

REPORT NUMBER: SINCAP-KAR-13-035

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

**FORD MOTOR CORPORATION
2013 FORD FOCUS ELECTRIC 5-DOOR HATCHBACK**

NHTSA No: MD0216

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



JANUARY 2, 2013

FINAL REPORT

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

TECHNICAL REPORT DOCUMENTATION PAGE

1. Report No. SINCAP-KAR-13-035	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle Final Report of New Car Assessment Program Side Impact MDB Testing of a 2013 Ford Focus Electric 5-Door Hatchback NHTSA No. MD0216	5. Report Date January 2, 2013	
	6. Performing Organization Code KAR	
7. Authors Mr. Steven D. Matsusaka, Project Engineer, KARCO Mr. Frank Richardson, Program Manager, KARCO	8. Performing Organization Report No. TR-P32003-12-NC	
	10. Work Unit No.	
9. Performing Organization Name and Address KARCO Engineering, LLC. 9270 Holly Rd. Adelanto, CA 92301	11. Contract or Grant No. DTNH22-09-D-00122	
	13. Type of Report and Period Covered Final Test Report, Dec. 19, 2012 - Jan. 2, 2013	
12. Sponsoring Agency Name and Address U. S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards (NVS-111) 1200 New Jersey Ave., SE, Room W43-410 Washington, D.C. 20590	14. Sponsoring Agency Code NVS-111	
	15. Supplementary Notes	

16. Abstract

A 55/28 km/h 90 deg. Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2013 Ford Focus Electric 5-Door Hatchback in accordance with the specifications of the Office of Crash Worthiness Standards Test Procedure for the generation of consumer information on vehicle side crash protection. The test was conducted at the KARCO Engineering, LLC. facility in Adelanto, California on December 19, 2012.

The impact velocity of the Moving Deformable Barrier was 61.65 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 12.8 deg. C. The target vehicle's maximum post-test static crush was 188 mm located at level 3. The test vehicle's occupant performance data is as follows:

Measurement Description	Driver ATD (ES-2re)		
	Units	IARV	Result
Head Injury Criteria (HIC ₃₆)		1000	72.5
Maximum Thorax Rib Deflection	mm	44	25
Total Abdominal Force	N	2500	903
Pubic Symphysis Force	N	6000	1301

Measurement Description	Passenger ATD (SID-IIs)		
	Units	IARV	Result
Head Injury Criteria (HIC ₃₆)		1000	178.2
Resultant Lower Spine Acceleration	g	82	44
Total Pelvic Force (Sum of Acetubular and Iliac Forces)	N	5525	3161
Maximum Thoracic Rib Deflection	mm	38*	16
Maximum Abdominal Rib Deflection	mm	45*	22

The doors on the struck side of the vehicle did not separate from the body at the hinges or latches, and the opposite side doors did not open during the side impact event.

* Proposed IARV

17. Key Words New Car Assessment Program (NCAP) Side Impact Moving Deformable Barrier (MDB) ES-2re SID-IIs		18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Admin. Technical Information Services Division, NPO-411 1200 New Jersey Ave., SE Washington, DC 20590 e-mail: tis@nhtsa.dot.gov FAX 202-493-2833	
19. Security Classification of this report UNCLASSIFIED	20. Security Classification of this page UNCLASSIFIED	21. No. of Pages 155	22. Price

TABLE OF CONTENTS

<u>Section</u>		<u>Page</u>
1	Test Purpose and Procedure	1
2	Summary of Test Results	2
3	Occupant and Vehicle Information	4
<u>Data Sheet</u>		<u>Page</u>
1	General Test and Vehicle Parameter Data	5
2	Seat, Seat Belt, Steering Wheel Adjustment and Fuel System Data	9
3	Dummy Longitudinal Clearance Dimensions	13
4	Dummy Lateral Clearance Dimensions	14
5	Camera and Instrumentation Data	15
6	Test Vehicle Accelerometer Locations	16
7	MDB Accelerometer Locations	17
8	Post-Test Observations	18
9	MDB Summary of Results	20
10	Test Vehicle Profile Measurements	21
11	Test Vehicle Exterior Crush Measurements	22
12	MDB Exterior Static Crush Measurements	25
13	FMVSS No. 301 Static Rollover Results	26
14	Dummy/Vehicle Temperature and Humidity Stabilization	27
<u>Appendix</u>		<u>Page</u>
A	Photographs	A
B	Vehicle and Dummy Response Data Plots	B
C	Dummy Configuration and Performance Verification Data	C
D	Test Equipment and Instrumentation Calibration Data	D

SECTION 1
TEST PURPOSE AND PROCEDURE

This moving deformable barrier side impact test is part of the MY 2013 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract number DTNH22-09-D-00122. The purpose of this test is to generate comparative side impact performance in a 2013 Ford Focus Electric 5-door hatchback. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated September 2012.

SECTION 2

SUMMARY OF TEST RESULTS

A 2013 Ford Focus Electric 5-door hatchback was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 61.65 km/h (38.31 mph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by KARCO Engineering, LLC. in Adelanto, California, on December 19, 2012. Pre- and post-test photographs of the test vehicle, the MDB and the dummies (ES-2re and SID-IIs) are included in Appendix A¹ of this report.

Dummies were placed in the driver and left rear designated seating positions according to instructions specified in the OCWS Side Impact Laboratory Test Procedure, dated September 2012. The side impact event was documented by 11 cameras. Camera locations are included in Data Sheet No. 5 of this report.

The dummies were instrumented in the following manner:

DRIVER ATD (ES-2re)

Primary and redundant head CG tri-axial accelerometers

Chest upper rib, middle rib and lower rib y-axis displacement potentiometers

Abdomen forward, middle, and rear y-axis load cells

Lower spine (12) tri-axial accelerometers

Pubic symphysis y-axis load cell

PASSENGER ATD (SID-IIs)

Primary and redundant head CG tri-axial accelerometers

Chest upper rib, middle rib and lower rib y-axis displacement potentiometers

Abdomen upper rib and lower rib y-axis displacement potentiometers

Lower spine (12) tri-axial accelerometers

Acetabulum and iliac wing y-axis load cells

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

¹Photographs were taken with a placard stating 'Ford Focus' instead of 'Ford Focus Electric'.

Dummy injury readings were recorded as follows:

Measurement Description	Units	Driver ATD (ES-2re)	
		Threshold	Result
Head Injury Criteria (HIC ₃₆)		1000	72.5
Maximum Thorax Rib Deflection	mm	44	25
Combined Abdominal Force	N	2500	903
Pubic Symphysis Force	N	6000	1301

Measurement Description	Units	Passenger ATD (SID-IIs)	
		Threshold	Result
Head Injury Criteria (HIC ₃₆)		1000	178.2
Lower Spine (T12) Resultant Acceleration	g	82	44
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3161
Maximum Thoracic Rib Deflection	mm	38*	16
Maximum Abdominal Rib Deflection	mm	45*	22

*Proposed IARV

Supplemental restraint information is given below:

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

GENERAL COMMENTS

The doors on the struck side of the vehicle remained closed and latched. There was no separation at the hinges or latches. The doors on the non-struck side remained closed and latched. There were no ATD values that exceeded limits.

SECTION 3

OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2013 Ford Focus Electric 5-Door Hatchback NHTSA No. MD0216

Test Program: NCAP MDB Side Impact Test Test Date: 12/19/12

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	°F	°C	$=(T_f - 32)/1.8$
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: 2013 Ford Focus Electric 5-Door Hatchback NHTSA No. MD0216
 Test Program: NCAP MDB Side Impact Test Test Date: 12/19/12

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	MD0216
Model Year	2013
Make	Ford
Model	Focus Electric
Body Style	5-Door Hatchback
VIN	1FADP3R44DL126036
Body Color	Ingot Silver Metallic
Odometer Reading (km / mi)	44 / 27
Engine Displacement (L)	N/A
Type / No. of Cylinders	Electric
Engine Placement	Transverse
Transmission Type	Automatic
Transmission Speeds	1
Overdrive	Yes
Final Drive	Front
Roof Rack	No
Sunroof / T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	Yes
Anti-Lock Brakes (ABS)	Yes

Traction Control System (TCS)	Yes
Auto-Leveling System	No
Automatic Door Locks	Yes
Power Window Auto-Reverse	Yes
Other Optional Feature	No
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	Yes
Rear Pass. Curtain Airbag	Yes
Rear Pass. Head/Torso Airbag	No
Rear Pass. Torso Airbag	No
Rear Pass. Torso/Pelvis Airbag	No
Rear Pass. Pelvis Airbag	No
Driver Seat Belt Pretensioner	Yes
Rear Pass. Seat Belt Pretensioner	No
Driver Load Limiter	Yes
Rear Pass. Load Limiter	No
Other Safety Restraint	No

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

DATA FROM CERTIFICATION LABEL

Manufactured By	Ford Motor Co.
Date of Manufacture	Sep-12
Vehicle Type	Passenger Car

GVWR (kg)	2085
GAWR Front (kg)	934
GAWR Rear (kg)	1200

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Designated Seating Capacity	2	3		5
Capacity Weight (VCW) (kg)				375.0
DSC x 68.04 (kg)				340.2
Cargo Weight (RCLW) (kg)				34.8

A
B
A-B

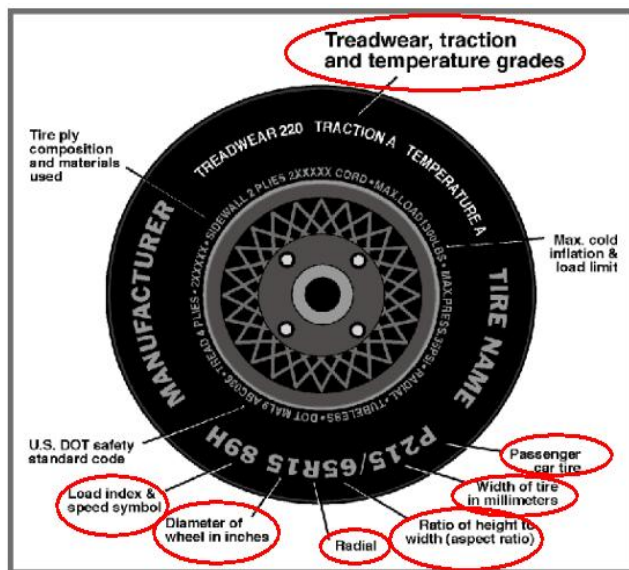
VEHICLE SEAT TYPE

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

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2013 Ford Focus Electric 5-Door Hatchback NHTSA No. MD0216
 Test Program: NCAP MDB Side Impact Test Test Date: 12/19/12



VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	350	350
Cold Pressure (kPa)	260	260
Recommended Tire Size	P225/50R17	P225/50R17
Tire Size on Vehicle	P225/50R17	P225/50R17
Tire Manufacturer	Michelin	Michelin
Tire Model	Energy Saver A/S	Energy Saver A/S
Treadware	480	480
Traction Grade	A	A
Temperature Grade	A	A
Tire Plies Sidewall	1 Polyester	1 Polyester
Tire Plies Body	1 Polyester, 1 Polyamide, 2 Steel	1 Polyester, 1 Polyamide, 2 Steel
Load Index/Speed Symbol	93V	93V
Tire Material	Polyester, Polyamide, Steel	Polyester, Polyamide, Steel
DOT Safety Code Left	B90A OONX 2612	B90A OONX 2612
DOT Safety Code Right	B90A OONX 2612	B90A OONX 2612

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2013 Ford Focus Electric 5-Door Hatchback NHTSA No. MD0216
 Test Program: NCAP MDB Side Impact Test Test Date: 12/19/12

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	255	260	260	260
Tire Placard	kPa	260	260	260	260
Owner's Manual	kPa	260	260	260	260
As Tested	kPa	260	260	260	260

MDB TIRE SPECIFICATIONS

	Units	Requirement	LF	RF	LR	RR
Tire Size		P205/75R15	P205/75R15	P205/75R15	P205/75R15	P205/75R15
Tire Pressure	kPa	200 ± 21	200	200	200	200

TEST VEHICLE AXLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	415.5	415.5		454.0	480.0		457.0	482.0	
Right	kg	396.5	422.5		406.0	463.5		401.5	468.0	
Ratio	%	49.2%	50.8%	100.0%	47.7%	52.3%	100.0%	47.5%	52.5%	100.0%
Total	kg	812.0	838.0	1650.0	860.0	943.5	1803.5	858.5	950.0	1808.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1650.0	A
Actual Weight of 2 P572 ATDs Used	kg	125.0	B
Rated Cargo/Luggage Wt (RCLW)	kg	34.8	C
Calculated Vehicle Target Wt (TVT _W)	kg	1809.8	A+B+C

Does the measured As Tested Vehicle Weight lie within the required weight range (i.e. Calculated Test Vehicle Target Weight -4.5 kg to -9.0 kg)? Yes No

TEST VEHICLE ATTITUDE AND CG

Measurement Description	Units	Fully Loaded	As Tested	Meets Requirement***
LF	mm	678	678	Yes
RF	mm	681	681	Yes
RR	mm	667	673	Yes
LR	mm	673	673	Yes
Vehicle CG (Aft of Front Axle)	mm	1393	1325	
Vehicle CG (Left (+)/Right (-) from Longitudinal Centerline)	mm	30	34	

***The "As Tested" vehicle attitude measurements must be equal to or within ±10 mm of the "Fully Loaded" vehicle attitude measurements at each wheel well. Indicate "Yes" or "No" for "Meets Requirement"

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2013 Ford Focus Electric 5-Door Hatchback NHTSA No. MD0216

Test Program: NCAP MDB Side Impact Test Test Date: 12/19/12

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Headlights	6.5
Front Bumper Cover	7.0
Windshield Washer Fluid Bottle	1.0
Headrest	1.5
Front Covers	3.0
Taillights	3.0
Trunk Trim	14.0
Rear Bumper Cover	3.5
Ballast / Equipment Added	70.8

DATA SHEET NO. 2

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

Test Vehicle: 2013 Ford Focus Electric 5-Door Hatchback NHTSA No. MD0216
 Test Program: NCAP MDB Side Impact Test Test Date: 12/19/12

SEAT POSITIONING

The driver's seat, front center seat (if applicable), and right front passenger's seat should be set to the mid-track, lowest, mid-angle position. The struck side rear passenger's seat, rear center seat, and non-struck side rear passenger's seats should be set to the rear-most, lowest, mid-angle position.

SCRL ANGLE RANGE

Seat	SCRL (°)		
	Max	Min	Mid
Driver Seat	5.2	0.0	2.6
Front Passenger Seat	Fixed	Fixed	Fixed
Front Center Seat			
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed

SEAT HEIGHT AND ANGLE

Seat	As Tested SCRL Angle	As Tested SCRP Height	SCRP Height Position	SCRP Height (mm)		
				Rearmost	Mid Fore/Aft	Forwardmost
Driver Seat	2.6	546	Max	534	546	558
			Mid	534	546	558
			Min	534	546	558
Front Passenger Seat	Fixed	538	Max	525	537	548
			Mid	525	537	548
			Min	525	537	548
Front Center Seat			Max			
			Mid			
			Min			
Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed

DATA SHEET NO. 2 ... (CONTINUED)

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

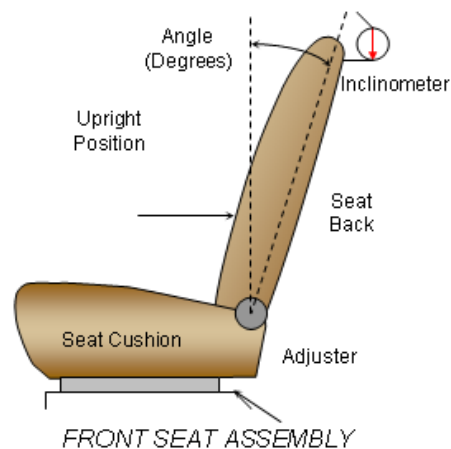
Test Vehicle: 2013 Ford Focus Electric 5-Door Hatchback NHTSA No. MD0216
 Test Program: NCAP MDB Side Impact Test Test Date: 12/19/12

SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position From Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	250		125	
Front Passenger Seat	250	25	130	13
Front Center Seat				
Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed	Fixed

SEAT BACK ADJUSTMENT

The driver's seat back is positioned to the manufacturer's designated design angle. The right front passenger's seat back is positioned in a similar manner as the driver's seat back. The struck side rear seat back is positioned such that the dummy's head is level. The rear center and non-struck side rear outboard seat backs are positioned in a similar manner as the struck side rear seat back. Seat back angle is measured at the headrest post bezel.



SEAT BACK POSITION

Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degree	Detent*
Driver Seat w/Seated Dummy	109.7		12.0	
Front Passenger Seat	73.5	34	12.0	13
Front Center Seat				
Struck Side Rear Seat w/Seated Dummy	Fixed	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed	Fixed

DATA SHEET NO. 2 ... (CONTINUED)

SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

Test Vehicle: 2013 Ford Focus Electric 5-Door Hatchback NHTSA No. MD0216
 Test Program: NCAP MDB Side Impact Test Test Date: 12/19/12

SEAT BELT ANCHORAGE ADJUSTMENT

Seat belt anchorages are adjusted in accordance with the information provided by the manufacturer on Form No. 1. The positions are marked H, M1, ..., L from top to bottom.

	Total No. of Positions	Placed in Position
Driver Seat	4	H
Rear Seat	Fixed	Fixed

HEAD RESTRAINT ADJUSTMENT

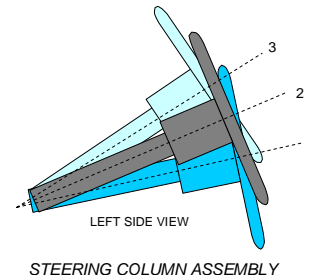
The driver's head restraint is adjusted to the highest and most full forward in-use position. The struck-side rear passenger's head restraint is adjusted to the lowest and most full forward in-use position.

	Total No. of Positions	Placed in Position
Driver Seat	3	Full Up
Rear Seat	Fixed	Fixed

STEERING COLUMN ADJUSTMENT

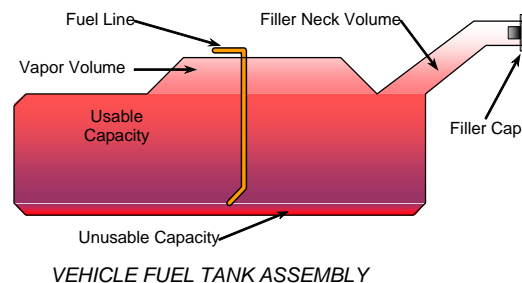
Steering wheel and column adjustments are made so that the steering wheel hub is at the center of the geometric locus it describes when it moves through its full range of motion.

	Degrees	Fore-Aft Position (mm)
Lowermost - Position 1	18.6	121
Geometric Center - Position 2	21.6	142
Uppermost - Position 3	24.3	163
Telescoping Steering Wheel Travel		42
Test Position	21.6	142



FUEL PUMP

The test vehicle is electric and is not equipped with any liquid fuel system, including a fuel pump or tank.



DATA SHEET NO. 2 ... (CONTINUED)

SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

Test Vehicle: 2013 Ford Focus Electric 5-Door Hatchback NHTSA No. MD0216
Test Program: NCAP MDB Side Impact Test Test Date: 12/19/12

FUEL TANK CAPACITY

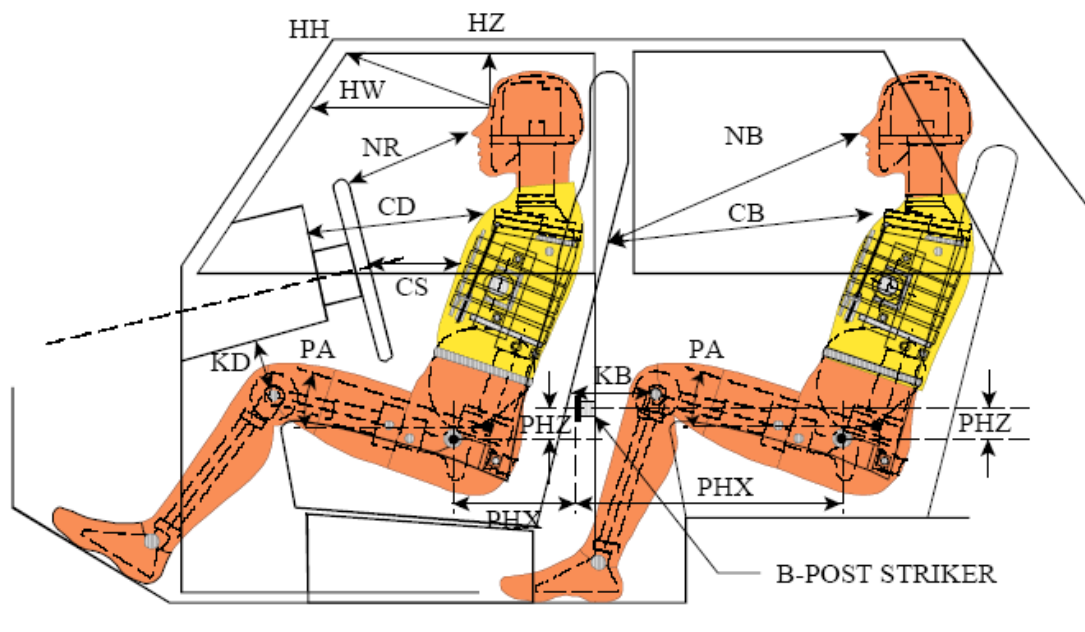
Description	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	
Usable Capacity of "Optional Tank" (see Form No. 1)	
Usable Capacity of "Standard Tank" (see Owner's Manual)	
Usable Capacity of "Optional Tank" (see Owner's Manual)	
93% of Usable Capacity	
Actual amount of Solvent Used in Test	
1/3 of Usable Capacity	

Is the Actual Amount of Solvent Used in the test equal to 93% ± 1% of the Usable Capacity stated in the Form No. 1? **Yes** **No**

DATA SHEET NO. 3

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2013 Ford Focus Electric 5-Door Hatchback NHTSA No. MD0216
 Test Program: NCAP MDB Side Impact Test Test Date: 12/19/12



LEFT SIDE VIEW

NOTE: 2-DOOR VEHICLE SHOWN.
 REAR DUMMY PHX & PHZ
 MEASUREMENTS FOR A 4-DOOR
 VEHICLE WOULD USE THE C-POST
 STRIKER AS A REFERENCE POINT

DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Pass. Code	Description	Driver		Passenger	
			Length (mm)	Angle (°)	Length (mm)	Angle (°)
HH		Head to Header	400			
HW		Head to Windshield	673			
HZ	HZ	Head to Roof	143		260	
NR	NB	Nose to Rim/Seat Back	467		492	
CD	CB	Chest to Dash/Seat Back	592		472	
CS		Chest to Steering Wheel	343			
KD(L)/KDA(L)°	KB(L)/KBA(L)°	Left Knee to Dash/Seat Back	138	50.0	260	18.0
KD(R)/KDA(R)°	KB(R)/KBA(R)°	Right Knee to Dash/Seat Back	148	27.7	263	14.0
PAX°	PAX°	Pelvic Tilt Angle X		13.6		24.0
	PAY°	Pelvic Tilt Angle Y				0.3
PHX	PHX	Hip Point to Striker (x-axis)	162		258	
PHZ	PHZ	Hip Point to Striker (z-axis)	104		284	

DATA SHEET NO. 4

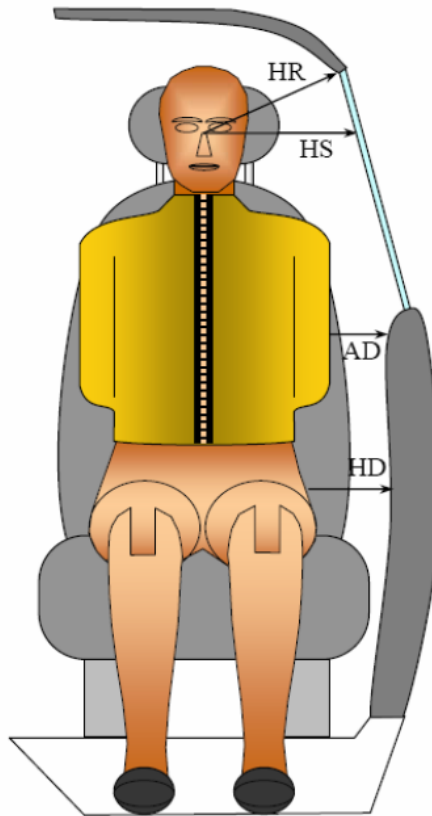
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2013 Ford Focus Electric 5-Door Hatchback

NHTSA No. MD0216

Test Program: NCAP MDB Side Impact Test

Test Date: 12/19/12



FRONT VIEW OF DUMMY

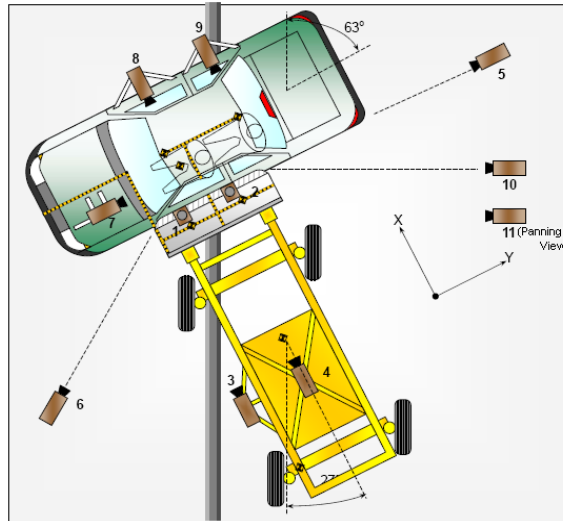
DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver	Passenger
HR	Head to Side Header	mm	190	264
HS	Head to Side Window	mm	318	387
AD	Arm to Door	mm	95	152
HD	H-Point to Door	mm	156	171

DATA SHEET NO. 5

CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2013 Ford Focus Electric 5-Door Hatchback NHTSA No. MD0216
 Test Program: NCAP MDB Side Impact Test Test Date: 12/19/12



CAMERA LOCATIONS AND DATA

No.	View	Coordinates (mm)			Lens Length (mm)	Operating Frame Rate (fps)
		X	Y	Z		
1	Overhead Overall	1220	2287	-5486	14	1000
2	Overhead Close-Up	609	2287	-5102	35	1000
3	Left Impact Point (MDB)	-2134	0	-1143	25	1000
4	Side Overall (MDB)	-3912	838	-1829	12.5	1000
5	Rear	-64	2485	-1348	85	1000
6	Left Front	-2266	-3564	-1475	24	1000
7	Driver Front (On-Board)	523	-823	-791	24	1000
8	Driver Side (On-Board)	1649	701	-477	14	1000
9	Passenger Side (On-Board)	1706	1606	-543	14	1000
10	Real Time Overall				Zoom	30
11	Real Time Inrun				Zoom	30

Reference: Impact Point Projected to Ground; +X = To Front of MDB, +Y = To Right of MDB, +Z = Down

*All measurements accurate to ±6 mm

INSTRUMENTATION

Driver Dummy Channels	16
Passenger Dummy Channels	16
Vehicle Structure Accelerometers	23
MDB Accelerometers	5
Total	60

DATA SHEET NO. 6

TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2013 Ford Focus Electric 5-Door Hatchback NHTSA No. MD0216
 Test Program: NCAP MDB Side Impact Test Test Date: 12/19/12



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

Loc. No.	Sensor Description	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	1800	0	-320
2	Right Sill at Front Seat	2260	710	-360
3	Right Sill at Rear Seat	1620	710	-360
4	Left Sill at Front Door	2235	-695	-190
5	Left Sill at Rear Door	1410	-695	-195
6	A-Pillar Lower	2975	-830	-535
7	A-Pillar Middle	2975	-830	-820
8	B-Pillar Lower	1930	-740	-625
9	B-Pillar Middle	1930	-740	-910
10	Front Seat Track	2220	-560	-360
11	Rear Seat Structure			
12	Right Rear Occupant Compartment	1680	420	-390
13	Engine Block	3780	0	-580
14	Rear Floorpan Above Axle	550	0	-505

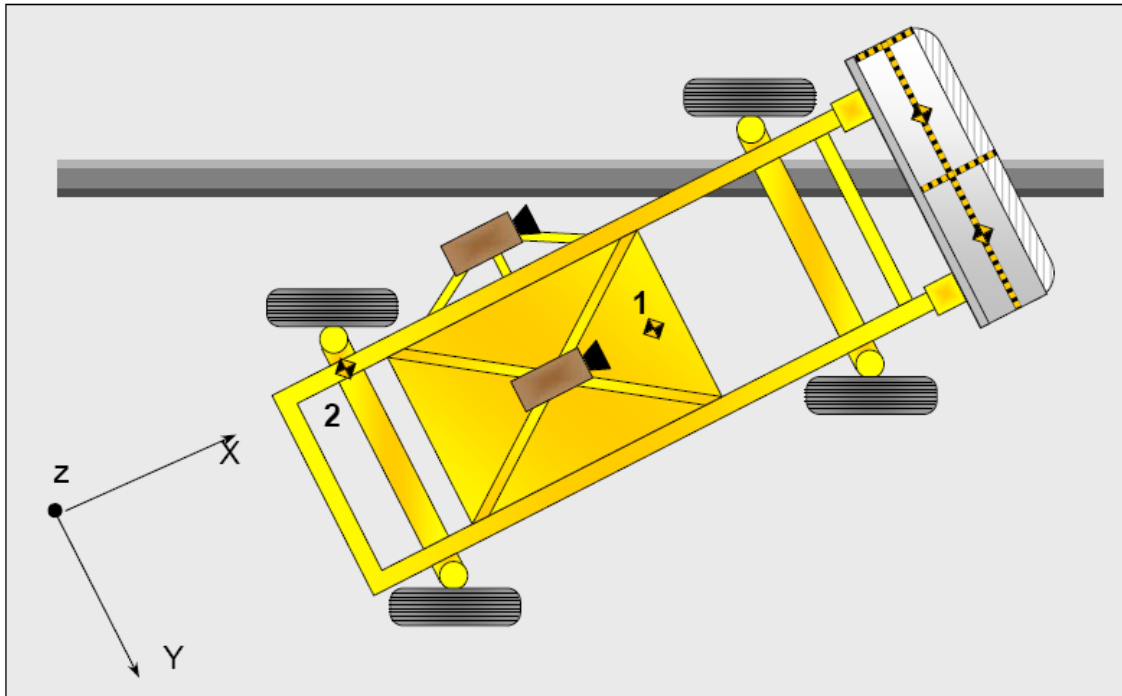
Reference: X – Rear surface of vehicle (+ forward)
 Y – Vehicle centerline (+ to right)
 Z – Ground plane (+ down)

DATA SHEET NO. 7

MDB ACCELEROMETER LOCATIONS

Test Vehicle: 2013 Ford Focus Electric 5-Door Hatchback NHTSA No. MD0216

Test Program: NCAP MDB Side Impact Test Test Date: 12/19/12



MDB ACCELEROMETER LOCATIONS

Loc. No.	Accelerometer Location	Measurement		
		X	Y	Z
1	MDB CG	-1195	0	-430
2	MDB Rear	-2642	-593	-608

Reference: X – Face of MDB (+ forward)
 Y – MDB centerline (+ to right)
 Z – Ground plane (+ down)

DATA SHEET NO. 8

POST-TEST OBSERVATIONS

Test Vehicle: 2013 Ford Focus Electric 5-Door Hatchback NHTSA No. MD0216
 Test Program: NCAP MDB Side Impact Test Test Date: 12/19/12

TEST DUMMY INFORMATION AND CONTACT POINTS

Dummy Body Part	Front Seat Dummy (ES-2re)	Rear Seat Dummy (SID-IIs)
Face	Curtain Airbag	Curtain Airbag
Top of Head	Side Header	Side Header, Curtain Airbag, Center Seat Back
Left Side of Head	Curtain Airbag, Side Header	Curtain Airbag
Back of Head	Curtain Airbag, Side Header, Headrest	Curtain Airbag, Headrest, Center Seat Back
Left Shoulder	Curtain Airbag, Torso/Pelvis Airbag	Door Panel
Upper Torso	Seat, Torso/Pelvis Airbag	None
Lower Torso	Seat, Torso/Pelvis Airbag	Door Panel
Left Hip	Seat, Torso/Pelvis Airbag, Door Panel	Seat
Left Knee	Door Panel	Door Panel, Right Knee

POST-TEST DOOR PERFORMANCE

Description	Struck Side		Non-Struck Side		Rear Hatch/Oth
	Front	Rear	Front	Rear	
Remained Closed and Operational	No	No	Yes	Yes	Yes
Total Separation from Vehicle at Hinges or Latches	No	No	No	No	No
Latch or Hinge System Pulled Out of Their Anchorages	No	No	No	No	No
Disengaged from Latched Position	No	No	No	No	No
Latch Separated from Striker	No	No	No	No	No
Jammed Shut	Yes	Yes	No	No	No
If Door Opened at Striker, Record Width of Opening at Striker (mm)					

POST-TEST SEAT PERFORMANCE

Description	Struck Side		Non-Struck Side	
	Front	Rear	Front	Rear
Seat Movement Along Seat Track	No	No	No	No
Seat Disengagement from Floor Pan	No	No	No	No
Seat Back Movement from Initial Position	No	No	No	No
Seat Back Collapse	No	No	No	No

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	No Separation
Sill Separation	No Separation
Windshield Damage	None
Side Window Damage	None
Other Notable Effects	None

DATA SHEET NO. 8 ... (CONTINUED)

POST-TEST OBSERVATIONS

Test Vehicle: 2013 Ford Focus Electric 5-Door Hatchback NHTSA No. MD0216
 Test Program: NCAP MDB Side Impact Test Test Date: 12/19/12

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vehicle Wheel Base	mm		2652
Vertical Impact Reference Line (Aft of Front Axle)(Intended Impact Point)	mm		387
Actual Impact Point (Aft of Front Axle)	mm		398
Horizontal Offset (+ forward / - rearward)	mm	± 50 of Intended Impact Point	-11
Vertical Offset (+ down / - up)	mm	± 20 of Intended Impact Point	6

DATA SHEET NO. 9
MDB SUMMARY OF RESULTS

Test Vehicle: 2013 Ford Focus Electric 5-Door Hatchback NHTSA No. MD0216
 Test Program: NCAP MDB Side Impact Test Test Date: 12/19/12

MDB SPECIFICATIONS

Measurement Description	Length (mm)
Overall Width of Framework Carriage	1251
Overall Length including Honeycomb Face	4023
Wheel Base of Framework Carriage	2595
CG location aft of Front Axle	1118

MDB WEIGHTS

	Units	Front Axle	Rear Axle	Total
Left	kg	401.8	298.0	699.8
Right	kg	376.9	291.6	668.5
Ratio	%	56.9%	43.1%	100.0%
Totals	kg	778.7	589.6	1368.3

SPEED AND IMPACT DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	61.65
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	61.64
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	89.7
MDB Forward Line of Motion to Target Vehicle CL	degrees	62.5 to 63.5	62.7
MDB Crabbed Angle to MDB Forward Line of Motion	degrees	26.0 to 28.0	27.0

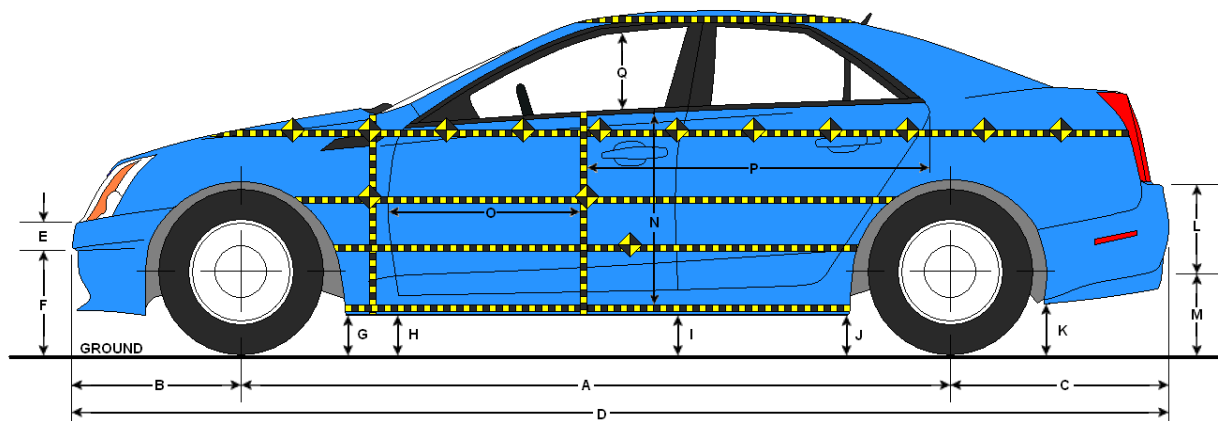
MAXIMUM STATIC CRUSH OF HONEYCOMB FACE

Vertical Location			From Centerline		Max. Crush (mm)
Row	Description	Height (mm)	Distance (mm)	Direction	
A	Center of Bumper	432	800	Right	248
B	Top of Bumper	533	800	Right	204
C	Mid Level	686	800	Left	191
D	Top of Stack	813	800	Left	179

DATA SHEET NO. 10

TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2013 Ford Focus Electric 5-Door Hatchback NHTSA No. MD0216
 Test Program: NCAP MDB Side Impact Test Test Date: 12/19/12



