REPORT NUMBER: SNCAP-CAL-07-02

NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TEST

Toyota Motor Corporation
2008 Scion xD
4-door

NHTSA NUMBER: M85114

PREPARED BY:
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Test Date: September 18, 2007

FINAL REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
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Technical Report Documentation Page

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15. *Supplementary Notes*

16. Abstract

A 55/28 kph 90^0 Impact Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2008 Scion xD 4-door 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 September 18, 2007.The impact velocity of the Moving Deformable Barrier (MDB) was 61.64 km/h, and the ambient temperature at the struck side (driver side) of the vehicle was 21°C. The target vehicle's maximum post test static crush was 199 mm at level 3. The test vehicle's occupant performance is as follows:

	DRIVER	PASS.
Left Upper Rib (LUR) Accel., g	57.95	36.16
Left Lower Rib (LLR) Accel., g	54.79	40.69
Lower Spine (T_{12}) Accel., g	45.12	73.87
Thoracic Trauma Index (TTI)	52	57
Pelvis (PEV) Accel., g	50	76
HIC	126.1	338.0

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.

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, Room 5111 (NAD-52) 400 Seventh Street, S.W. Washington, D.C. 20590

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SECTION 1

PURPOSE AND TEST PROCEDURE

PURPOSE

This side impact test was conducted as part of the FY' 2006 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 2008 Scion xD 4-door manufactured by Toyota Motor Corporation. 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 2008 Scion xD 4-door 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 61.64 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 1402 kg and the test weight of the MDB was 1362.5 kg. The test was conducted at the Calspan Corporation Transportation Sciences Center on September 18, 2007.

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 199 mm at level 3, 1350 mm rearward of the left vertical impact point. The driver and passenger SID/HIII's, Serial Nos. 905 and 906 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	126.1	36.1	68.3	52	50
Passenger	338.0	41.6	63.1	57	76

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:	2008 Scion xD	NHTSA No.	M85114
Test Program:	NCAP Side Impact	Test Date:	September 18, 2007

TEST VEHICLE INFORMATION AND VEHICLE OPTIONS

Make	Toyota Motor Corporation	Driver Front Airbag	Yes
Model	xD	Driver Side Curtain Airbag	Yes
Body Style	4-door	Driver Side Torso Airbag	Yes
NHTSA No.	M85114	Driver Pretensioners	Yes
VIN	JTKKU10498J000664	Driver Load Limiters	Yes
Color	Gray	Driver Power Seats	No
Engine Disp.(L)	1.8	Rear Pass. Side Curtain Airbag	Yes
Engine Cylinders	4	Rear Pass. Side Torso Airbag	No
Engine Placement	Lateral	Rear Pass. Pretensioners	No
Transmission Type	Automatic	Rear Pass. Load Limiters	No
Transmission Speeds	4	Rear Pass. Power Seats	NA
Final Drive	Front	Tilt Wheel	Yes
Air Conditioning	Yes	Anti-lock Brakes	Yes
Power Steering	Yes	Traction Control	No
Power Brakes	Yes	Power Windows	Yes
Delivery Date	8/28/07	Power Door Locks	Yes
Odometer Reading (km)	18	Automatic Door Locks (ADL)	No
Dealer	West Herr Scion	Owner's Manual Details Instructions on Disabling ADLs	NA

DATA FROM CERTIFICATION LABEL

Manufactured By	Toyota Motor Corporation	GVWR (kg)	1635
		GAWR Front (kg)	896
Date of Manufacture	06/07	GAWR Rear (kg)	817

VEHICLE CAPACITY DATA

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench		
Number Of Occupants	2	3		5
Capacity Wt. (VCW) (kg)				383
Cargo Wt. (RCLW) (kg)				42.8

DATA SHEET NO. 1 (continued)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle:	2008 Scion xD	NHTSA No.	M85114
Test Program:	NCAP Side Impact	Test Date:	September 18, 2007

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	372.5	234.0		428.0	315.5		413	314	
Right	kg	355.5	238.0		368.0	296.5		375	300	
Ratio	%	60.7	39.3		56.5	43.5		56.2	43.8	
Totals	kg	728.0	472.0	1200.0	796.0	612.0	1408.0	788.0	614.0	1402.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1200
Weight of 2 P572E ATDs (81.2 kg each)	kg	162.4
Rated Cargo/Luggage Weight (RCLW)	kg	42.8
Calculated Vehicle Target Weight (TVTW)	kg	1405.2

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

Weight of Ballast (including instrumentation package and cameras): 39.6 kg

TEST VEHICLE ATTITUDES

	Units	LF	RF	LR	RR
As Delivered	mm	694	699	697	702
Fully Loaded	mm	673	664	684	676
As Tested	mm	679	664	684	676

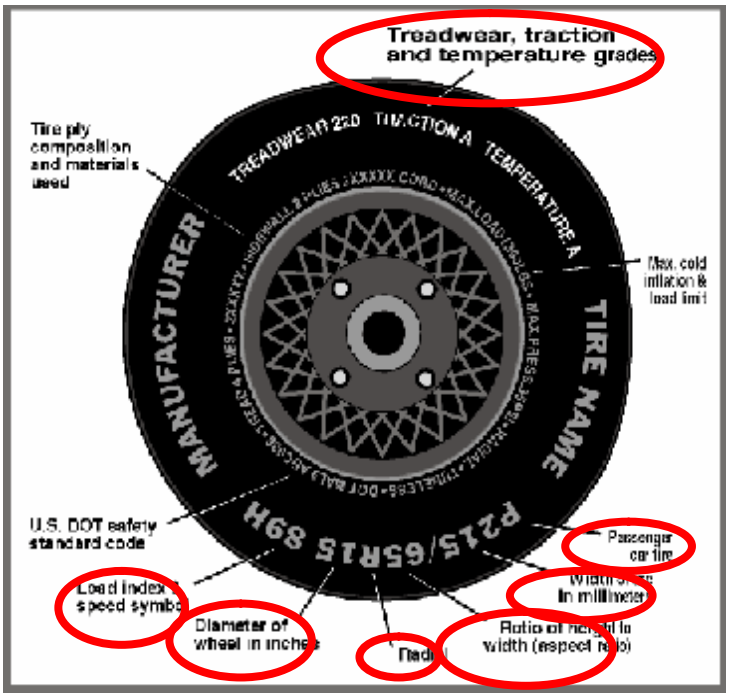
TEST VEHICLE VERTICAL IMPACT LINE AND CG

Measurement Description	Units	Value
Test Vehicle Wheel Base	mm	2458
Target Impact Point Aft of Front Axle	mm	289
Actual Impact Point Aft of Front Axle	mm	4
As Tested CG (aft of front axle)	mm	1076

DATA SHEET NO. 2

TEST VEHICLE TIRE INFORMATION

Test Vehicle:	2008 Scion xD	NHTSA No.	M85114
Test Program:	NCAP Side Impact	Test Date:	September 18, 2007



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	350	350
Cold / Test Pressure (kPa)	230	230
Recommended Tire Size	P195/60R16	P195/60R16
Tire Size on Vehicle	P195/60R16	P195/60R16
Tire Manufacturer	DUNLOP	DUNLOP
Tire Name	SP SPORT 5000	SP SPORT 5000
Tire Type	P	P
Tire Width (mm)	195	195
Ratio of Height to Width (aspect ratio)	60	60
Radial	Y	Y
Wheel Diameter	16	16
Load Index & Speed Symbol	89H	89H
Treadwear	340	340
Traction Grade	A	A
Temperature Grade	A	A

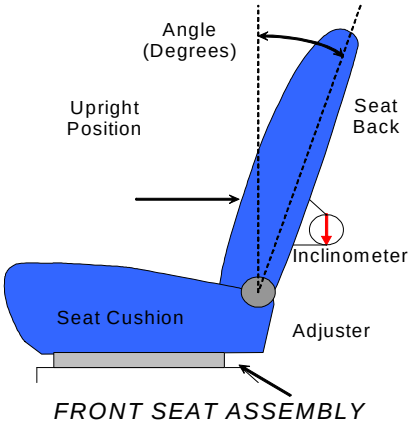
DATA SHEET NO. 3

TEST VEHICLE INFORMATION

Test Vehicle:	2008 Scion xD	NHTSA No.	M85114
Test Program:	NCAP Side Impact	Test Date:	September 18, 2007

NORMAL DESIGN RIDING POSITION

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



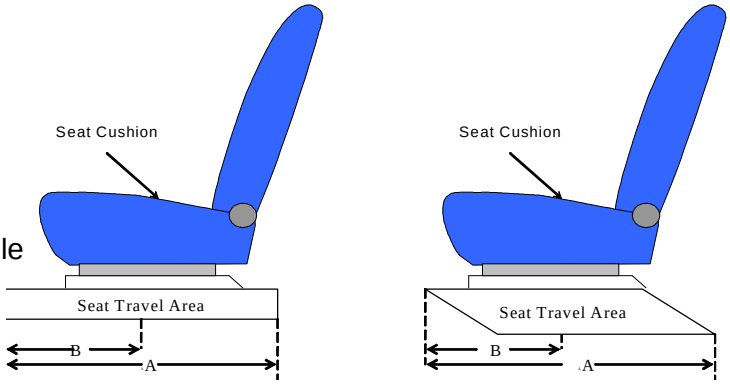
FRONT SEAT ASSEMBLY

SEAT BACK POSITION

	Driver Seat	Rear Seat
Test Detent (forward-most detent defined as 0)	Detent 6	Detent 0
Angle (deg. from forward-most locking position)	1	16.5
Alternative Measurements to Verify Test Position	N/A	N/A

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

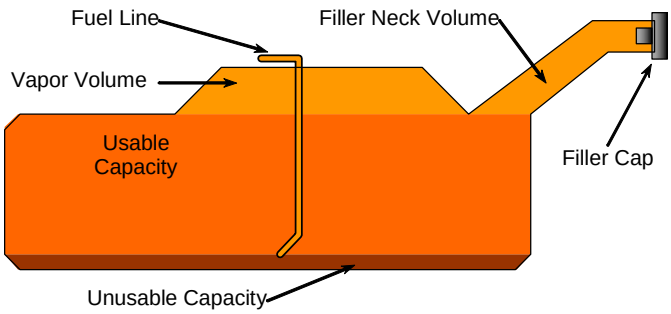
	Driver Seat	Rear Seat
Total Fore/Aft Travel (A) (mm)	240	160
Test Position (B) (mm)	120	80
Test Detent (forward-most detent defined as 0)	8	5
Total Number of Detents (including 0)	17	11

DATA SHEET NO. 3 (CONTINUED)
TEST VEHICLE INFORMATION

Test Vehicle:	2008 Scion xD	NHTSA No.	M85114
Test Program:	NCAP Side Impact	Test Date:	September 18, 2007

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.



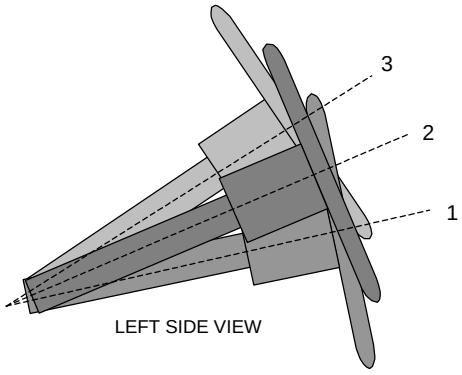
VEHICLE FUEL TANK ASSEMBLY

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard" Fuel Tank	42
Usable Capacity of "Optional" Fuel Tank	0
Stoddard Used For Test (92%-94% of Fuel Tank Usable Capacity)	39

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	N/A	23.2	N/A
Geometric Center Position No. 2 *	N/A	26.4	N/A
Uppermost Position No. 3	N/A	29.6	N/A

DATA SHEET NO. 4

MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS

Test Vehicle:	2008 Scion xD	NHTSA No.	M85114
Test Program:	NCAP Side Impact	Test Date:	September 18, 2007

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	61.64
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	61.64

POST TEST OBSERVATIONS

MDB LEFT EDGE IMPACT POINT DATA

Measured Parameter	Units	Requirement	Value
Horizontal Offset	mm	+/- 50	4 mm forward
Vertical Offset	mm	+/-20	4 mm above

DATA SHEET NO. 5

POST TEST OBSERVATIONS

Test Vehicle:	2008 Scion xD	NHTSA No.	M85114
Test Program:	NCAP Side Impact	Test Date:	September 18, 2007

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Front Seat SID/HIII	Rear Seat SID/HIII
Dummy Type / Serial No.	SID/HIII / 905	SID/HIII / 906
Head Contact	Side Curtain	Side Curtain
Upper Torso Contact	Side Bag	Door Trim
Lower Torso Contact	Door Trim	Door Trim
Left Knee Contact	Door Trim	Door Trim
Right Knee Contact	Left Knee	Left Knee

POST TEST DOOR OPENING AND SEAT TRACK INFORMATION

Description	Front	Rear
Locked/Unlocked Doors	Doors were unlocked	Doors were unlocked
Left Side Door Opening	Door remained closed and latched	Door remained closed and latched
Right Side Door Opening	Door remained closed and latched; Door opened without tools	Door remained closed and latched; Door opened without tools
Seat Movement	0	0
Seat Back Failure	None	None

POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	No Separation
Sill Separation	None
Windshield Damage	None
Window Damage	Left Rear Passenger Window Broke
Other Notable Effects	None

SUPPLEMENTAL RESTRAINT INFORMATION

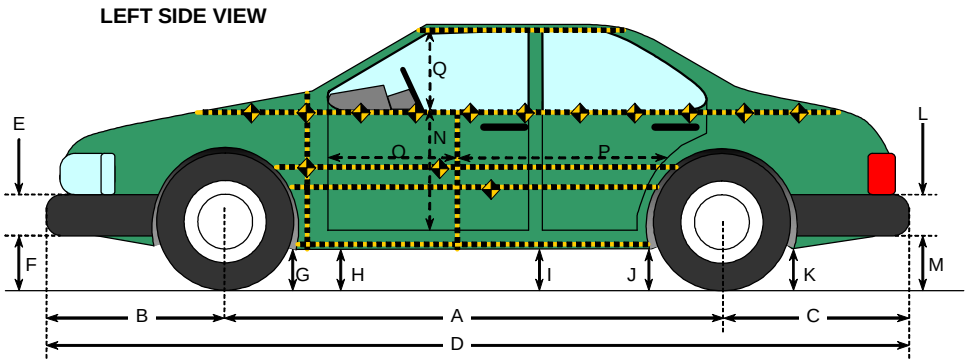
Restraint Type	Left Front (Driver)		Left Rear (Passenger)	
	Installed	Deployed	Installed	Deployed
Front Airbag	Yes	No	NA	NA
Side Torso Airbag	Yes	Yes	NA	NA
Side Head/Torso Combination Airbag	NA	NA	NA	NA
Curtain Airbag	Yes	Yes	Yes	Yes

DATA SHEET NO. 6

VEHICLE PRE-TEST AND POST-TEST MEASUREMENTS

Test Vehicle:	2008 Scion xD	NHTSA No.	M85114
Test Program:	NCAP Side Impact	Test Date:	September 18, 2007

All



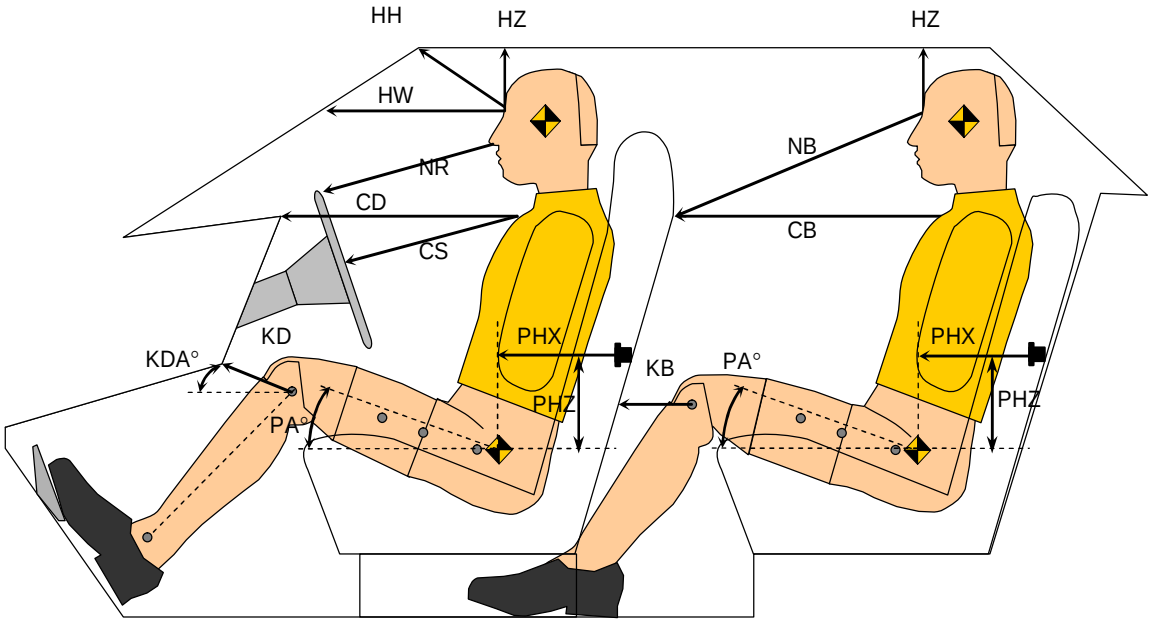
Measurements in mm

Code	Measurement Description	Pre-Test (delivered)	Pre-Test (as tested)	Post-Test (as tested)	Difference
A	Wheelbase	2459	2458	2461	-3
B	Front Axle to FSOV	783	784	812	-28
C	Rear Axle to RSOV	684	684	676	8
D	Total Length at Centerline	3926	3926	3949	-23
E	Front Bumper Thickness	160	160	160	0
F	Front Bumper Bottom to Ground	454	446	437	9
G	Sill Height at Front Wheel Well	215	196	207	-11
H	Sill Height at Front Door Leading Edge	217	198	224	-26
I	Sill Height at "B" Pillar	227	199	241	-42
J1	Sill Height at Rear Wheel Well	188	169	207	-38
J2	Pinch Weld Height at Rear Wheel Well	223	204	229	-25
K	Sill Height Aft of Rear Wheel Well	284	245	274	-29
L	Rear Bumper Thickness	215	215	213	2
M	Rear Bumper Bottom to Ground	442	406	426	-20
N	Sill Height to Window Bottom Sill	753	753	710	43
O	Front Door Leading Edge to Impact CL	732	732	723	9
P	Rear Door Trailing Edge to Impact CL	1086	1086	1052	34
Q	Front Window Opening	401	401	398	3
R	Right Side Length	3809	3809	3815	-6
S	Left Side Length	3806	3806	3854	-48
T	Vehicle Width at "B" Post	1694	1694	1625	69

DATA SHEET NO. 7

SID/HIII LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle:	2008 Scion xD	NHTSA No.	M85114
Test Program:	NCAP Side Impact	Test Date:	September 18, 2007

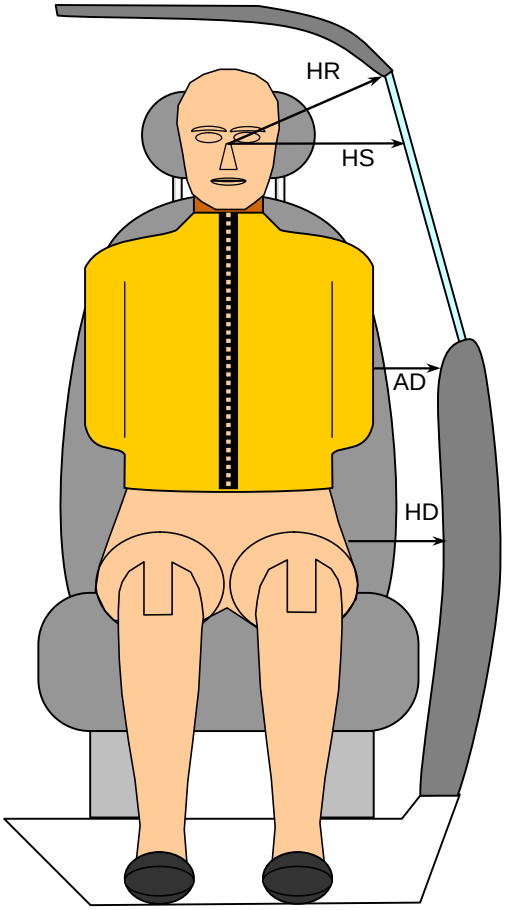


Driver Code	Pass. Code	Measurement Description	Driver S/N 905		Passenger S/N 906	
			Length(mm)	Angle(°)	Length(mm)	Angle(°)
HH		Head to Header	424			
HW		Head to Windshield	614			
HZ	HZ	Head to Roof	161		129	
NR	NB	Nose to Rim/Nose to Seatback	448		544	
CD	CB	Chest to Dash or Seatback	546		421	
CS		Chest to Steering Wheel	289			
KDL	KBL	Left Knee to Dash or Seatback	164	22	159	31
KDR	KBR	Right Knee to Dash or Seatback	161	23	149	29
PA	PA	Pelvic Angle		24.1		23.3
PHX	PHX	H-Point to Striker (X-Axis)	207		299	
PHZ	PHZ	H-Point to Striker (Z-Axis)	194		260	

DATA SHEET NO. 8

SID/HIII LATERAL CLEARANCE DIMENSIONS

Test Vehicle:	2008 Scion xD	NHTSA No.	M85114
Test Program:	NCAP Side Impact	Test Date:	September 18, 2007



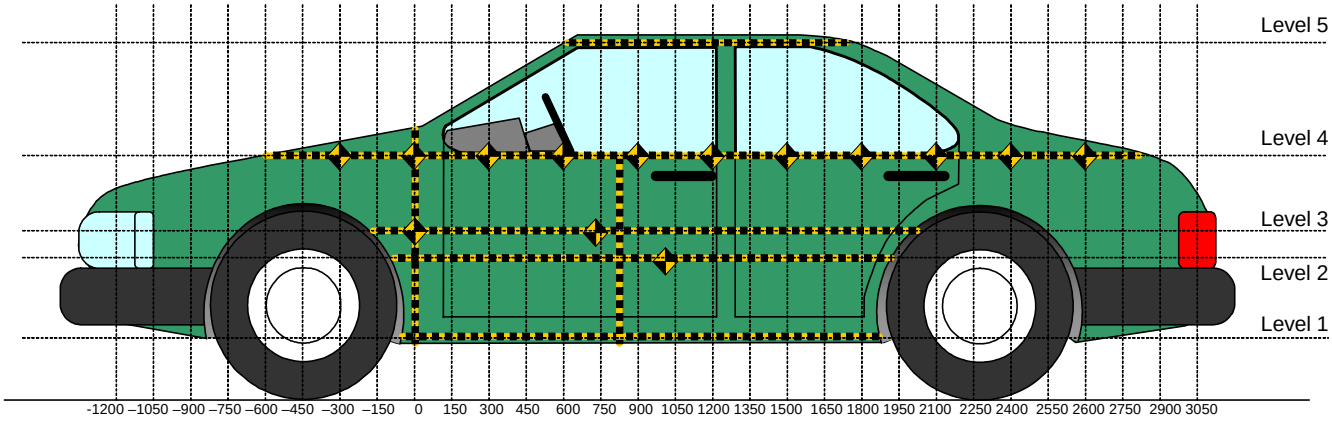
FRONT VIEW OF DUMMY

Code	Measurement Description	Units	Driver S/N 905	Passenger S/N 906
HR	Head to Side Header	mm	194	164
HS	Head to Side Window	mm	301	305
AD_1	Arm to Door (at upper rib level)	mm	105	83
AD_2	Arm to Door (at lower rib level)	mm	95	91
HD	H-Point to Door	mm	150	148

DATA SHEET NO. 9

VEHICLE SIDE MEASUREMENTS

Test Vehicle:	2008 Scion xD	NHTSA No.	M85114
Test Program:	NCAP Side Impact	Test Date:	September 18, 2007



All Measurements Shown in mm

LEFT SIDE VIEW

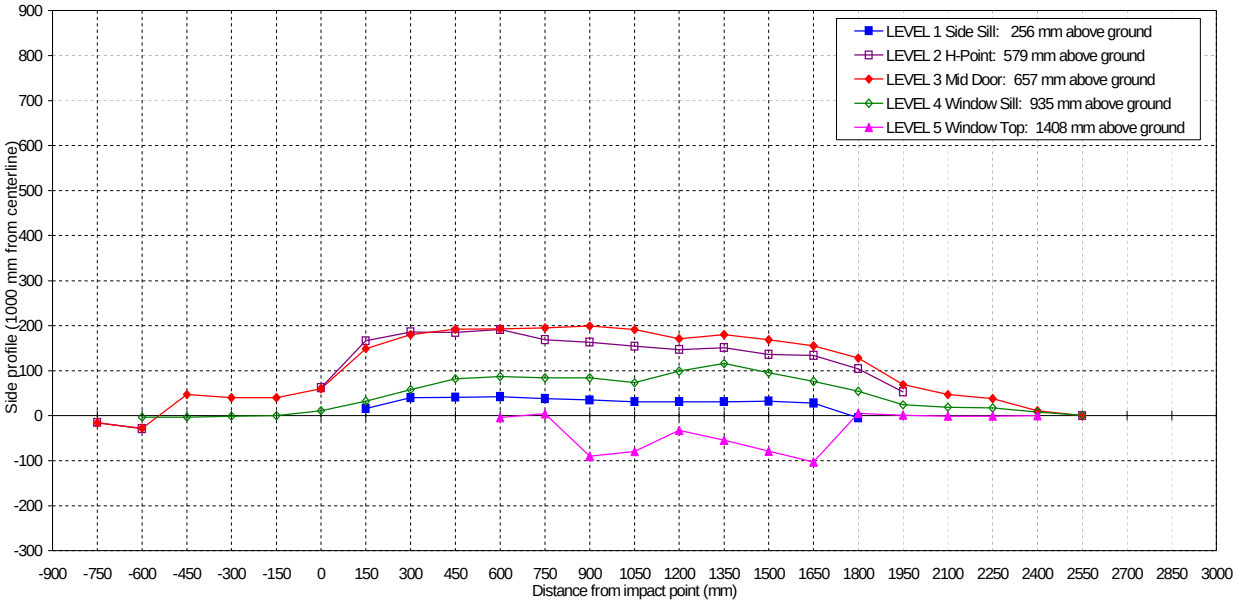
Measurements are taken with vehicle in the as tested condition.
Measurements along the vertical 750 mm.
All measurements below in mm.

