

REPORT NUMBER: SPNCAP-KAR-11-055

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

**FORD MOTOR CO.
2011 FORD F-150 XLT SUPERCREW 4-DOOR TRUCK**

NHTSA No: MB0206

**PREPARED BY:
KARCO ENGINEERING, LLC.
9270 HOLLY ROAD
ADELANTO, CA 92301**



FEBRUARY 9, 2011

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
MAIL CODE: NVS-111
1200 NEW JERSEY AVE, SE, ROOM W43-410
WASHINGTON, D.C. 20590**

TR-P30032-19-NC

TECHNICAL REPORT DOCUMENTATION PAGE

1. Report No. SPNCAP-KAR-11-055		2. Government Accession No.		3. Recipient's Catalog No.																				
4. Title and Subtitle Final Report of New Car Assessment Program Side Impact Pole Testing of a 2011 Ford F-150 XLT SuperCrew 4-Door Truck NHTSA No. MB0206				5. Report Date February 23, 2011																				
				6. Performing Organization Code KAR																				
7. Authors Mr. Denver J. Schaffarzick, Project Engineer, KARCO Mr. Frank D. Richardson, Program Manager, KARCO				8. Performing Organization Report No. TR-P30032-19-NC																				
9. Performing Organization Name and Address KARCO Engineering, LLC. 9270 Holly Rd. Adelanto, CA, 92301				10. Work Unit No.																				
				11. Contract or Grant No. DTNH22-09-D-00122																				
12. Sponsoring Agency Name and Address U. S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards (NVS-111) 1200 New Jersey Ave., SE, Room W43-410 Washington, D.C 20590				13. Type of Report and Period Covered Final Test Report, February 2010																				
				14. Sponsoring Agency Code NVS-111																				
15. Supplementary Notes																								
16. Abstract A 32.2 km/h (20 mph) 75° oblique impact Side NCAP test was conducted on the subject 2011 Ford F-150 XLT SuperCrew 4-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 9, 2011. The impact velocity was 32.77 km/h and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 9.4° C. The test vehicle's post-test maximum crush was 594 mm at level 2. The test vehicle's performance was as follows: <table border="1"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th colspan="3">Passenger ATD</th> </tr> <tr> <th>Units</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆)</td> <td></td> <td>1000</td> <td>494.3</td> </tr> <tr> <td>Resultant Lower Spine Acceleration</td> <td>G</td> <td>82</td> <td>59</td> </tr> <tr> <td>Combined Acetabulum and Iliac Pelvic Force</td> <td>N</td> <td>5525</td> <td>3661</td> </tr> </tbody> </table> 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.						Measurement Description	Passenger ATD			Units	Threshold	Result	Head Injury Criteria (HIC ₃₆)		1000	494.3	Resultant Lower Spine Acceleration	G	82	59	Combined Acetabulum and Iliac Pelvic Force	N	5525	3661
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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																				
19. Security Classification of this report UNCLASSIFIED		20. Security Classification of this page UNCLASSIFIED		21. No. of Pages 87																				
				22. Price																				

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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 SuperCrew 4-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 SuperCrew 4-Door Truck. The subject vehicle was towed into the rigid pole at an angle of 75.5° and a velocity of 32.77 km/h. The test was conducted by KARCO Engineering, LLC. in Adelanto, California, on February 9, 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	494	59	Iliac Wing	1818
			Acetabulur	1896
			Sum	3661

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 SuperCrew 4-Door Truck NHTSA No. MB0206

Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole Test Date: 2/9/11

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	$=(t_f - 32)/1.8$
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 SuperCrew 4-Door Truck NHTSA No. MB0206
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole Test Date: 2/9/11

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	MB0206
Model Year	2011
Make	Ford
Model	F-150 XLT SuperCrew
Body Style	4-Door Truck
VIN	1FTFW1CF2BFA07496
Body Color	Dark Blue Pearl Metallic
Delivery Date	1/26/2011
Odometer Reading (km / mi)	69 / 43
Dealer	Galpin Ford
Transmission	6-Speed Automatic
Final Drive	Rear
Type / No. of Cylinders	V8
Engine Displacement (L)	5.0
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)	3221
GAWR Front (kg)	1565
GAWR Rear (kg)	1746

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Designated Seating Capacity	3	3		6
Capacity Weight (VCW) (kg)				753.0
DSC x 68.04 (kg)				408.2
Cargo Weight (RCLW) (kg)				136.0

A

B

A-B

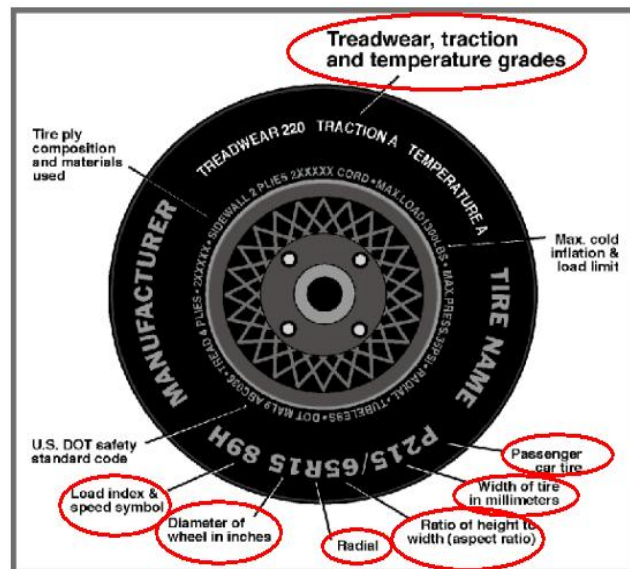
VEHICLE SEAT TYPE

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 SuperCrew 4-Door Truck NHTSA No. MB0206
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole Test Date: 2/9/11



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	LTX
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, 1 Polyamide	2 Polyester, 2 Steel, 1 Polyamide
Load Index/Speed Symbol	109T	109T
Tire Material	Polyester, Steel, Polyamide	Polyester, Steel, Polyamide
DOT Safety Code Right	APC4 WV1X 4310	APC4 WV1X 4310
DOT Safety Code Left	APC4 WV1X 4311	APC4 WV1X 4311

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMATER DATA

Test Vehicle: 2011 Ford F-150 XLT SuperCrew 4-Door Truck NHTSA No. MB0206
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole Test Date: 2/9/11

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	670.0	534.0		682.0	614.5		695.5	621.0	
Right	kg	673.5	555.0		680.5	632.5		665.5	632.5	
Ratio	%	55.2%	44.8%	100.0%	52.2%	47.8%	100.0%	52.1%	47.9%	100.0%
Total	kg	1343.5	1089.0	2432.5	1362.5	1247.0	2609.5	1361.0	1253.5	2614.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	2432.5	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	2617.5	A+B+C

TEST VEHICLE ATTITUDES

Condition	Units	As Delivered	As Tested	Fully Loaded
Driver Door Sill Angle (front-to-rear)	Deg	-0.9	-0.8	-0.8
Front Passenger Sill Angle (front-to-rear)	Deg	-1.3	-1.0	-0.8
Front Bumper Angle (left-to-right)	Deg	0.1	-0.2	-0.3
Rear Bumper Angle (left-to-right)	Deg	0.0	0.1	0.2
Vehicle CG (Aft of Front Axle)	mm	1646	1757	1762
Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline)	mm	-9	-5	6

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Weight of Ballast in Cargo Area	kg	106.0
Weight of Vehicle Components Removed	kg	30.5

Vehicle components removed to make Target Vehicle Test Weight:

Non-struck side door panels (12.0 kg), Jack and Tools (6.5 kg), Running Boards (12.0 kg)

TEST VEHICLE IMPACT POINT DATA

Measurement Description	Units	Value
Vertical Impact Reference Line (Aft of Front Axle)	mm	1262
Actual Impact Point (Aft of Front Axle)	mm	1265
Impact Point Difference (- forward/+ rearward)	mm	3

DATA SHEET NO. 2

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

Test Vehicle: 2011 Ford F-150 XLT SuperCrew 4-Door Truck

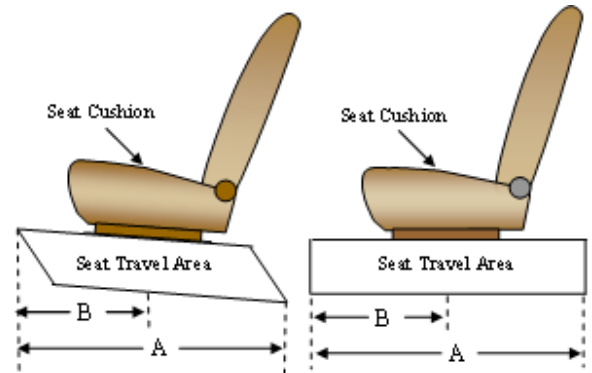
NHTSA No. MB0206

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

Test Date: 2/9/11

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.

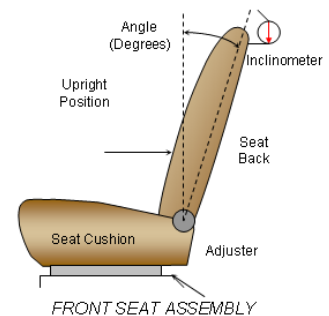


SEAT FORE/AFT POSITIONS

Seating Position	Total Fore-Aft Travel	Placed in Position	Cushion Range	Placed in Position
Driver Seat	247 mm	0 mm	10.4 - 20.4	15.4
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 330 mm up 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	14.6	4
Front Passenger Seat Back Angle	14.6	4
Struck Side Rear Seat Back Angle	3.3	Fixed
Non-Struck Side Rear Seat Back Angle	3.3	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 SuperCrew 4-Door Truck

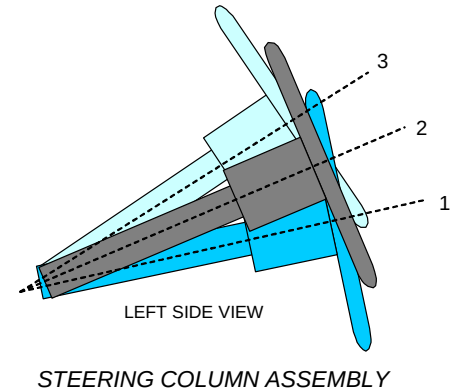
NHTSA No. MB0206

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

Test Date: 2/9/11

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. A tape measure is used with a reference mark on the steering column to measure telescoping travel.

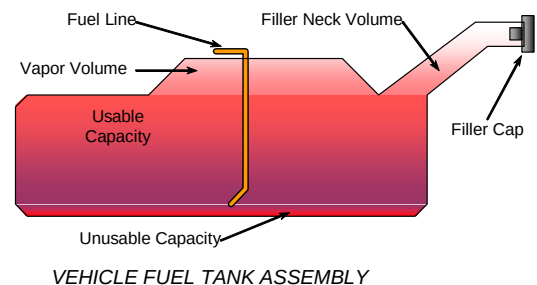


STEERING COLUMN POSITIONS

	Angle (°)	Fore-Aft Position (mm)
Lowermost Position, No. 1	20.3	Fixed
Geometric Center Position, No. 2	22.1	Fixed
Uppermost Position, No. 3	24.0	Fixed
Steering Wheel Travel	3.7	Fixed
Test Position	22.1	Fixed

FUEL PUMP

The test vehicle is equipped with an electric fuel pump. The fuel pump is activated when the ignition is turned on. The fuel filler door is located on the left side of the bed. The standard fuel tank occupies the area under the rear seat and the bed on the left side of the vehicle.



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

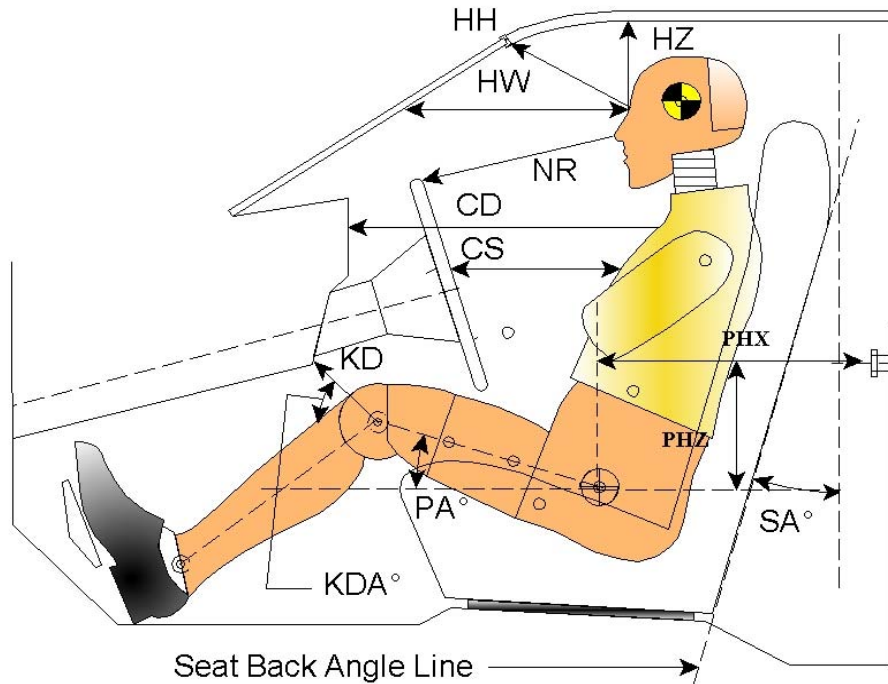
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Ford F-150 XLT SuperCrew 4-Door Truck

NHTSA No. MB0206

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

Test Date: 2/9/11



DUMMY LONGITUDINAL CLEARANCE DIMENSIONS (S/N: 299)

Driver Code	Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	351	40.0
HW	Head to Windshield	672	
HZ	Head to Roof	263	
NR	Nose to Rim	299	4.4
CD	Chest to Dash	492	10.4
CS	Chest to Steering Wheel	265	18.3
KDL / KDAL°	Left Knee to Dash	111	26.6
KDR / KDAR°	Right Knee to Dash	114	33.2
PA°	Pelvic Angle		22.1
PHX	H-Point to Striker (x-direction)	502	
PHZ	H-Point to Striker (z-direction)	34	
SA°	Seat Back Angle		14.6

DATA SHEET NO. 4

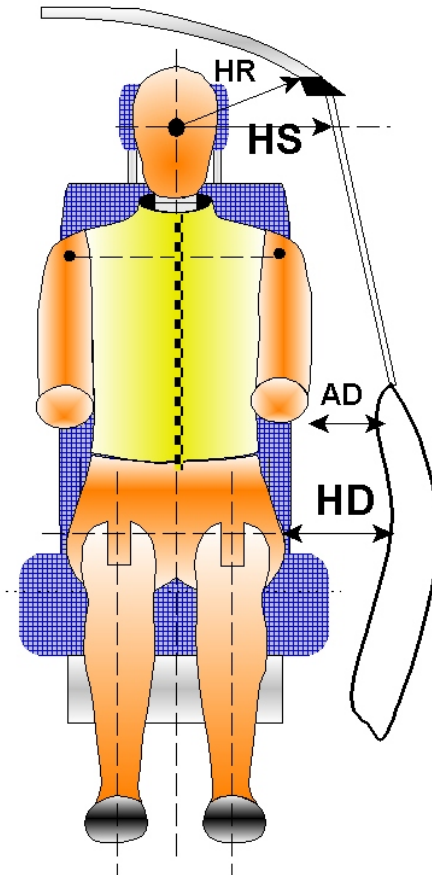
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Ford F-150 XLT SuperCrew 4-Door Truck

NHTSA No. MB0206

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

Test Date: 2/9/11



DUMMY LATERAL CLEARANCE DIMENSIONS (S/N: 299)

