REPORT NUMBER: SNCAP-CAL-11-030

NEW CAR ASSESSMENT PROGRAM (NCAP)
Moving Deformable Barrier Side Impact Test

Chrysler Group LLC.
2011 Dodge Caliber
Five Door Hatchback

NHTSA NUMBER: MB0307

PREPARED BY:
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December 23, 2010

FINAL REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
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FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

_____
COTR, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date: _____

Technical Report Documentation Page

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15. *Supplementary Notes*		

16. Abstract

A 55/28 kph 90^0 Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2011 Dodge Caliber Five Door Hatchback 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 12/7/2010.

The impact velocity of the Moving Deformable Barrier (MDB) was 62.15 km/h, and the ambient temperature at the struck side (driver side) of the vehicle was 22°C. The target vehicle's maximum post-test static crush was 210 mm at level 3. The test vehicle's performance was as follows:

	Driver ATD (ES-2re)		
Measurement Description	**Units**	**Threshold**	**Result**
Head Injury Criteria (HIC_{36})	N/A	1000	134.49
Maximum Chest Deflection	mm	44	34.34
Total Abdominal Force	N	2500	1832.06
Pubic Symphysis Force	N	6000	1797.98
	Passenger ATD (SID-IIs)		
Measurement Description	**Units**	**Threshold**	**Result**
Head Injury Criteria (HIC_{36})	N/A	1000	418.07
Lower Spine Resultant Acceleration	G	82	61.08
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3686.34

The two 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 MDB ES-2re SID-IIs	*18. Distribution Statement* Copies of this report are available from: National Highway Traffic Safety Adm. Technical Ref. Division, 1200 New Jersey Ave. SE Room W43-410 Washington, D.C. 20590

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SECTION 1

PURPOSE AND SUMMARY OF TEST

PURPOSE

This moving deformable barrier side impact test is part of the MY 2011 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract number DTNH22-09-D-00126. The purpose of this test is to generate comparative side impact performance in a 2011 Dodge Caliber Five Door Hatchback. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated January 2010.

SUMMARY

A 2011 Dodge Caliber Five Door Hatchback was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 62.15 km/h (38.6 mph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by the Calspan Corporation Transportation Sciences Center on 12/7/2010. Pretest and post- test photographs of the test vehicle, the MDB and the dummies (ES-2re and SID-IIs) are included in this report.

Dummies were placed in the driver and left rear designated seating positions according to instructions specified in the OCWS Side Impact Laboratory Test Procedure, dated January 2010. The side impact event was documented by 9 high-speed cameras. Camera locations are included in this report.

The Dummies were instrumented in the following manner:

DRIVER ATD (ES-2re)
Head Accelerometers
Thorax Rib 1 to Rib 3 Potentiometers
Abdomen Forward, Middle, and Rear Load Cells
Pubic Load Cell
Lower Spine Accelerometers

PASSENGER ATD (SID-IIs)
Head Accelerometers
Thorax Upper, Middle, and Lower Rib Potentiometers
Abdomen Upper and Lower Rib Potentiometers
Acetabulum Load Cell
Iliac Load Cell
Lower Spine Accelerometers

Dummy injury values were recorded as follows:

	Driver ATD (ES-2re)		
Measurement Description	**Units**	**Threshold**	**Result**
Head Injury Criteria (HIC_{36})	N/A	1000	134.49
Maximum Chest Deflection	mm	44	34.34
Total Abdominal Force	N	2500	1832.06
Pubic Symphysis Force	N	6000	1797.98

	Passenger ATD (SID-IIs)		
Measurement Description	**Units**	**Threshold**	**Result**
Head Injury Criteria (HIC_{36})	N/A	1000	418.07
Lower Spine Resultant Acceleration	G	82	61.08
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3686.34

Supplemental restraint information is given below:

SUPPLEMENTAL RESTRAINT INFORMATION

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

GENERAL COMMENTS

SECTION 2
DATA SHEETS

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Dodge Caliber **NHTSA No.:** MB0307
Test Program: Side MDB NCAP **Test Date:** 12/7/2010

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	MB0307	Anti-Lock Brakes	Yes
Model Year	2011	All-Wheel Drive	No
Make	Dodge	Power Steering	Yes
Model	Caliber	Driver Front Airbag	Yes
Body Style	Five Door Hatchback	Driver Curtain Airbag	Yes
VIN	1B3CB1HA5BD111229	Driver Head/Torso Airbag	No
Body Color	Light gray/silver	Driver Torso Airbag	No
Delivery Date	11/23/2010	Driver Torso/Pelvis Airbag	No
Odometer Reading (km/mi)	79/49	Driver Pelvis Airbag	No
Dealer	Joe Cicconis Chrysler	Driver Knee Airbag	Yes
Transmission	5-Speed Manual	Rear Pass. Curtain Airbag	Yes
Final Drive	Front Wheel Drive	Rear Pass. Head/Torso Airbag	No
Type/No. Cylinders	Inline 4	Rear Pass. Torso Airbag	No
Engine Displacement (L)	2.0	Rear Pass. Torso/Pelvis Airbag	No
Engine Placement	Transverse	Rear Pass. Pelvis Airbag	No
Roof Rack	No	Pretensioners	Yes
Sunroof/T-Top	No	Load Limiters	No
Tinted Glass	No	Automatic Door Locks	Yes
Traction Control	No	Bucket Seats	Yes
Power Brakes	Yes	Tilt Steering	Yes
Front Disc	Yes	Other	--
Rear Disc	No	Other	

Does owner's manual provide instructions to turn off automatic door locks? Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Chrysler Group	GVWR (kg)	2012
Date of Manufacture	10/10	GAWR Front (kg)	1080
		GAWR Rear (kg)	998

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity (DSC)	2	3		5	
Capacity Weight (VCW) (kg)				392	(A)
DSC x 68.04 (kg)				340	(B)
Cargo Weight (RCLW) (kg)				52	(A-B)

* Maximum allowable RCLW is 136 kg

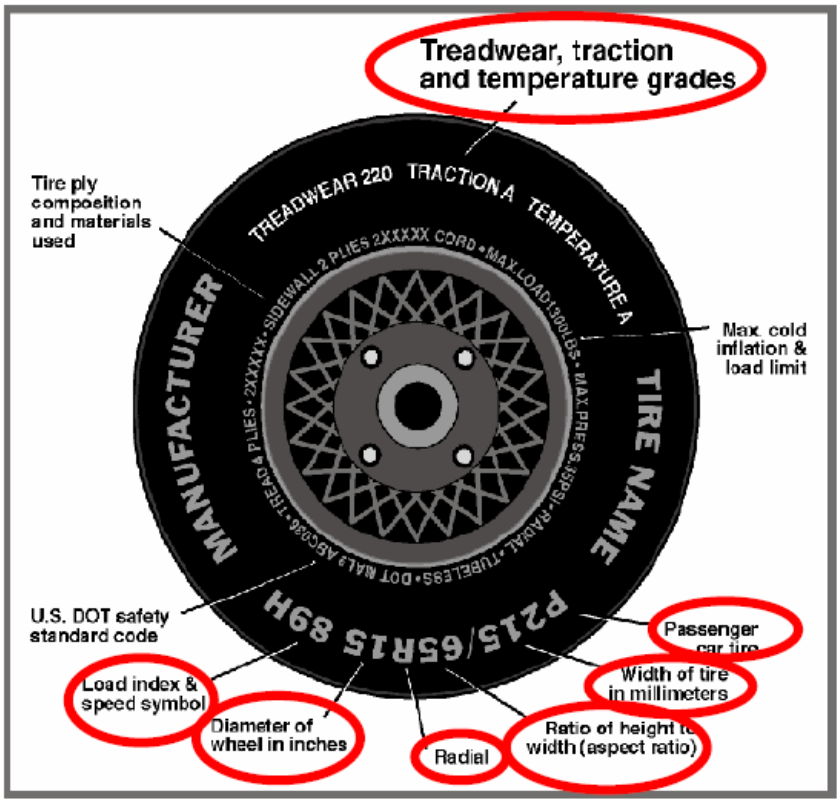
VEHICLE SEAT TYPE

Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable	
						W/ Lever	W/ Knob
Front Seat	X					X	
Rear or Second Row Seat			X	X		X	
Third row seat							

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

Test Vehicle:	**2011 Dodge Caliber**	**NHTSA No.:**	**MB0307**
Test Program:	**Side MDB NCAP**	**Test Date:**	**12/7/2010**

VEHICLE TIRE INFORMATION



	Front	Rear
Max. Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	240	240
Recommended Tire Size	P205/70R15	P205/70R15
Tire Size on Vehicle	P205/70R15	P205/70R15
Tire Manufacturer	Dunlop	Dunlop
Tire Model	SP50	SP50
Treadwear	460	460
Traction	A	A
Temperature Grades	B	B
Tire Plies Sidewall	1 Polyester	1 Polyester
Tire Plies Body	1 Polyester, 2 Steel	1 Polyester, 2 Steel
Load Index/Speed Symbol	95T	95T
Tire Material	Rubber	Rubber
DOT Safety Code Right	M6M0LTER2210	M6M0LTER2210
DOT Safety Code Left	M6MOLTER2210	M6MOLTER2210

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

Test Vehicle: 2011 Dodge Caliber **NHTSA No.:** MB0307
Test Program: Side MDB NCAP **Test Date:** 12/7/2010

TEST VEHICLE AXLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	406	276	682	443	358	801	453	358	811
Right	kg	387	281	668	382	347	729	390	337	727
Ratio	%	59	41		54	46		55	45	
Totals	kg	793	557	1350	825	705	1530	843	695	1538

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1350	(A)
Sum of Actual Weight of 2 P572 ATDS Used	kg	136.8	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	51.8	(C)
Calculated Target Vehicle Test Weight (TVTW)	kg	1538.6	(A+B+C)

TEST VEHICLE ATTITUDE AND CG

Measurement Description	Units	LF	RF	RR	LR	CG (aft of front axle)
Fully Loaded	mm	736	744	736	723	
As Tested (Fully Loaded ± 10 mm at each wheel well)	mm	735	744	729	720	1215

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2637
Total Vehicle Length at Left Side	mm	4306
Total Vehicle Length at Centerline	mm	4413
Total Vehicle Length at Right Side	mm	4303
Weight of Ballast in Cargo Area	kg	31
Weight of Vehicle Components Removed	kg	0
Amount of Stoddard Solvent in Fuel Tank	L	47.3

Vehicle components removed to make Target Vehicle Test Weight:

None

TEST VEHICLE VERTICAL IMPACT LINE DATA

Measured Parameter	Units	Value
Target Impact Point Aft of Front Axle	mm	385
Actual Impact Point Aft of Front Axle	mm	408

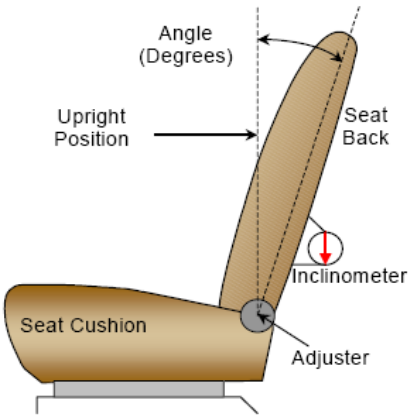
DATA SHEET NO. 2
SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

Test Vehicle: 2011 Dodge Caliber
Test Program: Side MDB NCAP
NHTSA No.: MB0307
Test Date: 12/7/2010

NORMAL DESIGN RIDING POSITION

Driver seat: Seat positioned according to manufacturer supplied FORM 1

Passenger Seat:
Seat back not adjustable however seat back angle was measured from head restraint



FRONT SEAT ASSEMBLY

SEAT BACK ANGLES

	Degrees
Driver w/ Seated Dummy	12.9
Passenger w/ Seated Dummy	21.0

SEAT FORE/AFT POSITIONS

The driver's seat was positioned at the mid-point of the fore/aft travel range.
Rear seat was not adjustable

SEAT FORE/AFT POSITIONING

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	34 detents	17
Rear Seat	NA	NA

SEAT BELT UPPER ANCHORAGES

Driver's upper belt anchorage was positioned at the uppermost of four possible positions
Rear passenger seat upper belt anchorage was not adjustable

SEAT BELT UPPER ANCHORAGES

	Total # of Positions	Placed in Position #
Driver Seat	4	0
Rear Seat	NA	NA

DATA SHEET NO. 2 (CONTINUED)
SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

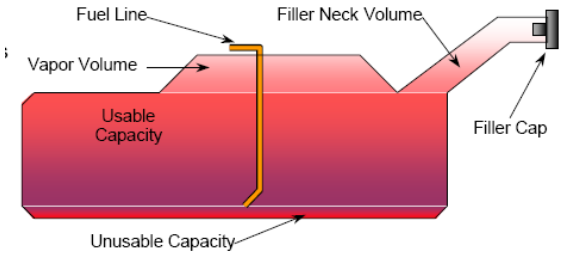
Test Vehicle: 2011 Dodge Caliber **NHTSA No.:** MB0307
Test Program: Side MDB NCAP **Test Date:** 12/7/2010

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	51.1
Usable Capacity of "Optional Tank"	NA
Usable Capacity Used for FMVSS 301	51.1
Actual Amount of Solvent Used	47.3

FUEL PUMP

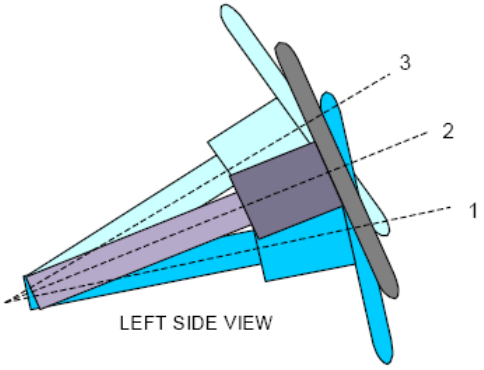
The fuel was evacuated from the fuel tank using the specifications provided by the Manufacturer in FORM 1



VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

The steering wheel was positioned at the mid-point of the tilt adjustment range and the mid-point of the telescoping travel (if applicable)



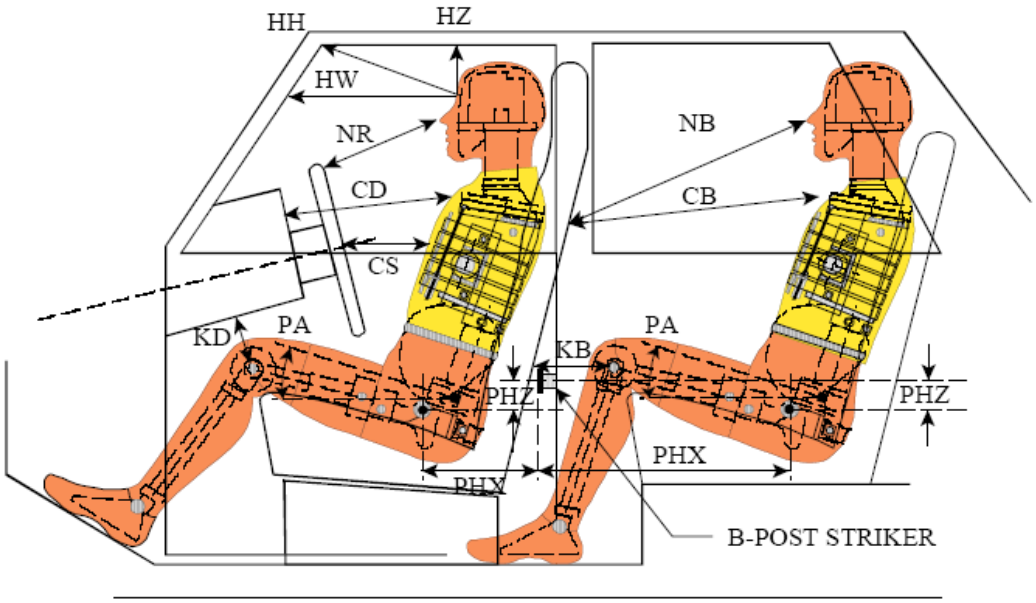
STEERING COLUMN ASSEMBLY

STEERING COLUMN POSITIONING

	Degrees	Fore/Aft Position (mm)
Lowermost - Position 1	65.3	
Geometric Center – Position 2	68.4	
Uppermost – Position 3	71.5	
Telescoping Steering Wheel Travel		NA
Test Position	68.4	NA

DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Dodge Caliber **NHTSA No.:** MB0307
Test Program: Side MDB NCAP **Test Date:** 12/7/2010



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

LEFT SIDE VIEW

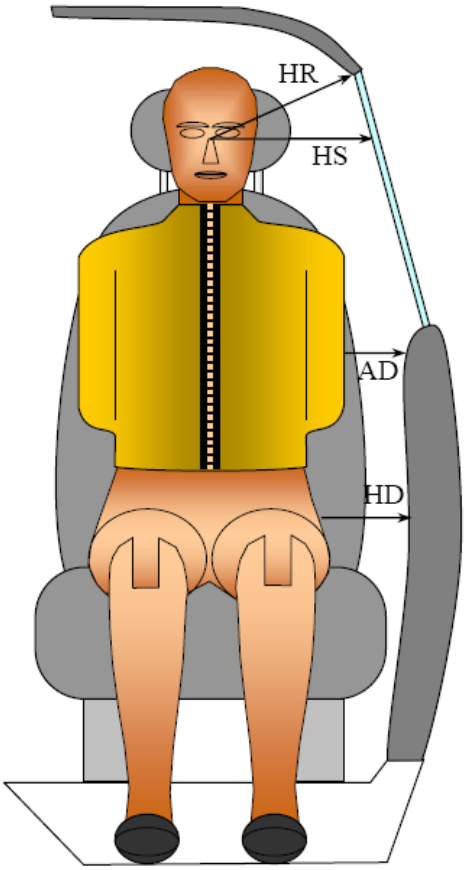
DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Pass. Code	Measurement Description	Driver S/N 033		Passenger S/N 300	
			Length (mm)	Angle	Length (mm)	Angle
HH		Header to Header	465	12.1		
HW		Header to Windshield	772	0		
HZ	HZ	Head to Roof	205	90	272	90
NR	NB	Nose to Rim/Seat Back	415	-21.0	460	-14.5
CD	CB	Chest to Dash/Seat Back	601	5.3	471	-2.0
CS		Chest to Steering Wheel	301	0		
KDL	KBL	Left Knee to Dash/Seat Back	173	21.2	262	12.0
KDR	KBR	Right Knee to Dash/Seat Back	142	18.0	251	12.5
PA	PA	Pelvic Angle		23.2		14.3
PHX	PHX	H-Point to Striker (X-Axis)	158		201	
PHZ	PHZ	H-Point to Striker (Z-Axis)	179		267	
SA	SA	Seat Back Angle		12.9 *		21.0

* Measurement from the head restraint post

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle:	**2011 Dodge Caliber**	**NHTSA No.:**	**MB0307**
Test Program:	**Side MDB NCAP**	**Test Date:**	**12/7/2010**

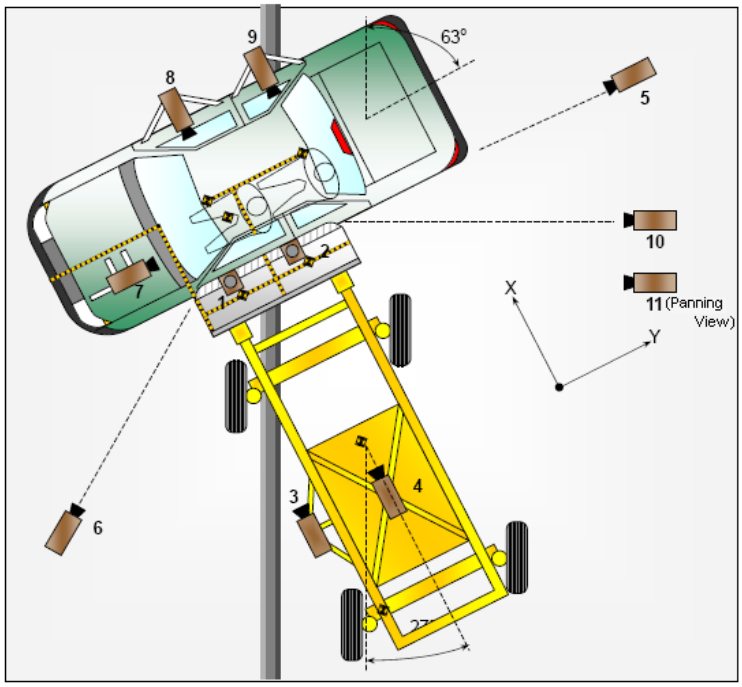


DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Description	Units	Driver S/N 033	Passenger S/N 300
HR	Head to Side Header	mm	223	259
HS	Head to Side Window	mm	403	407
AD	Arm to Door	mm	94	177
HD	H-point to Door	mm	150	148

DATA SHEET NO. 5
CAMERA LOCATIONS AND DATA

Test Vehicle: 2011 Dodge Caliber **NHTSA No.:** MB0307
Test Program: Side MDB NCAP **Test Date:** 12/7/2010



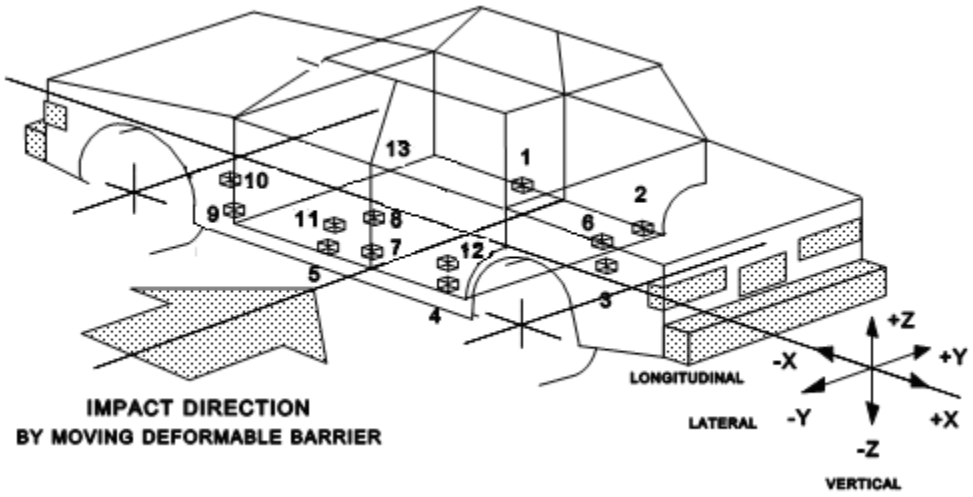
CAMERA LOCATIONS AND DATA

No.	Camera View	Location			Angle	Lens (mm)	Film Speed (fps)
		X	Y	Z			
1	Overhead Wide View	72	812	-4880	-90	14	1000
2	Overhead Close-up View	195	855	-4880	-90	24	1000
3	Impact Point	-1470	0	-847	0	25	500
4	Struck-Side View at Impact	-1140	838	-1587	-17	12.5	500
5	Rear Impact View of Struck Side	2035	1680	-920	-3	50	1000
6	Front Oblique Impact View of Struck Side	130	10685	-990	-2	24	1000
7	Driver Dummy Front View (OB)	540	1345	-295	-12	25	500
8	Driver Dummy Side View (OB)	1370	750	-940	-4	12.5	500
9	Rear Passenger Dummy Side View (OB)	1410	1560	-970	-1	12.5	500
10	Real-time Rear View of Impact	-	-	-	-	-	24
11	Real-time Pan View of Impact	-	-		-	-	24

Reference: Impact Point projected to Ground
+X = To Front of MDB,
+Y = To Right of MDB,
+Z = Down
**All measurements accurate to ± 6 mm.*

DATA SHEET NO. 6
VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2011 Dodge Caliber **NHTSA No.:** MB0307
Test Program: Side MDB NCAP **Test Date:** 12/7/2010



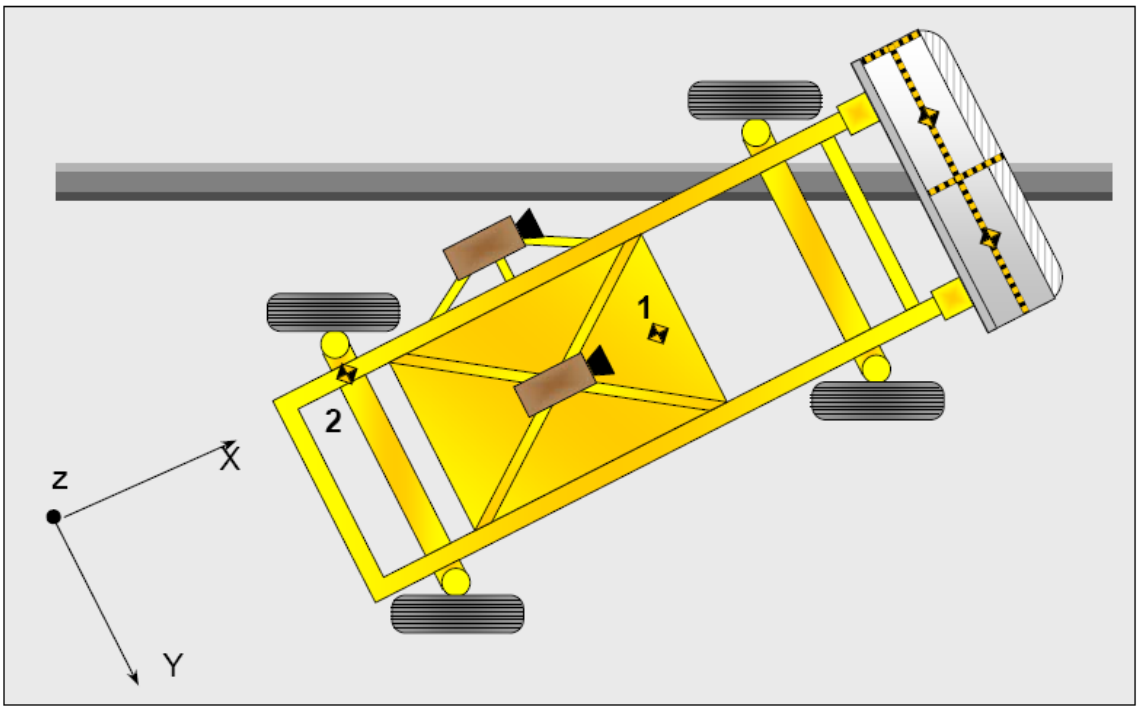
VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

Loc. No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Right Sill at Front Seat	2644	593	401
2	Right Sill at Rear Seat	1745	620	343
3	Rear Floorpan Above Axle	848	9	764
4	Left Sill at Rear Door	1785	-571	338
5	Left Sill at Front Door	2601	-601	398
6	Rt. Rear Occ. Compartment	1837	390	340
7	B-Post Lower	1922	-659	564
8	B-Post Middle	1951	-663	1067
9	A-Post Lower	2924	-617	480
10	A-Post Middle	2949	-624	1191
11	Front Seat Track	2030	-527	431
12	Rear Seat Structure	973	-496	825
13	Vehicle CG	2476	-1	656

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

DATA SHEET NO. 7
MDB ACCELEROMETER LOCATIONS

Test Vehicle: 2011 Dodge Caliber
Test Program: Side MDB NCAP
NHTSA No.: MB0307
Test Date: 12/7/2010



MDB ACCELEROMETER LOCATIONS

Loc No.	Accelerometer Locations	Measurements		
		X	Y	Z
1	MDB CG	1859	0	-330
2	MDB Rear	386	-660	-660

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

DATA SHEET NO. 8
TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle: 2011 Dodge Caliber **NHTSA No.:** MB0307
Test Program: Side MDB NCAP **Test Date:** 12/7/2010

MAXIMUM EXTERIOR STATIC CRUSH

Level	Measured Parameter	Units	Maximum Crush	Above Ground
1	Sill Top Height	mm	56	379
2	Occupant H-Point	mm	190	670
3	Mid Door	mm	210	793
4	Window Sill	mm	134	1049
5	Window Top	mm	26	1555
	Maximum Penetration	mm	210	793

INSTRUMENTATION

Driver Dummy Channels	16
Passenger Dummy Channels	16
Vehicle Structure Accelerometers	21
MDB Accelerometers	5
Total No. of Contact Switches	0 *
Total	58

* Vehicle manufacturer requested that certain contact switches not be installed on ATDs.

CAMERA COVERAGE

High-Speed Vehicle Onboard	3
High-Speed Offboard	4
High-Speed MDB Onboard	2
Real-Time Panning	2
Total	11

DATA SHEET NO. 9
MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS

Test Vehicle: 2011 Dodge Caliber **NHTSA No.:** MB0307
Test Program: Side MDB NCAP **Test Date:** 12/7/2010

MDB SPECIFICATIONS

Measurement Description	Length (mm)
Overall Width of Framework Carriage	1250
Overall Length Including Honeycomb Frame	4120
Wheel Base of Framework Carriage	2590
CG Location of Front Axle	1104

MDB WEIGHTS

	Units	Front Axle	Rear Axle	Total
Left	kg	409.5	281.5	691.0
Right	kg	372.5	299.0	671.5
Ratio	%	57.4	42.6	-
Totals	kg	782.0	580.5	1362.5

SPEED AND IMPACT DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	61.15
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	62.27
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	89.1

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE

Vertical Location			From Centerline		Maximum
Row	Description	Height	Distance	Direction	Crush
A	Center of Bumper	430	800	Right	216
B	Top of Bumper	542	800	Right	146
C	Mid-Level	682	800	Left	137
D	Top of Stack	811	800	Left	155

MDB INSTRUMENTATION

Accelerometers	5
Contact Switches	2

DATA SHEET NO. 10
POST TEST OBSERVATIONS

Test Vehicle: 2011 Dodge Caliber **NHTSA No.:** MB0307
Test Program: Side MDB NCAP **Test Date:** 12/7/2010

TEST DUMMY INFORMATION AND CONTACT

Description	Front Seat Dummy (ES-2re)	Rear Seat Dummy (SID-IIs)
Dummy Type/Serial No.	033	300
Head Contact	Curtain Airbag	Curtain Airbag
Upper Torso Contact	Door Trim Panel	C pillar trim
Lower Torso Contact	Door Trim Panel	C pillar trim, door trim panel
Left Knee Contact	Door Trim Panel	Door trim panel
Right Knee Contact		

POST TEST DOOR OPENING AND SEAT TRACK INFORMATION

Description	Front	Rear
Left Side Doors	Jammed Shut	Jammed Shut
Right Side Doors	Closed & Operational	Closed & Operational
Hatch and Other Doors	-	Closed & Operational
Seat Movement	None	None
Seat Back Failure	No	No

POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	Intruded due to side impact
Sill Separation	None
Windshield Damage	None
Window Damage	Driver door glass shattered
Other Notable Effects	None

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

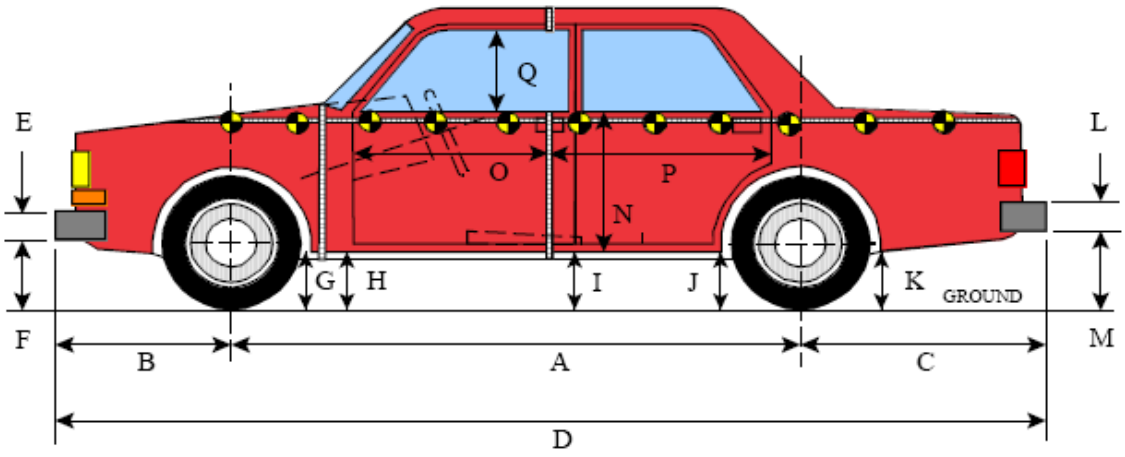
Restraint Type	**Left Front (Driver) Occupant Location 1**		**Left Rear (Passenger) Occupant Location 4**	
	Mounted	**Deployed**	**Mounted**	**Deployed**
Frontal Airbag	Yes	No		
Knee Airbag	Yes	No		
Side Curtain Airbag	Yes	Yes	Yes	Yes
Seat Belt Pretensioner	Yes	Yes	No	NA
Seat Belt Load Limiter	No	NA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

MDB LEFT EDGE IMPACT POINT DATA

Measured Parameter	Units	Requirement	Value
Horizontal Offset	mm	+/- 50	-23
Vertical Offset	mm	+/- 20	12

DATA SHEET NO. 11
VEHICLE PROFILE MEASUREMENTS

Test Vehicle:	**2011 Dodge Caliber**	**NHTSA No.:**	**MB0307**
Test Program:	**Side MDB NCAP**	**Test Date:**	**12/7/2010**



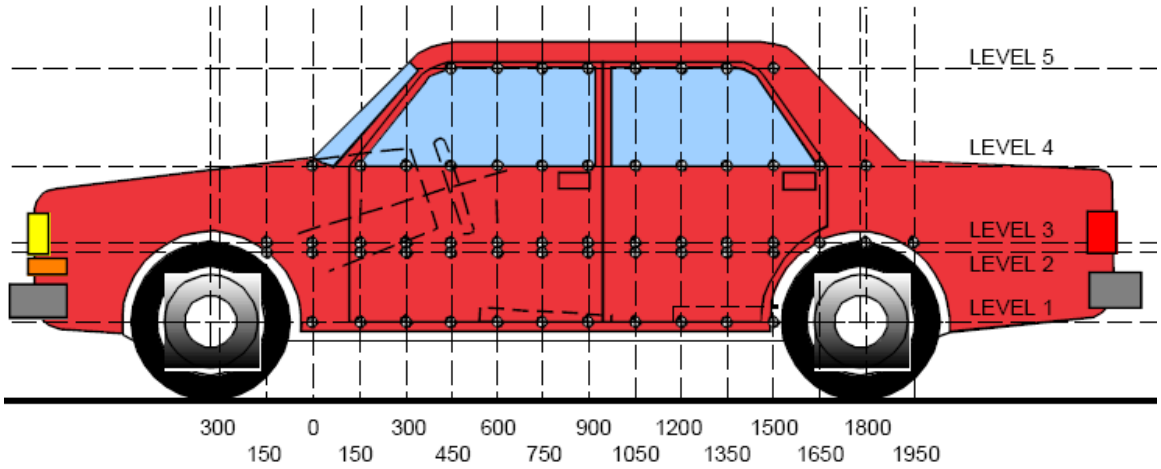
LEFT SIDE VIEW
All MEASUREMENTS IN (mm) WITH TOLERANCE OF ± 3mm

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2637	2640	3
B	Front Axle to FSOV	877	874	-3
C	Rear Axle to RSOV	898	896	-2
D	Total Length at Centerline	4413	4412	0
E	Front Bumper Thickness	340	340	0
F	Front Bumper Bottom to Ground	221	212	-9
G	Sill Height at Front Wheel Well	188	210	22
H	Sill Height at Front Door Leading Edge	210	210	0
I	Sill Height at B Pillar	209	221	12
J1	Sill Height at Rear Wheel Well	231	232	1
J2	Pinch Weld Height at Rear Wheel Well	205	201	-4
K	Sill Height Aft of Rear Wheel Well	264	260	-4
L	Rear Bumper Thickness	320	320	0
M	Rear Bumper Bottom to Ground	304	301	-3
N	Sill Height to Window Bottom Sill	731	684	-47
O	Front Door Leading Edge to Impact CL	837	861	23
P	Rear Door Trailing Edge to Impact CL	1194	1073	-121
Q	Front Window Opening	394	389	-5
R	Right Side Length	4303	4301	-2
S	Left Side Length	4306	4301	-5
T	Vehicle Width at B Post	1758	1574	-185

DATA SHEET NO. 12
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle:	**2011 Dodge Caliber**	**NHTSA No.:**	**MB0307**
Test Program:	**Side MDB NCAP**	**Test Date:**	**12/7/2010**



LEFT SIDE VIEW

Level	Measurement Description	Height Above Ground (mm)
1	Sill Top	379
2	Occupant H-Point	670
3	Mid-Door	793
4	Window Sill	1049
5	Window Top	1555

NOTE: The above measurements should be taken along the vertical impact reference line. Vehicle measurements forward of the vertical impact reference line are negative.

DATA SHEET NO. 12 (CONTINUED)
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Dodge Caliber **NHTSA No.:** MB0307
Test Program: Side MDB NCAP **Test Date:** 12/7/2010

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900	--	--	--	-	--	--	--	--	--	--	--	--	--	--	--
-750	--	--	--	-	--	--	--	--	--	--	--	--	--	--	--
-600	--	--	--	-	--	--	--	--	--	--	--	--	--	--	--
-450	--	--	--	-	--	--	--	--	--	--	--	--	--	--	--
-300	--	--	--	728	--	--	--	--	731	--	--	--	--	-3	--
-150	--	--	887	758	--	--	--	880	760	--	--	--	7	-2	--
0	--	877	877	789	--	--	859	846	784	--	--	18	31	5	--
150	827	841	848	802	--	824	765	777	794	--	3	76	71	8	--
300	834	849	857	821	--	801	708	739	787	--	33	141	118	34	--
450	838	854	863	835	--	802	715	707	791	--	36	139	156	44	--
600	841	859	867	846	--	801	718	693	787	--	40	141	174	59	--
750	843	862	870	852	609	799	698	681	782	609	44	164	189	70	0
900	844	865	872	857	623	793	679	686	775	617	51	186	186	82	6
1050	844	866	874	859	625	788	704	706	773	613	56	162	168	86	12
1200	841	866	874	860	628	789	726	719	764	611	52	140	155	96	17
1350	837	865	872	859	628	795	675	679	725	602	42	190	193	134	26
1500	831	862	870	858	626	802	675	660	746	607	29	187	210	112	19
1650	825	860	866	855	621	804	702	664	752	612	21	158	202	103	9
1800	818	879	870	850	613	807	742	701	763	609	11	137	169	87	4
1950	--	--	894	844	600	--	--	836	803	597	--	--	58	41	3
2100	--	--	--	838	585	--	--	--	819	583	--	--	--	19	2
2250	--	--	--	827	--	--	--	--	815	--	--	--	--	12	--
2400	--	--	--	814	--	--	--	--	807	--	--	--	--	7	--
2550	--	--	--	797	--	--	--	--	793	--	--	--	--	4	--
2700	--	--	--	775	--	--	--	--	774	--	--	--	--	1	--
2850	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

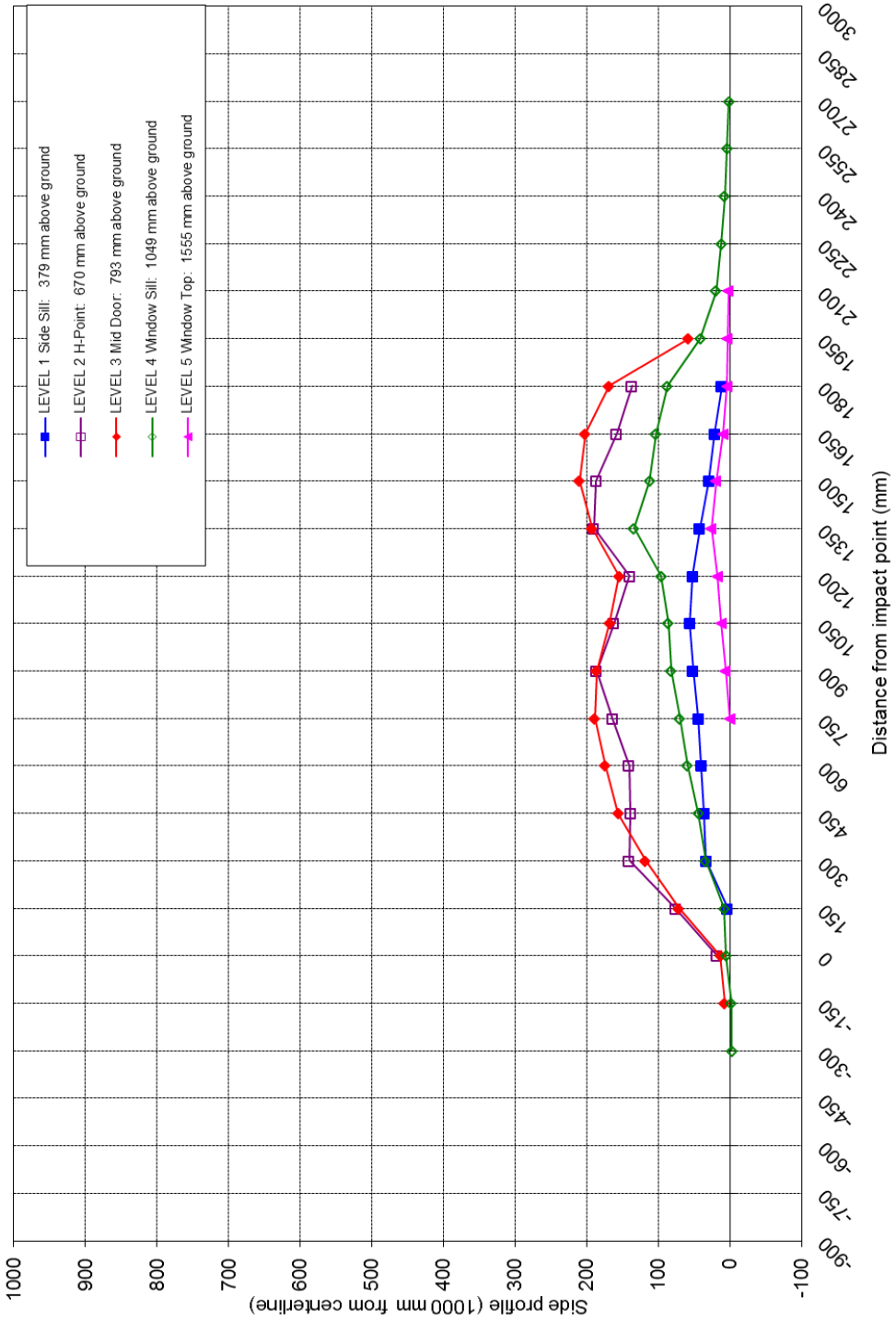
MAXIMUM CRUSH DATA

	Level 1	Level 2	Level 3	Level 4	Level 5
Maximum Crush (mm)	56	190	210	134	26
Distance From Impact (mm)	1050	1350	1500	1350	1350

NOTE: Pre-test measurements are taken when the vehicle is in the “As Tested” weight condition. Vehicle measurements forward of the vertical impact reference line are negative. The crush profile grid is established prior to test based on an estimated impact point.

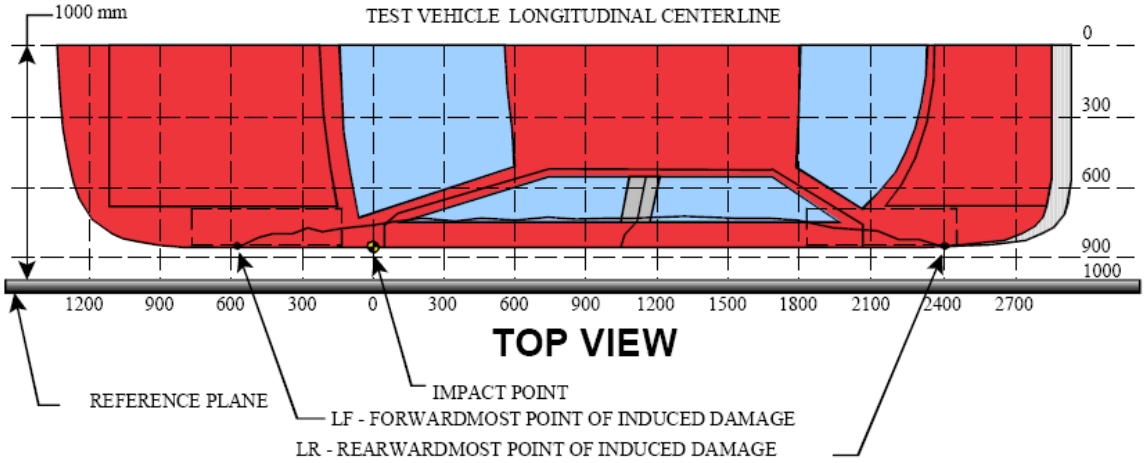
DATA SHEET NO. 12 (CONTINUED)
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle:	**2011 Dodge Caliber**	**NHTSA No.:**	**MB0307**
Test Program:	**Side MDB NCAP**	**Test Date:**	**12/7/2010**



DATA SHEET NO. 13
VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle:	**2011 Dodge Caliber**	**NHTSA No.:**	**MB0307**
Test Program:	**Side MDB NCAP**	**Test Date:**	**12/7/2010**

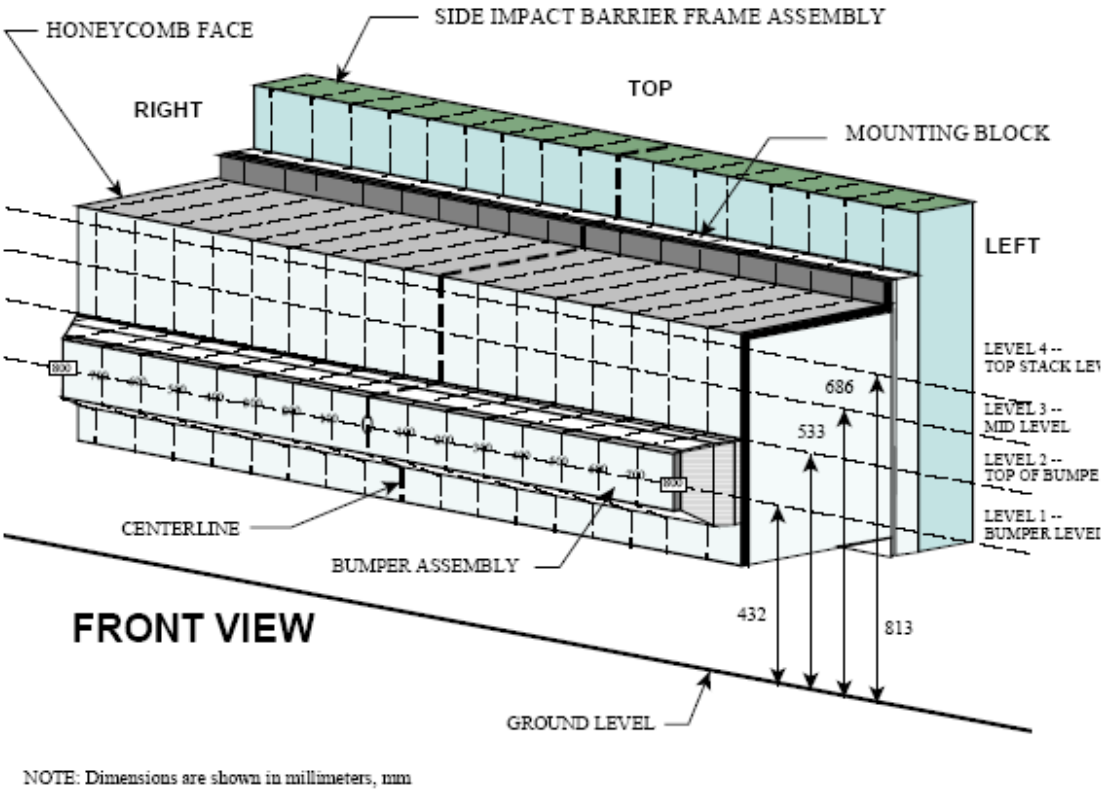


DAMAGE PROFILE DISTANCES

DPD	Distance From Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Maximum Static Crush (mm)
1	2550	4	203	207	4
2	2010	4	158	191	33
3	1470	3	130	336	206
4	930	3	128	310	182
5	0	3	139	280	141
6	-150	3	113	120	7

DATA SHEET NO. 14
EXTERIOR STATIC CRUSH FOR IMPACTOR FACE

Test Vehicle: 2011 Dodge Caliber **NHTSA No.:** MB0307
Test Program: Side MDB NCAP **Test Date:** 12/7/2010



NOTE: Dimensions are shown in millimeters, mm

DEFORMABLE BARRIER STATIC CRUSH

Stack Level	Distance Right of Center								C/L	Distance Left of Center							
	800	700	600	500	400	300	200	100	0	100	200	300	400	500	600	700	800
1	216	206	193	183	172	166	162	161	160	160	159	157	157	155	158	173	185
2	146	141	133	120	108	98	89	86	95	102	104	101	100	100	100	105	124
3	47	35	31	30	34	40	63	54	34	27	25	25	29	39	52	91	137
4	42	32	22	22	33	60	91	82	52	41	41	44	51	62	72	99	155

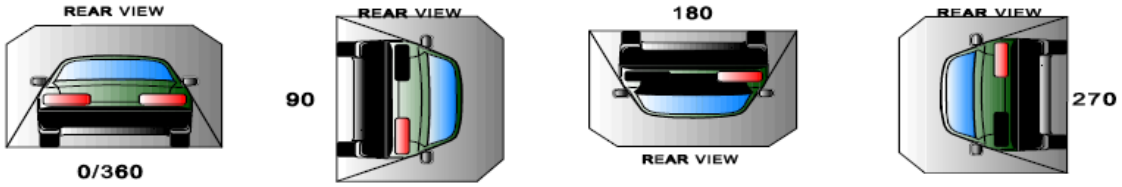
DATA SHEET NO. 15A
FMVSS NO. 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2011 Dodge Caliber **NHTSA No.:** MB0307
Test Program: Side MDB NCAP **Test Date:** 12/7/2010

Test Time: 13:35 **Temperature:** -2° C

A.	From impact until vehicle motion ceases: (Maximum allowable is 1 oz.)	0	oz.
B.	For the 5-minute period after motion ceases: (Maximum allowable is 5 oz.)	0	oz.
C.	For the following 25 minutes: (Maximum allowable is 1 oz./minute)	0	oz.
D.	Spillage Details:	None	

FMVSS NO. 301 STATIC ROLLOVER DATA



ROLLOVER SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0 to 90	1:13	5:00	6:13
90 to 180	1:05	5:00	6:05
180 to 270	1:01	5:00	6:01
270 to 360	1:07	5:00	6:07

FMVSS NO. 301 ROLLOVER SPILLAGE TABLE

Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0 to 90	None	None	NA	NA
90 to 180	None	None	NA	NA
180 to 270	None	None	NA	NA
270 to 360	None	None	NA	NA

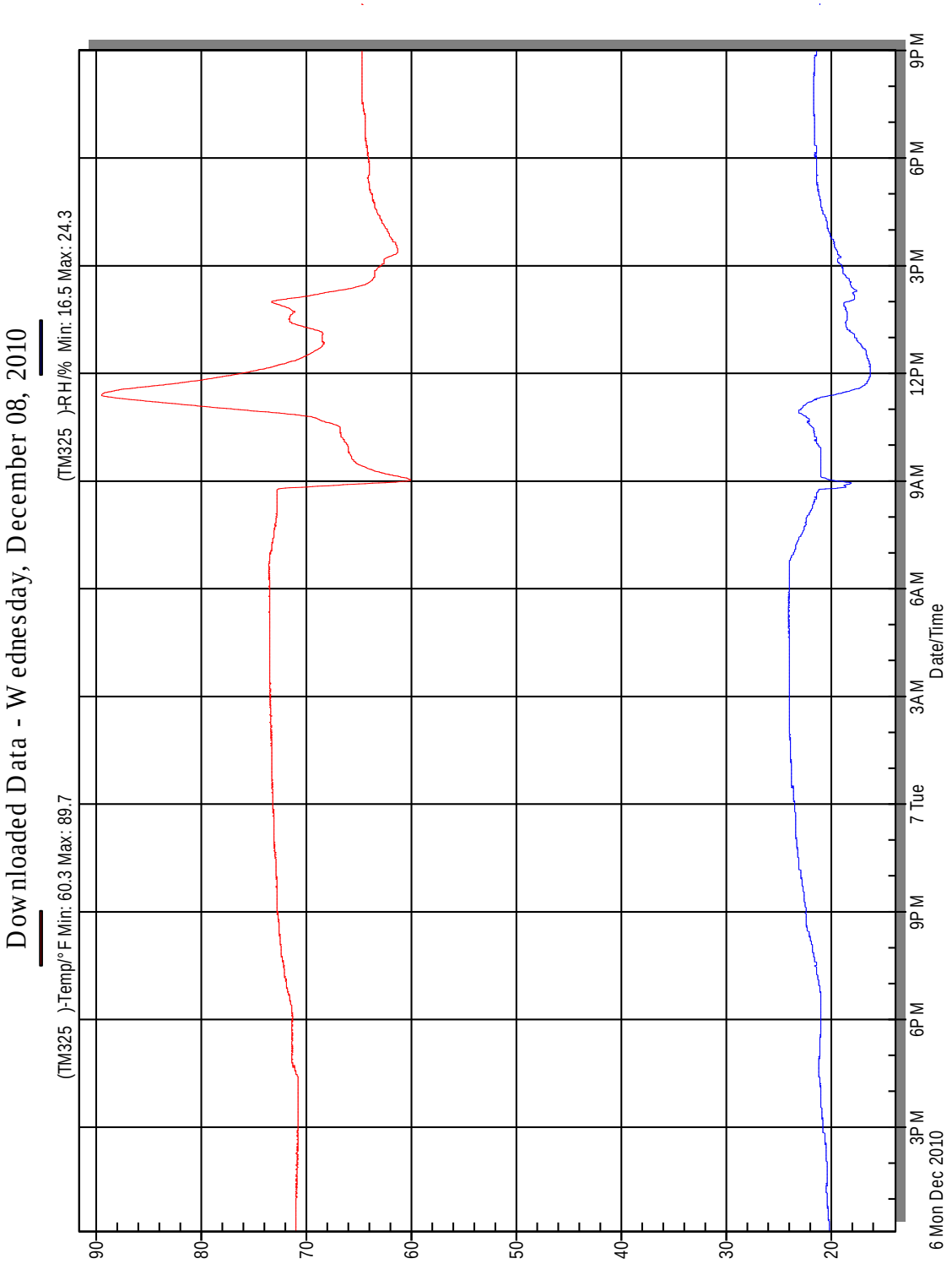
ROLLOVER SOLVENT SPILLAGE LOCATION TABLE

Test Phase	Spillage Location
0 to 90	NA
90 to 180	NA
180 to 270	NA
270 to 360	NA

DATA SHEET NO. 16
DUMMY/VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2011 Dodge Caliber
Test Program: Side MDB NCAP

NHTSA No.: MB0307
Test Date: 12/7/2010



APPENDIX A

PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

Figure A-1: As-Delivered Right Front ¾ View of Test Vehicle

Figure A-2: As-Delivered Left Rear ¾ View of Test Vehicle

Figure A-3: Pre-Test Frontal View of Test Vehicle

Figure A-4: Post-Test Frontal View of Test Vehicle

Figure A-5: Pre-Test Left Front ¾ View of Test Vehicle

Figure A-6: Post-Test Left Front ¾ View of Test Vehicle

Figure A-7: Pre-Test Left Side View of Test Vehicle

Figure A-8: Post-Test Left Side View of Test Vehicle

Figure A-9: Pre-Test Left Rear ¾ View of Test Vehicle

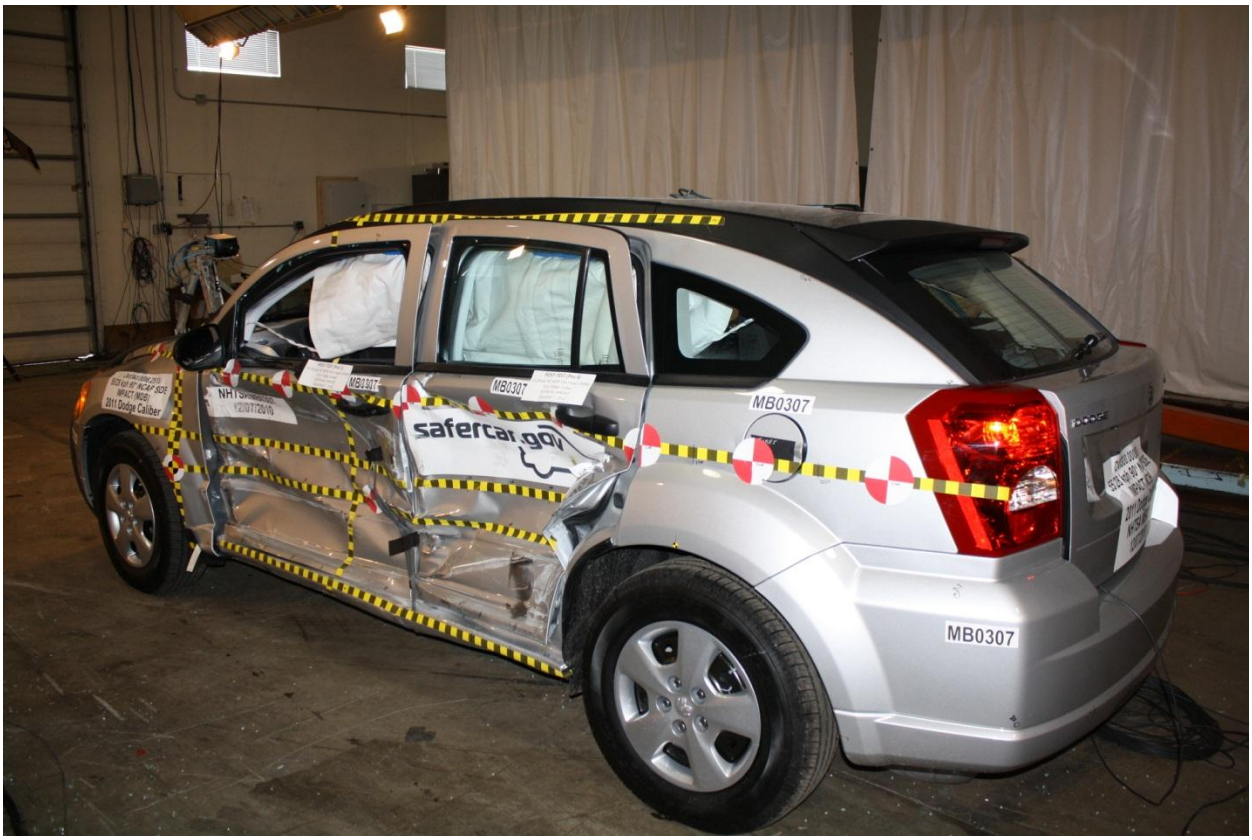


Figure A-10: Post-Test Left Rear ¾ View of Test Vehicle

Figure A-11: Pre-Test Rear View of Test Vehicle

Figure A-12: Post-Test Rear View of Test Vehicle

Figure A-13: Pre-Test Right Side View of Test Vehicle

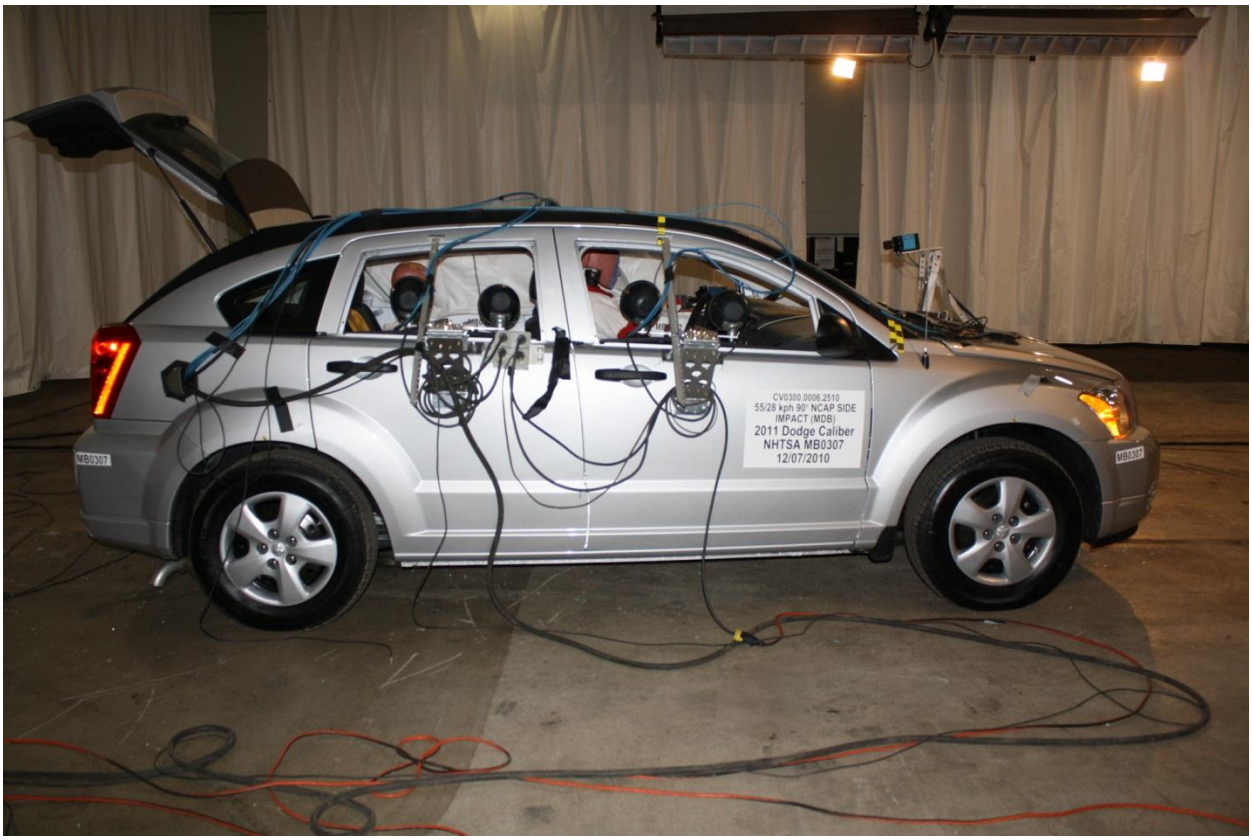


Figure A-14: Post-Test Right Side View of Test Vehicle

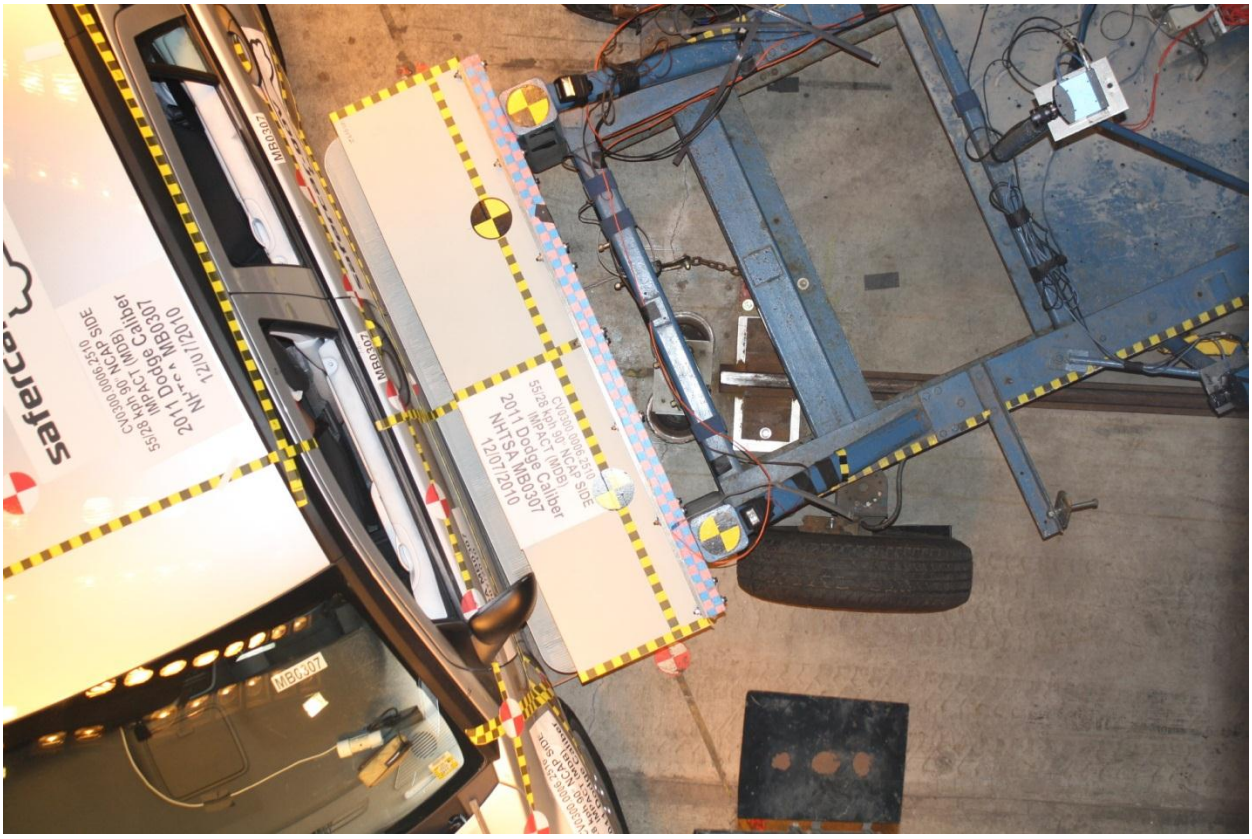


Figure A-15: Pre-Test Overhead View of the Test Vehicle and MDB

Figure A-16: Post-Test Overhead View of Test Vehicle and MDB

Figure A-17: Pre-Test Left Side View of MDB Positioned Against Side of Test Vehicle

Figure A-18: Pre-Test Right Side View of MDB Positioned Against Side of Test Vehicle

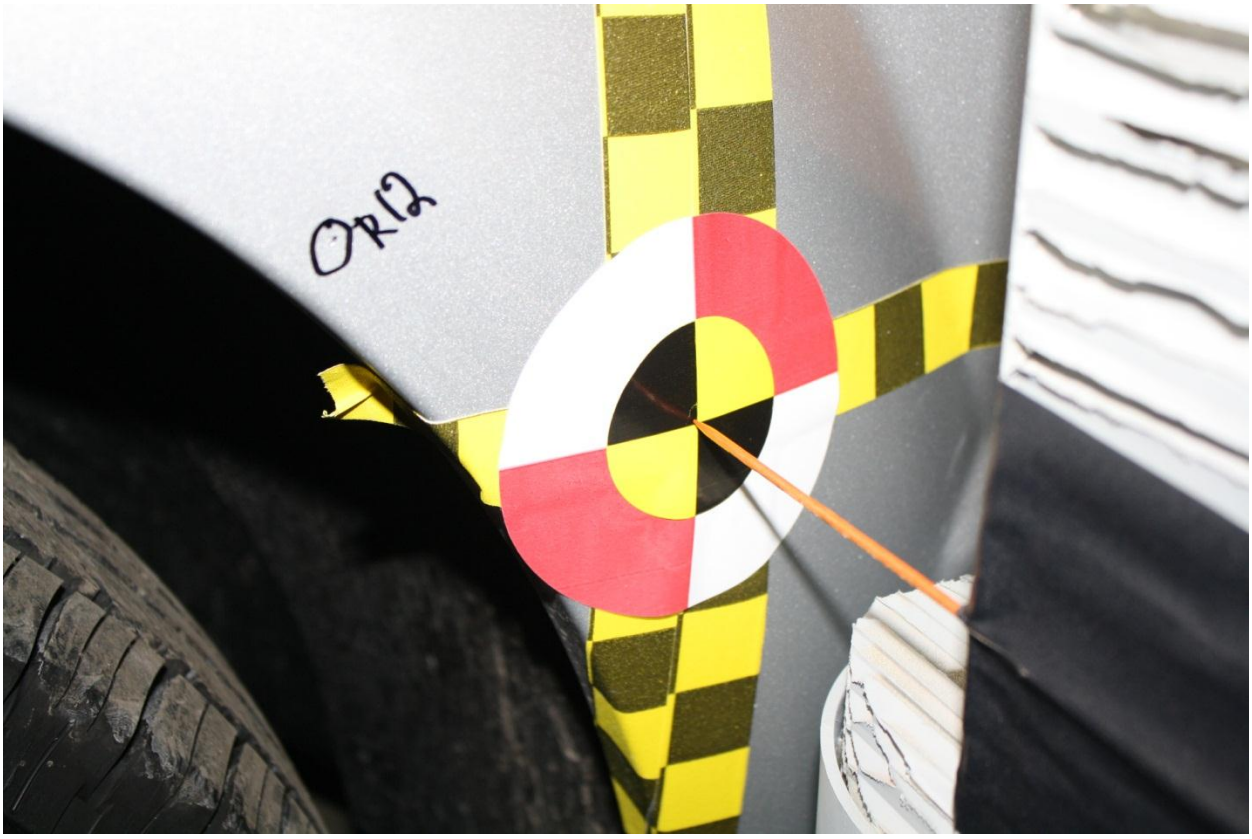


Figure A-19: Pre-Test Close-up View of Impact Point Target

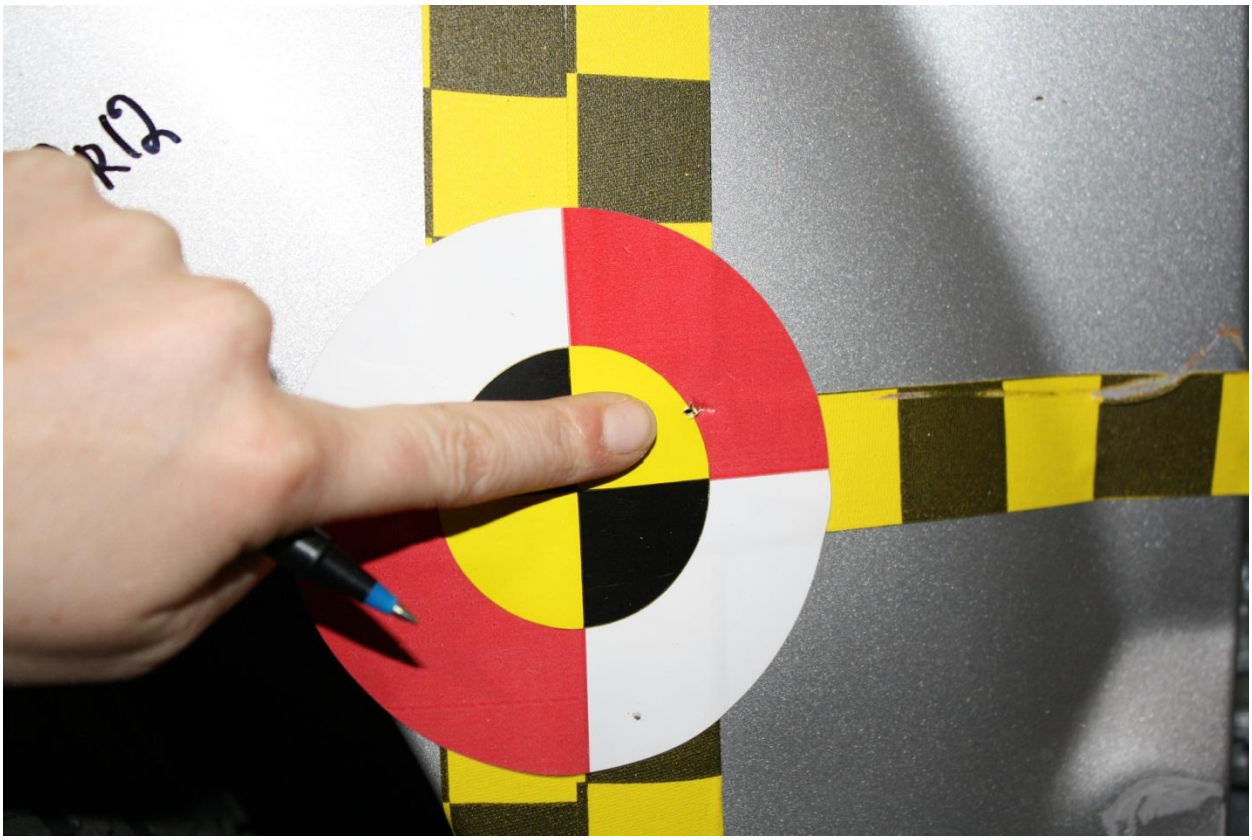


Figure A-20: Post-Test Close-up View of Impact Point Target

Figure A-21: Pre-Test Left Front Door Latch Close-up

Figure A-22: Post-Test Left Front Door Latch Close-up

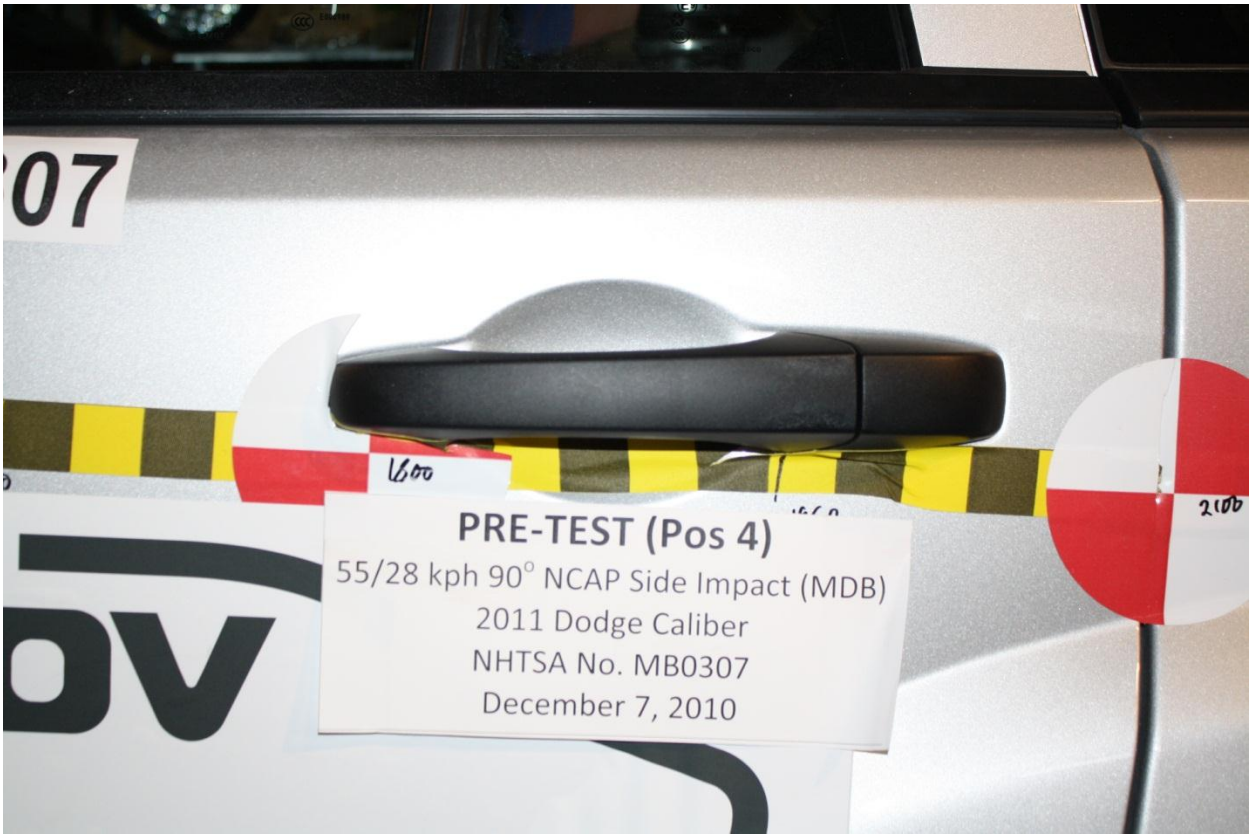


Figure A-23: Pre-Test Left Rear Door Latch Close-up

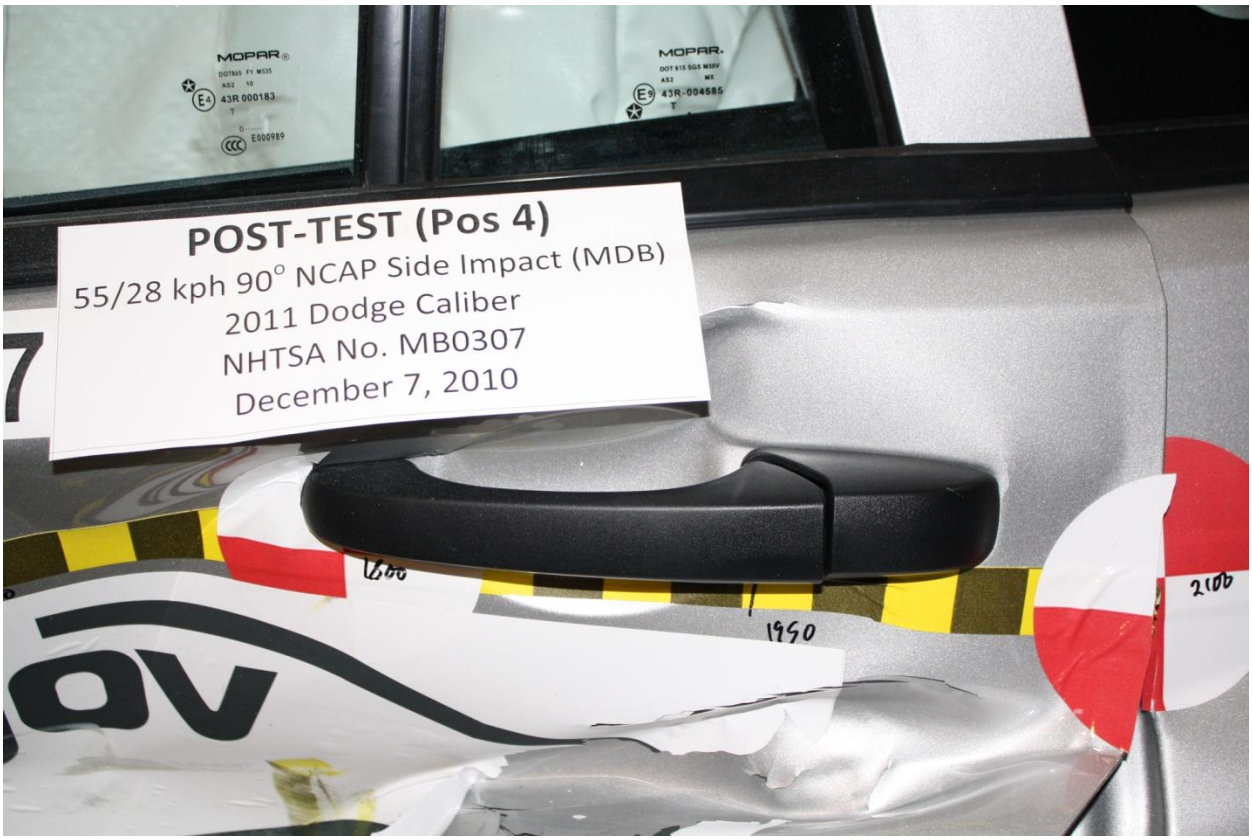


Figure A-24: Post-Test Left Rear Door Latch Close-up

Figure A-25: Pre-Test Front Close-up View of Driver Dummy

Figure A-26: Post-Test Front Close-up View of Driver Dummy

Figure A-27: Pre-Test Left Side View of Driver Dummy Showing Belt, Chalking, and Contact Switches