LEFT SIDE VIEW

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

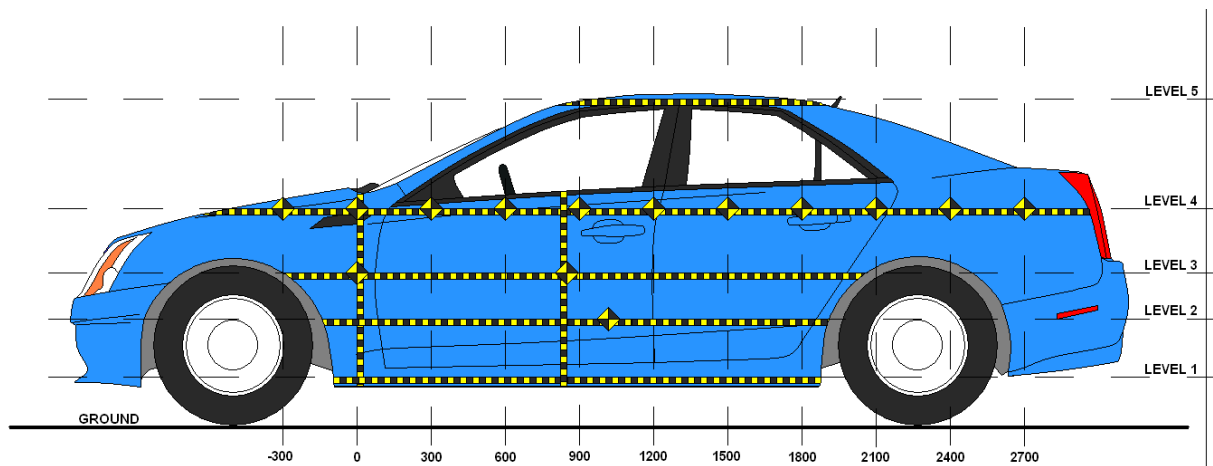
Code	Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2652	2653	1
B	Front Axle to FSOV	827	823	-4
C	Rear Axle to RSOV	785	787	2
D	Total Length at Centerline	4265	4263	-2
E	Front Bumper Thickness	118	119	1
F	Front Bumper Bottom to Ground	437	439	2
G	Sill Height at Front Wheel Well	179	194	15
H	Sill Height at Front Door Leading Edge	181	197	16
I	Sill Height at B-Pillar	210	240	30
J1	Sill Height at Rear Wheel Well	212	245	33
J2	Pinch Weld Height at Rear Wheel Well	173	188	15
K	Sill Height Aft of Rear Wheel Well	503	532	29
L	Rear Bumper Thickness	84	83	-1
M	Rear Bumper Bottom to Ground	390	426	36
N	Sill Height to Bottom of Front Window Sill	563	611	48
O	Front Door Leading Edge to Impact CL	769	749	-20
P	Rear Door Trailing Edge to Impact CL	1293	1278	-15
Q	Front Window Opening	423	448	25
R	Right Side Length	3138	3139	1
S	Left Side Length	3136	3114	-22
T	Vehicle Width at B-Pillar	1783	1677	-106

All measurements in mm with tolerance of ± 3 mm

DATA SHEET NO. 11

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2013 Ford Focus Electric 5-Door Hatchback NHTSA No. MD0216
 Test Program: NCAP MDB Side Impact Test Test Date: 12/19/12



LEFT SIDE VIEW

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Description	Height Above Ground (mm)	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	271	125	1200
2	Occupant H-Point	537	180	900
3	Mid-Door	641	188	900
4	Window Sill	874	150	1650
5	Window Top	1405	18	1800

DATA SHEET NO. 11 ... (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2013 Ford Focus Electric 5-Door Hatchback NHTSA No. MD0216

Test Program: NCAP MDB Side Impact Test Test Date: 12/19/12

EXTERIOR CRUSH MEASUREMENTS AT EACH LEVEL

	Pre-Test (mm)					Post-Test (mm)					Difference (mm)				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900															
-750															
-600															
-450				755					758					3	
-300				724					729					5	
-150			594	697				610	705				16	8	
0	634	604	608	682		643	636	633	695		9	32	25	13	
150	637	613	614	672		724	720	680	708		87	107	66	36	
300	636	612	611	661		715	735	708	709		79	123	97	48	
450	634	611	609	653		722	731	737	714		88	120	128	61	
600	633	610	607	644		732	736	766	729		99	126	159	85	
750	633	610	607	638	900	744	755	785	717	910	111	145	178	79	10
900	634	611	607	635	899	751	791	795	709	910	117	180	188	74	11
1050	636	613	608	632	903	757	767	766	697	916	121	154	158	65	13
1200	638	615	610	629	902	763	749	759	710	916	125	134	149	81	14
1350	642	619	613	629	907	763	748	782	731	916	121	129	169	102	9
1500	645	623	617	630	906	764	758	796	754	918	119	135	179	124	12
1650	650	629	623	633	908	764	776	798	783	920	114	147	175	150	12
1800	652	632	628	622	909	722	779	768	725	927	70	147	140	103	18
1950		623	620	618	914		688	710	679	930		65	90	61	16
2100				650	922				683	935				33	13
2250				657	929				685	939				28	10
2400				665	939				683	945				18	6
2550				681	951				693	957				12	6
2700															
2850															

DATA SHEET NO. 11 ... (CONTINUED)

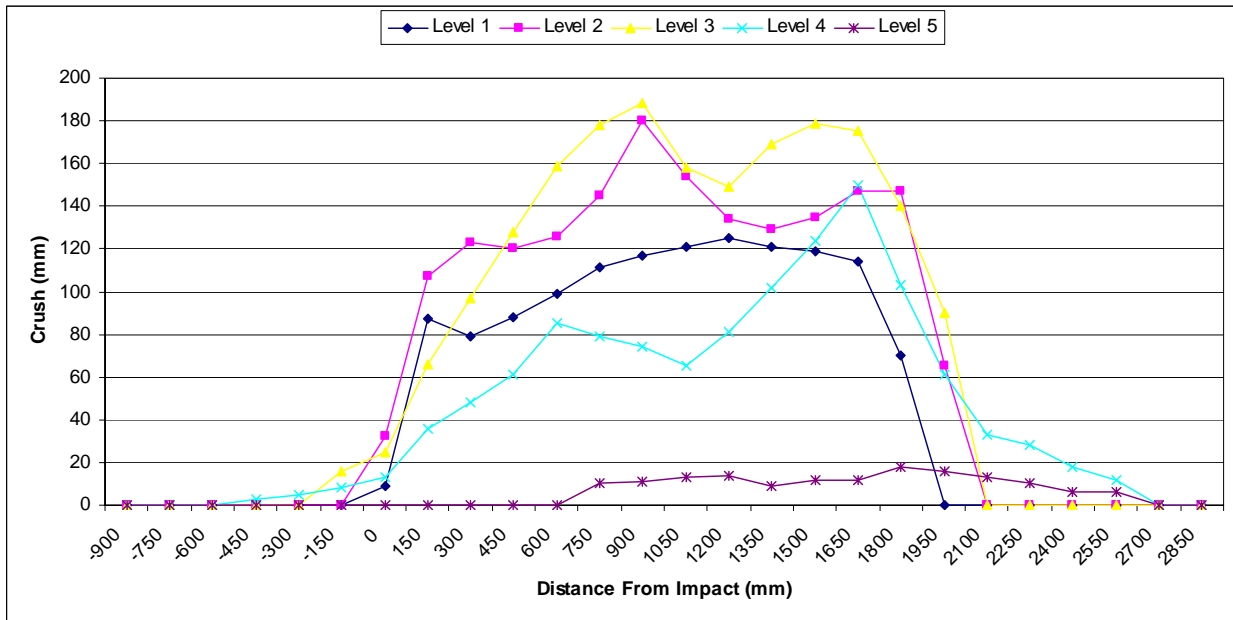
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2013 Ford Focus Electric 5-Door Hatchback

NHTSA No. MD0216

Test Program: NCAP MDB Side Impact Test

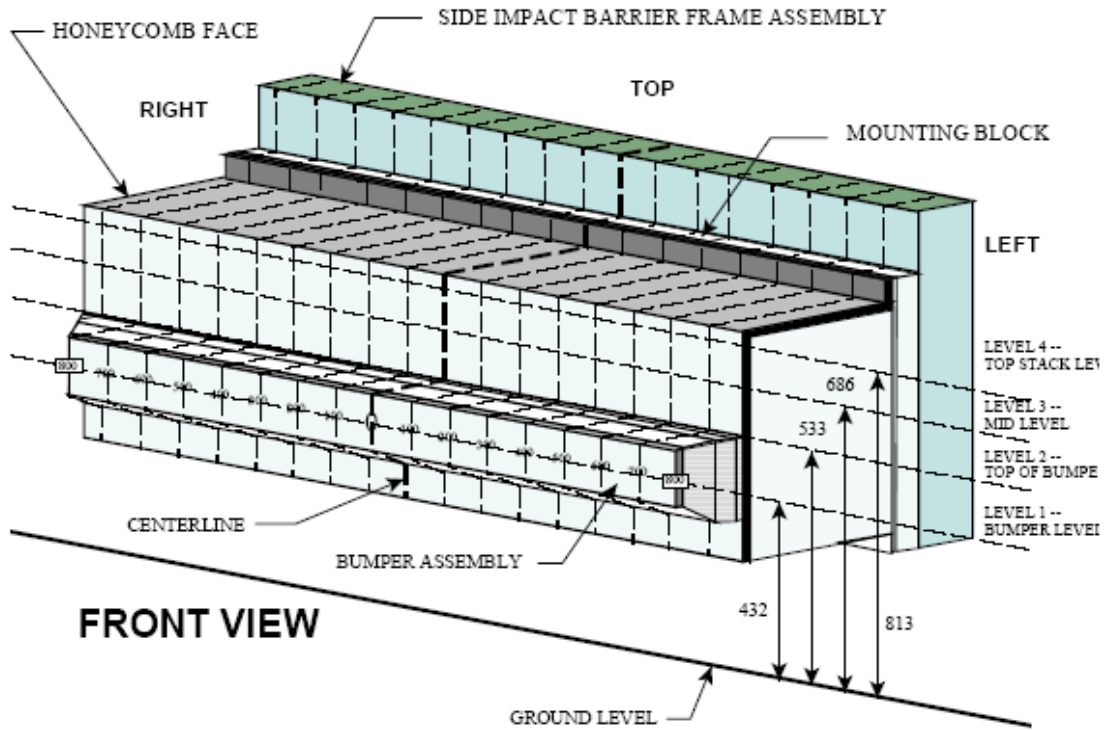
Test Date: 12/19/12



DATA SHEET NO. 12

MDB EXTERIOR STATIC CRUSH MEASUREMENTS

Test Vehicle: 2013 Ford Focus Electric 5-Door Hatchback NHTSA No. MD0216
 Test Program: NCAP MDB Side Impact Test Test Date: 12/19/12



NOTE: Dimensions are shown in millimeters, mm

DEFORMABLE BARRIER STATIC CRUSH

Stack Level	Distance Right of Center								C/L	Distance Left of Center							
	800	700	600	500	400	300	200	100		100	200	300	400	500	600	700	800
1	248	237	230	223	218	216	214	211	207	203	203	202	201	197	203	213	241
2	204	197	183	163	148	144	144	137	148	157	159	160	163	162	164	172	183
3	130	96	85	89	99	109	117	118	89	79	76	80	89	107	126	165	191
4	101	72	54	54	65	80	100	87	69	78	74	72	81	102	119	143	179

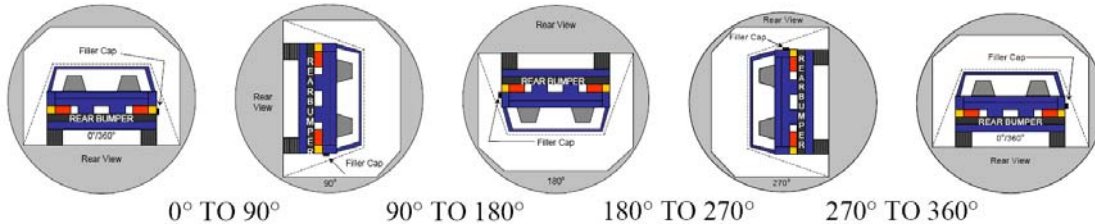
All dimensions in millimeters.

DATA SHEET NO. 13

FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2013 Ford Focus Electric 5-Door Hatchback NHTSA No. MD0216
 Test Program: NCAP MDB Side Impact Test Test Date: 12/19/12
 Temperature at Time of Impact: 12.8° C Test Time: 3:15 PM

- A. From impact until vehicle motion ceases: N/A oz.
(Maximum allowable = 1 oz.)
- B. For the 5 minute period after motion ceases: N/A oz.
(Maximum allowable = 5 oz.)
- C. For the following 25 minutes: N/A oz.
(Maximum allowable = 1 oz./minute)
- D. Spillage Details: N/A



SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° To 90°			
90° To 180°			
180° To 270°			
270° To 360°			

FMVSS 301 SPILLAGE TABLE

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

SOLVENT SPILLAGE LOCATION TABLE

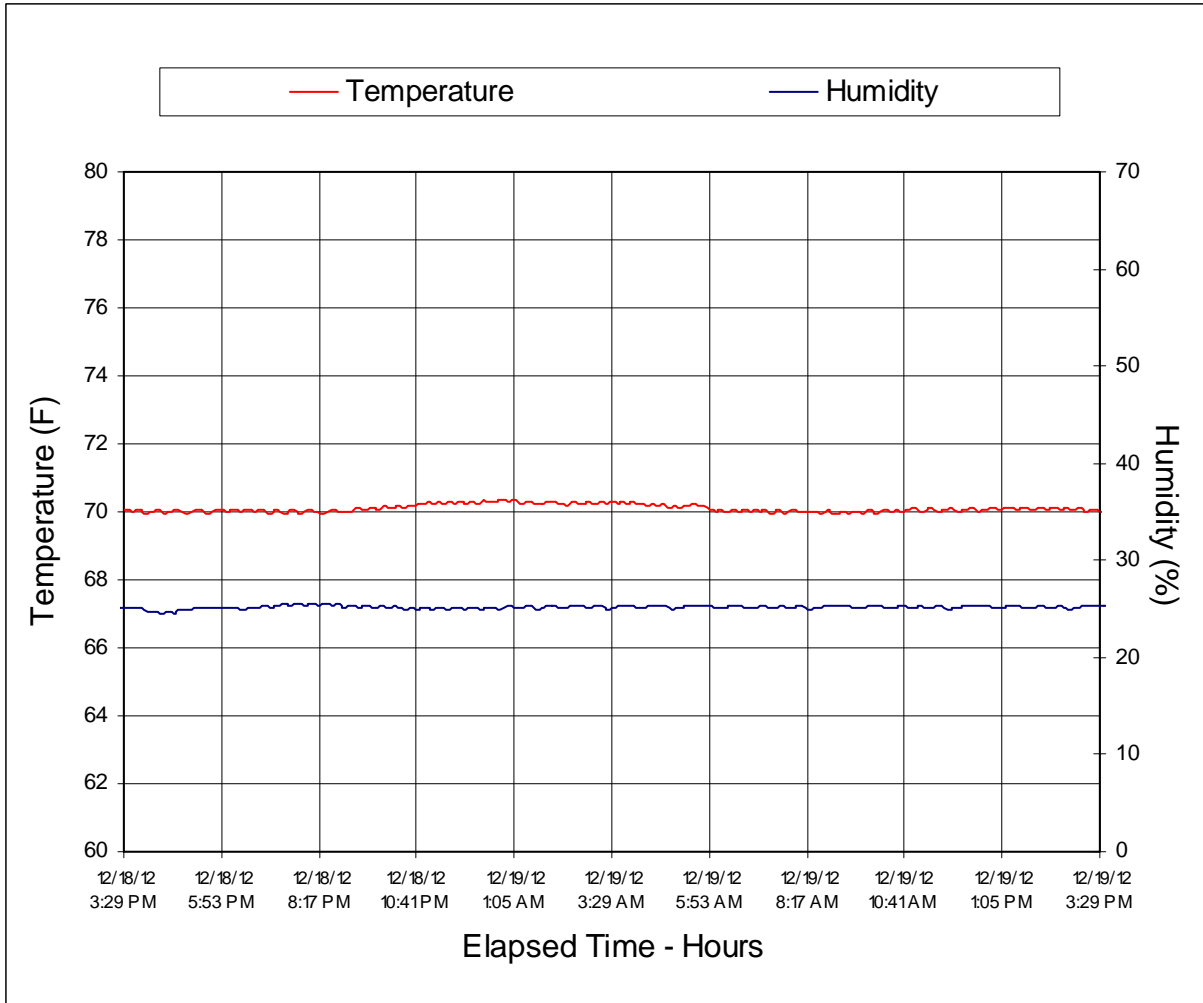
Test Phase	Spillage Location
0° To 90°	
90° To 180°	
180° To 270°	
270° To 360°	

DATA SHEET NO. 14

DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION

Test Vehicle: 2013 Ford Focus Electric 5-Door Hatchback NHTSA No. MD0216

Test Program: NCAP MDB Side Impact Test Test Date: 12/19/12



**APPENDIX A
PHOTOGRAPHS**

TABLE OF PHOTOGRAPHS

Figure		Page
1	As Delivered Right Front 3/4 View of Test Vehicle	A-1
2	As Delivered Left Rear 3/4 View of Test Vehicle	A-1
3	Pre-Test Frontal View of Test Vehicle	A-2
4	Post-Test Frontal View of Test Vehicle	A-2
5	Pre-Test Left Front 3/4 View of Test Vehicle	A-3
6	Post-Test Left Front 3/4 View of Test Vehicle	A-3
7	Pre-Test Left Side View of Test Vehicle	A-4
8	Post-Test Left Side View of Test Vehicle	A-4
9	Pre-Test Left Rear 3/4 View of Test Vehicle	A-5
10	Post-Test Left Rear 3/4 View of Impact Zone	A-5
11	Pre-Test Rear View of Test Vehicle	A-6
12	Post-Test Rear View of Test Vehicle	A-6
13	Pre-Test Right Side View of Test Vehicle	A-7
14	Post-Test Right Side View of Test Vehicle	A-7
15	Pre-Test Overhead View of Test Area	A-8
16	Post-Test Overhead View of Test Area	A-8
17	Pre-Test Left Side View of MDB Positioned Against Side of Test Vehicle	A-9
18	Pre-Test Right Side View of MDB Positioned Against Side of Test Vehicle	A-9
19	Pre-Test Close-Up View of Impact Point Target	A-10
20	Post-Test Close-Up View of Impact Point Target	A-10
21	Pre-Test Left Front Door Latch Close-Up	A-11
22	Post-Test Left Front Door Latch Close-Up	A-11
23	Pre-Test Left Rear Door Latch Close-Up	A-12
24	Post-Test Left Rear Door Latch Close-Up	A-12
25	Pre-Test Front Close-Up View of Driver Dummy	A-13
26	Post-Test Front Close-Up View of Driver Dummy	A-13
27	Pre-Test Left Side View of Driver Dummy Showing Belt and Chalking	A-14
28	Pre-Test Left Side View of Driver Dummy Shoulder and Door Top View	A-14
29	Post-Test Left Side View of Driver Dummy Shoulder and Door Top View	A-15
30	Pre-Test Frontal View of Driver Seat Back Prior to Dummy Positioning	A-15
31	Pre-Test Frontal View of Driver Dummy Head and Shoulders in Relation to Head Restraint	A-16
32	Pre-Test Overhead View of Driver Seat Pan Prior to Dummy Positioning	A-16
33	Pre-Test Overhead View of Driver Dummy Thighs on Seat Pan	A-17
34	Pre-Test Placement of Driver Dummy's Feet	A-17
35	Pre-Test View of Belt Anchorage for Driver Dummy	A-18

TABLE OF PHOTOGRAPHS ... (CONTINUED)

Figure		Page
36	Pre-Test Left Side View of Steering Wheel	A-18
37	View of Disengaged Parking Brake	A-19
38	Pre-Test View of Parking Brake	A-19
39	Pre-Test Close-Up Left Side View of Driver Seat Track	A-20
40	Pre-Test Close-Up Left Side View of Driver Seat Back	A-20
41	Pre-Test Close-Up View of Driver Seat Back or Head Restraint	A-21
42	Pre-Test Driver Dummy and Door Clearance View	A-21
43	Post-Test Driver Dummy and Door Clearance View	A-22
44	Pre-Test Right Side View of Driver Dummy and Front Seat of Occupant Compartment	A-22
45	Post-Test Right Side View of Driver Dummy and Front Seat Occupant Compartment	A-23
46	Pre-Test Driver Inner Door Panel View	A-23
47	Post-Test Driver Inner Door Panel View	A-24
48	Post-Test Driver Dummy Close-Up Head Contact with Vehicle Interior View	A-24
49	Post-Test Driver Dummy Close-Up Head Contact with Side Airbag View	A-25
50	Post-Test Driver Dummy Close-Up Torso Contact with Vehicle Interior View	A-25
51	Post-Test Driver Dummy Close-Up Torso Contact with Side Airbag View	A-26
52	Post-Test Driver Dummy Close-Up Pelvis Contact with Vehicle Interior View	A-26
53	Post-Test Driver Dummy Close-Up Pelvis Contact with Side Airbag View	A-27
54	Post-Test Driver Dummy Close-Up Knee Contact View	A-27
55	Pre-Test Left Side View of Rear Passenger Dummy Showing Belt and Chalking	A-28
56	Pre-Test Left Side View of Rear Passenger Dummy Shoulder and Door Top View	A-28
57	Post-Test Left Side View of Rear Passenger Dummy Shoulder and Door Top View	A-29
58	Pre-Test Frontal View of Rear Passenger Seat Back Prior to Dummy Positioning	A-29
59	Pre-Test Frontal View of Rear Passenger Dummy Head and Shoulders in Relation to Head Restraint	A-30
60	Pre-Test Overhead View of Rear Passenger Seat Pan Prior to Dummy Positioning	A-30
61	Pre-Test Overhead View of Rear Passenger Dummy Thighs on Seat Pan	A-31
62	Pre-Test View of Rear Passenger Dummy's Neck Showing Position of Adjustable Neck Bracket	A-31
63	Pre-Test View of Rear Passenger Dummy's Head Showing Dummy's Head is Level	A-32
64	Pre-Test Placement of Rear Passenger Dummy's Feet	A-32
65	Pre-Test View of Belt Anchorage for Rear Passenger Dummy	A-33
66	Pre-Test Close-Up Left Side View of Rear Passenger Seat Track	A-33
67	Pre-Test Close-Up Left Side View of Rear Passenger Seat Back	A-34
68	Pre-Test Close-Up View of Rear Passenger Seat Back or Head Restraint	A-34
69	Pre-Test Rear Passenger Dummy and Door Clearance View	A-35
70	Post-Test Rear Passenger Dummy and Door Clearance View	A-35

TABLE OF PHOTOGRAPHS ... (CONTINUED)

Figure		Page
71	Pre-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment	A-36
72	Post-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment	A-36
73	Pre-Test Rear Passenger Inner Door Panel View	A-37
74	Post-Test Rear Passenger Inner Door Panel	A-37
75	Post-Test Rear Passenger Dummy Close-Up Head Contact with Vehicle Interior View	A-38
76	Post-Test Rear Passenger Dummy Close-Up Head Contact with Side Airbag View	A-38
77	Post-Test Rear Passenger Dummy Close-Up Torso Contact with Vehicle Interior View	A-39
78	Post-Test Rear Passenger Dummy Close-Up Torso Contact with Side Airbag View	A-39
79	Post-Test Rear Passenger Dummy Close-Up Pelvis Contact with Vehicle Interior View	A-40
80	Post-Test Rear Passenger Dummy Close-Up Pelvis Contact with Side Airbag View	A-40
81	Post-Test Rear Passenger Dummy Close-Up Knee Contact View	A-41
82	Pre-Test View of Fuel Filler Cap or Fuel Filler Neck	A-41
83	Post-Test View of Fuel Filler Cap or Fuel Filler Neck	A-42
84	Pre-Test Front View of MDB Impactor Face	A-42
85	Post-Test Front View of MDB Impactor Face	A-43
86	Pre-Test Top View of MDB Impactor Face	A-43
87	Post-Test Top View of MDB Impactor Face	A-44
88	Pre-Test Left Side View of MDB Impactor Face	A-44
89	Post-Test Left Side View of MDB Impactor Face	A-45
90	Pre-Test Right Side View of MDB Impactor Face	A-45
91	Post-Test Right Side View of MDB Impactor Face	A-46
92	Close-Up View of Vehicle's Certification Label	A-46
93	Close-Up View of Vehicle's Tire Information Placard or Label	A-47
94	Pre-Test Ballast View	A-47
95	Post-Test Primary and Redundant Speed Trap Read-Out	A-48
96	FMVSS No. 301 Rollover 0 Degrees	A-48
97	FMVSS No. 301 Rollover 90 Degrees	A-49
98	FMVSS No. 301 Rollover 180 Degrees	A-49
99	FMVSS No. 301 Rollover 270 Degrees	A-50
100	FMVSS No. 301 Rollover 360 Degrees	A-50
101	Impact Event	A-51
102	Monroney Label	A-51
103	Driver Head Restraint Use and Adjustment Information from Vehicle Owner's Manual	A-52
104	Left Rear Passenger Head Restraint Use and Adjustment Information from Vehicle Owner's Manual	A-52



FIGURE 1. As-Delivered Right Front $\frac{3}{4}$ View of Test Vehicle



FIGURE 2. As-Delivered Left Rear $\frac{3}{4}$ View of Test Vehicle



FIGURE 3. Pre-Test Frontal View of Test Vehicle



FIGURE 4. Post-Test Frontal View of Test Vehicle



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



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



FIGURE 9. Pre-Test Left Rear $\frac{3}{4}$ View of Test Vehicle



FIGURE 10. Post-Test Left Rear $\frac{3}{4}$ View of Test Vehicle



FIGURE 11. Pre-Test Rear View of Test Vehicle

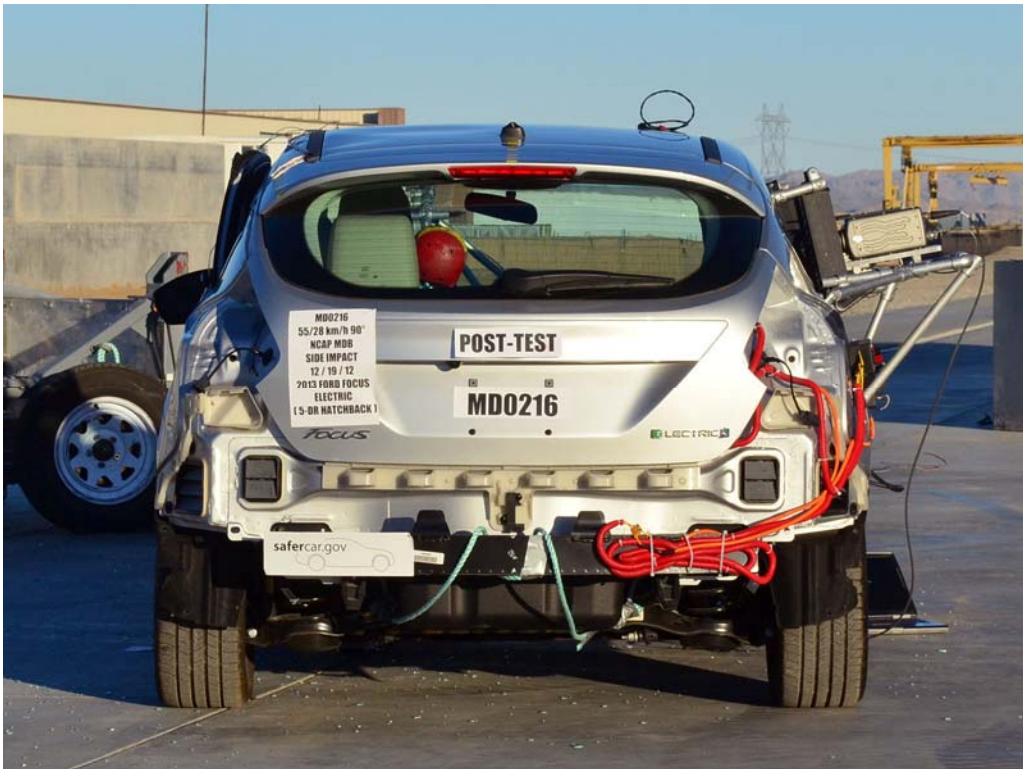


FIGURE 12. Post-Test Rear View of Test Vehicle



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



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

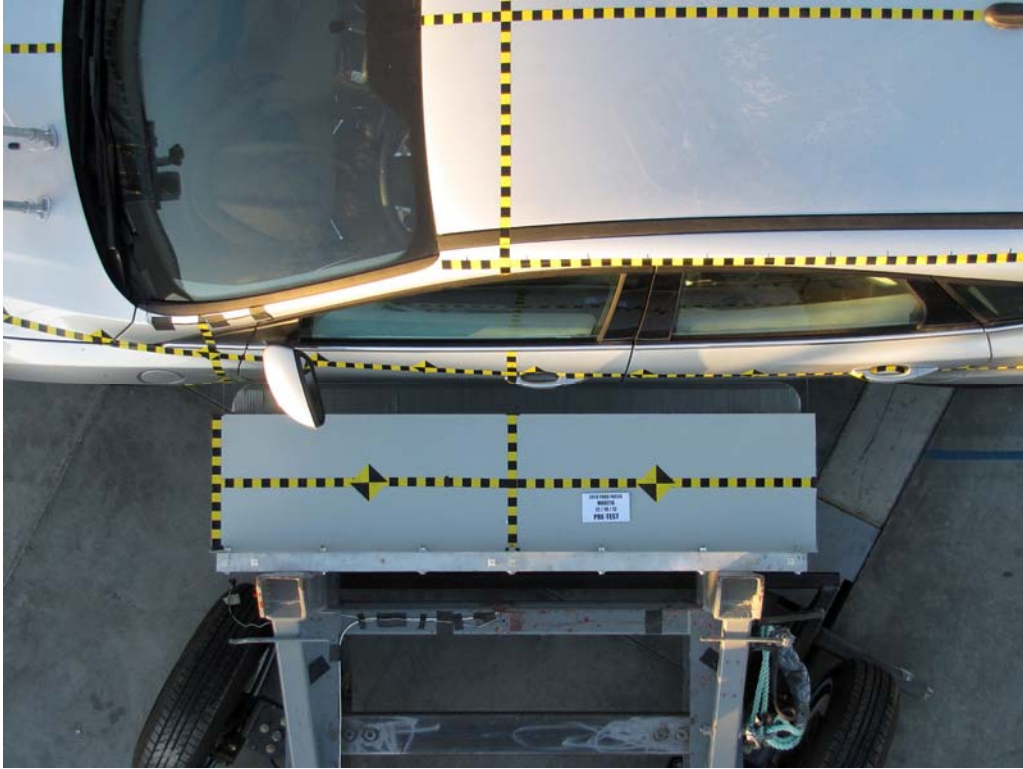


FIGURE 15. Pre-Test Overhead View of Test Area



FIGURE 16. Post-Test Overhead View of Test Area



FIGURE 17. Pre-Test Left Side View of MDB Positioned
Against Side of Test Vehicle



FIGURE 18. Pre-Test Right Side View of MDB Positioned
Against Side of Test Vehicle



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

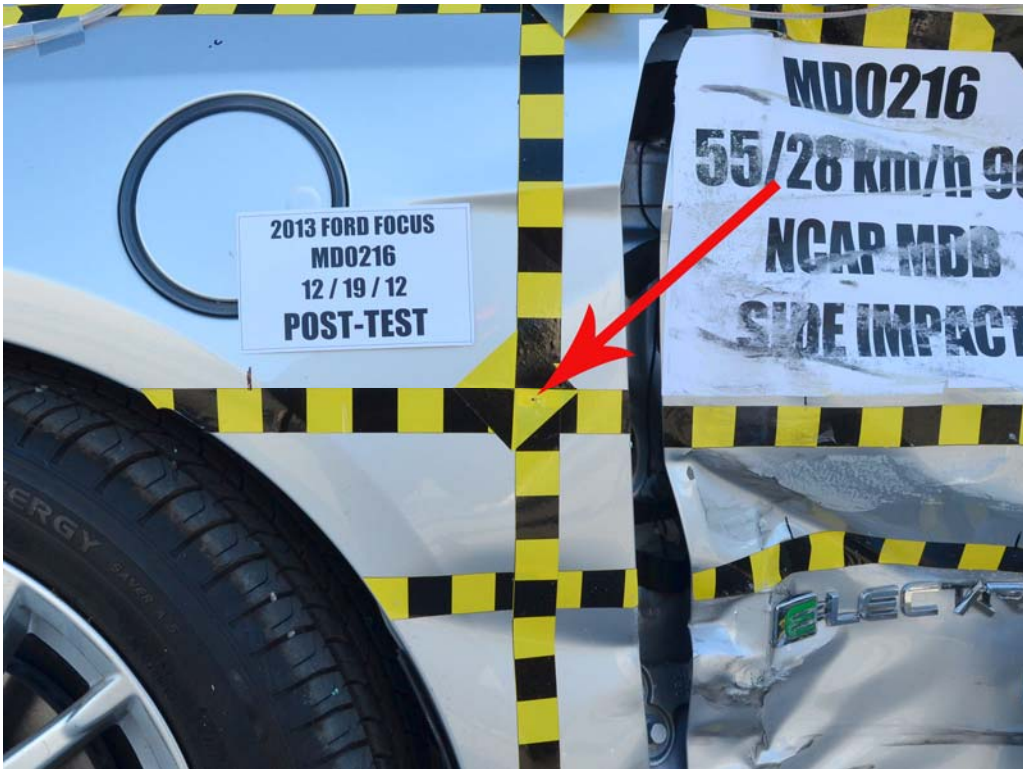


FIGURE 20. Post-Test Close-Up View of Impact Point Target



FIGURE 21. Pre-Test Left Front Door Latch Close-Up



FIGURE 22. Post-Test Left Front Door Latch Close-Up



FIGURE 23. Pre-Test Left Rear Door Latch Close-Up



FIGURE 24. Post-Test Left Rear Door Latch Close-Up



FIGURE 25. Pre-Test Front Close-Up View of Driver Dummy



FIGURE 26. Post-Test Front Close-Up View of Driver Dummy



FIGURE 27. Pre-Test Left Side View of Driver Dummy
Showing Belt and Chalking



FIGURE 28. Pre-Test Left Side View of Driver Dummy Shoulder and Door Top View



FIGURE 29. Post-Test Left Side View of Driver Dummy Shoulder and Door Top View



FIGURE 30. Pre-Test Frontal View of Driver Seat Back Prior to Dummy Positioning



FIGURE 31. Pre-Test Frontal View of Driver Dummy Head and Shoulders in Relation to Head Restraint



FIGURE 32. Pre-Test Overhead View of Driver Seat Pan Prior to Dummy Positioning



FIGURE 33. Pre-Test Overhead View of Driver Dummy Thighs on Seat Pan



FIGURE 34. Pre-Test Placement of Driver Dummy's Feet



FIGURE 35. Pre-Test View of Belt Anchorage for Driver Dummy



FIGURE 36. Pre-Test Left Side View of Steering Wheel



FIGURE 37. View of Disengaged Parking Brake



FIGURE 38. Pre-Test View of Parking Brake



FIGURE 39. Pre-Test Close-Up Left Side View of Driver Seat Track



FIGURE 40. Pre-Test Close-Up Left Side View of Driver Seat Back



FIGURE 41. Pre-Test Close-Up View of Driver Seat Back or Head Restraint



FIGURE 42. Pre-Test Driver Dummy and Door Clearance View



FIGURE 43. Post-Test Driver Dummy and Door Clearance View



FIGURE 44. Pre-Test Right Side View of Driver Dummy and Front Seat Occupant Compartment



FIGURE 45. Post-Test Right Side View of Driver Dummy and Front Seat Occupant Compartment



FIGURE 46. Pre-Test Driver Inner Door Panel View



FIGURE 47. Post-Test Driver Inner Door Panel View
Showing Driver Dummy Contact Locations



FIGURE 48. Post-Test Driver Dummy Close-Up Head Contact with Vehicle View



FIGURE 49. Post-Test Driver Dummy Close-Up Head Contact with Side Airbag View



FIGURE 50. Post-Test Driver Dummy Close-Up Torso Contact with Vehicle Interior View



FIGURE 51. Post-Test Driver Dummy Close-Up Torso Contact with Side Airbag View



FIGURE 52. Post-Test Driver Dummy Close-Up Pelvis Contact View



FIGURE 53. Post-Test Driver Dummy Close-Up Pelvis Contact with Side Airbag View



FIGURE 54. Post-Test Driver Dummy Close-Up Knee Contact View



FIGURE 55. Pre-Test Left Side View of Rear Passenger Dummy
Showing Belt and Chalking



FIGURE 56. Pre-Test Left Side View of Rear Passenger Dummy
Shoulder and Door Top View



FIGURE 57. Post-Test Left Side View of Rear Passenger Dummy
Shoulder and Door Top View



FIGURE 58. Pre-Test Frontal View of Rear Passenger Seat Back
Prior to Dummy Positioning



FIGURE 59. Pre-Test Frontal View of Rear Passenger Dummy Head and Shoulders in Relation to Head Restraint



FIGURE 60. Pre-Test Overhead View of Rear Passenger Seat Pan Prior to Dummy Positioning