Code	Measurement Description	Units	Driver
HR	Head to Side Header	mm	284
HS	Head to Side Window	mm	427
AD	Arm to Door	mm	188
HD	H-Point to Door	mm	182

DATA SHEET NO. 5

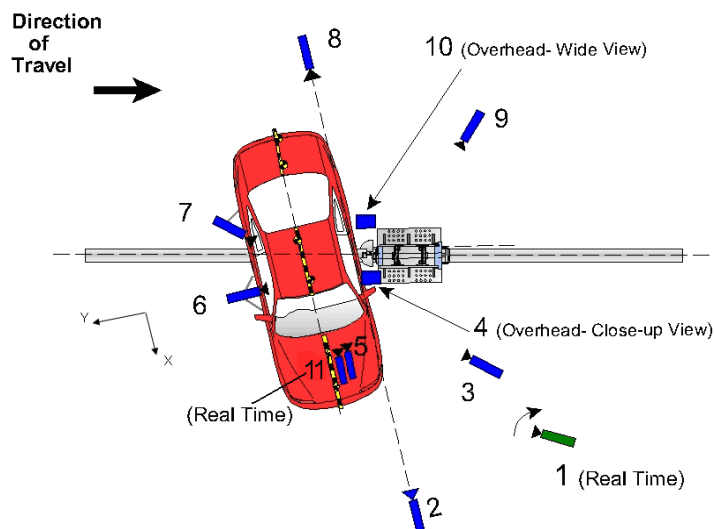
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2011 Ford F-150 XLT SuperCrew 4-Door Truck

NHTSA No. MB0206

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

Test Date: 2/9/11



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	1.76	0.60	-1.64	35	400
6	On-Board - Dummy Side View	1.76	0.60	-1.64	14	1000
7	On-Board - Dummy Rear Oblique View	1.76	0.60	-1.64	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	0.60	-1.64		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

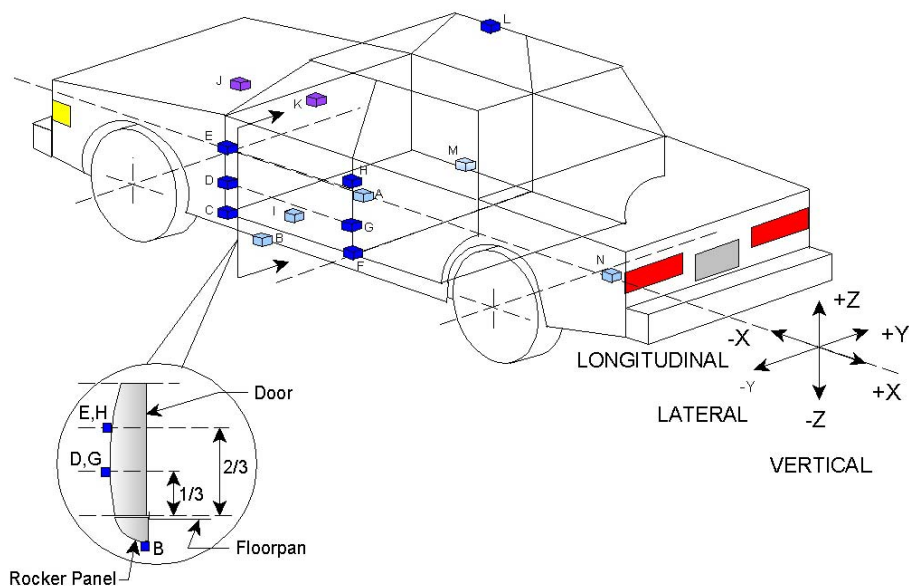
VEHICLE ACCELEROMETER DATA

Test Vehicle: 2011 Ford F-150 XLT SuperCrew 4-Door Truck

NHTSA No. MB0206

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

Test Date: 2/9/11



VEHICLE ACCELEROMETER LOCATIONS

	Sensor Description	Coordinates (mm)		
		X	Y	Z
A	Vehicle CG Accelerometer	2786	0	-565
	Vehicle CG ARS	2786	0	-565
B	Left Floor Sill	3367	-515	-262
C	A-Pillar Sill	4233	-898	-590
D	A-Pillar Lower	4233	-898	-734
E	A-Pillar Mid	4233	-898	-990
F	B-Pillar Sill	2979	-772	-520
G	B-Pillar Lower	2979	-772	-840
H	B-Pillar Mid	2979	-772	-1124
I	Driver Seat	3452	-626	-661
J	Engine Top	4840	15	-1038
K	Firewall	4601	312	-1155
L	Right Roof Sill	3158	630	-1849
M	Right Floor Sill	3065	778	-501
N	Rear Floorpan	1154	503	-785

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

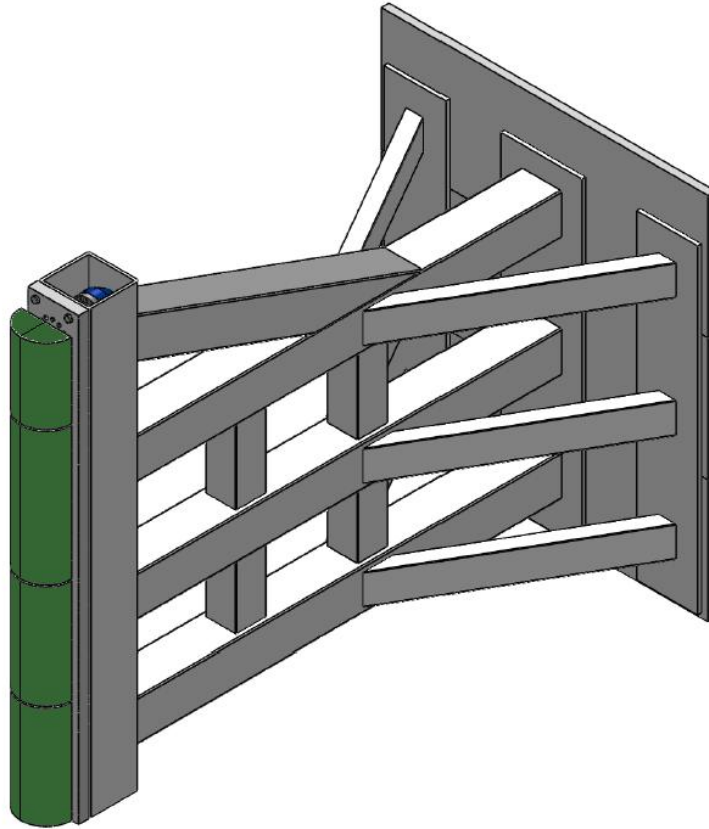
DATA SHEET NO. 7
RIGID POLE LOAD CELL DATA

Test Vehicle: 2011 Ford F-150 XLT SuperCrew 4-Door Truck

NHTSA No. MB0206

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

Test Date: 2/9/11



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 SuperCrew 4-Door Truck NHTSA No. MB0206
Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole Test Date: 2/9/11

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, Door Panel
Lower Torso Contact	Torso/Pelvis Airbag, Door Panel
Left Knee Contact	Door Panel, Knee Bolster, 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	3 (Right)
Trap No. 1 Velocity (Primary)	km/h	30.4 to 33.0	32.8
Trap No. 2 Velocity (Redundant)	km/h	30.4 to 33.0	32.8

DATA SHEET NO. 9

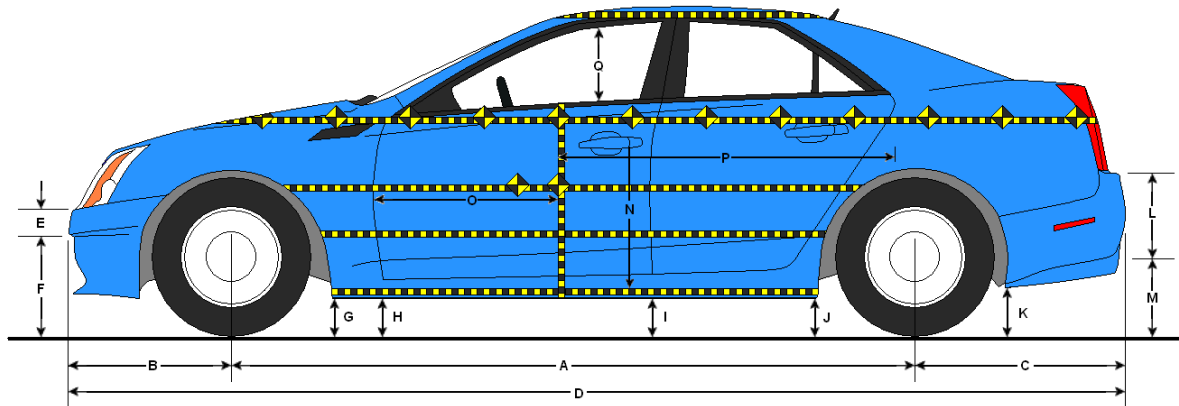
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2011 Ford F-150 XLT SuperCrew 4-Door Truck

NHTSA No. MB0206

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

Test Date: 2/9/11



LEFT SIDE VIEW

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Description	Pre-Test	Post-Test	Difference
A	Vehicle Wheelbase	3676	3603	-73
B	Front Axle to FSOV	976	1004	28
C	Rear Axle to RSOV	1232	1237	5
D1	Total Vehicle Length at Left Side	5059	4971	-88
D2	Total Vehicle Length at Centerline	5876	5844	-32
D3	Total Vehicle Length at Right Side	5058	5058	0
E	Front Bumper Thickness	238	238	0
F	Front Bumper Bottom to Ground	395	433	38
G	Sill Height at Front Wheel Well	410	424	14
H	Sill Height at Front Door Leading Edge	415	441	26
I	Sill Height at B-Pillar	444	481	37
J1	Sill Height at Rear Wheel Well	445	511	66
J2	Pinch Weld Height at Rear Wheel Well	416	471	55
K	Sill Aft of Rear Wheel Well	475	575	100
L	Rear Bumper Thickness	213	204	-9
M	Rear Bumper Bottom to Ground	473	553	80
N	Sill Height to Window Bottom Sill	705	795	90
O	Front Door Leading Edge to Impact CL	654	519	-135
P	Rear Door Trailing Edge to Impact CL	1557	1388	-169
Q	Front Window Opening	573	596	23
R	Right Side Length	5058	5058	0
S	Left Side Length	5059	4971	-88
T	Vehicle Width at B-Pillar	1985	1882	-103

* All measurements accurate to ± 3 mm

DATA SHEET NO. 10

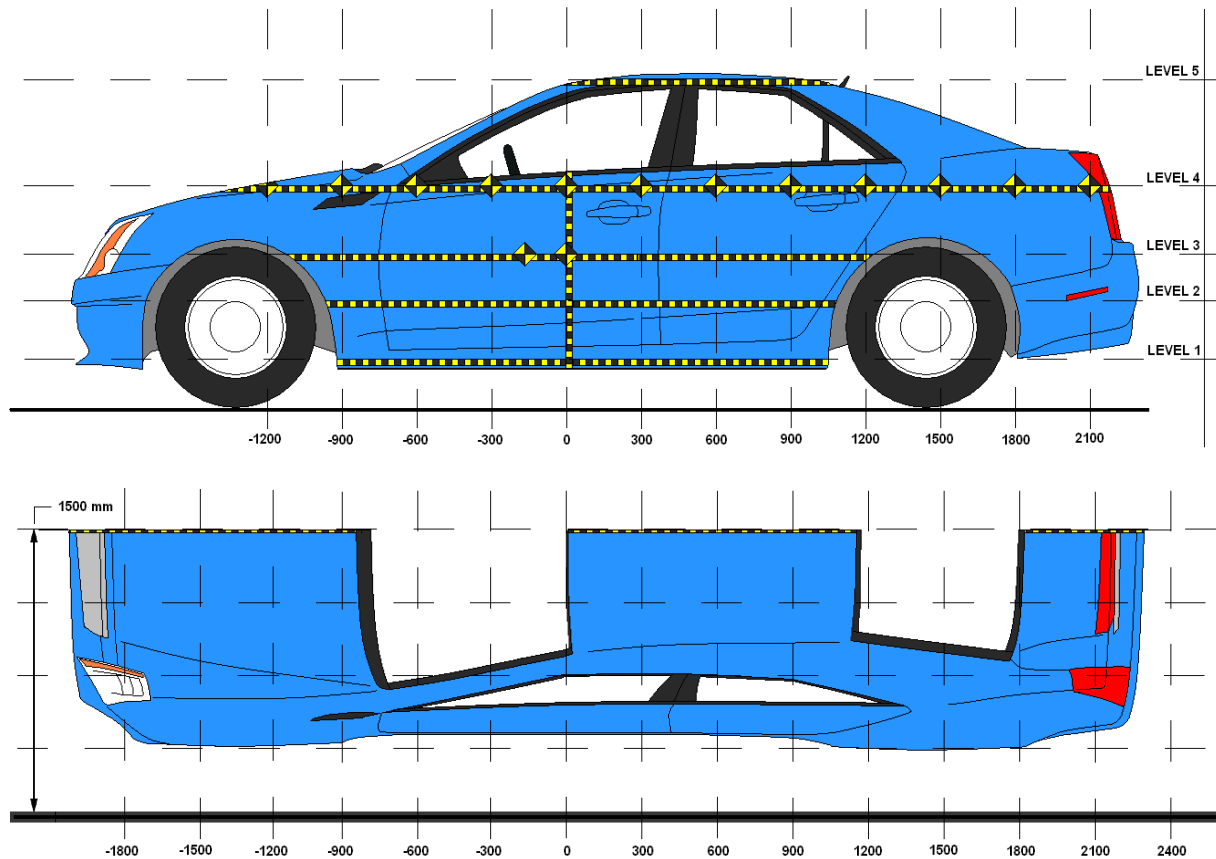
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Ford F-150 XLT SuperCrew 4-Door Truck

NHTSA No. MB0206

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

Test Date: 2/9/11



NOTE: All measurements are in millimeters (mm)

Level	Description	Height Above Ground (mm)
1	Sill Top Height	482
2	Occupant H-Point Height	901
3	Mid-Door Height	854
4	Window Sill Height	1183
5	Window Top Height	1805

DATA SHEET NO. 10 ... (CONTINUED)

VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Ford F-150 XLT SuperCrew 4-Door Truck

NHTSA No. MB0206

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

Test Date: 2/9/11

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900		530	523	568			660	658	704			130	135	136	
-750	555	540	542	559		718	690	695	705		163	150	153	146	
-600	553	536	538	554		776	746	748	732		223	210	210	178	
-450	549	530	533	550		850	824	827	814		301	294	294	264	
-300	546	526	528	544		930	911	913	900		384	385	385	356	
-150	544	522	525	540		1014	1012	1016	1007		470	490	491	467	
0	542	519	522	536	794	1108	1113	1114	1109	1153	566	594	592	573	359
150	540	517	519	532	793	1072	1086	1084	1089	1165	532	569	565	557	372
300	538	516	518	529	795	942	953	952	963	1113	404	437	434	434	318
450	536	515	517	527	797	827	821	823	847	1062	291	306	306	320	265
600	535	515	517	526	797	728	766	785	746	1021	193	251	268	220	224
750	536	514	516	525	798	733	719	720	732	996	197	205	204	207	198
900	537	514	516	524	799	711	698	700	710	982	174	184	184	186	183
1050	537	514	516	524	799	690	679	680	691	970	153	165	164	167	171
1200	539	515	517	524	799	670	659	660	671	958	131	144	143	147	159
1350	541	517	519	524	799	651	640	640	652	948	110	123	121	128	149
1500	542	519	521	525	799	632	620	621	633	939	90	101	100	108	140
1650	549	529	530	538		600	598	597	618		51	69	67	80	
1800	546	528	529	533		594	595	594	610		48	67	65	77	
1950		518	512	532			582	574	607			64	62	75	
2100		501	504	531			560	561	602			59	57	71	
2250				530					597					67	
2400				530					594					64	
2550															
2700															
2850															