Figure A-28: Pre-Test Left Side View of Driver Dummy Shoulder and Door Top View

Figure A-29: Post-test Left Side View of Driver Dummy Shoulder and Door Top View

Figure A-30: Pre-Test Frontal View of Driver Seat Back Prior to Dummy Positioning

Figure A-31: Pre-Test Frontal View of Driver Dummy Head and Shoulders in Relation to Head Restraint

Figure A-32: Pre-Test Frontal View of Driver Seat Pan Prior to Dummy Positioning

Figure A-33: Pre-Test Overhead View of Driver Dummy Thighs on Seat Pan

Figure A-34: Pre-Test Placement of Driver Dummy's Feet

Figure A-35: Pre-Test View of Belt Anchorage for Driver Dummy to Show Position

Figure A-36: Pre-Test Left Side View of Steering Wheel to Show Position

Figure A-37: Pre-Test View of Parking Brake

Figure A-38: Pre-test Close-up Left Side View of Driver Seat Track Showing Seat Positioning

Figure A-39: Pre-test Close-up Left Side View of Driver Seat Back Showing Seat Back Positioning

Figure A-40: Pre-Test Close-Up View of Driver Seat Back or Head Restraint Showing Seat Back Test Position

Figure A-41: Pre-test Driver Dummy and Door Clearance View

Figure A-42: Post-test Driver Dummy and Door Clearance View

Figure A-43: Pre-test Right Side View of Driver Dummy and Front Seat of Occupant Compartment

Figure A-44: Post-test Right Side View of Driver Dummy and Front Seat of Occupant Compartment

Figure A-45: Pre-test Driver Inner Door Panel View

Figure A-46: Post-test Driver Inner Door Panel View Showing Driver Dummy Contact Locations

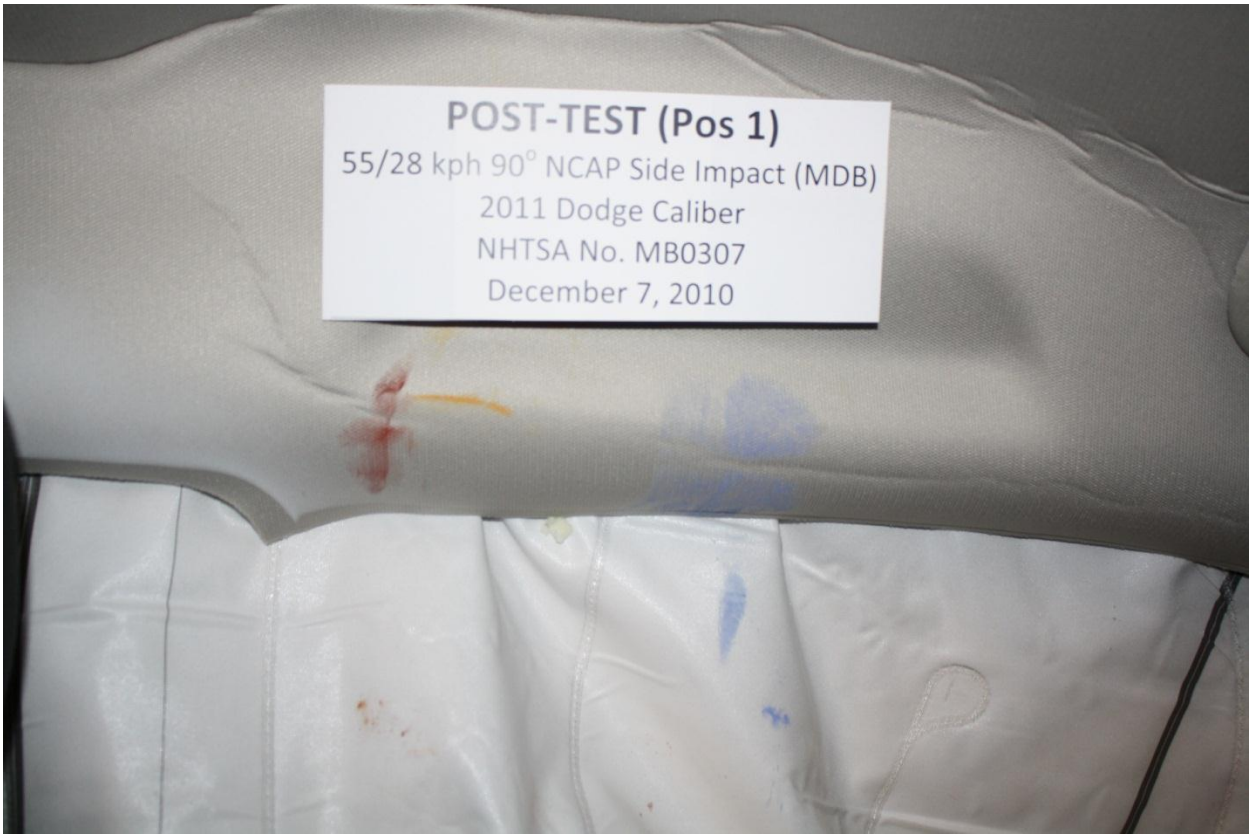


Figure A-47: Post-test Driver Dummy Close-Up Head Contact with Vehicle View

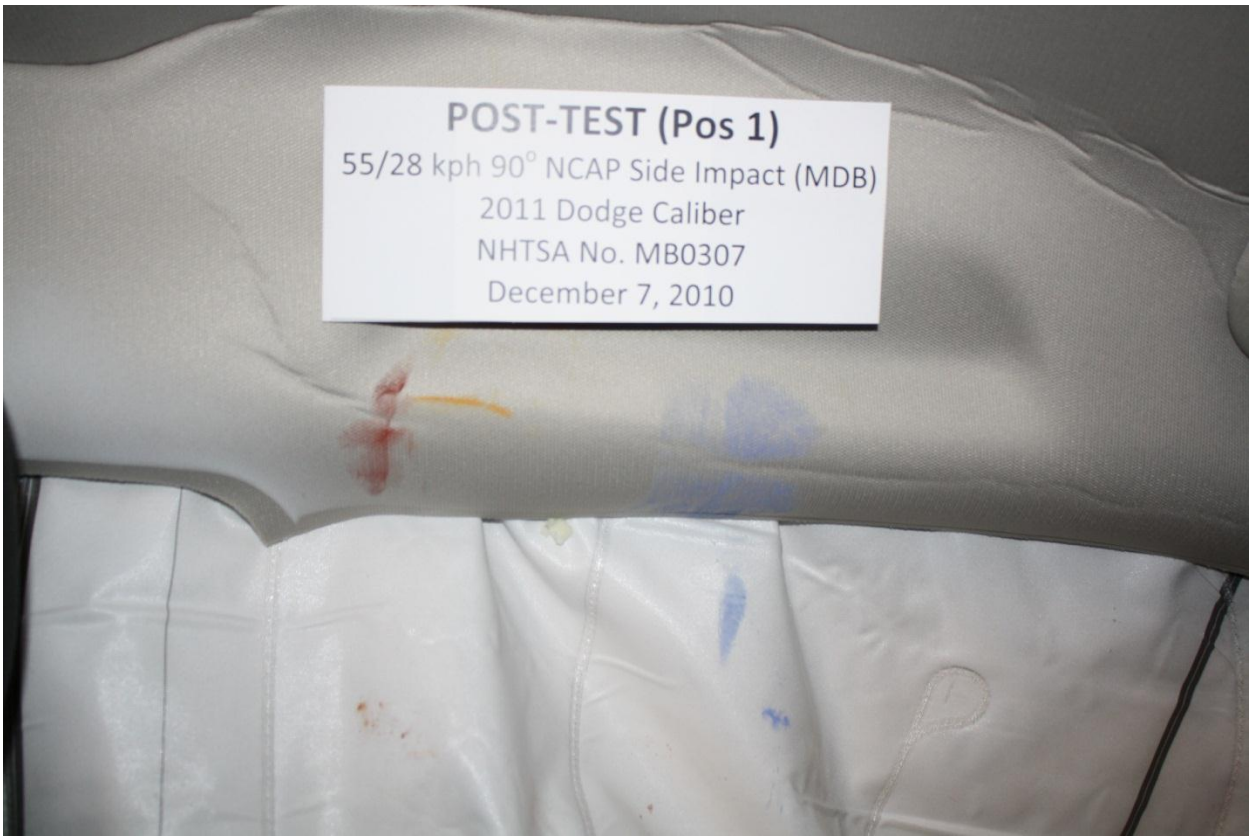


Figure A-48: Post-test Driver Dummy Close-Up Head Contact with Side Airbag View

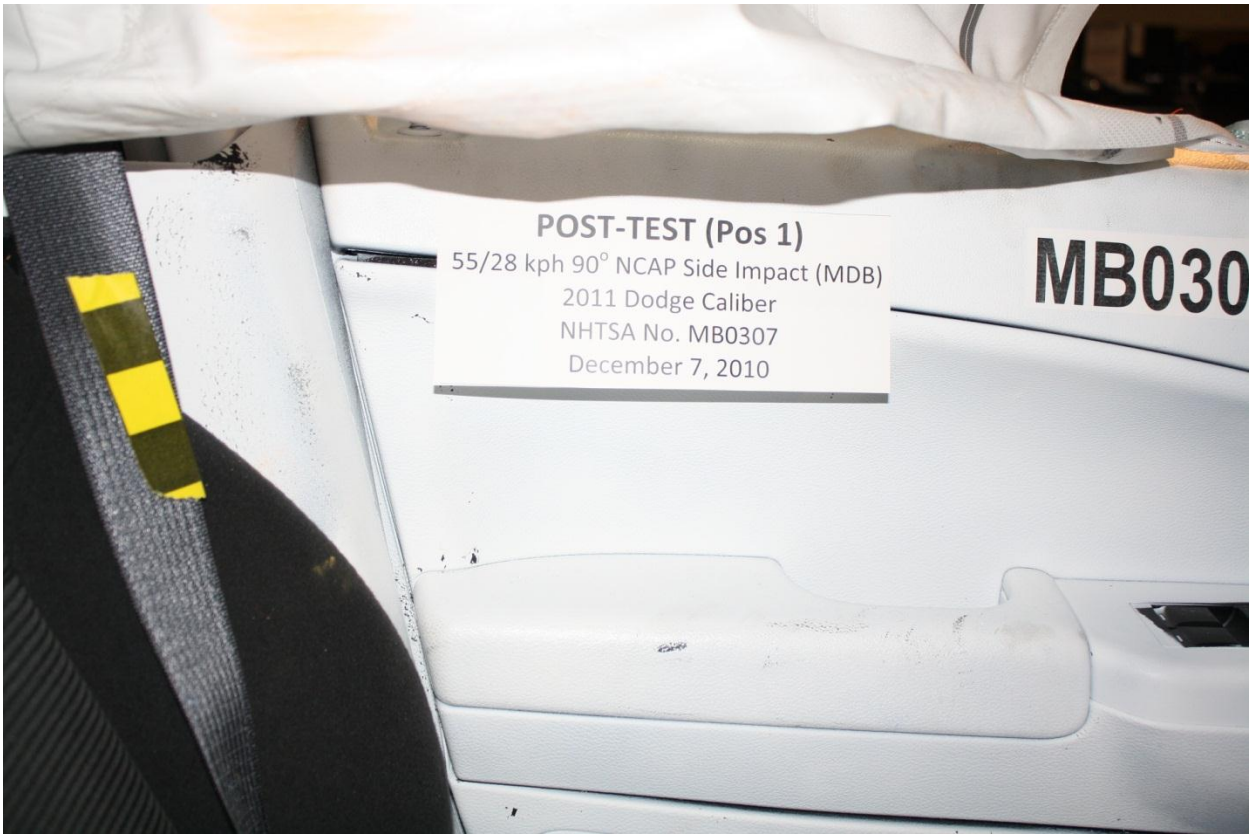


Figure A-49: Post-Test Driver Dummy Close-Up Torso Contact with Vehicle Interior View

Photo Not Applicable

Airbag Not Installed

Figure A-50: Post-Test Driver Dummy Close-Up Torso Contact with Side Airbag View

Figure A-51: Post-Test Driver Dummy Close-Up Pelvis Contact View

Photo Not Applicable

Airbag Not Installed

Figure A-52: Post-Test Driver Dummy Close-Up Pelvis Contact with Side Airbag View

Photo Not Available

Figure A-53: Pre-test Left Side View of Passenger Dummy Showing Belt, Chalking, and Contact Switches

Figure A-54: Pre-test Left Side View of Passenger Dummy Shoulder and Door Top View

Figure A-55: Post-test Left Side View of Passenger Dummy Shoulder and Door Top View

Figure A-56: Pre-Test Frontal View of Rear Passenger Seat Back Prior to Dummy Positioning

Figure A-57: Pre-Test Frontal View of Rear Passenger Dummy Head and Shoulders in Relation to Head Restraint

Figure A-58: Pre-Test Overhead View of Rear Passenger Seat Pan Prior to Dummy Positioning

Figure A-59: Pre-Test Overhead View of Rear Passenger Dummy Thighs on Seat Pan

Figure A-60: Pre-Test View of Rear Passenger Dummy's Neck Showing Position of Adjustable Neck Bracket

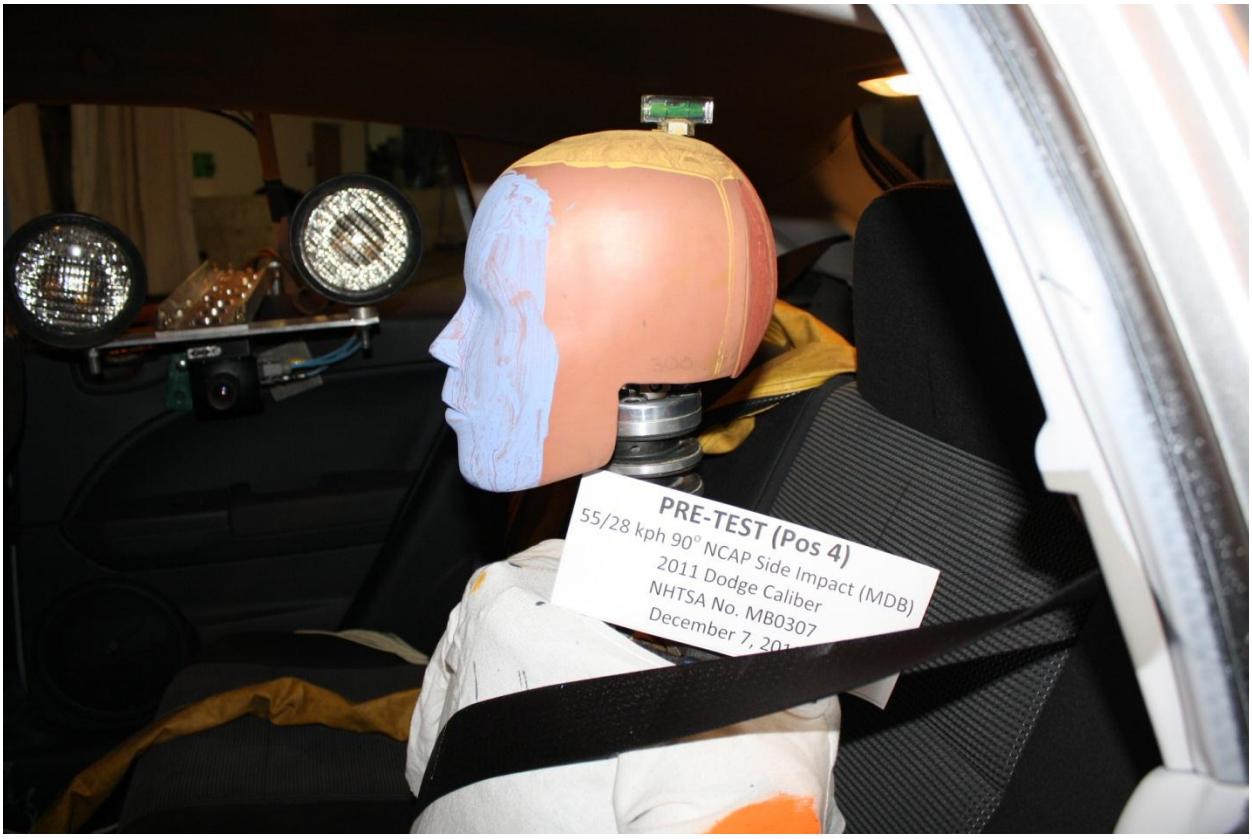


Figure A-61: Pre-Test View of Rear Passenger Dummy's Head Showing Dummy's Head is Level

Figure A-62: Pre-Test Placement of Rear Passenger Dummy's Feet

Figure A-63: Pre-Test View of Belt Anchorage for Rear Passenger Dummy to Show Position

Photo Not Applicable

No Passenger Seat Track

Figure A-64: Pre-test Close-Up Left Side View of Rear Passenger Seat Track Showing Test Position

Figure A-65: Pre-test Close-Up Left Side View of Rear Passenger Seat Back Showing Test Position

Photo Not Applicable

Rear Seat Back Not Adjustable

Figure A-66: Pre-Test Close-Up View of Rear Passenger Seat Back or Head Restraint Showing Seat Back Test Position

Figure A-67: Pre-Test Passenger Dummy and Door Clearance View

Figure A-68: Post-Test Passenger Dummy and Door Clearance View

Figure A-69: Pre-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment

Figure A-70: Post-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment

Figure A-71: Pre-test Passenger Inner Door Panel View

Figure A-72: Post-test Passenger Inner Door Panel View Showing Rear Passenger Dummy Contact Locations

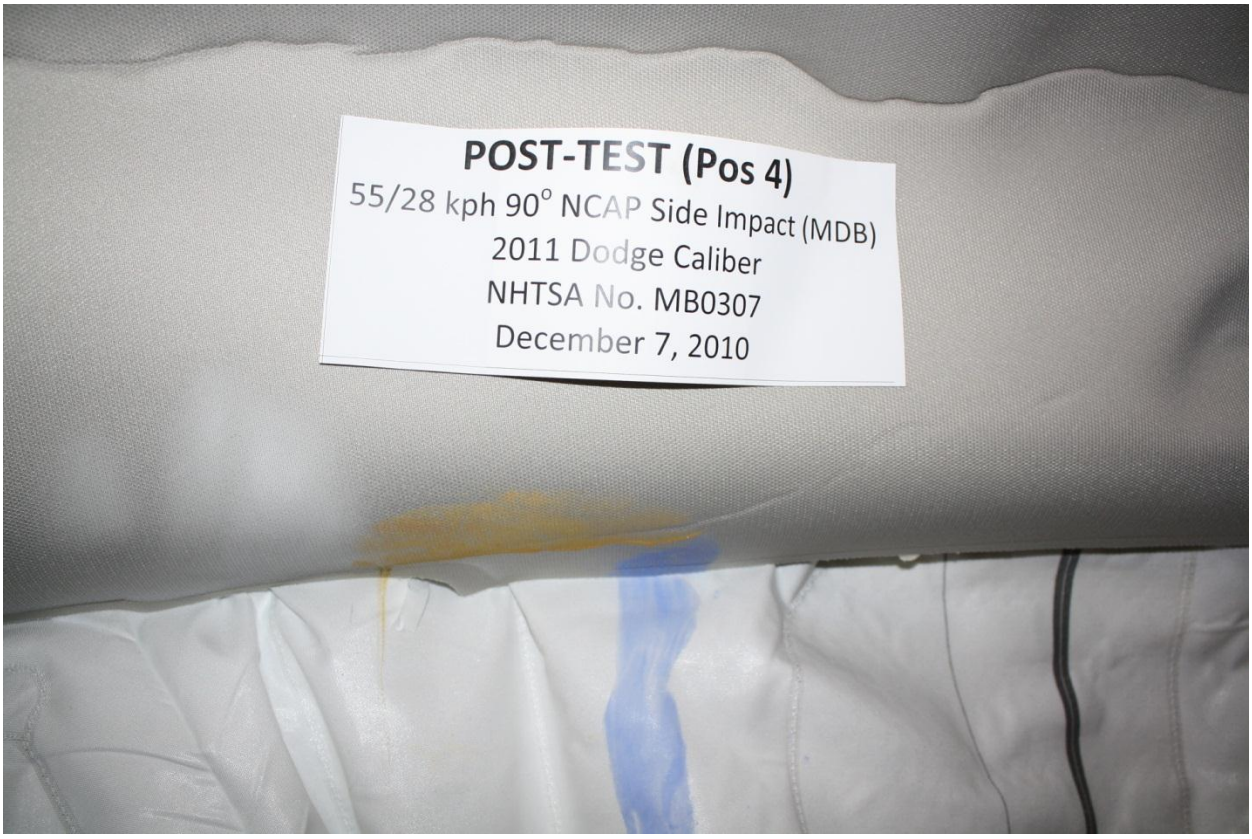


Figure A-73: Post-test Rear Passenger Dummy Close-Up Head Contact with Vehicle View

Figure A-74: Post-test Rear Passenger Dummy Close-Up Head Contact with Side Airbag View

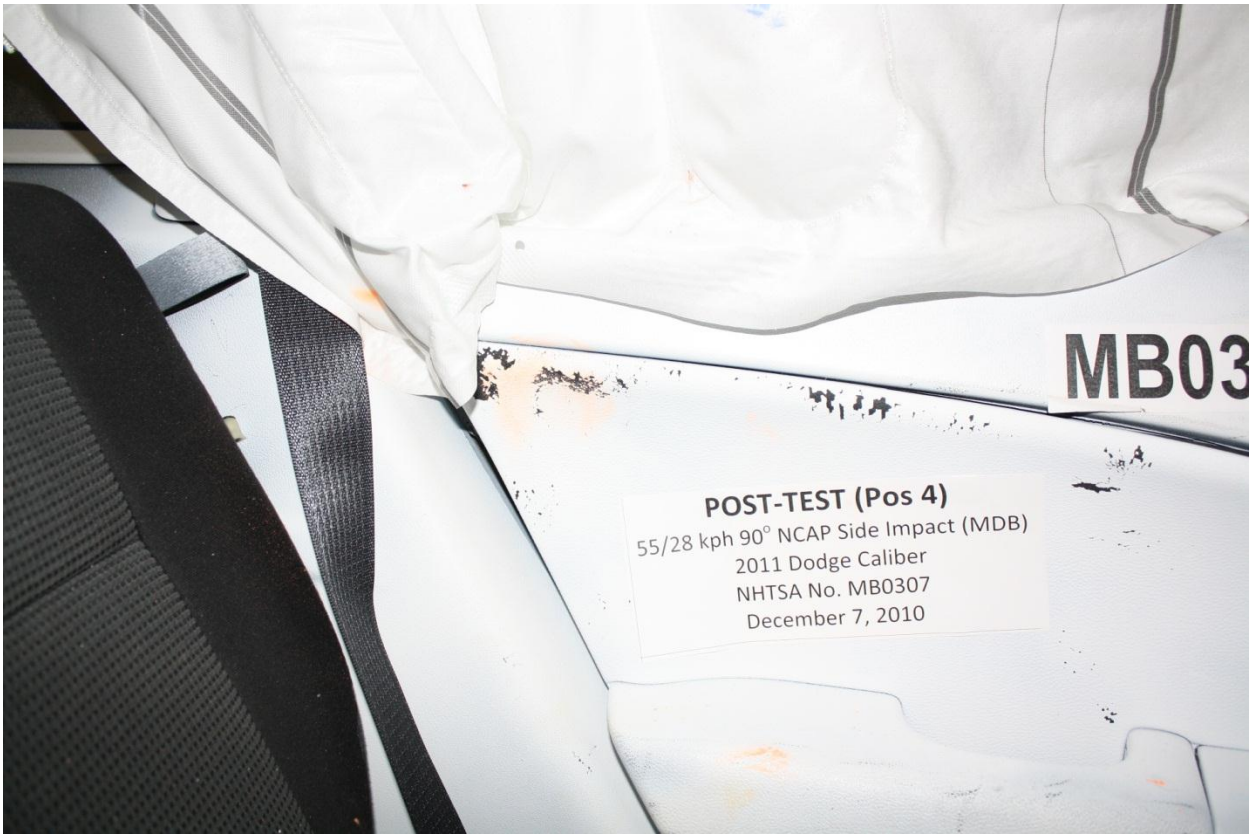


Figure A-75: Post-Test Rear Passenger Dummy Close-Up Torso Contact with Vehicle Interior View

Photo Not Applicable

Airbag Not Installed

Figure A-76: Post-Test Rear Passenger Dummy Close-Up Torso Contact with Side Airbag View

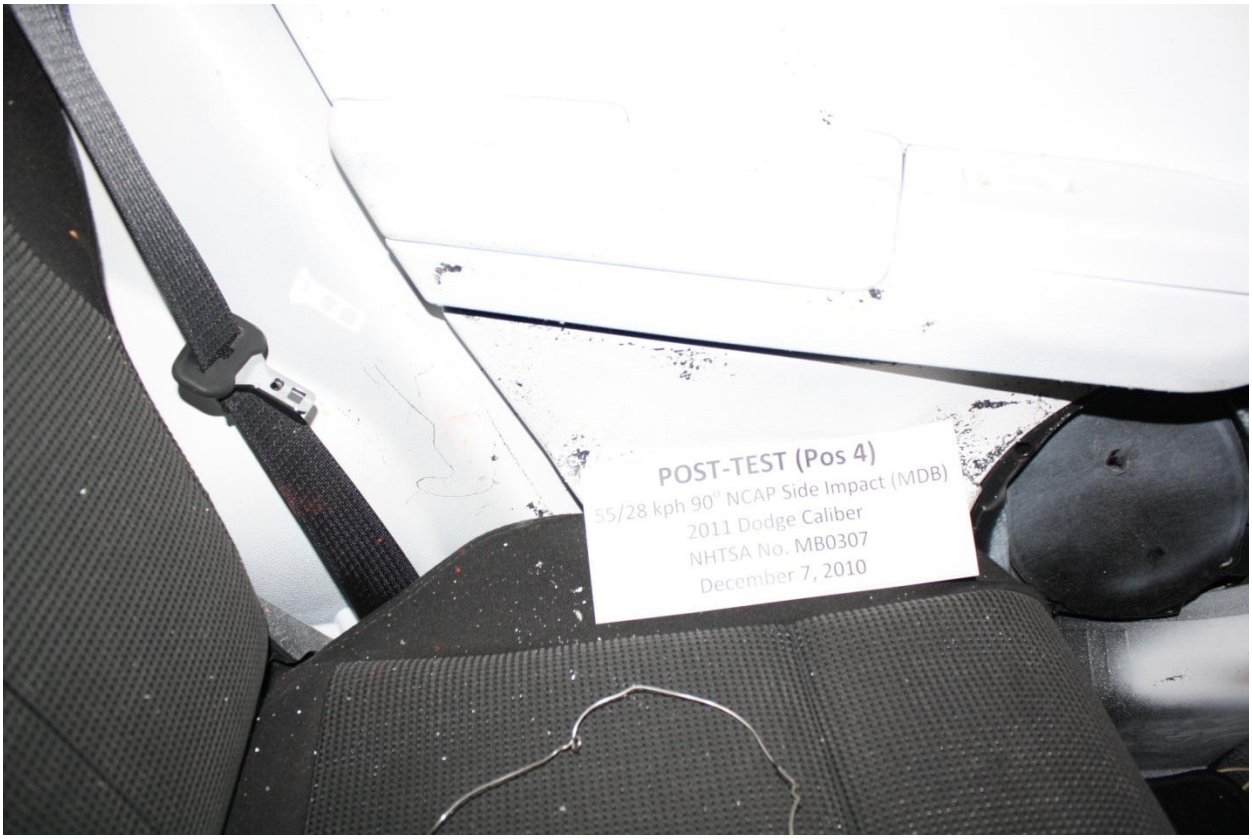


Figure A-77: Post-Test Rear Passenger Dummy Close-Up Pelvis Contact View

Photo Not Applicable

Airbag Not Installed

Figure A-78: Post-Test Rear Passenger Dummy Close-Up Pelvis Contact with Side Airbag View

Figure A-79: Pre-Test View of Fuel Filler Cap or Fuel Filler Neck

Figure A-80: Post-Test View of Fuel Filler Cap or Fuel Filler Neck

Figure A-81: Pre-Test Front View of MDB Impactor Face

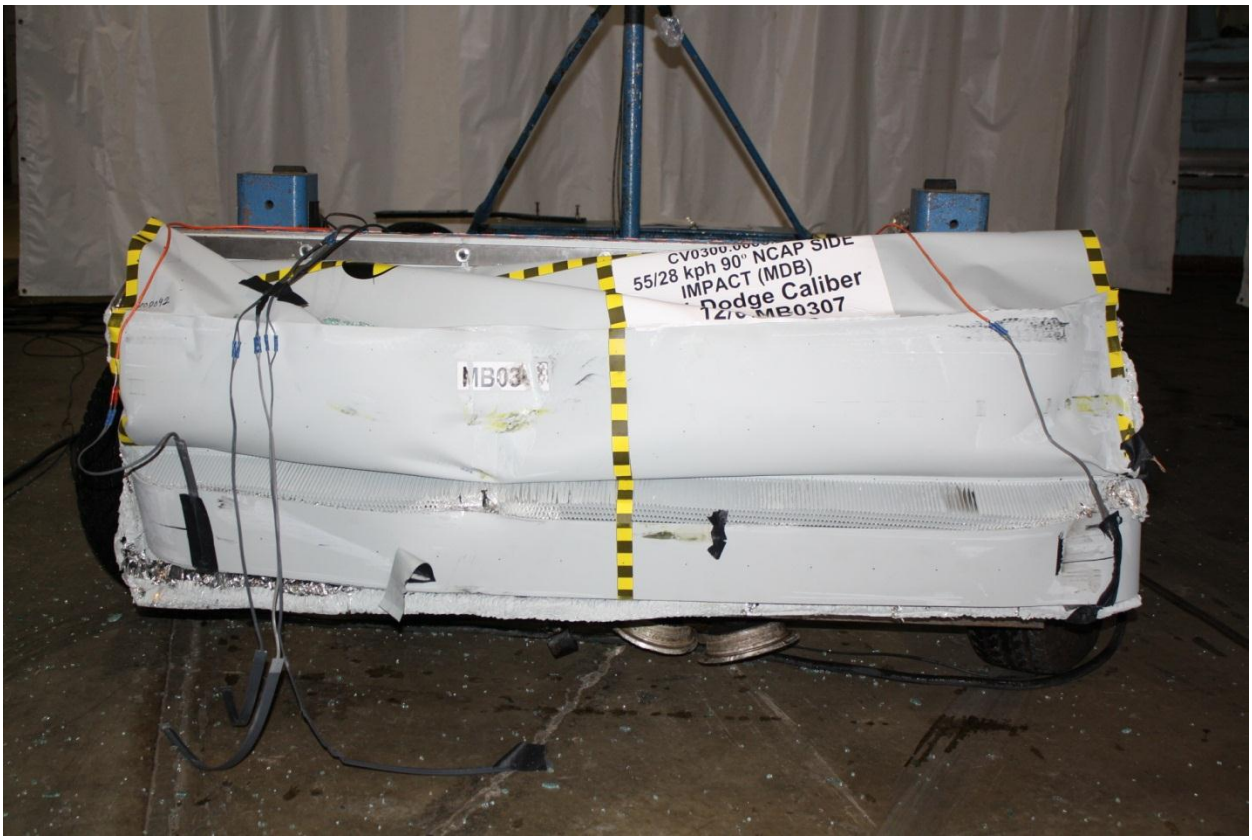


Figure A-82: Post-Test Front View of MDB Impactor Face

Figure A-83: Pre-Test Top View of MDB Impactor Face

Figure A-84: Post-Test Top View of MDB Impactor Face

Figure A-85: Pre-Test Left Side View of MDB Impactor Face

Figure A-86: Post-Test Left Side View of MDB Impactor Face

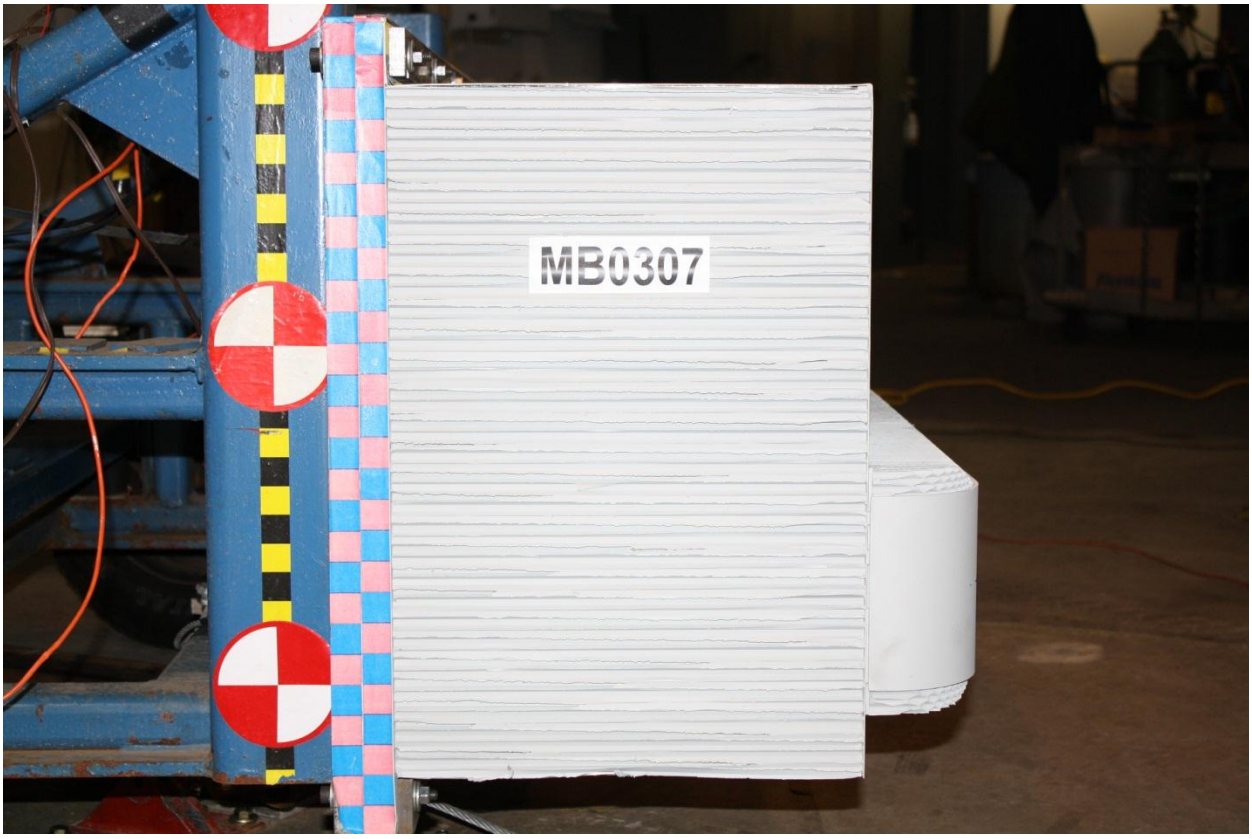


Figure A-87: Pre-Test Right Side View of MDB Impactor Face

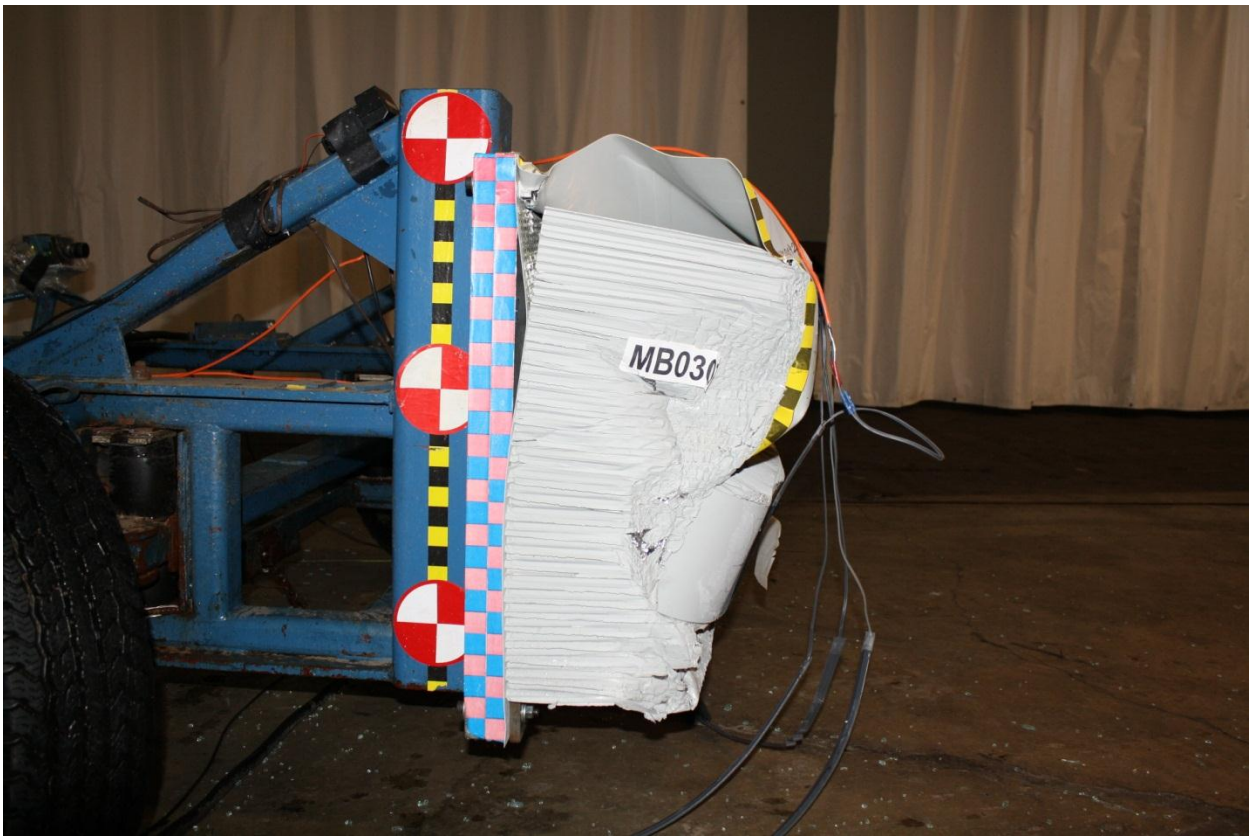


Figure A-88: Post-Test Right Side View of MDB Impactor Face

Figure A-89: Close-Up View of Vehicle's Certification Label

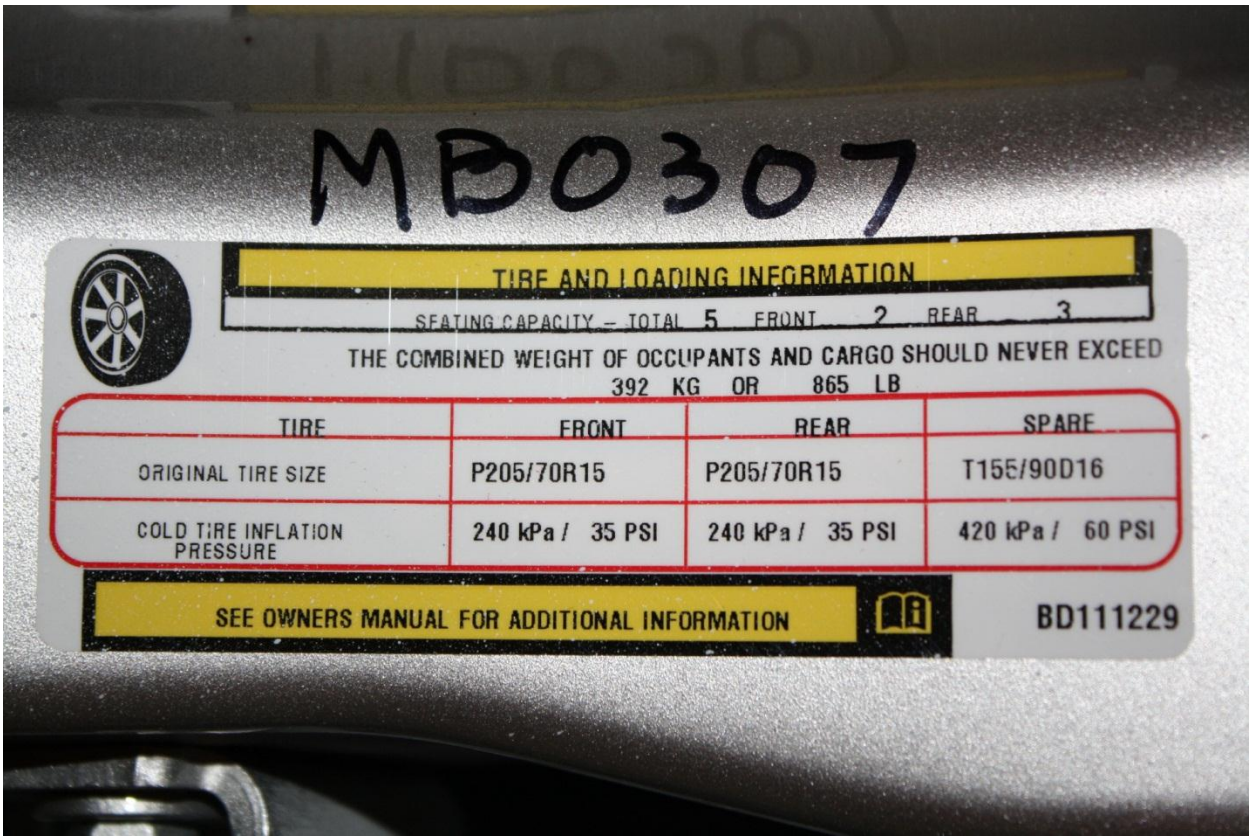


Figure A-90: Close-Up View of Vehicle's Tire Information Placard or Label

Photo Not Available

Figure A-91: Pre-Test Ballast View

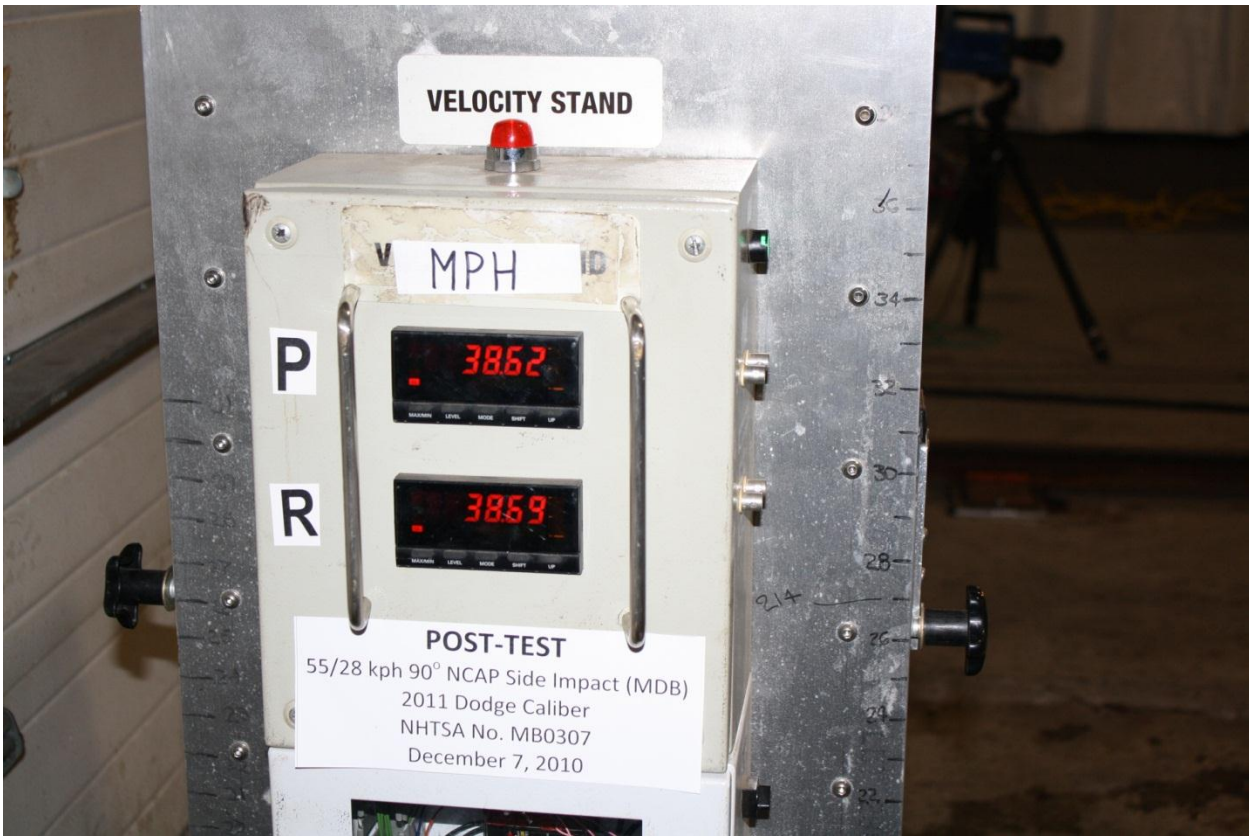


Figure A-92: Post-Test Primary and Redundant Speed Trap Read-Out

Figure A-93: FMVSS No. 301 Rollover 0°

Figure A-94: FMVSS No. 301 Rollover 90°

Figure A-95: FMVSS No. 301 Rollover 180°

Figure A-96: FMVSS No. 301 Rollover 270°

Figure A-97: FMVSS No. 301 Rollover 360°

Figure A-98: Impact Event (Impact Side)

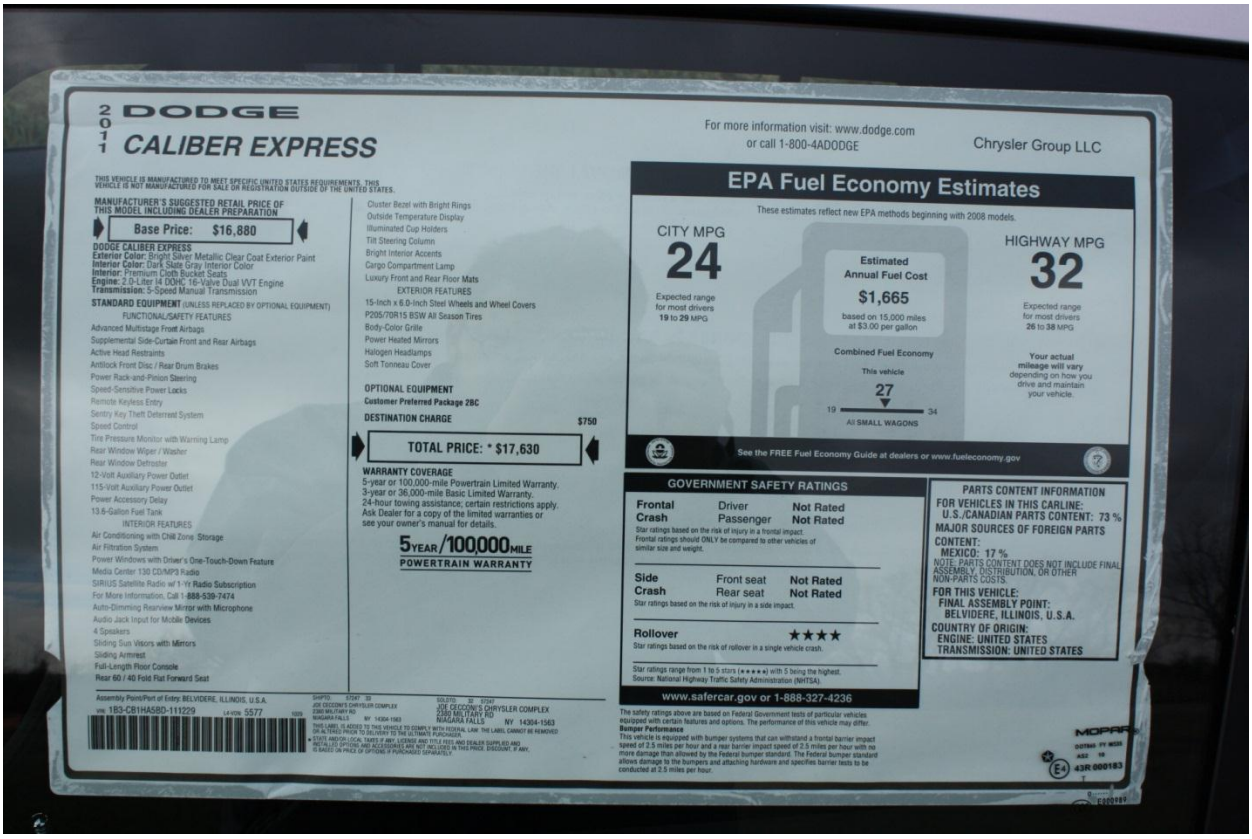


Figure A-99: Monroney Label

Photo Not Available

Information not present in Owner's Manual

Figure A-100: Driver Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

Figure A-101: Left Rear Passenger Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

APPENDIX B
DUMMY RESPONSE DATA

The following data plots shall be included in this appendix:

TABLE OF DATA PLOTS
Driver & Passenger Dummy Instrumentation Plots
FILTERED DATA

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

Driver & Passenger Dummy Instrumentation Data

Driver Lower Spine T12 Acceleration (X)
Driver Lower Spine T12 Acceleration (Y)
Driver Lower Spine T12 Acceleration (Z)
Passenger Upper Thorax Rib Deflection (Y)
Passenger Middle Thorax Rib Deflection (Y)
Passenger Lower Thorax Rib Deflection (Y)
Passenger Upper Abdomen Rib Deflection (Y)
Passenger Lower Abdomen Rib Deflection (Y)
Driver Head Acceleration Redundant (X)
Driver Head Acceleration Redundant (Y)
Driver Head Acceleration Redundant (Z)
Driver Shoulder Contact Switch
Driver Torso Contact Switch
Driver Pelvis Contact Switch
Passenger Head Acceleration Redundant (X)
Passenger Head Acceleration Redundant (Y)
Passenger Head Acceleration Redundant (Z)
Passenger Shoulder Contact Switch
Passenger Torso Contact Switch
Passenger Pelvis Contact Switch

Vehicle Instrumentation Data

Driver Side Airbag Timing
Driver Side Curtain Airbag Timing
Passenger Side Airbag Timing (if applicable)
Passenger Side Curtain Airbag Timing (if different from Driver)
Right Side Sill at Front Seat Acceleration (X)
Right Side Sill at Front Seat Acceleration (Y)
Right Side Sill at Front Seat Acceleration (Z)
Right Side Sill at Rear Seat Acceleration (X)
Right Side Sill at Rear Seat Acceleration (Y)
Right Side Sill at Rear Seat Acceleration (Z)
Rear Floorpan Above Axle Acceleration (X)
Rear Floorpan Above Axle Acceleration (Y)
Rear Floorpan Above Axle Acceleration (Z)
Left Side Sill at Front Seat Acceleration (Y)
Left Side Sill at Rear Seat Acceleration (Y)
Right Rear Occupant Compartment Acceleration (Y)
Lower A-Post Acceleration (Y)
Upper A-Post Acceleration (Y)
Lower B-Post Acceleration (Y)
Upper B-Post Acceleration (Y)
Front Seat Track Acceleration (Y)

Rear Seat Track Acceleration (Y)
Vehicle Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)

MDB Instrumentation Data

MDB Center of Gravity Acceleration (X)
MDB Center of Gravity Acceleration (Y)
MDB Center of Gravity Acceleration (Z)
MDB Rear Acceleration (X)
MDB Rear Acceleration (Y)
Left MDB Contact Switch
Right MDB Contact Switch

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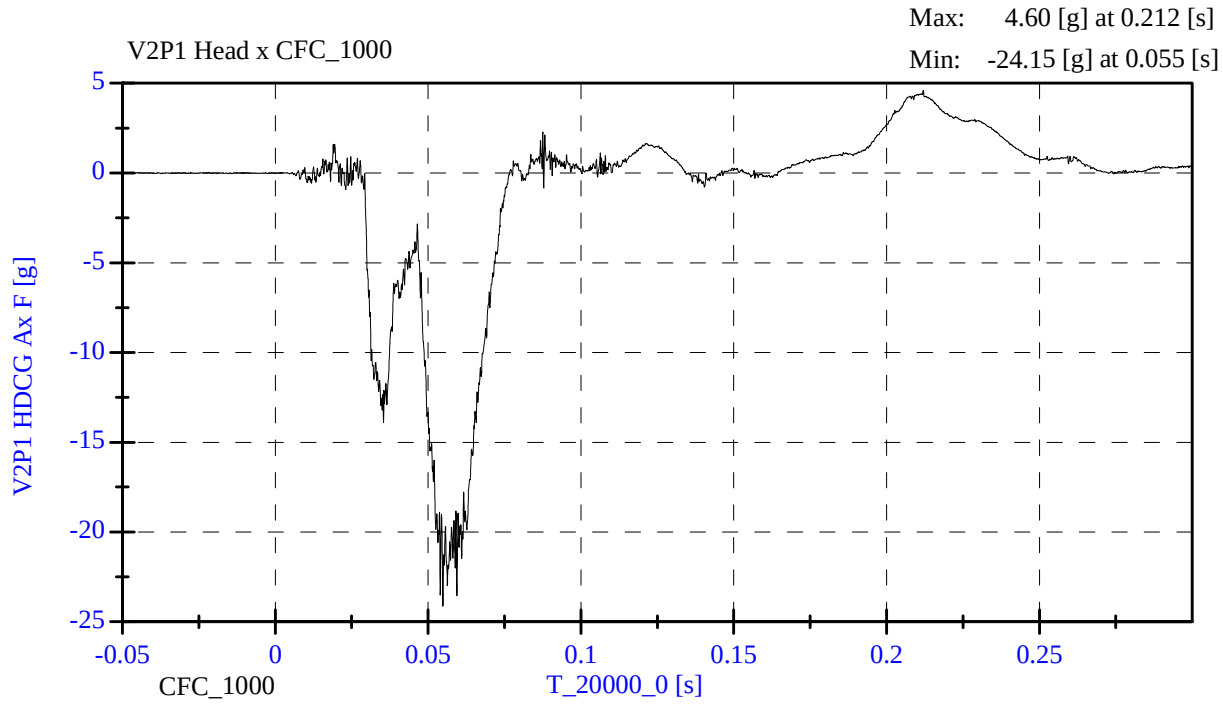
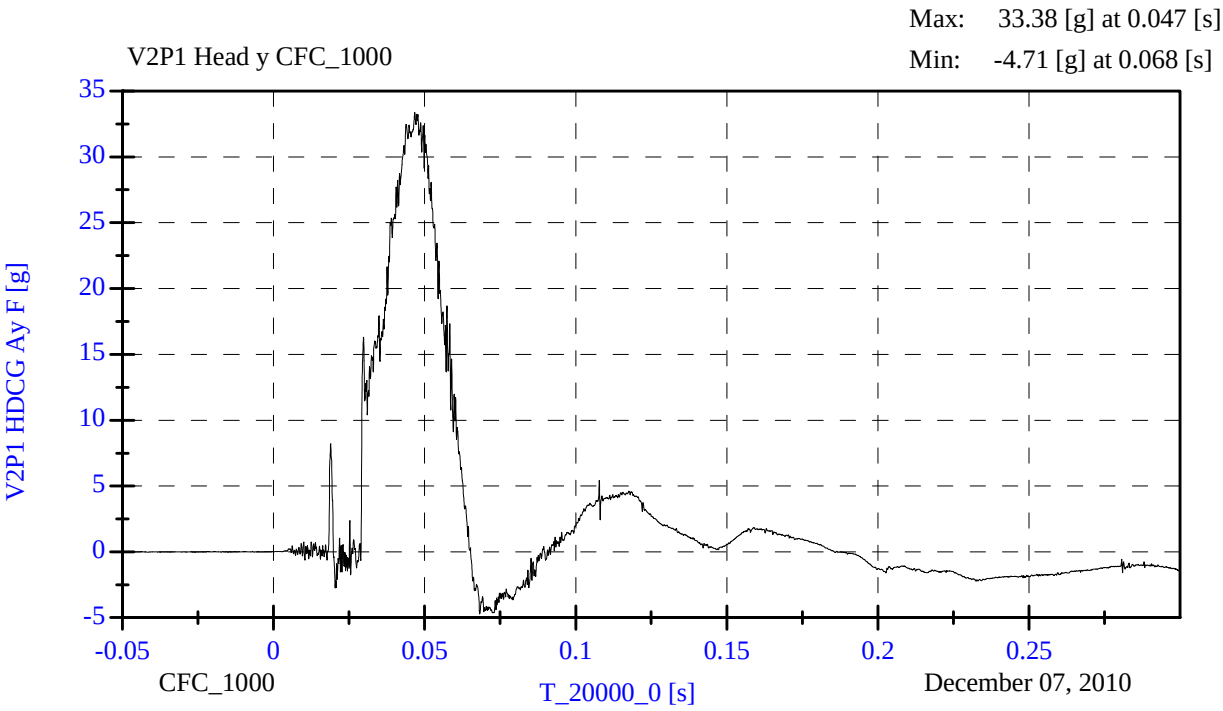
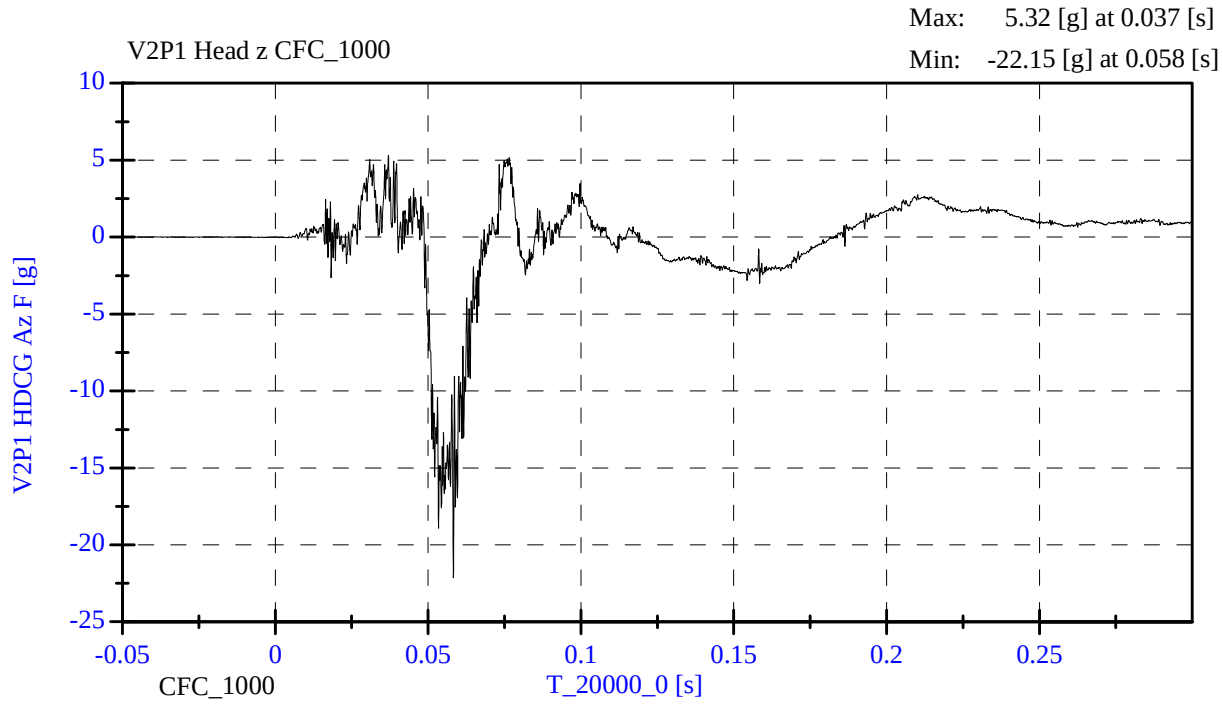
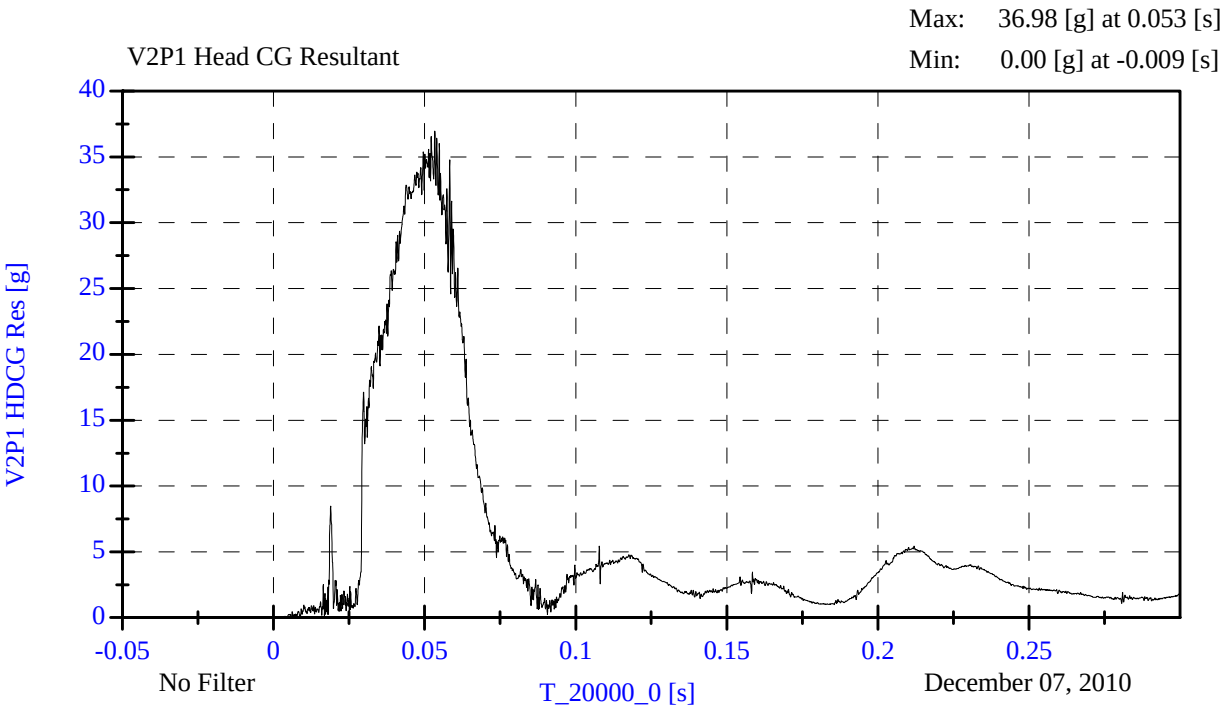


