

REPORT NUMBER: NCAP-CAL-11-019

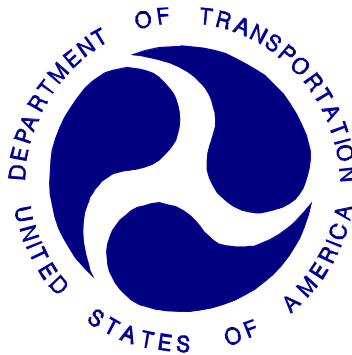
**NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST**

**Chrysler Group LLC
2011 Ram 1500 Quad Cab
4 Door Pickup**

NHTSA NUMBER: MB0305

CALSPAN TEST NUMBER: TR2498

**CALSPAN CORPORATION
TRANSPORTATION SCIENCES CENTER
P.O. BOX 400
BUFFALO, NEW YORK 14225**



December 6, 2010

FINAL REPORT

PREPARED FOR:

**U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Rulemaking
Office of Crashworthiness Standards
1200 New Jersey Ave SE, Room W43-410
Washington, DC 20590**

This publication is distributed by the U.S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof. If trade or manufacturers' names or products are mentioned it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

Prepared by: _____
Bethany Koetje, Project Engineer

Date: _____

Approved by: _____
David Travale, Program Manager
Transportation Sciences Center

Date: _____

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

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

Date: _____

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. NCAP-CAL-11-019		2. Government Accession No.		3. Recipient's Catalog No.																																																																	
4. Title and Subtitle Final Report of NEW CAR ASSESSMENT PROGRAM Testing of a 2011 Ram 1500 Quad Cab 4 Door Pickup NHTSA No. MB0305				5. Report Date 12/6/2010																																																																	
				6. Performing Organization Code CAL																																																																	
7. Author(s) David J. Travale, Program Manager Bethany Koetje, Project Engineer				8. Performing Organization Report No. tr2498																																																																	
9. Performing Organization Name and Address Calspan Corporation 4455 Genesee Street Buffalo, New York 14225				10. Work Unit No.																																																																	
				11. Contract or Grant No. DTNH22-06-D-00024																																																																	
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, DC 20590				13. Type of Report and Period Covered Final Report, 12/6/2010																																																																	
				14. Sponsoring Agency Code NVS-111																																																																	
15. Supplementary Notes																																																																					
16. Abstract A 56.3 km/h NCAP Frontal Impact Test was conducted on a 2011 Ram 4 Door Pickup in accordance with the specifications of the Office of Crashworthiness Standards Frontal NCAP Laboratory Test Procedure. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and foot well intrusion performance. The test was conducted at the Calspan Corporation's crash test facility in Buffalo, New York on 10/18/2010. The impact velocity of the vehicle was 56.3 km/h, and the ambient temperature at the barrier face at the time of impact was 22°C. The target vehicle post-test maximum crush was 614 mm of Vehicle. The test vehicle's performance is as follows:																																																																					
<table border="1"> <thead> <tr> <th></th> <th colspan="3">Driver ATD</th> <th colspan="3">Pass. ATD</th> </tr> <tr> <th>Measurement Description</th> <th>Units</th> <th>Threshold</th> <th>Result</th> <th>Units</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₁₅)</td> <td>N/A</td> <td>700</td> <td>226.856</td> <td>N/A</td> <td>700</td> <td>531.691</td> </tr> <tr> <td>Maximum Chest Compression</td> <td>mm</td> <td>63</td> <td>-33.650</td> <td>mm</td> <td>52</td> <td>-26.830</td> </tr> <tr> <td>Nij</td> <td>n/a</td> <td>1</td> <td>0.316</td> <td>n/a</td> <td>1</td> <td>0.749</td> </tr> <tr> <td>Neck Tension</td> <td>Newtons</td> <td>4170</td> <td>1,660.185</td> <td>Newtons</td> <td>2620</td> <td>1,530.362</td> </tr> <tr> <td>Neck Compression</td> <td>Newtons</td> <td>4000</td> <td>160.770</td> <td>Newtons</td> <td>2520</td> <td>-511.970</td> </tr> <tr> <td>Left Femur Force</td> <td>Newtons</td> <td>10008</td> <td>3953.139</td> <td>Newtons</td> <td>6805</td> <td>3458.123</td> </tr> <tr> <td>Right Femur Force</td> <td>Newtons</td> <td>10008</td> <td>1452.685</td> <td>Newtons</td> <td>6805</td> <td>1740.113</td> </tr> </tbody> </table>								Driver ATD			Pass. ATD			Measurement Description	Units	Threshold	Result	Units	Threshold	Result	Head Injury Criteria (HIC ₁₅)	N/A	700	226.856	N/A	700	531.691	Maximum Chest Compression	mm	63	-33.650	mm	52	-26.830	Nij	n/a	1	0.316	n/a	1	0.749	Neck Tension	Newtons	4170	1,660.185	Newtons	2620	1,530.362	Neck Compression	Newtons	4000	160.770	Newtons	2520	-511.970	Left Femur Force	Newtons	10008	3953.139	Newtons	6805	3458.123	Right Femur Force	Newtons	10008	1452.685	Newtons	6805	1740.113
	Driver ATD			Pass. ATD																																																																	
Measurement Description	Units	Threshold	Result	Units	Threshold	Result																																																															
Head Injury Criteria (HIC ₁₅)	N/A	700	226.856	N/A	700	531.691																																																															
Maximum Chest Compression	mm	63	-33.650	mm	52	-26.830																																																															
Nij	n/a	1	0.316	n/a	1	0.749																																																															
Neck Tension	Newtons	4170	1,660.185	Newtons	2620	1,530.362																																																															
Neck Compression	Newtons	4000	160.770	Newtons	2520	-511.970																																																															
Left Femur Force	Newtons	10008	3953.139	Newtons	6805	3458.123																																																															
Right Femur Force	Newtons	10008	1452.685	Newtons	6805	1740.113																																																															
17. Key Words 35 mph Frontal Barrier Impact test New Car Assessment Program (NCAP)				18. Distribution Statement Copies of this report are available from: NHTSA Technical Reference Division National Highway Traffic Safety Admin. 1200 New Jersey Ave SE Washington, DC 20590																																																																	
19. Security Classif. (of this report) UNCLASSIFIED		20. Security Classif. (of this page) UNCLASSIFIED		21. No. of Pages 222		22. Price																																																															

TABLE OF CONTENTS

Section		Page No.
1	Purpose and Summary of the Test	1-1
2	Occupant and Vehicle Information / Data Sheets	2-1
Data Sheet No.		Page No.
1	General Test and Vehicle Parameter Data	2-2
2	Seat Adjustment, Fuel System, and Steering Wheel Data	2-6
3	Dummy Longitudinal Clearance Dimensions	2-8
4	Dummy Lateral Clearance Dimensions	2-9
5	Seat Belt Positioning Data	2-10
6	High-Speed Camera Locations and Data	2-11
7	Vehicle Accelerometer Locations	2-13
8	Photographic Reference Target Locations	2-14
9	Load Cell Locations on Fixed Barrier	2-15
10	Test Vehicle Summary of Results	2-16
11	Post-Test Observations	2-17
12	Vehicle Profile Measurements	2-18
13	Accident Investigation Division Data	2-20
14	Vehicle Intrusion Measurements	2-21
15	Summary of FMVSS 212, FMVSS 219 (Partial) Data, and 301 Data	2-24
16	FMVSS 301 Static Rollover Results	2-26
17	Dummy/Vehicle Temperature Stabilization Chart	2-27
Appendix		Page No.
A	Photographs	A-1
B	Dummy Response Data Traces	B-1
C	Dummy Calibration and Performance Verification Data	C-1

SECTION 1

PURPOSE AND SUMMARY OF TEST

1.1 PURPOSE

This 56.3 kph frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-06-D-00024. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for consumer information purposes.

The 56.3 kph frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards Frontal NCAP Laboratory Test procedure.

1.2 TEST PROCEDURE

A load cell barrier consisting of 36 load cells was impacted by a 2011 Ram 1500 Quad Cab 4 Door Pickup at a velocity of 56.3 kph. The test was performed at Calspan on 10/18/2010. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

One real-time camera and 14 high-speed cameras were used to document the frontal barrier impact event. Camera locations and other pertinent camera information can be found in this report.

One Part 572E, 50th percentile male anthropomorphic test device (ATD), was placed in the driver seating position and one Part 572O 5th percentile female ATD was placed in the right-front passenger according to dummy placement instructions specified in the Frontal NCAP Laboratory Test Procedure.

Both ATDs were fully instrumented with head, chest and pelvis triaxial accelerometers, chest displacement potentiometers, upper neck transducers, right/left femur load cells, and lower leg instrumentation. Seat belt load cells were also on the driver's and passenger's lap and shoulder belts to measure dummy torso and pelvic section loading. The driver (position 1) ATD (Serial No. 061) and the right-front passenger (position 2) ATD (Serial No. 273) were calibrated previous to this test. Certification details, along with instrumentation calibration data, are found in Appendix C.

The 129 channels of data were recorded on an on-board data acquisition system. Appendix B contains the dummy response data traces.

There was 100 percent windshield retention and no intrusion into the protected zone of the windshield during the event. There was no Stoddard solvent leakage after the event or during any phase of the static rollover.

The maximum static crush of the vehicle was 614 mm and both the driver and passenger side doors remained closed during the impact event and were operable after the impact.

The driver's visible contact points were as follows: Face and Upper Torso with Frontal airbag with the back of head with the head restraint; both knees contacted the lower dash panel. The passenger's visible contact points were as follows: Face and Upper Torso with Frontal airbag with the back of head with the head restraint; both knees contacted the glove box door panel.

The occupant data is summarized below.

ATD Position	HIC ₁₅	T ¹	T ²	Chest Disp. (mm)	Nij	Neck Tension (N)	Neck Comp (N)	Left Femur (N)	Right Femur (N)
Driver (50th)	226.856	87.200	102.20	-33.650	.316	1,660.185	160.770	3953.139	1452.685
Passenger (5 th)	531.691	66.650	81.650	-26.830	.749	1,530.362	511.970	3458.123	1740.113

SECTION 2
DATA SHEETS

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle:	2011 Ram 1500 Quad Cab	NHTSA No:	MB0305
Test Program:	Frontal NCAP	Test Date	10/18/2010

TEST VEHICLE INFORMATION

NHTSA No.	MB0305
Make	Ram
Model	1500 Quad Cab
Body Style	4 Door Pickup
VIN	1D7RV1GP6BS504423
Color	Light gray/silver
Delivery Date	09/10/2010
Odometer Reading (mi)	7
Odometer Reading (km)	11.3
Dealer	Ed Schultz of Warren INC
Transmission	4-speed Automatic
Final Drive	Four Wheel Drive
Type/No. Cyl	V8
Engine Disp. (L)	4.7
Engine Placement	Transverse
Roof Rack	No
Sunroof/T-Top	No
Tinted Glass	No
Traction Control	No
Power Brakes	Yes
Front Disc	Yes
Rear Disc	Yes

TEST VEHICLE OPTIONS

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

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

NA

DATA FROM CERTIFICATION LABEL

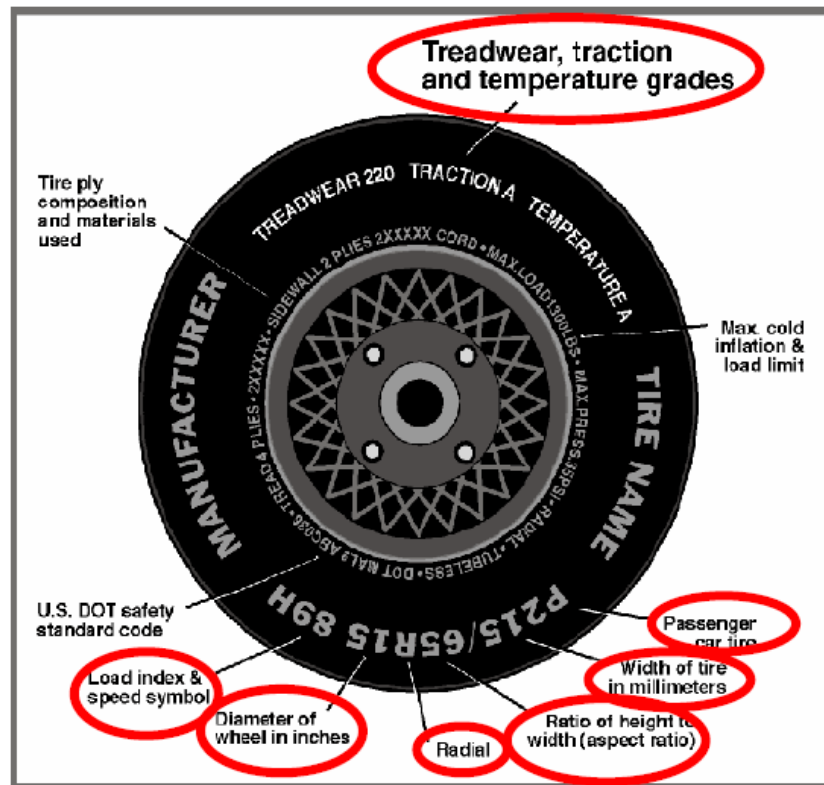
Manufactured By	Chrysler Group LLC	GVWR (kg)	3,040
Date of Manufacture	8/10	GAWR Front (kg)	1,679
		GAWR Rear (kg)	1,770

VEHICLE SEATING AND WEIGHT CAPACITY

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Split Bench	Bench	NA	
Number of Occupants	3	3		6
Capacity Wt. (VCW) (kg)				690
Cargo Wt. (RCLW) (kg)				281.8

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

Test Vehicle:	2011 Ram 1500 Quad Cab	NHTSA No:	MB0305
Test Program:	Frontal NCAP	Test Date	10/18/2010



Measured Parameter	Front	Rear
Maximum Tire Pressure	300	300
Cold Pressure (kPa)	276	276
Recommended Tire Size	P265/70R17	P265/7017
Tire Size on Vehicle	P265/70R17	P265/70R17
Tire Manufacturer	Goodyear	Goodyear
Tire Model	Wrangler SRA	Wrangler SRA
Treadwear	500	500
Traction	a	a
Temperature Grades	b	b
Tire Plies Sidewall	2 polyester cord	2 polyester cord
Tire Plies Body	2 polyester cord + 2 steel cord	2 polyester cord + 2 steel cord
Load Index/Speed Symbol	113R	113R
Tire Material		
DOT Safety Code Right	4BT6EXWR2610	4BT6EXWR2610
DOT Safety Code Left	4BT6EXWR2610	4BT6EXWR2610

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

Test Vehicle:	2011 Ram 1500 Quad Cab	NHTSA No:	MB0305
Test Program:	Frontal NCAP	Test Date	10/18/2010

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	663	532		742	606	
Right	kg	690	501		719	588	
Ratio	%	57	43		55	45	
Totals	kg	1,353	1,033	2,386	1,461	1,194	2,655

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	2,386
Weight of 1 P572E ATD & 1 P572O ATD	kg	140.6
Rated Cargo/Luggage Weight (RCLW)	kg	281.8
Calculated Vehicle Target Weight (TVTWT)	kg	2,808

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	926	930	1,009	1,018	1545
As Tested	mm	914	910	983	982	1605
Post Test	mm	935	928	983	985	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	3,568
Total Vehicle Length at Left Side	mm	5,739
Total Vehicle Length at Centerline	mm	5826
Total Vehicle Length at Right Side	mm	5739
Weight of Ballast in Cargo Area	kg	210
Weight of Vehicle Components Removed	kg	0
Amount of Stoddard Solvent in Fuel Tank	L	26

LIST OF COMPONENTS REMOVED TO MEET TEST WEIGHT: None

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

Test Vehicle:	2011 Ram 1500 Quad Cab	NHTSA No:	MB0305
Test Program:	Frontal NCAP	Test Date	10/18/2010

TARGET VEHICLE STRUCTURAL MEASUREMENT

	Elements	Pre-Test (mm)
1	Total Length	5826
2	Total Width	1849
3	Bumper Top Height	675
4	Bumper Bottom Height	278
5	Longitudinal Member Top Height	617
6	Distance Between Longitudinal Members	974
7	Longitudinal Member Width	67
8	Engine Top Height	1145
9	Engine Bottom Height	477
10	Engine and Gearbox Width	656
11	Front Bumper-Engine Distance	774
12	Front Shock Absorber Fixing Height	737
13	Bonnet Leading Edge Height	1120
14	Front Shock Absorber Fixing Width	623
15	Front Bumper – Front Axle Distance	1034
16	Front Axle – A Pillar Distance	4792
17	A- Pillar – B-Pillar Distance	0
18	B-Pillar – Rear Axle Distance	-1222
19	B-Pillar – C-Pillar Distance	0
20	Roof Sill Bottom Height	1736
21	Roof Sill Top Height	1805
22	Floor Sill Bottom Height	558
23	Floor Sill Top Height	568

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

Test Vehicle: 2011 Ram 1500 Quad Cab

NHTSA No: MB0305

Test Program: Frontal NCAP

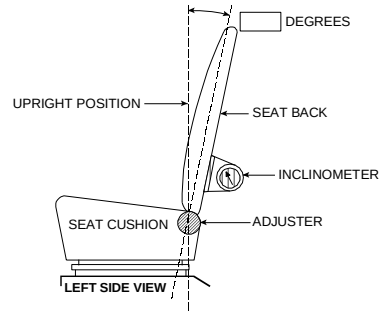
Test Date: 10/18/2010

NORMAL DESIGN RIDING POSITION

Driver seat: Driver Seat placed in manufacturer specified nominal design position

Passenger Seat: Left front passenger seat back adjusted to obtain a level head measurement on the SID-II's dummy

	Deg
Driver Seat Back Angle	5
Passenger Seat Back Angle	1

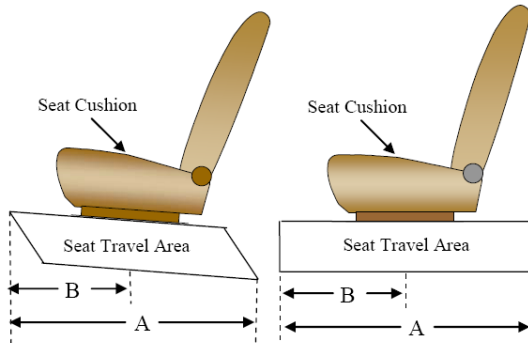


FRONT SEAT ASSEMBLY

SEAT FORE/AFT POSITIONS

The driver seat was placed in the midpoint of 24 detents including a full rear and full forward positions. The left front passenger was placed at detent number 1 to allow for clearance of the dummy with the vehicle interior. The forward most position is detent number 0.

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	24	12
Passenger Seat	24	1



SEAT BELT UPPER ANCHORAGES

The Driver upper belt anchorage was placed at the midpoint position (detent number 2 of 5 positions) and the passenger upper belt anchorage was placed at the topmost position (detent number 0 of 5 positions)

	Total # of Positions	Placed in Position #
Driver Seat	5	2
Passenger Seat	5	0

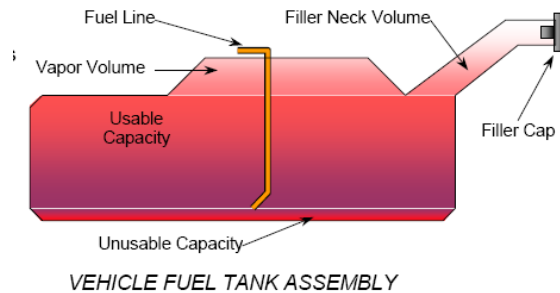
DATA SHEET NO. 2 (CONTINUED)
SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

Test Vehicle:	2011 Ram 1500 Quad Cab	NHTSA No:	MB0305
Test Program:	Frontal NCAP	Test Date	10/18/2010

FUEL TANK CAPACITY

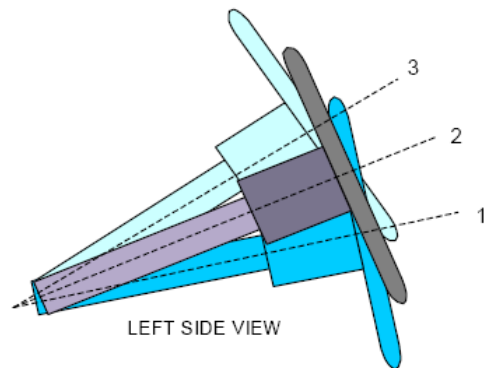
	Liters
Usable Capacity of "Standard Tank"	106.0
Usable Capacity of "Optional Tank"	121.1
92%-94% of Usable Capacity	97.5 - 99.6
Actual Amount of Solvent Used	98.4
1/3 of Usable Capacity	35.3

Fuel tank emptied according to manufacturer Form 1 information



STEERING COLUMN ADJUSTMENT

Steering wheel placed in the midpoint of tilt travel and there was no telescoping feature



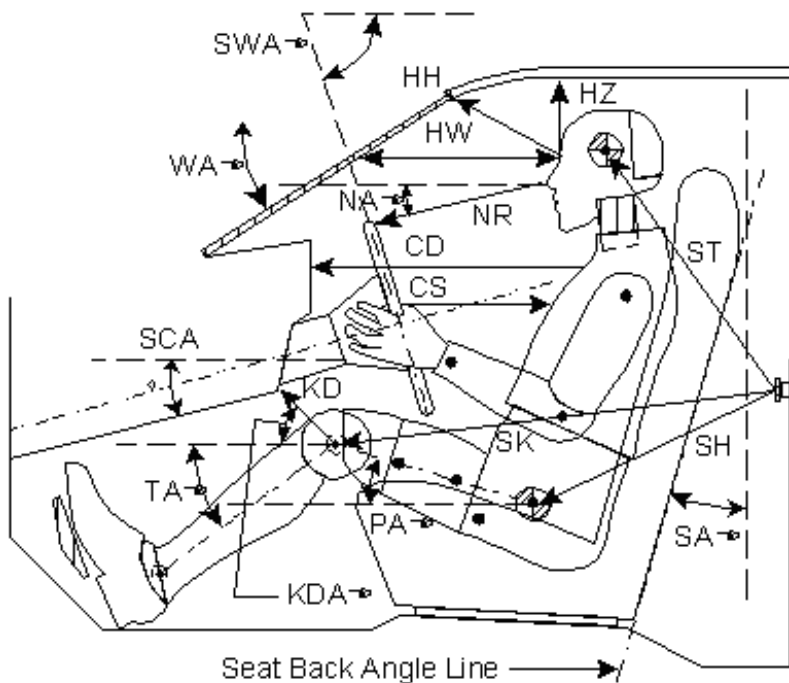
STEERING COLUMN ASSEMBLY

STEERING COLUMN POSITIONS

	Degrees	Fore/Aft Position (mm)
Lowermost position No. 1		
Geometric center position No. 2	66	
Uppermost position No. 3		
Telescoping Steering Wheel Travel		NA
Test Position	66	NA

DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

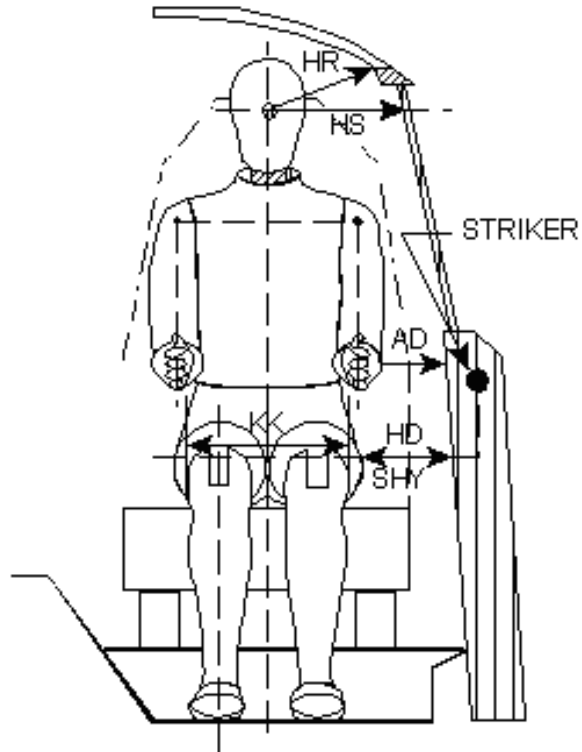
Test Vehicle:	2011 Ram 1500 Quad Cab	NHTSA No:	MB0305
Test Program:	Frontal NCAP	Test Date	10/18/2010



Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle(°)	Length (mm)	Angle (°)
WA°	Windshield Angle		34		
SWA°	Steering Wheel Angle		66		
SCA°	Steering Column Angle		26		
SA°	Seat Back Angle (on headrest post)		5		1
HZ	Head to Roof (Z)	246	90	280	90
HH	Head to Header	463	19	411	35
HW	Head to Windshield	697	0	753	0
NR	Nose to Rim	408	-14		
CD	Chest to Dash	589		530	
CS	Chest to Steering Hub	312	0		
RA	Rim to Abdomen	220	0		
KDL	Left Knee to Dash	166	12	73	21
KDR	Right Knee to Dash	122	14	80	26
PA°	Pelvic Angle		22		21
TA°	Tibia Angle		51		60
SK	Striker to Knee	590	0	695	4
ST	Striker to Head	645	77	637	73
SH	Striker to H-Point	220	-12	330	-2

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle:	2011 Ram 1500 Quad Cab	NHTSA No:	MB0305
Test Program:	Frontal NCAP	Test Date	10/18/2010

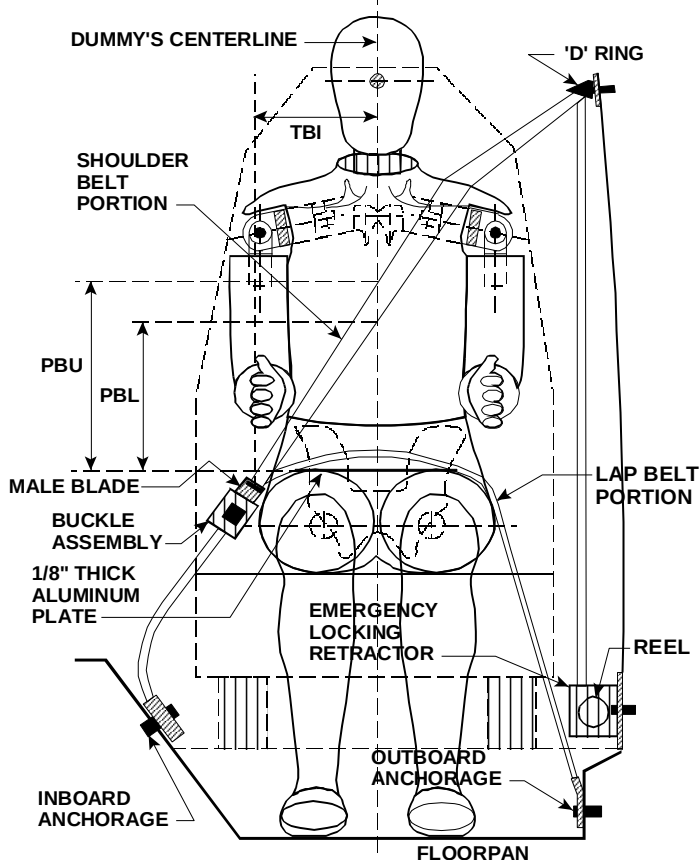


Code	Description	Driver	Passenger
AD	Arm to Door	120	92
HD	H-Point to Door	146	161
HR	Head to Side Header	193	283
HS	Head to Side Window	146	161
KK	Knee to Knee	295	227
SHY	Striker to H-Point (Y Direction)	250	285
AA	Ankle to Ankle	240	200

DATA SHEET NO. 5
SEAT BELT POSITIONING DATA

Test Vehicle:	2011 Ram 1500 Quad Cab	NHTSA No:	MB0305
Test Program:	Frontal NCAP	Test Date	10/18/2010

SEAT BELT POSITIONING DATA



FRONT VIEW OF DUMMY

SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
PBU — Top surface of aluminum plate to belt upper edge	mm	376	316
PBL — Top surface of aluminum plate to belt lower edge	mm	300	240

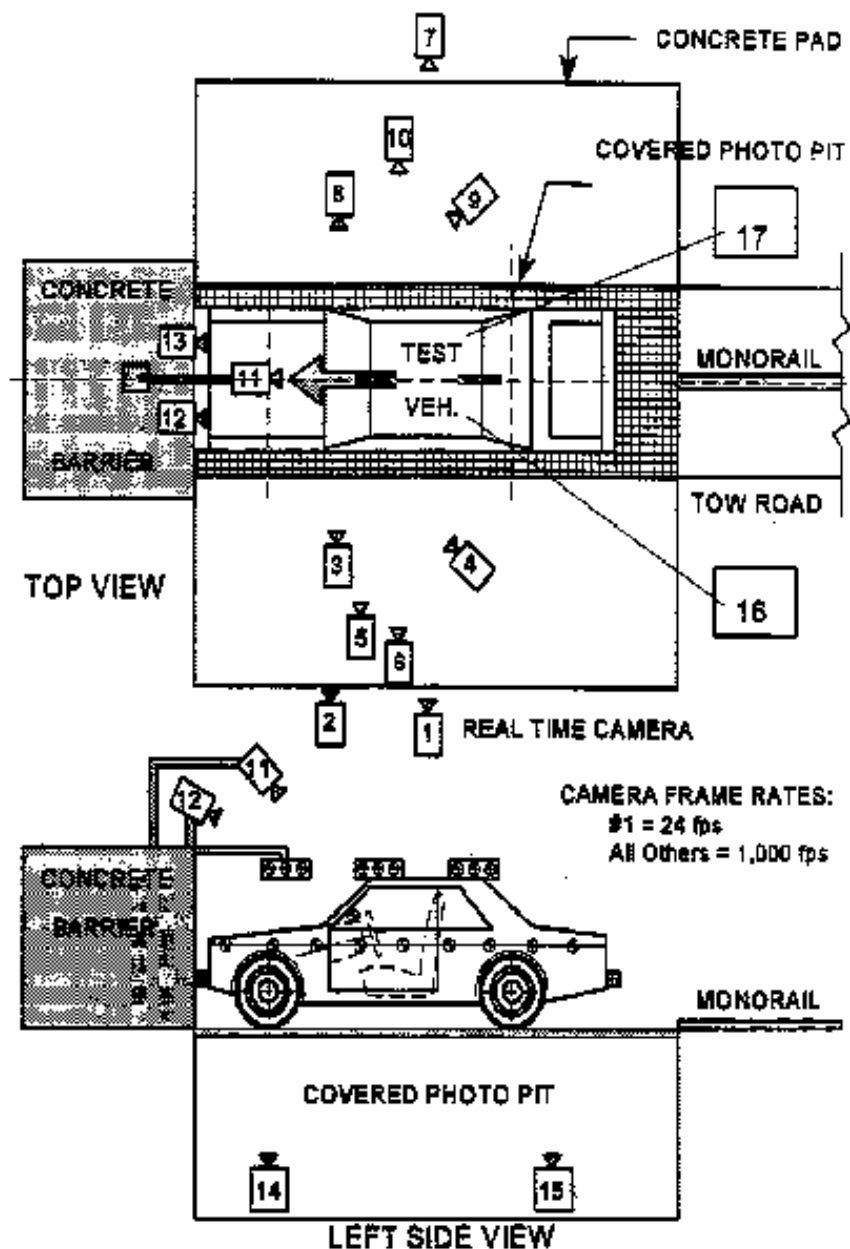
BELT LENGTH DATA

Measurement Description	Units	Driver	Passenger
Shoulder belt length as measured on ATD	mm	832	860
Lap Belt Length as measured on ATD	mm	890	950
Remainder of belt on reel	mm	210	170
Total belt length for continuous webbing systems	mm	1932	1980

DATA SHEET NO. 6
HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle:	2011 Ram 1500 Quad Cab	NHTSA No:	MB0305
Test Program:	Frontal NCAP	Test Date	10/18/2010

CAMERA POSITIONS FOR FRONTAL IMPACTS



DATA SHEET NO. 6 (CONTINUED)
HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle:	2011 Ram 1500 Quad Cab	NHTSA No:	MB0305
Test Program:	Frontal NCAP	Test Date	10/18/2010

CAMERA LOCATIONS

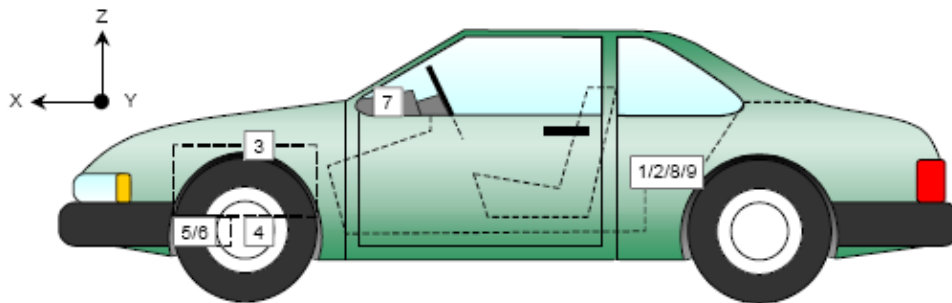
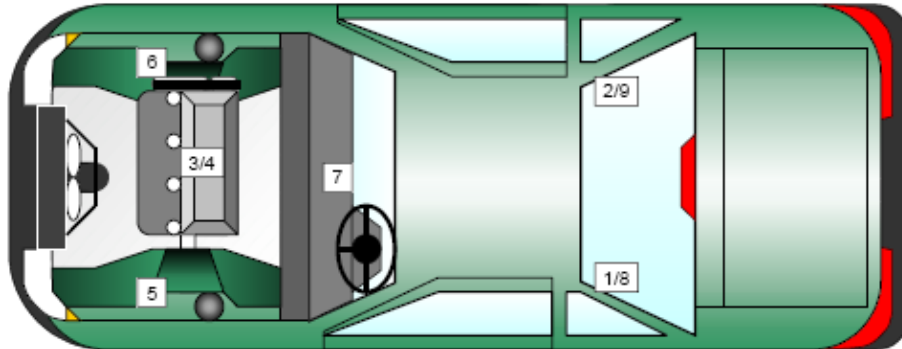
No.	Camera View	Location (mm)			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Camera				-	24
2	Driver Left Side View	10254	980	1010	50	1000
3	Left Side View	3280	2940	2370	25	1000
4	Overall Right Side	7930	2330	990	50	1000
5	Steering Column (Bottom)	7910	1970	1205	28-70	1000
6	Steering Column (Top)	7910	1970	1810	24-70	1000
7	Driver and Interior View	7276	1570	1215	50	1000
8	Right Side View	1200	1270	940	24	1000
9	Right Passenger View	9890	1270	1060	50	1000
10	Pass. And Interior View	8480	1700	1170	50	1000
11	Passenger Front View	620	-92	1987	25	500
12	Driver Front View	620	-92	1987	25	500
13	Windshield View	0	-530	3374	25	500
14	Pit View of Engine	0	615	-3048	12.5	1000
15	Pit View of Fuel Tank	0		-3048	12.5	1000
16	Onboard Driver Side (Optional)	N/A	N/A	N/A	N/A	N/A
17	Onboard Passenger Side (Optional)	N/A	N/A	N/A	N/A	N/A

* COORDINATES:

+X = forward of impact plane
+Y = right of monorail center
+Z = into ground

DATA SHEET NO. 7
VEHICLE ACCELEROMETER DATA

Test Vehicle:	2011 Ram 1500 Quad Cab	NHTSA No:	MB0305
Test Program:	Frontal NCAP	Test Date	10/18/2010



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear X-Member X	2770	-743	610
2	Right Rear X-Member X	2753	744	615
3	Engine Top X	4989	30	1145
4	Engine Bottom X	5024	204	477
5	Left Brake Caliper X	4650	-875	439
6	Right Brake Caliper X	4650	875	439
7	Instrument Panel X	-	-	-
8	Left Rear X-Member Z	2770	-743	610
9	Right Rear X-Member Z	2753	744	615

Reference Points:

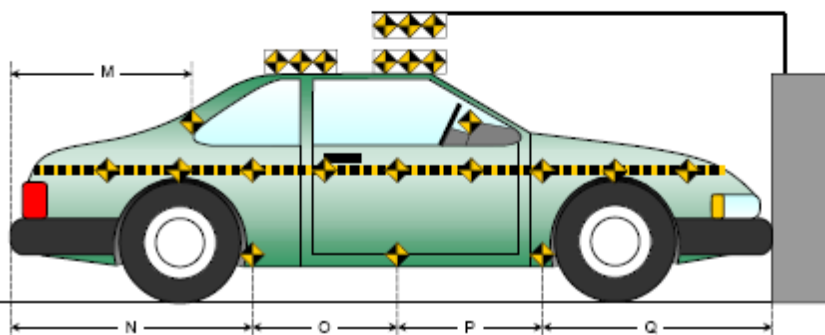
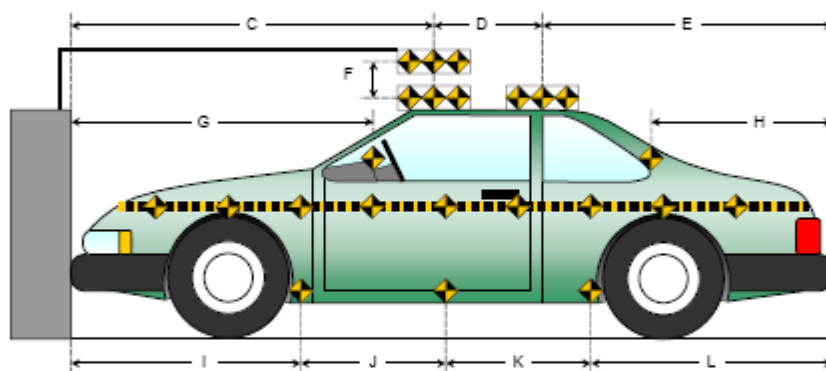
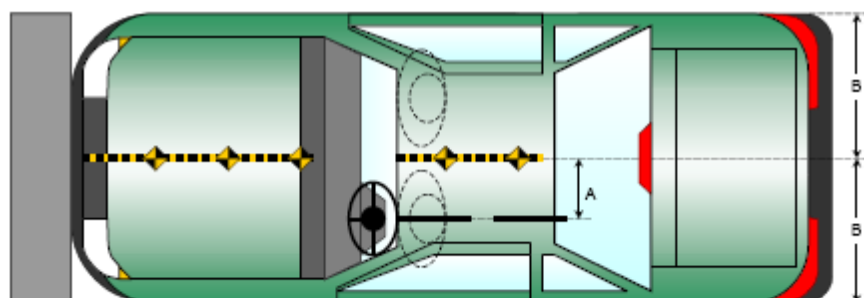
- X – Rear Surface of Vehicle (+ forward)
- Y – Vehicle Centerline (+ to right)
- Z – Ground Plane (+ down)

DATA SHEET NO. 8
PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle:	2011 Ram 1500 Quad Cab	NHTSA No:	MB0305
Test Program:	Frontal NCAP	Test Date	10/18/2010

Item	Value
A	597
B	0
C	2487
D	313
E	3027
F	NA
G	1873
H	0
I	5826
J	0
K	0
L	0
M	2307
N	1806
O	1225
P	1223
Q	1573

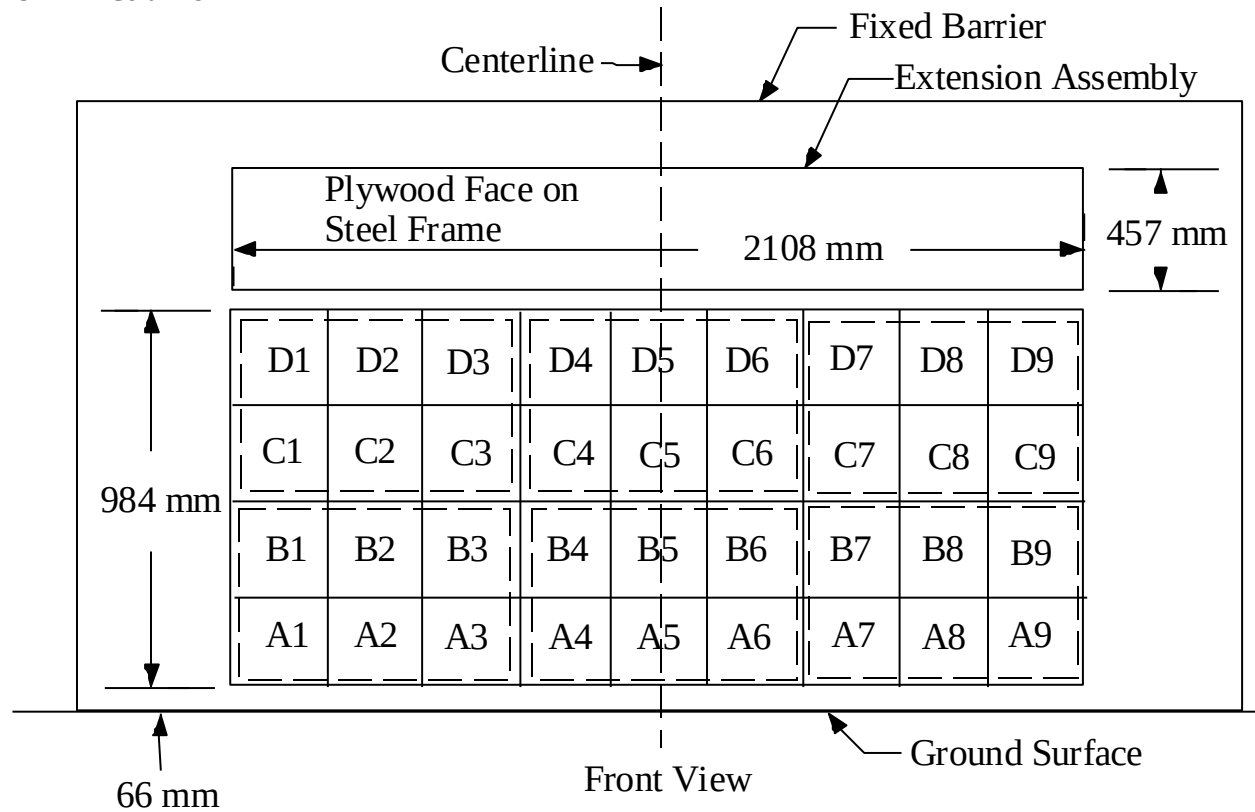
All units in millimeters



DATA SHEET NO. 9
LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle:	2011 Ram 1500 Quad Cab	NHTSA No:	MB0305
Test Program:	Frontal NCAP	Test Date	10/18/2010

36 Load Cells
 4 Rows
 9 Columns



DATA SHEET NO. 10
TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle:	2011 Ram 1500 Quad Cab	NHTSA No:	MB0305
Test Program:	Frontal NCAP	Test Date	10/18/2010

INSTRUMENTATION

Driver Dummy Channels	42
Passenger Dummy Channels	42
Belt load cells	4
Vehicle Structure Accelerometers	8
Barrier load cells	36
Total	132

CAMERA COVERAGE

High-Speed Vehicle Onboard	0
High-Speed Offboard	13
Real-Time Panning	2
Total	15

**DATA SHEET NO. 11
POST TEST OBSERVATIONS**

Test Vehicle:	2011 Ram 1500 Quad Cab	NHTSA No:	MB0305
Test Program:	Frontal NCAP	Test Date	10/18/2010

TEST DUMMY INFORMATION AND CONTACT

Description	Driver	Passenger
Dummy Type/Serial No.	061	273
Head Contact	Airbag	Airbag
Upper Torso Contact	Airbag	Airbag
Lower Torso Contact	Airbag	Airbag
Left Knee Contact	Lower Instrument Panel	Glove Box Door
Right Knee Contact	Lower Instrument Panel	Glove Box Door

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Passenger
Locked/Unlocked Doors	Unlocked	Unlocked
Front Door Opening	Closed & Operational 0	Closed & Operational 0
Rear Door Opening	Closed & Operational 0	Closed & Operational 0
Seat Track Shift (mm)	0	0
Seat Back Failure	None	None
Glazing Damage	None	

POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Windshield Damage	None
Window Damage	None
Other Notable Effects	None

VEHICLE REBOUND FROM BARRIER

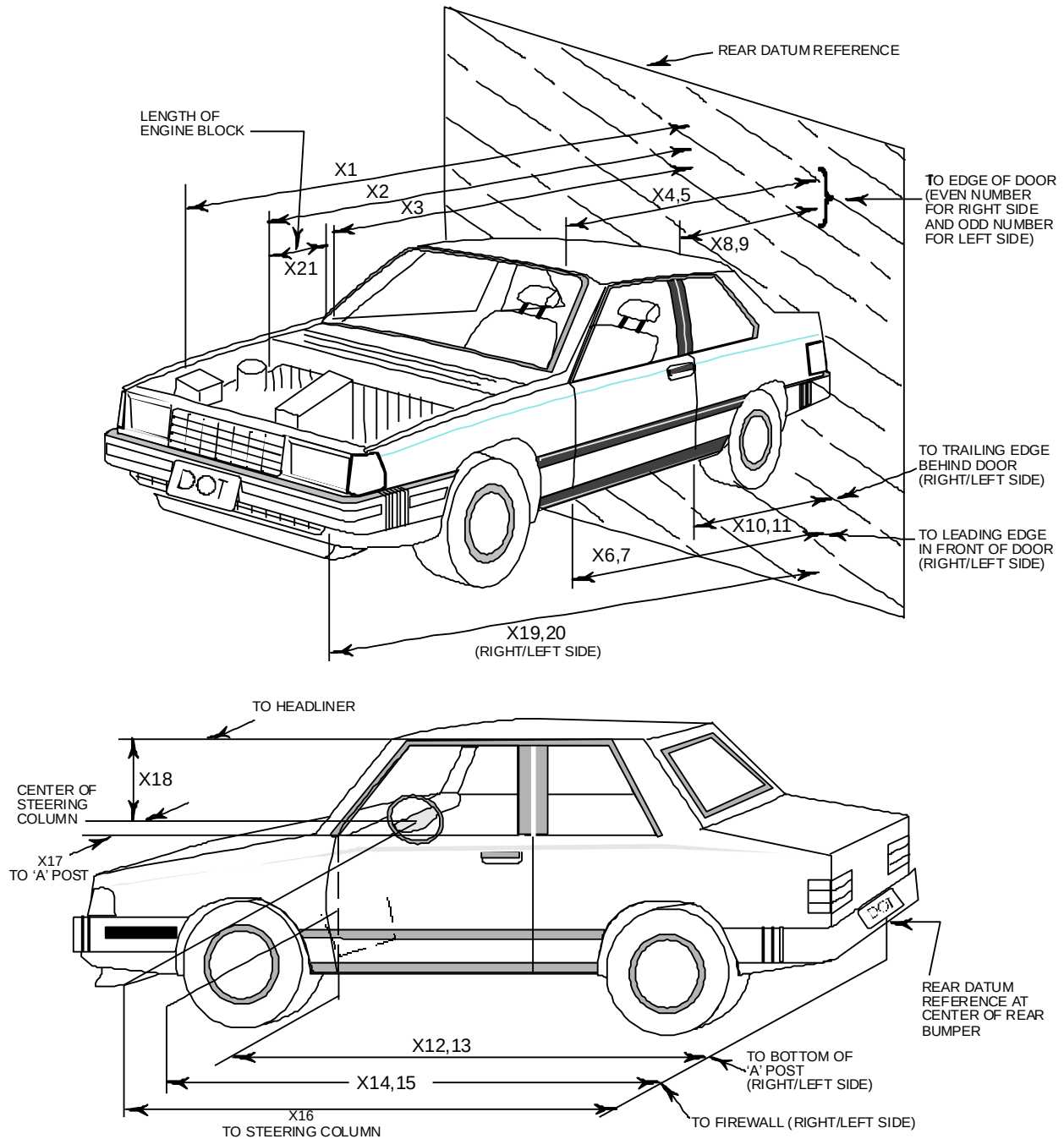
Measured Parameter	Units	Value
Left Side	mm	462
Center	mm	443
Right Side	mm	464
Average	mm	456

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Driver (Occupant 1)		Passenger (Occupant 2)	
	Installed	Operated	Installed	Operated
Front Airbag	Yes	Yes	Yes	Yes
Curtain Airbag	Yes	No	Yes	No
Torso Airbag	No	NA	No	NA
Knee Airbag	NA	NA	NA	NA
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes	Yes	Yes	Yes
Other				

DATA SHEET NO. 12
VEHICLE PROFILE MEASUREMENTS

Test Vehicle:	2011 Ram 1500 Quad Cab	NHTSA No:	MB0305
Test Program:	Frontal NCAP	Test Date	10/18/2010



DATA SHEET NO. 12 (CONTINUED)
VEHICLE PROFILE MEASUREMENTS

Test Vehicle:	2011 Ram 1500 Quad Cab	NHTSA No:	MB0305
Test Program:	Frontal NCAP	Test Date	10/18/2010

No.	Measurement Description	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	5826	5213	614
2	Rear Surface of Vehicle (RSOV) to Front of Engine	5052	4977	75
3	RSOV to Firewall	4664	4659	5
4	RSOV to Upper Leading Edge of Right Door	4259	4259	0
5	RSOV to Upper Leading Edge of Left Door	4262	4261	2
6	RSOV to Lower Leading Edge of Right Door	4196	4198	-2
7	RSOV to Lower Leading Edge of Left Door	4199	4200	-1
8	RSOV to Upper Trailing Edge of Right Door	3132	3130	3
9	RSOV to Upper Trailing Edge of Left Door	3134	3135	0
10	RSOV to Lower Trailing Edge of Right Door	3113	3112	1
11	RSOV to Lower Trailing Edge of Left Door	3115	3114	1
12	RSOV to Bottom of "A" Post of Right Side	4252	4248	4
13	RSOV to Bottom of "A" Post of Left Side	4250	4261	-11
14	RSOV to Firewall, Right Side	4651	4681	-30
15	RSOV to Firewall, Left Side	4657	4644	13
16	RSOV to Steering Column	3745	3767	-22
17	Center of Steering Column to "A" Post	271	275	-3
18	Center of Steering Column to Headliner	466	499	-33
19	RSOV to Right Side of Front Bumper	5767	5218	550
20	RSOV to Left Side of Front Bumper	5766	5231	535
21	Length of Engine Block	320	293	27
RD	RSOV to Right Side of Dash Panel	3961	3966	-5
CD	RSOV to Center of Dash Panel	3950	3957	-7
LD	RSOV to Left Side of Dash Panel	3963	3961	2

All Dimensions in mm

DATA SHEET NO. 13
ACCIDENT INVESTIGATION DIVISION DATA

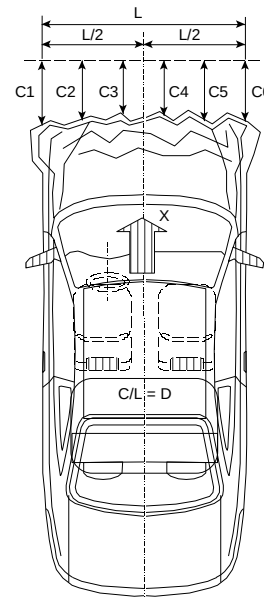
Test Vehicle:	2011 Ram 1500 Quad Cab	NHTSA No:	MB0305
Test Program:	Frontal NCAP	Test Date	10/18/2010

VEHICLE INFORMATION

VIN	1D7RV1GP6BS504423	Wheelbase (mm)	3568
Vehicle Size Category	4 Door Pickup	Test Weight (kg)	2655

ACCELEROMETER DATA

Accelerometer Locations: Locations According to Data Sheet No. 7
 Cal. Procedure/Interval: Calspan Procedure/ 6 month
 Integration Algorithm: Trapezoidal Linearity: >99%
 Impact Velocity (km/h): 56.3
 Velocity Change (km/h): 65.19
 Time of Separation (msec): 182



CRUSH PROFILE

Collision Deformation Classification: 12FDEW2
 Midpoint of Damage: Vehicle Centerline
 Damage Region Length (mm): 1471
 Impact Mode: Frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	5712	5243	469
C2	Crush zone 2 at left side	mm	5794	5241	553
C3	Crush zone 3 at left side	mm	5823	5225	598
C4	Crush zone 4 at right side	mm	5823	5219	604
C5	Crush zone 5 at right side	mm	5795	5230	565
C6	Crush zone 6 at right side	mm	5713	5227	485
L	C1 to C6	mm	1471	1506	-36

DATA SHEET NO. 14
VEHICLE INTRUSION MEASUREMENTS

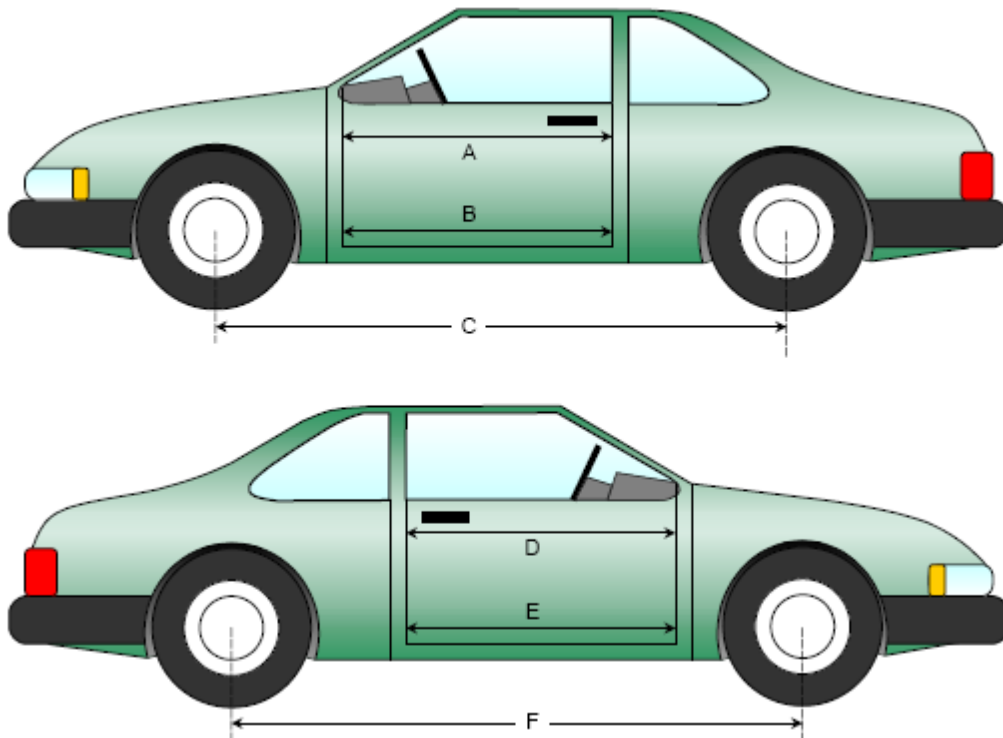
Test Vehicle:	2011 Ram 1500 Quad Cab	NHTSA No:	MB0305
Test Program:	Frontal NCAP	Test Date	10/18/2010

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	972	970	-3
B	Left Side Lower	mm	940	939	-1
D	Right Side Upper	mm	971	969	-3
E	Right Side Lower	mm	940	939	-1

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	3570	3566	-4
F	Right Side Wheelbase	mm	3567	3565	-2



DATA SHEET NO.14 (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Ram 1500 Quad Cab

NHTSA No: MB0305

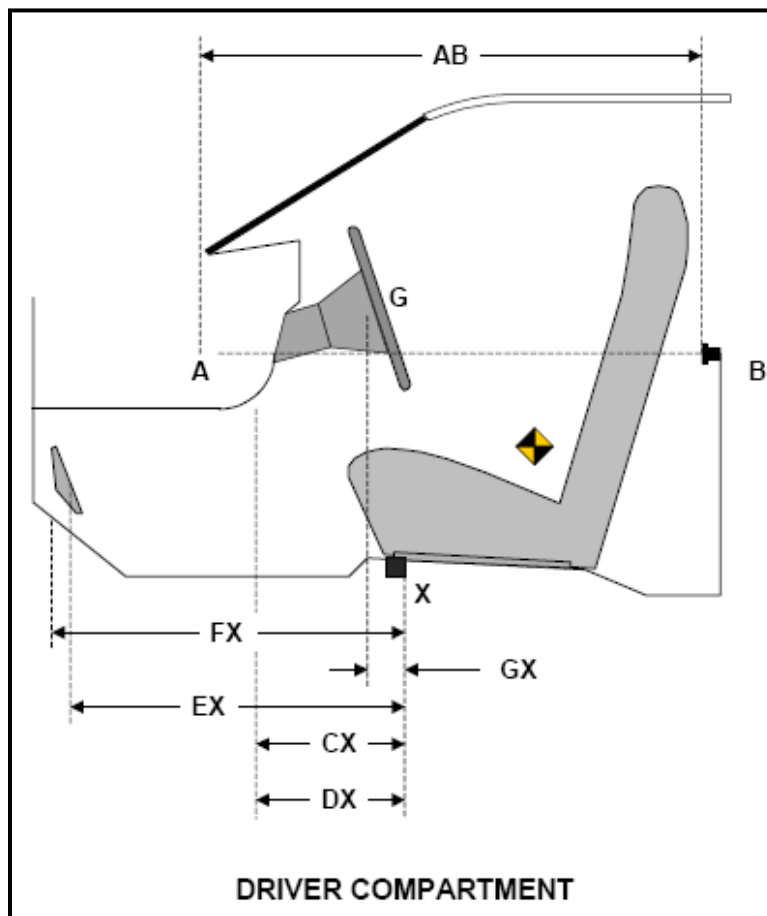
Test Program: Frontal NCAP

Test Date	10/18/2010
-----------	------------

DRIVER COMPARTMENT INTRUSION

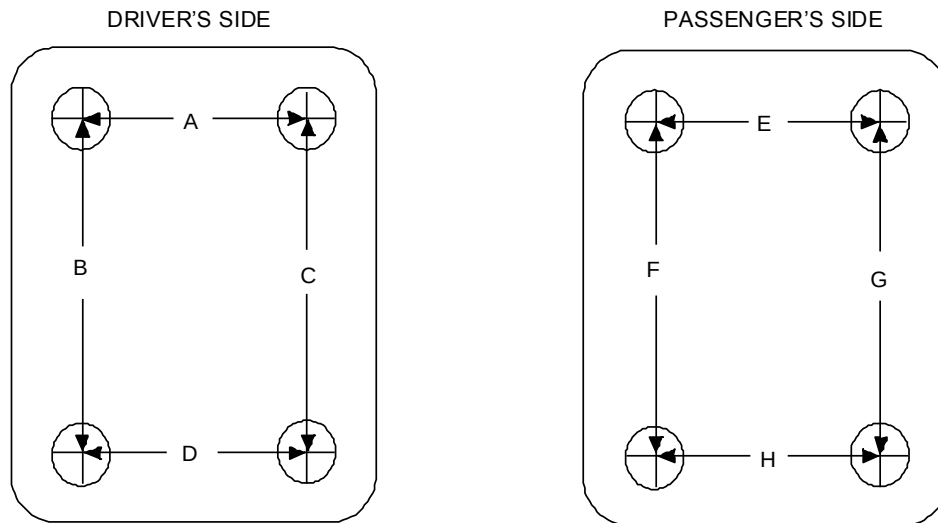
Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	816	817	1
CX	Left Knee Bolster to X	mm	278	NA	NA
DX	Right Knee Bolster to X	mm	256	NA	NA
EX	Brake Pedal to X	mm	506	505	-1
FX	Foot Rest to X	mm	649	629	-20
GX	Center of Steering Column Wheel Hub to X	mm	49	71	21

$X = \text{Front of Seat Track (Stationary)}$



DATA SHEET NO.14 (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle:	2011 Ram 1500 Quad Cab	NHTSA No:	MB0305
Test Program:	Frontal NCAP	Test Date	10/18/2010



TOP VIEW THROUGH FLOOR PAN

UNDERBODY FLOORBOARD DEFORMATION

Measurement	Pre-Test	Post-Test	Difference
A	513	514	2
B	259	260	0
C	217	218	1
D	511	509	-2
E	458	458	0
F	212	201	-11
G	202	202	-1
H	499	498	-1

All units in millimeters

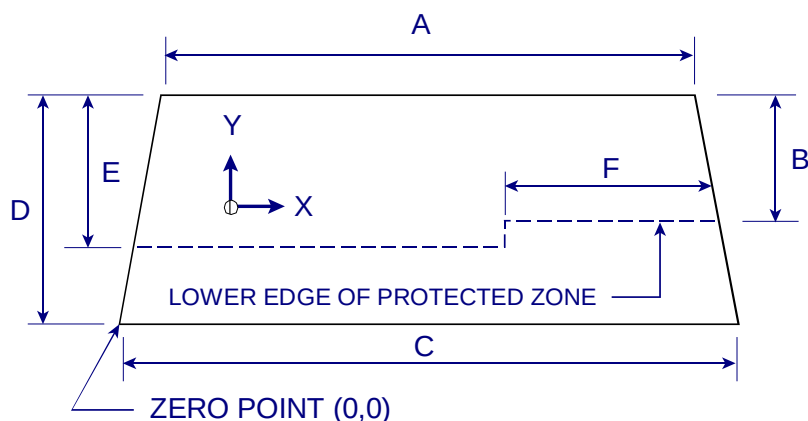
DATA SHEET NO. 15
SUMMARY OF FMVSS 212, 219 (PARTIAL), AND 301 DATA

Test Vehicle:	2011 Ram 1500 Quad Cab	NHTSA No:	MB0305
Test Program:	Frontal NCAP	Test Date	10/18/2010

A 0.8 mm trim surrounds the top and side of windshield while a plastic shroud is on the bottom.
The standard requires that the post-test retention measurement be a minimum of 75% of the pre-test total periphery measurement for vehicles not equipped with occupant passive restraints and 50% for each side of the windshield for vehicles which are equipped with occupant passive restraints.
Temperature of windshield molding during test: 21.3°C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% Retention
Left Side	2274	2274	100%
Right Side	2274	2274	100%
Total	4547	4547	100%



Item	Units	Value
A	mm	1395
B	mm	445
C	mm	1670
D	mm	741
E	mm	502
F	mm	610

AREAS OF PROTECTED ZONE FAILURES

A. Provide coordinates of the area that the protected zone was penetrated more than .25 inches by a vehicle component other than one that is normally in contact with the windshield.

X	Y
-	-
-	-
-	-
-	-

B. Provide coordinates of the area beneath the protected zone that the inner surface of the windshield was penetrated by a vehicle component.

