

REPORT NUMBER: SNCAP-CAL-10-01

**Validation Testing
Moving Deformable Barrier Side Impact Test**

**MAZDA MOTOR CORPORATION
2010 Mazda 3
4-Door Sedan**

NHTSA NUMBER: MA5404

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



Test Date: April 29, 2009

FINAL REPORT

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

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

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Date: July 15, 2009

Technical Report Documentation Page

1. Report No. SNCAP-CAL-10-01	2. Government Accession No.	3. Recipient's Catalog No.																																													
4. Title and Subtitle Final Report of Validation Testing of 2010 Mazda 3 4-Door Sedan NHTSA No.: MA5404		5. Report Date April 29, 2009																																													
		6. Performing Organization Code CAL																																													
7. Author(s) Vincent M. Paolini, Project Engineer		8. Performing Organization Report No. 8879-01																																													
9. Performing Organization Name and Address Calspan Corporation Transportation Sciences Center P.O. Box 400 Buffalo, New York 14225		10. Work Unit No.																																													
		11. Contract or Grant No. DTNH22-03-D-22005																																													
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards 1200 New Jersey Ave., SE, Room W43-410 Washington, D.C. 20590		13. Type of Report and Period Covered: Final Report May 2009																																													
		14. Sponsoring Agency Code NPS-10																																													
15. Supplementary Notes Validation Testing																																															
16. Abstract A 55/28 kph 90° Impact Moving Deformable Barrier NCAP Side Impact Validation Test was conducted on the subject 2010 Mazda 3 4-Door Sedan in accordance with the specifications of the Office of Crashworthiness Standards Test Procedure for the generation of consumer information on vehicle side crash protection. This test was conducted at the Calspan Corporation Crash Test Facility in Buffalo, New York, on April 29, 2009. The impact velocity of the Moving Deformable Barrier (MDB) was 62.6 km/h, and the ambient temperature at the struck side (driver side) of the vehicle was 21°C. The target vehicle's maximum post test static crush was 250 mm at level 2. The test vehicle's performance was as follows: <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th colspan="2"></th> <th colspan="2">Driver ATD (ES-2re)</th> </tr> <tr> <th>Measurement Description</th> <th>Units</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆)</td> <td>N/A</td> <td>1000</td> <td>115.3</td> </tr> <tr> <td>Maximum Chest Deflection</td> <td>mm</td> <td>44</td> <td>30.1</td> </tr> <tr> <td>Total Abdominal Force</td> <td>N</td> <td>2500</td> <td>901.5</td> </tr> <tr> <td>Pubic Symphysis Force</td> <td>N</td> <td>6000</td> <td>2353.5</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th colspan="2"></th> <th colspan="2">Passenger ATD (SID-IIs)</th> </tr> <tr> <th>Measurement Description</th> <th>Units</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆)</td> <td>N/A</td> <td>1000</td> <td>333.1</td> </tr> <tr> <td>Lower Spine Resultant Acceleration</td> <td>G</td> <td>82</td> <td>60.4</td> </tr> <tr> <td>Total Pelvic Force (sum of acetabular and iliac forces)</td> <td>N</td> <td>5525</td> <td>4462.5</td> </tr> </tbody> </table>						Driver ATD (ES-2re)		Measurement Description	Units	Threshold	Result	Head Injury Criteria (HIC ₃₆)	N/A	1000	115.3	Maximum Chest Deflection	mm	44	30.1	Total Abdominal Force	N	2500	901.5	Pubic Symphysis Force	N	6000	2353.5			Passenger ATD (SID-IIs)		Measurement Description	Units	Threshold	Result	Head Injury Criteria (HIC ₃₆)	N/A	1000	333.1	Lower Spine Resultant Acceleration	G	82	60.4	Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	4462.5
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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 Validation Testing 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 Washington, D.C. 20590																																													
19. Security Class. (of this report) Unclassified	20. Security Class. (of this page) Unclassified	21. No. of Pages	22. Price																																												

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SECTION 1

PURPOSE AND TEST PROCEDURE

PURPOSE

This moving deformable barrier side impact test is part of the FY New Car Assessment Program Side Impact Validation Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract number DTNH22-03-D-22005. The purpose of this test is to generate comparative side impact performance in a 2010 Mazda 3 4-Door Sedan. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated April 2009.

SUMMARY

This section gives a summary of the side impact event.

A 2010 Mazda 3 4-Door Sedan was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 62.6 km/h (38.9 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 April 29, 2009. Pretest and post test photographs of the test vehicle, the MDB and the dummies (ES-2re and SID-IIs) are included in this report.

Dummies were placed in the driver and left rear designated seating positions according to instructions specified in the OCWS Side Impact Laboratory Test Procedure, dated April 2009. The side impact event was documented by 11 cameras. Camera locations are included in this report.

The Dummies were instrumented in the following manner:

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

- PASSENGER ATD (SID-IIs)
- Head Accelerometers
- Upper Neck Load Cells
- Shoulder Displacement Potentiometer
- Chest Upper, Middle, and Lower Rib Load Cells
- Abdomen Upper and Lower Rib Load Cells
- Acetabulum Load Cell
- Iliac Load Cell
- Lower Spine Accelerometers

Dummy injury values were recorded as follows:

	Driver ATD (ES-2re)		
Measurement Description	Units	Threshold	Result
Head Injury Criteria (HIC ₃₆)	N/A	1000	115.3
Maximum Chest Deflection	mm	44	30.1
Total Abdominal Force	N	2500	901.5
Pubic Symphysis Force	N	6000	2353.5

	Passenger ATD (SID-IIs)		
Measurement Description	Units	Threshold	Result
Head Injury Criteria (HIC ₃₆)	N/A	1000	333.1
Lower Spine Acceleration	G	82	60.4
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	4462.5

Supplemental restraint information is given below:

SUPPLEMENTAL RESTRAINT INFORMATION

Restraint Type	Left Front (Driver)		Left Rear (Passenger)	
	Mounted	Deployed	Mounted	Deployed
Front Airbag	Yes	No	NA	NA
Knee Airbag	NA	NA	NA	NA
Side Torso Airbag	Yes	Yes	NA	NA
Head/Torso Airbag	NA	NA	NA	NA
Side Head Curtain/Tube Airbag	Yes	Yes	Yes	Yes
Pretensioner	Yes	No	NA	NA
Load Limiter	Yes	No	NA	NA

GENERAL COMMENTS

The rear truck lid unlatched during test impact.

SECTION 2
DATA SHEETS

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle:	2010 Mazda 3	NHTSA No.	MA5404
Test Program:	Validation Testing	Test Date:	April 29, 2009

TEST VEHICLE INFORMATION AND VEHICLE OPTIONS

NHTSA No.	MA5404	Anti-lock Brakes	Yes
Model Year	2010	All-Wheel Drive	No
Make	Mazda Motor Corporation	Power Steering	Yes
Model	3	Driver Front Airbag	Yes
Body Style	4-Door Sedan	Driver Side Torso Airbag	Yes
VIN	JM1BL1SF3A1122760	Driver Side Head Airbag	No
Body Color	Silver	Driver Curtain Airbag	Yes
Delivery Date	4/16/09	Driver Knee Airbag	No
Odometer Reading (km)	6	Driver Head/Torso Combo Airbag	No
Dealer	Ricart Mazda	Rear Pass. Front Airbag	No
Transmission Type	Manual	Rear Pass. Side Torso Airbag	No
Final Drive	Front	Rear Pass. Side Head Airbag	No
Type/No. Cylinders	4	Rear Pass. Curtain Airbag	Yes
Engine Displacement (L)	2.0	Rear Pass. Head/Torso Airbag	No
Engine Placement	Lateral	Pretensioners	Yes
Roof Rack	No	Load Limiters	Yes
Sunroof/T-Top	No	Air Conditioning	Yes
Tinted Glass	No	AM/FM CD	Yes
Traction Control	No	Tilt Steering	Yes
Power Brakes	Yes	Automatic Door Locks	Yes
Front Disc	Yes	Power Windows	Yes
Rear Disk	Yes	Power Seats	No
Other	-	Other	-

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

DATA FROM CERTIFICATION LABEL

Manufactured By	Mazda Motor Corporation	GVWR (kg)	1768
Date of Manufacture	1/09	GAWR Front (kg)	933
		GAWR Rear (kg)	835

VEHICLE SEATING AND WEIGHT CAPACITY DATA

	Front	Rear	Third	Total	
Designated Seating Capacity (DSC)	2	3	-	5	(A)
Vehicle Capacity Weight (VCW) (kg)				385.0	(B)
DSC X 68.04 kg				340.2	(A-B)
Rated Cargo and Luggage Weight (RCLW) (kg)				44.8	

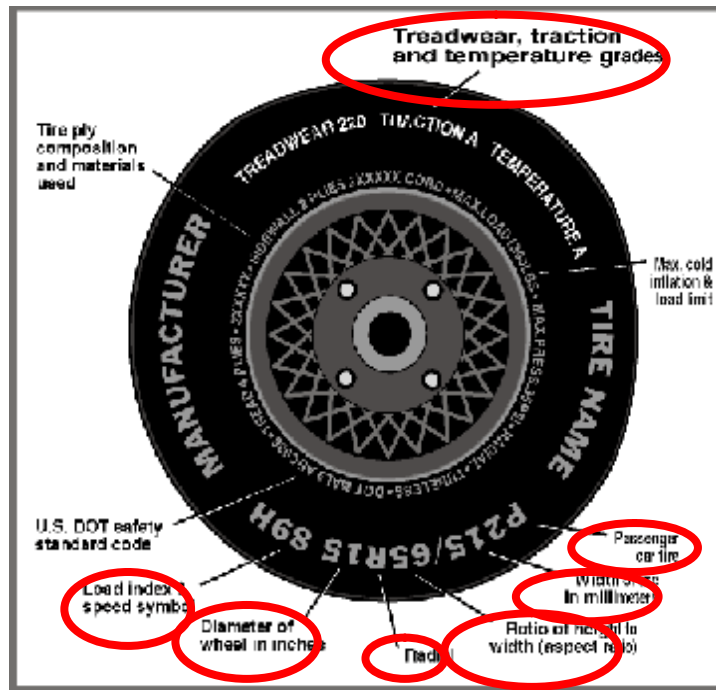
VEHICLE SEAT TYPE

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

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

NHTSA No. MA5404

Test Date: April 29, 2009



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure	300	300
Cold Pressure (kPa)	240	240
Recommended Tire Size	P255/55R16	P255/55R16
Tire Size on Vehicle	P255/55R16	P255/55R16
Tire Model	Turanza	Turanza
Tire Manufacturer	Bridgestone	Bridgestone
Treadwear	300	300
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	2 polyester	2 polyester
Tire Plies Body	1 polyester + 2 steel + 1 nylon	1 polyester + 2 steel + 1 nylon
Load Index/Speed Symbol	89H	89H
Tire Material	Steel belted radial	Steel belted radial
DOT Safety Code Right	H48K DHE 0309	H48K DHE 0309
DOT Safety Code Left	H48K DHE 0309	H48K DHE 0309

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

Test Vehicle:	2010 Mazda 3	NHTSA No.	MA5404
Test Program:	Validation Testing	Test Date:	April 29, 2009

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	390.5	259.5		422.5	329.0		428.0	340.0	
Right	kg	391.5	256.0		407.0	309.0		402.0	306.0	
Ratio	%	60.2	39.8		56.5	43.5		56.2	43.8	
Totals	kg	782.0	515.5	1297.5	829.5	638.0	1467.5	830.0	646.0	1476.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1297.5	(A)
Sum of Actual Weight of 2 P572 ATDs Used	kg	129.3	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	44.8	(C)
Calculated Vehicle Target Weight (TVTW)	kg	1471.6	(A+B+C)

TEST VEHICLE ATTITUDE AND CG

Measurement Description	Units	LF	RF	RR	LR	CG (aft of front axle)
Fully Loaded	mm	677	683	680	673	
As Tested (Fully Loaded $\pm$ 10 mm at each wheel well)	mm	678	688	679	679	1155

GENERAL VEHICLE TEST DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2639
Total Vehicle Length at Left Side	mm	4374
Total Vehicle Length at Centerline	mm	4575
Total Vehicle Length at Right Side	mm	4375
Weight of Ballast in Cargo Area	kg	0
Weight of Vehicle Components Removed	kg	0
Amount of Stoddard Solvent in Fuel Tank	L	51.1

Vehicle parts removed to make Target Vehicle Test Weight (list weight of component in parentheses):

None

TEST VEHICLE VERTICAL IMPACT LINE DATA

Measurement Parameter	Units	Value
Target Impact Point Aft of Front Axle	mm	379
Actual Impact Point Aft of Front Axle	mm	392

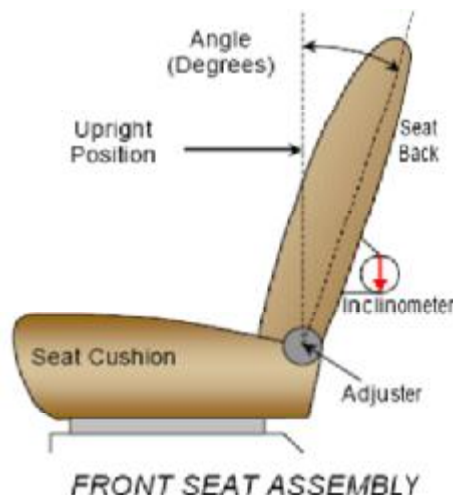
DATA SHEET NO. 2
SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

Test Vehicle: 2010 Mazda 3
 Test Program: Validation Testing

NHTSA No. MA5404
 Test Date: April 29, 2009

NORMAL DESIGN RIDING POSITION

The driver and passenger seat back is positioned to the manufacturer's designated angle. The procedure is as follows:
 Placed the seat back in the 6th detent from the full upright position. The head rest post angle was 16.7 degrees from vertical.



SEAT BACK ANGLES

	Degrees
Driver w/Seated Dummy	16.7 degrees
Passenger w/Seated Dummy	Fixed

SEAT FORE/AFT POSITIONS

Describe the method used for positioning seat fore/aft positions: Seat was placed in the mid-travel position. The vertical adjustment was placed in the full down position. Total fore/aft detents is 27 (seat placed in the 13th detent)

SEAT FORE/AFT POSITIONING

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	314 mm	Mid-Travel (157 mm)
Rear Seat	Not Applicable (Fixed)	Not Applicable (Fixed)

SEAT BELT ANCHORAGES

Describe the method used for positioning seat belt upper anchorages: All detent s were marked with respect to position. Their were four detents, including the upper-most, and the test position was a the upper most detent.

SEAT FOREUPER ANCHORAGE POSITIONING

	Total # of Positions	Placed in Position #
Driver Seat	4 (including upper most)	0 (upper most detent)
Rear Seat	Not Applicable	Not Applicable

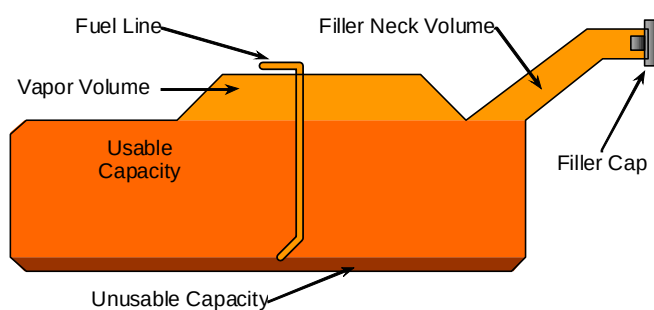
Data Sheet No. 2 (CONTINUED)
SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

Test Vehicle:	2010 Mazda 3	NHTSA No.	MA5404
Test Program:	Validation Testing	Test Date:	April 29, 2009

FUEL TANK CAPACITY

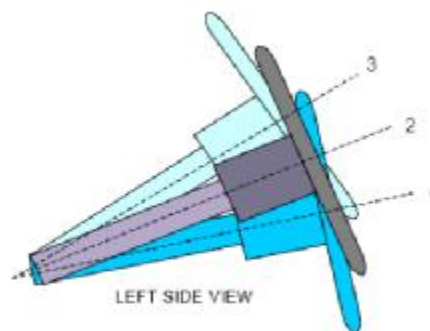
	Liters
Usable Capacity of "Standard" Fuel Tank	54.9
Usable Capacity of "Optional" Fuel Tank	-
Usable Capacity Used for FMVSS 301	54.9
Actual Amount of Solvent Used	51.1

Describe the fuel pump type, it's behavior, and the location of the fuel filler pipe:
 Fuel pump operates when starter or engine is activated. The fuel filler pipe is located on the rear right side of vehicle.



VEHICLE FUEL TANK ASSEMBLY

Steering wheel and column adjustments are made so that the steering wheel hub is at the center of its geometric locus it describes when it moves through its full range of motion. Describe how this measurement was attained:
 A straight edge was placed along the steering wheel touching both the upper and lower portions of the steering wheel.



STEERING COLUMN ASSEMBLY

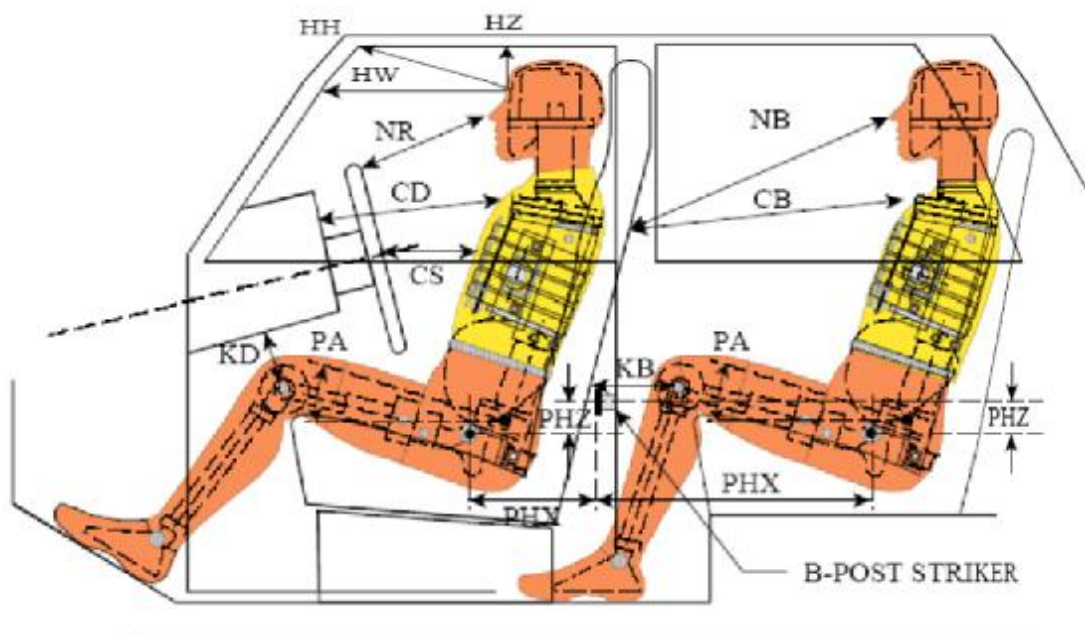
STEERING COLUMN POSITION

	Degrees	Fore/Aft Position (mm)
Lowermost Position No. 1	25.8	
Geometric Center Position No. 2 *	22.7	
Uppermost Position No. 3	19.5	
Telescoping Steering Wheel Travel		50
Test Position		25

DATA SHEET NO. 3 DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2010 Mazda 3
Test Program: Validation Testing

NHTSA No. MA5404
Test Date: April 29, 2009



LEFT SIDE VIEW

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

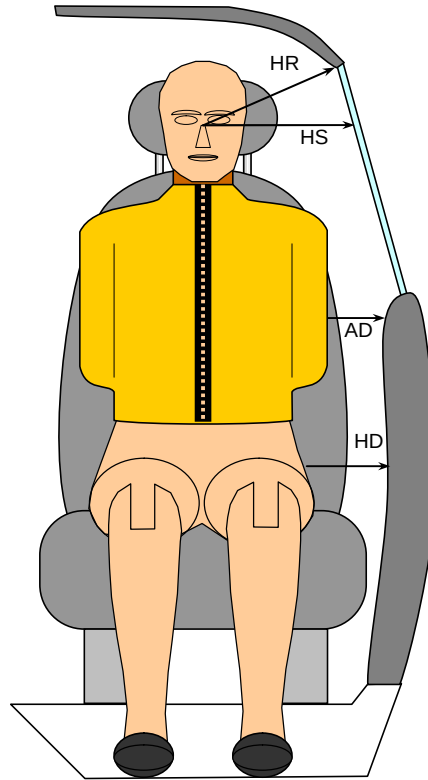
DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Pass. Code	Measurement Description	Driver S/N 033		Passenger S/N 297	
			Length(mm)	Angle(°)	Length(mm)	Angle(°)
HH		Head to Header	412			
HW		Head to Windshield	701			
HZ	HZ	Head to Roof	188		260	
NR	NB	Nose to Rim/Nose to Seatback	503		485	
CD	CB	Chest to Dash or Seatback	609		441	
CS		Chest to Steering Wheel	361			
KDL	KBL	Left Knee to Dash or Seatback	182	33	176	30
KDR	KBR	Right Knee to Dash or Seatback	131		205	
PA	PA	Pelvic Angle		NA		24.7
PHX	PHX	H-Point to Striker (X-Axis)	198 *		208	
PHZ	PHZ	H-Point to Striker (Z-Axis)	163		286	
SA	SA	Seat Back Angle				Fixed

* To Hm point on ES2-re ATD

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle:	2010 Mazda 3	NHTSA No.	MA5404
Test Program:	Validation Testing	Test Date:	April 29, 2009



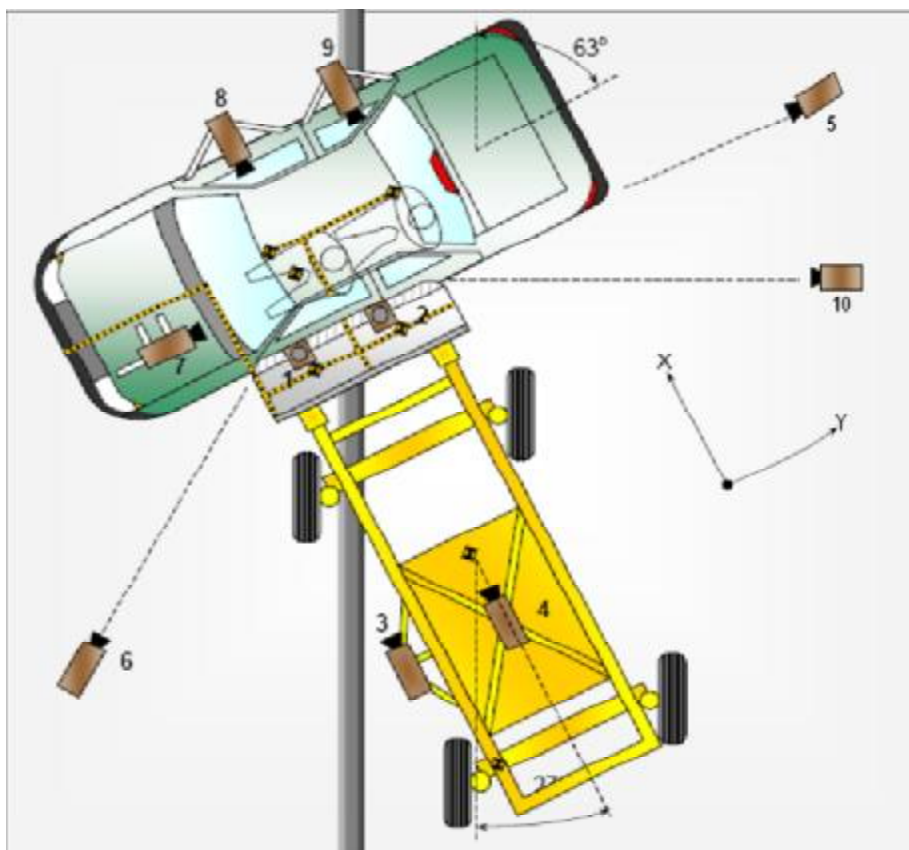
DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Description	Units	Driver S/N 033	Passenger S/N 297
HR	Head to Side Header	mm	195	139
HS	Head to Side Window	mm	322	361
AD	Arm to Door	mm	95	144
HD	H-Point to Door	mm	161	182

DATA SHEET NO. 5 **CAMERA LOCATIONS AND DATA**

Test Vehicle: 2010 Mazda 3
 Test Program: Validation Testing

NHTSA No. MA5404
 Test Date: April 29, 2009



CAMERA LOCATIONS AND DATA

No.	Camera View	Location (mm)			Angle (deg)	Lens (mm)	Film Speed (fps)
		X	Y	Z			
Doc.	Real Time Inrun	-	-	-	-	-	-
Doc.	Real Time Left Front	-	-	-	-	-	-
1	Overhead Overall	72	812	-4880	-90	8	1000
2	Overhead Close-up	195	855	-4880	90	28	1000
3	Left Impact Point (MDB)	-1470	0	-847	0	13	500
4	Side Overall (MDB)	-1140	838	-1586	-17	7.5	500
5	Rear	300	9954	909	-2	50	1000
6	Left Front	-2140	-1740	955	-5	24	1000
7	Driver Front (OB)	460	465	1285	-8	25	500
8	Driver Side (OB)	1690	850	1045	-5	12.5	500
9	Passenger Side (OB)	1650	1730	1095	-6	12.5	500
10	Left Rear (MDB)	-4985	3241	984	-1	50	1000

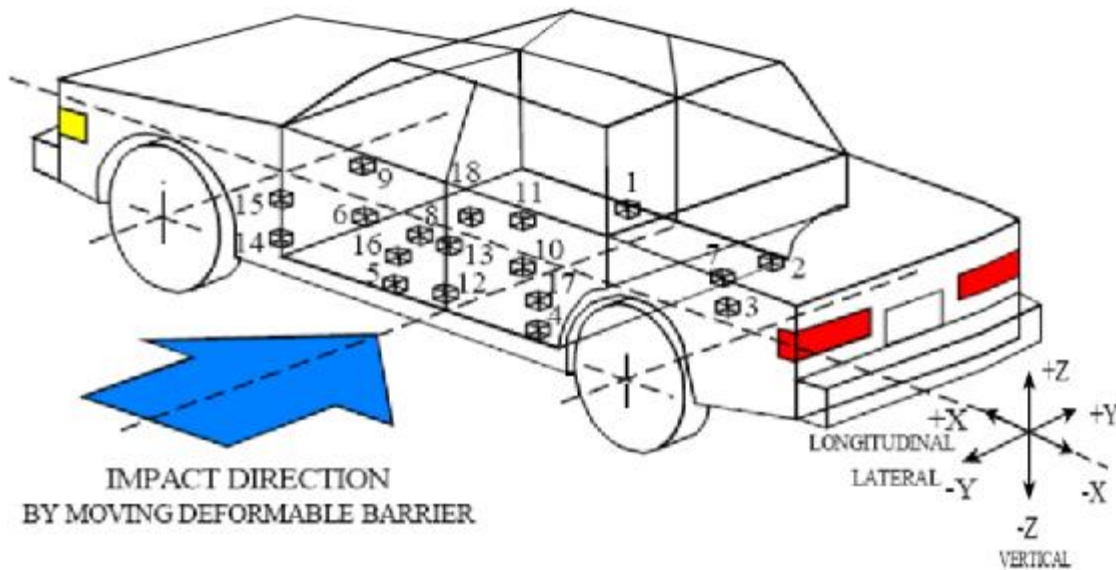
Reference: Impact Point projected to Ground

+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:	2010 Mazda 3	NHTSA No.	MA5404
Test Program:	Validation Testing	Test Date:	April 29, 2009



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

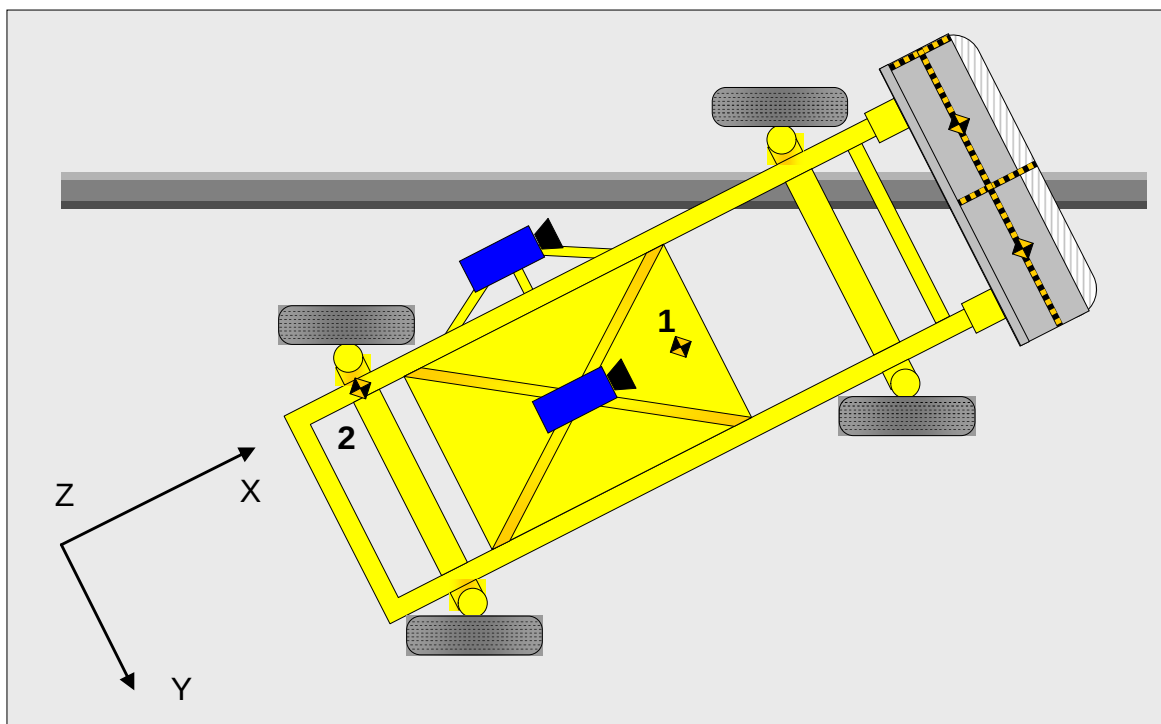
Loc. No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Right Sill at Front Seat	1955	677	242
2	Right Sill at Rear Seat	1205	-60	454
3	Rear Floorpan Above Axle	1990	-622	238
4	Left Sill at Rear Door	2911	-668	284
5	Left Sill at Front Door	1955	677	242
6	Front Door Centerline	-	-	-
7	Rt. Rear Occ. Compartment	2051	437	172
8	Front Door Mid-Rear	-	-	-
9	Front Door Upper Centerline	-	-	-
10	Rear Door Mid Rear	-	-	-
11	Rear Door Upper Centerline	-	-	-
12	B-Post Lower	2128	-676	386
13	B-Post Middle	2015	-649	927
14	A-Post Lower	3088	-616	414
15	A-Post Middle	3058	-641	977
16	Front Seat Track	2189	-542	293
17	Rear Seat Structure	1078	-534	516
18	Vehicle CG	2440	-12	458

Reference Points X – Rear surface of vehicle (+ forward)
 Y - Vehicle Centerline (+ to right)
 Z - Ground Plane (+ up)

DATA SHEET NO. 7 **MDB ACCELEROMETER LOCATIONS**

Test Vehicle: 2010 Mazda 3
 Test Program: Validation Testing

NHTSA No. MA5404
 Test Date: April 29, 2009



MDB ACCELEROMETER LOCATIONS

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

Reference Points X – Face of MDB (+ rearward)
 Y - MDB Centerline (+ to right)
 Z - Ground Plane (+ up)

DATA SHEET NO. 8
TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle:	2010 Mazda 3	NHTSA No.	MA5404
Test Program:	Validation Testing	Test Date:	April 29, 2009

MAXIMUM EXTERIOR STATIC CRUSH

Level	Measured Parameter	Units	Maximum Crush	Above Ground
1	Sill Top Height	mm	82	221
2	Occupant H-Point	mm	250	490
3	Mid Door	mm	230	618
4	Window Sill	mm	195	855
5	Window Top	mm	13	1382
	Maximum Penetration	mm	250	490

INSTRUMENTATION

Driver Dummy Channels	16
Passenger Dummy Channels	25
Vehicle Structure Accelerometers	21
MDB Accelerometers	5
Total No. of Contact Switches *	NA
Total	67

CAMERA COVERAGE

High-Speed Vehicle Onboard	3
High-Speed Offboard	5
High-Speed MDB Onboard	2
Real-Time Panning	1
Total	11

* Contact switches were not used in this test

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

Test Vehicle:	2010 Mazda 3	NHTSA No.	MA5404
Test Program:	Validation Testing	Test Date:	April 29, 2009

MDB SPECIFICATIONS

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

MDB WEIGHTS

	Units	Front Axle	Rear Axle	Total
Left	kg	409.5	281.5	691.0
Right	kg	372.5	299.0	671.5
Ratio	%	57.4	42.6	100
Totals	kg	782.0	580.5	1362.5

SPEED AND IMPACT DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	62.6
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	62.6
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	89.8

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE

Vertical Location			From Centerline		Maximum Crush (mm)
Row	Description	Height	Distance	Direction	
A	Center of Bumper	432	800	Left of center	91
B	Top of Bumper	533	800	Left of center	102
C	Mid-Level	686	800	Right of Center	122
D	Top of Stack	813	800	Right of Center	205

MDB SPECIFICATIONS

Accelerometer	5
Contact Switches	NA
High-Speed Cameras	2

**DATA SHEET NO. 10
POST TEST OBSERVATIONS**

Test Vehicle:	2010 Mazda 3	NHTSA No.	MA5404
Test Program:	Validation Testing	Test Date:	April 29, 2009

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Front Seat Dummy (ES-2re)	Rear Seat Dummy (SID-IIs)
Dummy Type / Serial No.	SID/HIII / 033	SID/HIII / 297
Head Contact	Left Side Curtain Airbag	Left Side Curtain Airbag
Upper Torso Contact	Torso Airbag	Door Trim
Lower Torso Contact	Torso Airbag	Door Trim
Left Knee Contact	No Contact	No Contact
Right Knee Contact	No Contact	No Contact

POST TEST DOOR OPENING AND SEAT TRACK INFORMATION

Description	Front	Rear
Locked/Unlocked Doors	Jammed shut	Remained closed and operational
Left Side Door Opening	Jammed shut	Jammed shut
Right Side Door Opening	Remained closed and operational	Remained closed and operational
Seat Movement	None	None
Seat Back Failure	None	None

POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	The Left side B-Pillar was pushed inboard during test event
Sill Separation	No visible tears or separations
Windshield Damage	None
Window Damage	Front left window shattered, rear Left window intact
Other Notable Effects	None

SUPPLEMENTAL RESTRAINT INFORMATION

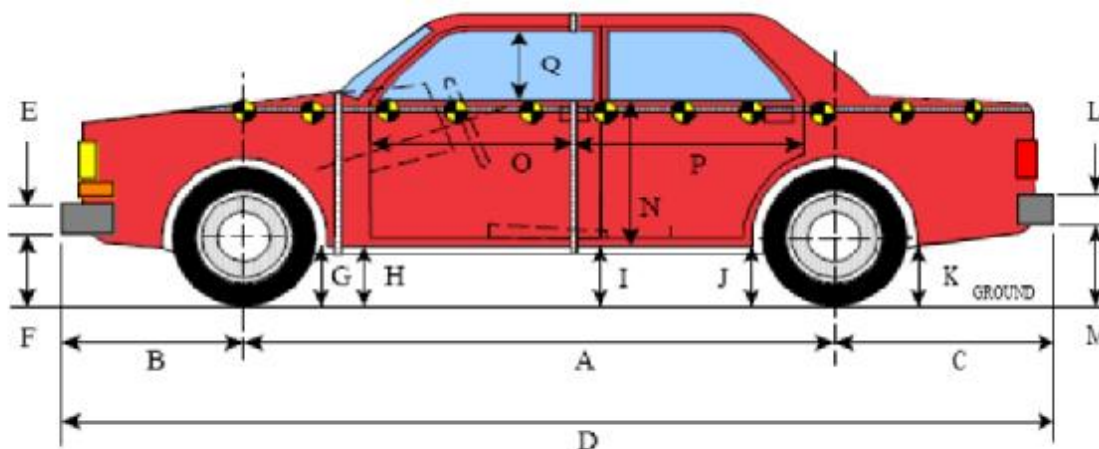
Restraint Type	Left Front (Driver) Occupant Location 1		Left Rear (Passenger) Occupant Location 4	
	Installed	Deployed	Installed	Deployed
Front Airbag	Yes	No	NA	NA
Side Torso Airbag	Yes	Yes	NA	NA
Head/Torso Airbag	NA	NA	NA	NA
Curtain Airbag	Yes	Yes	Yes	Yes
Seat Belt Pretensioner	No	No	No	No
Seat Belt Load Limiter	No	No	No	No

MDB LEFT EDGE IMPACT POINT DATA

Measured Parameter	Units	Requirement	Value
Horizontal Offset	mm	+/- 50	-13 mm
Vehicle Offset	m	+/- 50	+8 mm

DATA SHEET NO.11
VEHICLE PRE-TEST AND POST-TEST MEASUREMENTS

Test Vehicle:	2010 Mazda 3	NHTSA No.	MA5404
Test Program:	Validation Testing	Test Date:	April 29, 2009



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

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2639	2621	18
B	Front Axle to FSOV	954	951	3
C	Rear Axle to RSOV	983	1010	-27
D	Total Length at Centerline	4575	4582	-7
E	Front Bumper Thickness	334	320	14
F	Front Bumper Bottom to Ground	200	260	-60
G	Sill Height at Front Wheel Well	175	210	-35
H	Sill Height at Front Door Leading Edge	175	206	-31
I	Sill Height at "B" Pillar	175	262	-87
J1	Sill Height at Rear Wheel Well	133	242	-109
J2	Pinch Weld Height at Rear Wheel Well	173	182	-9
K	Sill Height Aft of Rear Wheel Well	211	270	-59
L	Rear Bumper Thickness	325	310	15
M	Rear Bumper Bottom to Ground	284	338	-54
N	Sill Height to Window Bottom Sill	743	702	41
O	Front Door Leading Edge to Impact CL	767	732	35
P	Rear Door Trailing Edge to Impact CL	1113	1053	60
Q	Front Window Opening	424	440	-16
R	Right Side Length	4375	4372	3
S	Left Side Length	4374	4360	14
T	Vehicle Width at "B" Post	1750	1551	199

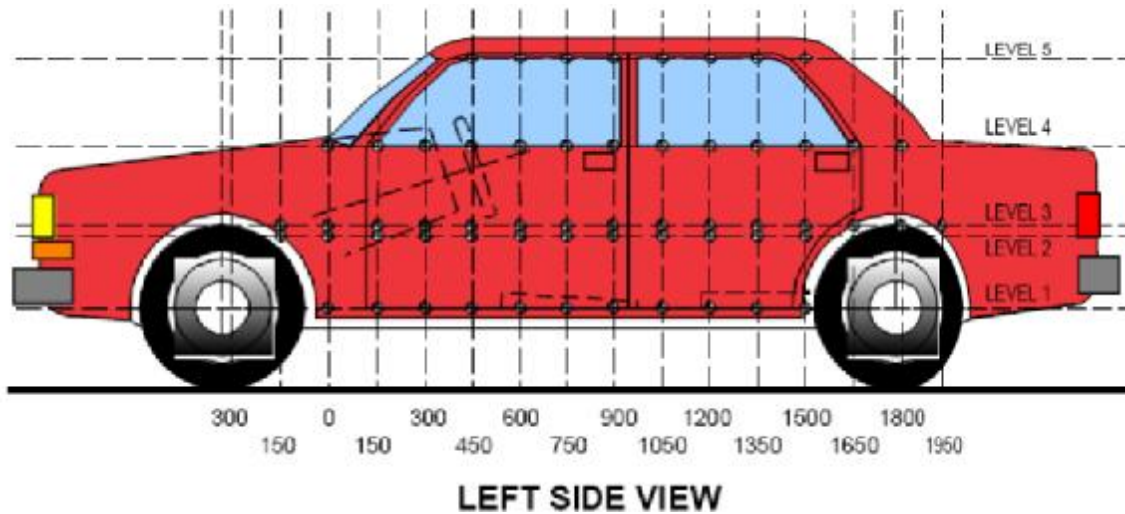
DATA SHEET NO. 12
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2010 Mazda 3

NHTSA No. MA5404

Test Program: Validation Testing

Test Date: April 29, 2009



Level	Measurement Description	Height Above Ground (mm)
1	Sill Top	221
2	Occupant H-Point	490
3	Mid-Door	618
4	Window Sill	855
5	Window Top	1382

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: 2010 Mazda 3

NHTSA No. MA5404

Test Program: Validation Testing

Test Date: April 29, 2009

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900	--	182	199	--	--	--	205	219	--	--	N/A	23	20	N/A	N/A
-750	--	141	149	--	--	--	165	170	--	--	N/A	24	21	N/A	N/A
-600	--	--	128	251	--	--	--	151	267	--	N/A	N/A	23	16	N/A
-450	--	--	--	182	--	--	--	--	200	--	N/A	N/A	N/A	18	N/A
-300	--	--	--	170	--	--	--	--	192	--	N/A	N/A	N/A	22	N/A
-150	--	--	122	183	--	--	--	153	212	--	N/A	N/A	31	29	N/A
0	171	127	130	195	--	207	165	174	231	--	36	38	44	36	N/A
150	172	137	136	187	--	206	304	251	262	--	34	167	115	75	N/A
300	174	137	134	179	--	241	348	317	294	--	67	211	183	115	N/A
450	174	136	132	170	--	244	367	341	310	--	70	231	209	140	N/A
600	174	134	130	163	--	248	376	350	318	--	74	242	220	155	N/A
750	173	134	128	156	682	253	380	337	320	688	80	246	209	164	6
900	174	133	127	149	421	256	383	337	324	426	82	250	210	175	5
1050	174	134	126	132	407	251	383	341	289	414	77	249	215	157	7
1200	173	135	127	140	405	250	374	341	304	414	77	239	214	164	9
1350	173	136	128	140	406	253	375	353	314	419	80	239	225	174	13
1500	175	138	131	140	411	244	340	361	333	419	69	202	230	193	8
1650	173	141	134	141	419	237	329	354	336	426	64	188	220	195	7
1800	174	137	135	143	435	209	295	353	313	436	35	158	218	170	1
1950	--	--	125	152	--	--	--	249	263	--	N/A	N/A	124	111	N/A
2100	--	--	--	150	--	--	--	--	205	--	N/A	N/A	N/A	55	N/A
2250	--	--	--	154	--	--	--	--	180	--	N/A	N/A	N/A	26	N/A
2400	--	--	--	162	--	--	--	--	173	--	N/A	N/A	N/A	11	N/A
2550	--	--	132	175	--	--	--	133	172	--	N/A	N/A	1	-3	N/A
2700	--	162	176	194	--	--	161	174	189	--	N/A	-1	-2	-5	N/A
2850	--	202	225	224	--	--	200	222	214	--	N/A	-2	-3	-10	N/A

MAXIMUM CRUSH DATA

	Level 1	Level 2	Level 3	Level 4	Level 5
Maximum Crush (mm)	82	250	230	195	13
Distance From Impact (mm)	900	900	1500	1650	1350

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

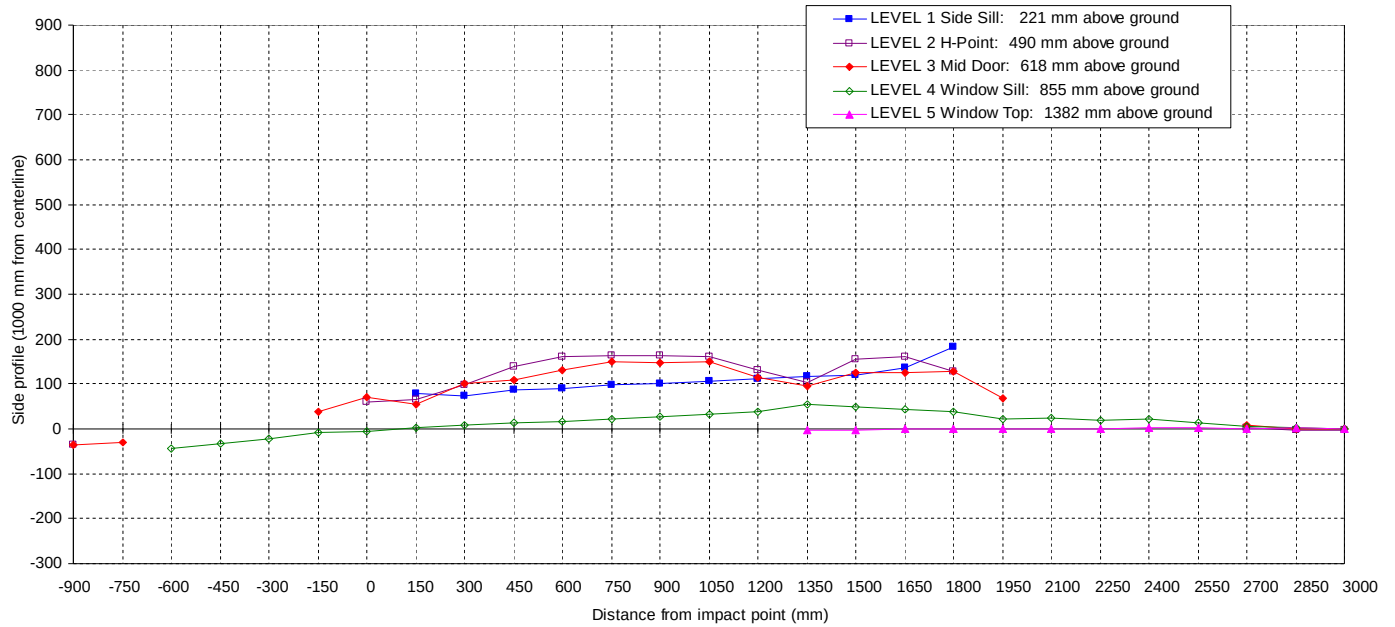
DATA SHEET NO. 12 (CONTINUED) **VEHICLE EXTERIOR CRUSH MEASUREMENTS**

Test Vehicle: 2010 Mazda 3

NHTSA No. MA5404

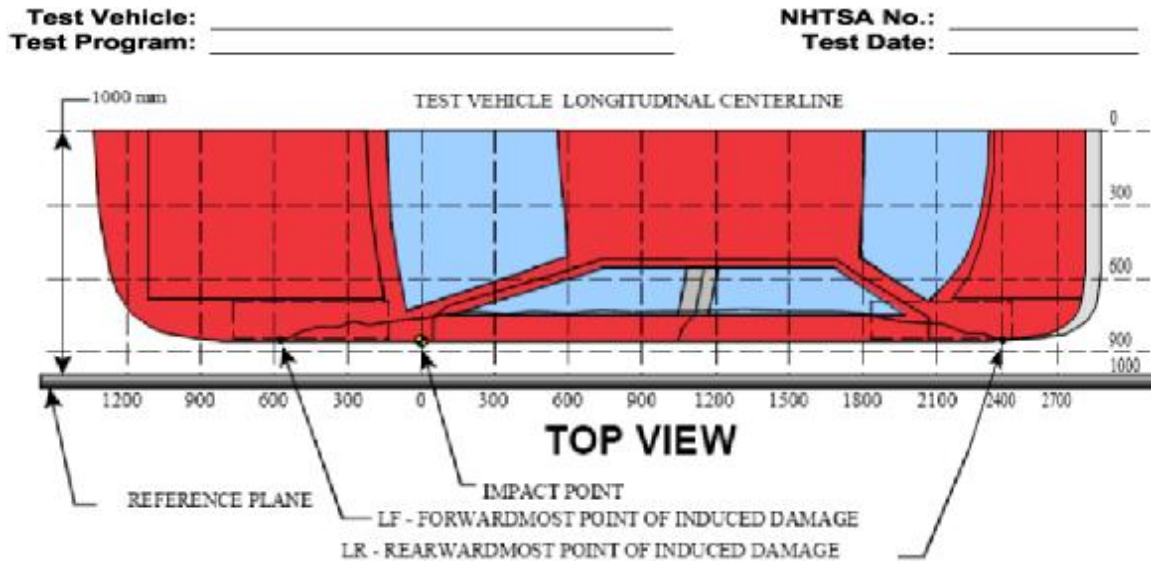
Test Program: Validation Testing

Test Date: April 29, 2009



DATA SHEET NO. 13
VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle:	2010 Mazda 3	NHTSA No.	MA5404
Test Program:	Validation Testing	Test Date:	April 29, 2009

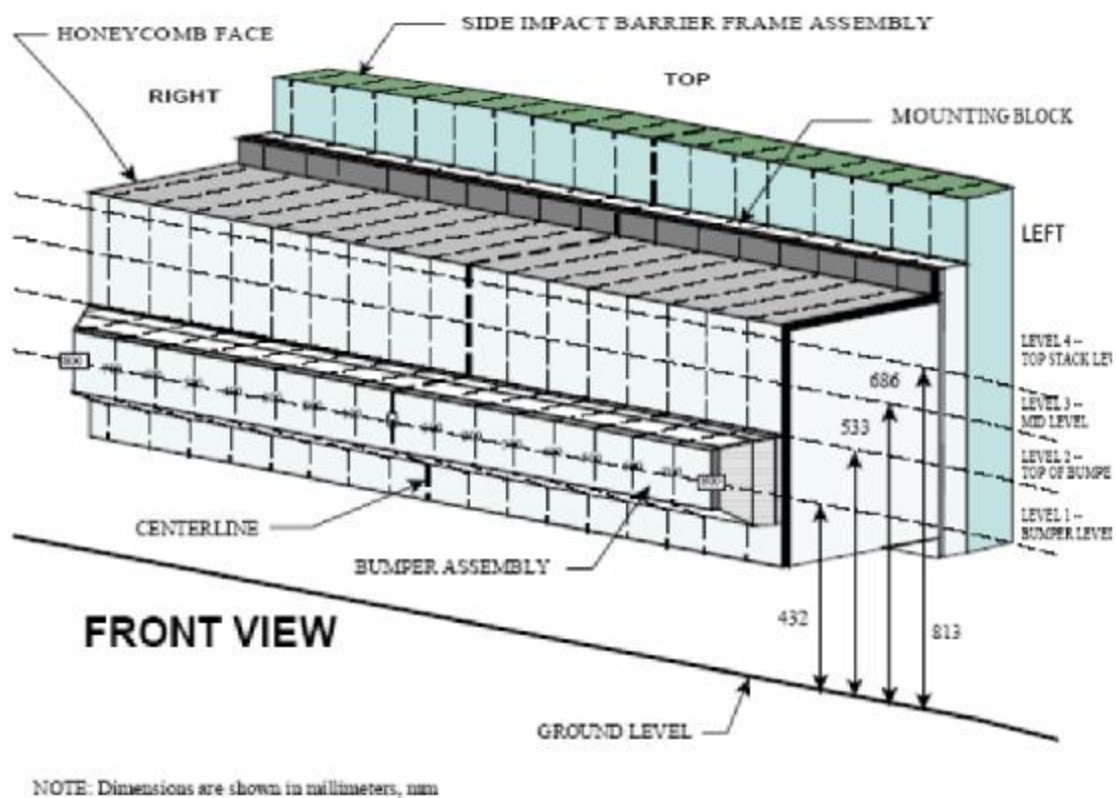


DPD	Distance From Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Maximum Static Crush (mm)
1	2700	3	81	88	7
2	2130	4	97	121	24
3	1560	2	113	270	157
4	990	2	114	277	163
5	420	2	120	251	131
6	-150	3	73	110	37

DATA SHEET NO. 14
EXTERIOR STATIC CRUSH FOR IMPACTOR FACE

Test Vehicle: 2010 Mazda 3
 Test Program: Validation Testing

NHTSA No. MA5404
 Test Date: April 29, 2009



DEFORMABLE BARRIER STATIC CRUSH

Stack Level	Distance Right of Center								C/L	Distance Left of Center							
	800	700	600	500	400	300	200	100		0	100	200	300	400	500	600	700
1	27	12	8	6	17	41	54	49	40	24	10	13	13	16	35	61	91
2	20	8	14	17	22	20	37	27	10	6	6	9	12	18	26	51	102
3	122	110	78	61	54	52	58	57	55	53	61	67	66	65	67	79	106
4	205	194	165	140	125	123	118	115	111	111	110	108	106	108	120	140	161

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

Test Vehicle: 2010 Mazda 3 NHTSA No. MA5404
 Test Program: Validation Testing Test Date: April 29, 2009

Test Time: 9:55 Temperature: 21° C

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

FMVSS 301 STATIS ROLLOVER DATA



ROLLOVER SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0 to 90	1 min 10 sec	5 min	6 min 10 sec
90 to 180	1 min 3 sec	5 min	6 min 3 sec
180 to 270	1 min 2 sec	5 min	5 min 2 sec
270 to 360	1 min 10 sec	5 min	6 min 10 sec

FMVSS 301 ROLLOVER SPILLAGE TABLE

Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0 to 90	0	0	0	NA
90 to 180	0	0	0	NA
180 to 270	0	0	0	NA
270 to 360	0	0	0	NA

ROLLOVER SOLVENT SPILLAGE LOCATION TABLE

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

DATA SHEET NO. 16
DUMMY/VEHICLE TEMPERATURE STABILIZATION

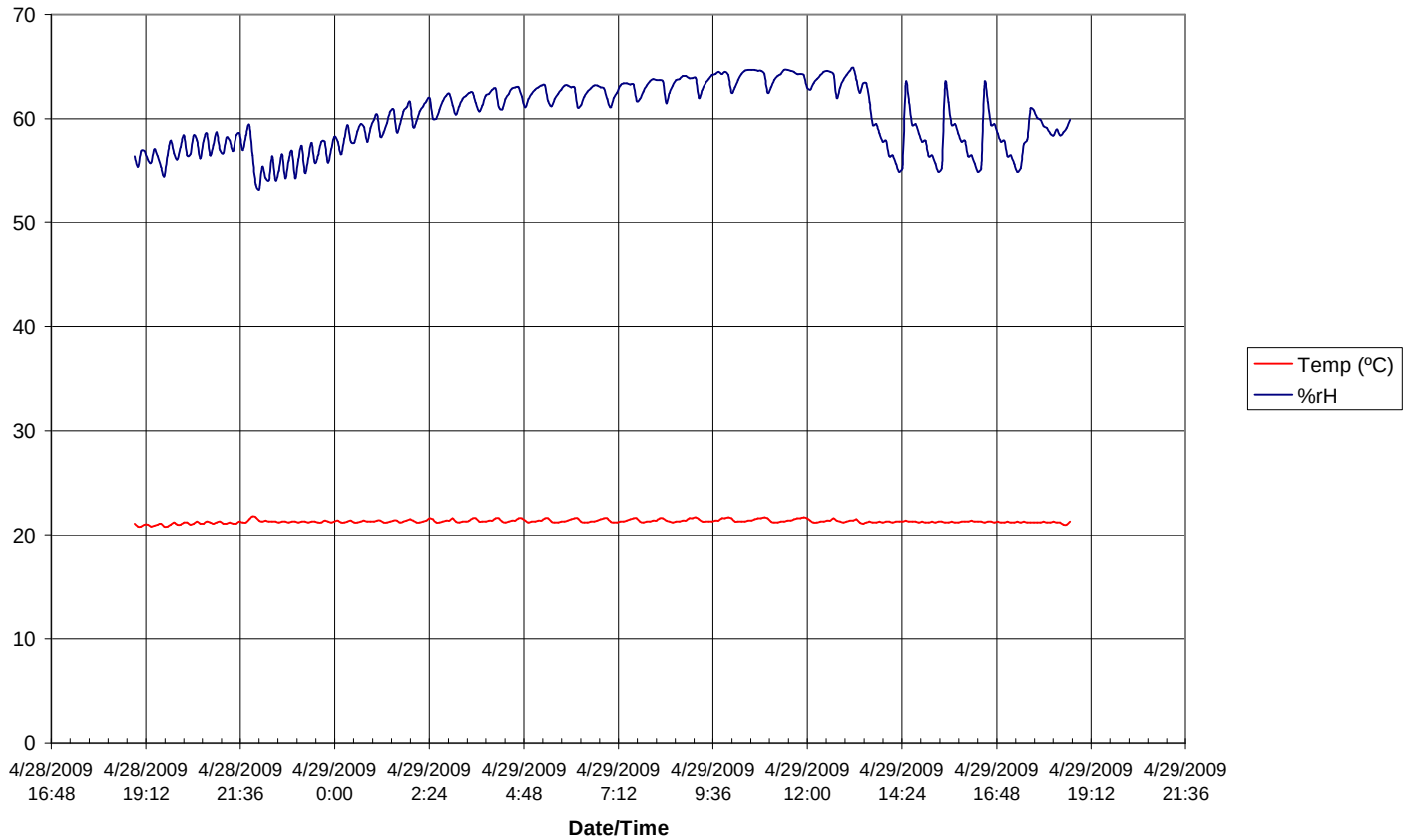
Test Vehicle: 2010 Mazda 3

NHTSA No. MA5404

Test Program: Validation Testing

Test Date: April 29, 2009

2010 Mazda 3 MA5404 Environmental Conditions



APPENDIX A
PHOTOGRAPHS

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Figure A-1: As-delivered right front $\frac{3}{4}$ view of test vehicle



Figure A-2: As-delivered left rear $\frac{3}{4}$ view of test vehicle



Figure A-3: Pre-test frontal view of the target vehicle



Figure A-4: Post-test frontal view of test vehicle (rear trunk lid was latched post-test)



Figure A-5: Pre-test left $\frac{3}{4}$ front view of test vehicle



Figure A-6: Post-test left $\frac{3}{4}$ front view of test vehicle (rear trunk lid was latched post-test)



Figure A-7: Pre-test left side view of test vehicle



Figure A-8: Post-test left side view of test vehicle (rear trunk lid was latched post-test)



Figure A-9: Pre-test left $\frac{3}{4}$ rear view of test vehicle



Figure A-10: Post-test left $\frac{3}{4}$ rear view of impact zone (rear trunk lid was latched post-test)



Figure A-11: Pre-test rear view of test vehicle

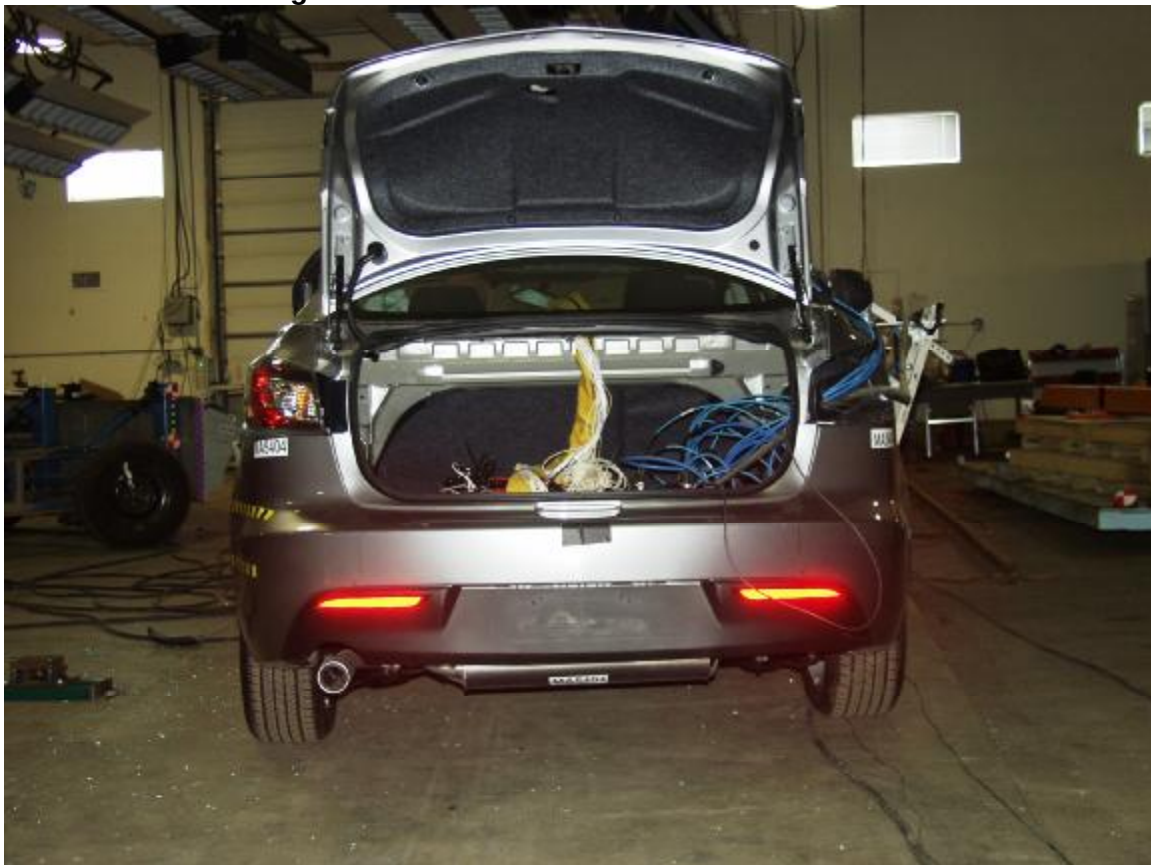


Figure A-12: Post-test rear view of test vehicle (rear trunk lid was latched post-test)



Figure A-13: Pre-test right side view of test vehicle



Figure A-14: Post-test right side view of test vehicle (rear trunk lid was latched post-test)

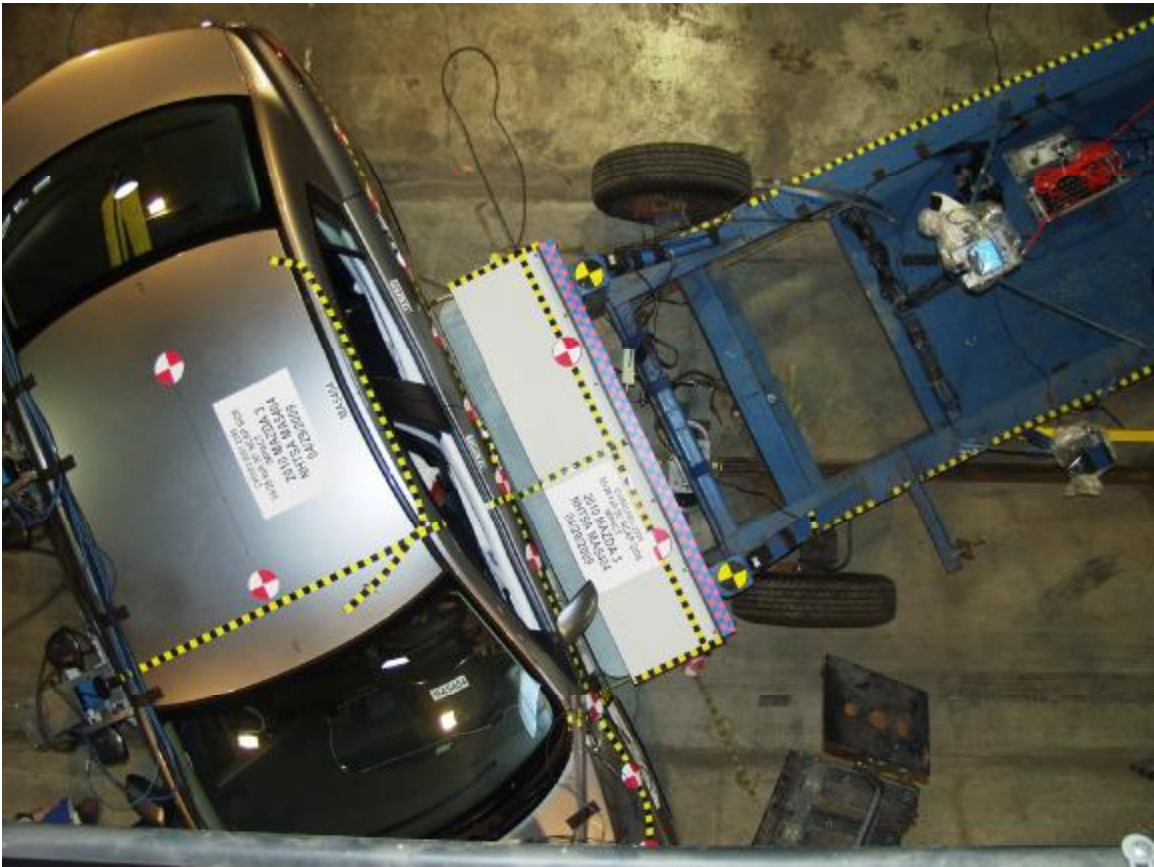


Figure A-15: Pre-test overhead view of the test vehicle with MDB



Figure A-16: Post-test overhead view of the test vehicle and MDB



Figure A-17: Pre-test left side view of MDB positioned against vehicle



Figure A-18: Pre-test right side view of MDB positioned against 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

Photograph Not Available

Figure A-21: Pre-test left front door latch close-up



Figure A-22: Post-test left front door latch close-up

Photograph Not Available

Figure A-23: Pre-test left rear door latch close-up



Figure A-24: Post-test left rear door latch close-up

Photograph Not Available

Figure A-25: Pre-test front close-up view of driver dummy

Photograph Not Available

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 and chalking



Figure A-28: Pre-test left side view of driver dummy shoulder and door top view

Photograph Not Available

Figure A-29: Post-test left side view of driver dummy shoulder and door top view



Figure A-30: Pre-test close-up left side view of driver seat track

Photograph Not Available

Figure A-31: Pre-test close-up left side view of driver seat back

Photograph Not Available

Figure A-32: Pre-test driver dummy and door clearance view

Photograph Not Available

Figure A-33: Post-test driver dummy and door clearance view



Figure A-34: Pre-test right side view of front seat of occupant compartment



Figure A-35: Post-test right side view of front seat of occupant compartment



Figure A-36: Pre-test driver inner door panel view



Figure A-37: Post-test driver inner door panel view



Figure A-38: Post-test driver dummy head contact view

Photograph Not Available

Figure A-39: Post-test driver dummy door contact view



Figure A-40: Pre-test left side view of passenger dummy showing belt and chalking



Figure A-41: Pre-test left side view of passenger dummy shoulder and door top view

Photograph Not Available

Figure A-42: Post-test left side view of pass. dummy shoulder and door top view

Photograph Not Available

Figure A-43: Pre-test close-up left side view of passenger seat track

Photograph Not Available

Figure A-44: Pre-test close-up left side view of passenger seat back

Photograph Not Available

Figure A-45: Pre-test passenger dummy and door clearance view

Photograph Not Available

Figure A-46: Post-test passenger dummy and door clearance view



Figure A-47: Pre-test right side view of rear seat of occupant compartment



Figure A-48: Post-test right side view of rear seat of occupant compartment



Figure A-49: Pre-test passenger inner door panel view



Figure A-50: Post-test passenger inner door panel view



Figure A-51: Post-test passenger dummy head contact view

Photograph Not Available

Figure A-52: Post-test passenger dummy door contact view



Figure A-53: Close-up view of vehicle's certification label



Figure A-54: Close-up view of vehicle's tire information placard





Figure A-57: Pre-test top view of MDB impactor face



Figure A-58: Post-test top view of MDB impactor face



Figure A-59: Pre-test left side view of MDB impactor face



Figure A-60: Post-test left side view of MDB impactor face



Figure A-61: Pre-test right side view of MDB impactor face



Figure A-62: Post-test right side view of MDB impactor face



Figure A-63: Post-test primary and redundant speed trap velocity

Photograph Not Available

Figure A-64: FMVSS 301/305 rollover 0°



Figure A-65: FMVSS 301/305 rollover 90°



Figure A-66: FMVSS 301/305 rollover 180°



Figure A-67: FMVSS 301/305 rollover 270°



Figure A-68: FMVSS 301/305 rollover 360°



Figure A-69: Impact event (impact side)

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

DATA CHANNEL FILTER CLASS SUMMARY

Data Type	SAE Filter Class
Dummy Head Accelerations	CFC 1000
Chest Deflection (ES-2re)	CFC 180
Chest, Shoulder, and Abdominal Deflections (SID-IIs)	CFC 600
All Forces and Moments	CFC 600
Spine Acceleration (ES-2re)	CFC 60
Spine Accelerations (SID-IIs)	CFC 180

DATA CHANNEL TITLE KEY

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

TABLE OF DATA PLOTS

PLOT	PLOT NAME[UNITS, CHANNEL FILTER CLASS]	PAGE
1	Driver Head X Acceleration vs. Time Primary	B-7
2	Driver Head Y Acceleration vs. Time Primary	B-7
3	Driver Head Z Acceleration vs. Time Primary	B-8
4	Driver Head Resultant Acceleration vs. Time Primary	B-8
5	Driver Upper Thorax Rib Deflection Y vs. Time	B-9
6	Driver Middle Thorax Rib Deflection Y vs. Time	B-9
7	Driver Lower Thorax Rib Deflection Y vs. Time	B-10
8	Driver Thorax Rib Deflection Maximum Y vs. Time	B-10
9	Driver Anterior Abdominal Force Y vs. Time	B-11
10	Driver Middle Abdominal Force Y vs. Time	B-11
11	Driver Posterior Abdominal Force Y vs. Time	B-12
12	Driver Total Abdominal Force vs. Time	B-12
13	Driver Pubic Symphysis Force Y vs. Time	B-13
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18	Passenger Lower Spine T12 X Acceleration vs. Time	B-15
19	Passenger Lower Spine T12 Y Acceleration vs. Time	B-16
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21	Passenger Lower Spine Resultant Acceleration vs. Time	B-17
22	Passenger Iliac Force Y vs. Time	B-17
23	Passenger Acetabulum Force Y vs. Time	B-18
24	Passenger Total Pelvic Force Y vs. Time	B-18