Level	Measurement Description	Maximum Exterior Static Crush	Height Above Ground	Distance From Impact
1	Sill Top	42	256	600
2	Occupant H-Point	191	579	600
3	Mid Door	199	657	900
4	Window Sill	116	935	1350
5	Window	5	1408	1800
	Maximum Penetration	199		

DATA SHEET NO. 10

VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle:	2008 Scion xD	NHTSA No.	M85114
Test Program:	NCAP Side Impact	Test Date:	September 18, 2007



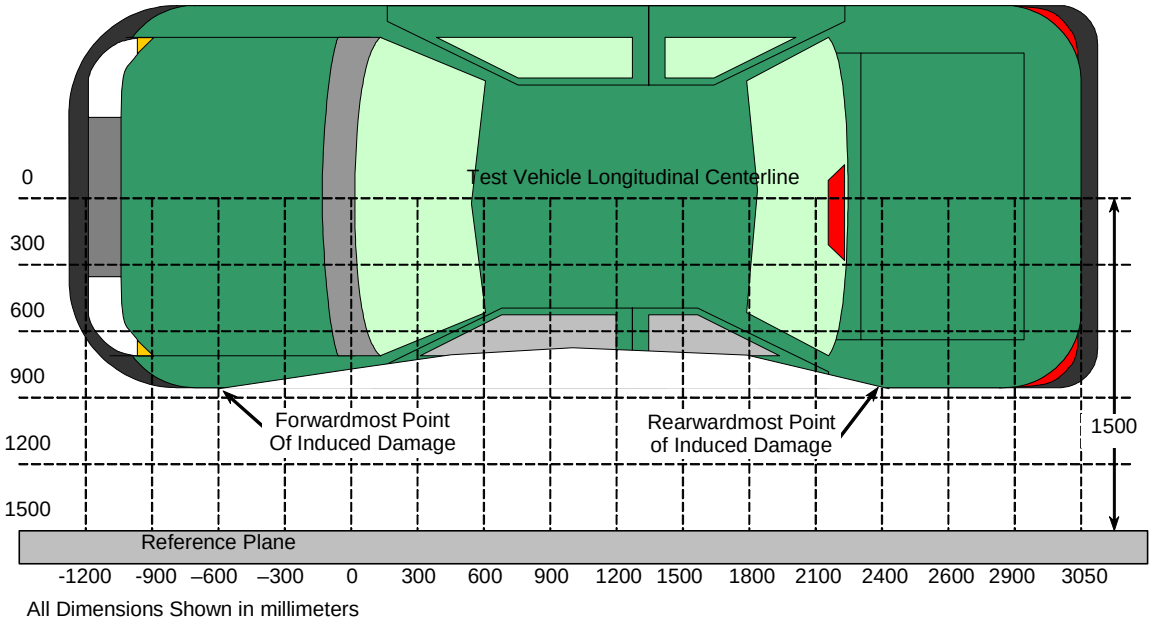
NOTE: All dimensions are in millimeters with a tolerance of ±3 mm

			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	256	PRE	--	--	--	--	--	--	--	183	193	190	186	187	187	188	188	190	194	194	179	--	--	--	--	--	--	--	--
		POST	--	--	--	--	--	--	--	199	233	231	228	225	222	219	219	221	226	222	174	--	--	--	--	--	--	--	--
		CRUSH	N/A	N/A	N/A	N/A	N/A	N/A	N/A	16	40	41	42	38	35	31	31	31	32	28	-5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
LEVEL 2 H POINT	579	PRE	--	202	149	--	--	--	139	158	162	159	156	153	152	151	152	154	158	160	142	133	--	--	--	170	--	--	--
		POST	--	187	120	--	--	--	201	324	348	344	347	322	315	305	299	305	294	294	246	186	--	--	--	170	--	--	--
		CRUSH	N/A	-15	-29	N/A	N/A	N/A	62	166	186	185	191	169	163	154	147	151	136	134	104	53	N/A	N/A	N/A	0	N/A	N/A	N/A
LEVEL 3 MID DOOR	657	PRE	--	219	159	139	135	135	140	162	160	155	152	149	146	145	146	148	152	156	149	135	132	134	145	184	--	--	--
		POST	--	203	131	186	175	175	200	311	340	347	345	344	345	336	317	328	321	311	277	204	179	172	156	184	--	--	--
		CRUSH	N/A	-16	-28	47	40	40	60	149	180	192	193	195	199	191	171	180	169	155	128	69	47	38	11	0	N/A	N/A	N/A
LEVEL 4 WINDOW SILL	935	PRE	--	--	458	350	293	257	234	217	204	193	186	183	180	179	178	180	181	185	190	200	206	217	233	253	--	--	--
		POST	--	--	455	347	292	257	245	249	262	275	273	267	264	252	277	296	276	261	244	224	225	234	241	254	--	--	--
		CRUSH	N/A	N/A	-3	-3	-1	0	11	32	58	82	87	84	84	73	99	116	95	76	54	24	19	17	8	1	N/A	N/A	N/A
LEVEL 5 WINDOW TOP	1408	PRE	--	--	--	--	--	--	--	--	--	--	472	411	399	398	394	393	396	400	408	415	430	456	492	--	--	--	--
		POST	--	--	--	--	--	--	--	--	--	--	468	415	309	318	361	338	317	297	413	416	429	455	492	--	--	--	--
		CRUSH	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-4	4	-90	-80	-33	-55	-79	-103	5	1	-1	-1	0	N/A	N/A	N/A	N/A

DATA SHEET NO. 11

VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle:	2008 Scion xD	NHTSA No.	M85114
Test Program:	NCAP Side Impact	Test Date:	September 18, 2007



TOP VIEW

DAMAGE PROFILE DISTANCES

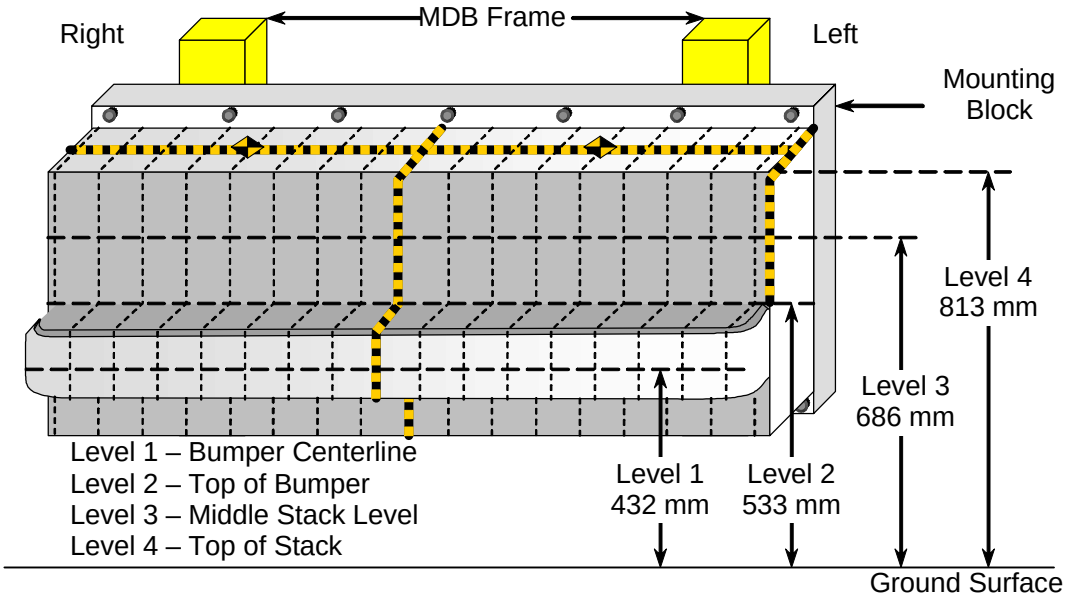
DPD	Distance from Impact Point in mm	Level	Pre-Test (mm)	Post-Test (mm)	Max Static Crush (mm)
1 (LR)	2550	935	253	254	1
2	1930	657	137	214	77
3	1310	657	147	325	178
4	690	657	150	344	194
5	70	579	148	258	110
6 (LF)	-550	657	152	149	-3

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:	2008 Scion xD	NHTSA No.	M85114
Test Program:	NCAP Side Impact	Test Date:	September 18, 2007



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

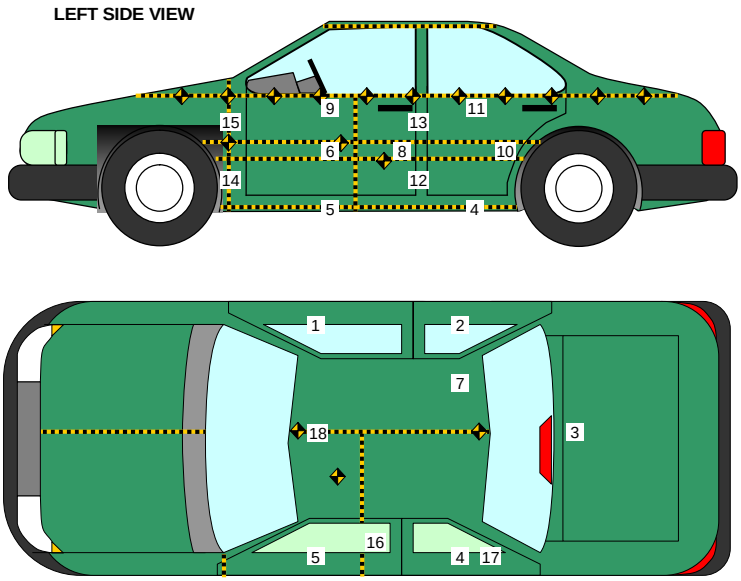
LEVEL	HEIGHT AT CL (mm)*		DISTANCE RIGHT OF CENTER (mm)									DISTANCE LEFT OF CENTER (mm)							
			800	700	600	500	400	300	200	100	0	100	200	300	400	500	600	700	800
LEVEL 4		PRE	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619
TOP	813	POST	686	677	672	666	668	704	706	683	673	669	674	670	670	677	692	716	774
STACK		CRUSH	67	58	53	47	49	85	87	64	54	50	55	51	51	58	73	97	155
LEVEL 3		PRE	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619
MID	686	POST	663	654	648	646	647	668	674	657	639	632	630	631	638	646	655	683	746
LEVEL		CRUSH	44	35	29	27	28	49	55	38	20	13	11	12	19	27	36	64	127
LEVEL 2		PRE	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619
TOP	533	POST	721	716	710	705	700	701	701	683	690	687	684	680	677	673	673	680	688
BUMPER		CRUSH	102	97	91	86	81	82	82	64	71	68	65	61	58	54	54	61	69
LEVEL 1		PRE	535	519	518	518	518	518	518	518	518	518	518	518	518	518	518	519	535
MID	432	POST	711	696	685	677	674	670	668	664	660	657	654	651	648	644	648	661	646
BUMPER		CRUSH	176	177	167	159	156	152	150	146	142	139	136	133	130	126	130	142	111

*Heights measured above ground level.

DATA SHEET NO. 13

VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle:	2008 Scion xD	NHTSA No.	M85114
Test Program:	NCAP Side Impact	Test Date:	September 18, 2007



Loc. No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Right Sill at Front Seat	2508	655	-290
2	Right Sill at Rear Seat	1634	649	-263
3	Rear Floorpan Above Axle	911	35	-455
4	Left Sill at Rear Door	1631	-644	-275
5	Left Sill at Front Door	2545	-651	-283
6	Left Front Door C/L**	-	-	-
7	Rear Occupant Compartment	1643	351	-221
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	1676	-656	-478
13	Left Middle B-Post	1655	-644	-865
14	Left Lower A-Post	2652	-648	-278
15	Left Middle A-Post	2757	-602	-1025
16	Front Seat Track	1813	-565	-343
17	Rear Seat Track or Structure	1354	-459	-373
18	Vehicle CG	2442	-27	-420

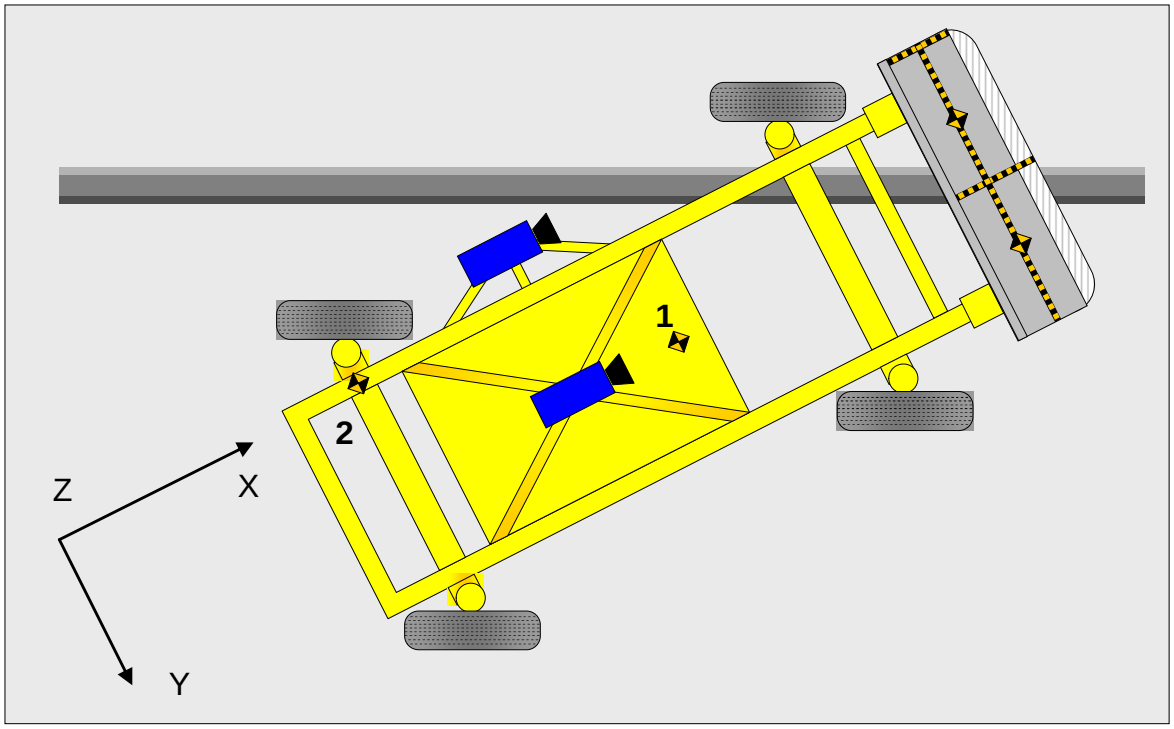
Reference Points X - Test Vehicle Rear Bumper (+ forward)
Y - Test Vehicle Centerline (+ to right)
Z - Ground Plane (+ down)

** Accelerometer was not requested by the COTR.

DATA SHEET NO. 14

MDB ACCELEROMETER LOCATIONS

Test Vehicle:	2008 Scion xD	NHTSA No.	M85114
Test Program:	NCAP Side Impact	Test Date:	September 18, 2007



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

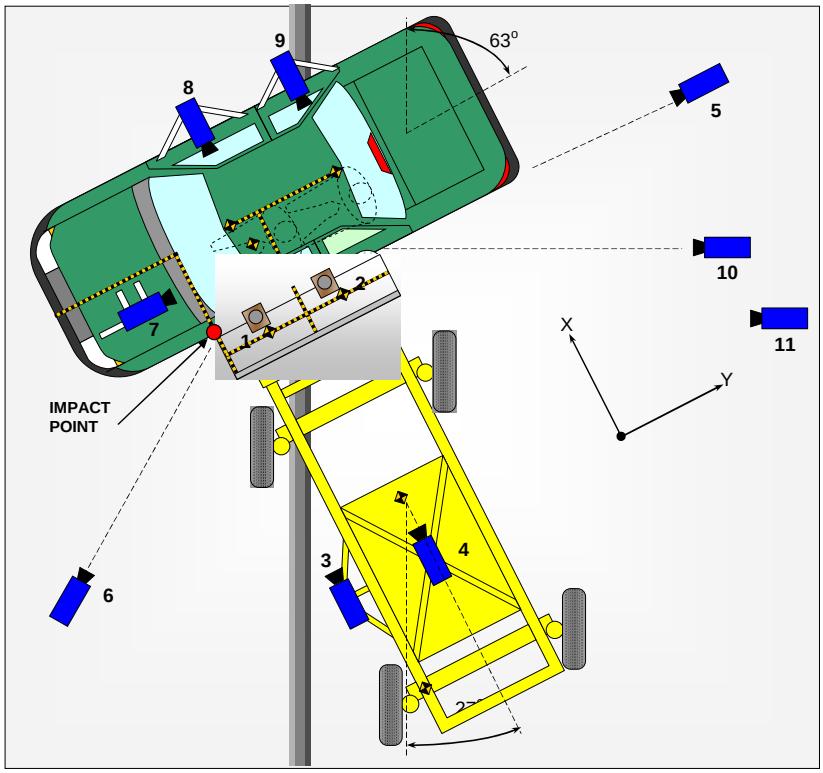
Test Vehicle:	2008 Scion xD	NHTSA No.	M85114
Test Program:	NCAP Side Impact	Test Date:	September 18, 2007

	Elements	Pre-Test (mm)
1	Total Length	3926
2	Total Width	1694
3	Bumper Top Height	586
4	Bumper Bottom Height	433
5	Longitudinal Member Top Height	516
6	Distance between Longitudinal Members	976
7	Longitudinal Member Width	56
8	Engine Top Height	846
9	Engine Bottom Height	229
10	Engine and gearbox width	545
11	Front bumper-engine distance	353
12	Front shock absorber fixing height	882
13	Bonnet leading edge height	754
14	Front shock absorber fixing width	1101
15	Front bumper – front axle distance	782
16	Front axle – a pillar distance	870
17	A-pillar – B-pillar distance	568
18	B-Pillar – rear axle distance	1022
19	B-pillar – C-pillar distance	1003
20	Roof sill bottom height	1423
21	Roof sill top height	1470
22	Floor sill bottom height	212
23	Floor sill top height	290

DATA SHEET NO. 16

HIGH SPEED CAMERA LOCATIONS AND DATA

Test Vehicle:	2008 Scion xD	NHTSA No.	M85114
Test Program:	NCAP Side Impact	Test Date:	September 18, 2007



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	10055	1035	2.9	50	1000
6	Left Side, Ground Level, Overall	1790	2185	965	6.3	28	1000
7	Vehicle Onboard Front SID/HIII, Front	525	-335	1316	6.9	25	1000
8	Vehicle Onboard Front SID/HIII, Side	1495	762	1125	7.7	12.5	1000
9	Vehicle Onboard Rear SID/HIII, Side	1495	1677	1187	4.8	12.5	1000
10	Secondary Impact Point	5198	2935	947	1.0	50	500
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

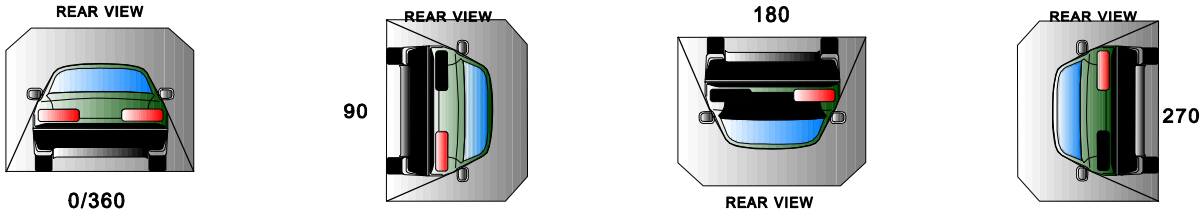
Test Vehicle:	2008 Scion xD	NHTSA No.	M85114
Test Program:	NCAP Side Impact	Test Date:	September 18, 2007

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



Rollover Stage	Rotation Time (spec. 1 -3 min)				FMVSS 301 Hold Time		Total Time				Next Whole Minute Interval	
0º - 90º	1	minutes	12	seconds	5	minutes	6	minutes	12	seconds	7	minutes
90º - 180º	0	minutes	59	seconds	5	minutes	5	minutes	59	seconds	6	minutes
180º-270º	1	minutes	10	seconds	5	minutes	6	minutes	10	seconds	7	minutes
270º-360º	1	minutes	05	seconds	5	minutes	6	minutes	5	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)
0º - 90º	0	0	0	0
90º - 180º	0	0	0	0
180º-270º	0	0	0	0
270º-360º	0	0	0	0
FMVSS 301 Maximum Allowable (for each 90º stage)	142	28	28	28

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

APPENDIX A

PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

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A-15	Pre-Test Right Rear ¾ View	A-11
A-16	Post-Test Right Rear ¾ View	A-11
A-17	Pre-Test Right Side View	A-12
A-18	Post-Test Right Side View	A-12
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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
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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 ¾ View of Left Side Doors	A-27
A-48	Post-Test Left Front ¾ View of Left Side Doors	A-27
A-49	Pre-Test Left Rear ¾ View of Left Side Doors	A-28
A-50	Post-Test Left Rear ¾ View of Left Side Doors	A-28
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Figure A-1: As Received Left Front ¾ View

Figure A-2: As Received Right Rear ¾ View

Figure A-3: Vehicle Certification Label

Figure A-4: Vehicle Tire Placard Label

Figure A-5: Pre-Test Front View

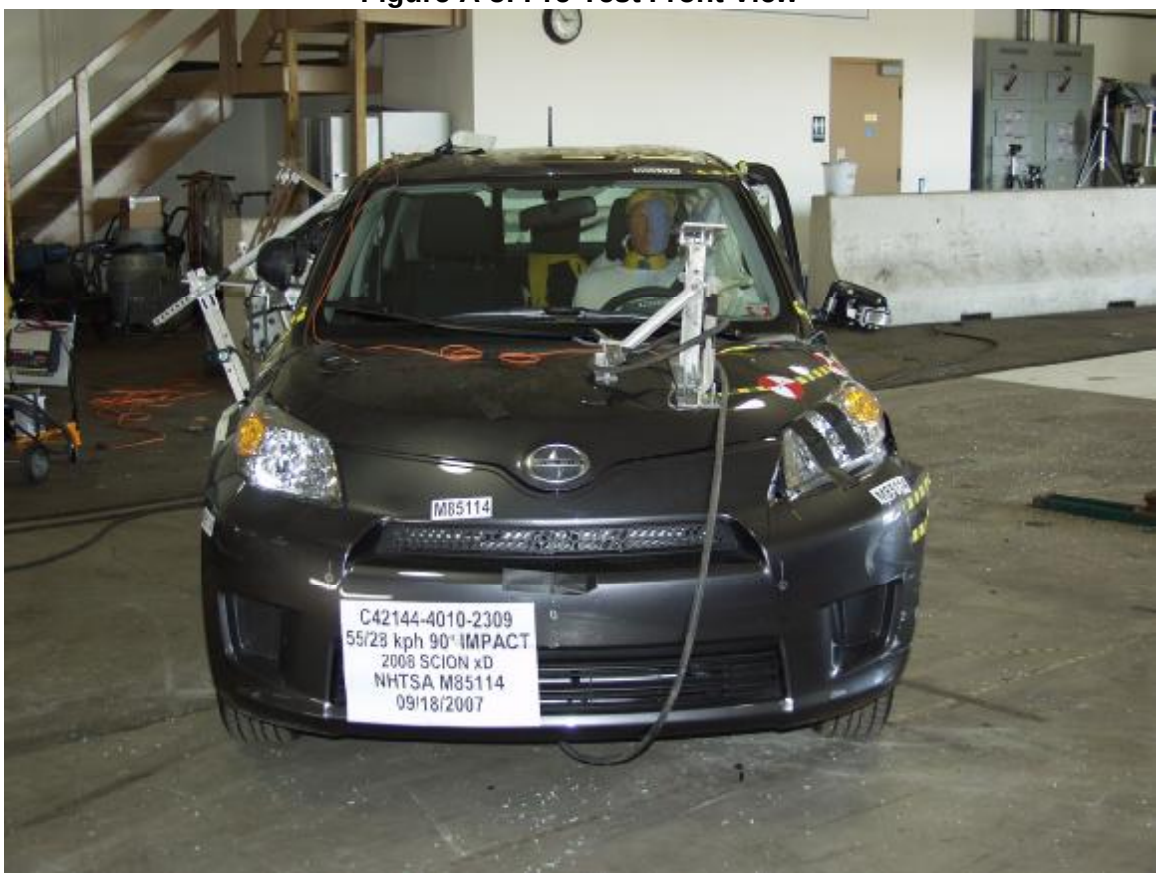


Figure A-6: Post-Test Front View

Figure A-7: Pre-Test Left Front ¾ View

Figure A-8: Post-Test Left Front ¾ View

Figure A-9: Pre-Test Left Side View

Figure A-10: Post-Test Left Side View

Figure A-11: Pre-Test Left Rear ¾ View

Figure A-12: Post-Test Left Rear ¾ View

Figure A-13: Pre-Test Rear View

Figure A-14: Post-Test Rear View

Figure A-15: Pre-Test Right Rear ¾ View

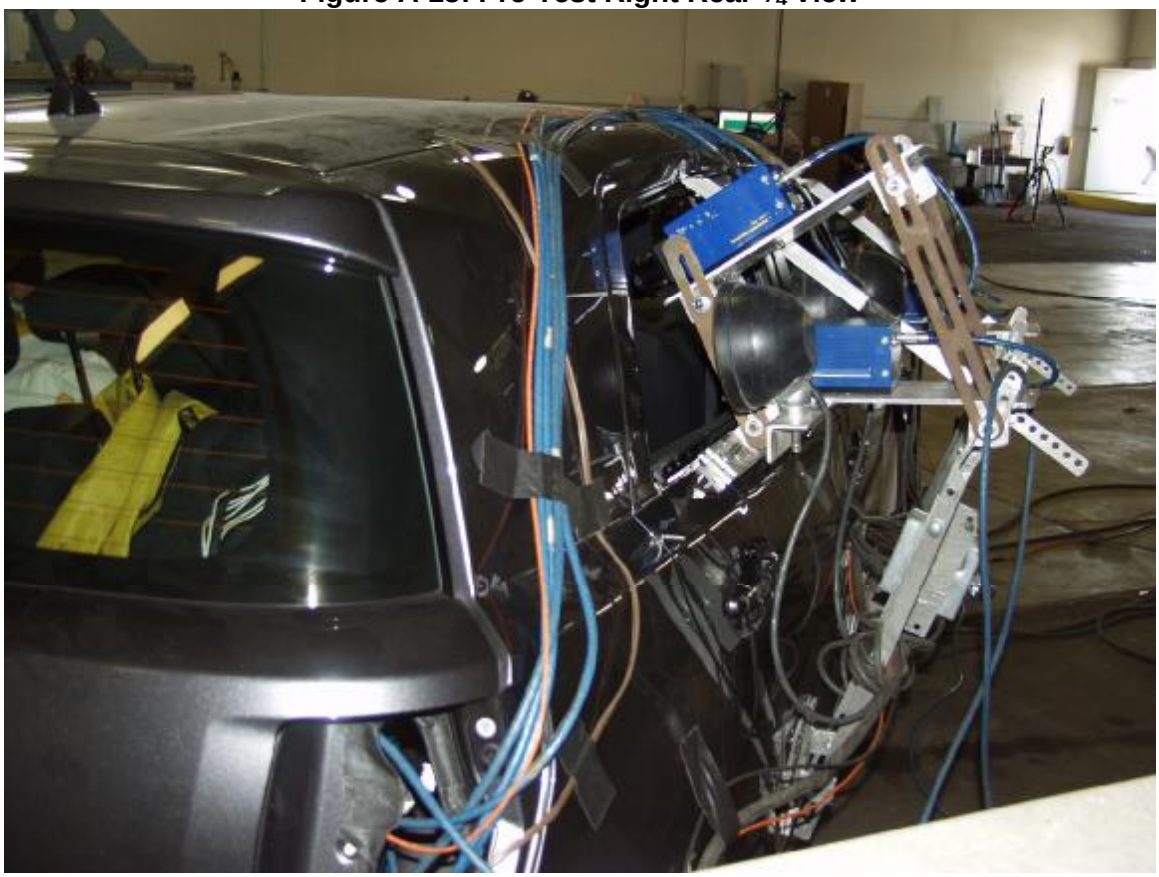


Figure A-16: Post-Test Right Rear ¾ View

Figure A-17: Pre-Test Right Side View

Photo Not Available

Figure A-18: Post-Test Right Side View

Figure A-19: Pre-Test Right Front ¾ View

Figure A-20: Post-Test Right Front ¾ 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

