

REPORT NUMBER: SNCAP-CAL-09-02

**NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TEST**

**FORD MOTOR COMPANY
2009 LINCOLN MKS
4-DOOR SEDAN**

NHTSA NUMBER: M90203

**PREPARED BY:
CALSPAN CORPORATION
P.O. BOX 400
BUFFALO, NEW YORK 14225**



Test Date: July 29, 2008

FINAL REPORT

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

This final test report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, in response to Contract Number DTNH22-03-D-22005.

This publication is distributed by the U.S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof. If trade or manufacturers' names or products are mentioned it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

Prepared by: 
Vincent M. Paolini, Project Engineer

Date: September 15, 2008

Reviewed by: 
David J. Travale, Program Manager
Transportation Sciences Center

Date: September 15, 2008

Technical Report Documentation Page

1. Report No. SNCAP-CAL-09-02	2. Government Accession No.	3. Recipient's Catalog No.																						
4. Title and Subtitle Final Report of New Car Assessment Program 2009 Lincoln MKS 4-Door Sedan NHTSA No.: M90203		5. Report Date July 29, 2008																						
		6. Performing Organization Code CAL																						
7. Author(s) Vincent M. Paolini, Project Engineer		8. Performing Organization Report No. 8864-SNCAP-02																						
9. Performing Organization Name and Address Calspan Corporation Transportation Sciences Center P.O. Box 400 Buffalo, New York 14225		10. Work Unit No.																						
		11. Contract or Grant No. DTNH22-03-D-22005																						
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Rulemaking, Office of Crashworthiness Standards Mail Code: NVS-111 1200 New Jersey Ave., SE, Room W43-410 Washington, D.C. 20590		13. Type of Report and Period Covered: <i>Final Report</i> August 2008																						
		14. Sponsoring Agency Code NVS-111																						
15. Supplementary Notes																								
16. Abstract A 55/28 kph 90° Impact Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2009 Lincoln MKS 4-Door Sedan in accordance with the specifications of the Office of Crashworthiness Standards Test Procedure for the generation of consumer information on vehicle side crash protection. This test was conducted at the Calspan Corporation Crash Test Facility in Buffalo, New York, on July 29, 2008. The impact velocity of the Moving Deformable Barrier (MDB) was 61.72 km/h, and the ambient temperature at the struck side (driver side) of the vehicle was 22°C. The target vehicle's maximum post test static crush was 238 mm at level 3. The test vehicle's occupant performance is as follows: <table style="margin-left: auto; margin-right: auto; border: none;"> <thead> <tr> <th></th> <th style="text-align: center;"><u>DRIVER</u></th> <th style="text-align: center;"><u>PASS.</u></th> </tr> </thead> <tbody> <tr> <td>Left Upper Rib (LUR) Accel., g</td> <td style="text-align: center;">18.6</td> <td style="text-align: center;">54.0</td> </tr> <tr> <td>Left Lower Rib (LLR) Accel., g</td> <td style="text-align: center;">18.7</td> <td style="text-align: center;">56.8</td> </tr> <tr> <td>Lower Spine (T₁₂) Accel., g</td> <td style="text-align: center;">21.2</td> <td style="text-align: center;">58.1</td> </tr> <tr> <td>Thoracic Trauma Index (TTI)</td> <td style="text-align: center;">20</td> <td style="text-align: center;">57</td> </tr> <tr> <td>Pelvis (PEV) Accel., g</td> <td style="text-align: center;">33</td> <td style="text-align: center;">56</td> </tr> <tr> <td>HIC</td> <td style="text-align: center;">72.1</td> <td style="text-align: center;">194.5</td> </tr> </tbody> </table> The doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.					<u>DRIVER</u>	<u>PASS.</u>	Left Upper Rib (LUR) Accel., g	18.6	54.0	Left Lower Rib (LLR) Accel., g	18.7	56.8	Lower Spine (T ₁₂) Accel., g	21.2	58.1	Thoracic Trauma Index (TTI)	20	57	Pelvis (PEV) Accel., g	33	56	HIC	72.1	194.5
	<u>DRIVER</u>	<u>PASS.</u>																						
Left Upper Rib (LUR) Accel., g	18.6	54.0																						
Left Lower Rib (LLR) Accel., g	18.7	56.8																						
Lower Spine (T ₁₂) Accel., g	21.2	58.1																						
Thoracic Trauma Index (TTI)	20	57																						
Pelvis (PEV) Accel., g	33	56																						
HIC	72.1	194.5																						
17. Key Words New Car Assessment Program (NCAP) Side Impact Side Impact Hybrid III Dummy (SID/HIII) Occupant Side Impact Protection		18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Adm. Technical Ref. Division, 1200 New Jersey Ave. SE Washington, D.C. 20590																						
19. Security Class. (of this report) Unclassified	20. Security Class. (of this page) Unclassified	21. No. of Pages 121	22. Price																					

Form DOT F1700.7 (8-72)

TABLE OF CONTENTS

<u>Section</u>		<u>Page No.</u>
1	Purpose and Test Procedure	1-1
2	Summary of NCAP Side Impact Test	2-1
<u>Data Sheet No.</u>		<u>Page No.</u>
1	General Test and Vehicle Parameter Data	2-3
2	Test Vehicle Tire Information	2-5
3	Test Vehicle Information	2-6
4	Moving Deformable Barrier (MDB) Summary of Results	2-8
5	Post Test Observations	2-9
6	Vehicle Pre-Test and Post Test Measurements	2-10
7	SID/HIII Longitudinal Clearance Dimensions	2-11
8	SID/HIII Lateral Clearance Dimensions	2-12
9	Vehicle Side Measurements	2-13
10	Vehicle Exterior Crush Profiles	2-14
11	Vehicle Damage Profile Distances	2-15
12	Deformable Barrier Honeycomb Face Static Crush	2-16
13	Vehicle Accelerometer Locations	2-17
14	MDB Accelerometer Locations	2-18
15	Vehicle Structural Measurements	2-19
16	High Speed Camera Locations and Data	2-20
17	Summary of FMVSS 301 Data	2-21
<u>Appendix</u>		<u>Page No</u>
A	Photographs	A-1
B	SID/HIII, Vehicle and MDB Response Data	B-1
C	SID/HIII Configuration and Performance Verification Data	C-1
D	Test Equipment and Calibration Information	D-1

SECTION 1

PURPOSE AND TEST PROCEDURE

PURPOSE

This side impact test was conducted as part of the FY' 2009 test program sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-03-D-22005. The purpose of this test was to evaluate side impact protection in a 2009 Lincoln MKS 4-Door Sedan manufactured by Ford Motor Company. The side impact test was conducted in accordance with the Laboratory Test Procedure for New Car Assessment Program Side Impact Testing dated July 1997.

SECTION 2

SUMMARY OF NCAP SIDE IMPACT TEST

A model year 2009 Lincoln MKS 4-Door Sedan 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 61.72 km/h. The specified impact velocity range is from 61.1 to 62.7 km/h. The test (target) vehicle was stationary and positioned 63° to the line of forward motion. The weight of the vehicle as tested was 2101.5 kg and the test weight of the MDB was 1362.5 kg. The test was conducted at the Calspan Corporation Transportation Sciences Center on July 29, 2008.

One (1) real-time motion picture camera and ten (10) high-speed motion picture cameras were used to document the impact event. The pre-test and post-test conditions were recorded by one (1) real-time motion picture camera. Camera locations and pertinent camera information are documented in the data sheets. Pre- and post-test photographs of the vehicle and Side Impact Dummies (SID/HIIIs) can be found in Appendix A.

Two 50th percentile adult male SID/HIII's were placed in the driver (P1) and left rear passenger (P4) designated seating positions according to instructions specified in the Laboratory Test Procedure for New Car Assessment Program Side Impact Testing dated July 1997. Each SID/HIII was instrumented in the following locations:

- Left Upper Rib (LUR) uni-axial accelerometer (Y-axis primary and redundant)
- Left Lower Rib (LLR) uni-axial accelerometer (Y-axis primary and redundant)
- Lower Thoracic Spine (T12) uni-axial accelerometer (Y-axis primary and redundant)
- Pelvic (PEV) section uni-axial accelerometer (Y-axis primary and redundant)
- Head Center of Gravity (CG) tri-axial accelerometers (X, Y and Z axes primary and redundant)
- Upper Neck load cell (Fx, Fy, Fz, Mx, My, Mz)

The test vehicle was instrumented with twenty-one (21) structural accelerometers and the MDB was instrumented with five (5) accelerometers.

2.2 GENERAL COMMENTS

The test vehicle sustained a maximum static crush of 238 mm at level 3, 600 mm rearward of the left vertical impact point. The driver and passenger SID/HIII's, Serial Nos. 270 and 269 respectively, were calibrated just prior to this test.

Test data and observations are presented in this section of the report. Appendix A contains the still photograph prints. Appendix B contains the driver and passenger SID/HIII's, vehicle, and MDB response data traces. Appendix C contains the SID/HIII's configuration and performance verification data. Appendix D contains the test equipment information.

The occupant data is summarized below:

ATD position	HIC(36)	T ₁	T ₂	TTI (G's)	Peak Pelvis (G's)
Driver	72.1	31.9	67.0	20	33
Passenger	194.5	43.0	70.9	57	56

SUPPLEMENTAL RESTRAINT INFORMATION

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

The test instrumentation data listed in Appendix B can be found on the NHTSA website:
www.nhtsa.dot.gov.

DATA SHEET NO. 1**GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle:	2009 Lincoln MKS	NHTSA No.	M90203
Test Program:	NCAP Side Impact	Test Date:	July 29, 2008

TEST VEHICLE INFORMATION AND VEHICLE OPTIONS

Make	Ford Motor Company	Driver Front Airbag	Yes
Model	MKS	Driver Side Curtain Airbag	Yes
Body Style	4-Door Sedan	Driver Side Torso Airbag	Yes
NHTSA No.	M90203	Driver Pretensioners	Yes
VIN	1LNHM93R49G603863	Driver Load Limiters	Yes
Color	Brown	Driver Power Seats	Yes
Engine Disp.(L)	3.7	Rear Pass. Side Curtain Airbag	Yes
Engine Cylinders	6	Rear Pass. Side Torso Airbag	No
Engine Placement	Lateral	Rear Pass. Pretensioners	No
Transmission Type	Automatic	Rear Pass. Load Limiters	No
Transmission Speeds	6	Rear Pass. Power Seats	NA
Final Drive	Front	Tilt Wheel	Yes
Air Conditioning	Yes	Anti-lock Brakes	Yes
Power Steering	Yes	Traction Control	Yes
Power Brakes	Yes	Power Windows	Yes
Delivery Date	July 24, 2008	Power Door Locks	Yes
Odometer Reading (km)	48	Automatic Door Locks (ADL)	Yes
Dealer	Towne Lincoln-Mercury	Owner's Manual Details Instructions on Disabling ADLs	Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Ford Motor Company	GVWR (kg)	2381
Date of Manufacture	06/08	GAWR Front (kg)	1288
		GAWR Rear (kg)	1134

VEHICLE CAPACITY DATA

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench		
Number Of Occupants	2	3		5
Capacity Wt. (VCW) (kg)				430.0
Cargo Wt. (RCLW) (kg)				89.8

DATA SHEET NO. 1 (continued)**GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle:	2009 Lincoln MKS	NHTSA No.	M90203
Test Program:	NCAP Side Impact	Test Date:	July 29, 2008

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			Fully Loaded (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	565.0	379.0		615.0	498.0		614.0	471.5	
Right	kg	553.0	358.0		557.0	443.0		574.0	442.0	
Ratio	%	60.3	39.7		55.5	44.5		56.5	43.5	
Totals	kg	1118.0	737.0	1855.0	1172.0	941.0	2113.0	1188.0	913.5	2101.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1855.0
Weight of 2 P572E ATDs (81.2 kg each)	kg	162.4
Rated Cargo/Luggage Weight (RCLW)	kg	89.8
Calculated Vehicle Target Weight (TVTW)	kg	2107.2

* Actual As Tested Weight (ATW) will be TVTW -4.5/-9.1 kg

Weight of Ballast (including instrumentation package and cameras): 84.1 kg

TEST VEHICLE ATTITUDES

	Units	LF	RF	LR	RR
As Delivered	mm	775	779	792	785
Fully Loaded	mm	760	772	754	756
As Tested	mm	761	773	758	761

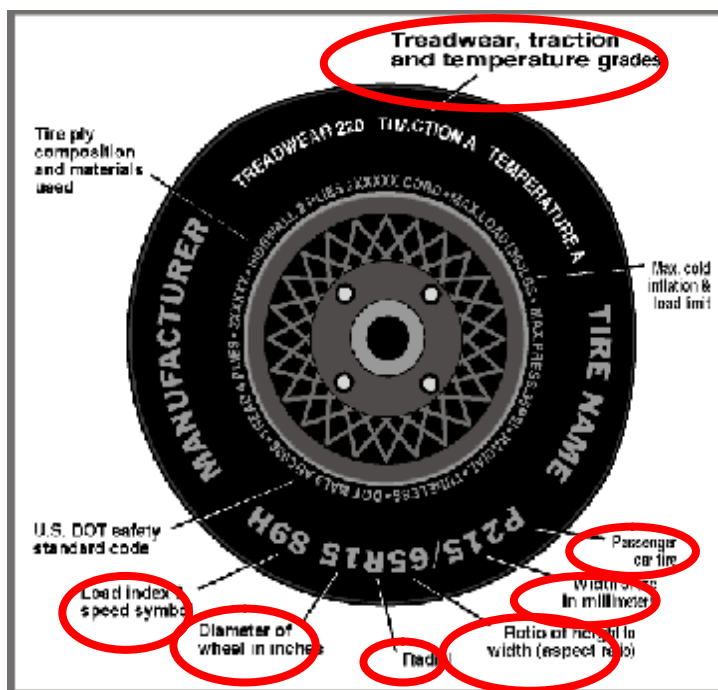
TEST VEHICLE VERTICAL IMPACT LINE AND CG

Measurement Description	Units	Value
Test Vehicle Wheel Base	mm	2873
Target Impact Point Aft of Front Axle	mm	497
Actual Impact Point Aft of Front Axle	mm	503
As Tested CG (aft of front axle)	mm	1249

DATA SHEET NO. 2

TEST VEHICLE TIRE INFORMATION

Test Vehicle:	2009 Lincoln MKS	NHTSA No.	M90203
Test Program:	NCAP Side Impact	Test Date:	July 29, 2008



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	350	350
Cold / Test Pressure (kPa)	220	220
Recommended Tire Size	P235/55R18 99T	P235/55R18 99T
Tire Size on Vehicle	P235/55R18 99T	P235/55R18 99T
Tire Manufacturer	Goodyear	Goodyear
Tire Name	Assurance	Assurance
Tire Type	Passenger	Passenger
Tire Width (mm)	235	235
Ratio of Height to Width (aspect ratio)	55	55
Radial	Yes	Yes
Wheel Diameter	18	18
Load Index & Speed Symbol	99T	99T
Treadwear	700	700
Traction Grade	A	A
Temperature Grade	B	B

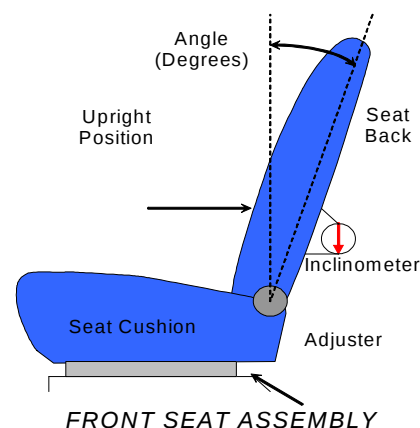
DATA SHEET NO. 3

TEST VEHICLE INFORMATION

Test Vehicle:	2009 Lincoln MKS	NHTSA No.	M90203
Test Program:	NCAP Side Impact	Test Date:	July 29, 2008

NORMAL DESIGN RIDING POSITION

The driver and passenger seat back is positioned to the manufacturer's designated angle.

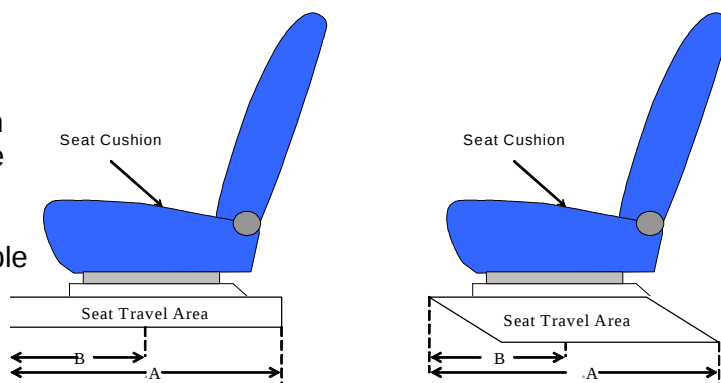


SEAT BACK POSITION

	Driver Seat	Rear Seat
Test Detent (forward-most detent defined as 0)	Power Recline (NA)	Fixed
Angle (deg. from forward-most locking position)	22 degrees	NA
Alternative Measurements to Verify Test Position	18.9 degrees from head restraint post	NA

SEAT FORE/AFT POSITIONS

The total seat travel was measured from forward most position to rearmost position irrespective of vertical seat height in those positions. The seat was set at the longitudinal mid position with vertical adjustment at the lowest position obtainable for both the driver and passenger.



SEAT FORE/AFT POSITION

	Driver Seat	Rear Seat
Total Fore/Aft Travel (A) (mm)	330	Fixed
Test Position (B) (mm)	165	NA
Test Detent (forward-most detent defined as 0)	Power Seat (NA)	NA
Total Number of Detents (including 0)	Power Seat (NA)	NA

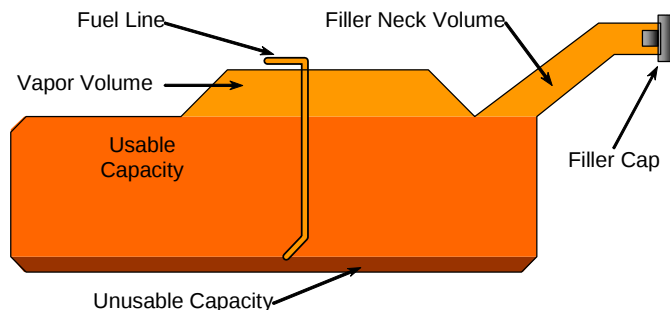
DATA SHEET NO. 3 (CONTINUED)
TEST VEHICLE INFORMATION

Test Vehicle: 2009 Lincoln MKS
 Test Program: NCAP Side Impact

NHTSA No. M90203
 Test Date: July 29, 2008

FUEL SYSTEM INFORMATION

The test vehicle is equipped with an electric fuel pump. The fuel pump operates for approximately two seconds after the ignition is placed in the "ON" position, after which the fuel pump automatically shuts off. The fuel filler door is located on the left rear fender. The standard fuel tank occupies the area under the rear seat.



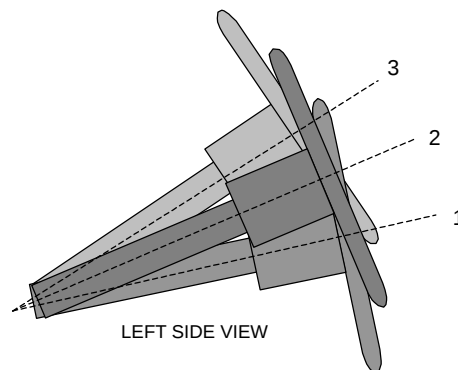
VEHICLE FUEL TANK ASSEMBLY

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard" Fuel Tank	75.7
Usable Capacity of "Optional" Fuel Tank	--
Stoddard Used For Test (92%-94% of Fuel Tank Usable Capacity)	70.4

STEERING COLUMN ADJUSTMENT

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



STEERING COLUMN ASSEMBLY

STEERING COLUMN POSITION

	Fore/Aft Position (mm)	Tilt (degrees)	Tilt (detent)
Lowermost Position No. 1	0	20.8	NA
Geometric Center Position No. 2 *	20	23.3	NA
Uppermost Position No. 3	40	25.8	NA

* Test position

DATA SHEET NO. 4**MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS**

Test Vehicle:	2009 Lincoln MKS	NHTSA No.	M90203
Test Program:	NCAP Side Impact	Test Date:	July 29, 2008

MDB SPECIFICATIONS

Measurement Description	Length (mm)
Overall Width of Framework Carriage	1250
Overall Length Including Honeycomb Face	4120
Wheel base of Framework Carriage	2590
Tread of Framework Carriage (front & rear)	1875
C.G. Location aft of Front Axle	1104

MDB WEIGHTS

	Units	Front Axle	Rear Axle	Total
Left	kg	409.5	281.5	
Right	kg	372.5	299.0	
Ratio	%	57.4	42.6	
Totals	kg	782.0	580.5	1362.5

MDB SPEED AND IMPACT ANGLE DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	61.72
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	61.72
Impact angle with respect to impactor	°	88.5° to 91.5°	89.8

POST TEST OBSERVATIONS**MDB LEFT EDGE IMPACT POINT DATA**

Measured Parameter	Units	Requirement	Value
Horizontal Offset	mm	+/- 50	6 mm rearward
Vertical Offset	mm	+/-20	11 mm above

DATA SHEET NO. 5
POST TEST OBSERVATIONS

Test Vehicle:	2009 Lincoln MKS	NHTSA No.	M90203
Test Program:	NCAP Side Impact	Test Date:	July 29, 2008

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Front Seat SID/HIII	Rear Seat SID/HIII
Dummy Type / Serial No.	SID/HIII / 270	SID/HIII / 269
Head Contact	Left Side Curtain Airbag	Left Side Curtain Airbag
Upper Torso Contact	Torso Airbag	Door Trim
Lower Torso Contact	Torso Airbag	Door Trim
Left Knee Contact	No Contact	No Contact
Right Knee Contact	No Contact	No Contact

POST TEST DOOR OPENING AND SEAT TRACK INFORMATION

Description	Front	Rear
Locked/Unlocked Doors	Unlocked	Unlocked
Left Side Door Opening	Closed, latched, and inoperable without tools	Closed, latched, and inoperable without tools
Right Side Door Opening	Closed, latched, and operable without tools	Closed, latched, and operable without tools
Seat Movement	None	None
Seat Back Failure	None	None

POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	The Left side B-Pillar was pushed inboard during test event
Sill Separation	No visible tears or separations
Windshield Damage	Minor stress cracks along A-pillar
Window Damage	None
Other Notable Effects	None

SUPPLEMENTAL RESTRAINT INFORMATION

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

DATA SHEET NO. 6

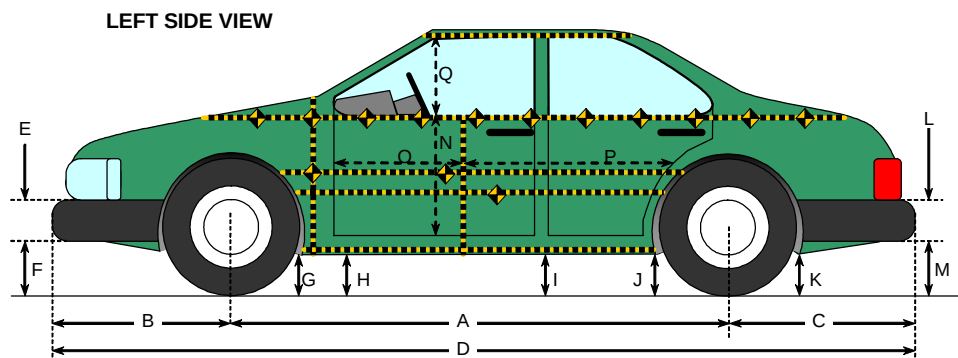
VEHICLE PRE-TEST AND POST-TEST MEASUREMENTS

Test Vehicle: 2009 Lincoln MKS

NHTSA No. M90203

Test Program: NCAP Side Impact

Test Date: July 29, 2008



All Measurements in mm

Code	Measurement Description	Pre-Test (delivered)	Pre-Test (as tested)	Post-Test (as tested)	Difference
A	Wheelbase	2873	2873	2868	5
B	Front Axle to FSOV	1068	1068	1075	-7
C	Rear Axle to RSOV	1251	1251	1242	9
D	Total Length at Centerline	5192	5192	5185	7
E	Front Bumper Thickness	95	95	95	0
F	Front Bumper Bottom to Ground	433	431	434	-3
G	Sill Height at Front Wheel Well	171	152	160	-8
H	Sill Height at Front Door Leading Edge	187	167	182	-15
I	Sill Height at "B" Pillar	203	177	196	-19
J1	Sill Height at Rear Wheel Well	228	195	185	10
J2	Pinch Weld Height at Rear Wheel Well	199	165	207	-42
K	Sill Height Aft of Rear Wheel Well	245	204	228	-24
L	Rear Bumper Thickness	165	165	165	0
M	Rear Bumper Bottom to Ground	518	471	504	-33
N	Sill Height to Window Bottom Sill	763	763	756	7
O	Front Door Leading Edge to Impact CL	821	821	787	34
P	Rear Door Trailing Edge to Impact CL	1185	1185	1132	53
Q	Front Window Opening	444	444	446	-2
R	Right Side Length	5031	5031	5034	-3
S	Left Side Length	5033	5033	5029	4
T	Vehicle Width at "B" Post	1907	1907	1681	226

DATA SHEET NO. 7

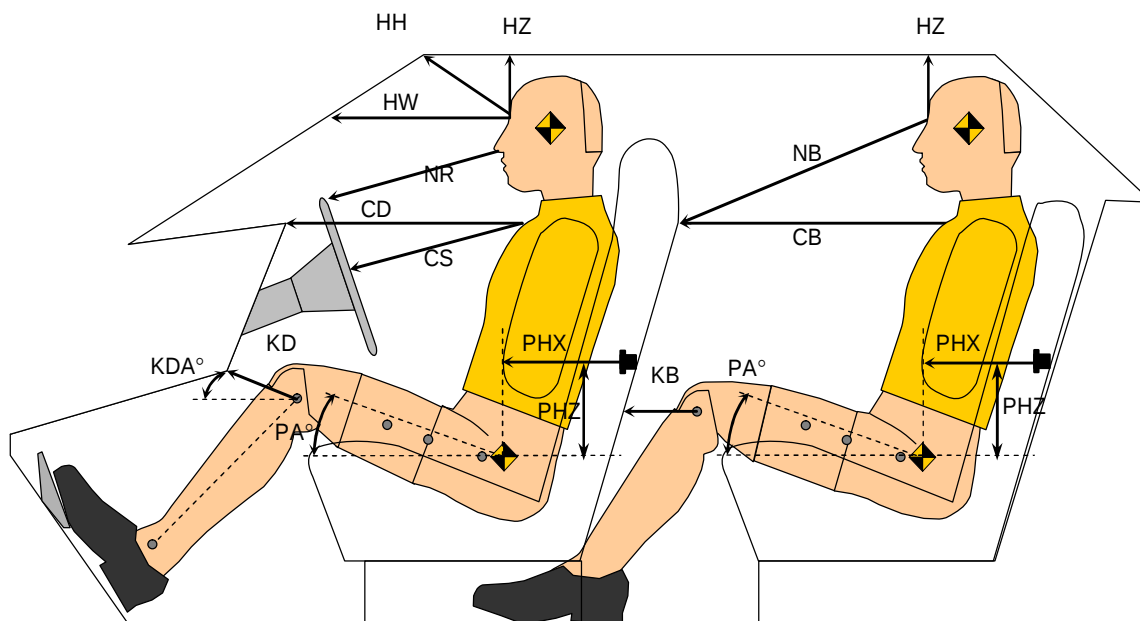
SID/HIII LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2009 Lincoln MKS

NHTSA No. M90203

Test Program: NCAP Side Impact

Test Date: July 29, 2008

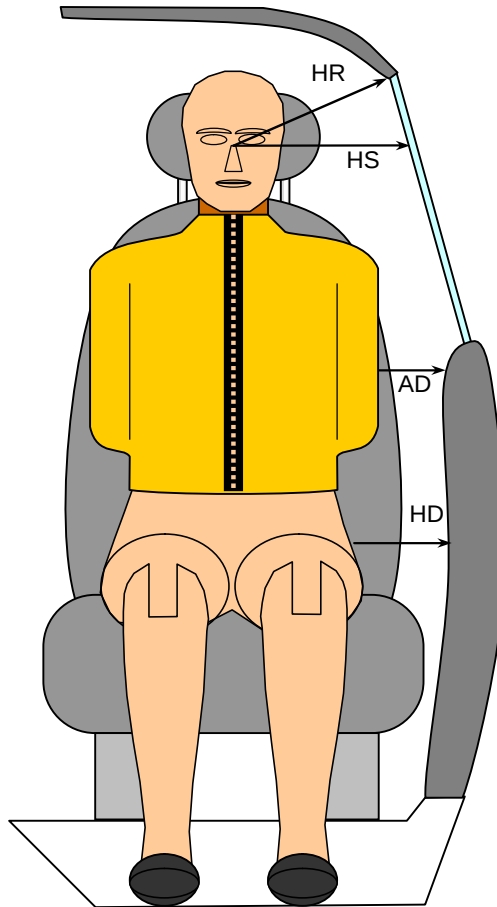


Driver Code	Pass. Code	Measurement Description	Driver S/N 270		Passenger S/N 269	
			Length(mm)	Angle(°)	Length(mm)	Angle(°)
HH		Head to Header	420			
HW		Head to Windshield	709			
HZ	HZ	Head to Roof	215		175	
NR	NB	Nose to Rim/Nose to Seatback	448		658	
CD	CB	Chest to Dash or Seatback	579		587	
CS		Chest to Steering Wheel	317			
KDL	KBL	Left Knee to Dash or Seatback	175	30	257	30
KDR	KBR	Right Knee to Dash or Seatback	160	40	261	38
PA	PA	Pelvic Angle		23.4		23.1
PHX	PHX	H-Point to Striker (X-Axis)	175		180	
PHZ	PHZ	H-Point to Striker (Z-Axis)	185		247	

DATA SHEET NO. 8

SID/HIII LATERAL CLEARANCE DIMENSIONS

Test Vehicle:	2009 Lincoln MKS	NHTSA No.	M90203
Test Program:	NCAP Side Impact	Test Date:	July 29, 2008



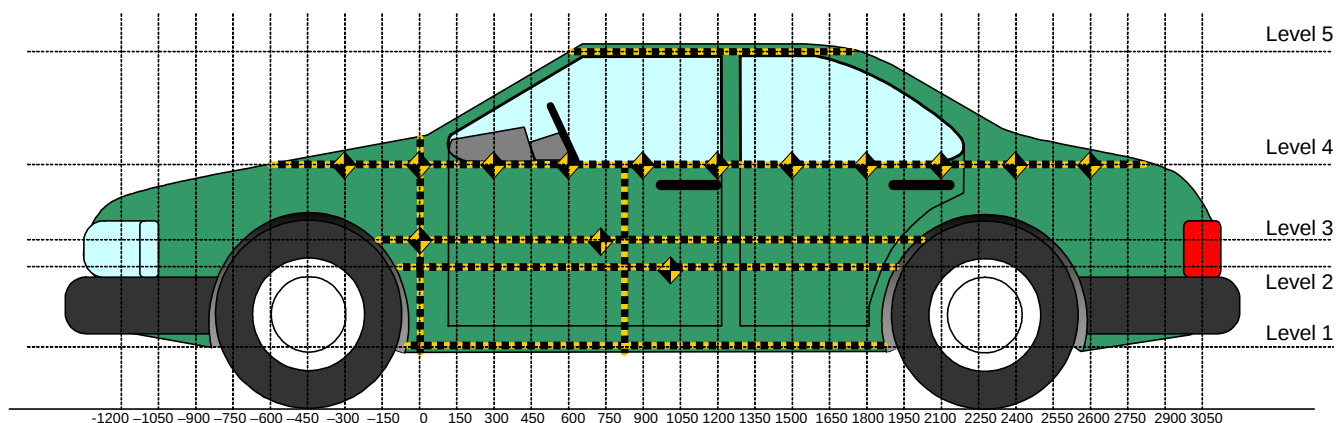
FRONT VIEW OF DUMMY

Code	Measurement Description	Units	Driver S/N 270	Passenger S/N 269
HR	Head to Side Header	mm	225	170
HS	Head to Side Window	mm	360	305
AD ₁	Arm to Door (at upper rib level)	mm	123	113
AD ₂	Arm to Door (at lower rib level)	mm	137	113
HD	H-Point to Door	mm	153	172

DATA SHEET NO. 9

VEHICLE SIDE MEASUREMENTS

Test Vehicle:	2009 Lincoln MKS	NHTSA No.	M90203
Test Program:	NCAP Side Impact	Test Date:	July 29, 2008



All Measurements Shown in mm

LEFT SIDE VIEW

Measurements are taken with vehicle in the as tested condition.
 Measurements along the vertical 750 mm.
 All measurements below in mm.