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

Driver & Passenger Dummy Instrumentation Plots

Driver Lower Spine T12 X Acceleration vs. Time
Driver Lower Spine T12 Y Acceleration vs. Time
Driver Lower Spine T12 Z Acceleration vs. Time
Passenger Upper Neck X Force vs. Time
Passenger Upper Neck Y Force vs. Time
Passenger Upper Neck Z Force vs. Time
Passenger Upper Neck X Moment vs. Time
Passenger Upper Neck Y Moment vs. Time
Passenger Upper Neck Z Moment vs. Time
Passenger Shoulder Y Deflection vs. Time
Passenger Upper Thorax Rib Y Deflection vs. Time
Passenger Middle Thorax Rib Y Deflection vs. Time
Passenger Lower Thorax Rib Y Deflection vs. Time
Passenger Upper Abdomen Rib Y Deflection vs. Time
Passenger Lower Abdomen Rib Y Deflection vs. Time
Driver Head (X) Acceleration vs. Time
Driver Head (Y) Acceleration vs. Time
Driver Head (Z) Acceleration vs. Time
Driver Shoulder Contact Switch vs. Time
Driver Torso Contact Switch vs. Time
Driver Leg Contact Switch vs. Time
Passenger Head (X) Acceleration vs. Time
Passenger Head (Y) Acceleration vs. Time
Passenger Head (Z) Acceleration vs. Time
Passenger Shoulder Contact Switch vs. Time
Passenger Torso Contact Switch vs. Time
Passenger Leg Contact Switch vs. Time

Vehicle Instrumentation Plots

Driver Side Airbag Voltage
Driver Side Curtain Airbag Voltage
Passenger Side Airbag Voltage (if applicable)
Passenger Side Curtain Airbag Voltage (if different from Driver)
Right Side Sill at Front Seat (X) Acceleration vs. Time
Right Side Sill at Front Seat (Y) Acceleration vs. Time
Right Side Sill at Front Seat (Z) Acceleration vs. Time
Right Side Sill at Rear Seat (X) Acceleration vs. Time
Right Side Sill at Rear Seat (Y) Acceleration vs. Time
Right Side Sill at Rear Seat (Z) Acceleration vs. Time
Rear Floorpan Above Axle (X) Acceleration vs. Time
Rear Floorpan Above Axle (Y) Acceleration vs. Time
Rear Floorpan Above Axle (Z) Acceleration vs. Time
Left Side Sill at Front Seat (Y) Acceleration vs. Time
Left Side Sill at Rear Seat (Y) Acceleration vs. Time
Right Rear Occupant Compartment (Y) Acceleration vs. Time
Lower A-Post (Y) Acceleration vs. Time
Upper A-Post (Y) Acceleration vs. Time
Lower B-Post (Y) Acceleration vs. Time
Upper B-Post (Y) Acceleration vs. Time
Front Seat Track (Y) Acceleration vs. Time
Rear Seat Track (Y) Acceleration vs. Time
Vehicle Center of Gravity (X) Acceleration vs. Time

Vehicle Center of Gravity (Y) Acceleration vs. Time

Vehicle Center of Gravity (Z) Acceleration vs. Time

MDB Instrumentation Plots

MDB Center of Gravity (X) Acceleration vs. Time

MDB Center of Gravity (Y) Acceleration vs. Time

MDB Center of Gravity (Z) Acceleration vs. Time

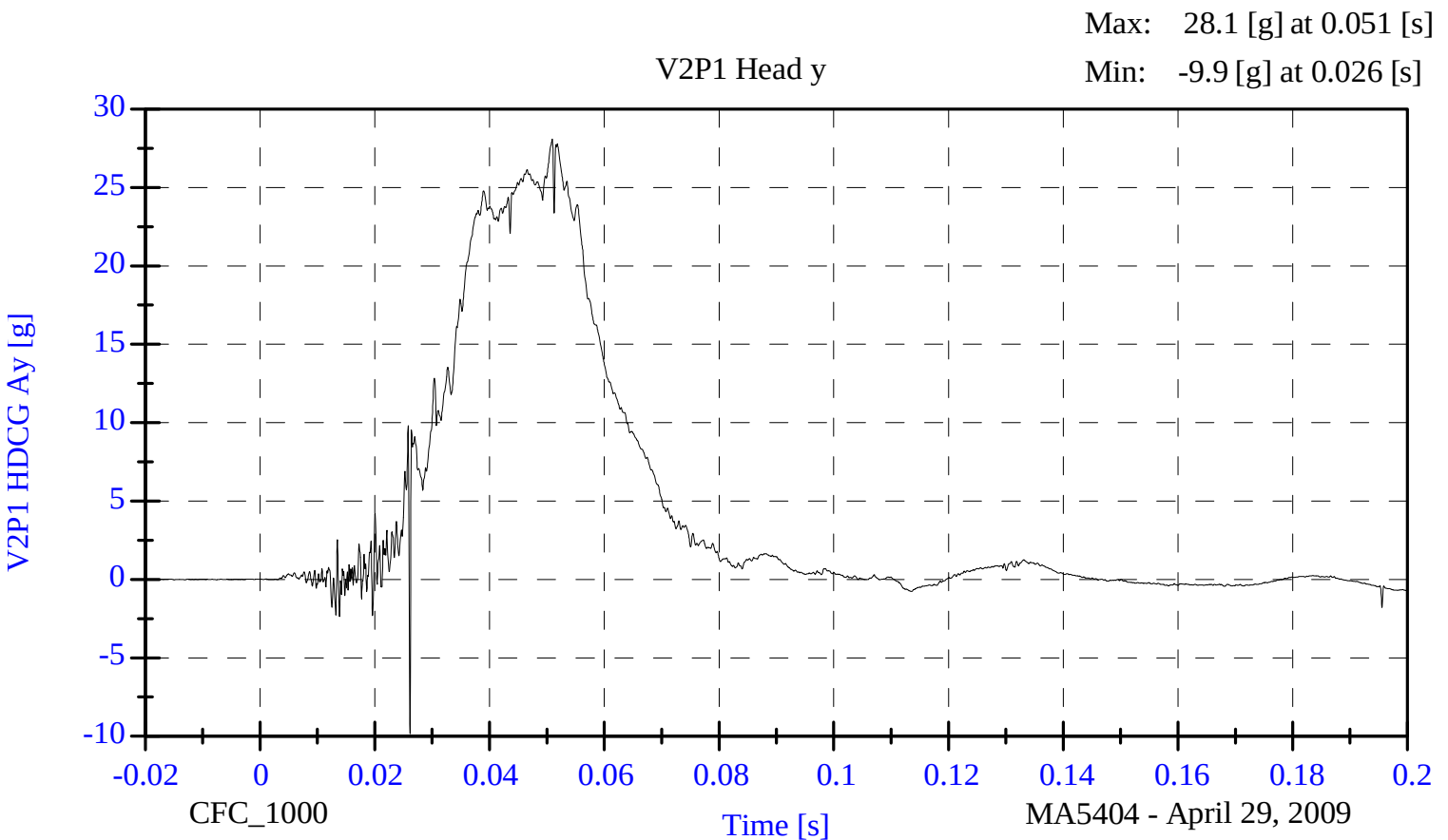
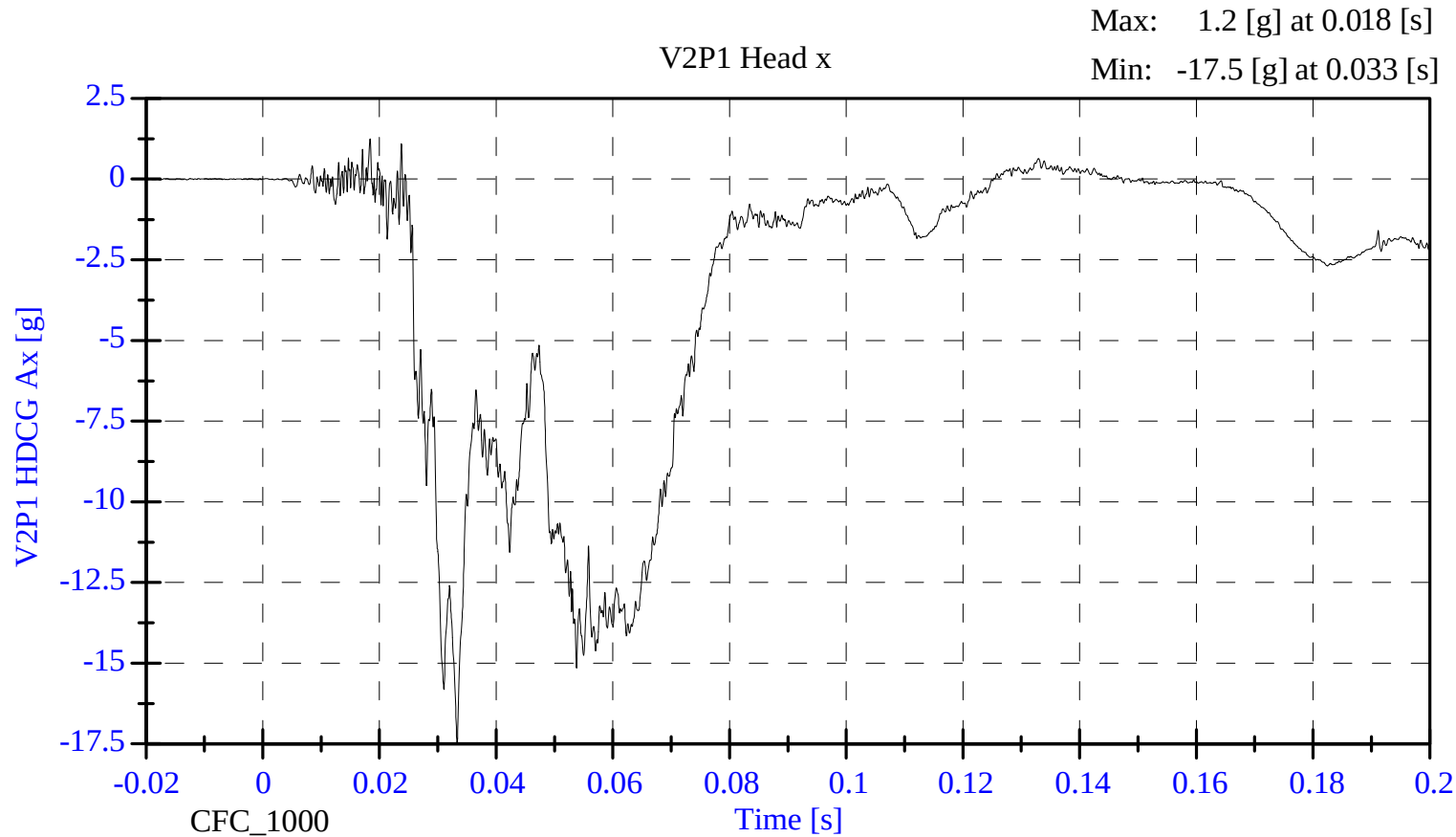
MDB Center of Gravity Resultant Acceleration vs. Time

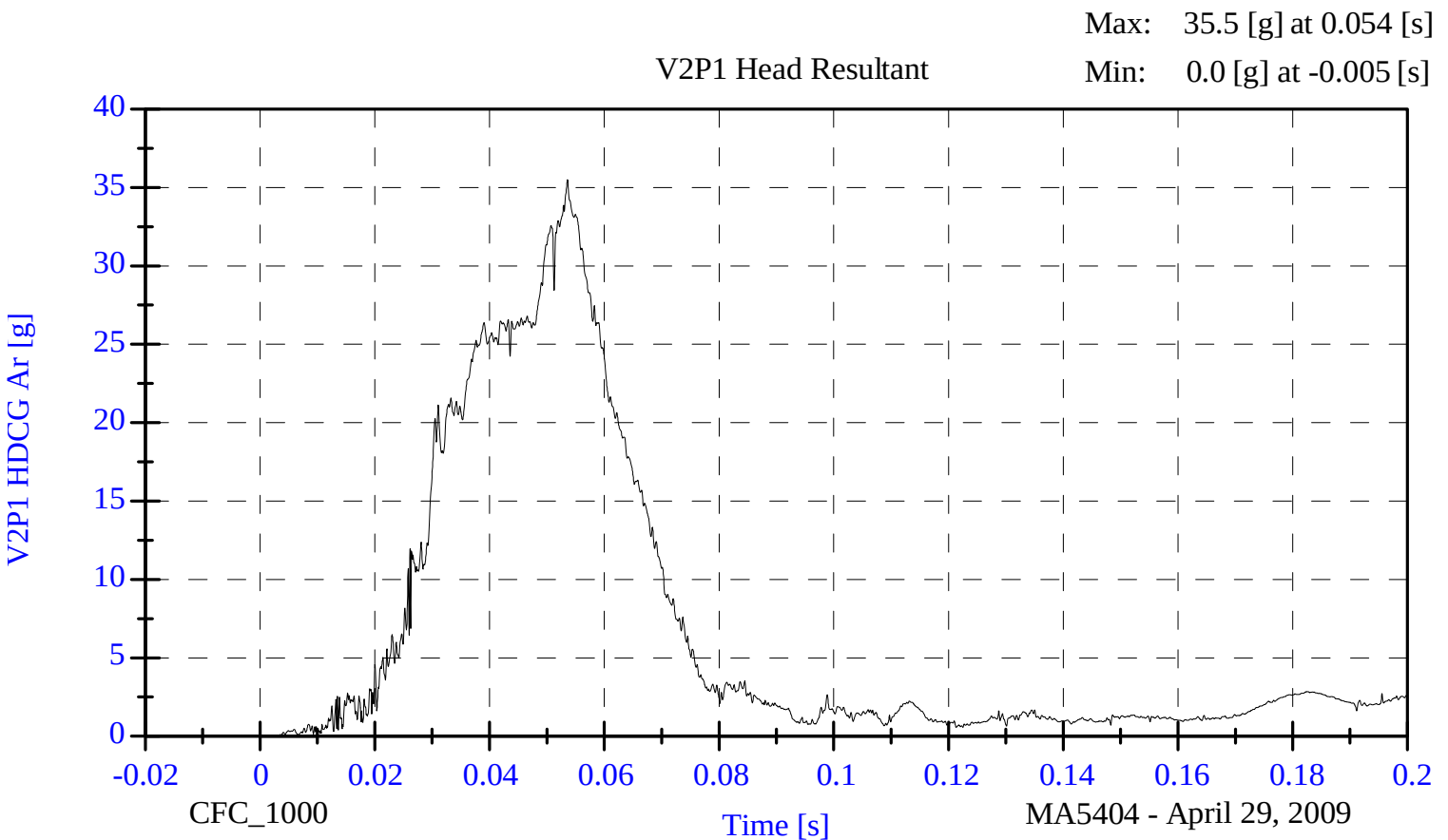
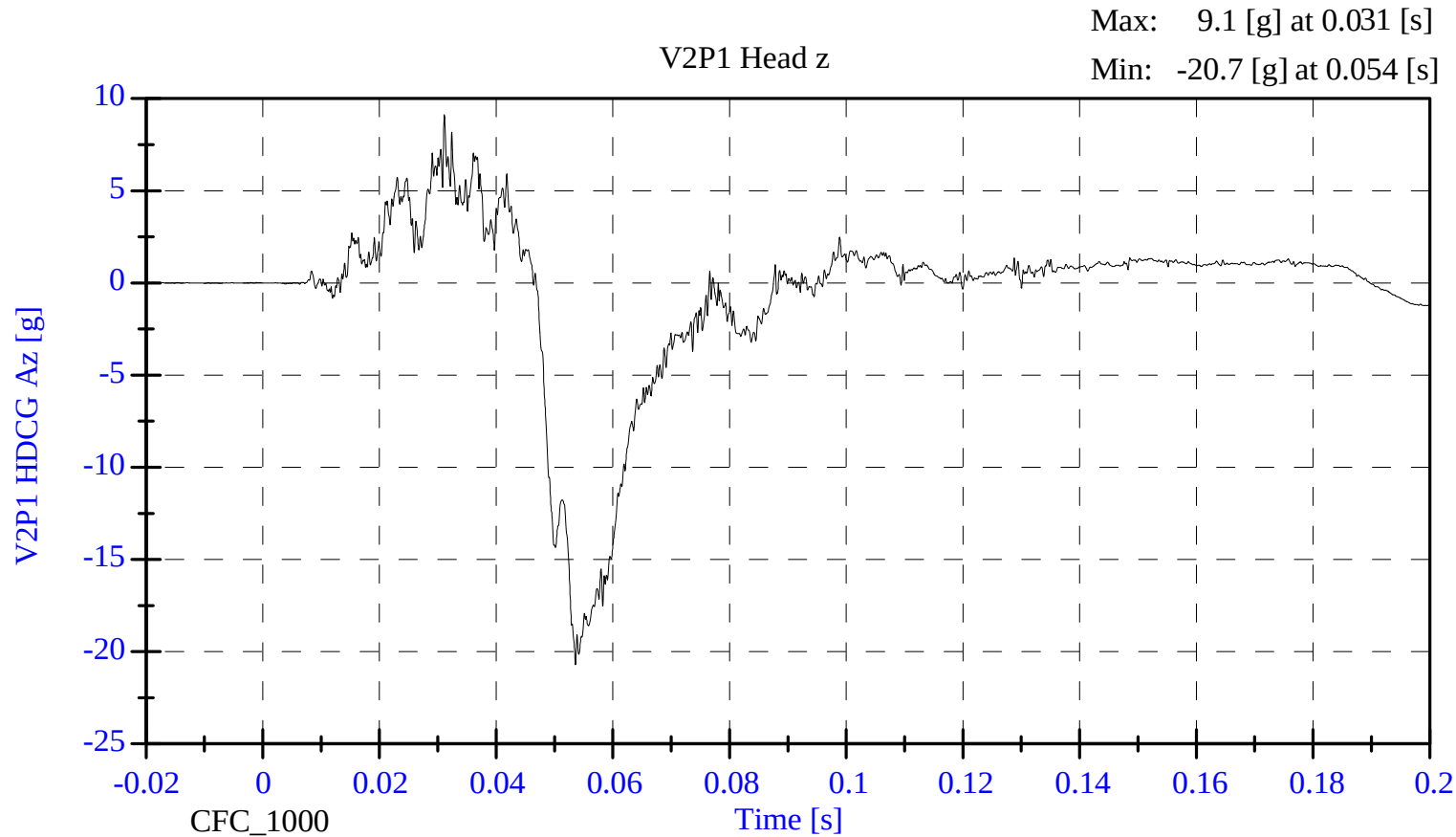
MDB Rear (X) Acceleration vs. Time (Not Measured)

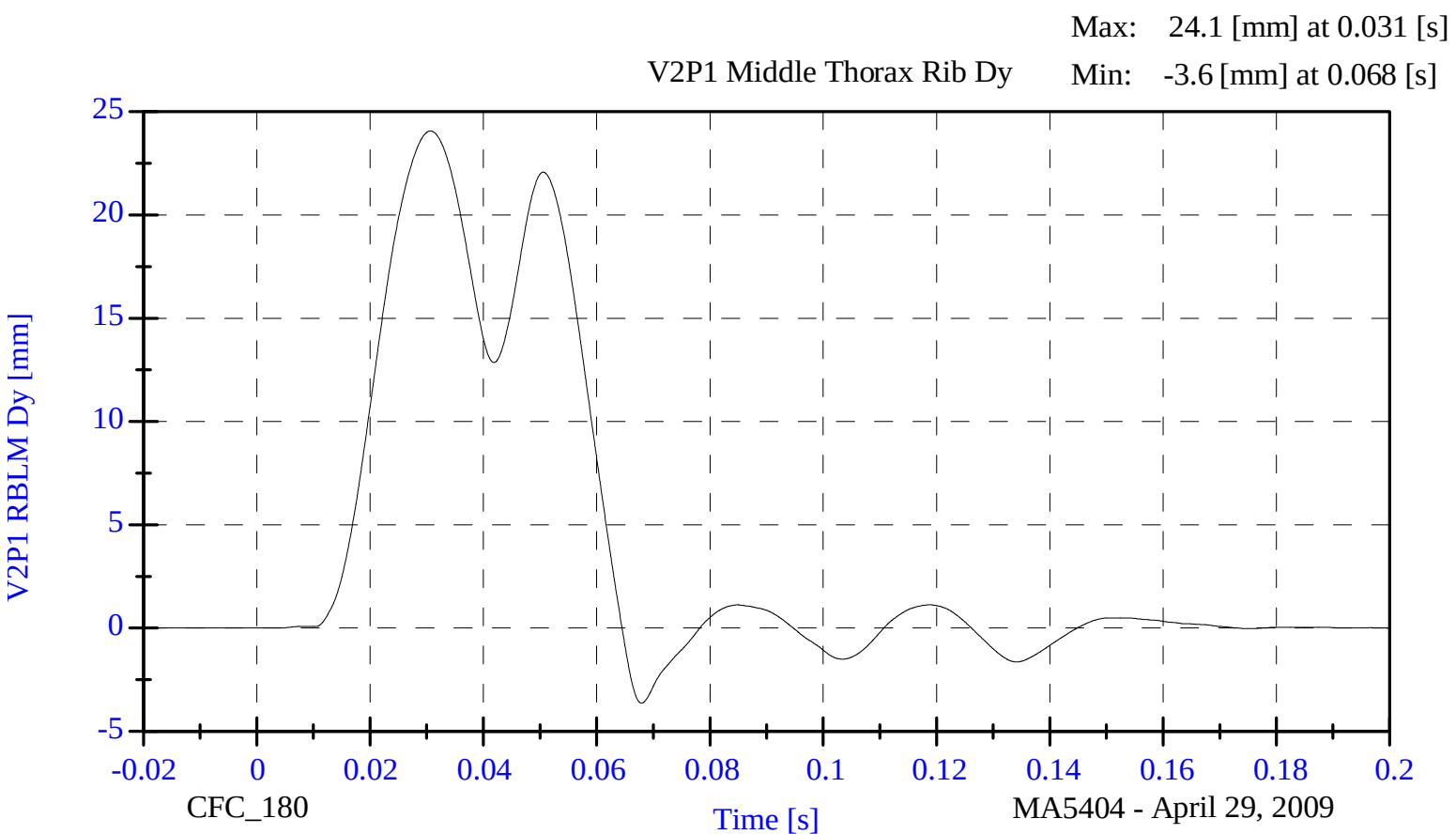
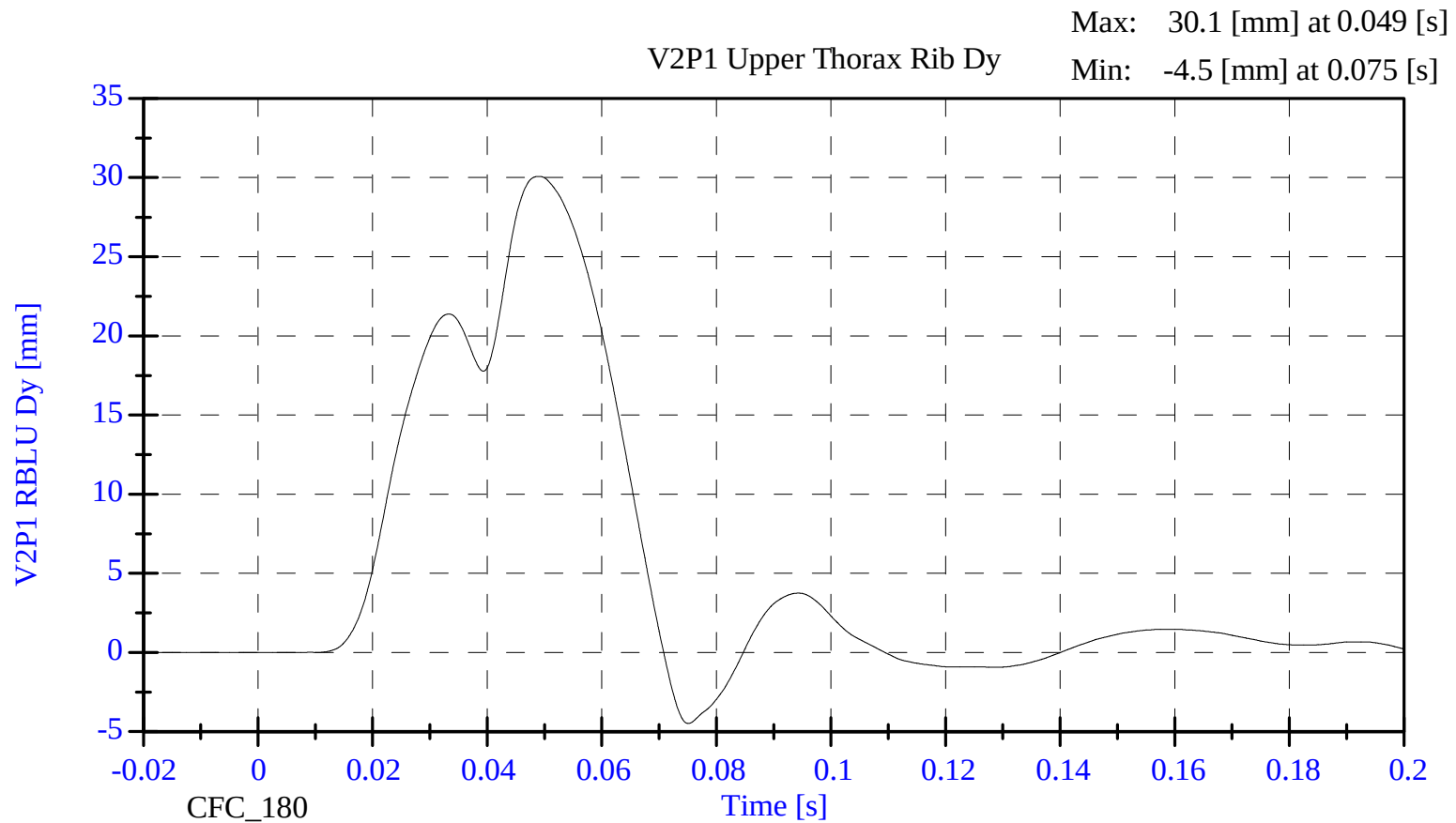
MDB Rear (Y) Acceleration vs. Time (Not Measured)

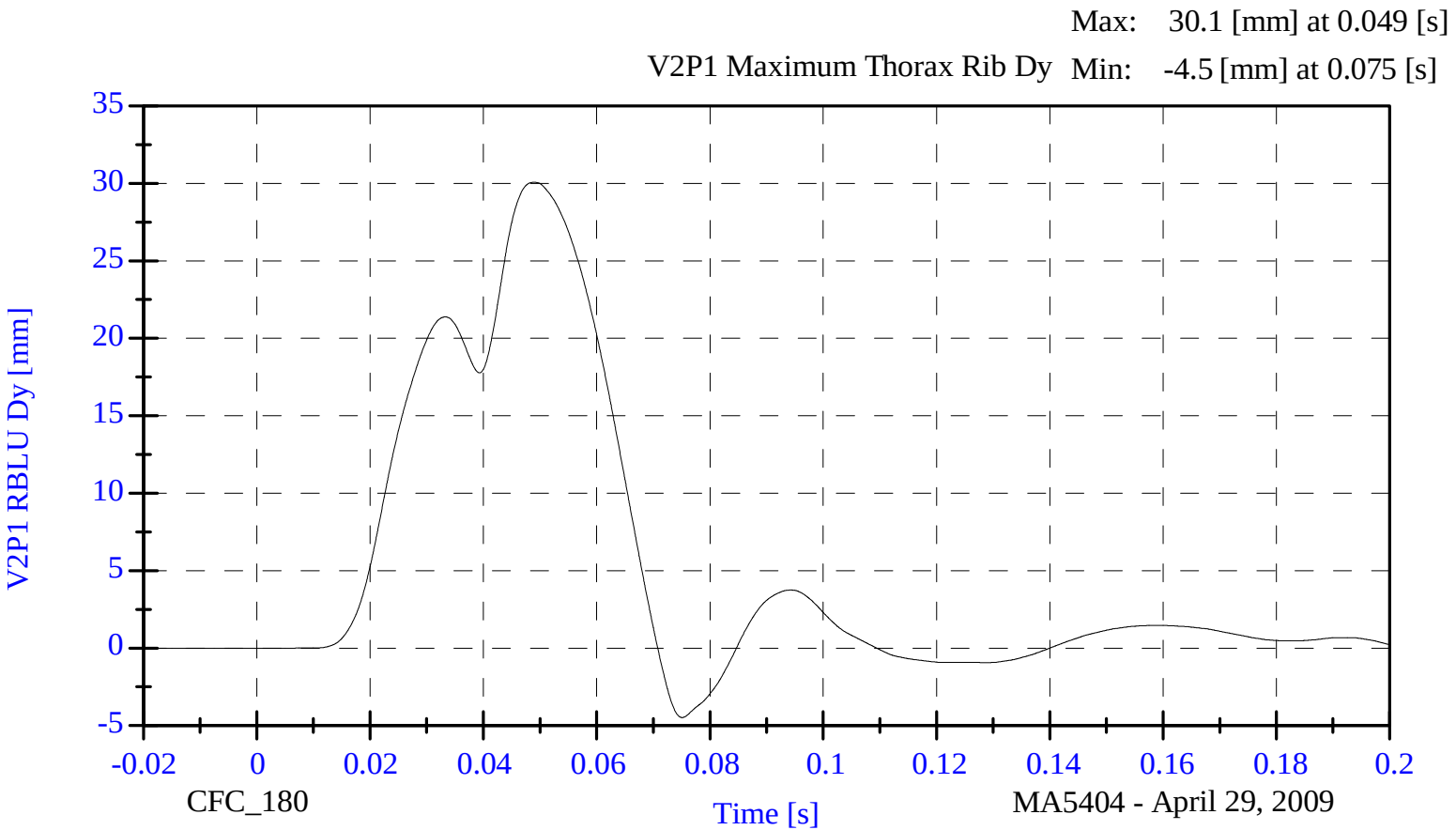
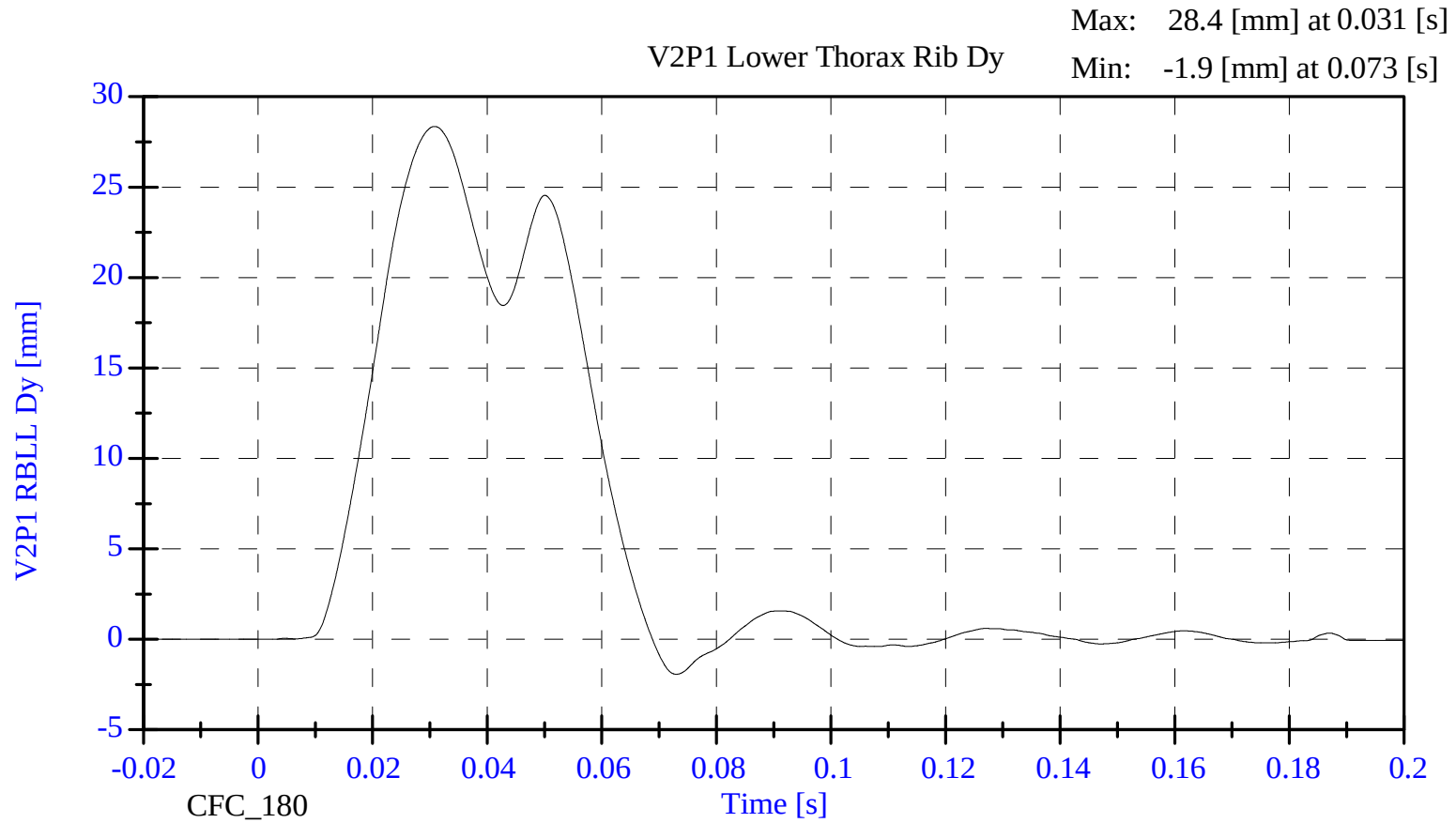
TEST NOTES

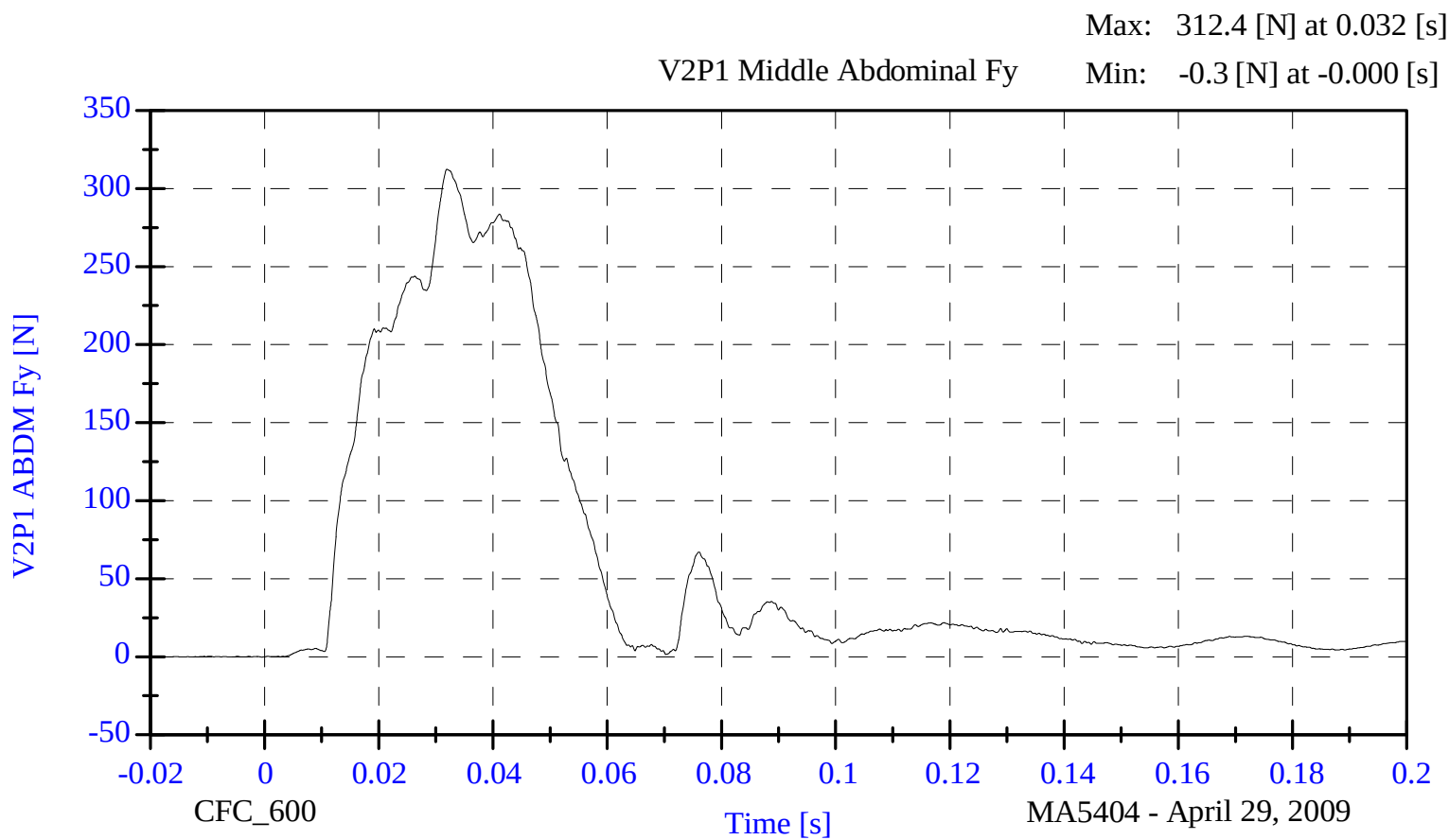
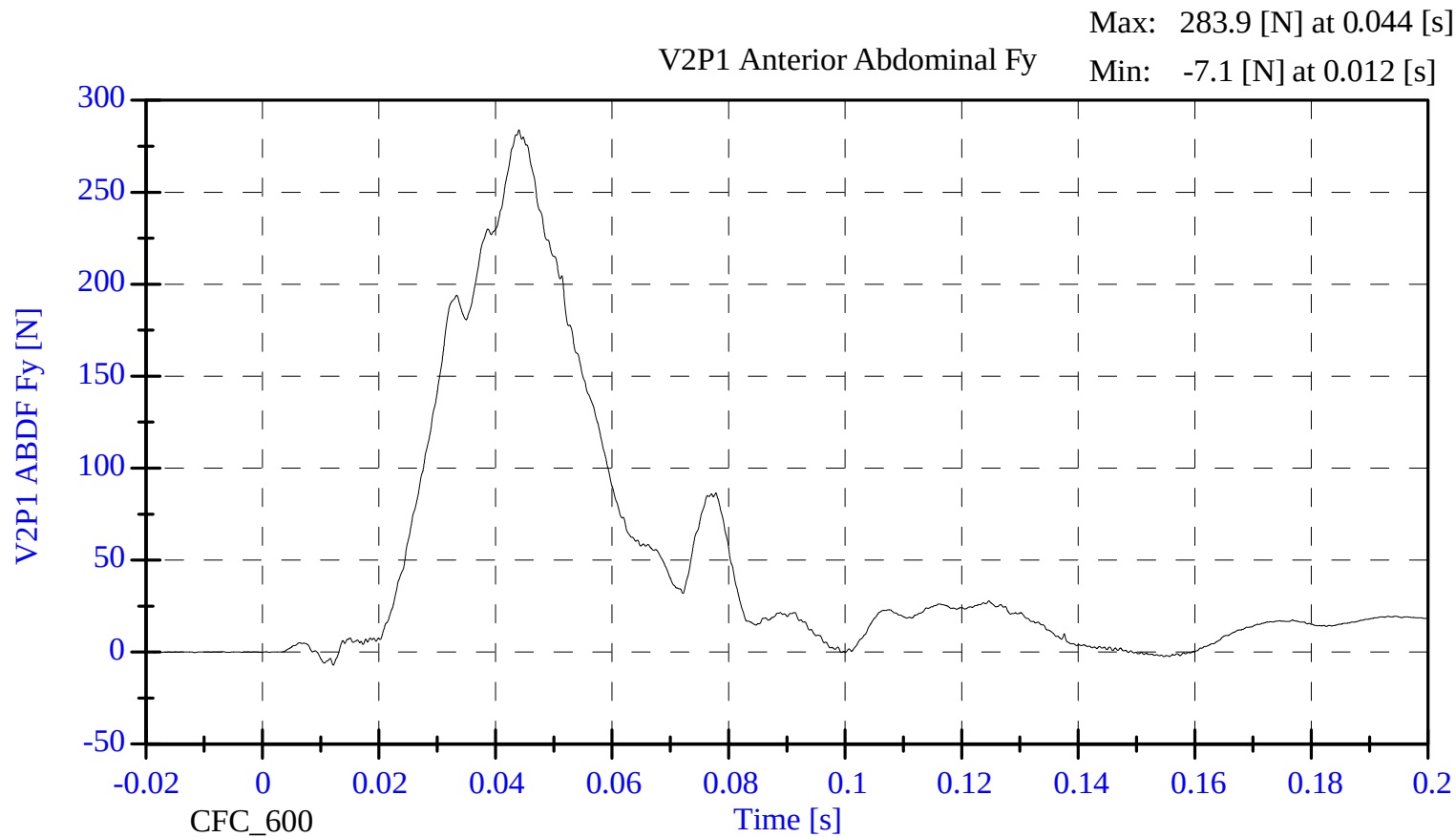
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- V2 Right Rear Compartment Y vehicle accelerometer did not record properly during test.
- V2 Vehicle CG X accelerometer contained questionable data after 50 msec.
- V2 Vehicle CG Y accelerometer contained questionable data after 50 msec.
- V2 Vehicle CG Z accelerometer contained questionable data after 50 msec.

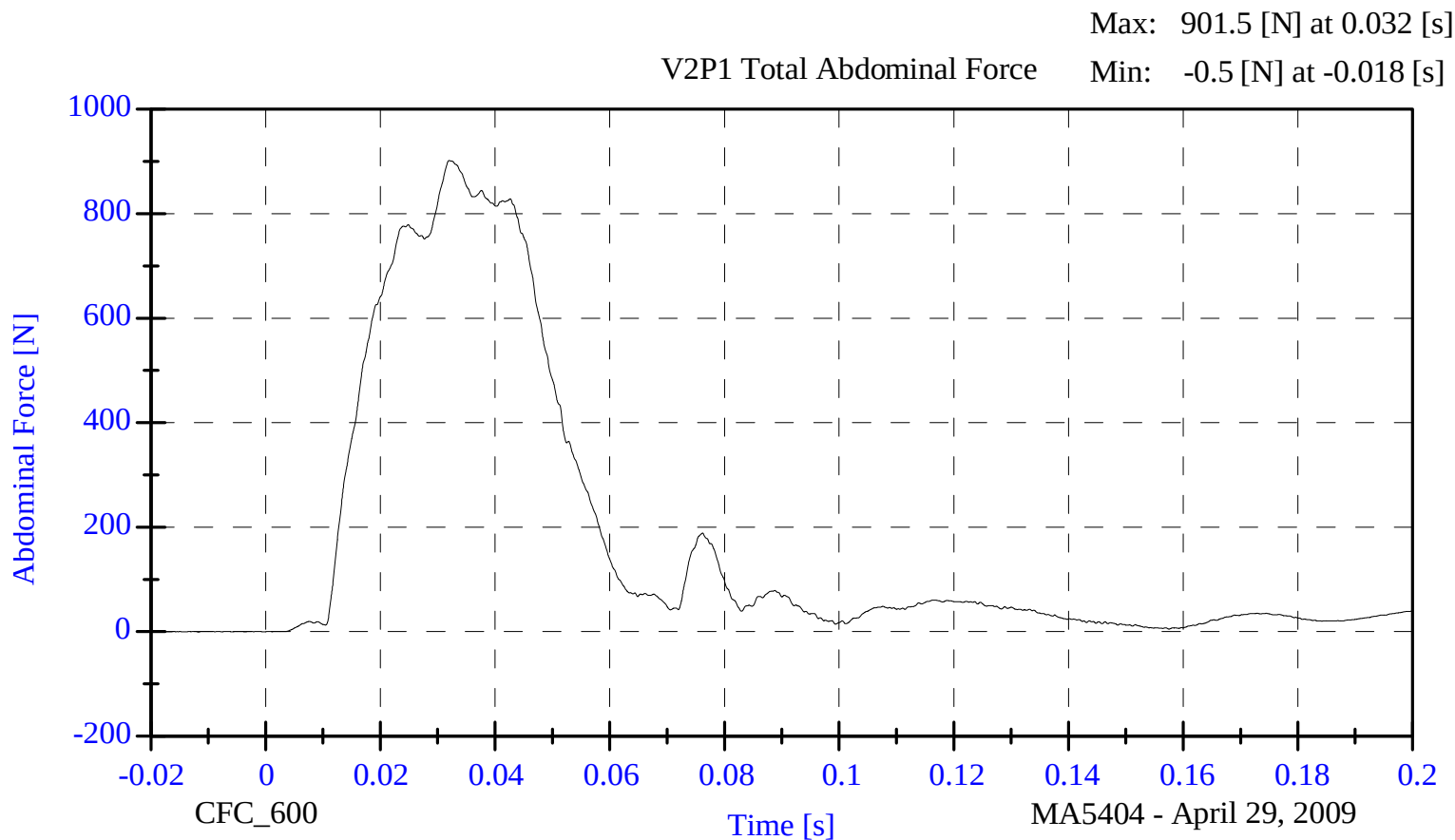
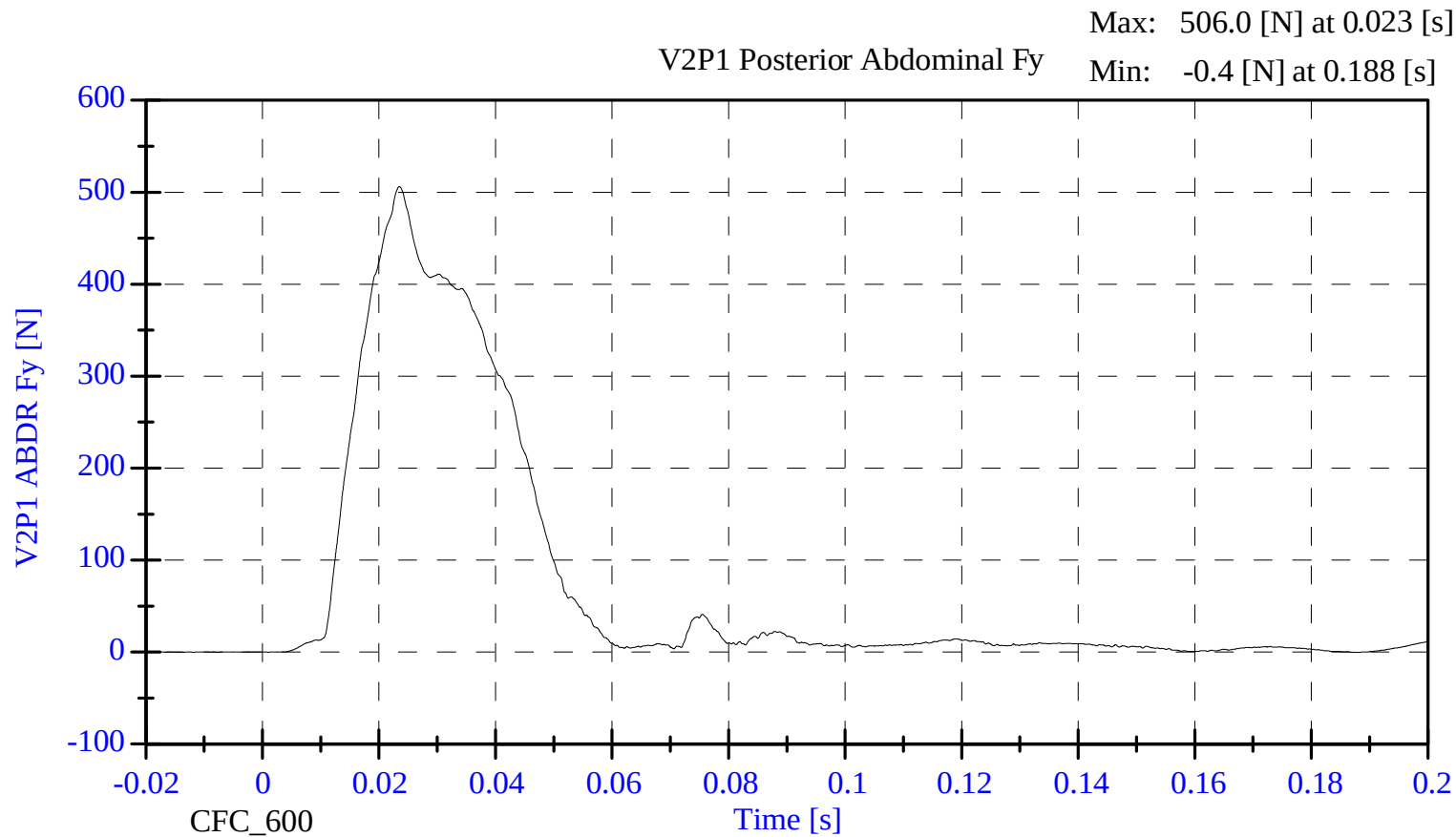


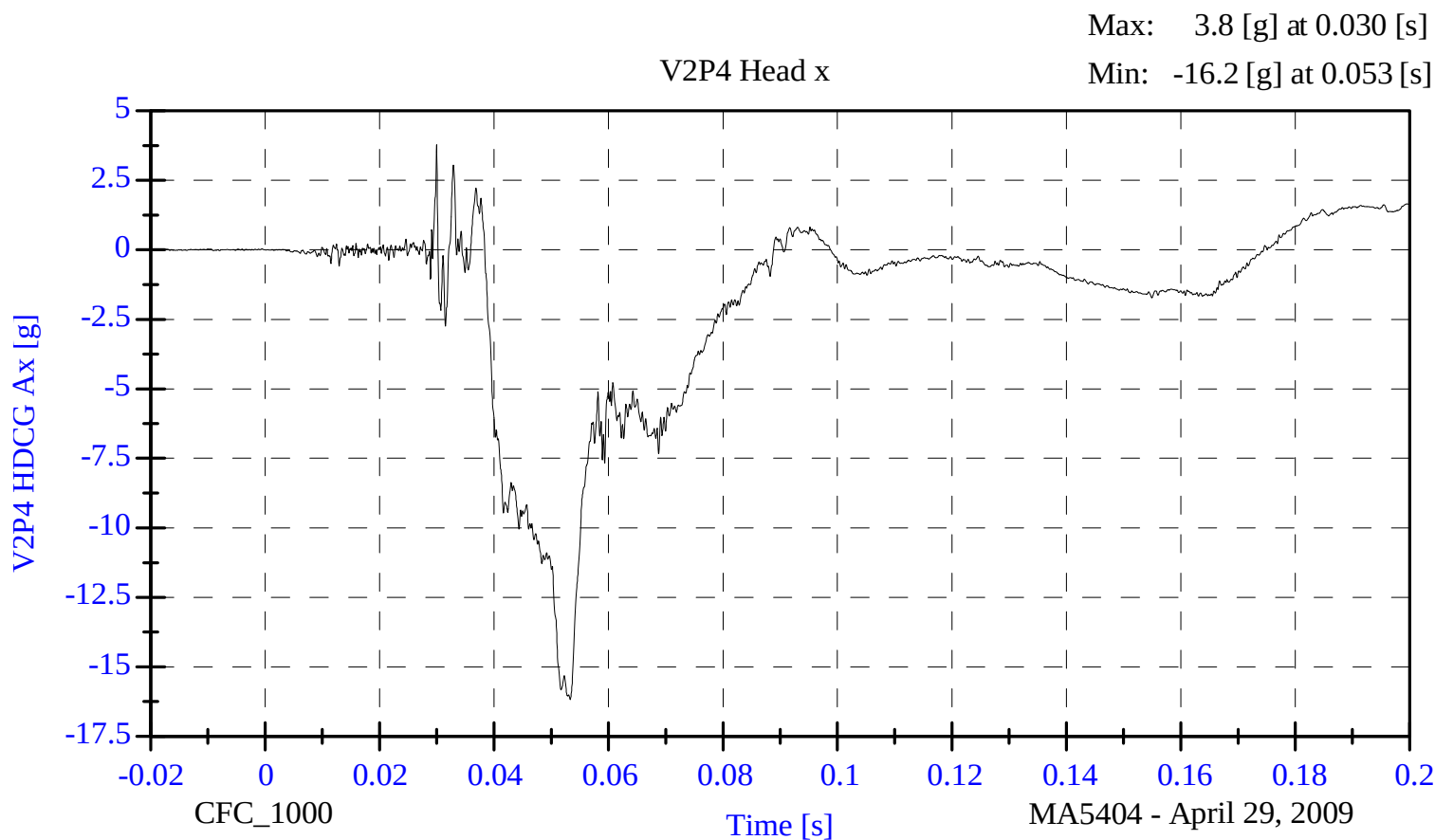
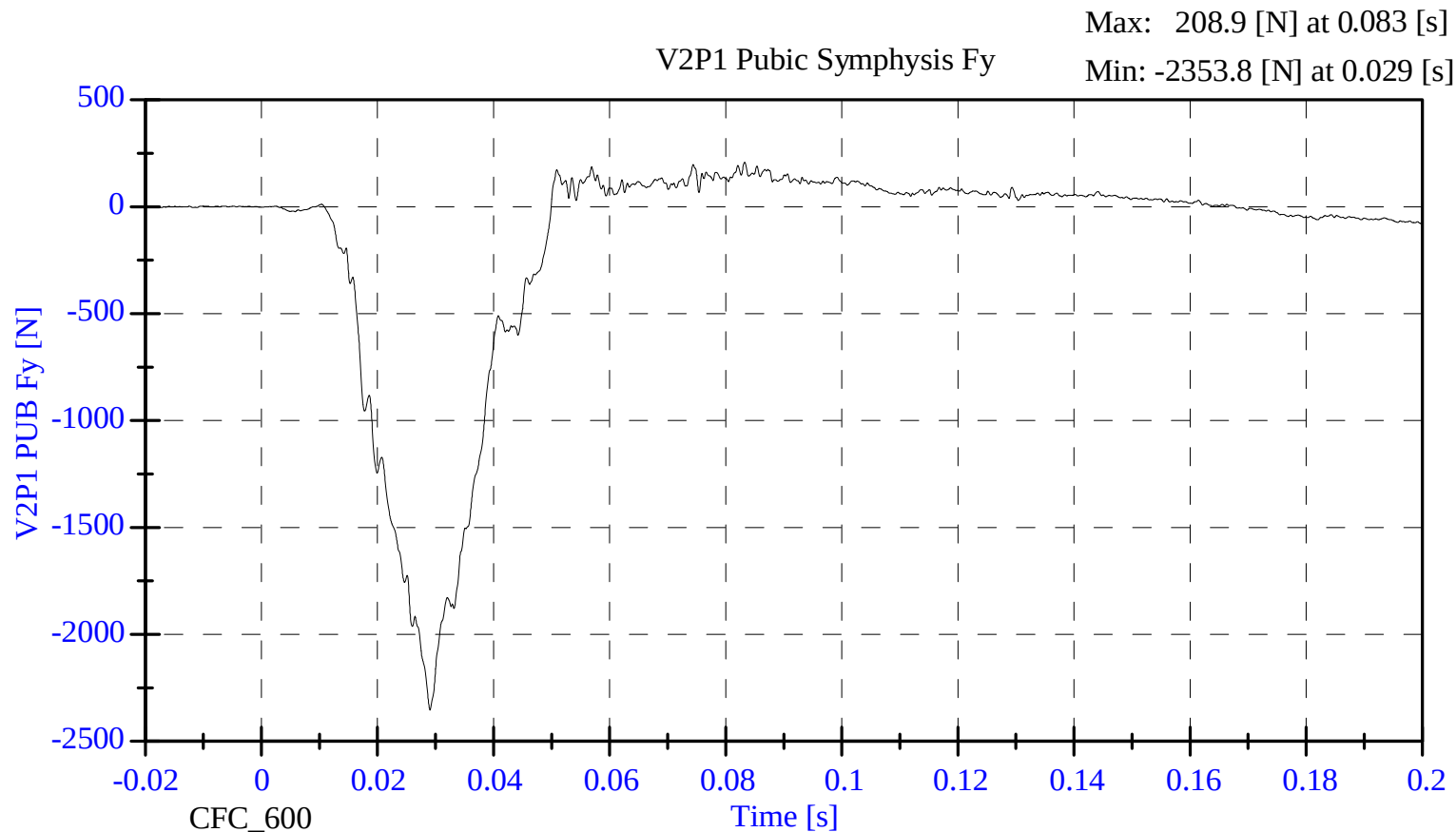


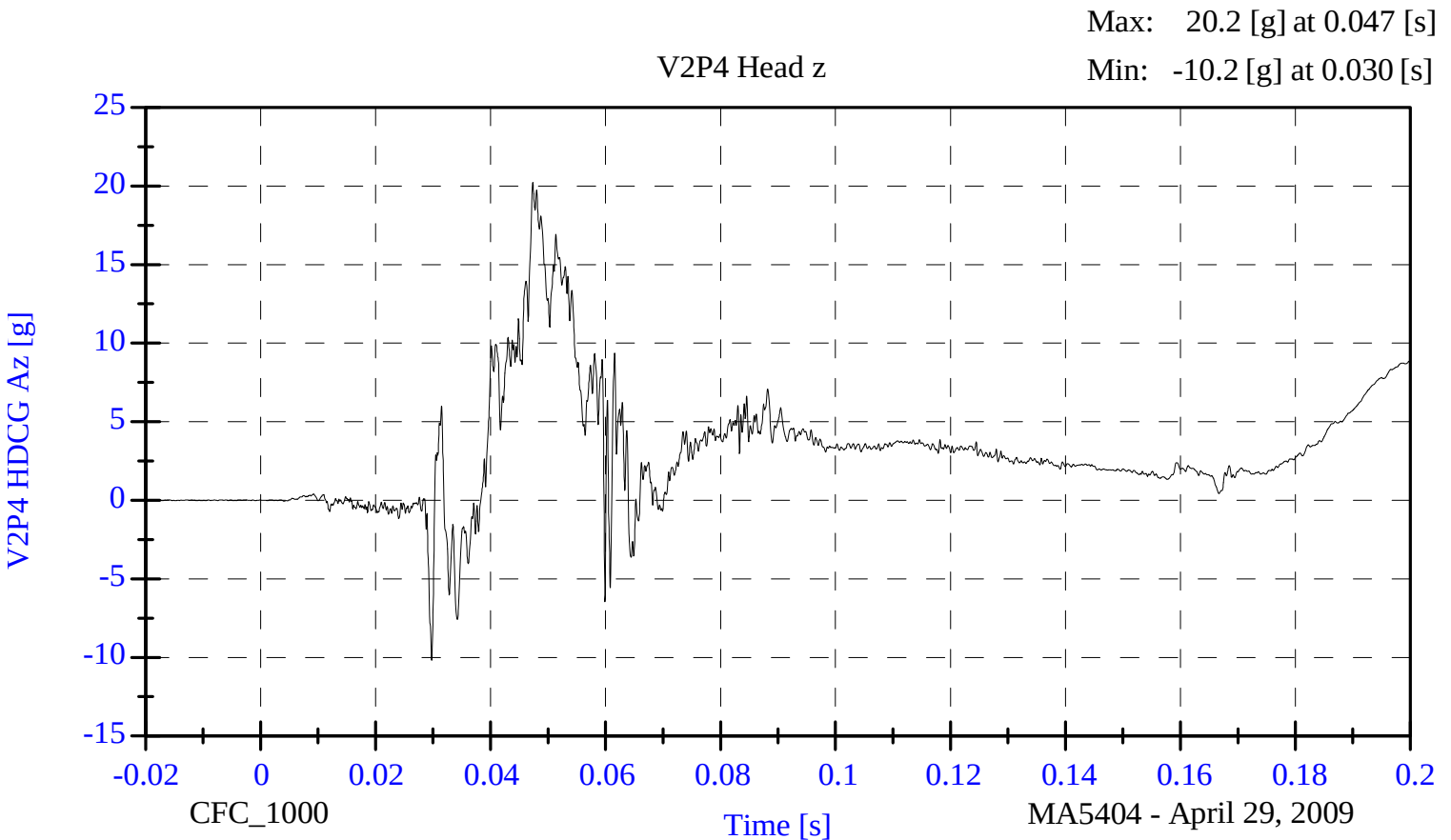
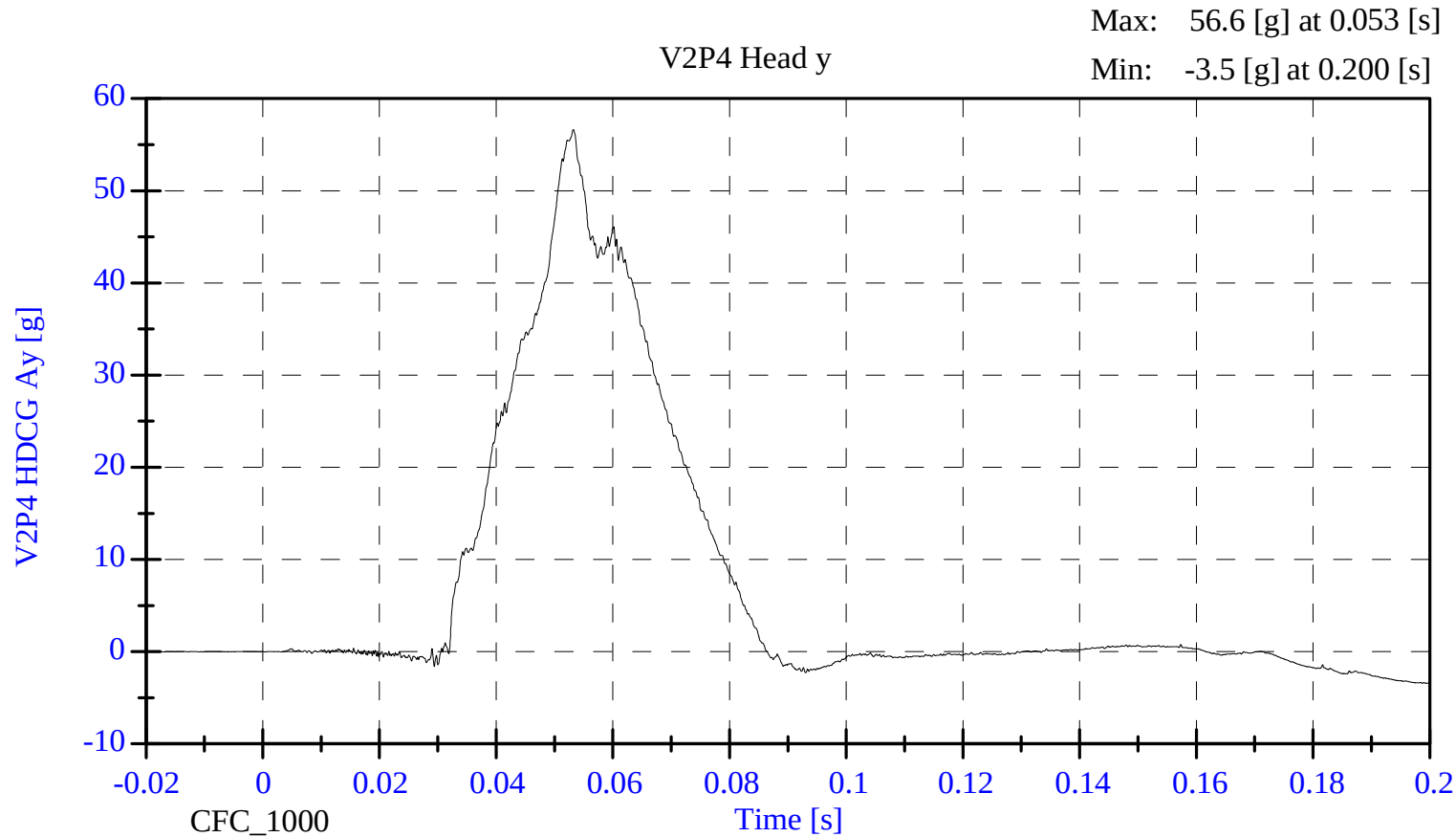


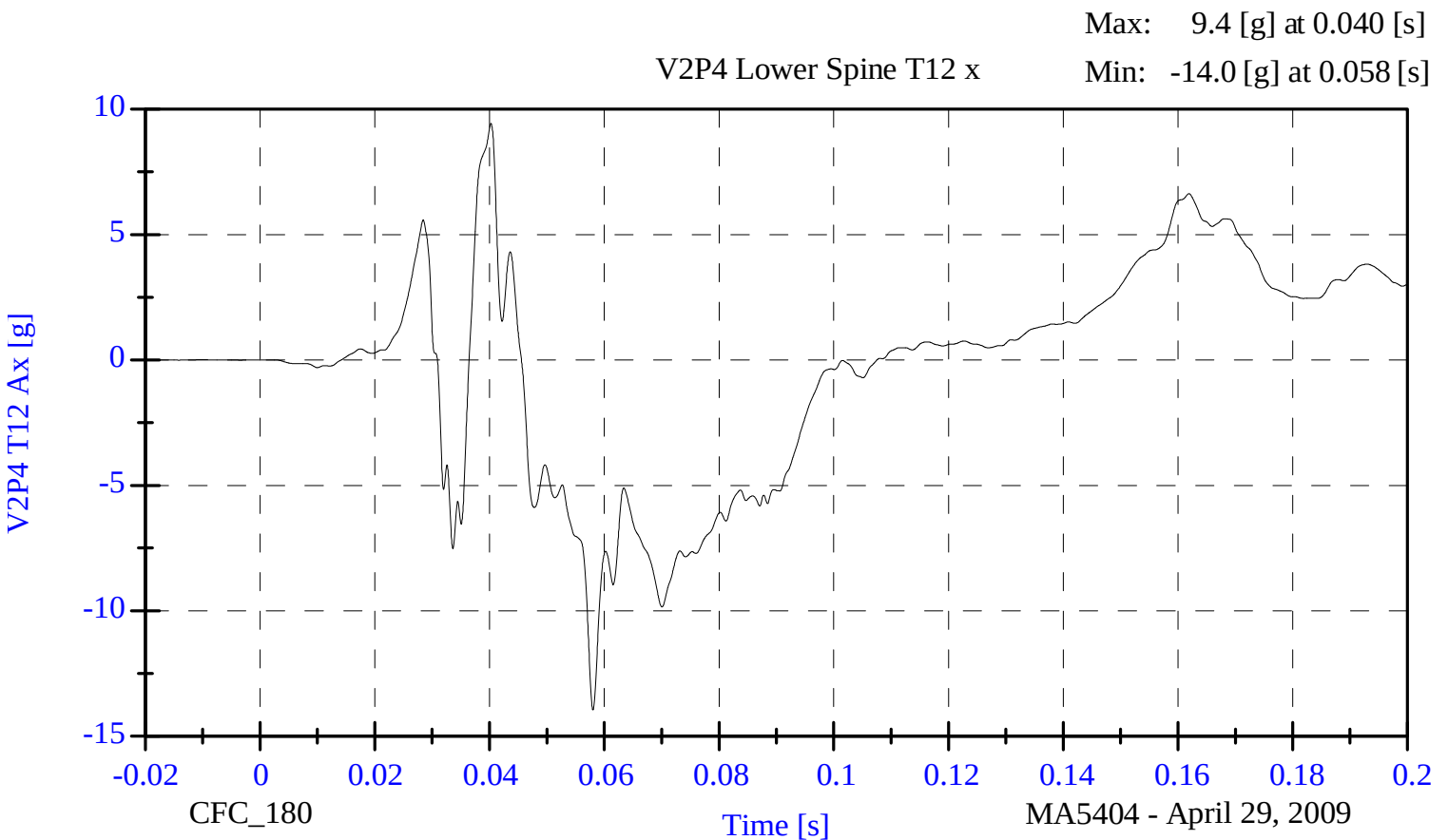
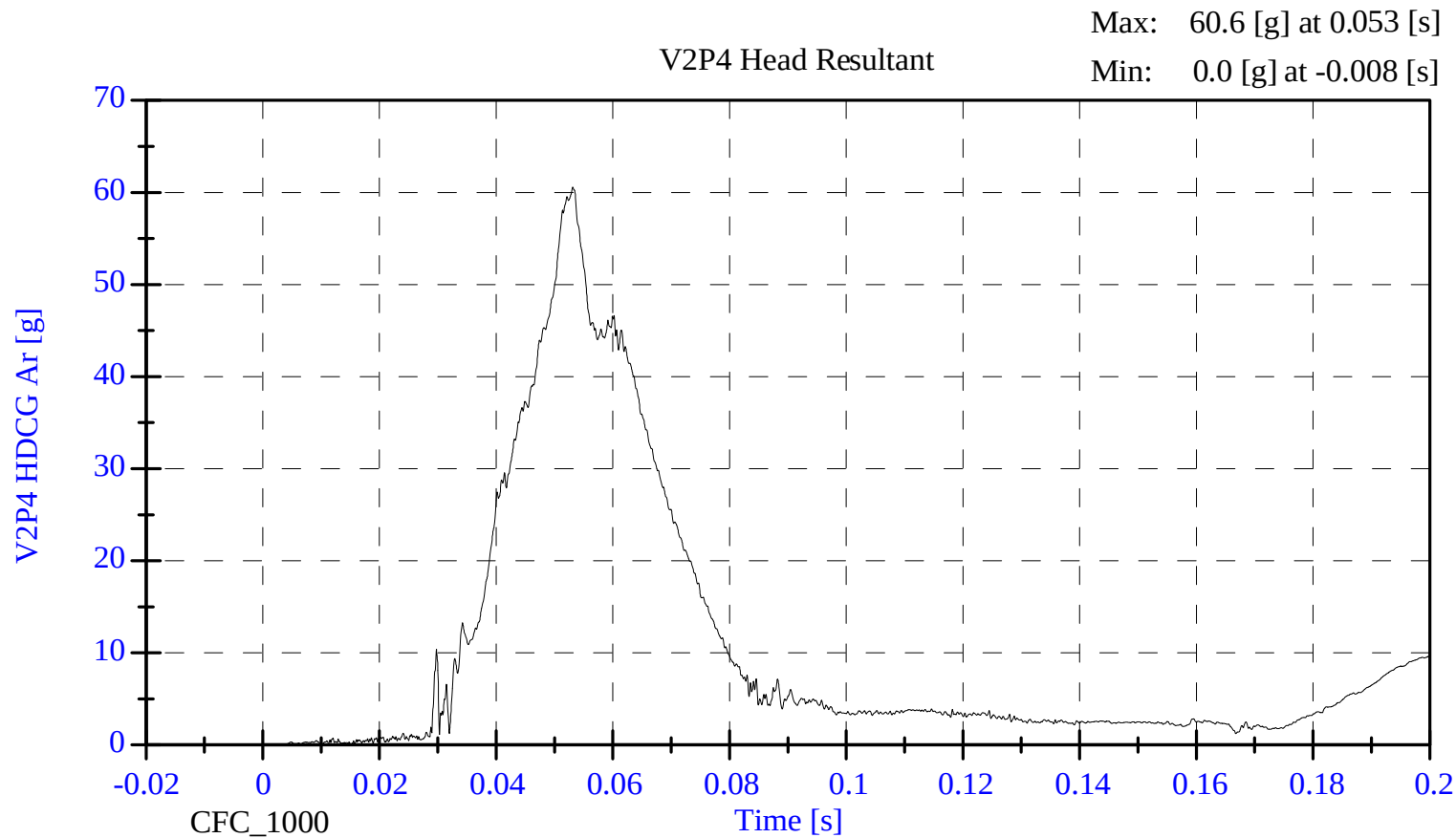