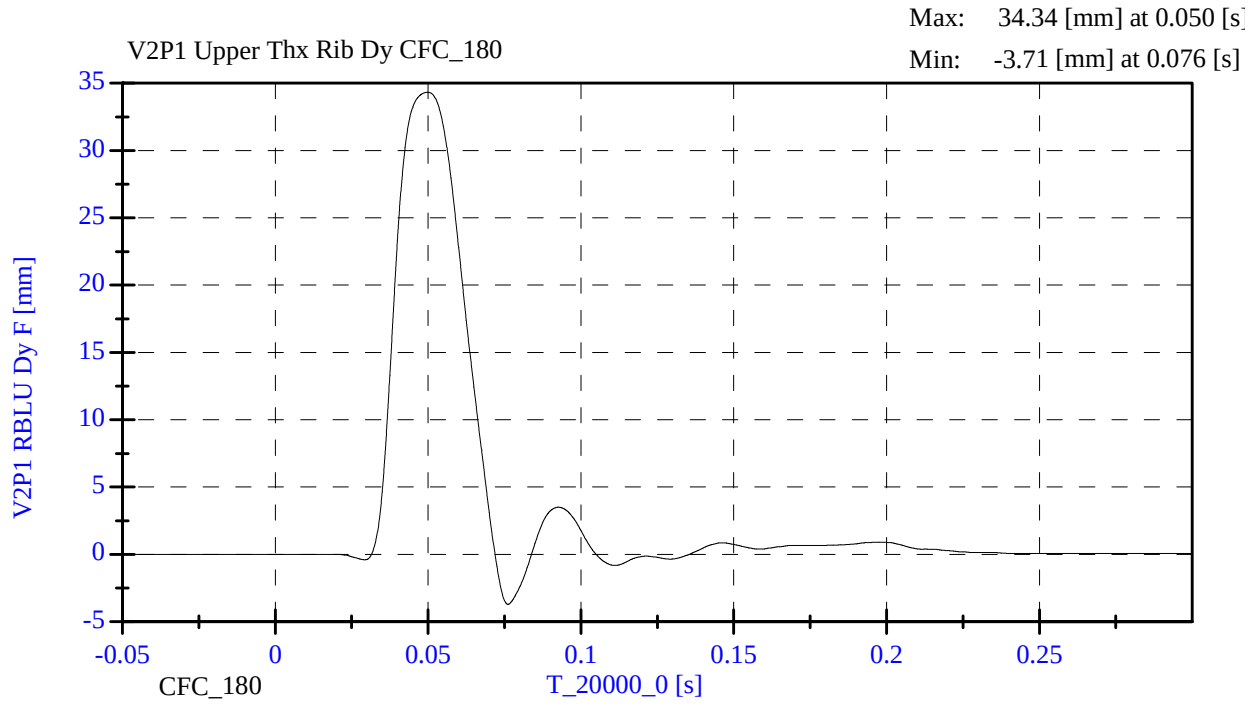


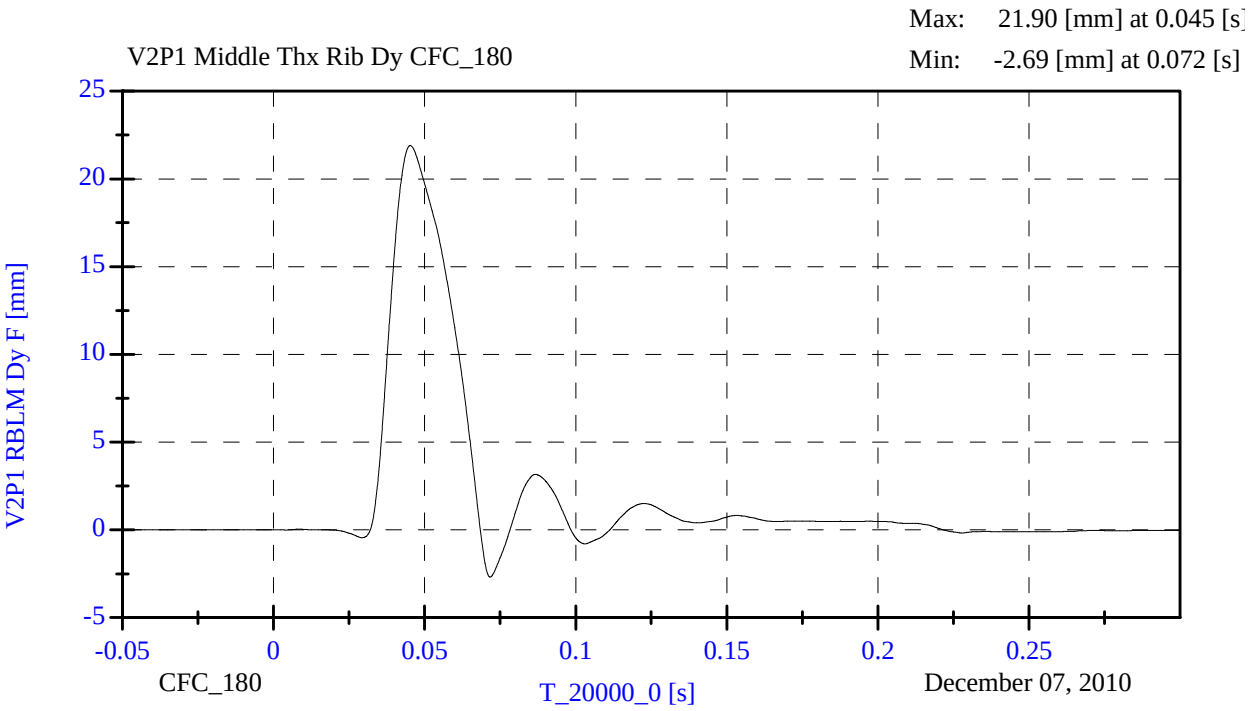
MB0307 2011 Dodge Caliber SNCAP



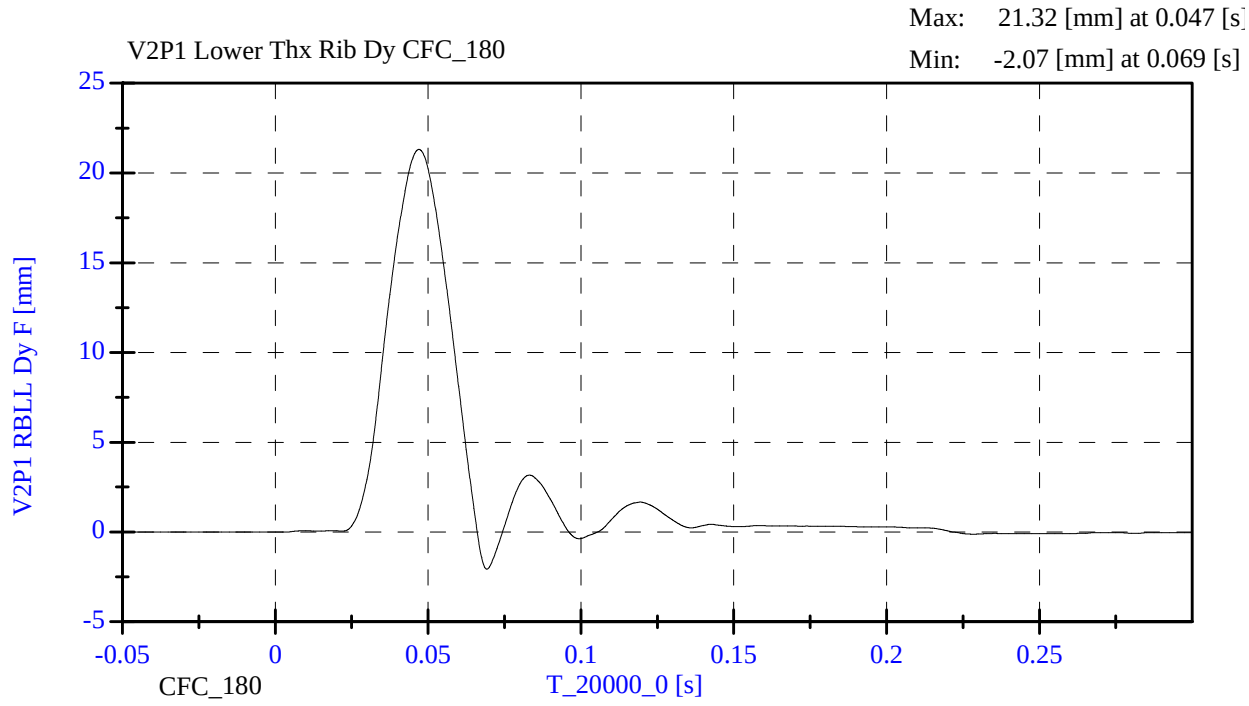


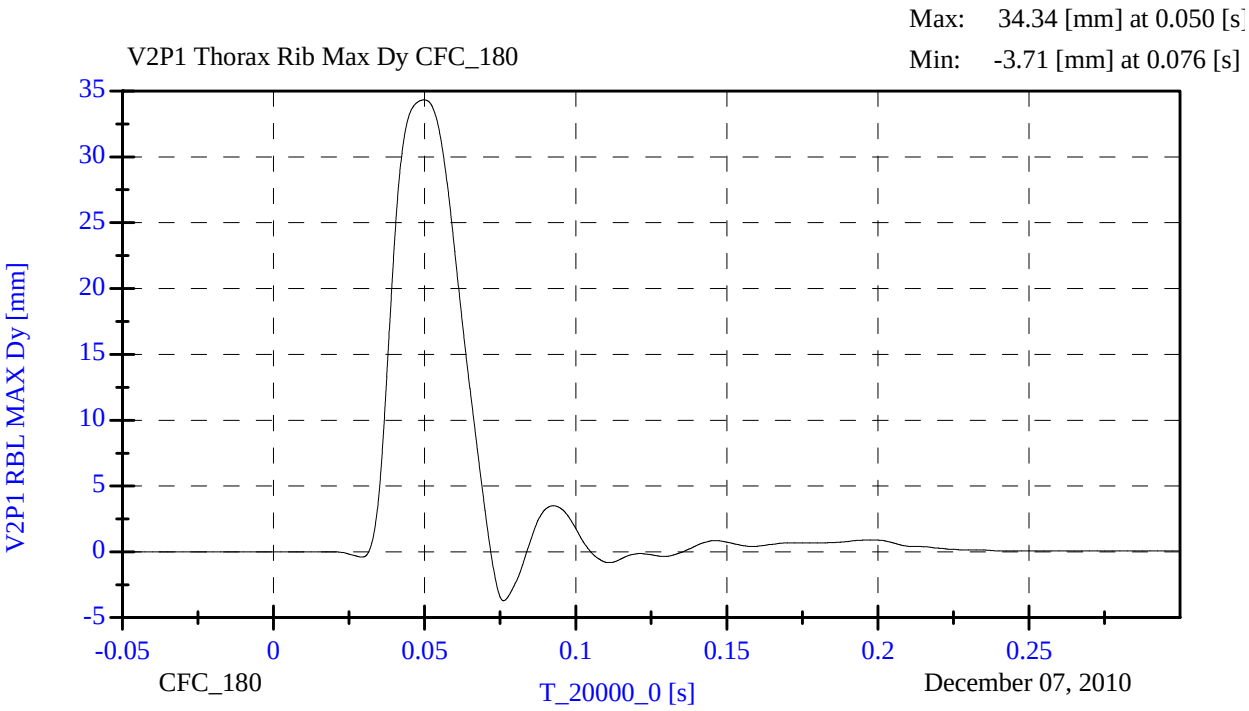
MB0307 2011 Dodge Caliber SNCAP



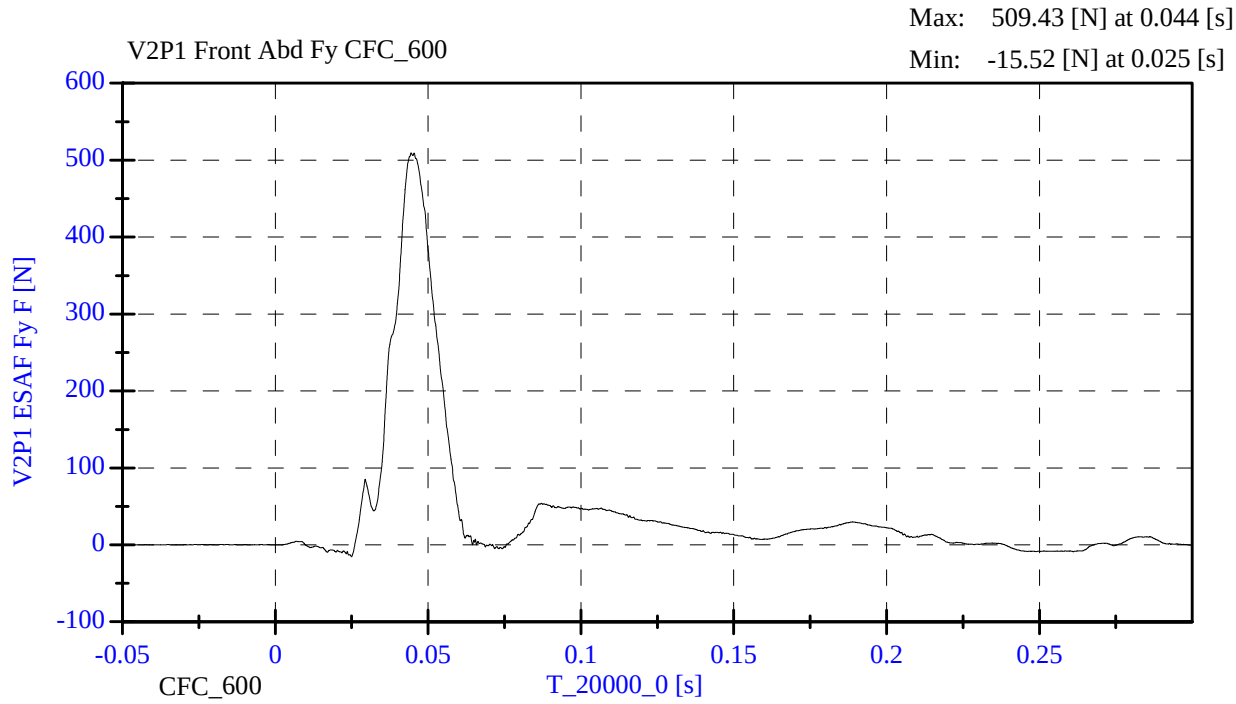


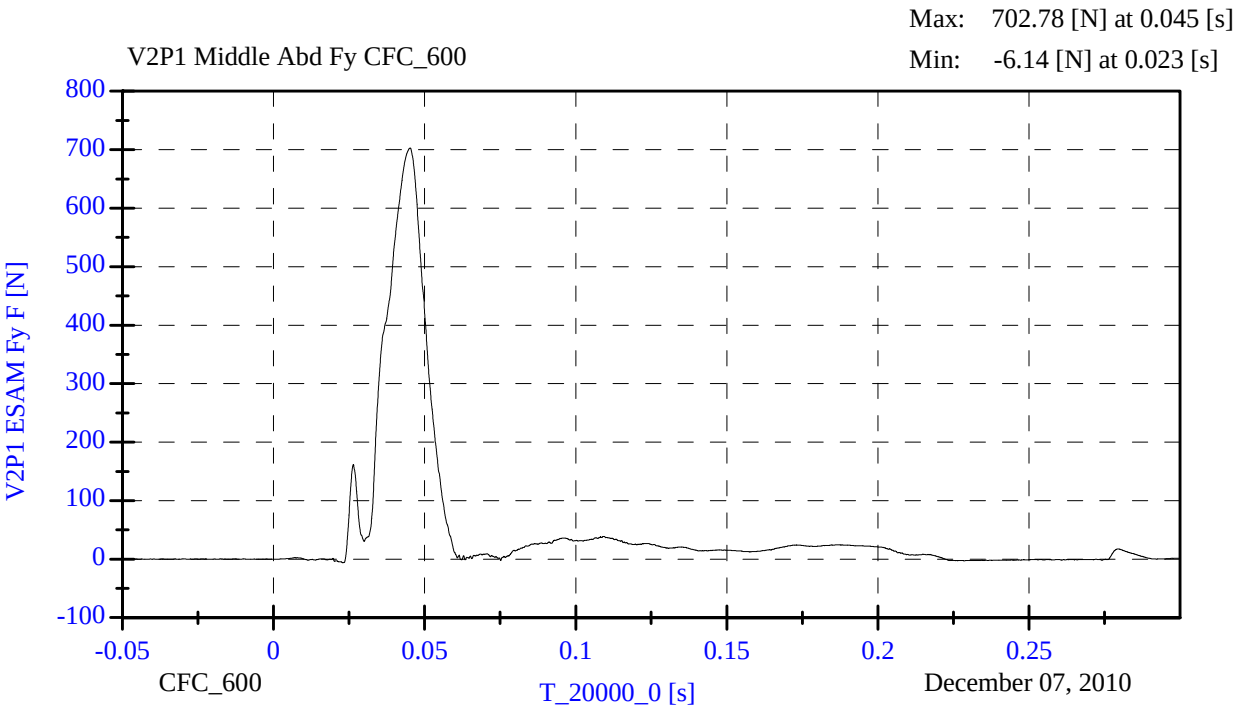
MB0307 2011 Dodge Caliber SNCAP





MB0307 2011 Dodge Caliber SNCAP





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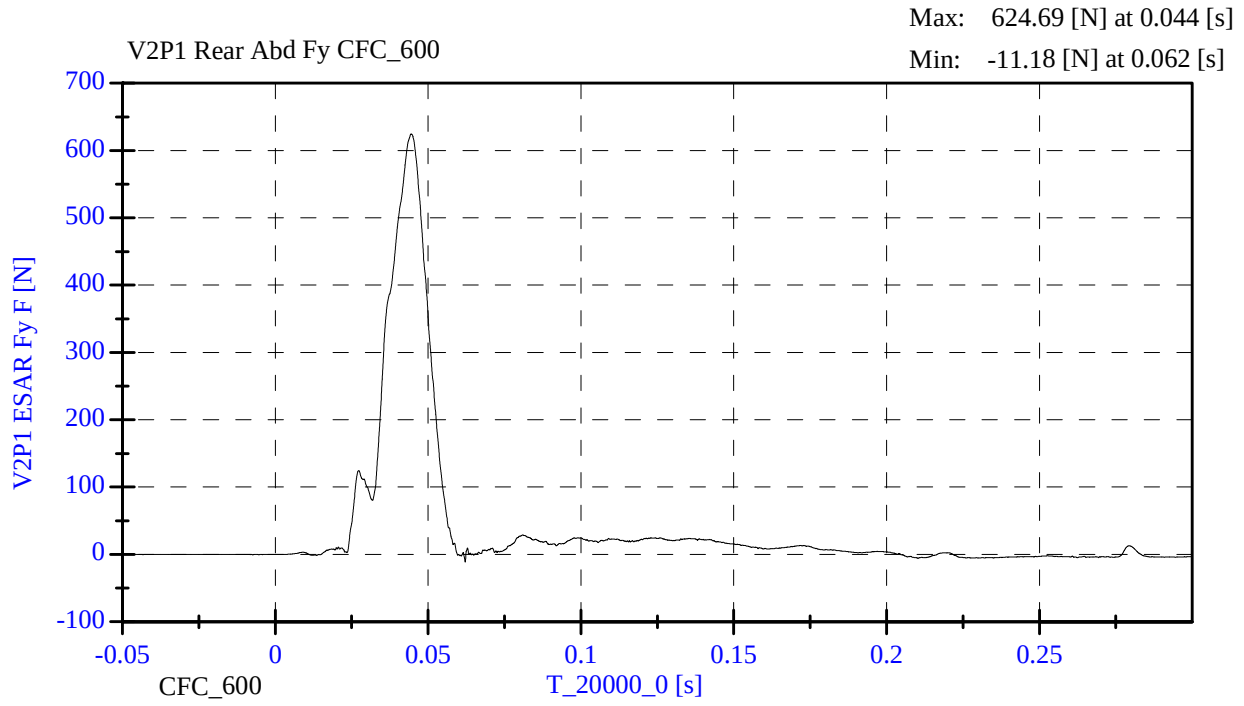
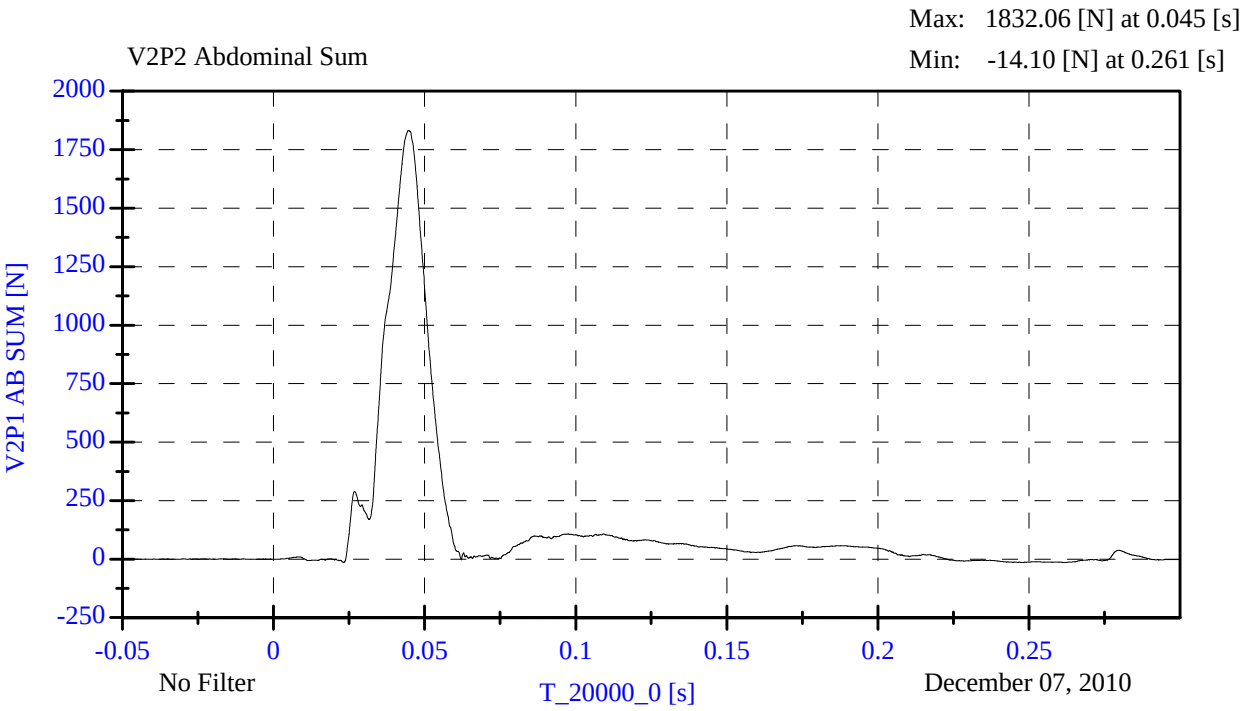
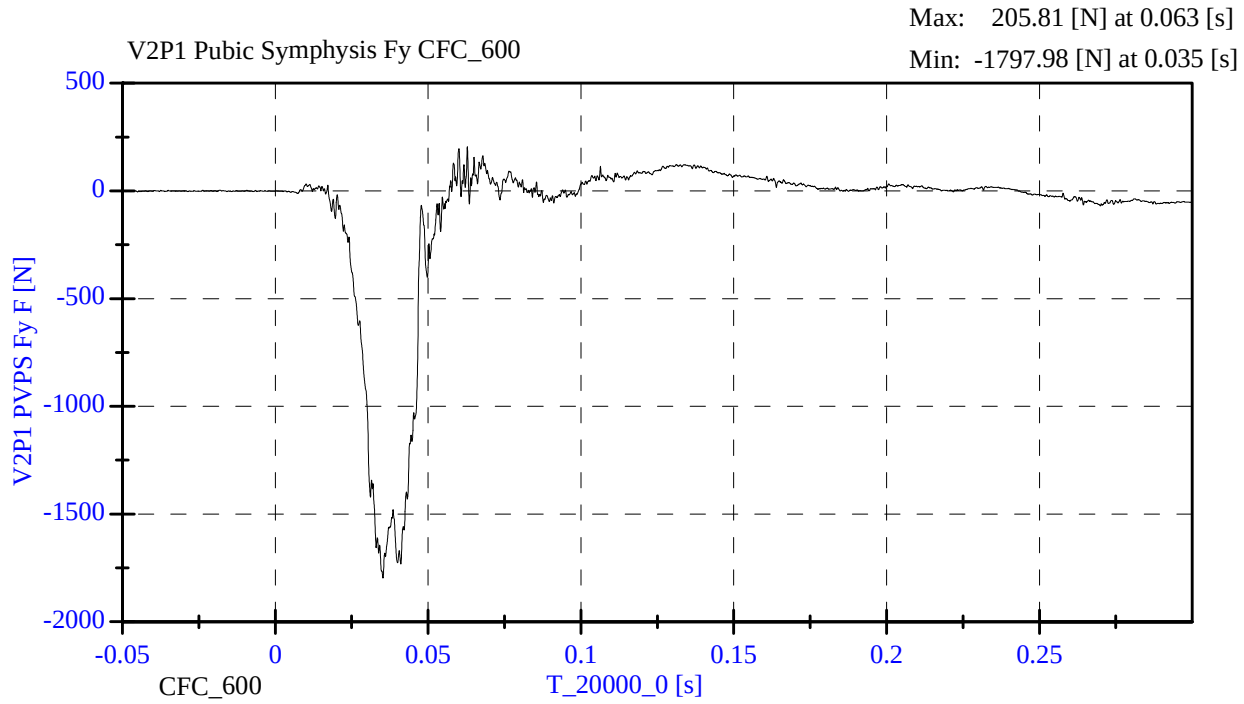
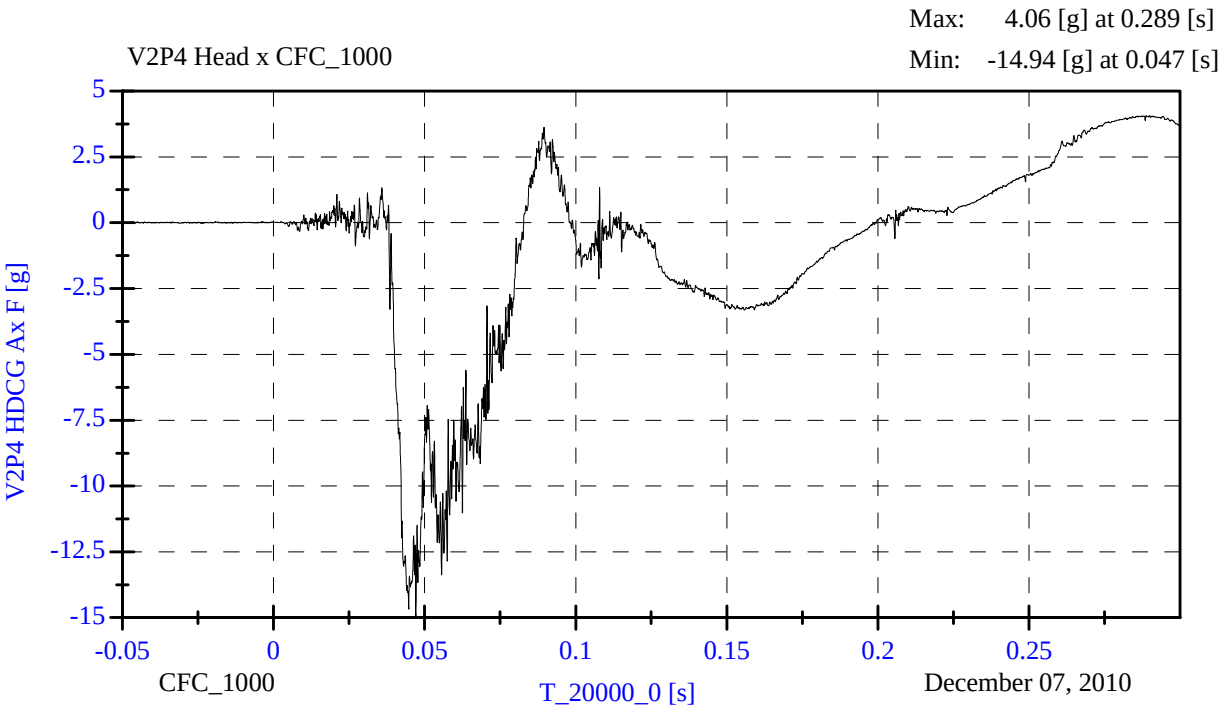


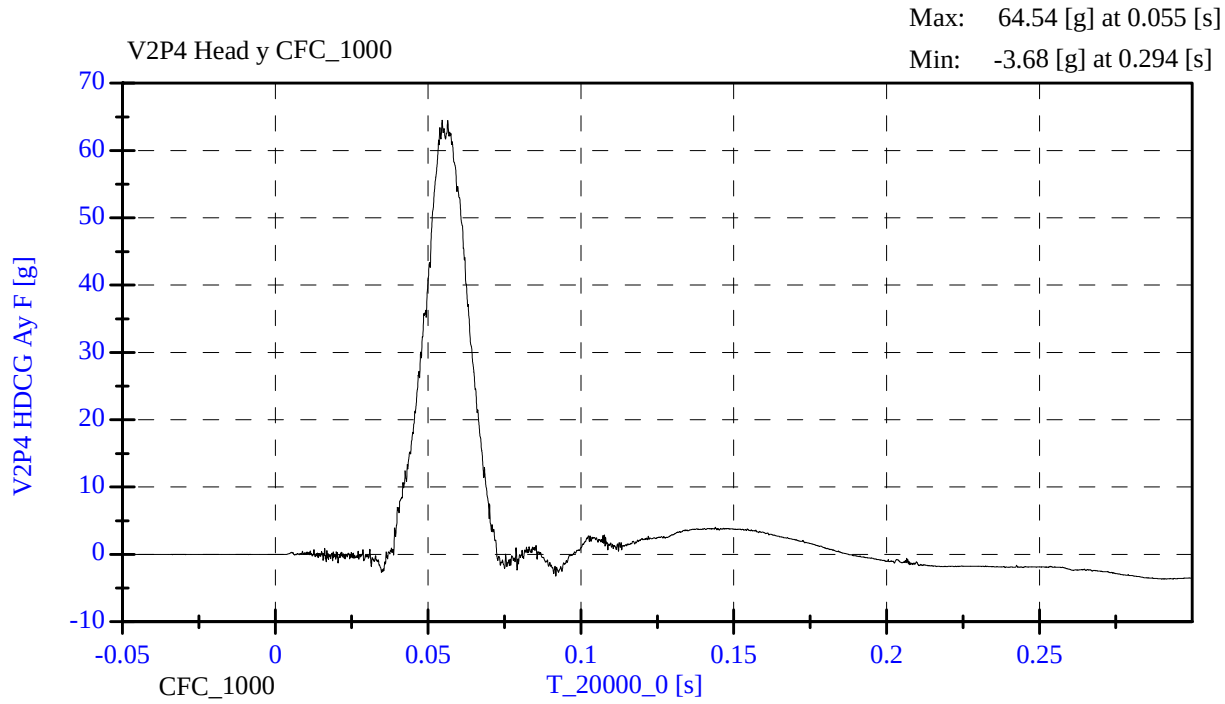


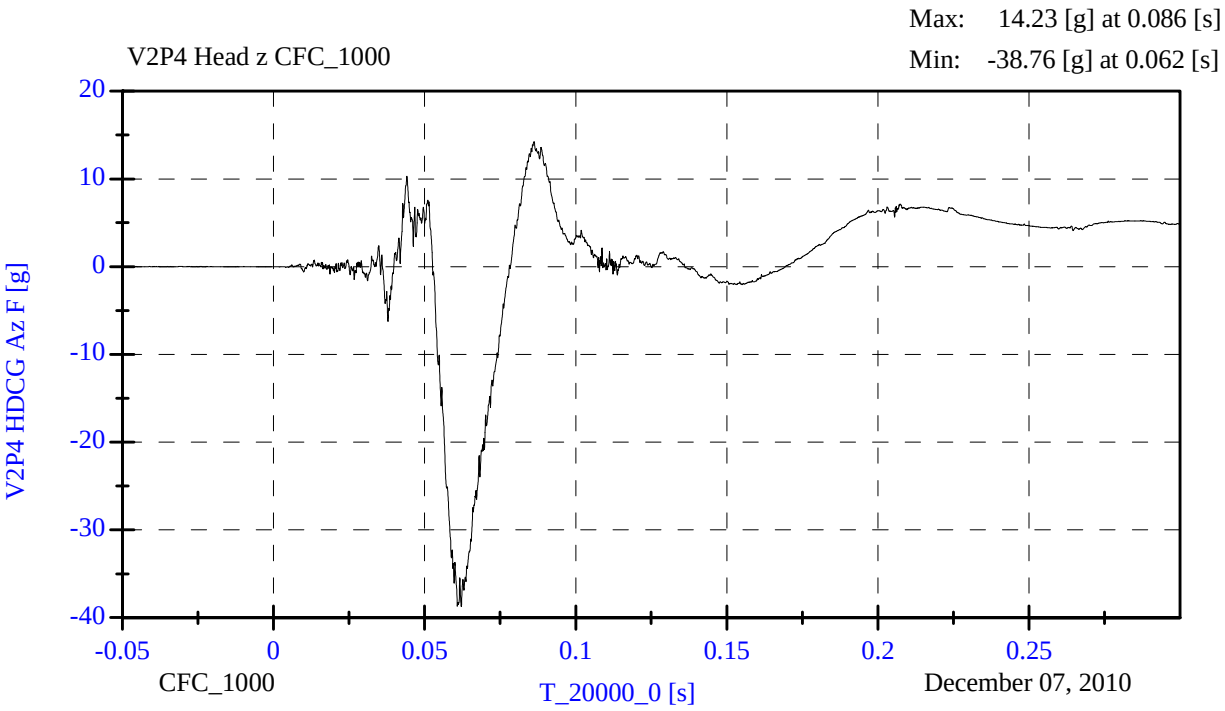
MB0307 2011 Dodge Caliber SNCAP



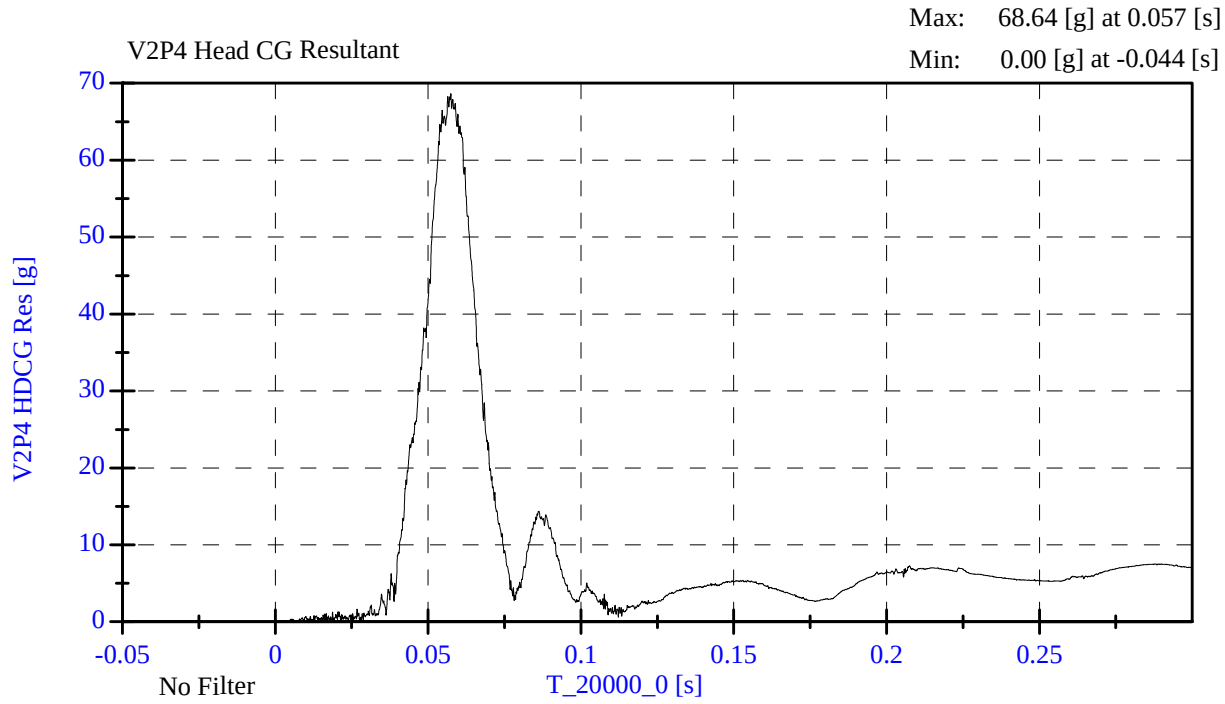


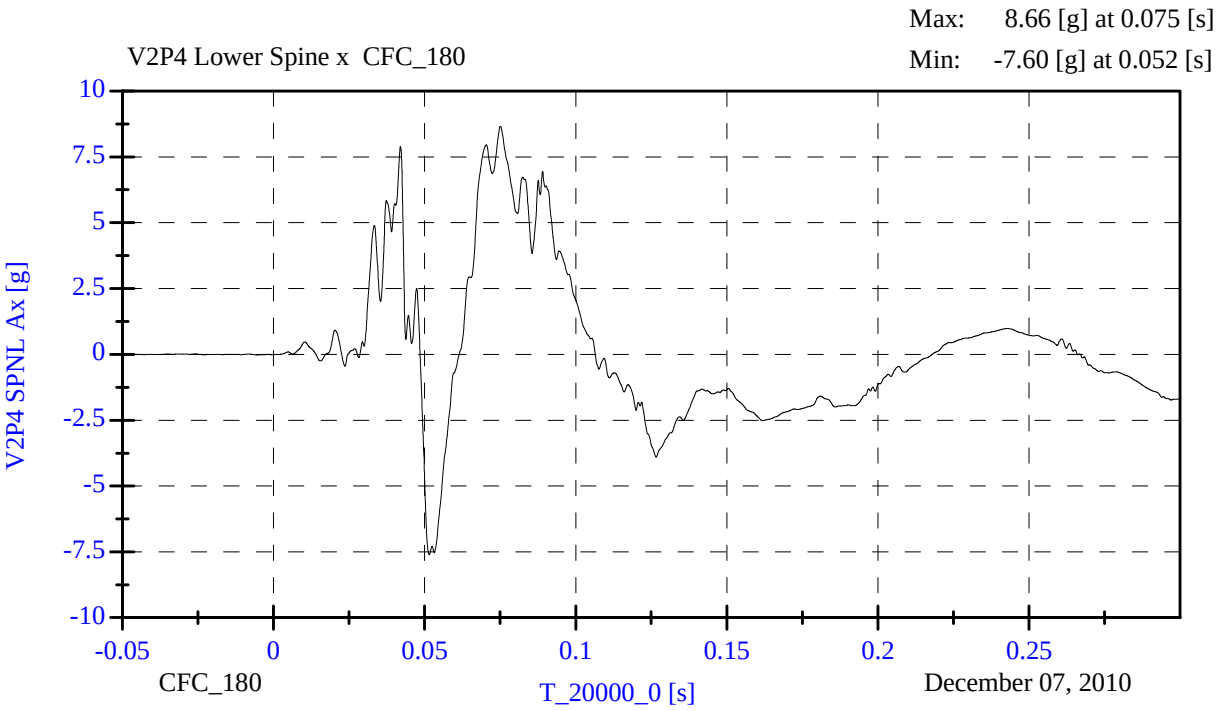
MB0307 2011 Dodge Caliber SNCAP





MB0307 2011 Dodge Caliber SNCAP





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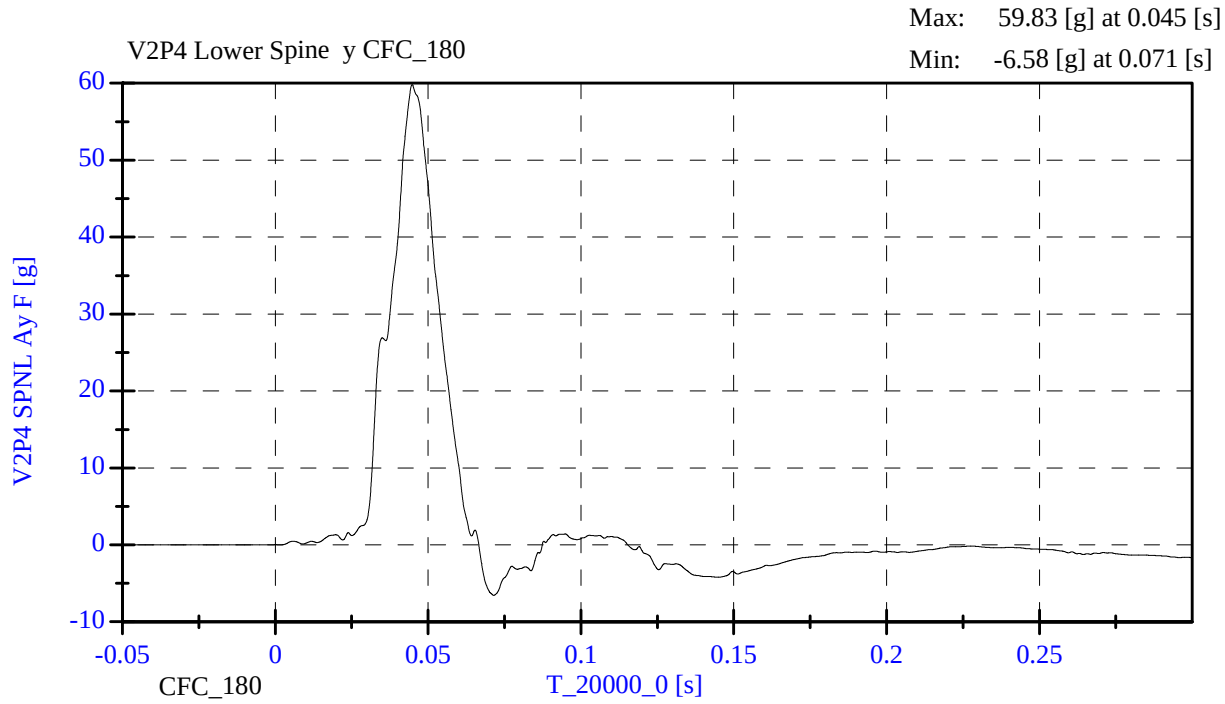

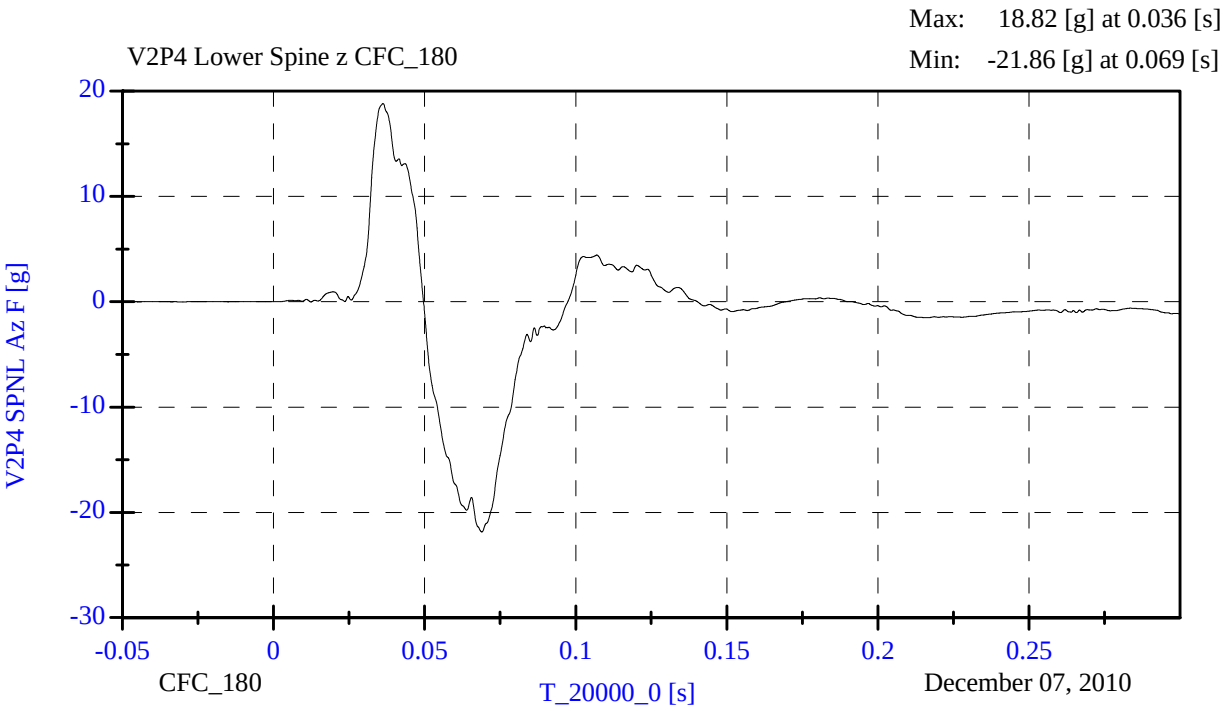

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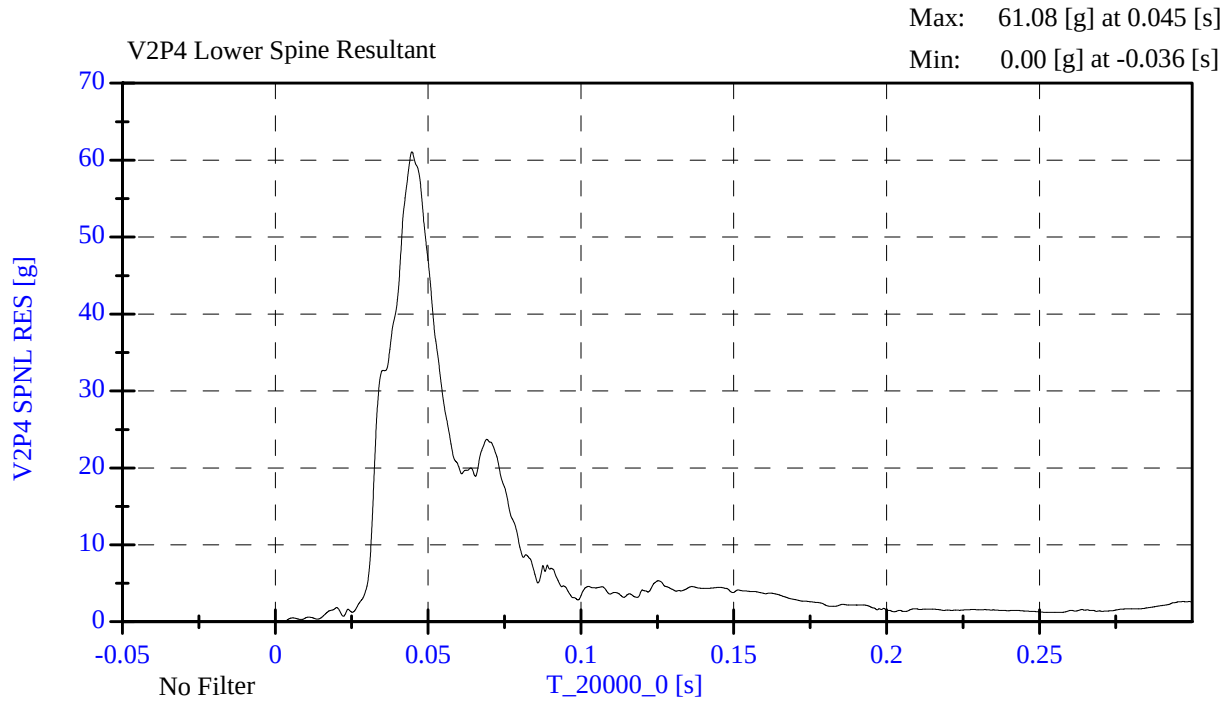

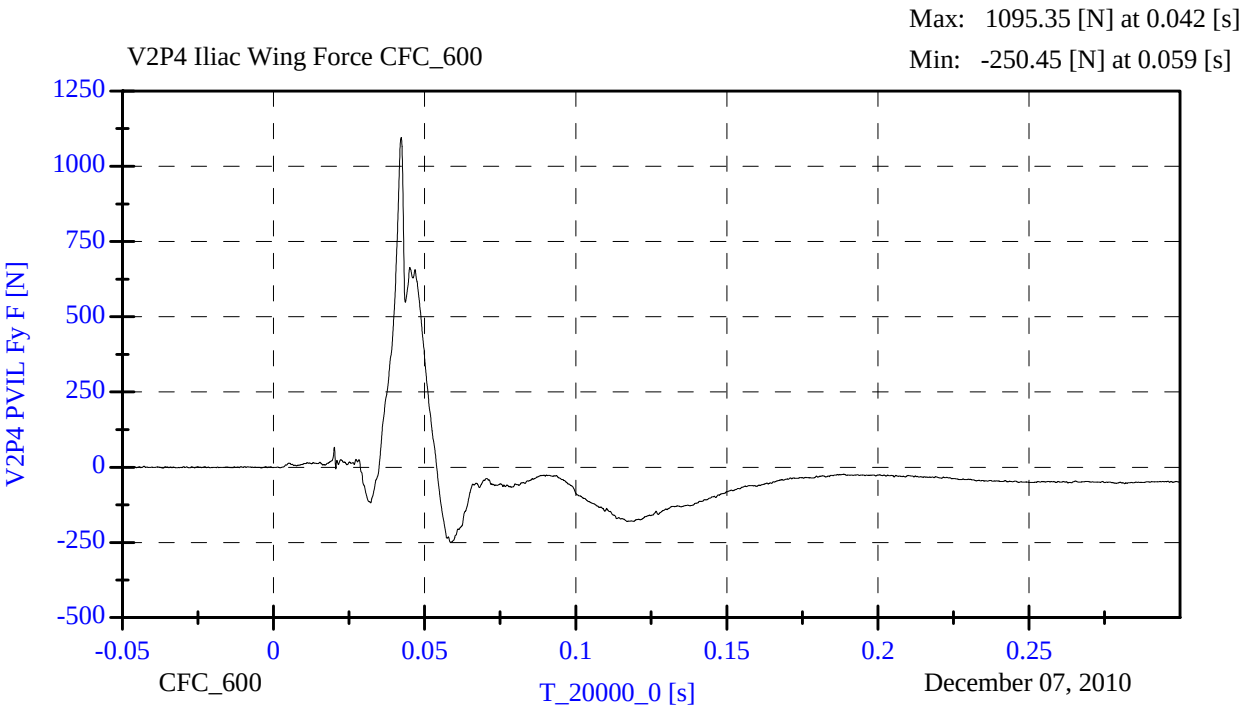

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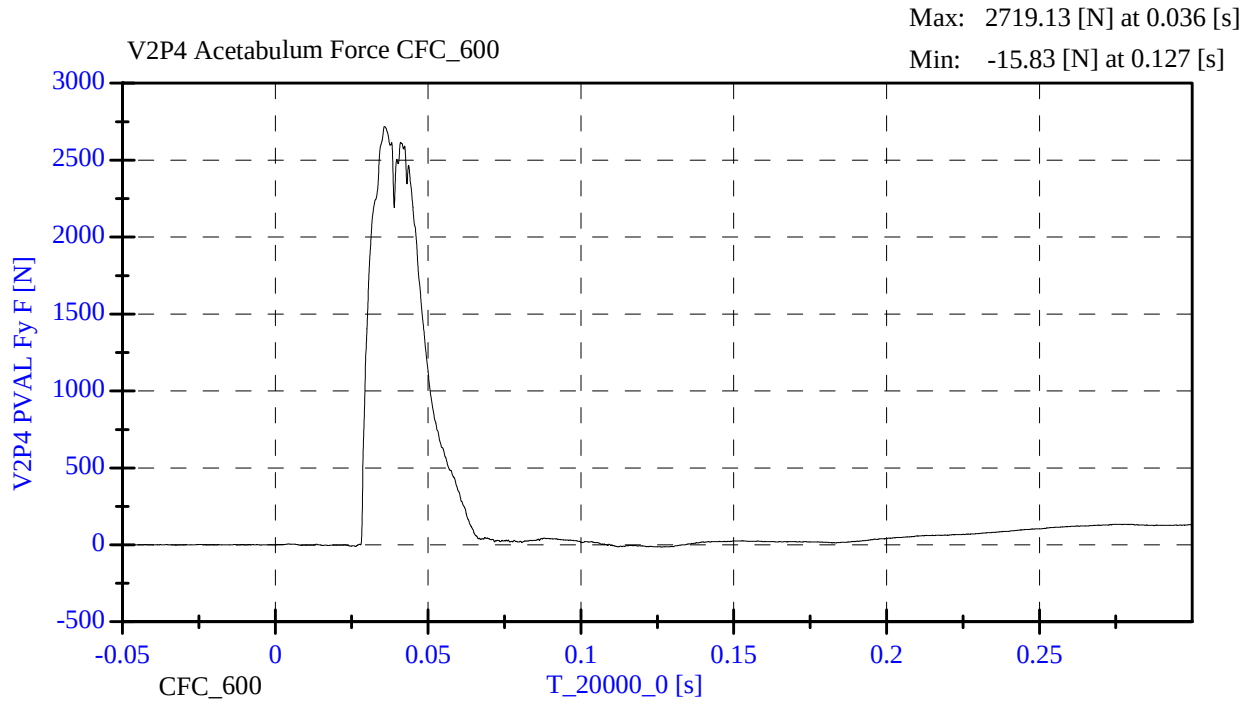

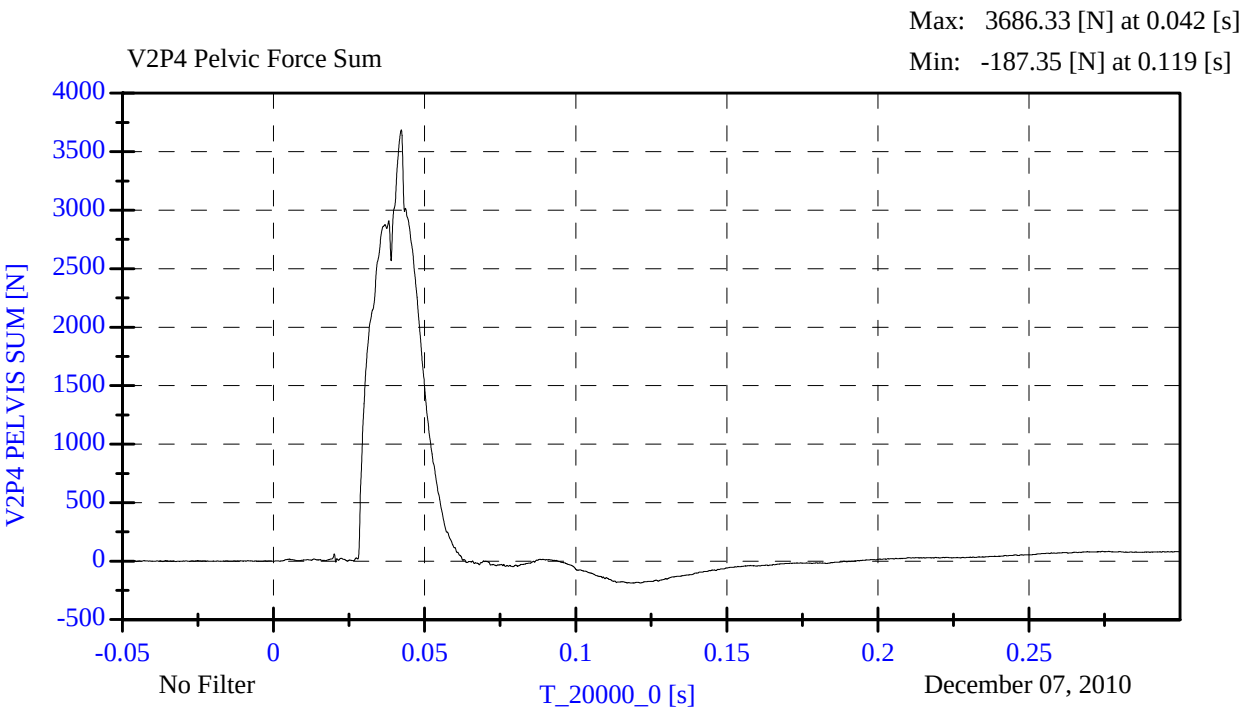

APPENDIX C

DUMMY CALIBRATION DATA

CALIBRATION TEST RESULTS

PRE-TEST

Es-2re No: 033

CONFIGURED FOR LEFT SIDE IMPACT

Calspan - Transportation Research Group
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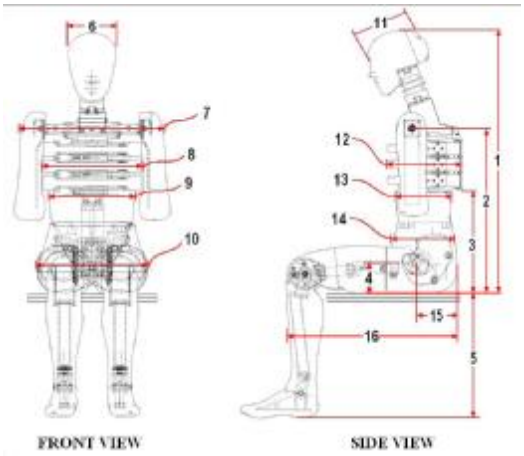
4455 Genesee Street, Buffalo, New York 14225 - Phone (716)632-7500

ES-2re External Measurements

NHTSA SN F033



Dim. No.	Description	Specification (mm)	Result (mm)	Pass/Fail
1	Sitting Height	900-918	909	Pass
2	Seat to Shoulder Joint	558-572	565	Pass
3	Seat to Lower Face of Thoracic Spine Box	346-356	354	Pass
4	Seat to Hip Joint (center of bolt)	97-103	100	Pass
5	Sole to Seat, Sitting	433-451	444	Pass
6	Head Width	152-158	158	Pass
7	Shoulder/Arm Width	461-479	470	Pass
8	Thorax Width	322-332	323	Pass
9	Abdomen Width	273-287	282	Pass
10	Pelvis Lap Width	359-373	369	Pass
11	Head Depth	196-206	201	Pass
12	Thorax Depth	262-272	267	Pass
13	Abdomen Depth	194-204	199	Pass
14	Pelvis Depth	235-245	239	Pass
15	Back of Buttocks to Hip Joint (center of bolt)	150-160	157	Pass
16	Back of Buttocks to Front Knee	597-615	603	Pass

Technician: SZ

Date: 11/30/2010

Calspan - Transportation Research Group
www.calspan.com
4455 Genesee Street, Buffalo, New York 14225 - Phone (716)632-7500

VERIFICATION REPORT

Test Name:	**Head Drop**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Head Drop**	Test Date:	**11/29/2010**
Test Number:	**1**	Test Time:	**10:43:48 AM**

Component Part Number	Component Serial Number
455-1007	**8473**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.0**	deg C	P
Humidity	10	--	70	**22**	%RH	P
Resultant Acceleration	125	--	155	**142**	g	P
Oscillation	0.0	--	15.0	**7.9**	%	P
Fore-Aft Acceleration	-15.00	--	15.00	**7.33**	g	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Endevco	**7264-2000**	**P51681**	**9/20/2010**
Endevco	**7264-2000**	**P52017**	**8/20/2010**
Endevco	**7264-2000**	**P51695**	**9/20/2010**

Test ID: **Head Drop** Test Time: **10:43:48 AM** Test Date: **11/29/2010**

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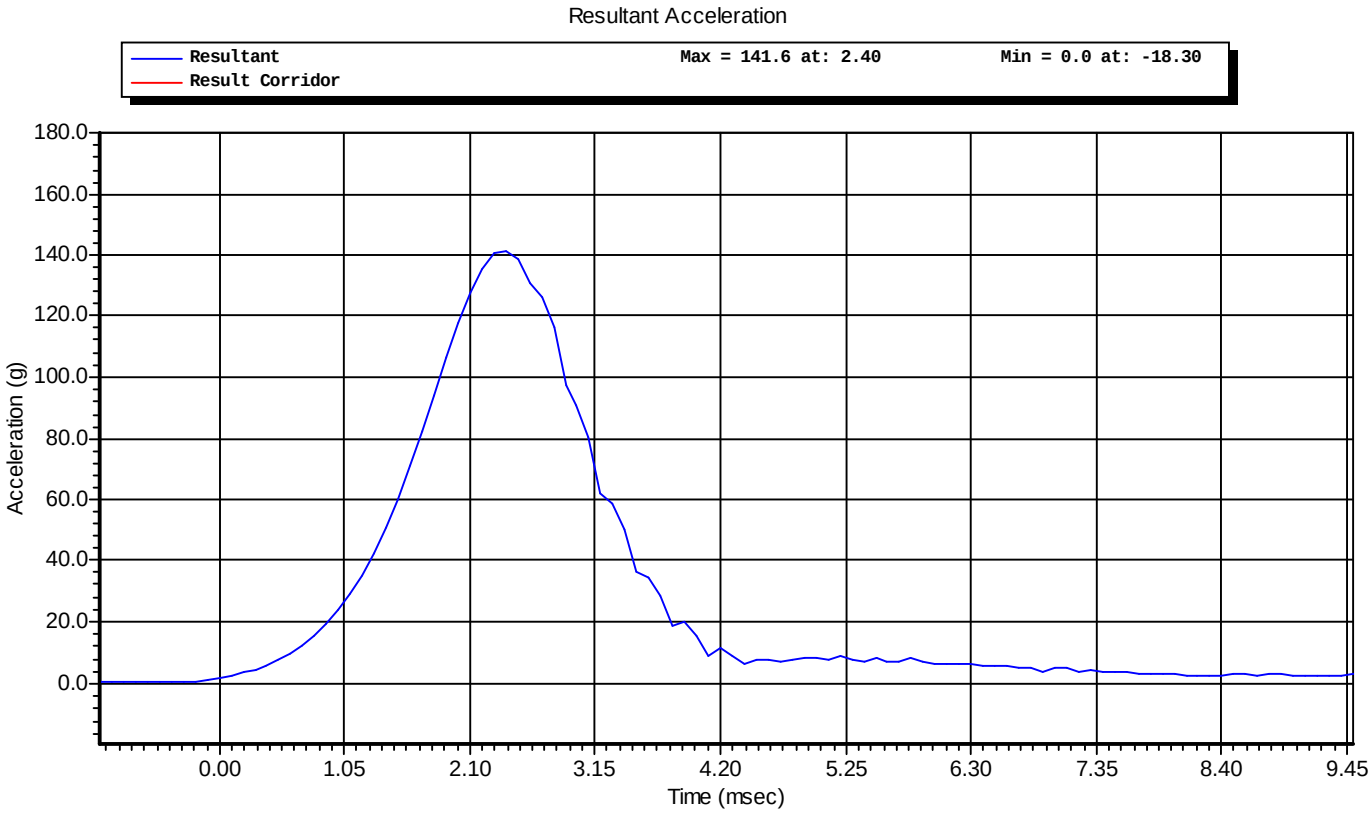
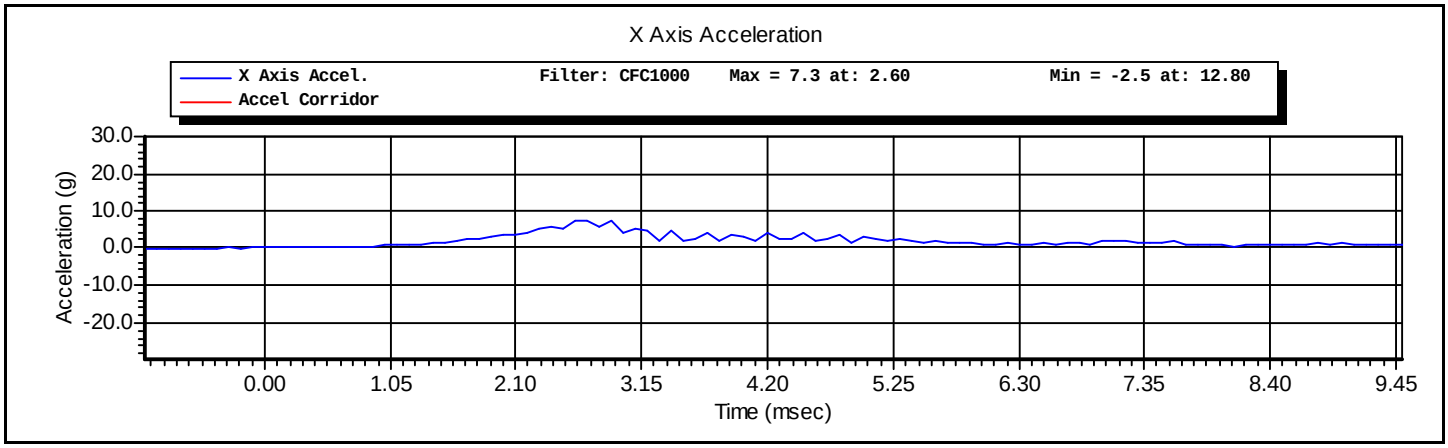
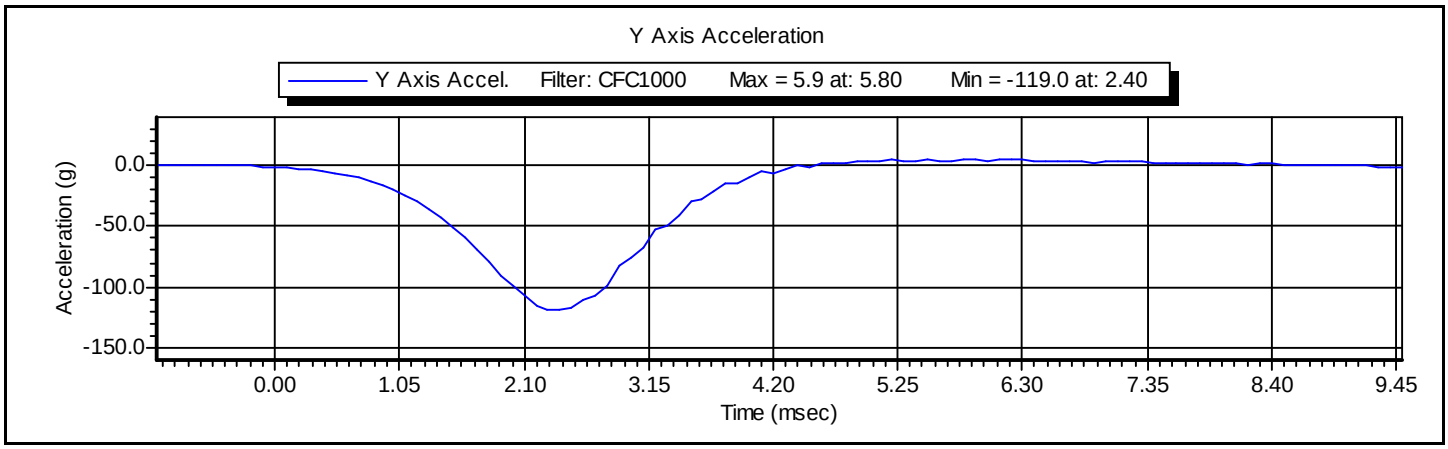
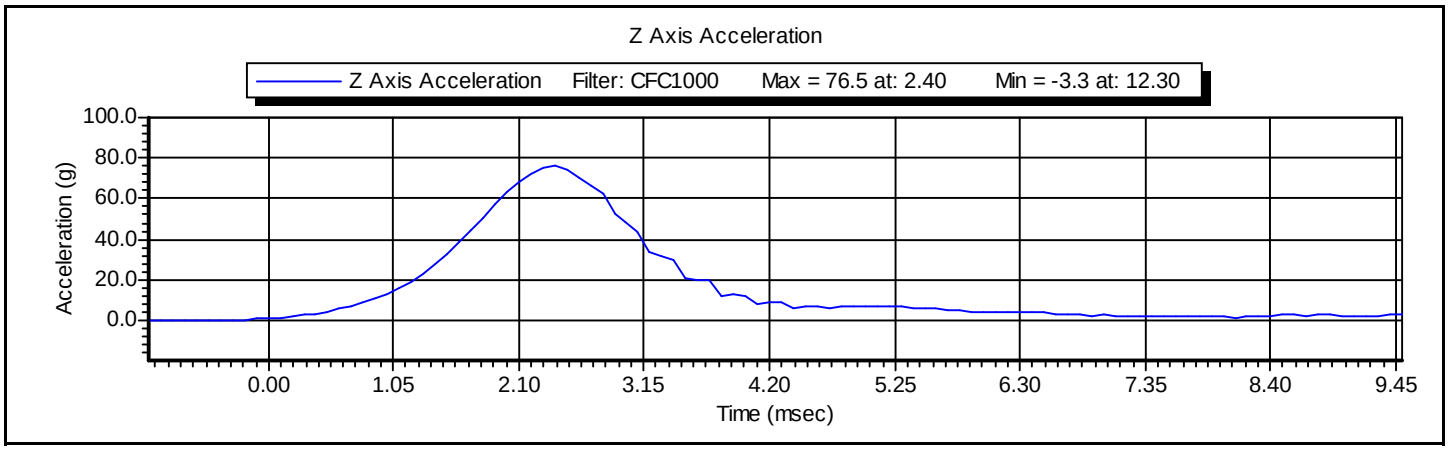
4455 Genesee Street, Buffalo, New York 14225 - Phone (716)632-7500

Test Name:	**Head Drop**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Head Drop**	Test Date:	**11/29/2010**
Test Number:	**1**	Test Time:	**10:43:48 AM**









Test ID: **Head Drop** Test Time: **10:43:48 AM** Test Date: **11/29/2010**

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4455 Genesee Street, Buffalo, New York 14225 - Phone (716)632-7500

VERIFICATION REPORT

Test Name:	**Neck Flexion**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Neck Flexion**	Test Date:	**11/29/2010**
Test Number:	**2**	Test Time:	**2:14:45 PM**

Component Part Number	Component Serial Number
455-2002	**07085**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.0**	deg C	P
Humidity	10	--	70	**22**	%RH	P
Velocity	3.30	--	3.50	**3.43**	m/s	P
Maximum Neck Flexion Angle	49.0	--	59.0	**51.5**	degrees	P
Time At Maximum Neck Flexion	54.0	--	66.0	**57.5**	ms	P
Decay to Zero Degrees	53.0	--	88.0	**58.9**	ms	P
Velocity Corridor		--				P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

Calspan - Transportation Research Group
www.calspan.com
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VERIFICATION REPORT

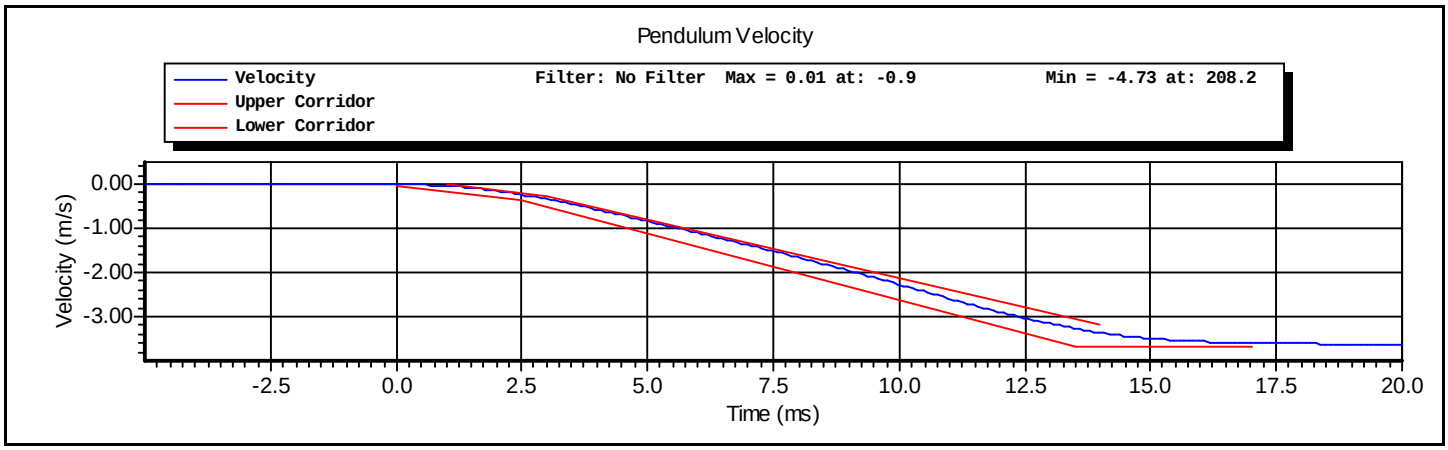
REFERENCE EQUIPMENT

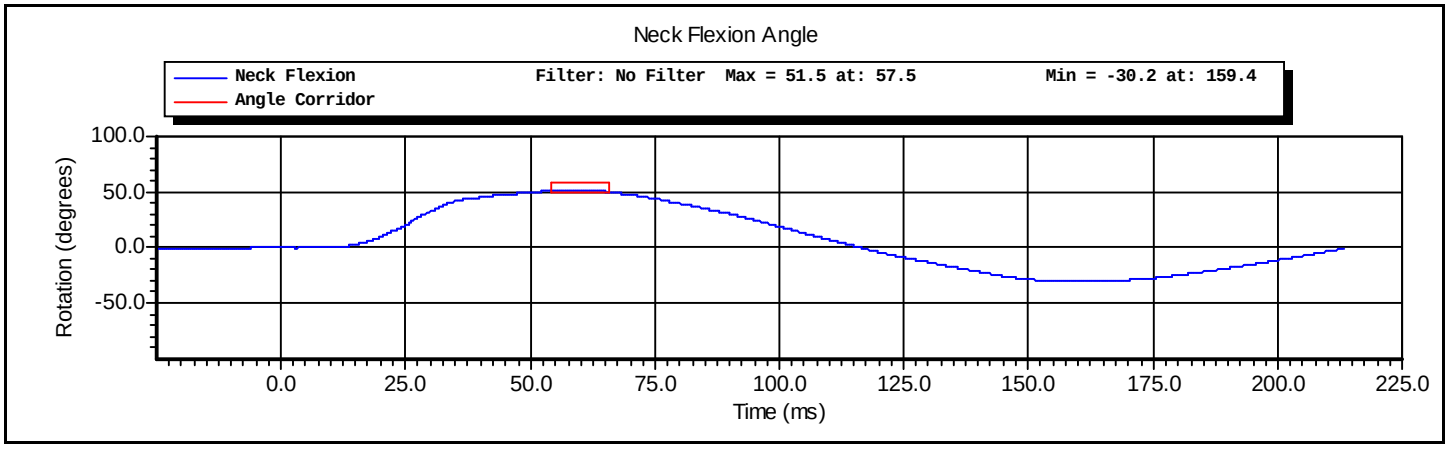
Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7231CT**	**C16510**	**10/21/2010**
DentonATD	**7000428**	**094**	**4/27/2010**
DentonATD	**7000428**	**095**	**4/27/2010**
DentonATD	**7000428**	**093**	**4/27/2010**

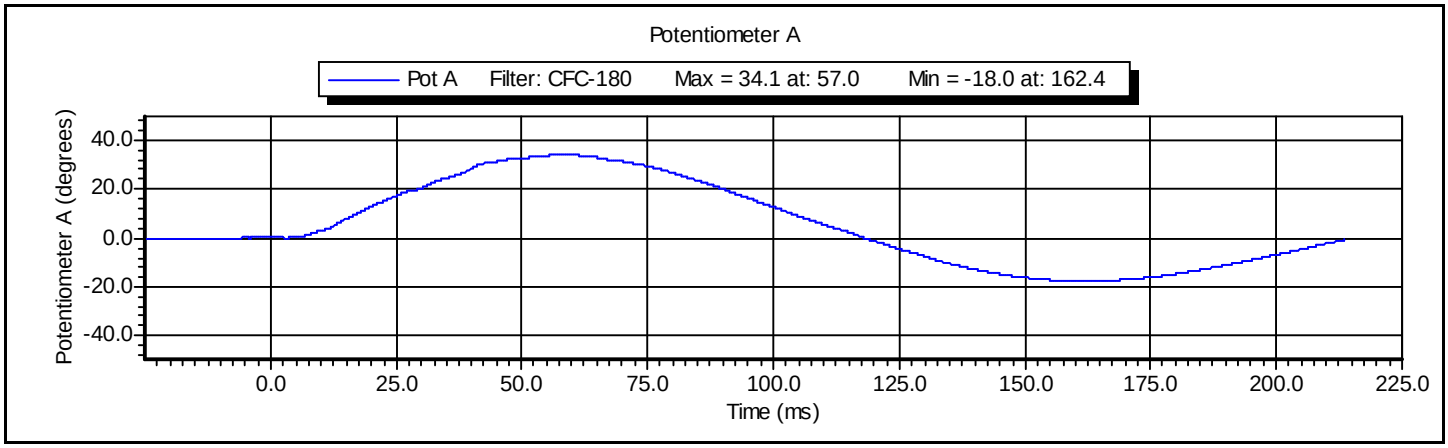
Test ID: **Neck Flexion** Test Time: **2:14:45 PM** Test Date: **11/29/2010**

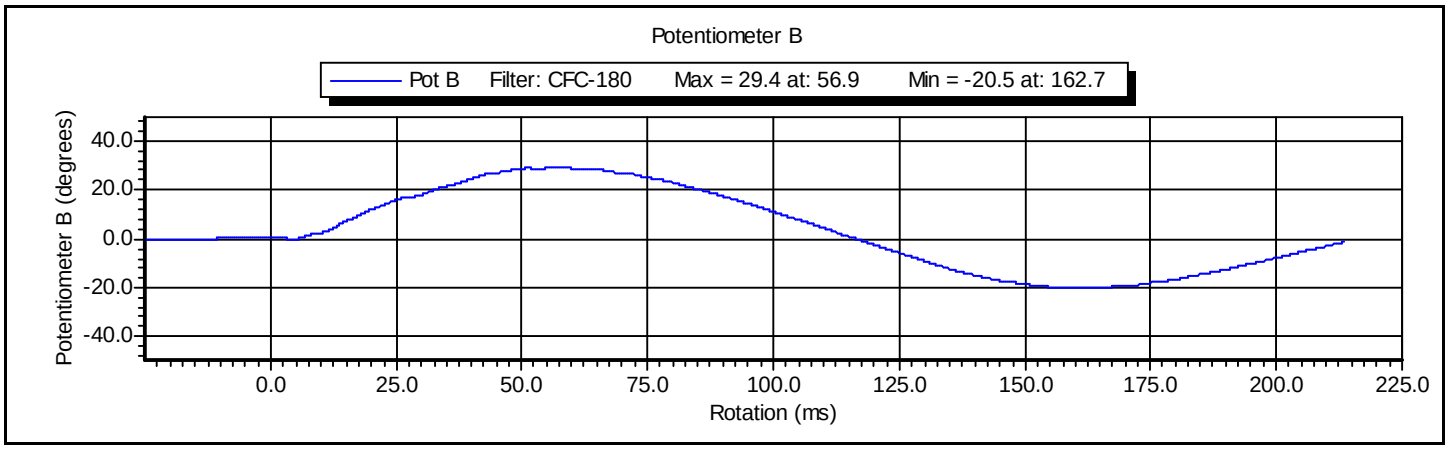
Calspan - Transportation Research Group
www.calspan.com
4455 Genesee Street, Buffalo, New York 14225 - Phone (716)632-7500

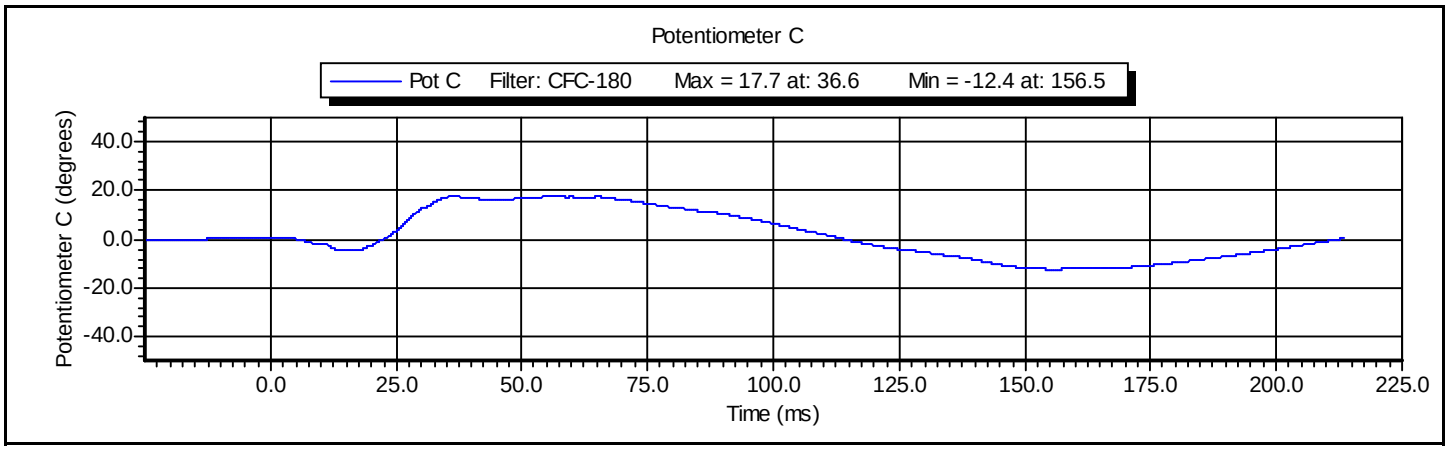
Test Name:	**Neck Flexion**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Neck Flexion**	Test Date:	**11/29/2010**
Test Number:	**2**	Test Time:	**2:14:45 PM**











Test ID: **Neck Flexion** Test Time: **2:14:45 PM** Test Date: **11/29/2010**

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VERIFICATION REPORT

Test Name:	**Shoulder Impact**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Shoulder**	Test Date:	**11/30/2010**
Test Number:	**1**	Test Time:	**11:42:33 AM**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**20.6**	deg C	P
Humidity	10.0	--	70.0	**45.0**	%RH	P
Velocity	4.20	--	4.40	**4.33**	m/s	P
Pendulum Acceleration	-10.50	--	-7.50	**-10.35**	g	P

All test parameters are within specifications

Technician: **S. Zito** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7264-2000**	**P66930**	**10/5/2010**

Test ID: **Shoulder** Test Time: **11:42:33 AM** Test Date: **11/30/2010**

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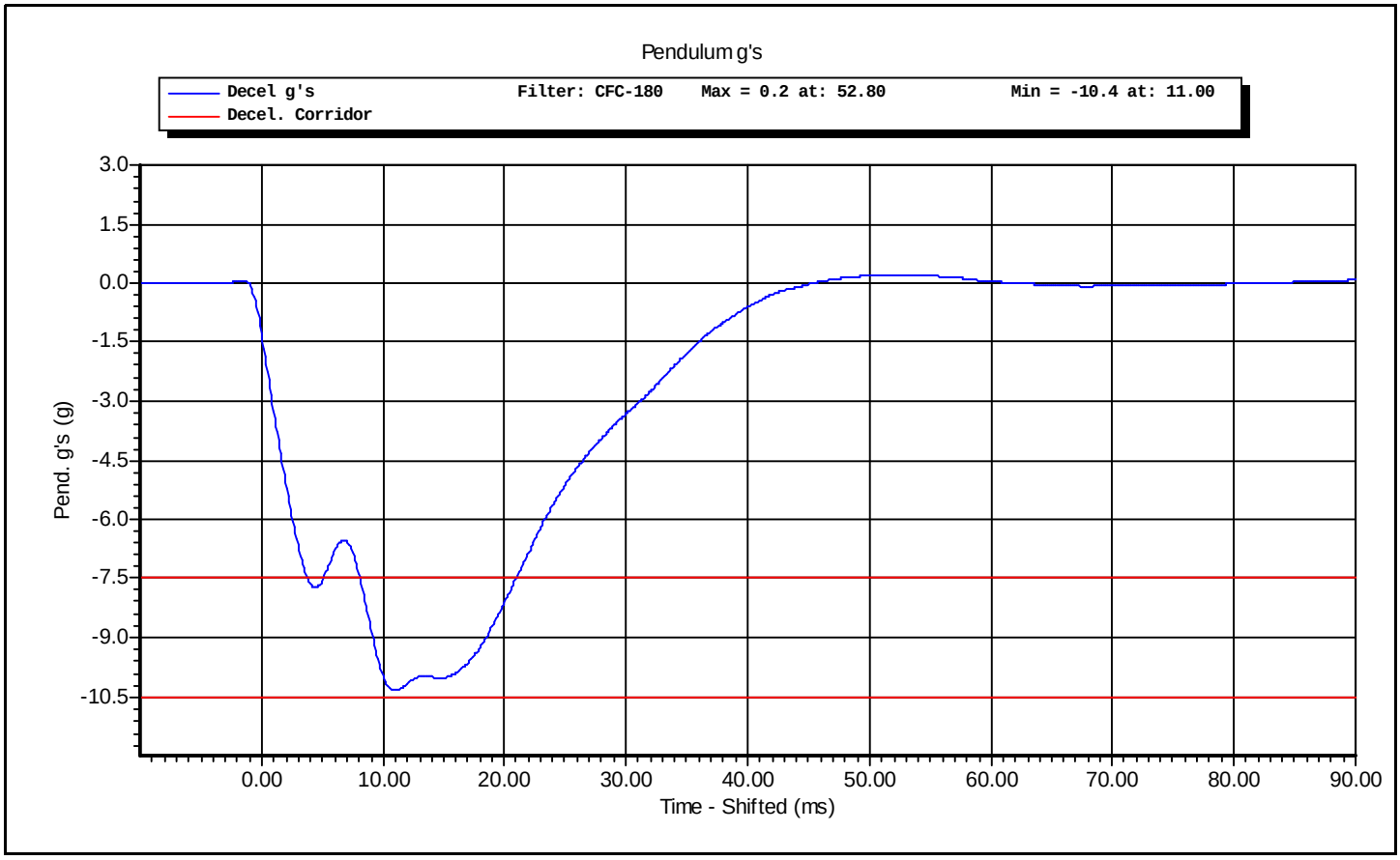
Test Name:	**Shoulder Impact**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Shoulder**	Test Date:	**11/30/2010**
Test Number:	**1**	Test Time:	**11:42:33 AM**



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VERIFICATION REPORT

Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**4.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
Test ID:	**Upper Rib 4 m/s**	Test Date:	**11/29/2010**
Test Number:	**1**	Test Time:	**4:19:22 PM**

Component Part Number	Component Serial Number
455-3100	**UPPER**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.0**	deg C	P
Humidity	10.0	--	70.0	**24.0**	%RH	P
Velocity	3.90	--	4.10	**3.97**	m/s	P
Rib Displacement	-51.00	--	-46.00	**-48.57**	mm	P
Drop Height	807.0	--	823.0	**815.0**	mm	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Honeywell	**MLT-38000**	**DS-179**	**4/23/2010**
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7264-2000**	**P38216**	**6/22/2010**

Test ID: **Upper Rib 4 m/s** Test Time: **4:19:22 PM** Test Date: **11/29/2010**

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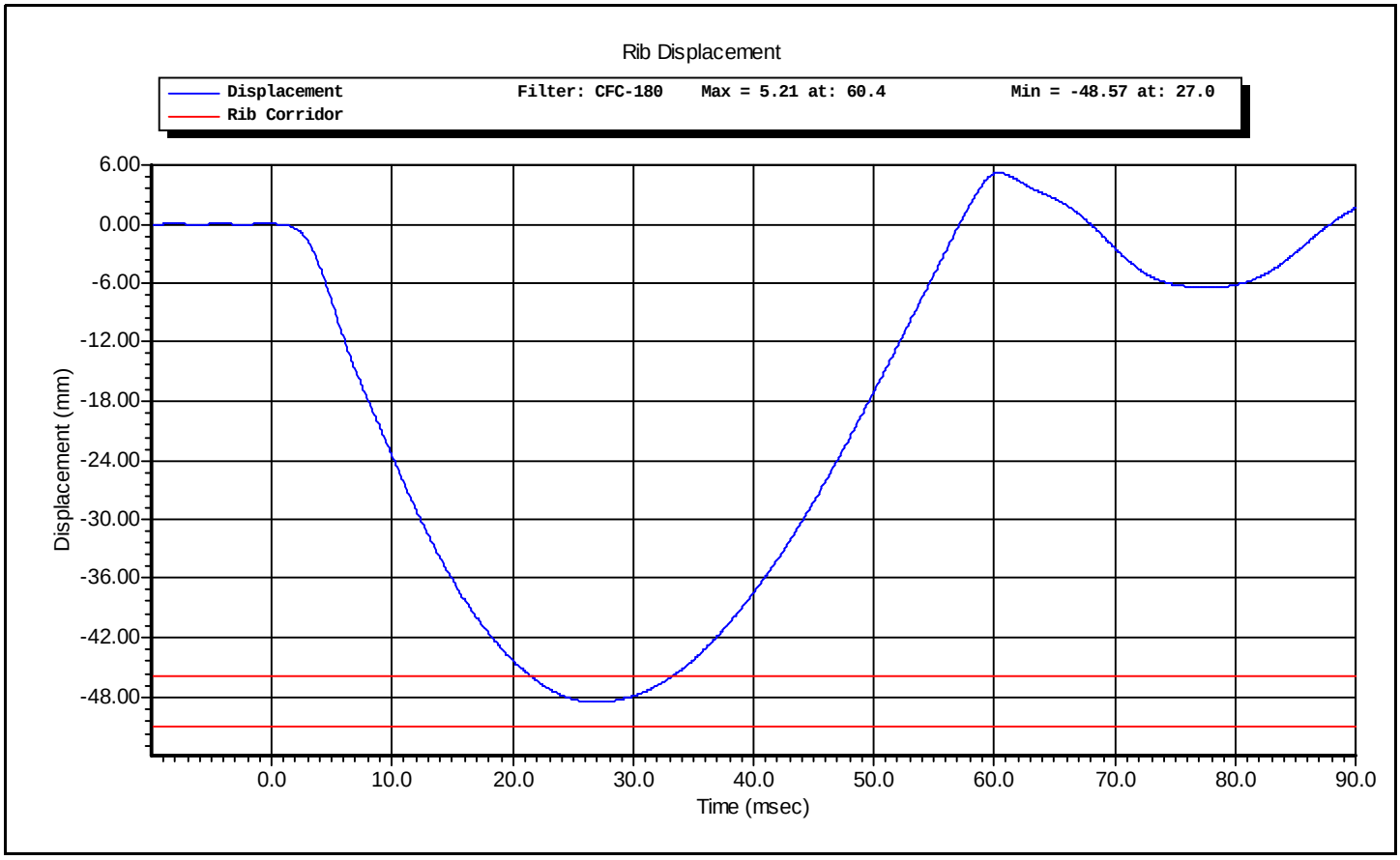
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**4.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Upper Rib 4 m/s**	Test Date:	**11/29/2010**
Test Number:	**1**	Test Time:	**4:19:22 PM**



