REPORT NUMBER: SNCAP-CAL-11-036

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

Ford Motor Company
2011 Ford Ranger SuperCab
Extended Cab Pickup

NHTSA NUMBER: MB0219

PREPARED BY:
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FINAL REPORT

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_____
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 Ford Ranger SuperCab Extended Cab Pickup 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 1/20/2011.

The impact velocity of the Moving Deformable Barrier (MDB) was 62.07 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 199 mm at level 1. 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	160.05
Maximum Chest Deflection	mm	44	19.97
Total Abdominal Force	N	2500	622.58
Pubic Symphysis Force	N	6000	2077.59

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 Ford Ranger Supercab Extended Cab Pickup. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated January 2010.

SUMMARY

A 2011 Ford Ranger Supercab Extended Cab Pickup 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 62.07 km/h (38.57 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 1/20/2011. Pretest and post- test photographs of the test vehicle, the MDB and dummy (ES-2re) are included in this report.

A dummy was placed in the driver designated seating position 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 dummy was 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

Dummy injury values were recorded as follows:

	Driver ATD (ES-2re)		
Measurement Description	**Units**	**Threshold**	**Result**
Head Injury Criteria (HIC_{36})	N/A	1000	160.05
Maximum Chest Deflection	mm	44	19.97
Total Abdominal Force	N	2500	622.58
Pubic Symphysis Force	N	6000	2077.59

Supplemental restraint information is given below:

Restraint Type	**Left Front (Driver) Occupant Location 1**	
	Mounted	**Deployed**
Frontal Airbag	Yes	No
Knee Airbag	No	NA
Head/Torso Combination Airbag	Yes	Yes
Seat Belt Pretensioner	Yes	Yes
Seat Belt Load Limiter	Yes	No
Other	No	NA

GENERAL COMMENTS

SECTION 2
DATA SHEETS

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Ford Ranger Supercab **NHTSA No.:** MB0219
Test Program: Side MDB NCAP **Test Date:** 1/20/2011

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	MB0219
Model Year	2011
Make	Ford
Model	Ranger Supercab
Body Style	Extended Cab Pickup
VIN	1FTKR4EE1BPA18608
Body Color	Red
Delivery Date	1/4/2011
Odometer Reading (km/mi)	151 \ 94
Dealer	Genesee Valley Ford
Transmission	5-Speed Manual
Final Drive	Rear Wheel Drive
Type/No. Cylinders	V6
Engine Displacement (L)	4.0
Engine Placement	Longitudinal
Roof Rack	No
Sunroof/T-Top	No
Tinted Glass	No
Traction Control	Yes
Power Brakes	Yes
Front Disc	Yes
Rear Disc	Yes

Anti-Lock Brakes	Yes
All-Wheel Drive	No
Power Steering	Yes
Driver Front Airbag	Yes
Driver Curtain Airbag	No
Driver Head/Torso Airbag	Yes
Driver Torso Airbag	No
Driver Torso/Pelvis Airbag	No
Driver Pelvis Airbag	No
Driver Knee Airbag	No
Rear Pass. Curtain Airbag	No
Rear Pass. Head/Torso Airbag	No
Rear Pass. Torso Airbag	No
Rear Pass. Torso/Pelvis Airbag	No
Rear Pass. Pelvis Airbag	No
Pretensioners	Yes
Load Limiters	Yes
Automatic Door Locks	No
Bucket Seats	No
Tilt Steering	Yes
Other	--
Other	

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

DATA FROM CERTIFICATION LABEL

Manufactured By	Ford Motor Company
Date of Manufacture	11/10

GVWR (kg)	2,268
GAWR Front (kg)	1,229
GAWR Rear (kg)	1,179

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity (DSC)	3	2		5	
Capacity Weight (VCW) (kg)				529.0	(A)
DSC x 68.04 (kg)				340.2	(B)
Cargo Weight (RCLW) (kg)				188.8*	(A-B)

* Maximum allowable RCLW is 136 kg

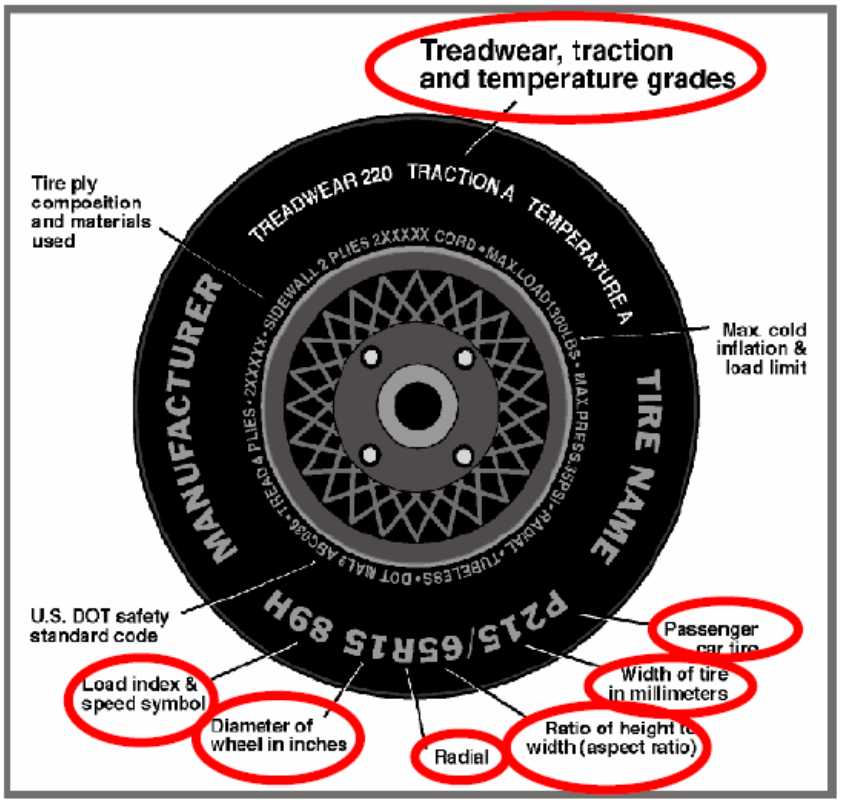
VEHICLE SEAT TYPE

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

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

Test Vehicle:	**2011 Ford Ranger Supercab**	**NHTSA No.:**	**MB0219**
Test Program:	**Side MDB NCAP**	**Test Date:**	**1/20/2011**

VEHICLE TIRE INFORMATION



	Front	Rear
Max. Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	240	240
Recommended Tire Size	P235/75R15	P235/75R15
Tire Size on Vehicle	P235/75R15	P235/75R15
Tire Manufacturer	Goodyear	Goodyear
Tire Model	Wrangler SR-A	Wrangler SR-A
Treadwear	500	500
Traction	A	A
Temperature Grades	B	B
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester + 2 Steel	2 Polyester + 2 Steel
Load Index/Speed Symbol	105S	105S
Tire Material	Rubber	Rubber
DOT Safety Code Right	MDHLDYER3910	MDHLDYER3910
DOT Safety Code Left	MDHLDYER3910	MDHLDYER3910

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

Test Vehicle: 2011 Ford Ranger Supercab **NHTSA No.:** MB0219
Test Program: Side MDB NCAP **Test Date:** 1/20/2011

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	497.0	375.0	872.0	547.0	444.5	991.5	533.5	455.5	989.0
Right	kg	467.5	369.5	864.0	500.5	424.0	924.5	472.0	445.0	917.0
Ratio	%	56	44		55	45		53	47	
Totals	kg	964.5	744.5	1,709.0	1,047.5	868.5	1,916.0	1,005.5	900.5	1,906.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1,709.0	(A)
Sum of Actual Weight of 1 P572 ATD Used	kg	78.0	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	136.0	(C)
Calculated Target Vehicle Test Weight (TVTW)	kg	1923.0	(A+B+C)

TEST VEHICLE ATTITUDE AND CG

Measurement Description	Units	LF	RF	RR	LR	CG (aft of front axle)
Fully Loaded	mm	832	840	860	865	
As Tested (Fully Loaded ± 10 mm at each wheel well)	mm	829	837	862	865	1,450

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	3,198
Total Vehicle Length at Left Side	mm	5,103
Total Vehicle Length at Centerline	mm	5,181
Total Vehicle Length at Right Side	mm	5,104
Weight of Ballast in Cargo Area	kg	84.0
Weight of Vehicle Components Removed	kg	0
Amount of Stoddard Solvent in Fuel Tank	L	68.1

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	271
Actual Impact Point Aft of Front Axle	mm	270

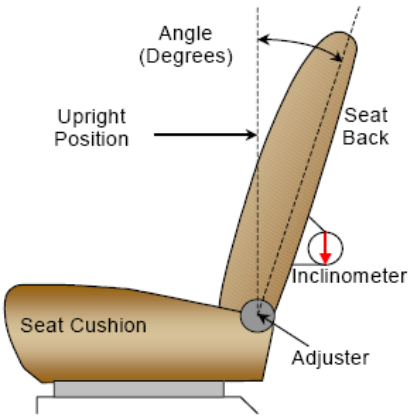
DATA SHEET NO. 2
SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

Test Vehicle: 2011 Ford Ranger Supercab **NHTSA No.:** MB0219
Test Program: Side MDB NCAP **Test Date:** 1/20/2011

NORMAL DESIGN RIDING POSITION

Driver seat:
The Driver's seat back was set to the position specified by the manufacturer in FORM 1.

Passenger Seat: Not Applicable



FRONT SEAT ASSEMBLY

SEAT BACK ANGLES

	Degrees
Driver w/ Seated Dummy	10.7
Passenger w/ Seated Dummy	-

SEAT FORE/AFT POSITIONS

The driver's seat was positioned at the mid-point of the fore/aft travel range.

SEAT FORE/AFT POSITIONING

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	26	13
Rear Seat	NA	NA

SEAT BELT UPPER ANCHORAGES

The driver's upper belt anchorage was adjusted to the midpoint of 5 possible positions

SEAT BELT UPPER ANCHORAGES

	Total # of Positions	Placed in Position #
Driver Seat	5	2
Rear Seat	-	-

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

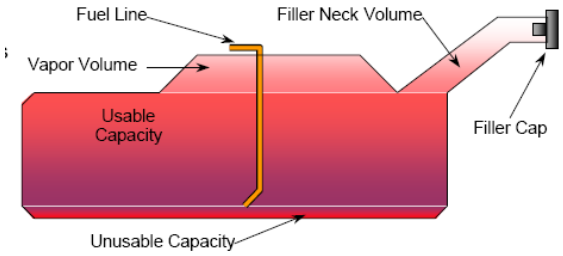
Test Vehicle:	**2011 Ford Ranger Supercab**	**NHTSA No.:**	**MB0219**
Test Program:	**Side MDB NCAP**	**Test Date:**	**1/20/2011**

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	73.8
Usable Capacity of "Optional Tank"	-
Usable Capacity Used for FMVSS 301	70.0
Actual Amount of Solvent Used	68.1

FUEL PUMP

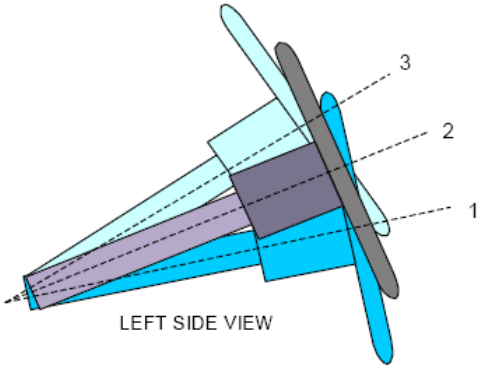
The fuel was evacuated from the fuel tank using the specifications provided by the Manufacturer in FORM 1



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)



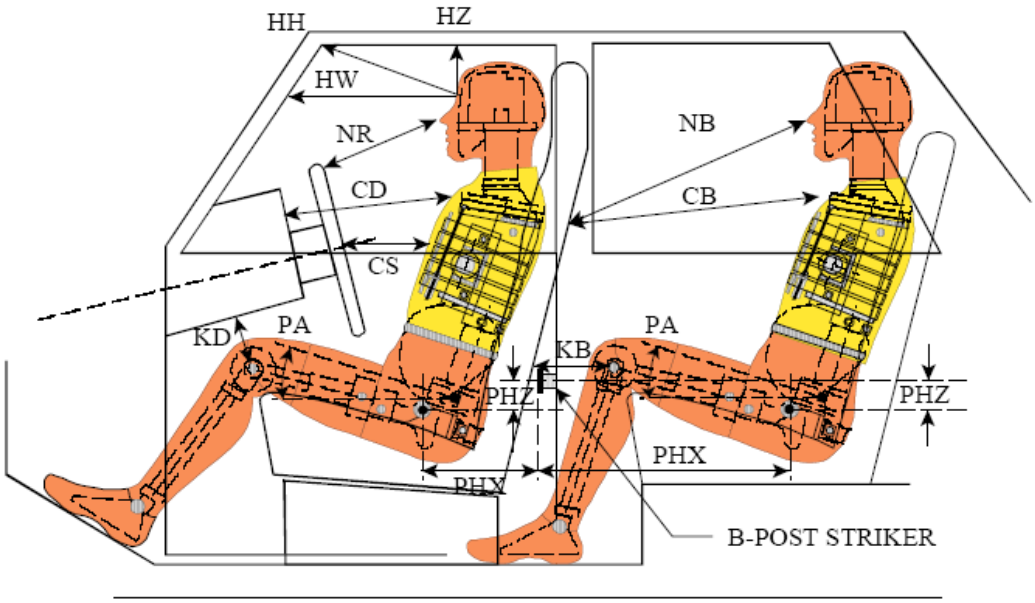
STEERING COLUMN ASSEMBLY

STEERING COLUMN POSITIONING

	Degrees	Fore/Aft Position (mm)
Lowermost - Position 1	-	
Geometric Center – Position 2	21.0	
Uppermost – Position 3	-	
Telescoping Steering Wheel Travel		NA
Test Position	21.0	NA

DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle:	**2011 Ford Ranger Supercab**	**NHTSA No.:**	**MB0219**
Test Program:	**Side MDB NCAP**	**Test Date:**	**1/20/2011**



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

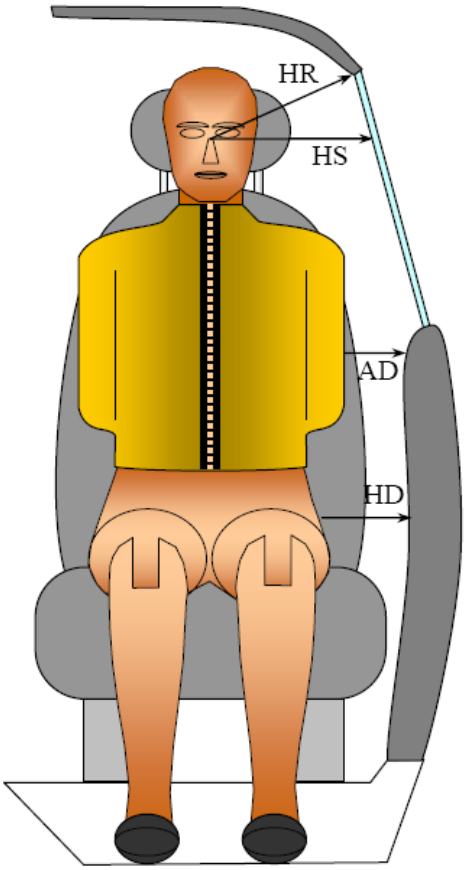
DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Pass. Code	Measurement Description	Driver S/N 033	
			Length (mm)	Angle
HH		Header to Header	485	10.5
HW		Header to Windshield	570	0.0
HZ	HZ	Head to Roof	184	90.0
NR	NB	Nose to Rim/Seat Back	397	-9.2
CD	CB	Chest to Dash/Seat Back	551	4.5
CS		Chest to Steering Wheel	268	0.0
KDL	KBL	Left Knee to Dash/Seat Back	140	33.0
KDR	KBR	Right Knee to Dash/Seat Back	130	30.0
PA	PA	Pelvic Angle		23.2
PHX	PHX	H-Point to Striker (X-Axis)	313	
PHZ	PHZ	H-Point to Striker (Z-Axis)	111	
SA	SA	Seat Back Angle		5.0 *

* Measurement from the head restraint post

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle:	**2011 Ford Ranger Supercab**	**NHTSA No.:**	**MB0219**
Test Program:	**Side MDB NCAP**	**Test Date:**	**1/20/2011**

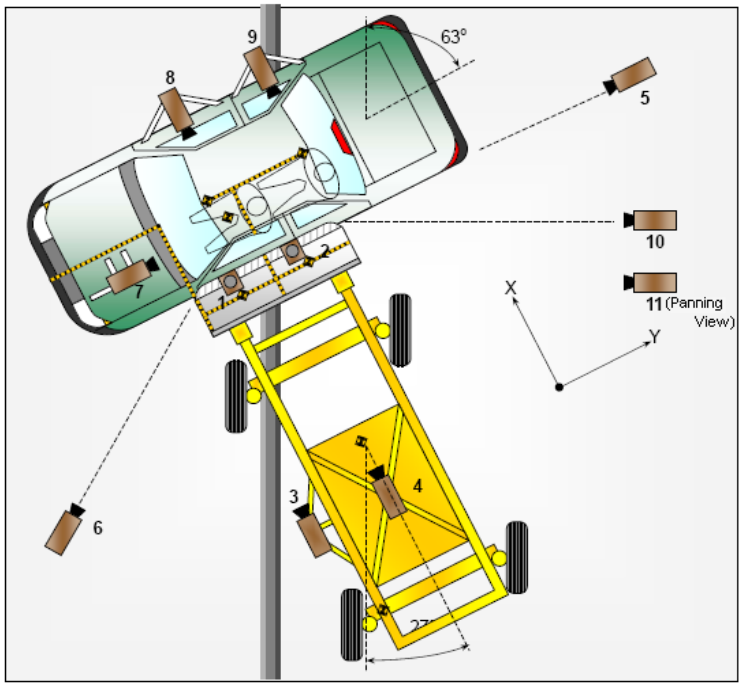


DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Description	Units	Driver S/N 033
HR	Head to Side Header	mm	237
HS	Head to Side Window	mm	373
AD	Arm to Door	mm	47
HD	H-point to Door	mm	140

DATA SHEET NO. 5
CAMERA LOCATIONS AND DATA

Test Vehicle: 2011 Ford Ranger Supercab **NHTSA No.:** MB0219
Test Program: Side MDB NCAP **Test Date:** 1/20/2011



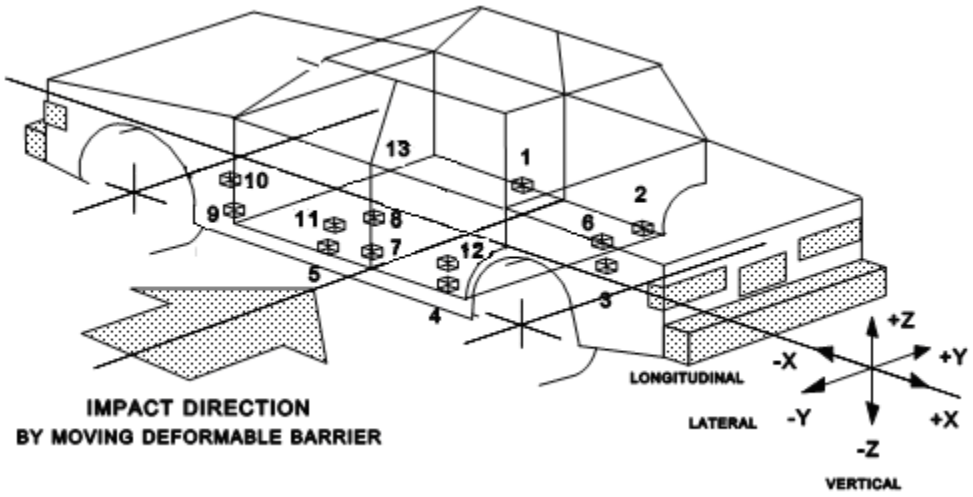
CAMERA LOCATIONS AND DATA

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	-70	10830	920	-1.1	50	1000
6	Front Oblique Impact View of Struck Side	-2500	-1800	975	1.0	24	1000
7	Driver Dummy Front View (OB)	500	-150	1550	-8.9	25	500
8	Driver Dummy Side View (OB)	1370	690	1030	6.4	12.5	500
9	Rear Passenger Dummy Side View (OB)	-	-	-	-	-	-
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 Ford Ranger Supercab**	**NHTSA No.:**	**MB0219**
Test Program:	**Side MDB NCAP**	**Test Date:**	**1/20/2011**



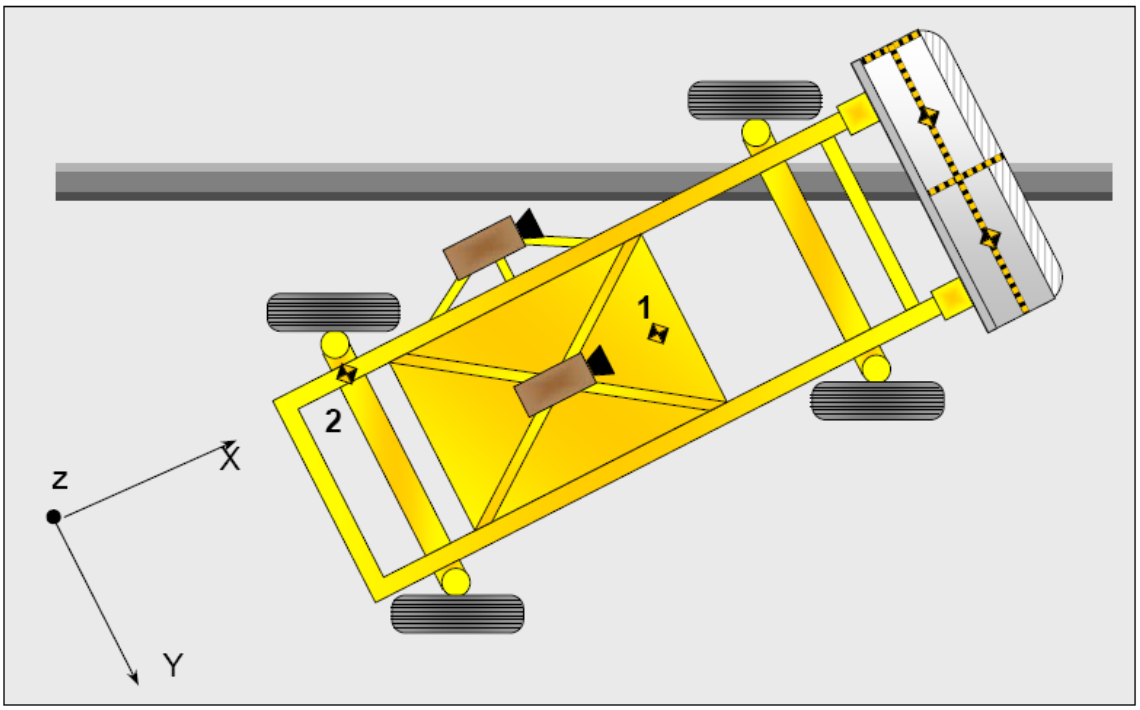
VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

Loc. No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Right Sill at Front Seat	3402	628	577
2	Right Sill at Rear Seat	2513	631	595
3	Rear Floorpan Above Axle	1130	-50	804
4	Left Sill at Rear Door	2488	-607	592
5	Left Sill at Front Door	3440	-610	572
6	Rt. Rear Occ. Compartment	2569	331	619
7	B-Post Lower	2673	-642	851
8	B-Post Middle	2677	-641	1176
9	A-Post Lower	3663	-652	691
10	A-Post Middle	3579	-641	1303
11	Front Seat Track	2879	-481	624
12	Rear Seat Structure	2246	-655	855
13	Vehicle CG	3369	-20	715

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 Ford Ranger Supercab**	**NHTSA No.:**	**MB0219**
Test Program:	**Side MDB NCAP**	**Test Date:**	**1/20/2011**



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 (+ down)

DATA SHEET NO. 8
TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle: 2011 Ford Ranger Supercab **NHTSA No.:** MB0219
Test Program: Side MDB NCAP **Test Date:** 1/20/2011

MAXIMUM EXTERIOR STATIC CRUSH

Level	Measured Parameter	Units	Maximum Crush	Above Ground
1	Sill Top Height	mm	199	581
2	Occupant H-Point	mm	177	849
3	Mid Door	mm	118	978
4	Window Sill	mm	75	1124
5	Window Top	mm	-43	1671
	Maximum Penetration	mm	199	581

INSTRUMENTATION

Driver Dummy Channels	16
Passenger Dummy Channels	-
Vehicle Structure Accelerometers	21
MDB Accelerometers	5
Total No. of Contact Switches	0 *
Total	42

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

CAMERA COVERAGE

High-Speed Vehicle Onboard	2
High-Speed Offboard	4
High-Speed MDB Onboard	2
Real-Time Panning	2
Total	10

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

Test Vehicle: 2011 Ford Ranger Supercab **NHTSA No.:** MB0219
Test Program: Side MDB NCAP **Test Date:** 1/20/2011

MDB SPECIFICATIONS

Measurement Description	Length (mm)
Overall Width of Framework Carriage	1,250
Overall Length Including Honeycomb Frame	4,120
Wheel Base of Framework Carriage	2,600
CG Location of Front Axle	1,120

MDB WEIGHTS

	Units	Front Axle	Rear Axle	Total
Left	kg	392.5	297.5	690.0
Right	kg	386.0	291.5	677.5
Ratio	%	57.4	42.6	-
Totals	kg	778.5.0	589.0	1,367.5

SPEED AND IMPACT DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	62.1
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	62.1
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	89.2

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	40
B	Top of Bumper	542	700	Right	59
C	Mid-Level	682	800	Right	130
D	Top of Stack	811	800	Right	196

MDB INSTRUMENTATION

Accelerometers	5
Contact Switches	2

DATA SHEET NO. 10
POST TEST OBSERVATIONS

Test Vehicle: 2011 Ford Ranger Supercab **NHTSA No.:** MB0219
Test Program: Side MDB NCAP **Test Date:** 1/20/2011

TEST DUMMY INFORMATION AND CONTACT

Description	Front Seat Dummy (ES-2re)
Dummy Type/Serial No.	033
Head Contact	Side Header Trim / Driver Head Restraint
Upper Torso Contact	Side Head/Torso Airbag / Seat Bolster
Lower Torso Contact	Side Head/Torso Airbag,Door Trim Panel
Left Knee Contact	Door Trim Panel
Right Knee Contact	

POST TEST DOOR OPENING AND SEAT TRACK INFORMATION

Description	Front	Rear
Left Side Doors	Jammed Shut (0mm)	Jammed Shut (0mm)
Right Side Doors	Closed & Operational (0mm)	Closed & Operational (0mm)
Hatch and Other Doors	-	Tailgate displaced off hinge during crash
Seat Movement	No	No
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	None
Other Notable Effects	None

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

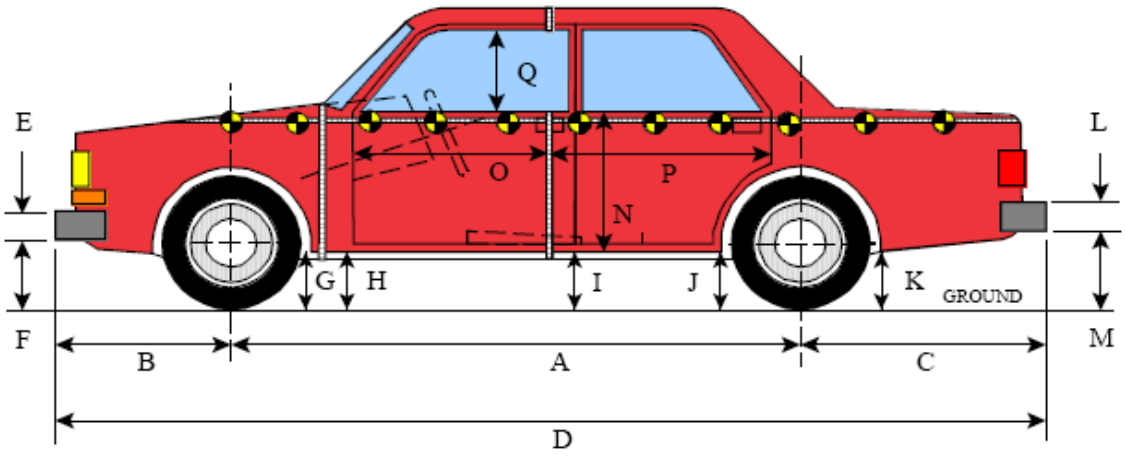
Restraint Type	**Left Front (Driver) Occupant Location 1**	
	Mounted	**Deployed**
Frontal Airbag	Yes	No
Knee Airbag	No	NA
Head/Torso Combination Airbag	Yes	Yes
Seat Belt Pretensioner	Yes	Yes
Seat Belt Load Limiter	Yes	No
Other	-	-

MDB LEFT EDGE IMPACT POINT DATA

Measured Parameter	Units	Requirement	Value
Horizontal Offset	mm	+/- 50	-1
Vertical Offset	mm	+/- 20	-9

DATA SHEET NO. 11
VEHICLE PROFILE MEASUREMENTS

Test Vehicle:	**2011 Ford Ranger Supercab**	**NHTSA No.:**	**MB0219**
Test Program:	**Side MDB NCAP**	**Test Date:**	**1/20/2011**



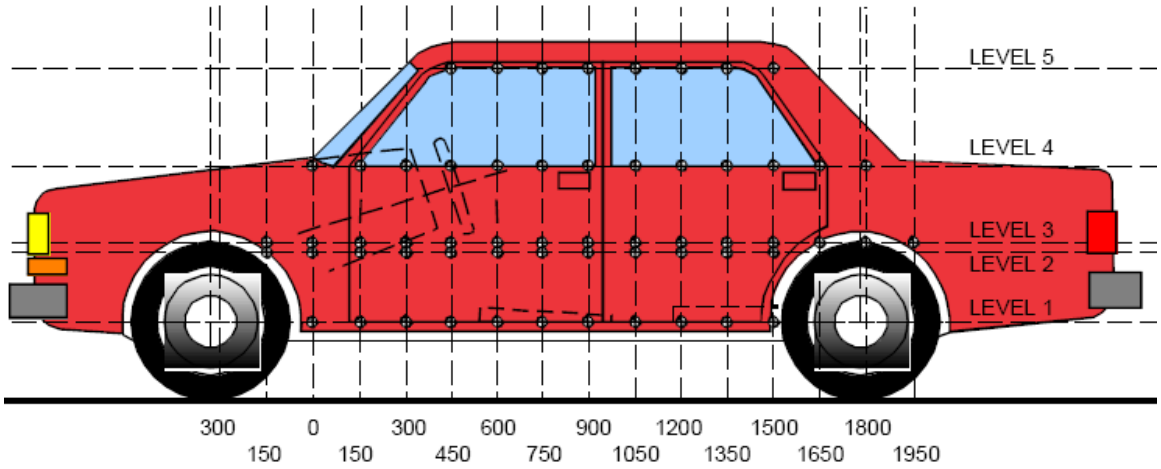
LEFT SIDE VIEW
All MEASUREMENTS IN (mm) WITH TOLERANCE OF ± 3mm

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Description	Pre-Test	Post-Test	Difference
A	Wheelbase	3198	3136	-62
B	Front Axle to FSOV	855	820	-35
C	Rear Axle to RSOV	1127	1246	120
D	Total Length at Centerline	5181	5192	11
E	Front Bumper Thickness	400	400	0
F	Front Bumper Bottom to Ground	273	275	2
G	Sill Height at Front Wheel Well	305	330	25
H	Sill Height at Front Door Leading Edge	353	365	12
I	Sill Height at B Pillar	355	360	5
J1	Sill Height at Rear Wheel Well	358	382	24
J2	Pinch Weld Height at Rear Wheel Well	358	382	24
K	Sill Height Aft of Rear Wheel Well	396	493	97
L	Rear Bumper Thickness	170	170	0
M	Rear Bumper Bottom to Ground	331	444	113
N	Sill Height to Window Bottom Sill	635	616	-19
O	Front Door Leading Edge to Impact CL	838	849	11
P	Rear Door Trailing Edge to Impact CL	860	827	-33
Q	Front Window Opening	490	490	0
R	Right Side Length	5049	5018	-30
S	Left Side Length	5051	4968	-83
T	Vehicle Width at B Post	1742	1608	-135

DATA SHEET NO. 12
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle:	**2011 Ford Ranger Supercab**	**NHTSA No.:**	**MB0219**
Test Program:	**Side MDB NCAP**	**Test Date:**	**1/20/2011**



LEFT SIDE VIEW

Level	Measurement Description	Height Above Ground (mm)
1	Sill Top	581
2	Occupant H-Point	849
3	Mid-Door	978
4	Window Sill	1124
5	Window Top	1671

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 Ford Ranger Supercab **NHTSA No.:** MB0219
Test Program: Side MDB NCAP **Test Date:** 1/20/2011

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
-750	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
-600	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
-450	--	873	850	--	--	--	876	859	--	--	--	-3	-9	--	--
-300	--	881	843	782	--	--	880	851	793	--	--	1	-8	-11	--
-150	--	870	855	794	--	--	869	862	804	--	--	1	-7	-10	--
0	854	855	855	806	--	824	853	860	815	--	30	2	-5	-9	--
150	821	857	856	811	--	692	795	821	844	--	129	62	35	-33	--
300	820	859	859	817	--	633	763	815	839	--	187	96	44	-22	--
450	820	861	861	822	--	621	749	814	836	--	199	112	47	-14	--
600	820	862	863	829	637	629	733	805	831	834	191	129	58	-2	-197
750	820	862	864	832	645	640	719	794	824	832	180	143	70	8	-187
900	819	862	865	835	649	651	700	781	816	827	168	162	84	19	-178
1050	818	863	866	838	653	660	692	767	804	822	158	171	99	34	-169
1200	818	862	866	840	656	679	685	748	765	699	139	177	118	75	-43
1350	814	861	865	841	657	706	709	747	790	716	108	152	118	51	-59
1500	813	859	864	841	657	719	726	766	820	732	94	133	98	21	-75
1650	810	856	861	841	--	733	806	829	844	--	77	50	32	-3	--
1800	813	863	869	853	--	782	827	894	972	--	31	36	-25	-119	--
1950	812	862	869	854	--	900	930	988	1038	--	-88	-68	-119	-184	--
2100	815	862	870	855	--	1016	1041	1081	1086	--	-201	-179	-211	-231	--
2250	869	892	870	856	--	1165	1169	1152	1121	--	-296	-277	-282	-265	--
2400	--	--	893	856	--	--	--	1191	1141	--	--	--	-298	-285	--
2550	--	--	905	855	--	--	--	1205	1154	--	--	--	-300	-299	--
2700	--	--	906	854	--	--	--	1213	1164	--	--	--	-307	-310	--
2850	--	--	901	853	--	--	--	1220	1174	--	--	--	-319	-321	--

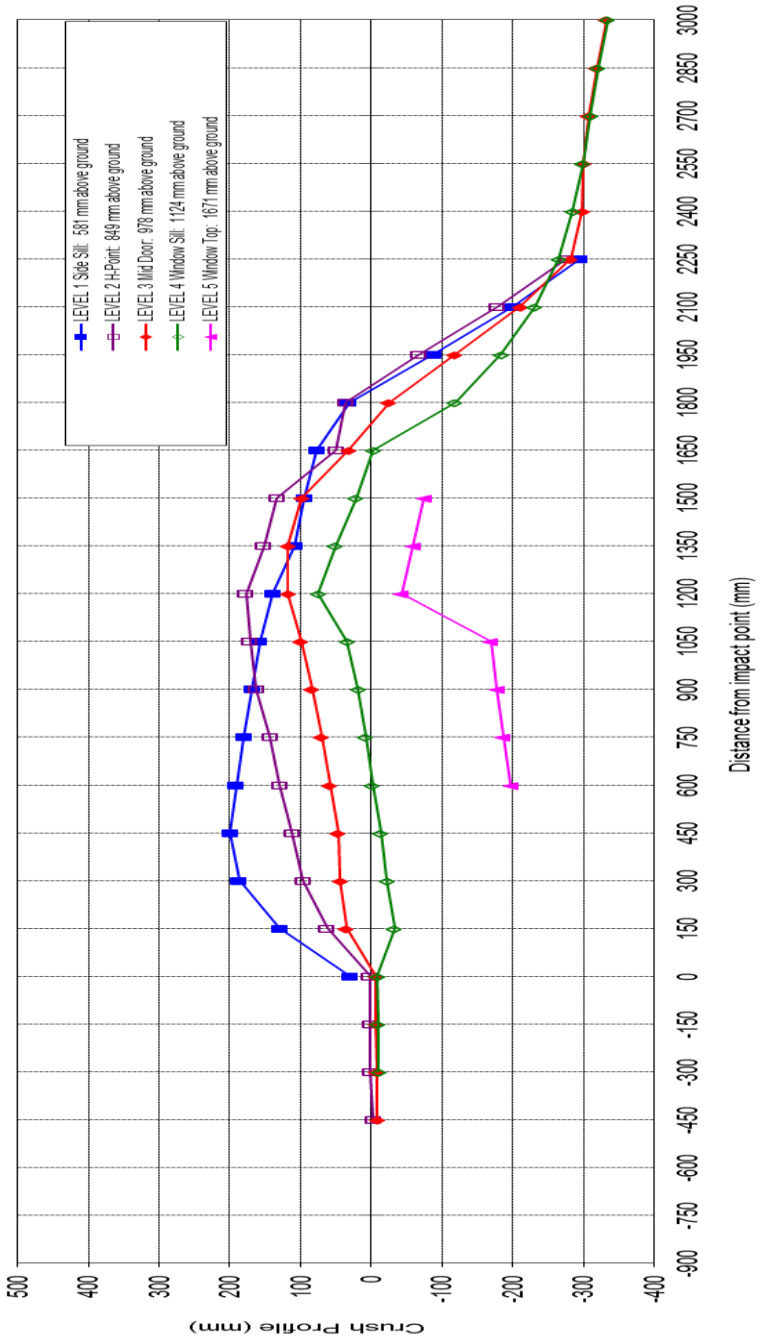
MAXIMUM CRUSH DATA

	Level 1	Level 2	Level 3	Level 4	Level 5
Maximum Crush (mm)	199	177	118	75	-43
Distance From Impact (mm)	450	1200	1200	1200	1200

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.

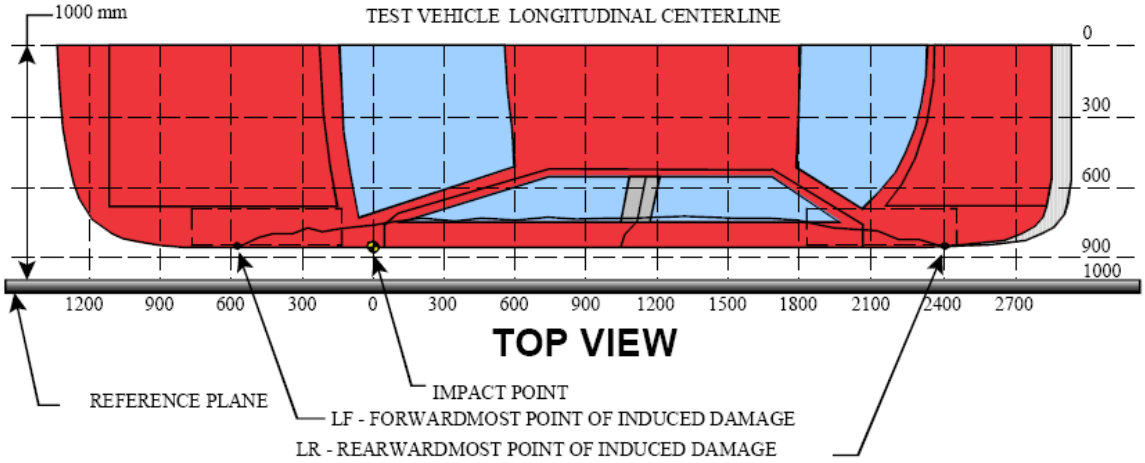
DATA SHEET NO. 12 (CONTINUED)
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle:	**2011 Ford Ranger Supercab**	**NHTSA No.:**	**MB0219**
Test Program:	**Side MDB NCAP**	**Test Date:**	**1/20/2011**



DATA SHEET NO. 13
VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle:	**2011 Ford Ranger Supercab**	**NHTSA No.:**	**MB0219**
Test Program:	**Side MDB NCAP**	**Test Date:**	**1/20/2011**

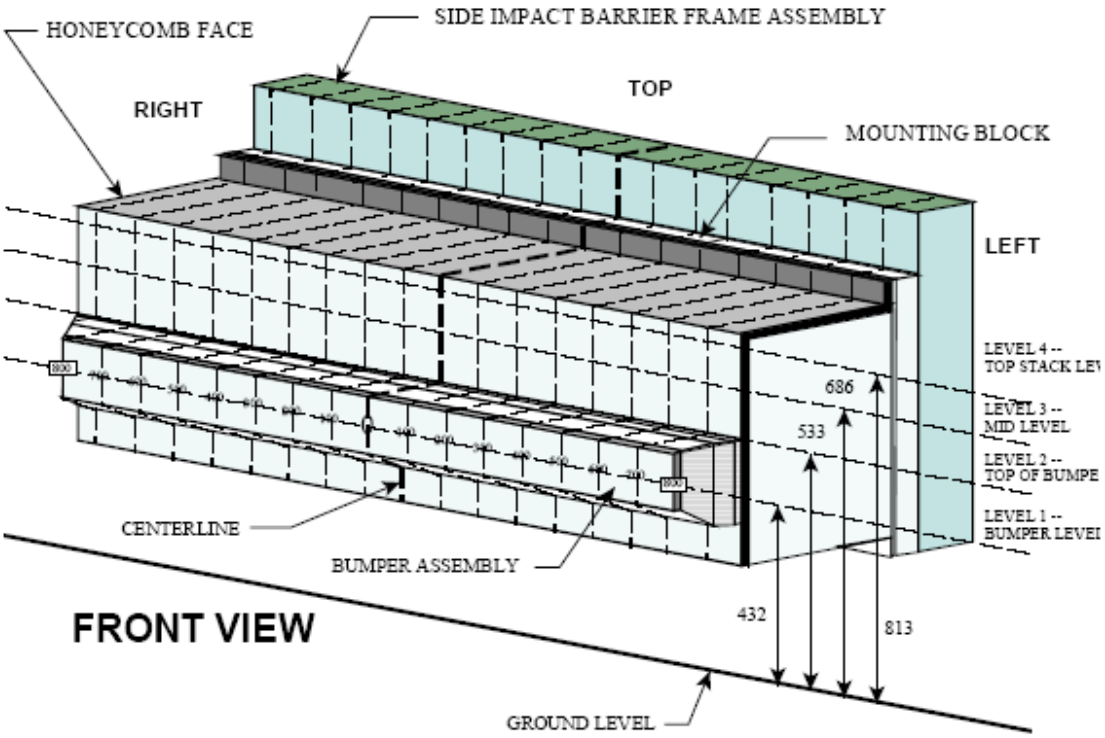


DAMAGE PROFILE DISTANCES

DPD	Distance From Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Maximum Static Crush (mm)
1	2550	4	145	-154	-299
2	2010	2	138	26	-112
3	1470	2	141	277	136
4	930	1	181	347	166
5	0	1	180	374	194
6	-150	2	130	131	1

DATA SHEET NO. 14
EXTERIOR STATIC CRUSH FOR IMPACTOR FACE

Test Vehicle:	**2011 Ford Ranger Supercab**	**NHTSA No.:**	**MB0219**
Test Program:	**Side MDB NCAP**	**Test Date:**	**1/20/2011**



NOTE: Dimensions are shown in millimeters, mm

DEFORMABLE BARRIER STATIC CRUSH

Stack	Distance Right of Center								C/L	Distance Left of Center							
Level	800	700	600	500	400	300	200	100	0	100	200	300	400	500	600	700	800
1	40	35	33	30	29	27	24	24	24	24	22	22	21	21	21	23	35
2	43	59	54	52	49	47	43	41	41	39	38	37	37	36	36	37	37
3	130	122	105	57	21	19	26	9	-2	-4	-3	-1	0	0	6	23	73
4	196	164	138	70	43	33	17	7	2	1	8	14	20	30	49	71	112

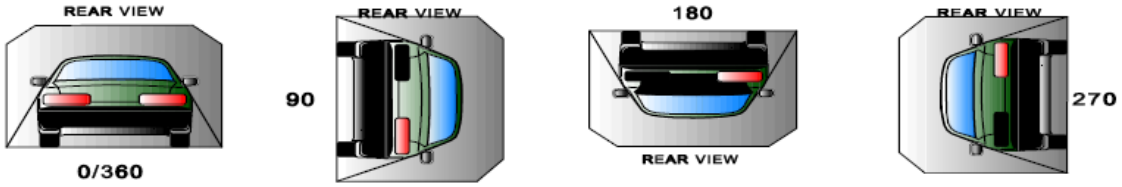
DATA SHEET NO. 15A
FMVSS NO. 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2011 Ford Ranger Supercab **NHTSA No.:** MB0219
Test Program: Side MDB NCAP **Test Date:** 1/20/2011

Test Time: 13:05 **Temperature:** -6.0° 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	1:11	5:00	6:11
90 to 180	1:02	5:00	6:02
180 to 270	1:08	5:00	6:08
270 to 360	1:03	5:00	6:03