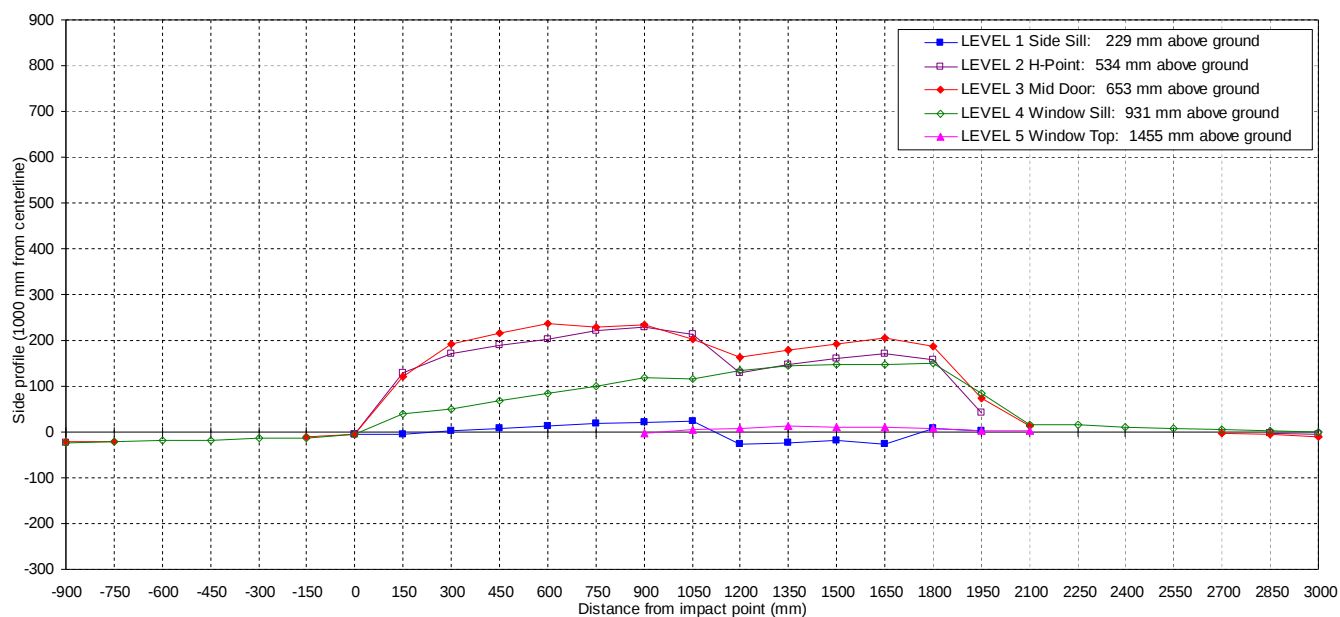
Level	Measurement Description	Maximum Exterior Static Crush	Height Above Ground	Distance From Impact
1	Sill Top	24	229	1050
2	Occupant H-Point	229	534	900
3	Mid Door	238	653	600
4	Window Sill	151	931	1800
5	Window	12	1455	1350
	Maximum Penetration	238		

DATA SHEET NO. 10

VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2009 Lincoln MKS
 Test Program: NCAP Side Impact

NHTSA No. M90203
 Test Date: July 29, 2008



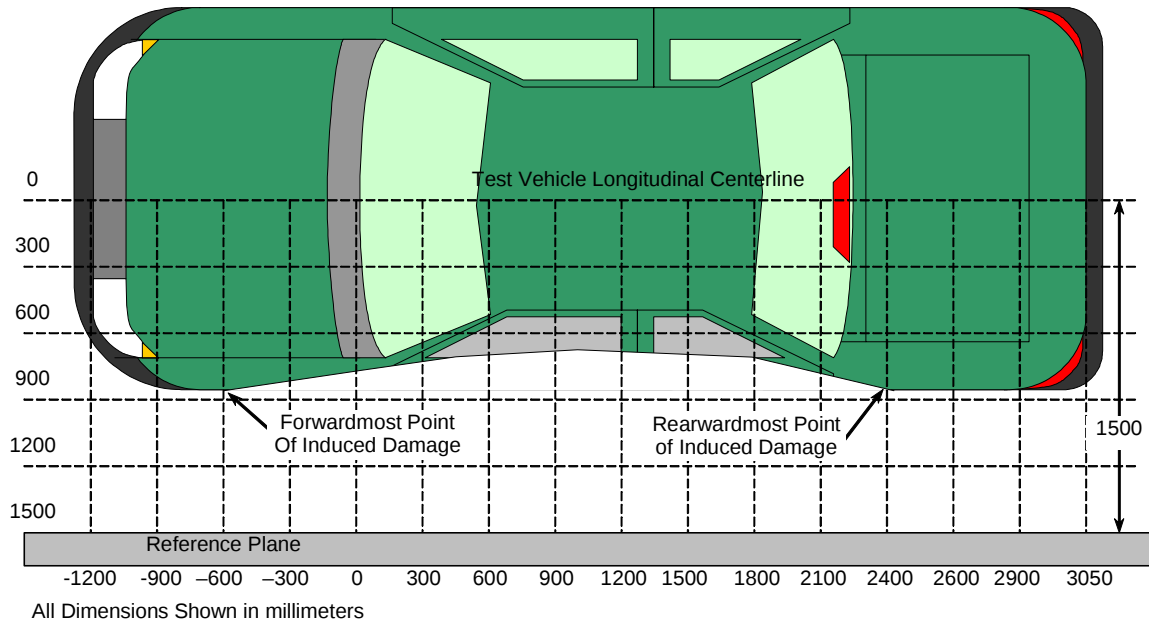
NOTE: All dimensions are in millimeters with a tolerance of ± 3 mm

		DISTANCE IN MILLIMETERS (mm) FROM IMPACT POINT																											
LEVEL	HEIGHT (mm)		-900	-750	-600	-450	-300	-150	0	150	300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700	2850	3000
LEVEL 1 SIDE SILL	229	PRE	--	--	--	--	--	--	67	64	63	65	66	70	76	82	83	86	93	99	102	99	--	--	--	--	--	--	--
		POST	--	--	--	--	--	--	61	60	66	73	80	89	97	106	58	63	74	72	109	102	--	--	--	--	--	--	--
		CRUSH	N/A	N/A	N/A	N/A	N/A	N/A	-6	-4	3	8	14	19	21	24	-25	-23	-19	-27	7	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A
LEVEL 2 H POINT	534	PRE	64	--	--	--	--	--	44	49	48	47	47	47	48	50	51	52	53	55	54	48	--	--	--	--	--	74	103
		POST	41	--	--	--	--	--	39	179	220	237	250	267	277	264	179	200	213	226	212	90	--	--	--	--	--	71	98
		CRUSH	-23	N/A	N/A	N/A	N/A	N/A	-5	130	172	190	203	220	229	214	128	148	160	171	158	42	N/A	N/A	N/A	N/A	N/A	-3	-5
LEVEL 3 MID DOOR	653	PRE	84	41	--	--	--	35	45	46	45	44	44	44	44	45	46	47	49	50	50	46	38	--	--	--	46	79	106
		POST	62	21	--	--	--	25	39	166	236	261	282	273	277	248	208	226	241	254	236	120	50	--	--	--	44	73	95
		CRUSH	-22	-20	N/A	N/A	N/A	-10	-6	120	191	217	238	229	233	203	162	179	192	204	186	74	12	N/A	N/A	N/A	-2	-6	-11
LEVEL 4 WINDOW SILL	931	PRE	376	259	201	164	141	118	103	96	91	87	84	81	80	77	78	77	76	77	76	48	71	75	78	85	96	112	134
		POST	352	238	182	146	127	106	98	136	142	155	168	182	199	193	213	222	223	225	227	132	88	91	89	93	101	115	134
		CRUSH	-24	-21	-19	-18	-14	-12	-5	40	51	68	84	101	119	116	135	145	147	148	151	84	17	16	11	8	5	3	0
LEVEL 5 WINDOW TOP	1455	PRE	--	--	--	--	--	--	--	--	--	--	--	--	383	370	368	366	368	369	372	381	450	--	--	--	--	--	--
		POST	--	--	--	--	--	--	--	--	--	--	--	--	381	374	375	378	378	379	379	384	453	--	--	--	--	--	--
		CRUSH	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-2	4	7	12	10	10	7	3	3	N/A	N/A	N/A	N/A	N/A	N/A

DATA SHEET NO. 11

VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle:	2009 Lincoln MKS	NHTSA No.	M90203
Test Program:	NCAP Side Impact	Test Date:	July 29, 2008



TOP VIEW

DAMAGE PROFILE DISTANCES

DPD	Distance from Impact Point in mm	Level	Pre-Test (mm)	Post-Test (mm)	Max Static Crush (mm)
1 (LR)	2399	4	78	89	11
2	1909	3	47	152	105
3	1419	3	48	233	185
4	930	3	44	271	227
5	440	3	44	259	215
6 (LF)	-50	4	108	101	-7

Reference plane is parallel to test vehicle longitudinal centerline.
 Given dimensions = Reference plane to vehicle body.

DATA SHEET NO. 12

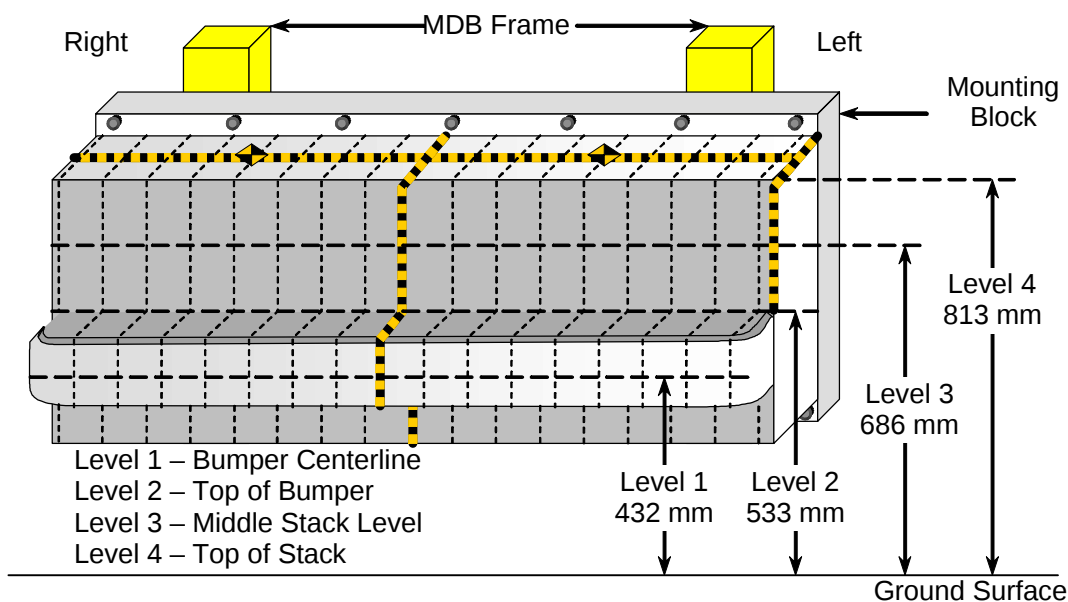
DEFORMABLE BARRIER HONEYCOMB FACE STATIC CRUSH

Test Vehicle: 2009 Lincoln MKS

NHTSA No. M90203

Test Program: NCAP Side Impact

Test Date: July 29, 2008



NOTE: All dimensions are in millimeters with a tolerance of ± 3 mm

			NOTE: All dimensions are in millimeters with a tolerance of ±3 mm																	
			DISTANCE RIGHT OF CENTER (mm)										DISTANCE LEFT OF CENTER (mm)							
LEVEL	HEIGHT AT CL (mm)*		-800	-700	-600	-500	-400	-300	-200	-100	0	100	200	300	400	500	600	700	800	
LEVEL 4	-811	PRE	411	412	412	412	412	412	413	413	413	413	413	413	413	413	413	413	412	
TOP		POST	357	375	376	376	377	356	319	308	342	358	348	348	339	330	321	305	266	
STACK		CRUSH	54	37	36	36	35	56	94	105	71	55	65	65	74	83	92	108	146	
LEVEL 3	-682	PRE	411	411	412	412	412	412	412	412	413	412	412	412	412	412	412	412	412	
MID		POST	355	377	381	380	378	378	366	343	355	374	377	380	378	368	350	331	279	
LEVEL		CRUSH	56	34	31	32	34	34	46	69	58	38	35	32	34	44	62	81	133	
LEVEL 2	-542	PRE	411	412	412	412	412	412	412	412	413	412	412	412	412	412	412	412	412	
TOP		POST	283	285	289	296	306	313	316	315	321	315	301	289	290	295	293	285	272	
BUMPER		CRUSH	128	127	123	116	106	99	96	97	92	97	111	123	122	117	119	127	140	
LEVEL 1	-430	PRE	501	513	513	513	513	513	513	514	514	514	514	514	514	514	514	514	505	
MID		POST	293	302	311	322	330	332	335	337	337	341	343	343	343	342	338	324	281	
BUMPER		CRUSH	208	211	202	191	183	181	178	177	177	173	171	171	171	172	176	190	224	

LEVEL	HEIGHT AT CL (mm)*	MAX CRUSH
LEVEL 4 TOP STACK	-811	146
LEVEL 3 MID LEVEL	-682	133
LEVEL 2 TOP BUMPER	-542	140
LEVEL 1 MID BUMPER	-430	224

*Heights measured above ground level.

DATA SHEET NO. 13

VEHICLE ACCELEROMETER LOCATIONS

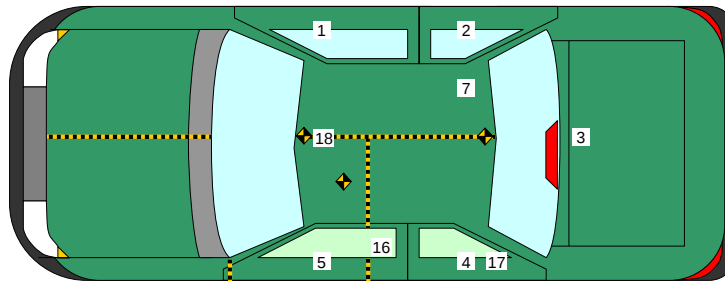
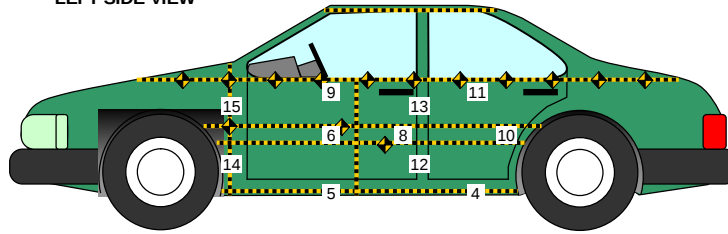
Test Vehicle: 2009 Lincoln MKS

NHTSA No. M90203

Test Program: NCAP Side Impact

Test Date: July 29, 2008

LEFT SIDE VIEW



Loc. No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Right Sill at Front Seat	3340	688	355
2	Right Sill at Rear Seat	2303	681	340
3	Rear Floorpan Above Axle	1358	75	570
4	Left Sill at Rear Door	2293	-676	339
5	Left Sill at Front Door	3350	-679	338
6	Left Front Door C/L **	-	-	-
7	Rear Occupant Compartment	2335	450	234
8	Left Front Door Mid-Rear**	-	-	-
9	Left Front Door Upper C/L **	-	-	-
10	Left Rear Door Mid-Rear**	-	-	-
11	Left Rear Door Upper C/L **	-	-	-
12	Left Lower B-Post	2528	-696	437
13	Left Middle B-Post	2479	-692	916
14	Left Lower A-Post	3539	-642	630
15	Left Middle A-Post	3475	-690	1044
16	Front Seat Track	2631	-574	330
17	Rear Seat Track or Structure	1351	-575	603
18	Vehicle CG	2835	-33	550

Reference Points X - Test Vehicle Rear Bumper (+ forward)

Y - Test Vehicle Centerline (+ to right)

Z - Ground Plane (+ down)

** Accelerometer was not requested by the COTR.

DATA SHEET NO. 14

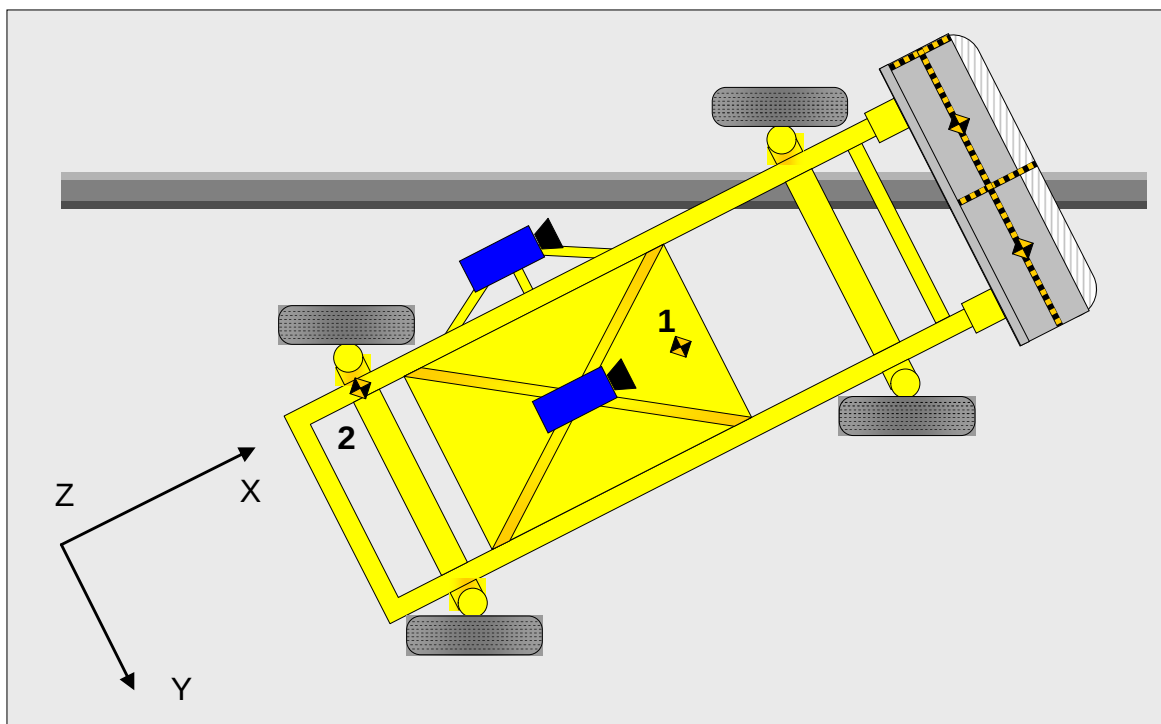
MDB ACCELEROMETER LOCATIONS

Test Vehicle: 2009 Lincoln MKS

NHTSA No. M90203

Test Program: NCAP Side Impact

Test Date: July 29, 2008



Loc. No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	MDB CG	1859	0	-330
2	MDB Rear	386	-660	-660

Reference Points
 X - MDB Rear Bumper (+ forward)
 Y - MDB Centerline (+ to right)
 Z - Ground Plane (+ down)

DATA SHEET NO. 15**VEHICLE STRUCTURAL MEASUREMENTS**

Test Vehicle:	2009 Lincoln MKS	NHTSA No.	M90203
Test Program:	NCAP Side Impact	Test Date:	July 29, 2008

	Elements	Pre-Test (mm)
1	Total Length	5192
2	Total Width	1907
3	Bumper Top Height	527
4	Bumper Bottom Height	436
5	Longitudinal Member Top Height	575
6	Distance between Longitudinal Members	1184
7	Longitudinal Member Width	93
8	Engine Top Height	921
9	Engine Bottom Height	255
10	Engine and gearbox width	593
11	Front bumper-engine distance	574
12	Front shock absorber fixing height	909
13	Bonnet leading edge height	754
14	Front shock absorber fixing width	633
15	Front bumper – front axle distance	1068
16	Front axle – a pillar distance	536
17	A-pillar – B-pillar distance	1112
18	B-Pillar – rear axle distance	1225
19	B-pillar – C-pillar distance	1083
20	Roof sill bottom height	1374
21	Roof sill top height	1466
22	Floor sill bottom height	262
23	Floor sill top height	368

DATA SHEET NO. 16

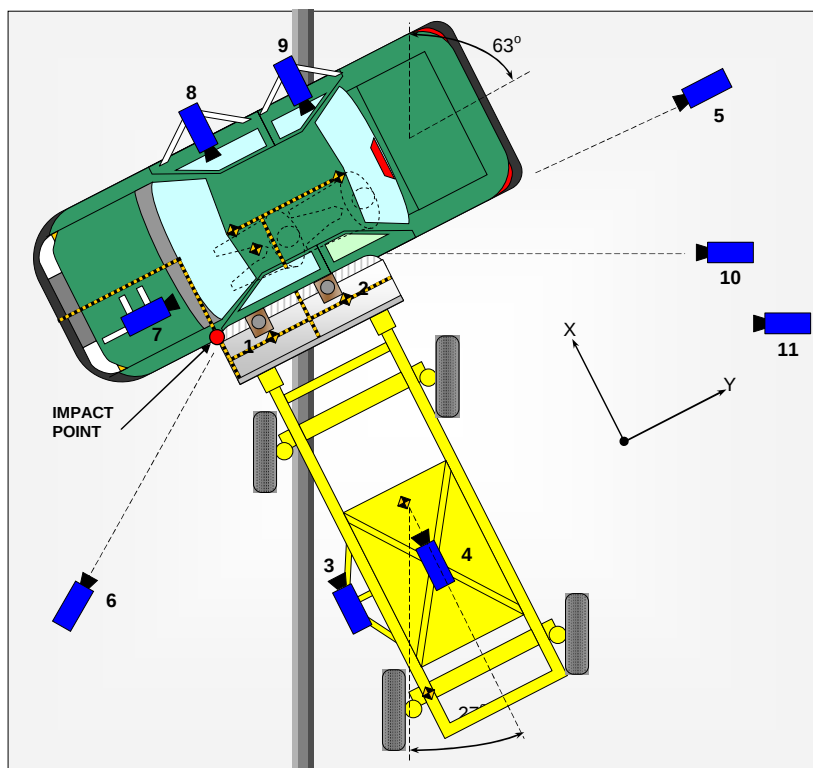
HIGH SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2009 Lincoln MKS

NHTSA No. M90203

Test Program: NCAP Side Impact

Test Date: July 29, 2008



No.	Camera View	Location (mm)			Angle (deg)	Lens (mm)	Film Speed (fps)
		X	Y	Z			
1	Overhead Overall	72	812	-4880	-90	8	500
2	Overhead Close-up	195	855	-4880	-90	28	1000
3	MDB Onboard, Impact Point Close-up	-1470	0	-847	0	13	500
4	MDB Onboard, Centerline of Impact	-1140	838	-1587	-17	7.5	500
5	Right Side, Ground Level, Overall	0	10620	910	-1	50	1000
6	Left Side, Ground Level, Overall	-2060	-1905	910	-3	24	1000
7	Vehicle Onboard Front SID/HIII, Front	620	-625	1315	-12	25	1000
8	Vehicle Onboard Front SID/HIII, Side	1750	740	1155	-5	12.5	1000
9	Vehicle Onboard Rear SID/HIII, Side	1750	1670	1220	-7	12.5	1000
10	Secondary Impact Point	-5150	3266	1020	-2	50	1000
11	Real Time Coverage						30

Reference Points
 X - Impact Line
 Y - MDB Left Edge Impact Point
 Z - Ground Plane

DATA SHEET NO. 17
SUMMARY OF FMVSS 301 DATA

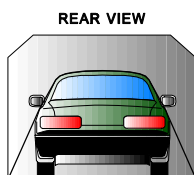
Test Vehicle:	2009 Lincoln MKS	NHTSA No.	M90203
Test Program:	NCAP Side Impact	Test Date:	July 29, 2008

FUEL SYSTEM INTEGRITY POST IMPACT DATA

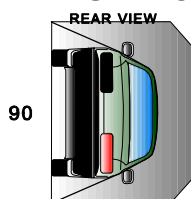
Time Interval	FMVSS 301 Maximum Allowable Spillage	Spillage (g)
Impact Until Motion Ceases	28 g	0
First Five Minutes Following Impact	142 g	0
Next 25 Minutes	28 g / 1 minute	0

Spillage Location(s)	None
----------------------	------

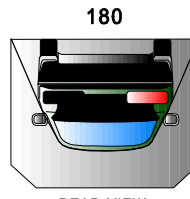
STATIC ROLLOVER DATA



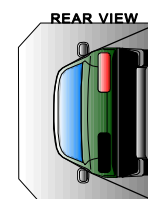
0/360



90



REAR VIEW



270

Rollover Stage	Rotation Time (spec. 1 -3 min)				FMVSS 301 Hold Time		Total Time				Next Whole Minute Interval	
0° - 90°	1	minutes	08	seconds	5	minutes	6	minutes	8	seconds	7	minutes
90° - 180°	1	minutes	01	seconds	5	minutes	6	minutes	1	seconds	7	minutes
180°-270°	1	minutes	03	seconds	5	minutes	6	minutes	3	seconds	7	minutes
270°-360°	1	minutes	11	seconds	5	minutes	6	minutes	11	seconds	7	minutes

Rollover Stage	Spillage (g)			
	First 5 min. from onset of rotation	6 th min.	7 th min.	8 th min. (if required)
0° - 90°	0	0	0	0
90° - 180°	0	0	0	0
180°-270°	0	0	0	0
270°-360°	0	0	0	0
FMVSS 301 Maximum Allowable (for each 90° stage)	142	28	28	28

Rollover Stage	Spillage Location(s)
0° - 90°	None
90° - 180°	None
180°-270°	None
270°-360°	None

APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

FIGURE	TITLE	PAGE
A-1	As Received Left Front $\frac{3}{4}$ View	A-4
A-2	As Received Right Rear $\frac{3}{4}$ View	A-4
A-3	Vehicle Certification Label	A-5
A-4	Vehicle Tire Placard Label	A-5
A-5	Pre-Test Front View	A-6
A-6	Post-Test Front View	A-6
A-7	Pre-Test Left Front $\frac{3}{4}$ View	A-7
A-8	Post-Test Left Front $\frac{3}{4}$ View	A-7
A-9	Pre-Test Left Side View	A-8
A-10	Post-Test Left Side View	A-8
A-11	Pre-Test Left Rear $\frac{3}{4}$ View	A-9
A-12	Post-Test Left Rear $\frac{3}{4}$ View	A-9
A-13	Pre-Test Rear View	A-10
A-14	Post-Test Rear View	A-10
A-15	Pre-Test Right Rear $\frac{3}{4}$ View	A-11
A-16	Post-Test Right Rear $\frac{3}{4}$ View	A-11
A-17	Pre-Test Right Side View	A-12
A-18	Post-Test Right Side View	A-12
A-19	Pre-Test Right Front $\frac{3}{4}$ View	A-13
A-20	Post-Test Right Front $\frac{3}{4}$ View	A-13
A-21	Pre-Test Frontal View of MDB Impactor Face	A-14
A-22	Post-Test Frontal View of MDB Impactor Face	A-14
A-23	Pre-Test Left Side View of MDB Impactor Face	A-15
A-24	Post-Test Left Side View of MDB Impactor Face	A-15
A-25	Pre-Test Right Side View of MDB Impactor Face	A-16
A-26	Post-Test Right Side View of MDB Impactor Face	A-16
A-27	Pre-Test Top View of MDB Impactor Face	A-17
A-28	Post-Test Top View of MDB Impactor Face	A-17
A-29	Pre-Test Left Side View of Aligned MDB and Vehicle	A-18
A-30	Pre-Test Right Side View of Aligned MDB and Vehicle	A-18
A-31	Pre-Test Overhead View of Aligned MDB and Vehicle	A-19
A-32	Post-Test Overhead View of MDB and Vehicle	A-19
A-33	Pre-Test Close-Up View of Impact Point Target	A-20
A-34	Post-Test Close-Up View of Impact Point Target	A-20

TABLE OF PHOTOGRAPHS (continued)

FIGURE	TITLE	PAGE
A-35	Pre-Test Right Occupant Compartment View of Driver	A-21
A-36	Post-Test Right Occupant Compartment View of Driver	A-21
A-37	Pre-Test Right Occupant Compartment View of Passenger	A-22
A-38	Post-Test Right Occupant Compartment View of Passenger	A-22
A-39	Pre-Test Left Occupant Compartment View of Driver	A-23
A-40	Post-Test Left Occupant Compartment View of Driver	A-23
A-41	Pre-Test Left Occupant Compartment View of Passenger	A-24
A-42	Post-Test Left Occupant Compartment View of Passenger	A-24
A-43	Pre-Test Left Front Interior Trim	A-25
A-44	Post-Test Left Front Interior Trim	A-25
A-45	Pre-Test Left Rear Interior Trim	A-26
A-46	Post-Test Left Rear Interior Trim	A-26
A-47	Pre-Test Left Front $\frac{3}{4}$ View of Left Side Doors	A-27
A-48	Post-Test Left Front $\frac{3}{4}$ View of Left Side Doors	A-27
A-49	Pre-Test Left Rear $\frac{3}{4}$ View of Left Side Doors	A-28
A-50	Post-Test Left Rear $\frac{3}{4}$ View of Left Side Doors	A-28
A-51	Rollover 90 Degrees	A-29
A-52	Rollover 180 Degrees	A-29
A-53	Rollover 270 Degrees	A-30
A-54	Rollover 360 Degrees	A-30
A-55	Impact Photo	A-31



Figure A-1: As Received Left Front $\frac{3}{4}$ View



Figure A-2: As Received Right Rear $\frac{3}{4}$ View

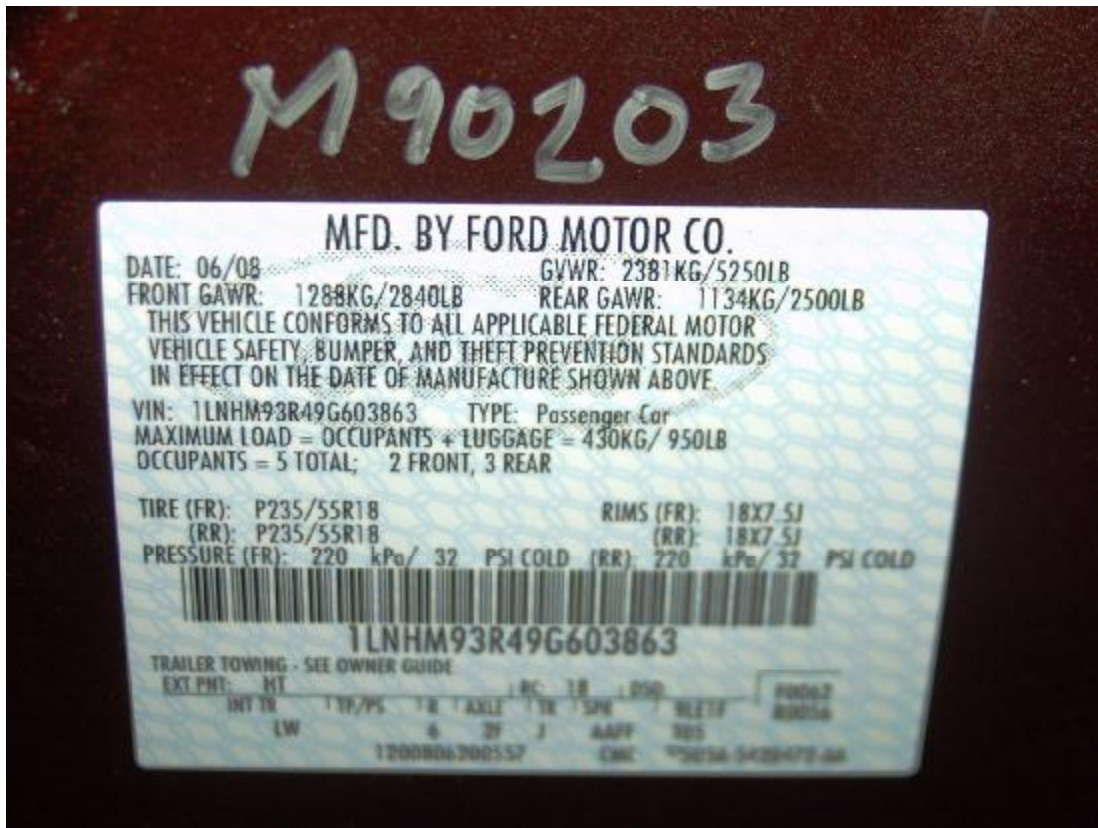


Figure A-3: Vehicle Certification Label



Figure A-4: Vehicle Tire Placard Label



Figure A-5: Pre-Test Front View

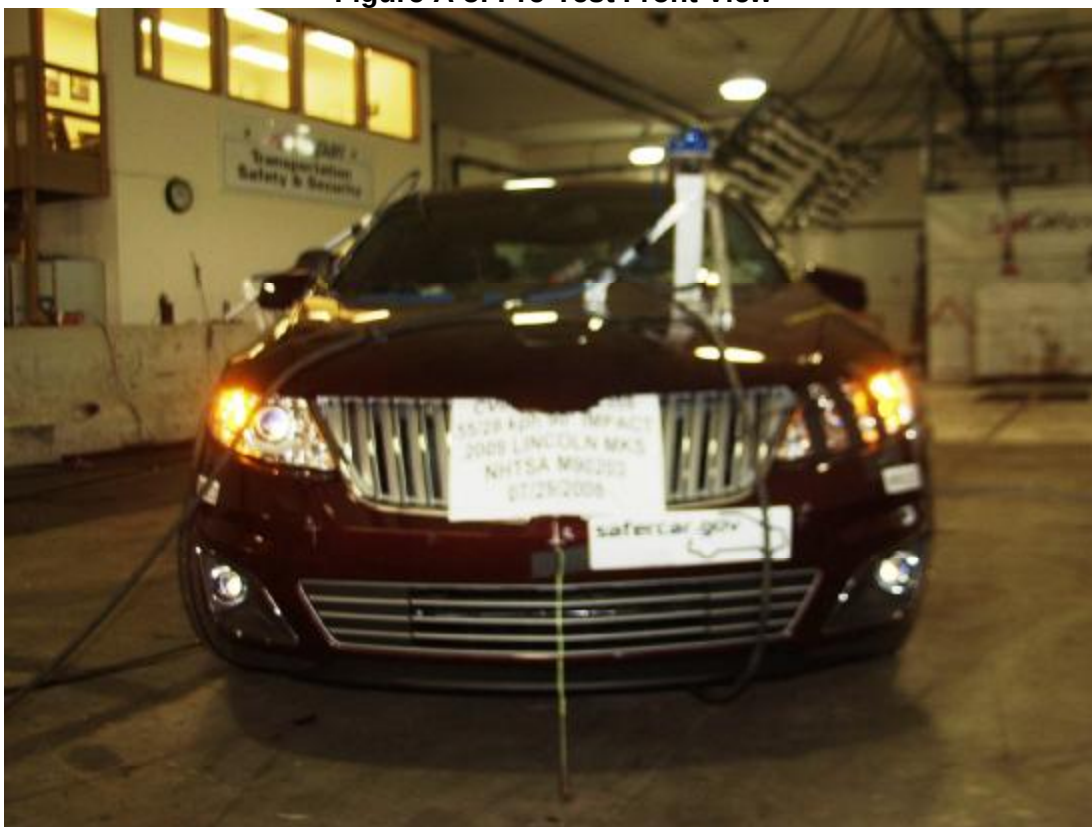


Figure A-6: Post-Test Front View



Figure A-7: Pre-Test Left Front $\frac{3}{4}$ View



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



Figure A-9: Pre-Test Left Side View



Figure A-10: Post-Test Left Side View



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



Figure A-12: Post-Test Left Rear $\frac{3}{4}$ View



Figure A-13: Pre-Test Rear View



Figure A-14: Post-Test Rear View



Figure A-15: Pre-Test Right Rear $\frac{3}{4}$ View



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



Figure A-17: Pre-Test Right Side View



Figure A-18: Post-Test Right Side View



Figure A-19: Pre-Test Right Front $\frac{3}{4}$ View



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



Figure A-21: Pre-Test Frontal View of MDB Impactor Face



Figure A-22: Post-Test Frontal View of MDB Impactor Face



Figure A-23: Pre-Test Left Side View of MDB Impactor Face



Figure A-24: Post-Test Left Side View of MDB Impactor Face



Figure A-25: Pre-Test Right Side View of MDB Impactor Face



Figure A-26: Post-Test Right Side View of MDB Impactor Face



Figure A-27: Pre-Test Top View of MDB Impactor Face



Figure A-28: Post-Test Top View of MDB Impactor Face



Figure A-29: Pre-Test Left Side View of Aligned MDB and Vehicle



Figure A-30: Pre-Test Right Side View of Aligned MDB and Vehicle



Figure A-31: Pre-Test Overhead View of Aligned MDB and Vehicle



Figure A-32: Post-Test Overhead View of MDB and Vehicle



Figure A-33: Pre-Test Close-Up View of Impact Point Target



Figure A-34: Post-Test Close-Up View of Impact Point Target



Figure A-35: Pre-Test Right Occupant Compartment View of Driver



Figure A-36: Post-Test Right Occupant Compartment View of Driver



Figure A-37: Pre-Test Right Occupant Compartment View of Passenger



Figure A-38: Post-Test Right Occupant Compartment View of Passenger



Figure A-39: Pre-Test Left Occupant Compartment View of Driver



Figure A-40: Post-Test Left Occupant Compartment View of Driver



Figure A-41: Pre-Test Left Occupant Compartment View of Passenger



Figure A-42: Post-Test Left Occupant Compartment View of Passenger



Figure A-43: Pre-Test Left Front Interior Trim



Figure A-44: Post-Test Left Front Interior Trim



Figure A-45: Pre-Test Left Rear Interior Trim



Figure A-46: Post-Test Left Rear Interior Trim



Figure A-47: Pre-Test Left Front $\frac{3}{4}$ View of Left Side Doors



Figure A-48: Post-Test Left Front $\frac{3}{4}$ View of Left Side Doors



Figure A-49: Pre-Test Left Rear $\frac{3}{4}$ View of Left Side Doors



Figure A-50: Post-Test Left Rear $\frac{3}{4}$ View of Left Side Doors



Figure A-51: Rollover 90 Degrees



Figure A-52: Rollover 180 Degrees



Figure A-53: Rollover 270 Degrees



Figure A-54: Rollover 360 Degrees



Figure A-55: Impact Photo

APPENDIX B
SID/HIII, VEHICLE AND MDB RESPONSE DATA
(SAE sign convention)

