REPORT NUMBER: NCAP-KAR-12-038

NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST

FORD MOTOR CO.

2012 FORD SUPER DUTY F-250 4X4 CREW CAB 4-DOOR TRUCK

NHTSA NUMBER: MC0207

PREPARED BY:

KARCO ENGINEERING, LLC.

9270 HOLLY ROAD

ADELANTO, CA 92301

JANUARY 30, 2012

FINAL REPORT

U.S. DEPARTMENT OF TRANSPORTATION

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

SAFETY PERFORMANCE STANDARDS

OFFICE OF CRASHWORTHINESS STANDARDS

1200 NEW JERSEY AVE, SE

ROOM W43-410

WASHINGTON, DC 20590

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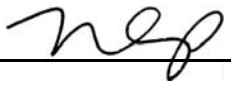
Reviewed By: 

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

Date:

COTR, New Car Assessment Program
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16. Abstract

A 56.3 km/h NCAP Frontal Impact Test was conducted on a 2012 Ford Super Duty F-250 4x4 4-door truck in accordance with the specifications of the Office of Crashworthiness Standards Frontal NCAP Laboratory Test Procedure. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and footwell intrusion performance. The test was conducted at the KARCO Engineering, LLC. facility in Adelanto, California on January 13, 2012.

The impact velocity of the vehicle was 56.34 km/h and the ambient temperature at the barrier face at the time of impact was 15.6 deg. C. The target vehicle's post-test maximum crush was 662 mm at the vehicle's centerline. The test vehicle's performance is as follows:

Measurement Description	Units	Driver ATD		Passenger ATD	
		Threshold	Result	Threshold	Result
Head Injury Criteria (HIC_{15})	N/A	700.0	414.5	700.0	376.0
Maximum Chest Compression	mm	63	-30	52	-17
Nij	N/A	1	0.26	1	0.52
Neck Tension	N	4170	859.2	2620	734.5
Neck Compression	N	4000	-224.5	2520	-372.7
Left Femur Force	N	10008	-454.1	6805	-880.5
Right Femur Force	N	10008	-499.3	6805	-1129.5

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SECTION 1
PURPOSE AND SUMMARY OF TEST

PURPOSE

This 56.3 km/h frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program, sponsored by the National Highway Traffic Safety Administration (NHTSA) under contract number DTNH22-06-D-00027. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for consumer information purposes.

The 56.3 km/h frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards Frontal NCAP Laboratory Test Procedure, dated August, 2011.

SUMMARY

A load cell barrier consisting of 36 load cells was impacted by a 2012 Ford Super Duty F-250 4x4 Crew Cab 4-door truck at a velocity of 56.34 km/h. The test was performed at KARCO Engineering, LLC. on January 13, 2012. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A of this report.

Three (3) real-time cameras and sixteen (16) high-speed cameras were used to document the frontal barrier impact event. Camera locations and other pertinent camera information can be found in Data Sheet 6 of this report.

One Part 572E 50th percentile male anthropomorphic test device (ATD) was placed in the driver seating position and one Part 572O 5th percentile female ATD was placed in the right-front passenger seating position according to dummy placement instructions specified in the Frontal NCAP Laboratory Test Procedure.

Both ATDs were fully instrumented with head, chest and pelvis tri-axial accelerometers, chest displacement potentiometers, upper neck force transducers, right / left femur load cells, and lower leg instrumentation. Seat belt load cells were also on the driver's and the passenger's lap and shoulder belts to measure the dummy pelvic and torso section loading. The driver (position 1) ATD (Serial No. 034) and the right-front passenger (position 2) ATD (Serial No. 141) were calibrated prior to this test. Certification details, along with instrumentation calibration data, are found in Appendix C of this report.

The 136 channels of data were recorded on an on-board data acquisition system. Appendix B contains the dummy response data traces.

There was 100% windshield retention and no intrusion into the protected zone of the windshield during the event. There was no Stoddard solvent leakage after the event or during any phase of the static rollover.

The maximum static crush of the test vehicle was 662 mm located at the vehicle's centerline. Both the driver and passenger side doors remained closed during the impact event and were operable after the impact.

The driver's visible contact points were as follows: The driver ATD's head contacted the airbag and the headrest. The upper torso contacted the airbag. Both the left and right knees contacted the knee bolster and steering column.

The passenger's visible contact points were as follows: The passenger ATD's head contacted the airbag and the headrest. The upper torso contacted the airbag. Both the left and right knees contacted the glovebox.

The occupant data is summarized below:

ATD Position	HIC_{15}	T^1	T^2	Chest Disp. (mm)	Nij	Neck Tension (N)	Neck Comp. (N)	Left Femur (N)	Right Femur (N)
Driver (50th)	414.5	74.1	89.1	-30	0.26	859.2	-224.5	-454.1	-499.3
Passenger (5th)	376.0	69.3	84.3	-17	0.52	734.5	-372.7	-880.5	-1129.5

SECTION 2

DATA SHEETS

Test Vehicle: 2012 Ford Super Duty F-250 4x4 Crew Cab 4-Door Truck NHTSA No.: MC0207

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/13/12

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	29.574
Pressure	Tire Pressures	lbf/in^2	kPa	6.895
Temperature	General Use	^oF	^oC	=(Tf -32)/1.8
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf-ft	N•m	1.355

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2012 Ford Super Duty F-250 4x4 Crew Cab 4-Door Truck NHTSA No.: MC0207

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/13/12

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	MC0207
Model Year	2012
Make	Ford
Model	Super Duty F-250 4x4 Crew Cab
Body Style	4-Door Truck
VIN	1FT7W2B68CEA63185
Body Color	Sterling Gray Met.
Odometer Reading (km / mi)	13 / 8
Engine Displacement (L)	6.2
Type / No. of Cylinders	V8
Engine Placement	Longitudinal
Transmission Type	Automatic
Transmission Speeds	6
Overdrive	Yes
Final Drive	4x4
Roof Rack	No
Sunroof / T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes
All Wheel Drive (AWD)	No
Traction Control System	Yes

Auto-Leveling System	No
Automatic Door Locks	No
Power Window Auto-Reverse	No
Other Optional Feature	None
Driver Front Airbag	Yes
Driver Curtain Airbag	Yes
Driver Head/Torso Airbag	No
Driver Torso Airbag	No
Driver Torso/Pelvis Airbag	Yes
Driver Pelvis Airbag	No
Driver Knee Airbag	No
Pass. Front Airbag	Yes
Pass. Curtain Airbag	Yes
Pass. Head/Torso Airbag	No
Pass. Torso Airbag	No
Pass. Torso/Pelvis Airbag	Yes
Pass. Pelvis Airbag	No
Pass. Knee Airbag	No
Driver Seat Belt Pretensioner	Yes
Pass. Seat Belt Pretensioner	Yes
Driver Load Limiter	Yes
Pass. Load Limiter	Yes
Other Safety Restraint	None

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

DATA FROM CERTIFICATION LABEL

Manufactured By	Ford Motor Co.
Date of Manufacture	Oct-11

GVWR (kg)	4536
GAWR Front (kg)	2694
GAWR Rear (kg)	2767

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

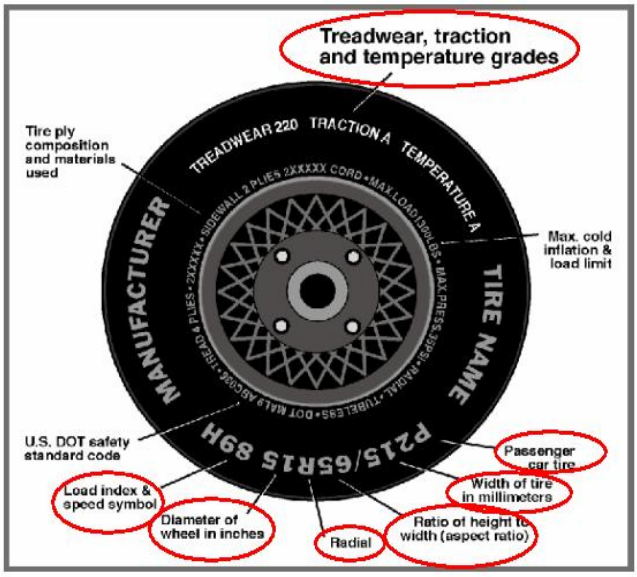
Measured Parameter	Front	Rear	Third	Total	
Type of Seats	Bucket	Bench			
Designated Seating Capacity	3	3		6	
Capacity Weight (VCW) (kg)				1324.0	*A*
DSC x 68.04 (kg)				408.2	*B*
Cargo Weight (RCLW) (kg)				136.0	*A-B*

DATA SHEET NO. 1 … (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2012 Ford Super Duty F-250 4x4 Crew Cab 4-Door Truck NHTSA No.: MC0207

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/13/12



VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	550	550
Cold Pressure (kPa)	515	515
Recommended Tire Size	LT265/70R17E	LT265/70R17E
Tire Size on Vehicle	LT265/70R17E	LT265/70R17E
Tire Manufacturer	BF Goodrich	BF Goodrich
Tire Model	Rugged Trail T/A	Rugged Trail T/A
Treadwear		
Traction		
Temperature Grades		
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester, 3 Steel	2 Polyester, 3 Steel
Load Index / Speed Symbol		
Tire Material	Polyester, Steel	Polyester, Steel
DOT Safety Code Left	M3AH DR21 3611	M3AH DR21 3611
DOT Safety Code Right	M3AH DR21 3611	M3AH DR21 3611

DATA SHEET NO. 1 … (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2012 Ford Super Duty F-250 4x4 Crew Cab 4-Door Truck NHTSA No.: MC0207

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/13/12

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	957.0	683.5		999.5	790.0	
Right	kg	909.5	629.0		933.0	725.5	
Ratio	%	58.7%	41.3%	100.0%	56.0%	44.0%	100.0%
Total	kg	1866.5	1312.5	3179.0	1932.5	1515.5	3448.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	3179.0	A
Weight of 1 P572E ATD & 1 P572O ATD	kg	141.0	B
Rated Cargo/Luggage Weight (RCLW)	kg	136.0	C
Calculated Vehicle Target Weight (TVTW)	kg	3456.0	A+B+C

TEST VEHICLE ATTITUDES

Condition	Units	LF	RF	LR	RR	CG Aft of Front Axle
As Delivered	mm	1046	1065	1051	1065	1817
As Tested	mm	1036	1056	1039	1046	1934
Post-Test	mm	1045	1038	1051	1024	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	4400
Total Vehicle Length at Left Side	mm	6155
Total Vehicle Length at Centerline	mm	6690
Total Vehicle Length at Right Side	mm	6176
Weight of Ballast in Cargo Area	kg	141.3
Weight of Vehicle Components Removed	kg	1.0
Amount of Stoddard Solvent in Fuel Tank	L	123.20

VEHICLE COMPONENTS REMOVED TO MEET TEST WEIGHT:

Hub Caps (1.0 kg).

DATA SHEET NO. 1 … (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2012 Ford Super Duty F-250 4x4 Crew Cab 4-Door Truck NHTSA No.: MC0207

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/13/12

TARGET VEHICLE STRUCTURAL MEASUREMENTS

No.	Description	Pre-Test	Post-Test	Difference
1	Total Length	6690	6028	-662
2	Total Width	2020	2300	280
3	Bumper Top Height	760	565	-195
4	Bumper Bottom Height	505	335	-170
5	Longitudinal Member Top Height	601	425	-176
6	Distance Between Longitudinal Members	975	790	-185
7	Longitudinal Member Width	60	110	50
8	Engine Top Height	1375	1245	-130
9	Engine Bottom Height	531	401	-130
10	Engine and Gearbox Width	830	830	0
11	Front Bumper to Engine Distance	800	240	-560
12	Front Shock Absorber Fixing Height	975	925	-50
13	Bonnet Leading Edge Height	1350	1305	-45
14	Front Shock Absorber Fixing Width	1370	1760	390
15	Front Bumper to Front Axle Distance	967	560	-407
16	Front Axle to A-Pillar Distance	708	570	-138
17	A-Pillar to B-Pillar Distance	986	986	0
18	B-Pillar to Rear Axle Distance	2490	2487	-3
19	B-Pillar to C-Pillar Distance	728	729	1
20	Roof Sill Bottom Height	1855	1840	-15
21	Roof Sill Top Height	1955	1945	-10
22	Floor Sill Bottom Height	525	510	-15
23	Floor Sill Top Height	612	600	-12

All measurements in millimeters.

DATA SHEET NO. 2

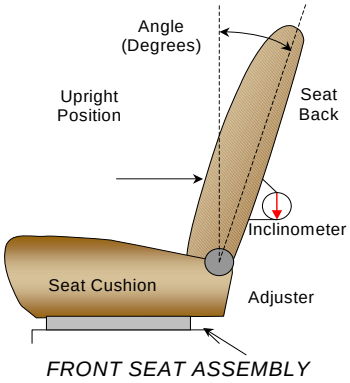
SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

Test Vehicle: 2012 Ford Super Duty F-250 4x4 Crew Cab 4-Door Truck NHTSA No.: MC0207

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/13/12

NOMINAL DESIGN RIDING POSITION

The procedure for the driver is as follows: the seat back is set to the manufacturer's designated angle. The procedure for the passenger is as follows: the seat back is set to position the transverse instrumentation platform of the dummy's head at 0° ± 0.5°. Seat back angle is measured at the seat back using a digital inclinometer.



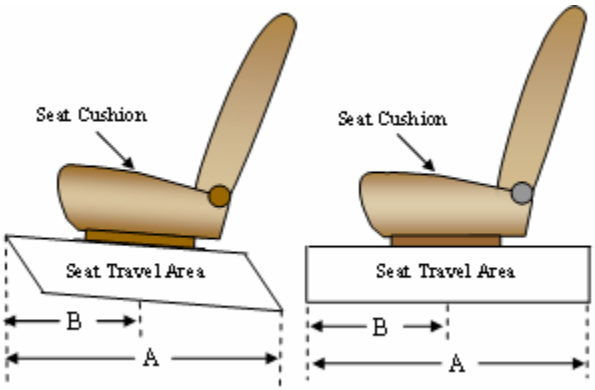
FRONT SEAT ASSEMBLY

SEAT BACK ANGLE

Seating Position	Degrees
Driver Seat Back Angle	19.8
Passenger Seat Back Angle	17.7

SEAT FORE / AFT POSITIONING

The total seat travel is measured from the forward most possible position to the rear most possible position. The driver's seat is set to the middle of the fore-aft travel. The passenger's seat is set to the forward most position where the ATD will not contact any interior panels.



SEAT FORE/AFT POSITIONS

Seating Position	Total Fore-Aft Travel	Placed in Position
Driver Seat	200 mm [47 detents]	100 mm [23rd detent]
Passenger Seat	220 mm [50 detents]	0 mm [1st detent]

SEAT BELT UPPER ANCHORAGE

The seat belt upper anchorage is positioned to the manufacturer's design position for a 50th percentile adult male ATD for the driver, and a 5th percentile adult female ATD for the passenger. Position "H" is the uppermost position, followed by position "M1". Position "L" is the lowermost position.

SEAT BELT UPPER ANCHORAGES

Seating Position	Total No. of Positions	Placed in Position
Driver Seat	4	M1
Passenger Seat	4	H

DATA SHEET NO. 2 … (CONTINUED)

SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

Test Vehicle: 2012 Ford Super Duty F-250 4x4 Crew Cab 4-Door Truck NHTSA No.: MC0207

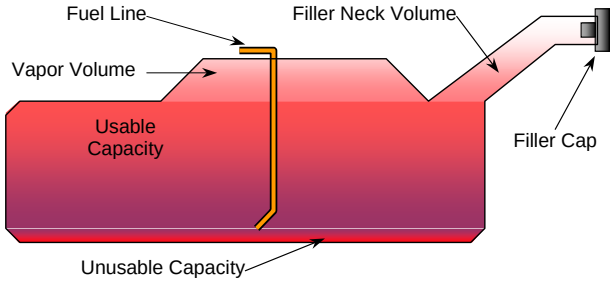
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/13/12

FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank"	132.48
Usable Capacity of "Optional Tank"	
92 - 94% of Usable Capacity	121.88 to 124.53
Actual Amount of Stoddard Solvent Used	123.20
1/3 of Usable Capacity	44.16

FUEL PUMP

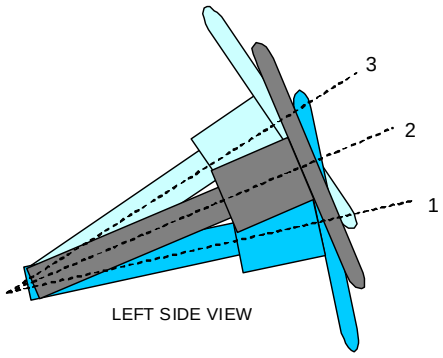
The vehicle is equipped with an electric fuel pump. The fuel pump operates for 2 seconds following the actuation of the ignition. If no attempt has been made to start the engine within 2 seconds the fuel pump will shut off. The fuel pump operates continuously while the engine is running.



VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when moved through its full range of motion. A digital inclinometer is used to measure a plate which is placed across the rim of the steering wheel for angular measurements. A tape measure is used to measure telescoping steering wheel travel.



STEERING COLUMN ASSEMBLY

STEERING COLUMN POSITIONING

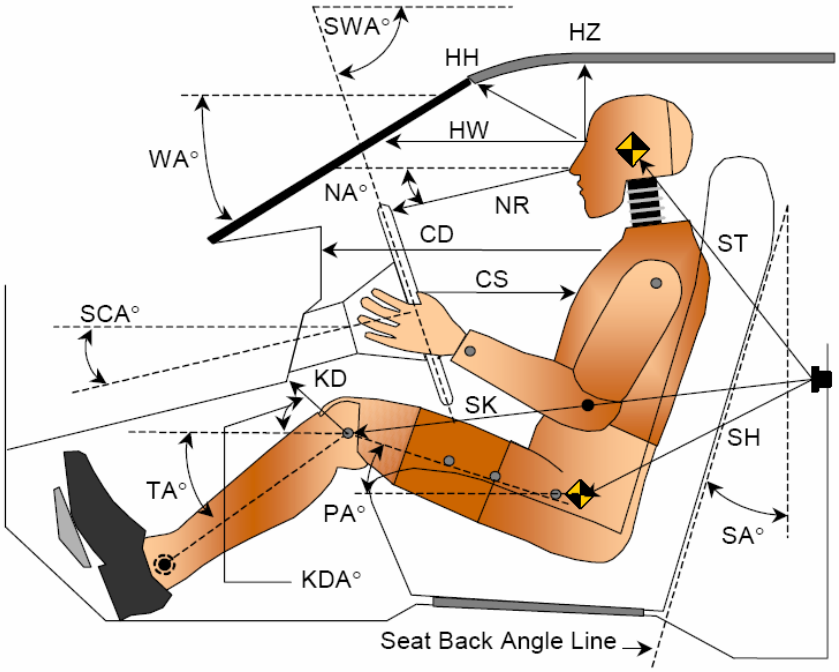
	Degrees	Fore-Aft Position (mm)
Lowermost Position, No. 1	22.0	158
Geometric Center Position, No. 2	23.9	169
Uppermost Position, No. 3	25.9	180
Telescoping Steering Wheel Travel		22
Test Position	23.9	169

DATA SHEET NO. 3

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2012 Ford Super Duty F-250 4x4 Crew Cab 4-Door Truck NHTSA No.: MC0207

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/13/12



LEFT SIDE VIEW

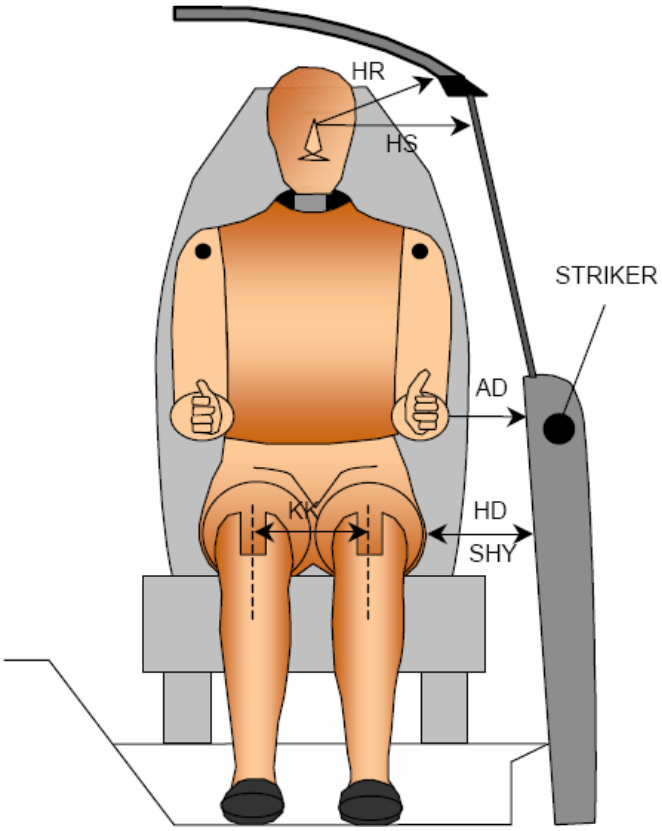
Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		35.7		
SWA°	Steering Wheel Angle		66.1		
SCA°	Steering Column Angle		23.9		
SA°	Seat Back Angle (On Headrest Post)		19.8		17.7
HZ	Head to Roof	227	90.0	283	90.0
HH	Head to Header	453	25.0	414	40.1
HW	Head to Windshield	661	0.0	665	0.0
NR	Nose to Rim	396	9.5	519	12.9
CD	Chest to Dash	570	10.4	475	12.3
CS	Chest to Steering Hub	304	0.0		
RA	Rim to Abdomen	200	0.0		
KDL	Left Knee to Dash	189	32.6	148	23.0
KDR	Right Knee to Dash	179	35.2	155	22.0
PA°	Pelvic Angle		21.3		20.3
TA°	Tibia Angle		50.8		61.5
SK	Striker to Knee	724	10.9	800	3.6
ST	Striker to Head	724	67.8	690	62.5
SH	Striker to H-Point	324	2.4	468	2.1

DATA SHEET NO. 4

DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2012 Ford Super Duty F-250 4x4 Crew Cab 4-Door Truck NHTSA No.: MC0207

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/13/12



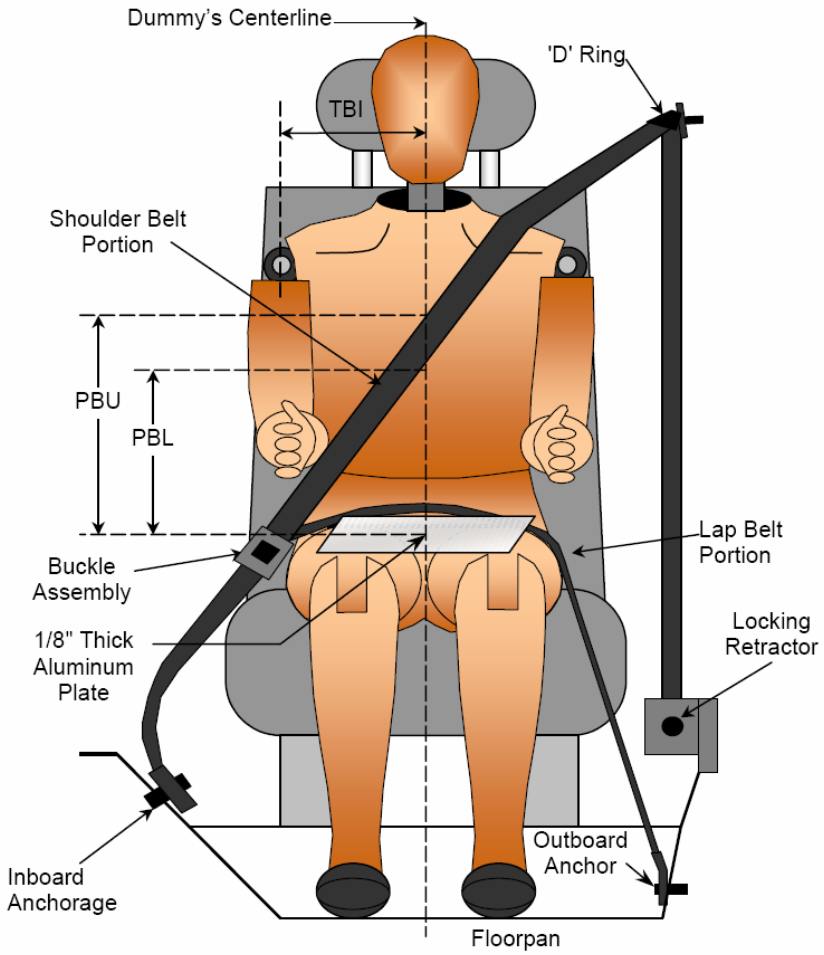
Code	Description	Driver (mm)	Passenger (mm)
AD	Arm to Door	140	94
HD	H-Point to Door	225	255
HR	Head to Side Header	233	304
HS	Head to Side Window	360	386
KK	Knee to Knee	315	226
SHY	Striker to H-Point (Y-Direction)	274	292
AA	Ankle to Ankle	285	153

DATA SHEET NO. 5

SEAT BELT POSITIONING DATA

Test Vehicle: 2012 Ford Super Duty F-250 4x4 Crew Cab 4-Door Truck NHTSA No.: MC0207

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/13/12



FRONT VIEW OF DUMMY

SEAT BELT POSITIONING MEASUREMENTS

Code	Measurement Description	Units	Driver	Passenger
PBU	Top Surface of Aluminum Plate to Belt Upper Edge	mm	333	300
PBL	Top Surface of Aluminum Plate to Belt Lower Edge	mm	245	194

BELT LENGTH DATA

Measurement Description	Units	Driver	Passenger
Shoulder Belt Length as Measured on ATD	mm	950	1038
Lap Belt Length as Measured on ATD	mm	855	907
Remainder of Belt on Reel	mm	689	679
Total Belt Length for Continuous Webbing Systems	mm	2494	2624

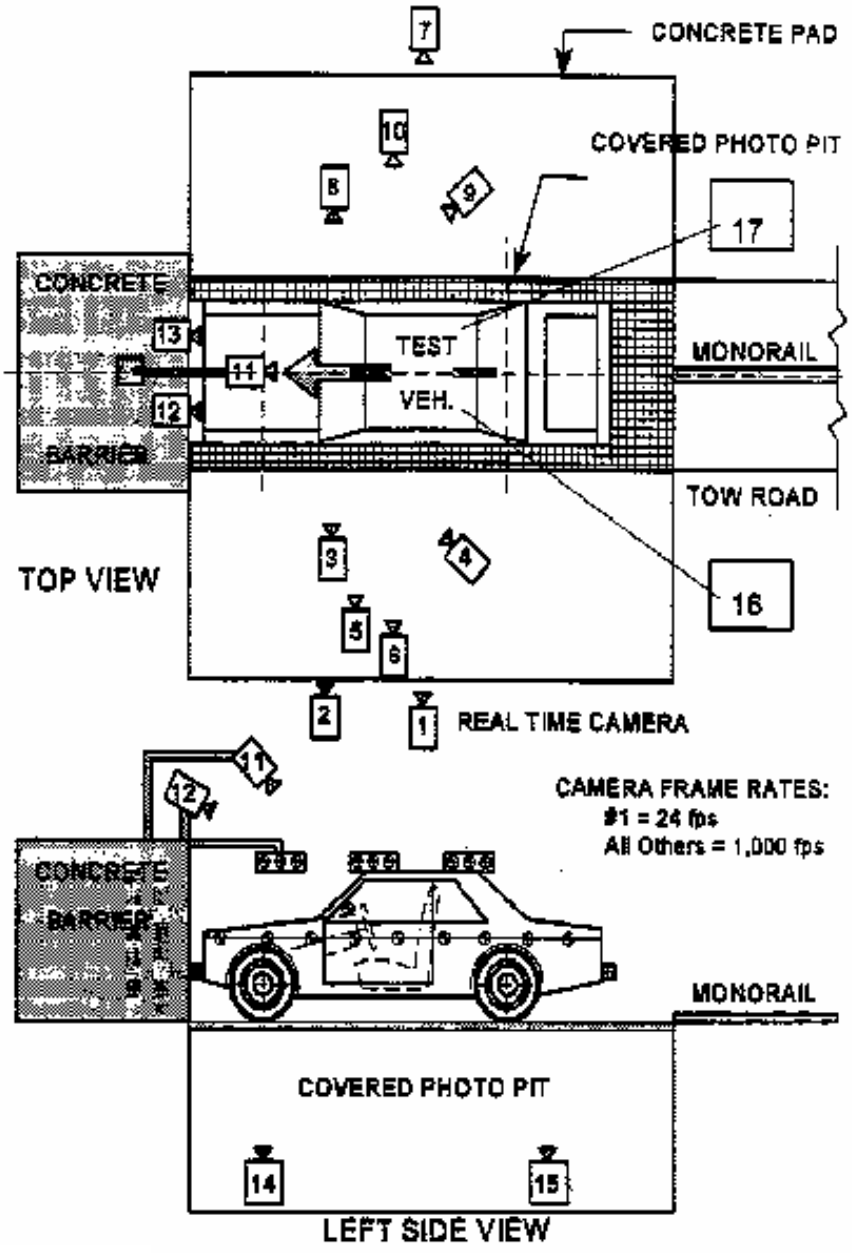
DATA SHEET NO. 6

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2012 Ford Super Duty F-250 4x4 Crew Cab 4-Door Truck NHTSA No.: MC0207

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/13/12

CAMERA POSITIONS FOR FRONTAL IMPACTS



DATA SHEET NO. 6 … (CONTINUED)

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2012 Ford Super Duty F-250 4x4 Crew Cab 4-Door Truck NHTSA No.: MC0207

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/13/12

CAMERA LOCATIONS

No.	Description	Location (mm)			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Overall	-11412	-8150	-1484		30
2	Driver Close-Up	-2590	-7950	-1371	24	1000
3	Left Front Half	-1701	-6197	-1701	50	1000
4	Left Angle	-6696	-10308	-3211	ZOOM	1000
5	Steering Column - Top	-1966	-10412	-3688	50	1000
6	Steering Column - Bottom	-1972	-10412	-3379	50	1000
7	Right Overall	-2336	7569	-1012	24	1000
8	Passenger Close-Up	-1733	7581	-1408	50	1000
9	Right Front Half	-1600	8214	-1811	ZOOM	1000
10	Right Angle	-6217	9516	-4830	ZOOM	1000
11	Windshield	-354	0	-5749	12	1000
12	Driver Windshield	297	-366	-2460	12	1000
13	Passenger Windshield	297	366	-2460	24	1000
14	Pit Front	-756	0	1495	12	1000
15	Pit Rear	-3398	0	1495	8	1000
16	Onboard Driver Airbag	-3500	400	-1900	12	1000
17	Onboard Passenger Airbag (Optional)	-3500	-400	-1900	12	1000
18	Real-Time Left View of Impact (Optional)					
19	Real-Time Right View of Impact					

Coordinates: +X = forward impact plane

+Y = right of monorail center

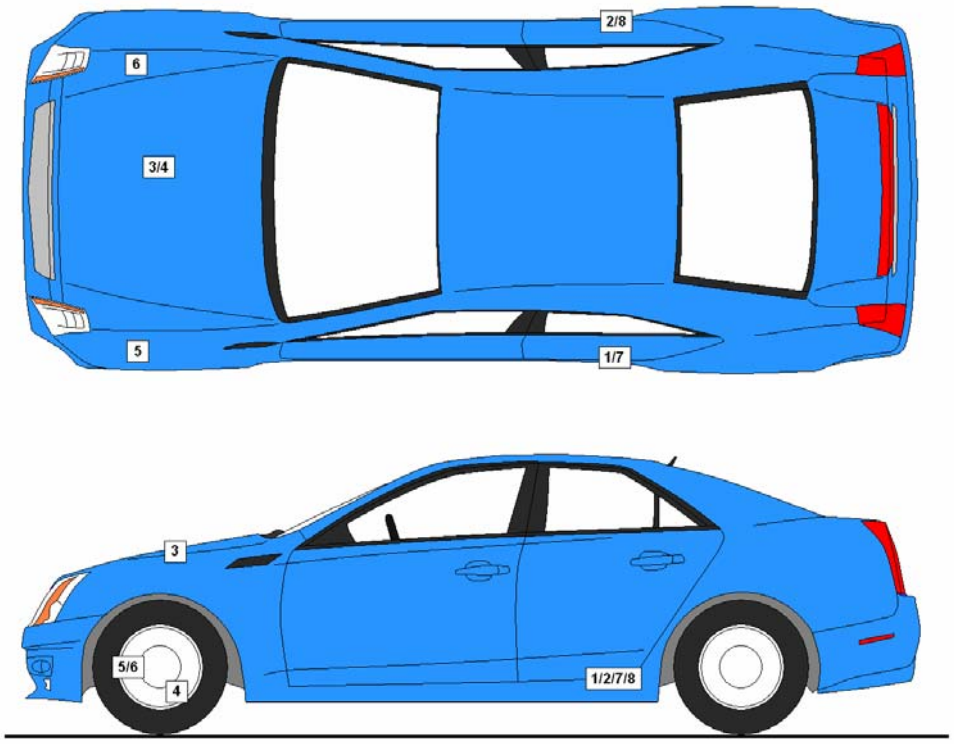
+Z = into ground

DATA SHEET NO. 7

VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2012 Ford Super Duty F-250 4x4 Crew Cab 4-Door Truck NHTSA No.: MC0207

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/13/12



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Description	Location		
		X	Y	Z
1	Left Rear Accelerometer X-Direction	3309	-762	-667
2	Right Rear Accelerometer X-Direction	3309	762	-667
3	Engine Top X	5684	370	-1135
4	Engine Bottom X	5470	205	-469
5	Left Brake Caliper X	5531	-753	-265
6	Right Brake Caliper X	5531	753	-265
7	Left Rear Accelerometer Z-Direction	3309	-762	-667
8	Right Rear Accelerometer Z-Direction	3309	762	-667

Reference Points: X – Rear Surface of Vehicle (+ forward)

Y – Vehicle Centerline (+ to right)

Z – Ground Plane (+ down)

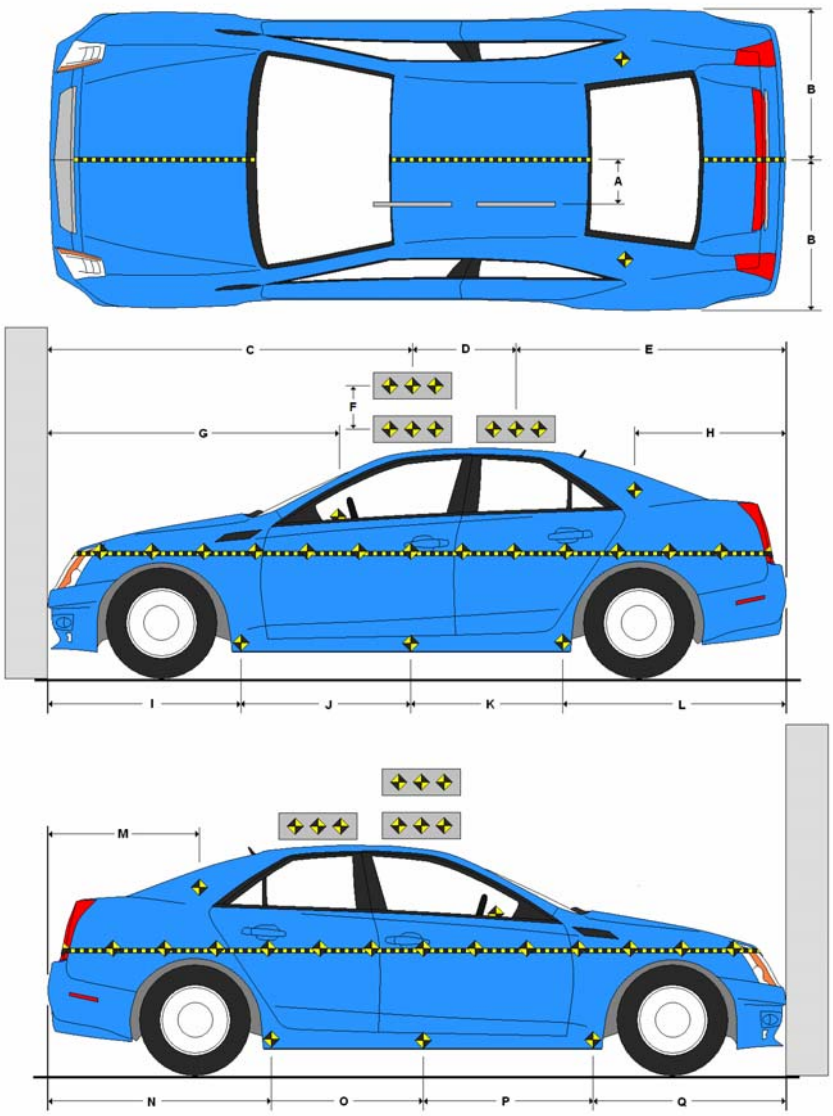
DATA SHEET NO. 8

PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2012 Ford Super Duty F-250 4x4 Crew Cab 4-Door Truck NHTSA No.: MC0207

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/13/12

Item	Value
A	500
B	1010
C	2510
D	610
E	3580
F	305
G	2035
H	2845
I	1552
J	1145
K	1145
L	2846
M	2853
N	2837
O	1143
P	1143
Q	1543



All measurements in millimeters.