FMVSS NO. 301 ROLLOVER SPILLAGE TABLE

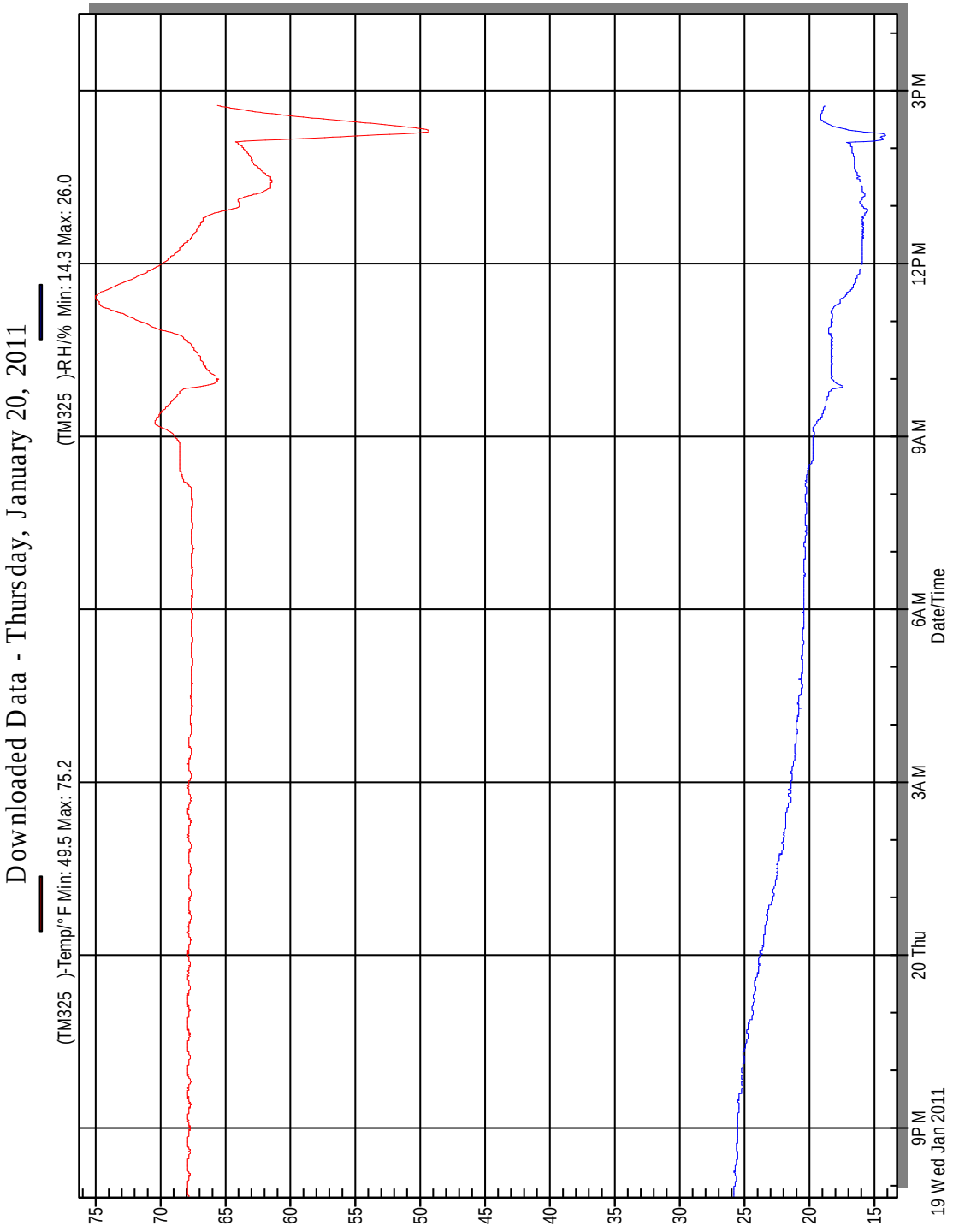
Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0 to 90	None	None	NA	NA
90 to 180	None	None	NA	NA
180 to 270	None	None	NA	NA
270 to 360	None	None	NA	NA

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 Ford Ranger Supercab**	**NHTSA No.:**	**MB0219**
Test Program:	**Side MDB NCAP**	**Test Date:**	**1/20/2011**



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

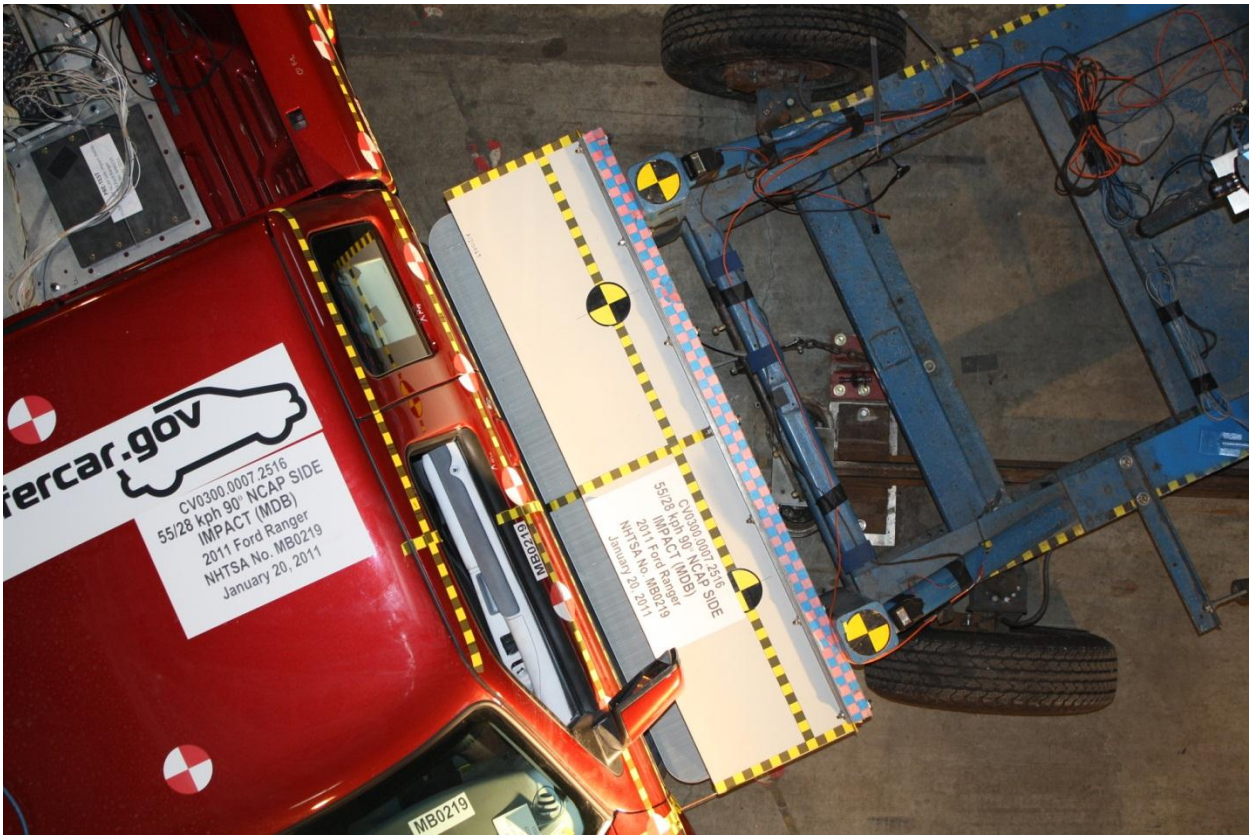


Figure A-15: Pre-Test Overhead View of the Test Vehicle and MDB

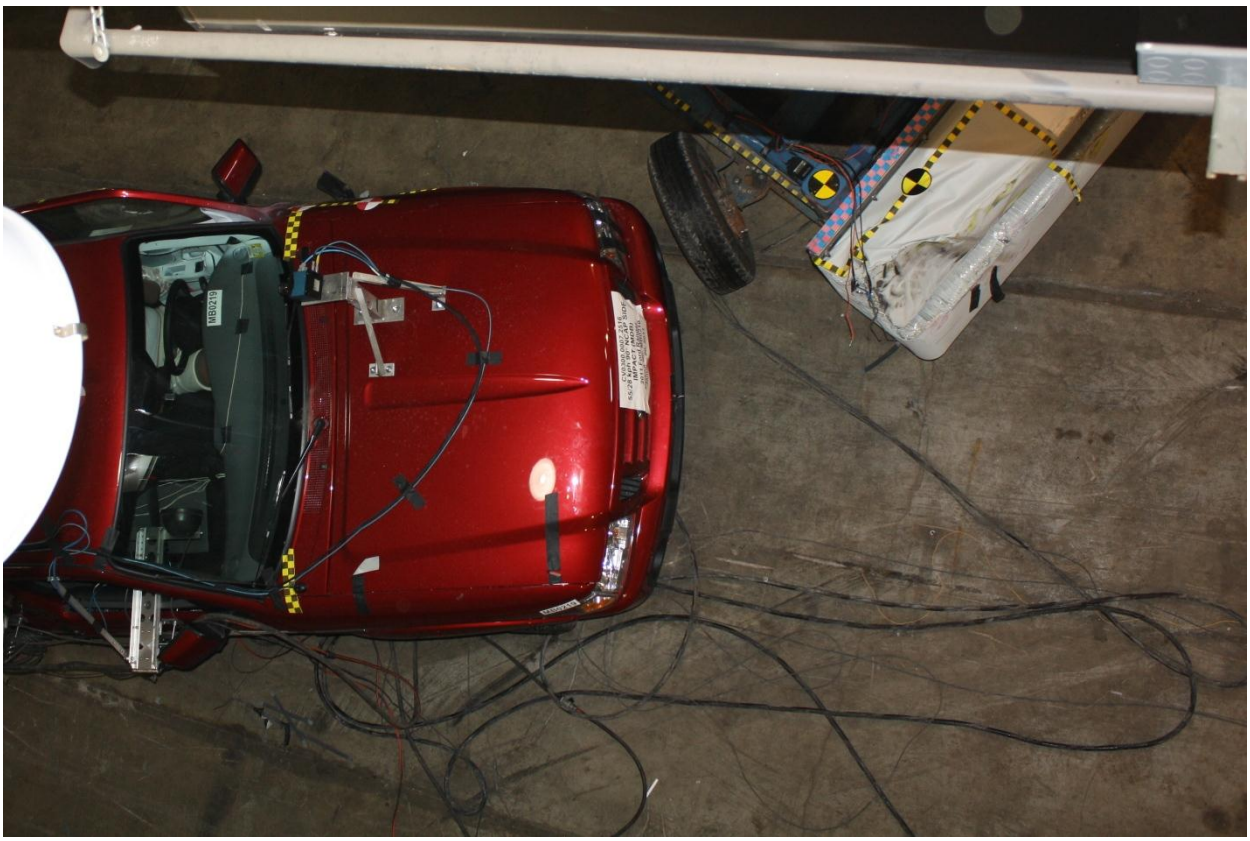


Figure A-16: Post-Test Overhead View of Test Vehicle and MDB

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

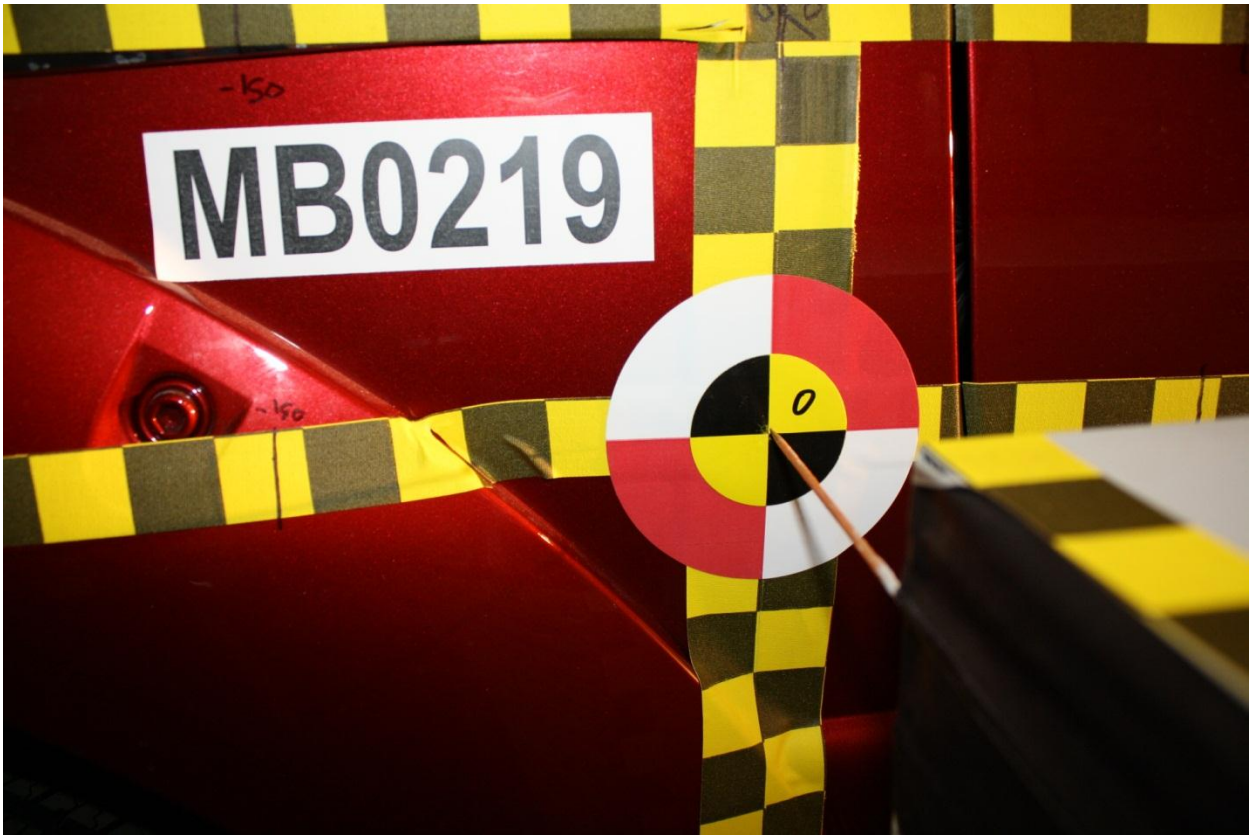


Figure A-19: Pre-Test Close-up View of Impact Point Target

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

Photo Not Applicable

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

Photo Not Applicable

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

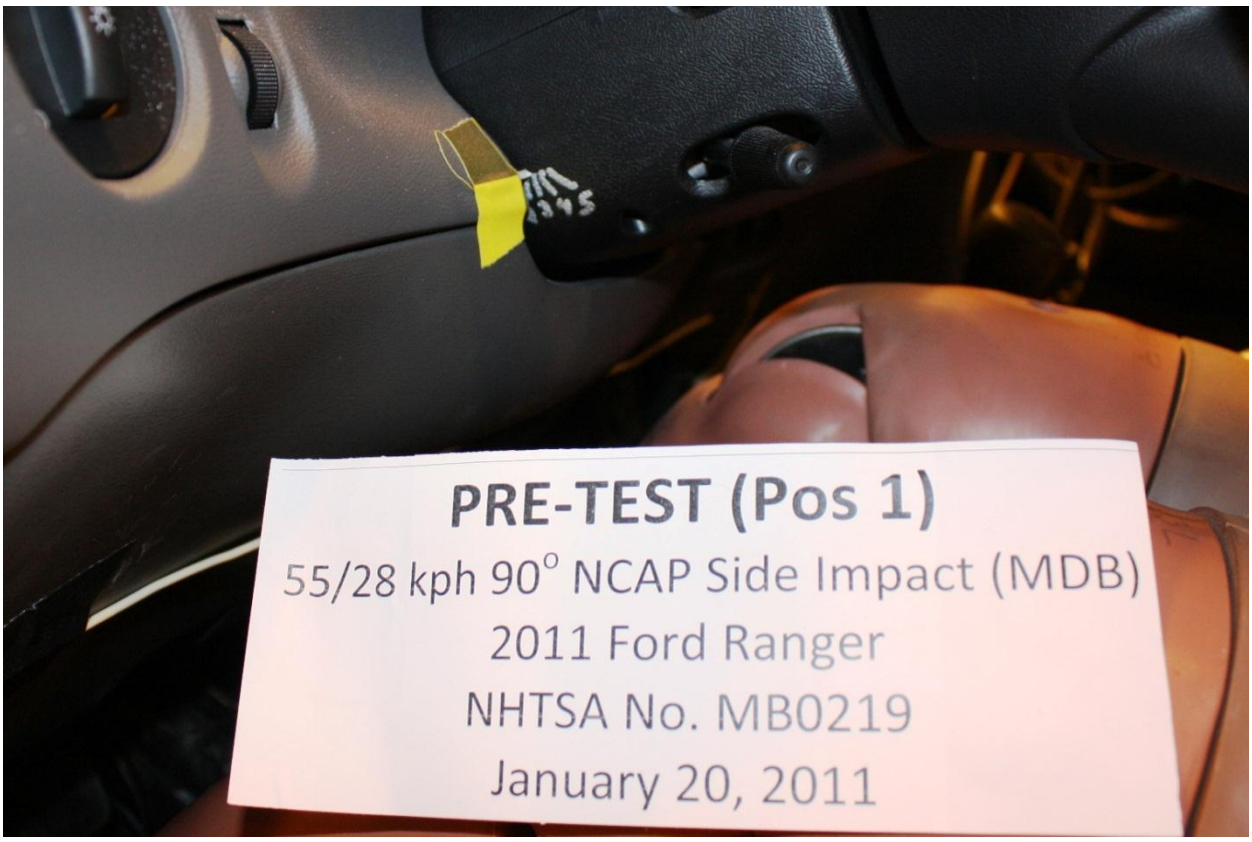


Figure A-36: Pre-Test Left Side View of Steering Wheel to Show Position

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

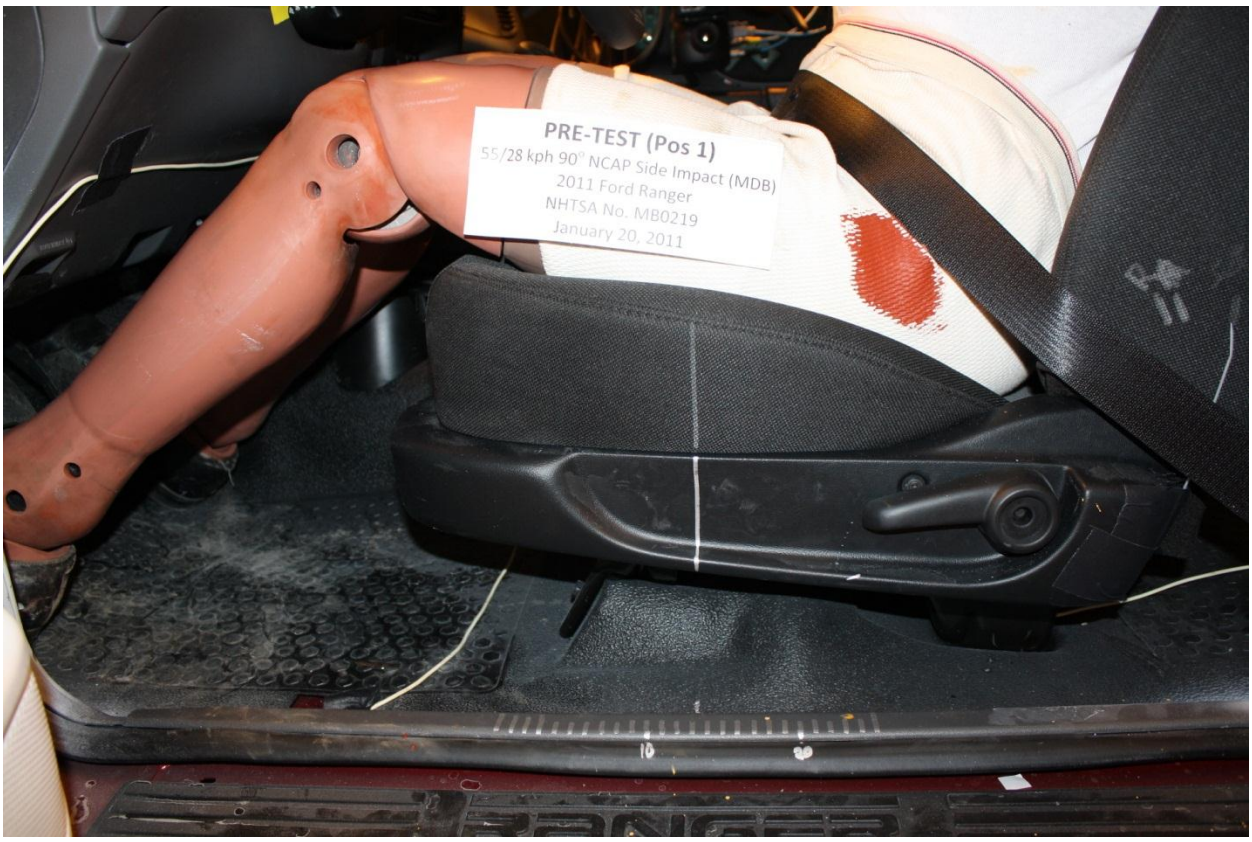


Figure A-38: Pre-test Close-up Left Side View of Driver Seat Track Showing Seat Positioning

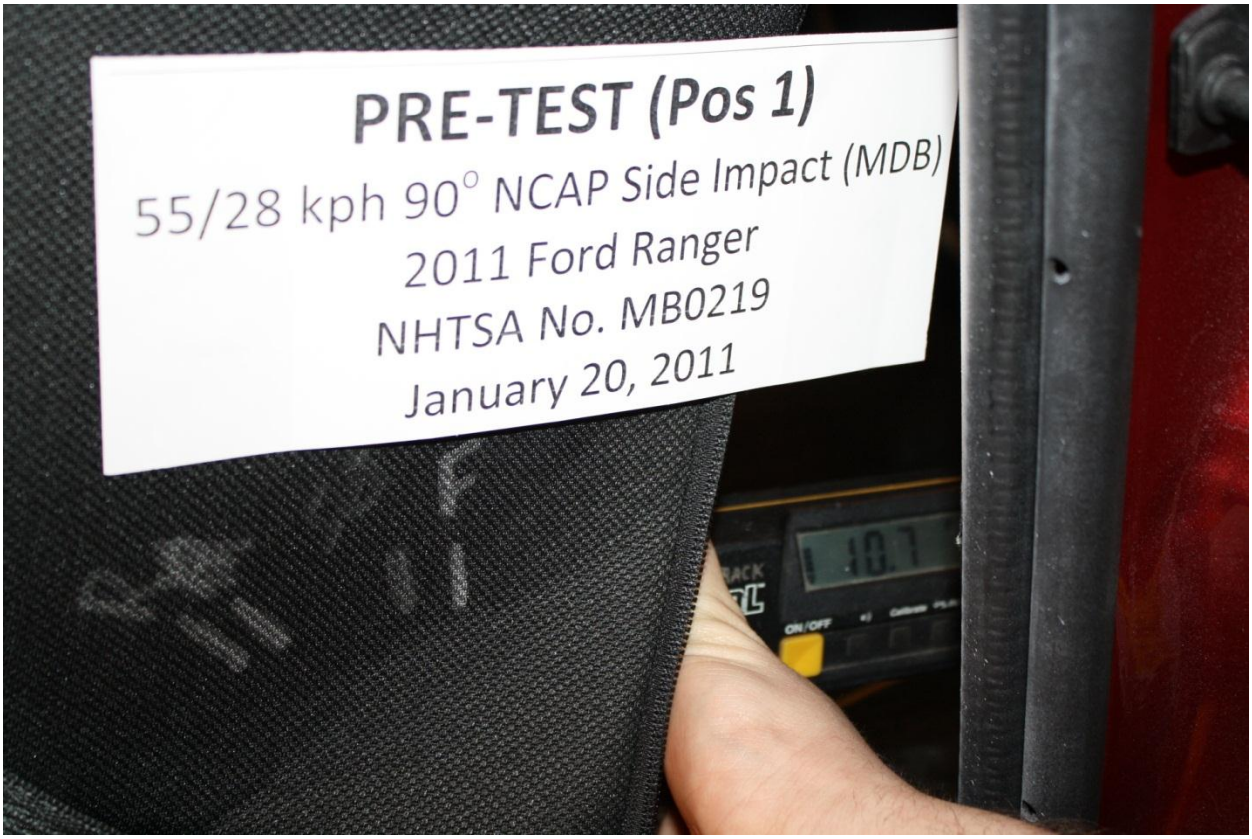


Figure A-39: Pre-test Close-up Left Side View of Driver Seat Back Showing Seat Back Positioning

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

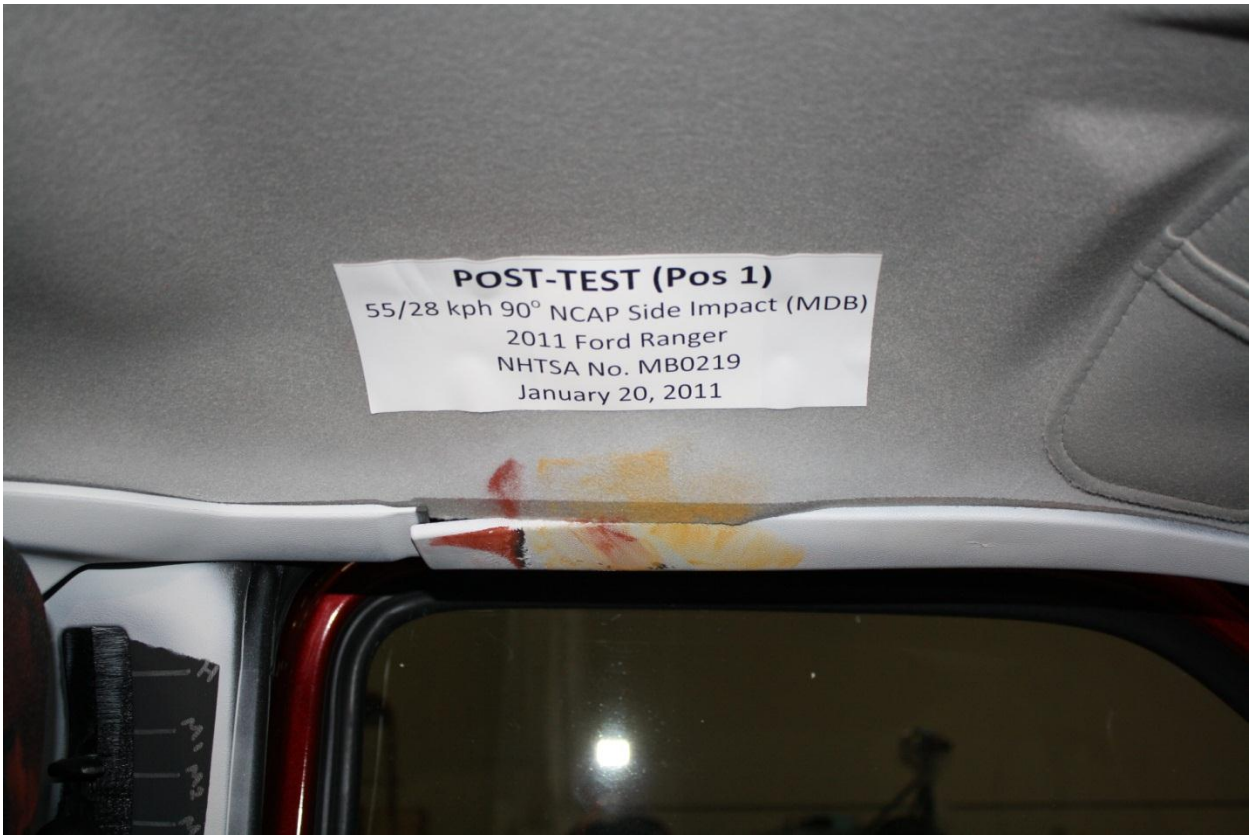


Figure A-47: Post-test Driver Dummy Close-Up Head Contact with Vehicle View

Photo Not Applicable

No Head Contact with Side Airbag

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

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 With Vehicle Interior View

Photo Not Applicable

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

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

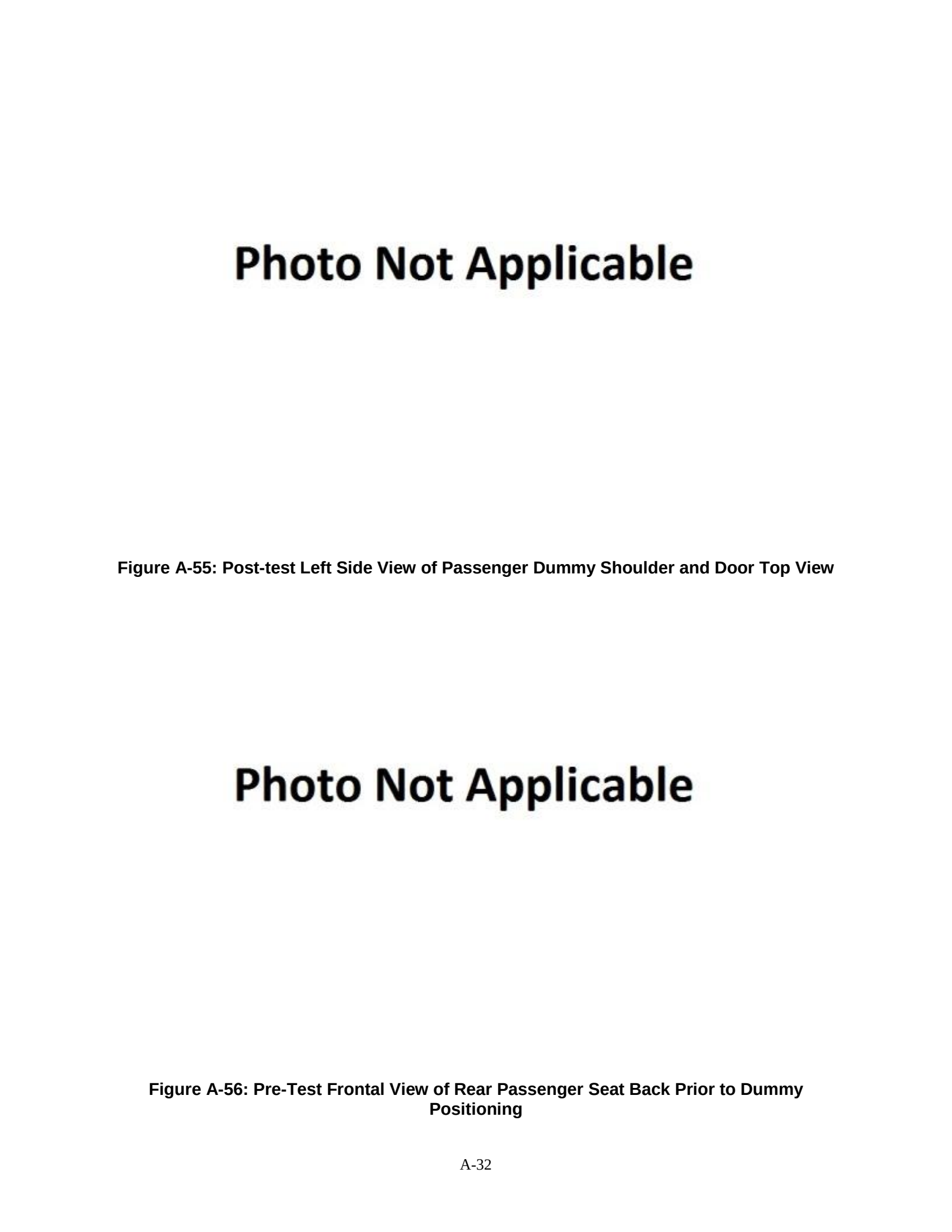


Figure A-55: Post-test Left Side View of Passenger Dummy Shoulder and Door Top View

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

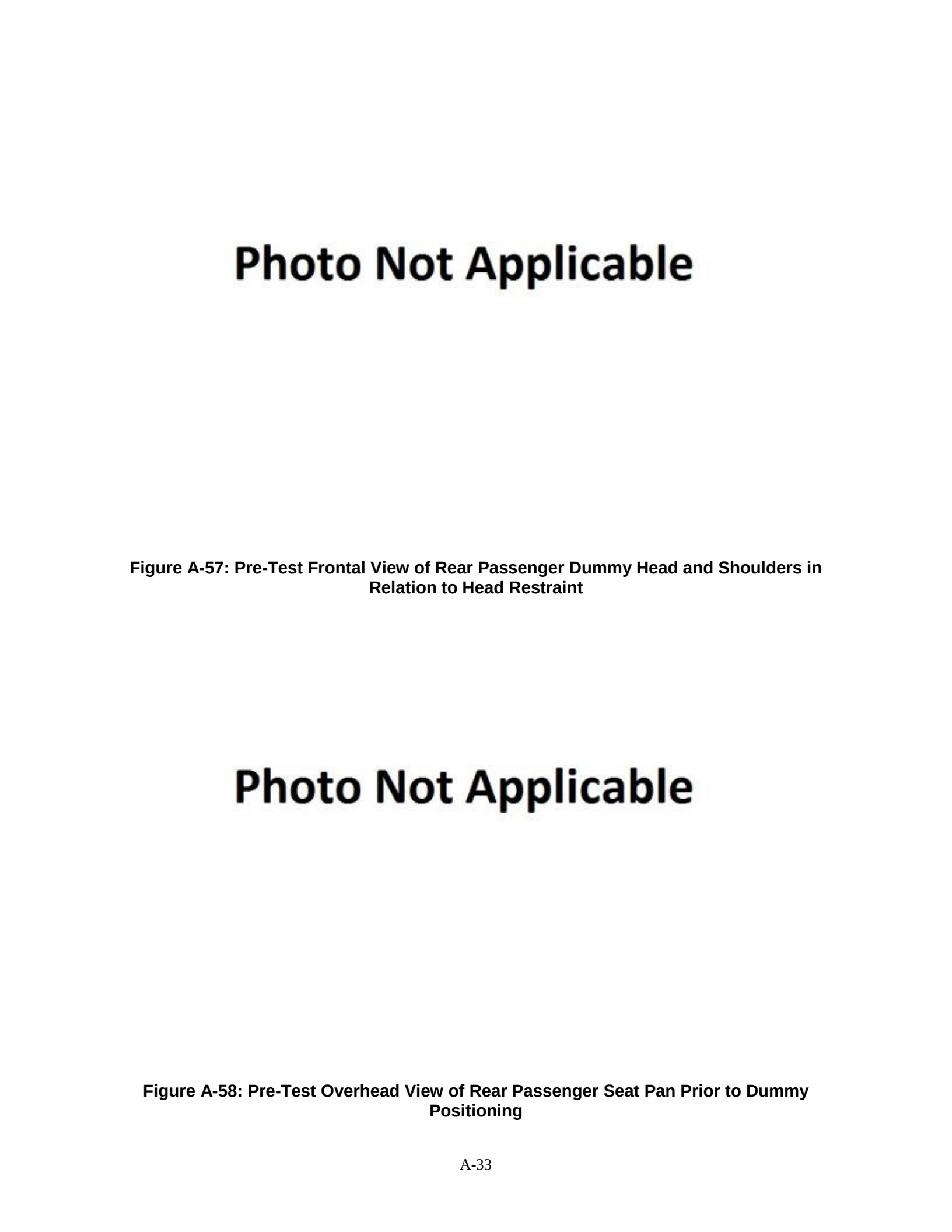


Figure A-57: Pre-Test Frontal View of Rear Passenger Dummy Head and Shoulders in Relation to Head Restraint

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

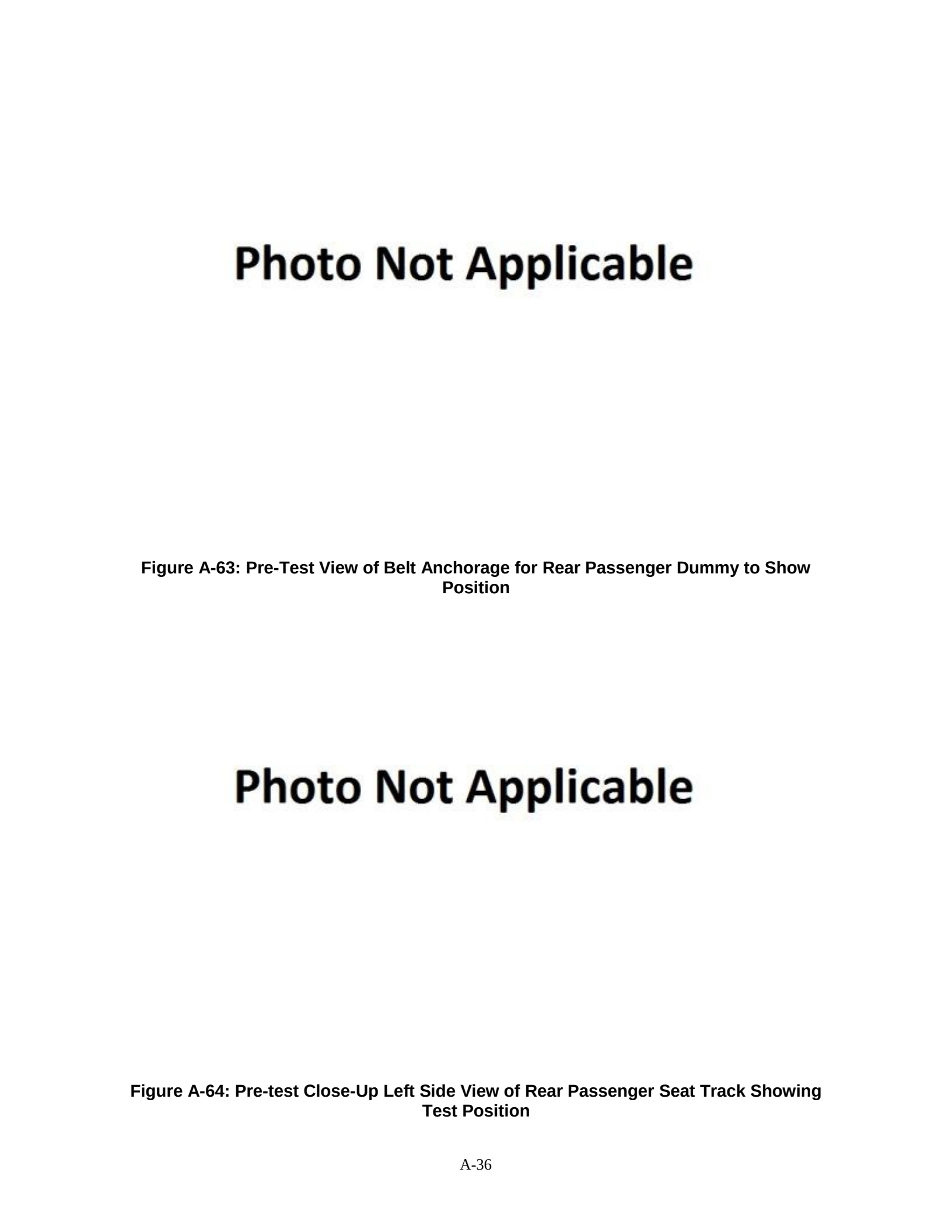


Figure A-63: Pre-Test View of Belt Anchorage for Rear Passenger Dummy to Show Position

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

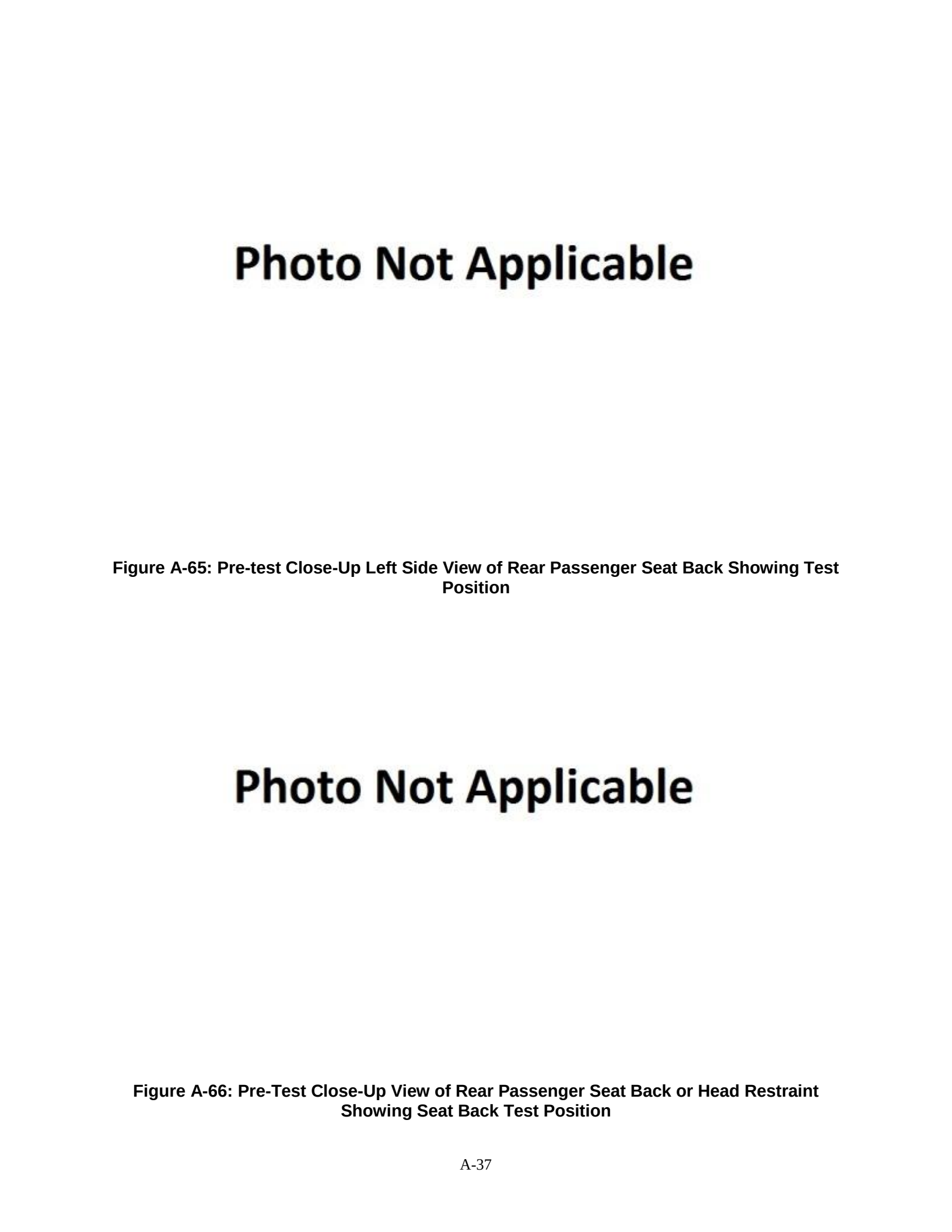


Figure A-65: Pre-test Close-Up Left Side View of Rear Passenger Seat Back Showing Test Position