DATA CHANNEL FILTER CLASS SUMMARY

Data Type	SAE Filter Class
Dummy Head Accelerations	CFC 1000
Rib Accelerations	FIR 100
Spine Accelerations	FIR 100
Pelvis Accelerations	FIR 100

DATA CHANNEL TITLE KEY

Prefix	Suffix
V1 = Vehicle 1 (Moving Barrier)	Ax = Acceleration, X-direction
V2 = Vehicle 2 (Test Vehicle)	Ay = Acceleration, Y-direction
P1 = Left Front Seating Position (Driver)	Az = Acceleration, Z-direction
P4 = Left Second Row Seating Position (Passenger)	Fx = Force, X-direction
A1-A18 = Accelerometer Location Number	Fy = Force, Y-direction
	Fz = Force, Z-direction
	Mx = Moment about X
	My = Moment about Y
	Mz = Moment about Z

TABLE OF DATA PLOTS

PLOT	PLOT NAME[UNITS, CHANNEL FILTER CLASS]	PAGE
1	V2P1 Head Ax [g, CFC_1000]	B-5
2	V2P1 Head Ay [g, CFC_1000]	B-5
3	V2P1 Head Az [g, CFC_1000]	B-5
4	V2P1 Head Ar [g, CFC_1000]	B-5
5	V1P1 Upper Rib Ay [g, FIR_100]	B-6
6	V1P1 Lower Rib Ay [g, FIR_100]	B-6
7	V1P1 Lower Spine Ay [g, FIR_100]	B-6
8	V1P1 Pelvic Ay [g, FIR_100]	B-6
9	V2P4 Head Ax [g, CFC_1000]	B-7
10	V2P4 Head Ay [g, CFC_1000]	B-7
11	V2P4 Head Az [g, CFC_1000]	B-7
12	V2P4 Head Ar [g, CFC_1000]	B-7
13	V1P4 Upper Rib Ay [g, FIR_100]	B-8
14	V1P4 Lower Rib Ay [g, FIR_100]	B-8
15	V1P4 Lower Spine Ay [g, FIR_100]	B-8
16	V1P4 Pelvic Ay [g, FIR_100]	B-8

The following dummy, vehicle and load cell response data can be found in the research and development section of the NHTSA website at: www.nhtsa.dot.gov

V2P1 Head Ax	V2P4 Lower Rib Ay
V2P1 Head Ay	V2P4 Lower Rib Redundant Ay
V2P1 Head Az	V2P4 Lower Spine Ay
V2P1 Head Ax Redundant	V2P4 Lower Spine Redundant Ay
V2P1 Head Ay Redundant	V2P4 Pelvic Ay
V2P1 Head Az Redundant	V2P4 Pelvic Redundant Ay
V2P1 Upper Neck Fx	V2A1 Right Front Sill Ax
V2P1 Upper Neck Fy	V2A1 Right Front Sill Ay
V2P1 Upper Neck Fz	V2A1 Right Front Sill Az
V2P1 Upper Neck Mx	V2A2 Right Rear Sill Ax
V2P1 Upper Neck My	V2A2 Right Rear Sill Ay
V2P1 Upper Neck Mz	V2A2 Right Rear Sill Az
V2P1 Upper Rib Ay	V2A3 Rear Floorpan Ax
V2P1 Upper Rib Redundant Ay	V2A3 Rear Floorpan Ay
V2P1 Lower Rib Ay	V2A3 Rear Floorpan Az
V2P1 Lower Rib Redundant Ay	V2A4 Left Rear Sill Ay
V2P1 Lower Spine Ay	V2A5 Left Front Sill Ay
V2P1 Lower Spine Redundant Ay	V2A7 Right Rear Compartment Ay
V2P1 Pelvic Ay	V2A12 Left Lower B Post Ay
V2P1 Pelvic Redundant Ay	V2A13 Left Mid B Post Ay
V2P4 Head Ax	V2A14 Left Lower A Post Ay
V2P4 Head Ay	V2A15 Left Mid A Post Ay
V2P4 Head Az	V2A16 Front Seat Track Ay
V2P4 Head Ax Redundant	V2A17 Rear Seat Track Ay
V2P4 Head Ay Redundant	V2A18 Target CG Ax
V2P4 Head Az Redundant	V2A18 Target CG Ay
V2P4 Upper Neck Fx	V2A18 Target CG Az
V2P4 Upper Neck Fy	V1 Moving Barrier CG Ax
V2P4 Upper Neck Fz	V1 Moving Barrier CG Ay
V2P4 Upper Neck Mx	V1 Moving Barrier CG Az
V2P4 Upper Neck My	V1 Moving Barrier Left Rail Ax
V2P4 Upper Neck Mz	V1 Moving Barrier Left Rail Ay
V2P4 Upper Rib Ay	
V2P4 Upper Rib Redundant Ay	

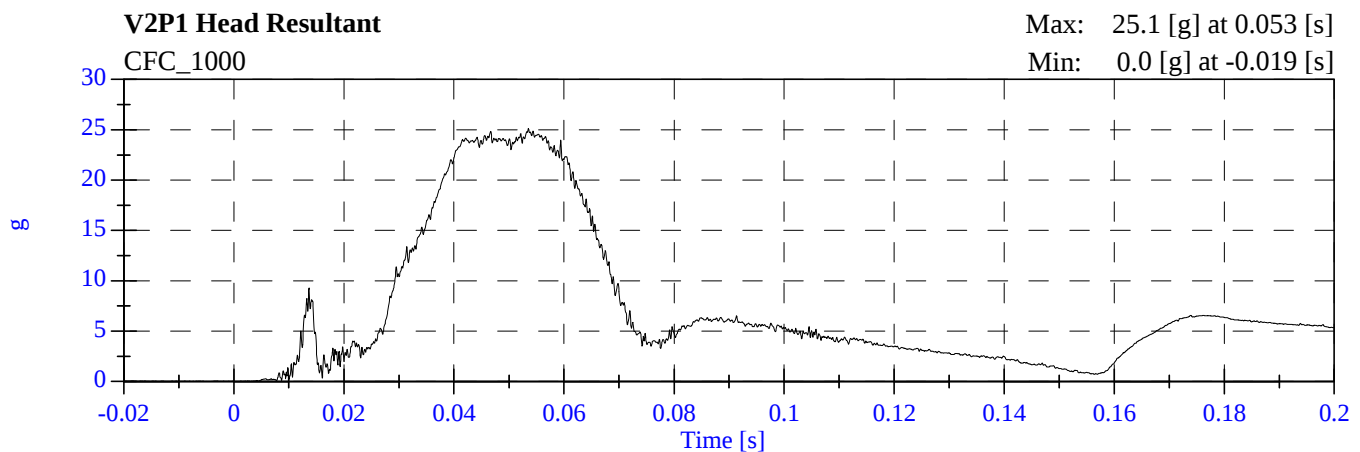
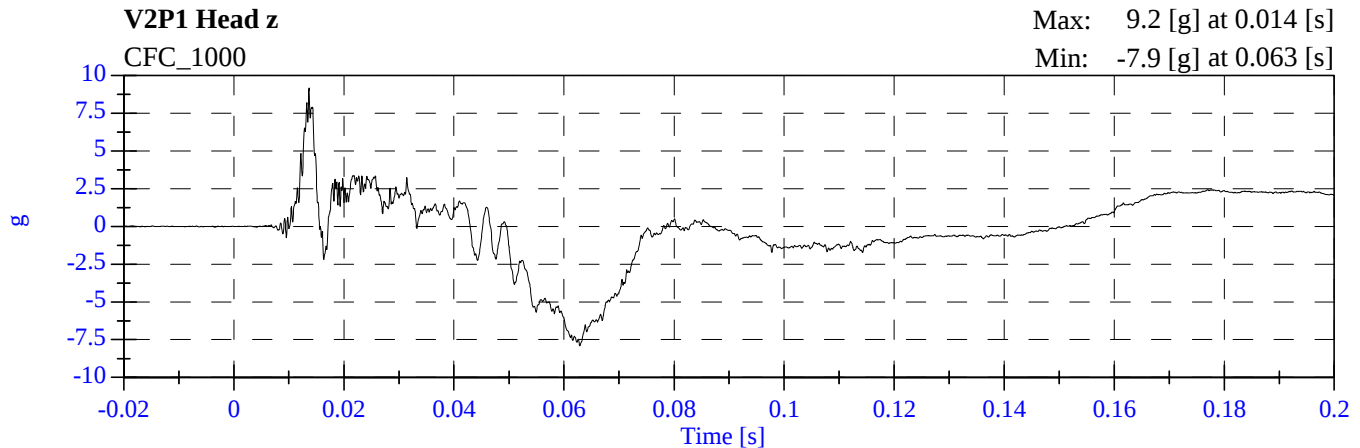
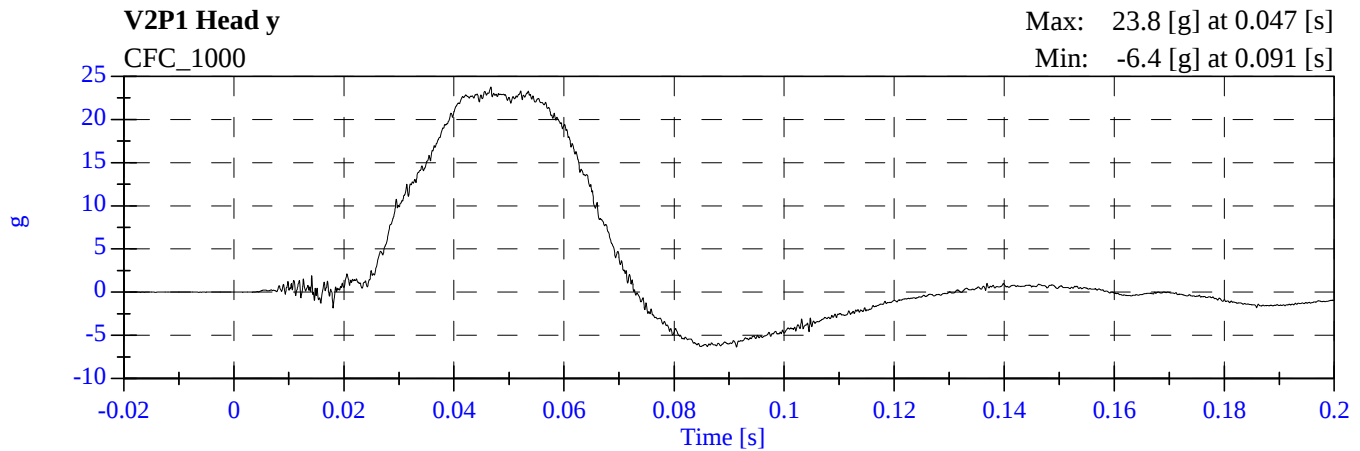
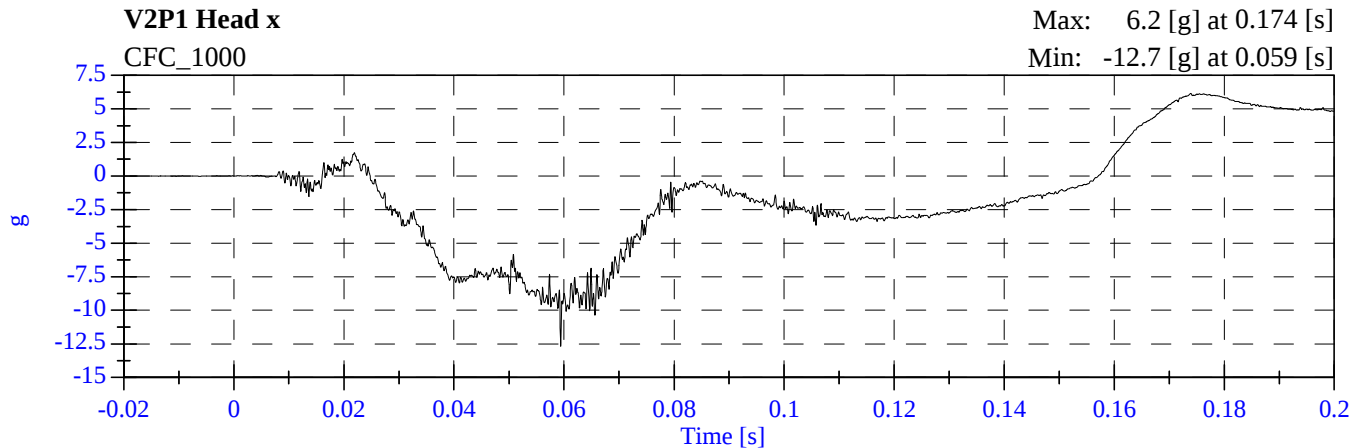
TEST NOTES

The following data anomalies occurred:

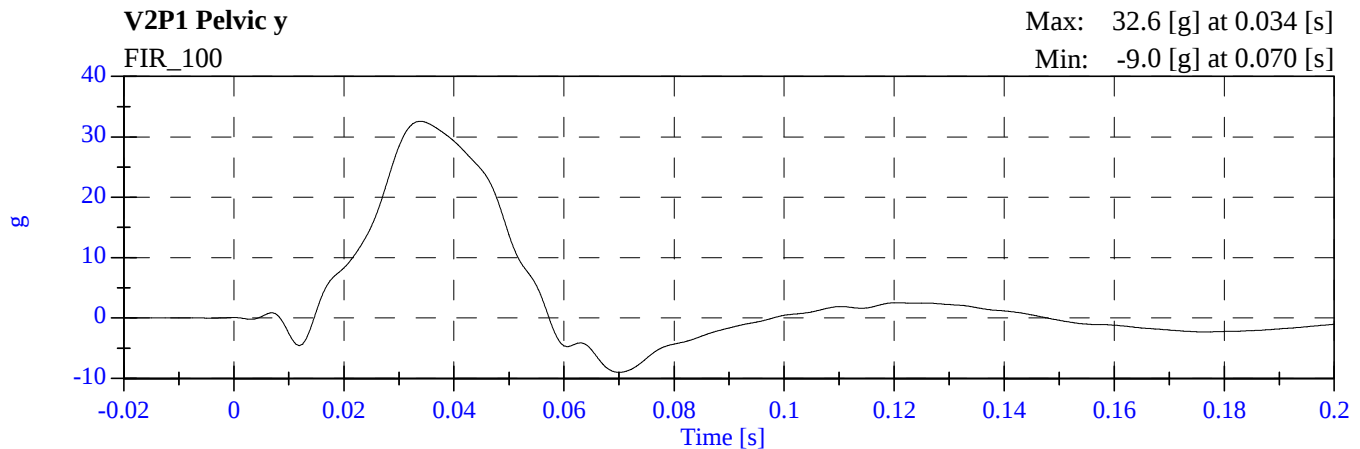
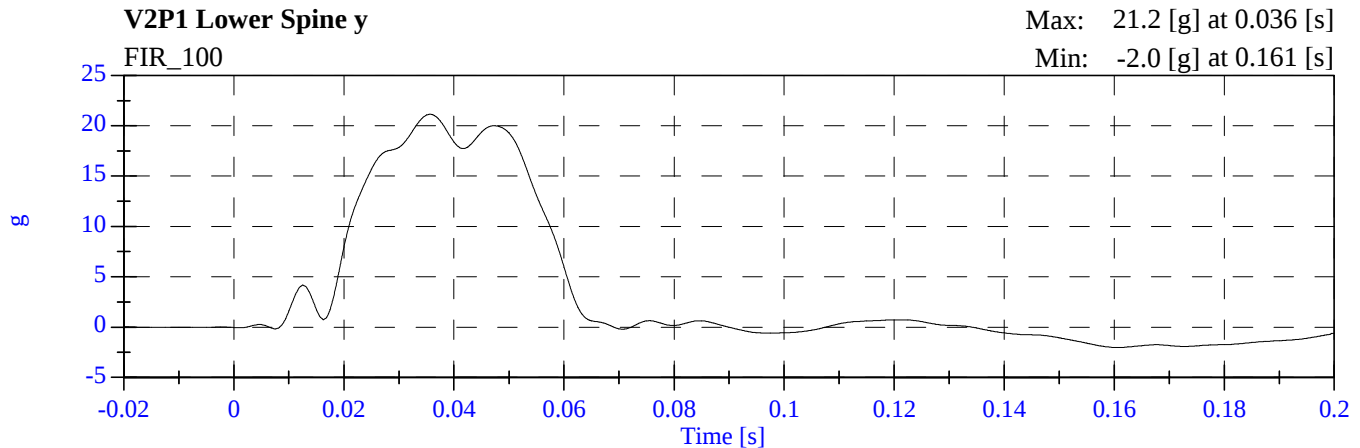
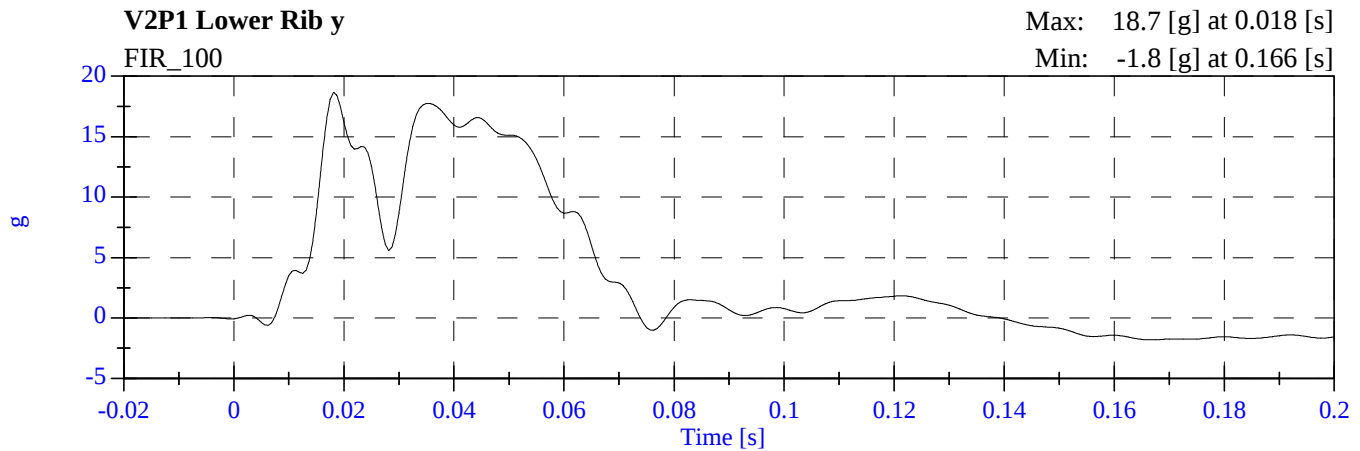
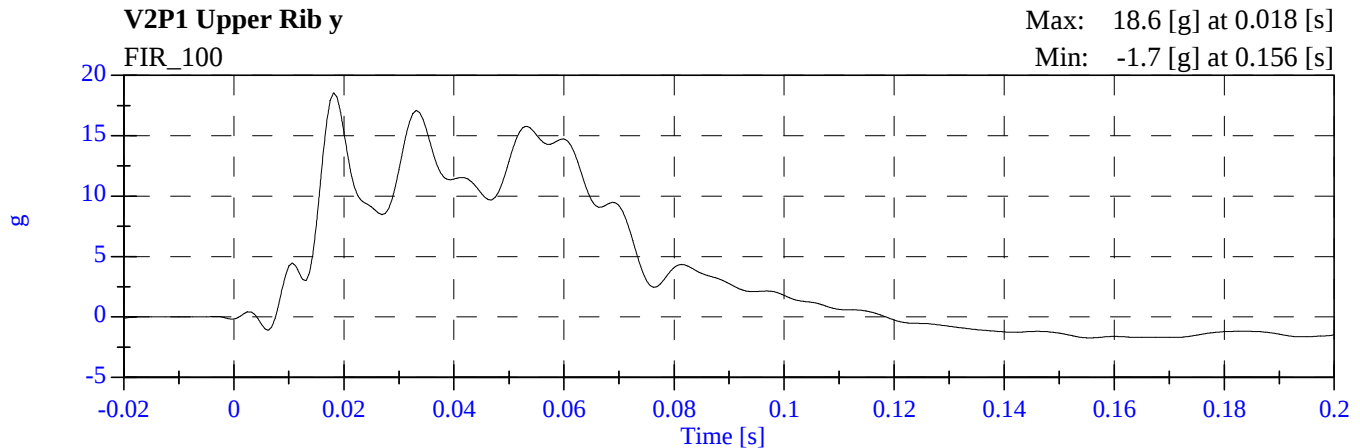
V2P4 Upper Neck Fx:	Data Noise
V2P4 Upper Neck Fy:	Data Noise
V2P4 Upper Neck Fz:	Data Noise
V2P4 Upper Neck Mz:	Channel saturated 58-77 msec.

2009 SNCAP Test 2 2009 Lincoln MKS

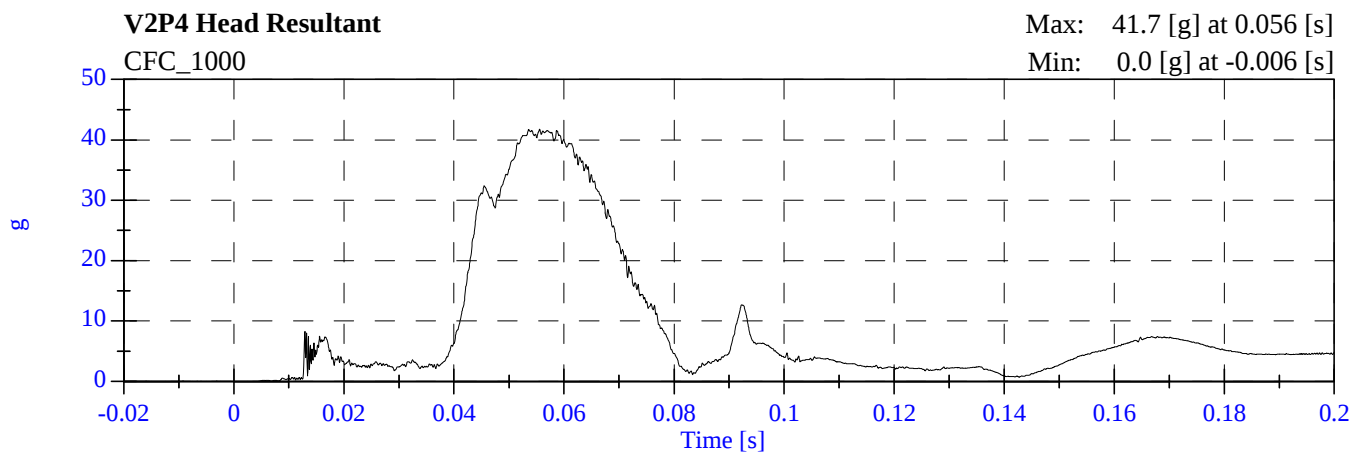
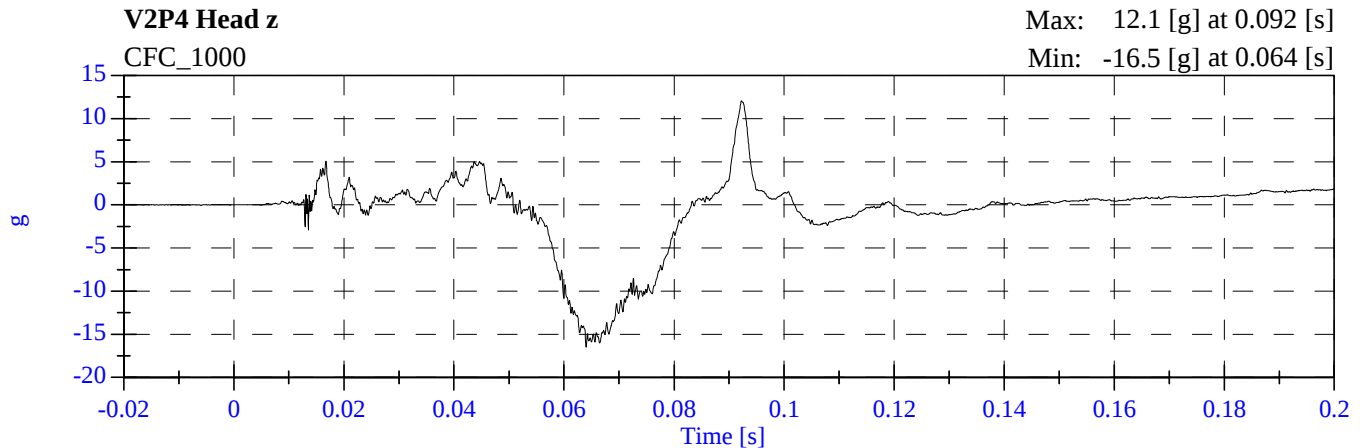
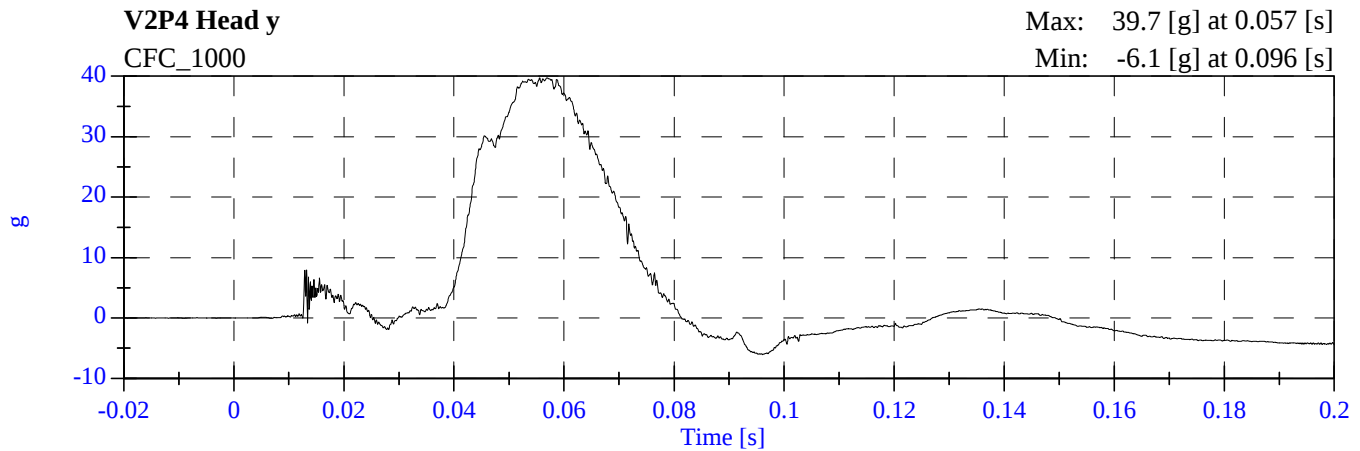
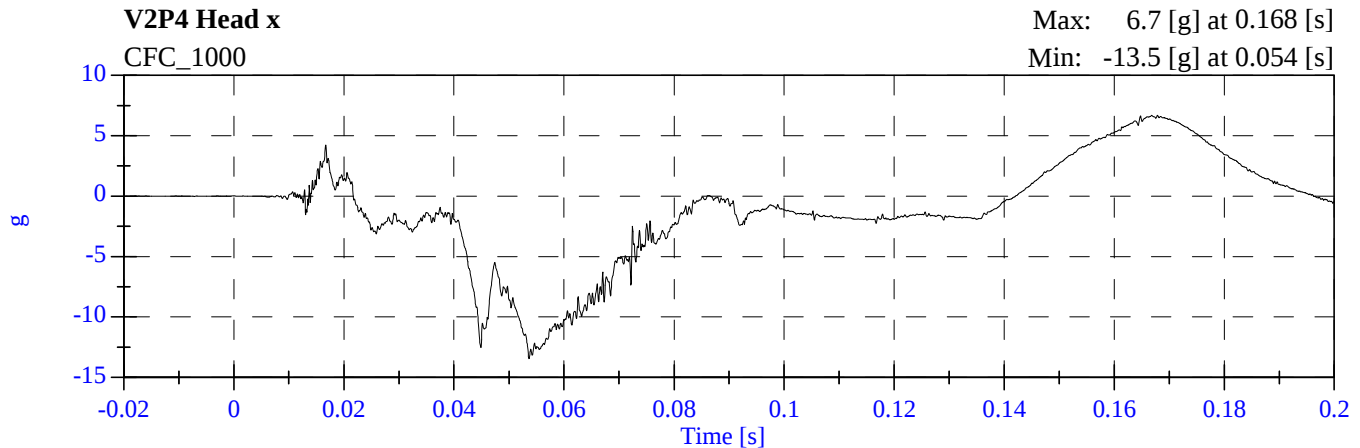
M90203 - July 29, 2008



