

REPORT NUMBER: 214-CAL-07-05

**SAFETY COMPLIANCE TESTING FOR FMVSS 214
SIDE IMPACT PROTECTION
INDICANT**

**GM DAEWOO AUTO & TECHNOLOGY COMPANY
2007 CHEVROLET AVEO
4-DOOR NOTCHBACK**

NHTSA NUMBER: C70102

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



Test Date: November 28, 2006

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
MAIL CODE: NVS-220
400 SEVENTH STREET, SW, ROOM 6111
WASHINGTON, D.C. 20590**

This final test report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, in response to Contract Number DTNH22-02-D-01114.

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Prepared by: _____
James Czarnecki, Project Engineer

Date: _____

Reviewed by: _____
Mike Kilgallon, Program Manager
Transportation Sciences Center

Date: _____

Technical Report Documentation Page

1. Report No. 214-CAL-07-05	2. Government Accession No.	3. Recipient's Catalog No.																						
4. Title and Subtitle Final Report of FMVSS 214 Compliance Side Impact Testing of a 2007 Chevrolet Aveo 4-door Notchback NHTSA No.: C70102		5. Report Date November 28, 2006																						
		6. Performing Organization Code CAL																						
7. Author(s) James Czarnecki, Project Engineer		8. Performing Organization Report No. 8675-F214-35																						
9. Performing Organization Name and Address Calspan Corporation Transportation Sciences Center P.O. Box 400 Buffalo, New York 14225		10. Work Unit No.																						
		11. Contract or Grant No. DTNH22-02-D-01114																						
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Vehicle Safety Compliance 400 Seventh Street, SW, Room 6111 Washington, D.C. 20590		13. Type of Report and Period Covered: <i>Final Report</i> November 2006 – December 2006																						
		14. Sponsoring Agency Code NVS-220																						
15. Supplementary Notes																								
16. Abstract A 55/28 km/h 90° Moving Deformable Barrier FMVSS 214 Indicant side impact was conducted on the subject 2007 Chevrolet Aveo 4-door Notchback to obtain new car assessment and research data indicant of FMVSS No. 214D performance. The test was conducted at the Calspan Corporation Transportation Sciences Center in Buffalo, New York, on November 28, 2006. 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 293 mm at level 4. The test vehicle's occupant performance is as follows: <table style="margin-left: auto; margin-right: auto; border: none;"> <thead> <tr> <th></th> <th style="text-align: center;"><u>DRIVER</u></th> <th style="text-align: center;"><u>PASS.</u></th> </tr> </thead> <tbody> <tr> <td>Left Upper Rib (LUR) Accel., g</td> <td style="text-align: center;">58.02</td> <td style="text-align: center;">69.71</td> </tr> <tr> <td>Left Lower Rib (LLR) Accel., g</td> <td style="text-align: center;">64.60</td> <td style="text-align: center;">92.64</td> </tr> <tr> <td>Lower Spine (T₁₂) Accel., g</td> <td style="text-align: center;">58.96</td> <td style="text-align: center;">65.68</td> </tr> <tr> <td>Thoracic Trauma Index (TTI)</td> <td style="text-align: center;">62</td> <td style="text-align: center;">79</td> </tr> <tr> <td>Pelvis (PEV) Accel., g</td> <td style="text-align: center;">71</td> <td style="text-align: center;">68</td> </tr> <tr> <td>HIC</td> <td style="text-align: center;">202.3</td> <td style="text-align: center;">405.5</td> </tr> </tbody> </table> The doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.					<u>DRIVER</u>	<u>PASS.</u>	Left Upper Rib (LUR) Accel., g	58.02	69.71	Left Lower Rib (LLR) Accel., g	64.60	92.64	Lower Spine (T ₁₂) Accel., g	58.96	65.68	Thoracic Trauma Index (TTI)	62	79	Pelvis (PEV) Accel., g	71	68	HIC	202.3	405.5
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17. Key Words Compliance Testing Side Impact Protection FMVSS 214 Side Impact Dummy (SID)		18. Distribution Statement <u>Copies of this report are available from:</u> National Highway Traffic Safety Administration Technical Reference Division (TIS) Room 5108 (NPO-230) 400 Seventh St., S.W. Washington, D.C. 20590 Telephone No. (202) 366-4946																						
19. Security Class. (of this report) Unclassified	20. Security Class. (of this page) Unclassified	21. No. of Pages 121	22. Price																					

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SECTION 1

PURPOSE AND TEST PROCEDURE

PURPOSE

This side impact test is part of the FMVSS 214 Side Impact Protection Compliance Test Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-02-D-01114. The purpose of this indicant test was to evaluate side impact protection in a 2007 Chevrolet Aveo 4-door Notchback when tested at the New Car Assessment Program (NCAP) target test velocity of 62.0 kph, which is 8 kph faster than the target velocity required by the Office of Vehicle Safety Compliance's Laboratory Test Procedure (TP-214D-06, dated July 26, 2001).

SECTION 2

SUMMARY OF FMVSS 214 INDICANT SIDE IMPACT TEST

This Side Impact Protection Indicant Test was performed at the New Car Assessment Program (NCAP) target test velocity of 62.0 kph, which is 8 kph faster than the target velocity required by the Office of Vehicle Safety Compliance's Laboratory Test Procedure (TP-214D-06, dated July 26, 2001).

A model year 2007 Chevrolet Aveo 4-door Notchback 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 1367 kg and the test weight of the MDB was 1362.5 kg. The test was conducted at the Calspan Corporation Transportation Sciences Center on November 28, 2006.

One (1) real-time motion picture camera and nine (9) 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 293 mm at level 4, 1500 mm rearward of the left vertical impact point. The driver and passenger SID/HIII's, Serial Nos. 270 and 269 respectively, were calibrated just prior to this test.

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

The occupant data is summarized below:

ATD position	HIC(36)	T ₁	T ₂	TTI (G's)	Peak Pelvis (G's)
Driver	202.3	41.9	77.8	62	71
Passenger	405.5	41.8	46.6	79	68

SUPPLEMENTAL RESTRAINT INFORMATION

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

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:	2007 Chevrolet Aveo	NHTSA No.	C70102
Test Program:	FMVSS 214 Indicant Side Impact	Test Date:	November 28, 2006

TEST VEHICLE INFORMATION AND VEHICLE OPTIONS

Make	GM Daewoo Auto & Technology Company	Driver Front Airbag	Yes
Model	Aveo	Driver Side Curtain Airbag	No
Body Style	4-door Notchback	Driver Side Combo Airbag	Yes
NHTSA No.	C70102	Driver Pretensioners	Yes
VIN	KL1TD566X7B044796	Driver Load Limiters	No
Color	Red	Driver Power Seats	No
Engine Disp.(L)	1.6	Rear Pass. Side Curtain Airbag	No
Engine Cylinders	4	Rear Pass. Side Combo 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	No
Power Steering	Yes	Traction Control	No
Power Brakes	Yes	Power Windows	No
Delivery Date	11/15/06	Power Door Locks	Yes
Odometer Reading (km)	27 km	Automatic Door Locks (ADL)	No
Dealer	Glen Campbell Chevrolet Williamsville, NY 14221	Owner's Manual Details Instructions on Disabling ADLs	NA

DATA FROM CERTIFICATION LABEL

Manufactured By	GM Daewoo Auto & Technology Company	GVWR (kg)	1572.5
		GAWR Front (kg)	838
Date of Manufacture	06/06	GAWR Rear (kg)	801.5

VEHICLE CAPACITY DATA

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench		
Number Of Occupants	2	3		5
Capacity Wt. (VCW) (kg)				390
Cargo Wt. (RCLW) (kg)				49.8

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

Test Vehicle:	2007 Chevrolet Aveo	NHTSA No.	C70102
Test Program:	FMVSS 214 Indicant Side Impact	Test Date:	November 28, 2006

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	364	224		413	324		406	311	
Right	kg	349	225		352	287		361	289	
Ratio	%	61.4	38.6		55.6	44.4		56.1	43.9	
Totals	kg	713.0	449.0	1162.0	765.0	611.0	1376.0	767.0	600.0	1367.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1162
Weight of 2 P572E ATDs (81.2 kg each)	kg	162.4
Rated Cargo/Luggage Weight (RCLW)	kg	49.8
Calculated Vehicle Target Weight (TVTW)	kg	1374.2

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

Weight of Ballast (including instrumentation package and cameras): 42.6 kg

TEST VEHICLE ATTITUDES

	Units	LF	RF	LR	RR
As Delivered	mm	638	645	646	650
Fully Loaded	mm	616	594	637	610
As Tested	mm	623	602	637	611

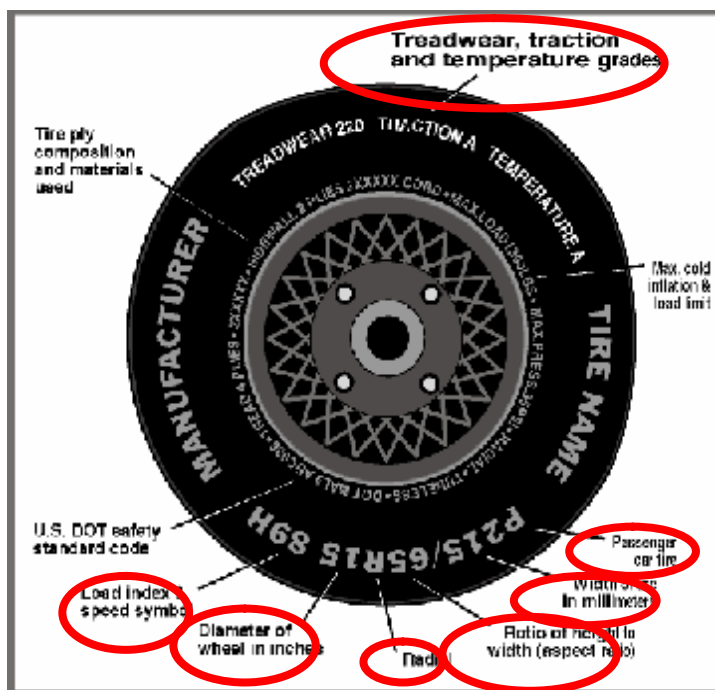
TEST VEHICLE VERTICAL IMPACT LINE AND CG

Measurement Description	Units	Value
Test Vehicle Wheel Base	mm	2482
Target Impact Point Aft of Front Axle	mm	301
Actual Impact Point Aft of Front Axle	mm	293
As Tested CG (aft of front axle)	mm	1089.39

DATA SHEET NO. 2

TEST VEHICLE TIRE INFORMATION

Test Vehicle:	2007 Chevrolet Aveo	NHTSA No.	C70102
Test Program:	FMVSS 214 Indicant Side Impact	Test Date:	November 28, 2006



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	300	300
Cold / Test Pressure (kPa)	210	210
Recommended Tire Size	P185/60R14	P185/60R14
Tire Size on Vehicle	P185/60R14	P185/60R14
Tire Manufacturer	KUMHO	KUMHO
Tire Name	STEEL RADIAL 722	STEEL RADIAL 722
Tire Type	P	P
Tire Width (mm)	185	185
Ratio of Height to Width (aspect ratio)	60	60
Radial	YES	YES
Wheel Diameter	14	14
Load Index & Speed Symbol	82H	82H
Treadwear	380	380
Traction Grade	A	A
Temperature Grade	A	A

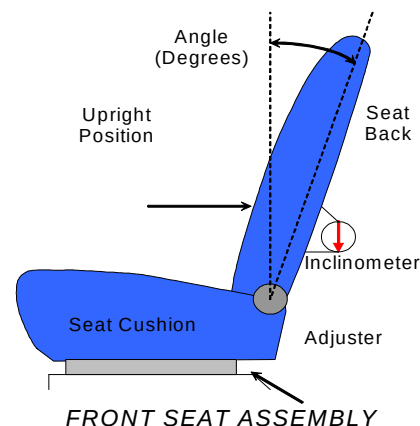
DATA SHEET NO. 3

TEST VEHICLE INFORMATION

Test Vehicle:	2007 Chevrolet Aveo	NHTSA No.	C70102
Test Program:	FMVSS 214 Indicant Side Impact	Test Date:	November 28, 2006

NORMAL DESIGN RIDING POSITION

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

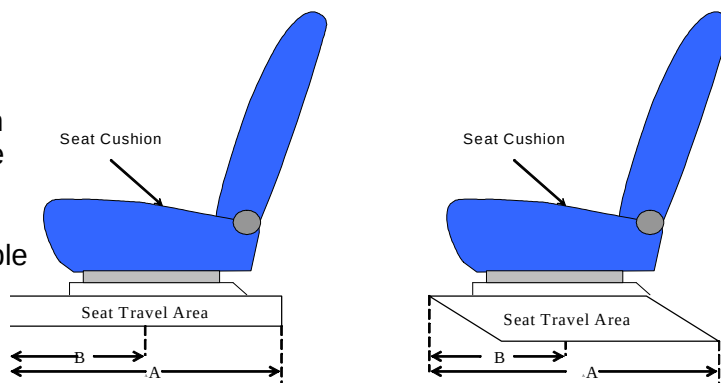


SEAT BACK POSITION

	Driver Seat	Rear Seat
Test Detent (forward-most detent defined as 0)	Detent 14	Not Adjustable
Angle (deg. from forward-most locking position)	25	Not Adjustable
Alternative Measurements to Verify Test Position	NA	NA

SEAT FORE/AFT POSITIONS

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



SEAT FORE/AFT POSITION

	Driver Seat	Rear Seat
Total Fore/Aft Travel (A) (mm)	230	Not Adjustable
Test Position (B) (mm)	120	NA
Test Detent (forward-most detent defined as 0)	19	Not Adjustable
Total Number of Detents (including 0)	10	NA

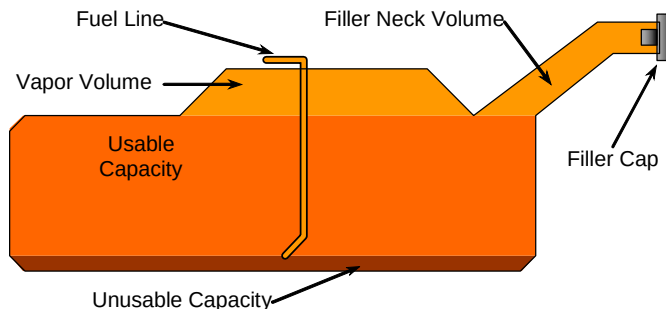
DATA SHEET NO. 3 (CONTINUED)

TEST VEHICLE INFORMATION

Test Vehicle: 2007 Chevrolet Aveo NHTSA No. C70102
Test Program: FMVSS 214 Indicant Side Impact Test Date: November 28, 2006

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.



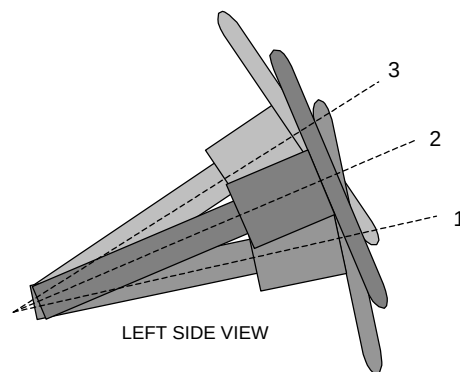
VEHICLE FUEL TANK ASSEMBLY

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard" Fuel Tank	44.7
Usable Capacity of "Optional" Fuel Tank	-
Stoddard Used For Test (92%-94% of Fuel Tank Usable Capacity)	41.6

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	NA	64.6	NA
Geometric Center Position No. 2 *	NA	67.15	NA
Uppermost Position No. 3	NA	69.7	NA

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

Test Vehicle:	2007 Chevrolet Aveo	NHTSA No.	C70102
Test Program:	FMVSS 214 Indicant Side Impact	Test Date:	November 28, 2006

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	61.6
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	61.6

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

Measured Parameter	Units	Requirement	Value
Horizontal Offset	mm	+/- 50	8 mm forward
Vertical Offset	mm	+/-20	10 mm below

DATA SHEET NO. 5
POST TEST OBSERVATIONS

Test Vehicle:	2007 Chevrolet Aveo	NHTSA No.	C70102
Test Program:	FMVSS 214 Indicant Side Impact	Test Date:	November 28, 2006

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Front Seat SID/HIII	Rear Seat SID/HIII
Dummy Type / Serial No.	SID/HIII / 270	SID/HIII / 269
Head Contact	Back of head to side bag	Rear Pillar / Side Rail /
Upper Torso Contact	Door Skin / Side Bag	Door Skin
Lower Torso Contact	Armrest	Door Skin
Left Knee Contact	Armrest	Armrest / Door Skin
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 Front and Rear Passenger Window Broke
Other Notable Effects	None

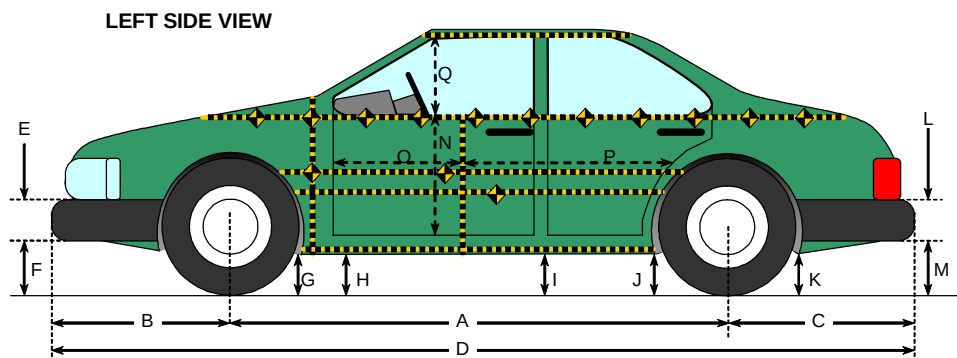
SUPPLEMENTAL RESTRAINT INFORMATION

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	No	No	No	No

DATA SHEET NO. 6

VEHICLE PRE-TEST AND POST-TEST MEASUREMENTS

Test Vehicle:	2007 Chevrolet Aveo	NHTSA No.	C70102
Test Program:	FMVSS 214 Indicant Side Impact	Test Date:	November 28, 2006



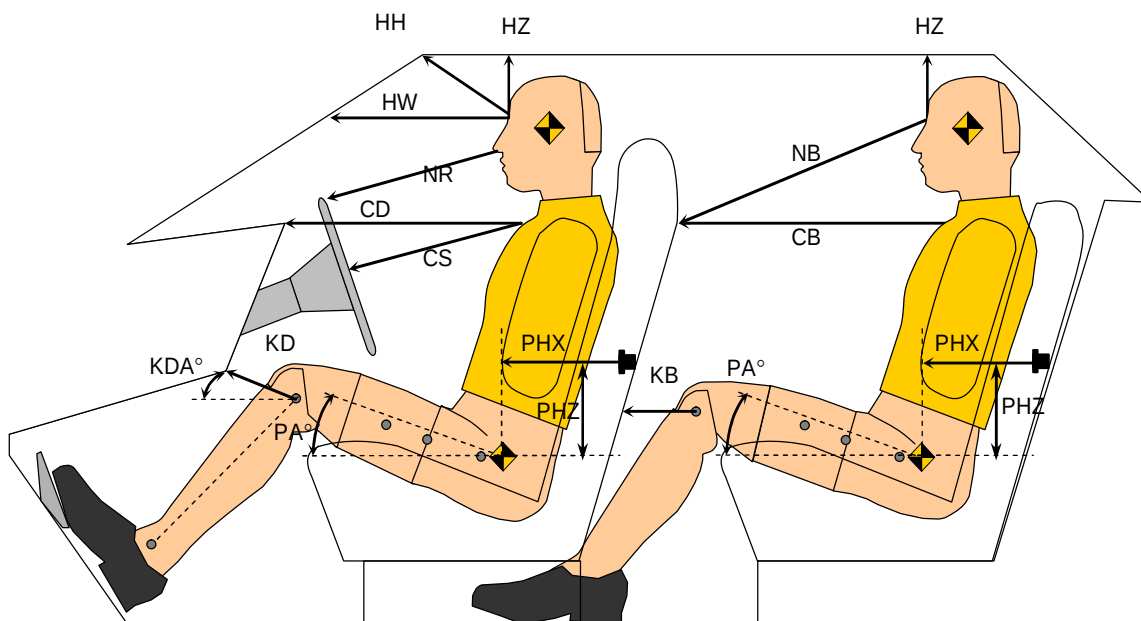
All Measurements in mm

Code	Measurement Description	Pre-Test (delivered)	Pre-Test (as tested)	Post-Test (as tested)	Difference
A	Wheelbase	2483	2482	2475	7
B	Front Axle to FSOV	824	1827	831	996
C	Rear Axle to RSOV	1002	1002	1001	1
D	Total Length at Centerline	4309	4309	4307	2
E	Front Bumper Thickness	145	145	141	4
F	Front Bumper Bottom to Ground	382	383	412	-29
G	Sill Height at Front Wheel Well	203	181	210	-29
H	Sill Height at Front Door Leading Edge	200	178	256	-78
I	Sill Height at "B" Pillar	223	185	271	-86
J1	Sill Height at Rear Wheel Well	230	185	166	19
J2	Pinch Weld Height at Rear Wheel Well	202	157	221	-64
K	Sill Height Aft of Rear Wheel Well	264	213	253	-40
L	Rear Bumper Thickness	170	170	168	2
M	Rear Bumper Bottom to Ground	478	425	450	-25
N	Sill Height to Window Bottom Sill	674	674	624	50
O	Front Door Leading Edge to Impact CL	724	724	708	16
P	Rear Door Trailing Edge to Impact CL	1161	1161	1071	90
Q	Front Window Opening	438	438	431	7
R	Right Side Length	4185	4185	4185	0
S	Left Side Length	4183	4183	4164	19
T	Vehicle Width at "B" Post	1668	1668	1539	129

DATA SHEET NO. 7

SID/HIII LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle:	2007 Chevrolet Aveo	NHTSA No.	C70102
Test Program:	FMVSS 214 Indicant Side Impact	Test Date:	November 28, 2006

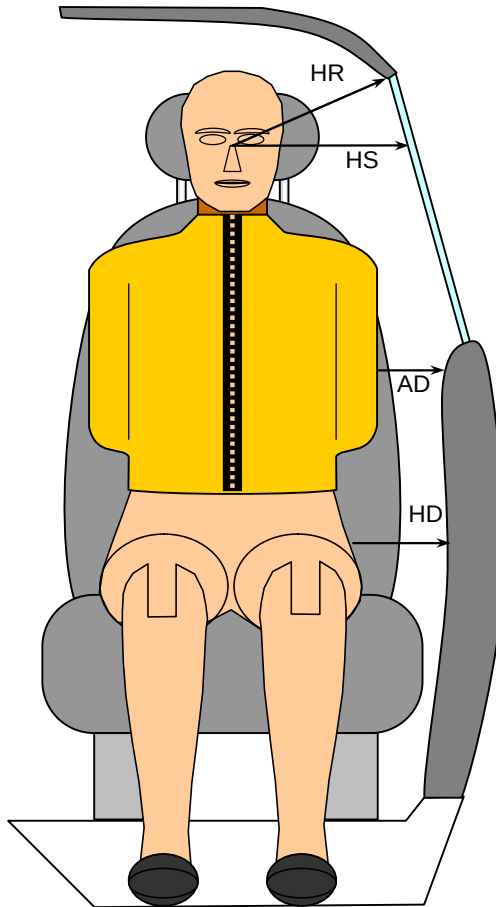


Driver Code	Pass. Code	Measurement Description	Driver S/N 270		Passenger S/N 269	
			Length(mm)	Angle(°)	Length(mm)	Angle(°)
HH		Head to Header	471			
HW		Head to Windshield	689			
HZ	HZ	Head to Roof	180		136	
NR	NB	Nose to Rim/Nose to Seatback	494		614	
CD	CB	Chest to Dash or Seatback	618		526	
CS		Chest to Steering Wheel	329			
KDL	KBL	Left Knee to Dash or Seatback	156	9.0	153	34.0
KDR	KBR	Right Knee to Dash or Seatback	79	31.0	153	34.0
PA	PA	Pelvic Angle		24.0		24.8
PHX	PHX	H-Point to Striker (X-Axis)	206		316	
PHZ	PHZ	H-Point to Striker (Z-Axis)	126		276	

DATA SHEET NO. 8

SID/HIII LATERAL CLEARANCE DIMENSIONS

Test Vehicle:	2007 Chevrolet Aveo	NHTSA No.	C70102
Test Program:	FMVSS 214 Indicant Side Impact	Test Date:	November 28, 2006



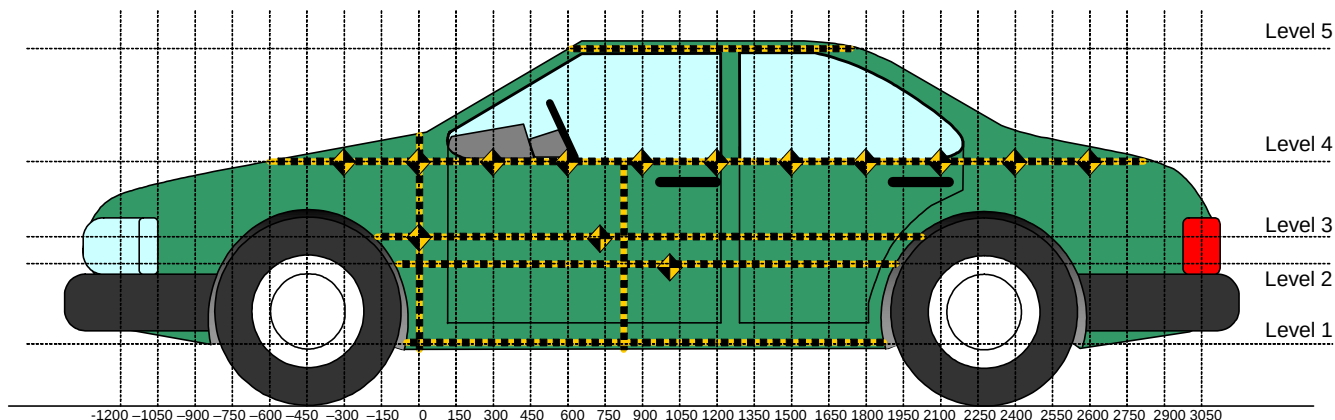
FRONT VIEW OF DUMMY

Code	Measurement Description	Units	Driver S/N 270	Passenger S/N 269
HR	Head to Side Header	mm	222	174
HS	Head to Side Window	mm	314	286
AD ₁	Arm to Door (at upper rib level)	mm	116	102
AD ₂	Arm to Door (at lower rib level)	mm	119	121
HD	H-Point to Door	mm	148	170

DATA SHEET NO. 9

VEHICLE SIDE MEASUREMENTS

Test Vehicle:	2007 Chevrolet Aveo	NHTSA No.	C70102
Test Program:	FMVSS 214 Indicant Side Impact	Test Date:	November 28, 2006



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.