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

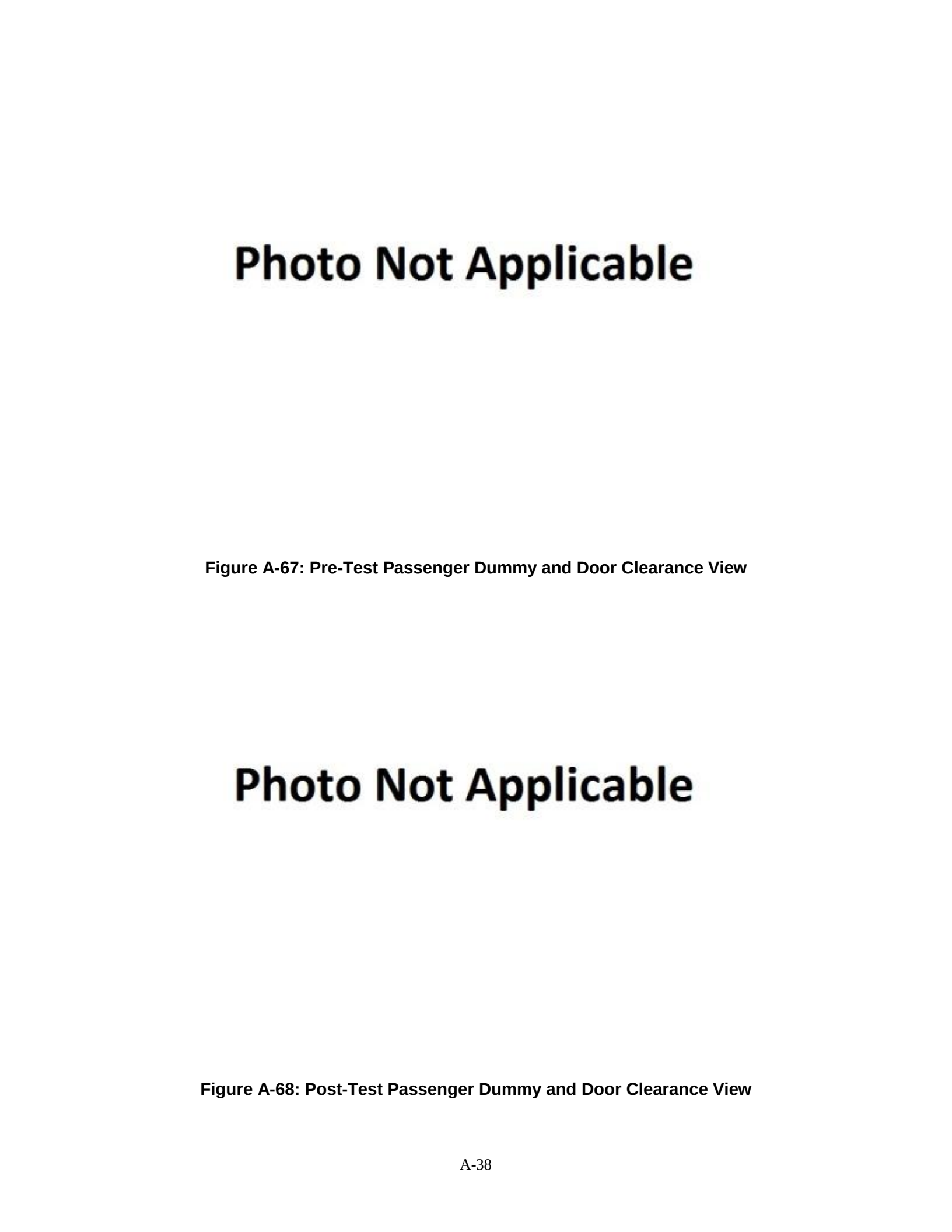


Figure A-67: Pre-Test Passenger Dummy and Door Clearance View

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

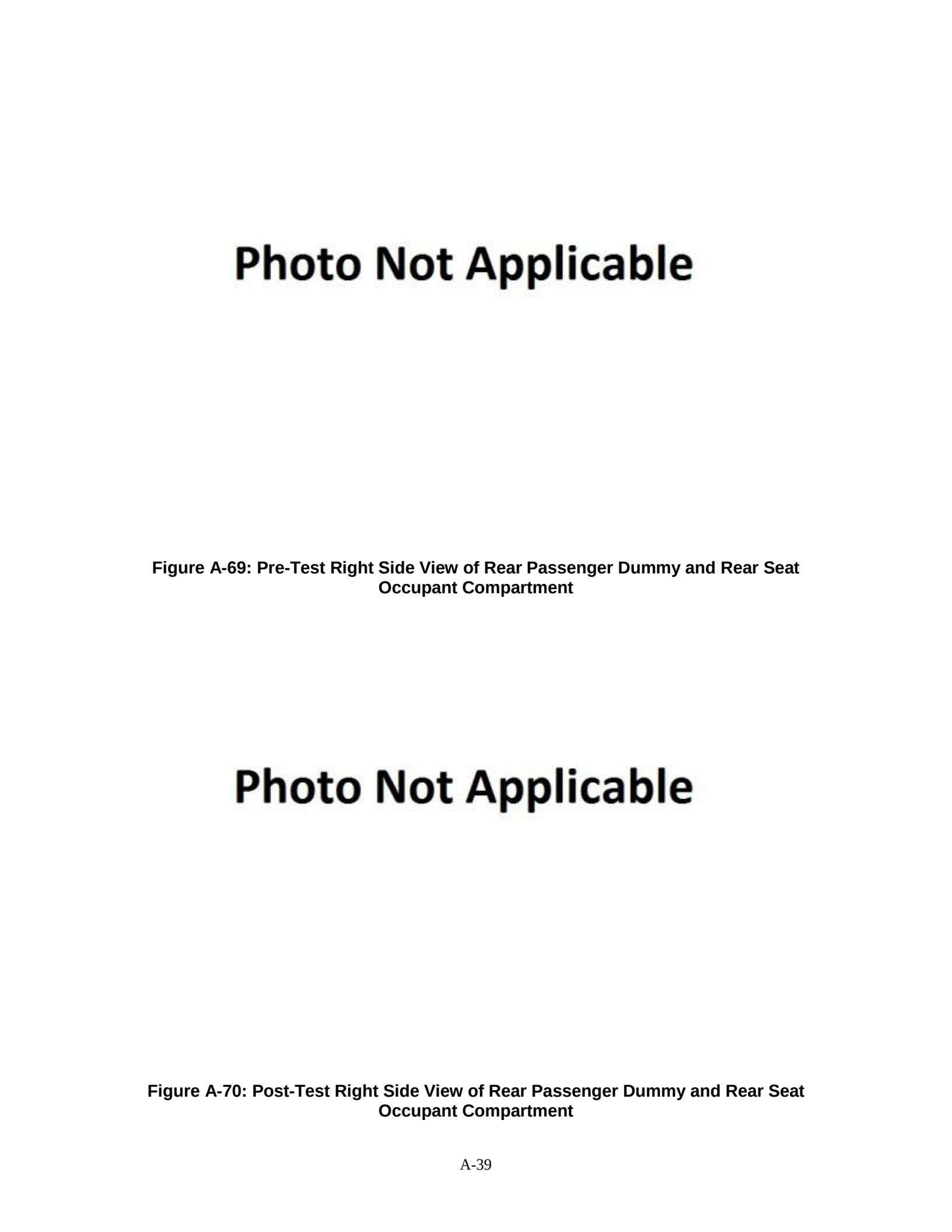


Figure A-69: Pre-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment

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

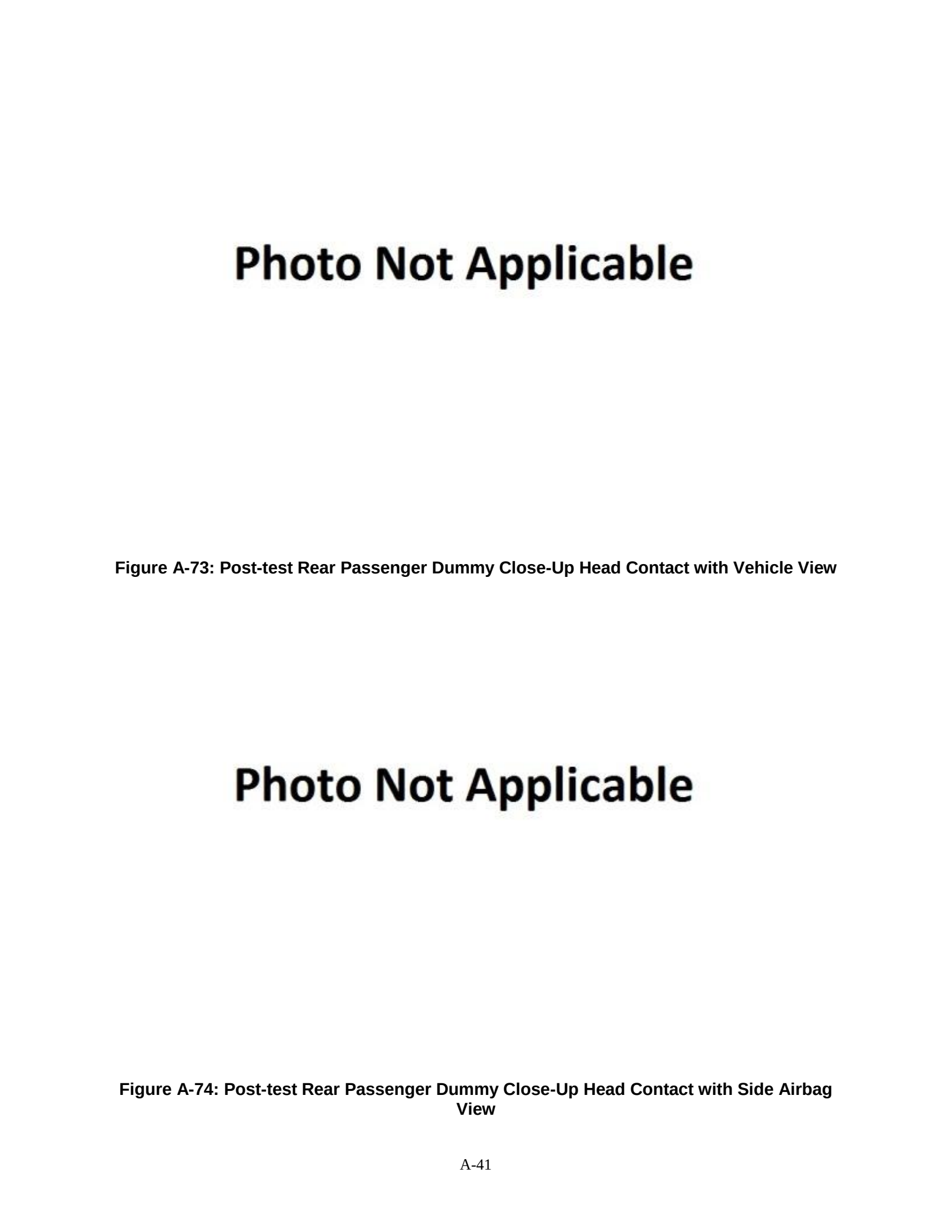


Figure A-73: Post-test Rear Passenger Dummy Close-Up Head Contact with Vehicle View

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

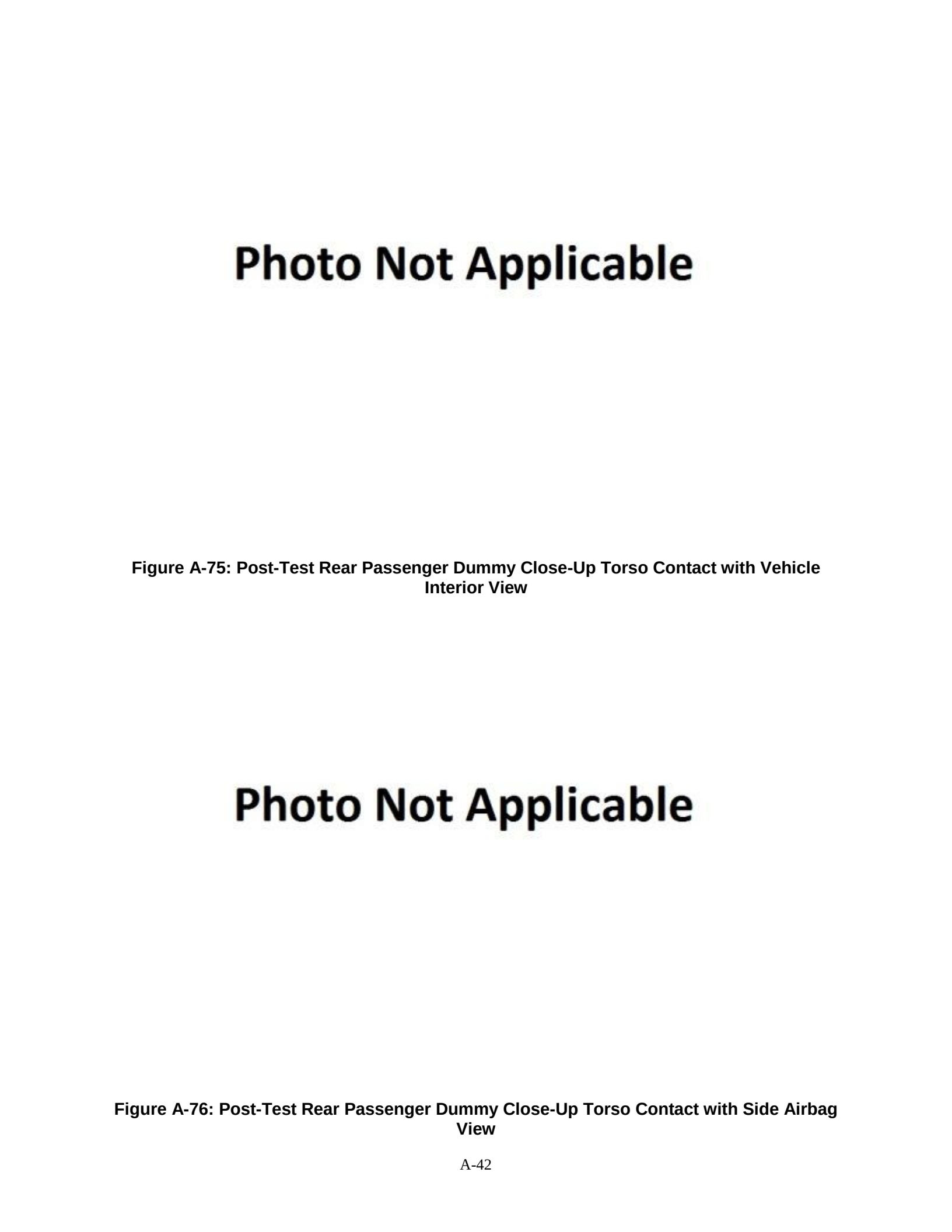


Figure A-75: Post-Test Rear Passenger Dummy Close-Up Torso Contact with Vehicle Interior View

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

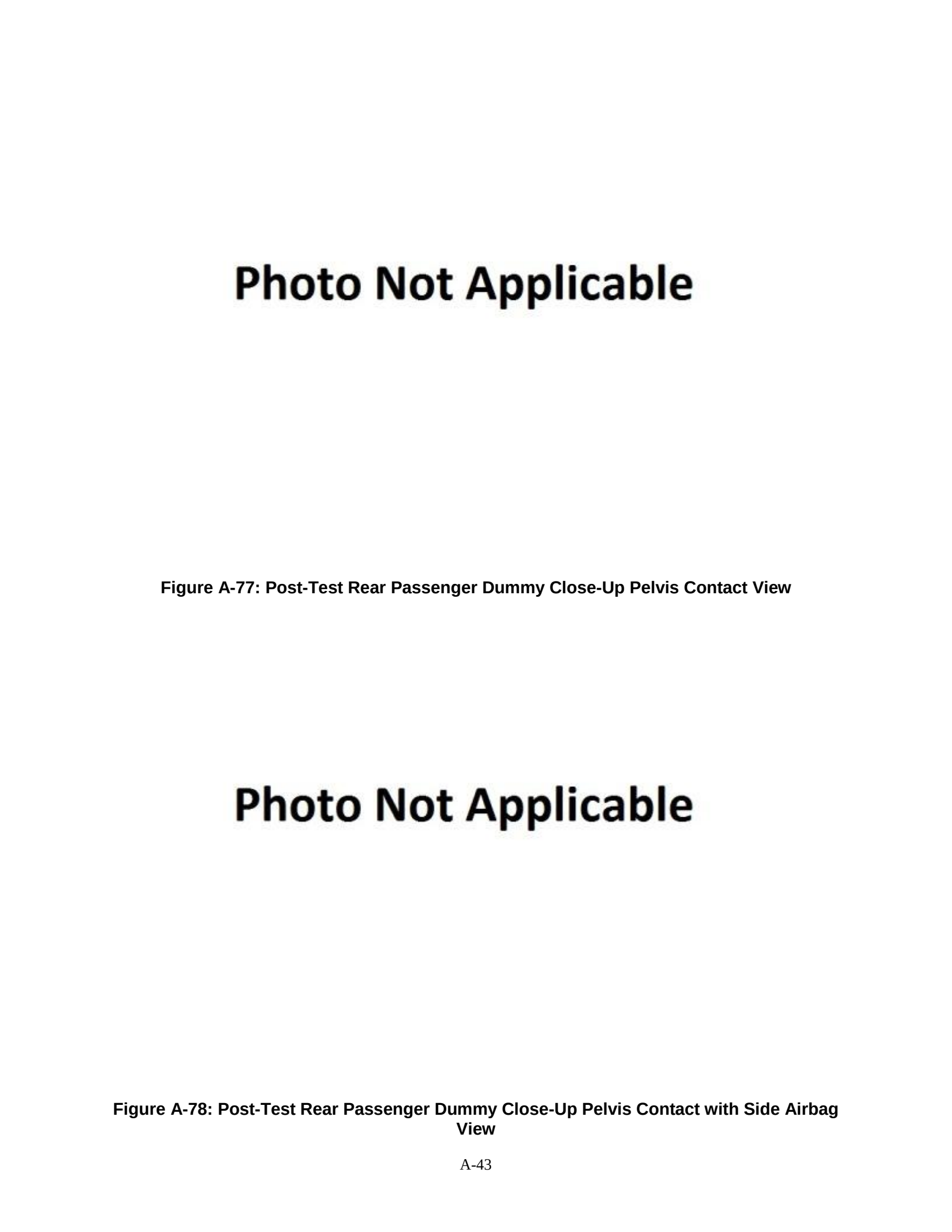


Figure A-77: Post-Test Rear Passenger Dummy Close-Up Pelvis Contact View

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

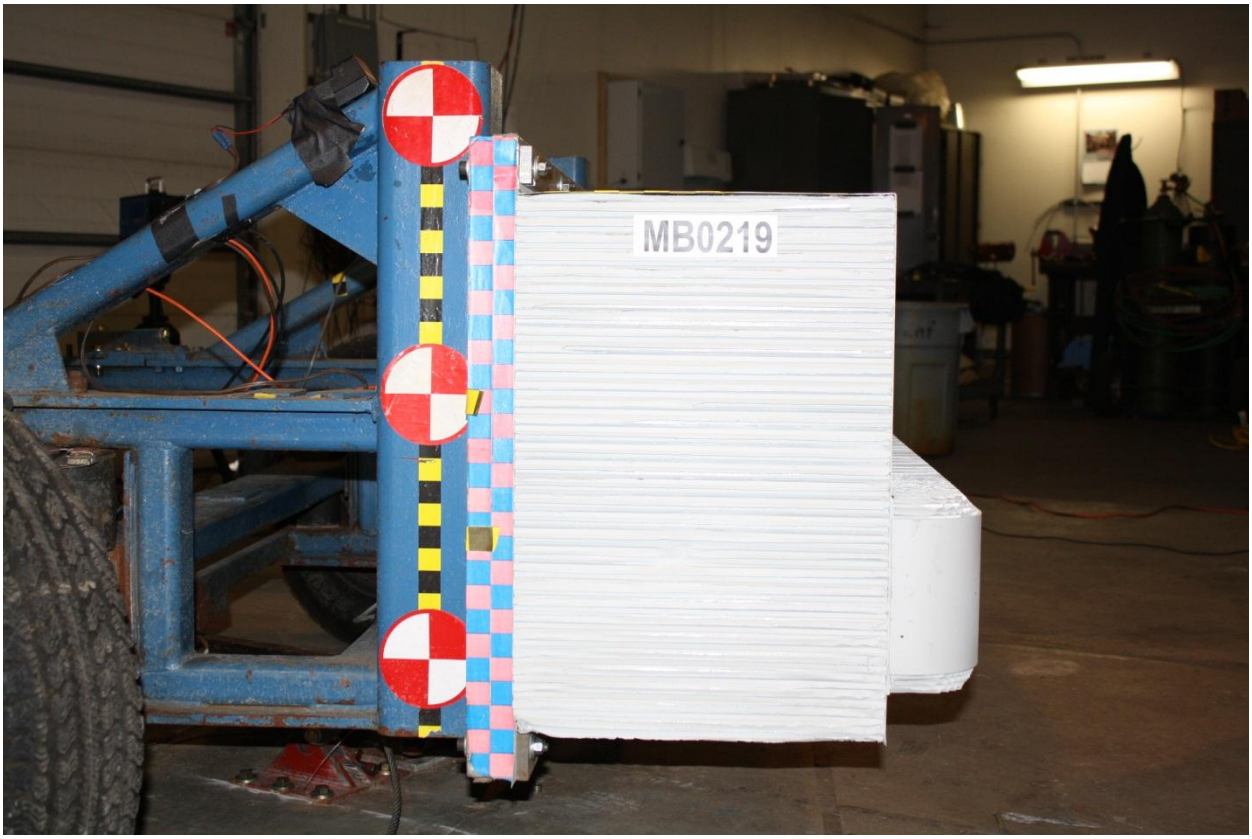


Figure A-87: Pre-Test Right Side View of MDB Impactor Face

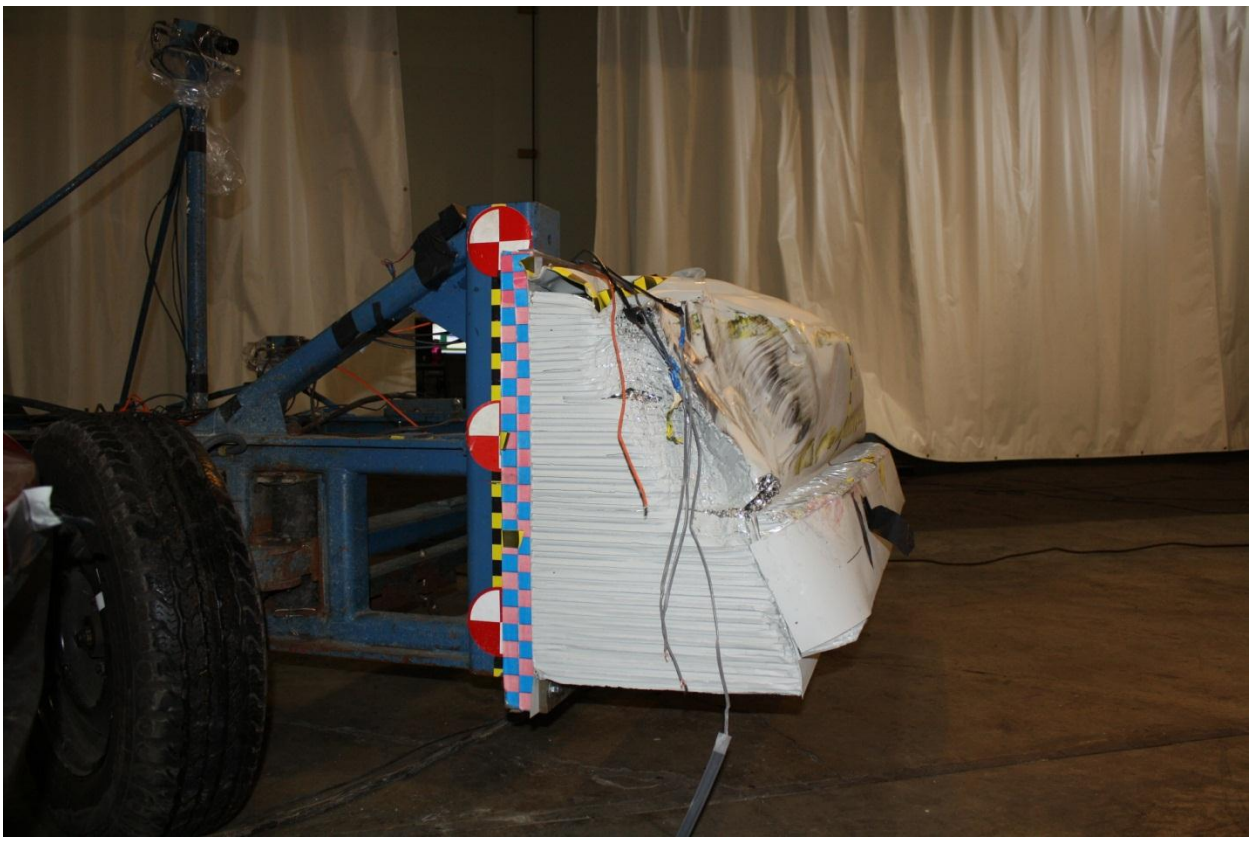


Figure A-88: Post-Test Right Side View of MDB Impactor Face

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

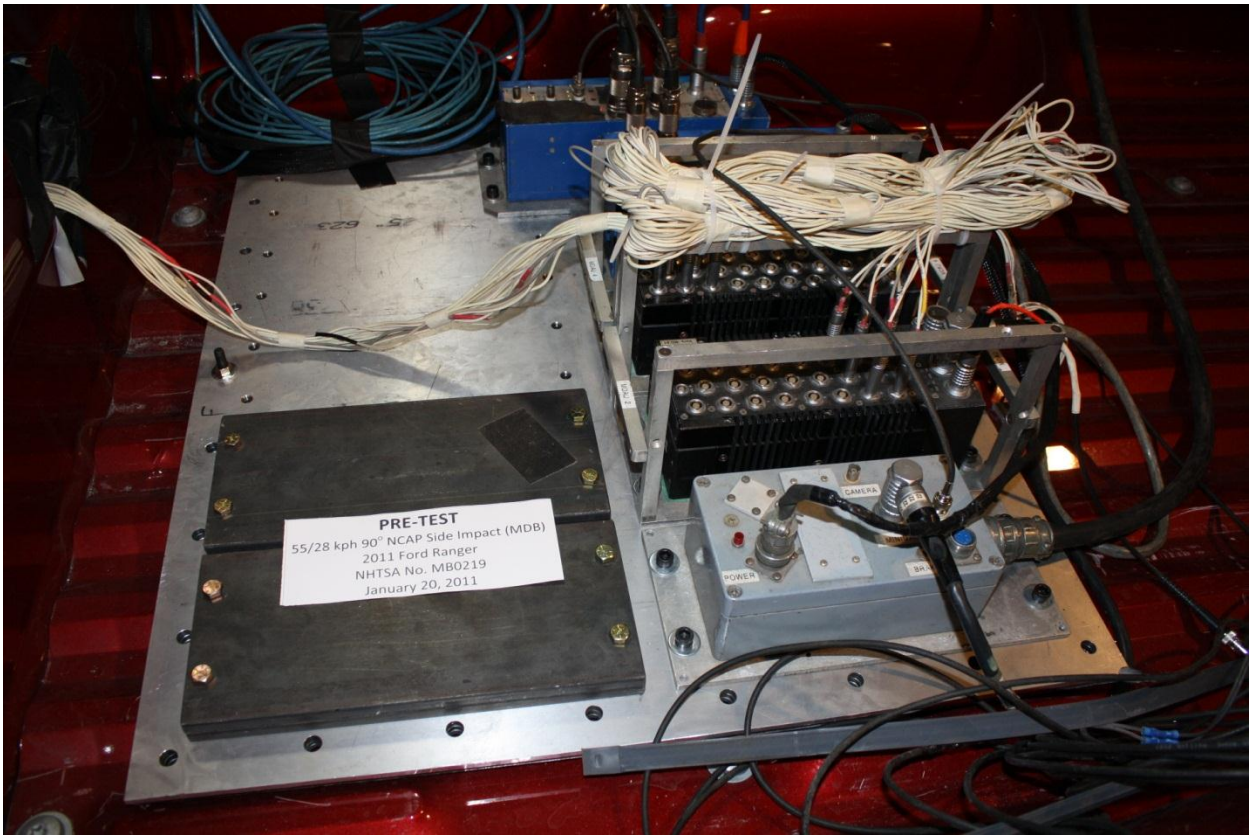


Figure A-91: Pre-Test Ballast View

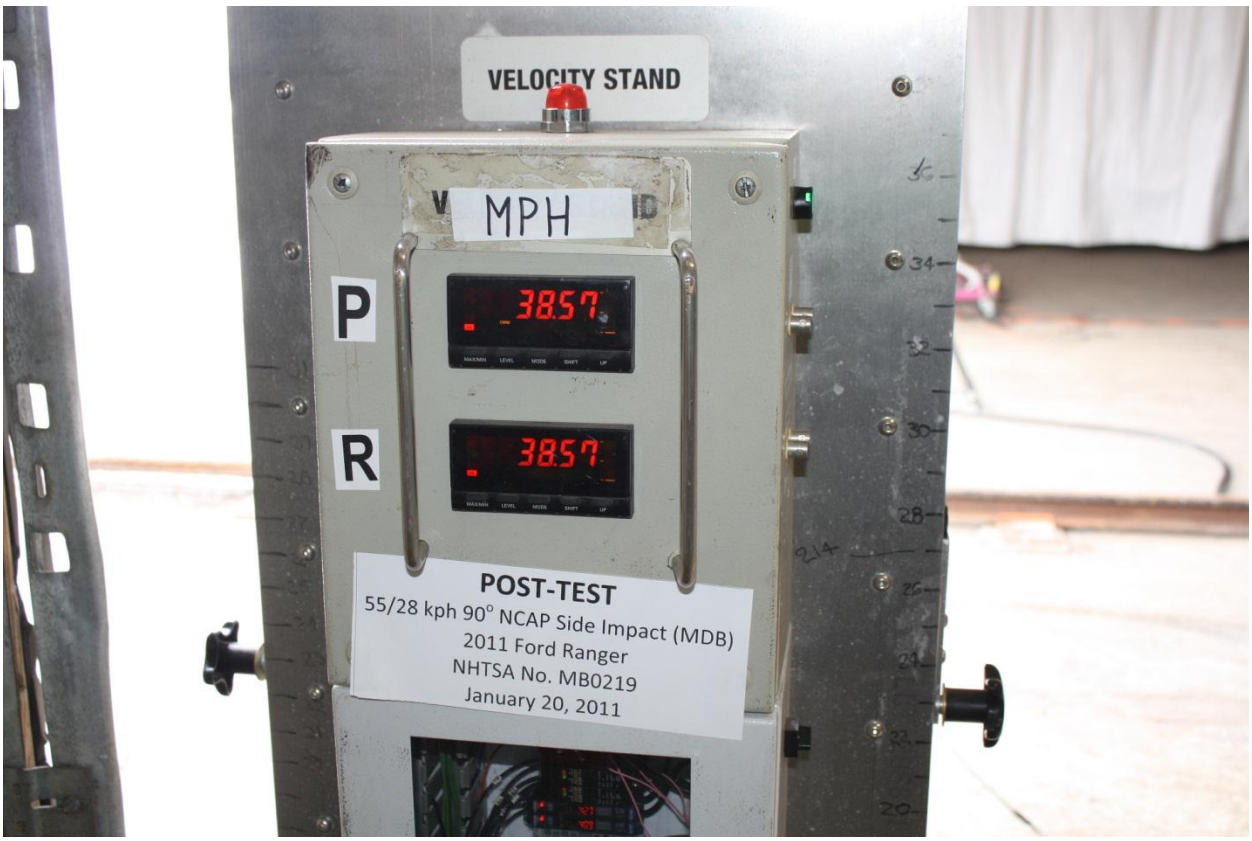


Figure A-92: Post-Test Primary and Redundant Speed Trap Read-Out

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)

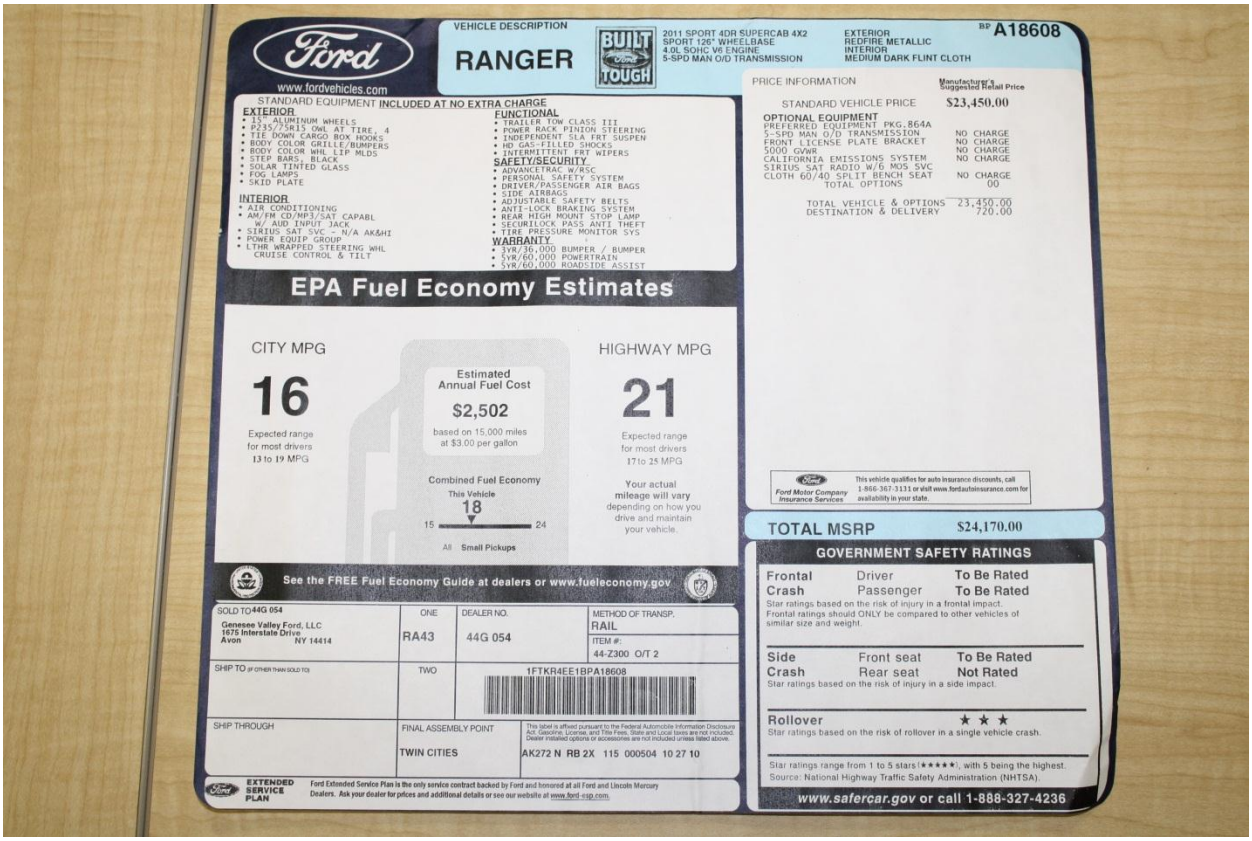


Figure A-99: Monroney Label

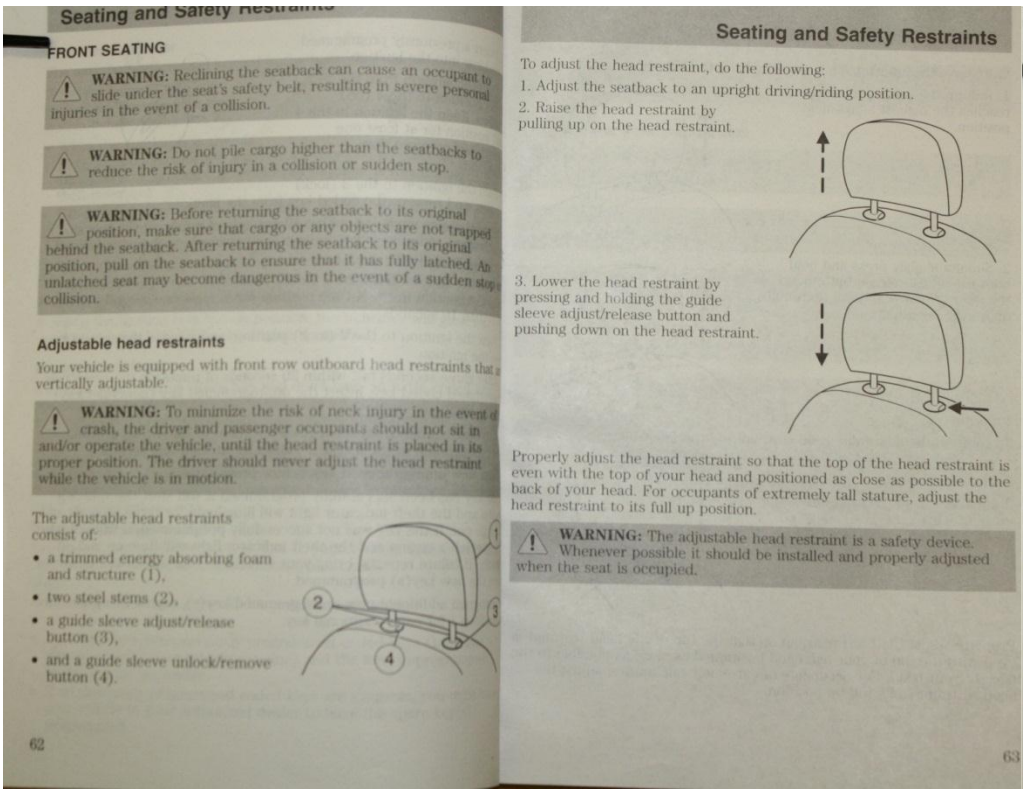


Figure A-100: Driver Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

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

APPENDIX B
DUMMY RESPONSE DATA

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 Dummy Instrumentation Data

Driver Lower Spine T12 Acceleration (X)
Driver Lower Spine T12 Acceleration (Y)
Driver Lower Spine T12 Acceleration (Z)
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

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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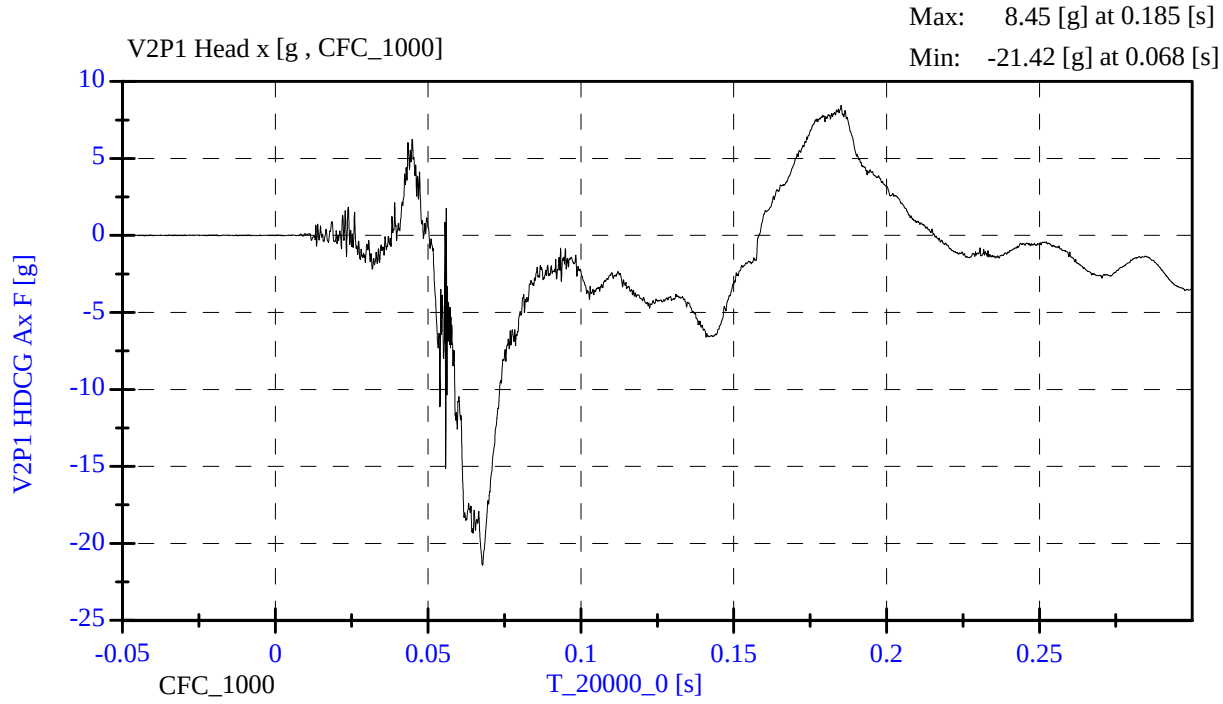
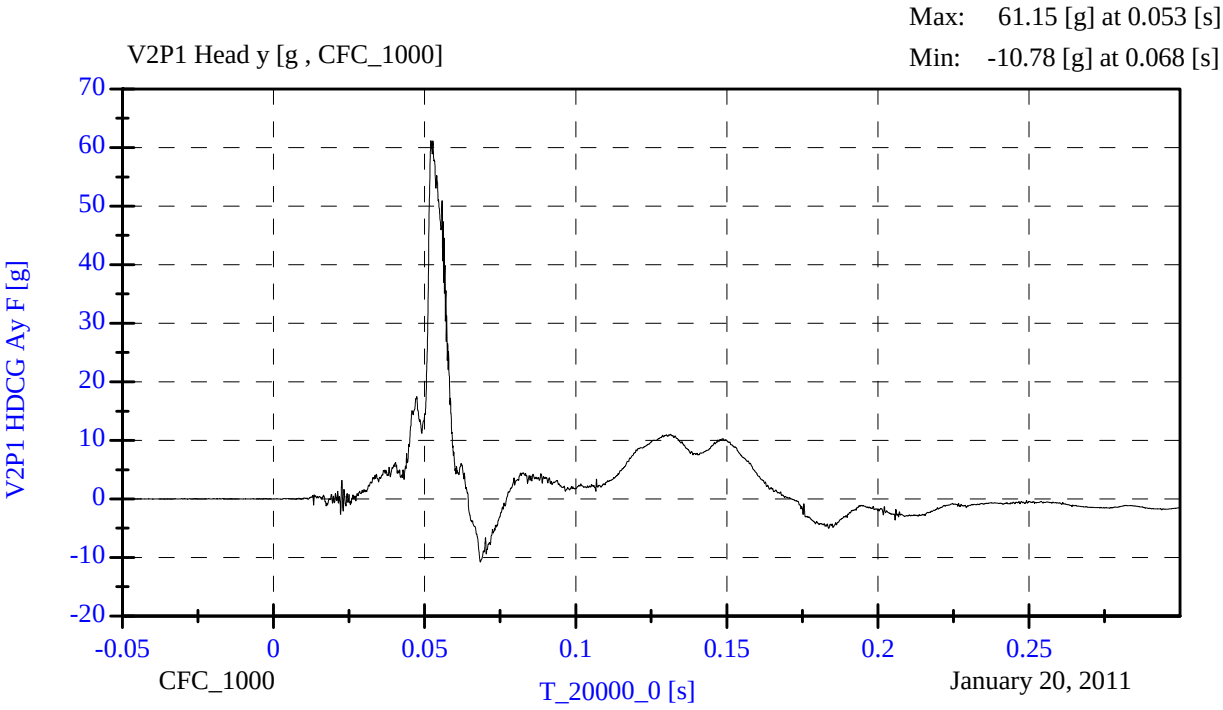
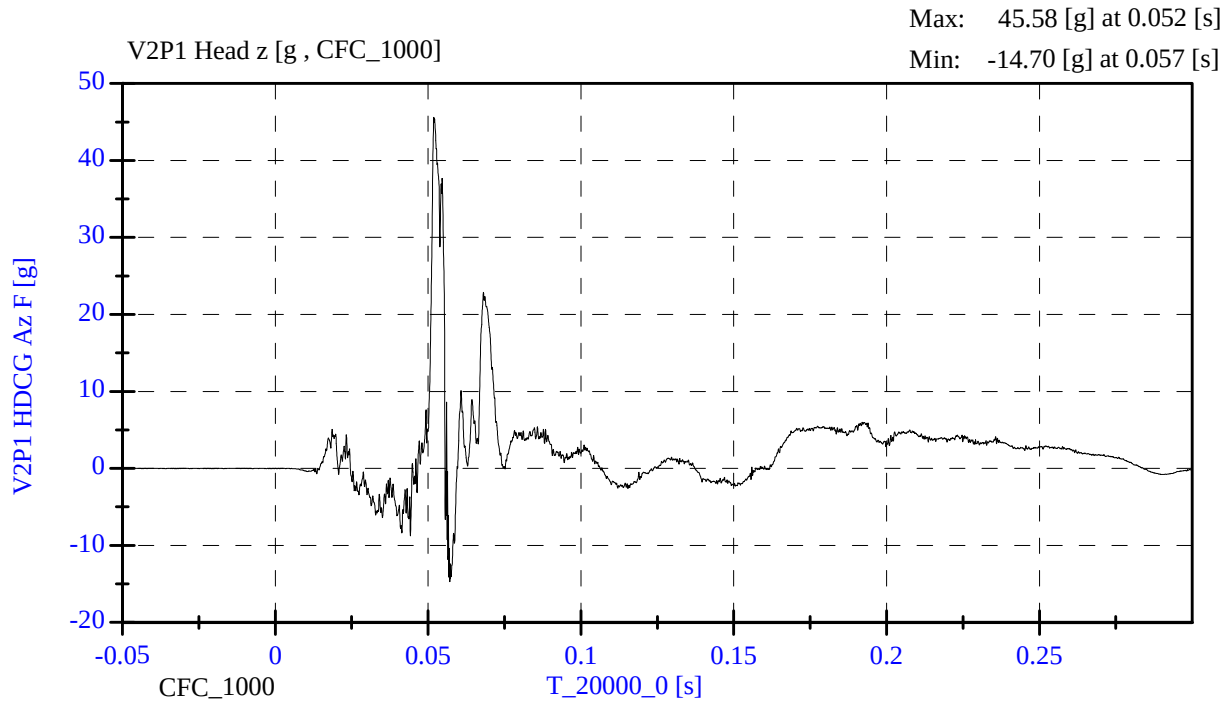
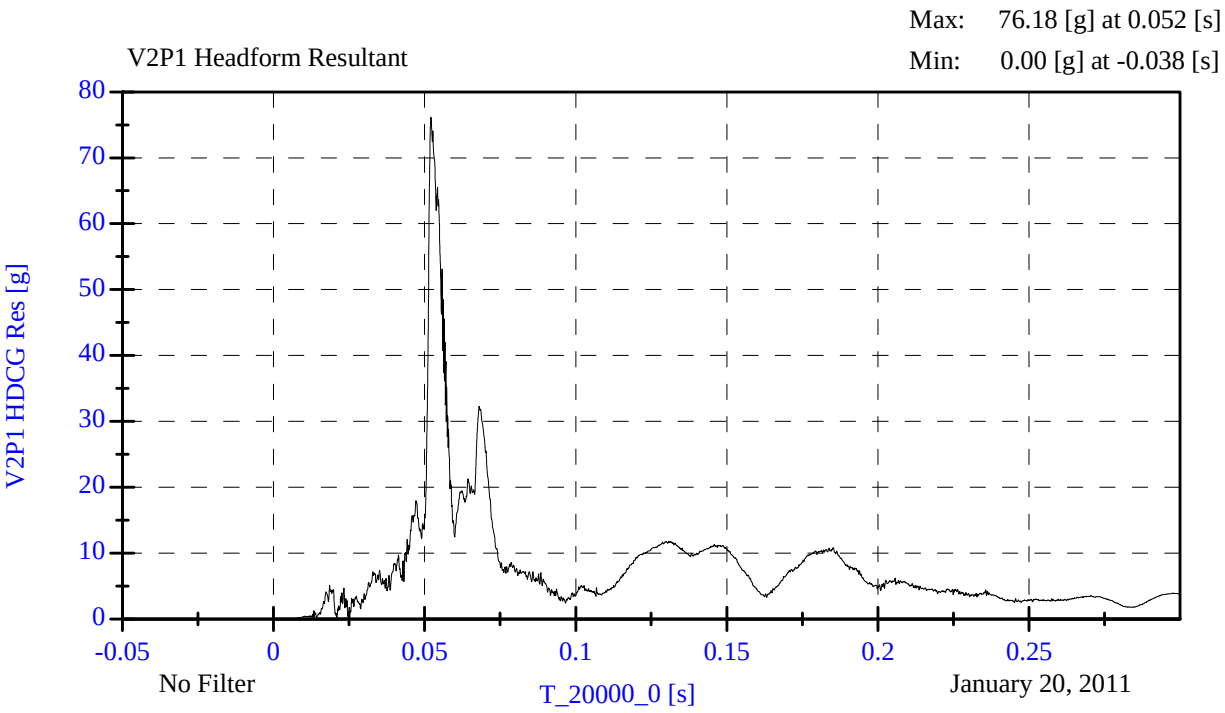