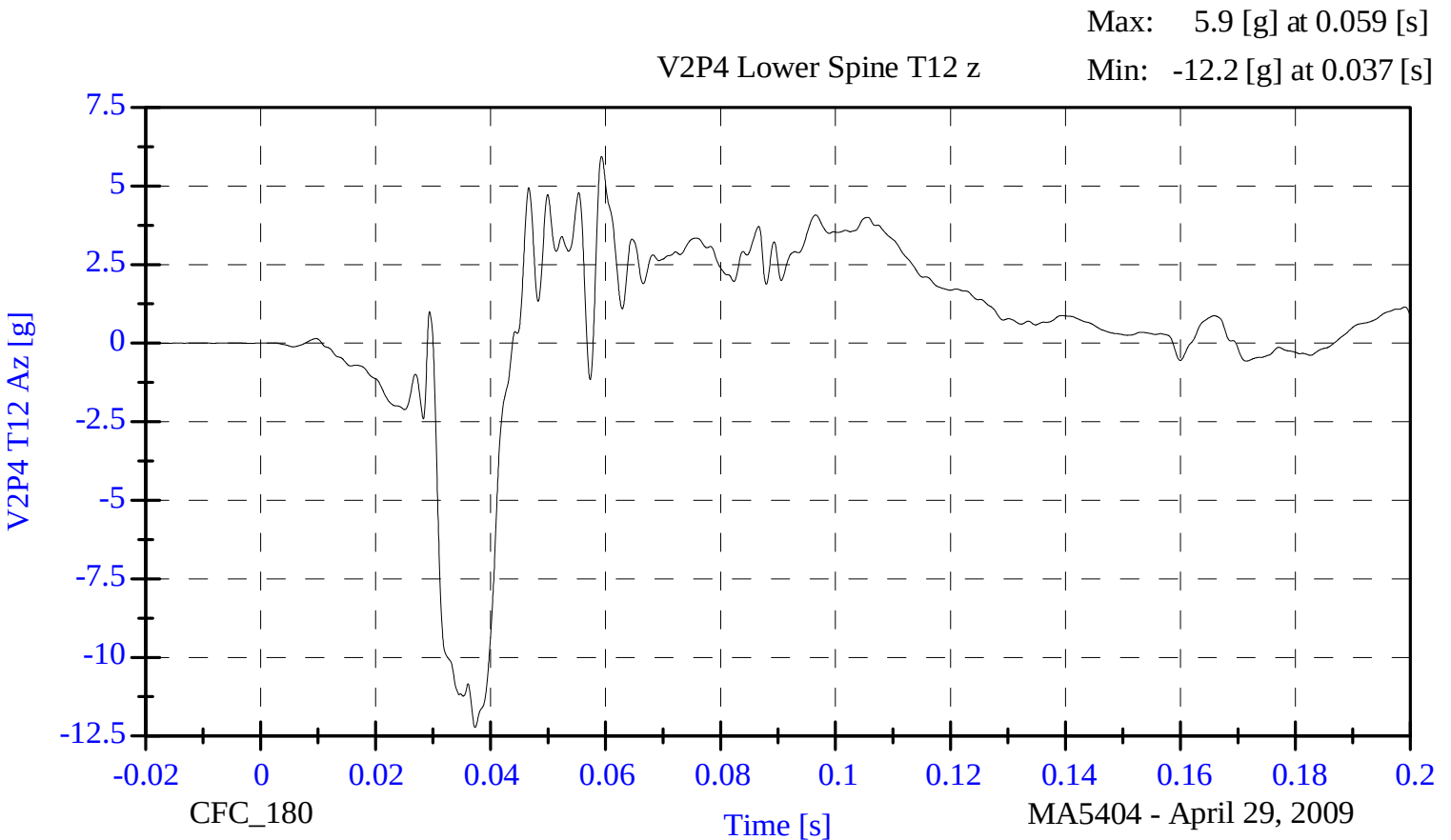
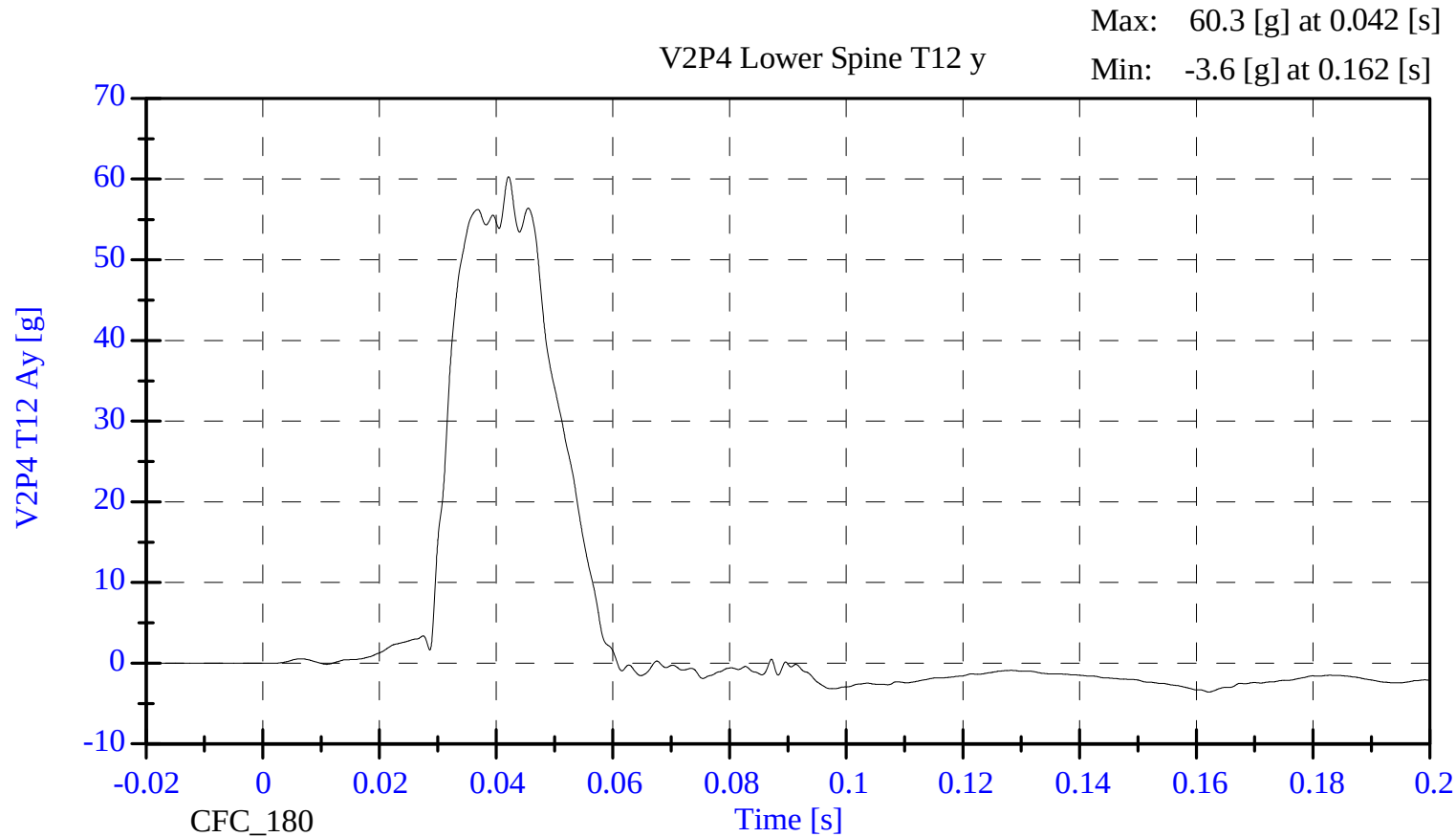


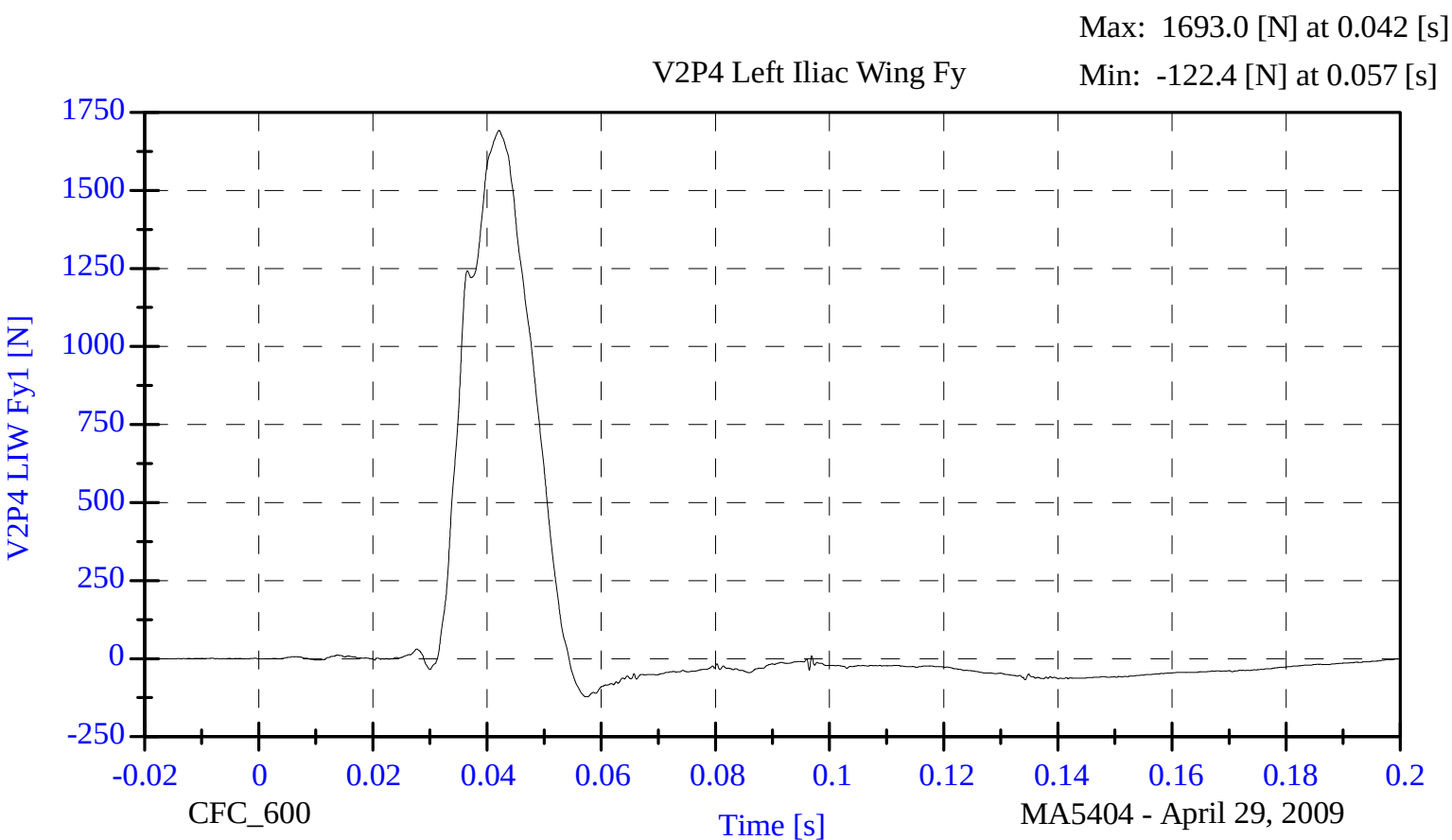
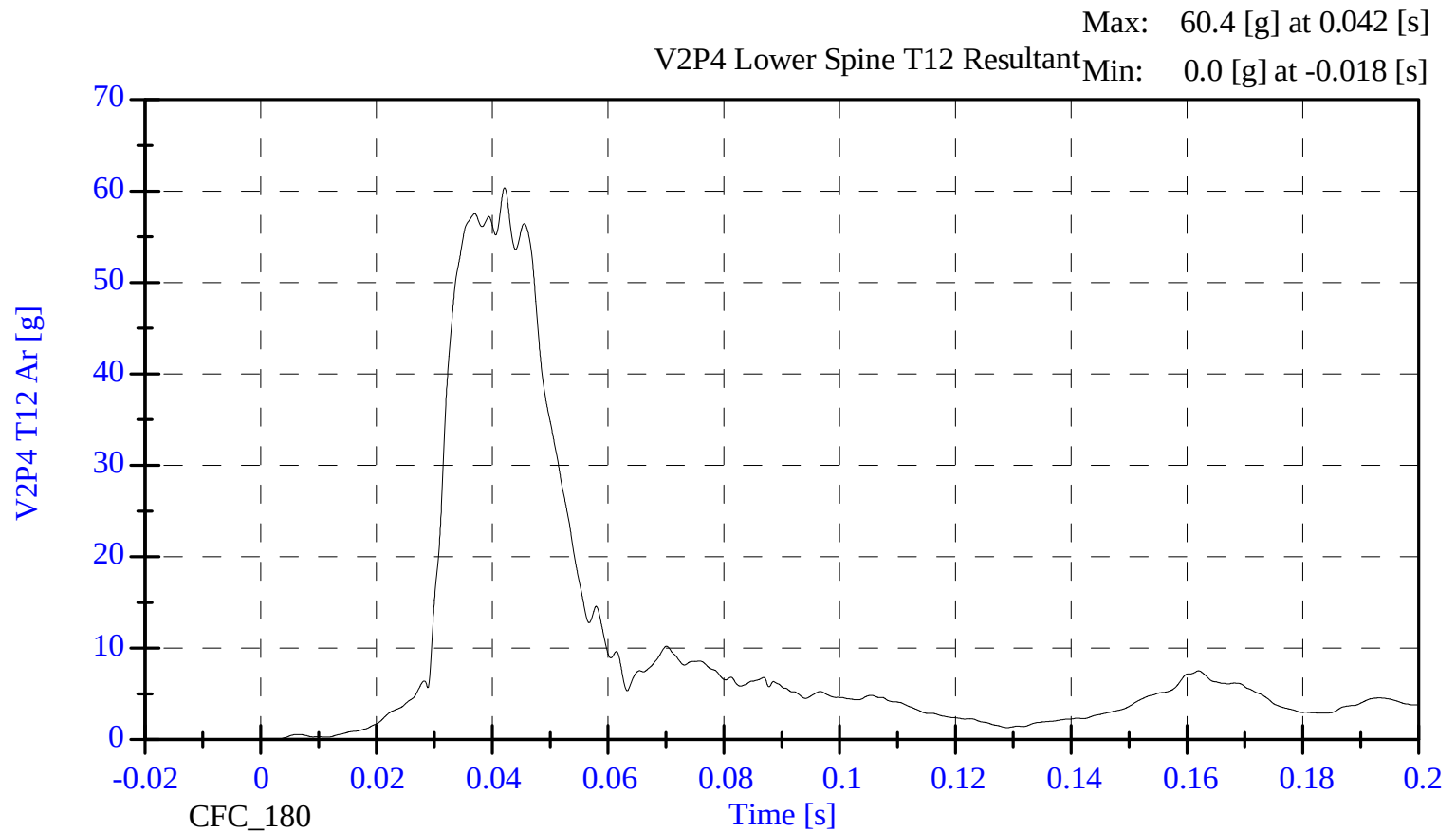


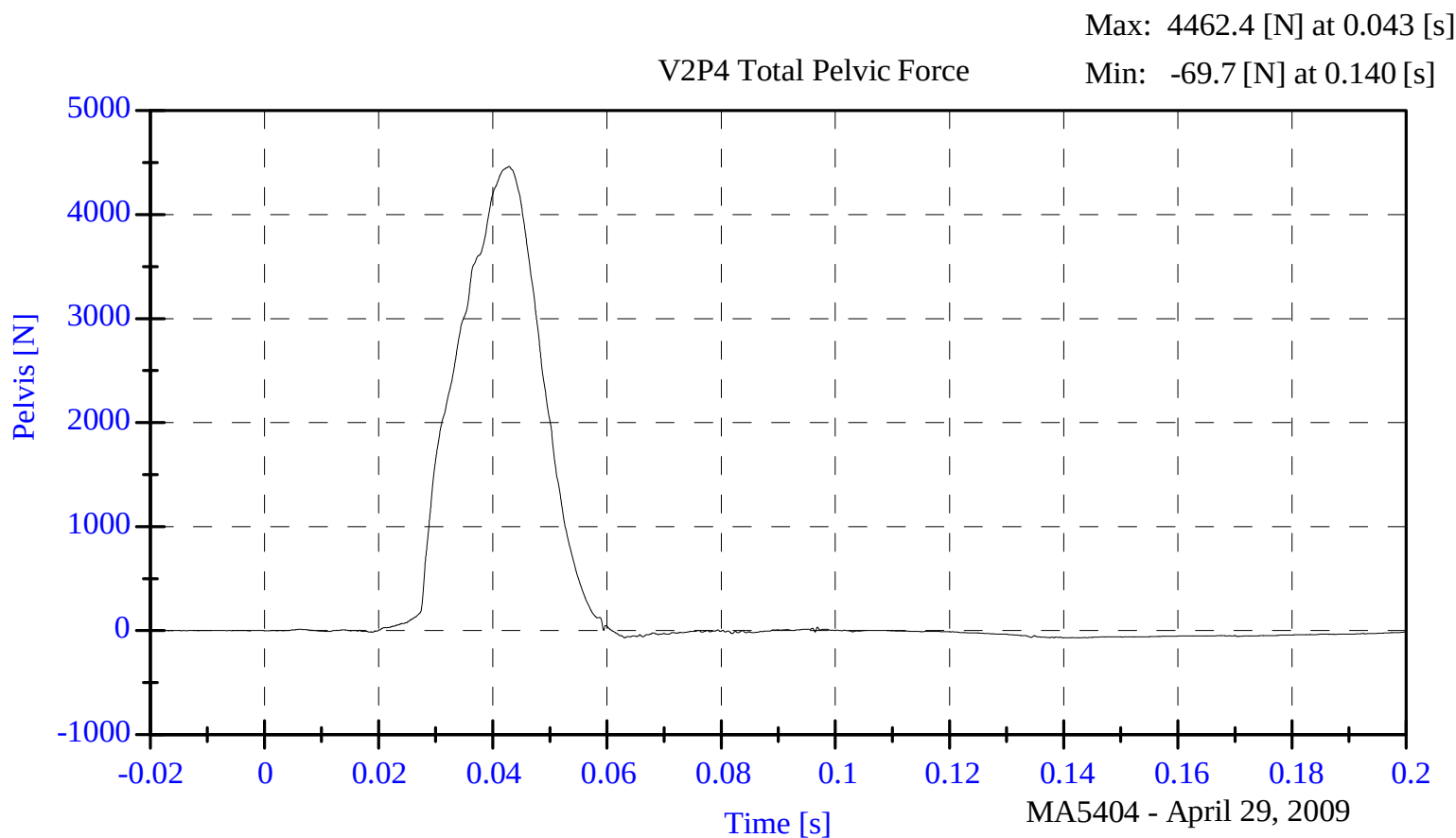
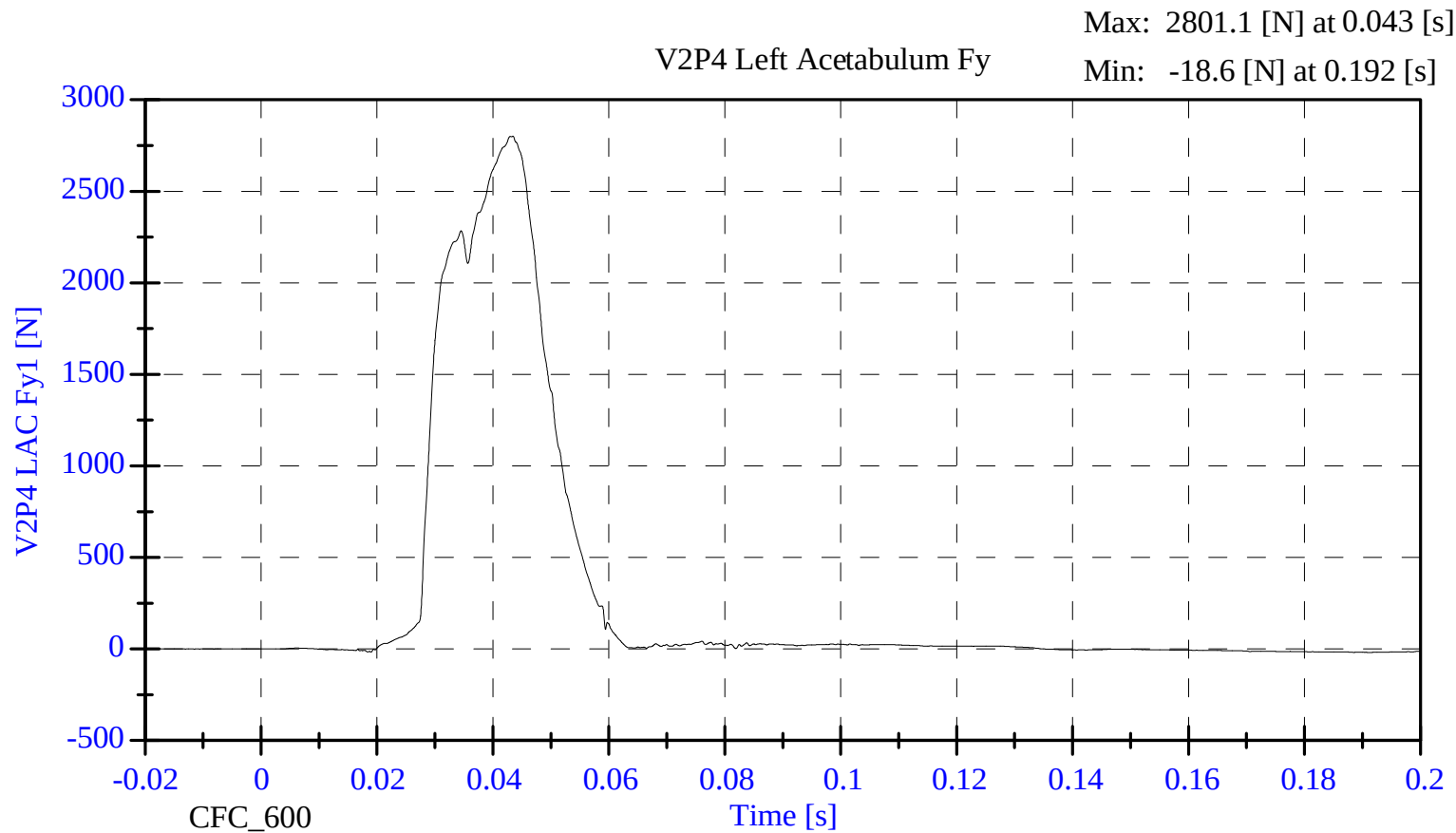












APPENDIX C

DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

CALIBRATION TEST RESULTS

PRE TEST

ES2-re NO.: 033

CONFIGURED FOR LEFT SIDE IMPACT

**DENTON TECHNICAL CENTER****DTC Form (IAW ISO-17025)****RMA Evaluation Report**

1965 Larchwood, Troy, Michigan 48083
Tel: (248) 528-9889 Fax: (248) 528-8494
Document Number: DTC-TLF012
Revision Date: 1/30/09
Revision Level: 5

Customer: Calspan**Certificate No.: 42409F033****DTC RMA#: 14024****RDI RMA#: NA****Dummy Type: EuroSID 2re****Serial Number: F033****Mechanical Status:****Condition as Received:**☐ In Tolerance ☒ Out of Tolerance**Condition as Returned:**☒ In Tolerance ☐ Out of Tolerance**Electrical Status (MUX):** ☒ Not Applicable**Condition as Received:**☐ In Tolerance ☐ Out of Tolerance**Condition as Returned:**☐ In Tolerance ☐ Out of Tolerance**Testing Requirements IAW: CFR 49, 572, U**

	Test Description	S/N	Status
1	Lateral Head Drop	8473	Passed
2	Lateral Neck Bending	7012	Passed
3	Shoulder Impact	7021	Passed
4	Full Thorax Impact	F033	Passed
5	Rib Module Impact (U)	7206	Passed
6	Rib Module Impact (M)	7207	Passed
7	Rib Module Impact (L)	7208	Passed
8	Damper Impact	N/A	NA
9	Abdominal Impact	07/136	Passed
10	Pelvis Impact Acet.	7033	Passed
11	Lateral Spine Bending	7083	Failed
12	Lateral Spine Bending	330	Passed

Incoming Appearance:**Head Assembly** ☒ Good ☐ Damaged**Neck Assembly** ☒ Good ☐ Damaged**Upper Torso Assembly** ☒ Good ☐ Damaged**Lower Torso Assembly** ☒ Good ☐ Damaged**Left Arm Assembly** ☒ Good ☐ Damaged**Right Arm Assembly** ☒ Good ☐ Damaged**Left Leg Assembly** ☒ Good ☐ Damaged**Right Leg Assembly** ☒ Good ☐ Damaged**Torque Wrench: 0505800050****Comments:**

Used Lab Accelerometers - Left side impact.

Used Lab Potentiometers

Used Lab Accelerometers - Left side impact.

Rib S/N = 7206,7207,7208 Used Lab Potentiometers

Used Lab Potentiometer

Used Lab Potentiometer

Used Lab Potentiometer

Used Lab Load Cell

Used Lab Load Cell

Failed Cert

New spine s/n 330 installed into S/N = F033 4/24/09

Comments:**Comments:**

No Sensor cals. Use VRTC to supply replacement parts if needed. Parts replaced - Lumbar Spine = 330



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

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:	XD8473	Test Date:	4/16/2009
Test Number:	1	Test Time:	11:16:27 AM

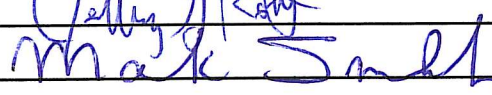
Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number - 8473
455-1007	

Comments:
LEFT

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.7 deg C P
Humidity	10 -- 70	42 %RH P
Resultant Acceleration	125 -- 155	155 g P
Oscillation	0.0 -- 15.0	2.7 % P
Fore-Aft Acceleration	-15.00 -- 15.00	5.34 g P

All test parameters are within specifications

Technician:	JR	Signature:	
Supervisor:	MS	Signature:	



Test ID: XD8473

Test Time: 11:16:27 AM

Test Date: 4/16/2009



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	12/16/2008
Endevco	7264D-2000	11553	8/12/2008
Endevco	7264D-2000	11558	8/12/2008
Endevco	7264D-2000	11569	8/18/2008



Test ID: XD8473

Test Time: 11:16:27 AM

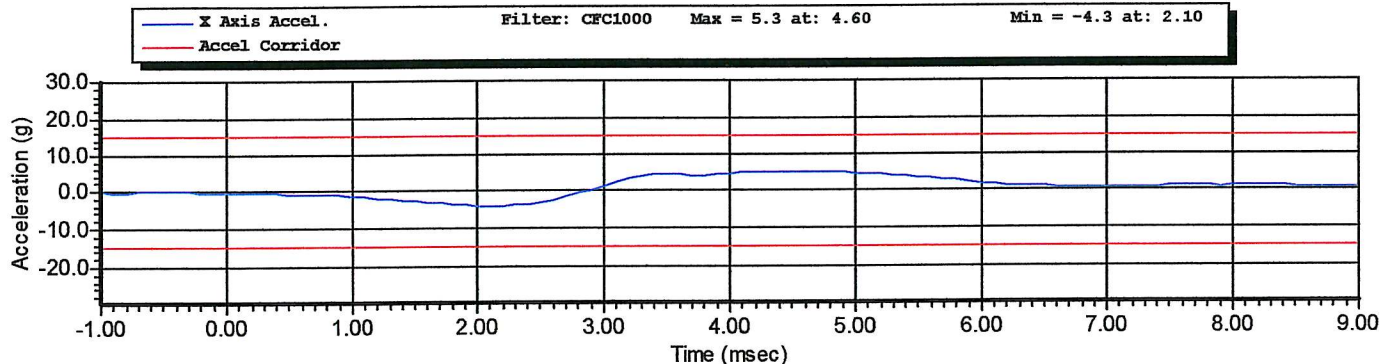
Test Date: 4/16/2009



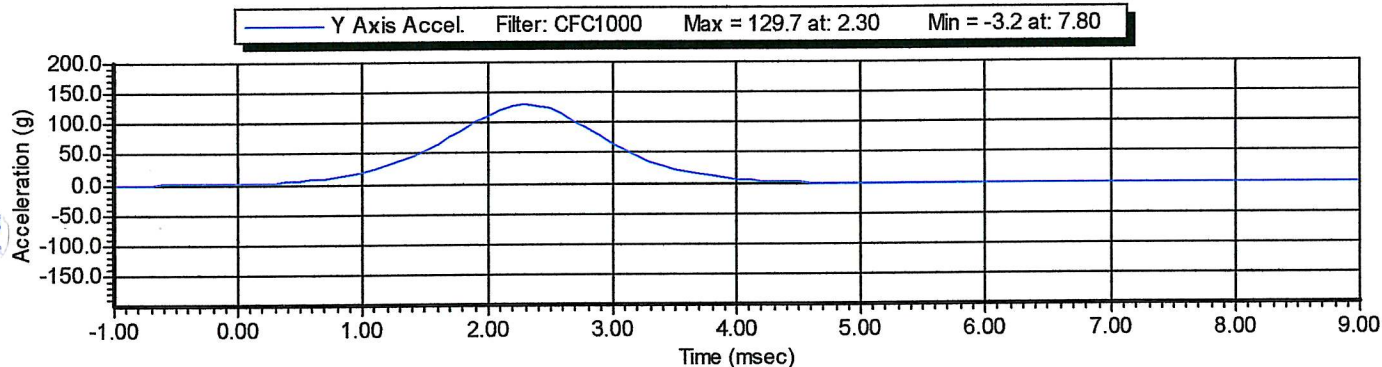
Denton Technical Center

1965 Larchwood Troy, Michigan 48083, Phone: (248) 528-9889, Fax: (248) 528-8494

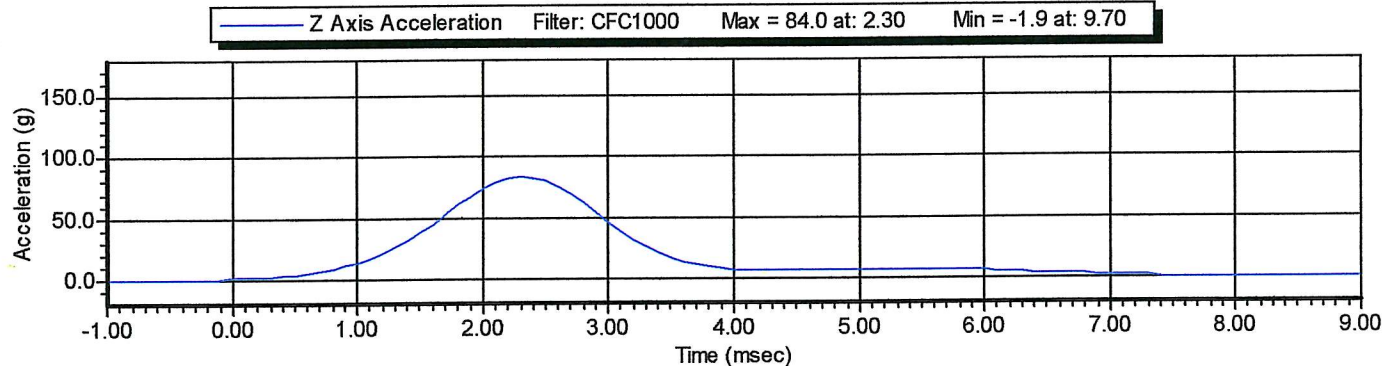
X Axis Acceleration



Y Axis Acceleration



Z Axis Acceleration

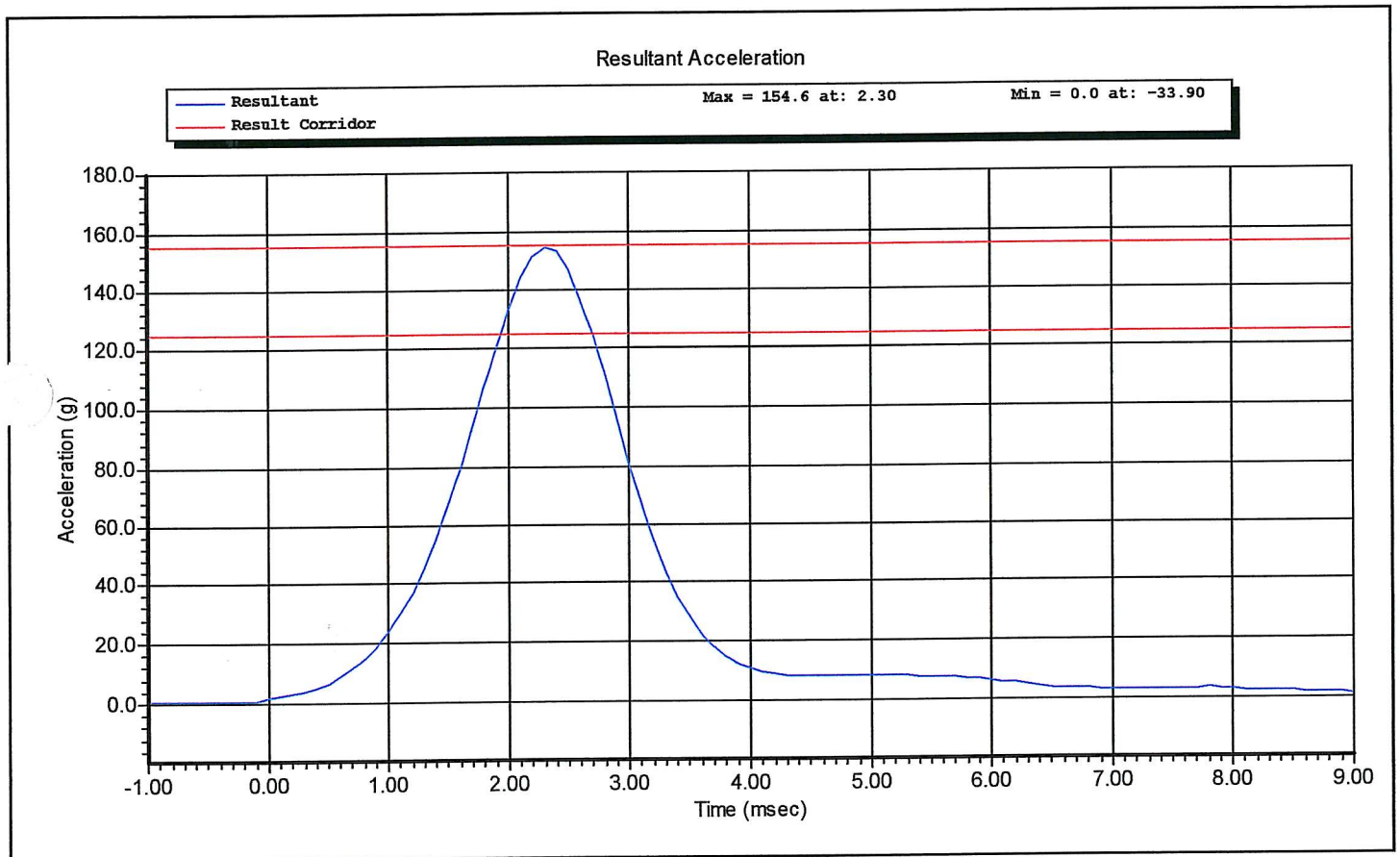




Denton Technical Center

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Test Name:	Head Drop	Revision:	12/14/2006
Test Name:		Spec Type:	NHTSA
ATD Type:	ES-2re		
ATD Serial Number:	F033		
Test Number:	1	Test Date:	4/16/2009
		Test Time:	11:16:27 AM
Component Part Number	Component Serial Number		
455-1007			



Test ID: XD8473

Test Time: 11:16:27 AM

Test Date: 4/16/2009



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

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:	XA7012	Test Date:	4/16/2009
Test Number:	2	Test Time:	1:54:25 PM

Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number - 7012
Neck 455-2002	
Torque Wrench s/n: 0505800050	

Comments:
LEFT
11X4+3 pc @ 49°

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.2 deg C P
Humidity	10 -- 70	44 %RH P
Velocity	3.30 -- 3.50	3.45 m/s P
Maximum Neck Flexion Angle	49.0 -- 59.0	53.4 degrees P
Time At Maximum Neck Flexion	54.0 -- 66.0	59.5 ms P
Decay to Zero Degrees	53.0 -- 88.0	56.0 ms P



Test ID: XA7012

Test Time: 1:54:25 PM

Test Date: 4/16/2009



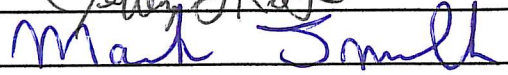
Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

VERIFICATION REPORT

Test Parameters	Test Specifications	Test Results
Velocity Corridor	--	P

All test parameters are within specifications

Technician: JR Signature: 
Supervisor: MS Signature: 



Testing
Certificate #2421.02

Test ID: **XA7012**

Test Time: **1:54:25 PM**

Test Date: **4/16/2009**



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	61A-750-10-360-XY	A021724	10/14/2008
DentonATD	7000428	523	2/27/2009
DentonATD	7000428	82	2/27/2009
DentonATD	7000428	81	2/27/2009



Test ID: **XA7012**

Test Time: **1:54:25 PM**

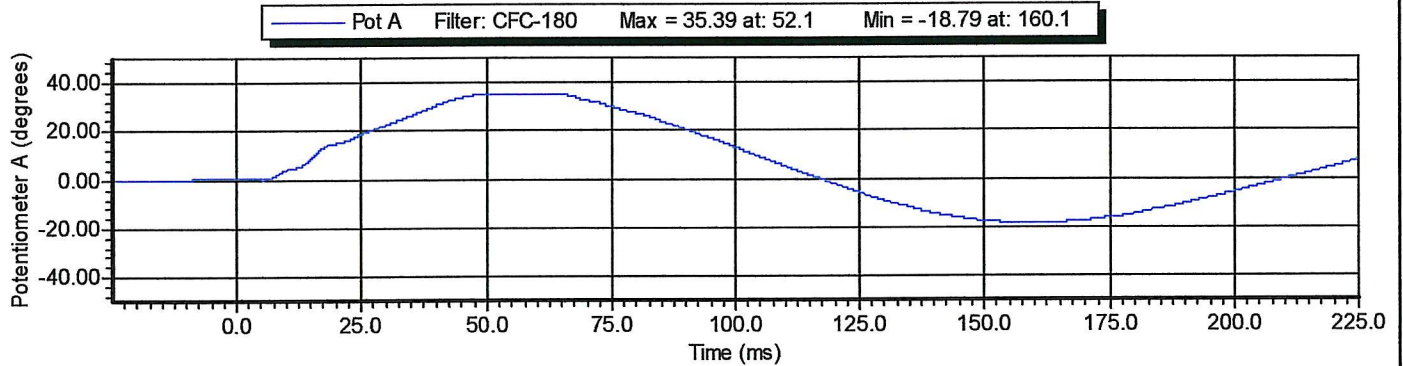
Test Date: **4/16/2009**



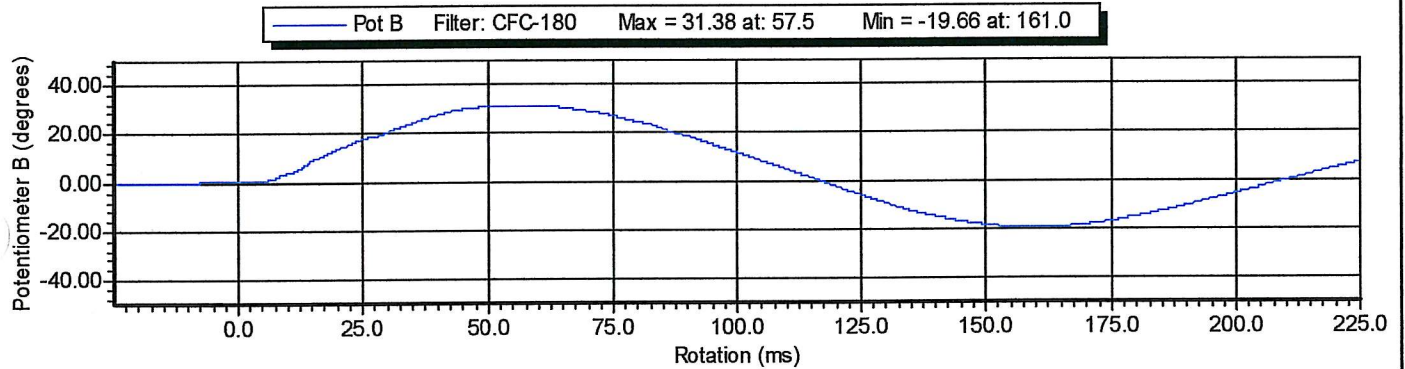
Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

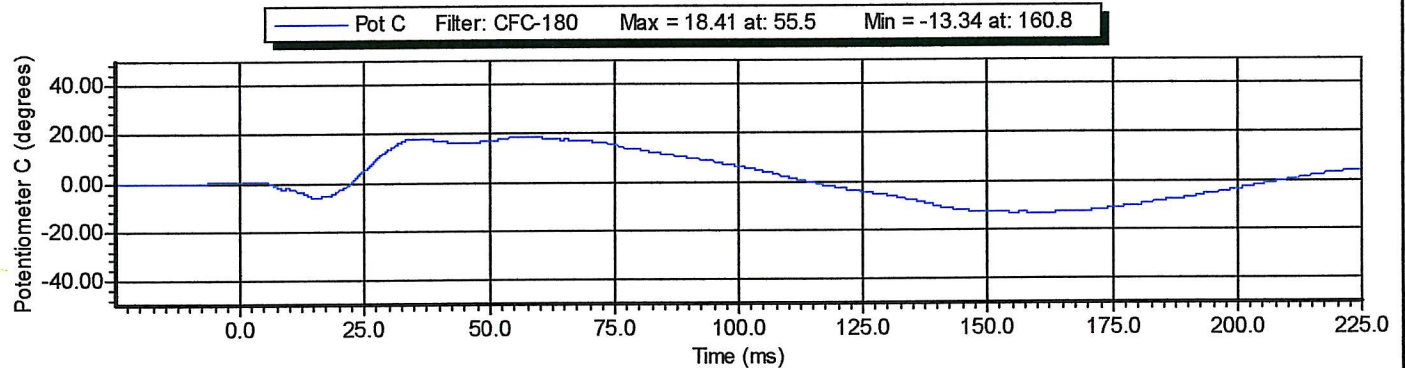
Potentiometer A



Potentiometer B



Potentiometer C





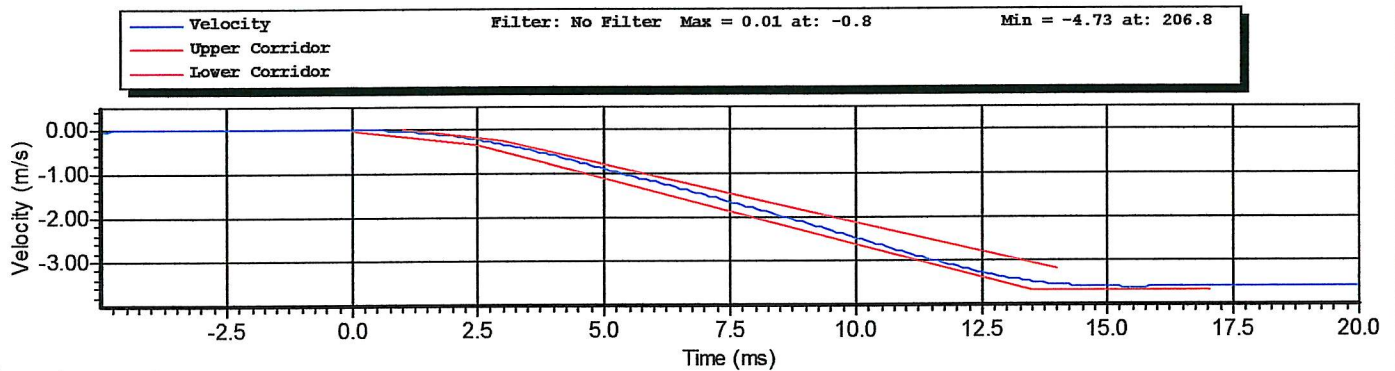
Denton Technical Center

1985 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

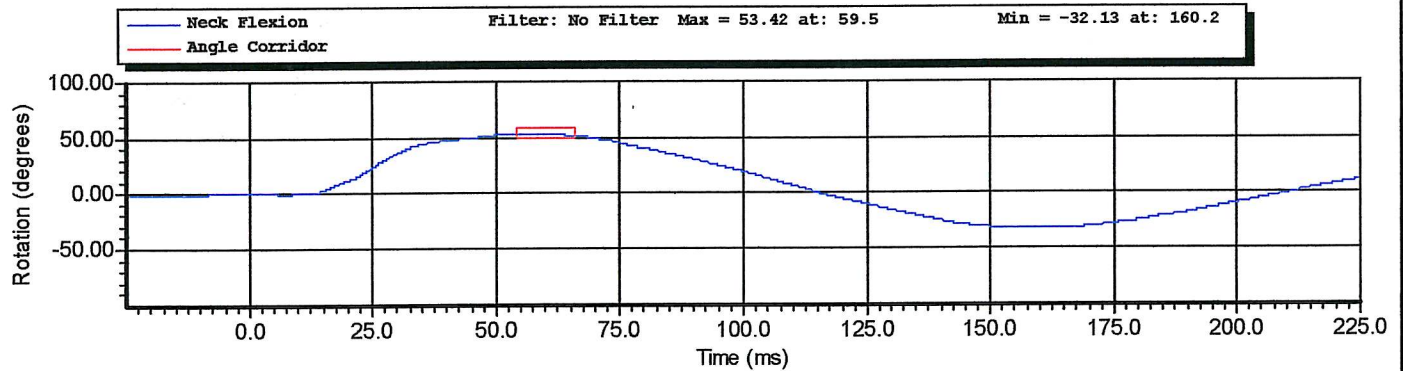
Test Name:	Neck Flexion	Revision:	12/14/2006
Job Test Name:		Spec Type:	NHTSA
ATD Type:	ES-2re		
ATD Serial Number:	F033		
Test Number:	2	Test Date:	4/16/2009
		Test Time:	1:54:25 PM

Component Part Number	Component Serial Number
Neck 455-2002	

Pendulum Velocity



Neck Flexion Angle



Test ID: XA7012

Test Time: 1:54:25 PM

Test Date: 4/16/2009



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

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:	XM7021	Test Date:	4/17/2009
Test Number:	3	Test Time:	3:21:49 PM

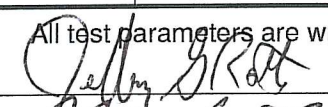
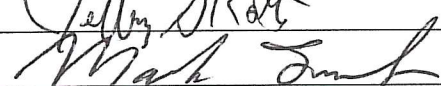
Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number - 7021
960715-313	

Comments:
LEFT

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.2 deg C P
Humidity	10.0 -- 70.0	43.2 %RH P
Velocity	4.20 -- 4.40	4.35 m/s P
Pendulum Acceleration	-10.50 -- -7.50	-9.74 g P

All test parameters are within specifications

Technician:	JR	Signature:	
Supervisor:	MS	Signature:	

Test ID: **XM7021**

Test Time: **3:21:49 PM**

Test Date: **4/17/2009**



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	61A-750-10-360-XY	A009323	10/14/2008

Test ID: XM7021

Test Time: 3:21:49 PM

Test Date: 4/17/2009



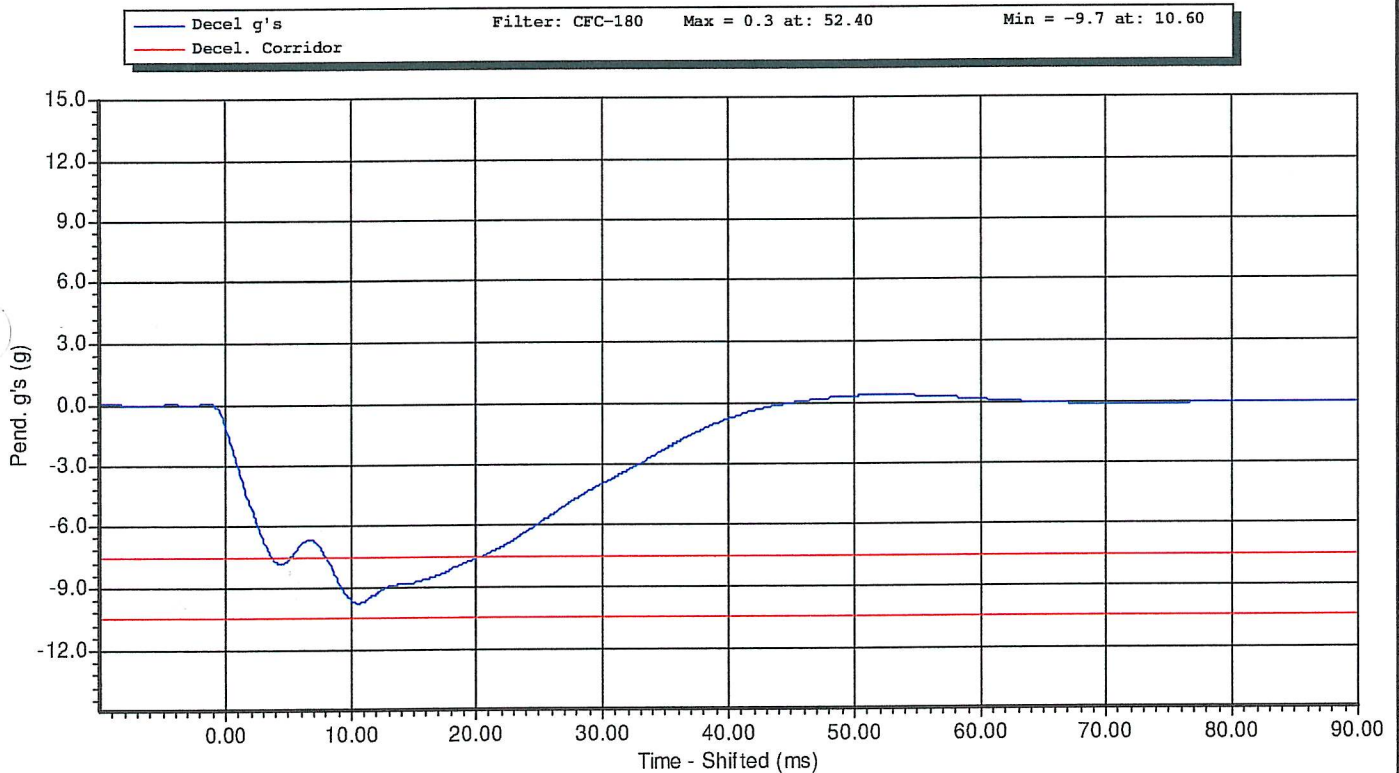
Denton Technical Center

1965 Larchwood Troy, Michigan 48083, Phone: (248) 528-9889, Fax: (248) 528-8494

Test Name:	Shoulder Impact	Revision:	12/14/2006
Test Name:		Spec Type:	NHTSA
ATD Type:	ES-2re		
ATD Serial Number:	F033		
Test Number:	3	Test Date:	4/17/2009
		Test Time:	3:21:49 PM

Component Part Number	Component Serial Number
960715-313	

Pendulum g's



Test ID: XM7021

Test Time: 3:21:49 PM

Test Date: 4/17/2009



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

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:	XS7206	Test Date:	4/16/2009
Test Number:	1	Test Time:	11:56:13 AM

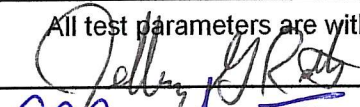
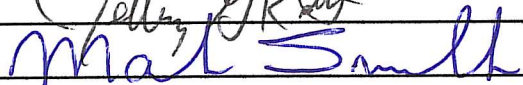
Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number - 7206
455-3100	

Comments:
LEFT, UPPER

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	20.8 deg C P
Humidity	10.0 -- 70.0	42.4 %RH P
Velocity	2.90 -- 3.10	2.92 m/s P
Rib Displacement	-40.00 -- -36.00	-36.16 mm P
Drop Height	454 -- 464	459 mm P

All test parameters are within specifications

Technician:	JR	Signature:	
Supervisor:	MS	Signature:	



Test ID: XS7206

Test Time: 11:56:13 AM

Test Date: 4/16/2009



Denton Technical Center

1965 Larchwood Troy, Michigan 48083, Phone: (248) 528-9889, Fax: (248) 528-8494

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Servo	9000851	120	2/27/2009
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	64-2000-10-360-XY	A009030	10/14/2008



Test ID: **XS7206**

Test Time: **11:56:13 AM**

Test Date: **4/16/2009**



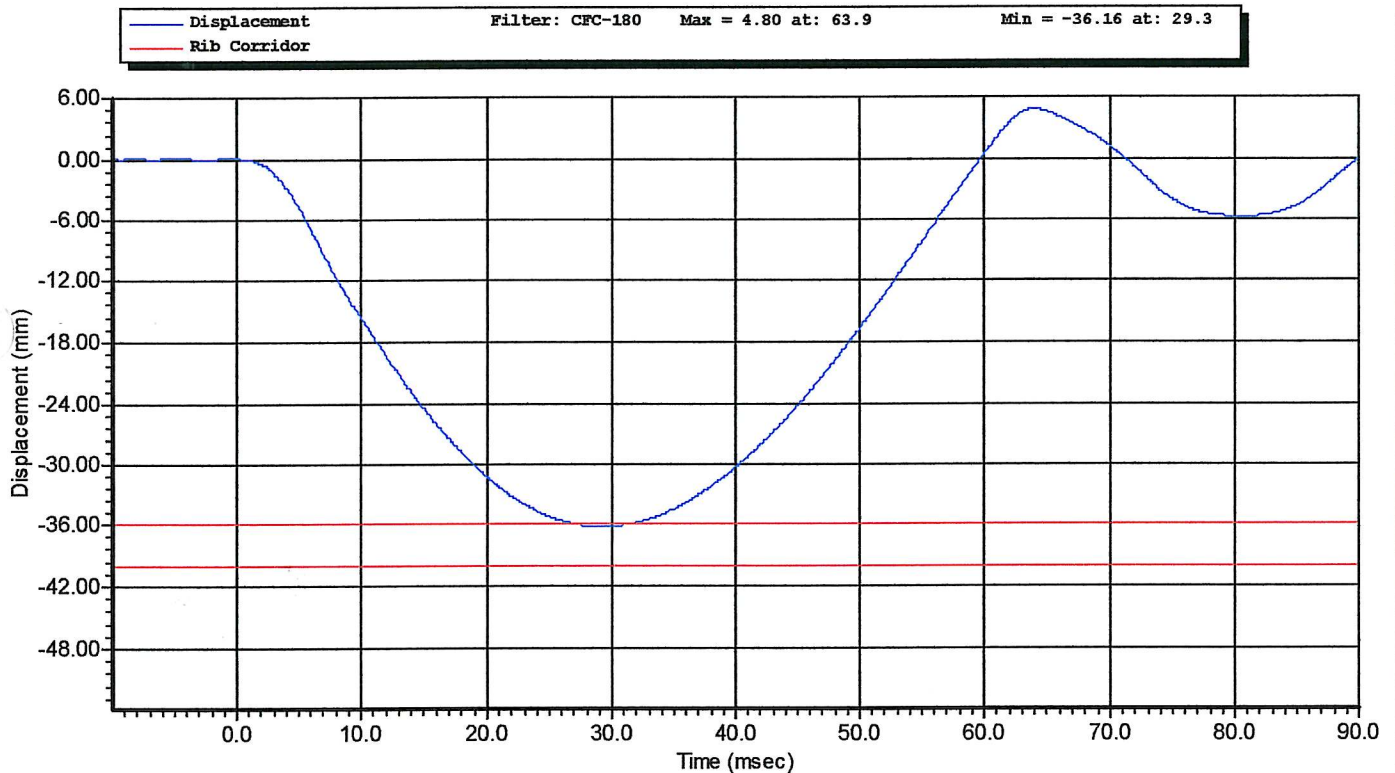
Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

Test Name:	Full Rib Module Impact	Revision:	12/14/2006
Test Name:	3.0 Meters/Second	Spec Type:	NHTSA
ATD Type:	ES-2re		
ATD Serial Number:	F033		
Test Number:	1	Test Date:	4/16/2009
		Test Time:	11:56:13 AM

Component Part Number	Component Serial Number
455-3100	

Rib Displacement



Test ID: **XS7206**

Test Time: **11:56:13 AM**

Test Date: **4/16/2009**



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

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:	XS7206	Test Date:	4/16/2009
Test Number:	1	Test Time:	12:28:22 PM

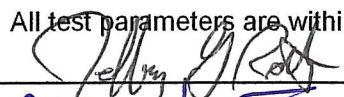
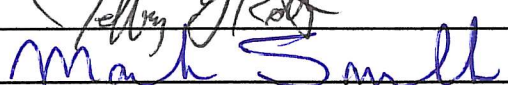
Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number - 7206
455-3100	

Comments:
LEFT, UPPER

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	20.9 deg C P
Humidity	10.0 -- 70.0	42.4 %RH P
Velocity	3.90 -- 4.10	3.95 m/s P
Rib Displacement	-51.00 -- -46.00	-48.49 mm P
Drop Height	807.0 -- 823.0	815.0 mm P

All test parameters are within specifications

Technician: JR	Signature: 
Supervisor: MS	Signature: 



Test ID: XS7206

Test Time: 12:28:22 PM

Test Date: 4/16/2009



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Servo	9000851	120	2/27/2009
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	64-2000-10-360-XY	A009030	10/14/2008



Test ID: XS7206

Test Time: 12:28:22 PM

Test Date: 4/16/2009



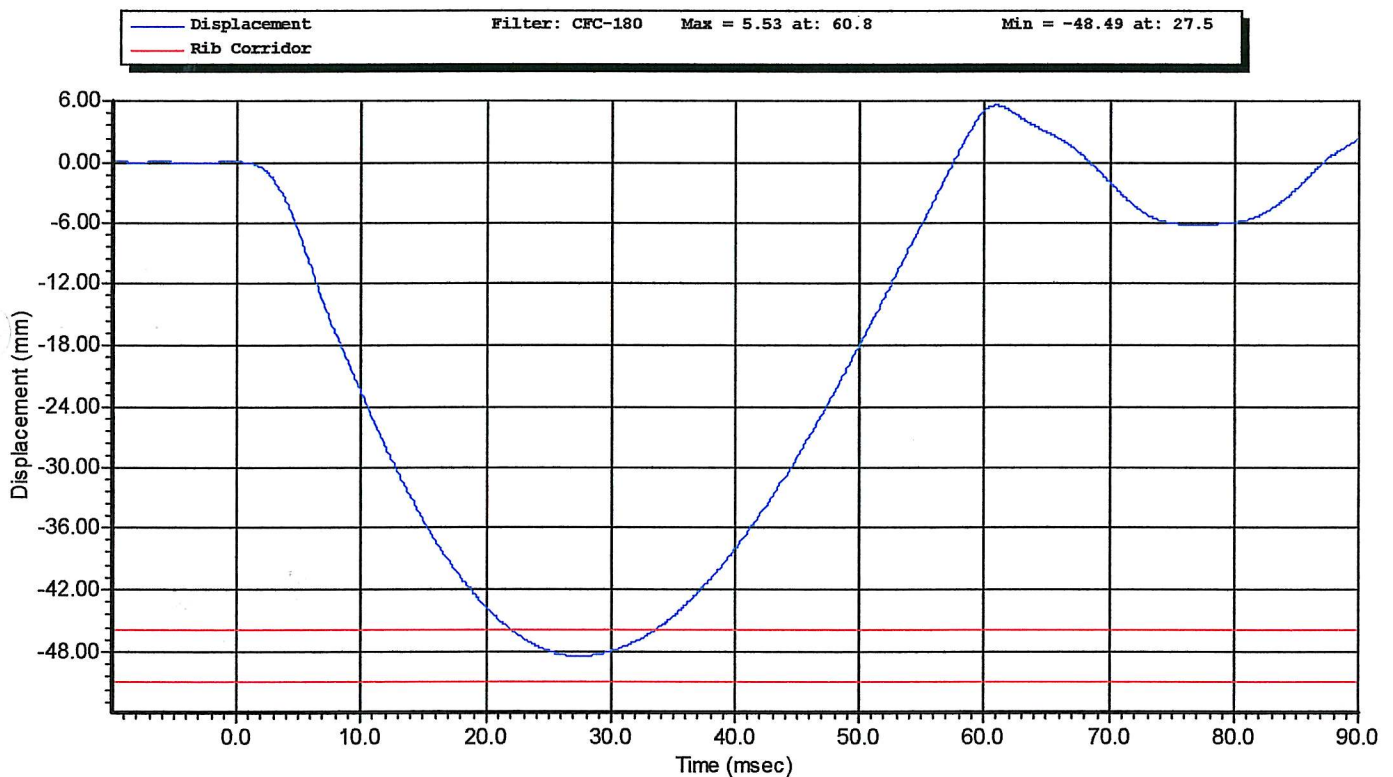
Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

Test Name:	Full Rib Module Impact	Revision:	12/14/2006
Test Name:	4.0 Meters/Second	Spec Type:	NHTSA
ATD Type:	ES-2re		
ATD Serial Number:	F033		
Test Number:	1	Test Date:	4/16/2009
		Test Time:	12:28:22 PM

Component Part Number	Component Serial Number
455-3100	

Rib Displacement



Test ID: **XS7206**

Test Time: **12:28:22 PM**

Test Date: **4/16/2009**



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

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:	XS7207	Test Date:	4/16/2009
Test Number:	2	Test Time:	1:21:07 PM

Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number - 7207
455-3100	

Comments:
LEFT, MIDDLE

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.1 deg C P
Humidity	10.0 -- 70.0	43.0 %RH P
Velocity	2.90 -- 3.10	2.94 m/s P
Rib Displacement	-40.00 -- -36.00	-36.73 mm P
Drop Height	454 -- 464	462 mm P

All test parameters are within specifications

Technician: JR Signature: [Signature]
Supervisor: MS Signature: [Signature]



Test ID: XS7207

Test Time: 1:21:07 PM

Test Date: 4/16/2009



Denton Technical Center

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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Servo	9000851	120	2/27/2009
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	64-2000-10-360-XY	A009030	10/14/2008



Test ID: XS7207

Test Time: 1:21:07 PM

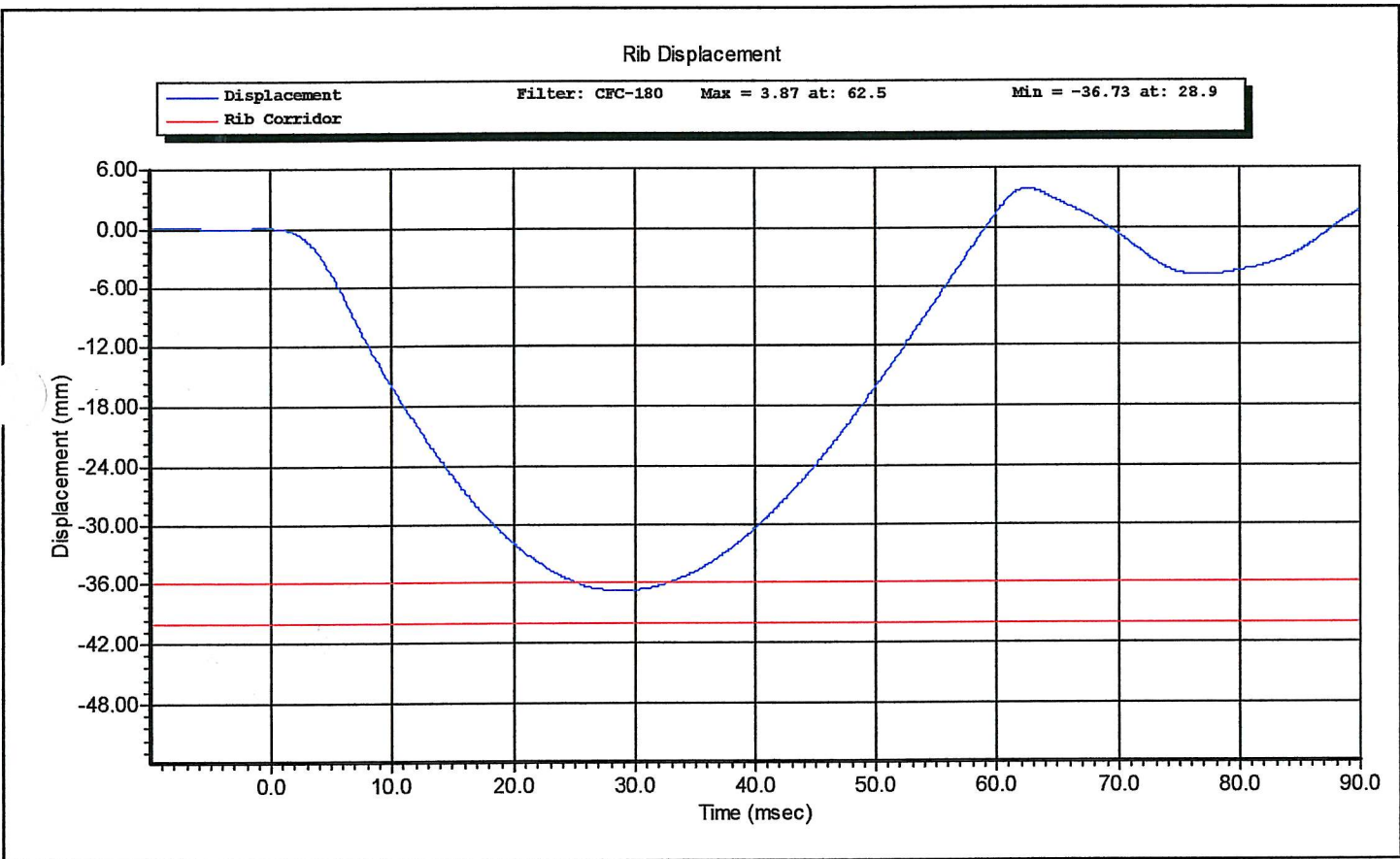
Test Date: 4/16/2009



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1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

Test Name:	Full Rib Module Impact	Revision:	12/14/2006
Test Name:	3.0 Meters/Second	Spec Type:	NHTSA
ATD Type:	ES-2re		
ATD Serial Number:	F033		
Test Number:	2	Test Date:	4/16/2009
		Test Time:	1:21:07 PM
Component Part Number	Component Serial Number		
455-3100			



Test ID: **XS7207**

Test Time: **1:21:07 PM**

Test Date: **4/16/2009**



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

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:	XS7207	Test Date:	4/16/2009
Test Number:	1	Test Time:	2:01:02 PM

Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number - 7207
455-3100	

Comments:
LEFT, MIDDLE

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.2 deg C P
Humidity	10.0 -- 70.0	43.7 %RH P
Velocity	3.90 -- 4.10	4.00 m/s P
Rib Displacement	-51.00 -- -46.00	-48.39 mm P
Drop Height	807.0 -- 823.0	817.0 mm P

All test parameters are within specifications

Technician:	JR	Signature:	
Supervisor:	MS	Signature:	



Testing
Certificate #2421.02

Test ID: XS7207

Test Time: 2:01:02 PM

Test Date: 4/16/2009



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Servo	9000851	120	2/27/2009
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	64-2000-10-360-XY	A009030	10/14/2008



Test ID: XS7207

Test Time: 2:01:02 PM

Test Date: 4/16/2009

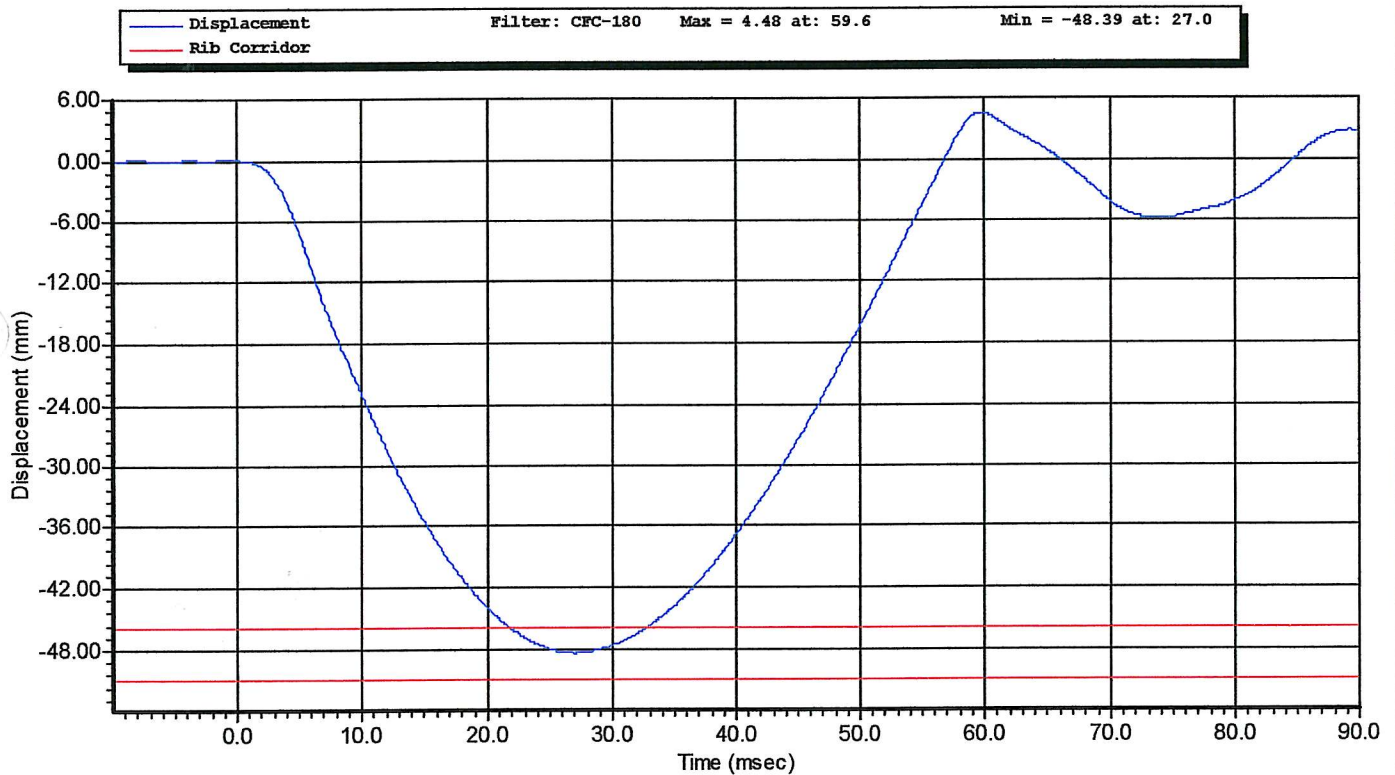


Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

Test Name:	Full Rib Module Impact	Revision:	12/14/2006
Test Name:	4.0 Meters/Second	Spec Type:	NHTSA
ATD Type:	ES-2re		
ATD Serial Number:	F033		
Test Number:	1	Test Date:	4/16/2009
		Test Time:	2:01:02 PM
Component Part Number	455-3100	Component Serial Number	

Rib Displacement



Test ID: XS7207

Test Time: 2:01:02 PM

Test Date: 4/16/2009



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

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:	XS7208	Test Date:	4/16/2009
Test Number:	1	Test Time:	2:56:37 PM

Condition As Received: CALSPAN

User Field 2:

User Field 3:

Component Part Number

455-3100

Component Serial Number - 7208

Comments:

LEFT, LOWER

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	20.9 deg C P
Humidity	10.0 -- 70.0	43.8 %RH P
Velocity	2.90 -- 3.10	2.92 m/s P
Rib Displacement	-40.00 -- -36.00	-36.27 mm P
Drop Height	454 -- 464	460 mm P

All test parameters are within specifications

Technician: JR

Signature:

Supervisor: MS

Signature:



Testing
Certificate #2421.02

Test ID: XS7208

Test Time: 2:56:37 PM

Test Date: 4/16/2009



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Servo	9000851	120	2/27/2009
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	64-2000-10-360-XY	A009030	10/14/2008



Testing
Certificate #2421.02

Test ID: **XS7208**

Test Time: **2:56:37 PM**

Test Date: **4/16/2009**

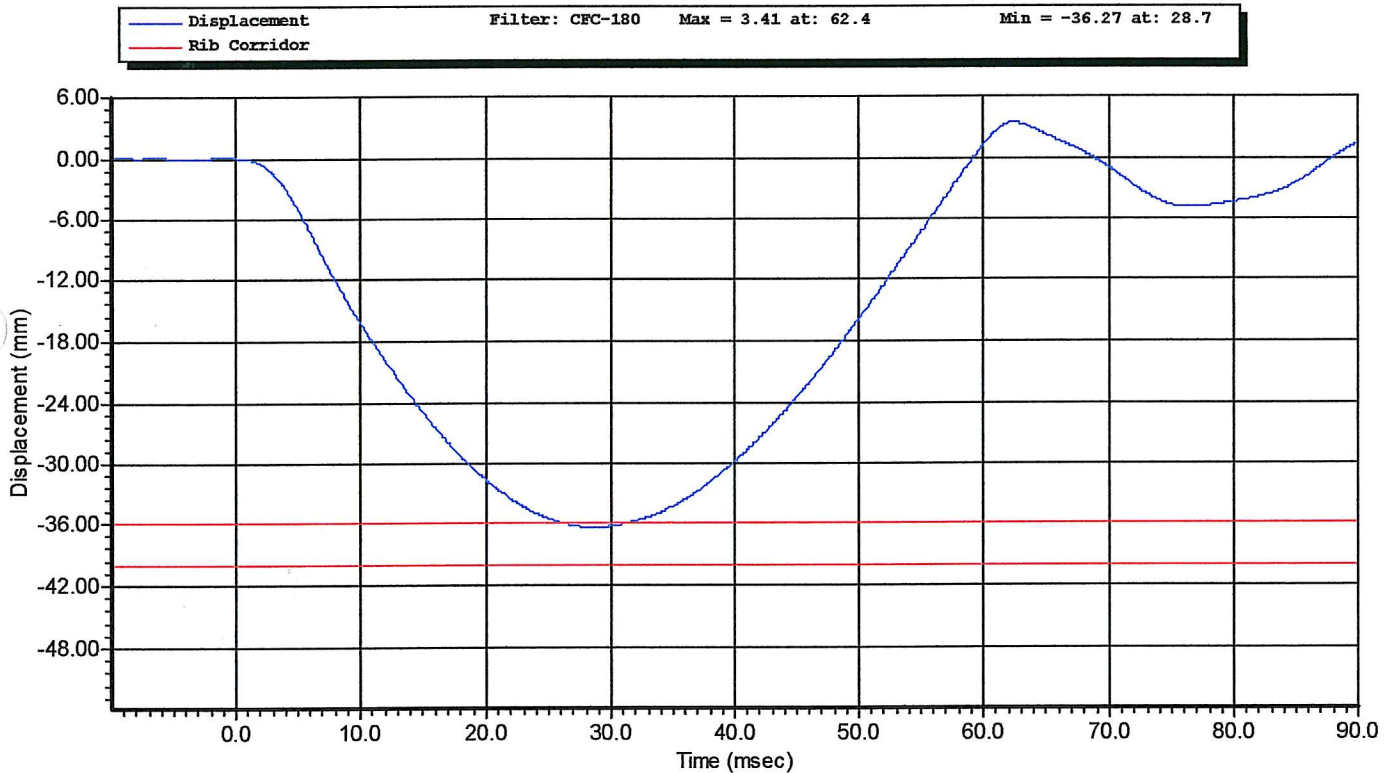


Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

Test Name:	Full Rib Module Impact	Revision:	12/14/2006
Test Name:	3.0 Meters/Second	Spec Type:	NHTSA
ATD Type:	ES-2re		
ATD Serial Number:	F033		
Test Number:	1	Test Date:	4/16/2009
		Test Time:	2:56:37 PM
Component Part Number	Component Serial Number		
455-3100			

Rib Displacement



Test ID: XS7208

Test Time: 2:56:37 PM

Test Date: 4/16/2009



Denton Technical Center

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VERIFICATION REPORT

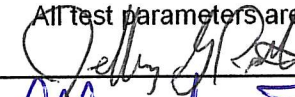
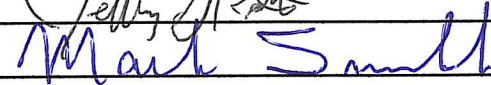
Test Name:	Full Rib Module Impact	Revision:	12/14/2006
Sub Test Name:	4.0 Meters/Second	Spec Type:	NHTSA
ATD Type:	ES-2re		
ATD Serial Number:	F033		
Test ID:	XS7208	Test Date:	4/16/2009
Test Number:	1	Test Time:	3:30:32 PM

Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number - 7208
455-3100	

Comments:
LEFT, LOWER

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.3 deg C P
Humidity	10.0 -- 70.0	43.6 %RH P
Velocity	3.90 -- 4.10	3.95 m/s P
Rib Displacement	-51.00 -- -46.00	-47.93 mm P
Drop Height	807.0 -- 823.0	815.0 mm P

All test parameters are within specifications	
Technician: JR	Signature: 
Supervisor: MS	Signature: 



Test ID: XS7208

Test Time: 3:30:32 PM

Test Date: 4/16/2009



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Servo	9000851	120	2/27/2009
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	64-2000-10-360-XY	A009030	10/14/2008



Test ID: **XS7208**

Test Time: **3:30:32 PM**

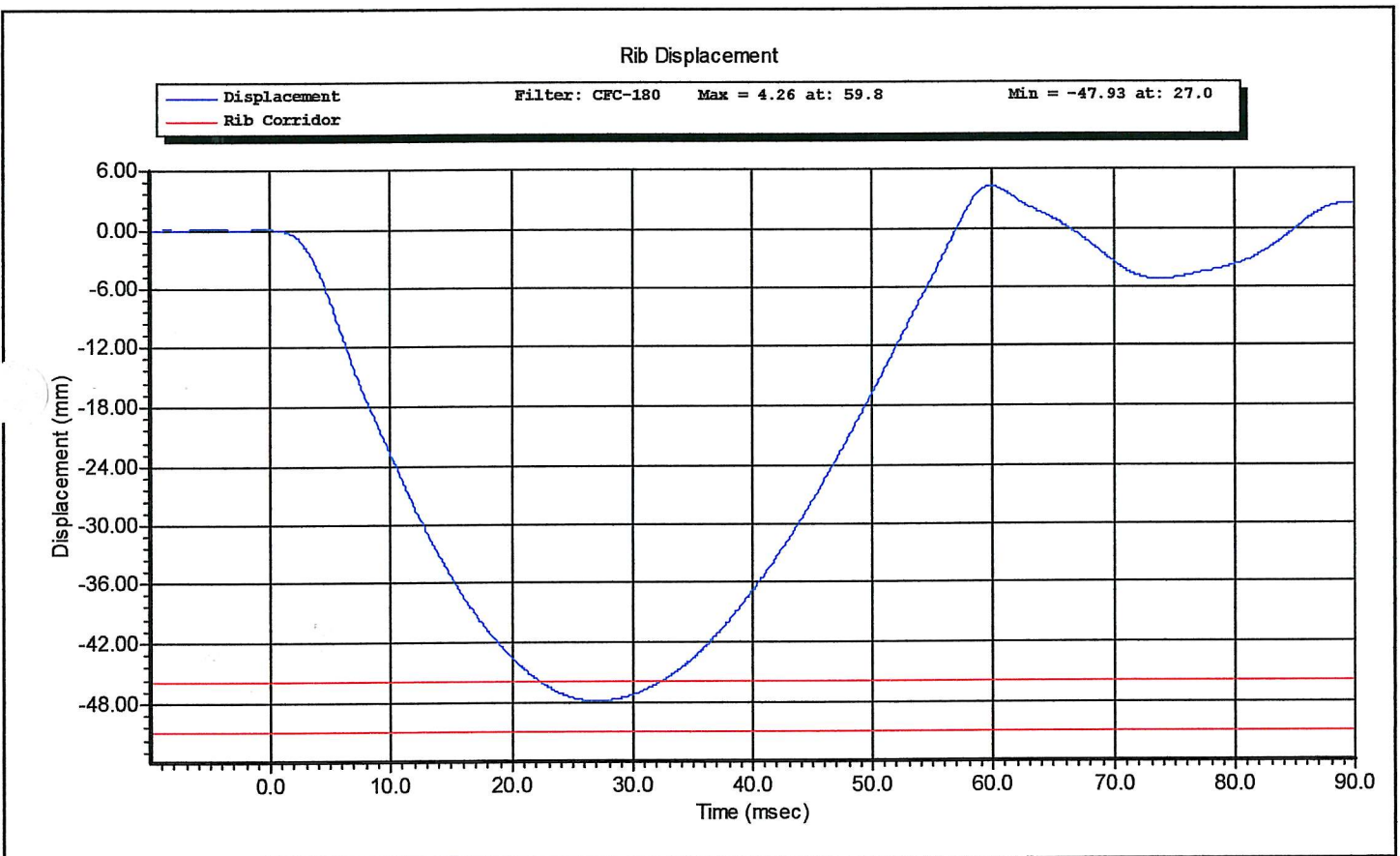
Test Date: **4/16/2009**



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

Test Name:	Full Rib Module Impact	Revision:	12/14/2006
Test Name:	4.0 Meters/Second	Spec Type:	NHTSA
ATD Type:	ES-2re		
ATD Serial Number:	F033		
Test Number:	1	Test Date:	4/16/2009
		Test Time:	3:30:32 PM
Component Part Number	Component Serial Number		
455-3100			



Test ID: **XS7208**

Test Time: **3:30:32 PM**

Test Date: **4/16/2009**



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

VERIFICATION REPORT

Test Name:	Thorax Impact	Revision:	6/16/2008
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	ES-2re		
ATD Serial Number:	F033		
Test ID:	XBF033	Test Date:	4/20/2009
Test Number:	1	Test Time:	7:16:12 AM

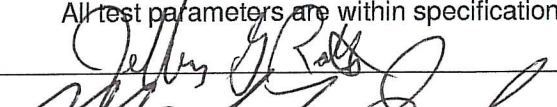
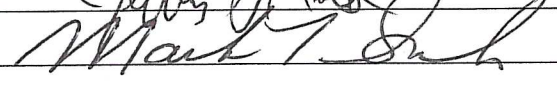
Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number
Upper Rib - 175-4002	- 7206
Middle Rib - 175-4002	- 7207
Lower Rib - 175-4002	- 7208

Comments:
LEFT, USING LAB POTS
RIBS UPPER-7206, MIDDLE- 7207, LOWER-7208

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.4 deg C P
Humidity	10.0 -- 70.0	42.7 %RH P
Velocity	5.40 -- 5.60	5.52 m/s P
Upper Rib Displacement	34.0 -- 41.0	37.1 mm P
Middle Rib Displacement	37.0 -- 45.0	40.7 mm P
Lower Rib Displacement	37.0 -- 44.0	39.7 mm P
Impactor Force	5100 -- 6200	5883 N P

All test parameters are within specifications

Technician:	JR	Signature:	
Supervisor:	MS	Signature:	

Test ID: **XBF033**

Test Time: **7:16:12 AM**

Test Date: **4/20/2009**



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	61A-750-10-360-XY	A009323	10/14/2008
Servo	9000851	161	3/3/2009
Servo	9000851	160	3/9/2009
Servo	9000851	120	2/27/2009

Test ID: **XBF033**

Test Time: **7:16:12 AM**

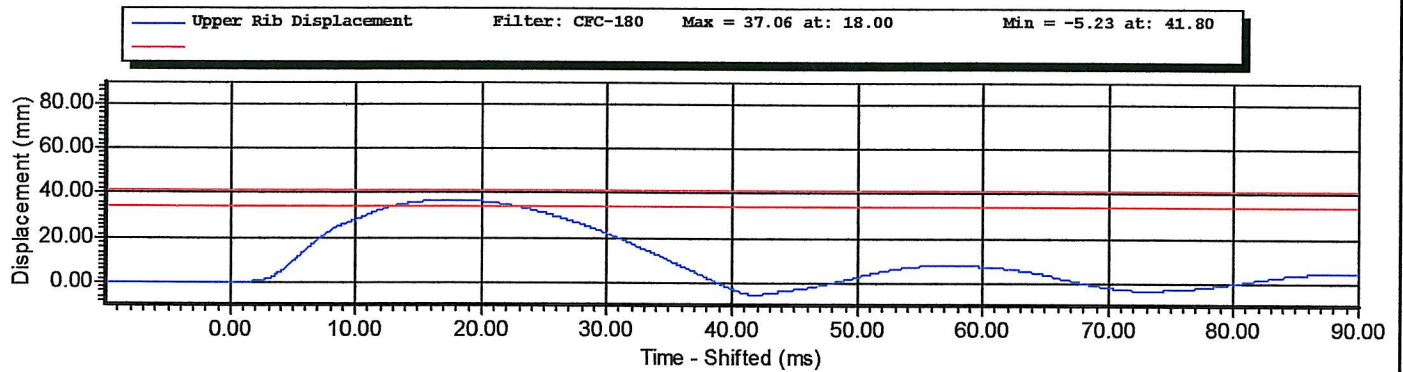
Test Date: **4/20/2009**



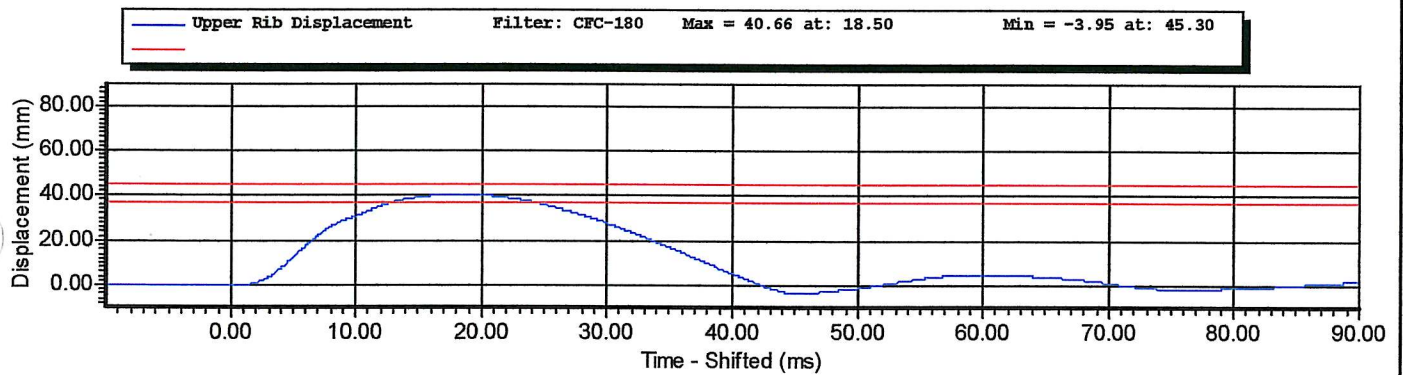
Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

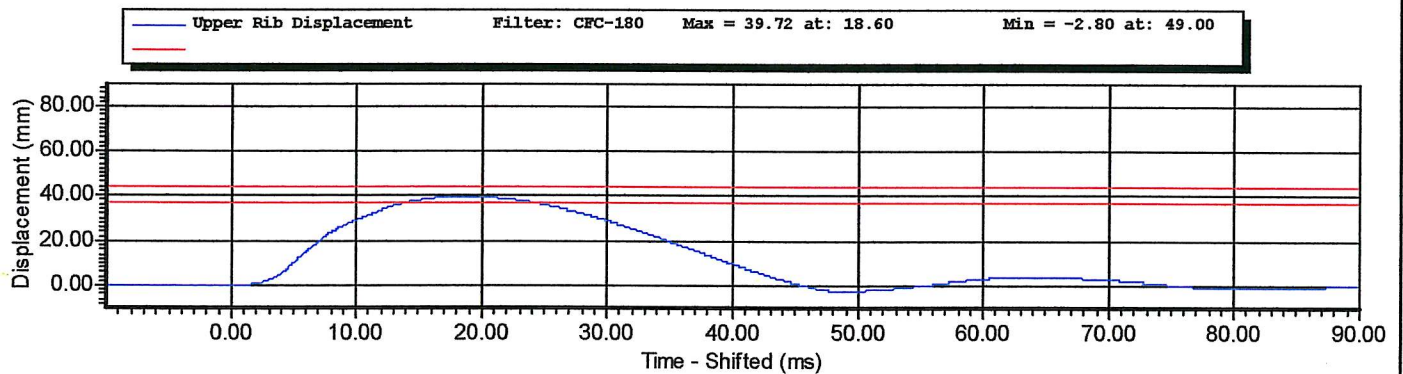
Upper Rib Displacement



Middle Rib Displacement



Lower Rib Displacement

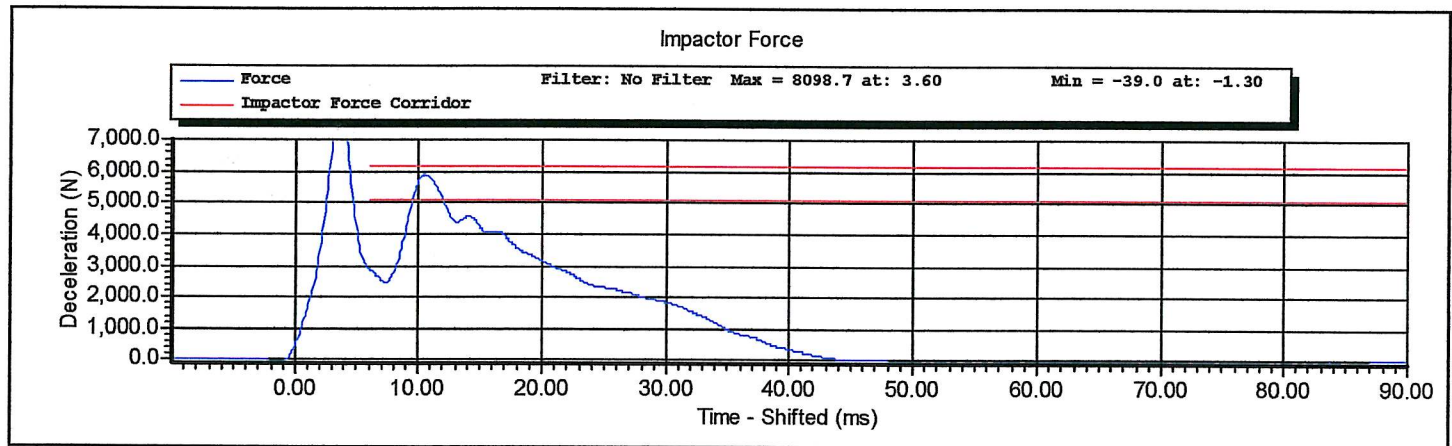
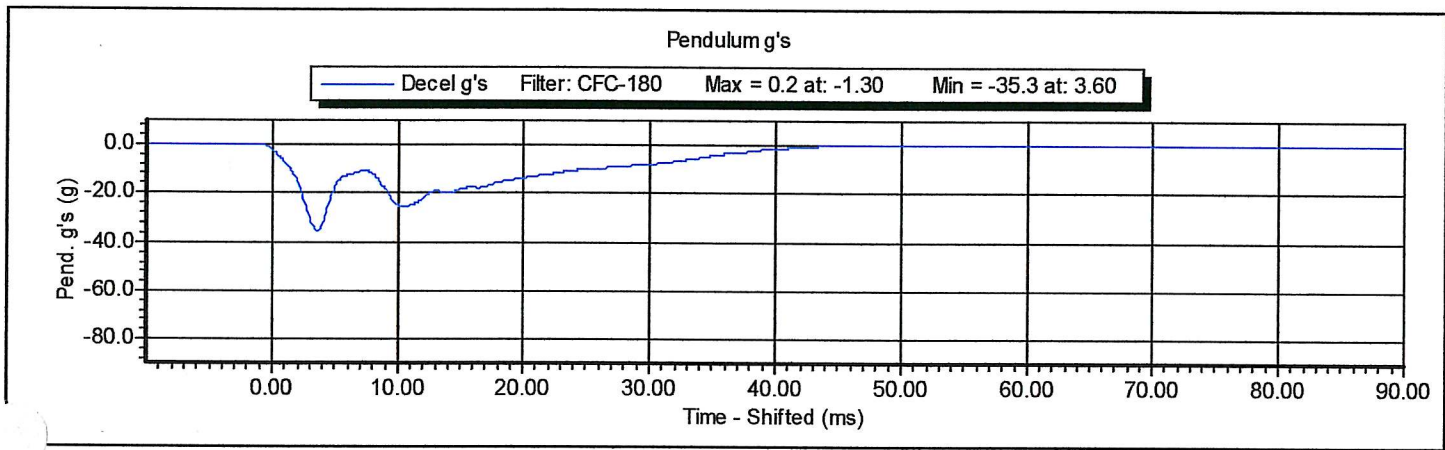




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Test Name:	Thorax Impact	Revision:	6/16/2008
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	ES-2re		
ATD Serial Number:	F033		
Test Number:	1	Test Date:	4/20/2009
		Test Time:	7:16:12 AM
Component Part Number	Component Serial Number		
Upper Rib - 175-4002			



Test ID: XBF033

Test Time: 7:16:12 AM

Test Date: 4/20/2009



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VERIFICATION REPORT

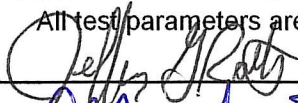
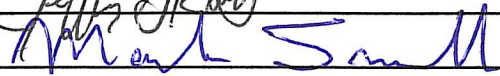
Test Name:	Lumbar Spine	Revision:	12/14/2006
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	ES-2re		
ATD Serial Number:	F033		
Test ID:	XG0330	Test Date:	4/24/2009
Test Number:	2	Test Time:	7:04:32 AM

Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number — 330
Spine Assembly 175-5501	
Torque Wrench s/n: 0106800459	

Comments:
LEFT
8X7+4 @ 94°

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.1 deg C P
Humidity	10 -- 70	42 %RH P
Velocity	5.95 -- 6.15	6.09 m/s P
Maximum Headform Flexion Angle	45.0 -- 55.0	47.2 degrees P
Time at Maximum Headform Flexion Angl	39.0 -- 53.0	44.6 ms P
Decay to Zero Degrees	37.0 -- 57.0	37.1 ms P
Velocity Corridor	--	P

Technician:	JR	Signature:	
Supervisor:	MS	Signature:	

All test parameters are within specifications

Test ID: **XG0330**

Test Time: **7:04:32 AM**

Test Date: **4/24/2009**



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	61A-750-10-360-XY	A021724	10/14/2008
DentonATD	7000428	523	2/27/2009
DentonATD	7000428	82	2/27/2009
DentonATD	7000428	81	2/27/2009

Test ID: **XG0330**

Test Time: **7:04:32 AM**

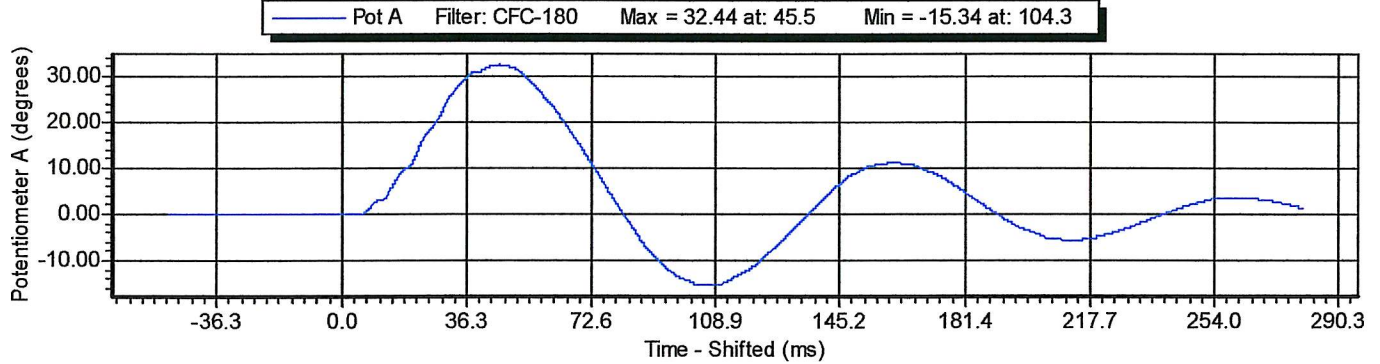
Test Date: **4/24/2009**



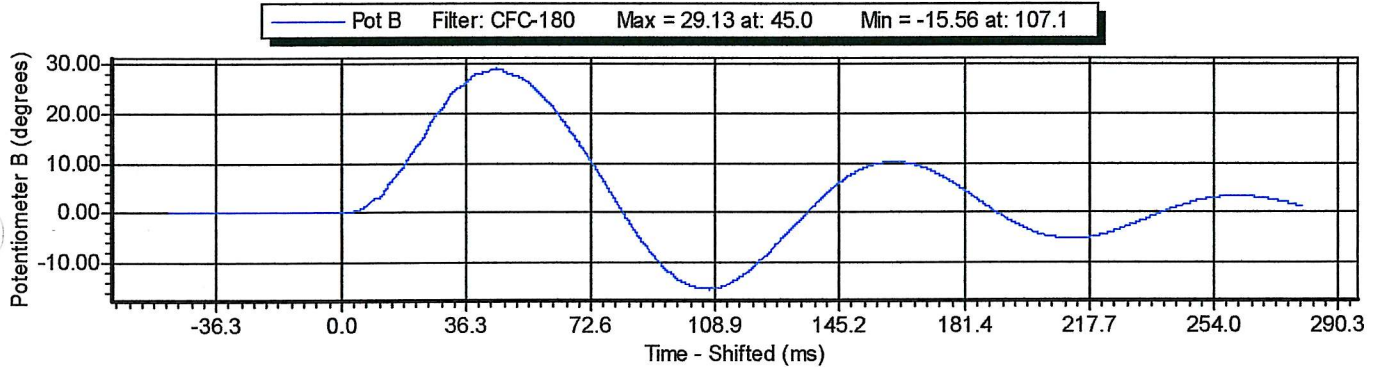
Denton Technical Center

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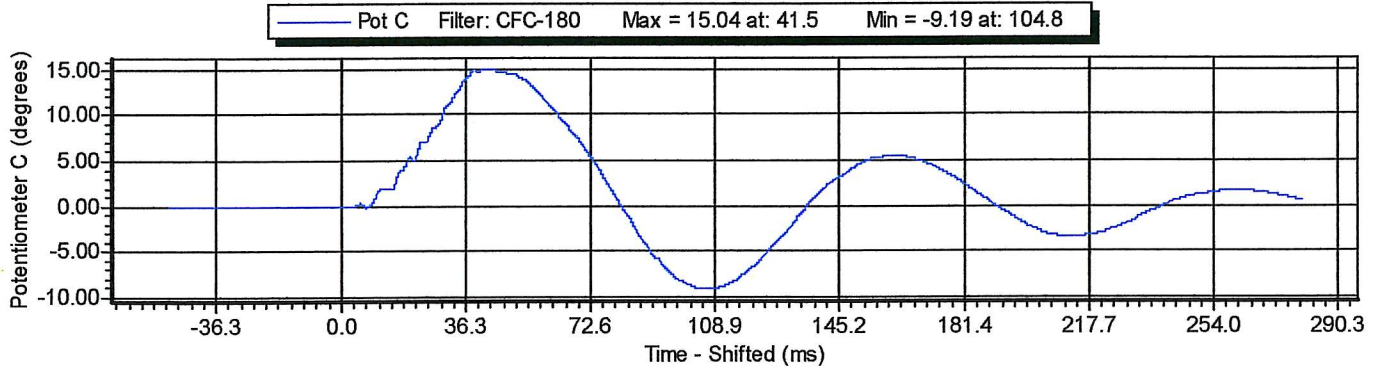
Potentiometer A



Potentiometer B



Potentiometer C

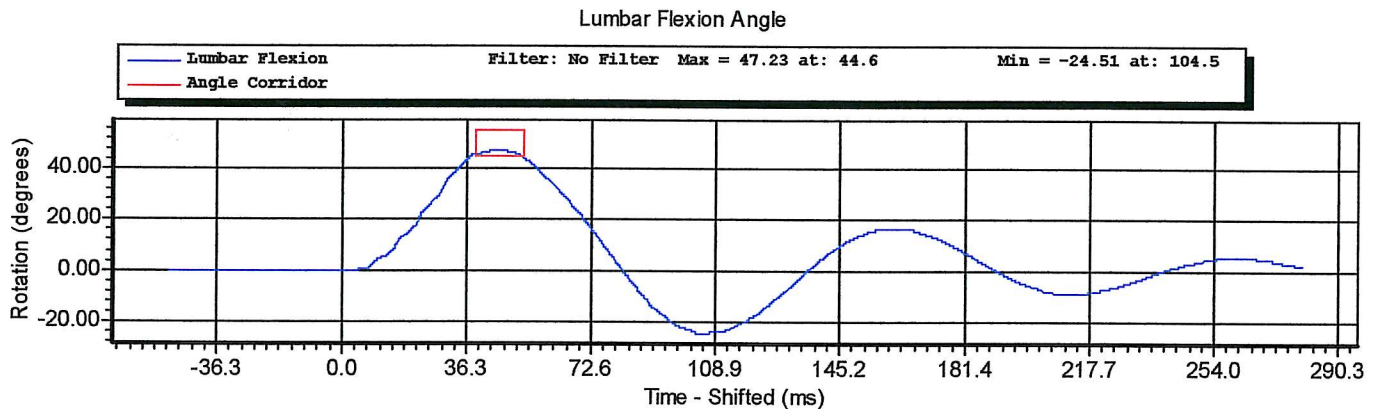
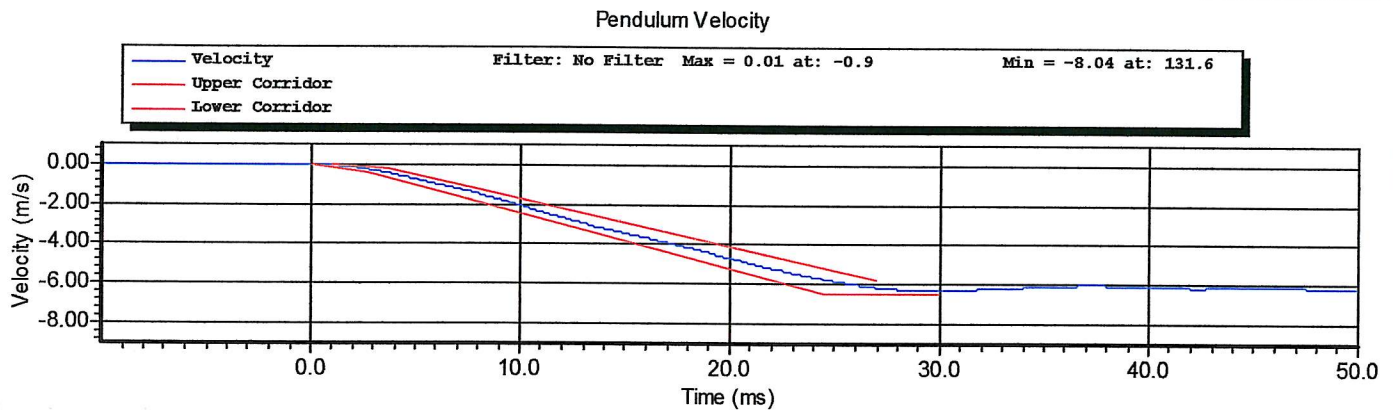




Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

Test Name:	Lumbar Spine	Revision:	12/14/2006
Job Test Name:		Spec Type:	NHTSA
ATD Type:	ES-2re		
ATD Serial Number:	F033		
Test Number:	2	Test Date:	4/24/2009
		Test Time:	7:04:32 AM
Component Part Number	Component Serial Number		
Spine Assembly 175-5501			



Test ID: **XG0330**

Test Time: **7:04:32 AM**

Test Date: **4/24/2009**



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

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:	XF07/136	Test Date:	4/17/2009
Test Number:	1	Test Time:	3:43:43 PM

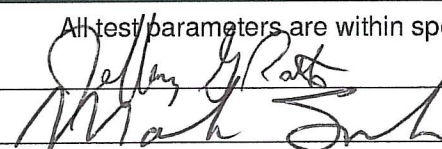
Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number
455-4001	- 7 / 136

Comments:
LEFT

Test Parameters	Test Specifications			Test Results	
Temperature	20.6	--	22.2	20.7 deg C	P
Humidity	10	--	70	43 %RH	P
Velocity	3.90	--	4.10	3.98 m/s	P
Peak Abdominal Force	-2.70	--	-2.20	-2.28 kN	P
Time At Peak Abdominal Force	10.0	--	12.3	10.5 ms	P
Maximum Pendulum Force	-4.80	--	-4.00	-4.34 kN	P
Time at Peak Pendulum Force	10.6	--	13.0	10.8 ms	P

All test parameters are within specifications

Technician: **JR** Signature: 

Supervisor: **MS** Signature: 

Test ID: **XF07/136**

Test Time: **3:43:43 PM**

Test Date: **4/17/2009**



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	61A-750-10-360-XY	A009323	10/14/2008
Denton	2631	1524	3/6/2009
Denton	2631	1523	3/6/2009
Denton	2631	1530	3/6/2009

Test ID: **XF07/136**

Test Time: **3:43:43 PM**

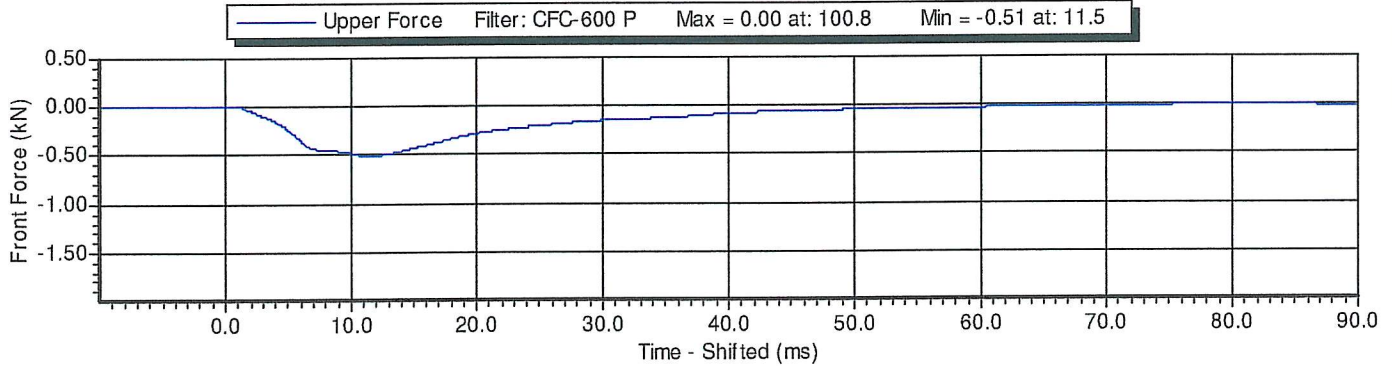
Test Date: **4/17/2009**



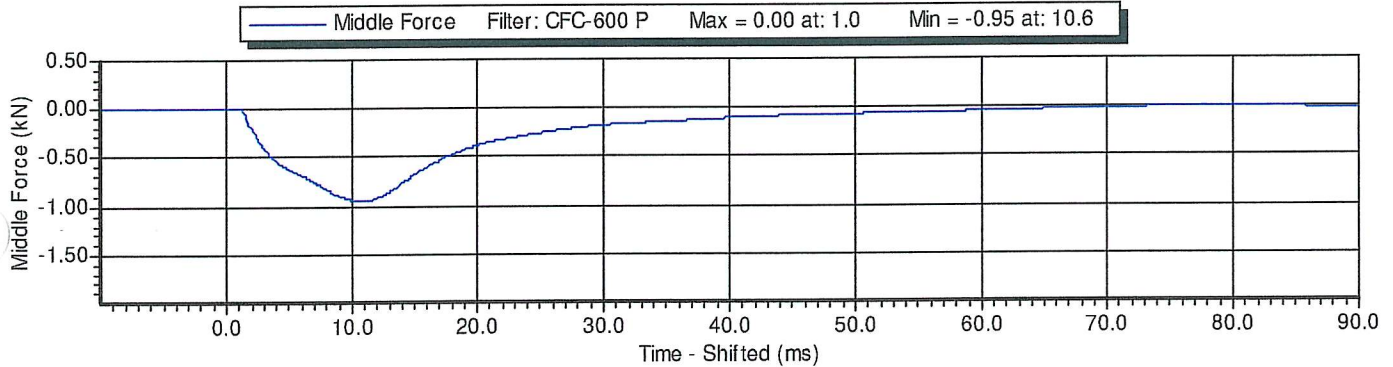
Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

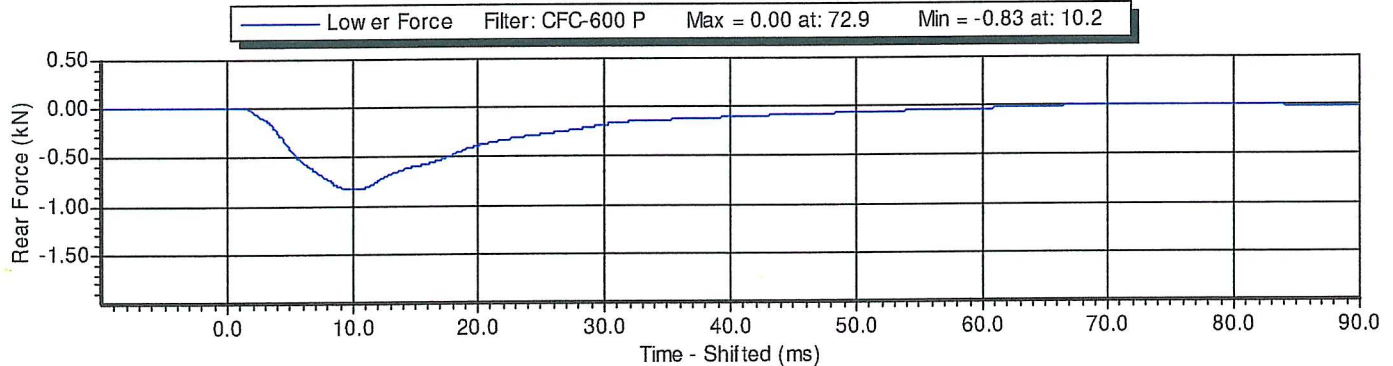
Front Abdominal Force



Middle Abdominal Force



Rear Abdominal Force



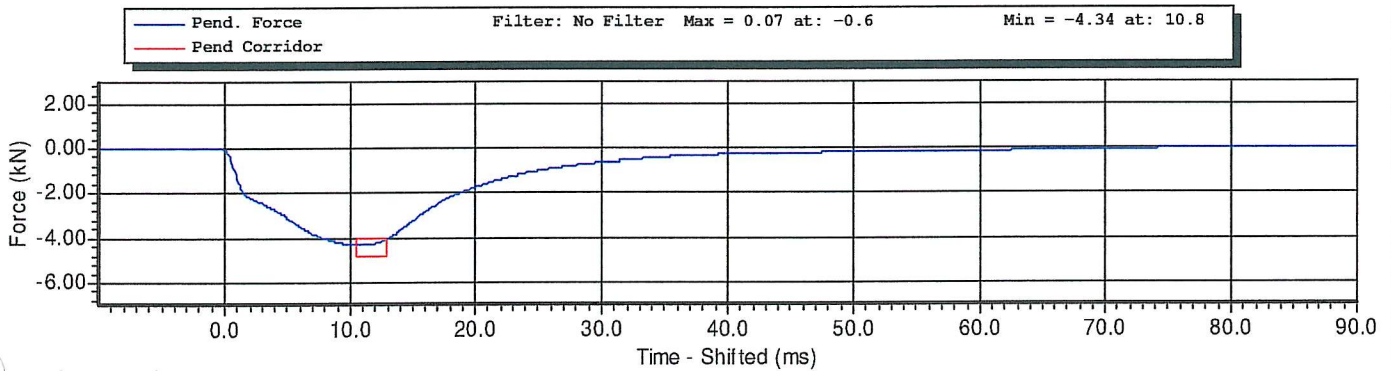


Denton Technical Center

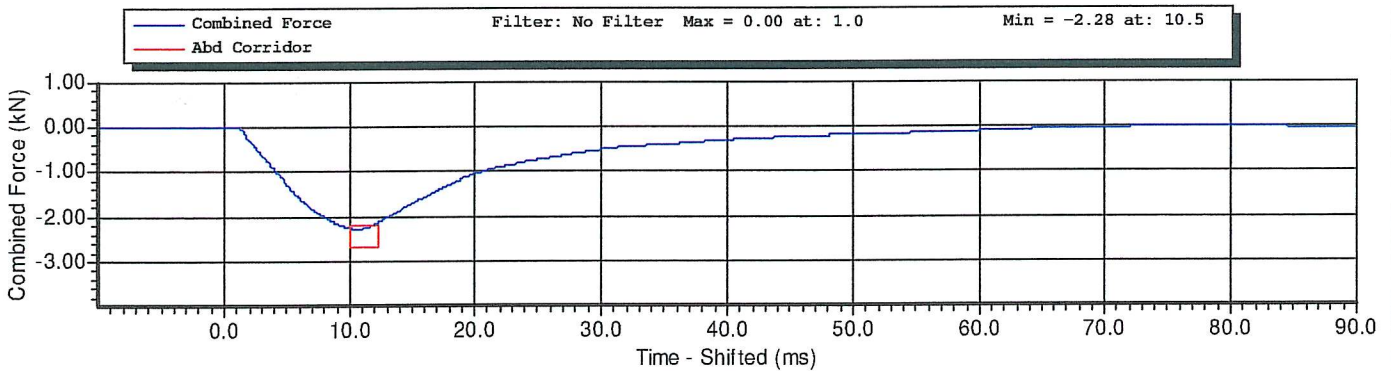
1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

Test Name:	Abdominal Impact	Revision:	12/14/2006
Test Name:		Spec Type:	NHTSA
ATD Type:	ES-2re		
ATD Serial Number:	F033		
Test Number:	1	Test Date:	4/17/2009
		Test Time:	3:43:43 PM
Component Part Number	Component Serial Number		
455-4001			

Pendulum Force



Combined Abdominal Force



Test ID: **XF07/136**

Test Time: **3:43:43 PM**

Test Date: **4/17/2009**



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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:	XJ7033	Test Date:	4/18/2009
Test Number:	1	Test Time:	9:48:47 AM

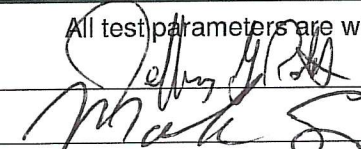
Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

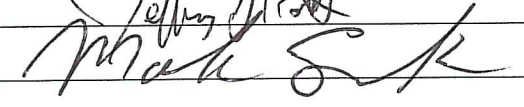
Component Part Number	Component Serial Number — 7033
455-4003	

Comments:
LEFT

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.0 deg C P
Humidity	10 -- 70	41 %RH P
Velocity	4.20 -- 4.40	4.37 m/s P
Peak Pendulum Force	-5.40 -- -4.70	-5.35 kN P
Time at Peak Pendulum Force	11.80 -- 16.10	12.89 ms P
Peak Pubic Symphysis Force	-1.59 -- -1.23	-1.54 kN P
Time at Peak Pubic Symphysis Force	12.20 -- 17.00	13.29 ms P

All test parameters are within specifications

Technician: **JR** Signature: 

Supervisor: **MS** Signature: 

Test ID: **XJ7033**

Test Time: **9:48:47 AM**

Test Date: **4/18/2009**



Denton Technical Center

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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	999999999	12/16/2008
MSI	61A-750-10-360-XY	A009323	10/14/2008
Denton	3096	456	3/6/2009

Test ID: **XJ7033**

Test Time: **9:48:47 AM**

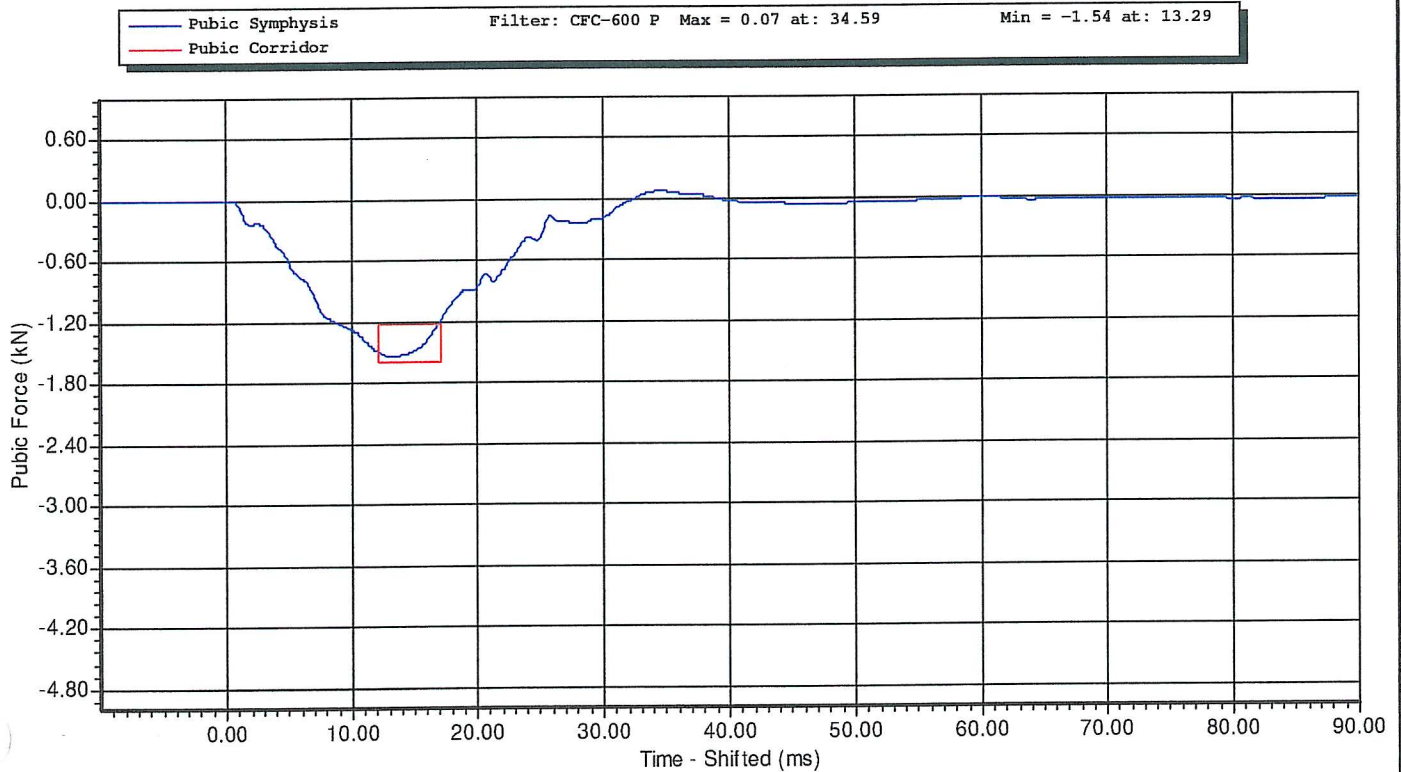
Test Date: **4/18/2009**



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1965 Larchwood Troy, Michigan 48083, Phone: (248) 528-9889, Fax: (248) 528-8494

Pubic Symphysis Force



Test ID: XJ7033

Test Time: 9:48:47 AM

Test Date: 4/18/2009

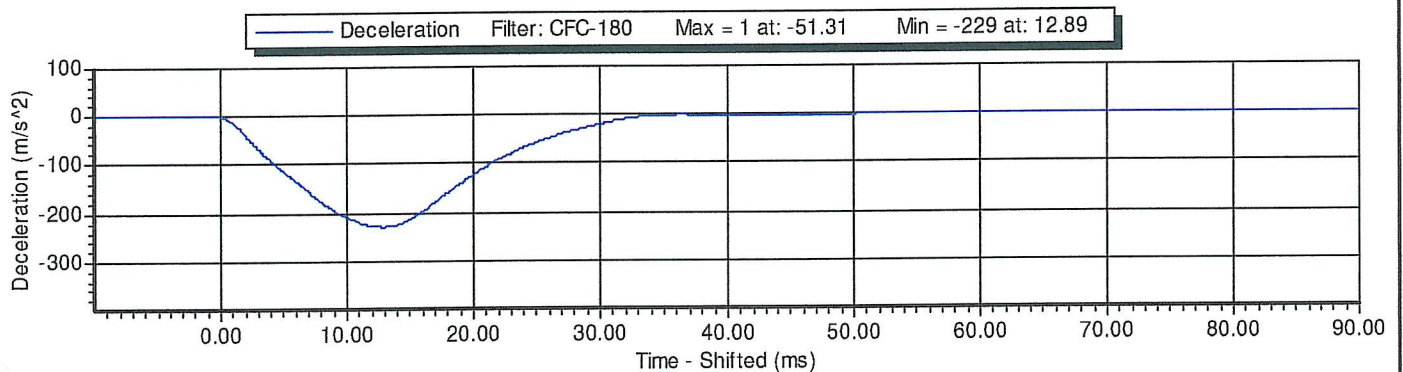


Denton Technical Center

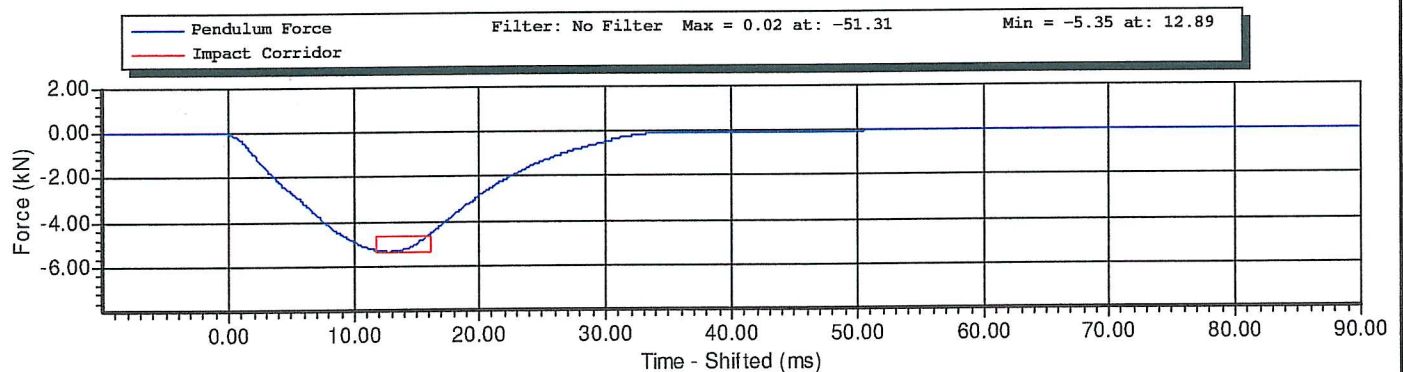
1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

Test Name:	Pelvis Impact	Revision:	12/14/2006
Test Name:		Spec Type:	NHTSA
ATD Type:	ES-2re		
ATD Serial Number:	F033		
Test Number:	1	Test Date:	4/18/2009
		Test Time:	9:48:47 AM
Component Part Number	Component Serial Number		
455-4003			

Pendulum Accelerometer



Pendulum Force



Test ID: **XJ7033**

Test Time: **9:48:47 AM**

Test Date: **4/18/2009**

CALIBRATION TEST RESULTS

PRE TEST

SID IIs NO.: 297

CONFIGURED FOR LEFT SIDE IMPACT

**DENTON TECHNICAL CENTER**

DTC Form (IAW ISO-17025)

RMA Evaluation Report

1965 Larchwood, Troy, Michigan 48083
Tel: (248) 528-9889 Fax: (248) 528-8494
Document Number: DTC-TLF012
Revision Date: 1/30/09
Revision Level: 5

Customer: Calspan

Certificate No.: 42409297

DTC RMA#: 14021

RDI RMA#: NA

Dummy Type: SID-IIs-BLD

Serial Number: 297

Mechanical Status:**Condition as Received:**☒ In Tolerance ☐ Out of Tolerance**Condition as Returned:**☒ In Tolerance ☐ Out of Tolerance**Electrical Status (MUX):** ☒ Not Applicable**Condition as Received:**☐ In Tolerance ☐ Out of Tolerance**Condition as Returned:**☐ In Tolerance ☐ Out of Tolerance**Testing Requirements IAW: CFR 49, 572, V**

	Test Description	S/N	Status
1	Lateral Head Drop	1330	Passed
2	Lateral Neck Bending	700	Passed
3	Thorax Impact w/ Arm	485	Passed
4	Thorax Impact w/o Arm	485	Passed
5	Shoulder Impact	259	Passed
6	Abdominal Impact	485	Passed
7	Pelvis Impact, Acet.	868	Passed
8	Pelvis Impact, Iliac	868	Passed
9			
10			
11			

Torque Wrench: 1100814903

Comments:

Incoming Appearance:Head Assembly ☒ Good ☐ DamagedNeck Assembly ☒ Good ☐ DamagedUpper Torso Assembly ☒ Good ☐ DamagedLower Torso Assembly ☒ Good ☐ DamagedLeft Arm Assembly ☒ Good ☐ DamagedRight Arm Assembly ☒ Good ☐ DamagedLeft Leg Assembly ☒ Good ☐ DamagedRight Leg Assembly ☒ Good ☐ Damaged**Comments:**

Neck Torque

Comments:

No Sensor cals. VRTC to supply replacement parts if needed.



Denton Technical Center

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VERIFICATION REPORT

Test Name:	Head Drop	Revision:	12/14/2006
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-IIs Level 'D'		
ATD Serial Number:	297		
Test ID:	RD1330	Test Date:	4/16/2009
Test Number:	1	Test Time:	9:07:52 AM

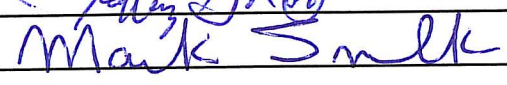
Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number
Head Skin - 180-1002	S/N 1330

Comments:
LEFT

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.6 deg C P
Humidity	10 -- 70	40 %RH P
Resultant Acceleration	115.0 -- 137.0	133.5 g P
Oscillation	0.0 -- 15.0	6.7 % P
Lateral Acceleration	-15.0 -- 15.0	-3.9 g P

All test parameters are within specifications

Technician:	JR	Signature:	
Supervisor:	MS	Signature:	

Test ID: RD1330

Test Time: 9:07:52 AM

Test Date: 4/16/2009



Denton Technical Center

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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	12/16/2008
Endevco	7264D-2000	11558	8/12/2008
Endevco	7264D-2000	11553	8/12/2008
Endevco	7264D-2000	11569	8/18/2008

Test ID: **RD1330**

Test Time: **9:07:52 AM**

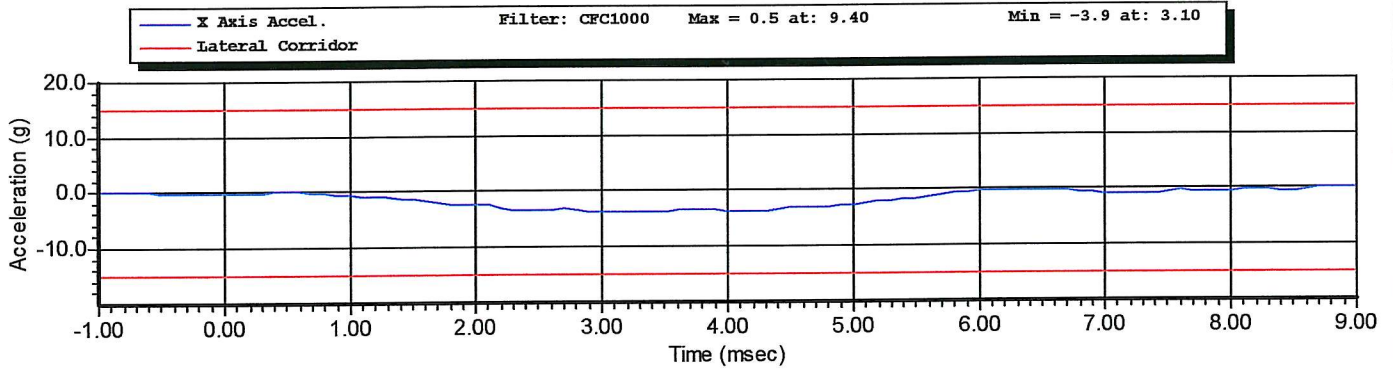
Test Date: **4/16/2009**



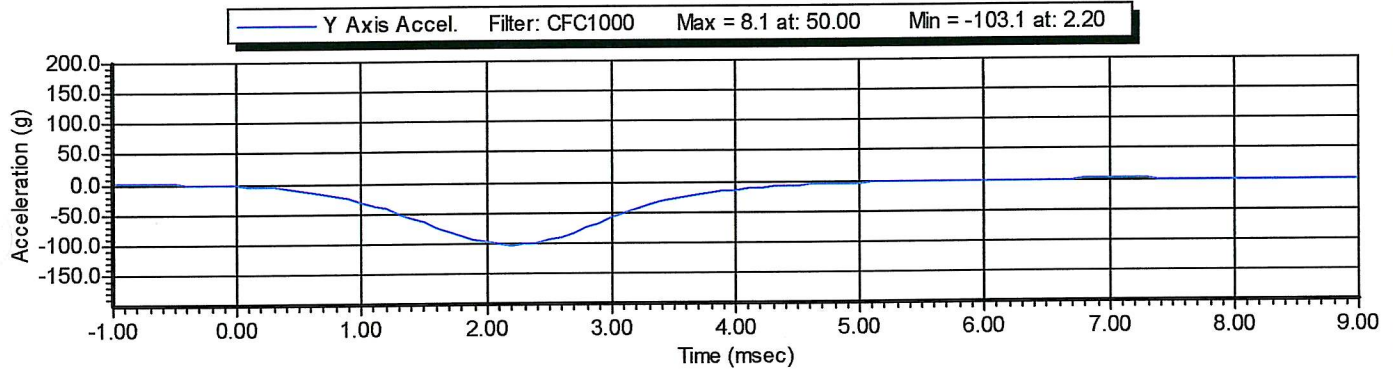
Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

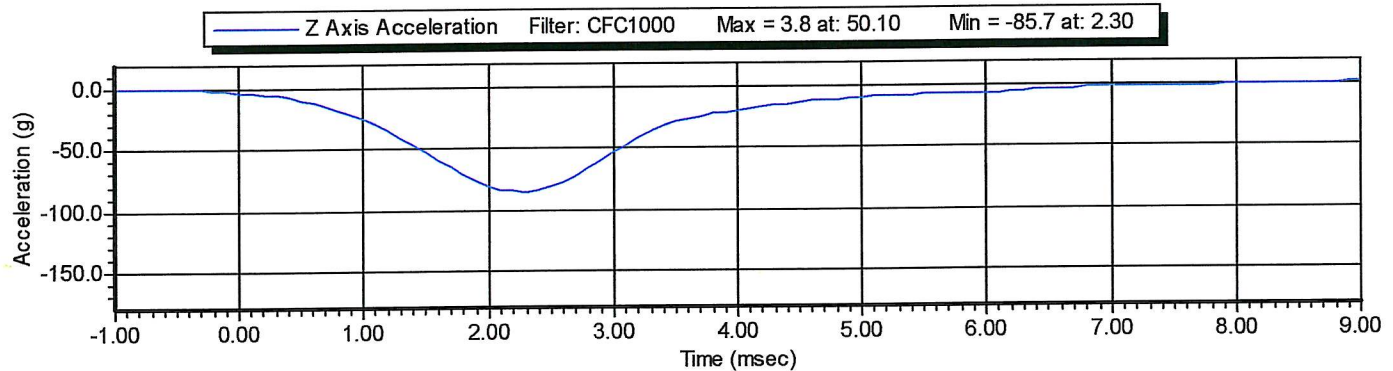
X Axis Acceleration



Y Axis Acceleration



Z Axis Acceleration



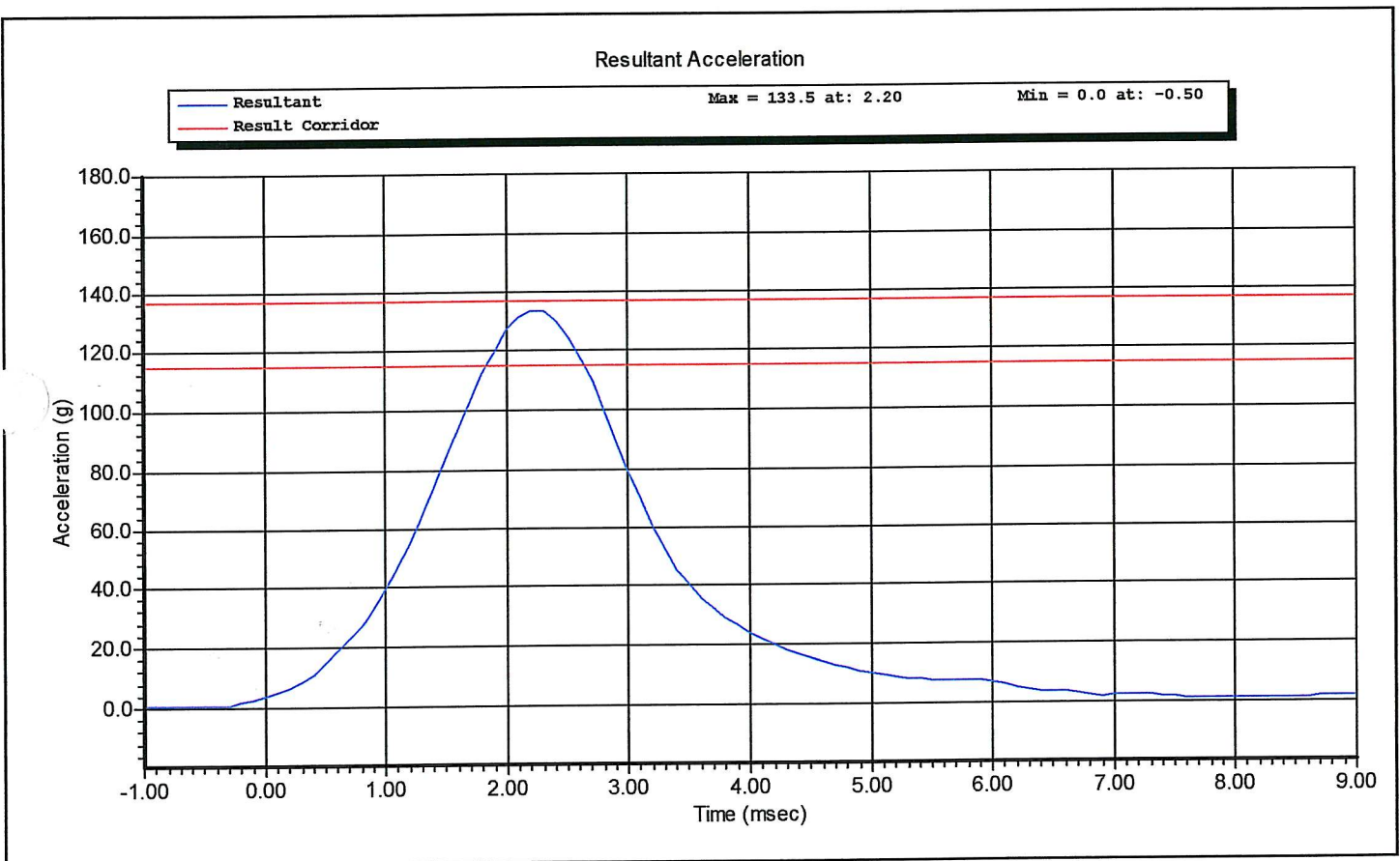


Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

Test Name:	Head Drop	Revision:	12/14/2006
Test Name:		Spec Type:	NHTSA
ATD Type:	SID-IIs Level 'D'		
ATD Serial Number:	297		
Test Number:	1	Test Date:	4/16/2009
		Test Time:	9:07:52 AM