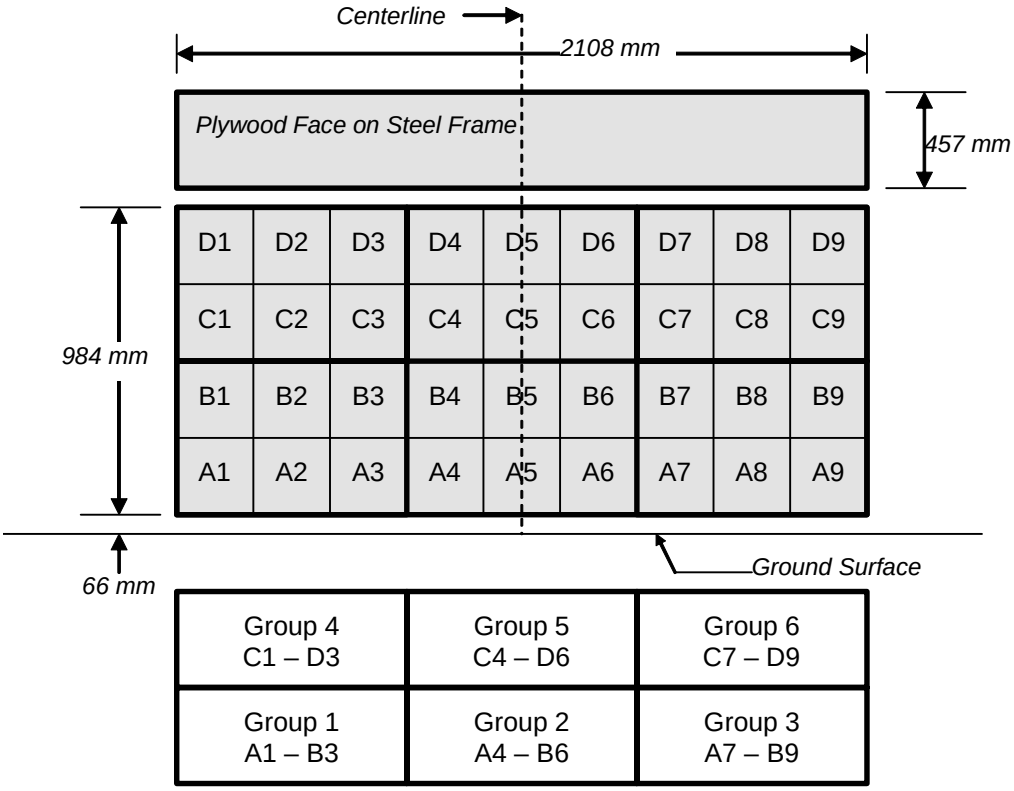
DATA SHEET NO. 9

LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle: 2012 Ford Super Duty F-250 4x4 Crew Cab 4-Door Truck NHTSA No.: MC0207

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/13/12

36 Load Cell Rigid Barrier (NHTSA Standard)
Load Cell Locations on Fixed Barrier



6 Groups of 6 Load Cells Each

DATA SHEET NO. 10

TEST VEHICLE CAMERA AND INSTRUMENTATION SUMMARY

Test Vehicle: 2012 Ford Super Duty F-250 4x4 Crew Cab 4-Door Truck NHTSA No.: MC0207

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/13/12

INSTRUMENTATION

Driver Dummy Accelerometers	44
Passenger Dummy Accelerometers	44
Vehicle Structure Accelerometers	8
Seat Belt Load Cells	4
Load Cell Barrier	36
Total	136

CAMERA COVERAGE

High-Speed Vehicle On Board	2
High-Speed Off board	14
Real Time	3
Total	19

DATA SHEET NO. 11

POST-TEST OBSERVATIONS

Test Vehicle: 2012 Ford Super Duty F-250 4x4 Crew Cab 4-Door Truck NHTSA No.: MC0207

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/13/12

TEST DUMMY INFORMATION AND CONTACT

Description	Driver	Passenger
Dummy Type/Serial No.	P572E 50th Percentile Male ATD / 034	P572O 5th Percentile Female ATD / 141
Head Contact	Airbag, Headrest	Airbag, Headrest
Upper Torso Contact	Airbag	Airbag
Lower Torso Contact	None	None
Left Knee Contact	Knee Bolster, Steering Column	Glovebox
Right Knee Contact	Knee Bolster, Steering Column	Glovebox

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Passenger
Locked / Unlocked Doors	Unlocked	Unlocked
Front Door Opening	Remained closed and latched, operational	Remained closed and latched, operational
Rear Door Opening	Remained closed and latched, operational	Remained closed and latched, operational
Seat Track Shift (mm)	7	3
Seat Back Failure	None	None
Glazing Damage	None	None

POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Windshield Damage	Broken
Window Damage	None
Other Notable Effects	None

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	870
Center	mm	901
Right Side	mm	900
Average	mm	890

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

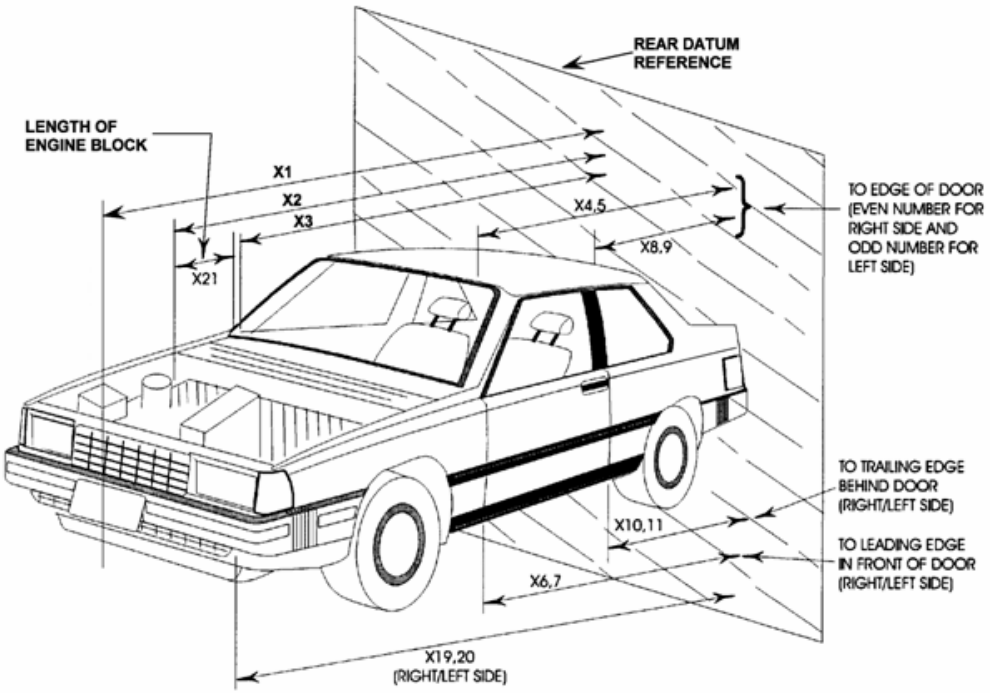
Restraint Type	Driver		Passenger	
	Installed	Operated	Installed	Operated
Front Airbag	Yes	Yes	Yes	Yes
Side Airbag 1 (Curtain)	Yes	No	Yes	No
Side Airbag 2 (Torso/Pelvis)	Yes	No	Yes	No
Knee Airbag	No		No	
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes	Yes	Yes	Yes
Other				

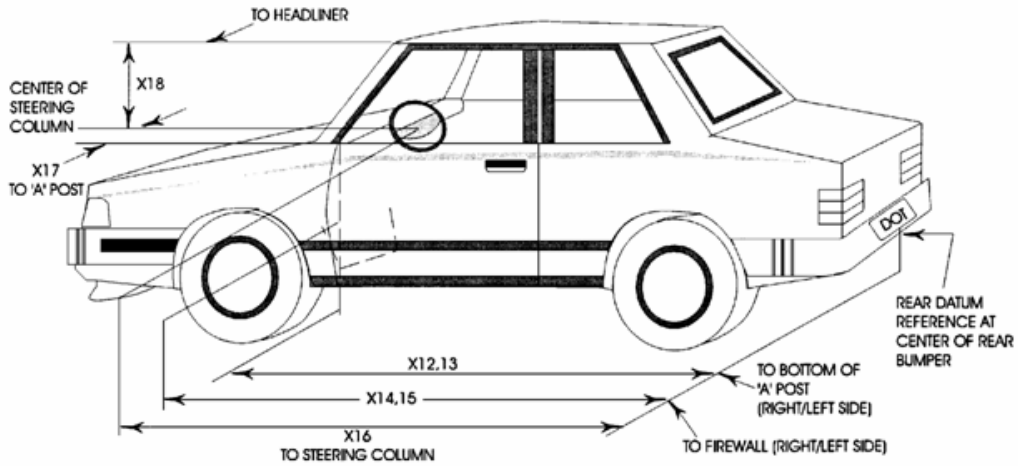
DATA SHEET NO. 12

VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2012 Ford Super Duty F-250 4x4 Crew Cab 4-Door Truck NHTSA No.: MC0207

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/13/12





DATA SHEET NO. 12 … (CONTINUED)

VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2012 Ford Super Duty F-250 4x4 Crew Cab 4-Door Truck NHTSA No.: MC0207

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/13/12

No.	Description	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	6690	6028	-662
2	Rear Surface of Vehicle to Front of Engine	6155	5878	-277
3	RSOV to Firewall	4970	4983	13
4	RSOV to Upper Leading Edge of Right Door	3816	3830	14
5	RSOV to Upper Leading Edge of Left Door	5890	5788	-102
6	RSOV to Lower Leading Edge of Right Door	4903	4913	10
7	RSOV to Lower Leading Edge of Left Door	4735	4740	5
8	RSOV to Upper Trailing Edge of Right Door	4493	4570	77
9	RSOV to Upper Trailing Edge of Left Door	5085	5097	12
10	RSOV to Lower Trailing Edge of Right Door	3805	3819	14
11	RSOV to Lower Trailing Edge of Left Door	6176	5922	-254
12	RSOV to Bottom of A-Pillar, Right Side	4913	4923	10
13	RSOV to Bottom of A-Pillar, Left Side	4741	4800	59
14	RSOV to Firewall, Right Side	4762	4775	13
15	RSOV to Firewall, Left Side	4968	4980	12
16	RSOV to Steering Column	3817	3830	13
17	Center of Steering Column to A-Pillar	5086	5102	16
18	Center of Steering Column to Headliner	3810	3825	15
19	RSOV to Right Side of Front Bumper	5490	5267	-223
20	RSOV to Left Side of Front Bumper	5470	5180	-290
21	Length of Engine Block	5470	5479	9
RD	RSOV to Right Side of Dash Panel	720	720	0
CD	RSOV to Center of Dash Panel	470	475	5
LD	RSOV to Left Side of Dash Panel	442	485	43

All measurements in millimeters.

DATA SHEET NO. 13

ACCIDENT INVESTIGATION DATA

Test Vehicle: 2012 Ford Super Duty F-250 4x4 Crew Cab 4-Door Truck NHTSA No.: MC0207

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/13/12

VEHICLE INFORMATION

VIN: 1FT7W2B68CEA63185 Wheelbase (mm): 4400

Vehicle Size Category: 4-Door Truck Test Weight (kg): 3448.0

ACCELEROMETER DATA

Accelerometer Locations: Left Rear Crossmember

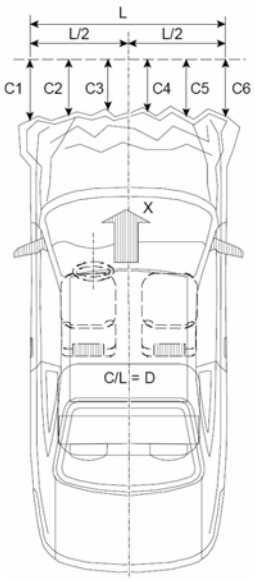
Cal. Procedure/Interval: Drop Test / 6 months

Integration Algorithm: NHTSA Standard Linearity: Good

Impact Velocity (km/h): 56.34

Velocity Change (km/h): 67.3

Time of Separation (msec): 80.5



CRUSH PROFILE

Collision Deformation Classification: 12FDEW2

Midpoint of Damage: Vehicle Centerline

Damage Region Length (mm): 1646

Impact Mode: Full Frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush Zone 1 at Left Side	mm	291	605	314
C2	Crush Zone 2 at Left Side	mm	55	658	603
C3	Crush Zone 3 at Left Side	mm	9	660	651
C4	Crush Zone 4 at Right Side	mm	9	655	646
C5	Crush Zone 5 at Right Side	mm	55	655	600
C6	Crush Zone 6 at Right Side	mm	291	635	344
L	C1 to C6	mm	1646		

DATA SHEET NO. 14

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2012 Ford Super Duty F-250 4x4 Crew Cab 4-Door Truck NHTSA No.: MC0207

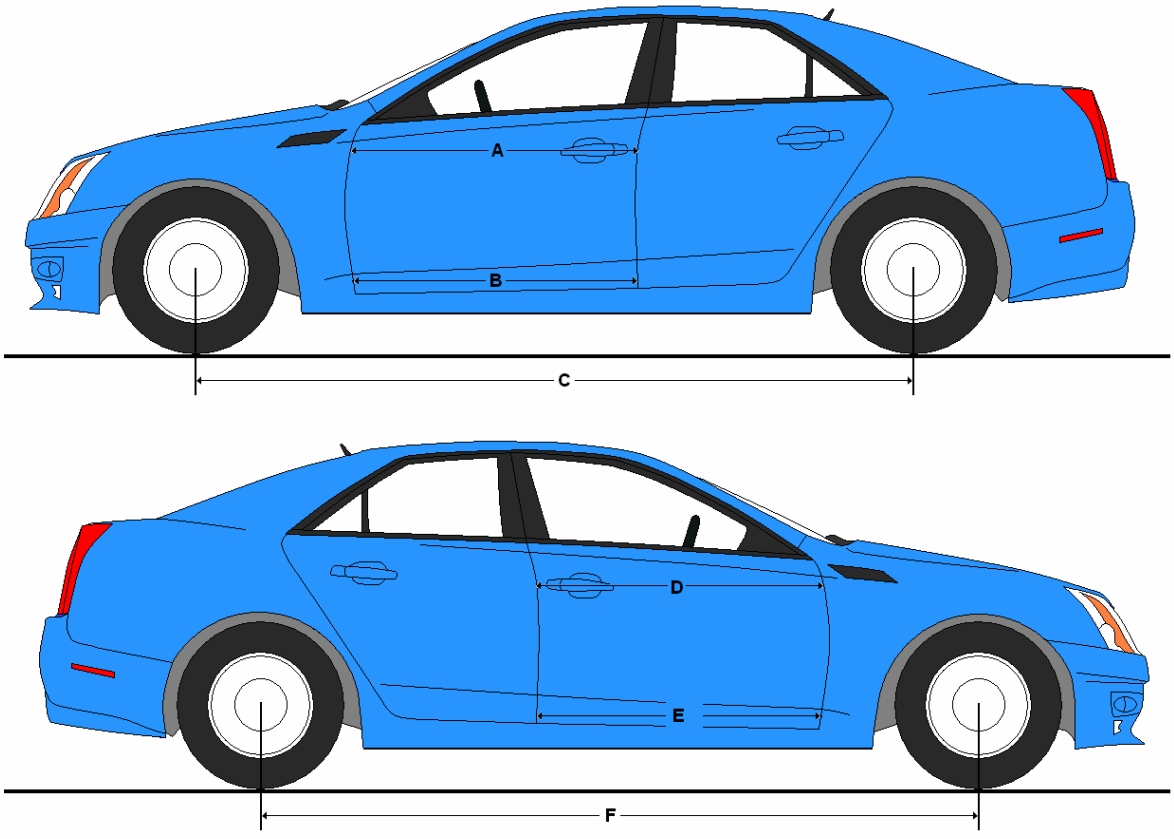
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/13/12

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	986	986	0
B	Left Side Lower	mm	1077	983	94
D	Right Side Upper	mm	999	988	11
E	Right Side Lower	mm	1023	1020	3

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	4400	4255	145
F	Right Side Wheelbase	mm	4400	4340	60



DATA SHEET NO. 14 … (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

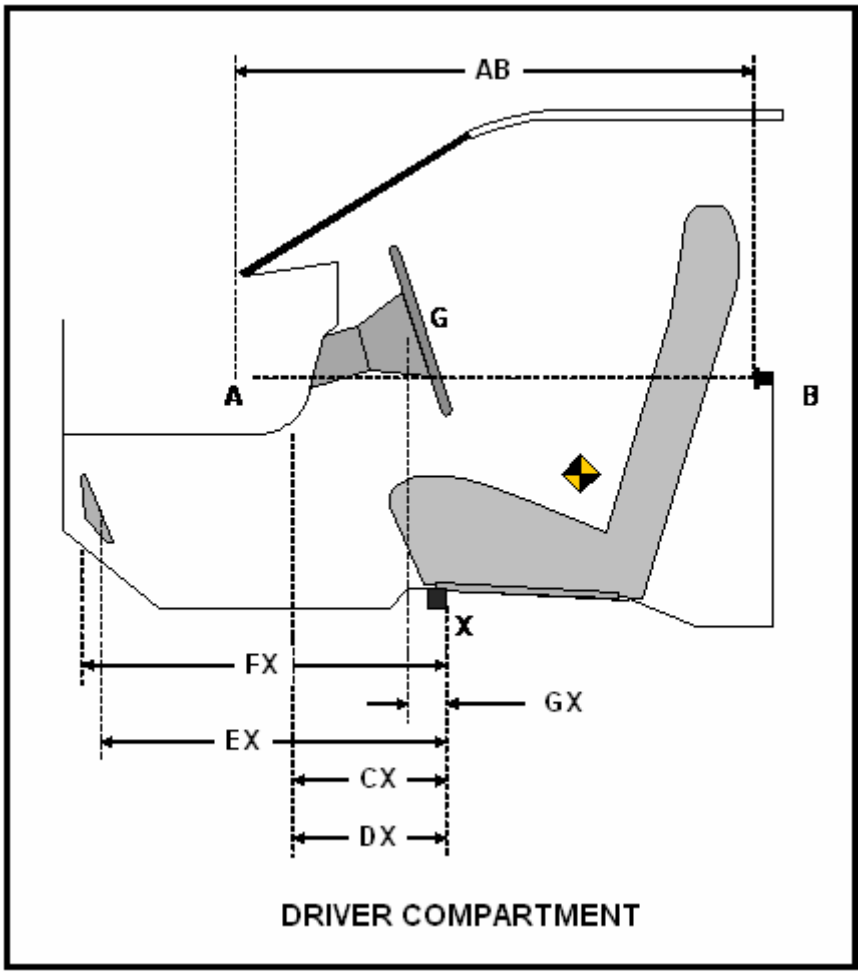
Test Vehicle: 2012 Ford Super Duty F-250 4x4 Crew Cab 4-Door Truck NHTSA No.: MC0207

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/13/12

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	964	963	1
CX	Left Knee Bolster to X	mm	340	290	50
DX	Right Knee Bolster to X	mm	355	310	45
EX	Brake Pedal to X	mm	535	500	35
FX	Foot Rest to X	mm	610	560	50
GX	Center of Steering Wheel Hub to X	mm	45	55	-10

X = Front of Seat Track (Stationary)

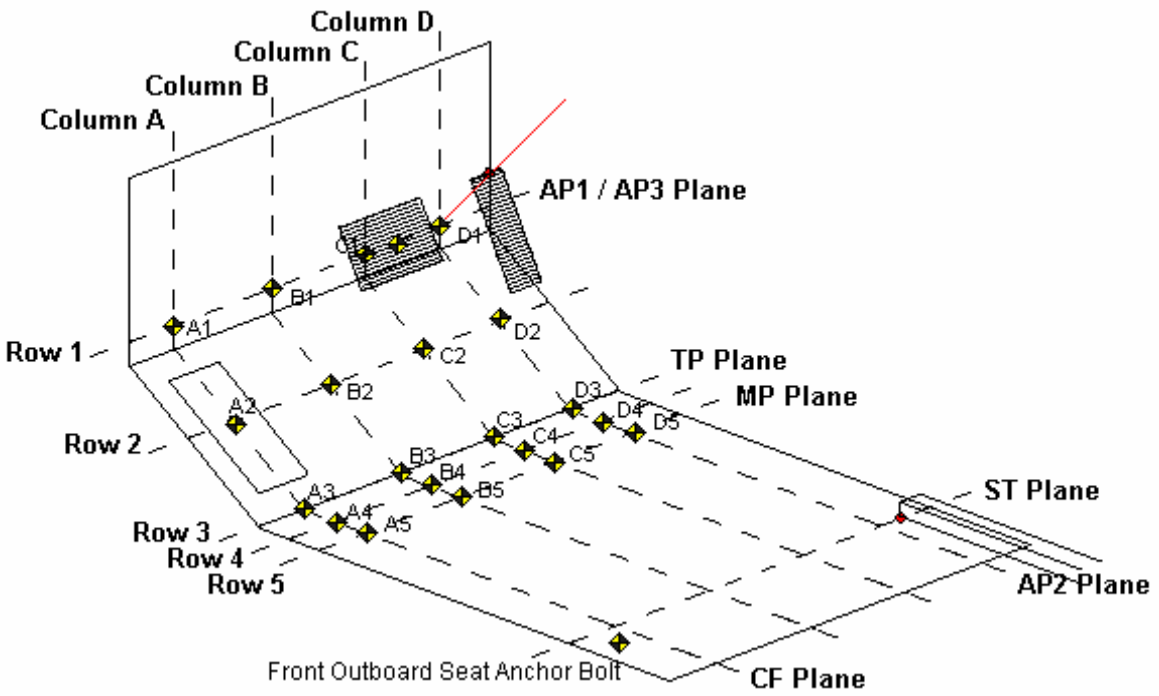


DATA SHEET NO. 14 … (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2012 Ford Super Duty F-250 4x4 Crew Cab 4-Door Truck NHTSA No.: MC0207

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/13/12



AP1: Y-Z Plane passing through D1

AP2: X-Z Plane passing through D1

AP3: X-Y plane passing through D1

MP: Y-Z plane, halfway between the ST plane and AP1 plane

CF Plane: X-Z plane passes through center of footrest.

BP Plane: X-Z plane passes through center of brake pedal

TP Plane: Y-Z plane, intersection of BP Plane and the intersection of the toe pan and floorboard

Column A: intersection of vehicle and CF plane

Column D: Intersection of vehicle and AP2 plane

Row 1: intersection of the vehicle and the AP3 Plane

Row 3: intersection of the vehicle and TP plane

Row 5: intersection of the vehicle and MP plane

Row 2: evenly spaced between row 1 and 3

Row 4: evenly spaced between row 3 and 5

DATA SHEET NO. 14 … (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2012 Ford Super Duty F-250 4x4 Crew Cab 4-Door Truck NHTSA No.: MC0207

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/13/12

DRIVER FLOORPAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	640	640	639	636	631	632	623	604	9	8	16	32
2	566	555	555	556	557	547	543	543	9	8	12	13
3	469	468	468	471	459	460	458	462	10	8	10	9
4	315	312	310	307	306	303	302	302	9	9	8	5
5	160	157	157	150	151	148	147	148	9	9	10	2

DRIVER FLOORPAN Y-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	1	-106	-209	-369	4	-104	-204	-357	-3	-2	-5	-12
2	-2	-108	-210	-368	4	-103	-207	-356	-6	-5	-3	-12
3	-5	-109	-214	-372	1	-103	-208	-361	-6	-6	-6	-11
4	-2	-112	-214	-376	4	-105	-211	-370	-6	-7	-3	-6
5	0	-112	-214	-374	3	-109	-215	-371	-3	-3	1	-3

DRIVER FLOORPAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	47	50	50	58	69	68	78	99	-22	-18	-28	-41
2	-21	-4	-2	-14	2	16	19	15	-23	-20	-21	-29
3	-60	-56	-55	-55	-35	-36	-36	-39	-25	-20	-19	-16
4	-63	-63	-62	-63	-42	-39	-43	-56	-21	-24	-19	-7
5	-63	-57	-60	-61	-51	-48	-56	-70	-12	-9	-4	9

All measurements in millimeters

DATA SHEET NO. 14 … (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2012 Ford Super Duty F-250 4x4 Crew Cab 4-Door Truck NHTSA No.: MC0207

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/13/12

PASSENGER FLOORPAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	494	612	614	615	480	601	608	608	14	11	6	7
2	468	531	540	542	458	525	535	534	10	6	5	8
3	434	452	460	466	430	449	455	452	4	3	5	14
4	312	309	309	311	308	306	304	305	4	3	5	6
5	155	153	154	150	151	147	149	145	4	6	5	5

PASSENGER FLOORPAN Y-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	350	228	120	13	350	229	120	13	0	-1	0	0
2	366	234	119	9	367	235	118	9	-1	-1	1	0
3	388	234	116	12	387	233	116	15	1	1	0	-3
4	391	233	120	10	392	233	120	8	-1	0	0	2
5	396	237	121	12	398	237	122	12	-2	0	-1	0

PASSENGER FLOORPAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	187	121	118	125	194	133	126	132	-7	-12	-8	-7
2	107	48	44	53	112	53	51	59	-5	-5	-7	-6
3	-3	-22	-22	-16	2	-16	-16	-16	-5	-6	-6	0
4	-39	-42	-43	-44	-39	-38	-37	-37	0	-4	-6	-7
5	-44	-44	-45	-46	-47	-43	-43	-42	3	-1	-2	-4

All measurements in millimeters

DATA SHEET NO. 15

SUMMARY OF FMVSS 212 AND 219 (PARTIAL) DATA

Test Vehicle: 2012 Ford Super Duty F-250 4x4 Crew Cab 4-Door Truck NHTSA No.: MC0207

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/13/12

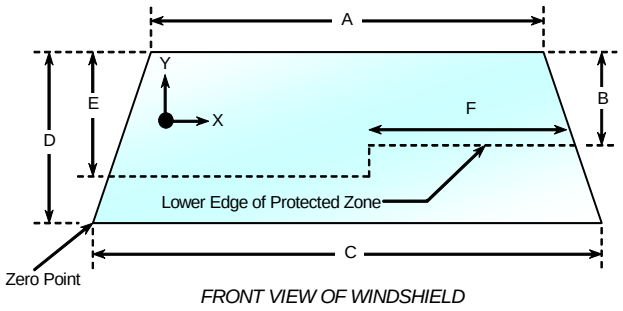
Windshield Mounting Details: Windshield glass is secured to the vehicle frame with rubber cement.

The standard requires that the post-test retention measurement be a minimum of 75% of the pre-test total periphery measurement for vehicles not equipped with occupant passive restraints and 50% for each side of the windshield for vehicles which are equipped with occupant passive restraints.

Temperature of windshield molding during test: 20.9 ° C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% Retention
Left Side	2335	2335	100.0%
Right Side	2335	2335	100.0%
Total	4670	4670	100.0%



FRONT VIEW OF WINDSHIELD

Item	Units	Value
A	mm	1450
B	mm	325
C	mm	1740
D	mm	740
E	mm	440
F	mm	660

AREAS OF PROTECTED ZONE FAILURES

A. Provide Coordinates of the area that the protected zone was penetrated more than 0.25 inches by a vehicle component other than one that is normally in contact with the windshield.

X	Y

B. Provide coordinates of the area beneath the protected zone that the inner surface of the windshield was penetrated by a vehicle component.

X	Y

DATA SHEET NO. 15 … (CONTINUED)

SUMMARY OF FMVSS 212 AND 219 (PARTIAL) DATA

Test Vehicle: 2012 Ford Super Duty F-250 4x4 Crew Cab 4-Door Truck NHTSA No.: MC0207

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/13/12

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 15.6° C Test Time: 1:36 PM

Stoddard Solvent Spillage Measurements

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)

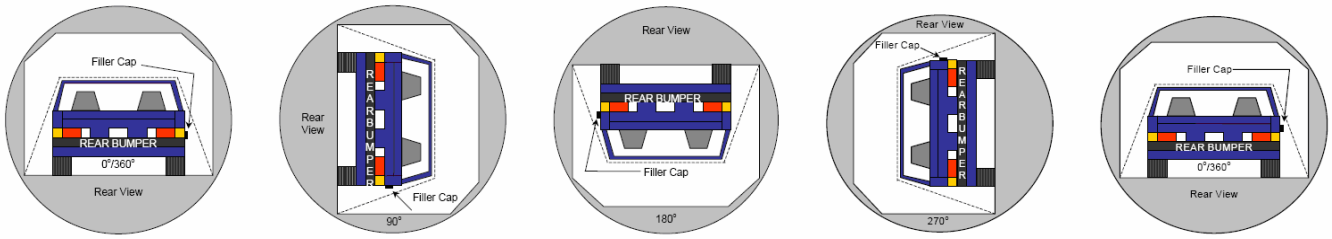
D. Spillage: There was no Stoddard solvent spillage.