X	Y
-	-
-	-
-	-
-	-

DATA SHEET NO. 15 (CONTINUED)
SUMMARY OF FMVSS 212, 219 (PARTIAL), AND 301 DATA

Test Vehicle:	<u>2011 Ram 1500 Quad Cab</u>	NHTSA No:	<u>MB0305</u>
Test Program:	<u>Frontal NCAP</u>	Test Date	<u>10/18/2010</u>

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

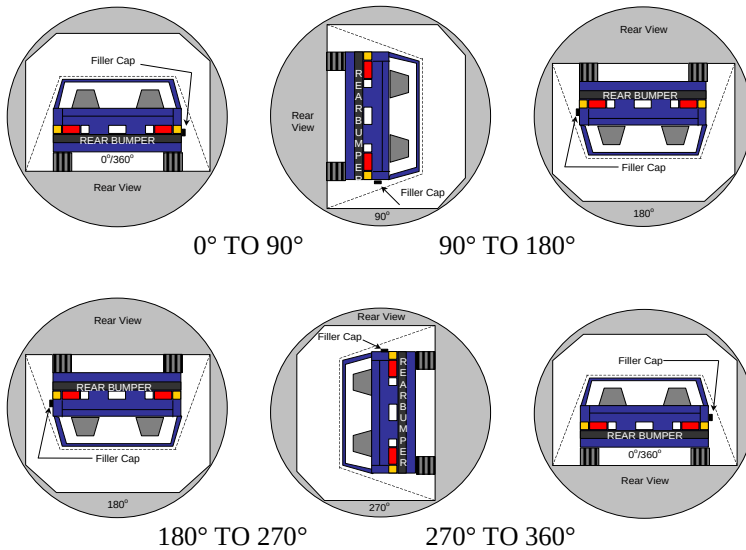
Temperature at Time of Impact: 22° C Test Time: 3:00 pm

Stoddard Solvent Spillage Measurements

A.	From impact until vehicle motion ceases: (Maximum allowable = 1 oz.)	<u>0</u>	oz
B.	For the 5-minute period after motion ceases: (Maximum allowable = 5 oz.)	<u>0</u>	oz
C.	For the following 25 minutes: (Maximum allowable = 1 oz./minute)	<u>0</u>	oz
D.	Spillage	<u>0</u>	oz

DATA SHEET NO. 16
FMVSS 301 STATIC ROLLOVER RESULTS

Test Vehicle:	2011 Ram 1500 Quad Cab	NHTSA No:	MB0305
Test Program:	Frontal NCAP	Test Date	10/18/2010



1. The specified fixture rollover rate for each 90° of rotation is 60 to 180 seconds.
2. The position hold time at each position is 300 seconds (minimum).
2. Details of Stoddard Solvent spillage:
None

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	1:09	5:00	6:09
90° to 180°	1:08	5:00	6:08
180° to 270°	1:09	5:00	6:09
270° to 360°	1:10	5:00	6:10

FMVSS 301 SPILLAGE TABLE

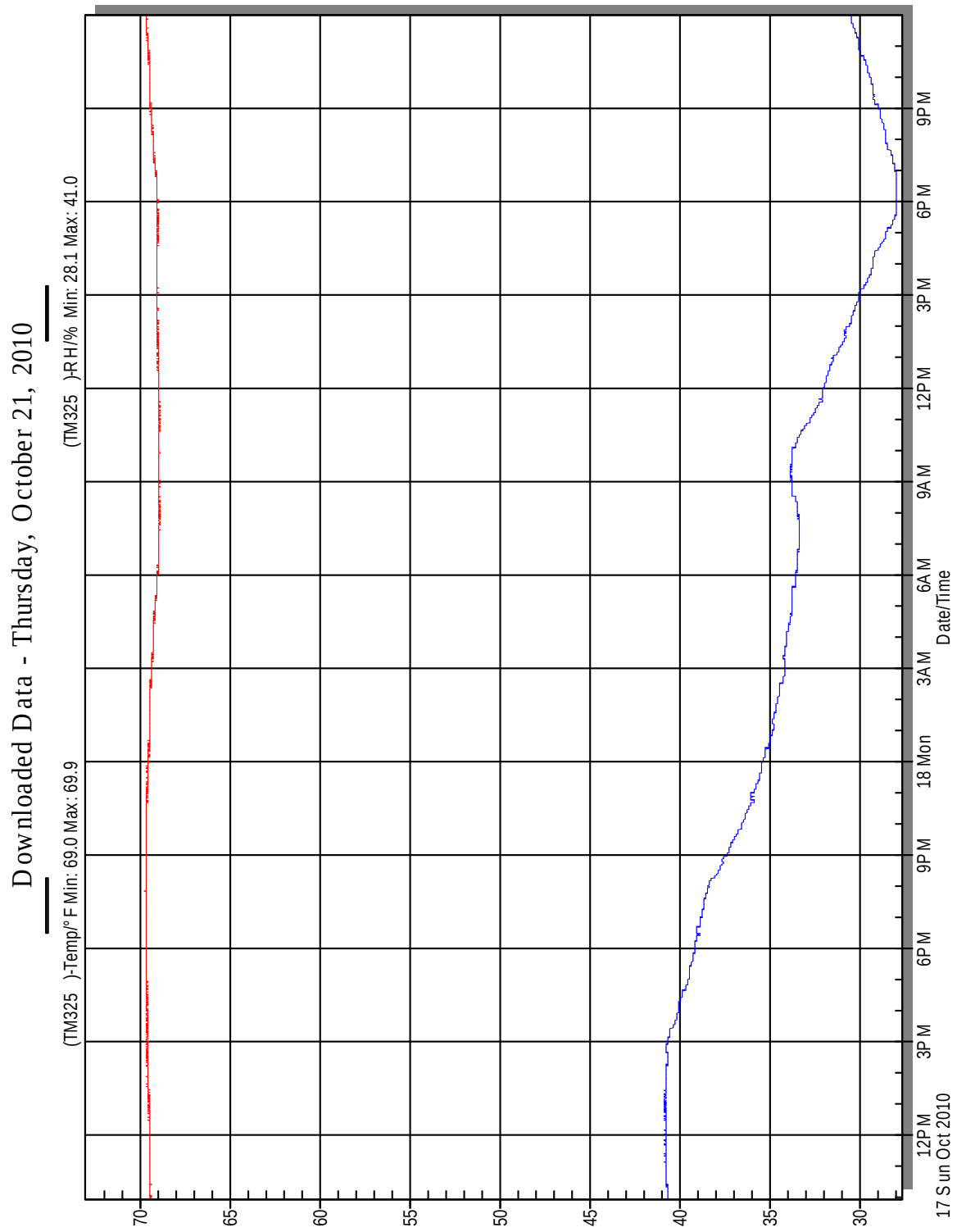
Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0° to 90°	0	NA		
90° to 180°	0	NA		
180° to 270°	0	NA		
270° to 360°	0	NA		

SOLVENT SPILLAGE LOCATION TABLE

Test Phase	Spillage Location
0° to 90°	None
90° to 180°	None
180° to 270°	None
270° to 360°	None

DATA SHEET NO. 17
DUMMY/VEHICLE TEMPERATURE STABILIZATION

Test Vehicle:	2011 Ram 1500 Quad Cab	NHTSA No:	MB0305
Test Program:	Frontal NCAP	Test Date	10/18/2010



APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS		
No.		Page
1	Load Cell Location	A-5
2	Load Cell Wall	A-5
3	Manufacturer's Label	A-6
4	Tire Placard	A-6
5	Right Front $\frac{3}{4}$ View, as Received	A-7
6	Left Rear $\frac{3}{4}$ View, as Received	A-7
7	Pre-test Front View of Test Vehicle	A-8
8	Post-test Front View of Test Vehicle	A-8
9	Pre-test Left View of Test Vehicle	A-9
10	Post-test Left View of Test Vehicle	A-9
11	Pre-test Right View of Test Vehicle	A-10
12	Post-test Right View of Test Vehicle	A-10
13	Pre-test Right Front $\frac{3}{4}$ View	A-11
14	Post-test Right Front $\frac{3}{4}$ View	A-11
15	Pre-test Left Rear $\frac{3}{4}$ View	A-12
16	Post-test Left Rear $\frac{3}{4}$ View	A-12
17	Pre-test Windshield View	A-13
18	Pre-test Windshield View	A-13
19	Pre-test Engine Compartment View	A-14
20	Post-test Engine Compartment View	A-14
21	Pre-test Fuel Filler Cap View	A-15
22	Post-test Fuel Filler Cap View	A-15
23	Pre-test Front Underbody View	A-16
24	Post-test Front Underbody View	A-16
25	Pre-test Rear Underbody View	A-17
26	Post-test Rear Underbody View	A-17
27	Pre-test Dummy Cable Routing	A-18
28	Post-test Dummy Cable Routing	A-18
29	Pre-test Driver Dummy Front View	A-19
30	Post-test Driver Dummy Front View	A-19

31	Pre-test Driver Dummy Window View	A-20
32	Post-test Driver Dummy Window View	A-20
33	Pre-test Driver Dummy and Vehicle Interior View	A-21
34	Post-test Driver Dummy and Vehicle Interior View	A-21
35	Pre-test Driver's Seat Fore-Aft Markings	A-22
36	Post-test Driver's Seat Fore-Aft Markings	A-22
37	Pre-test Driver Dummy Feet	A-23
38	Post-test Driver Dummy Feet	A-23
39	Pre-test Driver's Side Knee Bolster	A-24
40	Post-test Driver's Side Knee Bolster	A-24
41	Pre-test Driver's Side Floorpan	A-25
42	Post-test Driver's Side Floorpan	A-25
43a	Post-test Driver Dummy Contact With Airbag	A-26
43b	Post-Test Driver Dummy Contact With Head Restraint	A-26
44	Pre-test View of the Steering Column Shear Capsule	A-27
45	Post-test View of the Steering Column Shear Capsule	A-27
46	Pre-test Passenger Dummy Front View	A-28
47	Post-test Passenger Dummy Front View	A-28
48	Pre-test Passenger Dummy Window View	A-29
49	Post-test Passenger Dummy Window View	A-29
50	Pre-test Passenger Dummy and Vehicle Interior View	A-30
51	Post-test Passenger Dummy and Vehicle Interior View	A-30
52	Pre-test Passenger's Seat Fore-Aft Markings	A-31
53	Post-test Passenger's Seat Fore-Aft Markings	A-31
54	Pre-test Passenger Dummy Feet	A-32
55	Post-test Passenger Dummy Feet	A-32
56	Pre-test Passenger's Side Knee Bolster	A-33
57	Post-test Passenger's Side Knee Bolster	A-33
58	Pre-test Passenger's Side Floorpan	A-34
59	Post-test Passenger's Side Floorpan	A-34
60a	Post-test Passenger Dummy Contact With Airbag	A-35
60b	Post-test Passenger Dummy Contact with Head Restraint	A-35
61	Photograph of ballast installed in vehicle	A-36

62	Post-test Stoddard solvent spillage location view, if required	A-36
63	Post-test Speed Trap Read-out	A-37
64	Vehicle at 0° on Static Rollover Device	A-37
65	Vehicle at 90° on Static Rollover Device	A-38
66	Vehicle at 180° on Static Rollover Device	A-38
67	Vehicle at 270° on Static Rollover Device	A-39
68	Vehicle at 360° on Static Rollover Device	A-39
69	Impact Photograph (video still)	A-40
70	Monroney Label Photograph	A-40

Figure A-1: Load Cell Location

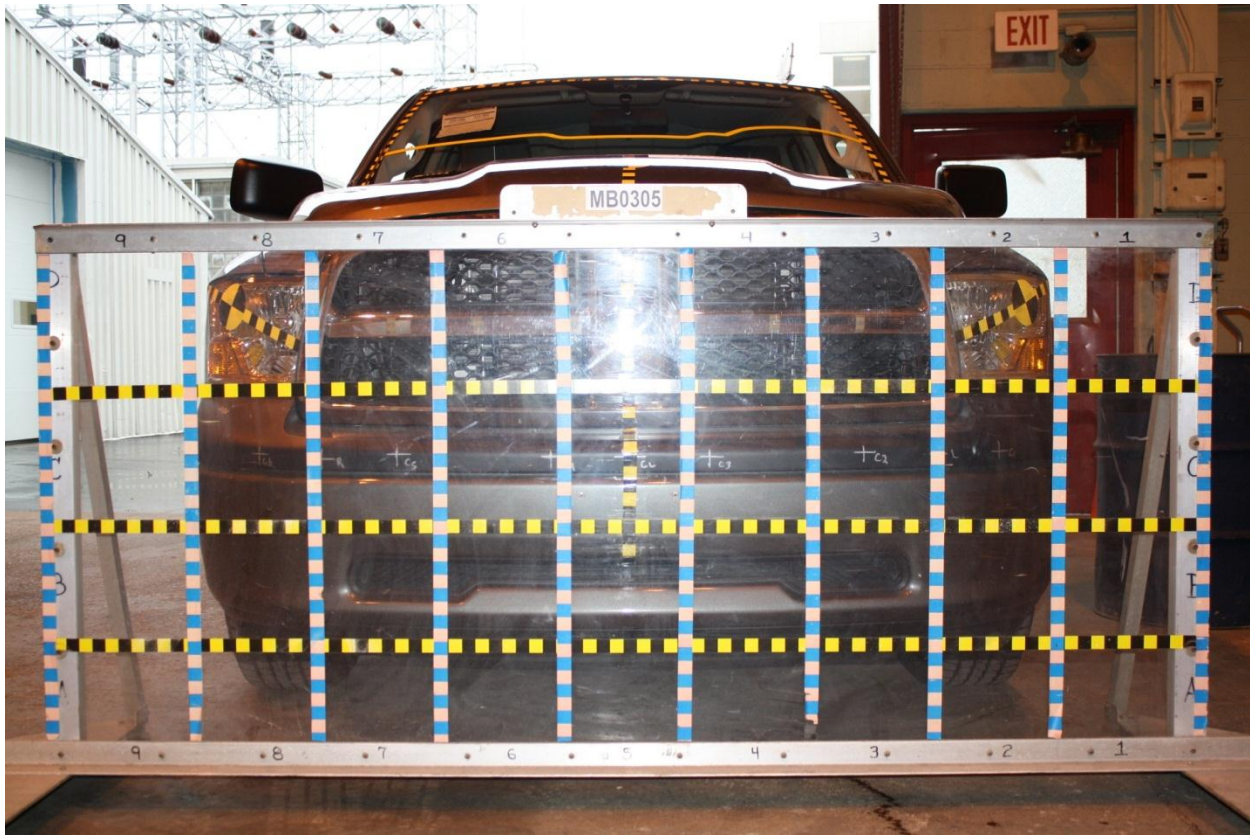


Figure A-2: Load Cell Wall



Figure A-3: Manufacturer Label



Figure A-4: Tire Placard

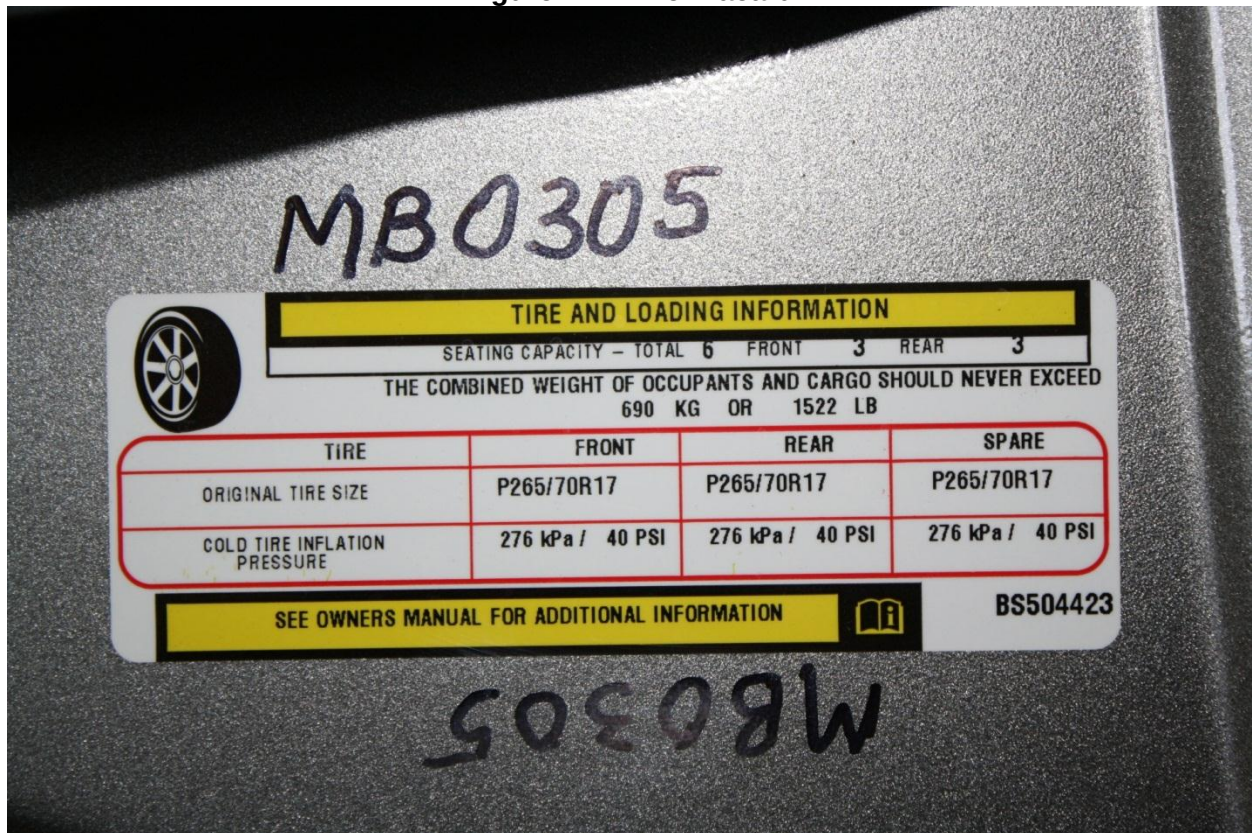


Figure A-5: Right Front 3/4 View, as Received



Figure A-6: Left Rear 3/4 View, as Received



Figure A-7: Pre-Test Front View of Test Vehicle



Figure A-8: Post-Test Front View of Test Vehicle

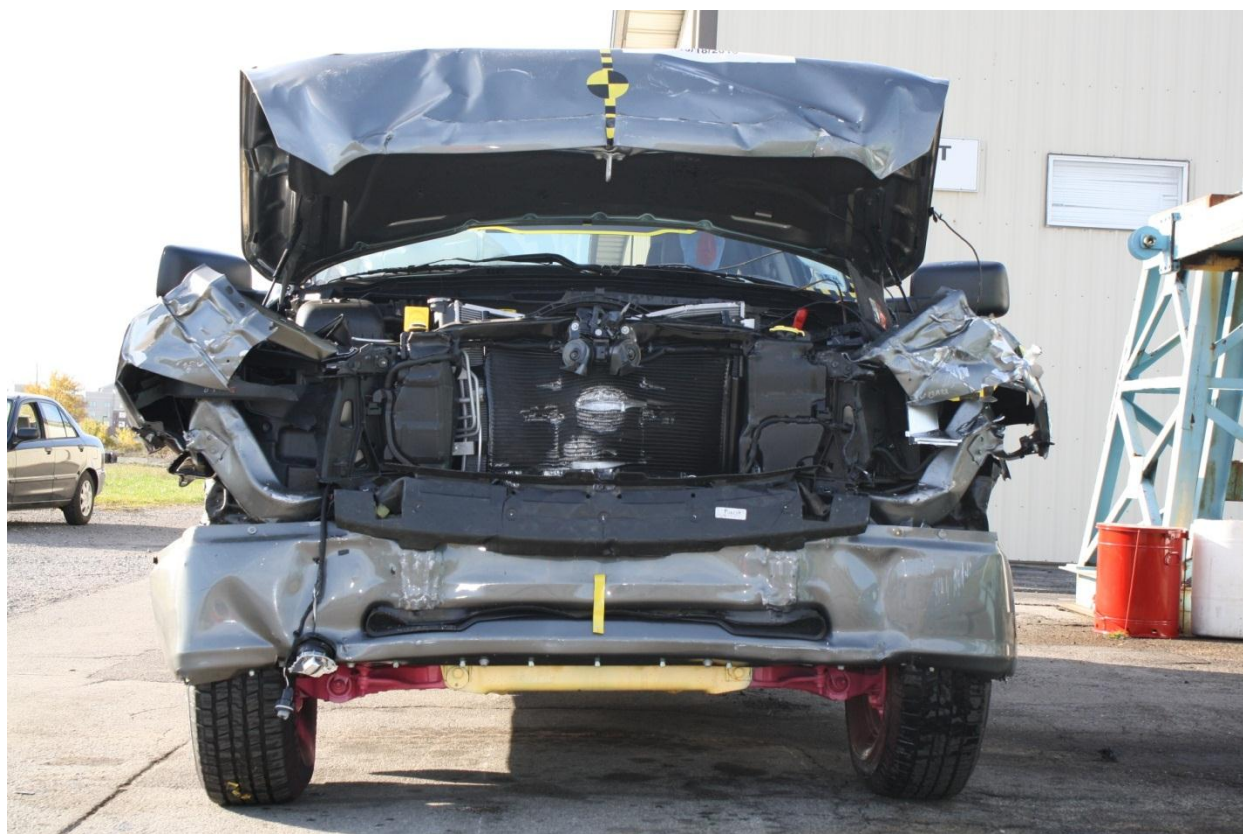


Figure A-9: Pre-Test Left View of Test Vehicle



Figure A-10 – Post-Test Left View of Vehicle



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



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



Figure A-13: Pre-Test Right $\frac{3}{4}$ View



Figure A-14: Post-Test Right $\frac{3}{4}$ View

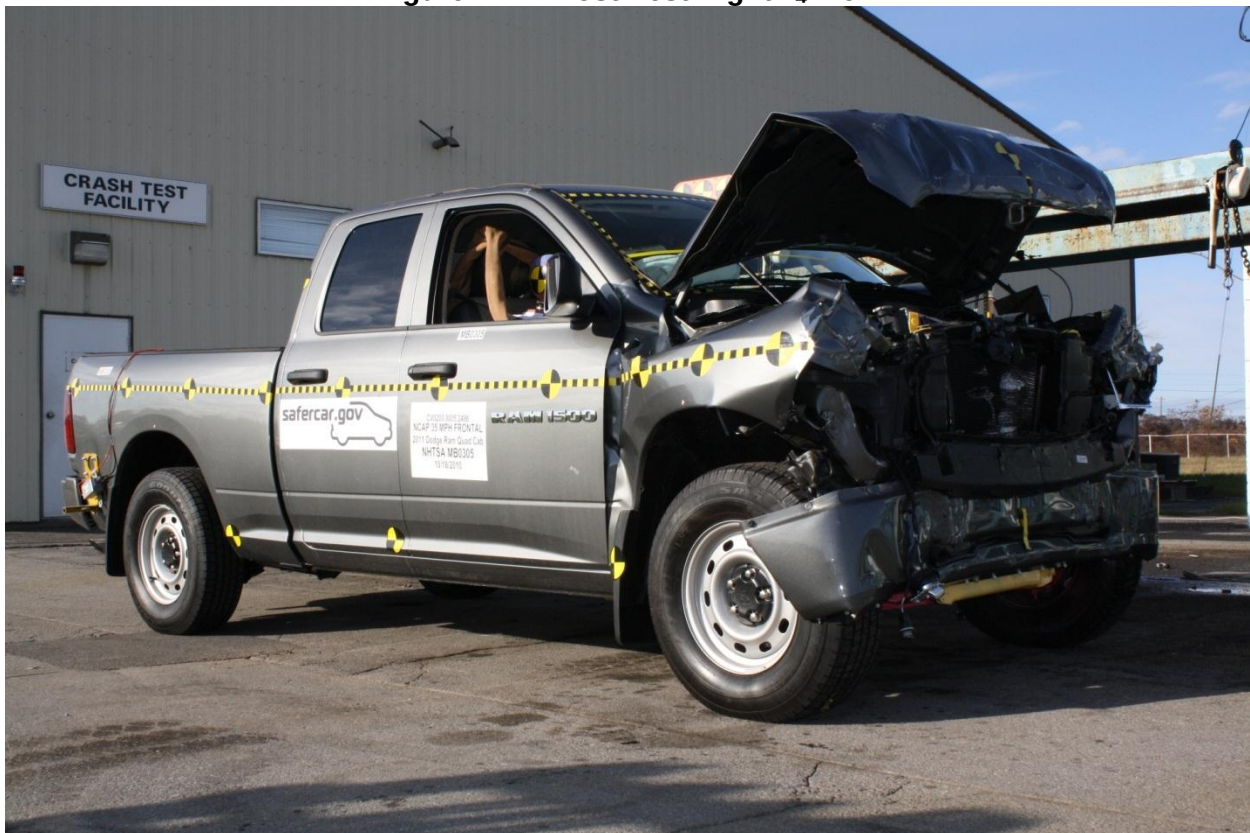


Figure A-15: Pre-Test Left Rear ¾ View



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



Figure A-17: Pre-Test Windshield View



Figure A-18: Post-Test Windshield View



Figure A-19: Pre-Test Engine Compartment View



Figure A-20: Post-Test Engine Compartment View

Photo Not Available

Figure A-21: Pre-Test Fuel Filler Cap View



Figure A-22: Post-Test Fuel Filler Cap View



Figure A-23: Pre-Test Front Underbody View



Figure A-24: Post-Test Front Underbody View



Figure A-25: Pre-Test Rear Underbody View

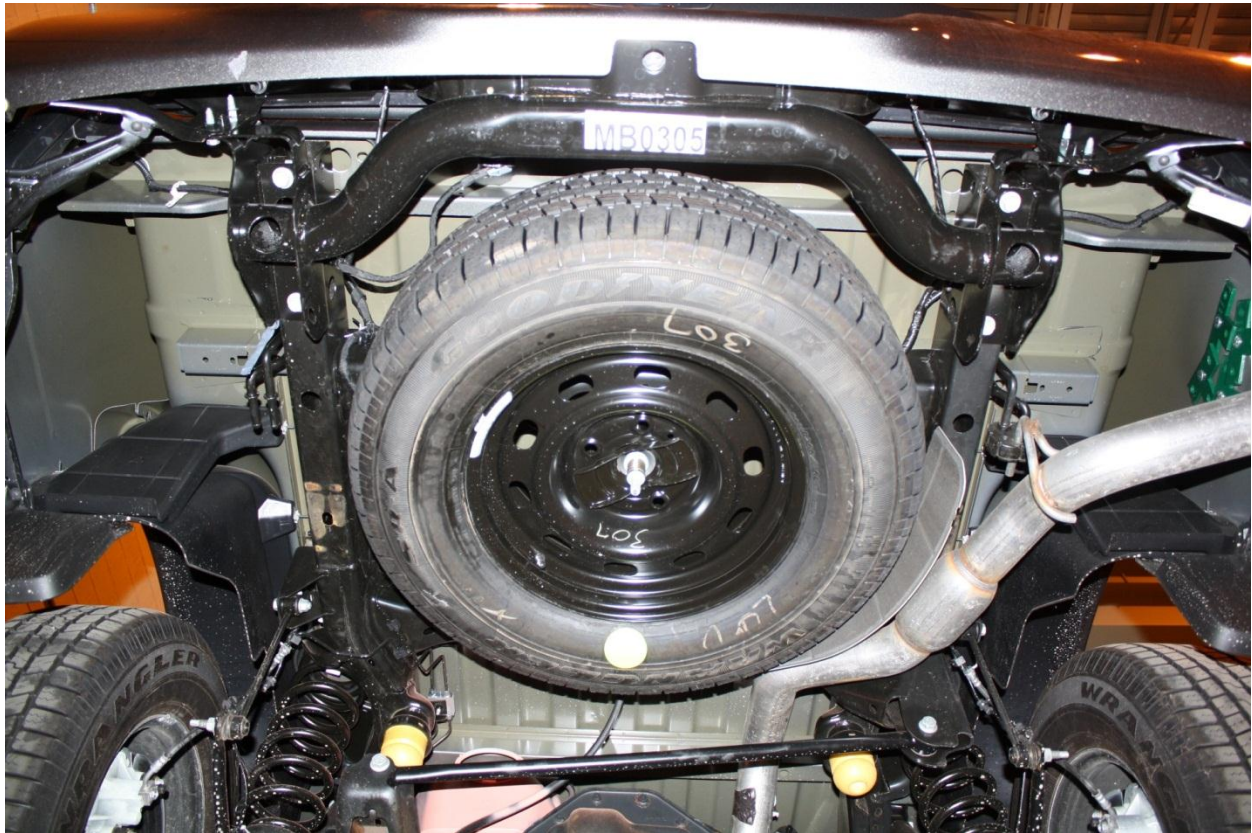


Figure A-26: Post-Test Rear Underbody View



Figure A-27: Pre-Test Dummy Cable Routing



Figure A-28: Post-Test Dummy Cable Routing

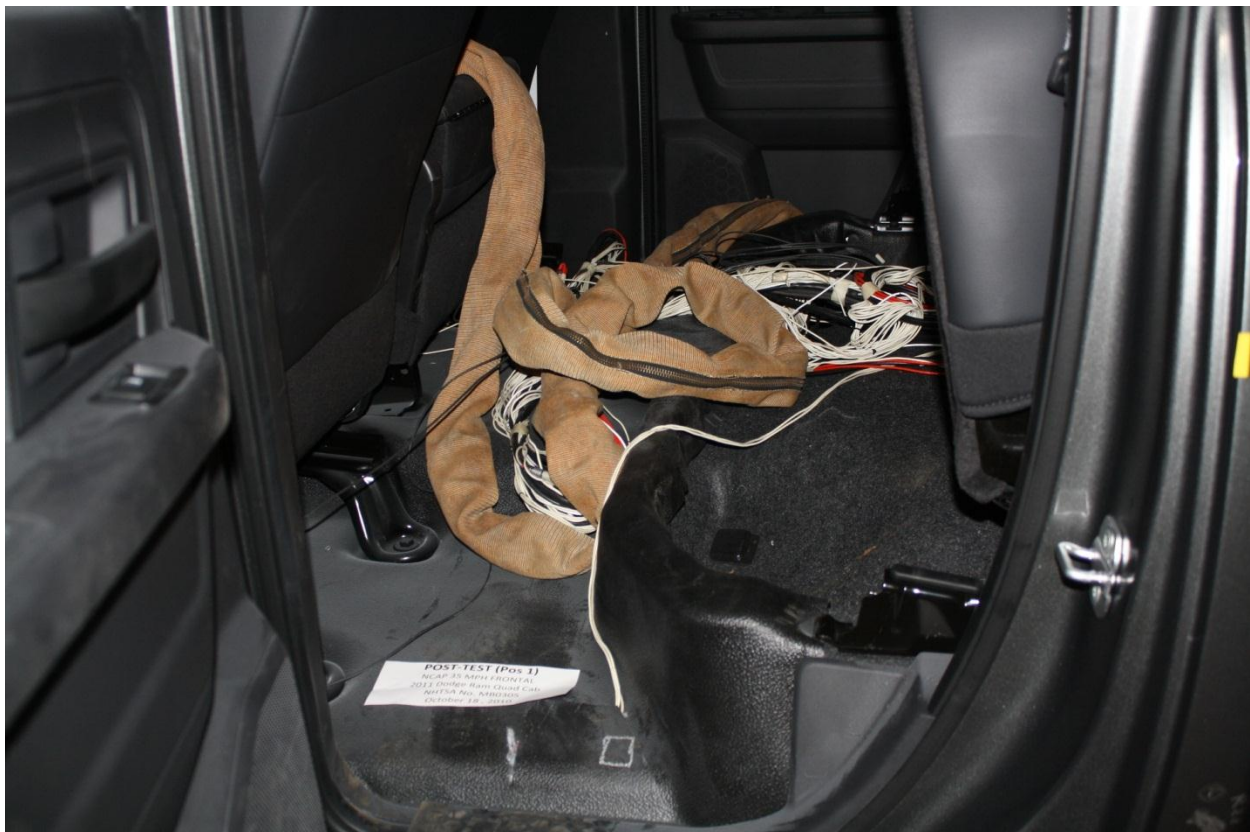


Figure A-29: Pre-Test Driver Dummy Front View

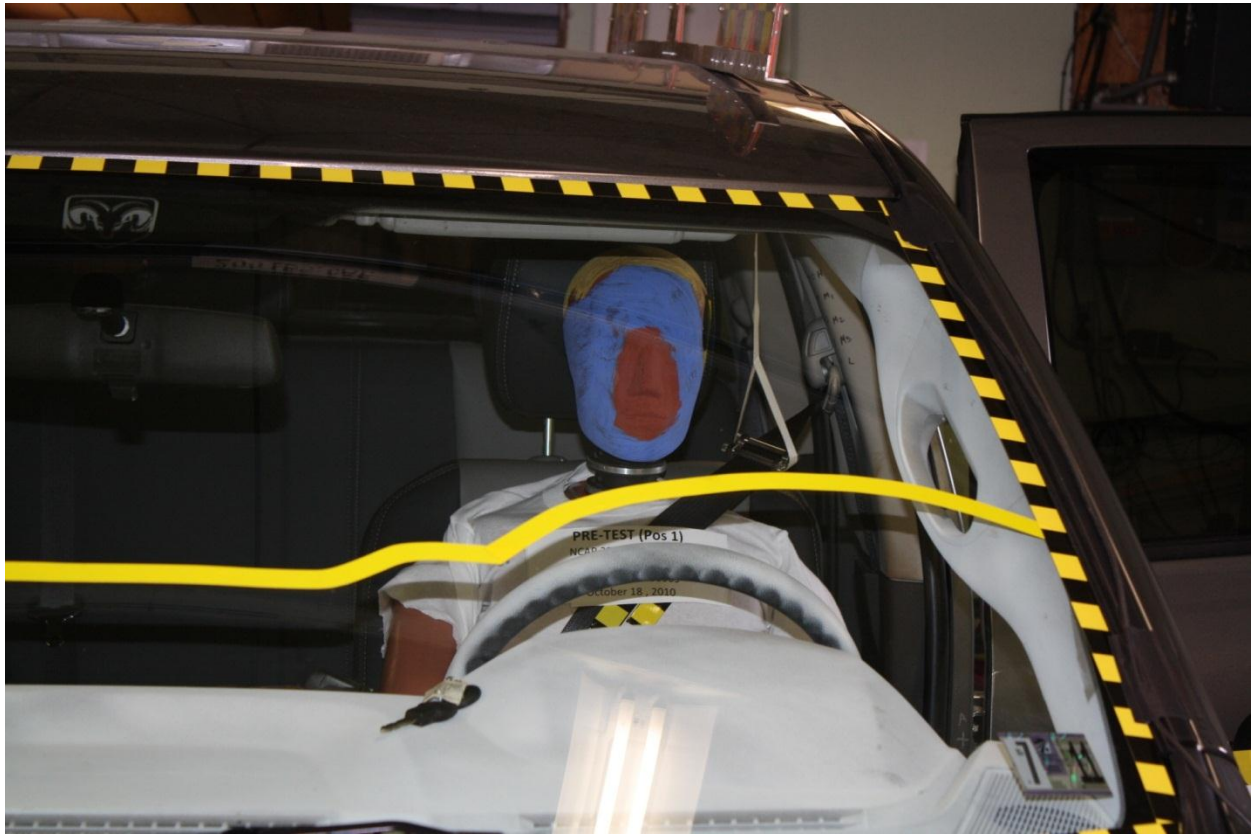


Figure A-30: Post-Test Driver Dummy Front View



Figure A-31: Pre-Test Driver Dummy Window View



Figure A-32: Post-Test Driver Dummy Window View



Figure A-33: Pre-Test Driver Dummy and Vehicle Interior View



Figure A-34: Post-Test Driver Dummy and Vehicle Interior View



Figure A-35: Pre-Test Driver's Seat Fore-Aft Markings



Figure A-36: Post-Test Driver's Seat Fore-Aft Markings



Figure A-37: Pre-Test Driver Dummy Feet



Figure A-38: Post-Test Driver Dummy Feet



Figure A-39: Pre-Test Driver's Side Knee Bolster



Figure A-40: Post-Test Driver's Side Knee Bolster



Figure A-41: Pre-Test Driver's Side Floorpan



Figure A-42: Post-Test Driver's Side Floorpan



Figure A-43a: Post-Test Diver Dummy Contact with Airbag

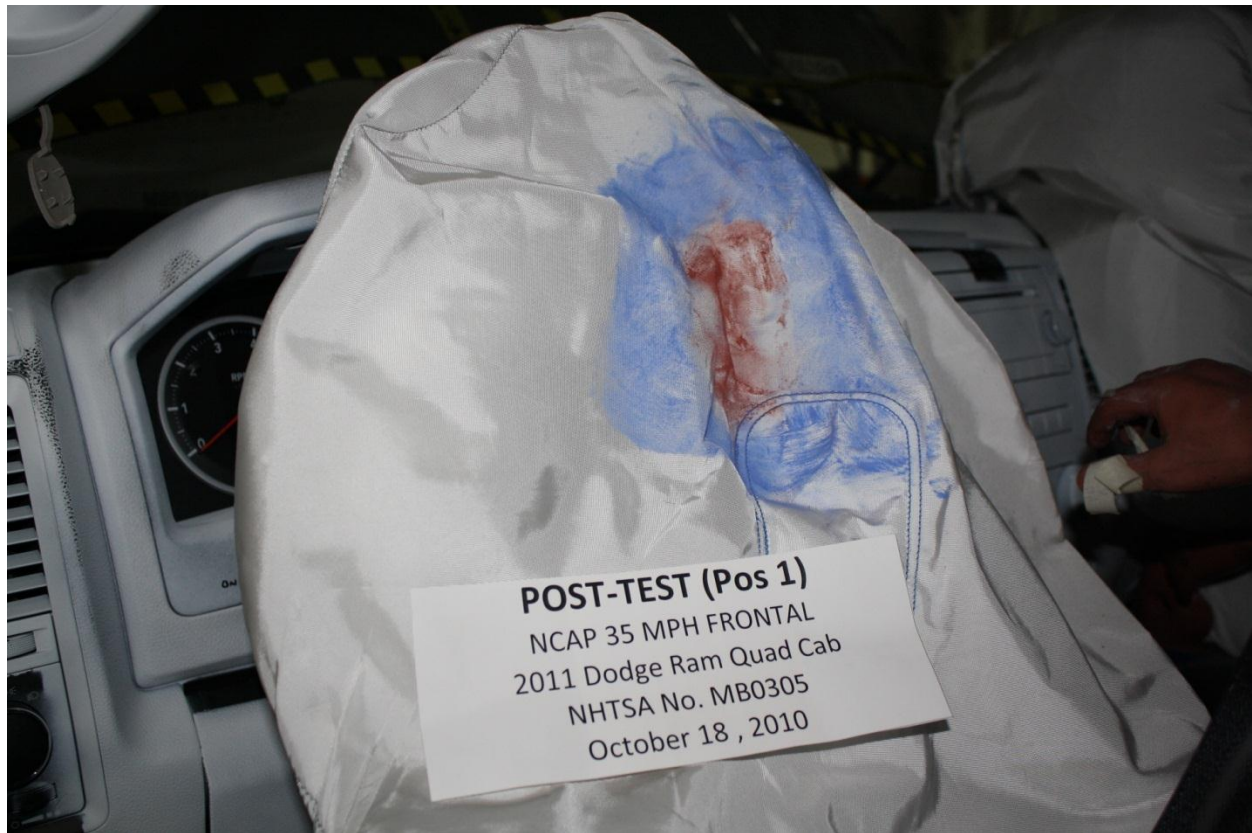


Figure A-43b: Post-Test Driver Dummy Contact with Head Restraint



Figure A-44: Pre-Test View of the Steering Column Shear Capsule



Figure A-45: Post-Test View of the Steering Column Shear Capsule



Figure A-46: Pre-Test Passenger Dummy Front View



Figure A-47: Post-Test Passenger Dummy Front View

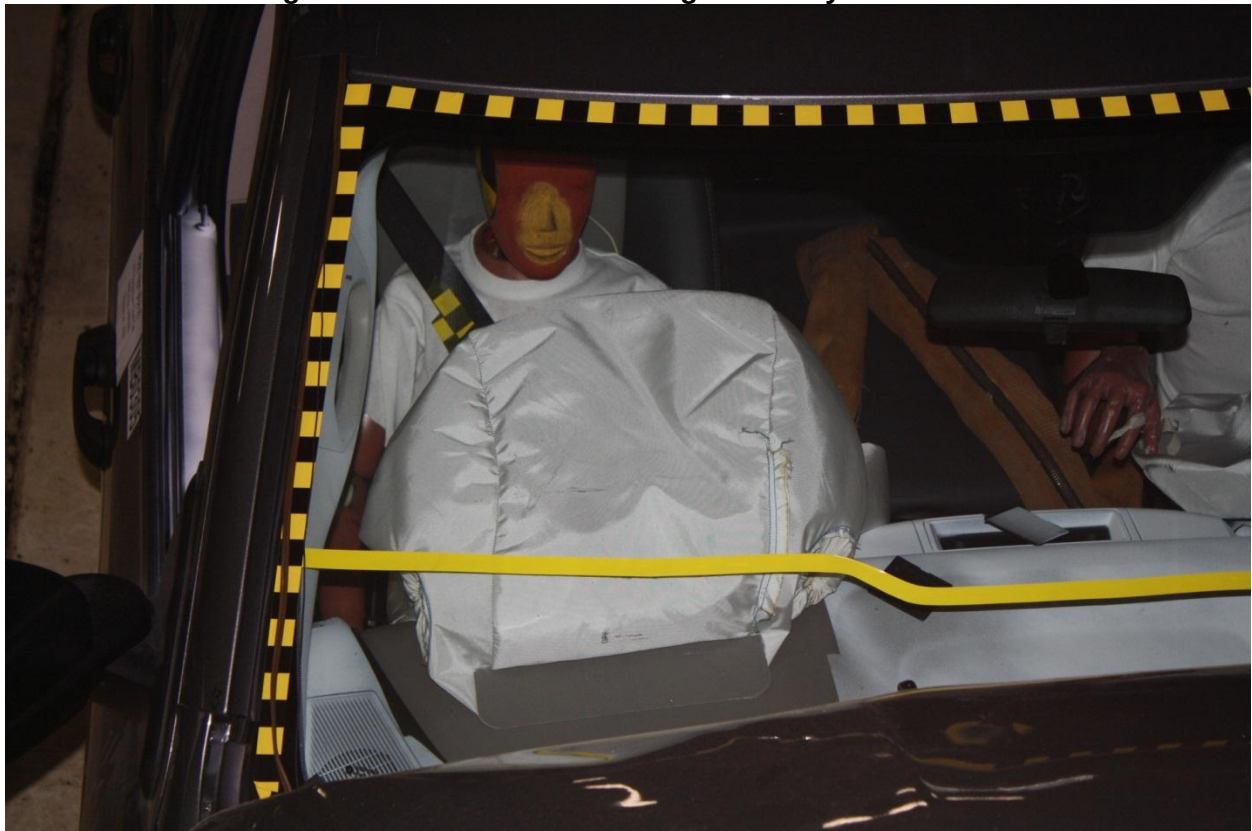


Figure A-48: Pre-Test Passenger Dummy Window View



Figure A-49: Post-Test Passenger Dummy Window View



Figure A-50: Pre-Test Passenger Dummy and Vehicle Interior View



Figure A-51: Post-test Passenger Dummy and Vehicle Interior View



Figure A-52: Pre-Test Passenger Seat Force-Aft Markings



Figure A-53: Post-Test Passenger Seat Force-Aft Markings



Figure A-54: Pre-Test Passenger Dummy Feet



Figure A-55: Post-Test Passenger Dummy Feet



Figure A-56: Pre-Test Passenger's Side Knee Bolster



Figure A-57: Post-Test Passenger's Side Knee Bolster



Figure A-58: Pre-Test Passenger's Side Floorpan

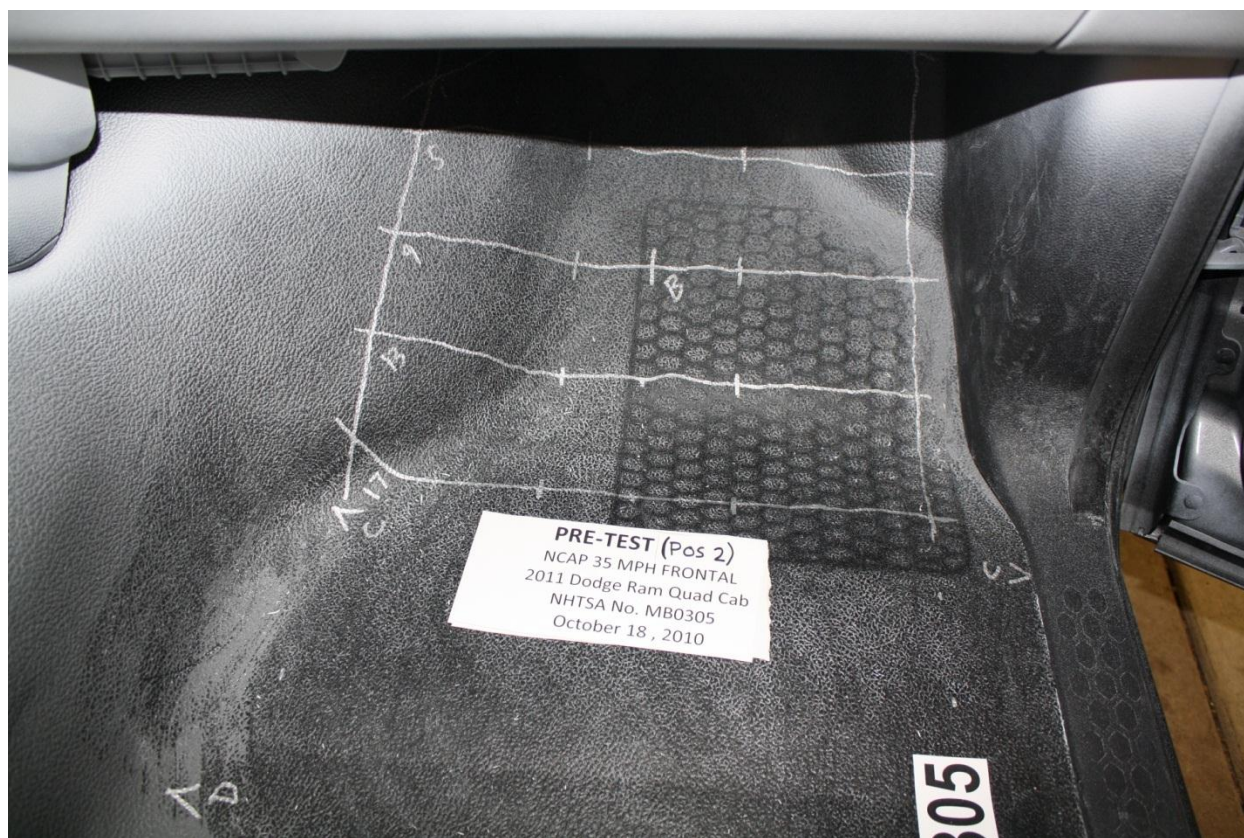


Figure A-59: Post-Test Passenger's Side Floorpan

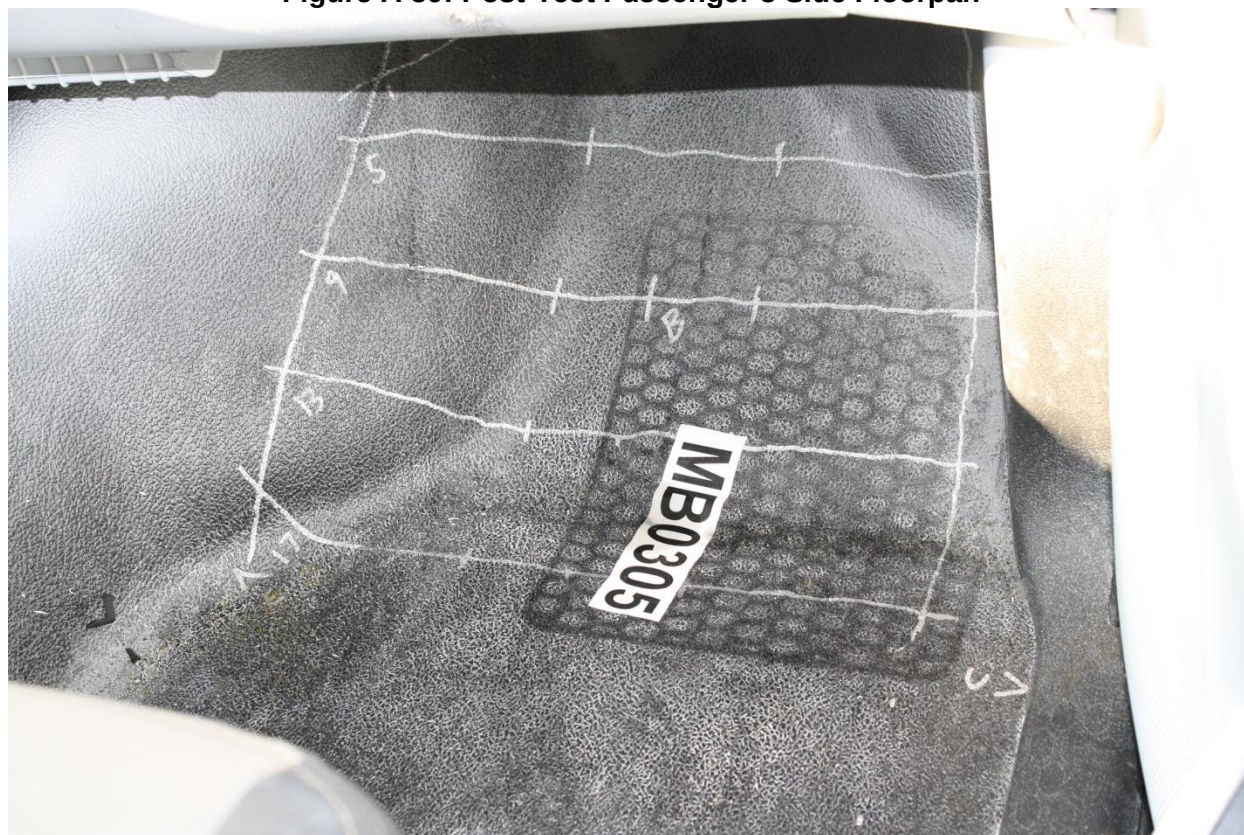


Figure A-60a: Post-Test Passenger Dummy Contact with Airbag



Figure A-60b: Post-Test Passenger Dummy Contact with Head Restraint



Figure A-61: Photograph of Ballast Installed Vehicle

Photo Not Available

Figure A-62: Post-Test Stoddard Solvent Spillage Location View

Photo Not Applicable

Figure A-63: Post-Test Speed Trap Read Out

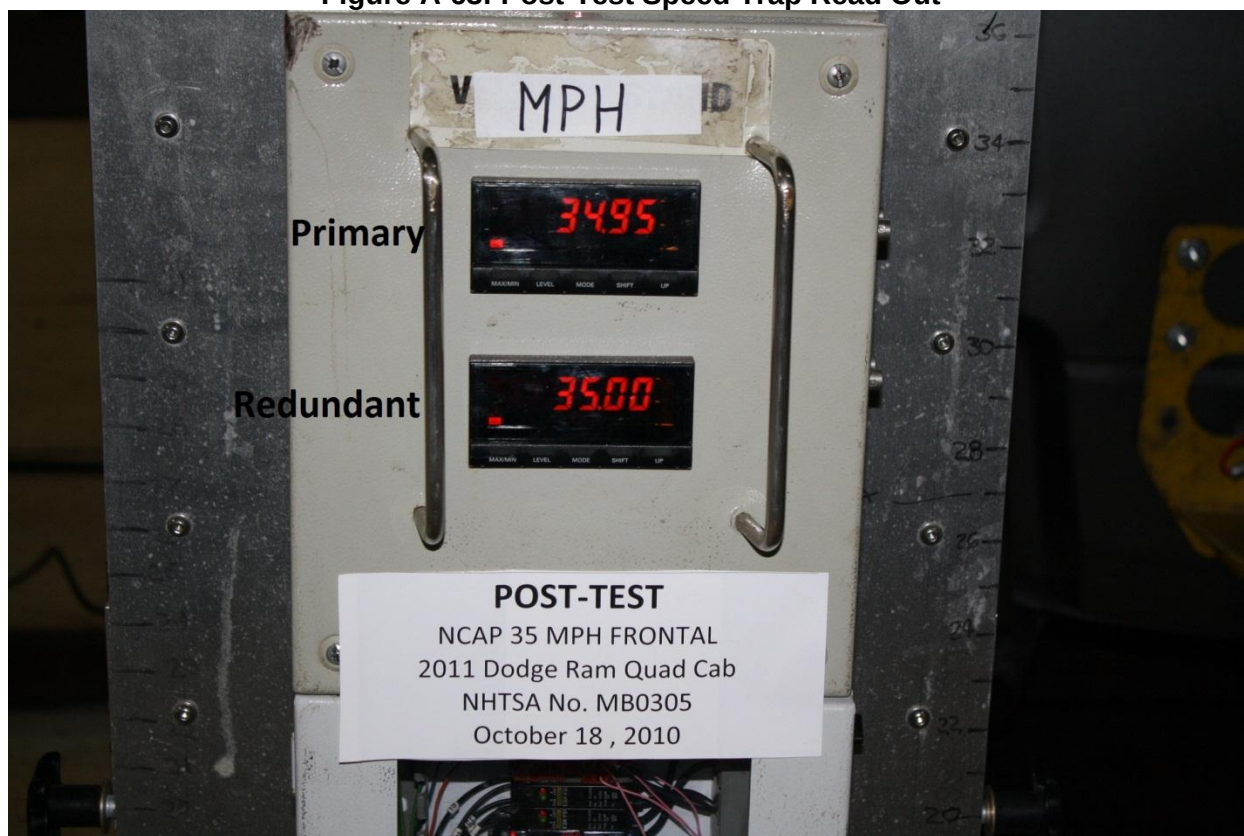


Figure A-64: Vehicle at 0° on Static Rollover Device



Figure A-65: Vehicle at 90° on Static Rollover Device



Figure A-66: Vehicle at 180° on Static Rollover Device



Figure A-67: Vehicle at 270° on Static Rollover Device



Figure A-68: Vehicle at 360° on Static Rollover Device



Figure A-69: Impact Photograph



Figure A-70: Monroney Label Photograph

2011 MODEL YEAR
RAM 1500 ST QUAD CAB 4X4

MB0305

MANUFACTURER'S SUGGESTED RETAIL PRICE OF THIS MODEL INCLUDING DEALER PREPARATION

Base Price: \$29,075

EXTERIOR FEATURES

- 17-inch x 12-inch Steel Argent Wheels
- P265/70R17 BSW All Season Tires
- Hill-Slope Spare Tire
- Trailer Tow Wiring with 4-Pin Connector
- 7-Pin Wiring Harness
- Argent Grille
- Antenna's Headlamps
- Halligan Headlamps
- Fold-Away Power Heated Mirrors
- Tinted Glass Windows

OPTIONAL EQUIPMENT

- Customer Preferred Package 240
- Flexible Fuel Vehicle

DESTINATION CHARGE \$600

TOTAL PRICE: *\$29,975

WARRANTY COVERAGE

- 5-year or 100,000-mile Powertrain Limited Warranty
- 3-year or 50,000-mile Basic Limited Warranty
- 24-hour towing assistance; certain restrictions apply
- Ask Dealer for a copy of this limited warranty or see your owner's manual for details

5 YEAR/100,000 MILE POWERTRAIN WARRANTY

INTERIOR FEATURES

- Air Conditioning
- Media Center 150 CD/MP3
- Audio Rack Input for Mobile Devices
- 6 Speakers
- Rear Folding Seat
- Power Windows w/ Front One-Touch Up & Down Feature
- Day/Night Rearview Mirror
- Rear Underseat Storage Compartment
- Tilt Steering Column
- 170-mph Cruise w/tilt Tachometer
- 12-Volt Auxiliary Power Outlet

STANDARD EQUIPMENT UNLESS REPLACED BY OPTIONAL EQUIPMENT:

- FUNCTIONAL/SAFETY FEATURES
- 26-Gallon Fuel Tank
- Advanced Multi-Stage Front Airbags
- Supplemental Side-Curtain Front and Rear Airbags
- Electronic Stability Control
- Anti-Lock 4-Wheel Disc Brakes
- Electric Shift-on-the-Fly Part Three Transfer Case
- 3.53 Rear Axle Ratio
- 200MM Heavy Duty Front Axle
- 180-Amp Alternator
- Steady Key Theft Deterrent System
- Heavy Duty Engine Cooling
- Heavy Duty Transmission Oil Cooler
- Power Locks
- Power Accessory Delay
- 120-MPH Primary Speedometer
- Tire Pressure Monitoring Warning Lamp
- Variable Intermittent Wiper/Vipers
- Locking Tailgate

Assembly Plant of Duty: WARREN, MICHIGAN, U.S.A.

vin: 1D7RV1G6P2B000403

107-RV1G6P2B000403

For more information visit: www.ramtrucks.com or call 1-866-RAMINFO

Stock 3B015
Chrysler Group LLC

EPA Fuel Economy Estimates

These estimates reflect new EPA methods beginning with 2008 models.

GASOLINE CITY MPG	Dual Fuel Vehicle* Gasoline-Ethanol (E85) Estimated Annual Fuel Cost	GASOLINE HIGHWAY MPG
13	\$2,601	18

Expected range for most drivers: 10 to 16 mpg

based on 15,000 miles at \$2.60 per gallon of gasoline

Combined Gasoline Fuel Economy: **15**

Expected range for most drivers: 14 to 22 MPG

Your actual mileage will vary depending on how you drive and maintain your vehicle.

See the FREE Fuel Economy Guide at dealers or www.fueleconomy.gov

GOVERNMENT SAFETY RATINGS

Frontal Crash	Driver Passenger	Not Rated
Star ratings based on the risk of injury in a frontal impact. Frontal ratings should ONLY be compared to other vehicles of similar size and weight.	Not Rated	Not Rated

Side Crash	Front seat Rear seat	Not Rated
Star ratings based on the risk of injury in a side impact.	Not Rated	Not Rated

Rollover ★★ ★

Star ratings based on the risk of rollover in a single vehicle crash.

Star ratings range from 1 to 5 stars (★ ★ ★ ★ ★) with 5 being the highest.

Source: National Highway Traffic Safety Administration (NHTSA)

www.safercar.gov or 1-888-327-4236

The safety ratings above are based on Federal Government tests of particular vehicles only, and with certain limitations and options. The performance of this vehicle may differ.

PARTS CONTENT INFORMATION FOR VEHICLES IN THIS CARLINE:

U.S./CANADIAN PARTS CONTENT: 70 %

MAJOR SOURCES OF FOREIGN PARTS CONTENT:

MEXICO: 15 %

NOTE: PARTS CONTENT DOES NOT INCLUDE FINAL ASSEMBLY, DISTRIBUTION, OR OTHER NON-PARTS COSTS.

FOR THIS VEHICLE:

FINAL ASSEMBLY POINT:
WARREN, MICHIGAN, U.S.A.

COUNTRY OF ORIGIN:
ENGINE: UNITED STATES
TRANSMISSION: UNITED STATES

Base Price Prep Dealer:
This vehicle not factory equipped for Snow Prep installation - See dealer for details.