MAXIMUM CRUSH DATA

	Units	Level 1	Level 2	Level 3	Level 4	Level 5
Maximum Crush	mm	566	594	592	573	372
Distance From Impact	mm	0	0	0	0	150

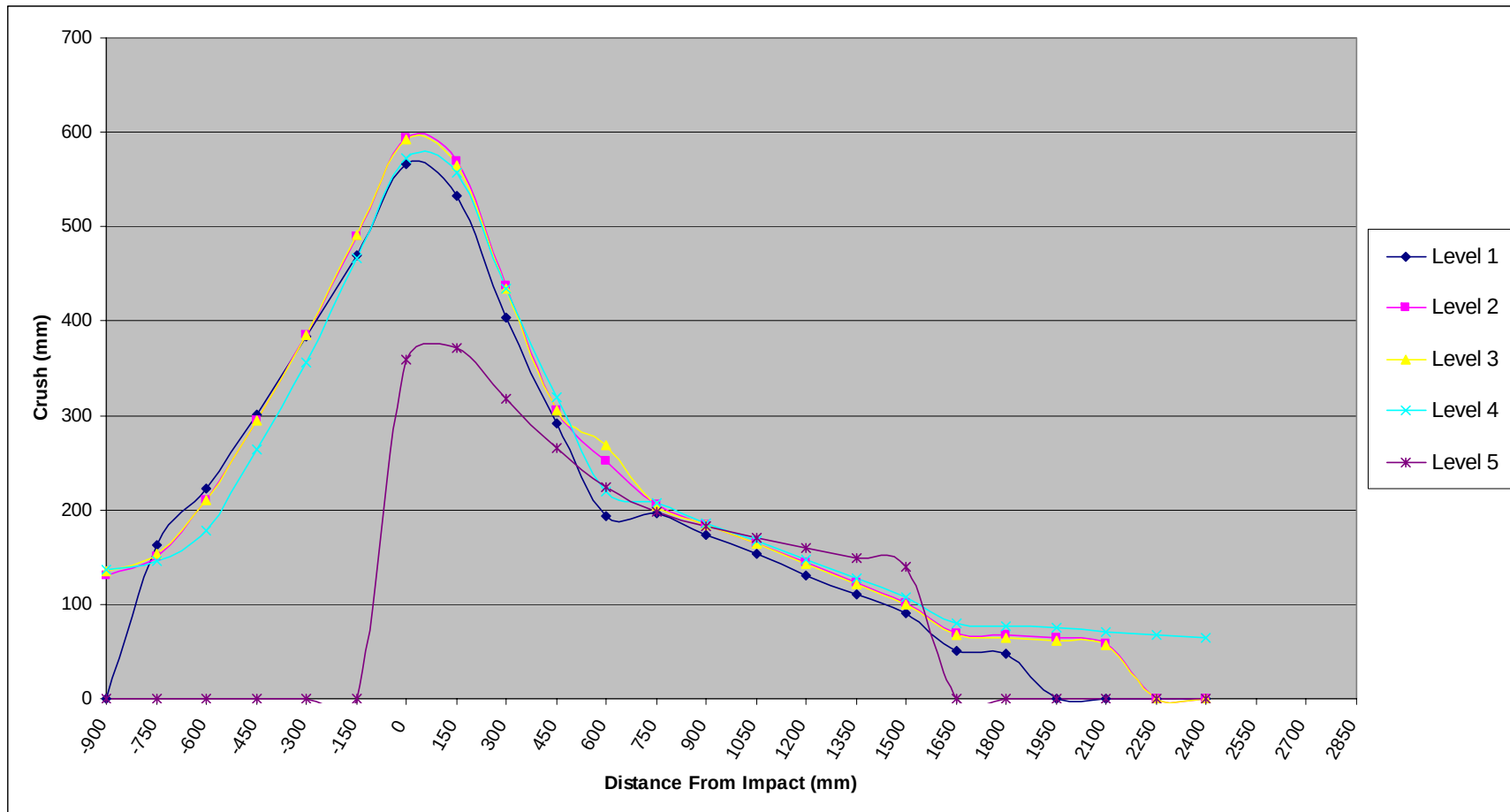
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VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Ford F-150 XLT SuperCrew 4-Door Truck

NHTSA No. MB0206

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

Test Date: 2/9/11



DATA SHEET NO. 11

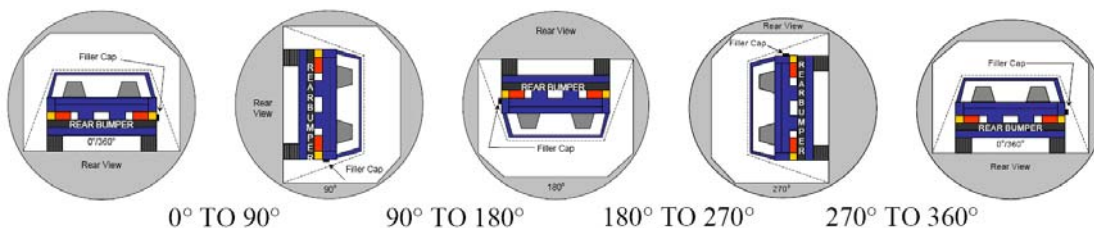
FMVSS NO. 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2011 Ford F-150 XLT SuperCrew 4-Door Truck NHTSA No. MB0206
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole Test Date: 2/9/11

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 9.4° C Test Time: 11:39 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°	87	300	387
90° To 180°	81	315	396
180° To 270°	79	328	407
270° To 360°	81	300	381

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

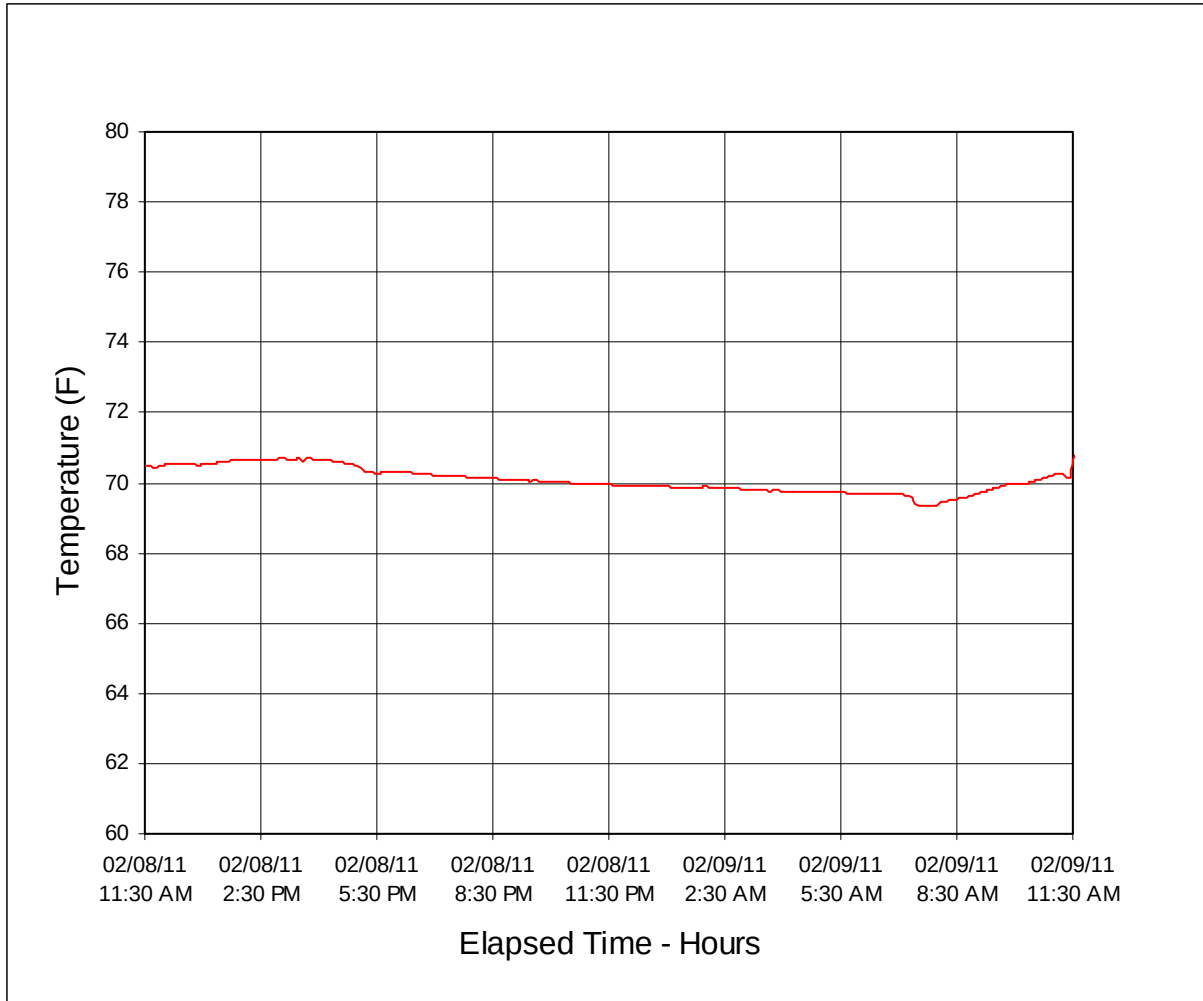
DUMMY/VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2011 Ford F-150 XLT SuperCrew 4-Door Truck

