

REPORT NUMBER: NCAP-CAL-13-013

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

**Toyota Motor Manufacturing, Texas, Inc
2013 Toyota Tacoma 4x4
Access Cab Pickup**

NHTSA No: MD5118

**PREPARED BY:
CALSPAN CORPORATION
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December 20, 2012

FINAL REPORT

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

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David Travale, Technical Director,
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FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

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

Date: _____

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16. Abstract A 56.30 km/h (35 mph), NCAP Frontal Impact Test was conducted on a 2013 Toyota Tacoma 4x4 Access Cab 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 Calspan Corporation's Transportation Test Operations facility in Buffalo, New York on November 8, 2012. The impact velocity of the vehicle was 55.71 km/h, and the ambient temperature at the barrier face at the time of impact was 4°C. The target vehicle's maximum post-test static crush was 540 mm at the vehicle's centerline. The test vehicle's occupant performance data is as follows:																																																									
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TABLE OF CONTENTS

<u>Section</u>		<u>Page</u>
1	Purpose and Summary of the Test	1-1
2	Occupant and Vehicle Information / Data Sheets	2-1
<u>Data Sheet</u>		<u>Page</u>
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, 219 (Partial), and 301 Data	2-23
16	FMVSS 301 Static Rollover Results	2-25
17	Dummy/Vehicle Temperature Stabilization Chart	2-26
<u>Appendix</u>		<u>Page</u>
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

PURPOSE

This 56.3 km/h 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. DTNH22-12-D-00260. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for consumer information purposes.

The 56.3 km/h frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards Frontal NCAP Laboratory Test procedure, dated September 2012.

SUMMARY

A load cell barrier consisting of 36 load cells was impacted by a 2013 Toyota Tacoma 4x4 Access Cab Pickup at a velocity of 55.71 km/h. The test was performed at Calspan Corporation's Transportation Test Operations facility in Buffalo, New York on November 8, 2012. Pre- and post-test photographs of the vehicle and dummies to document the test can be found in Appendix A. One real-time camera and 16 high-speed cameras were used to document the frontal barrier impact event. Camera locations and other pertinent camera information can be found in Data Sheet 6 of 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 tri-axial 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. 64) and the right-front passenger (position 2) ATD (Serial No. 139) were calibrated previous to this test. Certification details, along with instrumentation calibration data, can be found in Appendix C of this report.

The 136 channels of data were recorded on an on-board data acquisition system. Please refer to Appendix B for 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 a total of 0.0 grams of stoddard solvent leakage after the event and including all phases of the static rollover. The maximum static crush of the test vehicle was 540 mm at the vehicle's centerline. During and after the impact event, the driver's side door remained closed and operational and the passenger's side door remained closed and operational.

The driver's visible contact points were as follows: The driver's head contacted the frontal airbag and then the head restraint. The upper torso contacted the frontal airbag. Both knees contacted the knee bolster.

The passenger's visible contact points were as follows: The passenger's head contacted the frontal airbag and then the seat back, as the head restraint disconnected during the impact event. The upper torso contacted the frontal airbag. Both knees contacted the glovebox.

The occupant data is summarized below.

ATD Position	HIC ₁₅	Nij	Neck Tension (N)	Neck Comp. (N)	3ms Chest Clip (Gs)	Chest Disp. (mm)	Left Femur (N)	Right Femur (N)
Driver (50 th)	252.43	0.37	2,085.41	-229.08	41.17	-25.67	-2,080.31	-2,296.82
Passenger (5 th)	353.84	0.53	1,036.11	-570.07	46.90	-15.46	-2,327.44	-810.60

GENERAL COMMENTS:

1. P1 (Driver) serial number - 64
2. P2 (Passenger) serial number - 139

Data Anomalies:

- V1P2 Head CG Red y is questionable at 41 - 94 ms.
- B1 Barrier Load Cell B3 Fx, Load cell did not return to zero
- B1 Barrier Load Cell B7 Fx, Load cell did not return to zero

SECTION 2

OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

This section contains information reporting for the following Data Sheets:

Data Sheet No. 1 – General Test and Vehicle Parameter Data

Data Sheet No. 2 – Seat Adjustment, Fuel System, and Steering Wheel Data

Data Sheet No. 3 – Dummy Longitudinal Clearance Dimensions

Data Sheet No. 4 – Dummy Lateral Clearance Dimensions

Data Sheet No. 5 – Seat Belt Positioning Data

Data Sheet No. 6 – High-Speed Camera Locations and Data

Data Sheet No. 7 – Vehicle Accelerometer Locations

Data Sheet No. 8 – Photographic Reference Target Locations

Data Sheet No. 9 – Load Cell Locations on Fixed Barrier

Data Sheet No. 10 – Test Vehicle Summary of Results

Data Sheet No. 11 – Post-Test Observations

Data Sheet No. 12 – Vehicle Profile Measurements

Data Sheet No. 13 – Accident Investigation Division Data

Data Sheet No. 14 – Vehicle Intrusion Measurements

Data Sheet No. 15 – Summary of FMVSS 212, 219 (Partial), and 301 Data

Data Sheet No. 16 – FMVSS 301 Static Rollover Results

Data Sheet No. 17 – Dummy/Vehicle Temperature Stabilization Chart

**DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2013 Toyota Tacoma 4x4 Access Cab Pickup
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MD5118
 Test Date: 11/8/2012

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	MD5118
Model Year	2013
Make	Toyota
Model	Tacoma
Body Style	Access Cab Pickup
VIN	5TFUX4EN5DX016538
Body Color	Light gray/silver
Odometer Reading (km /mi)	4.8 / 3.0
Engine Displacement (L)	2.7
Type / No. Cylinders	I4
Engine Placement	Inline
Transmission Type	Automatic
Transmission Speeds	4-Speed
Overdrive	Yes
Final Drive	Four Wheel Drive
Roof Rack	No
Sunroof / T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes
Automatic Door Locks (ADLs)	No