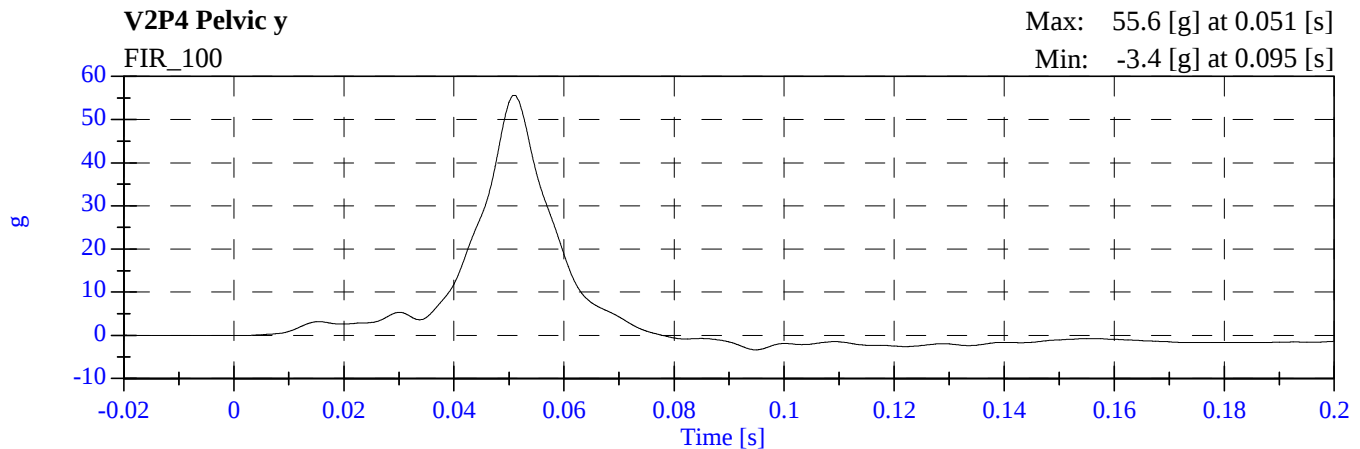
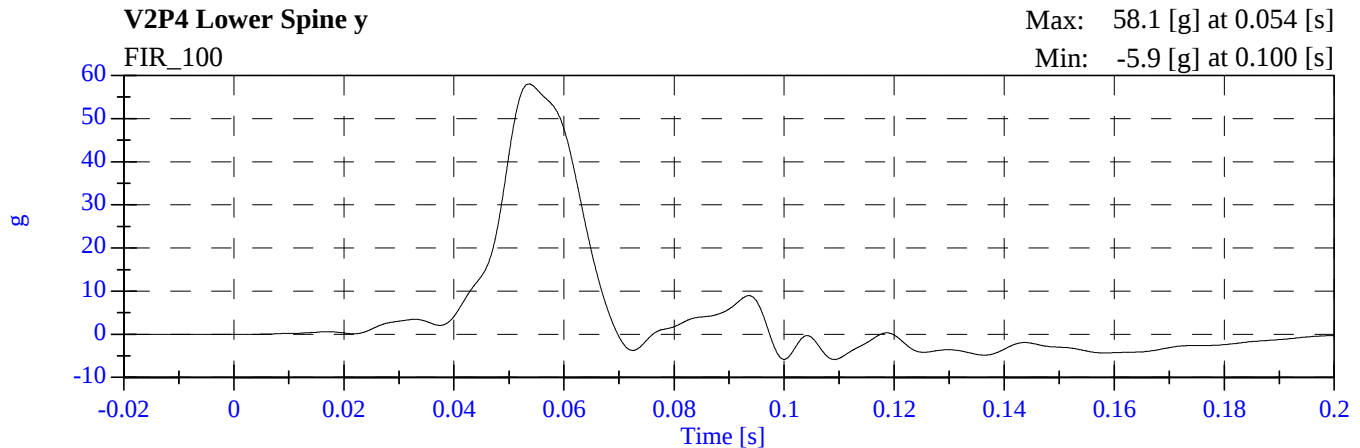
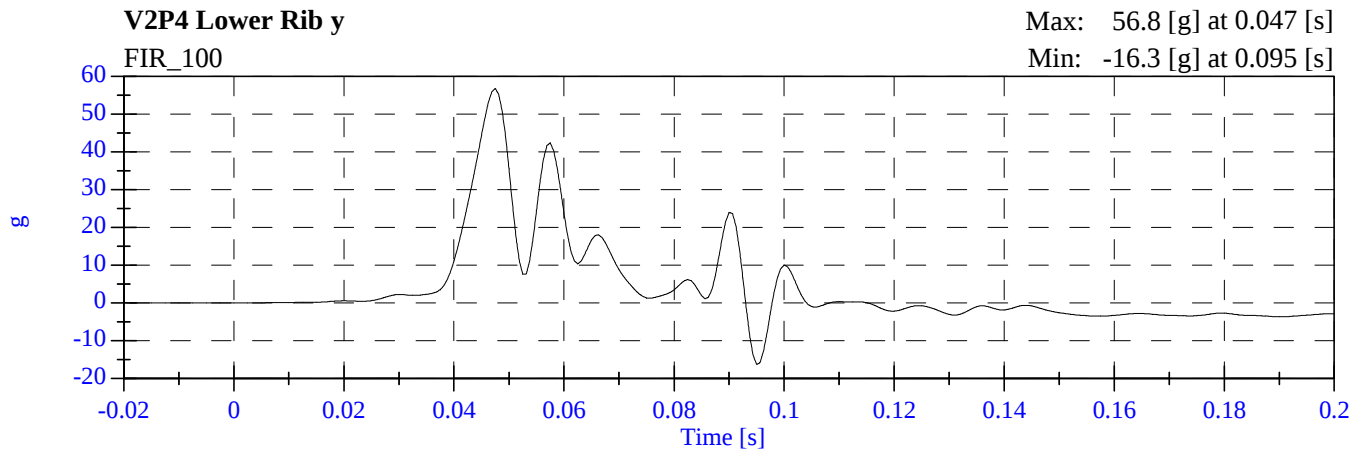
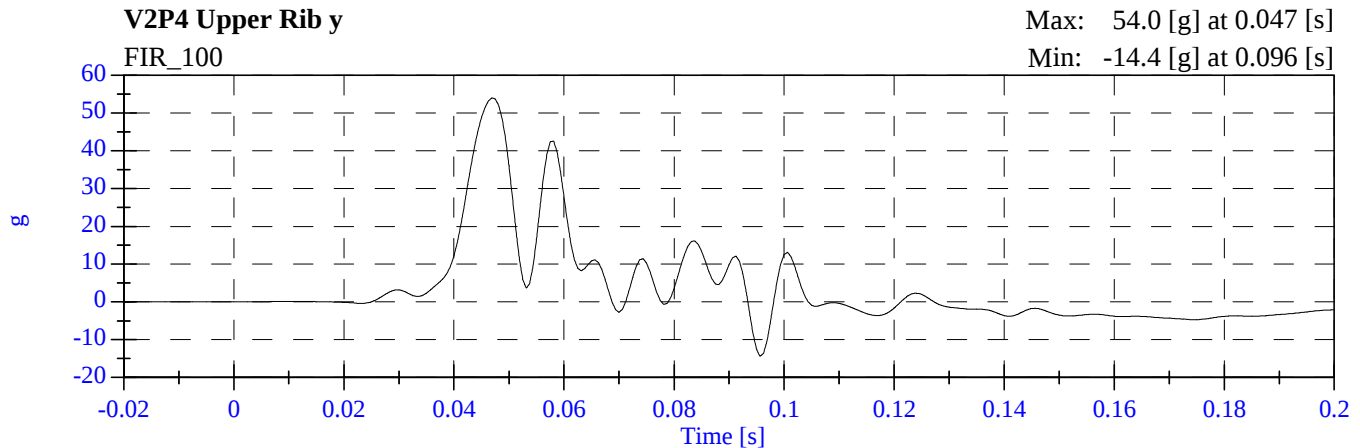
2009 SNCAP Test 2 2009 Lincoln MKS M90203 - July 29, 2008



2009 SNCAP Test 2 2009 Lincoln MKS M90203 - July 29, 2008



2009 SNCAP Test 2 2009 Lincoln MKS
M90203 - July 29, 2008



APPENDIX C

DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

SUMMARY
SID H3 PRE & POST TEST CALIBRATION

CONFIGURED FOR LEFT SIDE IMPACT

Date: July 25, 2008, September 10, 2008 Sequential Test Number: 1
Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	SID H3 NO.: 270		SID H3 NO.: 269	
		PRE TEST	POST TEST	PRE TEST	POST TEST
SH- Seated Height (mm)	889 - 909	899	899	899	899
RH- Rib Height (mm)	501 - 521	505	505	505	505
HP- Hip Pivot Height (mm)	99 ref.	99	99	99	99
RD- Rib from Back Line (mm)	229 - 241	234	234	234	234
KV- Knee Pivot from Back Line (mm)	511 - 526	518	518	516	516
SW- Knee Pivot to Floor (mm)	490 - 505	495	495	495	495
HW- Hip Width (mm)	356 - 391	384	384	381	381
THORAX IMPACTS					
TEMPERATURE (• C)	18.9 - 25.5	21.7	21.1	21.7	21.1
RELATIVE HUMIDITY (%)	10 - 70	63	48	63	48
PROBE SPEED (m/s)	4.27 - 4.33	4.31	4.28	4.30	4.30
UPPER RIB (g's)	37 - 46	40.08	39.95	40.75	39.66
LOWER RIB (g's)	37 - 46	39.41	38.65	37.79	38.37
LOWER SPINE (g's)	15 - 22	20.62	19.59	18.20	18.11
PELVIS IMPACT					
TEMPERATURE (• C)	18.9 - 25.5	21.7	21.1	21.7	21.1
RELATIVE HUMIDITY (%)	10 - 70	63	46	63	48
PROBE SPEED (m/s)	4.27 - 4.33	4.29	4.30	4.30	4.29
PELVIS (g's)	40 - 60	49.17	43.40	52.68	59.96

REMARKS: None

CALIBRATION TEST RESULTS

PRE-TEST

SID H3 NO.: 270

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.:	<u>270</u>	Sequential Test Number:	<u>1</u>
Date:	<u>July 25, 2008</u>	Laboratory Technician:	<u>B. Swiecicki</u>

TEST	COMMENTS
EXTERNAL DIMENSIONS	Passed all requirements.
THORACIC SHOCK ABSORBER TEST	Passed all requirements.
LATERAL THORAX IMPACT TEST	Passed all requirements.
LATERAL PELVIS IMPACT TEST	Passed all requirements.
HEAD DROP TEST*	Passed all requirements.
LATERAL NECK BEND TEST*	Passed all requirements.
ABDOMINAL COMPRESSION TEST*	Passed all requirements.
LUMBAR FLEXION TEST*	Passed all requirements.

* Test not required for SID certification.

REMARKS: None

**EXTERNAL DIMENSIONS
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 270 Sequential Test Number: 1
Date: July 25, 2008 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 – 909	899
RH- Rib Height (mm)	502 – 520	505
HP- Hip Pivot Height (mm)	99 ref.	99
RD- Rib from Back Line (mm)	229 – 241	234
KH- Knee Pivot from Back Line (mm)	511 – 526	518
KV- Knee Pivot to Floor (mm)	490 – 505	495
HW- Hip Width (mm)	356 - 391	384

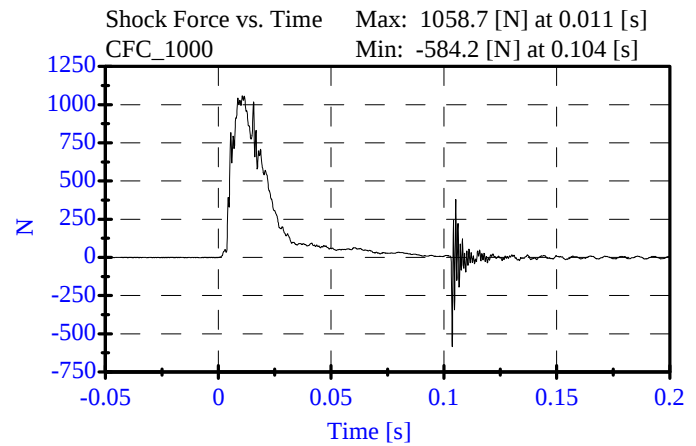
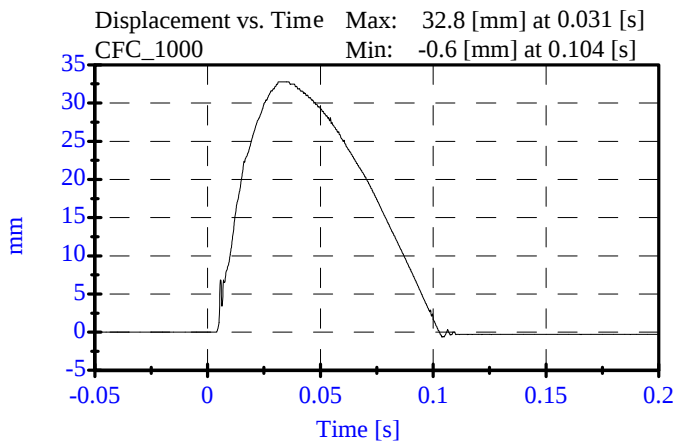
REMARKS: None

Shock Test Low (3.05 m/s)
PRE TEST
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 270
Date: 07-25-08

Sequential Test Number: 1 File: 270 Shock10 07-25-08
Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	63.00 %	Passed
Displacement:	30.00-35.00 mm	32.78 mm	Passed
Maximum Force:	836.00-1125.00 N	1058.75 N	Passed
Impact Test Velocity:	3.05 m/s		
Damper Identification:	270		
Damper Setting:	5		



Shock Test Medium (4.27 m/s)

PRE TEST

CONFIGURED FOR LEFT SIDE IMPACT

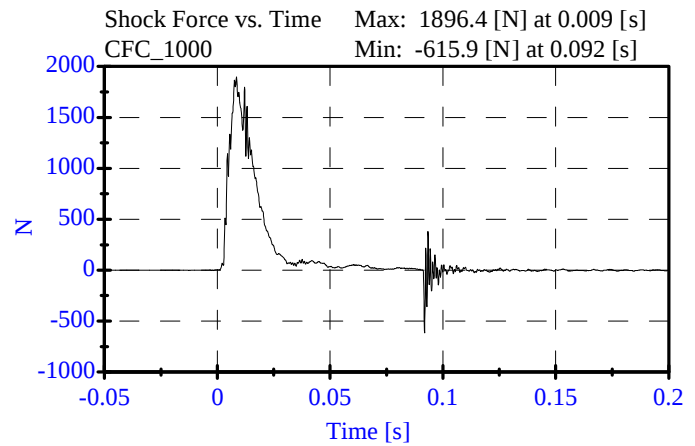
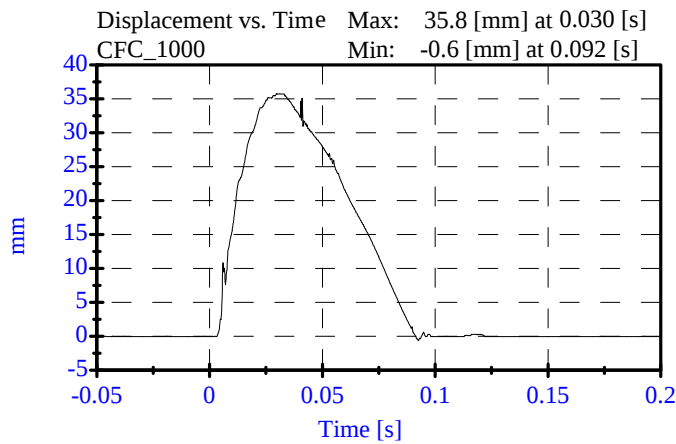
ATD Serial No: 270

Date: 07-25-08

Sequential Test Number: 1 File: 270 Shock14 07-25-08

Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	63.00 %	Passed
Displacement:	32.00-37.00 mm	35.79 mm	Passed
Maximum Force:	1730.00-2099.00 N	1896.42 N	Passed
Impact Test Velocity:	4.27 m/s		
Damper Identification:	270		
Damper Setting:	5		

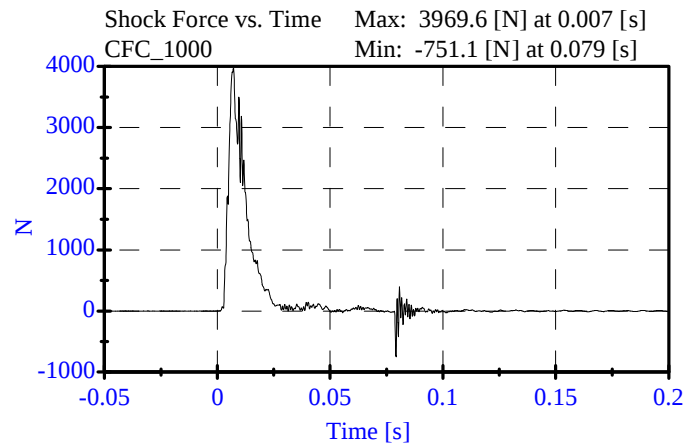
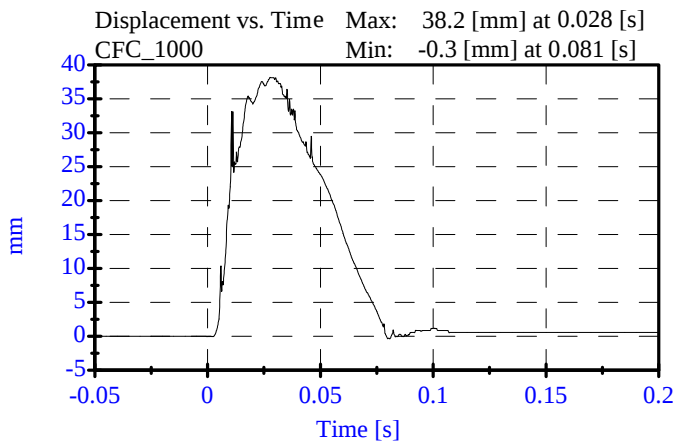


Shock Test High (6.10 m/s)
PRE TEST
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 270
Date: 07-25-08

Sequential Test Number: 1 File: 270 Shock20 07-25-08
Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	63.00 %	Passed
Displacement:	33.00-40.00 mm	38.17 mm	Passed
Maximum Force:	3741.00-4448.00 N	3969.63 N	Passed
Impact Test Velocity:	6.10 m/s		
Damper Identification:	270		
Damper Setting:	5		

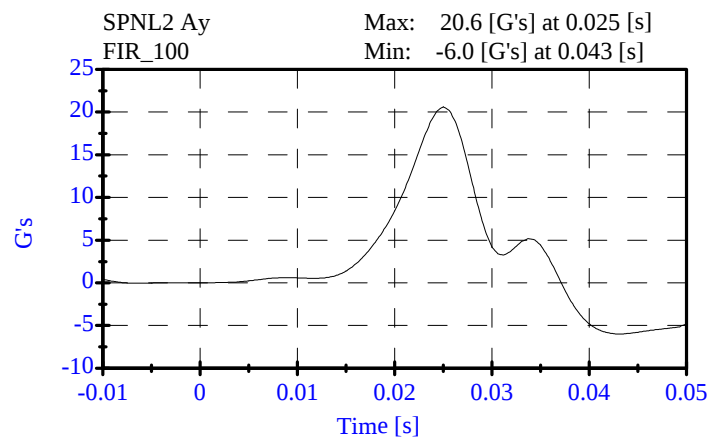
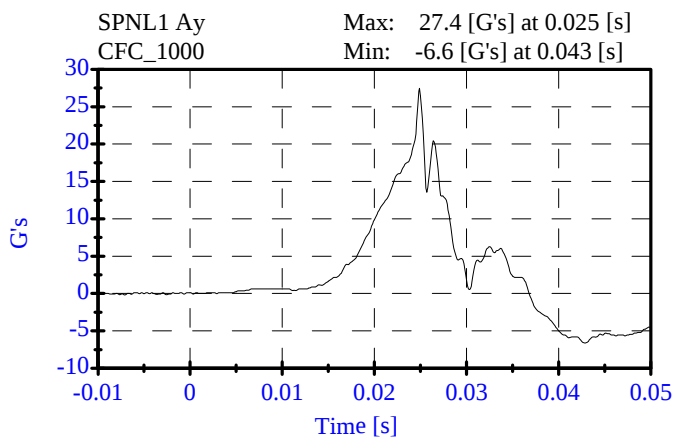
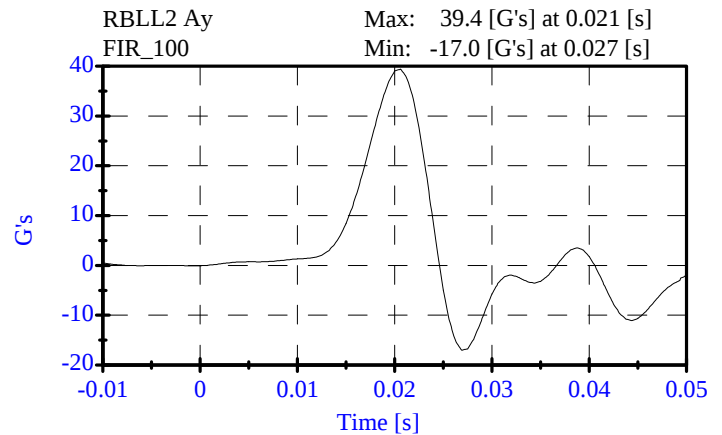
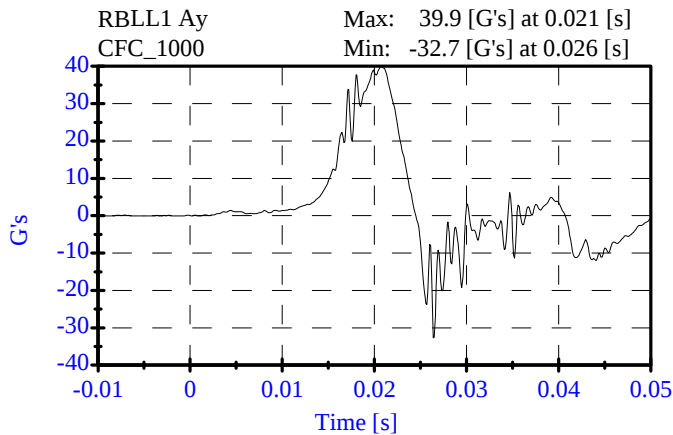
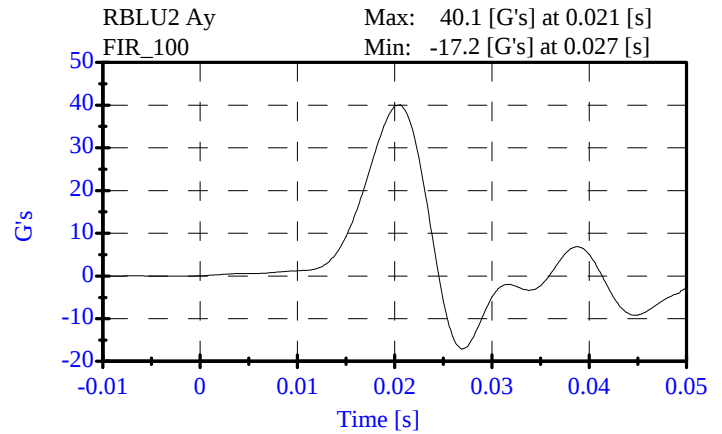
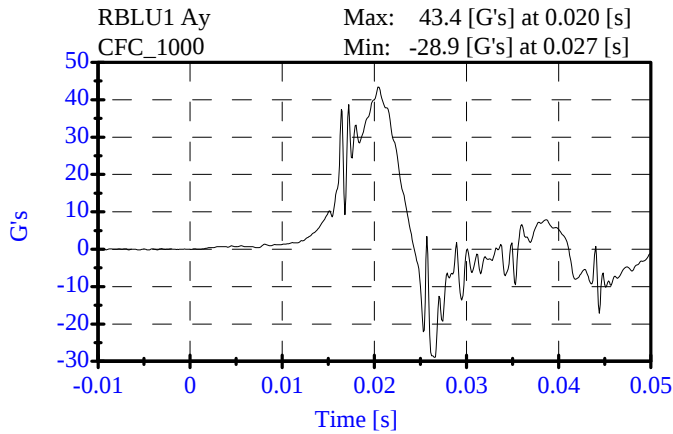


Thorax Impact
Pre-Test
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 270
Date: 07-25-08

Sequential Test Number: 1 File: 270T 07-25-08
Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	63.00 %	Passed
Probe Velocity:	4.27- 4.33 m/s	4.31 m/s	Passed
Upper Rib Acceleration:	37.00-46.00 G's	40.08 G's	Passed
Lower Rib Acceleration:	37.00-46.00 G's	39.41 G's	Passed
Lower Spine Acceleration:	15.00-22.00 G's	20.62 G's	Passed

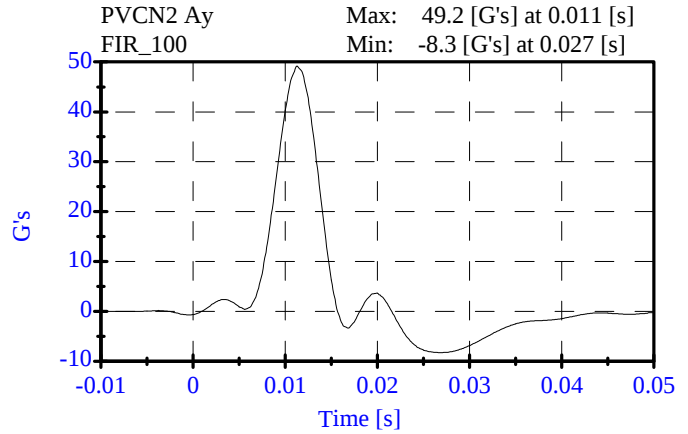
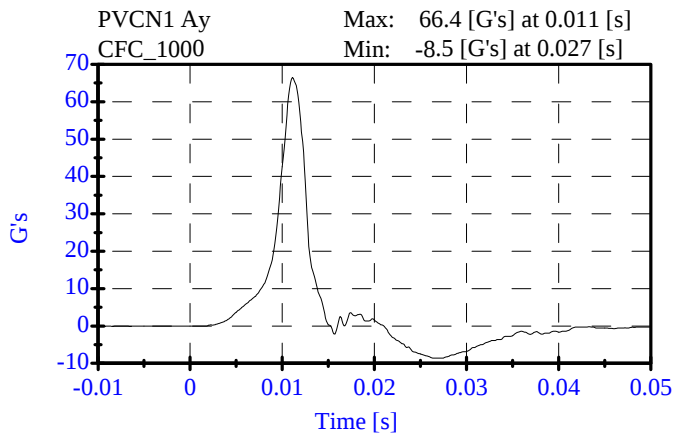


Pelvic Impact
Pre-Test
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 270
Date: 07-25-08

Sequential Test Number: 1 File: 270P 07-25-08
Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	63.00 %	Passed
Probe Velocity:	4.27- 4.33 m/s	4.29 m/s	Passed
Pelvis Y Acceleration:	40.00-60.00 G's	49.17 G's	Passed
Time Above 20 Gs	3.0-7.0 ms	5.5 ms	Passed



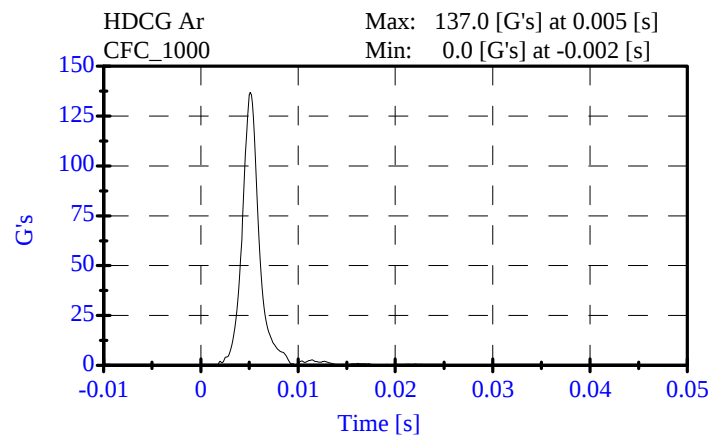
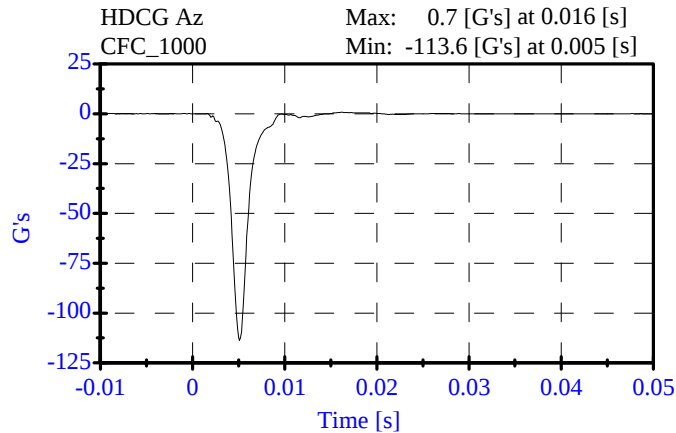
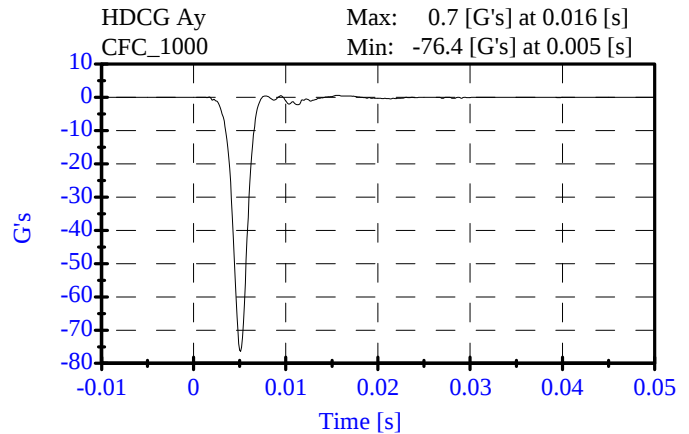
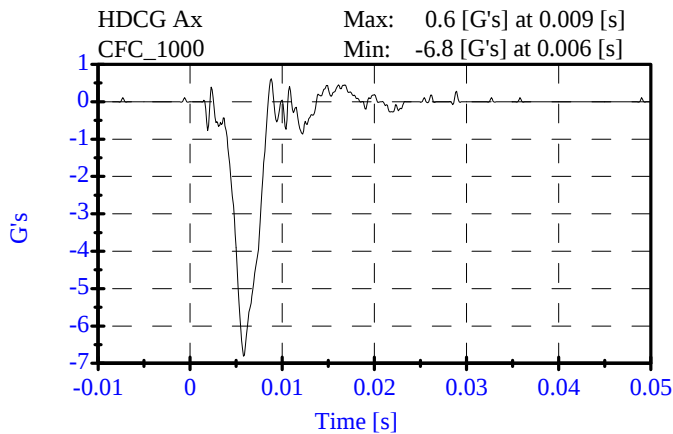
Head Drop Pre-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 270
Date: 07-23-08

Sequential Test Number: 1 File: 270H2 07-23-08
Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	18.9-25.6 C	21.7 C	Passed
Lab Humidity:	10-70 %	68.00 %	Passed
Peak Resultant Accel.:	120-150 Gs	136.98 Gs	Passed
Peak Lateral Accel.:	15 Gs Max	0.61 Gs	Passed
Curve PerCent NonModal:	< 15%	2.01 %	Passed



Neck Flexion Test
Pre-Test
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 270
Date: 07-24-08

Sequential Test Number: 1 File: 270N 07-24-08
Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	20.6-22.2 C	21.1 C	Passed
Lab Humidity:	10-70 %	65.00 %	Passed
Impact Velocity:	6.89- 7.13 m/s	7.00 m/s	Passed
PENDULUM DELTA V			
Delta V at 10 ms:	1.96- 2.55 m/s	2.17 m/s	Passed
Delta V at 20 ms:	4.12- 5.10 m/s	4.42 m/s	Passed
Delta V at 30 ms:	5.73- 7.01 m/s	6.23 m/s	Passed
Delta V between 40-70 ms:	6.27- 7.64 m/s	7.63 m/s	Passed
D PLANE ROTATION			
Maximum Rotation:	66.0-82.0 Deg	69.34 Deg	Passed
Rotation Angle Decay:	58.0-67.0 ms	59.40 ms	Passed
MOMENT ABOUT THE OCCIPITAL CONDYLE			
Max Occipital Moment:	73.00- 88.00 N-m	85.19 N-m	Passed
Occipital Moment Decay:	49.0-64.0 ms	52.90 ms	Passed
HEAD ROTATION TIME WITH RESPECT TO THE OCCIPITAL CONDYLE MOMENT			
Moment to Rotation Peak:	2.0-16.0 ms	7.50 ms	Passed

Neck Flexion Test
Pre-Test
CONFIGURED FOR LEFT SIDE IMPACT

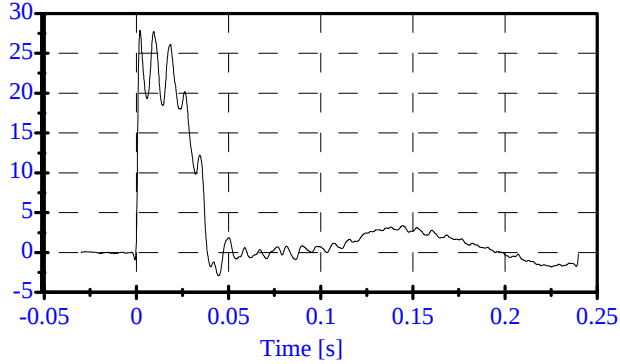
ATD Serial No: 270

Date: 07-24-08

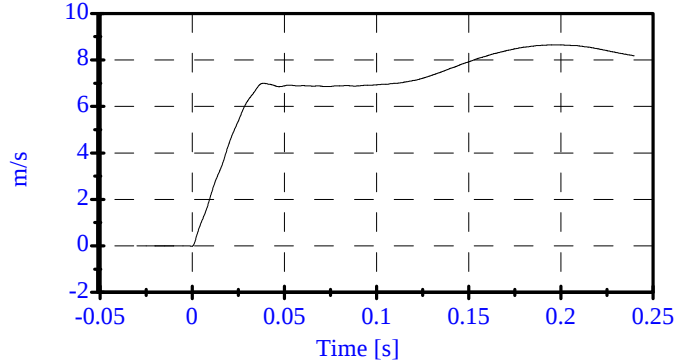
Sequential Test Number: 1 File: 270N 07-24-08

Laboratory Technician: B. Swiecicki

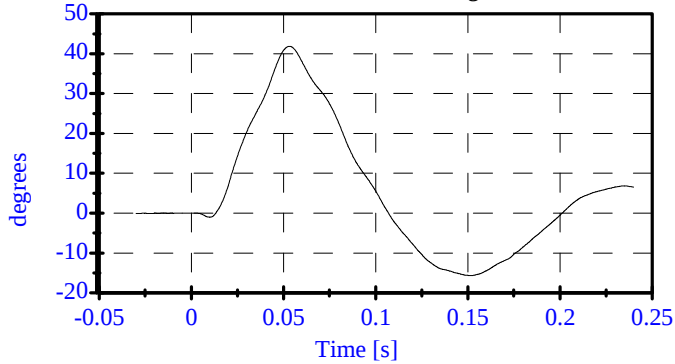
Pend Ax
CFC_180
Max: 27.9 [] at 0.002 [s]
Min: -2.9 [] at 0.045 [s]