Component Part Number	Component Serial Number
Head Skin - 180-1002	S/N 1330



Test ID: RD1330

Test Time: 9:07:52 AM

Test Date: 4/16/2009



Denton Technical Center

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VERIFICATION REPORT

Test Name:	Neck Pendulum	Revision:	12/14/2006
Sub Test Name:	Left Side	Spec Type:	NHTSA
ATD Type:	SID-IIs Level 'D'		
ATD Serial Number:	297		
Test ID:	RA0700	Test Date:	4/16/2009
Test Number:	4	Test Time:	11:44:22 AM

Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number
Neck - 180-2000	S/N 700
Torque Wrench s/n: 0106800459	

Comments:
8X7-2 @ 84°

Test Parameters		Test Specifications		Test Results	
Temperature		20.6	-- 22.2	20.8 deg C	P
Humidity		10	-- 70	43 %RH	P
Velocity		5.51	-- 5.63	5.61 m/s	P
Pendulum Impulse at	10 ms	2.20	-- 2.80	2.38 m/s	P
Pendulum Impulse at	15 ms	3.30	-- 4.10	3.57 m/s	P
Pendulum Impulse at	20 ms	4.40	-- 5.40	4.83 m/s	P
Pendulum Impulse at	25 ms	5.40	-- 6.10	5.88 m/s	P

Test ID: RA0700

Test Time: 11:44:22 AM

Test Date: 4/16/2009



Denton Technical Center

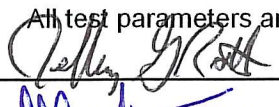
1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

VERIFICATION REPORT

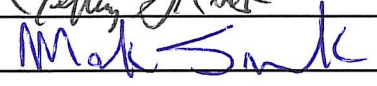
Test Parameters	Test Specifications	Test Results
Pendulum Impulse between 25 and 100 ms	5.50 -- 6.20	5.94 m/s P
Max D Plane Rotation	71.0 -- 81.0	71.9 degrees P
Time at Max Rotation	50.0 -- 70.0	60.0 ms P
Moment about OC	-44.0 -- -36.0	-36.0 Nm P
Moment Decay to Zero	102.0 -- 126.0	111.8 ms P

All test parameters are within specifications

Technician: **JR**

Signature: 

Supervisor: **MS**

Signature: 

Test ID: **RA0700**

Test Time: **11:44:22 AM**

Test Date: **4/16/2009**



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	61A-750-10-360-XY	A021724	10/14/2008
Denton	1716A	1999	11/14/2008
Denton	1716A	1999	11/14/2008
DentonATD	78051-342	114	10/28/2008
DentonATD	78051-342	113	10/28/2008
DentonATD	78051-342	112	10/28/2008

Test ID: **RA0700**

Test Time: **11:44:22 AM**

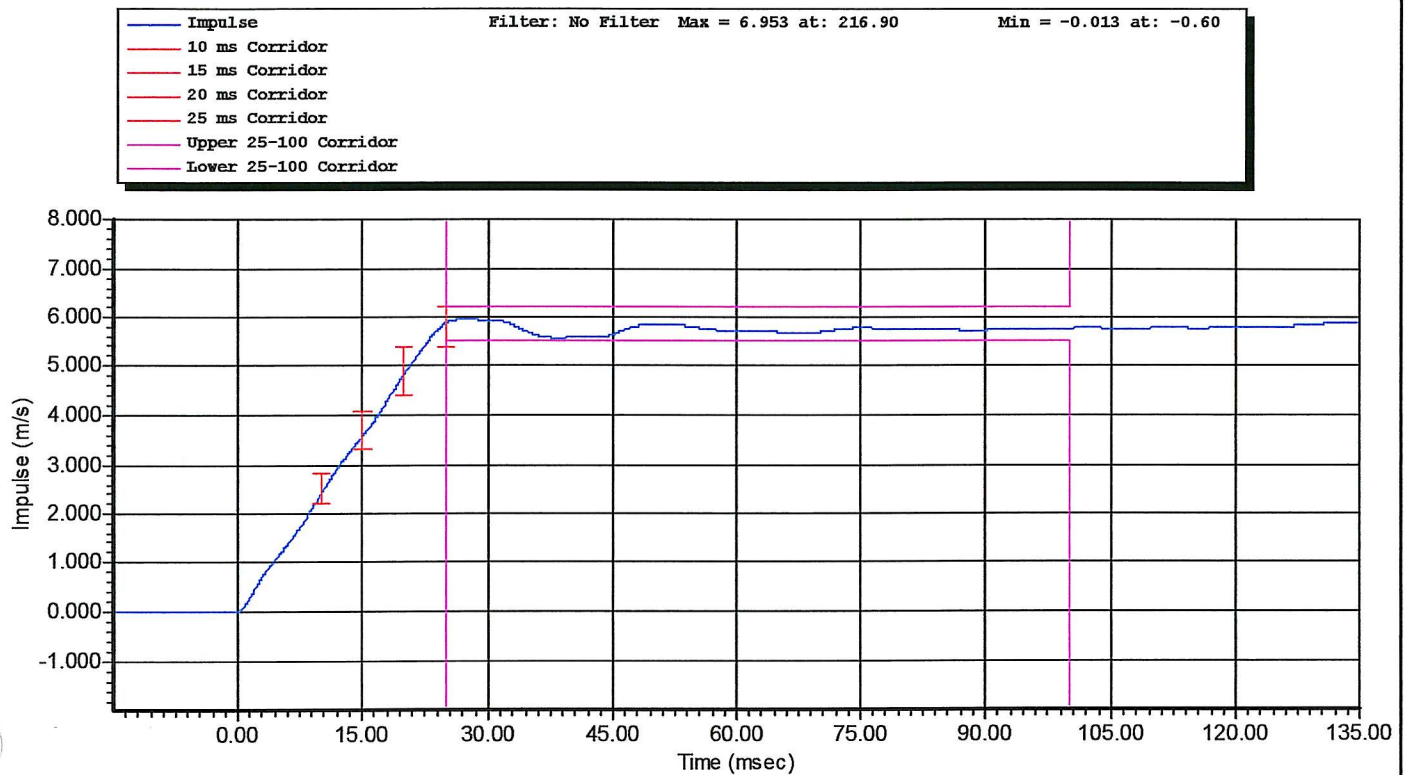
Test Date: **4/16/2009**



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1985 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

Pendulum Impulse



Test ID: RA0700

Test Time: 11:44:22 AM

Test Date: 4/16/2009



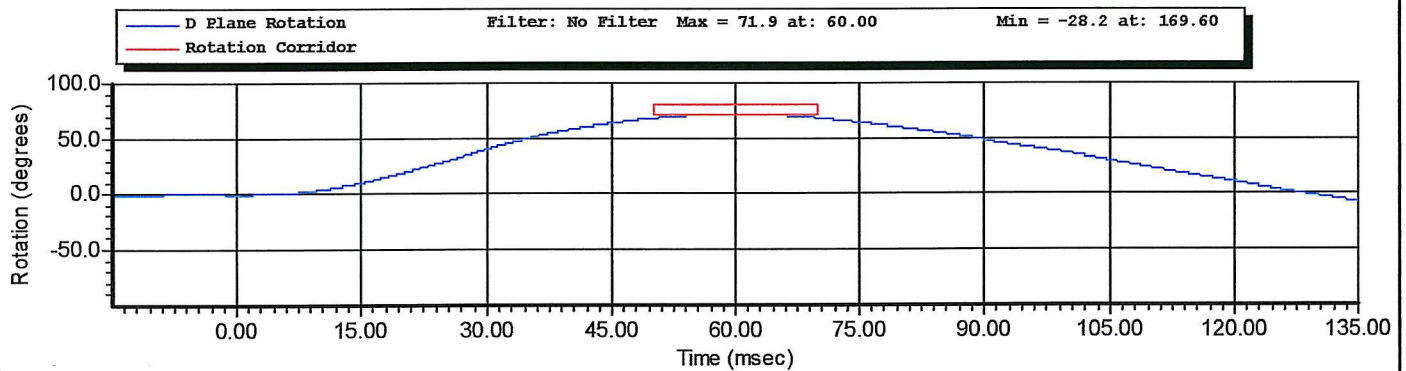
Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

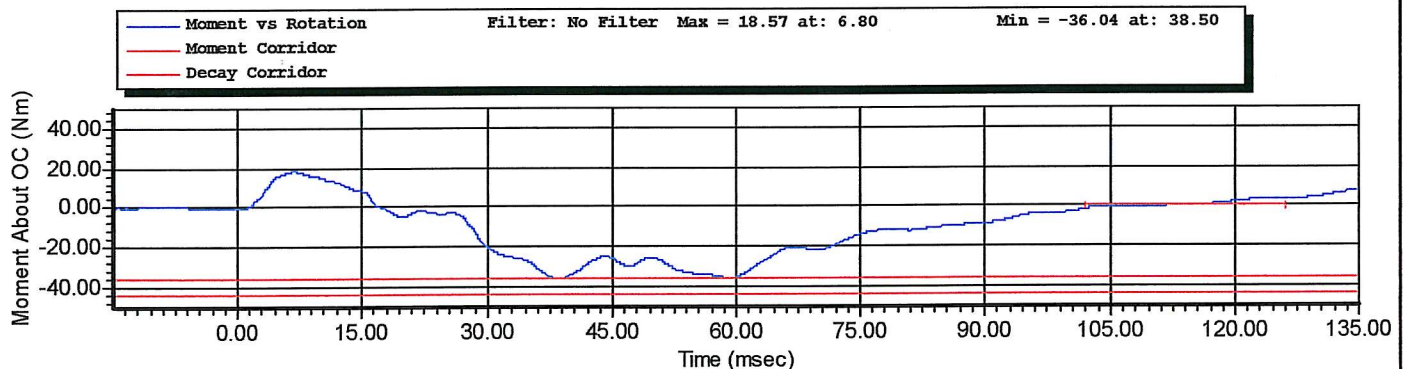
Test Name:	Neck Pendulum	Revision:	12/14/2006
Sub Test Name:	Left Side	Spec Type:	NHTSA
ATD Type:	SID-IIs Level 'D'		
ATD Serial Number:	297		
Test Number:	4	Test Date:	4/16/2009
		Test Time:	11:44:22 AM

Component Part Number	Component Serial Number
Neck - 180-2000	S/N 700

D Plane Rotation



Moment About Occipital Condyle



Test ID: RA0700

Test Time: 11:44:22 AM

Test Date: 4/16/2009



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VERIFICATION REPORT

Test Name:	Shoulder Impact	Revision:	12/14/2006
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-IIs Level 'D'		
ATD Serial Number:	297		
Test ID:	RM0485	Test Date:	4/21/2009
Test Number:	8	Test Time:	10:59:04 AM

Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number
Shoulder Rib - 180-3355	259

Comments:
LEFT

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	20.6 deg C P
Humidity	10.0 -- 70.0	45.9 %RH P
Velocity	4.30 -- 4.50	4.46 m/s P
Probe Acceleration	14.0 -- 18.0	16.5 g P
Shoulder Deflection	30.0 -- 37.0	30.7 mm P
Upper Spine Acceleration	17.0 -- 19.0	20.6 g F
FTSS Proposed Upper Spine Acceleration	17.0 -- 21.0	20.6 g P

All test parameters are NOT within specifications

Technician:	JSR	Signature:	
Supervisor:	MS	Signature:	

Test ID: RM0485

Test Time: 10:59:04 AM

Test Date: 4/21/2009



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	61A-750-10-360-XY	A022629	10/14/2008
Denton	180-3881	386	12/4/2008
Endevco	7264-2000	P52064	12/19/2008

Test ID: **RM0485**

Test Time: **10:59:04 AM**

Test Date: **4/21/2009**

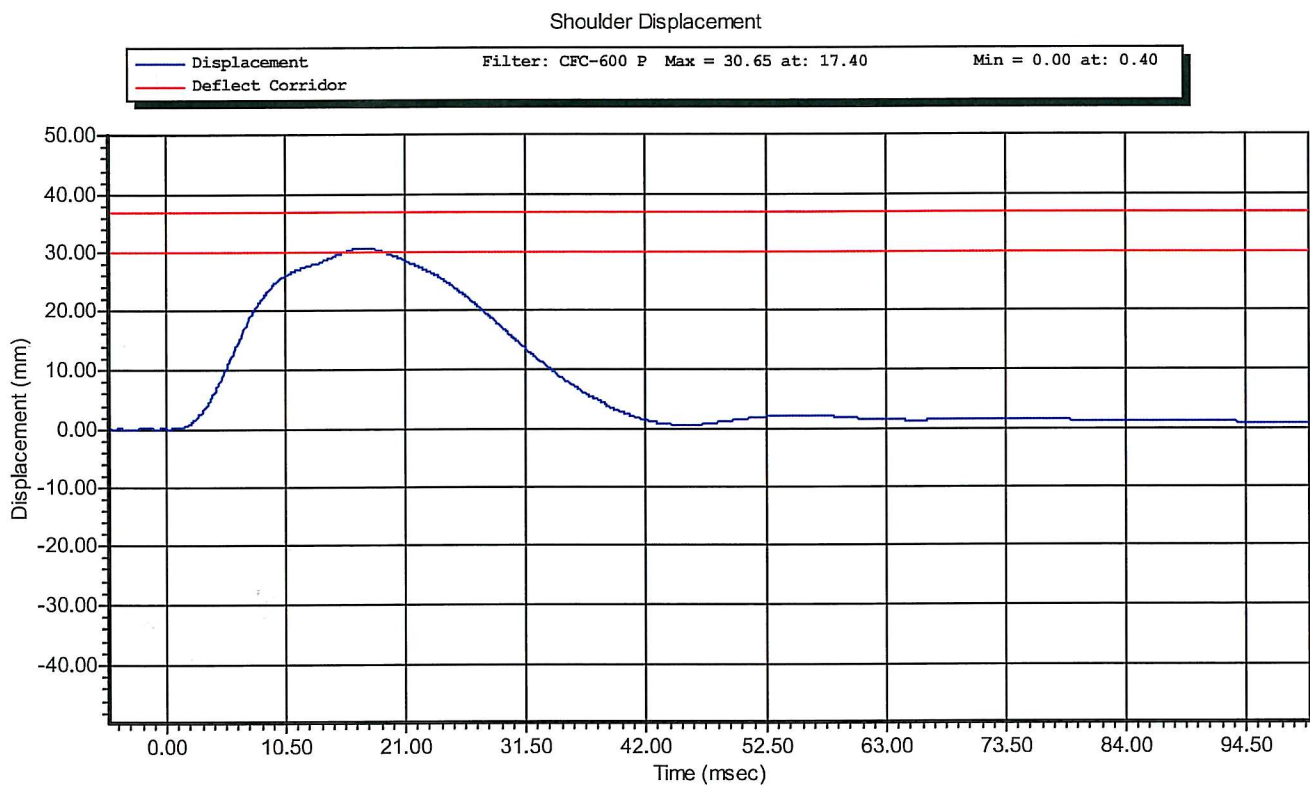


Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

Test Name:	Shoulder Impact	Revision:	12/14/2006
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-IIs Level 'D'		
ATD Serial Number:	297		
Test Number:	8	Test Date:	4/21/2009
		Test Time:	10:59:04 AM

Component Part Number	Component Serial Number
Shoulder Rib - 180-3355	259



Test ID: **RM0485**

Test Time: **10:59:04 AM**

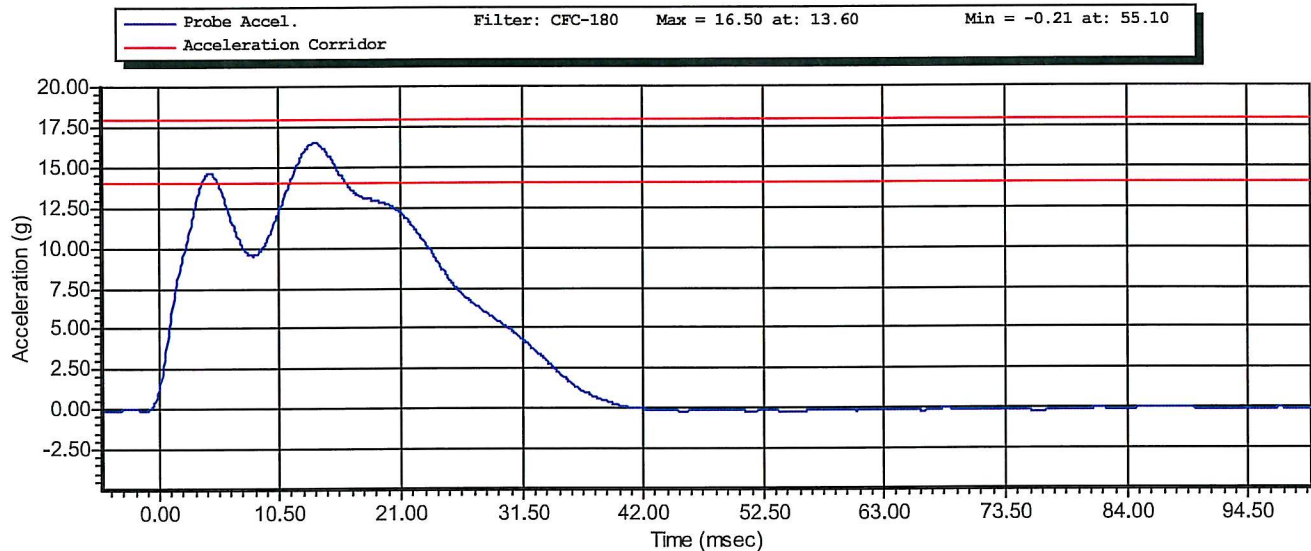
Test Date: **4/21/2009**



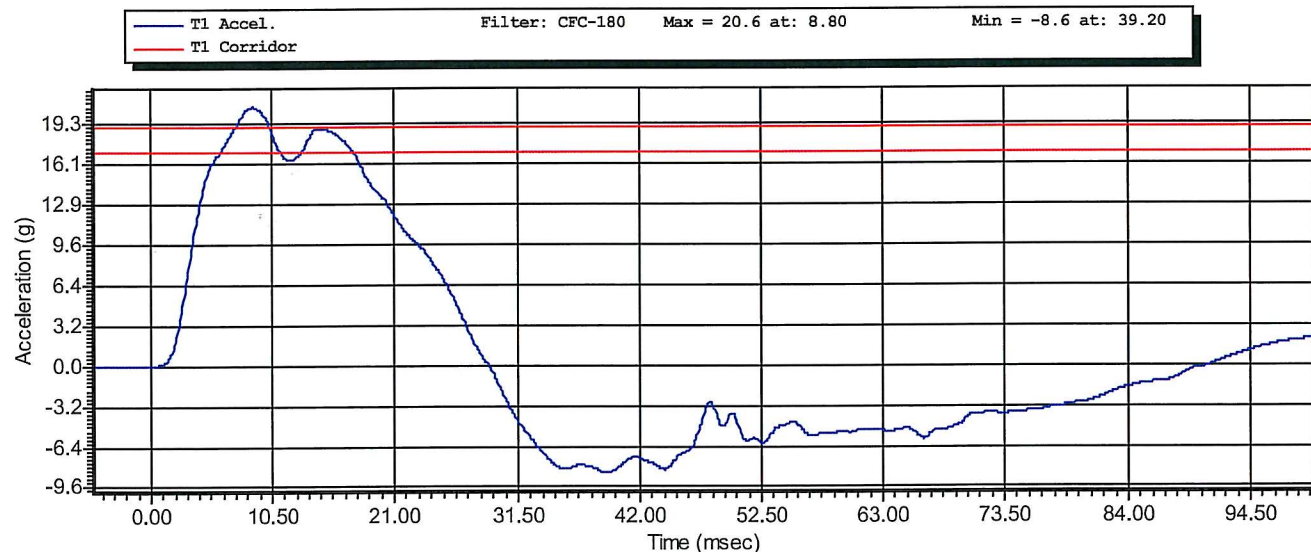
Denton Technical Center

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Probe Accelerometer



T1 Accelerometer





Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

VERIFICATION REPORT

Test Name:	Thorax Impact with Arm	Revision:	12/14/2006
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-IIs Level 'D'		
ATD Serial Number:	297		
Test ID:	RN0485	Test Date:	4/22/2009
Test Number:	10	Test Time:	7:59:02 AM

Condition As Received: **CALSPAN**
User Field 2:
User Field 3:

Component Part Number	Component Serial Number
Shoulder Rib - 180-3355	259
Thorax Rib #1 - 180-3362	2009
Thorax Rib #2 - 180-3362	2010
Thorax Rib #3 - 180-3362	2029
Arm - 180-6011	940

Comments:
LEFT

Test Parameters	Test Specifications			Test Results	
Temperature	20.6	--	22.2	20.6 deg C	P
Humidity	10	--	70	43 %RH	P
Velocity	6.60	--	6.80	6.72 m/s	P
Probe Acceleration	31.0	--	36.0	34.3 g	P
Upper Thorax Rib Deflection	26.0	--	32.0	26.2 mm	P
Mid Thorax Rib Deflection	30.0	--	36.0	30.5 mm	P
Lower Thorax Rib Deflection	32.0	--	38.0	33.4 mm	P
Upper Spine Acceleration	34.0	--	43.0	37.2 g	P

Test ID: **RN0485**

Test Time: **7:59:02 AM**

Test Date: **4/22/2009**



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

VERIFICATION REPORT

Test Parameters	Test Specifications	Test Results
Lower Spine Acceleration	28.0 -- 35.0	33.8 g P
Shoulder Deflection	31.0 -- 40.0	33.1 mm P

All test parameters are within specifications

Technician: **JSR**

Signature: John S. Rozell

Supervisor: **MS**

Signature: Mark S. Smith

Test ID: **RN0485**

Test Time: **7:59:02 AM**

Test Date: **4/22/2009**



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	61A-750-10-360-XY	A021717	4/3/2009
Denton	180-3885	420	12/5/2008
Denton	180-3885	409	12/5/2008
Denton	180-3885	25	4/15/2009
Endevco	7264-2000	P52064	12/19/2008
Endevco	7264-2000	P58833	12/19/2008
Denton	180-3881	386	12/4/2008

Test ID: **RN0485**

Test Time: **7:59:02 AM**

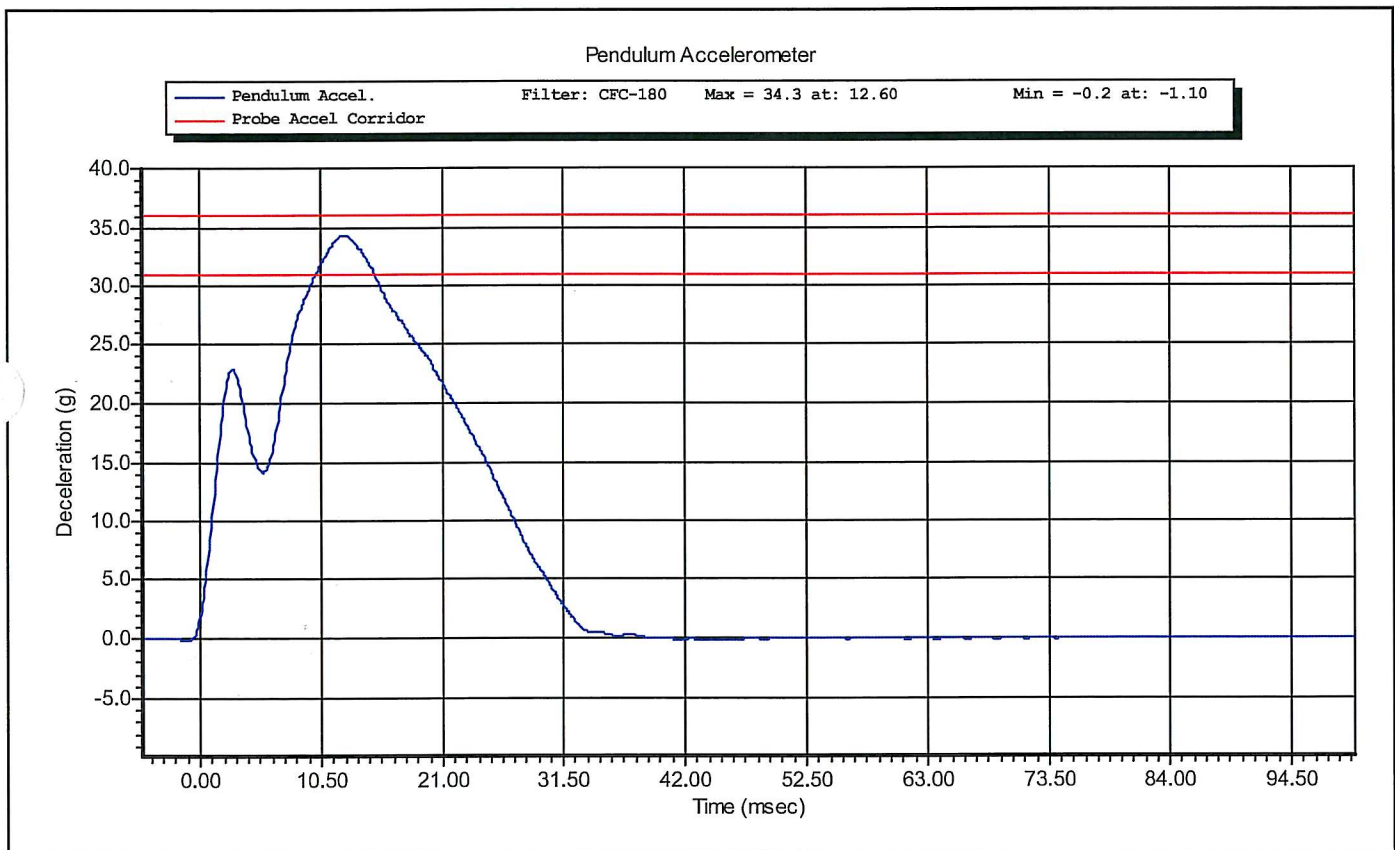
Test Date: **4/22/2009**



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

Test Name:	Thorax Impact with Arm	Revision:	12/14/2006
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-IIs Level 'D'		
ATD Serial Number:	297		
Test Number:	10	Test Date:	4/22/2009
		Test Time:	7:59:02 AM
Component Part Number	Component Serial Number		
Shoulder Rib - 180-3355	259		



Test ID: RN0485

Test Time: 7:59:02 AM

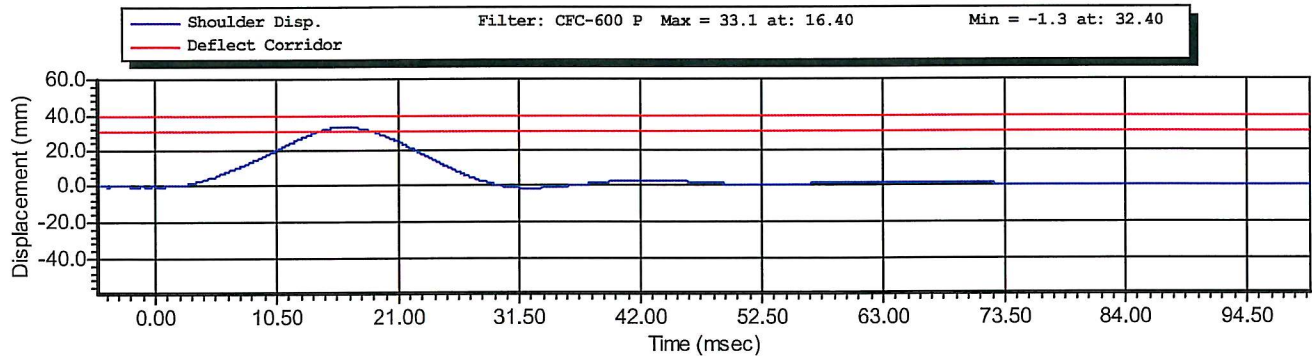
Test Date: 4/22/2009



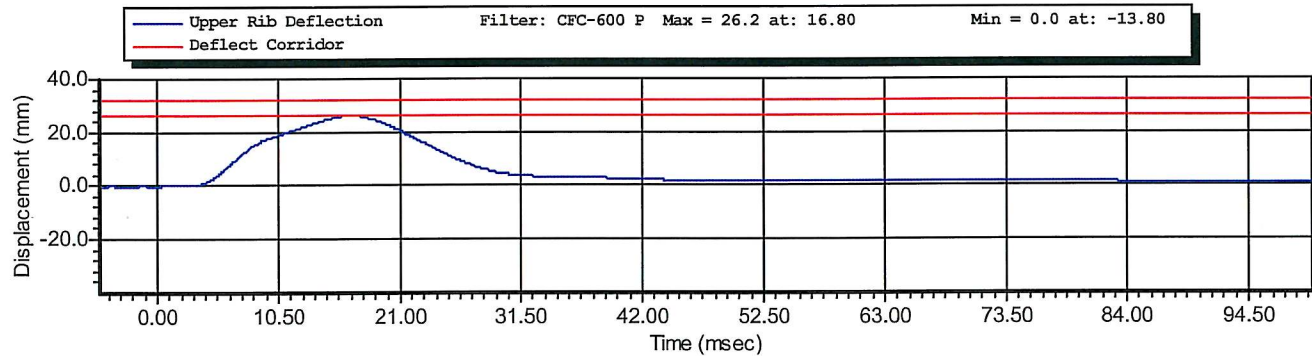
Denton Technical Center

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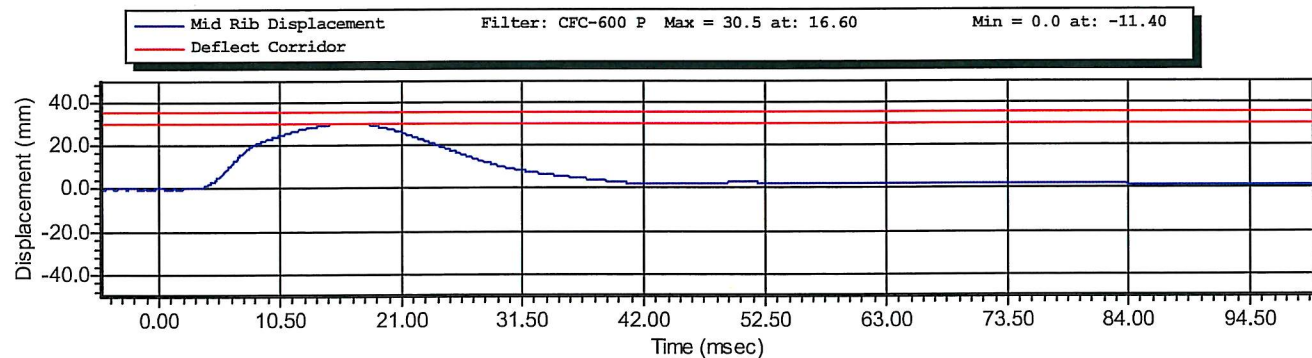
Shoulder Displacement



Upper Thorax Displacement



Mid Thorax Displacement

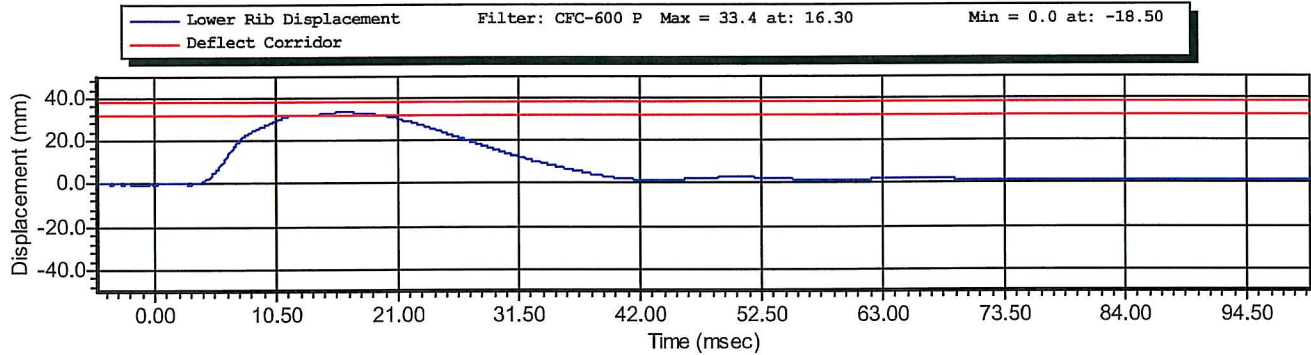




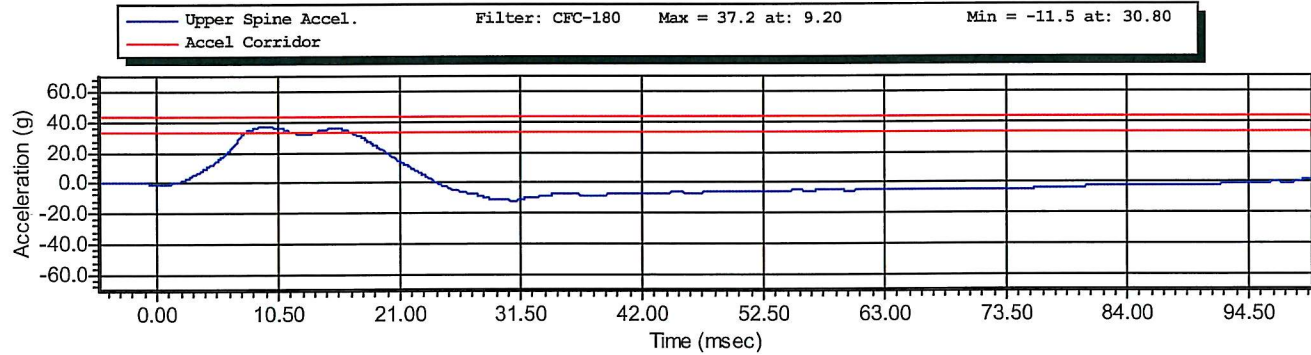
Denton Technical Center

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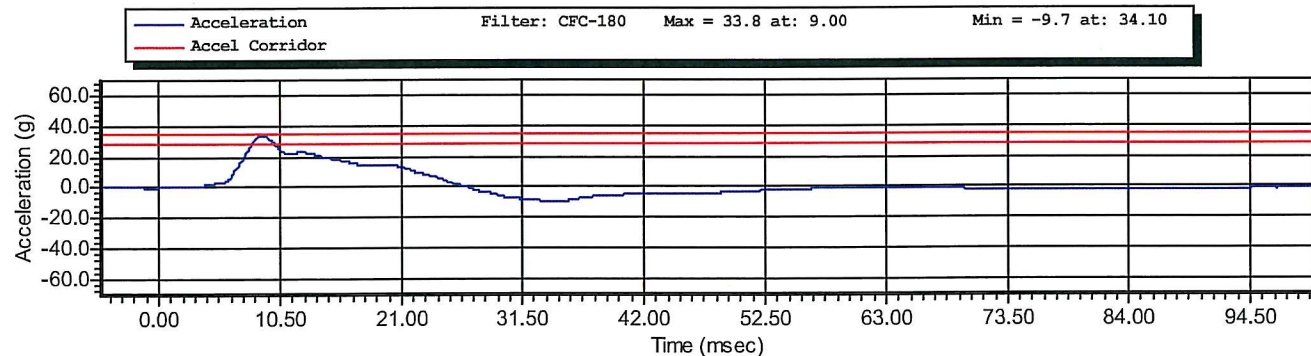
Lower Thorax Displacement



Upper Spine Acceleration



Lower Spine Acceleration





Denton Technical Center

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VERIFICATION REPORT

Test Name:	Thorax Impact without Arm	Revision:	12/14/2006
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-IIs Level 'D'		
ATD Serial Number:	297		
Test ID:	RO0485	Test Date:	4/20/2009
Test Number:	1	Test Time:	2:37:21 PM

Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number
Thorax Rib #1 - 180-3362	2009
Thorax Rib #2 - 180-3362	2010
Thorax Rib #3 - 180-3362	2029

Comments:
LEFT

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	20.7 deg C P
Humidity	10 -- 70	47 %RH P
Velocity	4.20 -- 4.40	4.32 m/s P
Probe Acceleration	14.0 -- 18.0	16.9 g P
Upper Thorax Rib Deflection	33.0 -- 40.0	34.8 mm P
Mid Thorax Rib Deflection	39.0 -- 45.0	40.4 mm P
Lower Thorax Rib Deflection	36.0 -- 43.0	38.9 mm P
Upper Spine Acceleration	14.0 -- 17.0	15.3 g P
Lower Spine Acceleration	7.0 -- 10.0	9.9 g P

Test ID: **RO0485**

Test Time: **2:37:21 PM**

Test Date: **4/20/2009**



Denton Technical Center

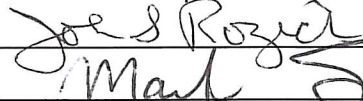
1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

VERIFICATION REPORT

Test Parameters	Test Specifications	Test Results
FTSS Proposed Lower Spine Acceleration	7.0 -- 11.0	9.9 g P

All test parameters are within specifications

Technician: **JSR**

Signature: 

Supervisor: **MS**

Signature: 

Test ID: **RO0485**

Test Time: **2:37:21 PM**

Test Date: **4/20/2009**



Denton Technical Center

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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	61A-750-10-360-XY	A022629	10/14/2008
Denton	180-3885	420	12/5/2008
Denton	180-3885	409	12/5/2008
Denton	180-3885	25	4/15/2009
Endevco	7264-2000	P52064	12/19/2008
Endevco	7264-2000	P58833	12/19/2008

Test ID: **RO0485**

Test Time: **2:37:21 PM**

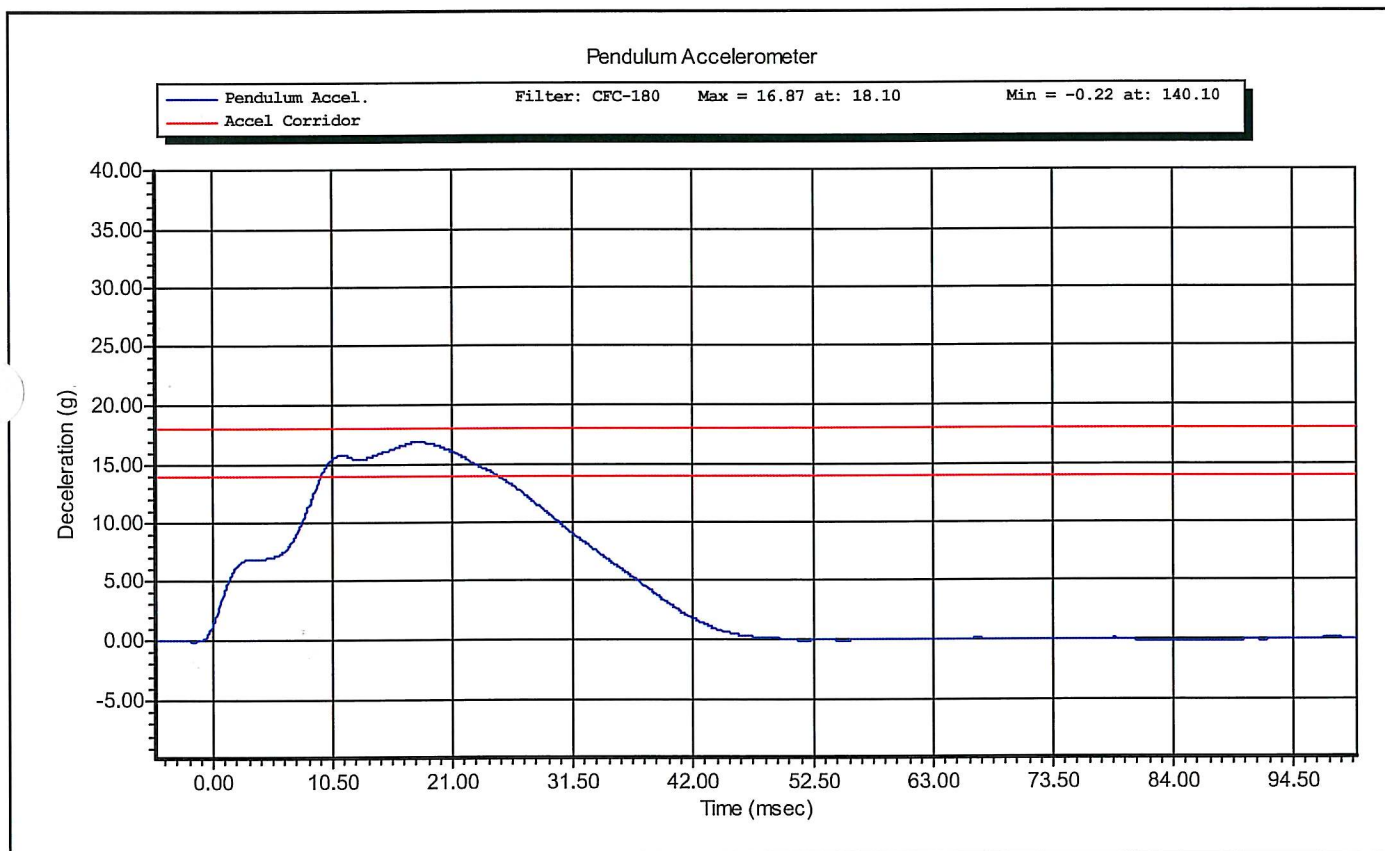
Test Date: **4/20/2009**



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

Test Name:	Thorax Impact without Arm	Revision:	12/14/2006
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-IIs Level 'D'		
ATD Serial Number:	297		
Test Number:	1	Test Date:	4/20/2009
		Test Time:	2:37:21 PM
Component Part Number	Component Serial Number		
Thorax Rib #1 - 180-3362	2009		



Test ID: **RO0485**

Test Time: **2:37:21 PM**

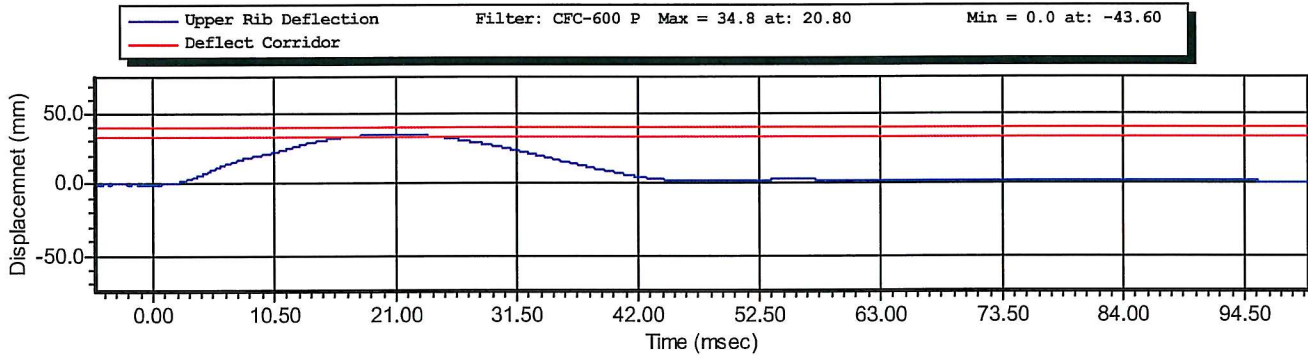
Test Date: **4/20/2009**



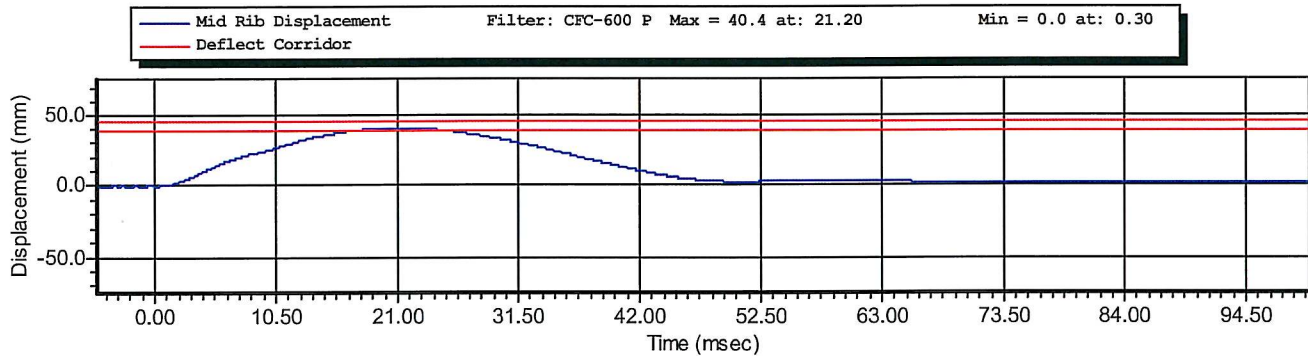
Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

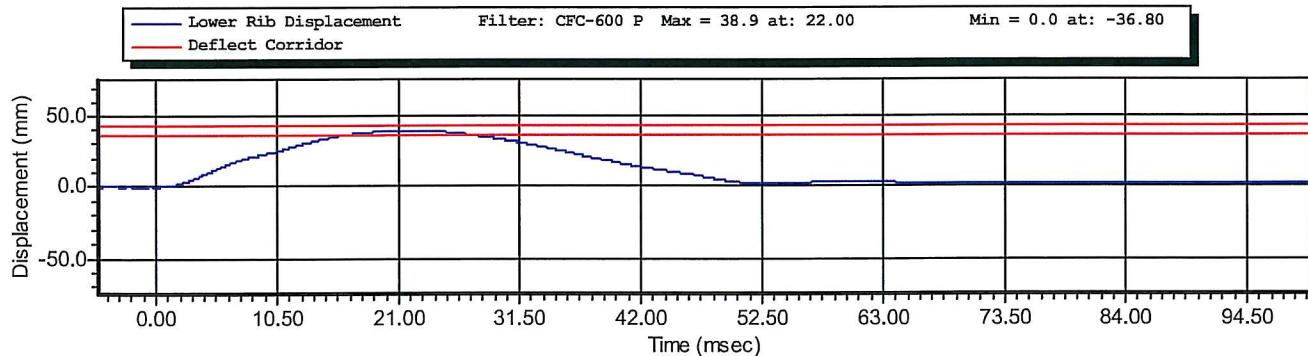
Upper Thorax Displacement



Mid Thorax Displacement



Lower Thorax Displacement

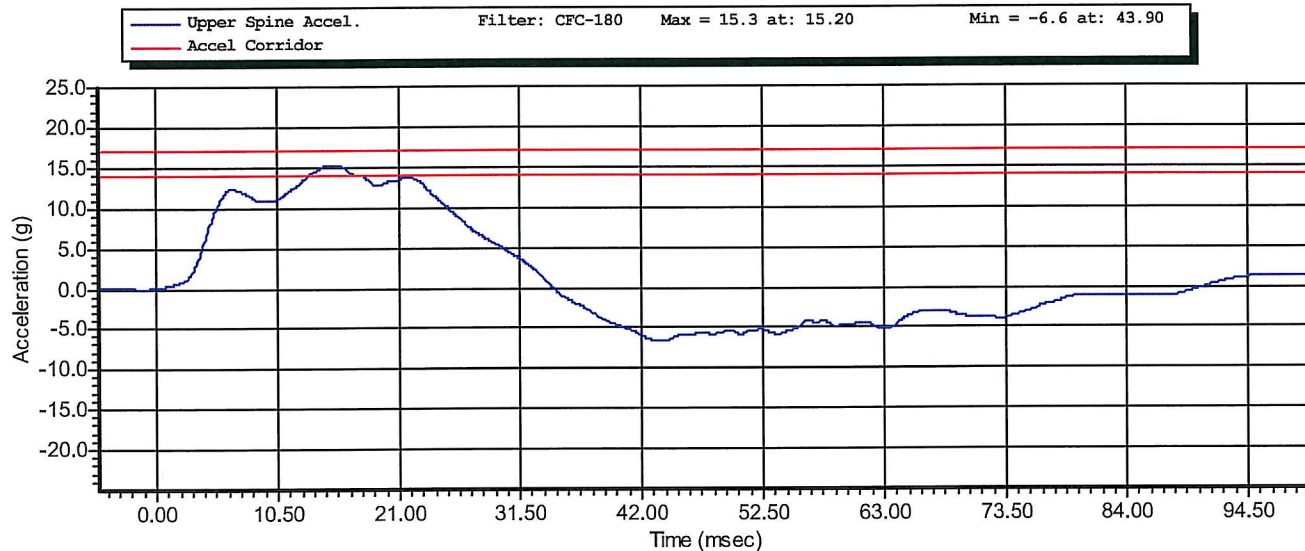




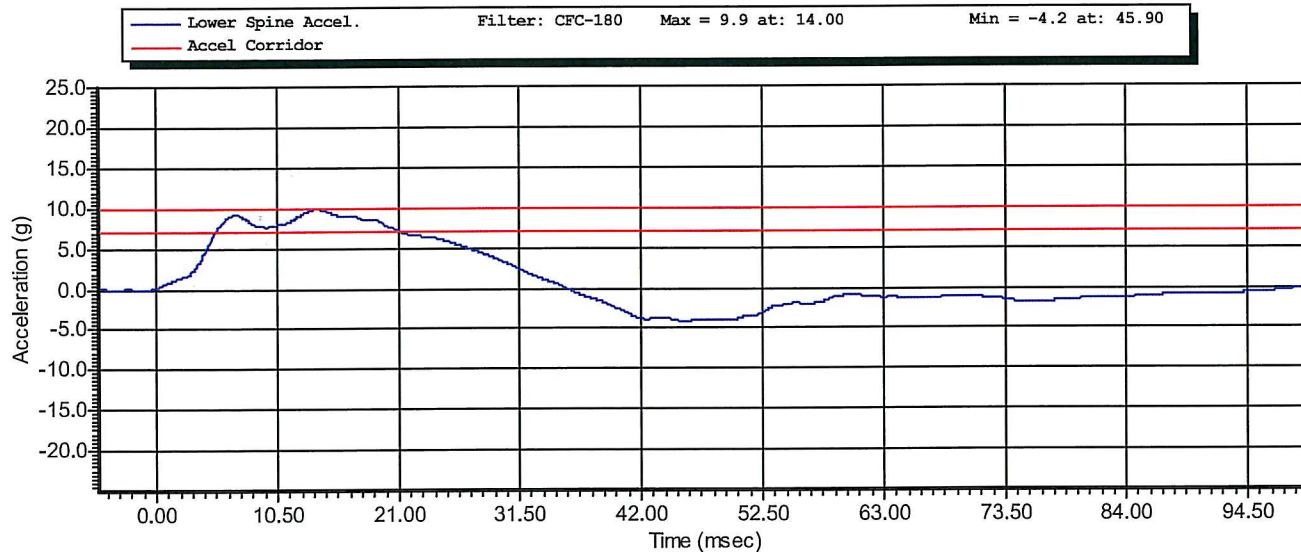
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Upper Spine Acceleration



Lower Spine Acceleration





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VERIFICATION REPORT

Test Name:	Abdominal Impact	Revision:	12/14/2006
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-IIs Level 'D'		
ATD Serial Number:	297		
Test ID:	RF0485	Test Date:	4/20/2009
Test Number:	3	Test Time:	2:24:26 PM

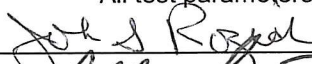
Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number
Abdo Rib #1 - 180-3362	1748
Abdo Rib #2 - 180-3362	1747

Comments:
LEFT

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	20.8 deg C P
Humidity	10 -- 70	47 %RH P
Velocity	4.30 -- 4.50	4.44 m/s P
Probe Acceleration	12.0 -- 16.0	15.7 g P
Upper Abdominal Rib Deflection	39.0 -- 47.0	40.8 mm P
Lower Abdominal Rib Deflection	37.0 -- 46.0	38.8 mm P
Lower Spine Acceleration	11.0 -- 14.0	11.9 g P
FTSS Proposed Lower Spine Acceleration	9.0 -- 14.0	11.9 g P

All test parameters are within specifications

Technician:	JSR	Signature:	
Supervisor:	MS	Signature:	

Test ID: **RF0485**

Test Time: **2:24:26 PM**

Test Date: **4/20/2009**



Denton Technical Center

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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	61A-750-10-360-XY	A022629	10/14/2008
Denton	180-3885	404	12/5/2008
Denton	180-3881	305	10/21/2008
Endevco	7264-2000	P58833	12/19/2008

Test ID: **RF0485**

Test Time: **2:24:26 PM**

Test Date: **4/20/2009**

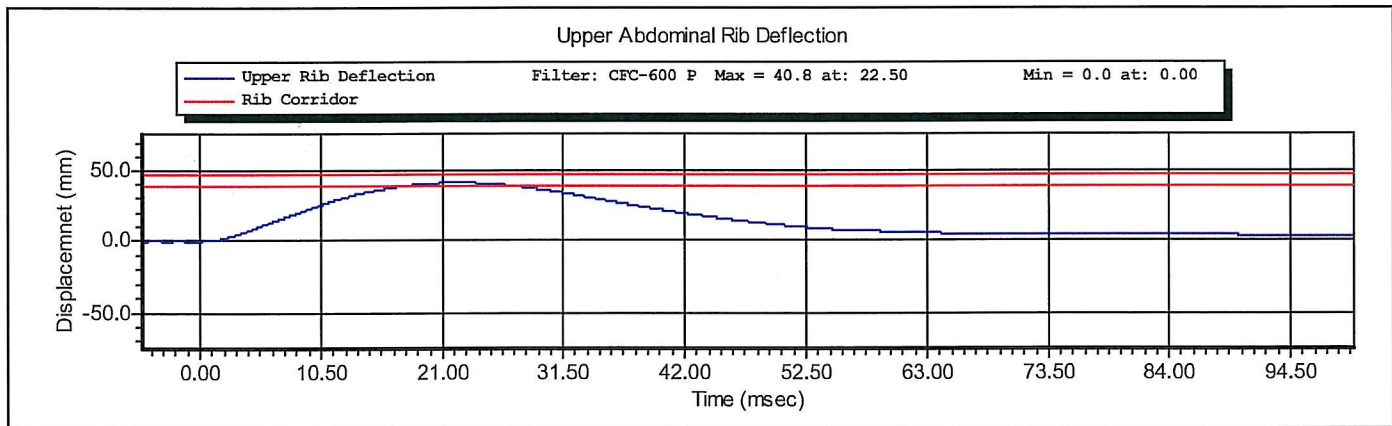
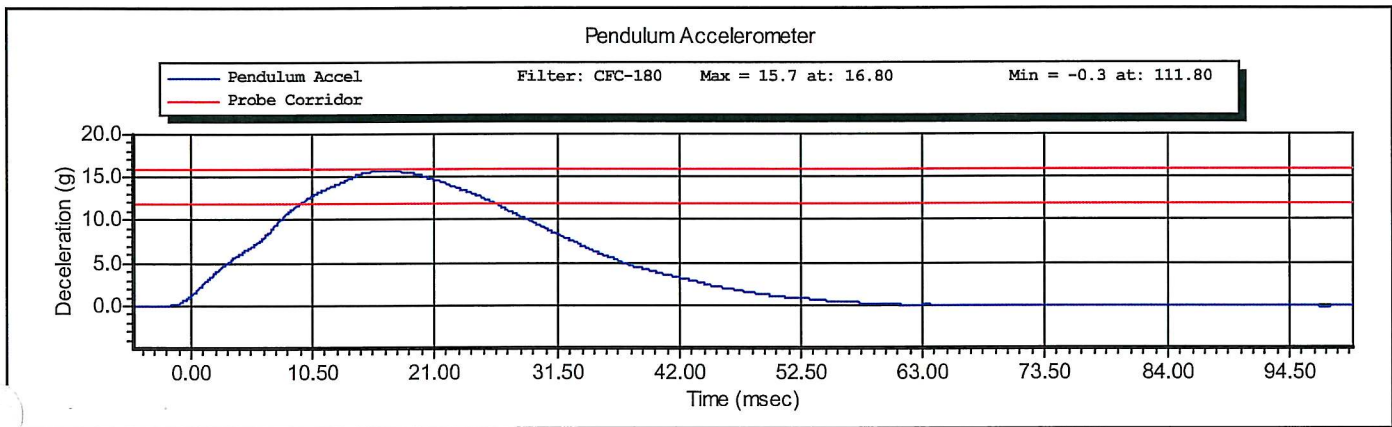


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Test Name:	Abdominal Impact	Revision:	12/14/2006
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-IIs Level 'D'		
ATD Serial Number:	297		
Test Number:	3	Test Date:	4/20/2009
		Test Time:	2:24:26 PM

Component Part Number	Component Serial Number
Abdo Rib #1 - 180-3362	1748



Test ID: **RF0485**

Test Time: **2:24:26 PM**

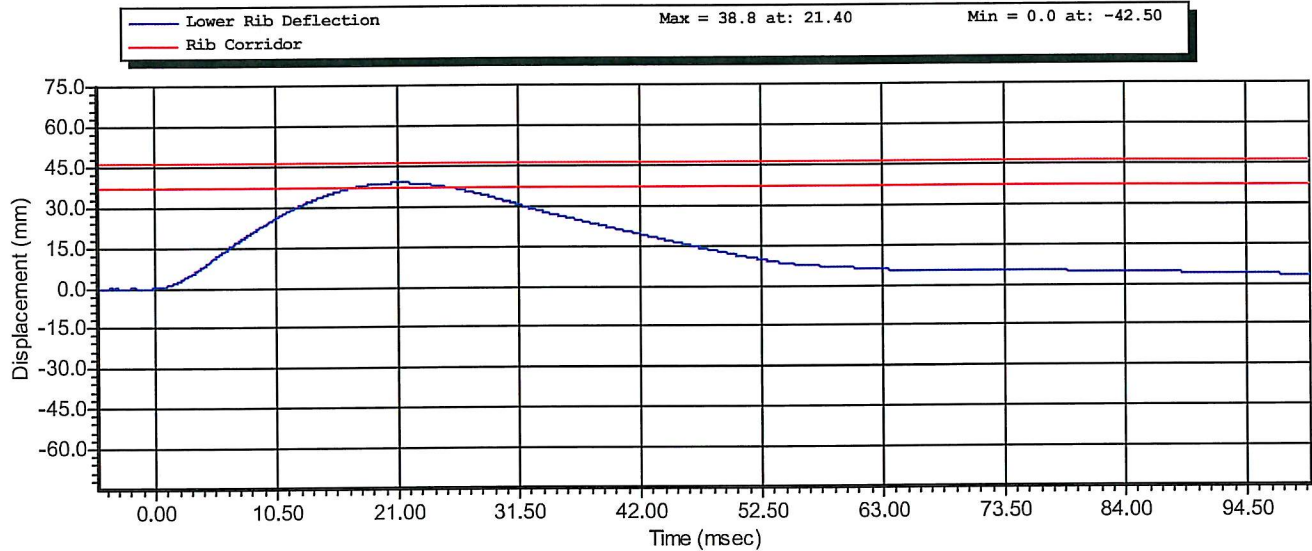
Test Date: **4/20/2009**



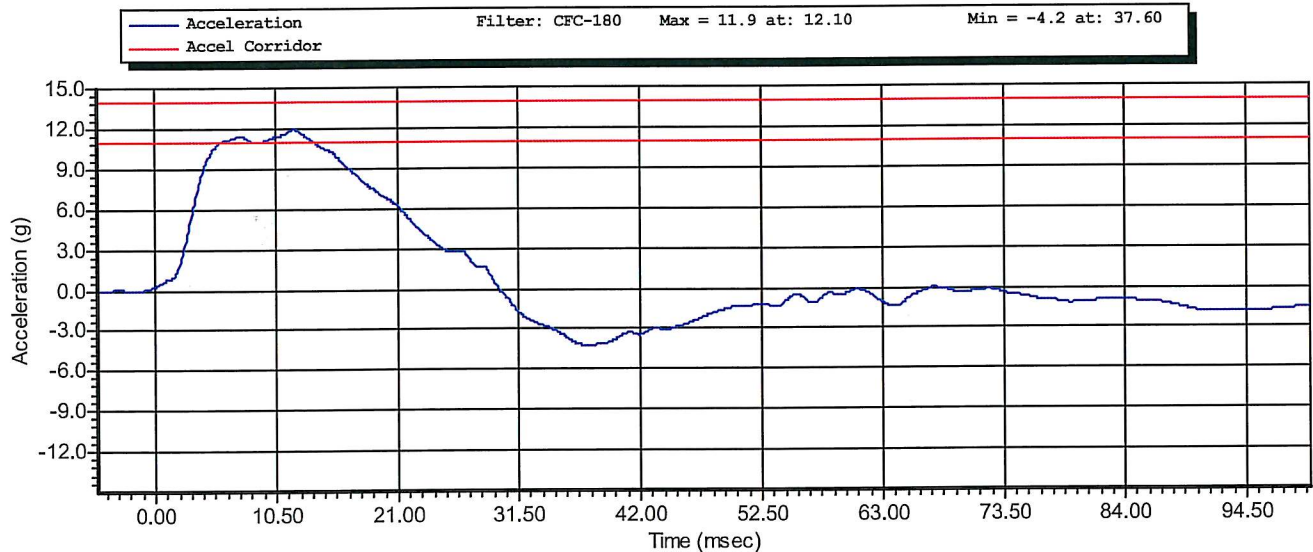
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Lower Abdominal Rib Deflection



Lower Spine Acceleration





Denton Technical Center

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VERIFICATION REPORT

Test Name:	Pelvis	Revision:	12/14/2006
Sub Test Name:	Acetabulum Impact	Spec Type:	NHTSA
ATD Type:	SID-IIs Level 'D'		
ATD Serial Number:	297		
Test ID:	RJ0868	Test Date:	4/18/2009
Test Number:	3	Test Time:	12:39:51 PM

Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number
Pelvis Flesh - 180-4343	868

Comments:
LEFT

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.1 deg C P
Humidity	10 -- 70	42 %RH P
Velocity	6.60 -- 6.80	6.65 m/s P
Peak Probe Acceleration	38.0 -- 47.0	46.9 g P
Peak Pelvis Acceleration	41.0 -- 50.0	43.0 g P
FTSS Proposed Peak Pelvis Accel after 5 i	34.0 -- 42.0	41.2 g P
Peak Acetabulum Force	3.80 -- 4.60	4.20 kN P
FTSS Proposed Peak Acetabulum Force	3.60 -- 4.40	4.20 kN P

All test parameters are within specifications

Technician:	JSR	Signature:	<i>Joe S. Rozier</i>
Supervisor:	MS	Signature:	<i>Mark Smith</i>

Test ID: **RJ0868**

Test Time: **12:39:51 PM**

Test Date: **4/18/2009**



Denton Technical Center

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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	61A-750-10-360-XY	A022629	10/14/2008
Endevco	7264-2000	P51867	12/19/2008
Denton	3249J	266	9/26/2008

Test ID: **RJ0868**

Test Time: **12:39:51 PM**

Test Date: **4/18/2009**

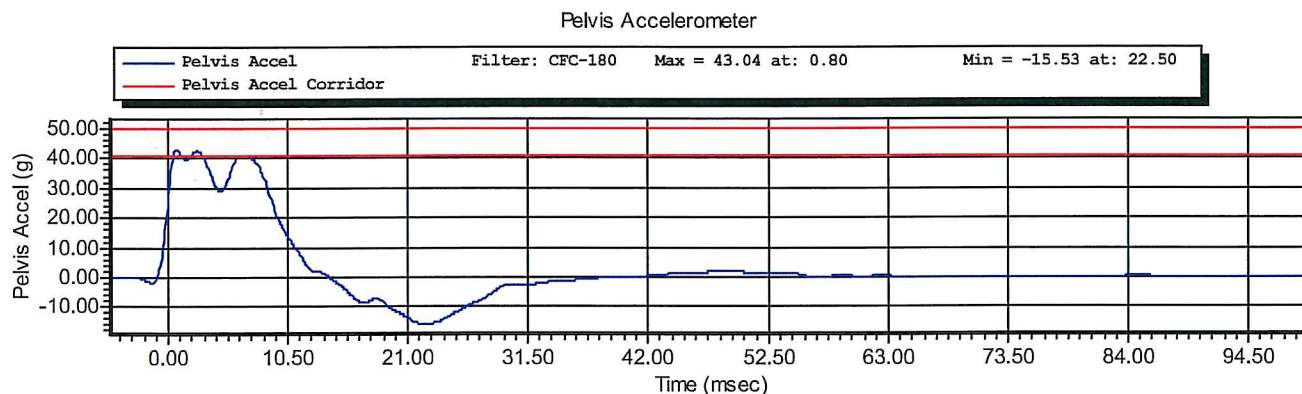
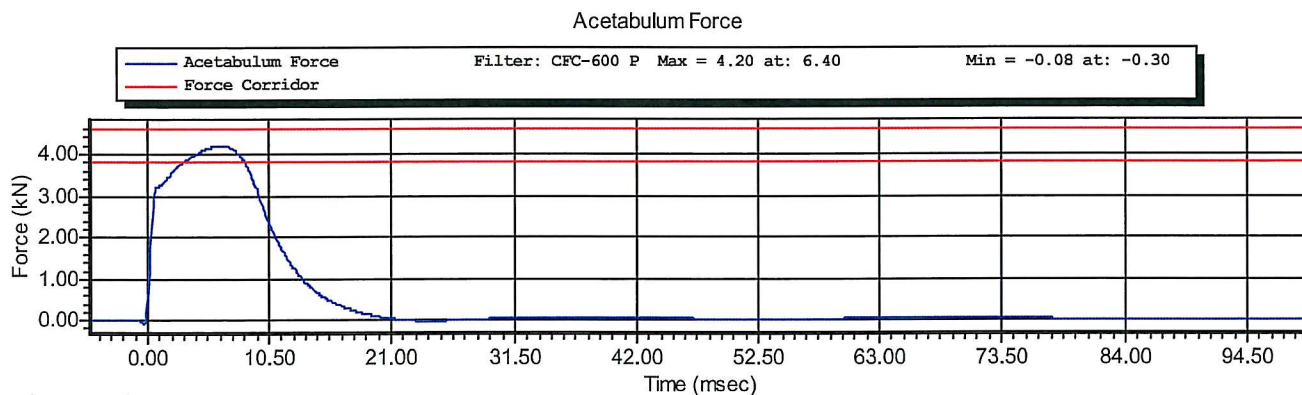


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Test Name:	Pelvis	Revision:	12/14/2006
Sub Test Name:	Acetabulum Impact	Spec Type:	NHTSA
ATD Type:	SID-IIs Level 'D'		
ATD Serial Number:	297		
Test Number:	3	Test Date:	4/18/2009
		Test Time:	12:39:51 PM

Component Part Number	Component Serial Number
Pelvis Flesh - 180-4343	868



Test ID: RJ0868

Test Time: 12:39:51 PM

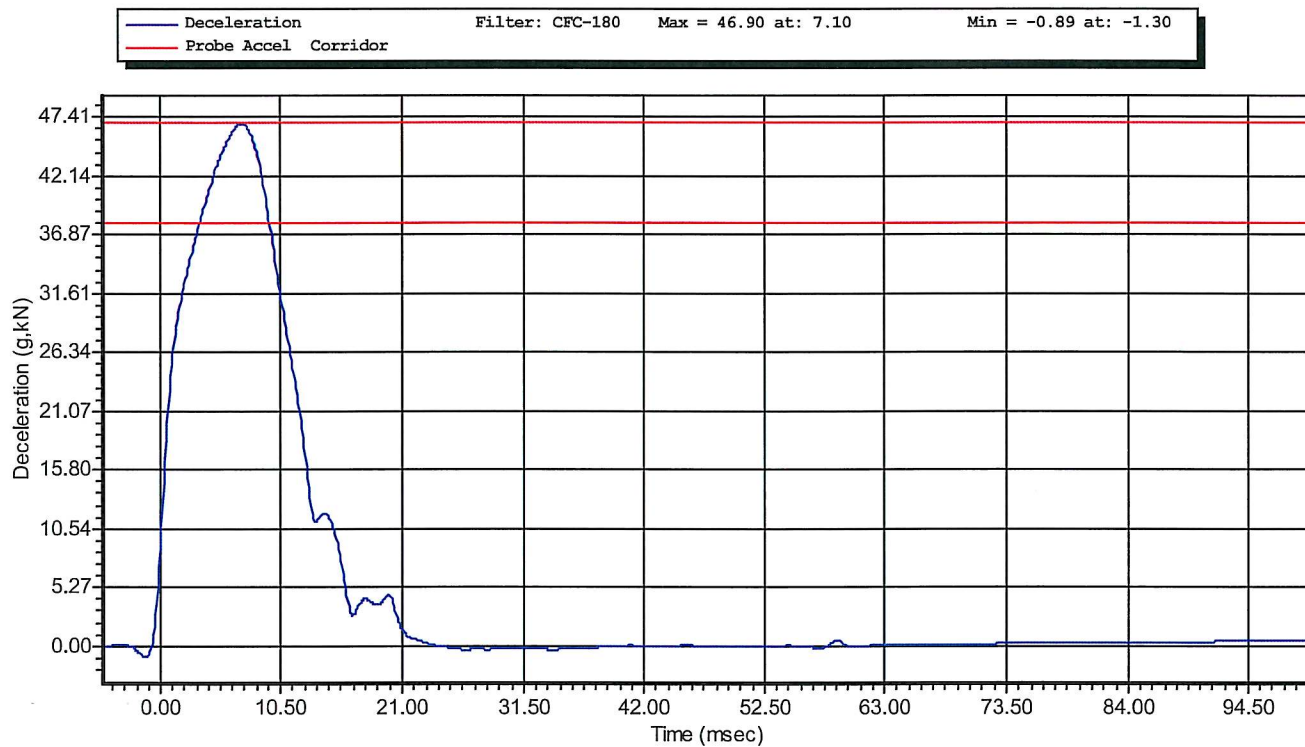
Test Date: 4/18/2009



Denton Technical Center

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Probe Accelerometer



Test ID: **RJ0868**

Test Time: **12:39:51 PM**

Test Date: **4/18/2009**



Denton Technical Center

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VERIFICATION REPORT

Test Name:	Pelvis	Revision:	12/14/2006
Sub Test Name:	Iliac Impact	Spec Type:	NHTSA
ATD Type:	SID-IIs Level 'D'		
ATD Serial Number:	297		
Test ID:	R60868	Test Date:	4/18/2009
Test Number:	5	Test Time:	11:54:47 AM