FIGURE 61. Pre-Test Overhead View of Rear Passenger Dummy Thighs on Seat Pan

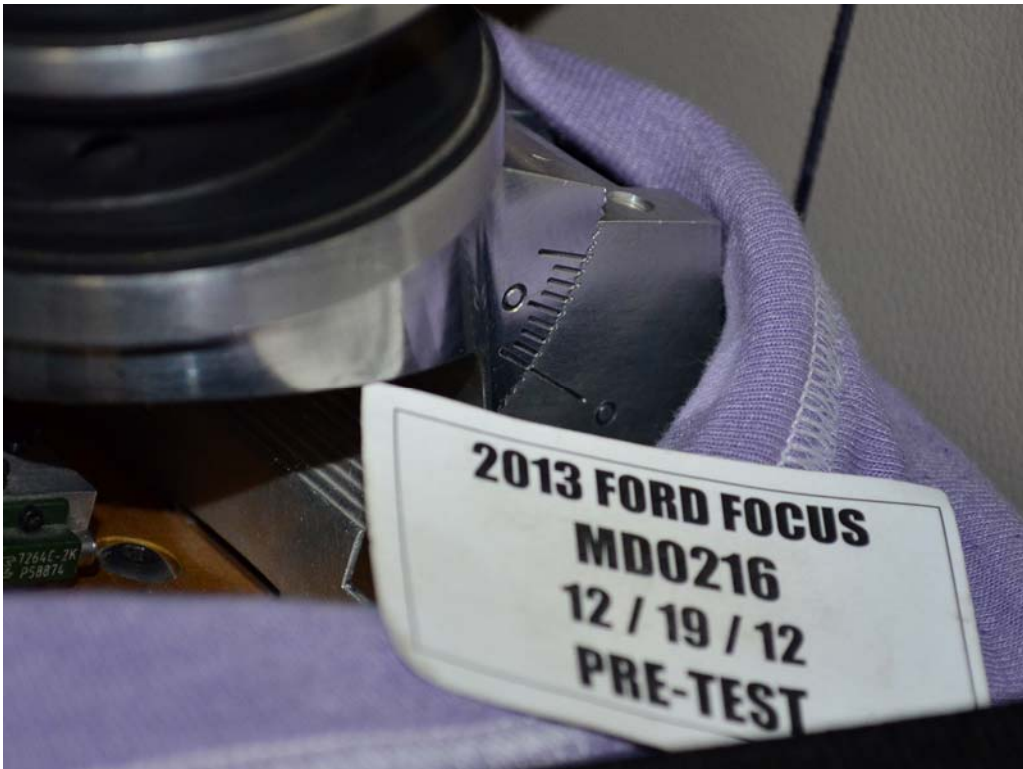


FIGURE 62. Pre-Test View of Rear Passenger Dummy's Neck
Showing Position of Adjustable Neck Bracket

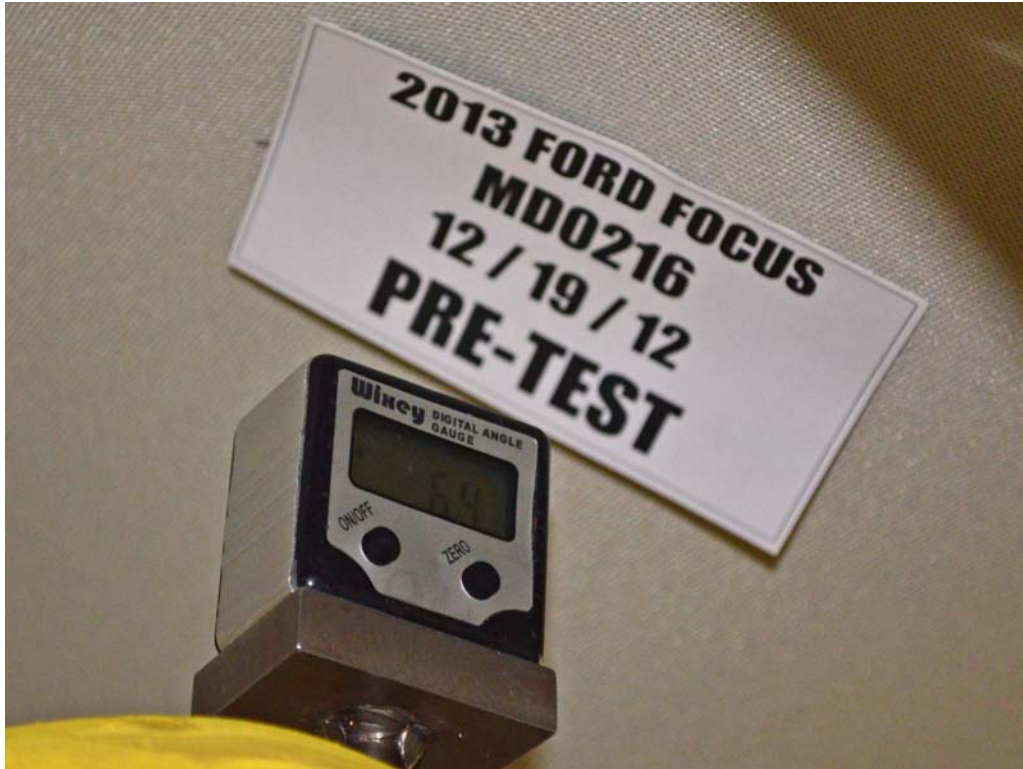


FIGURE 63. Pre-Test View of Rear Passenger Dummy's Head Showing Dummy's Head is Level



FIGURE 64. Pre-Test Placement of Rear Passenger Dummy's Feet



FIGURE 65. Pre-Test View of Belt Anchorage for Rear Passenger Dummy



FIGURE 66. Pre-Test Close-Up Left Side View of Rear Passenger Seat Track



FIGURE 67. Pre-Test Close-Up Left Side View of Rear Passenger Seat Back



FIGURE 68. Pre-Test Close-Up View of Rear Passenger Seat Back or Head Restraint



FIGURE 69. Pre-Test Rear Passenger Dummy and Door Clearance View



FIGURE 70. Post-Test Rear Passenger Dummy and Door Clearance View



FIGURE 71. Pre-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment



FIGURE 72. Post-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment



FIGURE 73. Pre-Test Rear Passenger Inner Door Panel View



FIGURE 74. Post-Test Rear Passenger Inner Door Panel View
Showing Rear Passenger Dummy Contact Locations



FIGURE 75. Post-Test Rear Passenger Dummy Close-Up
Head Contact with Vehicle View



FIGURE 76. Post-Test Rear Passenger Dummy Close-Up
Head Contact with Side Airbag View



FIGURE 77. Post-Test Rear Passenger Dummy Close-Up
Torso Contact with Vehicle Interior View

Photograph Not Applicable

**Vehicle Not Equipped with
Rear Passenger Side Airbags**

FIGURE 78. Post-Test Rear Passenger Dummy Close-Up
Torso Contact with Side Airbag View



FIGURE 79. Post-Test Rear Passenger Dummy Close-Up
Pelvis Contact View

Photograph Not Applicable

Vehicle Not Equipped with
Rear Passenger Side Airbags

FIGURE 80. Post-Test Rear Passenger Dummy Close-Up
Pelvis Contact with Side Airbag View



FIGURE 81. Post-Test Rear Passenger Dummy Close-Up Knee Close-Up View



FIGURE 82. Pre-Test View of Fuel Filler Cap or Fuel Filler Neck



FIGURE 83. Post-Test View of Fuel Filler Cap or Fuel Filler Neck



FIGURE 84. Pre-Test Front View of MDB Impactor Face



FIGURE 85. Post-Test Front View of MDB Impactor Face

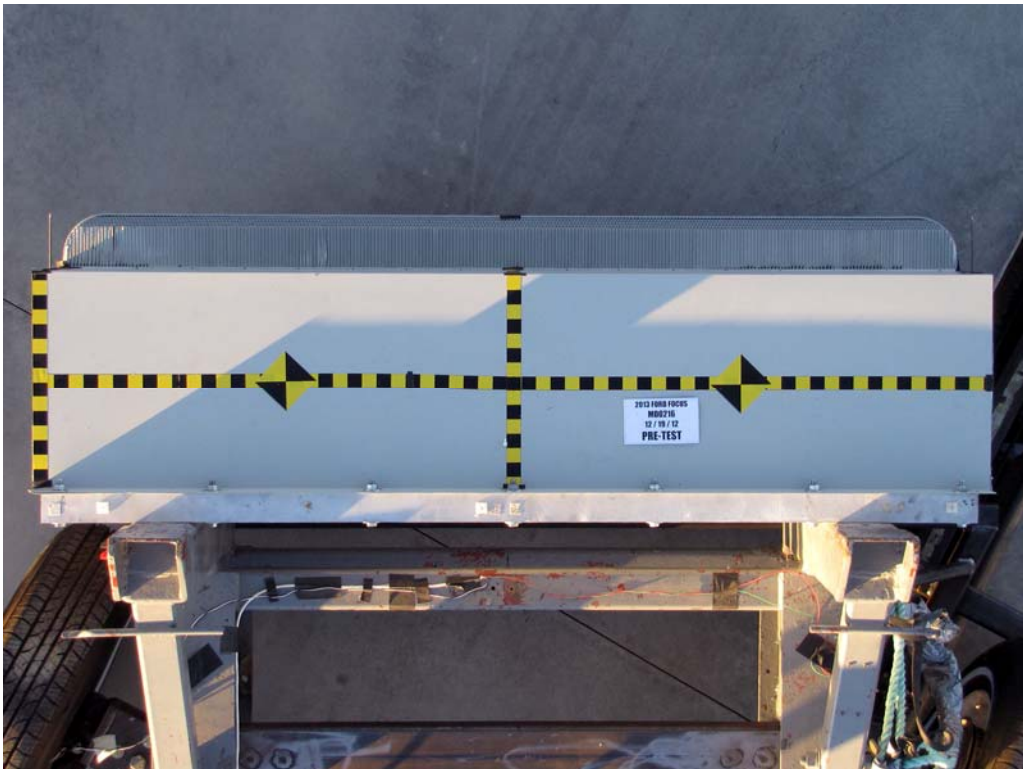


FIGURE 86. Pre-Test Top View of MDB Impactor Face



FIGURE 87. Post-Test Top View of MDB Impactor Face



FIGURE 88. Pre-Test Left Side View of MDB Impactor Face



FIGURE 89. Post-Test Left Side View of MDB Impactor Face



FIGURE 90. Pre-Test Right Side View of MDB Impactor Face



FIGURE 91. Post-Test Right Side View of MDB Impactor Face



FIGURE 92. Close-Up View of Vehicle's Certification Label

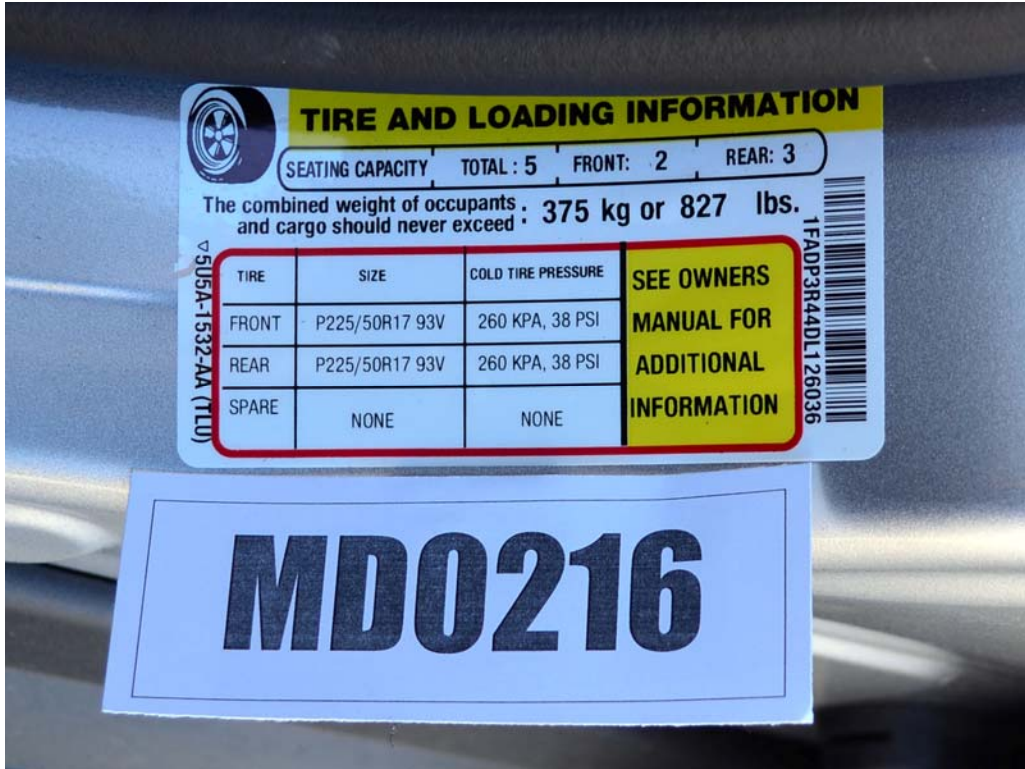


FIGURE 93. Close-Up View of Vehicle's Tire Information Placard or Label

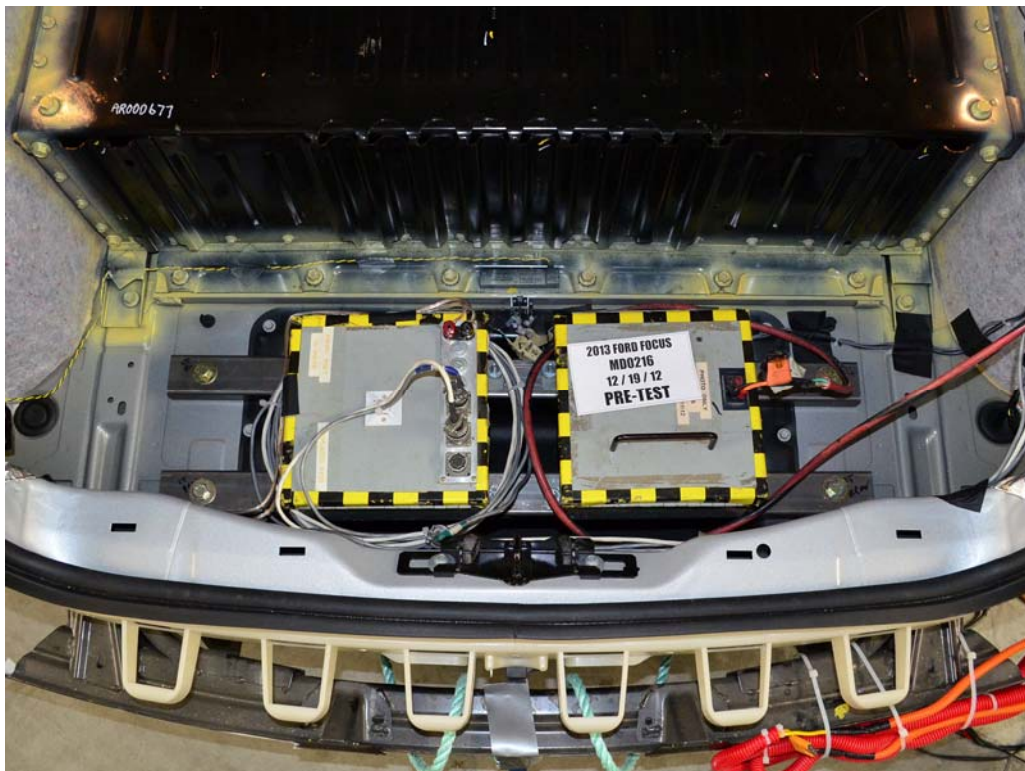


FIGURE 94. Pre-Test Ballast View

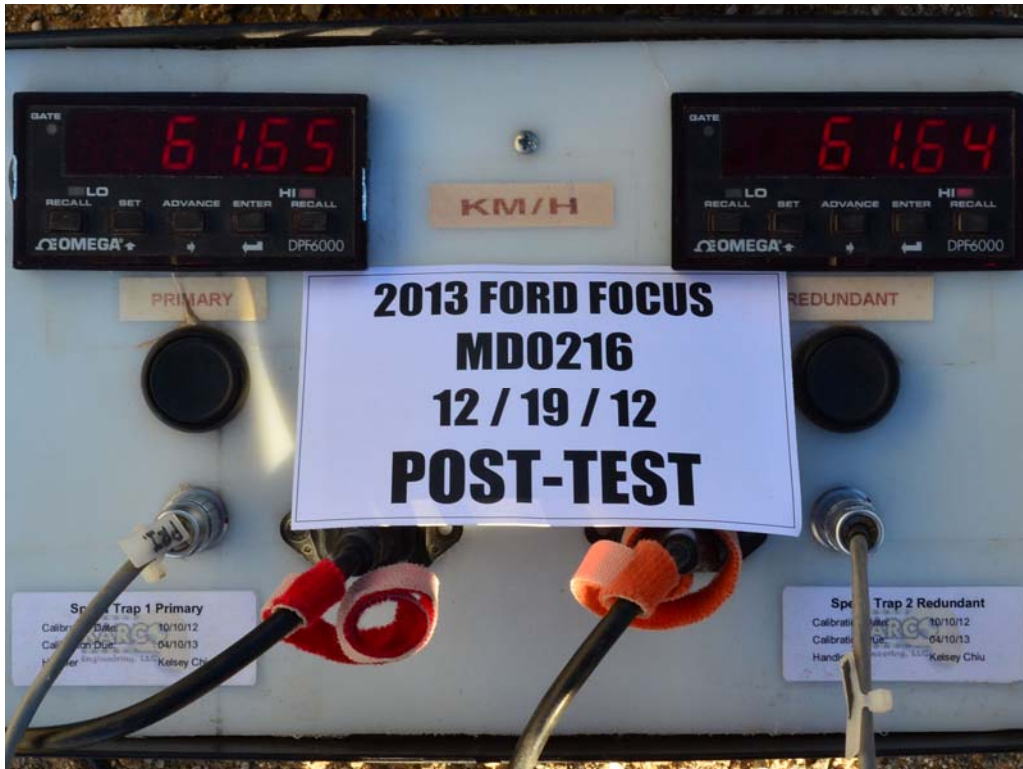


FIGURE 95. Post-Test Primary and Redundant Speed Trap Read-Out

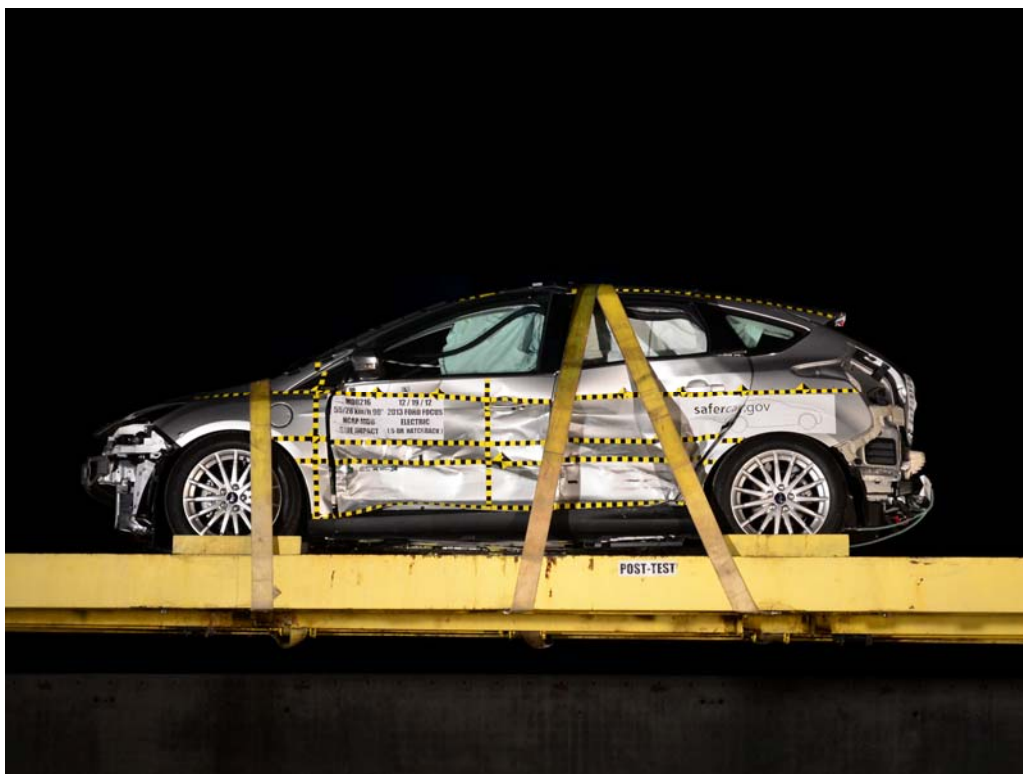


FIGURE 96. FMVSS No. 301 Static Rollover 0 Degrees



FIGURE 97. FMVSS No. 301 Static Rollover 90 Degrees



FIGURE 98. FMVSS No. 301 Static Rollover 180 Degrees

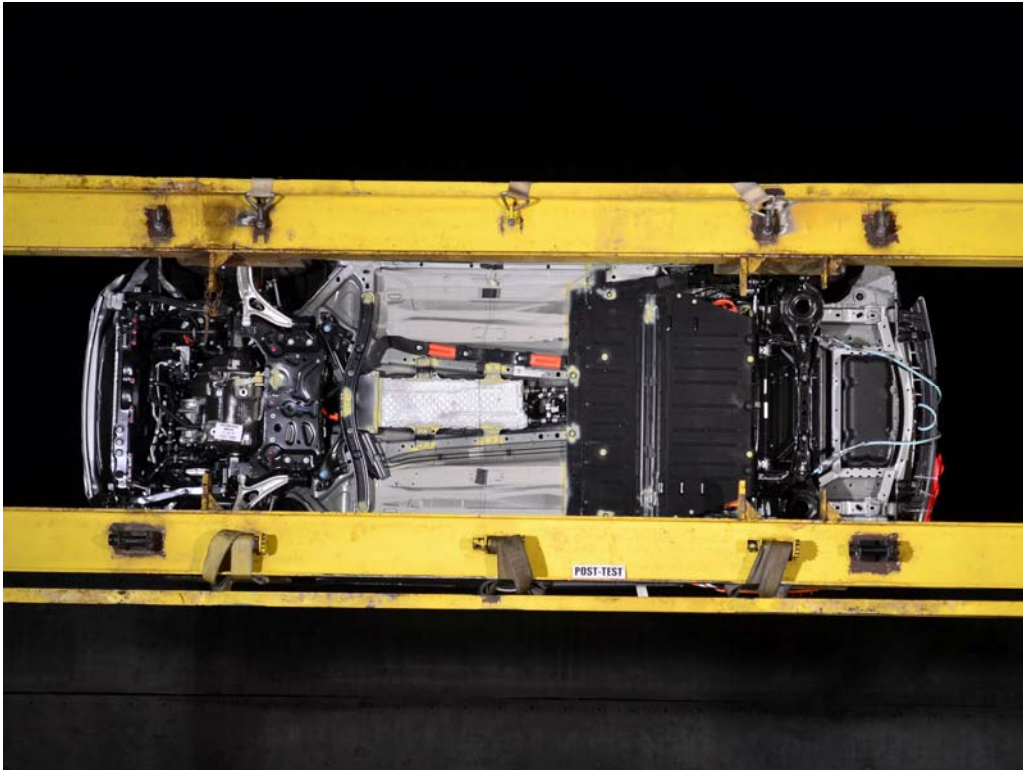


FIGURE 99. FMVSS No. 301 Static Rollover 270 Degrees



FIGURE 100. FMVSS No. 301 Static Rollover 360 Degrees



FIGURE 101. Impact Event

VEHICLE DESCRIPTION		DL 126036		EPA Fuel Economy and Environment		Electric Vehicle	
FORD FOCUS ELECTRIC 2013 5-DR HATCHBACK 5-SPACE SEATER 107 KW ELECTRIC MOTOR 1-SPD AUTO TRANSMISSION		EXTERIOR: TROUS SILVER METALLIC INTERIOR: LIGHT STONE LEATHER SEATS		Fuel Economy 105 MPGe <small>combined city/hwy</small> 110 city 32 highway <small>MPGe per 100 miles</small> Charge Time: 4 hours (slow)		You Save \$8,600 in fuel costs over 5 years compared to the average new vehicle. Annual fuel COST \$600 Fuel Economy & Greenhouse Gas Rating: 10 (Best) Smog Rating: 10 (Best)	
STANDARD EQUIPMENT INCLUDED AT NO EXTRA CHARGE				SAFETY/SECURITY			
EXTERIOR • LED ILLUMINATED CHARGE PORT • 17" ALUMINUM WHEELS • HID PROJECTOR HEADLAMPS • LED TAIL LAMPS • FUEL-EFFICIENT W/ INTORSTO • REAR SPOILER • CHROME TRIM HIGHLIGHTS • REAR WIPER		INTERIOR • ECO-FRIENDLY CLOTH SEATING • AMBIENT LIGHTING • AUTO DIMMING REAR VIEW MIRROR • AUTO CLIMATE CONTROL • FRONT AND REAR FLOOR MATS • DUAL 6-SPEAKER AMBIENT SOUND SYSTEM • POWER WINDOWS & LOCKS • ILLUMINATED ENTRY • LEATHER WRAPPED STEERING WHEEL • REAR CARGO MOUNT SYS • MAP LIGHTS W/ THEATRE DIM		FUNCTIONAL • SPIN-LOAD HTD & COOLED LITHIUM ION BATTERY • 4-BANK ONBOARD CHARGER • REGENERATIVE BRAKING SYS • 10W CHARGING CHRG CORD • MYFORD MOBILE • SYNC W/ MYFORD TOUCH • SONY AUDIO • HD RADIO • VOICE ACTIVATED NAVIGATION • REAR VIEW CAMERA • MYKEY • INTELLIGENT ACCESS W/ PUSH BUTTON START • SIRIUS SAT NAV (N/A, \$K 4.95)		• DRIVER/PASSENGER AIR BAGS • SIDE AIR BAGS/CURTAINS • ADVANCE TRAC ESC • SOS POST CRASH ALERT SYS • PERIMETER ALARM • TIRE PRESSURE MONITOR SYS • STEEL-REINFORCED BATTERY PACK • TIRE MOBILITY KIT WARRANTY • 10-YEAR/100,000 MILE BATTERY WARRANTY • 5-YEAR/50,000 MILE POWERTRAIN WARRANTY • 3-YEAR/50,000 MILE BUMPER-TO-BUMPER WARRANTY	
INCLUDED ON THIS VEHICLE EQUIPMENT GROUP 305A FRONT LICENSE PLATE BRACKET 36 STATE EMISSIONS LEATHER TRIM BUCKET SEATS		PRICE INFORMATION MSRP: \$38,200.00 SALES PRICE: \$38.00 TOTAL OPTIONS: \$1.00 TOTAL VEHICLE & OPTIONS: \$43,198.00 DESTINATION & DELIVERY: \$96.00		GOVERNMENT 5-STAR SAFETY RATINGS Overall Vehicle Score: Not Rated Based on the combined ratings of frontal, side and rollover. Should ONLY be compared to other vehicles of similar size and weight. Frontal Crash: Driver Not Rated, Passenger Not Rated Side Crash: Front seat Not Rated, Rear seat Not Rated Rollover: To Be Rated			
SALES TO: Monroney Ford, 3075 Chrysler Ave, Southfield, MI 48047		DEALER NO.: 72B 417		TOTAL MSRP \$40,990.00			
SALES TO: Monroney Ford, 3075 Chrysler Ave, Southfield, MI 48047		DEALER NO.: RA76		FINAL ASSEMBLY PLANT: MICHIGAN			
SALES TO: Monroney Ford, 3075 Chrysler Ave, Southfield, MI 48047		DEALER NO.: RA76		SALES TO: Monroney Ford, 3075 Chrysler Ave, Southfield, MI 48047			
SALES TO: Monroney Ford, 3075 Chrysler Ave, Southfield, MI 48047		DEALER NO.: RA76		SALES TO: Monroney Ford, 3075 Chrysler Ave, Southfield, MI 48047			

FIGURE 102. Monroney Label

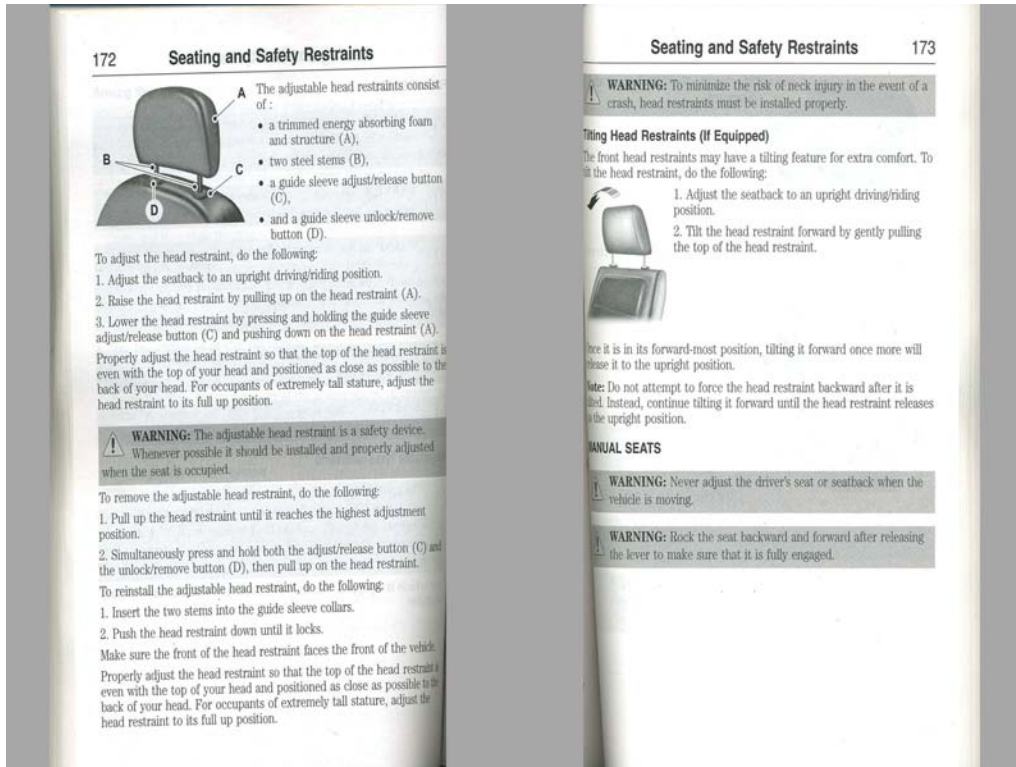


FIGURE 103. Driver Head Restraint Use and Adjustment
Information from Vehicle Owner's Manual

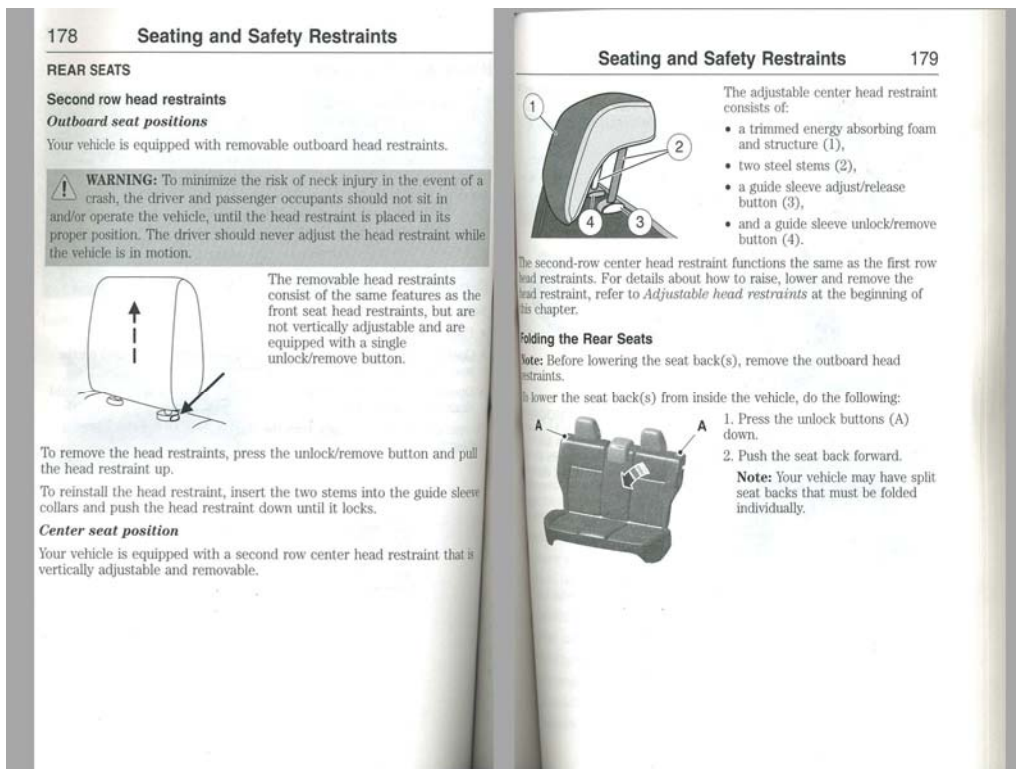


FIGURE 104. Left Rear Passenger Head Restraint
Use and Adjustment Information from Vehicle Owner's Manual

APPENDIX B
DUMMY RESPONSE DATA

TABLE OF DATA PLOTS

Plot		Page
1	Driver Head Acceleration (X) Primary vs. Time	B-1
2	Driver Head Acceleration (Y) Primary vs. Time	B-1
3	Driver Head Acceleration (Z) Primary vs. Time	B-1
4	Driver Head Resultant Acceleration Primary vs. Time	B-1
5	Driver Upper Thorax Rib Deflection (Y) vs. Time	B-2
6	Driver Middle Thorax Rib Deflection (Y) vs. Time	B-2
7	Driver Lower Thorax Rib Deflection (Y) vs. Time	B-2
8	Driver Thorax Rib Deflection Maximum vs. Time	B-2
9	Driver Anterior Abdominal Force (Y) vs. Time	B-3
10	Driver Middle Abdominal Force (Y) vs. Time	B-3
11	Driver Posterior Abdominal Force (Y) vs. Time	B-3
12	Driver Total Abdominal Force (Y) vs. Time	B-3
13	Driver Pubic Symphysis Force (Y) vs. Time	B-4
14	Passenger Head Acceleration (X) vs. Time Primary	B-4
15	Passenger Head Acceleration (Y) vs. Time Primary	B-4
16	Passenger Head Acceleration (Z) vs. Time Primary	B-4
17	Passenger Head Resultant Acceleration Primary vs. Time	B-5
18	Passenger Lower Spine T12 Acceleration (X) vs. Time	B-5
19	Passenger Lower Spine T12 Acceleration (Y) vs. Time	B-5
20	Passenger Lower Spine T12 Acceleration (Z) vs. Time	B-5
21	Passenger Lower Spine T12 Resultant Acceleration vs. Time	B-6
22	Passenger Iliac Force on Impact Side (Y) vs. Time	B-6
23	Passenger Acetabulum Force on Impact Side (Y) vs. Time	B-6
24	Passenger Total Pelvic Force on Impact Side (Y) vs. Time	B-6

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

Additional Driver & Passenger Dummy Instrumentation Data

Driver Lower Spine T12 Acceleration (X)
 Driver Lower Spine T12 Acceleration (Y)
 Driver Lower Spine T12 Acceleration (Z)
 Passenger Upper Thorax Rib Deflection (Y)
 Passenger Middle Thorax Rib Deflection (Y)
 Passenger Lower Thorax Rib Deflection (Y)

Passenger Upper Abdomen Rib Deflection (Y)
Passenger Lower Abdomen Rib Deflection (Y)
Driver Head Acceleration Redundant (X)
Driver Head Acceleration Redundant (Y)
Driver Head Acceleration Redundant (Z)
Passenger Head Acceleration Redundant (X)
Passenger Head Acceleration Redundant (Y)
Passenger Head Acceleration Redundant (Z)

Vehicle Instrumentation Data

Vehicle Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)
Right Side Sill at Front Seat Acceleration (X)
Right Side Sill at Front Seat Acceleration (Y)
Right Side Sill at Front Seat Acceleration (Z)
Right Side Sill at Rear Seat Acceleration (X)
Right Side Sill at Rear Seat Acceleration (Y)
Right Side Sill at Rear Seat Acceleration (Z)
Left Side Sill at Front Seat Acceleration (Y)
Left Side Sill at Rear Seat Acceleration (Y)
Lower A-Post Acceleration (Y)
Middle A-Post Acceleration (Y)
Lower B-Post Acceleration (Y)
Middle B-Post Acceleration (Y)
Front Seat Track Acceleration (Y)
Rear Seat Structure Acceleration (Y)
Right Rear Occupant Compartment Acceleration (Y)
Engine Block (X)
Engine Block (Y)
Rear Floorpan Above Axle Acceleration (X)
Rear Floorpan Above Axle Acceleration (Y)
Rear Floorpan Above Axle Acceleration (Z)

MDB Instrumentation Data

MDB Center of Gravity Acceleration (X)

MDB Center of Gravity Acceleration (Y)

MDB Center of Gravity Acceleration (Z)

MDB Rear Acceleration (X)

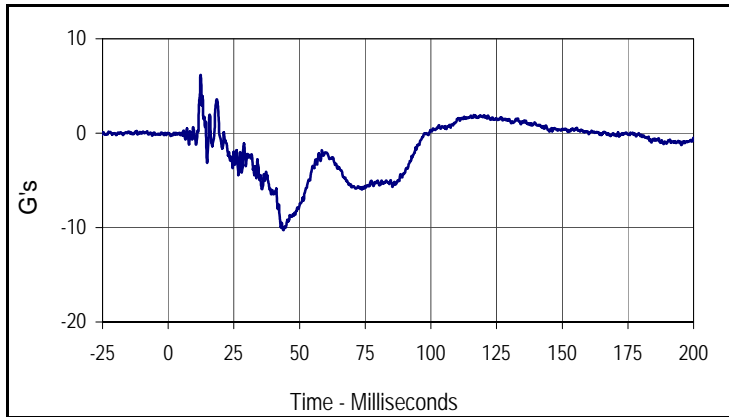
MDB Rear Acceleration (Y)