Traction Control System (TCS)	Yes
Power Steering	Yes
Power Window Auto-Reverse	No
Driver Frontal Airbag	Yes
Driver Curtain Airbag	Yes
Driver Head/Torso Airbag	No
Driver Torso Airbag	Yes
Driver Torso/Pelvis Airbag	No
Driver Pelvis Airbag	No
Driver Knee Airbag	No
Front Pass. Frontal Airbag	Yes
Front Pass. Curtain Airbag	Yes
Front Pass. Head/Torso Airbag	No
Front Pass. Torso Airbag	Yes
Front Pass. Torso/Pelvis Airbag	No
Front Pass. Pelvis Airbag	No
Front Pass. Knee Airbag	No
Driver Pretensioner	Yes
Driver Load Limiter	Yes
Front Pass. Pretensioner	Yes
Front Pass. Load Limiter	Yes
Other	--

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

No

DATA FROM CERTIFICATION LABEL

Manufactured By	Toyota Motor Manufacturing, Texas, Inc
Date of Manufacture	08/12

GVWR (kg)	2,425
GAWR Front (kg)	1,245
GAWR Rear (kg)	1,410

VEHICLE SEATING AND WEIGHT CAPACITY DATA

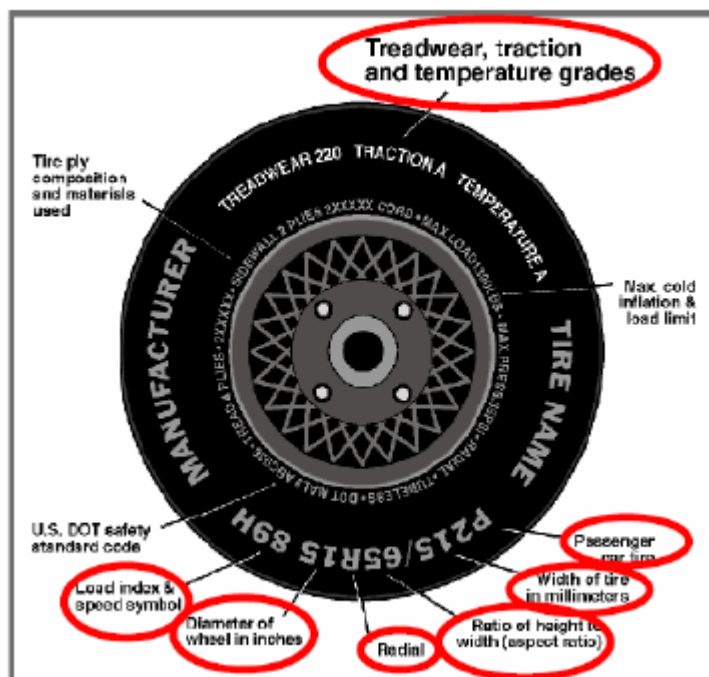
Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Fold Down		
Number of Occupants	2	2		4
Capacity Wt. (VCW) (kg)				540.0
Cargo Wt. (RCLW) (kg)				267.8

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

Test Vehicle: 2013 Toyota Tacoma 4x4 Access Cab Pickup
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MD5118
 Test Date: 11/8/2012

Collect items circled in red, tire manufacturer, and tire name.



VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	210	210
Recommended Tire Size	P245/75R16	P245/75R16
Tire Size on Vehicle	P245/75R16	P245/75R16
Tire Manufacturer	Dunlop	Dunlop
Tire Model	Grand Trek	Grand Trek
Treadwear	300	300
Traction	B	B
Temperature Grades	B	B
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester, 2 Steel, 1 Nylon	2 Polyester, 2 Steel, 1 Nylon
Load Index / Speed Symbol	109S	109S
Tire Material	RUBBER	RUBBER
DOT Safety Code Left	M670C8ER3012	M670C8ER3012
DOT Safety Code Right	M670C8ER3012	M670C8ER3012

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

Test Vehicle: 2013 Toyota Tacoma 4x4 Access Cab Pickup
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MD5118
 Test Date: 11/8/2012

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	526.0	406.0		550.0	527.0	
Right	kg	517.5	377.5		531.0	488.0	
Ratio	%	57.1	42.9		51.6	48.4	
Totals	kg	1,043.5	783.5	1,827.0	1,081.0	1,015.0	2,096.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1,827.0	(A)
Weight of 1 P572E ATD & 1 P572O ATD	kg	140.6	(B)
Rated Cargo / Luggage Weight (RCLW)*	kg	136.0	(C)
Calculated Vehicle Target Weight (TVTW)	kg	2103.6	(A+B+C)

* 136.0 kg is maximum RCLW per test procedure

TEST VEHICLE ATTITUDES AND CG

Condition	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	895	893	946	936	1,394
As Tested	mm	894	893	904	894	1,574
Post-Test	mm	825	828	911	892	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	3,250
Total Vehicle Length at Left Side	mm	5,266
Total Vehicle Length at Centerline	mm	5,284
Total Vehicle Length at Right Side	mm	5,265
Weight of Ballast in Cargo Area	kg	93.6
Weight of Vehicle Components Removed	kg	3.8
Amount of Stoddard Solvent in Fuel Tank	L	74.2

LIST OF COMPONENTS REMOVED TO MEET TEST WEIGHT:

Jack

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

Test Vehicle: 2013 Toyota Tacoma 4x4 Access Cab Pickup
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MD5118
 Test Date: 11/8/2012