DATA SHEET NO. 16

FMVSS 301 STATIC ROLLOVER

Test Vehicle: 2012 Ford Super Duty F-250 4x4 Crew Cab 4-Door Truck NHTSA No.: MC0207

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/13/12



0° TO 90° 90° TO 180° 180° TO 270° 270° TO 360°

1. The specified fixture rollover rate for each 90° of rotation is 60 to 180 seconds.
2. The position hold time at each position is 300 seconds (minimum).
3. Details of Stoddard solvent spillage: There was no Stoddard solvent spillage.

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° To 90°	84	300	384
90° To 180°	83	300	383
180° To 270°	80	300	380
270° To 360°	80	300	380

FMVSS 301 SPILLAGE TABLE

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

SOLVENT SPILLAGE LOCATION TABLE

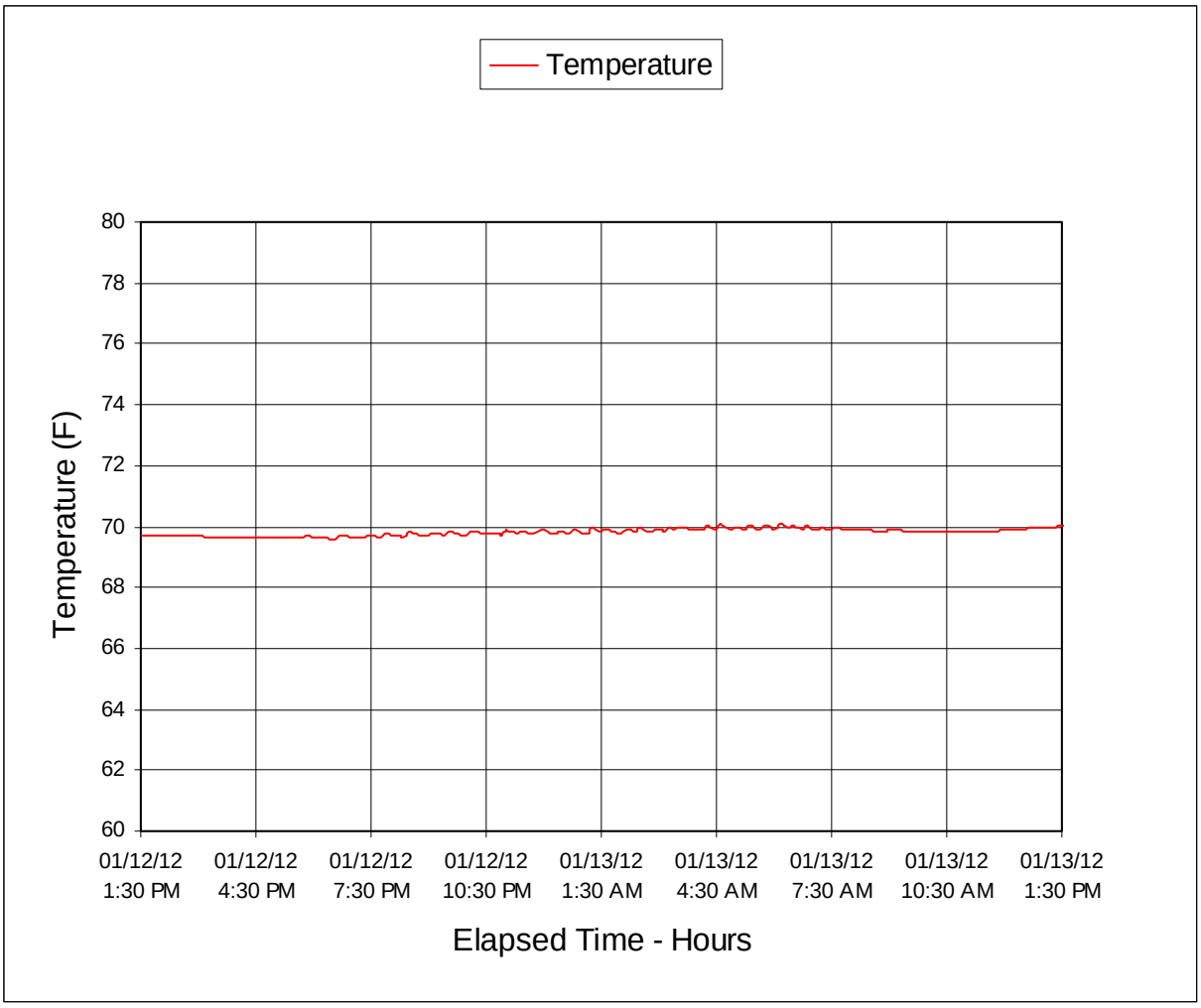
Test Phase	Spillage Location
0° To 90°	
90° To 180°	
180° To 270°	
270° To 360°	

DATA SHEET NO. 17

DUMMY / VEHICLE TEMPERATURE STABILIZATION CHART

Test Vehicle: 2012 Ford Super Duty F-250 4x4 Crew Cab 4-Door Truck NHTSA No.: MC0207

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/13/12



APPENDIX A

PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

Figure		Page
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2	Load Cell Wall	A-1
3	Manufacturer's Label	A-2
4	Tire Placard	A-2
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6	Left Rear 3-4 View, as Received	A-3
7	Pre-Test Front View of Test Vehicle	A-4
8	Post-Test Front View of Test Vehicle	A-4
9	Pre-Test Left View of Test Vehicle	A-5
10	Post-Test Left View of Test Vehicle	A-5
11	Pre-Test Right View of Test Vehicle	A-6
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FIGURE 1. Load Cell Location