NHTSA No. MB0206

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

Test Date: 2/9/11



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

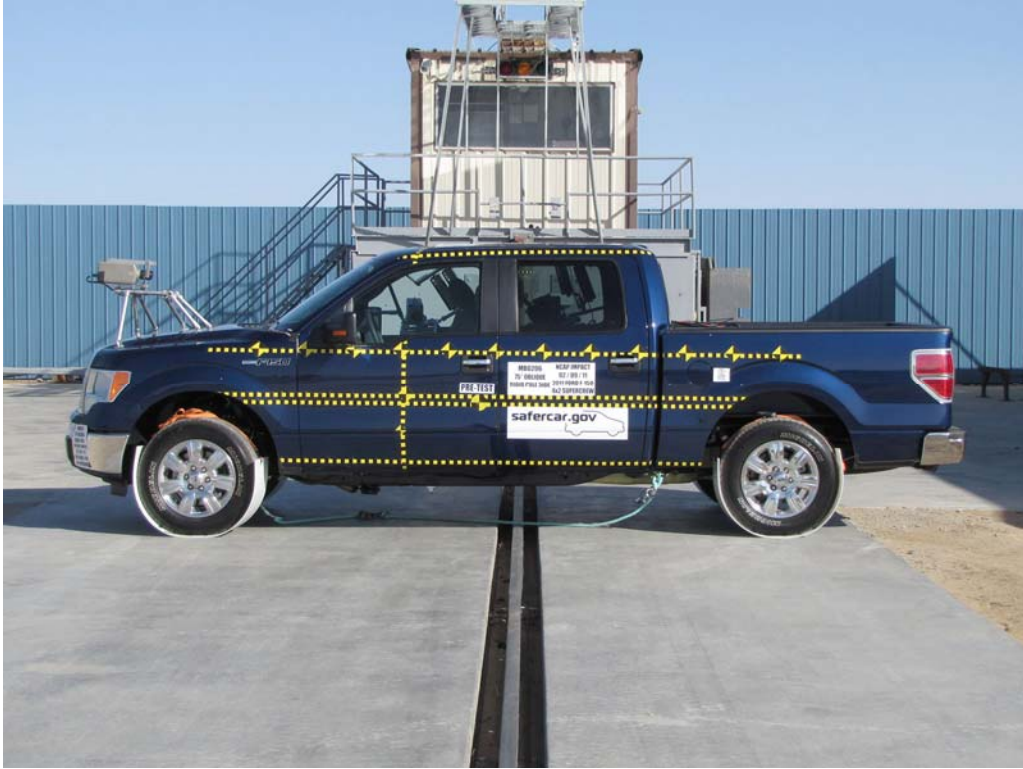


FIGURE 7. Pre-Test Left Side View of Test Vehicle



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

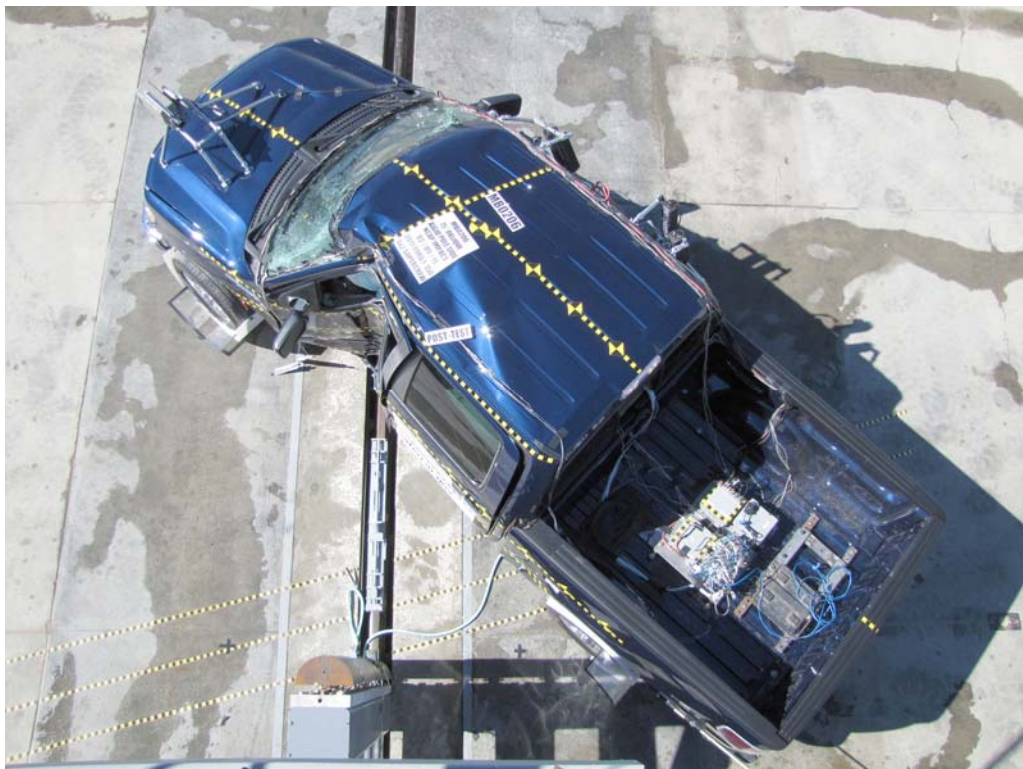


FIGURE 16. Post-Test Overhead View of Test Vehicle and Pole



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

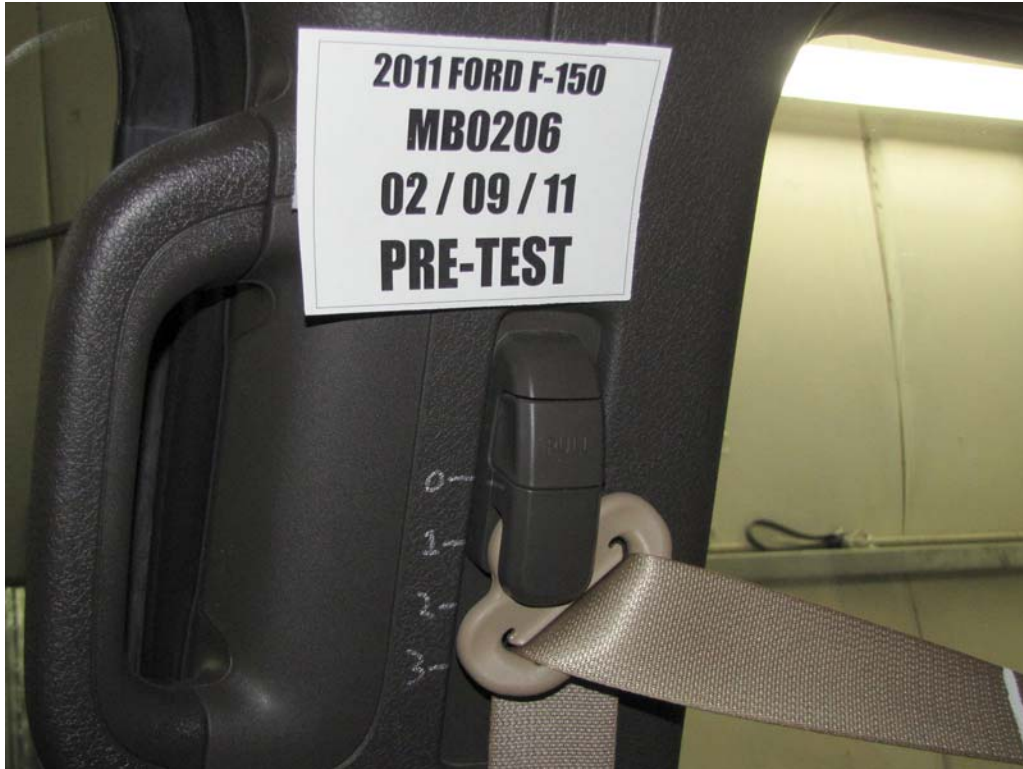


FIGURE 33. Pre-Test View of Belt Anchorage for Dummy



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

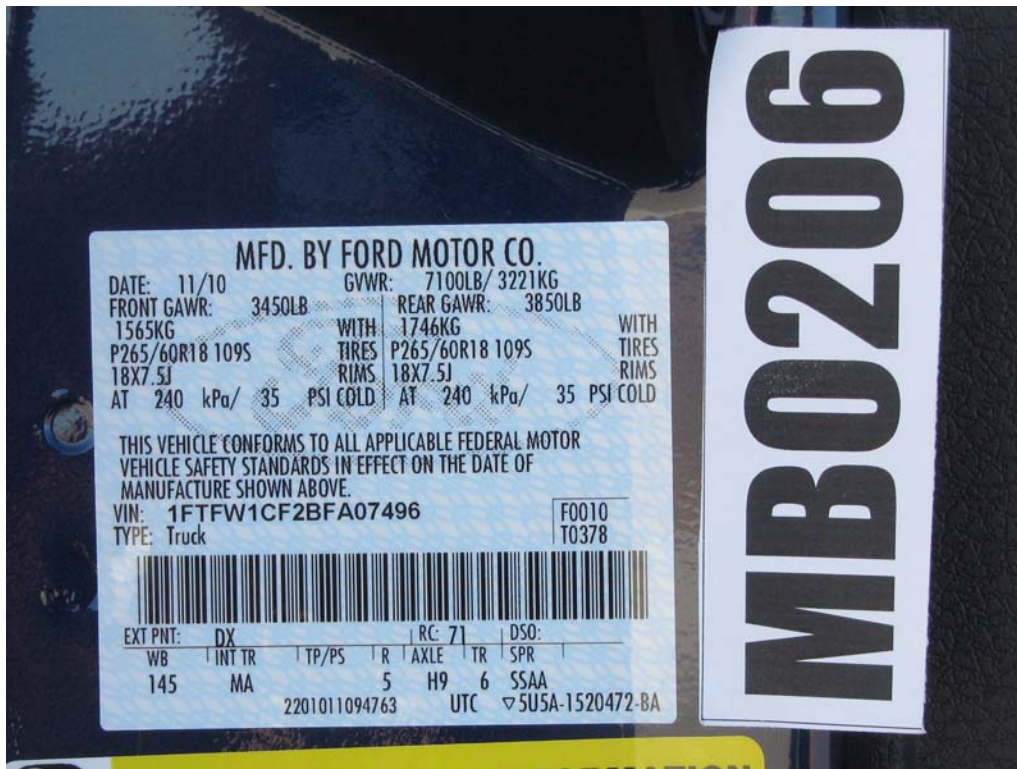


FIGURE 53. Close-Up View of Vehicle's Certification Label



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



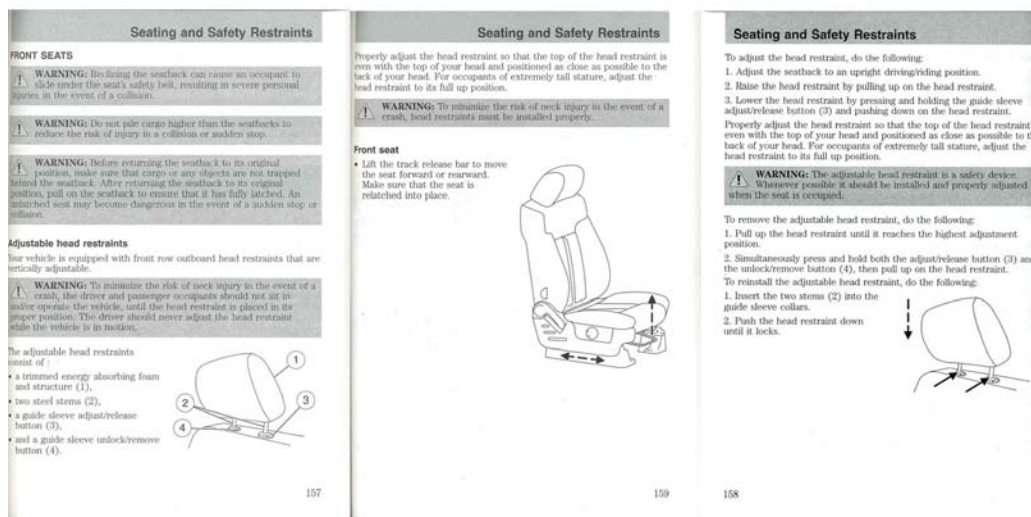
FIGURE 64. FMVSS No. 301-305 Rollover 270 Degrees



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



FIGURE 66. Impact Event

[illegible]

APPENDIX B
VEHICLE AND DUMMY RESPONSE DATA PLOTS

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3	Driver Head Acceleration(Z) Primary	B-1
4	Driver Head Resultant Primary	B-1
5	Driver Lower Spine T12 Acceleration (X)	B-2
6	Driver Lower Spine T12 Acceleration (Y)	B-2
7	Driver Lower Spine T12 Acceleration (Z)	B-2
8	Driver Lower Spine Y12 Resultant Acceleration	B-2
9	Driver Iliac Wing Force on Impact Side (Y)	B-3
10	Driver Acetabulum Force on Impact Side (Y)	B-3
11	Driver Total Pelvis Force on Impact Side (Y)	B-3

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)

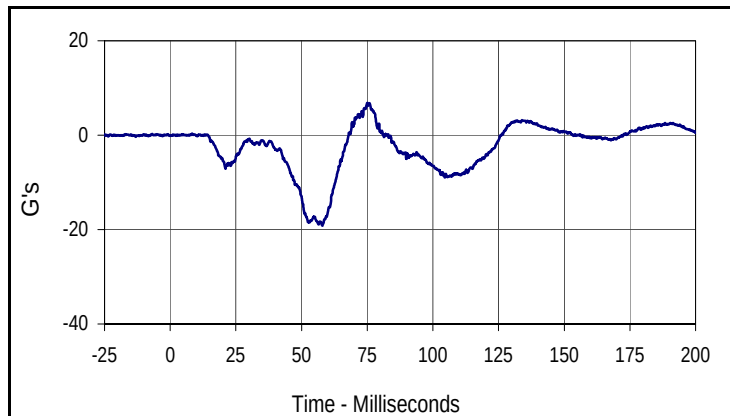
Left Floor Sill Acceleration (Y)
Left A-Pillar Sill Acceleration (Y)
Left Lower A-Pillar Acceleration (Y)
Left Mid A-Pillar Acceleration (Y)
Left B-Pillar Sill Acceleration (Y)
Left Lower B-Pillar Acceleration (Y)
Left Mid B-Pillar Acceleration (Y)
Driver Seat Track at Dummy H-Point Acceleration (Y)
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

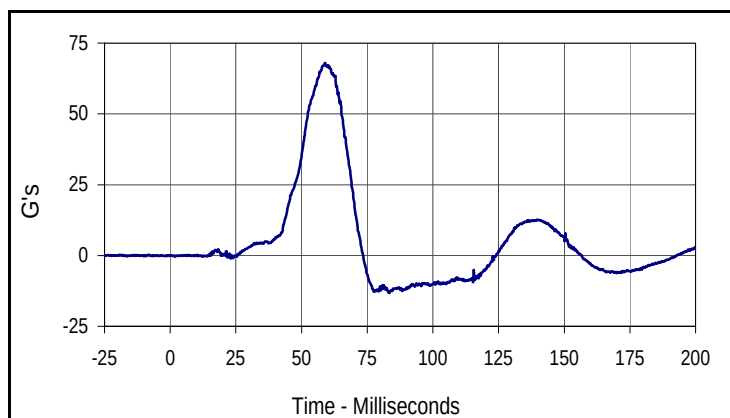
Load Cell Pole Barrier #1 Force (Y)
Load Cell Pole Barrier #2 Force (Y)
Load Cell Pole Barrier #3 Force (Y)
Load Cell Pole Barrier #4 Force (Y)
Load Cell Pole Barrier #5 Force (Y)
Load Cell Pole Barrier #6 Force (Y)
Load Cell Pole Barrier #7 Force (Y)
Load Cell Pole Barrier #8 Force (Y)

Test Vehicle: 2011 Ford F-150 XLT SuperCrew 4-Door Truck
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole Test

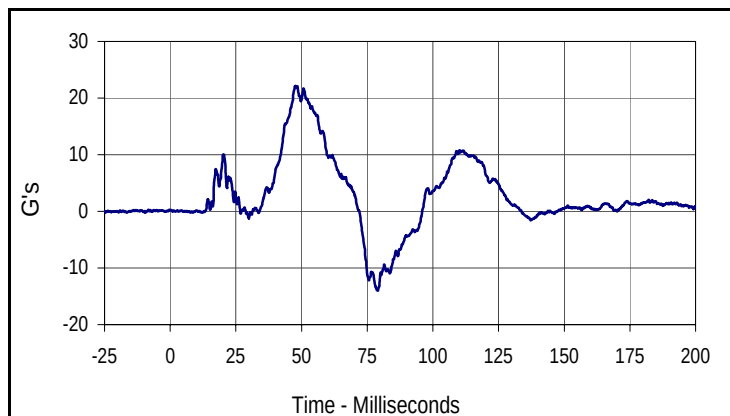
Test Date: 2/9/11
 NHTSA No.: MB0206



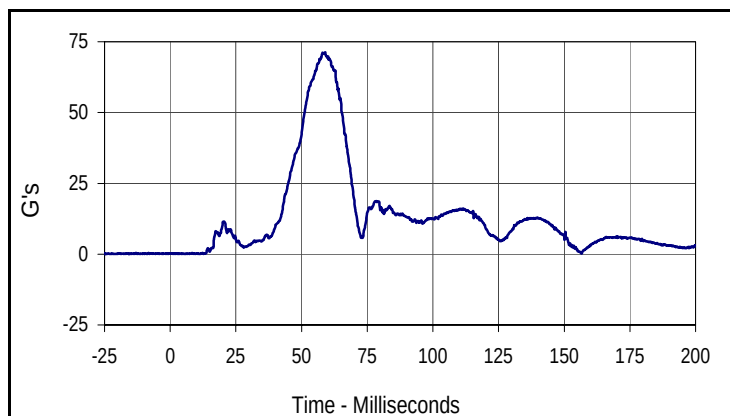
Curve Description			
Driver Head Acceleration X Primary			
CURNO	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
6.8	75.0	-19.2	57.9



Curve Description			
Driver Head Acceleration Y Primary			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
68.0	59.0	-13.2	83.4



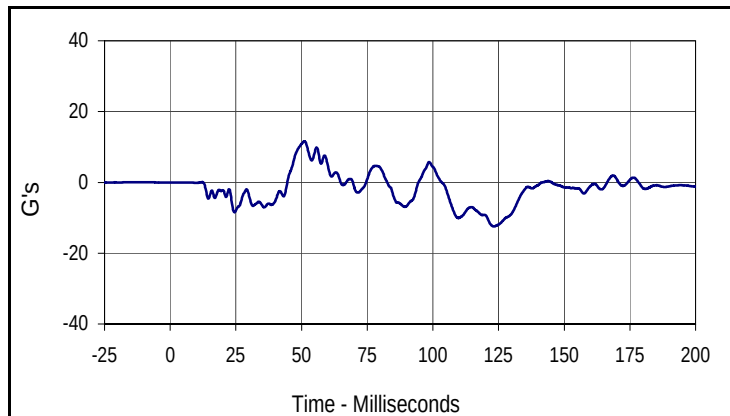
Curve Description			
Driver Head Acceleration Z Primary			
CURNO	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
22.1	47.7	-14.0	79.0



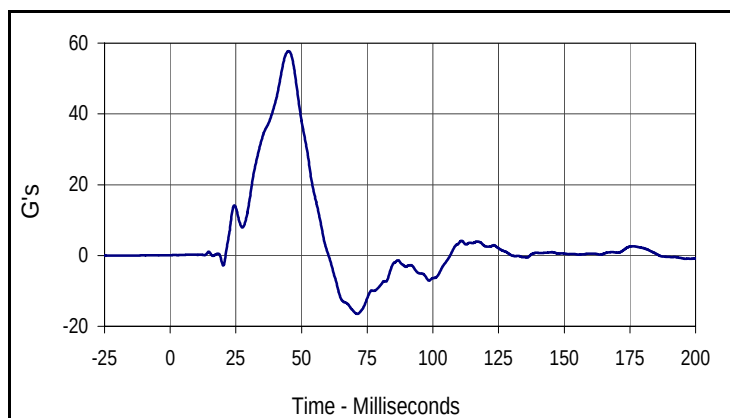
Curve Description			
Driver Head Acceleration Primary Res.			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
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Test Vehicle: 2011 Ford F-150 XLT SuperCrew 4-Door Truck
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole Test

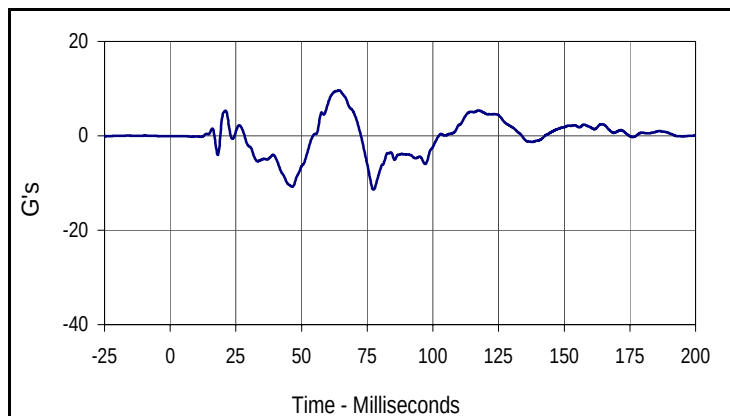
Test Date: 2/9/11
 NHTSA No.: MB0206



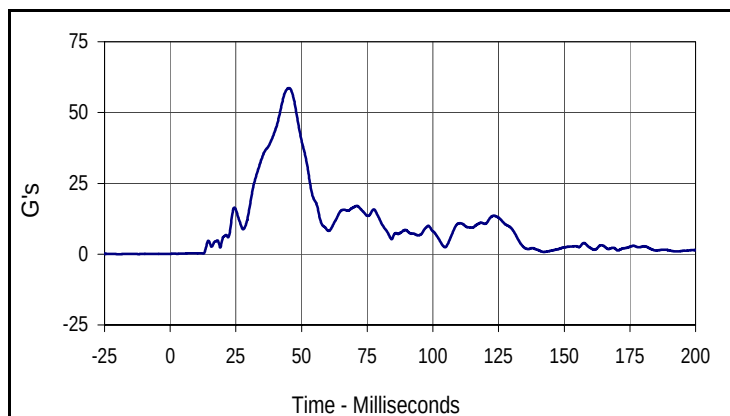
Curve Description			
Driver Lower Spine T12 Acceleration X			
CURNO	Type	SAE Class	Units
012	FIL	180	G's
Max	Time	Min	Time
11.6	51.1	-12.5	123.3