Left MDB Contact Switch

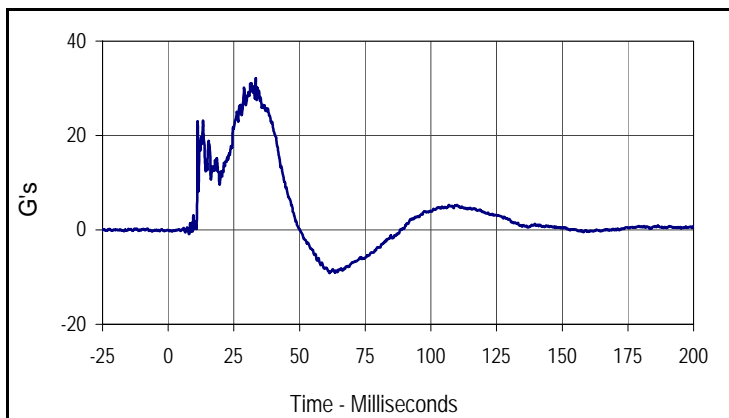
Right MDB Contact Switch

Test Vehicle: 2013 Ford Focus Electric 5-Door Hatchback
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

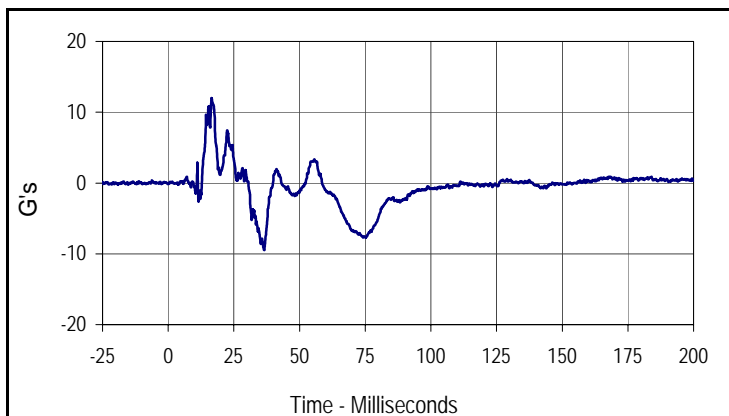
NHTSA No.: MD0216
 Test Date: 12/19/12



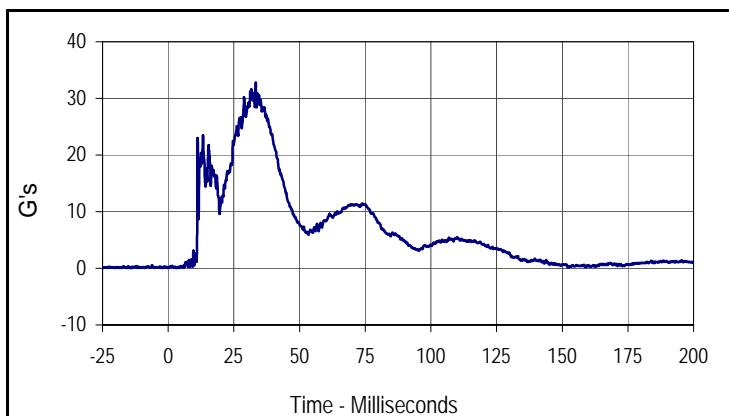
Curve Description			
Driver Head Acceleration X Primary			
Plot No.	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
6.2	12.3	-10.3	43.8



Curve Description			
Driver Head Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
32.2	33.3	-9.1	61.4



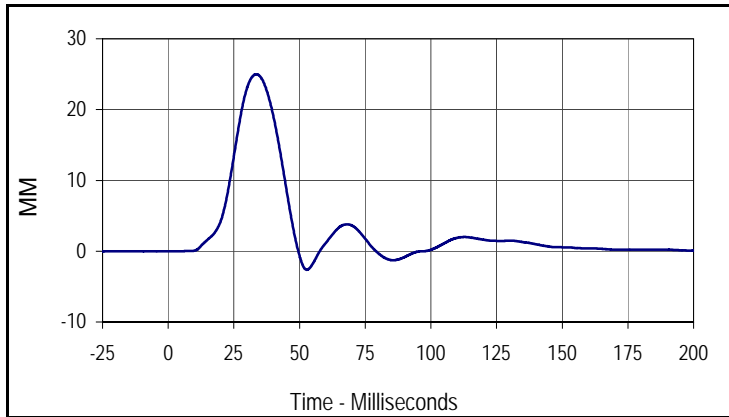
Curve Description			
Driver Head Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
12.0	16.6	-9.5	36.5



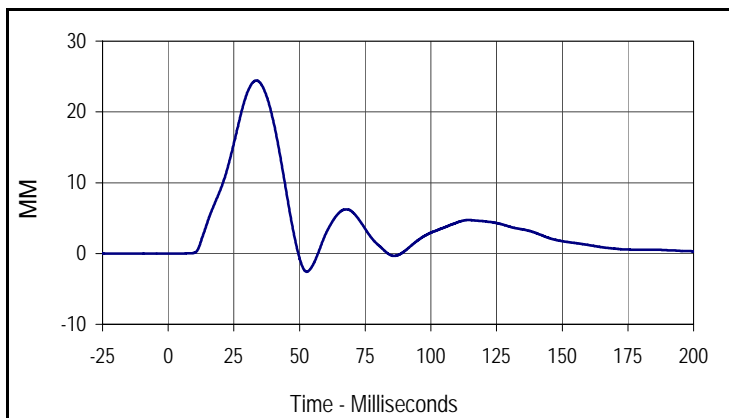
Curve Description			
Driver Head Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
004	RES	1000	G's
Max	Time	Min	Time
32.8	33.3	0.0	4.3

Test Vehicle: 2013 Ford Focus Electric 5-Door Hatchback
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

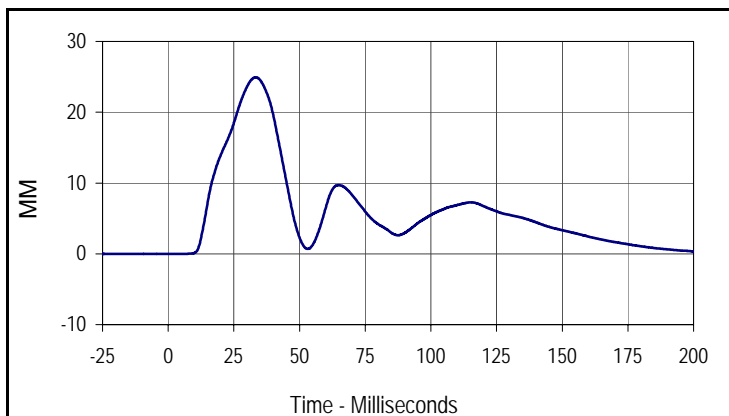
NHTSA No.: MD0216
 Test Date: 12/19/12



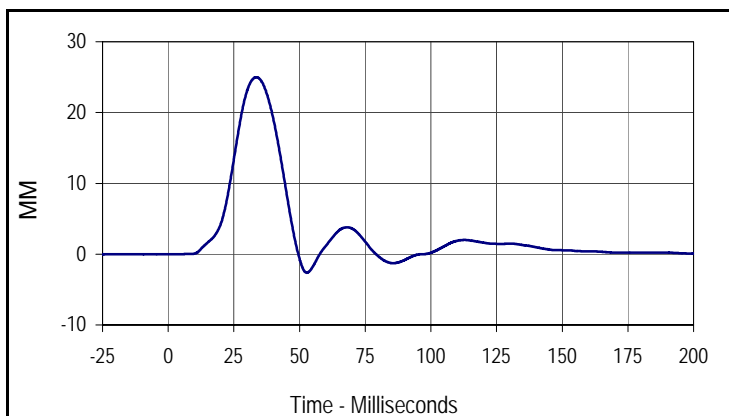
Curve Description			
Driver Upper Thorax Rib Deflection Y			
Plot No.	Type	SAE Class	Units
005	FIL	180	MM
Max	Time	Min	Time
25.0	33.5	-2.6	52.8



Curve Description			
Driver Middle Thorax Rib Deflection Y			
Plot No.	Type	SAE Class	Units
006	FIL	180	MM
Max	Time	Min	Time
24.4	33.6	-2.6	52.7



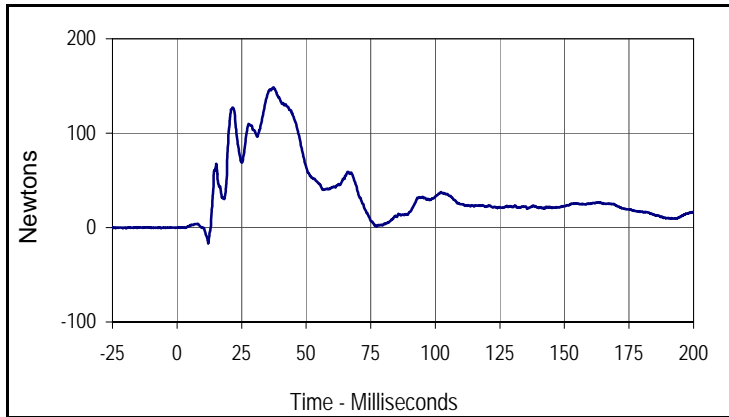
Curve Description			
Driver Lower Thorax Rib Deflection Y			
Plot No.	Type	SAE Class	Units
007	FIL	180	MM
Max	Time	Min	Time
24.9	33.3	0.0	1.6



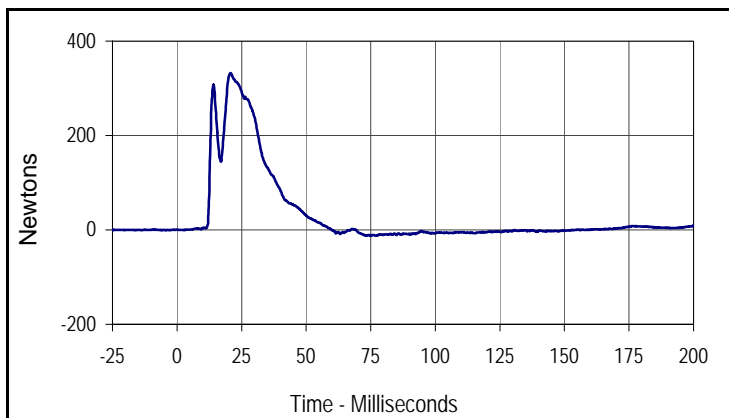
Curve Description			
Driver Thorax Rib Deflection Maximum			
Plot No.	Type	SAE Class	Units
010	FIL	180	MM
Max	Time	Min	Time
25.0	33.5	-2.6	52.8

Test Vehicle: 2013 Ford Focus Electric 5-Door Hatchback
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

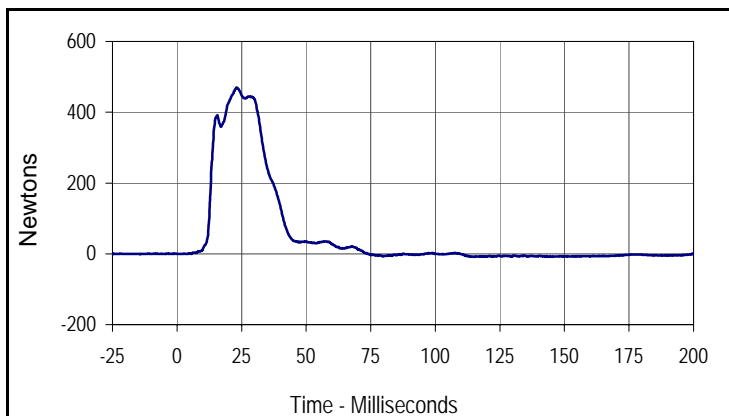
NHTSA No.: MD0216
 Test Date: 12/19/12



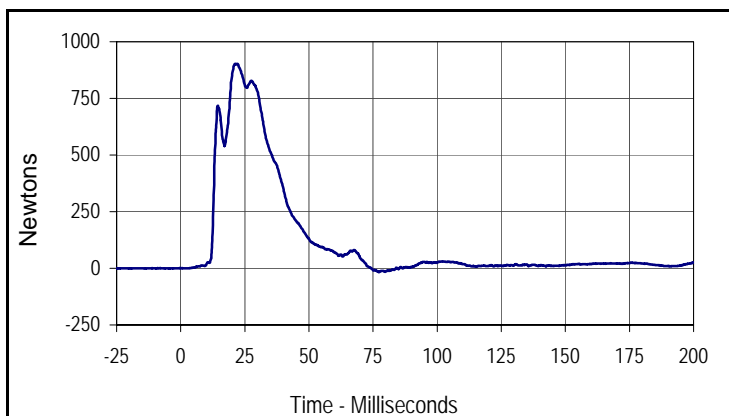
Curve Description			
Driver Anterior Abdominal Force Y			
Plot No.	Type	SAE Class	Units
008	FIL	600	Newtons
Max	Time	Min	Time
148.3	37.3	-16.5	12.1



Curve Description			
Driver Middle Abdominal Force Y			
Plot No.	Type	SAE Class	Units
009	FIL	600	Newtons
Max	Time	Min	Time
332.5	20.8	-12.6	75.1



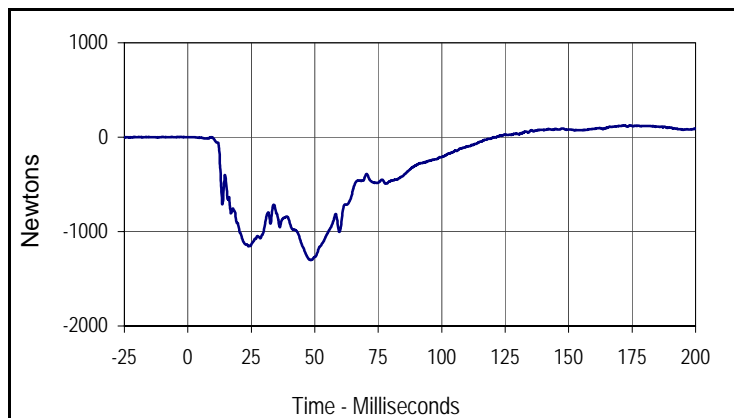
Curve Description			
Driver Posterior Abdominal Force Y			
Plot No.	Type	SAE Class	Units
011	FIL	600	Newtons
Max	Time	Min	Time
469.4	23.1	-8.5	145.4



Curve Description			
Driver Total Abdominal Force			
Plot No.	Type	SAE Class	Units
012	SUM	600	Newtons
Max	Time	Min	Time
902.7	21.4	-16.3	77.3

Test Vehicle: 2013 Ford Focus Electric 5-Door Hatchback
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

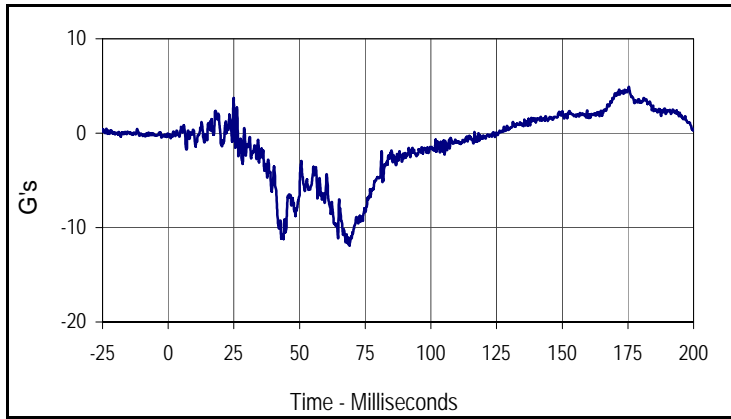
NHTSA No.: MD0216
 Test Date: 12/19/12



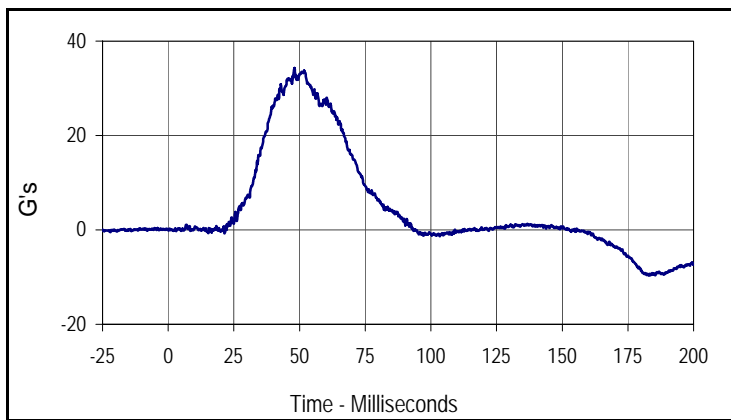
Curve Description			
Driver Pubic Symphysis Force Y			
Plot No.	Type	SAE Class	Units
013	FIL	600	Newtons
Max	Time	Min	Time
125.6	171.9	-1301.0	48.3

Test Vehicle: 2013 Ford Focus Electric 5-Door Hatchback
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

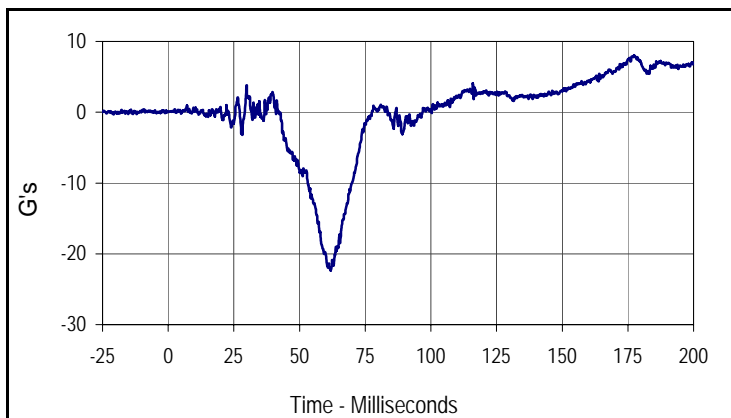
NHTSA No.: MD0216
 Test Date: 12/19/12



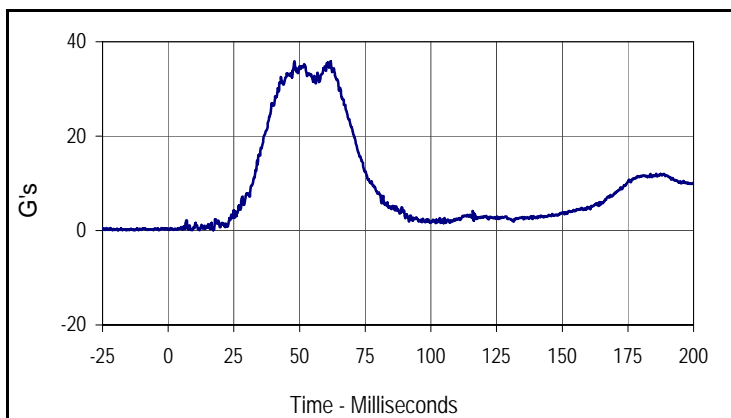
Curve Description			
Passenger Head Acceleration X Primary			
Plot No.	Type	SAE Class	Units
014	FIL	1000	G's
Max	Time	Min	Time
4.9	175.4	-11.9	69.0



Curve Description			
Passenger Head Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
015	FIL	1000	G's
Max	Time	Min	Time
34.3	48.1	-9.7	182.9



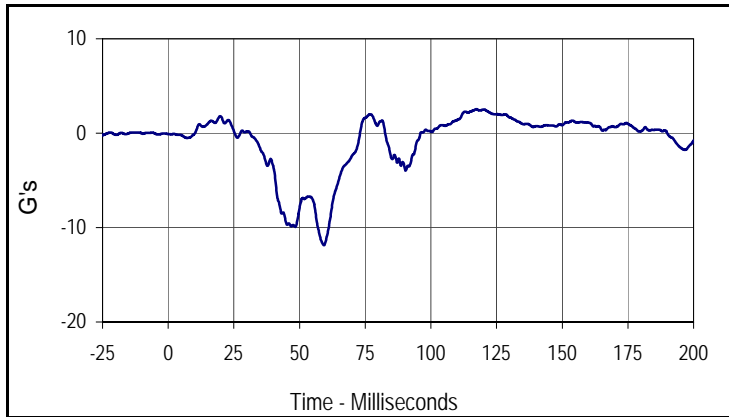
Curve Description			
Passenger Head Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
016	FIL	1000	G's
Max	Time	Min	Time
8.0	177.4	-22.4	61.9



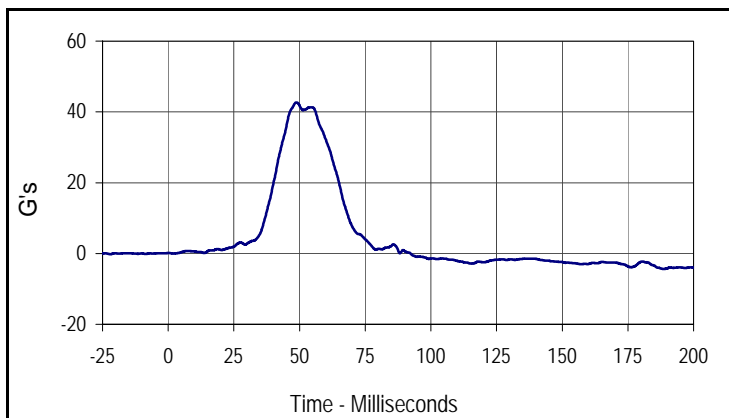
Curve Description			
Passenger Head Acceleration Resultant Primary			
Plot No.	Type	SAE Class	Units
017	RES	1000	G's
Max	Time	Min	Time
35.9	61.9	0.0	17.2

Test Vehicle: 2013 Ford Focus Electric 5-Door Hatchback
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

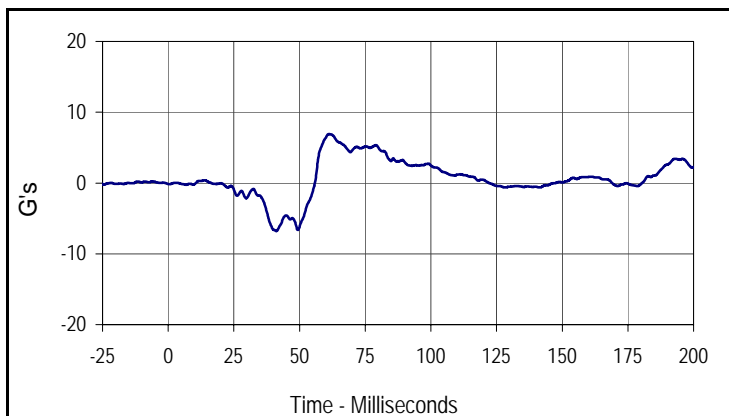
NHTSA No.: MD0216
 Test Date: 12/19/12



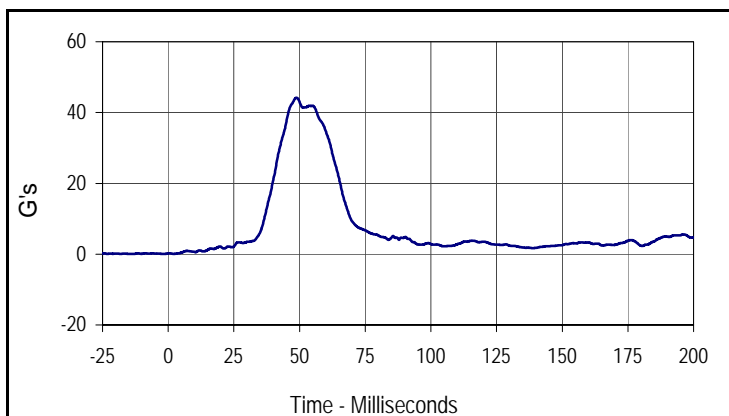
Curve Description			
Passenger Lower Spine T12 Acceleration X			
Plot No.	Type	SAE Class	Units
019	FIL	180	G's
Max	Time	Min	Time
2.5	117.2	-11.9	59.3



Curve Description			
Passenger Lower Spine T12 Acceleration Y			
Plot No.	Type	SAE Class	Units
020	FIL	180	G's
Max	Time	Min	Time
42.6	48.8	-4.3	188.3



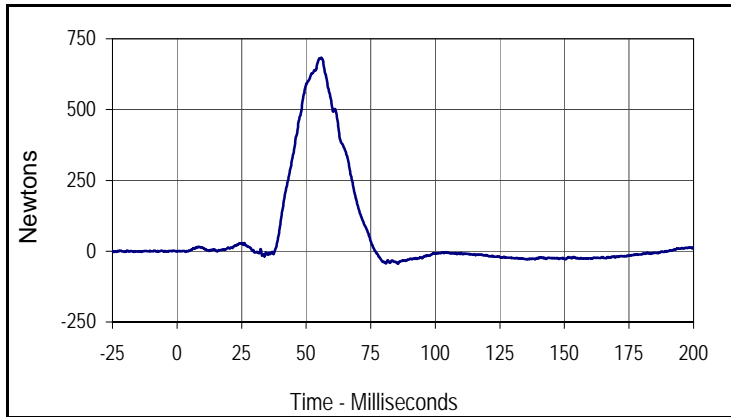
Curve Description			
Passenger Lower Spine T12 Acceleration Z			
Plot No.	Type	SAE Class	Units
021	FIL	180	G's
Max	Time	Min	Time
6.9	61.2	-6.8	41.2



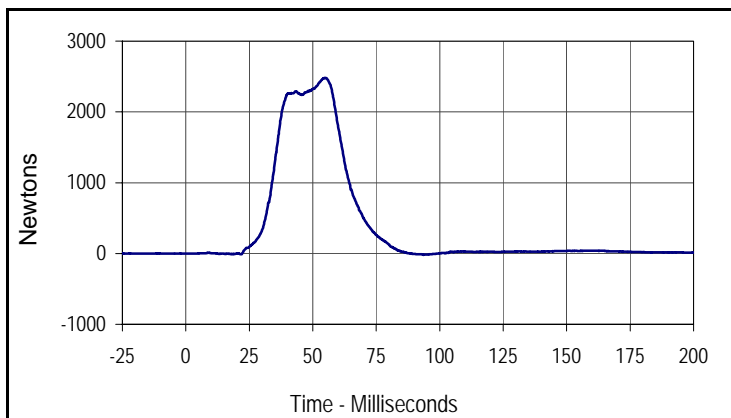
Curve Description			
Passenger Lower Spine T12 Acceleration Res.			
Plot No.	Type	SAE Class	Units
022	RES	180	G's
Max	Time	Min	Time
44.2	48.8	0.1	2.0

Test Vehicle: 2013 Ford Focus Electric 5-Door Hatchback
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

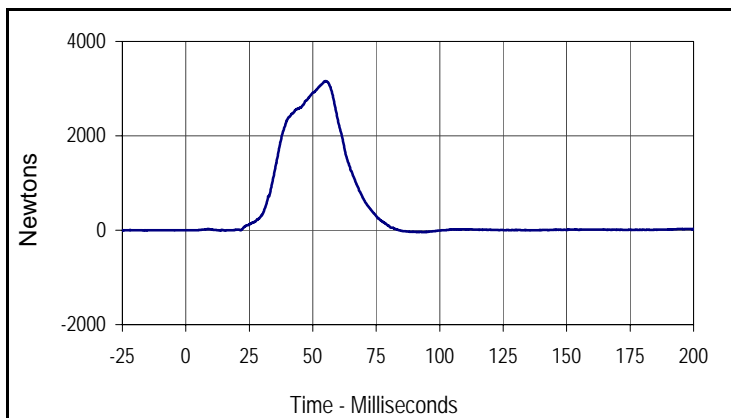
NHTSA No.: MD0216
 Test Date: 12/19/12



Curve Description			
Passenger Iliac Force on Impact Side Y			
Plot No.	Type	SAE Class	Units
023	FIL	600	Newtons
Max	Time	Min	Time
683.0	55.8	-43.9	85.5



Curve Description			
Passenger Acetabulum Force on Impact Side Y			
Plot No.	Type	SAE Class	Units
024	FIL	600	Newtons
Max	Time	Min	Time
2481.1	55.0	-17.0	93.6



Curve Description			
Passenger Total Pelvic Force			
Plot No.	Type	SAE Class	Units
018	SUM	600	Newtons
Max	Time	Min	Time
3161.1	55.1	-41.7	93.6

APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

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

Test Program: ES2re External Measurements

Test Date: 12/14/2012



ATD Serial No.: F035

Test I.D.: N/A

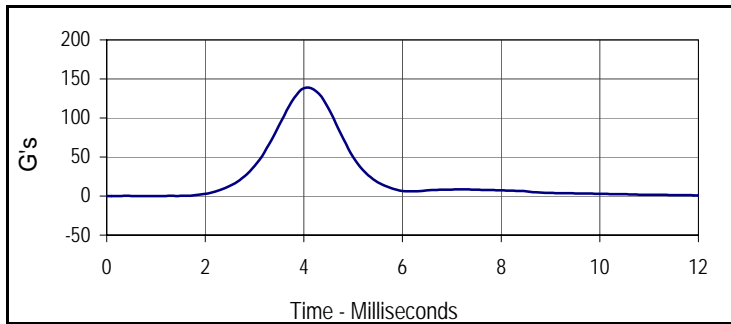
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	30.3	Pass
1 Sitting Height	mm	900 - 918	907	Pass
2 Seat to Shoulder Joint	mm	558 - 572	564	Pass
3 Seat to Lower Face of Thoracic Spine Box	mm	346 - 356	350	Pass
4 Seat to Hip Joint (Center of Bolt)	mm	97 - 103	100	Pass
5 Sole to Seat, Sitting	mm	333 - 451	389	Pass
6 Head Width	mm	152 - 158	155	Pass
7 Shoulder / Arm Width	mm	461 - 479	470	Pass
8 Thorax Width	mm	322 - 332	324	Pass
9 Abdomen Width	mm	273 - 287	280	Pass
10 Pelvis Lap Width	mm	359 - 373	365	Pass
11 Head Depth	mm	196 - 206	202	Pass
12 Thorax Depth	mm	262 - 272	269	Pass
13 Abdomen Width	mm	194 - 204	198	Pass
14 Pelvis Depth	mm	235 - 245	239	Pass
15 Back of Buttocks to Hip Joint (Center of Bolt)	mm	150 - 160	155	Pass
16 Back of Buttocks to Front Knee	mm	597 - 615	611	Pass
Overall Test Results				Pass

Test Program: ES2re Head Drop Test
 ATD Serial No.: F035

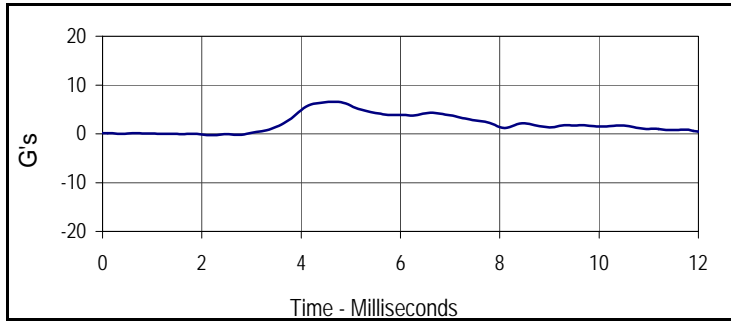
Test Date: 12/14/12
 Test I.D.: F035HD041



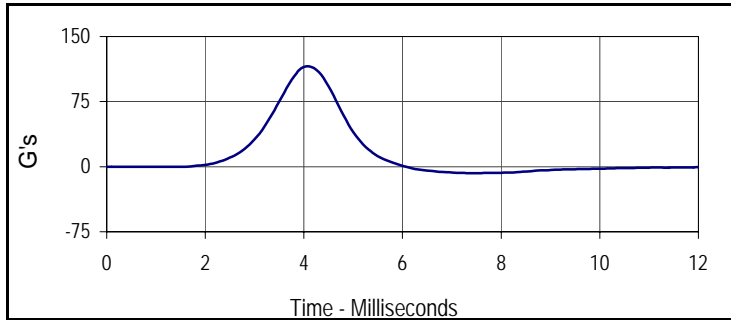
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	240	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		28.9	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.4	Pass
Peak Head Resultant Acceleration	G's	125 to 155	139.1	Pass
Peak Head X Acceleration	G's	≤15	6.6	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	6.1	Pass
Overall Test Results				Pass



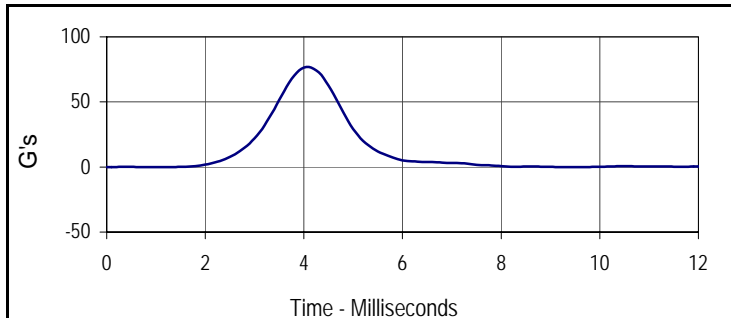
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
139.1	4.1	0.1	1.0



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
6.6	4.7	-0.3	2.2



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
115.8	4.1	-7.5	7.4



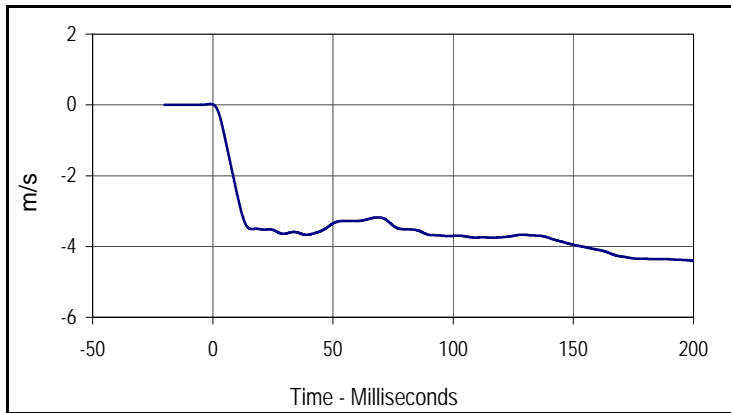
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
76.8	4.1	-0.1	9.4

Test Program: ES2re Neck Flexion Test
 ATD Serial No.: F035

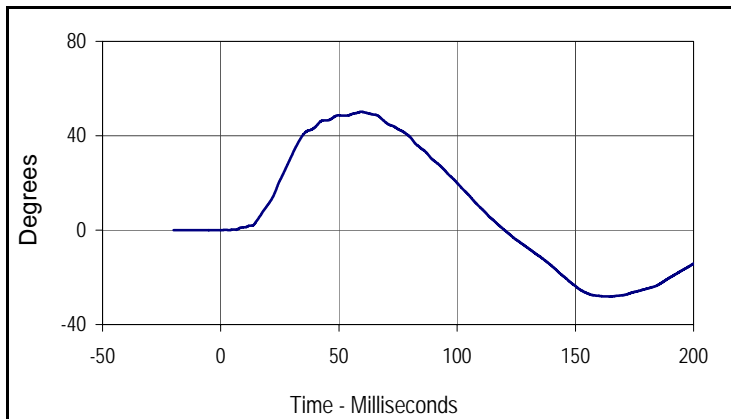
Test Date: 12/14/12
 Test I.D.: F035NB041



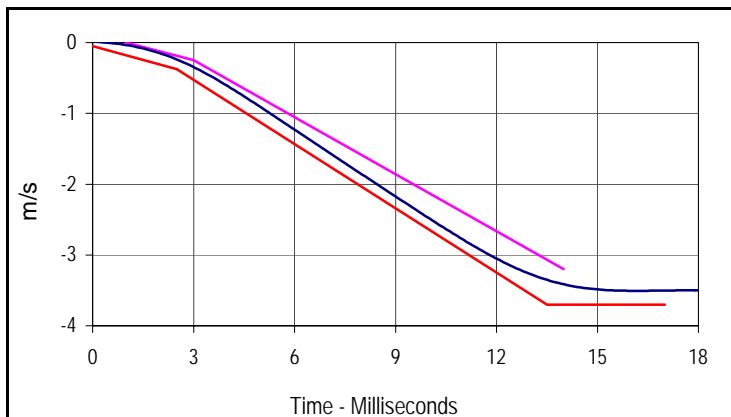
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	280	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		28.9	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.3	Pass
Pendulum Velocity	m/s	3.3 to 3.5	3.43	Pass
Headform Flexion	Max	49 to 59	50.1	Pass
	Time	54 to 66	59.5	Pass
Headform Flexion Decay (Peak to Zero)	msec	53 to 88	60.6	Pass
Overall Test Results				Pass