APPENDIX B
DUMMY RESPONSE DATA TRACES

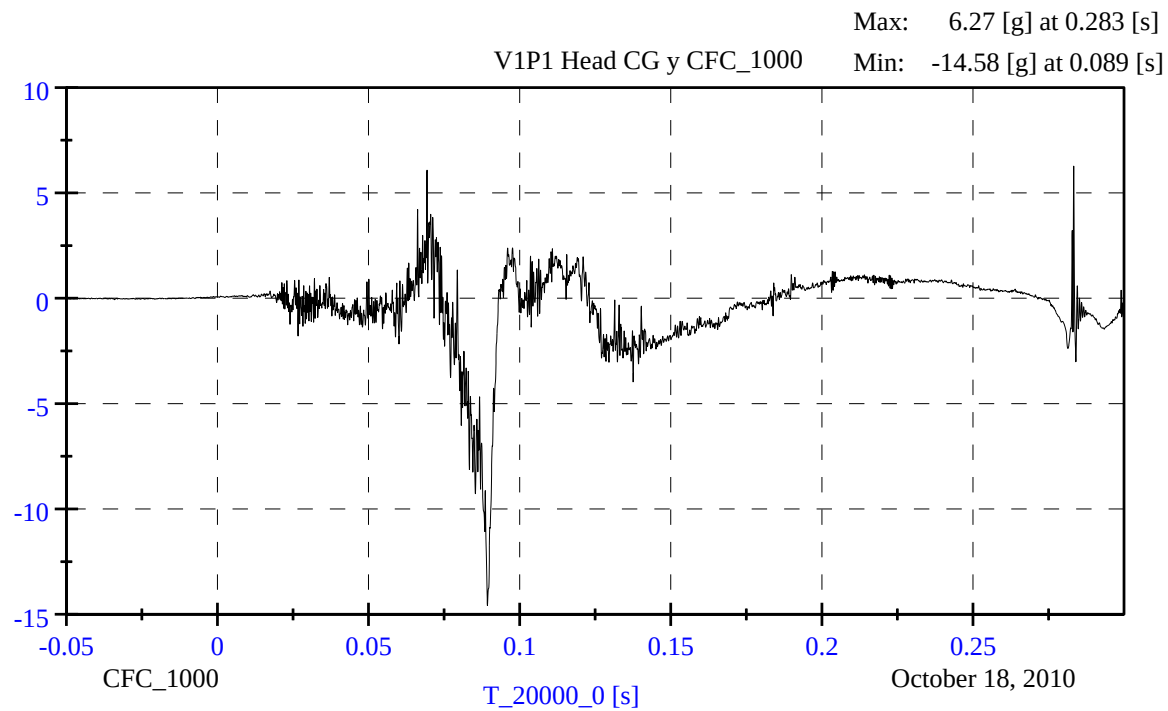
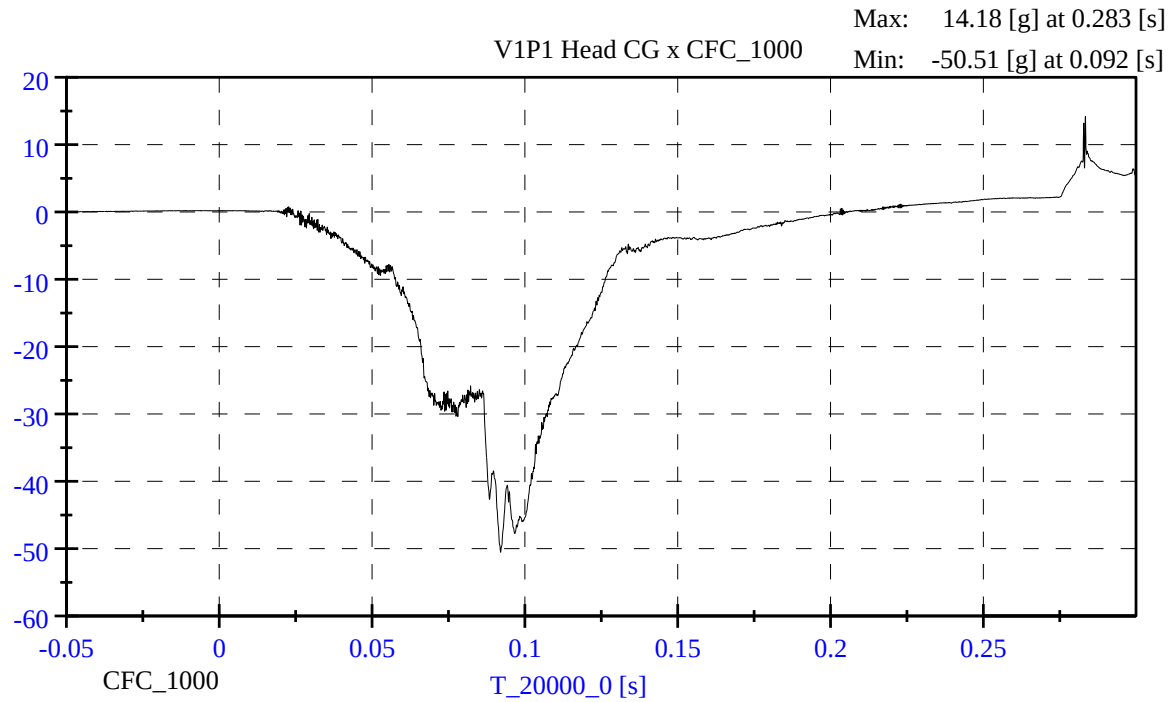
Fig. No.	List of Data Plots Provided In The Test Report	Page No.
1	Driver Head X Acceleration vs. Time Primary	B-5
2	Driver Head Y Acceleration vs. Time Primary	B-5
3	Driver Head Z Acceleration vs. Time Primary	B-6
4	Driver Head Resultant Acceleration vs. Time Primary	B-6
5	Driver Chest X Deflection vs. Time	B-7
6	Driver Chest X Acceleration vs. Time Primary	B-7
7	Driver Chest Y Acceleration vs. Time Primary	B-8
8	Driver Chest Z Acceleration vs. Time Primary	B-8
9	Driver Chest Resultant Acceleration vs. Time Primary	B-9
10	Driver Upper Neck Force X vs. Time Primary	B-9
11	Driver Upper Neck Force Z vs. Time Primary	B-10
12	Driver Upper Neck Moment Y vs. Time Primary	B-10
13	Driver Nij vs. Time Primary	B-11
14	Driver Left Femur Force vs. Time	B-11
15	Driver Right Femur Force vs. Time	B-12
16	Passenger Head X Acceleration vs. Time Primary	B-12
17	Passenger Head Y Acceleration vs. Time Primary	B-13
18	Passenger Head Z Acceleration vs. Time Primary	B-13
19	Passenger Head Resultant Acceleration vs. Time Primary	B-14
20	Passenger Chest X Deflection vs. Time	B-14
21	Passenger Chest X Acceleration vs. Time Primary	B-15
22	Passenger Chest Y Acceleration vs. Time Primary	B-15
23	Passenger Chest Z Acceleration vs. Time Primary	B-16
24	Passenger Chest Resultant Acceleration vs. Time Primary	B-16
25	Passenger Upper Neck Force X vs. Time Primary	B-17
26	Passenger Upper Neck Force Z vs. Time Primary	B-17
27	Passenger Upper Neck Moment Y vs. Time Primary	B-18
28	Passenger Nij vs. Time Primary	B-18
29	Passenger Left Femur Force vs. Time	B-19

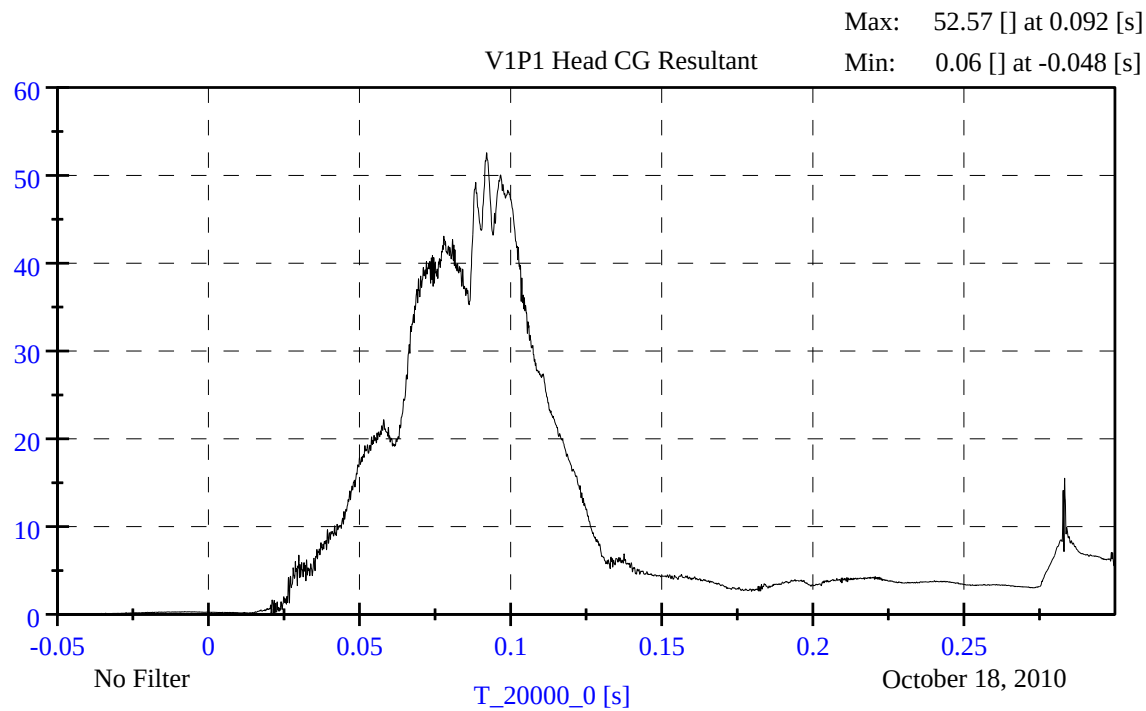
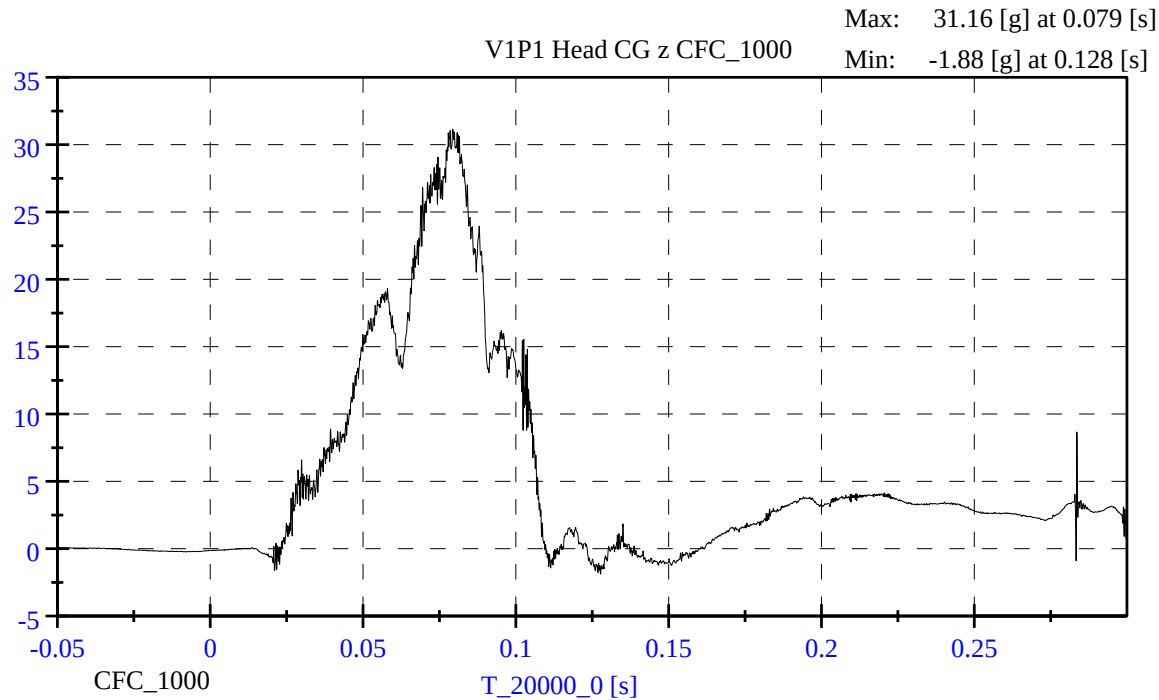
30	Passenger Right Femur Force vs. Time	B-19
----	--------------------------------------	------

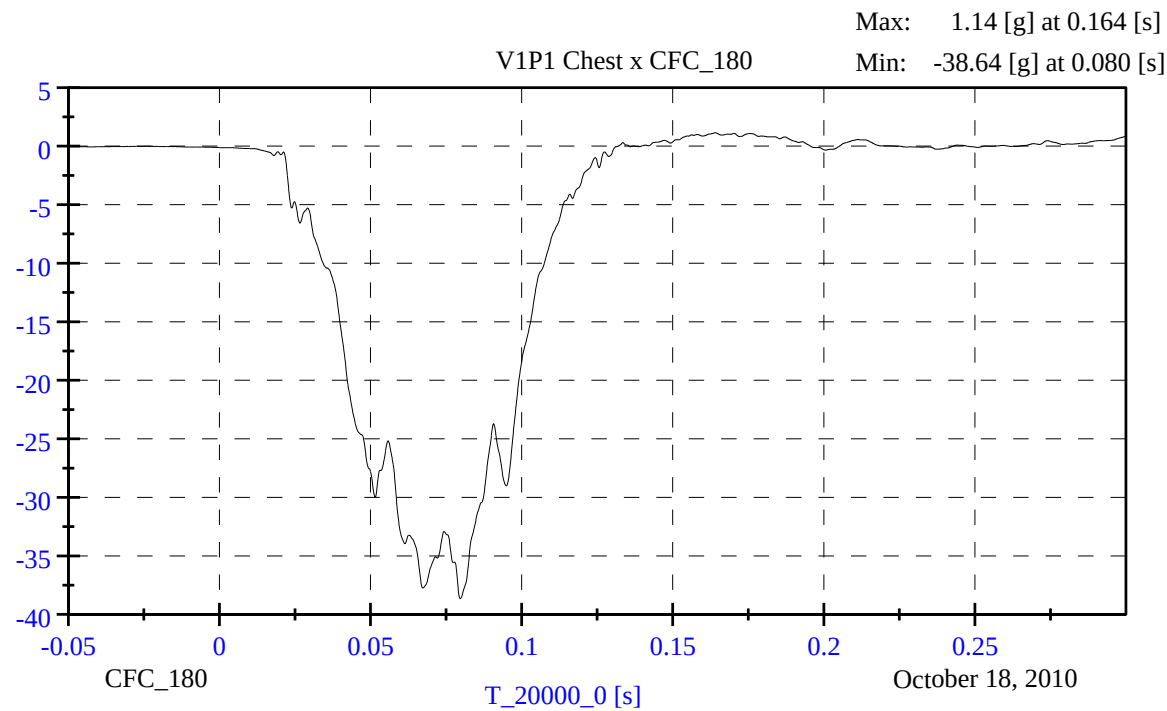
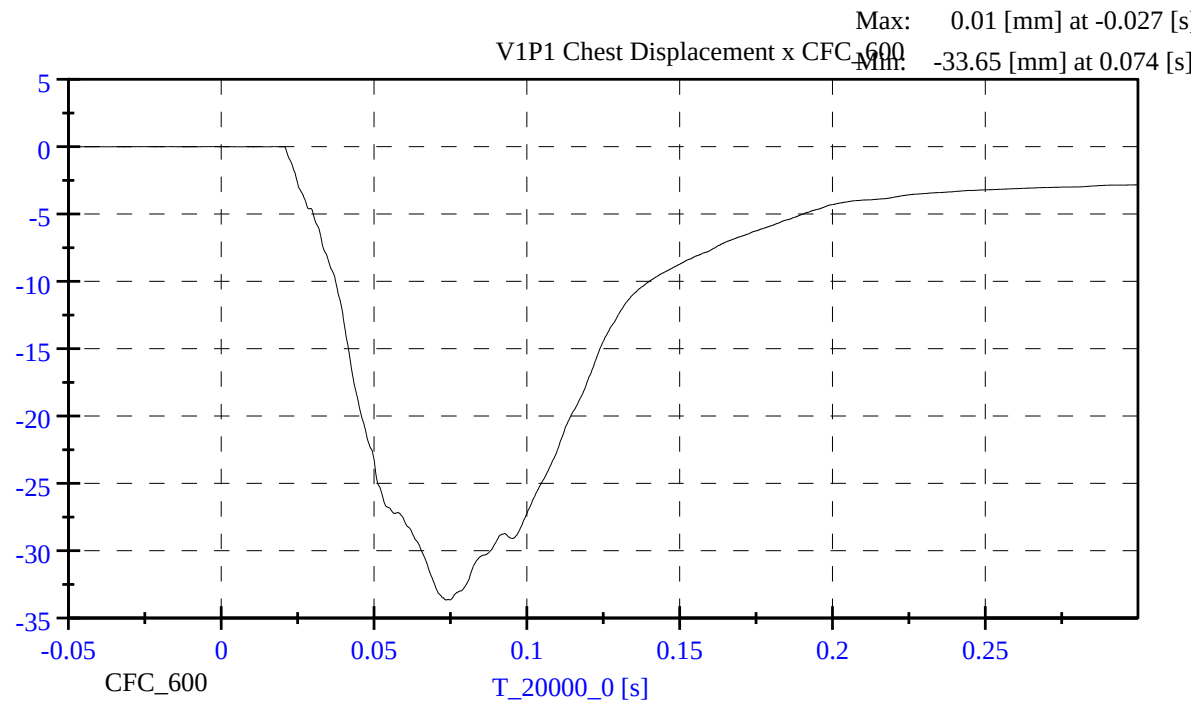
The following additional dummy and vehicle response data can be found in the R&D section of the NHTSA website at www.nhtsa.dot.gov

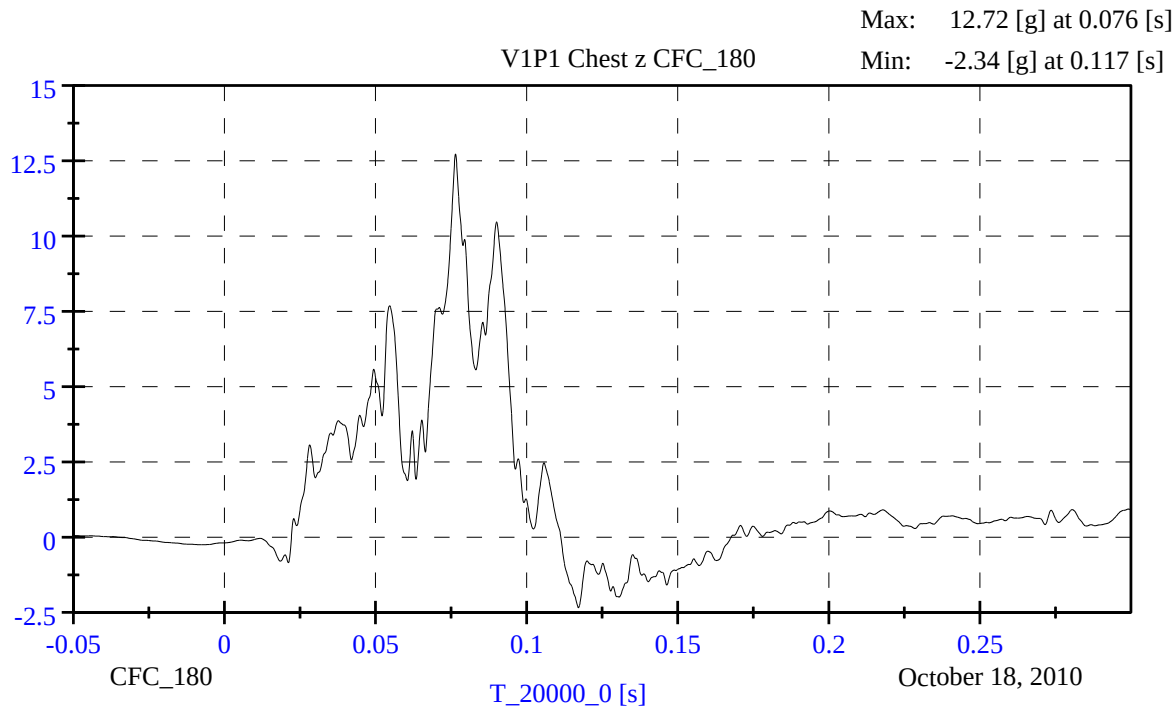
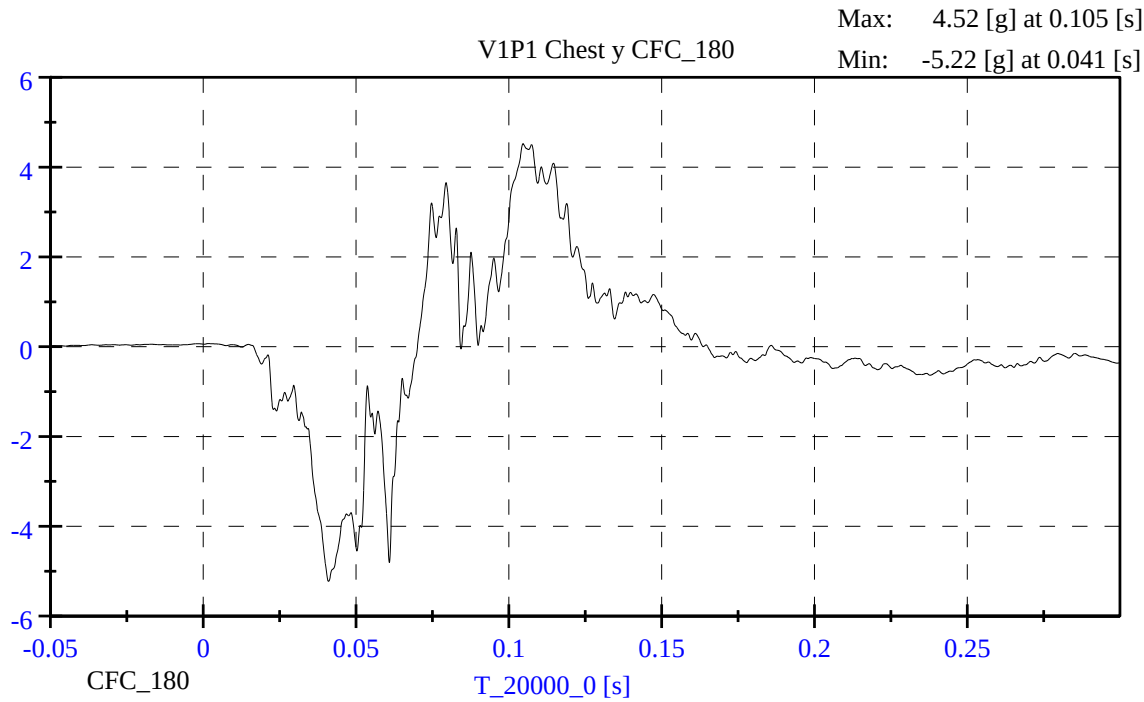
Driver Head X Acceleration Redundant
 Driver Head Y Acceleration Redundant
 Driver Head Z Acceleration Redundant
 Driver Upper Neck Force Y
 Driver Upper Neck Moment X
 Driver Upper Neck Moment Z
 Driver Chest X Acceleration Redundant
 Driver Chest Y Acceleration Redundant
 Driver Chest Z Acceleration Redundant
 Driver Pelvis X
 Driver Pelvis Y
 Driver Pelvis Z
 Driver Shoulder Belt Force
 Driver Lap Belt Force
 Driver Left Upper Tibia Moment X
 Driver Left Upper Tibia Moment Y
 Driver Left Upper Tibia Force Z
 Driver Left Lower Tibia Moment X
 Driver Left Lower Tibia Moment Y
 Driver Left Lower Tibia Force Z
 Driver Right Upper Tibia Moment X
 Driver Right Upper Tibia Moment Y
 Driver Right Upper Tibia Force Z
 Driver Right Lower Tibia Moment X
 Driver Right Lower Tibia Moment Y
 Driver Right Lower Tibia Force Z
 Driver Left Foot Fore Z
 Driver Left Foot Aft X
 Driver Left Foot Aft Z
 Driver Right Foot Fore Z
 Driver Right Foot Aft X
 Driver Right Foot Aft Z
 Passenger Head X Acceleration Redundant
 Passenger Head Y Acceleration Redundant
 Passenger Head Z Acceleration Redundant
 Passenger Upper Neck Force X
 Passenger Upper Neck Force Z
 Passenger Upper Neck Moment Y
 Passenger Chest X Acceleration Redundant
 Passenger Chest Y Acceleration Redundant
 Passenger Chest Z Acceleration Redundant
 Passenger Pelvis X
 Passenger Pelvis Y
 Passenger Pelvis Z
 Passenger Shoulder Belt Force
 Passenger Lap Belt Force
 Passenger Left Upper Tibia Moment X
 Passenger Left Upper Tibia Moment Y
 Passenger Left Upper Tibia Force Z
 Passenger Left Lower Tibia Moment X
 Passenger Left Lower Tibia Moment Y
 Passenger Left Lower Tibia Force Z
 Passenger Right Upper Tibia Moment X
 Passenger Right Upper Tibia Moment Y

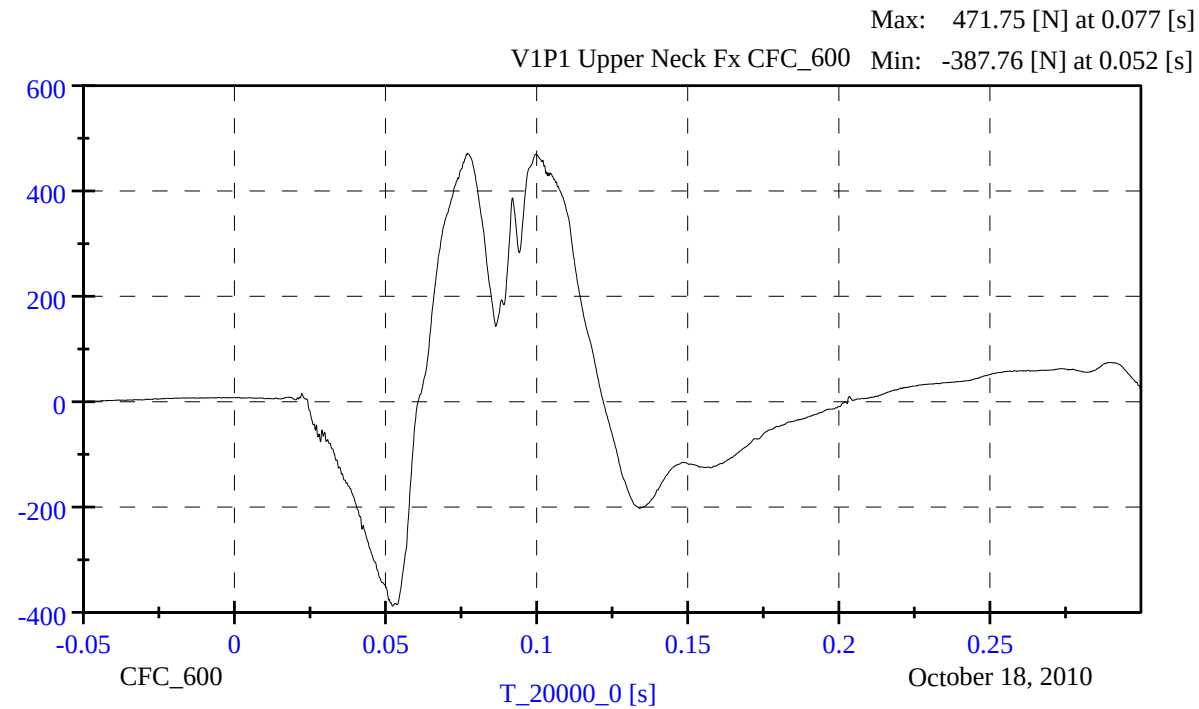
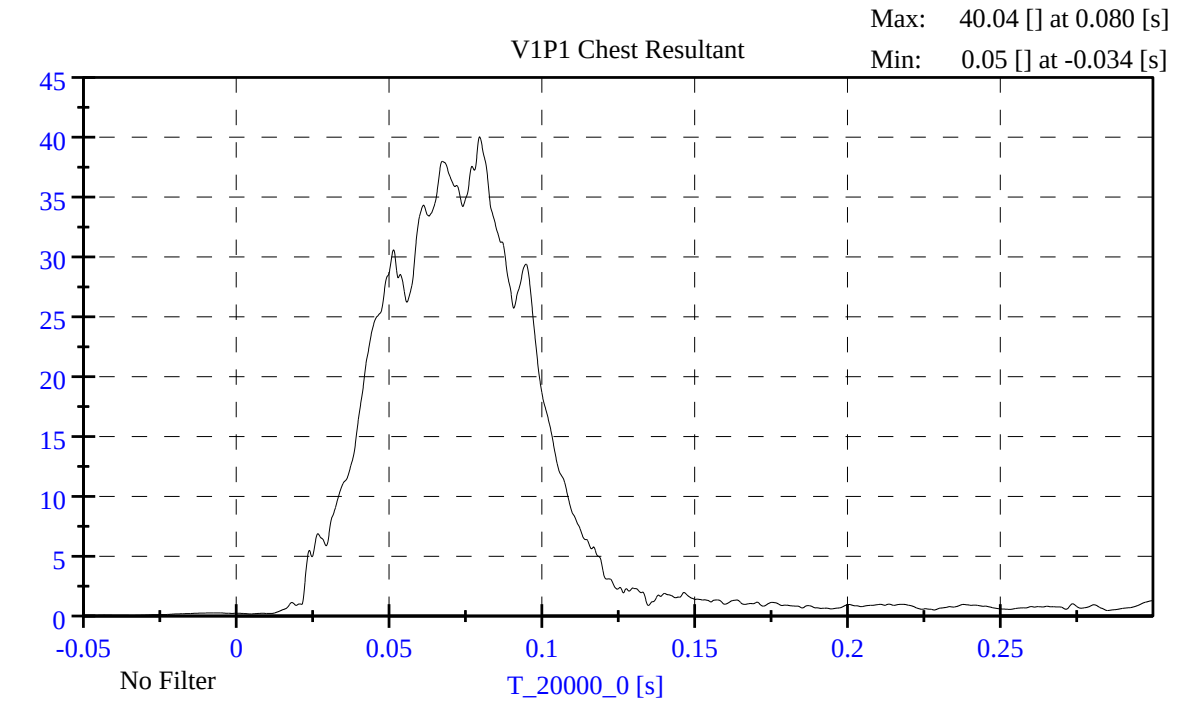
Passenger Right Upper Tibia Force Z
Passenger Right Lower Tibia Moment X
Passenger Right Lower Tibia Moment Y
Passenger Right Lower Tibia Force Z
Passenger Left Foot Fore Z
Passenger Left Foot Aft X
Passenger Left Foot Aft Z
Passenger Right Foot Fore Z
Passenger Right Foot Aft X
Passenger Right Foot Aft Z
Left Rear Seat Crossmember X
Left Rear Seat Crossmember Z
Right Rear Seat Crossmember X
Right Rear Seat Crossmember Z
Vehicle Engine Top X
Vehicle Engine Bottom X
Vehicle Left Brake Caliper X
Vehicle Right Brake Caliper X
Load Cell Barrier A1-A9
Load Cell Barrier B1-A9
Load Cell Barrier C1-A9
Load Cell Barrier D1-A9

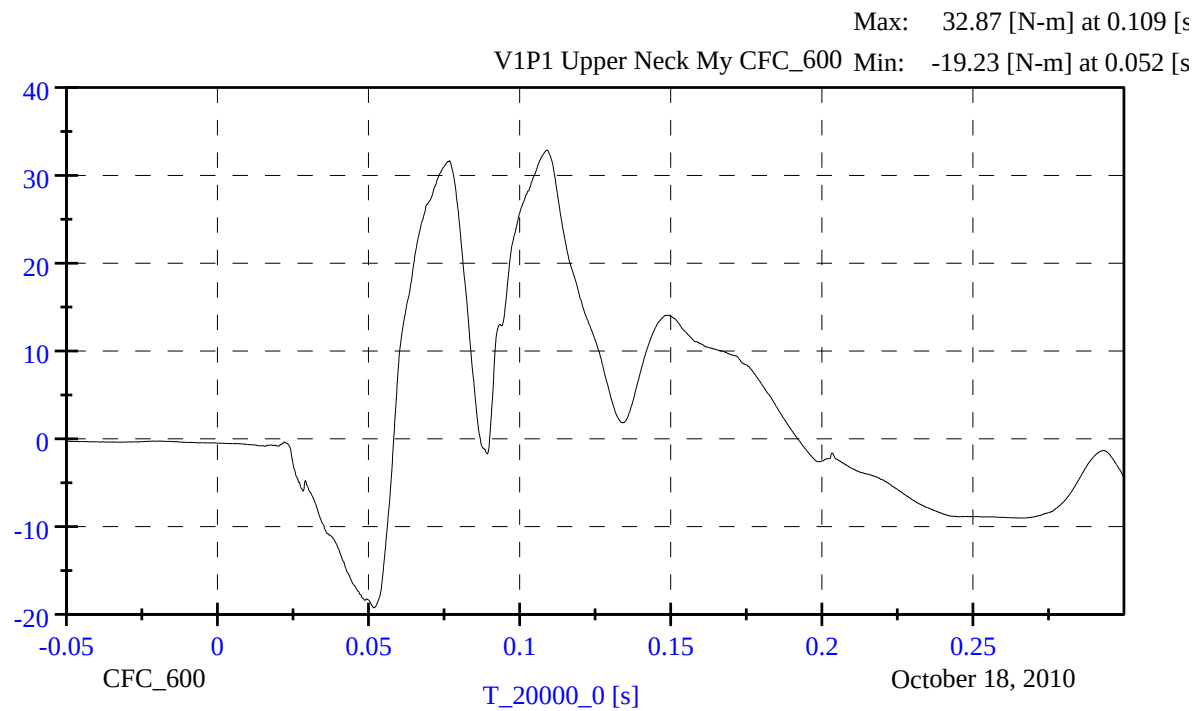
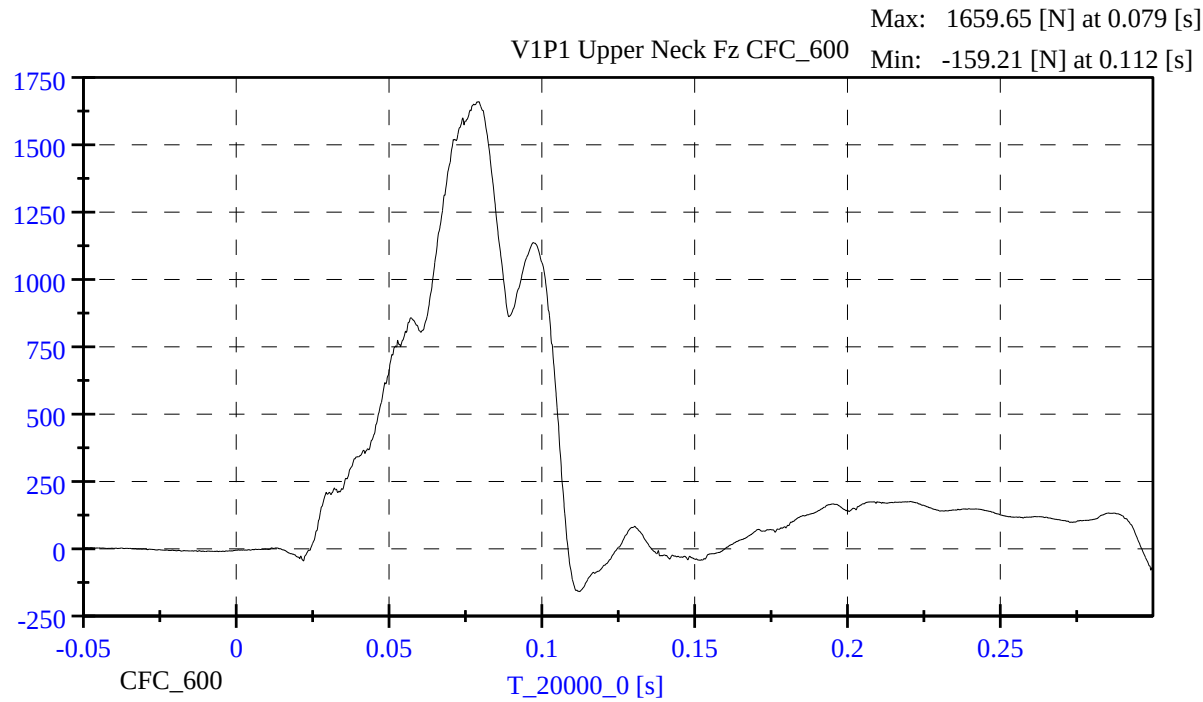


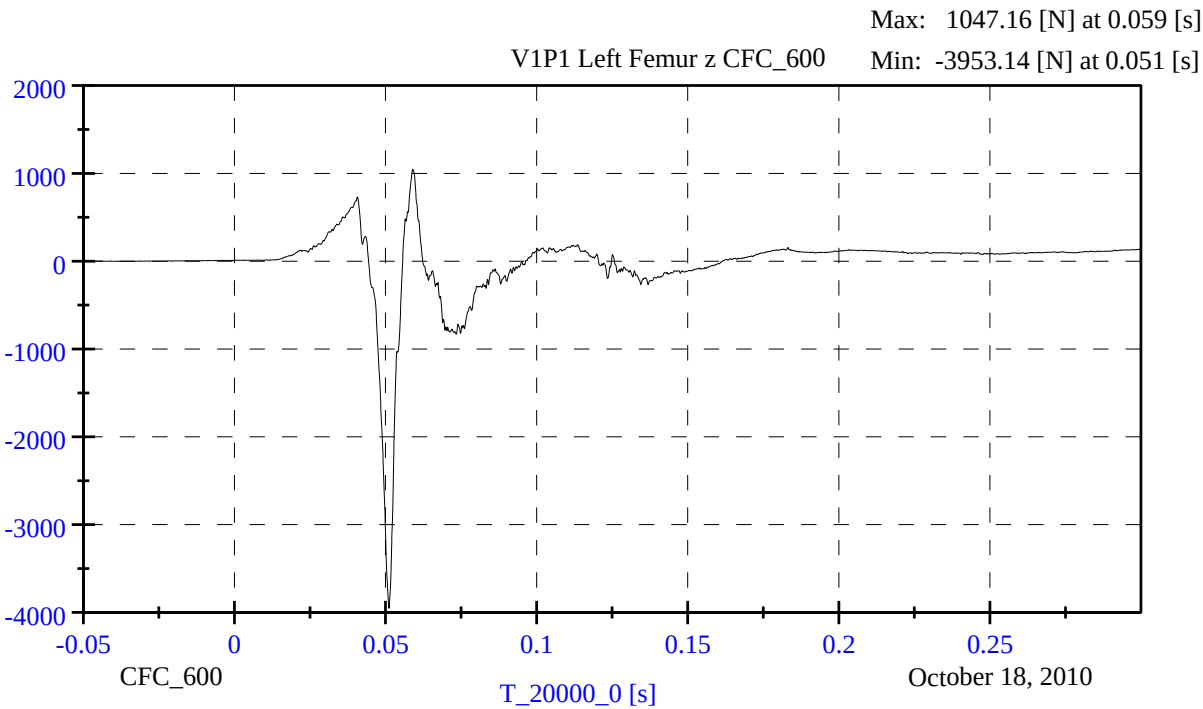
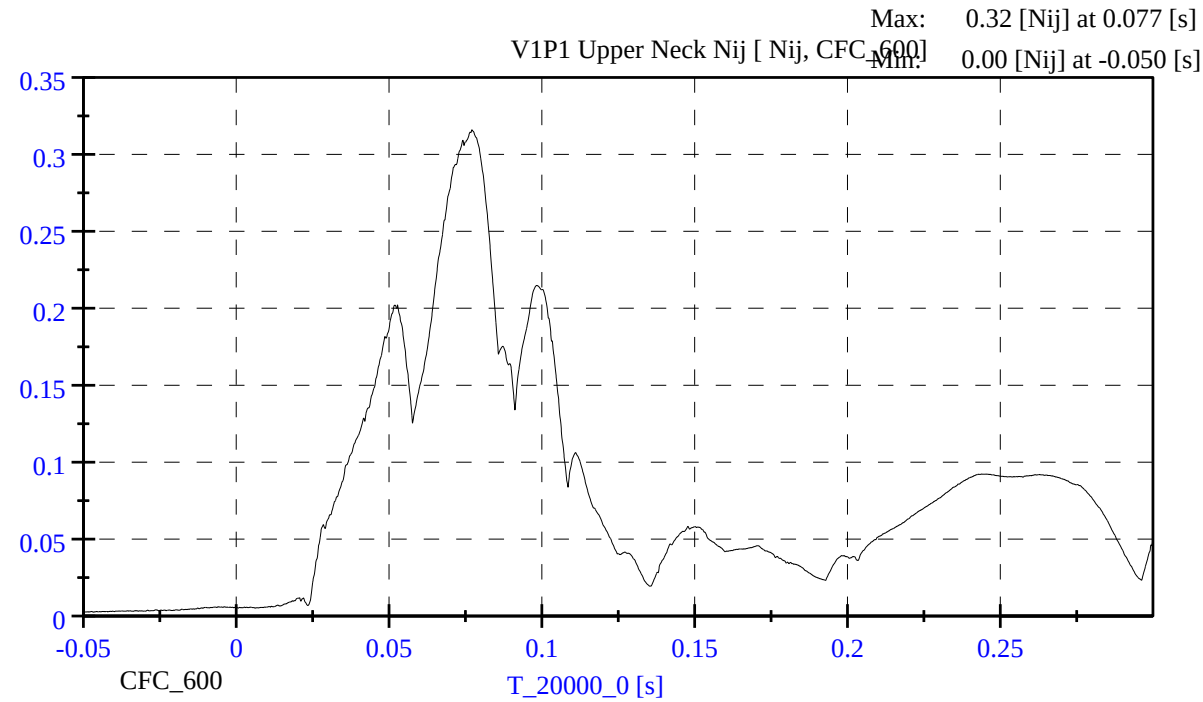


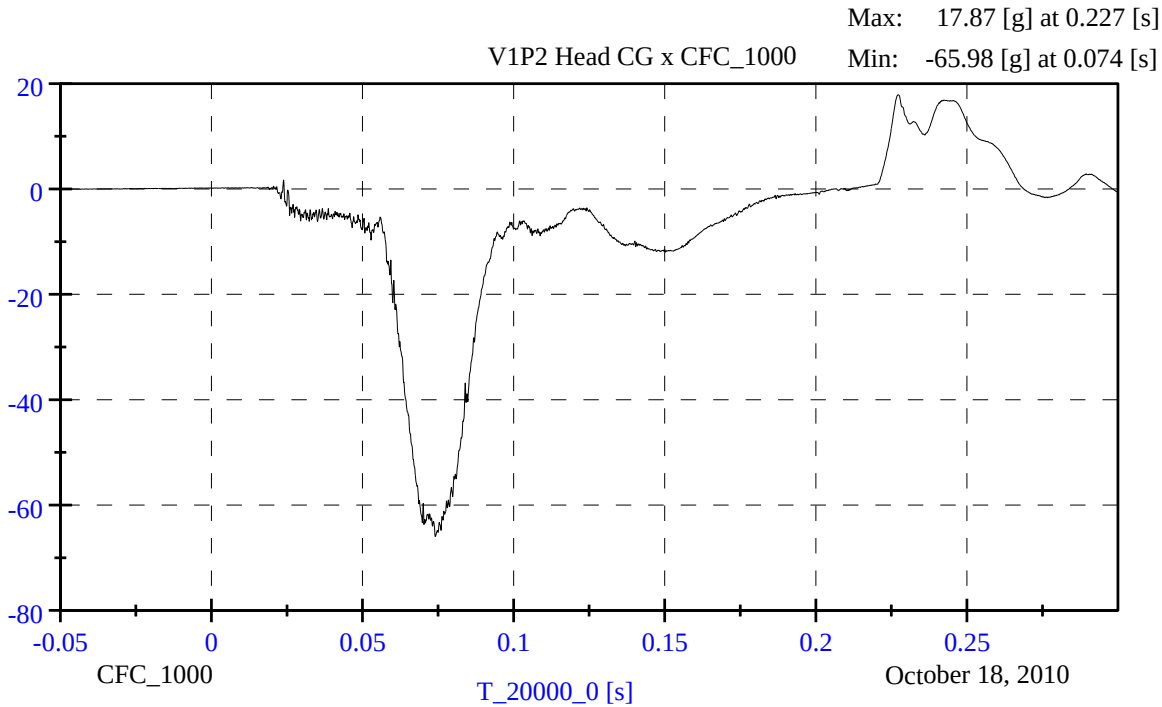
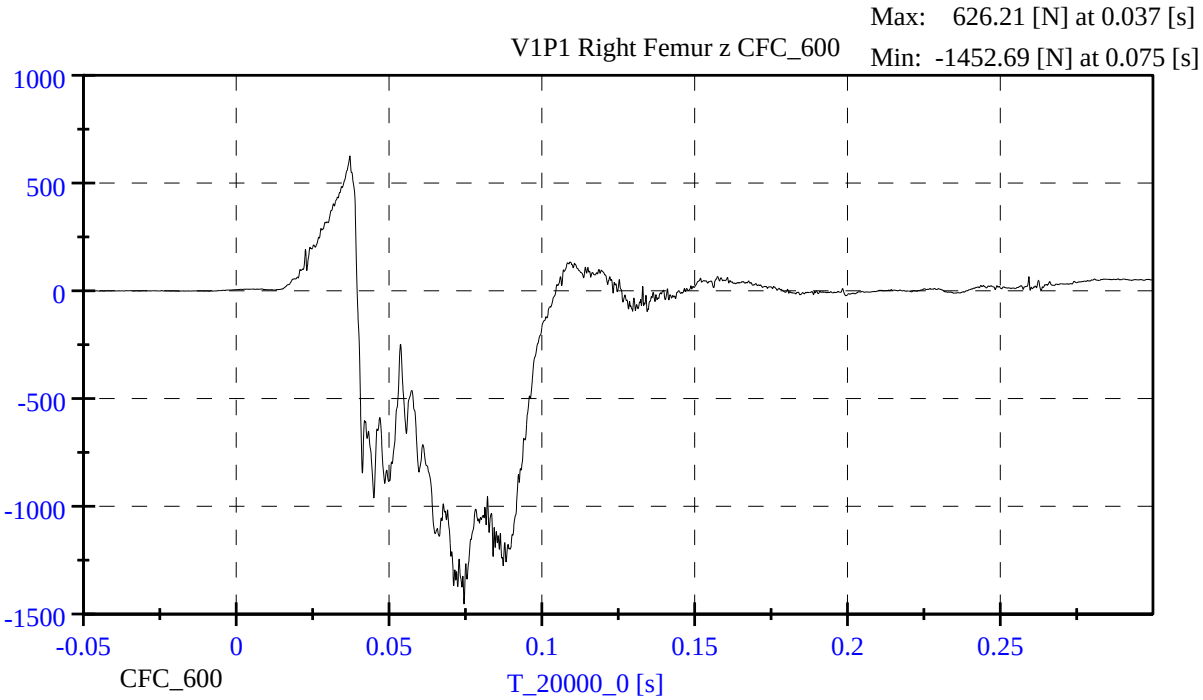


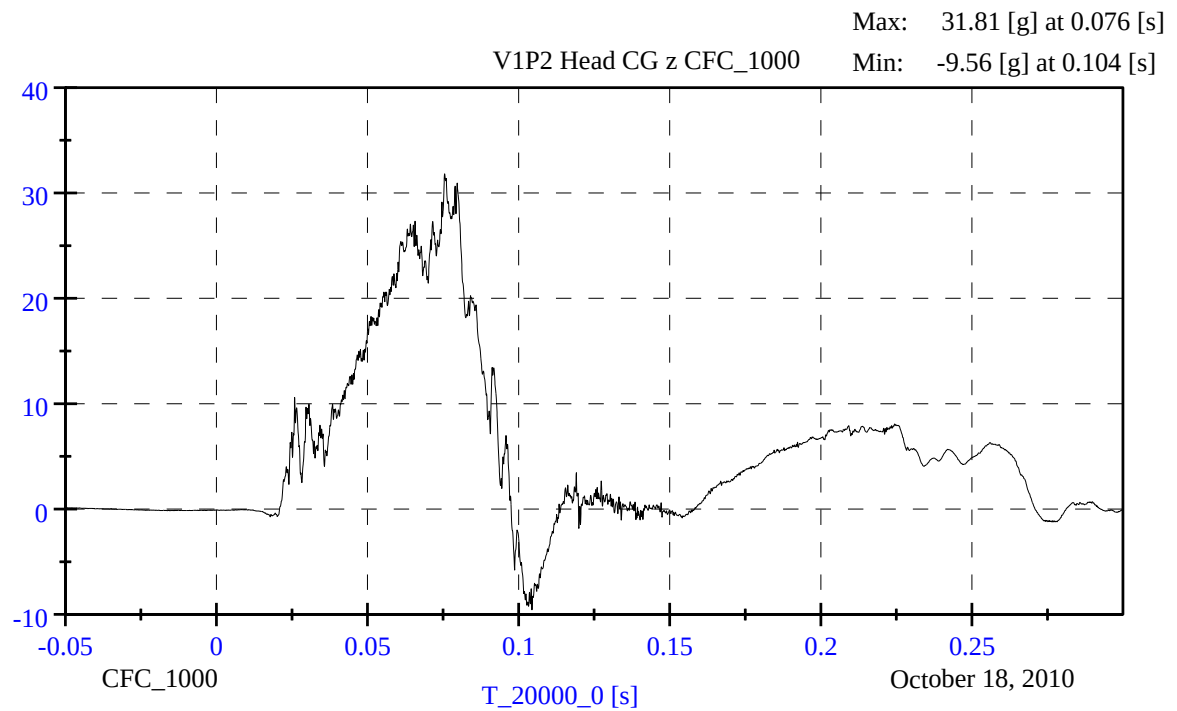
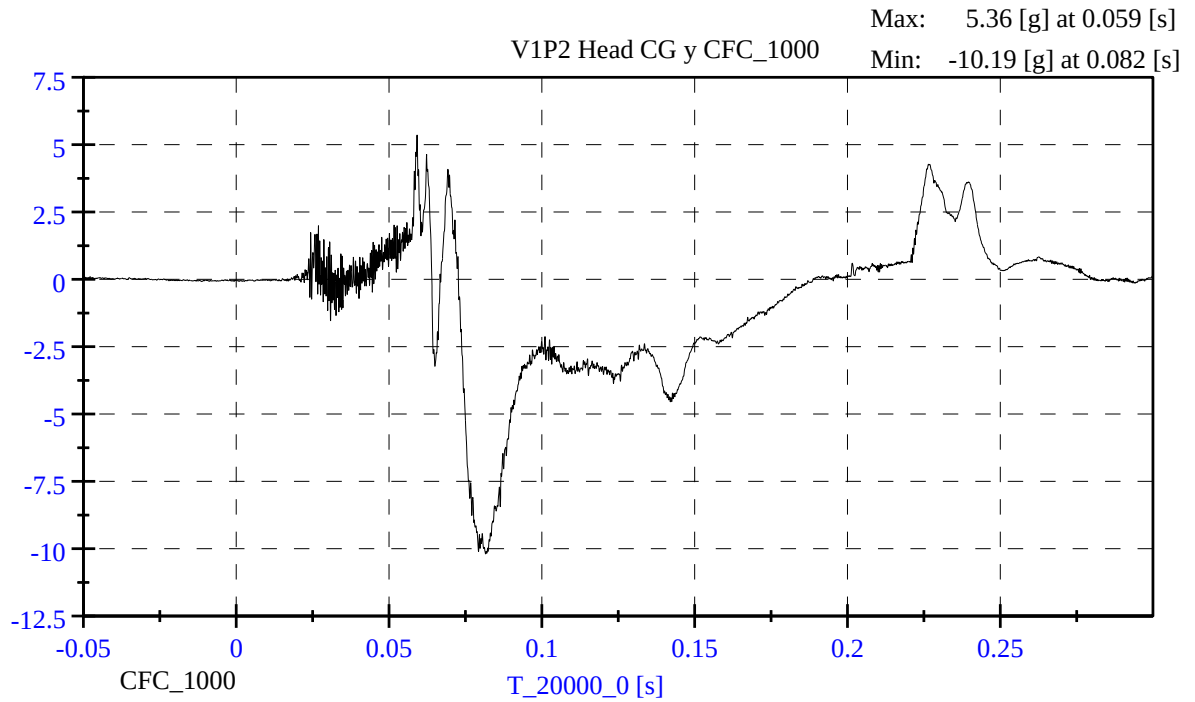


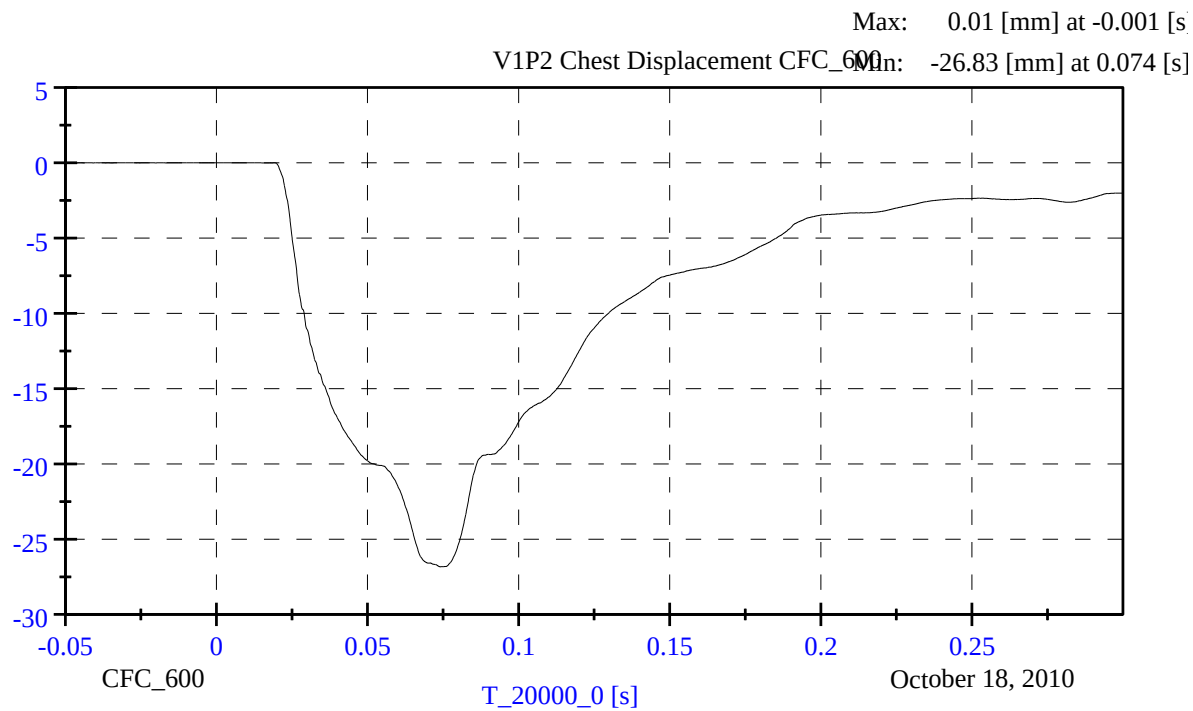
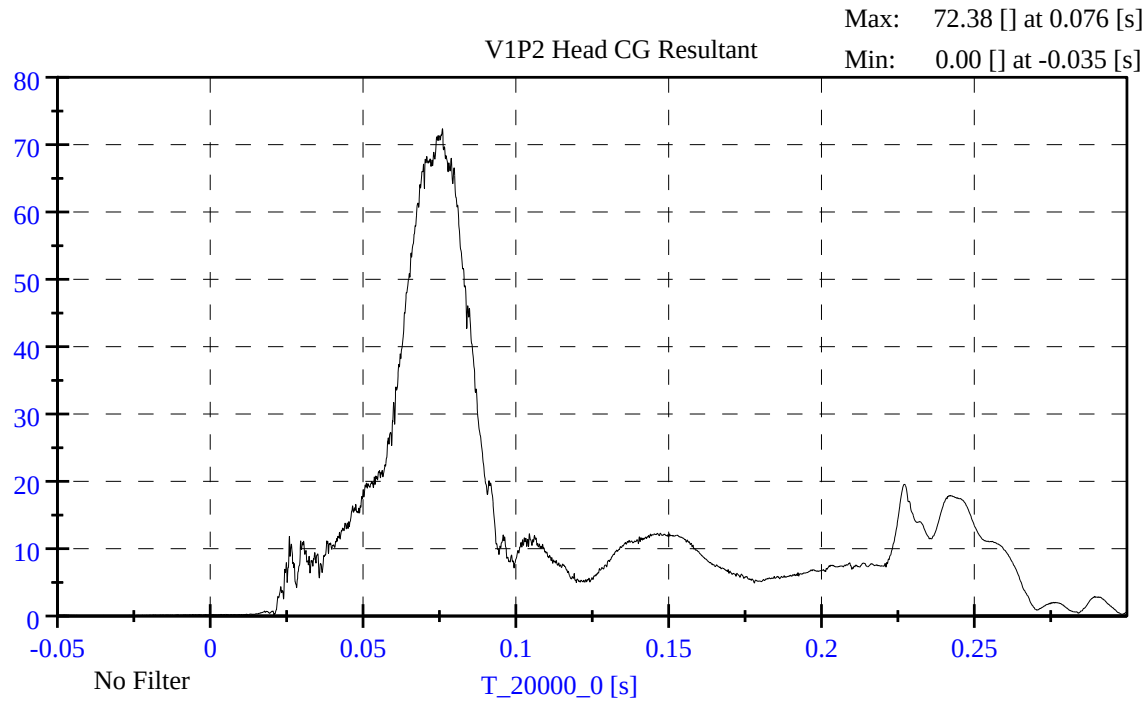


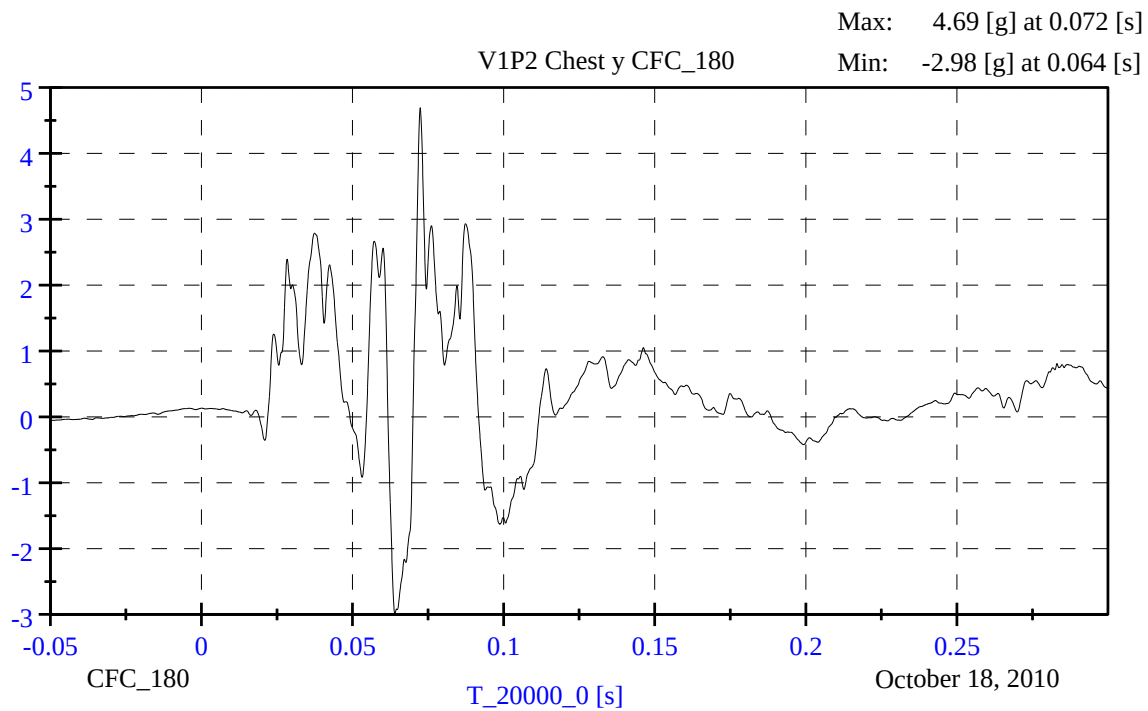
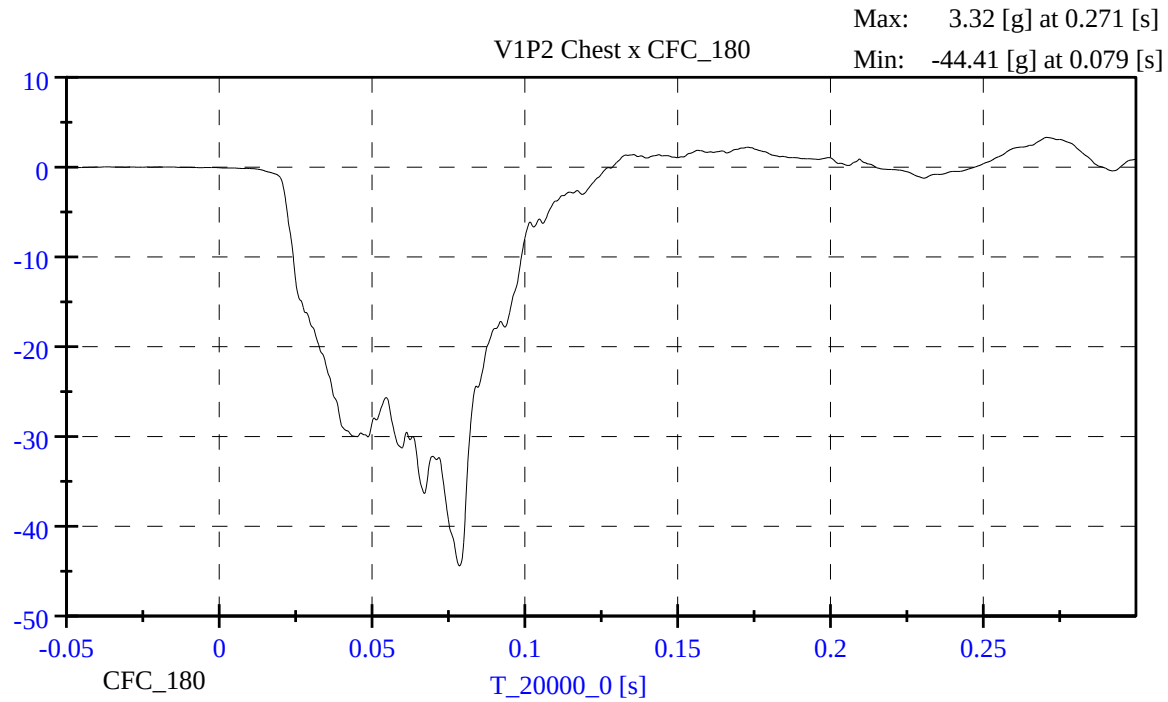