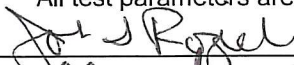
Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number
Pelvis Flesh - 180-4343	868

Comments:
LEFT

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.0 deg C P
Humidity	10 -- 70	42 %RH P
Velocity	4.20 -- 4.40	4.21 m/s P
Peak Probe Acceleration	34.0 -- 40.0	39.7 g P
Peak Pelvis Acceleration	27.0 -- 33.0	32.9 g P
Peak Iliac Force	3.70 -- 4.50	4.44 kN P
FTSS Proposed Peak Iliac Force	3.60 -- 4.40	4.44 kN F

All test parameters are NOT within specifications

Technician:	JSR	Signature:	
Supervisor:	MS	Signature:	

Test ID: **R60868**

Test Time: **11:54:47 AM**

Test Date: **4/18/2009**



Denton Technical Center

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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	61A-750-10-360-XY	A022629	10/14/2008
Endevco	7264-2000	P51867	12/19/2008
Denton	3228J	286	9/24/2008

Test ID: **R60868**

Test Time: **11:54:47 AM**

Test Date: **4/18/2009**

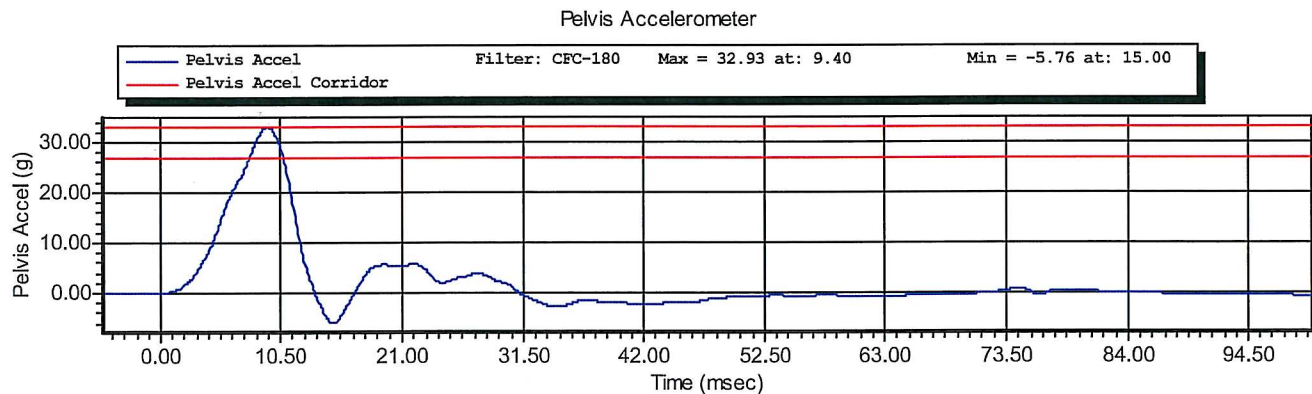
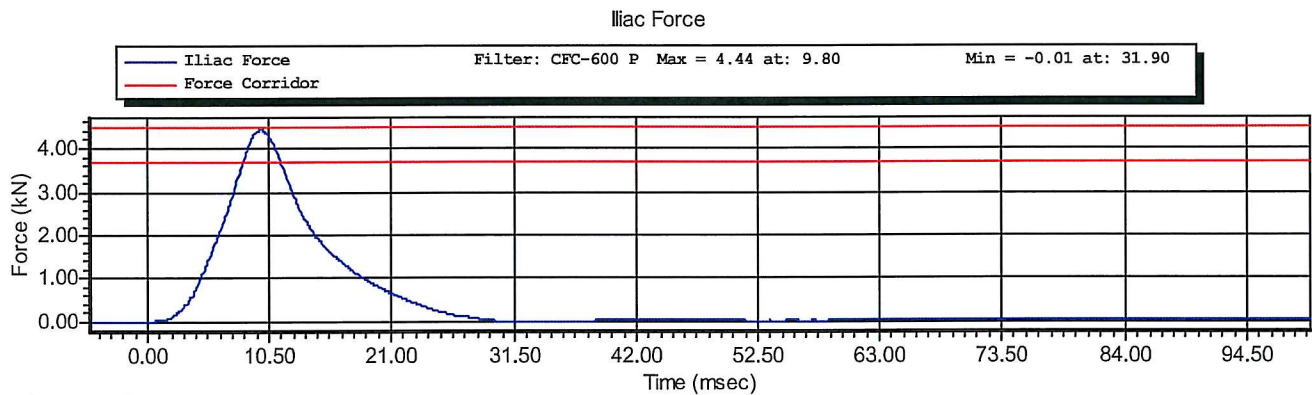


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Test Name:	Pelvis	Revision:	12/14/2006
Sub Test Name:	Iliac Impact	Spec Type:	NHTSA
ATD Type:	SID-Ils Level 'D'		
ATD Serial Number:	297		
Test Number:	5	Test Date:	4/18/2009
		Test Time:	11:54:47 AM

Component Part Number	Component Serial Number
Pelvis Flesh - 180-4343	868



Test ID: **R60868**

Test Time: **11:54:47 AM**

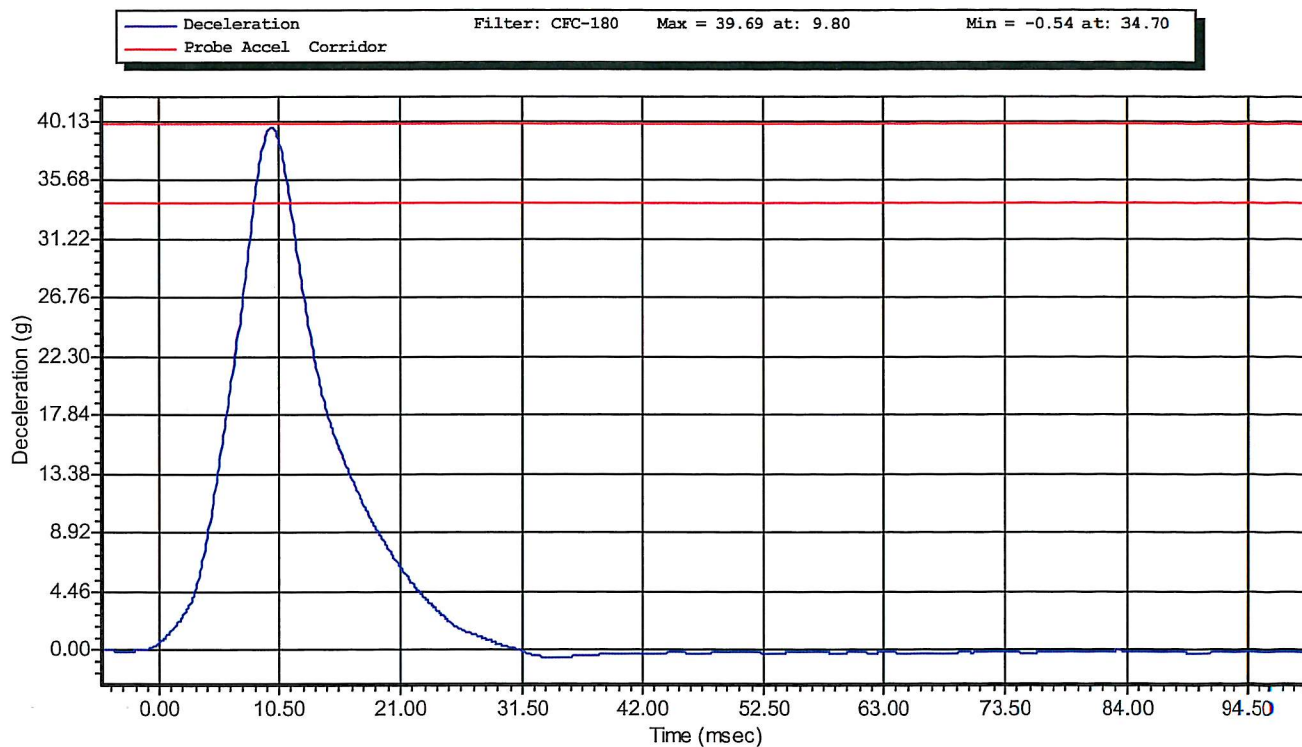
Test Date: **4/18/2009**



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Probe Accelerometer



Test ID: R60868

Test Time: 11:54:47 AM

Test Date: 4/18/2009

CALIBRATION TEST RESULTS

POST TEST

ES2-re NO.: 033

CONFIGURED FOR LEFT SIDE IMPACT

**DENTON TECHNICAL CENTER**

DTC Form (IAW ISO-17025)

RMA Evaluation Report

1965 Larchwood, Troy, Michigan 48083

Tel: (248) 528-9889 Fax: (248) 528-8494

Document Number: DTC-TLF012

Revision Date: 1/30/09

Revision Level: 5

Customer: Calspan

Certificate No.: 51309F033

DTC RMA#: 14049

RDI RMA#:

Dummy Type: EuroSID 2re

Serial Number: F033

Mechanical Status:**Condition as Received:**☒ In Tolerance ☐ Out of Tolerance**Condition as Returned:**☒ In Tolerance ☐ Out of Tolerance**Electrical Status (MUX):** ☒ Not Applicable**Condition as Received:**☐ In Tolerance ☐ Out of Tolerance**Condition as Returned:**☐ In Tolerance ☐ Out of Tolerance**Testing Requirements IAW: CFR 49, 572, U**

	Test Description	S/N	Status
1	Lateral Head Drop	8473	Passed
2	Lateral Neck Bending	7085	Passed
3	Shoulder Impact	7021	Passed
4	Full Thorax Impact	F033	Passed
5	Rib Module Impact (U)	7206	Passed
6	Rib Module Impact (M)	7207	Passed
7	Rib Module Impact (L)	7208	Passed
8	Damper Impact	N/A	NA
9	Abdominal Impact	7136	Passed
10	Pelvis Impact Acet.	7033	Passed
11	Lateral Spine Bending	330	Passed

Torque Wrench: 0505800050

Comments:

Incoming Appearance:Head Assembly ☒ Good ☐ DamagedNeck Assembly ☒ Good ☐ DamagedUpper Torso Assembly ☒ Good ☐ DamagedLower Torso Assembly ☒ Good ☐ DamagedLeft Arm Assembly ☒ Good ☐ DamagedRight Arm Assembly ☒ Good ☐ DamagedLeft Leg Assembly ☒ Good ☐ DamagedRight Leg Assembly ☒ Good ☐ Damaged

Comments:

Comments:

Customer shipping ATD 5-5-09 Need back 05-21-09



Denton Technical Center

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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:	XD8473	Test Date:	5/8/2009
Test Number:	1	Test Time:	10:53:24 AM

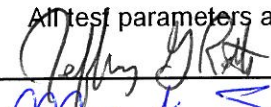
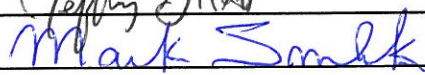
Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number
Head Skin - 455-1007	8473

Comments:
LEFT

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.6 deg C P
Humidity	10 -- 70	52 %RH P
Resultant Acceleration	125 -- 155	154 g P
Oscillation	0.0 -- 15.0	3.7 % P
Fore-Aft Acceleration	-15.00 -- 15.00	5.75 g P

All test parameters are within specifications

Technician:	JR	Signature:	
Supervisor:	MS	Signature:	

Test ID: XD8473

Test Time: 10:53:24 AM

Test Date: 5/8/2009



Denton Technical Center

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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	12/16/2008
Endevco	7264D-2000	11553	8/12/2008
Endevco	7264D-2000	11558	8/12/2008
Endevco	7264D-2000	11569	8/18/2008

Test ID: **XD8473**

Test Time: **10:53:24 AM**

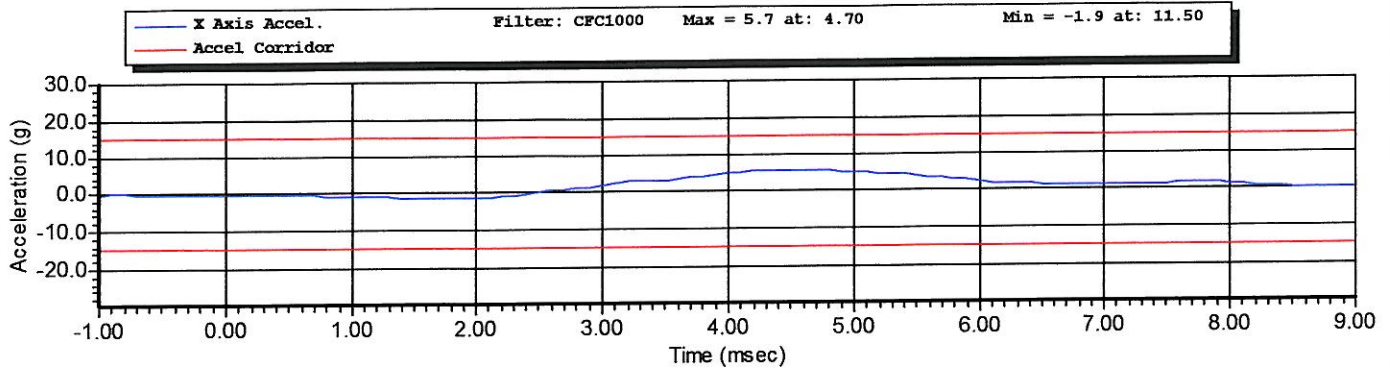
Test Date: **5/8/2009**



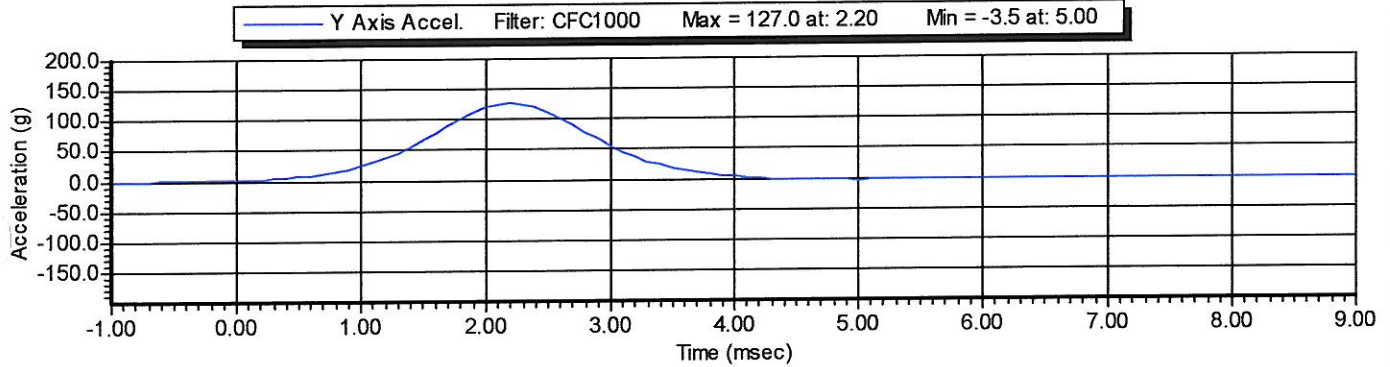
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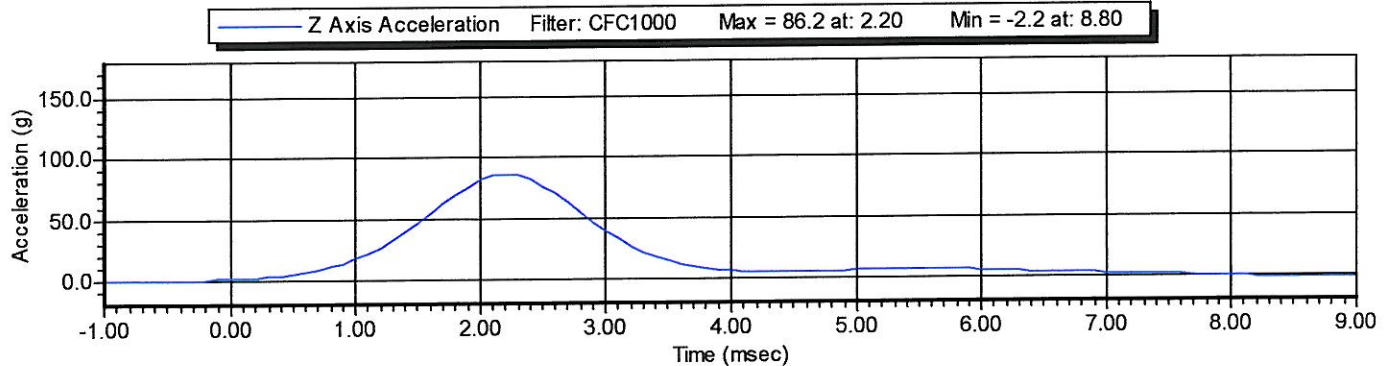
X Axis Acceleration



Y Axis Acceleration



Z Axis Acceleration



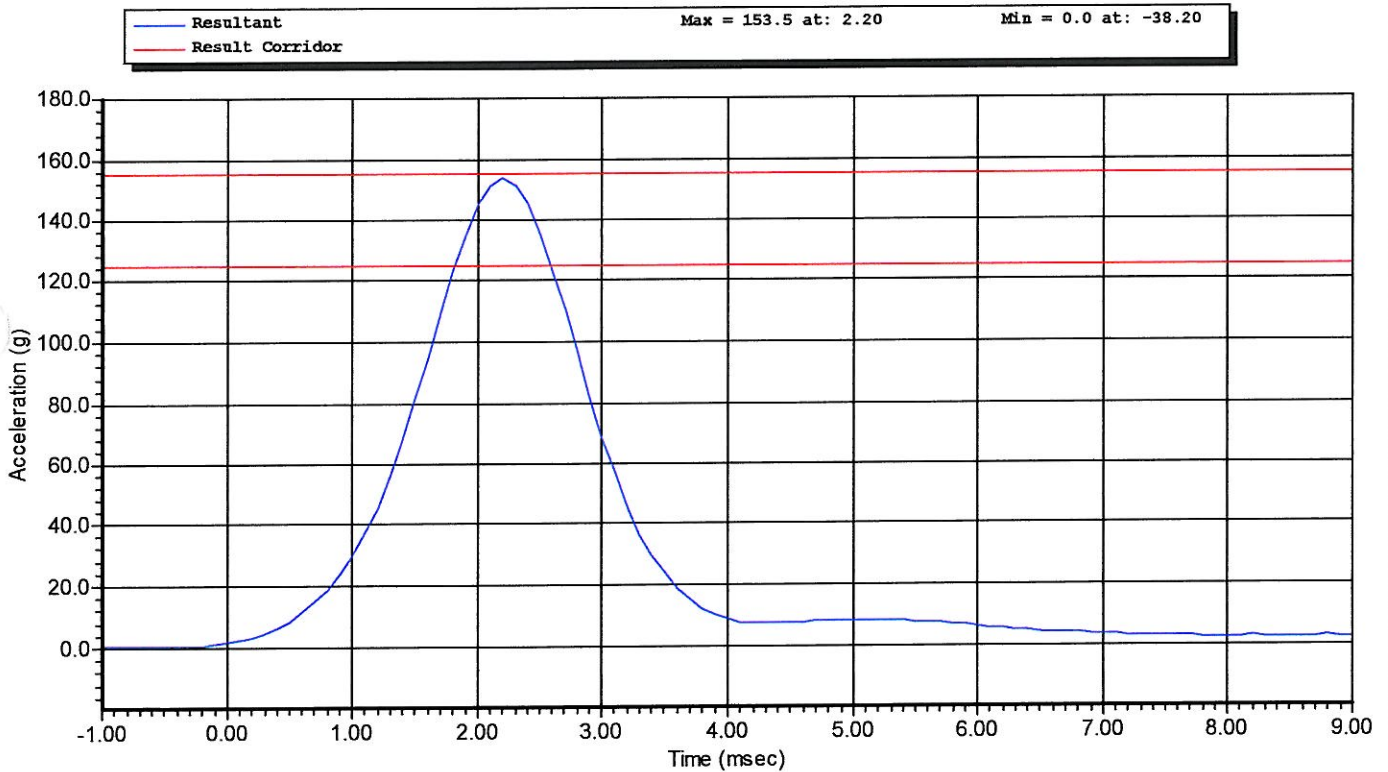


Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

Test Name:	Head Drop	Revision:	12/14/2006
Test Name:		Spec Type:	NHTSA
ATD Type:	ES-2re		
ATD Serial Number:	F033		
Test Number:	1	Test Date:	5/8/2009
		Test Time:	10:53:24 AM
Component Part Number	Component Serial Number		
Head Skin - 455-1007	8473		

Resultant Acceleration



Test ID: XD8473

Test Time: 10:53:24 AM

Test Date: 5/8/2009



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 526-9889, Fax: (248) 528-8494

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:	XA7085	Test Date:	5/8/2009
Test Number:	1	Test Time:	11:38:34 AM

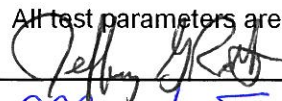
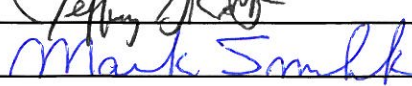
Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number
Neck - 455-2002	7085
Torque Wrench s/n: 0505800050	

Comments:
LEFT
11X4+3 pc @ 49°

Test Parameters	Test Specifications			Test Results	
Temperature	20.6	--	22.2	21.7 deg C	P
Humidity	10	--	70	52 %RH	P
Velocity	3.30	--	3.50	3.46 m/s	P
Maximum Neck Flexion Angle	49.0	--	59.0	54.4 degrees	P
Time At Maximum Neck Flexion	54.0	--	66.0	58.5 ms	P
Decay to Zero Degrees	53.0	--	88.0	57.9 ms	P
Velocity Corridor		--			P

All test parameters are within specifications

Technician:	JR	Signature:	
Supervisor:	MS	Signature:	

Test ID: XA7085

Test Time: 11:38:34 AM

Test Date: 5/8/2009



Denton Technical Center

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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	61A-750-10-360-XY	A021724	10/14/2008
DentonATD	7000428	523	2/27/2009
DentonATD	7000428	82	2/27/2009
DentonATD	7000428	81	2/27/2009

Test ID: **XA7085**

Test Time: **11:38:34 AM**

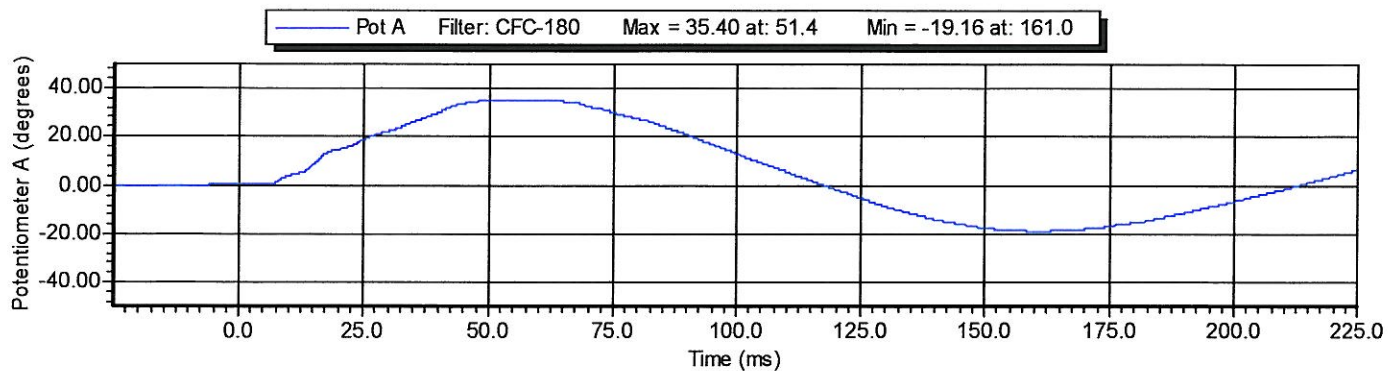
Test Date: **5/8/2009**



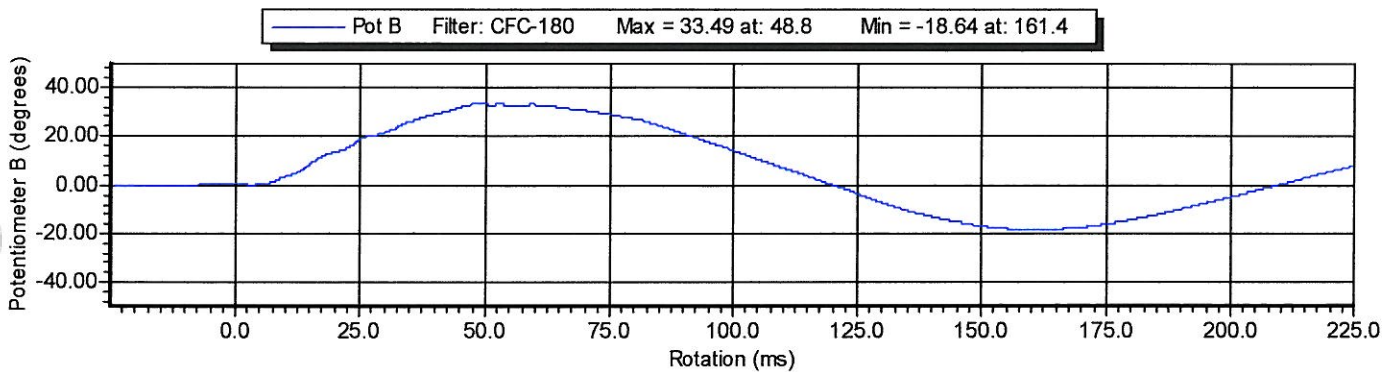
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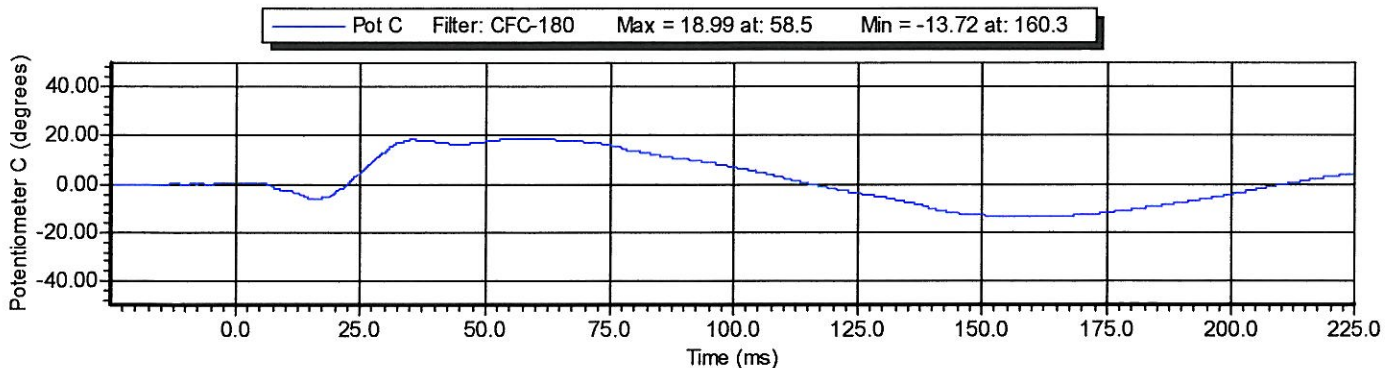
Potentiometer A



Potentiometer B



Potentiometer C



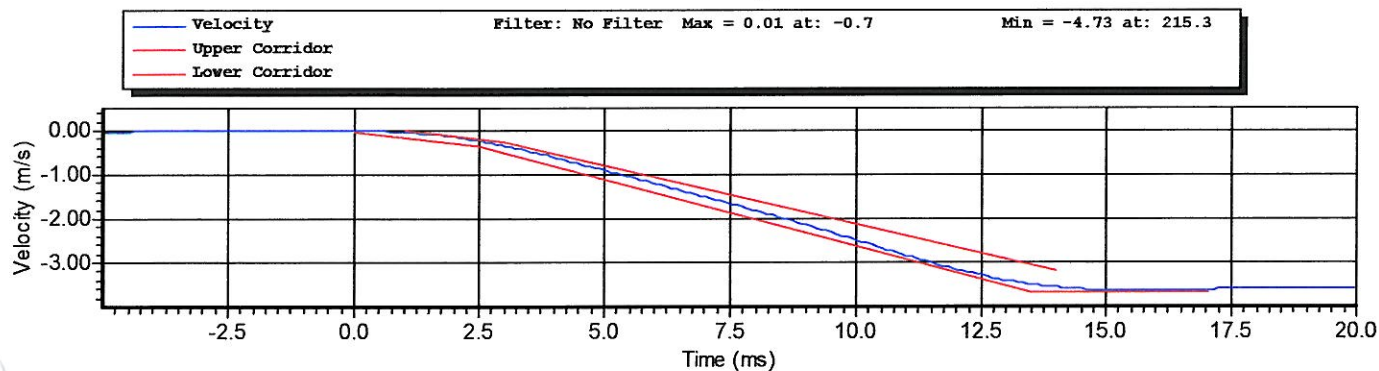


Denton Technical Center

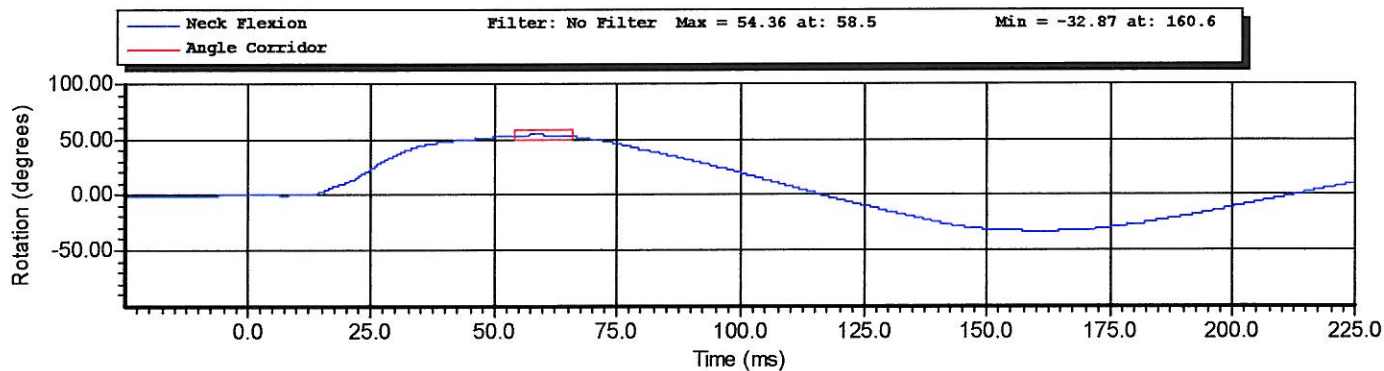
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Test Name:	Neck Flexion	Revision:	12/14/2006
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	ES-2re		
ATD Serial Number:	F033		
Test Number:	1	Test Date:	5/8/2009
		Test Time:	11:38:34 AM
Component Part Number	Component Serial Number		
Neck - 455-2002	7085		

Pendulum Velocity



Neck Flexion Angle



Test ID: XA7085

Test Time: 11:38:34 AM

Test Date: 5/8/2009



Denton Technical Center

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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:	XM7021	Test Date:	5/13/2009
Test Number:	1	Test Time:	6:30:30 AM

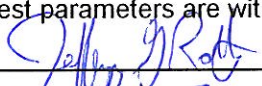
Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number
960715-313	7021

Comments:
LEFT

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	20.6 deg C P
Humidity	10.0 -- 70.0	37.7 %RH P
Velocity	4.20 -- 4.40	4.31 m/s P
Pendulum Acceleration	-10.50 -- -7.50	-9.46 g P

All test parameters are within specifications

Technician:	JR	Signature:	
Supervisor:	MS	Signature:	



Test ID: XM7021

Test Time: 6:30:30 AM

Test Date: 5/13/2009



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD MSI	Velocity Trap 61A-750-10-360-XY	99999999 A021717	12/16/2008 4/3/2009



Test ID: **XM7021**

Test Time: **6:30:30 AM**

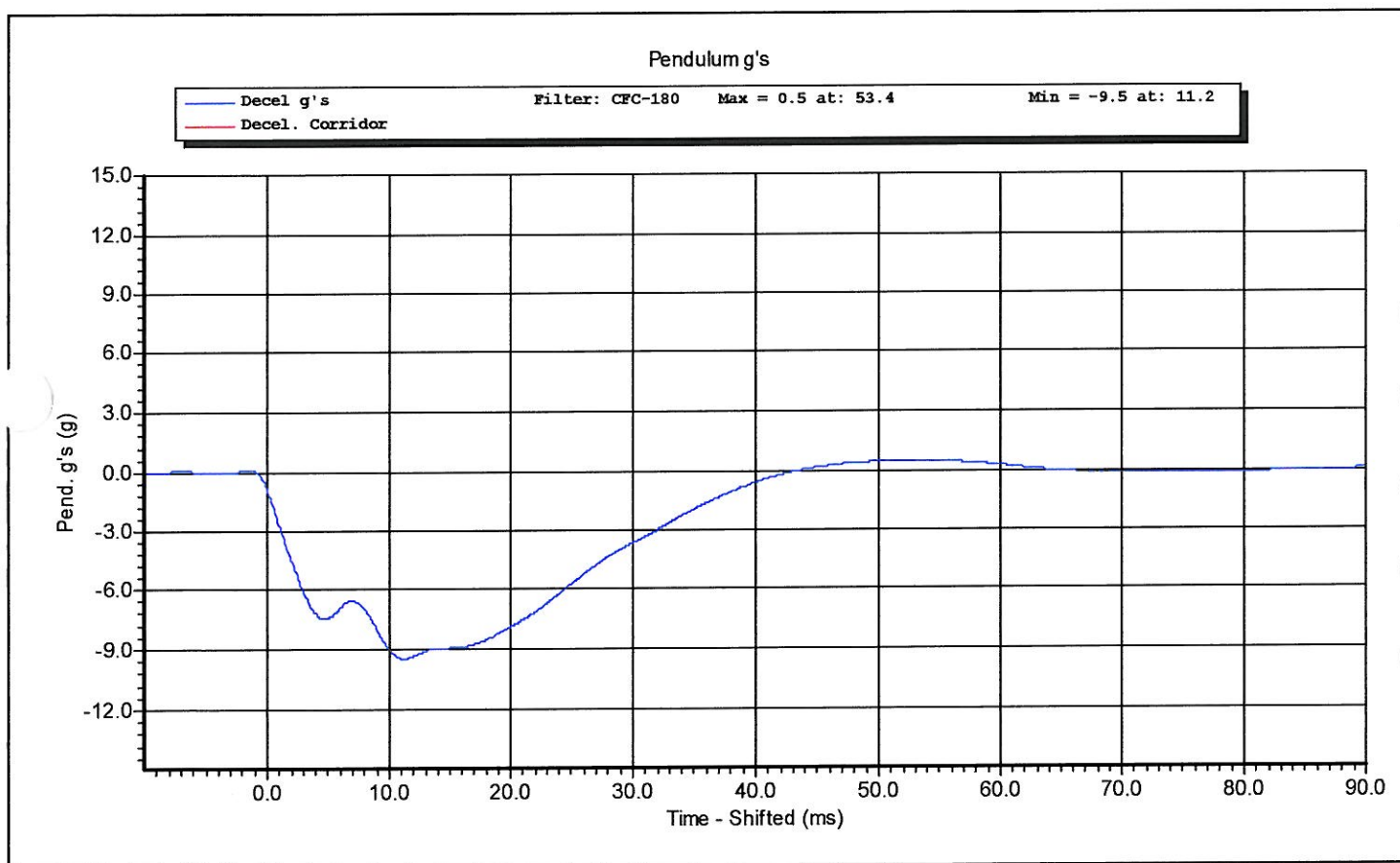
Test Date: **5/13/2009**



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Test Name:	Shoulder Impact	Revision:	12/14/2006
Test Name:		Spec Type:	NHTSA
ATD Type:	ES-2re		
ATD Serial Number:	F033		
Test Number:	1	Test Date:	5/13/2009
		Test Time:	6:30:30 AM
Component Part Number	Component Serial Number		
960715-313	7021		



Test ID: XM7021

Test Time: 6:30:30 AM

Test Date: 5/13/2009



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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:	XS7206	Test Date:	5/8/2009
Test Number:	1	Test Time:	12:48:15 PM

Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number
Rib Module - 175-4002	7206

Comments:
LEFT,UPPER

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	22.0 deg C P
Humidity	10.0 -- 70.0	51.8 %RH P
Velocity	2.90 -- 3.10	2.93 m/s P
Rib Displacement	-40.00 -- -36.00	-36.75 mm P
Drop Height	454 -- 464	459 mm P

All test parameters are within specifications

Technician:	JR	Signature:	
Supervisor:	MS	Signature:	

Test ID: XS7206

Test Time: 12:48:15 PM

Test Date: 5/8/2009



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Servo	9000851	120	2/27/2009
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	64-2000-10-360-XY	A009030	10/14/2008

Test ID: **XS7206**

Test Time: **12:48:15 PM**

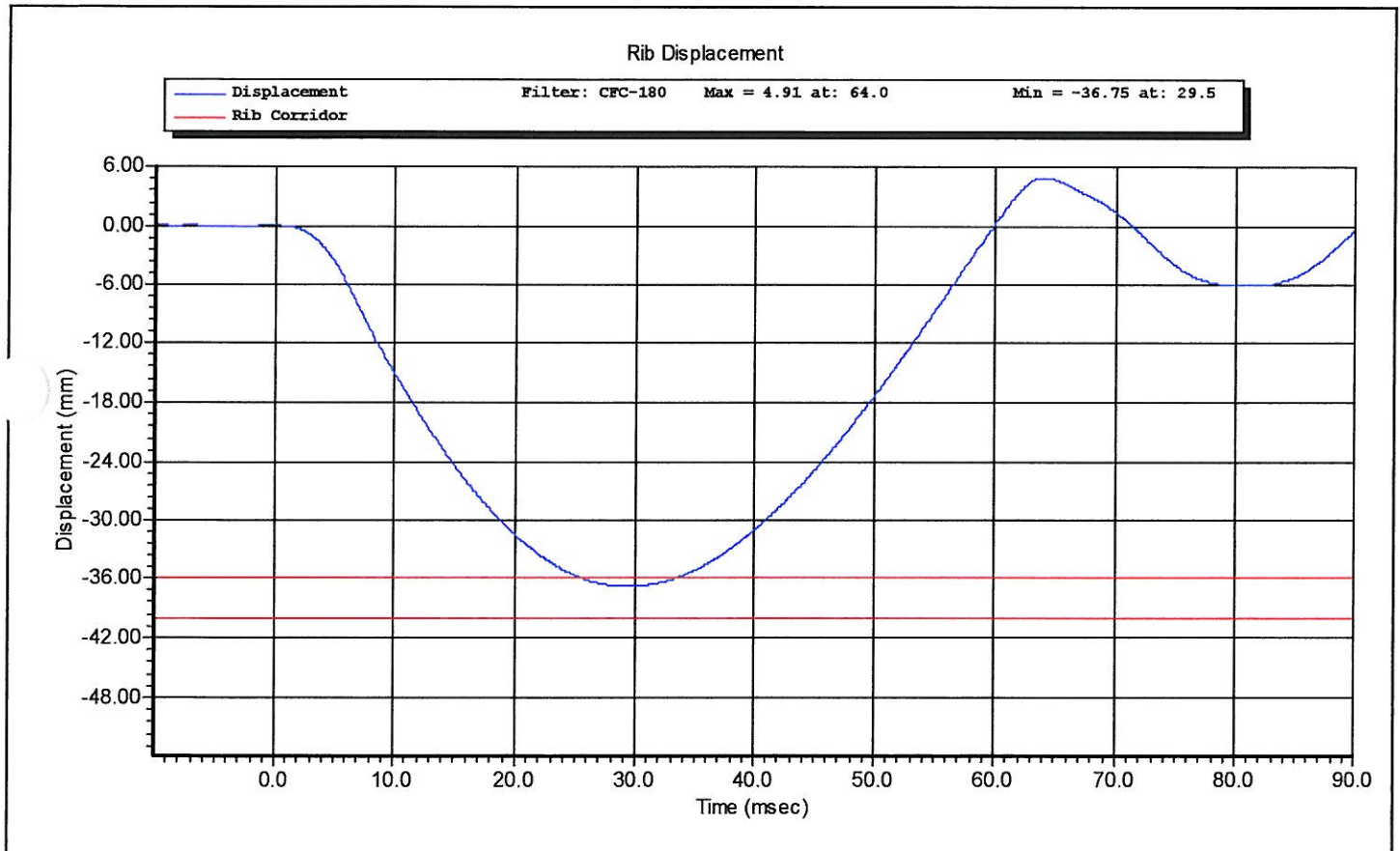
Test Date: **5/8/2009**



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Test Name:	Full Rib Module Impact	Revision:	12/14/2006
Test Name:	3.0 Meters/Second	Spec Type:	NHTSA
ATD Type:	ES-2re		
ATD Serial Number:	F033		
Test Number:	1	Test Date:	5/8/2009
		Test Time:	12:48:15 PM
Component Part Number	Component Serial Number		
Rib Module - 175-4002	7206		



Test ID: **XS7206**

Test Time: **12:48:15 PM**

Test Date: **5/8/2009**



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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:	XS7206	Test Date:	5/11/2009
Test Number:	1	Test Time:	6:54:18 AM

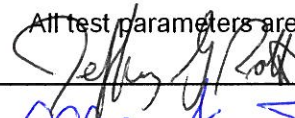
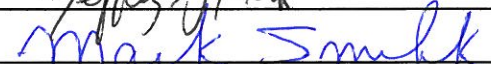
Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number
Rib Module - 175-4002	7206

Comments:
LEFT, UPPER

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	20.8 deg C P
Humidity	10.0 -- 70.0	43.7 %RH P
Velocity	3.90 -- 4.10	3.96 m/s P
Rib Displacement	-51.00 -- -46.00	-48.82 mm P
Drop Height	807.0 -- 823.0	815.0 mm P

All test parameters are within specifications

Technician:	JR	Signature:	
Supervisor:	MS	Signature:	

Test ID: XS7206

Test Time: 6:54:18 AM

Test Date: 5/11/2009



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Servo	9000851	120	2/27/2009
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	64-2000-10-360-XY	A009030	10/14/2008

Test ID: **XS7206**

Test Time: **6:54:18 AM**

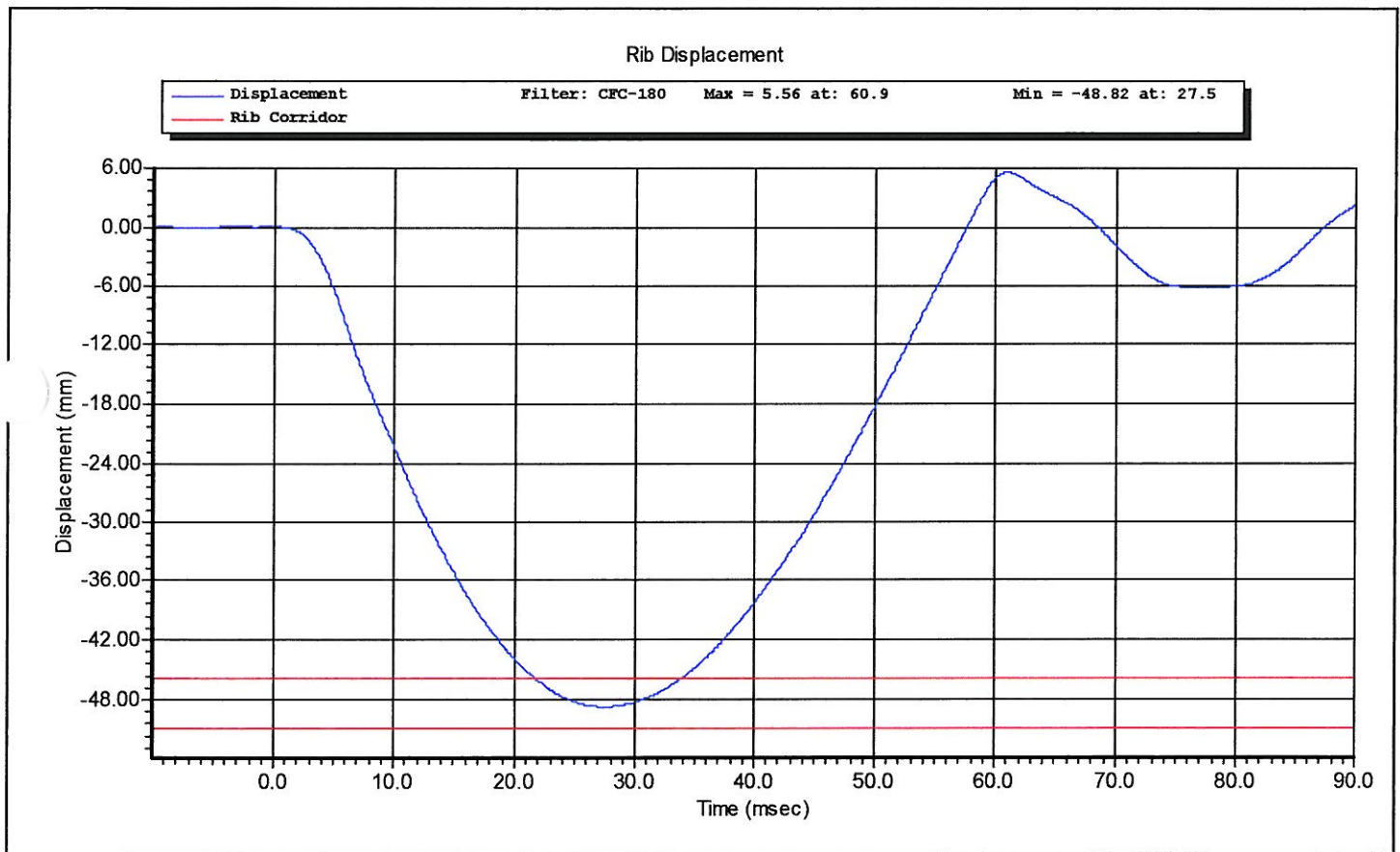
Test Date: **5/11/2009**



Denton Technical Center

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Test Name:	Full Rib Module Impact	Revision:	12/14/2006
Test Name:	4.0 Meters/Second	Spec Type:	NHTSA
ATD Type:	ES-2re		
ATD Serial Number:	F033		
Test Number:	1	Test Date:	5/11/2009
		Test Time:	6:54:18 AM
Component Part Number	Component Serial Number		
Rib Module - 175-4002	7206		



Test ID: **XS7206**

Test Time: **6:54:18 AM**

Test Date: **5/11/2009**



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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:	XS7207	Test Date:	5/11/2009
Test Number:	1	Test Time:	7:26:50 AM

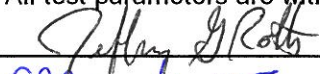
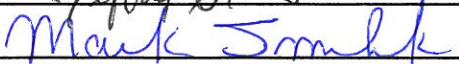
Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number
Rib Module - 175-4002	7207

Comments:
LEFT, MIDDLE

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	20.8 deg C P
Humidity	10.0 -- 70.0	43.7 %RH P
Velocity	2.90 -- 3.10	2.92 m/s P
Rib Displacement	-40.00 -- -36.00	-36.64 mm P
Drop Height	454 -- 464	459 mm P

All test parameters are within specifications

Technician:	JR	Signature:	
Supervisor:	MS	Signature:	

Test ID: XS7207

Test Time: 7:26:50 AM

Test Date: 5/11/2009



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Servo	9000851	120	2/27/2009
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	64-2000-10-360-XY	A009030	10/14/2008

Test ID: **XS7207**

Test Time: **7:26:50 AM**

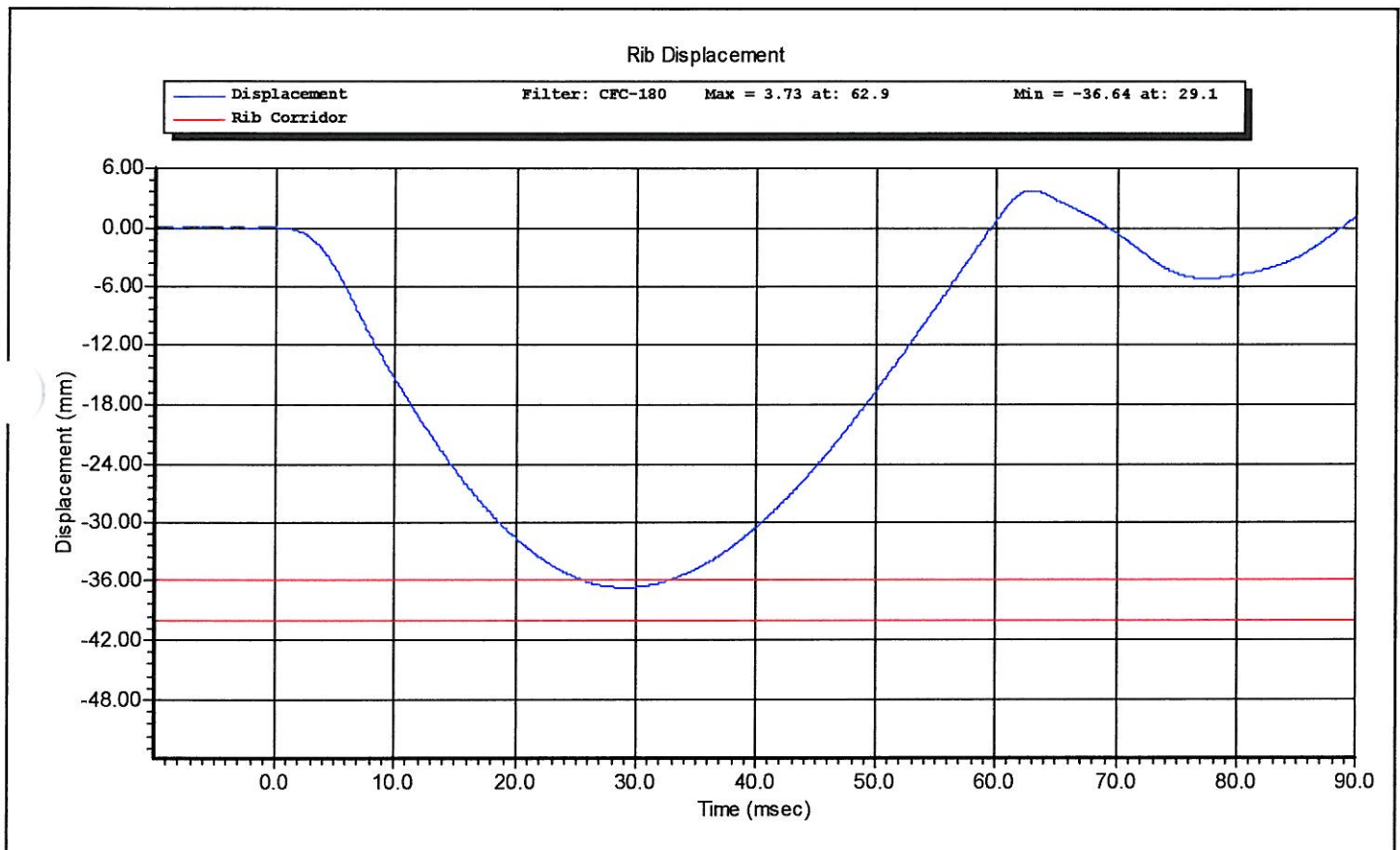
Test Date: **5/11/2009**



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

Test Name:	Full Rib Module Impact	Revision:	12/14/2006
Lab Test Name:	3.0 Meters/Second	Spec Type:	NHTSA
ATD Type:	ES-2re		
ATD Serial Number:	F033		
Test Number:	1	Test Date:	5/11/2009
		Test Time:	7:26:50 AM
Component Part Number	Component Serial Number		
Rib Module - 175-4002	7207		



Test ID: **XS7207**

Test Time: **7:26:50 AM**

Test Date: **5/11/2009**



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

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:	XS7207	Test Date:	5/11/2009
Test Number:	1	Test Time:	7:59:29 AM

Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number
Rib Module - 175-4002	7207

Comments:
LEFT, MIDDLE

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.3 deg C P
Humidity	10.0 -- 70.0	43.5 %RH P
Velocity	3.90 -- 4.10	3.93 m/s P
Rib Displacement	-51.00 -- -46.00	-48.32 mm P
Drop Height	807.0 -- 823.0	815.0 mm P

All test parameters are within specifications

Technician:	JR	Signature:	
Supervisor:	MS	Signature:	

Test ID: XS7207

Test Time: 7:59:29 AM

Test Date: 5/11/2009



Denton Technical Center

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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Servo	9000851	120	2/27/2009
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	64-2000-10-360-XY	A009030	10/14/2008

Test ID: **XS7207**

Test Time: **7:59:29 AM**

Test Date: **5/11/2009**

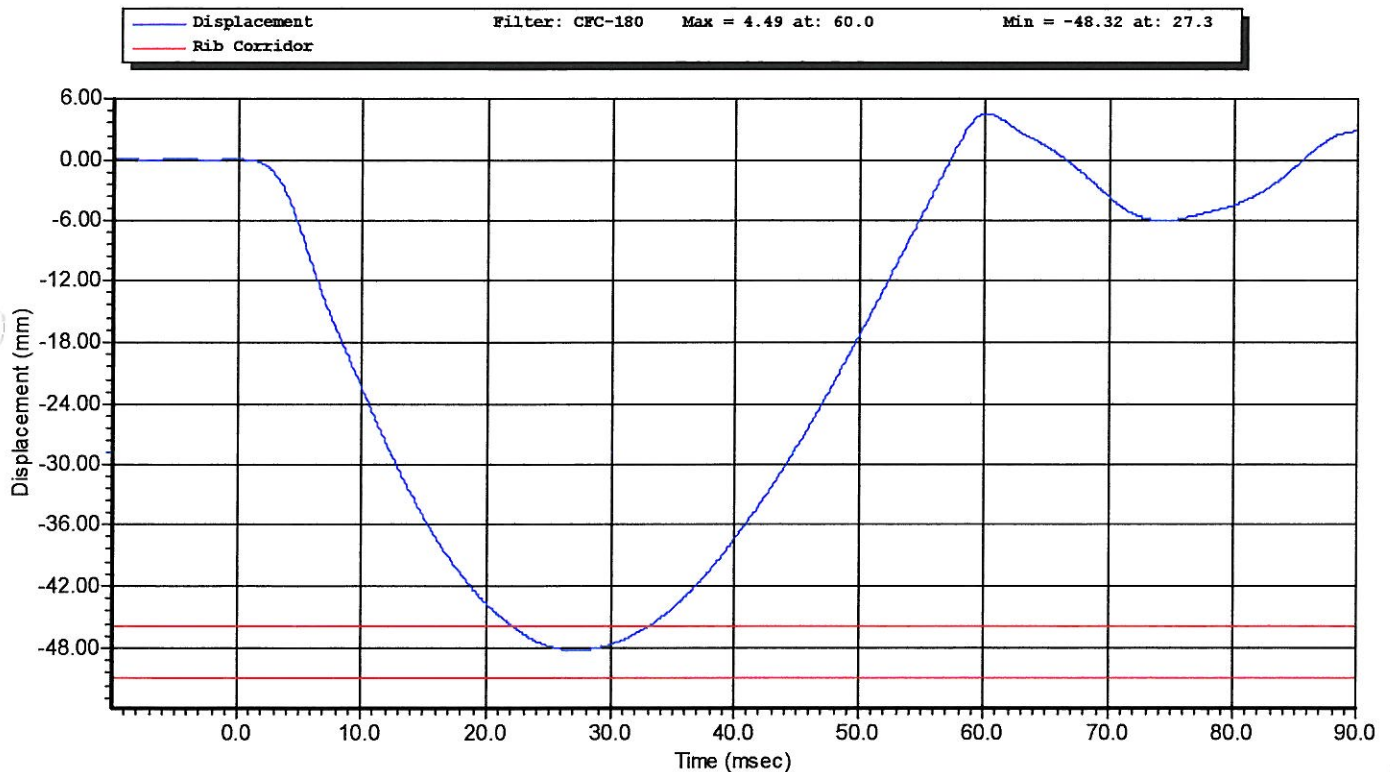


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Test Name:	Full Rib Module Impact	Revision:	12/14/2006
Lab Test Name:	4.0 Meters/Second	Spec Type:	NHTSA
ATD Type:	ES-2re		
ATD Serial Number:	F033		
Test Number:	1	Test Date:	5/11/2009
		Test Time:	7:59:29 AM
Component Part Number	Component Serial Number		
Rib Module - 175-4002	7207		

Rib Displacement



Test ID: **XS7207**

Test Time: **7:59:29 AM**

Test Date: **5/11/2009**



Denton Technical Center

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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:	XS7208	Test Date:	5/11/2009
Test Number:	1	Test Time:	8:34:37 AM

Condition As Received: CALSPAN

User Field 2:

User Field 3:

Component Part Number	Component Serial Number
Rib Module - 175-4002	7208

Comments:
LEFT, LOWER

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	20.8 deg C P
Humidity	10.0 -- 70.0	45.1 %RH P
Velocity	2.90 -- 3.10	2.92 m/s P
Rib Displacement	-40.00 -- -36.00	-36.68 mm P
Drop Height	454 -- 464	459 mm P

All test parameters are within specifications

Technician:	JR	Signature:	
Supervisor:	MS	Signature:	

Test ID: XS7208

Test Time: 8:34:37 AM

Test Date: 5/11/2009



Denton Technical Center

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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Servo	9000851	120	2/27/2009
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	64-2000-10-360-XY	A009030	10/14/2008

Test ID: **XS7208**

Test Time: **8:34:37 AM**

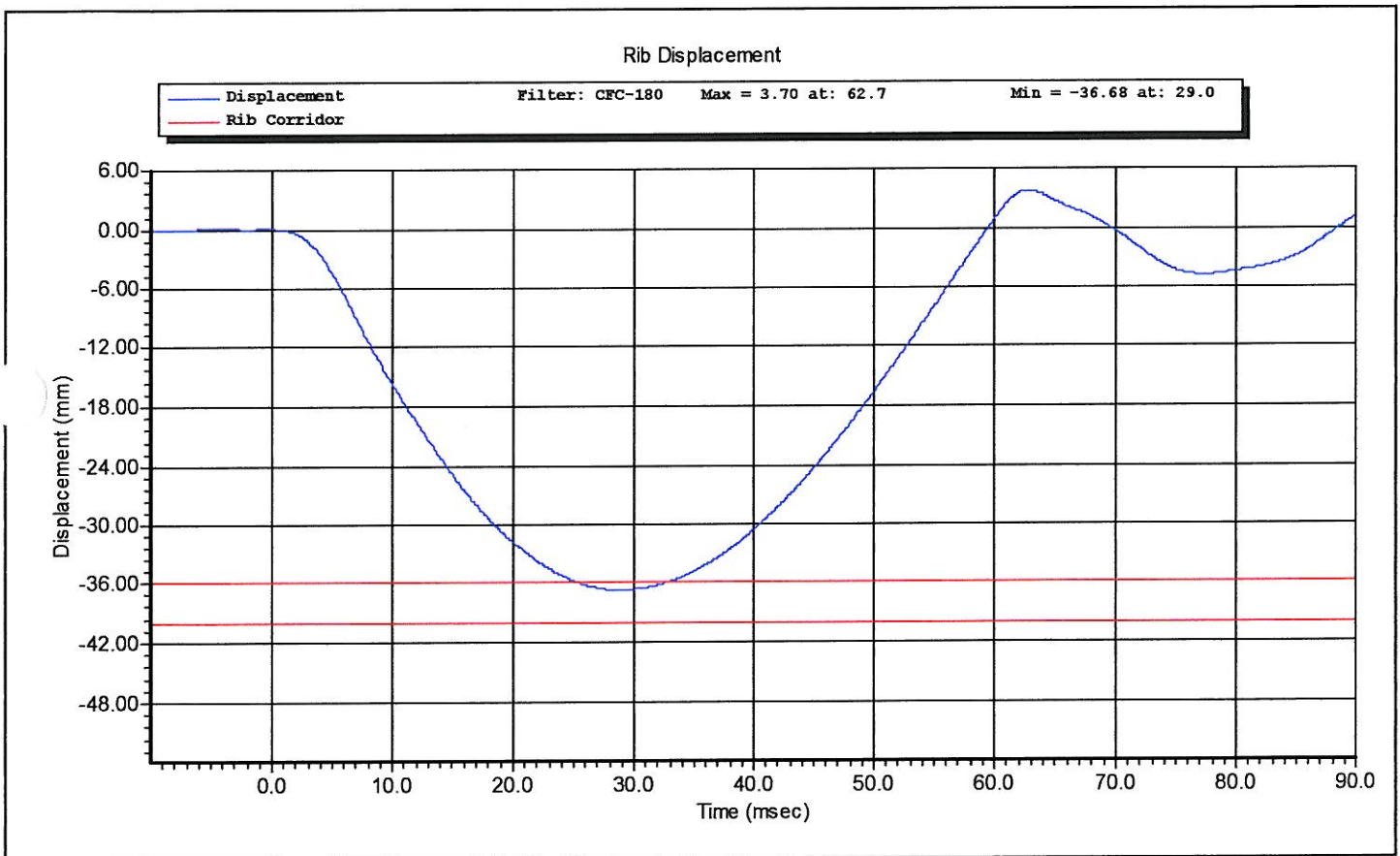
Test Date: **5/11/2009**



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

Test Name:	Full Rib Module Impact	Revision:	12/14/2006
Test Name:	3.0 Meters/Second	Spec Type:	NHTSA
ATD Type:	ES-2re		
ATD Serial Number:	F033		
Test Number:	1	Test Date:	5/11/2009
		Test Time:	8:34:37 AM
Component Part Number	Component Serial Number		
Rib Module - 175-4002	7208		



Test ID: XS7208

Test Time: 8:34:37 AM

Test Date: 5/11/2009



Denton Technical Center

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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:	XS7208	Test Date:	5/11/2009
Test Number:	1	Test Time:	9:09:25 AM

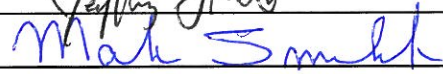
Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number
Rib Module - 175-4002	7208

Comments:
LEFT, LOWER

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.0 deg C P
Humidity	10.0 -- 70.0	46.3 %RH P
Velocity	3.90 -- 4.10	3.95 m/s P
Rib Displacement	-51.00 -- -46.00	-48.22 mm P
Drop Height	807.0 -- 823.0	815.0 mm P

All test parameters are within specifications

Technician:	JR	Signature:	
Supervisor:	MS	Signature:	

Test ID: **XS7208**

Test Time: **9:09:25 AM**

Test Date: **5/11/2009**



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Servo	9000851	120	2/27/2009
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	64-2000-10-360-XY	A009030	10/14/2008

Test ID: **XS7208**

Test Time: **9:09:25 AM**

Test Date: **5/11/2009**

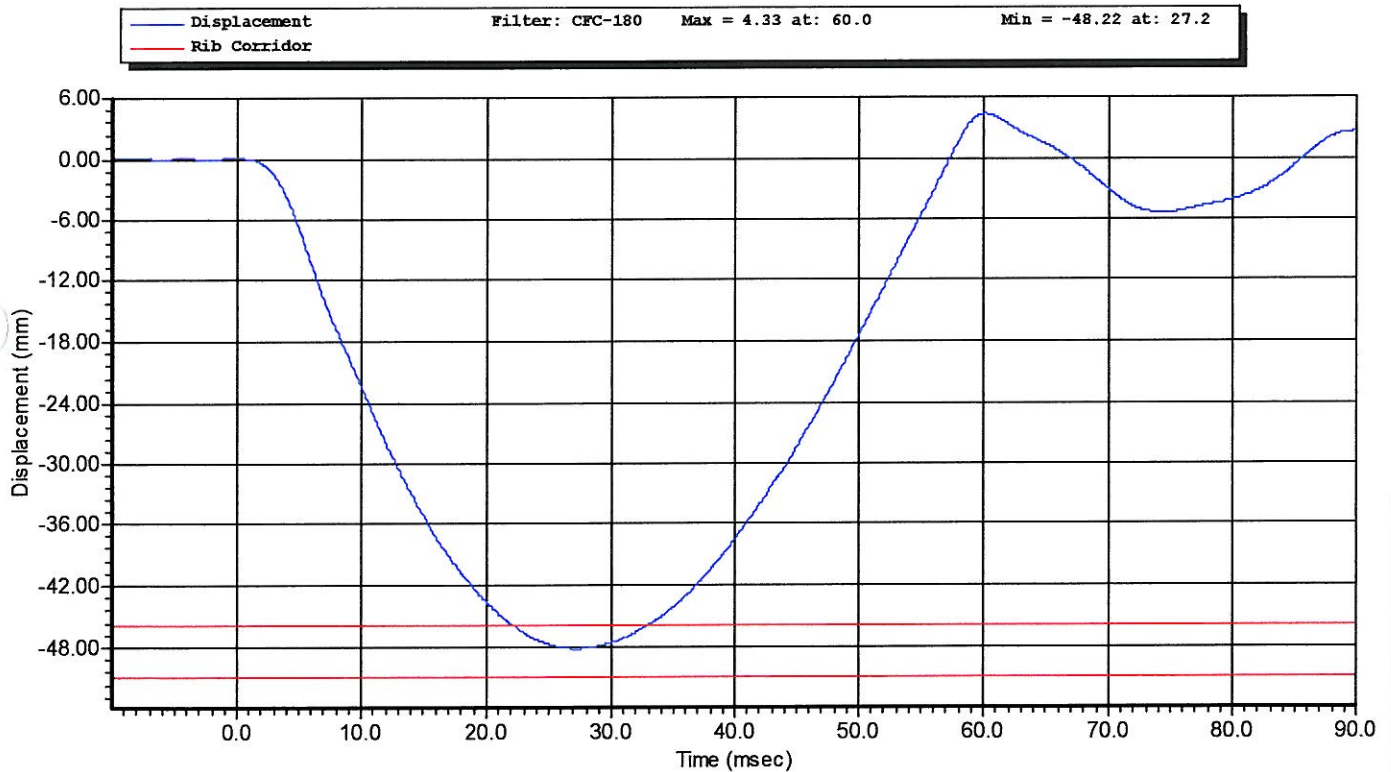


Denton Technical Center

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Test Name:	Full Rib Module Impact	Revision:	12/14/2006
Test Name:	4.0 Meters/Second	Spec Type:	NHTSA
ATD Type:	ES-2re		
ATD Serial Number:	F033		
Test Number:	1	Test Date:	5/11/2009
		Test Time:	9:09:25 AM
Component Part Number	Component Serial Number		
Rib Module - 175-4002	7208		

Rib Displacement



Test ID: **XS7208**

Test Time: **9:09:25 AM**

Test Date: **5/11/2009**



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

VERIFICATION REPORT

Test Name:	Thorax Impact	Revision:	6/16/2008
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	ES-2re		
ATD Serial Number:	F033		
Test ID:	XBF033	Test Date:	5/13/2009
Test Number:	1	Test Time:	7:19:42 AM

Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number
Upper Rib - 175-4002	7206
Middle Rib - 175-4002	7207
Lower Rib - 175-4002	7208

Comments:
LEFT

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	20.8 deg C P
Humidity	10.0 -- 70.0	38.2 %RH P
Velocity	5.40 -- 5.60	5.52 m/s P
Upper Rib Displacement	34.0 -- 41.0	37.8 mm P
Middle Rib Displacement	37.0 -- 45.0	41.4 mm P
Lower Rib Displacement	37.0 -- 44.0	40.7 mm P
Impactor Force	5100 -- 6200	5717 N P

All test parameters are within specifications

Technician: JR Signature: Jeffrey J. Roth
Supervisor: MS Signature: Mark Smith



Test ID: XBF033

Test Time: 7:19:42 AM

Test Date: 5/13/2009



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	61A-750-10-360-XY	A021717	4/3/2009
Servo	MLT- 380	179	3/6/2009
Servo	MLT- 380	185	3/3/2009
Servo	MLT- 380	178	3/6/2009