MB0219 2011 Ford Ranger SNCAP

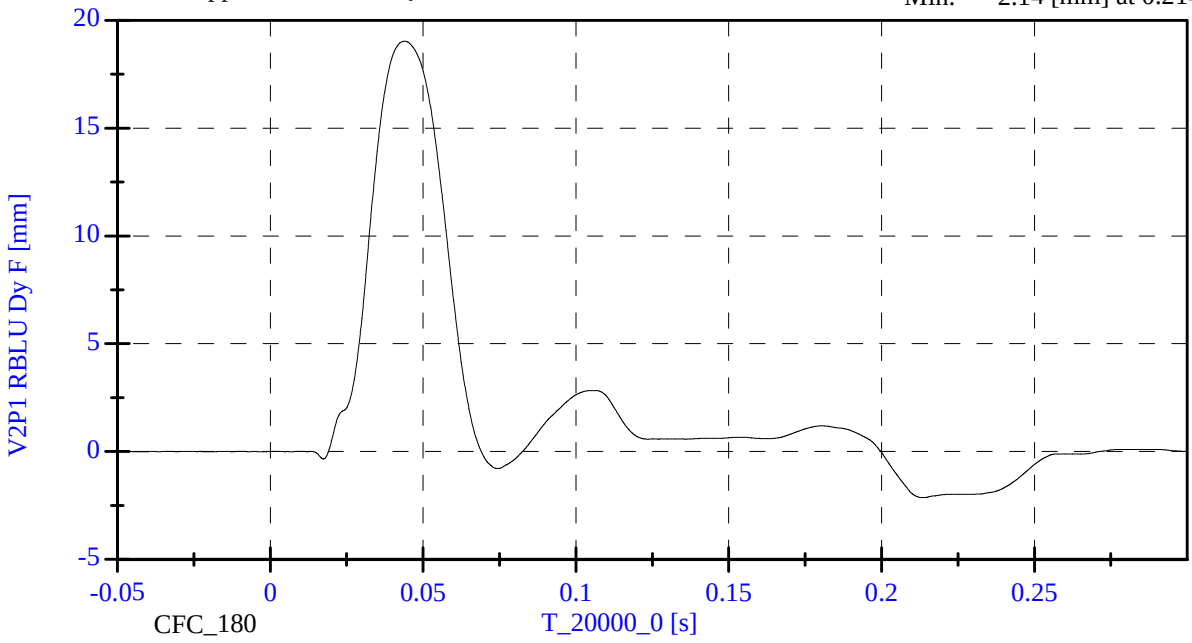




MB0219 2011 Ford Ranger SNCAP

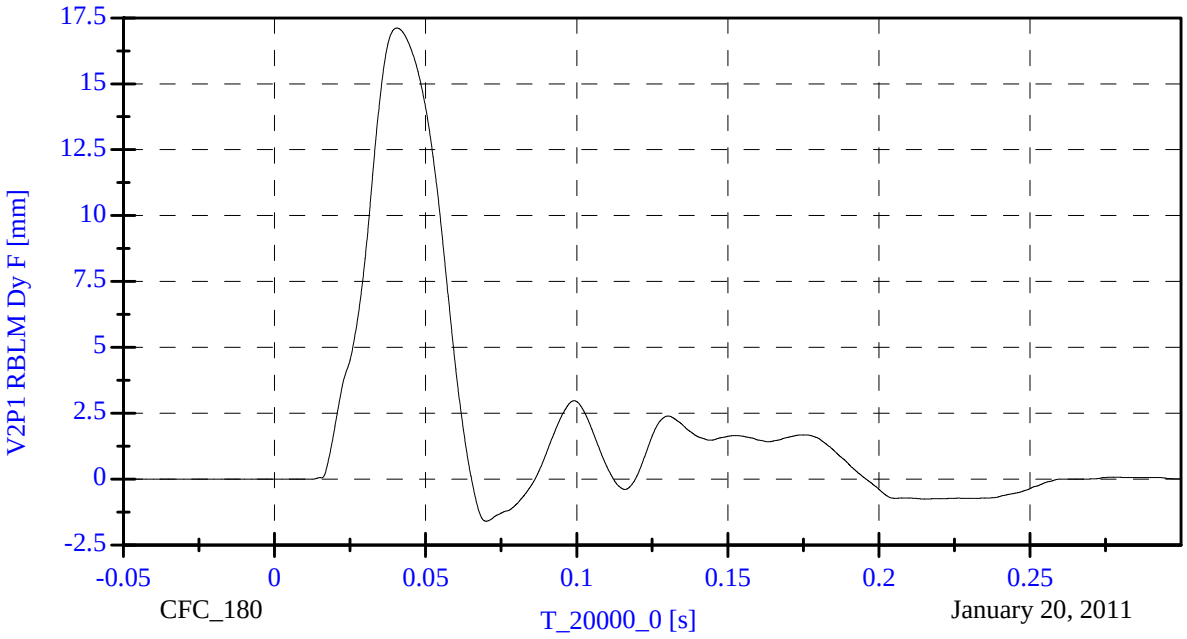
Max: 19.03 [mm] at 0.044 [s]
Min: -2.14 [mm] at 0.214 [s]

V2P1 Upper Thorax Rib Dy [mm , CFC_180]

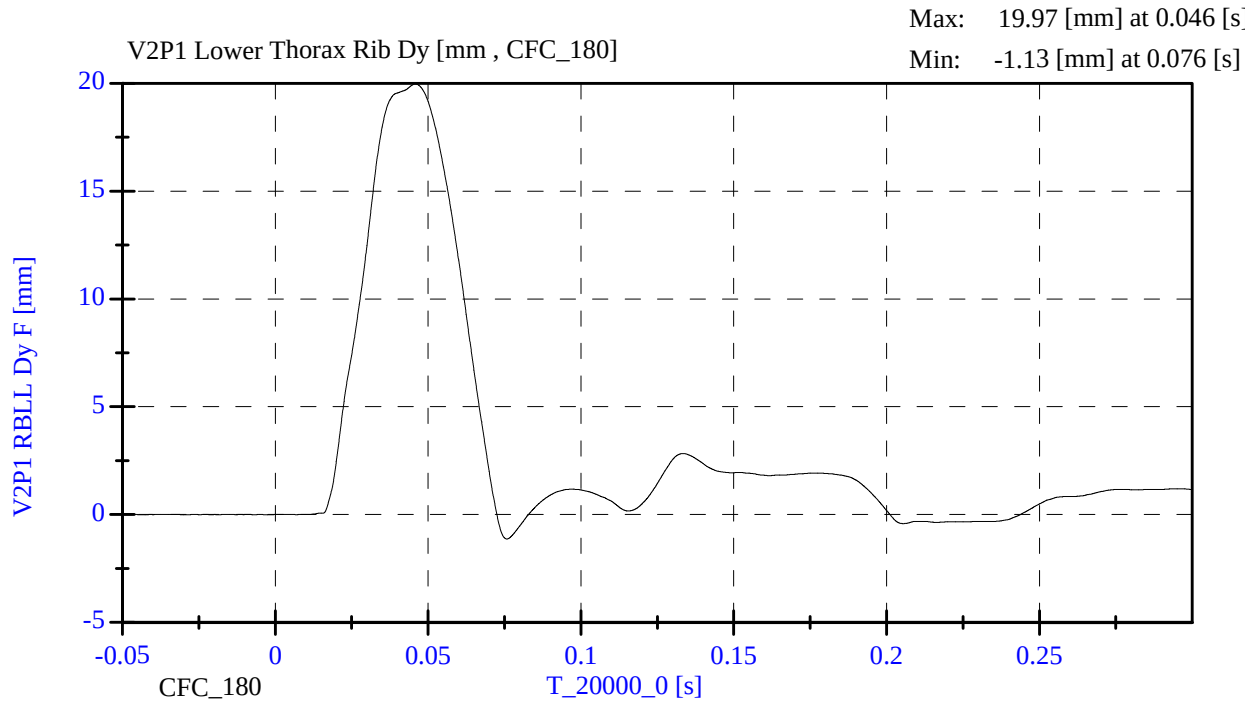


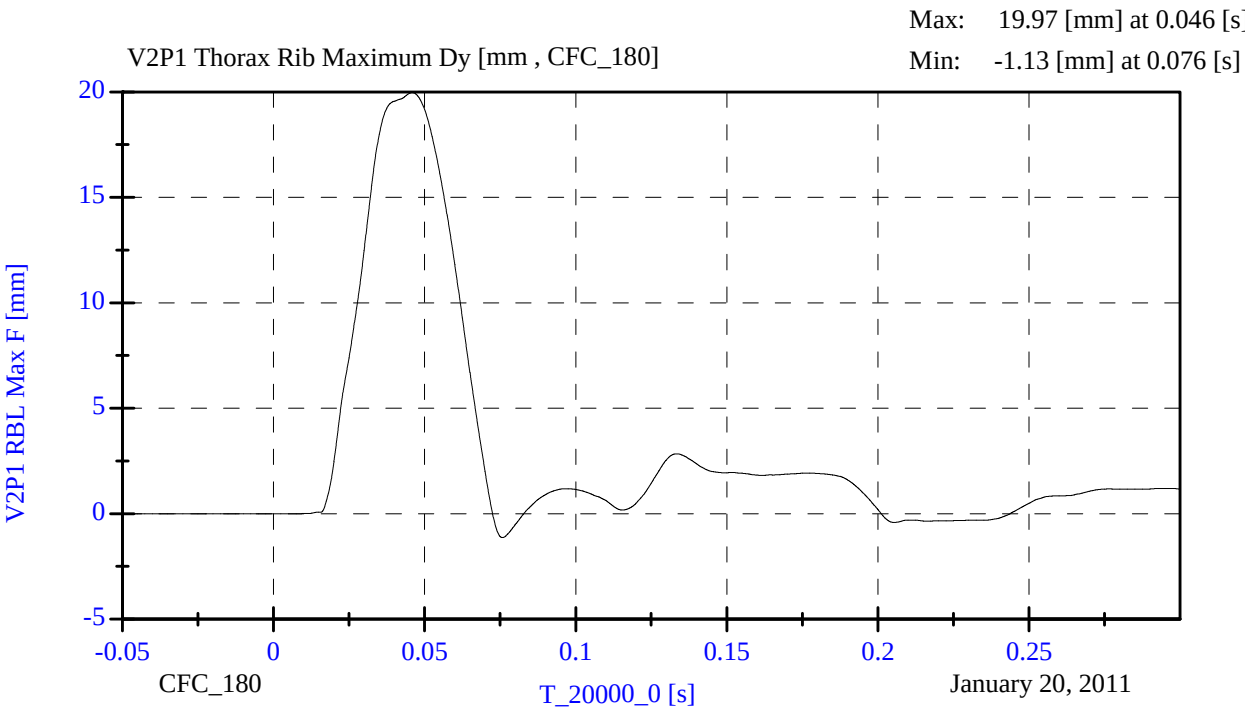
Max: 17.12 [mm] at 0.041 [s]
Min: -1.59 [mm] at 0.070 [s]

V2P1 Middle Thorax Rib Dy [mm , CFC_180]



MB0219 2011 Ford Ranger SNCAP

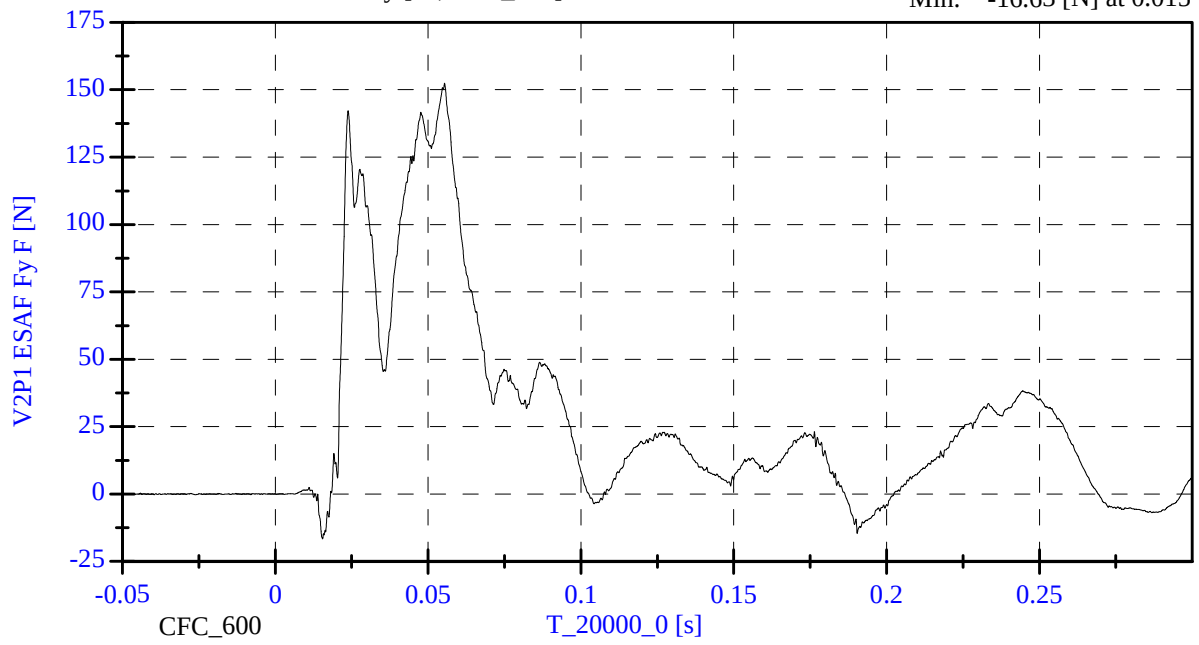




MB0219 2011 Ford Ranger SNCAP

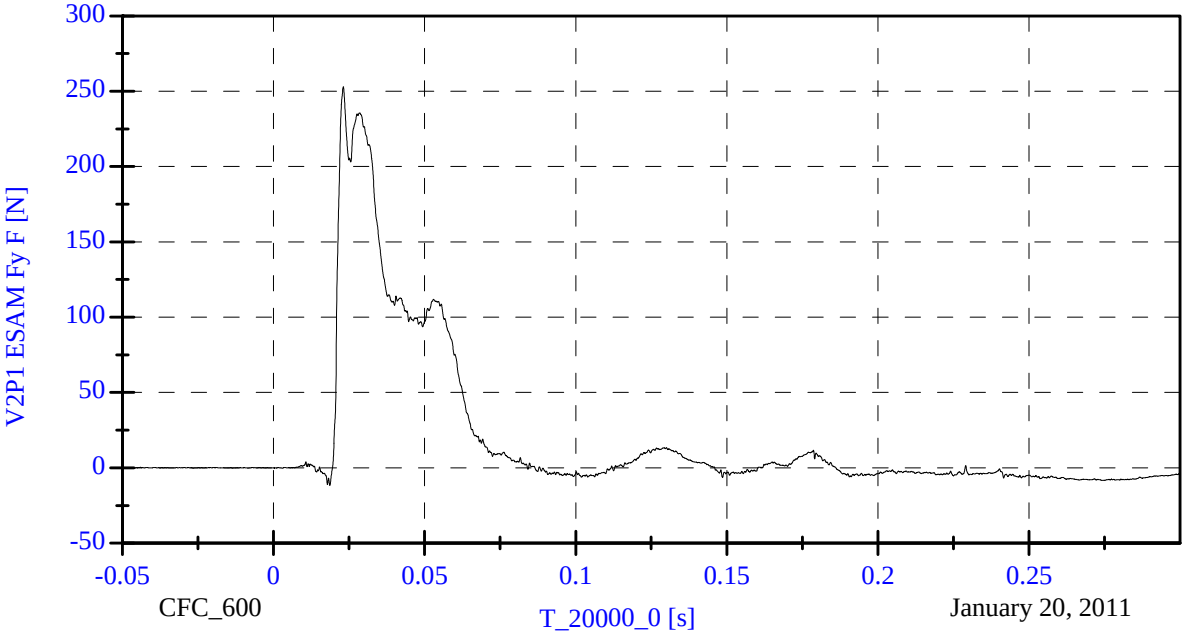
Max: 152.50 [N] at 0.055 [s]
Min: -16.63 [N] at 0.015 [s]

V2P1 Front Abdomen Fy [N , CFC_600]

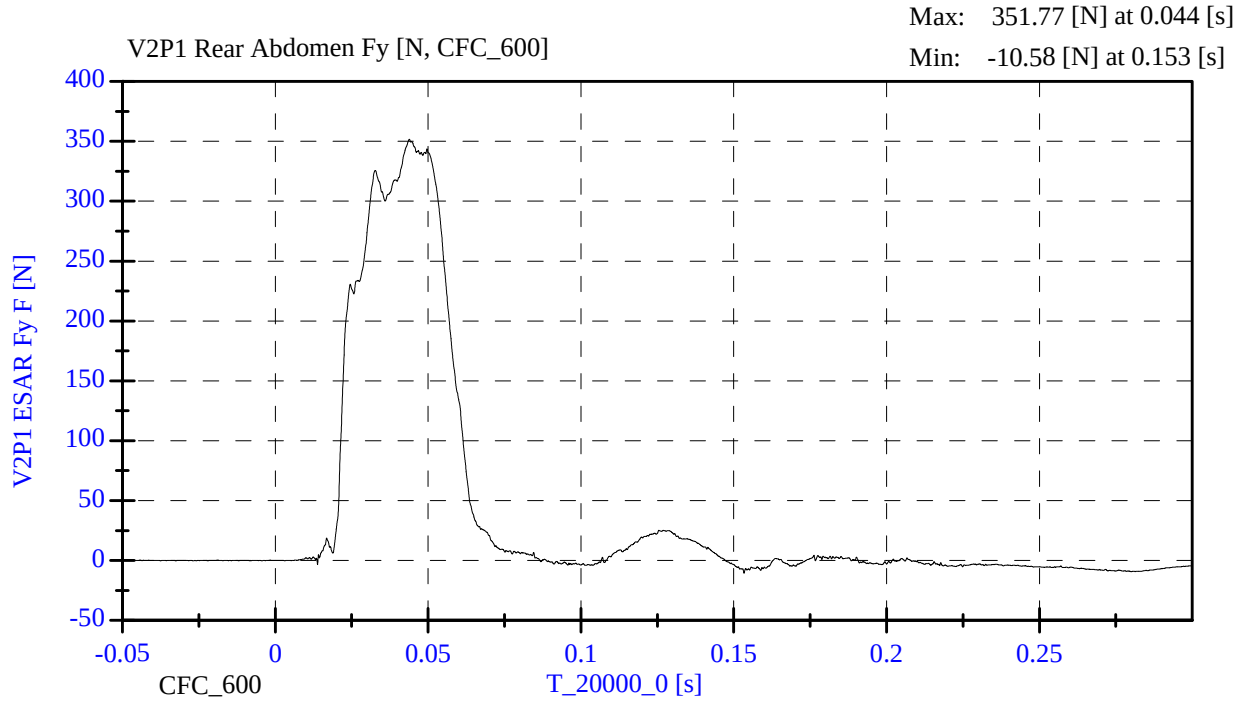


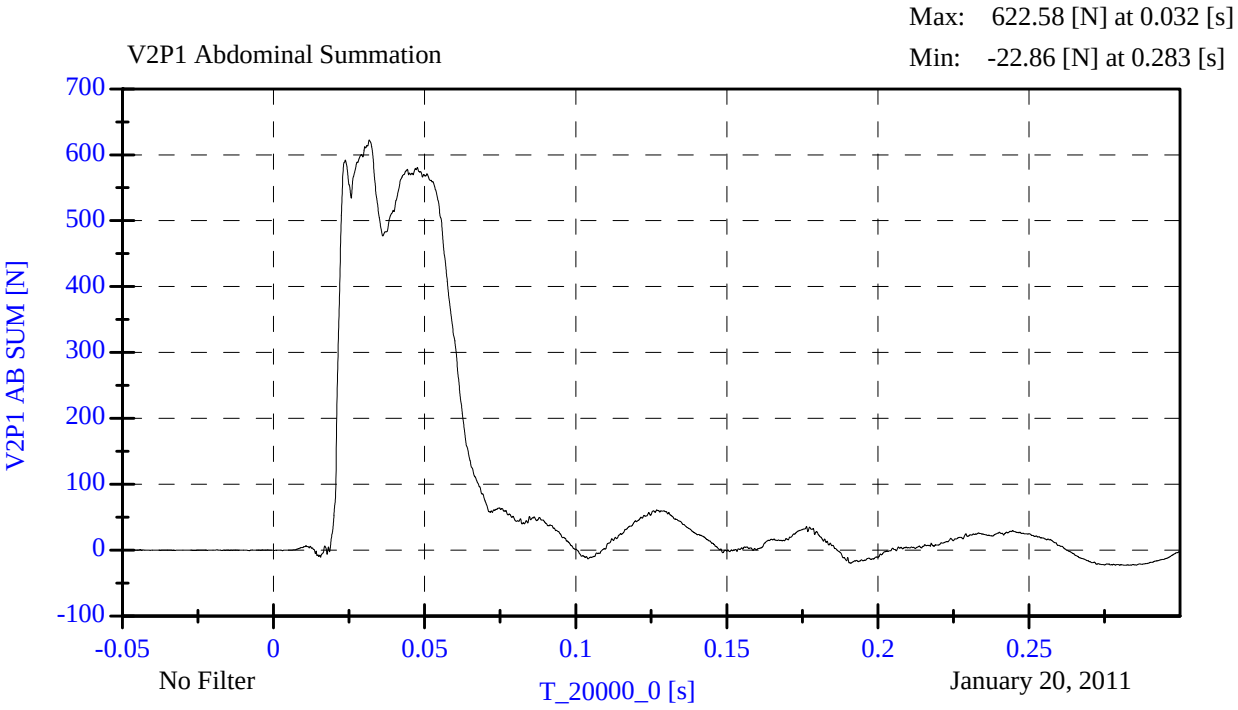
Max: 253.06 [N] at 0.023 [s]
Min: -11.77 [N] at 0.019 [s]

V2P1 Middle Abdomen Fy [N , CFC_600]



MB0219 2011 Ford Ranger SNCAP

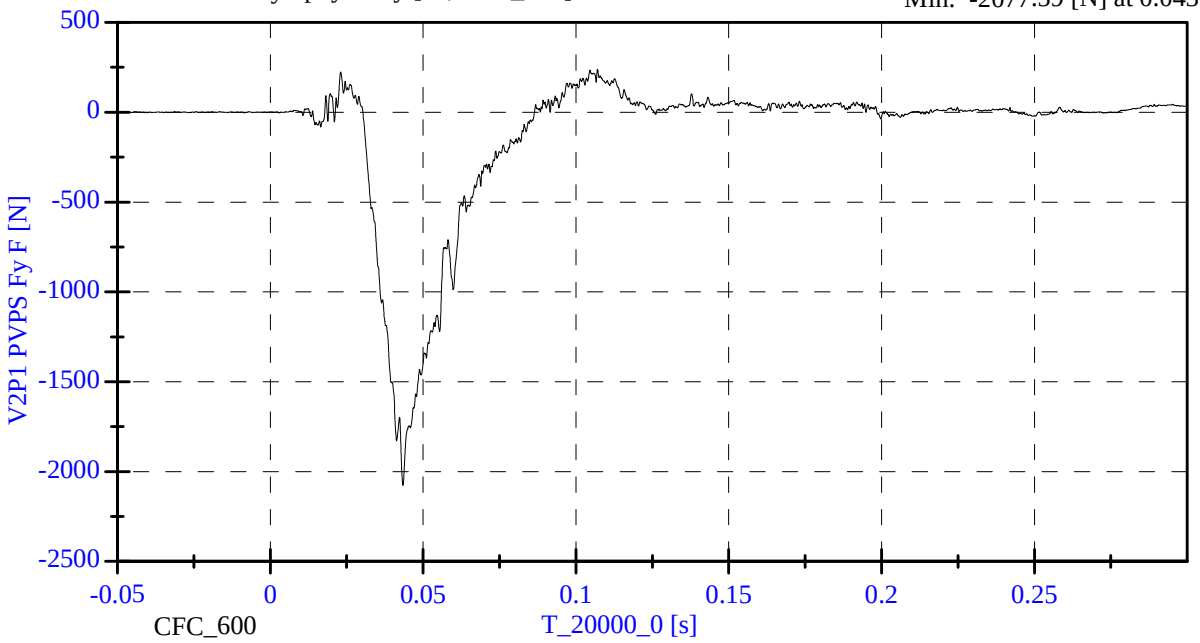




MB0219 2011 Ford Ranger SNCAP

Max: 239.47 [N] at 0.107 [s]
Min: -2077.59 [N] at 0.043 [s]

V2P1 Pubic Symphysis Fy [N , CFC_600]



January 20, 2011

APPENDIX C

DUMMY CALIBRATION DATA

CALIBRATION TEST RESULTS

PRE-TEST

Es-2re No: 033

CONFIGURED FOR LEFT SIDE IMPACT

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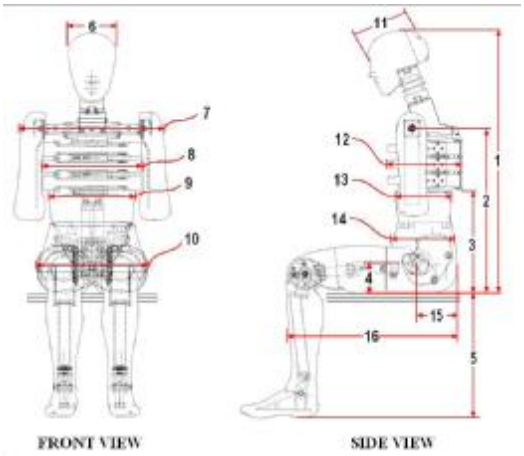
ES-2re External Measurements

NHTSA SN F033



Dim. No.	Description	Specification (mm)	Result (mm)	Pass/Fail
1	Sitting Height	900-918	911	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	445	Pass
6	Head Width	152-158	158	Pass
7	Shoulder/Arm Width	461-479	470	Pass
8	Thorax Width	322-332	327	Pass
9	Abdomen Width	273-287	284	Pass
10	Pelvis Lap Width	359-373	369	Pass
11	Head Depth	196-206	198	Pass
12	Thorax Depth	262-272	270	Pass
13	Abdomen Depth	194-204	200	Pass
14	Pelvis Depth	235-245	237	Pass
15	Back of Buttocks to Hip Joint (center of bolt)	150-160	153	Pass
16	Back of Buttocks to Front Knee	597-615	605	Pass

Technician: DS

Date: 01/18/2011

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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:	**1/13/2011**
Test Number:	**1**	Test Time:	**10:59:38 AM**

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

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.2**	deg C	P
Humidity	10	--	70	**16**	%RH	P
Resultant Acceleration	125	--	155	**139**	g	P
Oscillation	0.0	--	15.0	**6.1**	%	P
Fore-Aft Acceleration	-15.00	--	15.00	**4.14**	g	P

All test parameters are within specifications

Technician: **Don Schenk** 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: **10:59:38 AM** Test Date: **1/13/2011**

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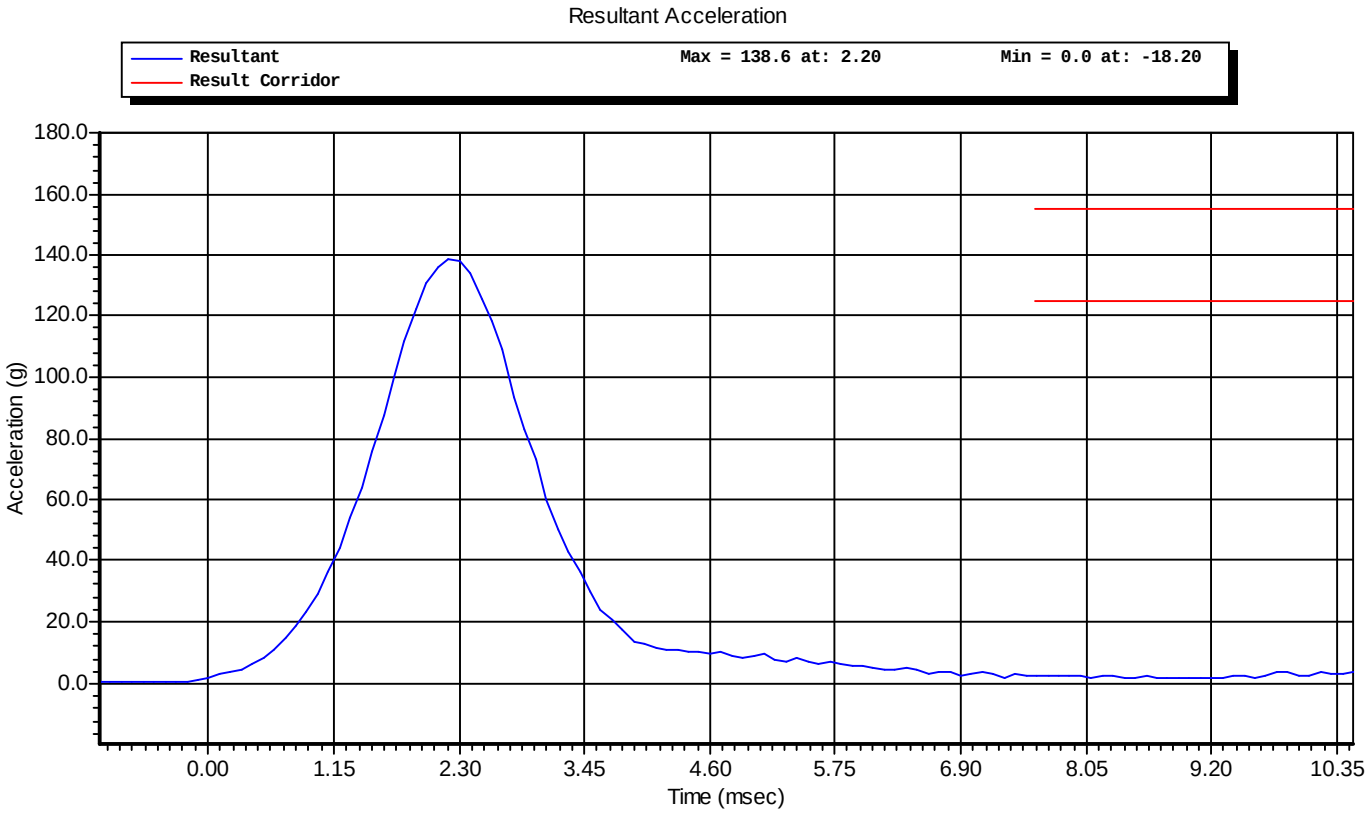
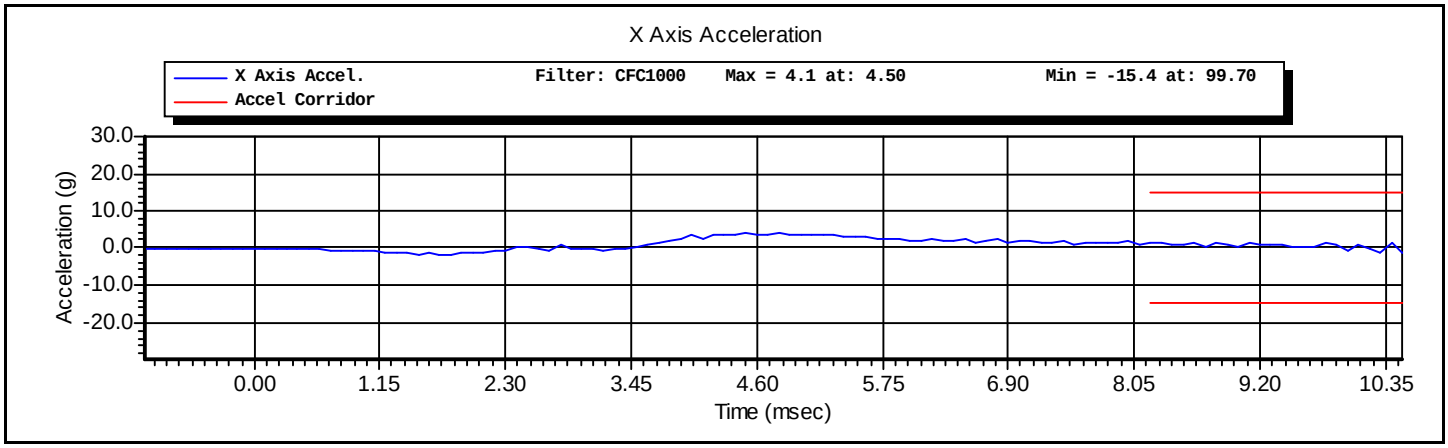
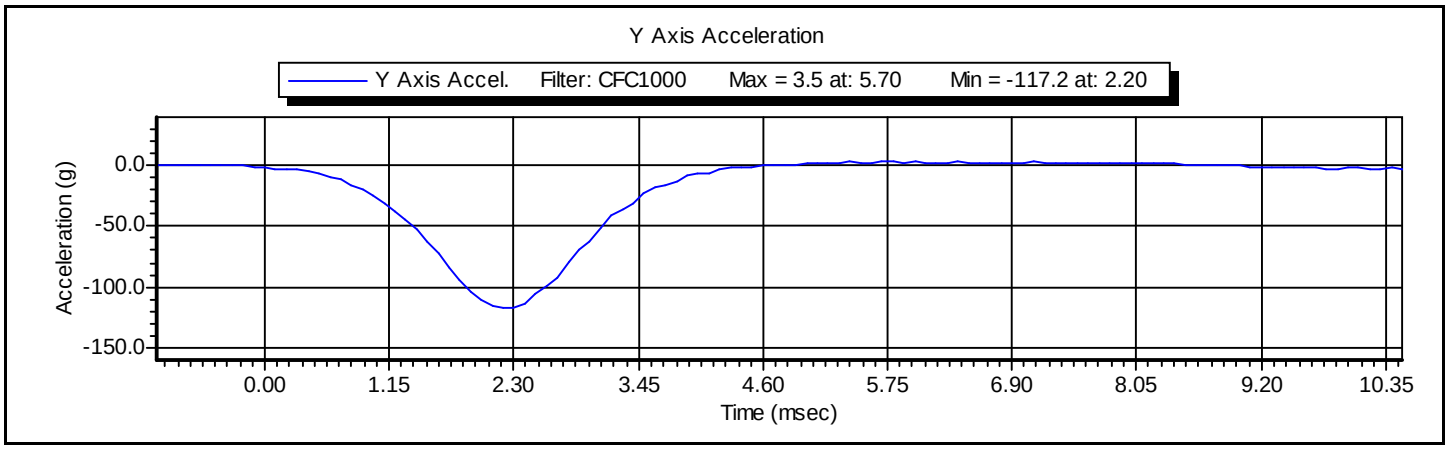
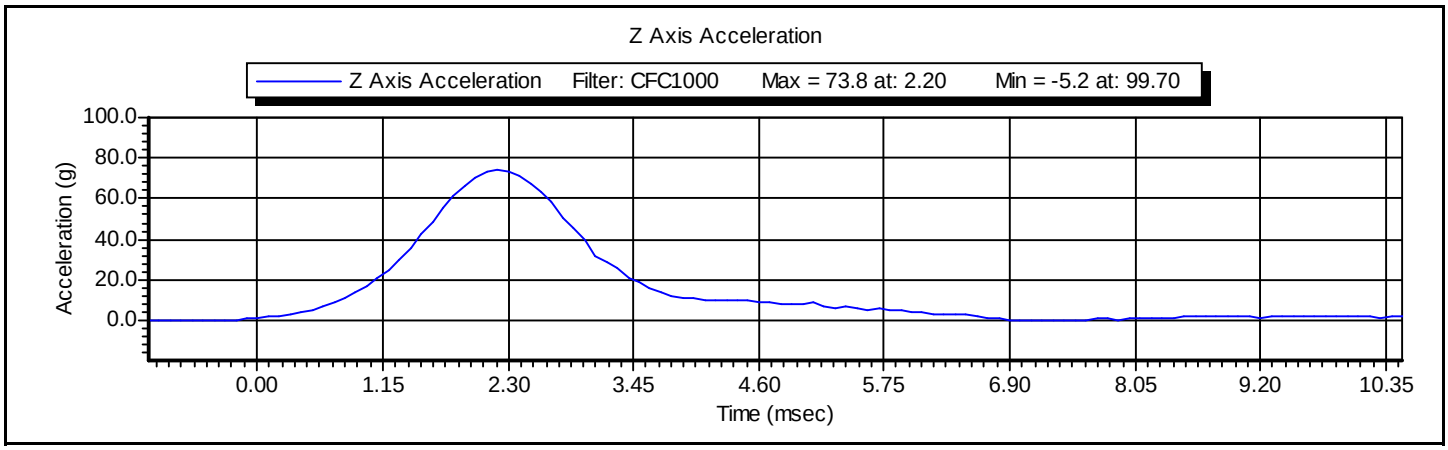
Test Name:	**Head Drop**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Head drop**	Test Date:	**1/13/2011**
Test Number:	**1**	Test Time:	**10:59:38 AM**









Test ID: **Head drop** Test Time: **10:59:38 AM** Test Date: **1/13/2011**

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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:	**1/13/2011**
Test Number:	**1**	Test Time:	**12:05:19 PM**

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

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.2**	deg C	P
Humidity	10	--	70	**19**	%RH	P
Velocity	3.30	--	3.50	**3.42**	m/s	P
Maximum Neck Flexion Angle	49.0	--	59.0	**51.7**	degrees	P
Time At Maximum Neck Flexion	54.0	--	66.0	**58.6**	ms	P
Decay to Zero Degrees	53.0	--	88.0	**59.2**	ms	P
Velocity Corridor		--				P

All test parameters are within specifications

Technician: **Don Schenk** Signature: _____

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

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2011**
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: **12:05:19 PM** Test Date: **1/13/2011**

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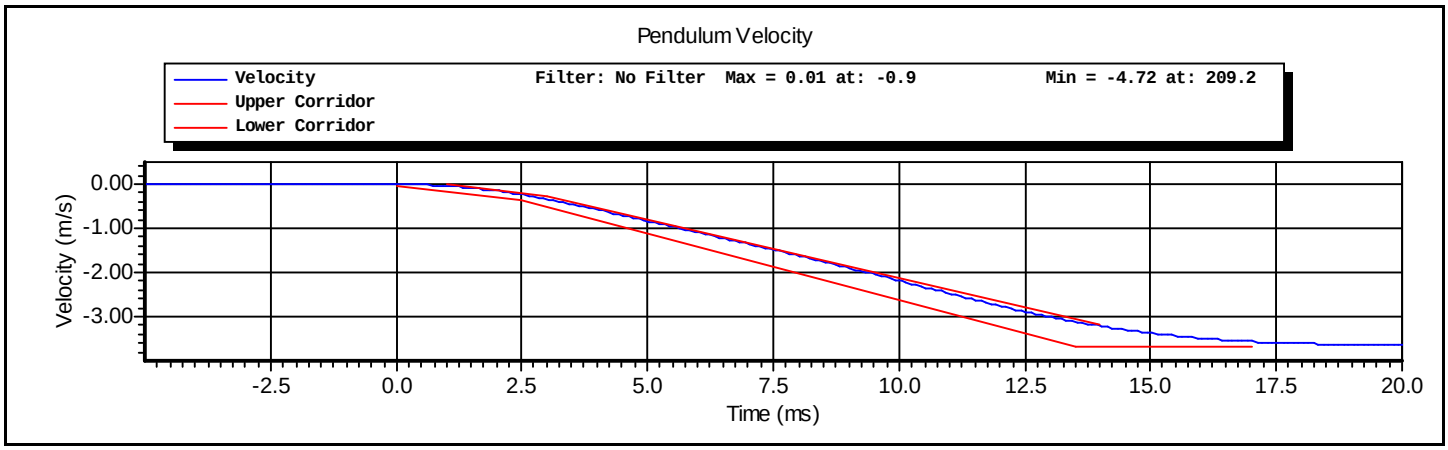
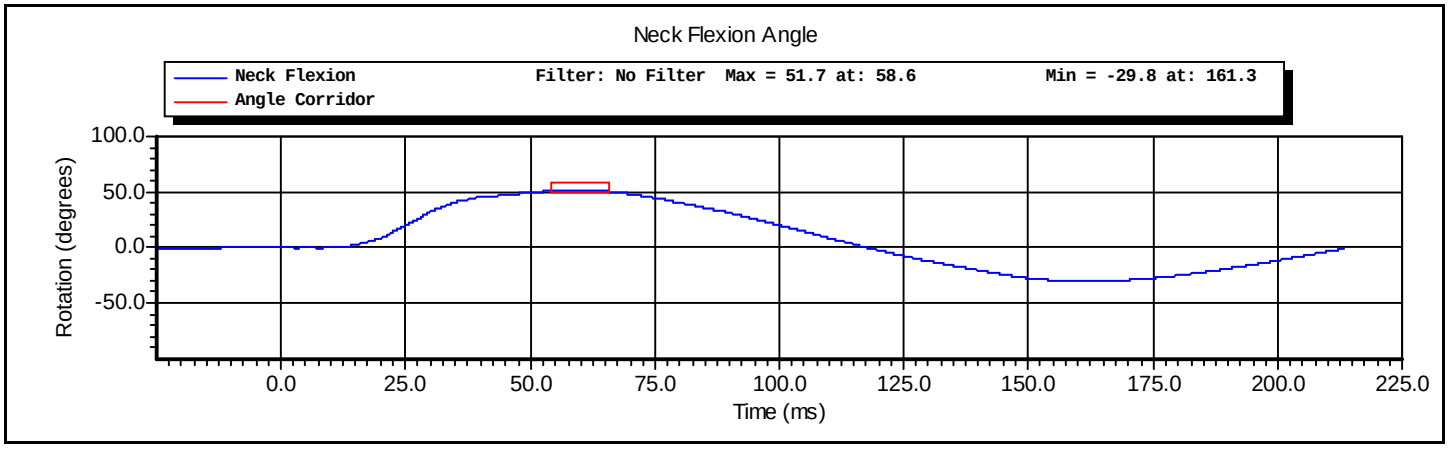
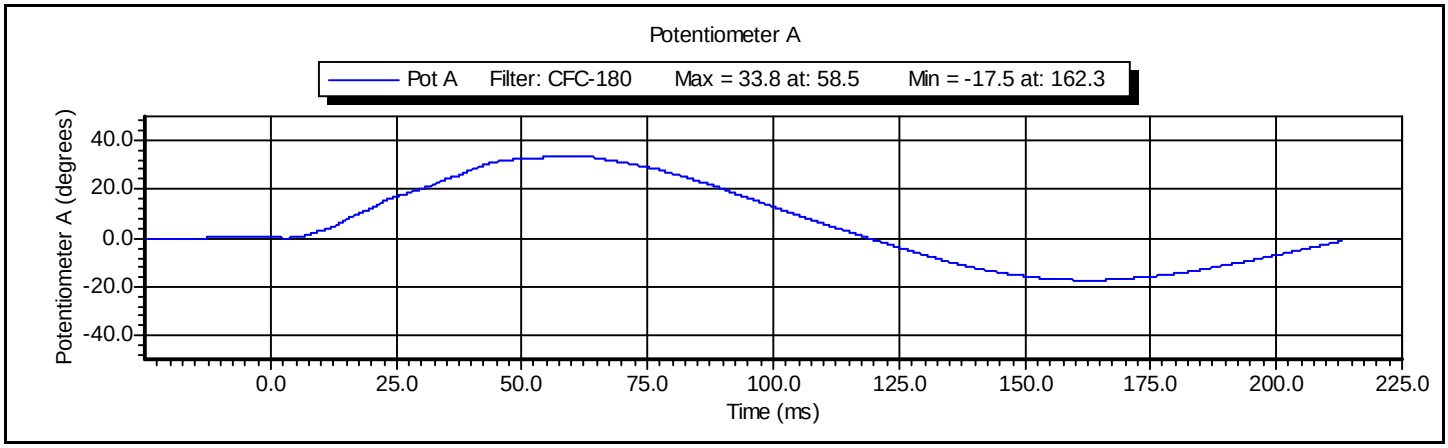
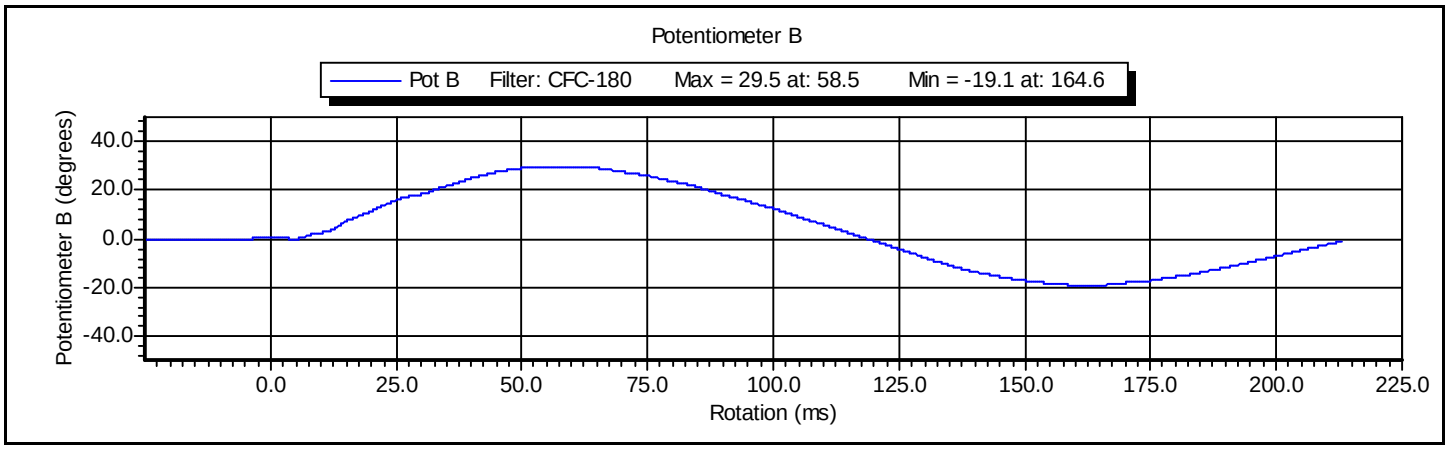
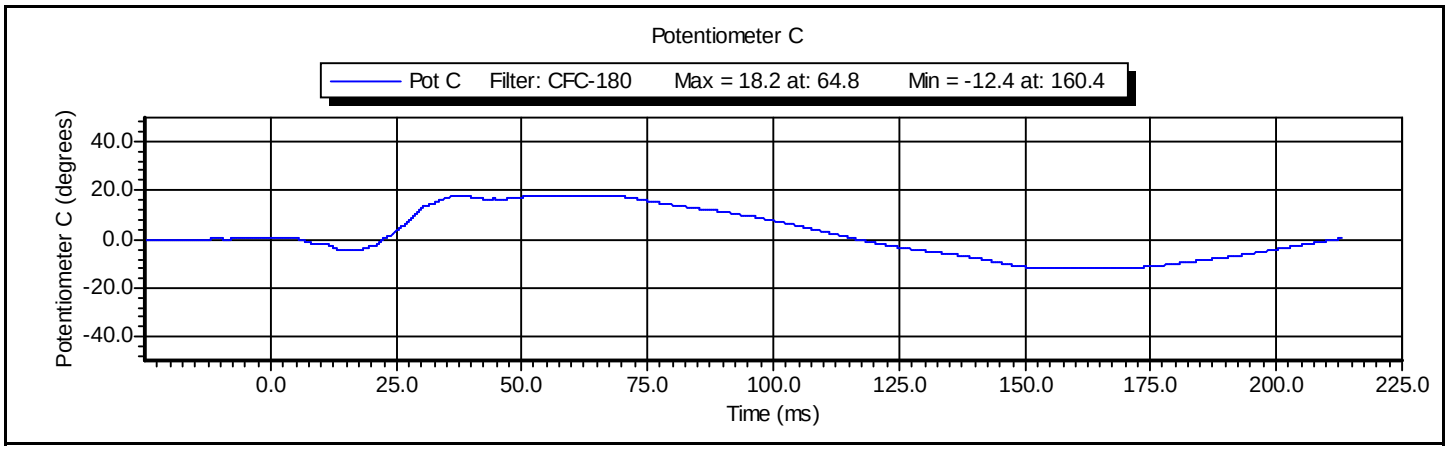
Test Name:	**Neck Flexion**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Neck Flexion**	Test Date:	**1/13/2011**
Test Number:	**1**	Test Time:	**12:05:19 PM**