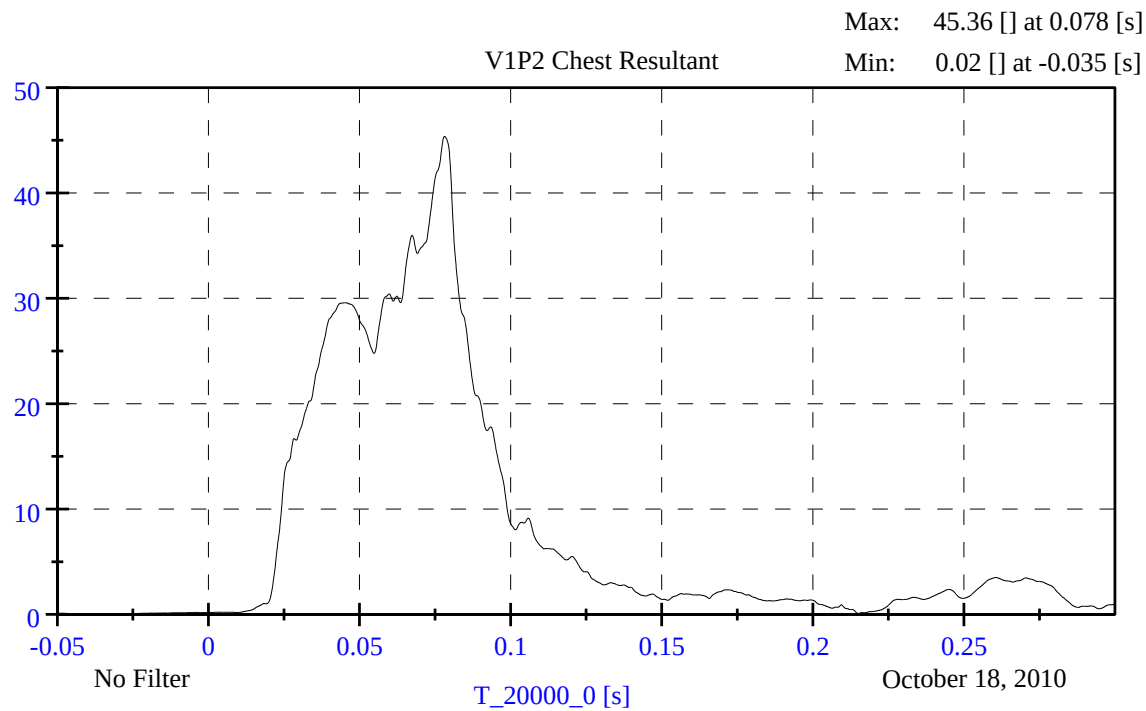
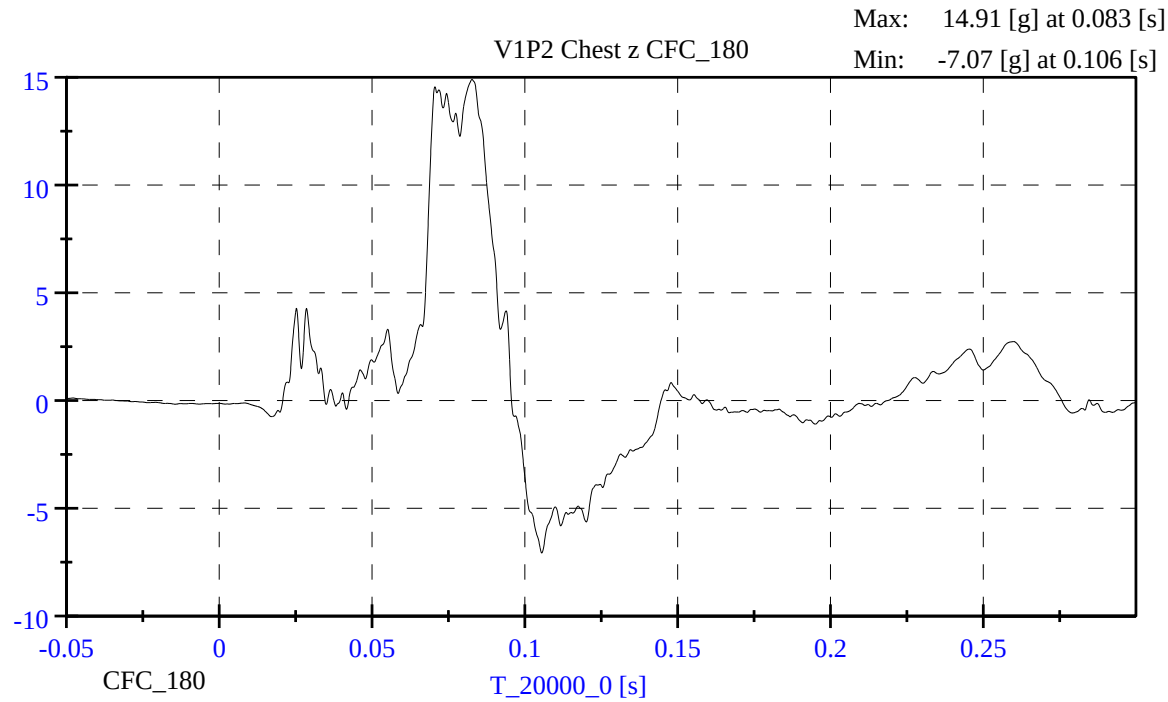


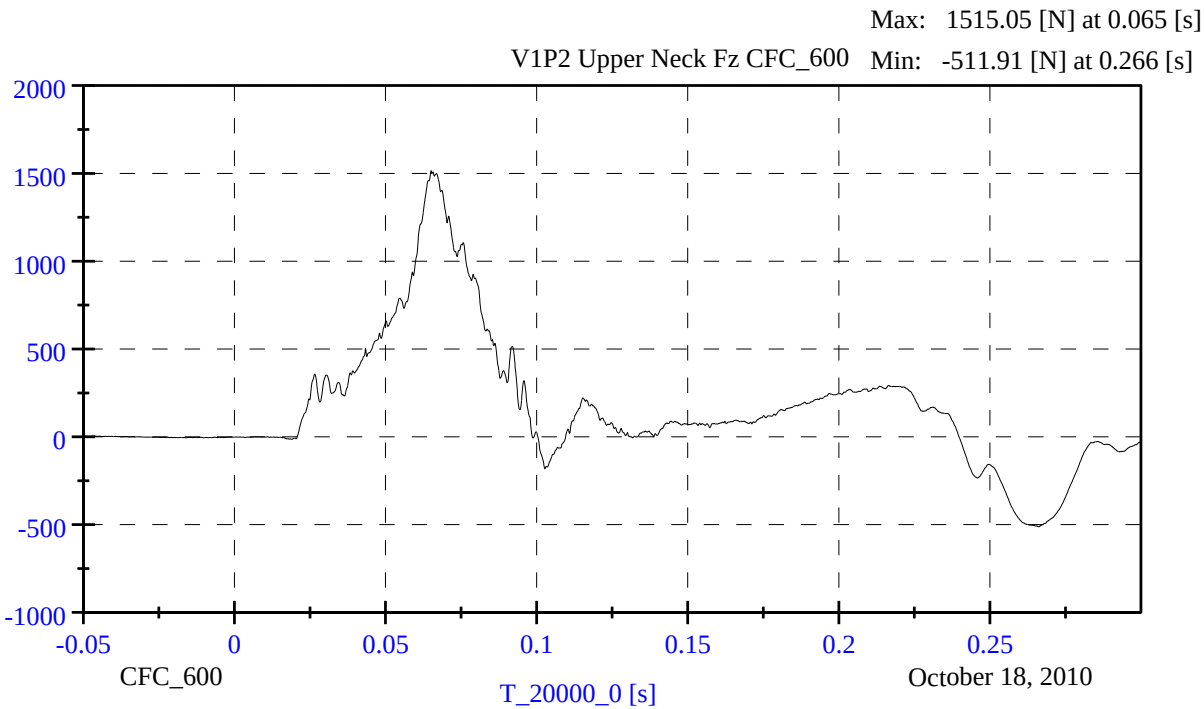
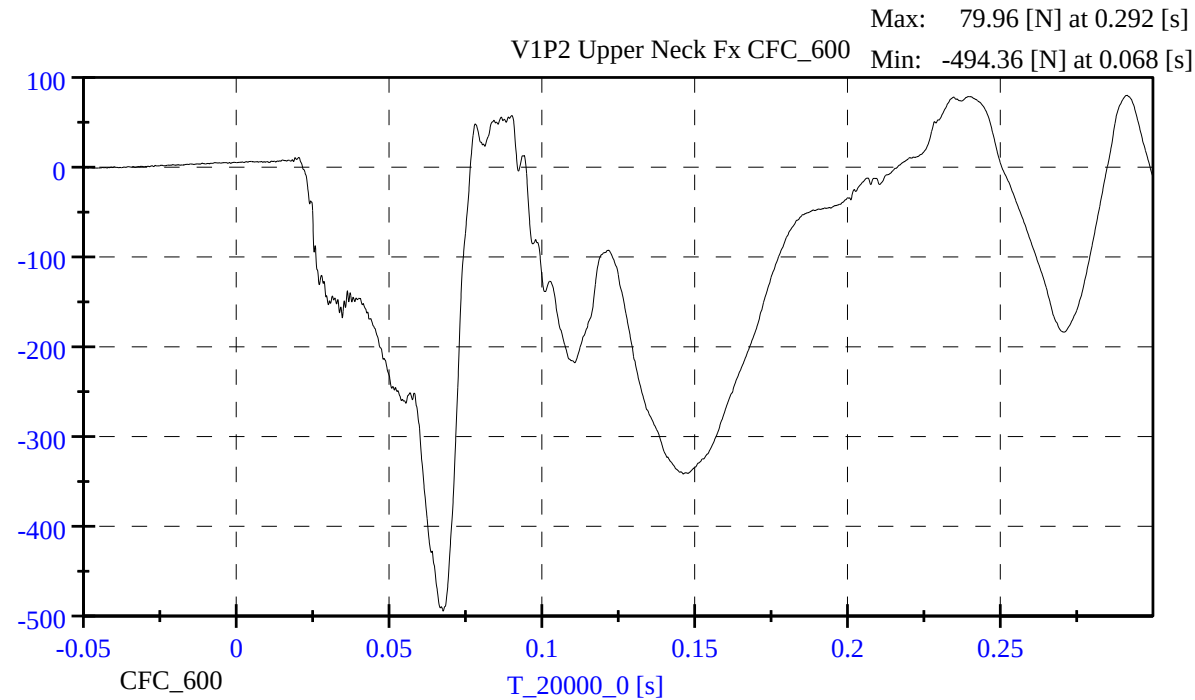


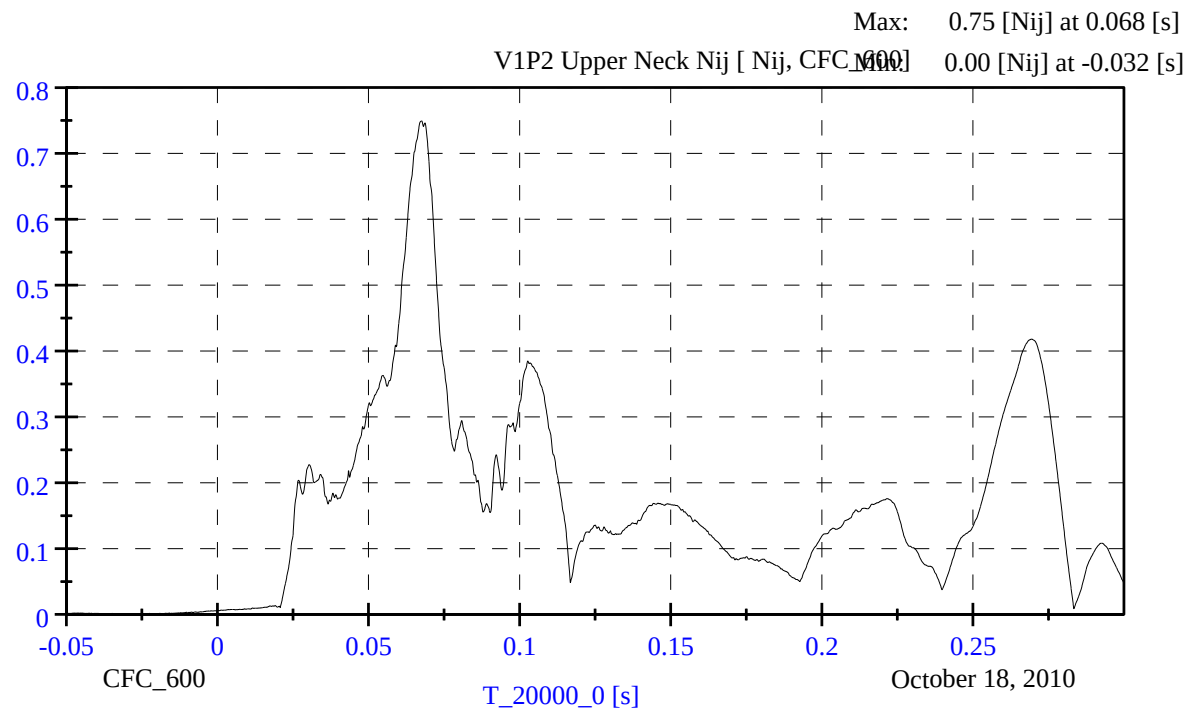
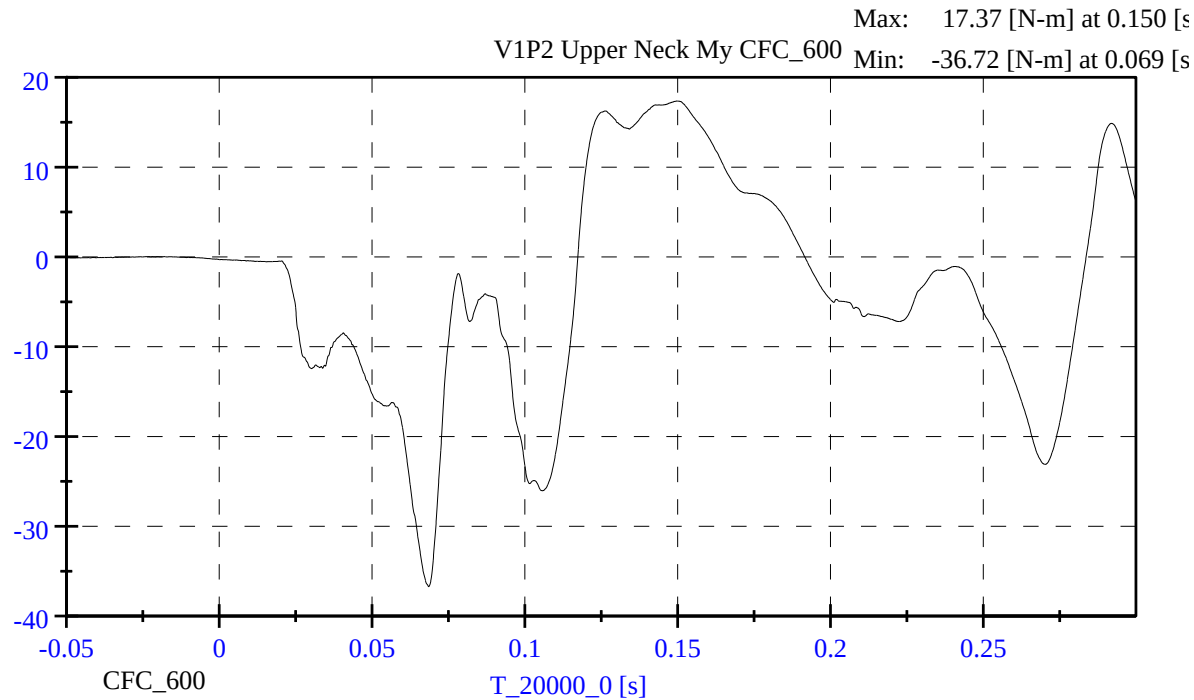


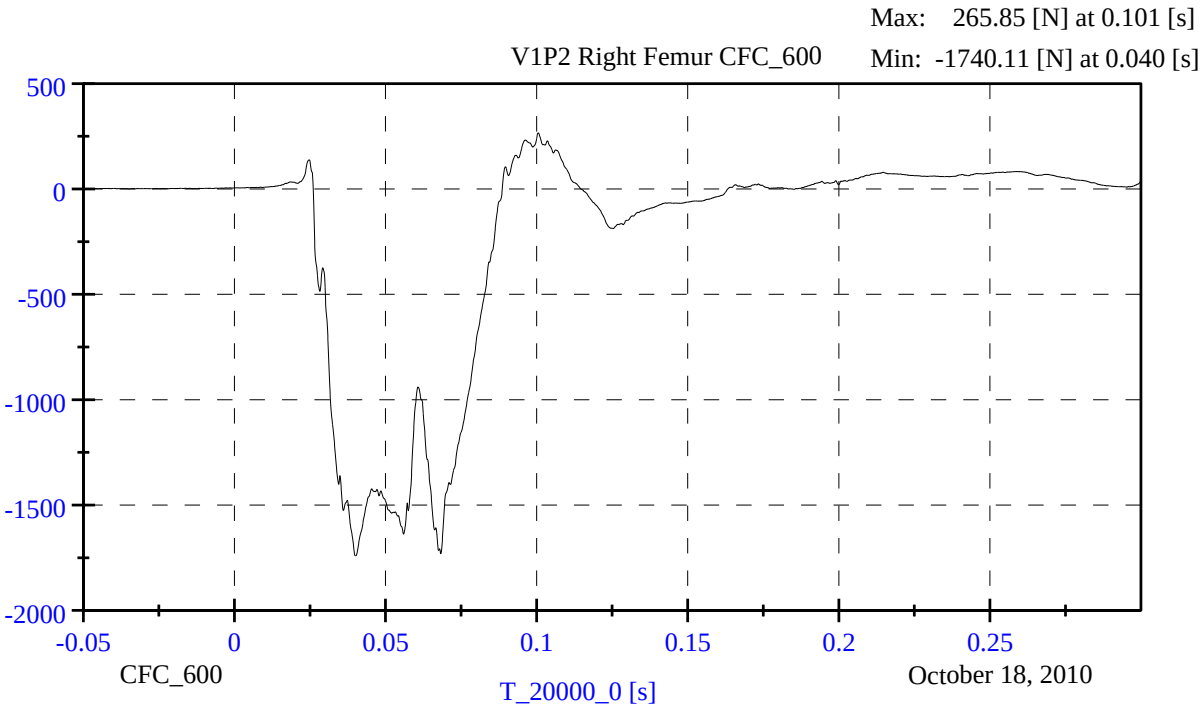
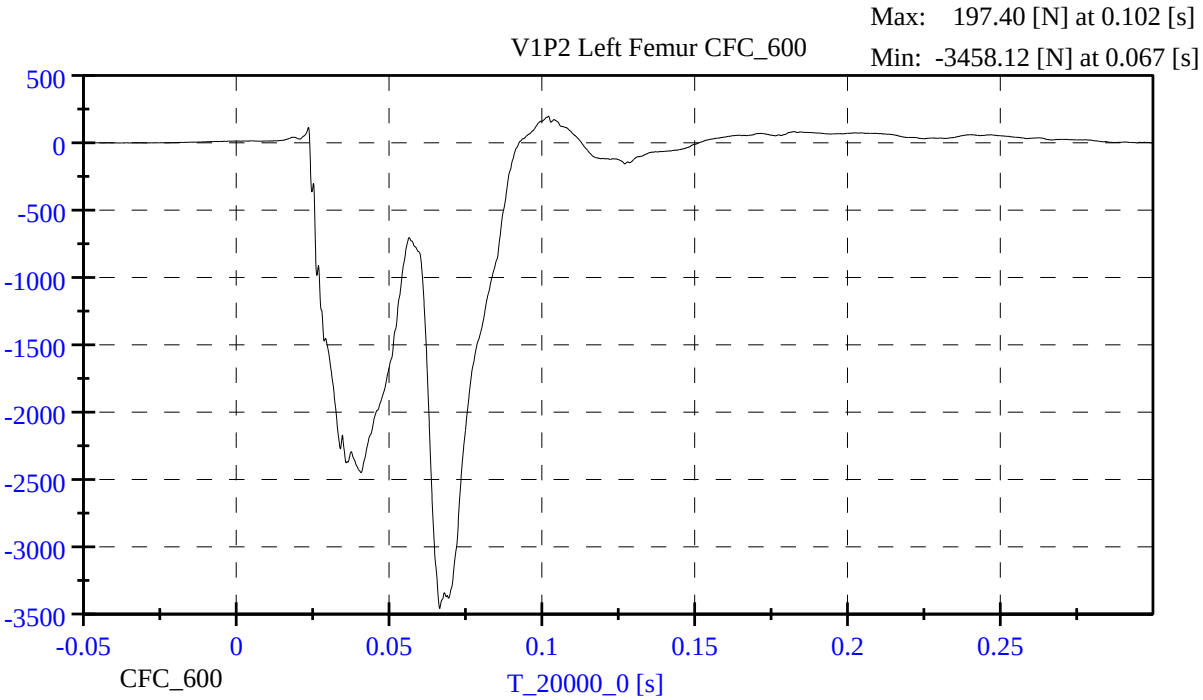












APPENDIX C

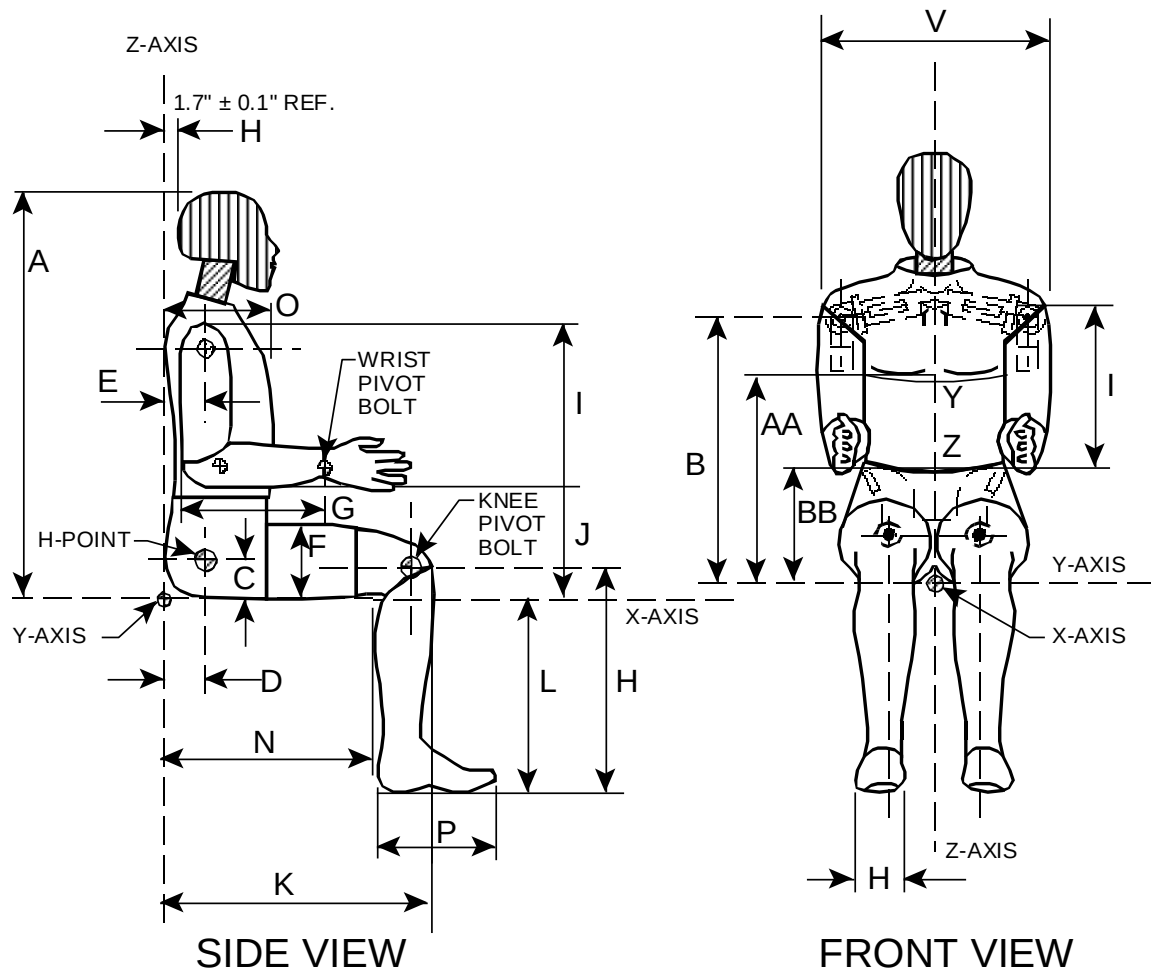
PART 572 E/O DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA SHEETS

The tests were conducted at the Dummy Certification Test Facility of Calspan. A summary of the test results, and Part 572 specifications are included in this Appendix.

Dummy serial numbers and certification dates are:

<u>Position No./Location</u>	<u>Serial No.</u>	<u>Completion Date</u>
#1/Driver	061	10/15/2010
#2/Right Front Passenger	273	10/15/2010

EXTERNAL DIMENSIONS SPECIFICATIONS



NOTE: Figure is referenced to the erect seated position. The curved lumbar does not allow the Hybrid III to be positioned in a perfect erect attitude.
(REF: S572.31(A)(6))

CALIBRATION TEST RESULTS

PRE-TEST

DRIVER DUMMY

S/N: 061

50th Male External Measurements

SN 061

Symbol	Description	Specification	Results	Pass
		in	in	
A	Sitting Height	34.6 - 35	34.7	Yes
B	Shoulder Pivot Height	19.9 - 20.5	2.04	Yes
C	H-Point Height	3.3 - 3.5	3.5	Yes
D	H-Point from Backline	5.3 - 5.5	5.3	Yes
E	Shoulder Pivot from Backline	3.3 - 3.7	3.7	Yes
F	Thigh Clearance	5.5 - 6.1	6.1	Yes
G	Back of Elbow to Wrist Pivot	11.4 - 12.0	11.5	Yes
H	Head Back to Backline	1.6 - 1.8	1.7	Yes
I	Shoulder to Elbow Length	13.0 - 13.6	13.2	Yes
J	Elbow Rest Height	7.5 - 8.3	8.0	Yes
K	Buttock to Knee Length	22.8 - 23.8	23.4	Yes
L	Popliteal Height	16.9 - 17.9	17.5	Yes
M	Knee Pivot Height	19.1 - 19.7	19.2	Yes
N	Buttock Popliteal Length	17.8 - 18.8	18.7	Yes
O	Chest Depth without Jacket	8.4 - 9.0	8.6	Yes
P	Foot Length (right)	9.9 - 10.5	10.1	Yes
V	Shoulder Breadth	16.3 - 17.2	16.8	Yes
W	Foot Breadth	3.6 - 4.2	3.9	Yes
Y	Chest Circumference with Jacket	38.2 - 39.4	38.5	Yes
Z	Waist Circumference	32.9 - 34.1	33.4	Yes
AA	Reference Location (Chest Circumference)	16.9 - 17.1	17.0	Yes
BB	Reference Location (Waist Circumference)	8.9 - 9.1	9.0	Yes

Technician: SZ

Date: 10/15/2010



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

Test Name:	Head Drop	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	061		
Test ID:	Head Drop	Test Date:	10/13/2010
Test Number:	1	Test Time:	2:30:34 PM

Component Part Number	Component Serial Number
Head Skin - 78051-228	243

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	22.2 deg C P
Humidity	10 -- 70	33 %RH P
Resultant Acceleration	225 -- 275	248 g P
Oscillation	0.0 -- 10.0	1.2 % P
Lateral Acceleration	-15.00 -- 15.00	-10.20 g P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____
Supervisor: **D. Travale** Signature: _____

Test ID: **Head Drop**

Test Time: **2:30:34 PM**

Test Date: **10/13/2010**



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Endevco	7264-2000	P66943	7/27/2010
Endevco	7264-2000	P66931	4/20/2010
Endevco	7264-2000	P66926	4/20/2010

Test ID: **Head Drop**

Test Time: **2:30:34 PM**

Test Date: **10/13/2010**

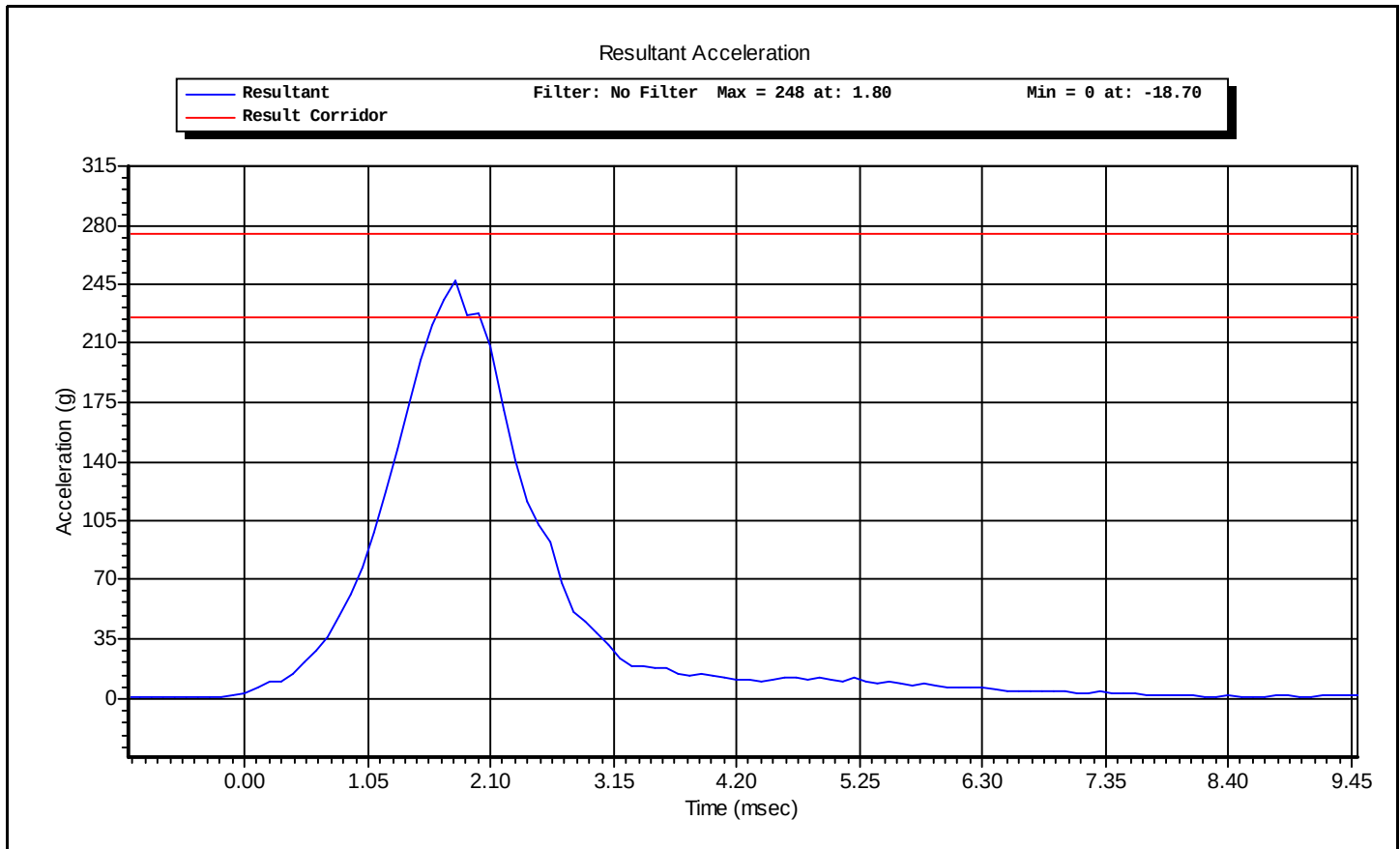


www.calspan.com

Calspan - Transportation Research Group

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

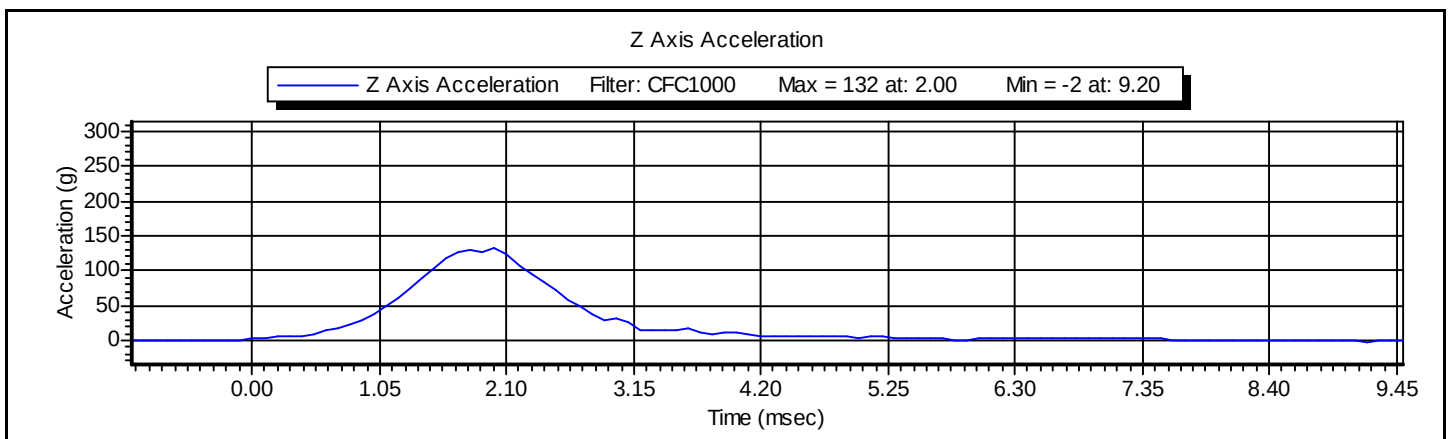
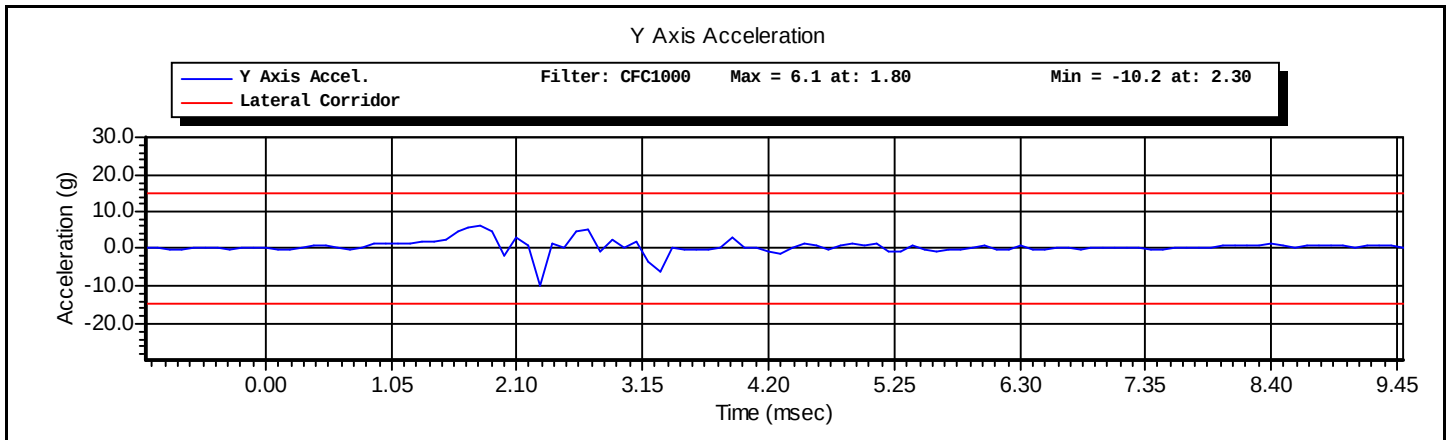
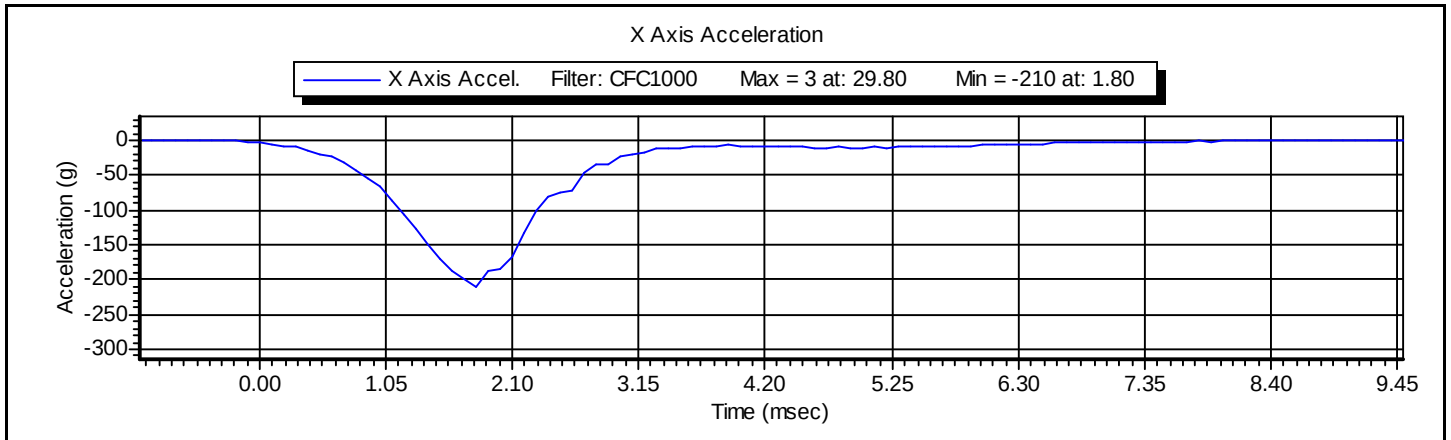
Test Name:	Head Drop	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	061		
Test ID:	Head Drop	Test Date:	10/13/2010
Test Number:	1	Test Time:	2:30:34 PM



Test ID: Head Drop

Test Time: 2:30:34 PM

Test Date: 10/13/2010





www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

Test Name:	Neck Flexion	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	061		
Test ID:	Neck Flexion	Test Date:	10/13/2010
Test Number:	1	Test Time:	1:07:37 PM

Component Part Number	Component Serial Number
Neck - 78051-336	4194

Test Parameters		Test Specifications		Test Results	
Temperature		20.6	-- 22.2	22.2 deg C	P
Humidity		10	-- 70	33 %RH	P
Velocity		6.89	-- 7.13	7.09 m/s	P
Pendulum Deceleration at	10 ms	22.5	-- 27.5	24.9 g	P
Pendulum Deceleration at	20 ms	17.6	-- 22.6	20.0 g	P
Pendulum Deceleration at	30 ms	12.5	-- 18.5	15.6 g	P
Max Pendulum Deceleration After	30 ms	0.0	-- 29.0	15.6 g	P
Deceleration time to	5 g	34.0	-- 42.0	39.3 ms	P
D Plane Rotation		-78.0	-- -64.0	-66.8 degrees	P
Time at max rotation		57.0	-- 64.0	59.3 ms	P
Rotation Decay to Zero		113.0	-- 128.0	118.8 ms	P
Moment about OC		88.1	-- 108.4	102.0 Nm	P
Time at Max Moment		47.0	-- 58.0	53.4 ms	P
Moment Decay to Zero		97.0	-- 107.0	97.5 ms	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____
 Supervisor: **D. Travale** Signature: _____

Test ID: **Neck Flexion**

Test Time: **1:07:37 PM**

Test Date: **10/13/2010**



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

REFERENCE EQUIPMENT

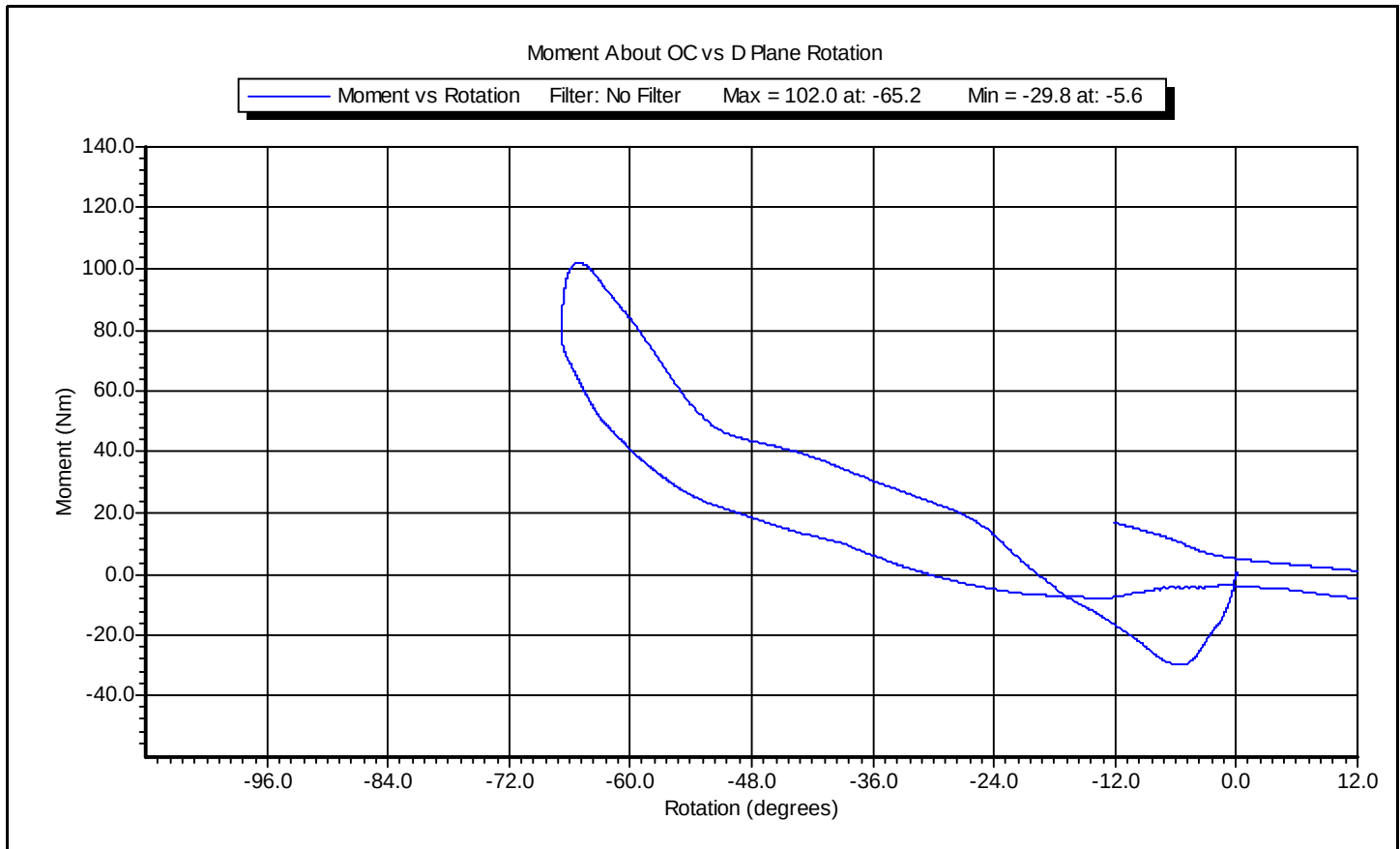
<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2010
Endevco	7231CT	C16510	5/10/2010
DentonATD	78051-342	PENDULUM POT	8/14/2010
DentonATD	78051-342	CONDYLE POT	8/14/2010
Denton	1716A	LC-1916 My	5/18/2010
Denton	1716A	LC-1916 Fx	5/18/2010

Test ID: **Neck Flexion**

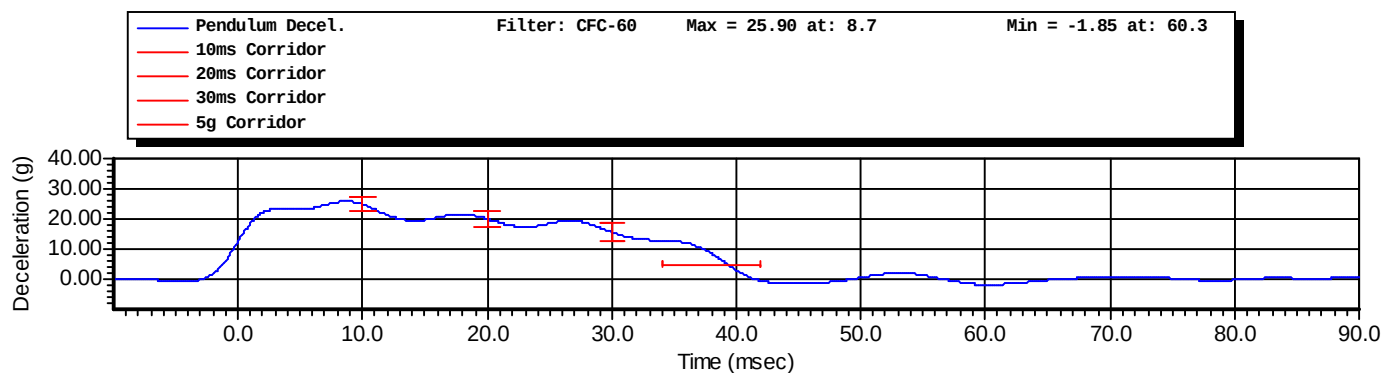
Test Time: **1:07:37 PM**

Test Date: **10/13/2010**

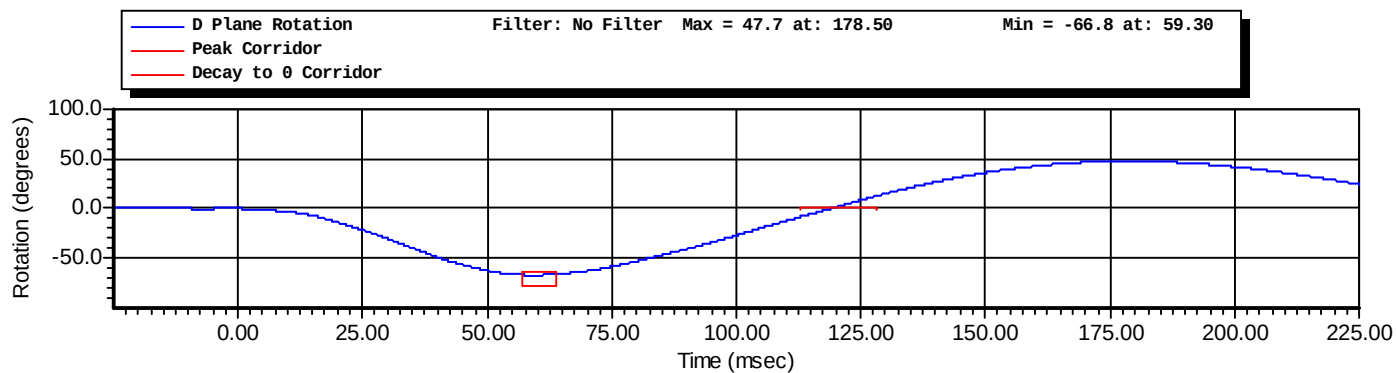
Name of Test:	Neck Flexion	REVISION:	10/1/2001
Name of Sub Test:		Type of Spec:	NHTSA
Type of ATD:	Hybrid III 50'th		
ATD Serial Number:	061		
ID of Test:	Neck Flexion	Date:	10/13/2010
Number of Test:	1	Time of Test:	1:07:37 PM



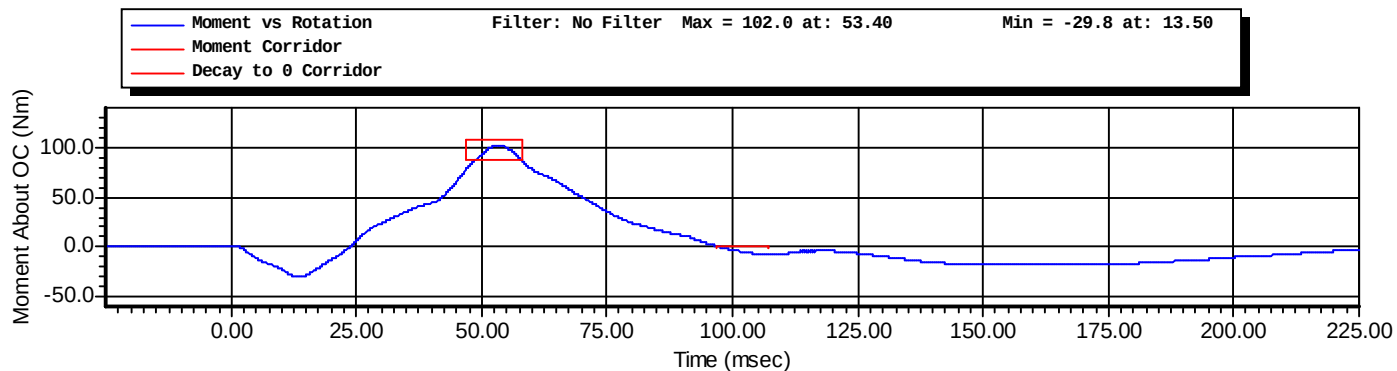
Pendulum Deceleration



D Plane Rotation



Moment About Occipital Condyle





www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

Test Name:	Neck Extension	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	061		
Test ID:	Neck Extension	Test Date:	10/13/2010
Test Number:	1	Test Time:	1:45:29 PM

Component Part Number	Component Serial Number
Neck - 78051-336	4194

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	22.2 deg C P
Humidity	10 -- 70	33 %RH P
Velocity	5.94 -- 6.19	6.00 m/s P
Pendulum Deceleration at 10 ms	17.2 -- 21.2	18.7 g P
Pendulum Deceleration at 20 ms	14.0 -- 19.0	16.4 g P
Pendulum Deceleration at 30 ms	11.0 -- 16.0	12.9 g P
Max Pendulum Deceleration after 30 ms	0.0 -- 22.0	13.4 g P
Decel Time to 5 g	38.0 -- 46.0	42.6 ms P
D Plane Rotation	81.0 -- 106.0	90.2 degrees P
Time at Max Rotation	72.0 -- 82.0	76.9 ms P
Rotation Decay to Zero	147.0 -- 174.0	158.2 ms P
Moment About Occipital Condyle	-80.0 -- -52.9	-66.7 Nm P
Time at Max Moment	65.0 -- 79.0	72.1 ms P
Moment Decay to Zero	120.0 -- 148.0	141.4 ms P

All test parameters are within specifications

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

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

Test ID: **Neck Extension**

Test Time: **1:45:29 PM**

Test Date: **10/13/2010**



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2010
Endevco	7231CT	C16510	5/10/2010
DentonATD	78051-342	PENDULUM POT	8/14/2010
DentonATD	78051-342	CONDYLE POT	8/14/2010
Denton	1716A	LC-1916 My	5/18/2010
Denton	1716A	LC-1916 Fx	5/18/2010

Test ID: **Neck Extension**

Test Time: **1:45:29 PM**

Test Date: **10/13/2010**

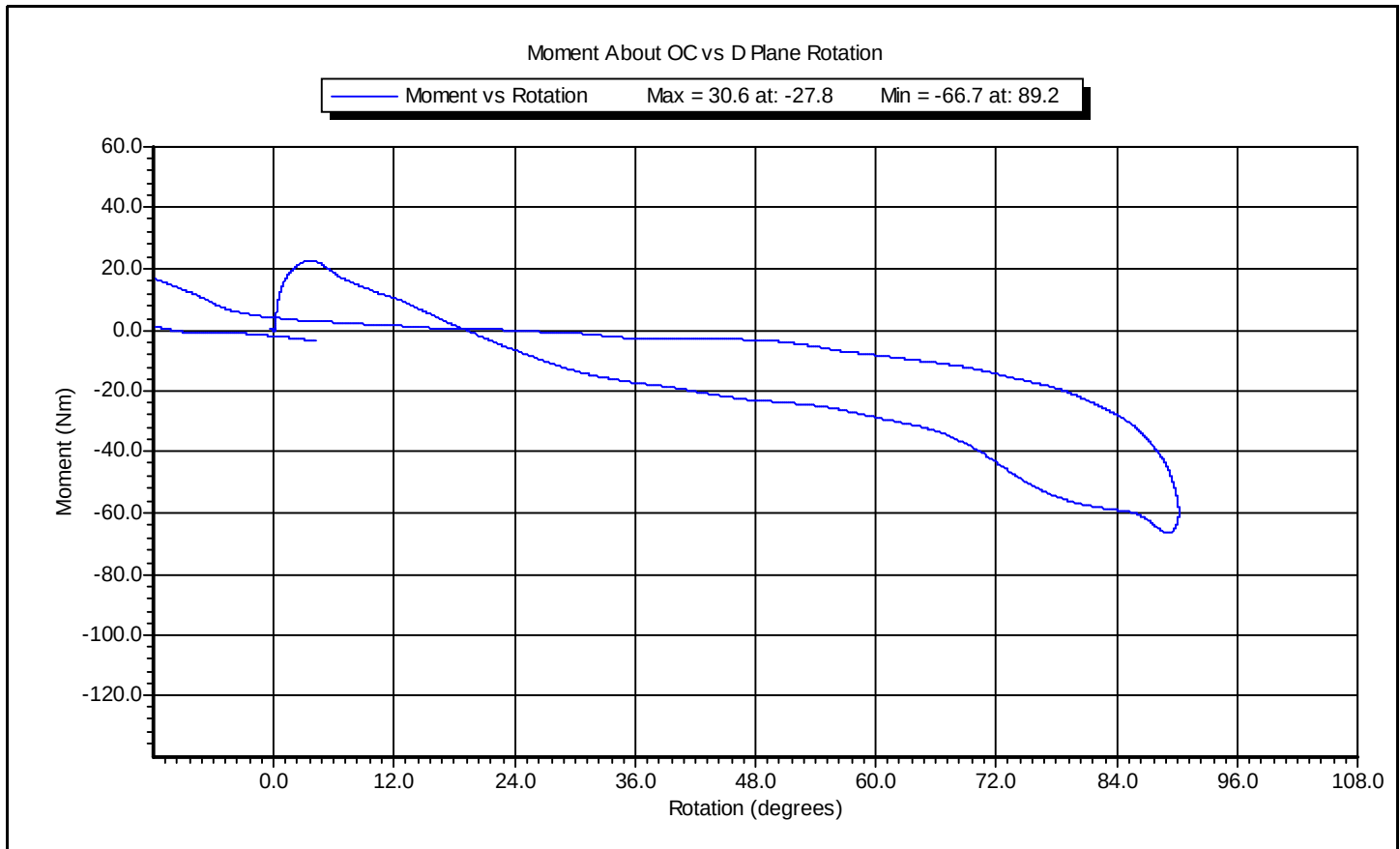


www.calspan.com

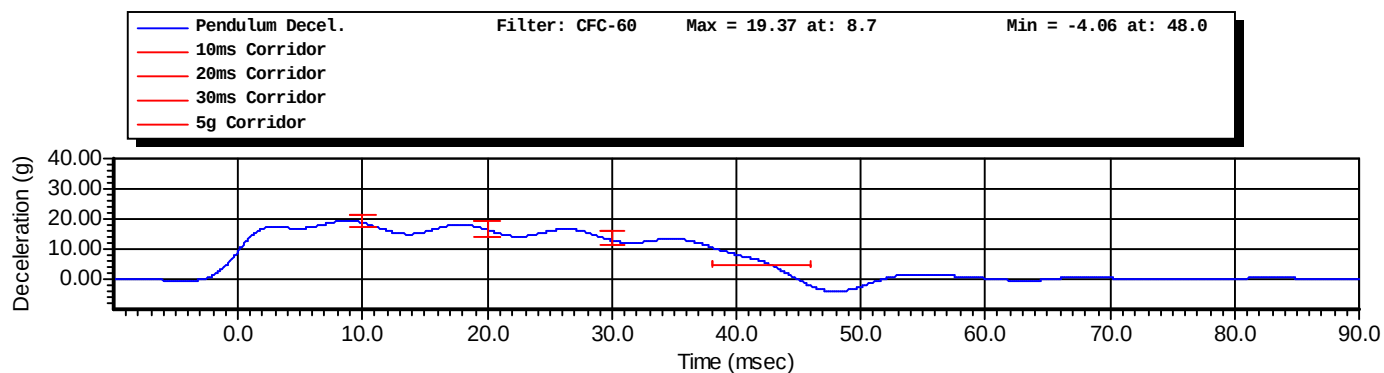
Calspan - Transportation Research Group

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

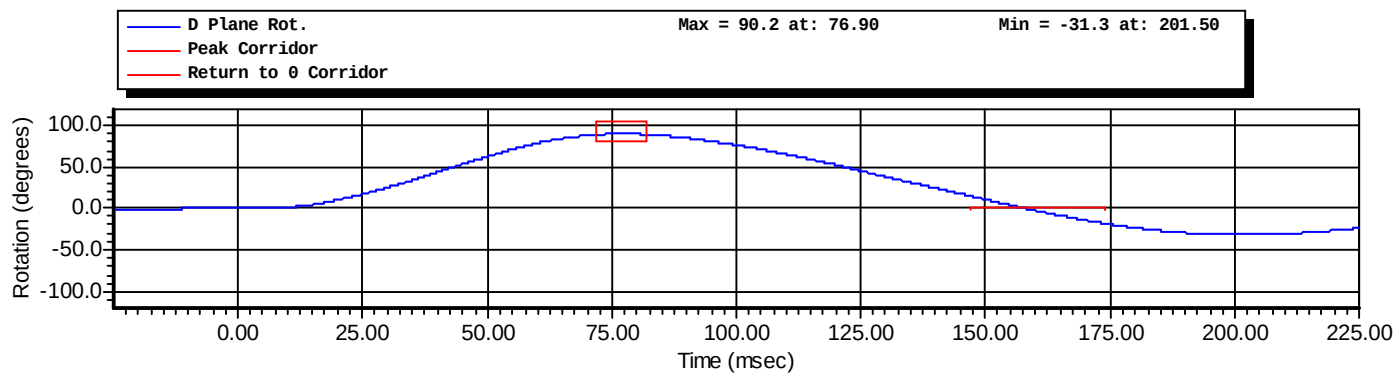
Name of Test:	Neck Extension	REVISION:	10/1/2001
Name of Sub Test:		Type of Spec:	NHTSA
Type of ATD:	Hybrid III 50'th		
ATD Serial Number:	061		
ID of Test:	Neck Extension	Date:	10/13/2010
Number of Test:	1	Time of Test:	1:45:29 PM



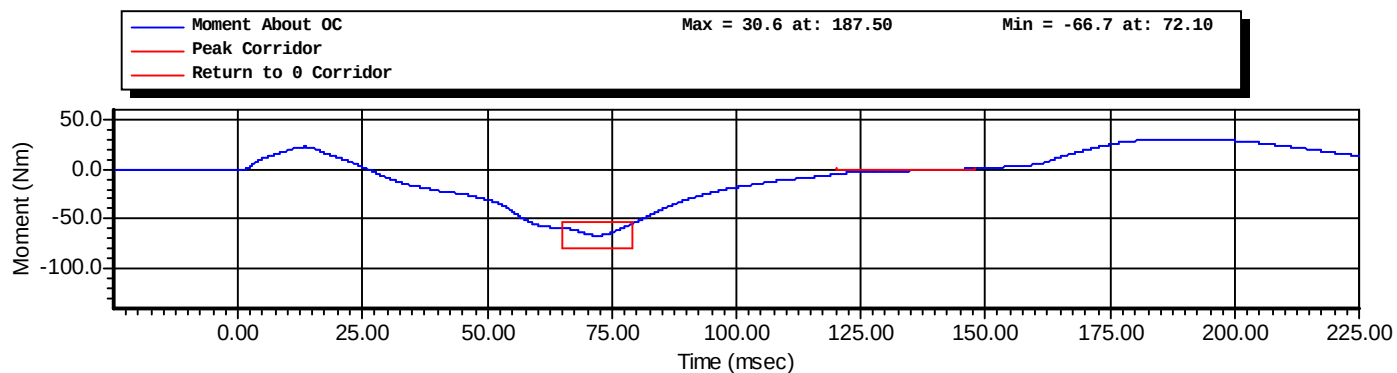
Pendulum Deceleration



D Plane Rotation



Moment About Occipital Condyle





www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

Test Name:	Thorax Impact	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	061		
Test ID:	Thorax	Test Date:	10/15/2010
Test Number:	1	Test Time:	5:52:03 PM

Component Part Number	Component Serial Number
Ribs 78051-RS	4273
Chest Jacket - 78051-169	2437

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	22.2 deg C P
Humidity	10.0 -- 70.0	39.0 %RH P
Velocity	6.59 -- 6.83	6.71 m/s P
Resistive Force	-5.894 -- -5.160	-5.655 kN P
Sternum Displacement	-72.6 -- -63.5	-70.3 mm P
Hysteresis	69 -- 85	72 % P

All test parameters are within specifications

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

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

Test ID: **Thorax**

Test Time: **5:52:03 PM**

Test Date: **10/15/2010**



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

REFERENCE EQUIPMENT

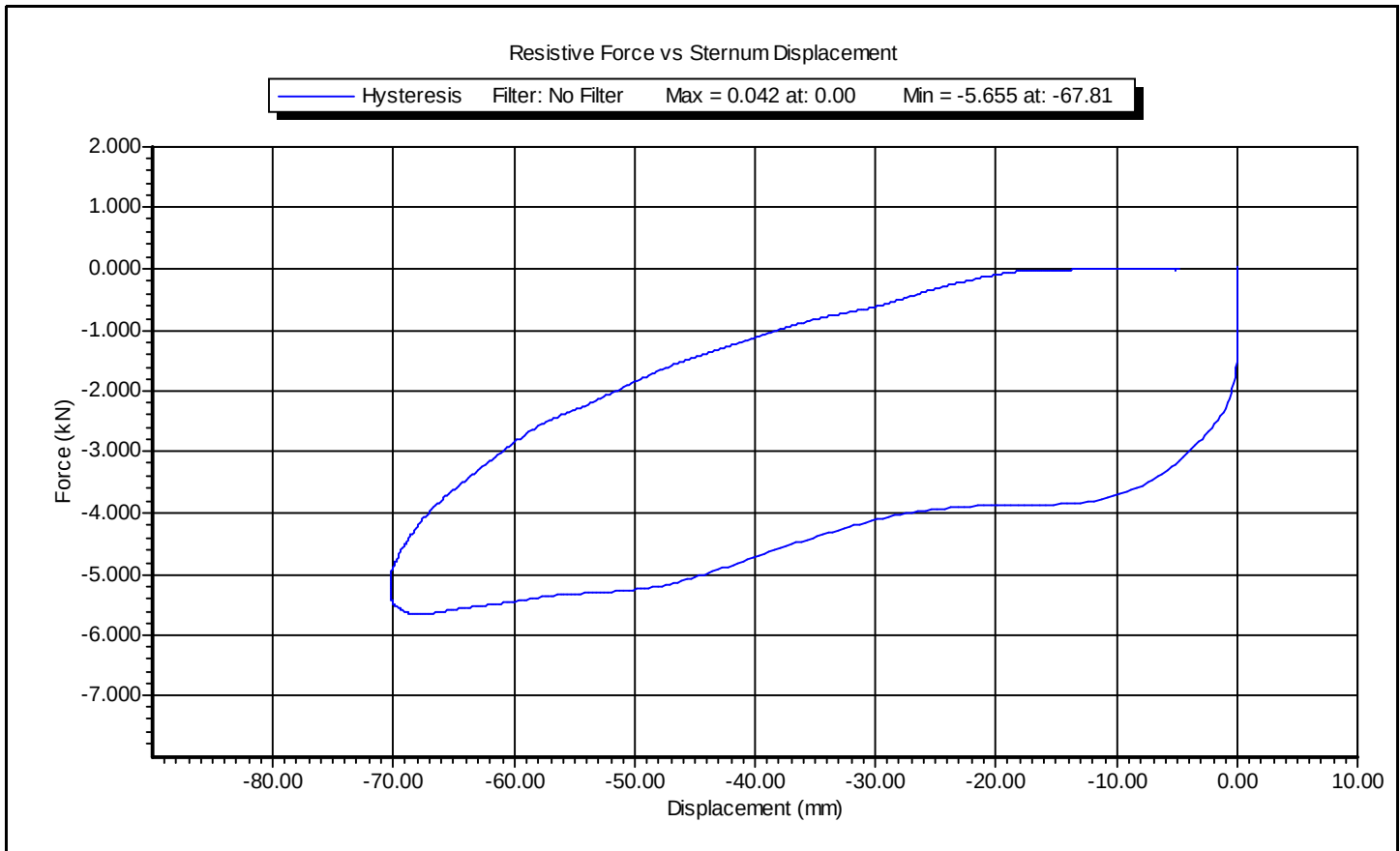
<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2010
Endevco	7264-2000	P66930	10/5/2010
DentonATD	78051-342	DS-061	6/1/2010