Curve Description			
Driver Lower Spine T12 Acceleration Y			
CURNO	Type	SAE Class	Units
013	FIL	180	G's
Max	Time	Min	Time
57.7	45.1	-16.5	71.2



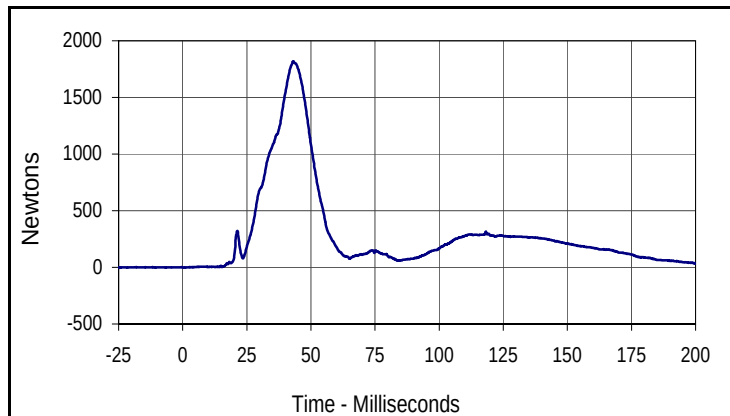
Curve Description			
Driver Lower Spine T12 Acceleration Z			
CURNO	Type	SAE Class	Units
014	FIL	180	G's
Max	Time	Min	Time
9.6	64.4	-11.4	77.4



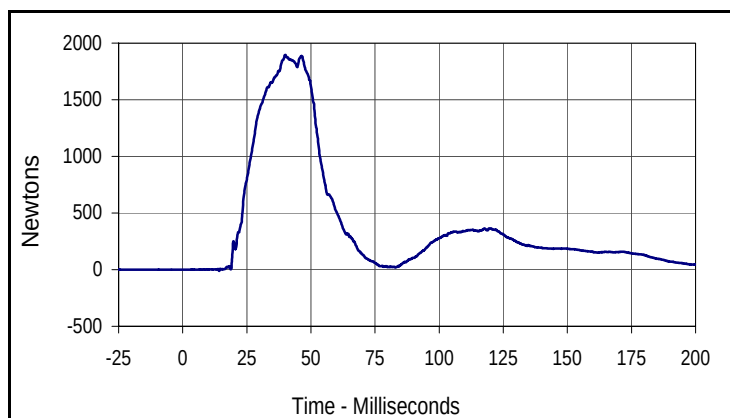
Curve Description			
Driver Lower Spine T12 Acceleration Res.			
CURNO	Type	SAE Class	Units
012	RES	180	G's
Max	Time	Min	Time
58.7	45.2	0.1	2.8

Test Vehicle: 2011 Ford F-150 XLT SuperCrew 4-Door Truck
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole Test

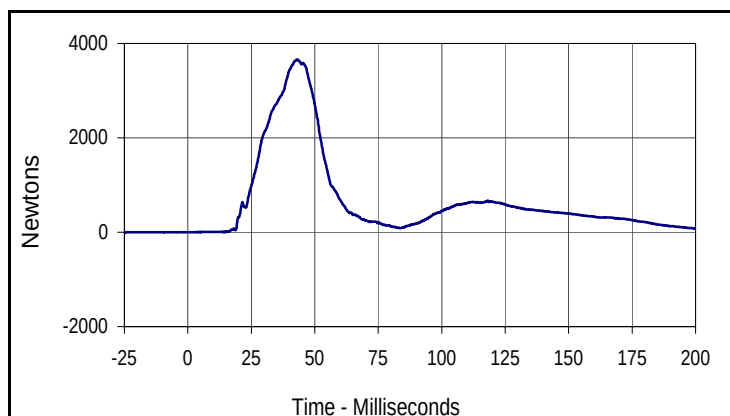
Test Date: 2/9/11
 NHTSA No.: MB0206



Curve Description			
Driver Iliac Wing Force on Impact Side Y			
CURNO	Type	SAE Class	Units
015	FIL	600	Newtons
Max	Time	Min	Time
1817.8	43.1	-2.3	0.7



Curve Description			
Driver Acetabulum Force on Impact Side Y			
CURNO	Type	SAE Class	Units
016	FIL	600	Newtons
Max	Time	Min	Time
1895.5	40.0	-10.1	14.2



Curve Description			
Driver Total Pelvic Force on Impact Side Y			
CURNO	Type	SAE Class	Units
015	SUM	600	Newtons
Max	Time	Min	Time
3660.6	43.1	-6.4	14.3

APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

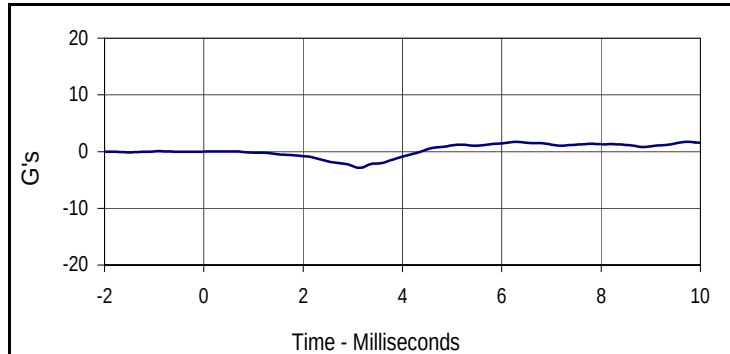
APPENDIX C
PRE-TEST / SID-IIs CONFIGURATION AND PERFORMANCE VERIFICATION DATA

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

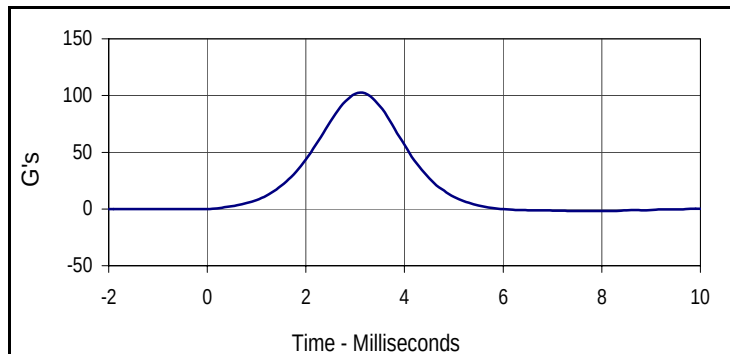
Test Date: 2/4/11
 Test I.D.: HDP02B



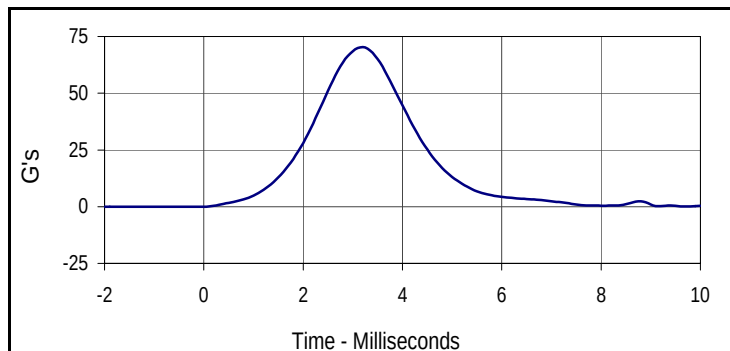
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.52	Pass
Laboratory Relative Humidity	%	10 to 70	24.99	Pass
Peak Resultant Acceleration	G's	115 to 137	124.3	Pass
Peak Longitudinal Acceleration	G's	≤15	2.8	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	13.7	Pass
Overall Test Results			Pass	



Curve Description			
Head X			
CURNO	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
1.7	9.7	-2.8	3.1



Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
102.7	3.1	-1.9	8.0



Curve Description			
Head Z			
CURNO	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
70.4	3.2	-0.1	-1.8



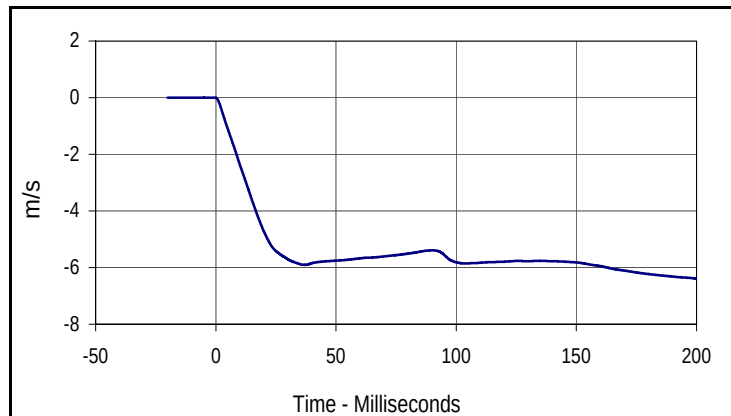
Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
124.3	3.1	0.1	0.0

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

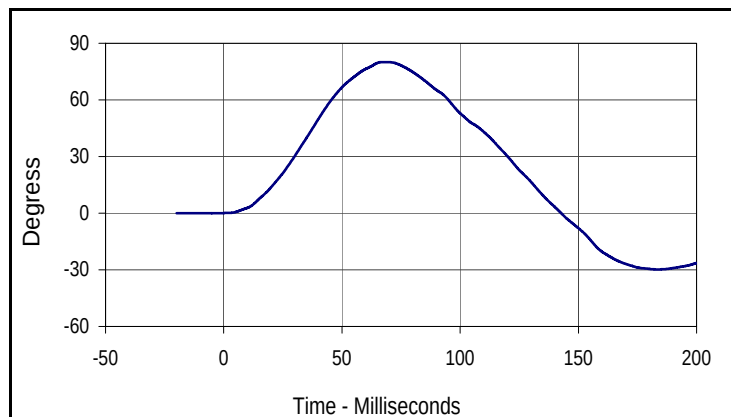
Test Date: 2/4/11
 Test I.D.: NBP02B



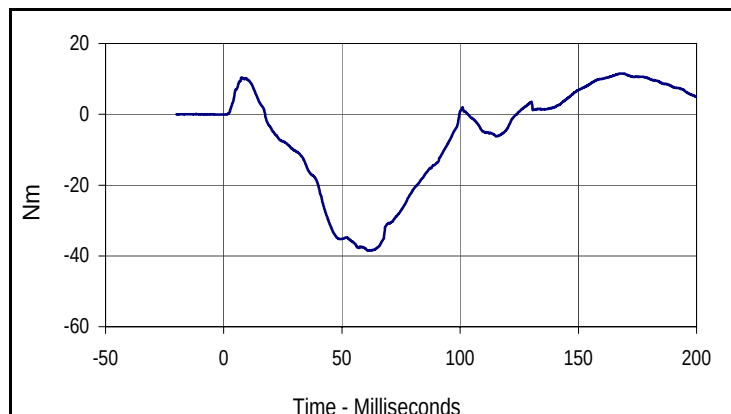
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.46	Pass
Laboratory Relative Humidity		%	10 to 70	24.86	Pass
Pendulum Velocity		m/s	5.51 to 5.63	5.55	Pass
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.37	Pass
	15 msec	m/s	-3.30 to -4.10	-3.61	Pass
	20 msec	m/s	-4.40 to -5.40	-4.73	Pass
	25 msec	m/s	-5.40 to -6.10	-5.42	Pass
	25-100 msec	m/s	-5.50 to -6.20	-5.90	Pass
Translation-Rotation	Max	Degrees	71.0 to 81.0	80.1	Pass
	Time	msec	50.0 to 70.0	67.2	Pass
Peak Occipital Condyle Moment		Nm	-36.0 to -44.0	-38.5	Pass
Decaying Moment Time to Cross 0 Nm		msec	102.0 to 126.0	124.0	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	-6.4	200.0



Curve Description			
Maximum Translation Rotation			
CURNO	Type	SAE Class	Units
002	FIL	60	Degress
Max	Time	Min	Time
80.1	67.2	-29.8	183.4



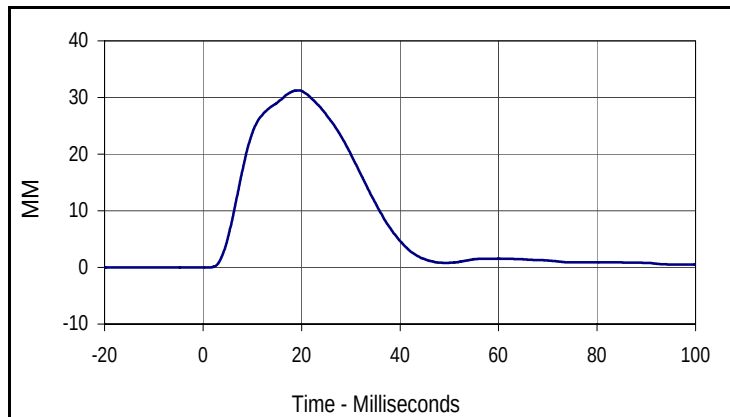
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
11.5	168.5	-38.5	62.0

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

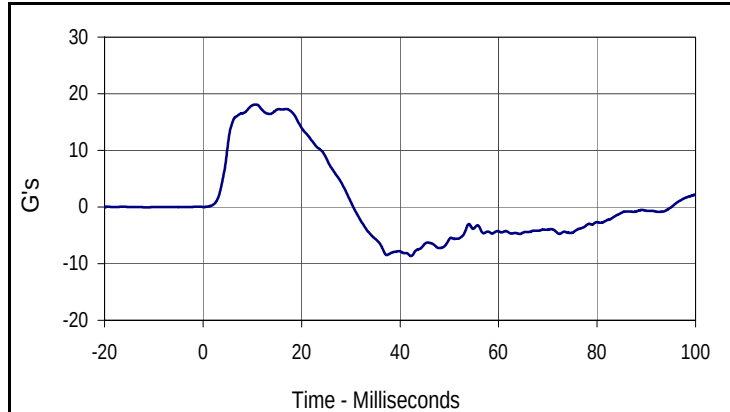
Test Date: 2/4/11
 Test I.D.: SHP02B



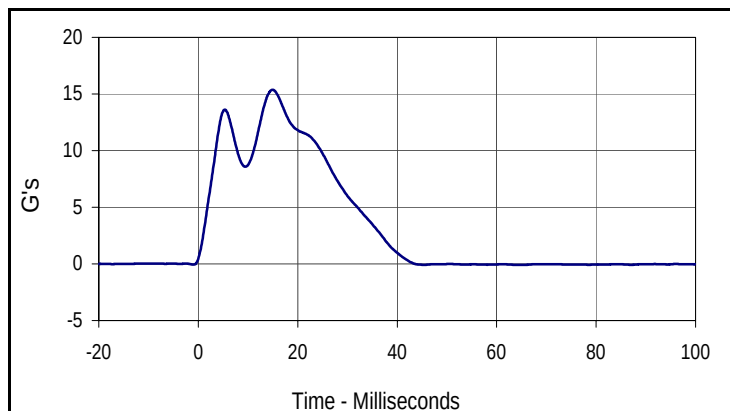
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.46	Pass
Laboratory Relative Humidity	%	10 to 70	24.86	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.29	Pass
Shoulder Deflection	MM	28 to 37	31.3	Pass
Peak Upper Spine Y Acceleration	G's	17 to 22	18.1	Pass
Peak Impactor Acceleration	G's	13 to 18	15.4	Pass
Overall Test Results			Pass	