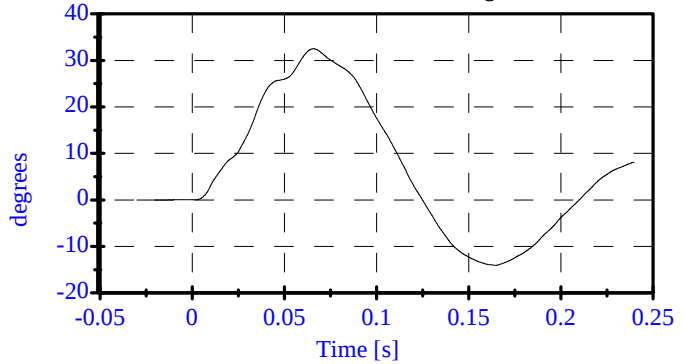
Pend Vx
CFC_180
Max: 8.7 [m/s] at 0.199 [s]
Min: -0.0 [m/s] at -0.000 [s]



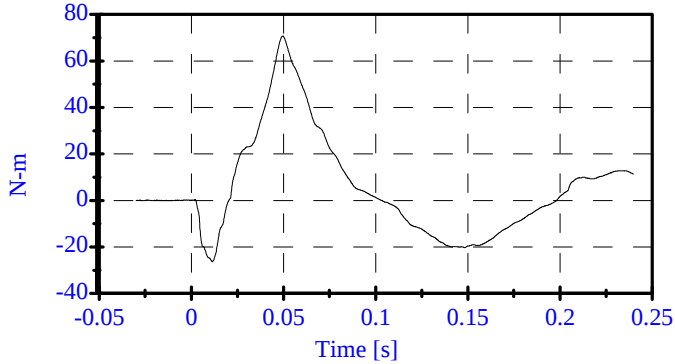
Head Rot
CFC_180
Max: 41.9 [degrees] at 0.053 [s]
Min: -15.6 [degrees] at 0.152 [s]



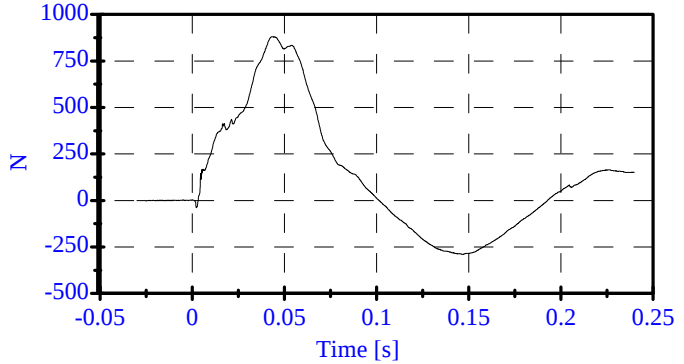
Arm Rot
CFC_180
Max: 32.5 [degrees] at 0.066 [s]
Min: -14.0 [degrees] at 0.165 [s]



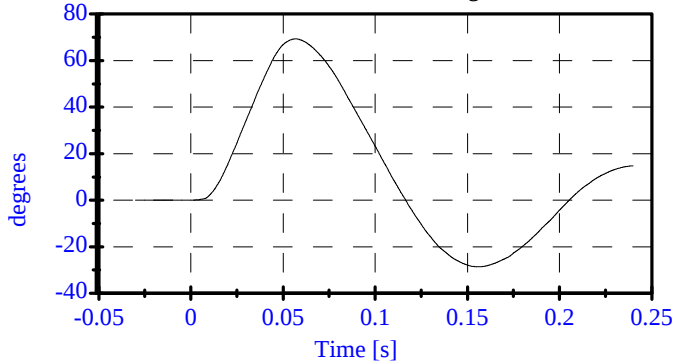
Neck Mx
CFC_600
Max: 70.7 [N-m] at 0.050 [s]
Min: -26.4 [N-m] at 0.011 [s]



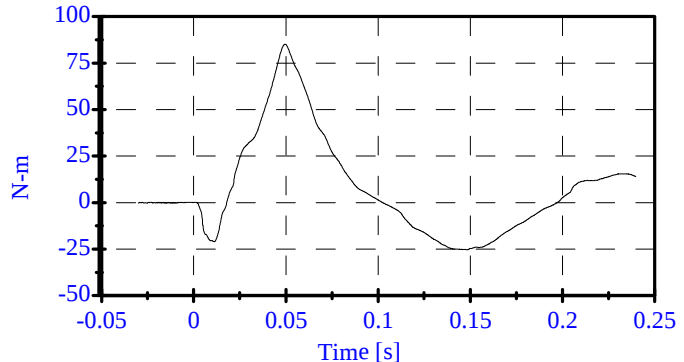
Neck Fy
CFC_1000
Max: 880.6 [N] at 0.045 [s]
Min: -289.5 [N] at 0.147 [s]



Tot Rot
CFC_180
Max: 69.3 [degrees] at 0.057 [s]
Min: -28.6 [degrees] at 0.157 [s]



MOCX
Max: 85.2 [N-m] at 0.050 [s]
Min: -25.3 [N-m] at 0.148 [s]



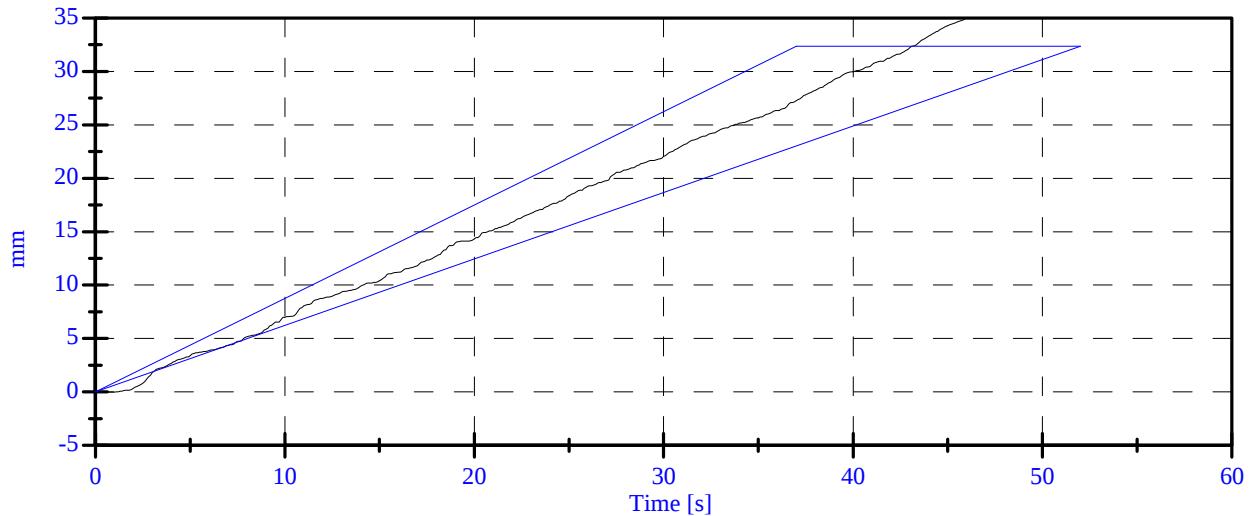
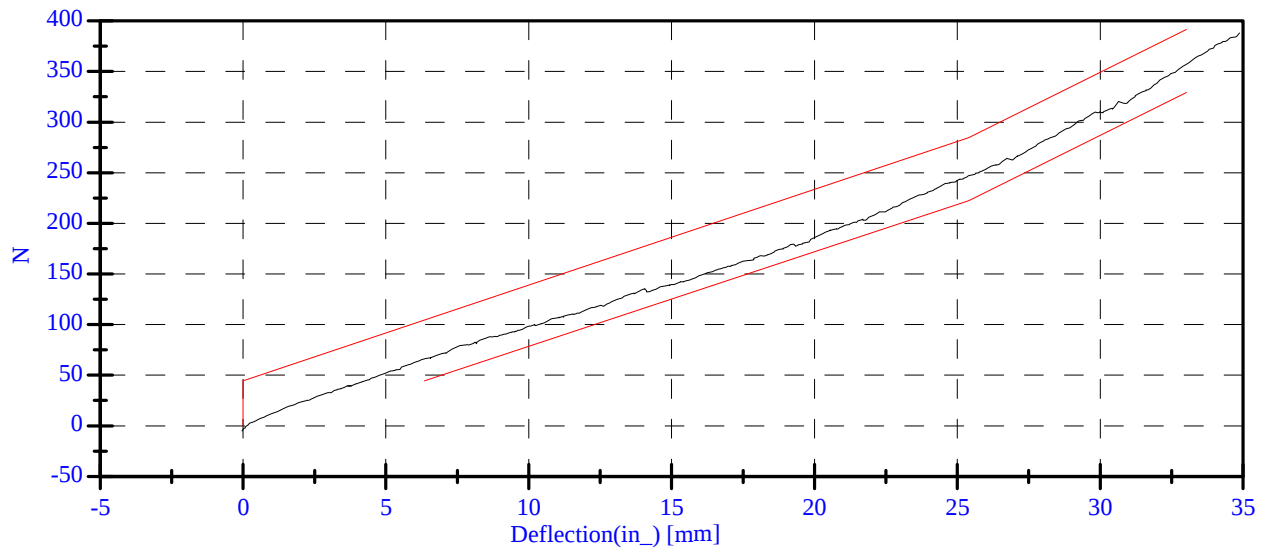
Abdominal Compression Test
Pre-Test
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 270
Date: 07-24-08

Sequential Test Number: 1 File: 270 Ab 07-24-08
Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	64.00 %	Passed
Force at 12.95 mm :	104.00-162.00 N	122.45 N	Passed
Force at 19.05 mm :	162.98-220.99 N	176.84 N	Passed
Force at 25.40 mm :	221.97-280.02 N	246.93 N	Passed
Force at 33.02 mm :	324.99-391.00 N	356.81 N	Passed

ABDOMINAL COMPRESSION TEST



Lumbar Spine Test

Pre-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 270

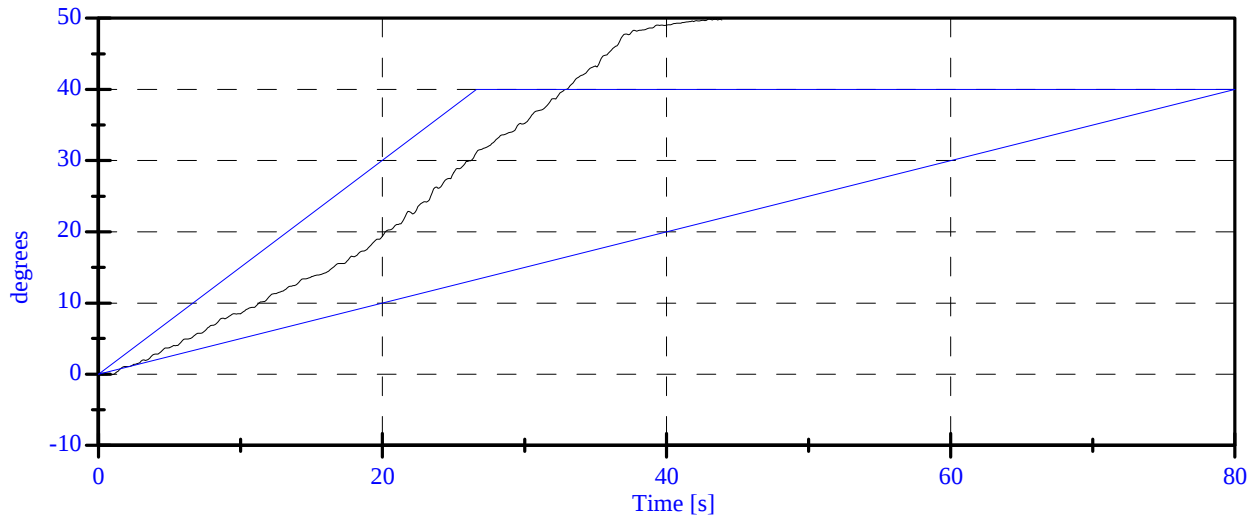
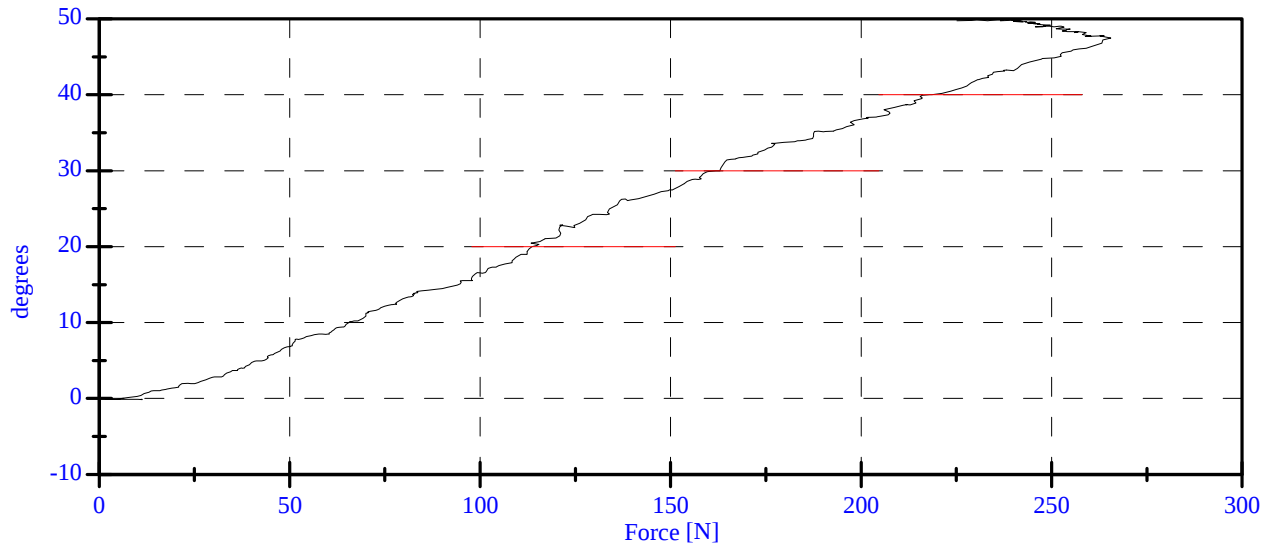
Date: 07-24-08

Sequential Test Number: 1 File: 270 Spine 07-24-08

Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	65.00 %	Passed
Force at 0 Deg:	0.00-26.69 N	6.00 N	Passed
Force at 20 Deg:	97.86-151.24 N	113.60 N	Passed
Force at 30 Deg:	151.24-204.62 N	161.91 N	Passed
Force at 40 Deg:	204.62-258.00 N	218.06 N	Passed
Return Angle	12 Deg Max	7.65 deg	Passed

LUMBAR SPINE FLEXION TEST



PRE-TEST DUMMY INSPECTION LIST
CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 270 Sequential Test Number: 1
 Date: July 25, 2008 Laboratory Technician: B. Swiecicki

PART	ITEMS CHECKED	COMMENTS
SKIN	VISUAL INSPECTION	OK
HEAD	VISUAL, BALLAST, ACCELEROMETER MOUNT	OK
NECK	VISUAL, CABLE TORQUE	OK
SPINE BOX	VISUAL, BALLAST, WELDMENT, ACCELEROMETER MOUNT	OK
RIB CAGE	VISUAL, MEASURE, STIFFENERS	OK
STERNUM	VISUAL	OK
LUMBAR SPINE	VISUAL	OK
ABDOMEN	VISUAL	OK
PELVIS	VISUAL, PALPATE, ACCELEROMETER MOUNT	OK
UPPER LEGS	VISUAL	OK
KNEES	VISUAL, STOPS, INSERTS	OK
LOWER LEGS	VISUAL, RANGE OF MOTION	OK
ANKLES	VISUAL, RANGE OF MOTION	OK
FEET	VISUAL, RANGE OF MOTION	OK
JOINTS	1 TO 2 g RANGE	OK
OTHER	NONE	-

REMARKS: None

CALIBRATION TEST RESULTS

PRE-TEST

SID H3 NO.: 269

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.:	<u>269</u>	Sequential Test Number:	<u>1</u>
Date:	<u>July 25, 2008</u>	Laboratory Technician:	<u>B. Swiecicki</u>

TEST	COMMENTS
EXTERNAL DIMENSIONS	Passed all requirements.
THORACIC SHOCK ABSORBER TEST	Passed all requirements.
LATERAL THORAX IMPACT TEST	Passed all requirements.
LATERAL PELVIS IMPACT TEST	Passed all requirements.
HEAD DROP TEST*	Passed all requirements.
LATERAL NECK BEND TEST*	Passed all requirements.
ABDOMINAL COMPRESSION TEST*	Passed all requirements.
LUMBAR FLEXION TEST*	Passed all requirements.

* Test not required for SID certification.

REMARKS: None

**EXTERNAL DIMENSIONS
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 269 Sequential Test Number: 1
Date: July 25, 2008 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	899
RH- Rib Height (mm)	502 - 520	505
HP- Hip Pivot Height (mm)	99 ref.	99
RD- Rib from Back Line (mm)	229 - 241	234
KH- Knee Pivot from Back Line (mm)	511 - 526	516
KV- Knee Pivot to Floor (mm)	490 - 505	495
HW- Hip Width (mm)	356 - 391	381

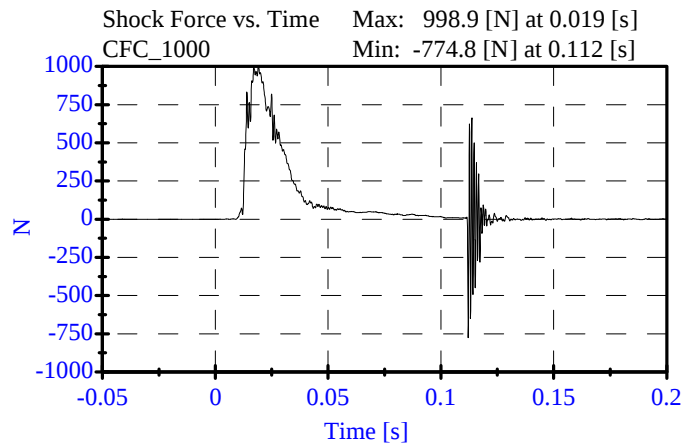
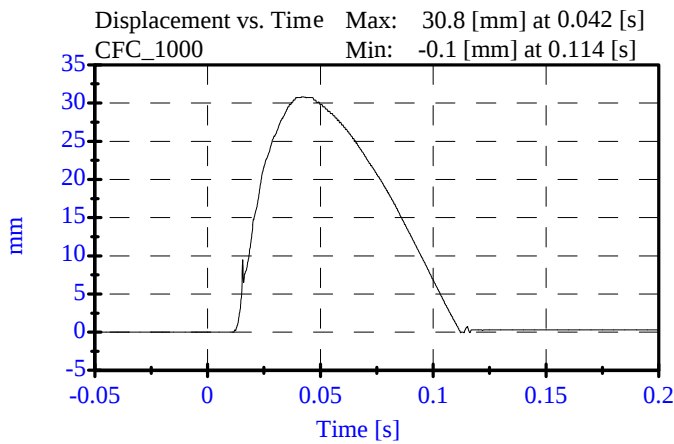
REMARKS: None

Shock Test (3.05 m/s)
PRE TEST
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 269
Date: 06-25-08

Sequential Test Number: 1 File: 269 Shock10 06-25-08
Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	55.00 %	Passed
Displacement:	30.00-35.00 mm	30.82 mm	Passed
Maximum Force:	836.00-1125.00 N	998.86 N	Passed
Impact Test Velocity:	3.05 m/s		
Damper Identification:	269		
Damper Setting:	5		

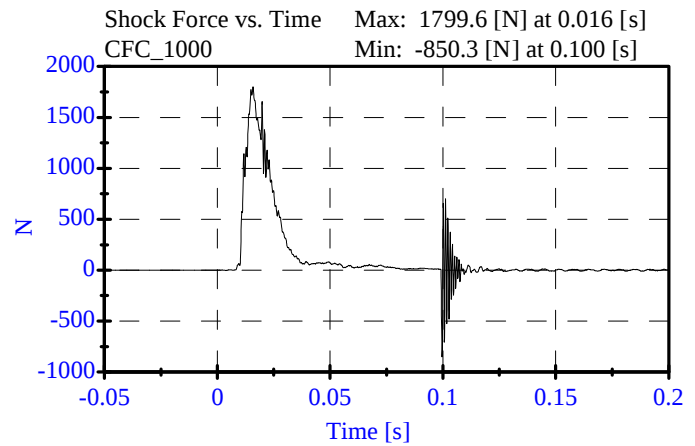
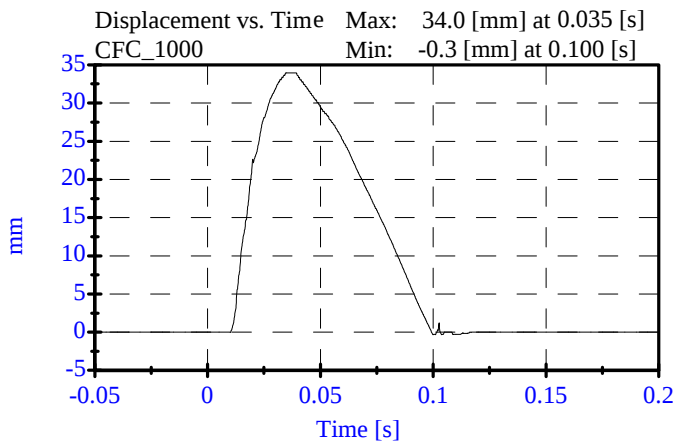


Shock Test (4.27 m/s)
PRE TEST
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 269
Date: 06-25-08

Sequential Test Number: 1 File: 269 Shock14 06-25-08
Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	55.00 %	Passed
Displacement:	32.00-37.00 mm	33.97 mm	Passed
Maximum Force:	1730.00-2099.00 N	1799.59 N	Passed
Impact Test Velocity:	4.27 m/s		
Damper Identification:	269		
Damper Setting:	5		

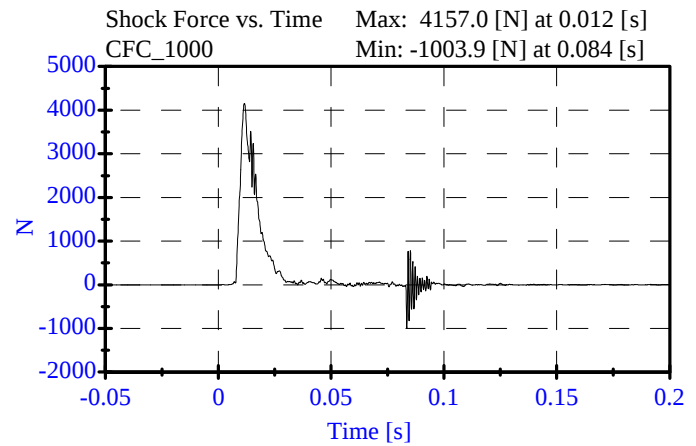
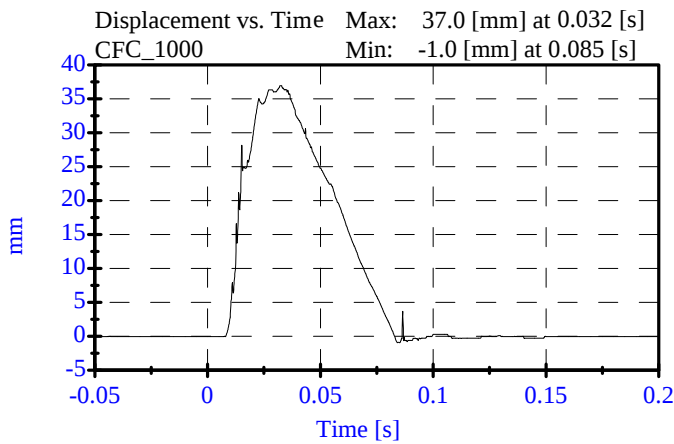


Shock Test (6.10 m/s)
PRE TEST
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 269
Date: 06-25-08

Sequential Test Number: 1 File: 269 Shock20 06-25-08
Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	18.9-25.5 C	22.2 C	Passed
Lab Humidity:	10-70 %	55.00 %	Passed
Displacement:	33.00-40.00 mm	36.96 mm	Passed
Maximum Force:	3741.00-4448.00 N	4156.98 N	Passed
Impact Test Velocity:	6.10 m/s		
Damper Identification:	269		
Damper Setting:	5		

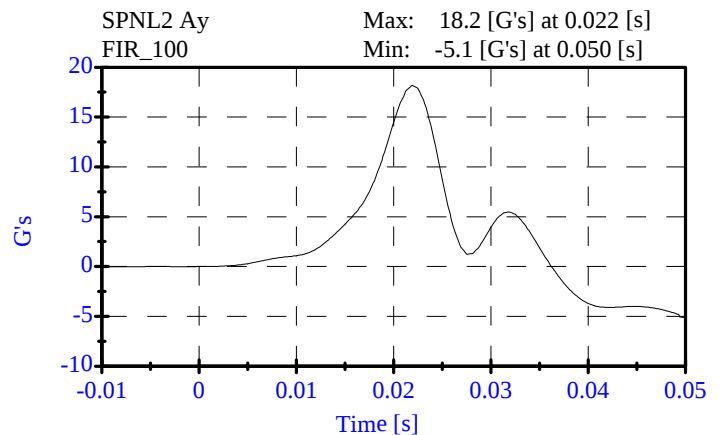
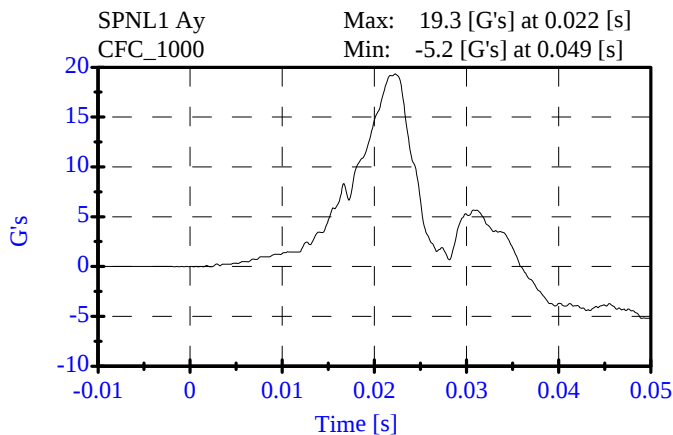
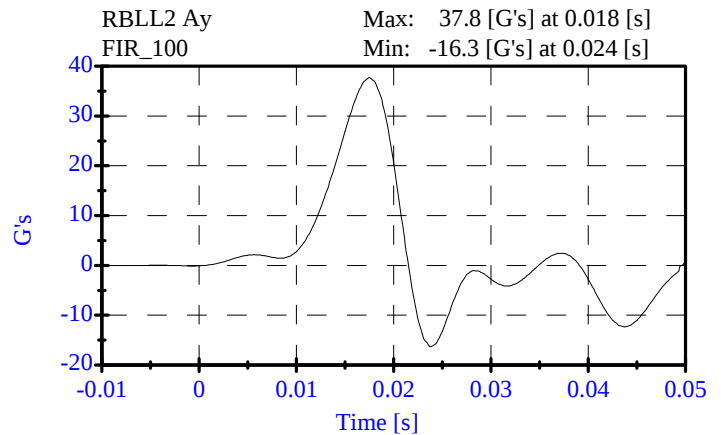
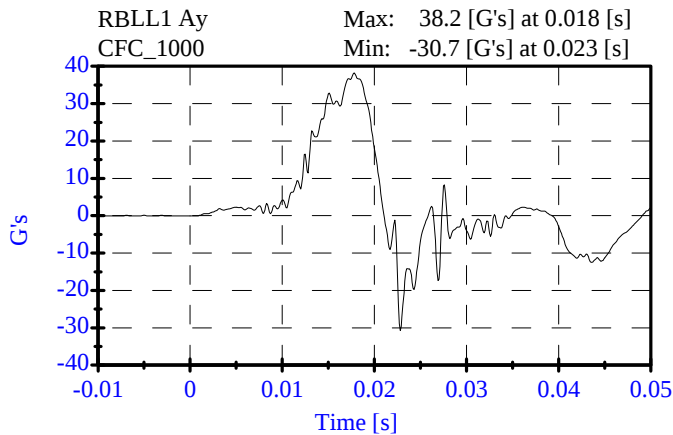
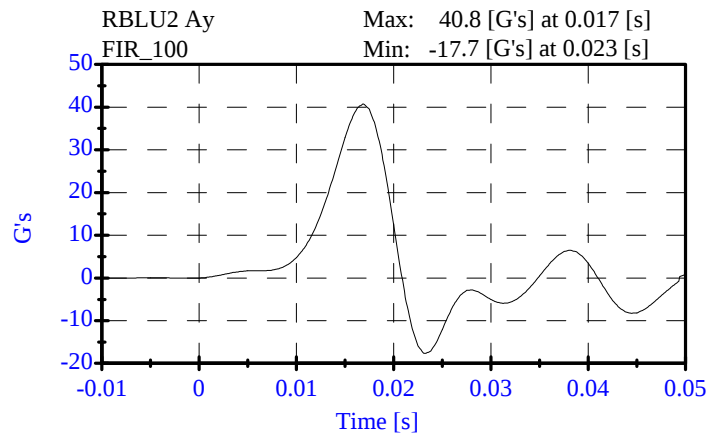
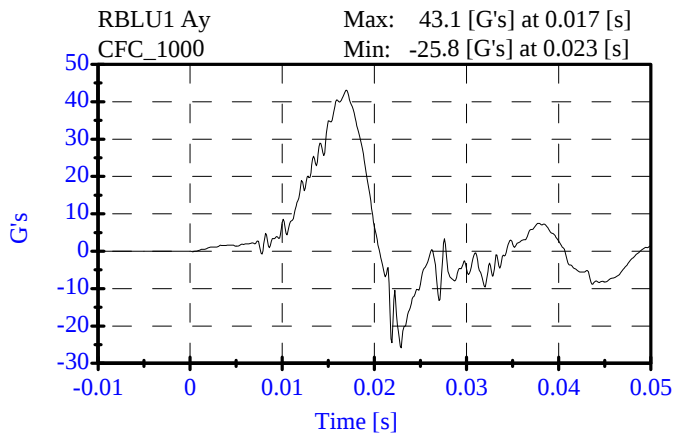


Thorax Impact Test
Pre-Test
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 269
Date: 07-25-08

Sequential Test Number: 1 File: 269T1 07-25-08
Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	63.00 %	Passed
Probe Velocity:	4.27- 4.33 m/s	4.30 m/s	Passed
Upper Rib Acceleration:	37.00-46.00 G's	40.75 G's	Passed
Lower Rib Acceleration:	37.00-46.00 G's	37.79 G's	Passed
Lower Spine Acceleration:	15.00-22.00 G's	18.20 G's	Passed

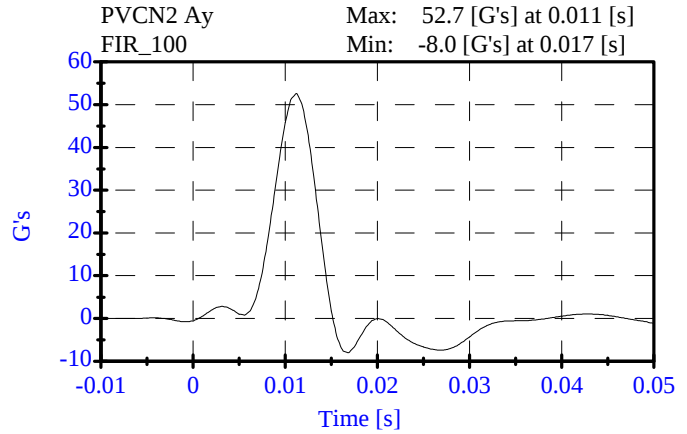
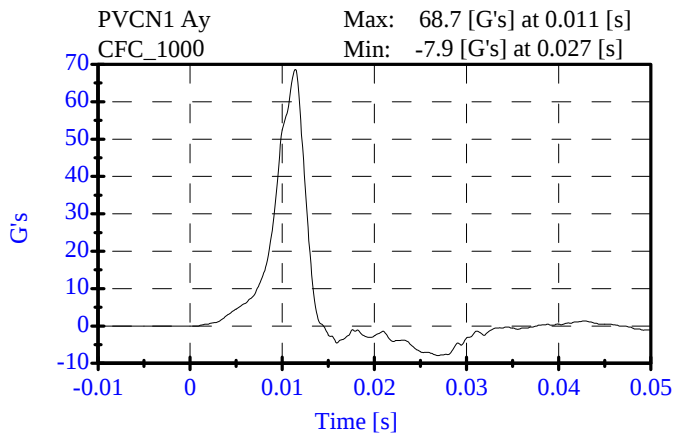


Pelvic Impact Test
Pre-Test
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 269
Date: 07-25-08

Sequential Test Number: 1 File: 269P1 07-25-08
Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	63.00 %	Passed
Probe Velocity:	4.27- 4.33 m/s	4.30 m/s	Passed
Pelvis Y Acceleration:	40.00-60.00 G's	52.68 G's	Passed
Time Above 20 Gs	3.0-7.0 ms	5.6 ms	Passed