Test ID: **Neck Flexion** Test Time: **12:05:19 PM** Test Date: **1/13/2011**

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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:	**1/14/2011**
Test Number:	**1**	Test Time:	**2:34:23 PM**

Component Part Number	Component Serial Number
960715-313	

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.8**	deg C	P
Humidity	10.0	--	70.0	**26.0**	%RH	P
Velocity	4.20	--	4.40	**4.35**	m/s	P
Pendulum Acceleration	-10.50	--	-7.50	**-9.97**	g	P

All test parameters are within specifications

Technician: **Don Schenk** Signature: _____

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

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2011**
Endevco	**7264-2000**	**P66930**	**10/5/2010**

Test ID: **Shoulder** Test Time: **2:34:23 PM** Test Date: **1/14/2011**

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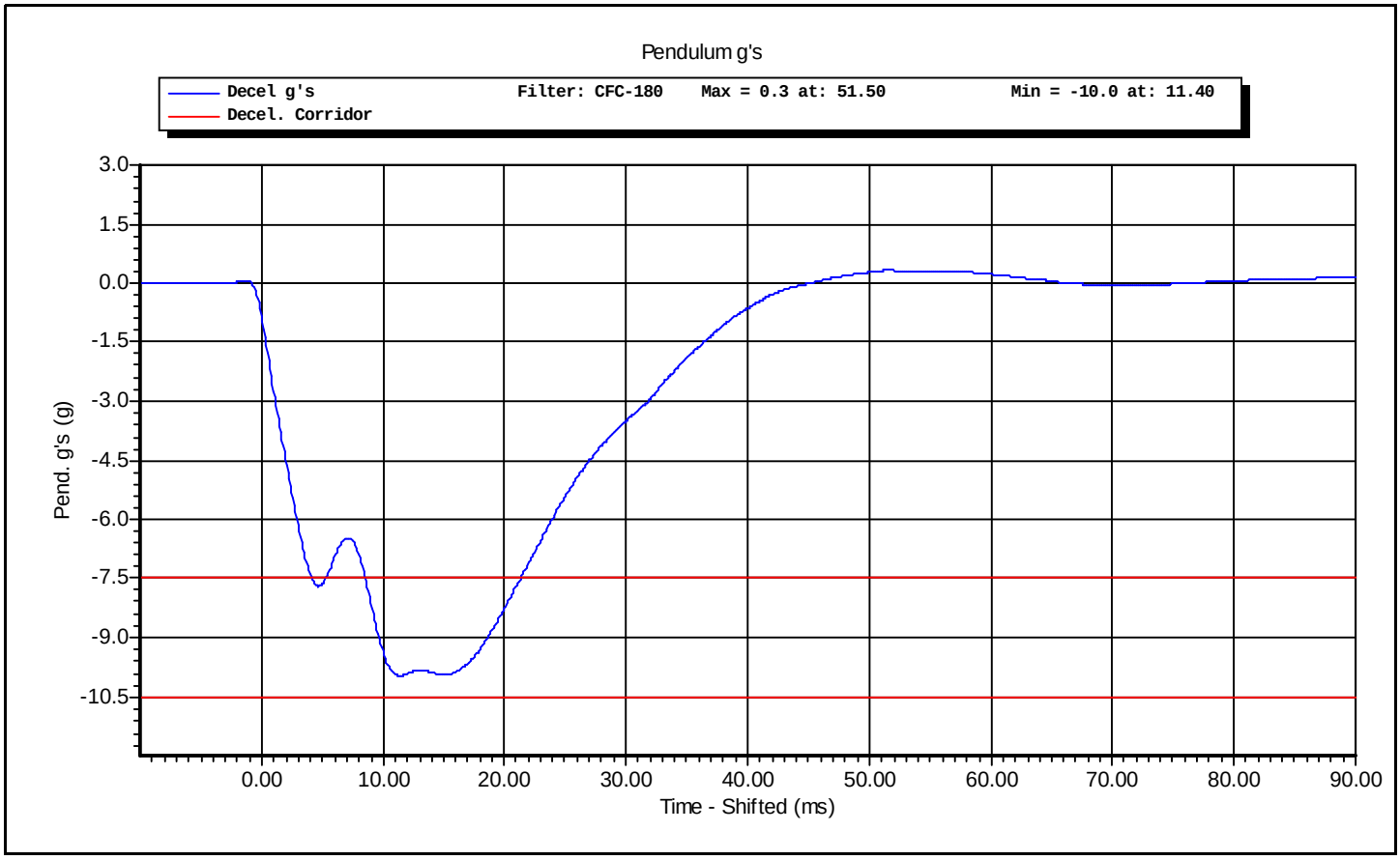
Test Name:	**Shoulder Impact**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Shoulder**	Test Date:	**1/14/2011**
Test Number:	**1**	Test Time:	**2:34:23 PM**



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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:	**Upper Rib 4.0ms**	Test Date:	**1/13/2011**
Test Number:	**1**	Test Time:	**2:57:45 PM**

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

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.2**	deg C	P
Humidity	10.0	--	70.0	**18.0**	%RH	P
Velocity	3.90	--	4.10	**3.97**	m/s	P
Rib Displacement	-51.00	--	-46.00	**-48.72**	mm	P
Drop Height	807.0	--	823.0	**815.0**	mm	P

All test parameters are within specifications

Technician: **Don Schenk** 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**	**1/11/2011**
Endevco	**7264-2000**	**P32222**	**11/17/2010**

Test ID: **Upper Rib 4.0ms** Test Time: **2:57:45 PM** Test Date: **1/13/2011**

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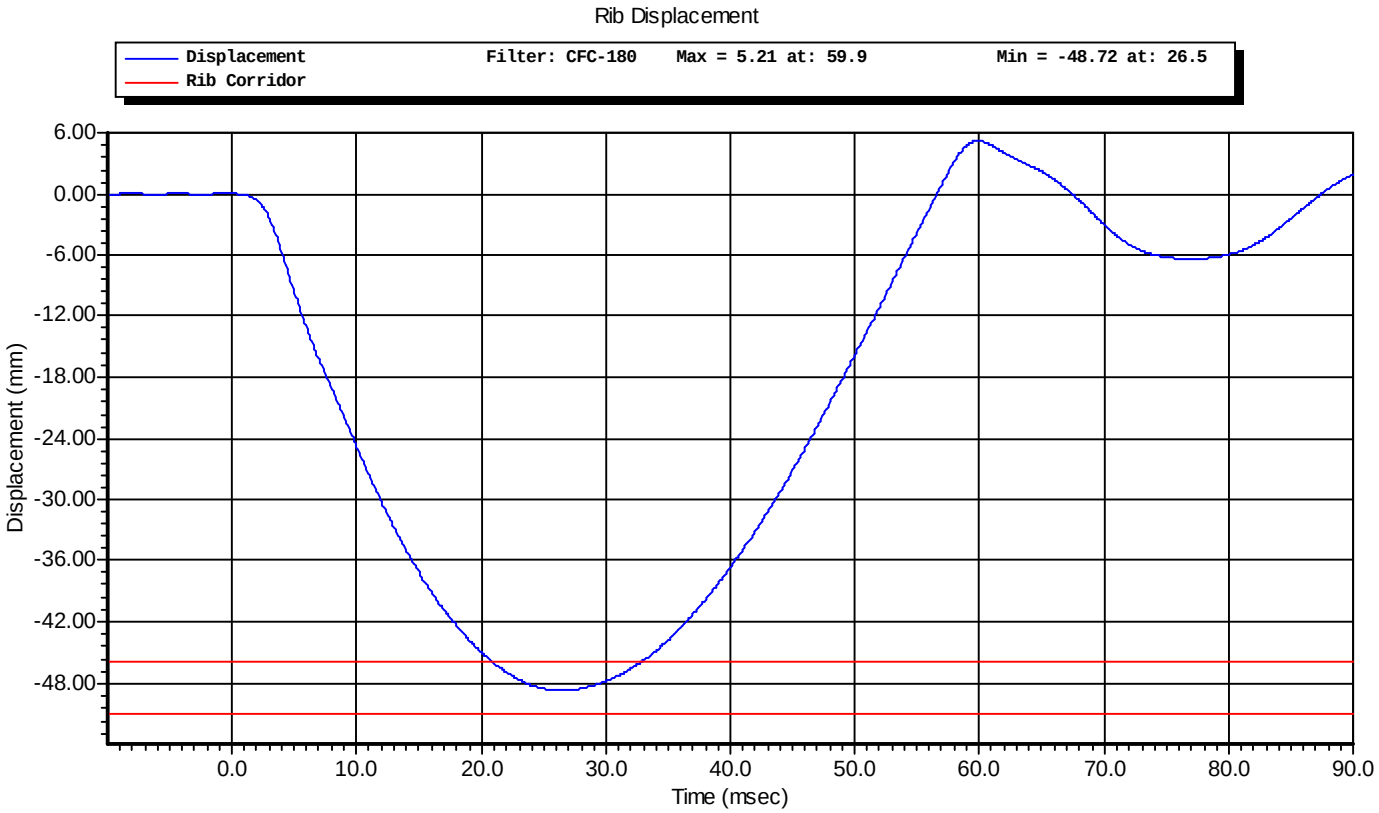
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**4.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Upper Rib 4.0ms**	Test Date:	**1/13/2011**
Test Number:	**1**	Test Time:	**2:57:45 PM**



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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 3.0 m/s**	Test Date:	**1/13/2011**
Test Number:	**1**	Test Time:	**3:04:18 PM**

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

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.2**	deg C	P
Humidity	10.0	--	70.0	**18.0**	%RH	P
Velocity	2.90	--	3.10	**2.97**	m/s	P
Rib Displacement	-40.00	--	-36.00	**-37.90**	mm	P
Drop Height	454	--	464	**459**	mm	P

All test parameters are within specifications

Technician: **Don Schenk** 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**	**1/11/2011**
Endevco	**7264-2000**	**P32222**	**11/17/2010**

Test ID: **Upper Rib 3.0 m/s** Test Time: **3:04:18 PM** Test Date: **1/13/2011**

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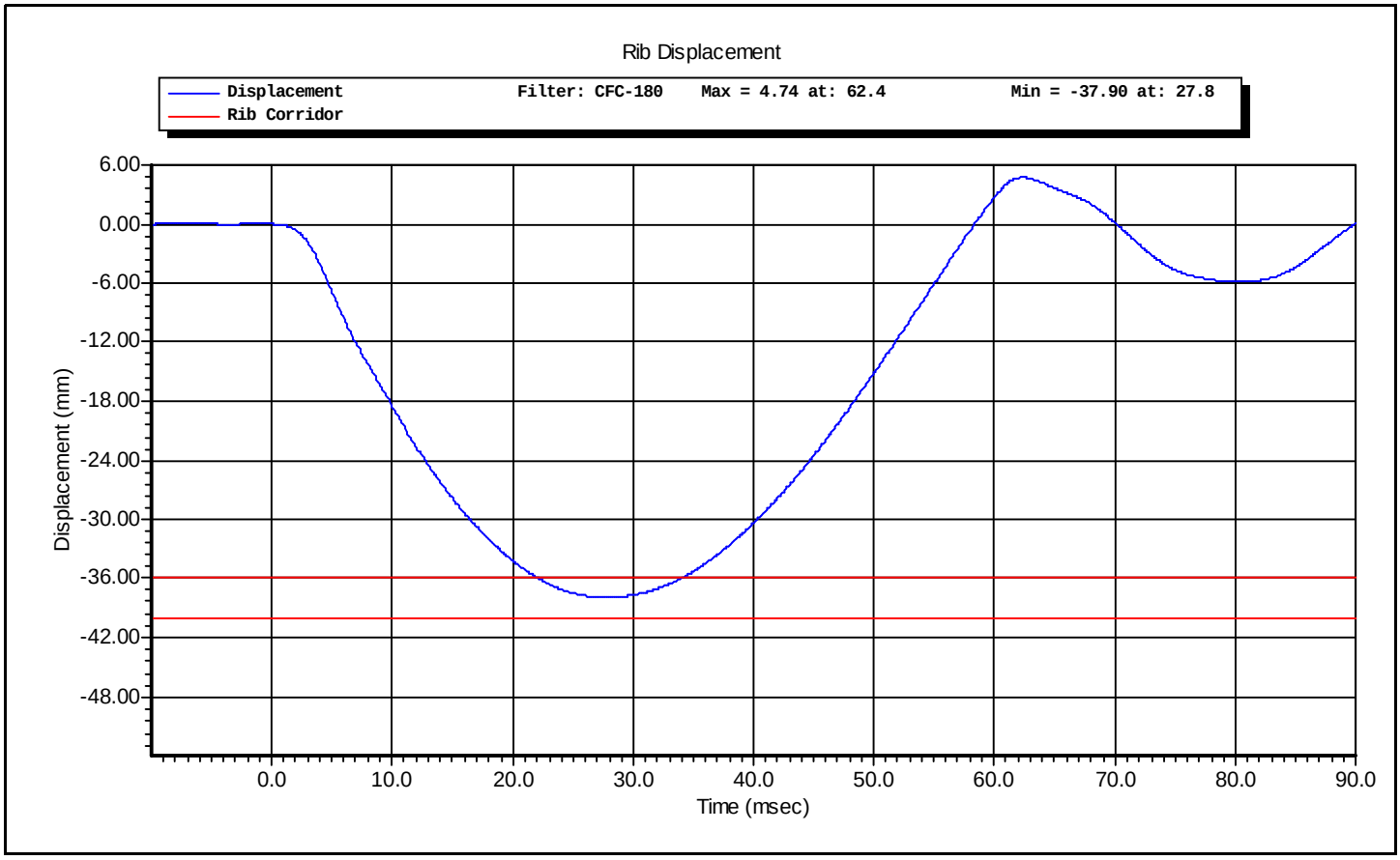
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**3.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Upper Rib 3.0 m/s**	Test Date:	**1/13/2011**
Test Number:	**1**	Test Time:	**3:04:18 PM**



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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 4.0 m/s**	Test Date:	**1/13/2011**
Test Number:	**1**	Test Time:	**3:11:22 PM**

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

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.2**	deg C	P
Humidity	10.0	--	70.0	**18.0**	%RH	P
Velocity	3.90	--	4.10	**3.97**	m/s	P
Rib Displacement	-51.00	--	-46.00	**-48.11**	mm	P
Drop Height	807.0	--	823.0	**815.0**	mm	P

All test parameters are within specifications

Technician: **Don Sheck** Signature: _____

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

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REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Honeywell	**MLT-38000**	**DS-185**	**4/23/2010**
DentonATD	**Velocity Trap**	**1**	**1/11/2011**
Endevco	**7264-2000**	**P32222**	**11/17/2010**

Test ID: **Middle Rib 4.0 m/s** Test Time: **3:11:22 PM** Test Date: **1/13/2011**

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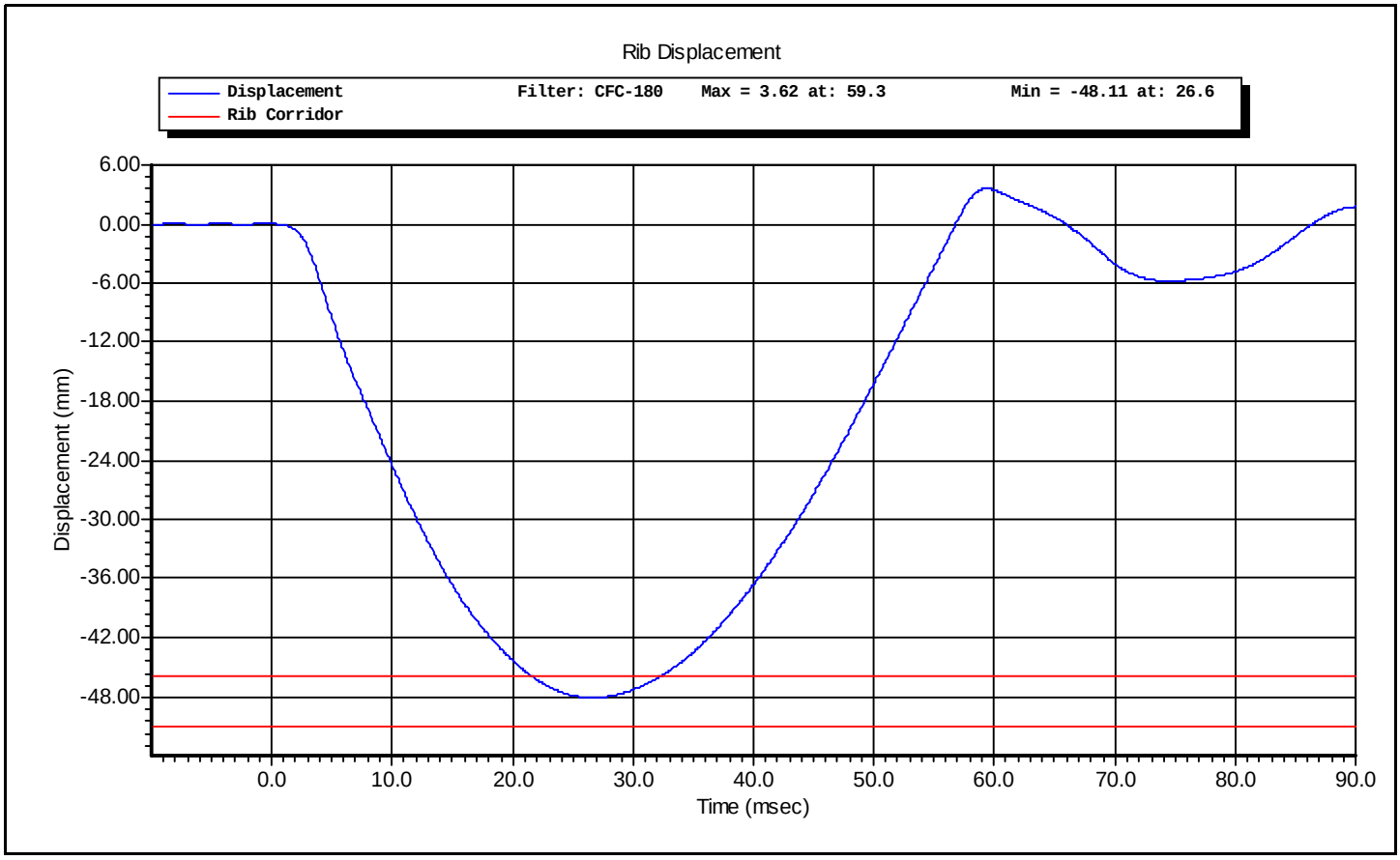
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**4.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Middle Rib 4.0 m/s**	Test Date:	**1/13/2011**
Test Number:	**1**	Test Time:	**3:11:22 PM**



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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:	**Middle Rib 3.0 m/s**	Test Date:	**1/13/2011**
Test Number:	**1**	Test Time:	**3:17:58 PM**

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

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.2**	deg C	P
Humidity	10.0	--	70.0	**18.0**	%RH	P
Velocity	2.90	--	3.10	**2.97**	m/s	P
Rib Displacement	-40.00	--	-36.00	**-37.34**	mm	P
Drop Height	454	--	464	**459**	mm	P

All test parameters are within specifications

Technician: **Don Schek** 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**	**1/11/2011**
Endevco	**7264-2000**	**P32222**	**11/17/2010**

Test ID: **Middle Rib 3.0 m/s** Test Time: **3:17:58 PM** Test Date: **1/13/2011**

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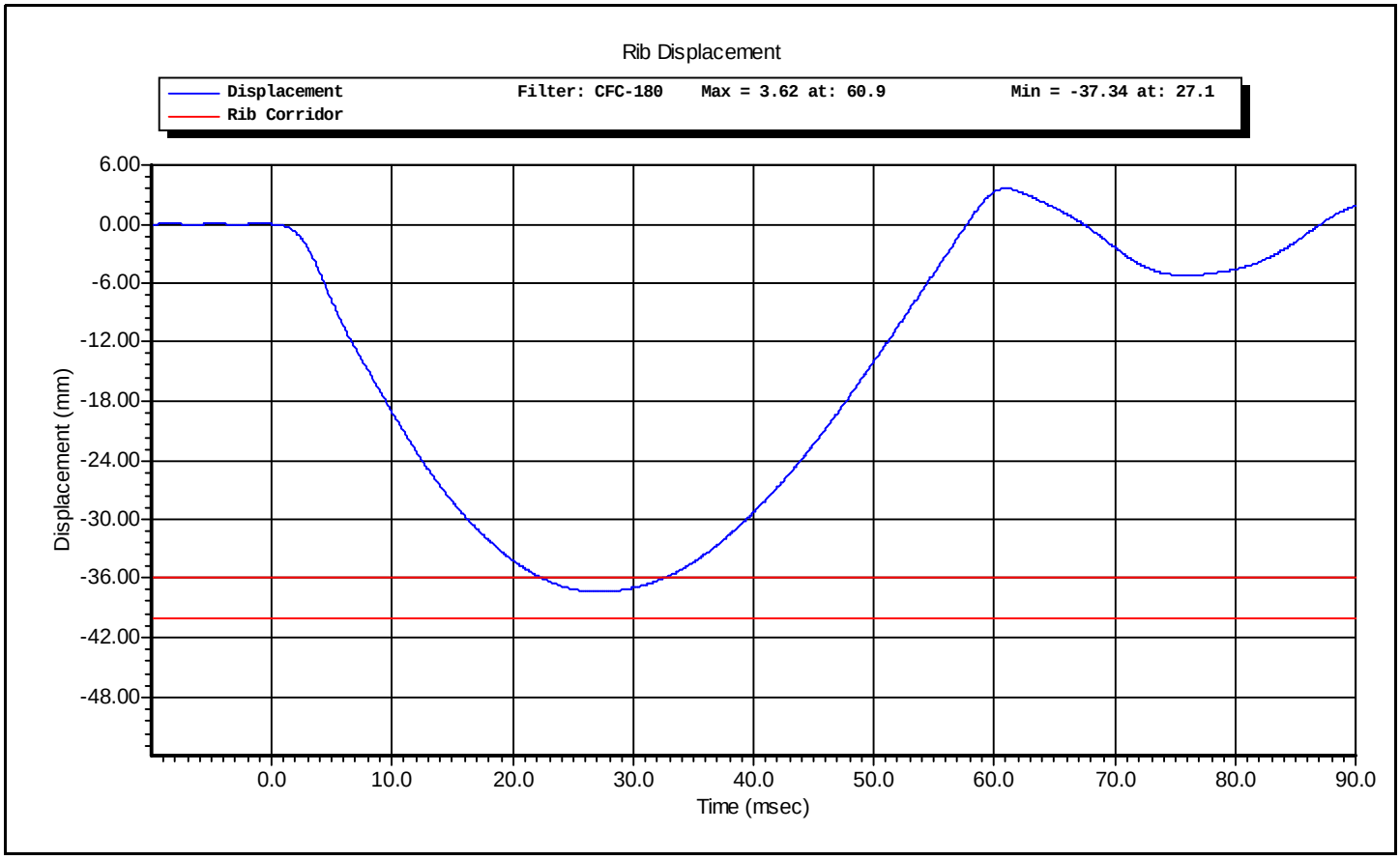
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**3.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Middle Rib 3.0 m/s**	Test Date:	**1/13/2011**
Test Number:	**1**	Test Time:	**3:17:58 PM**



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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 4.0 m/s**	Test Date:	**1/13/2011**
Test Number:	**1**	Test Time:	**3:22:49 PM**

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

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.2**	deg C	P
Humidity	10.0	--	70.0	**18.0**	%RH	P
Velocity	3.90	--	4.10	**3.98**	m/s	P
Rib Displacement	-51.00	--	-46.00	**-47.66**	mm	P
Drop Height	807.0	--	823.0	**815.0**	mm	P

All test parameters are within specifications

Technician: **Don Schek** 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**	**1/11/2011**
Endevco	**7264-2000**	**P32222**	**11/17/2010**

Test ID: **Lower Rib 4.0 m/s** Test Time: **3:22:49 PM** Test Date: **1/13/2011**

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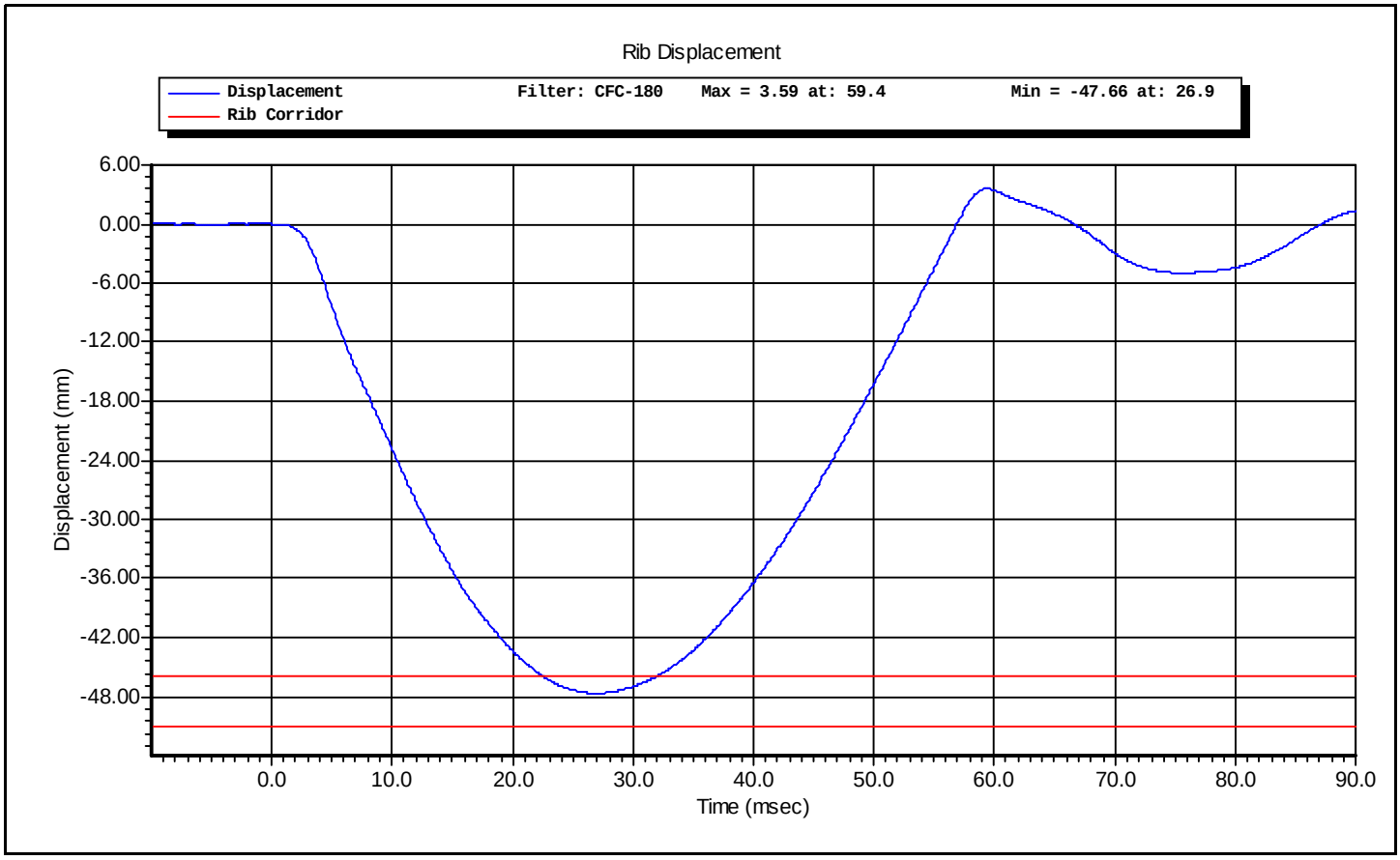
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**4.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Lower Rib 4.0 m/s**	Test Date:	**1/13/2011**
Test Number:	**1**	Test Time:	**3:22:49 PM**



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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 3.0 m/s**	Test Date:	**1/13/2011**
Test Number:	**1**	Test Time:	**3:30:23 PM**

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

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.2**	deg C	P
Humidity	10.0	--	70.0	**18.0**	%RH	P
Velocity	2.90	--	3.10	**2.98**	m/s	P
Rib Displacement	-40.00	--	-36.00	**-37.46**	mm	P
Drop Height	454	--	464	**459**	mm	P

All test parameters are within specifications

Technician: **Don Schek** 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**	**1/11/2011**
Endevco	**7264-2000**	**P32222**	**11/17/2010**

Test ID: **Lower Rib 3.0 m/s** Test Time: **3:30:23 PM** Test Date: **1/13/2011**

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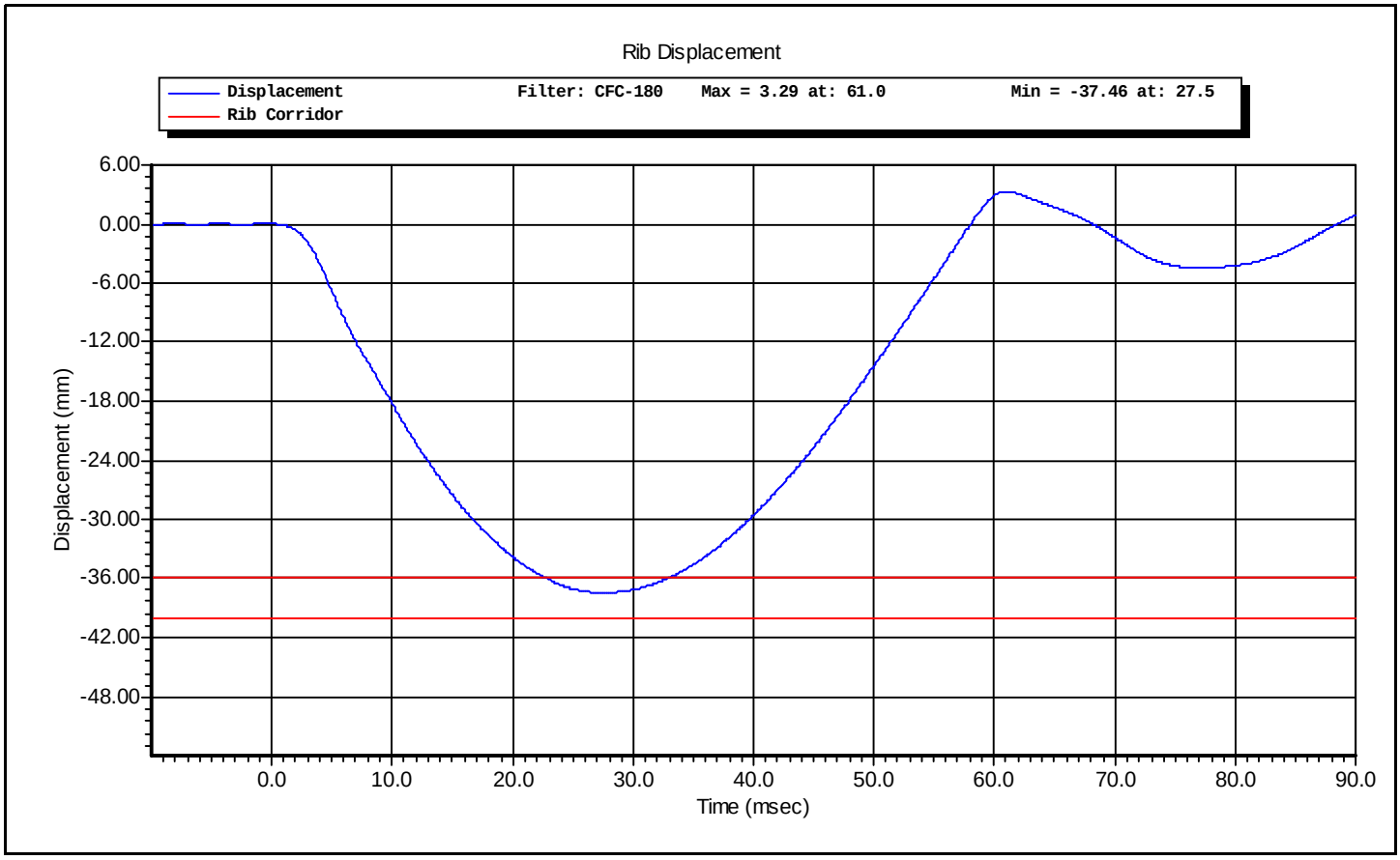
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**3.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Lower Rib 3.0 m/s**	Test Date:	**1/13/2011**
Test Number:	**1**	Test Time:	**3:30:23 PM**



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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:	**1/14/2011**
Test Number:	**1**	Test Time:	**3:00:57 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	**21.7**	deg C	P
Humidity	10.0	--	70.0	**26.0**	%RH	P
Velocity	5.40	--	5.60	**5.50**	m/s	P
Upper Rib Displacement	34.0	--	41.0	**36.1**	mm	P
Middle Rib Displacement	37.0	--	45.0	**41.3**	mm	P
Lower Rib Displacement	37.0	--	44.0	**41.3**	mm	P
Impactor Force	5100	--	6200	**5547**	N	P

All test parameters are within specifications

Technician: **Don Schenk** Signature: _____

Supervisor: **D Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2011**
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: **3:00:57 PM** Test Date: **1/14/2011**

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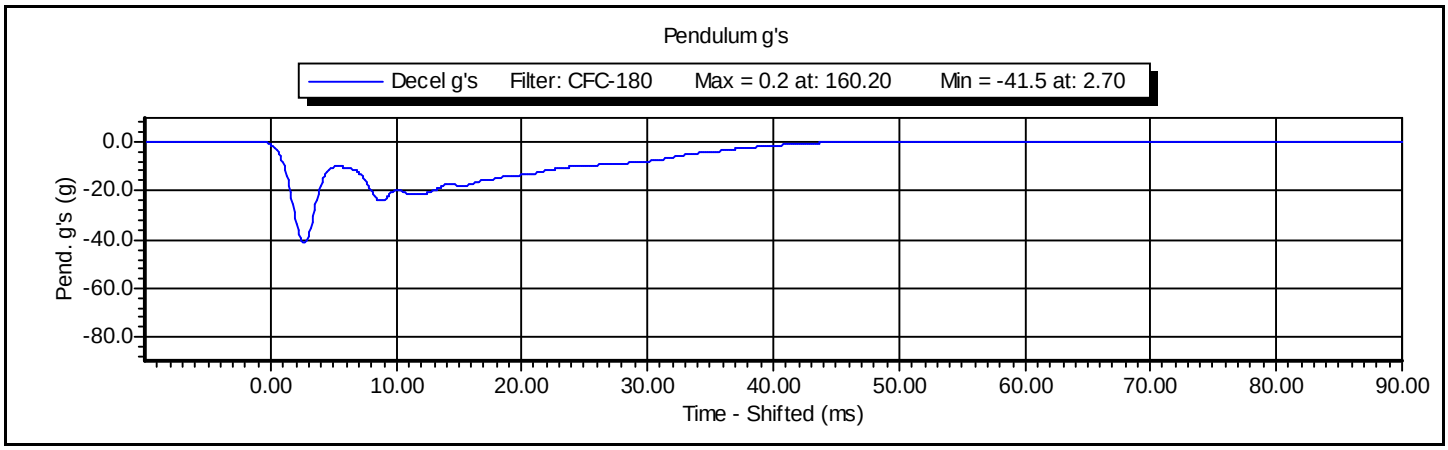
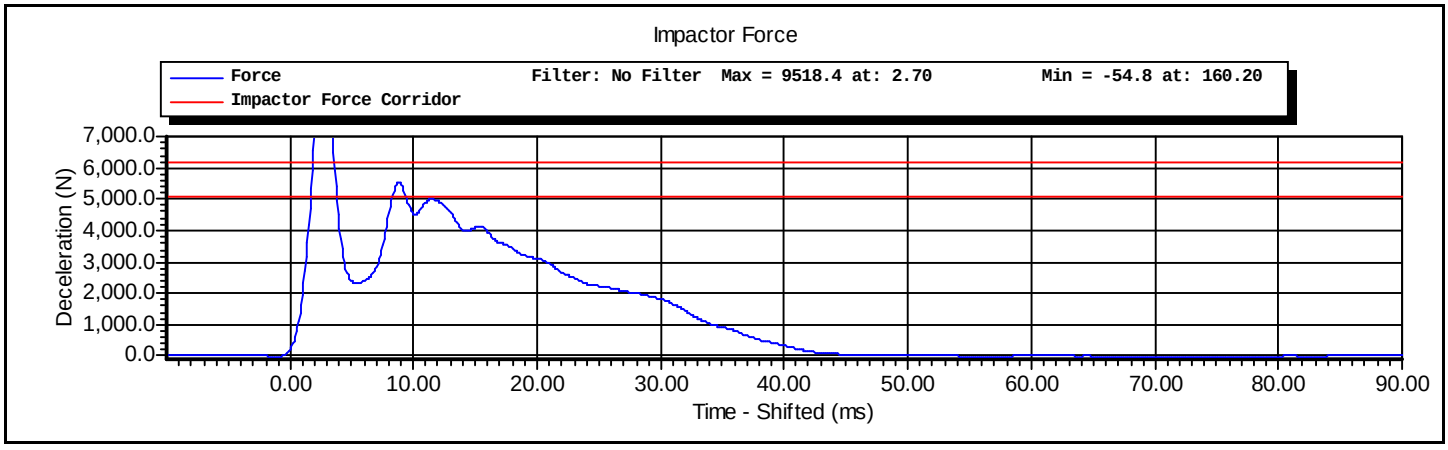
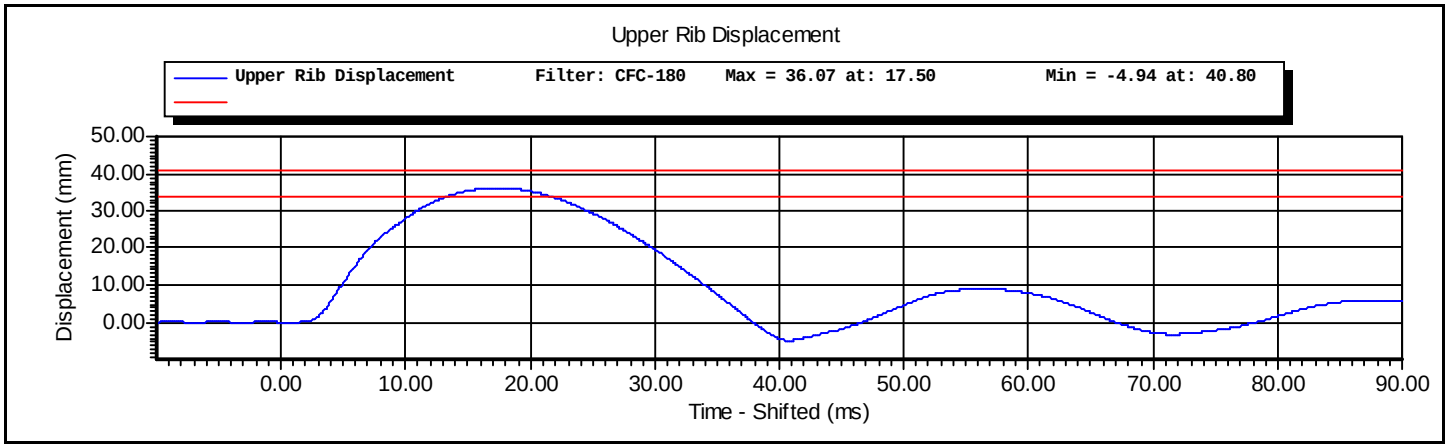
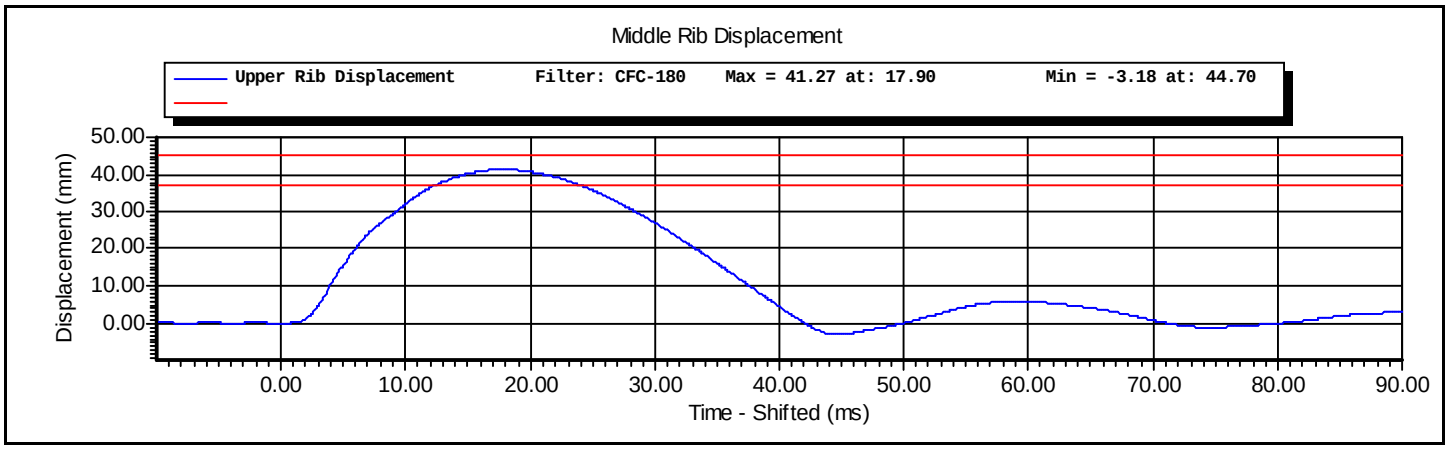
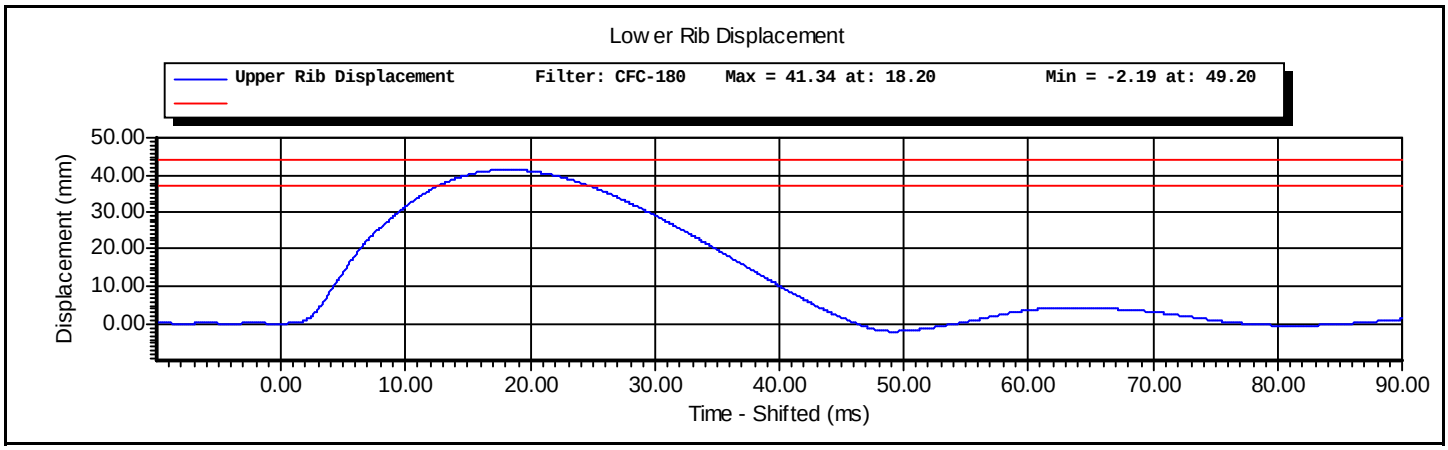
Test Name:	**Thorax Impact**	Revision:	**8/15/2008**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Thorax**	Test Date:	**1/14/2011**
Test Number:	**1**	Test Time:	**3:00:57 PM**