Test ID: **XBF033**

Test Time: **7:19:42 AM**

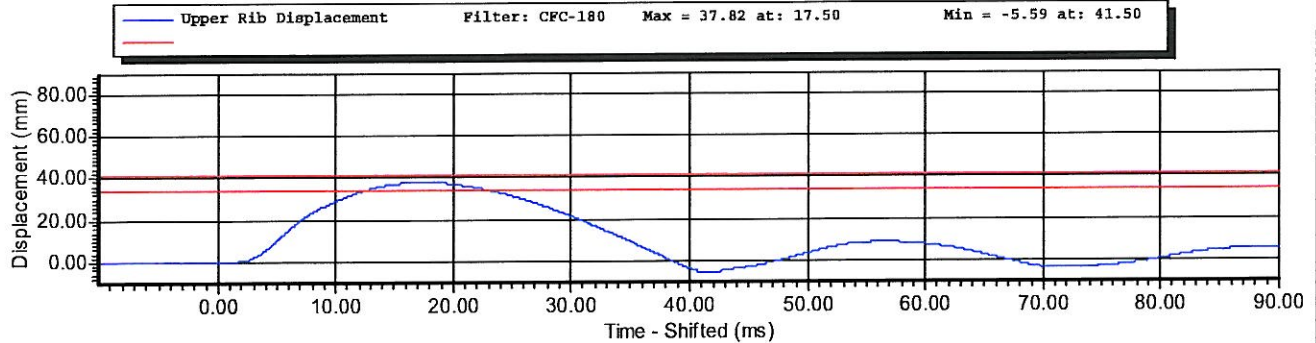
Test Date: **5/13/2009**



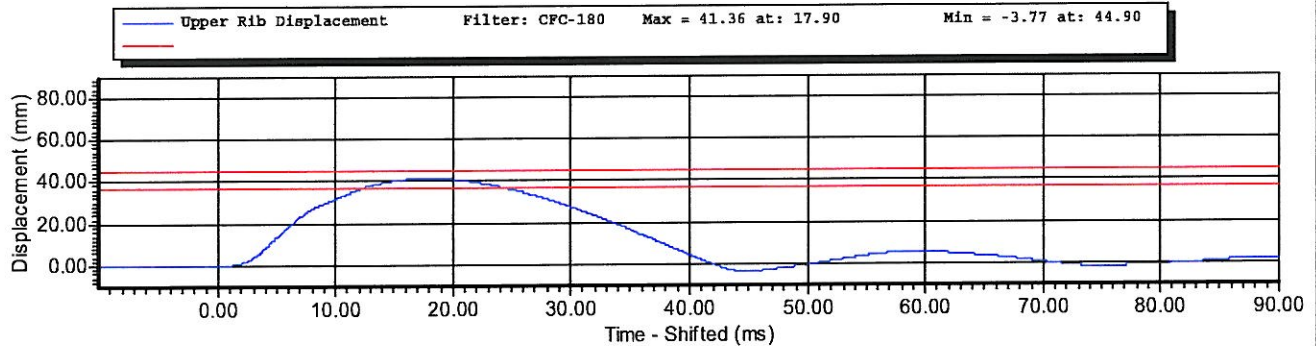
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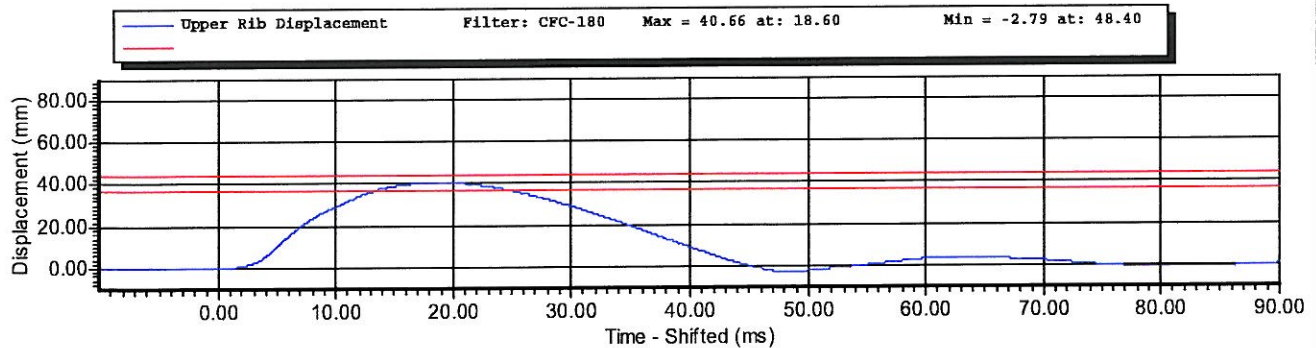
Upper Rib Displacement



Middle Rib Displacement



Lower Rib Displacement



Test ID: **XBF033**

Test Time: **7:19:42 AM**

Test Date: **5/13/2009**

Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.7.0.1

2 of 2

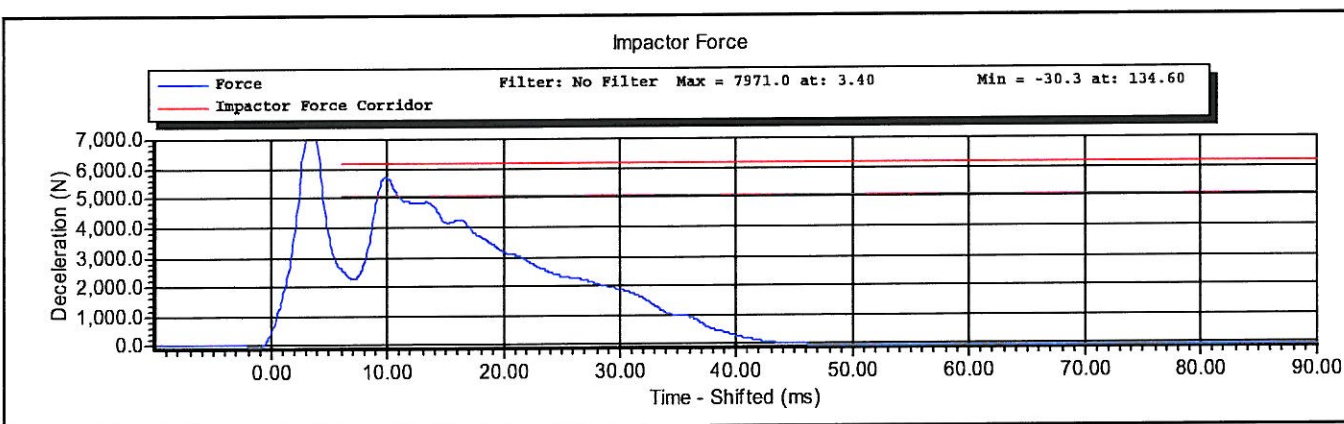
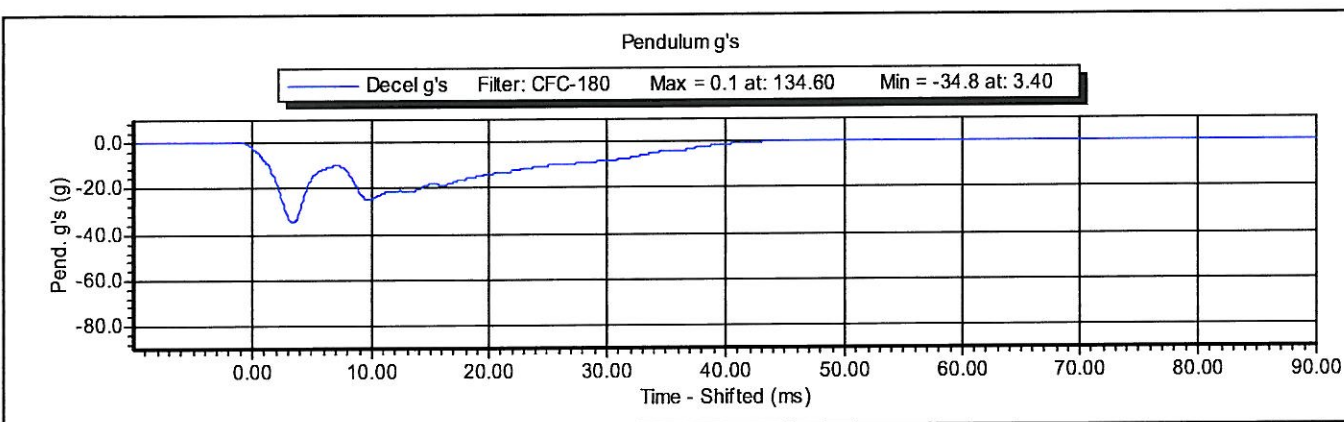


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Test Name:	Thorax Impact	Revision:	6/16/2008
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	ES-2re		
ATD Serial Number:	F033		
Test Number:	1	Test Date:	5/13/2009
		Test Time:	7:19:42 AM

Component Part Number	Component Serial Number
Upper Rib - 175-4002	7206



Test ID: XBF033

Test Time: 7:19:42 AM

Test Date: 5/13/2009



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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:	XG0330	Test Date:	5/8/2009
Test Number:	2	Test Time:	12:55:56 PM

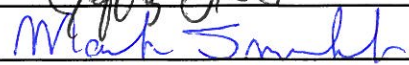
Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number
Spine Assembly - 175-5501	0330
Torque Wrench s/n: 0505800050	

Comments:
LEFT
8X7+3pc @ 93°

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	22.0 deg C P
Humidity	10 -- 70	52 %RH P
Velocity	5.95 -- 6.15	6.04 m/s P
Maximum Headform Flexion Angle	45.0 -- 55.0	47.0 degrees P
Time at Maximum Headform Flexion Angl	39.0 -- 53.0	45.1 ms P
Decay to Zero Degrees	37.0 -- 57.0	37.3 ms P
Velocity Corridor	--	P

All test parameters are within specifications

Technician:	JR	Signature:	
Supervisor:	MS	Signature:	

Test ID: **XG0330**

Test Time: **12:55:56 PM**

Test Date: **5/8/2009**



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	61A-750-10-360-XY	A021724	10/14/2008
DentonATD	7000428	523	2/27/2009
DentonATD	7000428	82	2/27/2009
DentonATD	7000428	81	2/27/2009

Test ID: **XG0330**

Test Time: **12:55:56 PM**

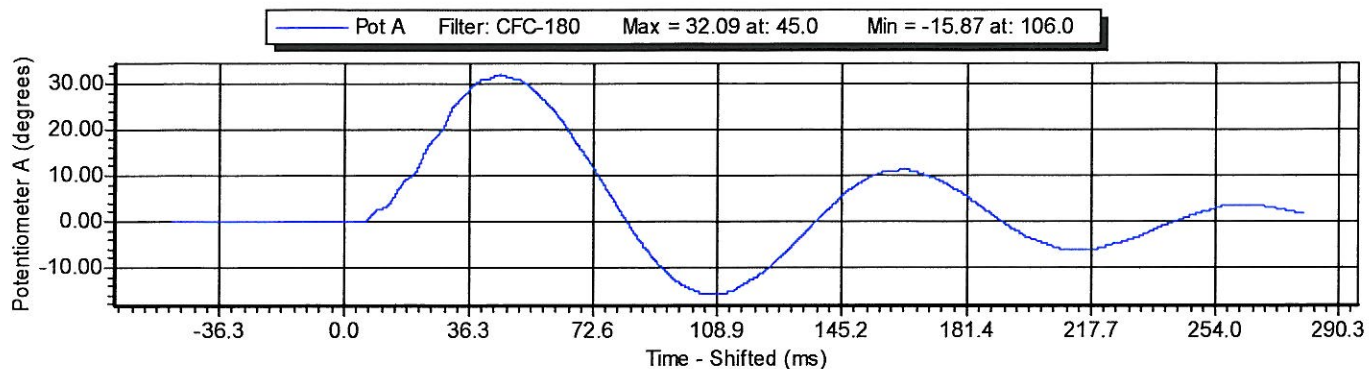
Test Date: **5/8/2009**



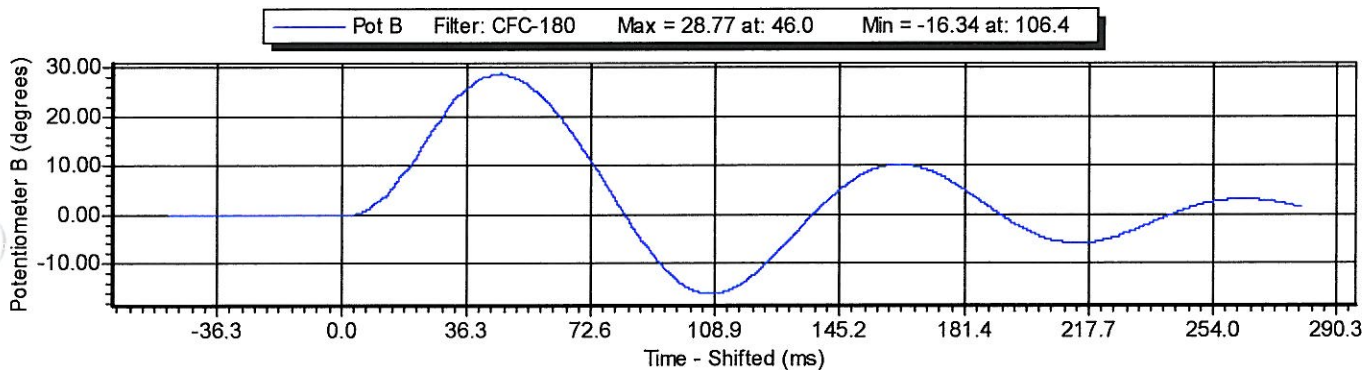
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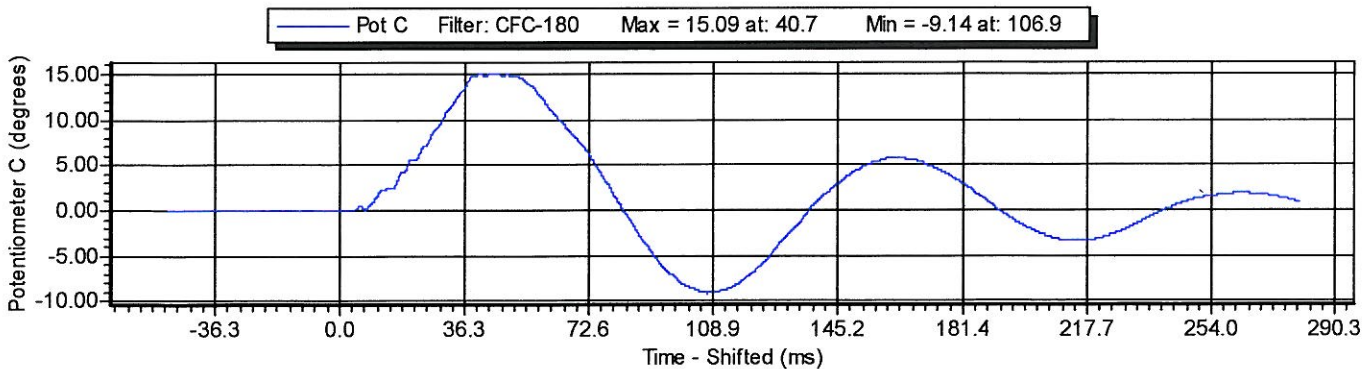
Potentiometer A



Potentiometer B



Potentiometer C



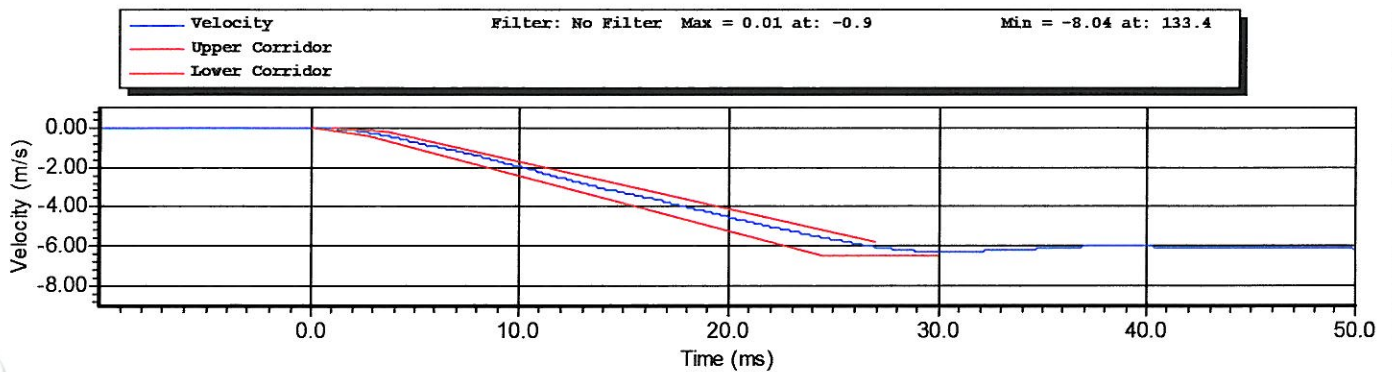


Denton Technical Center

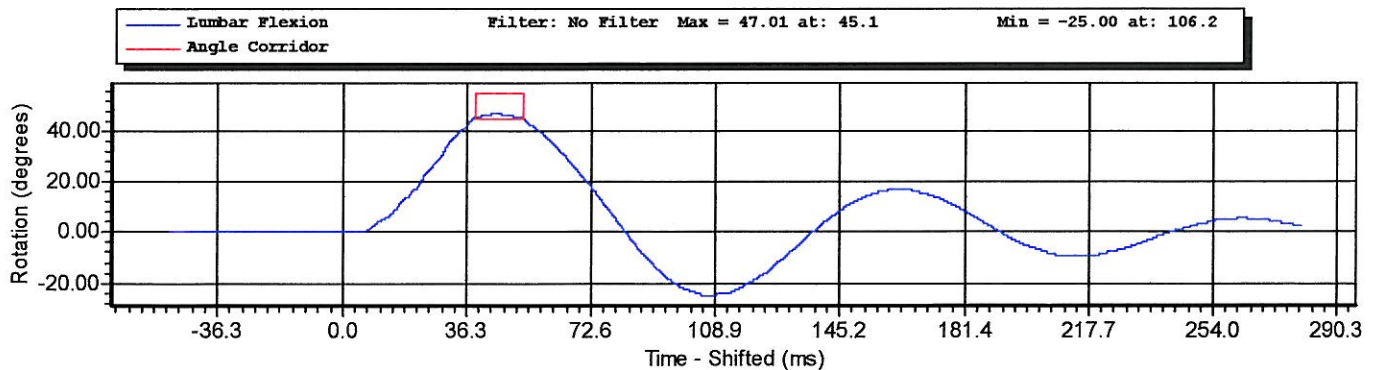
1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

Test Name:	Lumbar Spine	Revision:	12/14/2006
Test Name:		Spec Type:	NHTSA
ATD Type:	ES-2re		
ATD Serial Number:	F033		
Test Number:	2	Test Date:	5/8/2009
		Test Time:	12:55:56 PM
Component Part Number	Component Serial Number		
Spine Assembly - 175-5501	0330		

Pendulum Velocity



Lumbar Flexion Angle



Test ID: **XG0330**

Test Time: **12:55:56 PM**

Test Date: **5/8/2009**



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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:	XF7136	Test Date:	5/13/2009
Test Number:	1	Test Time:	7:35:49 AM

Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number
455-4001	7136

Comments:
LEFT

Test Parameters	Test Specifications			Test Results	
Temperature	20.6	--	22.2	20.8 deg C	P
Humidity	10	--	70	38 %RH	P
Velocity	3.90	--	4.10	4.10 m/s	P
Peak Abdominal Force	-2.70	--	-2.20	-2.48 kN	P
Time At Peak Abdominal Force	10.0	--	12.3	11.2 ms	P
Maximum Pendulum Force	-4.80	--	-4.00	-4.33 kN	P
Time at Peak Pendulum Force	10.6	--	13.0	11.1 ms	P

All test parameters are within specifications

Technician: JR Signature: [Signature]
Supervisor: MS Signature: [Signature]



Test ID: XF7136

Test Time: 7:35:49 AM

Test Date: 5/13/2009



Denton Technical Center

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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	61A-750-10-360-XY	A021717	4/3/2009
Denton	2631	1524	3/6/2009
Denton	2631	1523	3/6/2009
Denton	2631	1530	3/6/2009



Test ID: **XF7136**

Test Time: **7:35:49 AM**

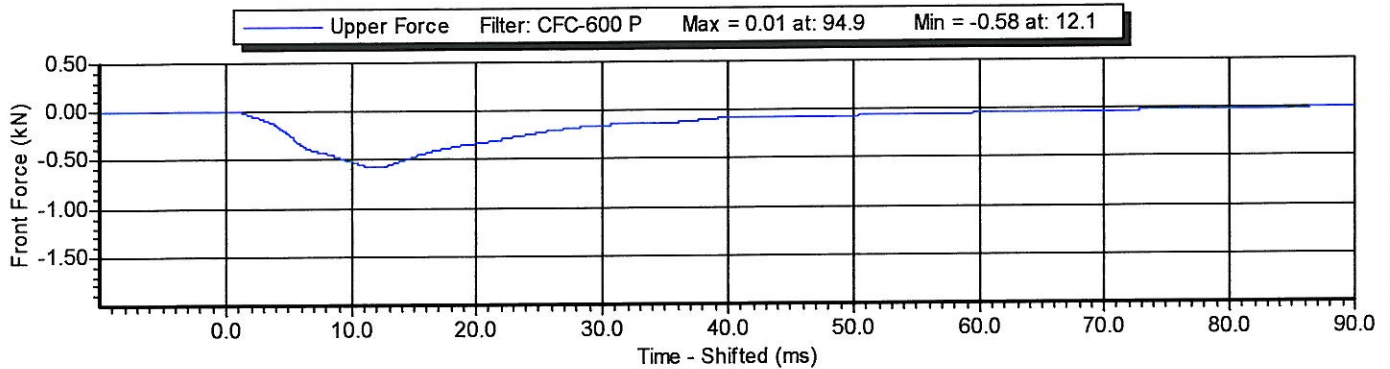
Test Date: **5/13/2009**



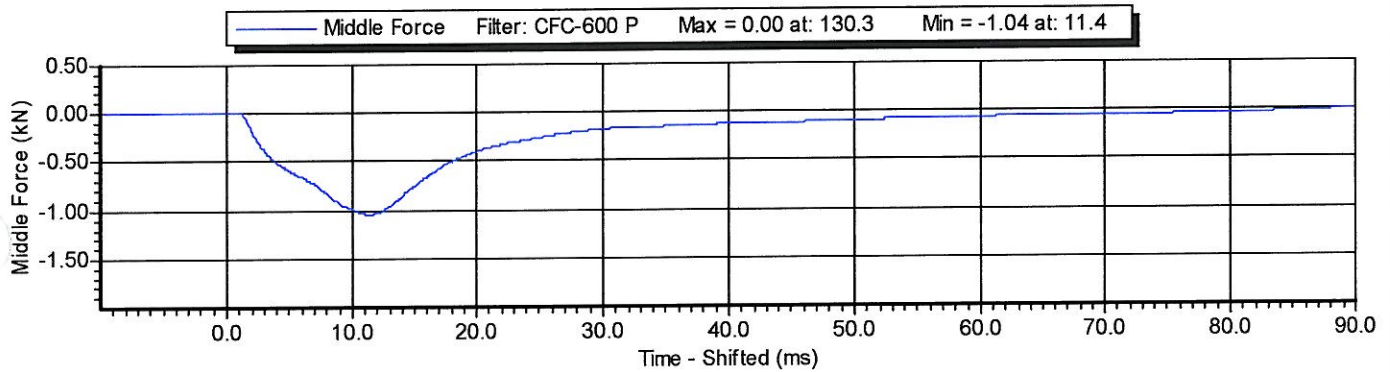
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1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

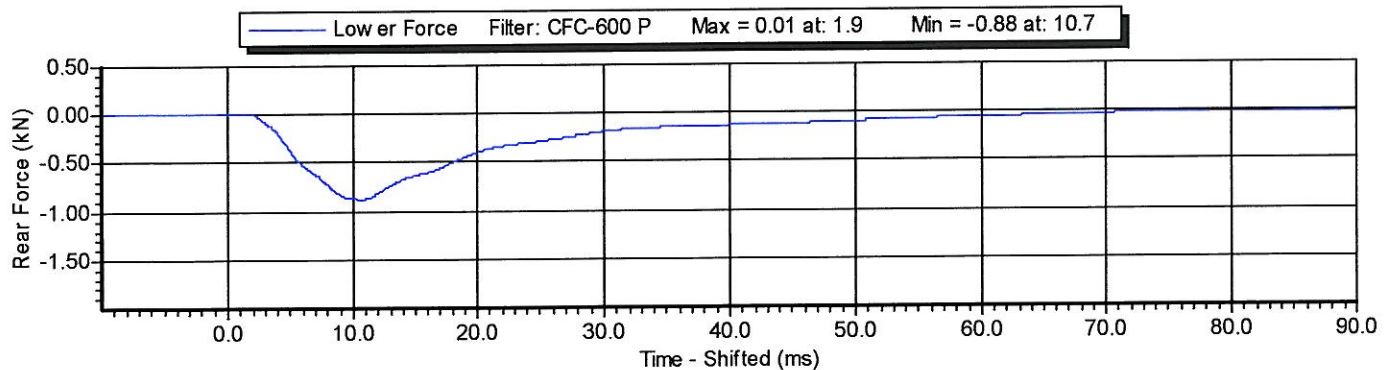
Front Abdominal Force



Middle Abdominal Force



Rear Abdominal Force



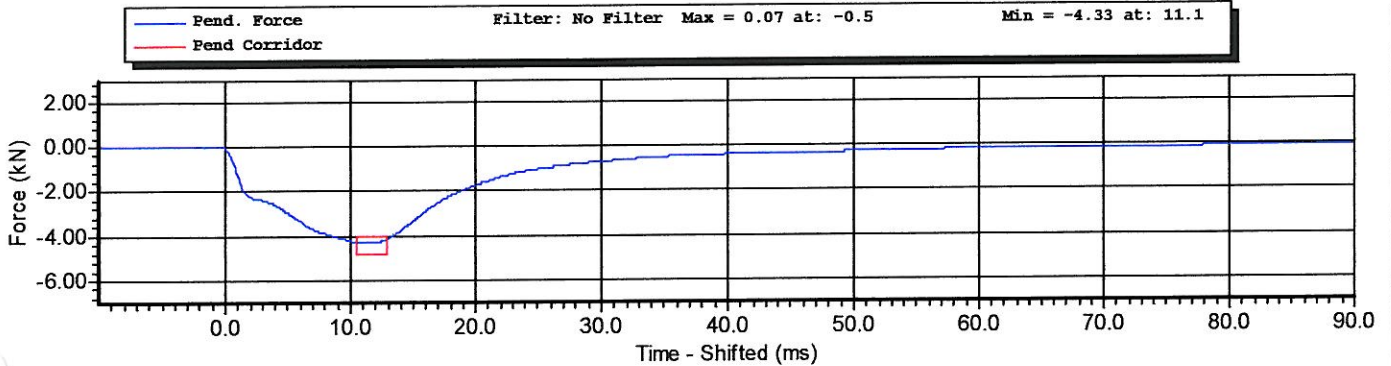


Denton Technical Center

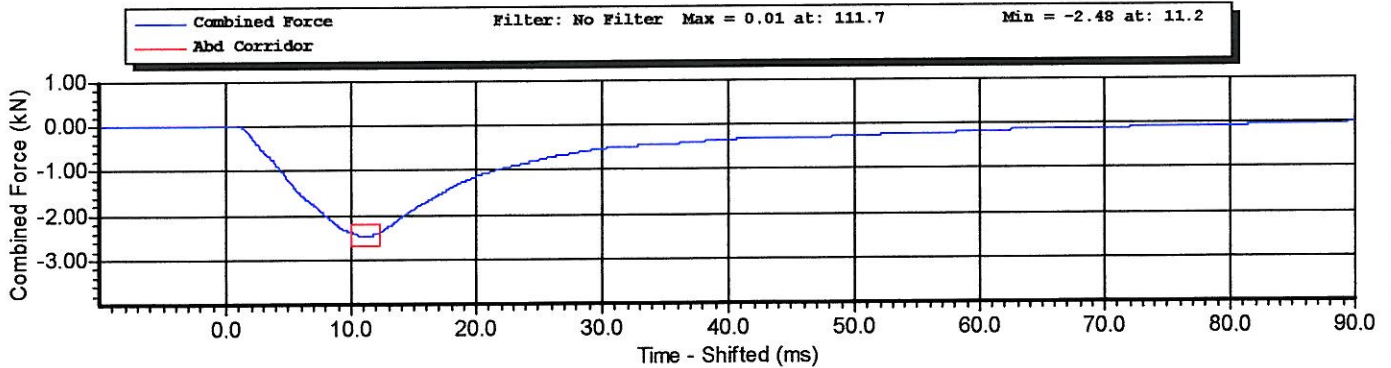
1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

Test Name:	Abdominal Impact	Revision:	12/14/2006
Test Name:		Spec Type:	NHTSA
ATD Type:	ES-2re		
ATD Serial Number:	F033		
Test Number:	1	Test Date:	5/13/2009
		Test Time:	7:35:49 AM
Component Part Number	Component Serial Number		
455-4001	7136		

Pendulum Force



Combined Abdominal Force



Test ID: XF7136

Test Time: 7:35:49 AM

Test Date: 5/13/2009



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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:	XJ7033	Test Date:	5/13/2009
Test Number:	1	Test Time:	7:51:49 AM

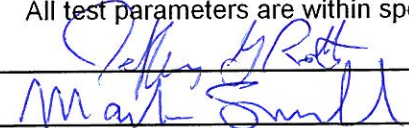
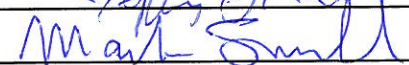
Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number
455-4003	7033

Comments:
LEFT

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.8 deg C P
Humidity	10 -- 70	39 %RH P
Velocity	4.20 -- 4.40	4.32 m/s P
Peak Pendulum Force	-5.40 -- -4.70	-5.05 kN P
Time at Peak Pendulum Force	11.80 -- 16.10	12.74 ms P
Peak Pubic Symphysis Force	-1.59 -- -1.23	-1.52 kN P
Time at Peak Pubic Symphysis Force	12.20 -- 17.00	14.34 ms P

All test parameters are within specifications

Technician:	JR	Signature:	
Supervisor:	MS	Signature:	



Test ID: **XJ7033**

Test Time: **7:51:49 AM**

Test Date: **5/13/2009**



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	61A-750-10-360-XY	A021717	4/3/2009
Denton	3096	456	3/6/2009



Test ID: XJ7033

Test Time: 7:51:49 AM

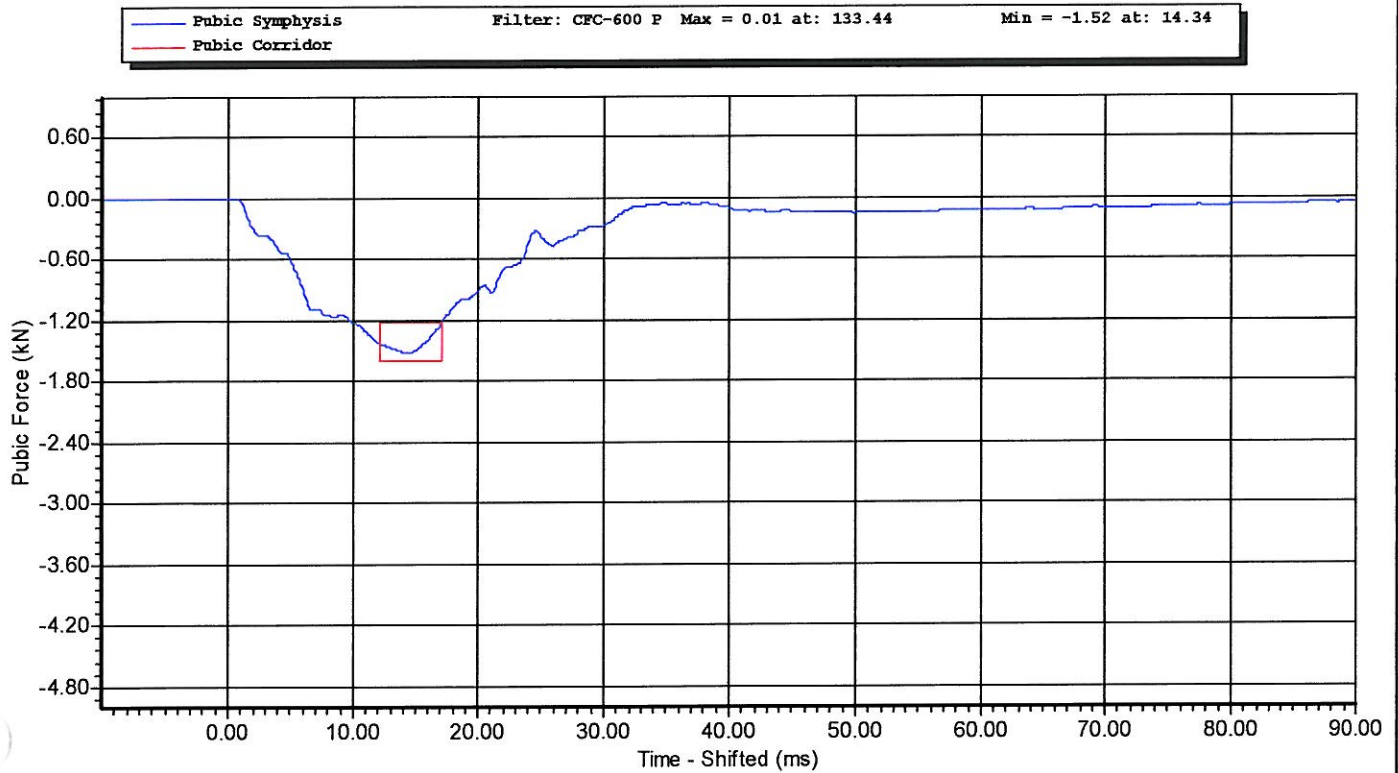
Test Date: 5/13/2009



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Pubic Symphysis Force



Test ID: XJ7033

Test Time: 7:51:49 AM

Test Date: 5/13/2009

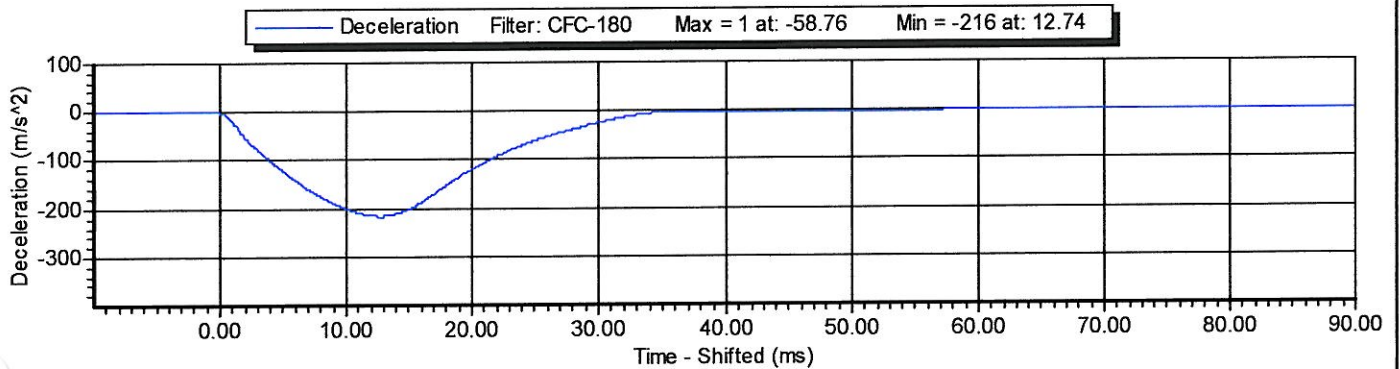


Denton Technical Center

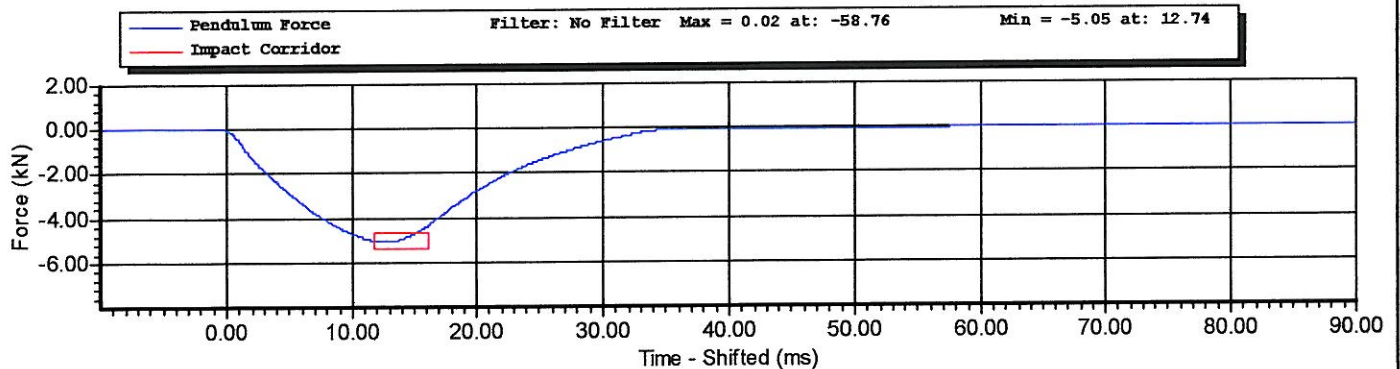
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Test Name:	Pelvis Impact	Revision:	12/14/2006
Test Name:		Spec Type:	NHTSA
ATD Type:	ES-2re		
ATD Serial Number:	F033		
Test Number:	1	Test Date:	5/13/2009
		Test Time:	7:51:49 AM
Component Part Number	Component Serial Number		
455-4003	7033		

Pendulum Accelerometer



Pendulum Force



Test ID: **XJ7033**

Test Time: **7:51:49 AM**

Test Date: **5/13/2009**

CALIBRATION TEST RESULTS

POST TEST

SID IIs NO.: 297

CONFIGURED FOR LEFT SIDE IMPACT

**DENTON TECHNICAL CENTER**

DTC Form (IAW ISO-17025)

RMA Evaluation Report

1965 Larchwood, Troy, Michigan 48083

Tel: (248) 528-9889 Fax: (248) 528-8494

Document Number: DTC-TLF012

Revision Date: 1/30/09

Revision Level: 5

Customer: Calspan

Certificate No.: 511090297**DTC RMA#: 14047****RDI RMA#:****Dummy Type: SID-IIs-BLD****Serial Number: 0297****Mechanical Status:****Condition as Received:**☒ In Tolerance ☐ Out of Tolerance**Condition as Returned:**☒ In Tolerance ☐ Out of Tolerance**Electrical Status (MUX):** ☒ Not Applicable**Condition as Received:**☐ In Tolerance ☐ Out of Tolerance**Condition as Returned:**☐ In Tolerance ☐ Out of Tolerance**Testing Requirements IAW: CFR 49, 572, V**

	Test Description	S/N	Status
1	Lateral Head Drop	1330	Passed
2	Lateral Neck Bending	700	Passed
3	Thorax Impact w/ Arm	485	Passed
4	Thorax Impact w/o Arm	485	Passed
5	Shoulder Impact	295	Passed
6	Abdominal Impact	485	Passed
7	Pelvis Impact, Acet.	868	Passed
8	Pelvis Impact, Iliac	868	Passed
9			
10			
11			

Torque Wrench: 1100814903**Comments:**

Installed New Pelvis Plug S/N = 9795 After Impact Test

Incoming Appearance:Head Assembly ☒ Good ☐ DamagedNeck Assembly ☒ Good ☐ DamagedUpper Torso Assembly ☒ Good ☐ DamagedLower Torso Assembly ☒ Good ☐ DamagedLeft Arm Assembly ☒ Good ☐ DamagedRight Arm Assembly ☐ Good ☐ DamagedLeft Leg Assembly ☒ Good ☐ DamagedRight Leg Assembly ☒ Good ☐ Damaged**Comments:**

N/A

Comments:

Customer shipping ATD 5-5-09 Need back 05-15-09



Denton Technical Center

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VERIFICATION REPORT

Test Name:	Head Drop	Revision:	12/14/2006
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-IIs Level 'D'		
ATD Serial Number:	297		
Test ID:	RD1330	Test Date:	5/9/2009
Test Number:	1	Test Time:	11:10:01 AM

Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number
Head Skin - 180-1002	1330

Comments:
LEFT

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	20.6 deg C P
Humidity	10 -- 70	45 %RH P
Resultant Acceleration	115.0 -- 137.0	132.3 g P
Oscillation	0.0 -- 15.0	8.8 % P
Lateral Acceleration	-15.0 -- 15.0	-2.0 g P

All test parameters are within specifications

Technician:	JSR	Signature:	<i>John Rozzi</i>
Supervisor:	MS	Signature:	<i>Mark Smelt</i>

Test ID: RD1330

Test Time: 11:10:01 AM

Test Date: 5/9/2009



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	12/16/2008
Endevco	7264D-2000	11558	8/12/2008
Endevco	7264D-2000	11553	8/12/2008
Endevco	7264D-2000	11569	8/18/2008

Test ID: **RD1330**

Test Time: **11:10:01 AM**

Test Date: **5/9/2009**

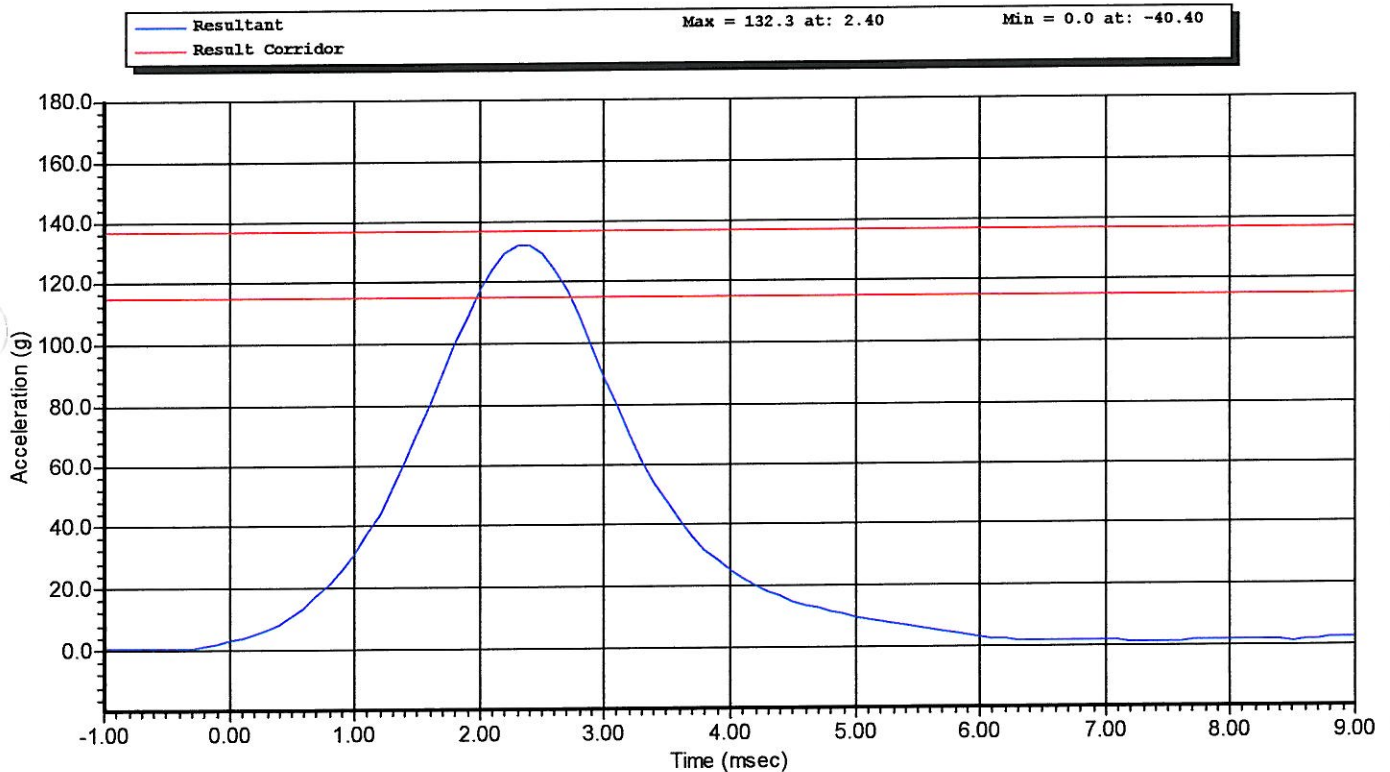


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Test Name:	Head Drop	Revision:	12/14/2006
Test Name:		Spec Type:	NHTSA
ATD Type:	SID-IIs Level 'D'		
ATD Serial Number:	297		
Test Number:	1	Test Date:	5/9/2009
		Test Time:	11:10:01 AM
Component Part Number	Component Serial Number		
Head Skin - 180-1002	1330		

Resultant Acceleration



Test ID: RD1330

Test Time: 11:10:01 AM

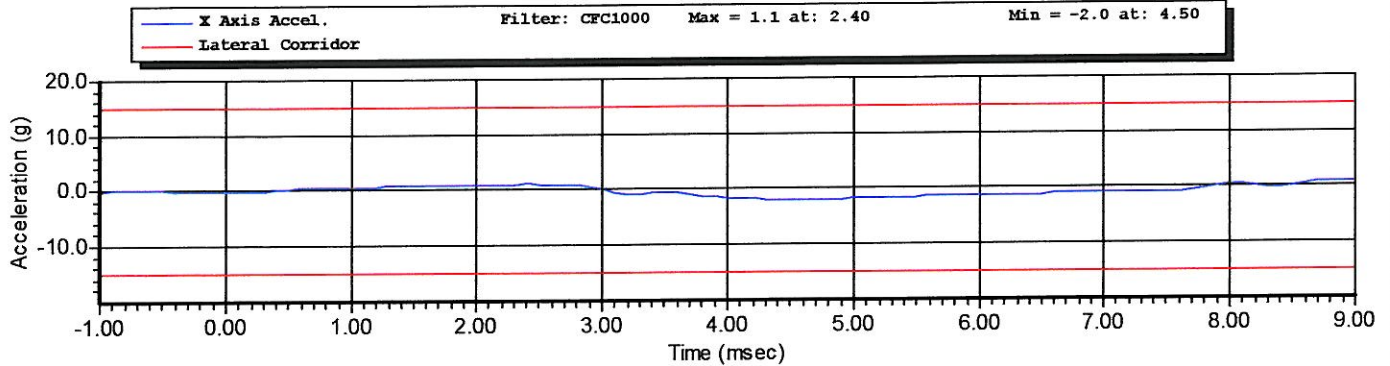
Test Date: 5/9/2009



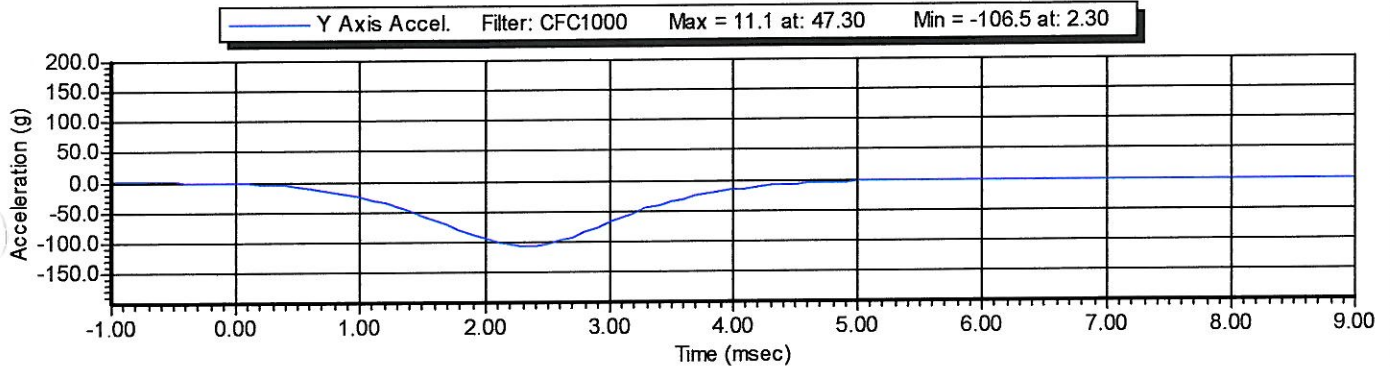
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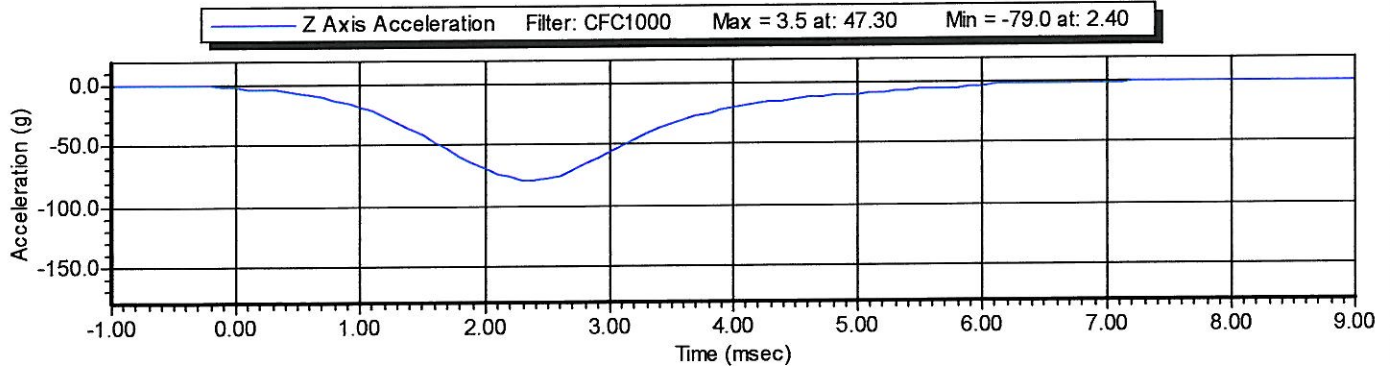
X Axis Acceleration



Y Axis Acceleration



Z Axis Acceleration



Test ID: RD1330

Test Time: 11:10:01 AM

Test Date: 5/9/2009



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

VERIFICATION REPORT

Test Name:	Neck Pendulum	Revision:	12/14/2006
Sub Test Name:	Left Side	Spec Type:	NHTSA
ATD Type:	SID-IIs Level 'D'		
ATD Serial Number:	297		
Test ID:	RA0700	Test Date:	5/11/2009
Test Number:	1	Test Time:	6:30:13 AM

Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number
Neck - 180-2000	0700
Torque Wrench s/n: 0106800459	

Comments:
LEFT
8X7-2 @ 84°

Test Parameters		Test Specifications		Test Results	
Temperature		20.6	-- 22.2	21.2 deg C	P
Humidity		10	-- 70	43 %RH	P
Velocity		5.51	-- 5.63	5.61 m/s	P
Pendulum Impulse at	10 ms	2.20	-- 2.80	2.32 m/s	P
Pendulum Impulse at	15 ms	3.30	-- 4.10	3.52 m/s	P
Pendulum Impulse at	20 ms	4.40	-- 5.40	4.74 m/s	P
Pendulum Impulse at	25 ms	5.40	-- 6.10	5.78 m/s	P
Pendulum Impulse between 25 and	100 ms	5.50	-- 6.20	5.89 m/s	P

Test ID: RA0700

Test Time: 6:30:13 AM

Test Date: 5/11/2009



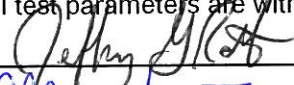
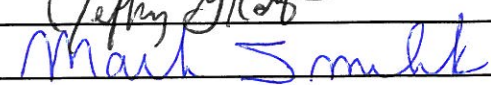
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VERIFICATION REPORT

Test Parameters	Test Specifications	Test Results
Max D Plane Rotation	71.0 -- 81.0	72.5 degrees P
Time at Max Rotation	50.0 -- 70.0	60.1 ms P
Moment about OC	-44.0 -- -36.0	-36.1 Nm P
Moment Decay to Zero	102.0 -- 126.0	109.7 ms P

All test parameters are within specifications

Technician: **JR** Signature: 
Supervisor: **MS** Signature: 

Test ID: **RA0700**

Test Time: **6:30:13 AM**

Test Date: **5/11/2009**



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	61A-750-10-360-XY	A021724	10/14/2008
Denton	1716A	1999	11/14/2008
Denton	1716A	1999	11/14/2008
DentonATD	78051-342	114	10/28/2008
DentonATD	78051-342	113	10/28/2008
DentonATD	78051-342	112	10/28/2008

Test ID: **RA0700**

Test Time: **6:30:13 AM**

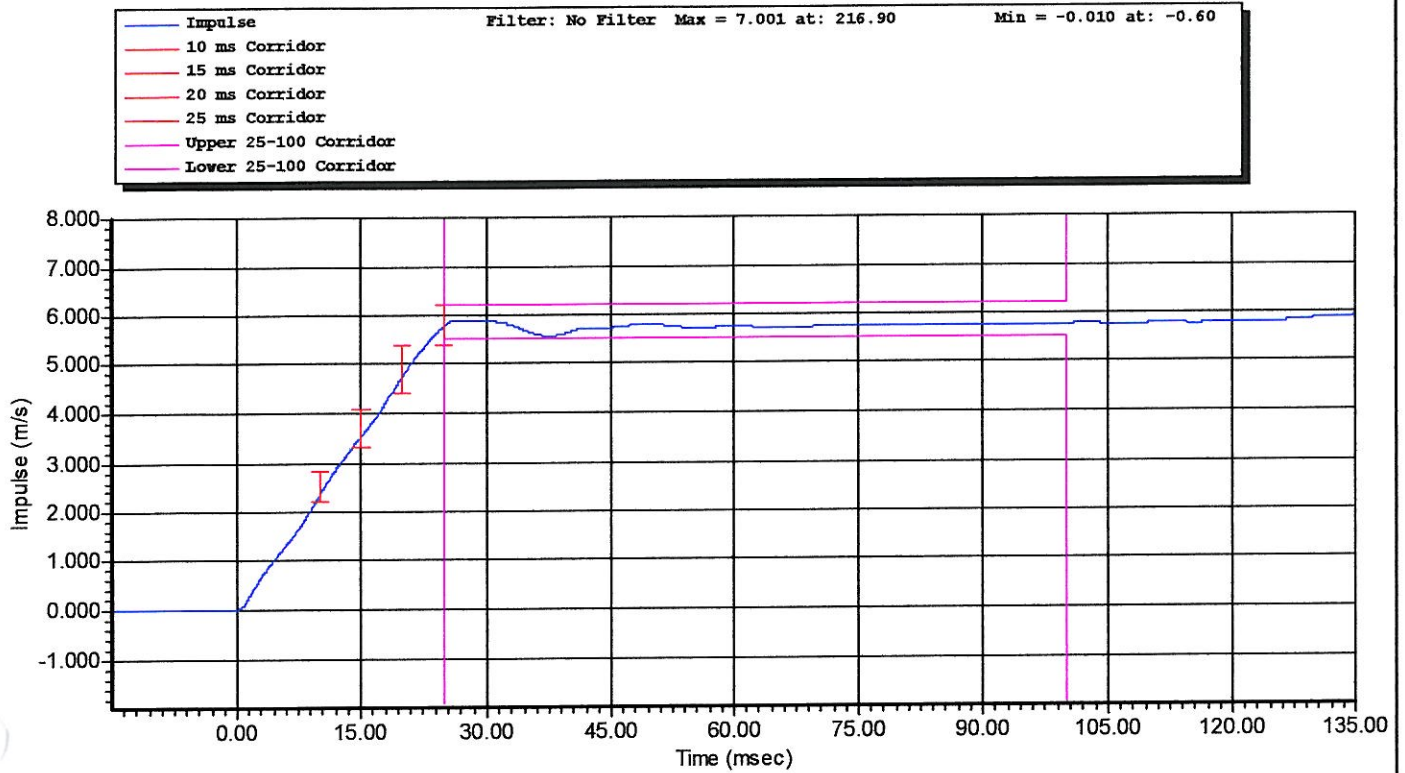
Test Date: **5/11/2009**



Denton Technical Center

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Pendulum Impulse



Test ID: RA0700

Test Time: 6:30:13 AM

Test Date: 5/11/2009



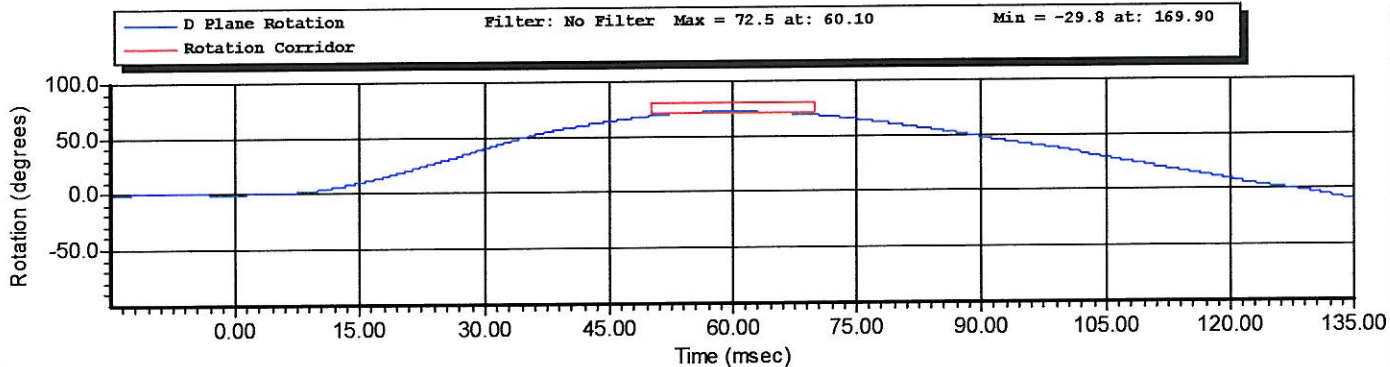
Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

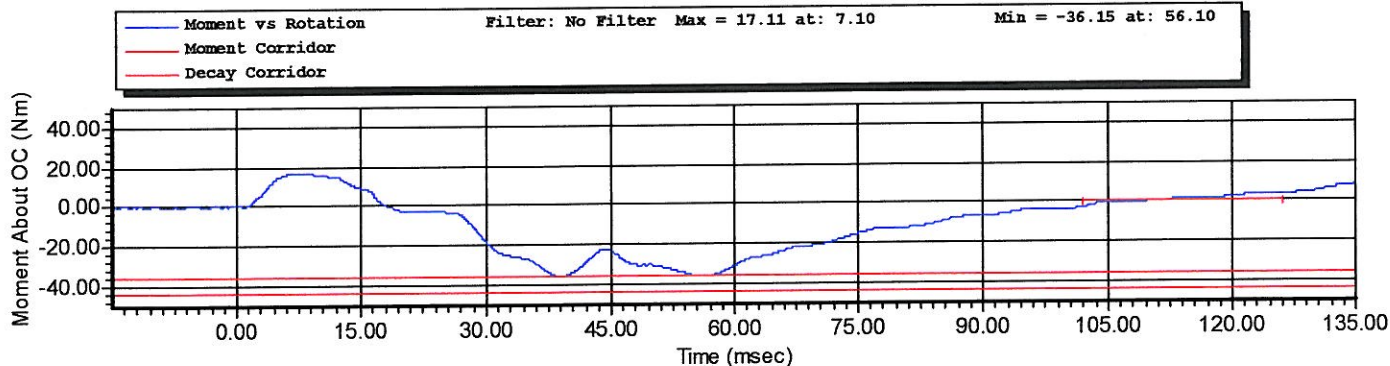
Test Name:	Neck Pendulum	Revision:	12/14/2006
Sub Test Name:	Left Side	Spec Type:	NHTSA
ATD Type:	SID-IIs Level 'D'		
ATD Serial Number:	297		
Test Number:	1	Test Date:	5/11/2009
		Test Time:	6:30:13 AM

Component Part Number	Component Serial Number
Neck - 180-2000	0700

D Plane Rotation



Moment About Occipital Condyle



Test ID: RA0700

Test Time: 6:30:13 AM

Test Date: 5/11/2009



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VERIFICATION REPORT

Test Name:	Shoulder Impact	Revision:	12/14/2006
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-IIs Level 'D'		
ATD Serial Number:	297		
Test ID:	RM0485	Test Date:	5/8/2009
Test Number:	1	Test Time:	7:22:20 AM

Condition As Received: **CALSPAN**
User Field 2:
User Field 3:

Component Part Number Component Serial Number
Shoulder Rib - 180-3355 **259**

Comments:
LEFT

Test Parameters	Test Specifications			Test Results	
Temperature	20.6	--	22.2	21.2 deg C	P
Humidity	10.0	--	70.0	48.5 %RH	P
Velocity	4.30	--	4.50	4.44 m/s	P
Probe Acceleration	14.0	--	18.0	16.3 g	P
Shoulder Deflection	30.0	--	37.0	30.8 mm	P
Upper Spine Acceleration	17.0	--	19.0	20.1 g	F
FTSS Proposed Upper Spine Acceleration	17.0	--	21.0	20.1 g	P

All test parameters are NOT within specifications

Technician: **MS** Signature: Mark Smeltz
Supervisor: **MS** Signature: Mark Smeltz

Test ID: **RM0485**

Test Time: **7:22:20 AM**

Test Date: **5/8/2009**



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	61A-750-10-360-XY	A021717	4/3/2009
Denton	180-3885	1169	9/16/2008
Endevco	7264-2000	P52064	12/19/2008

Test ID: **RM0485**

Test Time: **7:22:20 AM**

Test Date: **5/8/2009**

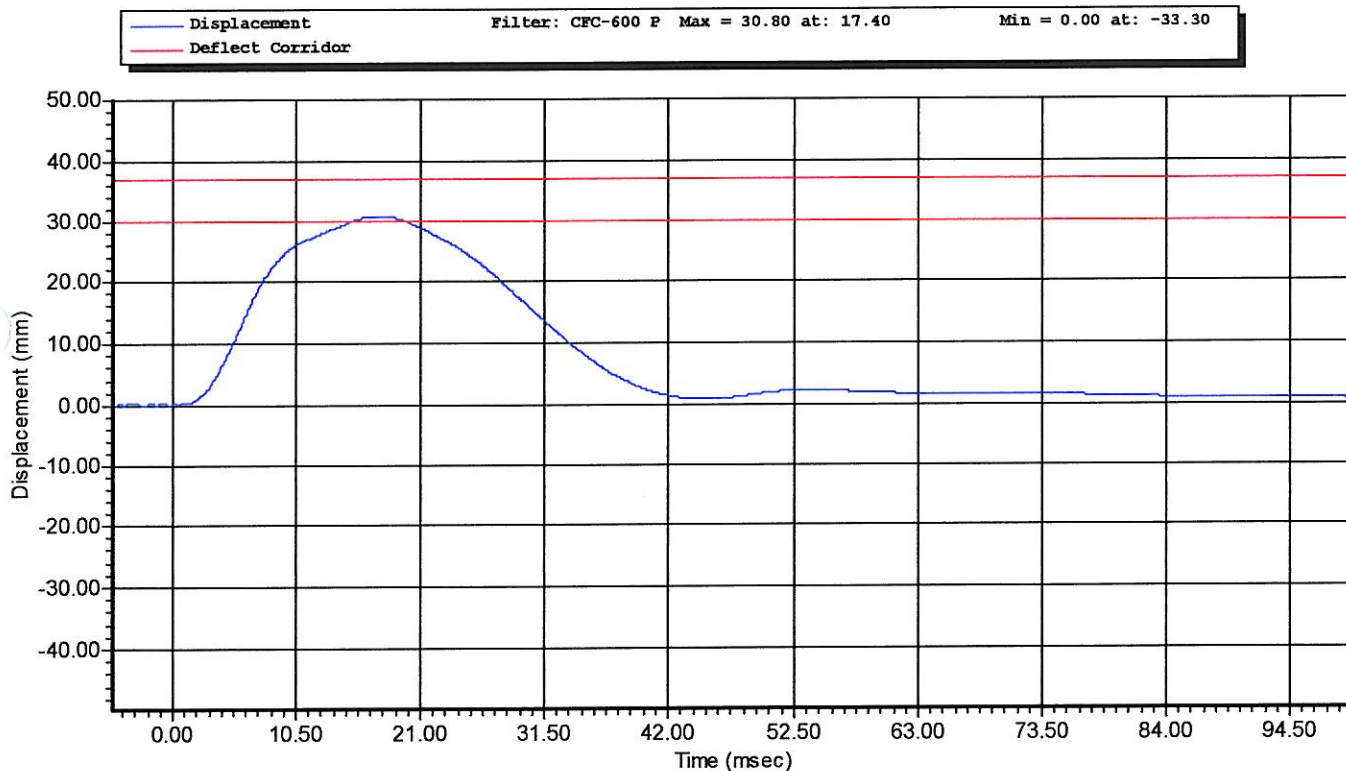


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Test Name:	Shoulder Impact	Revision:	12/14/2006
Test Name:		Spec Type:	NHTSA
ATD Type:	SID-IIs Level 'D'		
ATD Serial Number:	297		
Test Number:	1	Test Date:	5/8/2009
		Test Time:	7:22:20 AM
Component Part Number	Component Serial Number		
Shoulder Rib - 180-3355	259		

Shoulder Displacement



Test ID: RM0485

Test Time: 7:22:20 AM

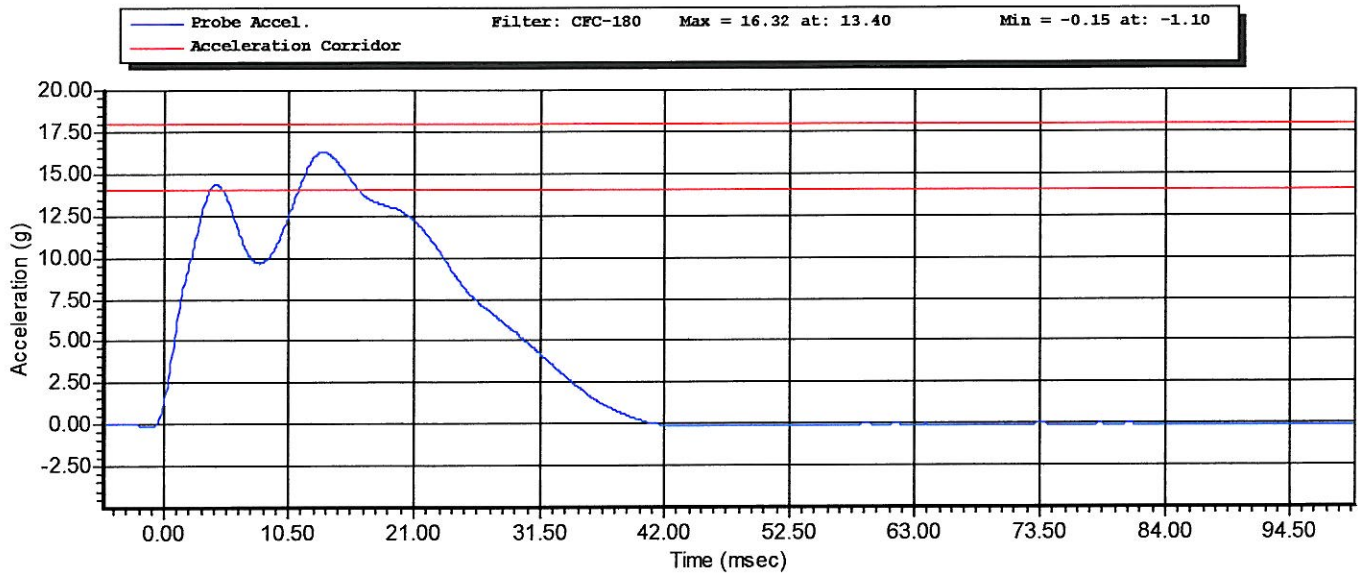
Test Date: 5/8/2009



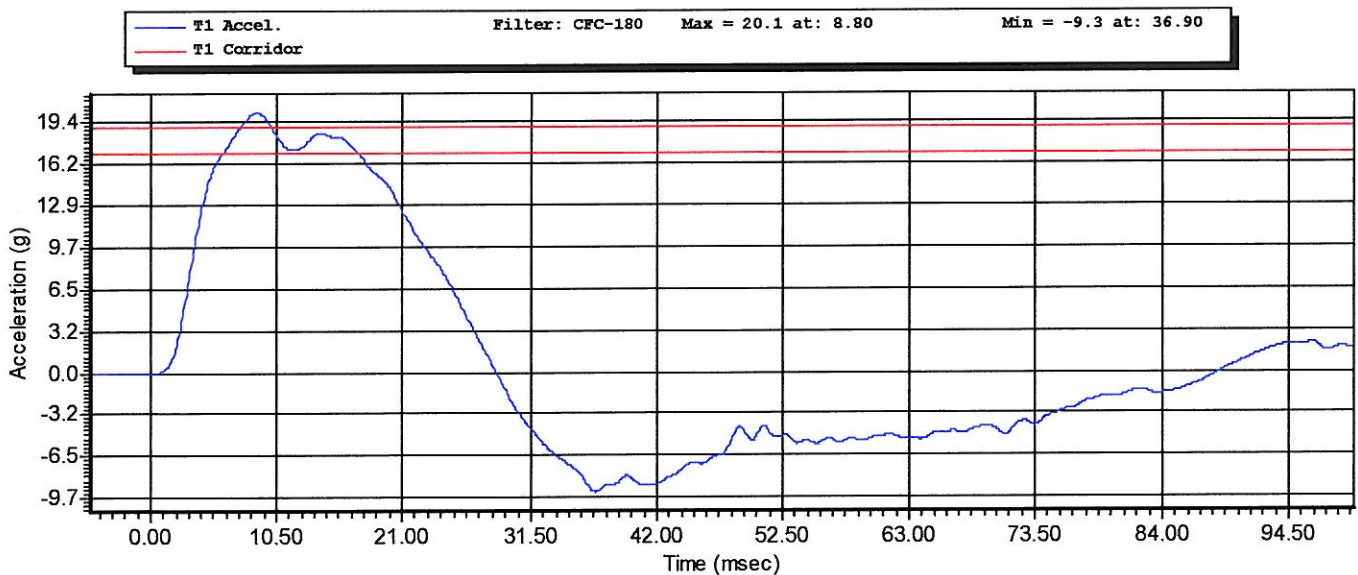
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Probe Accelerometer