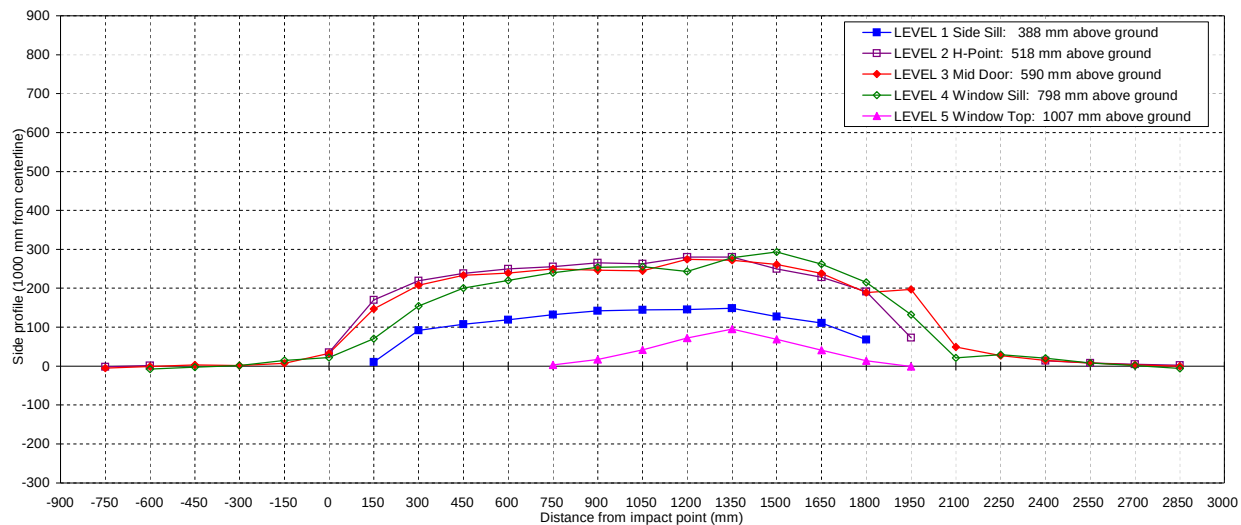
Level	Measurement Description	Maximum Exterior Static Crush	Height Above Ground	Distance From Impact
1	Sill Top	149	388	1350
2	Occupant H-Point	280	518	1200
3	Mid Door	274	590	1200
4	Window Sill	293	798	1500
5	Window	95	1007	1350
	Maximum Penetration	293		

DATA SHEET NO. 10

VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2007 Chevrolet Aveo
Test Program: FMVSS 214 Indicant Side Impact

NHTSA No. C70102
Test Date: November 28, 2006



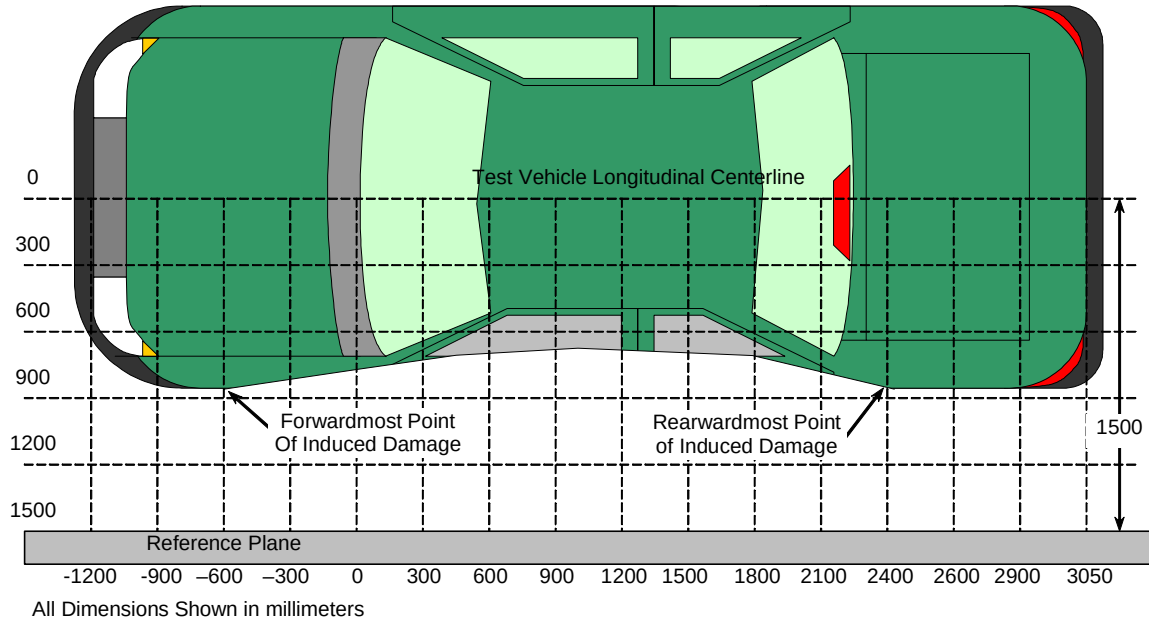
NOTE: All dimensions are in millimeters with a tolerance of ± 3 mm

			(NOTE: All dimensions are in millimeters with a tolerance of ±3 mm)																											
			DISTANCE 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	388	PRE	--	--	--	--	--	--	--	216	217	217	216	216	216	215	214	215	215	217	204	--	--	--	--	--	--	--	--	
		POST	--	--	--	--	--	--	--	226	309	324	335	348	358	359	359	364	342	328	272	--	--	--	--	--	--	--		
		CRUSH	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10	92	107	119	132	142	144	145	149	127	111	68	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
LEVEL 2 H POINT	518	PRE	--	237	188	--	--	--	164	177	174	172	171	170	170	169	170	170	172	174	177	156	--	--	163	200	216	238	--	
		POST	--	235	189	--	--	--	199	347	393	410	421	425	435	432	450	450	422	402	368	229	--	--	177	208	221	240	--	
		CRUSH	N/A	-2	1	N/A	N/A	N/A	35	170	219	238	250	255	265	263	280	280	250	228	191	73	N/A	N/A	14	8	5	2	N/A	
LEVEL 3 MID DOOR	590	PRE	--	243	205	170	163	160	170	172	169	167	166	165	165	165	165	167	169	171	173	158	151	154	171	199	216	239	--	
		POST	--	238	204	173	164	167	203	319	377	400	405	415	411	410	439	439	430	409	362	355	200	181	186	207	219	239	--	
		CRUSH	N/A	-5	-1	3	1	7	33	147	208	233	239	250	246	245	274	272	261	238	189	197	49	27	15	8	3	0	N/A	
LEVEL 4 WINDOW SILL	798	PRE	--	--	301	260	239	219	205	193	186	177	173	173	173	173	174	176	178	180	181	157	188	195	203	214	228	253	--	
		POST	--	--	293	257	240	234	227	263	340	377	393	413	427	428	417	454	471	442	396	289	209	224	223	222	229	247	--	
		CRUSH	N/A	N/A	-8	-3	1	15	22	70	154	200	220	240	254	255	243	278	293	262	215	132	21	29	20	8	1	-6	N/A	
LEVEL 5 WINDOW TOP	1007	PRE	--	--	--	--	--	--	--	--	--	--	--	--	592	464	439	435	434	437	447	470	586	--	--	--	--	--	--	
		POST	--	--	--	--	--	--	--	--	--	--	--	--	595	481	481	507	529	506	488	484	585	--	--	--	--	--	--	
		CRUSH	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3	17	42	72	95	69	41	14	-1	N/A	N/A	N/A	N/A	N/A	N/A	N/A

DATA SHEET NO. 11

VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle:	2007 Chevrolet Aveo	NHTSA No.	C70102
Test Program:	FMVSS 214 Indicant Side Impact	Test Date:	November 28, 2006



TOP VIEW

DAMAGE PROFILE DISTANCES

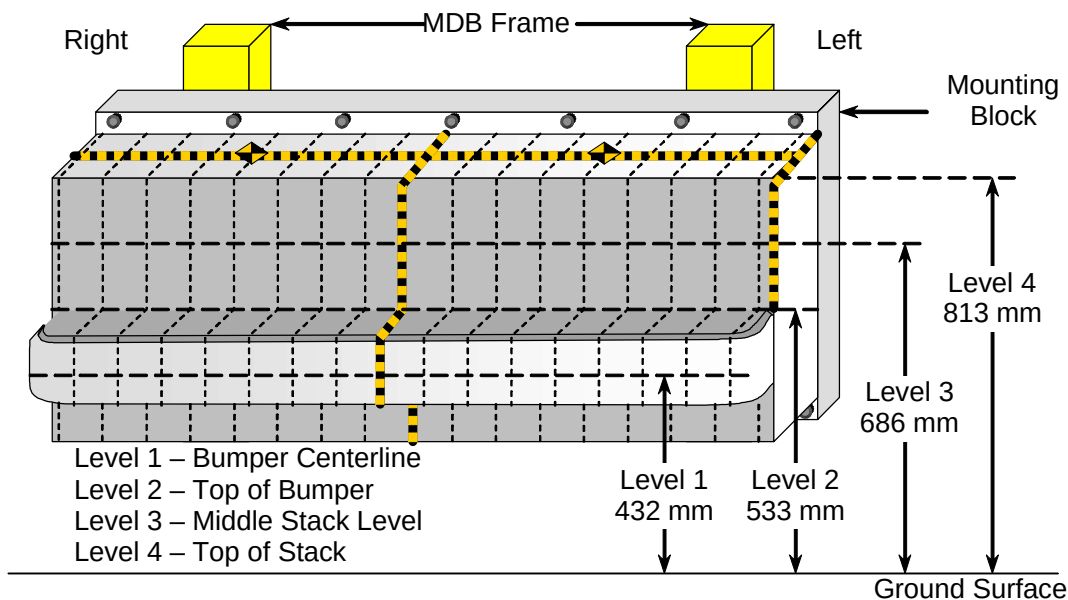
DPD	Distance from Impact Point in mm	Level	Pre-Test (mm)	Post-Test (mm)	Max Static Crush (mm)
1 (LR)	2700	518	216	221	5
2	2100	590	151	200	49
3	1500	798	178	471	293
4	900	518	170	435	265
5	300	518	174	393	219
6 (LF)	-300	590	163	164	1

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:	2007 Chevrolet Aveo	NHTSA No.	C70102
Test Program:	FMVSS 214 Indicant Side Impact	Test Date:	November 28, 2006



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

			NOTE: All dimensions are in millimeters with a tolerance of ±0.5 mm																	
			DISTANCE RIGHT OF CENTER (mm)											DISTANCE LEFT OF CENTER (mm)						
LEVEL	HEIGHT AT CL (mm)*		800	700	600	500	400	300	200	100	0	100	200	300	400	500	600	700	800	
LEVEL 4 TOP STACK	813	PRE	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	
		POST	662	629	606	609	622	646	642	641	635	632	636	645	655	671	699	748	817	
		CRUSH	43	10	-13	-10	3	27	23	22	16	13	17	26	36	52	80	129	198	
LEVEL 3 MID LEVEL	686	PRE	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	
		POST	662	637	626	625	628	640	637	632	632	631	634	637	644	653	668	719	758	
		CRUSH	43	18	7	6	9	21	18	13	13	12	15	18	25	34	49	100	139	
LEVEL 2 TOP BUMPER	533	PRE	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	
		POST	717	706	692	675	669	669	670	668	668	667	668	669	671	681	708	733	749	
		CRUSH	98	87	73	56	50	50	51	49	49	48	49	50	52	62	89	114	130	
LEVEL 1 MID BUMPER	432	PRE	535	519	518	518	518	518	518	518	518	518	518	518	518	518	518	519	535	
		POST	682	650	627	611	604	601	603	602	602	602	600	600	601	608	628	661	691	
		CRUSH	147	131	109	93	86	83	85	84	84	84	82	82	83	90	110	142	156	

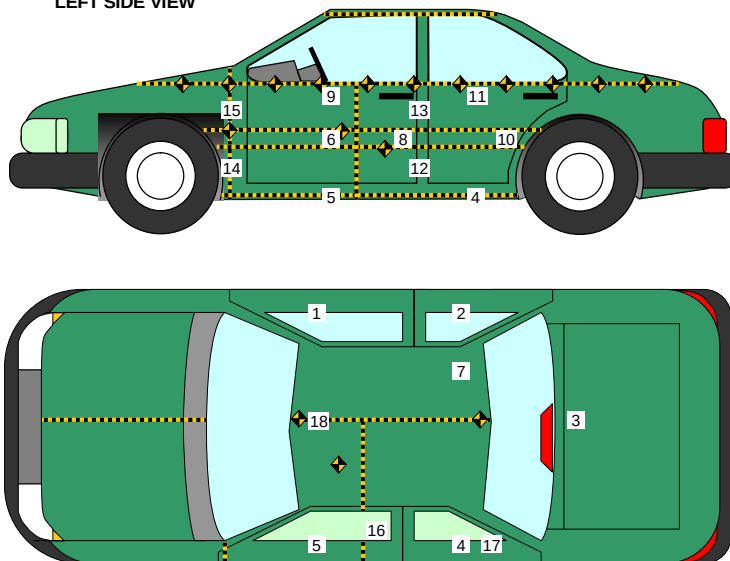
*Heights measured above ground level.

DATA SHEET NO. 13

VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle:	2007 Chevrolet Aveo	NHTSA No.	C70102
Test Program:	FMVSS 214 Indicant Side Impact	Test Date:	November 28, 2006

LEFT SIDE VIEW



Loc. No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Right Sill at Front Seat	2844	643	-291
2	Right Sill at Rear Seat	1728	603	-325
3	Rear Floorpan Above Axle	1108	18	-473
4	Left Sill at Rear Door	1735	-593	-315
5	Left Sill at Front Door	2876	-640	-293
6	Left Front Door C/L **	-	-	-
7	Rear Occupant Compartment	1900	412	-233
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	1968	-636	-438
13	Left Middle B-Post	1868	-648	-971
14	Left Lower A-Post	3015	-615	-453
15	Left Middle A-Post	3011	-637	-955
16	Front Seat Track	2106	-562	-254
17	Rear Seat Track or Structure	909	-490	-549
18	Vehicle CG	2712	0	-399

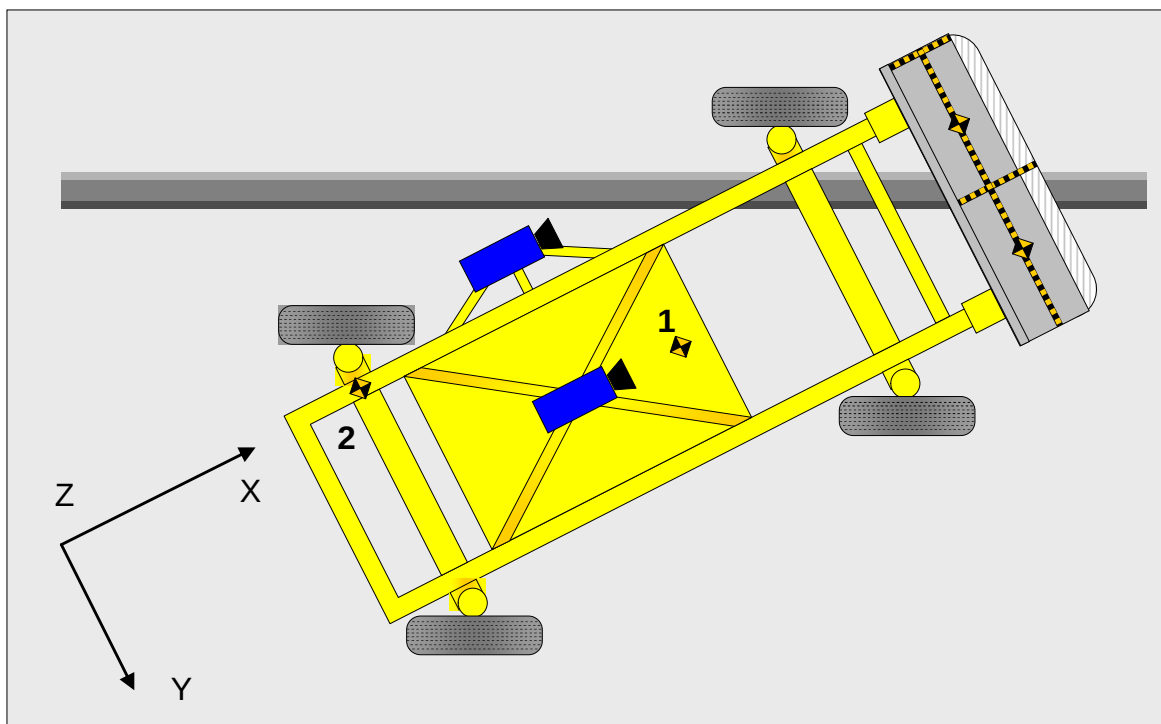
Reference Points X - Test Vehicle Rear Bumper (+ forward)
 Y - Test Vehicle Centerline (+ to right)
 Z - Ground Plane (+ down)

** Accelerometer was not requested by the COTR.

DATA SHEET NO. 14

MDB ACCELEROMETER LOCATIONS

Test Vehicle:	2007 Chevrolet Aveo	NHTSA No.	C70102
Test Program:	FMVSS 214 Indicant Side Impact	Test Date:	November 28, 2006



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**

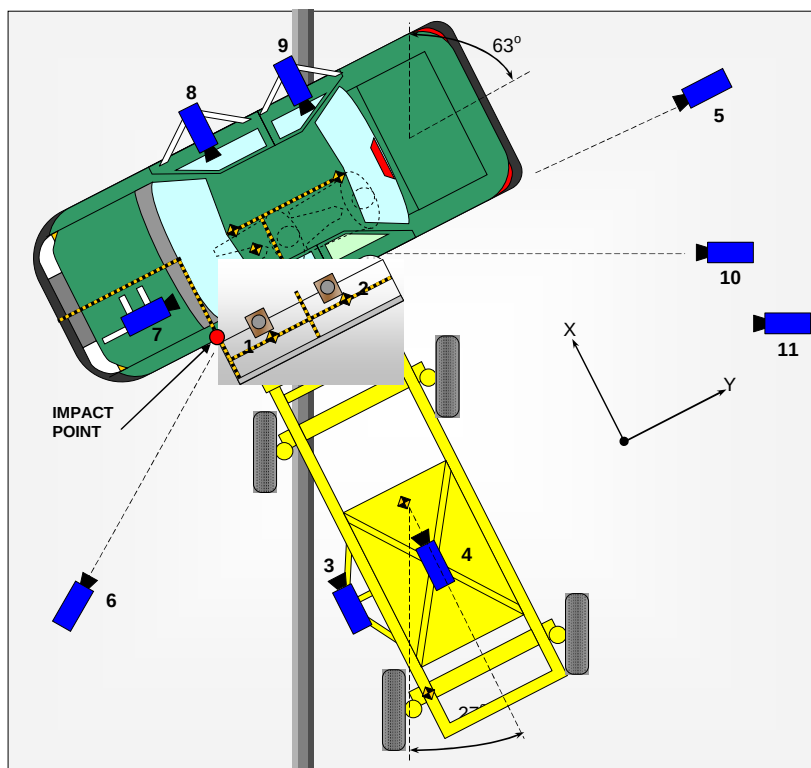
Test Vehicle:	2007 Chevrolet Aveo	NHTSA No.	C70102
Test Program:	FMVSS 214 Indicant Side Impact	Test Date:	November 28, 2006

	Elements	Pre-Test (mm)
1	Total Length	4309
2	Total Width	1668
3	Bumper Top Height	525
4	Bumper Bottom Height	378
5	Longitudinal Member Top Height	514
6	Distance between Longitudinal Members	962
7	Longitudinal Member Width	41
8	Engine Top Height	774
9	Engine Bottom Height	207
10	Engine and gearbox width	804
11	Front bumper-engine distance	421
12	Front shock absorber fixing height	823
13	Bonnet leading edge height	749
14	Front shock absorber fixing width	1112
15	Front bumper – front axle distance	824
16	Front axle – a pillar distance	964
17	A-pillar – B-pillar distance	508
18	B-Pillar – rear axle distance	1011
19	B-pillar – C-pillar distance	956
20	Roof sill bottom height	1370
21	Roof sill top height	1440
22	Floor sill bottom height	202
23	Floor sill top height	317

DATA SHEET NO. 16

HIGH SPEED CAMERA LOCATIONS AND DATA

Test Vehicle:	2007 Chevrolet Aveo	NHTSA No.	C70102
Test Program:	FMVSS 214 Indicant Side Impact	Test Date:	November 28, 2006



No.	Camera View	Location (mm)			Angle (deg)	Lens (mm)	Film Speed (fps)
		X	Y	Z			
1	Overhead Close-up	72	812	-4880	-90	8	500
2	Overhead Overall	195	855	-4880	-90	28	500
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	364	10035	-1155	-3.8	25	500
6	Left Side, Ground Level, Overall	-2194	-1786	-1074	-6.3	28	500
7	Vehicle Onboard Front SID/HIII, Front	480	-475	-1280	-1.0	25	1000
8	Vehicle Onboard Front SID/HIII, Side	1602	860	-1042	-6.7	12.5	1000
9	Vehicle Onboard Rear SID/HIII, Side	1551	1790	-1075	-5.8	12.5	1000
10	Secondary Impact Point	NA	NA	NA	NA	25	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

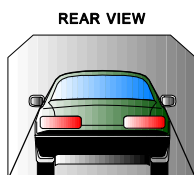
Test Vehicle:	2007 Chevrolet Aveo	NHTSA No.	C70102
Test Program:	FMVSS 214 Indicant Side Impact	Test Date:	November 28, 2006

FUEL SYSTEM INTEGRITY POST IMPACT DATA

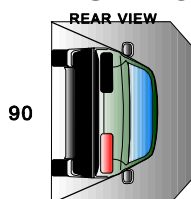
Time Interval	FMVSS 301 Maximum Allowable Spillage	Spillage (g)
Impact Until Motion Ceases	28 g	0
First Five Minutes Following Impact	142 g	0
Next 25 Minutes	28 g / 1 minute	0

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

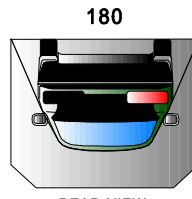
STATIC ROLLOVER DATA



0/360

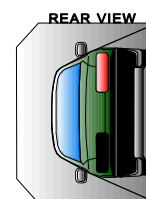


90



180

REAR VIEW



270

Rollover Stage	Rotation Time (spec. 1 -3 min)				FMVSS 301 Hold Time		Total Time				Next Whole Minute Interval	
0° - 90°	1	minutes	14	seconds	5	minutes	6	minutes	14	seconds	7	minutes
90° - 180°	1	minutes	19	seconds	5	minutes	6	minutes	19	seconds	7	minutes
180°-270°	1	minutes	13	seconds	5	minutes	6	minutes	13	seconds	7	minutes
270°-360°	1	minutes	16	seconds	5	minutes	6	minutes	16	seconds	7	minutes

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

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

APPENDIX A
PHOTOGRAPHS

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



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



Figure A-3: Vehicle Certification Label



Figure A-4: Vehicle Tire Placard Label



Figure A-5: Pre-Test Front View



Figure A-6: Post-Test Front View



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



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



Figure A-9: Pre-Test Left Side View



Figure A-10: Post-Test Left Side View



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



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



Figure A-13: Pre-Test Rear View



Figure A-14: Post-Test Rear View



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



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



Figure A-17: Pre-Test Right Side View



Figure A-18: Post-Test Right Side View



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



Figure A-51: Rollover 90 Degrees



Figure A-52: Rollover 180 Degrees



Figure A-53: Rollover 270 Degrees



Figure A-54: Rollover 360 Degrees



Figure A-55: Impact Photo

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

DATA CHANNEL FILTER CLASS SUMMARY

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

DATA CHANNEL TITLE KEY

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

TABLE OF DATA PLOTS

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

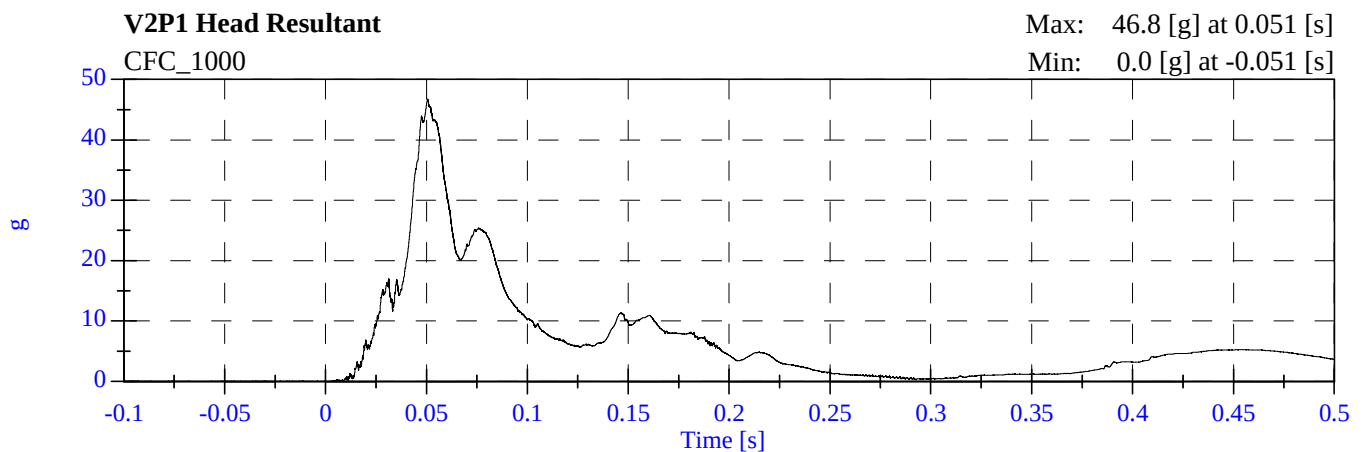
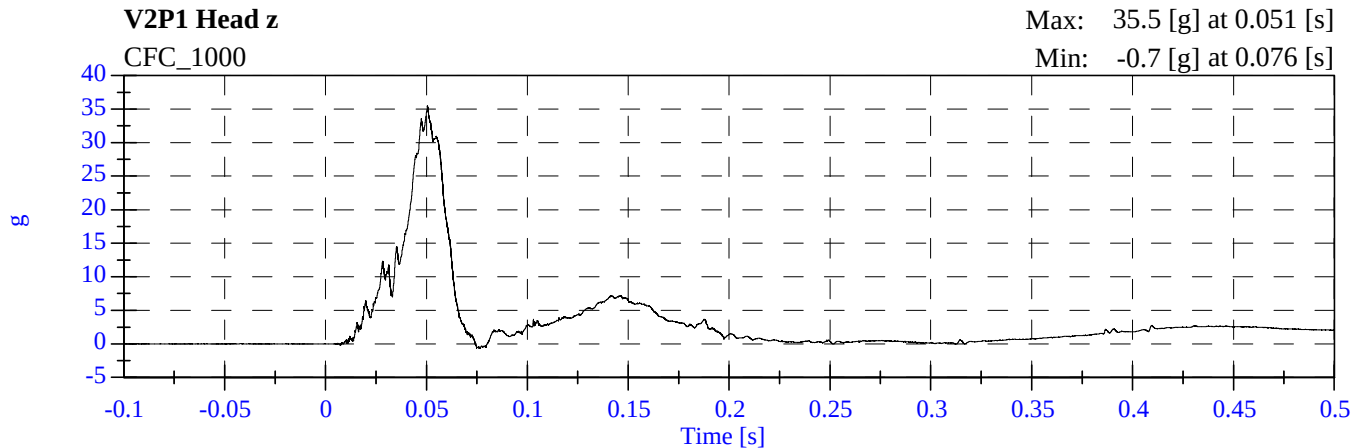
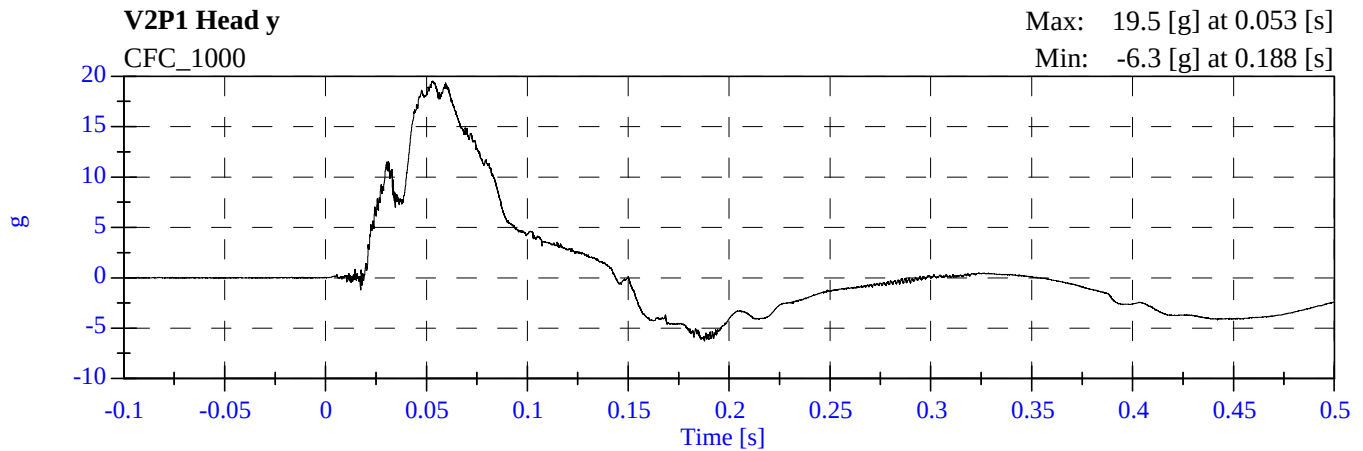
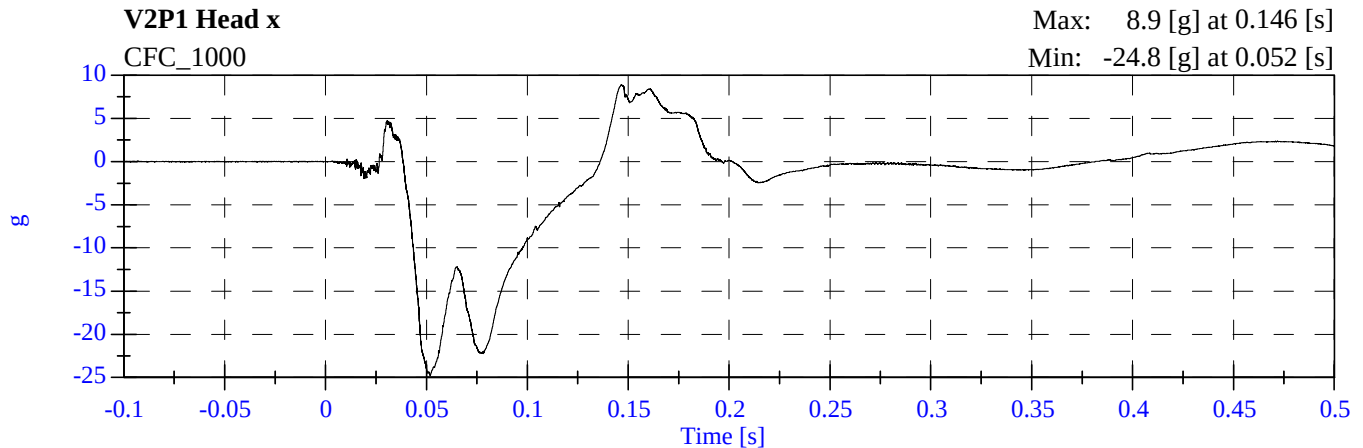
The following dummy, vehicle and load cell response data can be found in the research and development section of the NHTSA website at: www.nhtsa.dot.gov