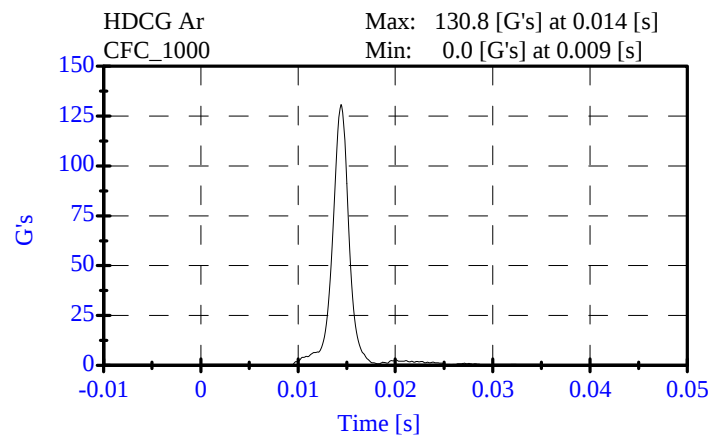
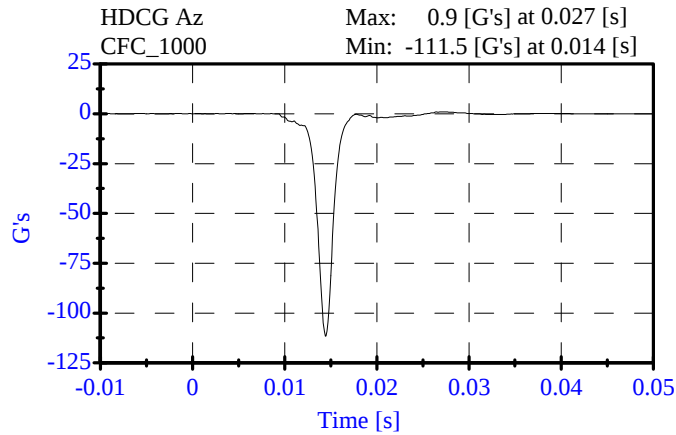
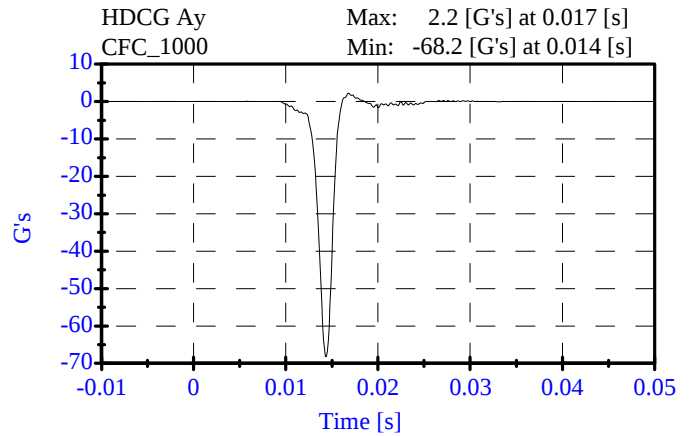
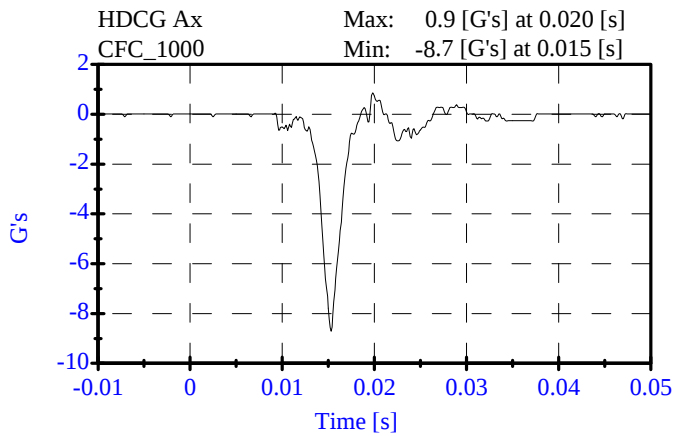
Head Drop Pre-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 269
Date: 07-23-08

Sequential Test Number: 1 File: 269H 07-23-08
Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	18.9-25.6 C	21.7 C	Passed
Lab Humidity:	10-70 %	69.00 %	Passed
Peak Resultant Accel.:	120-150 Gs	130.82 Gs	Passed
Peak Lateral Accel.:	15 Gs Max	0.85 Gs	Passed
Curve PerCent NonModal:	< 15%	2.10 %	Passed



Neck Flexion Test
Pre-Test
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 269
Date: 07-24-08

Sequential Test Number: 1 File: 269N 07-24-08
Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	20.6-22.2 C	21.1 C	Passed
Lab Humidity:	10-70 %	65.00 %	Passed
Impact Velocity:	6.89- 7.13 m/s	7.00 m/s	Passed
PENDULUM DELTA V			
Delta V at 10 ms:	1.96- 2.55 m/s	2.16 m/s	Passed
Delta V at 20 ms:	4.12- 5.10 m/s	4.33 m/s	Passed
Delta V at 30 ms:	5.73- 7.01 m/s	6.03 m/s	Passed
Delta V between 40-70 ms:	6.27- 7.64 m/s	7.62 m/s	Passed
D PLANE ROTATION			
Maximum Rotation:	66.0-82.0 Deg	68.65 Deg	Passed
Rotation Angle Decay:	58.0-67.0 ms	62.30 ms	Passed
MOMENT ABOUT THE OCCIPITAL CONDYLE			
Max Occipital Moment:	73.00- 88.00 N-m	77.68 N-m	Passed
Occipital Moment Decay:	49.0-64.0 ms	52.80 ms	Passed
HEAD ROTATION TIME WITH RESPECT TO THE OCCIPITAL CONDYLE MOMENT			
Moment to Rotation Peak:	2.0-16.0 ms	6.70 ms	Passed

Neck Flexion Test
Pre-Test
CONFIGURED FOR LEFT SIDE IMPACT

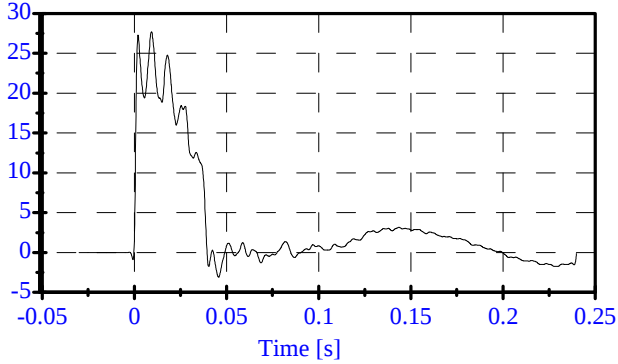
ATD Serial No: 269

Date: 07-24-08

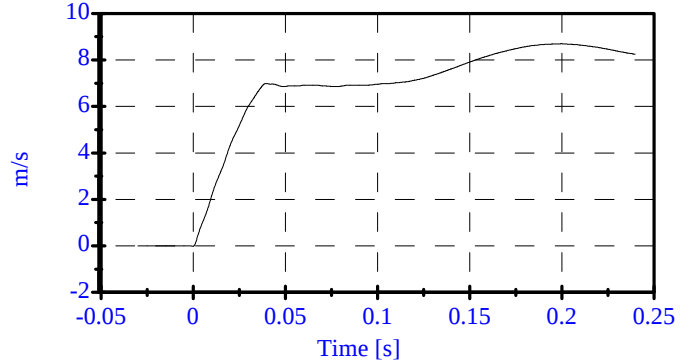
Sequential Test Number: 1 File: 269N 07-24-08

Laboratory Technician: B. Swiecicki

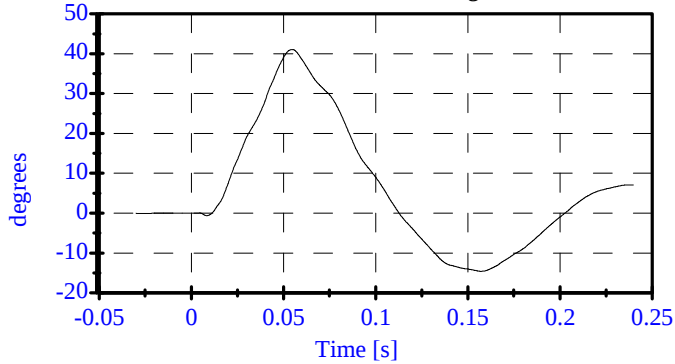
Pend Ax
CFC_180
Max: 27.7 [] at 0.009 [s]
Min: -3.1 [] at 0.046 [s]



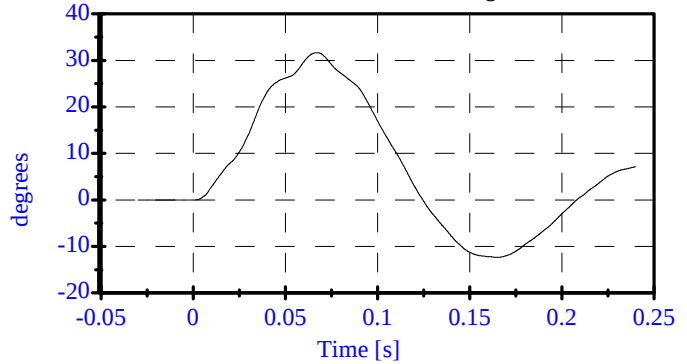
Pend Vx
CFC_180
Max: 8.7 [m/s] at 0.200 [s]
Min: -0.0 [m/s] at -0.000 [s]



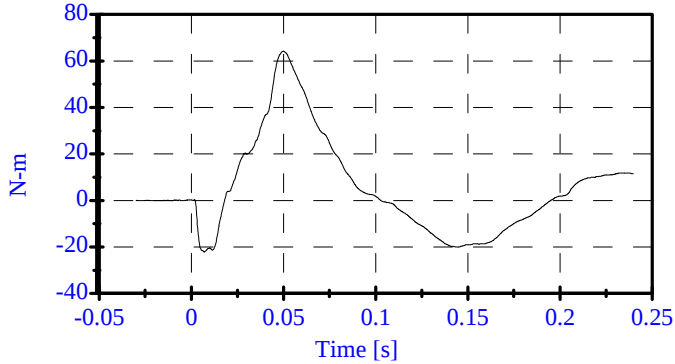
Head Rot
CFC_180
Max: 41.1 [degrees] at 0.055 [s]
Min: -14.6 [degrees] at 0.157 [s]



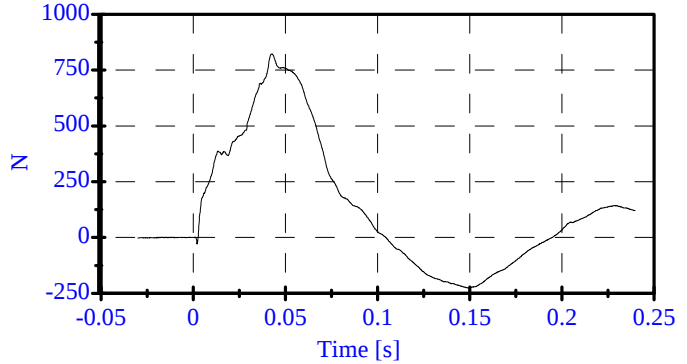
Arm Rot
CFC_180
Max: 31.7 [degrees] at 0.067 [s]
Min: -12.3 [degrees] at 0.165 [s]



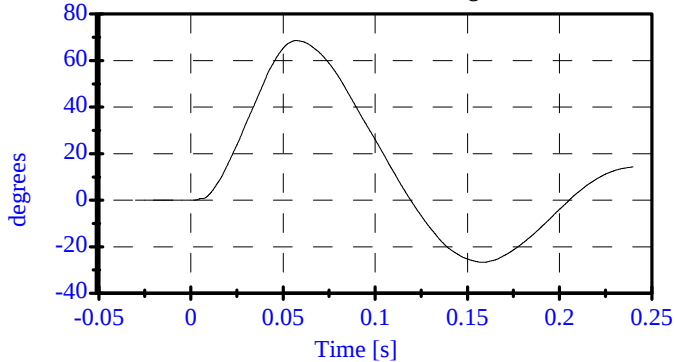
Neck Mx
CFC_600
Max: 64.2 [N-m] at 0.050 [s]
Min: -22.2 [N-m] at 0.007 [s]



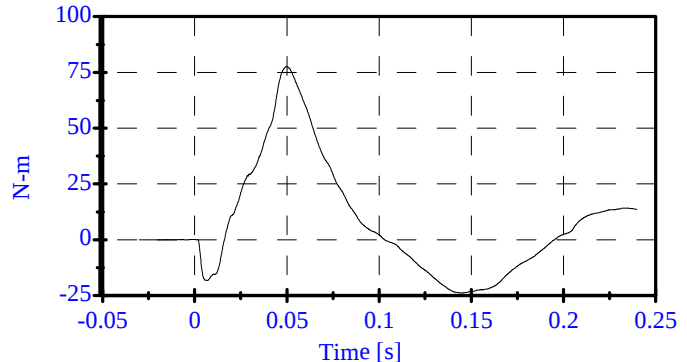
Neck Fy
CFC_1000
Max: 823.3 [N] at 0.043 [s]
Min: -225.8 [N] at 0.149 [s]



Tot Rot
CFC_180
Max: 68.6 [degrees] at 0.057 [s]
Min: -26.7 [degrees] at 0.158 [s]



MOCX
Max: 77.7 [N-m] at 0.050 [s]
Min: -23.8 [N-m] at 0.146 [s]



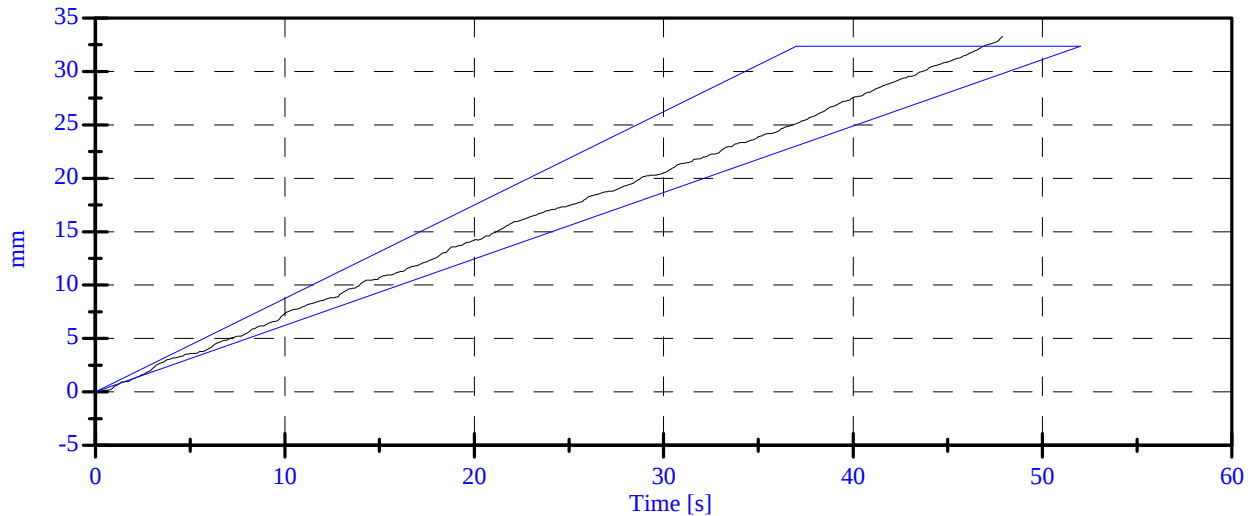
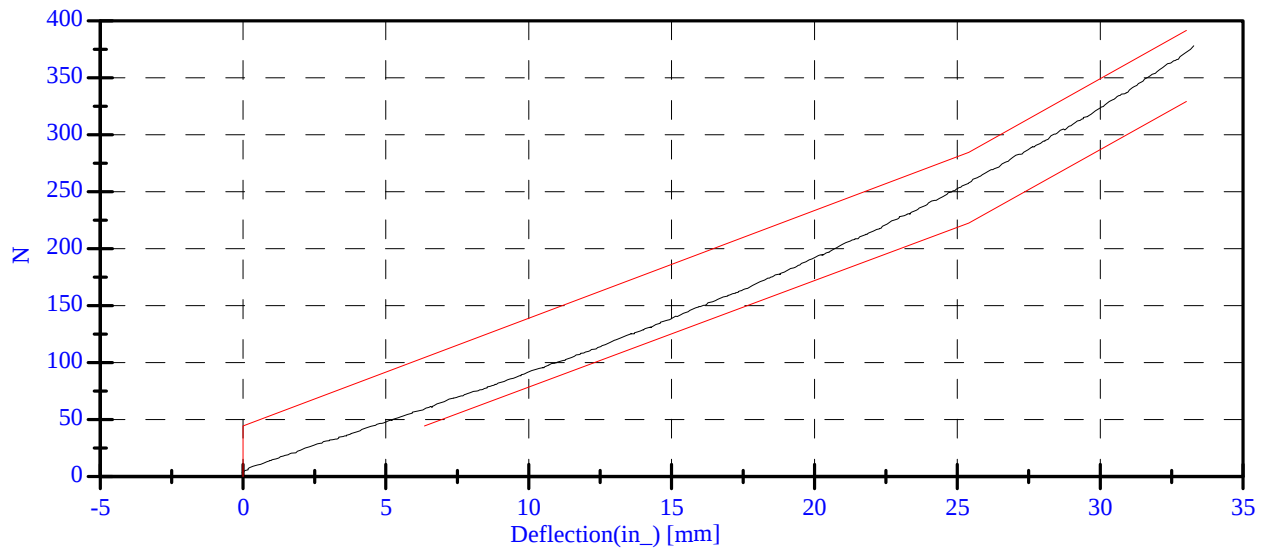
Abdominal Compression Test
Pre-Test
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 269
Date: 07-24-08

Sequential Test Number: 1 File: 269 Ab 07-24-08
Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	65.00 %	Passed
Force at 12.95 mm :	104.00-162.00 N	119.53 N	Passed
Force at 19.05 mm :	162.98-220.99 N	180.49 N	Passed
Force at 25.40 mm :	221.97-280.02 N	257.15 N	Passed
Force at 33.02 mm :	324.99-391.00 N	371.41 N	Passed

ABDOMINAL COMPRESSION TEST



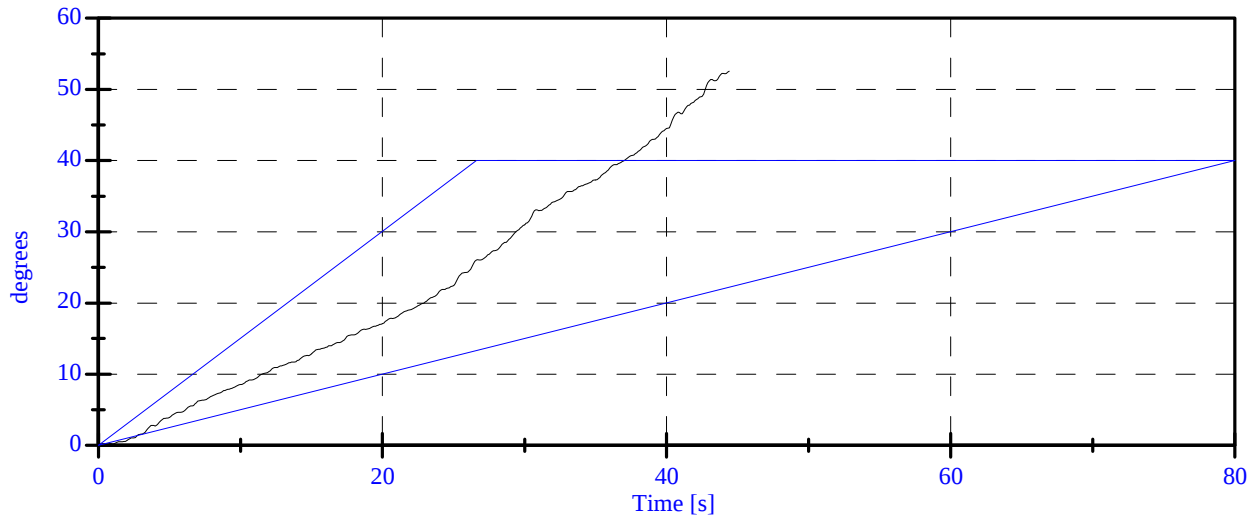
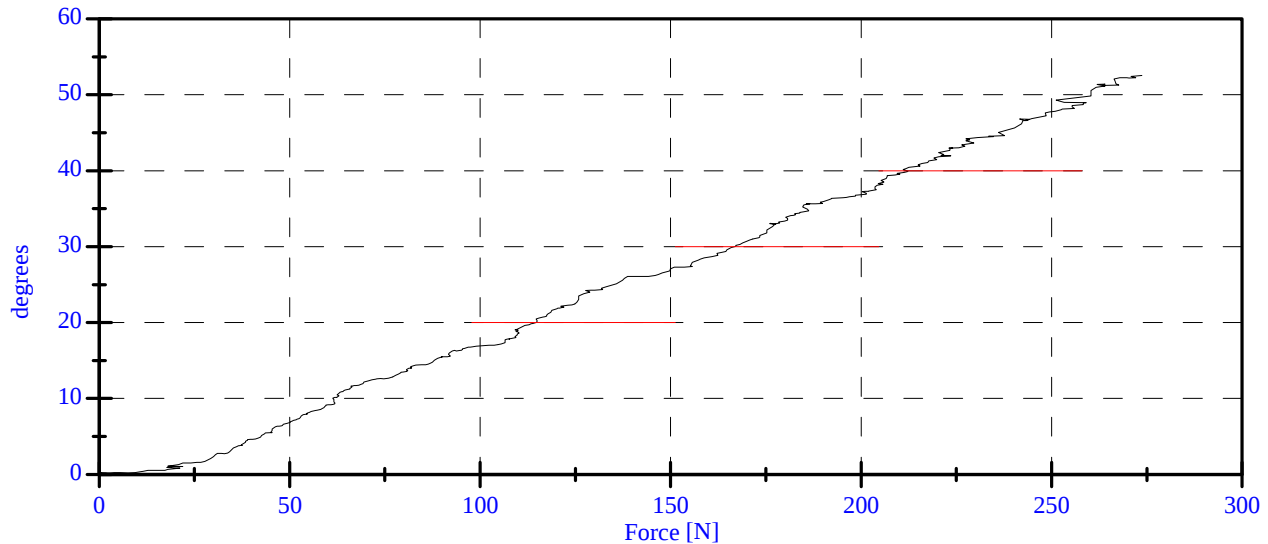
Lumbar Spine Test
Pre-Test
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 269
Date: 07-25-08

Sequential Test Number: 1 File: 269 Spine 07-25-08
Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	63.00 %	Passed
Force at 0 Deg:	0.00-26.69 N	2.35 N	Passed
Force at 20 Deg:	97.86-151.24 N	114.64 N	Passed
Force at 30 Deg:	151.24-204.62 N	167.14 N	Passed
Force at 40 Deg:	204.62-258.00 N	212.06 N	Passed
Return Angle	12 Deg Max	7.56 deg	Passed

LUMBAR SPINE FLEXION TEST



PRE-TEST DUMMY INSPECTION LIST
CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 269 Sequential Test Number: 1
 Date: July 25, 2008 Laboratory Technician: B. Swiecicki

PART	ITEMS CHECKED	COMMENTS
SKIN	VISUAL INSPECTION	OK
HEAD	VISUAL, BALLAST, ACCELEROMETER MOUNT	OK
NECK	VISUAL, CABLE TORQUE	OK
SPINE BOX	VISUAL, BALLAST, WELDMENT, ACCELEROMETER MOUNT	OK
RIB CAGE	VISUAL, MEASURE, STIFFENERS	OK
STERNUM	VISUAL	OK
LUMBAR SPINE	VISUAL	OK
ABDOMEN	VISUAL	OK
PELVIS	VISUAL, PALPATE, ACCELEROMETER MOUNT	OK
UPPER LEGS	VISUAL	OK
KNEES	VISUAL, STOPS, INSERTS	OK
LOWER LEGS	VISUAL, RANGE OF MOTION	OK
ANKLES	VISUAL, RANGE OF MOTION	OK
FEET	VISUAL, RANGE OF MOTION	OK
JOINTS	1 TO 2 g RANGE	OK
OTHER	NONE	-

REMARKS: None

CALIBRATION TEST RESULTS

POST TEST

SID H3 NO.: 270

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 270 Sequential Test Number: 1
Date: September 10, 2008 Laboratory Technician: B. Swiecicki

TEST	COMMENTS
EXTERNAL DIMENSIONS	Passed all requirements.
LATERAL THORAX IMPACT TEST	Passed all requirements.
LATERAL PELVIS IMPACT TEST	Passed all requirements.
HEAD DROP TEST*	Passed all requirements.
LATERAL NECK BEND TEST*	Passed all requirements.
ABDOMINAL COMPRESSION TEST*	Passed all requirements.
LUMBAR FLEXION TEST*	Passed all requirements.

* Test not required for SID certification.

REMARKS: None

**EXTERNAL DIMENSIONS
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 270 Sequential Test Number: 1
Date: September 10, 2008 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	899
RH- Rib Height (mm)	502 - 520	505
HP- Hip Pivot Height (mm)	99 ref.	99
RD- Rib from Back Line (mm)	229 - 241	234
KH- Knee Pivot from Back Line (mm)	511 - 526	518
KV- Knee Pivot to Floor (mm)	490 - 505	495
HW- Hip Width (mm)	356 - 391	384

REMARKS: None

Thorax Impact

Post-Test

CONFIGURED FOR LEFT SIDE IMPACT

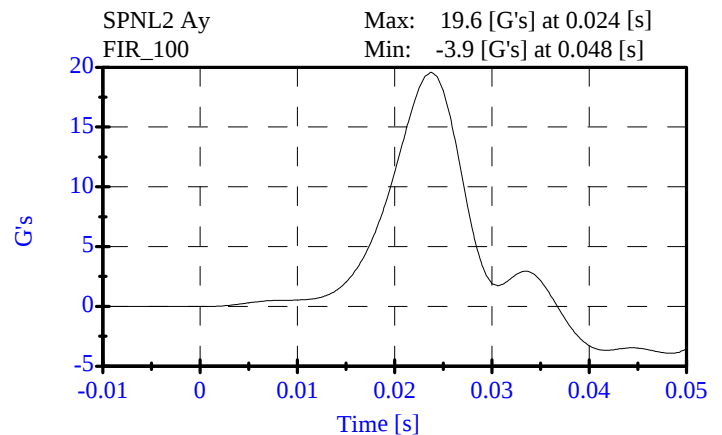
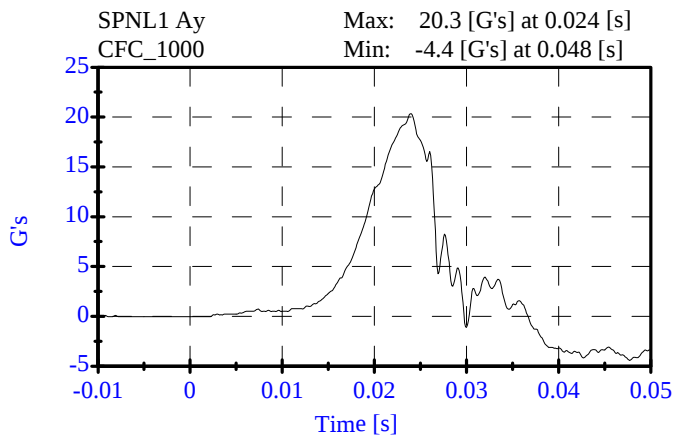
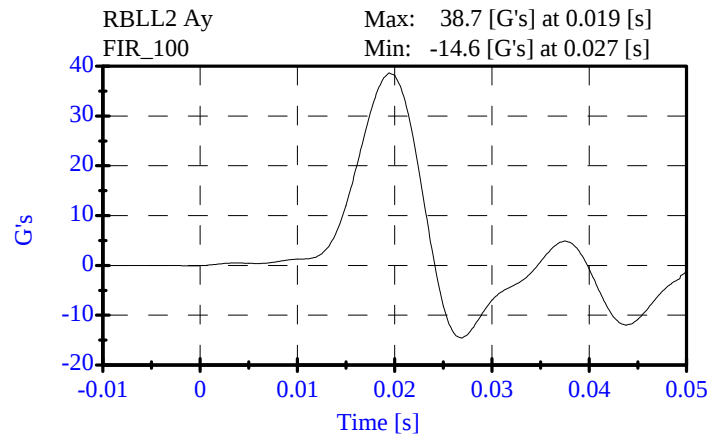
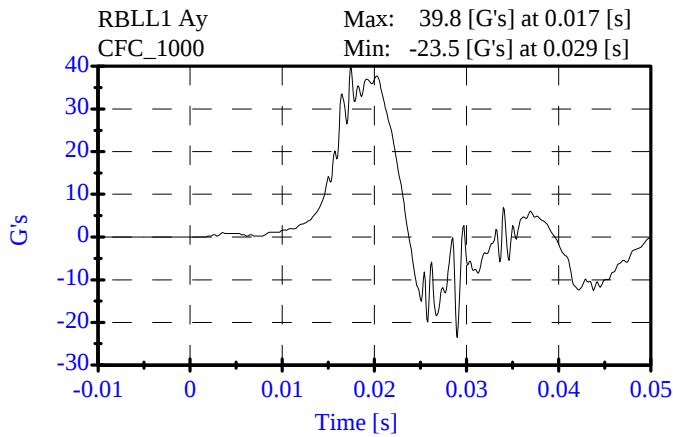
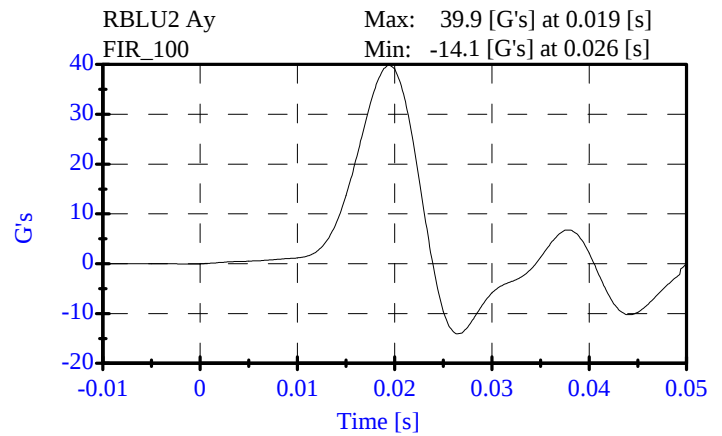
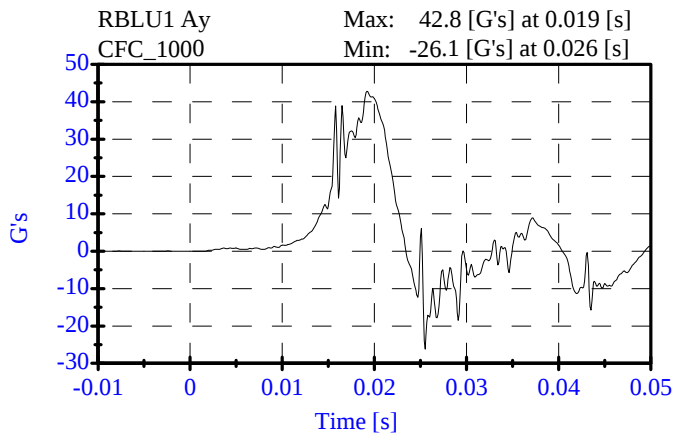
ATD Serial No: 270

Date: 09-10-08

Sequential Test Number: 1 File: 270T 09-10-08

Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	18.9-25.5 C	21.1 C	Passed
Lab Humidity:	10-70 %	48.00 %	Passed
Probe Velocity:	4.27- 4.33 m/s	4.28 m/s	Passed
Upper Rib Acceleration:	37.00-46.00 G's	39.95 G's	Passed
Lower Rib Acceleration:	37.00-46.00 G's	38.65 G's	Passed
Lower Spine Acceleration:	15.00-22.00 G's	19.59 G's	Passed



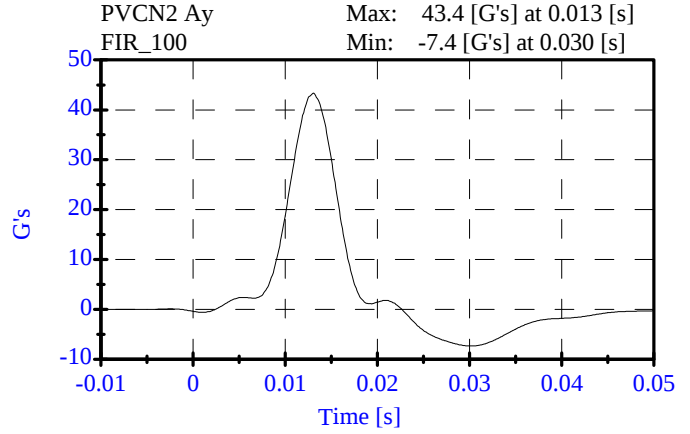
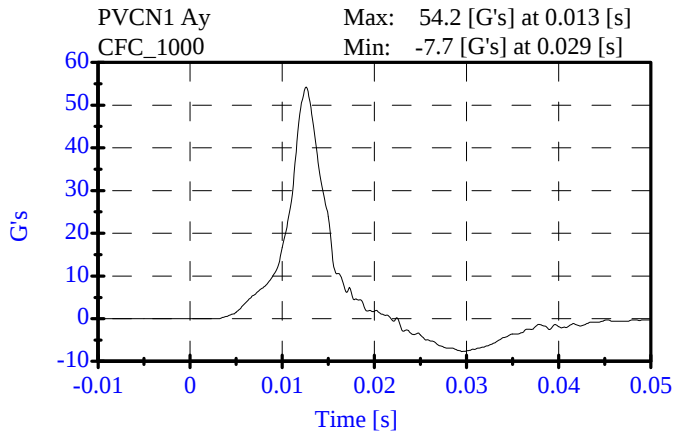
Pelvis Impact **Post-Test**

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 270
Date: 09-10-08

Sequential Test Number: 1 File: 270P 09-10-08
Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	18.9-25.5 C	21.1 C	Passed
Lab Humidity:	10-70 %	46.00 %	Passed
Probe Velocity:	4.27- 4.33 m/s	4.30 m/s	Passed
Pelvis Y Acceleration:	40.00-60.00 G's	43.40 G's	Passed
Time Above 20 Gs	3.0-7.0 ms	5.8 ms	Passed