Curve Description			
Shoulder Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
31.3	19.2	0.0	-18.7



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
18.1	10.8	-8.7	42.2



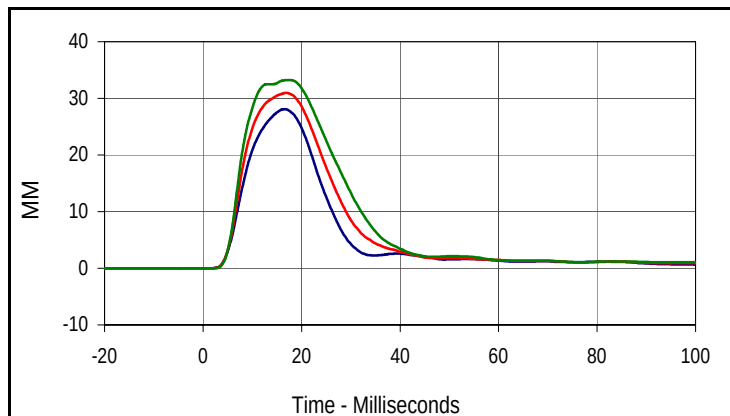
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
15.4	14.9	-0.1	65.4

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

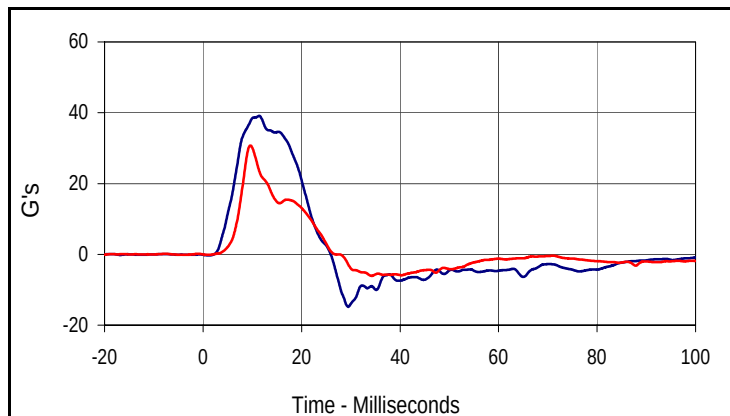
Test Date: 2/4/11
 Test I.D.: TWAP02B



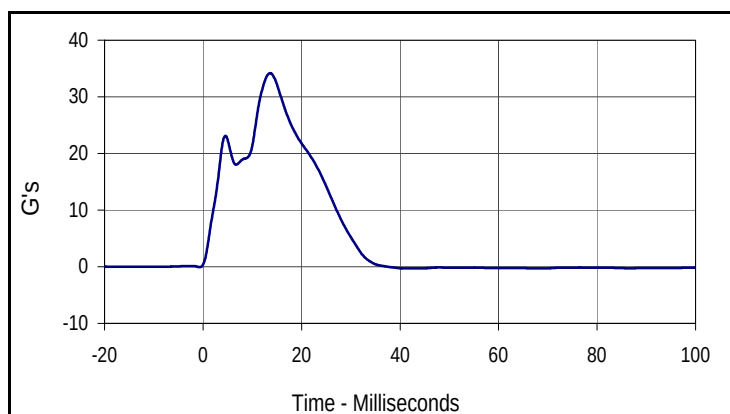
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.36	Pass
Laboratory Relative Humidity	%	10 to 70	24.86	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.70	Pass
Shoulder Deflection	MM	31 to 40	36.5	Pass
Upper Thorax Rib Deflection	MM	25 to 32	28.1	Pass
Middle Thorax Rib Deflection	MM	30 to 36	31.0	Pass
Lower Thorax Rib Deflection	MM	32 to 38	33.2	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	39.1	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	30.7	Pass
Peak Impactor Acceleration After 5 msec.	G's	30 to 36	34.2	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
28.1	16.5	0.0	-8.8
Middle Thorax Deflection			
Max	Time	Min	Time
31.0	16.9	0.0	-15.7
Lower Thorax Deflection			
Max	Time	Min	Time
33.2	17.2	0.0	-10.7



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
39.1	11.4	-14.8	29.5
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
30.7	9.6	-6.1	34.2



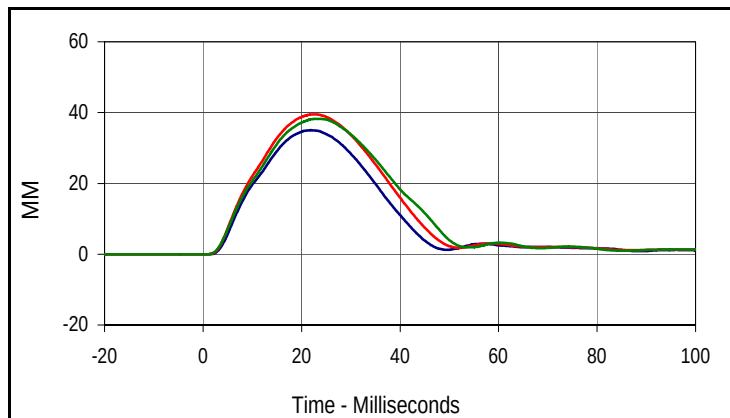
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
34.2	13.6	-0.3	40.8

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

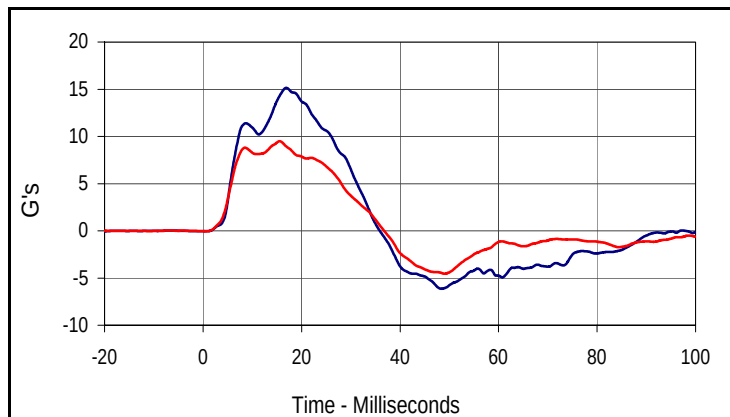
Test Date: 2/4/11
 Test I.D.: TOAP02B



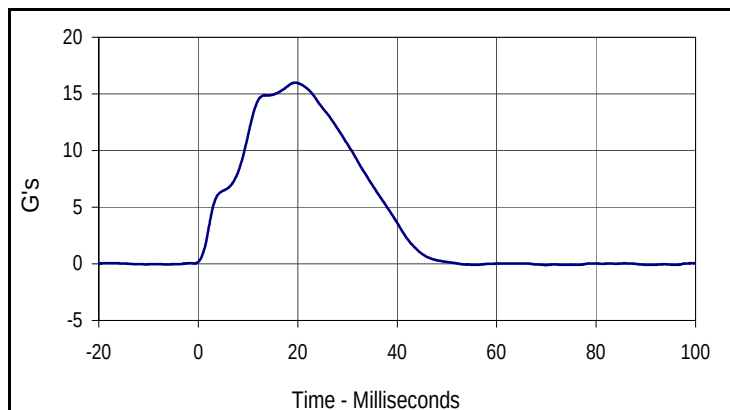
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.30	Pass
Laboratory Relative Humidity	%	10 to 70	24.86	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.36	Pass
Upper Thorax Rib Deflection	MM	32 to 40	35.0	Pass
Middle Thorax Rib Deflection	MM	39 to 45	39.5	Pass
Lower Thorax Rib Deflection	MM	35 to 43	38.2	Pass
Peak Upper Spine Y Acceleration	G's	13 to 17	15.1	Pass
Peak Lower Spine Y Acceleration	G's	7 to 11	9.5	Pass
Peak Impactor Acceleration	G's	14 to 18	16.0	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
35.0	21.9	0.0	-4.7
Middle Thorax Deflection			
Max	Time	Min	Time
39.5	22.5	0.0	-4.4
Lower Thorax Deflection			
Max	Time	Min	Time
38.2	23.4	0.0	-7.9



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.1	16.9	-6.1	48.4
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
9.5	15.6	-4.5	49.1



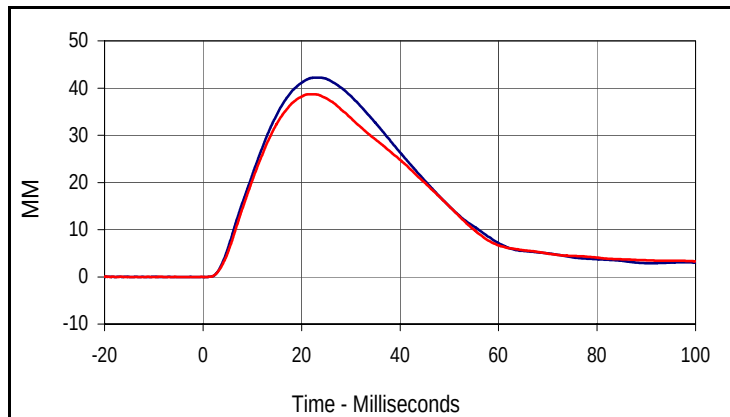
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
16.0	19.5	-0.1	69.9

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

Test Date: 2/4/11
 Test I.D.: ABDP02B

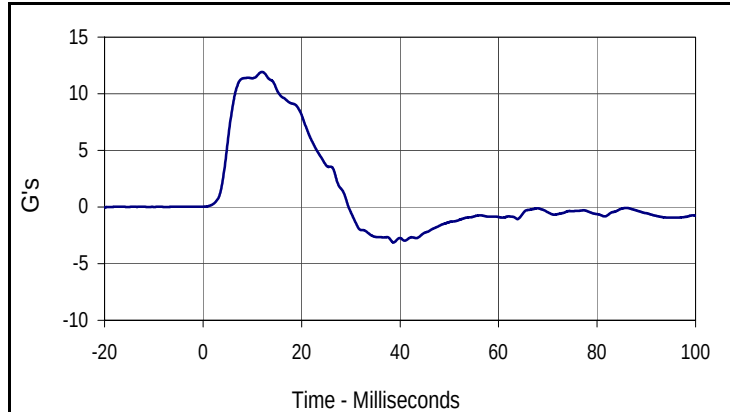


Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.30	Pass
Laboratory Relative Humidity	%	10 to 70	24.82	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.36	Pass
Upper Abdominal Rib Deflection	MM	36 to 47	42.2	Pass
Lower Abdominal Rib Deflection	MM	33 to 44	38.7	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	11.9	Pass
Peak Impactor Acceleration	G's	12 to 16	13.9	Pass
Overall Test Results			Pass	

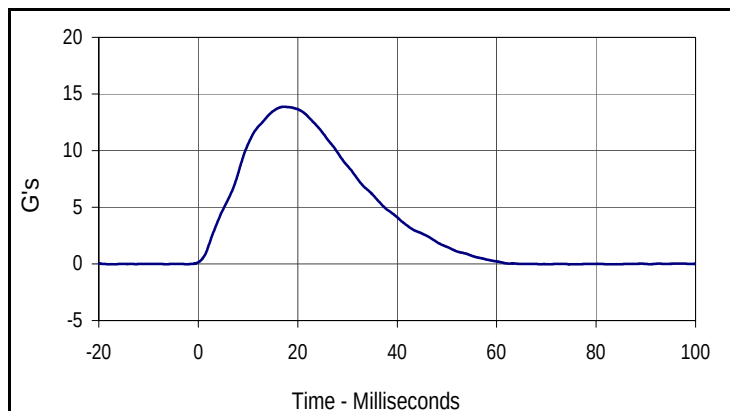


Curve Description			
Upper Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
42.2	23.2	0.0	-11.2

Curve Description			
Lower Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
38.7	22.2	0.0	-6.3



Curve Description			
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
11.9	12.0	-3.1	38.7



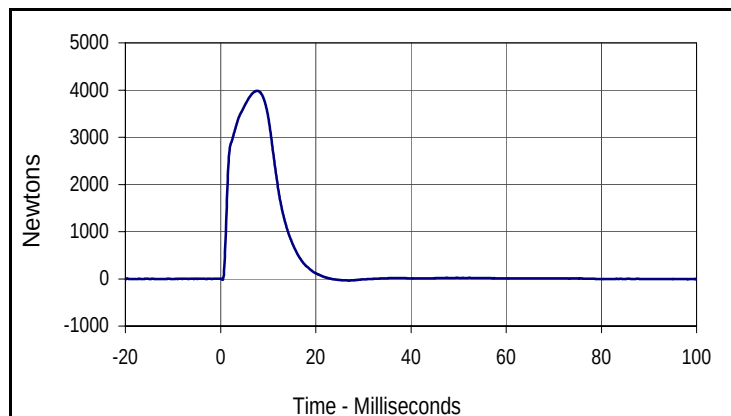
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
13.9	17.3	0.0	76.2

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

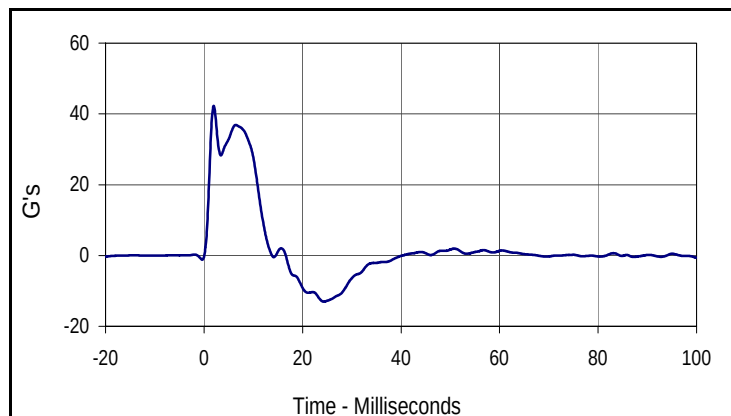
Test Date: 2/4/11
 Test I.D.: PAP02B



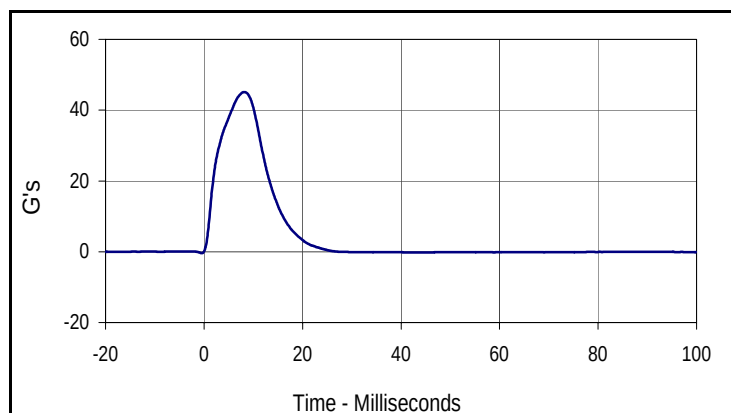
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.24	Pass
Laboratory Relative Humidity	%	10 to 70	24.77	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.66	Pass
Peak Acetabulum Force	Newtons	3600 to 4300	3984.8	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	36.9	Pass
Peak Impactor Acceleration	G's	38 to 47	45.1	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Acetabulum Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3984.8	7.7	-35.6	27.0