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

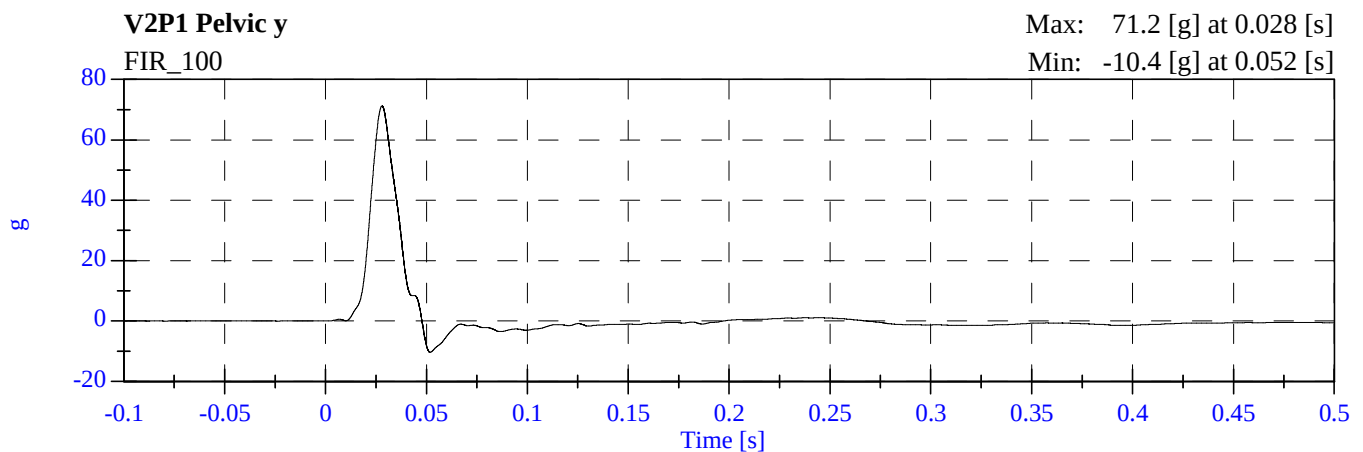
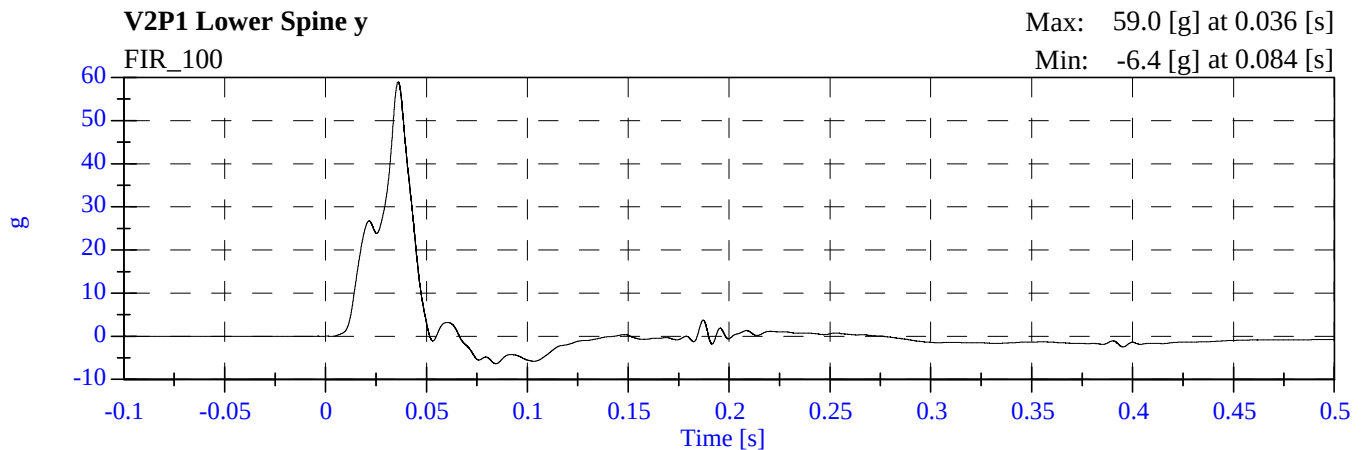
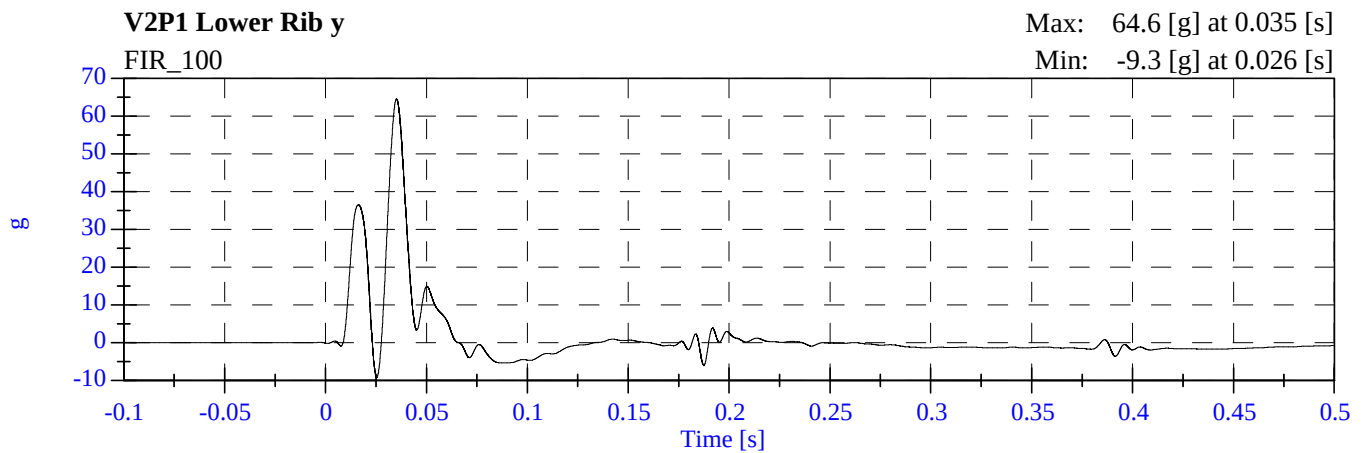
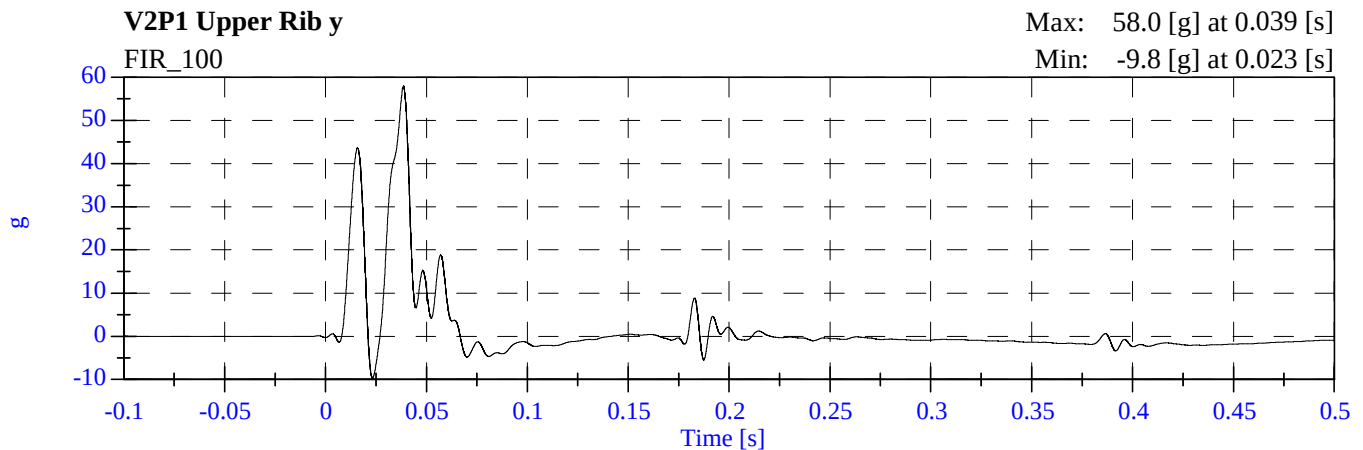
TEST NOTES

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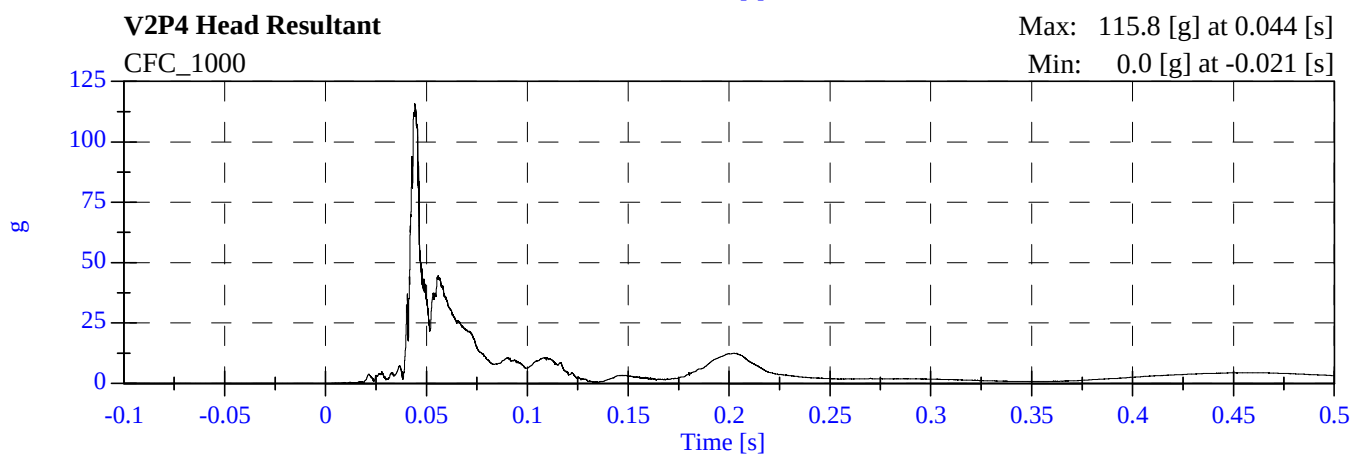
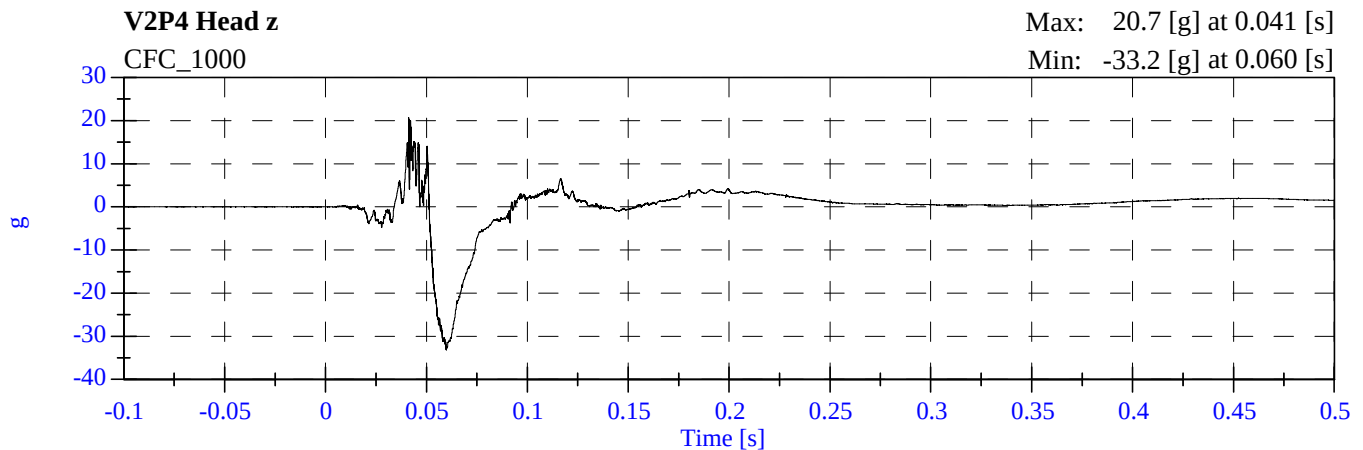
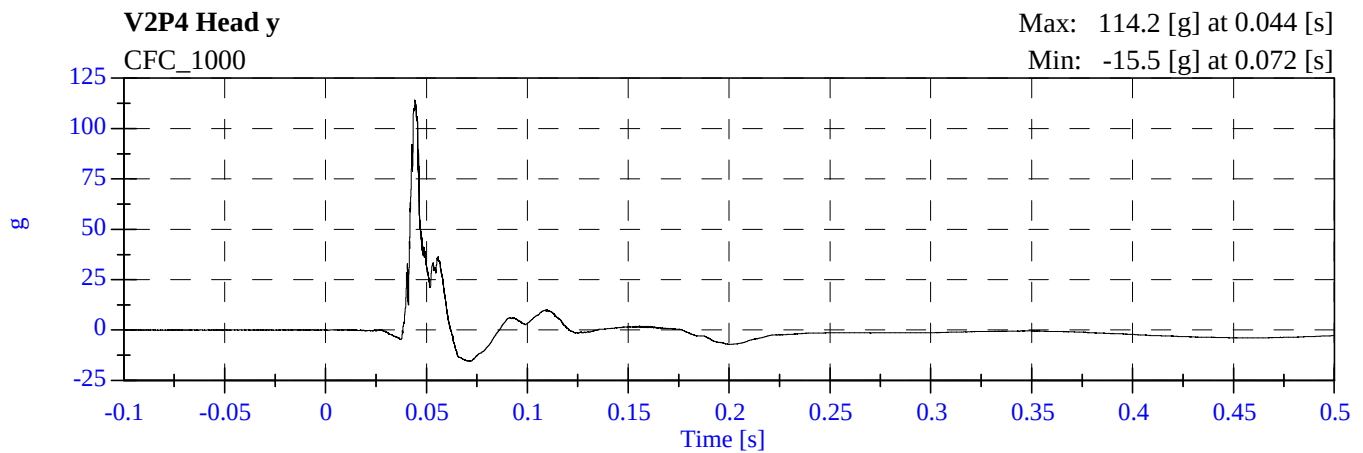
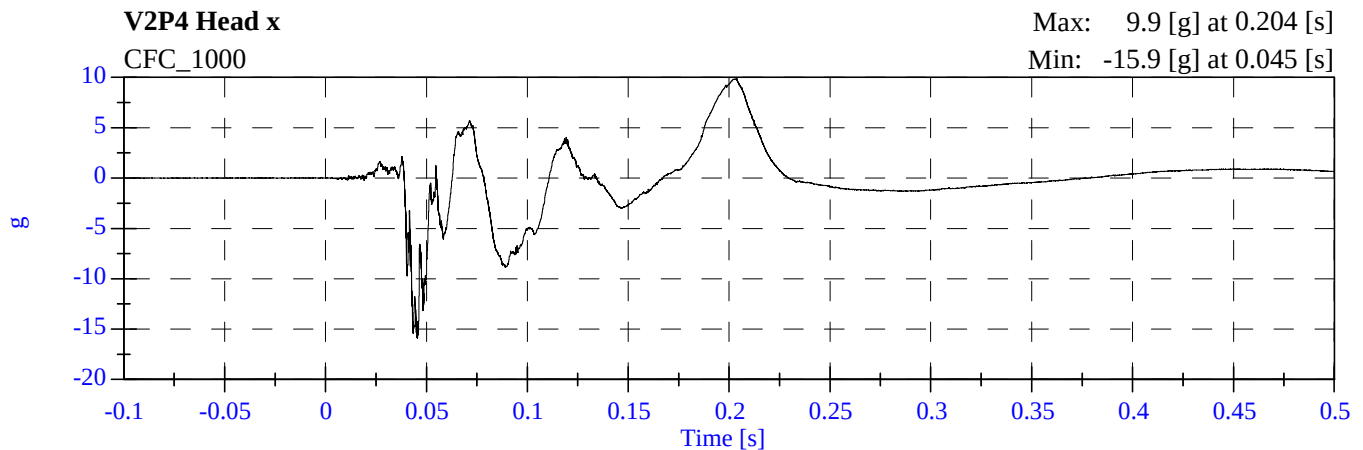
2007 214i Test 5 2007 Chevrolet Aveo
C70102 - November 28, 2006



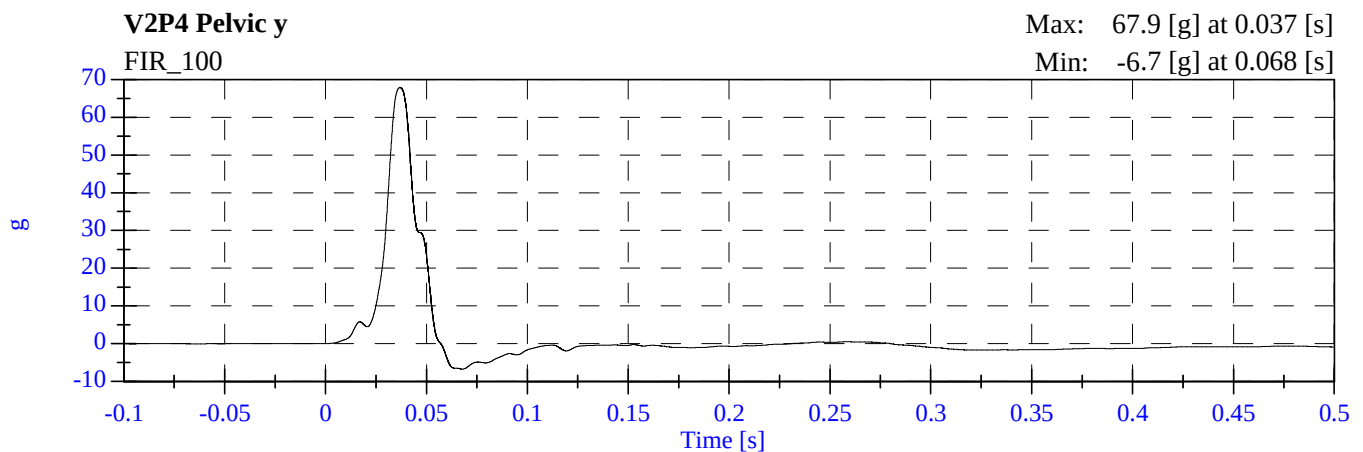
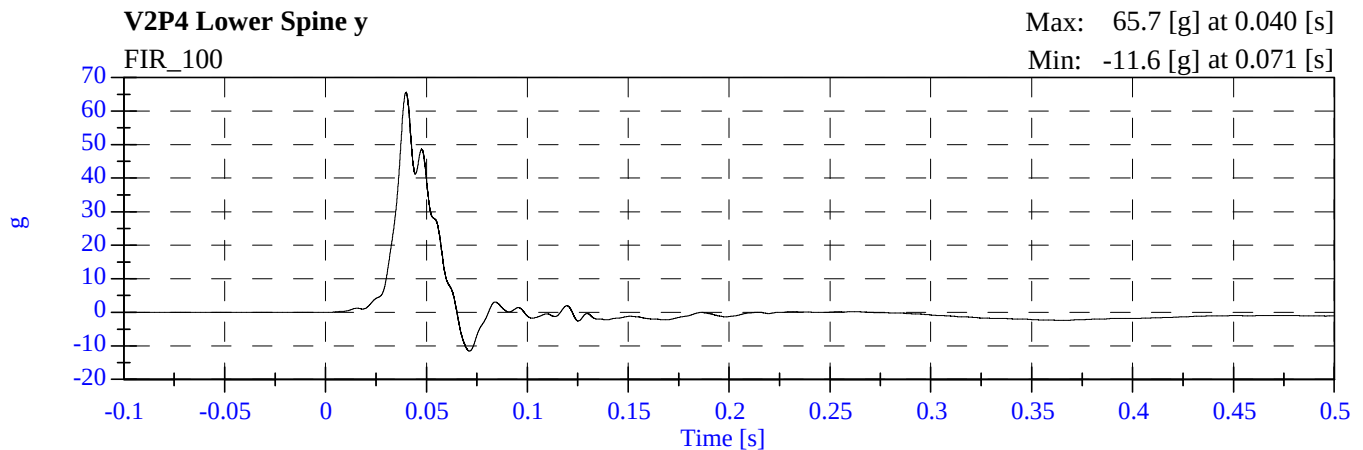
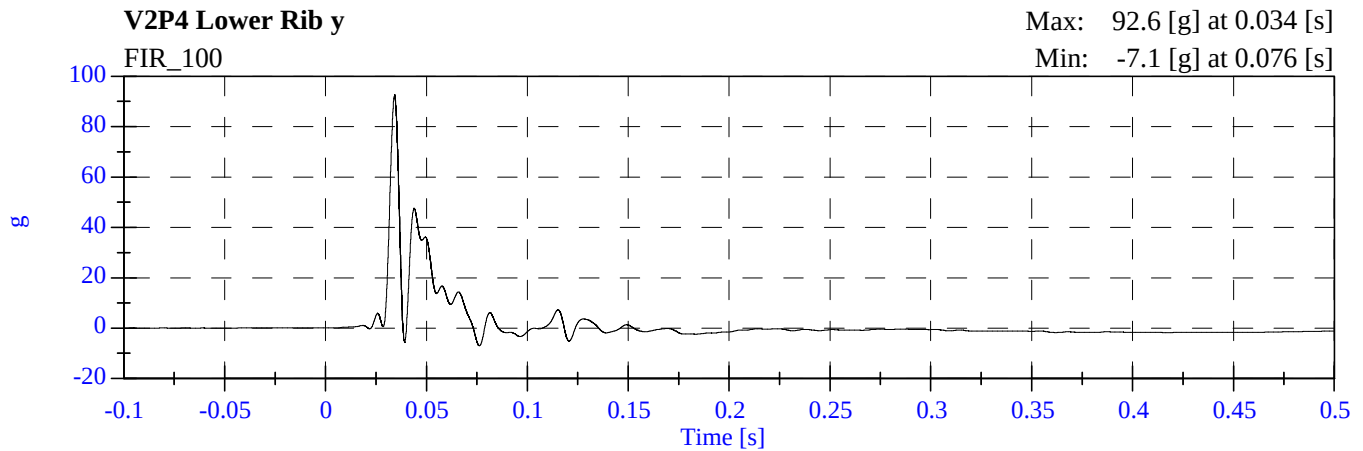
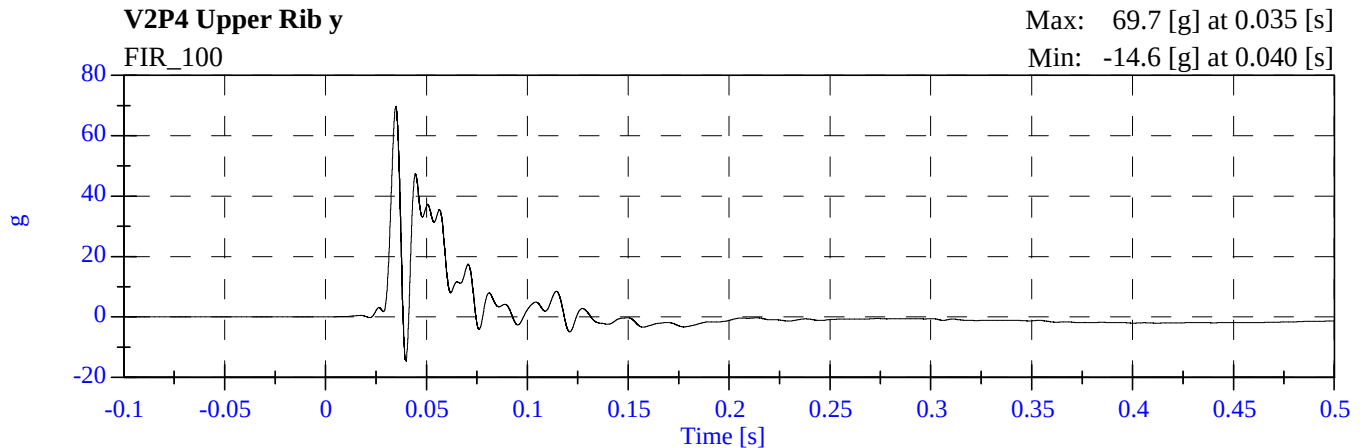
2007 214i Test 5 2007 Chevrolet Aveo
C70102 - November 28, 2006



2007 214i Test 5 2007 Chevrolet Aveo
C70102 - November 28, 2006



2007 214i Test 5 2007 Chevrolet Aveo
C70102 - November 28, 2006



APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

SUMMARY
SID H3 PRE & POST TEST CALIBRATION

CONFIGURED FOR LEFT SIDE IMPACT

Date: 12/05/06 Sequential Test Number: 1
Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	SID H3 NO.: 270		SID H3 NO.: 269	
		PRE TEST	POST TEST	PRE TEST	POST TEST
SH- Seated Height (mm)	889 - 909	900	900	899	900
RH- Rib Height (mm)	501 - 521	508	509	509	508
HP- Hip Pivot Height (mm)	99 ref.	99	99	99	99
RD- Rib from Back Line (mm)	229 - 241	234	233	235	234
KV- Knee Pivot from Back Line (mm)	511 - 526	519	519	520	519
SW- Knee Pivot to Floor (mm)	490 - 505	498	499	499	499
HW- Hip Width (mm)	356 - 391	378	377	371	372
THORAX IMPACTS					
TEMPERATURE (• C)	18.9 - 25.5	21.1	21.1	21.1	21.1
RELATIVE HUMIDITY (%)	10 - 70	40.0	22.0	40	33.0
PROBE SPEED (m/s)	4.27 - 4.33	4.28	4.32	4.28	4.32
UPPER RIB (g's)	37 - 46	38.64	40.81	39.26	42.52
LOWER RIB (g's)	37 - 46	37.07	40.65	39.29	42.26
LOWER SPINE (g's)	15 - 22	19.79	21.55	17.65	18.73
PELVIS IMPACT					
TEMPERATURE (• C)	18.9 - 25.5	21.1	21.1	21.1	21.1
RELATIVE HUMIDITY (%)	10 - 70	40.0	33.0	40.0	37.0
PROBE SPEED (m/s)	4.27 - 4.33	4.28	4.28	4.27	4.30
PELVIS (g's)	40 - 60	54.01	48.40	54.96	43.29

REMARKS: None

CALIBRATION TEST RESULTS

PRE-TEST

SID H3 NO.: 270

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 270 Sequential Test Number: 5
Date: 11/20/06 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.: 270 Sequential Test Number: 5
Date: 11/16/06 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 – 909	900
RH- Rib Height (mm)	502 – 520	508
HP- Hip Pivot Height (mm)	99 ref.	99
RD- Rib from Back Line (mm)	229 – 241	234
KH- Knee Pivot from Back Line (mm)	511 – 526	519
KV- Knee Pivot to Floor (mm)	490 – 505	498
HW- Hip Width (mm)	356 - 391	378

REMARKS: None

SID Low Speed Shock Test S/N:270 (3.05 m/s)

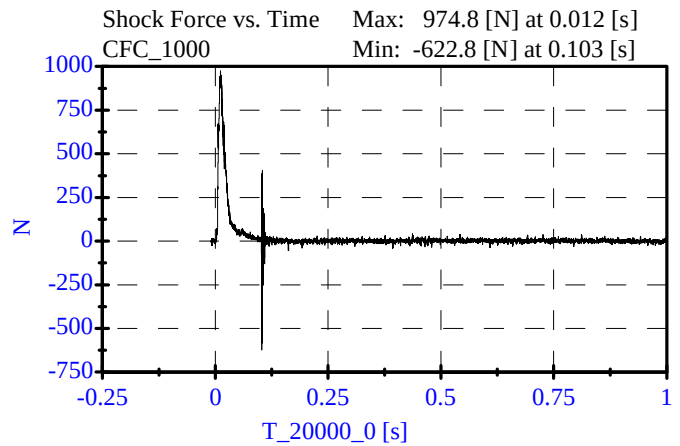
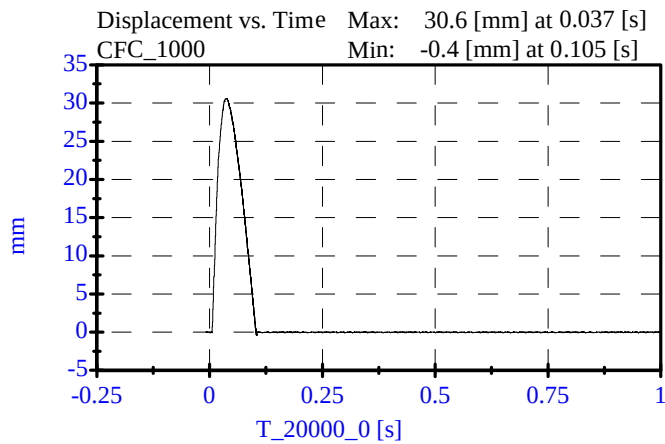
PRE TEST

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 270
Date: September 15, 2006

Sequential Test Number: 1 File: 270SL
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 %	50.00 %	Passed
Displacement:	30.00-35.00 mm	30.58 mm	Passed
Maximum Force:	836.00-1125.00 N	974.82 N	Passed
Impact Test Velocity:	3.05 m/s		
Damper Identification:	270		
Damper Setting:	5		



SID Medium Speed Shock Test S/N:270 (4.27 m/s)

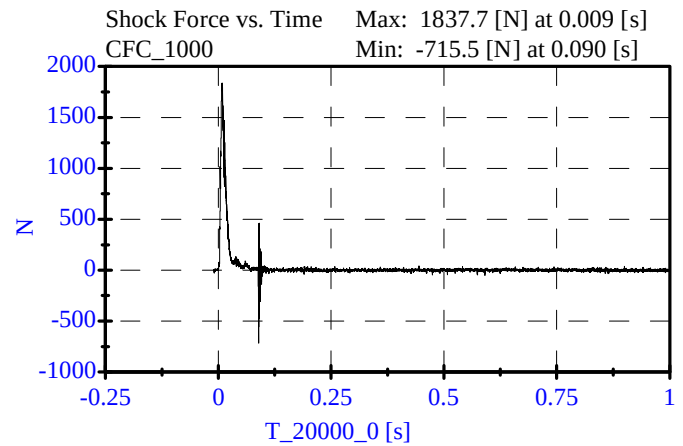
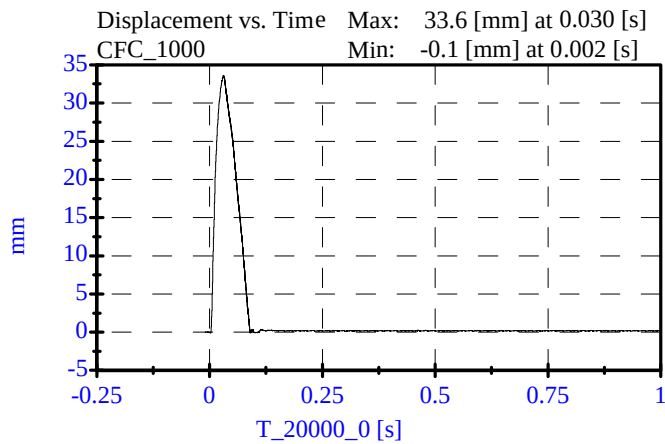
PRE TEST