Test ID: **Thorax** Test Time: **3:00:57 PM** Test Date: **1/14/2011**

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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:	**1/17/2011**
Test Number:	**3**	Test Time:	**12:59:30 PM**

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

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.2**	deg C	P
Humidity	10	--	70	**16**	%RH	P
Velocity	3.90	--	4.10	**4.08**	m/s	P
Peak Abdominal Force	-2.70	--	-2.20	**-2.59**	kN	P
Time At Peak Abdominal Force	10.0	--	12.3	**10.2**	ms	P
Maximum Pendulum Force	-4.80	--	-4.00	**-4.69**	kN	P
Time at Peak Pendumlum Force	10.6	--	13.0	**10.8**	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**	**1/11/2011**
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: **12:59:30 PM** Test Date: **1/17/2011**

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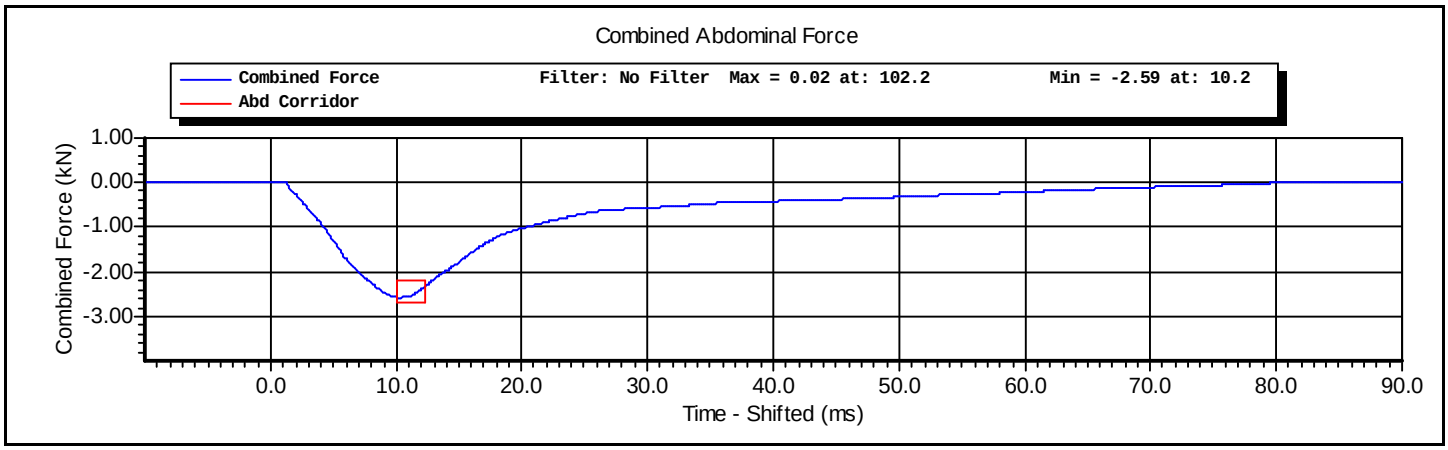
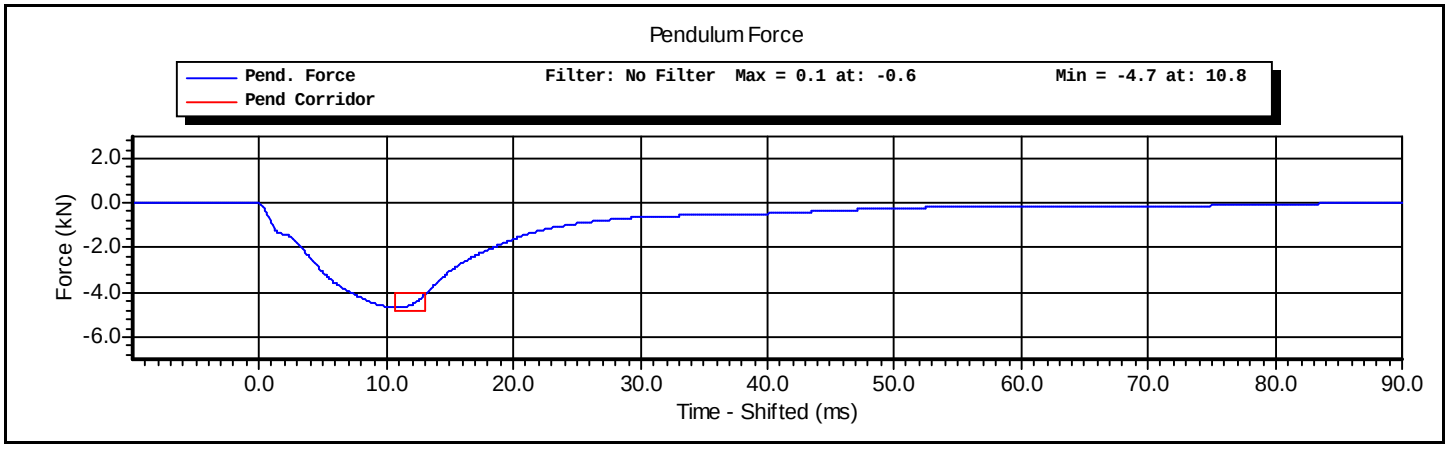
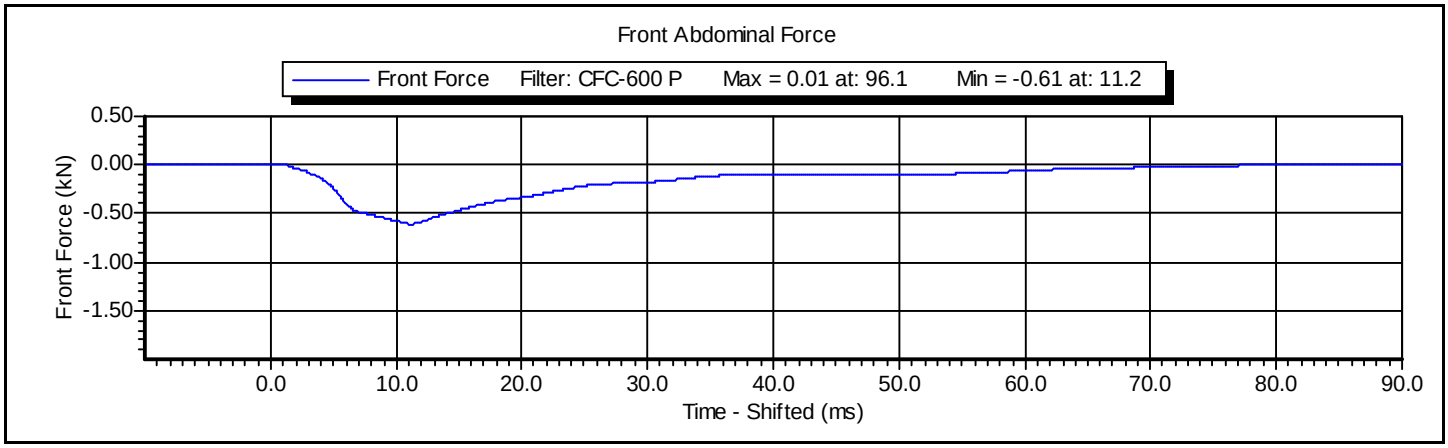
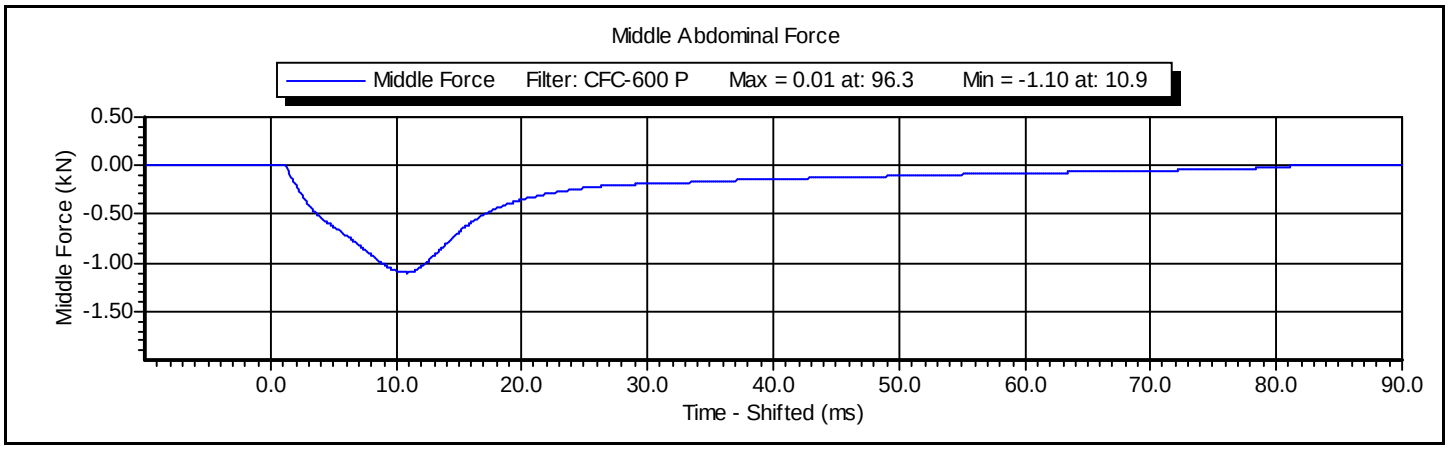
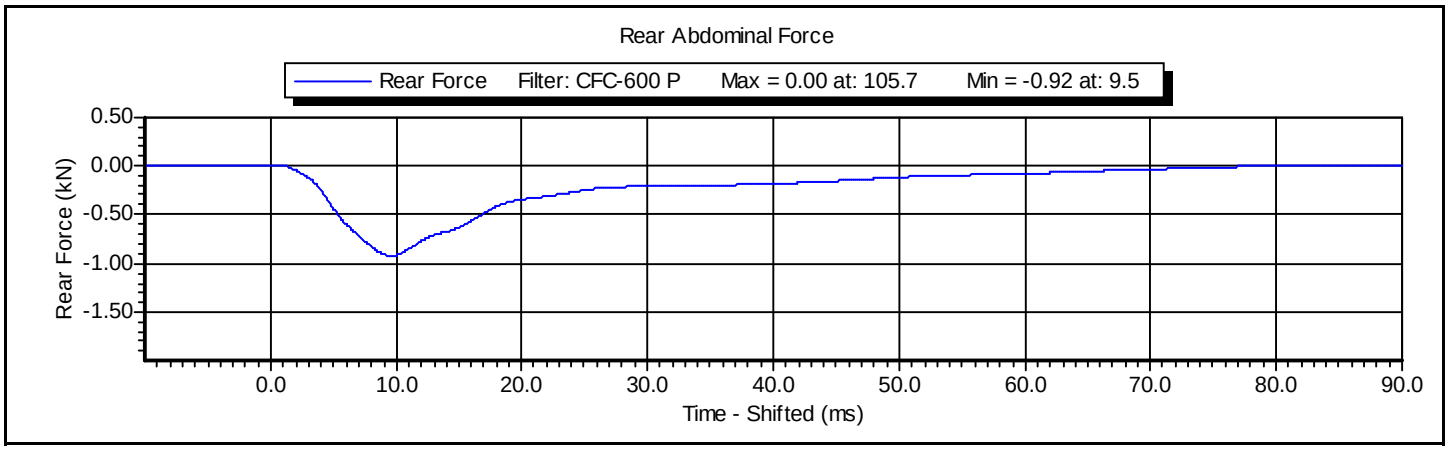
Test Name:	**Abdominal Impact**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Abdomen**	Test Date:	**1/17/2011**
Test Number:	**3**	Test Time:	**12:59:30 PM**











Test ID: **Abdomen** Test Time: **12:59:30 PM** Test Date: **1/17/2011**

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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:	**1/13/2011**
Test Number:	**2**	Test Time:	**2:08:37 PM**

Component Part Number	Component Serial Number
175-5501	**19-0545**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.2**	deg C	P
Humidity	10	--	70	**18**	%RH	P
Velocity	5.95	--	6.15	**6.15**	m/s	P
Maximum Headform Flexion Angle	45.0	--	55.0	**48.6**	degrees	P
Time at Maximum Headform Flexion Angle	39.0	--	53.0	**44.5**	ms	P
Decay to Zero Degrees	37.0	--	57.0	**38.6**	ms	P
Velocity Corridor		--				P

All test parameters are within specifications

Technician: **Don Schenk** Signature: _____

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

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2011**
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: **2:08:37 PM** Test Date: **1/13/2011**

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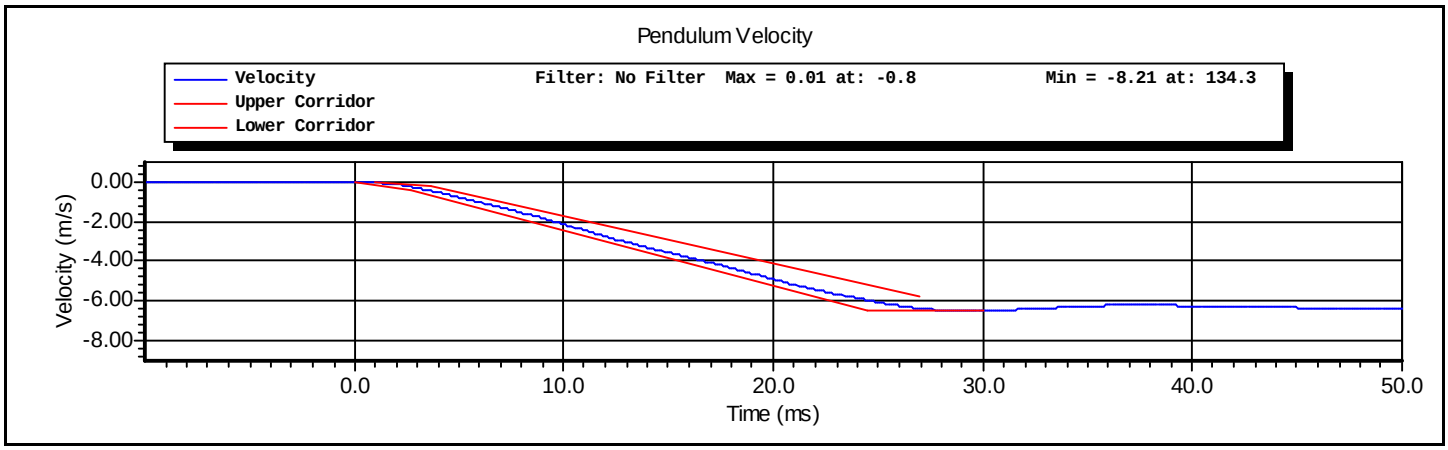
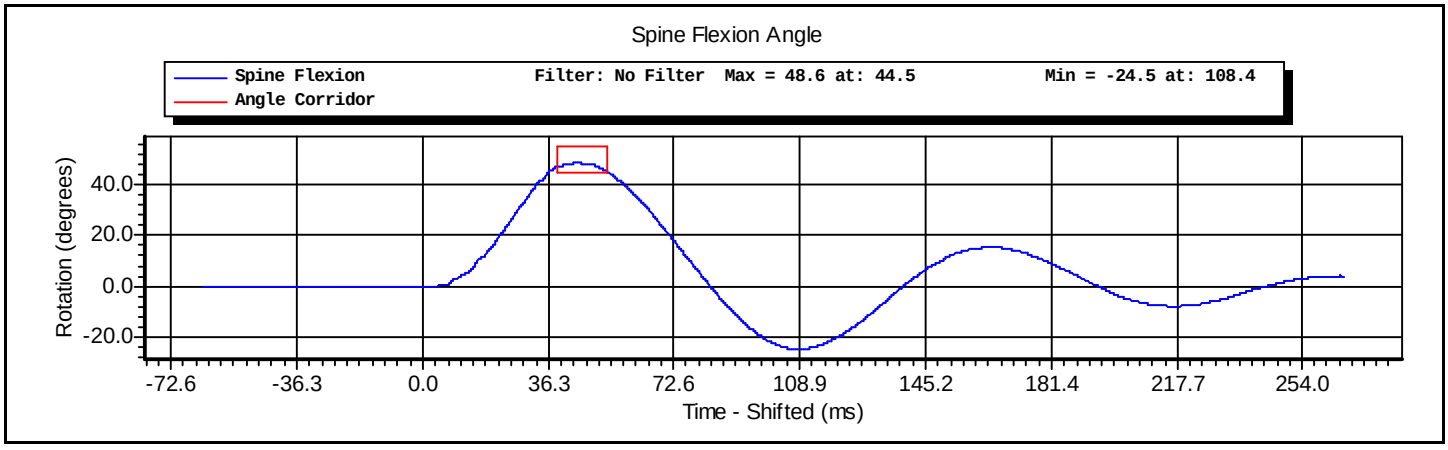
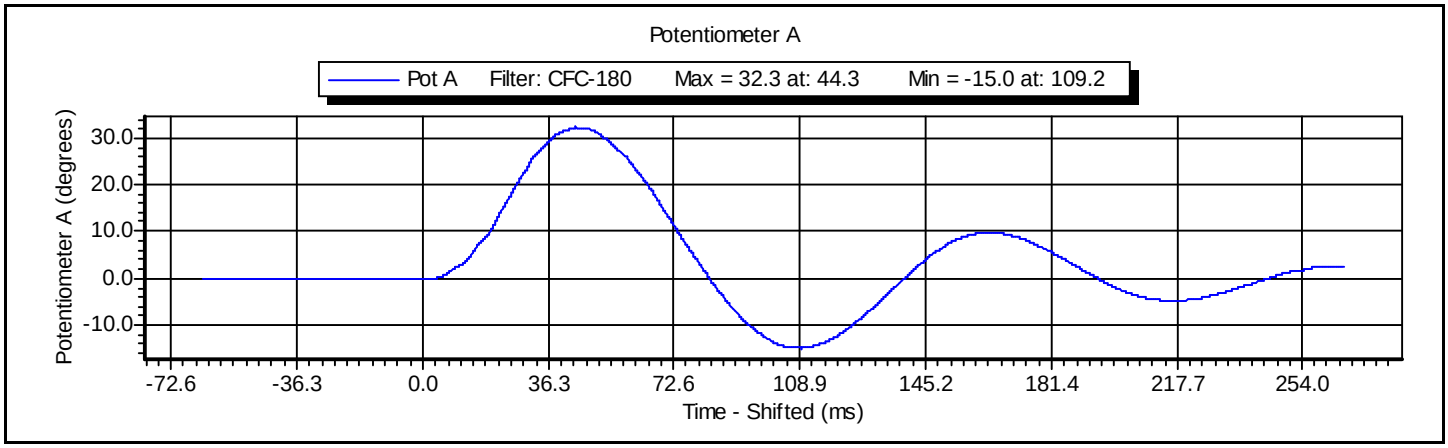
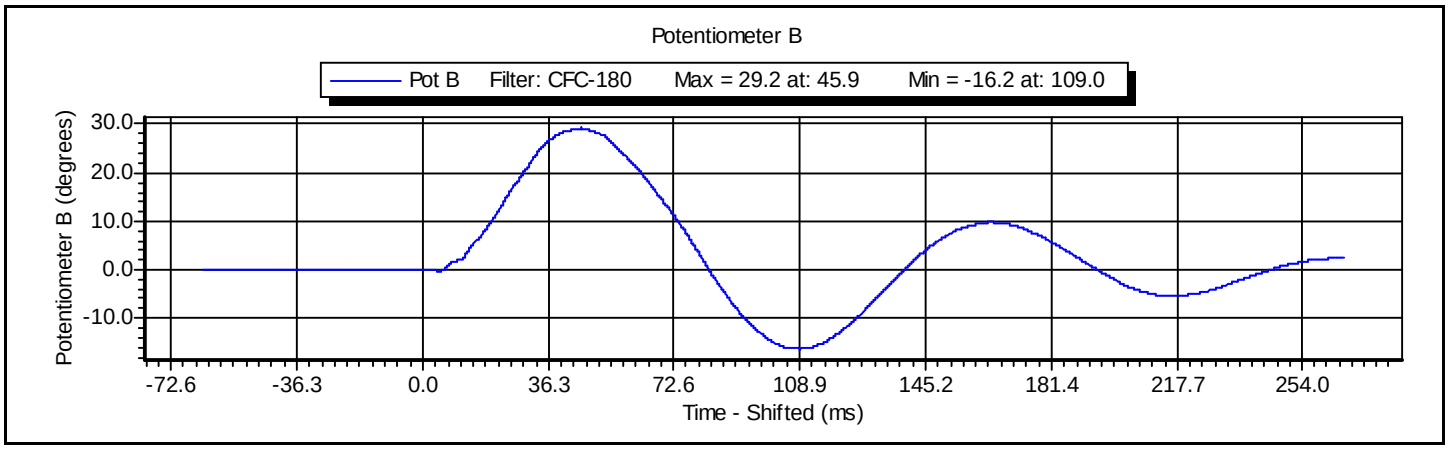
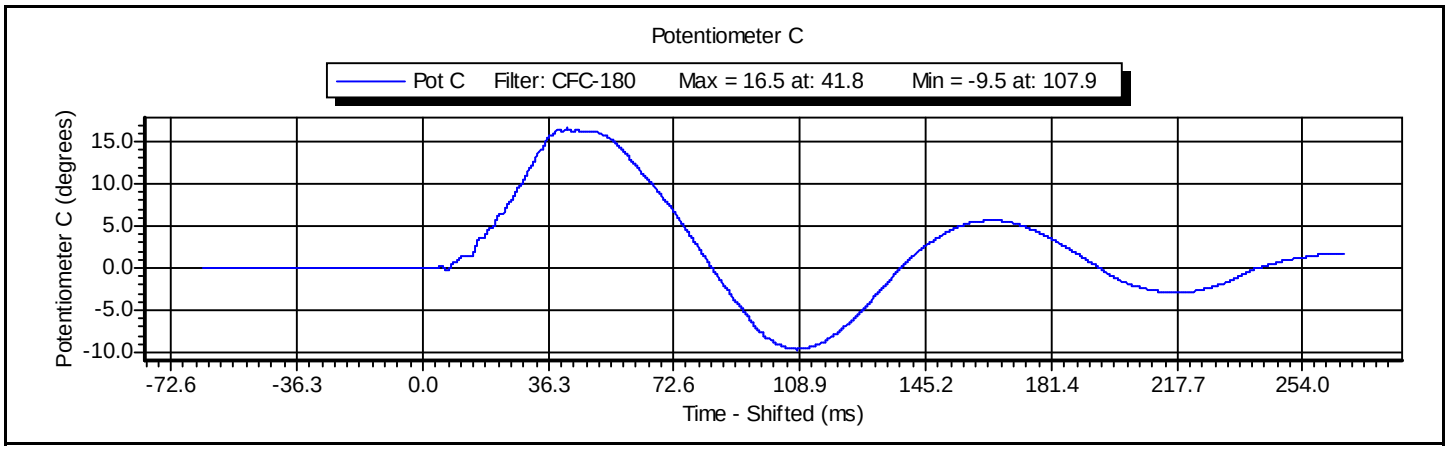
Test Name:	**Lumbar Spine**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Spine Flexion**	Test Date:	**1/13/2011**
Test Number:	**2**	Test Time:	**2:08:37 PM**











Test ID: **Spine Flexion** Test Time: **2:08:37 PM** Test Date: **1/13/2011**

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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:	**1/18/2011**
Test Number:	**1**	Test Time:	**8:49:51 AM**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.6**	deg C	P
Humidity	10	--	70	**26**	%RH	P
Velocity	4.20	--	4.40	**4.36**	m/s	P
Peak Pendulum Force	-5.40	--	-4.70	**-5.21**	kN	P
Time at Peak Pendulum Force	11.80	--	16.10	**11.86**	ms	P
Peak Pubic Symphysis Force	-1.59	--	-1.23	**-1.45**	kN	P
Time at Peak Pubic Symphysis Force	12.20	--	17.00	**12.66**	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**	**1/11/2011**
Endevco	**7264-2000**	**P66930**	**10/5/2010**
Denton	**3096**	**LC-456Fy**	**4/22/2010**

Test ID: **Pelvis** Test Time: **8:49:51 AM** Test Date: **1/18/2011**

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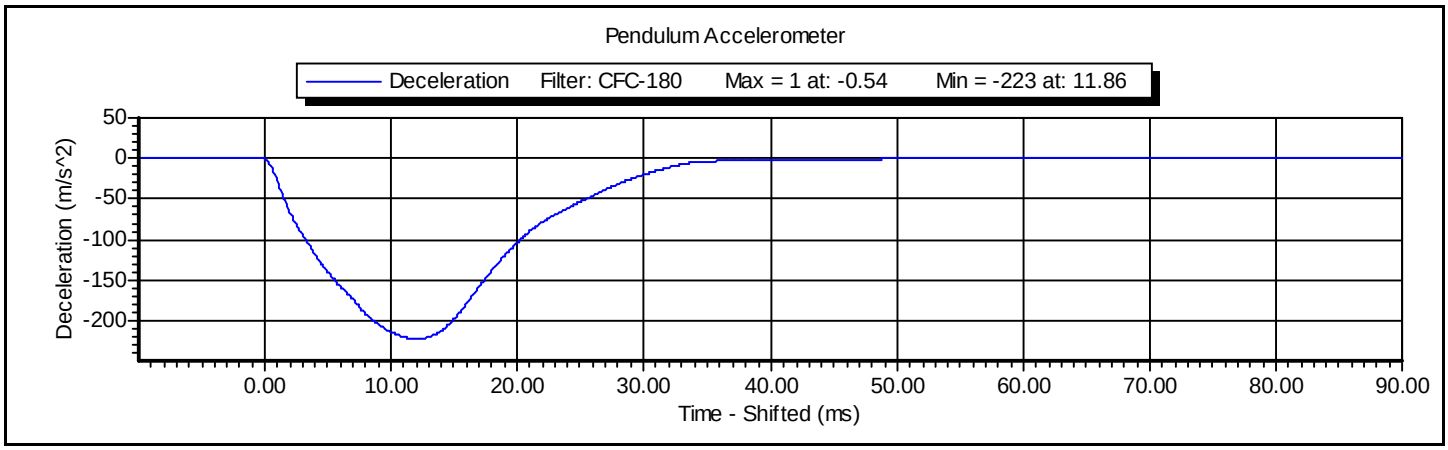
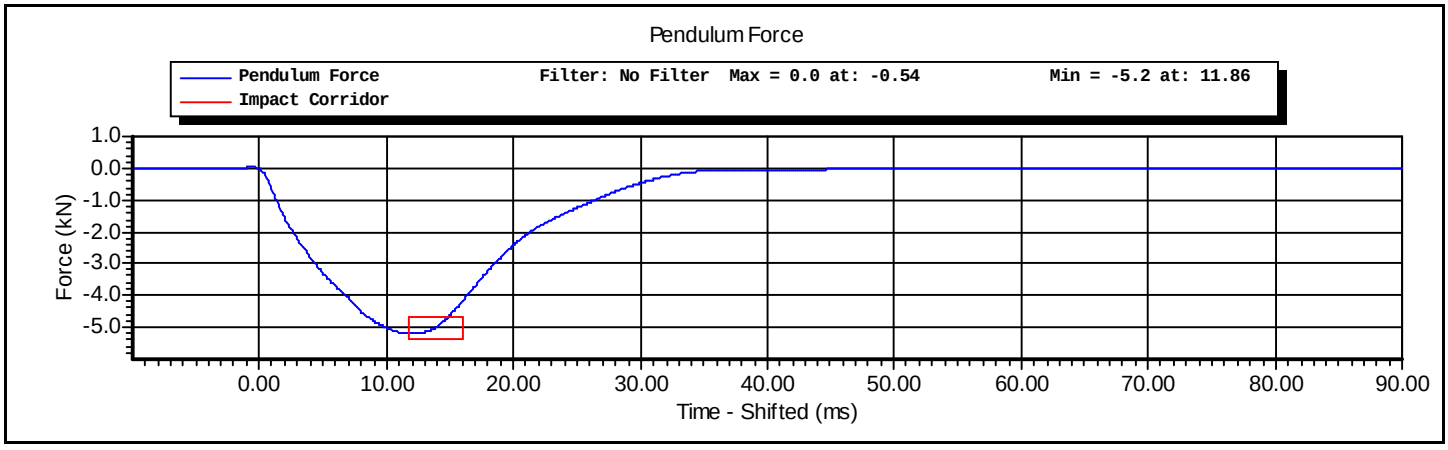
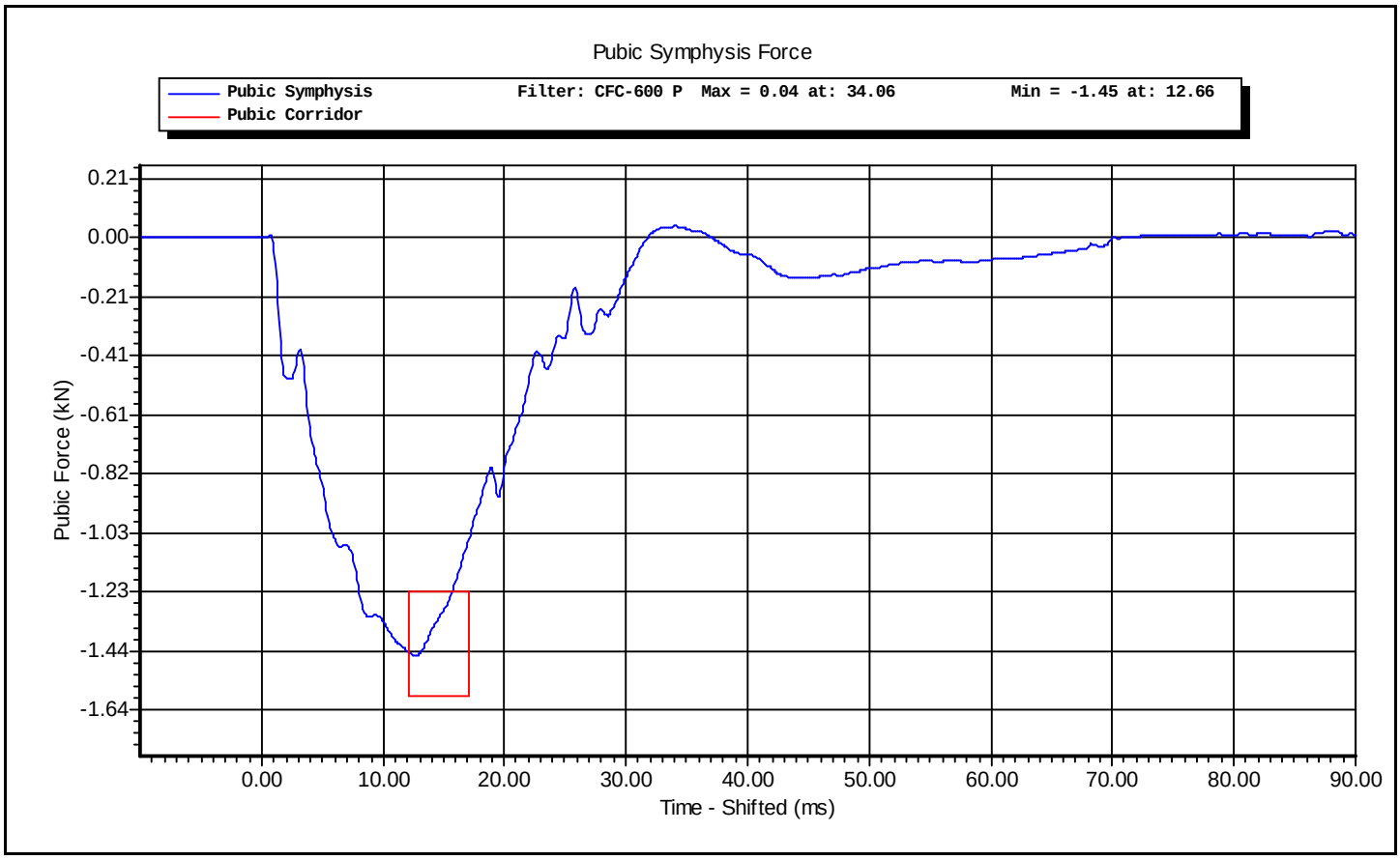
Test Name:	**Pelvis Impact**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Pelvis**	Test Date:	**1/18/2011**
Test Number:	**1**	Test Time:	**8:49:51 AM**







Test ID: **Pelvis** Test Time: **8:49:51 AM** Test Date: **1/18/2011**

CALIBRATION TEST RESULTS

POST-TEST

ES2-re No: 033

CONFIGURED FOR LEFT SIDE IMPACT

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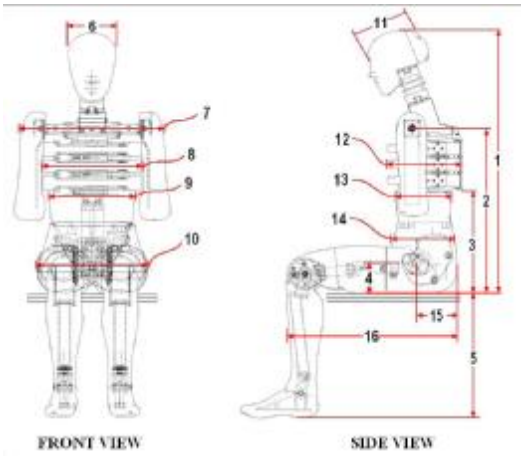
ES-2re External Measurements

NHTSA SN F033



Dim. No.	Description	Specification (mm)	Result (mm)	Pass/Fail
1	Sitting Height	900-918	911	Pass
2	Seat to Shoulder Joint	558-572	565	Pass
3	Seat to Lower Face of Thoracic Spine Box	346-356	355	Pass
4	Seat to Hip Joint (center of bolt)	97-103	102	Pass
5	Sole to Seat, Sitting	433-451	435	Pass
6	Head Width	152-158	158	Pass
7	Shoulder/Arm Width	461-479	470	Pass
8	Thorax Width	322-332	327	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	268	Pass
13	Abdomen Depth	194-204	198	Pass
14	Pelvis Depth	235-245	239	Pass
15	Back of Buttocks to Hip Joint (center of bolt)	150-160	156	Pass
16	Back of Buttocks to Front Knee	597-615	603	Pass

Technician: AR

Date: 2/10/2011

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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:	**1/21/2011**
Test Number:	**1**	Test Time:	**2:26:02 PM**

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

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.2**	deg C	P
Humidity	10	--	70	**16**	%RH	P
Resultant Acceleration	125	--	155	**148**	g	P
Oscillation	0.0	--	15.0	**5.6**	%	P
Fore-Aft Acceleration	-15.00	--	15.00	**4.97**	g	P

All test parameters are within specifications

Technician: **Don Schenk** 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: **2:26:02 PM** Test Date: **1/21/2011**

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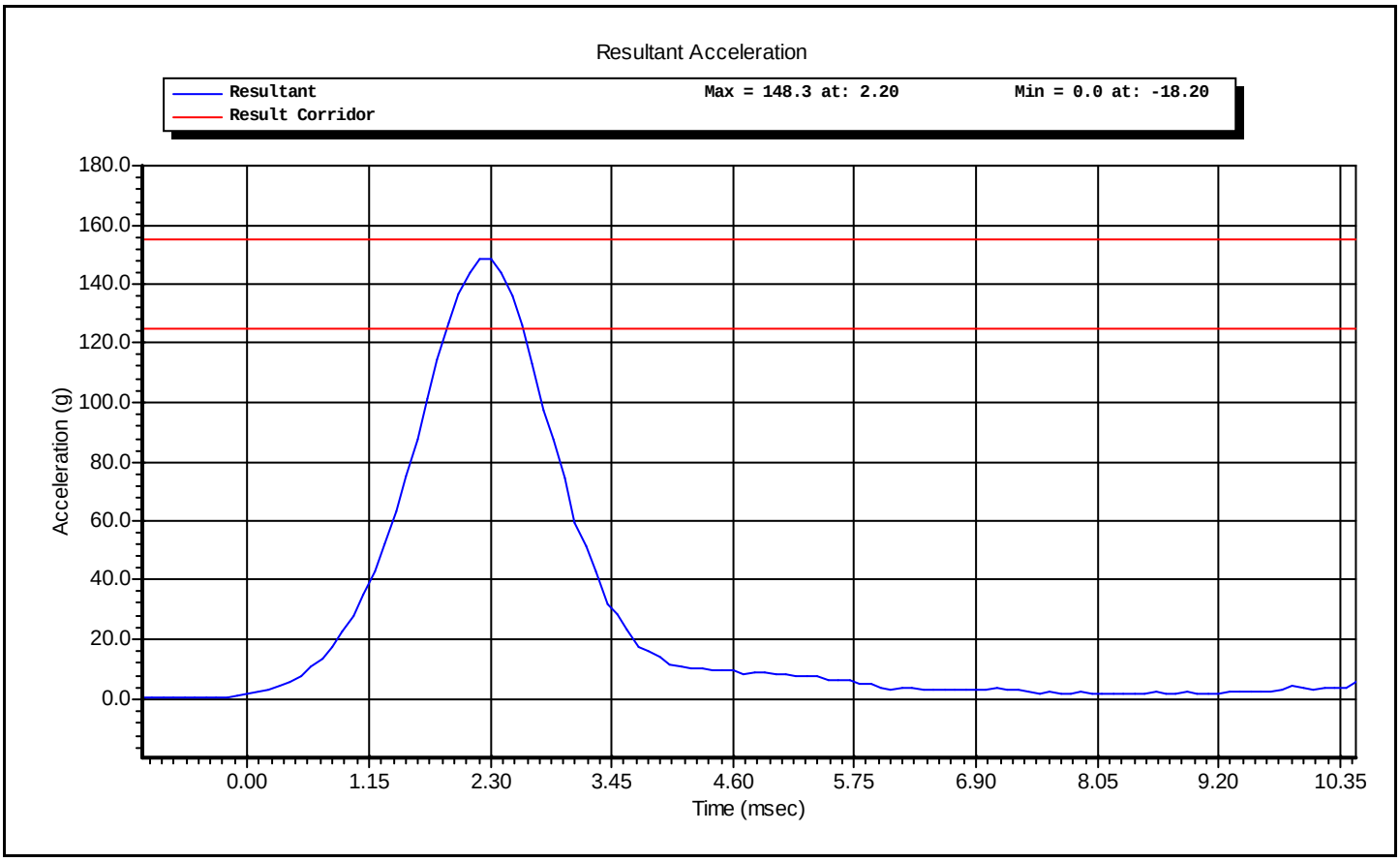
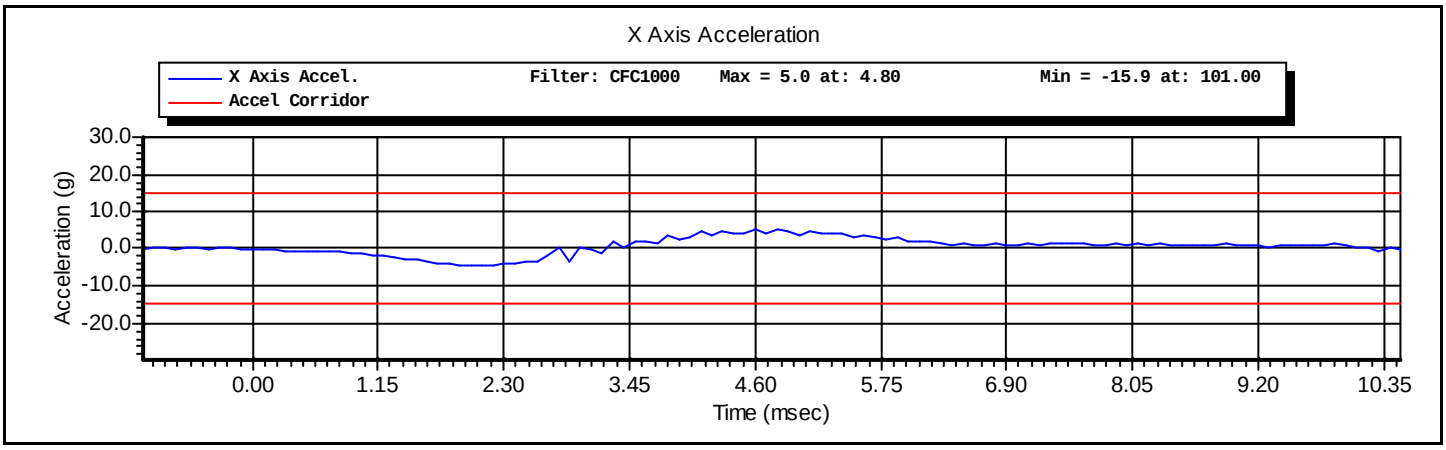
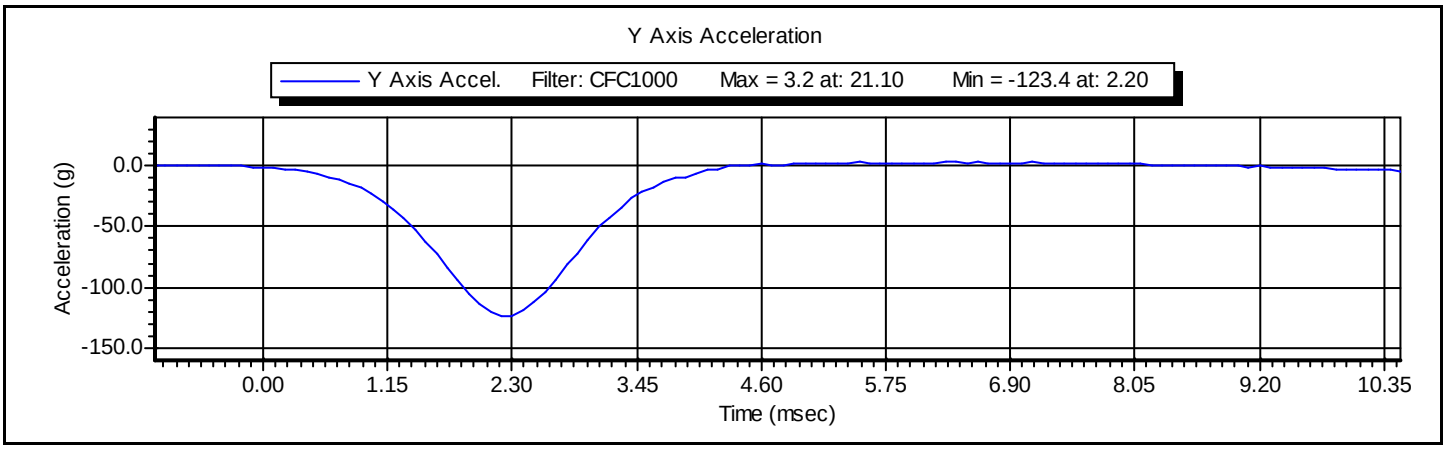
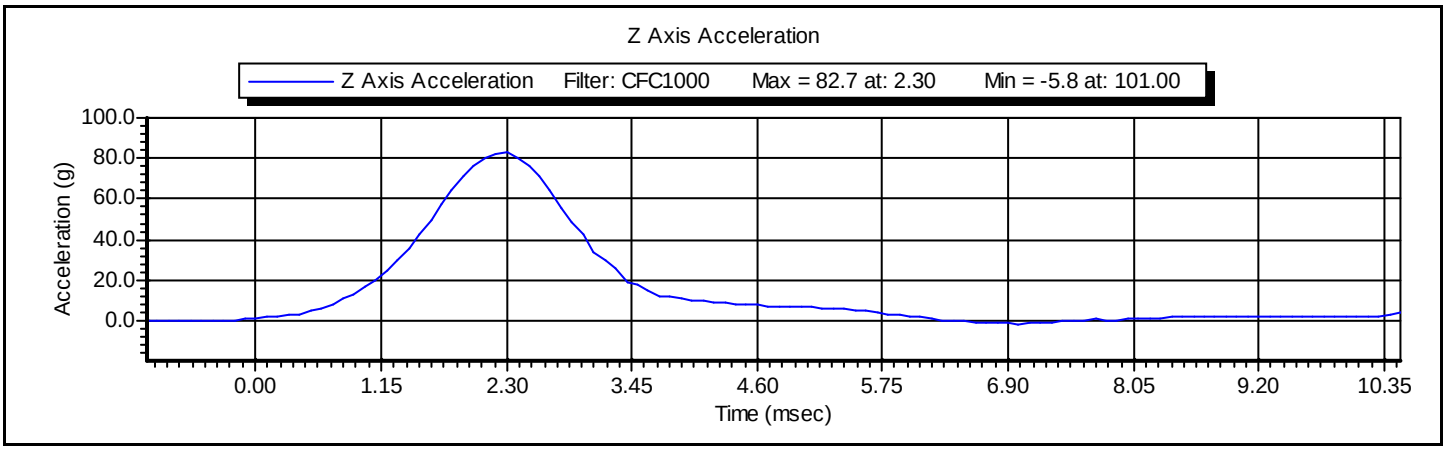
Test Name:	**Head Drop**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Head Drop**	Test Date:	**1/21/2011**
Test Number:	**1**	Test Time:	**2:26:02 PM**