TARGET VEHICLE STRUCTURAL MEASUREMENT

No.	Description	Pre-Test
1	Total Length	5,284
2	Total Width	1,807
3	Bumper Top Height	-590
4	Bumper Bottom Height	-509
5	Longitudinal Member Top Height	-577
6	Distance Between Longitudinal Members	870
7	Longitudinal Member Width	73
8	Engine Top Height	-1,147
9	Engine Bottom Height	-274
10	Engine and Gearbox Width	597
11	Front Bumper-Engine Distance	601
12	Front Shock Absorber Fixing Height	-883
13	Bonnet Leading Edge Height	-1,140
14	Front Shock Absorber Fixing Width	972
15	Front Bumper – Front Axle Distance	842
16	Front Axle – A Pillar Distance	589
17	A-Pillar – B-Pillar Distance	1,063
18	B-Pillar – Rear Axle Distance	1,600
19	B-Pillar – C-Pillar Distance	682
20	Roof Sill Bottom Height	-1,599
21	Roof Sill Top Height	-1,715
22	Floor Sill Bottom Height	-542
23	Floor Sill Top Height	-565

*All measurements are in millimeters

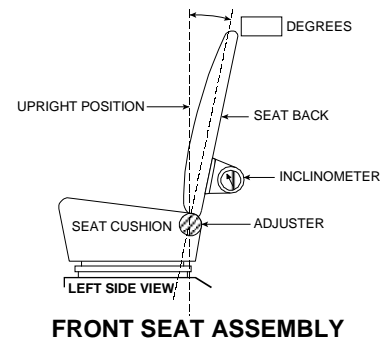
DATA SHEET NO. 2
SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

Test Vehicle: 2013 Toyota Tacoma 4x4 Access Cab Pickup
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MD5118
 Test Date: 11/8/2012

NOMINAL DESIGN RIDING POSITION

The driver's seat back was set to the manufacturer's designated angle. The passenger's seat back was positioned in a similar manner as the driver's seat back. Seat back angles are measured at the headrest post bezel using a digital inclinometer.



Seating Position	Degrees
Driver Seat Back Angle	0.2
Passenger Seat Back Angle	-0.5

SEAT FORE / AFT POSITIONS

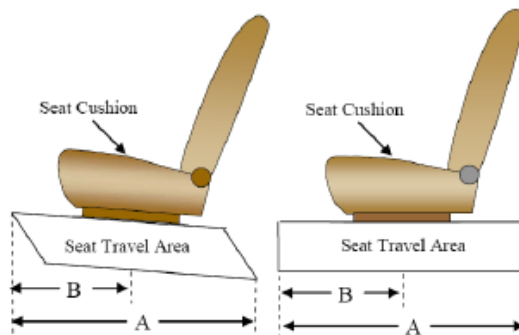
The driver's seat was positioned at the mid-point of fore/aft travel. The passenger's seat was positioned at the most forward position of fore/aft travel. Zero is defined as the forward most position.

Seating Position	Total Fore / Aft Travel	Placed in Position #
Driver Seat	240	8
Passenger Seat	240	0

SEAT BELT UPPER ANCHORAGE

The driver's seat belt anchorage was positioned according to the manufacturer's designated positioning for a 50th percentile adult male ATD. The passenger's seat belt anchorage was positioned according to the manufacturer's designated positioning for a 5th percentile adult female ATD. For this test zero is defined as the uppermost position.

Seating Position	Total # of Positions	Placed in Position #
Driver Seat	4	0
Passenger Seat	4	0



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

Test Vehicle: 2013 Toyota Tacoma 4x4 Access Cab Pickup
 Test Program: NCAP Frontal Barrier Impact Test

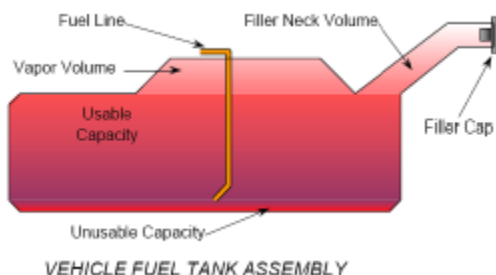
NHTSA No.: MD5118
 Test Date: 11/8/2012

FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank"	79.9
Usable Capacity of "Optional Tank"	N/A
92%-94% of Usable Capacity	73.5 - 75.1
Actual Amount of Solvent Used	74.2
1/3 of Usable Capacity	26.6

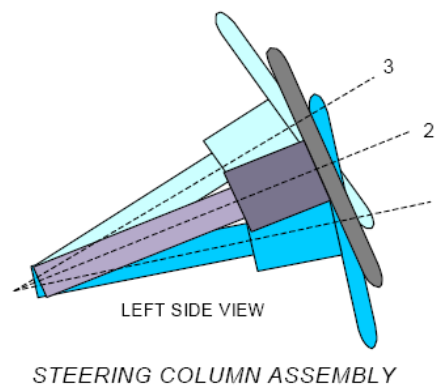
FUEL PUMP

The vehicle is equipped with an electric fuel pump. The fuel filler neck is on the left side of the vehicle. The pump creates positive pressure in the fuel lines, pushing the gasoline to the engine. See form 1 for more information.



STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when moved through its full range of motion. For angular measurements, a digital inclinometer was used to measure a plate which was placed across the steering wheel rim. A tape measure was used to measure the telescoping steering wheel travel.