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 270
Date: September 15, 2006

Sequential Test Number: 1 File: 270SL
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 %	50.00 %	Passed
Displacement:	32.00-37.00 mm	33.58 mm	Passed
Maximum Force:	1730.00-2099.00 N	1837.72 N	Passed
Impact Test Velocity:	4.27 m/s		
Damper Identification:	270		
Damper Setting:	5		



SID High Speed Shock Test S/N:270 (6.10 m/s)

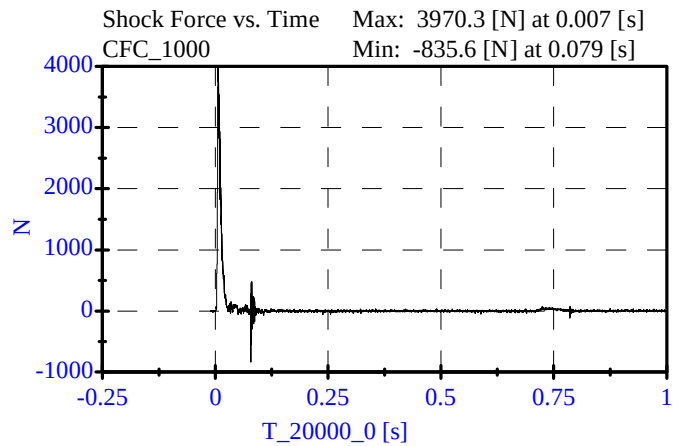
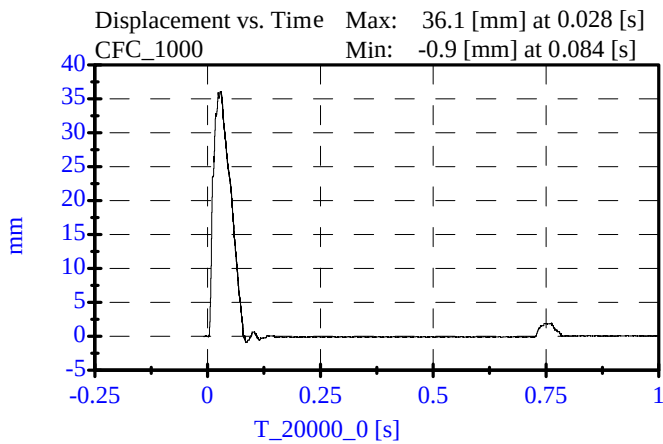
PRE TEST

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 270
Date: September 15, 2006

Sequential Test Number: 1 File: 270SL
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 %	50.00 %	Passed
Displacement:	33.00-40.00 mm	36.08 mm	Passed
Maximum Force:	3741.00-4448.00 N	3970.32 N	Passed
Impact Test Velocity:	6.10 m/s		
Damper Identification:	270		
Damper Setting:	5		

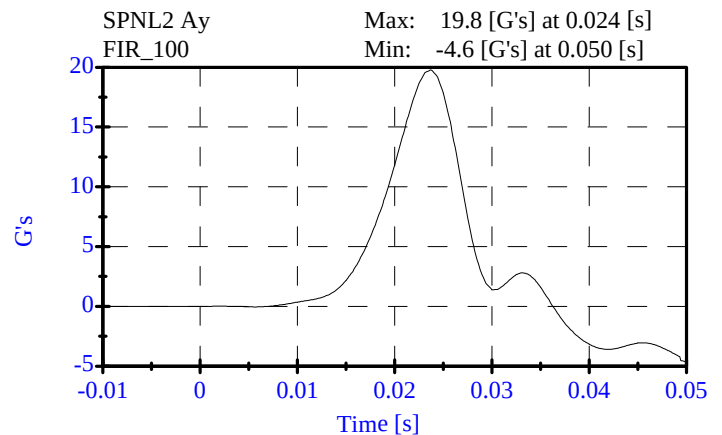
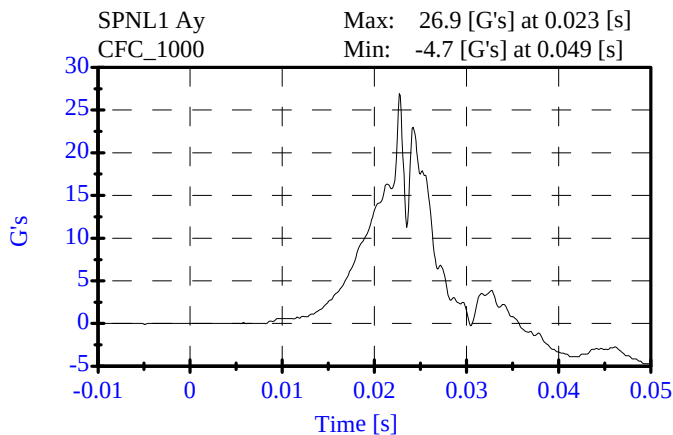
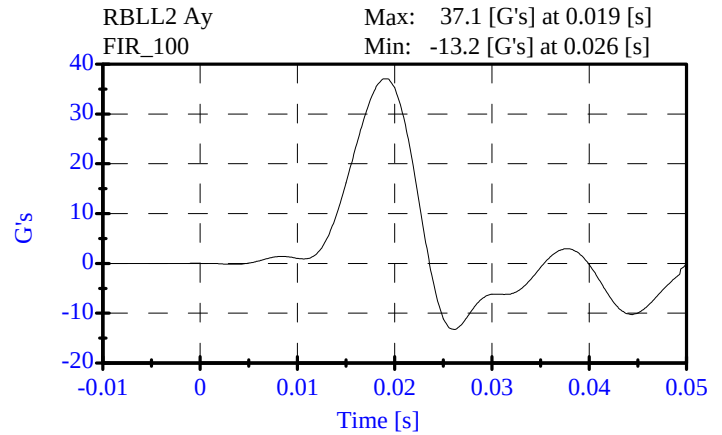
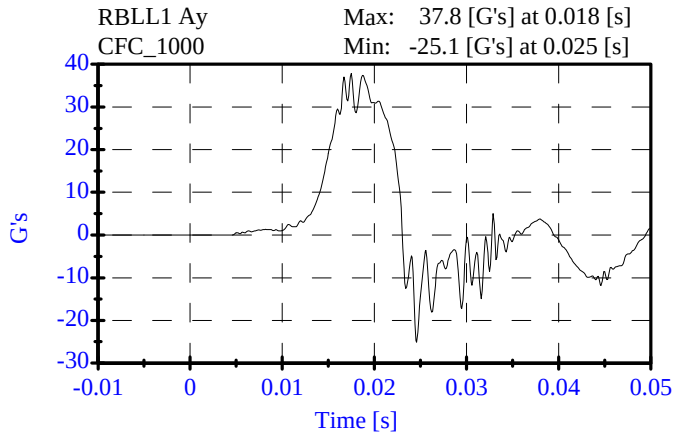
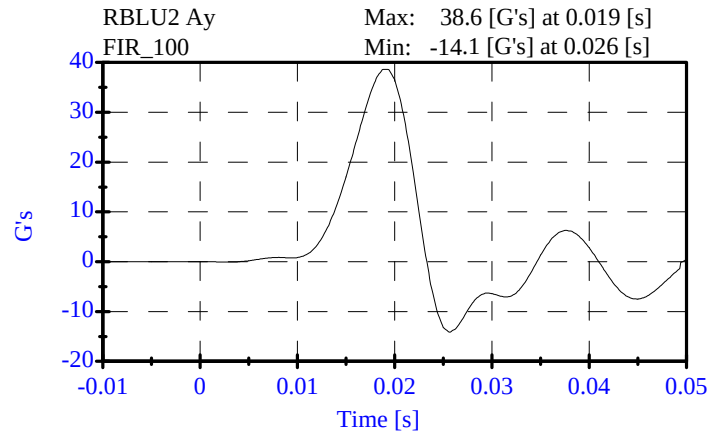
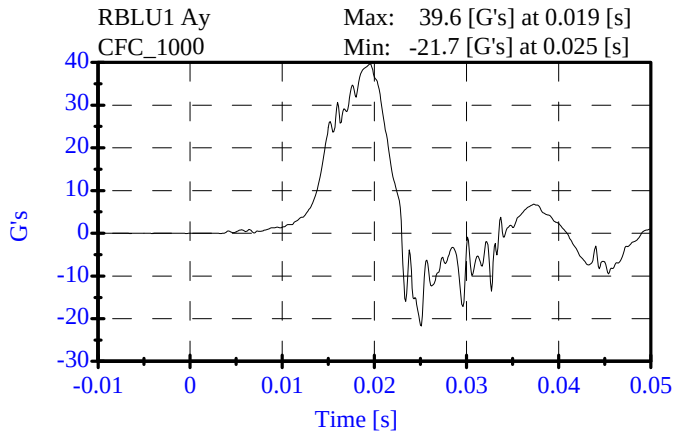


Thorax Impact
Pre-Test
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 270
Date: 11-16-06

Sequential Test Number: 1 File: 270T 11-16-06
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 %	40.00 %	Passed
Probe Velocity:	4.27- 4.33 m/s	4.28 m/s	Passed
Upper Rib Acceleration:	37.00-46.00 G's	38.64 G's	Passed
Lower Rib Acceleration:	37.00-46.00 G's	37.07 G's	Passed
Lower Spine Acceleration:	15.00-22.00 G's	19.79 G's	Passed



Pelvic Impact

Pre-Test

CONFIGURED FOR LEFT SIDE IMPACT

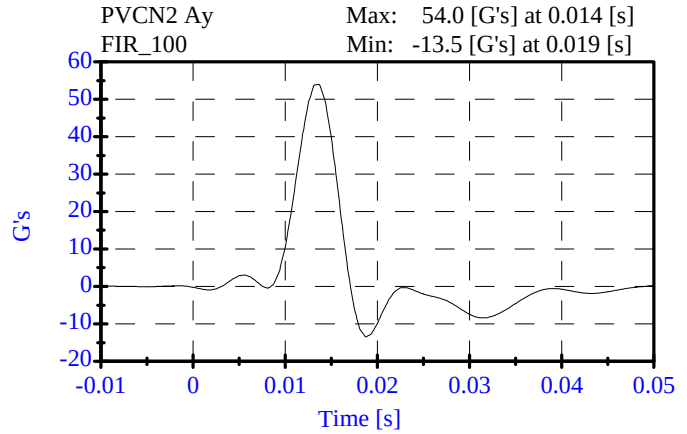
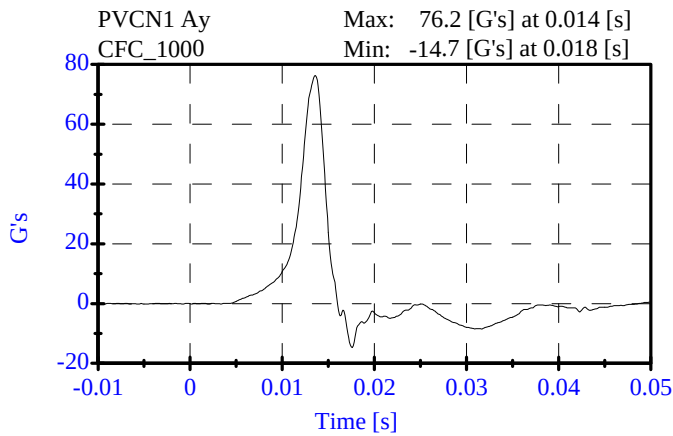
ATD Serial No: 270

Date: 11-16-06

Sequential Test Number: 1 File: 270P 11-16-06

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 %	40.00 %	Passed
Probe Velocity:	4.27- 4.33 m/s	4.28 m/s	Passed
Pelvis Y Acceleration:	40.00-60.00 G's	54.01 G's	Passed
Time Above 20 Gs	3.0-7.0 ms	5.3 ms	Passed



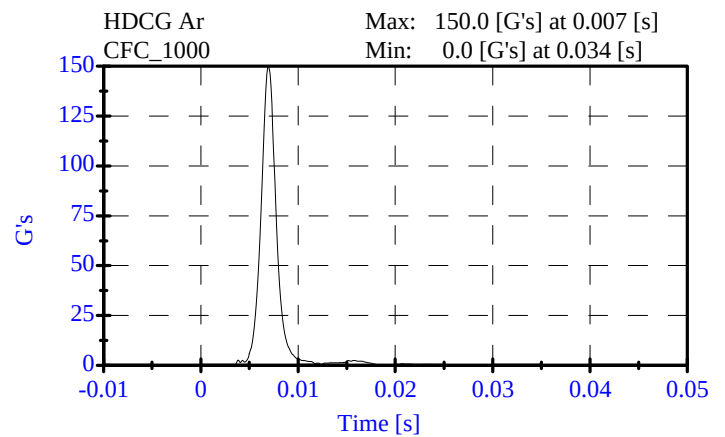
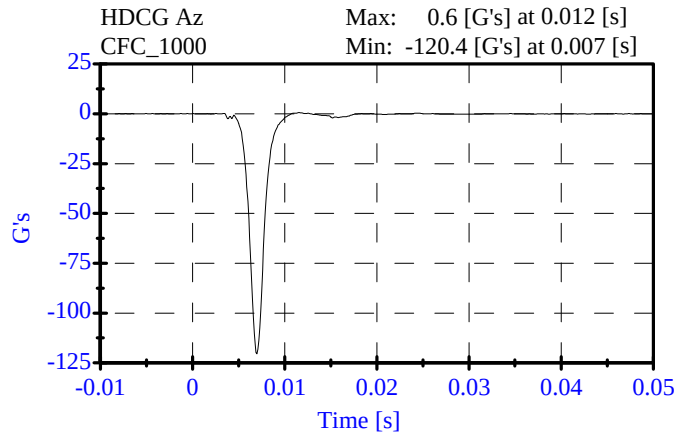
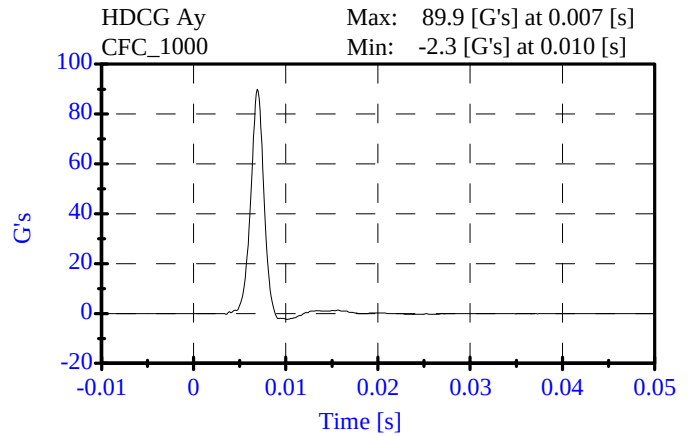
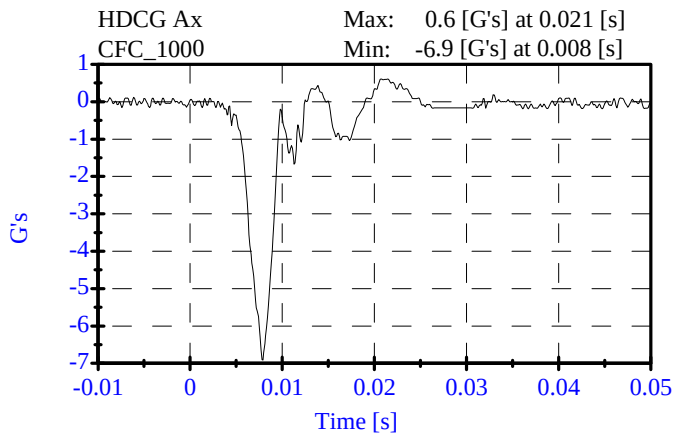
Head Drop Pre-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 270
Date: 11-15-06

Sequential Test Number: 1 File: 270HD 11-15-06
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 %	38.00 %	Passed
Peak Resultant Accel.:	120-150 Gs	149.96 Gs	Passed
Peak Lateral Accel.:	15 Gs Max	0.61 Gs	Passed
Curve PerCent NonModal:	< 15%	1.66 %	Passed



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

ATD Serial No: 270

Date: 11-15-06

Sequential Test Number: 1 File: 270N 11-15-06

Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	20.6-22.2 C	21.1 C	Passed
Lab Humidity:	10-70 %	38.00 %	Passed
Impact Velocity:	6.89- 7.13 m/s	7.00 m/s	Passed
PENDULUM DELTA V			
Delta V at 10 ms:	1.96- 2.55 m/s	2.47 m/s	Passed
Delta V at 20 ms:	4.12- 5.10 m/s	4.84 m/s	Passed
Delta V at 30 ms:	5.73- 7.01 m/s	6.70 m/s	Passed
Delta V between 40-70 ms:	6.27- 7.64 m/s	7.15 m/s	Passed
D PLANE ROTATION			
Maximum Rotation:	66.0-82.0 Deg	68.91 Deg	Passed
Rotation Angle Decay:	58.0-67.0 ms	59.80 ms	Passed
MOMENT ABOUT THE OCCIPITAL CONDYLE			
Max Occipital Moment:	73.00- 88.00 N-m	83.60 N-m	Passed
Occipital Moment Decay:	49.0-64.0 ms	51.60 ms	Passed
HEAD ROTATION TIME WITH RESPECT TO THE OCCIPITAL CONDYLE MOMENT			
Moment to Rotation Peak:	2.0-16.0 ms	8.80 ms	Passed

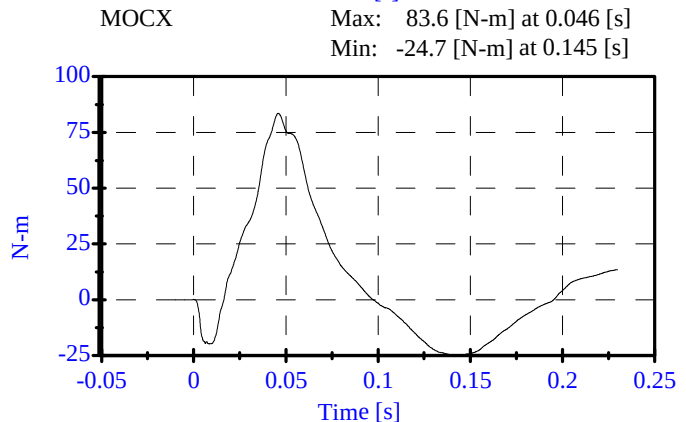
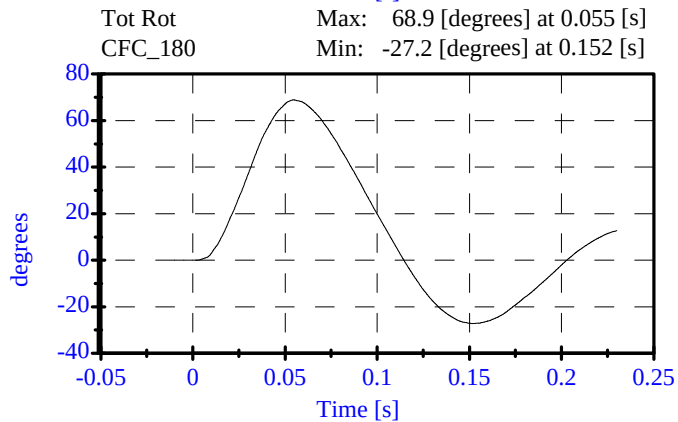
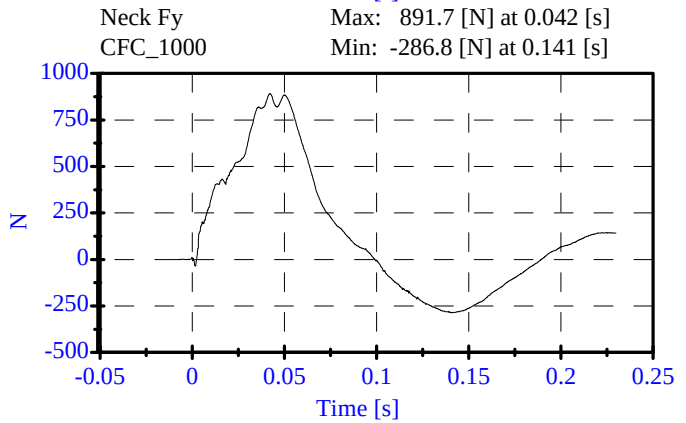
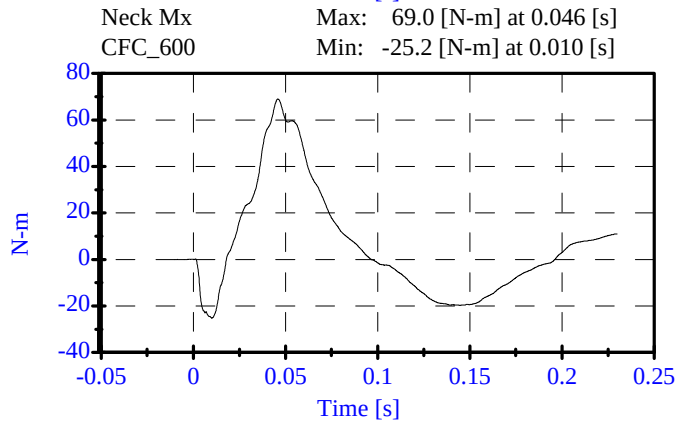
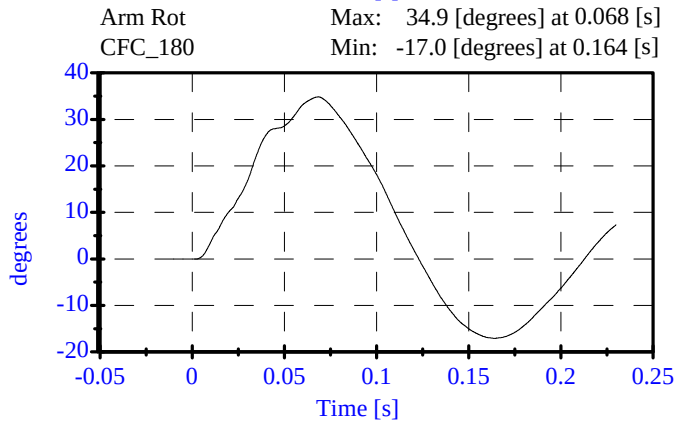
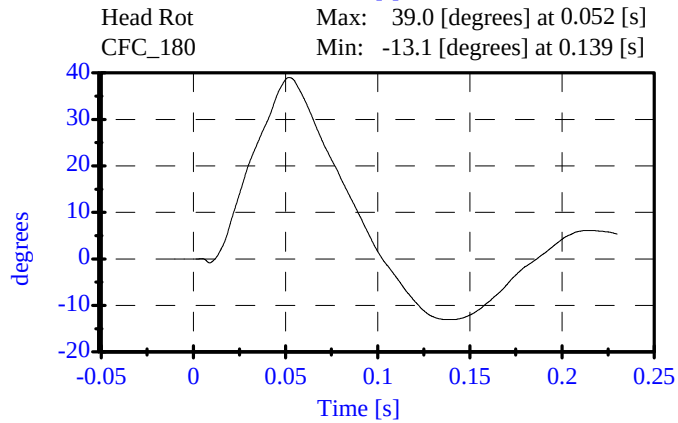
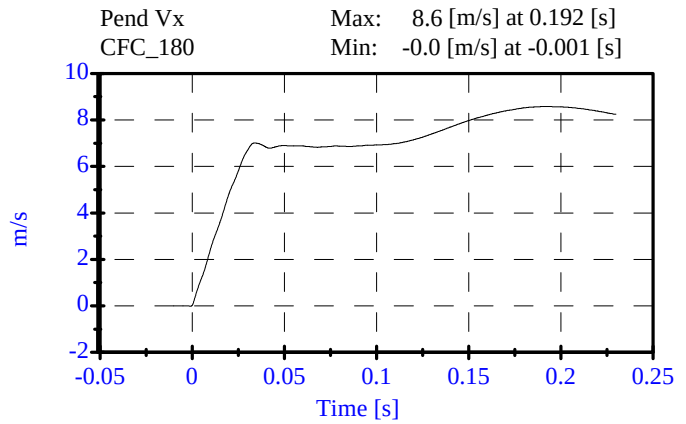
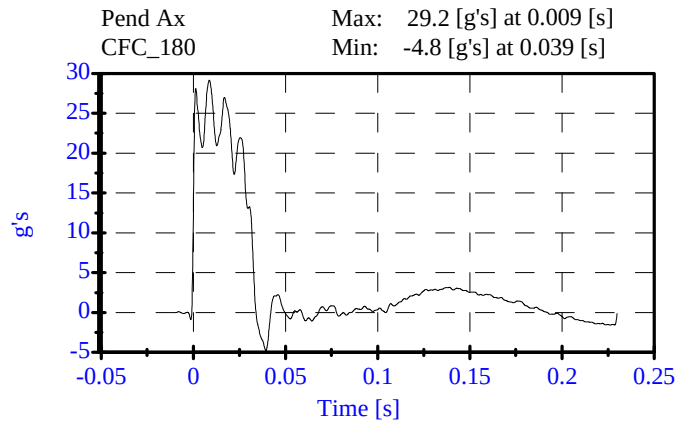
Neck Test
Pre-Test
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 270

Date: 11-15-06

Sequential Test Number: 1 File: 270N 11-15-06

Laboratory Technician: B. Swiecicki



Abdomen Test

Pre-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 270

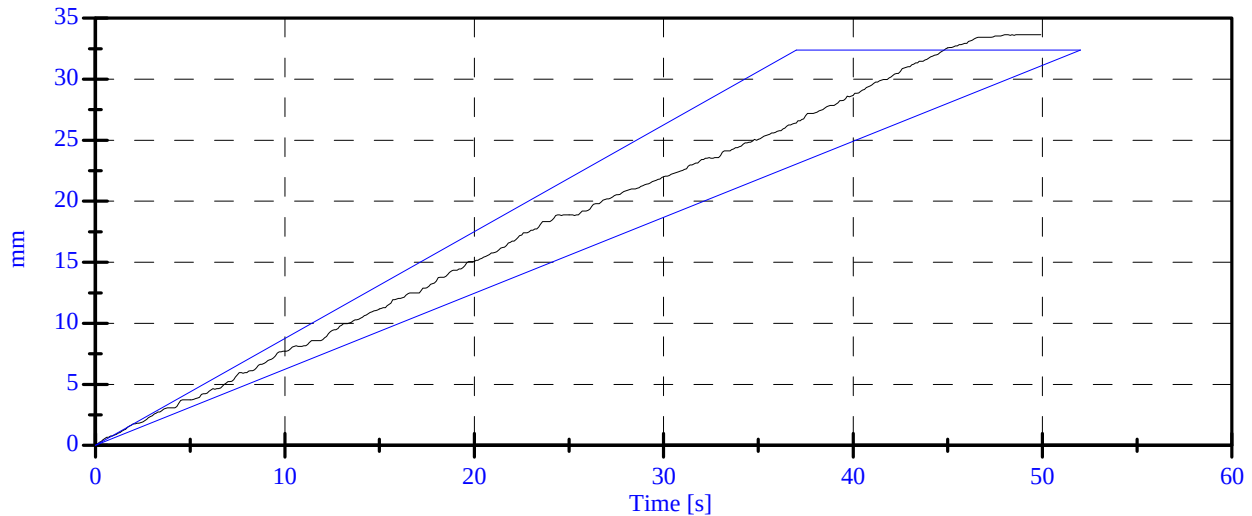
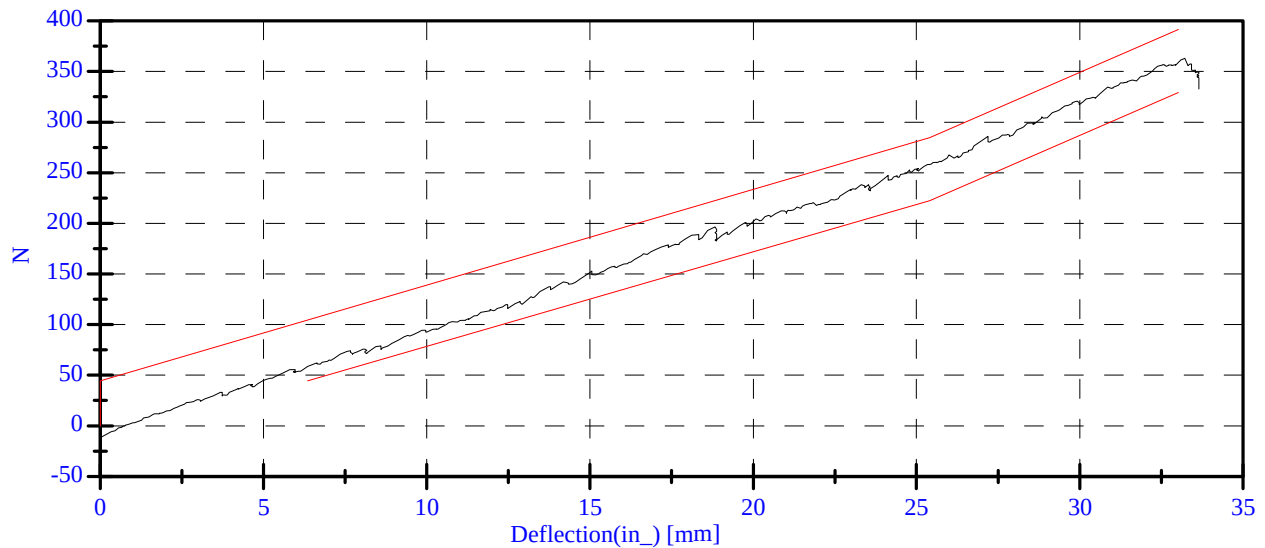
Date: 11-20-06

Sequential Test Number: 1 File: 270Ab 11-20-06

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 12.95 mm :	104.00-162.00 N	120.05 N	Passed
Force at 19.05 mm :	162.98-220.99 N	188.20 N	Passed
Force at 25.40 mm :	221.97-280.02 N	258.16 N	Passed
Force at 33.02 mm :	324.99-391.00 N	361.47 N	Passed