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.0	-4.4	200.0



Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
50.1	59.5	-28.1	165.0

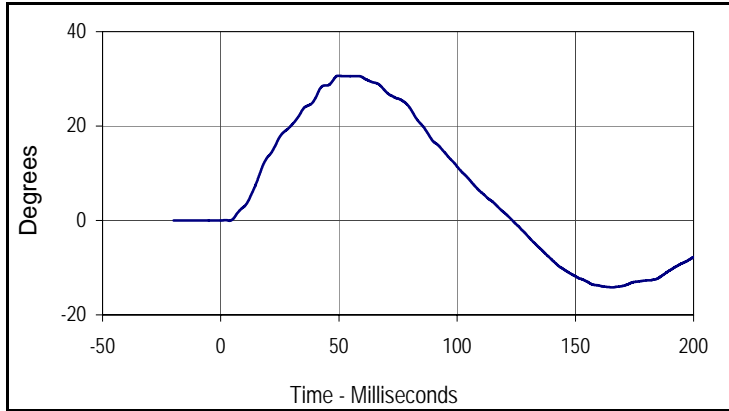


Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.0	-4.4	200.0

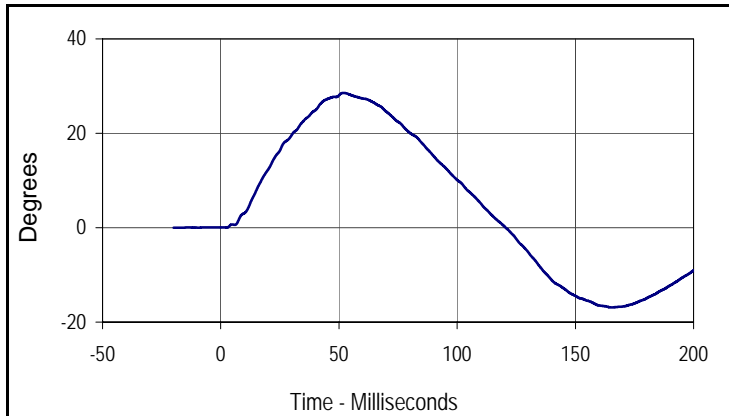
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.0	-0.03	2.5	-0.375
14.0	-3.20	13.5	-3.70
		17.0	-3.70

Test Program: ES2re Neck Flexion Test
 ATD Serial No.: F035

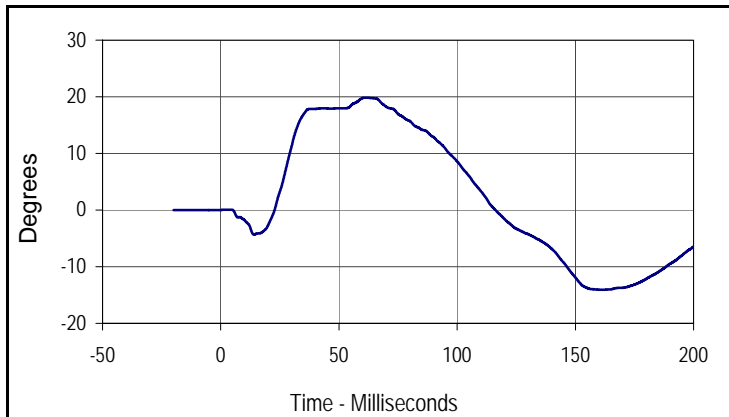
Test Date: 12/14/12
 Test I.D.: F035NB041



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
30.7	49.7	-14.2	165.5



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
28.6	51.9	-16.9	165.0



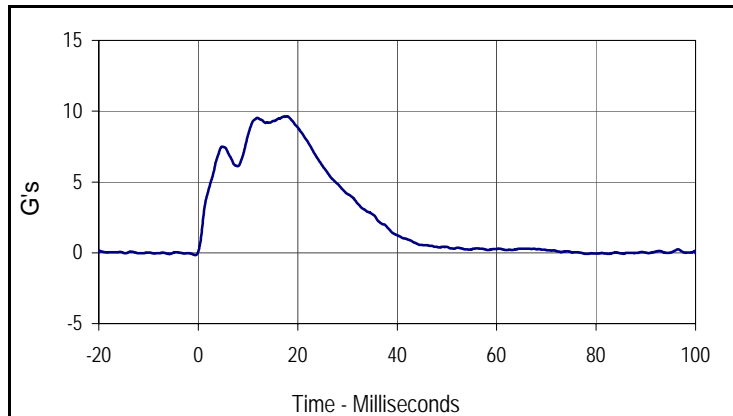
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
19.8	61.4	-14.1	161.6

Test Program: ES2re Shoulder Impact Test
 ATD Serial No.: F035

Test Date: 12/14/12
 Test I.D.: F035SH041



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	315	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		28.9	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.4	Pass
Pendulum Speed	m/s	4.2 to 4.4	4.29	Pass
Peak Impactor Acceleration	G's	7.5 to 10.5	9.6	Pass
Overall Test Results				Pass



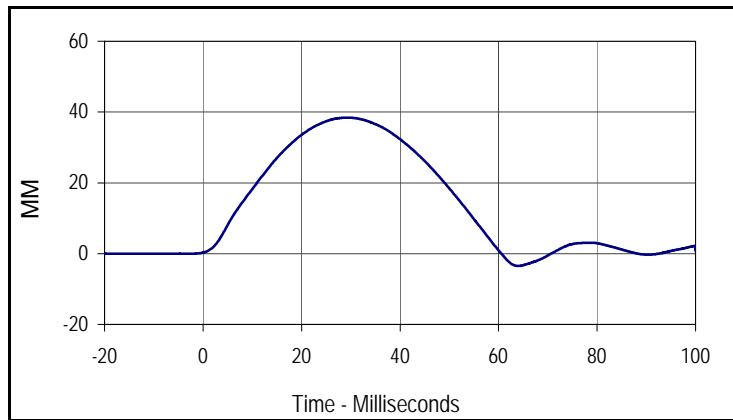
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
9.6	17.9	-0.2	-0.6

Test Program: ES2re Thorax - Rib Drop Test
 ATD Serial No.: F035 Rib # 1

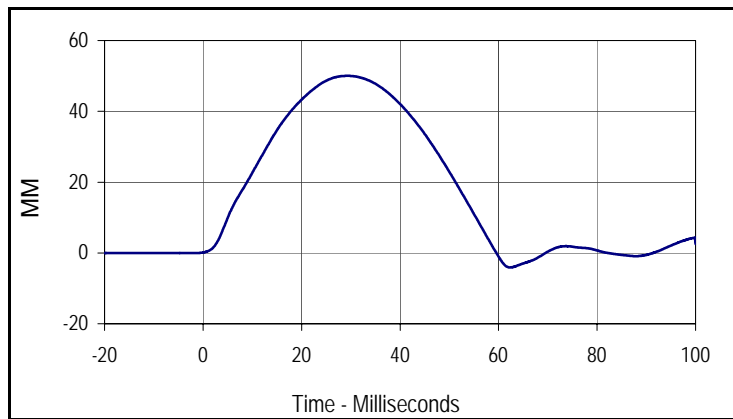
Test Date: 12/14/12
 Test I.D.: F035RB1041



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	340	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		28.9	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.5	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	38.4	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	50.0	Pass
Overall Test Results				Pass



Curve Description			
Upper Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
38.4	29.4	-3.5	64.0



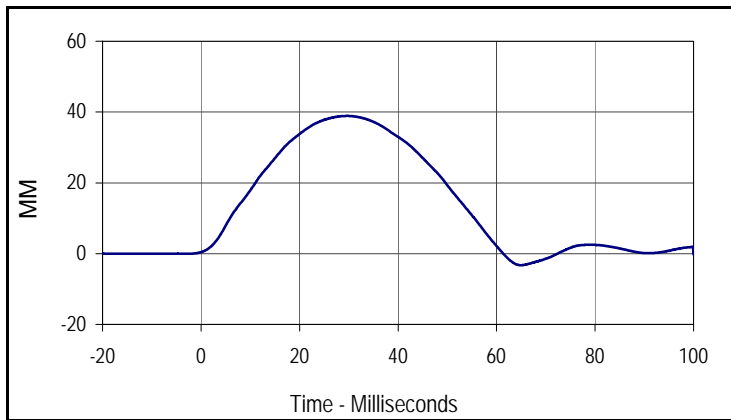
Curve Description			
Upper Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
50.0	29.3	-4.1	62.4

Test Program: ES2re Thorax - Rib Drop Test
 ATD Serial No.: F035 Rib # 2

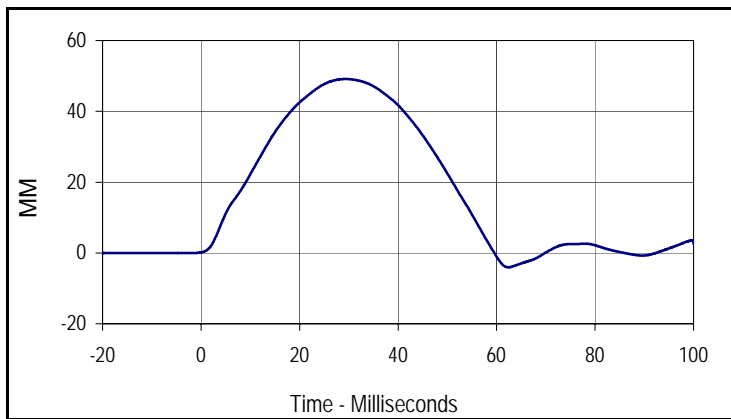
Test Date: 12/14/12
 Test I.D.: F035RB2041



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	355	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		28.9	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.6	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	38.9	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	49.1	Pass
Overall Test Results				Pass



Curve Description			
Middle Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
38.9	29.7	-3.3	65.0



Curve Description			
Middle Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
49.1	29.4	-4.1	62.4

Test Program: ES2re Thorax - Rib Drop Test

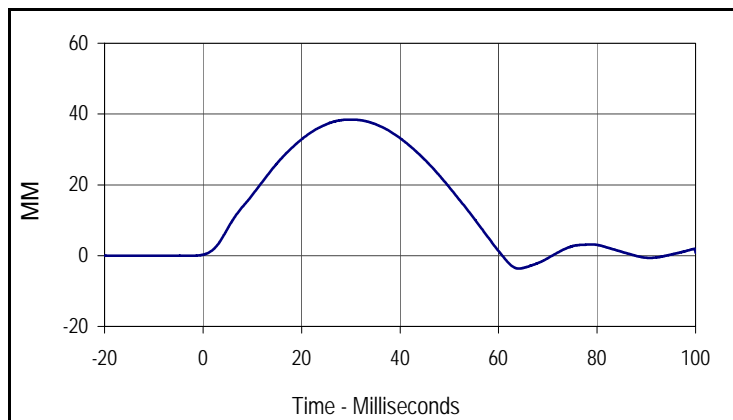
Test Date: 12/14/12



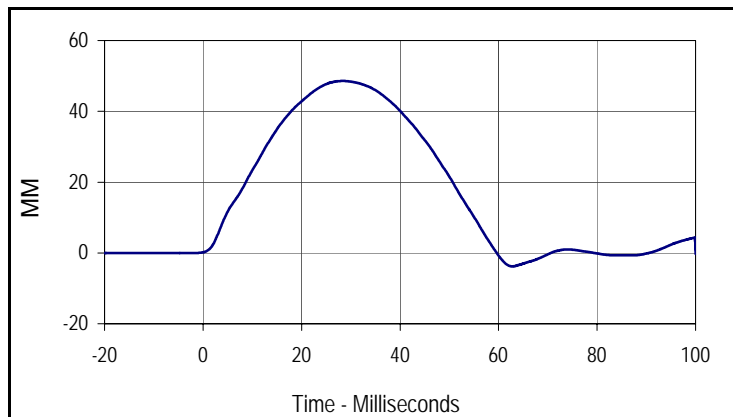
ATD Serial No.: F035 Rib # 3

Test I.D.: F035RB3041

Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	370	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		28.9	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.5	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	38.4	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	48.6	Pass
Overall Test Results				Pass



Curve Description			
Lower Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
38.4	30.0	-3.6	64.1



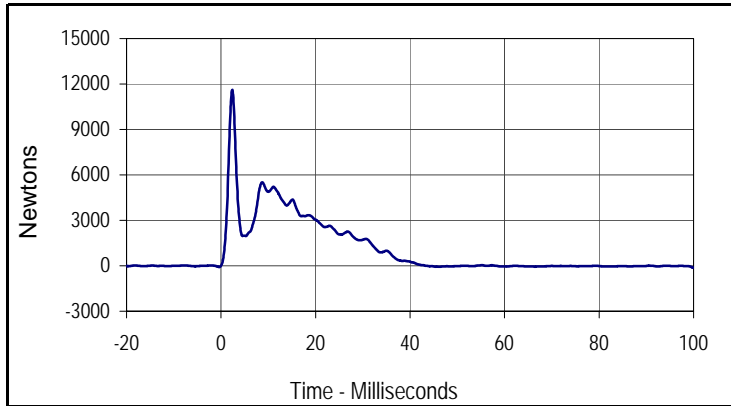
Curve Description			
Lower Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
48.6	28.4	-3.8	62.8

Test Program: ES2re Thorax - Full Body Impact Test
 ATD Serial No.: F035

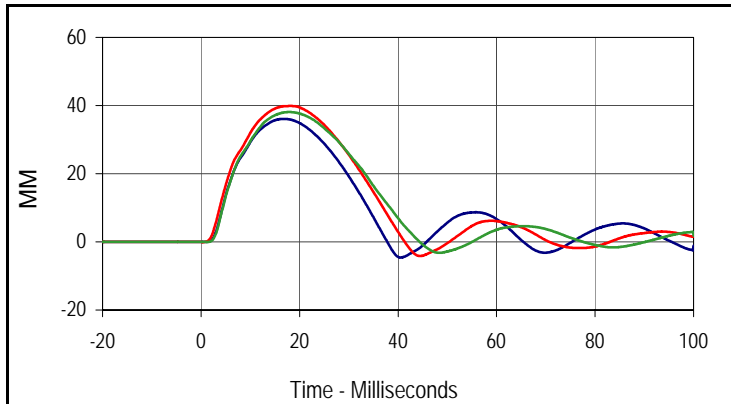
Test Date: 12/14/12
 Test I.D.: F035TH041



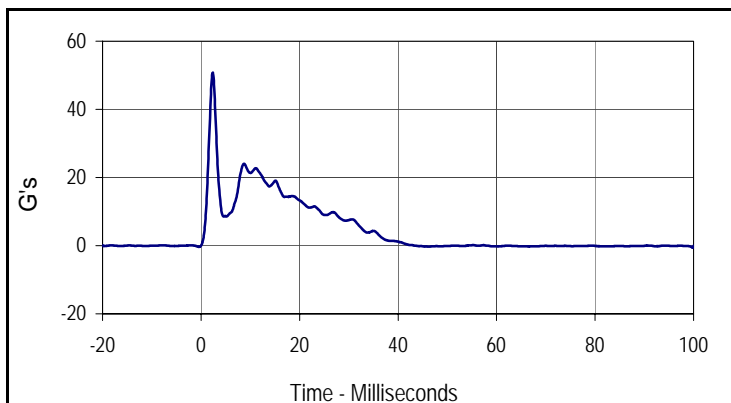
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	410	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		28.9	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.4	Pass
Peak Impactor Velocity	m/s	5.4 to 5.6	5.54	Pass
Peak Impactor Force	N	5100 to 6200	5505.6	Pass
	msec	> 6.0 msec	8.7	Pass
Peak Upper Rib Deflection	mm	34 to 41	36.1	Pass
Peak Middle Rib Deflection	mm	37 to 45	39.9	Pass
Peak Lower Rib Deflection	mm	37 to 44	38.1	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
11628.9	2.4	-133.5	99.9



Curve Description			
Upper, Middle, Lower Rib Deflections			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max (Upper)	Time	Min (Upper)	Time
36.1	16.8	-4.6	40.6
Max (Middle)	Time	Min (Middle)	Time
39.9	18.3	-4.2	44.5
Max (Lower)	Time	Min (Lower)	Time
38.1	17.9	-3.2	48.4



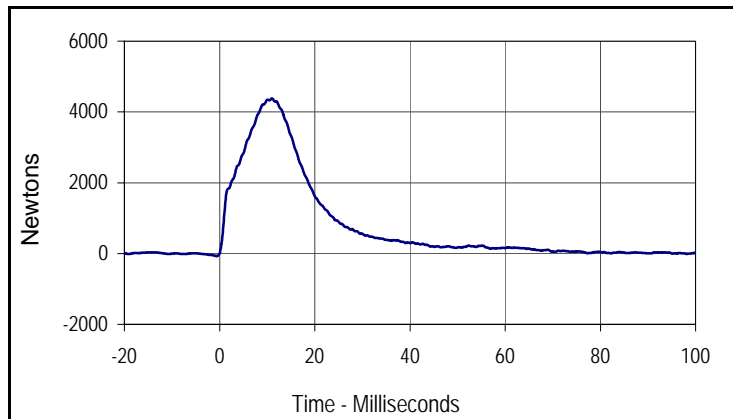
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
50.8	2.4	-0.6	99.9

Test Program: ES2re Abdomen Impact Test
 ATD Serial No.: F035

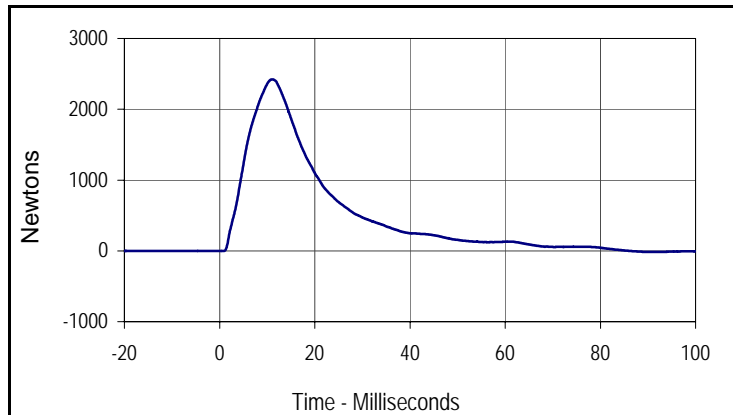
Test Date: 12/14/12
 Test I.D.: F035ABD041



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	430	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		28.9	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.3	Pass
Probe Velocity	m/s	3.9 to 4.1	3.98	Pass
Peak Impactor Force	N	4000 to 4800	4381.2	Pass
	msec	10.6 to 13.0	11.0	Pass
Sum of Abdominal Forces	N	2200 to 2700	2422.2	Pass
	msec	10.0 to 12.3	11.1	Pass
Overall Test Results				Pass



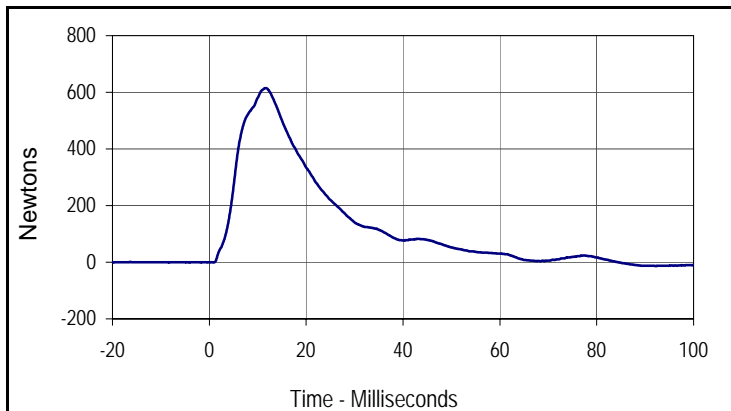
Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
4381.2	11.0	-71.1	-0.6



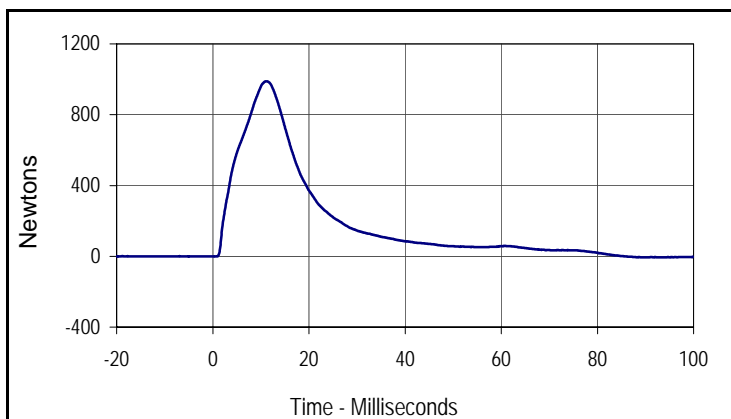
Curve Description			
Abdomen Sum Resultant			
Plot No.	Type	SAE Class	Units
002	RES	600	Newtons
Max	Time	Min	Time
2422.2	11.1	-15.3	90.0

Test Program: ES2re Abdomen Impact Test
 ATD Serial No.: F035

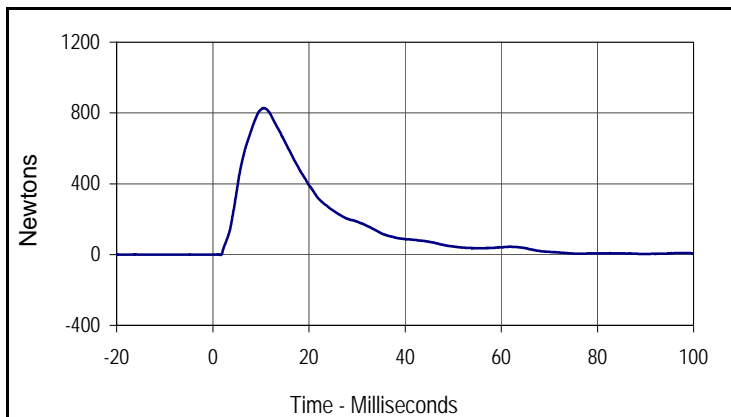
Test Date: 12/14/12
 Test I.D.: F035ABD041



Curve Description			
Front Abdomen Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
615.2	11.7	-13.5	92.2



Curve Description			
Middle Abdomen Force			
Plot No.	Type	SAE Class	Units
004	FIL	600	Newtons
Max	Time	Min	Time
989.1	11.2	-5.8	93.0



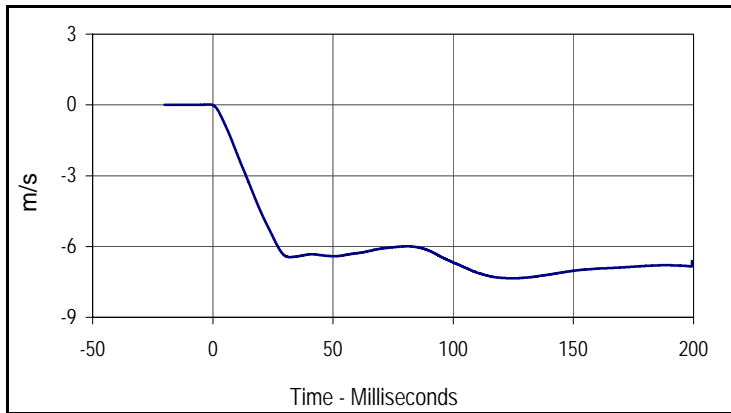
Curve Description			
Rear Abdomen Force			
Plot No.	Type	SAE Class	Units
005	FIL	600	Newtons
Max	Time	Min	Time
827.3	10.6	-3.0	1.6

Test Program: ES2re Lumbar Flexion Test
 ATD Serial No.: F035

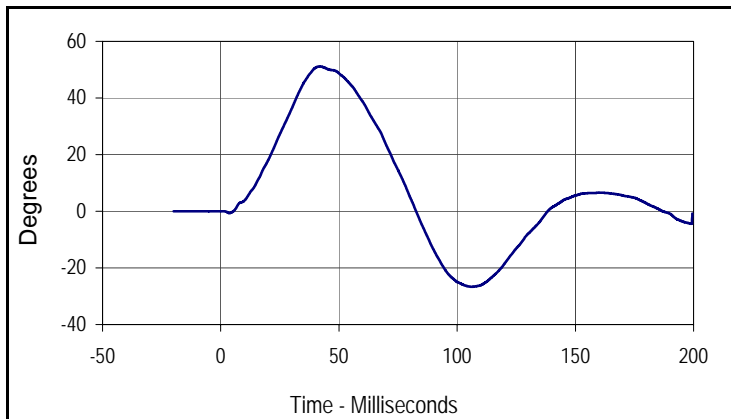
Test Date: 12/14/12
 Test I.D.: F035LB041



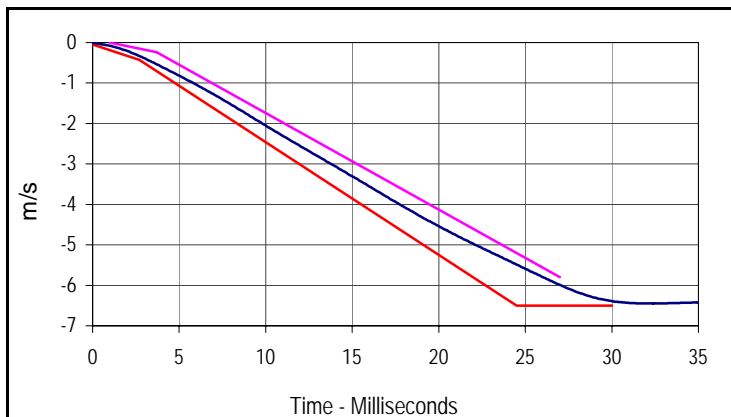
Tested Parameter	Units	Specification	Result	Pass/Fail
Lumbar Spine Assembly Soak Time	Minutes	≥240	485	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		28.9	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.4	Pass
Pendulum Velocity	m/s	5.95 to 6.15	6.09	Pass
Headform Rotation	Max	45 to 55	51.1	Pass
	Time	39 to 53	42.3	Pass
Time of Decay to Zero Angle from Peak	msec	37 to 57	44.0	Pass
Overall Test Results				Pass



Curve Description			
Plot No.	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.0	-7.3	125.4



Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
51.1	42.3	-26.6	106.8

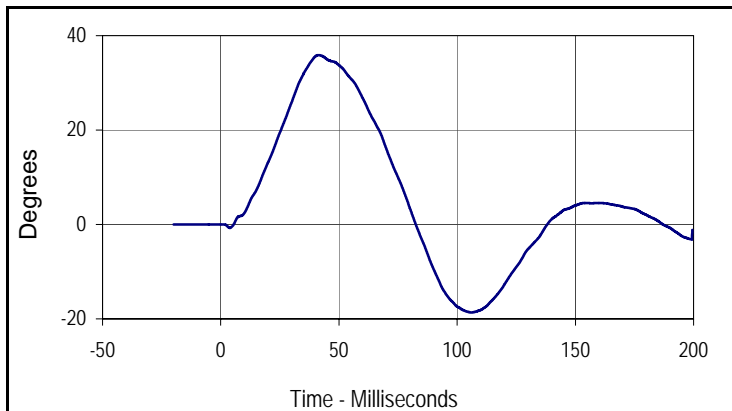


Curve Description			
Plot No.	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.0	-7.3	125.4

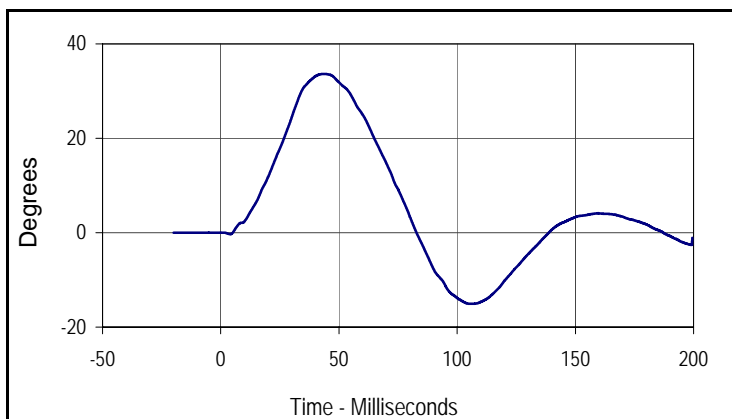
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.7	-0.24	2.7	-0.425
27.0	-5.80	24.5	-6.50
		30.0	-6.50

Test Program: ES2re Lumbar Flexion Test
 ATD Serial No.: F035

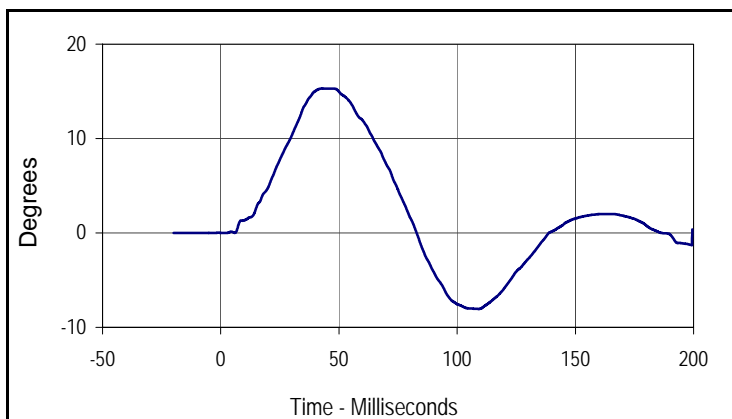
Test Date: 12/14/12
 Test I.D.: F035LB041



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
35.9	42.0	-18.6	106.6



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
33.6	44.3	-15.1	106.4



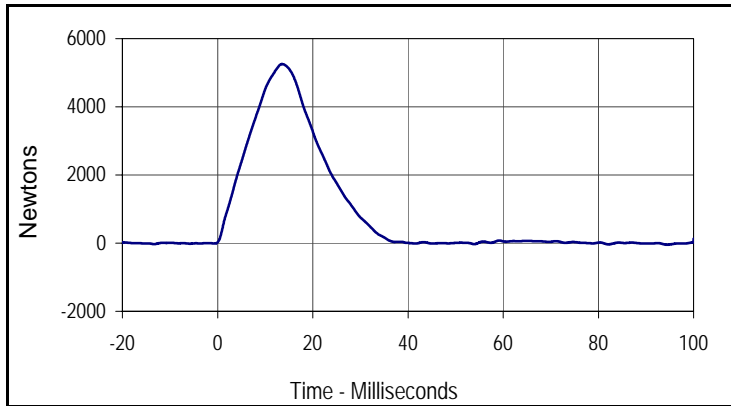
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
15.3	43.7	-8.1	109.7

Test Program: ES2re Pelvis Impact Test
 ATD Serial No.: F035

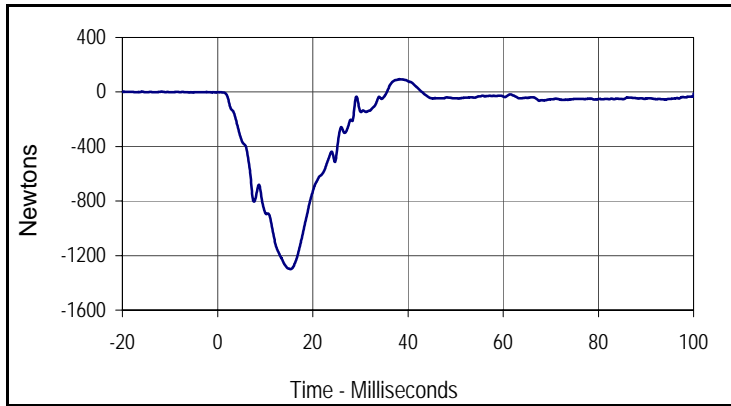
Test Date: 12/14/12
 Test I.D.: F035PL041



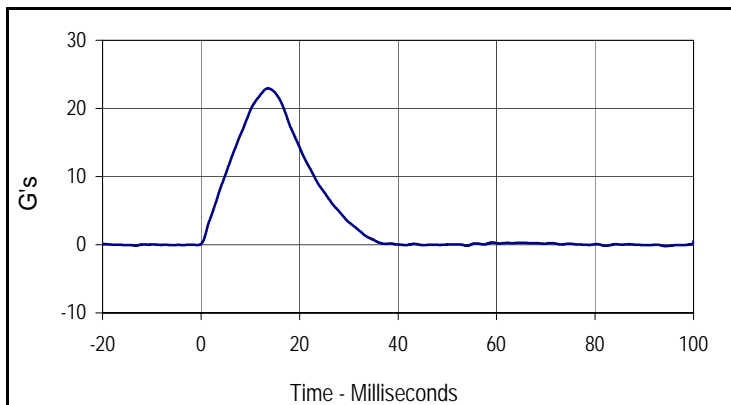
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	545	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		28.9	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.5	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.30	Pass
Peak Impactor Force	N	4700 to 5400	5253.8	Pass
	msec	11.8 to 16.1	13.6	Pass
Peak Pubic Symphysis Load	N	-1230 to -1590	-1299.6	Pass
	msec	12.2 to 17.0	15.3	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
5253.8	13.6	-47.0	94.5



Curve Description			
Pubic Symphysis Force Y			
Plot No.	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
93.7	38.2	-1299.6	15.3



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
22.9	13.6	-0.2	94.5

Test Program: SID IIs External Measurements

Test Date: 12/15/12



ATD Serial No.: 307

Test I.D.: N/A

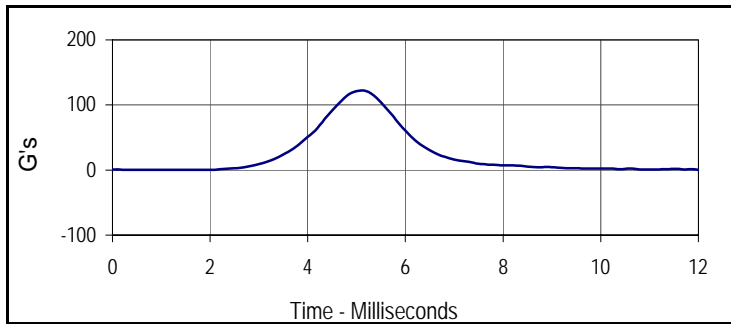
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A Sitting Height	mm	772 - 788	778	Pass
B Shoulder Pivot Height	mm	437 - 453	443	Pass
C H-Point Height	mm	79 - 89	85	Pass
D H-Point from Seatback	mm	141 - 151	144	Pass
E Shoulder Pivot from Backline	mm	97 - 107	102	Pass
F Thigh Clearance	mm	119 - 135	128	Pass
G Head Breadth	mm	140 - 148	145	Pass
H Head Back from Backline	mm	40 - 46	43	Pass
I Head Depth	mm	178 - 188	185	Pass
J Head Circumference	mm	541 - 551	546	Pass
K Buttock to Knee Length	mm	514 - 540	525	Pass
L Popliteal Height	mm	343 - 369	351	Pass
M Knee Pivot to Floor Height	mm	392 - 409	400	Pass
N Buttock Popliteal Length	mm	416 - 442	432	Pass
O Chest Depth w/o Jacket	mm	195 - 211	205	Pass
P Foot Length	mm	216 - 232	223	Pass
Q Hip Breadth with Pelvic Plug	mm	313 - 323	319	Pass
R Arm Length	mm	249 - 259	254	Pass
S Knee Joint to Seatback	mm	477 - 493	483	Pass
V Shoulder Width	mm	341 - 357	351	Pass
W Foot Width	mm	78 - 94	89	Pass
Y Chest Circumference with Jacket	mm	851 - 881	872	Pass
Z Waist Circumference	mm	760 - 791	774	Pass
Overall Test Results				Pass

Test Program: SID IIs Head Drop Test
 ATD Serial No.: 307

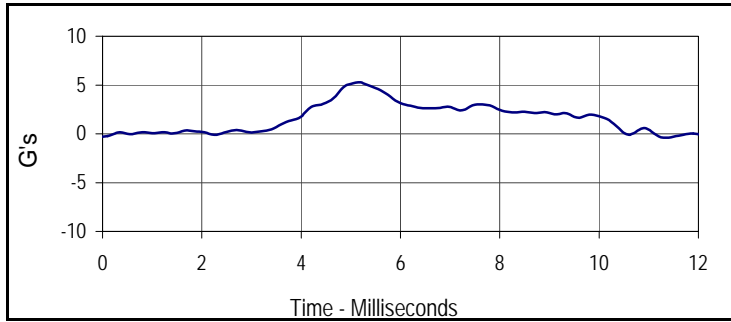
Test Date: 12/15/12
 Test I.D.: 307HD048



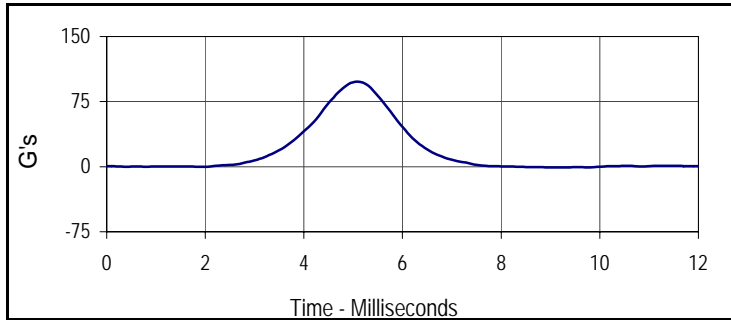
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	345	Pass
Temperature During Soak	Max	18.9 to 25.6	21.7	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		29.2	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.5	Pass
Peak Head Resultant Acceleration	G's	115 to 137	122.4	Pass
Peak Head X Acceleration	G's	<15	5.3	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	3.7	Pass
Overall Test Results				Pass



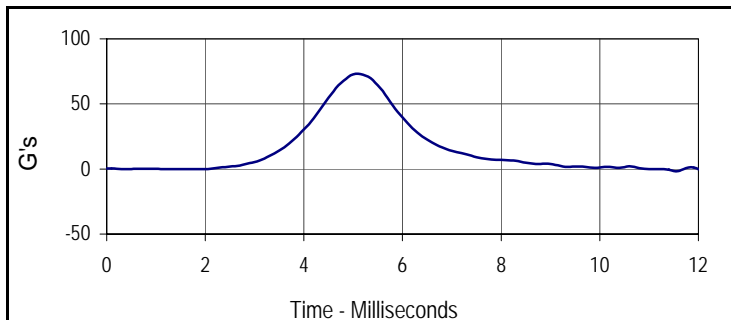
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
122.4	5.1	0.1	0.5