Photo Not Available

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 ¾ View of Left Side Doors

Figure A-48: Post-Test Left Front ¾ View of Left Side Doors

Figure A-49: Pre-Test Left Rear ¾ View of Left Side Doors

Figure A-50: Post-Test Left Rear ¾ View of Left Side Doors

Figure A-51: Rollover 90 Degrees

Figure A-52: Rollover 180 Degrees

Figure A-53: Rollover 270 Degrees

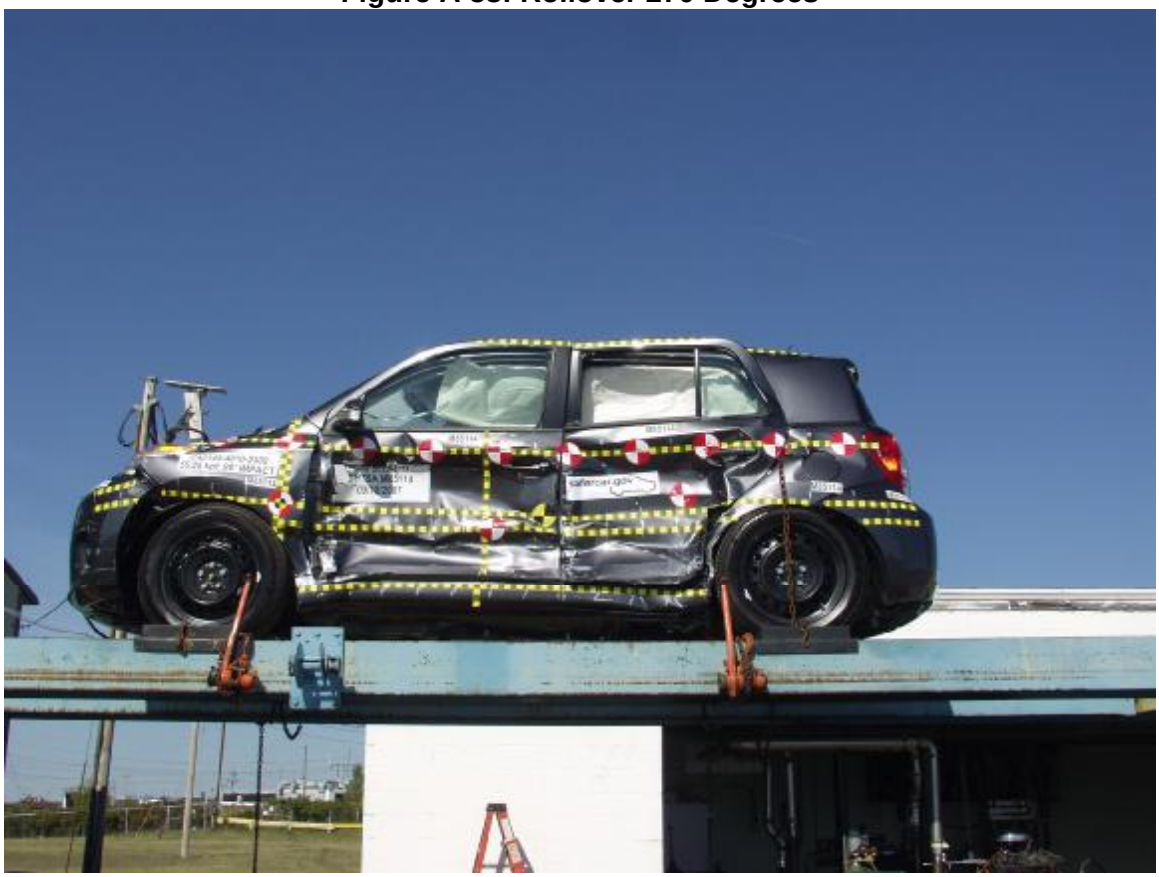


Figure A-54: Rollover 360 Degrees

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

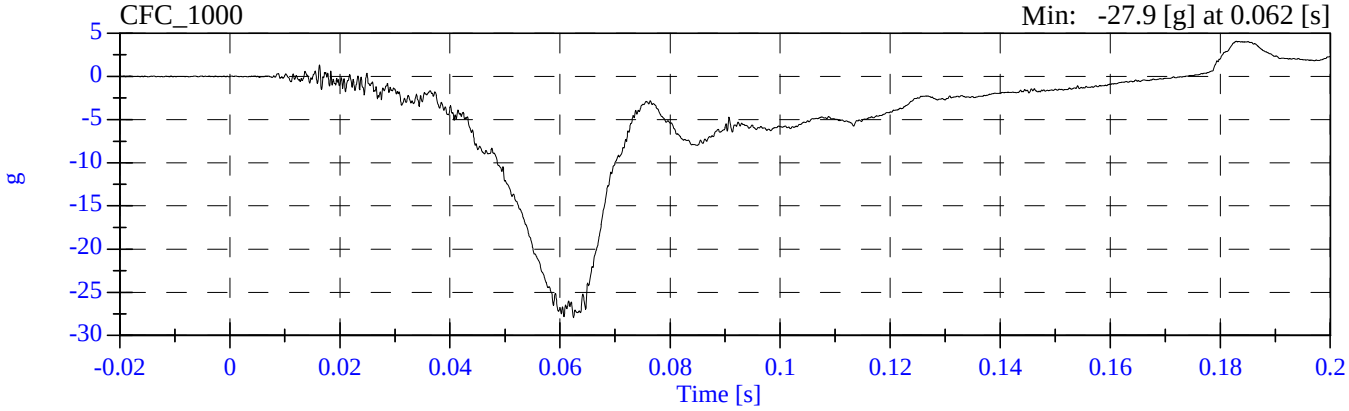
V2P1 Head Ax
V2P1 Head Ay
V2P1 Head Az
V2P1 Upper Neck Fx
V2P1 Upper Neck Fy
V2P1 Upper Neck Fz
V2P1 Upper Neck Mx
V2P1 Upper Neck My
V2P1 Upper Neck Mz
V2P1 Upper Rib Ay
V2P1 Upper Rib Redundant Ay
V2P1 Lower Rib Ay
V2P1 Lower Rib Redundant Ay
V2P1 Lower Spine Ay
V2P1 Lower Spine Redundant Ay
V2P1 Pelvic Ay
V2P1 Pelvic Redundant Ay
V2P4 Head Ax
V2P4 Head Ay
V2P4 Head Az
V2P4 Upper Neck Fx
V2P4 Upper Neck Fy
V2P4 Upper Neck Fz
V2P4 Upper Neck Mx
V2P4 Upper Neck My
V2P4 Upper Neck Mz
V2P4 Upper Rib Ay
V2P4 Upper Rib Redundant Ay
V2P4 Lower Rib Ay
V2P4 Lower Rib Redundant Ay
V2P4 Lower Spine Ay
V2P4 Lower Spine Redundant Ay
V2P4 Pelvic Ay
V2P4 Pelvic Redundant Ay
V2A1 Right Front Sill Ax
V2A1 Right Front Sill Ay
V2A1 Right Front Sill Az
V2A2 Right Rear Sill Ax
V2A2 Right Rear Sill Ay
V2A2 Right Rear Sill Az
V2A3 Rear Floorpan Ax
V2A3 Rear Floorpan Ay
V2A3 Rear Floorplan Az
V2A4 Left Rear Sill Ay
V2A5 Left Front Sill Ay
V2A6 Left Front Door C/L Ay
V2A7 Right Rear Compartment Ay
V2A8 Left Front Door Midrear Ay
V2A9 Left Front Door Upper C/L Ay
V2A10 Left Rear Door Midrear Ay
V2A11 Left Rear Door Upper C/L Ay
V2A12 Left Lower B Post Ay
V2A13 Left Mid B Post Ay
V2A14 Left Lower A Post Ay
V2A15 Left Mid A Post Ay
V2A16 Front Seat Track Ay
V2A17 Rear Seat Track Ay
V2A18 Target CG Ax
V2A18 Target CG Ay
V2A18 Target CG Az
V1 Moving Barrier CG Ax
V1 Moving Barrier CG Ay
V1 Moving Barrier CG Az
V1 Moving Barrier Left Rail Ax
V1 Moving Barrier Left Rail Ay

TEST NOTES

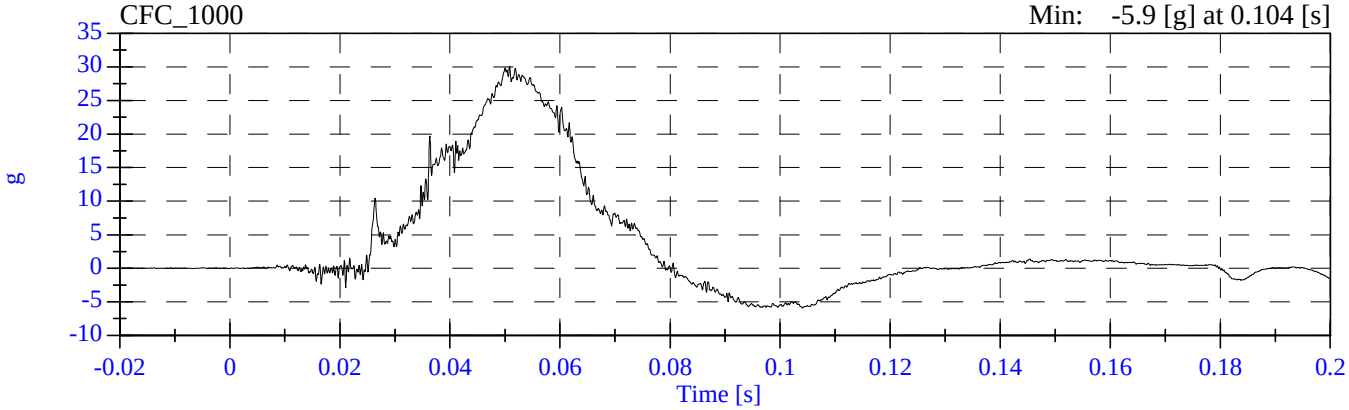
The following data anomalies occurred:

2008 SNCAP Test 2 2008 Scion xD
M85114 - September 18, 2007

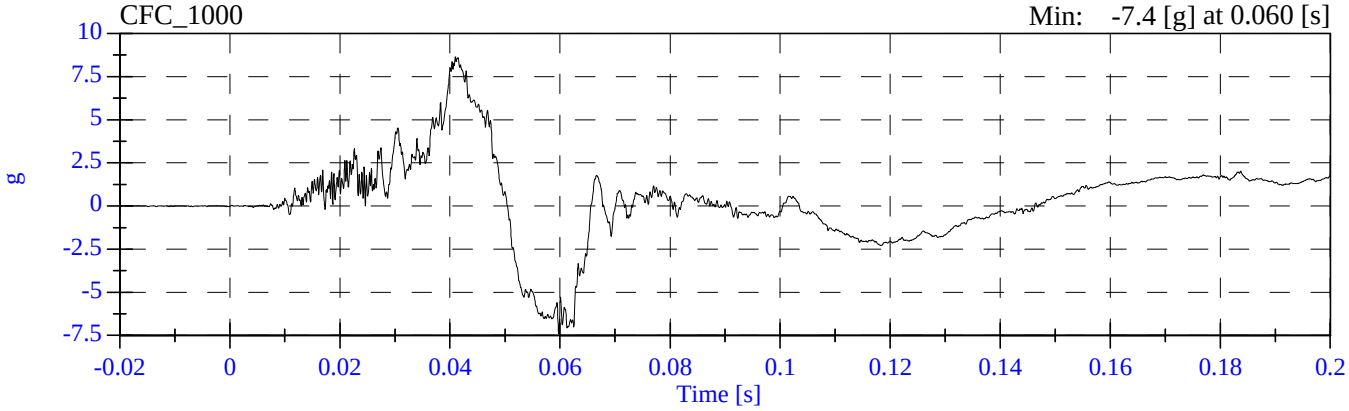
V2P1 Head x
CFC_1000
Max: 4.1 [g] at 0.183 [s]
Min: -27.9 [g] at 0.062 [s]



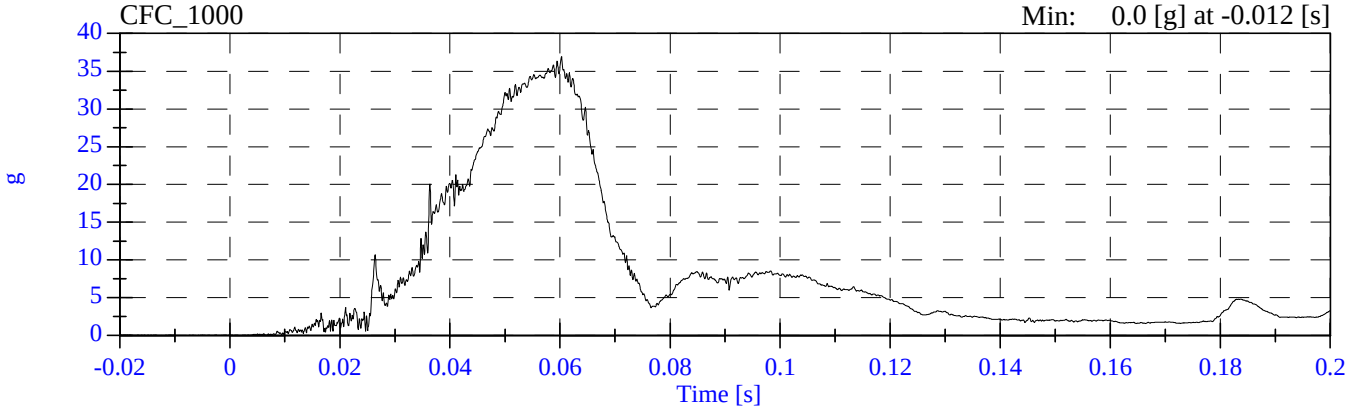
V2P1 Head y
CFC_1000
Max: 30.1 [g] at 0.051 [s]
Min: -5.9 [g] at 0.104 [s]



V2P1 Head z
CFC_1000
Max: 8.6 [g] at 0.041 [s]
Min: -7.4 [g] at 0.060 [s]

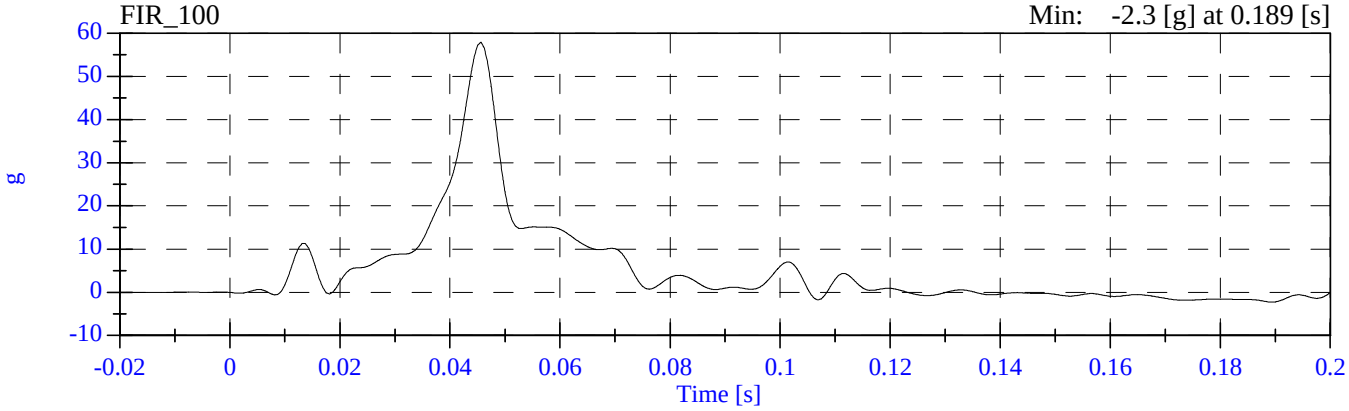


V2P1 Head Resultant
CFC_1000
Max: 36.9 [g] at 0.060 [s]
Min: 0.0 [g] at -0.012 [s]

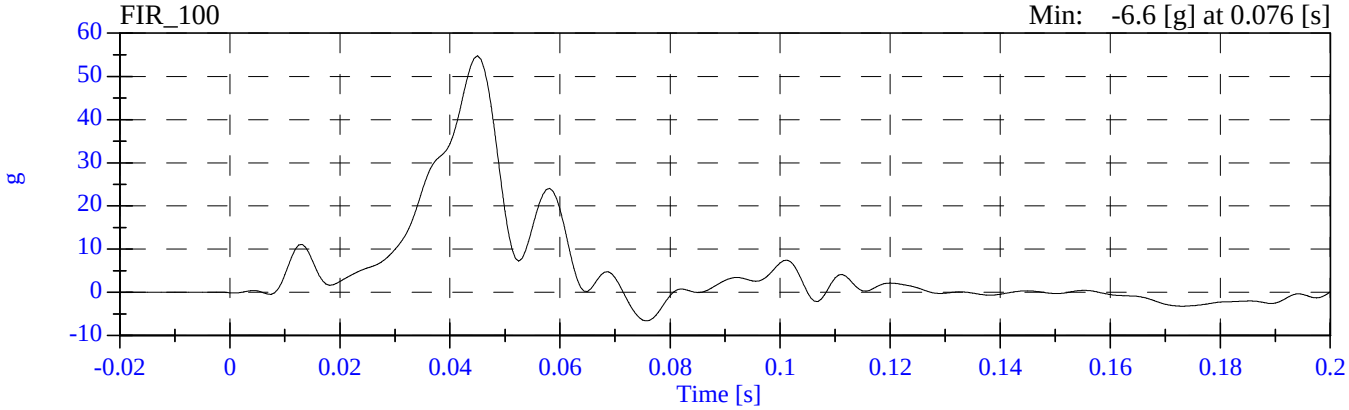


2008 SNCAP Test 2 2008 Scion xD
M85114 - September 18, 2007

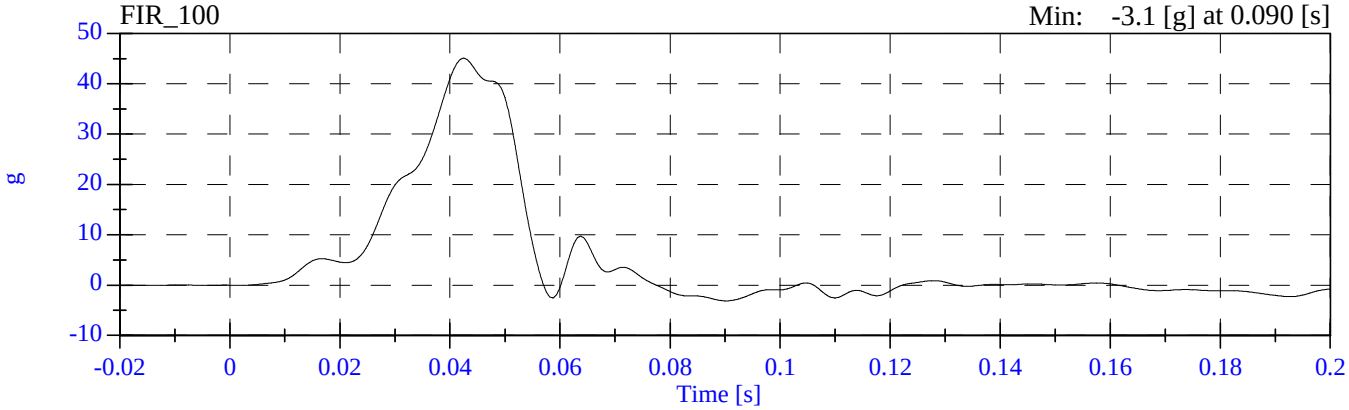
V2P1 Upper Rib y
FIR_100
Max: 58.0 [g] at 0.046 [s]
Min: -2.3 [g] at 0.189 [s]



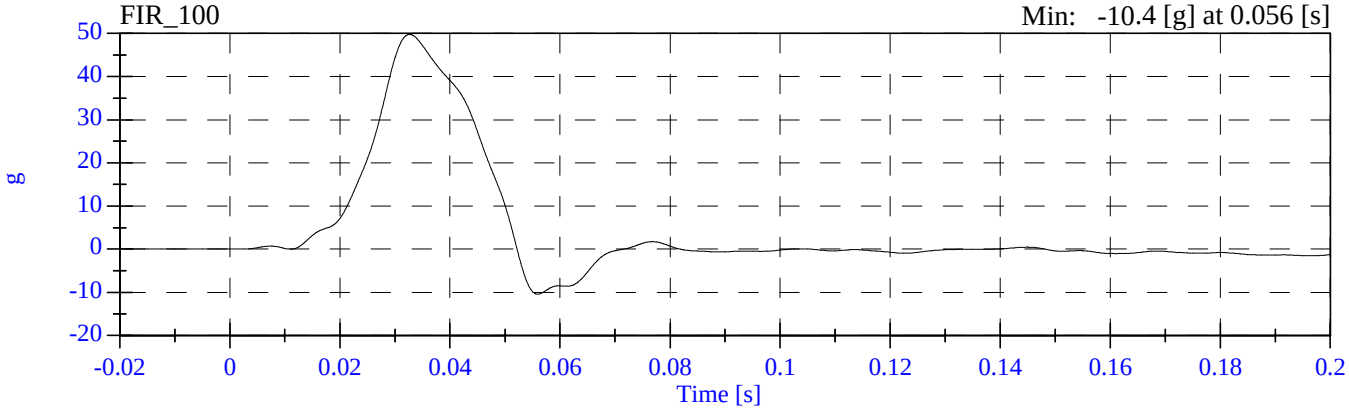
V2P1 Lower Rib y
FIR_100
Max: 54.8 [g] at 0.045 [s]
Min: -6.6 [g] at 0.076 [s]



V2P1 Lower Spine y
FIR_100
Max: 45.1 [g] at 0.043 [s]
Min: -3.1 [g] at 0.090 [s]

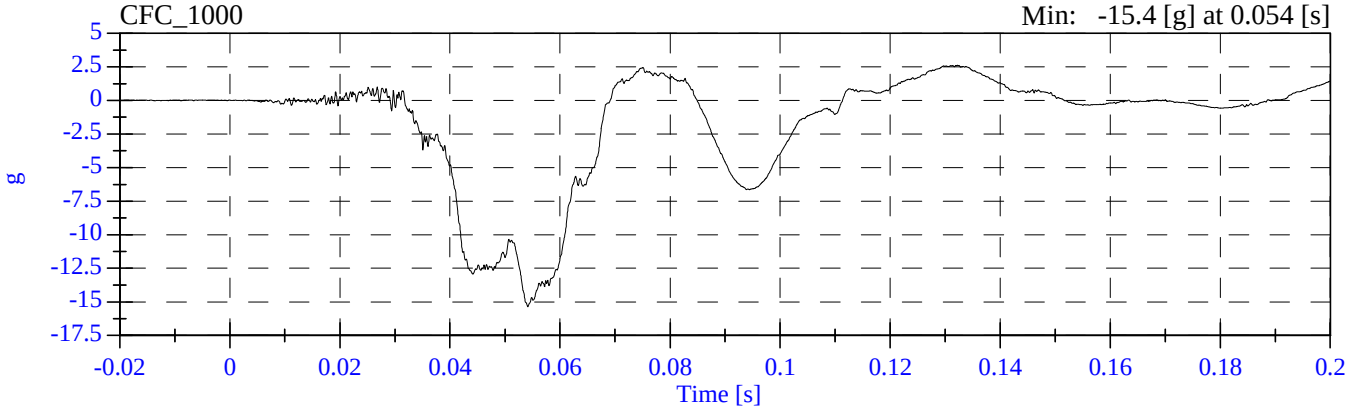


V2P1 Pelvic y
FIR_100
Max: 49.8 [g] at 0.032 [s]
Min: -10.4 [g] at 0.056 [s]

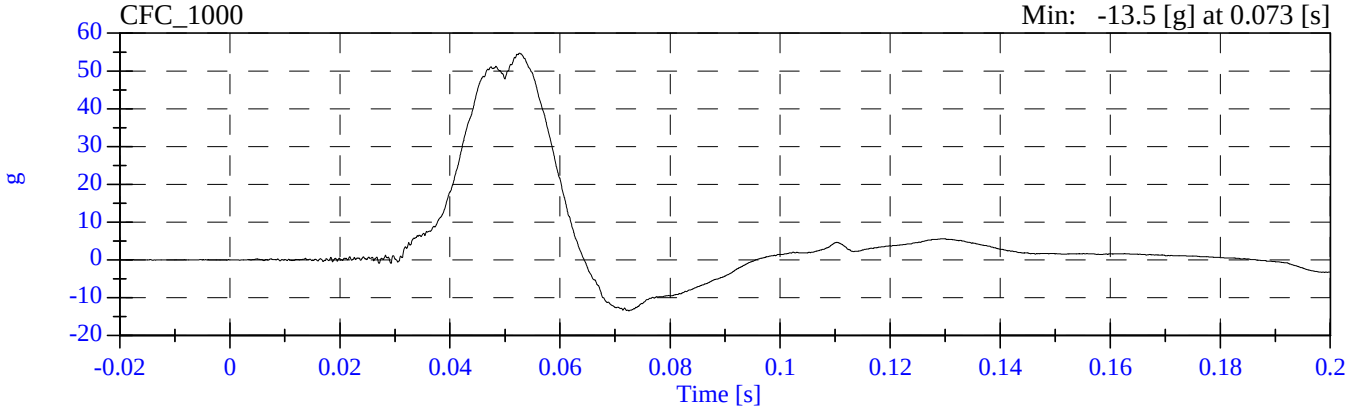


2008 SNCAP Test 2 2008 Scion xD
M85114 - September 18, 2007

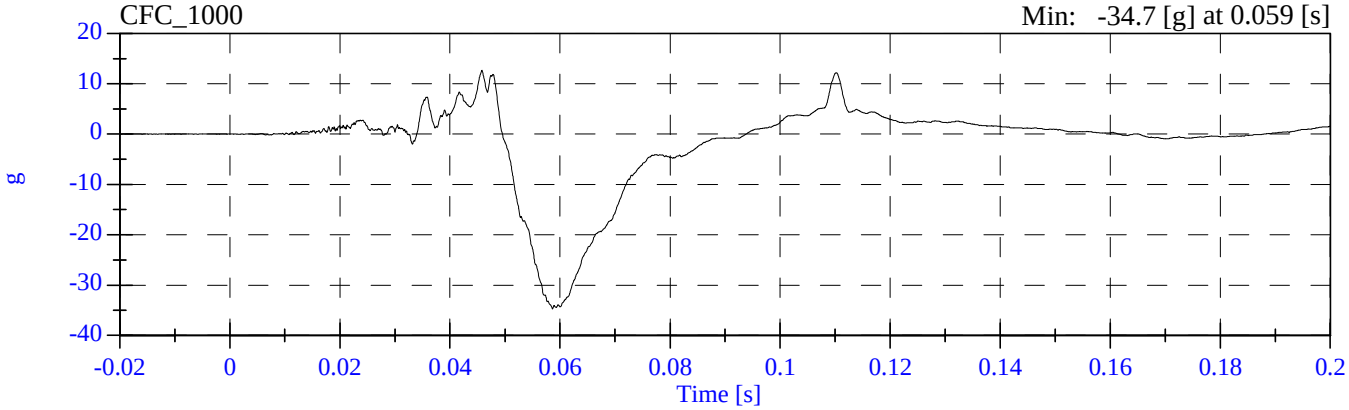
V2P4 Head x
CFC_1000
Max: 2.6 [g] at 0.132 [s]
Min: -15.4 [g] at 0.054 [s]



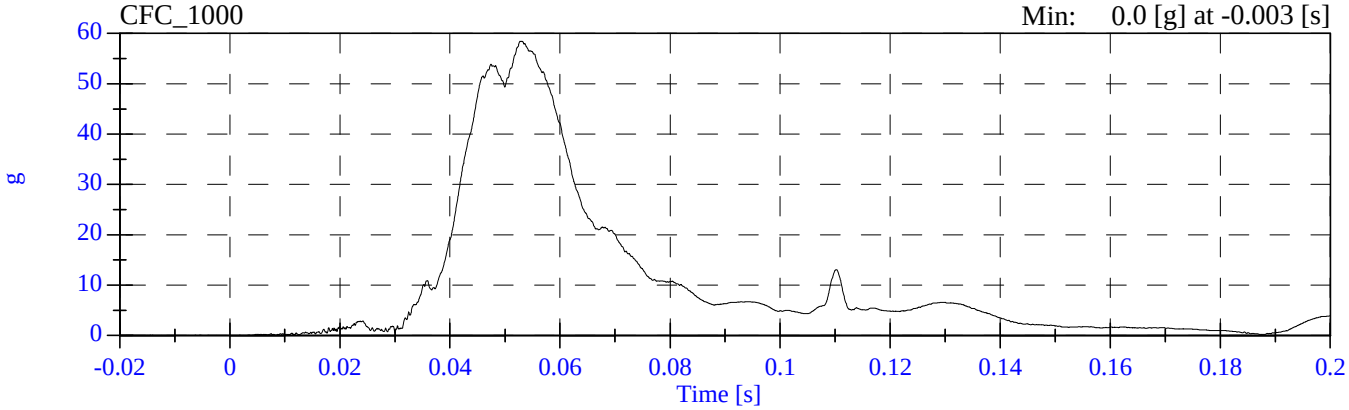
V2P4 Head y
CFC_1000
Max: 54.8 [g] at 0.053 [s]
Min: -13.5 [g] at 0.073 [s]



V2P4 Head z
CFC_1000
Max: 12.7 [g] at 0.046 [s]
Min: -34.7 [g] at 0.059 [s]

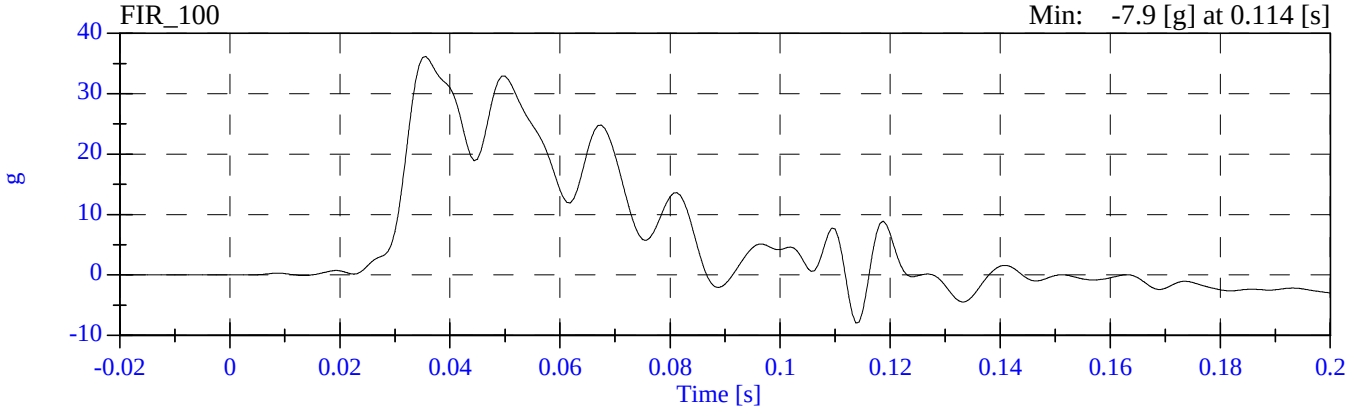


V2P4 Head Resultant
CFC_1000
Max: 58.5 [g] at 0.053 [s]
Min: 0.0 [g] at -0.003 [s]