FIGURE 2. Load Cell Wall

FIGURE 3. Manufacturer's Label

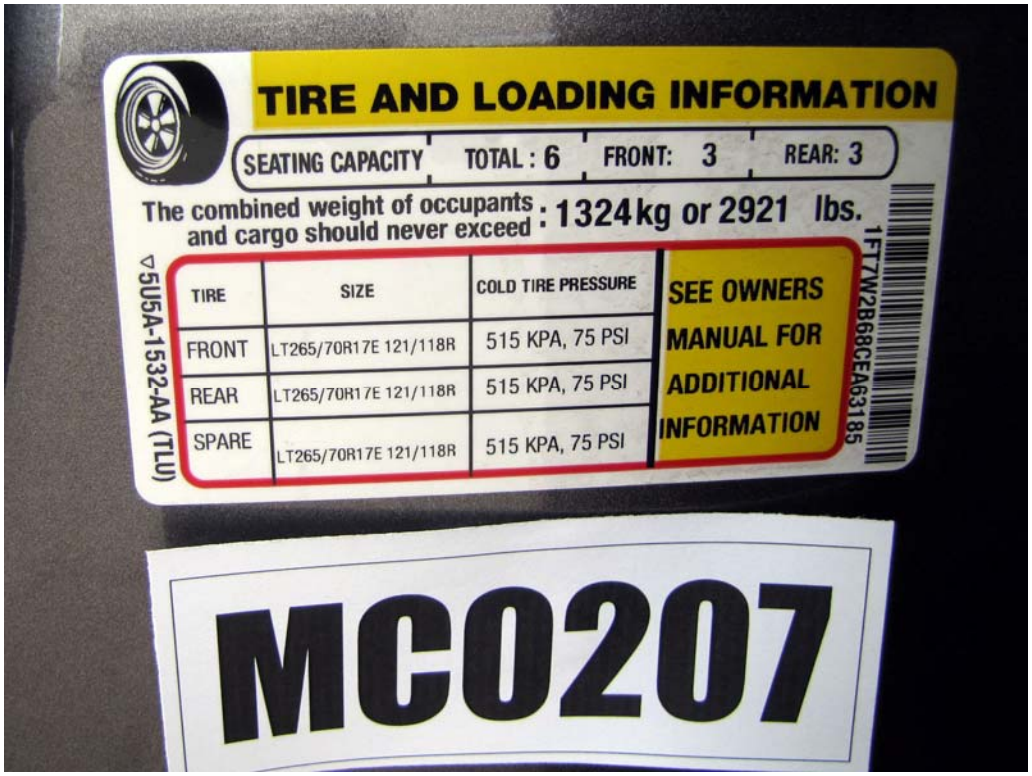

FIGURE 4. Tire Placard

FIGURE 5. 2012 Ford Super Duty F-250 Frontal, As Delivered

FIGURE 6. Left Rear ¾ View, As Received

FIGURE 7. Pre-Test Front View of Test Vehicle

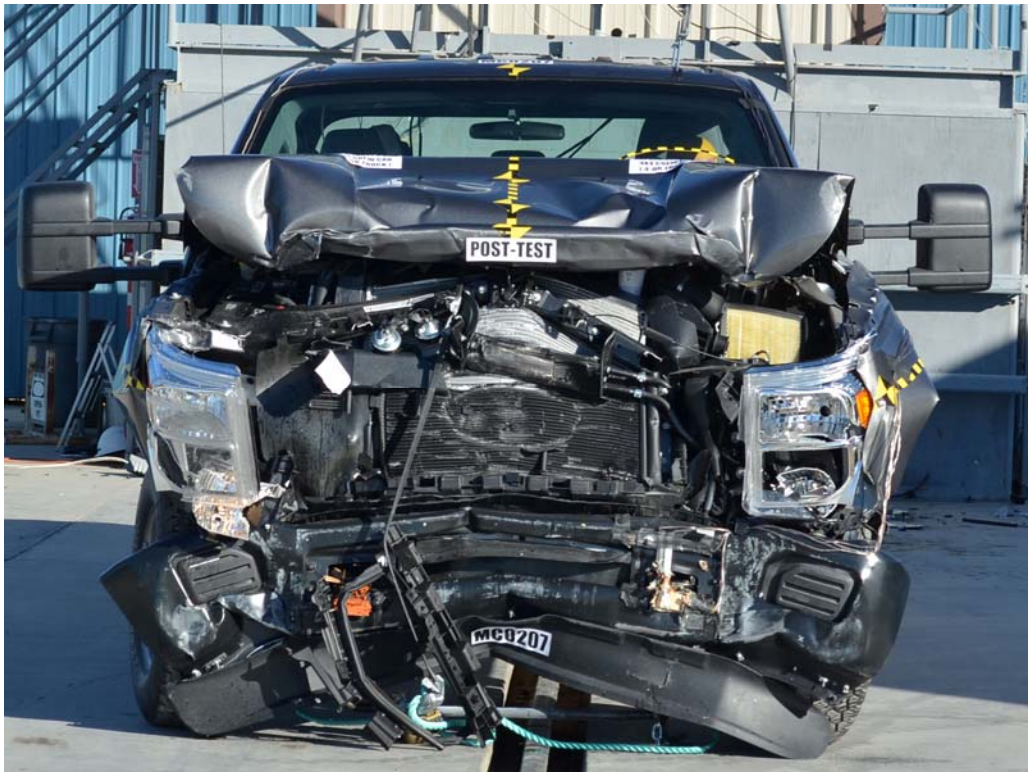

FIGURE 8. Post-Test Front View of Test Vehicle

FIGURE 9. Pre-Test Left View of Test Vehicle

FIGURE 10. Post-Test Left View of Test Vehicle

FIGURE 11. Pre-Test Right View of Test Vehicle

FIGURE 12. Post-Test Right View of Test Vehicle

FIGURE 13. Pre-Test Right Front ¾ View

FIGURE 14. Post-Test Right Front ¾ View

FIGURE 15. Pre-Test Left Rear ¾ View

FIGURE 16. Post-Test Left Rear ¾ View

FIGURE 17. Pre-Test Windshield View

FIGURE 18. Post-Test Windshield View

FIGURE 19. Pre-Test Engine Compartment View

FIGURE 20. Post-Test Engine Compartment View

FIGURE 21. Pre-Test Fuel Filler Cap View

FIGURE 22. Post-Test Fuel Filler Cap View

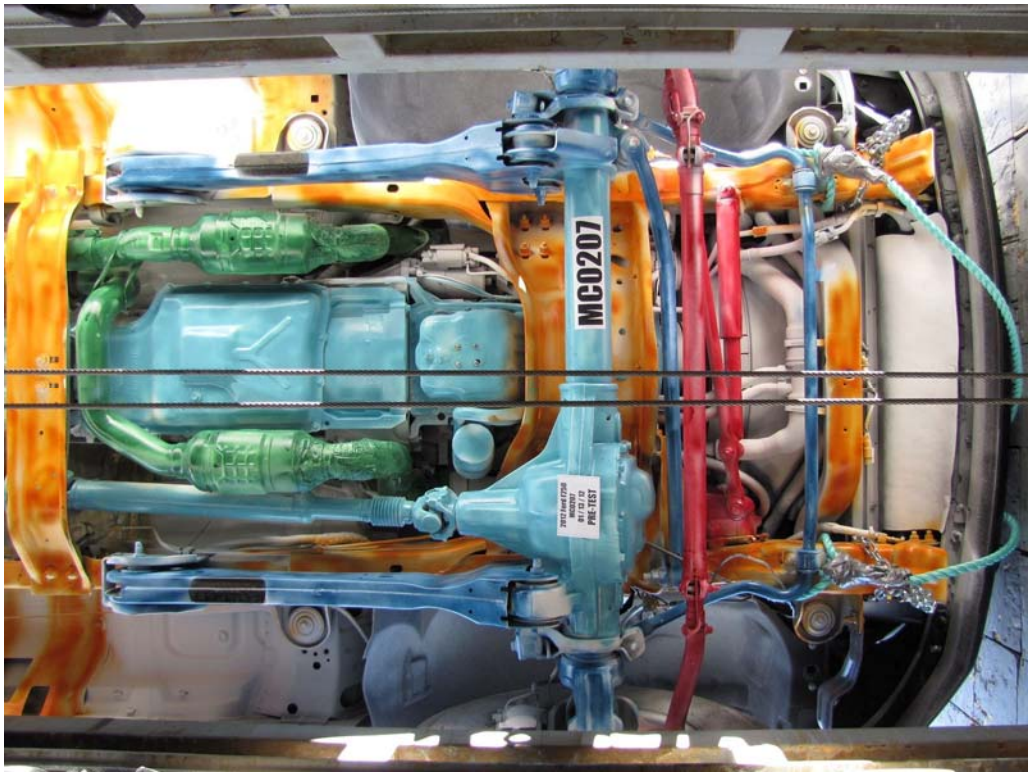

FIGURE 23. Pre-Test Front Underbody View

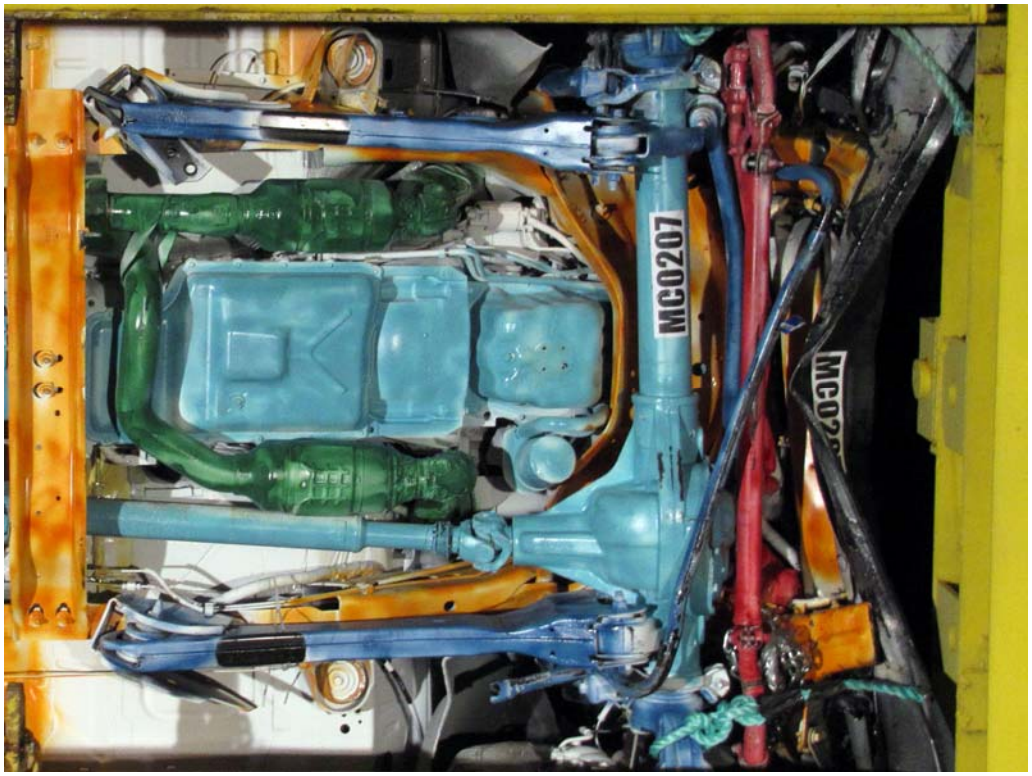

FIGURE 24. Post-Test Front Underbody View

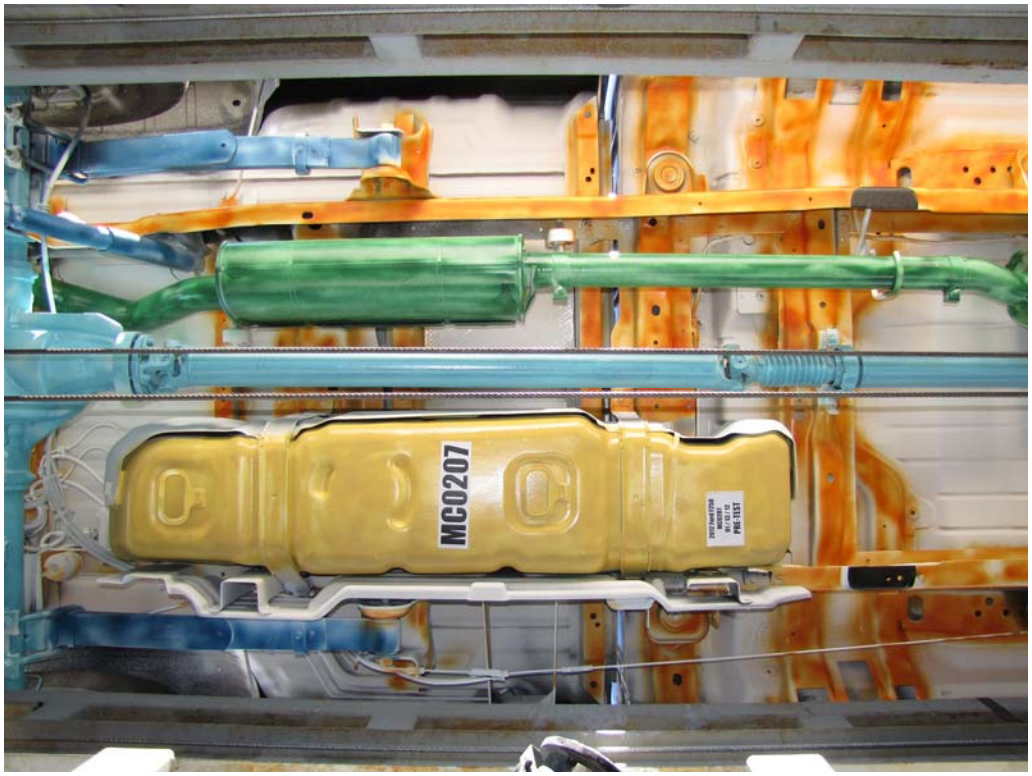

FIGURE 25. Pre-Test Rear Underbody View

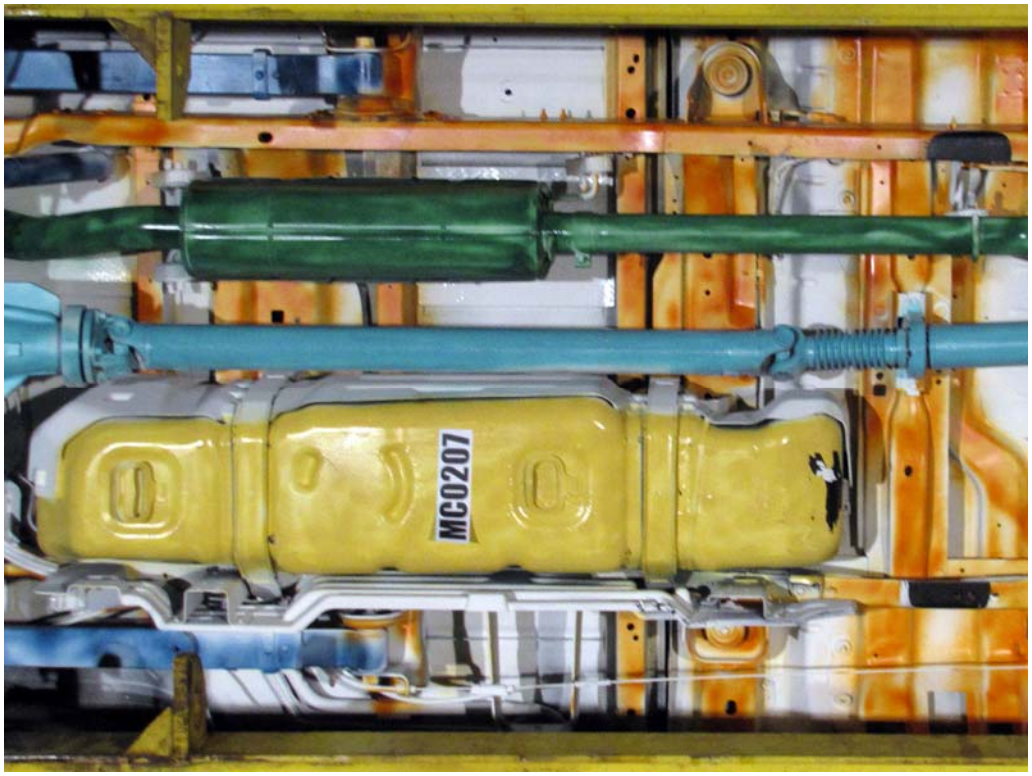

FIGURE 26. Post-Test Rear Underbody View

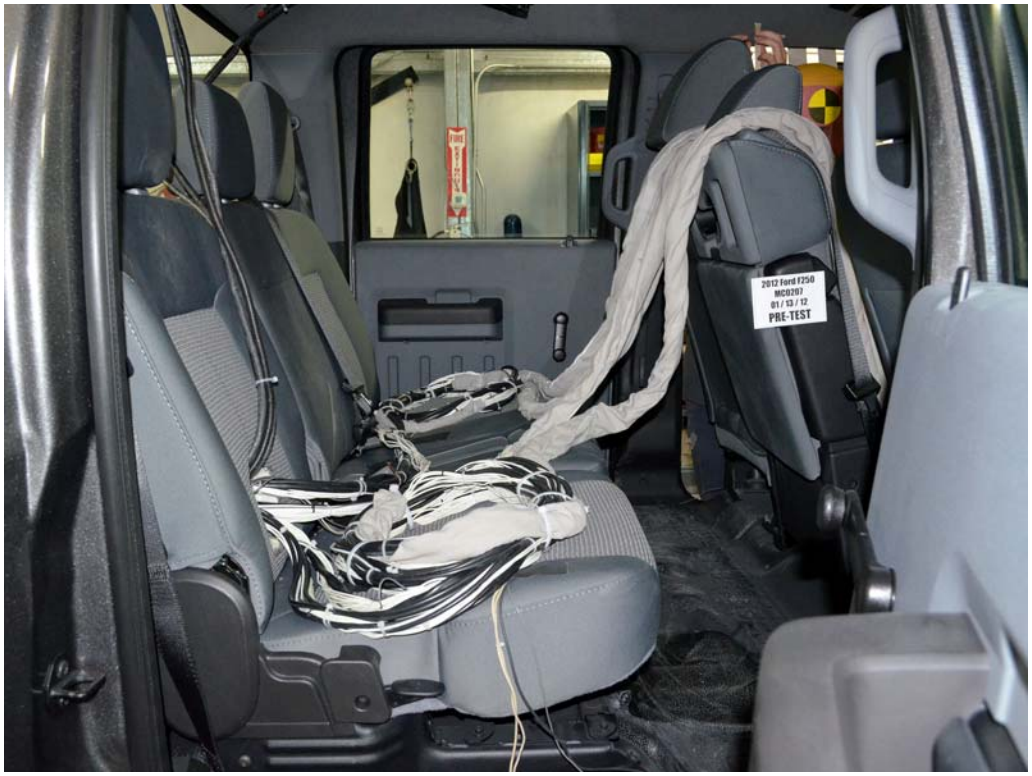

FIGURE 27. Pre-Test Dummy Cable Routing

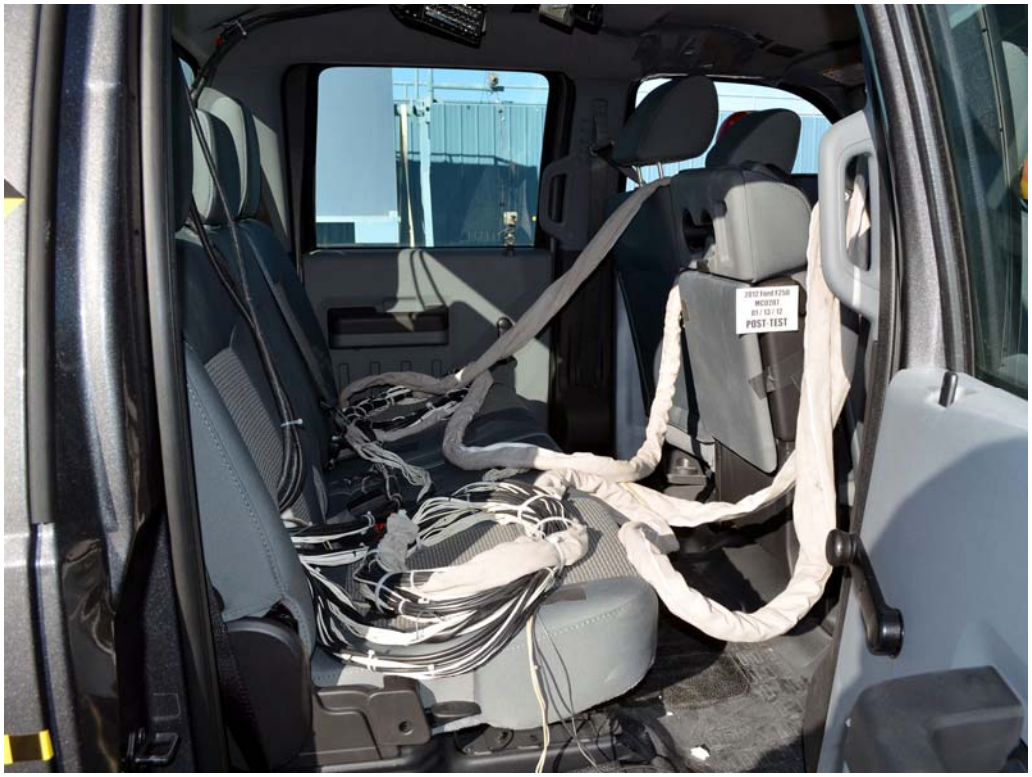

FIGURE 28. Post-Test Dummy Cable Routing

FIGURE 29. Pre-Test Driver Dummy Front View

FIGURE 30. Post-Test Driver Dummy Front View

FIGURE 31. Pre-Test Driver Dummy Window View

FIGURE 32. Post-Test Driver Dummy Window View

FIGURE 33. Pre-Test Driver Dummy and Vehicle Interior View

FIGURE 34. Post-Test Driver Dummy and Vehicle Interior View

FIGURE 35. Pre-Test Driver's Seat Fore-Aft Markings

FIGURE 36. Post-Test Driver's Seat Fore-Aft Markings

FIGURE 37. Pre-Test Driver Dummy Feet

FIGURE 38. Post-Test Driver Dummy Feet

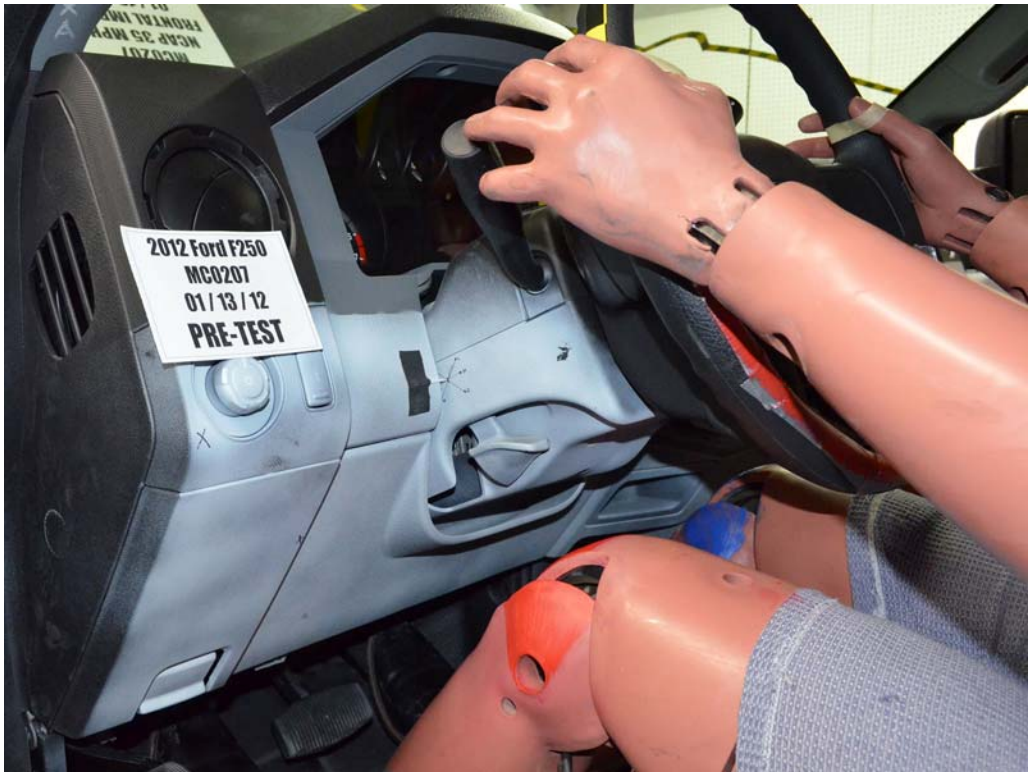

FIGURE 39. Pre-Test Driver's Side Knee Bolster

FIGURE 40. Post-Test Driver's Side Knee Bolster

FIGURE 41. Pre-Test Driver's Side Floorpan

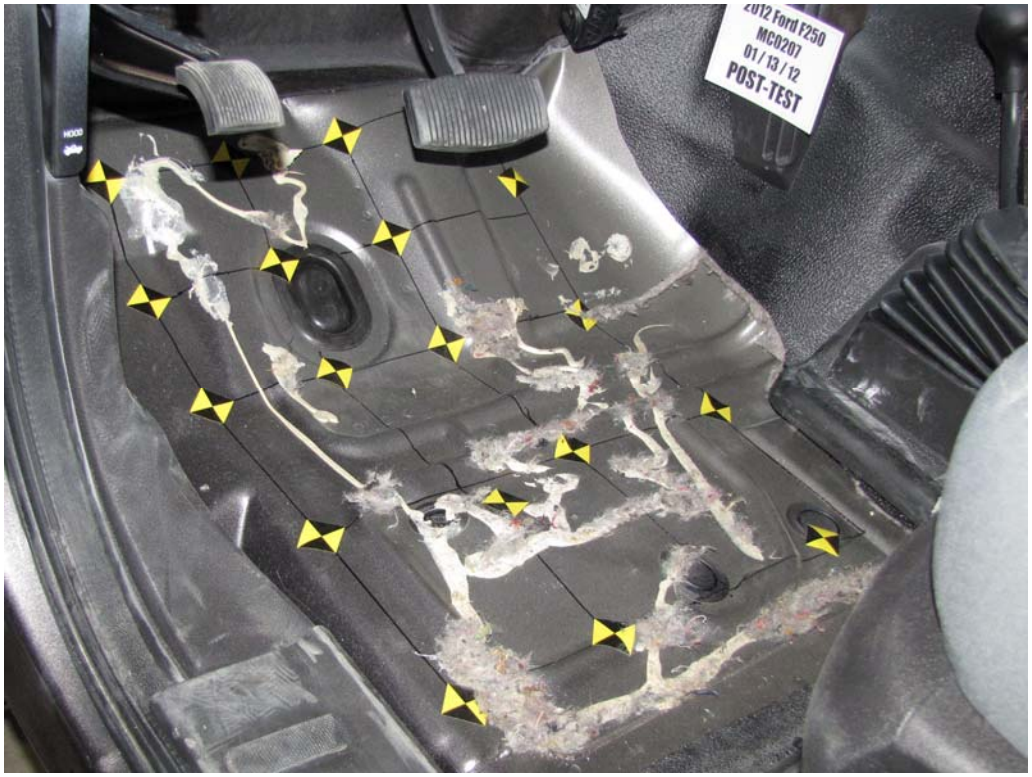

FIGURE 42. Post-Test Driver's Side Floorpan

FIGURE 43. Post-Test Driver Dummy Face

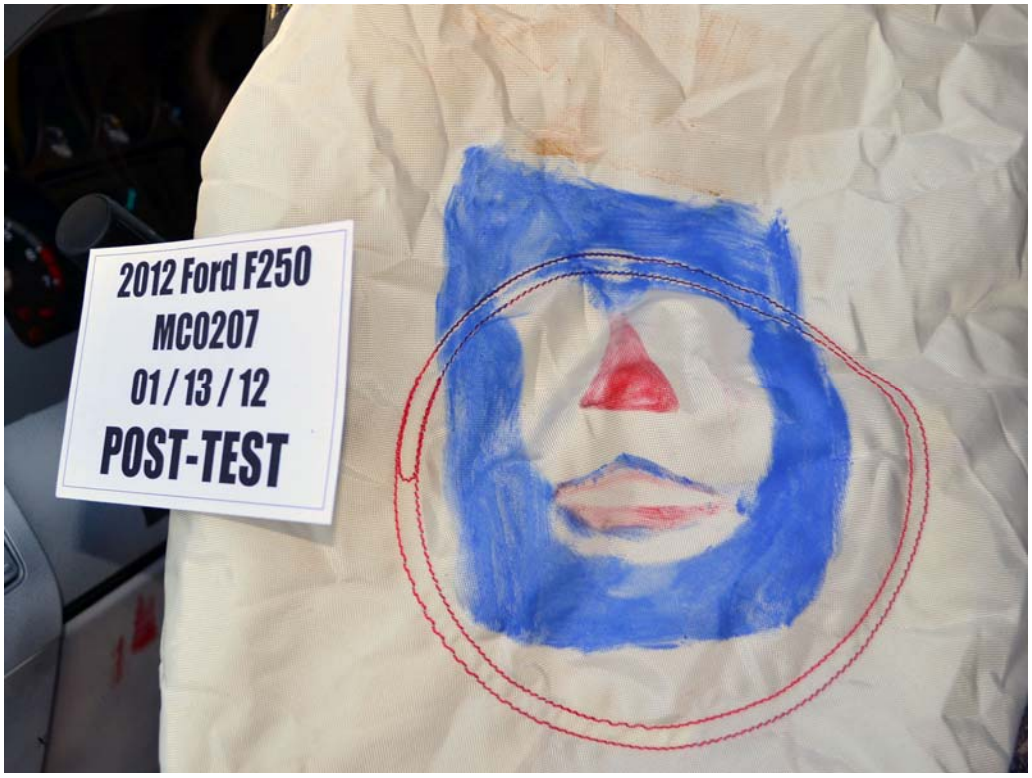

FIGURE 44. Post-Test Driver Dummy Contact With Airbag

FIGURE 45. Post-Test Driver Dummy Contact With Headrest

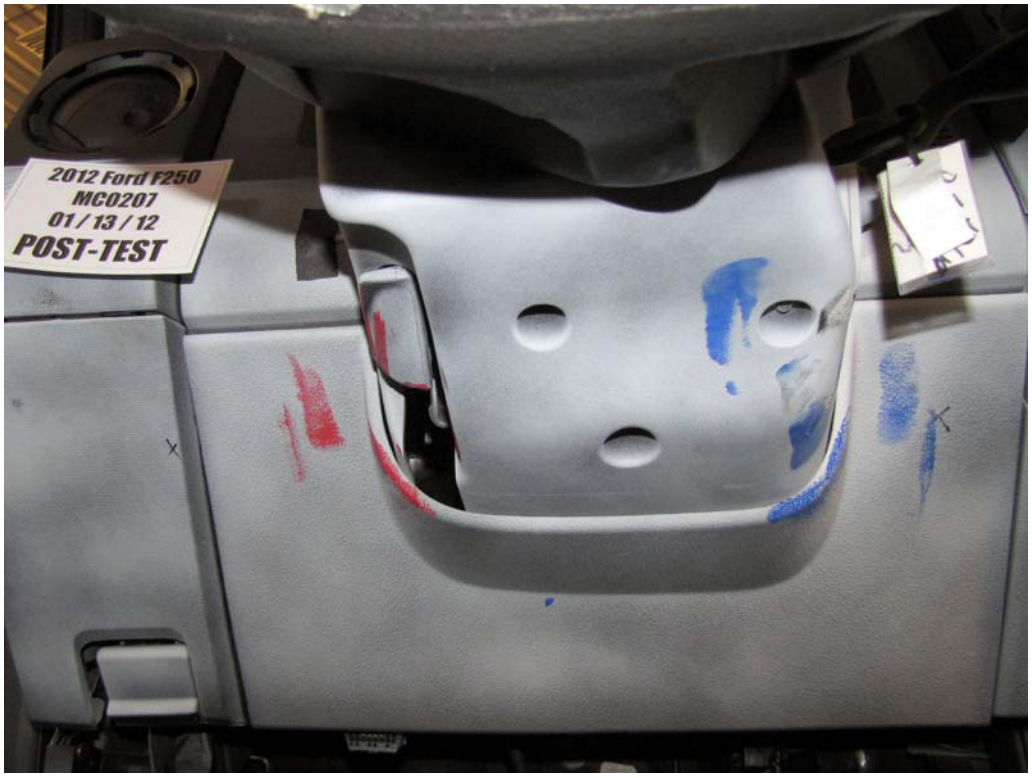

FIGURE 45a. Post-Test Driver Dummy Contact With Knee Bolster

FIGURE 45b. Post-Test Driver Dummy Contact Steering Column

FIGURE 46. Pre-Test View Of Steering Wheel

FIGURE 47. Post-Test View Of Steering Wheel

FIGURE 48. Pre-Test Passenger Dummy Front View

FIGURE 49. Post-Test Passenger Dummy Front View

FIGURE 50. Pre-Test Passenger Dummy Window View

FIGURE 51. Post-Test Passenger Dummy Window View

FIGURE 52. Pre-Test Passenger Dummy and Vehicle Interior View

FIGURE 53. Post-Test Passenger Dummy and Vehicle Interior View

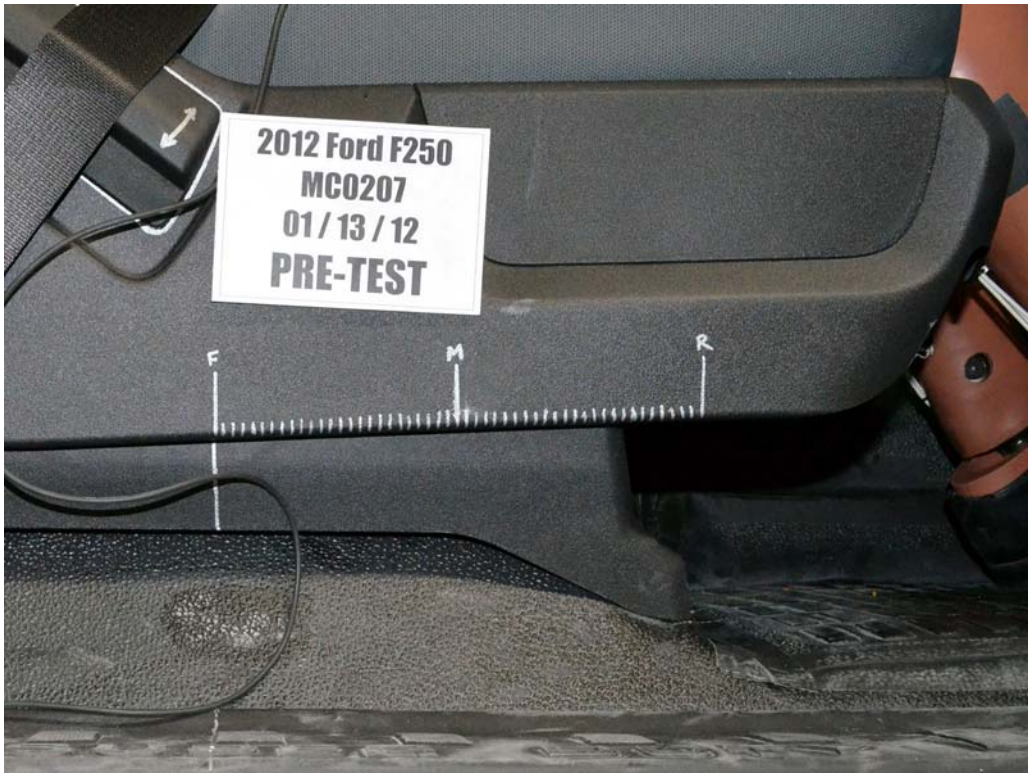

FIGURE 54. Pre-Test Passenger's Seat Fore-Aft Markings

FIGURE 55. Post-Test Passenger's Seat Fore-Aft Markings

FIGURE 56. Pre-Test Passenger Dummy Feet

FIGURE 57. Post-Test Passenger Dummy Feet

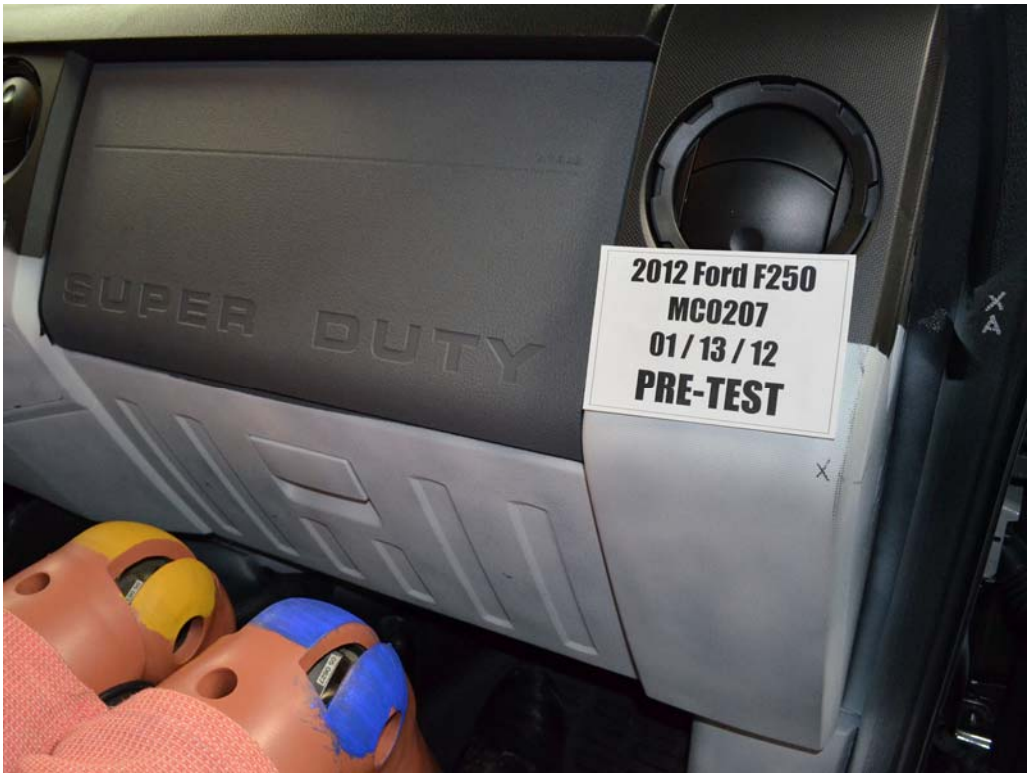

FIGURE 58. Pre-Test Passenger's Side Knee Bolster

FIGURE 59. Post-Test Passenger's Side Knee Bolster

FIGURE 60. Pre-Test Passenger's Side Floorpan

FIGURE 61. Post-Test Passenger's Side Floorpan

FIGURE 62. Post-Test Passenger Dummy Contact With Airbag

FIGURE 62a. Post-Test Passenger Dummy Contact With Headrest

FIGURE 62b. Post-Test Passenger Dummy Contact With Glovebox

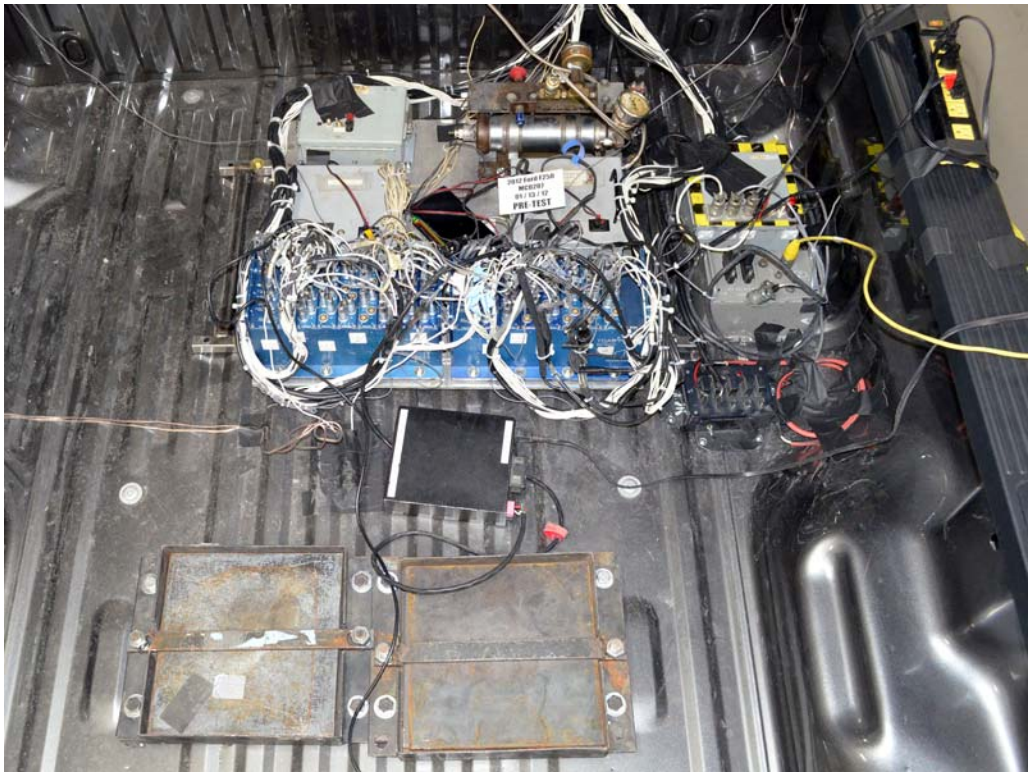

FIGURE 63. Pre-Test of Ballast Installed in Vehicle

Photograph Not Applicable
No Stoddard
Solvent Spillage

FIGURE 64. Post-Test Stoddard Solvent Spillage Location

FIGURE 65. Post-Test Speed Trap Read Out

FIGURE 66. Vehicle at 0°on Static Rollover Device

FIGURE 67. Vehicle at 90°on Static Rollover Device

FIGURE 68. Vehicle at 180°on Static Rollover Device

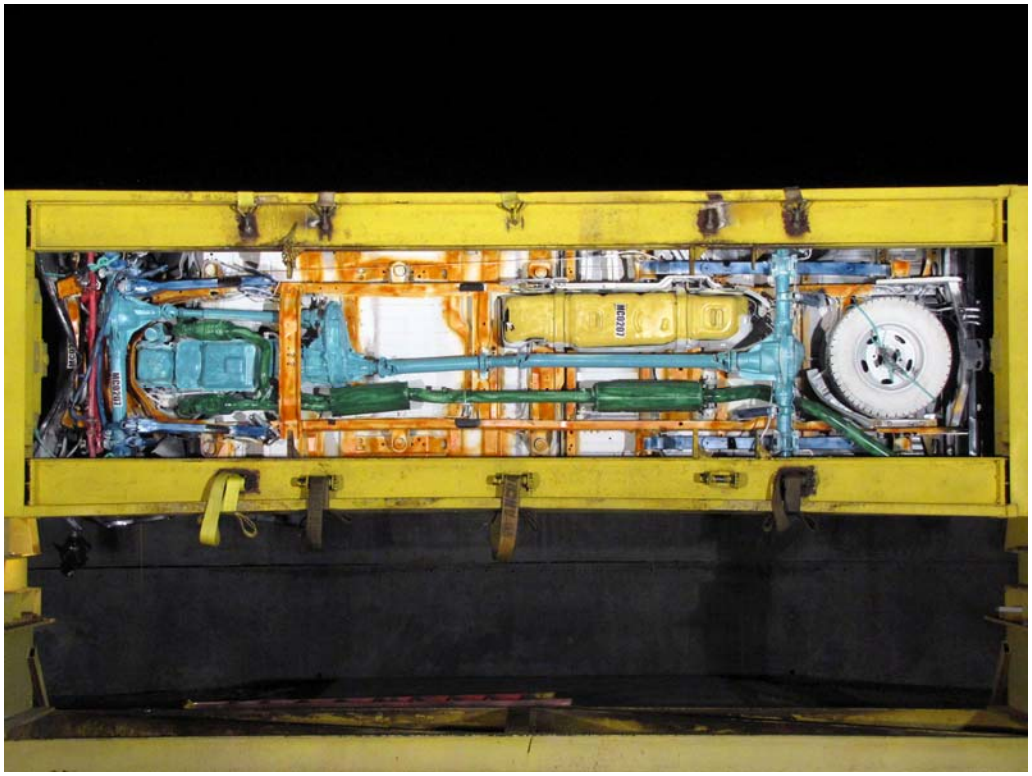

FIGURE 69. Vehicle at 270°on Static Rollover Device

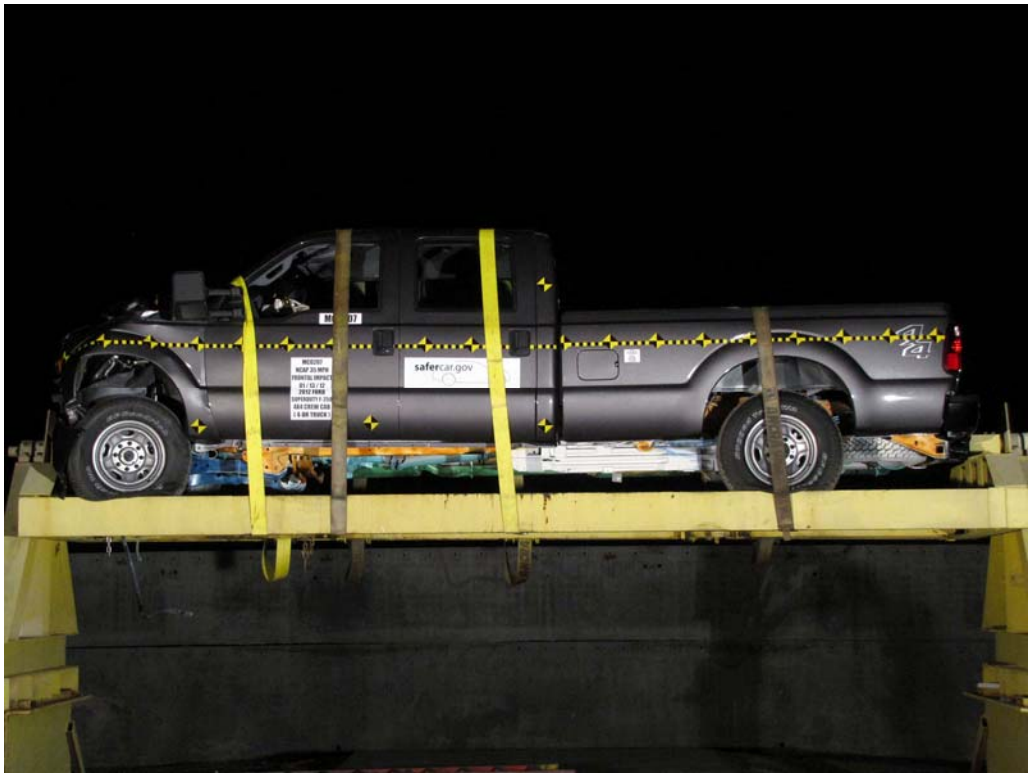

FIGURE 70. Vehicle at 360°on Static Rollover Device

FIGURE 71. 2012 Ford Super Duty F-250 Frontal Impact Event

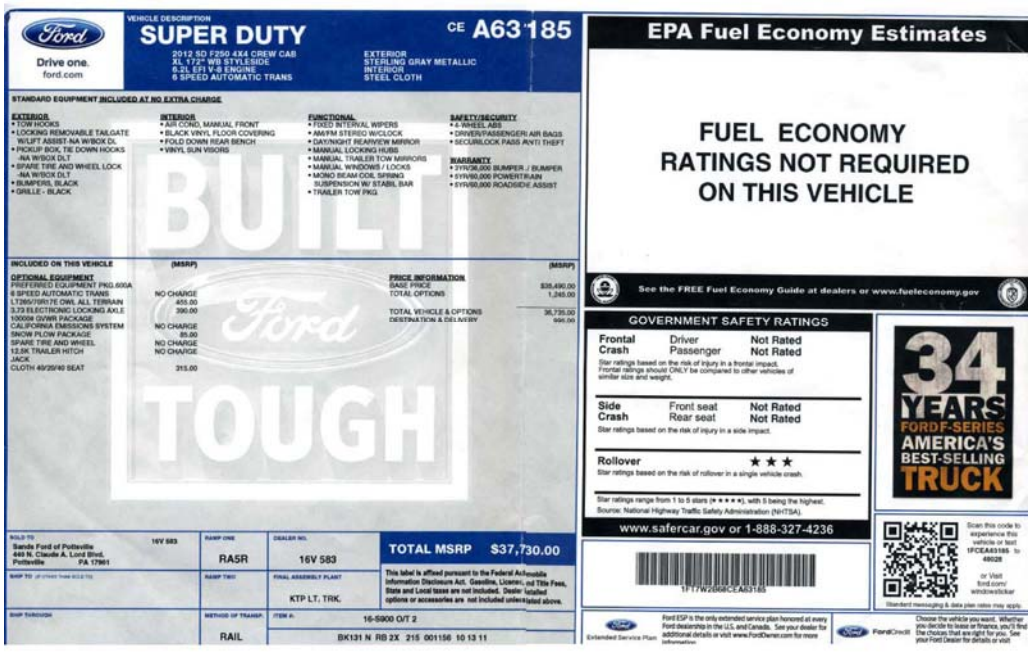

FIGURE 72. Monroney Label Photograph

APPENDIX B
DUMMY RESPONSE DATA TRACES

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12	Driver Upper Neck Moment Y vs. Time Primary	B-4
13	Driver Nij vs. Time Primary	B-4
14	Driver Left Femur Force vs. Time	B-5
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28	Passenger Nij vs. Time Primary	B-9
29	Passenger Left Femur Force vs. Time	B-10
30	Passenger Right Femur Force vs. Time	B-10

The following additional dummy and vehicle response data can be found in the R&D section of the NHTSA website at www.nhtsa.dot.gov

Driver Head X Acceleration Redundant
Driver Head Y Acceleration Redundant
Driver Head Z Acceleration Redundant
Driver Upper Neck Force Y
Driver Upper Neck Moment X
Driver Upper Neck Moment Z
Driver Chest X Acceleration Redundant
Driver Chest Y Acceleration Redundant
Driver Chest Z Acceleration Redundant
Driver Pelvis X
Driver Pelvis Y
Driver Pelvis Z
Driver Left Femur Force Z Redundant
Driver Right Femur Force Z Redundant
Driver Shoulder Belt Force
Driver Lap Belt Force
Driver Left Upper Tibia Moment X
Driver Left Upper Tibia Moment Y
Driver Left Upper Tibia Force Z
Driver Left Lower Tibia Moment X
Driver Left Lower Tibia Moment Y
Driver Left Lower Tibia Force Z
Driver Right Upper Tibia Moment X
Driver Right Upper Tibia Moment Y
Driver Right Upper Tibia Force Z
Driver Right Lower Tibia Moment X
Driver Right Lower Tibia Moment Y
Driver Right Lower Tibia Force Z
Driver Left Foot Fore Z
Driver Left Foot Aft X
Driver Left Foot Aft Z
Driver Right Foot Fore Z
Driver Right Foot Aft X

Driver Right Foot Aft Z
Passenger Head X Acceleration Redundant
Passenger Head Y Acceleration Redundant
Passenger Head Z Acceleration Redundant
Passenger Upper Neck Force X
Passenger Upper Neck Force Z
Passenger Upper Neck Moment Y
Passenger Chest X Acceleration Redundant
Passenger Chest Y Acceleration Redundant
Passenger Chest Z Acceleration Redundant
Passenger Pelvis X
Passenger Pelvis Y
Passenger Pelvis Z
Passenger Left Femur Force Z Redundant
Passenger Right Femur Force Z Redundant
Passenger Shoulder Belt Force
Passenger Lap Belt Force
Passenger Left Upper Tibia Moment X
Passenger Left Upper Tibia Moment Y
Passenger Left Upper Tibia Force Z
Passenger Left Lower Tibia Moment X
Passenger Left Lower Tibia Moment Y
Passenger Left Lower Tibia Force Z
Passenger Right Upper Tibia Moment X
Passenger Right Upper Tibia Moment Y
Passenger Right Upper Tibia Force Z
Passenger Right Lower Tibia Moment X
Passenger Right Lower Tibia Moment Y
Passenger Right Lower Tibia Force Z
Passenger Left Foot Fore Z
Passenger Left Foot Aft X
Passenger Left Foot Aft Z
Passenger Right Foot Fore Z
Passenger Right Foot Aft X
Passenger Right Foot Aft Z
Left Rear Seat Crossmember X

Left Rear Seat Crossmember Z

Right Rear Seat Crossmember X

Right Rear Seat Crossmember Z

Vehicle Engine Top X

Vehicle Engine Bottom X

Vehicle Left Brake Caliper X

Vehicle Right Brake Caliper X

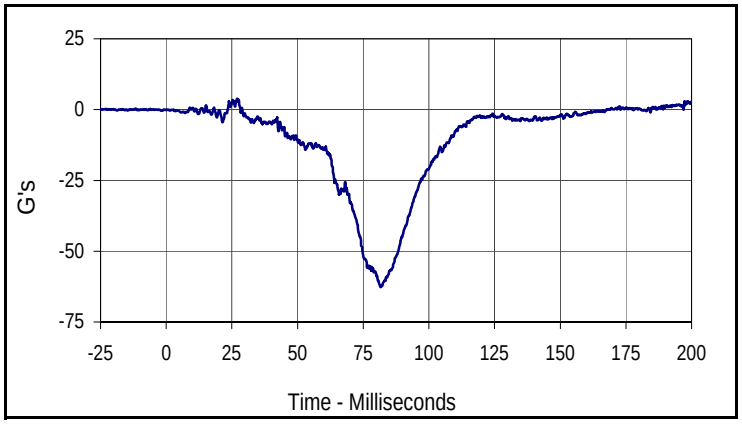
Load Cell Barrier A1-A9

Load Cell Barrier B1-B9

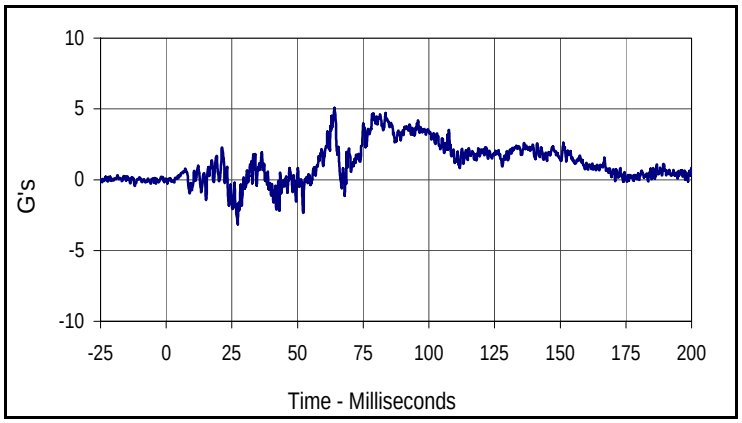
Load Cell Barrier C1-C9

Load Cell Barrier D1-D9

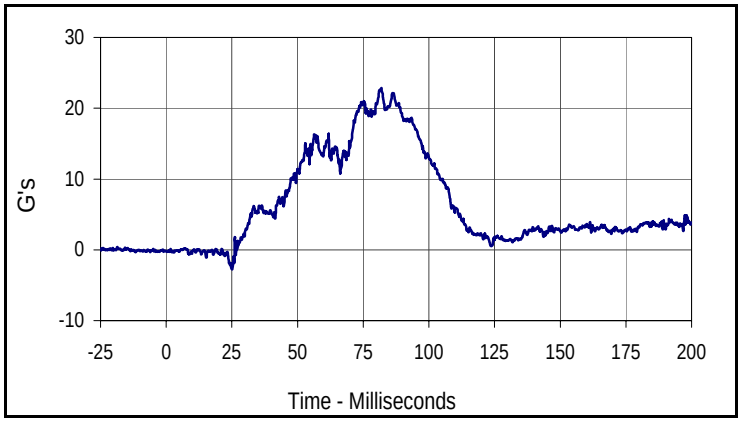
Test Vehicle:	2012 Ford SD F250 4X4 Crew Cab 4-Door Truck	NHTSA No.:	MC0207
Test Program:	56 km/h Frontal Impact NCAP Test	Test Date:	1/13/12



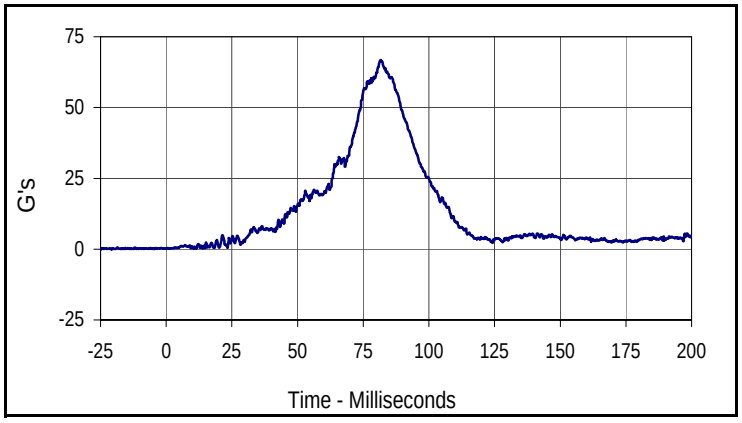
Curve Description			
Driver Head Acceleration X Primary			
Plot No.	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
3.9	27.0	-62.7	81.6



Curve Description			
Driver Head Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
5.1	64.0	-3.2	27.2

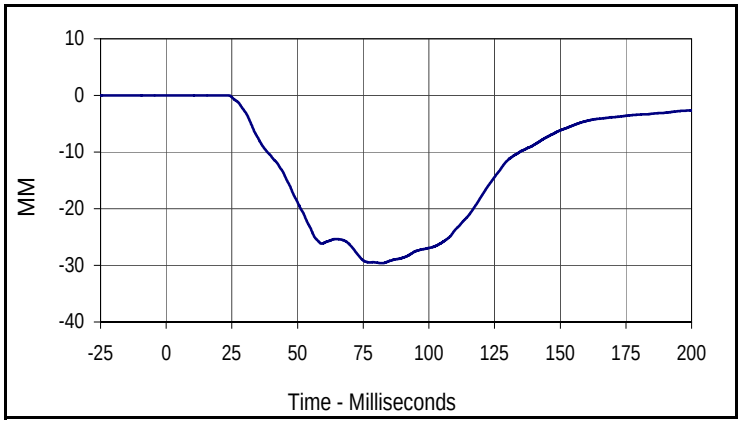


Curve Description			
Driver Head Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
22.9	81.9	-2.8	25.1

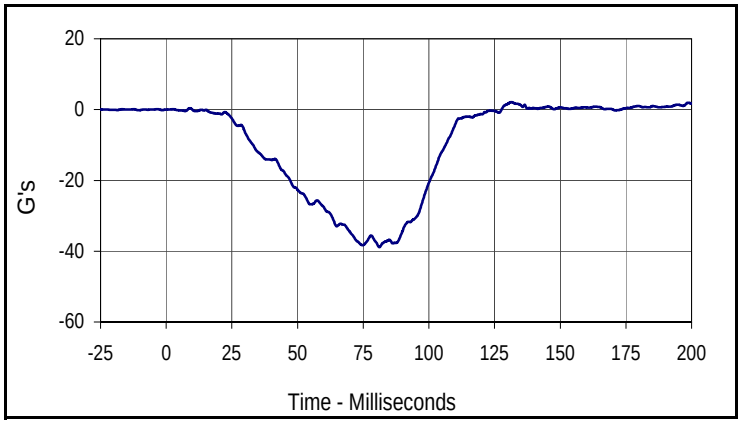


Curve Description			
Driver Head Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
004	RES	1000	G's
Max	Time	Min	Time
66.8	81.6	0.2	0.3

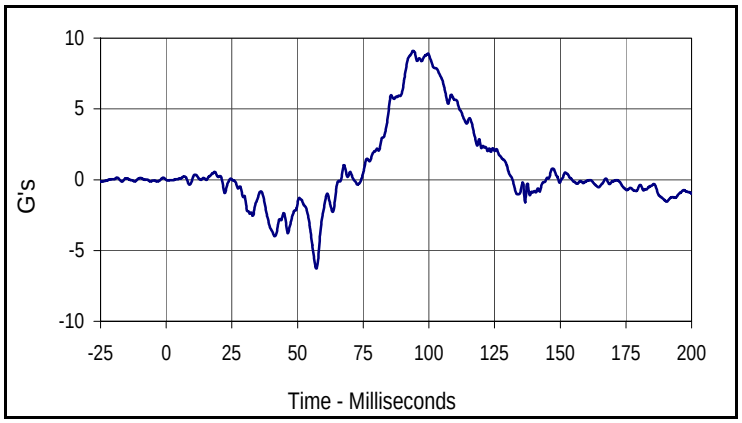
Test Vehicle:	2012 Ford SD F250 4X4 Crew Cab 4-Door Truck	NHTSA No.:	MC0207
Test Program:	56 km/h Frontal Impact NCAP Test	Test Date:	1/13/12