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
5.3	5.2	-0.3	0.0



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
97.9	5.1	-0.8	9.3



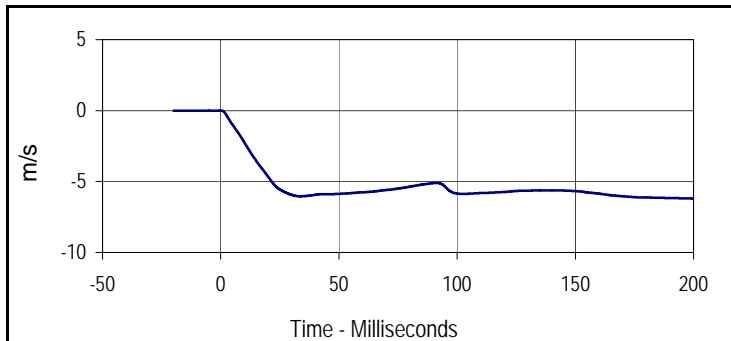
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
73.2	5.1	-1.6	11.6

Test Program: SID IIs Neck Flexion Test
 ATD Serial No.: 307

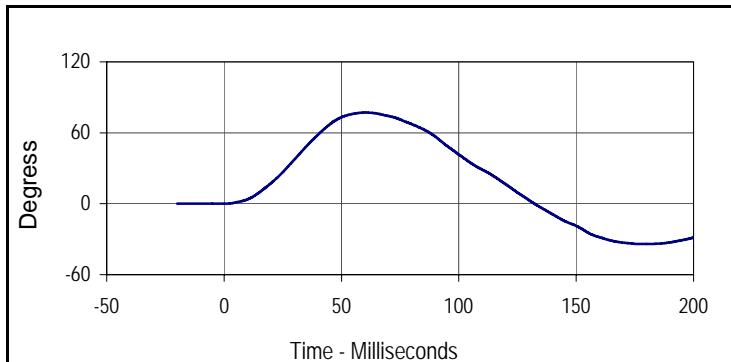
Test Date: 12/15/12
 Test I.D.: 307NB048



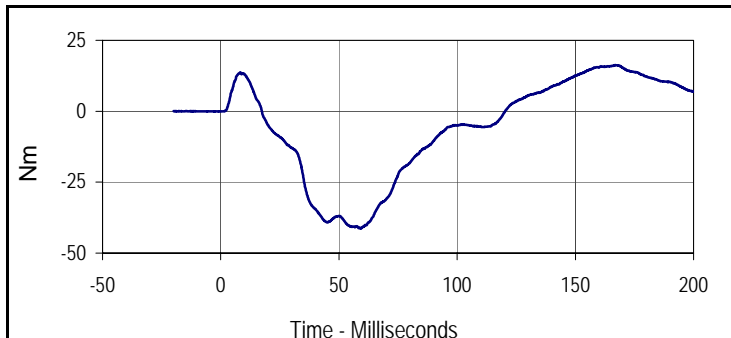
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	400	Pass	
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass	
	Min		20.8	Pass	
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass	
	Min		29.2	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	30.6	Pass	
Pendulum Velocity	m/s	5.51 to 5.63	5.55	Pass	
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.25	Pass
	15 msec	m/s	-3.30 to -4.10	-3.54	Pass
	20 msec	m/s	-4.40 to -5.40	-4.66	Pass
	25 msec	m/s	-5.40 to -6.10	-5.56	Pass
	25-100 msec	m/s	-5.50 to -6.20	-6.04	Pass
D-Plane Rotation	Max	Degrees	71 to 81	77.1	Pass
	Time	msec	50 to 70	60.1	Pass
Peak Occipital Condyle Moment	Nm	-36 to -44	-41.3	Pass	
Decaying Moment Time to Cross 0 Nm	msec	102 to 126	120.3	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.1	-6.2	200.0



Curve Description			
Maximum Translation Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degress
Max	Time	Min	Time
77.1	60.1	-34.1	177.0



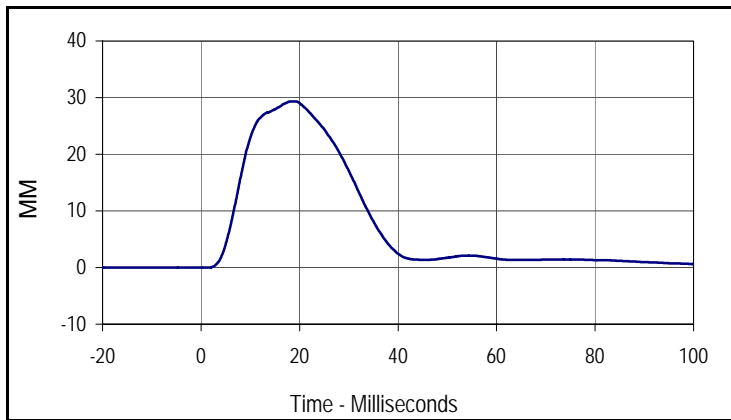
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
16.3	166.8	-41.3	59.0

Test Program: SID IIs Shoulder Impact Test
 ATD Serial No.: 307

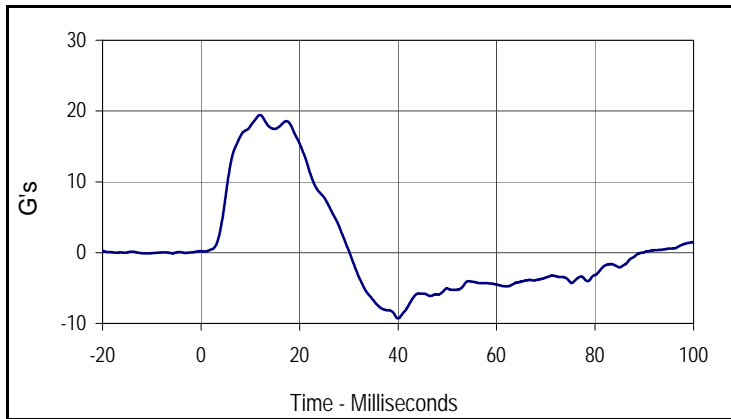
Test Date: 12/15/12
 Test I.D.: 307SH048



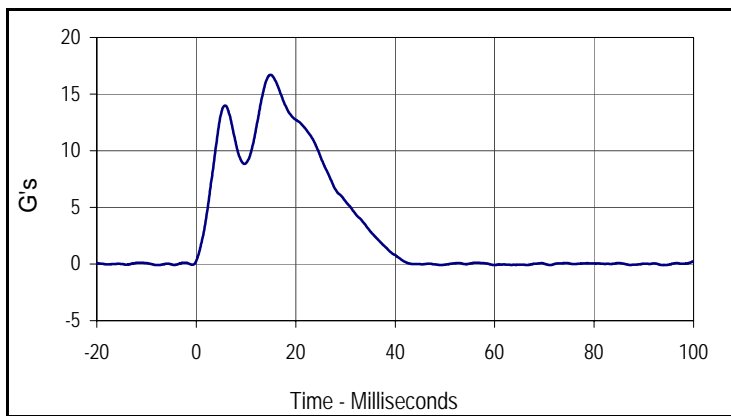
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	435	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		29.2	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.5	Pass
Impactor Velocity	m/s	4.20 to 4.40	4.31	Pass
Peak Shoulder Deflection	mm	28 to 37	29.3	Pass
Peak Lateral Spine Acceleration Y	G's	17 to 22	19.4	Pass
Peak Impactor Acceleration	G's	13 to 18	16.7	Pass
Overall Test Results				Pass



Curve Description			
Shoulder Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
29.3	18.6	0.0	-20.0



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
19.4	12.0	-9.3	40.0



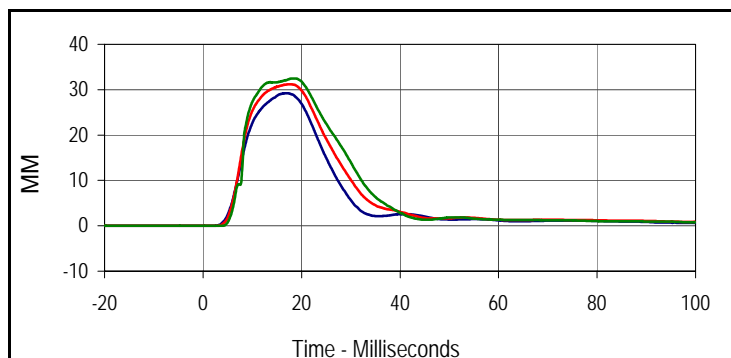
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
16.7	14.9	-0.1	-7.4

Test Program: SID IIs Thorax with Arm Impact Test
 ATD Serial No.: 307

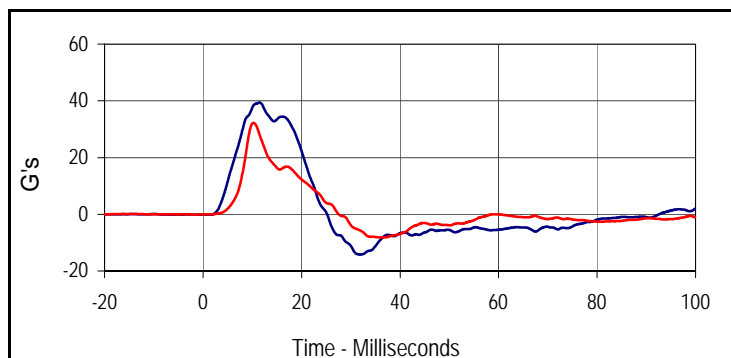
Test Date: 12/15/12
 Test I.D.: 307TWA048



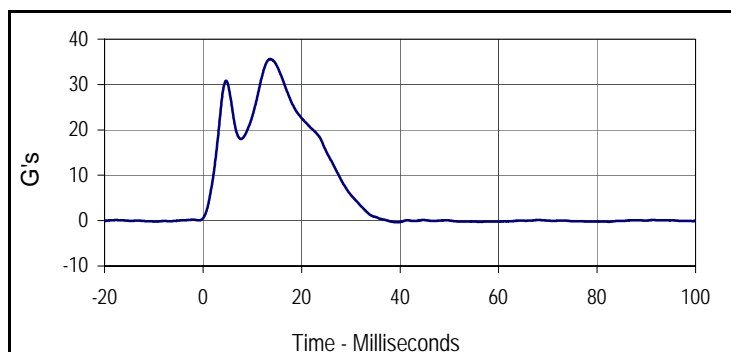
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	455	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		29.2	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.4	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.65	Pass
Peak Shoulder Deflection	mm	31 to 40	37.9	Pass
Peak Upper Thorax Rib Deflection	mm	25 to 32	29.2	Pass
Peak Middle Thorax Rib Deflection	mm	30 to 36	31.2	Pass
Peak Lower Thorax Rib Deflection	mm	32 to 38	32.5	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	39.4	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	32.2	Pass
Peak Impactor Acceleration	G's	30 to 36	35.6	Pass
Overall Test Results				Pass



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
29.2	17.0	0.0	-9.2
Middle Thorax Deflection			
Max	Time	Min	Time
31.2	17.5	0.0	-6.8
Lower Thorax Deflection			
Max	Time	Min	Time
32.5	18.7	0.0	-7.1



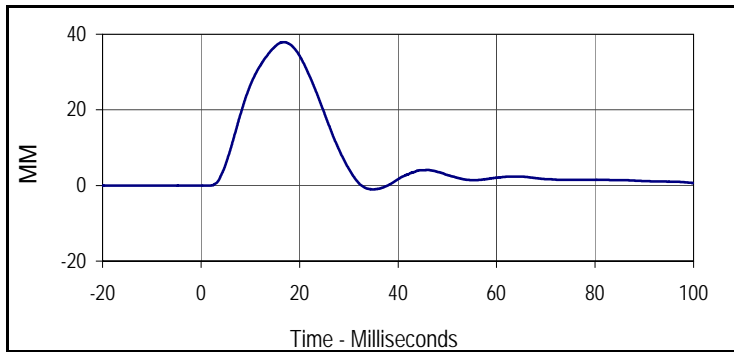
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
39.4	11.5	-14.2	31.7
Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
32.2	10.2	-8.2	36.7



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
35.6	13.6	-0.4	39.5

Test Program: SID IIs Thorax with Arm Impact Test
 ATD Serial No.: 307

Test Date: 12/15/12
 Test I.D.: 307TWA048



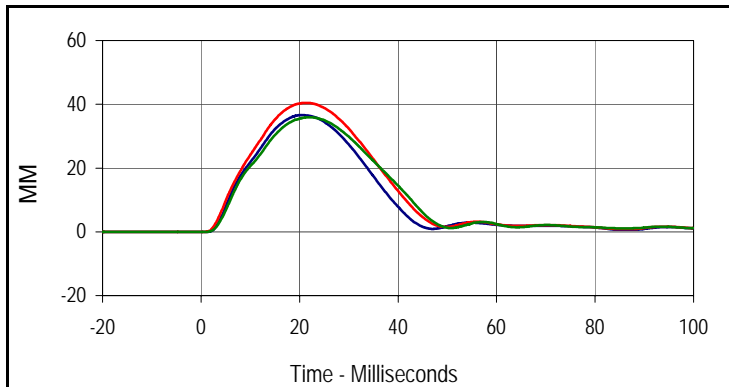
Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
007	FIL	600	MM
Max	Time	Min	Time
37.9	16.9	-1.0	35.0

Test Program: SID IIs Thorax without Arm Impact Test
 ATD Serial No.: 307

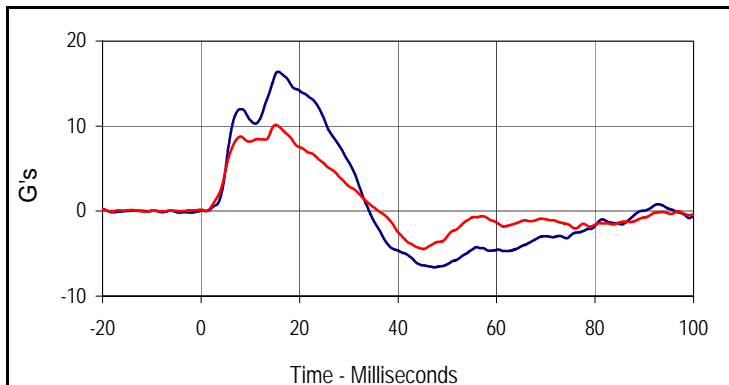
Test Date: 12/15/12
 Test I.D.: 307TWOA048



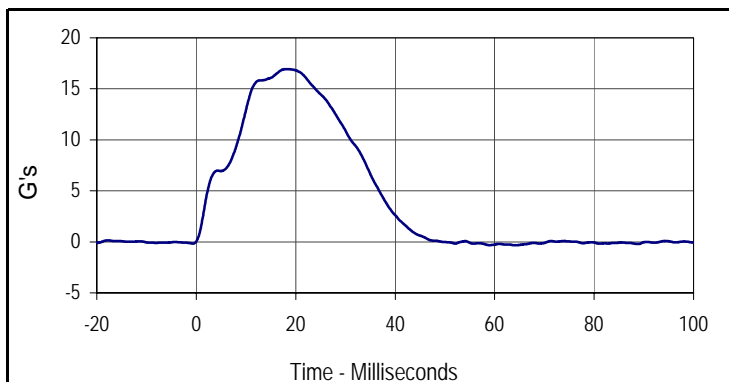
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	480	Pass
Temperature During Soak	Max	18.9 to 25.6	21.7	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		29.2	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.7	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.31	Pass
Peak Upper Thorax Rib Deflection	mm	32 to 40	36.6	Pass
Peak Middle Thorax Rib Deflection	mm	39 to 45	40.4	Pass
Peak Lower Thorax Rib Deflection	mm	35 to 43	35.9	Pass
Peak Upper Spine Y Acceleration	G's	13 to 17	16.4	Pass
Peak Lower Spine Y Acceleration	G's	7 to 11	10.1	Pass
Peak Impactor Acceleration	G's	14 to 18	16.9	Pass
Overall Test Results				Pass



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
36.6	20.5	0.0	-5.8
Middle Thorax Deflection			
Max	Time	Min	Time
40.4	21.4	0.0	0.8
Lower Thorax Deflection			
Max	Time	Min	Time
35.9	21.7	0.0	-1.9



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
16.4	15.6	-6.6	47.4
Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
10.1	15.1	-4.5	45.1



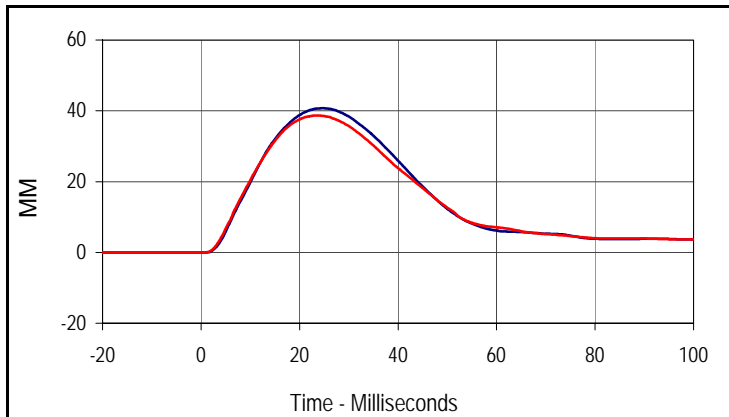
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
16.9	18.4	-0.3	64.0

Test Program: SID IIs Abdomen Impact Test
 ATD Serial No.: 307

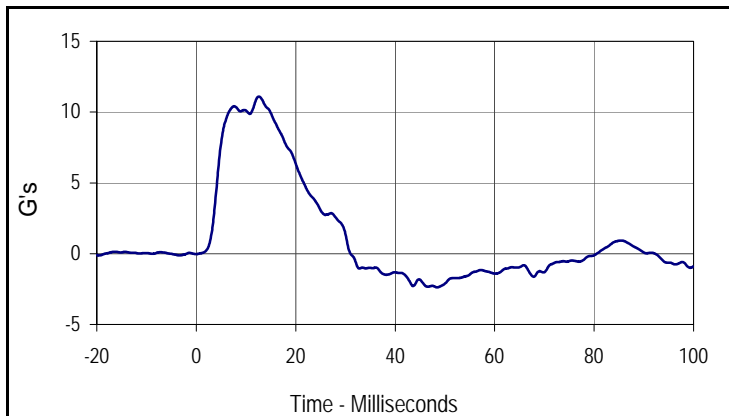
Test Date: 12/15/12
 Test I.D.: 307ABD048



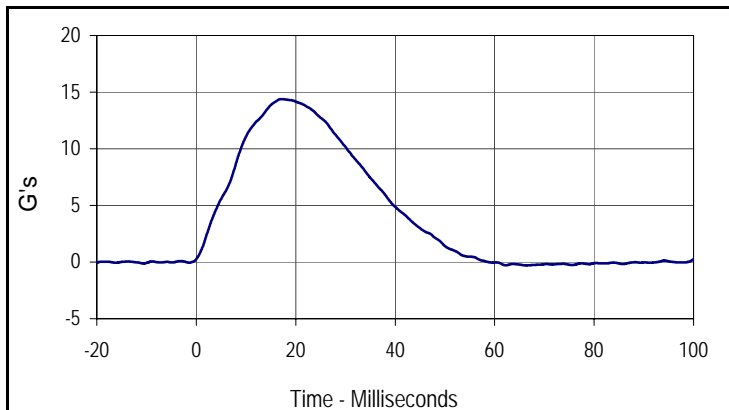
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	500	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		29.2	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.5	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.27	Pass
Peak Upper Abdominal Rib Deflection	mm	36 to 47	40.7	Pass
Peak Lower Abdominal Rib Deflection	mm	33 to 44	38.7	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	11.1	Pass
Peak Impactor Acceleration	G's	12 to 16	14.4	Pass
Overall Test Results				Pass



Curve Description			
Upper Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
40.7	24.7	0.0	-12.5
Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
38.7	23.5	0.0	-6.1

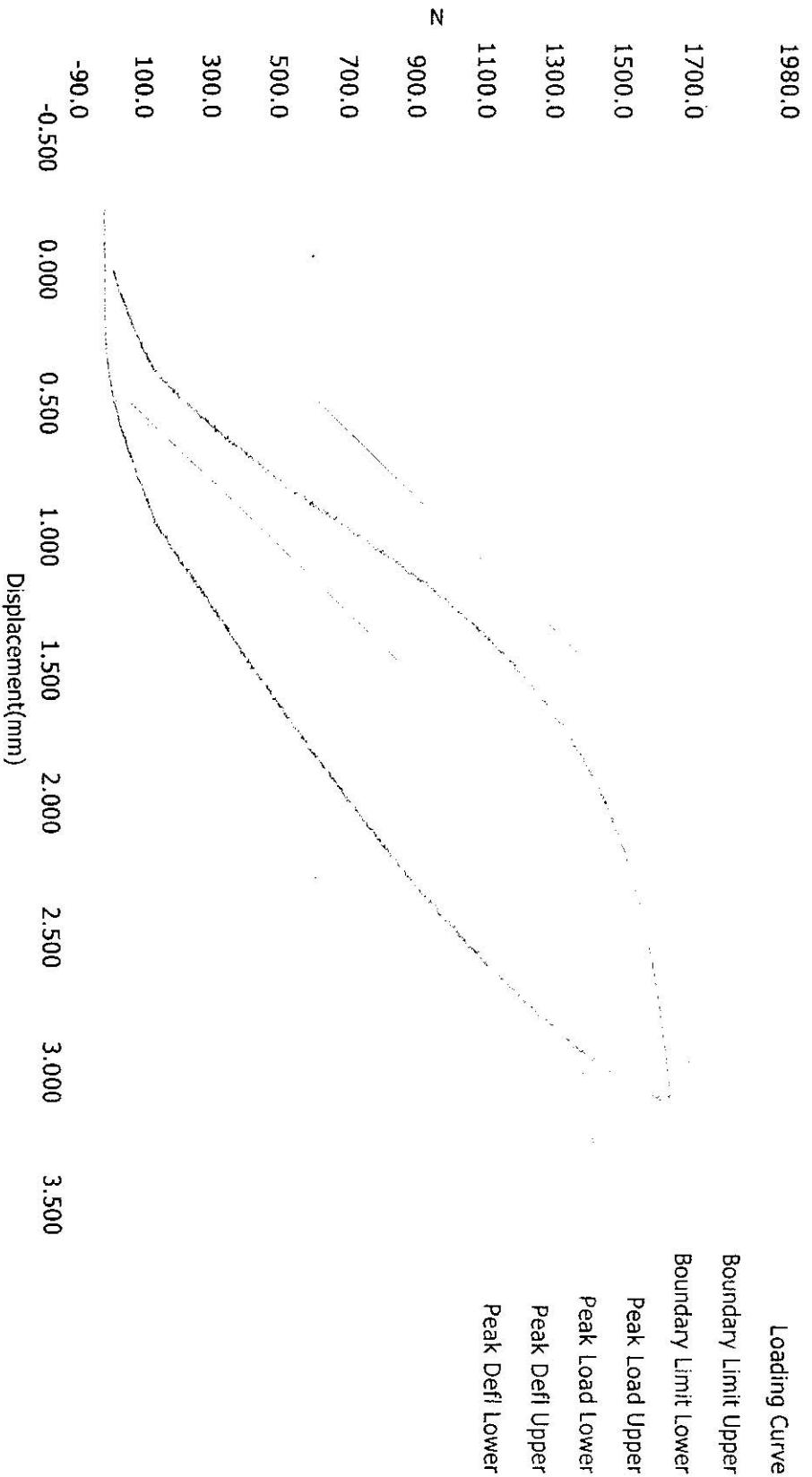


Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
11.1	12.6	-2.4	48.5



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
14.4	17.2	-0.3	66.3

Resultant Data - SIDIIs Plug Compression



ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
<u>Cert ID</u>	<u>ATD Serial Number</u>	<u>ATD Type</u>	
	N/A	SIDIIs	

Current Date : 10/5/2011

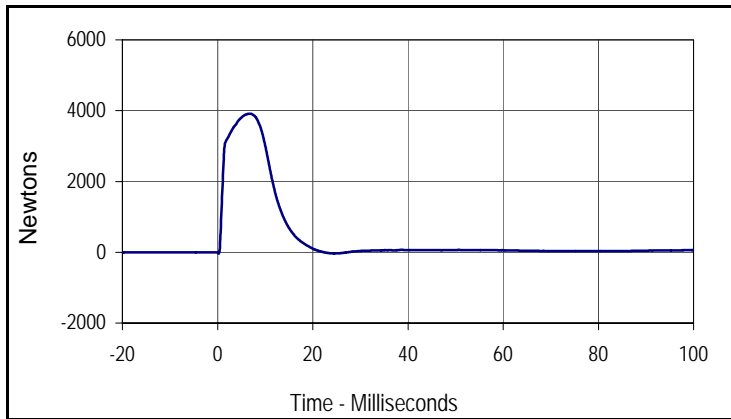
Current Time : 23:28:35

Test Program: SID IIs Pelvis Acetabulum Impact Test
 ATD Serial No.: 307

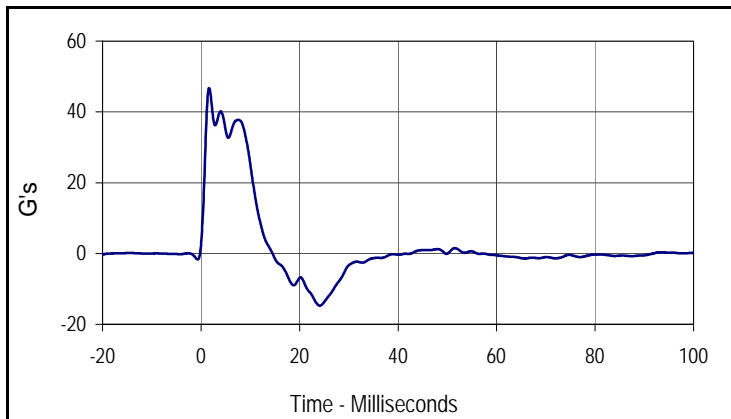
Test Date: 12/15/12
 Test I.D.: 307ACET048



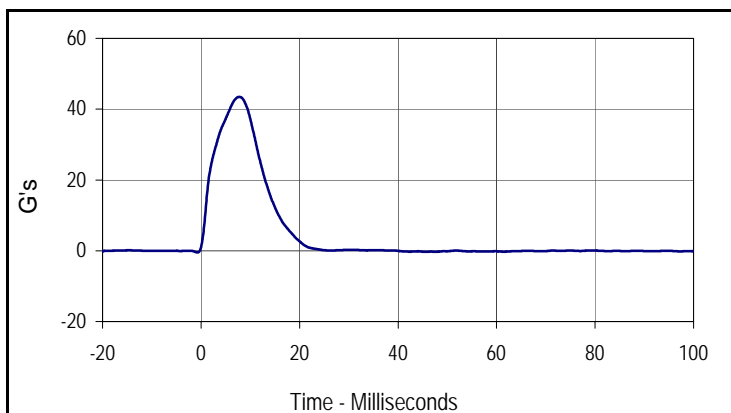
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	535	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		29.2	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.3	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.69	Pass
Peak Acetabulum Force Y	Newtons	3600 to 4300	3914.6	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	37.8	Pass
Peak Impactor Acceleration	G's	38 to 47	43.5	Pass
Overall Test Results				Pass



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3914.6	6.9	-35.7	0.2



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
46.7	1.6	-14.8	24.1



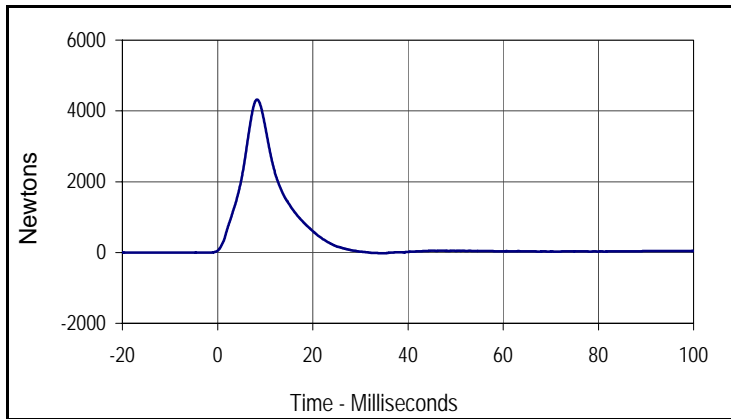
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
43.5	7.7	-0.5	-0.7

Test Program: SID IIs Pelvis Iliac Calibration
 ATD Serial No.: 307

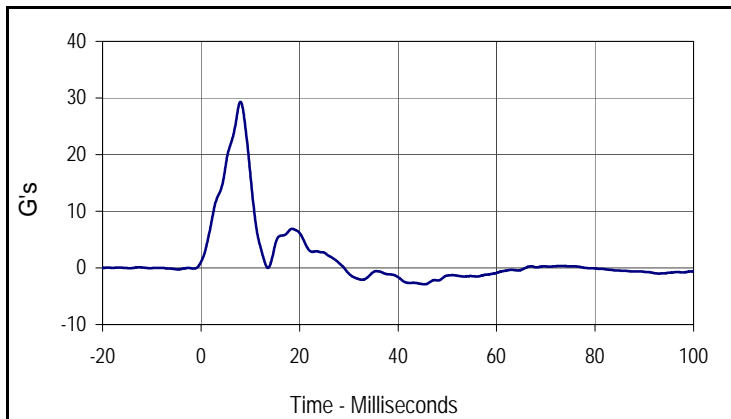
Test Date: 12/15/12
 Test I.D.: 307PL048



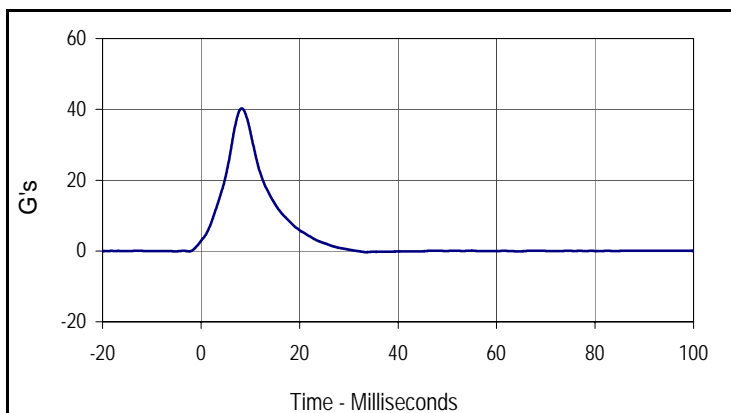
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	590	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		29.2	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.4	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.29	Pass
Peak Iliac Force	Newtons	4100 to 5100	4321.3	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	29.3	Pass
Peak Impactor Acceleration	G's	36 to 45	40.3	Pass
Overall Test Results				Pass



Curve Description			
Pelvis Iliac Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4321.3	8.3	-20.4	34.8



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
29.3	8.0	-2.9	45.5



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
40.3	8.3	-0.3	33.5

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

Test Program: ES2re External Measurements

Test Date: 12/20/12



ATD Serial No.: F035

Test I.D.: N/A

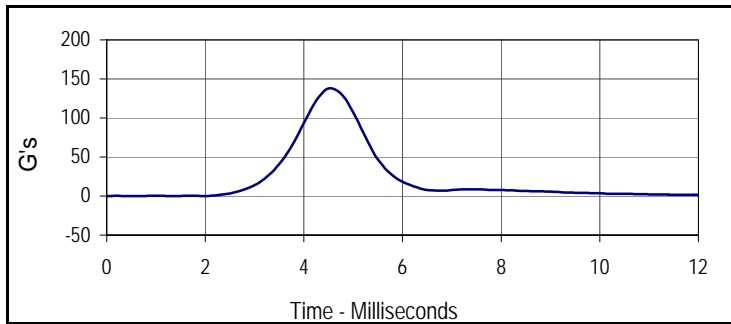
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	30.3	Pass
1 Sitting Height	mm	900 - 918	907	Pass
2 Seat to Shoulder Joint	mm	558 - 572	564	Pass
3 Seat to Lower Face of Thoracic Spine Box	mm	346 - 356	350	Pass
4 Seat to Hip Joint (Center of Bolt)	mm	97 - 103	100	Pass
5 Sole to Seat, Sitting	mm	333 - 451	389	Pass
6 Head Width	mm	152 - 158	155	Pass
7 Shoulder / Arm Width	mm	461 - 479	470	Pass
8 Thorax Width	mm	322 - 332	324	Pass
9 Abdomen Width	mm	273 - 287	280	Pass
10 Pelvis Lap Width	mm	359 - 373	365	Pass
11 Head Depth	mm	196 - 206	202	Pass
12 Thorax Depth	mm	262 - 272	269	Pass
13 Abdomen Width	mm	194 - 204	198	Pass
14 Pelvis Depth	mm	235 - 245	239	Pass
15 Back of Buttocks to Hip Joint (Center of Bolt)	mm	150 - 160	155	Pass
16 Back of Buttocks to Front Knee	mm	597 - 615	611	Pass
Overall Test Results				Pass

Test Program: ES2re Head Drop Test
 ATD Serial No.: F035

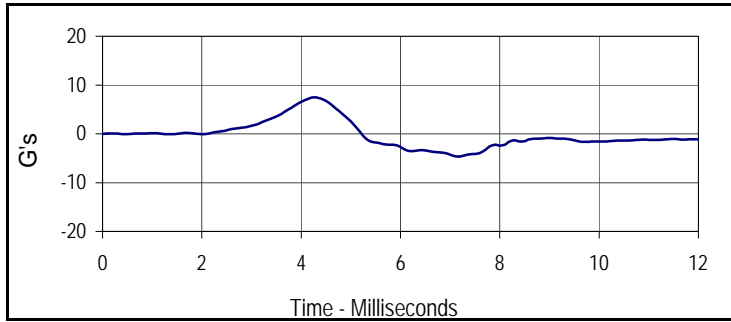
Test Date: 12/20/12
 Test I.D.: F035HD042



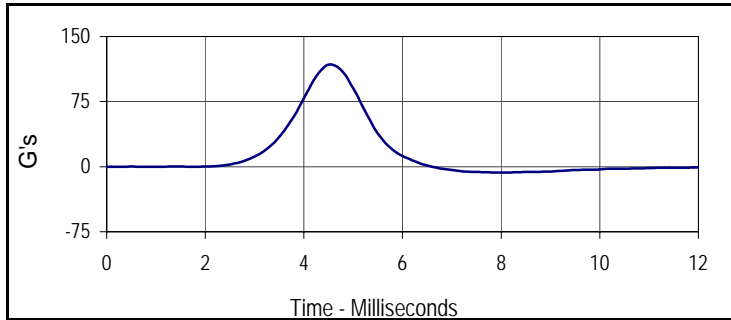
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	300	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		28.9	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.7	Pass
Peak Head Resultant Acceleration	G's	125 to 155	137.5	Pass
Peak Head X Acceleration	G's	≤15	7.5	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	6.3	Pass
Overall Test Results				Pass



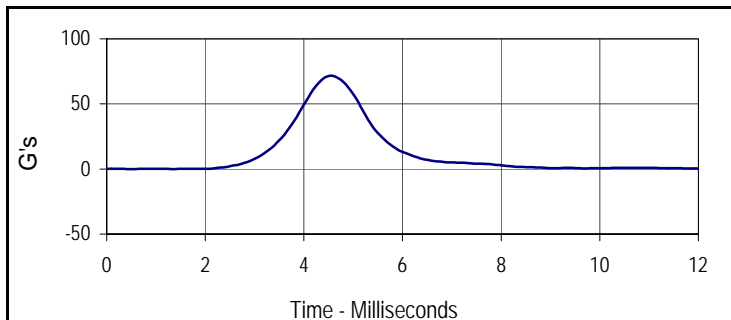
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
137.5	4.5	0.0	0.6



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
7.5	4.3	-4.6	7.2



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
117.4	4.5	-6.8	8.0



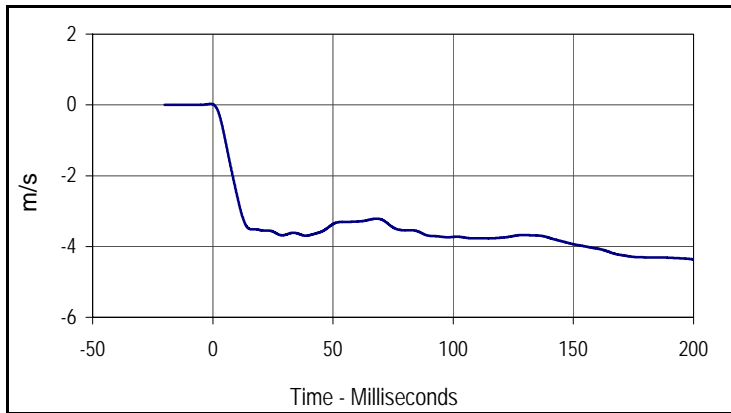
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
71.4	4.6	0.0	0.5

Test Program: ES2re Neck Flexion Test
 ATD Serial No.: F035

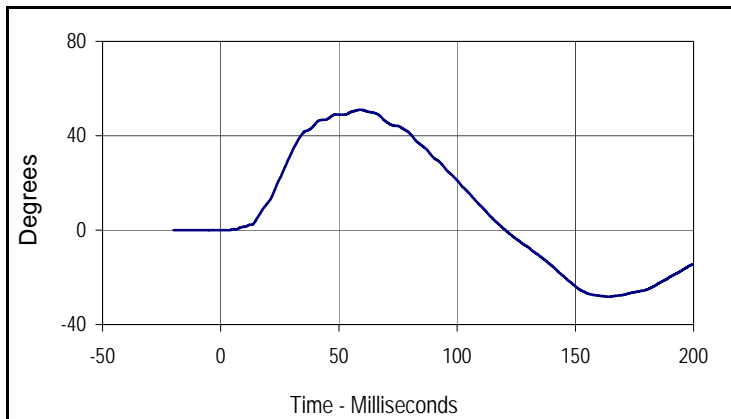
Test Date: 12/20/12
 Test I.D.: F035NB042