ABDOMINAL COMPRESSION TEST



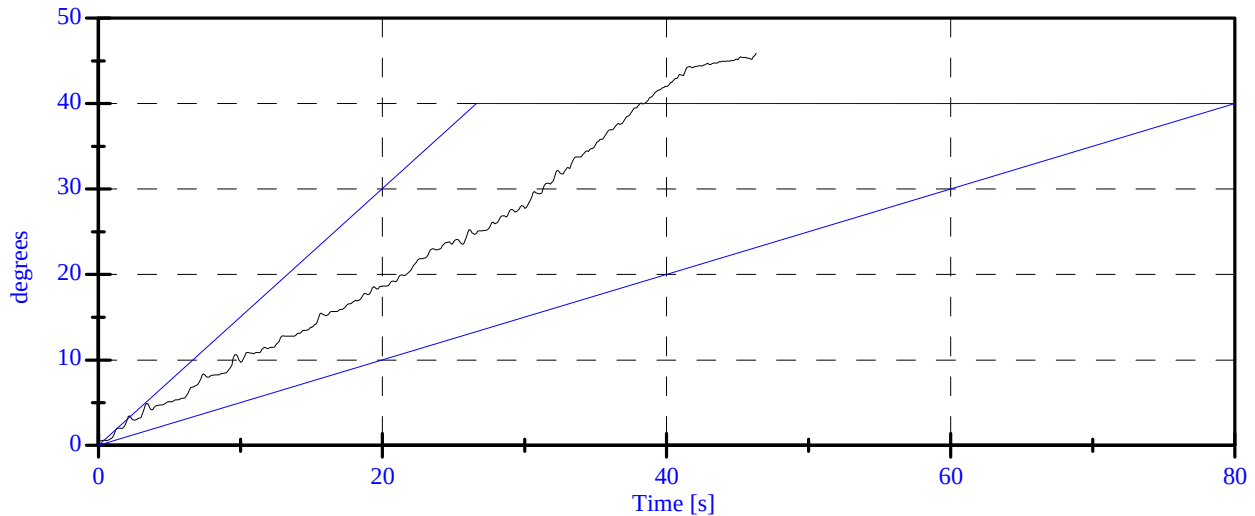
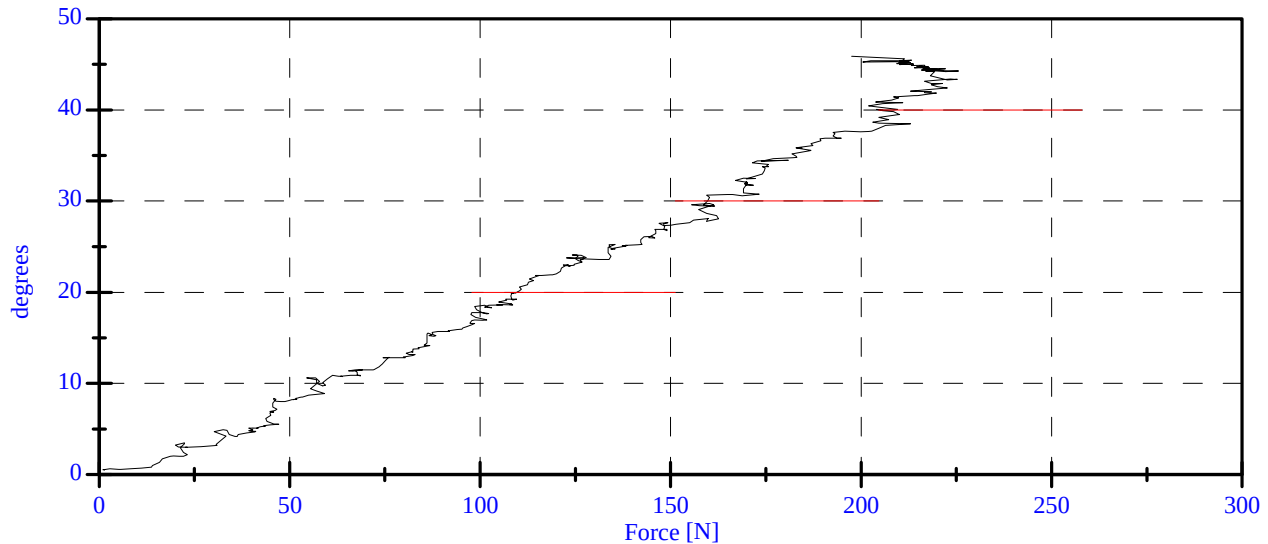
**Lumbar Spine
Pre-Test
CONFIGURED FOR LEFT SIDE IMPACT**

ATD Serial No: 270
Date: 11-20-06

Sequential Test Number: 1 File: 270Sp 11-20-06
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	0.92 N	Passed
Force at 20 Deg:	97.86-151.24 N	109.82 N	Passed
Force at 30 Deg:	151.24-204.62 N	159.70 N	Passed
Force at 40 Deg:	204.62-258.00 N	206.19 N	Passed
Return Angle	12 Deg Max	3.42 deg	Passed

LUMBAR SPINE FLEXION TEST



PRE-TEST DUMMY INSPECTION LIST
CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 270 Sequential Test Number: 5
Date: 11/20/06 Laboratory Technician: B. Swiecicki

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

REMARKS: None

CALIBRATION TEST RESULTS

PRE-TEST

SID H3 NO.: 269

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 269	Sequential Test Number: 5
Date: 11/20/06	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.: 269 Sequential Test Number: 5
Date: 11/16/06 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	899
RH- Rib Height (mm)	502 - 520	509
HP- Hip Pivot Height (mm)	99 ref.	99
RD- Rib from Back Line (mm)	229 - 241	235
KH- Knee Pivot from Back Line (mm)	511 - 526	520
KV- Knee Pivot to Floor (mm)	490 - 505	499
HW- Hip Width (mm)	356 - 391	371

REMARKS: None

SID Low Speed Shock Test S/N:269 (3.05 m/s)

PRE TEST

CONFIGURED FOR LEFT SIDE IMPACT

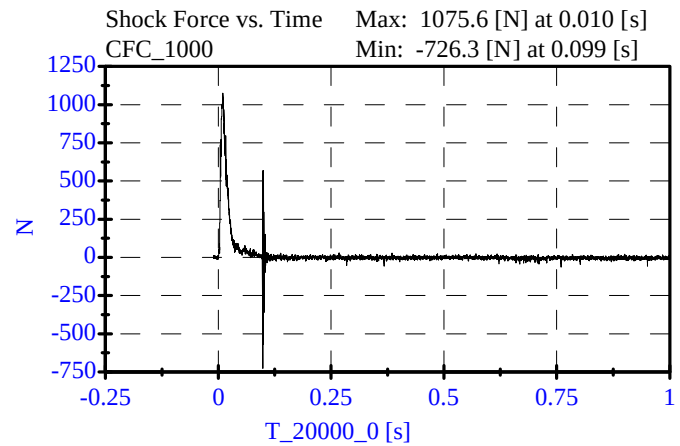
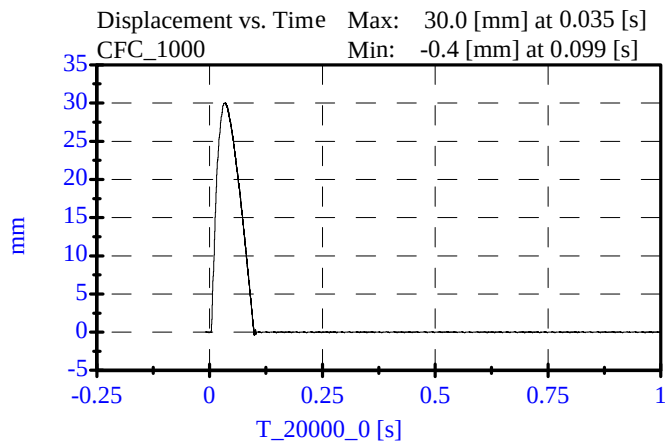
ATD Serial No: 269

Date: September 15, 2006

Sequential Test Number: 1 File: 906SH

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 %	50.00 %	Passed
Displacement:	30.00-35.00 mm	30.01 mm	Passed
Maximum Force:	836.00-1125.00 N	1075.61 N	Passed
Impact Test Velocity:	3.05 m/s		
Damper Identification:	269		
Damper Setting:	5		



SID Mid Speed Shock Test S/N:269 (4.27 m/s)

PRE TEST

CONFIGURED FOR LEFT SIDE IMPACT

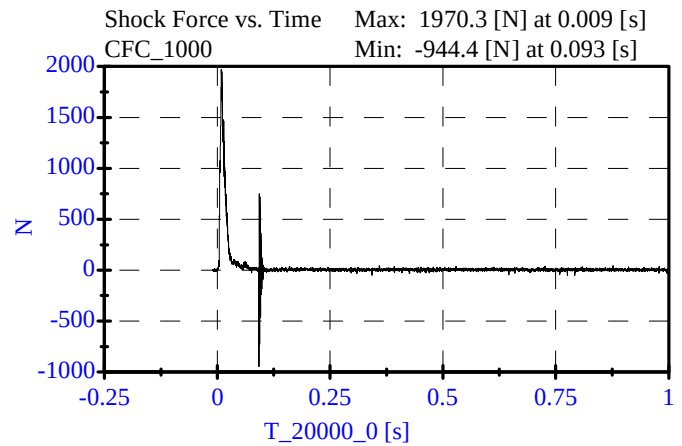
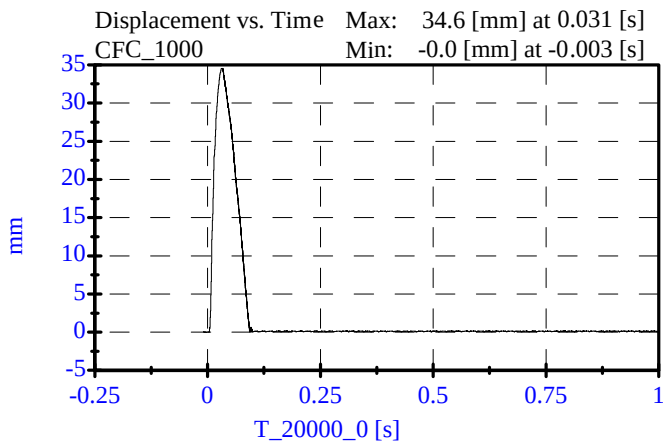
ATD Serial No: 269

Date: September 15, 2006

Sequential Test Number: 1 File: 269SM

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 %	50.00 %	Passed
Displacement:	32.00-37.00 mm	34.56 mm	Passed
Maximum Force:	1730.00-2099.00 N	1970.28 N	Passed
Impact Test Velocity:	4.27 m/s		
Damper Identification:	269		
Damper Setting:	5		



SID High Speed Shock Test S/N:269 (6.10 m/s)

PRE TEST

CONFIGURED FOR LEFT SIDE IMPACT

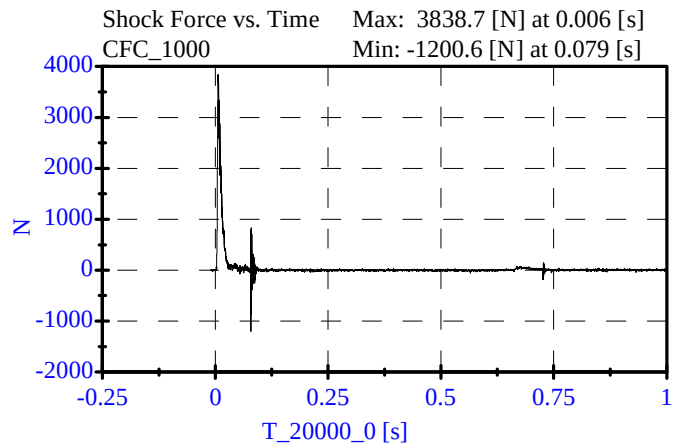
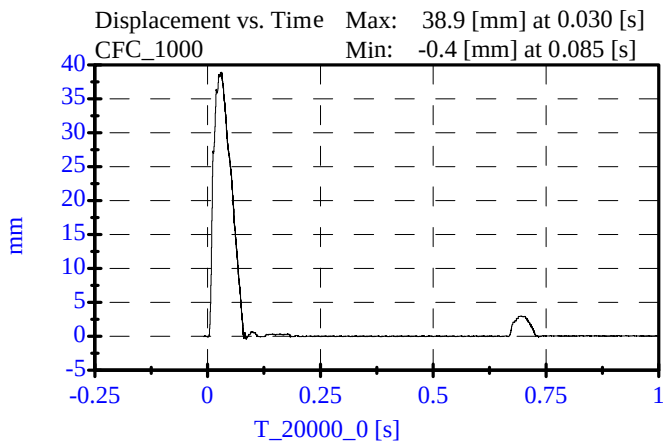
ATD Serial No: 269

Date: September 15, 2006

Sequential Test Number: 1 File: 269SM

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 %	50.00 %	Passed
Displacement:	33.00-40.00 mm	38.90 mm	Passed
Maximum Force:	3741.00-4448.00 N	3838.67 N	Passed
Impact Test Velocity:	6.10 m/s		
Damper Identification:	269		
Damper Setting:	5		

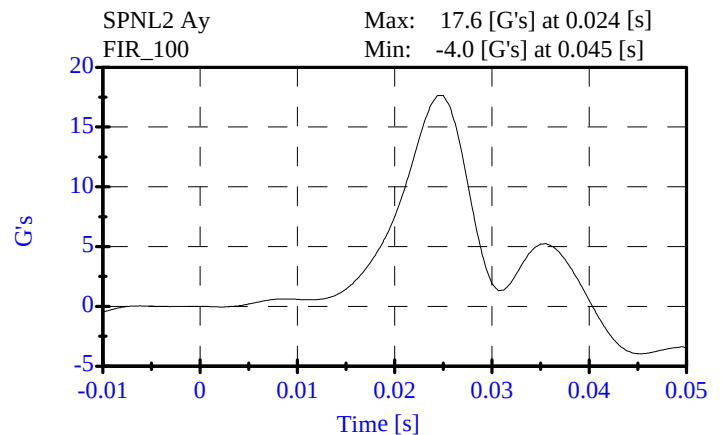
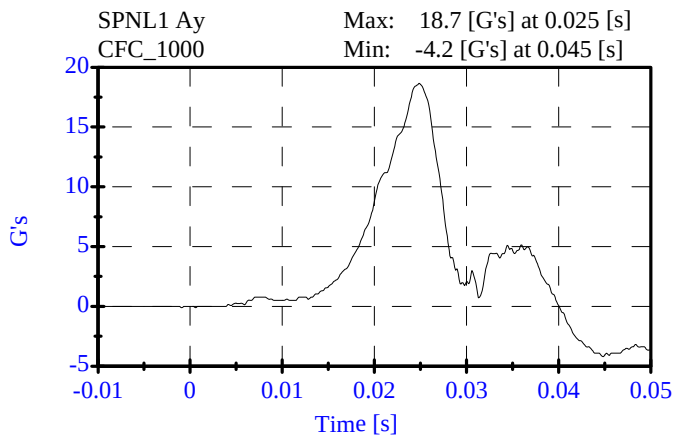
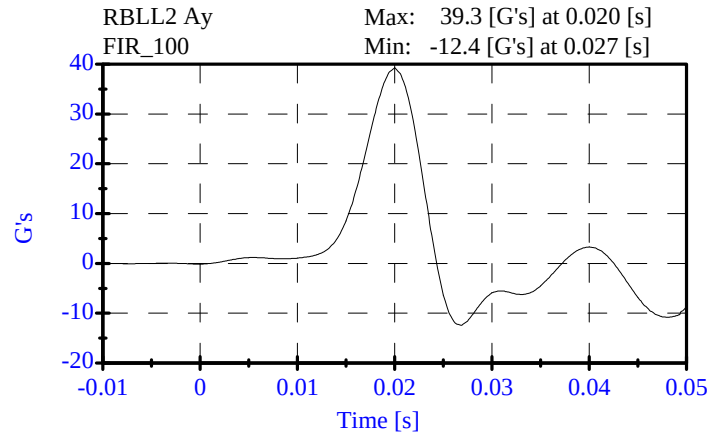
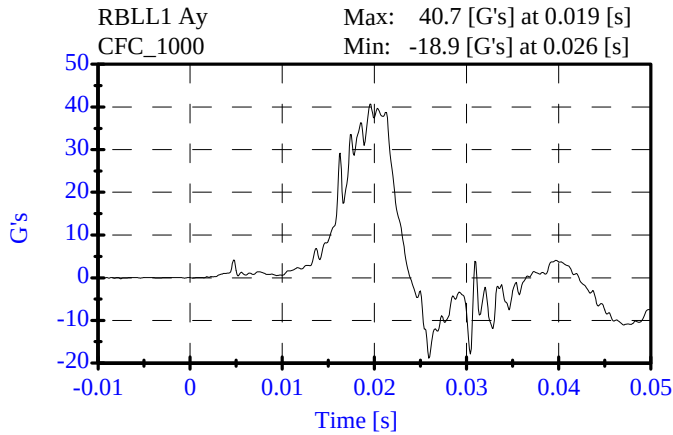
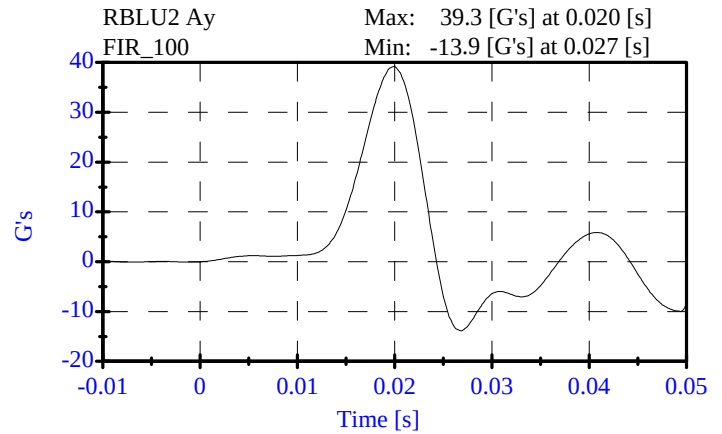
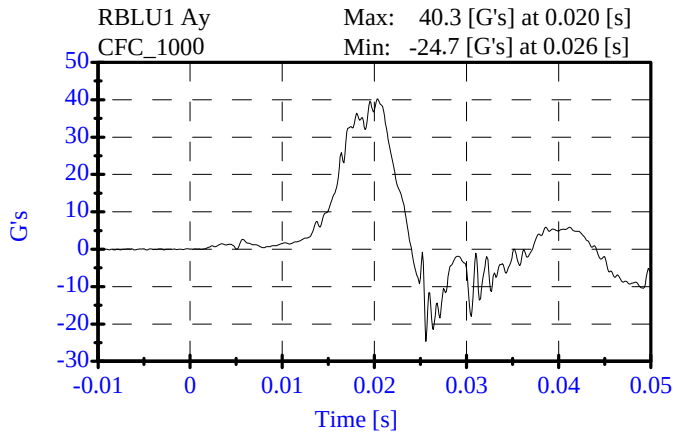


Thorax Impact
Pre-Test
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 269
Date: 11-16-06

Sequential Test Number: 1 File: 269T 11-16-06
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 %	40.00 %	Passed
Probe Velocity:	4.27- 4.33 m/s	4.28 m/s	Passed
Upper Rib Acceleration:	37.00-46.00 G's	39.26 G's	Passed
Lower Rib Acceleration:	37.00-46.00 G's	39.29 G's	Passed
Lower Spine Acceleration:	15.00-22.00 G's	17.65 G's	Passed



Pelvic Impact

Pre-Test

CONFIGURED FOR LEFT SIDE IMPACT

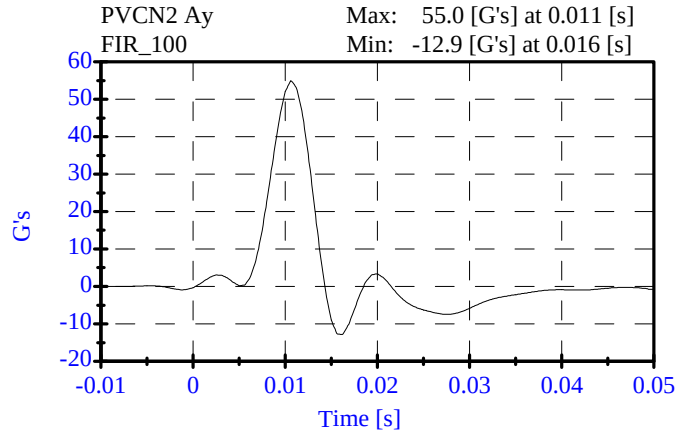
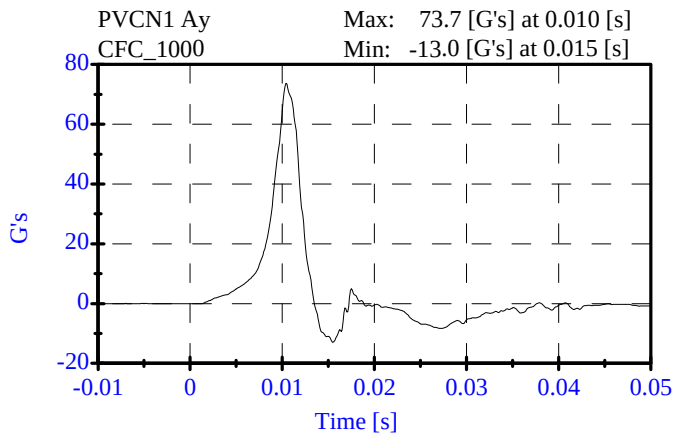
ATD Serial No: 269

Date: 11-16-06

Sequential Test Number: 1 File: 269P 11-16-06

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 %	40.00 %	Passed
Probe Velocity:	4.27- 4.33 m/s	4.27 m/s	Passed
Pelvis Y Acceleration:	40.00-60.00 G's	54.96 G's	Passed
Time Above 20 Gs	3.0-7.0 ms	5.4 ms	Passed



Head Drop Pre-Test

CONFIGURED FOR LEFT SIDE IMPACT

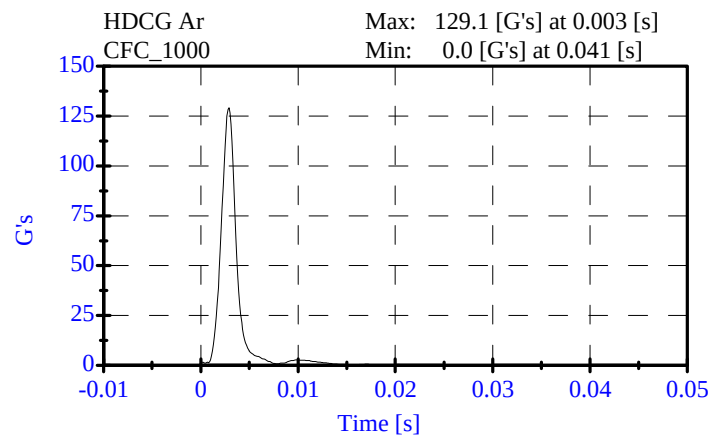
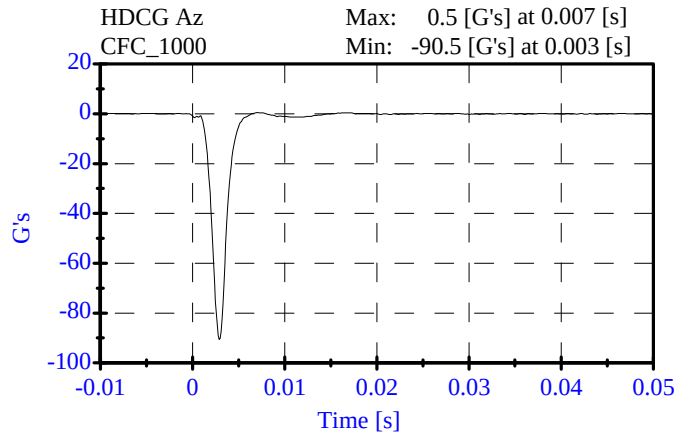
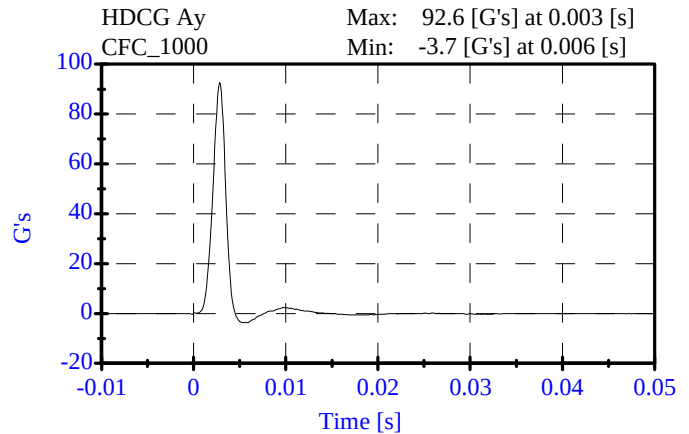
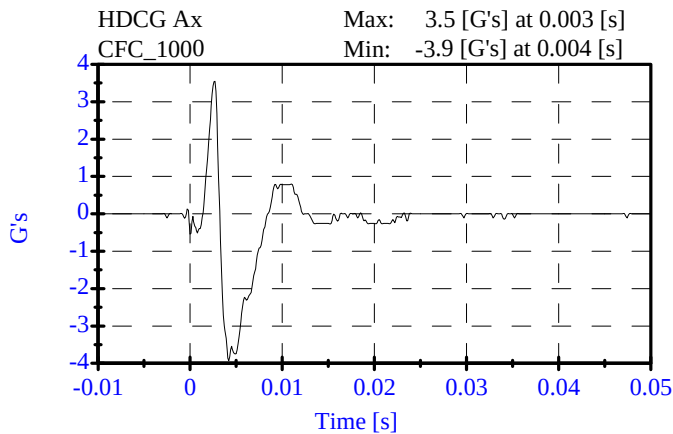
ATD Serial No: 269

Date: 11-14-06

Sequential Test Number: 1 File: 269HD 11-14-06

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 %	35.00 %	Passed
Peak Resultant Accel.:	120-150 Gs	129.13 Gs	Passed
Peak Lateral Accel.:	15 Gs Max	3.54 Gs	Passed
Curve PerCent NonModal:	< 15%	2.16 %	Passed



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

ATD Serial No: 269

Date: 11-15-06

Sequential Test Number: 1 File: 269N 11-15-06

Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	20.6-22.2 C	21.1 C	Passed
Lab Humidity:	10-70 %	38.00 %	Passed
Impact Velocity:	6.89- 7.13 m/s	7.00 m/s	Passed
PENDULUM DELTA V			
Delta V at 10 ms:	1.96- 2.55 m/s	2.19 m/s	Passed
Delta V at 20 ms:	4.12- 5.10 m/s	4.56 m/s	Passed
Delta V at 30 ms:	5.73- 7.01 m/s	6.55 m/s	Passed
Delta V between 40-70 ms:	6.27- 7.64 m/s	7.05 m/s	Passed
D PLANE ROTATION			
Maximum Rotation:	66.0-82.0 Deg	70.81 Deg	Passed
Rotation Angle Decay:	58.0-67.0 ms	61.80 ms	Passed
MOMENT ABOUT THE OCCIPITAL CONDYLE			
Max Occipital Moment:	73.00- 88.00 N-m	82.20 N-m	Passed
Occipital Moment Decay:	49.0-64.0 ms	56.50 ms	Passed
HEAD ROTATION TIME WITH RESPECT TO THE OCCIPITAL CONDYLE MOMENT			
Moment to Rotation Peak:	2.0-16.0 ms	10.40 ms	Passed