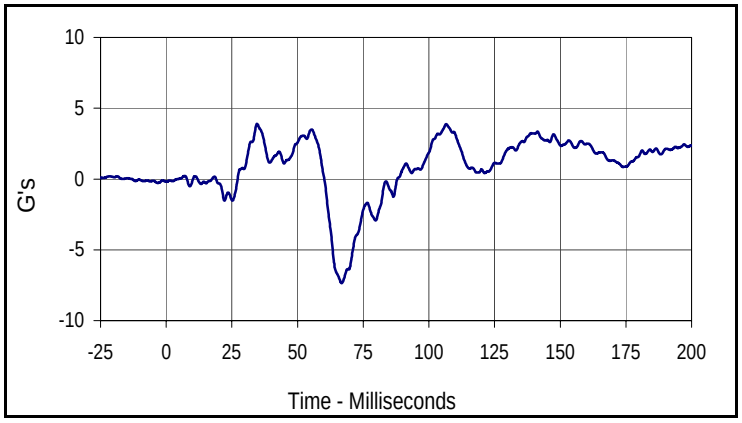
Curve Description			
Driver Chest Deflection			
Plot No.	Type	SAE Class	Units
005	FIL	180	MM
Max	Time	Min	Time
0.0	23.0	-29.6	82.1



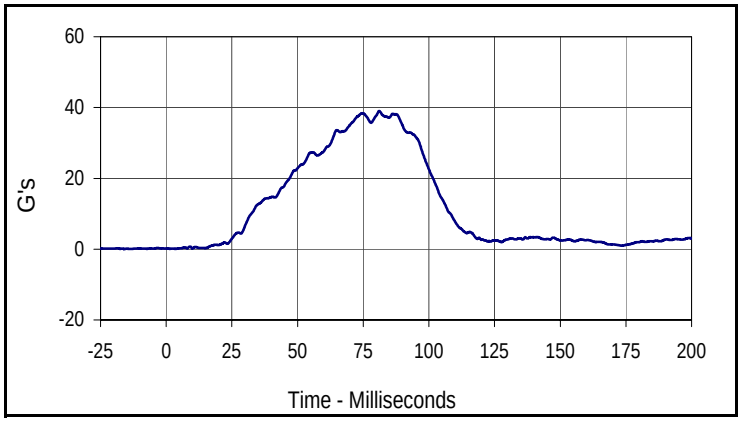
Curve Description			
Driver Chest Acceleration X Primary			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
2.1	131.5	-38.9	81.1



Curve Description			
Driver Chest Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
007	FIL	180	G's
Max	Time	Min	Time
9.1	93.9	-6.3	57.1

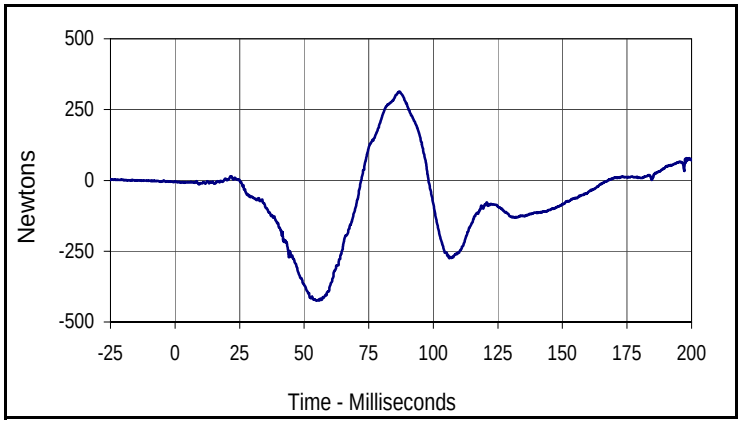


Curve Description			
Driver Chest Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
008	FIL	180	G's
Max	Time	Min	Time
3.9	34.6	-7.4	66.8

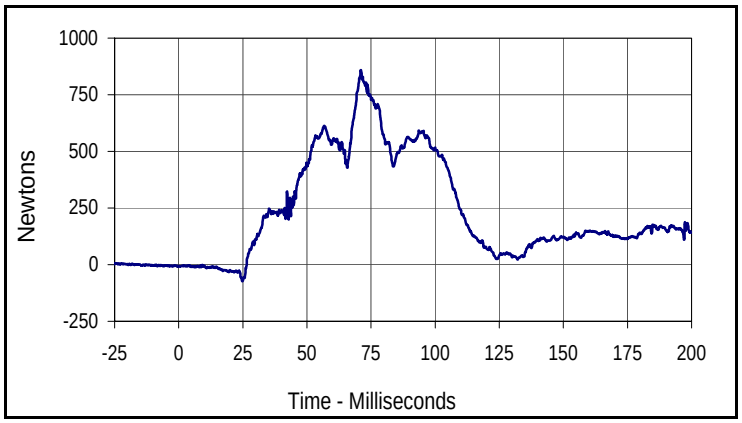


Curve Description			
Driver Chest Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
009	RES	180	G's
Max	Time	Min	Time
39.0	81.1	0.1	3.5

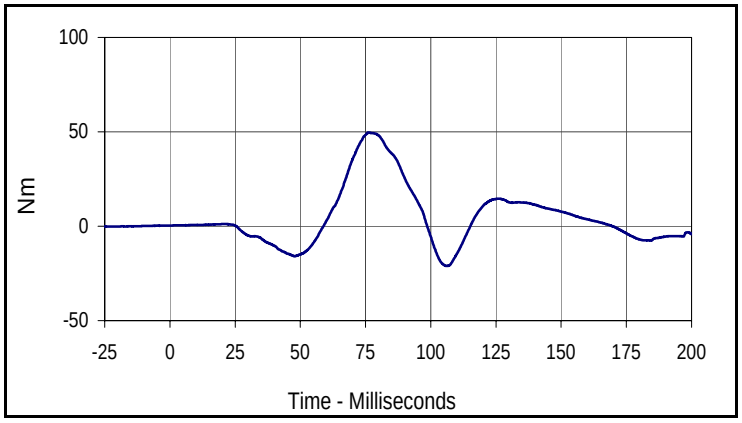
Test Vehicle:	2012 Ford SD F250 4X4 Crew Cab 4-Door Truck	NHTSA No.:	MC0207
Test Program:	56 km/h Frontal Impact NCAP Test	Test Date:	1/13/12



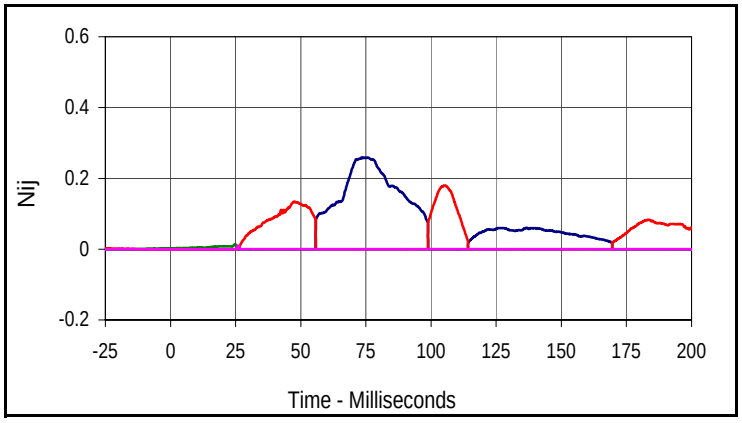
Curve Description			
Driver Upper Neck Force X			
Plot No.	Type	SAE Class	Units
010	FIL	1000	Newtons
Max	Time	Min	Time
313.0	87.0	-424.7	55.9



Curve Description			
Driver Upper Neck Force Z			
Plot No.	Type	SAE Class	Units
011	FIL	1000	Newtons
Max	Time	Min	Time
859.2	71.0	-73.6	24.8

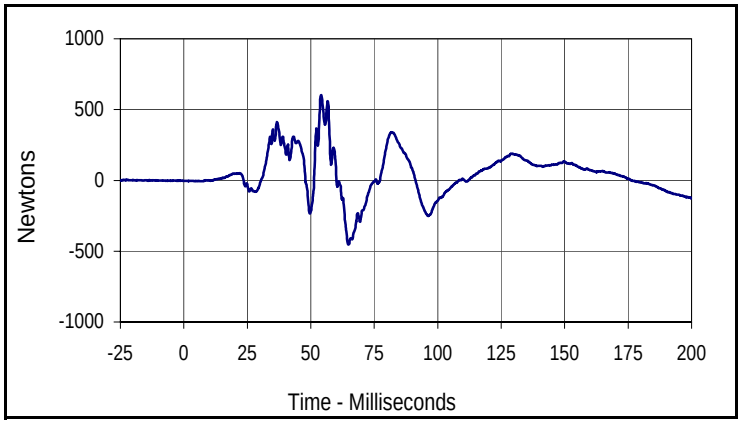


Curve Description			
Driver Upper Neck Moment Y			
Plot No.	Type	SAE Class	Units
012	FIL	600	Nm
Max	Time	Min	Time
49.6	76.5	-21.1	106.3

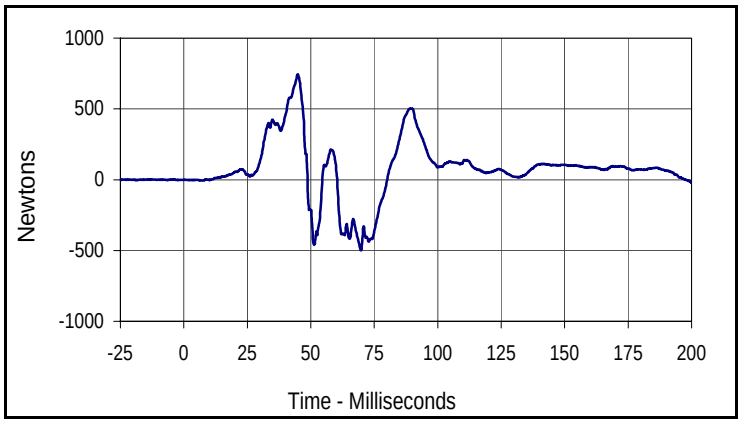


Curve Description			
Driver Nij			
Units	Type	Max	Time
Ntf	FIL	0.26	73.8
Units	Type	Max	Time
Nte	FIL	0.18	105.3
Units	Type	Max	Time
Ncf	FIL	0.06	265.0
Units	Type	Max	Time
Nce	FIL	0.01	25.8

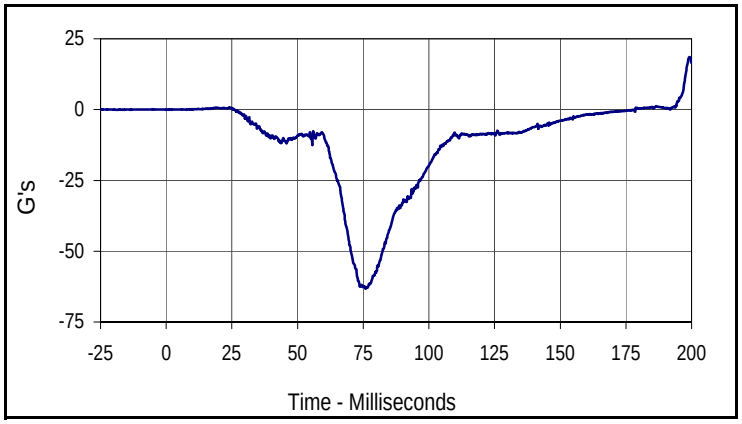
Test Vehicle:	2012 Ford SD F250 4X4 Crew Cab 4-Door Truck	NHTSA No.:	MC0207
Test Program:	56 km/h Frontal Impact NCAP Test	Test Date:	1/13/12



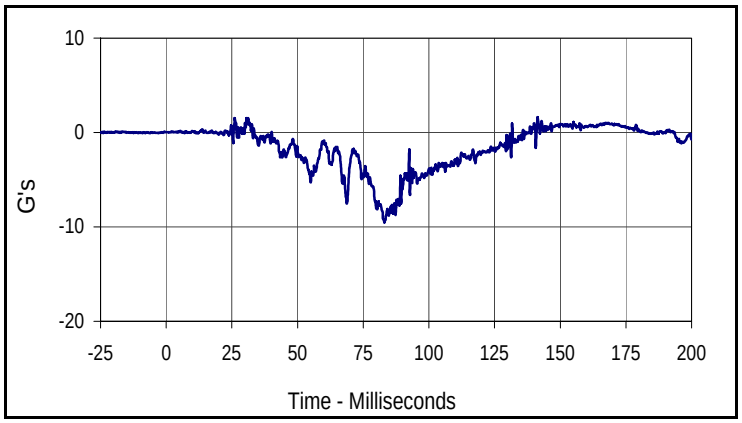
Curve Description			
Driver Left Femur Force Z			
Plot No.	Type	SAE Class	Units
013	FIL	600	Newtons
Max	Time	Min	Time
602.3	54.1	-454.1	64.8



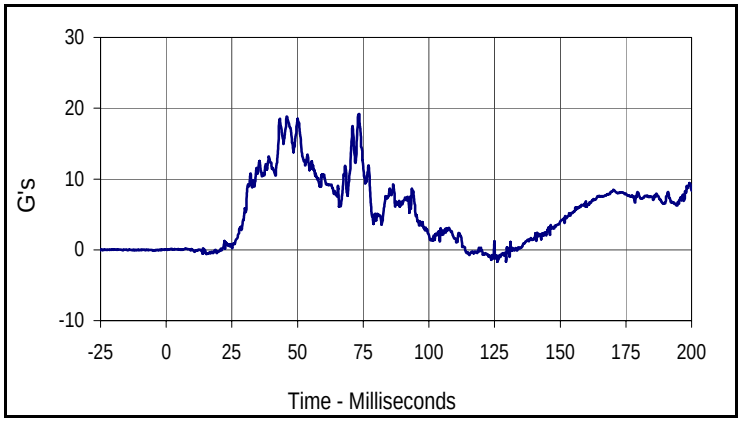
Curve Description			
Driver Right Femur Force Z			
Plot No.	Type	SAE Class	Units
014	FIL	600	Newtons
Max	Time	Min	Time
743.6	44.9	-499.3	69.8



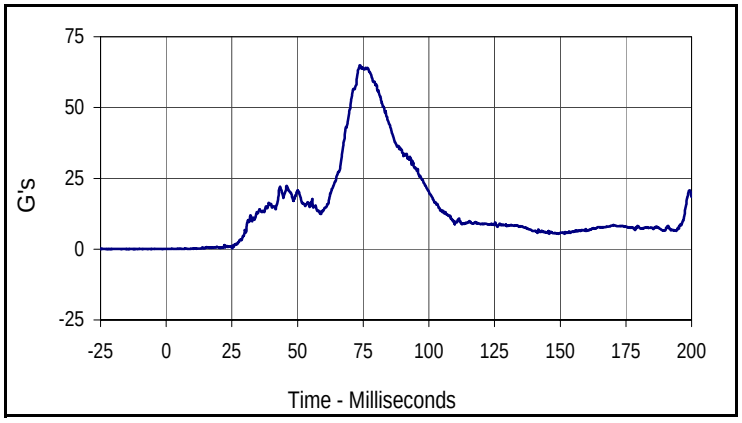
Curve Description			
Passenger Head Acceleration X Primary			
Plot No.	Type	SAE Class	Units
015	FIL	1000	G's
Max	Time	Min	Time
18.5	199.2	-63.2	75.9



Curve Description			
Passenger Head Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
016	FIL	1000	G's
Max	Time	Min	Time
1.6	141.4	-9.5	83.0

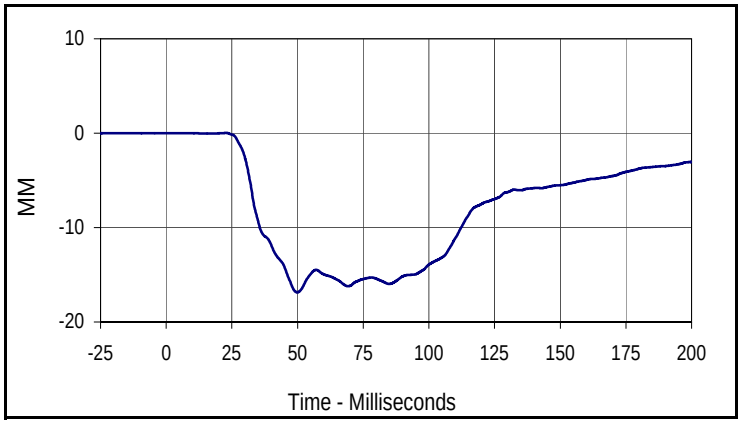


Curve Description			
Passenger Head Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
017	FIL	1000	G's
Max	Time	Min	Time
19.2	73.4	-1.7	126.1

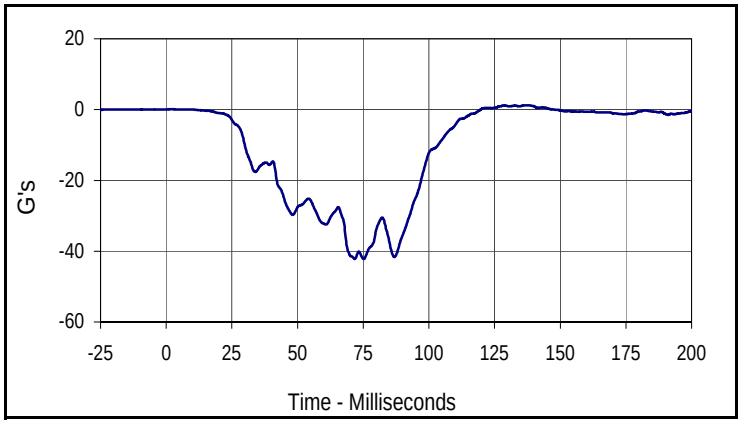


Curve Description			
Passenger Head Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
018	RES	1000	G's
Max	Time	Min	Time
65.0	73.8	0.0	0.6

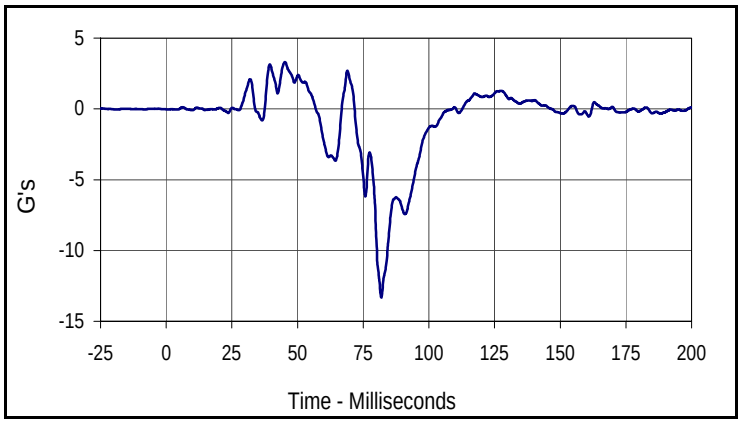
Test Vehicle:	2012 Ford SD F250 4X4 Crew Cab 4-Door Truck	NHTSA No.:	MC0207
Test Program:	56 km/h Frontal Impact NCAP Test	Test Date:	1/13/12



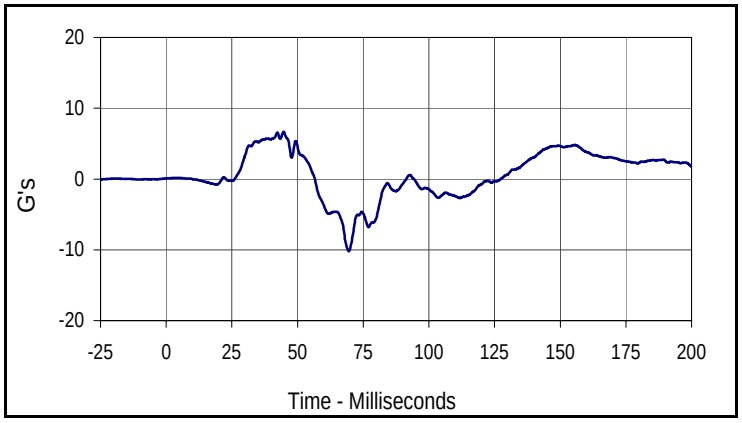
Curve Description			
Passenger Chest Deflection			
Plot No.	Type	SAE Class	Units
019	FIL	180	MM
Max	Time	Min	Time
0.0	22.8	-16.9	49.9



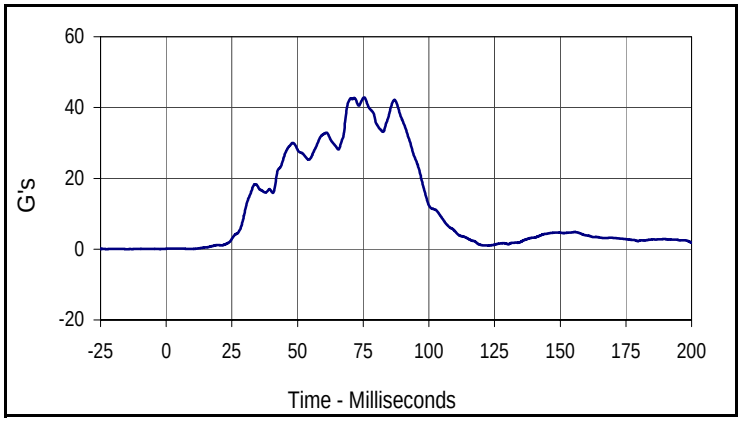
Curve Description			
Passenger Chest Acceleration X Primary			
Plot No.	Type	SAE Class	Units
020	FIL	180	G's
Max	Time	Min	Time
1.2	136.8	-42.2	75.2



Curve Description			
Passenger Chest Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
021	FIL	180	G's
Max	Time	Min	Time
3.3	45.2	-13.3	81.9

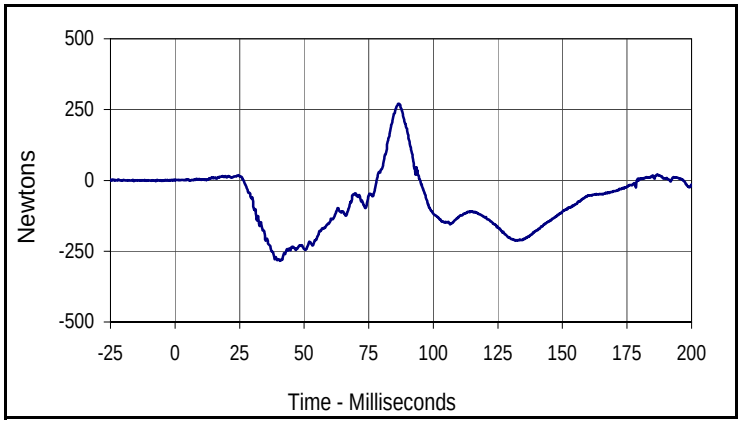


Curve Description			
Passenger Chest Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
022	FIL	180	G's
Max	Time	Min	Time
6.7	44.7	-10.2	69.5

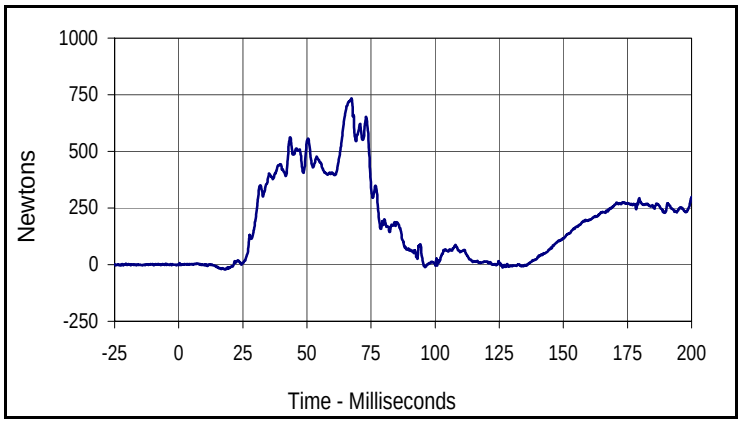


Curve Description			
Passenger Chest Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
023	RES	180	G's
Max	Time	Min	Time
42.9	75.3	0.1	10.7

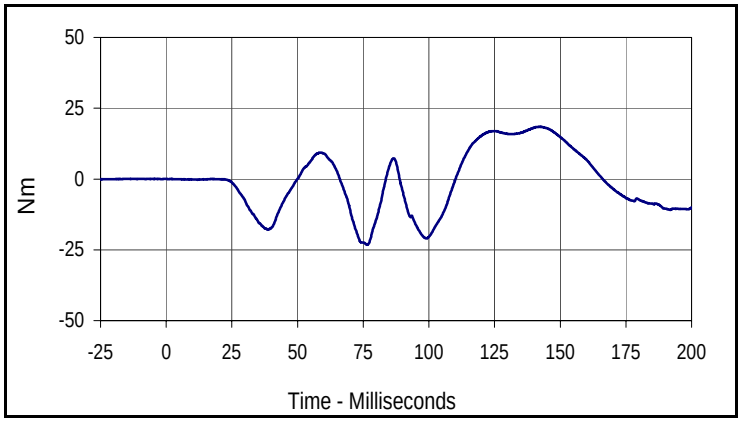
Test Vehicle:	2012 Ford SD F250 4X4 Crew Cab 4-Door Truck	NHTSA No.:	MC0207
Test Program:	56 km/h Frontal Impact NCAP Test	Test Date:	1/13/12



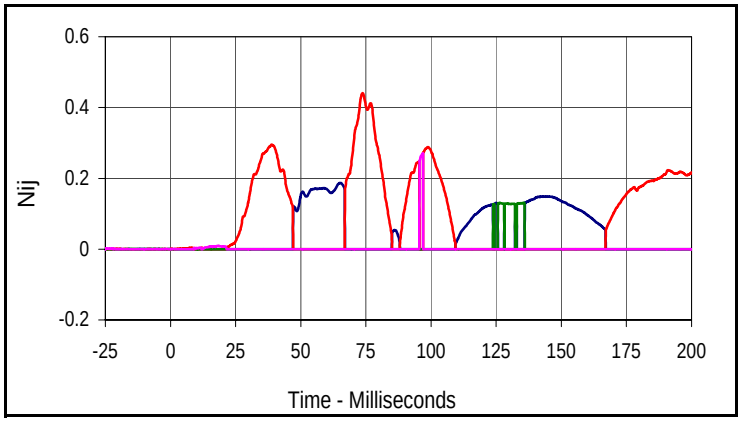
Curve Description			
Passenger Upper Neck Force X			
Plot No.	Type	SAE Class	Units
024	FIL	1000	Newtons
Max	Time	Min	Time
270.6	86.5	-283.7	40.6



Curve Description			
Passenger Upper Neck Force Z			
Plot No.	Type	SAE Class	Units
025	FIL	1000	Newtons
Max	Time	Min	Time
734.5	67.4	-20.6	18.3

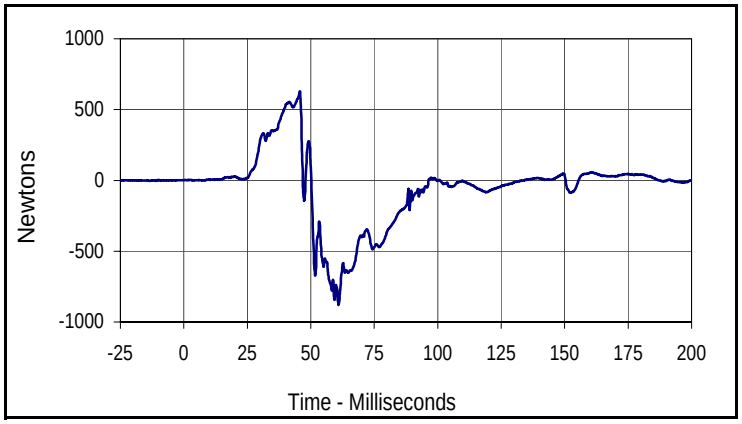


Curve Description			
Passenger Upper Neck Moment Y			
Plot No.	Type	SAE Class	Units
026	FIL	600	Nm
Max	Time	Min	Time
18.4	142.1	-23.2	76.5

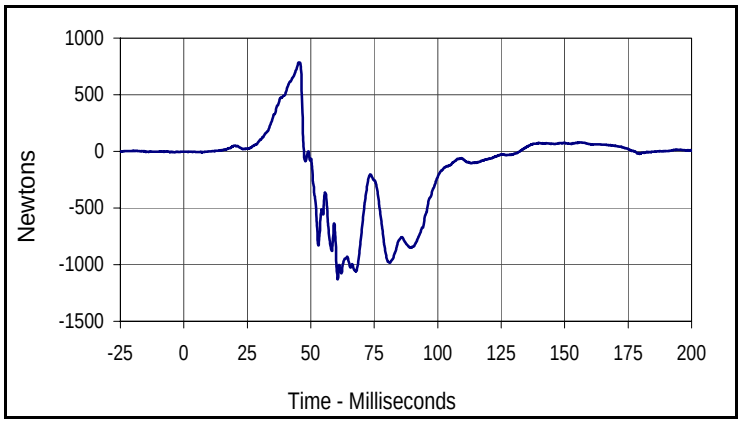


Curve Description			
Passenger Nij			
Units	Type	Max	Time
Ntf	FIL	0.19	65.3
Units	Type	Max	Time
Nte	FIL	0.44	73.7
Units	Type	Max	Time
Ncf	FIL	0.13	126.5
Units	Type	Max	Time
Nce	FIL	0.52	245.3

Test Vehicle:	2012 Ford SD F250 4X4 Crew Cab 4-Door Truck	NHTSA No.:	MC0207
Test Program:	56 km/h Frontal Impact NCAP Test	Test Date:	1/13/12



Curve Description			
Passenger Left Femur Force Z			
Plot No.	Type	SAE Class	Units
027	FIL	600	Newtons
Max	Time	Min	Time
628.3	45.7	-880.5	60.9



Curve Description			
Passenger Right Femur Force Z			
Plot No.	Type	SAE Class	Units
028	FIL	600	Newtons
Max	Time	Min	Time
786.6	45.3	-1129.5	60.6

APPENDIX C
DUMMY CALIBRATION AND PERFORMANCE VERIFICATION DATA

APPENDIX C
PRE-TEST / ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Test Program: Hybrid III 50th Percentile Male Dummy Damage Checklist Test Date: 1/12/12

ATD Serial No.: 034 Test I.D.: N/A

Dummy Item	Inspect for	Comments	Damaged	OK
Entire Dummy	Perform general cleaning			X
Outer Skin	Gashes, rips, cracks			X
Head	Ballast secure			X
	General appearance			X
Neck	Broken or cracked rubber			X
	Upper neck bracket firmly attached to the lower neck bracket			X
	Looseness at the condyle joint			X
	Nodding blocks cracked or out of position			X
Spine	Broken or cracks in rubber			X
Ribs	Broken or bent ribs			X
	Broken or bent rib supports			X
	Damping material separated or cracked			X
	Rubber bumpers in place			X
Chest Displacement Assembly	Bent shaft			X
	Slider arm riding in track			X
Transducer Leads	Torn cables			X
Accelerometer Mountings	Head mounting secure			X
	Chest mounting secure			X
Knees	Skin condition			X
	Insert (do not remove)			X
	Casting			X
Limbs	Normal movement and adjustment			X
Knee Sliders	Wires intact			X
	Rubber returned to "at rest" position			X
Pelvis	Broken			X
Other				X

Describe the repair on repair or replacement of parts:

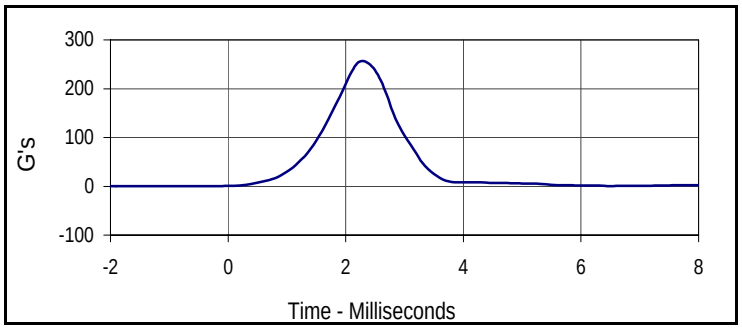
Test Program: Hybrid III 50th Percentile Male External Measurements Test Date: 1/12/12