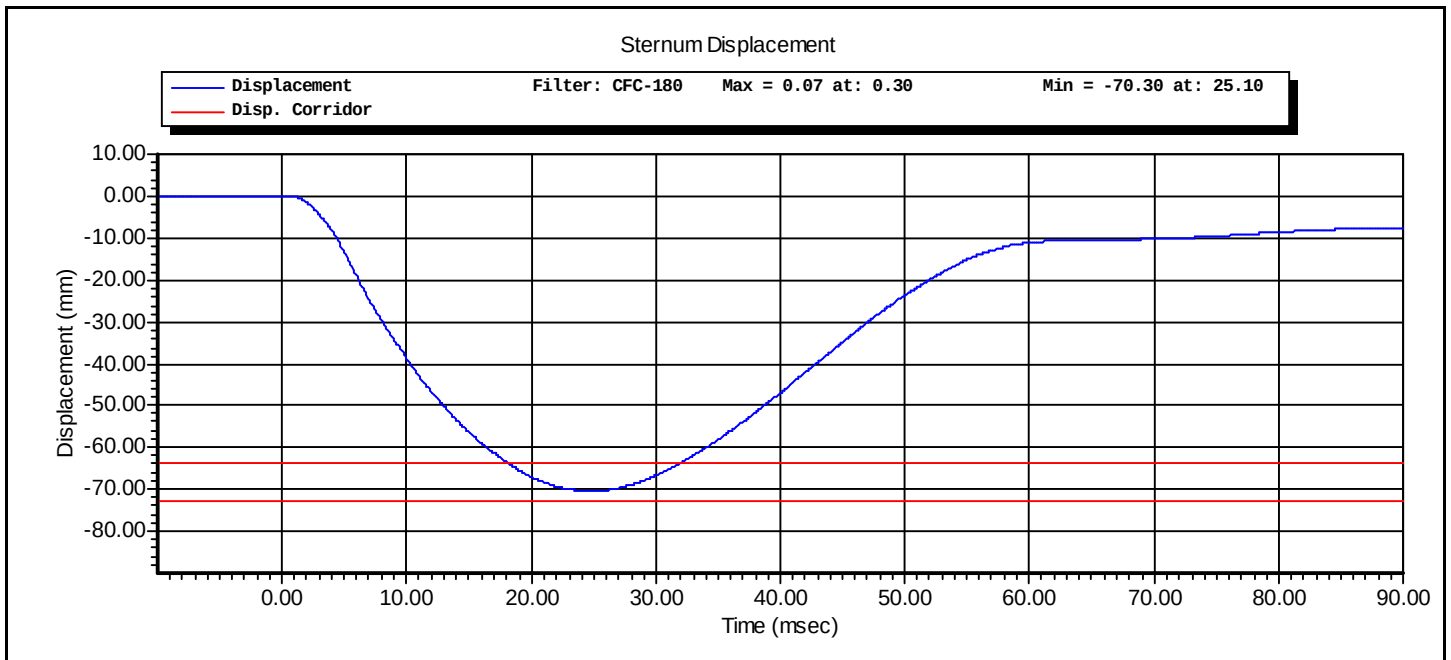
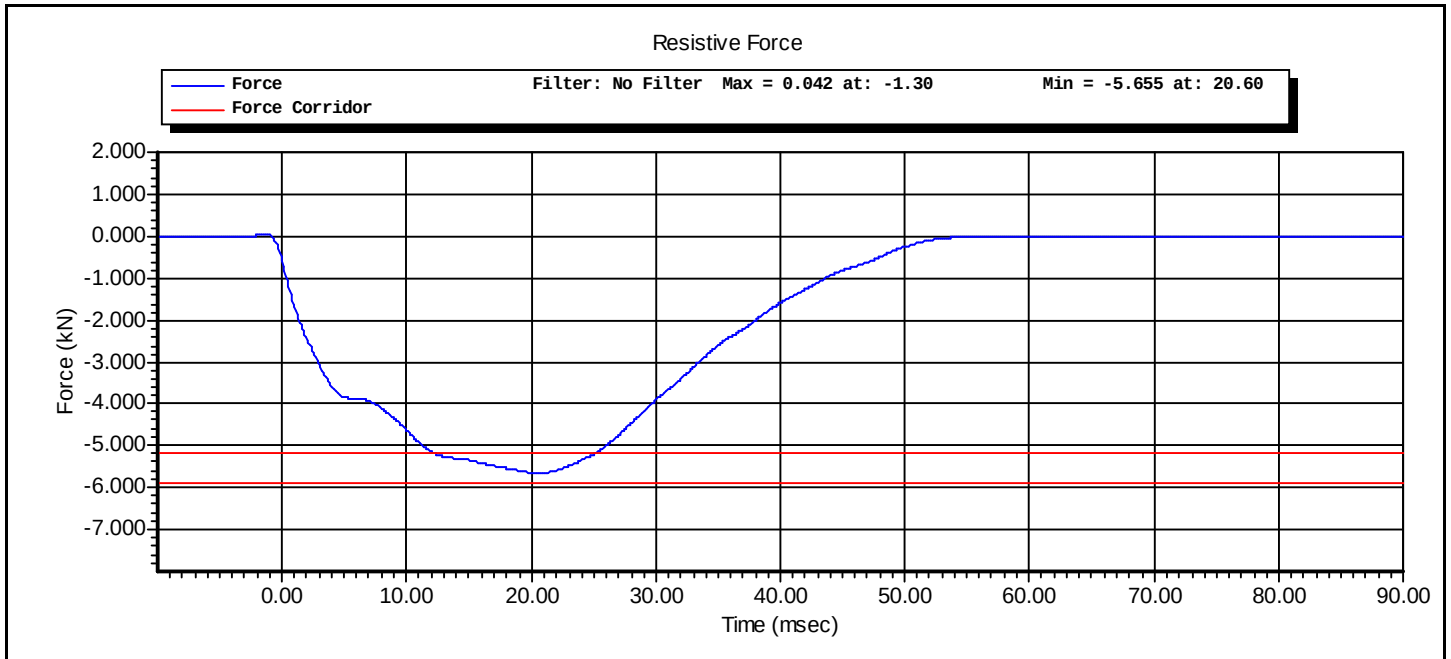
Test ID: **Thorax**

Test Time: **5:52:03 PM**

Test Date: **10/15/2010**

Test Name:	Thorax Impact	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	061		
Test ID:	Thorax	Test Date:	10/15/2010
Test Number:	1	Test Time:	5:52:03 PM





CALSPAN

Hybrid III Hip Range of Motion: Hybrid III 50th Male

Serial Number: 061
Test Number: 1
Comments: LEFT

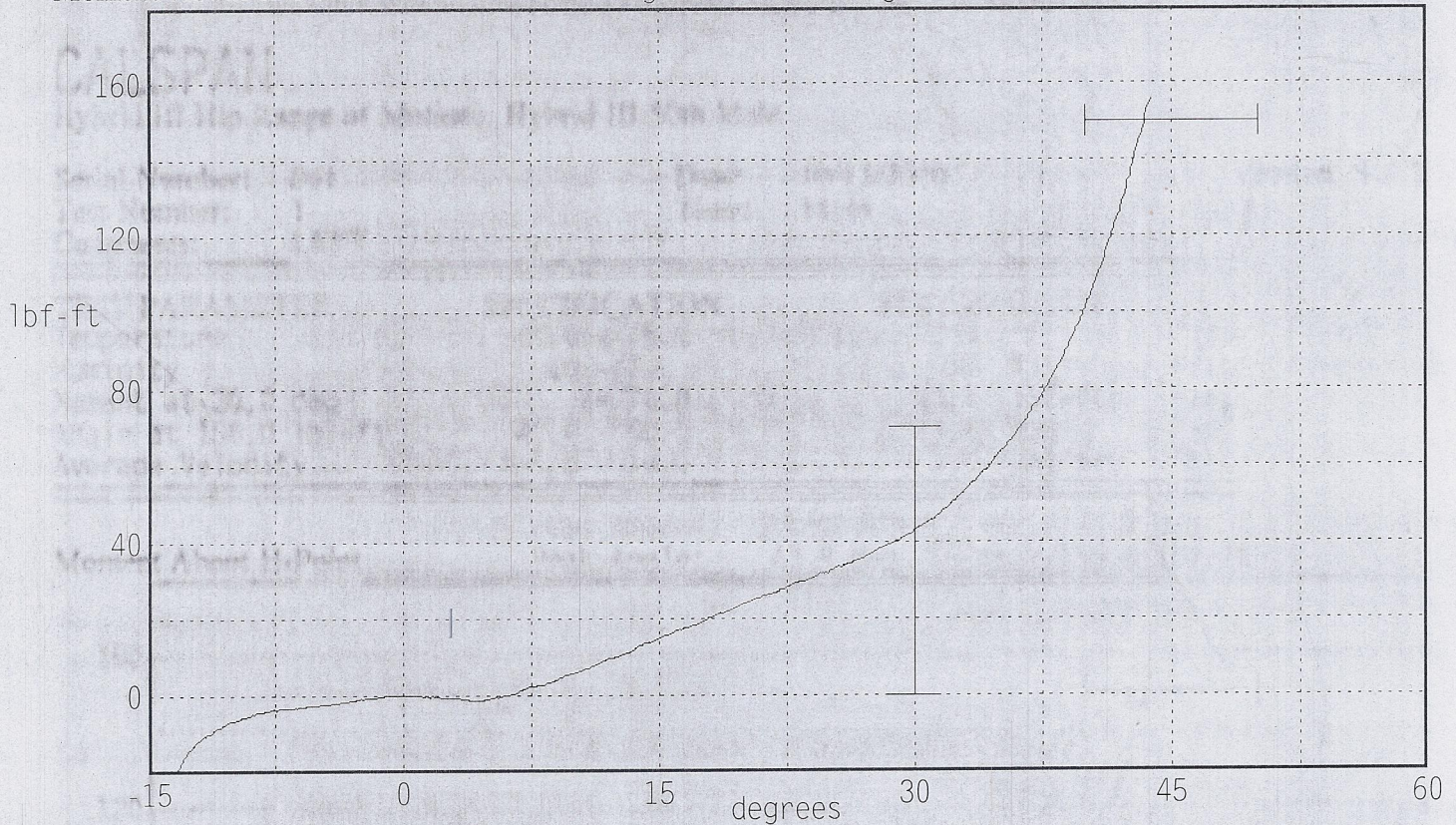
Date: 10/13/2010
Time: 11:46

Version: 1.6.3

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66.0 - 78.0	72.0 °F Pass
Humidity	10 - 70	33 % Pass
Moment at 30.0 deg	<= 70.0	43.2 lbf-ft Pass
Angle at 150.0 lbf-ft	40.0 - 50.0	43.4 deg Pass
Average Velocity	5.0 - 10.0	7.5 deg/sec Pass

Peak Moment: 155.6 lbf-ft at 43.8 deg
Peak Angle: 43.8 deg at 155.6 lbf-ft

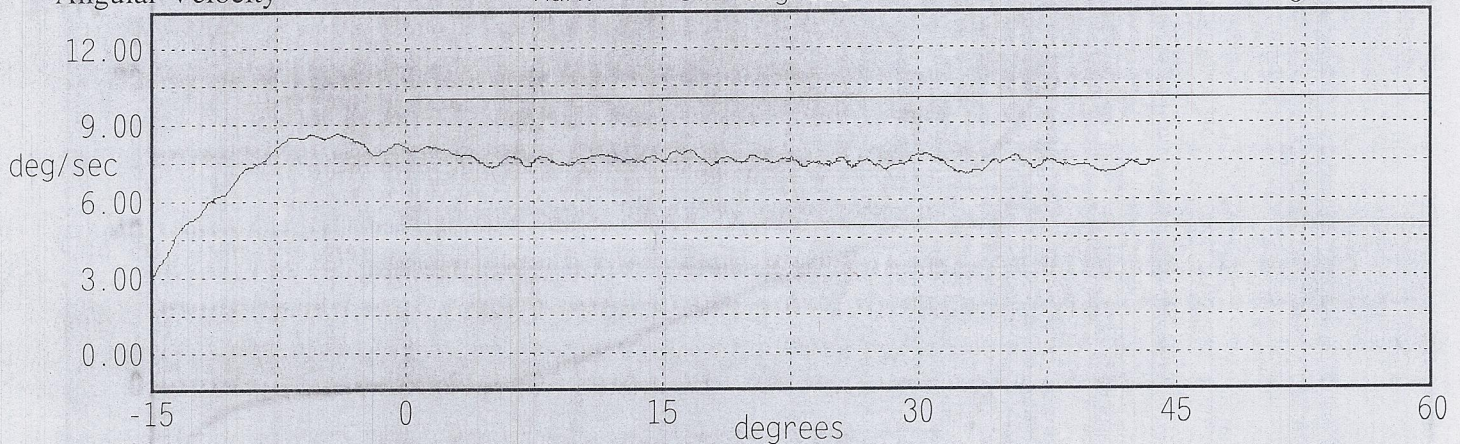
Moment About H-Point



Angular Velocity

Max: 8.2 deg/sec

Min: 7.0 deg/sec



CALSPAN

Hybrid III Hip Range of Motion: Hybrid III 50th Male

Serial Number: 061
Test Number: 1
Comments: RIGHT

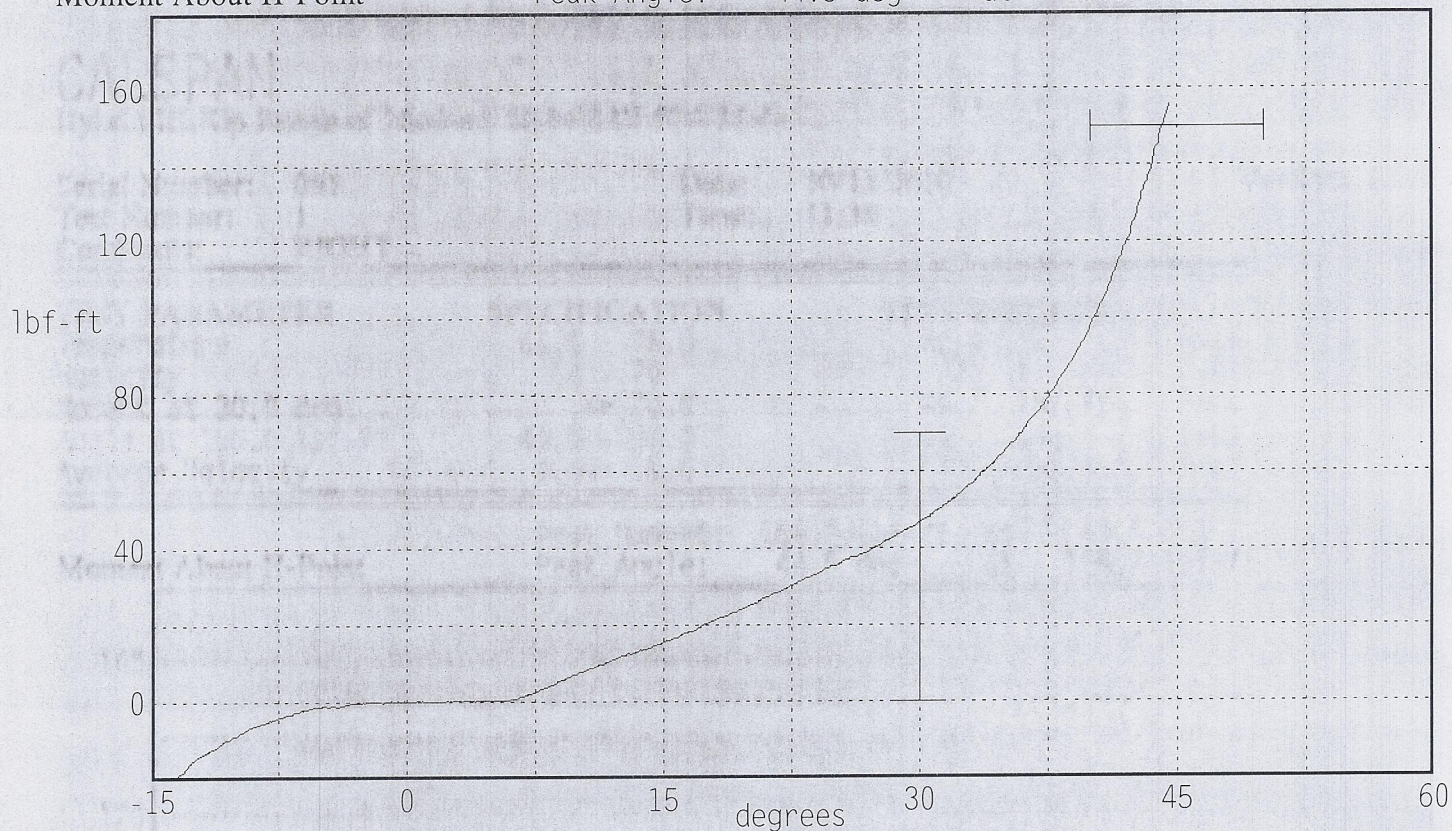
Date: 10/13/2010
Time: 11:38

Version: 1.6.3

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66.0 - 78.0	72.0 °F Pass
Humidity	10 - 70	33 % Pass
Moment at 30.0 deg	<= 70.0	46.7 lbf-ft Pass
Angle at 150.0 lbf-ft	40.0 - 50.0	44.2 deg Pass
Average Velocity	5.0 - 10.0	7.5 deg/sec Pass

Peak Moment: 155.7 lbf-ft at 44.5 deg
Peak Angle: 44.5 deg at 155.7 lbf-ft

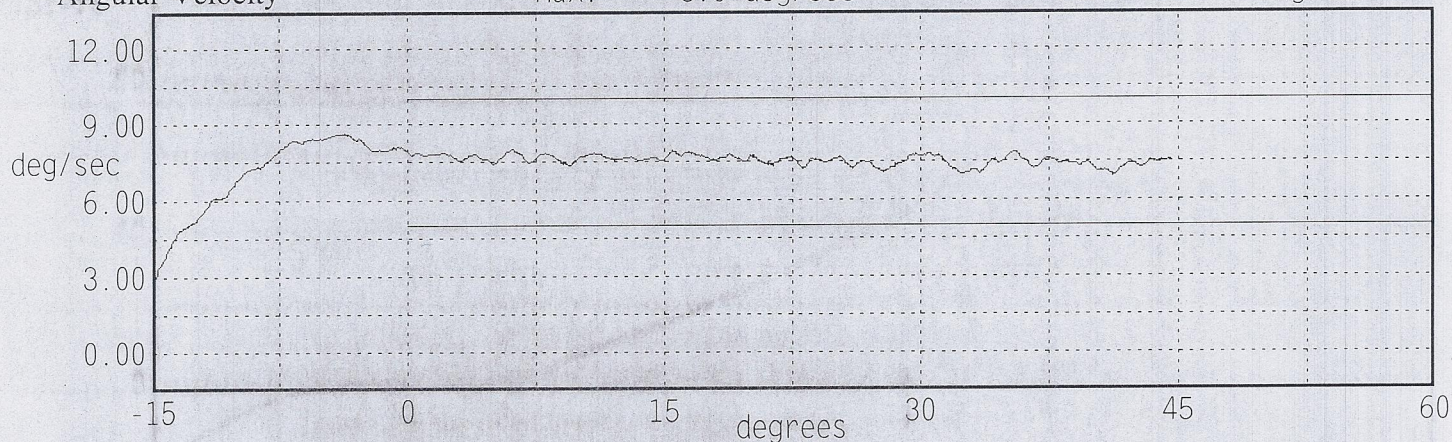
Moment About H-Point



Angular Velocity

Max: 8.0 deg/sec

Min: 6.9 deg/sec





www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

Test Name:	Knee Impact	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	061		
Test ID:	Left Knee	Test Date:	10/13/2010
Test Number:	1	Test Time:	4:22:52 PM

Component Part Number	Component Serial Number
Knee Skin - 78051(L) or 6(R)	077

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	22.2 deg C P
Humidity	10.0 -- 70.0	29.0 %RH P
Velocity	2.07 -- 2.13	2.11 m/s P
Resistive Force	-5.78 -- -4.72	-5.31 kN P

All test parameters are within specifications

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

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

Test ID: **Left Knee**

Test Time: **4:22:52 PM**

Test Date: **10/13/2010**



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2010
CEC	4-202	AC-A44	8/26/2010

Test ID: **Left Knee**

Test Time: **4:22:52 PM**

Test Date: **10/13/2010**

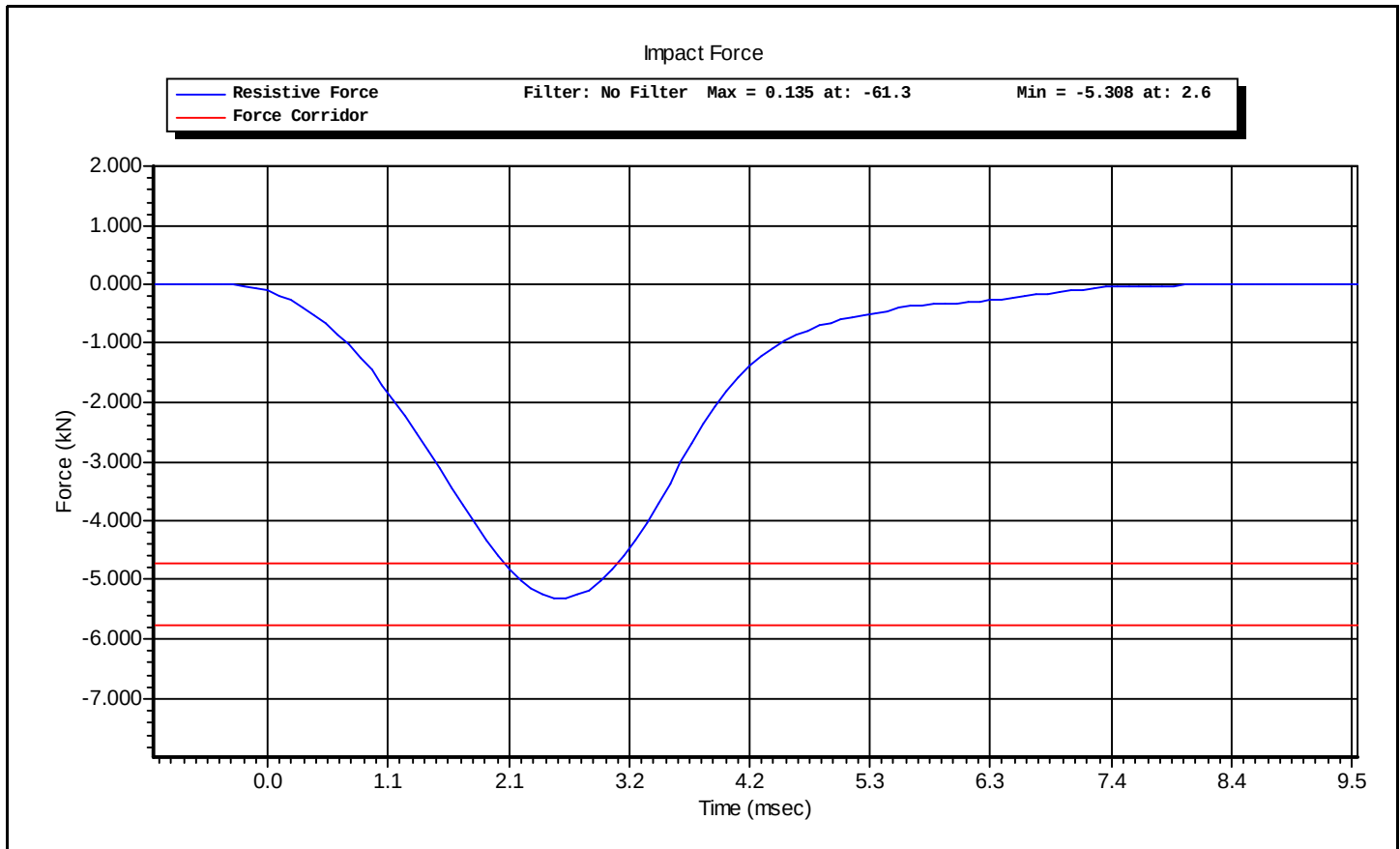


www.calspan.com

Calspan - Transportation Research Group

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

Test Name:	Knee Impact	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	061		
Test ID:	Left Knee	Test Date:	10/13/2010
Test Number:	1	Test Time:	4:22:52 PM



Test ID: Left Knee

Test Time: 4:22:52 PM

Test Date: 10/13/2010



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

Test Name:	Knee Impact	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	061		
Test ID:	Right Knee	Test Date:	10/13/2010
Test Number:	1	Test Time:	3:58:02 PM

Component Part Number	Component Serial Number
Knee Skin - 78051(L) or 6(R)	3266

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	22.2 deg C P
Humidity	10.0 -- 70.0	29.0 %RH P
Velocity	2.07 -- 2.13	2.07 m/s P
Resistive Force	-5.78 -- -4.72	-5.02 kN P

All test parameters are within specifications

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

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

Test ID: **Right Knee**

Test Time: **3:58:02 PM**

Test Date: **10/13/2010**



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2010
CEC	4-202	AC-A44	8/26/2010

Test ID: **Right Knee**

Test Time: **3:58:02 PM**

Test Date: **10/13/2010**

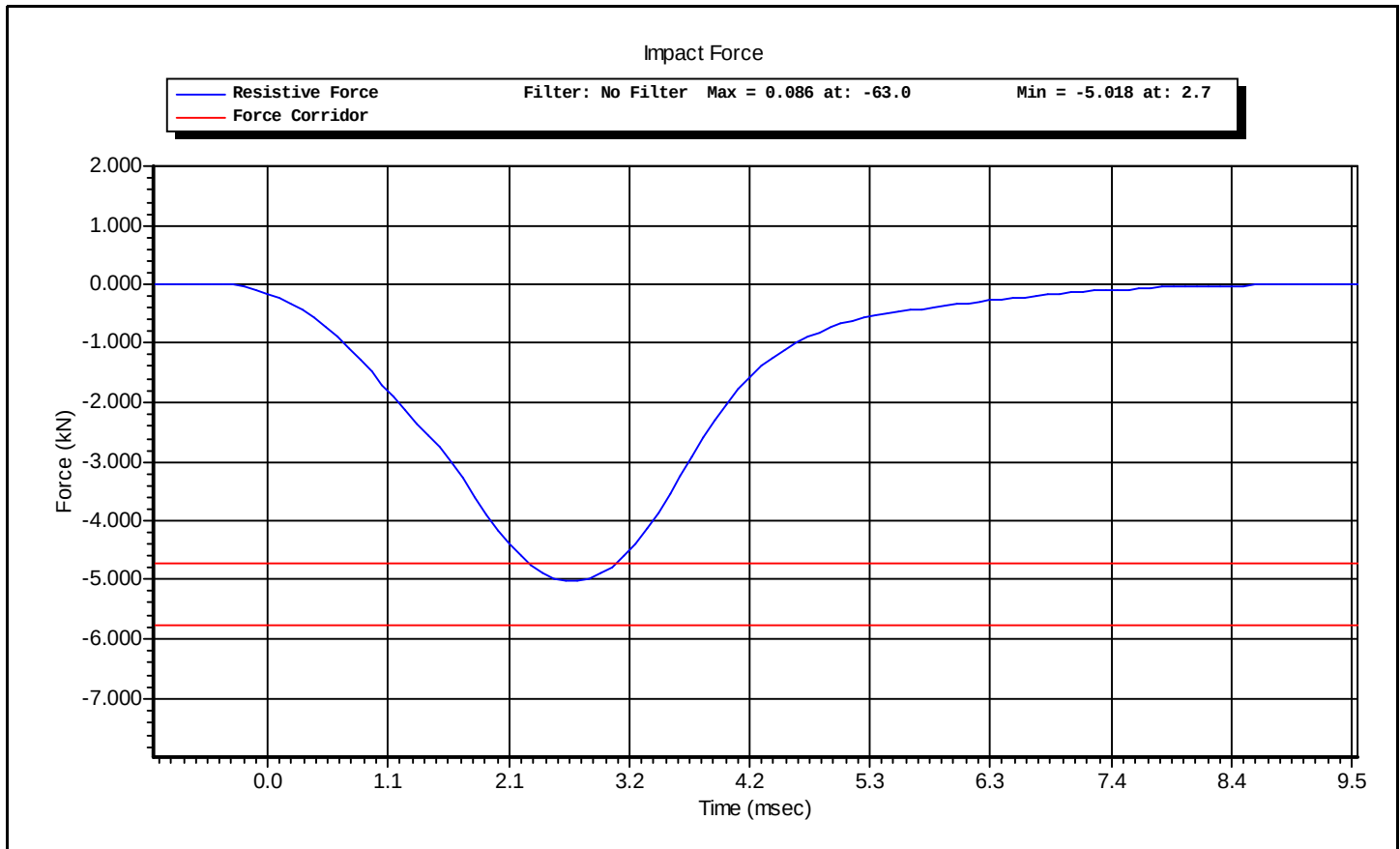


www.calspan.com

Calspan - Transportation Research Group

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

Test Name:	Knee Impact	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	061		
Test ID:	Right Knee	Test Date:	10/13/2010
Test Number:	1	Test Time:	3:58:02 PM



Test ID: **Right Knee**

Test Time: **3:58:02 PM**

Test Date: **10/13/2010**

CALIBRATION TEST RESULTS

PRE-TEST

RIGHT-FRONT PASSENGER DUMMY

S/N: 273

External Measurements

5th Female SN 273

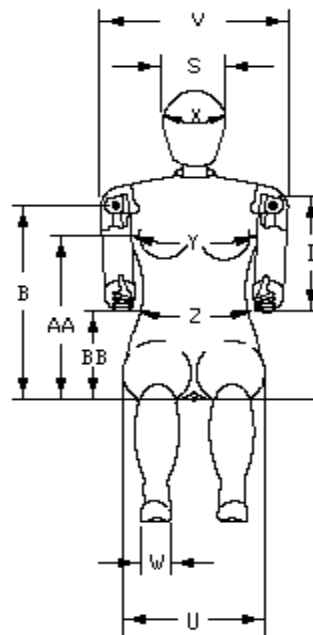
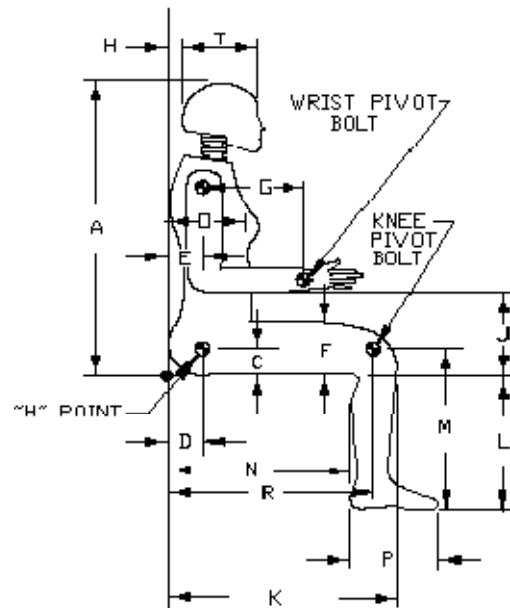
Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	774.7 – 800.1	785	Yes
B	Shoulder Pivot Height	431.8 – 457.2	449	Yes
C	H-Point Height	81.3 – 86.3	85	Yes
D	H-Point from Backline	144.8 – 149.8	148	Yes
E	Shoulder Pivot from Backline	68.6-83.8	78	Yes
F	Thigh Clearance	119.4 – 134.6	128	Yes
G	Back of Elbow to Wrist Pivot	243.9 – 259.1	250	Yes
H	Head Back to Backline	43.2 – 48.2	46	Yes
I	Shoulder to Elbow Length	276.8 – 297.2	282	Yes
J	Elbow Rest Height	182.8 – 203.2	195	Yes
K	Buttock to Knee Length	520.7 – 546.1	530	Yes
L	Popliteal Height	355.6 - 376	360	Yes
M	Knee Pivot Height	393.7 – 419.1	401	Yes
N	Buttock Popliteal Length	414 – 439.4	425	Yes
O	Chest Depth without Jacket	175.3 – 190.5	184	Yes
P	Foot Length (right)	218.5 – 233.7	222	Yes
R	Buttock To Knee Pivot Length	457.2 – 482.6	479	Yes
S	Head Breadth	137.1 – 147.3	144	Yes
T	Head Depth	177.8 - 188	184	Yes
U	Hip Breadth	299.7 – 314.9	309	Yes
V	Shoulder Breadth	350.5 – 365.7	359	Yes
W	Foot Breadth	78.8 - 94	88	Yes
X	Head Circumference	528.3 – 548.7	539	Yes
Y	Chest Circumference with Jacket	850.9 – 881.3	859	Yes
Z	Waist Circumference	759.5 – 789.9	775	Yes
AA	Reference Location (Chest Circumference)	332.7 – 358.1	345	Yes
BB	Reference Location (Waist Circumference)	160.1 – 170.2	165	Yes

Technician: SZ

Date: 10/15/2010

Hybrid 3 5th Female External Measurements

Reference Diagram





www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

Test Name:	Head Drop	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	273		
Test ID:	Head Drop	Test Date:	10/15/2010
Test Number:	1	Test Time:	8:35:34 AM

Component Part Number	Component Serial Number
Head Skin - 78051-228	780

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	21.0 deg C P
Humidity	10 -- 70	39 %RH P
Resultant Acceleration	250 -- 300	277 g P
Oscillation	0.0 -- 10.0	2.5 % P
Lateral Acceleration	-15.00 -- 15.00	-3.77 g P

All test parameters are within specifications

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

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

Test ID: **Head Drop**

Test Time: **8:35:34 AM**

Test Date: **10/15/2010**



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Endevco	7264-2000	P66943	7/27/2010
Endevco	7264-2000	P66931	4/20/2010
Endevco	7264-2000	P66926	4/20/2010

Test ID: **Head Drop**

Test Time: **8:35:34 AM**

Test Date: **10/15/2010**

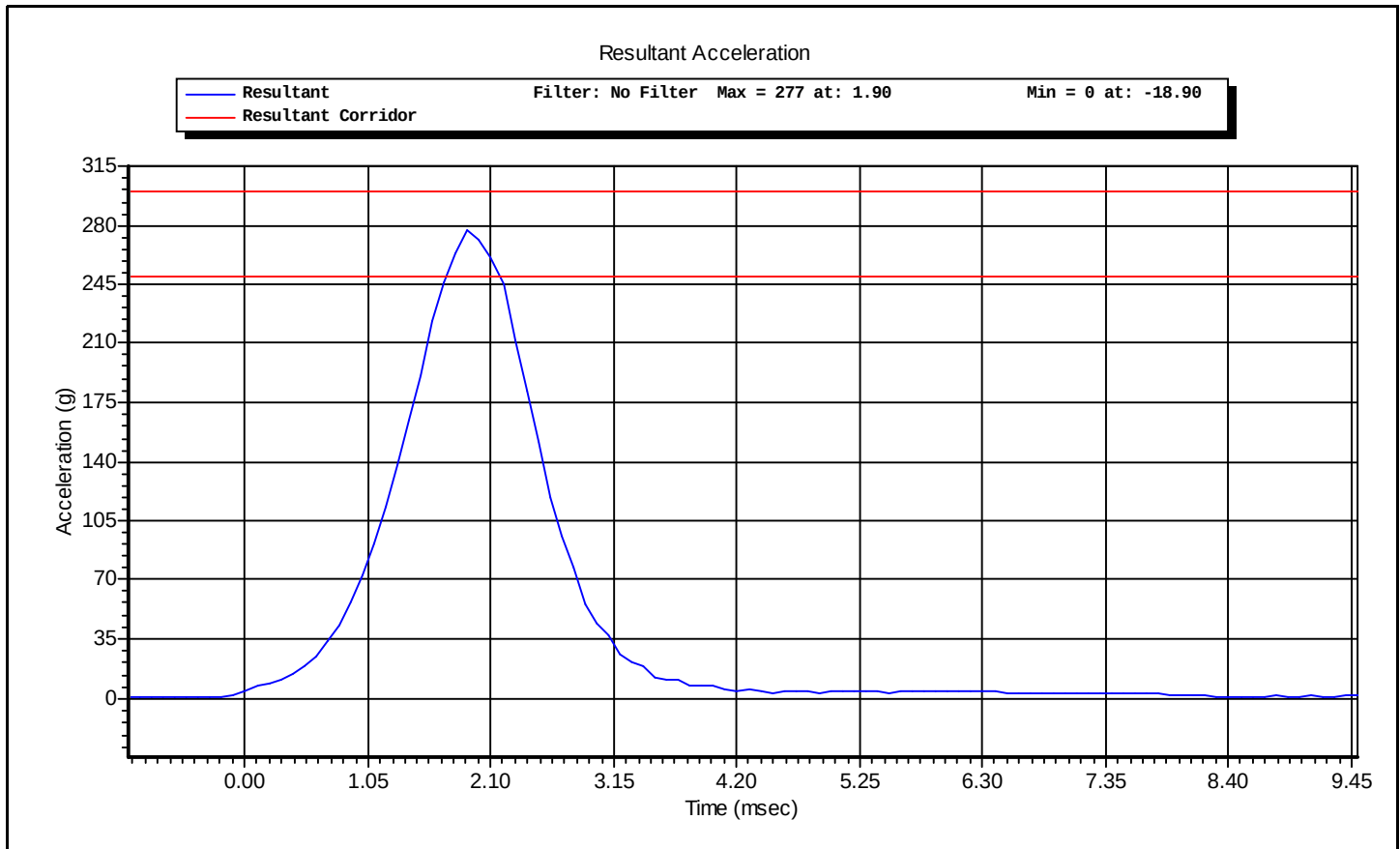


www.calspan.com

Calspan - Transportation Research Group

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

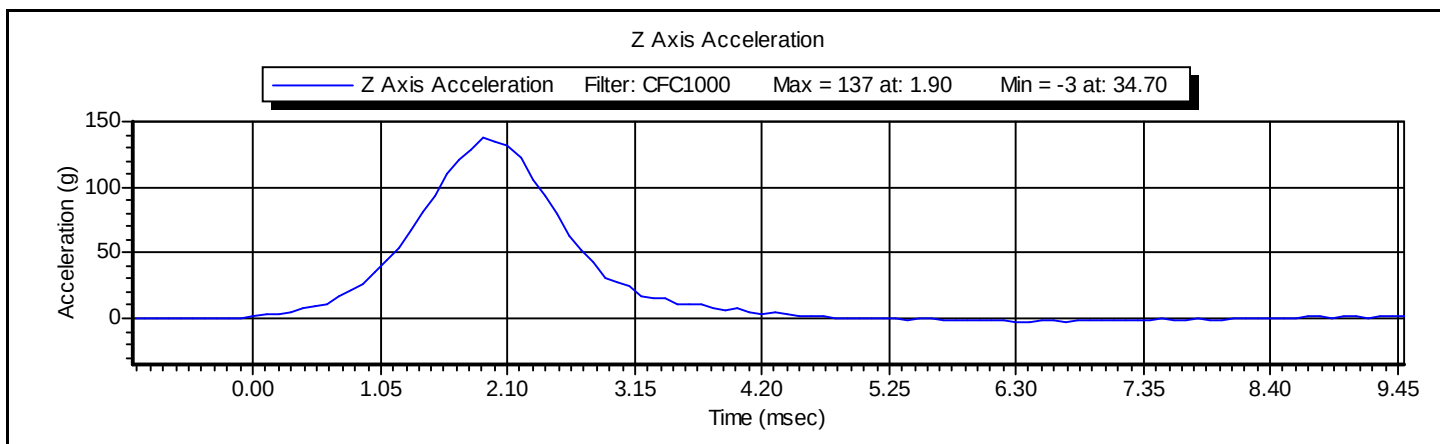
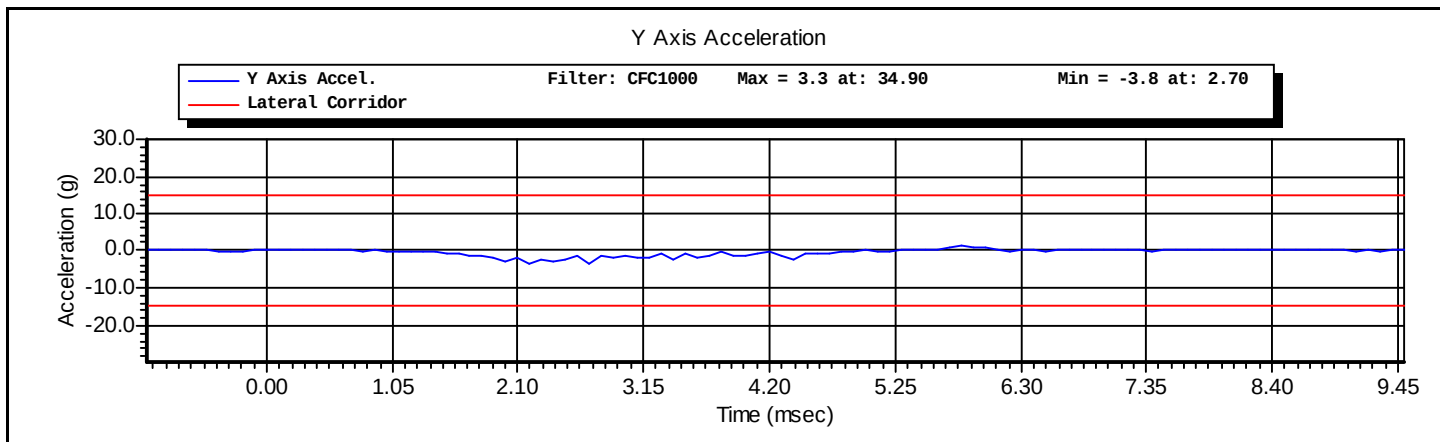
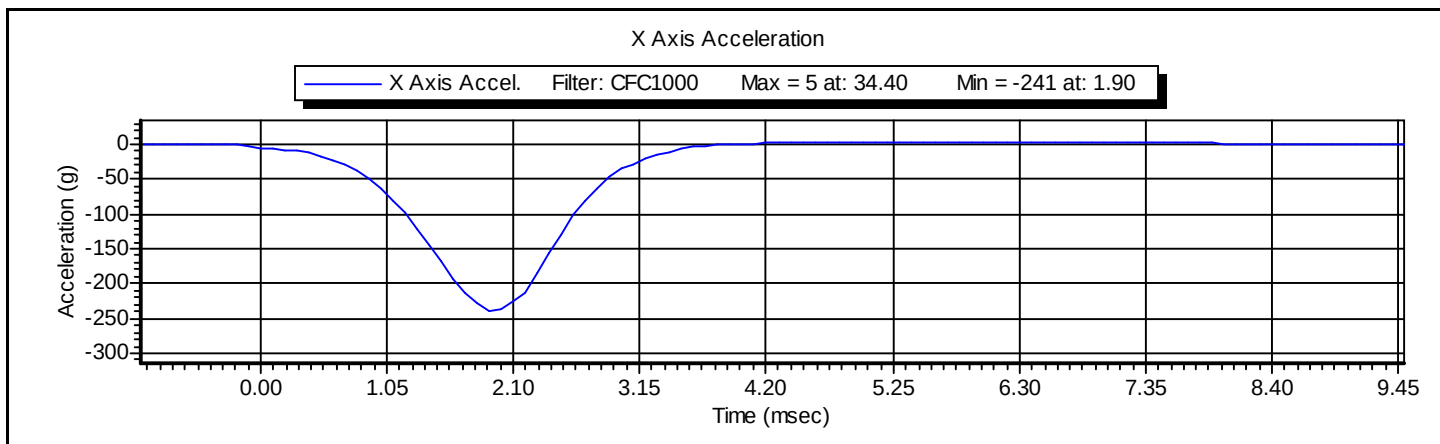
Test Name:	Head Drop	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	273		
Test ID:	Head Drop	Test Date:	10/15/2010
Test Number:	1	Test Time:	8:35:34 AM



Test ID: **Head Drop**

Test Time: **8:35:34 AM**

Test Date: **10/15/2010**





www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

Test Name:	Neck Flexion	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	273		
Test ID:	Neck Flexion	Test Date:	10/14/2010
Test Number:	3	Test Time:	2:40:13 PM

Component Part Number	Component Serial Number
Neck - 880105-255	713

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	22.2 deg C P
Humidity	10 -- 70	43 %RH P
Velocity	6.89 -- 7.13	7.08 m/s P
Pendulum Impulse at 10 ms	2.10 -- 2.50	2.27 m/s P
Pendulum Impulse at 20 ms	4.00 -- 5.00	4.49 m/s P
Pendulum Impulse at 30 ms	5.80 -- 7.00	6.41 m/s P
D Plane Rotation	-91.0 -- -77.0	-78.0 degrees P
Moment During Rotation Interval	69.0 -- 83.0	70.8 Nm P
Moment Decay to 10.0 Nm	80.0 -- 100.0	90.0 ms P

All test parameters are within specifications

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

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

Test ID: **Neck Flexion**

Test Time: **2:40:13 PM**

Test Date: **10/14/2010**



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2010
Endevco	7231CT	C16510	5/10/2010
DentonATD	78051-342	PENDULUM POT	8/14/2010
DentonATD	78051-342	CONDYLE POT	8/14/2010
FTSS	1716A	LC-296 My	2/1/2010
FTSS	1716A	LC-296 Fx	2/1/2010
FTSS	1716A	LC-296 Fy	2/1/2010
FTSS	1716A	LC-296 Fz	2/1/2010

Test ID: **Neck Flexion**

Test Time: **2:40:13 PM**

Test Date: **10/14/2010**

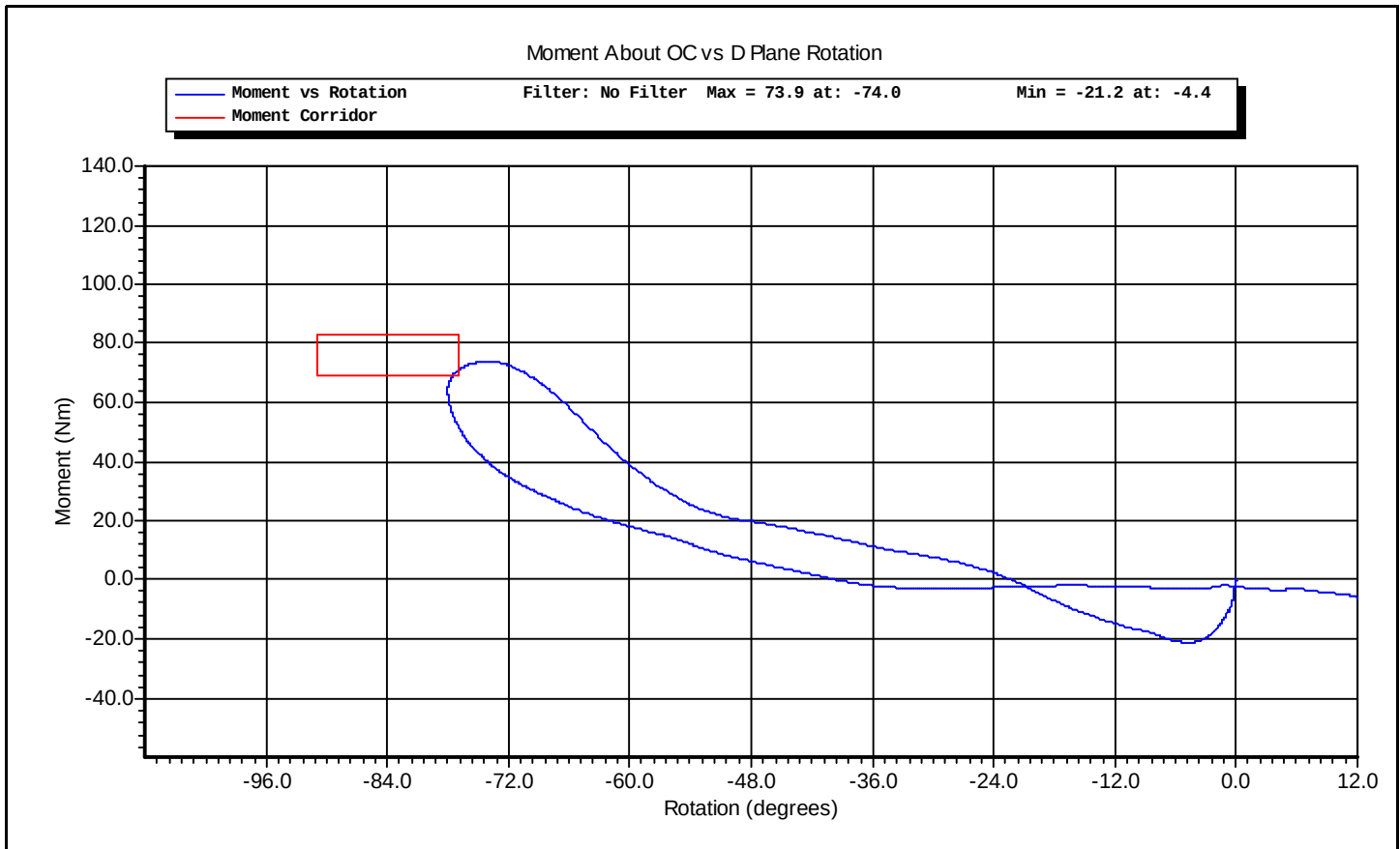


www.calspan.com

Calspan - Transportation Research Group

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

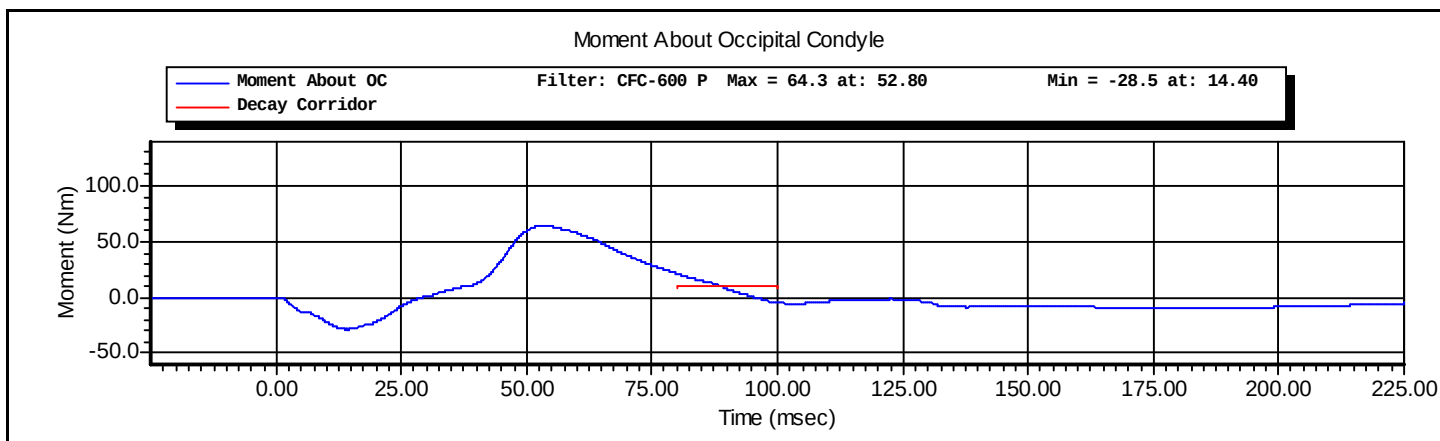
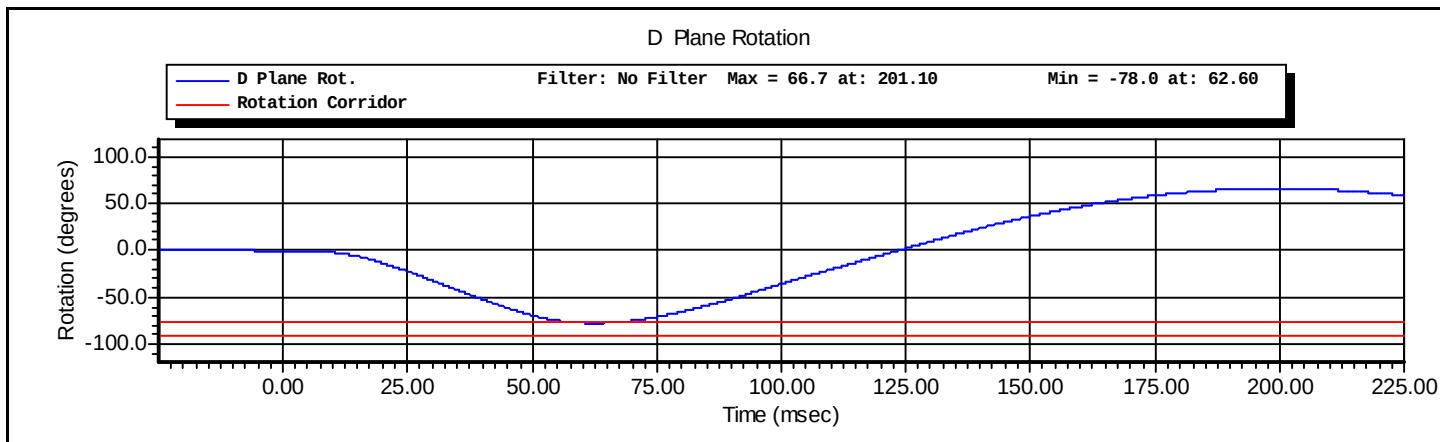
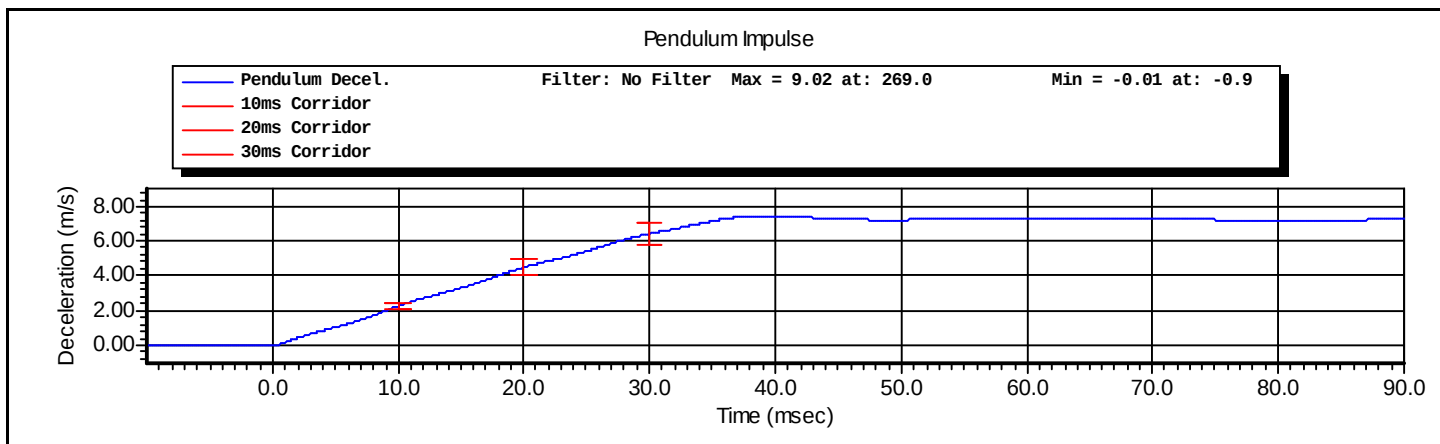
Test Name:	Neck Flexion	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	273		
Test ID:	Neck Flexion	Test Date:	10/14/2010
Test Number:	3	Test Time:	2:40:13 PM



Test ID: Neck Flexion

Test Time: 2:40:13 PM

Test Date: 10/14/2010





www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

Test Name:	Neck Extension	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	273		
Test ID:	Neck Extension	Test Date:	10/14/2010
Test Number:	1	Test Time:	3:12:50 PM

Component Part Number	Component Serial Number
Neck - 880105-255	713

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	22.2 deg C P
Humidity	10 -- 70	43 %RH P
Velocity	5.95 -- 6.19	6.09 m/s P
Pendulum Impulse at 10 ms	1.50 -- 1.90	1.83 m/s P
Pendulum Impulse at 20 ms	3.10 -- 3.90	3.61 m/s P
Pendulum Impulse at 30 ms	4.60 -- 5.60	5.20 m/s P
D Plane Rotation	99.0 -- 114.0	109.2 degrees P
Moment During Rotation Interval	-65.0 -- -53.0	-58.8 Nm P
Moment Decay to -10.0 Nm	94.0 -- 114.0	104.7 ms P

All test parameters are within specifications

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

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

Test ID: **Neck Extension**

Test Time: **3:12:50 PM**

Test Date: **10/14/2010**



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2010
Endevco	7231CT	C16510	5/10/2010
DentonATD	78051-342	PENDULUM POT	8/14/2010
DentonATD	78051-342	CONDYLE POT	8/14/2010
FTSS	1716A	LC-296 My	2/1/2010
FTSS	1716A	LC-296 Fx	2/1/2010
FTSS	1716A	LC-296 Fy	2/1/2010
FTSS	1716A	LC-296 Fz	2/1/2010

Test ID: **Neck Extension**

Test Time: **3:12:50 PM**

Test Date: **10/14/2010**

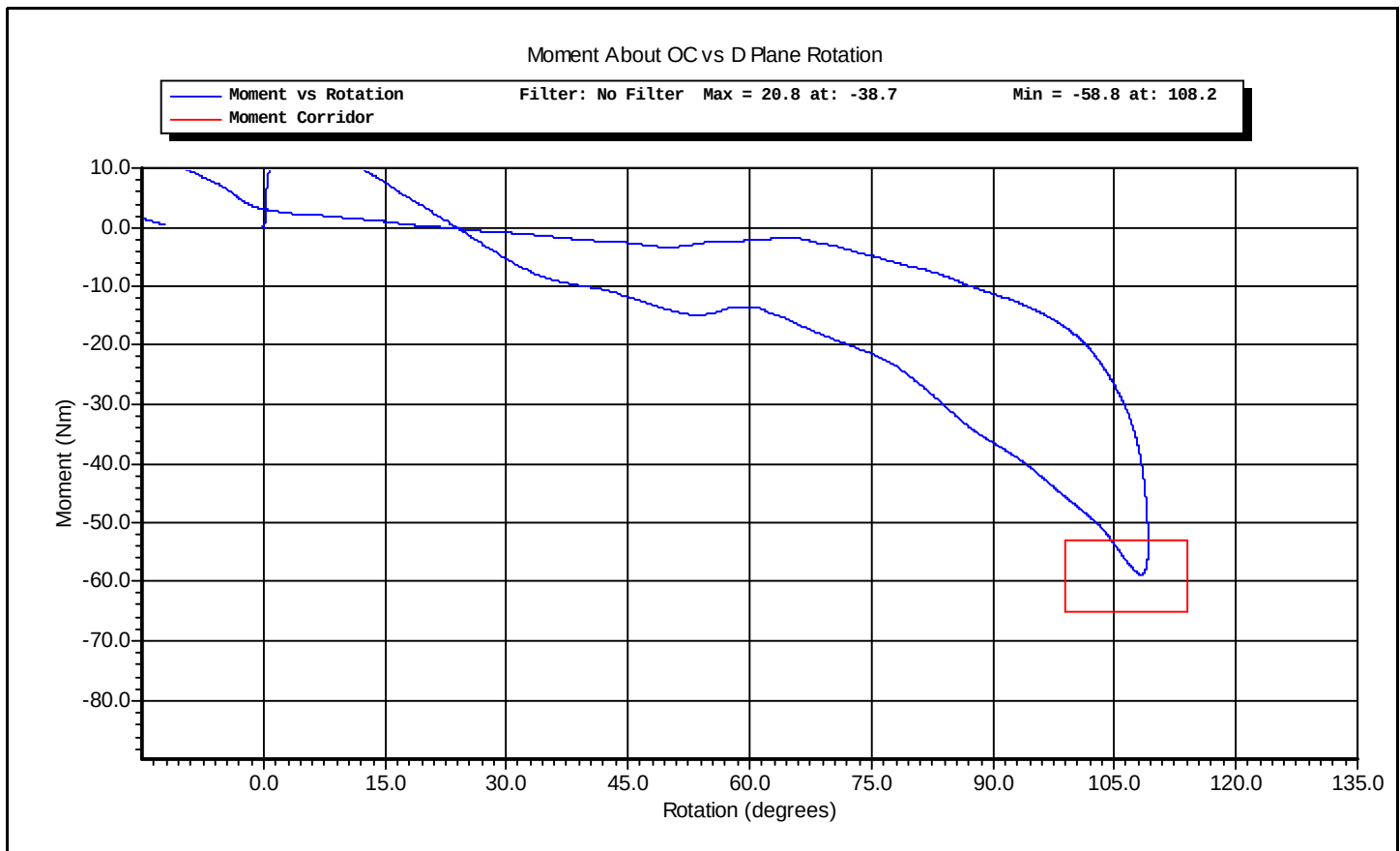


www.calspan.com

Calspan - Transportation Research Group

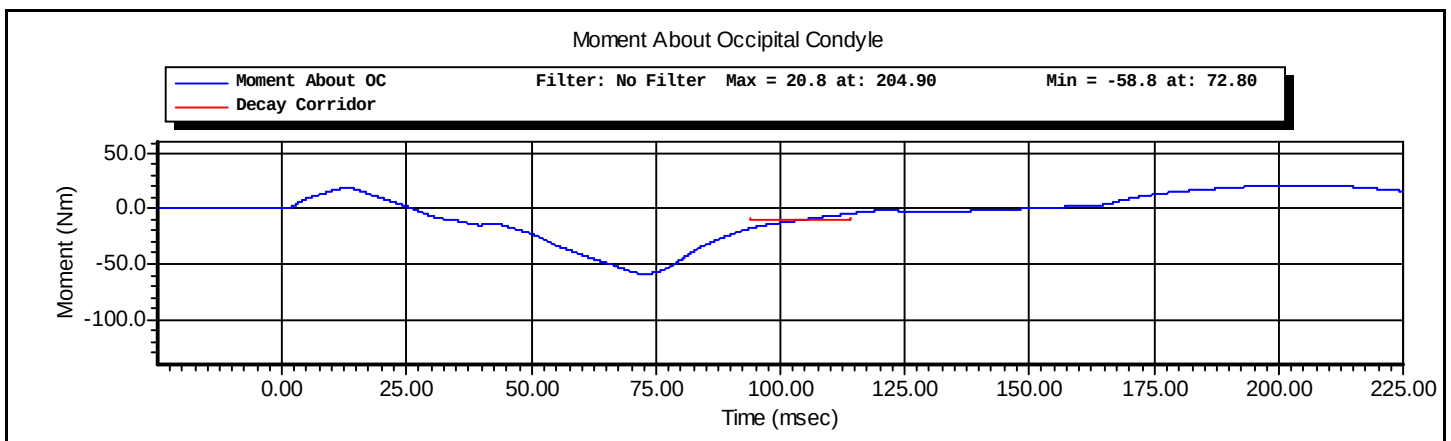
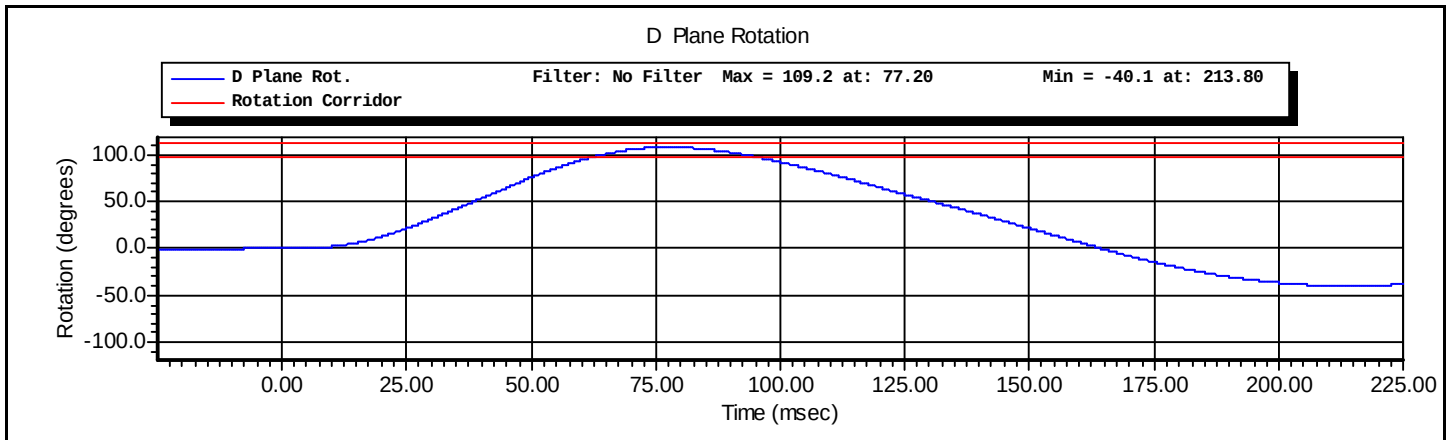
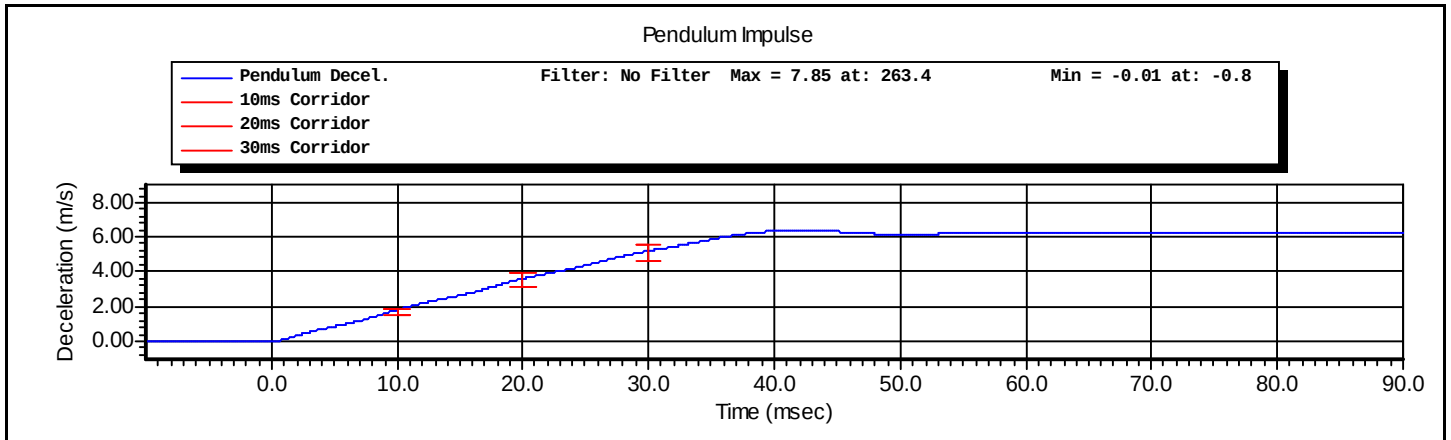
4455 Genesee Street, Buffalo, New York 14225 - Phone (716)632-7500