T1 Accelerometer



Test ID: RM0485

Test Time: 7:22:20 AM

Test Date: 5/8/2009



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VERIFICATION REPORT

Test Name:	Thorax Impact without Arm	Revision:	12/14/2006
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-IIs Level 'D'		
ATD Serial Number:	297		
Test ID:	RO0485	Test Date:	5/8/2009
Test Number:	2	Test Time:	9:33:13 AM

Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number
Thorax Rib #1 - 180-3362	2009
Thorax Rib #2 - 180-3362	2010
Thorax Rib #3 - 180-3362	2029

Comments:
LEFT

Test Parameters	Test Specifications			Test Results	
Temperature	20.6	--	22.2	21.7 deg C	P
Humidity	10	--	70	50 %RH	P
Velocity	4.20	--	4.40	4.35 m/s	P
Probe Acceleration	14.0	--	18.0	16.3 g	P
Upper Thorax Rib Deflection	33.0	--	40.0	35.4 mm	P
Mid Thorax Rib Deflection	39.0	--	45.0	39.9 mm	P
Lower Thorax Rib Deflection	36.0	--	43.0	37.3 mm	P
Upper Spine Acceleration	14.0	--	17.0	15.2 g	P
Lower Spine Acceleration	7.0	--	10.0	8.9 g	P

Test ID: RO0485

Test Time: 9:33:13 AM

Test Date: 5/8/2009



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VERIFICATION REPORT

Test Parameters	Test Specifications	Test Results
FTSS Proposed Lower Spine Acceleration	7.0 -- 11.0	8.9 g P

All test parameters are within specifications

Technician: **JSR**

Signature: *John Rozich*

Supervisor: **MS**

Signature: *Mark Smith*

Test ID: **RO0485**

Test Time: **9:33:13 AM**

Test Date: **5/8/2009**



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	61A-750-10-360-XY	A021717	4/3/2009
Denton	180-3885	1164	9/16/2008
Denton	180-3885	1149	9/16/2008
Denton	180-3885	1132	9/16/2008
Endevco	7264-2000	P52064	12/19/2008
Endevco	7264-2000	P58833	12/19/2008

Test ID: **RO0485**

Test Time: **9:33:13 AM**

Test Date: **5/8/2009**

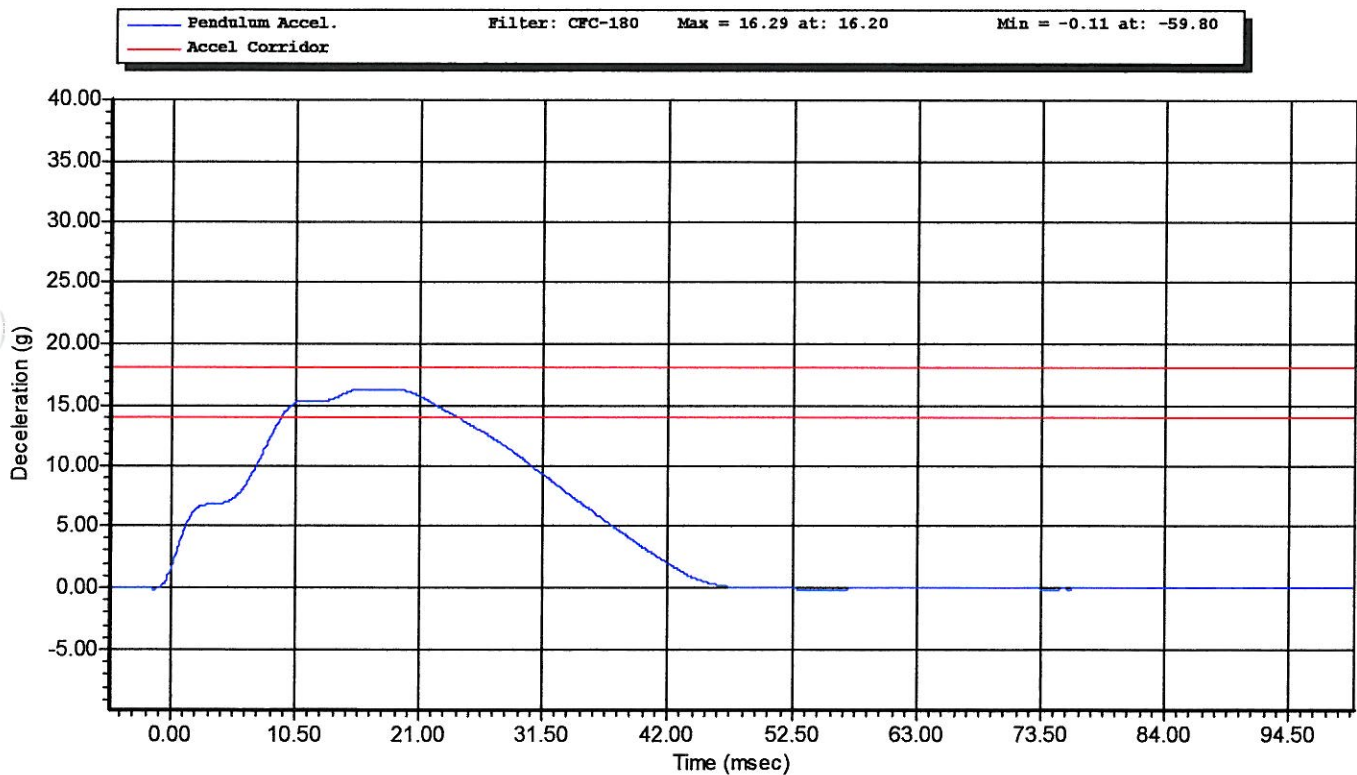


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Test Name:	Thorax Impact without Arm	Revision:	12/14/2006
.b Test Name:		Spec Type:	NHTSA
ATD Type:	SID-IIs Level 'D'		
ATD Serial Number:	297		
Test Number:	2	Test Date:	5/8/2009
		Test Time:	9:33:13 AM
Component Part Number	Component Serial Number		
Thorax Rib #1 - 180-3362	2009		

Pendulum Accelerometer



Test ID: RO0485

Test Time: 9:33:13 AM

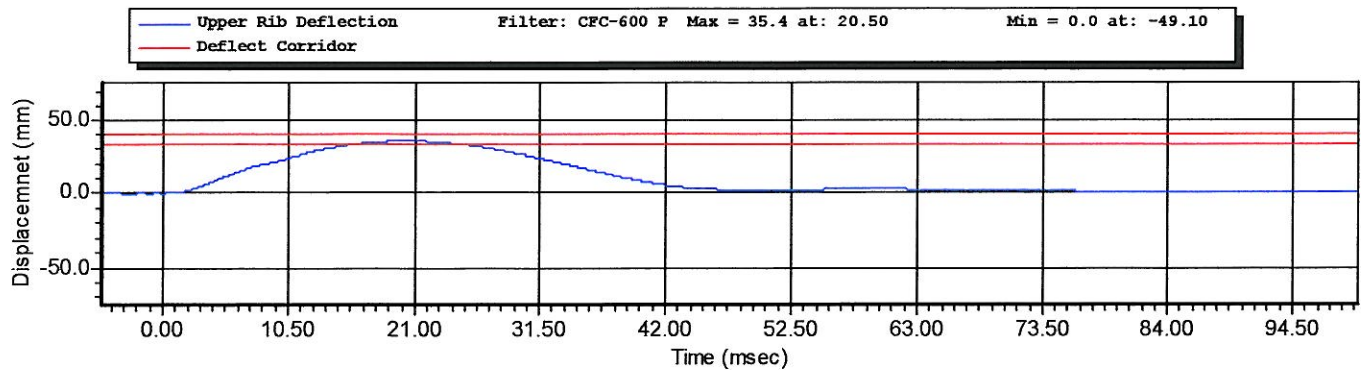
Test Date: 5/8/2009



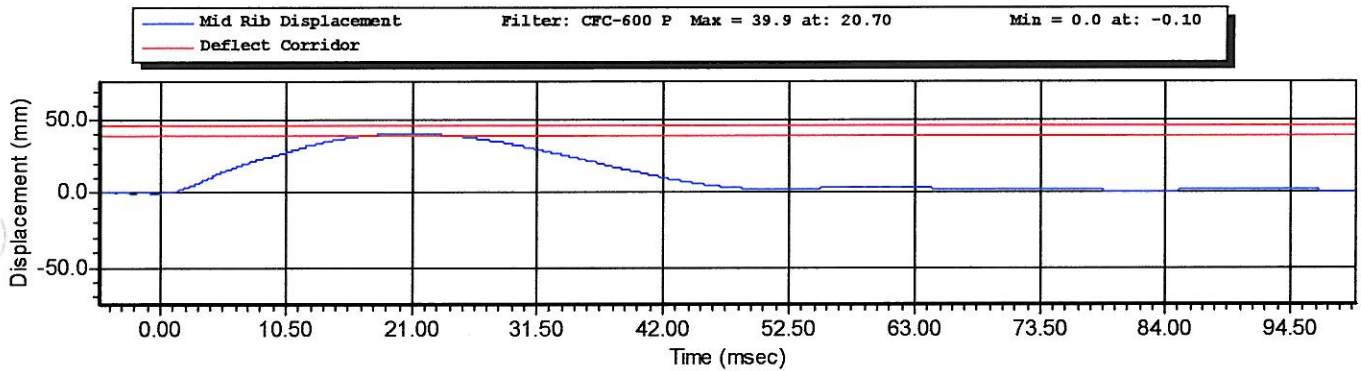
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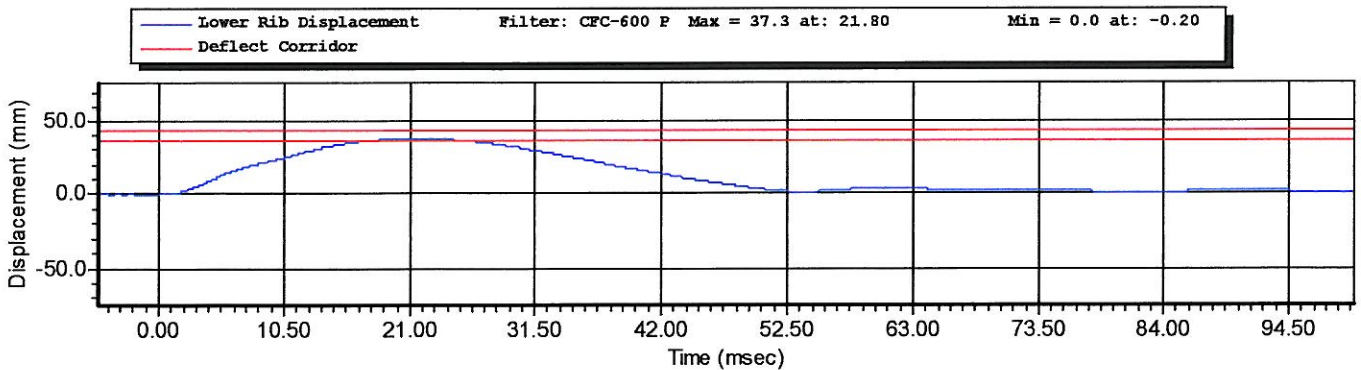
Upper Thorax Displacement



Mid Thorax Displacement



Lower Thorax Displacement

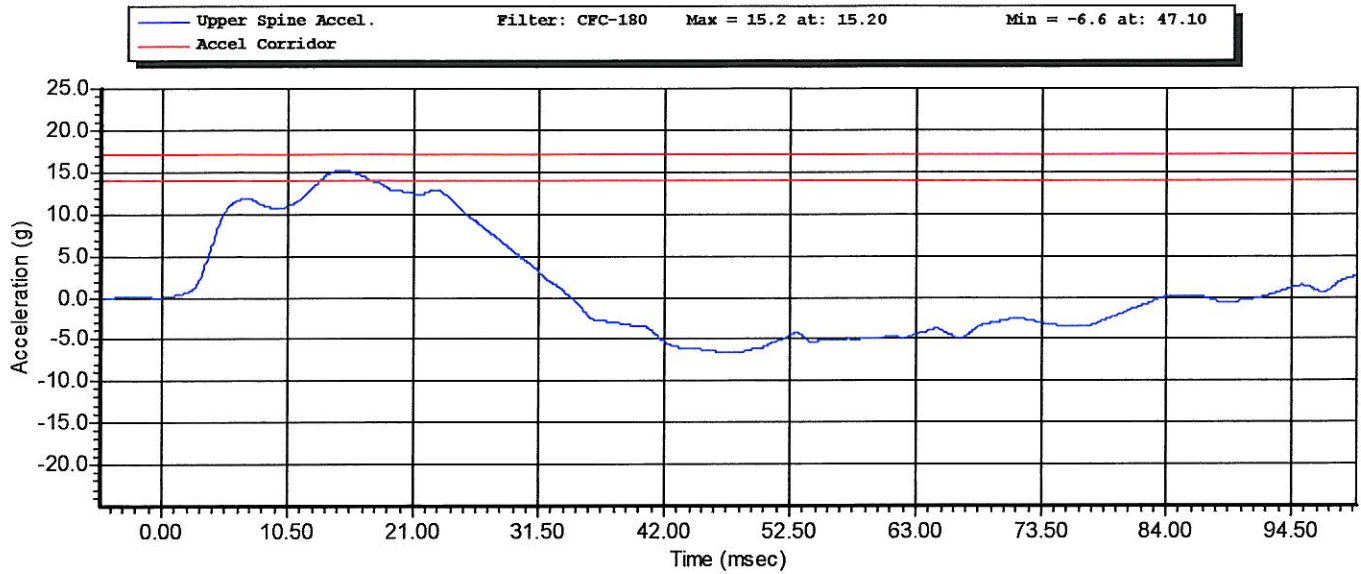




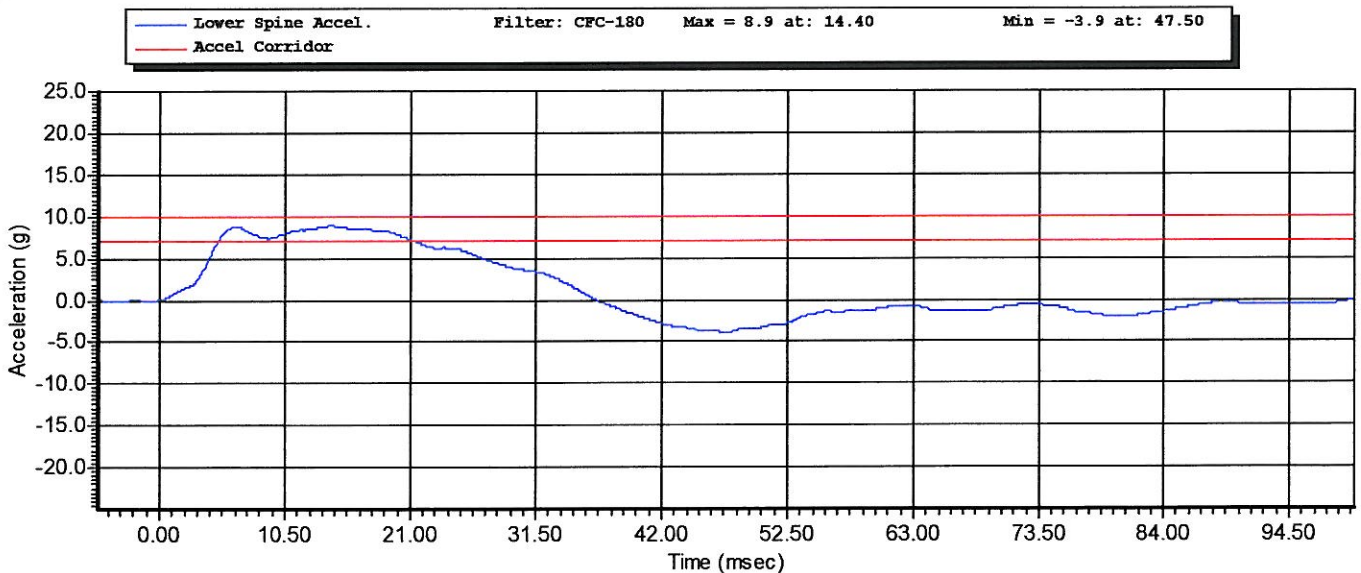
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Upper Spine Acceleration



Lower Spine Acceleration





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VERIFICATION REPORT

Test Name:	Abdominal Impact	Revision:	12/14/2006
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-IIs Level 'D'		
ATD Serial Number:	297		
Test ID:	RF0485	Test Date:	5/8/2009
Test Number:	3	Test Time:	11:25:01 AM

Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number
Abdo Rib #1 - 180-3362	1748
Abdo Rib #2 - 180-3362	1747

Comments:
LEFT

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.6 deg C P
Humidity	10 -- 70	52 %RH P
Velocity	4.30 -- 4.50	4.45 m/s P
Probe Acceleration	12.0 -- 16.0	15.3 g P
Upper Abdominal Rib Deflection	39.0 -- 47.0	41.5 mm P
Lower Abdominal Rib Deflection	37.0 -- 46.0	39.6 mm P
Lower Spine Acceleration	11.0 -- 14.0	11.9 g P
FTSS Proposed Lower Spine Acceleration	9.0 -- 14.0	11.9 g P

All test parameters are within specifications

Technician:	JSR	Signature:	<i>John J. Rozich</i>
Supervisor:	MS	Signature:	<i>Mark Small</i>

Test ID: **RF0485**

Test Time: **11:25:01 AM**

Test Date: **5/8/2009**



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	61A-750-10-360-XY	A021717	4/3/2009
Denton	180-3885	1130	9/16/2008
Denton	180-3885	1125	9/16/2008
Endevco	7264-2000	P58833	12/19/2008

Test ID: **RF0485**

Test Time: **11:25:01 AM**

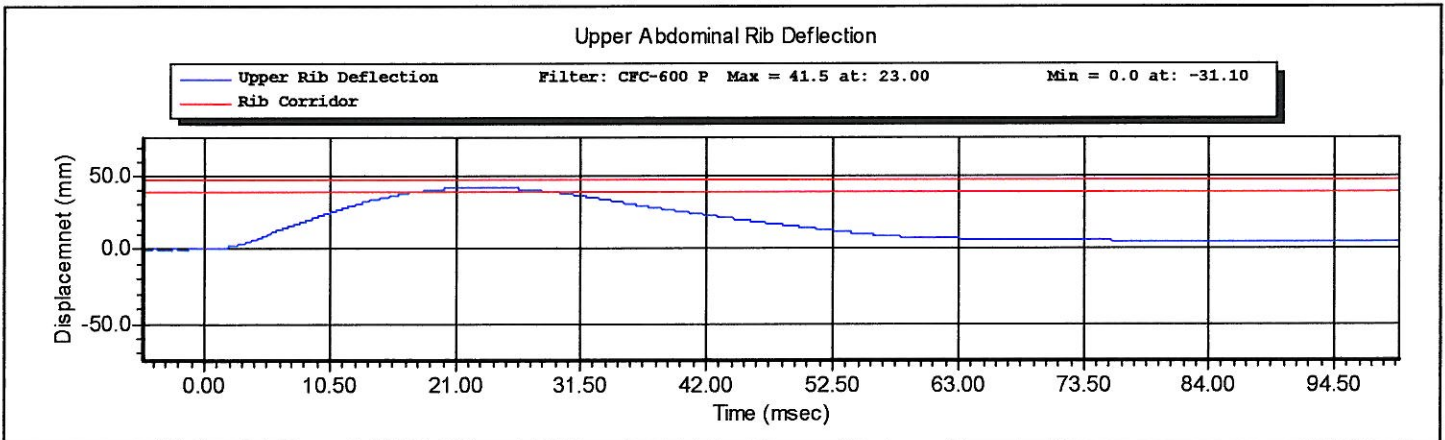
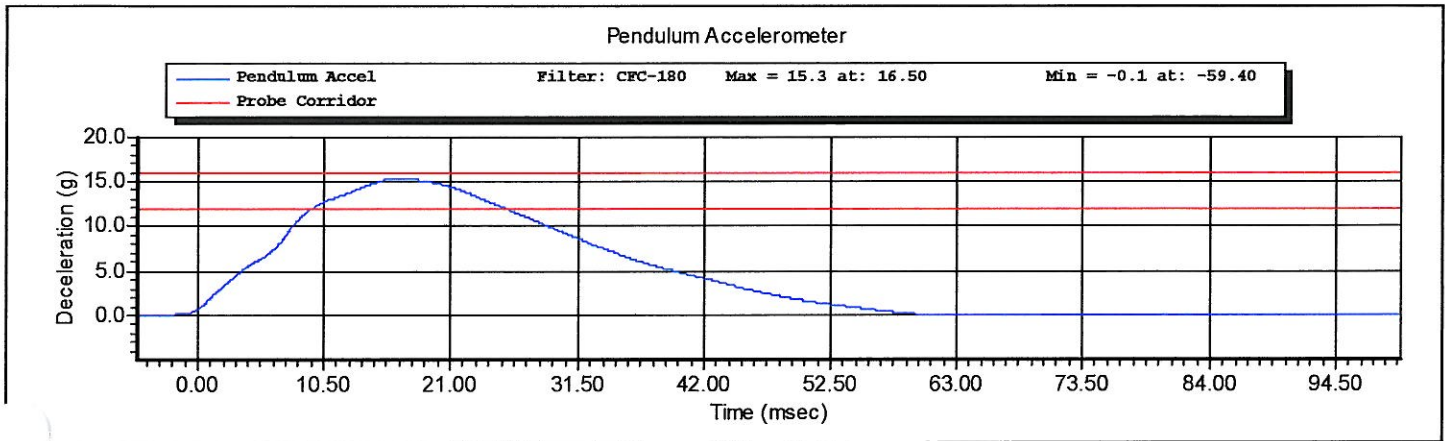
Test Date: **5/8/2009**



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Test Name:	Abdominal Impact	Revision:	12/14/2006
Test Name:		Spec Type:	NHTSA
ATD Type:	SID-IIs Level 'D'		
ATD Serial Number:	297		
Test Number:	3	Test Date:	5/8/2009
		Test Time:	11:25:01 AM
Component Part Number	Component Serial Number		
Abdo Rib #1 - 180-3362	1748		



Test ID: **RF0485**

Test Time: **11:25:01 AM**

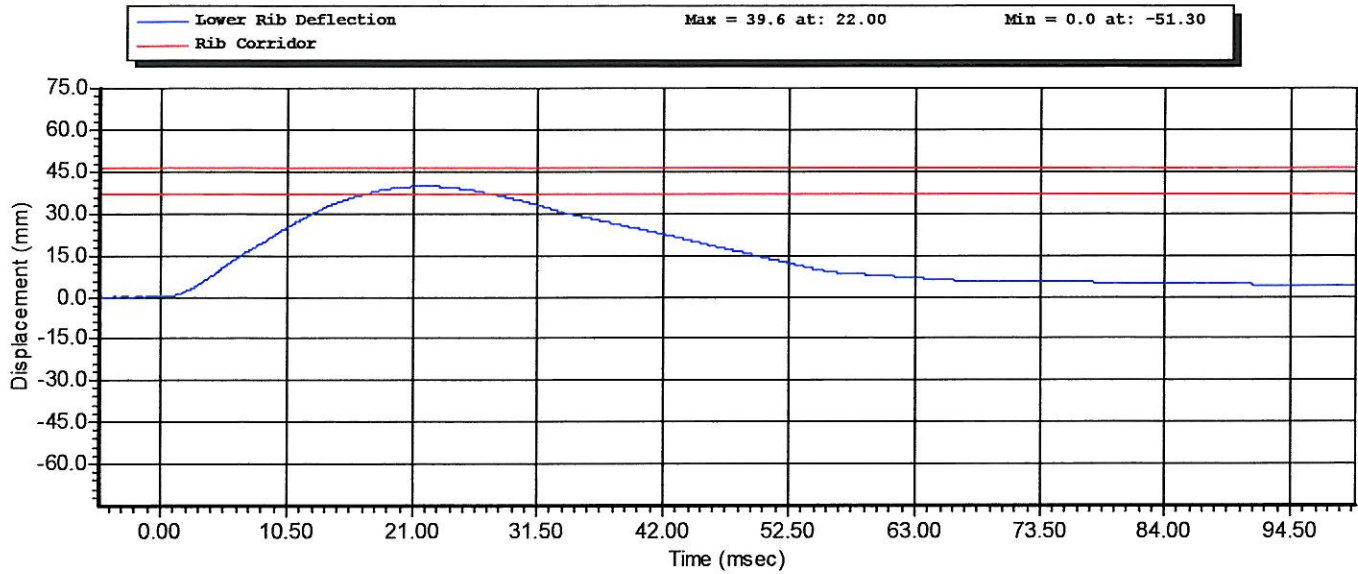
Test Date: **5/8/2009**



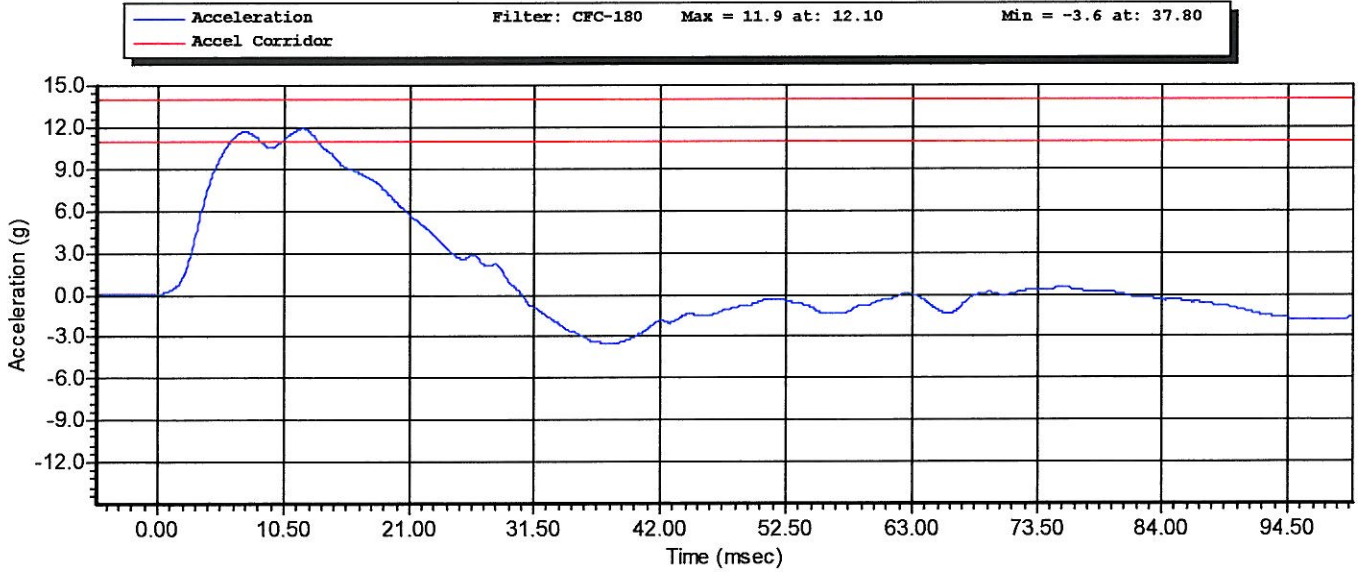
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Lower Abdominal Rib Deflection



Lower Spine Acceleration



Test ID: RF0485

Test Time: 11:25:01 AM

Test Date: 5/8/2009



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VERIFICATION REPORT

Test Name:	Thorax Impact with Arm	Revision:	12/14/2006
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-IIs Level 'D'		
ATD Serial Number:	297		
Test ID:	RN0485	Test Date:	5/8/2009
Test Number:	3	Test Time:	1:19:50 PM

Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number
Thorax Rib #1 - 180-3362	2009
Thorax Rib #2 - 180-3362	2010
Thorax Rib #3 - 180-3362	2029
Shoulder Rib - 180-3355	259
Arm - 180-6011	940

Comments:
FT

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	22.0 deg C P
Humidity	10 -- 70	51 %RH P
Velocity	6.60 -- 6.80	6.66 m/s P
Probe Acceleration	31.0 -- 36.0	34.1 g P
Upper Thorax Rib Deflection	26.0 -- 32.0	27.3 mm P
Mid Thorax Rib Deflection	30.0 -- 36.0	31.5 mm P
Lower Thorax Rib Deflection	32.0 -- 38.0	34.0 mm P
Upper Spine Acceleration	34.0 -- 43.0	37.5 g P

Test ID: RN0485

Test Time: 1:19:50 PM

Test Date: 5/8/2009



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VERIFICATION REPORT

Test Parameters	Test Specifications	Test Results
Lower Spine Acceleration	28.0 -- 35.0	34.3 g P
Shoulder Deflection	31.0 -- 40.0	35.3 mm P

All test parameters are within specifications

Technician: **JSR**

Signature: 

Supervisor: **MS**

Signature: 

Test ID: **RN0485**

Test Time: **1:19:50 PM**

Test Date: **5/8/2009**



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	61A-750-10-360-XY	A021717	4/3/2009
Denton	180-3885	1164	9/16/2008
Denton	180-3885	1149	9/16/2008
Denton	180-3885	1132	9/16/2008
Endevco	7264-2000	P52064	12/19/2008
Endevco	7264-2000	P58833	12/19/2008
Denton	180-3885	1169	9/16/2008

Test ID: **RN0485**

Test Time: **1:19:50 PM**

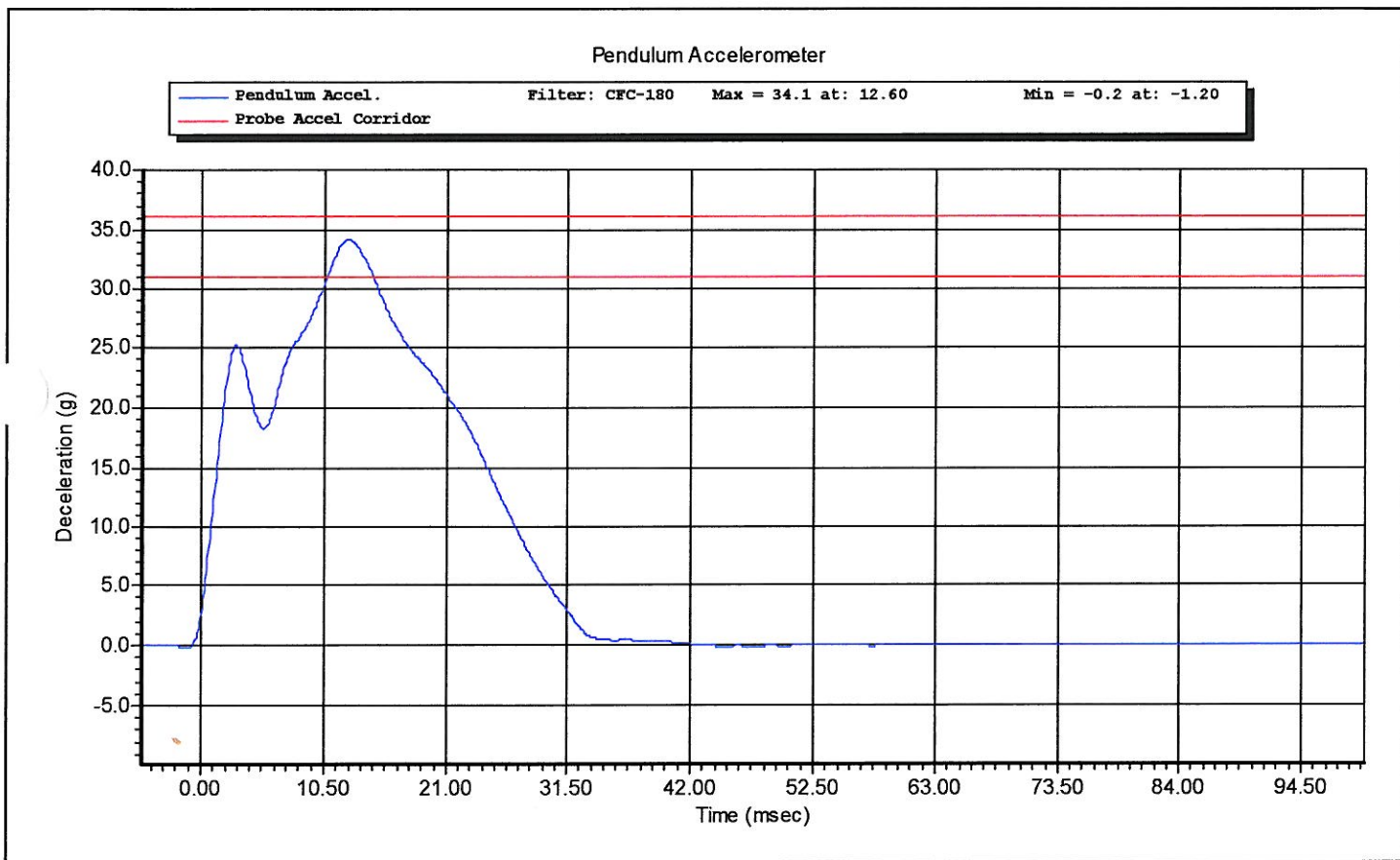
Test Date: **5/8/2009**



Denton Technical Center

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Test Name:	Thorax Impact with Arm	Revision:	12/14/2006
Job Test Name:		Spec Type:	NHTSA
ATD Type:	SID-IIs Level 'D'		
ATD Serial Number:	297		
Test Number:	3	Test Date:	5/8/2009
		Test Time:	1:19:50 PM
Component Part Number	Component Serial Number		
Thorax Rib #1 - 180-3362	2009		



Test ID: RN0485

Test Time: 1:19:50 PM

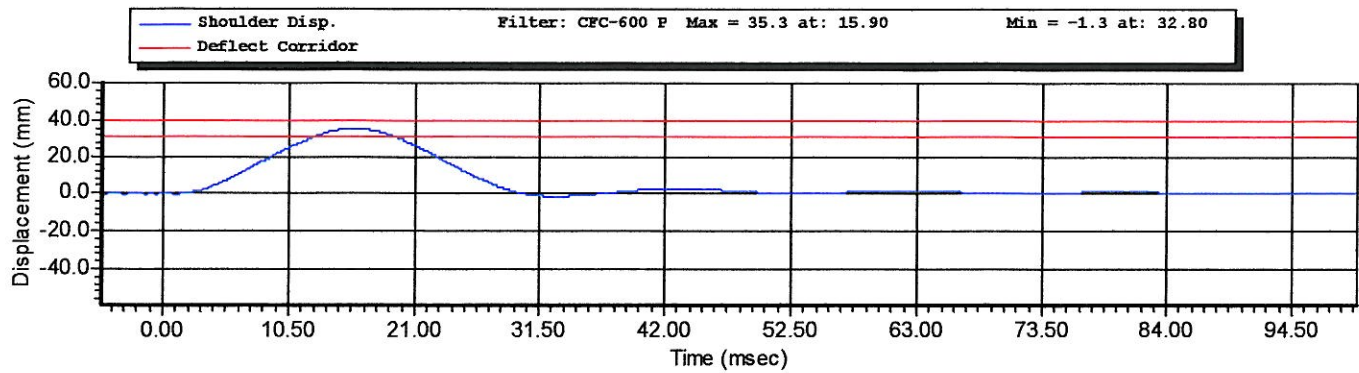
Test Date: 5/8/2009



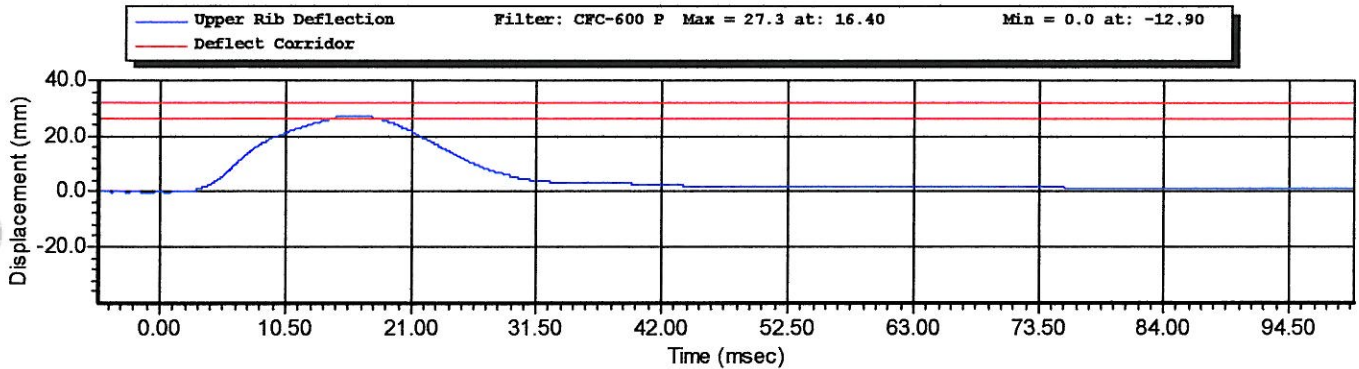
Denton Technical Center

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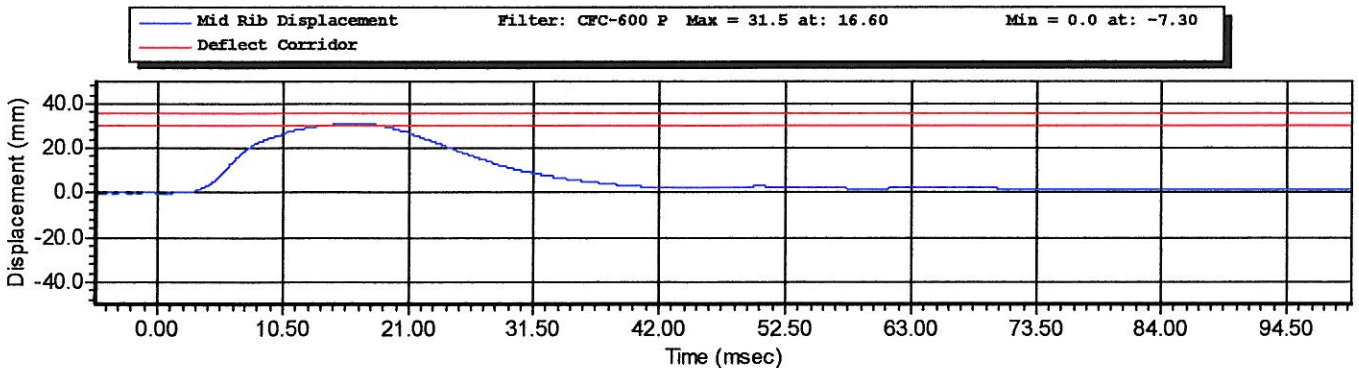
Shoulder Displacement



Upper Thorax Displacement



Mid Thorax Displacement

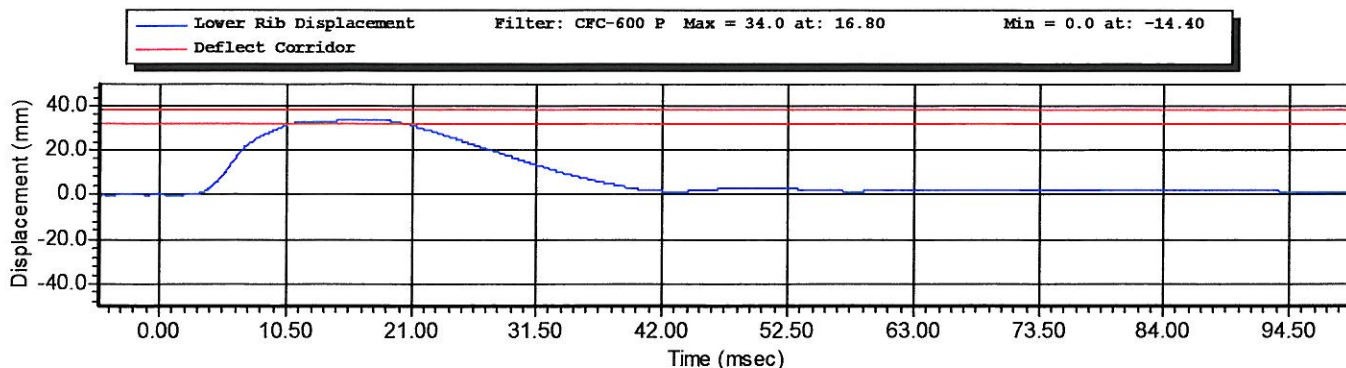




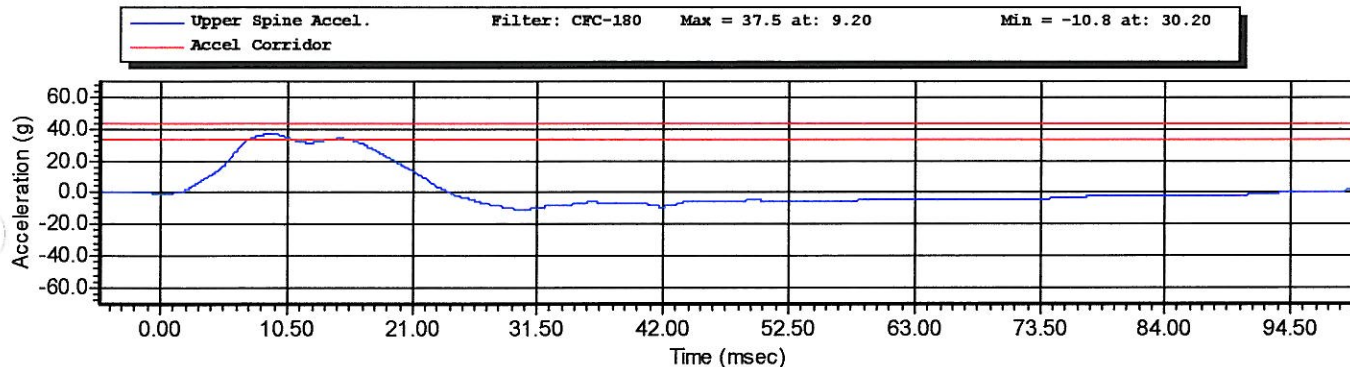
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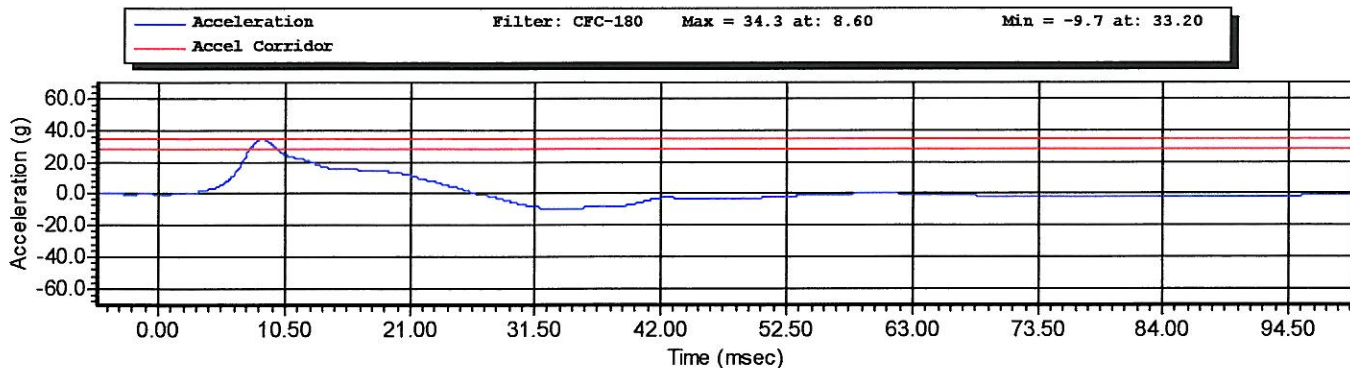
Lower Thorax Displacement



Upper Spine Acceleration



Lower Spine Acceleration





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VERIFICATION REPORT

Test Name:	Pelvis	Revision:	12/14/2006
Sub Test Name:	Acetabulum Impact	Spec Type:	NHTSA
ATD Type:	SID-IIs Level 'D'		
ATD Serial Number:	297		
Test ID:	RJ0868	Test Date:	5/9/2009
Test Number:	3	Test Time:	9:11:32 AM

Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number
Pelvis Flesh - 180-4343	868
Pelvis Plug - 180-4450	9820

Comments:
LEFT

Test Parameters	Test Specifications			Test Results	
Temperature	20.6	--	22.2	20.7 deg C	P
Humidity	10	--	70	44 %RH	P
Velocity	6.60	--	6.80	6.61 m/s	P
Peak Probe Acceleration	38.0	--	47.0	46.0 g	P
Peak Pelvis Acceleration	41.0	--	50.0	49.5 g	P
FTSS Proposed Peak Pelvis Accel after 5	34.0	--	42.0	41.3 g	P
Peak Acetabulum Force	3.80	--	4.60	4.12 kN	P
FTSS Proposed Peak Acetabulum Force	3.60	--	4.40	4.12 kN	P

All test parameters are within specifications

Technician:	JSR	Signature:	
Supervisor:	MS	Signature:	

Test ID: **RJ0868**

Test Time: **9:11:32 AM**

Test Date: **5/9/2009**



Denton Technical Center

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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	61A-750-10-360-XY	A021717	4/3/2009
Endevco	7264-2000	P51867	12/19/2008
Denton	3249J	266	9/26/2008

Test ID: **RJ0868**

Test Time: **9:11:32 AM**

Test Date: **5/9/2009**

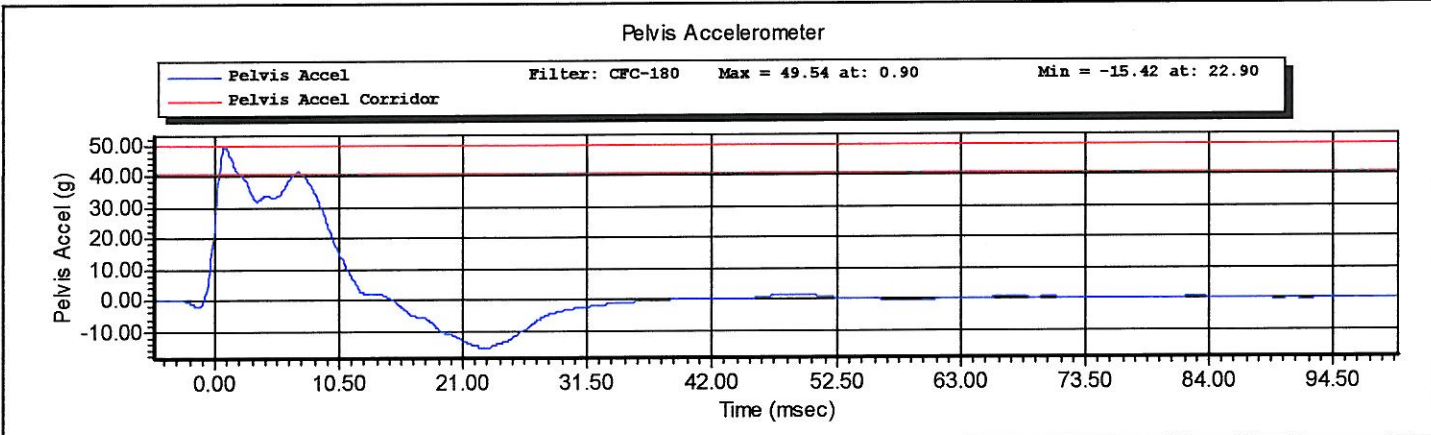
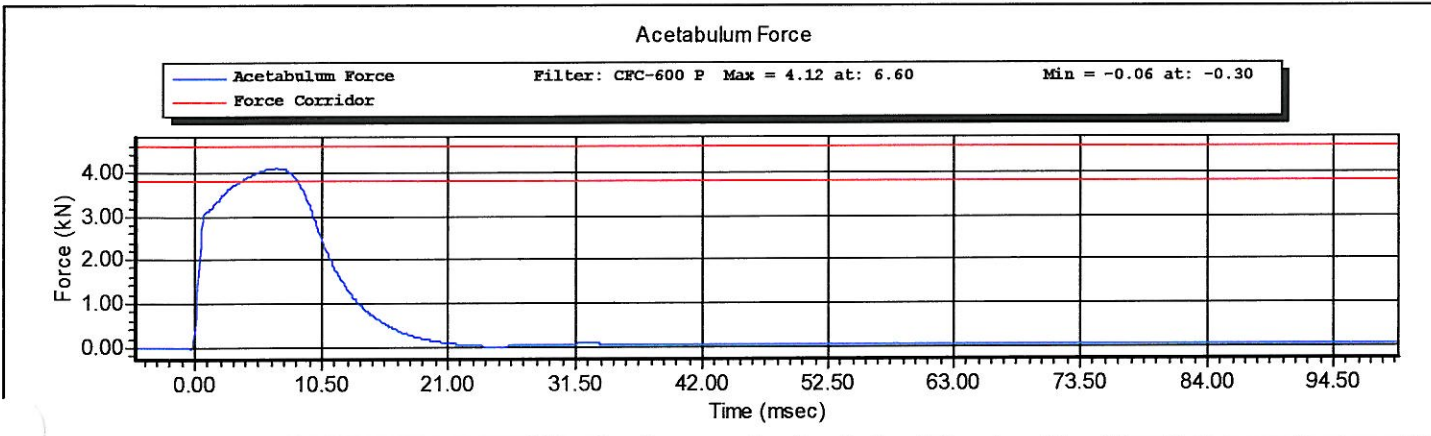


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Test Name:	Pelvis	Revision:	12/14/2006
Sub Test Name:	Acetabulum Impact	Spec Type:	NHTSA
ATD Type:	SID-IIs Level 'D'		
ATD Serial Number:	297		
Test Number:	3	Test Date:	5/9/2009
		Test Time:	9:11:32 AM

Component Part Number	Component Serial Number
Pelvis Flesh - 180-4343	868



Test ID: RJ0868

Test Time: 9:11:32 AM

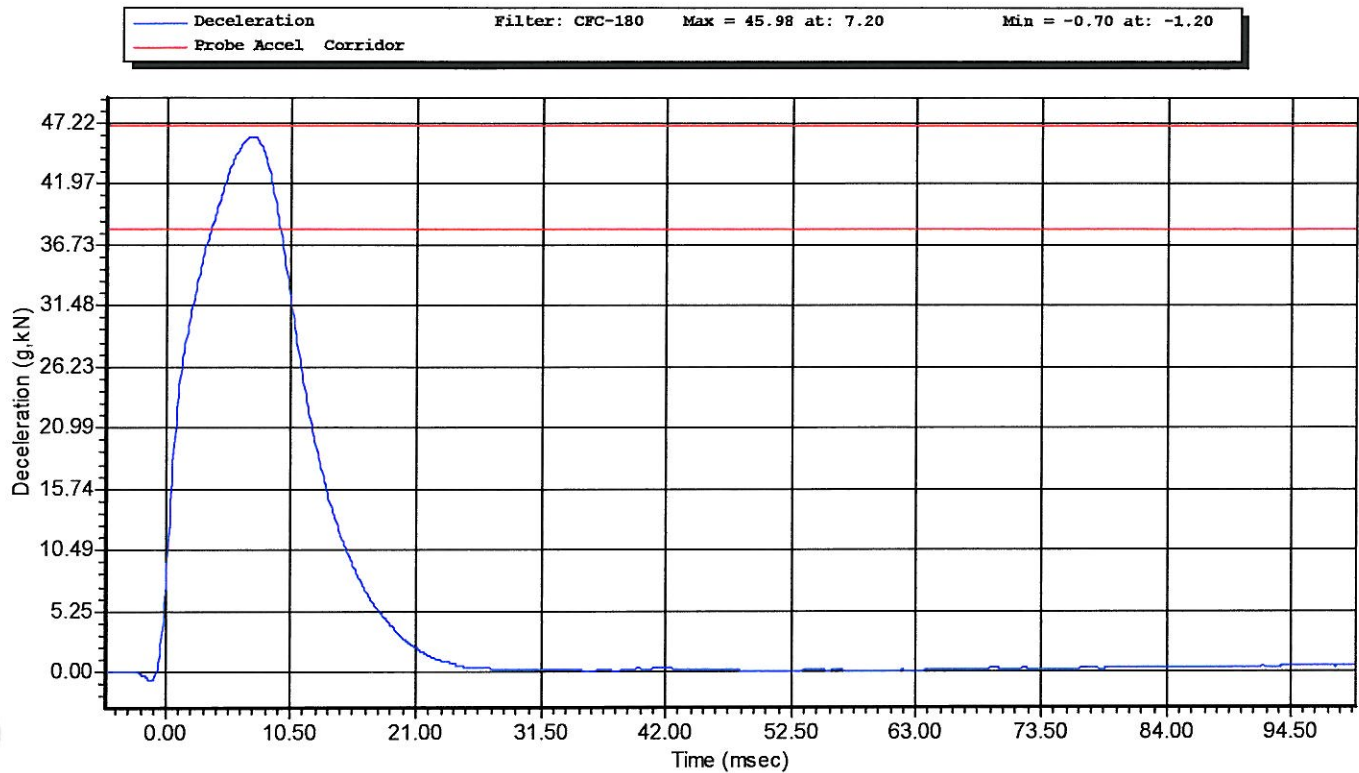
Test Date: 5/9/2009



Denton Technical Center

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Probe Accelerometer



Test ID: **RJ0868**

Test Time: **9:11:32 AM**

Test Date: **5/9/2009**



Denton Technical Center

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VERIFICATION REPORT

Test Name:	Pelvis	Revision:	12/14/2006
Sub Test Name:	Iliac Impact	Spec Type:	NHTSA
ATD Type:	SID-Ils Level 'D'		
ATD Serial Number:	297		
Test ID:	R60868	Test Date:	5/9/2009
Test Number:	1	Test Time:	9:51:26 AM

Condition As Received:	CALSPAN
User Field 2:	
User Field 3:	

Component Part Number	Component Serial Number
Pelvis Flesh - 180-4343	868

Comments:
LEFT

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	20.7 deg C P
Humidity	10 -- 70	48 %RH P
Velocity	4.20 -- 4.40	4.20 m/s P
Peak Probe Acceleration	34.0 -- 40.0	39.9 g P
Peak Pelvis Acceleration	27.0 -- 33.0	29.6 g P
Peak Iliac Force	3.70 -- 4.50	4.30 kN P
FTSS Proposed Peak Iliac Force	3.60 -- 4.40	4.30 kN P

All test parameters are within specifications

Technician:	JSR	Signature:	
Supervisor:	MS	Signature:	

Test ID: **R60868**

Test Time: **9:51:26 AM**

Test Date: **5/9/2009**



Denton Technical Center

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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	99999999	12/16/2008
MSI	61A-750-10-360-XY	A021717	4/3/2009
Endevco	7264-2000	P51867	12/19/2008
Denton	3228J	286	9/24/2008

Test ID: **R60868**

Test Time: **9:51:26 AM**

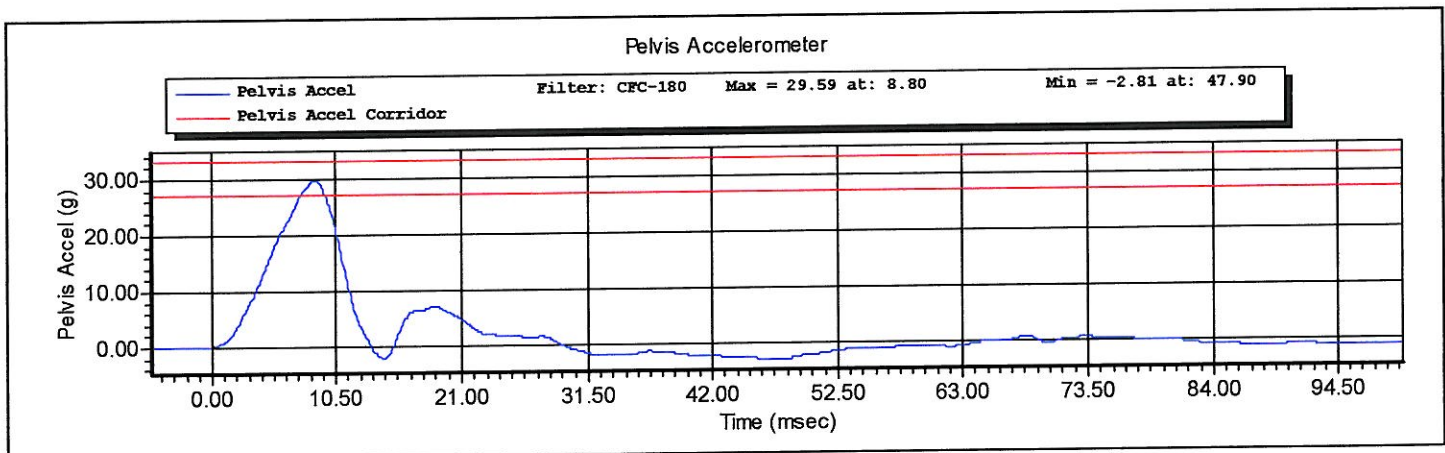
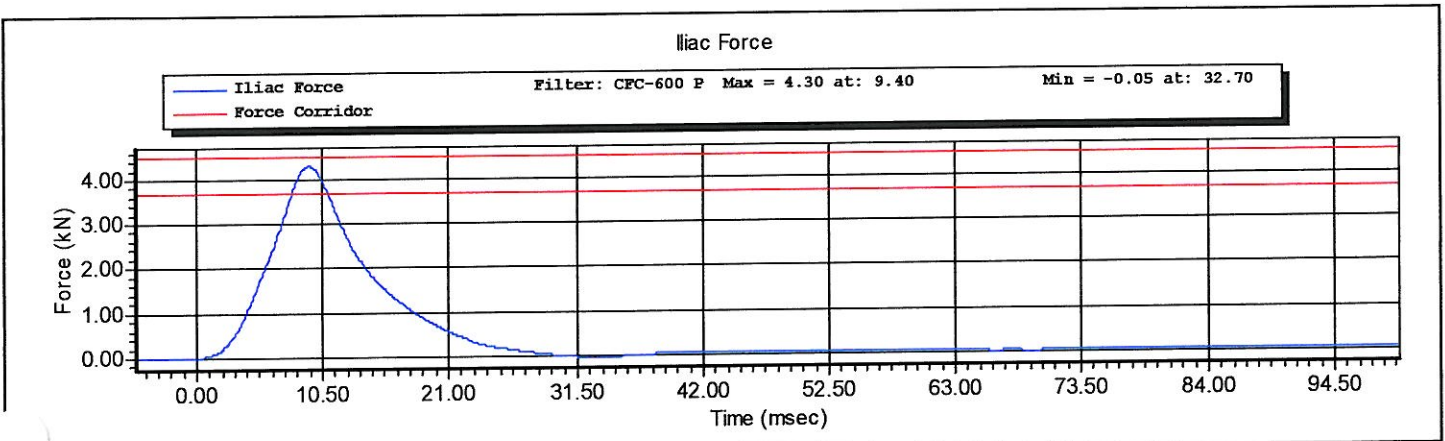
Test Date: **5/9/2009**



Denton Technical Center

1965 Larchwood Troy, Michigan 48063, Phone: (248) 528-9889, Fax: (248) 528-8494

Test Name:	Pelvis	Revision:	12/14/2006
Test Name:	Iliac Impact	Spec Type:	NHTSA
ATD Type:	SID-Ils Level 'D'		
ATD Serial Number:	297		
Test Number:	1	Test Date:	5/9/2009
		Test Time:	9:51:26 AM
Component Part Number	Component Serial Number		
Pelvis Flesh - 180-4343	868		



Test ID: **R60868**

Test Time: **9:51:26 AM**

Test Date: **5/9/2009**

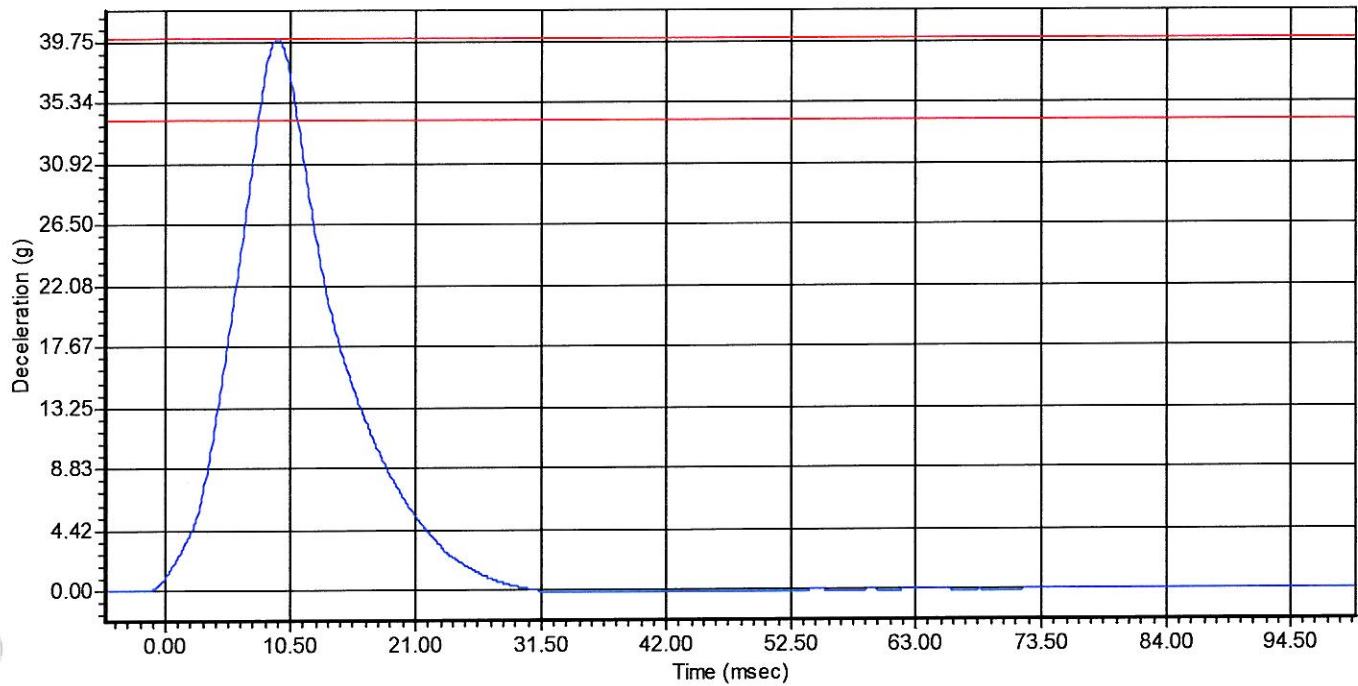


Denton Technical Center

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Probe Accelerometer

Deceleration Filter: CFC-180 Max = 39.92 at: 9.40 Min = -0.15 at: 32.80
Probe Accel Corridor



Test ID: **R60868**

Test Time: **9:51:26 AM**

Test Date: **5/9/2009**

APPENDIX D

TEST EQUIPMENT AND CALIBRATION INFORMATION

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

SID/HIII INSTRUMENTATION

	FRONT SID/HIII NO.: 033		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
HEAD AX	AC-P16535	ENDEVCO	03-Apr-09
HEAD AY	AC-05H10-M16	ENTRAN	06-Mar-09
HEAD AZ	AC-P51949	ENDEVCO	06-Mar-09
HEAD AX (REDUNDANT)	AC-P50088	ENDEVCO	06-Mar-09
HEAD AY (REDUNDANT)	AC-05H31-Z06	ENTRAN	06-Mar-09
HEAD AZ (REDUNDANT)	AC-P51960	ENDEVCO	06-Mar-09
UPPER THORAX RIB DX	DS-179	Honeywell	06-Mar-09
UPPER THORAX RIB DY	DS-185	Honeywell	03-Mar-09
UPPER THORAX RIB DZ	DS-178	Honeywell	06-Mar-09
LOWER SPINE T12 AX	AC-AAMD5	ENDEVCO	06-Mar-09
LOWER SPINE T12 AY	AC-J27457	ENDEVCO	06-Mar-09
LOWER SPINE T12 AZ	AC-J18736	ENDEVCO	06-Mar-09
ABDOMEN FORWARD FY	LC-1524	DENTON	06-Mar-09
ABDOMEN MIDDLE FY	LC-1523	DENTON	06-Mar-09
ABDOMEN REAR FY	LC-1530	DENTON	06-Mar-09
PUBIC SYMPHYSIS FY	LC-456	DENTON	06-Mar-09

	REAR SID/HIII NO.: 297		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
HEAD AX	AC-P38896	ENDEVCO	24-Mar-09
HEAD AY	AC-P52052	ENDEVCO	08-Dec-08
HEAD AZ	AC-P51637	ENDEVCO	08-Dec-08
HEAD AX (REDUNDANT)	AC-P51739	ENDEVCO	09-Dec-08
HEAD AY (REDUNDANT)	AC-P58837	ENDEVCO	19-Dec-08
HEAD AZ (REDUNDANT)	AC-P58848	ENDEVCO	19-Dec-08
UPPER NECK FX	LC-2022Fx	DENTON	15-Oct-08
UPPER NECK FY	LC-2022Fy	DENTON	15-Oct-08
UPPER NECK FZ	LC-2022Fz	DENTON	15-Oct-08
UPPER NECK MX	LC-2022Mx	DENTON	15-Oct-08
UPPER NECK MY	LC-2022My	DENTON	15-Oct-08
UPPER NECK MZ	LC-2022Mz	DENTON	15-Oct-08
SHUOLDER DY	DS-1169	FTSS	16-Sep-08
UPPER THORAX RIB DY	DS-1164	FTSS	16-Sep-08
MIDDLE THORAX RIB DY	DS-1149	FTSS	16-Sep-08
LOWER THORAX RIB DY	DS-1132	FTSS	16-Sep-08
LOWER SPINE T12 AX	AC-P52092	ENDEVCO	08-Dec-08
LOWER SPINE T12 AY	AC-P58833	ENDEVCO	19-Dec-08
LOWER SPINE T12 AZ	AC-P58881	ENDEVCO	08-Dec-08
ABDOMEN UPPER RIB DY	DS-1130	FTSS	16-Sep-08
ABDOMEN LOWER RIB DY	DS-1125	FTSS	16-Sep-08
ACETABULUM FY	LC-266	DENTON	26-Sep-08
ILIAC WING FY	LC-286	DENTON	24-Sep-08

REMARKS: None

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

VEHICLE AND MDB INSTRUMENTATION

	VEHICLE AND MDB INSTRUMENTS		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
RIGHT FRONT SILL (X)	AC-P23164	ENDEVCO	24-Mar-09
RIGHT FRONT SILL (Y)	AC-P23939	ENDEVCO	03-Mar-09
RIGHT FRONT SILL (Z)	AC-P23993	ENDEVCO	03-Mar-09
RIGHT REAR SILL (X)	AC-P23885	ENDEVCO	02-Mar-09
RIGHT REAR SILL (Y)	AC-P32288	ENDEVCO	02-Mar-09
RIGHT REAR SILL (Z)	AC-P16671	ENDEVCO	02-Mar-09
REAR FLOORPAN ABOVE AXLE (X)	AC-P35803	ENDEVCO	02-Mar-09
REAR FLOORPAN ABOVE AXLE (Y)	AC-P35811	ENDEVCO	02-Mar-09
REAR FLOORPAN ABOVE AXLE (Z)	AC-P35789	ENDEVCO	02-Mar-09
LEFT REAR SILL (Y)	AC-P23788	ENDEVCO	03-Mar-09
LEFT FRONT SILL (Y)	AC-P21516	ENDEVCO	21-Nov-08
RIGHT REAR SEAT OCCUPANT COMP. (Y)	AC-P24145	ENDEVCO	03-Mar-09
LOWER LEFT B- PILLAR (Y)	AC-P17539	ENDEVCO	03-Mar-09
MIDDLE LEFT B-PILLAR (Y)	AC-P23139	ENDEVCO	02-Mar-09
LOWER LEFT A-PILLAR (Y)	AC-J33376	ENDEVCO	21-Nov-08
UPPER LEFT A-PILLAR (Y)	AC-J32832	ENDEVCO	21-Nov-08
FRONT SEAT TRACK (Y)	AC-P18531	ENDEVCO	03-Mar-09
REAR SEAT TRACK (Y)	AC-P17283	ENDEVCO	03-Mar-09
VEHICLE CG (X)	AC-A13829	ENDEVCO	03-Apr-09
VEHICLE CG (Y)	AC-P35793	ENDEVCO	03-Apr-09
VEHICLE CG (Z)	AC-P16841	ENDEVCO	03-Apr-09
MDB CG (X)	AC-C16680	ENDEVCO	09-Apr-09
MDB CG (Y)	AC-C14948	ENDEVCO	09-Apr-09
MDB CG (Z)	AC-CP30	ENDEVCO	09-Apr-09
MDB REAR FRAME MEMBER (X)	AC-C15007	ENDEVCO	09-Apr-09
MDB REAR FRAME MEMBER (Y)	AC-C16499	ENDEVCO	09-Apr-09

REMARKS: None