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
42.2	2.0	-13.0	24.3



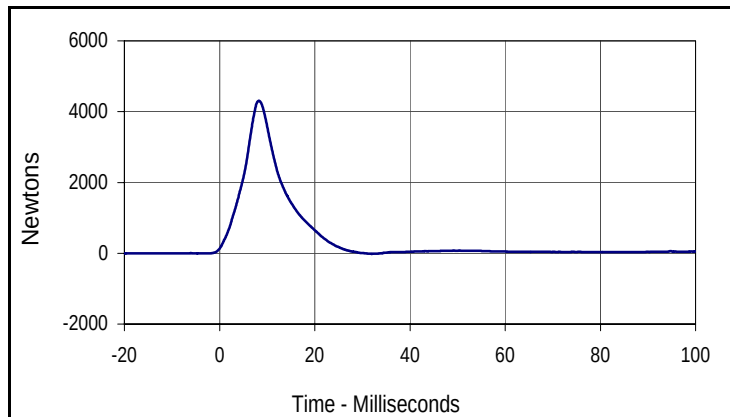
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
45.1	8.2	-0.4	-0.5

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

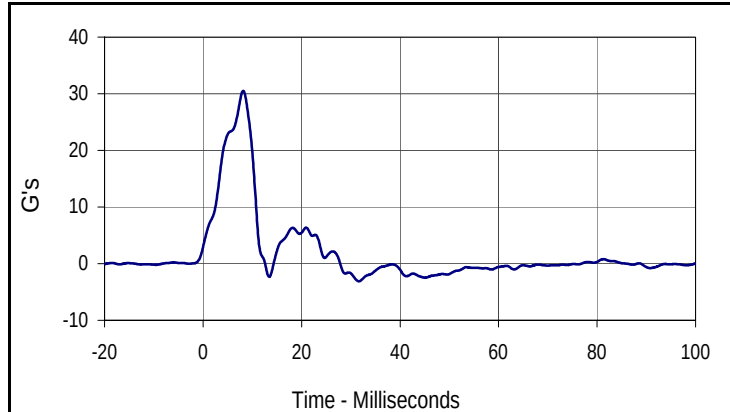
Test Date: 2/4/11
 Test I.D.: PLP02B



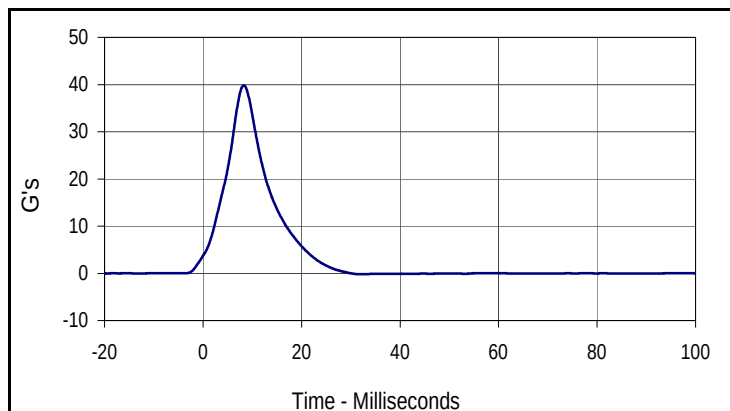
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.19	Pass
Laboratory Relative Humidity	%	10 to 70	24.78	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.36	Pass
Peak Iliac Force	Newtons	4100 to 5100	4305.5	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	30.5	Pass
Peak Impactor Acceleration	G's	36 to 45	39.8	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Iliac Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4305.5	8.3	-16.1	32.0



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
30.5	8.1	-3.1	31.6



Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
39.8	8.3	-0.2	31.9

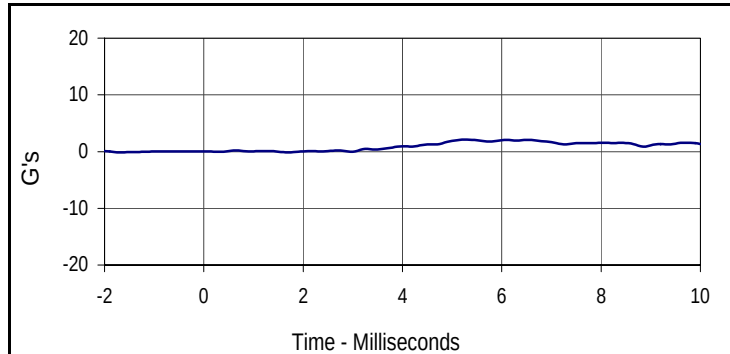
APPENDIX C
POST-TEST / SID-IIs CONFIGURATION AND PERFORMANCE VERIFICATION DATA

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

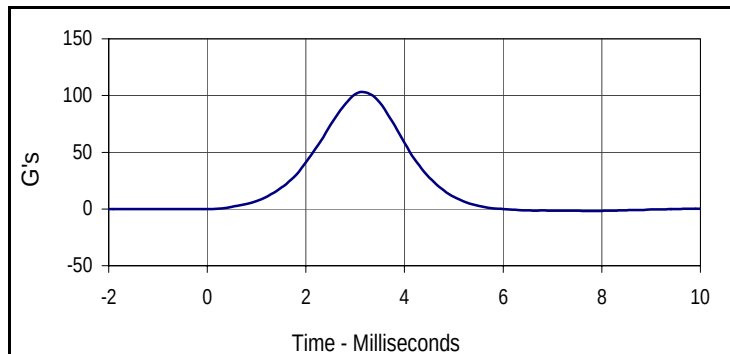
Test Date: 2/9/11
 Test I.D.: HDP02C



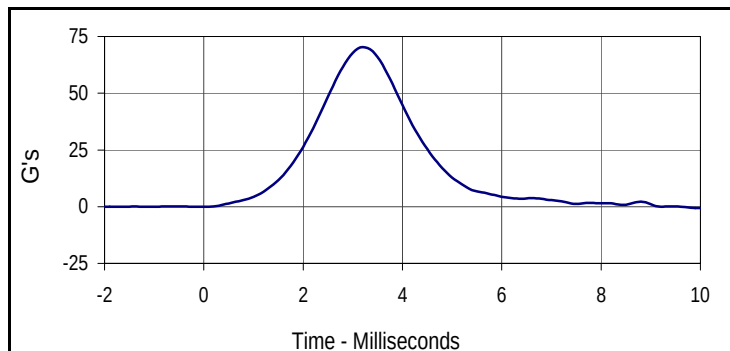
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.41	Pass
Laboratory Relative Humidity	%	10 to 70	24.79	Pass
Peak Resultant Acceleration	G's	115 to 137	124.6	Pass
Peak Longitudinal Acceleration	G's	≤15	2.1	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass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



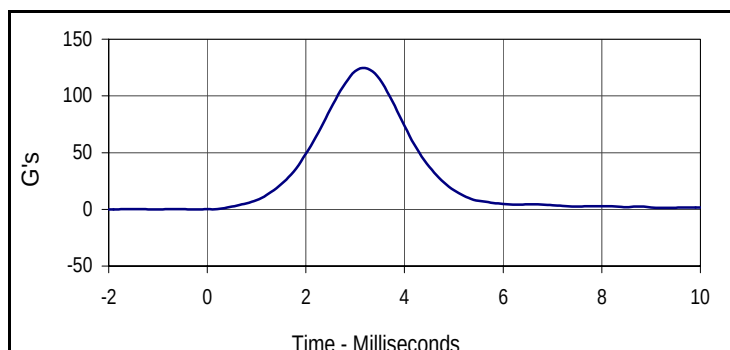
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
2.1	5.3	-0.1	1.7



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



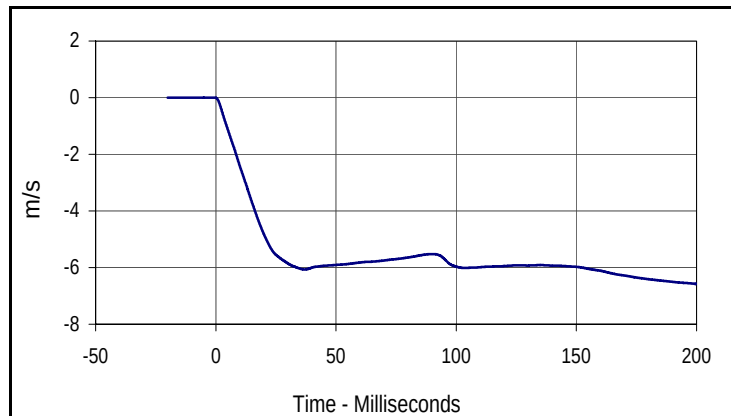
Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
124.6	3.2	0.0	-1.9

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

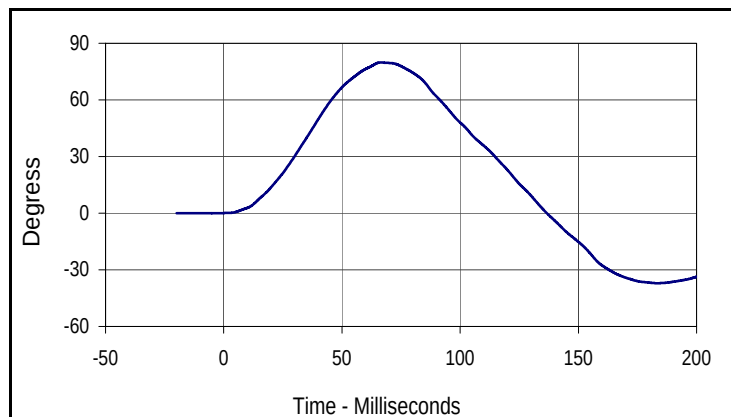
Test Date: 2/9/11
 Test I.D.: NBP02C



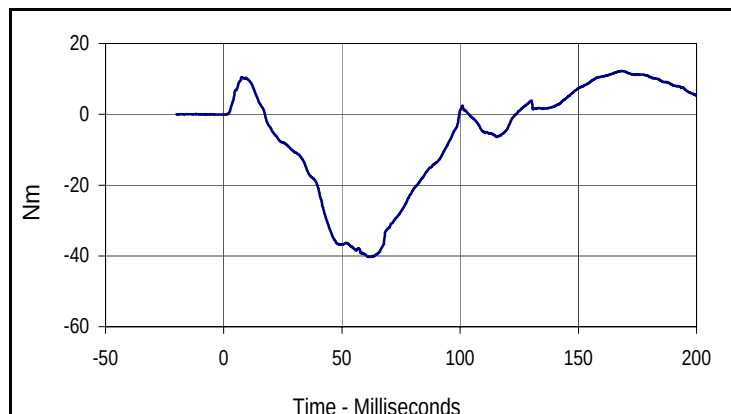
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.35	Pass
Laboratory Relative Humidity		%	10 to 70	24.66	Pass
Pendulum Velocity		m/s	5.51 to 5.63	5.56	Pass
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.42	Pass
	15 msec	m/s	-3.30 to -4.10	-3.69	Pass
	20 msec	m/s	-4.40 to -5.40	-4.83	Pass
	25 msec	m/s	-5.40 to -6.10	-5.55	Pass
	25-100 msec	m/s	-5.50 to -6.20	-6.07	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	Degress
Max	Time	Min	Time
79.8	66.4	-37.1	183.4



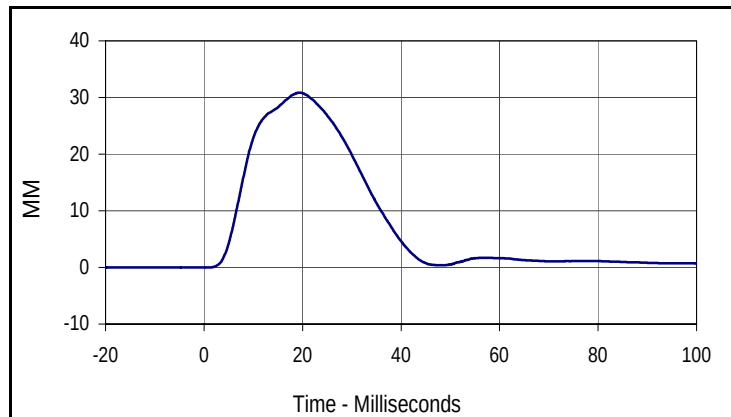
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
12.2	168.5	-40.3	62.0

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

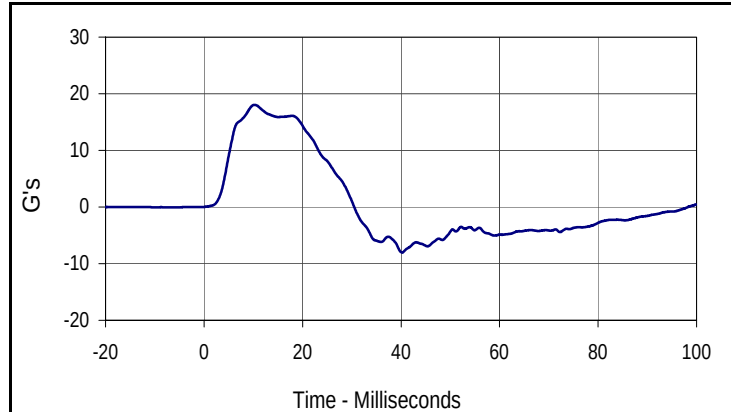
Test Date: 2/9/11
 Test I.D.: SHP02C



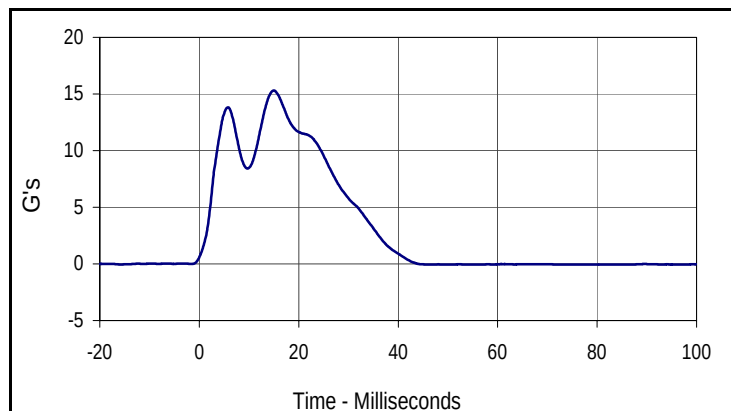
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.35	Pass
Laboratory Relative Humidity	%	10 to 70	24.66	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.36	Pass
Shoulder Deflection	MM	28 to 37	30.8	Pass
Peak Upper Spine Y Acceleration	G's	17 to 22	18.0	Pass
Peak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



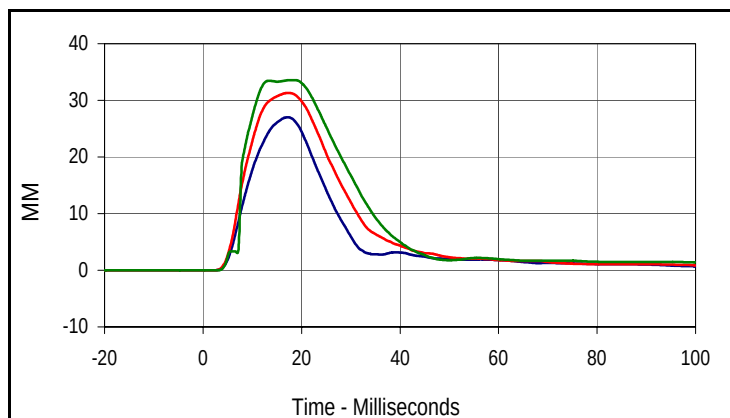
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
15.3	15.0	-0.1	50.8