Test Name:	Neck Extension	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	273		
Test ID:	Neck Extension	Test Date:	10/14/2010
Test Number:	1	Test Time:	3:12:50 PM



Test ID: Neck Extension Test Time: 3:12:50 PM

Test Date: 10/14/2010



Torso Flexion Test

Technician: AR

Calibration Date: 10/15/2010

ATD Serial Number: 5th Female 273

Test Results			
Test Condition	Parameters	Results	Status
Temperature	18.9-25.6° C	22.2° C	P
Lab Humidity: 38%	10-70%	39%	P
Max Force @ 45 deg	320 – 390N	362N	P
Torso Rotation Rate	0.5 °/s ≤ rate ≤ 1.5 °/s	1.0 °/s	P
Initial reference angle	≤20 deg	15°	P
Final ref plan angle	Initial ref plane ± 8 deg	21°	P

P = Pass

F= Fail



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

Test Name:	Thorax Impact	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	273		
Test ID:	Thorax Impact	Test Date:	10/15/2010
Test Number:	4	Test Time:	4:59:41 PM

Component Part Number	Component Serial Number
Ribs 880105-RS	
Chest Jacket - 880105-355-E	948
Lumbar Spine - 880105-1095	

Test Parameters	Test Specifications			Test Results	
Temperature	20.6	--	22.2	22.2 deg C	P
Humidity	10.0	--	70.0	39.0 %RH	P
Velocity	6.59	--	6.83	6.70 m/s	P
Sternum Displacement	-58.0	--	-50.0	-52.1 mm	P
Force During Displacement Interval	-4400	--	-3900	-4393 N	P
Force -18.0 to -50.0 Displacement	-4600	--	0	-4383 N	P
Hysteresis	69	--	85	69 %	P

All test parameters are within specifications

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

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

Test ID: **Thorax Impact**

Test Time: **4:59:41 PM**

Test Date: **10/15/2010**



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2010
Endevco	7264-2000	P66930	10/5/2010
DentonATD	78051-342	DS-273	4/13/2010

Test ID: **Thorax Impact**

Test Time: **4:59:41 PM**

Test Date: **10/15/2010**



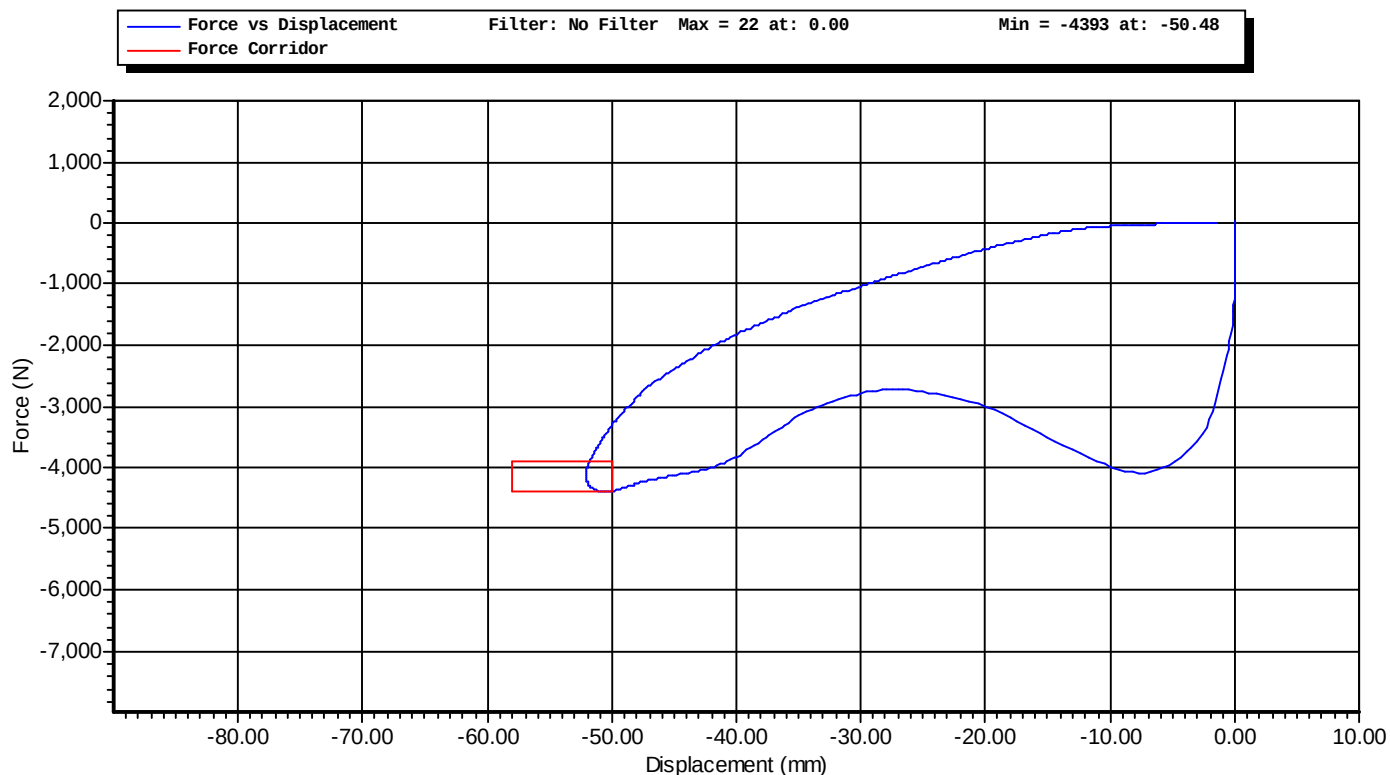
www.calspan.com

Calspan - Transportation Research Group

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

Test Name:	Thorax Impact	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	273		
Test ID:	Thorax Impact	Test Date:	10/15/2010
Test Number:	4	Test Time:	4:59:41 PM

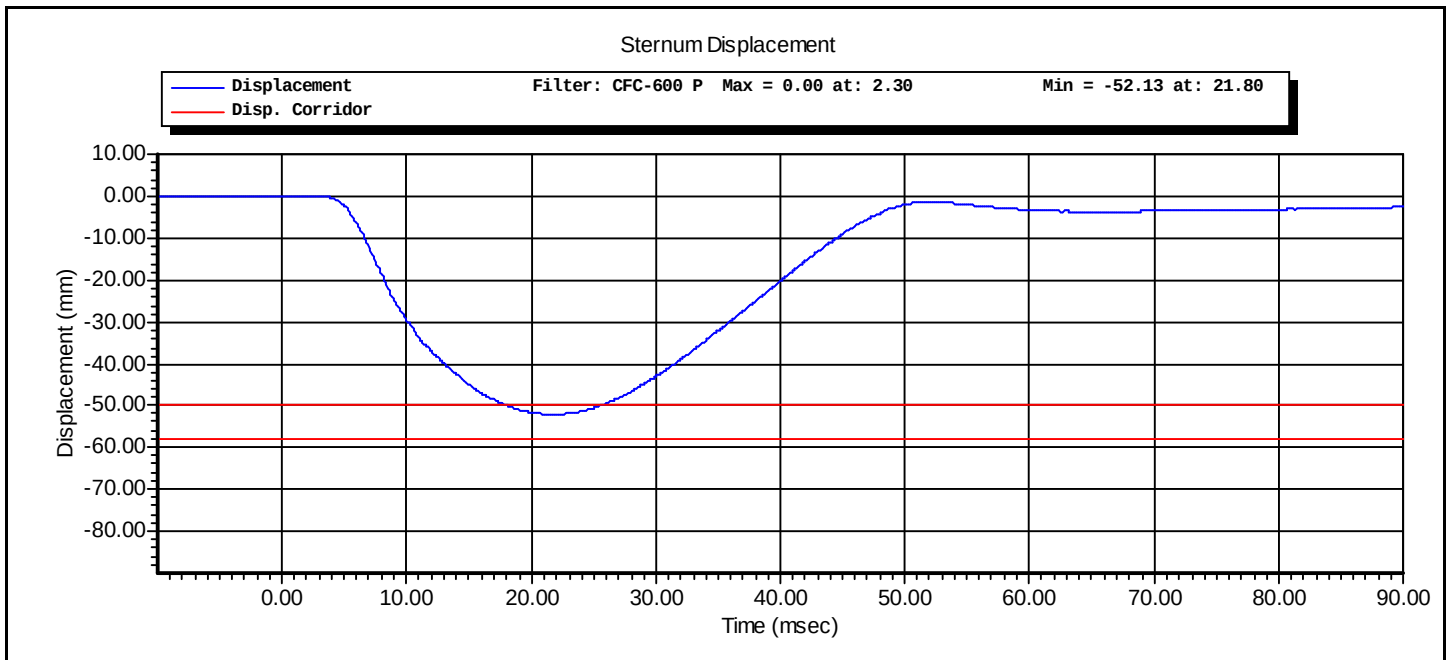
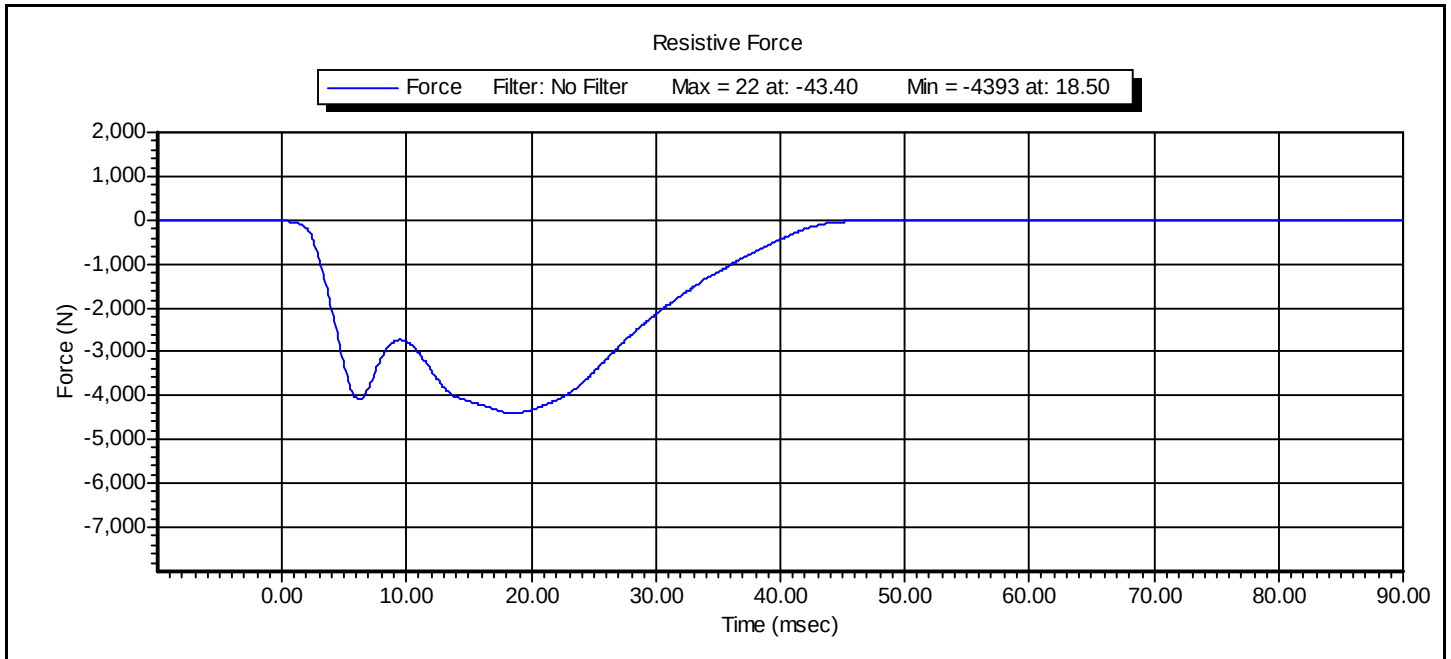
Resistive Force vs Sternum Displacement



Test ID: Thorax Impact

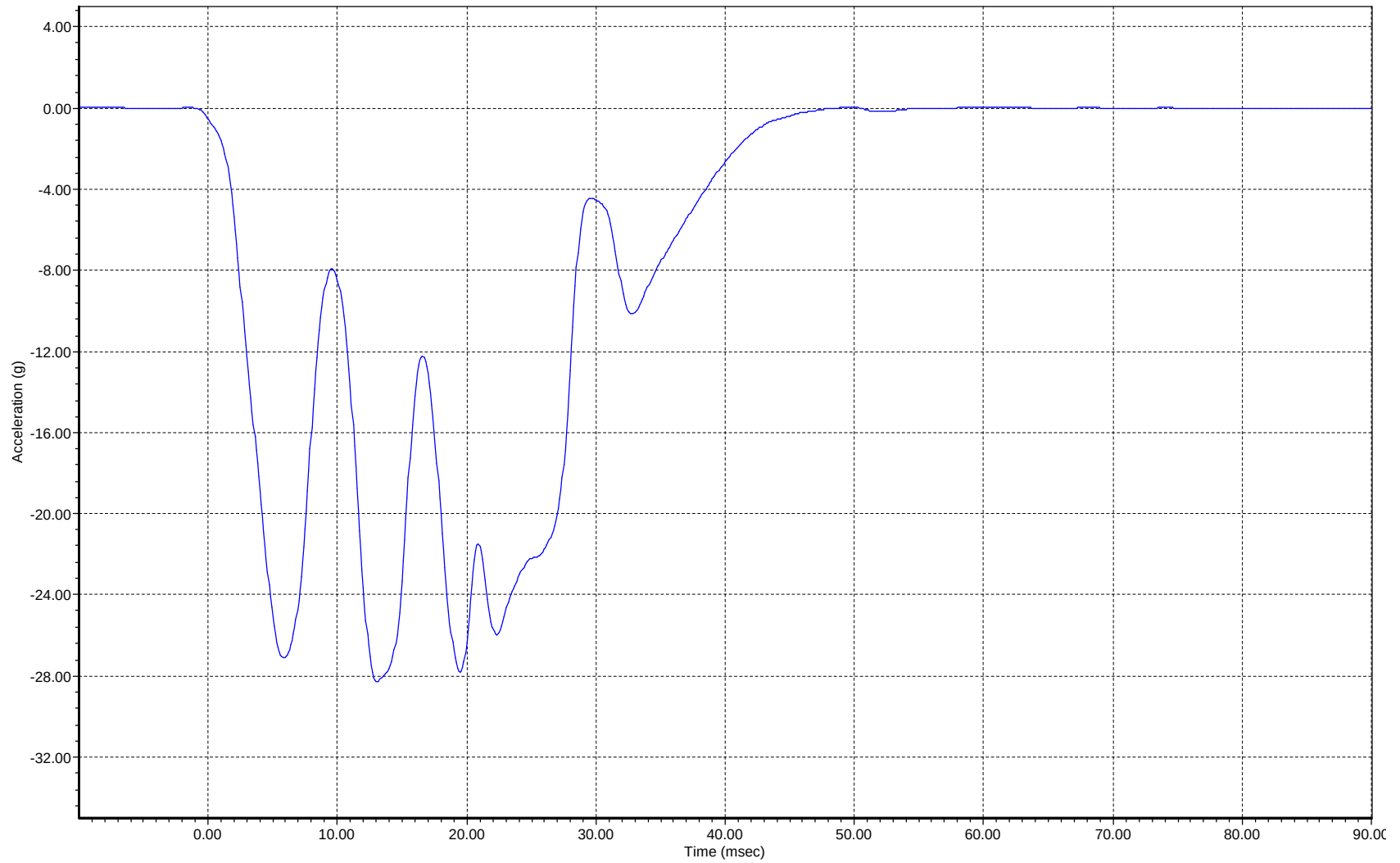
Test Time: 4:59:41 PM

Test Date: 10/15/2010



Probe Accelerometer

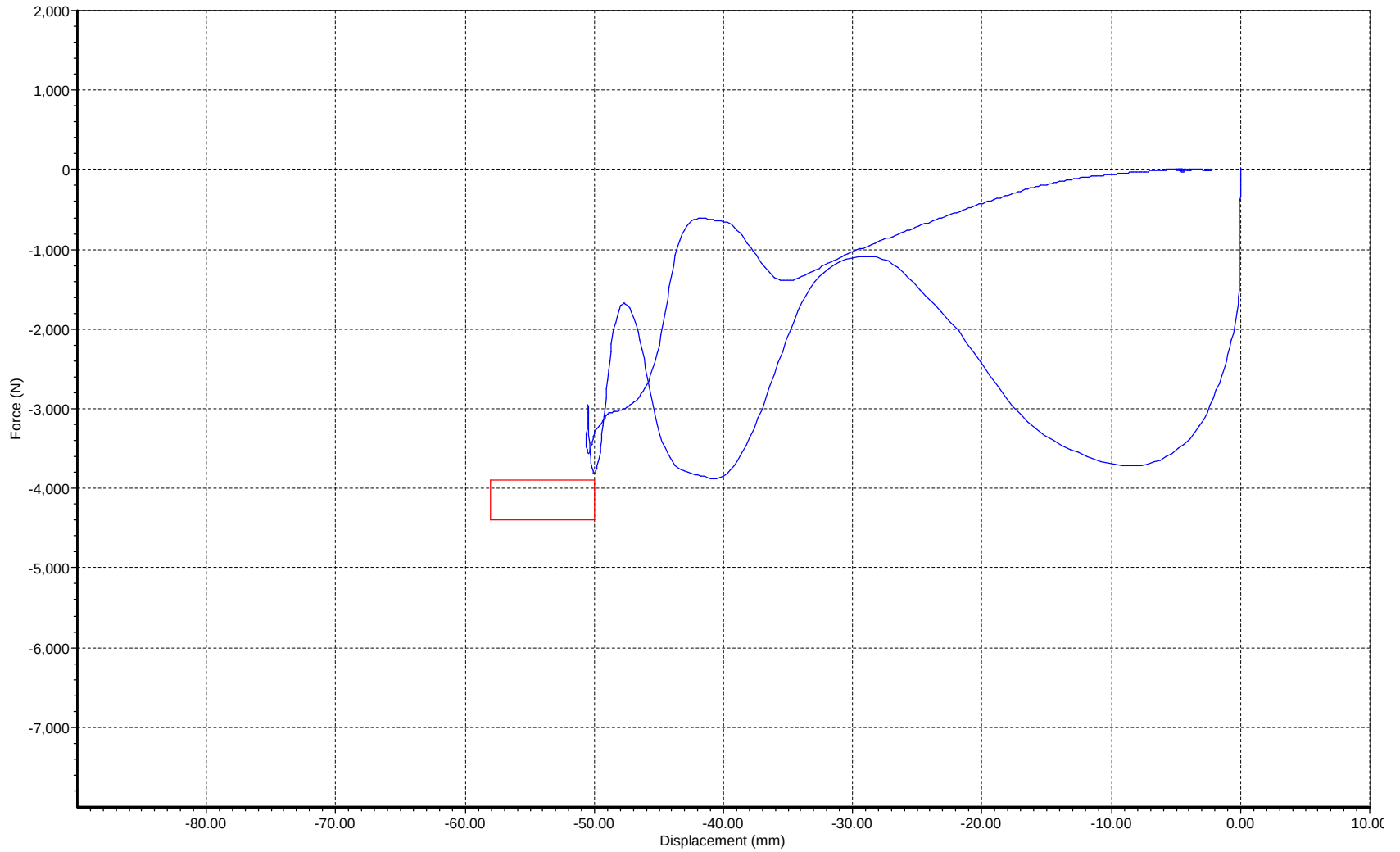
Probe Accel. Filter: CFC-180 Max = 0.16 at: -43.20 Min = -28.28 at: 13.10



Hybrid III 5'th, Thorax Impact, 10/12/2010, 4:21:05 PM

Resistive Force vs Sternum Displacement

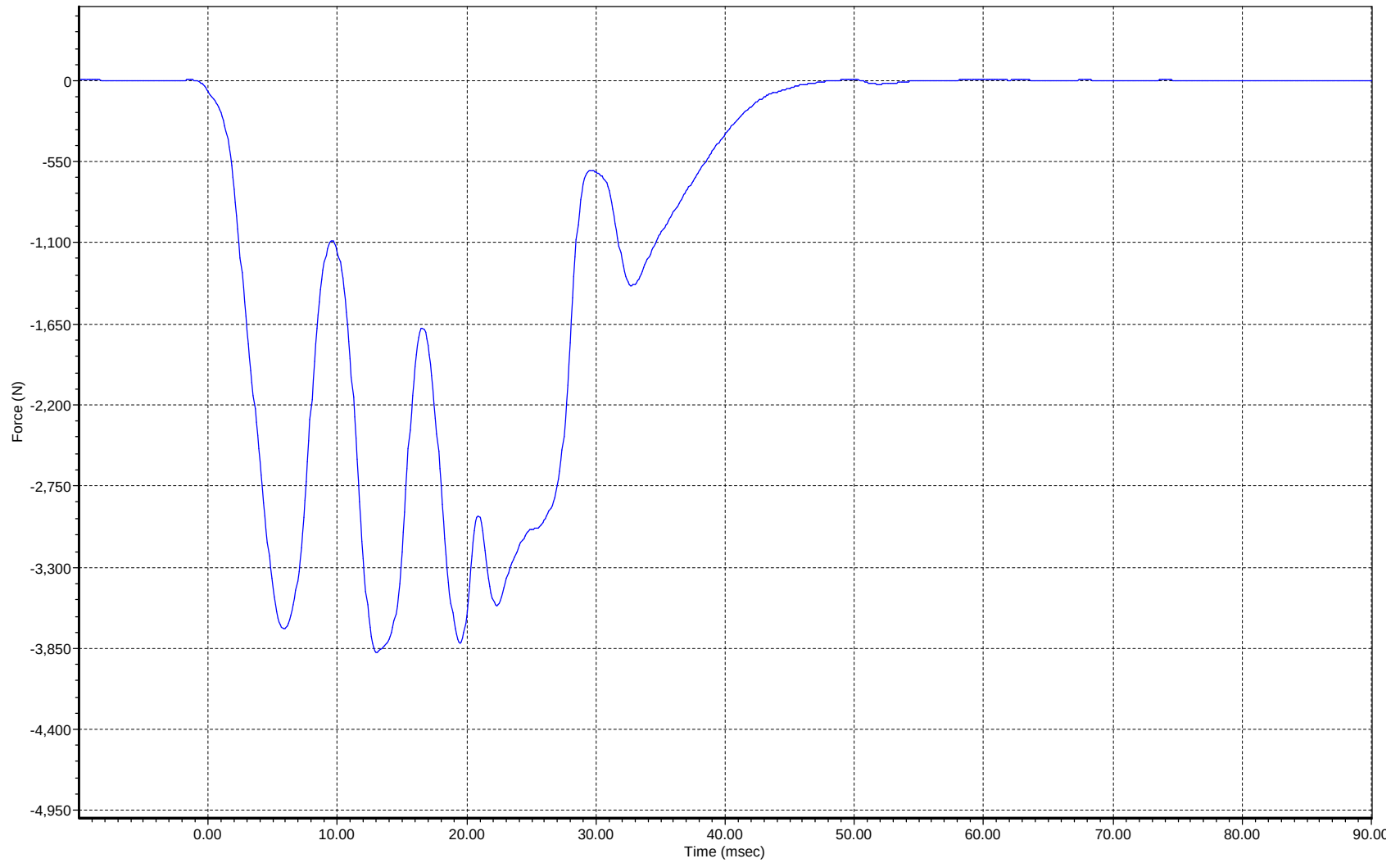
Force vs Displacement Filter: No Filter Max = 22 at: 0.00 Min = -3878 at: -40.80
Force Corridor



Hybrid III 5'th, Thorax Impact, 10/12/2010, 4:21:05 PM

Resistive Force

Force Filter: No Filter Max = 22 at: -43.20 Min = -3878 at: 13.10



Hybrid III 5'th, Thorax Impact, 10/12/2010, 4:21:05 PM



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

Test Name:	Knee Impact	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	273		
Test ID:	Left Knee	Test Date:	10/14/2010
Test Number:	1	Test Time:	4:02:18 PM

Component Part Number	Component Serial Number
Knee Skin - 880105-508	1726

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	22.2 deg C P
Humidity	10.0 -- 70.0	43.0 %RH P
Velocity	2.07 -- 2.13	2.11 m/s P
Resistive Force	-4060 -- -3450	-3714 N P

All test parameters are within specifications

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

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

Test ID: **Left Knee**

Test Time: **4:02:18 PM**

Test Date: **10/14/2010**



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2010
CEC	4-202	AC-A44	8/26/2010

Test ID: **Left Knee**

Test Time: **4:02:18 PM**

Test Date: **10/14/2010**

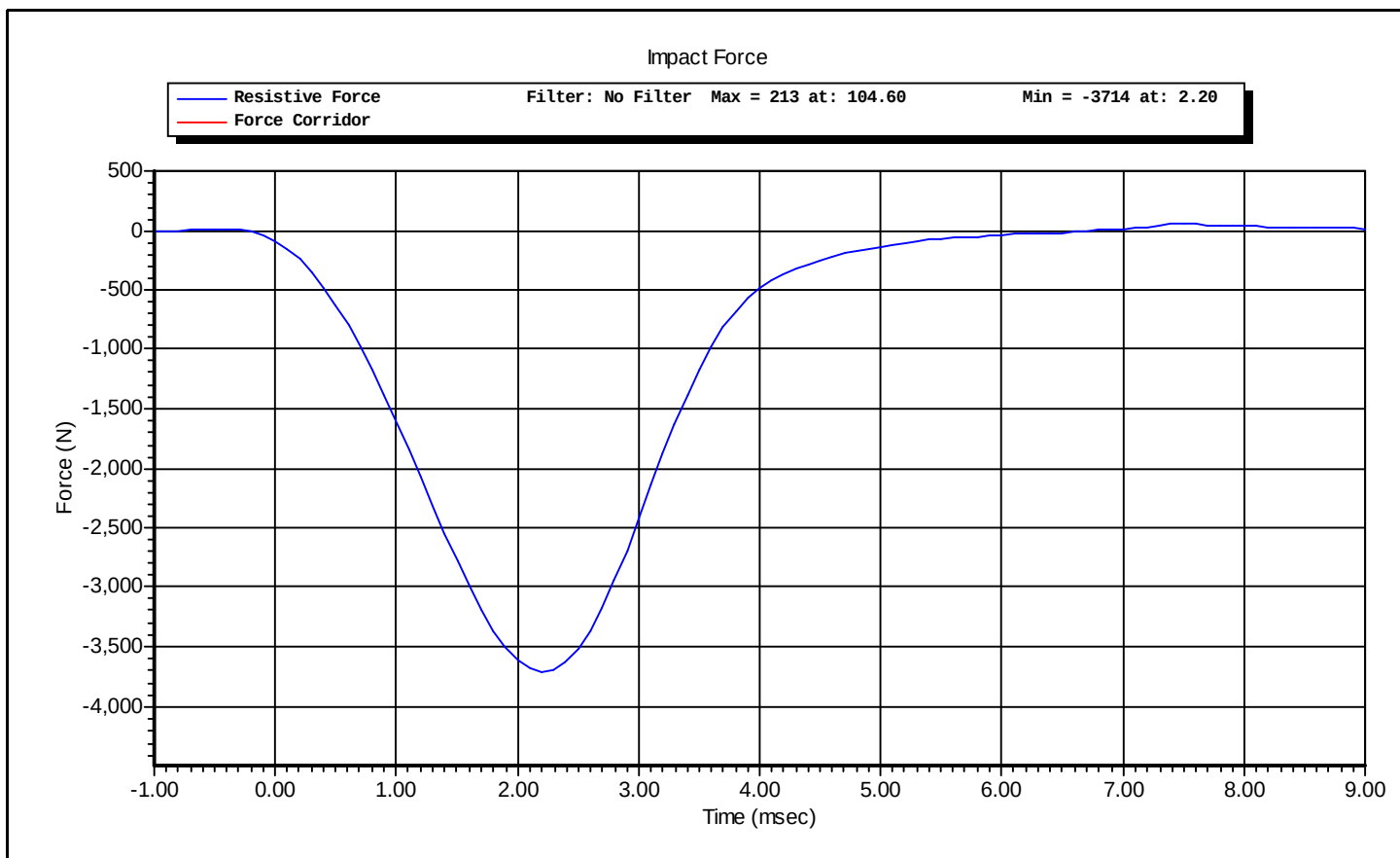


www.calspan.com

Calspan - Transportation Research Group

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

Test Name:	Knee Impact	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	273		
Test ID:	Left Knee	Test Date:	10/14/2010
Test Number:	1	Test Time:	4:02:18 PM



Test ID: **Left Knee**

Test Time: **4:02:18 PM**

Test Date: **10/14/2010**



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

Test Name:	Knee Impact	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	273		
Test ID:	Right Knee	Test Date:	10/14/2010
Test Number:	1	Test Time:	4:09:39 PM

Component Part Number	Component Serial Number
Knee Skin - 880105-508	1051

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	22.2 deg C P
Humidity	10.0 -- 70.0	43.0 %RH P
Velocity	2.07 -- 2.13	2.11 m/s P
Resistive Force	-4060 -- -3450	-3710 N P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____
Supervisor: **D. Travale** Signature: _____

Test ID: **Right Knee**

Test Time: **4:09:39 PM**

Test Date: **10/14/2010**



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2010
CEC	4-202	AC-A44	8/26/2010

Test ID: **Right Knee**

Test Time: **4:09:39 PM**

Test Date: **10/14/2010**

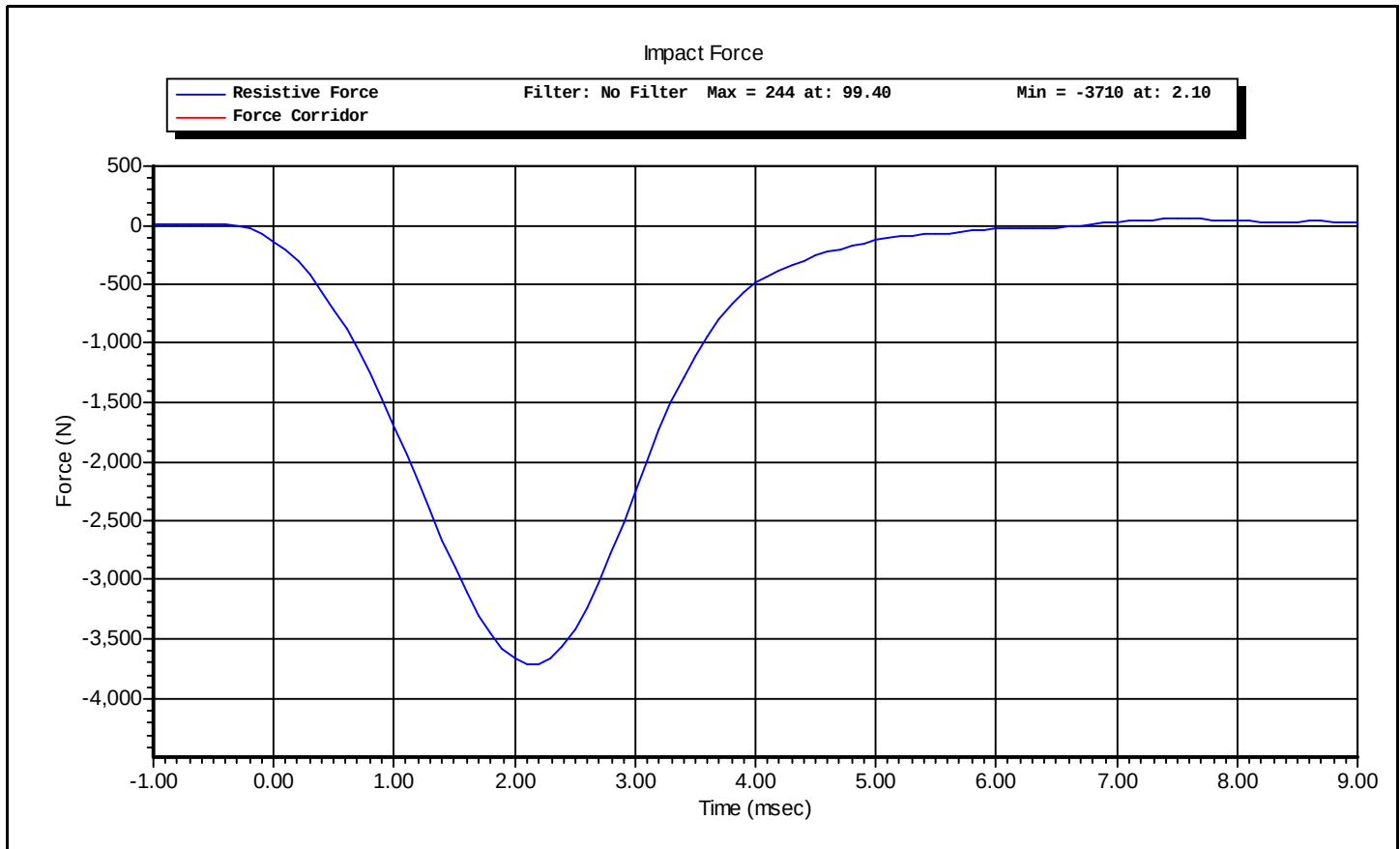


www.calspan.com

Calspan - Transportation Research Group

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

Test Name:	Knee Impact	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	273		
Test ID:	Right Knee	Test Date:	10/14/2010
Test Number:	1	Test Time:	4:09:39 PM



Test ID: Right Knee

Test Time: 4:09:39 PM

Test Date: 10/14/2010

CALIBRATION TEST RESULTS

POST-TEST

DRIVER DUMMY

S/N: 061

50th Male External Measurements

SN 061

Symbol	Description	Specification	Results	Pass
		in	in	
A	Sitting Height	34.6 - 35	34.7	Yes
B	Shoulder Pivot Height	19.9 - 20.5	2.04	Yes
C	H-Point Height	3.3 - 3.5	3.5	Yes
D	H-Point from Backline	5.3 - 5.5	5.3	Yes
E	Shoulder Pivot from Backline	3.3 - 3.7	3.7	Yes
F	Thigh Clearance	5.5 - 6.1	6.1	Yes
G	Back of Elbow to Wrist Pivot	11.4 - 12.0	11.5	Yes
H	Head Back to Backline	1.6 - 1.8	1.7	Yes
I	Shoulder to Elbow Length	13.0 - 13.6	13.2	Yes
J	Elbow Rest Height	7.5 - 8.3	8.0	Yes
K	Buttock to Knee Length	22.8 - 23.8	23.4	Yes
L	Popliteal Height	16.9 - 17.9	17.5	Yes
M	Knee Pivot Height	19.1 - 19.7	19.2	Yes
N	Buttock Popliteal Length	17.8 - 18.8	18.7	Yes
O	Chest Depth without Jacket	8.4 - 9.0	8.6	Yes
P	Foot Length (right)	9.9 - 10.5	10.1	Yes
V	Shoulder Breadth	16.3 - 17.2	16.8	Yes
W	Foot Breadth	3.6 - 4.2	3.9	Yes
Y	Chest Circumference with Jacket	38.2 - 39.4	38.5	Yes
Z	Waist Circumference	32.9 - 34.1	33.4	Yes
AA	Reference Location (Chest Circumference)	16.9 - 17.1	17.0	Yes
BB	Reference Location (Waist Circumference)	8.9 - 9.1	9.0	Yes

Technician: SZ

Date: 10/26/2010



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

Test Name:	Head Drop	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	061		
Test ID:	Head Drop	Test Date:	10/27/2010
Test Number:	1	Test Time:	3:14:34 PM

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	22.2 deg C P
Humidity	10 -- 70	37 %RH P
Resultant Acceleration	225 -- 275	272 g P
Oscillation	0.0 -- 10.0	9.0 % P
Lateral Acceleration	-15.00 -- 15.00	-5.34 g P

All test parameters are within specifications

Technician: S. Zito Signature: _____

Supervisor: D. Travale Signature: _____

Test ID: **Head Drop**

Test Time: **3:14:34 PM**

Test Date: **10/27/2010**



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Endevco	7264-2000	P66943	10/25/2010
Endevco	7264-2000	P66931	10/25/2010
Endevco	7264-2000	P66926	10/25/2011

Test ID: **Head Drop**

Test Time: **3:14:34 PM**

Test Date: **10/27/2010**

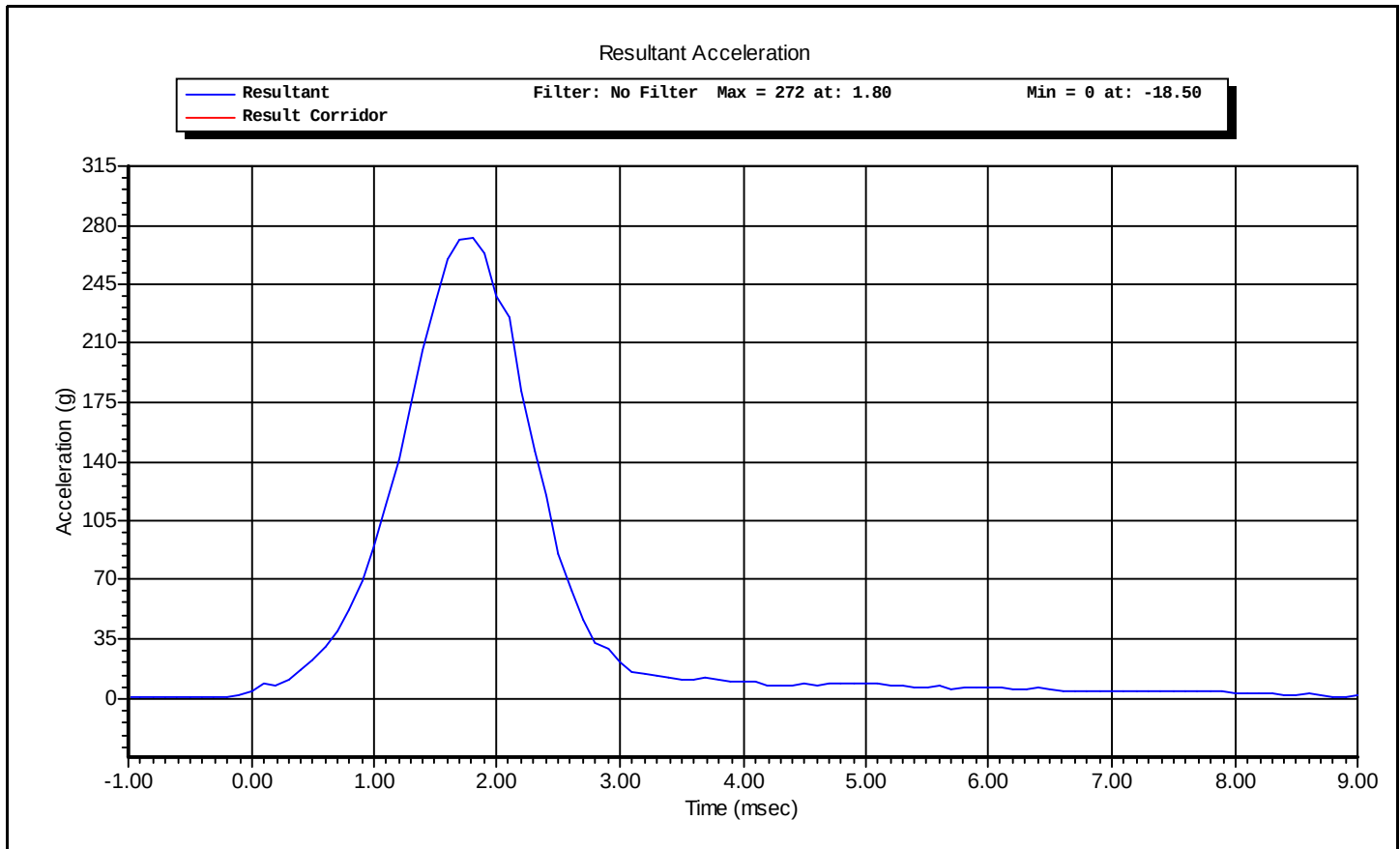


www.calspan.com

Calspan - Transportation Research Group

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

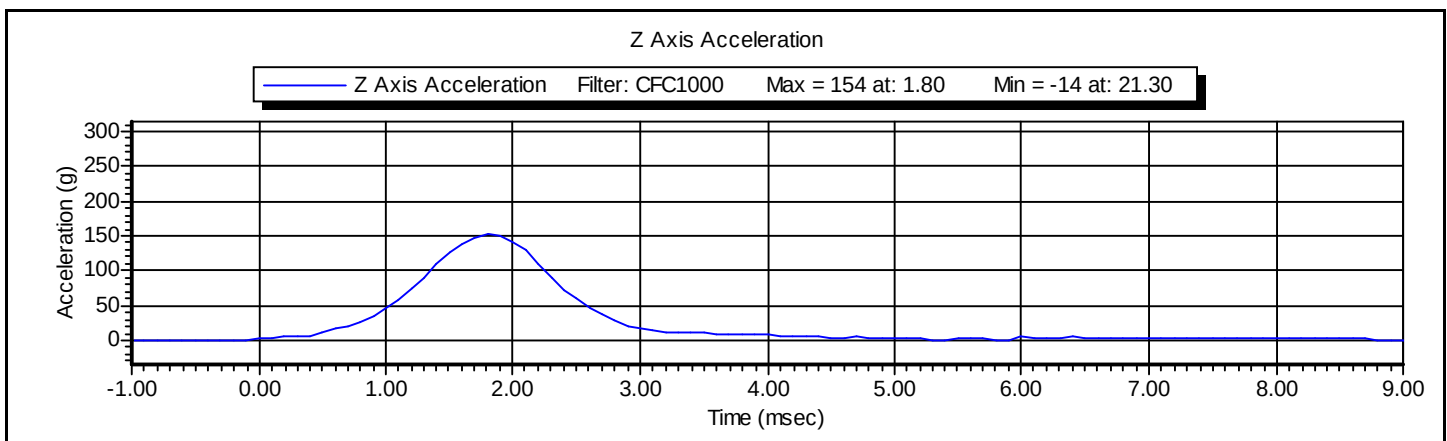
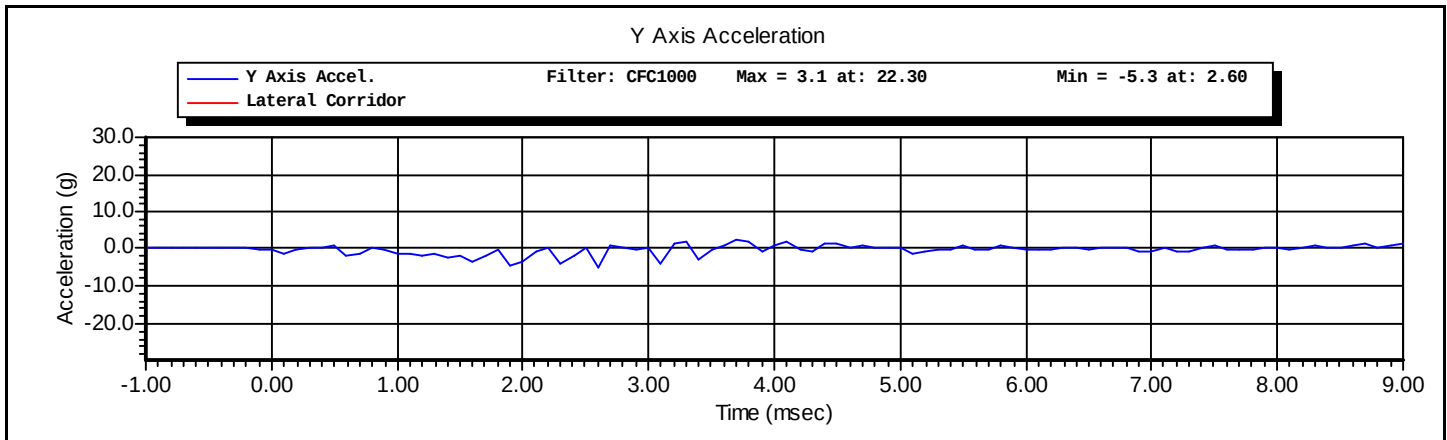
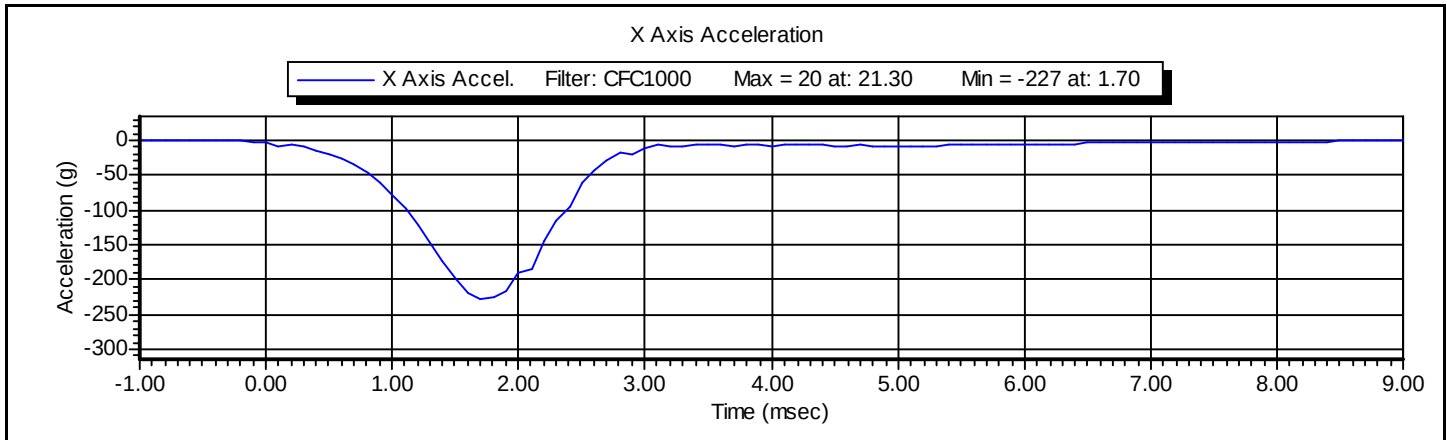
Test Name:	Head Drop	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	061		
Test ID:	Head Drop	Test Date:	10/27/2010
Test Number:	1	Test Time:	3:14:34 PM



Test ID: Head Drop

Test Time: 3:14:34 PM

Test Date: 10/27/2010





www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

Test Name:	Neck Extension	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	061		
Test ID:	Neck Extension	Test Date:	10/28/2010
Test Number:	3	Test Time:	11:35:34 AM

Component Part Number	Component Serial Number
Neck - 78051-336	4194

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.7 deg C P
Humidity	10 -- 70	37 %RH P
Velocity	5.94 -- 6.19	6.13 m/s P
Pendulum Deceleration at 10 ms	17.2 -- 21.2	18.2 g P
Pendulum Deceleration at 20 ms	14.0 -- 19.0	16.2 g P
Pendulum Deceleration at 30 ms	11.0 -- 16.0	12.4 g P
Max Pendulum Deceleration after 30 ms	0.0 -- 22.0	12.4 g P
Decel Time to 5 g	38.0 -- 46.0	44.3 ms P
D Plane Rotation	81.0 -- 106.0	92.7 degrees P
Time at Max Rotation	72.0 -- 82.0	77.1 ms P
Rotation Decay to Zero	147.0 -- 174.0	158.9 ms P
Moment About Occipital Condyle	-80.0 -- -52.9	-67.1 Nm P
Time at Max Moment	65.0 -- 79.0	72.3 ms P
Moment Decay to Zero	120.0 -- 148.0	142.8 ms P

All test parameters are within specifications

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

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

Test ID: **Neck Extension**

Test Time: **11:35:34 AM**

Test Date: **10/28/2010**



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2010
Endevco	7231CT	C16510	5/10/2010
DentonATD	78051-342	PENDULUM POT	8/14/2010
DentonATD	78051-342	CONDYLE POT	8/14/2010
Denton	1716A	LC-1916 My	5/18/2010
Denton	1716A	LC-1916 Fx	5/18/2010

Test ID: **Neck Extension**

Test Time: **11:35:34 AM**

Test Date: **10/28/2010**

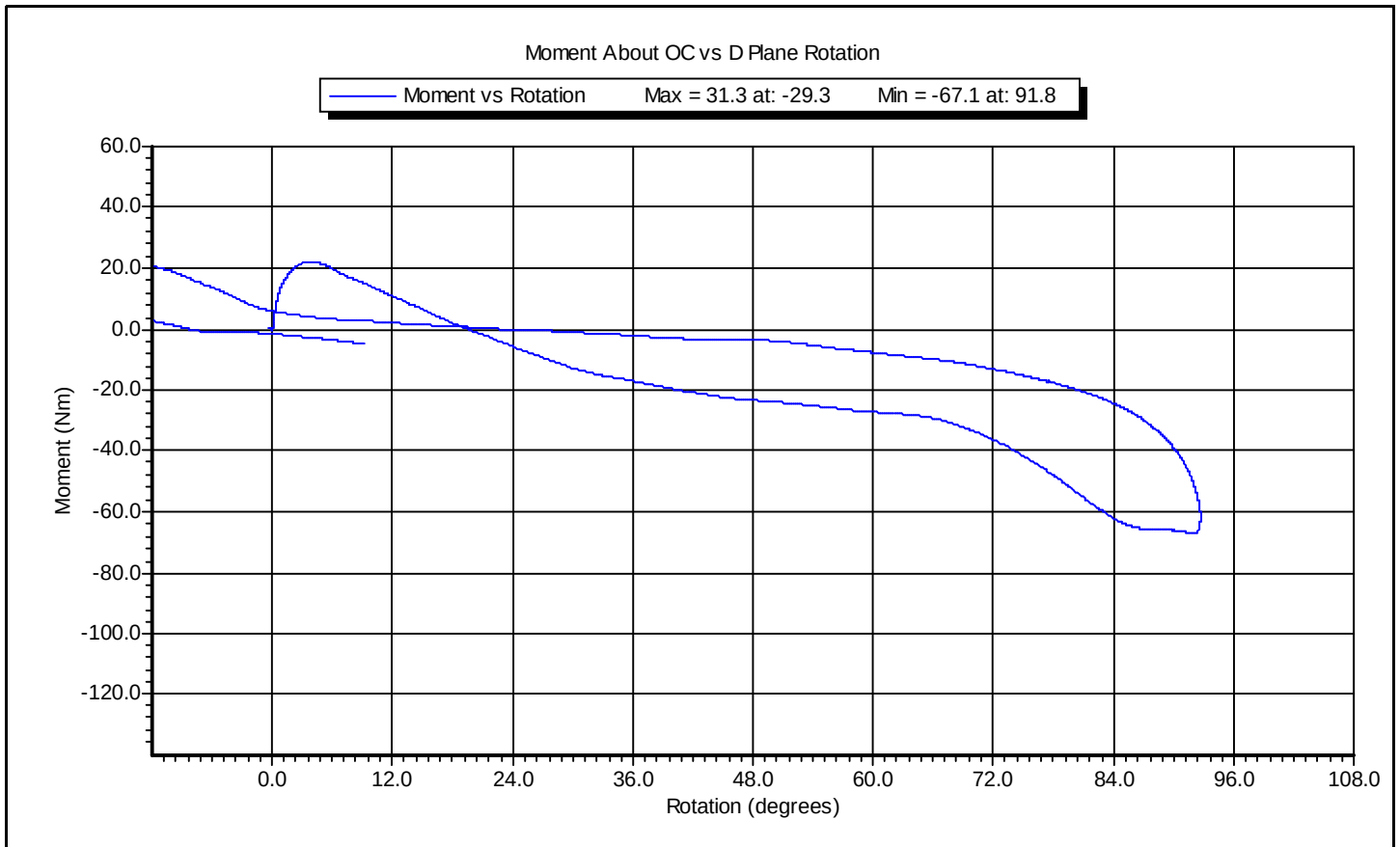


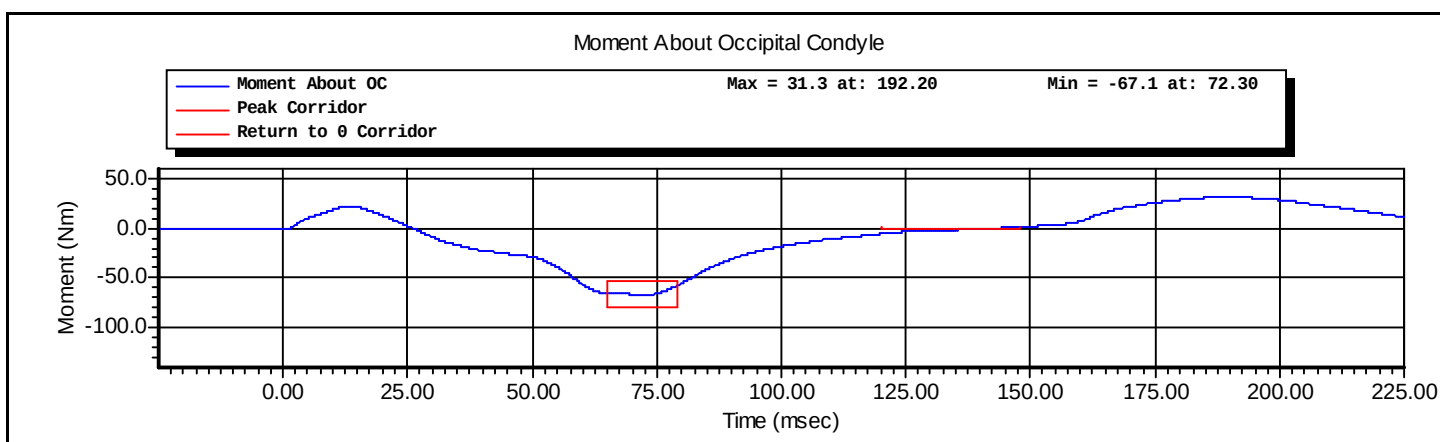
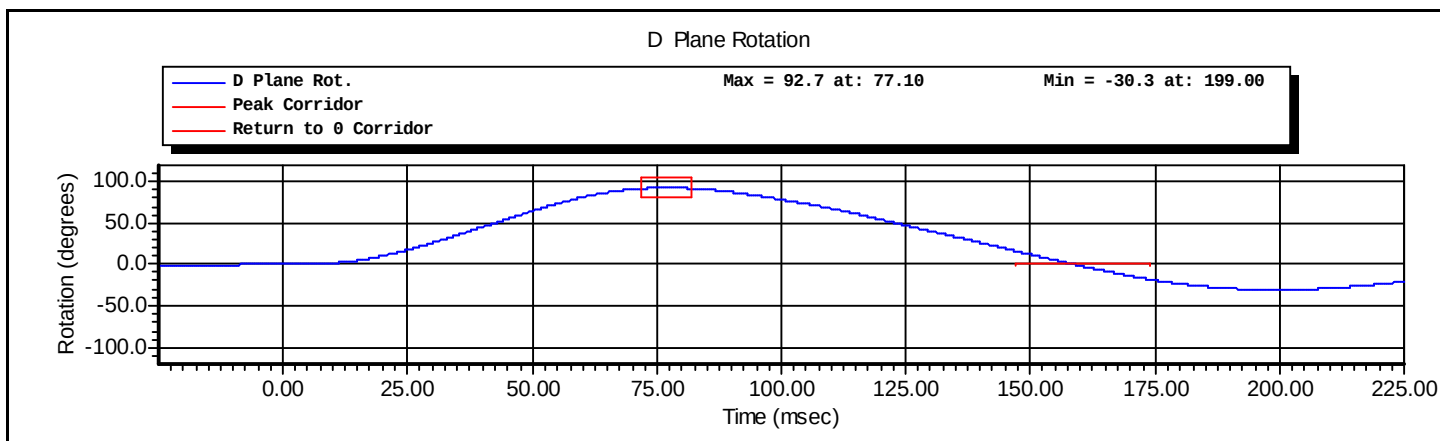
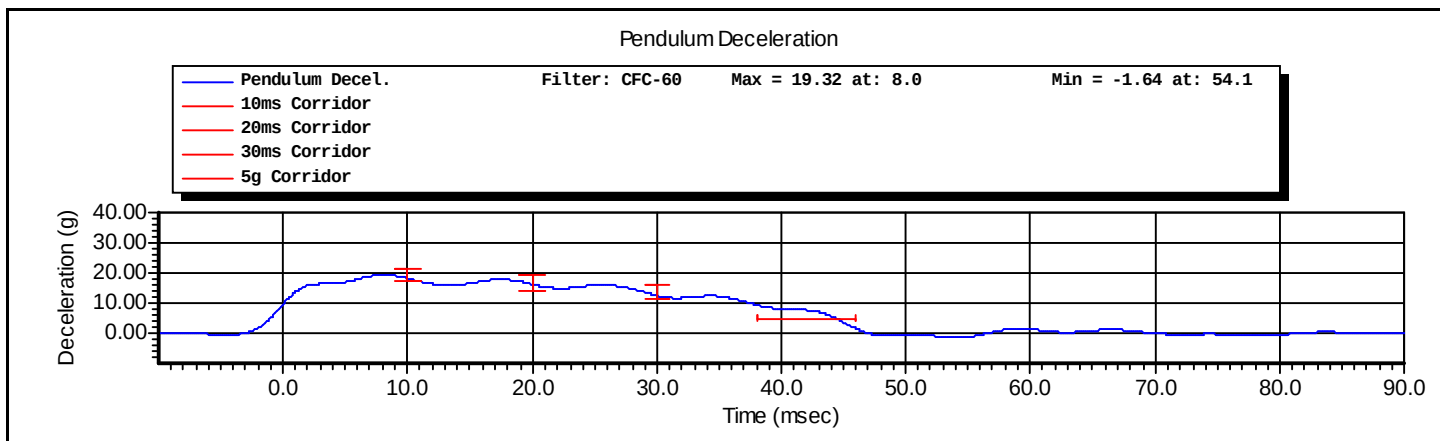
www.calspan.com