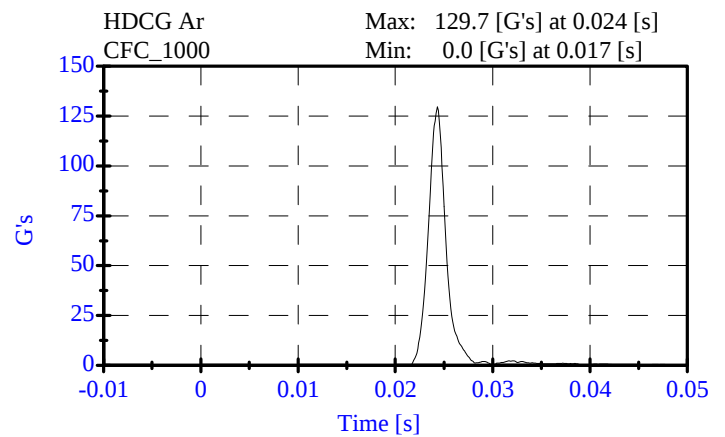
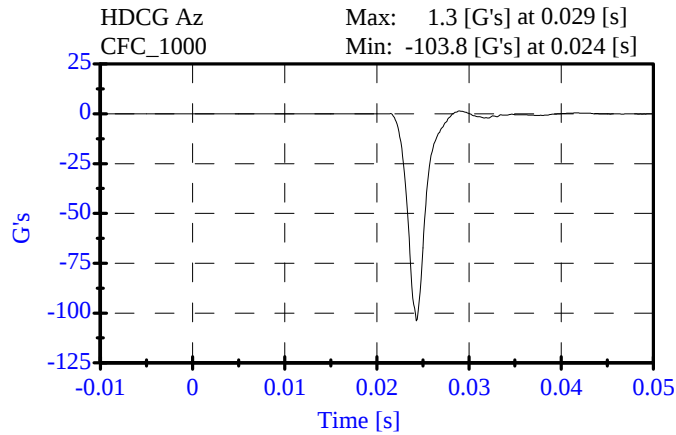
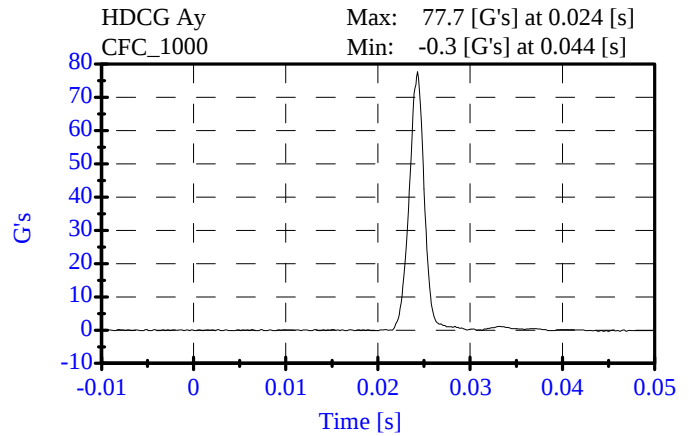
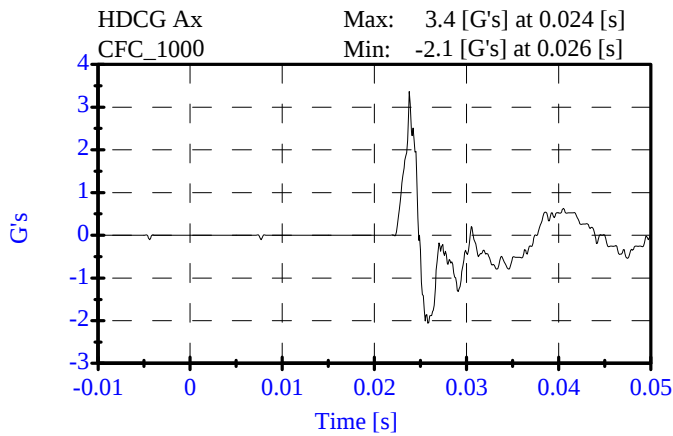
Head Drop Post-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 270
Date: 09-05-08

Sequential Test Number: 1 File: 270hd 09-05-08
Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	18.9-25.6 C	21.1 C	Passed
Lab Humidity:	10-70 %	52.00 %	Passed
Peak Resultant Accel.:	120-150 Gs	129.68 Gs	Passed
Peak Lateral Accel.:	15 Gs Max	3.36 Gs	Passed
Curve PerCent NonModal:	< 15%	1.77 %	Passed



Neck Test**Post-Test****CONFIGURED FOR LEFT SIDE IMPACT**

ATD Serial No: 270

Date: 09-09-08

Sequential Test Number: 1 File: 270N 09-09-08

Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	20.6-22.2 C	21.7 C	Passed
Lab Humidity:	10-70 %	58.00 %	Passed
Impact Velocity:	6.89- 7.13 m/s	7.00 m/s	Passed
PENDULUM DELTA V			
Delta V at 10 ms:	1.96- 2.55 m/s	2.12 m/s	Passed
Delta V at 20 ms:	4.12- 5.10 m/s	4.40 m/s	Passed
Delta V at 30 ms:	5.73- 7.01 m/s	6.37 m/s	Passed
Delta V between 40-70 ms:	6.27- 7.64 m/s	7.19 m/s	Passed
D PLANE ROTATION			
Maximum Rotation:	66.0-82.0 Deg	71.30 Deg	Passed
Rotation Angle Decay:	58.0-67.0 ms	59.10 ms	Passed
MOMENT ABOUT THE OCCIPITAL CONDYLE			
Max Occipital Moment:	73.00- 88.00 N-m	84.57 N-m	Passed
Occipital Moment Decay:	49.0-64.0 ms	52.80 ms	Passed
HEAD ROTATION TIME WITH RESPECT TO THE OCCIPITAL CONDYLE MOMENT			
Moment to Rotation Peak:	2.0-16.0 ms	9.40 ms	Passed

Neck Test

Post-Test

CONFIGURED FOR LEFT SIDE IMPACT

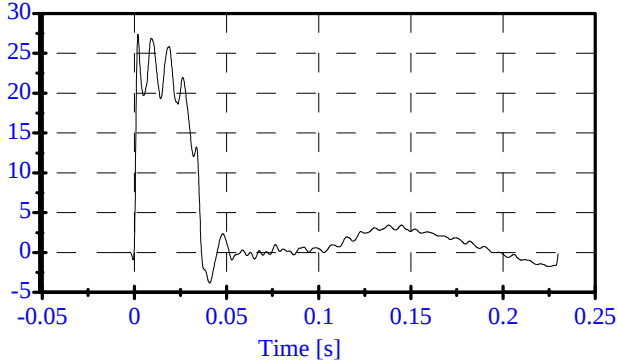
ATD Serial No: 270

Date: 09-09-08

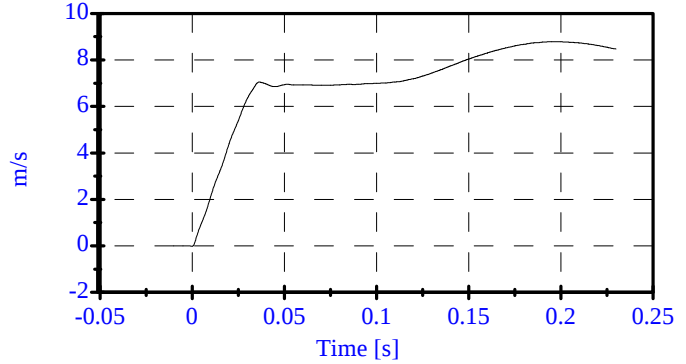
Sequential Test Number: 1 File: 270N 09-09-08

Laboratory Technician: B. Swiecicki

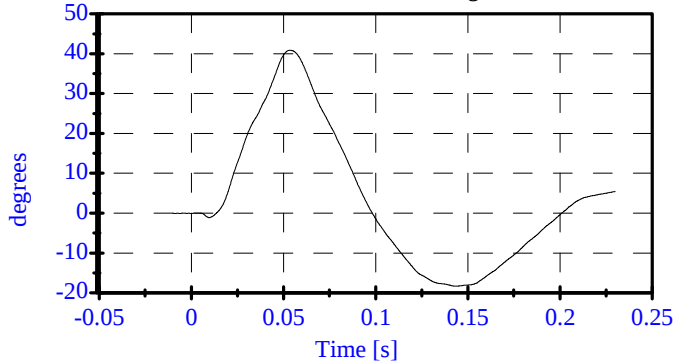
Pend Ax
CFC_180
Max: 27.4 [] at 0.002 [s]
Min: -3.8 [] at 0.041 [s]



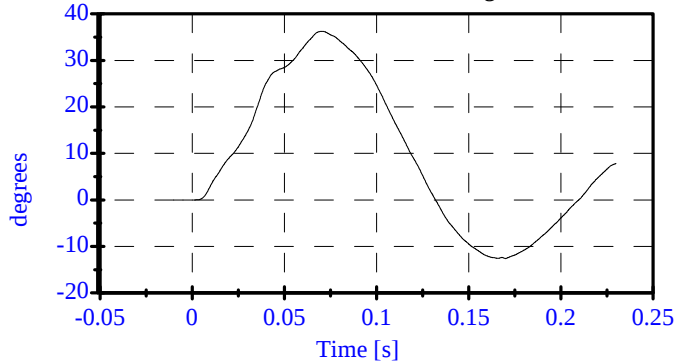
Pend Vx
CFC_180
Max: 8.8 [m/s] at 0.199 [s]
Min: -0.0 [m/s] at -0.000 [s]



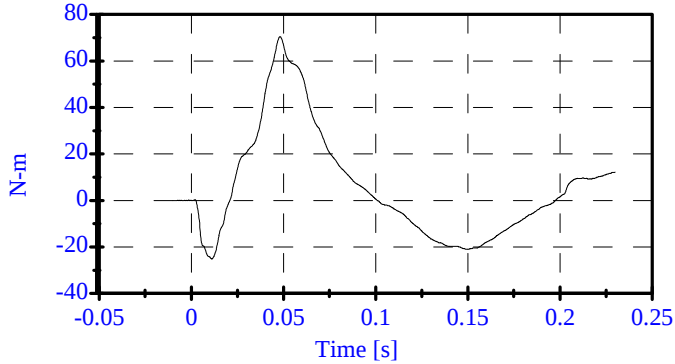
Head Rot
CFC_180
Max: 40.9 [degrees] at 0.054 [s]
Min: -18.3 [degrees] at 0.143 [s]



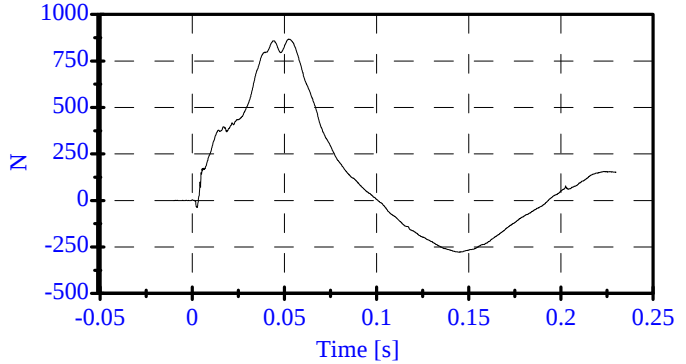
Arm Rot
CFC_180
Max: 36.3 [degrees] at 0.070 [s]
Min: -12.6 [degrees] at 0.170 [s]



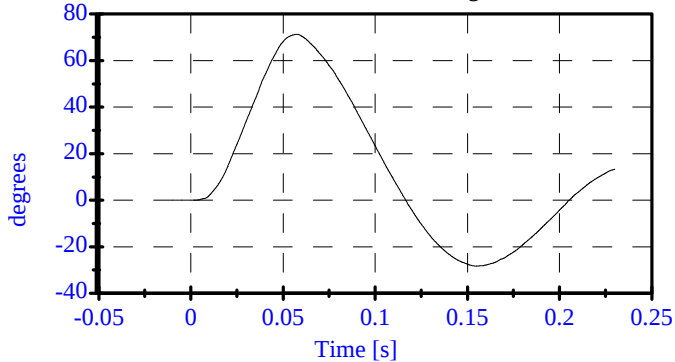
Neck Mx
CFC_600
Max: 70.4 [N-m] at 0.048 [s]
Min: -25.2 [N-m] at 0.011 [s]



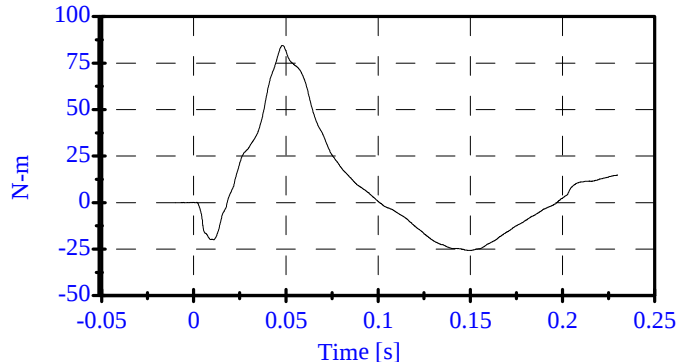
Neck Fy
CFC_1000
Max: 867.6 [N] at 0.052 [s]
Min: -278.1 [N] at 0.145 [s]



Tot Rot
CFC_180
Max: 71.3 [degrees] at 0.057 [s]
Min: -28.3 [degrees] at 0.155 [s]



MOCX
Max: 84.6 [N-m] at 0.048 [s]
Min: -25.7 [N-m] at 0.149 [s]



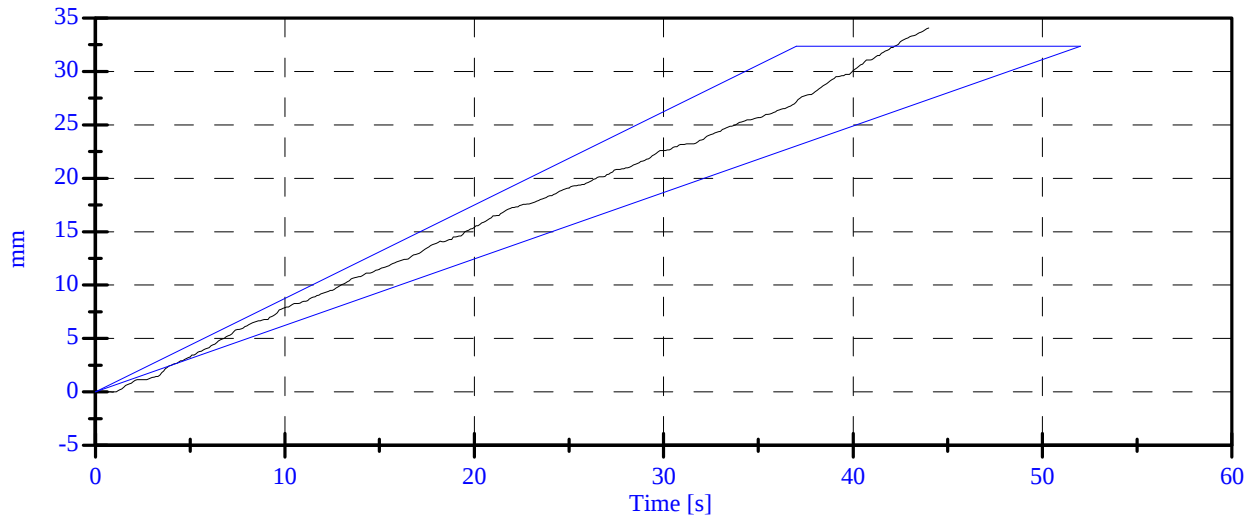
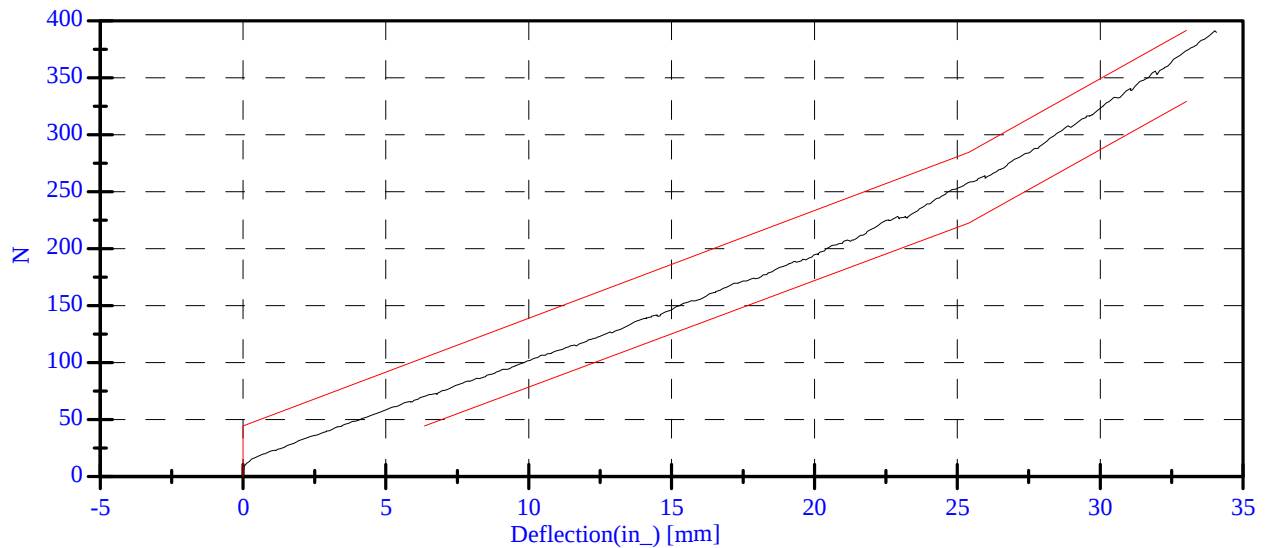
Abdominal Compression Test
Post-Test
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 270
Date: 09-10-08

Sequential Test Number: 1 File: 270 Ab 09-10-08
Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	49.00 %	Passed
Force at 12.95 mm :	104.00-162.00 N	126.47 N	Passed
Force at 19.05 mm :	162.98-220.99 N	185.97 N	Passed
Force at 25.40 mm :	221.97-280.02 N	258.25 N	Passed
Force at 33.02 mm :	324.99-391.00 N	373.60 N	Passed

ABDOMINAL COMPRESSION TEST



Lumbar Spine Test

Post-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 270

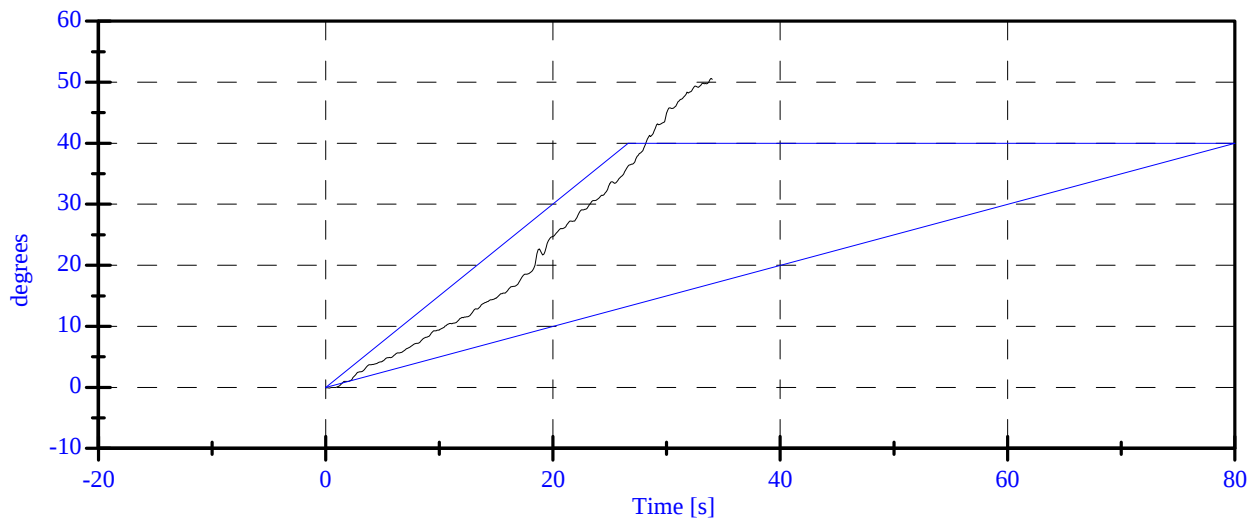
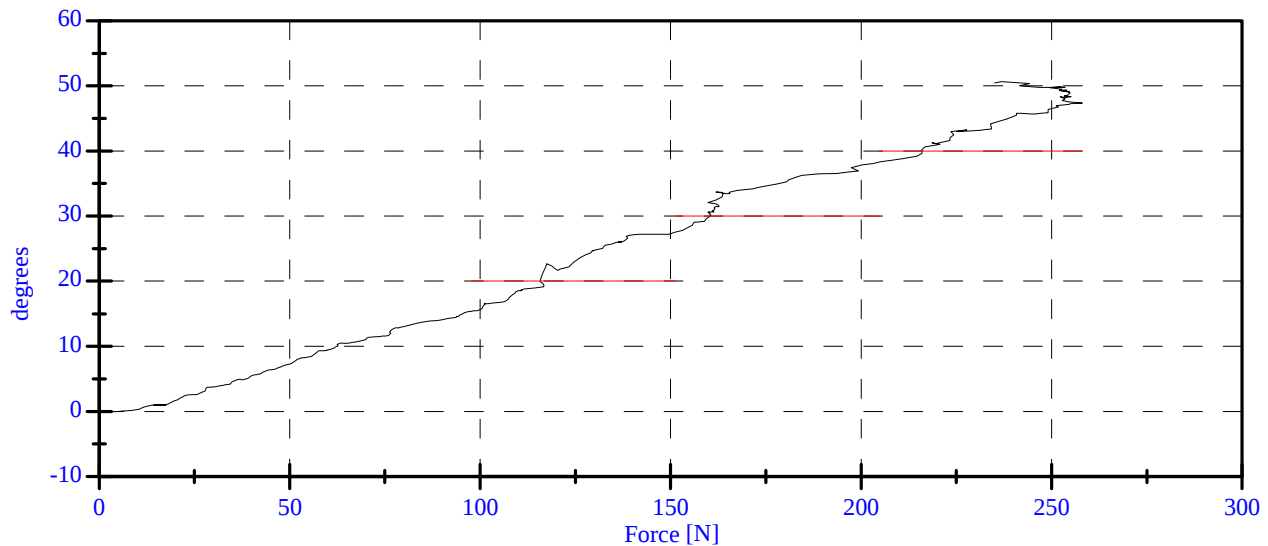
Date: 09-10-08

Sequential Test Number: 1 File: 270 Spine 09-10-08

Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	18.9-25.5 C	21.1 C	Passed
Lab Humidity:	10-70 %	48.00 %	Passed
Force at 0 Deg:	0.00-26.69 N	1.30 N	Passed
Force at 20 Deg:	97.86-151.24 N	115.69 N	Passed
Force at 30 Deg:	151.24-204.62 N	160.35 N	Passed
Force at 40 Deg:	204.62-258.00 N	215.97 N	Passed
Return Angle	12 Deg Max	8.09 deg	Passed

LUMBAR SPINE FLEXION TEST



POST TEST DUMMY INSPECTION LIST
CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 270 Sequential Test Number: 1
 Date: September 4, 2008 Laboratory Technician: B. Swiecicki

PART	ITEMS CHECKED	COMMENTS
SKIN	VISUAL INSPECTION	OK
HEAD	VISUAL, BALLAST, ACCELEROMETER MOUNT	OK
NECK	VISUAL, CABLE TORQUE	OK
SPINE BOX	VISUAL, BALLAST, WELDMENT, ACCELEROMETER MOUNT	OK
RIB CAGE	VISUAL, MEASURE, STIFFENERS	OK
STERNUM	VISUAL	OK
LUMBAR SPINE	VISUAL	OK
ABDOMEN	VISUAL	OK
PELVIS	VISUAL, PALPATE, ACCELEROMETER MOUNT	OK
UPPER LEGS	VISUAL	OK
KNEES	VISUAL, STOPS, INSERTS	OK
LOWER LEGS	VISUAL, RANGE OF MOTION	OK
ANKLES	VISUAL, RANGE OF MOTION	OK
FEET	VISUAL, RANGE OF MOTION	OK
JOINTS	1 TO 2 g RANGE	OK
OTHER	NONE	-

REMARKS: None

CALIBRATION TEST RESULTS

POST TEST

SID H3 NO.: 269

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 269 Sequential Test Number: 1
Date: September 10, 2008 Laboratory Technician: B. Swiecicki

TEST	COMMENTS
EXTERNAL DIMENSIONS	Passed all requirements.
LATERAL THORAX IMPACT TEST	Passed all requirements.
LATERAL PELVIS IMPACT TEST	Passed all requirements.
HEAD DROP TEST*	Passed all requirements.
LATERAL NECK BEND TEST*	Passed all requirements.
ABDOMINAL COMPRESSION TEST*	Passed all requirements.
LUMBAR FLEXION TEST*	Passed all requirements.

* Test not required for SID certification.

REMARKS: None

**EXTERNAL DIMENSIONS
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 269 Sequential Test Number: 1
Date: September 10, 2008 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	899
RH- Rib Height (mm)	502 - 520	505
HP- Hip Pivot Height (mm)	99 ref.	99
RD- Rib from Back Line (mm)	229 - 241	234
KH- Knee Pivot from Back Line (mm)	511 - 526	516
KV- Knee Pivot to Floor (mm)	490 - 505	495
HW- Hip Width (mm)	356 - 391	381

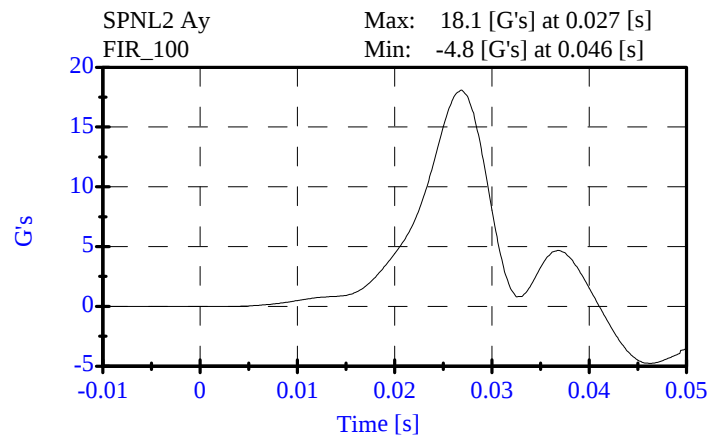
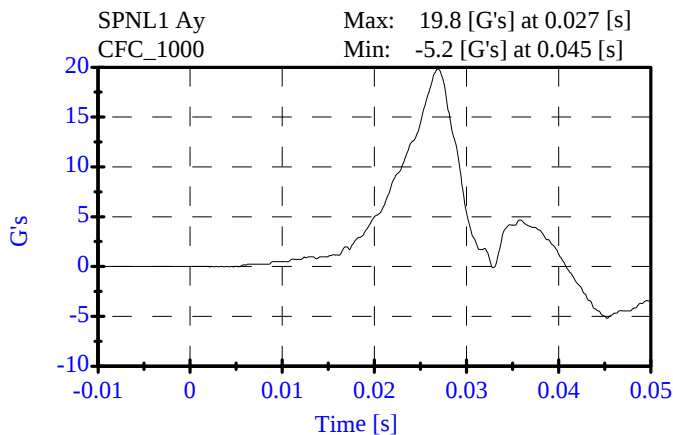
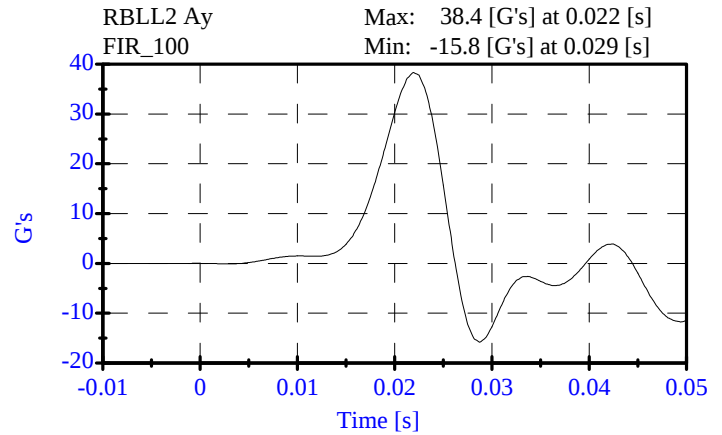
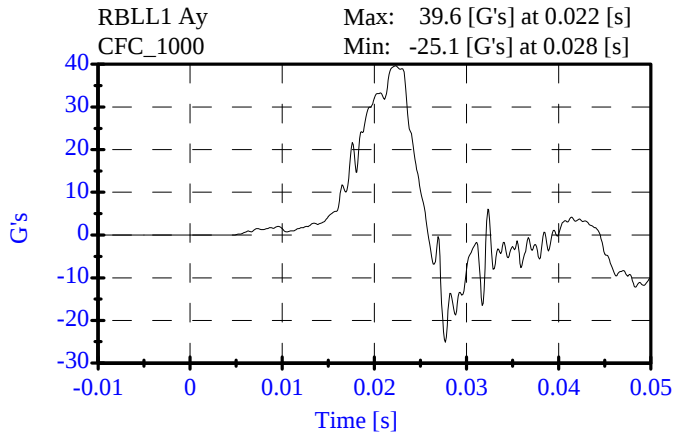
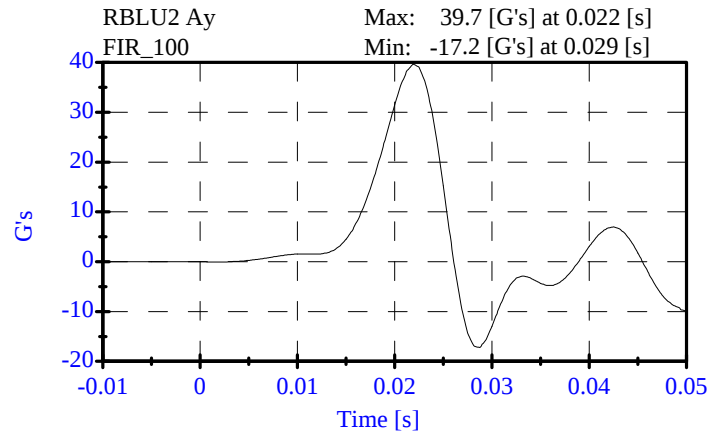
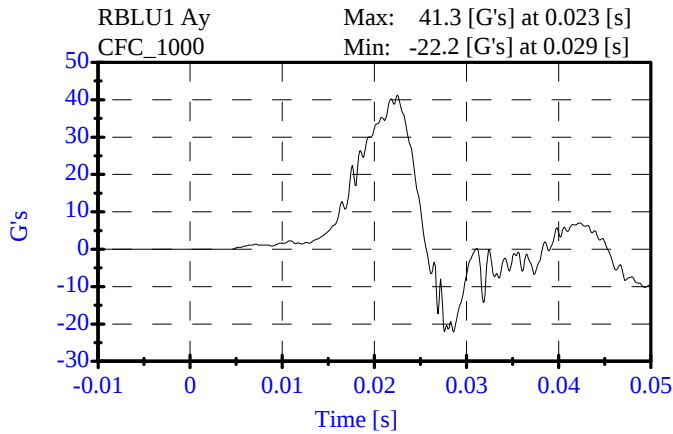
REMARKS: None

Thorax Impact
Post-Test
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 269
Date: 09-10-08

Sequential Test Number: 1 File: 269T1 09-10-08
Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	18.9-25.5 C	21.1 C	Passed
Lab Humidity:	10-70 %	48.00 %	Passed
Probe Velocity:	4.27- 4.33 m/s	4.30 m/s	Passed
Upper Rib Acceleration:	37.00-46.00 G's	39.66 G's	Passed
Lower Rib Acceleration:	37.00-46.00 G's	38.37 G's	Passed
Lower Spine Acceleration:	15.00-22.00 G's	18.11 G's	Passed



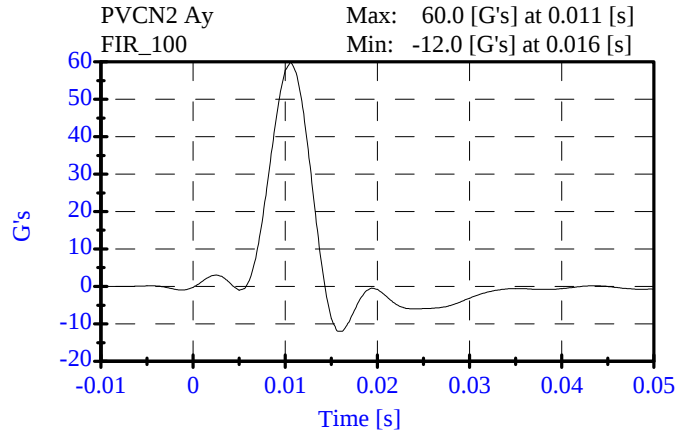
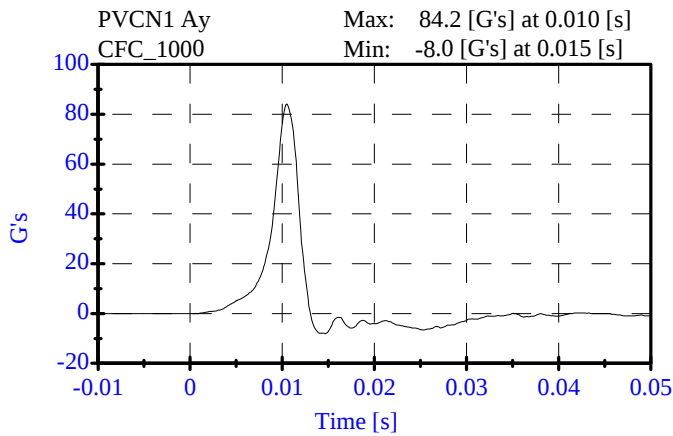
Pelvis Impact Post-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 269
Date: 09-10-08

Sequential Test Number: 1 File: 269P1 09-10-08
Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.5 C	21.1 C	Passed
Lab Humidity:	10-70 %	48.00 %	Passed
Probe Velocity:	4.27- 4.33 m/s	4.29 m/s	Passed
Pelvis Y Acceleration:	40.00-60.00 G's	59.96 G's	Passed
Time Above 20 Gs	3.0-7.0 ms	5.6 ms	Passed