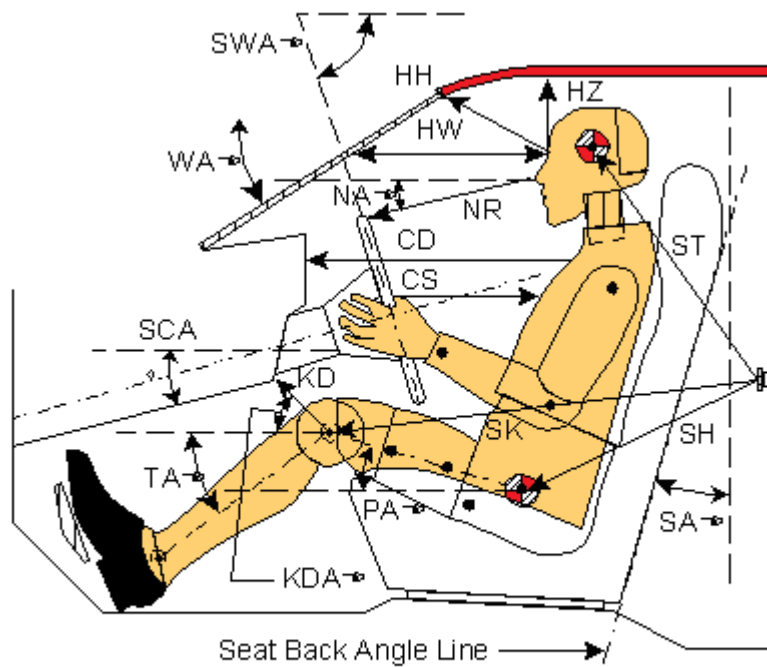
STEERING COLUMN POSITIONS

Description	Degrees	Fore / Aft Position (mm)
Lowermost position No. 1	23.2	0
Geometric center position No. 2	24.9	10
Uppermost position No. 3	26.5	20
Telescoping Steering Wheel Travel		20
Test Position	24.9	10

DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2013 Toyota Tacoma 4x4 Access Cab Pickup
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MD5118
Test Date: 11/8/2012



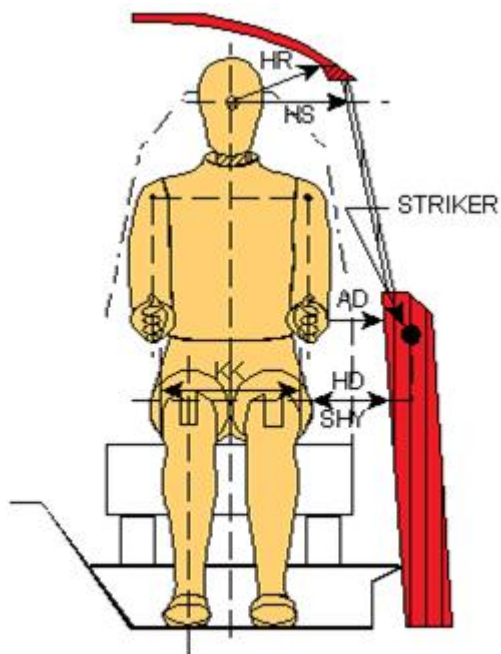
Left Side View

Code	Measurement Description	Driver (SN: 64)		Passenger (SN: 139)	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		-36.0		
SWA°	Steering Wheel Angle		25.1		
SCA°	Steering Column Angle		64.9		
SA°	Seat Back Angle (on headrest post)		0.1		-0.5
HZ	Head to Roof (Z)	221	90.0	273	90.0
HH	Head to Header	432	20.0	371	38.8
HW	Head to Windshield	647	0.0	608	0.0
NR	Nose to Rim	439	-10.7	466	-24.3
CD	Chest to Dash	552		425	
CS	Chest to Steering Hub	339	-4.9		
RA	Rim to Abdomen	312	-1.0		
KDL	Left Knee to Dash	166	30.8	115	31.8
KDR	Right Knee to Dash	156	21.7	117	37.0
PA°	Pelvic Angle		24.4		20.8
TA°	Tibia Angle		-29.7		32.4
SK	Striker to Knee	574	-7.5	663	-9.8
ST	Striker to Head	487	81.6	472	57.5
SH	Striker to H-Point	247	-48.6	372	26.5

**DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS**

Test Vehicle: 2013 Toyota Tacoma 4x4 Access Cab Pickup
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MD5118
 Test Date: 11/8/2012