Test ID: **Head Drop** Test Time: **2:26:02 PM** Test Date: **1/21/2011**

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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:	**1/21/2011**
Test Number:	**2**	Test Time:	**4:12:29 PM**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.2**	deg C	P
Humidity	10	--	70	**15**	%RH	P
Velocity	3.30	--	3.50	**3.42**	m/s	P
Maximum Neck Flexion Angle	49.0	--	59.0	**51.6**	degrees	P
Time At Maximum Neck Flexion	54.0	--	66.0	**58.1**	ms	P
Decay to Zero Degrees	53.0	--	88.0	**58.6**	ms	P
Velocity Corridor		--				P

All test parameters are within specifications

Technician: **Don Schenk** Signature: _____

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

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2011**
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: **4:12:29 PM** Test Date: **1/21/2011**

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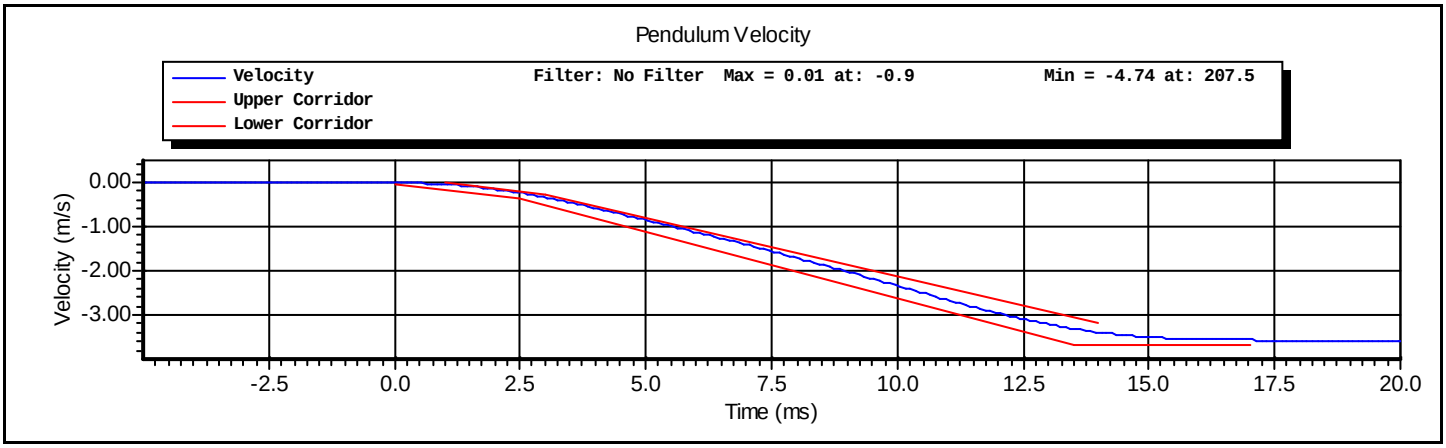
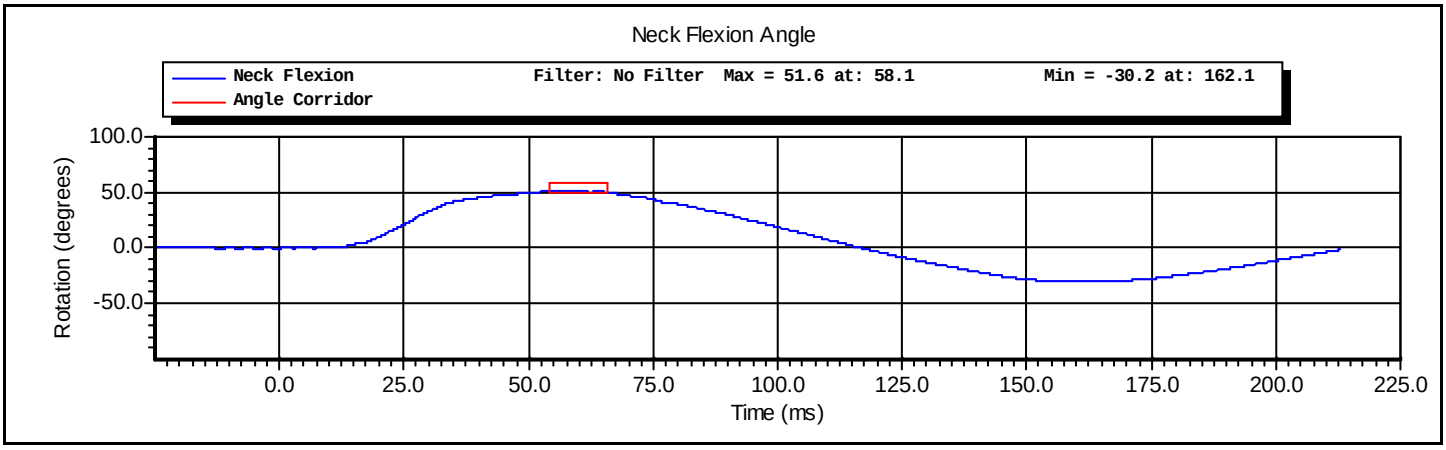
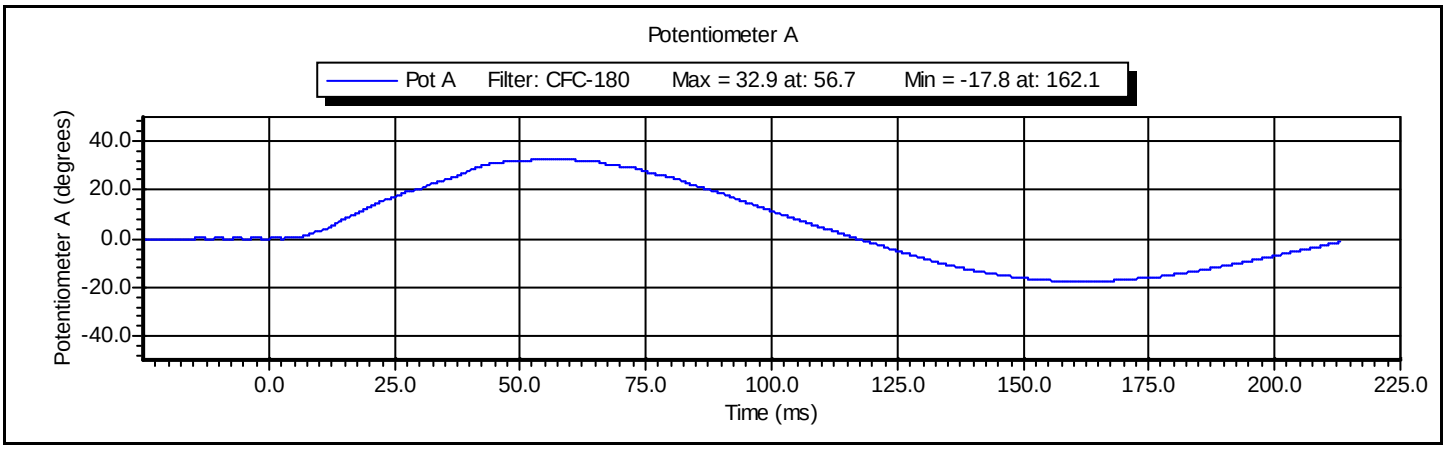
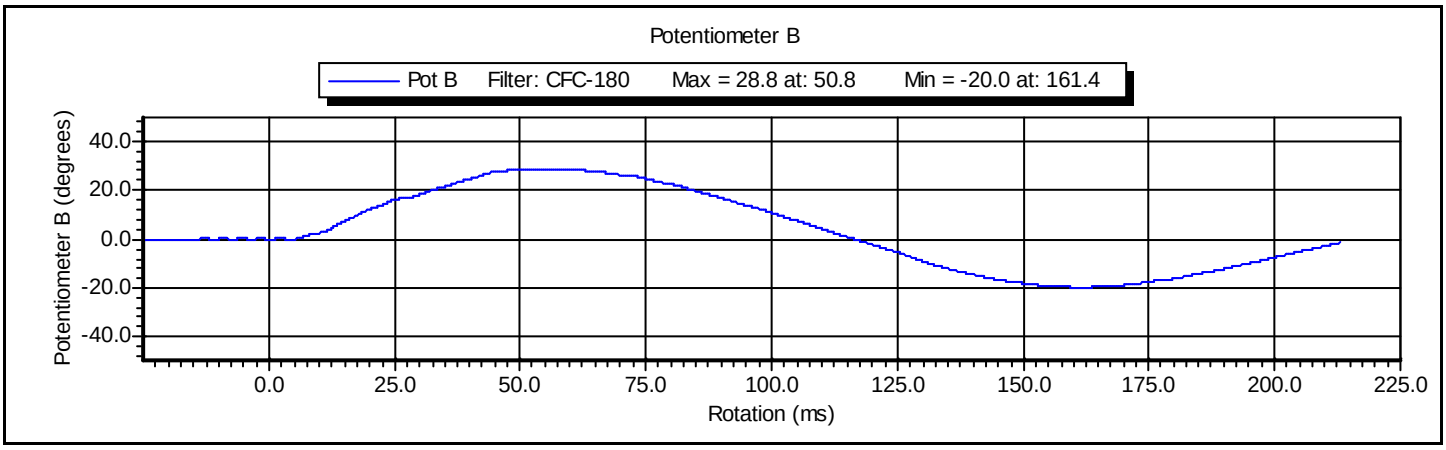
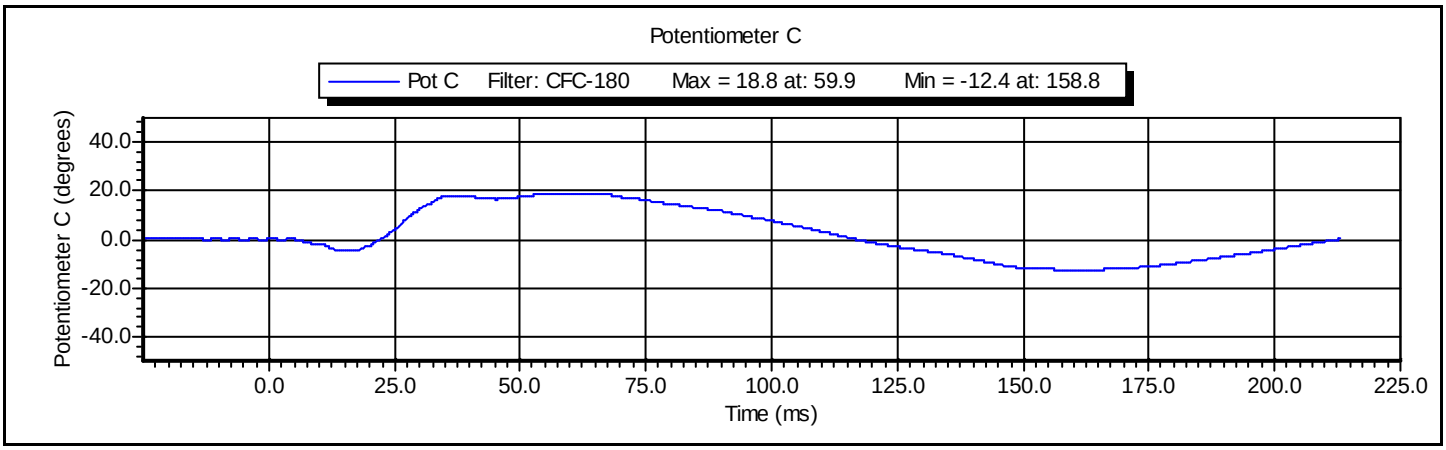
Test Name:	**Neck Flexion**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Neck Flexion**	Test Date:	**1/21/2011**
Test Number:	**2**	Test Time:	**4:12:29 PM**











Test ID: **Neck Flexion** Test Time: **4:12:29 PM** Test Date: **1/21/2011**

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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:	**1/24/2011**
Test Number:	**1**	Test Time:	**2:45:39 PM**

Component Part Number	Component Serial Number
960715-313	**N/A**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.0**	deg C	P
Humidity	10.0	--	70.0	**22.0**	%RH	P
Velocity	4.20	--	4.40	**4.33**	m/s	P
Pendulum Acceleration	-10.50	--	-7.50	**-10.09**	g	P

All test parameters are within specifications

Technician: **Don Schenk** Signature: _____

Supervisor: **D Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2011**
Endevco	**7264-2000**	**P66930**	**10/5/2010**

Test ID: **Shoulder** Test Time: **2:45:39 PM** Test Date: **1/24/2011**

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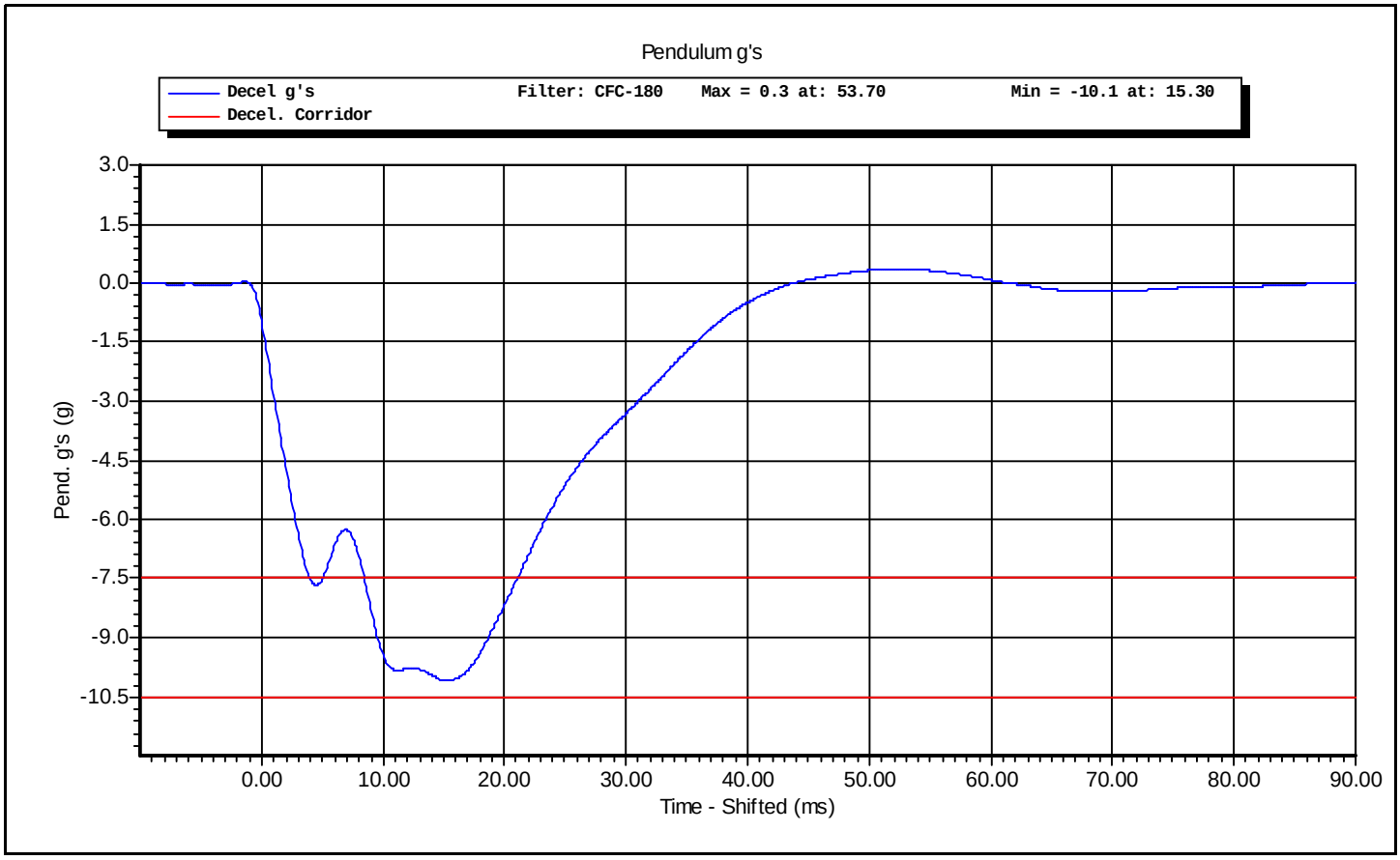
Test Name:	**Shoulder Impact**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Shoulder**	Test Date:	**1/24/2011**
Test Number:	**1**	Test Time:	**2:45:39 PM**



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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:	**1/24/2011**
Test Number:	**1**	Test Time:	**3:06:59 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	**21.0**	deg C	P
Humidity	10.0	--	70.0	**22.0**	%RH	P
Velocity	5.40	--	5.60	**5.51**	m/s	P
Upper Rib Displacement	34.0	--	41.0	**36.3**	mm	P
Middle Rib Displacement	37.0	--	45.0	**41.5**	mm	P
Lower Rib Displacement	37.0	--	44.0	**41.6**	mm	P
Impactor Force	5100	--	6200	**5672**	N	P

All test parameters are within specifications

Technician: **Don Schenk** Signature: _____

Supervisor: **D Travale** Signature: _____

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2011**
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: **3:06:59 PM** Test Date: **1/24/2011**

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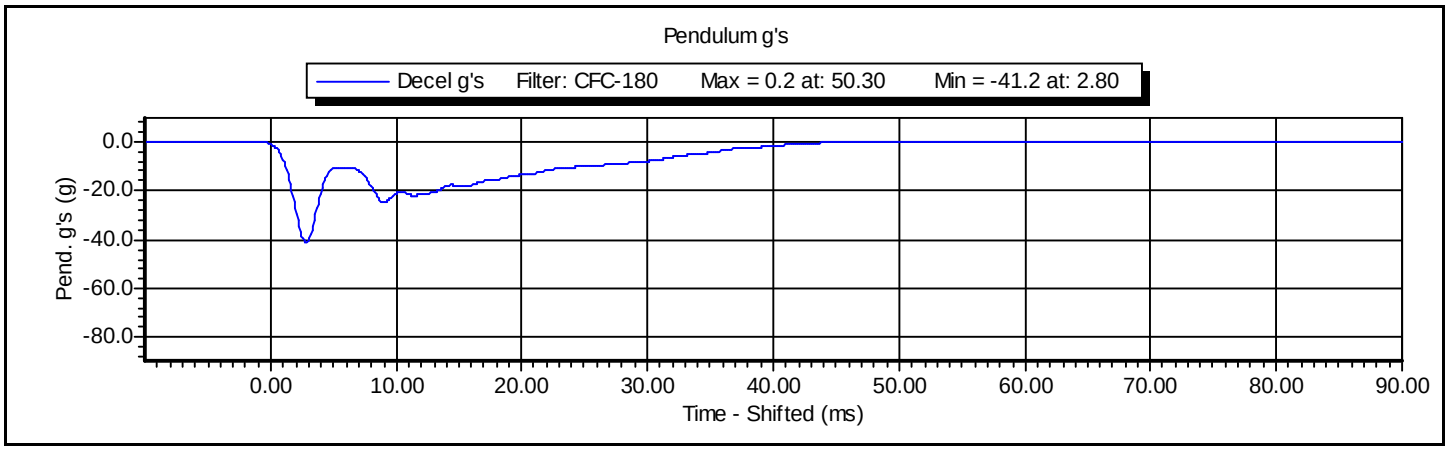
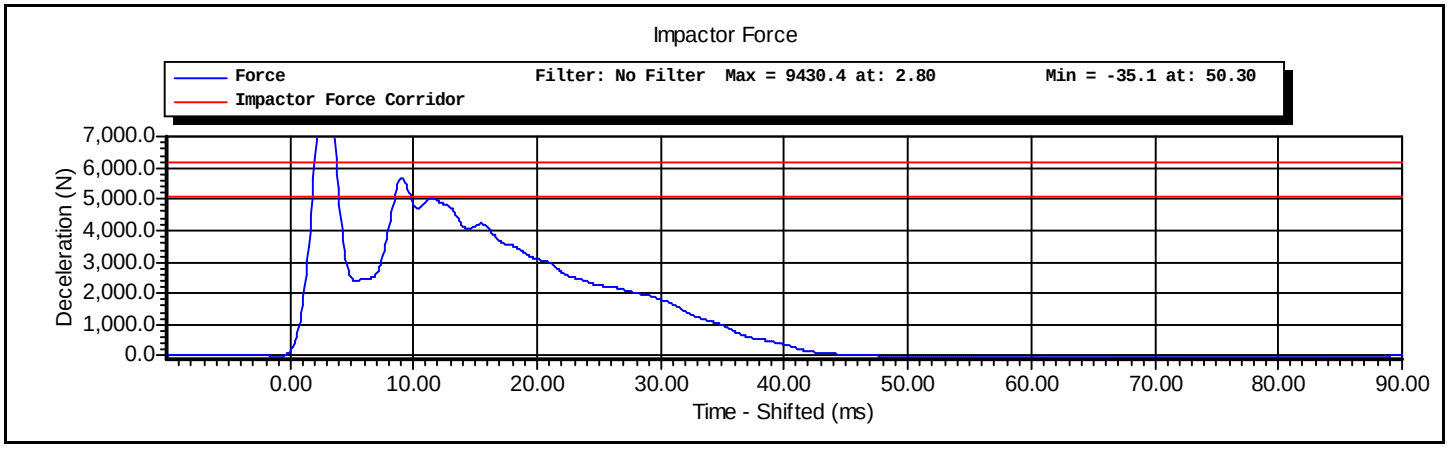
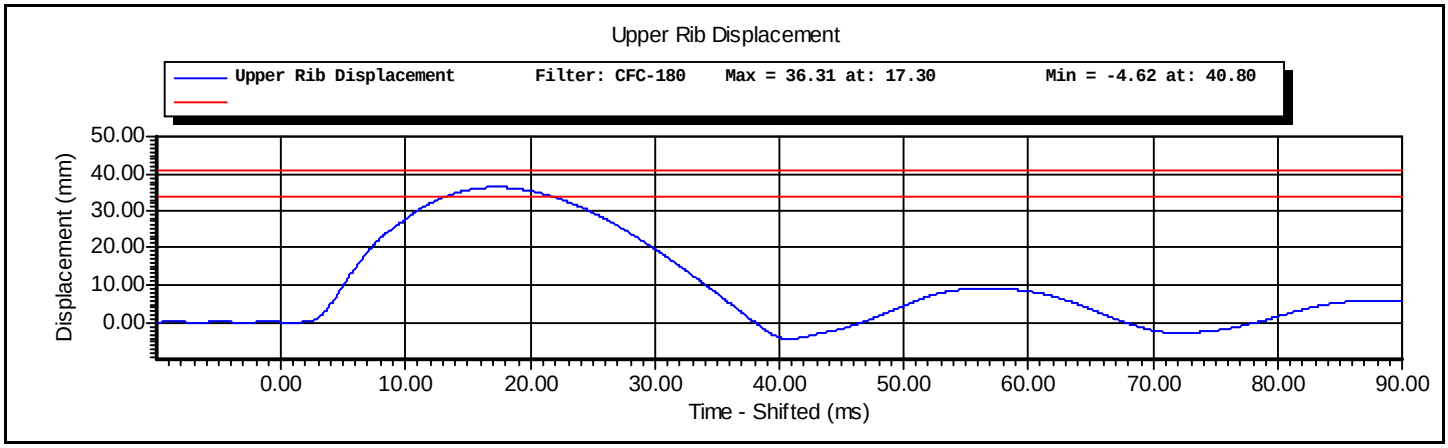
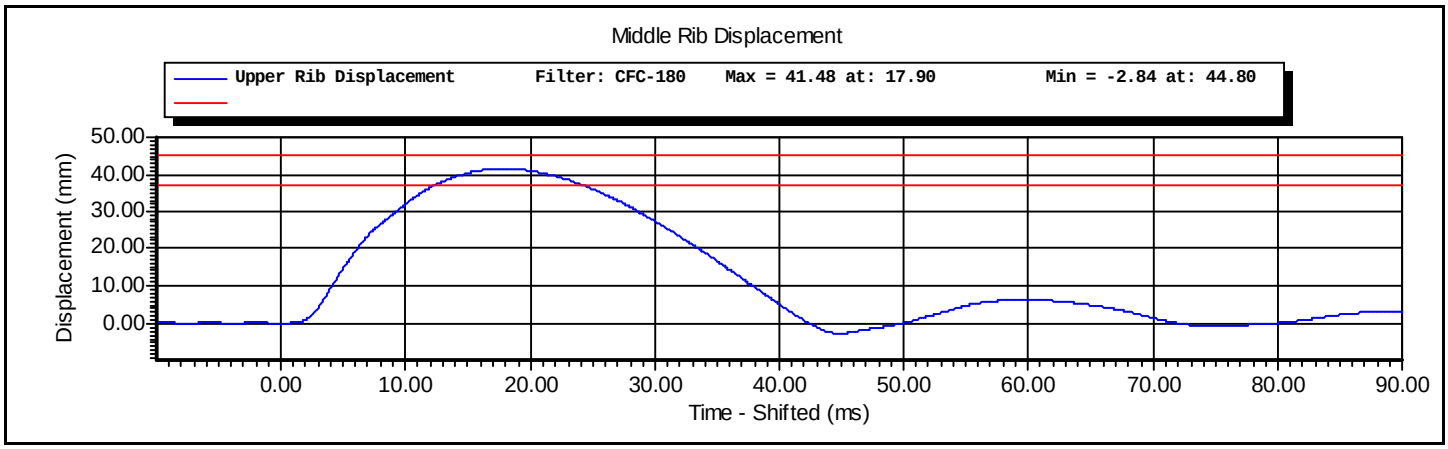
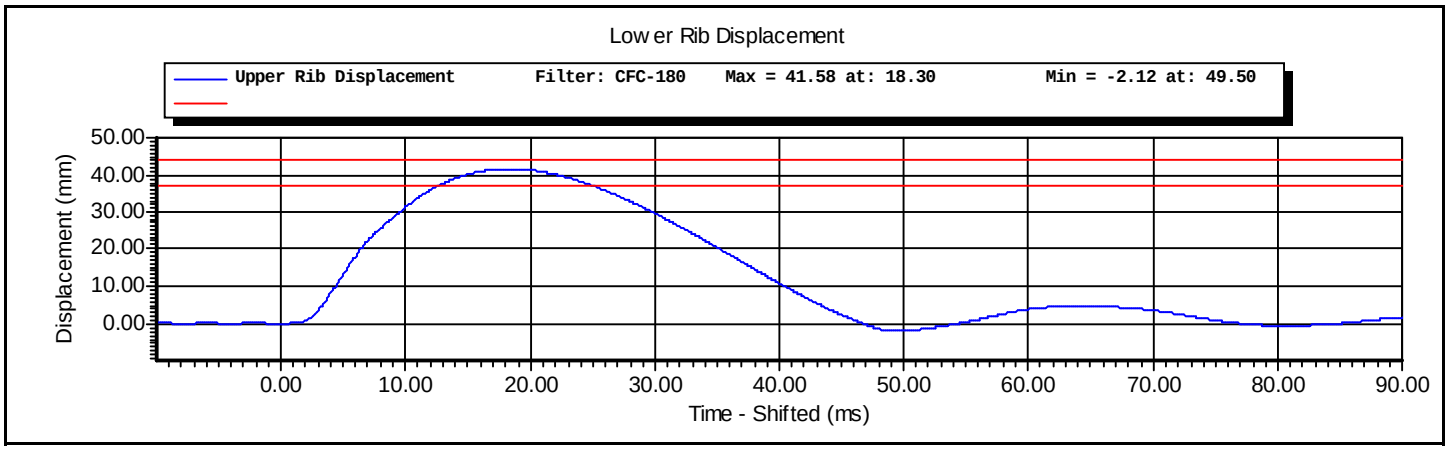
Test Name:	**Thorax Impact**	Revision:	**8/15/2008**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Thorax**	Test Date:	**1/24/2011**
Test Number:	**1**	Test Time:	**3:06:59 PM**











Test ID: **Thorax** Test Time: **3:06:59 PM** Test Date: **1/24/2011**

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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 4.0 m/s**	Test Date:	**1/24/2011**
Test Number:	**1**	Test Time:	**10:11:20 AM**

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

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.1**	deg C	P
Humidity	10.0	--	70.0	**11.0**	%RH	P
Velocity	3.90	--	4.10	**3.97**	m/s	P
Rib Displacement	-51.00	--	-46.00	**-48.46**	mm	P
Drop Height	807.0	--	823.0	**815.0**	mm	P

All test parameters are within specifications

Technician: **Don Schenk** 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**	**1/11/2011**
Endevco	**7264-2000**	**P32222**	**11/17/2010**

Test ID: **Upper Rib 4.0 m/s** Test Time: **10:11:20 AM** Test Date: **1/24/2011**

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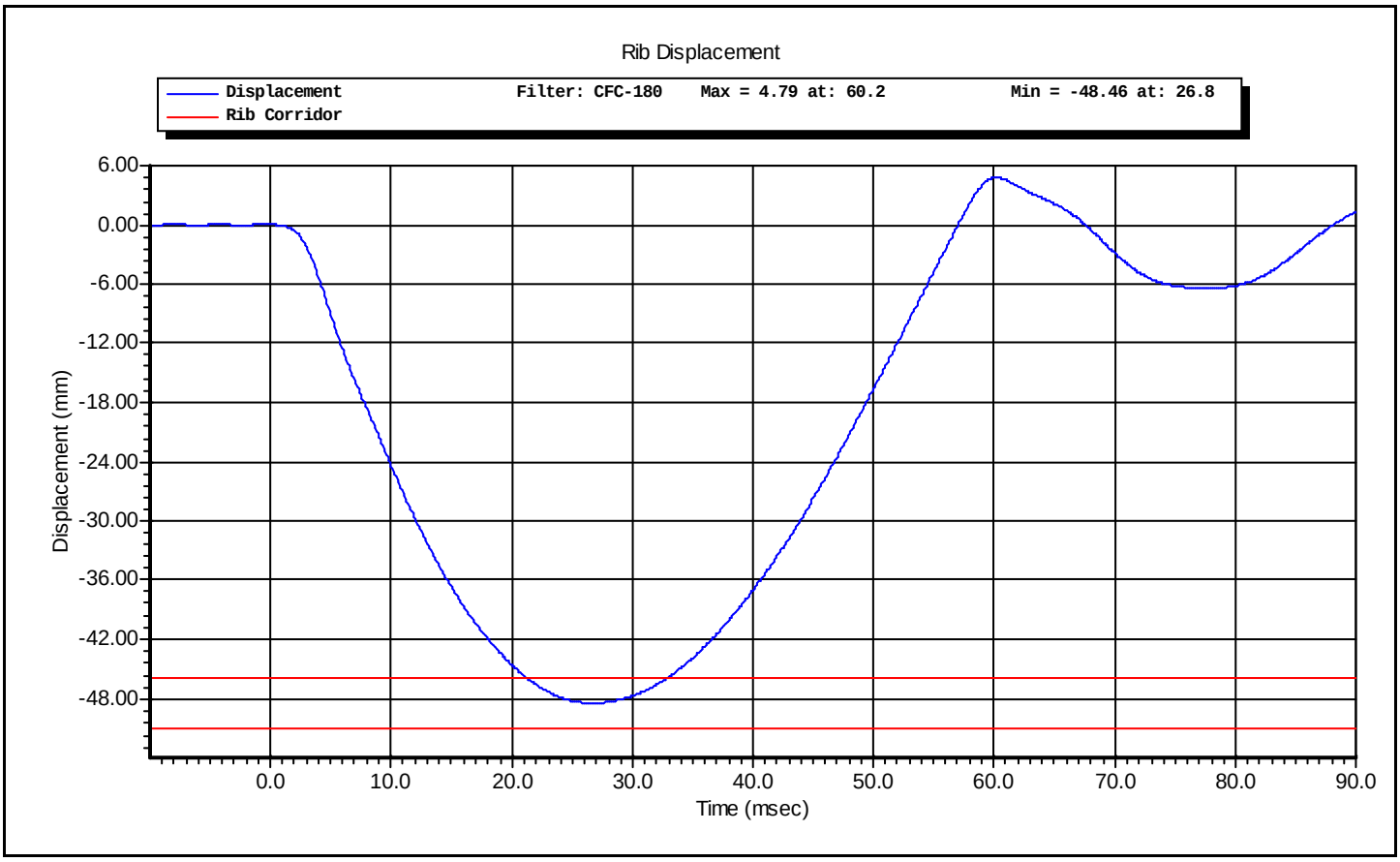
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**4.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Upper Rib 4.0 m/s**	Test Date:	**1/24/2011**
Test Number:	**1**	Test Time:	**10:11:20 AM**



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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 3.0 m/s**	Test Date:	**1/24/2011**
Test Number:	**1**	Test Time:	**10:16:45 AM**

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

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.0**	deg C	P
Humidity	10.0	--	70.0	**11.0**	%RH	P
Velocity	2.90	--	3.10	**2.97**	m/s	P
Rib Displacement	-40.00	--	-36.00	**-37.83**	mm	P
Drop Height	454	--	464	**459**	mm	P

All test parameters are within specifications

Technician: **Don Schenk** 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**	**1/11/2011**
Endevco	**7264-2000**	**P32222**	**11/17/2010**

Test ID: **Upper Rib 3.0 m/s** Test Time: **10:16:45 AM** Test Date: **1/24/2011**

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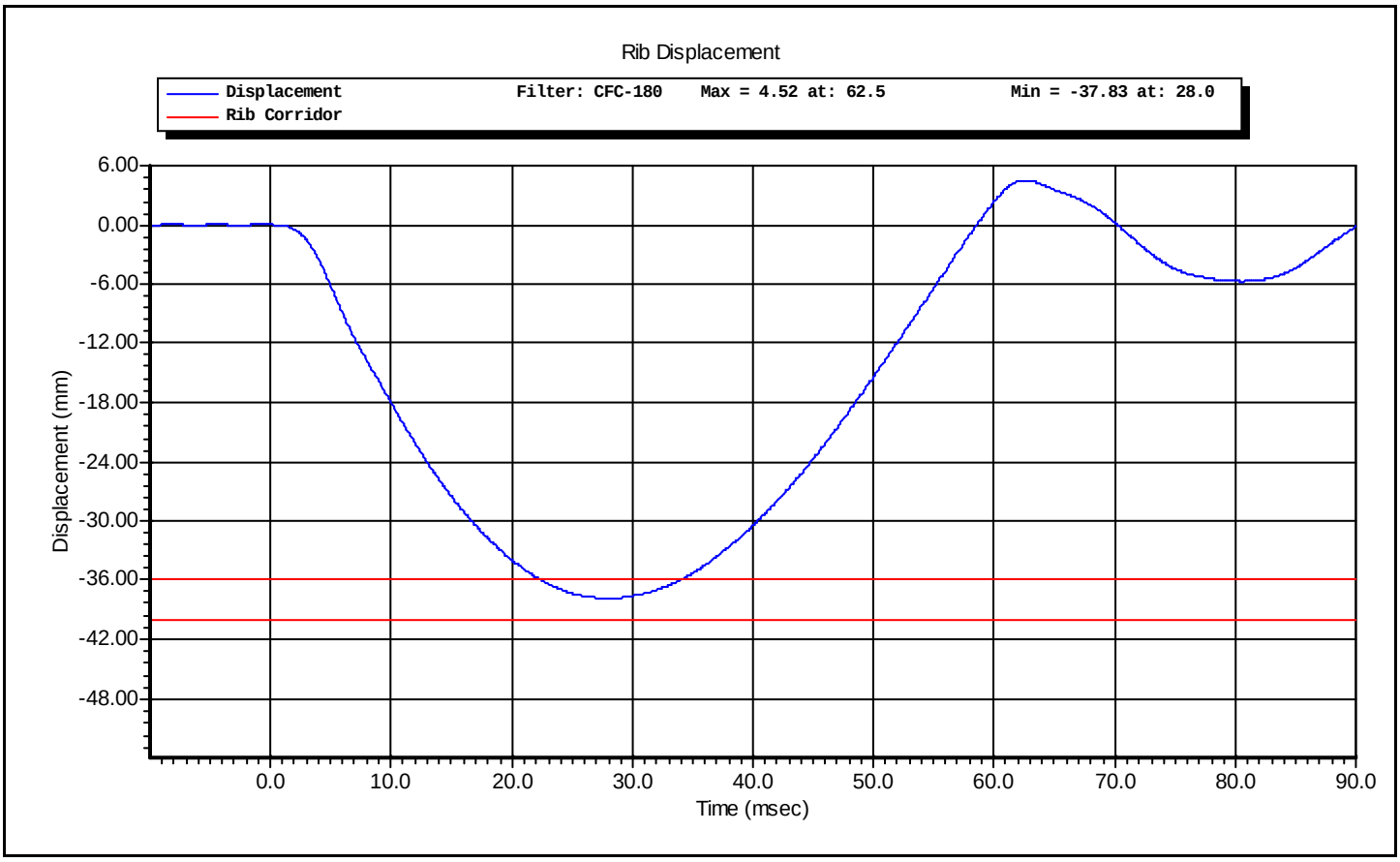
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**3.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Upper Rib 3.0 m/s**	Test Date:	**1/24/2011**
Test Number:	**1**	Test Time:	**10:16:45 AM**



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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**		
ATD Serial Number:	**F033**		
Test ID:	**Middle Rib 4.0 m/s**	Test Date:	**1/24/2011**
Test Number:	**1**	Test Time:	**10:25:42 AM**

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

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.0**	deg C	P
Humidity	10.0	--	70.0	**11.0**	%RH	P
Velocity	3.90	--	4.10	**3.98**	m/s	P
Rib Displacement	-51.00	--	-46.00	**-47.69**	mm	P
Drop Height	807.0	--	823.0	**815.0**	mm	P

All test parameters are within specifications

Technician: **Don Schenk** 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**	**1/11/2011**
Endevco	**7264-2000**	**P32222**	**11/17/2010**

Test ID: **Middle Rib 4.0 m/s** Test Time: **10:25:42 AM** Test Date: **1/24/2011**

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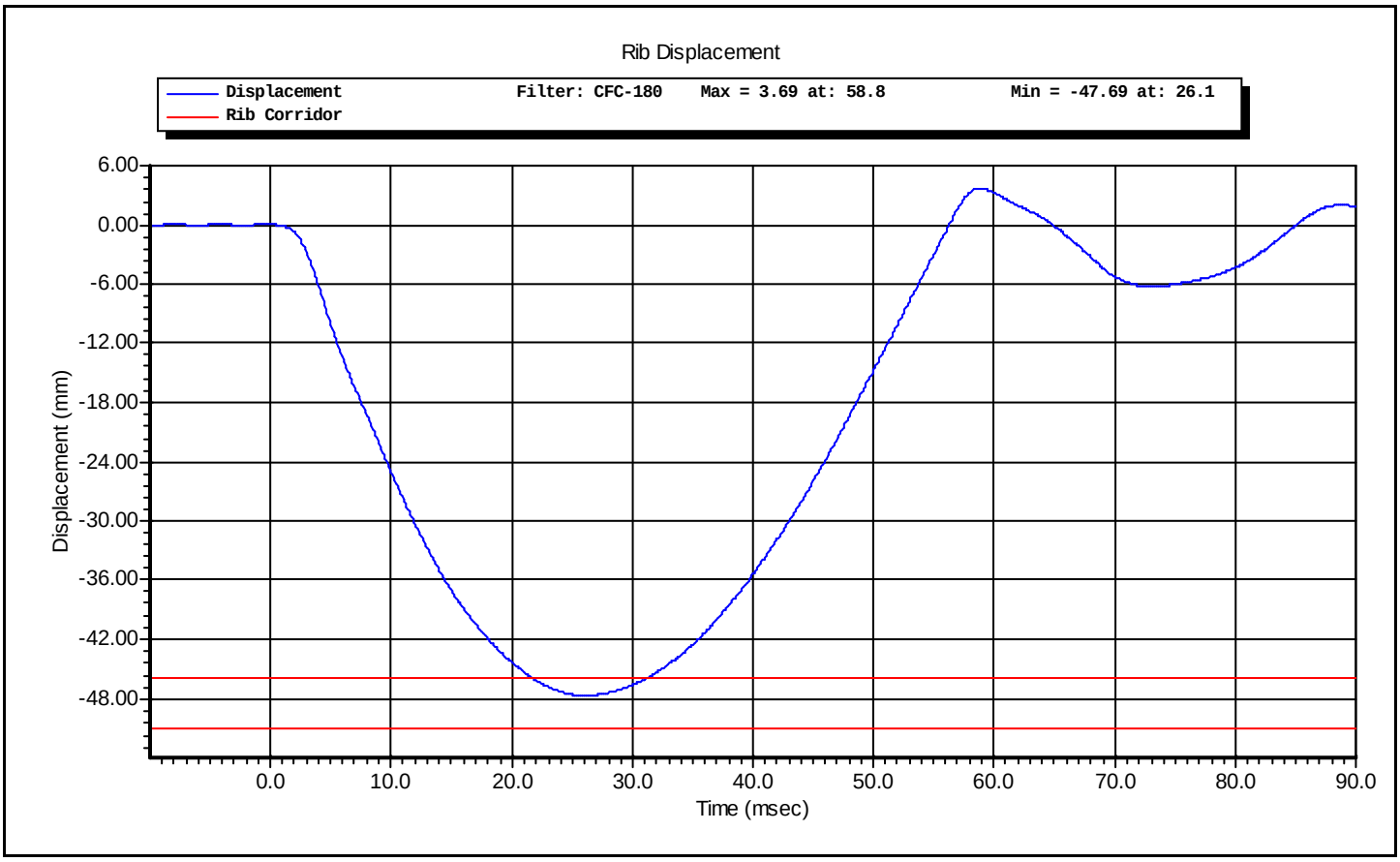
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**4.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Middle Rib 4.0 m/s**	Test Date:	**1/24/2011**
Test Number:	**1**	Test Time:	**10:25:42 AM**



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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 3.0 m/s**	Test Date:	**1/24/2011**
Test Number:	**1**	Test Time:	**10:32:36 AM**

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

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.1**	deg C	P
Humidity	10.0	--	70.0	**11.0**	%RH	P
Velocity	2.90	--	3.10	**2.96**	m/s	P
Rib Displacement	-40.00	--	-36.00	**-37.12**	mm	P
Drop Height	454	--	464	**459**	mm	P

All test parameters are within specifications

Technician: **Don Schenk** 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**	**1/11/2011**
Endevco	**7264-2000**	**P32222**	**11/17/2010**

Test ID: **Middle Rib 3.0 m/s** Test Time: **10:32:36 AM** Test Date: **1/24/2011**