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VERIFICATION REPORT

Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**3.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Upper Rib 4 m/s**	Test Date:	**11/29/2010**
Test Number:	**1**	Test Time:	**4:25:51 PM**

Component Part Number	Component Serial Number
455-3100	**UPPER**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.0**	deg C	P
Humidity	10.0	--	70.0	**23.0**	%RH	P
Velocity	2.90	--	3.10	**2.98**	m/s	P
Rib Displacement	-40.00	--	-36.00	**-37.59**	mm	P
Drop Height	454	--	464	**459**	mm	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Honeywell	**MLT-38000**	**DS-179**	**4/23/2010**
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7264-2000**	**P38216**	**6/22/2010**

Test ID: **Upper Rib 4 m/s** Test Time: **4:25:51 PM** Test Date: **11/29/2010**

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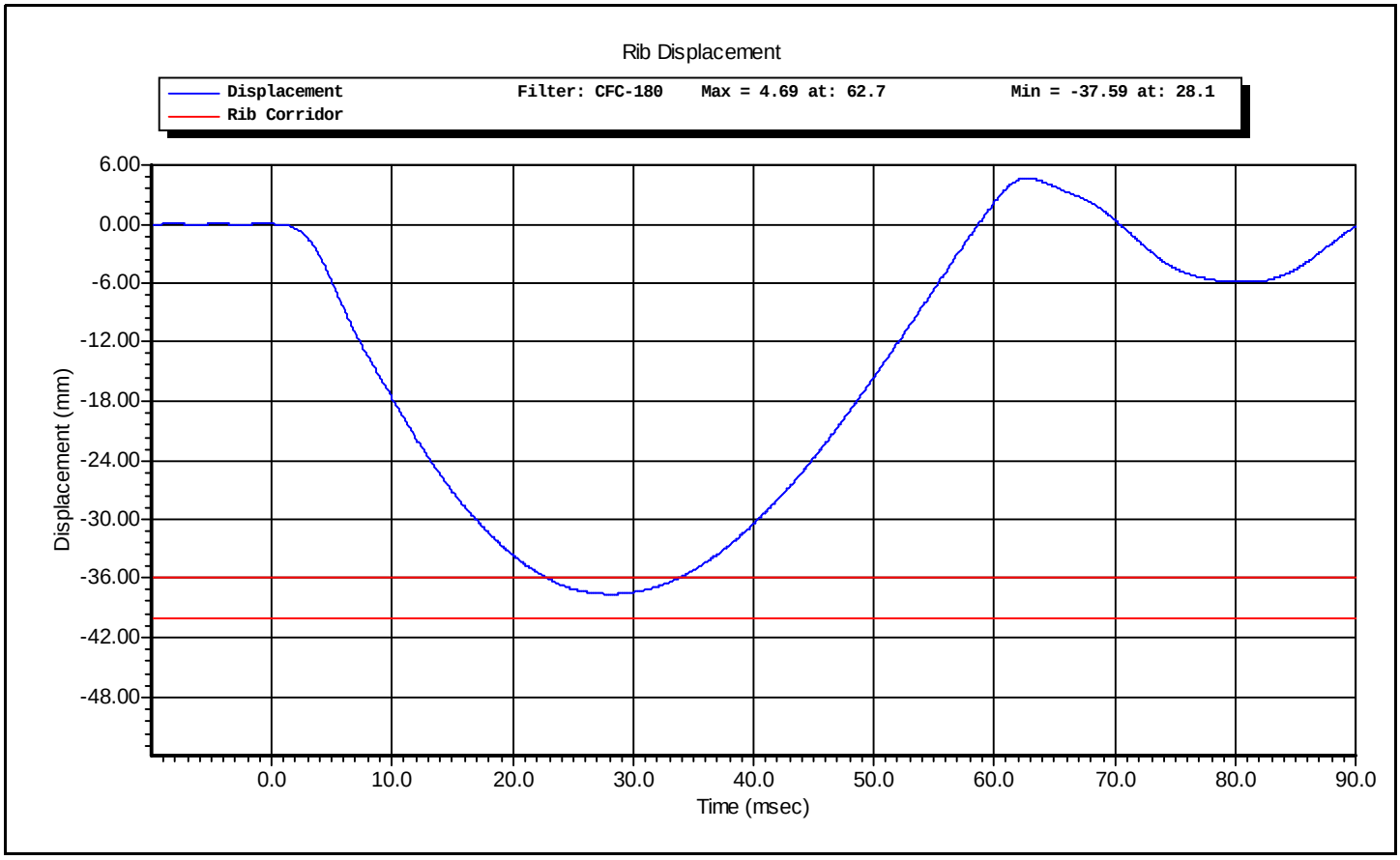
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**3.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Upper Rib 4 m/s**	Test Date:	**11/29/2010**
Test Number:	**1**	Test Time:	**4:25:51 PM**



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VERIFICATION REPORT

Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**4.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Middle Rib 4 m/s**	Test Date:	**11/29/2010**
Test Number:	**1**	Test Time:	**5:14:28 PM**

Component Part Number	Component Serial Number
455-3100	**MIDDLE**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.0**	deg C	P
Humidity	10.0	--	70.0	**24.0**	%RH	P
Velocity	3.90	--	4.10	**3.96**	m/s	P
Rib Displacement	-51.00	--	-46.00	**-47.53**	mm	P
Drop Height	807.0	--	823.0	**815.0**	mm	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Honeywell	**MLT-38000**	**DS-185**	**4/23/2010**
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7264-2000**	**P38216**	**6/22/2010**

Test ID: **Middle Rib 4 m/s** Test Time: **5:14:28 PM** Test Date: **11/29/2010**

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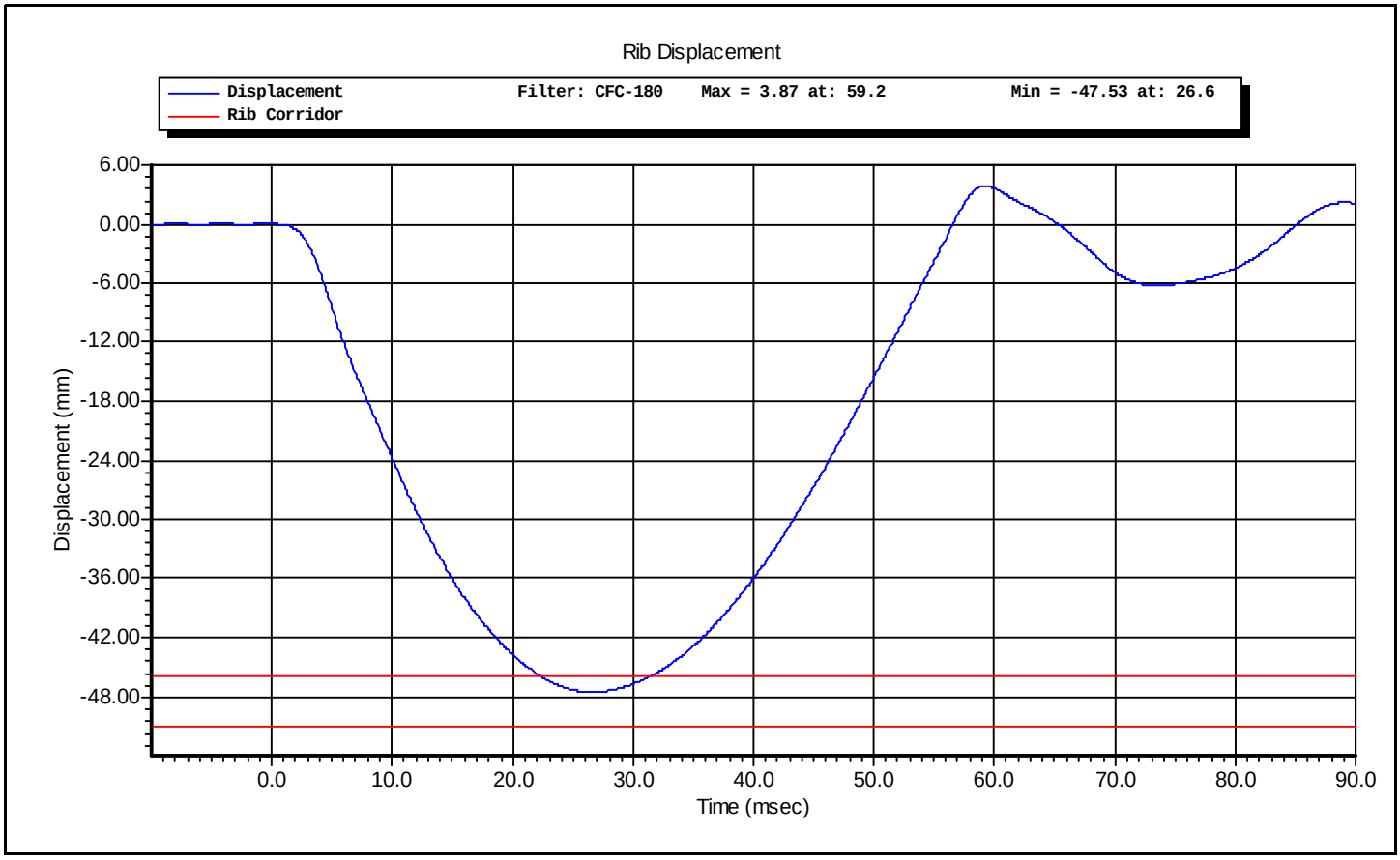
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**4.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Middle Rib 4 m/s**	Test Date:	**11/29/2010**
Test Number:	**1**	Test Time:	**5:14:28 PM**



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VERIFICATION REPORT

Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**3.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Middle Rib 3 m/s**	Test Date:	**11/29/2010**
Test Number:	**1**	Test Time:	**5:27:26 PM**

Component Part Number	Component Serial Number
455-3100	**MIDDLE**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.0**	deg C	P
Humidity	10.0	--	70.0	**24.0**	%RH	P
Velocity	2.90	--	3.10	**2.98**	m/s	P
Rib Displacement	-40.00	--	-36.00	**-37.11**	mm	P
Drop Height	454	--	464	**459**	mm	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Honeywell	**MLT-38000**	**DS-185**	**4/23/2010**
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7264-2000**	**P38216**	**6/22/2010**

Test ID: **Middle Rib 3 m/s** Test Time: **5:27:26 PM** Test Date: **11/29/2010**

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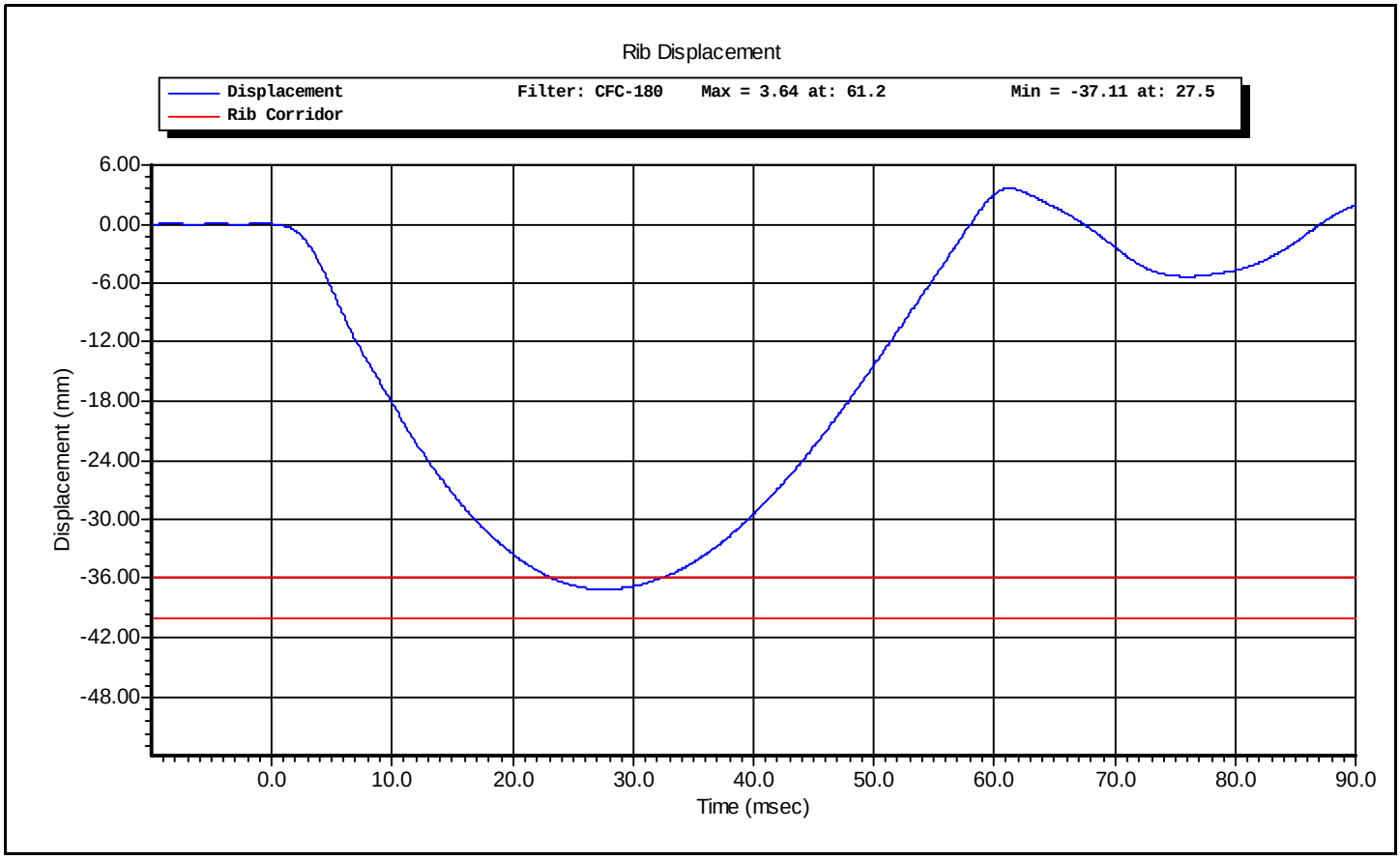
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**3.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Middle Rib 3 m/s**	Test Date:	**11/29/2010**
Test Number:	**1**	Test Time:	**5:27:26 PM**



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VERIFICATION REPORT

Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**4.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Lower Rib 4 m/s**	Test Date:	**11/29/2010**
Test Number:	**1**	Test Time:	**5:35:59 PM**

Component Part Number	Component Serial Number
455-3100	**LOWER**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.0**	deg C	P
Humidity	10.0	--	70.0	**24.0**	%RH	P
Velocity	3.90	--	4.10	**3.98**	m/s	P
Rib Displacement	-51.00	--	-46.00	**-47.56**	mm	P
Drop Height	807.0	--	823.0	**815.0**	mm	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Honeywell	**MLT-38000**	**DS-178**	**4/23/2010**
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7264-2000**	**P38216**	**6/22/2010**

Test ID: **Lower Rib 4 m/s** Test Time: **5:35:59 PM** Test Date: **11/29/2010**

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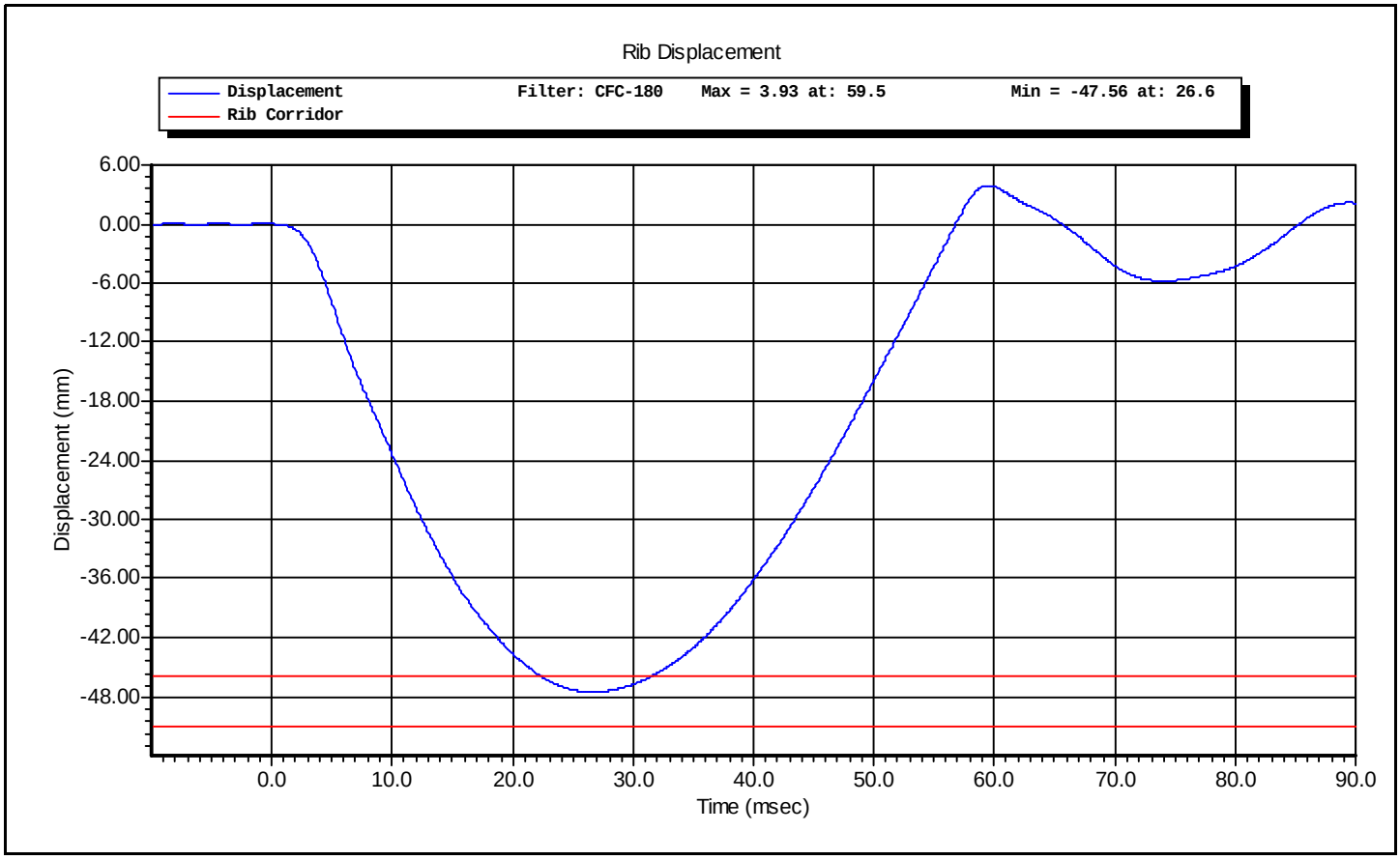
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**4.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Lower Rib 4 m/s**	Test Date:	**11/29/2010**
Test Number:	**1**	Test Time:	**5:35:59 PM**



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VERIFICATION REPORT

Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**3.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Lower Rib 3 m/s**	Test Date:	**11/29/2010**
Test Number:	**1**	Test Time:	**5:46:03 PM**

Component Part Number	Component Serial Number
455-3100	**LOWER**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.0**	deg C	P
Humidity	10.0	--	70.0	**24.0**	%RH	P
Velocity	2.90	--	3.10	**2.97**	m/s	P
Rib Displacement	-40.00	--	-36.00	**-37.04**	mm	P
Drop Height	454	--	464	**459**	mm	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Honeywell	**MLT-38000**	**DS-178**	**4/23/2010**
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7264-2000**	**P38216**	**6/22/2010**

Test ID: **Lower Rib 3 m/s** Test Time: **5:46:03 PM** Test Date: **11/29/2010**

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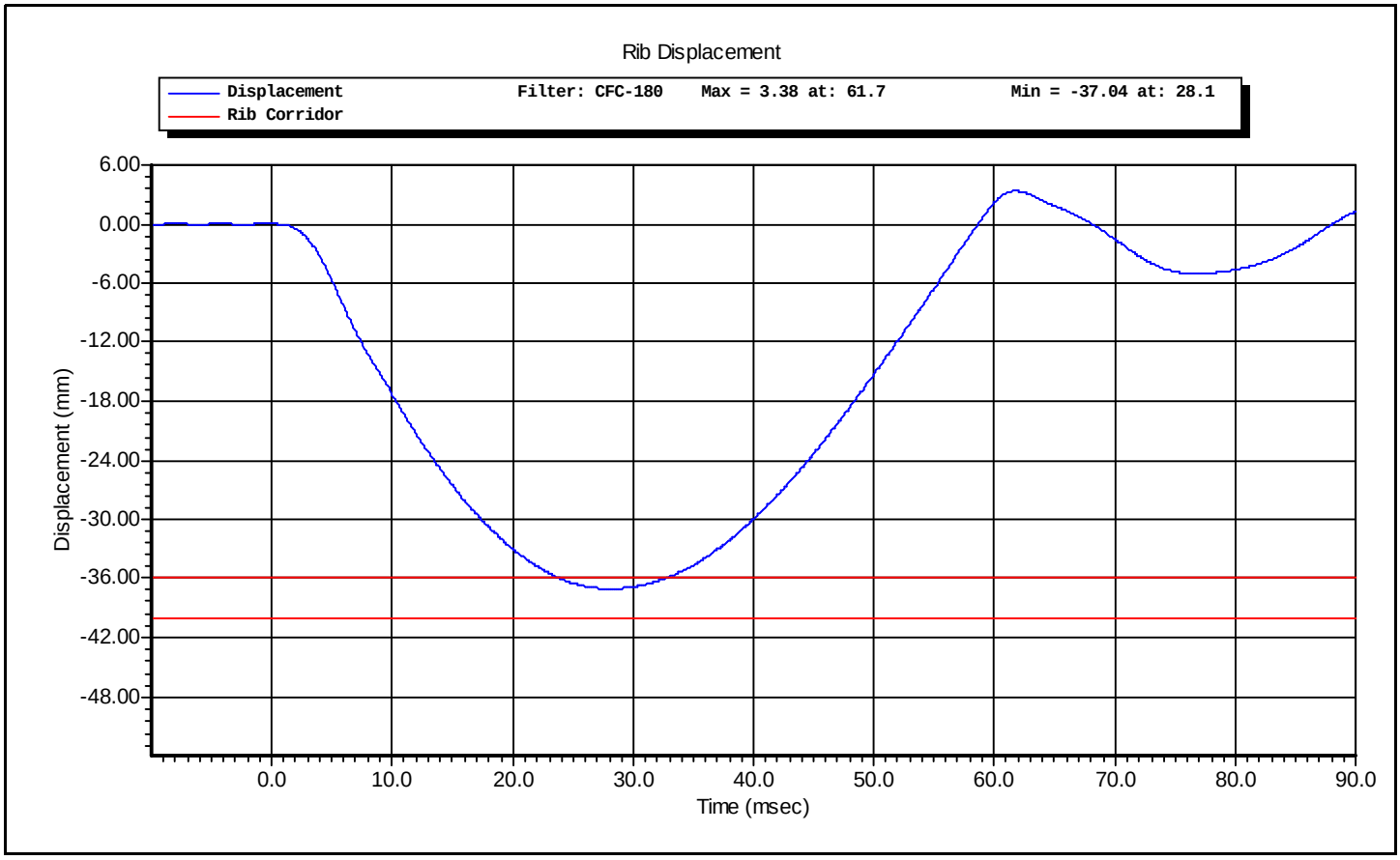
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**3.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Lower Rib 3 m/s**	Test Date:	**11/29/2010**
Test Number:	**1**	Test Time:	**5:46:03 PM**



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VERIFICATION REPORT

Test Name:	**Abdominal Impact**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Abdomen**	Test Date:	**11/30/2010**
Test Number:	**2**	Test Time:	**10:14:11 AM**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**20.6**	deg C	P
Humidity	10	--	70	**42**	%RH	P
Velocity	3.90	--	4.10	**4.05**	m/s	P
Peak Abdominal Force	-2.70	--	-2.20	**-2.53**	kN	P
Time At Peak Abdominal Force	10.0	--	12.3	**10.6**	ms	P
Maximum Pendulum Force	-4.80	--	-4.00	**-4.59**	kN	P
Time at Peak Pendumlum Force	10.6	--	13.0	**10.9**	ms	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7264-2000**	**P66930**	**10/5/2010**
Denton	**2631**	**LC-1524**	**4/22/2010**
Denton	**2631**	**LC-1523**	**4/22/2010**
Denton	**2631**	**LC-1530**	**4/22/2010**

Test ID: **Abdomen** Test Time: **10:14:11 AM** Test Date: **11/30/2010**

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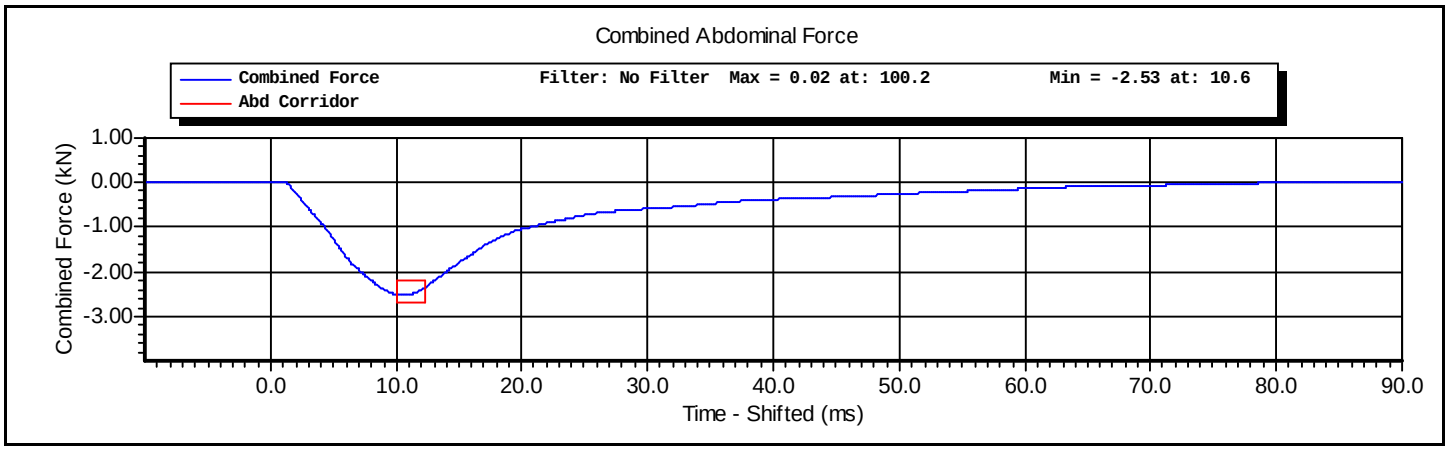
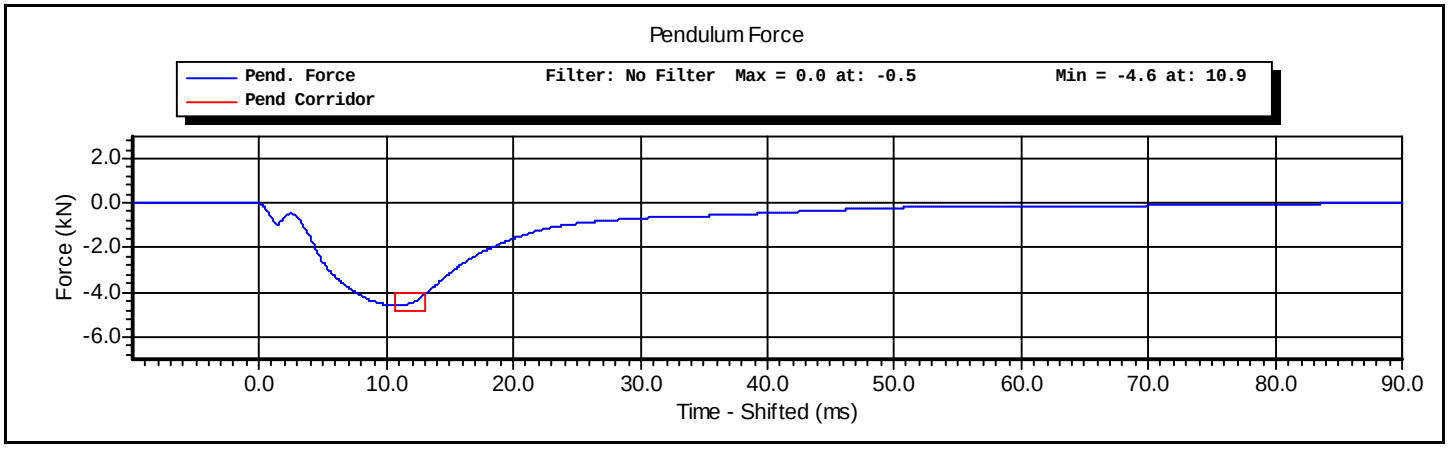
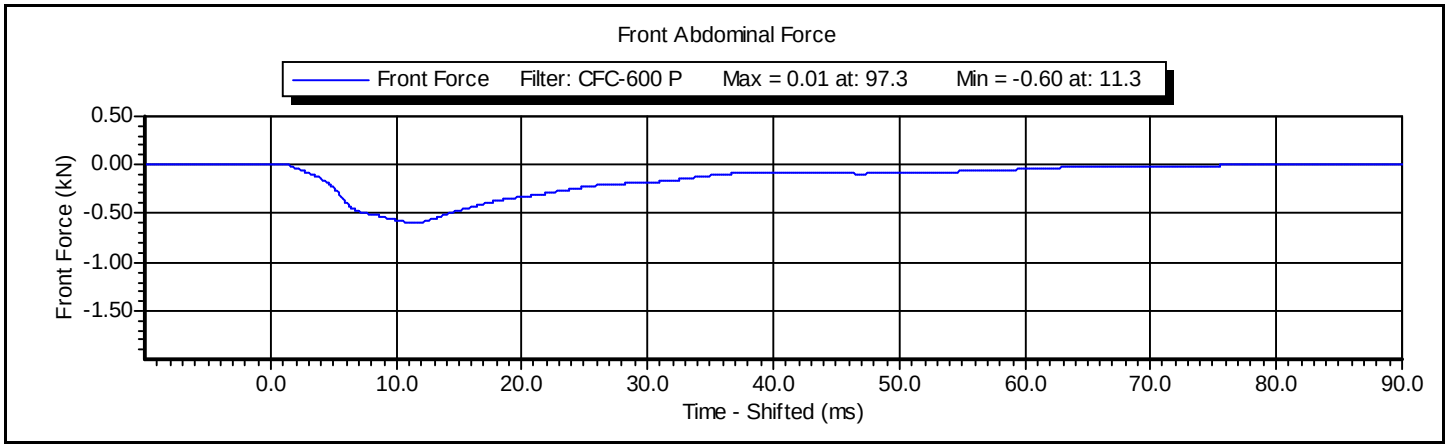
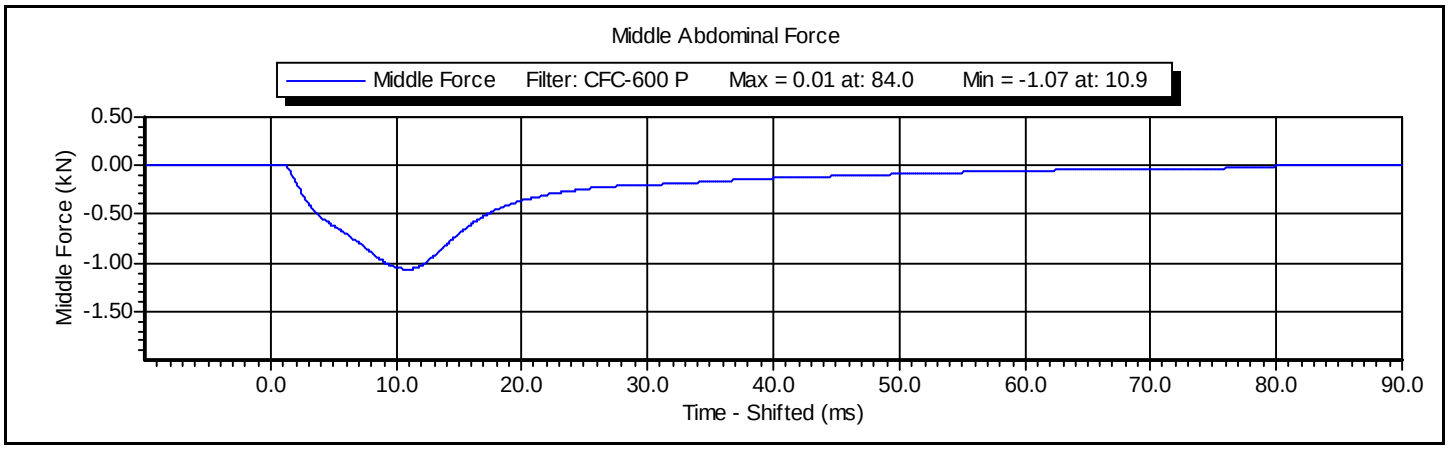
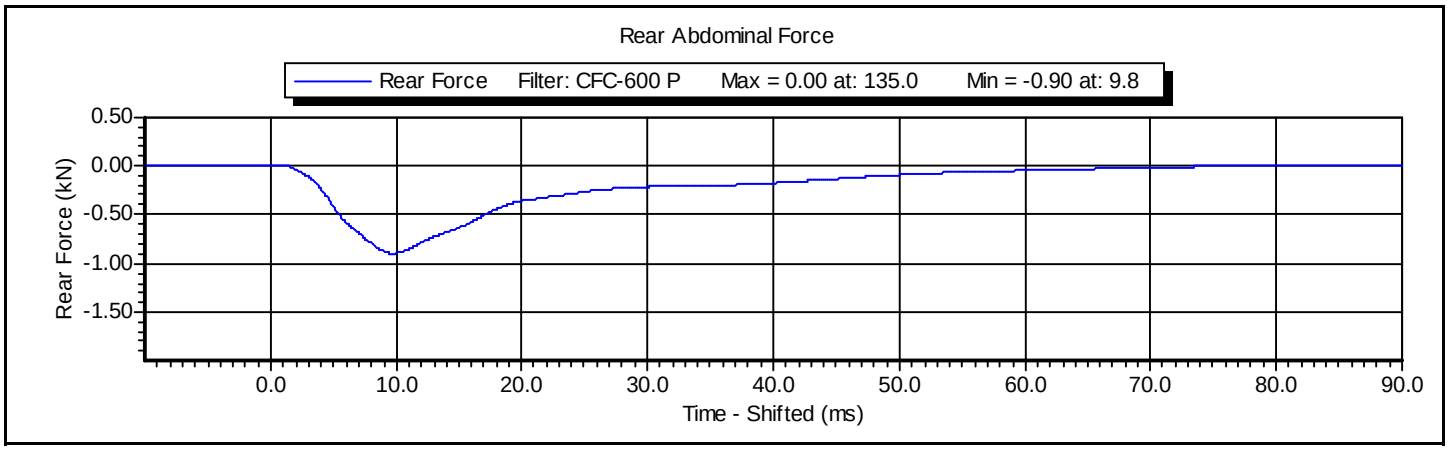
Test Name:	**Abdominal Impact**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Abdomen**	Test Date:	**11/30/2010**
Test Number:	**2**	Test Time:	**10:14:11 AM**











Test ID: **Abdomen** Test Time: **10:14:11 AM** Test Date: **11/30/2010**

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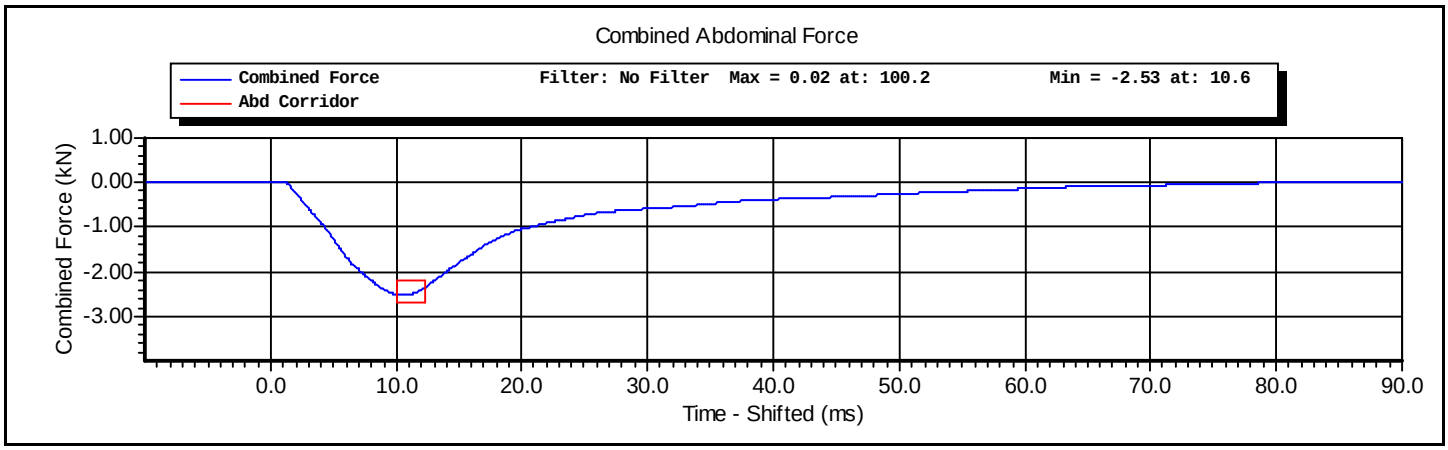
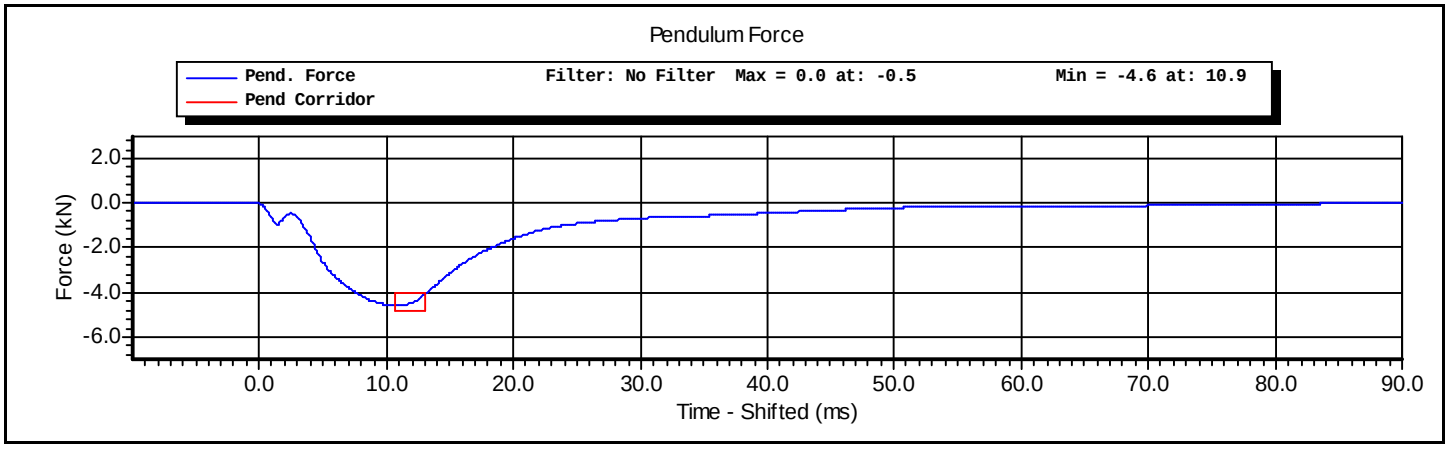
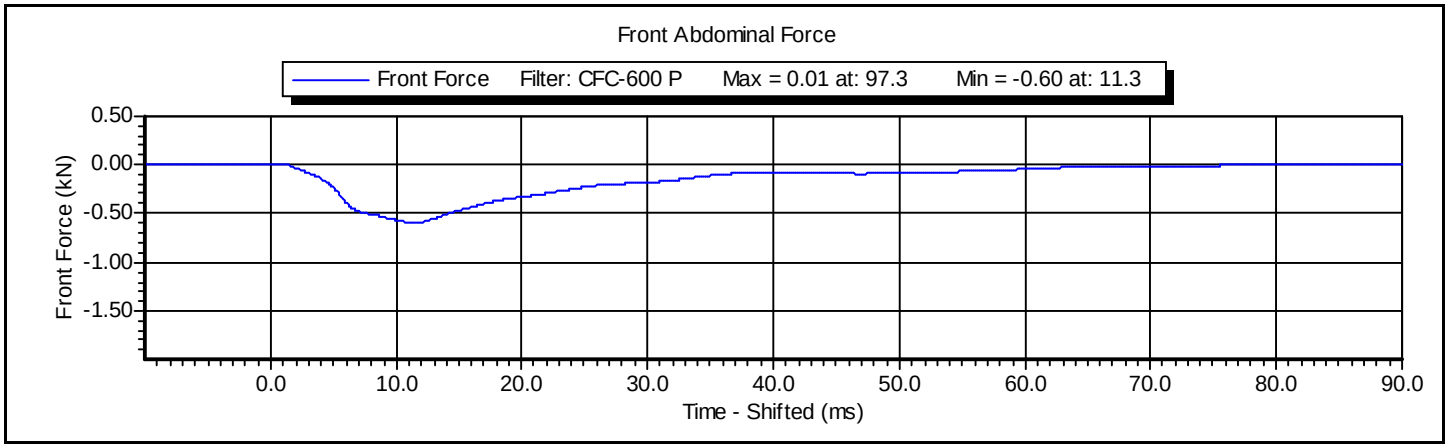
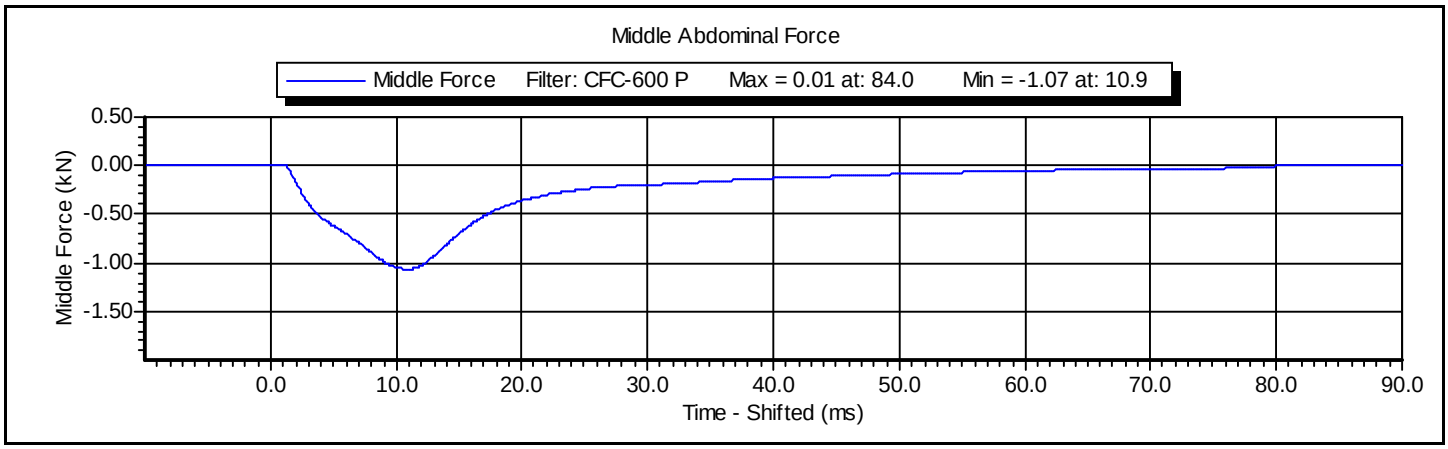
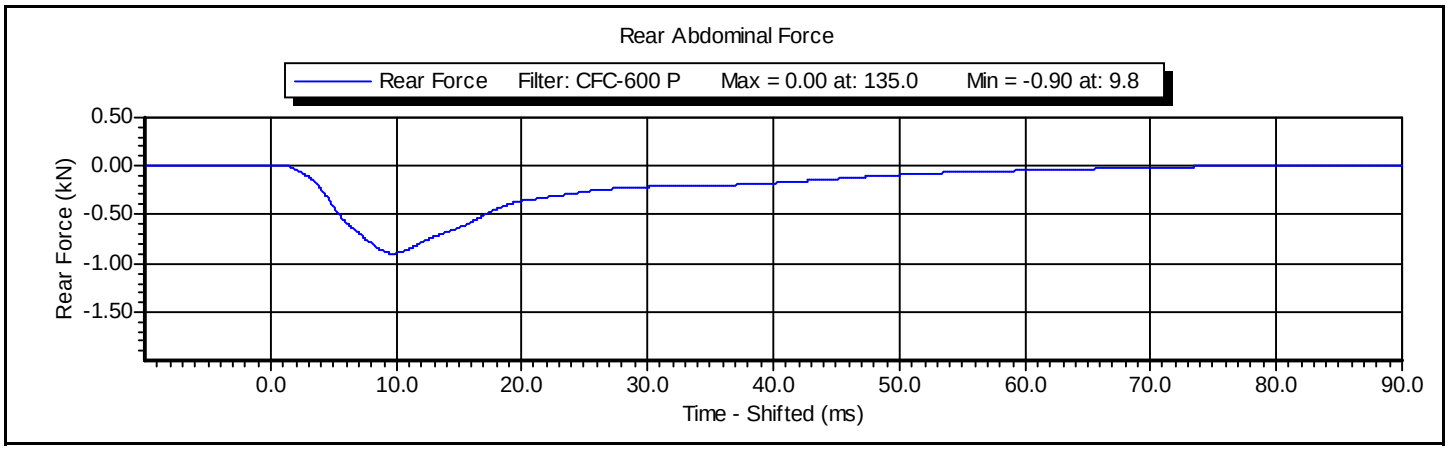
Test Name:	**Abdominal Impact**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Abdomen**	Test Date:	**11/30/2010**
Test Number:	**2**	Test Time:	**10:14:11 AM**











Test ID: **Abdomen** Test Time: **10:14:11 AM** Test Date: **11/30/2010**

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VERIFICATION REPORT

Test Name:	**Lumbar Spine**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Spine Flexion**	Test Date:	**11/29/2010**
Test Number:	**1**	Test Time:	**3:15:39 PM**

Component Part Number	Component Serial Number
175-5501	**15-0545**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.0**	deg C	P
Humidity	10	--	70	**21**	%RH	P
Velocity	5.95	--	6.15	**6.14**	m/s	P
Maximum Headform Flexion Angle	45.0	--	55.0	**47.0**	degrees	P
Time at Maximum Headform Flexion Angle	39.0	--	53.0	**45.6**	ms	P
Decay to Zero Degrees	37.0	--	57.0	**38.2**	ms	P
Velocity Corridor		--				P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7231CT**	**C16510**	**10/21/2010**
DentonATD	**7000428**	**094**	**4/27/2010**
DentonATD	**7000428**	**095**	**4/27/2010**
DentonATD	**7000428**	**093**	**4/27/2010**

Test ID: **Spine Flexion** Test Time: **3:15:39 PM** Test Date: **11/29/2010**

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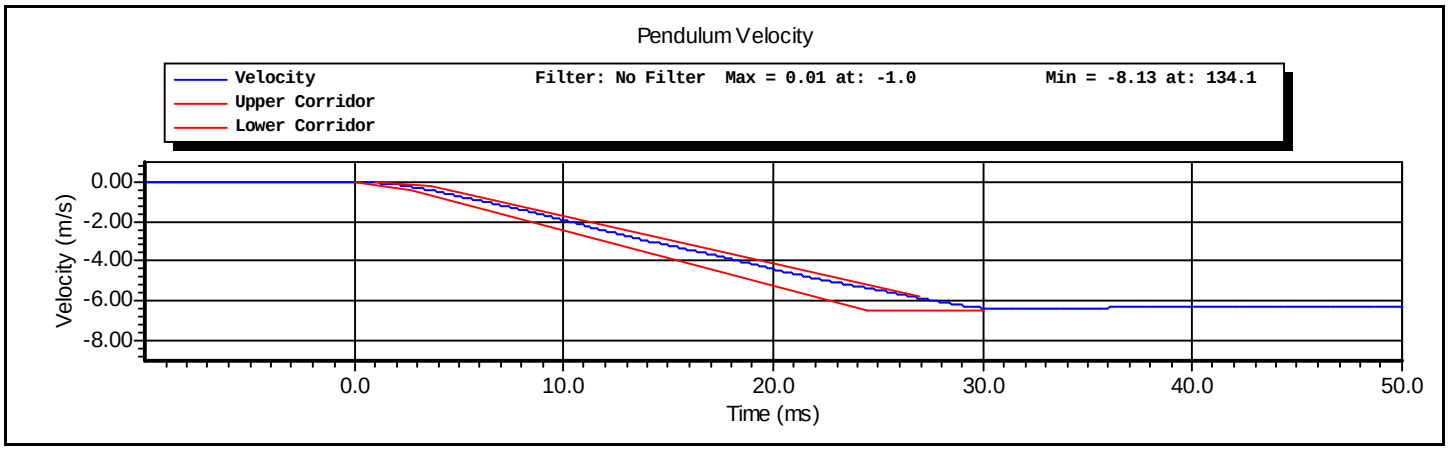
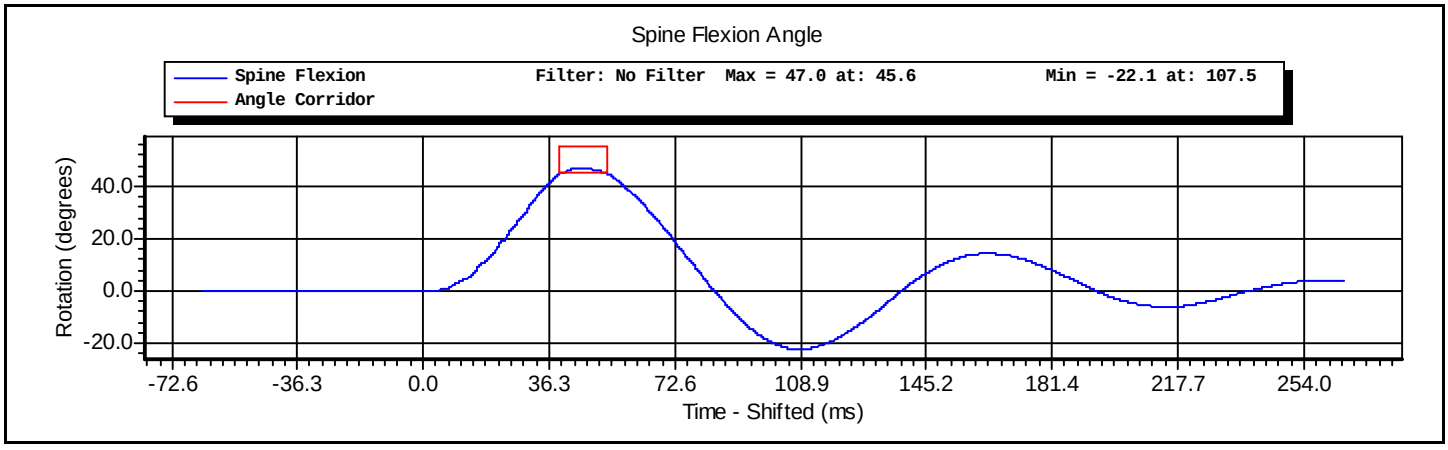
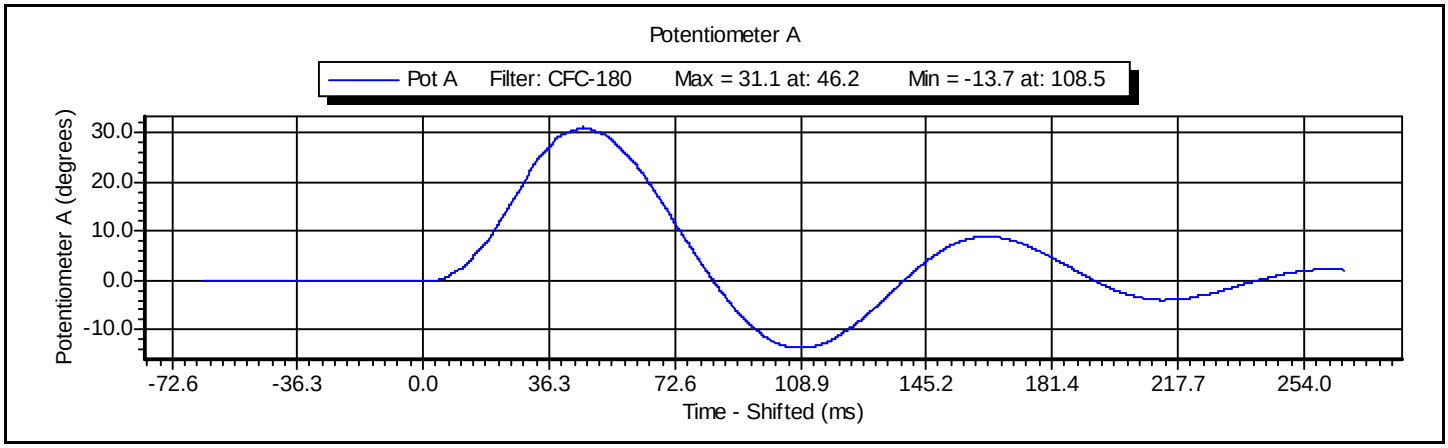
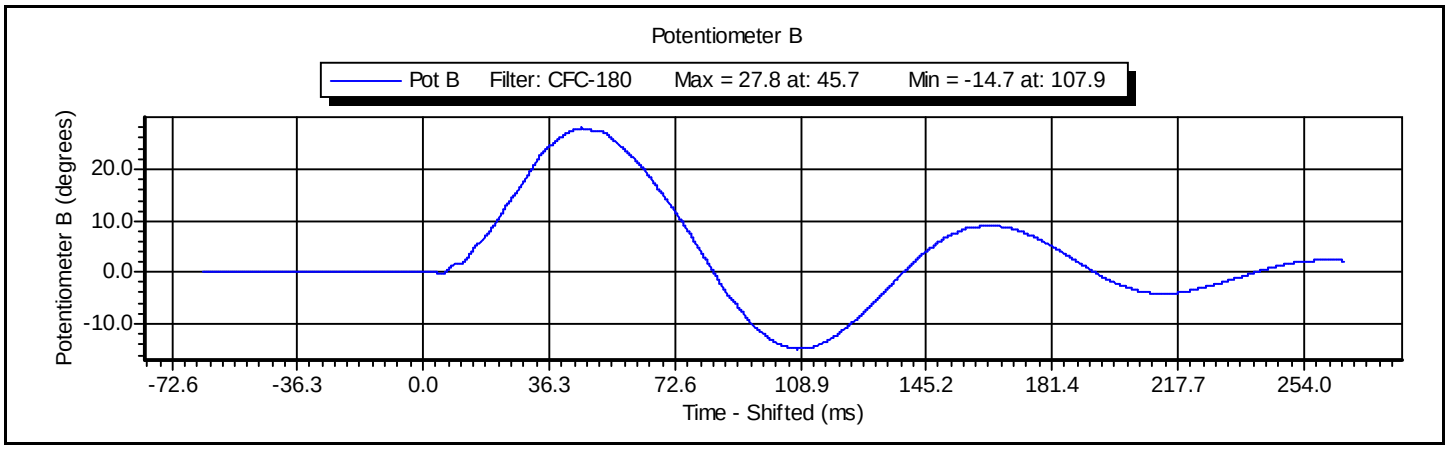
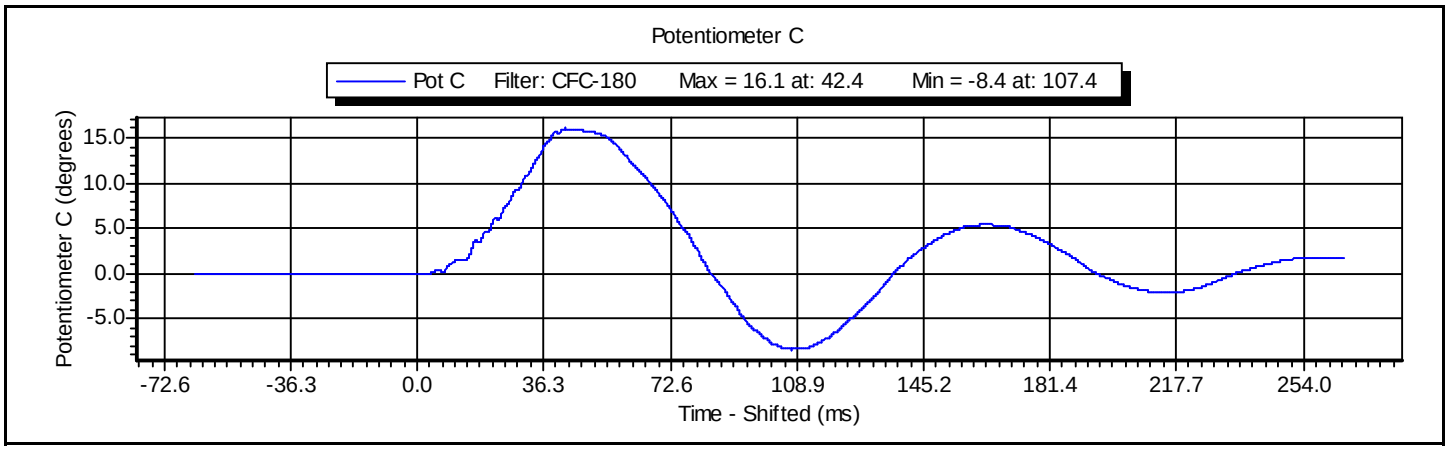
Test Name:	**Lumbar Spine**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Spine Flexion**	Test Date:	**11/29/2010**
Test Number:	**1**	Test Time:	**3:15:39 PM**











Test ID: **Spine Flexion** Test Time: **3:15:39 PM** Test Date: **11/29/2010**

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VERIFICATION REPORT

Test Name:	**Pelvis Impact**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Pelvis**	Test Date:	**11/30/2010**
Test Number:	**1**	Test Time:	**9:11:48 AM**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**20.6**	deg C	P
Humidity	10	--	70	**41**	%RH	P
Velocity	4.20	--	4.40	**4.35**	m/s	P
Peak Pendulum Force	-5.40	--	-4.70	**-5.09**	kN	P
Time at Peak Pendulum Force	11.80	--	16.10	**12.87**	ms	P
Peak Pubic Symphysis Force	-1.59	--	-1.23	**-1.26**	kN	P
Time at Peak Pubic Symphysis Force	12.20	--	17.00	**14.17**	ms	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7264-2000**	**P66930**	**10/5/2010**
Denton	**3096**	**LC-456Fy**	**4/22/2010**

Test ID: **Pelvis** Test Time: **9:11:48 AM** Test Date: **11/30/2010**

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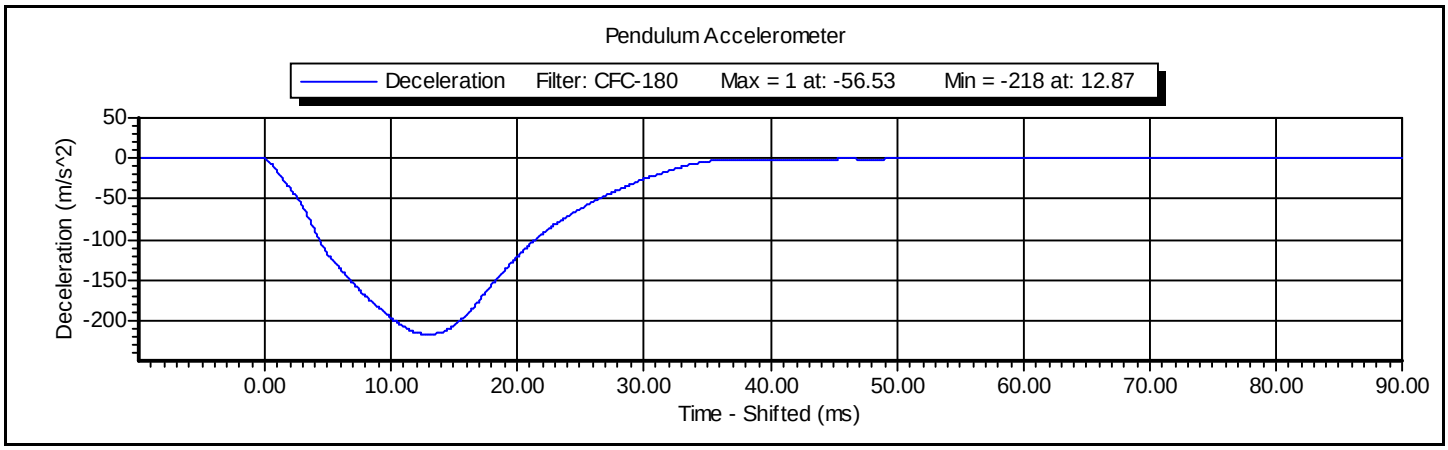
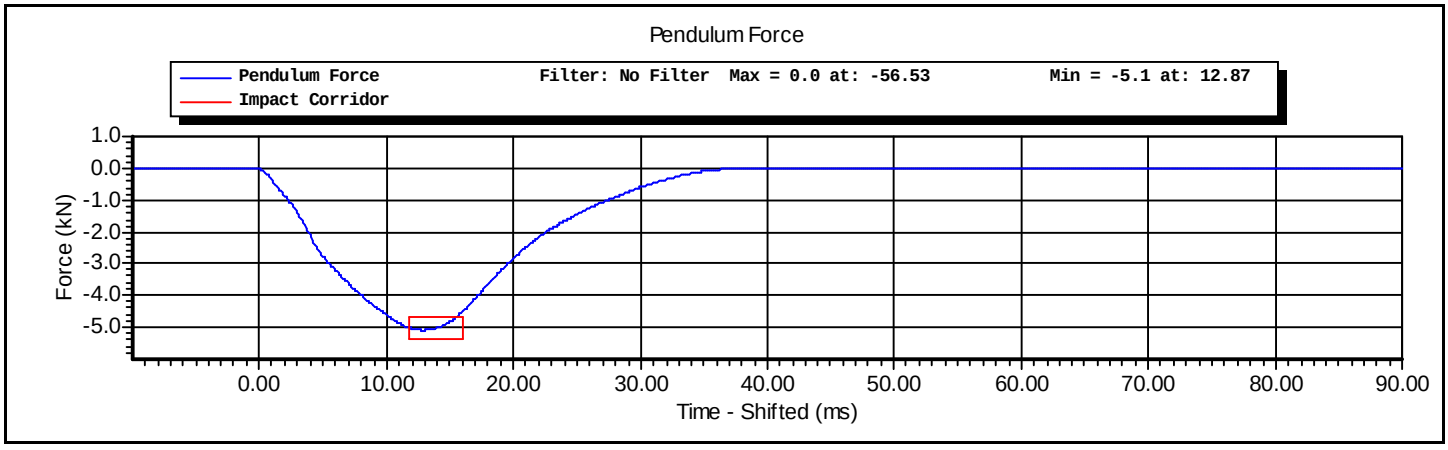
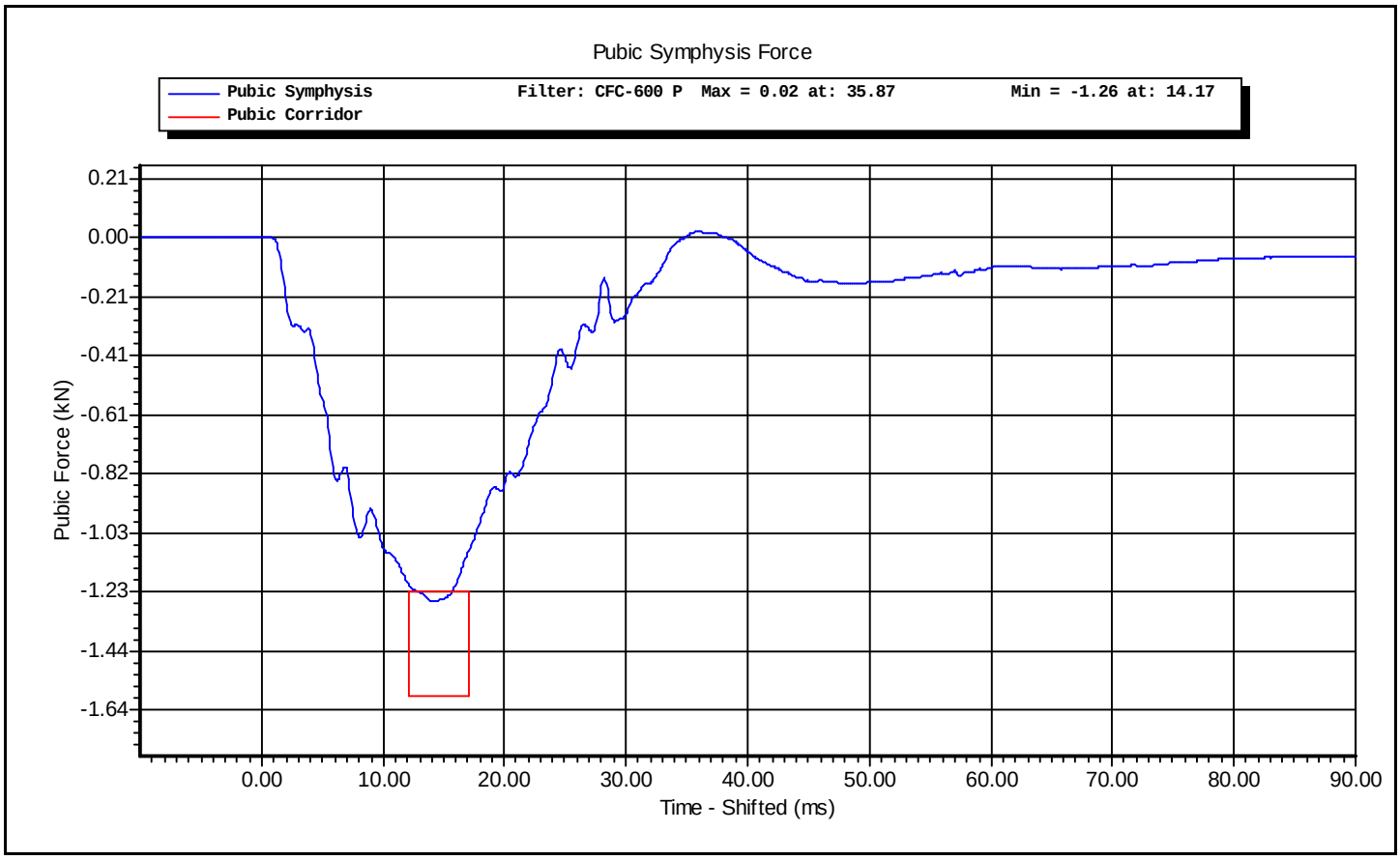
Test Name:	**Pelvis Impact**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Pelvis**	Test Date:	**11/30/2010**
Test Number:	**1**	Test Time:	**9:11:48 AM**







Test ID: **Pelvis** Test Time: **9:11:48 AM** Test Date: **11/30/2010**

CALIBRATION TEST RESULTS

PRE-TEST

SID-IIs No: 300

CONFIGURED FOR LEFT SIDE IMPACT

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SID-IIsD External Measurements

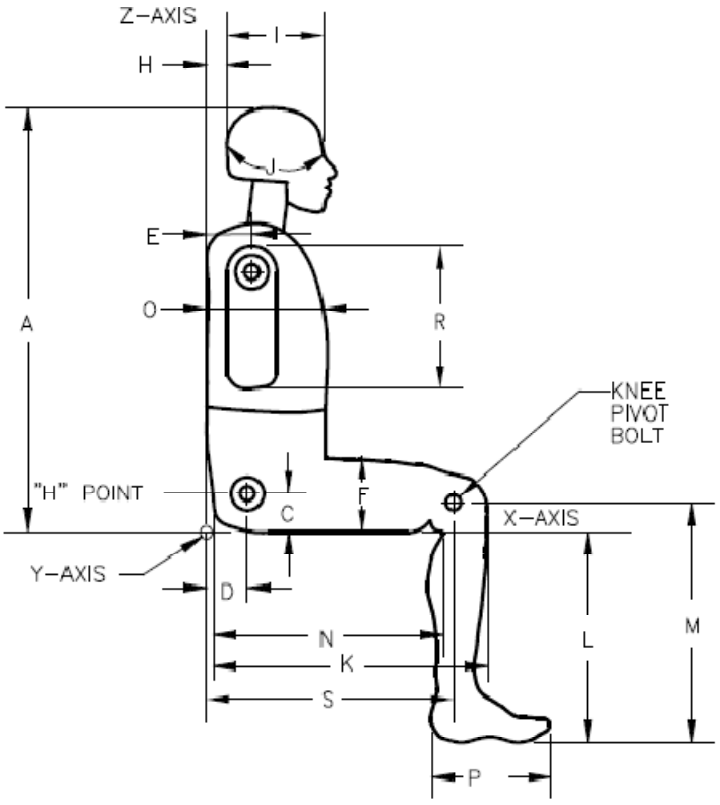
NHTSA ATD S/N 300

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	785	Yes
B	Shoulder Pivot Height	437.0 - 453.0	450	Yes
C	H-Point Height	79.0 - 89.0	87	Yes
D	H-Point from Seat Back	141.0 - 151.0	147	Yes
E	Shoulder Pivot from Backline	97.0 - 107.0	98	Yes
F	Thigh Clearance	119.0 - 135.0	125	Yes
G	Head Breadth	140.0 - 148.0	143	Yes
H	Head Back from Backline	40.0 - 46.0	42	Yes
I	Head Depth	178.0 - 188.0	181	Yes
J	Head Circumference	541.0 - 551.0	545	Yes
K	Buttock to Knee Length	514.0 - 540.0	525	Yes
L	Popliteal Height	343.0 - 369.0	365	Yes
M	Knee Pivot to Floor Height	393.0 - 409.0	395	Yes
N	Buttock Popliteal Length	416.0 - 442.0	433	Yes
O	Chest Depth without Jacket	195.0 - 211.0	205	Yes
P	Foot Length (right)	216.0 - 232.0	220	Yes
P	Foot Length (left)	216.0 - 232.0	220	Yes
Q	Hip Breadth	313.0 - 323.0	315	Yes
R	Arm Length	249.0 - 259.0	253	Yes
S	Knee Joint to Seat back	478.0 - 493.0	475	Yes
V	Shoulder Width (only one arm installed)	341.0 - 357.0	353	Yes
W	Foot Width (right)	78.0 - 94.0	85	Yes
W	Foot Width (left)	78.0 - 94.0	85	Yes
Y	Chest Circumference with Jacket	851.0 - 881.0	870	Yes
Z	Waist Circumference	761.0 - 791.0	773	Yes

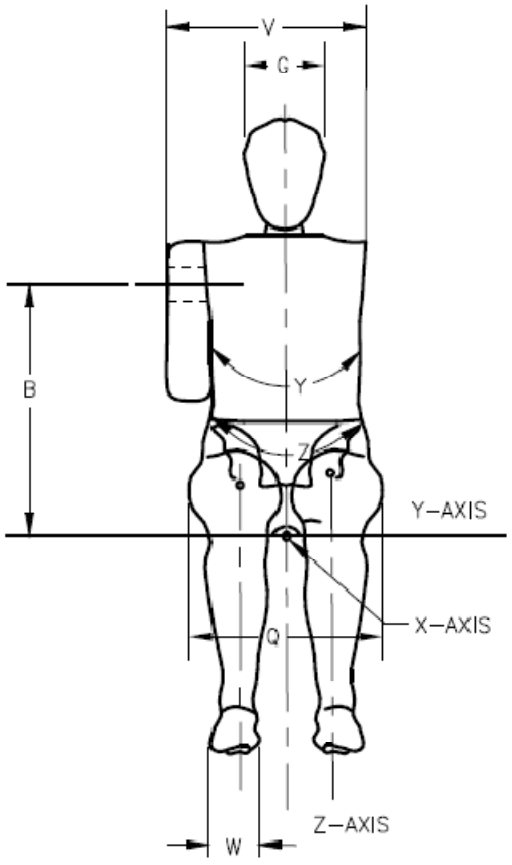
Technician: SZ

Date: 12/03/2010

SID-IIsD External Dimension Reference Diagram



SIDE VIEW



FRONT VIEW

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VERIFICATION REPORT

Test Name:	**Head Drop**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**SID 300**		
Test ID:	**Head Drop**	Test Date:	**12/1/2010**
Test Number:	**1**	Test Time:	**10:01:14 AM**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**20.6**	deg C	P
Humidity	10	--	70	**40**	%RH	P
Resultant Acceleration	115.0	--	137.0	**127.3**	g	P
Oscillation	0.0	--	15.0	**3.0**	%	P
Fore-Aft Acceleration	-15.0	--	15.0	**-3.4**	g	P

All test parameters are within specifications

Technician: **S. Zito** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Endevco	**7264-2000**	**P66931**	**10/25/2010**
Endevco	**7264-2000**	**P66943**	**10/25/2010**
Endevco	**7264-2000**	**P66943**	**10/25/2010**