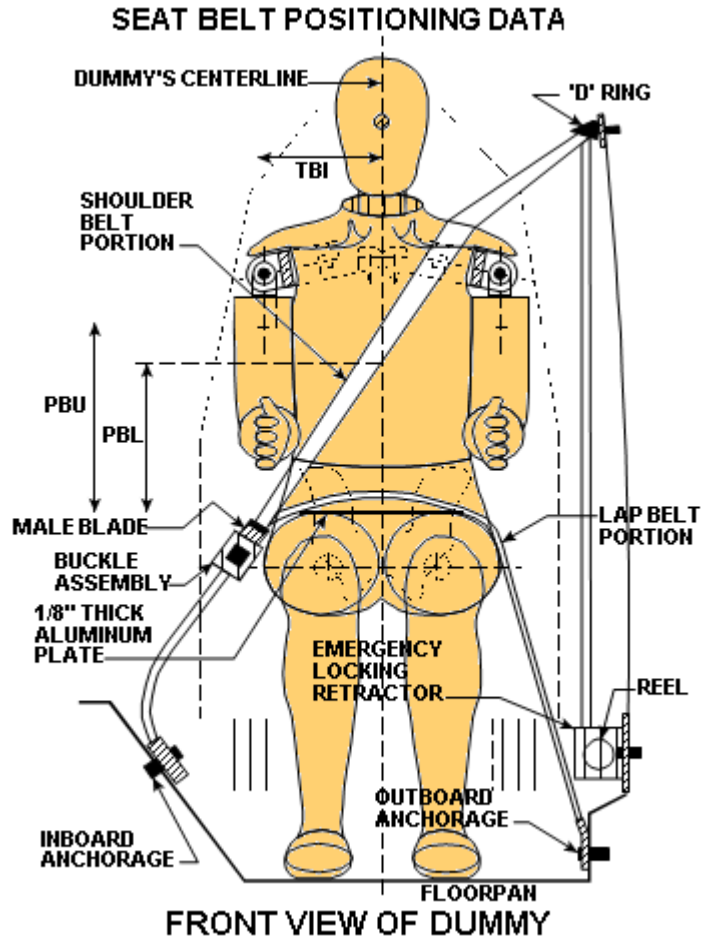
Front View

Code	Description	Driver (mm)	Passenger (mm)
AD	Arm to Door	127	80
HD	H-Point to Door	128	154
HR	Head to Side Header	229	290
HS	Head to Side Window	355	376
KK	Knee to Knee	295	166
SHY	Striker to H-Point (Y Direction)	250	275
AA	Ankle to Ankle	298	165

**DATA SHEET NO. 5
SEAT BELT POSITIONING DATA**

Test Vehicle: 2013 Toyota Tacoma 4x4 Access Cab Pickup
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MD5118
 Test Date: 11/8/2012



SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
PBU — Top surface of reference to belt upper edge	mm	370	230
PBL — Top surface of reference to belt lower edge	mm	295	255

BELT LENGTH DATA

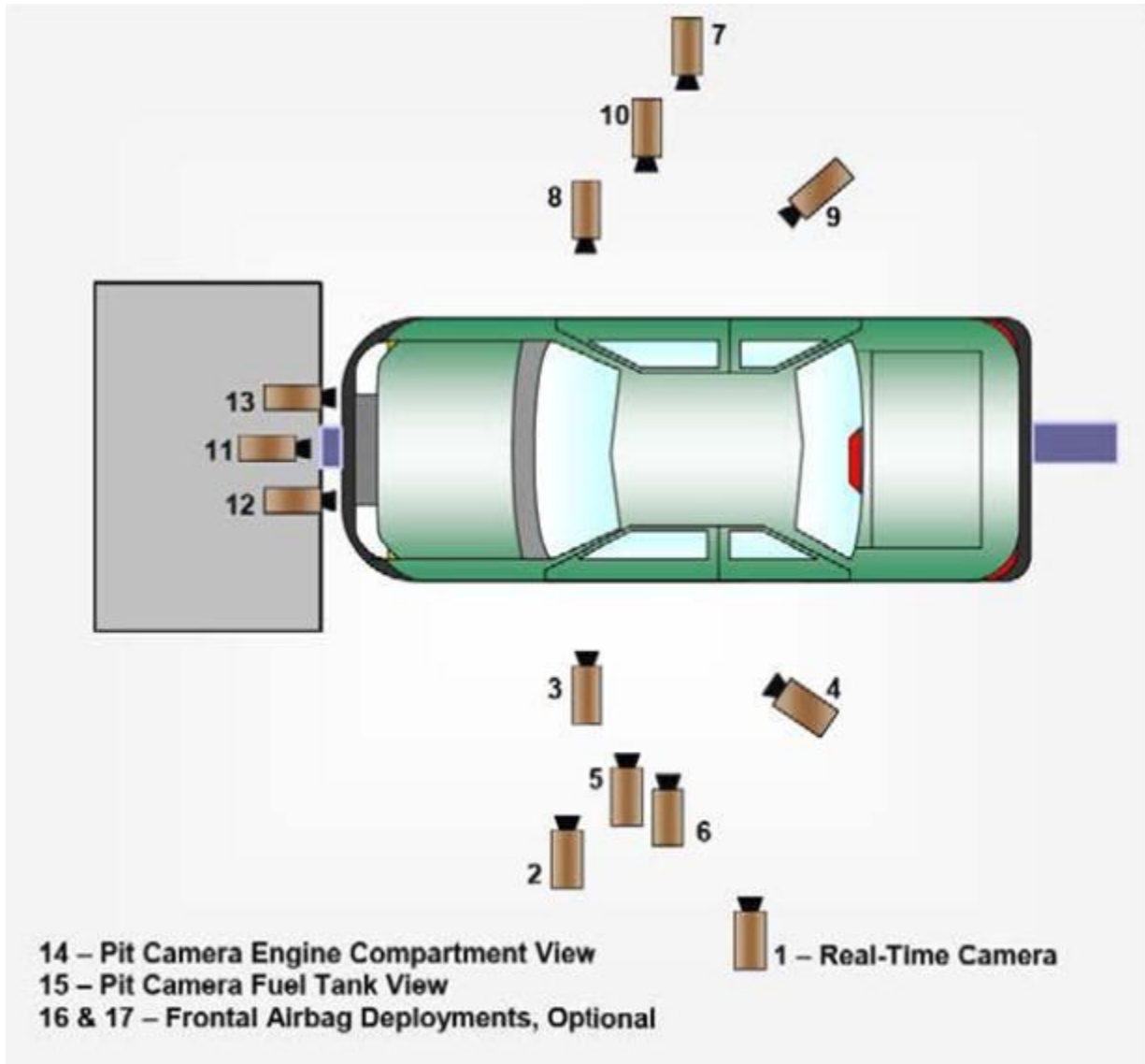
Measurement Description	Units	Driver	Passenger
Shoulder belt length as measured on ATD	mm	870	905
Lap Belt Length as measured on ATD	mm	765	840
Remainder of belt on reel	mm	965	855
Total belt length for continuous webbing systems	mm	2,600	2,600

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

Test Vehicle: 2013 Toyota Tacoma 4x4 Access Cab Pickup
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MD5118
Test Date: 11/8/2012