ATD Serial No.: 034 Test I.D.: N/A

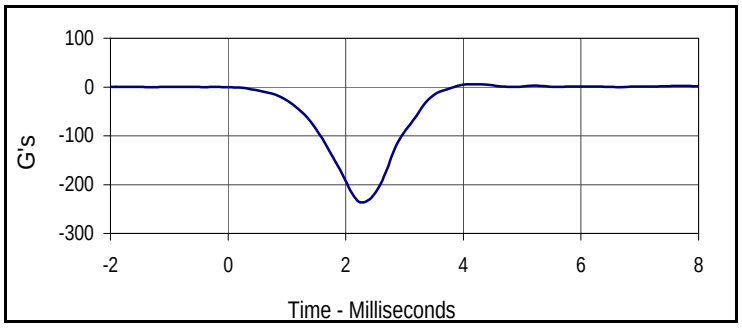
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.24	Pass
Laboratory Relative Humidity	%	10 to 70	28.0	Pass
A - Total sitting height	mm	879 to 889	883	Pass
B - Shoulder pivot height	mm	505 to 521	513	Pass
C - H point height	mm	84 to 89	89	Pass
D - H point location from backline	mm	135 to 140	136	Pass
E - Shoulder pivot from backline	mm	84 to 94	86	Pass
F - Thigh clearance	mm	140 to 155	149	Pass
G - Back of elbow to wrist pivot	mm	290 to 305	300	Pass
H - Head back to backline	mm	41 to 46	43	Pass
I - Shoulder to elbow length	mm	330 to 345	335	Pass
J - Elbow rest height	mm	190 to 211	204	Pass
K - Buttock to knee length	mm	579 to 604	589	Pass
L - Popliteal length	mm	429 to 455	436	Pass
M - Knee pivot height	mm	485 to 500	488	Pass
N - Buttock popliteal length	mm	452 to 477	472	Pass
O - Chest depth without jacket	mm	213 to 229	225	Pass
P - Foot length	mm	251 to 267	260	Pass
V - Shoulder breadth	mm	422 to 437	434	Pass
W - Foot breadth	mm	91 to 107	99	Pass
Y - Chest circumference (with chest jacket)	mm	970 to 1001	983	Pass
Z - Waist circumference	mm	836 to 866	864	Pass
AA - Location for chest circumference	mm	429 to 434	432	Pass
BB - Location for waist circumference	mm	226 to 231	230	Pass
		Overall Test Results		Pass

Test Program:	Hybrid III 50th Percentile Male Head Drop Test	Test Date:	1/12/12
ATD Serial No.:	034	Test I.D.:	M034HD027

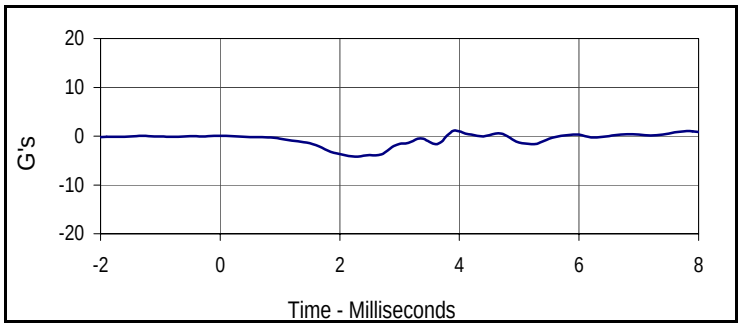
Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	255	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	40.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	28.1	Pass
Peak Resultant Acceleration		G's	225.0 to 275.0	256.9	Pass
Peak Lateral Acceleration		G's	≤15.0	4.2	Pass
Oscillations After Main Pulse		%	<10% of peak Res. Acceleration	3.3	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
			Overall Test Results		Pass



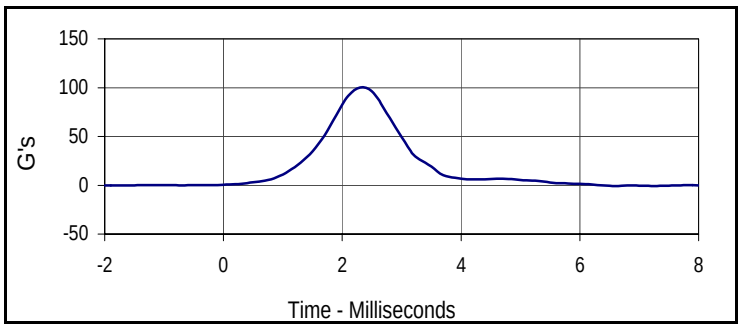
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
256.9	2.3	0.1	-1.4



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
5.6	4.2	-236.5	2.3



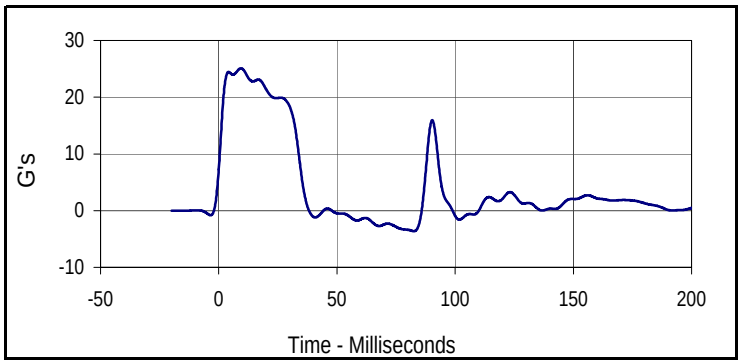
Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
1.1	3.9	-4.2	2.3



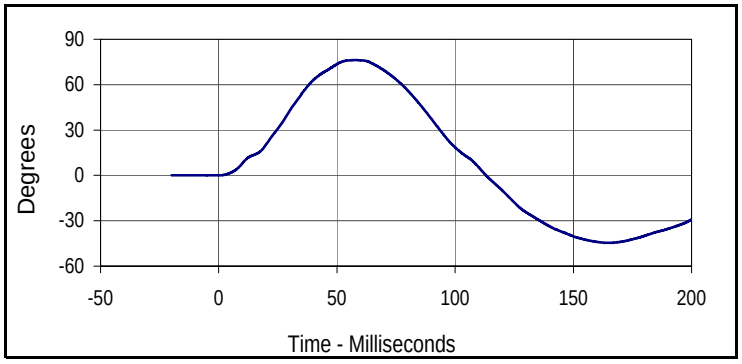
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
100.2	2.3	-0.2	-2.0

Test Program:	Hybrid III 50th Percentile Male Neck Flexion Test	Test Date:	1/12/12
ATD Serial No.:	034	Test I.D.:	M034NF027

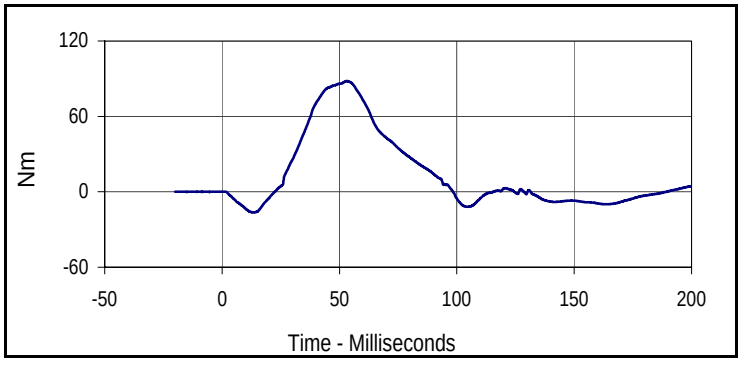
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	295	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	34.0	Pass
	Min	%		29.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	28.2	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.00	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	25.0	Pass
	20 Msec.	G's	17.6 to 22.6	21.4	Pass
	30 Msec.	G's	12.5 to 18.5	18.4	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	18.4	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	35.4	Pass
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	76.2	Pass
	Time	Msec.	57.0 to 64.0	57.3	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	113.1	Pass
Moment About Occ. Condyle	Max	Nm	84.1 to 108.5	88.1	Pass
	Time	Msec.	47.0 to 58.0	53.1	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	98.4	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
25.1	9.4	-3.6	82.6

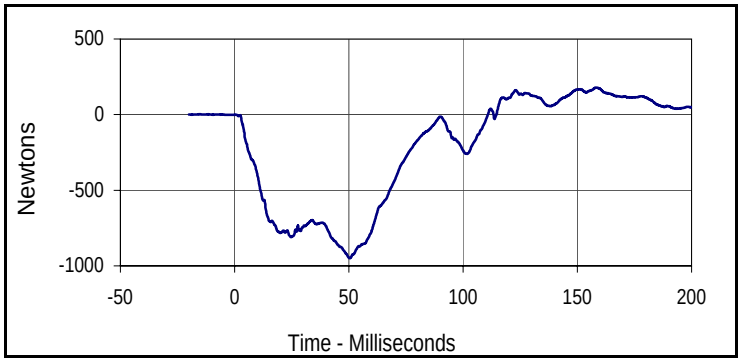


Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
76.2	57.3	-44.6	164.8

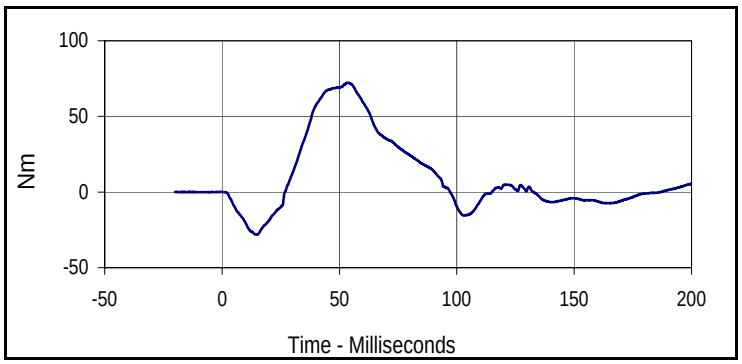


Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
88.1	53.1	-16.4	13.2

Test Program:	Hybrid III 50th Percentile Male Neck Flexion Test	Test Date:	1/12/12
ATD Serial No.:	034	Test I.D.:	M034NF027



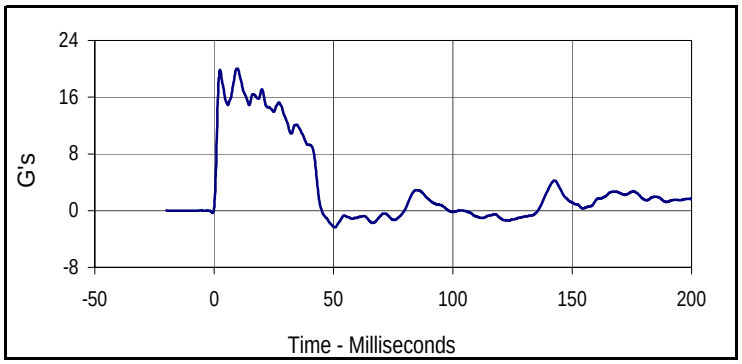
Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
179.4	158.4	-949.4	50.2



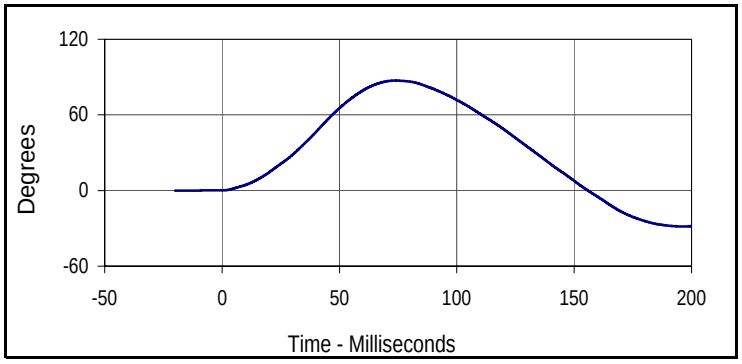
Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
72.2	53.2	-28.2	14.9

Test Program:	Hybrid III 50th Percentile Male Neck Extension Test	Test Date:	1/12/12
ATD Serial No.:	034	Test I.D.:	M034NE027

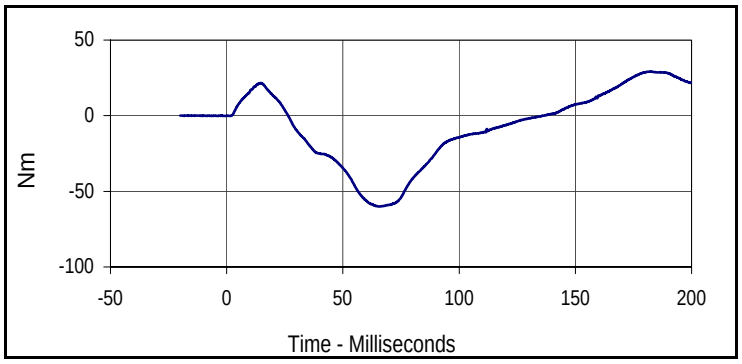
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	330	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	34.0	Pass
	Min	%		29.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	28.1	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.08	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	20.0	Pass
	20 Msec.	G's	14.0 to 19.0	17.1	Pass
	30 Msec.	G's	11.0 to 16.0	12.9	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	12.9	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	42.9	Pass
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	87.2	Pass
	Time	Msec.	72.0 to 82.0	73.8	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	155.8	Pass
Moment About Occ. Condyle	Max	Nm	-52.9 to -79.9	-60.1	Pass
	Time	Msec.	65.0 to 79.0	65.6	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	136.1	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
20.0	9.8	-2.4	50.6

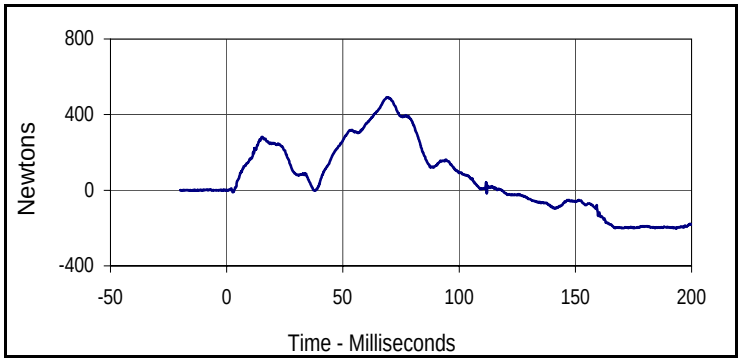


Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
87.2	73.8	-28.5	196.2

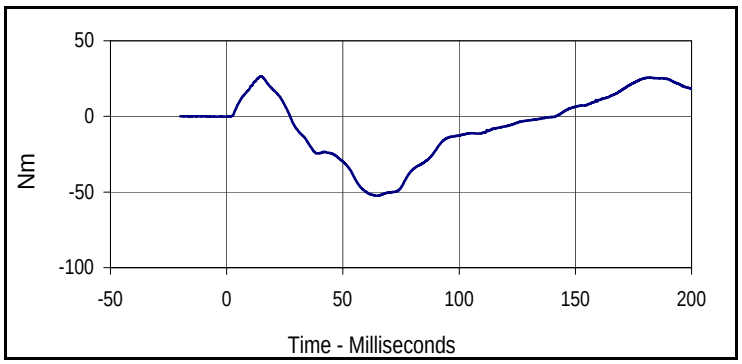


Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
29.2	182.5	-60.1	65.6

Test Program:	Hybrid III 50th Percentile Male Neck Extension Test	Test Date:	1/12/12
ATD Serial No.:	034	Test I.D.:	M034NE027



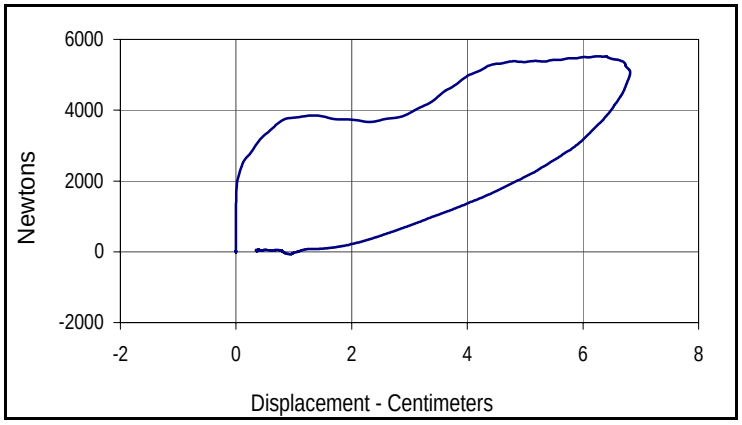
Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
492.0	68.9	-203.3	193.3



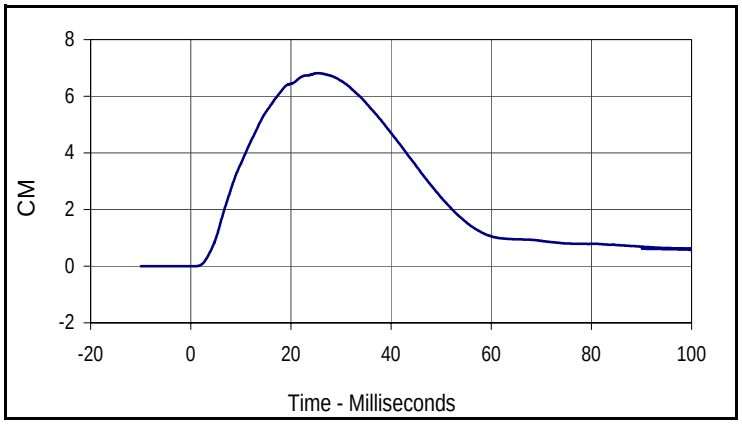
Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
26.4	14.8	-52.4	65.2

Test Program:	Hybrid III 50th Percentile Male Thorax Impact Test	Test Date:	1/12/12
ATD Serial No.:	034	Test I.D.:	M034CH027

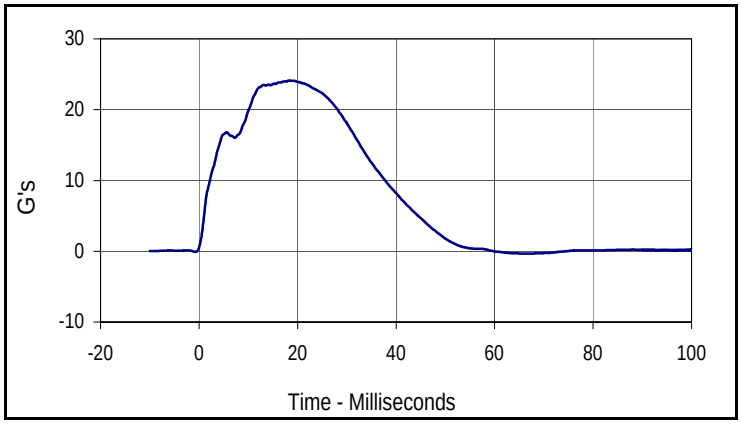
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	375	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	34.0	Pass
	Min	%		29.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	28.1	Pass
Probe Velocity		m/s	6.58 to 6.82	6.75	Pass
Peak Probe Force		Newtons	5159 to 5893	5523	Pass
Peak Sternum Deflection		CM	6.35 to 7.26	6.82	Pass
Internal Hysterysis		%	69 to 85	69.7	Pass
			Overall Test Results		Pass



Curve Description			
Probe Force vs. Chest Deflection			
Plot No.	Type	SAE Class	Hysterysis
001	FIL	180	69.7
Peak Probe Force		Peak Chest Deflection	
5523		6.82	



Curve Description			
Chest Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	180	CM
Max	Time	Min	Time
6.8	25.4	0.0	0.7



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
24.1	18.3	-0.3	66.4

Test Program:	Hybrid III 50th Percentile Male Knee Impact Test	Test Date:	1/12/12
ATD Serial No.:	034	Test I.D.:	M034LK027 , M034RK027

Left Knee

Tested Parameter		Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time		Minutes	≥240	280	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		20.6	Pass
Humidity During Soak	Max	%	10.0 to 70.0	34.0	Pass
	Min	%		29.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	28.1	Pass
Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force		Newtons	4715 to 5782	5045	Pass
			Overall Test Results		Pass

Right Knee

Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	Newtons	4715 to 5782	5010	Pass
		Overall Test Results		Pass

Curve Description			
Left Knee Probe Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
5044.5	2.2	-41.7	7.9

Curve Description			
Left Knee Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	600	G's
Max	Time	Min	Time
103.1	2.2	-0.9	7.9

Curve Description			
Right Knee Probe Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
5009.6	2.2	-43.0	7.5

Curve Description			
Right Knee Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	600	G's
Max	Time	Min	Time
102.4	2.2	-0.9	7.5

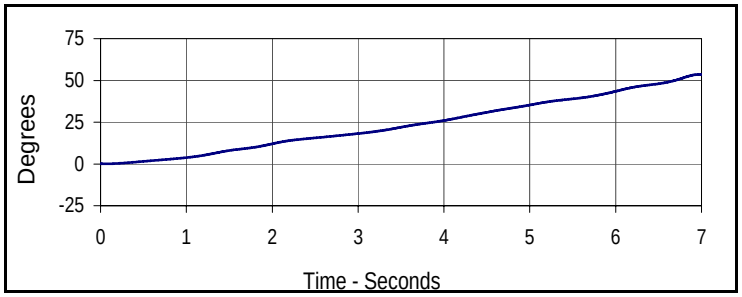
Test Program:	Hybrid III 50th Percentile Male Hip Joint-Femur Flexion Test	Test Date:	1/12/12
ATD Serial No.:	034	Test I.D.:	M034LF027 , M034RF027

Left Hip Joint-Femur Results

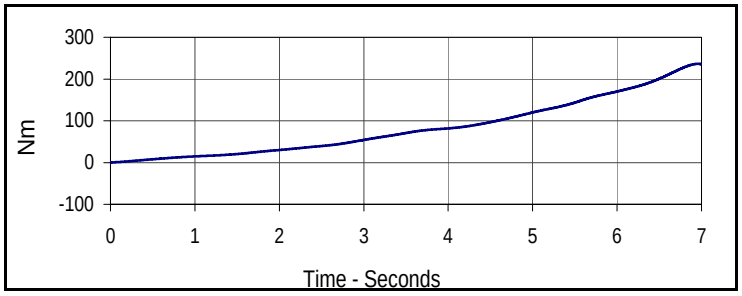
Tested Parameter		Units	Specification	Result	Pass/Fail
Hip Joint-Femur Assembly Soak Time		Minutes	≥240	395	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	34.0	Pass
	Min	%		29.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.0	Pass
Rotation Rate		deg/sec	5 to 10	7.7	Pass
Femur Torque at 30°		Nm	≤ 95	93.0	Pass
Rotation at 203 Nm		Degrees	40.0 to 50.0	48.2	Pass
			Overall Test Results		Pass

Right Hip Joint-Femur Results

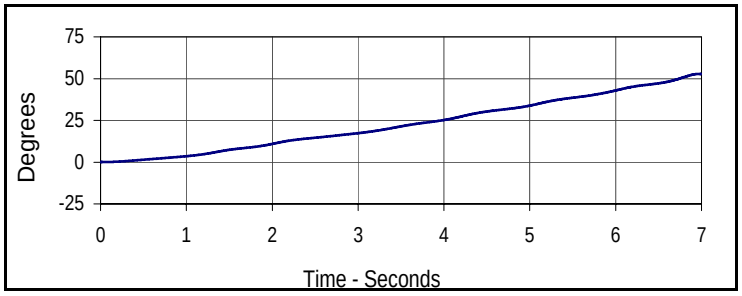
Rotation Rate	deg/sec	5 to 10	7.6	Pass
Femur Torque at 30°	Nm	≤ 95	86.1	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	47.4	Pass
		Overall Test Results		Pass



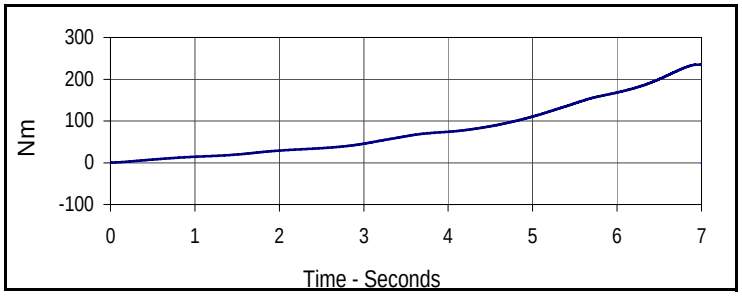
Curve Description			
Left Hip-Femur Rotation			
Plot No.	Type	SAE Class	Units
001	FIL	60	Degrees
Max	Time	Min	Time
53.6	7.0	0.0	0.0



Curve Description			
Left Femur Torque			
Plot No.	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
236.3	7.0	0.3	0.0



Curve Description			
Right Hip-Femur Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
52.8	7.0	0.0	0.0



Curve Description			
Right Femur Torque			
Plot No.	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
235.2	7.0	0.3	0.0

Test Program: Hybrid III 5th Percentile Female Dummy Damage Checklist Test Date: 1/12/12

ATD Serial No.: 141 Test I.D.: N/A

Dummy Item	Inspect for	Comments	Damaged	OK
Entire Dummy	Perform general cleaning			X
Outer Skin	Gashes, rips, cracks			X
Head	Ballast secure			X
	General appearance			X
Neck	Broken or cracked rubber			X
	Upper neck bracket firmly attached to the lower neck bracket			X
	Looseness at the condyle joint			X
	Nodding blocks cracked or out of position			X
Spine	Broken or cracks in rubber			X
Ribs	Broken or bent ribs			X
	Broken or bent rib supports			X
	Damping material separated or cracked			X
	Rubber bumpers in place			X
Chest Displacement Assembly	Bent shaft			X
	Slider arm riding in track			X
Transducer Leads	Torn cables			X
Accelerometer Mountings	Head mounting secure			X
	Chest mounting secure			X
Knees	Skin condition			X
	Insert (do not remove)			X
	Casting			X
Limbs	Normal movement and adjustment			X
Knee Sliders	Wires intact			X
	Rubber returned to "at rest" position			X
Pelvis	Broken			X
Other				X

Describe the repair on repair or replacement of parts:

Test Program: Hybrid III 5th Percentile Female External Measurements | Test Date: 1/12/12

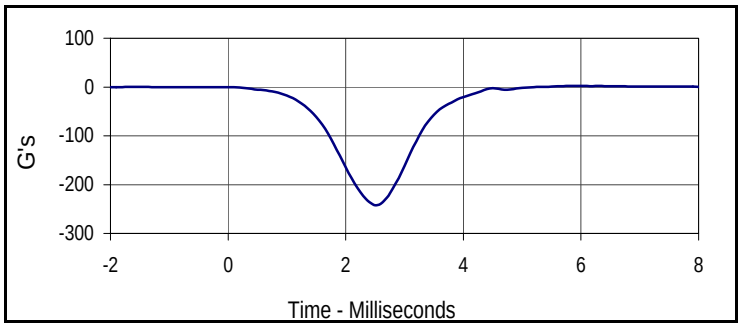
ATD Serial No.: 141 | Test I.D.: N/A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.15	Pass
Laboratory Relative Humidity	%	10 to 70	29.9	Pass
A - Total sitting height	mm	774.7 to 800.1	781	Pass
B - Shoulder pivot height	mm	431.8 to 457.2	452	Pass
C - H point height	mm	81.3 to 86.3	84	Pass
D - H point location from backline	mm	144.8 to 149.8	145	Pass
E - Shoulder pivot from backline	mm	68.6 to 83.8	79	Pass
F - Thigh clearance	mm	119.4 to 134.6	125	Pass
G - Back of elbow to wrist pivot	mm	243.9 to 259.1	250	Pass
H - Head back to backline	mm	40.7 to 45.7	44	Pass
I - Shoulder to elbow length	mm	276.8 to 297.2	285	Pass
J - Elbow rest height	mm	182.8 to 203.2	198	Pass
K - Buttock to knee length	mm	520.7 to 546.1	529	Pass
L - Popliteal length	mm	355.6 to 376.0	374	Pass
M - Knee pivot height	mm	393.7 to 419.1	399	Pass
N - Buttock popliteal length	mm	414.0 to 439.4	420	Pass
O - Chest depth without jacket	mm	175.3 to 190.5	185	Pass
P - Foot length	mm	218.5 to 233.7	221	Pass
R - Buttock to Knee Pivot Length	mm	457.2 to 482.6	475	Pass
S - Head Breadth	mm	137.1 to 147.3	144	Pass
T - Head Depth	mm	177.8 to 188.0	180	Pass
U - Hip Breadth	mm	299.7 to 314.9	300	Pass
V - Shoulder breadth	mm	350.5 to 365.7	359	Pass
W - Foot breadth	mm	78.8 to 94.0	90	Pass
X - Head circumference	mm	528.3 to 548.7	540	Pass
Y - Chest circumference (with chest jacket)	mm	850.8 to 881.3	860	Pass
Z - Waist circumference	mm	759.5 to 789.9	766	Pass
AA - Location for chest circumference	mm	299.7 to 309.9	300	Pass
BB - Location for waist circumference	mm	160.1 to 170.2	164	Pass
		Overall Test Results		Pass

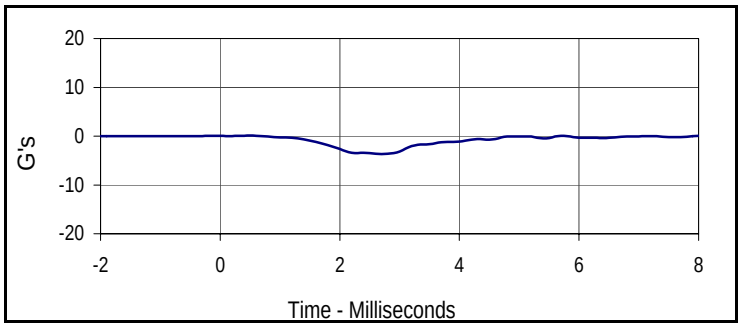
Test Program:	Hybrid III 5th Percentile Female Head Drop Test	Test Date:	1/12/12
ATD Serial No.:	141	Test I.D.:	F141HD031

Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	320	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	36.0	Pass
	Min	%		30.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.9	Pass
Peak Resultant Acceleration		G's	250.0 to 300.0	271.9	Pass
Peak Lateral Acceleration		G's	≤15.0	3.6	Pass
Oscillations After Main Pulse		%	<10% of peak Res. Acceleration	1.1	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
			Overall Test Results		Pass

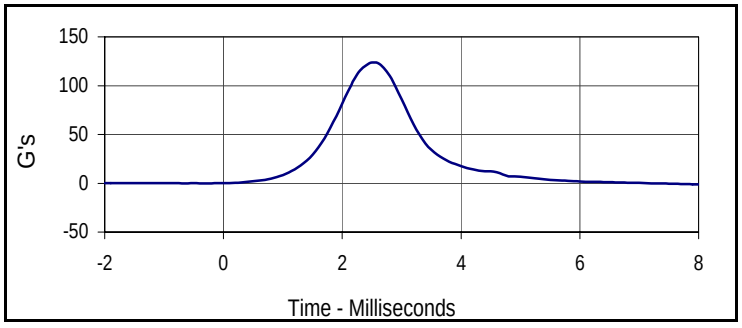
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
271.9	2.5	0.0	-2.0



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
2.4	5.9	-242.1	2.5



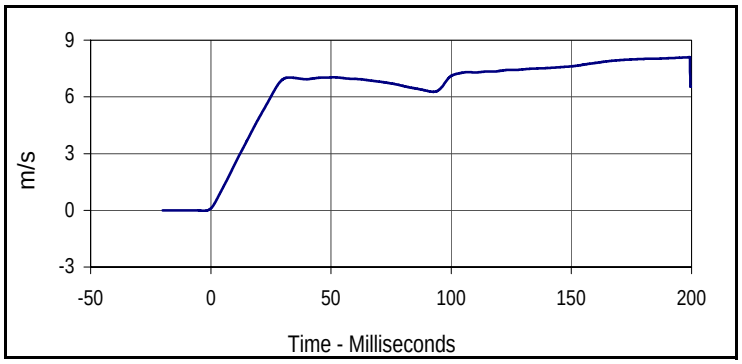
Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
0.1	0.5	-3.6	2.7



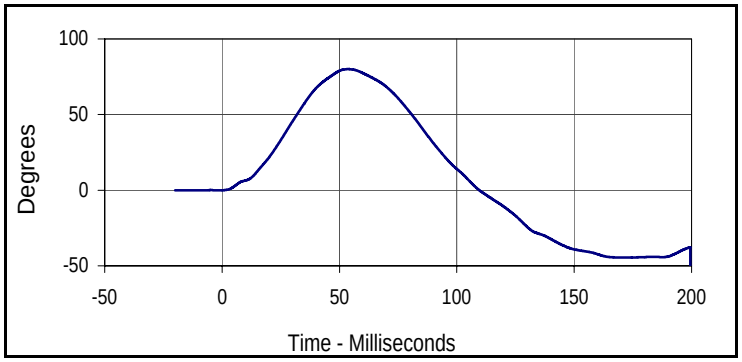
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
123.7	2.5	0.0	-0.7

Test Program:	Hybrid III 5th Percentile Female Neck Flexion Test	Test Date:	1/12/12
ATD Serial No.:	141	Test I.D.:	F141NF031