Calspan - Transportation Research Group

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

Name of Test:	Neck Extension	REVISION:	10/1/2001
Name of Sub Test:		Type of Spec:	NHTSA
Type of ATD:	Hybrid III 50'th		
ATD Serial Number:	061		
ID of Test:	Neck Extension	Date:	10/28/2010
Number of Test:	3	Time of Test:	11:35:34 AM







www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

Test Name:	Neck Flexion	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	061		
Test ID:	Neck Flexion	Test Date:	10/27/2010
Test Number:	1	Test Time:	4:04:48 PM

Test Parameters		Test Specifications		Test Results	
Temperature		20.6	-- 22.2	22.2 deg C	P
Humidity		10	-- 70	36 %RH	P
Velocity		6.89	-- 7.13	7.10 m/s	P
Pendulum Deceleration at	10 ms	22.5	-- 27.5	23.9 g	P
Pendulum Deceleration at	20 ms	17.6	-- 22.6	19.5 g	P
Pendulum Deceleration at	30 ms	12.5	-- 18.5	13.3 g	P
Max Pendulum Deceleration After	30 ms	0.0	-- 29.0	13.3 g	P
Deceleration time to	5 g	34.0	-- 42.0	39.3 ms	P
D Plane Rotation		-78.0	-- -64.0	-65.5 degrees	P
Time at max rotation		57.0	-- 64.0	60.9 ms	P
Rotation Decay to Zero		113.0	-- 128.0	119.2 ms	P
Moment about OC		88.1	-- 108.4	88.6 Nm	P
Time at Max Moment		47.0	-- 58.0	57.5 ms	P
Moment Decay to Zero		97.0	-- 107.0	99.9 ms	P

All test parameters are within specifications

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

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

Test ID: **Neck Flexion**

Test Time: **4:04:48 PM**

Test Date: **10/27/2010**



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2010
Endevco	7231CT	C16510	5/10/2010
DentonATD	78051-342	PENDULUM POT	8/14/2010
DentonATD	78051-342	CONDYLE POT	8/14/2010
Denton	1716A	LC-1916 My	5/18/2010
Denton	1716A	LC-1916 Fx	5/18/2010

Test ID: **Neck Flexion**

Test Time: **4:04:48 PM**

Test Date: **10/27/2010**

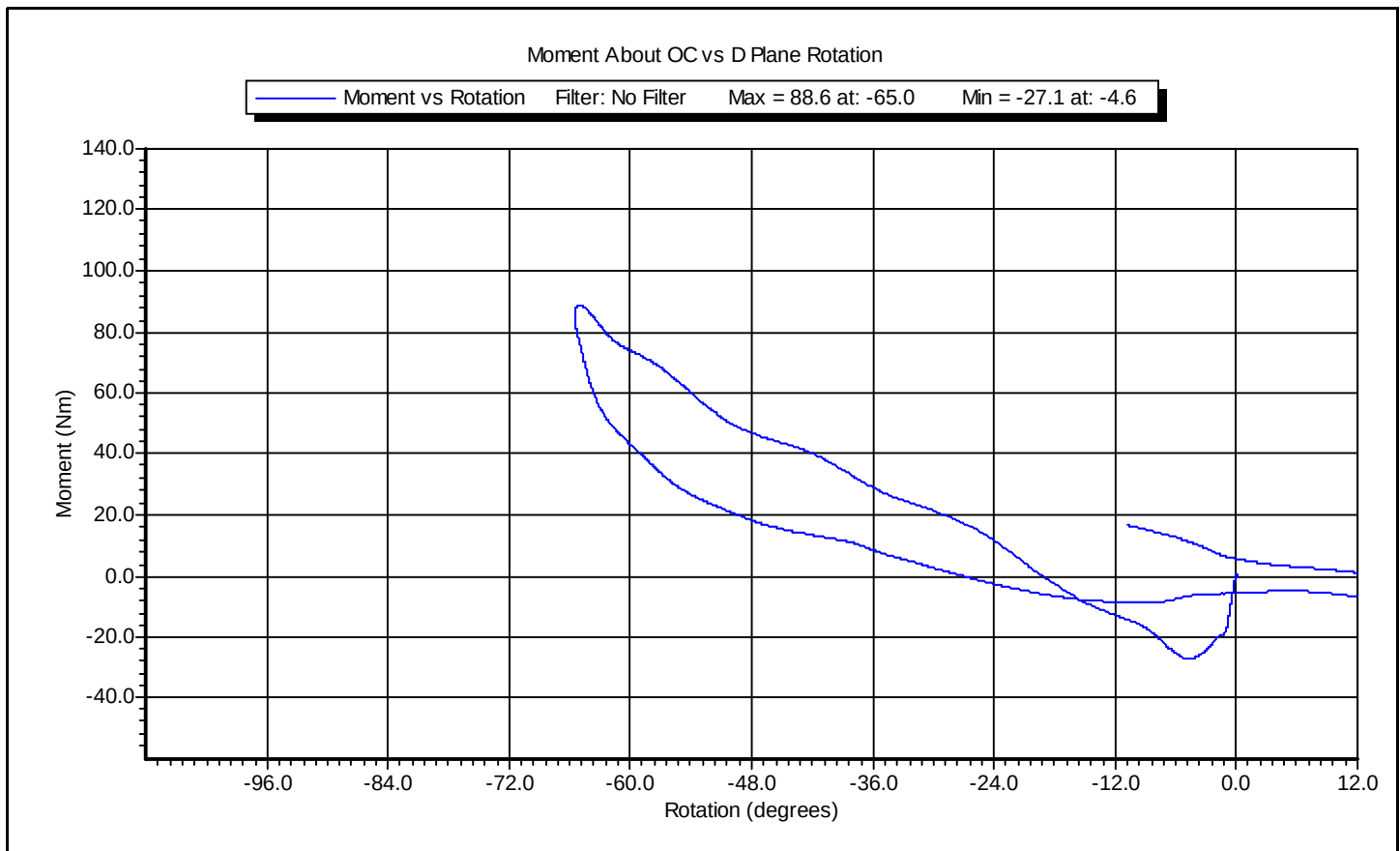


www.calspan.com

Calspan - Transportation Research Group

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

Name of Test:	Neck Flexion	REVISION:	10/1/2001
Name of Sub Test:		Type of Spec:	NHTSA
Type of ATD:	Hybrid III 50'th		
ATD Serial Number:	061		
ID of Test:	Neck Flexion	Date:	10/27/2010
Number of Test:	1	Time of Test:	4:04:48 PM

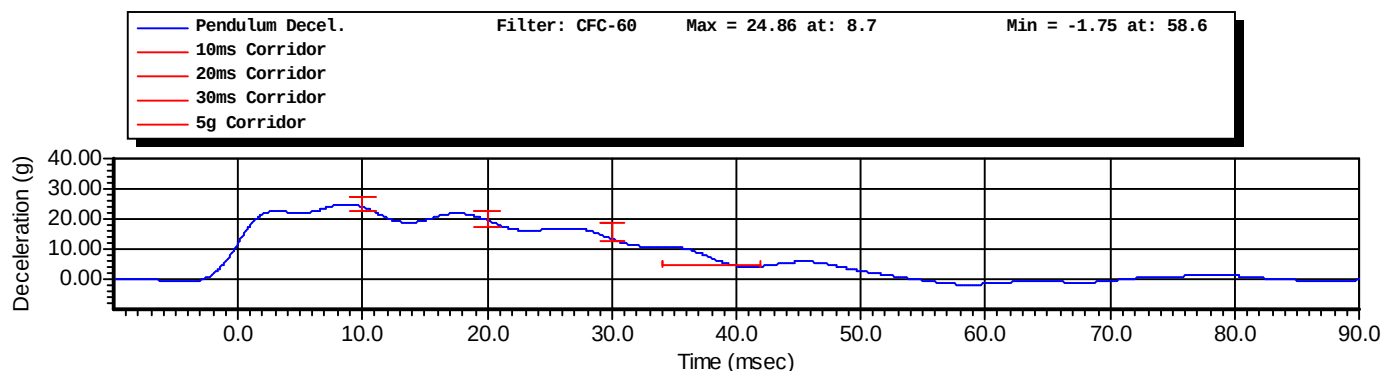


ID of Test: **Neck Flexion**

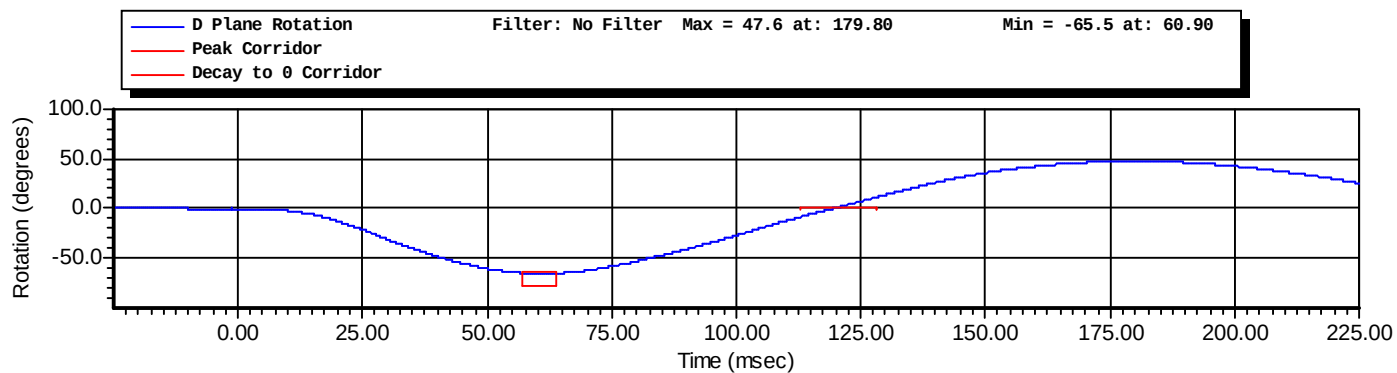
Time of Test: **4:04:48 PM**

Date of Test: **10/27/2010**

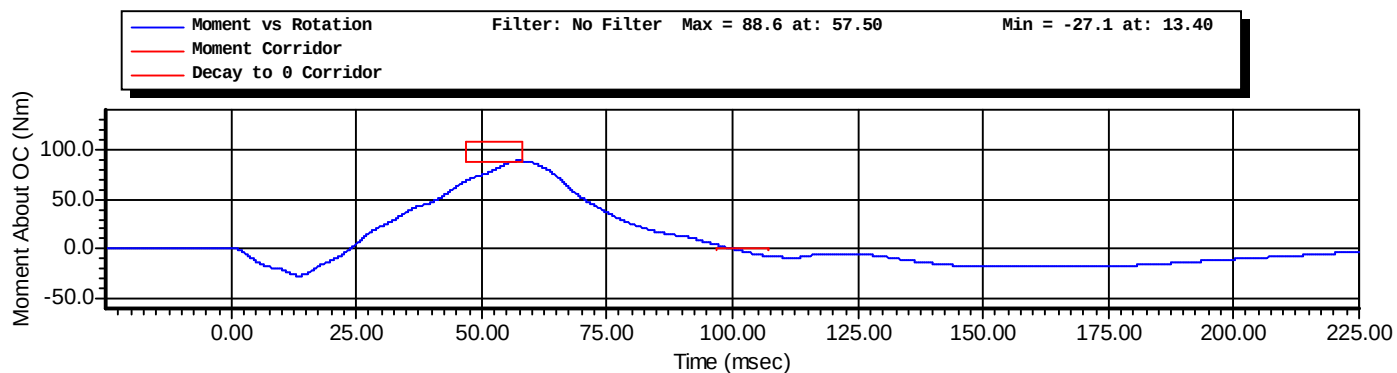
Pendulum Deceleration



D Plane Rotation



Moment About Occipital Condyle





www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

Test Name:	Thorax Impact	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	061		
Test ID:	Thorax	Test Date:	10/26/2010
Test Number:	1	Test Time:	10:55:56 AM

Component Part Number	Component Serial Number
Ribs 78051-RS	4273
Chest Jacket - 78051-169	2437

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	22.2 deg C P
Humidity	10.0 -- 70.0	57.0 %RH P
Velocity	6.59 -- 6.83	6.72 m/s P
Resistive Force	-5.894 -- -5.160	-5.586 kN P
Sternum Displacement	-72.6 -- -63.5	-72.4 mm P
Hysteresis	69 -- 85	72 % P

All test parameters are within specifications

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

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

Test ID: **Thorax**

Test Time: **10:55:56 AM**

Test Date: **10/26/2010**



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

REFERENCE EQUIPMENT

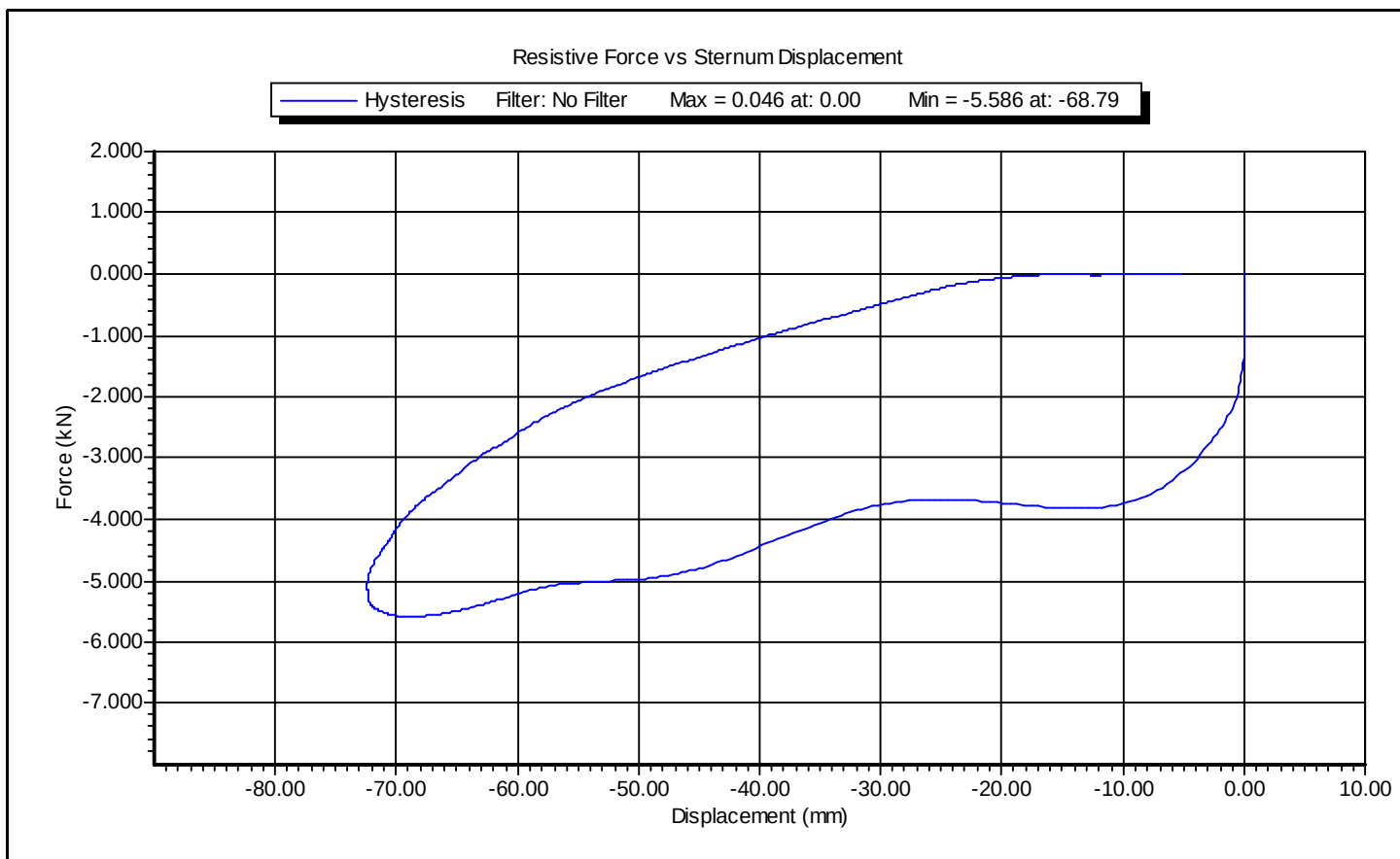
<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2010
Endevco	7264-2000	P66930	10/5/2010
DentonATD	78051-342	DS-061	6/1/2010

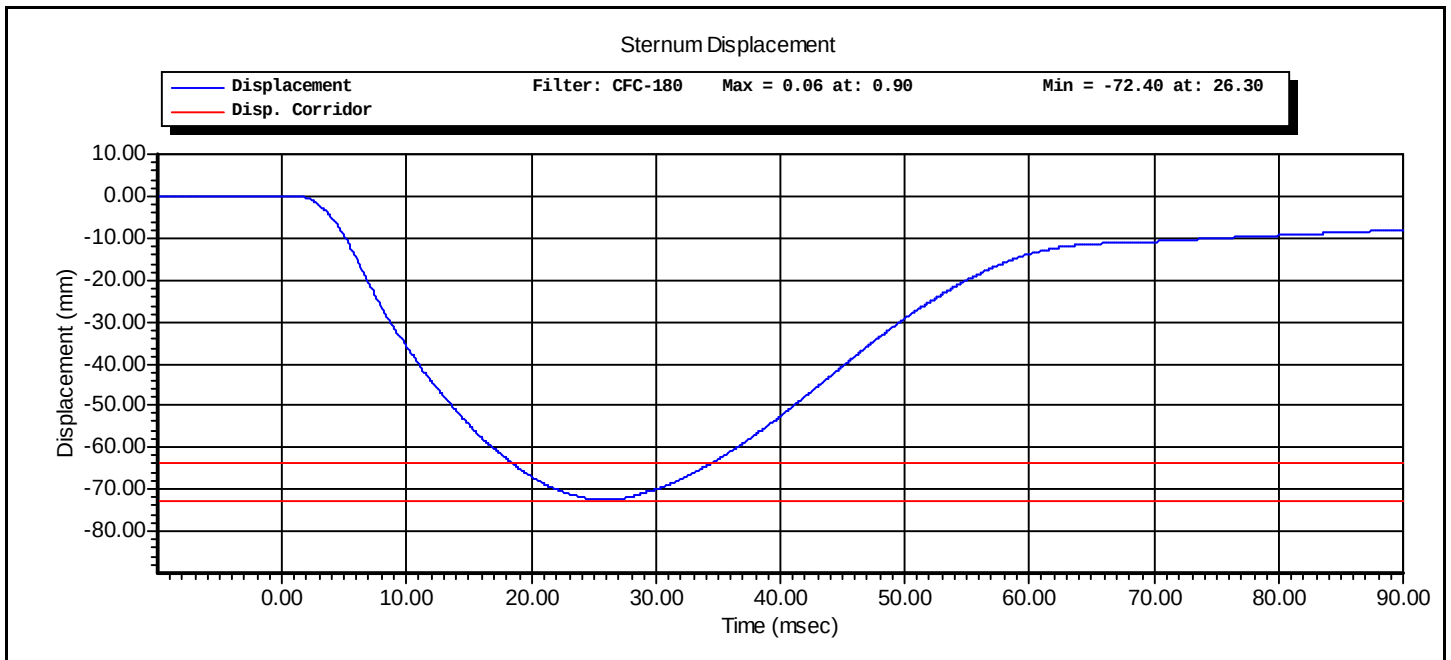
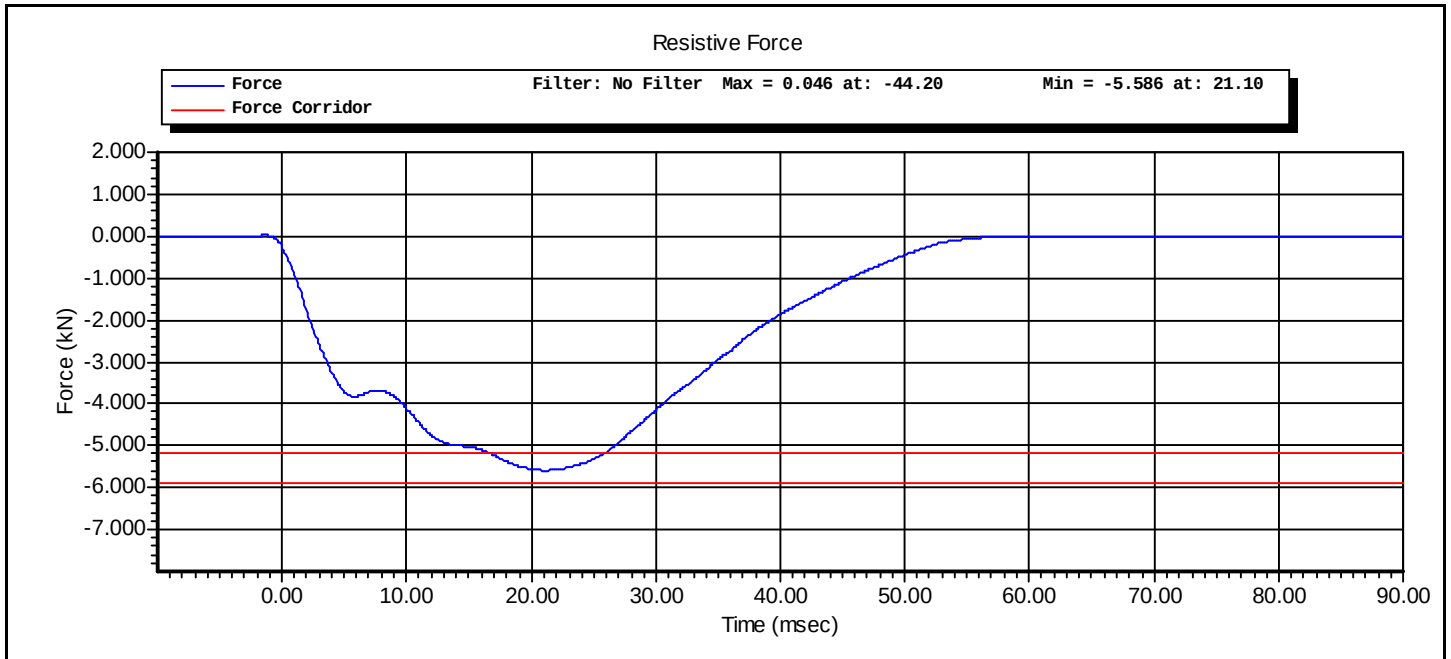
Test ID: **Thorax**

Test Time: **10:55:56 AM**

Test Date: **10/26/2010**

Test Name:	Thorax Impact	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	061		
Test ID:	Thorax	Test Date:	10/26/2010
Test Number:	1	Test Time:	10:55:56 AM





CALSPAN

Hybrid III Hip Range of Motion: Hybrid III 50th Male

Serial Number: 061
Test Number: 1
Comments: RIGHT

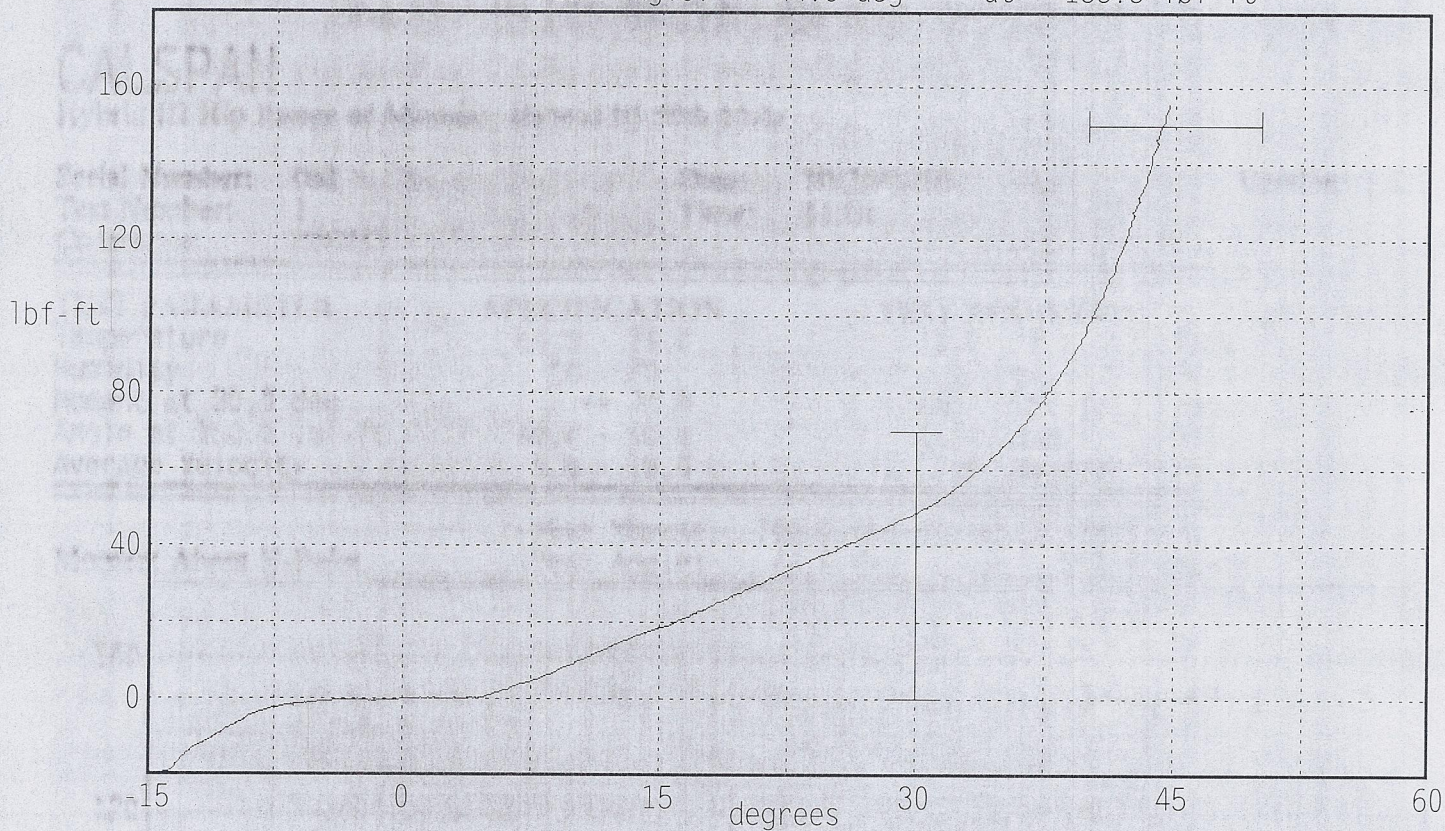
Date: 10/28/2010
Time: 11:04

Version: 1.6.3

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66.0 - 78.0	71.0 °F Pass
Humidity	10 - 70	37 % Pass
Moment at 30.0 deg	<= 70.0	48.7 lbf-ft Pass
Angle at 150.0 lbf-ft	40.0 - 50.0	44.4 deg Pass
Average Velocity	5.0 - 10.0	7.5 deg/sec Pass

Moment About H-Point

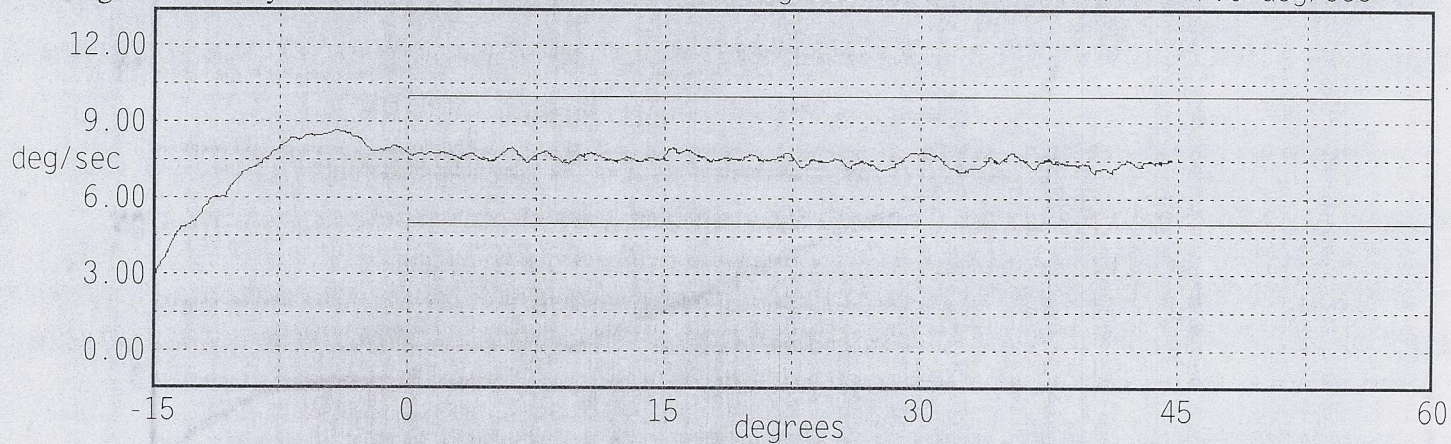
Peak Moment: 155.5 lbf-ft at 44.6 deg
Peak Angle: 44.6 deg at 155.5 lbf-ft



Angular Velocity

Max: 8.0 deg/sec

Min: 7.0 deg/sec



CALSPAN

Hybrid III Hip Range of Motion: Hybrid III 50th Male

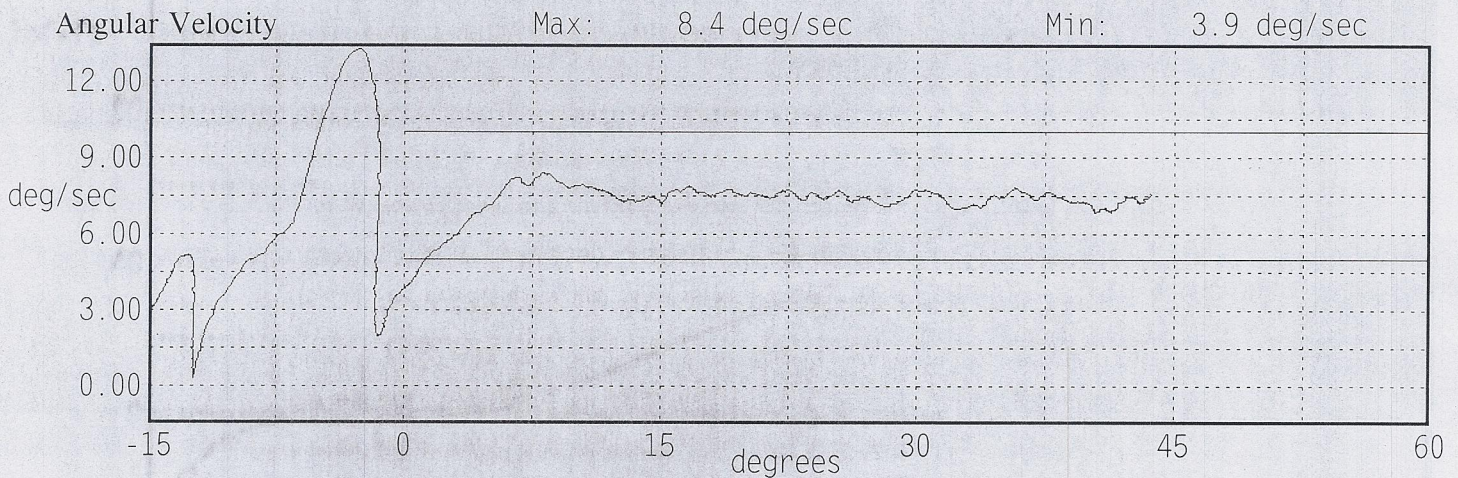
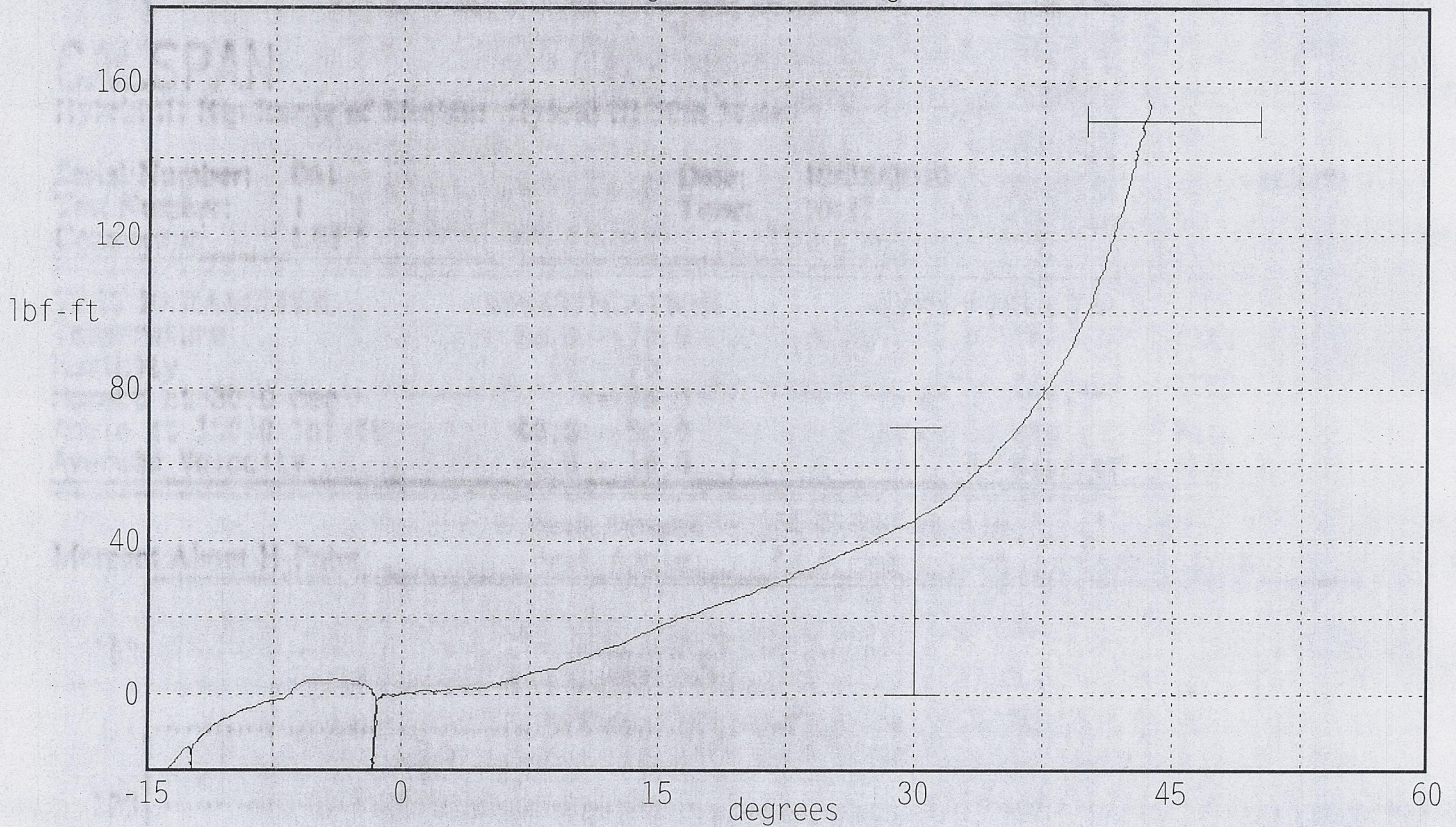
Serial Number: 061
Test Number: 1
Comments: LEFT

Date: 10/28/2010
Time: 10:57

Version: 1.6.3

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66.0 - 78.0	71.0 °F Pass
Humidity	10 - 70	37 % Pass
Moment at 30.0 deg	<= 70.0	46.0 lbf-ft Pass
Angle at 150.0 lbf-ft	40.0 - 50.0	43.5 deg Pass
Average Velocity	5.0 - 10.0	7.3 deg/sec Pass

Moment About H-Point
Peak Moment: 155.7 lbf-ft at 43.6 deg
Peak Angle: 43.6 deg at 154.5 lbf-ft





www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

Test Name:	Knee Impact	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	061		
Test ID:	Left Knee	Test Date:	10/28/2010
Test Number:	1	Test Time:	2:31:25 PM

Component Part Number	Component Serial Number
Knee Skin - 78051(L) or 6(R)	077

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	22.2 deg C P
Humidity	10.0 -- 70.0	34.0 %RH P
Velocity	2.07 -- 2.13	2.09 m/s P
Resistive Force	-5.78 -- -4.72	-5.24 kN P

All test parameters are within specifications

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

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

Test ID: **Left Knee**

Test Time: **2:31:25 PM**

Test Date: **10/28/2010**



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2010
CEC	4-202	AC-A44	8/26/2010

Test ID: **Left Knee**

Test Time: **2:31:25 PM**

Test Date: **10/28/2010**

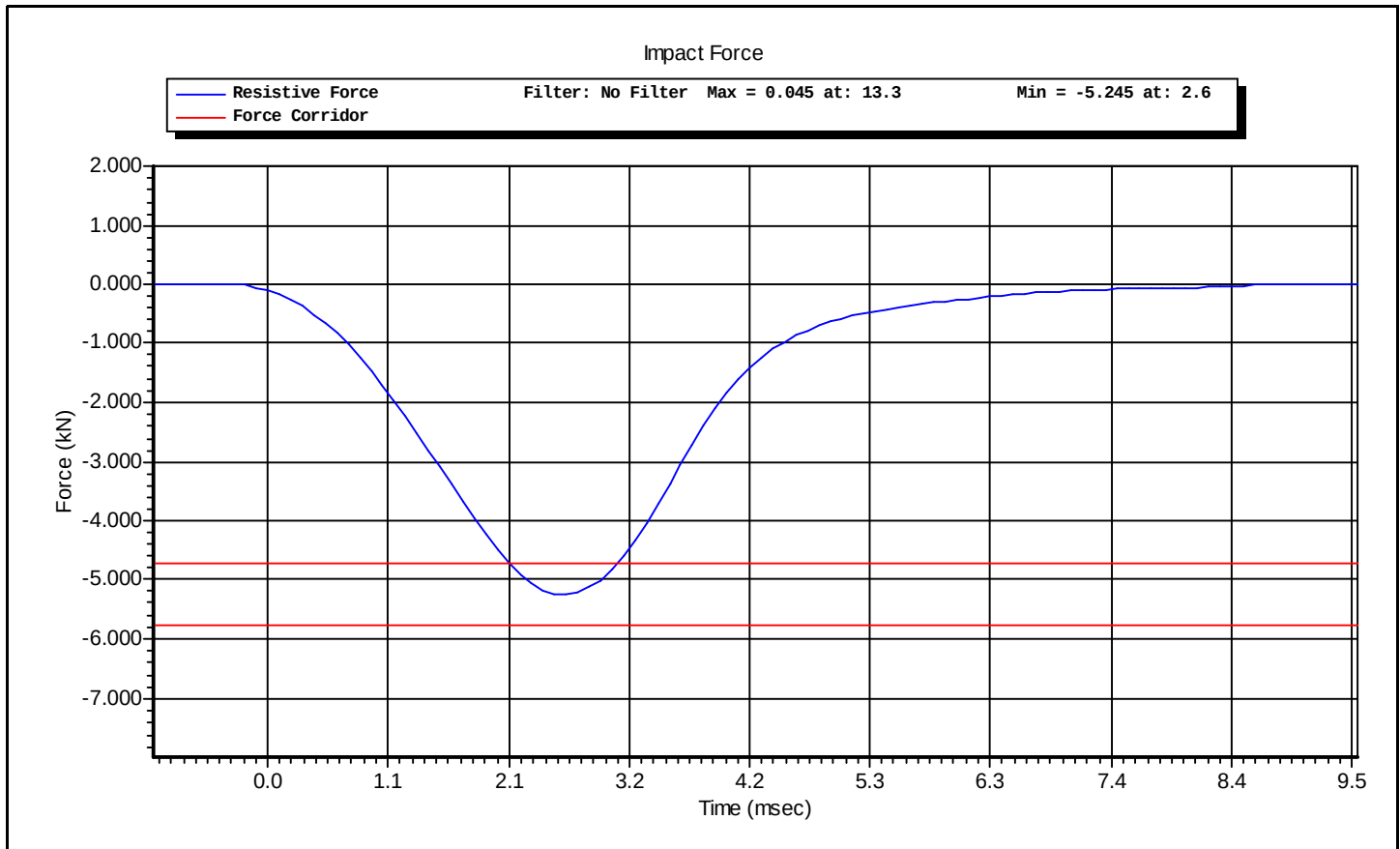


www.calspan.com

Calspan - Transportation Research Group

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

Test Name:	Knee Impact	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	061		
Test ID:	Left Knee	Test Date:	10/28/2010
Test Number:	1	Test Time:	2:31:25 PM



Test ID: **Left Knee**

Test Time: **2:31:25 PM**

Test Date: **10/28/2010**



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

Test Name:	Knee Impact	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	061		
Test ID:	Right Knee	Test Date:	10/28/2010
Test Number:	1	Test Time:	2:25:48 PM

Component Part Number	Component Serial Number
Knee Skin - 78051(L) or 6(R)	3266

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	22.2 deg C P
Humidity	10.0 -- 70.0	35.0 %RH P
Velocity	2.07 -- 2.13	2.09 m/s P
Resistive Force	-5.78 -- -4.72	-5.33 kN P

All test parameters are within specifications

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

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

Test ID: **Right Knee**

Test Time: **2:25:48 PM**

Test Date: **10/28/2010**



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2010
CEC	4-202	AC-A44	8/26/2010

Test ID: **Right Knee**

Test Time: **2:25:48 PM**

Test Date: **10/28/2010**

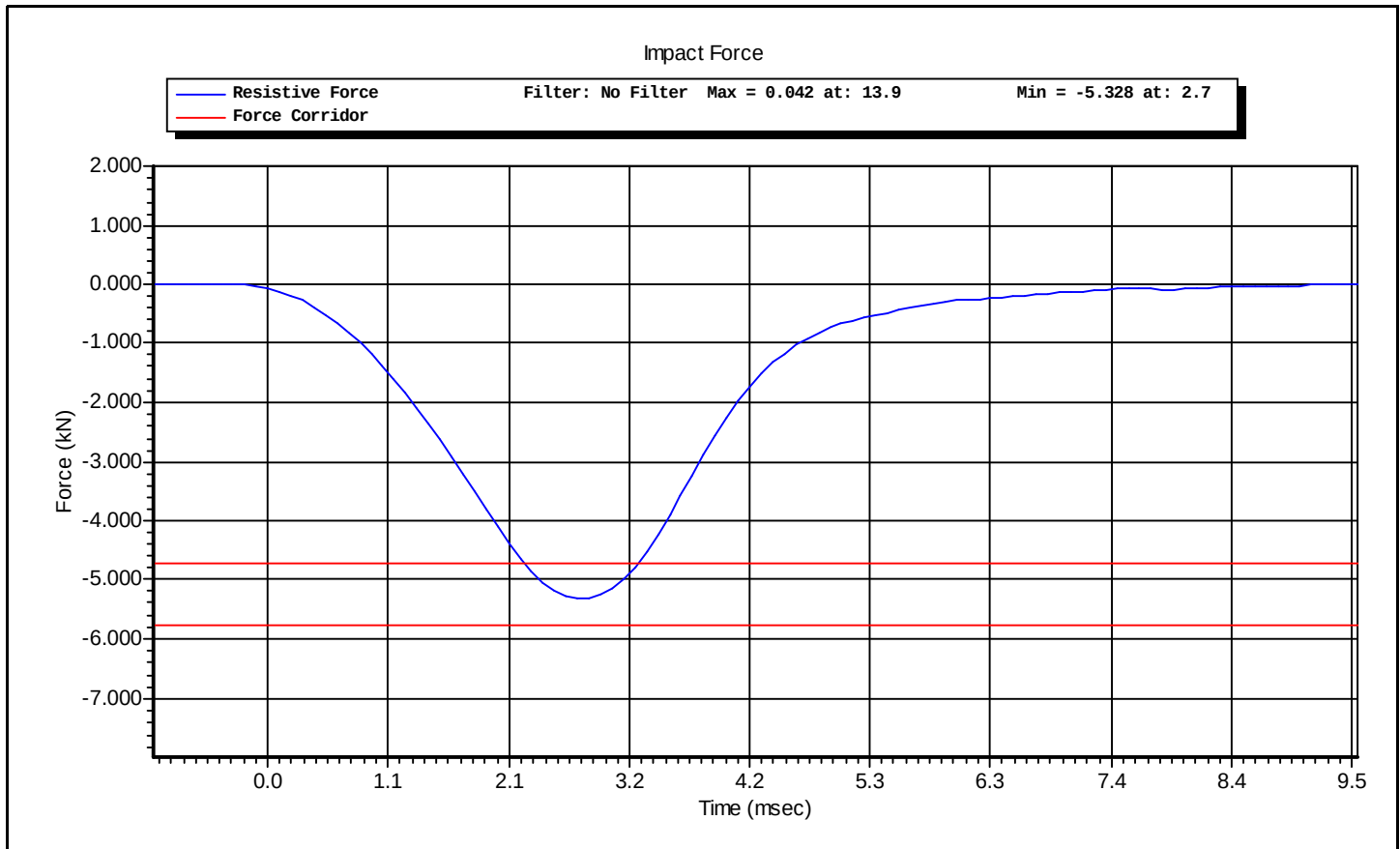


www.calspan.com

Calspan - Transportation Research Group

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

Test Name:	Knee Impact	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	061		
Test ID:	Right Knee	Test Date:	10/28/2010
Test Number:	1	Test Time:	2:25:48 PM



Test ID: **Right Knee**

Test Time: **2:25:48 PM**

Test Date: **10/28/2010**

CALIBRATION TEST RESULTS

POST-TEST

RIGHT-FRONT PASSENGER DUMMY

S/N: 273

External Measurements

5th Female SN 273

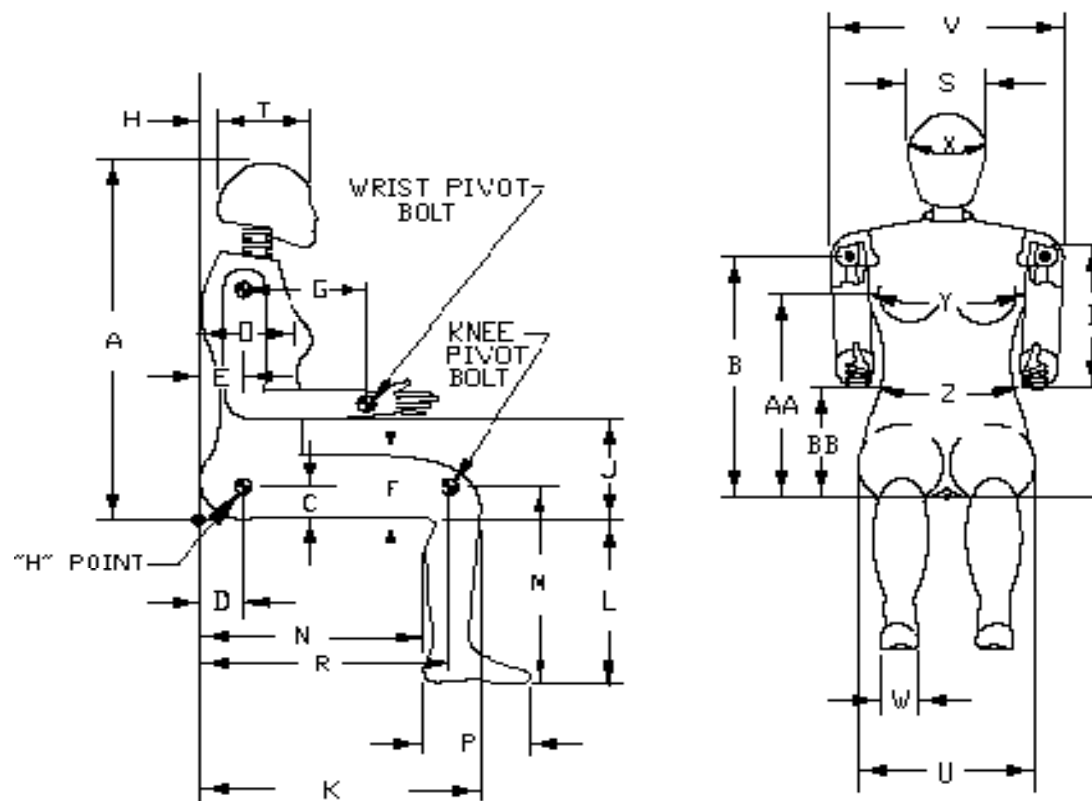
Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	774.7 – 800.1	784	Yes
B	Shoulder Pivot Height	431.8 – 457.2	450	Yes
C	H-Point Height	81.3 – 86.3	85	Yes
D	H-Point from Backline	144.8 – 149.8	148	Yes
E	Shoulder Pivot from Backline	68.6-83.8	76	Yes
F	Thigh Clearance	119.4 – 134.6	130	Yes
G	Back of Elbow to Wrist Pivot	243.9 – 259.1	250	Yes
H	Head Back to Backline	43.2 – 48.2	45	Yes
I	Shoulder to Elbow Length	276.8 – 297.2	282	Yes
J	Elbow Rest Height	182.8 – 203.2	195	Yes
K	Buttock to Knee Length	520.7 – 546.1	529	Yes
L	Popliteal Height	355.6 - 376	361	Yes
M	Knee Pivot Height	393.7 – 419.1	399	Yes
N	Buttock Popliteal Length	414 – 439.4	421	Yes
O	Chest Depth without Jacket	175.3 – 190.5	185	Yes
P	Foot Length (right)	218.5 – 233.7	221	Yes
R	Buttock To Knee Pivot Length	457.2 – 482.6	465	Yes
S	Head Breadth	137.1 – 147.3	144	Yes
T	Head Depth	177.8 - 188	180	Yes
U	Hip Breadth	299.7 – 314.9	311	Yes
V	Shoulder Breadth	350.5 – 365.7	358	Yes
W	Foot Breadth	78.8 - 94	85	Yes
X	Head Circumference	528.3 – 548.7	540	Yes
Y	Chest Circumference with Jacket	850.9 – 881.3	859	Yes
Z	Waist Circumference	759.5 – 789.9	775	Yes
AA	Reference Location (Chest Circumference)	332.7 – 358.1	345	Yes
BB	Reference Location (Waist Circumference)	160.1 – 170.2	165	Yes

Technician: SZ

Date: 11/1/2010

Hybrid III 5th Female External Measurements

Reference Diagram





www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

Test Name:	Head Drop	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	273		
Test ID:	Head Drop	Test Date:	10/29/2010
Test Number:	1	Test Time:	12:58:21 PM

Component Part Number	Component Serial Number
Head Skin - 78051-228	780

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	22.2 deg C P
Humidity	10 -- 70	30 %RH P
Resultant Acceleration	250 -- 300	284 g P
Oscillation	0.0 -- 10.0	5.3 % P
Lateral Acceleration	-15.00 -- 15.00	14.35 g P

All test parameters are within specifications

Technician: **S. Zito** Signature: _____
Supervisor: **D. Travale** Signature: _____

Test ID: **Head Drop**

Test Time: **12:58:21 PM**

Test Date: **10/29/2010**



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Endevco	7264-2000	P66943	10/25/2010
Endevco	7264-2000	P66931	10/25/2010
Endevco	7264-2000	P66926	10/25/2011

Test ID: **Head Drop**

Test Time: **12:58:21 PM**

Test Date: **10/29/2010**

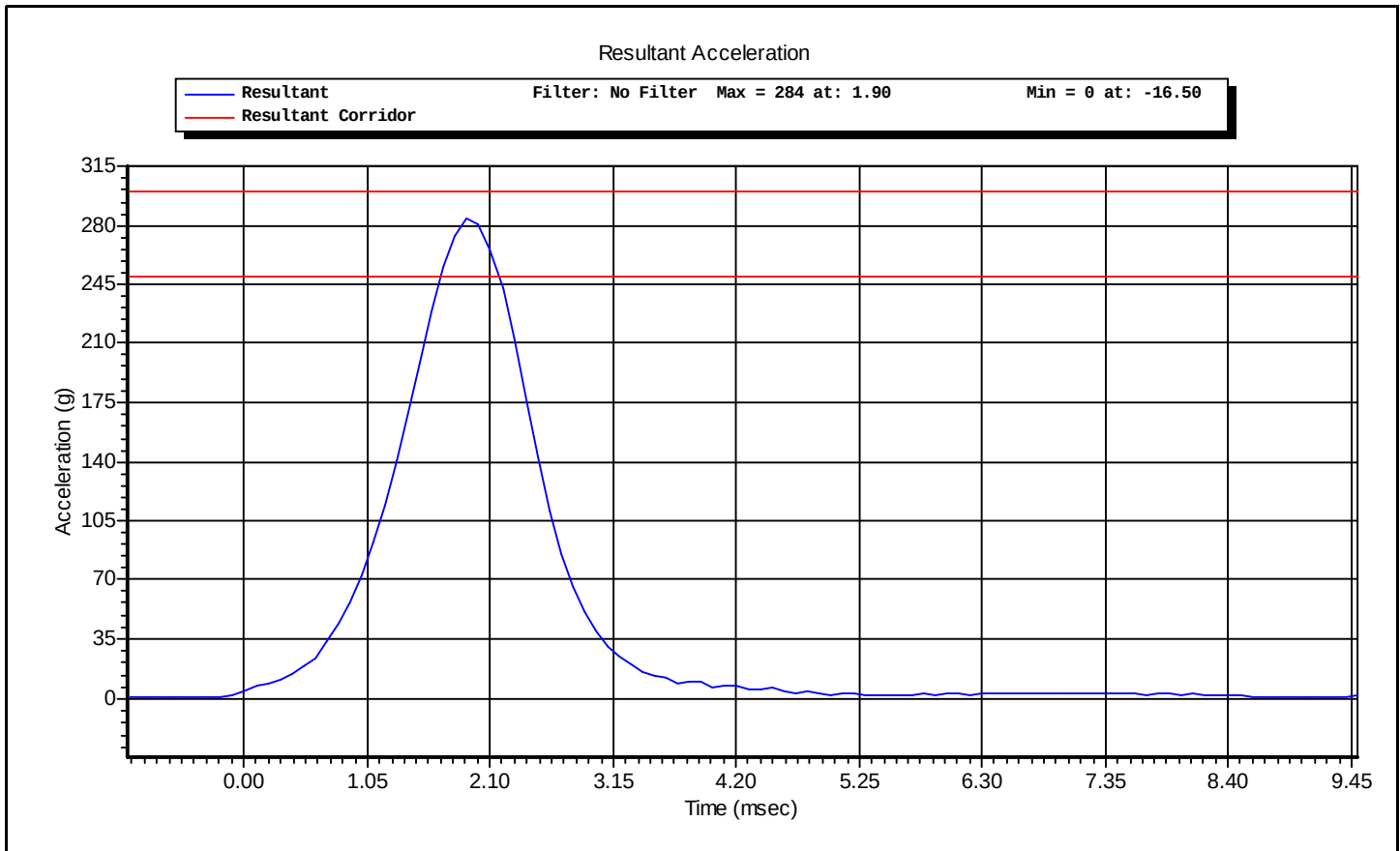


www.calspan.com

Calspan - Transportation Research Group

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

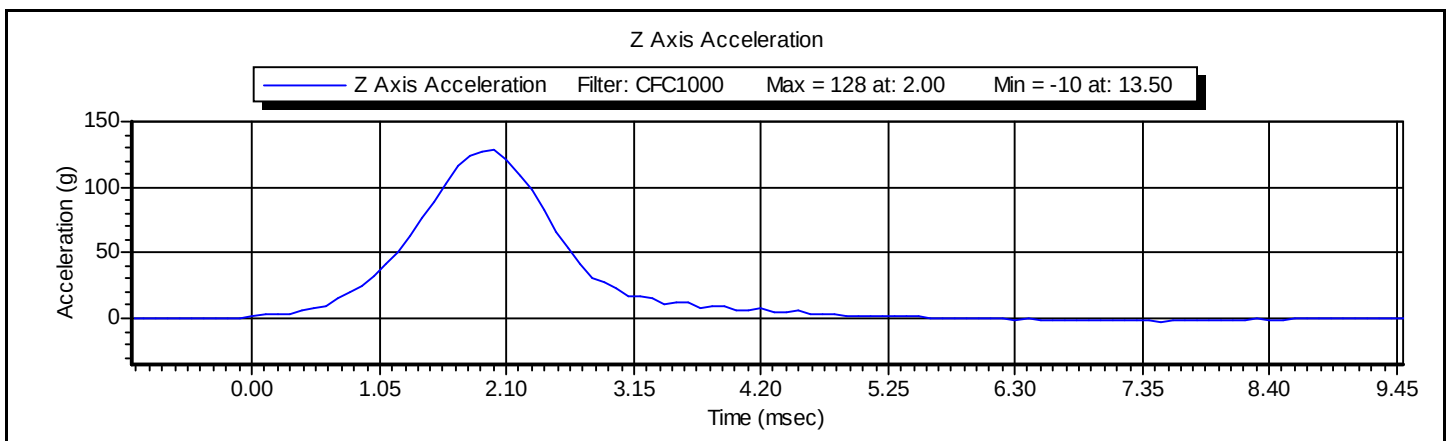
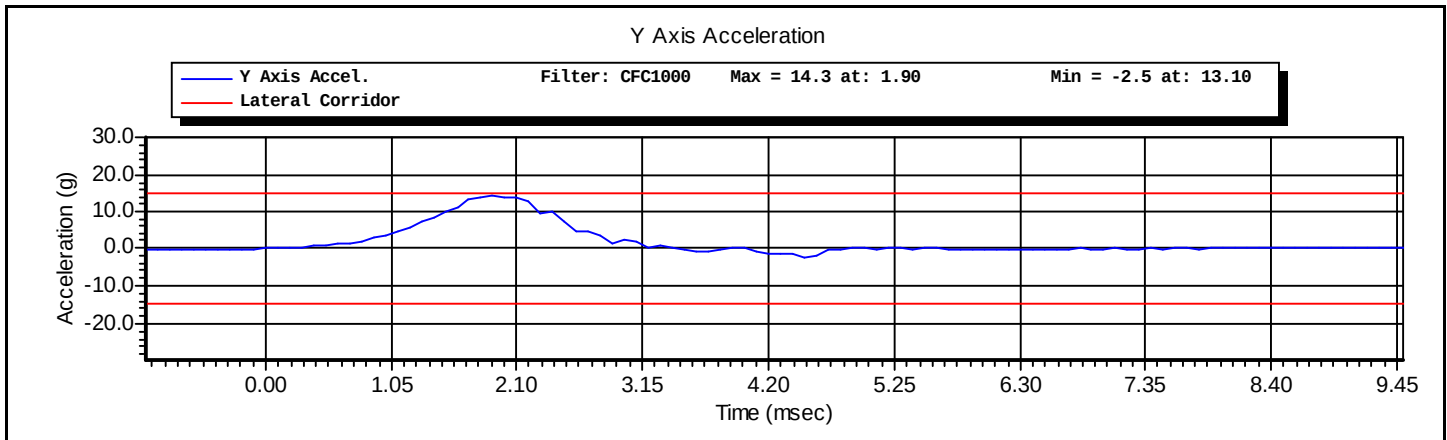
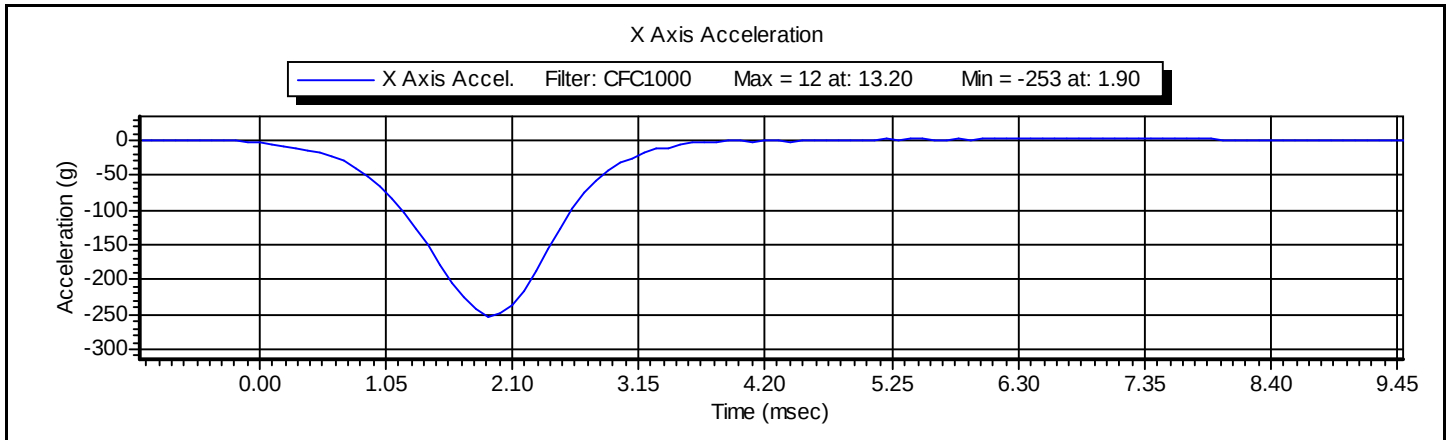
Test Name:	Head Drop	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	273		
Test ID:	Head Drop	Test Date:	10/29/2010
Test Number:	1	Test Time:	12:58:21 PM



Test ID: **Head Drop**

Test Time: **12:58:21 PM**

Test Date: **10/29/2010**





www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

Test Name:	Neck Extension	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	273		
Test ID:	Neck Extension	Test Date:	10/29/2010
Test Number:	2	Test Time:	11:41:29 AM

Component Part Number	Component Serial Number
Neck - 880105-255	713

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	22.1 deg C P
Humidity	10 -- 70	31 %RH P
Velocity	5.95 -- 6.19	6.13 m/s P
Pendulum Impulse at 10 ms	1.50 -- 1.90	1.63 m/s P
Pendulum Impulse at 20 ms	3.10 -- 3.90	3.22 m/s P
Pendulum Impulse at 30 ms	4.60 -- 5.60	4.70 m/s P
D Plane Rotation	99.0 -- 114.0	103.6 degrees P
Moment During Rotation Interval	-65.0 -- -53.0	-53.1 Nm P
Moment Decay to -10.0 Nm	94.0 -- 114.0	105.9 ms P