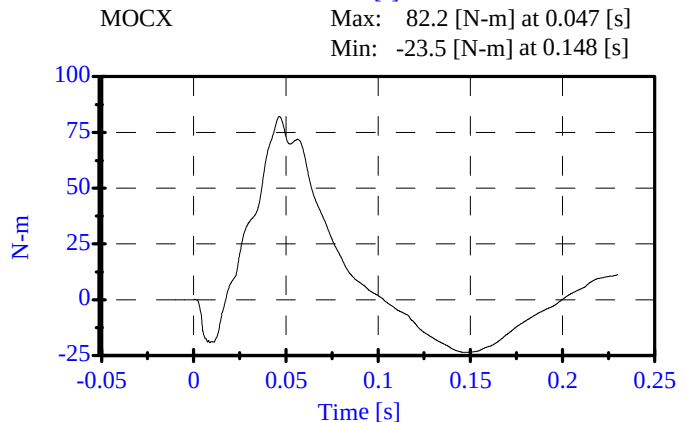
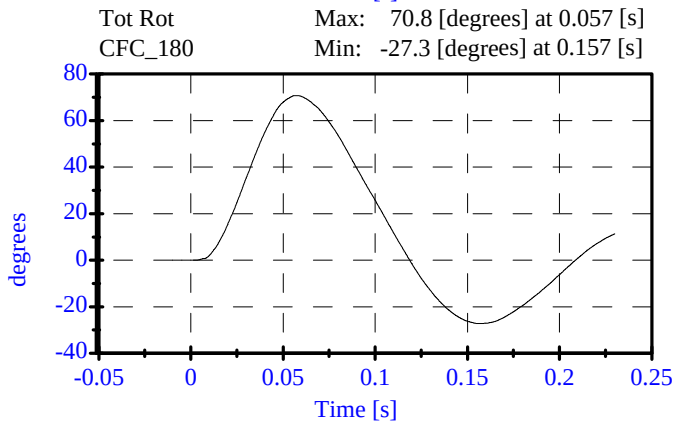
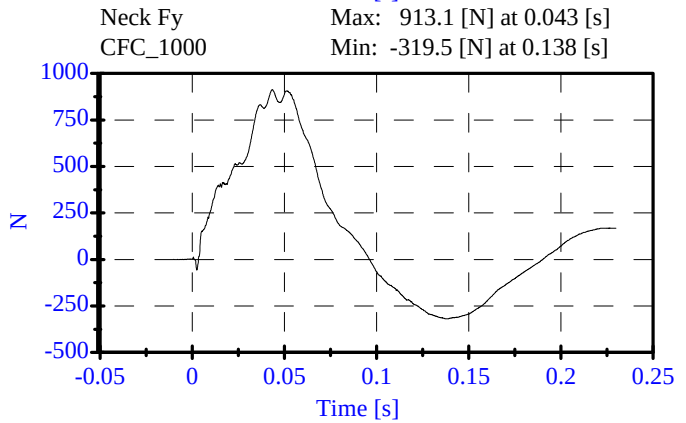
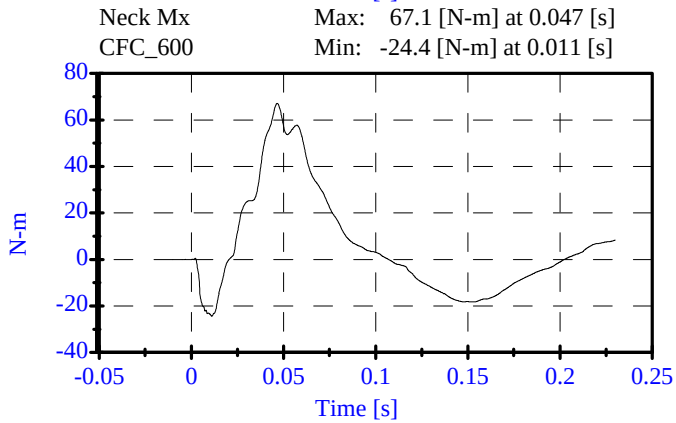
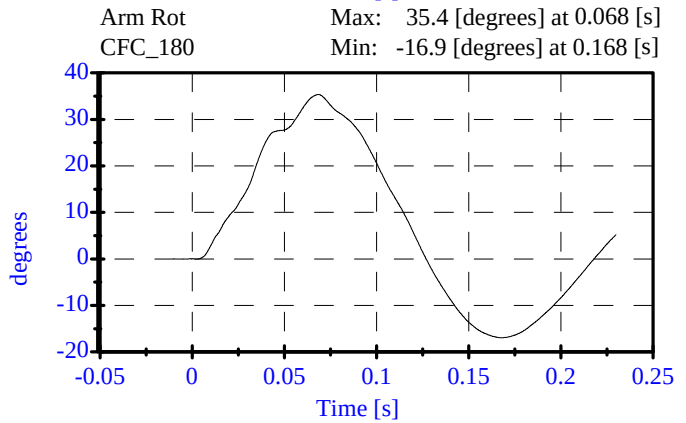
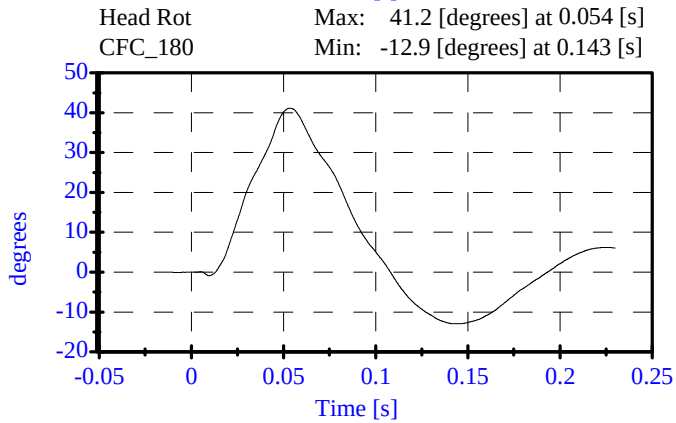
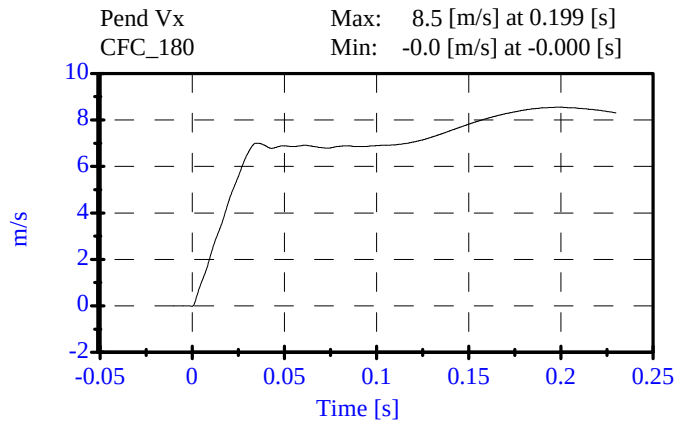
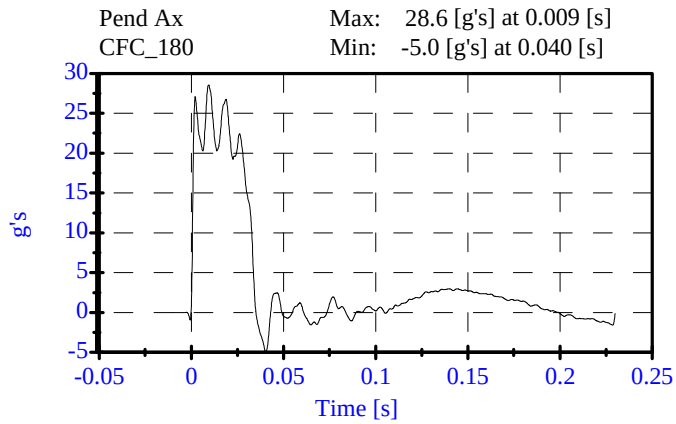
Neck Test
Pre-Test
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 269

Date: 11-15-06

Sequential Test Number: 1 File: 269N 11-15-06

Laboratory Technician: B. Swiecicki



Abdomen Test

Pre-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 269

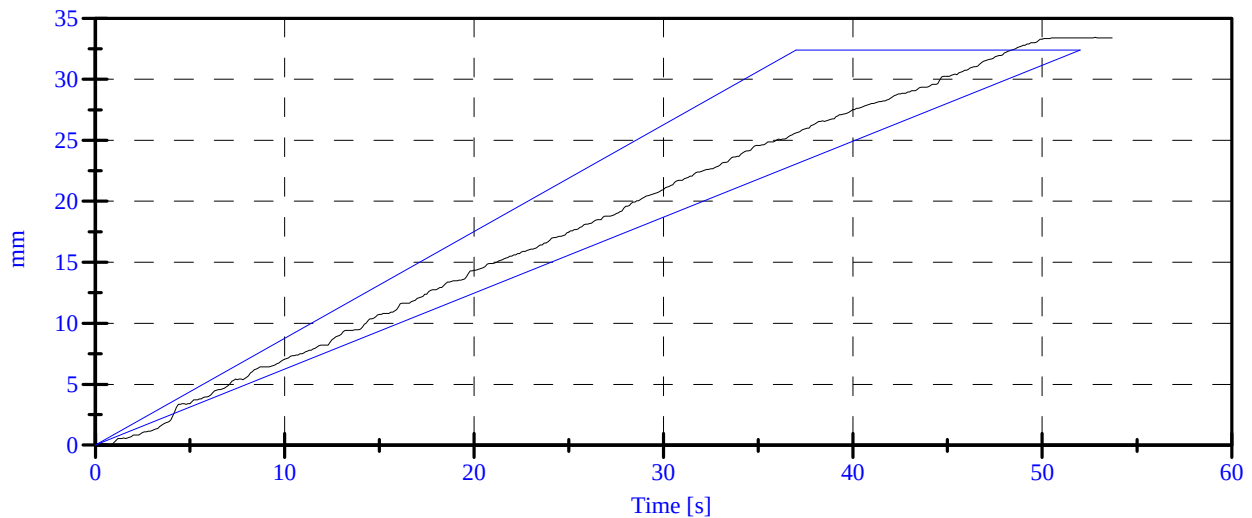
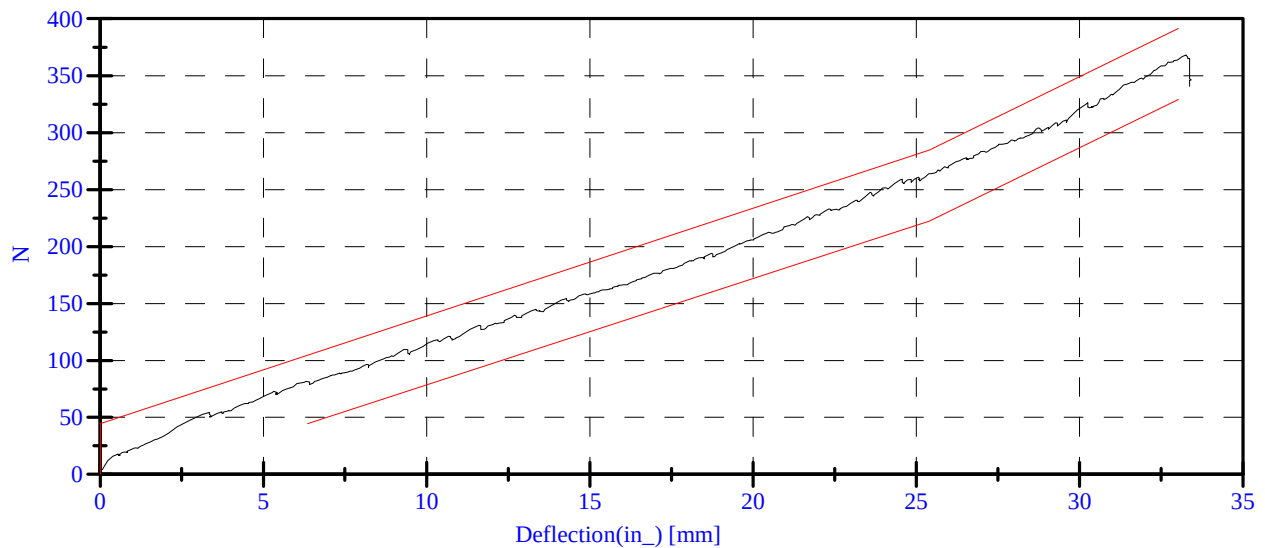
Date: 11-20-06

Sequential Test Number: 1 File: 269Ab 11-20-06

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 12.95 mm :	104.00-162.00 N	137.82 N	Passed
Force at 19.05 mm :	162.98-220.99 N	194.73 N	Passed
Force at 25.40 mm :	221.97-280.02 N	263.96 N	Passed
Force at 33.02 mm :	324.99-391.00 N	364.73 N	Passed

ABDOMINAL COMPRESSION TEST



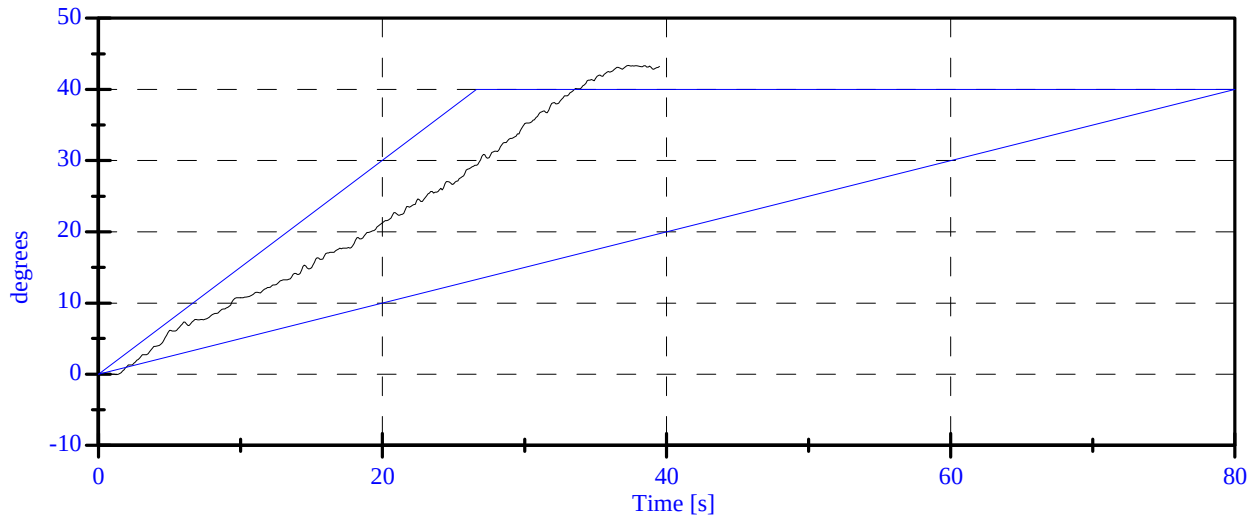
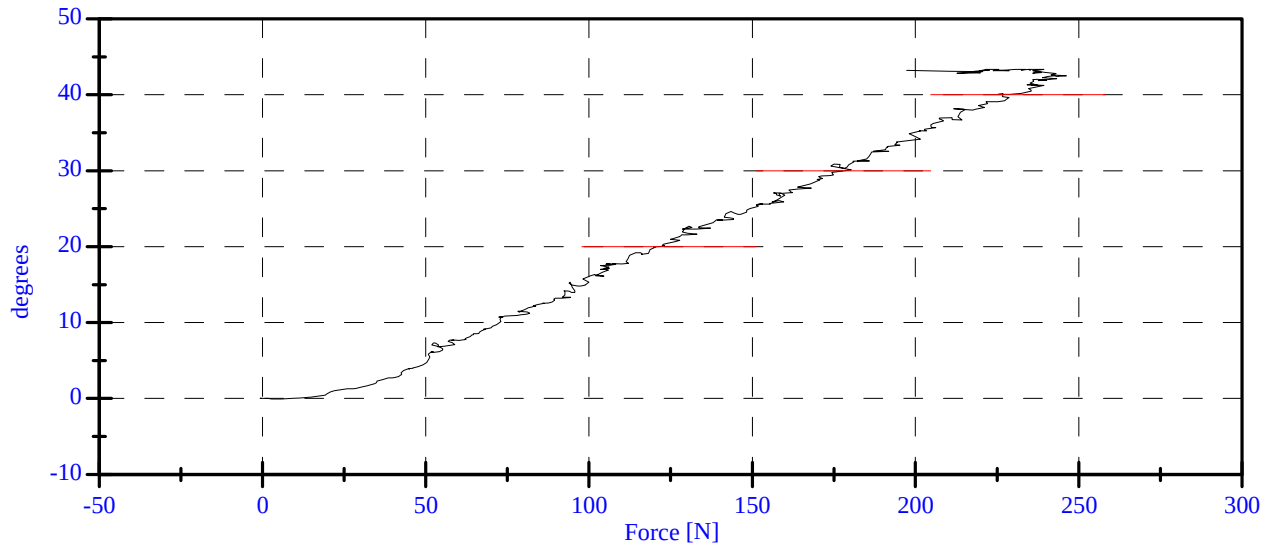
**Lumbar Spine
Pre-Test
CONFIGURED FOR LEFT SIDE IMPACT**

ATD Serial No: 269
Date: 11-20-06

Sequential Test Number: 1 File: 269Sp 11-20-06
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	-0.65 N	Failed
Force at 20 Deg:	97.86-151.24 N	122.62 N	Passed
Force at 30 Deg:	151.24-204.62 N	180.33 N	Passed
Force at 40 Deg:	204.62-258.00 N	226.82 N	Passed
Return Angle	12 Deg Max	4.26 deg	Passed

LUMBAR SPINE FLEXION TEST



PRE-TEST DUMMY INSPECTION LIST

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 269 Sequential Test Number: 5
 Date: 11/20/06 Laboratory Technician: B. Swiecicki

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

REMARKS: None

CALIBRATION TEST RESULTS

POST TEST

SID H3 NO.: 270

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 270 Sequential Test Number: 1
Date: 12/05/06 Laboratory Technician: B. Swiecicki

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

* Test not required for SID certification.

REMARKS: None

**EXTERNAL DIMENSIONS
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 270 Sequential Test Number: 1
Date: 12/05/06 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	900
RH- Rib Height (mm)	502 - 520	509
HP- Hip Pivot Height (mm)	99 ref.	99
RD- Rib from Back Line (mm)	229 - 241	233
KH- Knee Pivot from Back Line (mm)	511 - 526	519
KV- Knee Pivot to Floor (mm)	490 - 505	499
HW- Hip Width (mm)	356 - 391	377

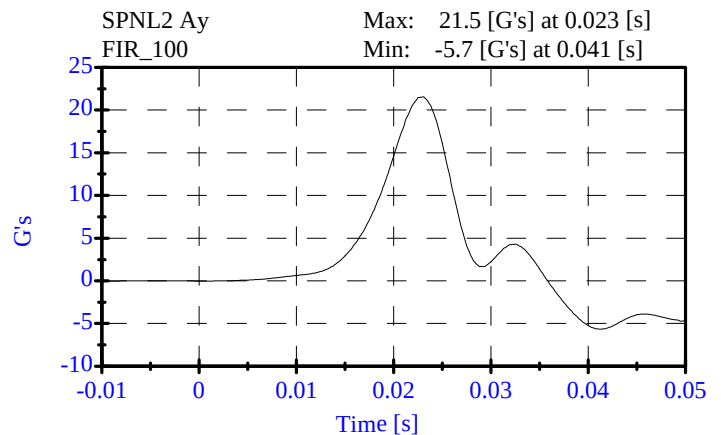
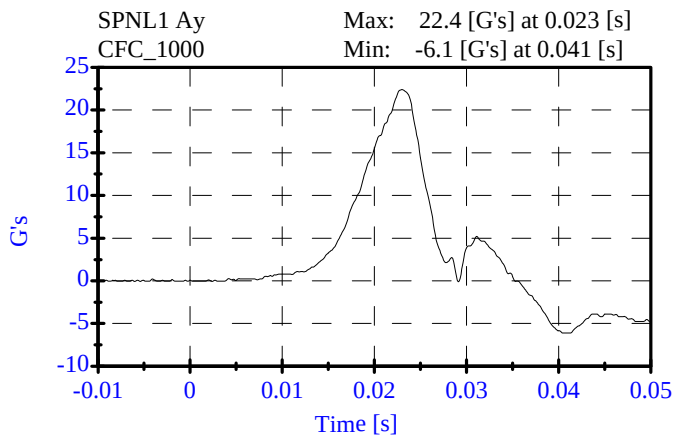
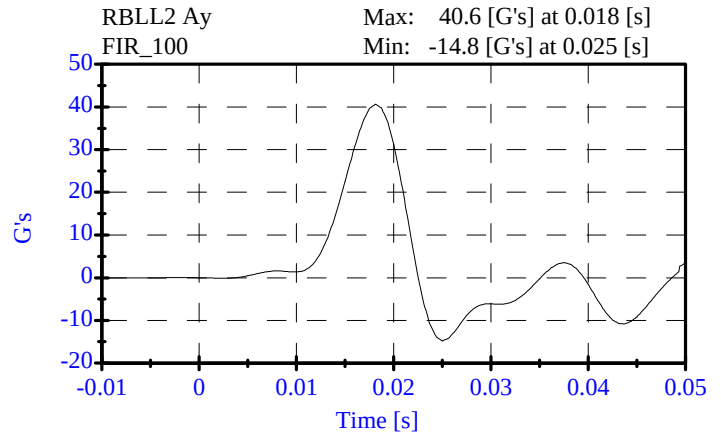
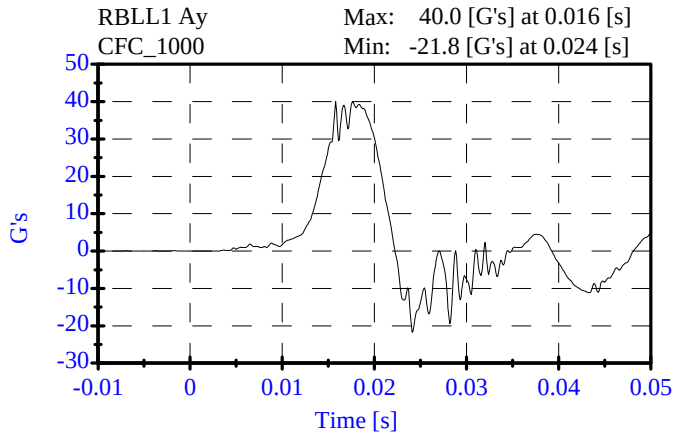
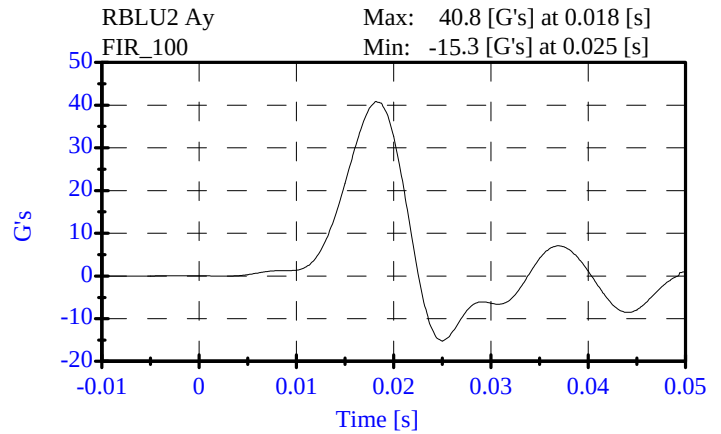
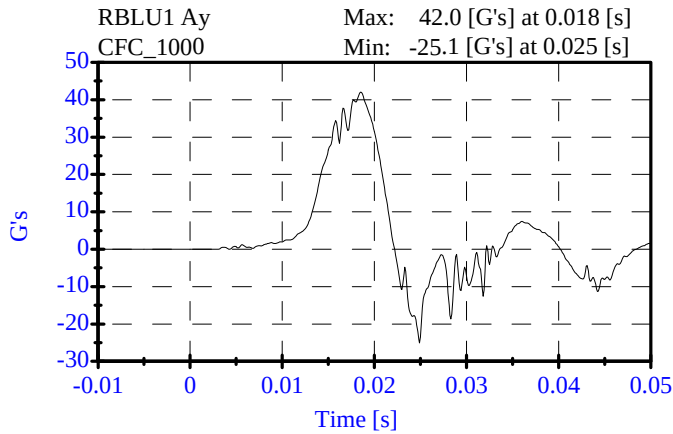
REMARKS: None

Thorax Impact
Post-Test
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 270
Date: 12-4-06

Sequential Test Number: 1 File: 270T1 12-04-06
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 %	22.00 %	Passed
Probe Velocity:	4.27- 4.33 m/s	4.32 m/s	Passed
Upper Rib Acceleration:	37.00-46.00 G's	40.81 G's	Passed
Lower Rib Acceleration:	37.00-46.00 G's	40.65 G's	Passed
Lower Spine Acceleration:	15.00-22.00 G's	21.55 G's	Passed



Pelvic Impact

Post-Test

CONFIGURED FOR LEFT SIDE IMPACT

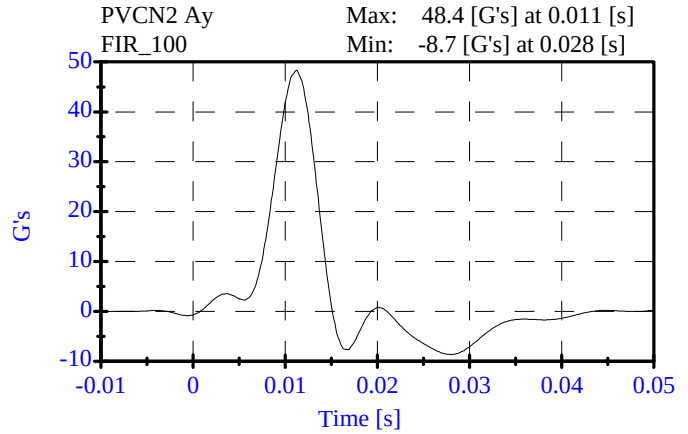
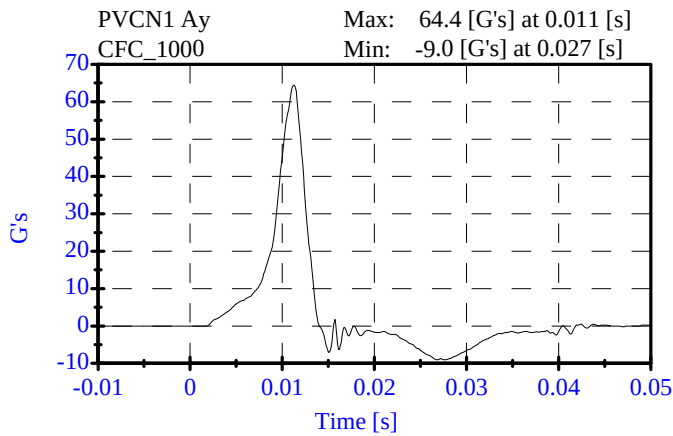
ATD Serial No: 270

Date: 12-04-06

Sequential Test Number: 1 File: 270P 12-04-06

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	4.28 m/s	Passed
Pelvis Y Acceleration:	40.00-60.00 G's	48.40 G's	Passed
Time Above 20 Gs	3.0-7.0 ms	5.4 ms	Passed



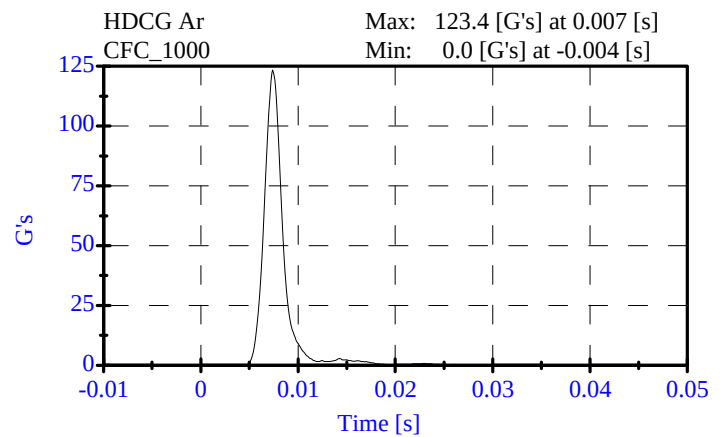
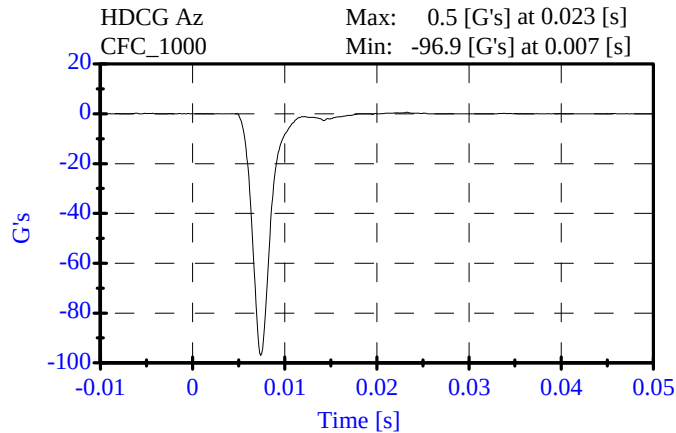
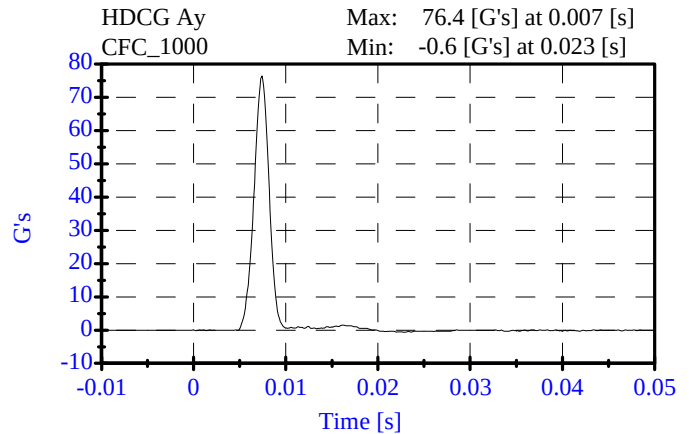
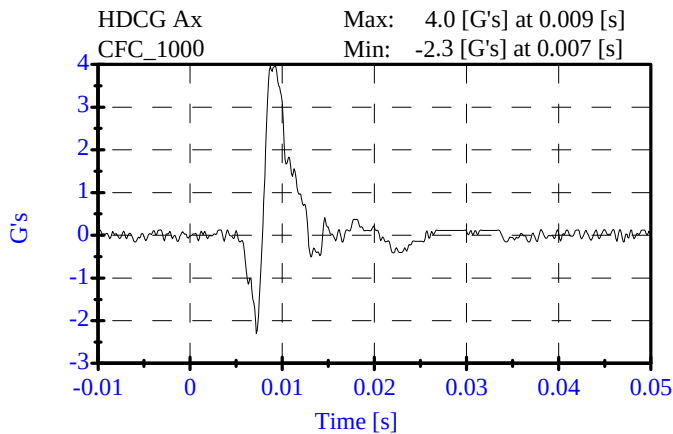
Head Drop Post-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 270
Date: 11-29-06

Sequential Test Number: 1 File: 270HD1 11-29-06
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 %	35.00 %	Passed
Peak Resultant Accel.:	120-150 Gs	123.43 Gs	Passed
Peak Lateral Accel.:	15 Gs Max	3.95 Gs	Passed
Curve PerCent NonModal:	< 15%	2.33 %	Passed



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

ATD Serial No: 270

Date: 11-30-06

Sequential Test Number: 1 File: 270N 11-30-06

Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	20.6-22.2 C	21.1 C	Passed
Lab Humidity:	10-70 %	35.00 %	Passed
Impact Velocity:	6.89- 7.13 m/s	6.98 m/s	Passed
PENDULUM DELTA V			
Delta V at 10 ms:	1.96- 2.55 m/s	2.20 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	6.94 m/s	Passed
D PLANE ROTATION			
Maximum Rotation:	66.0-82.0 Deg	68.89 Deg	Passed
Rotation Angle Decay:	58.0-67.0 ms	58.00 ms	Passed
MOMENT ABOUT THE OCCIPITAL CONDYLE			
Max Occipital Moment:	73.00- 88.00 N-m	86.39 N-m	Passed
Occipital Moment Decay:	49.0-64.0 ms	53.60 ms	Passed
HEAD ROTATION TIME WITH RESPECT TO THE OCCIPITAL CONDYLE MOMENT			
Moment to Rotation Peak:	2.0-16.0 ms	11.10 ms	Passed