Test ID: **Head Drop** Test Time: **10:01:14 AM** Test Date: **12/1/2010**

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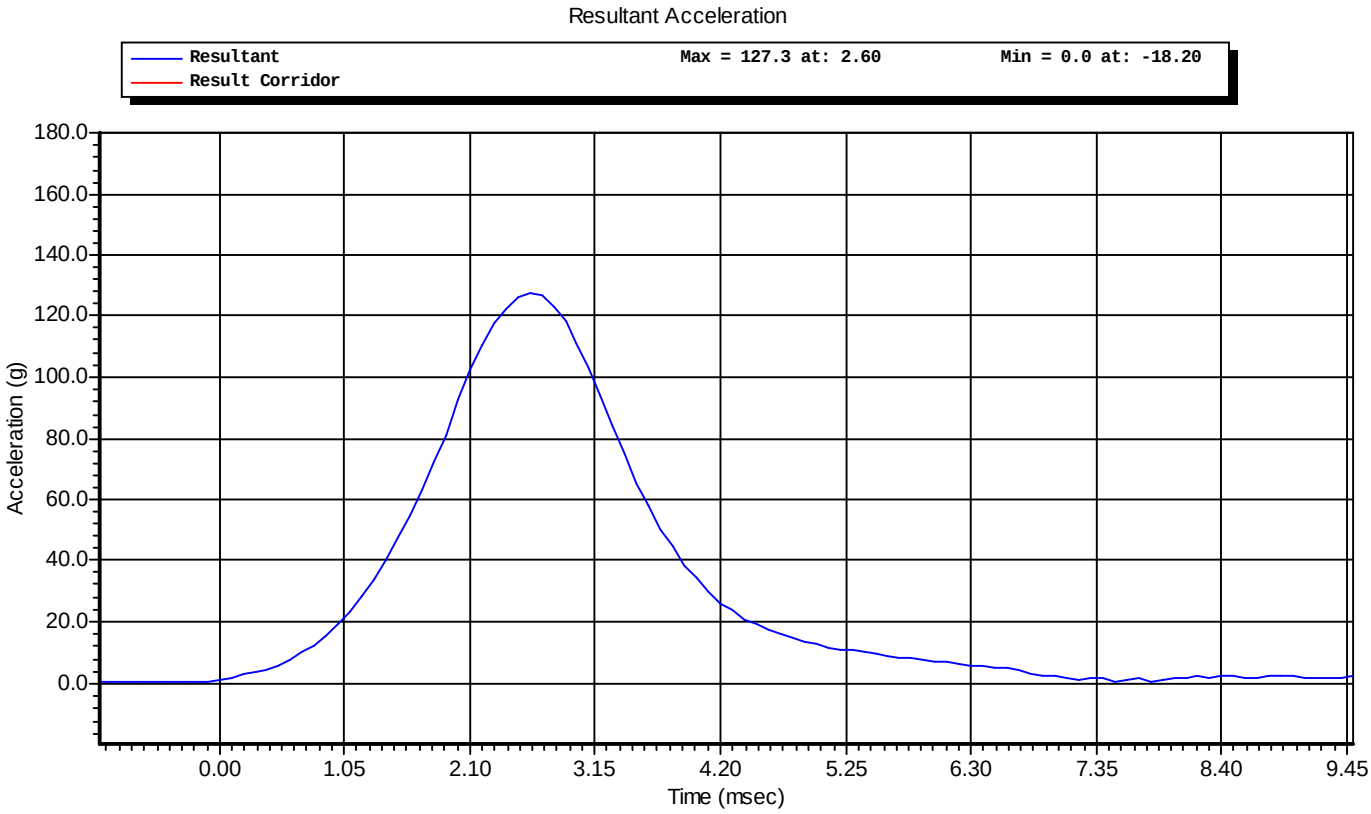
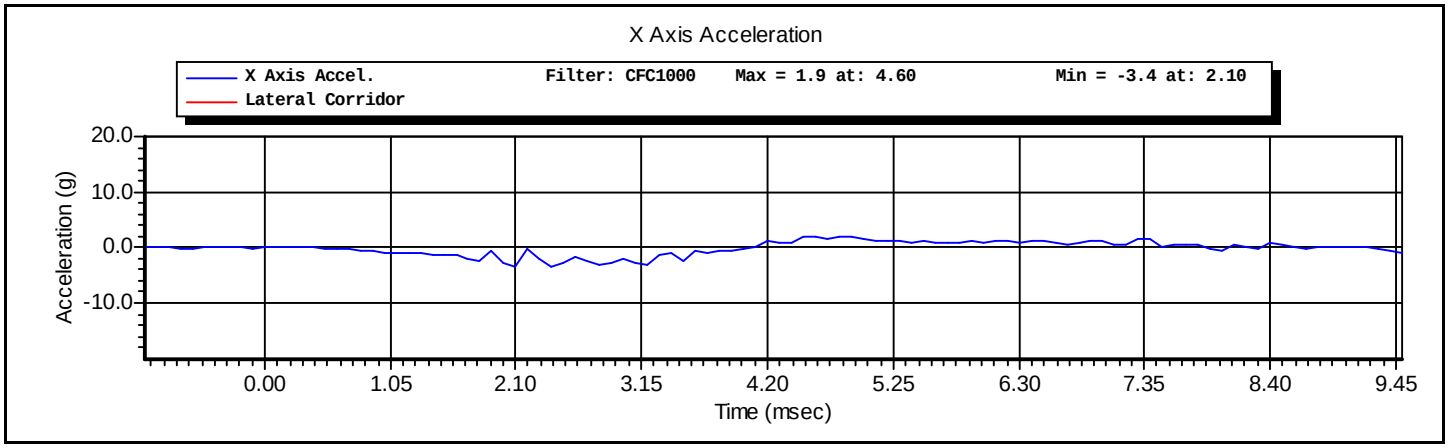
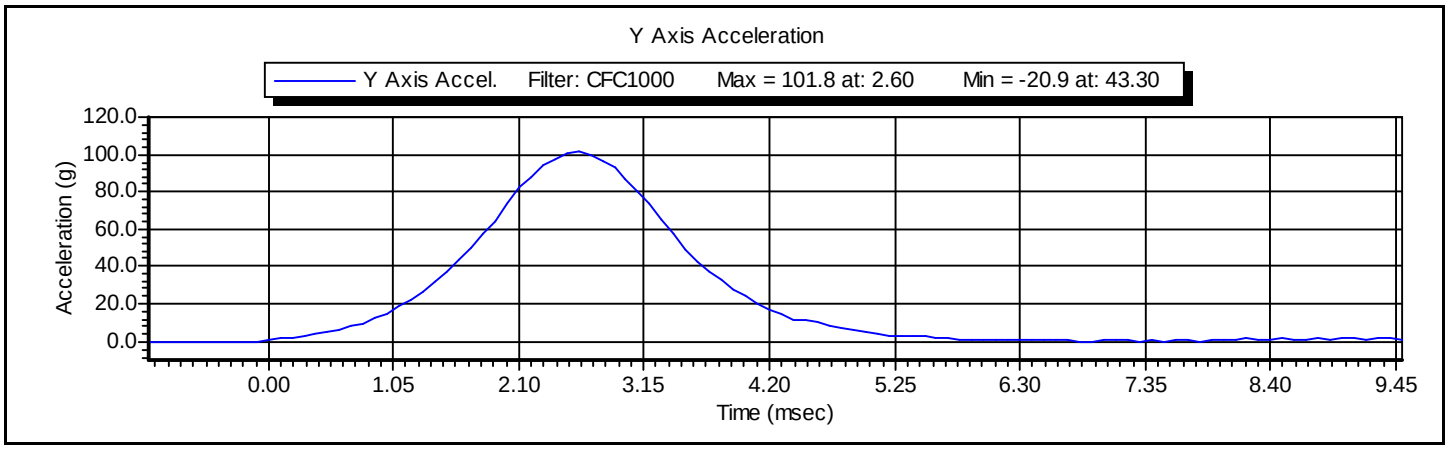
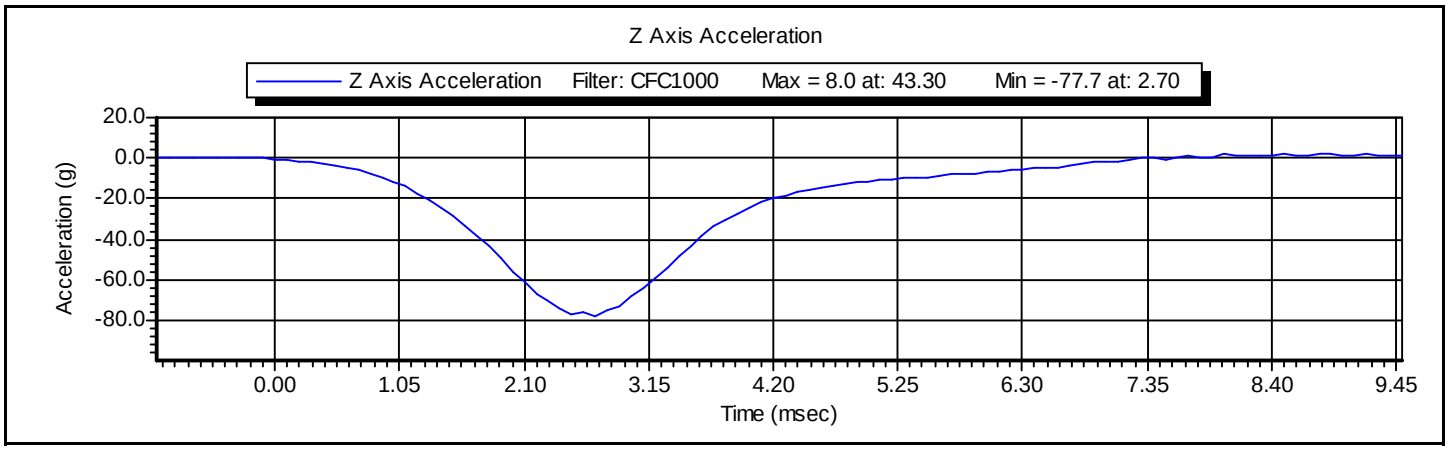
Test Name:	**Head Drop**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**SID 300**		
Test ID:	**Head Drop**	Test Date:	**12/1/2010**
Test Number:	**1**	Test Time:	**10:01:14 AM**









Test ID: **Head Drop** Test Time: **10:01:14 AM** Test Date: **12/1/2010**

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VERIFICATION REPORT

Test Name:	**Neck Pendulum**	Revision:	**8/24/2009**
Sub Test Name:	**Left Side**	Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**SID 300**		
Test ID:	**Neck Flexion**	Test Date:	**12/1/2010**
Test Number:	**1**	Test Time:	**11:09:48 AM**

Component Part Number	Component Serial Number
Neck - 180-2000	**787**

Test Parameters	Test Specifications	Test Results	
Temperature	20.6 -- 22.2	**21.0** deg C	P
Humidity	10 -- 70	**37** %RH	P
Velocity	5.51 -- 5.63	**5.53** m/s	P
Pendulum Impulse at 10 ms	2.20 -- 2.80	**2.52** m/s	P
Pendulum Impulse at 15 ms	3.30 -- 4.10	**3.69** m/s	P
Pendulum Impulse at 20 ms	4.40 -- 5.40	**5.04** m/s	P
Pendulum Impulse at 25 ms	5.40 -- 6.10	**5.84** m/s	P
Pendulum Impulse between 25 and 100 ms	5.50 -- 6.20	**5.87** m/s	P
Max D Plane Rotation	71.0 -- 81.0	**72.7** degrees	P
Time at Max Rotation	50.0 -- 70.0	**60.7** ms	P
Moment about OC	-44.0 -- -36.0	**-41.8** Nm	P
Moment Decay to Zero	102.0 -- 126.0	**114.0** ms	P

All test parameters are within specifications

Technician: **S. Zito** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7231CT**	**C16510**	**10/21/2010**
Denton	**1716A**	**LC-576 Fy**	**2/15/2010**
Denton	**1716A**	**LC-576 Mx**	**2/15/2010**
DentonATD	**78051-342**	**184**	**4/30/2010**
DentonATD	**78051-342**	**174**	**4/30/2010**
DentonATD	**78051-342**	**185**	**4/30/2010**

Test ID: **Neck Flexion** Test Time: **11:09:48 AM** Test Date: **12/1/2010**

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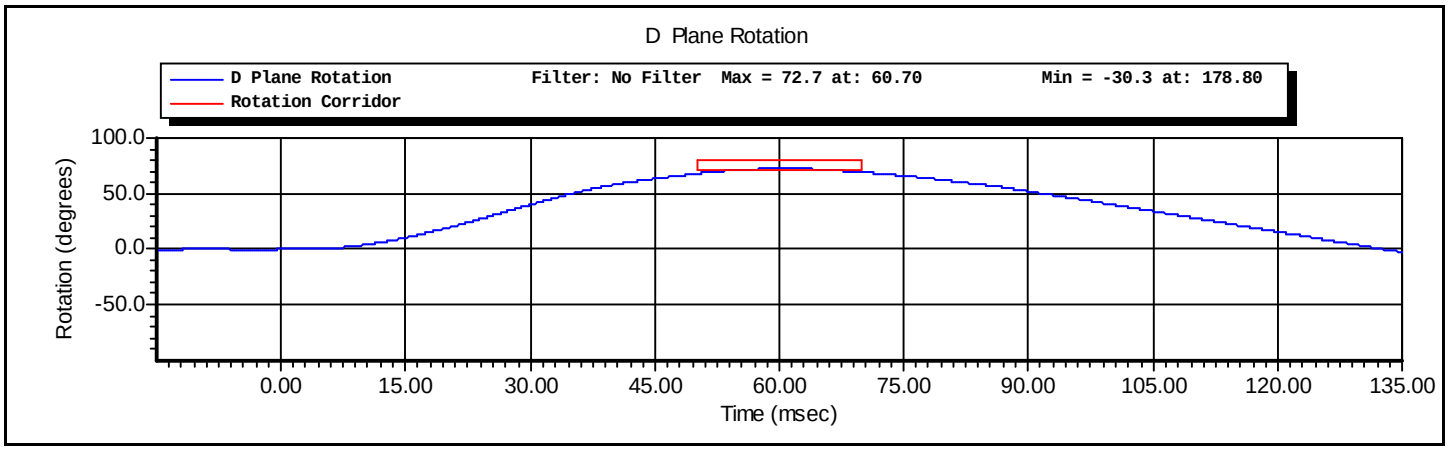
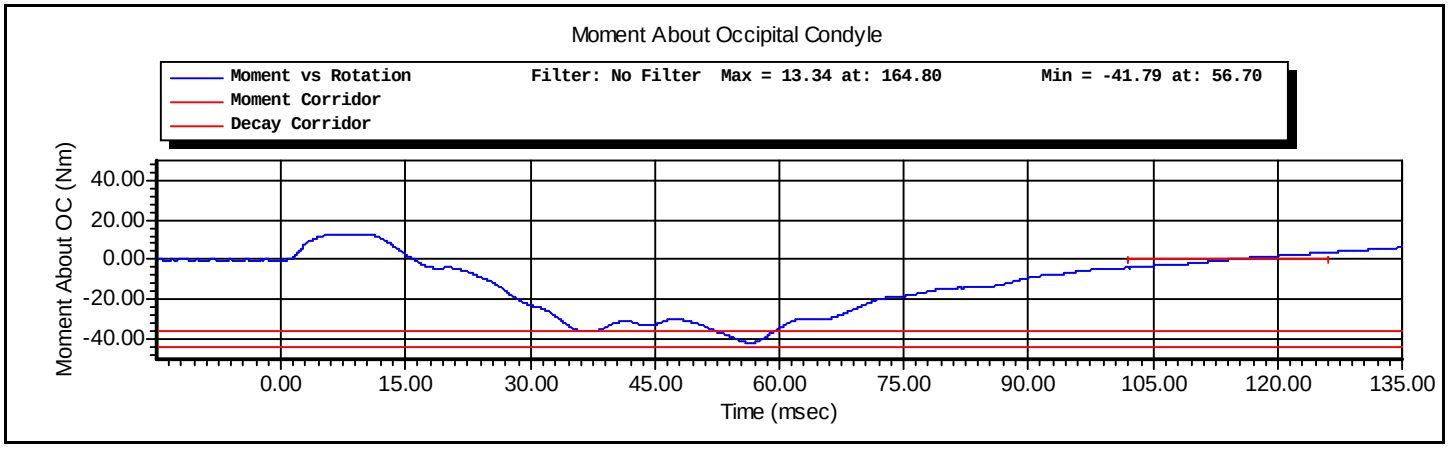
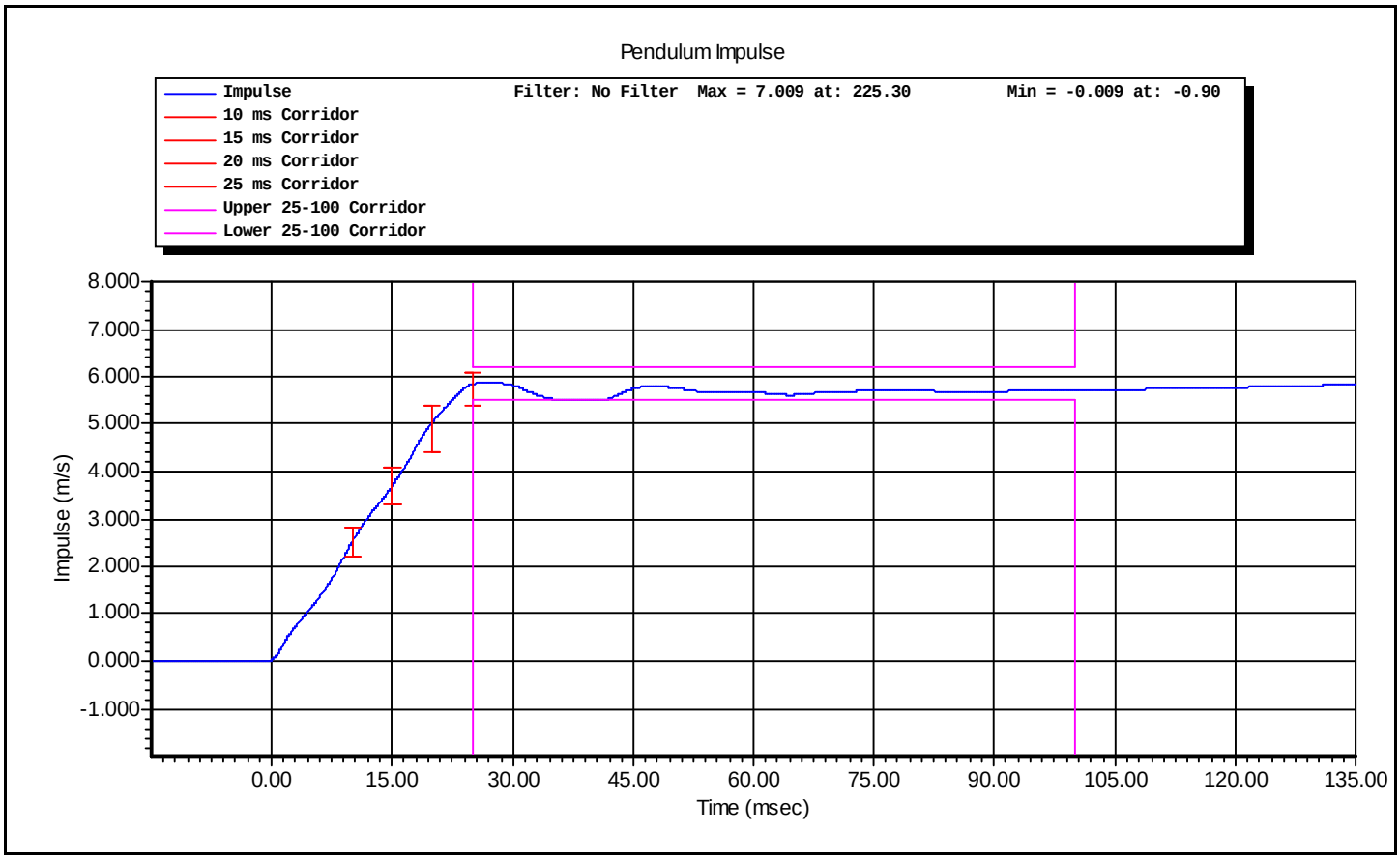
Test Name:	**Neck Pendulum**	Revision:	**8/24/2009**
Sub Test Name:	**Left Side**	Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**SID 300**		
Test ID:	**Neck Flexion**	Test Date:	**12/1/2010**
Test Number:	**1**	Test Time:	**11:09:48 AM**







Test ID: **Neck Flexion** Test Time: **11:09:48 AM** Test Date: **12/1/2010**

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VERIFICATION REPORT

Test Name:	**Shoulder Impact**	Revision:	**8/24/2009**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**SID 300**		
Test ID:	**Shoulder**	Test Date:	**12/3/2010**
Test Number:	**1**	Test Time:	**3:29:15 PM**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**20.80**	deg C	P
Humidity	10.0	--	70.0	**31.0**	%RH	P
Velocity	4.20	--	4.40	**4.33**	m/s	P
Probe Acceleration	13.0	--	18.0	**16.7**	g	P
Shoulder Deflection	28.0	--	37.0	**31.8**	mm	P
T1 Acceleration	17.0	--	22.0	**20.0**	g	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7264-2000**	**P66930**	**10/5/2010**
Servo	**180-3885**	**DS-1063**	**4/7/2010**
Endevco	**7264-2000**	**P58884**	**10/19/2010**

Test ID: **Shoulder** Test Time: **3:29:15 PM** Test Date: **12/3/2010**

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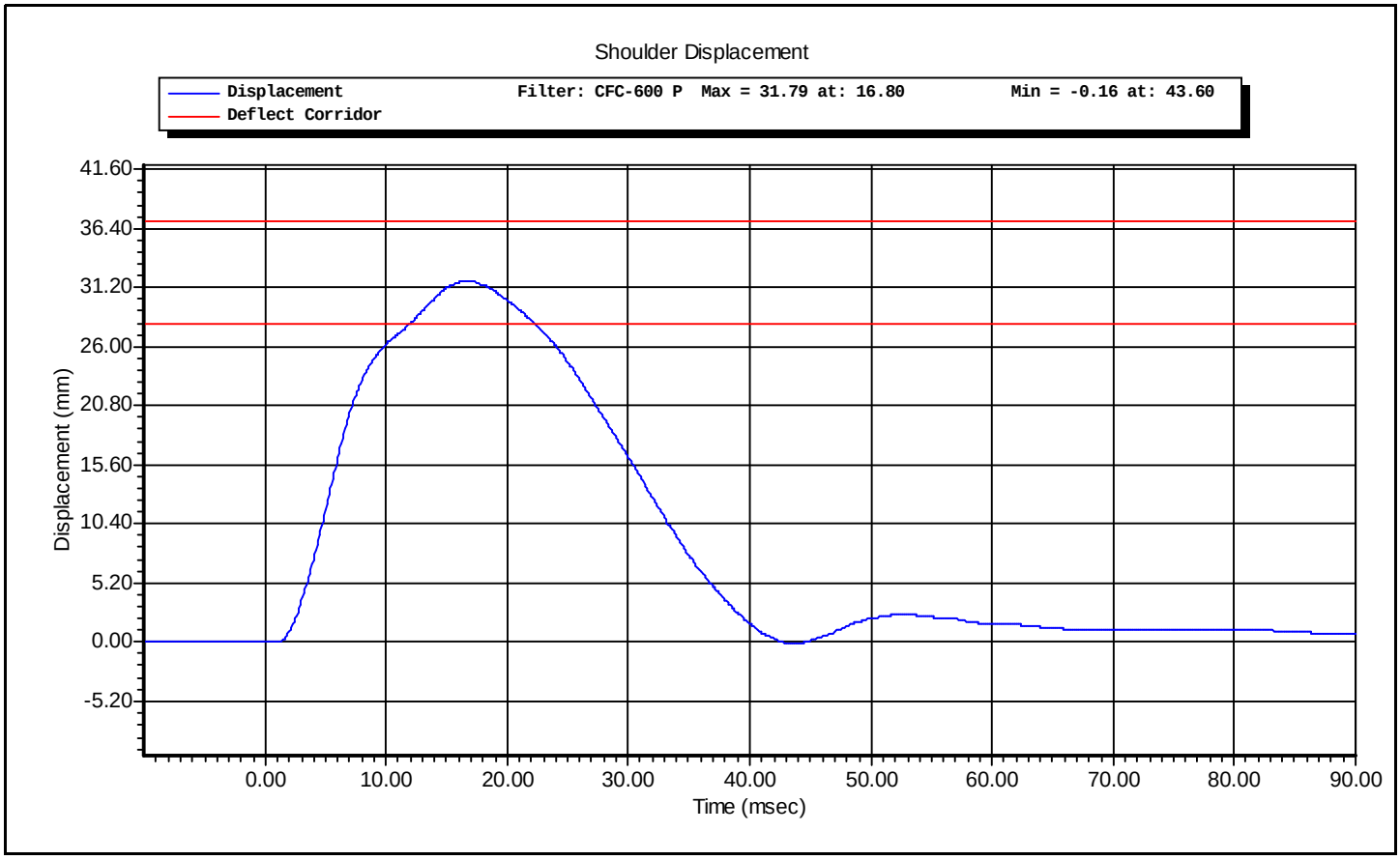
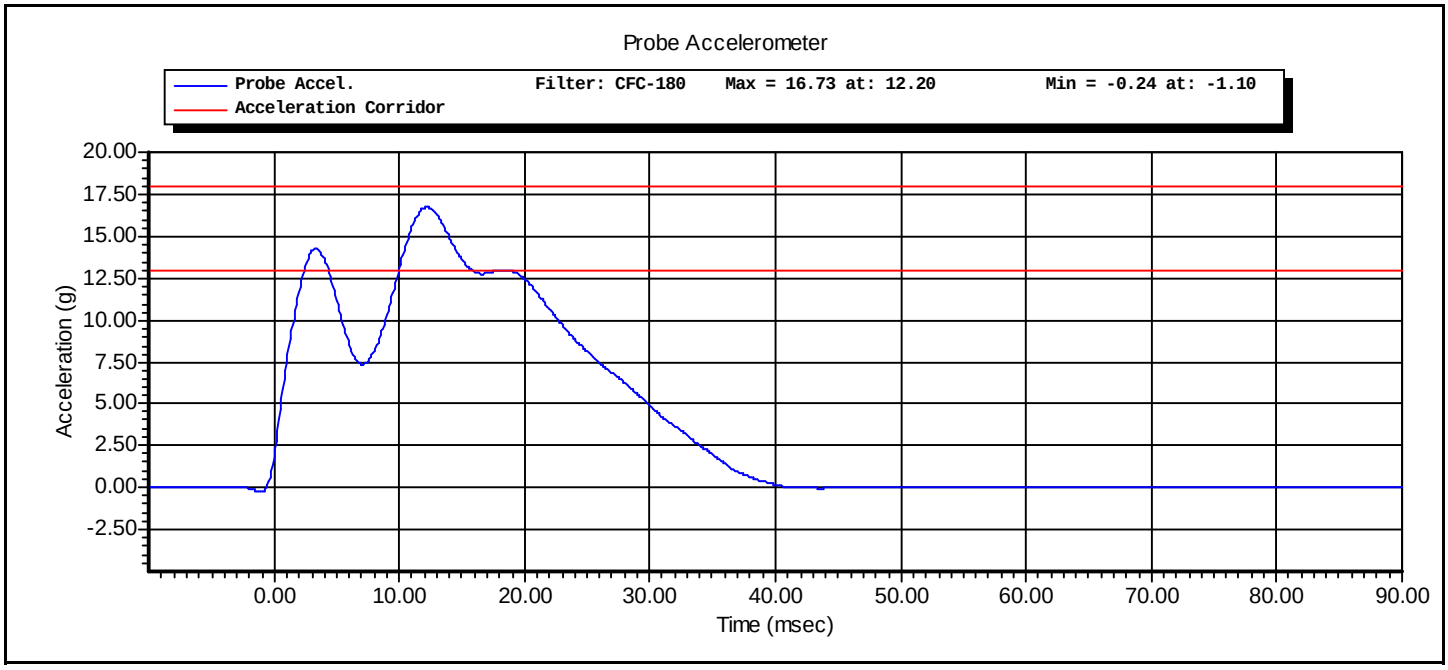
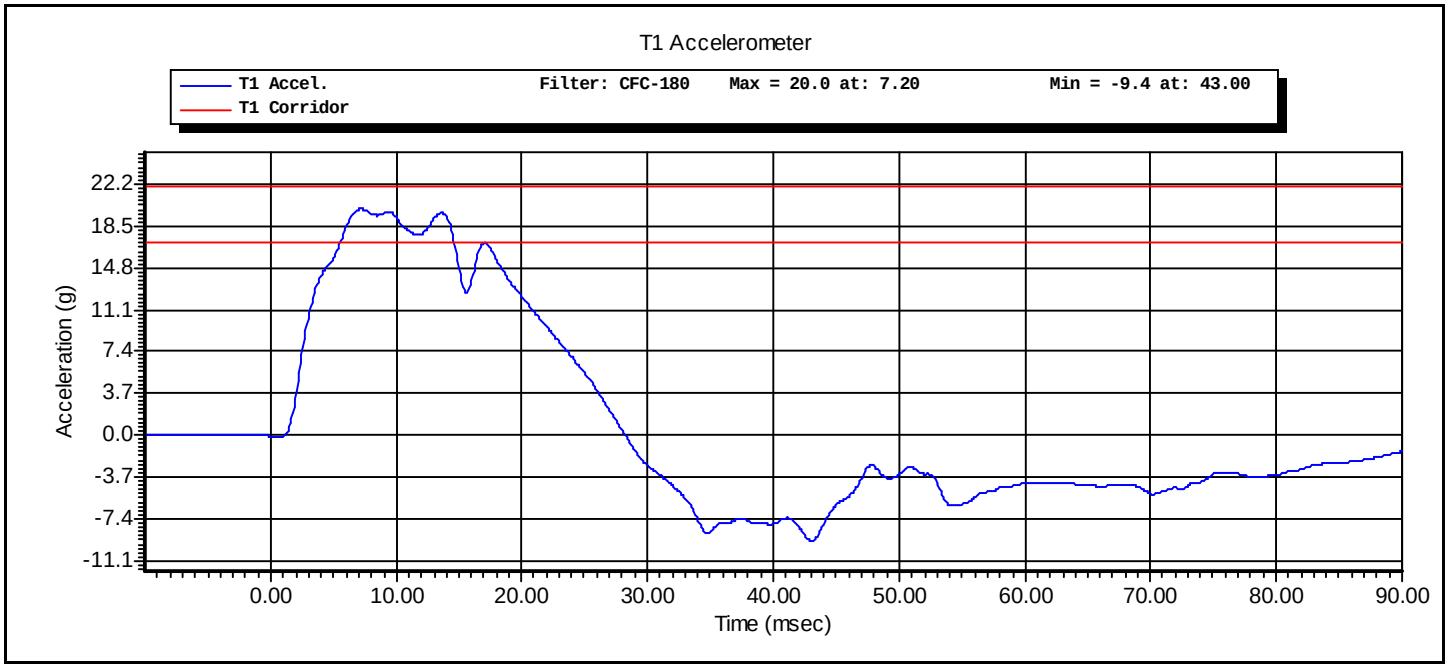
Test Name:	**Shoulder Impact**	Revision:	**8/24/2009**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**SID 300**		
Test ID:	**Shoulder**	Test Date:	**12/3/2010**
Test Number:	**1**	Test Time:	**3:29:15 PM**







Test ID: **Shoulder** Test Time: **3:29:15 PM** Test Date: **12/3/2010**

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VERIFICATION REPORT

Test Name:	**Thorax Impact without Arm**	Revision:	**8/24/2009**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**300**		
Test ID:	**Thorax Without Arm**	Test Date:	**12/3/2010**
Test Number:	**2**	Test Time:	**1:56:17 PM**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**20.8**	deg C	P
Humidity	10	--	70	**32**	%RH	P
Velocity	4.20	--	4.40	**4.33**	m/s	P
Probe Acceleration	14.0	--	18.0	**16.3**	g	P
Upper Thorax Rib Deflection	32.0	--	40.0	**35.2**	mm	P
Mid Thorax Rib Deflection	39.0	--	45.0	**40.9**	mm	P
Lower Thorax Rib Deflection	35.0	--	43.0	**37.9**	mm	P
Upper Spine Acceleration T1	13.0	--	17.0	**16.6**	g	P
Lower Spine Acceleration T12	7.0	--	11.0	**10.2**	g	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7264-2000**	**P66930**	**10/5/2010**
Servo	**180-3885**	**DS-1121**	**4/7/2010**
Servo	**180-3885**	**DS-1151**	**4/7/2010**
Servo	**180-3885**	**DS-1156**	**4/7/2010**
Endevco	**7264-2000**	**P58884**	**10/19/2010**
Endevco	**7264-2000**	**P64147**	**10/8/2010**

Test ID: **Thorax Without Arm** Test Time: **1:56:17 PM** Test Date: **12/3/2010**

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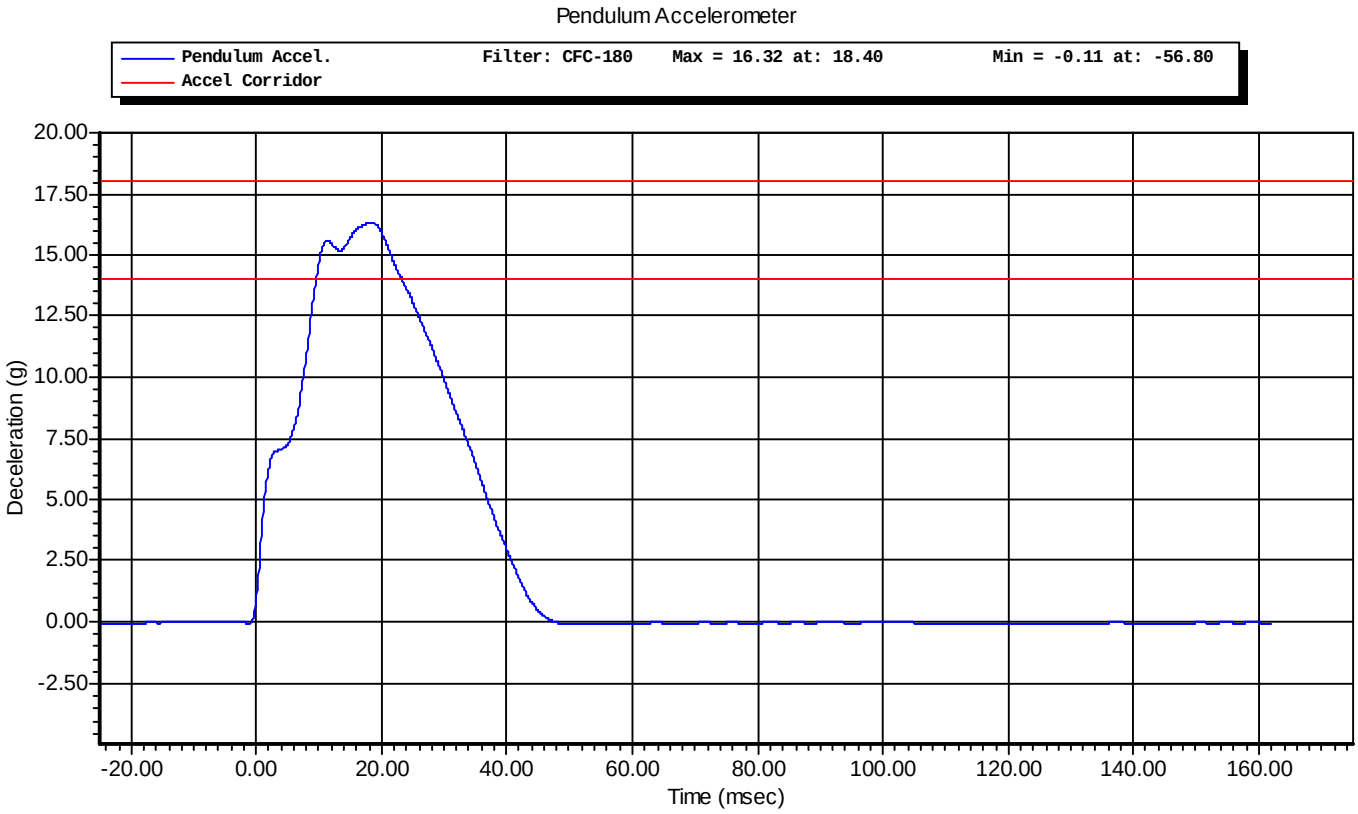
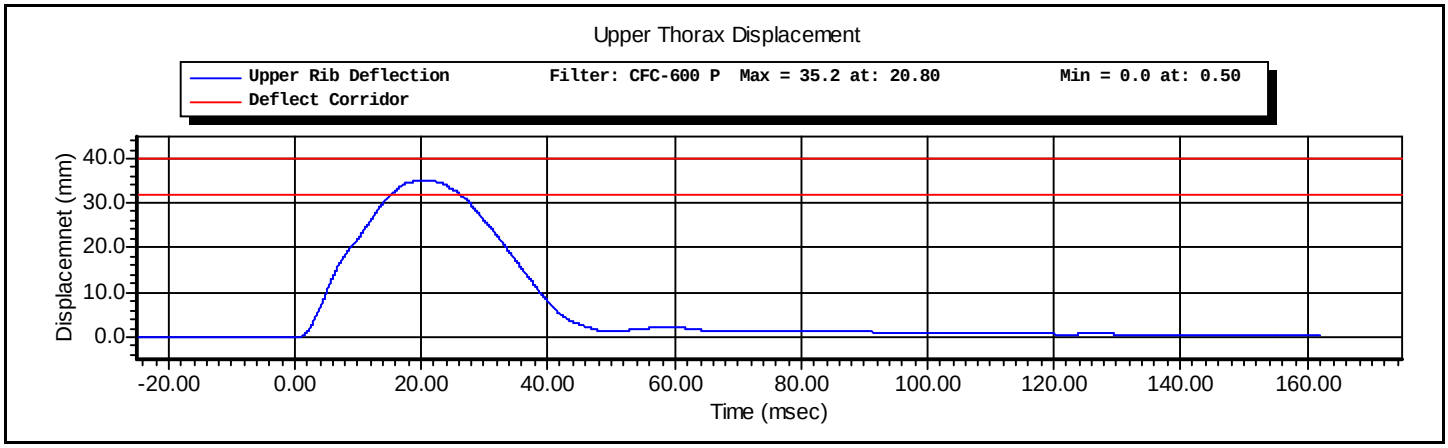
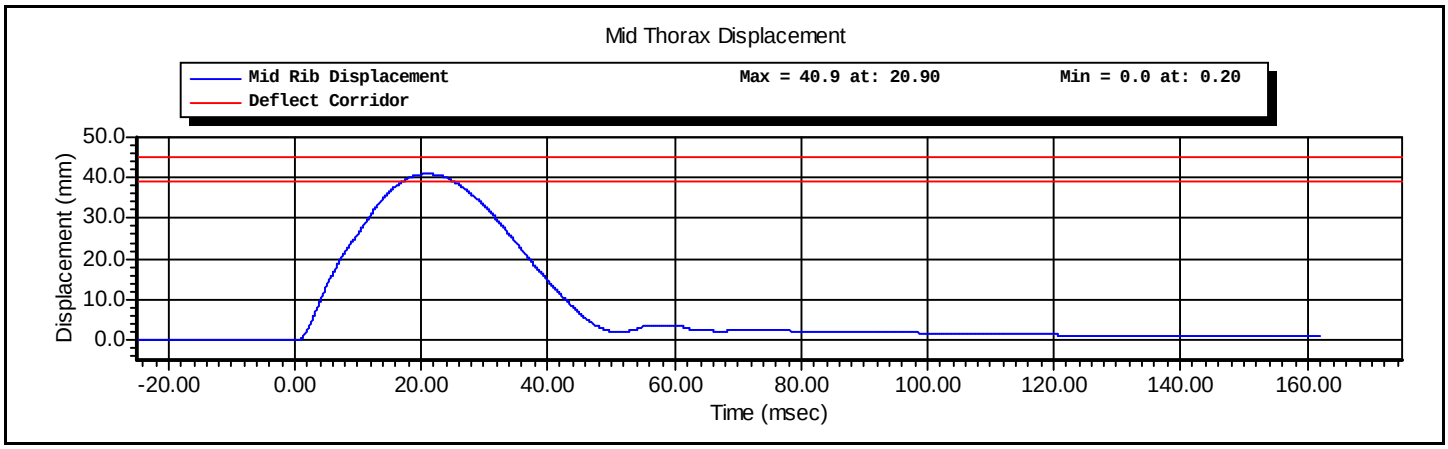
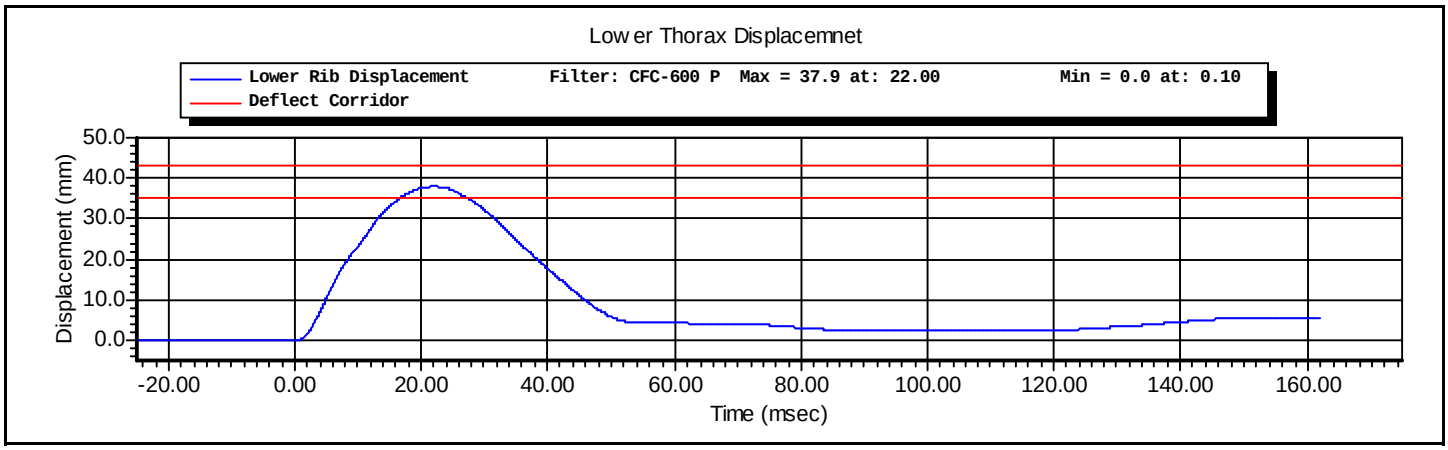
Test Name:	**Thorax Impact without Arm**	Revision:	**8/24/2009**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**300**		
Test ID:	**Thorax Without Arm**	Test Date:	**12/3/2010**
Test Number:	**2**	Test Time:	**1:56:17 PM**

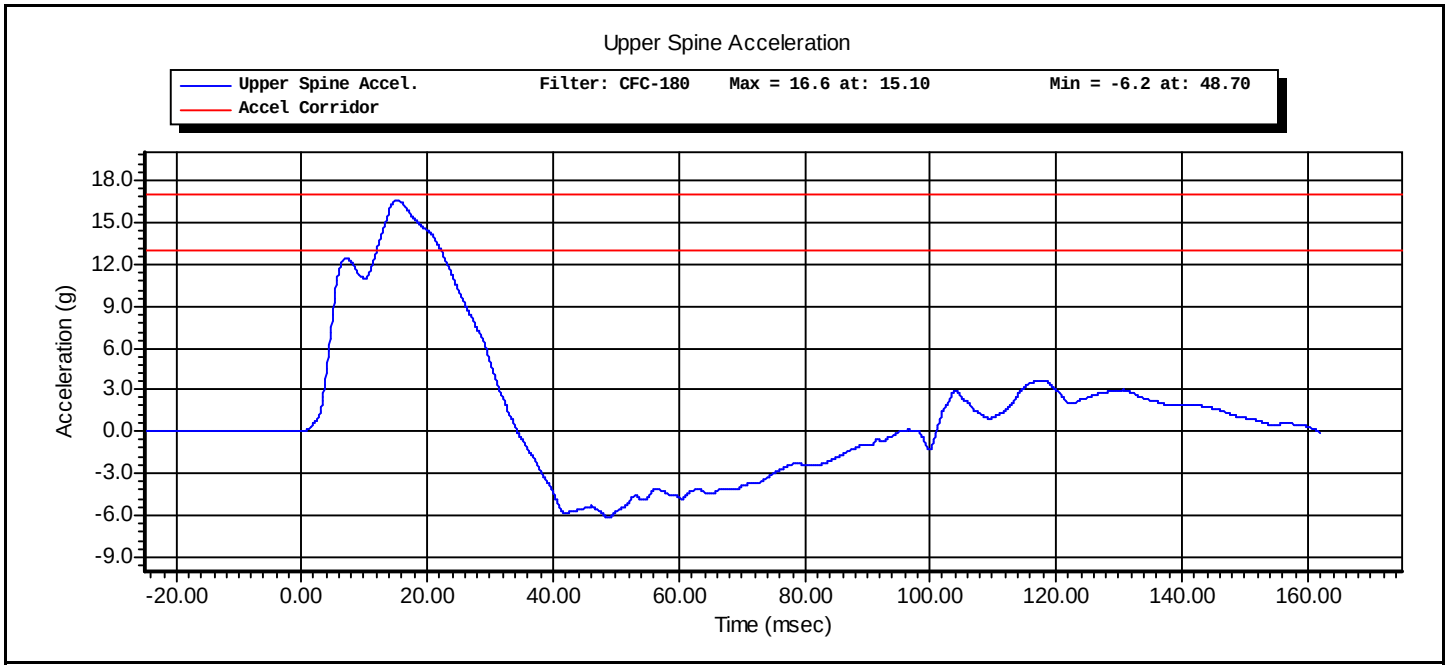


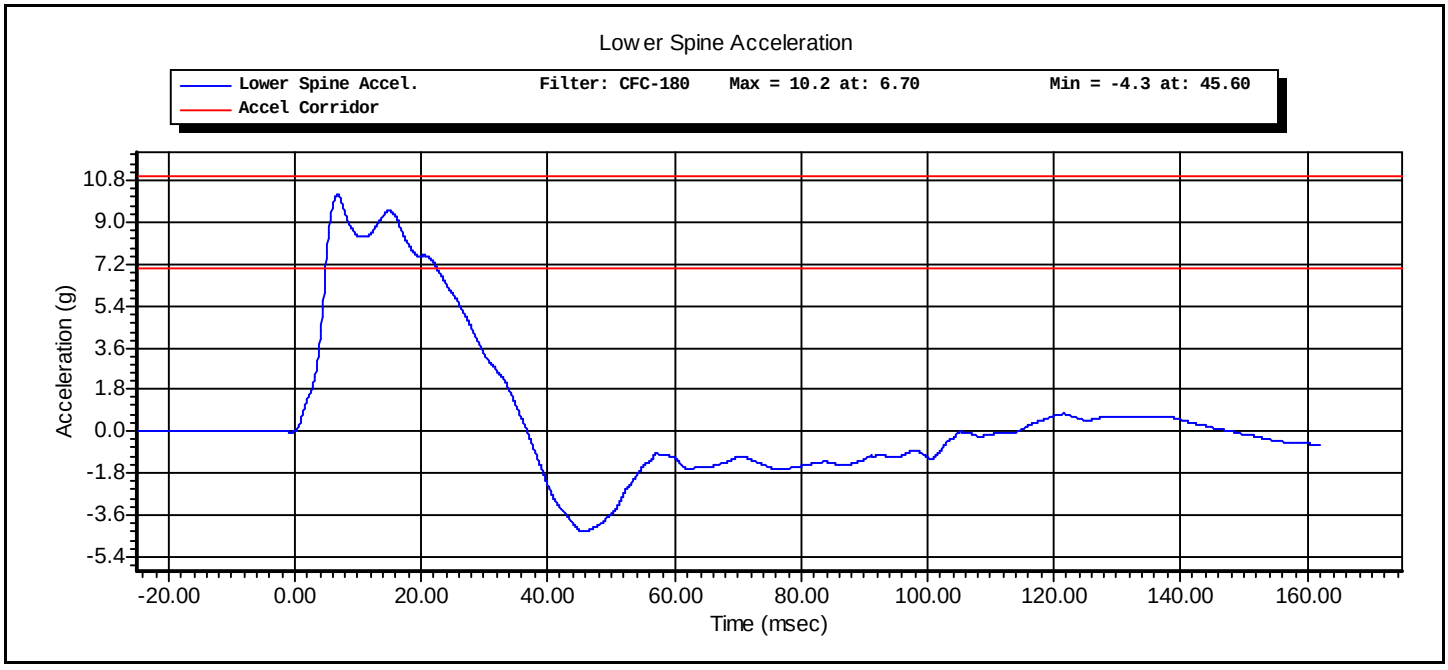






Test ID: **Thorax Without Arm** Test Time: **1:56:17 PM** Test Date: **12/3/2010**





Test ID: **Thorax Without Arm** Test Time: **1:56:17 PM** Test Date: **12/3/2010**

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VERIFICATION REPORT

Test Name:	**Thorax Impact with Arm**	Revision:	**8/24/2009**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**SID 300**		
Test ID:	**Thorax With Arm**	Test Date:	**12/3/2010**
Test Number:	**1**	Test Time:	**2:37:44 PM**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**20.8**	deg C	P
Humidity	10	--	70	**32**	%RH	P
Velocity	6.60	--	6.80	**6.68**	m/s	P
Probe Acceleration after 5ms	30.0	--	36.0	**34.6**	g	P
Upper Thorax Rib Deflection	25.0	--	32.0	**26.4**	mm	P
Mid Thorax Rib Deflection	30.0	--	36.0	**31.0**	mm	P
Lower Thorax Rib Deflection	32.0	--	38.0	**32.1**	mm	P
Upper Spine Acceleration ("y")	34.0	--	43.0	**40.0**	g	P
Lower Spine Acceleration ("y")	29.0	--	37.0	**36.8**	g	P
Shoulder Deflection	31.0	--	40.0	**37.3**	mm	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7264-2000**	**P66930**	**10/5/2010**
Servo	**180-3885**	**DS-1121**	**4/7/2010**
Servo	**180-3885**	**DS-1151**	**4/7/2010**
Servo	**180-3885**	**DS-1156**	**4/7/2010**
Endevco	**7264-2000**	**P58884**	**10/19/2010**
Endevco	**7264-2000**	**P64147**	**10/8/2010**
Servo	**180-3885**	**DS-1063**	**4/7/2010**

Test ID: **Thorax With Arm** Test Time: **2:37:44 PM** Test Date: **12/3/2010**

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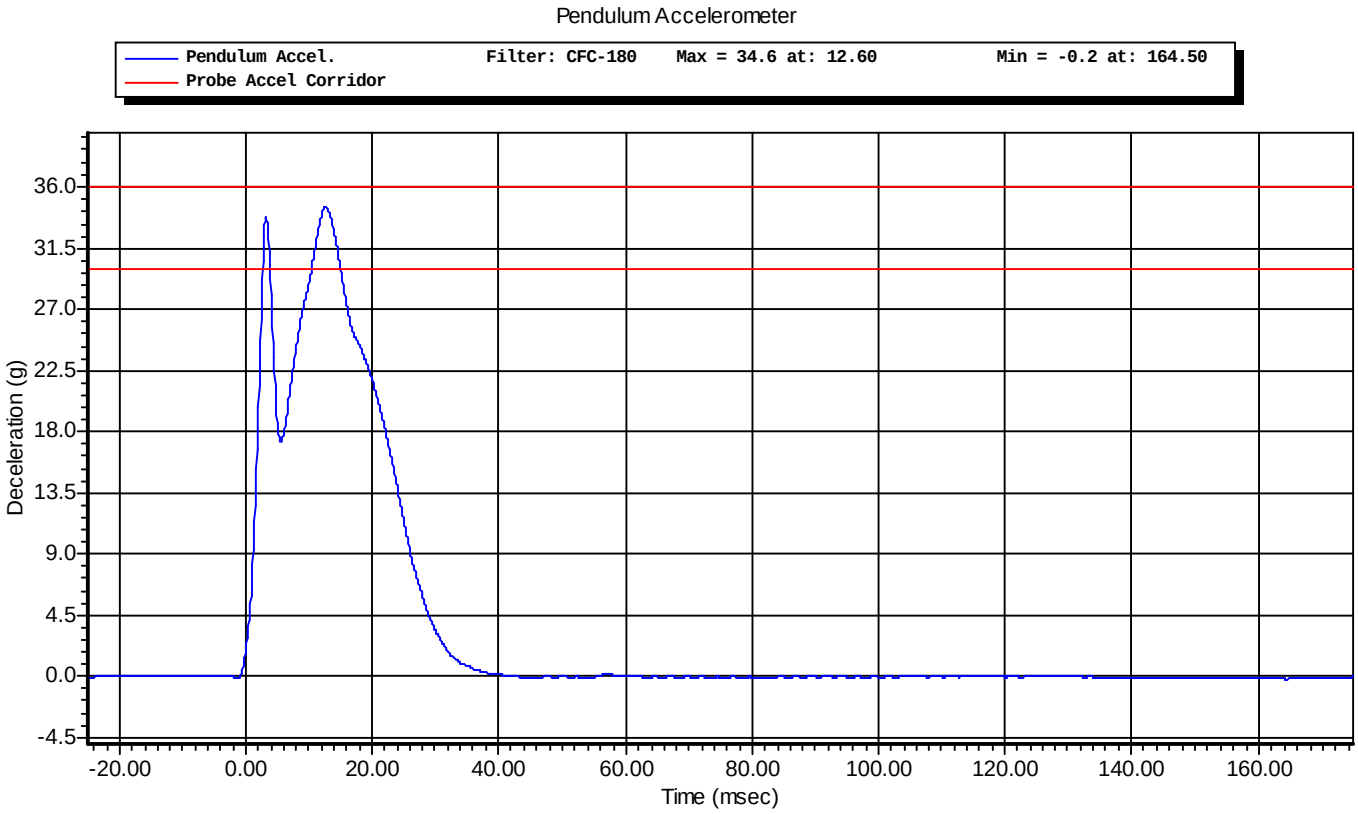
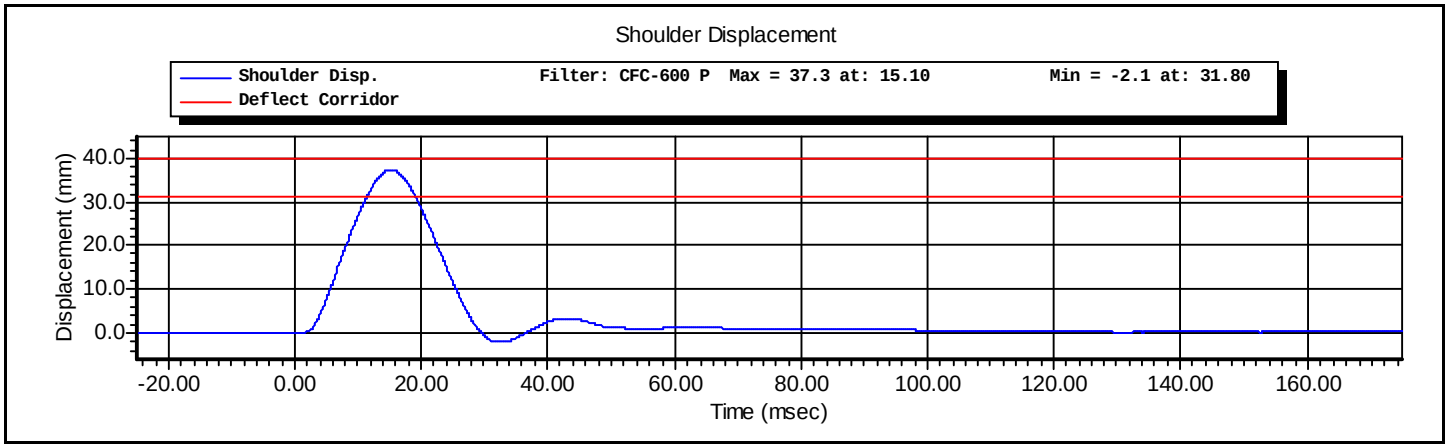
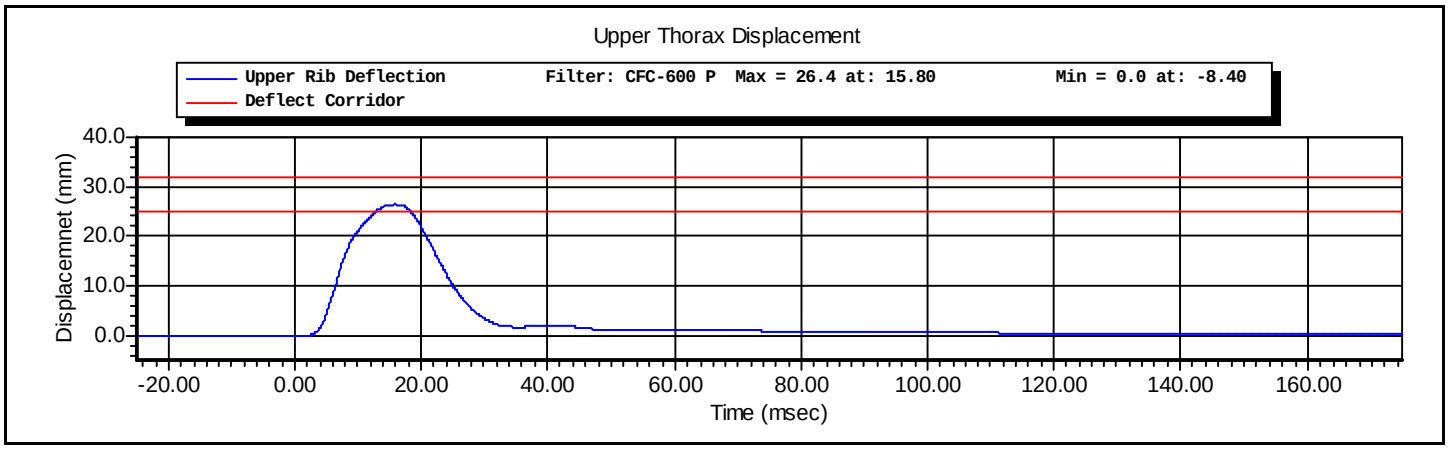
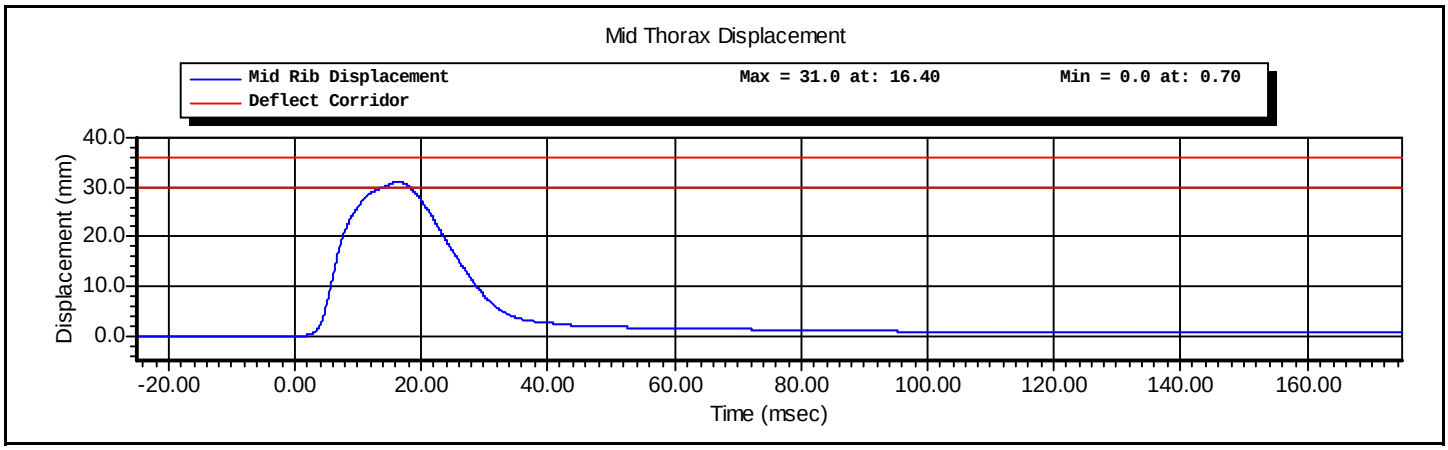
Test Name:	**Thorax Impact with Arm**	Revision:	**8/24/2009**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**SID 300**		
Test ID:	**Thorax With Arm**	Test Date:	**12/3/2010**
Test Number:	**1**	Test Time:	**2:37:44 PM**

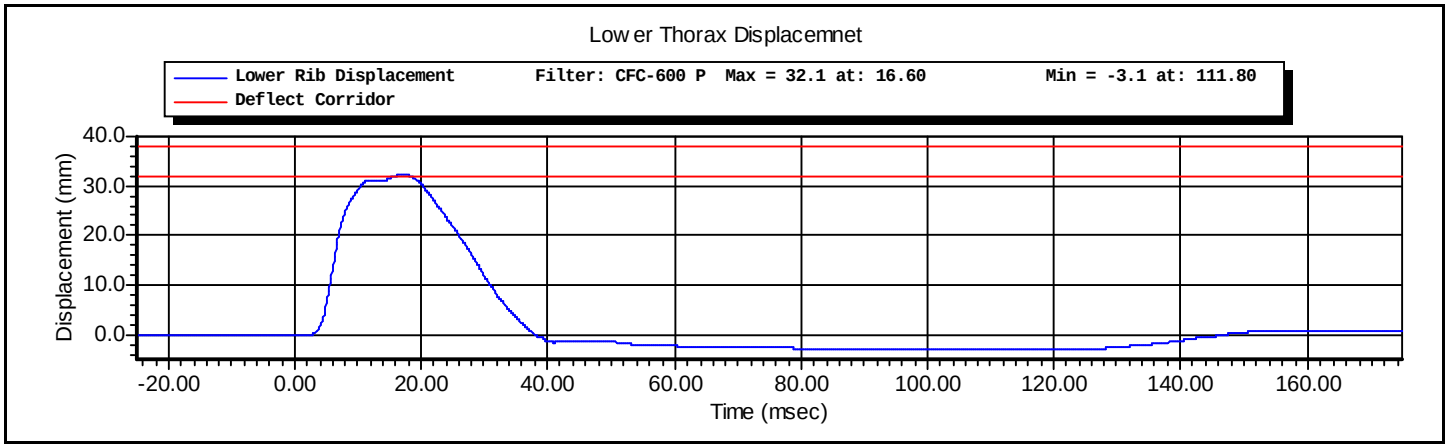


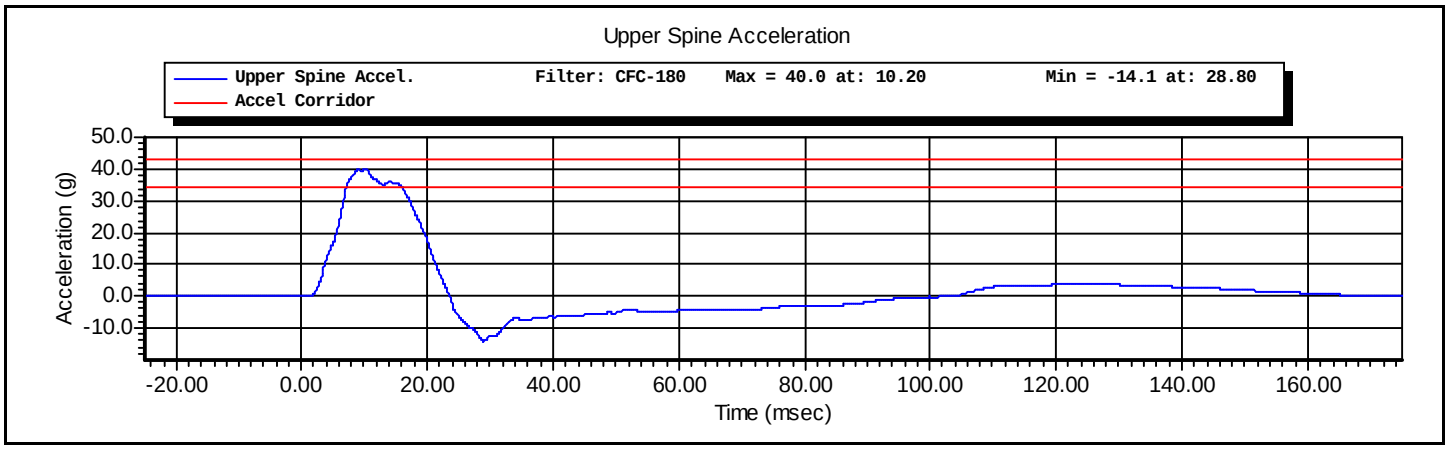


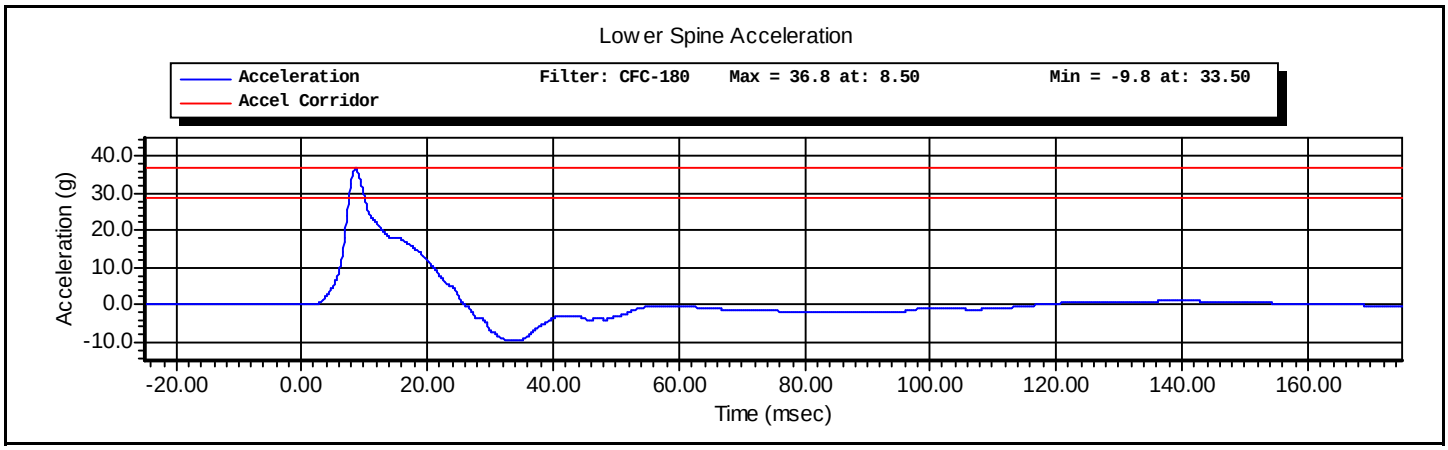




Test ID: **Thorax With Arm** Test Time: **2:37:44 PM** Test Date: **12/3/2010**







Test ID: **Thorax With Arm** Test Time: **2:37:44 PM** Test Date: **12/3/2010**

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VERIFICATION REPORT

Test Name:	**Abdominal Impact**	Revision:	**8/24/2009**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**SID 300**		
Test ID:	**Abdomen**	Test Date:	**12/3/2010**
Test Number:	**1**	Test Time:	**11:57:03 AM**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.5**	deg C	P
Humidity	10	--	70	**30**	%RH	P
Velocity	4.20	--	4.40	**4.32**	m/s	P
Probe Acceleration	12.0	--	16.0	**15.7**	g	P
Upper Abdominal Rib Deflection	36.0	--	47.0	**38.1**	mm	P
Lower Abdominal Rib Deflection	33.0	--	44.0	**35.1**	mm	P
Lower Spine Acceleration - T12	9.0	--	14.0	**12.4**	g	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7264-2000**	**P66930**	**10/5/2010**
Servo	**180-3885**	**DS-1162**	**4/7/2010**
Servo	**180-3885**	**DS-1232**	**4/7/2010**
Endevco	**7264-2000**	**P64147**	**10/8/2010**

Test ID: **Abdomen** Test Time: **11:57:03 AM** Test Date: **12/3/2010**

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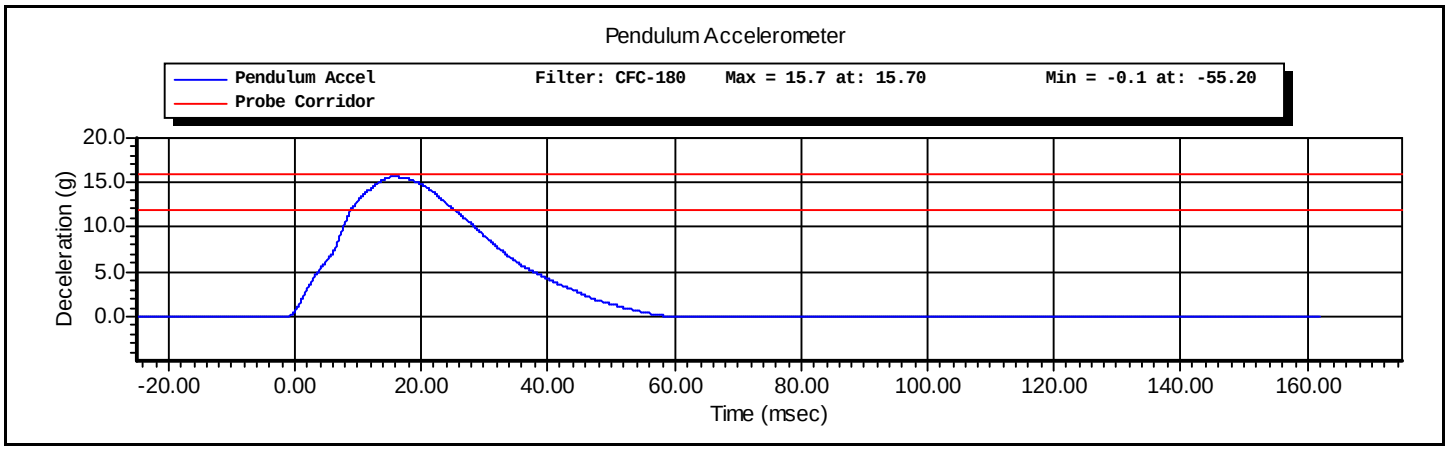
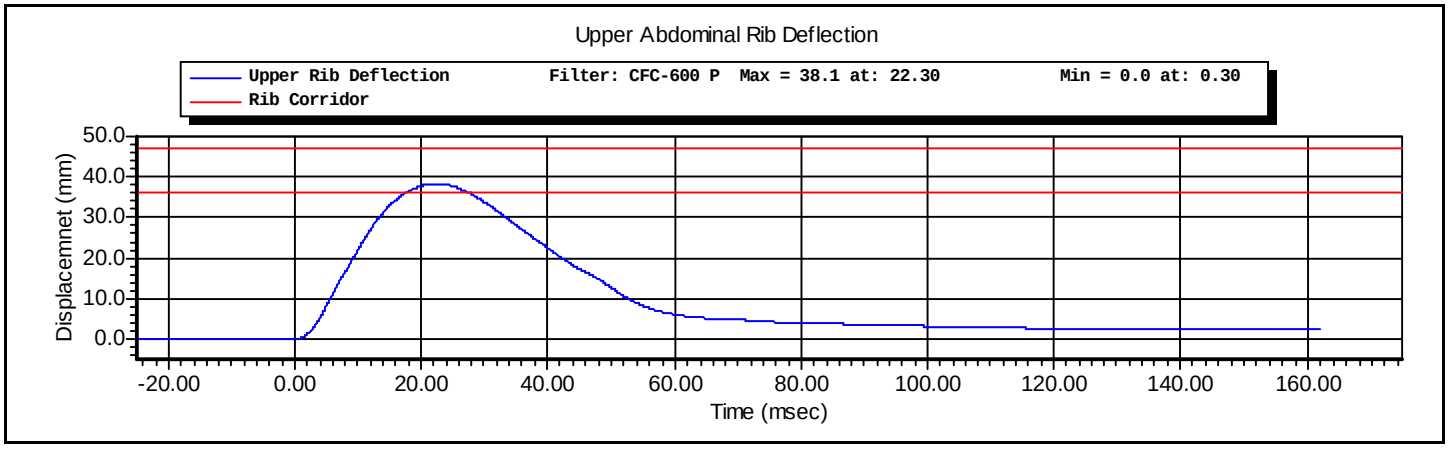
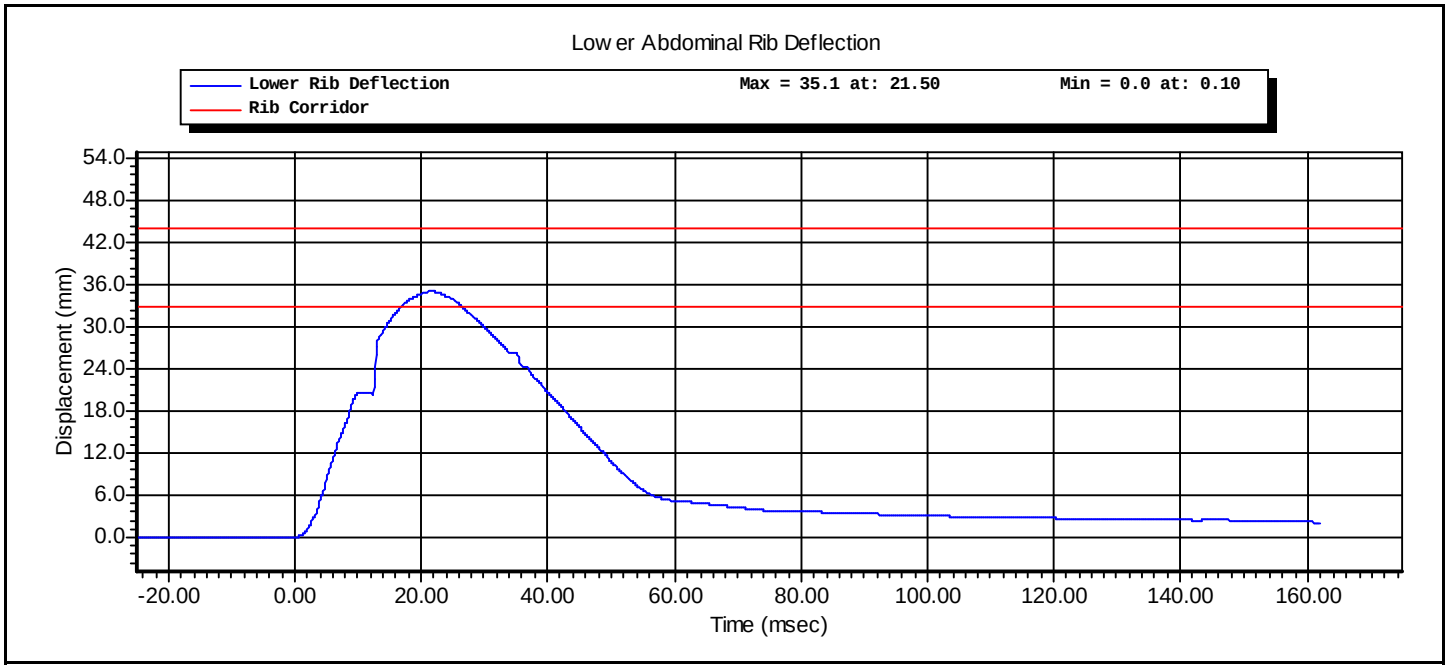
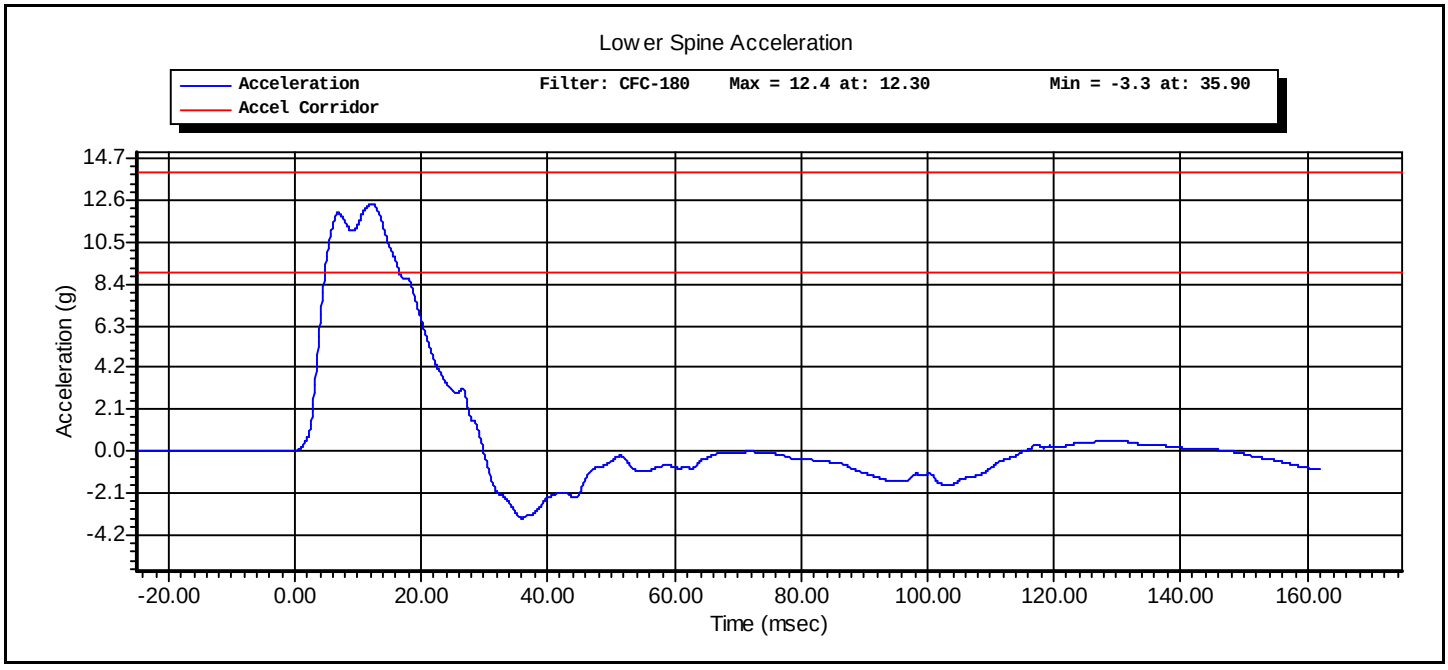
Test Name:	**Abdominal Impact**	Revision:	**8/24/2009**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**SID 300**		
Test ID:	**Abdomen**	Test Date:	**12/3/2010**
Test Number:	**1**	Test Time:	**11:57:03 AM**









Test ID: **Abdomen** Test Time: **11:57:03 AM** Test Date: **12/3/2010**

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VERIFICATION REPORT

Test Name:	**Pelvis**	Revision:	**8/24/2009**
Sub Test Name:	**Iliac Impact**	Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**SID 300**		
Test ID:	**Pelvis Iliac**	Test Date:	**12/7/2010**
Test Number:	**3**	Test Time:	**10:29:42 AM**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.6**	deg C	P
Humidity	10	--	70	**22**	%RH	P
Velocity	4.20	--	4.40	**4.40**	m/s	P
Peak Probe Acceleration	36.0	--	45.0	**38.8**	g	P
Peak Pelvis Acceleration	28.0	--	39.0	**31.7**	g	P
Peak Iliac Force	4.10	--	5.10	**4.20**	kN	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7264-2000**	**P66930**	**10/5/2010**
Endevco	**7264-2000**	**P51671**	**6/12/2010**
DentonATD	**3228J**	**LC-279 Fy**	**4/12/2010**