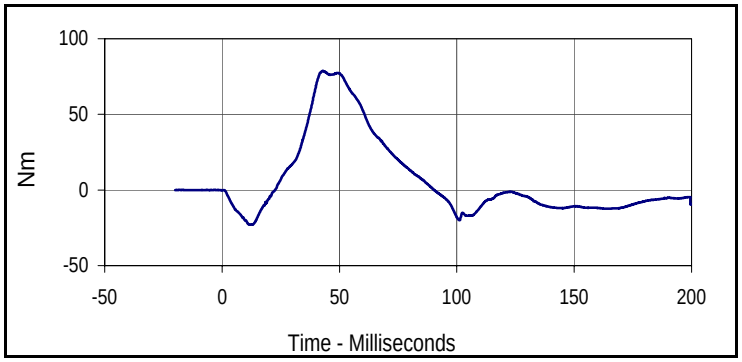
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	415	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	36.0	Pass
	Min	%		30.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.9	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.98	Pass
Pendulum Deceleration	10 Msec.	m/s	2.1 to 2.5	2.4	Pass
	20 Msec.	m/s	4.0 to 5.0	4.9	Pass
	30 Msec.	m/s	5.8 to 7.0	6.9	Pass
"D" Plane Rotation	Max	Degrees	77.0 to 91.0	80.0	Pass
Peak Moment in Rotation	Max	Nm	69.0 to 83.0	77.4	Pass
Positive Moment Decay, Time To 10 Nm		Msec.	80.0 to 100.0	81.6	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
8.1	199.4	0.0	-2.7

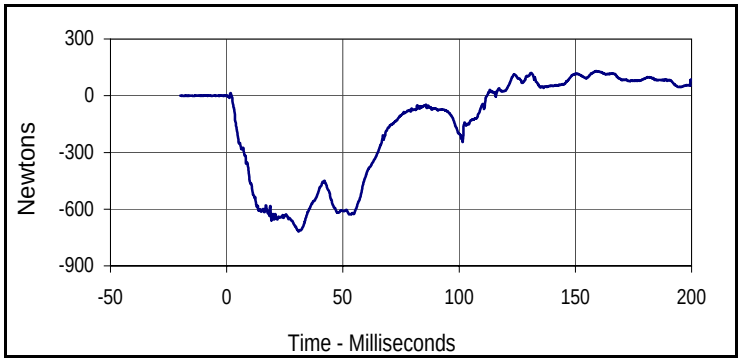


Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
80.0	53.6	-53.8	199.5

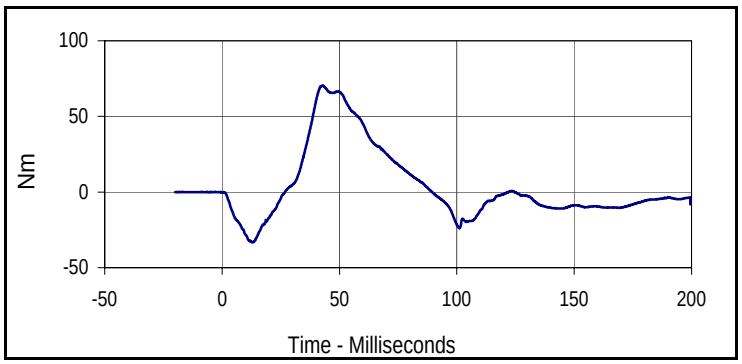


Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
78.7	42.9	-23.0	12.6

Test Program:	Hybrid III 5th Percentile Female Neck Flexion Test	Test Date:	1/12/12
ATD Serial No.:	141	Test I.D.:	F141NF031



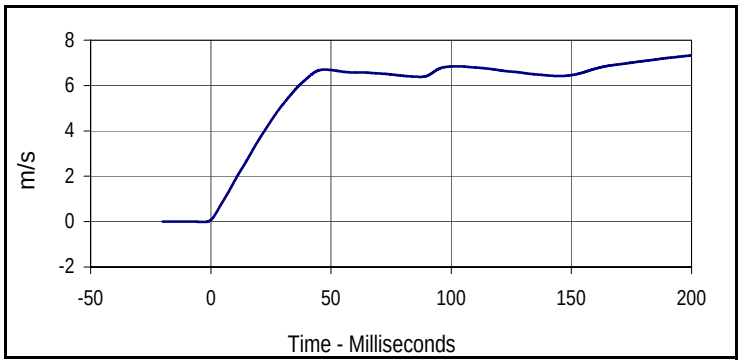
Curve Description			
Upper Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
130.7	158.9	-718.6	30.9



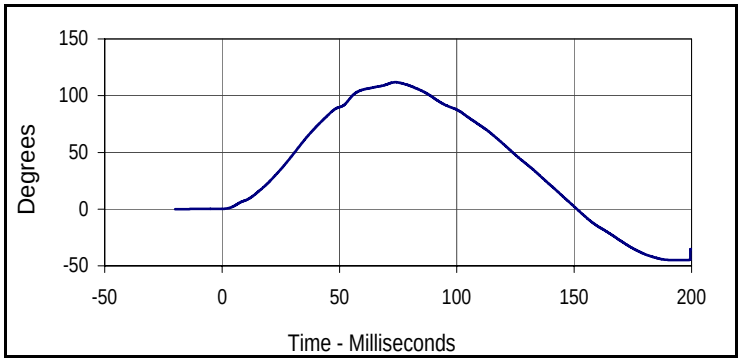
Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
70.4	42.7	-33.3	12.9

Test Program:	Hybrid III 5th Percentile Female Neck Extension Test	Test Date:	1/12/12
ATD Serial No.:	141	Test I.D.:	F141NE031

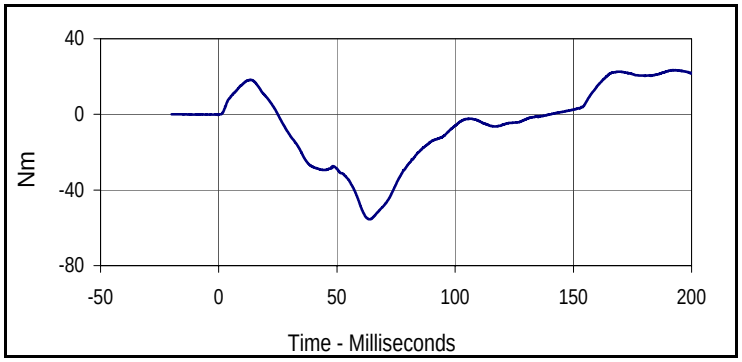
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	440	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.0	Pass
	Min	%		30.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.0	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.10	Pass
Pendulum Deceleration	10 Msec.	m/s	1.5 to 1.9	1.8	Pass
	20 Msec.	m/s	3.1 to 3.9	3.6	Pass
	30 Msec.	m/s	4.6 to 5.6	5.2	Pass
"D" Plane Rotation	Max	Degrees	99.0 to 114.0	111.8	Pass
Peak Moment in Rotation	Max	Nm	-53.0 to -65.0	-55.5	Pass
Positive Moment Decay, Time To -10 Nm		Msec.	94.0 to 114.0	96.4	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
7.3	200.0	0.0	-2.7

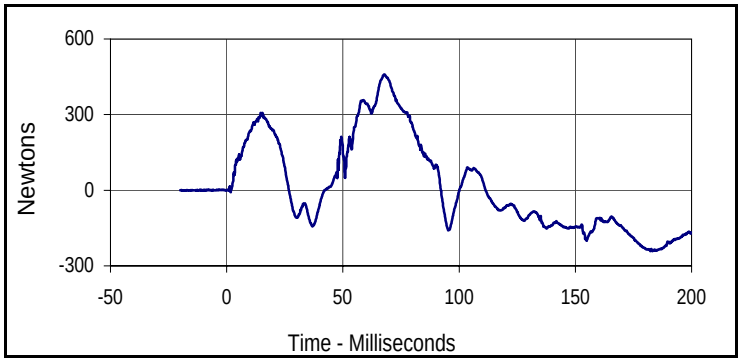


Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
111.8	73.8	-45.1	193.5

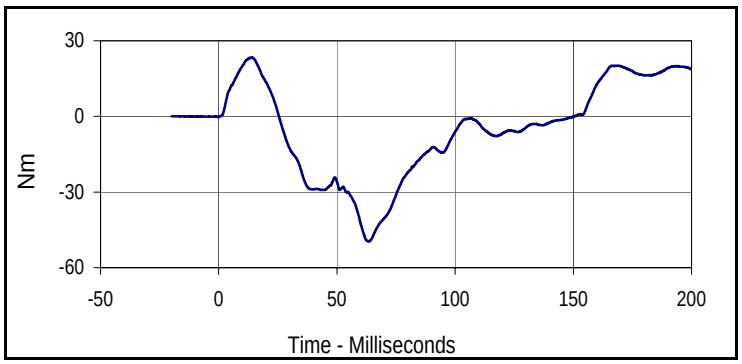


Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
23.4	193.0	-55.5	64.0

Test Program:	Hybrid III 5th Percentile Female Neck Extension Test	Test Date:	1/12/12
ATD Serial No.:	141	Test I.D.:	F141NE031



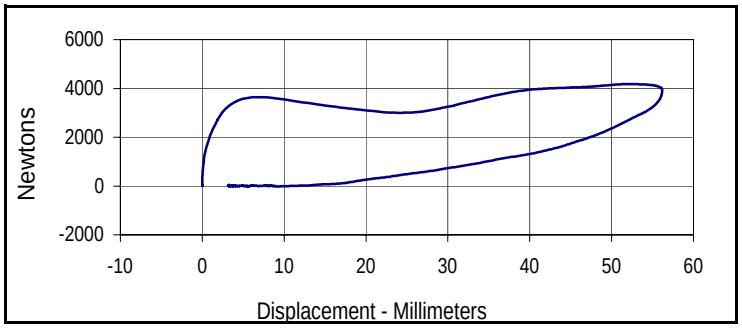
Curve Description			
Upper Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
459.0	67.9	-241.7	183.1



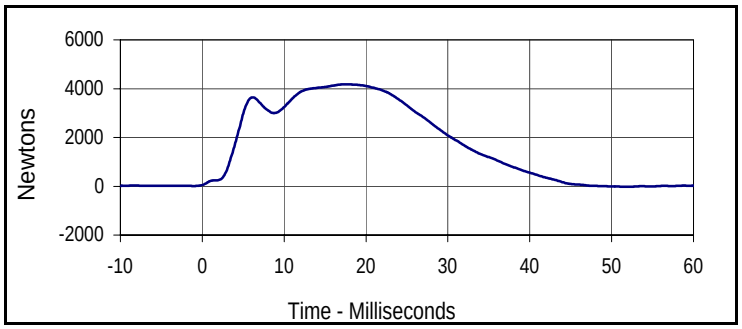
Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
23.4	13.9	-49.5	63.4

Test Program:	Hybrid III 5th Percentile Female Thorax Impact Test	Test Date:	1/12/12
ATD Serial No.:	141	Test I.D.:	F141CH031

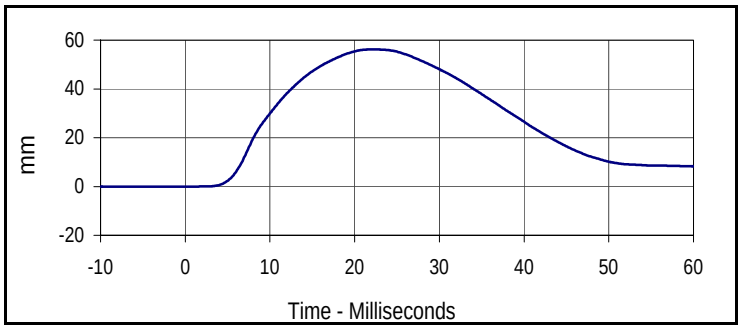
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	485	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.0	Pass
	Min	%		30.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.9	Pass
Probe Velocity		m/s	6.59 to 6.83	6.73	Pass
Peak Chest Deflection		mm	50.0 to 58.0	56.2	Pass
Peak Force Between 50 and 58 MM		Newtons	3900 to 4400	4142	Pass
Peak Force Between 18 and 50 MM		Newtons	≤4600	4181	Pass
Internal Hysterysis		%	69 to 85	73.9	Pass
			Overall Test Results		Pass



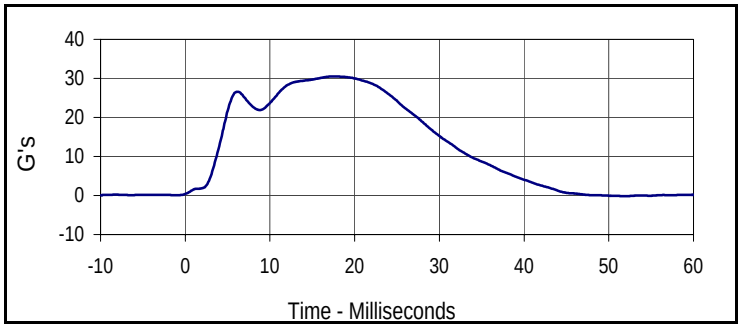
Curve Description			
Probe Force vs. Chest Deflection			
Plot No.	Type	SAE Class	Hysterysis
001	FIL	180	73.9
Peak Probe Force		Peak Chest Deflection	
4181.3		56.2	



Curve Description			
Probe Force			
Plot No.	Type	SAE Class	Units
002	FIL	180	Newtons
Max	Time	Min	Time
4181.3	17.4	-23.1	51.9



Curve Description			
Chest Deflection			
Plot No.	Type	SAE Class	Units
003	FIL	600	mm
Max	Time	Min	Time
56.2	22.2	0.0	-4.3



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
30.5	17.4	-0.2	51.9

Test Program:	Hybrid III 5th Percentile Female Knee Impact Test	Test Date:	1/12/12
ATD Serial No.:	141	Test I.D.:	F141LK031 , F141LK031

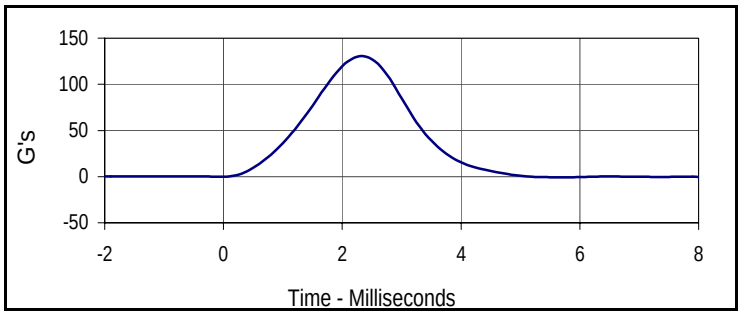
Left Knee

Tested Parameter		Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time		Minutes	≥240	515	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.0	Pass
	Min	%		30.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.9	Pass
Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force		Newtons	3450 to 4060	3828	Pass
			Overall Test Results		Pass

Right Knee

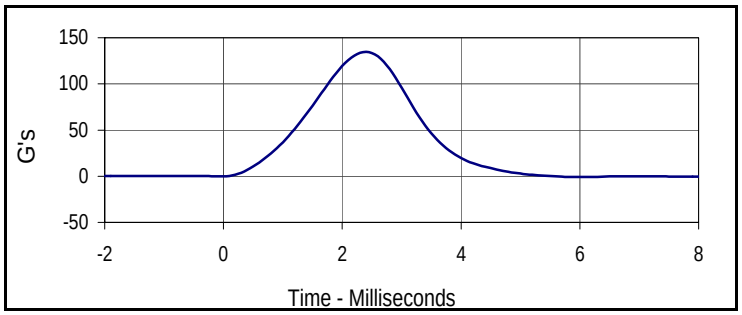
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force	Newtons	3450 to 4060	3945	Pass
		Overall Test Results		Pass

Curve Description			
Left Knee Probe Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3828.4	2.3	-27.9	5.7



Curve Description			
Left Knee Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	600	G's
Max	Time	Min	Time
130.6	2.3	-1.0	5.7

Curve Description			
Right Knee Probe Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
3944.9	2.4	-25.7	6.1



Curve Description			
Right Knee Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	600	G's
Max	Time	Min	Time
134.6	2.4	-0.9	6.1

Test Program:	Hybrid III 5th Percentile Female Torso Flexion Test		Test Date:	1/12/12	
ATD Serial No.:	141		Test I.D.:	F141TF031	

Left Hip Joint-Femur Results

Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	535	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.0	Pass
	Min	%		30.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.9	Pass
Initial Reference Plane Angle		Degrees	≤ 20	9.1	Pass
Peak Force at 45° +/-0.5°		Newtons	320.0 to 390.0	348.9	Pass
Torso Rotation Rate		deg/sec	0.5 to 1.5	1.2	Pass
Final Reference Plane Angle		Degrees	+/-8	4.0	Pass
			Overall Test Results		Pass

APPENDIX C
POST-TEST / ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Test Program: Hybrid III 50th Percentile Male Dummy Damage Checklist Test Date: 1/14/12

ATD Serial No.: 034 Test I.D.: N/A

Dummy Item	Inspect for	Comments	Damaged	OK
Entire Dummy	Perform general cleaning			X
Outer Skin	Gashes, rips, cracks			X
Head	Ballast secure			X
	General appearance			X
Neck	Broken or cracked rubber			X
	Upper neck bracket firmly attached to the lower neck bracket			X
	Looseness at the condyle joint			X
	Nodding blocks cracked or out of position			X
Spine	Broken or cracks in rubber			X
Ribs	Broken or bent ribs			X
	Broken or bent rib supports			X
	Damping material separated or cracked			X
	Rubber bumpers in place			X
Chest Displacement Assembly	Bent shaft			X
	Slider arm riding in track			X
Transducer Leads	Torn cables			X
Accelerometer Mountings	Head mounting secure			X
	Chest mounting secure			X
Knees	Skin condition			X
	Insert (do not remove)			X
	Casting			X
Limbs	Normal movement and adjustment			X
Knee Sliders	Wires intact			X
	Rubber returned to "at rest" position			X
Pelvis	Broken			X
Other				X

Describe the repair on repair or replacement of parts:

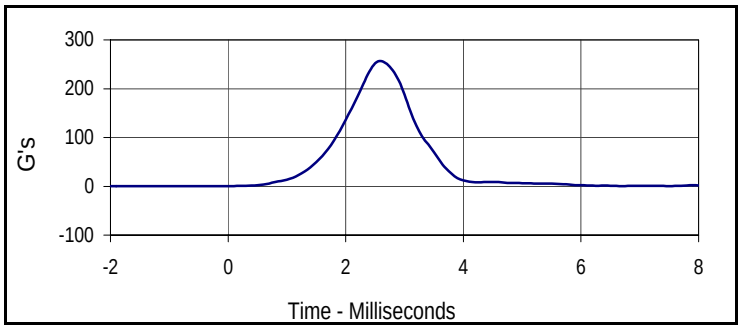
Test Program: Hybrid III 50th Percentile Male External Measurements Test Date: 1/14/12

ATD Serial No.: 034 Test I.D.: N/A

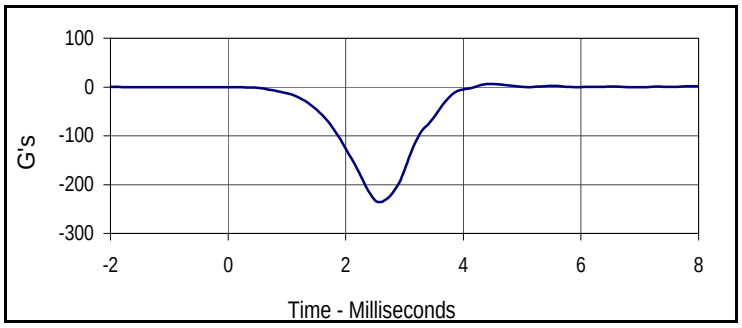
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.22	Pass
Laboratory Relative Humidity	%	10 to 70	28.2	Pass
A - Total sitting height	mm	879 to 889	884	Pass
B - Shoulder pivot height	mm	505 to 521	514	Pass
C - H point height	mm	84 to 89	89	Pass
D - H point location from backline	mm	135 to 140	136	Pass
E - Shoulder pivot from backline	mm	84 to 94	86	Pass
F - Thigh clearance	mm	140 to 155	149	Pass
G - Back of elbow to wrist pivot	mm	290 to 305	300	Pass
H - Head back to backline	mm	41 to 46	43	Pass
I - Shoulder to elbow length	mm	330 to 345	335	Pass
J - Elbow rest height	mm	190 to 211	203	Pass
K - Buttock to knee length	mm	579 to 604	589	Pass
L - Popliteal length	mm	429 to 455	436	Pass
M - Knee pivot height	mm	485 to 500	487	Pass
N - Buttock popliteal length	mm	452 to 477	472	Pass
O - Chest depth without jacket	mm	213 to 229	224	Pass
P - Foot length	mm	251 to 267	260	Pass
V - Shoulder breadth	mm	422 to 437	434	Pass
W - Foot breadth	mm	91 to 107	99	Pass
Y - Chest circumference (with chest jacket)	mm	970 to 1001	983	Pass
Z - Waist circumference	mm	836 to 866	864	Pass
AA - Location for chest circumference	mm	429 to 434	432	Pass
BB - Location for waist circumference	mm	226 to 231	230	Pass
		Overall Test Results		Pass

Test Program:	Hybrid III 50th Percentile Male Head Drop Test	Test Date:	1/14/12
ATD Serial No.:	034	Test I.D.:	M034HD028

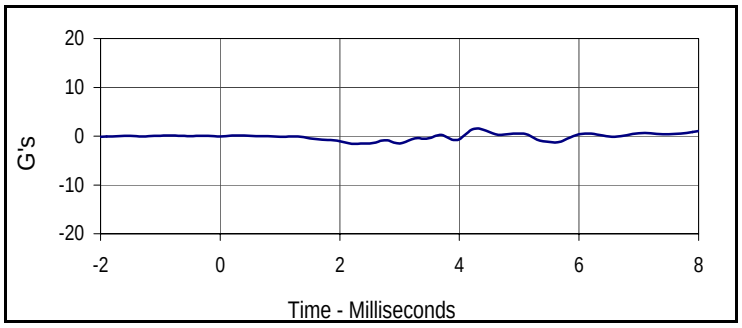
Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	240	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	40.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.0	Pass
Peak Resultant Acceleration		G's	225.0 to 275.0	256.7	Pass
Peak Lateral Acceleration		G's	≤15.0	1.6	Pass
Oscillations After Main Pulse		%	<10% of peak Res. Acceleration	4.7	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
			Overall Test Results		Pass



Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
256.7	2.6	0.1	-1.4



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
6.3	4.5	-235.8	2.6

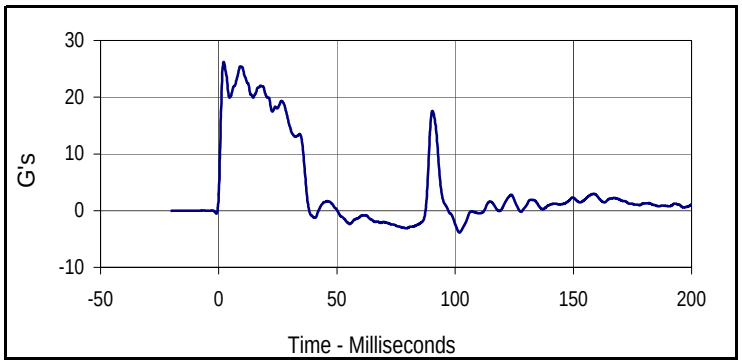


Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
1.6	4.3	-1.6	2.3

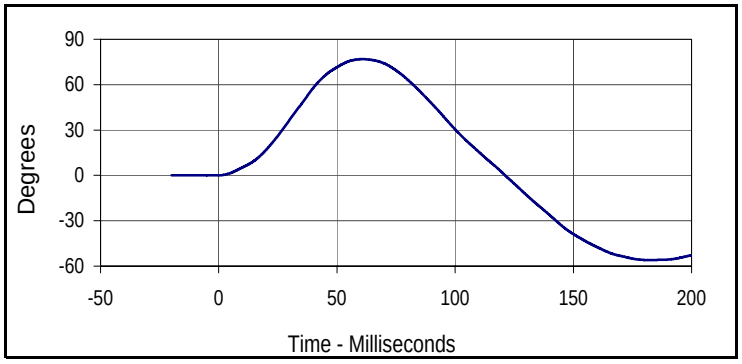
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
101.2	2.6	-0.4	-1.9

Test Program:	Hybrid III 50th Percentile Male Neck Flexion Test	Test Date:	1/14/12
ATD Serial No.:	034	Test I.D.:	M034NF028

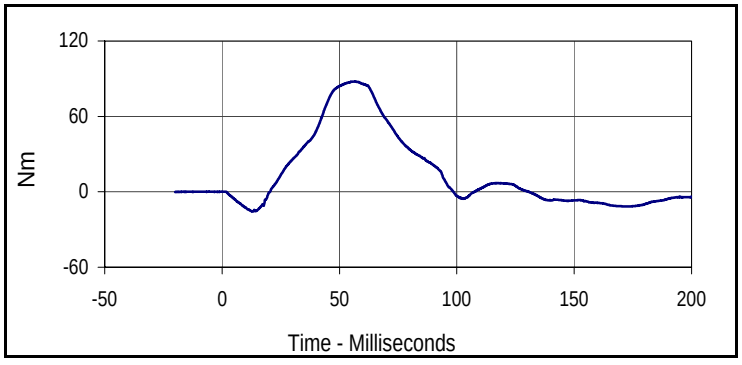
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	295	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	34.0	Pass
	Min	%		29.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.1	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.96	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	25.3	Pass
	20 Msec.	G's	17.6 to 22.6	20.3	Pass
	30 Msec.	G's	12.5 to 18.5	14.9	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	17.6	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	36.8	Pass
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	76.9	Pass
	Time	Msec.	57.0 to 64.0	60.7	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	121.2	Pass
Moment About Occ. Condyle	Max	Nm	84.1 to 108.5	87.8	Pass
	Time	Msec.	47.0 to 58.0	56.9	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	98.6	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
26.2	2.1	-3.9	101.8

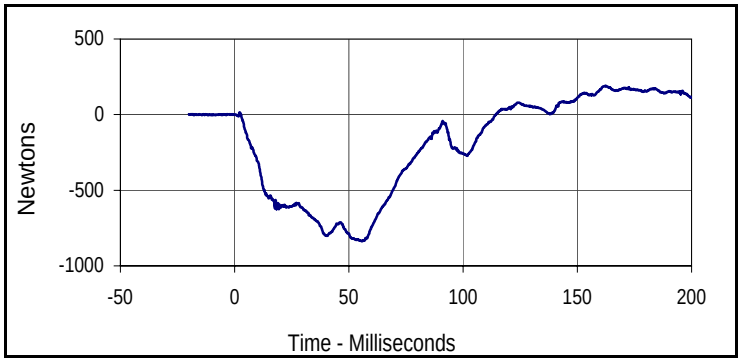


Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
76.9	60.7	-55.9	181.7

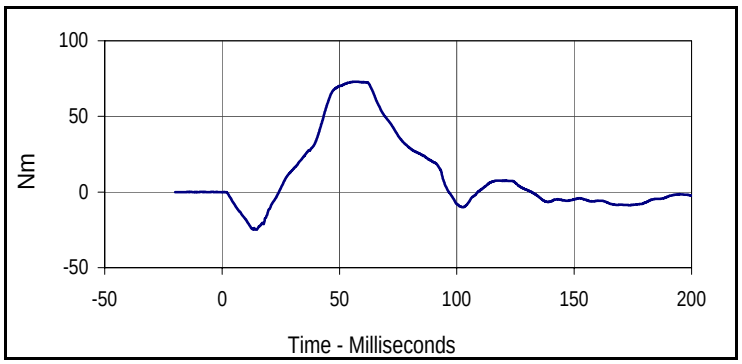


Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
87.8	56.9	-15.7	13.1

Test Program:	Hybrid III 50th Percentile Male Neck Flexion Test	Test Date:	1/14/12
ATD Serial No.:	034	Test I.D.:	M034NF028



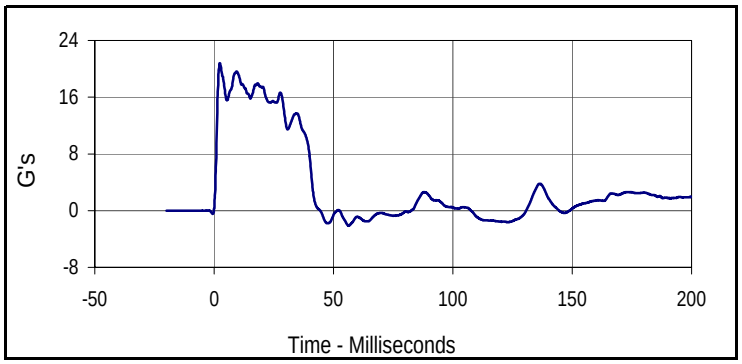
Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
190.6	162.3	-836.4	55.9



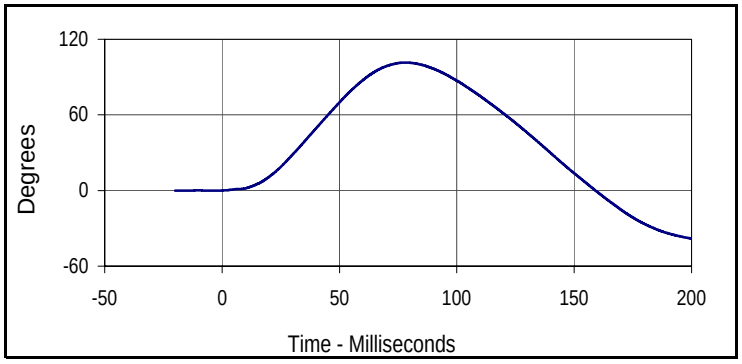
Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
73.0	57.0	-24.9	14.1

Test Program:	Hybrid III 50th Percentile Male Neck Extension Test	Test Date:	1/14/12
ATD Serial No.:	034	Test I.D.:	M034NE028

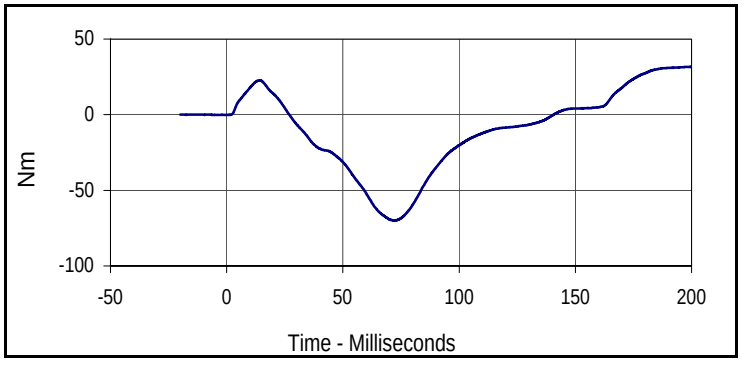
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	310	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	34.0	Pass
	Min	%		29.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.0	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.08	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	19.3	Pass
	20 Msec.	G's	14.0 to 19.0	17.4	Pass
	30 Msec.	G's	11.0 to 16.0	12.3	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	13.7	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	40.8	Pass
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	101.5	Pass
	Time	Msec.	72.0 to 82.0	78.0	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	159.1	Pass
Moment About Occ. Condyle	Max	Nm	-52.9 to -79.9	-70.1	Pass
	Time	Msec.	65.0 to 79.0	72.1	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	140.7	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
20.8	2.4	-2.1	56.3

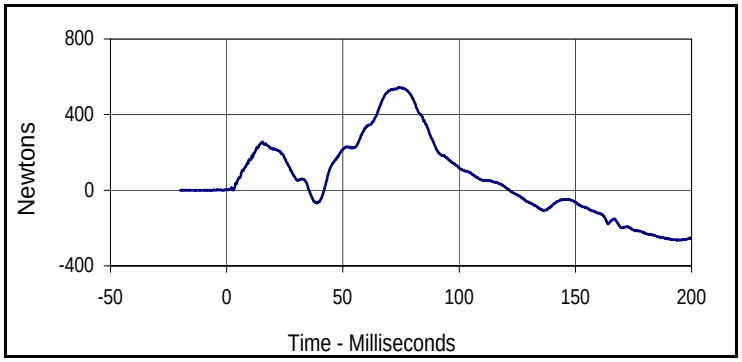


Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
101.5	78.0	-38.0	200.0

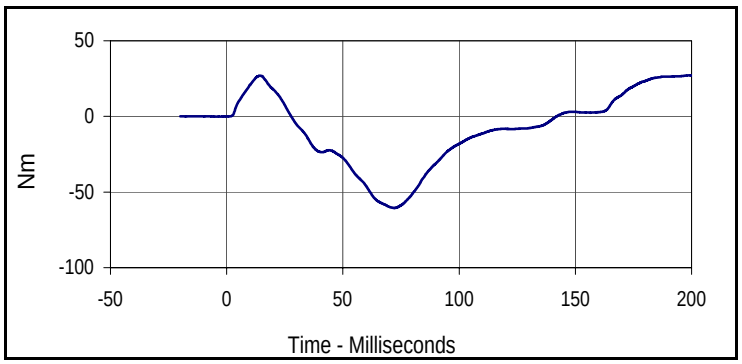


Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
31.7	198.5	-70.1	72.1

Test Program:	Hybrid III 50th Percentile Male Neck Extension Test	Test Date:	1/14/12
ATD Serial No.:	034	Test I.D.:	M034NE028