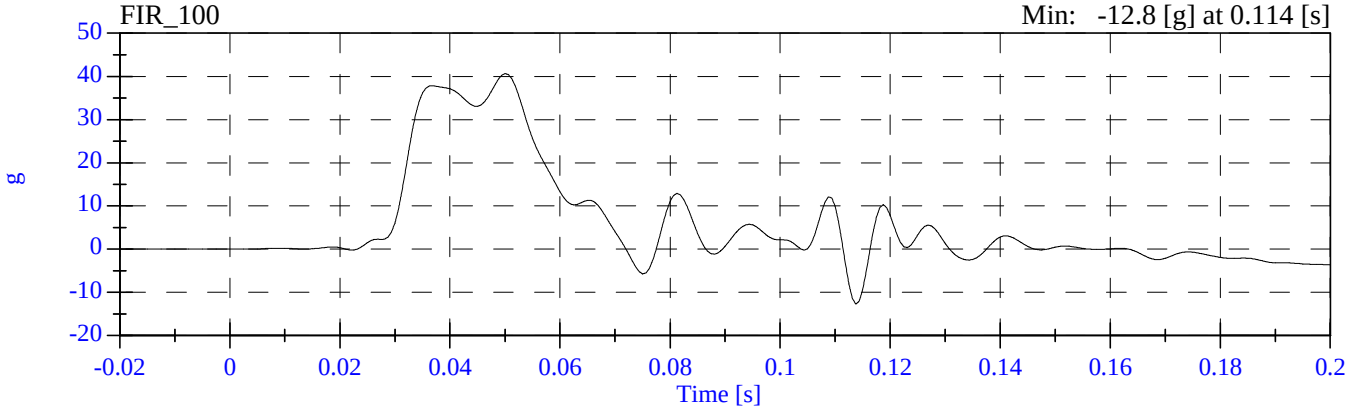


2008 SNCAP Test 2 2008 Scion xD
M85114 - September 18, 2007

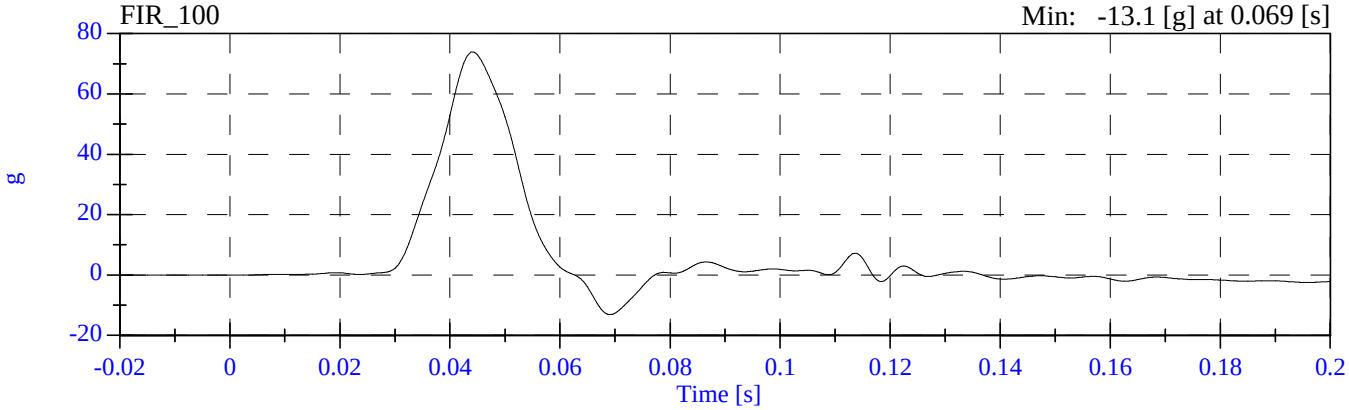
V2P4 Upper Rib y
FIR_100
Max: 36.2 [g] at 0.036 [s]
Min: -7.9 [g] at 0.114 [s]



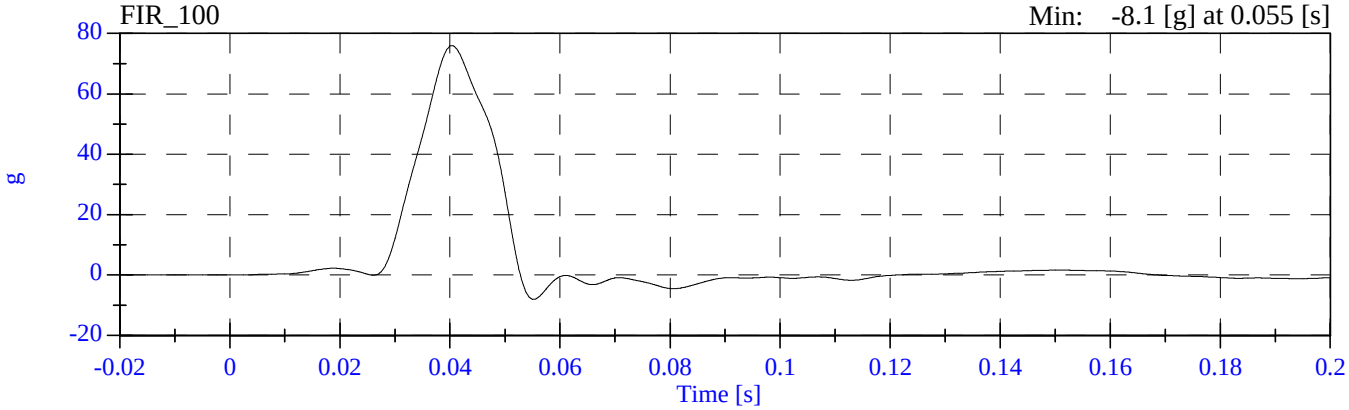
V2P4 Lower Rib y
FIR_100
Max: 40.7 [g] at 0.050 [s]
Min: -12.8 [g] at 0.114 [s]



V2P4 Lower Spine y
FIR_100
Max: 73.9 [g] at 0.044 [s]
Min: -13.1 [g] at 0.069 [s]



V2P4 Pelvic y
FIR_100
Max: 76.0 [g] at 0.041 [s]
Min: -8.1 [g] at 0.055 [s]



APPENDIX C

DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

SUMMARY
SID H3 PRE & POST TEST CALIBRATION

CONFIGURED FOR LEFT SIDE IMPACT

Date: 8/03/07 and 9/27/07 Sequential Test Number: 1 and 2
Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	SID H3 NO.: 905		SID H3 NO.: 906	
		PRE TEST	POST TEST	PRE TEST	POST TEST
SH- Seated Height (mm)	889 - 909	902	902	902	902
RH- Rib Height (mm)	501 - 521	513	513	511	511
HP- Hip Pivot Height (mm)	99 ref.	99	99	99	99
RD- Rib from Back Line (mm)	229 - 241	239	239	239	239
KV- Knee Pivot from Back Line (mm)	511 - 526	521	521	518	518
SW- Knee Pivot to Floor (mm)	490 - 505	496	496	493	493
HW- Hip Width (mm)	356 - 391	381	381	386	386
THORAX IMPACTS					
TEMPERATURE (• C)	18.9 - 25.5	21.1	21.1	21.1	21.1
RELATIVE. HUMIDITY (%)	10 -70	44	33	39	35
PROBE SPEED (m/s)	4.27 - 4.33	4.29	4.32	4.33	4.33
UPPER RIB (g's)	37 - 46	42.78	44.81	38.0	37.60
LOWER RIB (g's)	37 - 46	43.47	43.38	37.14	37.55
LOWER SPINE (g's)	15 -22	21.86	21.77	20.53	20.47
PELVIS IMPACT					
TEMPERATURE (• C)	18.9 - 25.5	21.1	21.1	21.1	21.1
RELATIVE HUMIDITY (%)	10 - 70	44	33	44	33
PROBE SPEED (m/s)	4.27 - 4.33	4.32	4.32	4.30	4.31
PELVIS (g's)	40 -60	43.11	40.44	49.60	45.96

REMARKS: None

CALIBRATION TEST RESULTS

PRE-TEST

SID H3 NO.: 905

CONFIGURED FOR LEFT SIDE IMPACT

CALIBRATION TEST RESULTS SUMMARY
PRE-TEST

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 905 Sequential Test Number: 1
Date: 8/03/07 Laboratory Technician: B. Swiecicki

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.: 905 Sequential Test Number: 1
Date: 8/03/07 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 – 909	902
RH- Rib Height (mm)	502 – 520	513
HP- Hip Pivot Height (mm)	99 ref.	99
RD- Rib from Back Line (mm)	229 – 241	239
KH- Knee Pivot from Back Line (mm)	511 – 526	521
KV- Knee Pivot to Floor (mm)	490 – 505	496
HW- Hip Width (mm)	356 - 391	381

REMARKS: None

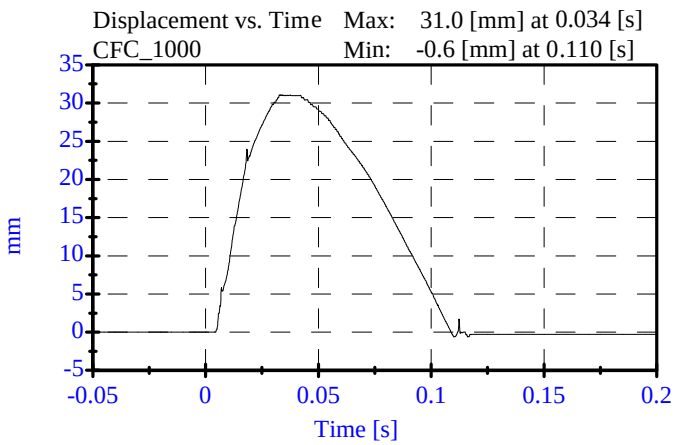
Shock Impact Low (3.05 m/s)
PRE TEST

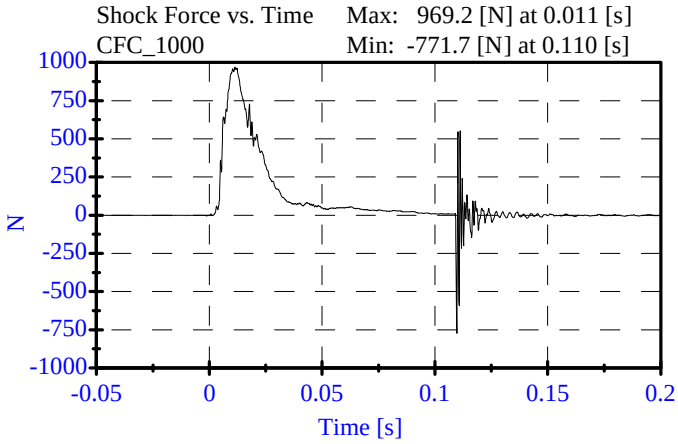
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 905 Sequential Test Number: 1 File: 905SL 08-1-07
Date: 08-01-07 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 %	36.00 %	Passed
Displacement:	30.00-35.00 mm	31.05 mm	Passed
Maximum Force:	836.00-1125.00 N	969.22 N	Passed

Impact Test Velocity: 3.05 m/s
Damper Identification: 905
Damper Setting: 5





Shock Impact Med (4.27 m/s)

PRE TEST

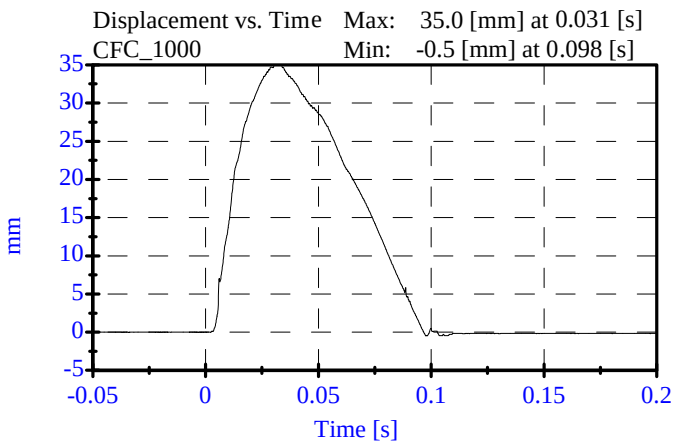
CONFIGURED FOR LEFT SIDE IMPACT

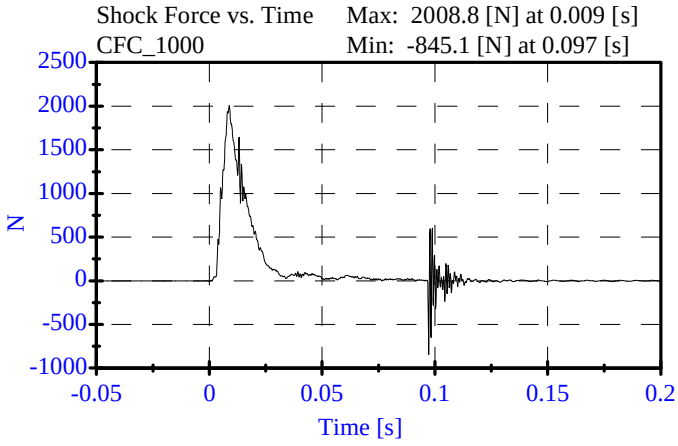
ATD Serial No: 905 Sequential Test Number: 1 File: 905SM 08-1-07

Date: 08-01-07 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 %	36.00 %	Passed
Displacement:	32.00-37.00 mm	34.98 mm	Passed
Maximum Force:	1730.00-2099.00 N	2008.82 N	Passed

Impact Test Velocity: 4.27 m/s
Damper Identification: 905
Damper Setting: 5





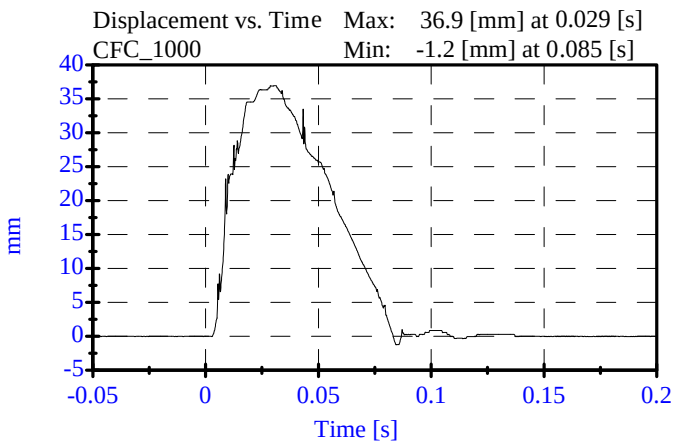
Shock Impact High (6.10 m/s)
PRE TEST

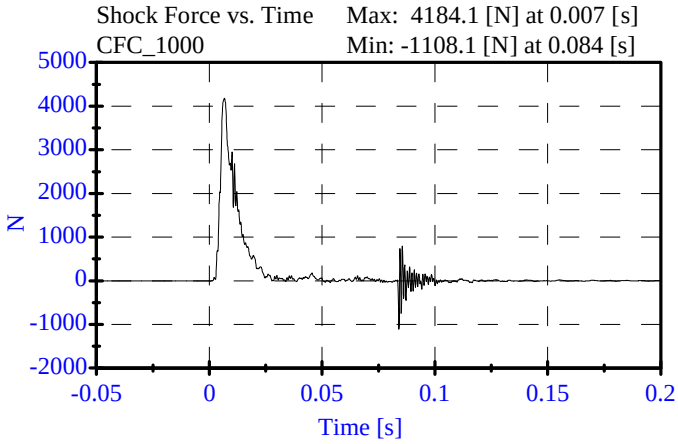
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 905 Sequential Test Number: 1 File: 905SH 08-1-07
Date: 08-01-07 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 %	36.00 %	Passed
Displacement:	33.00-40.00 mm	36.94 mm	Passed
Maximum Force:	3741.00-4448.00 N	4184.07 N	Passed

Impact Test Velocity: 6.10 m/s
Damper Identification: 905
Damper Setting: 5





Thorax Impact

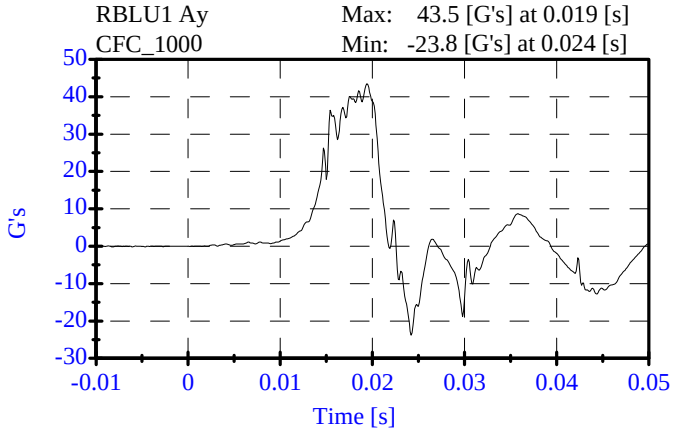
Pre-Test

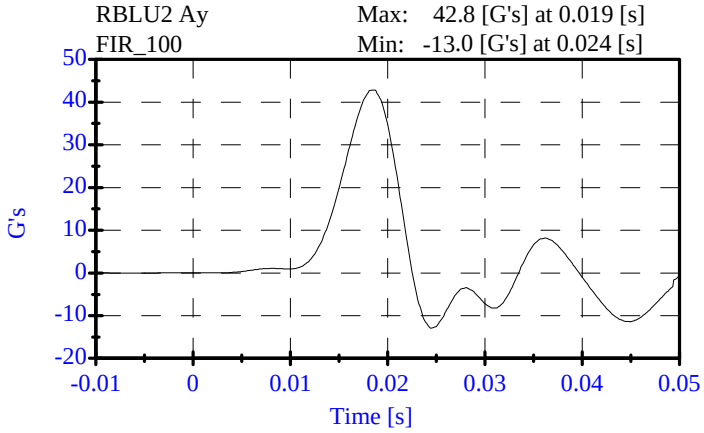
CONFIGURED FOR LEFT SIDE IMPACT

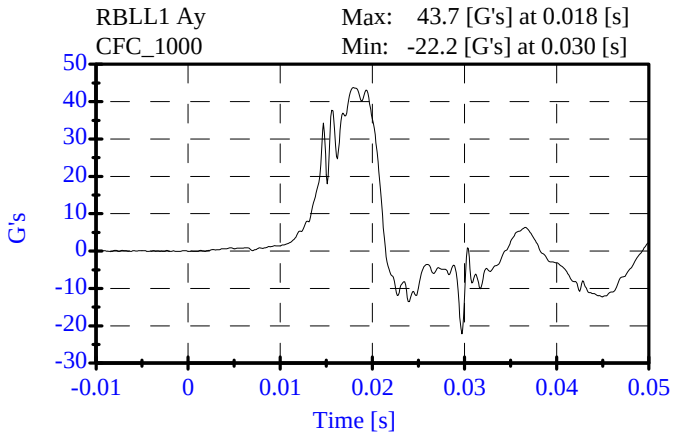
ATD Serial No: 905 Sequential Test Number: 1 File: 905T 08-3-07

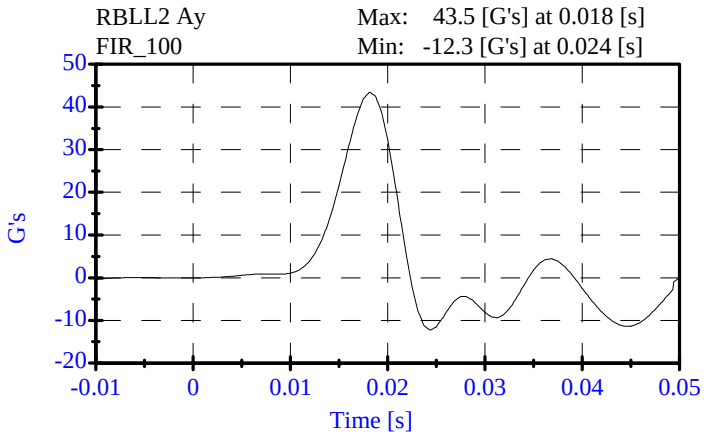
Date: 08-03-07 Laboratory Technician: B. Swiecicki

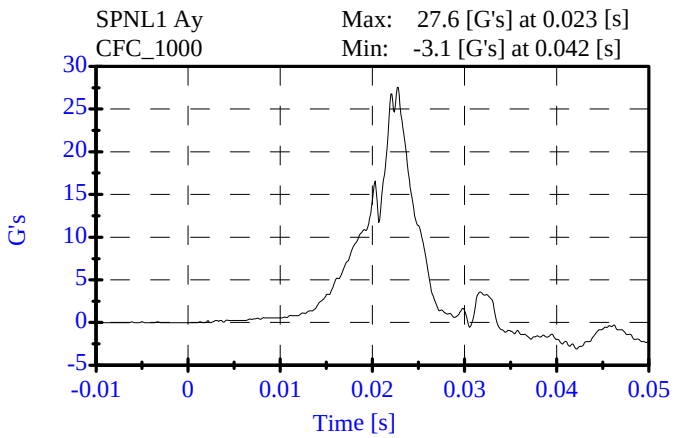
TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	18.9-25.5 C	21.1 C	Passed
Lab Humidity:	10-70 %	44.00 %	Passed
Probe Velocity:	4.27- 4.33 m/s	4.29 m/s	Passed
Upper Rib Acceleration:	37.00-46.00 G's	42.78 G's	Passed
Lower Rib Acceleration:	37.00-46.00 G's	43.47 G's	Passed
Lower Spine Acceleration:	15.00-22.00 G's	21.86 G's	Passed

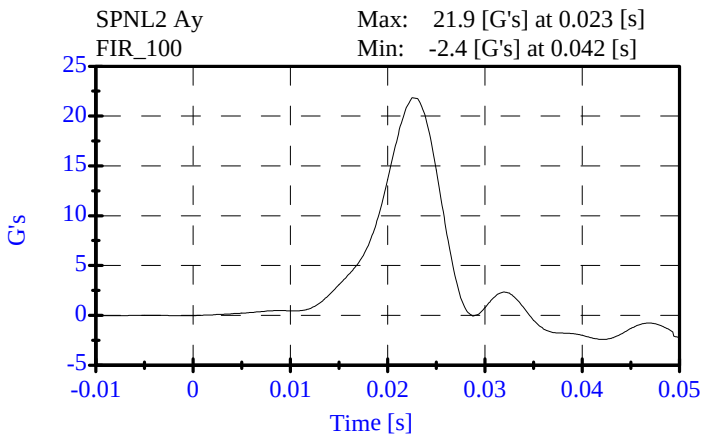












Pelvic Impact

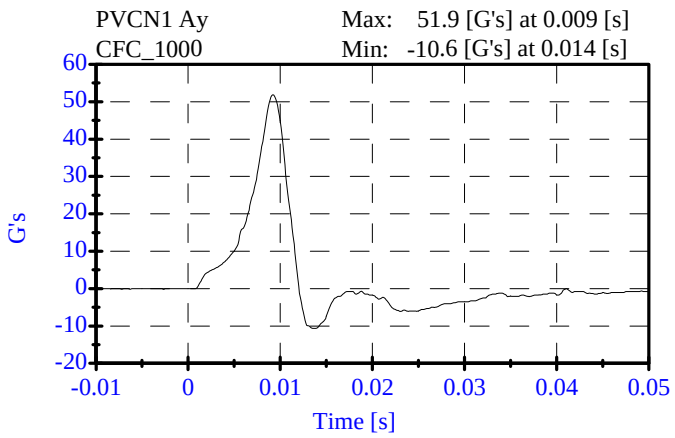
Pre-Test

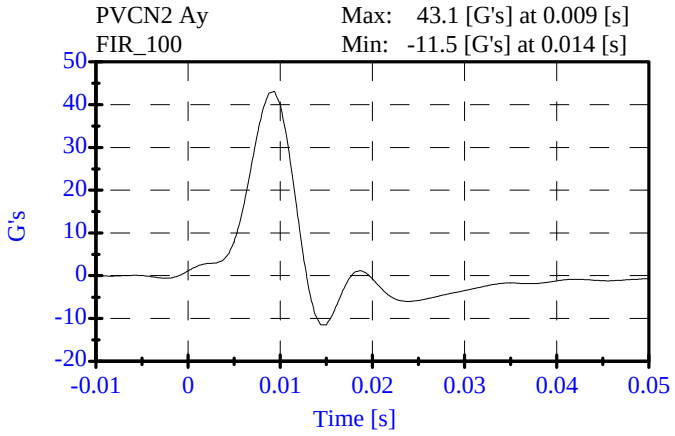
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 905 Sequential Test Number: 1 File: 905P1 08-3-07

Date: 08-03-07 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 %	44.00 %	Passed
Probe Velocity:	4.27- 4.33 m/s	4.32 m/s	Passed
Pelvis Y Acceleration:	40.00-60.00 G's	43.11 G's	Passed
Time Above 20 Gs	3.0-7.0 ms	5.2 ms	Passed





Head Drop

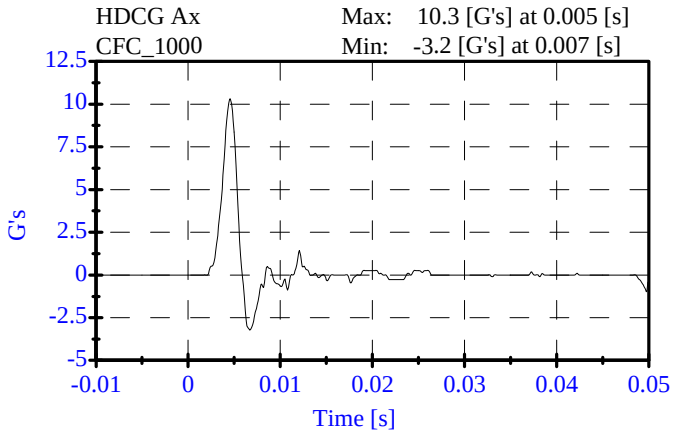
Pre-Test

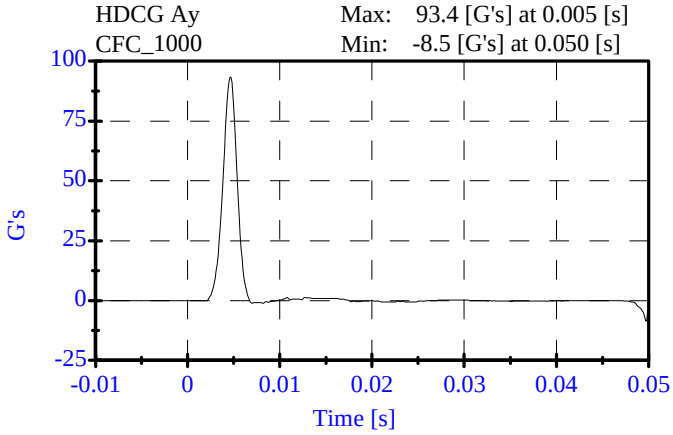
CONFIGURED FOR LEFT SIDE IMPACT

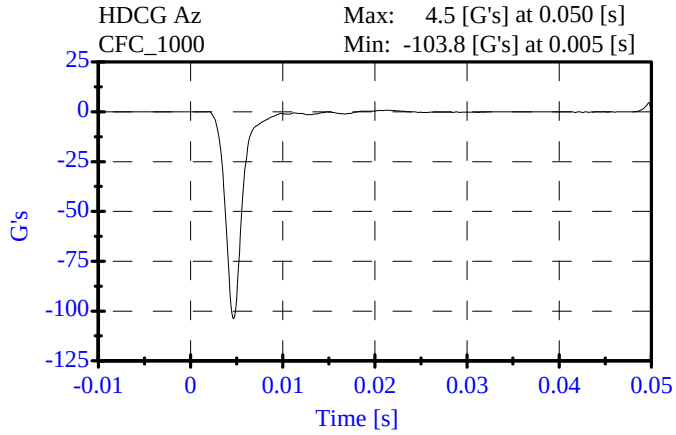
ATD Serial No: 905 Sequential Test Number: 1 File: 905H 07-30-07

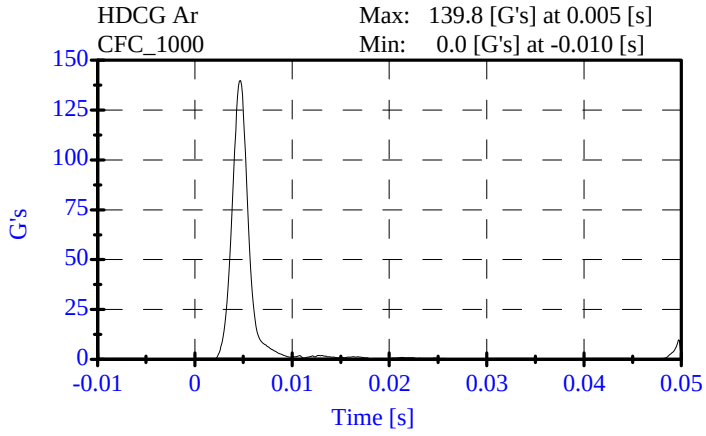
Date: 07-30-07 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	18.9-25.6 C	21.1 C	Passed
Lab Humidity:	10-70 %	37.00 %	Passed
Peak Resultant Accel.:	120-150 Gs	139.85 Gs	Passed
Peak Lateral Accel.:	15 Gs Max	10.30 Gs	Passed
Curve PerCent NonModal:	< 15%	6.95 %	Passed









Neck Test

Pre-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 905 Sequential Test Number: 1 File: 905N 07-31-07