Test ID: **Pelvis Iliac** Test Time: **10:29:42 AM** Test Date: **12/7/2010**

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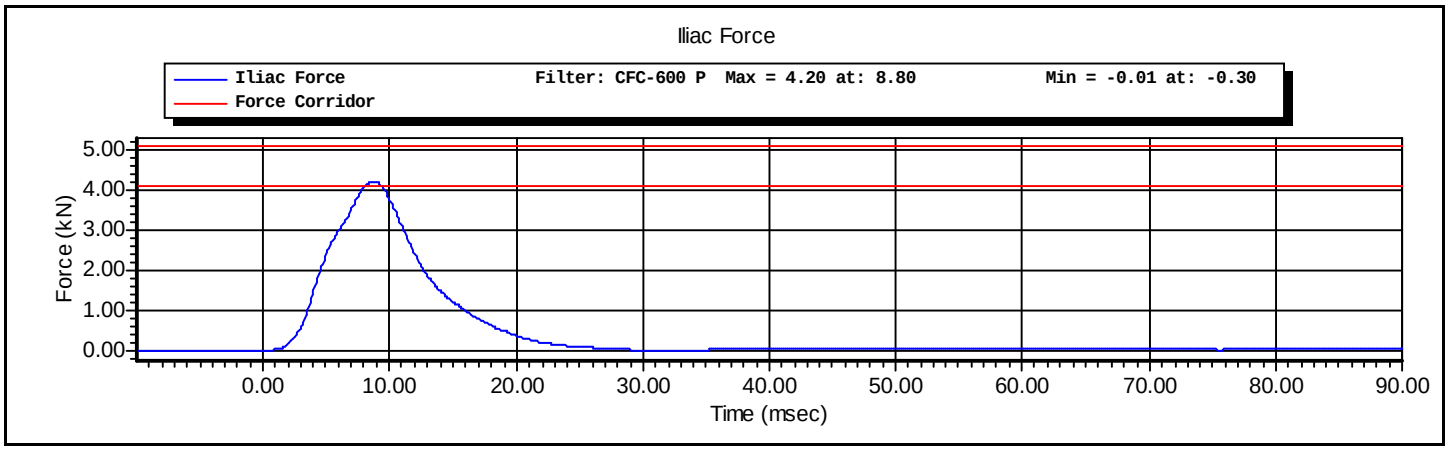
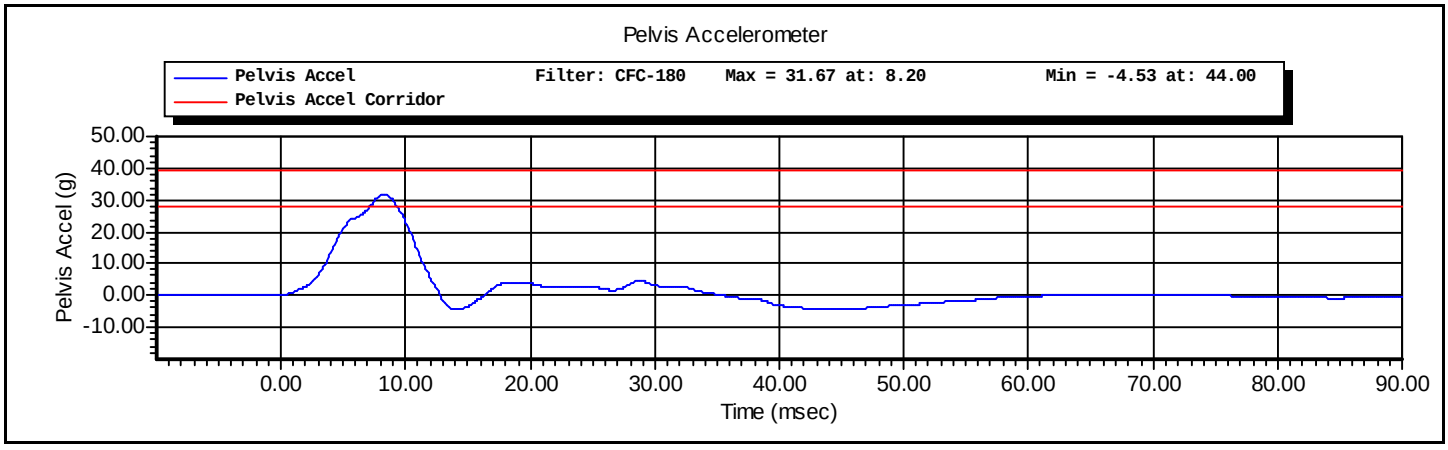
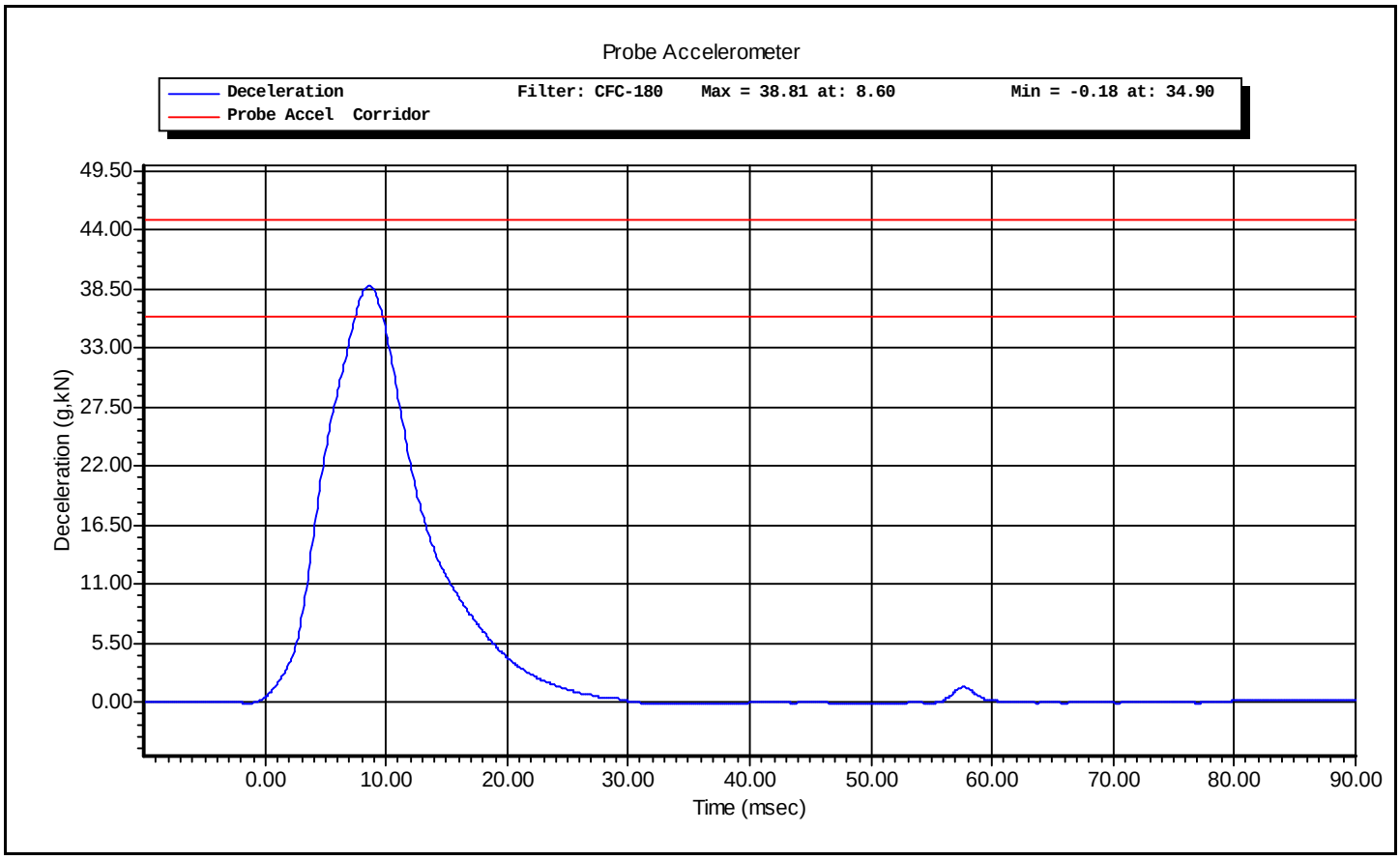
Test Name:	**Pelvis**	Revision:	**8/24/2009**
Sub Test Name:	**Iliac Impact**	Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**SID 300**		
Test ID:	**Pelvis Iliac**	Test Date:	**12/7/2010**
Test Number:	**3**	Test Time:	**10:29:42 AM**







Test ID: **Pelvis Iliac** Test Time: **10:29:42 AM** Test Date: **12/7/2010**

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VERIFICATION REPORT

Test Name:	**Pelvis**	Revision:	**8/24/2009**
Sub Test Name:	**Acetabulum Impact**	Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**SID 300**		
Test ID:	**Acetabulum**	Test Date:	**12/6/2010**
Test Number:	**3**	Test Time:	**7:09:50 PM**

Component Part Number	Component Serial Number
Pelvis Flesh 180-4343	**1033-1**

Comments:

Pelvis Plug Used For Certification:
FTSS S/N 36366
Force @ 3mm = 1437N

Pelvis Plug Used For Full Scale Test:
FTSS S/N 36368
Force @ 3mm = 1447N

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**20.8**	deg C	P
Humidity	10	--	70	**27**	%RH	P
Velocity	6.60	--	6.80	**6.62**	m/s	P
Peak Probe Acceleration	38.0	--	47.0	**45.3**	g	P
Peak Pelvis Acceleration	34.0	--	42.0	**41.6**	g	P
Peak Acetabulum Force	3.60	--	4.30	**3.81**	kN	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7264-2000**	**P66930**	**10/5/2010**
Endevco	**7264-2000**	**P51671**	**6/12/2010**
DentonATD	**3249J**	**LC-275a**	**4/12/2010**
Endevco	**7264-2000**	**P51288**	**6/2/2010**

Test ID: **Acetabulum** Test Time: **7:09:50 PM** Test Date: **12/6/2010**

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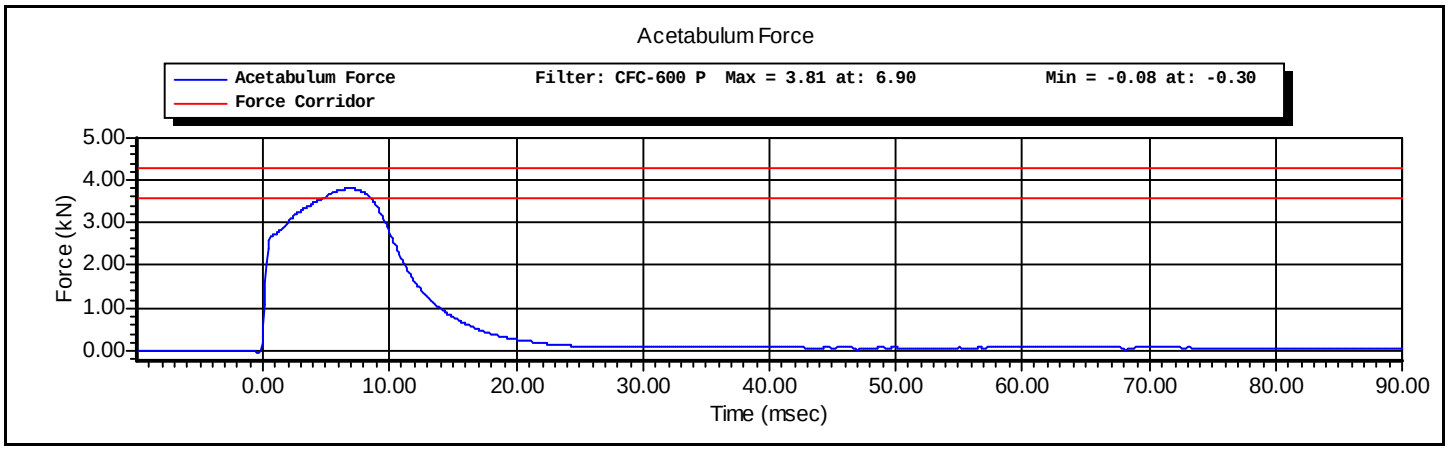
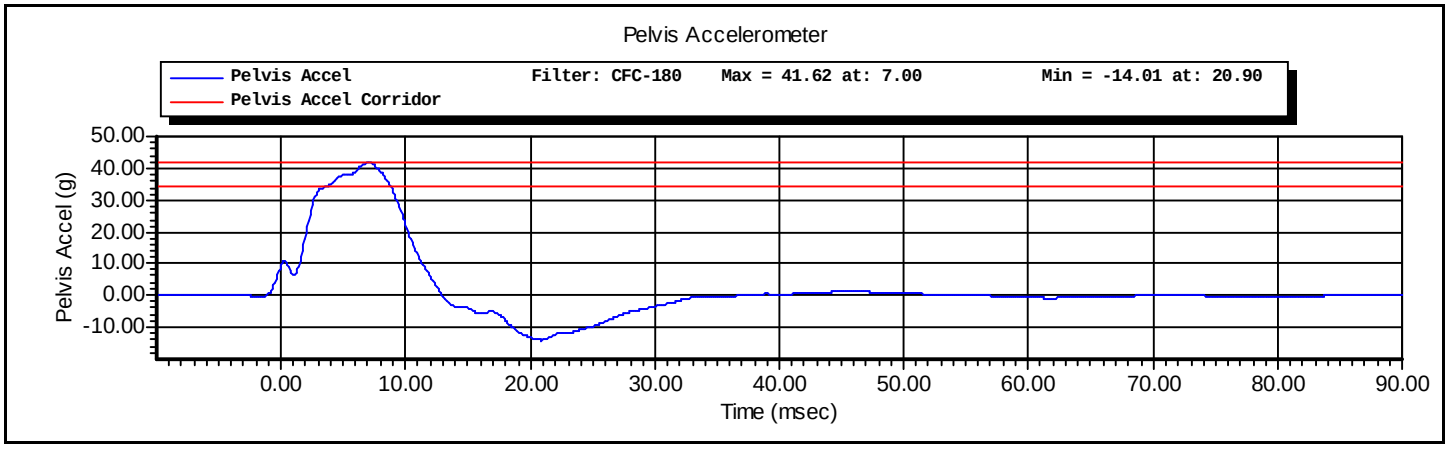
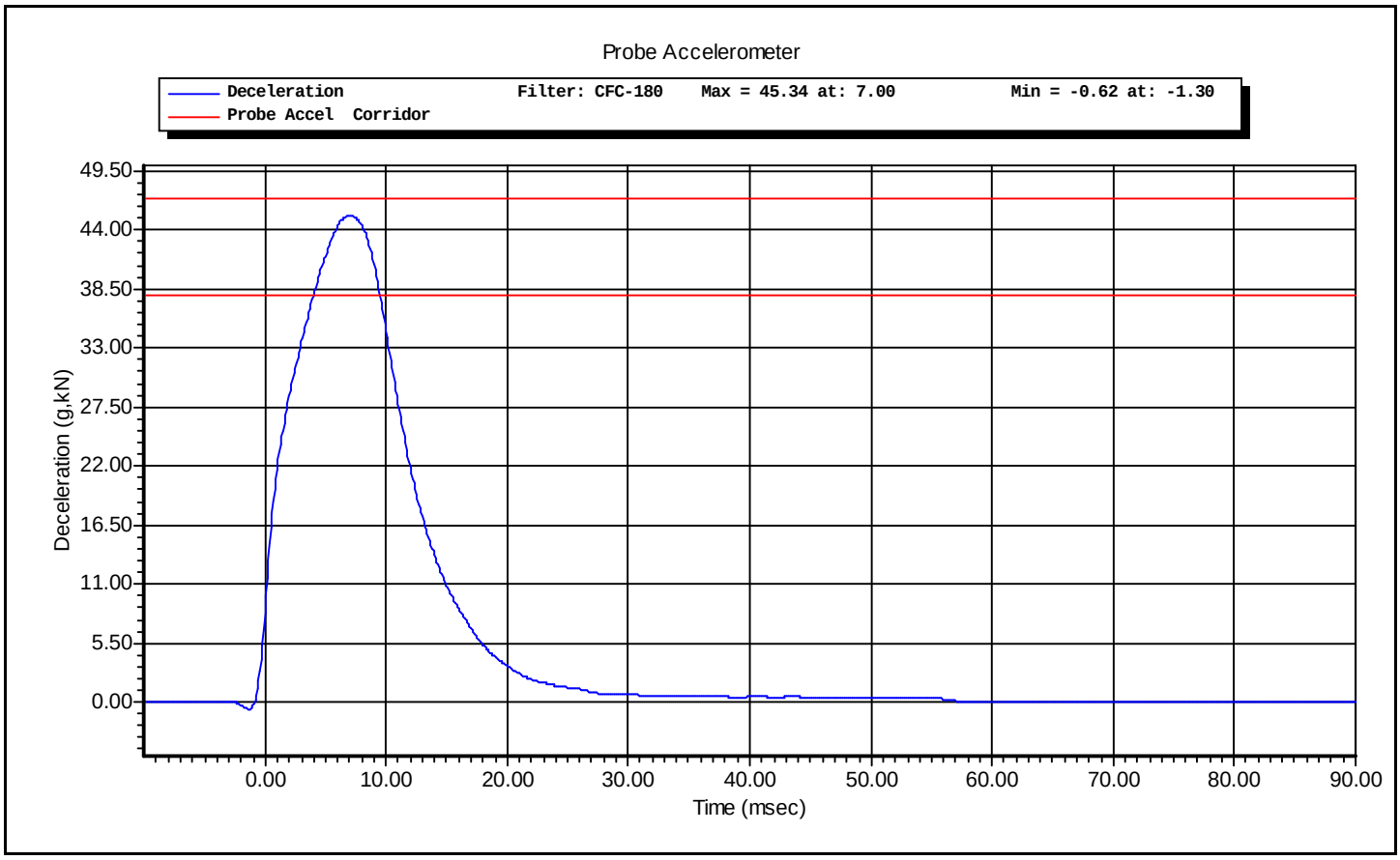
Test Name:	**Pelvis**	Revision:	**8/24/2009**
Sub Test Name:	**Acetabulum Impact**	Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**SID 300**		
Test ID:	**Acetabulum**	Test Date:	**12/6/2010**
Test Number:	**3**	Test Time:	**7:09:50 PM**

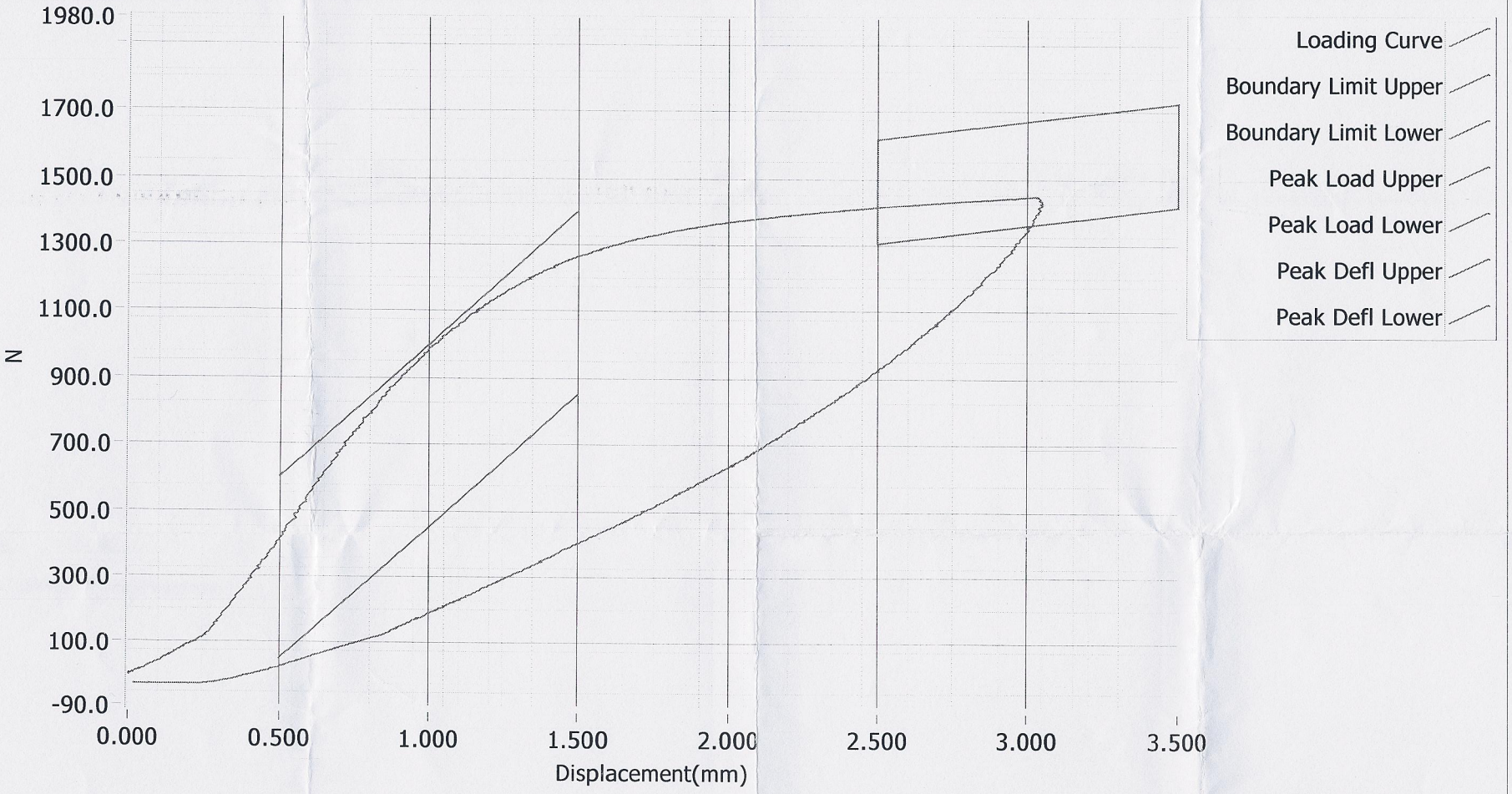






Test ID: **Acetabulum** Test Time: **7:09:50 PM** Test Date: **12/6/2010**

Resultant Data - SIDIIs Plug Compression



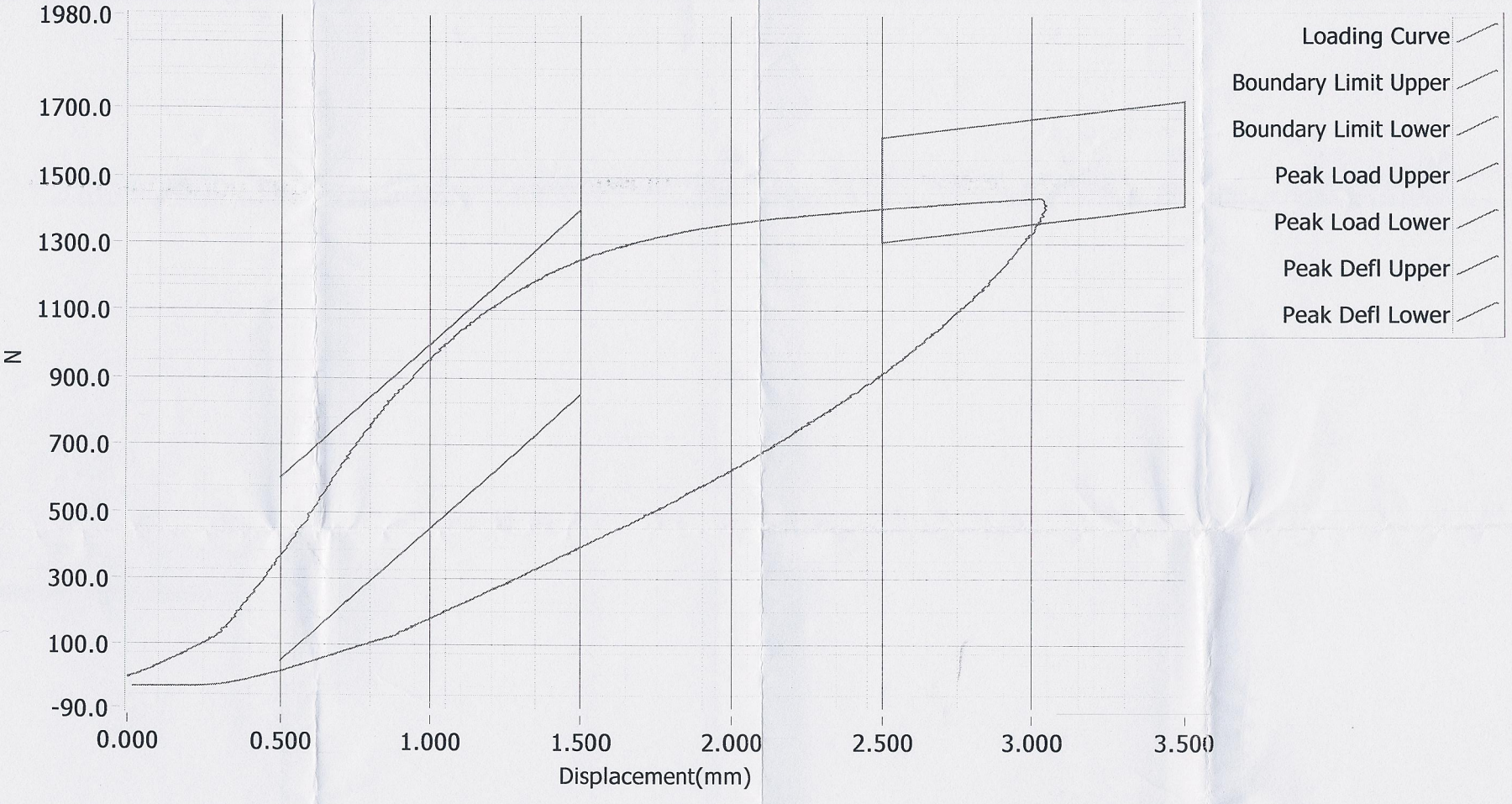
ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
		9/23/2010	12:54 AM

Cert ID	ATD Serial Number	ATD Type
	36368	SIDIIs

Current Date : 9/23/2010 Current Time : 00:56:00

Resultant Data - SIDIIs Plug Compression



ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
		9/23/2010	12:51 AM
Cert ID	ATD Serial Number	ATD Type	
	36366	SIDIIs	

Current Date : 9/23/2010 Current Time : 00:52:26

CALIBRATION TEST RESULTS

POST-TEST

ES2-re No: 033

CONFIGURED FOR LEFT SIDE IMPACT

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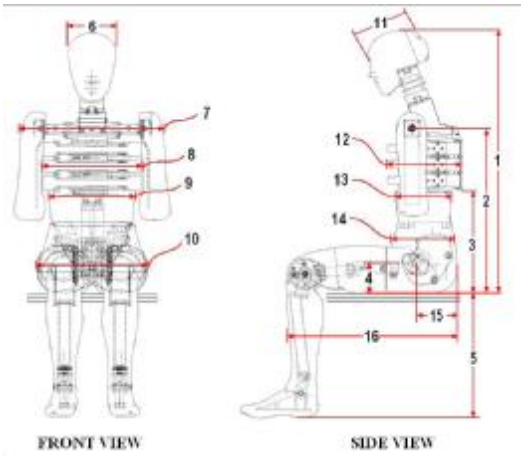
ES-2re External Measurements

NHTSA SN F033



Dim. No.	Description	Specification (mm)	Result (mm)	Pass/Fail
1	Sitting Height	900-918	909	Pass
2	Seat to Shoulder Joint	558-572	565	Pass
3	Seat to Lower Face of Thoracic Spine Box	346-356	354	Pass
4	Seat to Hip Joint (center of bolt)	97-103	100	Pass
5	Sole to Seat, Sitting	433-451	444	Pass
6	Head Width	152-158	158	Pass
7	Shoulder/Arm Width	461-479	470	Pass
8	Thorax Width	322-332	323	Pass
9	Abdomen Width	273-287	282	Pass
10	Pelvis Lap Width	359-373	369	Pass
11	Head Depth	196-206	201	Pass
12	Thorax Depth	262-272	267	Pass
13	Abdomen Depth	194-204	199	Pass
14	Pelvis Depth	235-245	239	Pass
15	Back of Buttocks to Hip Joint (center of bolt)	150-160	157	Pass
16	Back of Buttocks to Front Knee	597-615	603	Pass

Technician: AR

Date: 01/05/2011

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VERIFICATION REPORT

Test Name:	**Head Drop**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Head Drop**	Test Date:	**1/6/2011**
Test Number:	**1**	Test Time:	**12:45:06 PM**

Component Part Number	Component Serial Number
455-1007	**8473**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.0**	deg C	P
Humidity	10	--	70	**24**	%RH	P
Resultant Acceleration	125	--	155	**146**	g	P
Oscillation	0.0	--	15.0	**5.9**	%	P
Fore-Aft Acceleration	-15.00	--	15.00	**4.60**	g	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Endevco	**7264-2000**	**P51681**	**9/20/2010**
Endevco	**7264-2000**	**P51949**	**12/3/2010**
Endevco	**7264-2000**	**P51695**	**9/20/2010**

Test ID: **Head Drop** Test Time: **12:45:06 PM** Test Date: **1/6/2011**

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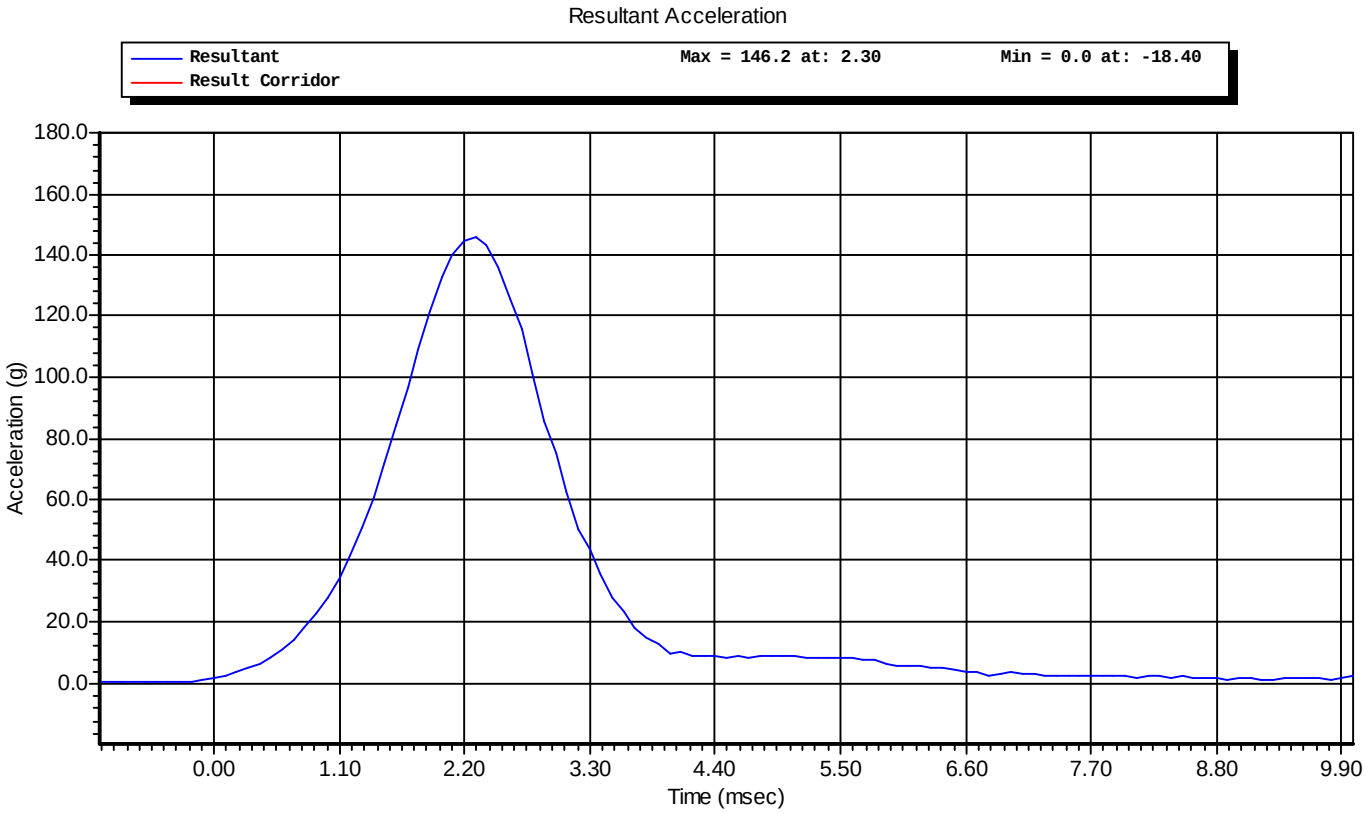
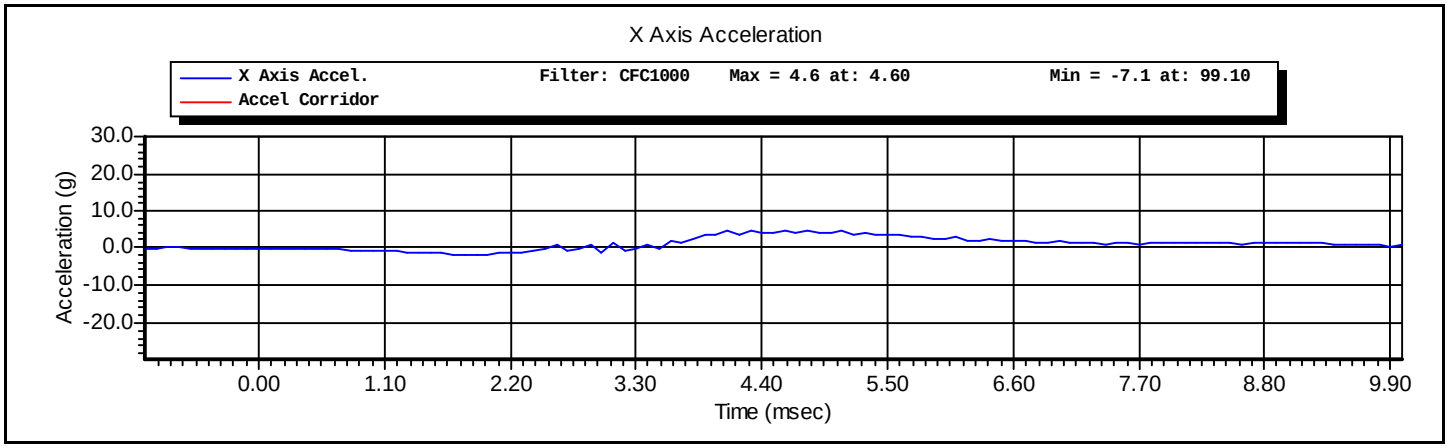
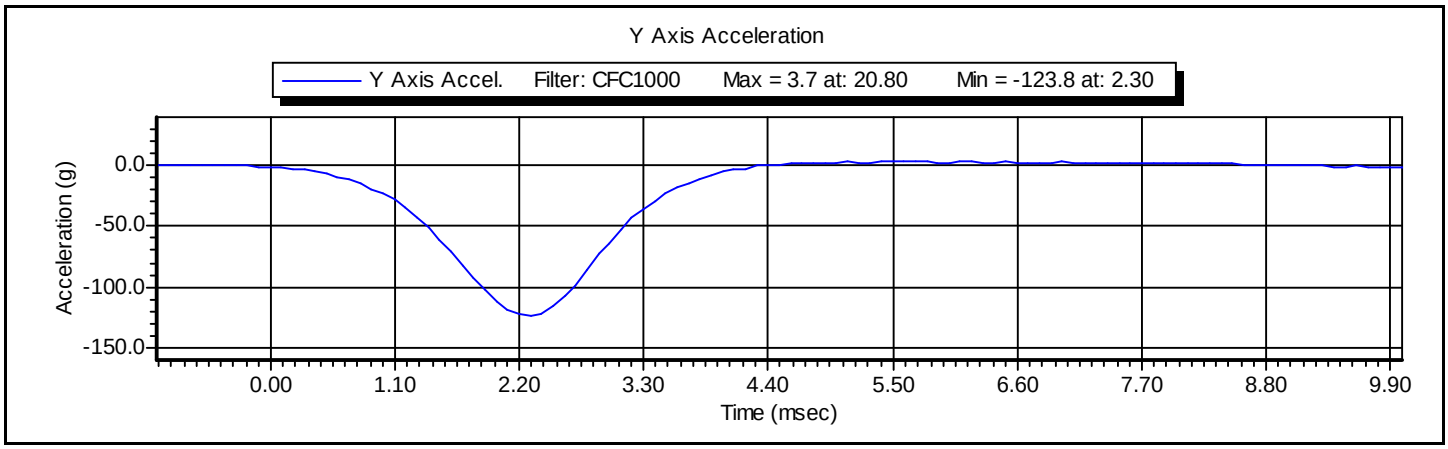
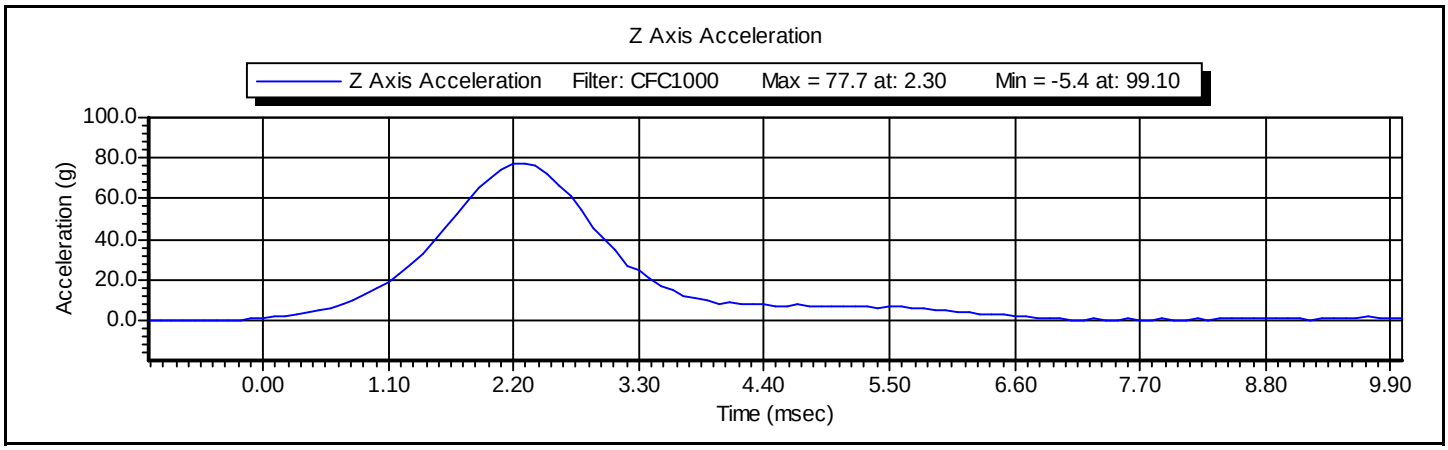
Test Name:	**Head Drop**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Head Drop**	Test Date:	**1/6/2011**
Test Number:	**1**	Test Time:	**12:45:06 PM**









Test ID: **Head Drop** Test Time: **12:45:06 PM** Test Date: **1/6/2011**

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VERIFICATION REPORT

Test Name:	**Neck Flexion**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Neck Flexion**	Test Date:	**1/6/2011**
Test Number:	**1**	Test Time:	**10:00:40 AM**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.9**	deg C	P
Humidity	10	--	70	**25**	%RH	P
Velocity	3.30	--	3.50	**3.42**	m/s	P
Maximum Neck Flexion Angle	49.0	--	59.0	**51.2**	degrees	P
Time At Maximum Neck Flexion	54.0	--	66.0	**58.4**	ms	P
Decay to Zero Degrees	53.0	--	88.0	**58.4**	ms	P
Velocity Corridor		--				P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7231CT**	**C16510**	**10/21/2010**
DentonATD	**7000428**	**094**	**4/27/2010**
DentonATD	**7000428**	**095**	**4/27/2010**
DentonATD	**7000428**	**093**	**4/27/2010**

Test ID: **Neck Flexion** Test Time: **10:00:40 AM** Test Date: **1/6/2011**

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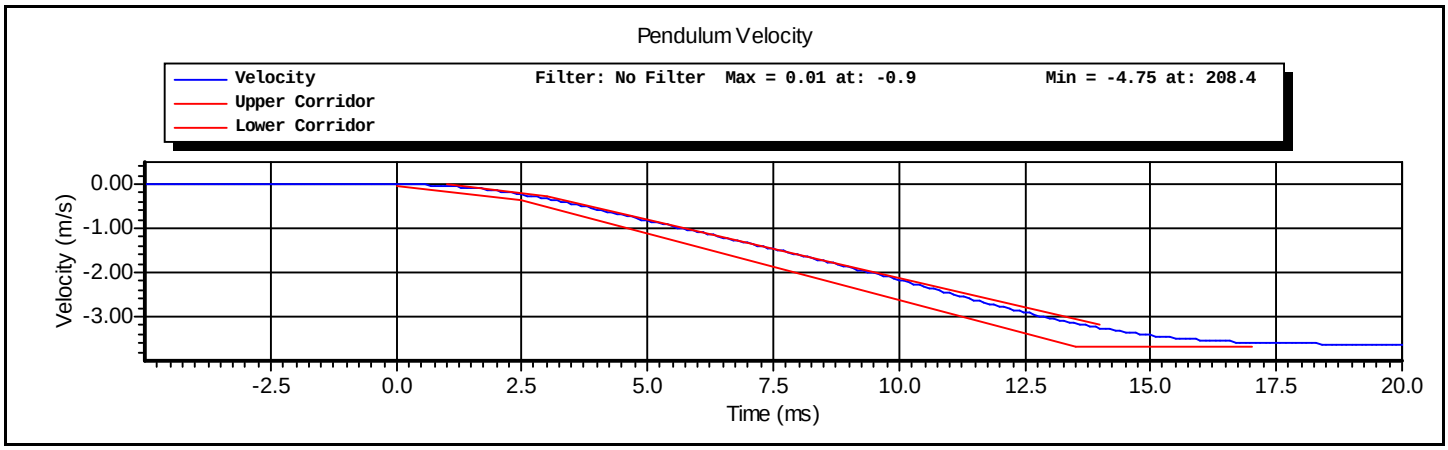
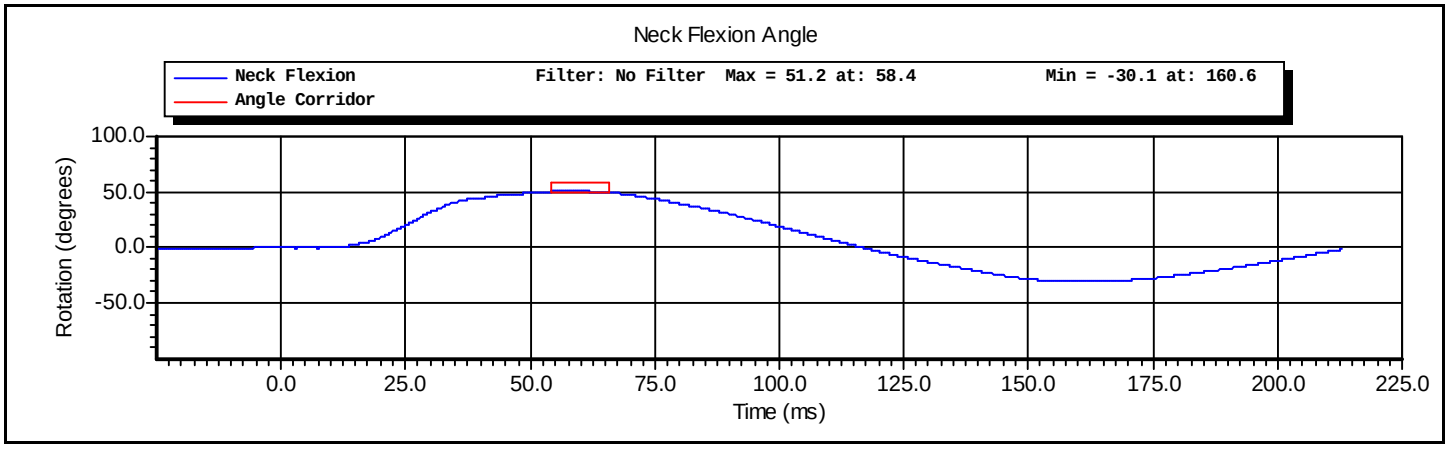
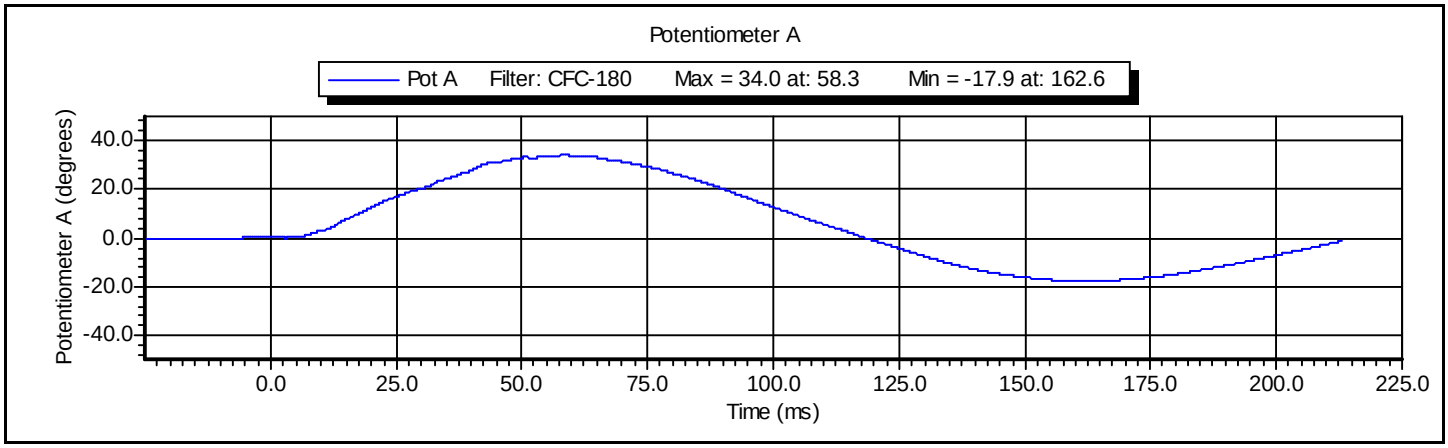
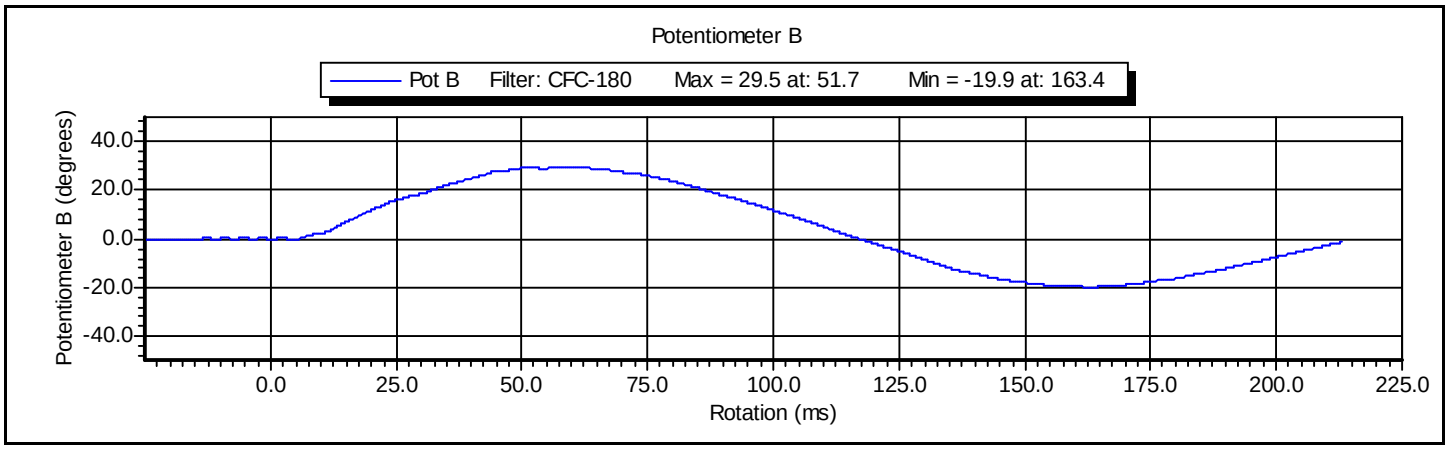
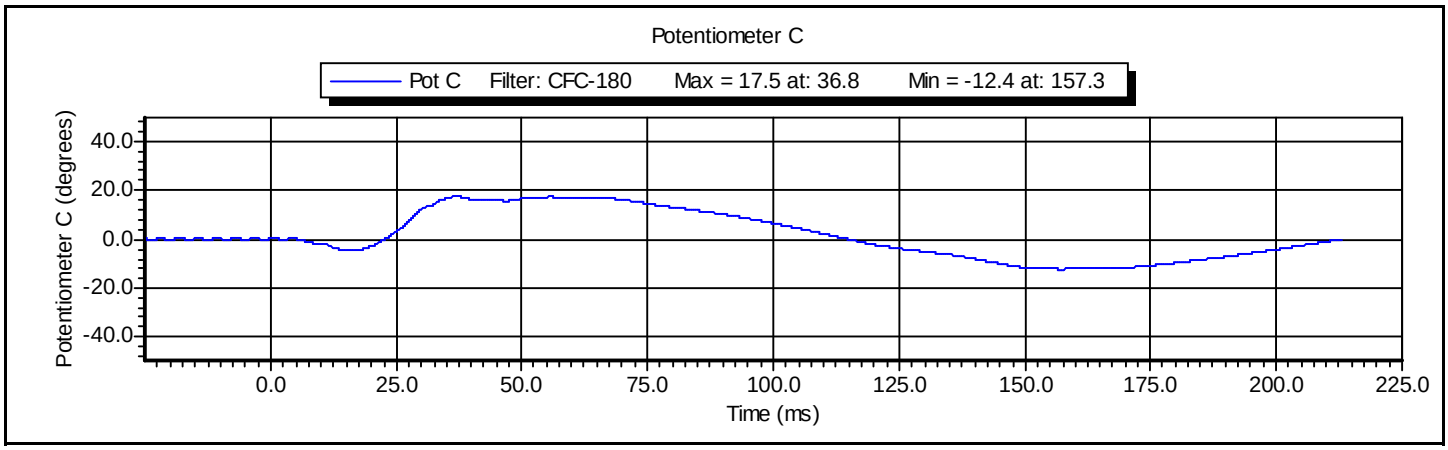
Test Name:	**Neck Flexion**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Neck Flexion**	Test Date:	**1/6/2011**
Test Number:	**1**	Test Time:	**10:00:40 AM**











Test ID: **Neck Flexion** Test Time: **10:00:40 AM** Test Date: **1/6/2011**

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VERIFICATION REPORT

Test Name:	**Shoulder Impact**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Shoulder**	Test Date:	**1/5/2011**
Test Number:	**1**	Test Time:	**7:37:46 PM**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.0**	deg C	P
Humidity	10.0	--	70.0	**28.0**	%RH	P
Velocity	4.20	--	4.40	**4.32**	m/s	P
Pendulum Acceleration	-10.50	--	-7.50	**-9.69**	g	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7264-2000**	**P66930**	**10/5/2010**

Test ID: **Shoulder** Test Time: **7:37:46 PM** Test Date: **1/5/2011**

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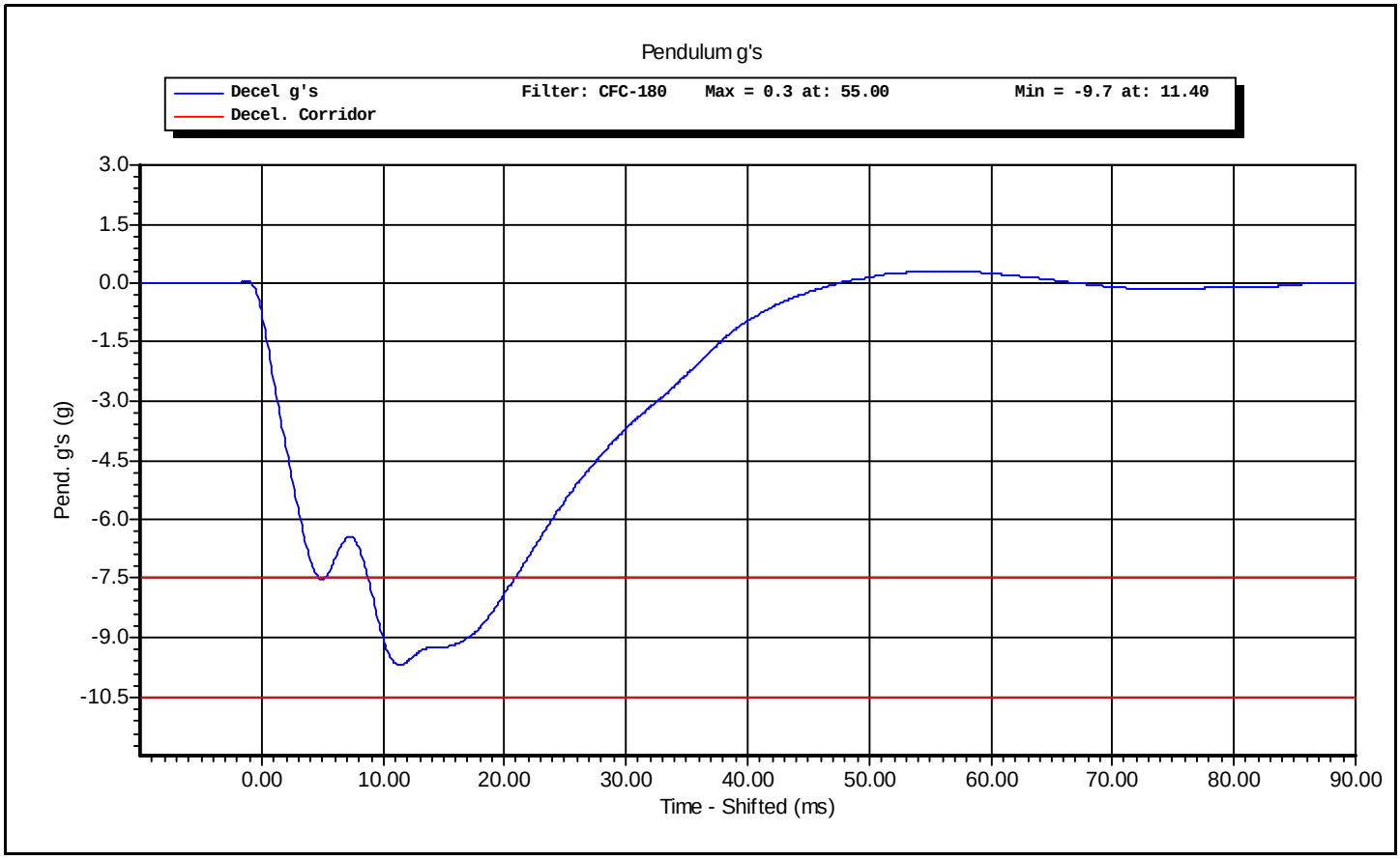
Test Name:	**Shoulder Impact**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Shoulder**	Test Date:	**1/5/2011**
Test Number:	**1**	Test Time:	**7:37:46 PM**



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VERIFICATION REPORT

Test Name:	**Abdominal Impact**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Abdomen**	Test Date:	**1/5/2011**
Test Number:	**1**	Test Time:	**5:06:20 PM**

Component Part Number	Component Serial Number
455-4001	**07/136**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.7**	deg C	P
Humidity	10	--	70	**28**	%RH	P
Velocity	3.90	--	4.10	**4.08**	m/s	P
Peak Abdominal Force	-2.70	--	-2.20	**-2.48**	kN	P
Time At Peak Abdominal Force	10.0	--	12.3	**10.5**	ms	P
Maximum Pendulum Force	-4.80	--	-4.00	**-4.59**	kN	P
Time at Peak Pendumlum Force	10.6	--	13.0	**11.2**	ms	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7264-2000**	**P66930**	**10/5/2010**
Denton	**2631**	**LC-1524**	**4/22/2010**
Denton	**2631**	**LC-1523**	**4/22/2010**
Denton	**2631**	**LC-1530**	**4/22/2010**

Test ID: **Abdomen** Test Time: **5:06:20 PM** Test Date: **1/5/2011**

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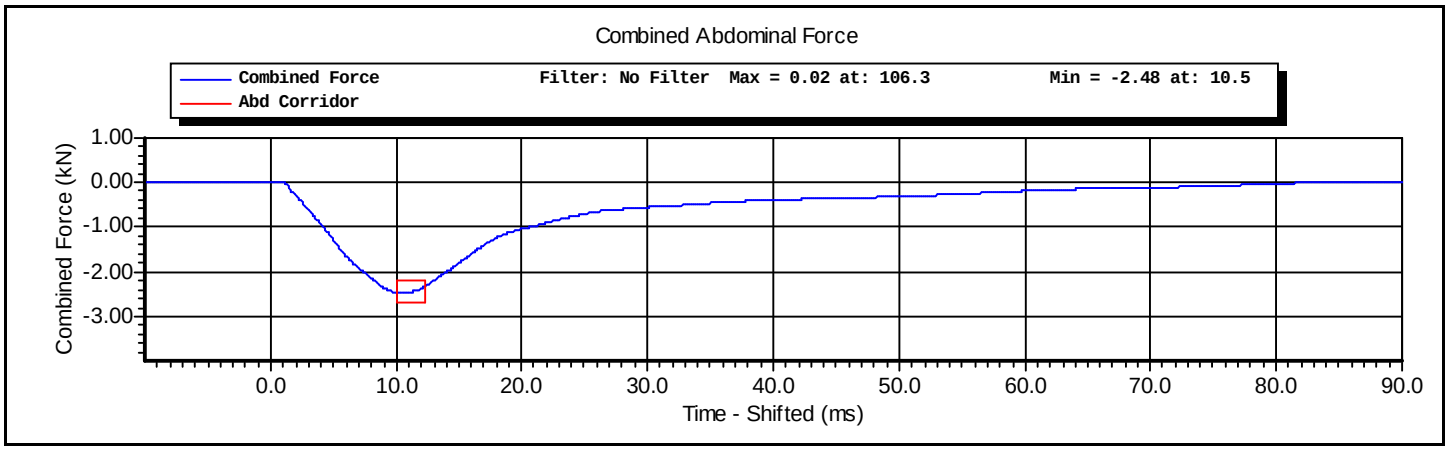
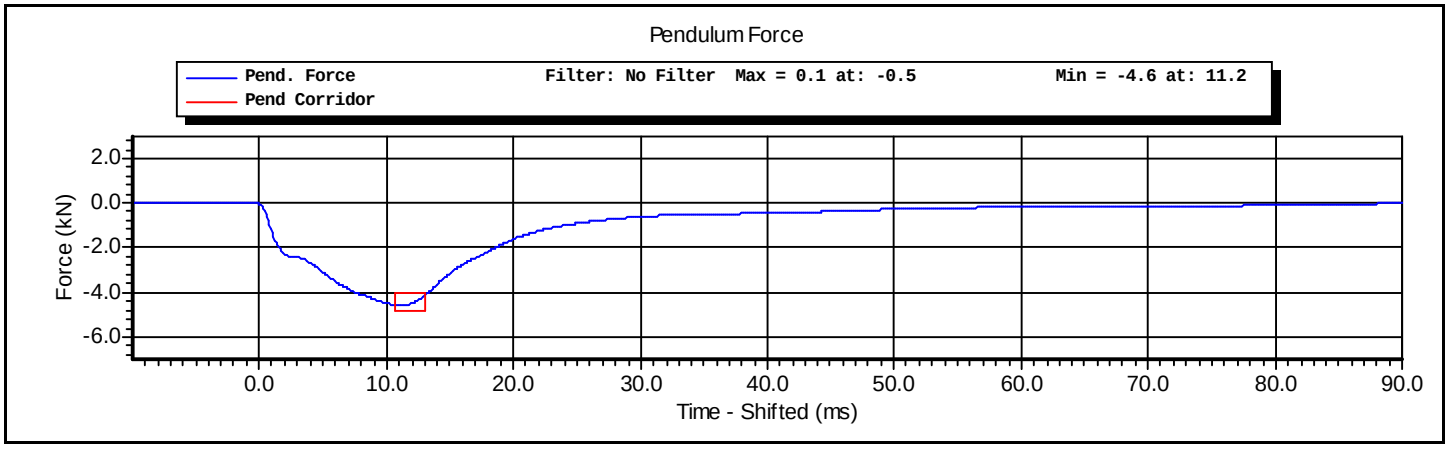
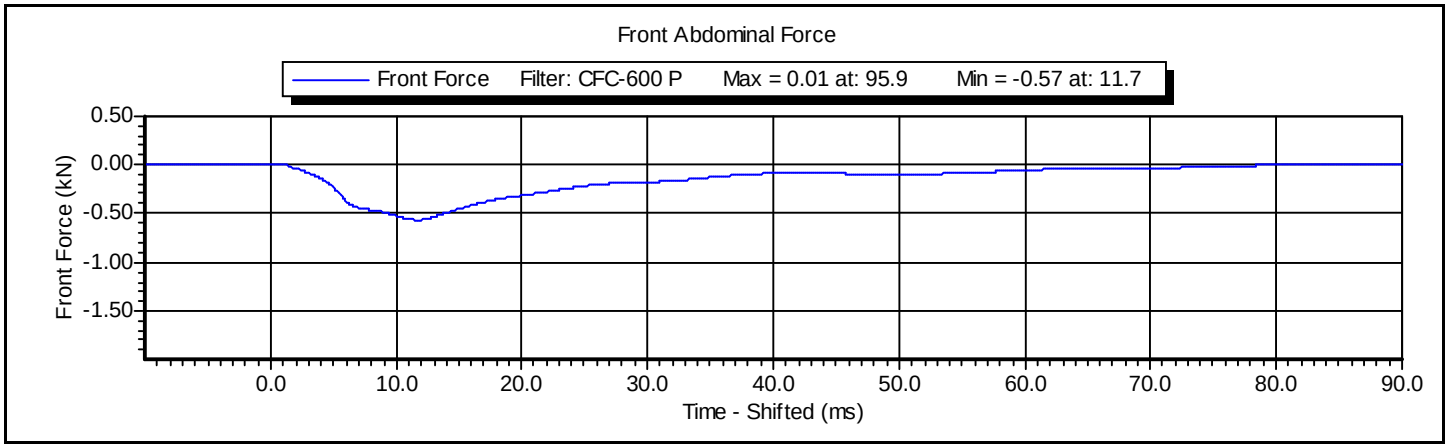
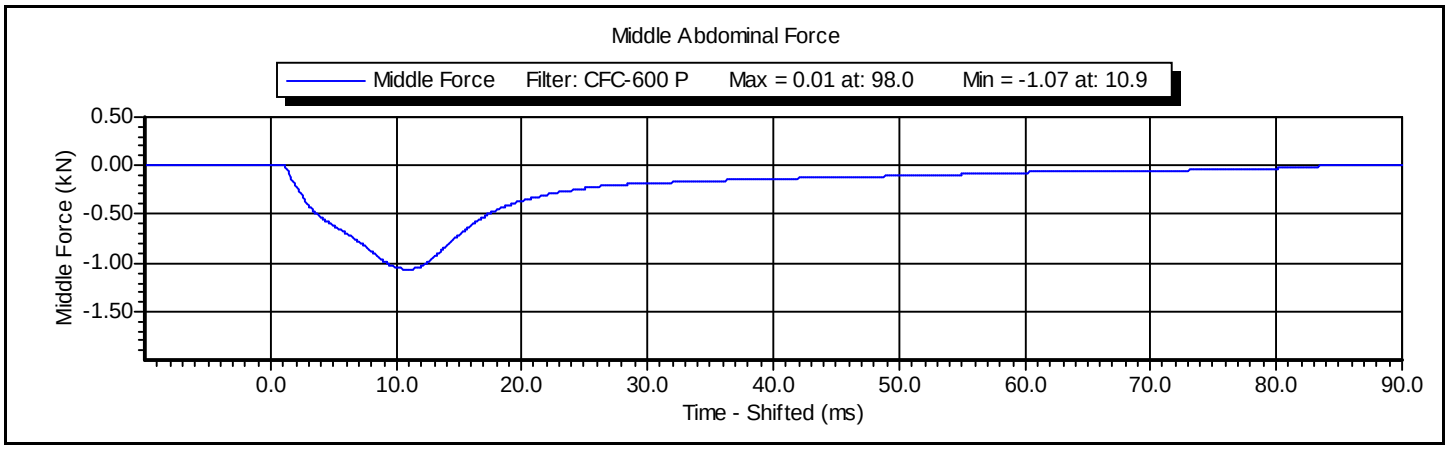
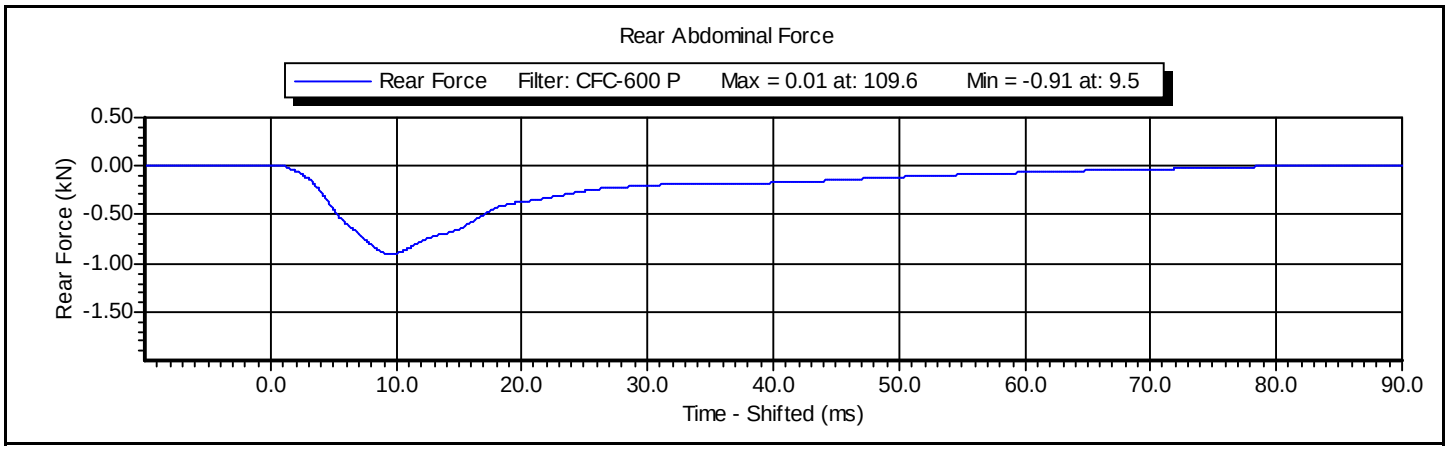
Test Name:	**Abdominal Impact**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Abdomen**	Test Date:	**1/5/2011**
Test Number:	**1**	Test Time:	**5:06:20 PM**











Test ID: **Abdomen** Test Time: **5:06:20 PM** Test Date: **1/5/2011**

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VERIFICATION REPORT

Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**4.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Upper Rib 4 m/s**	Test Date:	**1/5/2011**
Test Number:	**1**	Test Time:	**5:54:20 PM**

Component Part Number	Component Serial Number
455-3100	**UPPER**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.6**	deg C	P
Humidity	10.0	--	70.0	**24.0**	%RH	P
Velocity	3.90	--	4.10	**3.96**	m/s	P
Rib Displacement	-51.00	--	-46.00	**-48.76**	mm	P
Drop Height	807.0	--	823.0	**815.0**	mm	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Honeywell	**MLT-38000**	**DS-179**	**4/23/2010**
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7264-2000**	**P32222**	**11/17/2010**

Test ID: **Upper Rib 4 m/s** Test Time: **5:54:20 PM** Test Date: **1/5/2011**

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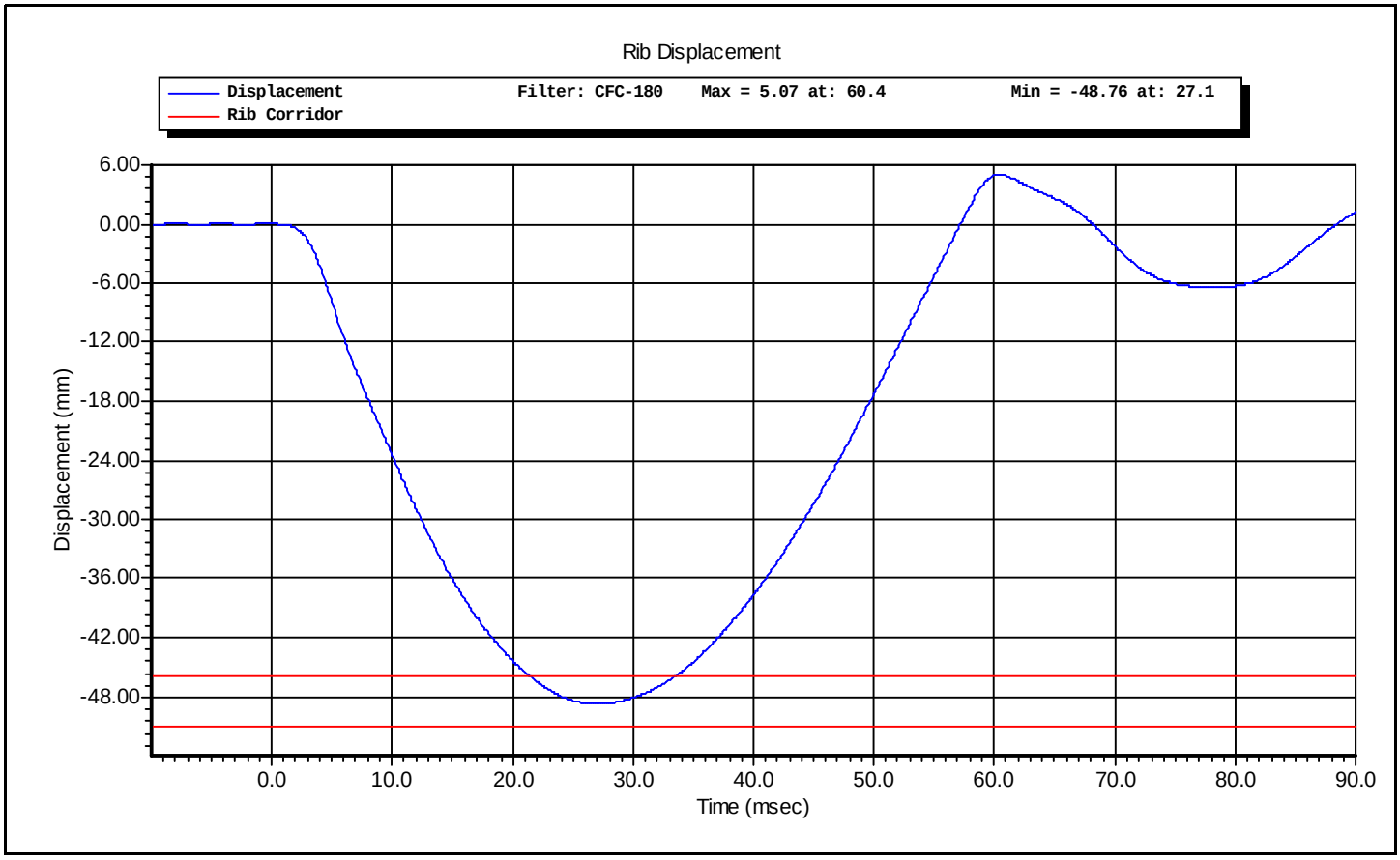
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**4.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Upper Rib 4 m/s**	Test Date:	**1/5/2011**
Test Number:	**1**	Test Time:	**5:54:20 PM**



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VERIFICATION REPORT

Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**3.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Upper Rib 3 m/s**	Test Date:	**1/5/2011**
Test Number:	**1**	Test Time:	**6:00:28 PM**

Component Part Number	Component Serial Number
455-3100	**UPPER**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.6**	deg C	P
Humidity	10.0	--	70.0	**24.0**	%RH	P
Velocity	2.90	--	3.10	**2.97**	m/s	P
Rib Displacement	-40.00	--	-36.00	**-38.02**	mm	P
Drop Height	454	--	464	**459**	mm	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Honeywell	**MLT-38000**	**DS-179**	**4/23/2010**
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7264-2000**	**P32222**	**11/17/2010**

Test ID: **Upper Rib 3 m/s** Test Time: **6:00:28 PM** Test Date: **1/5/2011**

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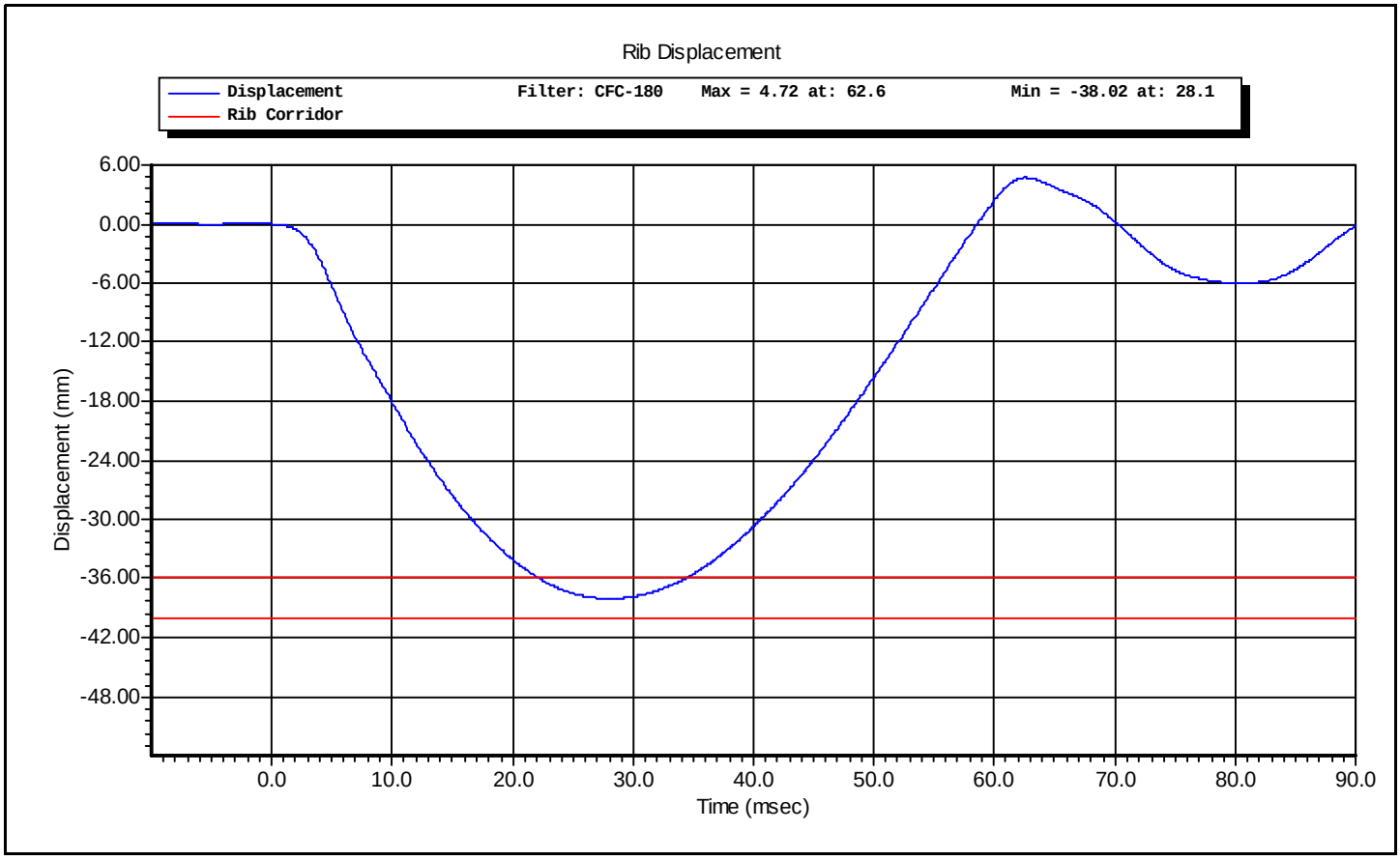
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**3.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Upper Rib 3 m/s**	Test Date:	**1/5/2011**
Test Number:	**1**	Test Time:	**6:00:28 PM**



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VERIFICATION REPORT

Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**4.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Middle Rib 4 m/s**	Test Date:	**1/5/2011**
Test Number:	**1**	Test Time:	**5:43:42 PM**

Component Part Number	Component Serial Number
455-3100	**MIDDLE**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.6**	deg C	P
Humidity	10.0	--	70.0	**24.0**	%RH	P
Velocity	3.90	--	4.10	**3.97**	m/s	P
Rib Displacement	-51.00	--	-46.00	**-48.12**	mm	P
Drop Height	807.0	--	823.0	**815.0**	mm	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Honeywell	**MLT-38000**	**DS-185**	**4/23/2010**
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7264-2000**	**P32222**	**11/17/2010**

Test ID: **Middle Rib 4 m/s** Test Time: **5:43:42 PM** Test Date: **1/5/2011**

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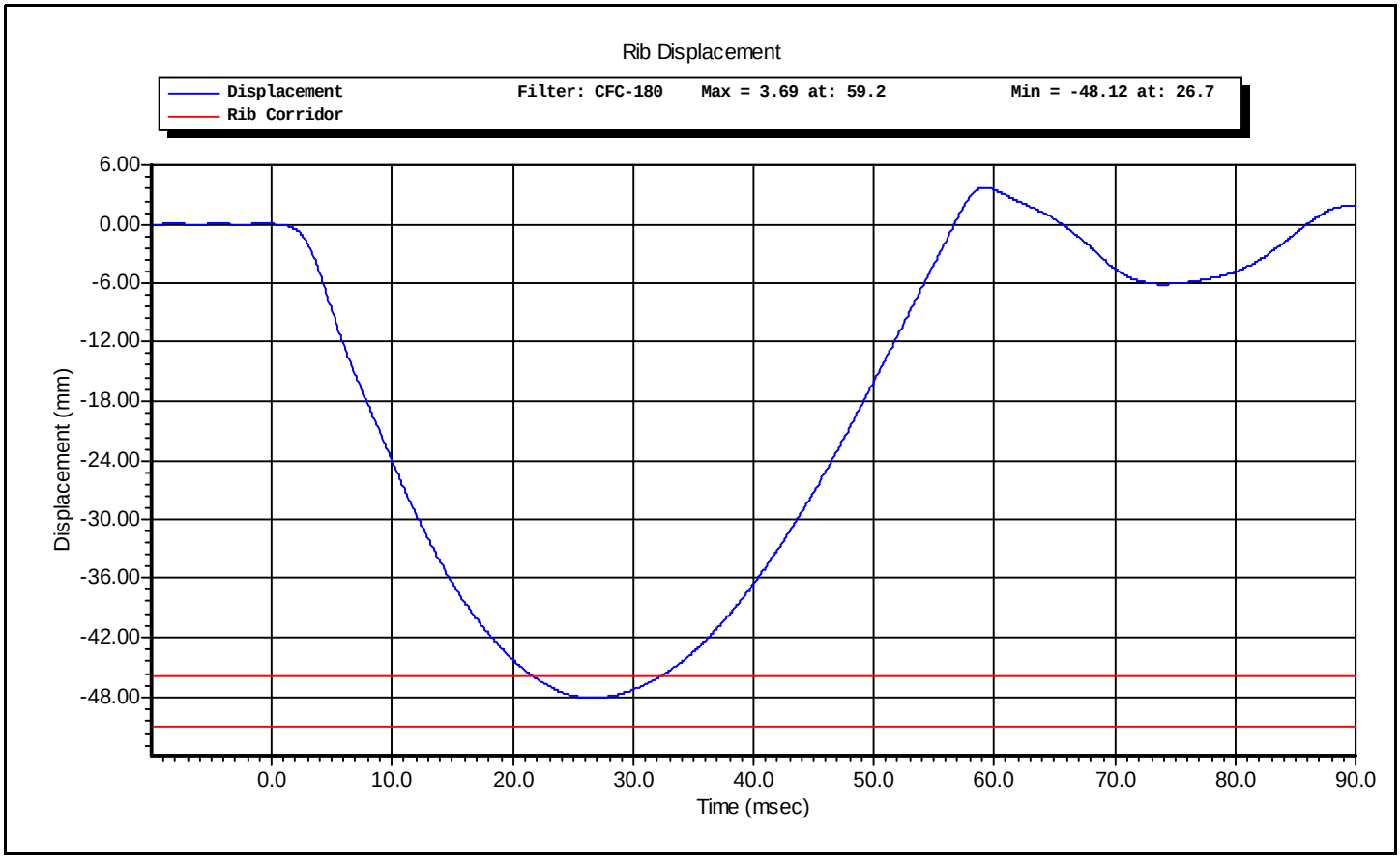
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**4.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Middle Rib 4 m/s**	Test Date:	**1/5/2011**
Test Number:	**1**	Test Time:	**5:43:42 PM**