CAMERA POSITIONS FOR FRONTAL IMPACTS



Top View

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

Test Vehicle: 2013 Toyota Tacoma 4x4 Access Cab Pickup
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MD5118
 Test Date: 11/8/2012

CAMERA LOCATIONS

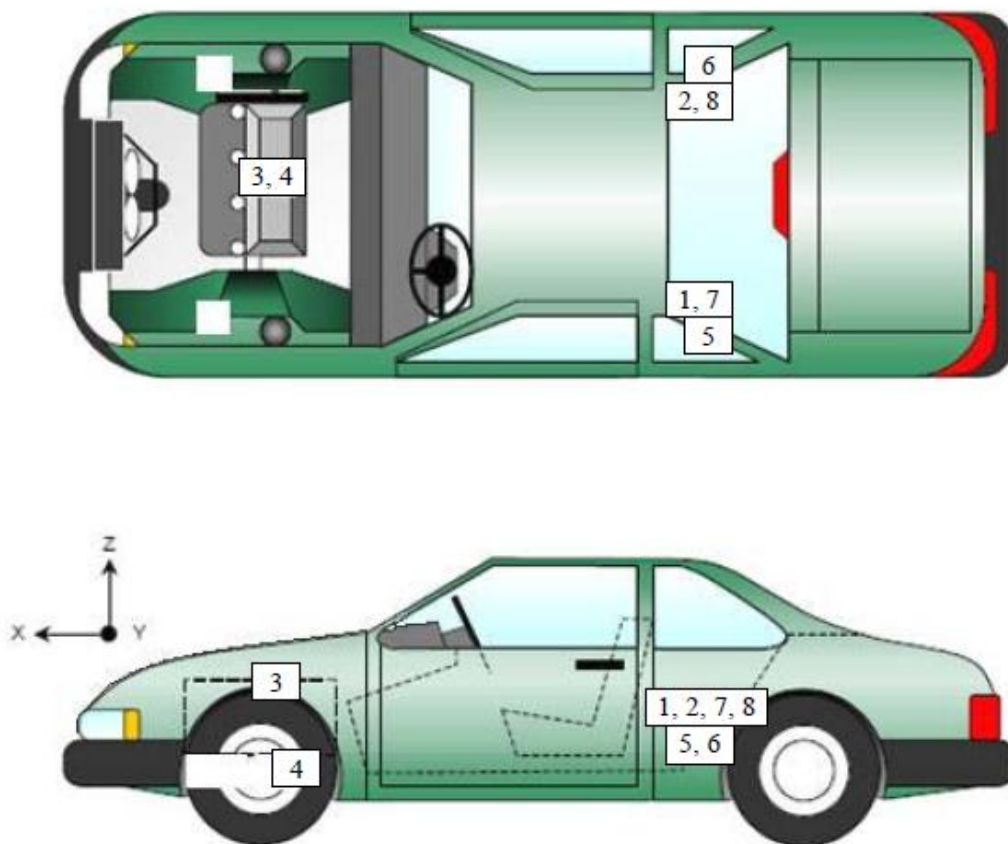
No.	Camera View	Location (mm)			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Overall	--	--	--		30
2	Driver Close-Up	1658	7637	1170	50	1000
3	Left Front Half	1011	9625	989	50	1000
4	Left Angle	3046	3158	2246	24	1000
5	Steering Column - Top	2007	8263	1817	28 - 70	1000
6	Steering Column - Bottom	2007	8263	1167	24 - 70	1000
7	Right Overall	2097	8091	1094	28	1000
8	Passenger Close-Up	1688	7570	1295	50	1000
9	Right Front Half	1210	9253	1055	50	1000
10	Right Angle	3050	3000	2226	24	1000
11	Windshield	480	0	3219	24	1000
12	Driver Windshield	260	-602	2012	12.5	1000
13	Passenger Windshield	260	583	1971	12.5	1000
14	Pit Front	948	0	1740	6.5	1000
15	Pit Rear	2454	0	1740	6.5	1000
16	Onboard Driver Airbag (Optional)					
17	Onboard Passenger Airbag (Optional)					

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

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

Test Vehicle: 2013 Toyota Tacoma 4x4 Access Cab Pickup
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MD5118
 Test Date: 11/8/2012



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear Accelerometer – X Direction	2,474	-640	-551
2	Right Rear Accelerometer – X Direction	2,475	623	-552
3	Engine Top X	4,617	57	-1,049
4	Engine Bottom X	4,654	17	-399
5	Left Rear Accelerometer – Z Direction	2,474	-640	-551
6	Right Rear Accelerometer – Z Direction	2,475	623	-552
7	Left Rear Accelerometer – X Direction Redundant	2,474	-640	-551
8	Right Rear Accelerometer – X Direction Redundant	2,475	623	-552

Reference Points: *X – Rear Surface of Vehicle (+ forward)*
 Y – Vehicle Centerline (+ to right)
 Z – Ground Plane (+ down)