Date: 07-31-07 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	20.6-22.2 C	21.1 C	Passed
Lab Humidity:	10-70 %	33.00 %	Passed
Impact Velocity:	6.89- 7.13 m/s	6.99 m/s	Passed
PENDULUM DELTA V			
Delta V at 10 ms:	1.96- 2.55 m/s	2.04 m/s	Passed
Delta V at 20 ms:	4.12- 5.10 m/s	4.18 m/s	Passed
Delta V at 30 ms:	5.73- 7.01 m/s	6.00 m/s	Passed
Delta V between 40-70 ms:	6.27- 7.64 m/s	7.13 m/s	Passed
D PLANE ROTATION			
Maximum Rotation:	66.0-82.0 Deg	71.04 Deg	Passed
Rotation Angle Decay:	58.0-67.0 ms	59.90 ms	Passed
MOMENT ABOUT THE OCCIPITAL CONDYLE			
Max Occipital Moment:	73.00- 88.00 N-m	85.13 N-m	Passed
Occiptal Moment Decay:	49.0-64.0 ms	54.70 ms	Passed
HEAD ROTATION TIME WITH RESPECT TO THE OCCIPITAL CONDYLE MOMENT			
Moment to Rotation Peak:	2.0-16.0 ms	6.80 ms	Passed

Neck Test

Pre-Test

CONFIGURED FOR LEFT SIDE IMPACT

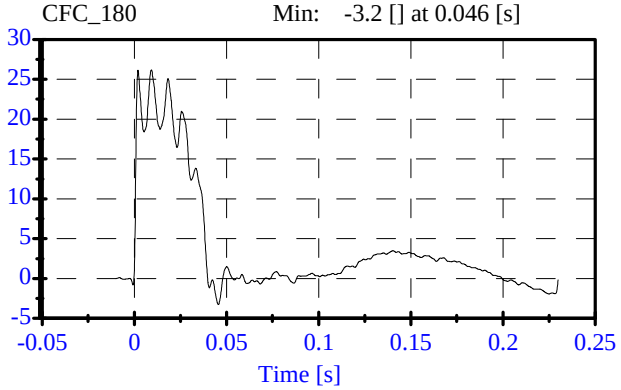
ATD Serial No: 905

Sequential Test Number: 1 File: 905N 07-31-07

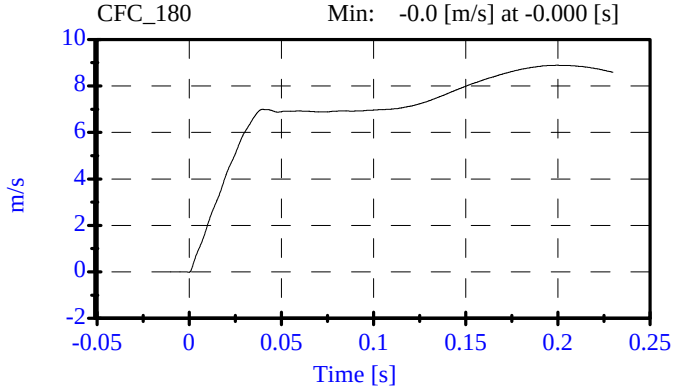
Date: 07-31-07

Laboratory Technician: B. Swiecicki

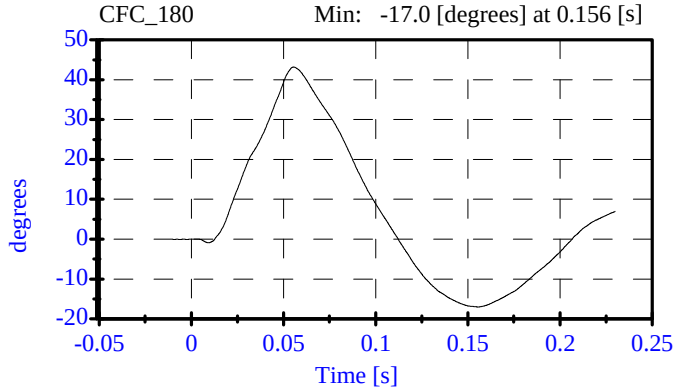
Pend Ax
CFC_180
Max: 26.2 [] at 0.009 [s]
Min: -3.2 [] at 0.046 [s]



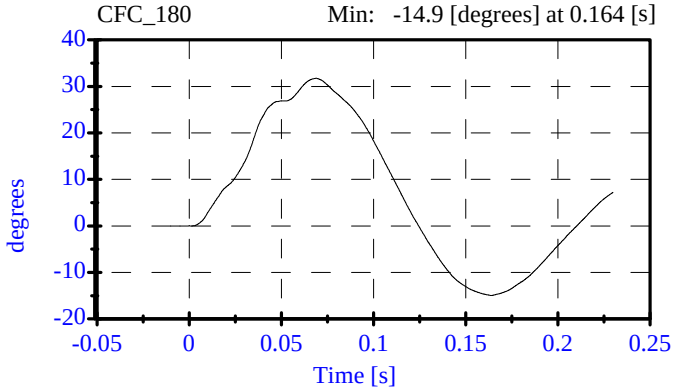
Pend Vx
CFC_180
Max: 8.9 [m/s] at 0.200 [s]
Min: -0.0 [m/s] at -0.000 [s]



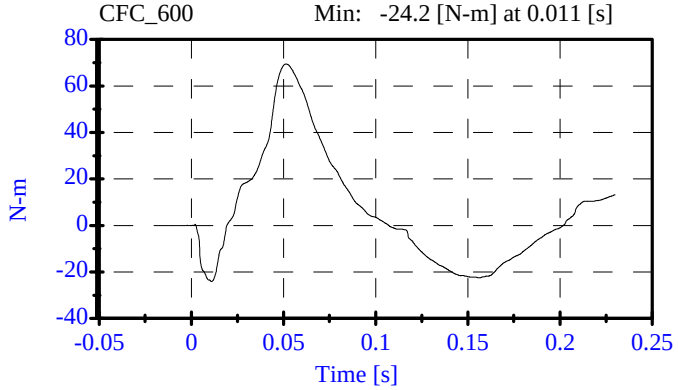
Head Rot
CFC_180
Max: 43.2 [degrees] at 0.055 [s]
Min: -17.0 [degrees] at 0.156 [s]



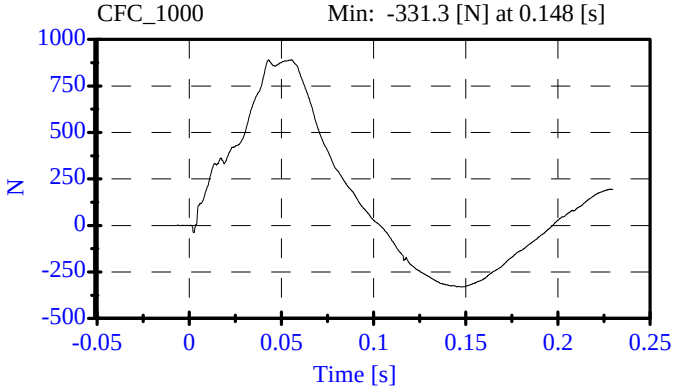
Arm Rot
CFC_180
Max: 31.7 [degrees] at 0.069 [s]
Min: -14.9 [degrees] at 0.164 [s]



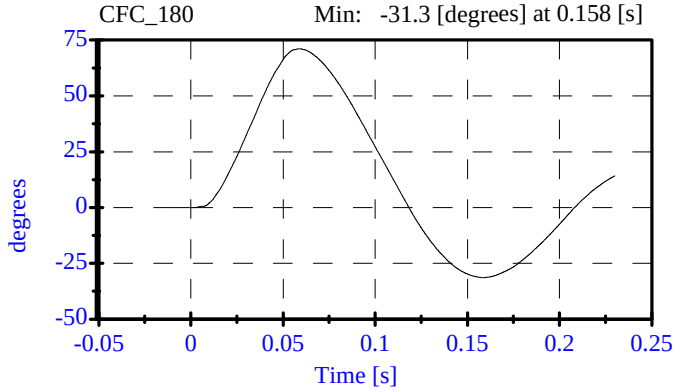
Neck Mx
CFC_600
Max: 69.4 [N-m] at 0.051 [s]
Min: -24.2 [N-m] at 0.011 [s]



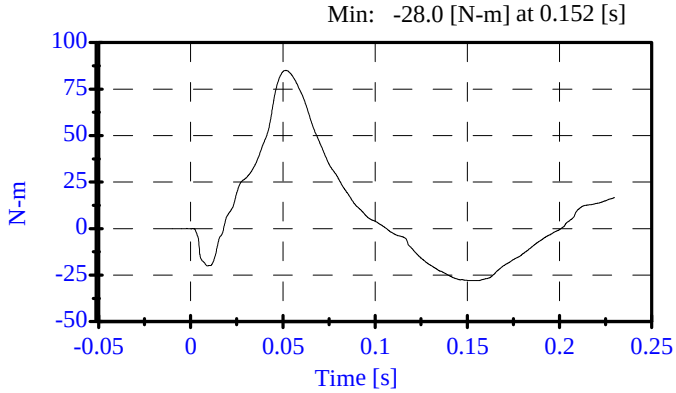
Neck Fy
CFC_1000
Max: 890.3 [N] at 0.056 [s]
Min: -331.3 [N] at 0.148 [s]



Tot Rot
CFC_180
Max: 71.0 [degrees] at 0.058 [s]
Min: -31.3 [degrees] at 0.158 [s]



MOCX
Max: 85.1 [N-m] at 0.052 [s]
Min: -28.0 [N-m] at 0.152 [s]



PRE-TEST DUMMY INSPECTION LIST

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 905 Sequential Test Number: 1
Date: 8/03/07 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.: 906

CONFIGURED FOR LEFT SIDE IMPACT

CALIBRATION TEST RESULTS SUMMARY
PRE-TEST

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 906 Sequential Test Number: 1
Date: 8/03/07 Laboratory Technician: B. Swiecicki

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.: 906 Sequential Test Number: 1
Date: 8/03/07 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	902
RH- Rib Height (mm)	502 - 520	511
HP- Hip Pivot Height (mm)	99 ref.	99
RD- Rib from Back Line (mm)	229 - 241	239
KH- Knee Pivot from Back Line (mm)	511 - 526	518
KV- Knee Pivot to Floor (mm)	490 - 505	493
HW- Hip Width (mm)	356 - 391	386

REMARKS: None

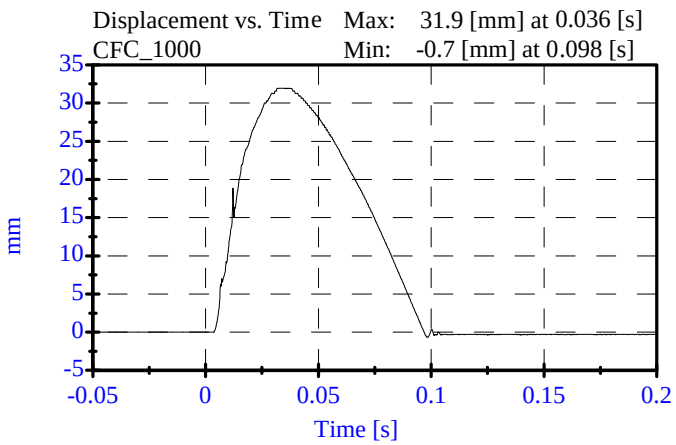
Shock Impact Low (3.05 m/s)
PRE TEST

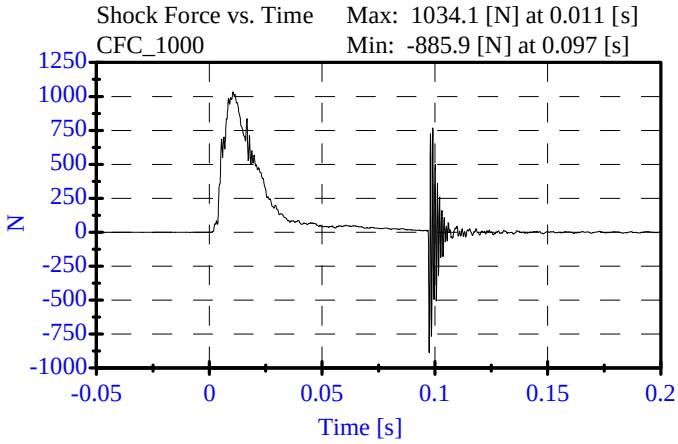
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 906 Sequential Test Number: 1 File: 906SL 08-1-07
Date: 08-01-07 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 %	36.00 %	Passed
Displacement:	30.00-35.00 mm	31.95 mm	Passed
Maximum Force:	836.00-1125.00 N	1034.07 N	Passed

Impact Test Velocity: 3.05 m/s
Damper Identification: 906
Damper Setting: 5





Shock Impact Med (4.27 m/s)

PRE TEST

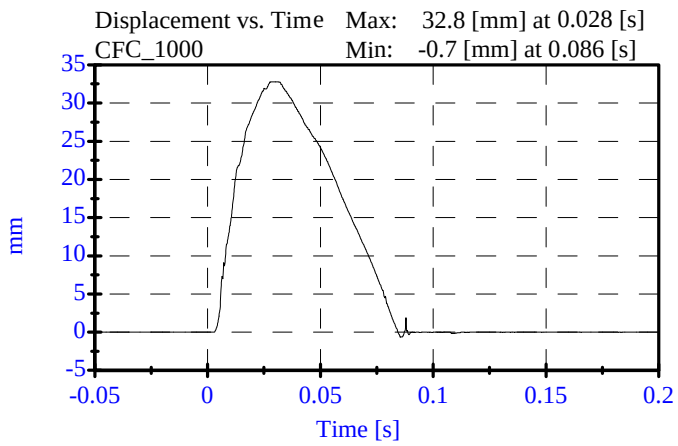
CONFIGURED FOR LEFT SIDE IMPACT

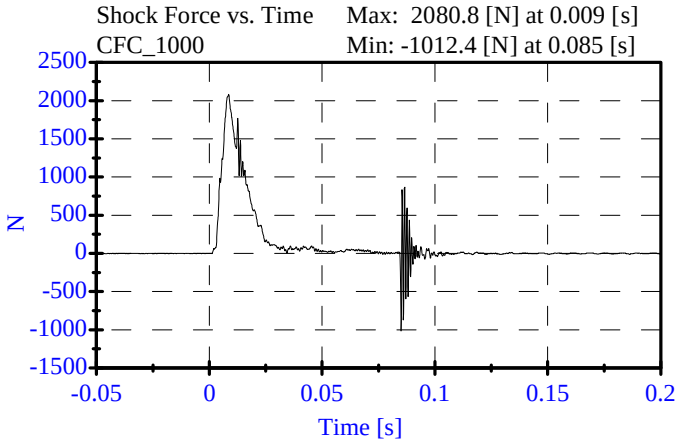
ATD Serial No: 906 Sequential Test Number: 1 File: 906SM 08-1-07

Date: 08-01-07 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 %	36.00 %	Passed
Displacement:	32.00-37.00 mm	32.78 mm	Passed
Maximum Force:	1730.00-2099.00 N	2080.78 N	Passed

Impact Test Velocity: 4.27 m/s
Damper Identification: 906
Damper Setting: 5





Shock Impact high (6.10 m/s)

PRE TEST

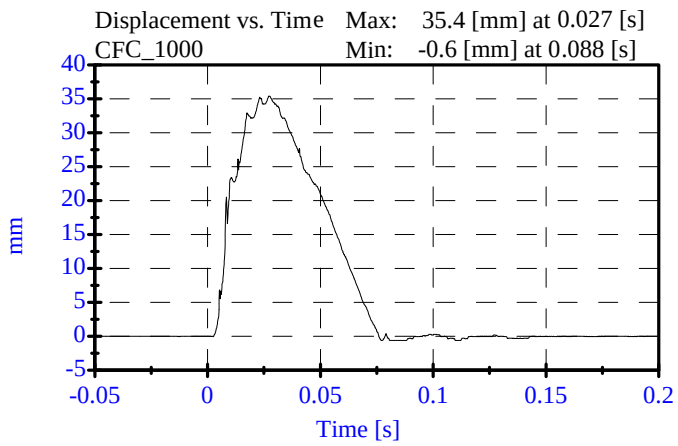
CONFIGURED FOR LEFT SIDE IMPACT

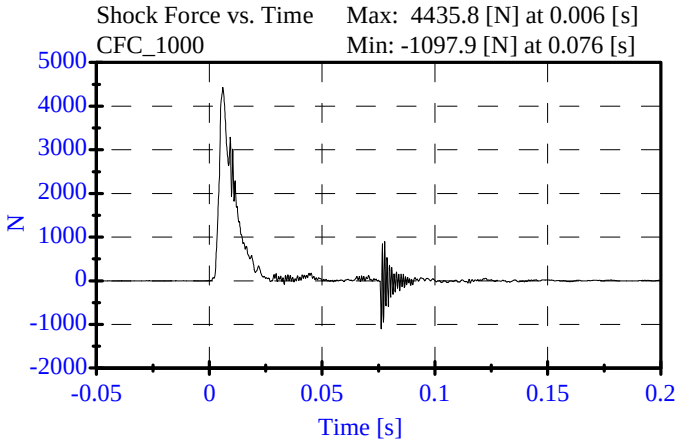
ATD Serial No: 906 Sequential Test Number: 1 File: 906SH 08-1-07

Date: 08-01-07 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 %	36.00 %	Passed
Displacement:	33.00-40.00 mm	35.42 mm	Passed
Maximum Force:	3741.00-4448.00 N	4435.77 N	Passed

Impact Test Velocity: 6.10 m/s
Damper Identification: 906
Damper Setting: 5





Thorax Impact

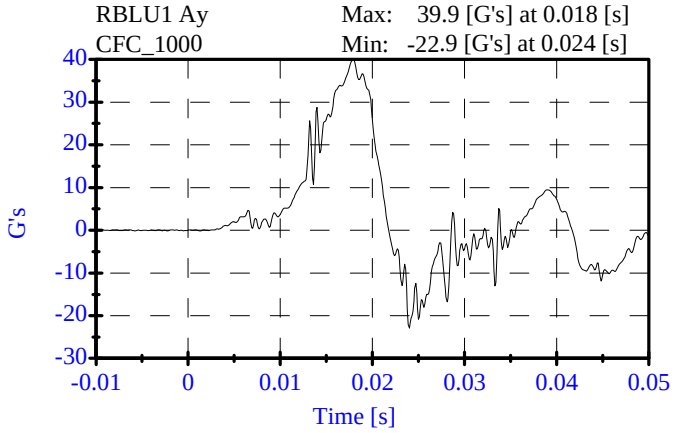
Pre-Test

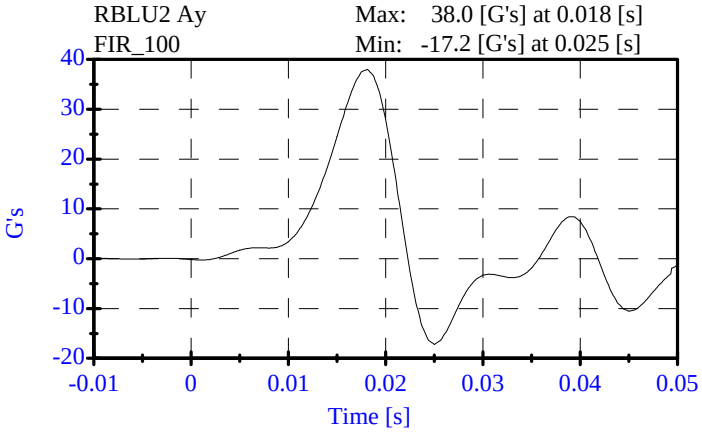
CONFIGURED FOR LEFT SIDE IMPACT

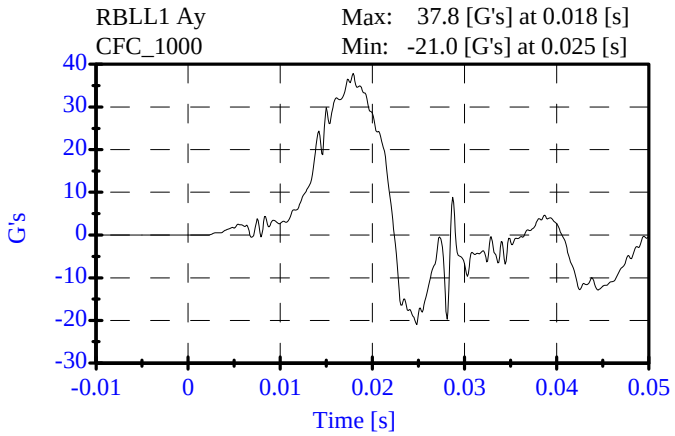
ATD Serial No: 906 Sequential Test Number: 1 File: 906T2 08-2-07

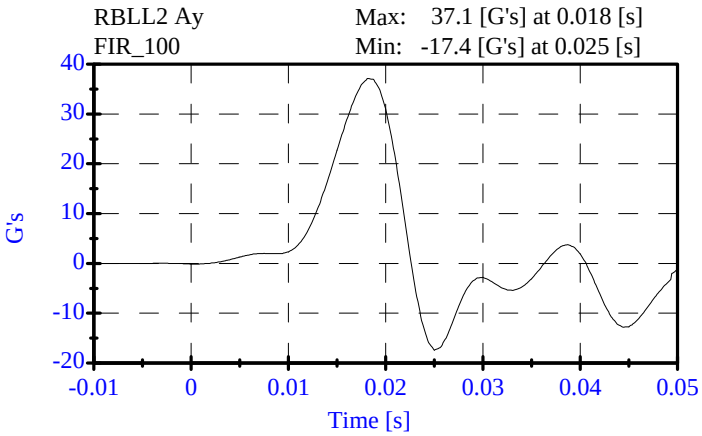
Date: 08-02-07 Laboratory Technician: B. Swiecicki

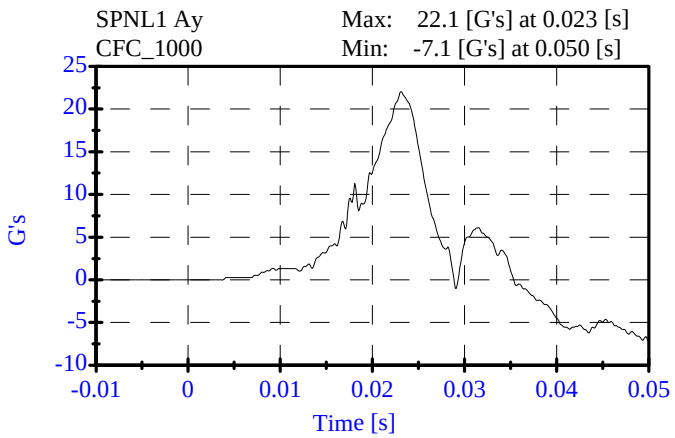
TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	18.9-25.5 C	21.1 C	Passed
Lab Humidity:	10-70 %	39.00 %	Passed
Probe Velocity:	4.27- 4.33 m/s	4.33 m/s	Passed
Upper Rib Acceleration:	37.00-46.00 G's	38.00 G's	Passed
Lower Rib Acceleration:	37.00-46.00 G's	37.14 G's	Passed
Lower Spine Acceleration:	15.00-22.00 G's	20.53 G's	Passed

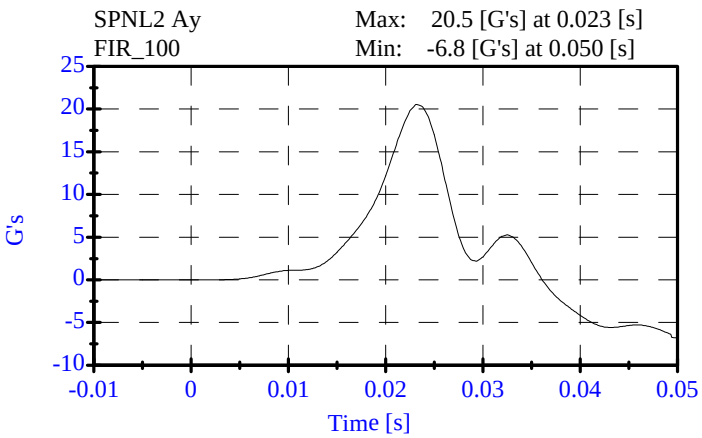












Pelvic Impact

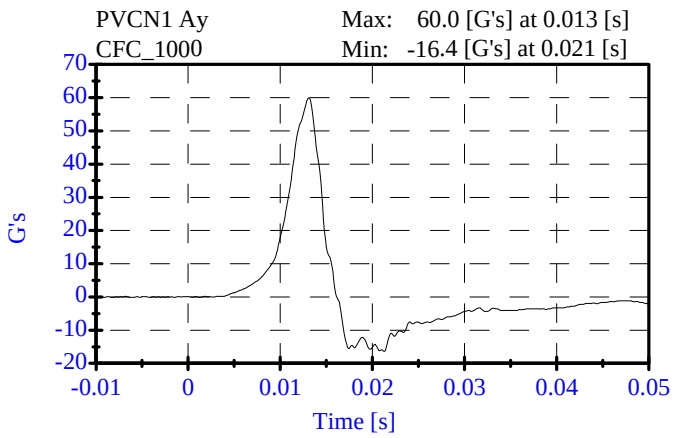
Pre-Test

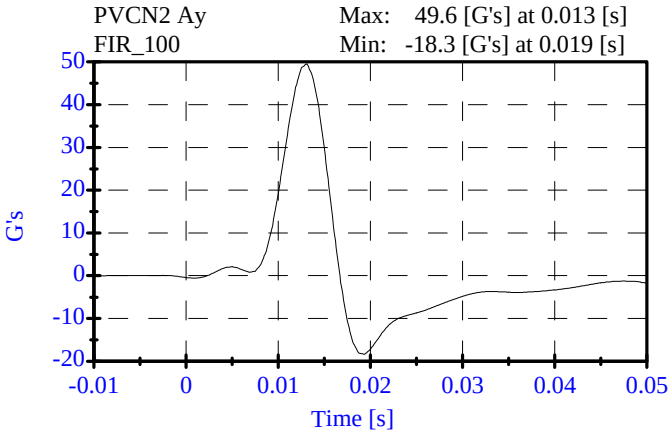
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 906 Sequential Test Number: 1 File: 906P 08-3-07

Date: 08-03-07 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 %	44.00 %	Passed
Probe Velocity:	4.27- 4.33 m/s	4.30 m/s	Passed
Pelvis Y Acceleration:	40.00-60.00 G's	49.60 G's	Passed
Time Above 20 Gs	3.0-7.0 ms	5.5 ms	Passed





Head Drop

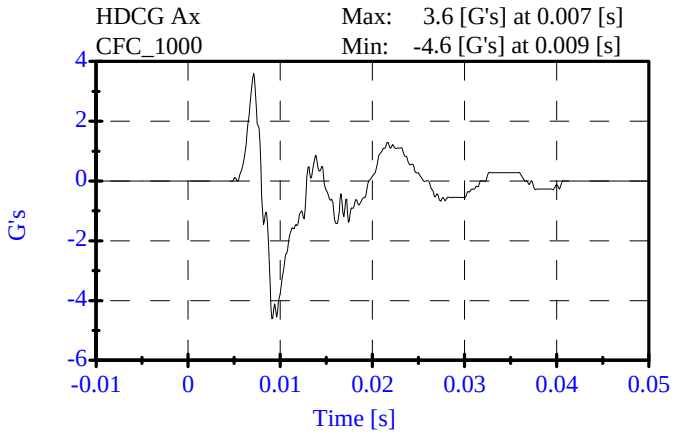
Pre-Test

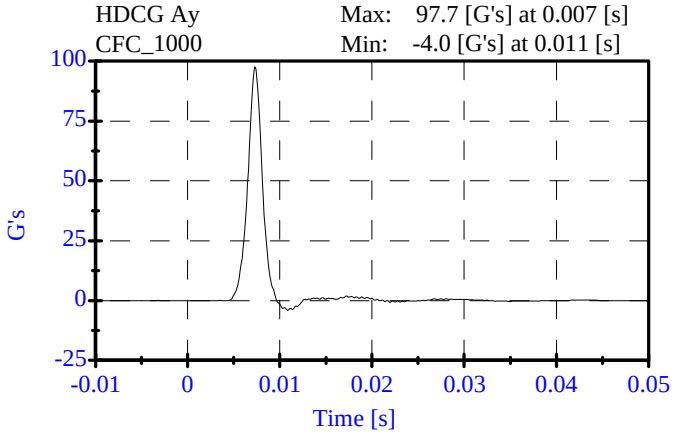
CONFIGURED FOR LEFT SIDE IMPACT

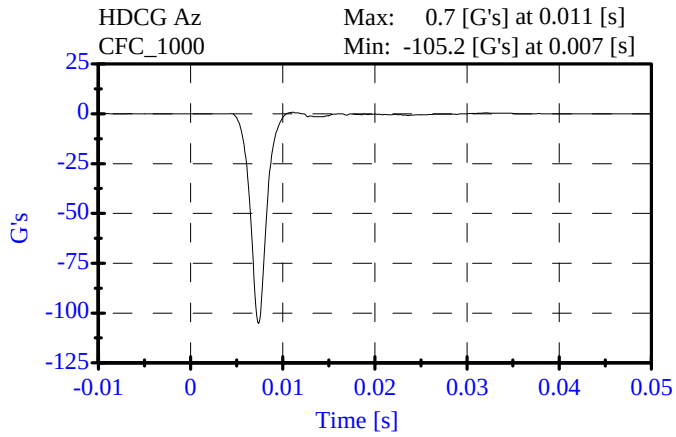
ATD Serial No: 906 Sequential Test Number: 1 File: 906H2 07-30-07