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VERIFICATION REPORT

Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**3.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Middle Rib 3 m/s**	Test Date:	**1/5/2011**
Test Number:	**1**	Test Time:	**5:51:09 PM**

Component Part Number	Component Serial Number
455-3100	**MIDDLE**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.6**	deg C	P
Humidity	10.0	--	70.0	**24.0**	%RH	P
Velocity	2.90	--	3.10	**2.98**	m/s	P
Rib Displacement	-40.00	--	-36.00	**-37.44**	mm	P
Drop Height	454	--	464	**459**	mm	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Honeywell	**MLT-38000**	**DS-185**	**4/23/2010**
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7264-2000**	**P32222**	**11/17/2010**

Test ID: **Middle Rib 3 m/s** Test Time: **5:51:09 PM** Test Date: **1/5/2011**

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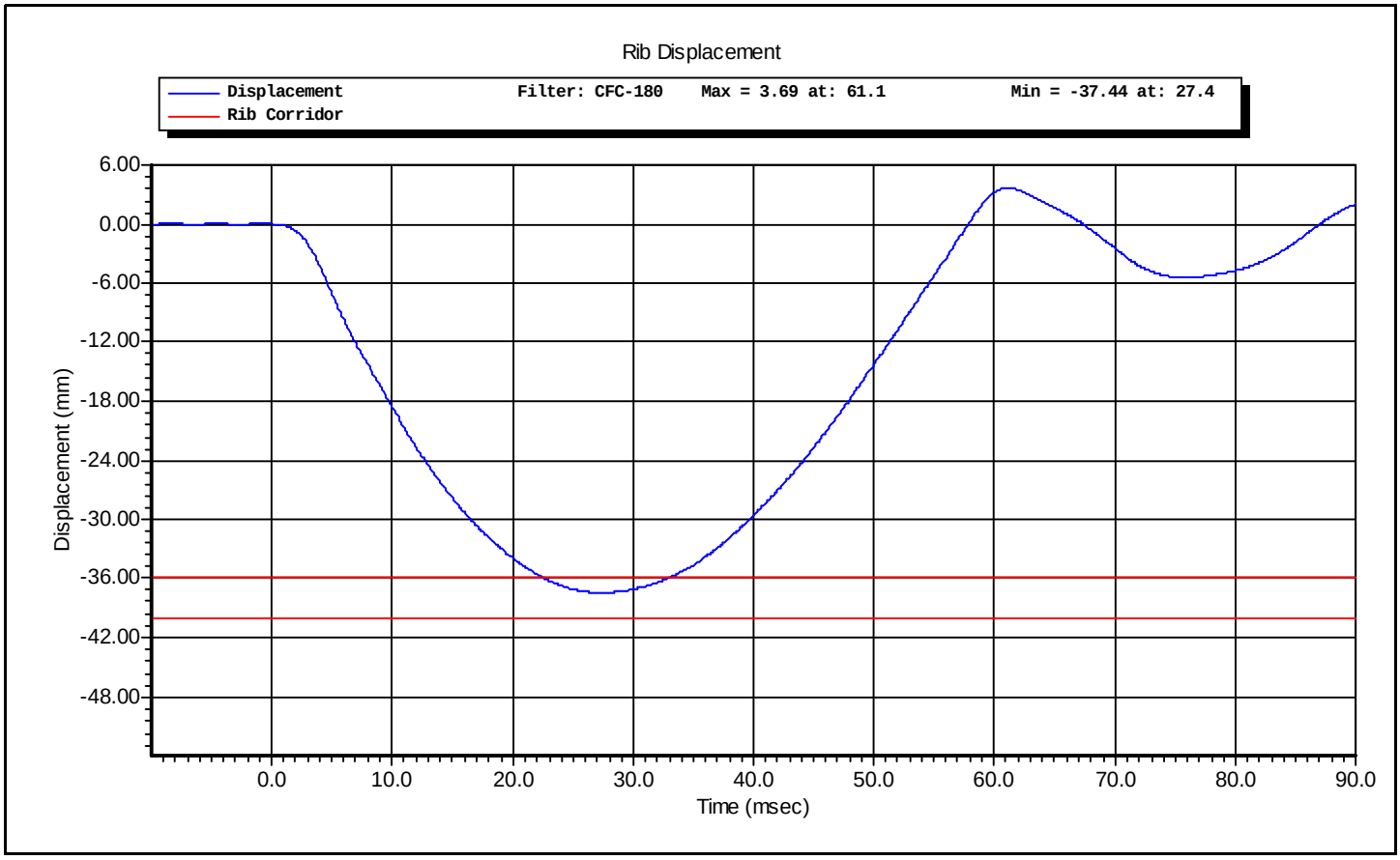
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**3.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Middle Rib 3 m/s**	Test Date:	**1/5/2011**
Test Number:	**1**	Test Time:	**5:51:09 PM**



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VERIFICATION REPORT

Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**4.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Rib Lower 4 m/s**	Test Date:	**1/5/2011**
Test Number:	**1**	Test Time:	**5:28:52 PM**

Component Part Number	Component Serial Number
455-3100	**LOWER**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.6**	deg C	P
Humidity	10.0	--	70.0	**29.0**	%RH	P
Velocity	3.90	--	4.10	**3.96**	m/s	P
Rib Displacement	-51.00	--	-46.00	**-48.28**	mm	P
Drop Height	807.0	--	823.0	**815.0**	mm	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Honeywell	**MLT-38000**	**DS-178**	**4/23/2010**
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7264-2000**	**P32222**	**11/17/2010**

Test ID: **Rib Lower 4 m/s** Test Time: **5:28:52 PM** Test Date: **1/5/2011**

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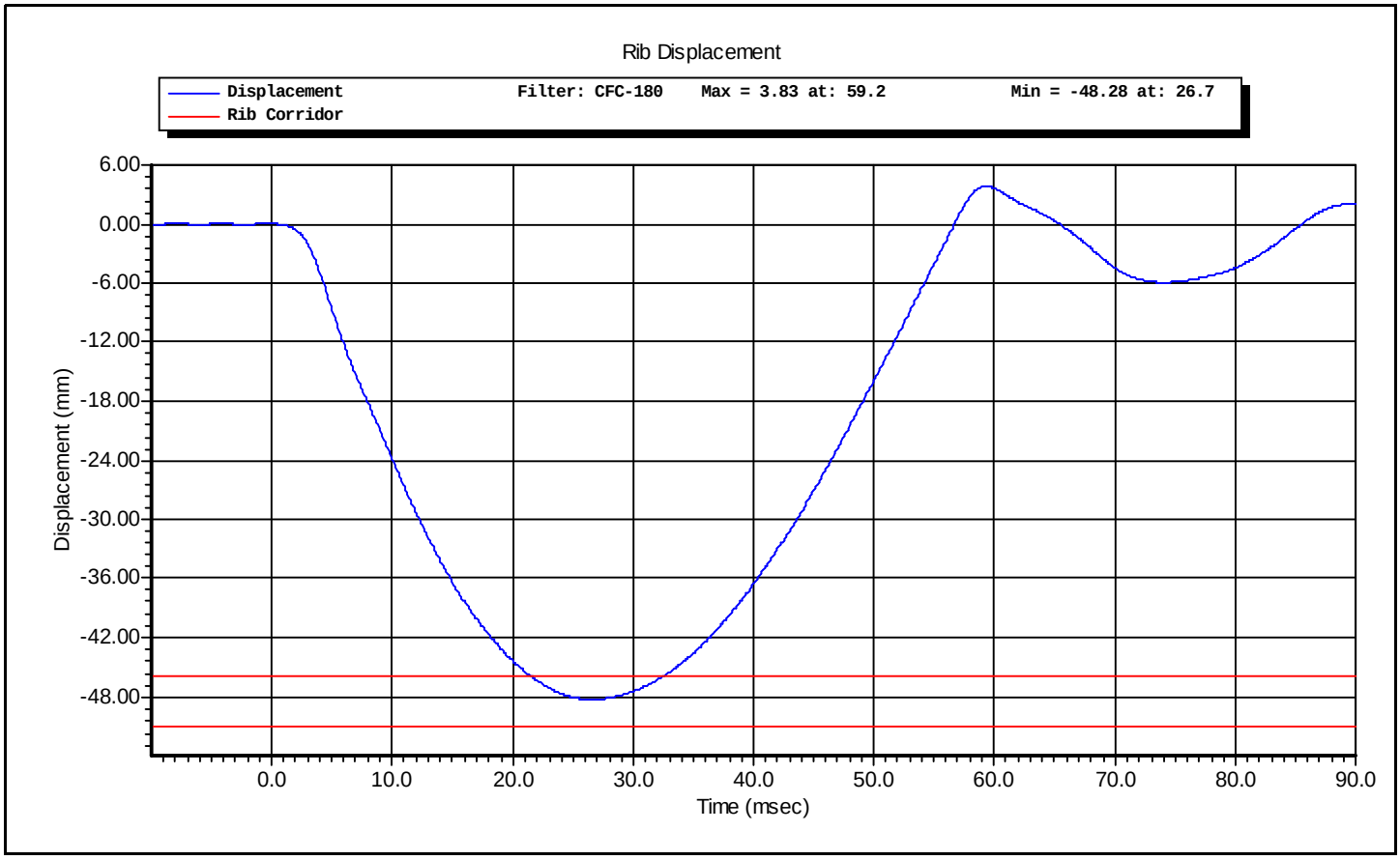
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**4.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Rib Lower 4 m/s**	Test Date:	**1/5/2011**
Test Number:	**1**	Test Time:	**5:28:52 PM**



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VERIFICATION REPORT

Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**3.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Rib Lower 3 m/s**	Test Date:	**1/5/2011**
Test Number:	**1**	Test Time:	**5:38:40 PM**

Component Part Number	Component Serial Number
455-3100	**LOWER**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.6**	deg C	P
Humidity	10.0	--	70.0	**29.0**	%RH	P
Velocity	2.90	--	3.10	**2.97**	m/s	P
Rib Displacement	-40.00	--	-36.00	**-37.45**	mm	P
Drop Height	454	--	464	**459**	mm	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Honeywell	**MLT-38000**	**DS-178**	**4/23/2010**
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7264-2000**	**P32222**	**11/17/2010**

Test ID: **Rib Lower 3 m/s** Test Time: **5:38:40 PM** Test Date: **1/5/2011**

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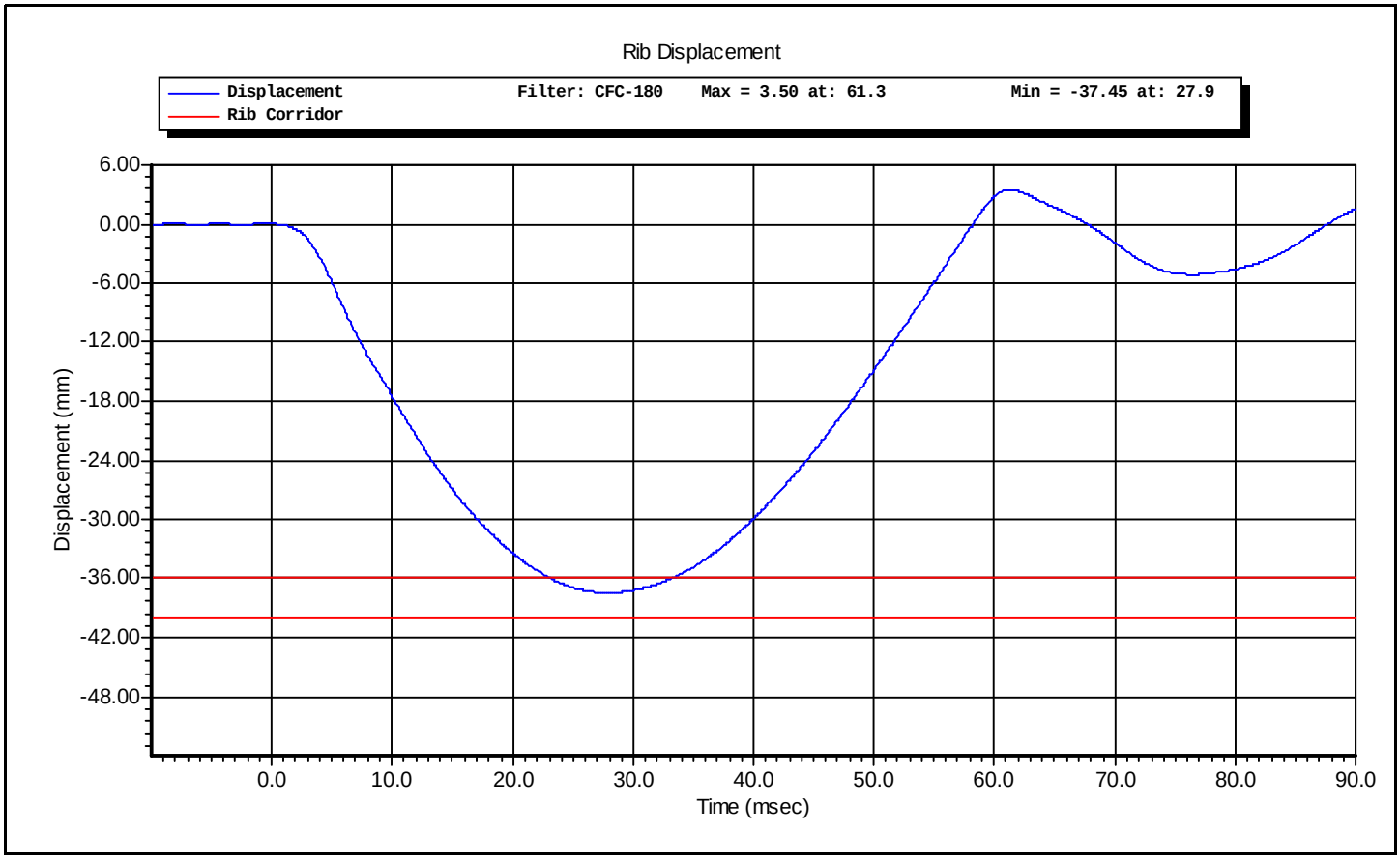
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**3.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Rib Lower 3 m/s**	Test Date:	**1/5/2011**
Test Number:	**1**	Test Time:	**5:38:40 PM**



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VERIFICATION REPORT

Test Name:	**Thorax Impact**	Revision:	**8/15/2008**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Thorax**	Test Date:	**1/5/2011**
Test Number:	**1**	Test Time:	**7:24:42 PM**

Component Part Number	Component Serial Number
Upper Rib - 175-4002	**UPPER**
Middle Rib - 175-4002	**MIDDLE**
Lower Rib - 175-4002	**LOWER**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.0**	deg C	P
Humidity	10.0	--	70.0	**28.0**	%RH	P
Velocity	5.40	--	5.60	**5.50**	m/s	P
Upper Rib Displacement	34.0	--	41.0	**37.4**	mm	P
Middle Rib Displacement	37.0	--	45.0	**41.4**	mm	P
Lower Rib Displacement	37.0	--	44.0	**41.5**	mm	P
Impactor Force	5100	--	6200	**5672**	N	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7264-2000**	**P66930**	**10/5/2010**
Honeywell	**MLT-38000**	**DS-179**	**4/23/2010**
Honeywell	**MLT-38000**	**DS-185**	**4/23/2010**
Honeywell	**MLT-38000**	**DS-178**	**4/23/2010**

Test ID: **Thorax** Test Time: **7:24:42 PM** Test Date: **1/5/2011**

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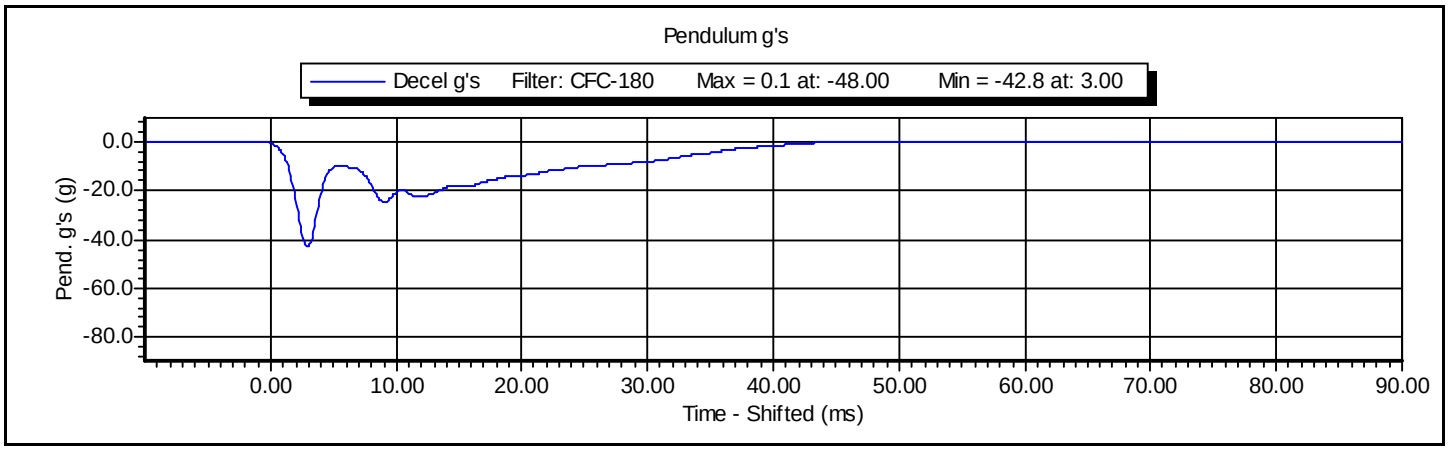
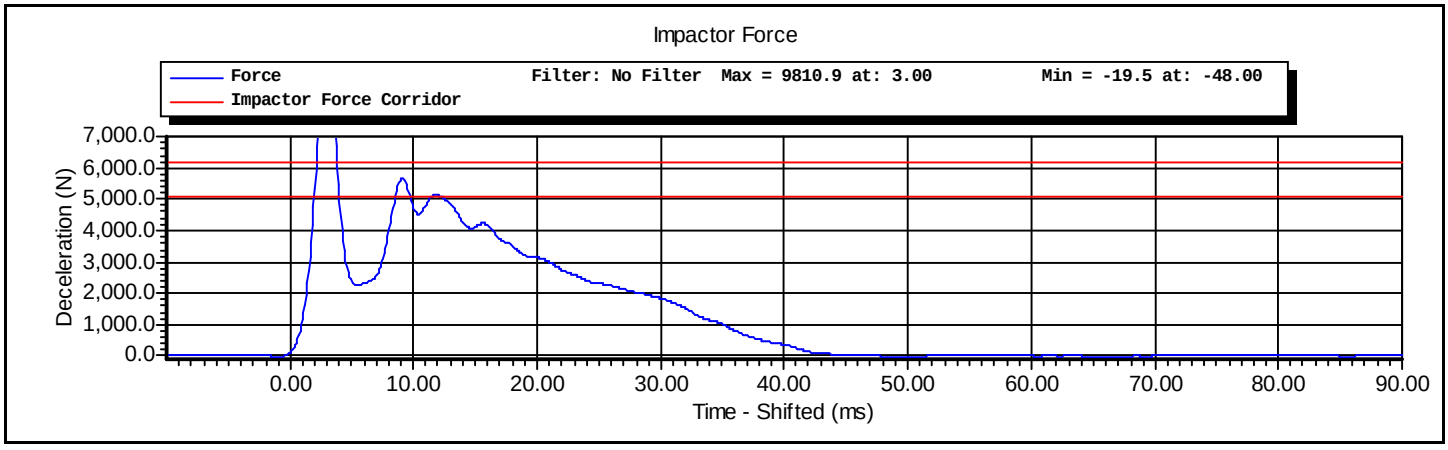
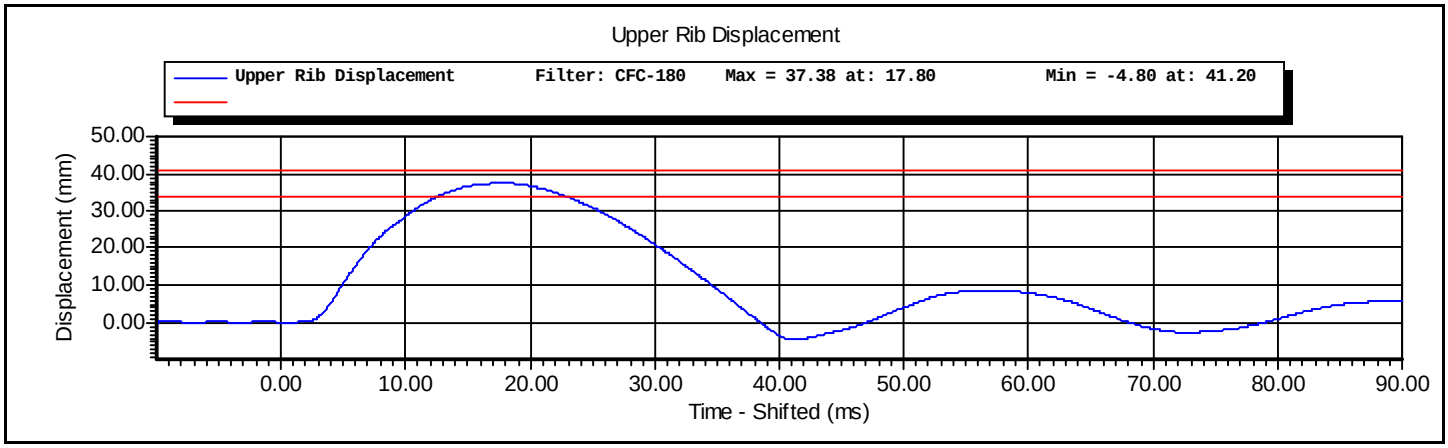
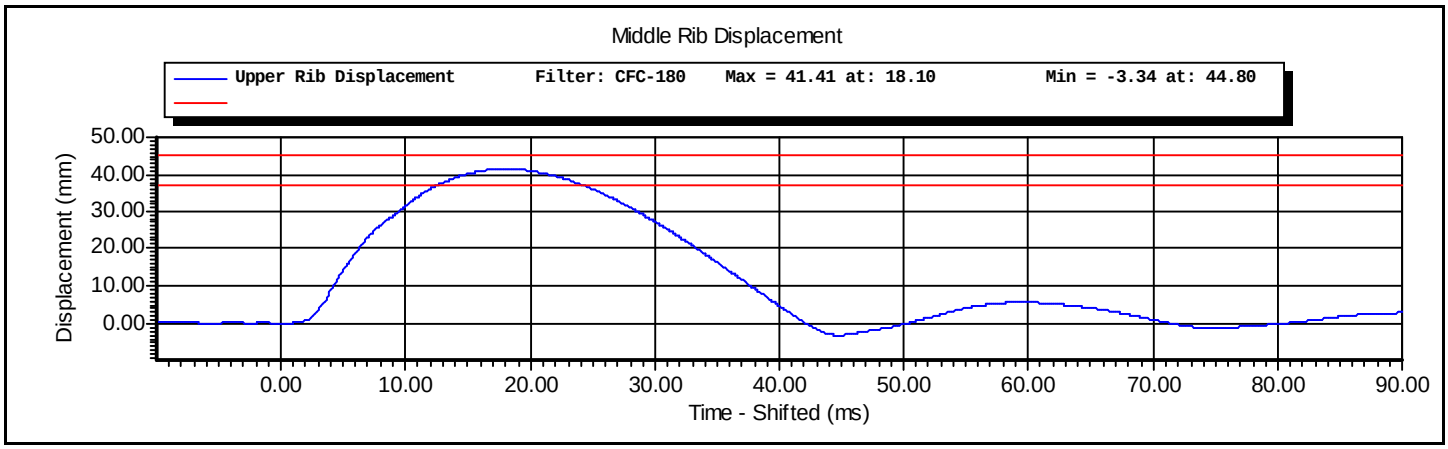
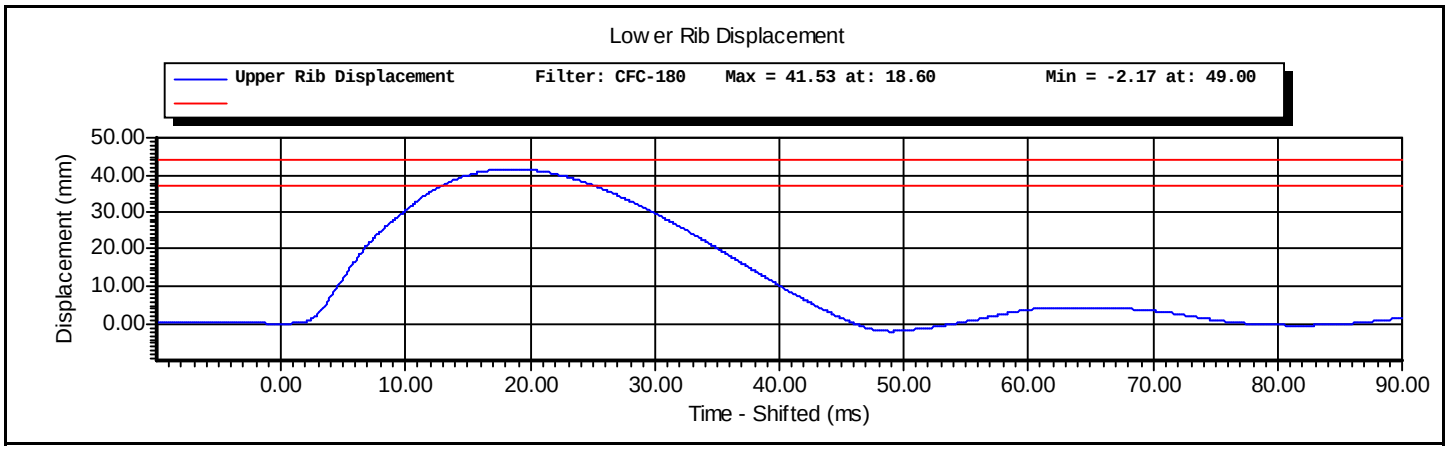
Test Name:	**Thorax Impact**	Revision:	**8/15/2008**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Thorax**	Test Date:	**1/5/2011**
Test Number:	**1**	Test Time:	**7:24:42 PM**











Test ID: **Thorax** Test Time: **7:24:42 PM** Test Date: **1/5/2011**

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VERIFICATION REPORT

Test Name:	**Lumbar Spine**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Spine Flexion**	Test Date:	**1/5/2011**
Test Number:	**1**	Test Time:	**8:27:38 PM**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.0**	deg C	P
Humidity	10	--	70	**28**	%RH	P
Velocity	5.95	--	6.15	**6.15**	m/s	P
Maximum Headform Flexion Angle	45.0	--	55.0	**47.2**	degrees	P
Time at Maximum Headform Flexion Angle	39.0	--	53.0	**42.2**	ms	P
Decay to Zero Degrees	37.0	--	57.0	**37.1**	ms	P
Velocity Corridor		--				P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7231CT**	**C16510**	**10/21/2010**
DentonATD	**7000428**	**094**	**4/27/2010**
DentonATD	**7000428**	**095**	**4/27/2010**
DentonATD	**7000428**	**093**	**4/27/2010**

Test ID: **Spine Flexion** Test Time: **8:27:38 PM** Test Date: **1/5/2011**

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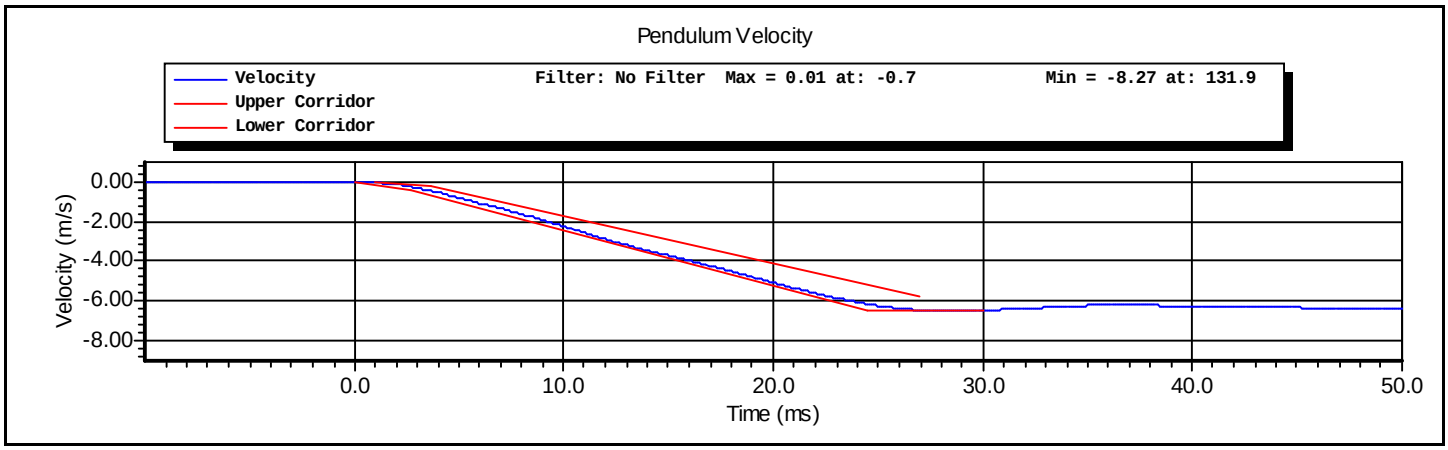
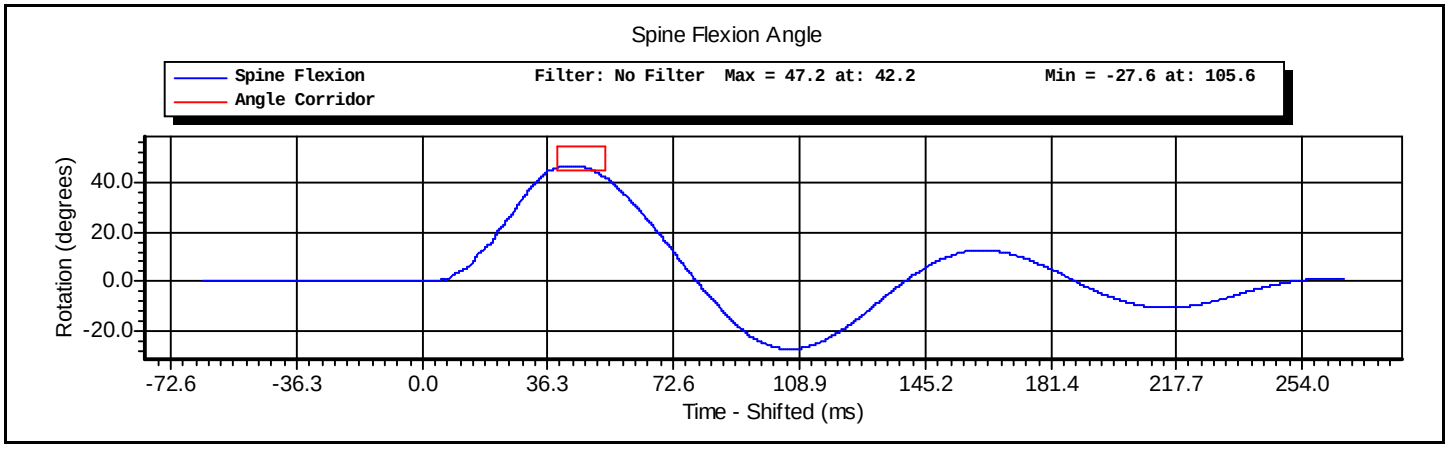
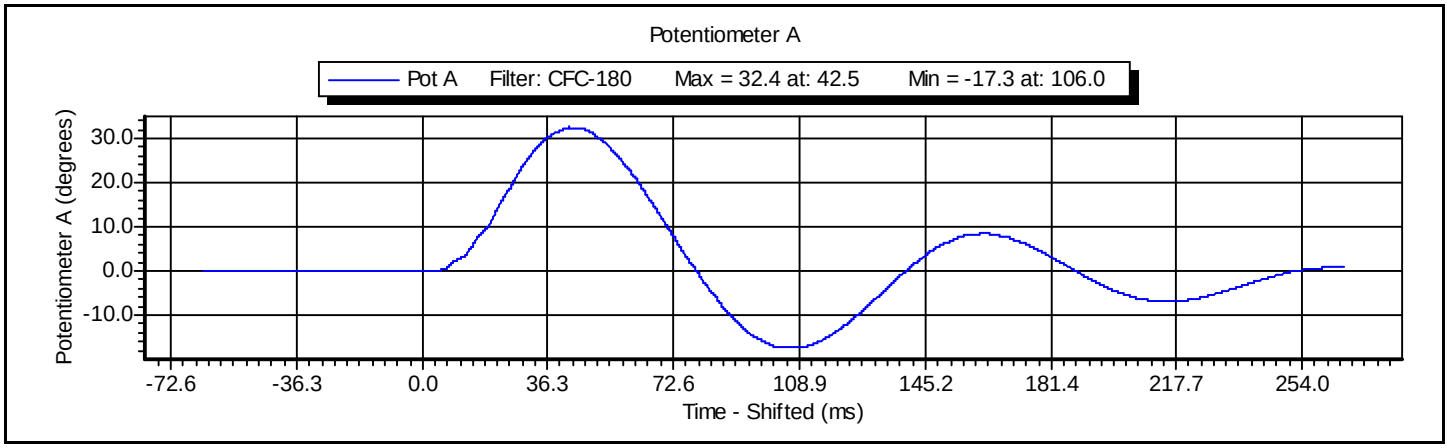
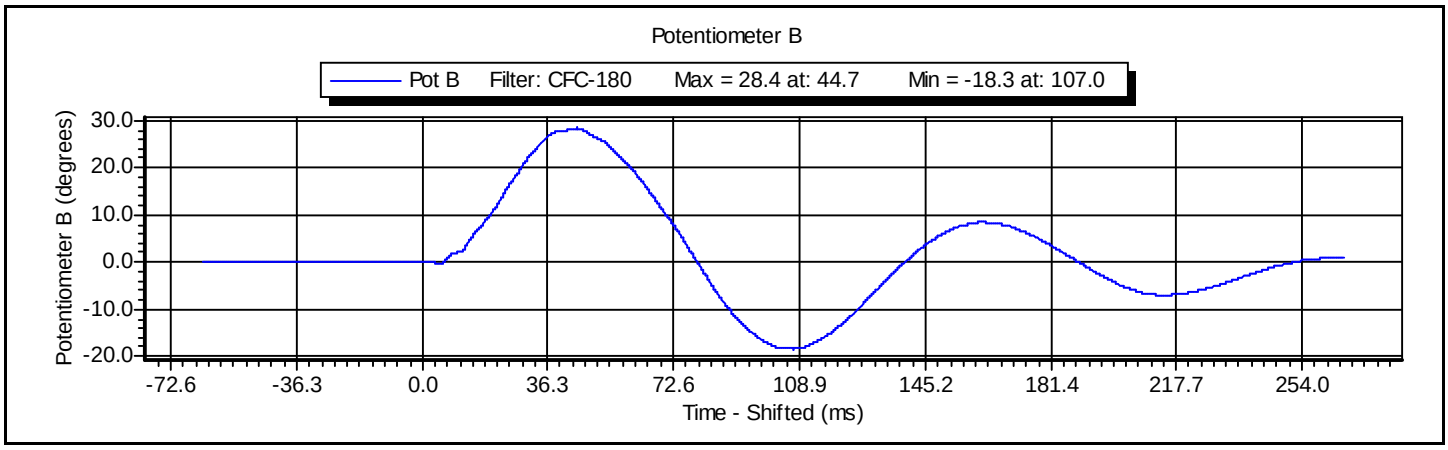
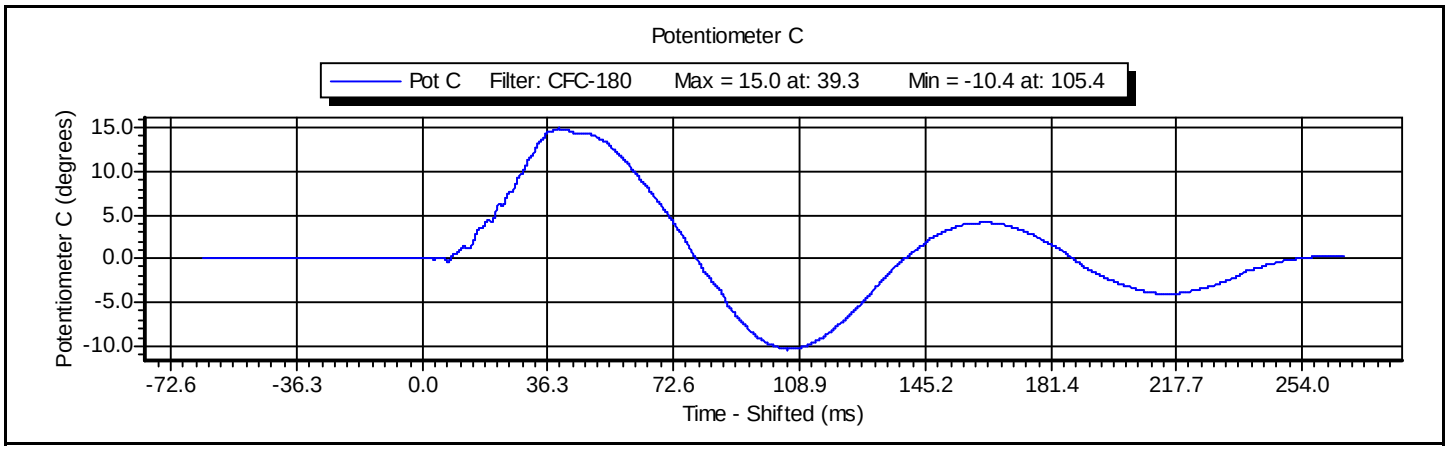
Test Name:	**Lumbar Spine**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Spine Flexion**	Test Date:	**1/5/2011**
Test Number:	**1**	Test Time:	**8:27:38 PM**











Test ID: **Spine Flexion** Test Time: **8:27:38 PM** Test Date: **1/5/2011**

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VERIFICATION REPORT

Test Name:	**Pelvis Impact**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Pelvis**	Test Date:	**1/5/2011**
Test Number:	**1**	Test Time:	**4:00:30 PM**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.1**	deg C	P
Humidity	10	--	70	**25**	%RH	P
Velocity	4.20	--	4.40	**4.38**	m/s	P
Peak Pendulum Force	-5.40	--	-4.70	**-5.24**	kN	P
Time at Peak Pendulum Force	11.80	--	16.10	**13.46**	ms	P
Peak Pubic Symphysis Force	-1.59	--	-1.23	**-1.36**	kN	P
Time at Peak Pubic Symphysis Force	12.20	--	17.00	**14.56**	ms	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7264-2000**	**P66930**	**10/5/2010**
Denton	**3096**	**LC-456Fy**	**4/22/2010**

Test ID: **Pelvis** Test Time: **4:00:30 PM** Test Date: **1/5/2011**

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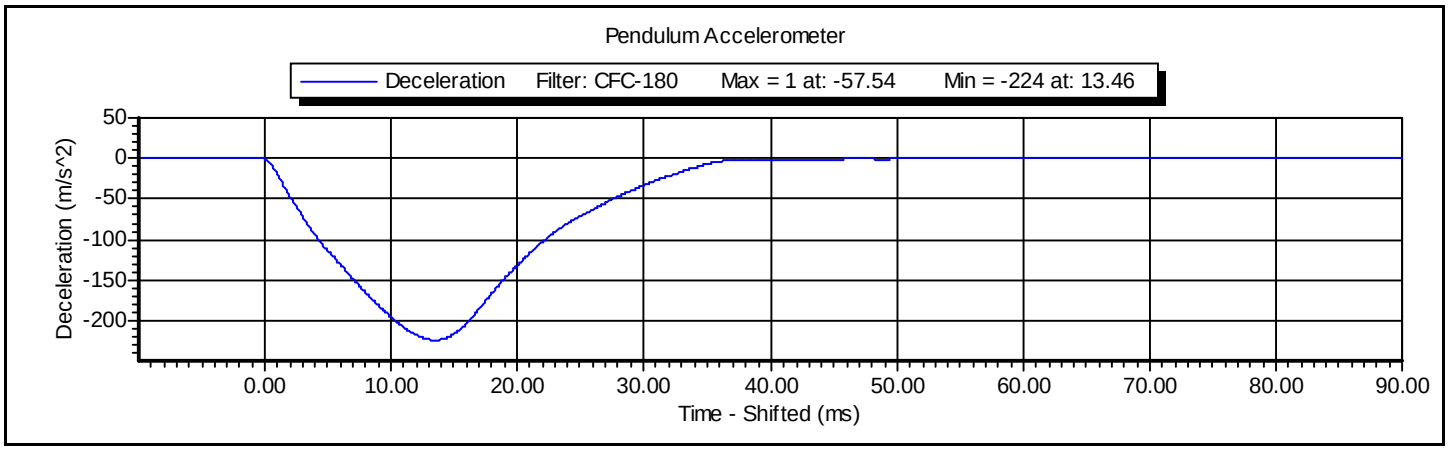
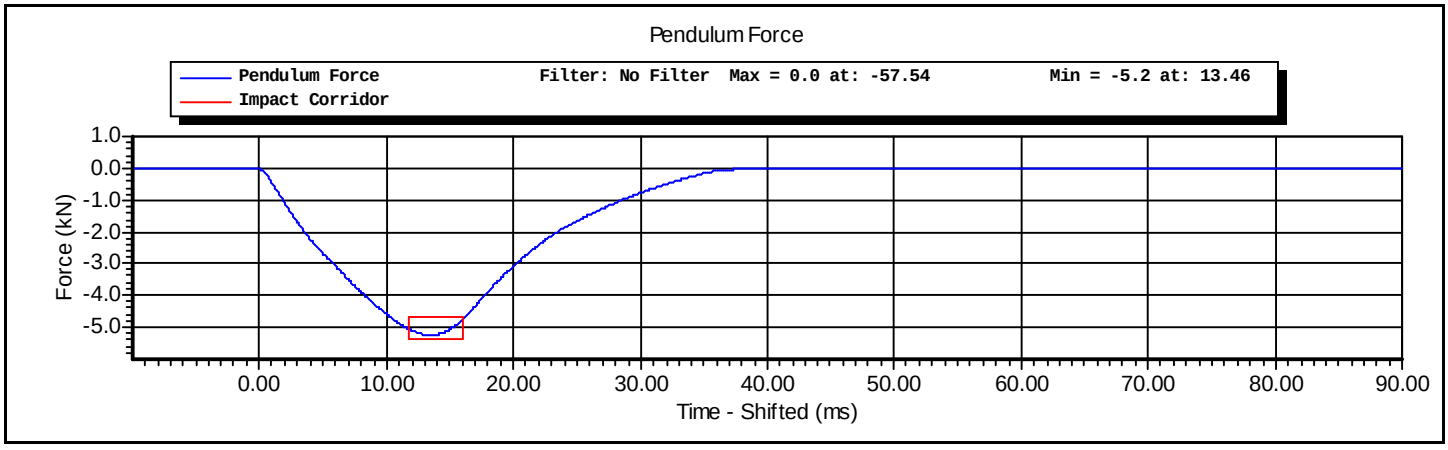
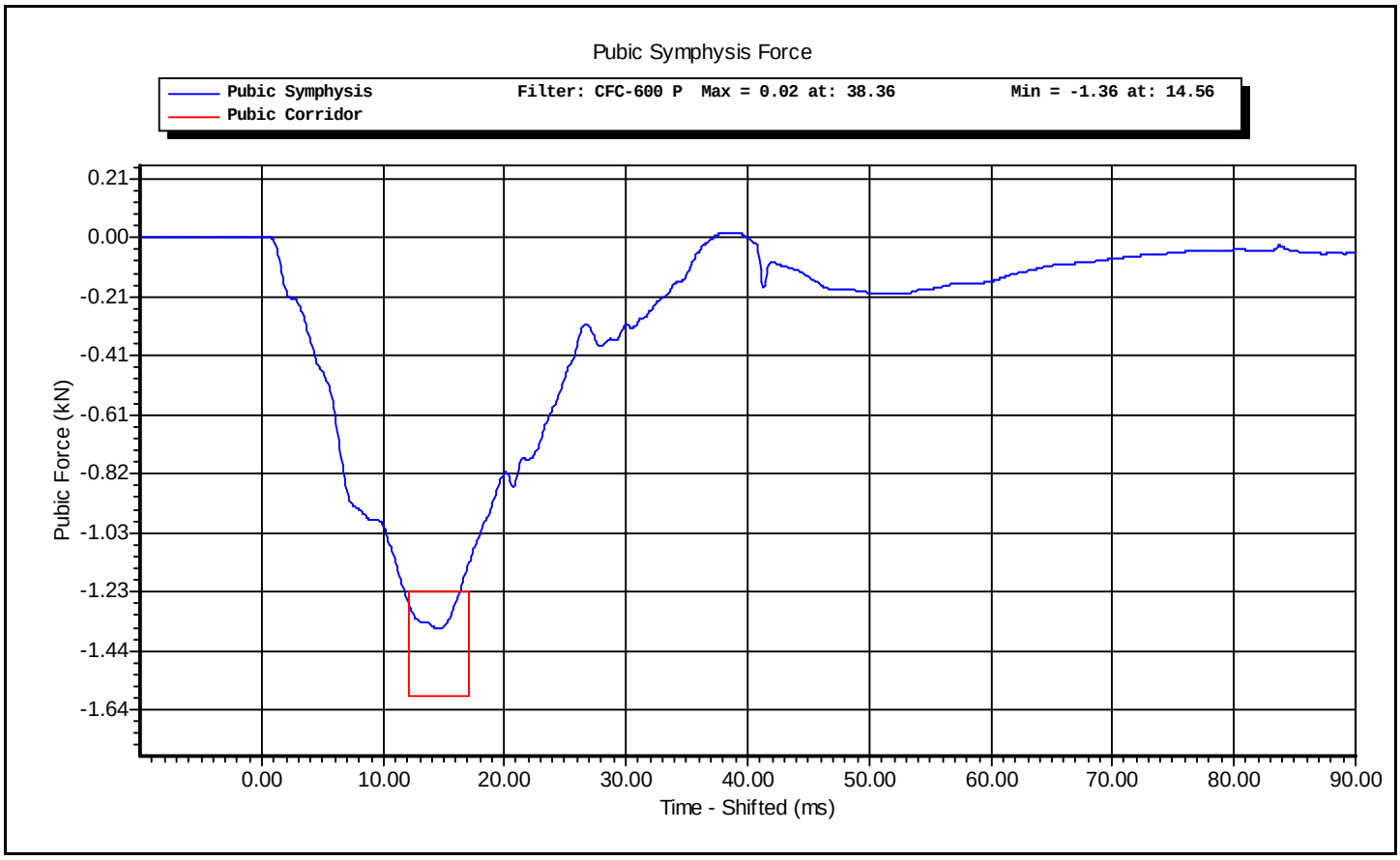
Test Name:	**Pelvis Impact**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Pelvis**	Test Date:	**1/5/2011**
Test Number:	**1**	Test Time:	**4:00:30 PM**







Test ID: **Pelvis** Test Time: **4:00:30 PM** Test Date: **1/5/2011**

CALIBRATION TEST RESULTS

POST-TEST

SID-IIs No: 300

CONFIGURED FOR LEFT SIDE IMPACT

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VERIFICATION REPORT

Test Name:	**Head Drop**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**SID 300**		
Test ID:	**Head Drop**	Test Date:	**12/10/2010**
Test Number:	**1**	Test Time:	**4:51:47 PM**

Component Part Number	Component Serial Number
Head Skin - 180-1002	**1355**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.0**	deg C	P
Humidity	10	--	70	**24**	%RH	P
Resultant Acceleration	115.0	--	137.0	**123.2**	g	P
Oscillation	0.0	--	15.0	**1.7**	%	P
Fore-Aft Acceleration	-15.0	--	15.0	**3.8**	g	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Endevco	**7264-2000**	**P66926**	**10/25/2010**
Endevco	**7264-2000**	**P66931**	**10/25/2010**
Endevco	**7264-2000**	**P66943**	**10/25/2010**

Test ID: **Head Drop** Test Time: **4:51:47 PM** Test Date: **12/10/2010**

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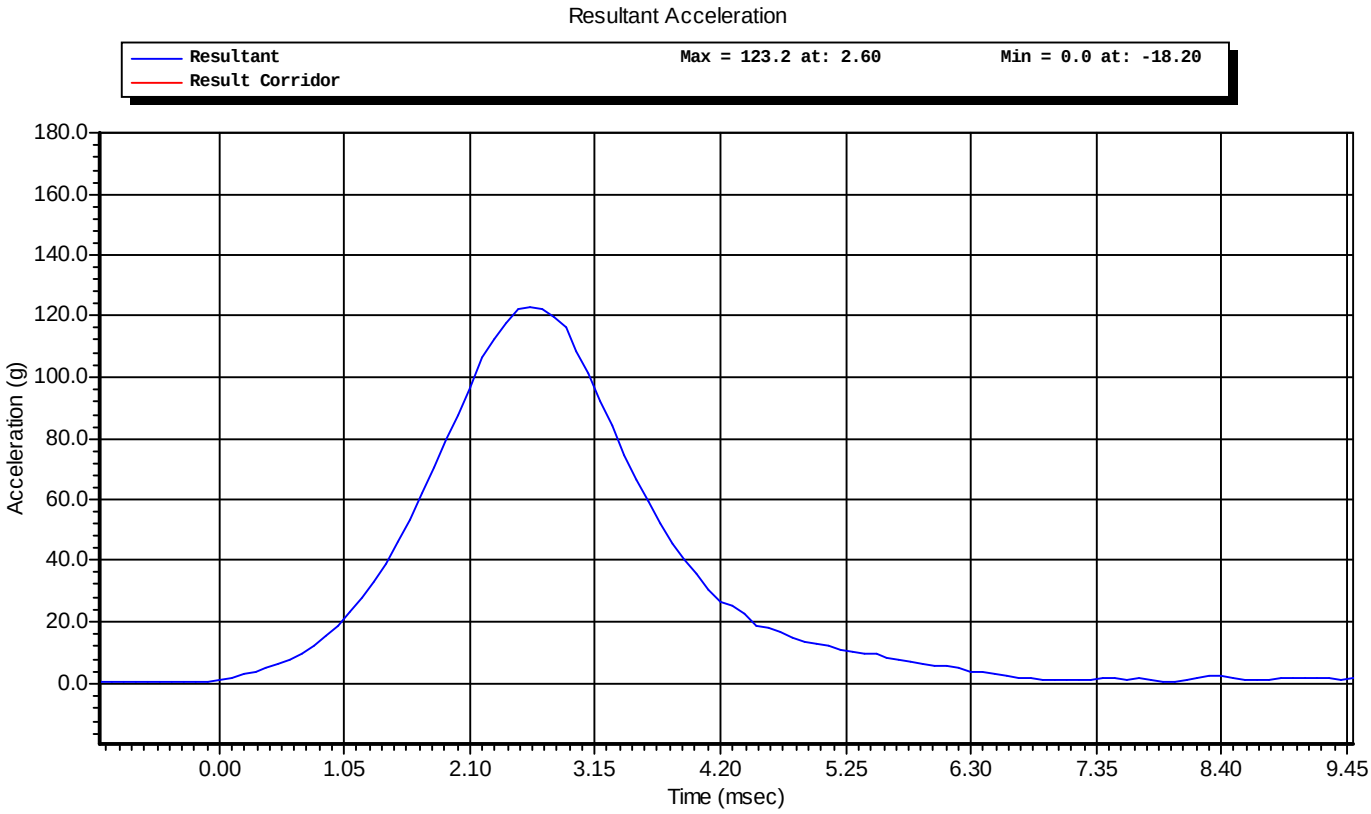
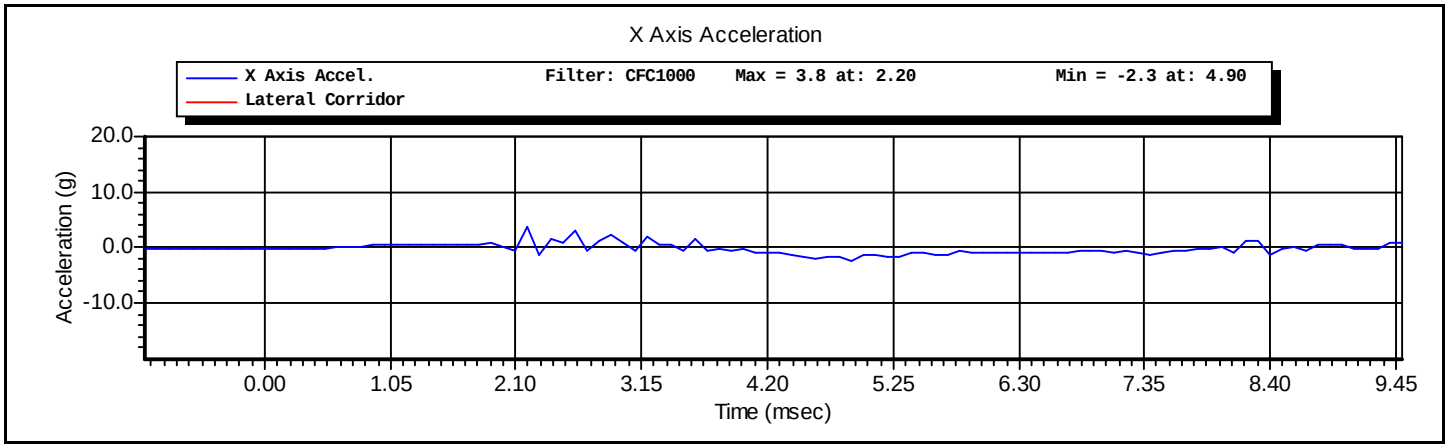
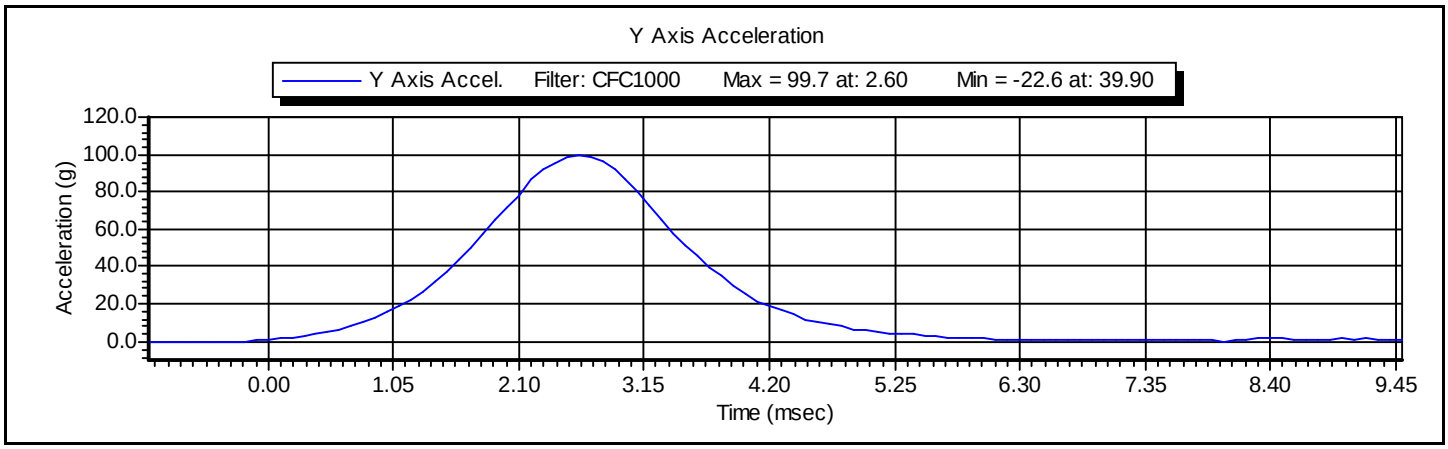
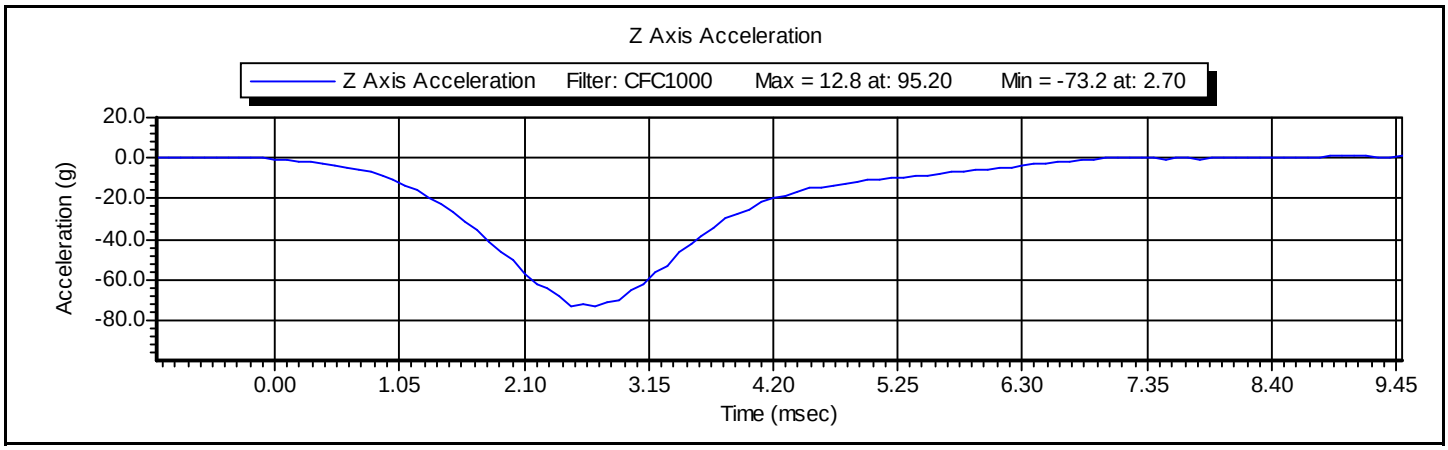
Test Name:	**Head Drop**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**SID 300**		
Test ID:	**Head Drop**	Test Date:	**12/10/2010**
Test Number:	**1**	Test Time:	**4:51:47 PM**









Test ID: **Head Drop** Test Time: **4:51:47 PM** Test Date: **12/10/2010**

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VERIFICATION REPORT

Test Name:	**Neck Pendulum**	Revision:	**8/24/2009**
Sub Test Name:	**Left Side**	Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**SID 300**		
Test ID:	**Neck Flexion**	Test Date:	**12/10/2010**
Test Number:	**1**	Test Time:	**6:14:16 PM**

Component Part Number	Component Serial Number
Neck - 180-2000	**787**

Test Parameters	Test Specifications	Test Results	
Temperature	20.6 -- 22.2	**22.0** deg C	P
Humidity	10 -- 70	**24** %RH	P
Velocity	5.51 -- 5.63	**5.53** m/s	P
Pendulum Impulse at 10 ms	2.20 -- 2.80	**2.30** m/s	P
Pendulum Impulse at 15 ms	3.30 -- 4.10	**3.39** m/s	P
Pendulum Impulse at 20 ms	4.40 -- 5.40	**4.71** m/s	P
Pendulum Impulse at 25 ms	5.40 -- 6.10	**5.63** m/s	P
Pendulum Impulse between 25 and 100 ms	5.50 -- 6.20	**5.84** m/s	P
Max D Plane Rotation	71.0 -- 81.0	**75.9** degrees	P
Time at Max Rotation	50.0 -- 70.0	**63.1** ms	P
Moment about OC	-44.0 -- -36.0	**-40.4** Nm	P
Moment Decay to Zero	102.0 -- 126.0	**116.6** ms	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7231CT**	**C16510**	**10/21/2010**
Denton	**1716A**	**LC-576 Fy**	**2/15/2010**
Denton	**1716A**	**LC-576 Mx**	**2/15/2010**
DentonATD	**78051-342**	**184**	**4/30/2010**
DentonATD	**78051-342**	**174**	**4/30/2010**
DentonATD	**78051-342**	**185**	**4/30/2010**

Test ID: **Neck Flexion** Test Time: **6:14:16 PM** Test Date: **12/10/2010**

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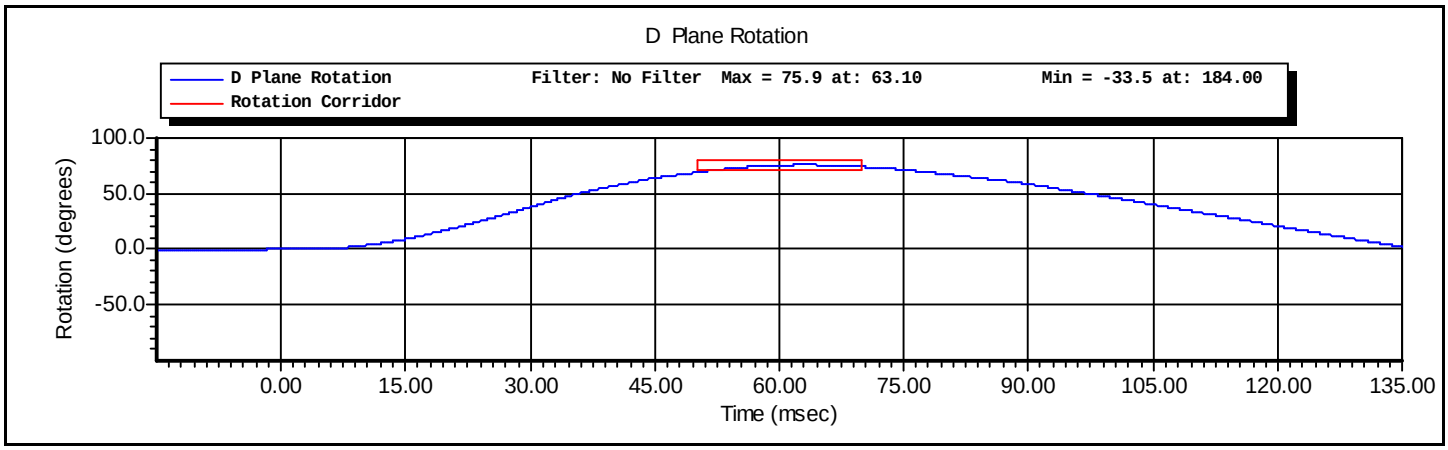
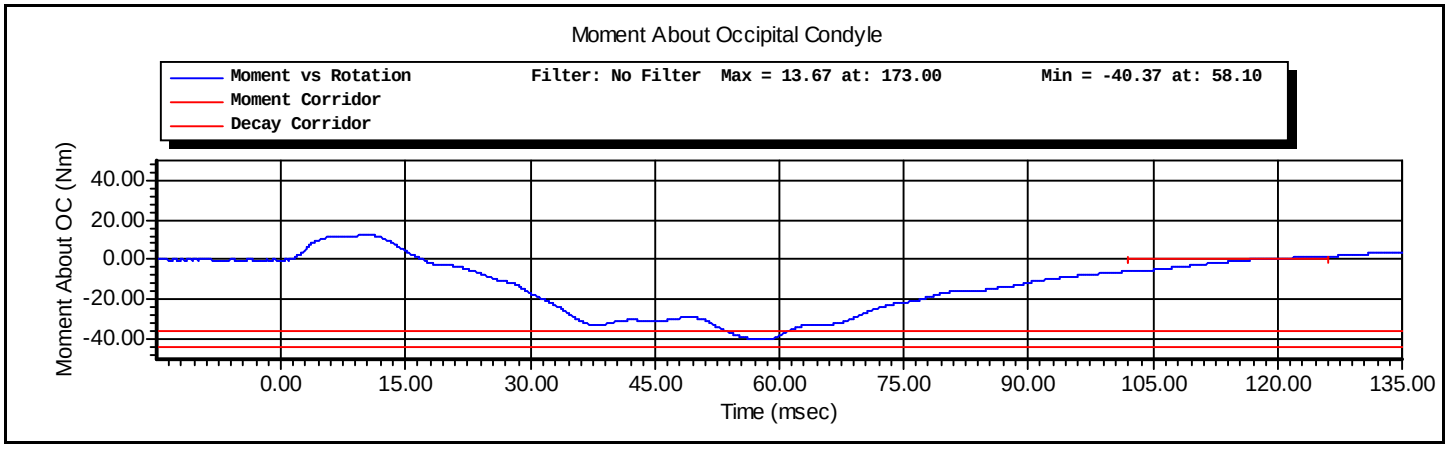
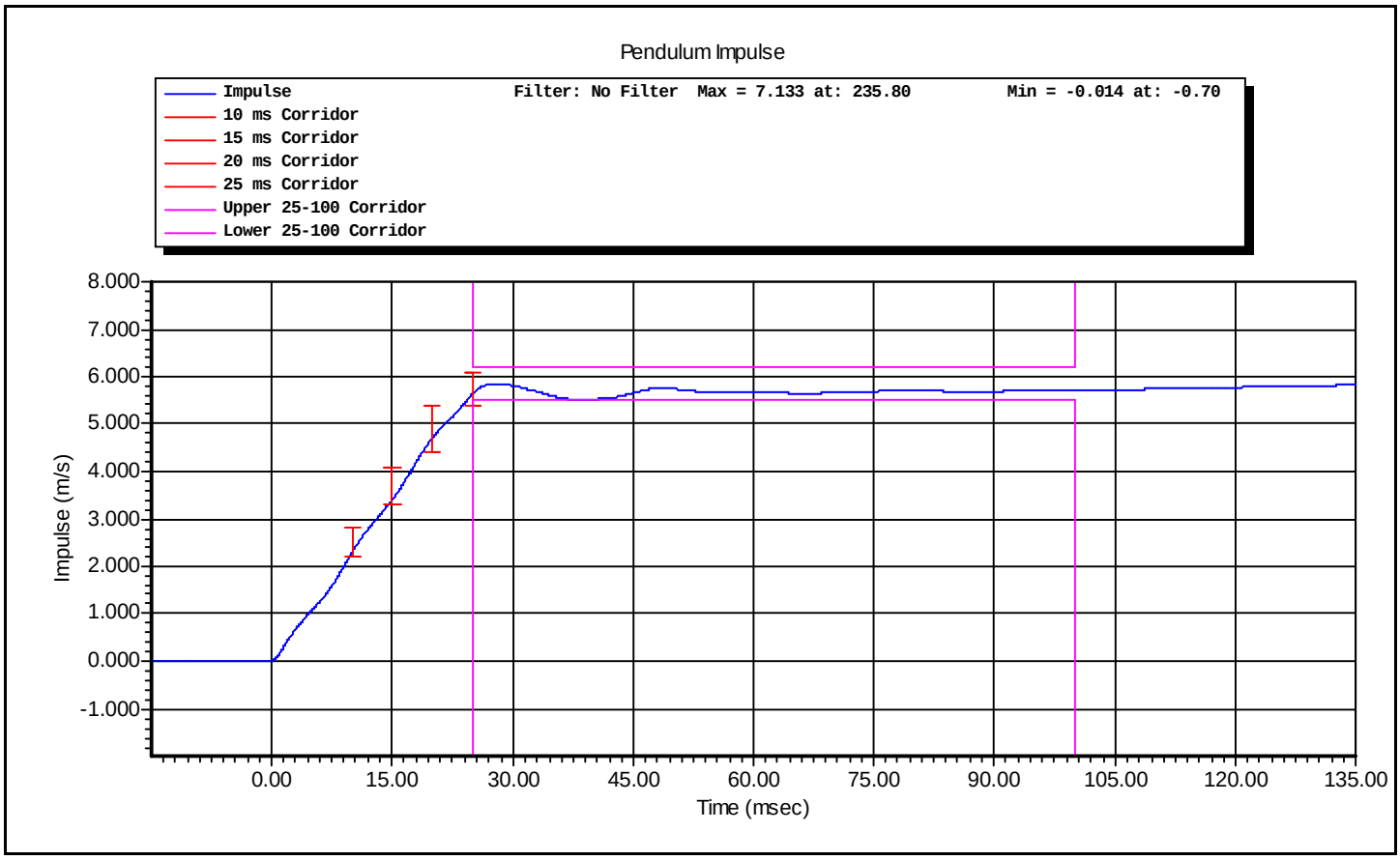
Test Name:	**Neck Pendulum**	Revision:	**8/24/2009**
Sub Test Name:	**Left Side**	Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**SID 300**		
Test ID:	**Neck Flexion**	Test Date:	**12/10/2010**
Test Number:	**1**	Test Time:	**6:14:16 PM**







Test ID: **Neck Flexion** Test Time: **6:14:16 PM** Test Date: **12/10/2010**

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VERIFICATION REPORT

Test Name:	**Abdominal Impact**	Revision:	**8/24/2009**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**SID 300**		
Test ID:	**Abdomen**	Test Date:	**12/11/2010**
Test Number:	**1**	Test Time:	**9:28:38 AM**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.0**	deg C	P
Humidity	10	--	70	**30**	%RH	P
Velocity	4.20	--	4.40	**4.33**	m/s	P
Probe Acceleration	12.0	--	16.0	**15.8**	g	P
Upper Abdominal Rib Deflection	36.0	--	47.0	**38.2**	mm	P
Lower Abdominal Rib Deflection	33.0	--	44.0	**35.5**	mm	P
Lower Spine Acceleration - T12	9.0	--	14.0	**12.3**	g	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7264-2000**	**P66930**	**10/5/2010**
Servo	**180-3885**	**DS-1162**	**4/7/2010**
Servo	**180-3885**	**DS-1232**	**4/7/2010**
Endevco	**7264-2000**	**P64147**	**10/8/2010**

Test ID: **Abdomen** Test Time: **9:28:38 AM** Test Date: **12/11/2010**

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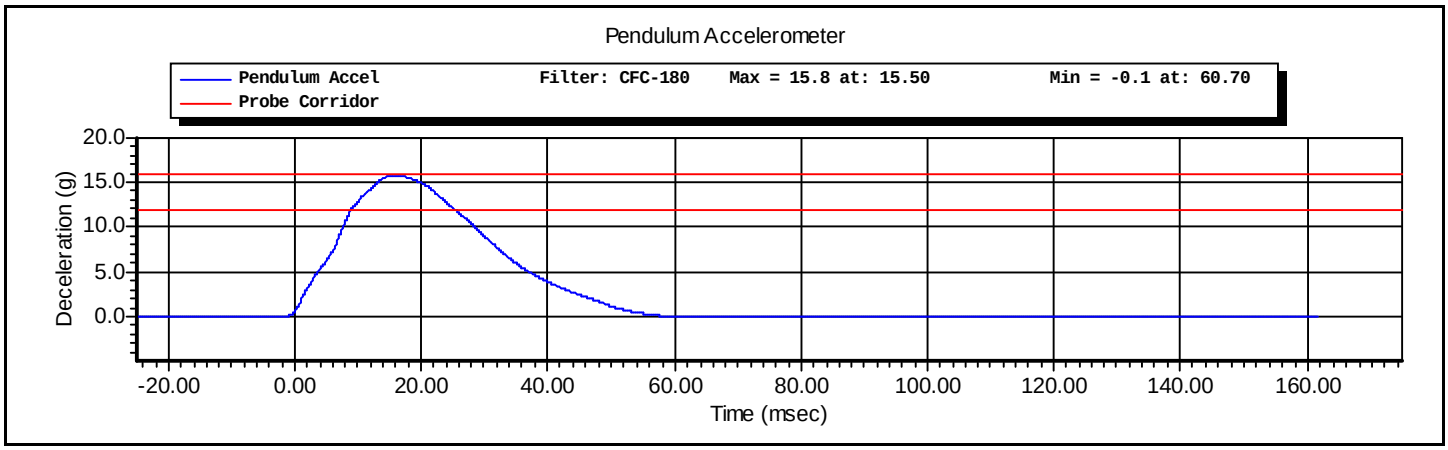
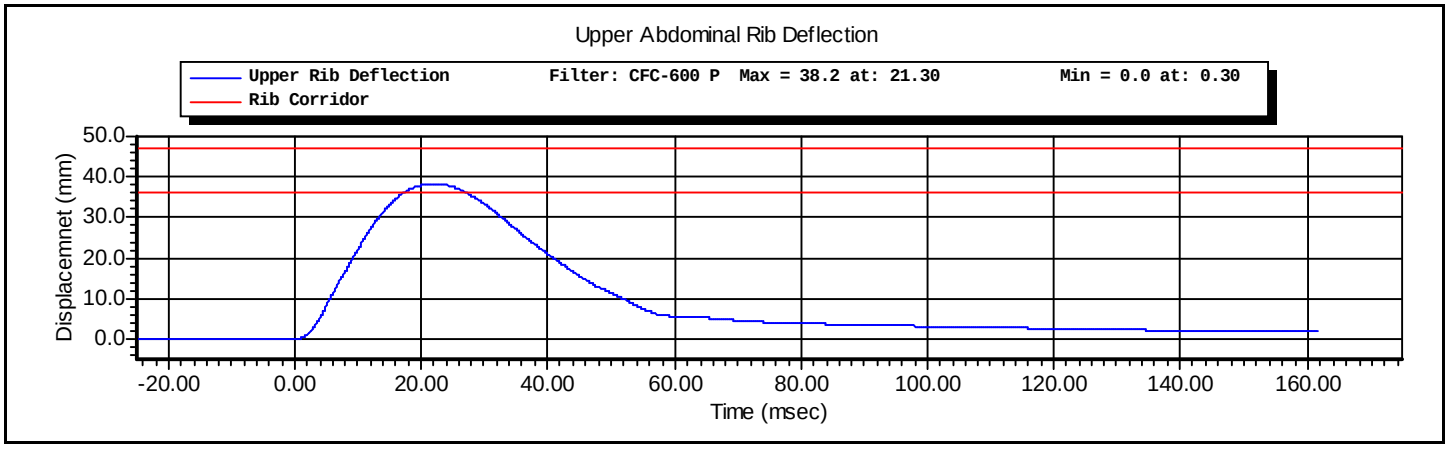
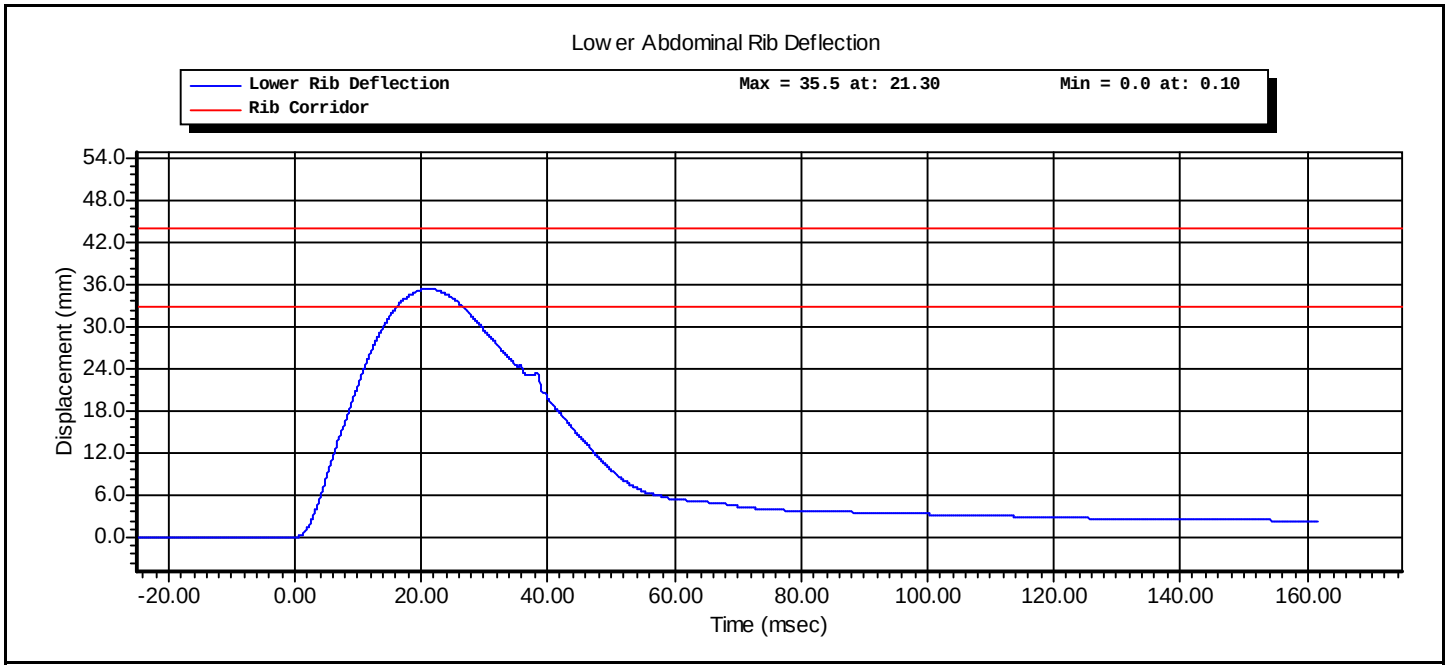
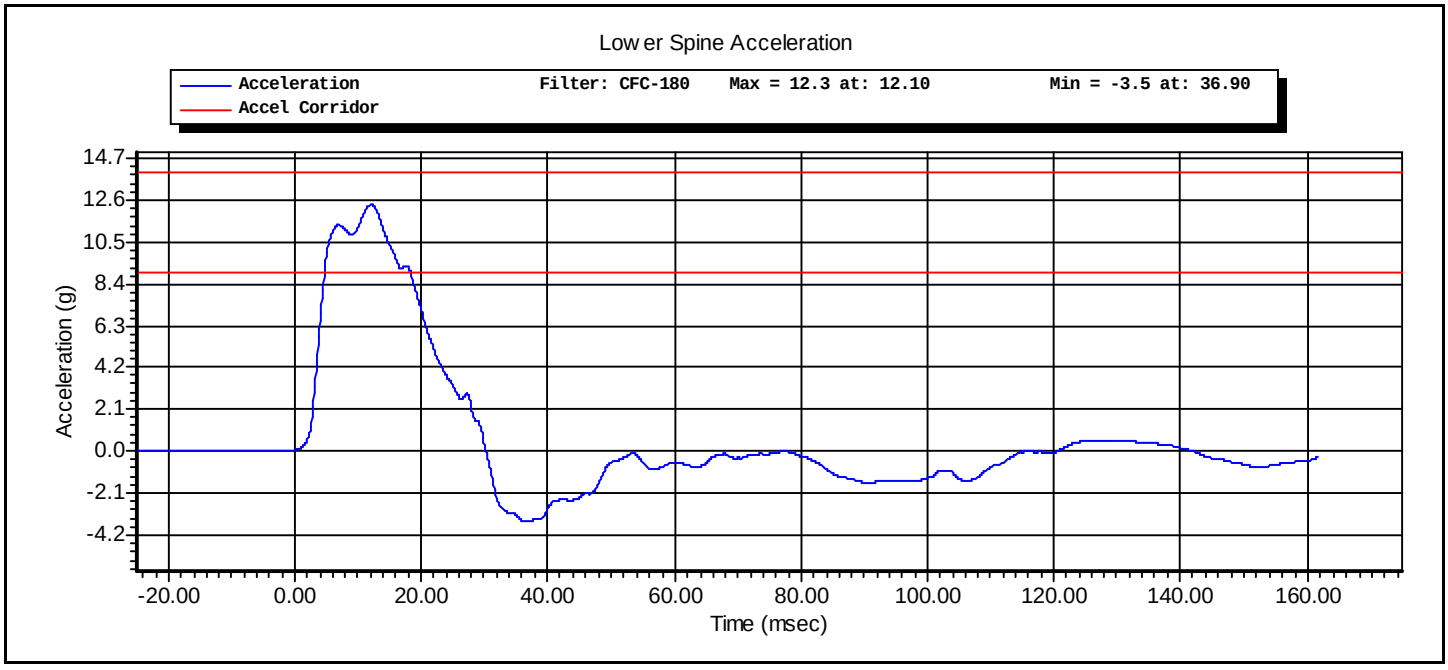
Test Name:	**Abdominal Impact**	Revision:	**8/24/2009**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**SID 300**		
Test ID:	**Abdomen**	Test Date:	**12/11/2010**
Test Number:	**1**	Test Time:	**9:28:38 AM**