Neck Test

Post-Test

CONFIGURED FOR LEFT SIDE IMPACT

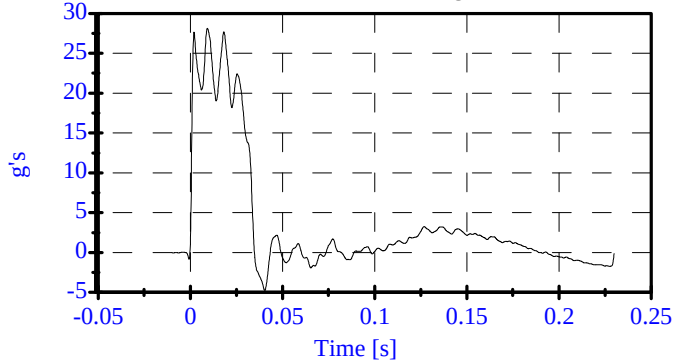
ATD Serial No: 270

Date: 11-30-06

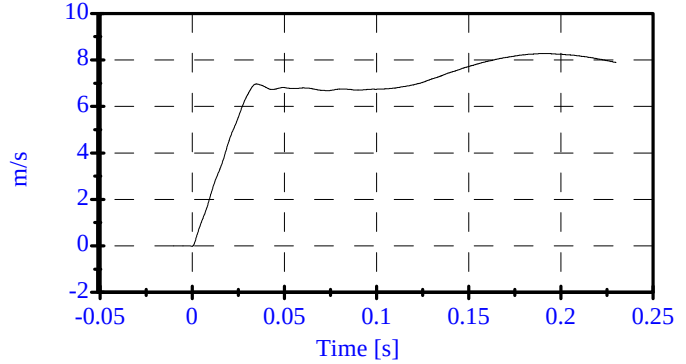
Sequential Test Number: 1 File: 270N 11-30-06

Laboratory Technician: B. Swiecicki

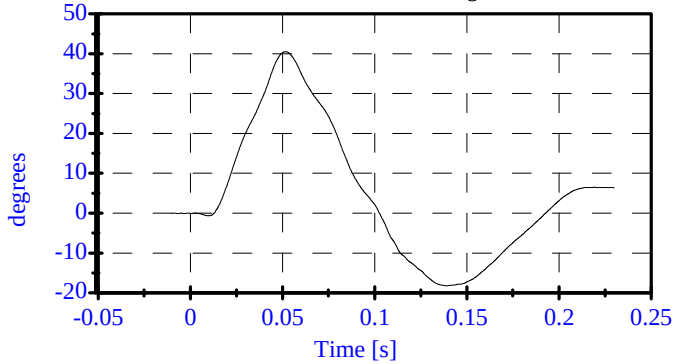
Pend Ax
CFC_180
Max: 28.1 [g's] at 0.009 [s]
Min: -4.7 [g's] at 0.040 [s]



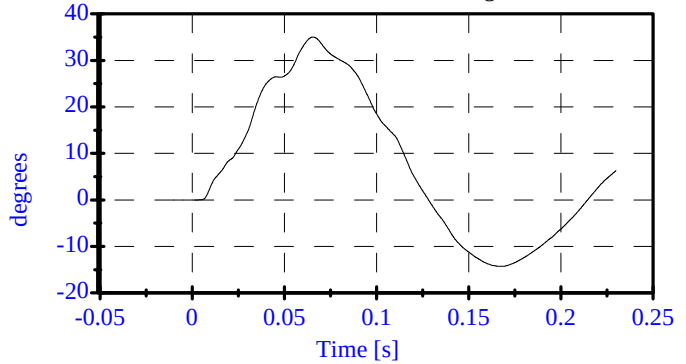
Pend Vx
CFC_180
Max: 8.3 [m/s] at 0.194 [s]
Min: -0.0 [m/s] at -0.000 [s]



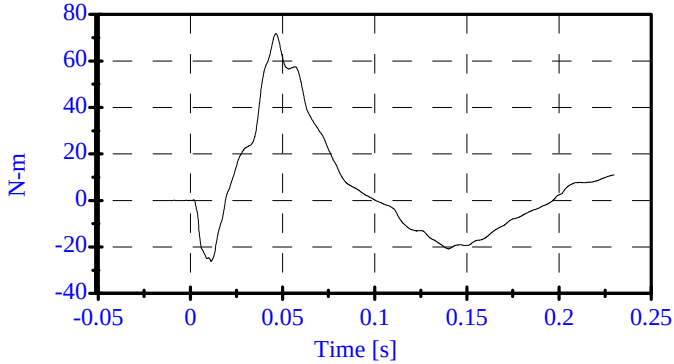
Head Rot
CFC_180
Max: 40.6 [degrees] at 0.052 [s]
Min: -18.2 [degrees] at 0.139 [s]



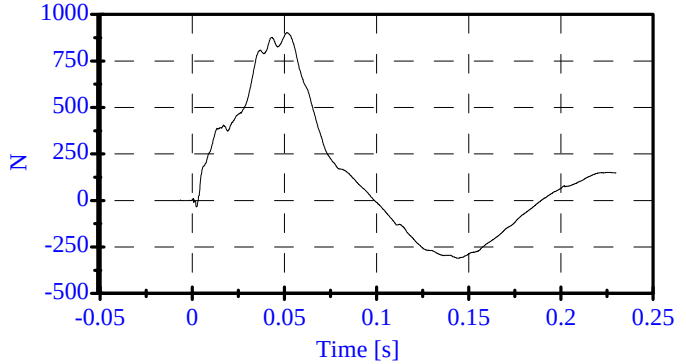
Arm Rot
CFC_180
Max: 35.0 [degrees] at 0.066 [s]
Min: -14.3 [degrees] at 0.167 [s]



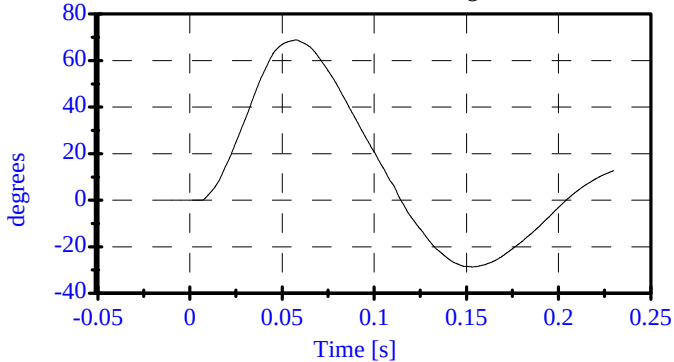
Neck Mx
CFC_600
Max: 71.7 [N-m] at 0.046 [s]
Min: -26.2 [N-m] at 0.011 [s]



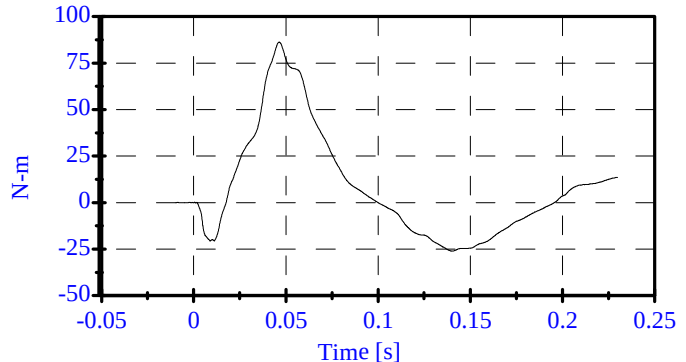
Neck Fy
CFC_1000
Max: 901.7 [N] at 0.052 [s]
Min: -311.3 [N] at 0.144 [s]



Tot Rot
CFC_180
Max: 68.9 [degrees] at 0.057 [s]
Min: -28.7 [degrees] at 0.153 [s]



MOCX
Max: 86.4 [N-m] at 0.046 [s]
Min: -26.1 [N-m] at 0.140 [s]



Abdomen Test

Post-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 270

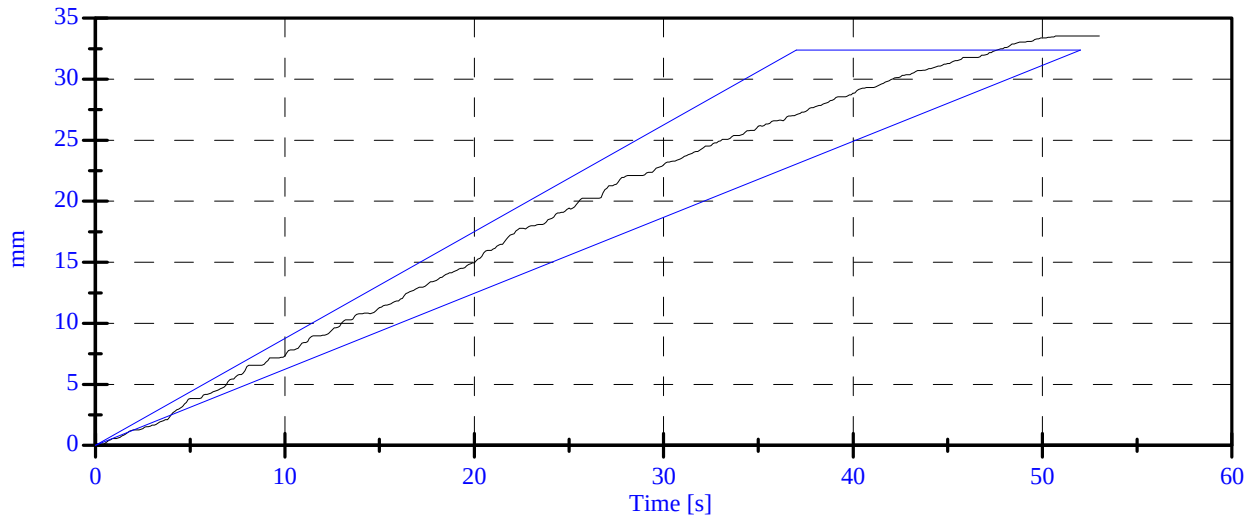
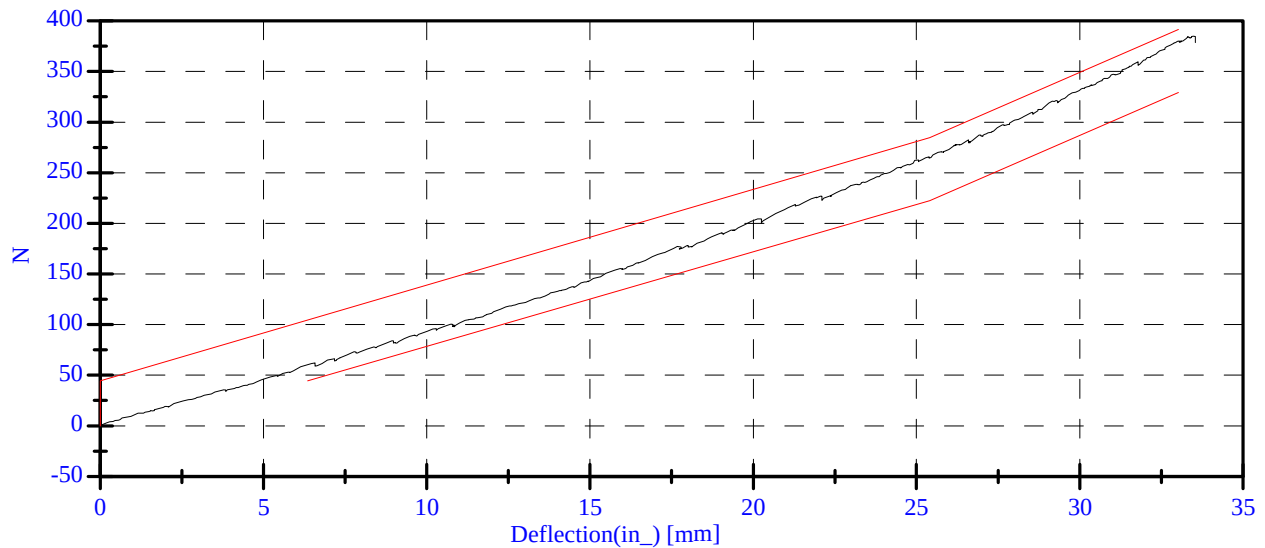
Date: 12-05-06

Sequential Test Number: 1 File: 270Ab 12-05-06

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 %	37.00 %	Passed
Force at 12.95 mm :	104.00-162.00 N	121.50 N	Passed
Force at 19.05 mm :	162.98-220.99 N	190.74 N	Passed
Force at 25.40 mm :	221.97-280.02 N	265.77 N	Passed
Force at 33.02 mm :	324.99-391.00 N	379.95 N	Passed

ABDOMINAL COMPRESSION TEST



Spine Test

PRE TEST

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 270

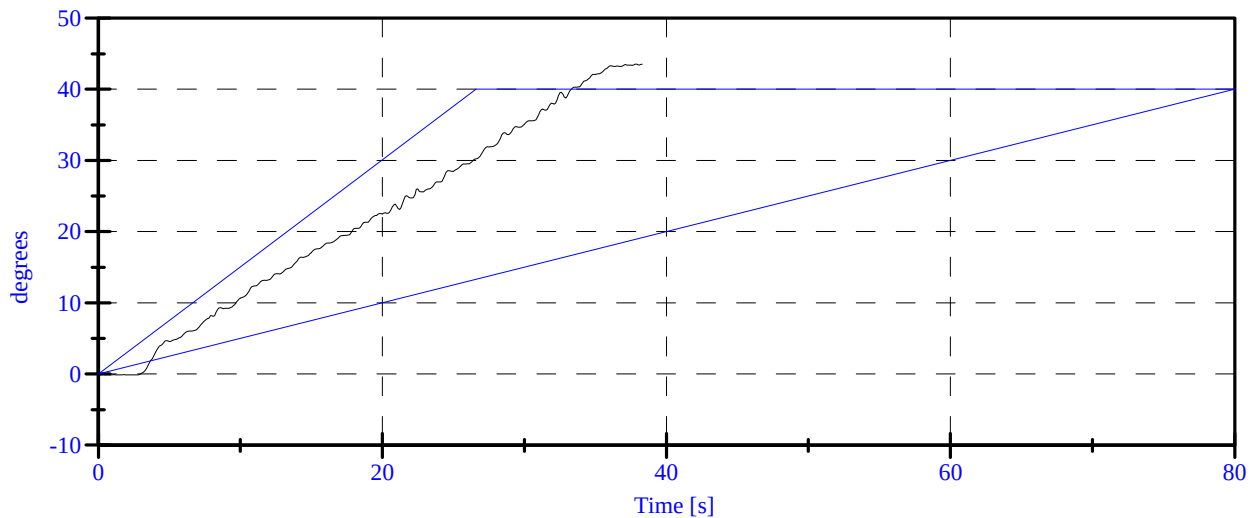
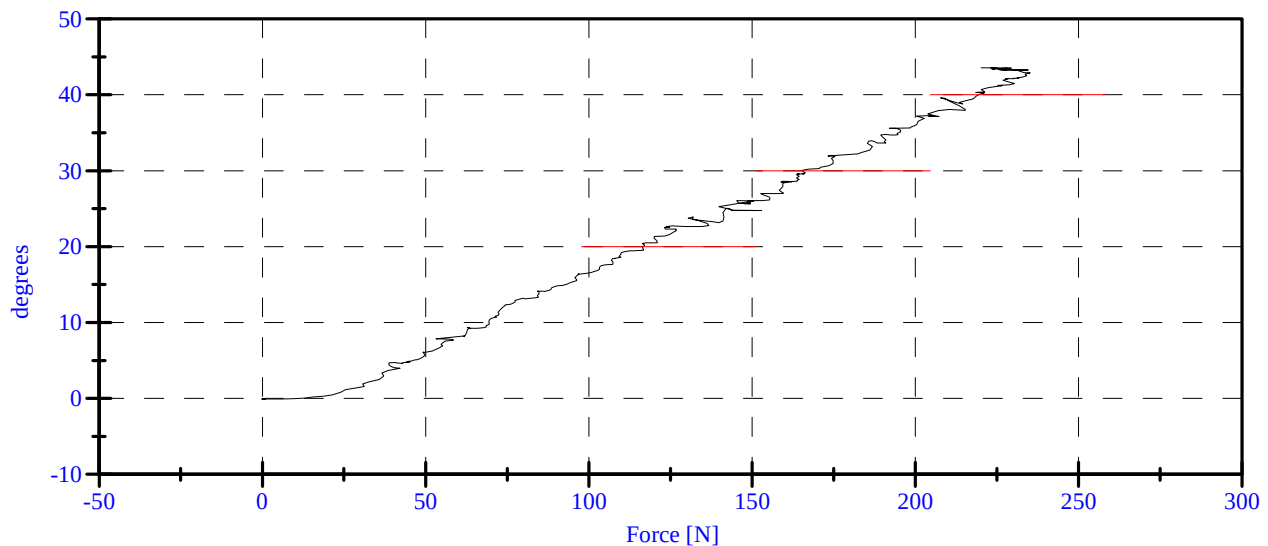
Date: 12-05-06

Sequential Test Number: 1 File: 270Sp 12-05-06

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 %	37.00 %	Passed
Force at 0 Deg:	0.00-26.69 N	13.19 N	Passed
Force at 20 Deg:	97.86-151.24 N	116.35 N	Passed
Force at 30 Deg:	151.24-204.62 N	165.45 N	Passed
Force at 40 Deg:	204.62-258.00 N	219.77 N	Passed
Return Angle	12 Deg Max	4.75 deg	Passed

LUMBAR SPINE FLEXION TEST



POST TEST DUMMY INSPECTION LIST
CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 270 Sequential Test Number: 1
 Date: 12/05/06 Laboratory Technician: B. Swiecicki

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

REMARKS: None

CALIBRATION TEST RESULTS

POST TEST

SID H3 NO.: 269

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 269	Sequential Test Number: 1
Date: 12/05/06	Laboratory Technician: B. Swiecicki

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

* Test not required for SID certification.

REMARKS: None

**EXTERNAL DIMENSIONS
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 269 Sequential Test Number: 1
Date: 12/05/06 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	900
RH- Rib Height (mm)	502 - 520	508
HP- Hip Pivot Height (mm)	99 ref.	99
RD- Rib from Back Line (mm)	229 - 241	234
KH- Knee Pivot from Back Line (mm)	511 - 526	519
KV- Knee Pivot to Floor (mm)	490 - 505	499
HW- Hip Width (mm)	356 - 391	372

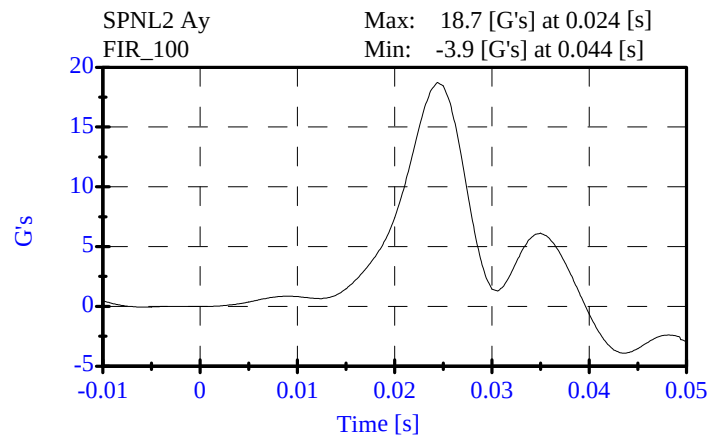
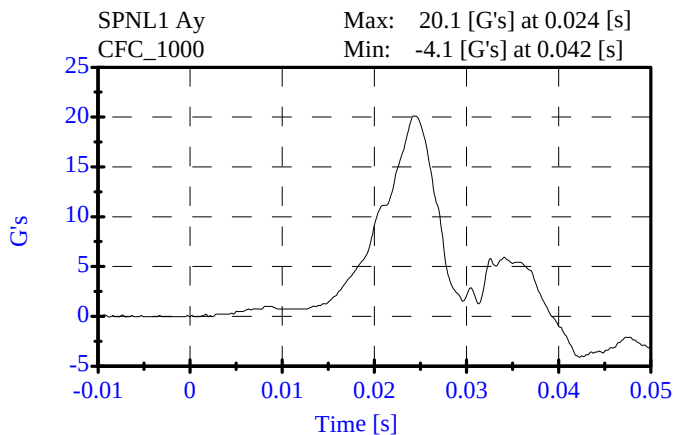
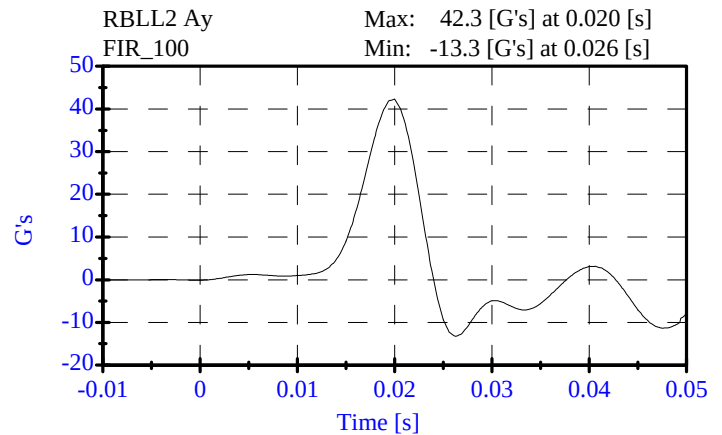
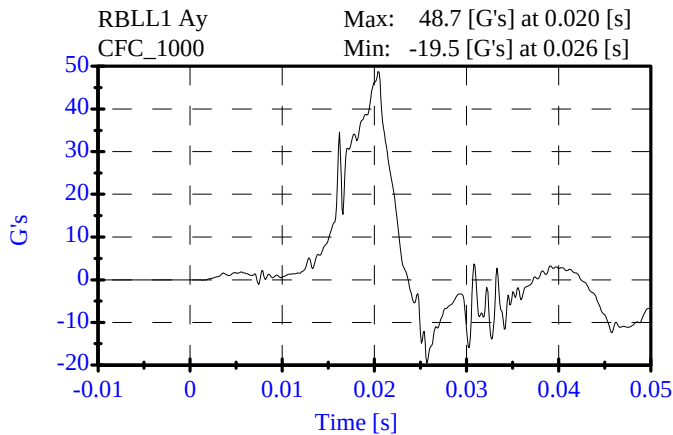
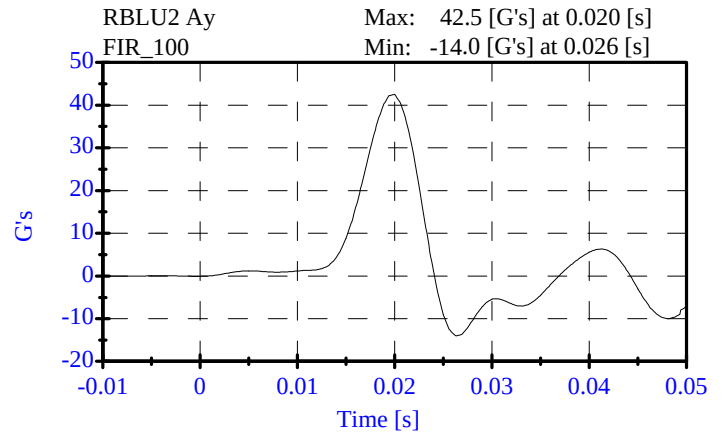
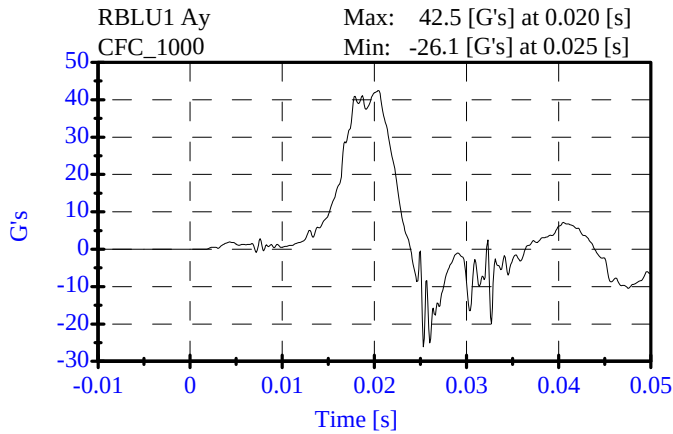
REMARKS: None

Thorax Impact
Post-Test
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 269
Date: 12-04-06

Sequential Test Number: 1 File: 269T 12-04-06
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	42.52 G's	Passed
Lower Rib Acceleration:	37.00-46.00 G's	42.26 G's	Passed
Lower Spine Acceleration:	15.00-22.00 G's	18.73 G's	Passed



Pelvic Impact

Post-Test

CONFIGURED FOR LEFT SIDE IMPACT

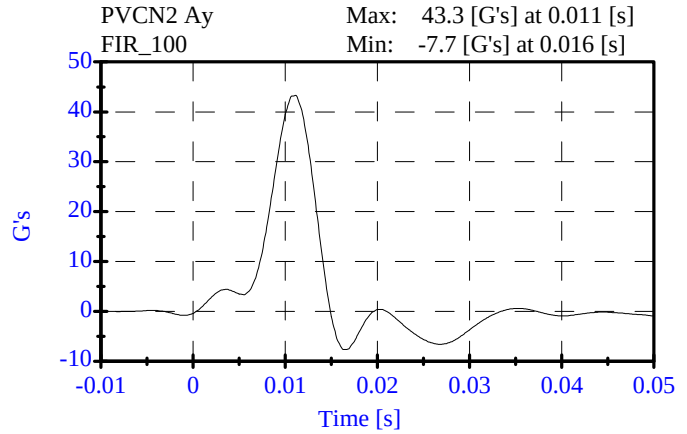
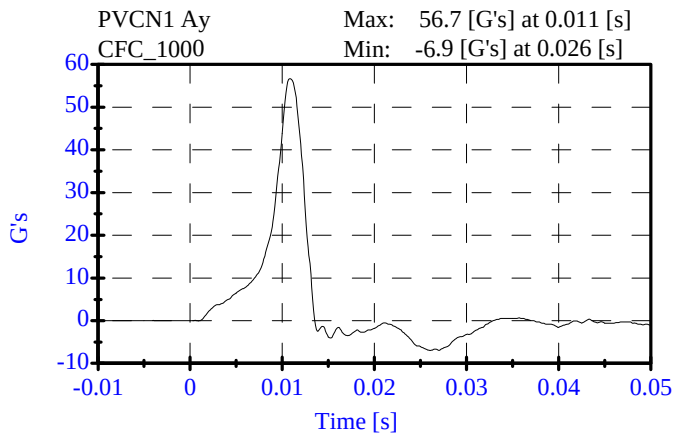
ATD Serial No: 269

Date: 12-05-06

Sequential Test Number: 1 File: 269P 12-05-06

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 %	37.00 %	Passed
Probe Velocity:	4.27- 4.33 m/s	4.30 m/s	Passed
Pelvis Y Acceleration:	40.00-60.00 G's	43.29 G's	Passed
Time Above 20 Gs	3.0-7.0 ms	5.1 ms	Passed



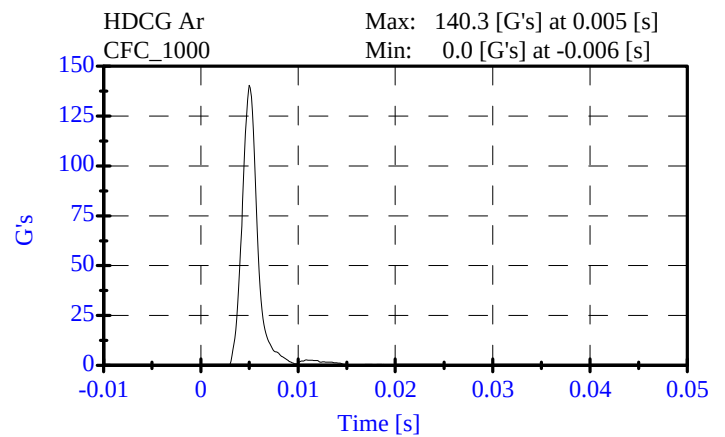
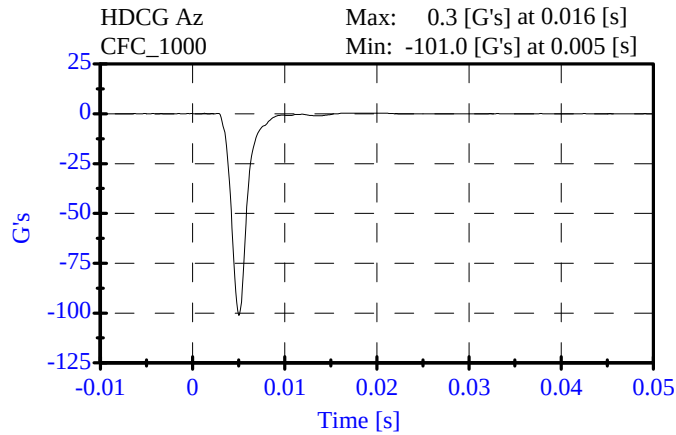
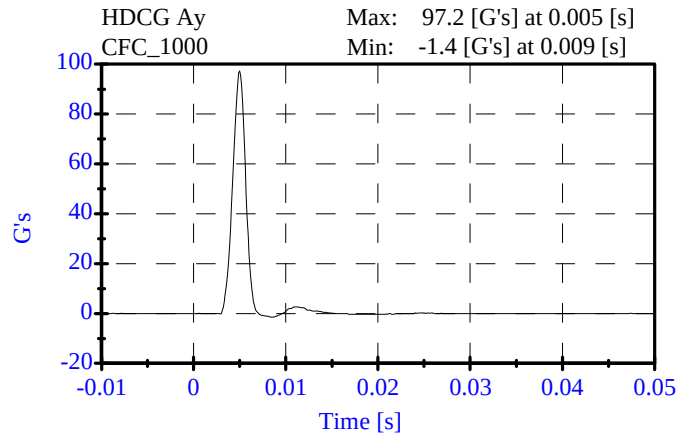
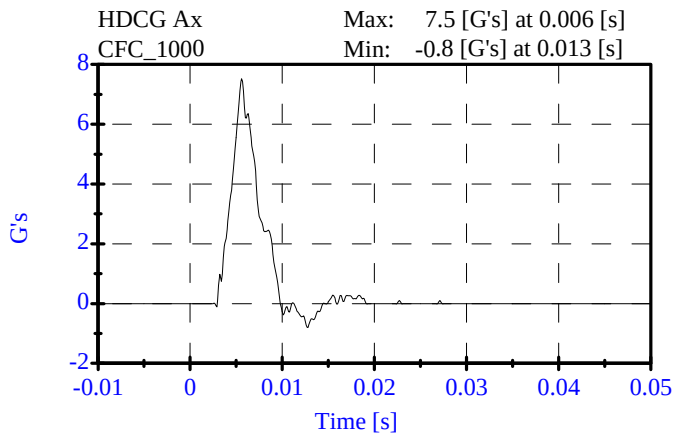
Head Drop Post-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 269
Date: 11-29-06