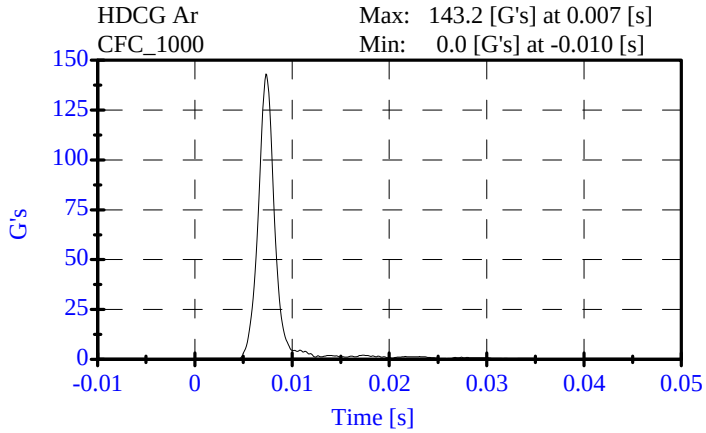
Date: 07-30-07 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	18.9-25.6 C	21.1 C	Passed
Lab Humidity:	10-70 %	37.00 %	Passed
Peak Resultant Accel.:	120-150 Gs	143.15 Gs	Passed
Peak Lateral Accel.:	15 Gs Max	3.60 Gs	Passed
Curve PerCent NonModal:	< 15%	3.27 %	Passed









Neck Test

Pre-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 906 Sequential Test Number: 1 File: 906N 07-31-07

Date: 07-31-07 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	20.6-22.2 C	21.1 C	Passed
Lab Humidity:	10-70 %	33.00 %	Passed
Impact Velocity:	6.89- 7.13 m/s	6.94 m/s	Passed
PENDULUM DELTA V			
Delta V at 10 ms:	1.96- 2.55 m/s	2.21 m/s	Passed
Delta V at 20 ms:	4.12- 5.10 m/s	4.54 m/s	Passed
Delta V at 30 ms:	5.73- 7.01 m/s	6.51 m/s	Passed
Delta V between 40-70 ms:	6.27- 7.64 m/s	7.17 m/s	Passed
D PLANE ROTATION			
Maximum Rotation:	66.0-82.0 Deg	70.57 Deg	Passed
Rotation Angle Decay:	58.0-67.0 ms	59.20 ms	Passed
MOMENT ABOUT THE OCCIPITAL CONDYLE			
Max Occipital Moment:	73.00- 88.00 N-m	87.41 N-m	Passed
Occiptal Moment Decay:	49.0-64.0 ms	54.40 ms	Passed
HEAD ROTATION TIME WITH RESPECT TO THE OCCIPITAL CONDYLE MOMENT			
Moment to Rotation Peak:	2.0-16.0 ms	8.20 ms	Passed

Neck Test

Pre-Test

CONFIGURED FOR LEFT SIDE IMPACT

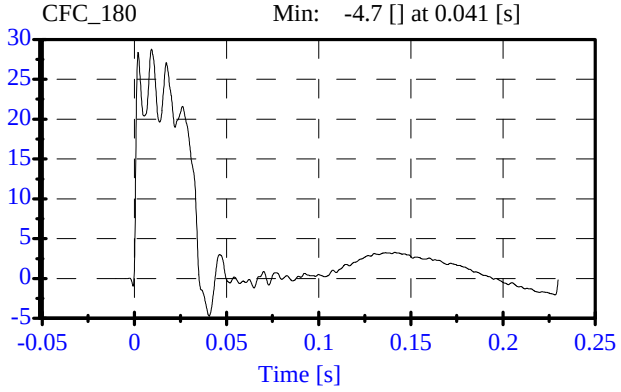
ATD Serial No: 906

Sequential Test Number: 1 File: 906N 07-31-07

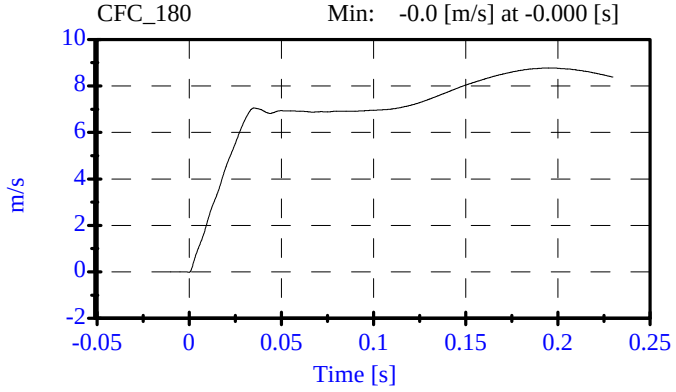
Date: 07-31-07

Laboratory Technician: B. Swiecicki

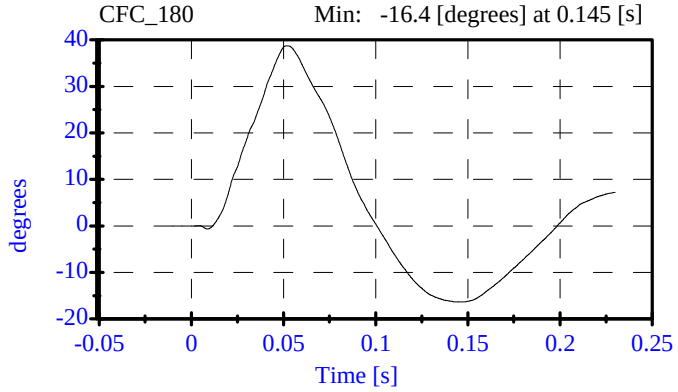
Pend Ax
CFC_180
Max: 28.8 [] at 0.009 [s]
Min: -4.7 [] at 0.041 [s]



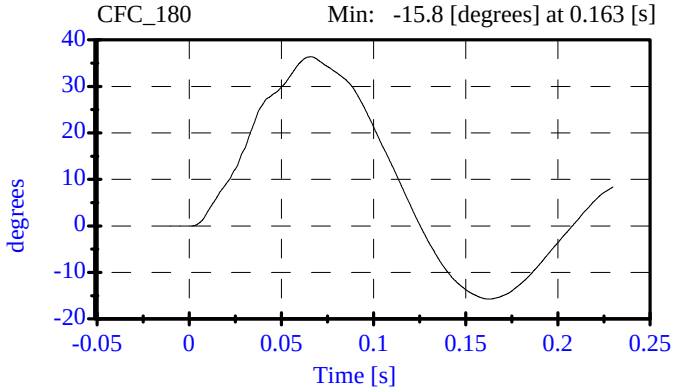
Pend Vx
CFC_180
Max: 8.8 [m/s] at 0.194 [s]
Min: -0.0 [m/s] at -0.000 [s]



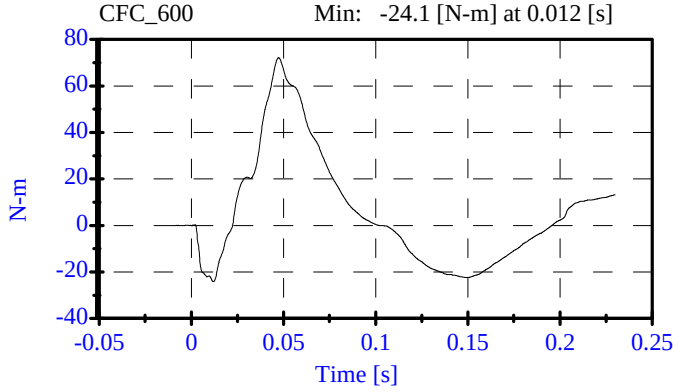
Head Rot
CFC_180
Max: 38.7 [degrees] at 0.052 [s]
Min: -16.4 [degrees] at 0.145 [s]



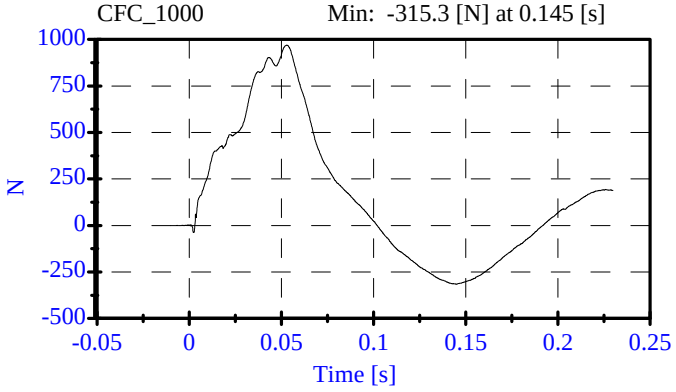
Arm Rot
CFC_180
Max: 36.4 [degrees] at 0.066 [s]
Min: -15.8 [degrees] at 0.163 [s]



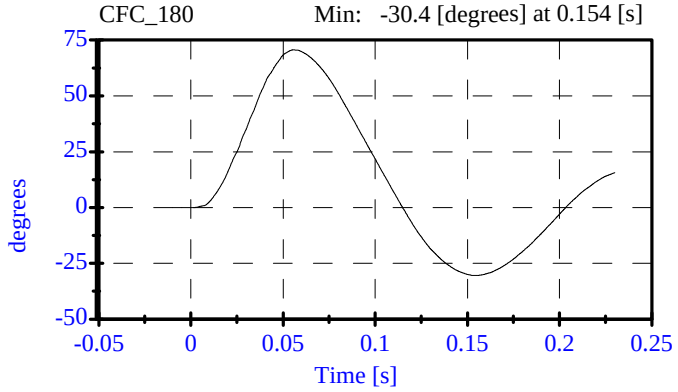
Neck Mx
CFC_600
Max: 72.2 [N-m] at 0.047 [s]
Min: -24.1 [N-m] at 0.012 [s]



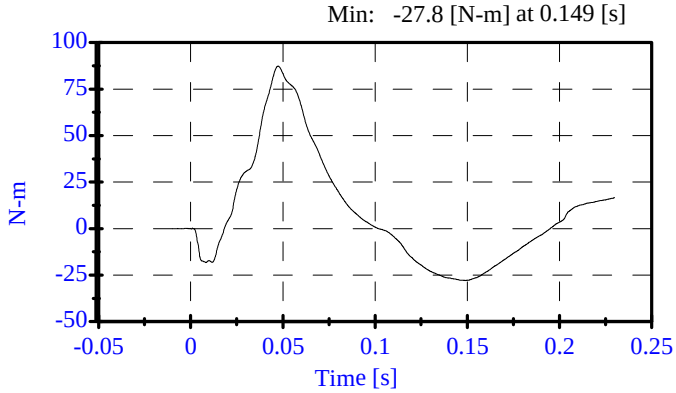
Neck Fy
CFC_1000
Max: 969.9 [N] at 0.053 [s]
Min: -315.3 [N] at 0.145 [s]



Tot Rot
CFC_180
Max: 70.6 [degrees] at 0.056 [s]
Min: -30.4 [degrees] at 0.154 [s]



MOCX
Max: 87.4 [N-m] at 0.048 [s]
Min: -27.8 [N-m] at 0.149 [s]



PRE-TEST DUMMY INSPECTION LIST

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 906 Sequential Test Number: 1
Date: 8/03/07 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.: 905

CONFIGURED FOR LEFT SIDE IMPACT

CALIBRATION TEST RESULTS SUMMARY
POST TEST

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 905 Sequential Test Number: 2
Date: 9/27/07 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.: 905 Sequential Test Number: 2
Date: 9/27/07 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	902
RH- Rib Height (mm)	502 - 520	513
HP- Hip Pivot Height (mm)	99 ref.	99
RD- Rib from Back Line (mm)	229 - 241	239
KH- Knee Pivot from Back Line (mm)	511 - 526	521
KV- Knee Pivot to Floor (mm)	490 - 505	496
HW- Hip Width (mm)	356 - 391	381

REMARKS: None

Thorax Impact

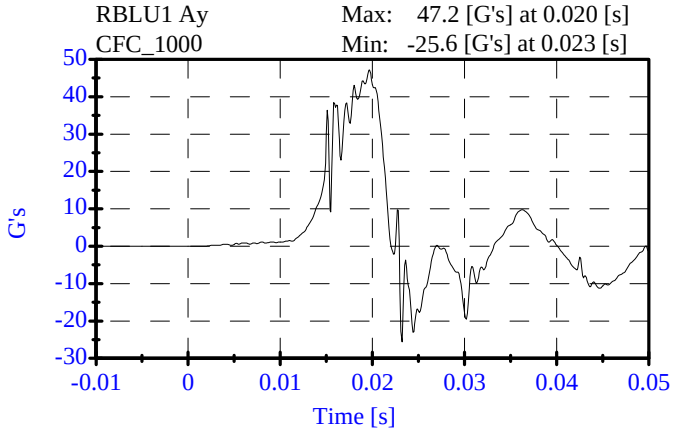
Post-Test

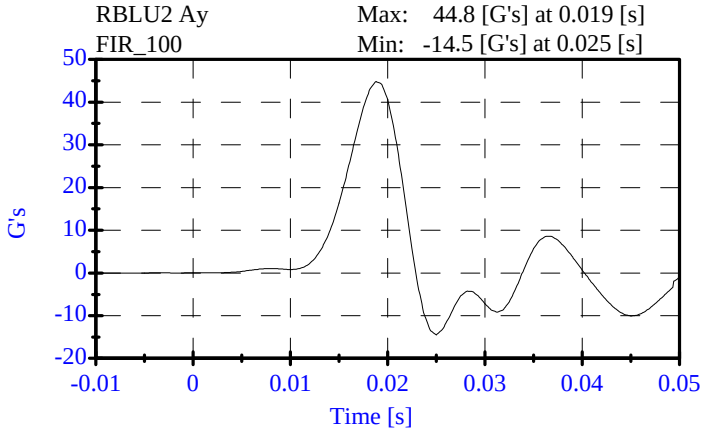
CONFIGURED FOR LEFT SIDE IMPACT

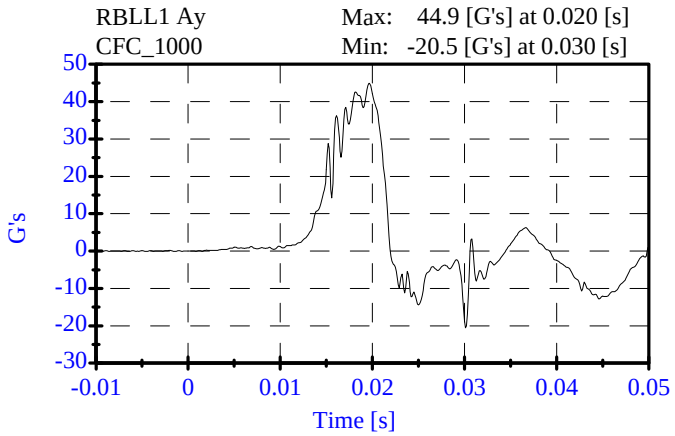
ATD Serial No: 905 Sequential Test Number: 1 File: 905T 09-27-07

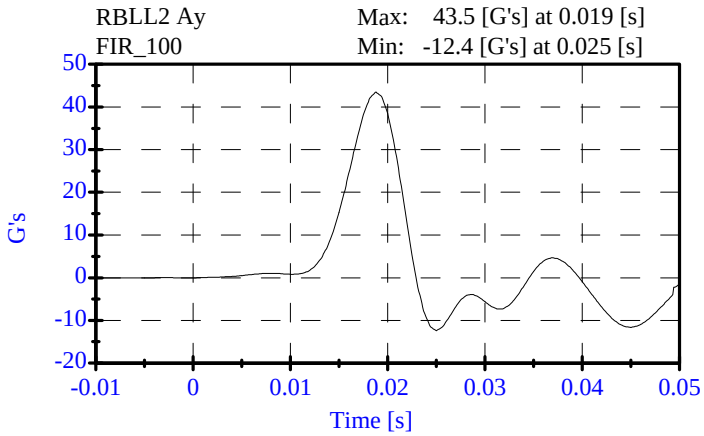
Date: 09-27-07 Laboratory Technician: B. Swiecicki

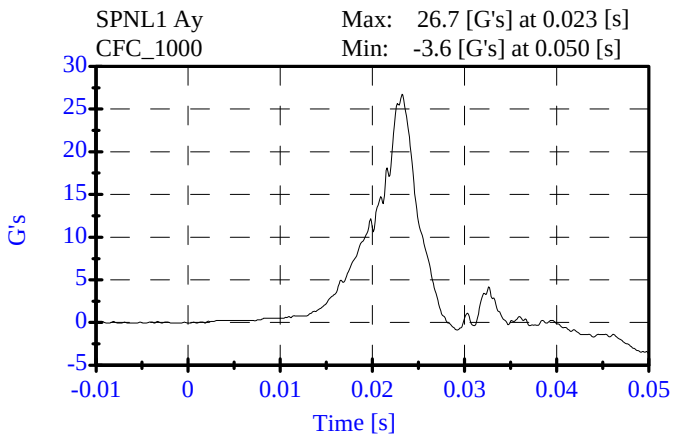
TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	18.9-25.5 C	21.1 C	Passed
Lab Humidity:	10-70 %	33.00 %	Passed
Probe Velocity:	4.27- 4.33 m/s	4.32 m/s	Passed
Upper Rib Acceleration:	37.00-46.00 G's	44.81 G's	Passed
Lower Rib Acceleration:	37.00-46.00 G's	43.48 G's	Passed
Lower Spine Acceleration:	15.00-22.00 G's	21.77 G's	Passed

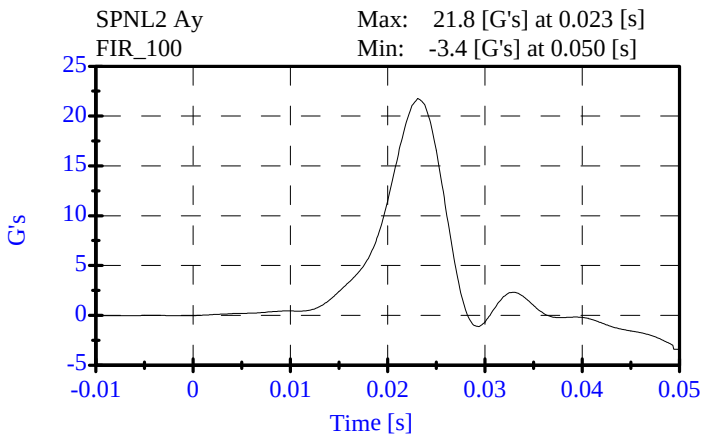












Pelvic Impact

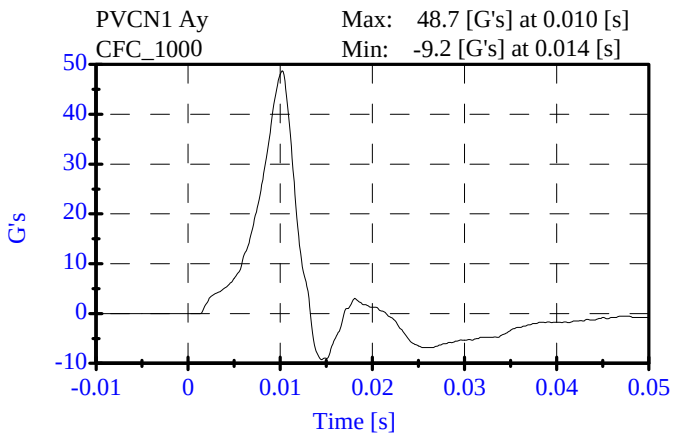
Post-Test

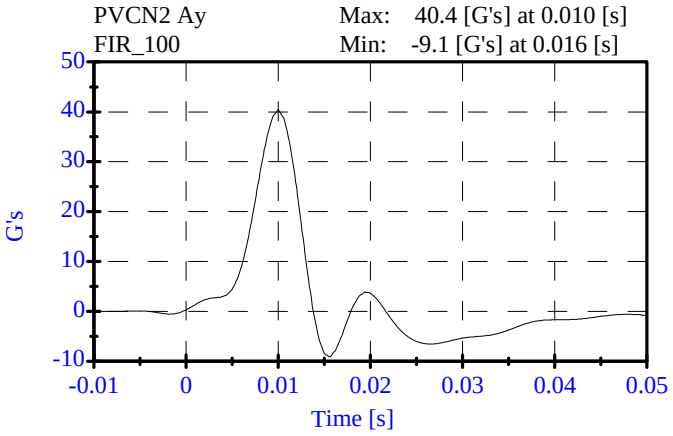
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 905 Sequential Test Number: 1 File: 905P 09-27-07

Date: 09-27-07 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 %	33.00 %	Passed
Probe Velocity:	4.27- 4.33 m/s	4.32 m/s	Passed
Pelvis Y Acceleration:	40.00-60.00 G's	40.44 G's	Passed
Time Above 20 Gs	3.0-7.0 ms	5.0 ms	Passed





Head Drop

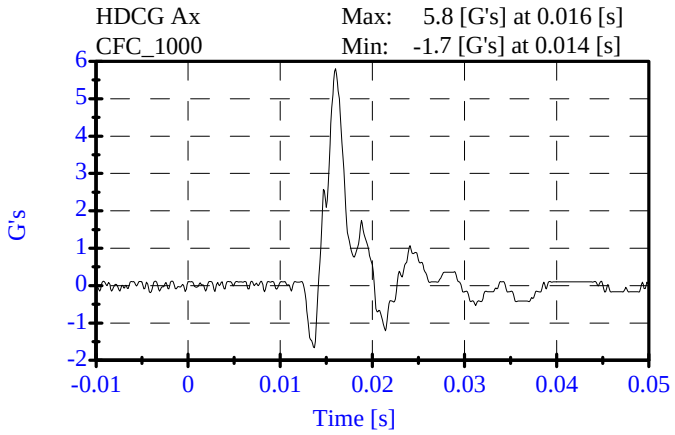
Post-Test

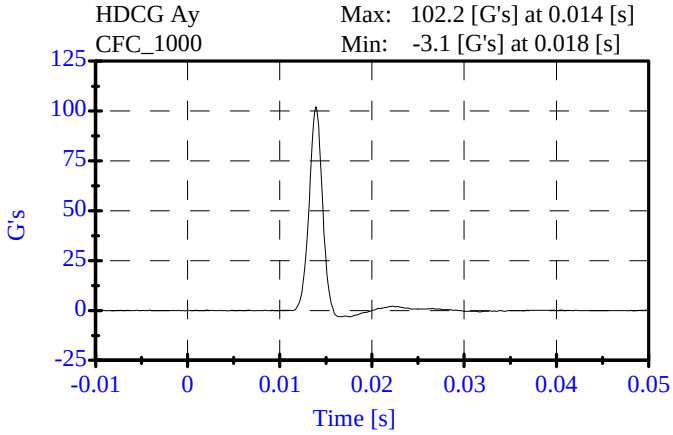
CONFIGURED FOR LEFT SIDE IMPACT

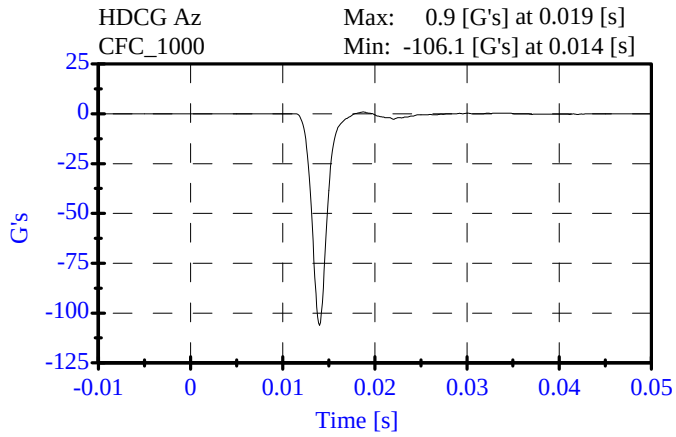
ATD Serial No: 905 Sequential Test Number: 1 File: 905H 09-25-07

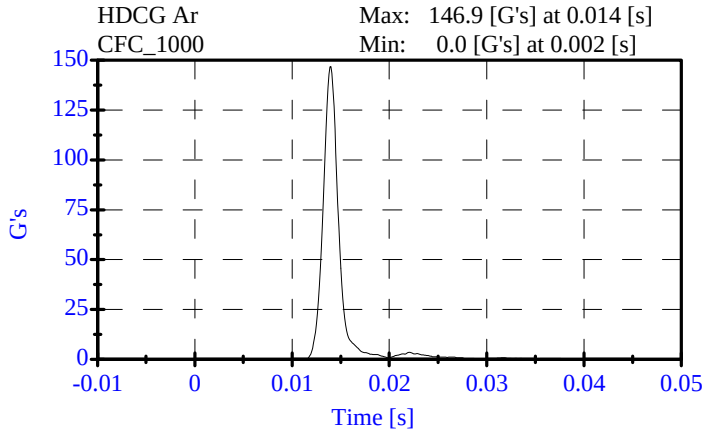
Date: 09-25-07 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	18.9-25.6 C	21.1 C	Passed
Lab Humidity:	10-70 %	36.00 %	Passed
Peak Resultant Accel.:	120-150 Gs	146.86 Gs	Passed
Peak Lateral Accel.:	15 Gs Max	5.80 Gs	Passed
Curve PerCent NonModal:	< 15%	2.40 %	Passed









Neck Test

Post-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 905 Sequential Test Number: 1 File: 905N 09-25-07

Date: 09-25-07 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	20.6-22.2 C	21.1 C	Passed
Lab Humidity:	10-70 %	37.00 %	Passed
Impact Velocity:	6.89- 7.13 m/s	6.99 m/s	Passed
PENDULUM DELTA V			
Delta V at 10 ms:	1.96- 2.55 m/s	1.96 m/s	Passed
Delta V at 20 ms:	4.12- 5.10 m/s	4.14 m/s	Passed
Delta V at 30 ms:	5.73- 7.01 m/s	6.10 m/s	Passed
Delta V between 40-70 ms:	6.27- 7.64 m/s	6.97 m/s	Passed
D PLANE ROTATION			
Maximum Rotation:	66.0-82.0 Deg	71.31 Deg	Passed
Rotation Angle Decay:	58.0-67.0 ms	60.00 ms	Passed
MOMENT ABOUT THE OCCIPITAL CONDYLE			
Max Occipital Moment:	73.00- 88.00 N-m	84.98 N-m	Passed
Occiptal Moment Decay:	49.0-64.0 ms	57.70 ms	Passed
HEAD ROTATION TIME WITH RESPECT TO THE OCCIPITAL CONDYLE MOMENT			
Moment to Rotation Peak:	2.0-16.0 ms	10.00 ms	Passed

Neck Test

Post-Test

CONFIGURED FOR LEFT SIDE IMPACT

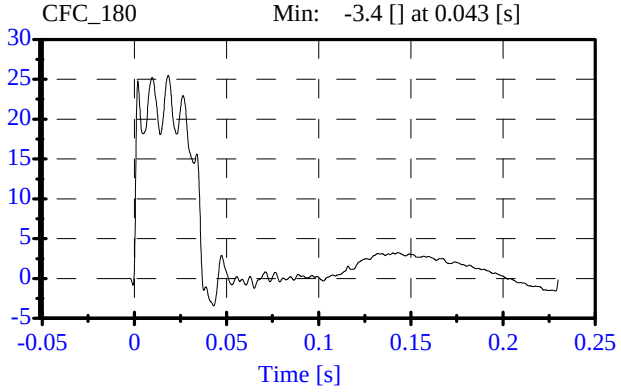
ATD Serial No: 905

Sequential Test Number: 1 File: 905N 09-25-07

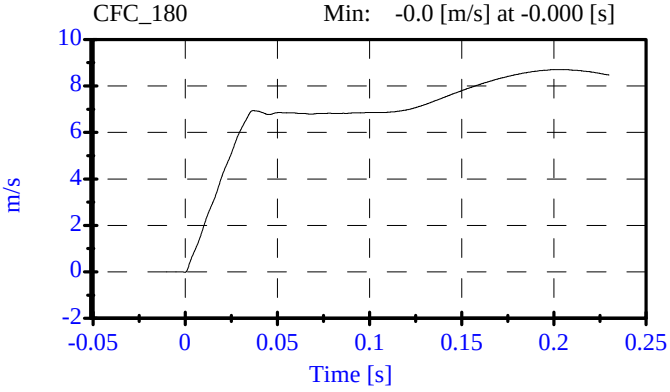
Date: 09-25-07

Laboratory Technician: B. Swiecicki

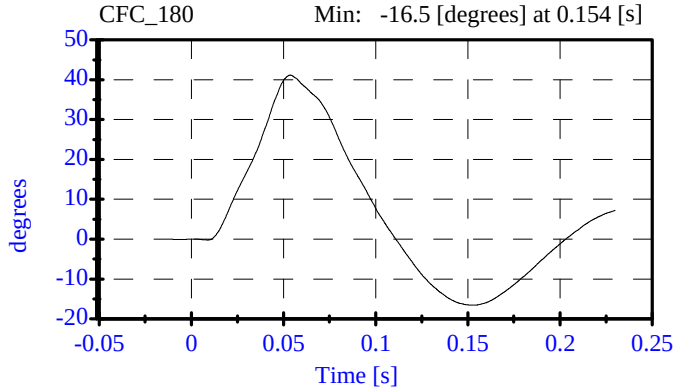
Pend Ax
CFC_180
Max: 25.5 [] at 0.018 [s]
Min: -3.4 [] at 0.043 [s]