All test parameters are within specifications

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

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

Test ID: **Neck Extension**

Test Time: **11:41:29 AM**

Test Date: **10/29/2010**



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2010
Endevco	7231CT	C16510	5/10/2010
DentonATD	78051-342	PENDULUM POT	8/14/2010
DentonATD	78051-342	CONDYLE POT	8/14/2010
FTSS	1716A	LC-296 My	2/1/2010
FTSS	1716A	LC-296 Fx	2/1/2010
FTSS	1716A	LC-296 Fy	2/1/2010
FTSS	1716A	LC-296 Fz	2/1/2010

Test ID: **Neck Extension**

Test Time: **11:41:29 AM**

Test Date: **10/29/2010**

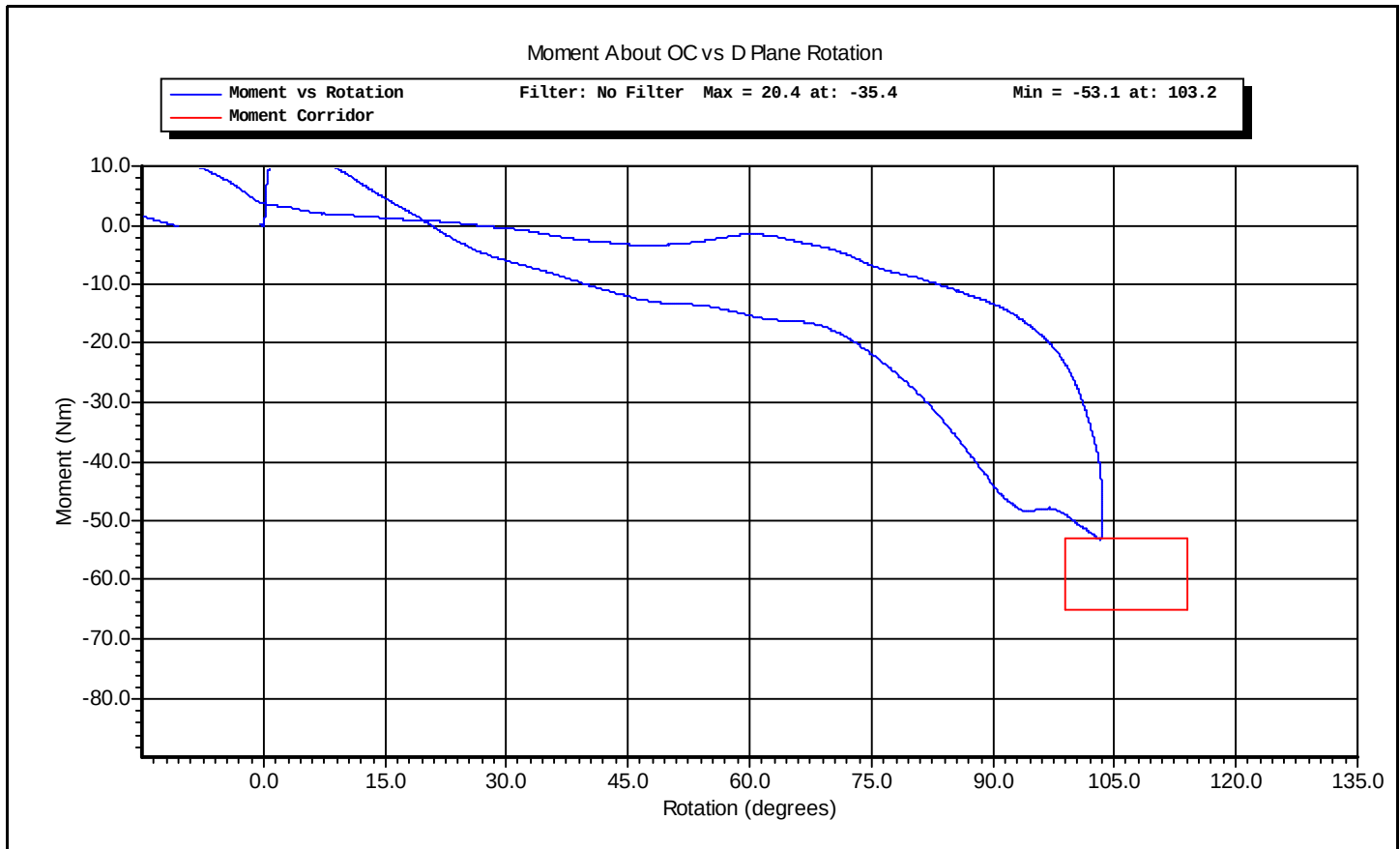


www.calspan.com

Calspan - Transportation Research Group

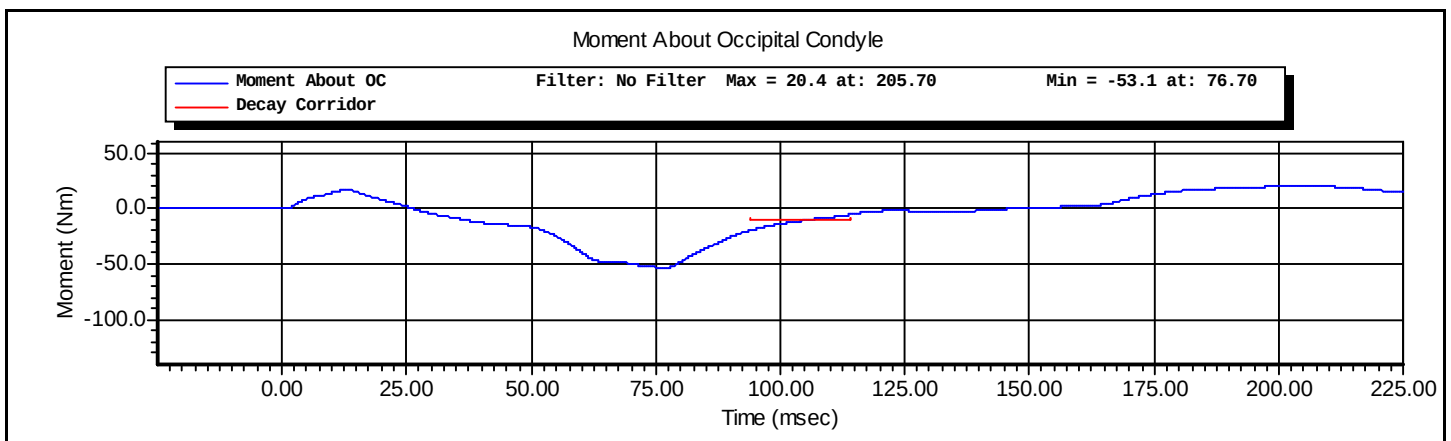
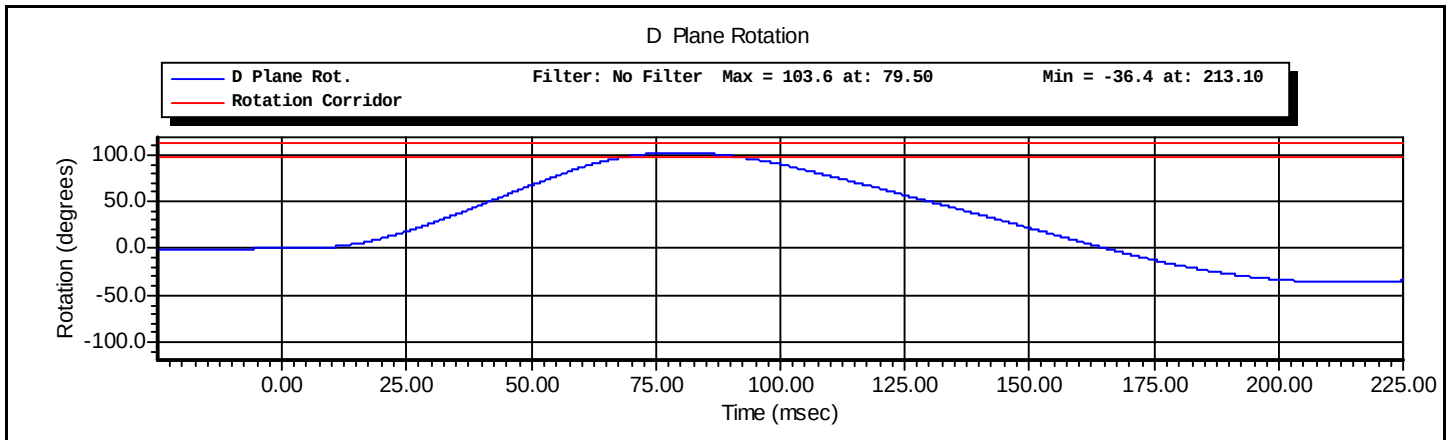
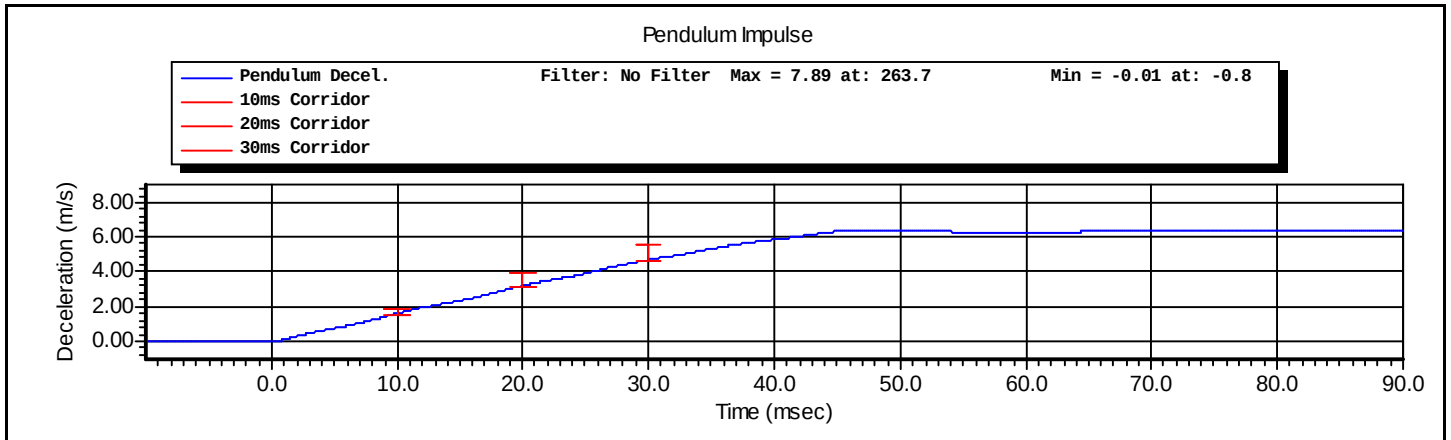
4455 Genesee Street, Buffalo, New York 14225 - Phone (716)632-7500

Test Name:	Neck Extension	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	273		
Test ID:	Neck Extension	Test Date:	10/29/2010
Test Number:	2	Test Time:	11:41:29 AM



Test ID: Neck Extension Test Time: 11:41:29 AM

Test Date: 10/29/2010





www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

Test Name:	Neck Flexion	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	273		
Test ID:	Neck Flexion	Test Date:	10/29/2010
Test Number:	1	Test Time:	10:07:57 AM

Component Part Number	Component Serial Number
Neck - 880105-255	713
Front Nodding Block - 78051-351	
Rear Nodding Block - 78051-351	
Head Skin - 880105-109	
Skull - 880105-1002	

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	22.0 deg C P
Humidity	10 -- 70	32 %RH P
Velocity	6.89 -- 7.13	7.10 m/s P
Pendulum Impulse at 10 ms	2.10 -- 2.50	2.19 m/s P
Pendulum Impulse at 20 ms	4.00 -- 5.00	4.51 m/s P
Pendulum Impulse at 30 ms	5.80 -- 7.00	6.45 m/s P
D Plane Rotation	-91.0 -- -77.0	-78.9 degrees P
Moment During Rotation Interval	69.0 -- 83.0	71.4 Nm P
Moment Decay to 10.0 Nm	80.0 -- 100.0	88.0 ms P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____
Supervisor: **D. Travale** Signature: _____

Test ID: **Neck Flexion**

Test Time: **10:07:57 AM**

Test Date: **10/29/2010**



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2010
Endevco	7231CT	C16510	5/10/2010
DentonATD	78051-342	PENDULUM POT	8/14/2010
DentonATD	78051-342	CONDYLE POT	8/14/2010
FTSS	1716A	LC-296 My	2/1/2010
FTSS	1716A	LC-296 Fx	2/1/2010
FTSS	1716A	LC-296 Fy	2/1/2010
FTSS	1716A	LC-296 Fz	2/1/2010

Test ID: **Neck Flexion**

Test Time: **10:07:57 AM**

Test Date: **10/29/2010**

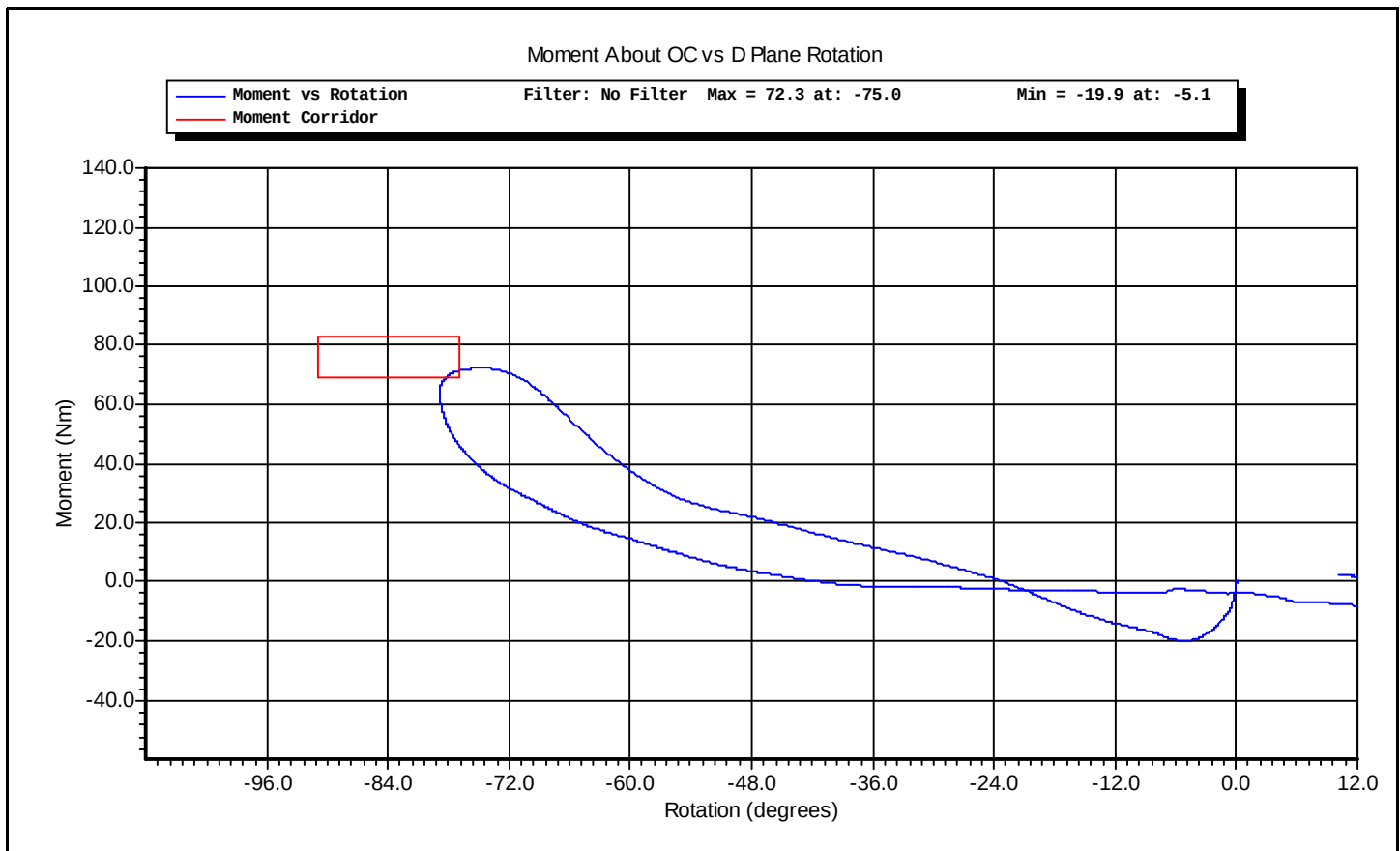


www.calspan.com

Calspan - Transportation Research Group

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

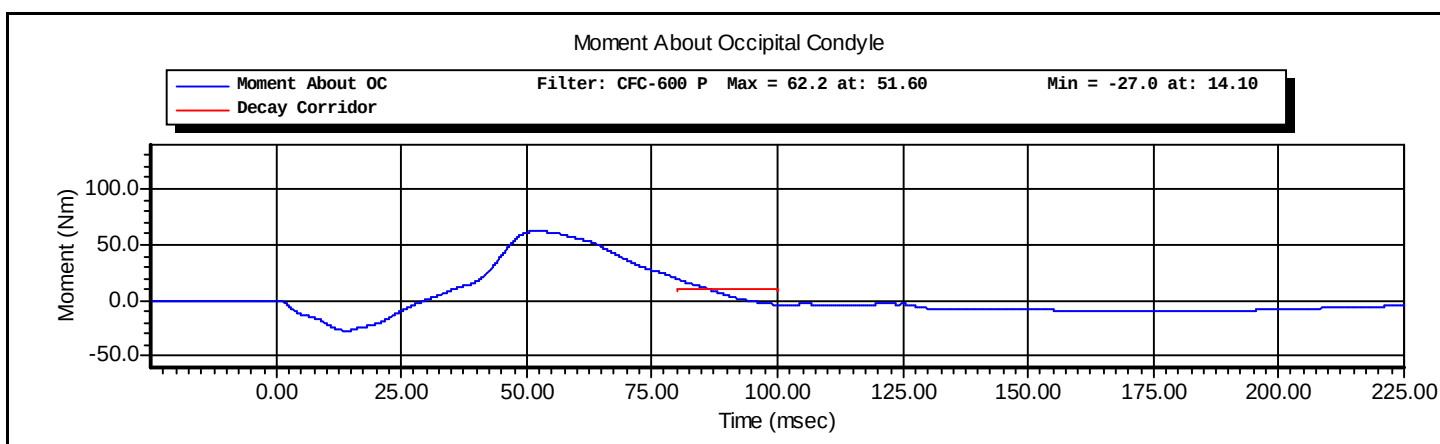
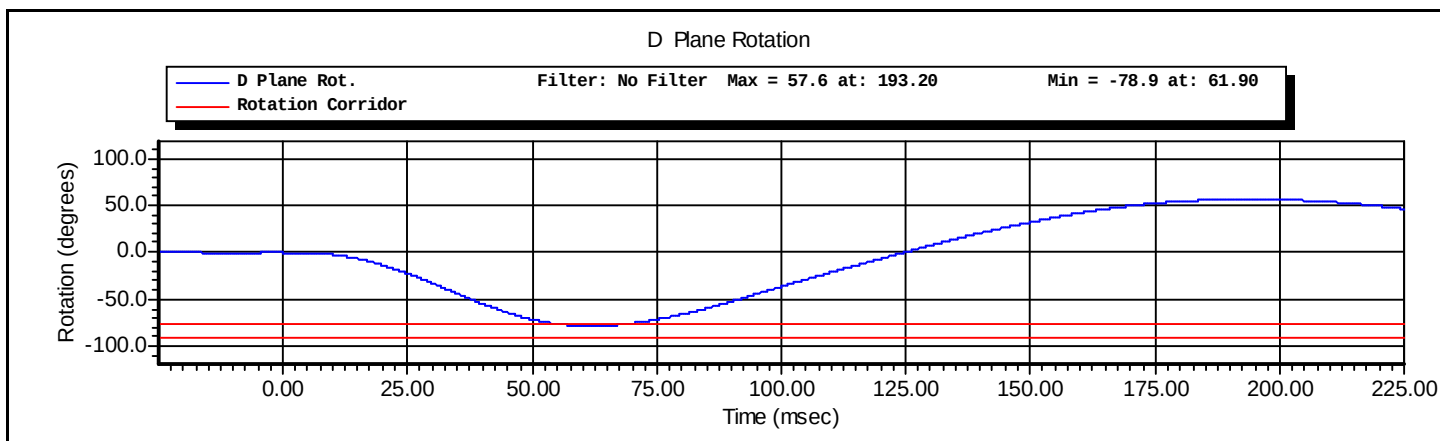
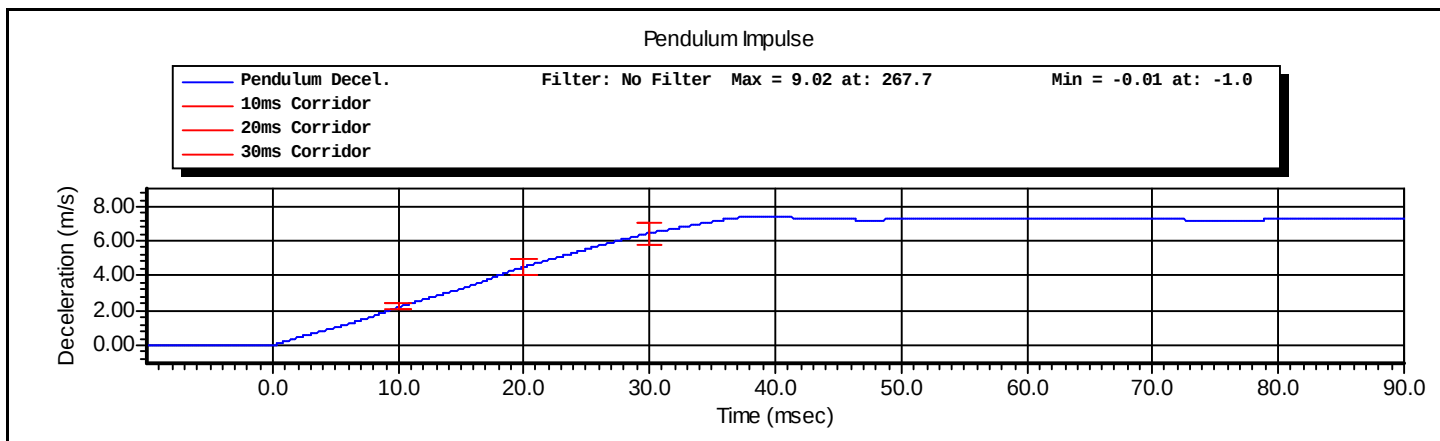
Test Name:	Neck Flexion	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	273		
Test ID:	Neck Flexion	Test Date:	10/29/2010
Test Number:	1	Test Time:	10:07:57 AM



Test ID: Neck Flexion

Test Time: 10:07:57 AM

Test Date: 10/29/2010





www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

Test Name:	Thorax Impact	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	273		
Test ID:	Thorax Impact	Test Date:	10/27/2010
Test Number:	1	Test Time:	2:12:12 PM

Test Parameters	Test Specifications			Test Results	
Temperature	20.6	--	22.2	22.2 deg C	P
Humidity	10.0	--	70.0	41.0 %RH	P
Velocity	6.59	--	6.83	6.69 m/s	P
Sternum Displacement	-58.0	--	-50.0	-51.1 mm	P
Force During Displacement Interval	-4400	--	-3900	-4353 N	P
Force -18.0 to -50.0 Displacement	-4600	--	0	-4266 N	P
Hysteresis	69	--	85	71 %	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____
Supervisor: **D. Travale** Signature: _____

Test ID: **Thorax Impact**

Test Time: **2:12:12 PM**

Test Date: **10/27/2010**



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2010
Endevco	7264-2000	P66930	10/5/2010
DentonATD	78051-342	DS-273	4/13/2010

Test ID: **Thorax Impact**

Test Time: **2:12:12 PM**

Test Date: **10/27/2010**



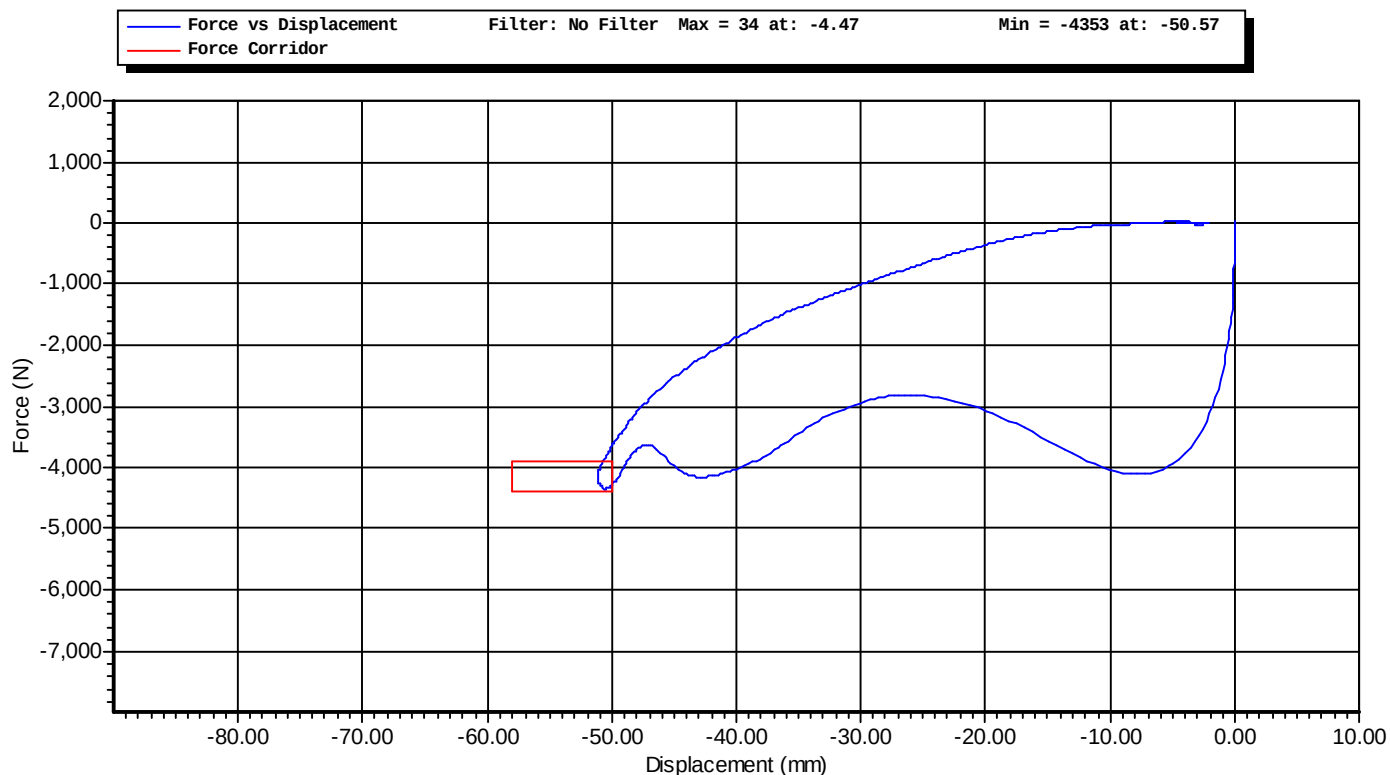
www.calspan.com

Calspan - Transportation Research Group

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

Test Name:	Thorax Impact	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	273		
Test ID:	Thorax Impact	Test Date:	10/27/2010
Test Number:	1	Test Time:	2:12:12 PM

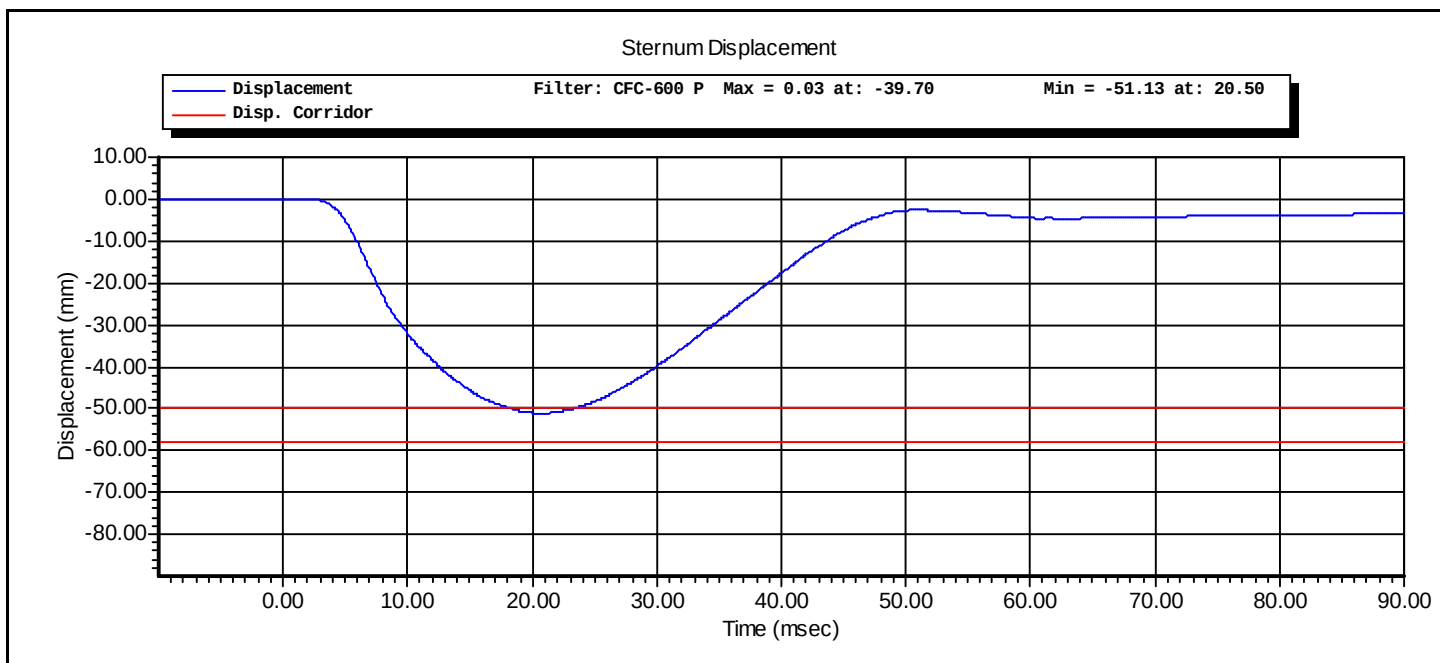
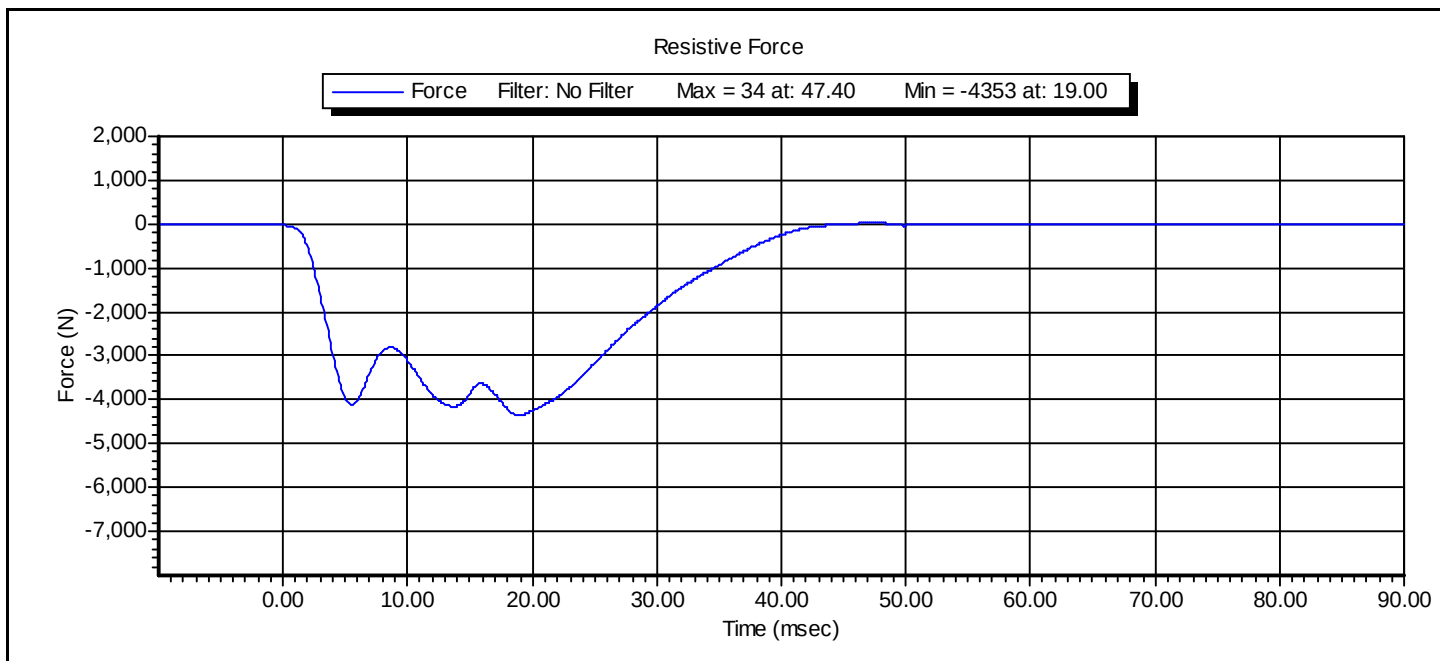
Resistive Force vs Sternum Displacement



Test ID: Thorax Impact

Test Time: 2:12:12 PM

Test Date: 10/27/2010





www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

Test Name:	Thorax Impact	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	273		
Test ID:	Thorax Impact	Test Date:	10/27/2010
Test Number:	1	Test Time:	2:12:12 PM

Test Parameters	Test Specifications			Test Results	
Temperature	20.6	--	22.2	22.2 deg C	P
Humidity	10.0	--	70.0	41.0 %RH	P
Velocity	6.59	--	6.83	6.69 m/s	P
Sternum Displacement	-58.0	--	-50.0	-51.1 mm	P
Force During Displacement Interval	-4400	--	-3900	-4353 N	P
Force -18.0 to -50.0 Displacement	-4600	--	0	-4266 N	P
Hysteresis	69	--	85	71 %	P

All test parameters are within specifications

Technician: **A. Rudniski** Signature: _____
Supervisor: **D. Travale** Signature: _____

Test ID: **Thorax Impact**

Test Time: **2:12:12 PM**

Test Date: **10/27/2010**



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2010
Endevco	7264-2000	P66930	10/5/2010
DentonATD	78051-342	DS-273	4/13/2010

Test ID: **Thorax Impact**

Test Time: **2:12:12 PM**

Test Date: **10/27/2010**



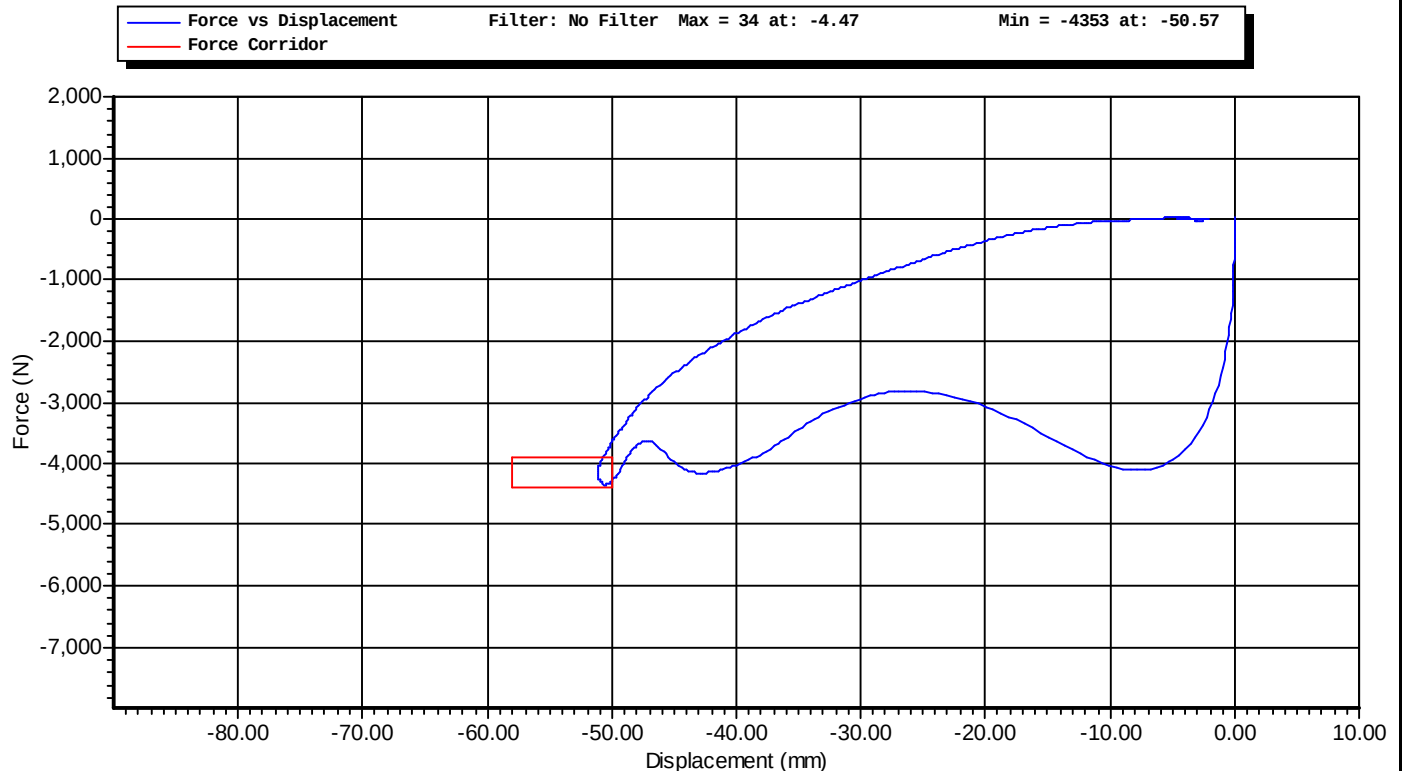
www.calspan.com

Calspan - Transportation Research Group

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

Test Name:	Thorax Impact	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	273		
Test ID:	Thorax Impact	Test Date:	10/27/2010
Test Number:	1	Test Time:	2:12:12 PM

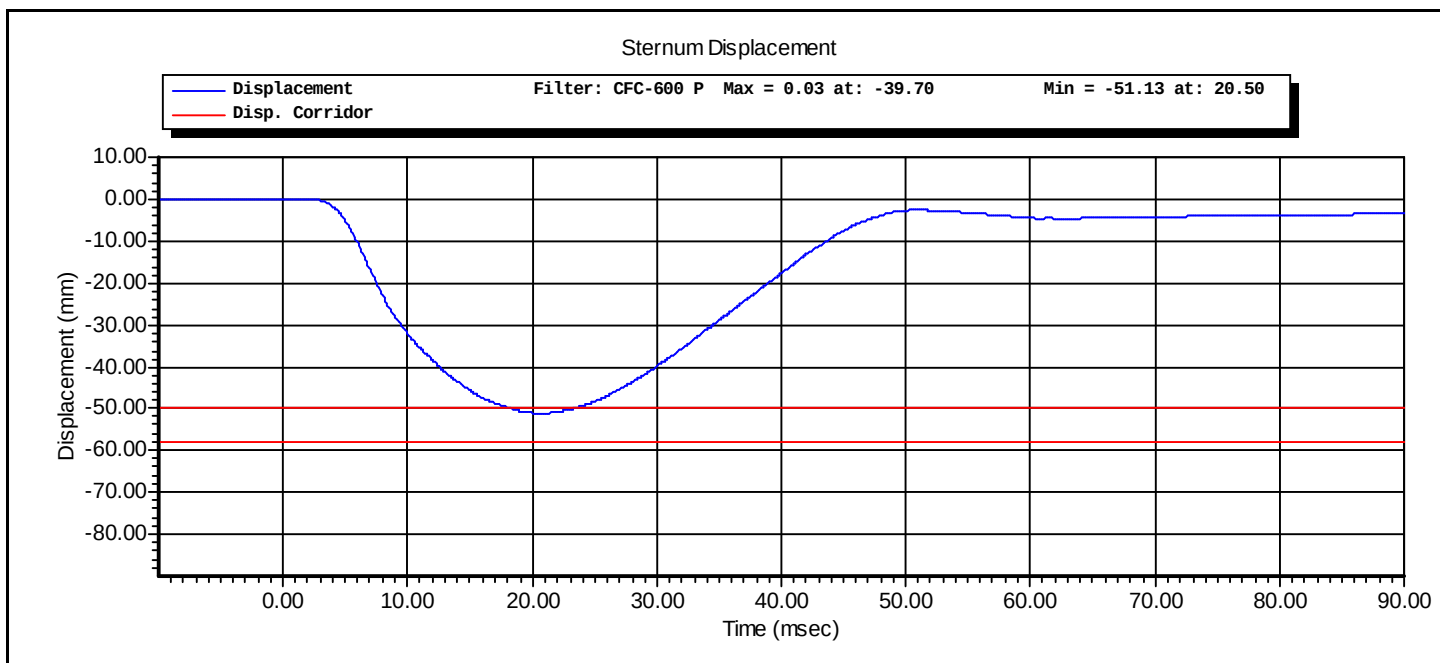
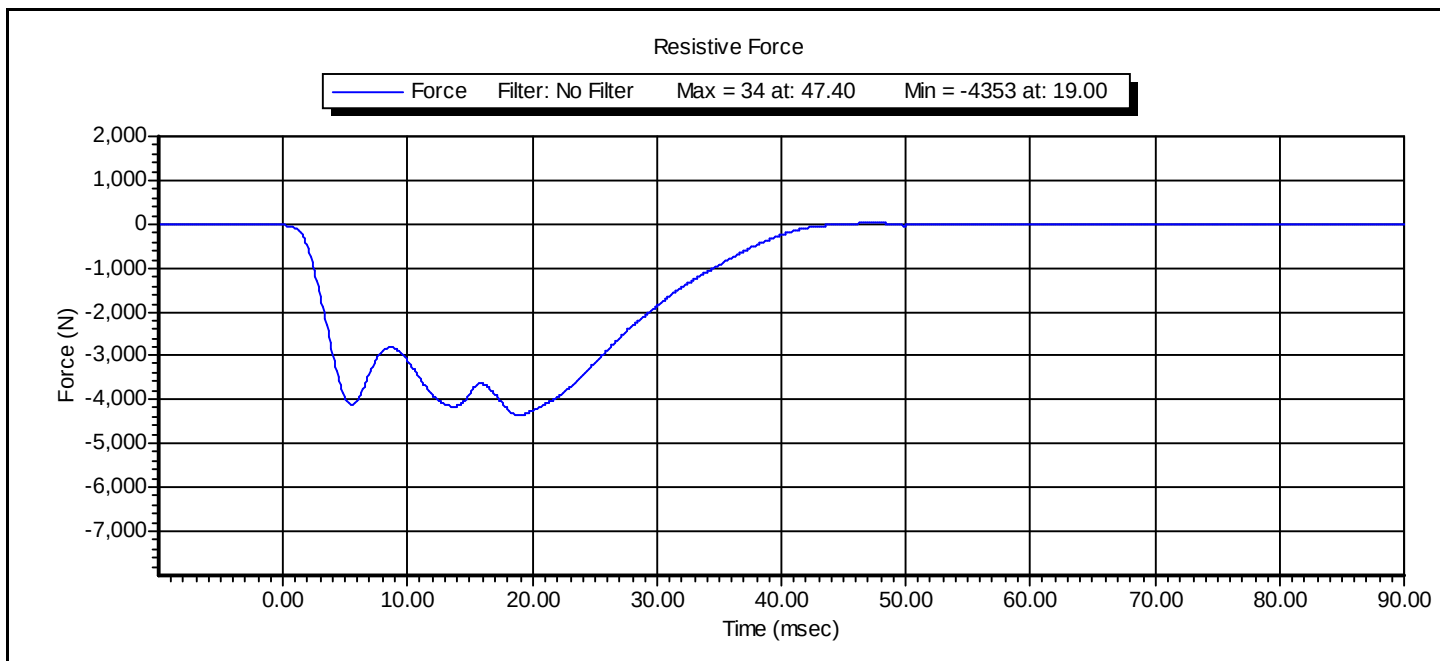
Resistive Force vs Sternum Displacement



Test ID: Thorax Impact

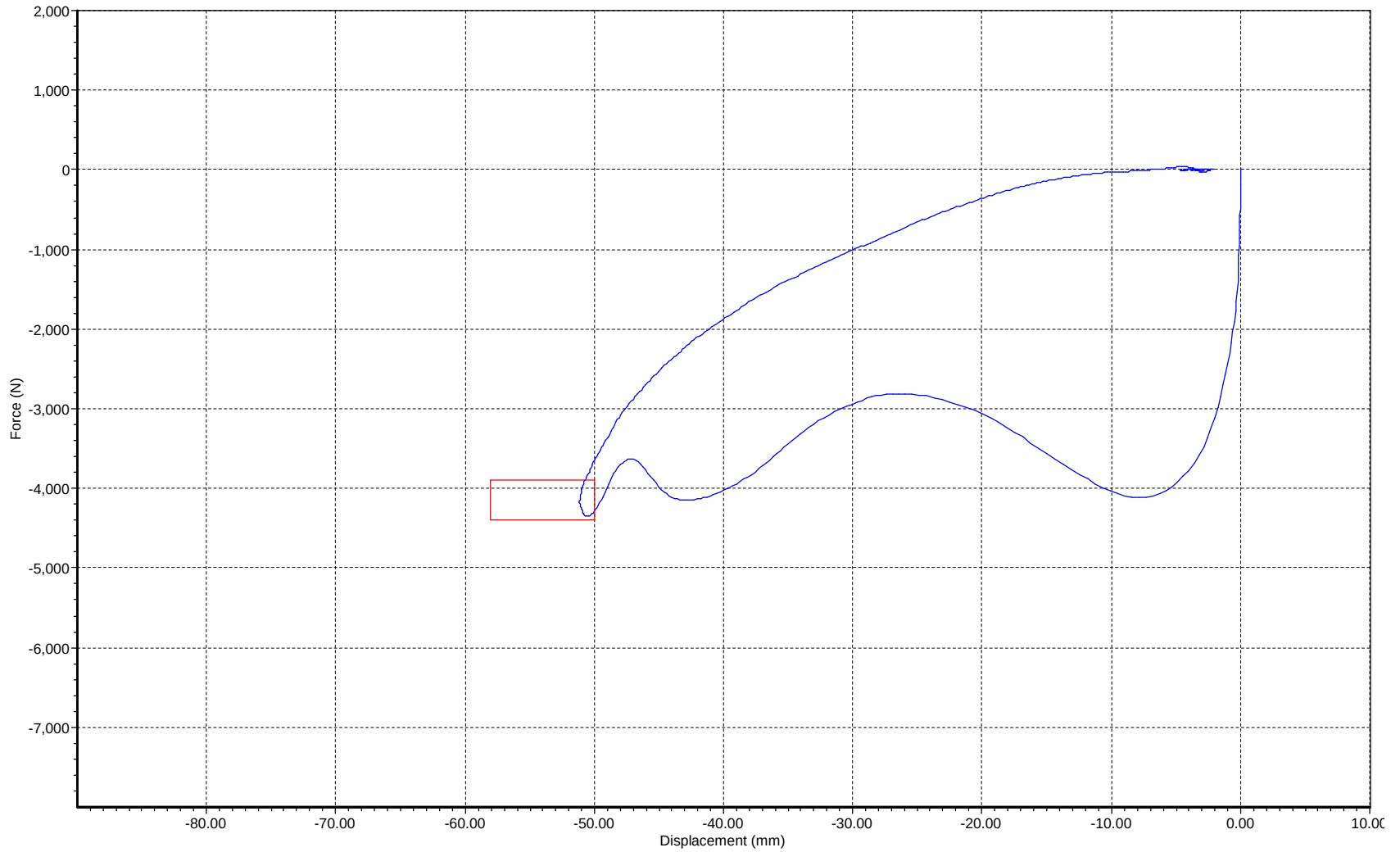
Test Time: 2:12:12 PM

Test Date: 10/27/2010



Resistive Force vs Sternum Displacement

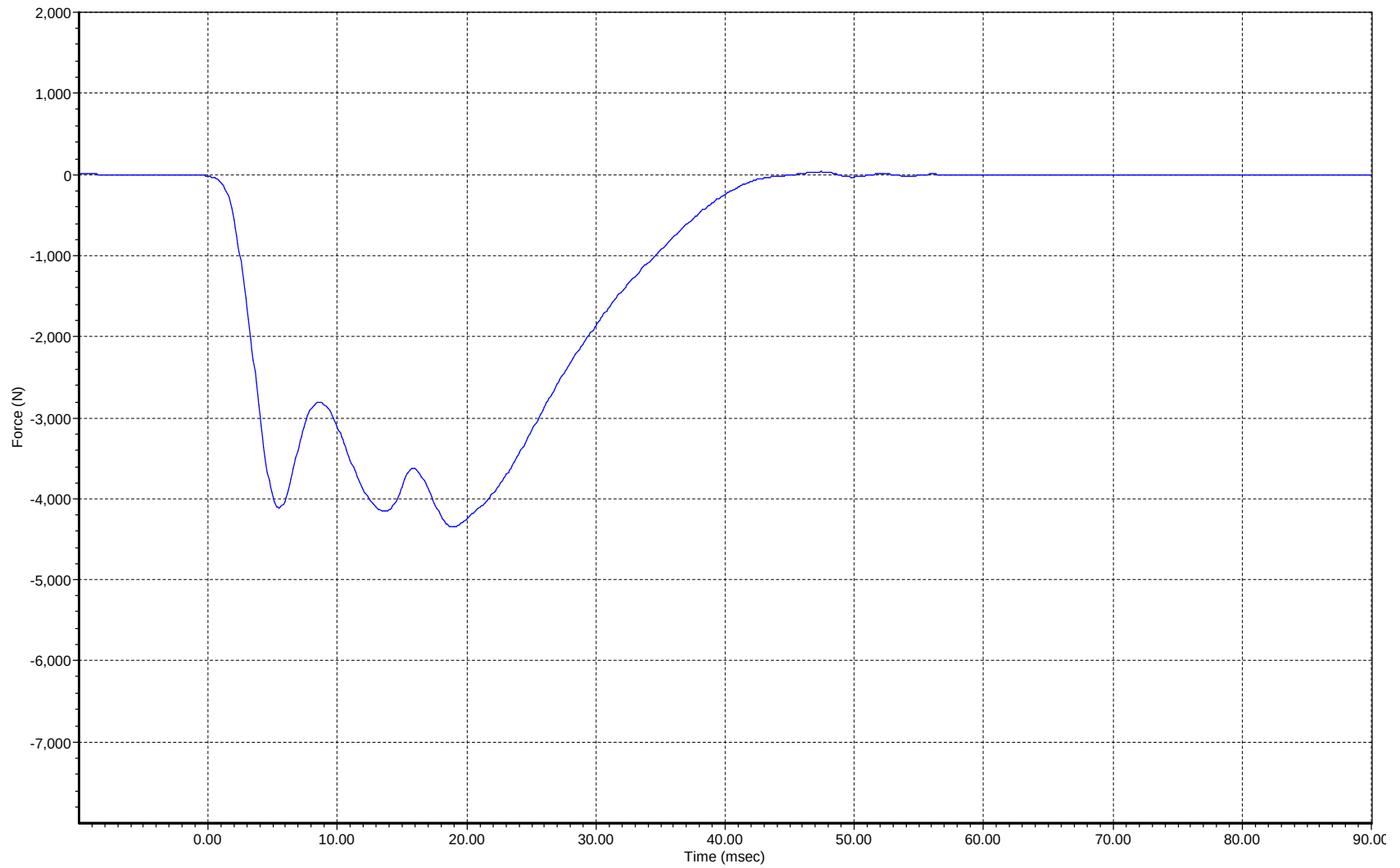
Force vs Displacement Filter: No Filter Max = 34 at: -4.47 Min = -4353 at: -50.57
Force Corridor



Hybrid III 5'th, Thorax Impact, 10/27/2010, 2:12:12 PM

Resistive Force

Force Filter: No Filter Max = 34 at: 47.40 Min = -4353 at: 19.00



Hybrid III 5'th, Thorax Impact, 10/27/2010, 2:12:12 PM

Torso Flexion Test

Technician: AR

Calibration Date: 10/29/2010

ATD Serial Number: 5th Female 273

Test Results			
Test Condition	Parameters	Results	Status
Temperature	18.9-25.6° C	22.2° C	P
Lab Humidity: 38%	10-70%	29%	P
Max Force @ 45 deg	320 – 390N	362N	P
Torso Rotation Rate	0.5 °/s ≤ rate ≤ 1.5 °/s	1.0 °/s	P
Initial reference angle	≤20 deg	14 °	P
Final ref plan angle	Initial ref plane ± 8 deg	20 °	P

P = Pass

F= Fail



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

Test Name:	Knee Impact	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	273		
Test ID:	Left	Test Date:	10/29/2010
Test Number:	1	Test Time:	2:12:42 PM

Component Part Number	Component Serial Number
Knee Skin - 880105-508	1726

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	222.0 deg C F
Humidity	10.0 -- 70.0	30.0 %RH P
Velocity	2.07 -- 2.13	2.09 m/s P
Resistive Force	-4060 -- -3450	-3552 N P

All test parameters are NOT within specifications

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

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

Test ID: **Left**

Test Time: **2:12:42 PM**

Test Date: **10/29/2010**



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2010
CEC	4-202	AC-A44	8/26/2010

Test ID: **Left**

Test Time: **2:12:42 PM**

Test Date: **10/29/2010**

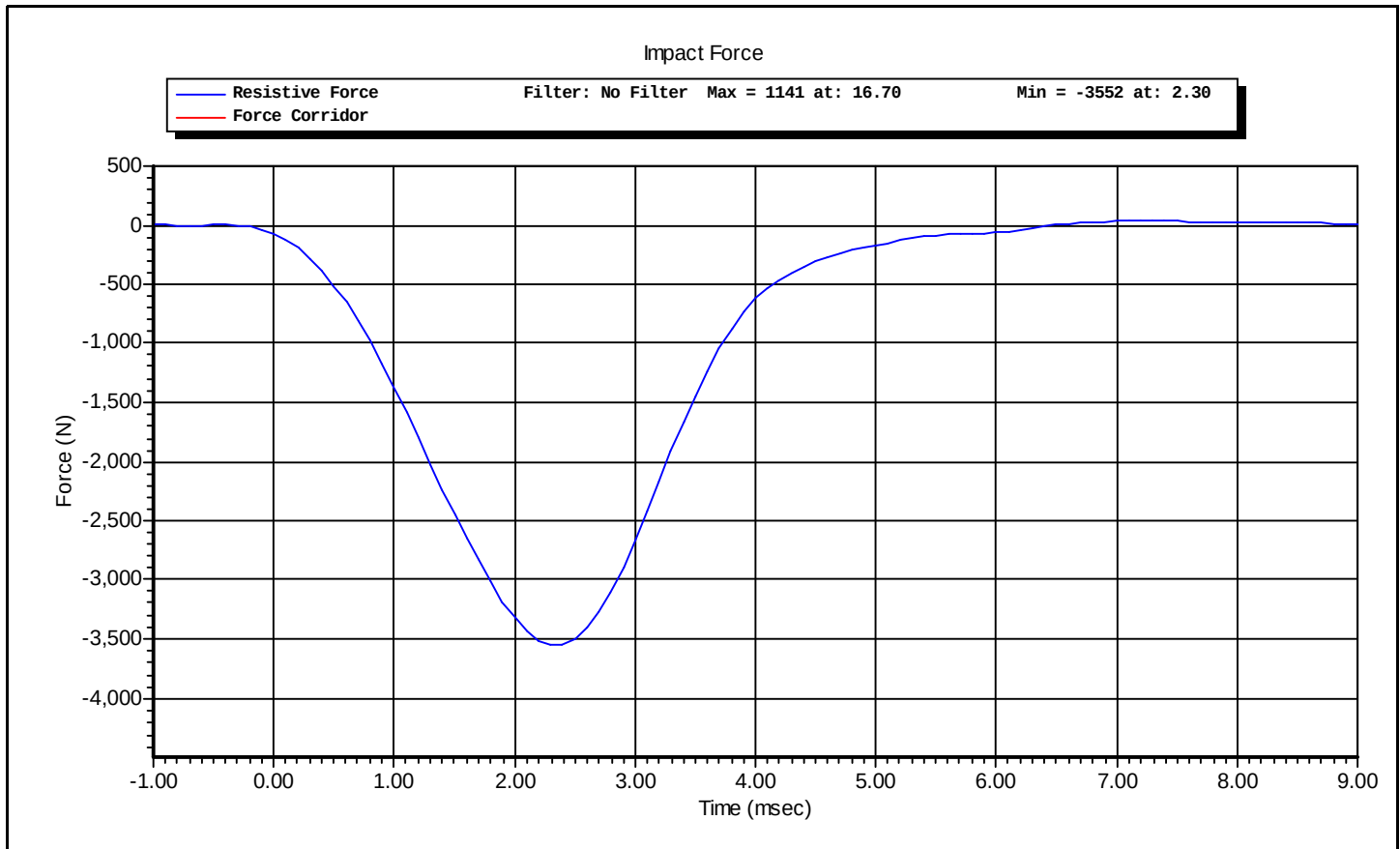


www.calspan.com

Calspan - Transportation Research Group

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

Test Name:	Knee Impact	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	273		
Test ID:	Left	Test Date:	10/29/2010
Test Number:	1	Test Time:	2:12:42 PM



Test ID: **Left**

Test Time: **2:12:42 PM**

Test Date: **10/29/2010**



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

Test Name:	Knee Impact	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	273		
Test ID:	Right Knee	Test Date:	10/29/2010
Test Number:	1	Test Time:	2:00:39 PM

Component Part Number	Component Serial Number
Knee Skin - 880105-508	1051

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	22.2 deg C P
Humidity	10.0 -- 70.0	30.0 %RH P
Velocity	2.07 -- 2.13	2.12 m/s P
Resistive Force	-4060 -- -3450	-3727 N P

All test parameters are within specifications

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

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

Test ID: **Right Knee**

Test Time: **2:00:39 PM**

Test Date: **10/29/2010**



www.calspan.com

Calspan - Transportation Research Group

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

VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2010
CEC	4-202	AC-A44	8/26/2010

Test ID: **Right Knee**

Test Time: **2:00:39 PM**

Test Date: **10/29/2010**

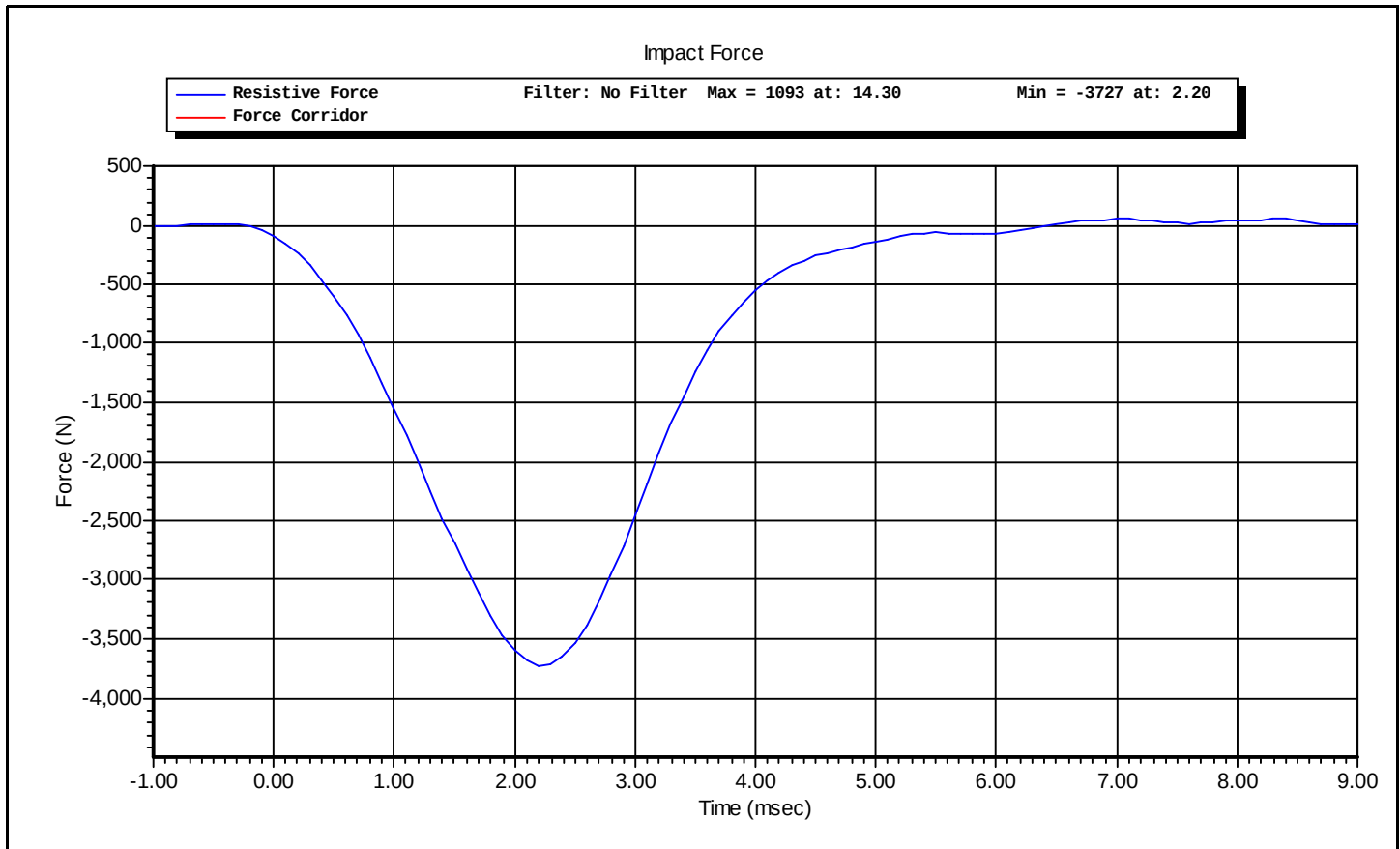


www.calspan.com

Calspan - Transportation Research Group

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

Test Name:	Knee Impact	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	273		
Test ID:	Right Knee	Test Date:	10/29/2010
Test Number:	1	Test Time:	2:00:39 PM



Test ID: **Right Knee**

Test Time: **2:00:39 PM**

Test Date: **10/29/2010**