Sequential Test Number: 1 File: 269HD 11-29-06
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 %	35.00 %	Passed
Peak Resultant Accel.:	120-150 Gs	140.32 Gs	Passed
Peak Lateral Accel.:	15 Gs Max	7.52 Gs	Passed
Curve PerCent NonModal:	< 15%	1.95 %	Passed



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

ATD Serial No: 269

Date: 11-30-06

Sequential Test Number: 1 File: 269N 11-30-06

Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	20.6-22.2 C	21.1 C	Passed
Lab Humidity:	10-70 %	35.00 %	Passed
Impact Velocity:	6.89- 7.13 m/s	7.00 m/s	Passed
PENDULUM DELTA V			
Delta V at 10 ms:	1.96- 2.55 m/s	2.10 m/s	Passed
Delta V at 20 ms:	4.12- 5.10 m/s	4.33 m/s	Passed
Delta V at 30 ms:	5.73- 7.01 m/s	6.27 m/s	Passed
Delta V between 40-70 ms:	6.27- 7.64 m/s	6.98 m/s	Passed
D PLANE ROTATION			
Maximum Rotation:	66.0-82.0 Deg	68.40 Deg	Passed
Rotation Angle Decay:	58.0-67.0 ms	60.20 ms	Passed
MOMENT ABOUT THE OCCIPITAL CONDYLE			
Max Occipital Moment:	73.00- 88.00 N-m	81.39 N-m	Passed
Occipital Moment Decay:	49.0-64.0 ms	55.30 ms	Passed
HEAD ROTATION TIME WITH RESPECT TO THE OCCIPITAL CONDYLE MOMENT			
Moment to Rotation Peak:	2.0-16.0 ms	9.90 ms	Passed

Neck Test

Post-Test

CONFIGURED FOR LEFT SIDE IMPACT

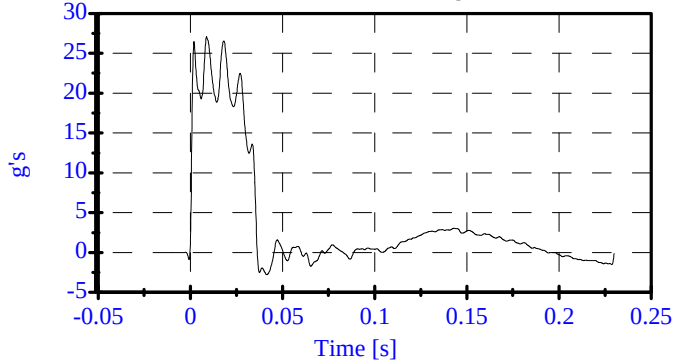
ATD Serial No: 269

Date: 11-30-06

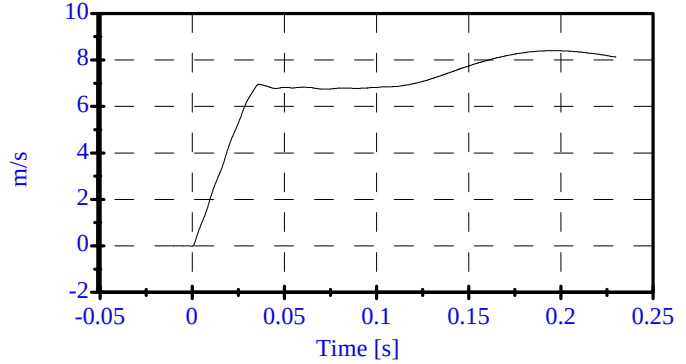
Sequential Test Number: 1 File: 269N 11-30-06

Laboratory Technician: B. Swiecicki

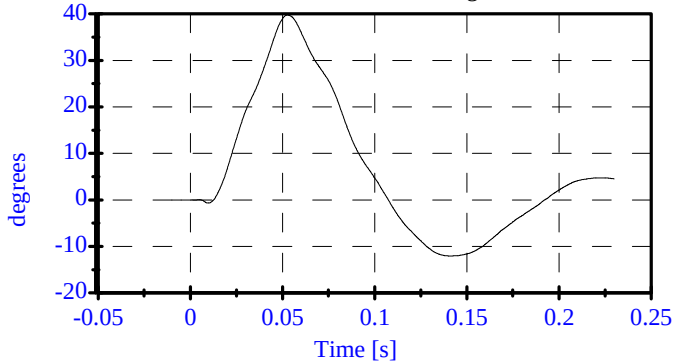
Pend Ax
CFC_180
Max: 27.1 [g's] at 0.009 [s]
Min: -2.8 [g's] at 0.042 [s]



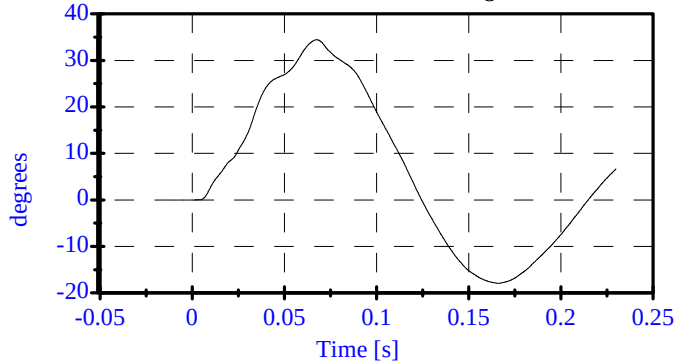
Pend Vx
CFC_180
Max: 8.4 [m/s] at 0.194 [s]
Min: -0.0 [m/s] at -0.000 [s]



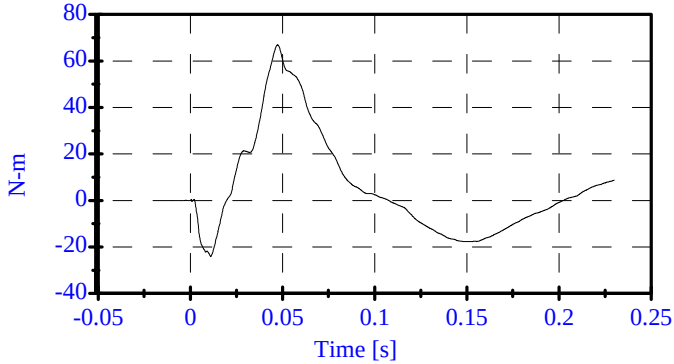
Head Rot
CFC_180
Max: 39.8 [degrees] at 0.053 [s]
Min: -12.0 [degrees] at 0.141 [s]



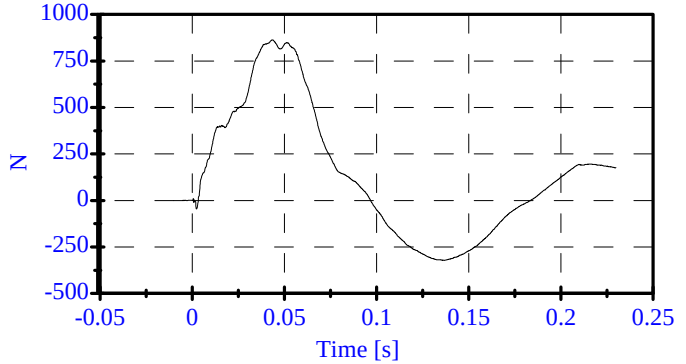
Arm Rot
CFC_180
Max: 34.5 [degrees] at 0.068 [s]
Min: -17.9 [degrees] at 0.166 [s]



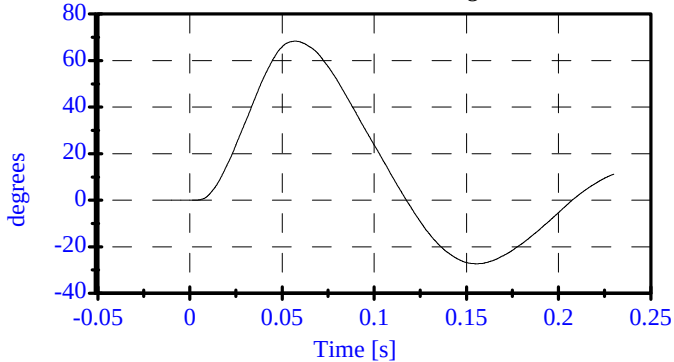
Neck Mx
CFC_600
Max: 66.9 [N-m] at 0.047 [s]
Min: -24.2 [N-m] at 0.011 [s]



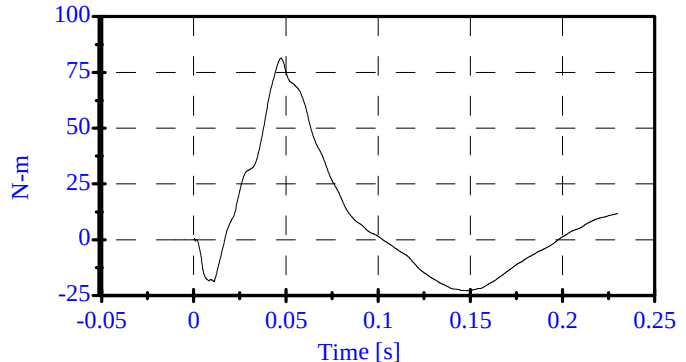
Neck Fy
CFC_1000
Max: 862.8 [N] at 0.043 [s]
Min: -323.0 [N] at 0.137 [s]



Tot Rot
CFC_180
Max: 68.4 [degrees] at 0.057 [s]
Min: -27.4 [degrees] at 0.155 [s]



MOCX
Max: 81.4 [N-m] at 0.047 [s]
Min: -22.7 [N-m] at 0.147 [s]



Abdomen Test

Post-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 269

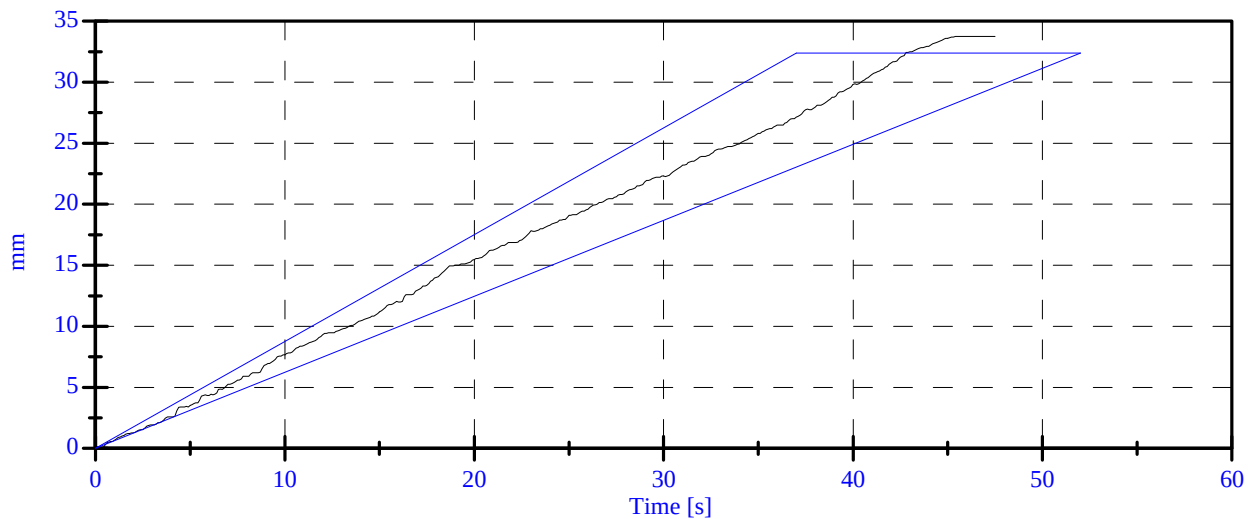
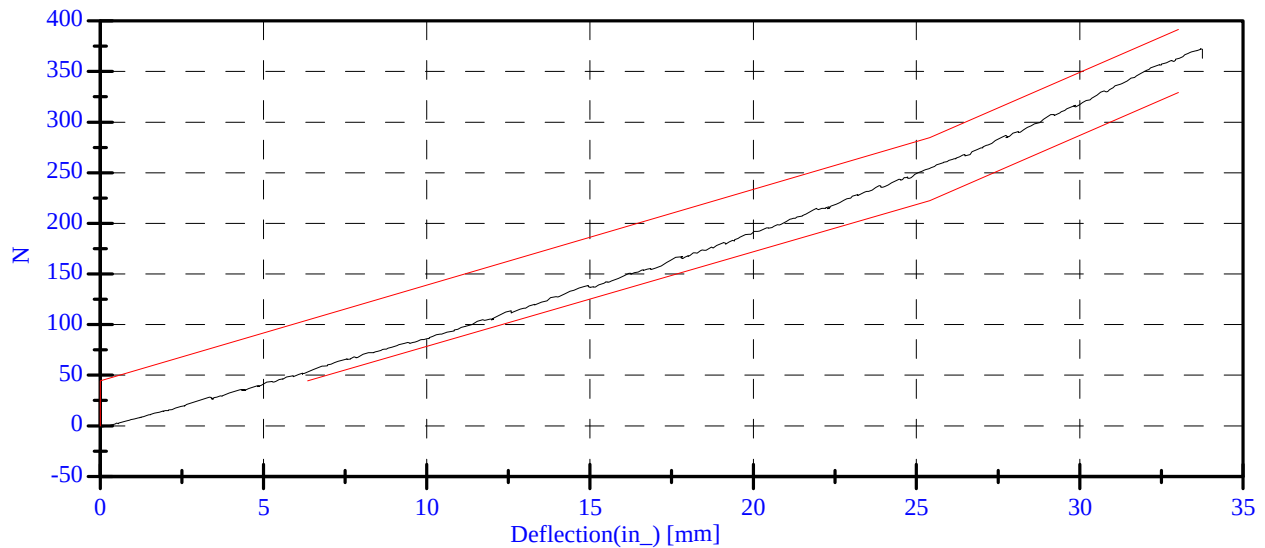
Date: 12-05-06

Sequential Test Number: 1 File: 269Ab 12-05-06

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 %	37.00 %	Passed
Force at 12.95 mm :	104.00-162.00 N	116.43 N	Passed
Force at 19.05 mm :	162.98-220.99 N	180.95 N	Passed
Force at 25.40 mm :	221.97-280.02 N	254.17 N	Passed
Force at 33.02 mm :	324.99-391.00 N	362.92 N	Passed

ABDOMINAL COMPRESSION TEST



Spine Test

Post-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 269

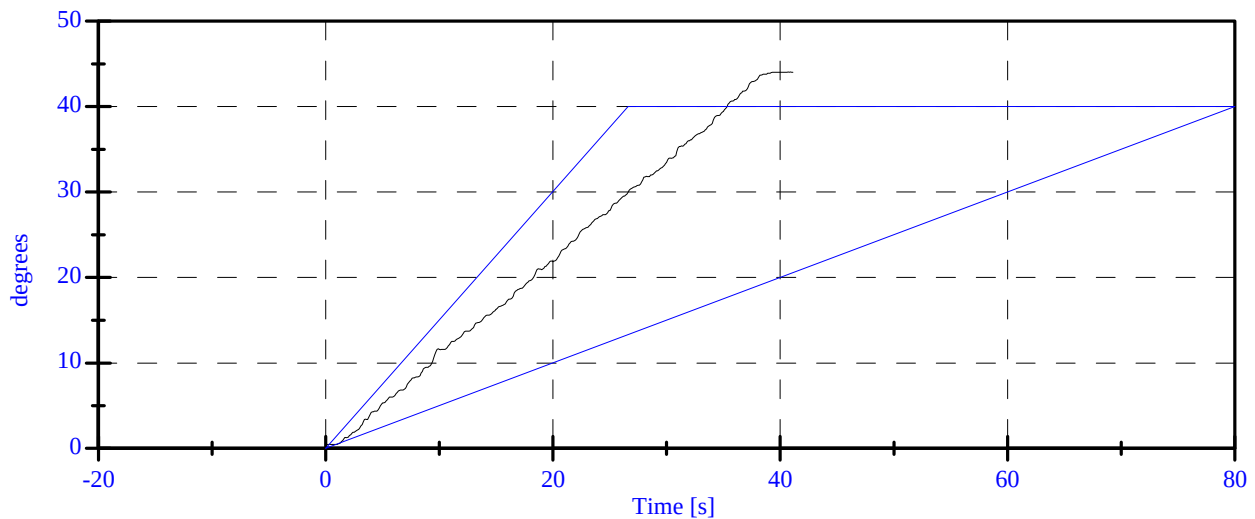
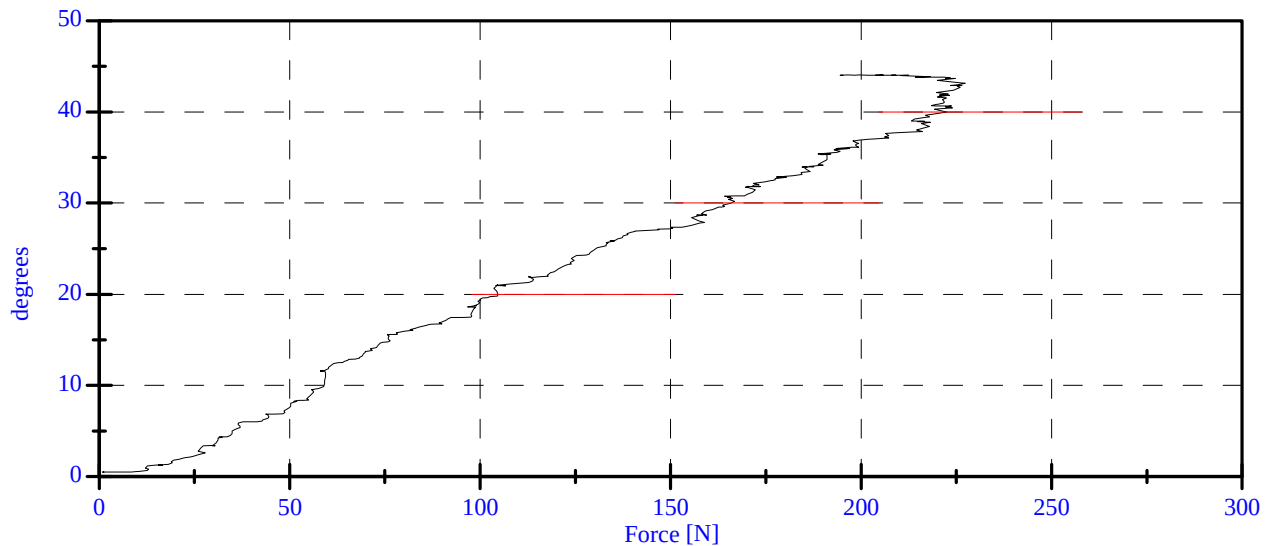
Date: 12-05-06

Sequential Test Number: 1 File: 269Sp 12-05-06

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 %	37.00 %	Passed
Force at 0 Deg:	0.00-26.69 N	0.92 N	Passed
Force at 20 Deg:	97.86-151.24 N	104.60 N	Passed
Force at 30 Deg	151.24-204.62 N	165.71 N	Passed
Force at 40 Deg	204.62-258.00 N	222.38 N	Passed
Return Angle	12 Deg Max	1.69 deg	Passed

LUMBAR SPINE FLEXION TEST



POST TEST DUMMY INSPECTION LIST
CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 269 Sequential Test Number: 1
 Date: 12/05/06 Laboratory Technician: B. Swiecicki

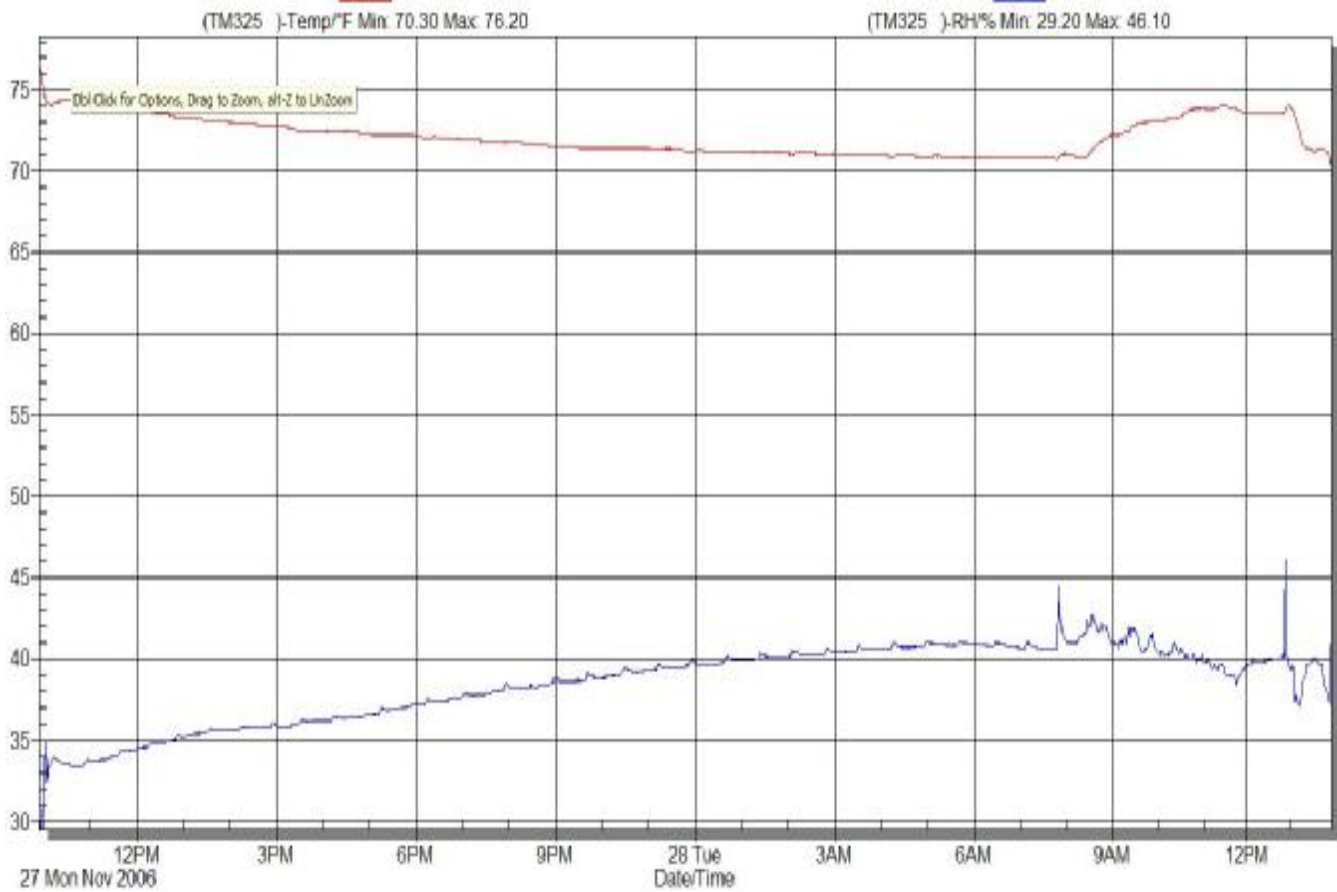
PART	ITEMS CHECKED	COMMENTS
SKIN	VISUAL INSPECTION	OK
HEAD	VISUAL, BALLAST, ACCELEROMETER MOUNT	OK
NECK	VISUAL, CABLE TORQUE	OK
SPINE BOX	VISUAL, BALLAST, WELDMENT, ACCELEROMETER MOUNT	OK
RIB CAGE	VISUAL, MEASURE, STIFFENERS	OK
STERNUM	VISUAL	OK
LUMBAR SPINE	VISUAL	OK
ABDOMEN	VISUAL	OK
PELVIS	VISUAL, 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

11/27/2006 19:20, 76.52

Downloaded Data - Tuesday, November 28, 2006



APPENDIX D

TEST EQUIPMENT AND CALIBRATION INFORMATION

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

SID/HIII INSTRUMENTATION

	FRONT SID/HIII NO.: 270		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
HEAD AX	P35812	ENDEVCO	8/28/2006
HEAD AY	P18739	ENDEVCO	8/28/2006
HEAD AZ	P19212	ENDEVCO	8/28/2006
UPPER NECK FX	1629Fx	DENTON	9/8/2006
UPPER NECK FY	1629Fy	DENTON	9/8/2006
UPPER NECK FZ	1629Fz	DENTON	9/8/2006
UPPER NECK MX	1629Mx	DENTON	9/8/2006
UPPER NECK MY	1629My	DENTON	9/8/2006
UPPER NECK MZ	1629Mz	DENTON	9/8/2006
UPPER RIB	P18558	ENDEVCO	8/28/2006
LOWER RIB	P18537	ENDEVCO	8/28/2006
LOWER SPINE	P18639	ENDEVCO	8/28/2006
PELVIS	P21171	ENDEVCO	8/28/2006
UPPER RIB REDUNDANT	P35818	ENDEVCO	7/18/2006
LOWER RIB REDUNDANT	P19222	ENDEVCO	8/28/2006
LOWER SPINE REDUNDANT	P16576	ENDEVCO	6/14/2006
PELVIS REDUNDANT	P22639	ENDEVCO	8/28/2006

	REAR SID/HIII NO.: 269		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
HEAD AX	P22943	ENDEVCO	8/30/2006
HEAD AY	P35789	ENDEVCO	7/18/2006
HEAD AZ	P23164	ENDEVCO	8/30/2006
UPPER NECK FX	442Fx	DENTON	9/8/2006
UPPER NECK FY	442Fy	DENTON	9/8/2006
UPPER NECK FZ	442Fz	DENTON	9/8/2006
UPPER NECK MX	442Mx	DENTON	9/8/2006
UPPER NECK MY	442My	DENTON	9/8/2006
UPPER NECK MZ	442Mz	DENTON	9/8/2006
UPPER RIB	P39731	ENDEVCO	8/30/2006
LOWER RIB	P38896	ENDEVCO	8/30/2006
LOWER SPINE	P38188	ENDEVCO	8/30/2006
PELVIS	P38132	ENDEVCO	8/30/2006
UPPER RIB REDUNDANT	P39740	ENDEVCO	8/30/2006
LOWER RIB REDUNDANT	P35786	ENDEVCO	8/30/2006
LOWER SPINE REDUNDANT	P38216	ENDEVCO	8/30/2006
PELVIS REDUNDANT	P35757	ENDEVCO	8/30/2006

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)	P15534	ENDEVCO	6/14/2006
RIGHT FRONT SILL (Y)	P18718	ENDEVCO	7/5/2006
RIGHT FRONT SILL (Z)	P18628	ENDEVCO	7/6/2006
RIGHT REAR SILL (X)	J32838	ENDEVCO	7/7/2006
RIGHT REAR SILL (Y)	P16625	ENDEVCO	7/18/2006
RIGHT REAR SILL (Z)	P17237	ENDEVCO	7/5/2006
REAR FLOORPAN ABOVE AXLE (X)	P23999	ENDEVCO	7/19/2006
REAR FLOORPAN ABOVE AXLE (Y)	P23939	ENDEVCO	7/19/2006
REAR FLOORPAN ABOVE AXLE (Z)	P23993	ENDEVCO	7/19/2006
LEFT REAR SILL (Y)	8083-037	ICS	7/12/2006
LEFT FRONT SILL (Y)	P35804	ENDEVCO	7/18/2006
LEFT FRONT DOOR CENTERLINE (Y)	-	-	-
RIGHT REAR SEAT OCCUPANT COMP. (Y)	P39743	ENDEVCO	7/18/2006
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)	P16832	ENDEVCO	7/18/2006
MIDDLE LEFT B-PILLAR (Y)	P23155	ENDEVCO	6/30/2006
LOWER LEFT A-PILLAR (Y)	P19216	ENDEVCO	6/14/2006
UPPER LEFT A-PILLAR (Y)	P13323	ENDEVCO	7/5/2006
FRONT SEAT TRACK (Y)	P35758	ENDEVCO	7/18/2006
REAR SEAT TRACK (Y)	P23136	ENDEVCO	7/5/2006
VEHICLE CG (X)	J31101	ENDEVCO	7/5/2006
VEHICLE CG (Y)	P23174	ENDEVCO	6/28/2006
VEHICLE CG (Z)	J31059	ENDEVCO	7/5/2006
MDB CG (X)	C15007	ENDEVCO	11/5/2006
MDB CG (Y)	C16416	ENDEVCO	6/27/2006
MDB CG (Z)	C16499	ENDEVCO	6/27/2006
MDB REAR FRAME MEMBER (X)	C14948	ENDEVCO	6/27/2006
MDB REAR FRAME MEMBER (Y)	C16680	ENDEVCO	6/27/2006

REMARKS: None