Test ID: **Abdomen** Test Time: **9:28:38 AM** Test Date: **12/11/2010**

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VERIFICATION REPORT

Test Name:	**Shoulder Impact**	Revision:	**8/24/2009**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**SID 300**		
Test ID:	**Shoulder**	Test Date:	**12/11/2010**
Test Number:	**1**	Test Time:	**11:17:16 AM**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.10**	deg C	P
Humidity	10.0	--	70.0	**29.0**	%RH	P
Velocity	4.20	--	4.40	**4.35**	m/s	P
Probe Acceleration	13.0	--	18.0	**17.0**	g	P
Shoulder Deflection	28.0	--	37.0	**32.0**	mm	P
T1 Acceleration	17.0	--	22.0	**20.2**	g	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7264-2000**	**P66930**	**10/5/2010**
Servo	**180-3885**	**DS-1063**	**4/7/2010**
Endevco	**7264-2000**	**P58884**	**10/19/2010**

Test ID: **Shoulder** Test Time: **11:17:16 AM** Test Date: **12/11/2010**

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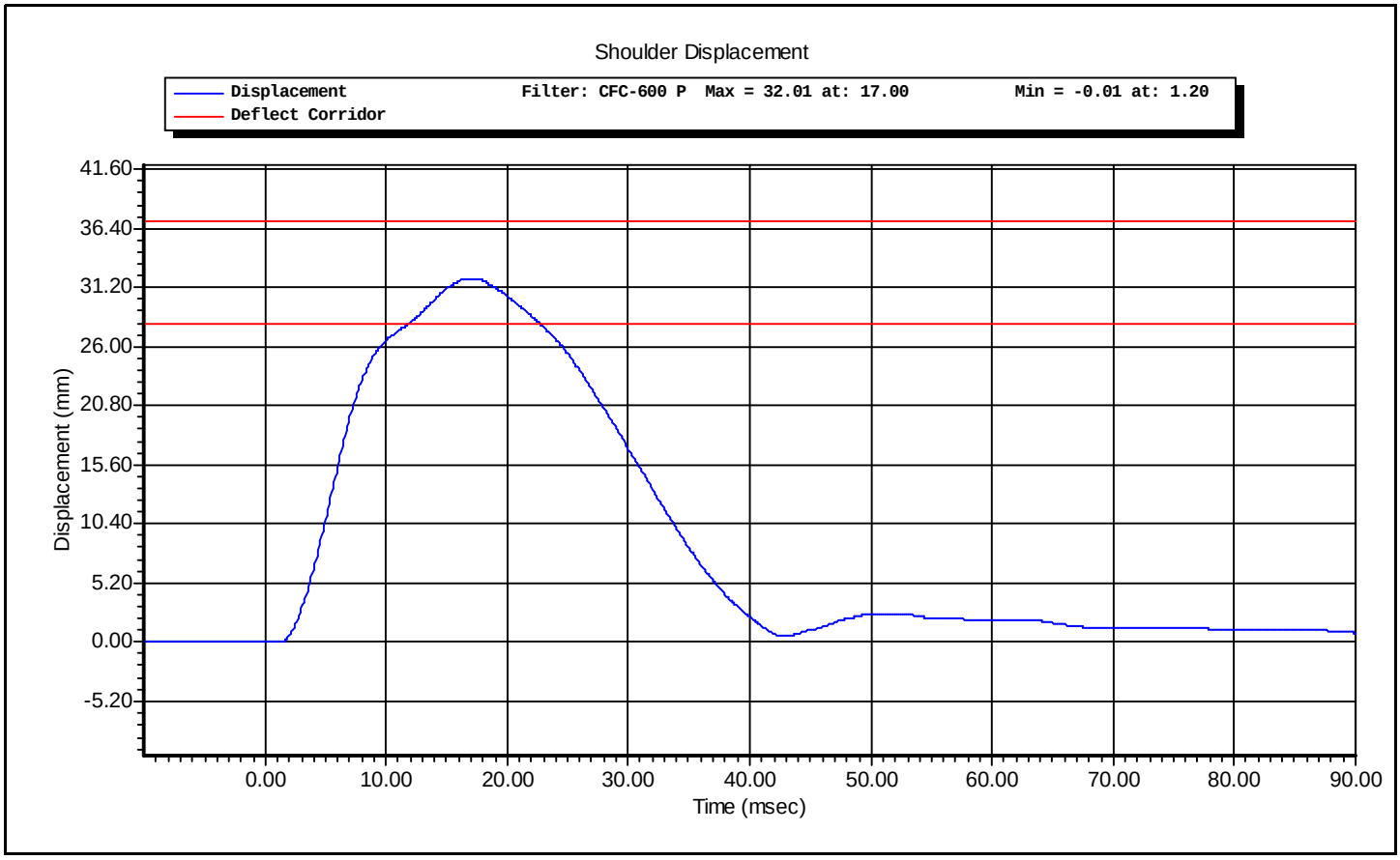
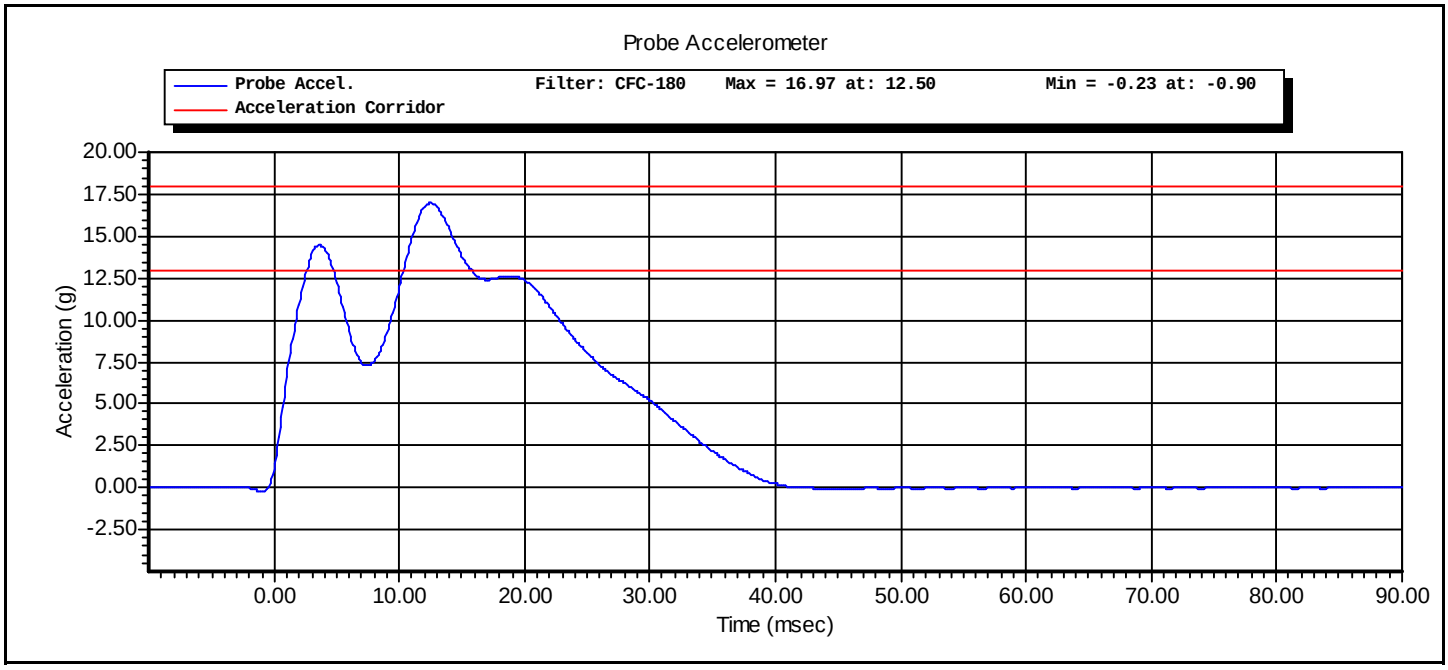
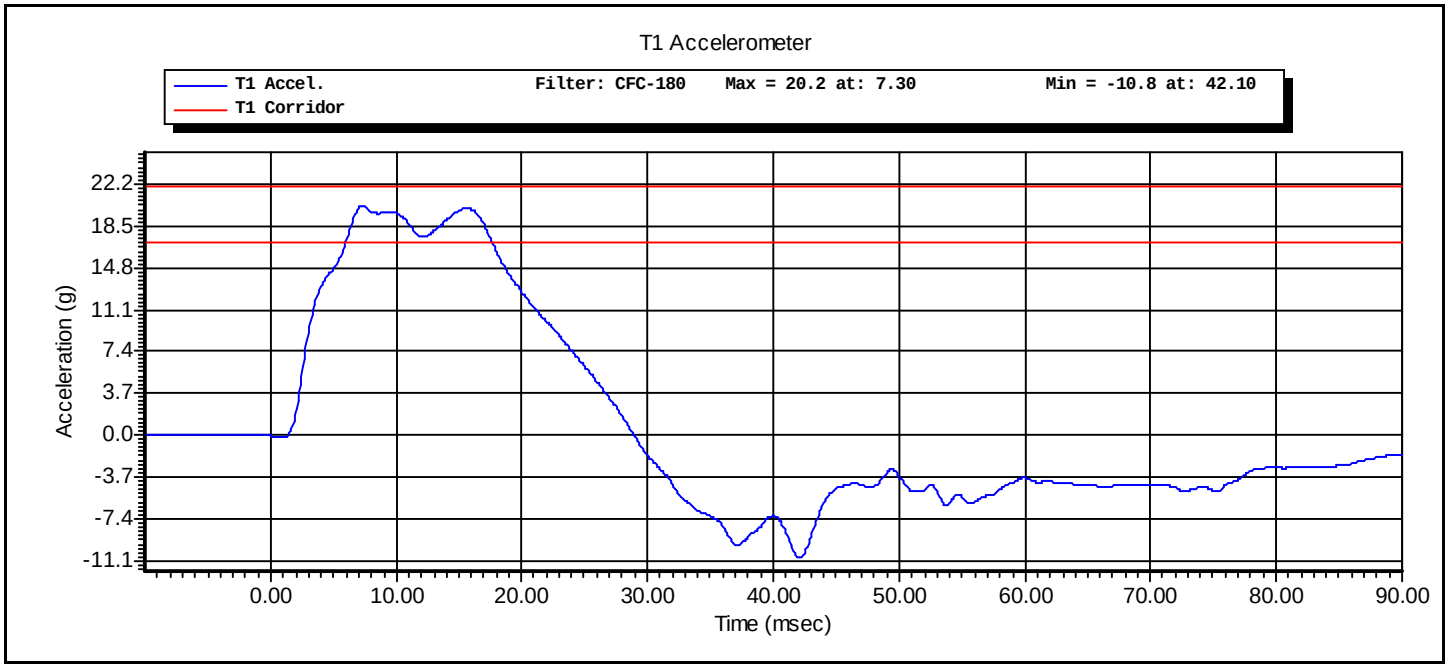
Test Name:	**Shoulder Impact**	Revision:	**8/24/2009**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**SID 300**		
Test ID:	**Shoulder**	Test Date:	**12/11/2010**
Test Number:	**1**	Test Time:	**11:17:16 AM**







Test ID: **Shoulder** Test Time: **11:17:16 AM** Test Date: **12/11/2010**

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VERIFICATION REPORT

Test Name:	**Thorax Impact with Arm**	Revision:	**8/24/2009**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**SID 300**		
Test ID:	**Thorax With Arm**	Test Date:	**12/11/2010**
Test Number:	**1**	Test Time:	**10:44:27 AM**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.6**	deg C	P
Humidity	10	--	70	**29**	%RH	P
Velocity	6.60	--	6.80	**6.69**	m/s	P
Probe Acceleration after 5ms	30.0	--	36.0	**35.1**	g	P
Upper Thorax Rib Deflection	25.0	--	32.0	**26.7**	mm	P
Mid Thorax Rib Deflection	30.0	--	36.0	**31.8**	mm	P
Lower Thorax Rib Deflection	32.0	--	38.0	**35.2**	mm	P
Upper Spine Acceleration ("y")	34.0	--	43.0	**40.6**	g	P
Lower Spine Acceleration ("y")	29.0	--	37.0	**36.3**	g	P
Shoulder Deflection	31.0	--	40.0	**36.0**	mm	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7264-2000**	**P66930**	**10/5/2010**
Servo	**180-3885**	**DS-1121**	**4/7/2010**
Servo	**180-3885**	**DS-1151**	**4/7/2010**
Servo	**180-3885**	**DS-1156**	**4/7/2010**
Endevco	**7264-2000**	**P58884**	**10/19/2010**
Endevco	**7264-2000**	**P64147**	**10/8/2010**
Servo	**180-3885**	**DS-1063**	**4/7/2010**

Test ID: **Thorax With Arm** Test Time: **10:44:27 AM** Test Date: **12/11/2010**

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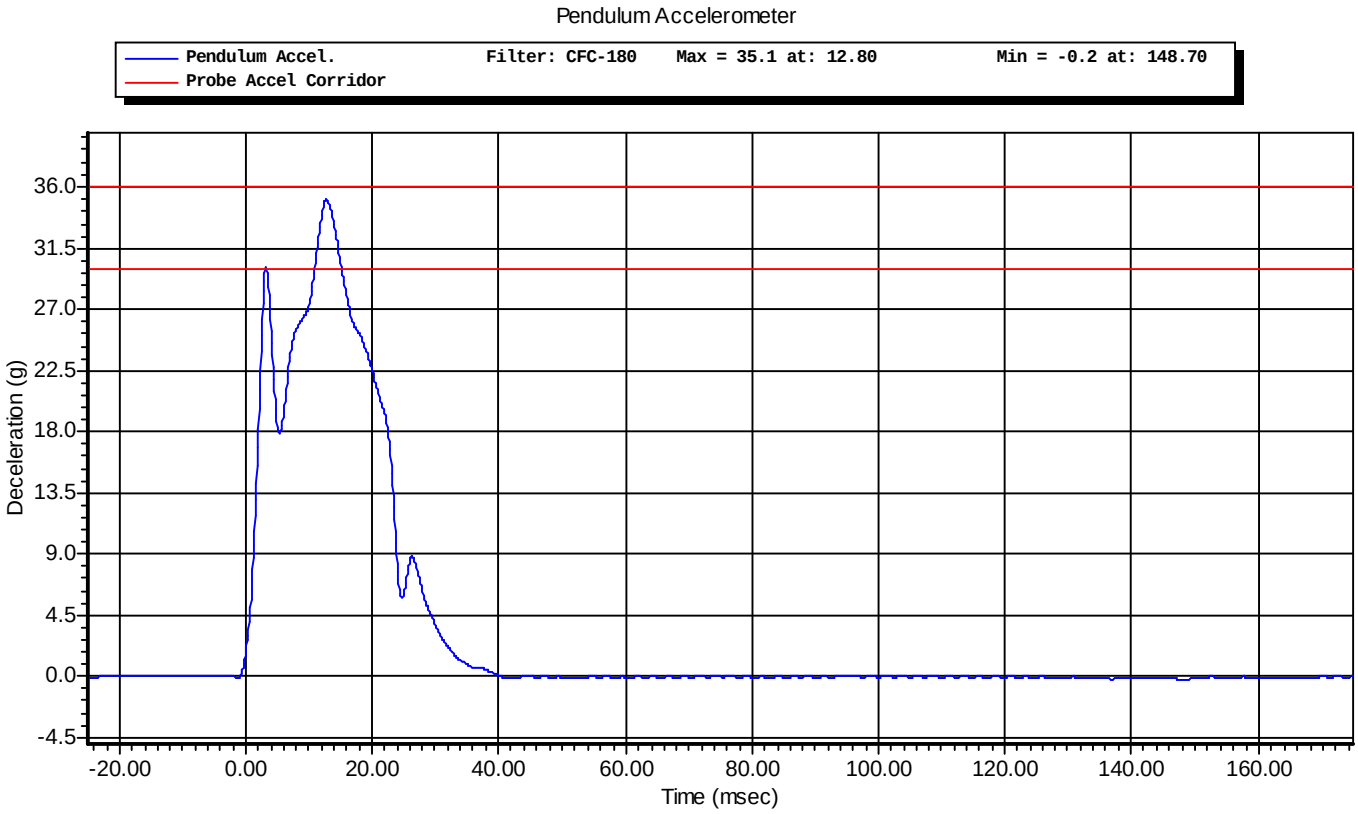
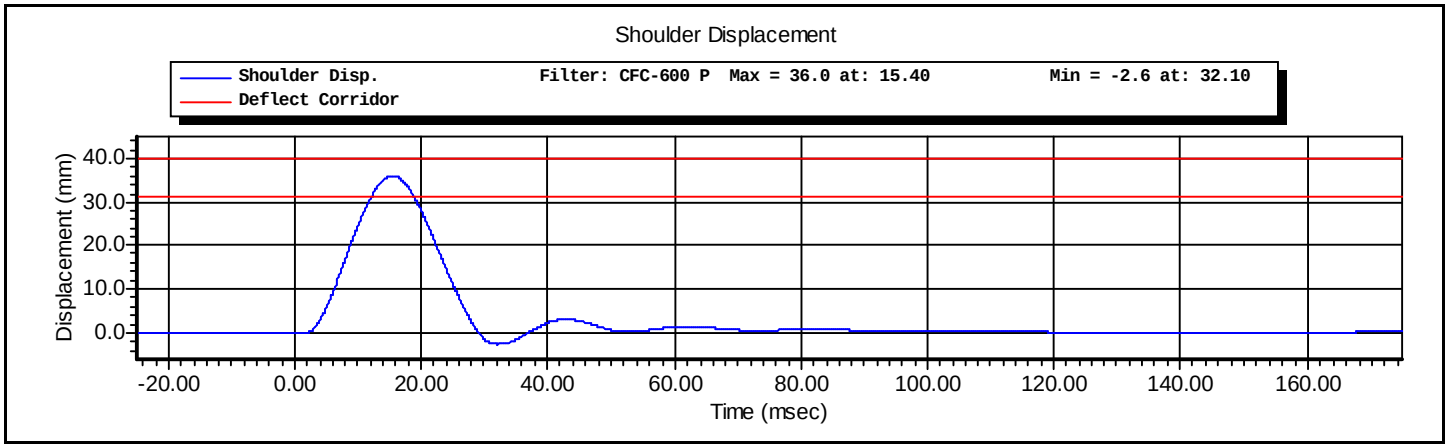
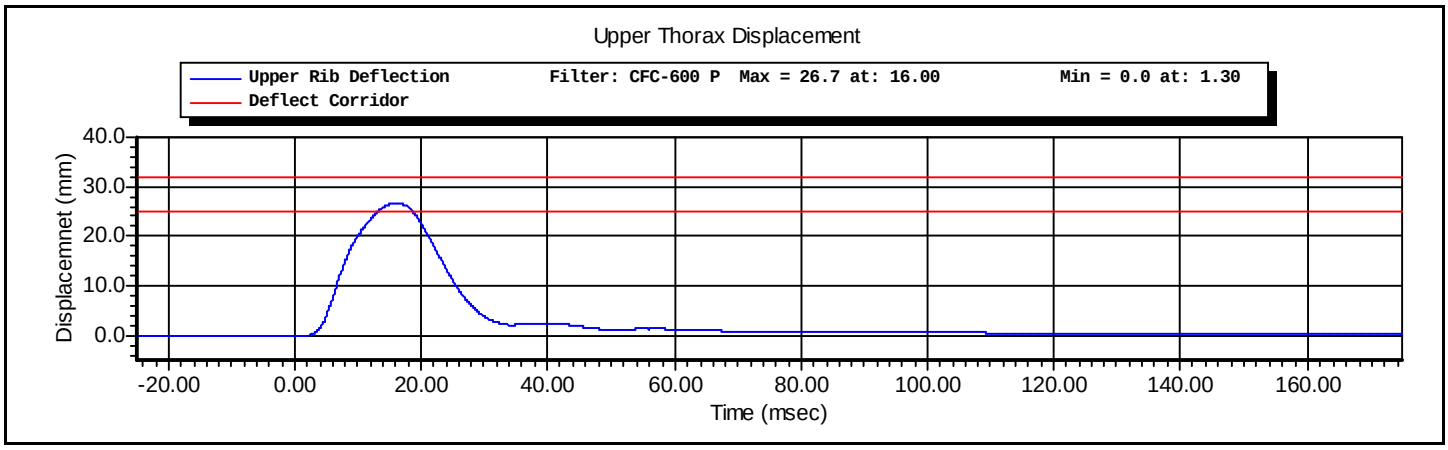
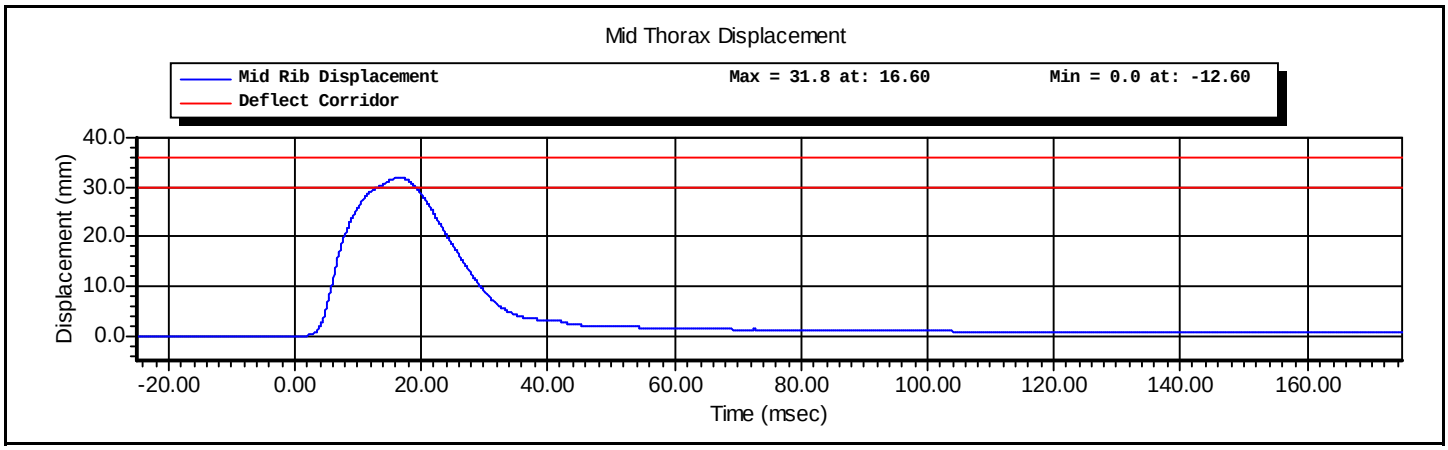
Test Name:	**Thorax Impact with Arm**	Revision:	**8/24/2009**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**SID 300**		
Test ID:	**Thorax With Arm**	Test Date:	**12/11/2010**
Test Number:	**1**	Test Time:	**10:44:27 AM**

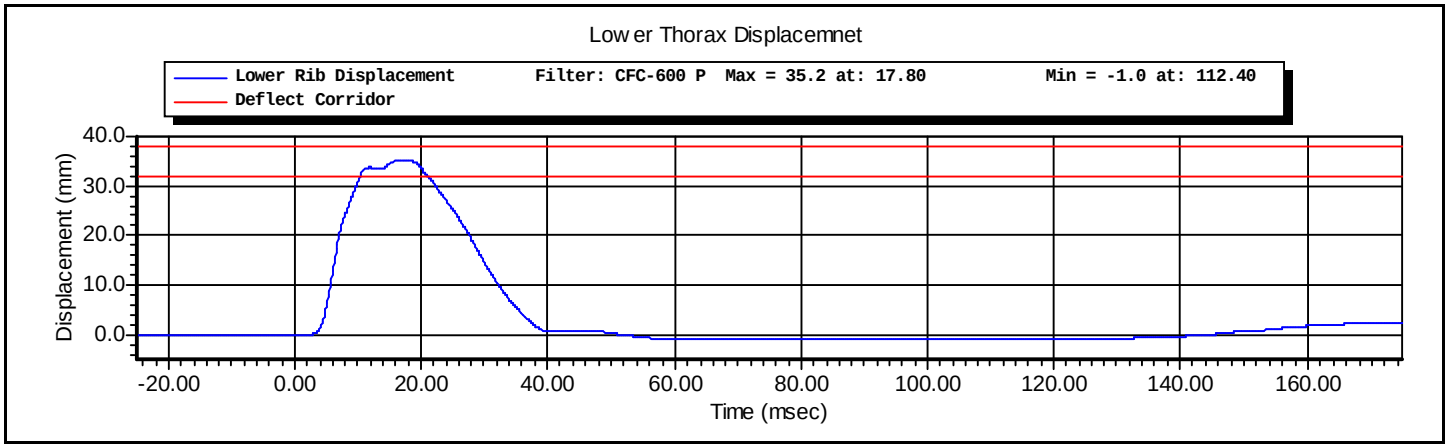


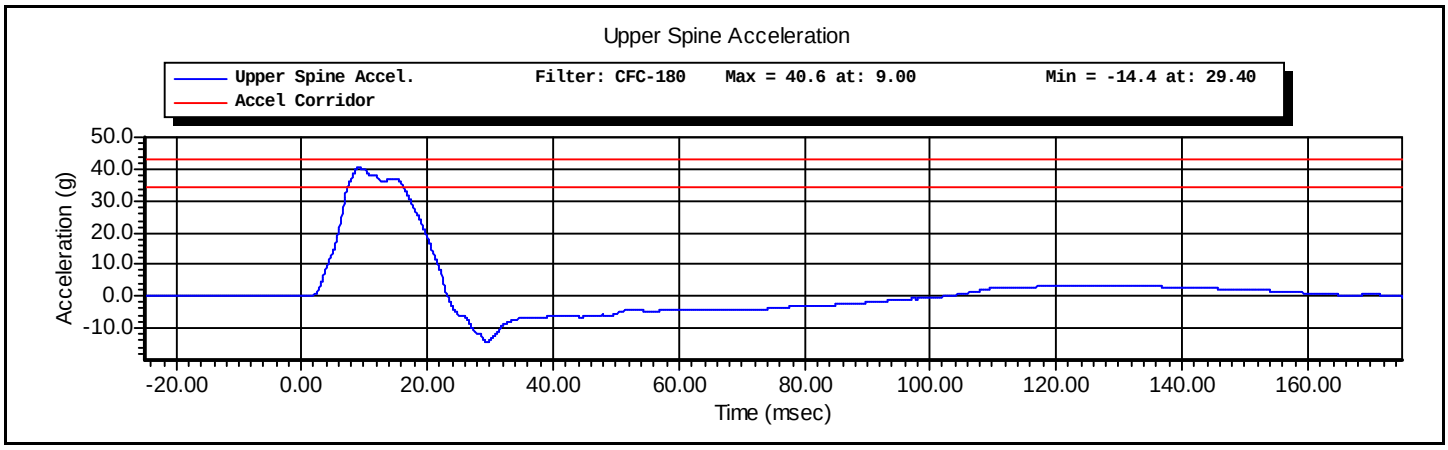


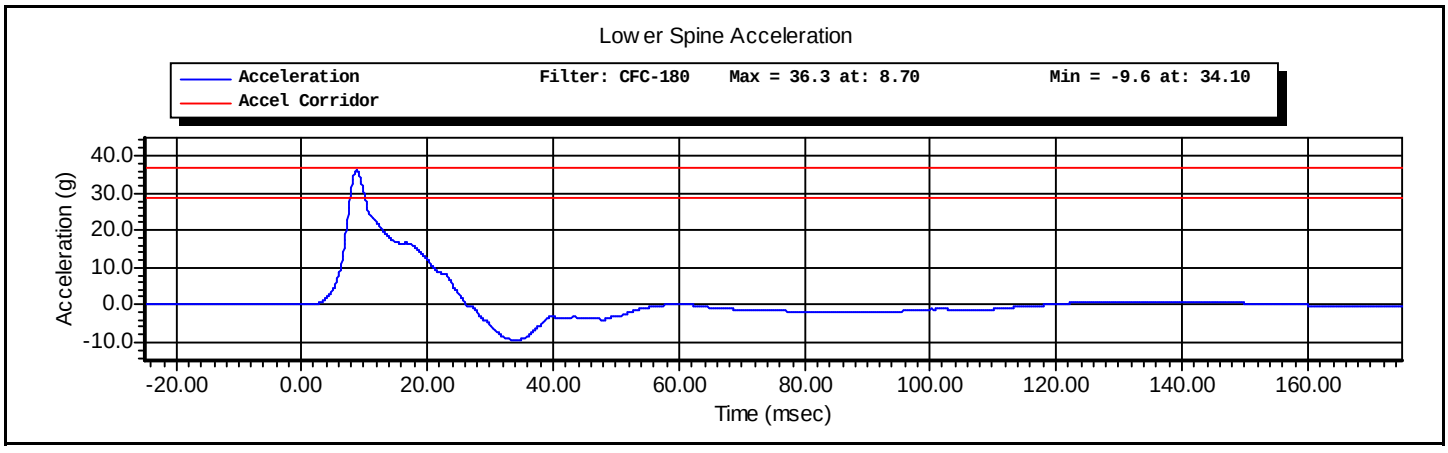




Test ID: **Thorax With Arm** Test Time: **10:44:27 AM** Test Date: **12/11/2010**







Test ID: **Thorax With Arm** Test Time: **10:44:27 AM** Test Date: **12/11/2010**

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VERIFICATION REPORT

Test Name:	**Thorax Impact without Arm**	Revision:	**8/24/2009**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**SID 300**		
Test ID:	**Thorax Without Arm**	Test Date:	**12/11/2010**
Test Number:	**1**	Test Time:	**10:08:10 AM**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.4**	deg C	P
Humidity	10	--	70	**29**	%RH	P
Velocity	4.20	--	4.40	**4.34**	m/s	P
Probe Acceleration	14.0	--	18.0	**16.4**	g	P
Upper Thorax Rib Deflection	32.0	--	40.0	**34.6**	mm	P
Mid Thorax Rib Deflection	39.0	--	45.0	**41.1**	mm	P
Lower Thorax Rib Deflection	35.0	--	43.0	**41.4**	mm	P
Upper Spine Acceleration T1	13.0	--	17.0	**15.9**	g	P
Lower Spine Acceleration T12	7.0	--	11.0	**10.1**	g	P

All test parameters are within specifications

Technician: **S. Zito** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7264-2000**	**P66930**	**10/5/2010**
Servo	**180-3885**	**DS-1121**	**4/7/2010**
Servo	**180-3885**	**DS-1151**	**4/7/2010**
Servo	**180-3885**	**DS-1156**	**4/7/2010**
Endevco	**7264-2000**	**P58884**	**10/19/2010**
Endevco	**7264-2000**	**P64147**	**10/8/2010**

Test ID: **Thorax Without Arm** Test Time: **10:08:10 AM** Test Date: **12/11/2010**

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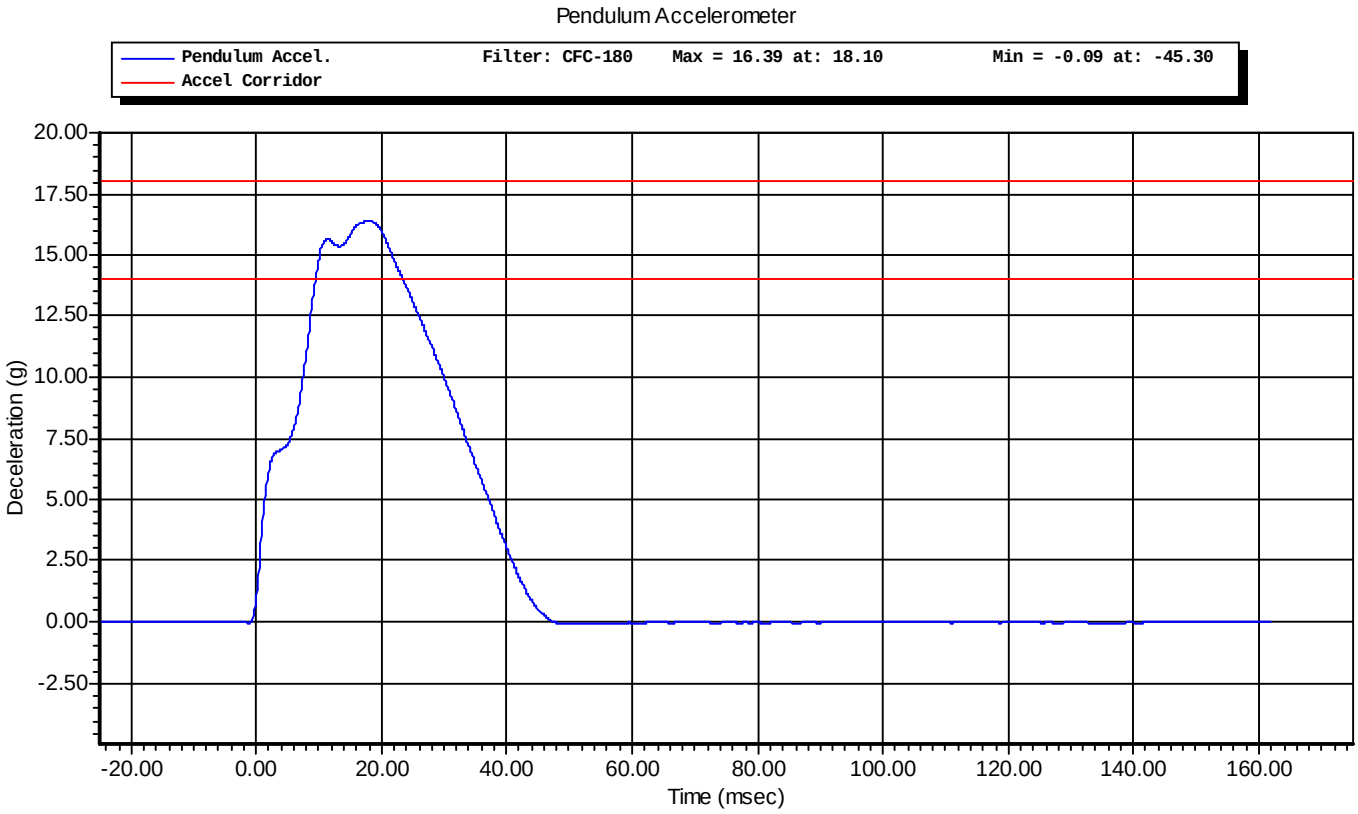
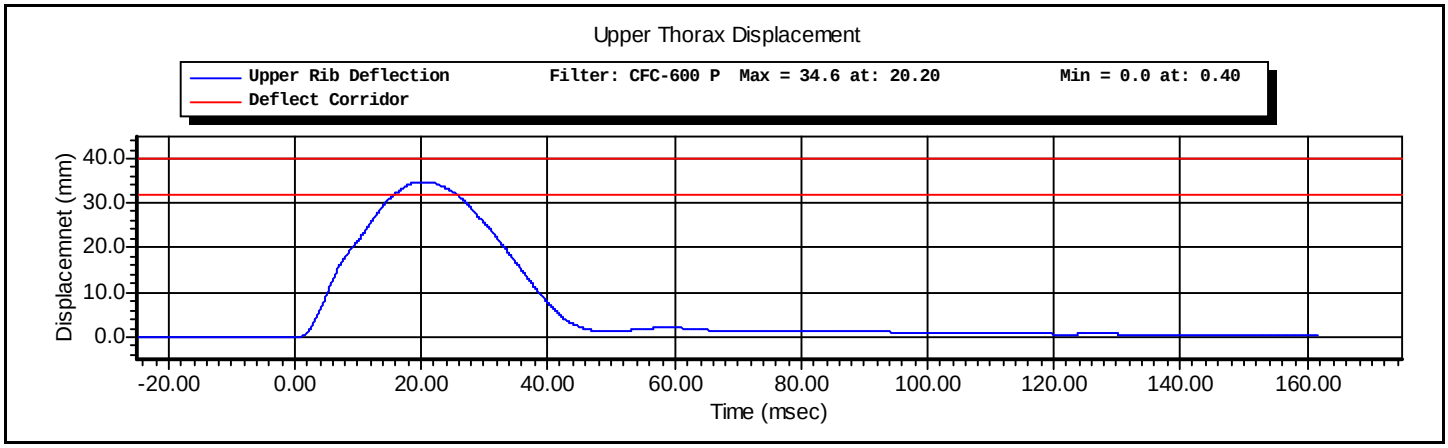
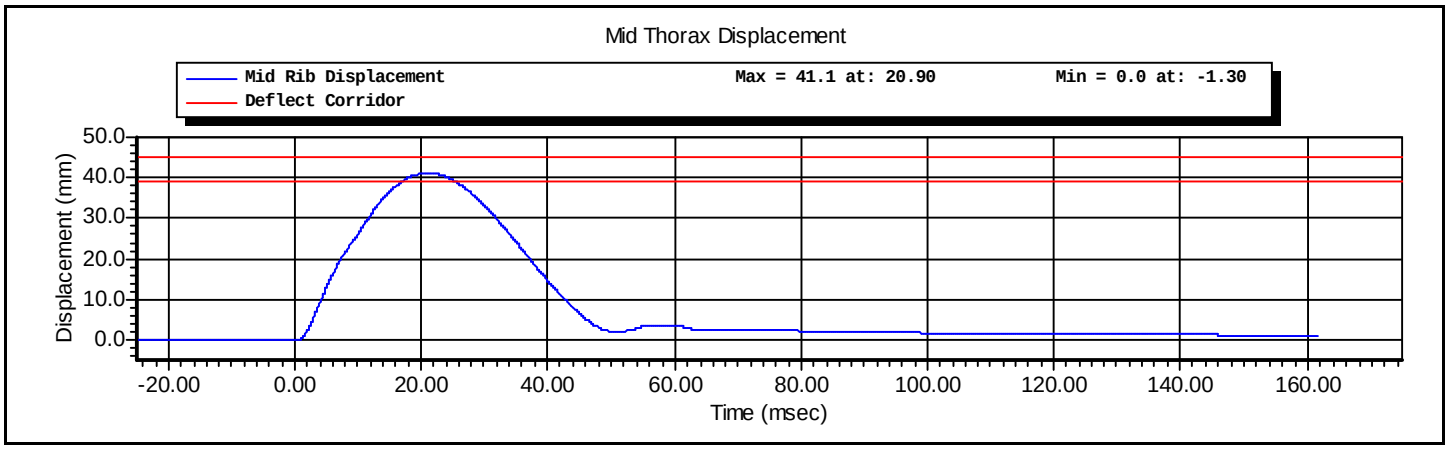
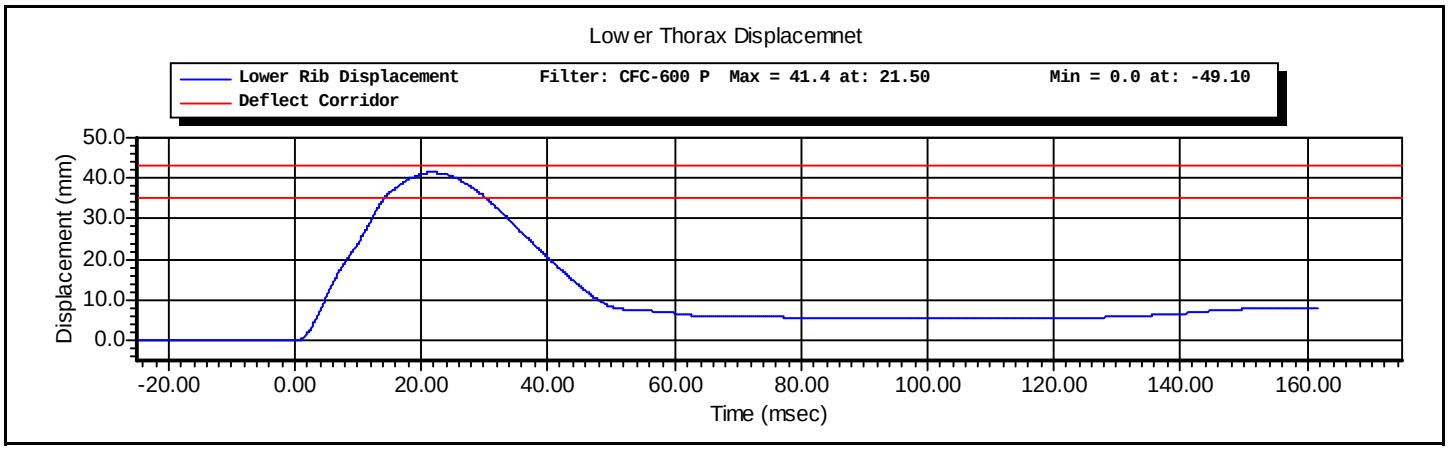
Test Name:	**Thorax Impact without Arm**	Revision:	**8/24/2009**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**SID 300**		
Test ID:	**Thorax Without Arm**	Test Date:	**12/11/2010**
Test Number:	**1**	Test Time:	**10:08:10 AM**

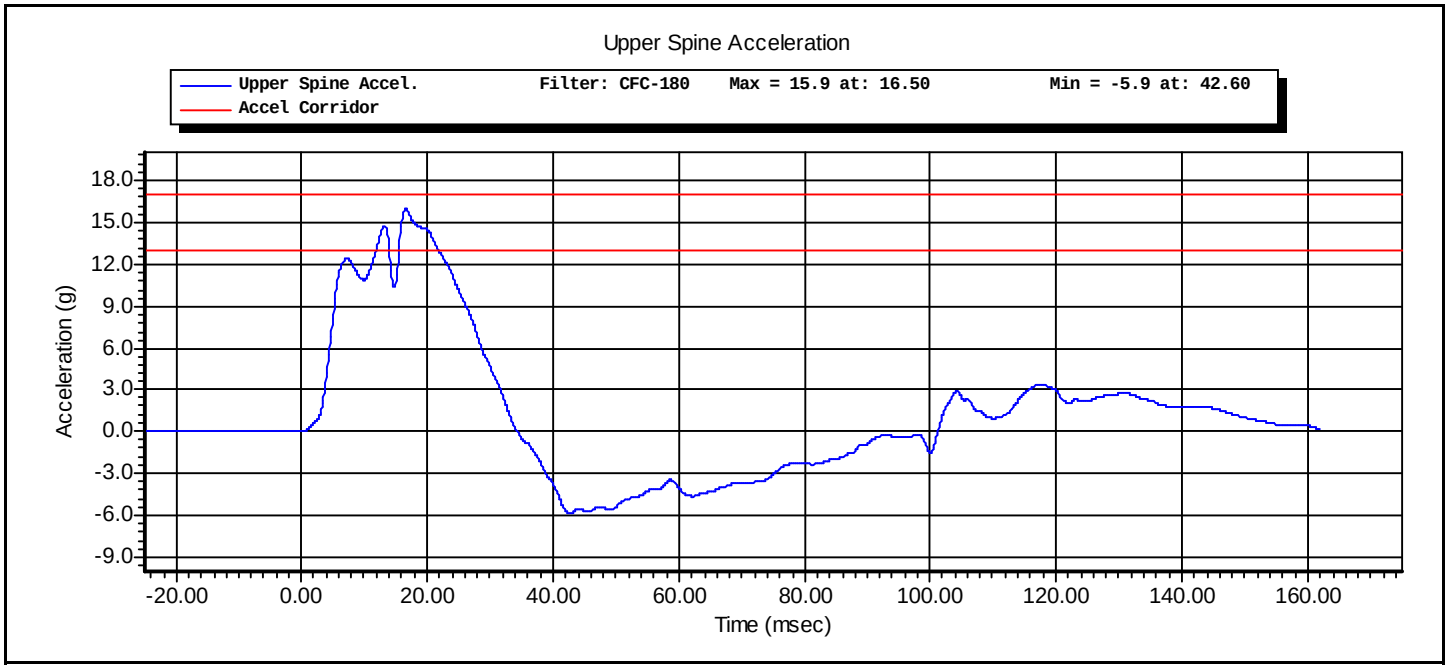


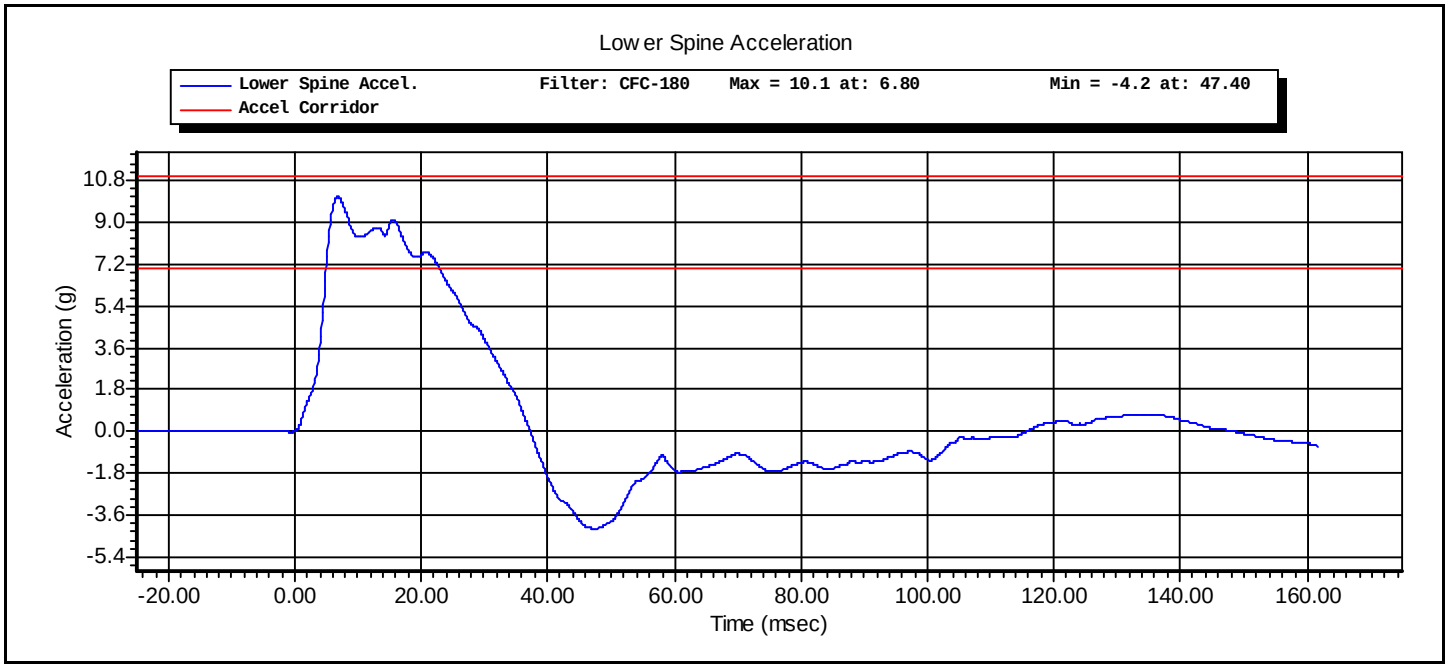






Test ID: **Thorax Without Arm** Test Time: **10:08:10 AM** Test Date: **12/11/2010**





Test ID: **Thorax Without Arm** Test Time: **10:08:10 AM** Test Date: **12/11/2010**

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VERIFICATION REPORT

Test Name:	**Pelvis**	Revision:	**8/24/2009**
Sub Test Name:	**Iliac Impact**	Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**SID 300**		
Test ID:	**Iliac**	Test Date:	**12/13/2010**
Test Number:	**1**	Test Time:	**7:31:20 PM**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.2**	deg C	P
Humidity	10	--	70	**20**	%RH	P
Velocity	4.20	--	4.40	**4.29**	m/s	P
Peak Probe Acceleration	36.0	--	45.0	**42.6**	g	P
Peak Pelvis Acceleration	28.0	--	39.0	**37.6**	g	P
Peak Iliac Force	4.10	--	5.10	**4.74**	kN	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7264-2000**	**P66930**	**10/5/2010**
Endevco	**7264-2000**	**P51671**	**12/13/2010**
DentonATD	**3228J**	**LC-279 Fy**	**4/12/2010**

Test ID: **Iliac** Test Time: **7:31:20 PM** Test Date: **12/13/2010**

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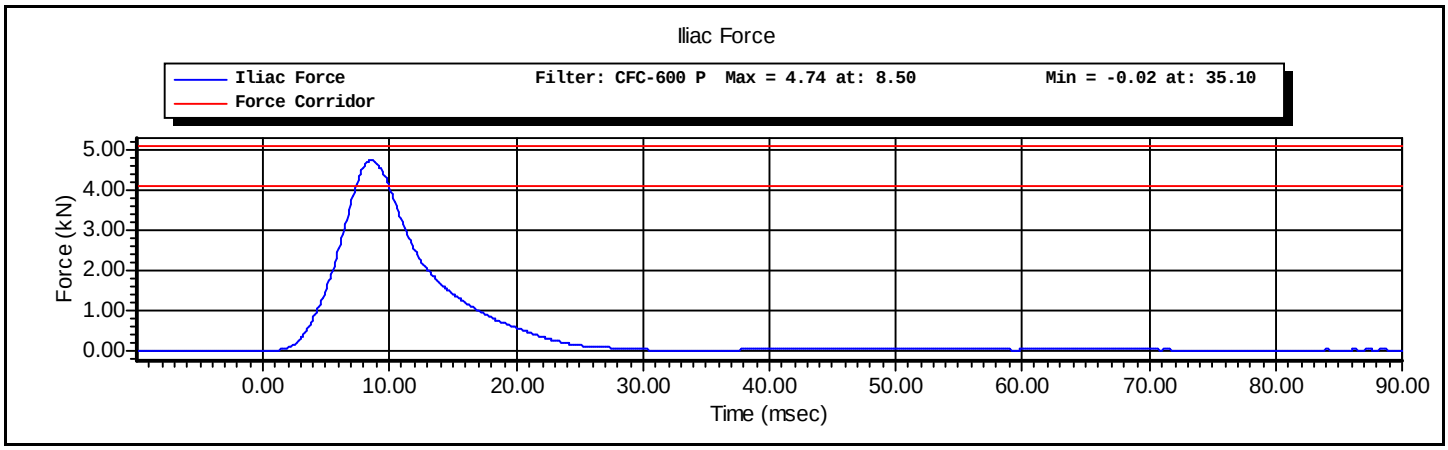
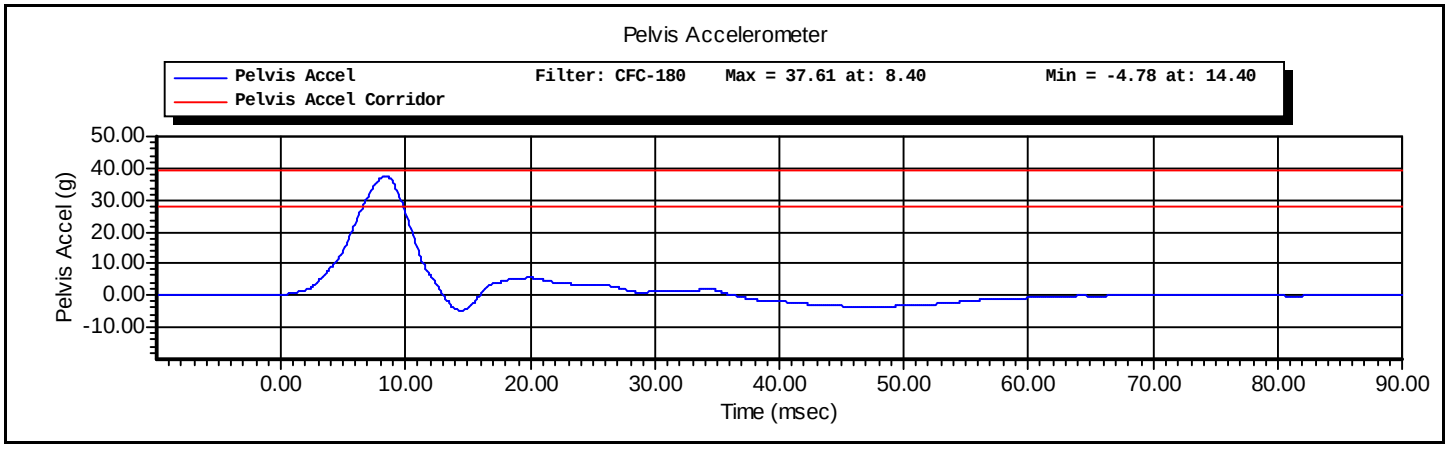
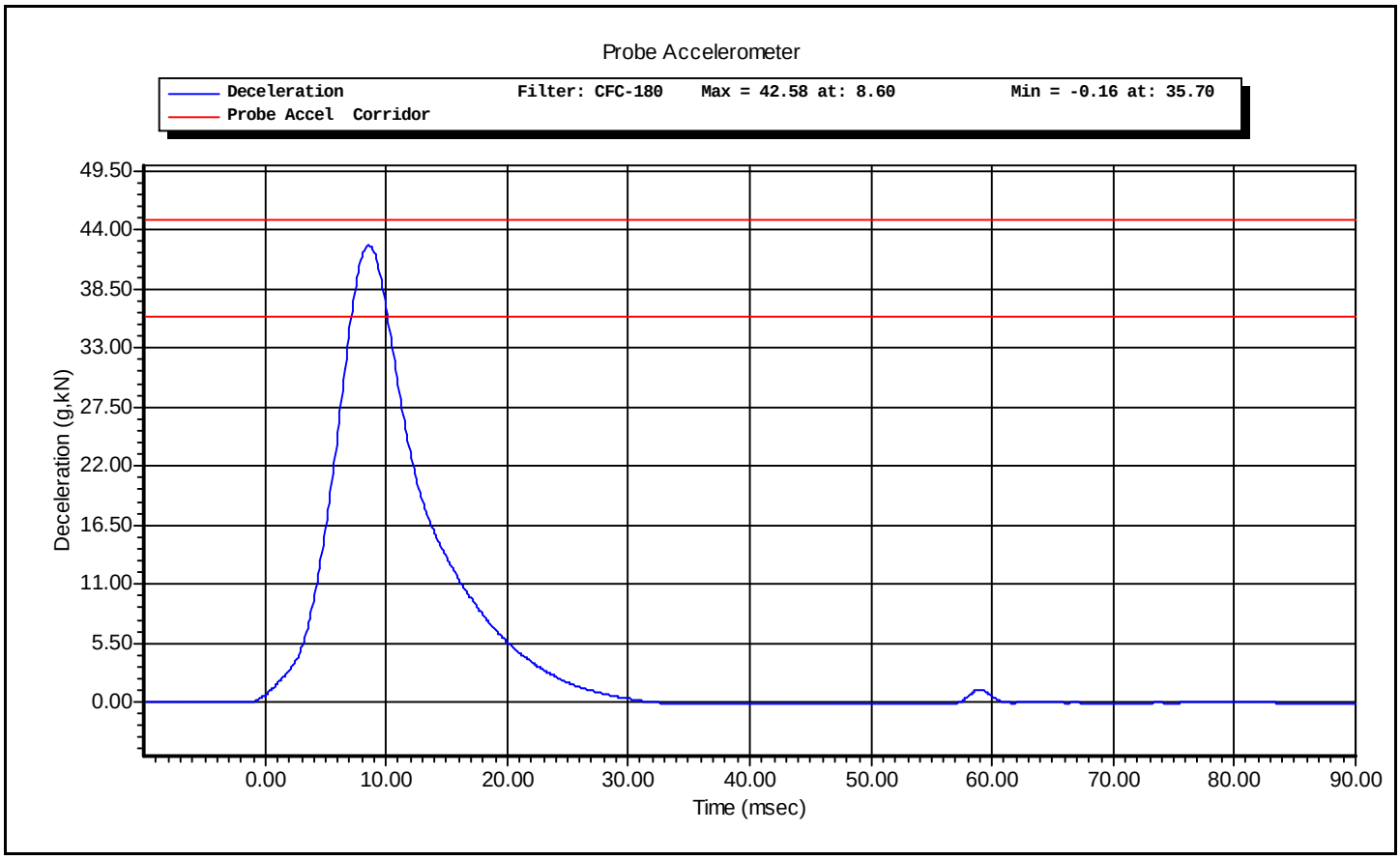
Test Name:	**Pelvis**	Revision:	**8/24/2009**
Sub Test Name:	**Iliac Impact**	Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**SID 300**		
Test ID:	**Iliac**	Test Date:	**12/13/2010**
Test Number:	**1**	Test Time:	**7:31:20 PM**







Test ID: **Iliac** Test Time: **7:31:20 PM** Test Date: **12/13/2010**

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VERIFICATION REPORT

Test Name:	**Pelvis**	Revision:	**8/24/2009**
Sub Test Name:	**Acetabulum Impact**	Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**SID 300**		
Test ID:	**Acetabulum**	Test Date:	**12/13/2010**
Test Number:	**3**	Test Time:	**7:05:04 PM**

Comments:

12460 plug
Pelvis Plug Used For Certification:
FTSS S/N 12460
Force @ 3mm = 1652N

Pelvis Plug Used For Full Scale Test:
FTSS S/N 12702
Force @ 3mm = 1626N

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.1**	deg C	P
Humidity	10	--	70	**20**	%RH	P
Velocity	6.60	--	6.80	**6.61**	m/s	P
Peak Probe Acceleration	38.0	--	47.0	**45.7**	g	P
Peak Pelvis Acceleration	34.0	--	42.0	**41.5**	g	P
Peak Acetabulum Force	3.60	--	4.30	**4.25**	kN	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____

Supervisor: **D. Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2010**
Endevco	**7264-2000**	**P66930**	**10/5/2010**
Endevco	**7264-2000**	**P51671**	**12/13/2010**
DentonATD	**3249J**	**LC-275a**	**4/12/2010**
Endevco	**7264-2000**	**P47300**	**12/13/2010**

Test ID: **Acetabulum** Test Time: **7:05:04 PM** Test Date: **12/13/2010**

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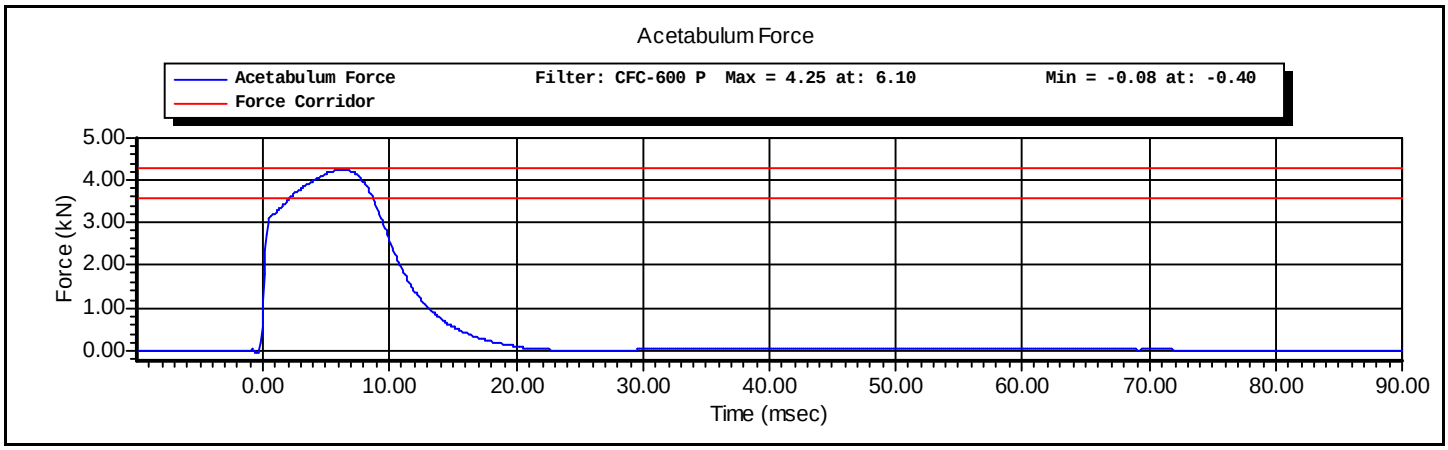
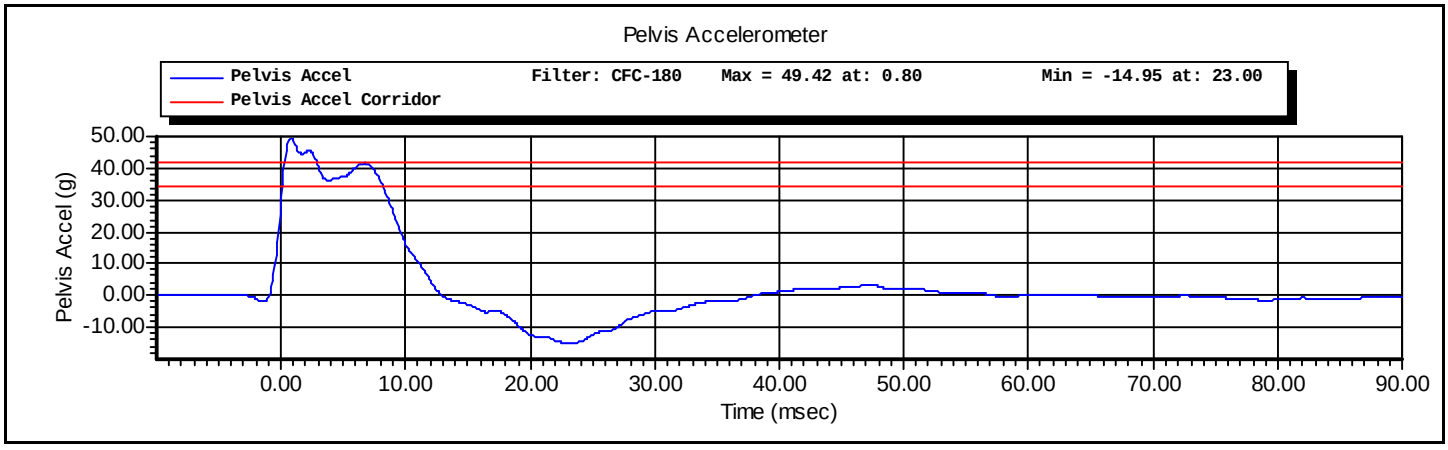
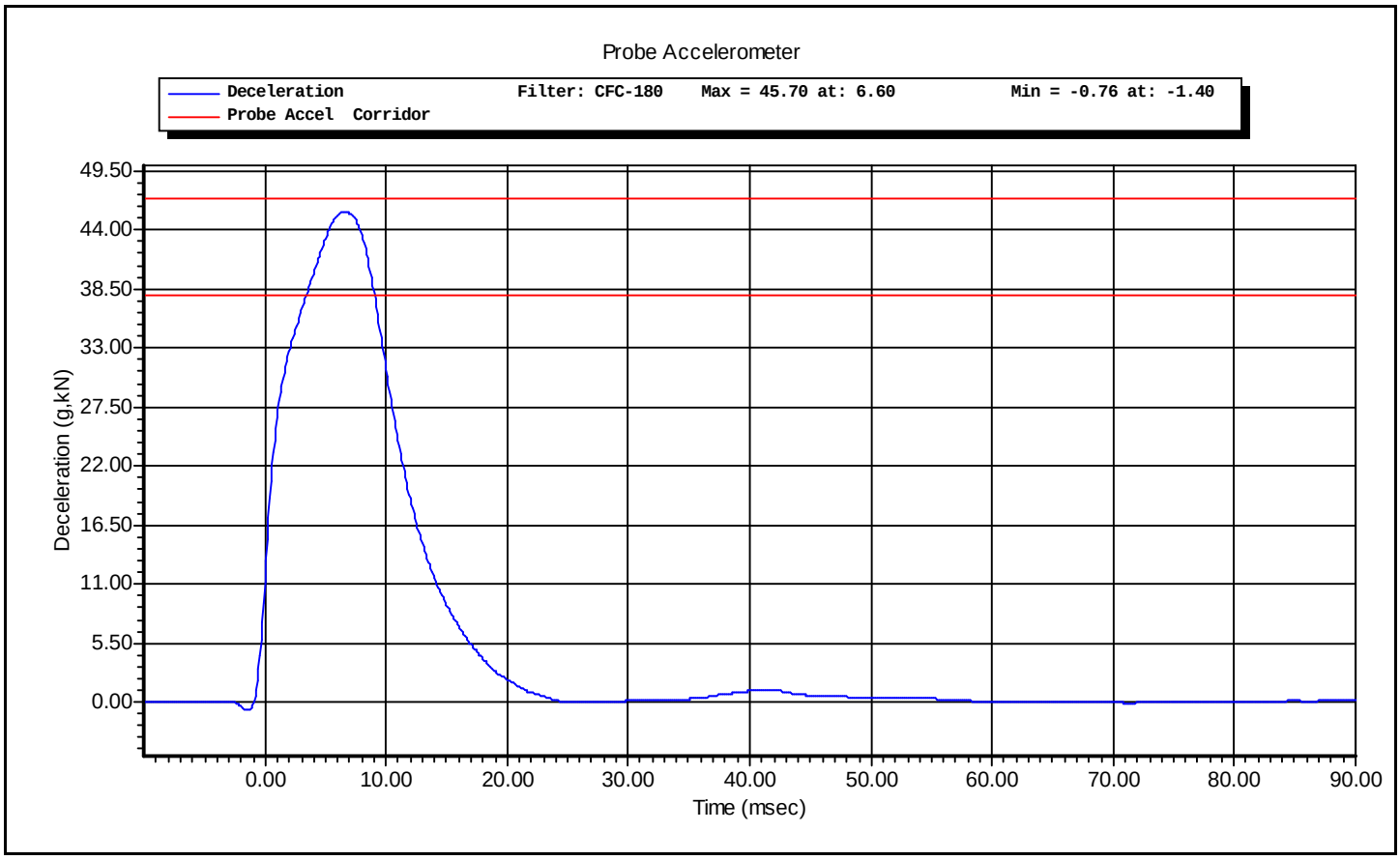
Test Name:	**Pelvis**	Revision:	**8/24/2009**
Sub Test Name:	**Acetabulum Impact**	Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**SID 300**		
Test ID:	**Acetabulum**	Test Date:	**12/13/2010**
Test Number:	**3**	Test Time:	**7:05:04 PM**

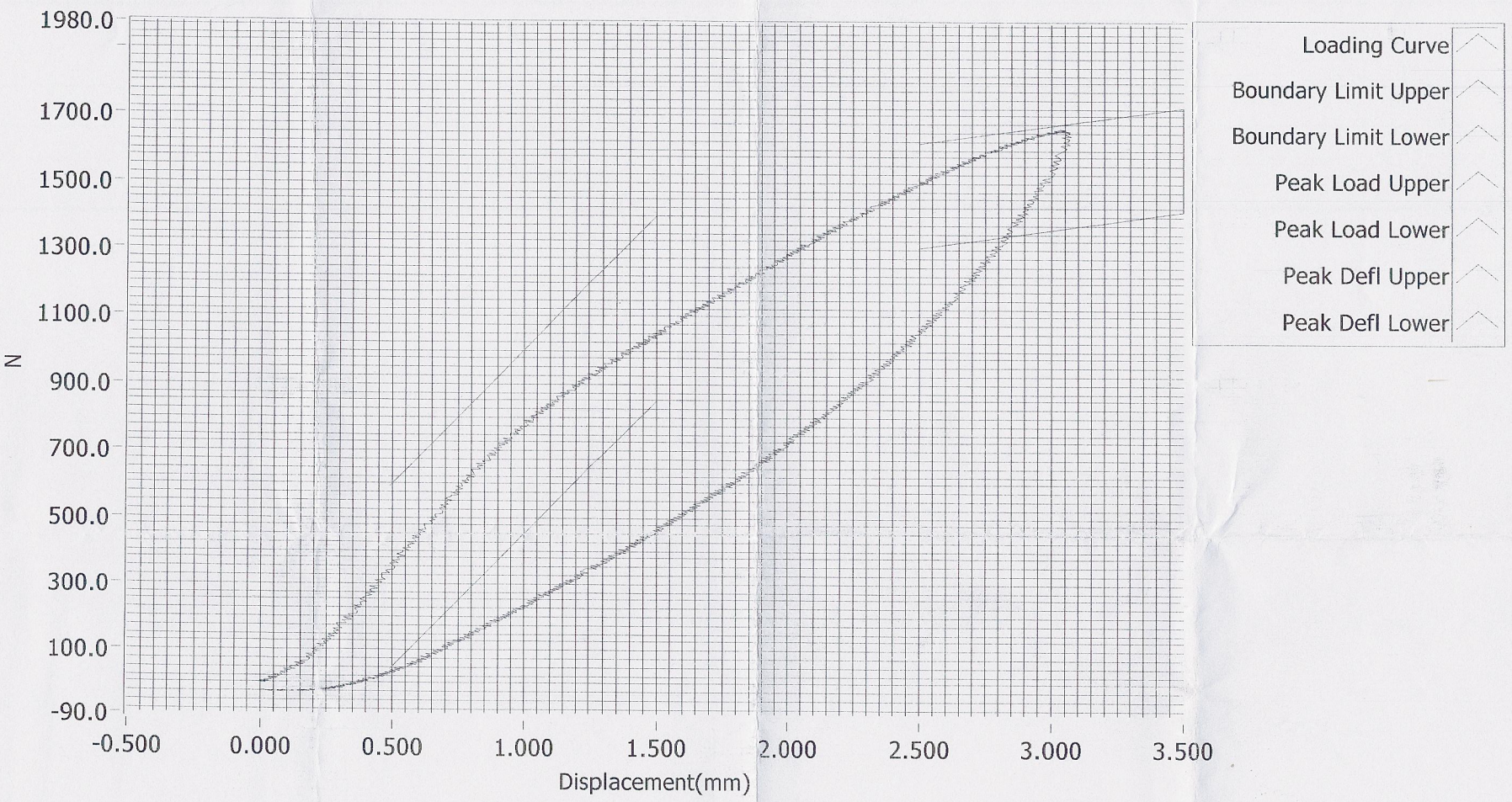






Test ID: **Acetabulum** Test Time: **7:05:04 PM** Test Date: **12/13/2010**

Resultant Data - SIDIIs Plug Compression

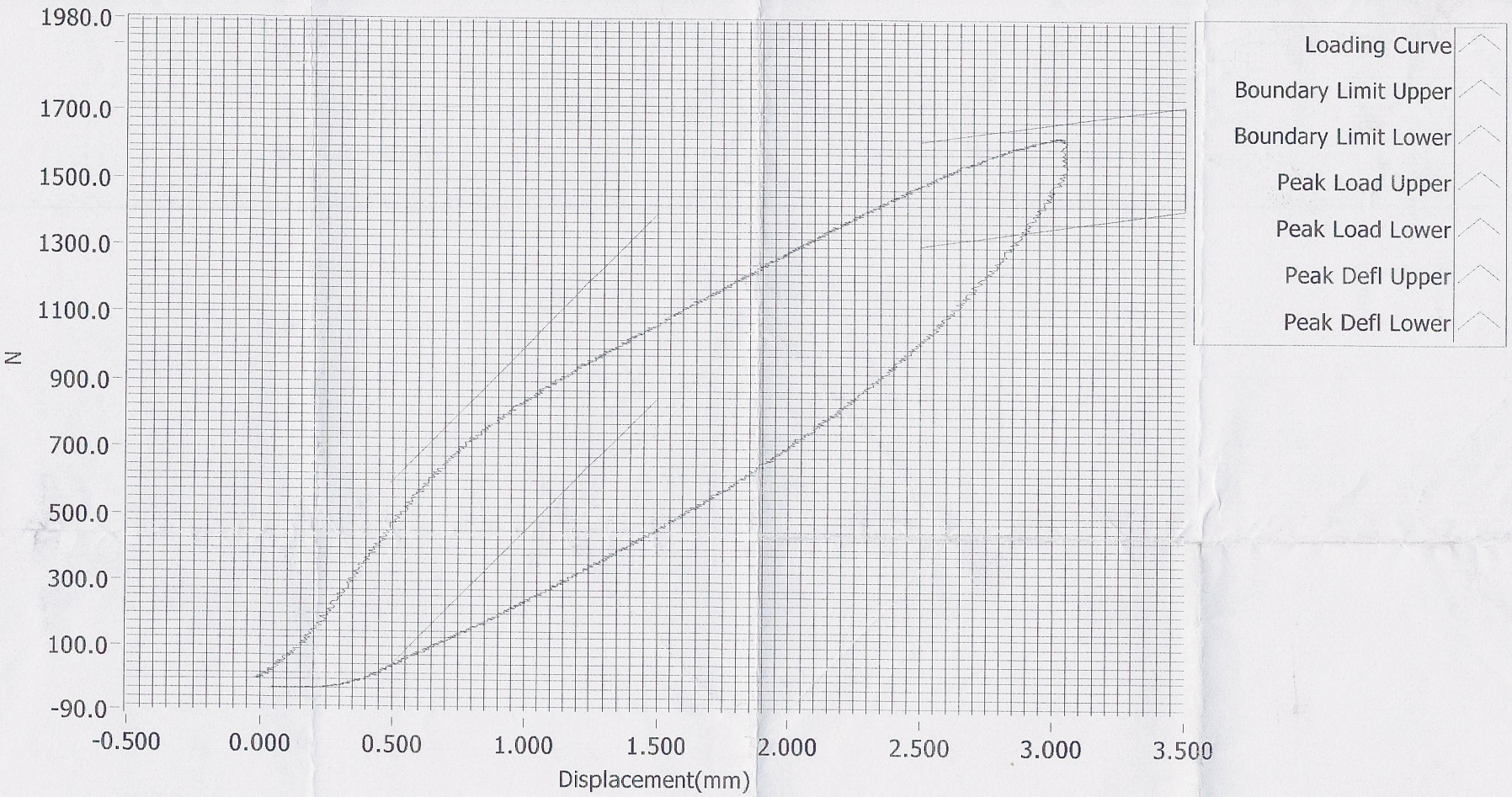


ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
		7/9/2007	9:05 AM
Cert ID	ATD Serial Number	ATD Type	
	12460	SIDIIs	

Current Date : 7/9/2007 Current Time : 09:06:40

Resultant Data - SIDIIs Plug Compression



ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
		7/16/2007	12:21 PM
Cert ID	ATD Serial Number	ATD Type	
	12702	SIDIIs	

Current Date : 7/16/2007 Current Time : 12:22:23