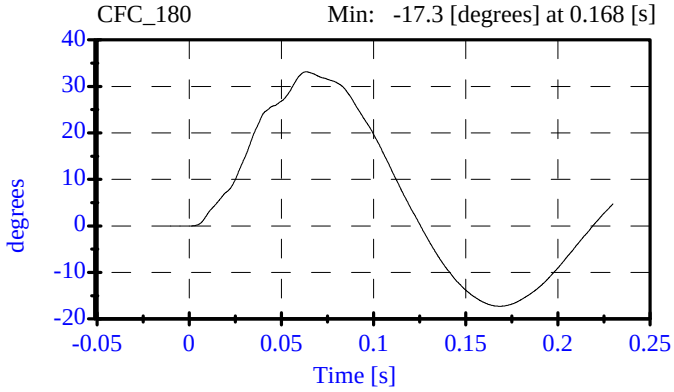
Pend Vx
CFC_180
Max: 8.7 [m/s] at 0.202 [s]
Min: -0.0 [m/s] at -0.000 [s]



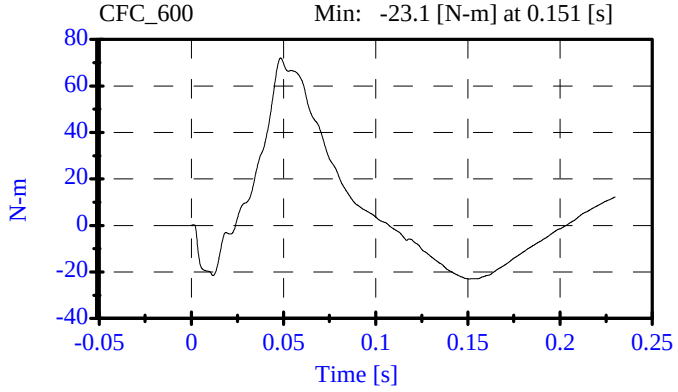
Head Rot
CFC_180
Max: 41.2 [degrees] at 0.054 [s]
Min: -16.5 [degrees] at 0.154 [s]



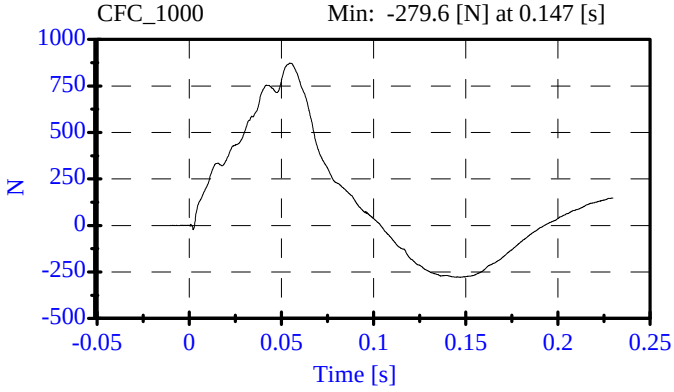
Arm Rot
CFC_180
Max: 33.2 [degrees] at 0.063 [s]
Min: -17.3 [degrees] at 0.168 [s]



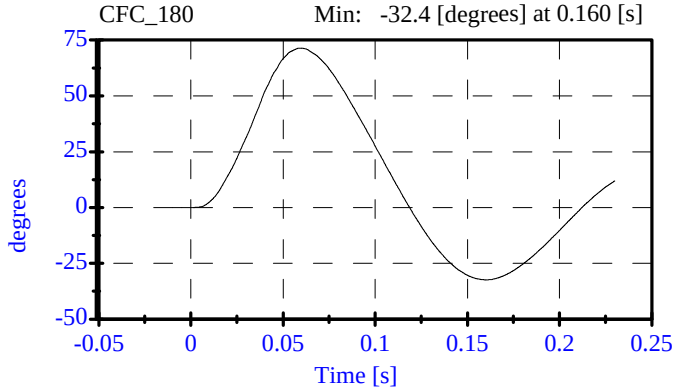
Neck Mx
CFC_600
Max: 72.1 [N-m] at 0.049 [s]
Min: -23.1 [N-m] at 0.151 [s]



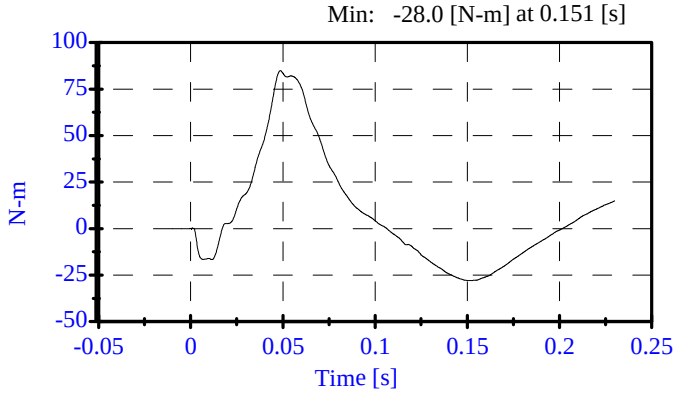
Neck Fy
CFC_1000
Max: 872.9 [N] at 0.054 [s]
Min: -279.6 [N] at 0.147 [s]



Tot Rot
CFC_180
Max: 71.3 [degrees] at 0.059 [s]
Min: -32.4 [degrees] at 0.160 [s]



MOCX
Max: 85.0 [N-m] at 0.049 [s]
Min: -28.0 [N-m] at 0.151 [s]



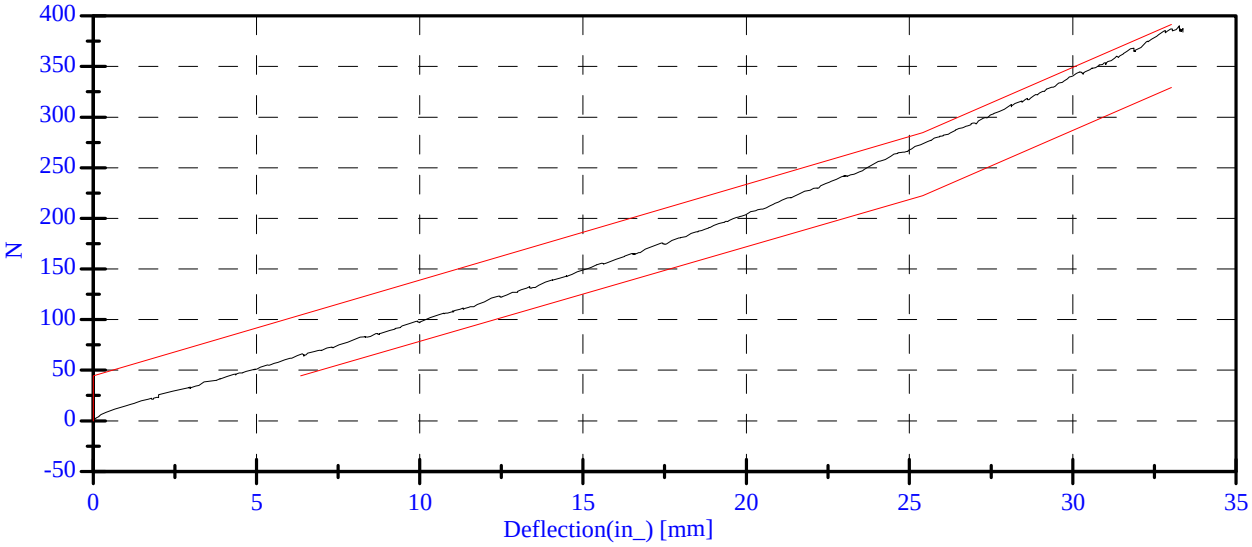
Abdomen Test
Post-Test

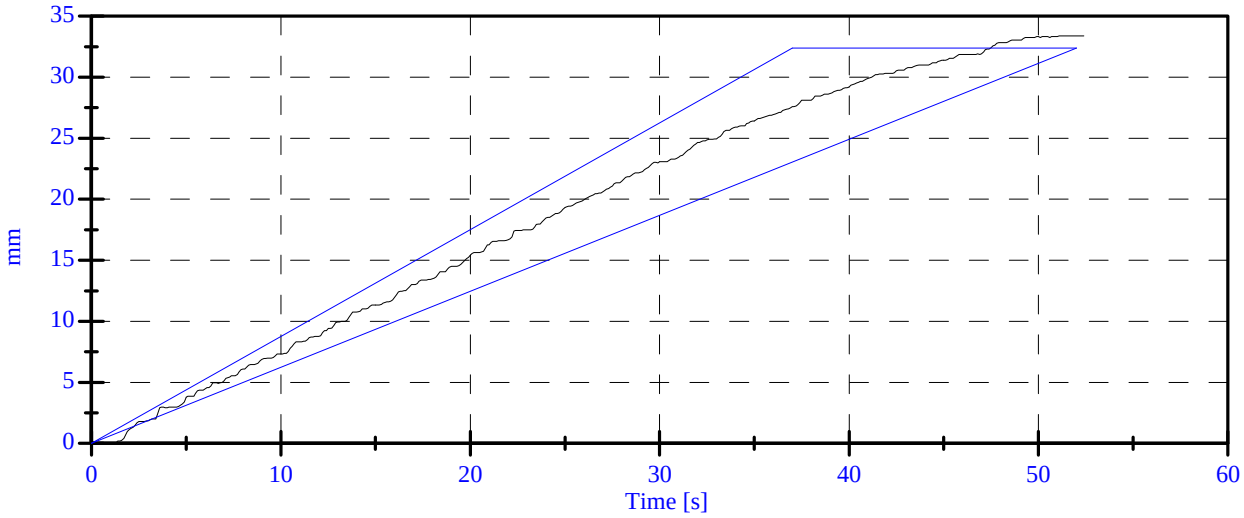
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 905 Sequential Test Number: 1 File: 905AB 09-28-07
Date: 09-28-07 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 %	44.00 %	Passed
Force at 12.95 mm :	104.00-162.00 N	127.03 N	Passed
Force at 19.05 mm :	162.98-220.99 N	193.01 N	Passed
Force at 25.40 mm :	221.97-280.02 N	272.75 N	Passed
Force at 33.02 mm :	324.99-391.00 N	386.93 N	Passed

ABDOMINAL COMPRESSION TEST





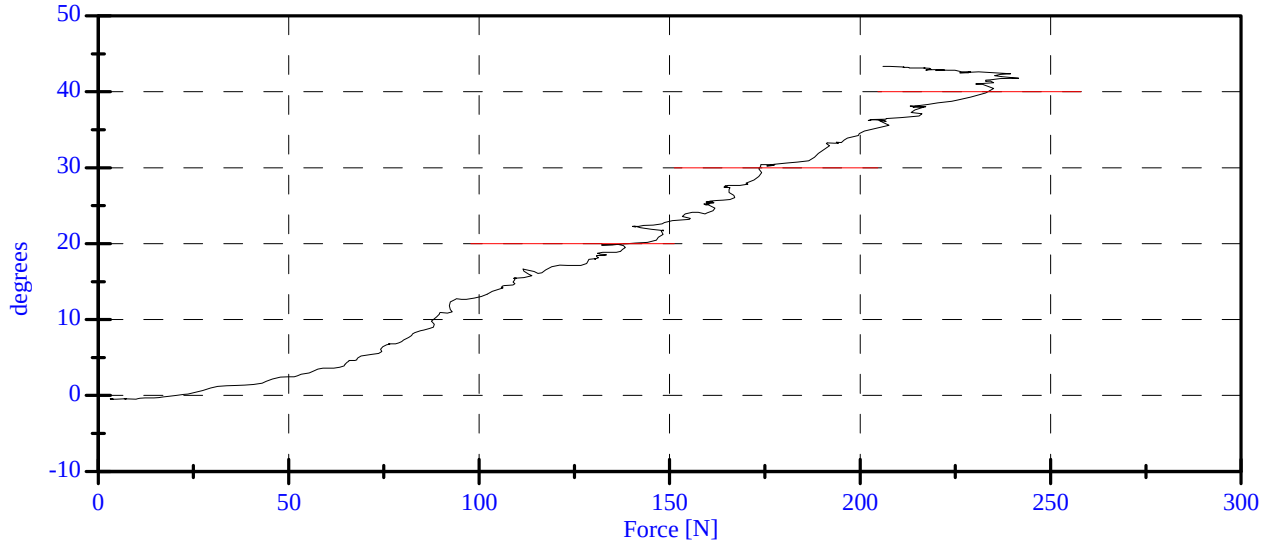
Lumbar Spine
Post-Test

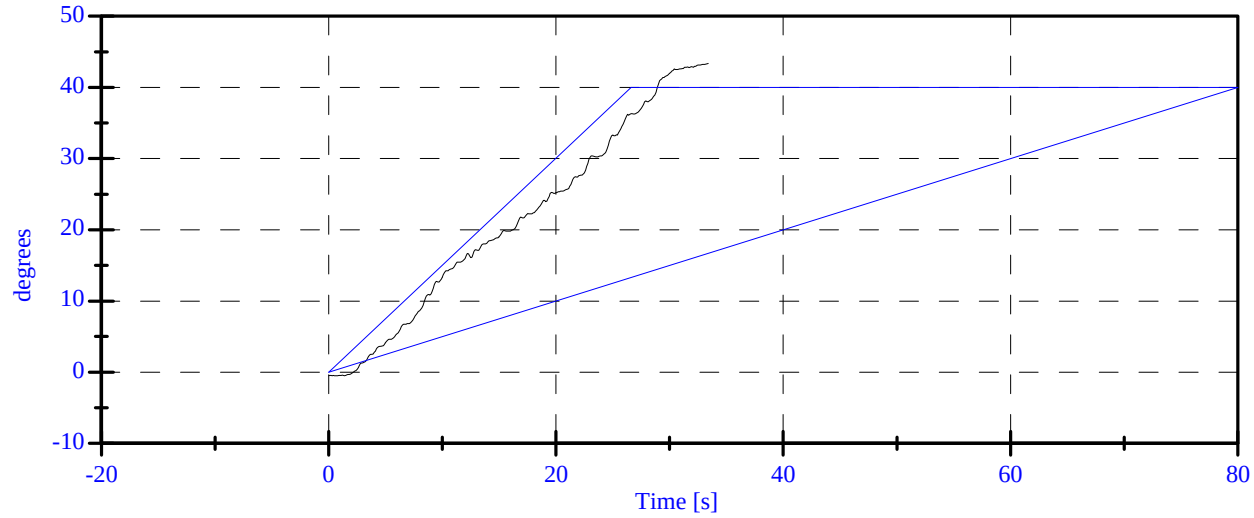
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 905 Sequential Test Number: 1 File: 905sp 09-27-07
Date: 09-27-07 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 %	33.00 %	Passed
Force at 0 Deg:	0.00-26.69 N	20.63 N	Passed
Force at 20 Deg:	97.86-151.24 N	138.93 N	Passed
Force at 30 Deg	151.24-204.62 N	173.40 N	Passed
Force at 40 Deg	204.62-258.00 N	232.95 N	Passed
Return Angle	12 Deg Max	9.11 deg	Passed

LUMBAR SPINE FLEXION TEST





POST TEST DUMMY INSPECTION LIST

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 905 Sequential Test Number: 2
Date: 9/27/07 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.: 906

CONFIGURED FOR LEFT SIDE IMPACT

CALIBRATION TEST RESULTS SUMMARY
POST TEST

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 906 Sequential Test Number: 2
Date: 9/27/07 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.: 906 Sequential Test Number: 2
Date: 9/27/07 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	902
RH- Rib Height (mm)	502 - 520	511
HP- Hip Pivot Height (mm)	99 ref.	99
RD- Rib from Back Line (mm)	229 - 241	239
KH- Knee Pivot from Back Line (mm)	511 - 526	518
KV- Knee Pivot to Floor (mm)	490 - 505	493
HW- Hip Width (mm)	356 - 391	386

REMARKS: None

Thorax Impact

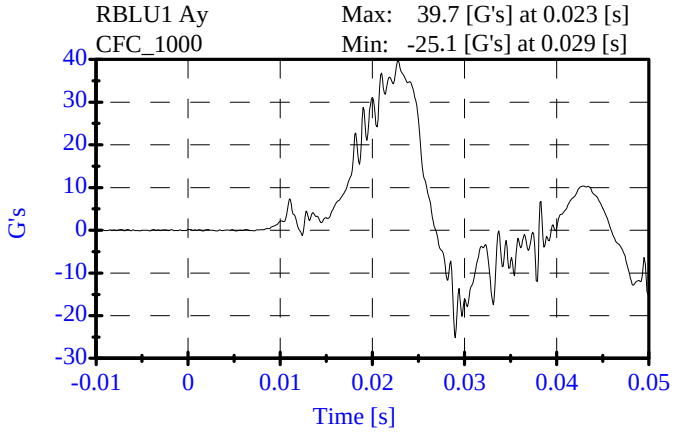
Post-Test

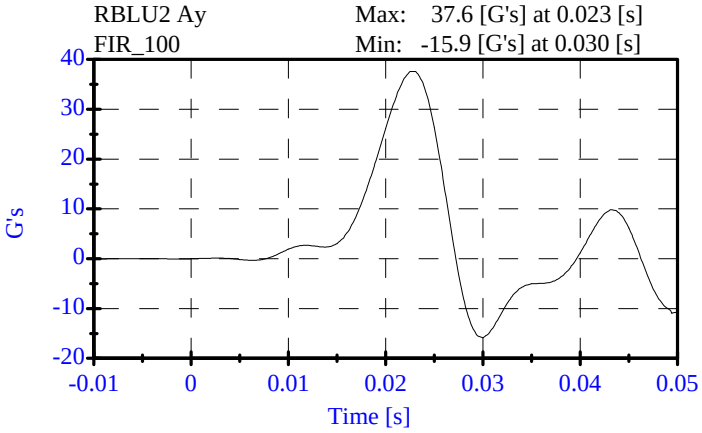
CONFIGURED FOR LEFT SIDE IMPACT

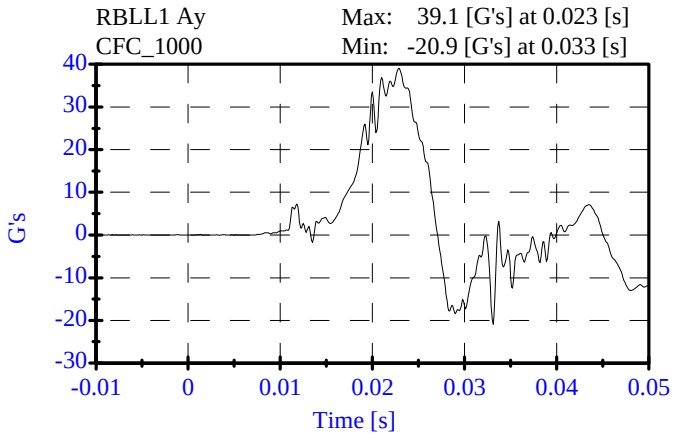
ATD Serial No: 906 Sequential Test Number: 1 File: 906T2 09-25-07

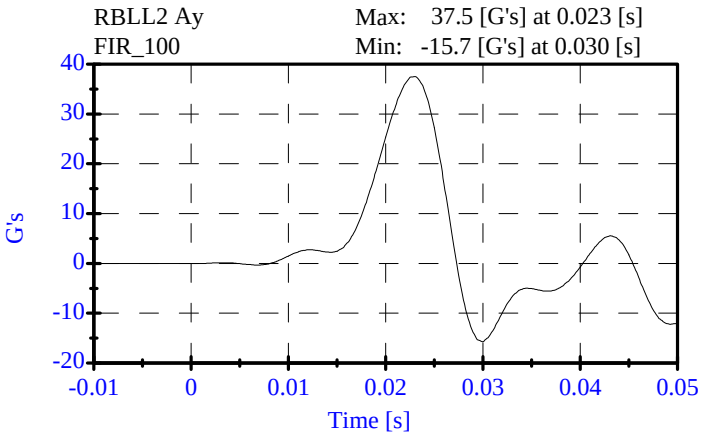
Date: 09-25-07 Laboratory Technician: B. Swiecicki

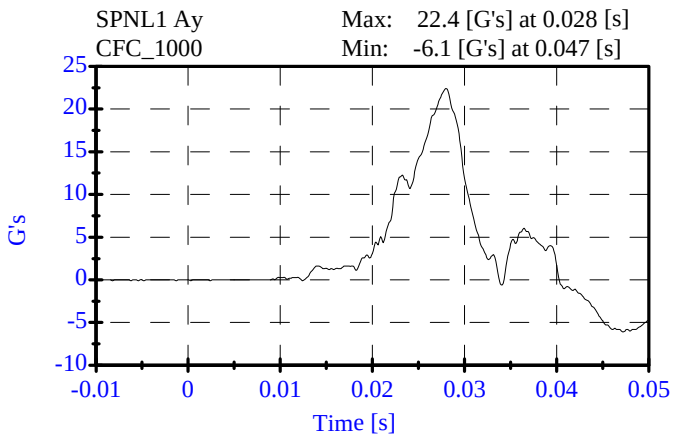
TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	18.9-25.5 C	21.1 C	Passed
Lab Humidity:	10-70 %	35.00 %	Passed
Probe Velocity:	4.27- 4.33 m/s	4.33 m/s	Passed
Upper Rib Acceleration:	37.00-46.00 G's	37.60 G's	Passed
Lower Rib Acceleration:	37.00-46.00 G's	37.55 G's	Passed
Lower Spine Acceleration:	15.00-22.00 G's	20.47 G's	Passed

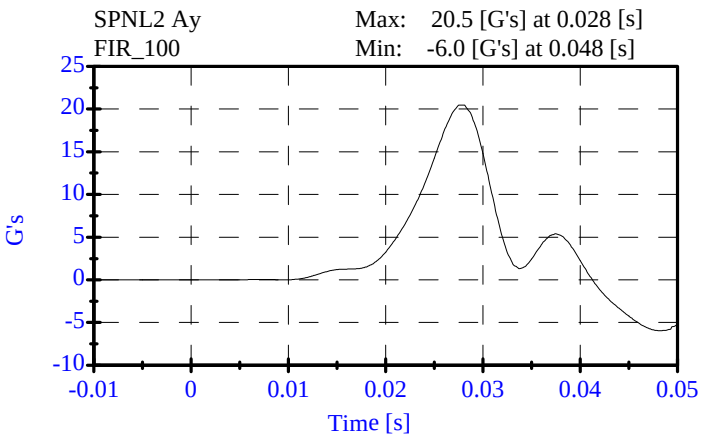












Pelvic Impact

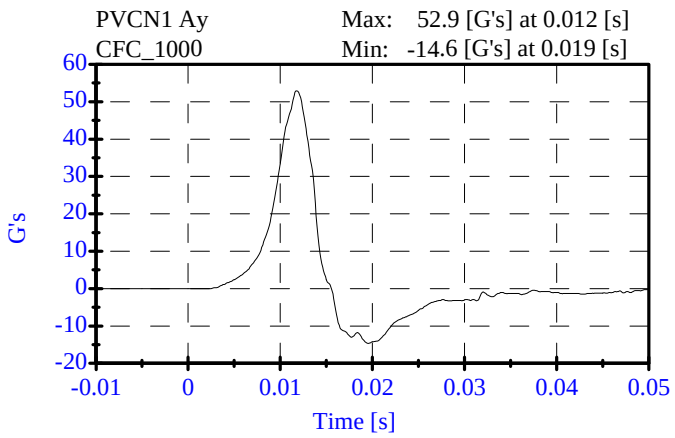
Post-Test

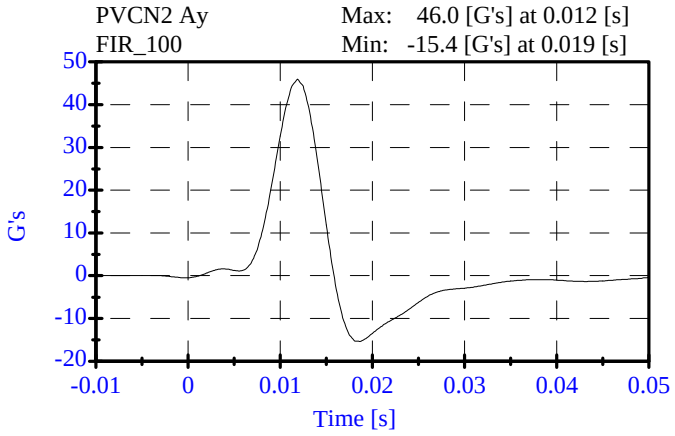
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 906 Sequential Test Number: 1 File: 906P 09-27-07

Date: 09-27-07 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 %	33.00 %	Passed
Probe Velocity:	4.27- 4.33 m/s	4.31 m/s	Passed
Pelvis Y Acceleration:	40.00-60.00 G's	45.96 G's	Passed
Time Above 20 Gs	3.0-7.0 ms	5.5 ms	Passed





Head Drop

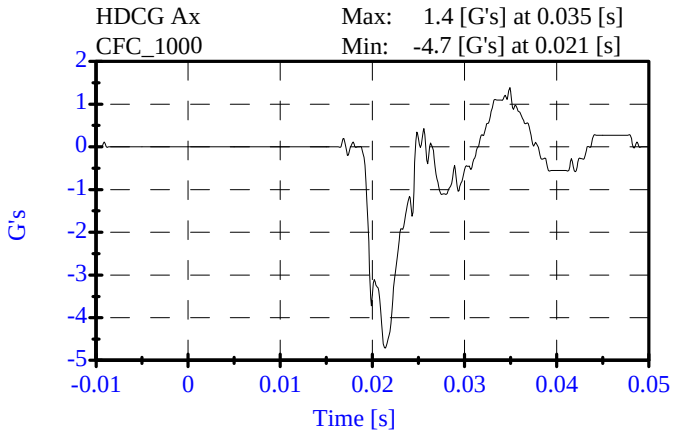
Post-Test

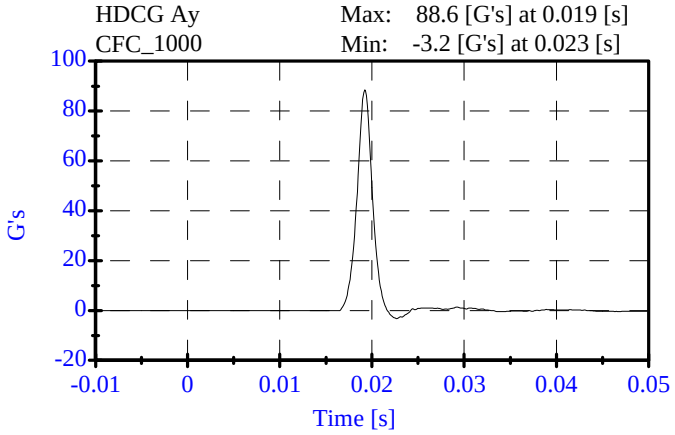
CONFIGURED FOR LEFT SIDE IMPACT

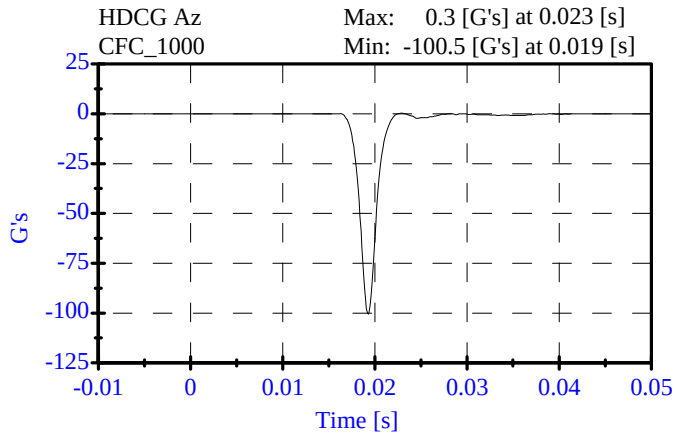
ATD Serial No: 906 Sequential Test Number: 1 File: 906H2 09-25-07