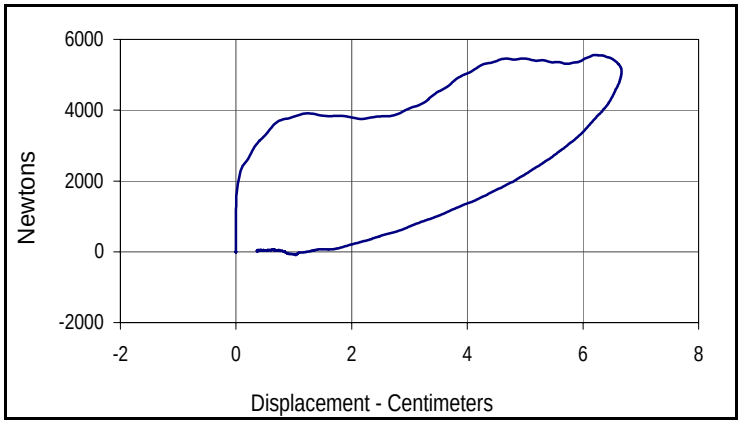
Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
543.0	73.7	-265.4	195.1



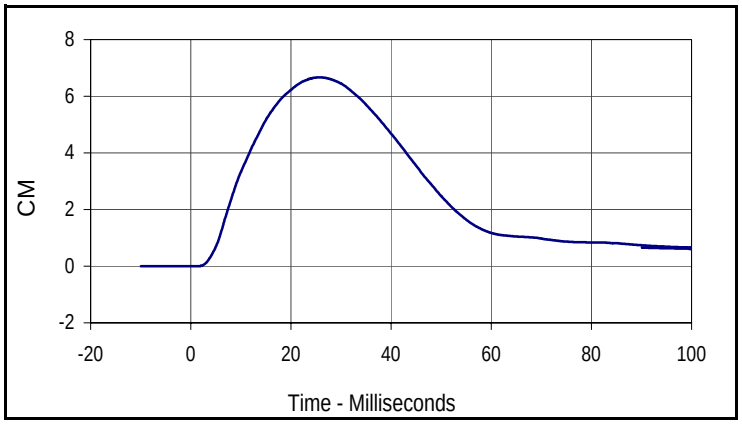
Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
27.2	199.8	-60.6	72.1

Test Program:	Hybrid III 50th Percentile Male Thorax Impact Test	Test Date:	1/14/12
ATD Serial No.:	034	Test I.D.:	M034CH028

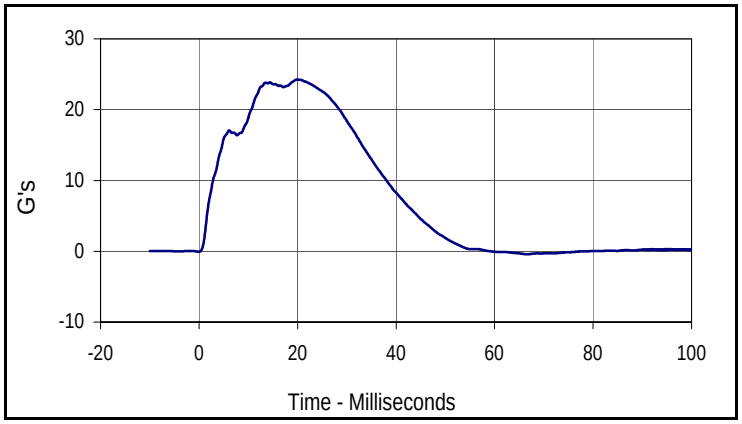
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	355	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	34.0	Pass
	Min	%		29.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.0	Pass
Probe Velocity		m/s	6.58 to 6.82	6.75	Pass
Peak Probe Force		Newtons	5159 to 5893	5559	Pass
Peak Sternum Deflection		CM	6.35 to 7.26	6.67	Pass
Internal Hysterysis		%	69 to 85	70.6	Pass
			Overall Test Results		Pass



Curve Description			
Probe Force vs. Chest Deflection			
Plot No.	Type	SAE Class	Hysterysis
001	FIL	180	70.6
Peak Probe Force		Peak Chest Deflection	
5559		6.67	



Curve Description			
Chest Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	180	CM
Max	Time	Min	Time
6.7	25.7	0.0	1.2



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
24.3	19.8	-0.4	66.7

Test Program:	Hybrid III 50th Percentile Male Knee Impact Test	Test Date:	1/14/12
ATD Serial No.:	034	Test I.D.:	M034LK028 , M034RK028

Left Knee

Tested Parameter		Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time		Minutes	≥240	395	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		20.6	Pass
Humidity During Soak	Max	%	10.0 to 70.0	34.0	Pass
	Min	%		29.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.0	Pass
Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force		Newtons	4715 to 5782	5022	Pass
			Overall Test Results		Pass

Right Knee

Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	Newtons	4715 to 5782	5045	Pass
		Overall Test Results		Pass

Curve Description			
Left Knee Probe Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
5021.9	2.3	-43.3	7.6

Curve Description			
Left Knee Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	600	G's
Max	Time	Min	Time
102.6	2.3	-0.9	7.6

Curve Description			
Right Knee Probe Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
5044.5	2.2	-41.7	7.9

Curve Description			
Right Knee Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	600	G's
Max	Time	Min	Time
103.1	2.2	-0.9	7.9

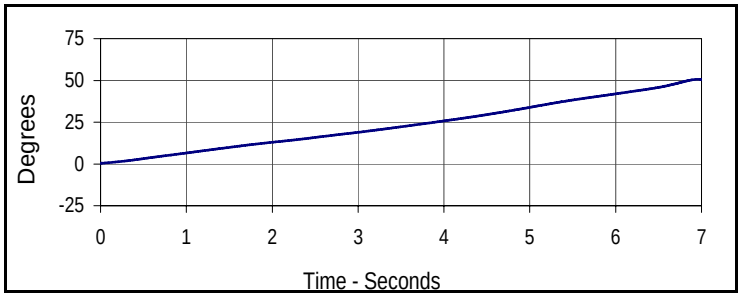
Test Program:	Hybrid III 50th Percentile Male Hip Joint-Femur Flexion Test	Test Date:	1/14/12
ATD Serial No.:	034	Test I.D.:	M034LF028 , M034RF028

Left Hip Joint-Femur Results

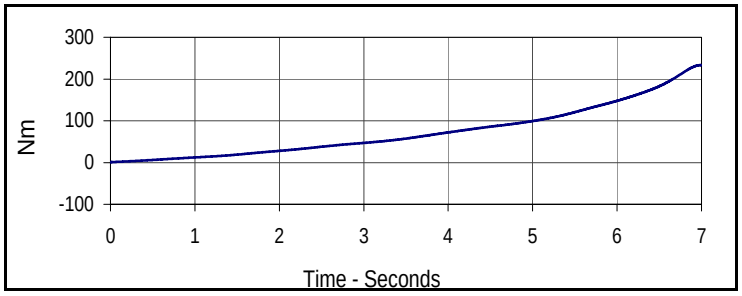
Tested Parameter		Units	Specification	Result	Pass/Fail
Hip Joint-Femur Assembly Soak Time		Minutes	≥240	440	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	34.0	Pass
	Min	%		29.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.1	Pass
Rotation Rate		deg/sec	5 to 10	7.3	Pass
Femur Torque at 30°		Nm	≤ 95	87.4	Pass
Rotation at 203 Nm		Degrees	40.0 to 50.0	47.9	Pass
			Overall Test Results		Pass

Right Hip Joint-Femur Results

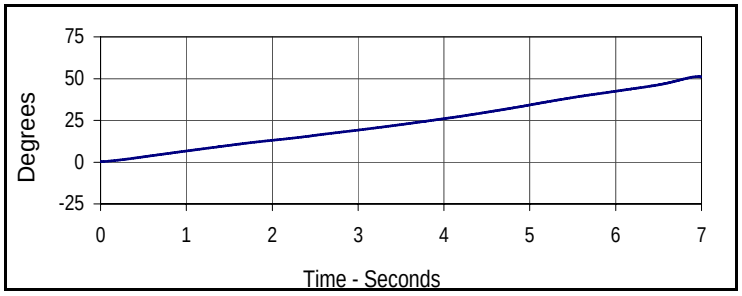
Rotation Rate	deg/sec	5 to 10	7.4	Pass
Femur Torque at 30°	Nm	≤ 95	86.6	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	48.3	Pass
		Overall Test Results		Pass



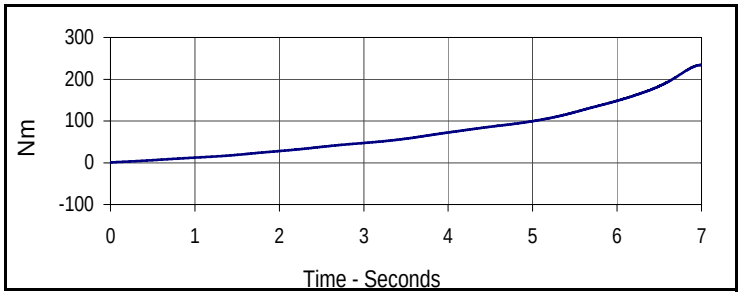
Curve Description			
Left Hip-Femur Rotation			
Plot No.	Type	SAE Class	Units
001	FIL	60	Degrees
Max	Time	Min	Time
50.7	7.0	0.4	0.0



Curve Description			
Left Femur Torque			
Plot No.	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
233.4	7.0	1.0	0.0



Curve Description			
Right Hip-Femur Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
51.2	7.0	0.2	0.0



Curve Description			
Right Femur Torque			
Plot No.	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
234.1	7.0	1.0	0.0

Test Program: Hybrid III 5th Percentile Female Dummy Damage Checklist Test Date: 1/13/12

ATD Serial No.: 141 Test I.D.: N/A

Dummy Item	Inspect for	Comments	Damaged	OK
Entire Dummy	Perform general cleaning			X
Outer Skin	Gashes, rips, cracks			X
Head	Ballast secure			X
	General appearance			X
Neck	Broken or cracked rubber			X
	Upper neck bracket firmly attached to the lower neck bracket			X
	Looseness at the condyle joint			X
	Nodding blocks cracked or out of position			X
Spine	Broken or cracks in rubber			X
Ribs	Broken or bent ribs			X
	Broken or bent rib supports			X
	Damping material separated or cracked			X
	Rubber bumpers in place			X
Chest Displacement Assembly	Bent shaft			X
	Slider arm riding in track			X
Transducer Leads	Torn cables			X
Accelerometer Mountings	Head mounting secure			X
	Chest mounting secure			X
Knees	Skin condition			X
	Insert (do not remove)			X
	Casting			X
Limbs	Normal movement and adjustment			X
Knee Sliders	Wires intact			X
	Rubber returned to "at rest" position			X
Pelvis	Broken			X
Other				X

Describe the repair on repair or replacement of parts:

Test Program: Hybrid III 5th Percentile Female External Measurements Test Date: 1/13/12

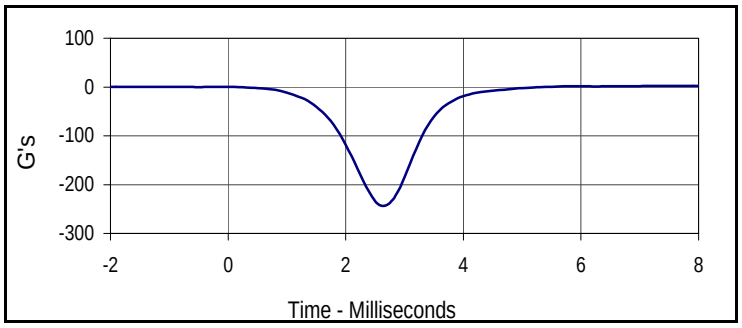
ATD Serial No.: 141 Test I.D.: N/A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.34	Pass
Laboratory Relative Humidity	%	10 to 70	31.5	Pass
A - Total sitting height	mm	774.7 to 800.1	782	Pass
B - Shoulder pivot height	mm	431.8 to 457.2	451	Pass
C - H point height	mm	81.3 to 86.3	84	Pass
D - H point location from backline	mm	144.8 to 149.8	145	Pass
E - Shoulder pivot from backline	mm	68.6 to 83.8	79	Pass
F - Thigh clearance	mm	119.4 to 134.6	126	Pass
G - Back of elbow to wrist pivot	mm	243.9 to 259.1	250	Pass
H - Head back to backline	mm	40.7 to 45.7	44	Pass
I - Shoulder to elbow length	mm	276.8 to 297.2	285	Pass
J - Elbow rest height	mm	182.8 to 203.2	196	Pass
K - Buttock to knee length	mm	520.7 to 546.1	529	Pass
L - Popliteal length	mm	355.6 to 376.0	372	Pass
M - Knee pivot height	mm	393.7 to 419.1	399	Pass
N - Buttock popliteal length	mm	414.0 to 439.4	420	Pass
O - Chest depth without jacket	mm	175.3 to 190.5	185	Pass
P - Foot length	mm	218.5 to 233.7	221	Pass
R - Buttock to Knee Pivot Length	mm	457.2 to 482.6	475	Pass
S - Head Breadth	mm	137.1 to 147.3	144	Pass
T - Head Depth	mm	177.8 to 188.0	180	Pass
U - Hip Breadth	mm	299.7 to 314.9	300	Pass
V - Shoulder breadth	mm	350.5 to 365.7	359	Pass
W - Foot breadth	mm	78.8 to 94.0	90	Pass
X - Head circumference	mm	528.3 to 548.7	540	Pass
Y - Chest circumference (with chest jacket)	mm	850.8 to 881.3	860	Pass
Z - Waist circumference	mm	759.5 to 789.9	766	Pass
AA - Location for chest circumference	mm	299.7 to 309.9	300	Pass
BB - Location for waist circumference	mm	160.1 to 170.2	164	Pass
		Overall Test Results		Pass

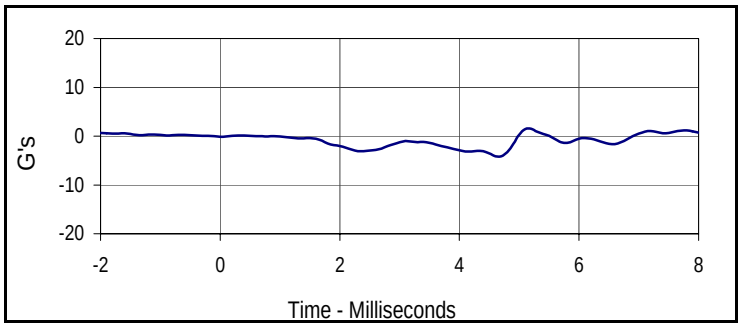
Test Program:	Hybrid III 5th Percentile Female Head Drop Test	Test Date:	1/13/12
ATD Serial No.:	141	Test I.D.:	F141HD032

Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	300	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	36.0	Pass
	Min	%		30.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.2	Pass
Peak Resultant Acceleration		G's	250.0 to 300.0	278.6	Pass
Peak Lateral Acceleration		G's	≤15.0	4.1	Pass
Oscillations After Main Pulse		%	<10% of peak Res. Acceleration	1.1	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
			Overall Test Results		Pass

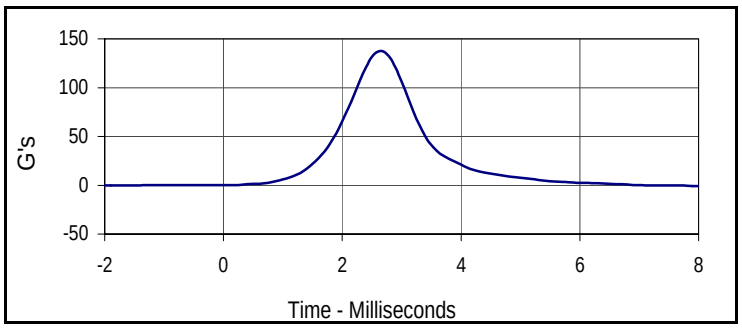
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
278.6	2.6	0.1	0.1



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
1.6	5.9	-242.7	2.6



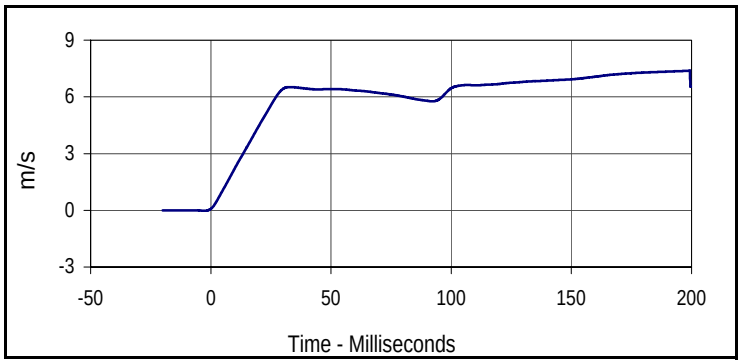
Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
1.5	5.2	-4.1	4.7



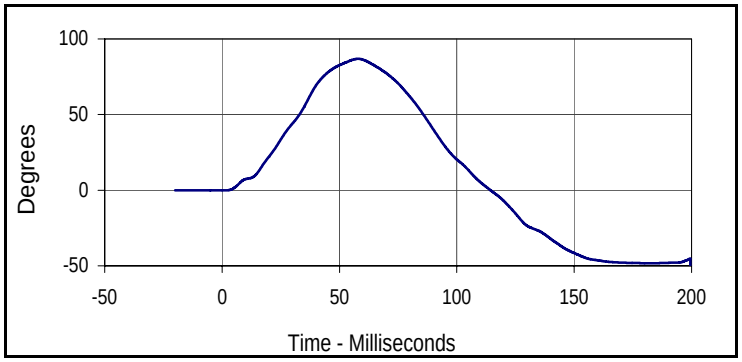
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
136.9	2.6	-0.2	-2.0

Test Program:	Hybrid III 5th Percentile Female Neck Flexion Test	Test Date:	1/13/12
ATD Serial No.:	141	Test I.D.:	F141NF032

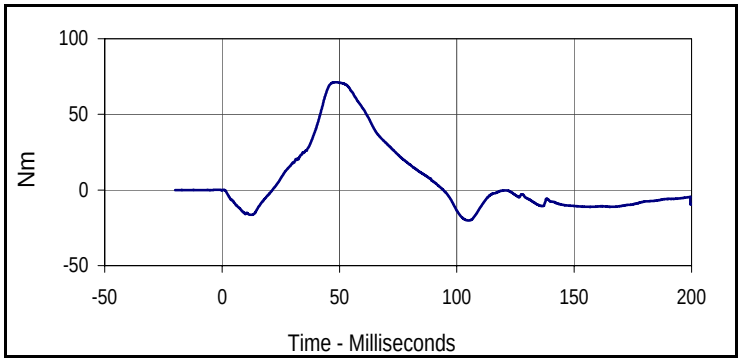
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	335	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	36.0	Pass
	Min	%		30.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.9	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.94	Pass
Pendulum Deceleration	10 Msec.	m/s	2.1 to 2.5	2.2	Pass
	20 Msec.	m/s	4.0 to 5.0	4.5	Pass
	30 Msec.	m/s	5.8 to 7.0	6.4	Pass
"D" Plane Rotation	Max	Degrees	77.0 to 91.0	86.9	Pass
Peak Moment in Rotation	Max	Nm	69.0 to 83.0	71.3	Pass
Positive Moment Decay, Time To 10 Nm		Msec.	80.0 to 100.0	85.1	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
7.4	199.4	0.0	-2.6

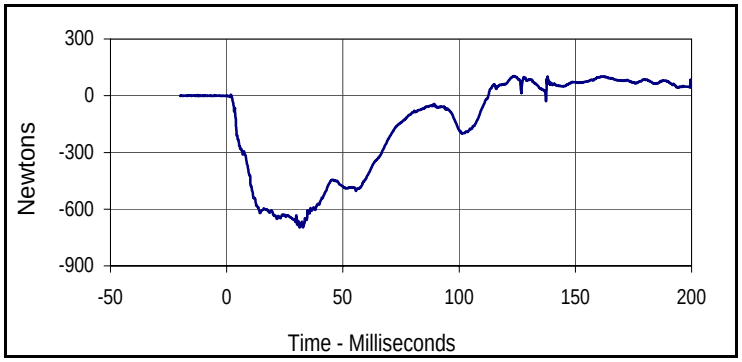


Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
86.9	57.9	-53.8	199.5

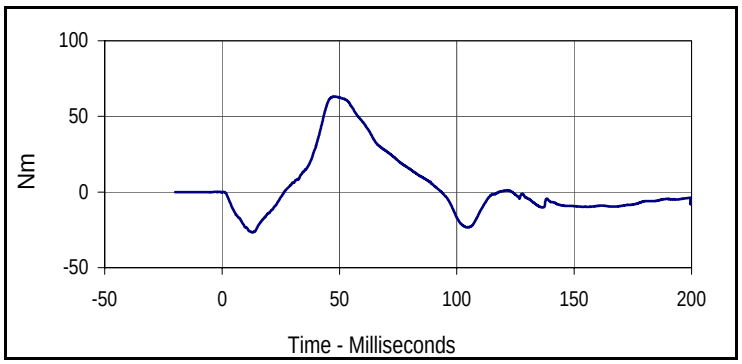


Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
71.3	48.4	-20.1	104.9

Test Program:	Hybrid III 5th Percentile Female Neck Flexion Test	Test Date:	1/13/12
ATD Serial No.:	141	Test I.D.:	F141NF032



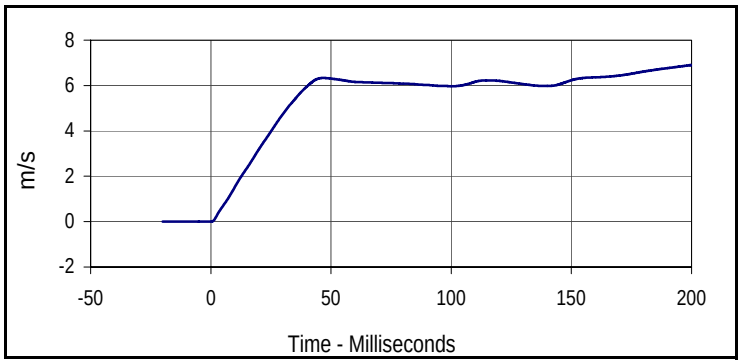
Curve Description			
Upper Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
103.5	123.6	-696.9	31.5



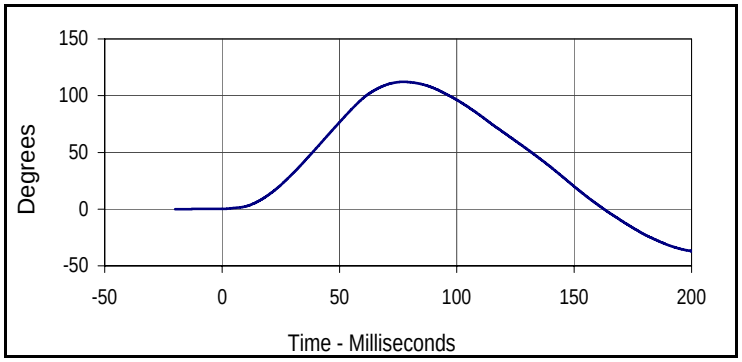
Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
63.1	47.9	-26.7	12.9

Test Program:	Hybrid III 5th Percentile Female Neck Extension Test	Test Date:	1/13/12
ATD Serial No.:	141	Test I.D.:	F141NE032

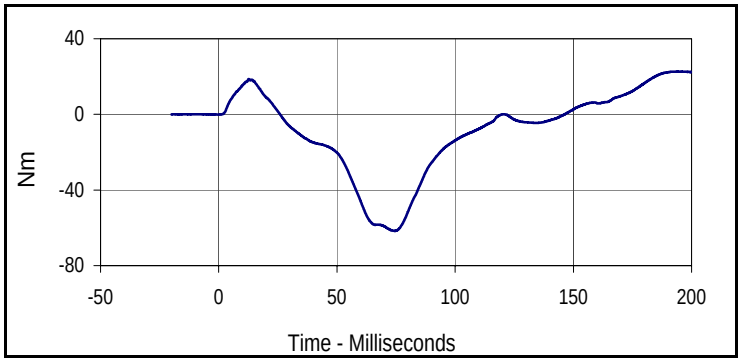
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	365	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.0	Pass
	Min	%		30.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.9	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.12	Pass
Pendulum Deceleration	10 Msec.	m/s	1.5 to 1.9	1.5	Pass
	20 Msec.	m/s	3.1 to 3.9	3.2	Pass
	30 Msec.	m/s	4.6 to 5.6	4.7	Pass
"D" Plane Rotation	Max	Degrees	99.0 to 114.0	112.2	Pass
Peak Moment in Rotation	Max	Nm	-53.0 to -65.0	-61.6	Pass
Positive Moment Decay, Time To -10 Nm		Msec.	94.0 to 114.0	106.0	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
6.9	200.0	0.0	-0.3

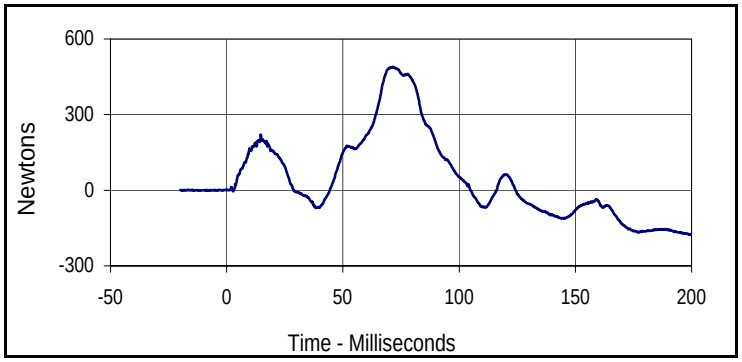


Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
112.2	77.2	-37.0	200.0

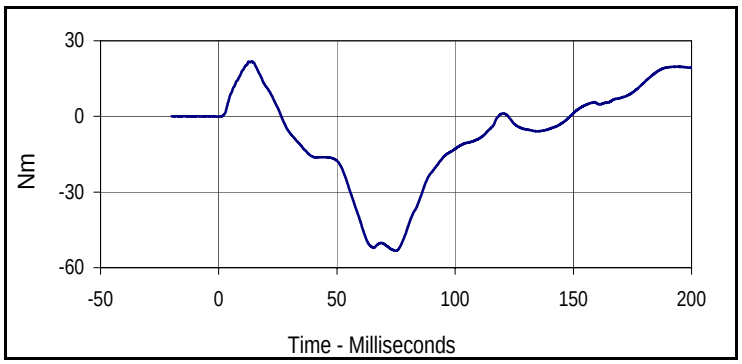


Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
22.7	195.8	-61.6	74.5

Test Program:	Hybrid III 5th Percentile Female Neck Extension Test	Test Date:	1/13/12
ATD Serial No.:	141	Test I.D.:	F141NE032



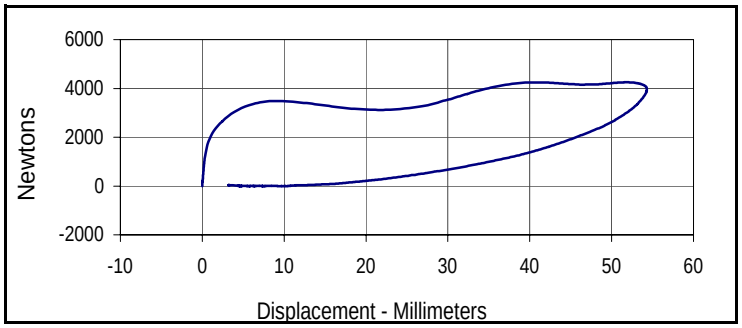
Curve Description			
Upper Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
490.2	71.4	-176.3	199.4



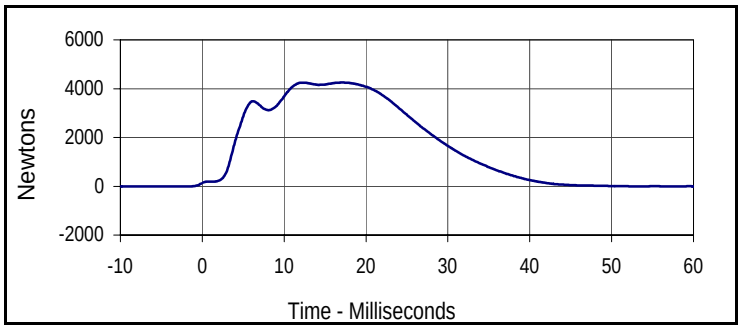
Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
21.9	14.0	-53.3	74.8

Test Program:	Hybrid III 5th Percentile Female Thorax Impact Test	Test Date:	1/13/12
ATD Serial No.:	141	Test I.D.:	F141CH032

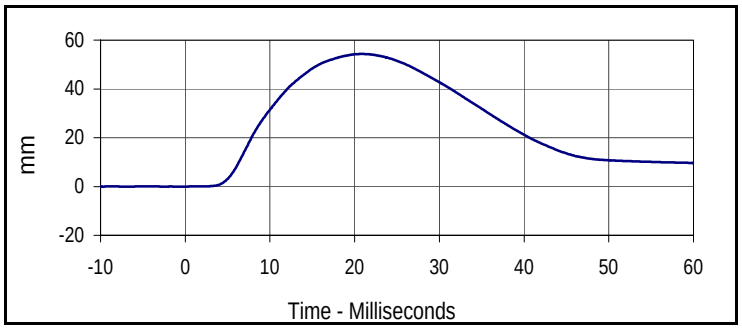
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	405	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.0	Pass
	Min	%		30.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.9	Pass
Probe Velocity		m/s	6.59 to 6.83	6.73	Pass
Peak Chest Deflection		mm	50.0 to 58.0	54.3	Pass
Peak Force Between 50 and 58 MM		Newtons	3900 to 4400	4248	Pass
Peak Force Between 18 and 50 MM		Newtons	≤4600	4253	Pass
Internal Hysterysis		%	69 to 85	75.3	Pass
			Overall Test Results		Pass



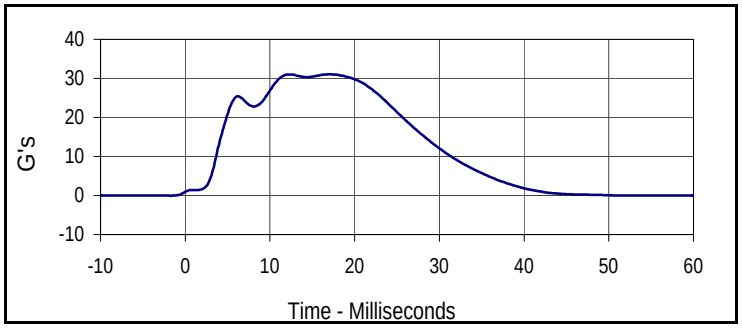
Curve Description			
Probe Force vs. Chest Deflection			
Plot No.	Type	SAE Class	Hysterysis
001	FIL	180	75.3
Peak Probe Force		Peak Chest Deflection	
4252.9		54.3	



Curve Description			
Probe Force			
Plot No.	Type	SAE Class	Units
002	FIL	180	Newtons
Max	Time	Min	Time
4252.9	17.1	-7.1	61.1



Curve Description			
Chest Deflection			
Plot No.	Type	SAE Class	Units
003	FIL	600	mm
Max	Time	Min	Time
54.3	20.8	0.0	-0.1



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
31.0	17.1	-0.1	61.1

Test Program:	Hybrid III 5th Percentile Female Knee Impact Test	Test Date:	1/13/12
ATD Serial No.:	141	Test I.D.:	F141LK032 , F141LK031

Left Knee

Tested Parameter		Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time		Minutes	≥240	440	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.0	Pass
	Min	%		30.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.9	Pass
Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force		Newtons	3450 to 4060	3844	Pass
			Overall Test Results		Pass

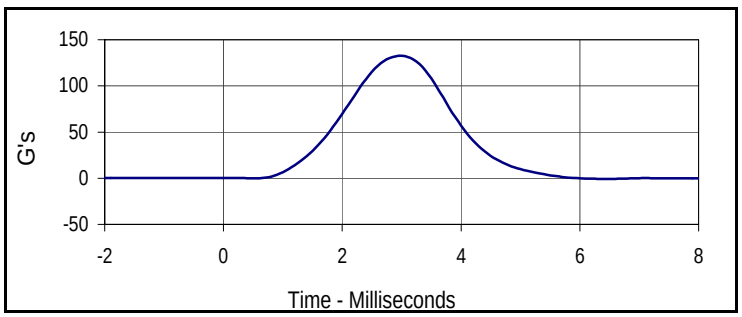
Right Knee

Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	Newtons	3450 to 4060	3884	Pass
		Overall Test Results		Pass

Curve Description			
Left Knee Probe Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3844.0	3.0	-16.8	9.7

Curve Description			
Left Knee Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	600	G's
Max	Time	Min	Time
131.1	3.0	-0.6	9.7

Curve Description			
Right Knee Probe Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
3883.8	3.0	-26.3	6.4



Curve Description			
Right Knee Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	600	G's
Max	Time	Min	Time
132.5	3.0	-0.9	6.4

Test Program:	Hybrid III 5th Percentile Female Torso Flexion Test	Test Date:	1/13/12
ATD Serial No.:	141	Test I.D.:	F141TF032

Left Hip Joint-Femur Results

Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	480	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.0	Pass
	Min	%		30.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.0	Pass
Initial Reference Plane Angle		Degrees	≤ 20	8.9	Pass
Peak Force at 45° +/-0.5°		Newtons	320.0 to 390.0	345.2	Pass
Torso Rotation Rate		deg/sec	0.5 to 1.5	1.0	Pass
Final Reference Plane Angle		Degrees	+/-8	3.7	Pass
			Overall Test Results		Pass