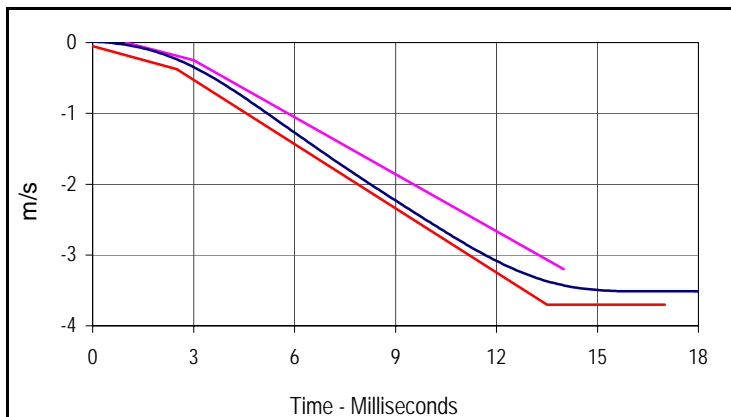
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	340	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		28.9	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.8	Pass
Pendulum Velocity	m/s	3.3 to 3.5	3.44	Pass
Headform Flexion	Max	49 to 59	51.0	Pass
	Time	54 to 66	59.2	Pass
Headform Flexion Decay (Peak to Zero)	msec	53 to 88	61.2	Pass
Overall Test Results				Pass



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.0	-4.4	200.0



Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
51.0	59.2	-28.2	164.2



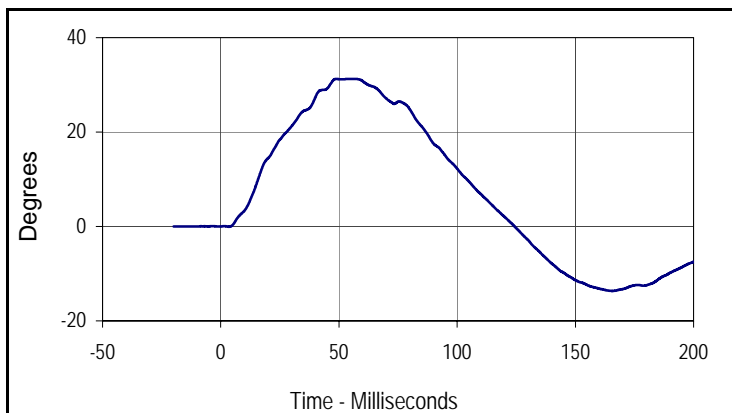
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.0	-4.4	200.0

Velocity Corridors

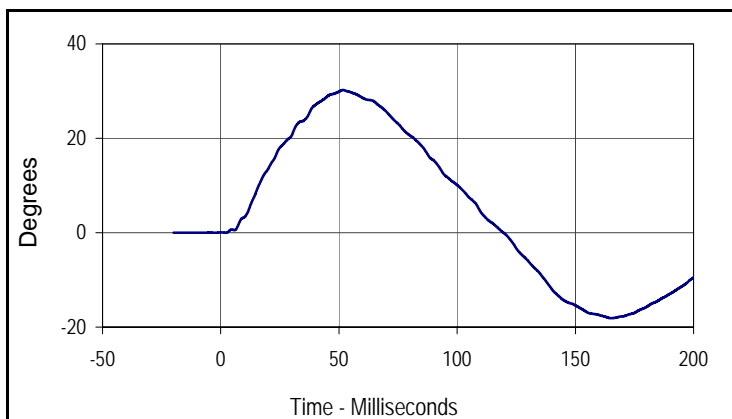
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.0	-0.03	2.5	-0.375
14.0	-3.20	13.5	-3.70
		17.0	-3.70

Test Program: ES2re Neck Flexion Test
 ATD Serial No.: F035

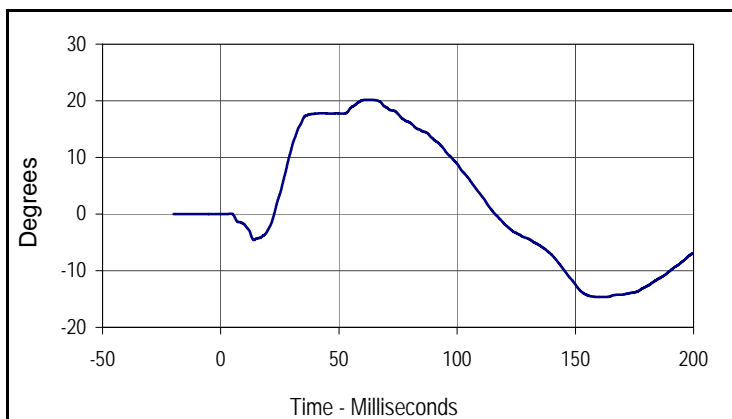
Test Date: 12/20/12
 Test I.D.: F035NB042



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
31.3	56.4	-13.7	165.5



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
30.2	51.7	-18.1	164.9



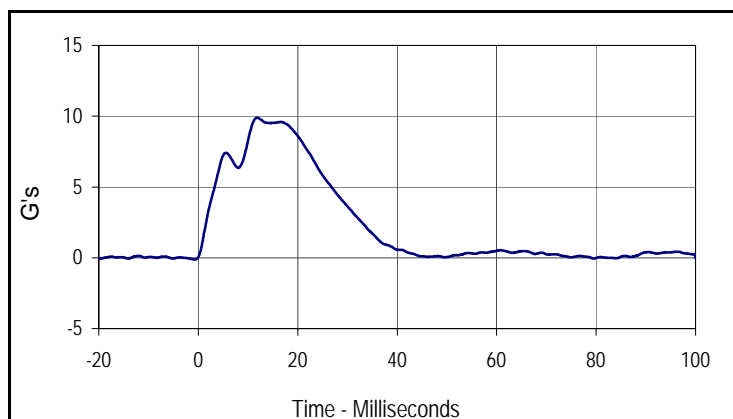
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
20.2	62.8	-14.6	162.7

Test Program: ES2re Shoulder Impact Test
 ATD Serial No.: F035

Test Date: 12/20/12
 Test I.D.: F035SH042



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	375	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		28.9	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.9	Pass
Pendulum Speed	m/s	4.2 to 4.4	4.30	Pass
Peak Impactor Acceleration	G's	7.5 to 10.5	9.9	Pass
Overall Test Results				Pass



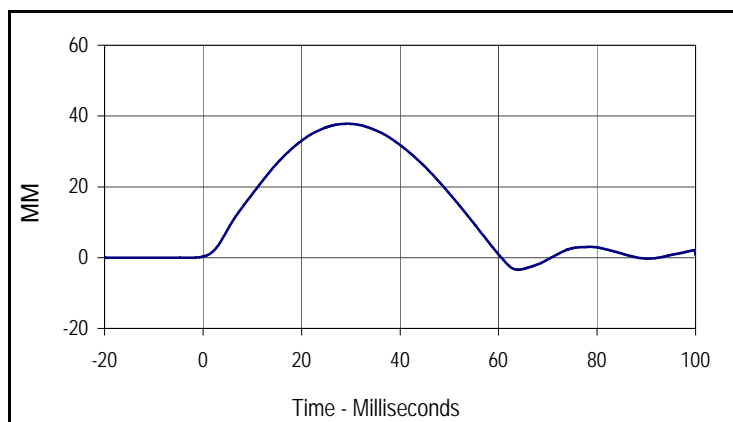
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
9.9	11.8	-0.1	-0.7

Test Program: ES2re Thorax - Rib Drop Test
 ATD Serial No.: F035 Rib # 1

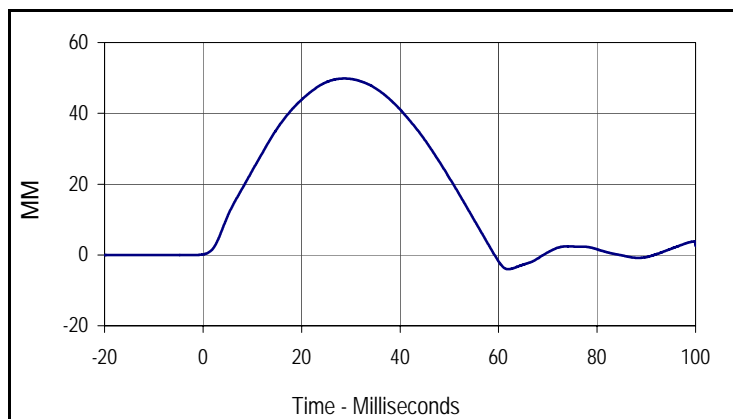
Test Date: 12/20/12
 Test I.D.: F035RB1042



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	400	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		28.9	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.8	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	37.8	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	49.8	Pass
Overall Test Results				Pass



Curve Description			
Upper Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
37.8	29.4	-3.4	64.0



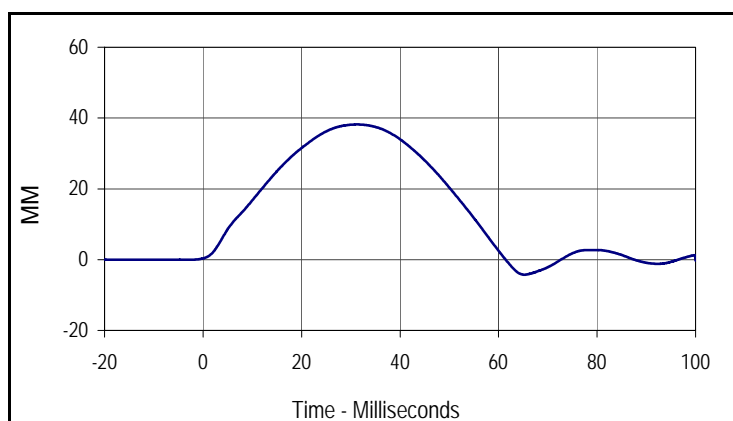
Curve Description			
Upper Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
49.8	28.7	-4.0	62.0

Test Program: ES2re Thorax - Rib Drop Test
 ATD Serial No.: F035 Rib # 2

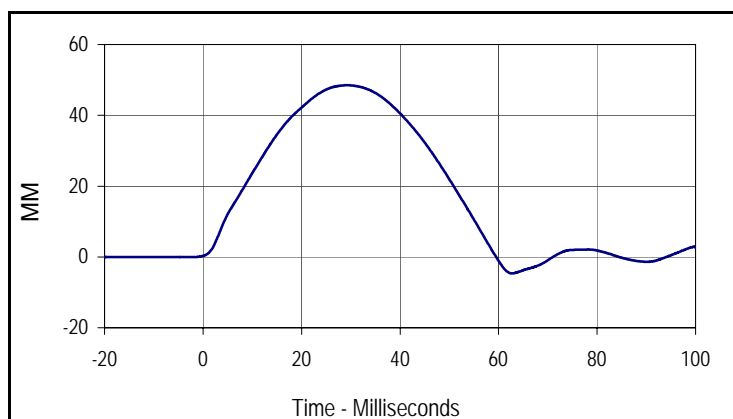
Test Date: 12/20/12
 Test I.D.: F035RB2042



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	415	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		28.9	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.9	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	38.2	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	48.5	Pass
Overall Test Results				Pass



Curve Description			
Middle Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
38.2	31.3	-4.3	65.3



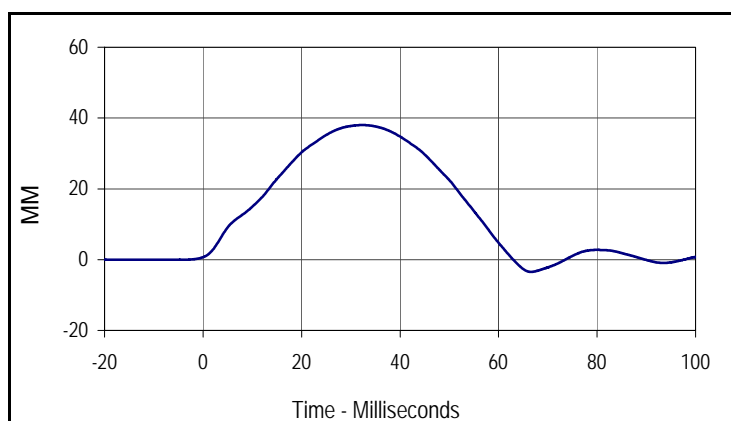
Curve Description			
Middle Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
48.5	29.2	-4.6	62.8

Test Program: ES2re Thorax - Rib Drop Test
 ATD Serial No.: F035 Rib # 3

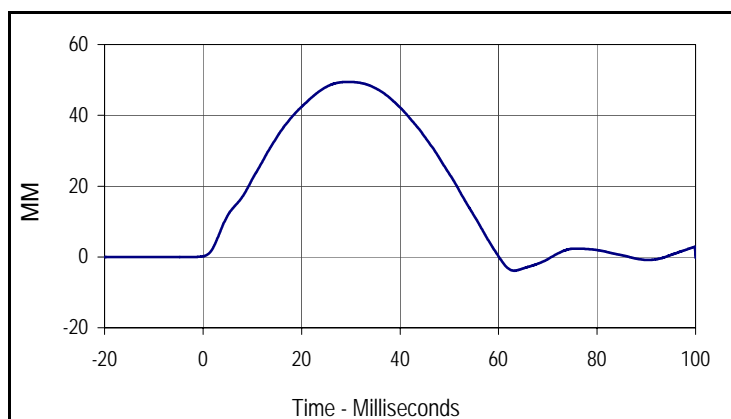
Test Date: 12/20/12
 Test I.D.: F035RB3042



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	430	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		28.9	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.7	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	38.0	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	49.4	Pass
Overall Test Results				Pass



Curve Description			
Lower Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
38.0	32.3	-3.5	66.6



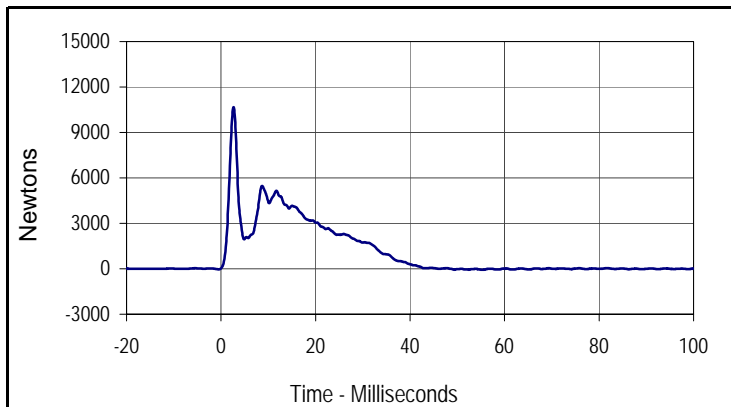
Curve Description			
Lower Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
49.4	29.5	-3.9	63.2

Test Program: ES2re Thorax - Full Body Impact Test
 ATD Serial No.: F035

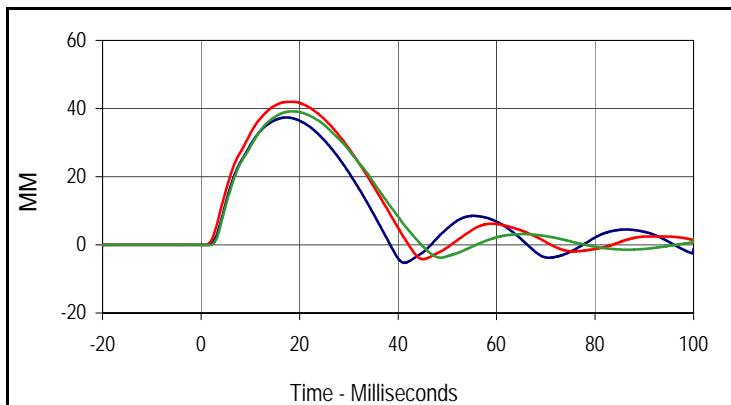
Test Date: 12/20/12
 Test I.D.: F035TH042



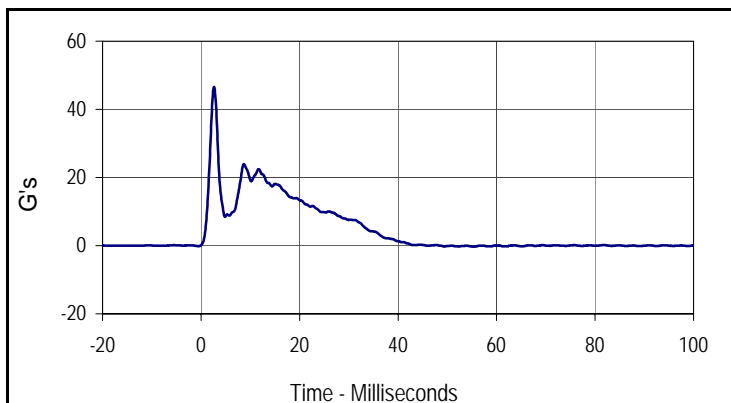
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	470	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		28.9	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.8	Pass
Peak Impactor Velocity	m/s	5.4 to 5.6	5.55	Pass
Peak Impactor Force	N	5100 to 6200	5475.1	Pass
	msec	> 6.0 msec	8.7	Pass
Peak Upper Rib Deflection	mm	34 to 41	37.4	Pass
Peak Middle Rib Deflection	mm	37 to 45	42.0	Pass
Peak Lower Rib Deflection	mm	37 to 44	39.2	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
10662.0	2.6	-61.5	55.4



Curve Description			
Upper, Middle, Lower Rib Deflections			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max (Upper)	Time	Min (Upper)	Time
37.4	17.3	-5.2	41.3
Max (Middle)	Time	Min (Middle)	Time
42.0	18.2	-4.2	45.1
Max (Lower)	Time	Min (Lower)	Time
39.2	18.6	-3.7	48.7



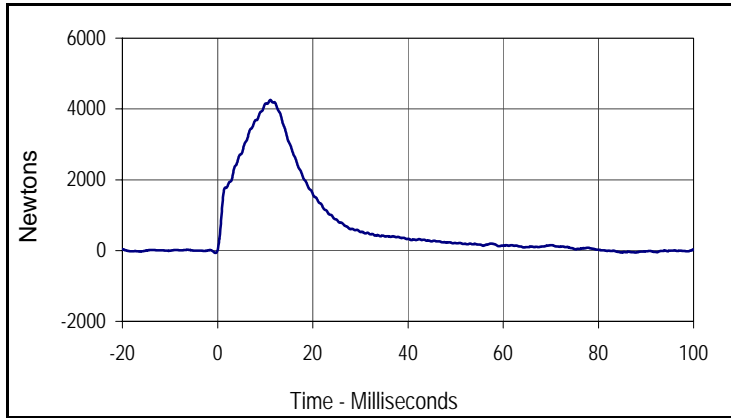
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
46.5	2.6	-0.3	55.4

Test Program: ES2re Abdomen Impact Test
 ATD Serial No.: F035

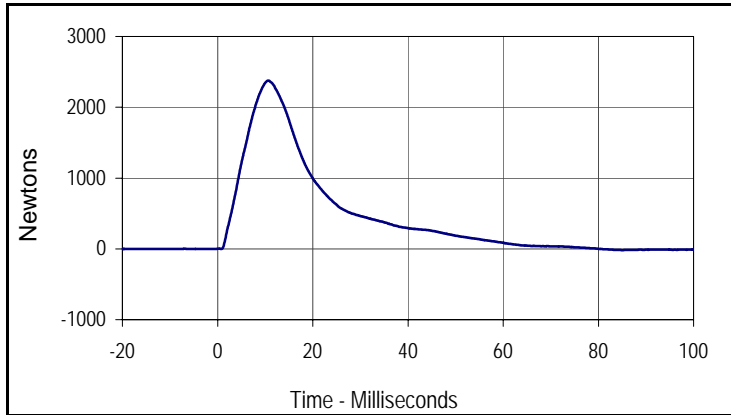
Test Date: 12/20/12
 Test I.D.: F035ABD042



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	490	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		28.9	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.9	Pass
Probe Velocity	m/s	3.9 to 4.1	3.95	Pass
Peak Impactor Force	N	4000 to 4800	4251.9	Pass
	msec	10.6 to 13.0	11.1	Pass
Sum of Abdominal Forces	N	2200 to 2700	2378.5	Pass
	msec	10.0 to 12.3	10.6	Pass
Overall Test Results				Pass



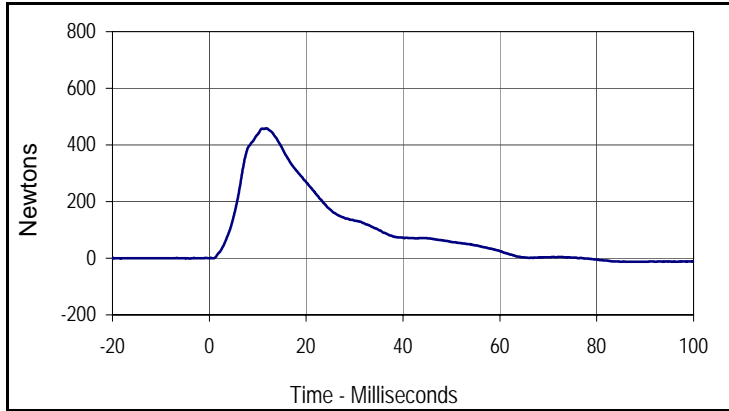
Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
4251.9	11.1	-68.9	-0.4



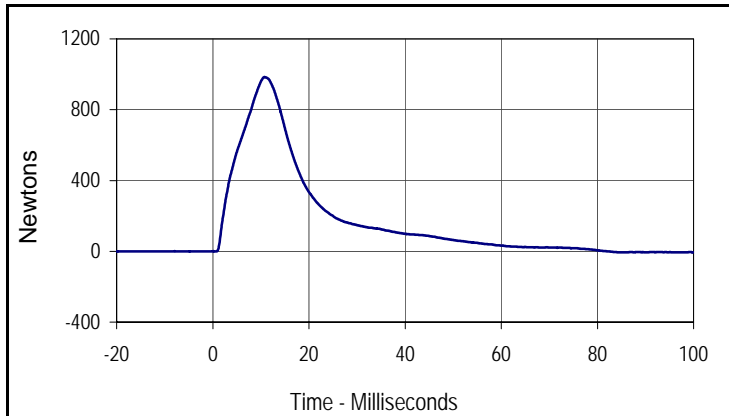
Curve Description			
Abdomen Sum Resultant			
Plot No.	Type	SAE Class	Units
002	RES	600	Newtons
Max	Time	Min	Time
2378.5	10.6	-17.1	85.0

Test Program: ES2re Abdomen Impact Test
 ATD Serial No.: F035

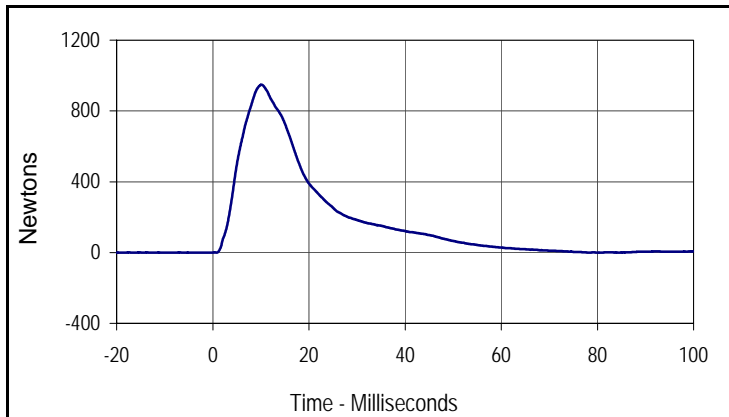
Test Date: 12/20/12
 Test I.D.: F035ABD042



Curve Description			
Front Abdomen Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
458.9	11.8	-12.8	87.8



Curve Description			
Middle Abdomen Force			
Plot No.	Type	SAE Class	Units
004	FIL	600	Newtons
Max	Time	Min	Time
984.8	10.7	-6.4	95.6



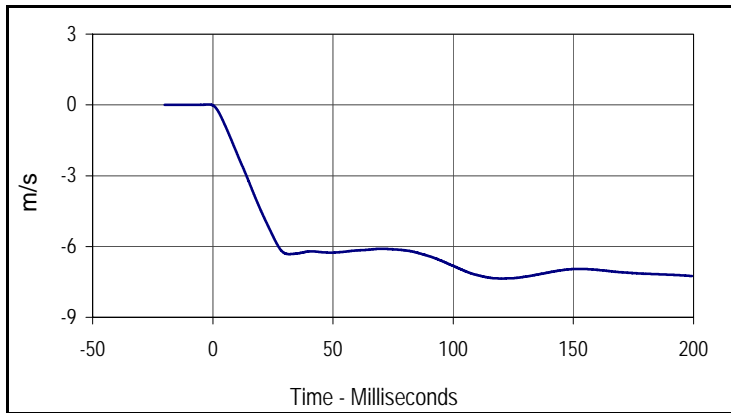
Curve Description			
Rear Abdomen Force			
Plot No.	Type	SAE Class	Units
005	FIL	600	Newtons
Max	Time	Min	Time
947.9	10.1	-0.4	-5.4

Test Program: ES2re Lumbar Flexion Test
 ATD Serial No.: F035

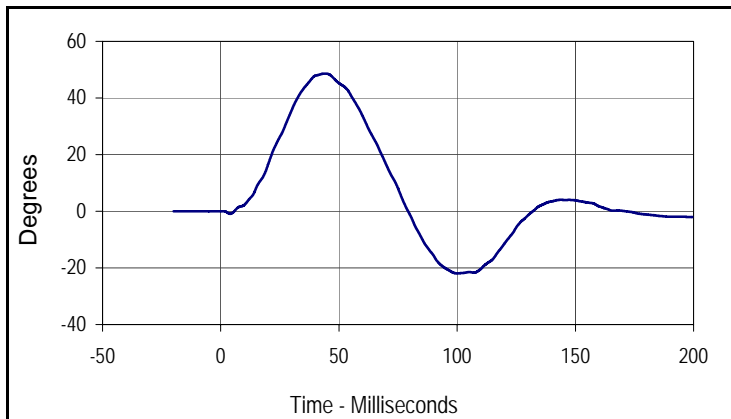
Test Date: 12/20/12
 Test I.D.: F035LB042



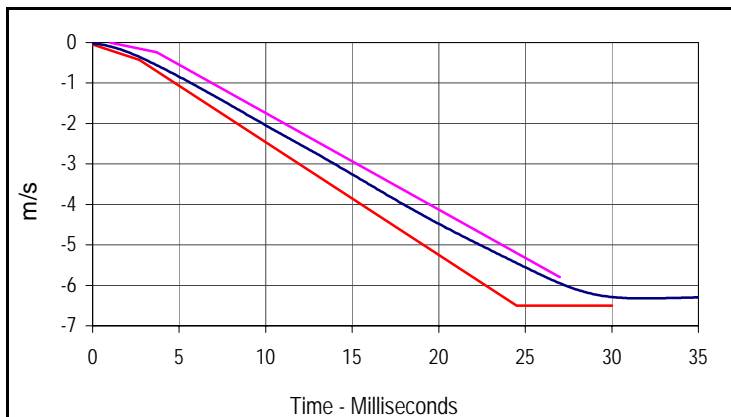
Tested Parameter	Units	Specification	Result	Pass/Fail
Lumbar Spine Assembly Soak Time	Minutes	≥240	545	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		28.9	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.5	Pass
Pendulum Velocity	m/s	5.95 to 6.15	6.07	Pass
Headform Rotation	Max	45 to 55	48.6	Pass
	Time	39 to 53	45.2	Pass
Time of Decay to Zero Angle from Peak	msec	37 to 57	41.1	Pass
Overall Test Results				Pass



Curve Description			
Plot No.	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.2	-7.4	120.6



Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
48.6	45.2	-22.0	100.6

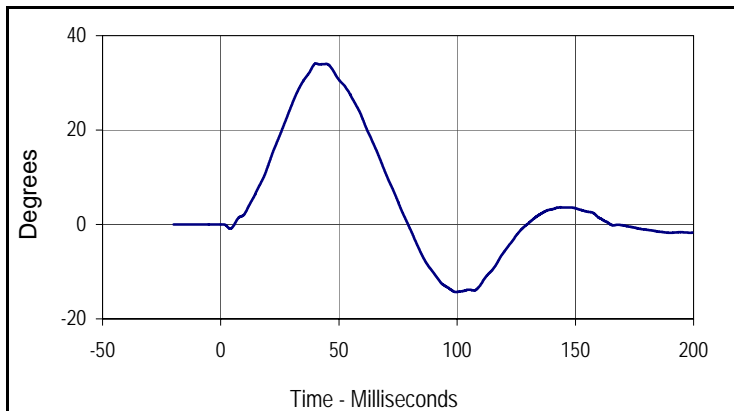


Curve Description			
Plot No.	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.2	-7.4	120.6

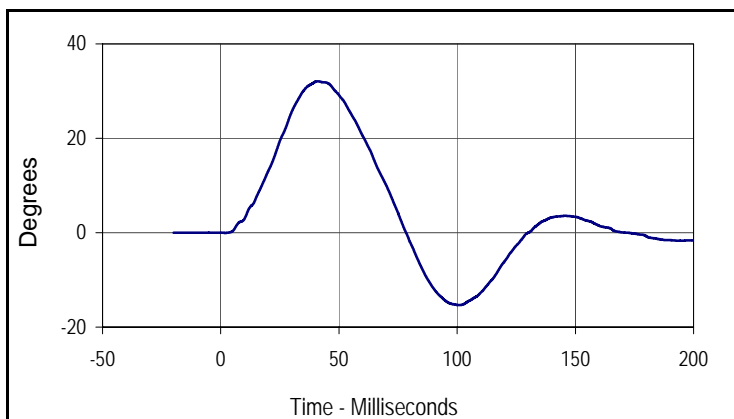
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.7	-0.24	2.7	-0.425
27.0	-5.80	24.5	-6.50
		30.0	-6.50

Test Program: ES2re Lumbar Flexion Test
 ATD Serial No.: F035

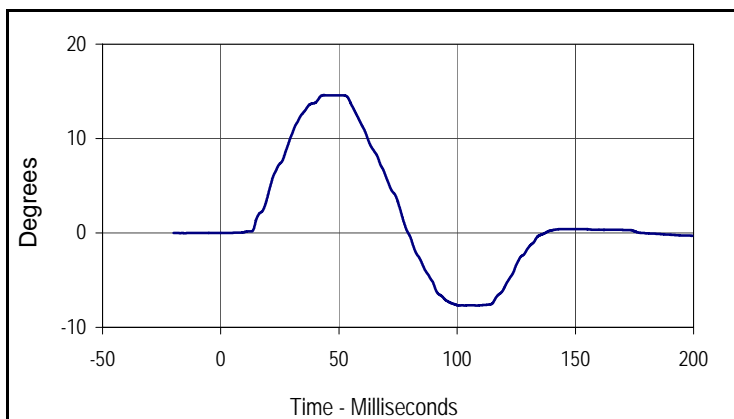
Test Date: 12/20/12
 Test I.D.: F035LB042



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
34.1	40.8	-14.3	100.2



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
32.1	41.6	-15.3	101.6



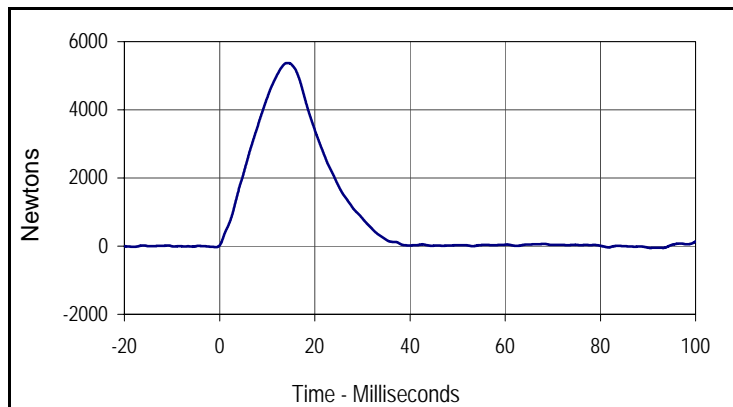
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
14.6	44.2	-7.7	108.8

Test Program: ES2re Pelvis Impact Test
 ATD Serial No.: F035

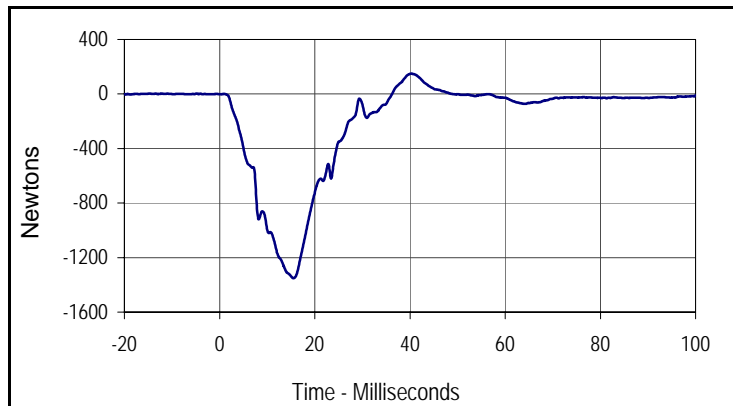
Test Date: 12/20/12
 Test I.D.: F035PL042



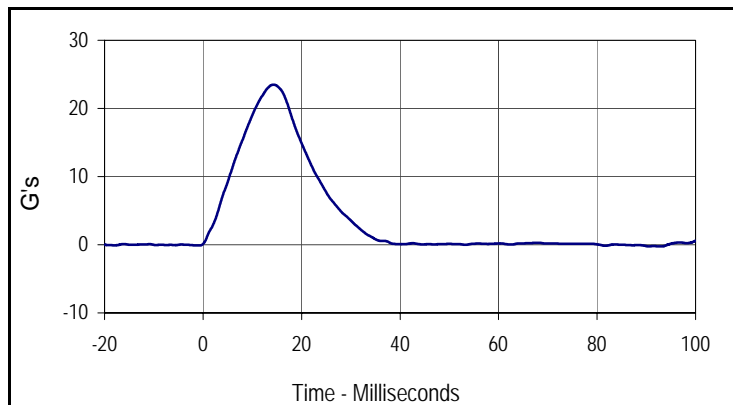
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	605	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		28.9	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.7	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.35	Pass
Peak Impactor Force	N	4700 to 5400	5374.7	Pass
	msec	11.8 to 16.1	14.3	Pass
Peak Pubic Symphysis Load	N	-1230 to -1590	-1351.3	Pass
	msec	12.2 to 17.0	15.5	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
5374.7	14.3	-53.5	90.5



Curve Description			
Pubic Symphysis Force Y			
Plot No.	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
149.5	40.2	-1351.3	15.5



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
23.5	14.3	-0.2	90.5

Test Program: SID IIs External Measurements

Test Date: 12/21/12



ATD Serial No.: 307

Test I.D.: N/A

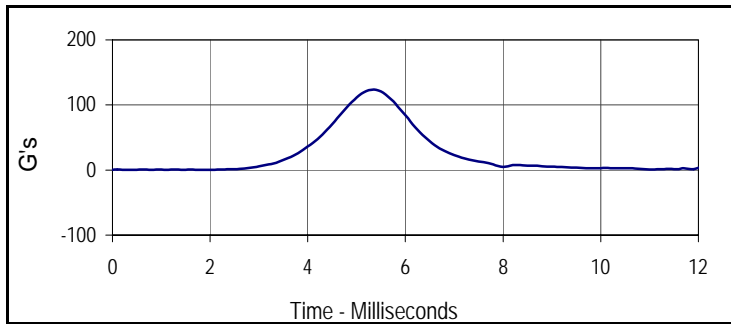
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A Sitting Height	mm	772 - 788	778	Pass
B Shoulder Pivot Height	mm	437 - 453	443	Pass
C H-Point Height	mm	79 - 89	85	Pass
D H-Point from Seatback	mm	141 - 151	144	Pass
E Shoulder Pivot from Backline	mm	97 - 107	102	Pass
F Thigh Clearance	mm	119 - 135	128	Pass
G Head Breadth	mm	140 - 148	145	Pass
H Head Back from Backline	mm	40 - 46	43	Pass
I Head Depth	mm	178 - 188	185	Pass
J Head Circumference	mm	541 - 551	546	Pass
K Buttock to Knee Length	mm	514 - 540	525	Pass
L Popliteal Height	mm	343 - 369	351	Pass
M Knee Pivot to Floor Height	mm	392 - 409	400	Pass
N Buttock Popliteal Length	mm	416 - 442	432	Pass
O Chest Depth w/o Jacket	mm	195 - 211	205	Pass
P Foot Length	mm	216 - 232	223	Pass
Q Hip Breadth with Pelvic Plug	mm	313 - 323	319	Pass
R Arm Length	mm	249 - 259	254	Pass
S Knee Joint to Seatback	mm	477 - 493	483	Pass
V Shoulder Width	mm	341 - 357	351	Pass
W Foot Width	mm	78 - 94	89	Pass
Y Chest Circumference with Jacket	mm	851 - 881	872	Pass
Z Waist Circumference	mm	760 - 791	774	Pass
Overall Test Results				Pass

Test Program: SID IIs Head Drop Test
 ATD Serial No.: 307

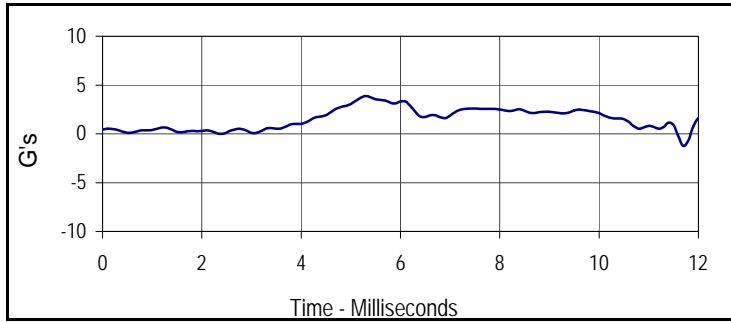
Test Date: 12/21/12
 Test I.D.: 307HD049