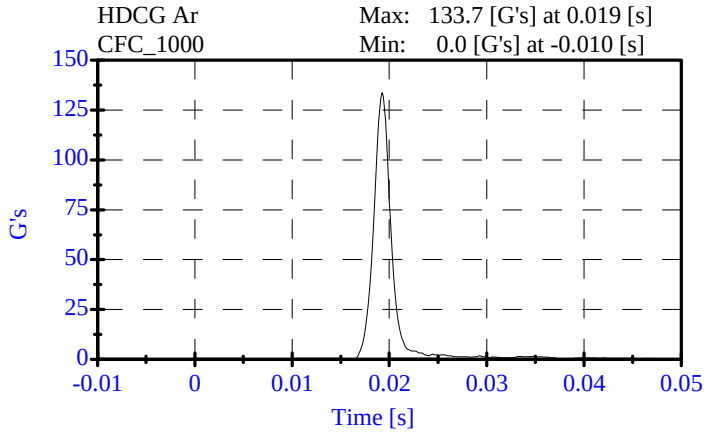
Date: 09-25-07 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	18.9-25.6 C	21.1 C	Passed
Lab Humidity:	10-70 %	36.00 %	Passed
Peak Resultant Accel.:	120-150 Gs	133.71 Gs	Passed
Peak Lateral Accel.:	15 Gs Max	1.39 Gs	Passed
Curve PerCent NonModal:	< 15%	2.42 %	Passed









Neck Test

Post-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 906 Sequential Test Number: 1 File: 906N 09-25-07

Date: 09-25-07 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	20.6-22.2 C	21.1 C	Passed
Lab Humidity:	10-70 %	37.00 %	Passed
Impact Velocity:	6.89- 7.13 m/s	6.92 m/s	Passed
PENDULUM DELTA V			
Delta V at 10 ms:	1.96- 2.55 m/s	2.01 m/s	Passed
Delta V at 20 ms:	4.12- 5.10 m/s	4.23 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	7.59 m/s	Passed
D PLANE ROTATION			
Maximum Rotation:	66.0-82.0 Deg	70.55 Deg	Passed
Rotation Angle Decay:	58.0-67.0 ms	60.00 ms	Passed
MOMENT ABOUT THE OCCIPITAL CONDYLE			
Max Occipital Moment:	73.00- 88.00 N-m	84.36 N-m	Passed
Occiptal Moment Decay:	49.0-64.0 ms	58.20 ms	Passed
HEAD ROTATION TIME WITH RESPECT TO THE OCCIPITAL CONDYLE MOMENT			
Moment to Rotation Peak:	2.0-16.0 ms	9.20 ms	Passed

Neck Test

Post-Test

CONFIGURED FOR LEFT SIDE IMPACT

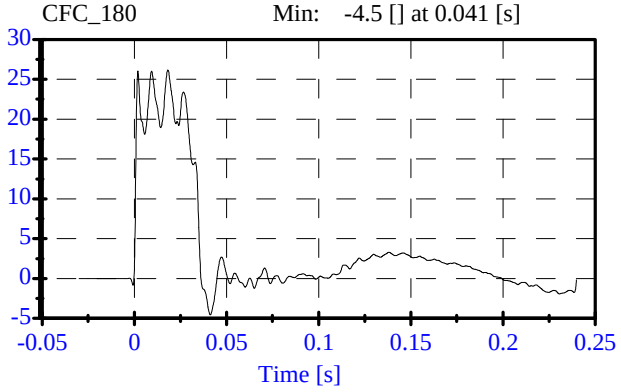
ATD Serial No: 906

Sequential Test Number: 1 File: 906N 09-25-07

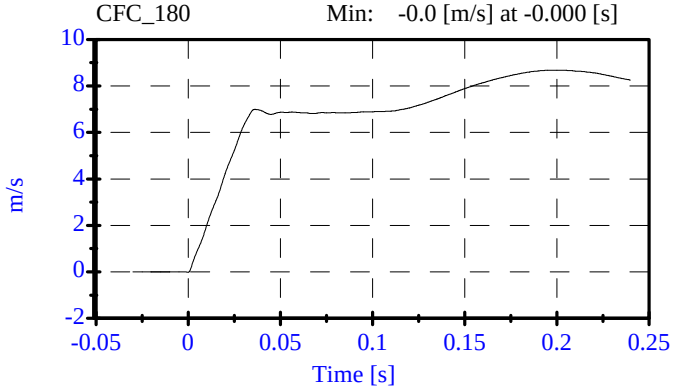
Date: 09-25-07

Laboratory Technician: B. Swiecicki

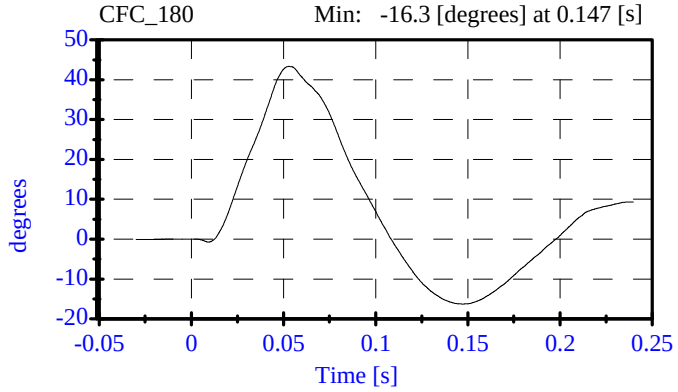
Pend Ax
CFC_180
Max: 26.2 [] at 0.018 [s]
Min: -4.5 [] at 0.041 [s]



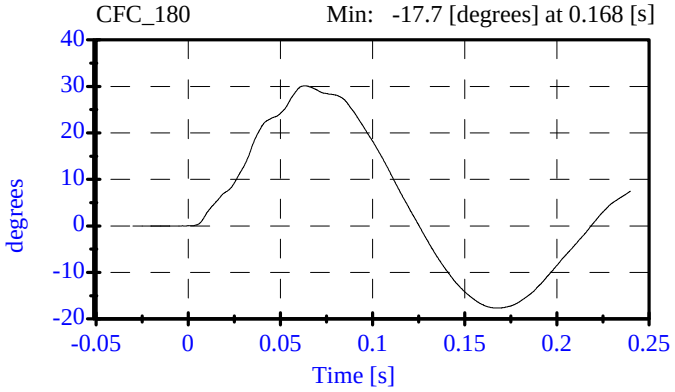
Pend Vx
CFC_180
Max: 8.7 [m/s] at 0.199 [s]
Min: -0.0 [m/s] at -0.000 [s]



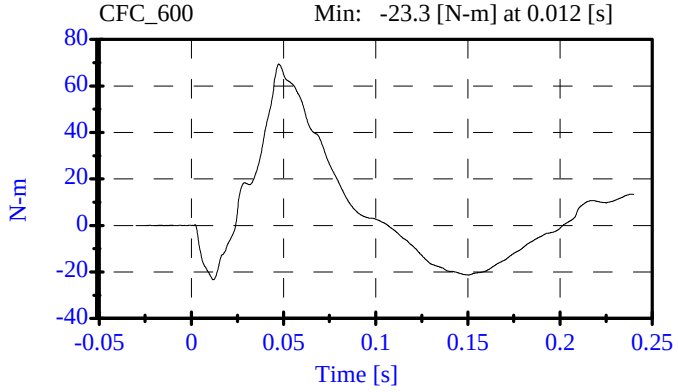
Head Rot
CFC_180
Max: 43.4 [degrees] at 0.053 [s]
Min: -16.3 [degrees] at 0.147 [s]



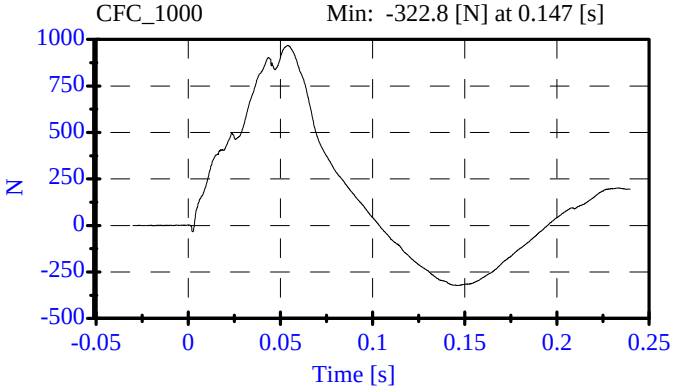
Arm Rot
CFC_180
Max: 30.1 [degrees] at 0.063 [s]
Min: -17.7 [degrees] at 0.168 [s]



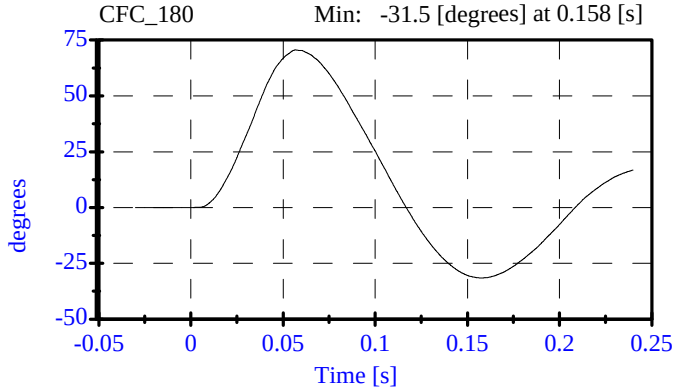
Neck Mx
CFC_600
Max: 69.4 [N-m] at 0.047 [s]
Min: -23.3 [N-m] at 0.012 [s]



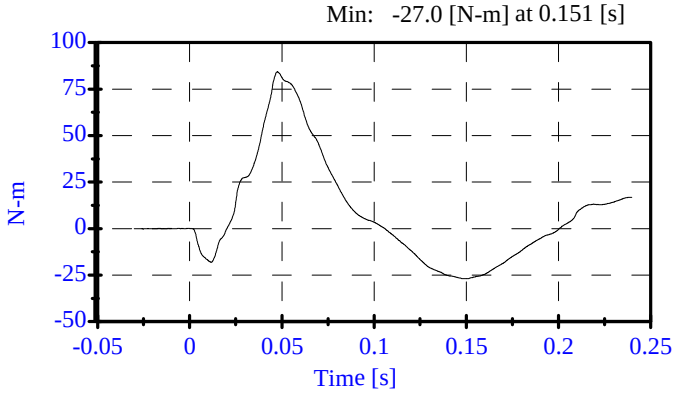
Neck Fy
CFC_1000
Max: 967.7 [N] at 0.054 [s]
Min: -322.8 [N] at 0.147 [s]



Tot Rot
CFC_180
Max: 70.5 [degrees] at 0.057 [s]
Min: -31.5 [degrees] at 0.158 [s]



MOCX
Max: 84.4 [N-m] at 0.048 [s]
Min: -27.0 [N-m] at 0.151 [s]



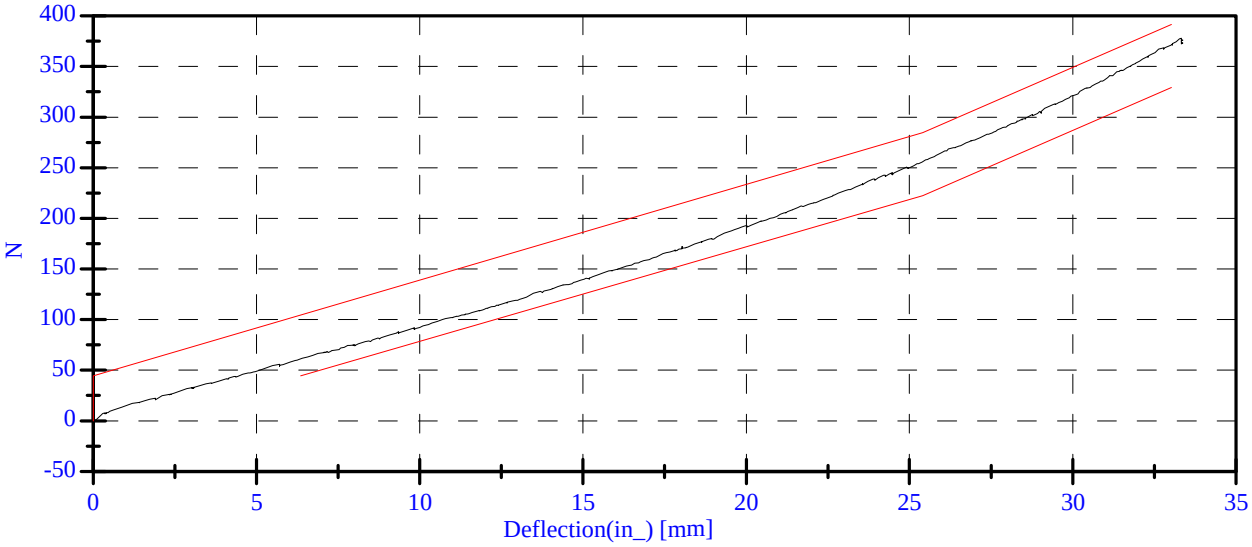
Abdomen Test
Post-Test

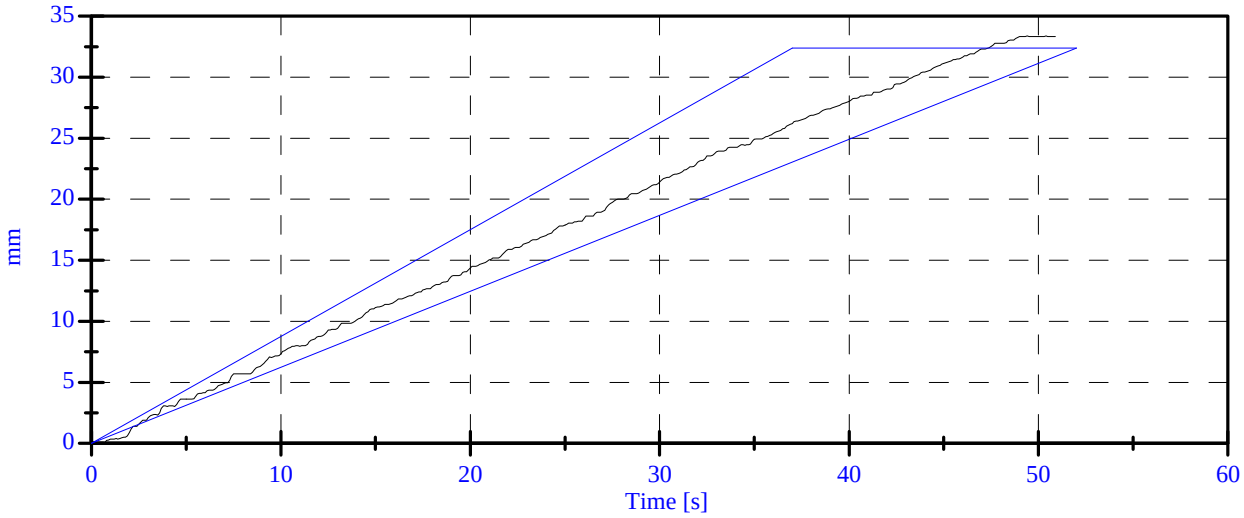
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 906 Sequential Test Number: 1 File: 906AB 09-28-07
Date: 09-28-07 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 %	44.00 %	Passed
Force at 12.95 mm :	104.00-162.00 N	119.06 N	Passed
Force at 19.05 mm :	162.98-220.99 N	179.59 N	Passed
Force at 25.40 mm :	221.97-280.02 N	255.71 N	Passed
Force at 33.02 mm :	324.99-391.00 N	370.98 N	Passed

ABDOMINAL COMPRESSION TEST





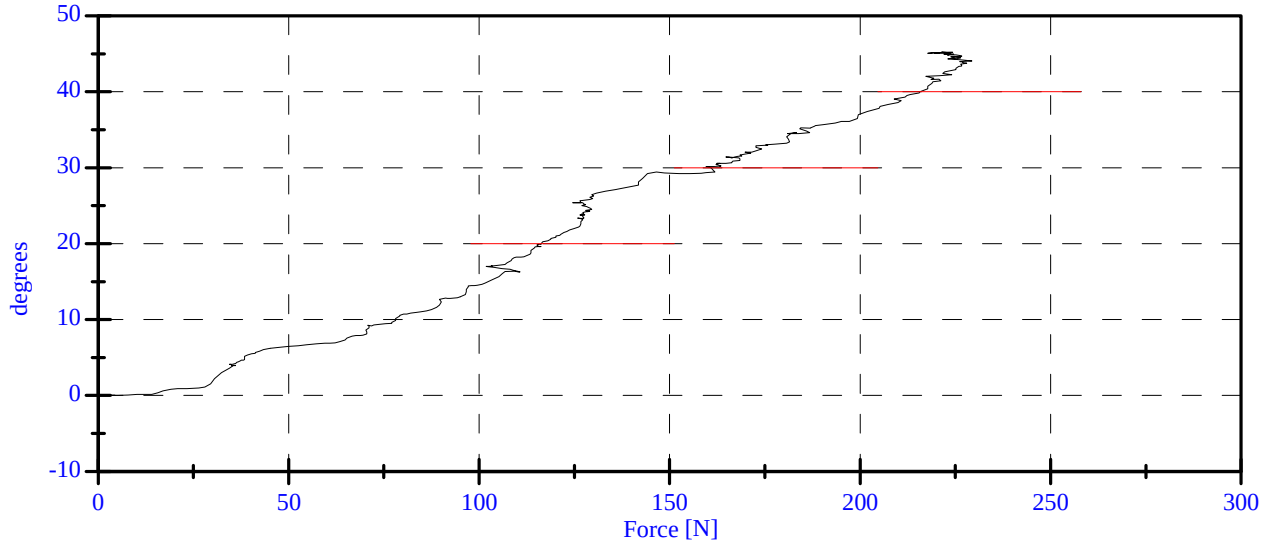
Lumbar Spine
Post-Test

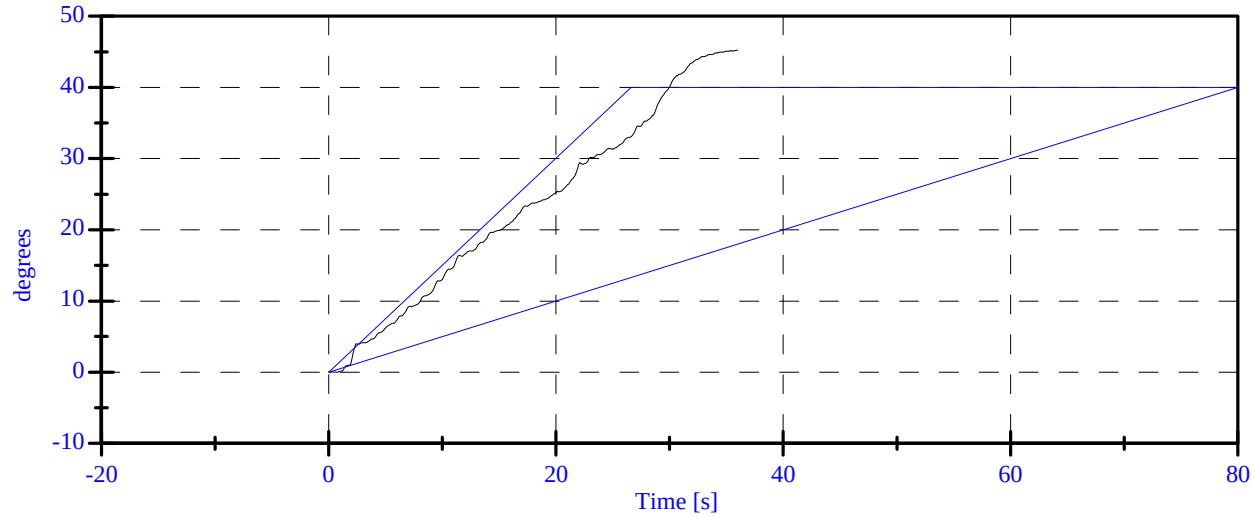
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 906 Sequential Test Number: 1 File: 906sp 09-27-07
Date: 09-27-07 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 %	33.00 %	Passed
Force at 0 Deg:	0.00-26.69 N	3.92 N	Passed
Force at 20 Deg:	97.86-151.24 N	116.47 N	Passed
Force at 30 Deg	151.24-204.62 N	160.87 N	Passed
Force at 40 Deg	204.62-258.00 N	215.71 N	Passed
Return Angle	12 Deg Max	3.42 deg	Passed

LUMBAR SPINE FLEXION TEST





POST TEST DUMMY INSPECTION LIST

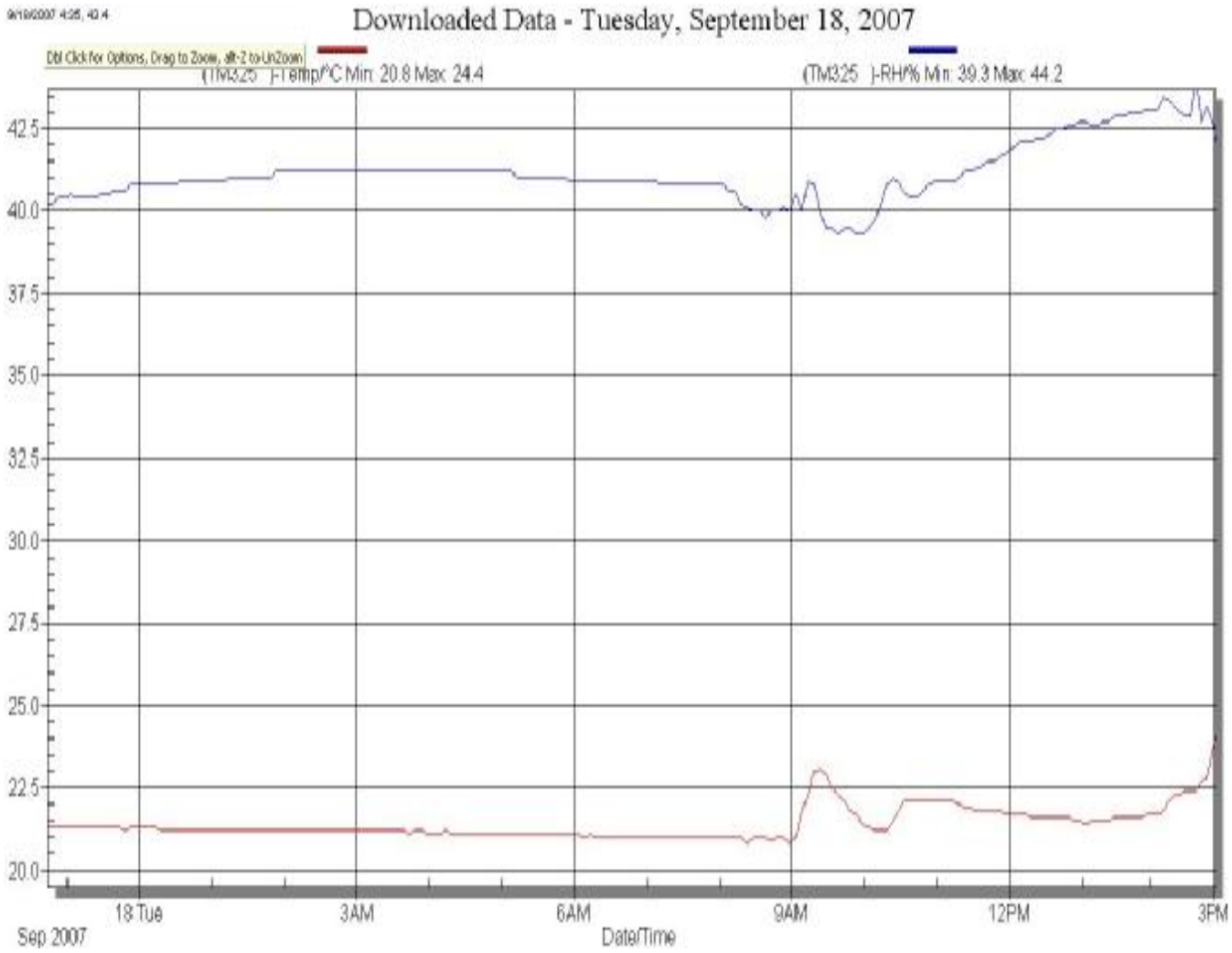
CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 906 Sequential Test Number: 2
Date: 9/27/07 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



APPENDIX D

TEST EQUIPMENT AND CALIBRATION INFORMATION

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

SID/HIII INSTRUMENTATION

	FRONT SID/HIII NO.: 905		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
HEAD AX	P21373	ENDEVCO	7/13/2007
HEAD AY	P23128	ENDEVCO	7/13/2007
HEAD AZ	P21297	ENDEVCO	7/13/2007
UPPER NECK FX	1626Fx	DENTON	7/13/2007
UPPER NECK FY	1626Fy	DENTON	7/13/2007
UPPER NECK FZ	1626Fz	DENTON	7/13/2007
UPPER NECK MX	1626Mx	DENTON	7/13/2007
UPPER NECK MY	1626My	DENTON	7/13/2007
UPPER NECK MZ	1626Mz	DENTON	7/13/2007
UPPER RIB	P15736	ENDEVCO	7/13/2007
LOWER RIB	P16289	ENDEVCO	7/13/2007
LOWER SPINE	P16761	ENDEVCO	7/13/2007
PELVIS	P35804	ENDEVCO	7/13/2007
UPPER RIB REDUNDANT	P16593	ENDEVCO	7/13/2007
LOWER RIB REDUNDANT	P23142	ENDEVCO	7/13/2007
LOWER SPINE REDUNDANT	P21516	ENDEVCO	7/13/2007
PELVIS REDUNDANT	P32221	ENDEVCO	7/13/2007

	REAR SID/HIII NO.: 906		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
HEAD AX	P35764	ENDEVCO	7/12/2007
HEAD AY	P39736	ENDEVCO	7/12/2007
HEAD AZ	P39729	ENDEVCO	7/12/2007
UPPER NECK FX	798Fx	DENTON	7/12/2007
UPPER NECK FY	798Fy	DENTON	7/12/2007
UPPER NECK FZ	798Fz	DENTON	7/12/2007
UPPER NECK MX	798Mx	DENTON	7/12/2007
UPPER NECK MY	798My	DENTON	7/12/2007
UPPER NECK MZ	798Mz	DENTON	7/12/2007
UPPER RIB	P39575	ENDEVCO	7/12/2007
LOWER RIB	P16866	ENDEVCO	7/12/2007
LOWER SPINE	P16645	ENDEVCO	7/12/2007
PELVIS	P23139	ENDEVCO	7/12/2007
UPPER RIB REDUNDANT	P15526	ENDEVCO	7/12/2007
LOWER RIB REDUNDANT	P16656	ENDEVCO	7/12/2007
LOWER SPINE REDUNDANT	P19343	ENDEVCO	7/12/2007
PELVIS REDUNDANT	P17539	ENDEVCO	7/12/2007

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)	P23134	ENDEVCO	6/30/2007
RIGHT FRONT SILL (Y)	P17535	ENDEVCO	4/22/2007
RIGHT FRONT SILL (Z)	P18792	ENDEVCO	3/23/2007
RIGHT REAR SILL (X)	P16625	ENDEVCO	8/9/2007
RIGHT REAR SILL (Y)	J32838	ENDEVCO	8/9/2007
RIGHT REAR SILL (Z)	P17237	ENDEVCO	8/9/2007
REAR FLOORPAN ABOVE AXLE (X)	P17563	ENDEVCO	8/9/2007
REAR FLOORPAN ABOVE AXLE (Y)	P18948	ENDEVCO	8/9/2007
REAR FLOORPAN ABOVE AXLE (Z)	P14965	ENDEVCO	8/9/2007
LEFT REAR SILL (Y)	FA2487	ICS	9/12/2007
LEFT FRONT SILL (Y)	FA2480	ICS	9/12/2007
LEFT FRONT DOOR CENTERLINE (Y)	-	-	-
RIGHT REAR SEAT OCCUPANT COMP. (Y)	P16845	ENDEVCO	4/24/2007
MID REAR OF LEFT FRONT DOOR (Y)	-	-	-
LEFT FRONT DOOR UPPER C\L (Y)	-	-	-
MID REAR OF LEFT REAR DOOR (Y)	-	-	-
LEFT REAR DOOR UPPER C\L (Y)	-	-	-
LOWER LEFT B- PILLAR (Y)	P23788	ENDEVCO	4/24/2007
MIDDLE LEFT B-PILLAR (Y)	P17242	ENDEVCO	8/9/2007
LOWER LEFT A-PILLAR (Y)	FA2479	ICS	9/12/2007
UPPER LEFT A-PILLAR (Y)	P23960	ENDEVCO	4/3/2007
FRONT SEAT TRACK (Y)	J33071	ENDEVCO	8/10/2007
REAR SEAT TRACK (Y)	P23358	ENDEVCO	8/10/2007
VEHICLE CG (X)	J31101	ENDEVCO	8/10/2007
VEHICLE CG (Y)	P23174	ENDEVCO	8/10/2007
VEHICLE CG (Z)	J31059	ENDEVCO	8/10/2007
MDB CG (X)	C15007	ENDEVCO	9/12/2007
MDB CG (Y)	C16416	ENDEVCO	9/12/2007
MDB CG (Z)	C16499	ENDEVCO	9/12/2007
MDB REAR FRAME MEMBER (X)	C14948	ENDEVCO	9/12/2007
MDB REAR FRAME MEMBER (Y)	C16680	ENDEVCO	9/12/2007

REMARKS: None