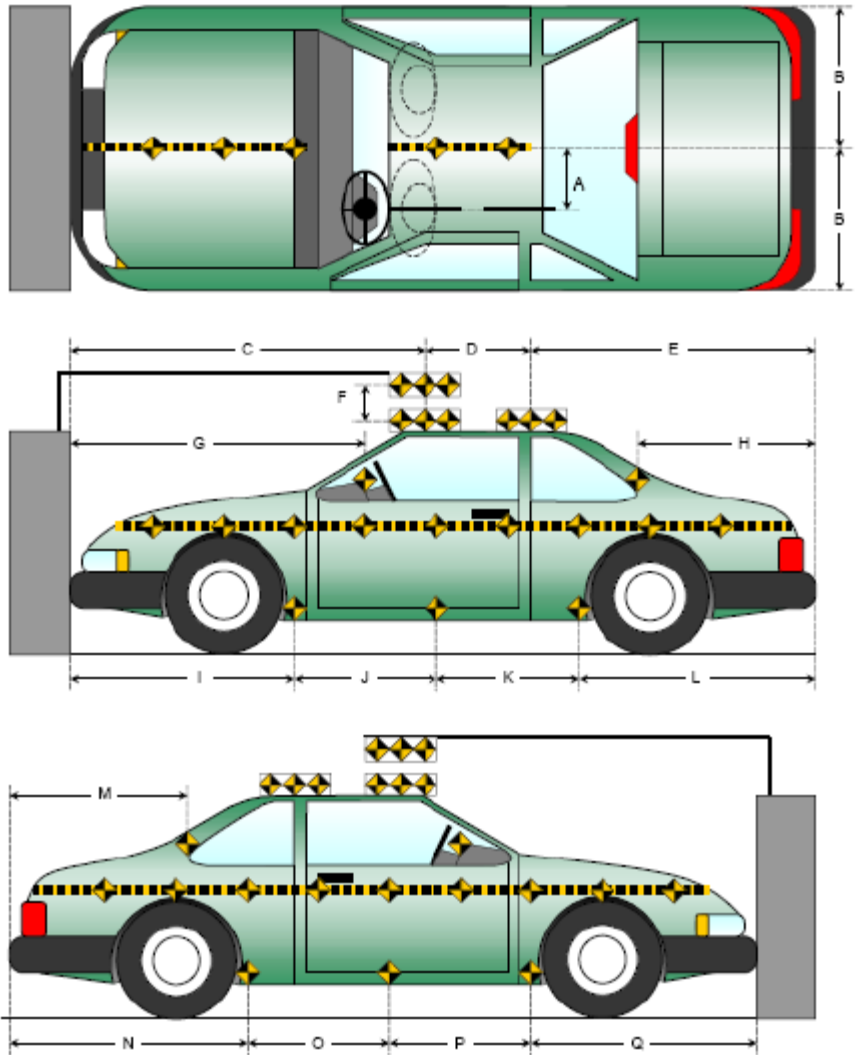
DATA SHEET NO. 8
PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2013 Toyota Tacoma 4x4 Access Cab Pickup
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MD5118
 Test Date: 11/8/2012

Item	Value
A	402
B	903
C	2,214
D	850
E	2,220
F	122
G	1,726
H	2,226
I	1,348
J	1,112
K	1,109
L	1,715
M	2,228
N	1,730
O	1,103
P	1,103
Q	1,348

All units in millimeters



DATA SHEET NO. 9
LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle: 2013 Toyota Tacoma 4x4 Access Cab Pickup
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MD5118
 Test Date: 11/8/2012

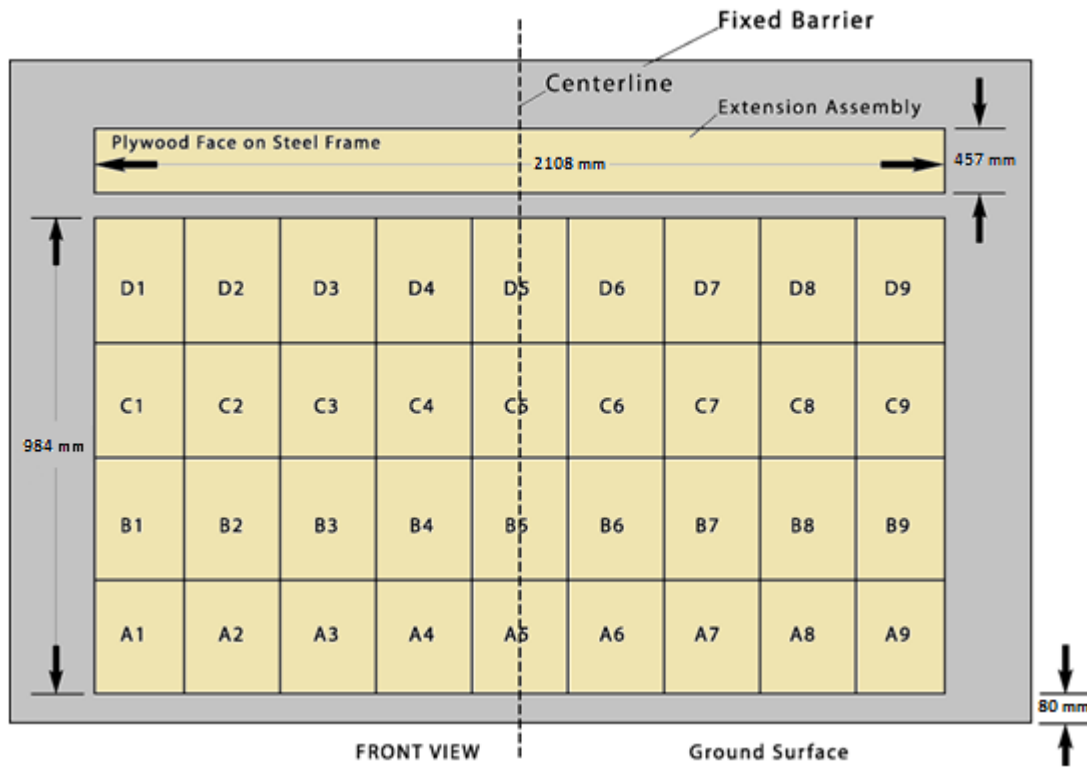


Figure 1 - Load Cell Locations on a 36-Load Cell Barrier with Plywood Height Extension

DATA SHEET NO. 10
TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle: 2013 Toyota Tacoma 4x4 Access Cab Pickup
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MD5118
 Test Date: 11/8/2012