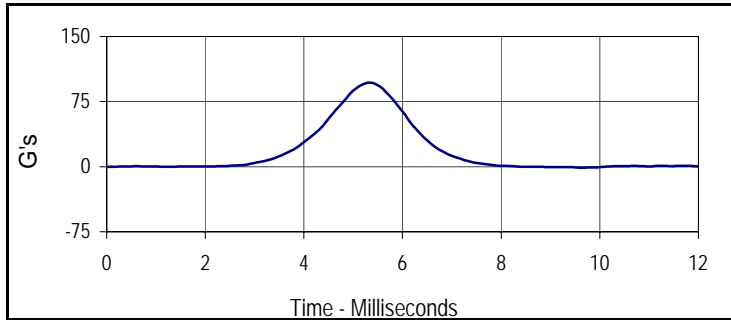
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	345	Pass
Temperature During Soak	Max	18.9 to 25.6	21.7	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		29.2	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.5	Pass
Peak Head Resultant Acceleration	G's	115 to 137	123.4	Pass
Peak Head X Acceleration	G's	<15	3.9	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	4.1	Pass
Overall Test Results				Pass



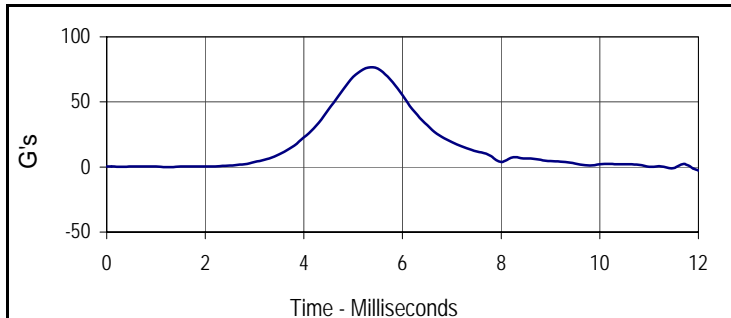
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
123.4	5.3	0.4	0.4



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
3.9	5.3	0.0	2.4



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
96.8	5.3	-1.2	9.6



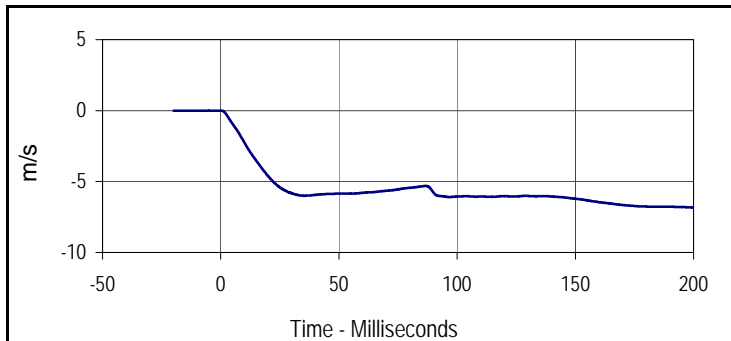
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
76.7	5.4	-2.6	12.0

Test Program: SID IIs Neck Flexion Test
 ATD Serial No.: 307

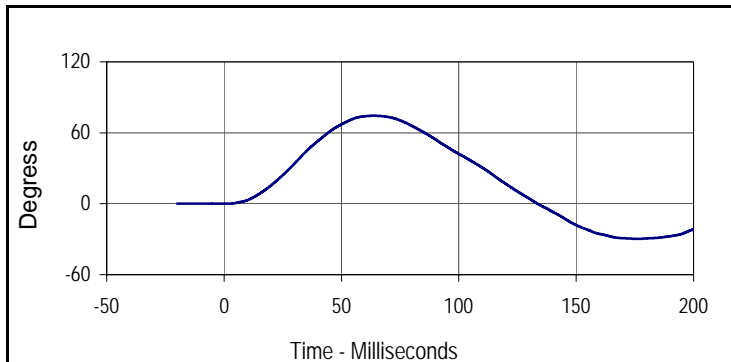
Test Date: 12/21/12
 Test I.D.: 307NB049



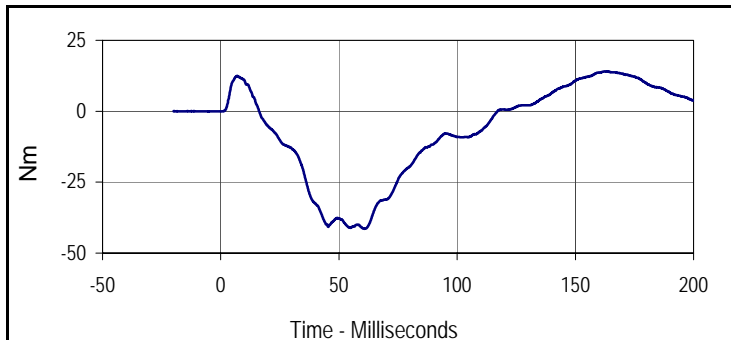
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	400	Pass	
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass	
	Min		20.8	Pass	
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass	
	Min		29.2	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	30.6	Pass	
Pendulum Velocity	m/s	5.51 to 5.63	5.54	Pass	
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.25	Pass
	15 msec	m/s	-3.30 to -4.10	-3.53	Pass
	20 msec	m/s	-4.40 to -5.40	-4.61	Pass
	25 msec	m/s	-5.40 to -6.10	-5.41	Pass
	25-100 msec	m/s	-5.50 to -6.20	-6.09	Pass
D-Plane Rotation	Max	Degrees	71 to 81	74.5	Pass
	Time	msec	50 to 70	63.8	Pass
Peak Occipital Condyle Moment	Nm	-36 to -44	-41.4	Pass	
Decaying Moment Time to Cross 0 Nm	msec	102 to 126	117.1	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
0.0	-16.2	-6.8	200.0



Curve Description			
Maximum Translation Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degress
Max	Time	Min	Time
74.5	63.8	-29.7	176.1



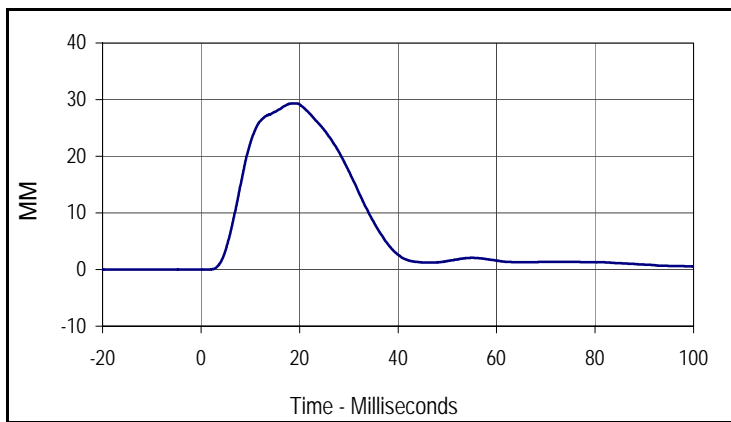
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
14.1	162.7	-41.4	60.8

Test Program: SID IIs Shoulder Impact Test
 ATD Serial No.: 307

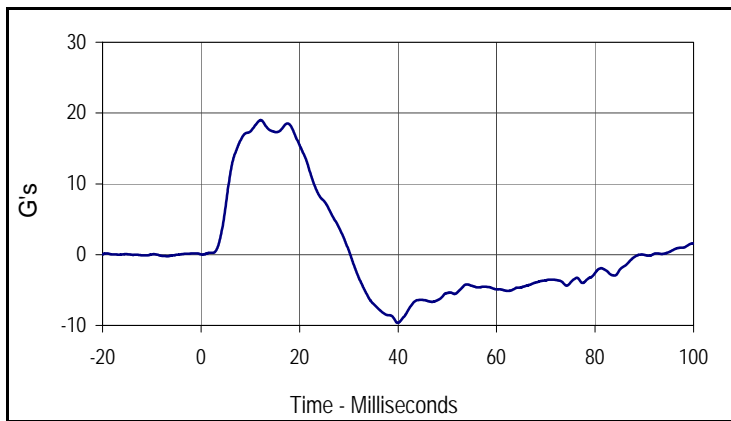
Test Date: 12/21/12
 Test I.D.: 307SH049



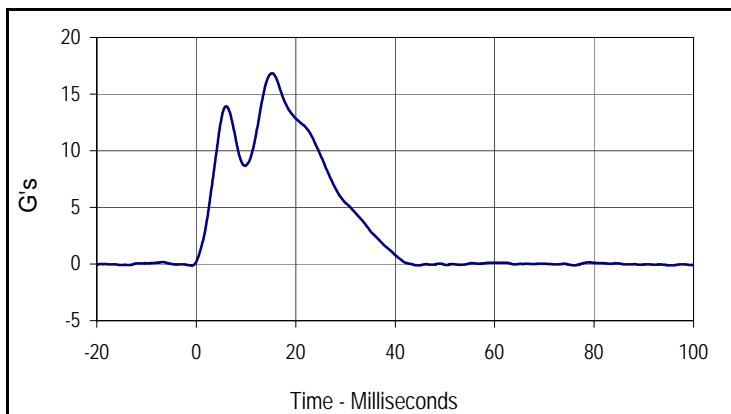
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	435	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		29.2	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.5	Pass
Impactor Velocity	m/s	4.20 to 4.40	4.29	Pass
Peak Shoulder Deflection	mm	28 to 37	29.3	Pass
Peak Lateral Spine Acceleration Y	G's	17 to 22	19.0	Pass
Peak Impactor Acceleration	G's	13 to 18	16.8	Pass
Overall Test Results				Pass



Curve Description			
Shoulder Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
29.3	18.8	0.0	-16.8



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
19.0	12.1	-9.6	39.9



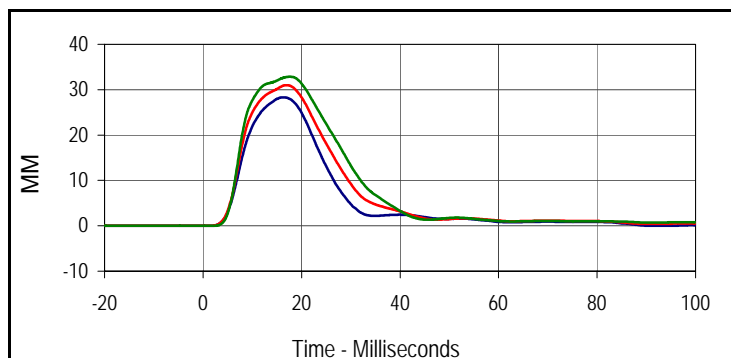
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
16.8	15.2	-0.1	-1.0

Test Program: SID IIs Thorax with Arm Impact Test
 ATD Serial No.: 307

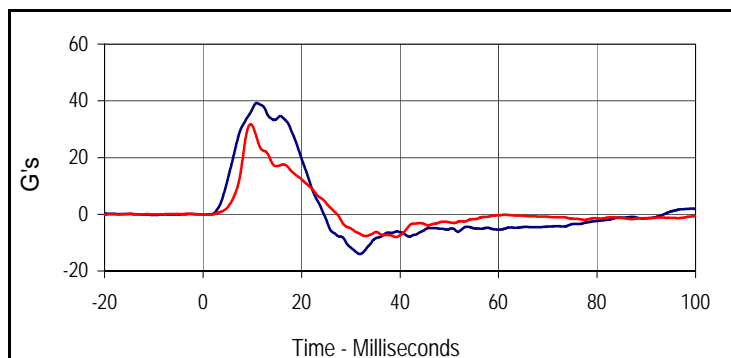
Test Date: 12/21/12
 Test I.D.: 307TWA049



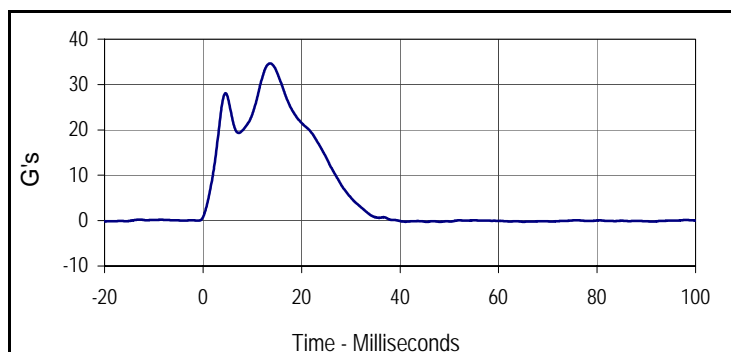
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	455	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		29.2	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.4	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.62	Pass
Peak Shoulder Deflection	mm	31 to 40	36.4	Pass
Peak Upper Thorax Rib Deflection	mm	25 to 32	28.3	Pass
Peak Middle Thorax Rib Deflection	mm	30 to 36	31.0	Pass
Peak Lower Thorax Rib Deflection	mm	32 to 38	32.9	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	39.2	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	31.8	Pass
Peak Impactor Acceleration	G's	30 to 36	34.7	Pass
Overall Test Results				Pass



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
28.3	16.2	0.0	-19.4
Middle Thorax Deflection			
Max	Time	Min	Time
31.0	17.0	0.0	1.4
Lower Thorax Deflection			
Max	Time	Min	Time
32.9	17.6	0.0	2.0



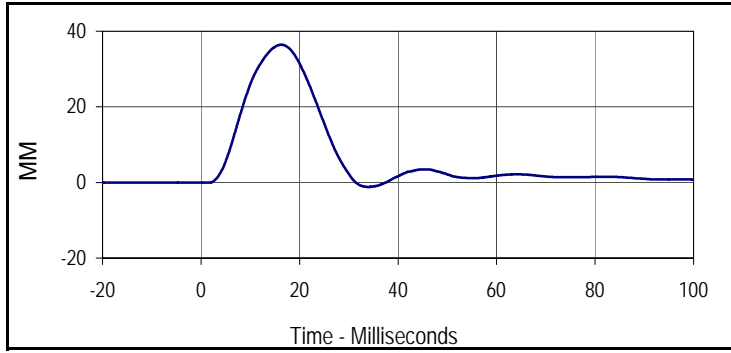
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
39.2	10.9	-14.0	31.9
Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
31.8	9.7	-8.1	39.2



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
34.7	13.6	-0.3	45.4

Test Program: SID IIs Thorax with Arm Impact Test
 ATD Serial No.: 307

Test Date: 12/21/12
 Test I.D.: 307TWA049



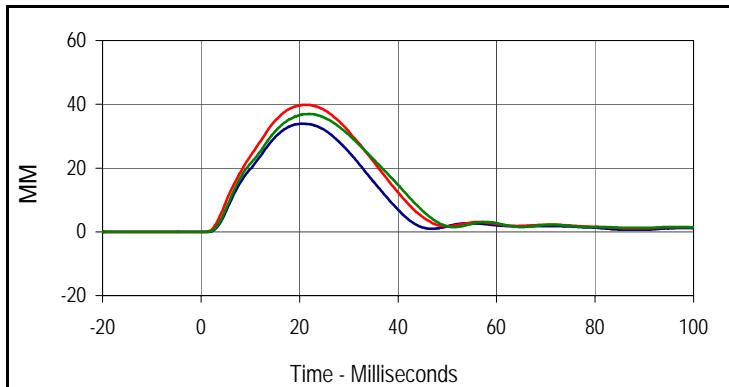
Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
007	FIL	600	MM
Max	Time	Min	Time
36.4	16.3	-1.2	33.9

Test Program: SID IIs Thorax without Arm Impact Test
 ATD Serial No.: 307

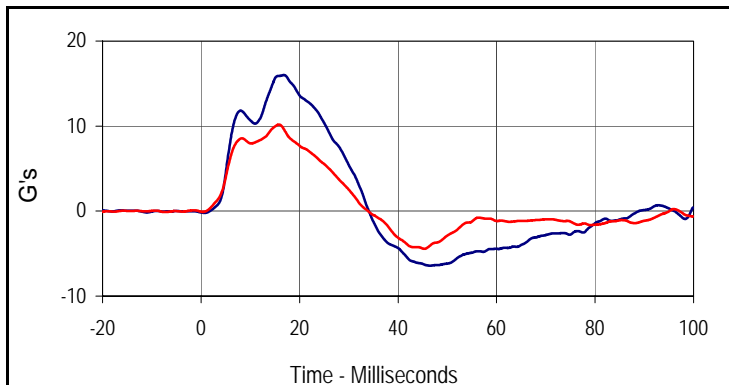
Test Date: 12/21/12
 Test I.D.: 307TWOA049



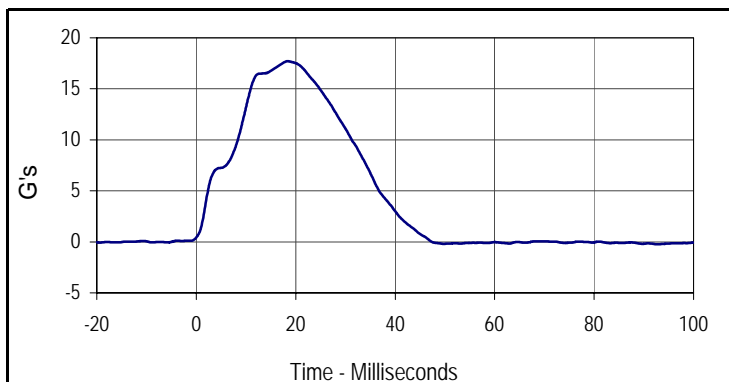
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	480	Pass
Temperature During Soak	Max	18.9 to 25.6	21.7	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		29.2	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.5	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.29	Pass
Peak Upper Thorax Rib Deflection	mm	32 to 40	33.9	Pass
Peak Middle Thorax Rib Deflection	mm	39 to 45	39.9	Pass
Peak Lower Thorax Rib Deflection	mm	35 to 43	37.0	Pass
Peak Upper Spine Y Acceleration	G's	13 to 17	16.0	Pass
Peak Lower Spine Y Acceleration	G's	7 to 11	10.2	Pass
Peak Impactor Acceleration	G's	14 to 18	17.7	Pass
Overall Test Results				Pass



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
33.9	20.6	0.0	-9.3
Middle Thorax Deflection			
Max	Time	Min	Time
39.9	21.2	0.0	-9.9
Lower Thorax Deflection			
Max	Time	Min	Time
37.0	22.0	0.0	-16.3



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
16.0	16.8	-6.4	46.5
Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
10.2	15.8	-4.4	45.3



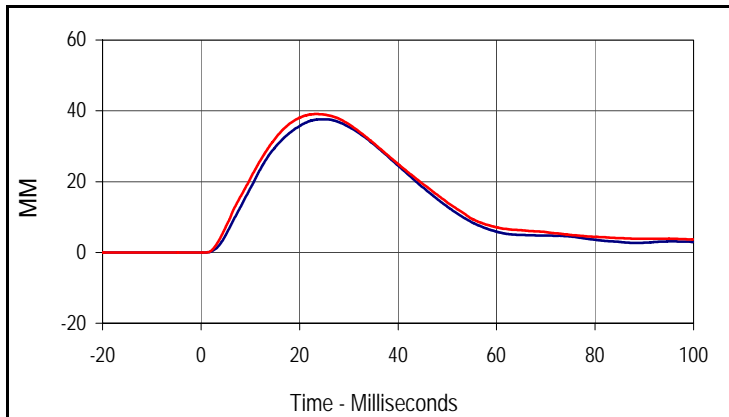
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
17.7	18.4	-0.2	92.7

Test Program: SID IIs Abdomen Impact Test
 ATD Serial No.: 307

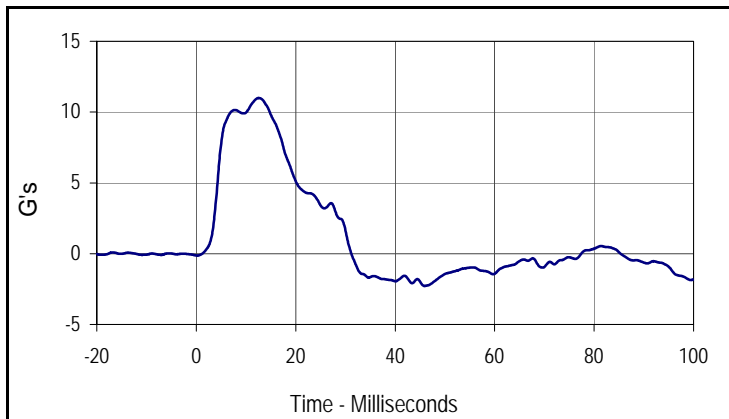
Test Date: 12/21/12
 Test I.D.: 307ABD049



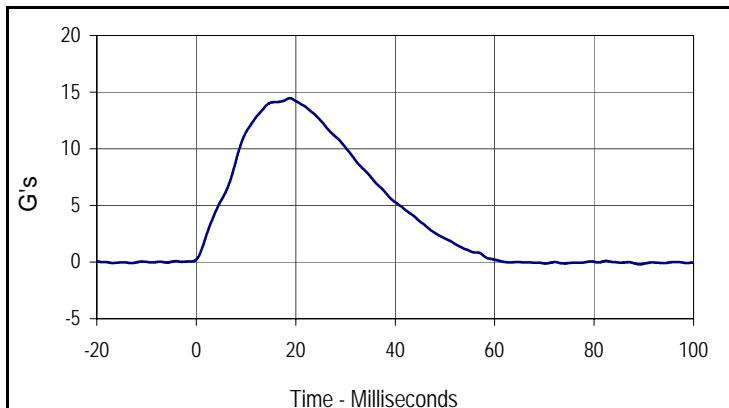
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	500	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		29.2	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.3	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.29	Pass
Peak Upper Abdominal Rib Deflection	mm	36 to 47	37.6	Pass
Peak Lower Abdominal Rib Deflection	mm	33 to 44	39.1	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	11.0	Pass
Peak Impactor Acceleration	G's	12 to 16	14.5	Pass
Overall Test Results				Pass



Curve Description			
Upper Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
37.6	24.6	0.0	-7.9



Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
39.1	23.4	0.0	-1.9

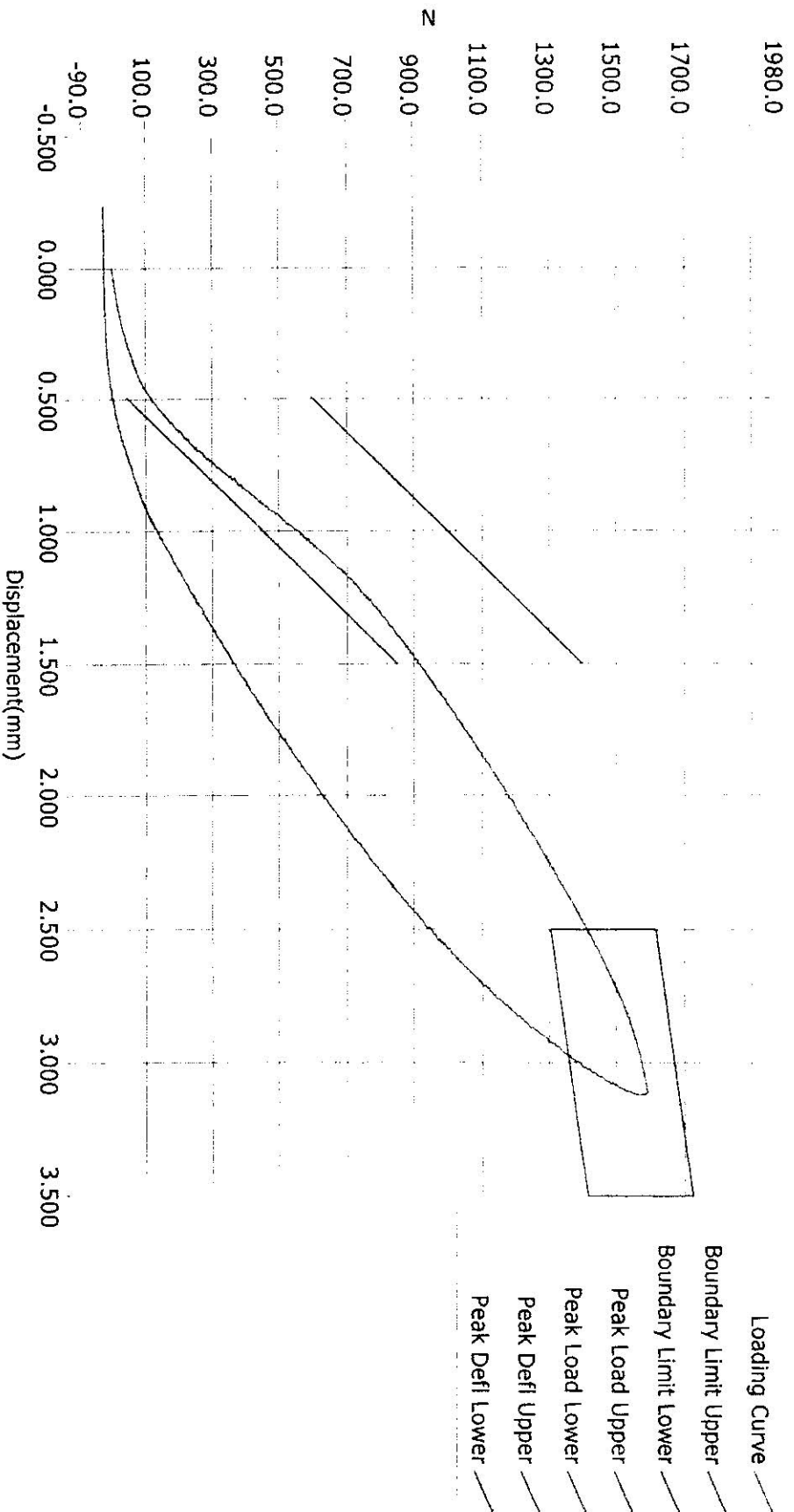


Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
11.0	12.6	-2.3	45.9

Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
14.5	18.8	-0.2	89.2

MD0216 POST TEST

Resultant Data - SIDIIs Plug Compression



ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
	49051	12/7/2011	8:18 PM
Cert ID	ATD Serial Number	ATD Type	
N/A		SIDIIs	

Current Date : 12/7/2011

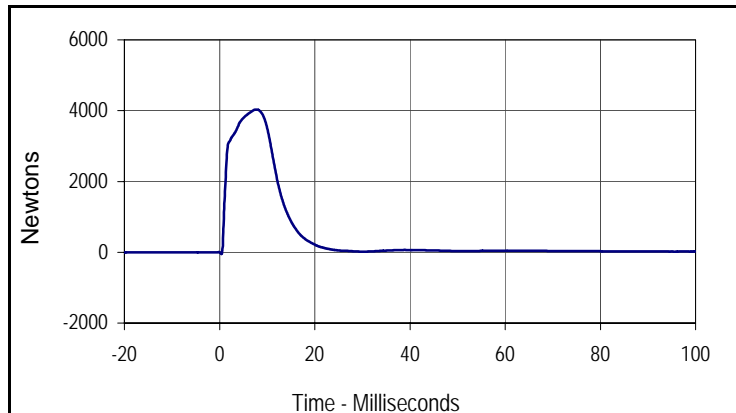
Current Time : 20:19:46

Test Program: SID IIs Pelvis Acetabulum Impact Test
 ATD Serial No.: 307

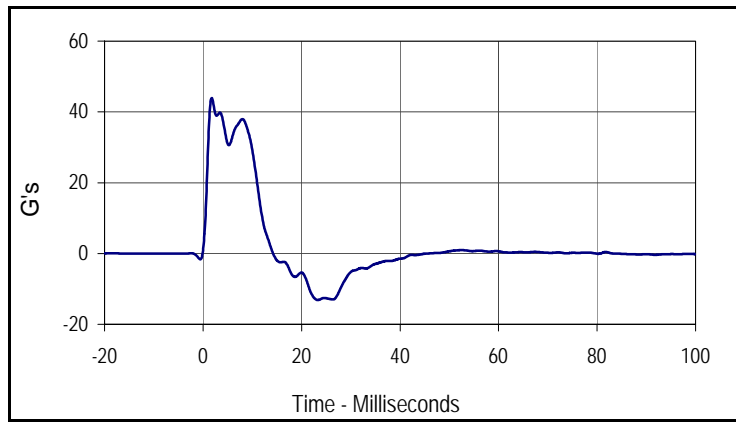
Test Date: 12/21/12
 Test I.D.: 307ACET049



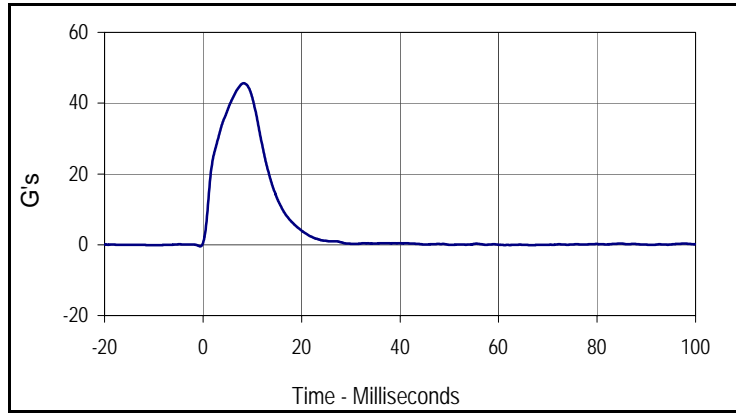
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	535	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		29.2	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.4	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.71	Pass
Peak Acetabulum Force Y	Newtons	3600 to 4300	4032.3	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	38.0	Pass
Peak Impactor Acceleration	G's	38 to 47	45.6	Pass
Overall Test Results				Pass



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4032.3	7.7	-49.1	0.4



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
43.9	1.8	-13.1	23.3



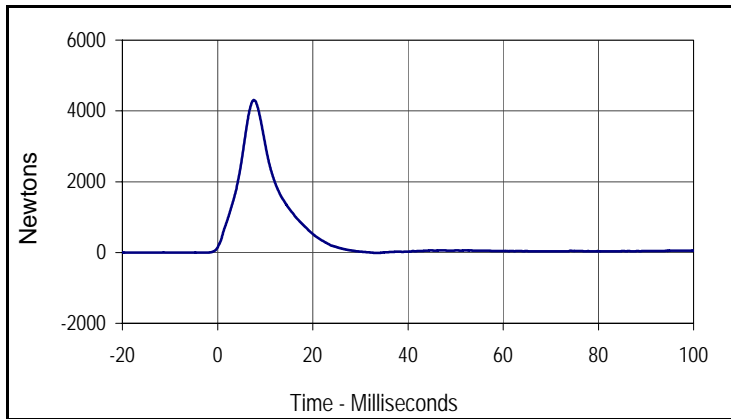
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
45.6	8.2	-0.4	-0.6

Test Program: SID IIs Pelvis Iliac Calibration
 ATD Serial No.: 307

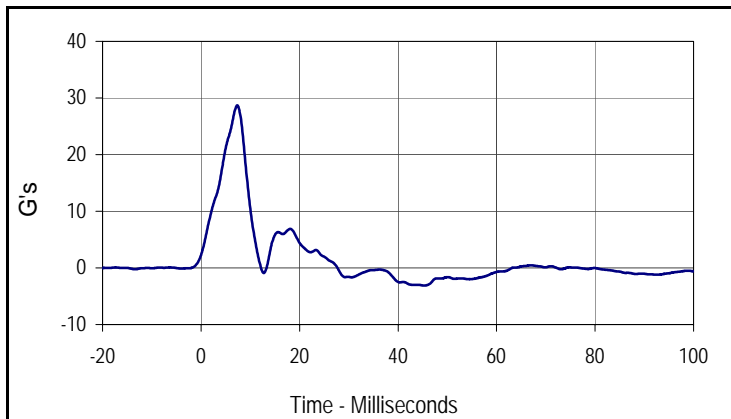
Test Date: 12/21/12
 Test I.D.: 307PL049



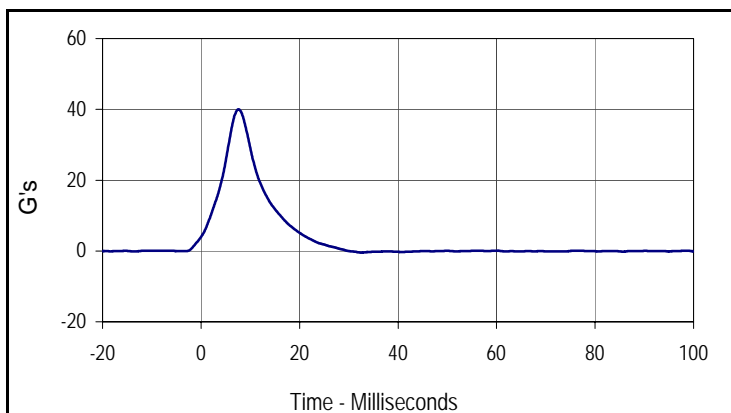
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	590	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		29.2	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.2	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.27	Pass
Peak Iliac Force	Newtons	4100 to 5100	4306.7	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	28.7	Pass
Peak Impactor Acceleration	G's	36 to 45	40.0	Pass
Overall Test Results				Pass



Curve Description			
Pelvis Iliac Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4306.7	7.6	-10.9	33.0



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
28.7	7.4	-3.1	45.3



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
40.0	7.6	-0.4	32.6

APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

TABLE 1 – Dummy Instrumentation (ES-2re)

			ES-2re S/N F035		
			Serial Number	Manufacturer	Calibration
Head Accelerometers		X	P58760	Endevco	8/30/12
		Y	P58763	Endevco	8/31/12
		Z	P52093	Endevco	8/31/12
Thorax Rib Displacement Potentiometers		Upper	180	FTSS	6/22/12
		Middle	177	FTSS	6/22/12
		Lower	186	FTSS	6/22/12
Abdomen Load Cells		Forward	1514	Denton	6/7/12
		Middle	1510	Denton	6/7/12
		Rear	1515	Denton	6/7/12
Lower Spine Accelerometers (T12)		X	P49165	Endevco	6/21/12
		Y	P49212	Endevco	6/21/12
		Z	P52113	Endevco	6/21/12
Pubic Symphysis Load Cell		Y	506	Denton	6/21/12

TABLE 2 – Dummy Instrumentation (SID-IIs)

			SID-IIs S/N 307			
			Serial Number	Manufacturer	Calibration	
Head Accelerometers		X	P58900	Endevco	8/15/12	
		Y	P58902	Endevco	8/15/12	
		Z	P58983	Endevco	8/15/12	
Displacement Potentiometers	Shoulder		Y	1244	FTSS	8/17/12
	Thoracic Rib	Upper	Y	1249	FTSS	8/17/12
		Middle	Y	1265	FTSS	8/17/12
		Lower	Y	1277	FTSS	8/17/12
	Abdominal Rib	Upper	Y	1286	FTSS	8/17/12
		Lower	Y	1290	FTSS	8/17/12
Lower Spine Accelerometers (T12)		X	P59007	Endevco	8/16/12	
		Y	P59015	Endevco	8/16/12	
		Z	P59016	Endevco	8/16/12	
Acetabulum Load Cell		Y	277	Denton	5/24/12	
Iliac Wing Load Cell		Y	289	Denton	5/24/12	
Pelvis Plug (Struck Side)			46076	FTSS	9/21/11	
Pelvis Plug (Non-Struck Side)			48930	FTSS	12/5/11	

TABLE 3 – Vehicle Instrumentation

Vehicle Instrumentation			Serial Number	Manufacturer	Calibration Date
1	Vehicle Center of Gravity	X	Ketx11a	ICSensor	8/17/12
	Vehicle Center of Gravity	Y	Ketx11b	ICSensor	8/17/12
	Vehicle Center of Gravity	Z	Ketx11c	ICSensor	8/17/12
2	Right Sill at Front Seat	X	13331	Endevco	6/18/12
	Right Sill at Front Seat	Y	13469	Endevco	12/11/12
	Right Sill at Front Seat	Z	13346	Endevco	6/18/12
3	Right Sill at Rear Seat	X	13665	Endevco	10/20/12
	Right Sill at Rear Seat	Y	13673	Endevco	10/20/12
	Right Sill at Rear Seat	Z	13676	Endevco	10/20/12
4	Left Sill at Front Door	Y	13680	Endevco	10/20/12
5	Left Sill at Rear Door	Y	13713	Endevco	10/22/12
6	Left A-Post Lower	Y	13714	Endevco	10/22/12
7	Left A-Post Middle	Y	13716	Endevco	10/22/12
8	Left B-Post Lower	Y	13667	Endevco	10/20/12
9	Left B-Post Middle	Y	13330	Endevco	6/18/12
10	Front Seat Track	Y	13354	Endevco	6/18/12
11	Rear Seat Structure	Y	N/A	N/A	N/A
12	Right Rear Occ. Compartment	Y	13717	Endevco	10/22/12
13	Engine Block	X	13718	Endevco	10/22/12
	Engine Block	Y	13663	Endevco	10/20/12
14	Rear Floorpan Above Axle	X	13348	Endevco	6/18/12
	Rear Floorpan Above Axle	Y	12865	Endevco	1/11/12
	Rear Floorpan Above Axle	Z	12903	Endevco	1/11/12

TABLE 4 – MDB Instrumentation

		Serial Number	Manufacturer	Calibration Date
MDB Center of Gravity	X	13682	Endevco	11/14/12
MDB Center of Gravity	Y	13706	Endevco	11/14/12
MDB Center of Gravity	Z	13715	Endevco	11/14/12
Left Frame at Rear Axle Centerline	X	13705	Endevco	11/14/12
Left Frame at Rear Axle Centerline	Y	13711	Endevco	11/14/12