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

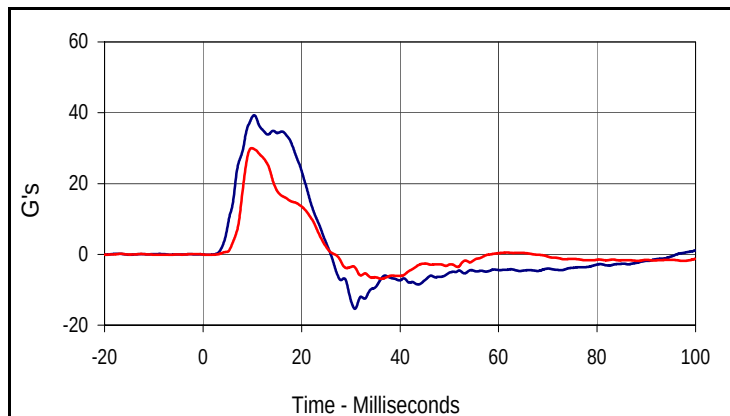
Test Date: 2/9/11
 Test I.D.: TWAP02C



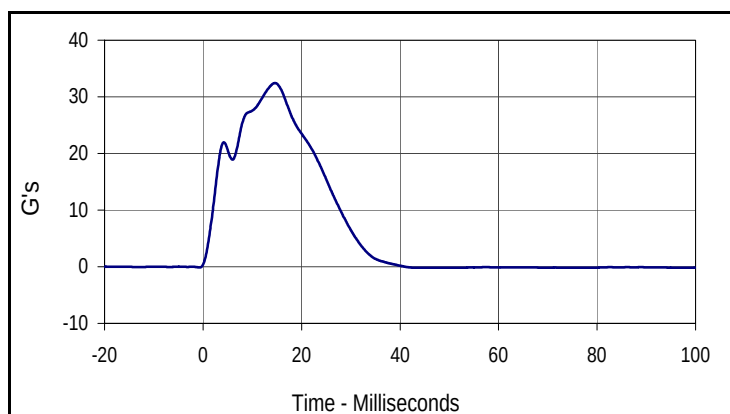
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.24	Pass
Laboratory Relative Humidity	%	10 to 70	24.66	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.69	Pass
Shoulder Deflection	MM	31 to 40	34.0	Pass
Upper Thorax Rib Deflection	MM	25 to 32	27.0	Pass
Middle Thorax 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



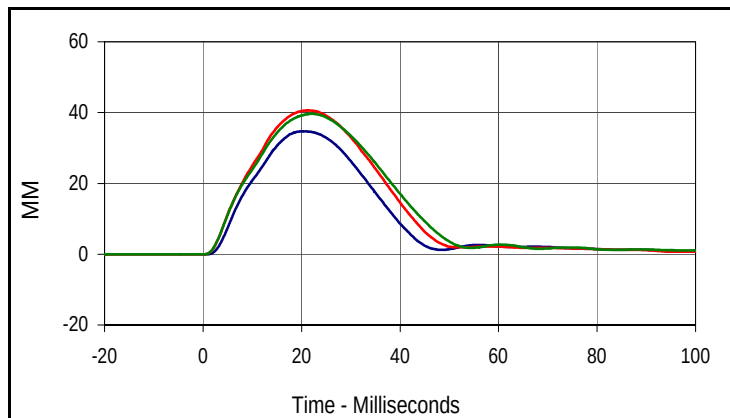
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
32.4	14.6	-0.2	50.4

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

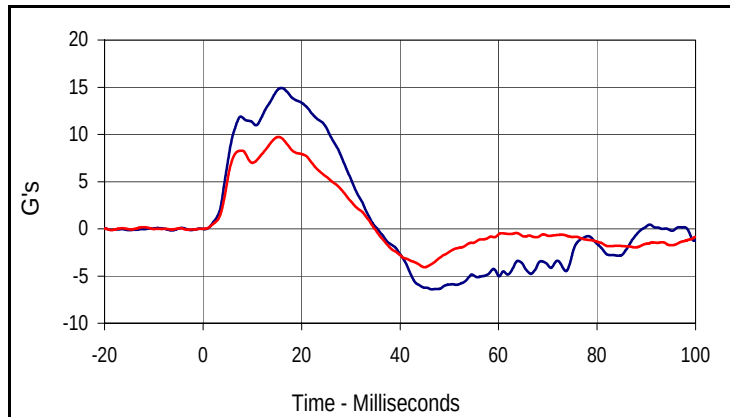
Test Date: 2/9/11
 Test I.D.: TOAP02C



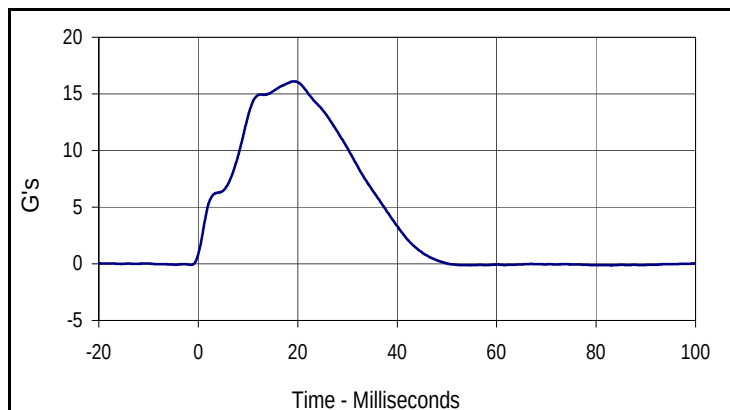
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.19	Pass
Laboratory Relative Humidity	%	10 to 70	24.66	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.35	Pass
Upper Thorax Rib Deflection	MM	32 to 40	34.7	Pass
Middle Thorax Rib Deflection	MM	39 to 45	40.6	Pass
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



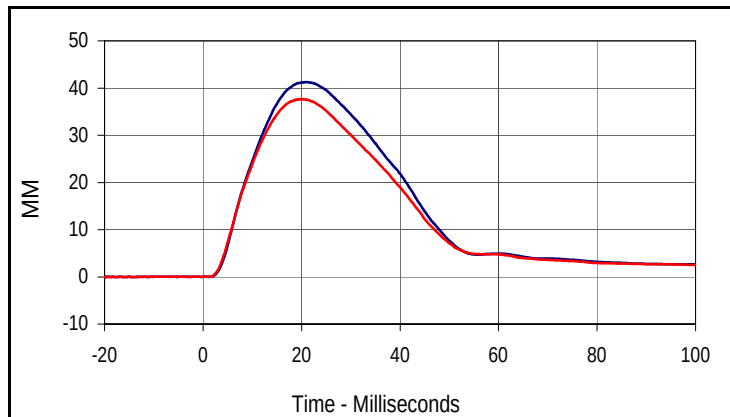
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
16.1	19.2	-0.1	83.0

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

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

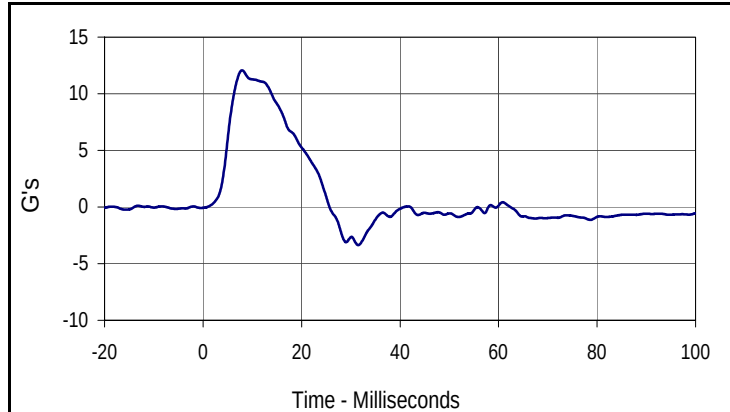


Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.19	Pass
Laboratory Relative Humidity	%	10 to 70	24.62	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.36	Pass
Upper Abdominal Rib Deflection	MM	36 to 47	41.3	Pass
Lower Abdominal Rib Deflection	MM	33 to 44	37.7	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	

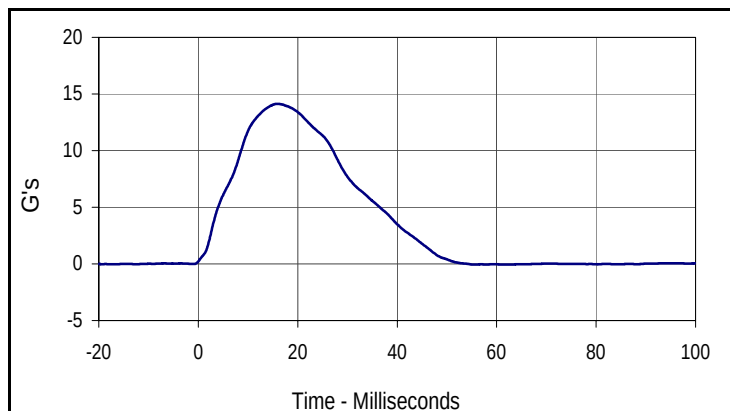


Curve Description			
Upper Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
41.3	20.9	0.0	-16.3

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



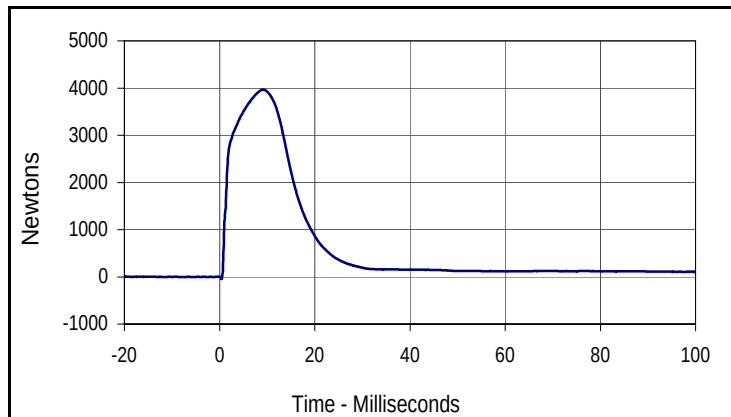
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
14.1	15.9	-0.1	55.4

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

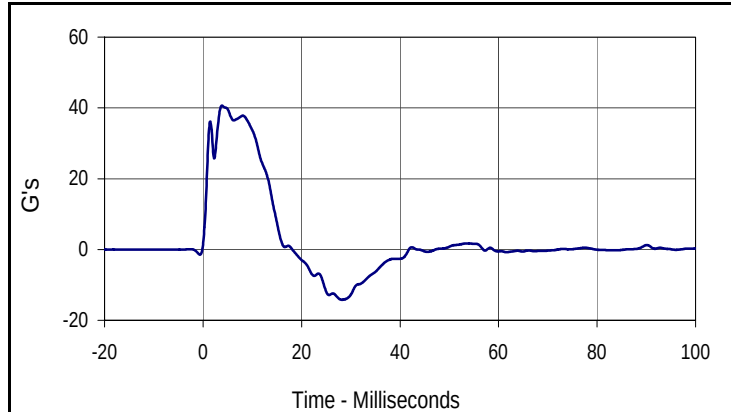
Test Date: 2/9/11
 Test I.D.: PAP02C



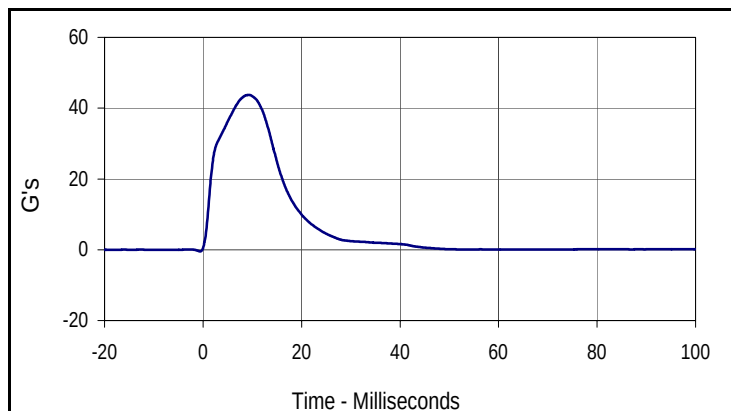
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.13	Pass
Laboratory Relative Humidity	%	10 to 70	24.57	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.65	Pass
Peak Acetabulum Force	Newtons	3600 to 4300	3969.1	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34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



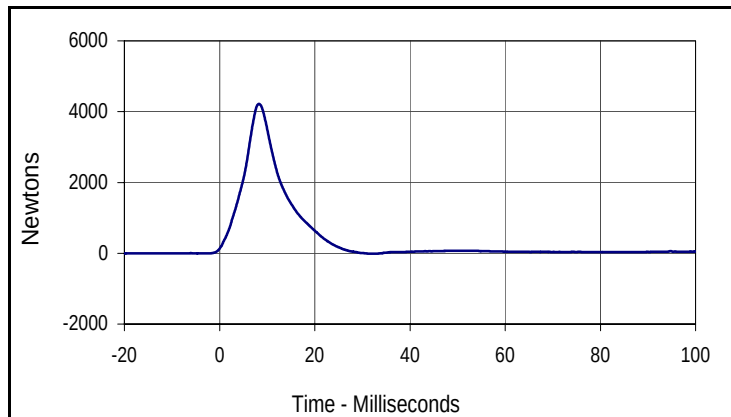
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
43.7	9.3	-0.5	-0.6

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

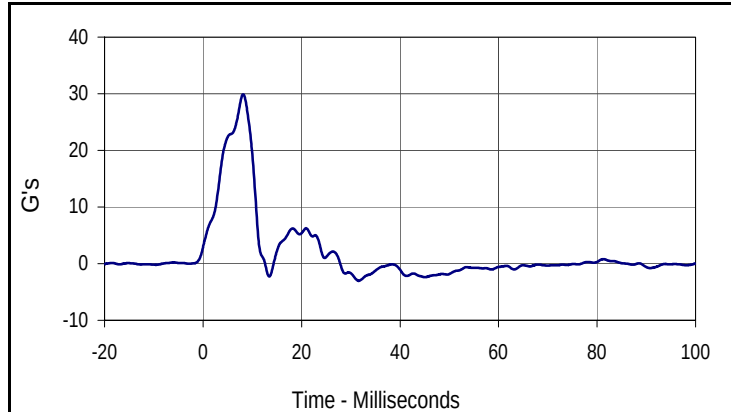
Test Date: 2/9/11
 Test I.D.: PLP02C



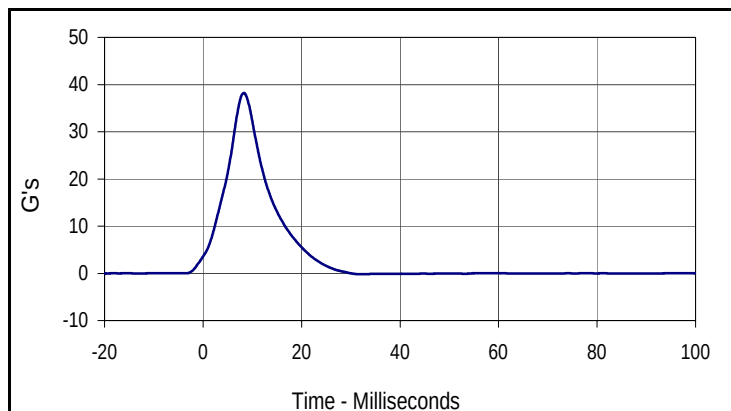
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.19	Pass
Laboratory Relative Humidity	%	10 to 70	24.78	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.34	Pass
Peak Iliac Force	Newtons	4100 to 5100	4219.5	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	29.9	Pass
Peak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