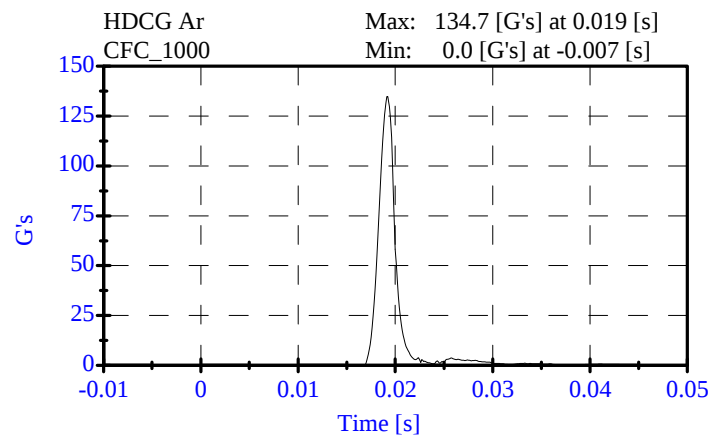
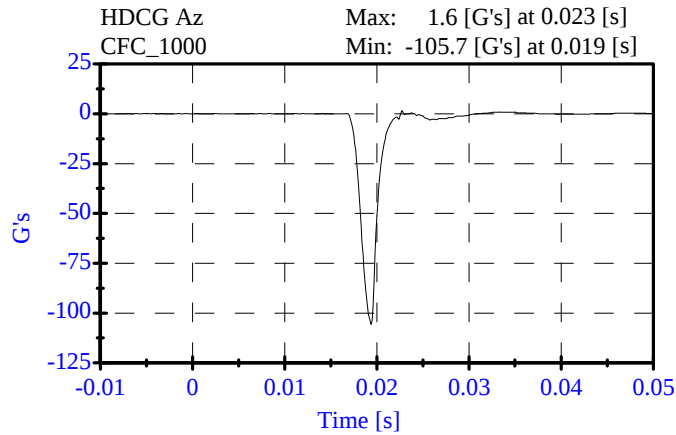
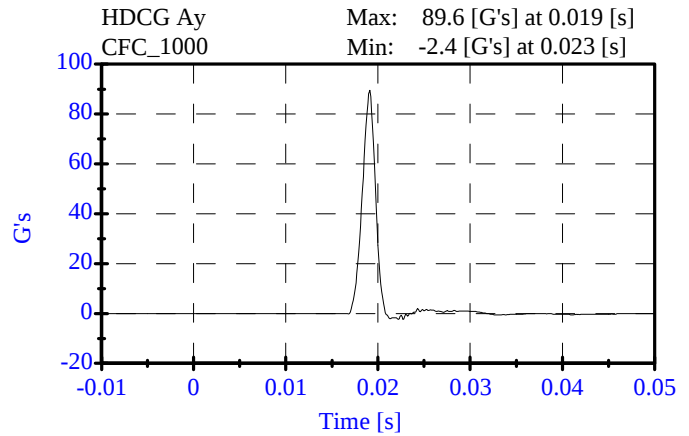
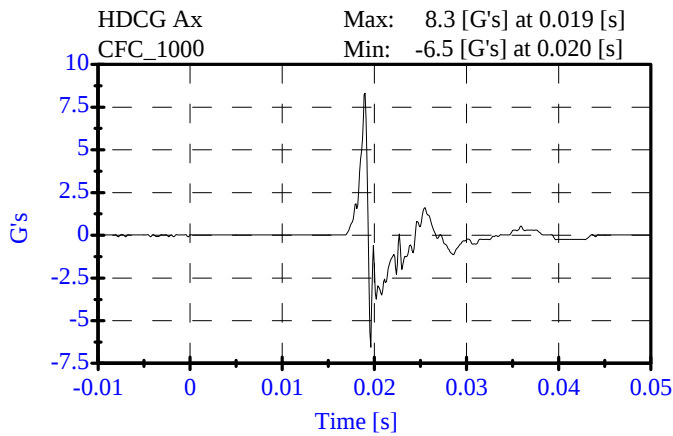
Head Drop Post-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 269
Date: 09-05-08

Sequential Test Number: 1 File: 269HD 09-05-08
Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	18.9-25.6 C	21.1 C	Passed
Lab Humidity:	10-70 %	52.00 %	Passed
Peak Resultant Accel.:	120-150 Gs	134.72 Gs	Passed
Peak Lateral Accel.:	15 Gs Max	8.32 Gs	Passed
Curve PerCent NonModal:	< 15%	2.83 %	Passed



Neck Test**Post-Test****CONFIGURED FOR LEFT SIDE IMPACT**

ATD Serial No: 269

Date: 09-09-08

Sequential Test Number: 1 File: 269N1 09-09-08

Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	20.6-22.2 C	21.7 C	Passed
Lab Humidity:	10-70 %	56.00 %	Passed
Impact Velocity:	6.89- 7.13 m/s	7.00 m/s	Passed
PENDULUM DELTA V			
Delta V at 10 ms:	1.96- 2.55 m/s	2.17 m/s	Passed
Delta V at 20 ms:	4.12- 5.10 m/s	4.47 m/s	Passed
Delta V at 30 ms:	5.73- 7.01 m/s	6.29 m/s	Passed
Delta V between 40-70 ms:	6.27- 7.64 m/s	7.01 m/s	Passed
D PLANE ROTATION			
Maximum Rotation:	66.0-82.0 Deg	73.48 Deg	Passed
Rotation Angle Decay:	58.0-67.0 ms	61.80 ms	Passed
MOMENT ABOUT THE OCCIPITAL CONDYLE			
Max Occipital Moment:	73.00- 88.00 N-m	78.71 N-m	Passed
Occipital Moment Decay:	49.0-64.0 ms	57.90 ms	Passed
HEAD ROTATION TIME WITH RESPECT TO THE OCCIPITAL CONDYLE MOMENT			
Moment to Rotation Peak:	2.0-16.0 ms	10.10 ms	Passed

Neck Test

Post-Test

CONFIGURED FOR LEFT SIDE IMPACT

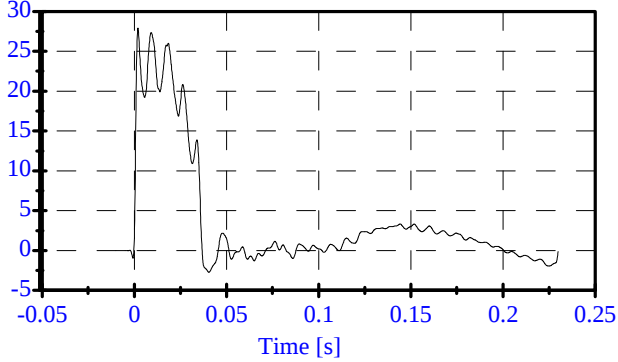
ATD Serial No: 269

Date: 09-09-08

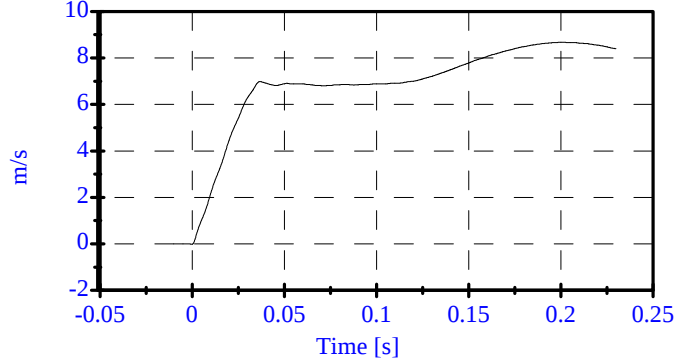
Sequential Test Number: 1 File: 269N1 09-09-08

Laboratory Technician: B. Swiecicki

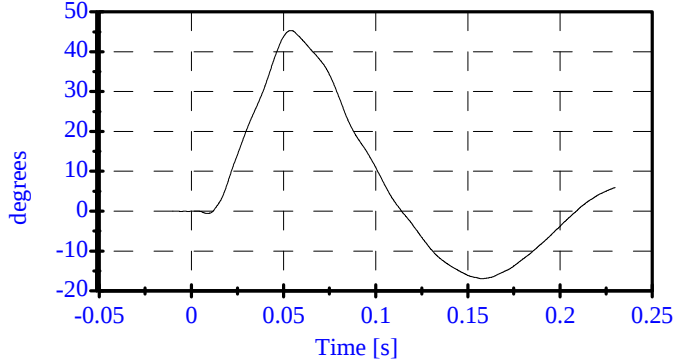
Pend Ax
CFC_180
Max: 27.9 [] at 0.002 [s]
Min: -2.7 [] at 0.040 [s]



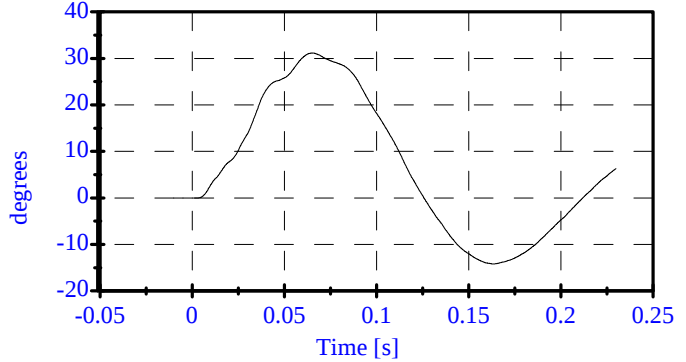
Pend Vx
CFC_180
Max: 8.7 [m/s] at 0.201 [s]
Min: -0.0 [m/s] at -0.000 [s]



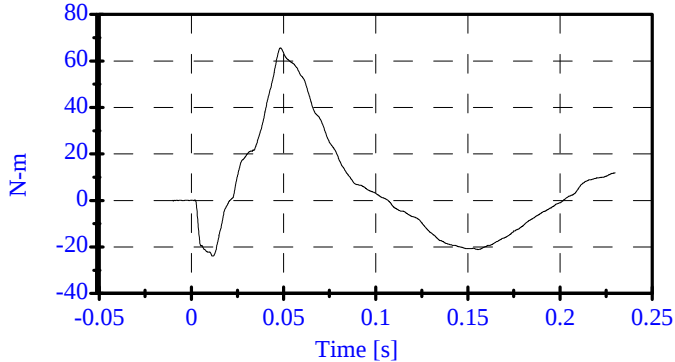
Head Rot
CFC_180
Max: 45.3 [degrees] at 0.054 [s]
Min: -16.9 [degrees] at 0.158 [s]



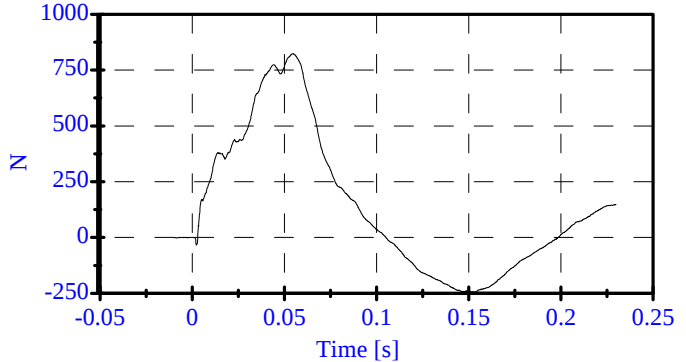
Arm Rot
CFC_180
Max: 31.2 [degrees] at 0.065 [s]
Min: -14.2 [degrees] at 0.163 [s]



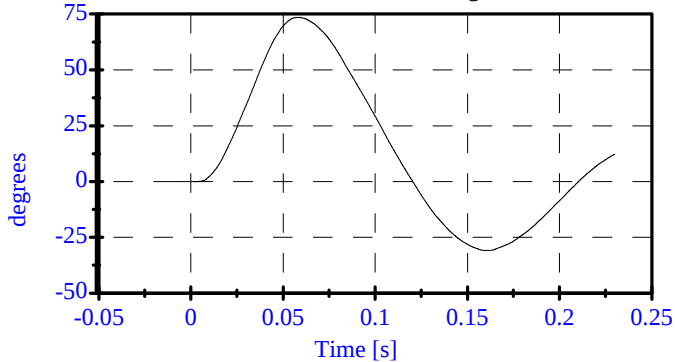
Neck Mx
CFC_600
Max: 65.6 [N-m] at 0.048 [s]
Min: -23.9 [N-m] at 0.012 [s]



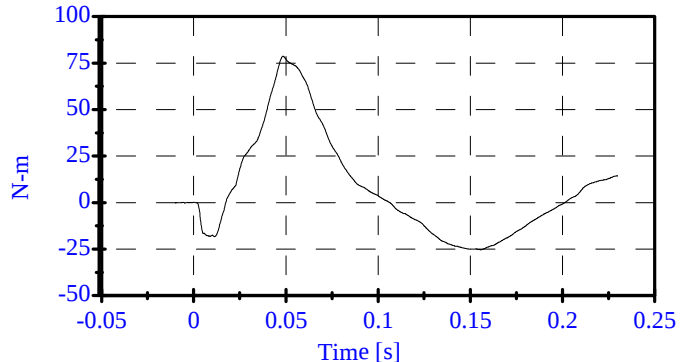
Neck Fy
CFC_1000
Max: 824.5 [N] at 0.054 [s]
Min: -244.0 [N] at 0.153 [s]



Tot Rot
CFC_180
Max: 73.5 [degrees] at 0.059 [s]
Min: -30.8 [degrees] at 0.159 [s]



MOCX
Max: 78.7 [N-m] at 0.049 [s]
Min: -25.4 [N-m] at 0.156 [s]



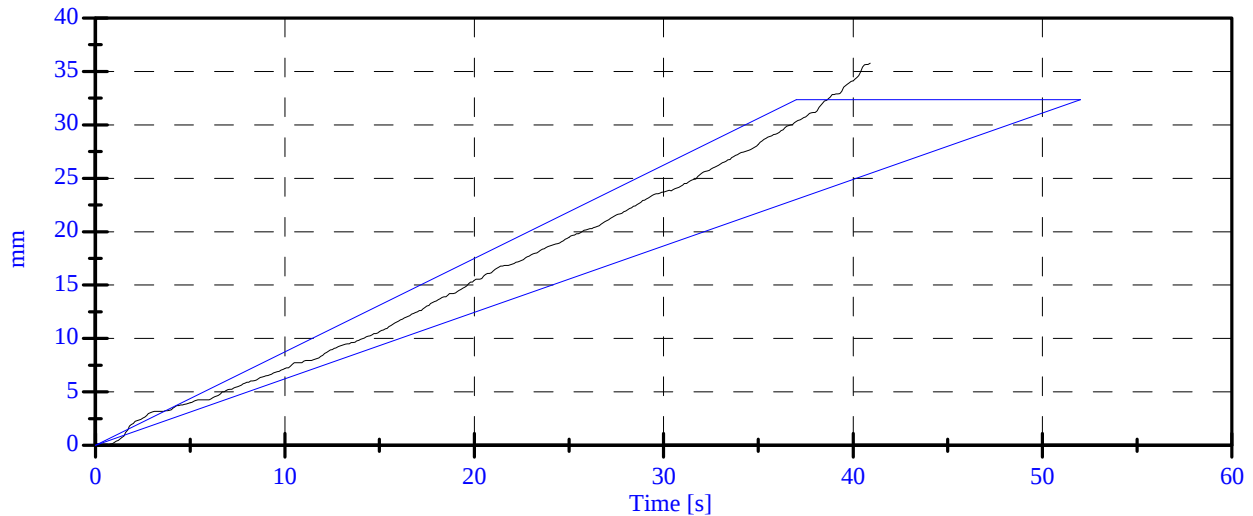
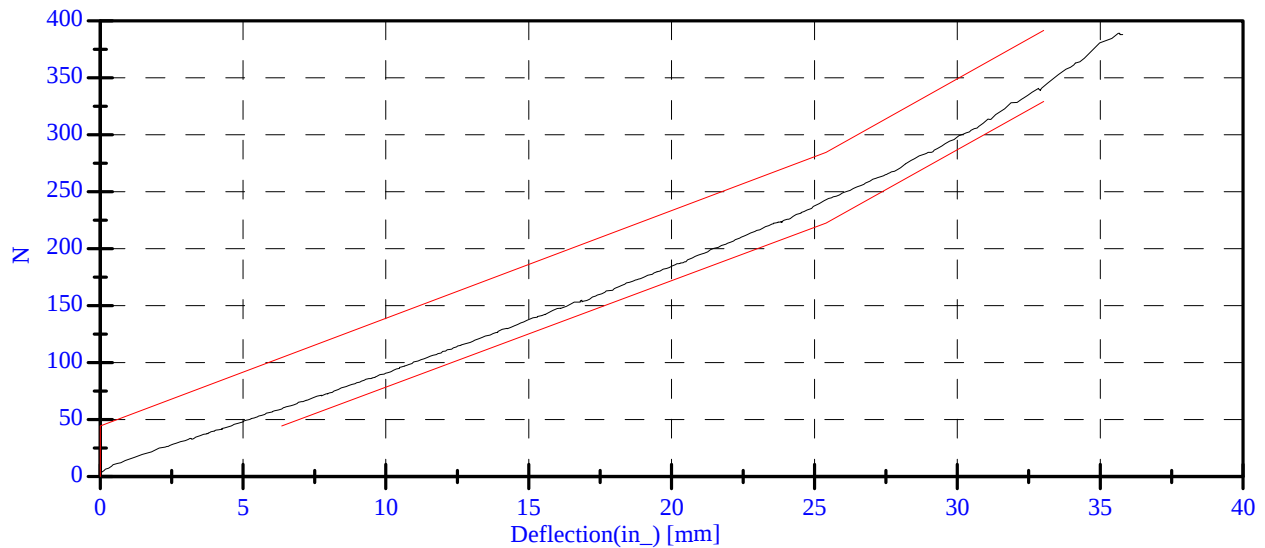
Abdominal Compression Test
Post-Test
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 269
Date: 09-10-08

Sequential Test Number: 1 File: 269 Ab 09-10-08
Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	49.00 %	Passed
Force at 12.95 mm :	104.00-162.00 N	117.71 N	Passed
Force at 19.05 mm :	162.98-220.99 N	175.38 N	Passed
Force at 25.40 mm :	221.97-280.02 N	242.19 N	Passed
Force at 33.02 mm :	324.99-391.00 N	340.75 N	Passed

ABDOMINAL COMPRESSION TEST



Lumbar Spine Test

Post-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 269

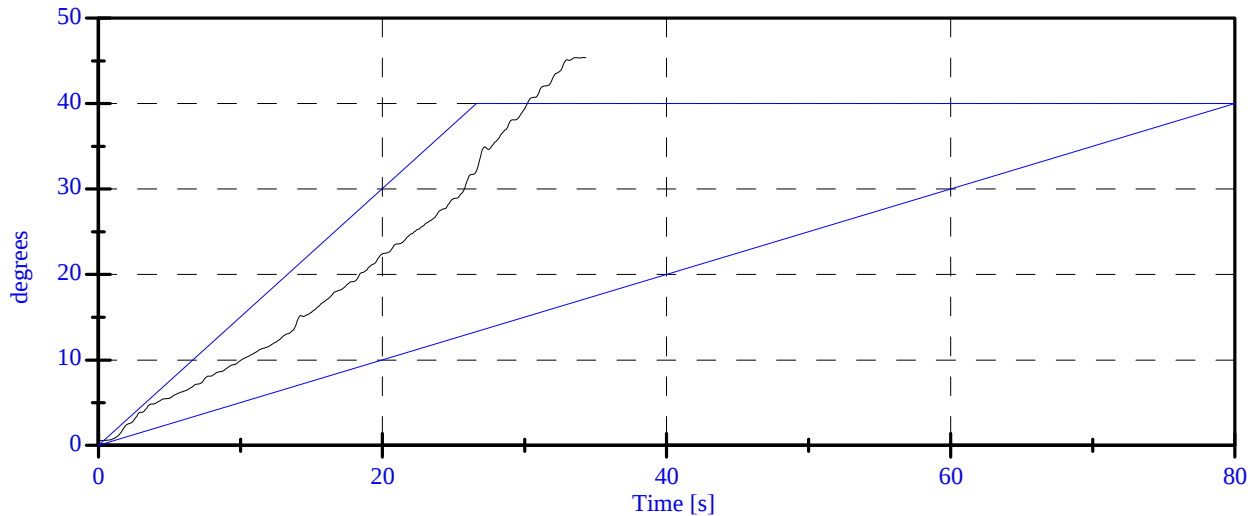
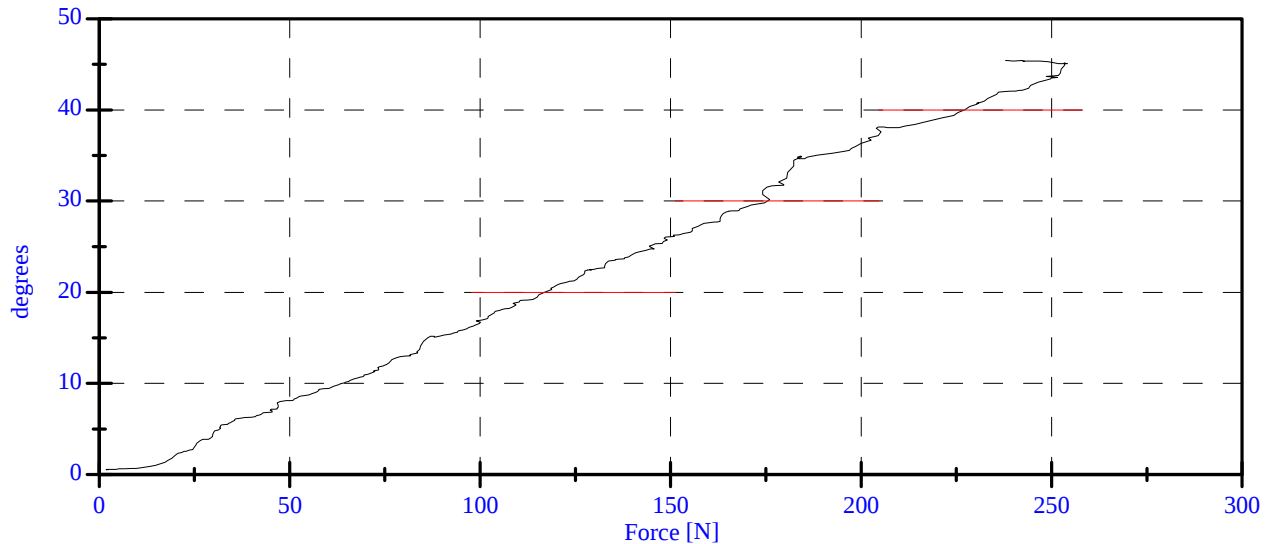
Date: 09-10-08

Sequential Test Number: 1 File: 269 Spine 09-10-08

Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	18.9-25.5 C	21.1 C	Passed
Lab Humidity:	10-70 %	48.00 %	Passed
Force at 0 Deg:	0.00-26.69 N	2.35 N	Passed
Force at 20 Deg:	97.86-151.24 N	117.26 N	Passed
Force at 30 Deg	151.24-204.62 N	176.02 N	Passed
Force at 40 Deg	204.62-258.00 N	227.20 N	Passed
Return Angle	12 Deg Max	7.47 deg	Passed

LUMBAR SPINE FLEXION TEST



POST TEST DUMMY INSPECTION LIST
CONFIGURED FOR LEFT SIDE IMPACT

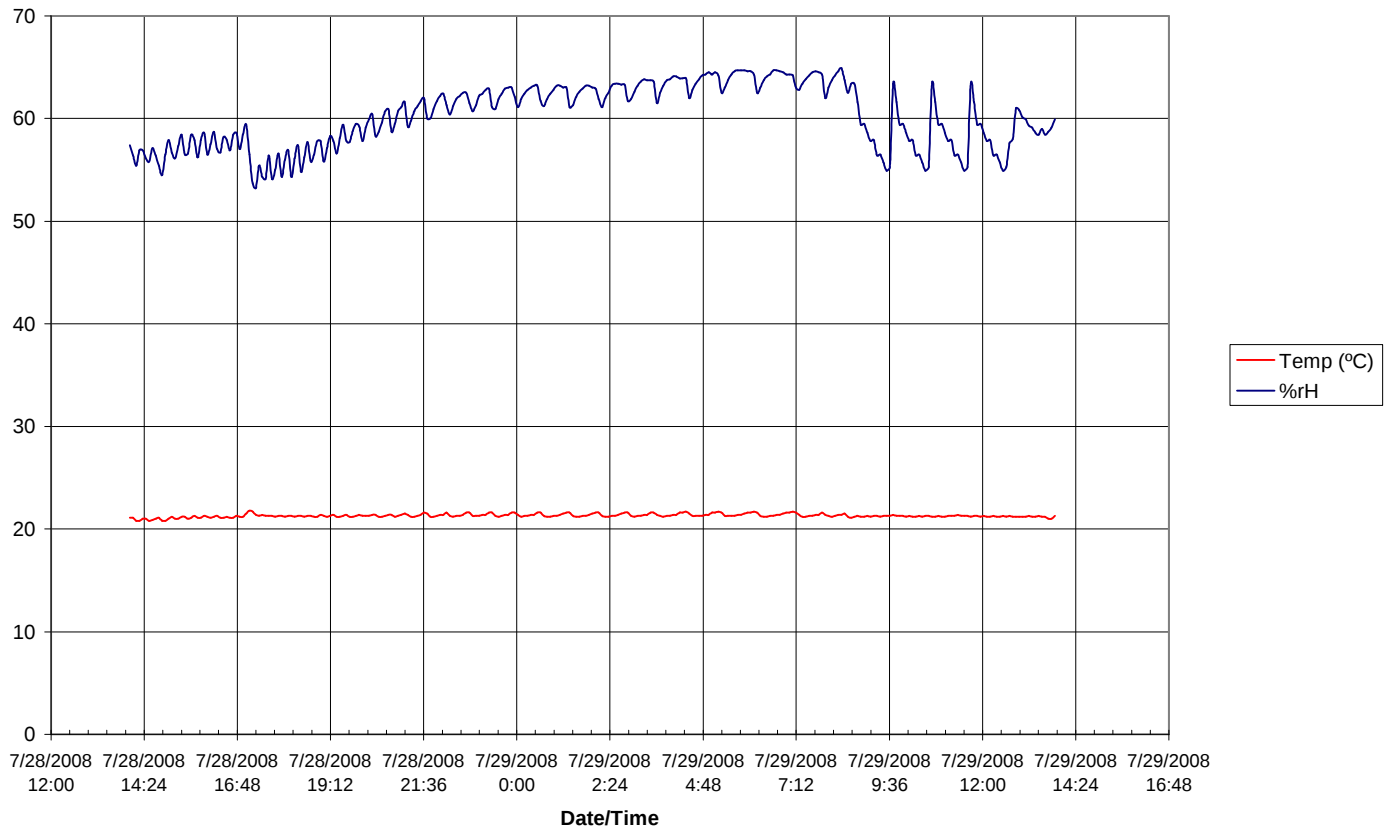
SID H3 Serial No.: 269 Sequential Test Number: 1
Date: September 4, 2008 Laboratory Technician: B. Swiecicki

PART	ITEMS CHECKED	COMMENTS
SKIN	VISUAL INSPECTION	OK
HEAD	VISUAL, BALLAST, ACCELEROMETER MOUNT	OK
NECK	VISUAL, CABLE TORQUE	OK
SPINE BOX	VISUAL, BALLAST, WELDMENT, ACCELEROMETER MOUNT	OK
RIB CAGE	VISUAL, MEASURE, STIFFENERS	OK
STERNUM	VISUAL	OK
LUMBAR SPINE	VISUAL	OK
ABDOMEN	VISUAL	OK
PELVIS	VISUAL, PALPATE, ACCELEROMETER MOUNT	OK
UPPER LEGS	VISUAL	OK
KNEES	VISUAL, STOPS, INSERTS	OK
LOWER LEGS	VISUAL, RANGE OF MOTION	OK
ANKLES	VISUAL, RANGE OF MOTION	OK
FEET	VISUAL, RANGE OF MOTION	OK
JOINTS	1 TO 2 g RANGE	OK
OTHER	NONE	-

REMARKS: None

TEMPERATURE TRACE

2009 Lincoln M90203 Environmental Conditions



APPENDIX D

TEST EQUIPMENT AND CALIBRATION INFORMATION

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

SID/HIII INSTRUMENTATION

	FRONT SID/HIII NO.: 270		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
HEAD AX	AC-P58998	ENDEVCO	07-Mar-08
HEAD AY	AC-P58909	ENDEVCO	07-Mar-08
HEAD AZ	AC-P51279	ENDEVCO	01-Apr-08
HEAD AX REDUNDANT	AC-P58780	ENDEVCO	06-Mar-08
HEAD AY REDUNDANT	AC-P58997	ENDEVCO	07-Mar-08
HEAD AZ REDUNDANT	AC-P58912	ENDEVCO	07-Mar-08
UPPER NECK FX	LC-498Fx	DENTON	03-Apr-08
UPPER NECK FY	LC-498Fy	DENTON	03-Apr-08
UPPER NECK FZ	LC-498Fz	DENTON	03-Apr-08
UPPER NECK MX	LC-498Mx	DENTON	03-Apr-08
UPPER NECK MY	LC-498My	DENTON	03-Apr-08
UPPER NECK MZ	LC-498Mz	DENTON	03-Apr-08
UPPER RIB	AC-P51969	ENDEVCO	01-Apr-08
LOWER RIB	AC-P51959	ENDEVCO	01-Apr-08
LOWER SPINE	AC-P51970	ENDEVCO	01-Apr-08
PELVIS	AC-P51946	ENDEVCO	01-Apr-08
UPPER RIB REDUNDANT	AC-P51948	ENDEVCO	01-Apr-08
LOWER RIB REDUNDANT	AC-P51238	ENDEVCO	04-Apr-08
LOWER SPINE REDUNDANT	AC-P51965	ENDEVCO	01-Apr-08
PELVIS REDUNDANT	AC-P51945	ENDEVCO	01-Apr-08

	REAR SID/HIII NO.: 269		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
HEAD AX	AC-P52088	ENDEVCO	18-Feb-08
HEAD AY	AC-P52095	ENDEVCO	18-Feb-08
HEAD AZ	AC-P58986	ENDEVCO	07-Mar-08
HEAD AX REDUNDANT	AC-P58908	ENDEVCO	22-Feb-08
HEAD AY REDUNDANT	AC-P59021	ENDEVCO	10-Mar-08
HEAD AZ REDUNDANT	AC-P58794	ENDEVCO	07-Mar-08
UPPER NECK FX	LC-810Fx	DENTON	08-Nov-07
UPPER NECK FY	LC-810Fy	DENTON	08-Nov-07
UPPER NECK FZ	LC-810Fz	DENTON	08-Nov-07
UPPER NECK MX	LC-810Mx	DENTON	08-Nov-07
UPPER NECK MY	LC-810My	DENTON	08-Nov-07
UPPER NECK MZ	LC-810Mz	DENTON	08-Nov-07
UPPER RIB	AC-P49467	ENDEVCO	22-Feb-08
LOWER RIB	AC-P51734	ENDEVCO	22-Feb-08
LOWER SPINE	AC-P51689	ENDEVCO	22-Feb-08
PELVIS	AC-P58762	ENDEVCO	29-Feb-08
UPPER RIB REDUNDANT	AC-P51713	ENDEVCO	22-Feb-08
LOWER RIB REDUNDANT	AC-P59020	ENDEVCO	22-Feb-08
LOWER SPINE REDUNDANT	AC-P58776	ENDEVCO	18-Feb-08
PELVIS REDUNDANT	AC-P58905	ENDEVCO	22-Feb-08

REMARKS: None

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

VEHICLE AND MDB INSTRUMENTATION

	VEHICLE AND MDB INSTRUMENTS		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
RIGHT FRONT SILL (X)	AC-P35811	ENDEVCO	11-Jul-08
RIGHT FRONT SILL (Y)	AC-P35803	ENDEVCO	11-Jul-08
RIGHT FRONT SILL (Z)	AC-P35789	ENDEVCO	11-Jul-08
RIGHT REAR SILL (X)	AC-P32464	ENDEVCO	28-Feb-08
RIGHT REAR SILL (Y)	AC-P32139	ENDEVCO	01-Feb-08
RIGHT REAR SILL (Z)	AC-P32455	ENDEVCO	01-Feb-08
REAR FLOORPAN ABOVE AXLE (X)	AC-P23993	ENDEVCO	01-Feb-08
REAR FLOORPAN ABOVE AXLE (Y)	AC-P23164	ENDEVCO	01-Feb-08
REAR FLOORPAN ABOVE AXLE (Z)	AC-P23939	ENDEVCO	01-Feb-08
LEFT REAR SILL (Y)	AC-P35757	ENDEVCO	19-Jun-08
LEFT FRONT SILL (Y)	AC-J25745	ENDEVCO	07-Feb-08
RIGHT REAR SEAT OCCUPANT COMP. (Y)	AC-P24145	ENDEVCO	11-Apr-08
LOWER LEFT B- PILLAR (Y)	AC-P23139	ENDEVCO	11-Jul-08
MIDDLE LEFT B-PILLAR (Y)	AC-P19343	ENDEVCO	11-Jul-08
LOWER LEFT A-PILLAR (Y)	AC-P16645	ENDEVCO	11-Jul-08
UPPER LEFT A-PILLAR (Y)	AC-P23156	ENDEVCO	16-Jun-08
FRONT SEAT TRACK (Y)	AC-P23288	ENDEVCO	11-Jul-08
REAR SEAT TRACK (Y)	AC-P26266	ENDEVCO	11-Jul-08
VEHICLE CG (X)	AC-P15526	ENDEVCO	11-Jul-08
VEHICLE CG (Y)	AC-P16656	ENDEVCO	11-Jul-08
VEHICLE CG (Z)	AC-P39575	ENDEVCO	11-Jul-08
MDB CG (X)	AC-C15007	ENDEVCO	05-Jun-08
MDB CG (Y)	AC-GE16	ENDEVCO	05-Jun-08
MDB CG (Z)	AC-C16499	ENDEVCO	05-Jun-08
MDB REAR FRAME MEMBER (X)	AC-C14948	ENDEVCO	05-Jun-08
MDB REAR FRAME MEMBER (Y)	AC-C16680	ENDEVCO	05-Jun-08

REMARKS: None