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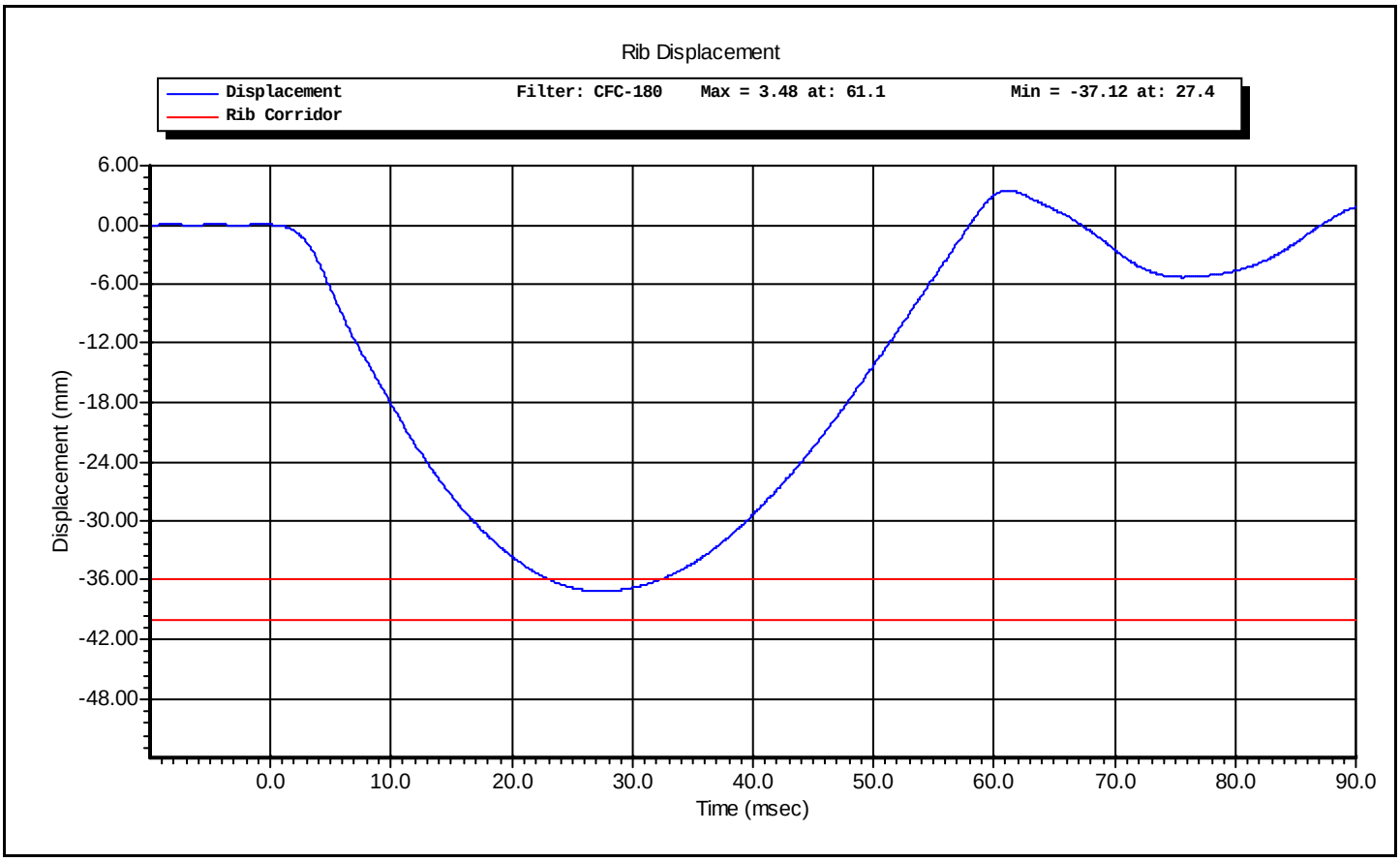
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**3.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Middle Rib 3.0 m/s**	Test Date:	**1/24/2011**
Test Number:	**1**	Test Time:	**10:32:36 AM**



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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**		
ATD Serial Number:	**F033**		
Test ID:	**Lower Rib 4.0 m/s**	Test Date:	**1/24/2011**
Test Number:	**1**	Test Time:	**10:37:03 AM**

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

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.0**	deg C	P
Humidity	10.0	--	70.0	**11.0**	%RH	P
Velocity	3.90	--	4.10	**3.98**	m/s	P
Rib Displacement	-51.00	--	-46.00	**-47.78**	mm	P
Drop Height	807.0	--	823.0	**815.0**	mm	P

All test parameters are within specifications

Technician: **Don Schenk** 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**	**1/11/2011**
Endevco	**7264-2000**	**P32222**	**11/17/2010**

Test ID: **Lower Rib 4.0 m/s** Test Time: **10:37:03 AM** Test Date: **1/24/2011**

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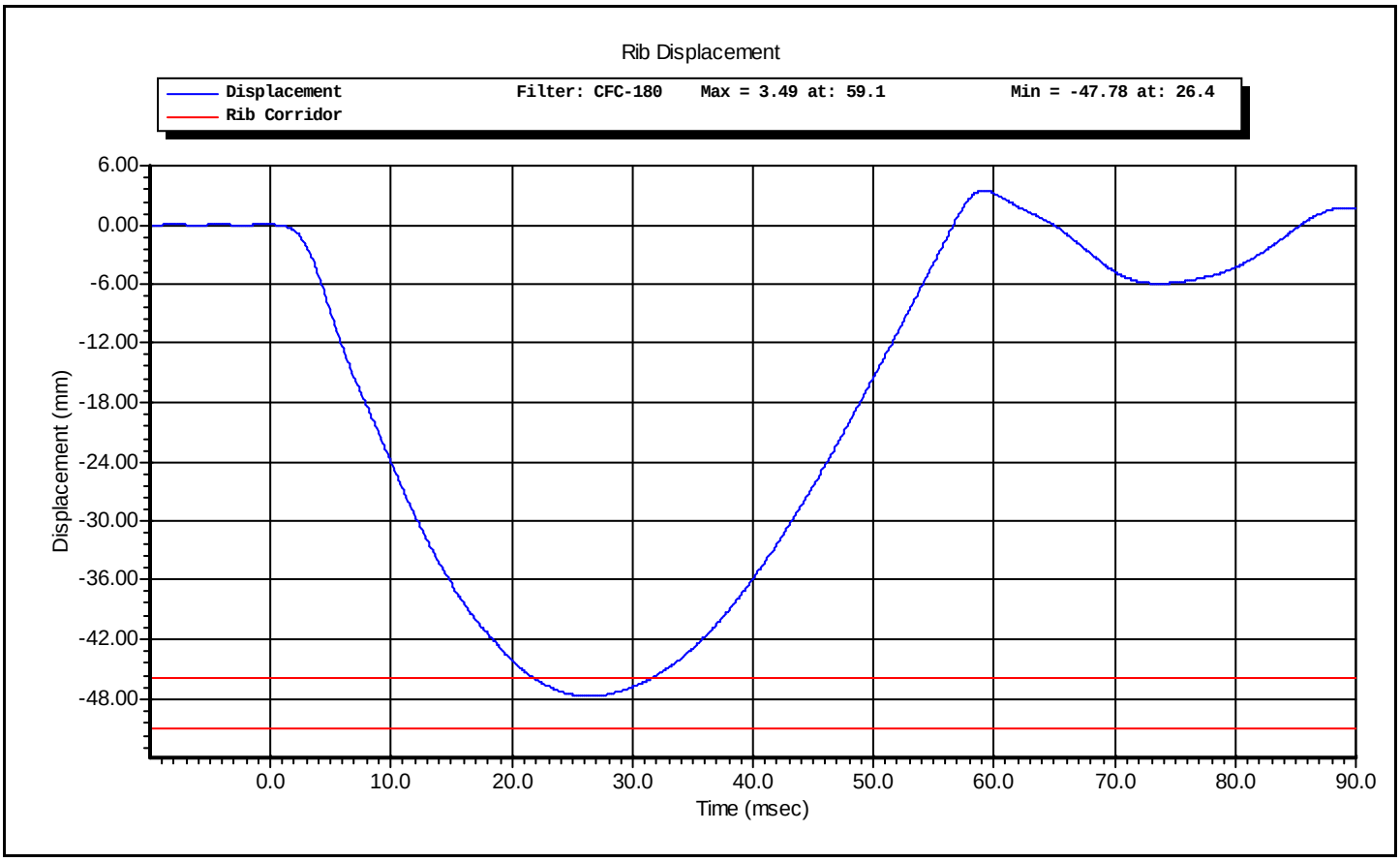
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**4.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Lower Rib 4.0 m/s**	Test Date:	**1/24/2011**
Test Number:	**1**	Test Time:	**10:37:03 AM**



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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 3.0 m/s**	Test Date:	**1/24/2011**
Test Number:	**1**	Test Time:	**10:42:29 AM**

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

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.0**	deg C	P
Humidity	10.0	--	70.0	**11.0**	%RH	P
Velocity	2.90	--	3.10	**2.98**	m/s	P
Rib Displacement	-40.00	--	-36.00	**-37.12**	mm	P
Drop Height	454	--	464	**459**	mm	P

All test parameters are within specifications

Technician: **Don Schenk** 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**	**1/11/2011**
Endevco	**7264-2000**	**P32222**	**11/17/2010**

Test ID: **Lower Rib 3.0 m/s** Test Time: **10:42:29 AM** Test Date: **1/24/2011**

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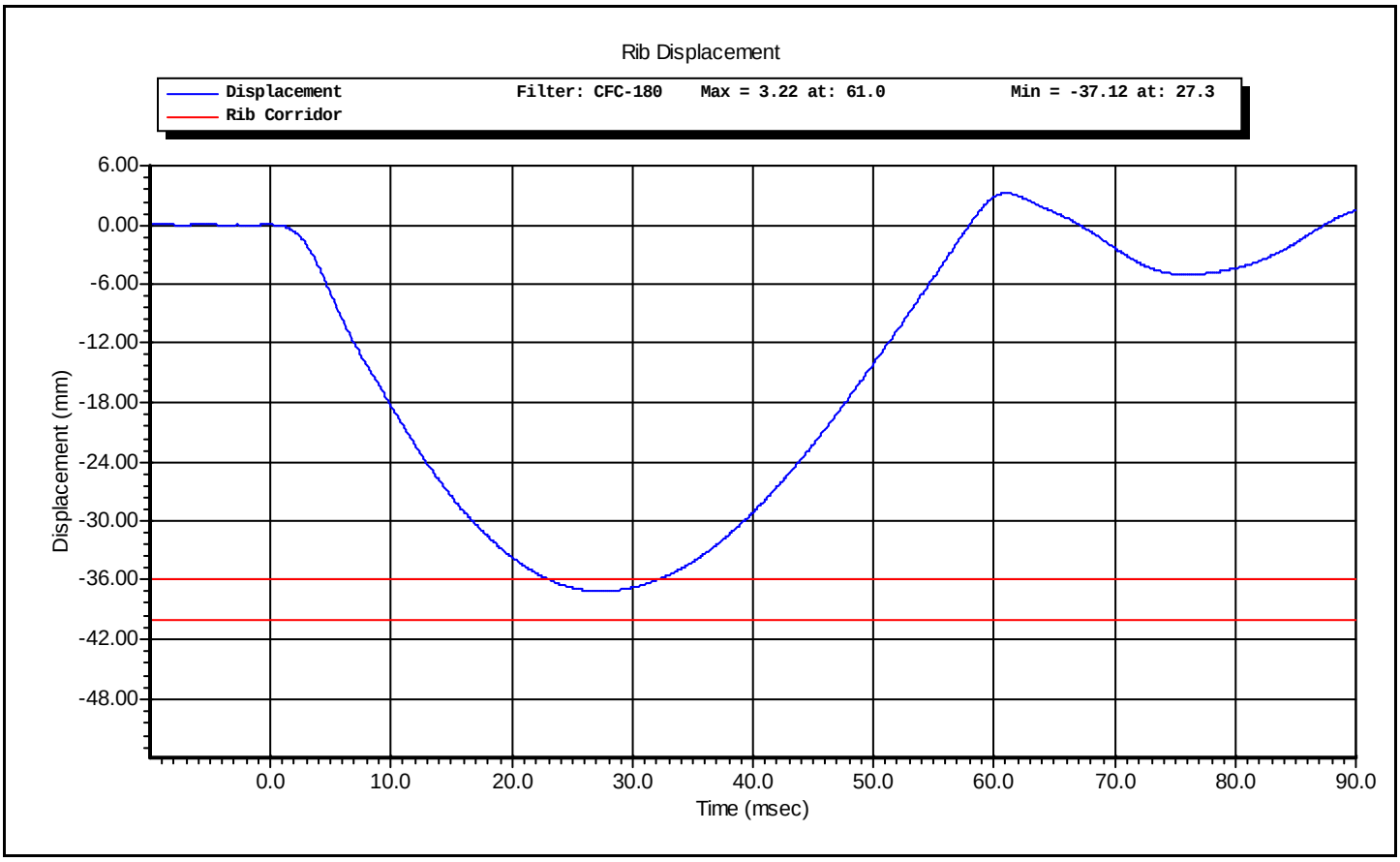
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**3.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Lower Rib 3.0 m/s**	Test Date:	**1/24/2011**
Test Number:	**1**	Test Time:	**10:42:29 AM**



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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:	**Abdominal**	Test Date:	**1/25/2011**
Test Number:	**1**	Test Time:	**9:35:29 AM**

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

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.0**	deg C	P
Humidity	10	--	70	**36**	%RH	P
Velocity	3.90	--	4.10	**4.04**	m/s	P
Peak Abdominal Force	-2.70	--	-2.20	**-2.58**	kN	P
Time At Peak Abdominal Force	10.0	--	12.3	**10.5**	ms	P
Maximum Pendulum Force	-4.80	--	-4.00	**-4.63**	kN	P
Time at Peak Pendumlum Force	10.6	--	13.0	**10.8**	ms	P

All test parameters are within specifications

Technician: **Don Schenk** Signature: _____

Supervisor: **D Travale** Signature: _____

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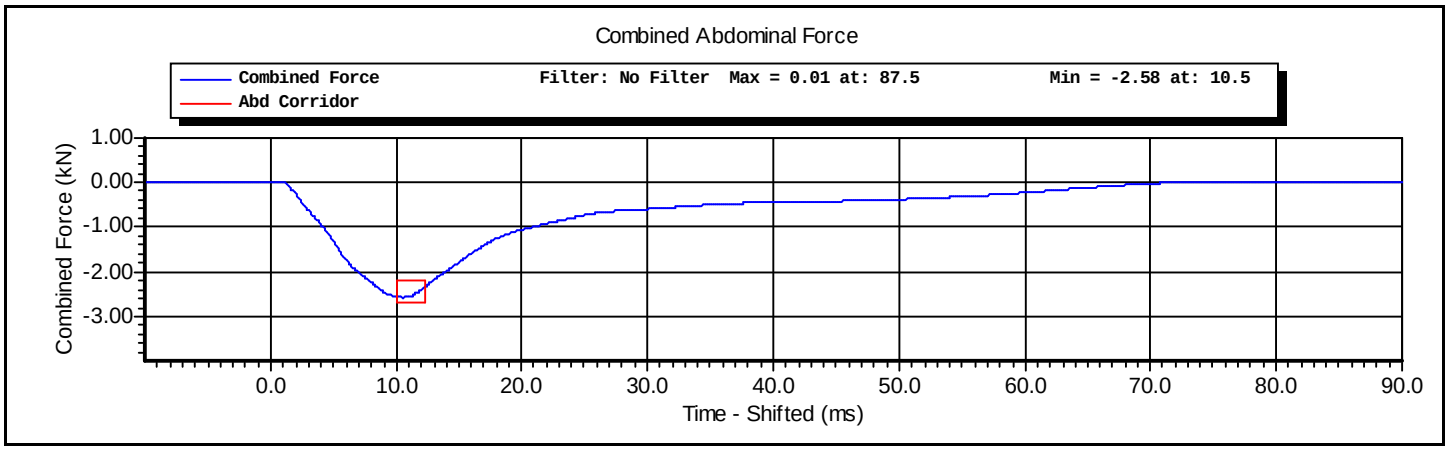
VERIFICATION REPORT

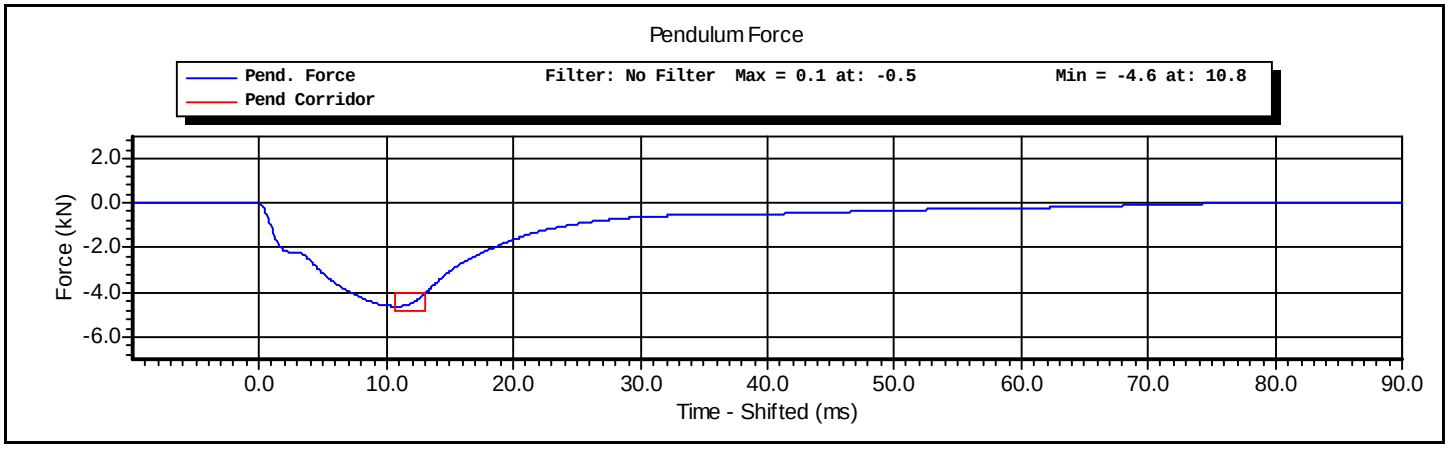
REFERENCE EQUIPMENT

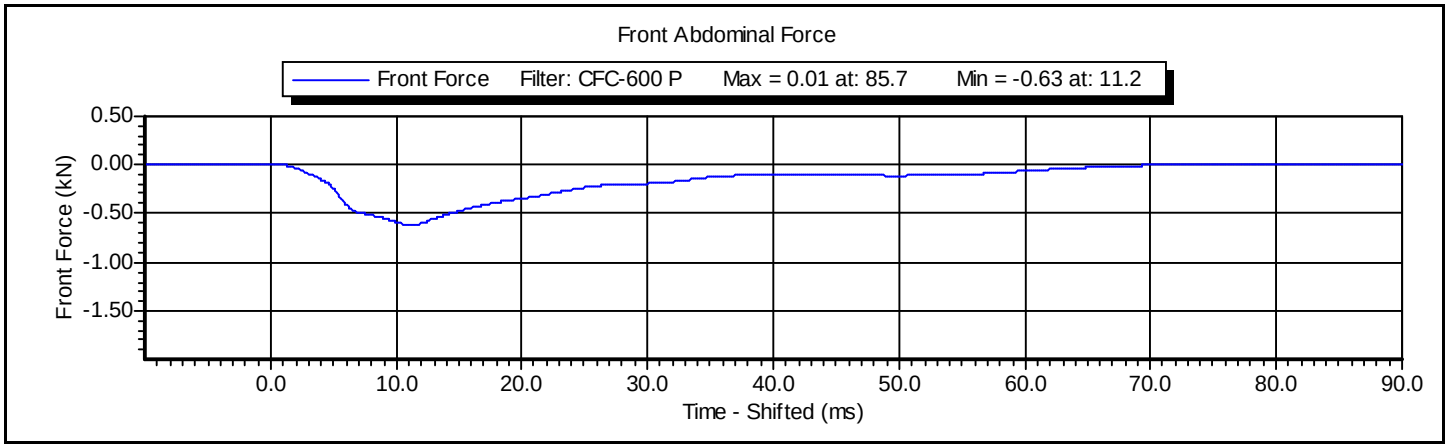
Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2011**
Endevco	**7264-2000**	**P66930**	**10/5/2010**
Denton	**2631**	**LC-1524**	**4/22/2010**
Denton	**2631**	**LC-1523**	**4/22/2010**
Denton	**2631**	**LC-1530**	**4/22/2010**

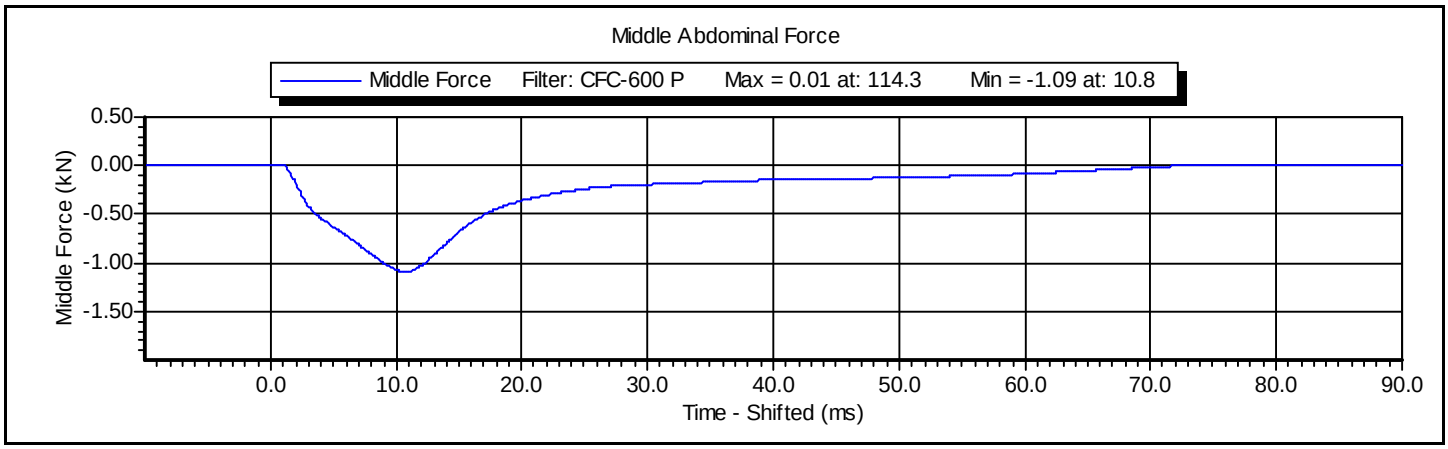
Test ID: **Abdominal** Test Time: **9:35:29 AM** Test Date: **1/25/2011**

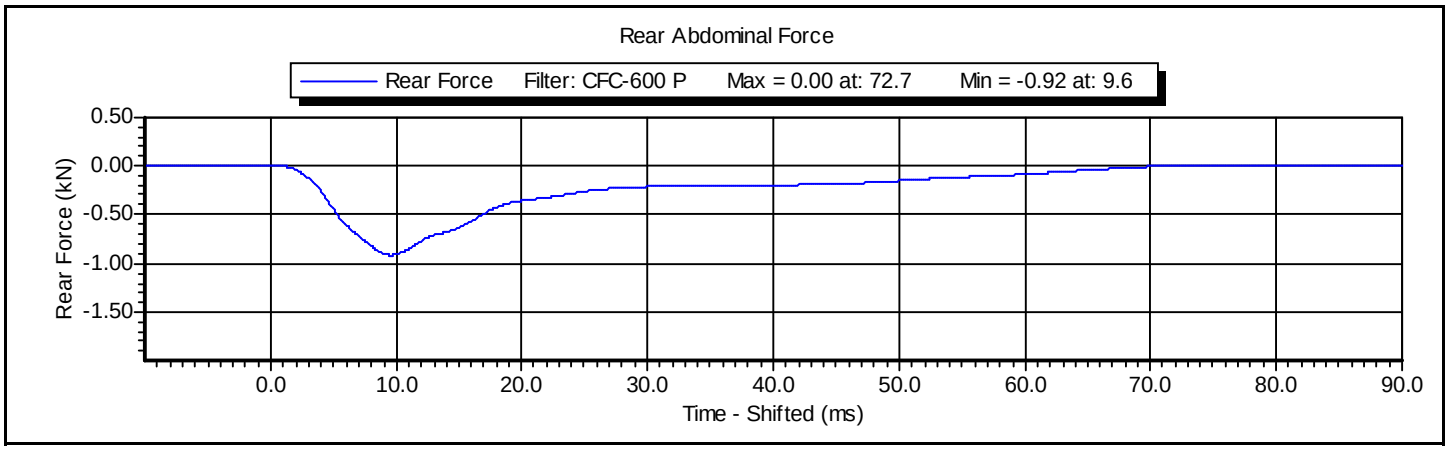
Test Name:	**Abdominal Impact**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Abdominal**	Test Date:	**1/25/2011**
Test Number:	**1**	Test Time:	**9:35:29 AM**











Test ID: **Abdominal** Test Time: **9:35:29 AM** Test Date: **1/25/2011**

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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:	**Lumbar Spine**	Test Date:	**1/24/2011**
Test Number:	**2**	Test Time:	**9:48:29 AM**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.9**	deg C	P
Humidity	10	--	70	**11**	%RH	P
Velocity	5.95	--	6.15	**6.15**	m/s	P
Maximum Headform Flexion Angle	45.0	--	55.0	**47.9**	degrees	P
Time at Maximum Headform Flexion Angle	39.0	--	53.0	**42.9**	ms	P
Decay to Zero Degrees	37.0	--	57.0	**39.7**	ms	P
Velocity Corridor		--				P

All test parameters are within specifications

Technician: **Don Schenk** Signature: _____

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

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2011**
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: **Lumbar Spine** Test Time: **9:48:29 AM** Test Date: **1/24/2011**

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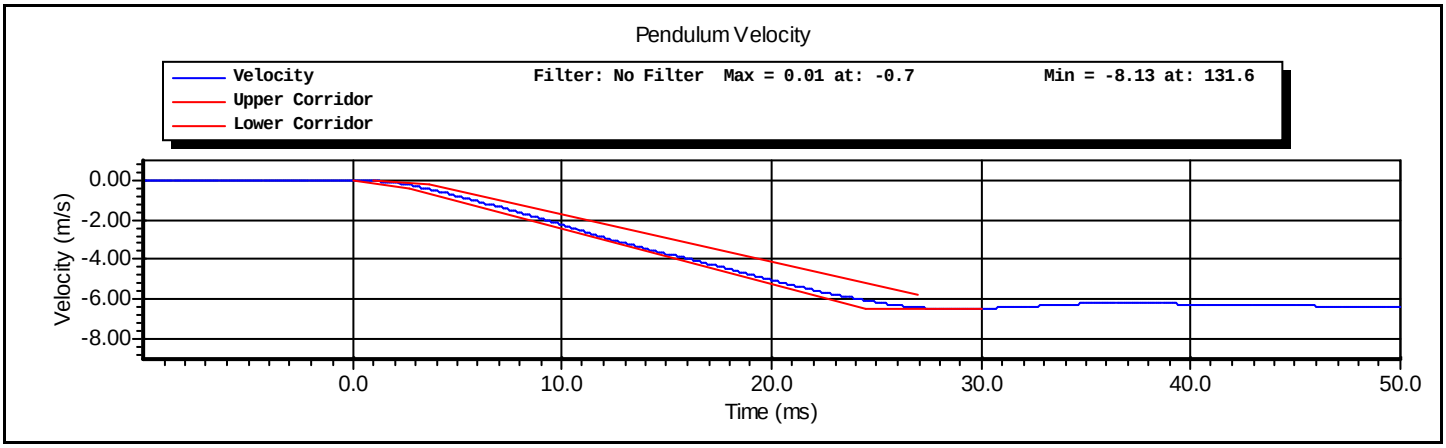
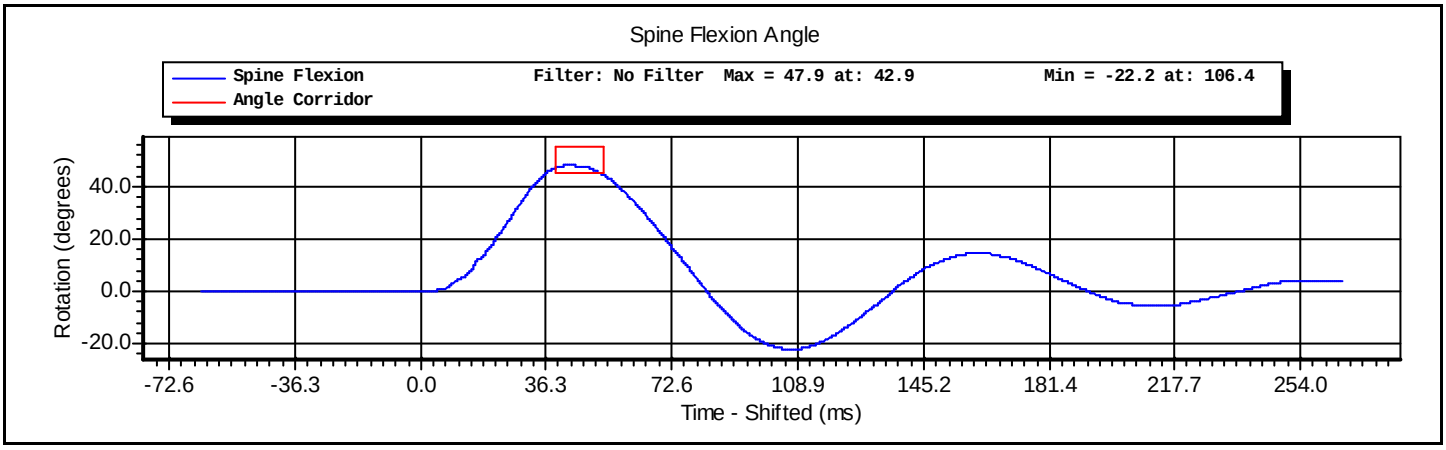
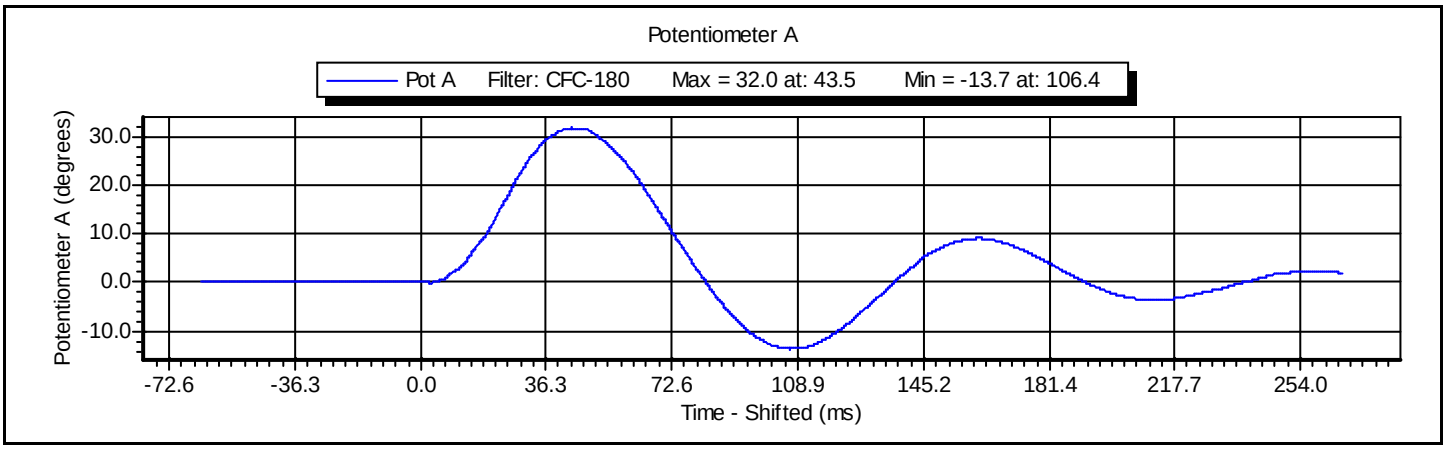
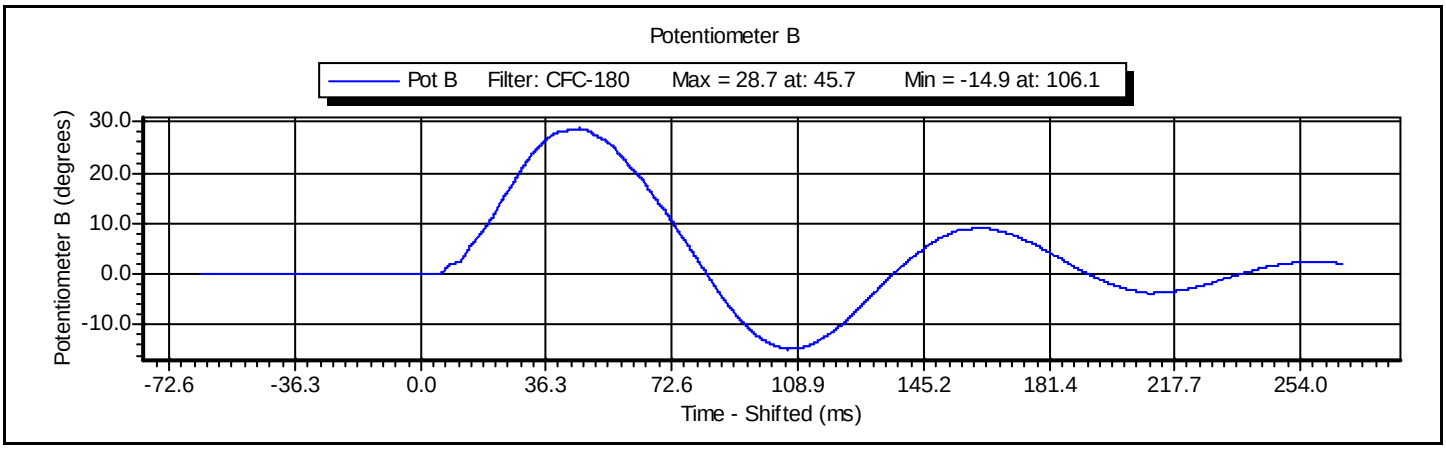
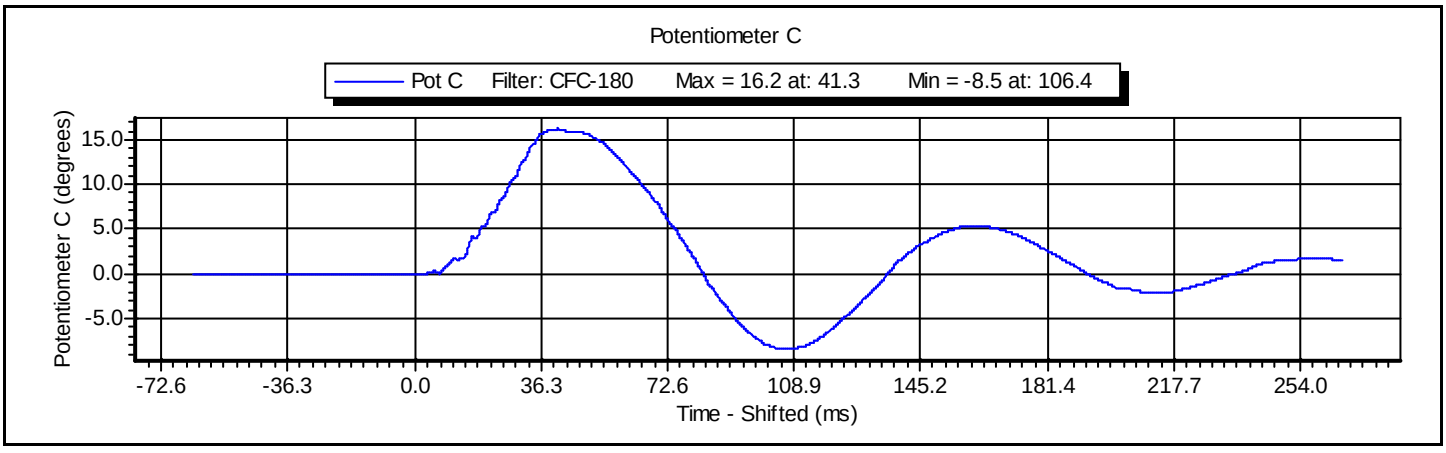
Test Name:	**Lumbar Spine**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Lumbar Spine**	Test Date:	**1/24/2011**
Test Number:	**2**	Test Time:	**9:48:29 AM**











Test ID: **Lumbar Spine** Test Time: **9:48:29 AM** Test Date: **1/24/2011**

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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 Impact**	Test Date:	**1/25/2011**
Test Number:	**1**	Test Time:	**10:32:30 AM**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.8**	deg C	P
Humidity	10	--	70	**33**	%RH	P
Velocity	4.20	--	4.40	**4.27**	m/s	P
Peak Pendulum Force	-5.40	--	-4.70	**-5.24**	kN	P
Time at Peak Pendulum Force	11.80	--	16.10	**12.30**	ms	P
Peak Pubic Symphysis Force	-1.59	--	-1.23	**-1.48**	kN	P
Time at Peak Pubic Symphysis Force	12.20	--	17.00	**13.30**	ms	P

All test parameters are within specifications

Technician: **Don Schenk** Signature: _____

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

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2011**
Endevco	**7264-2000**	**P66930**	**10/5/2010**
Denton	**3096**	**LC-456Fy**	**4/22/2010**

Test ID: **Pelvis Impact** Test Time: **10:32:30 AM** Test Date: **1/25/2011**

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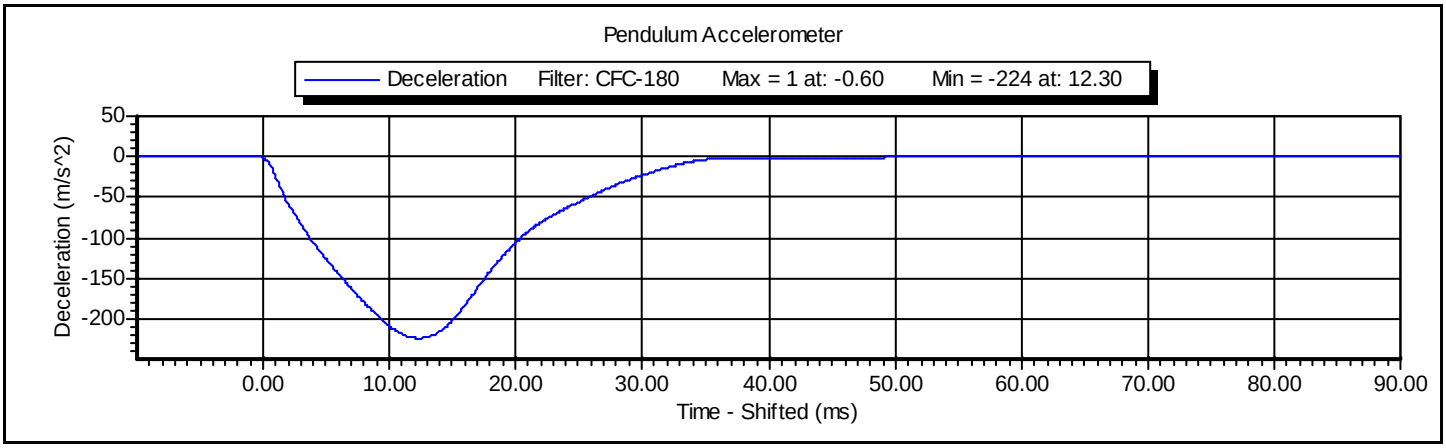
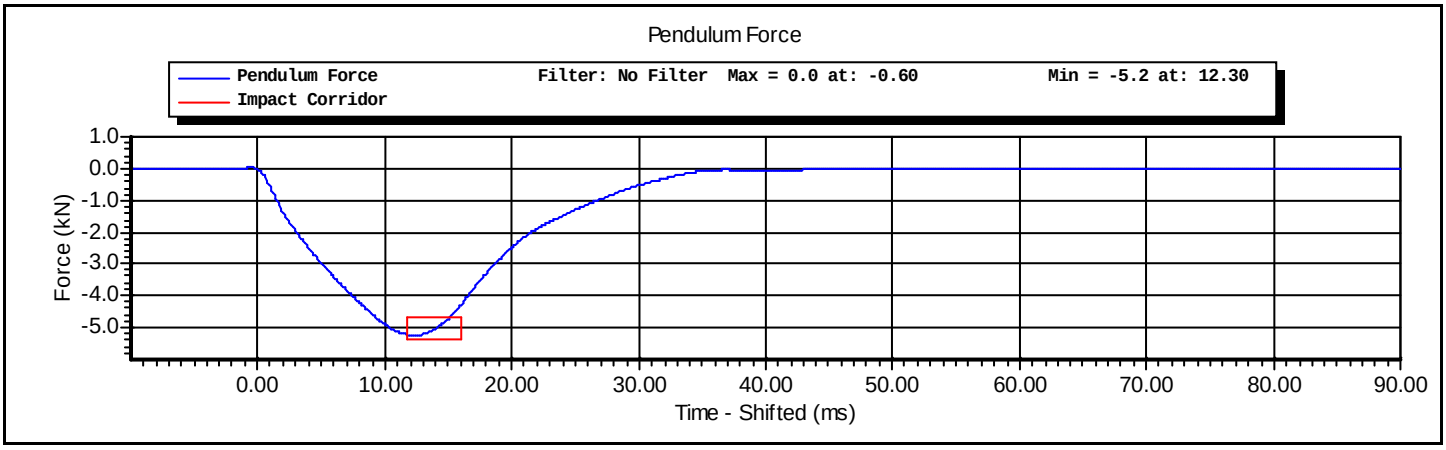
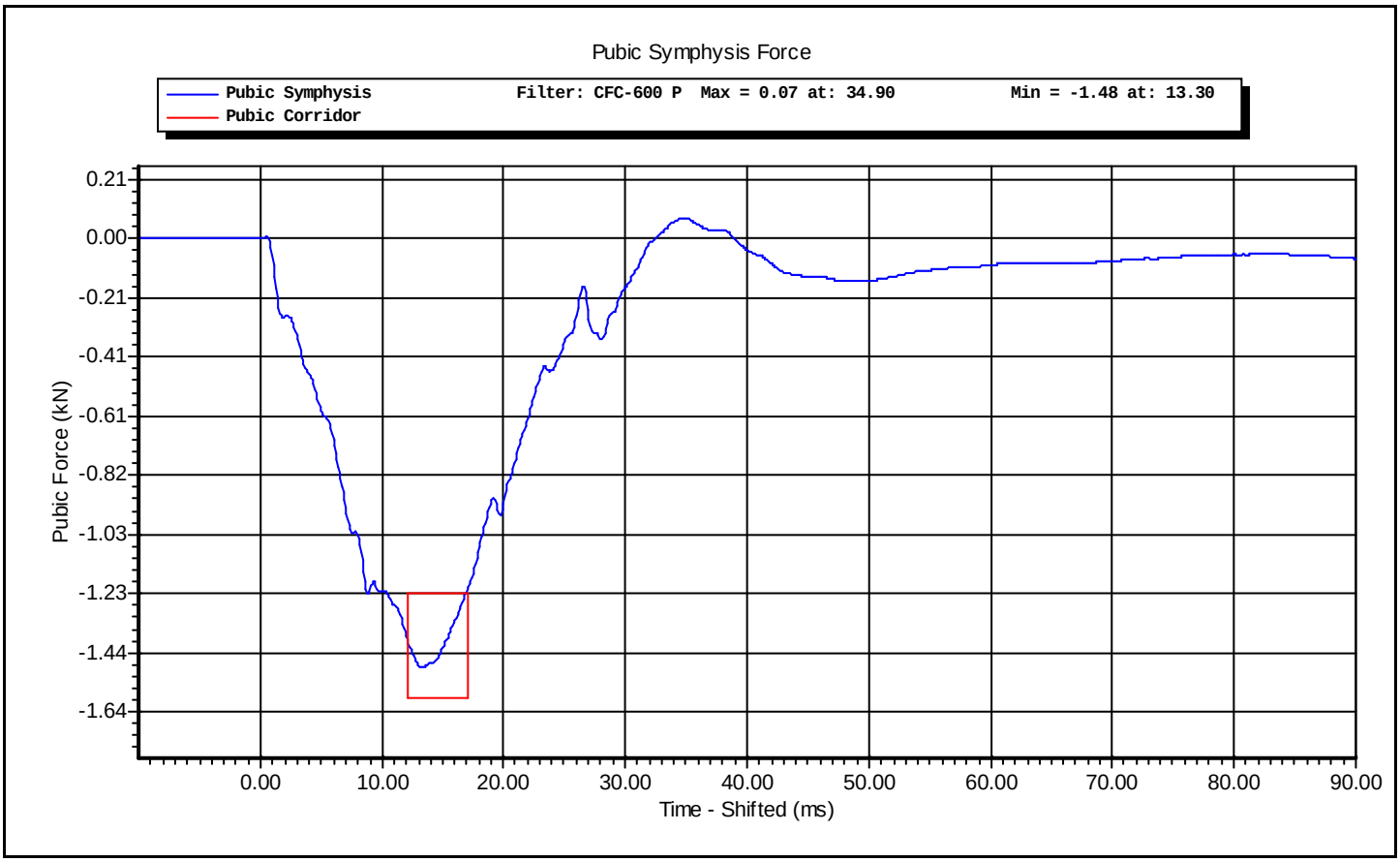
Test Name:	**Pelvis Impact**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F033**		
Test ID:	**Pelvis Impact**	Test Date:	**1/25/2011**
Test Number:	**1**	Test Time:	**10:32:30 AM**







Test ID: **Pelvis Impact** Test Time: **10:32:30 AM** Test Date: **1/25/2011**