INSTRUMENTATION

Instrumentation	Number of Channels Collected
Driver Dummy Accelerometers	46
Passenger Dummy Accelerometers	46
Vehicle Structure Accelerometers	8
Load Cell Barrier	36
Total	136

CAMERA COVERAGE

Type of Camera	Number Used in this Test
High-Speed Vehicle Onboard	0
High-Speed Offboard	14
Real-Time Panning	1
Total	15

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

Test Vehicle: 2013 Toyota Tacoma 4x4 Access Cab Pickup
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MD5118
 Test Date: 11/8/2012

TEST DUMMY INFORMATION AND CONTACT LOCATIONS

Description	Driver	Passenger
Dummy Type / Serial No.	P572E 50 th male / 64	P5720 5 th female / 139
Head Contact	Front Airbag & Head Rest	Front Airbag & Seat Back
Upper Torso Contact	Front Airbag	Front Airbag
Lower Torso Contact	None	None
Left Knee Contact	Knee Bolster	Glove Box
Right Knee Contact	Knee Bolster	Glove Box

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Passenger
Locked / Unlocked Doors	Unlocked	Unlocked
Front Door Opening	Closed and Operational	Closed and Operational
Rear Door Opening	Closed and Operational	Closed and Operational
Seat Track Shift (mm)	0	0
Seat Back Failure	No	No
Glazing Damage	None	None

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Windshield Damage	Cracks along driver's side
Window Damage	None
Other Notable Effects	Passenger headrest released from seat

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	427
Center	mm	485
Right Side	mm	483
Average	mm	465

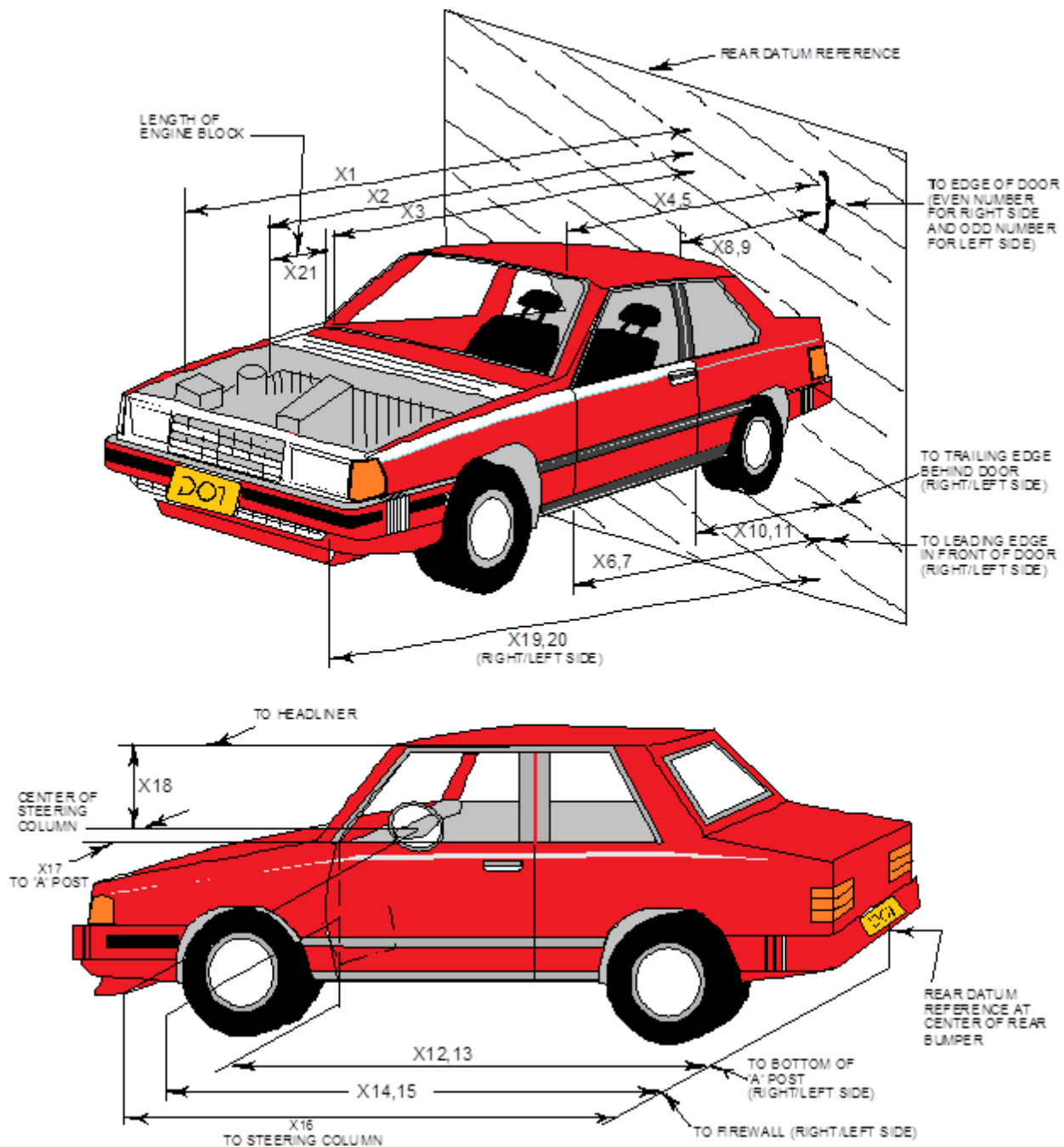
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Driver		Passenger	
	Installed	Deployed	Installed	Deployed
Front Airbag	Yes	Yes	Yes	Yes
Side Airbag 1 - Curtain	Yes	No	Yes	No
Side Airbag 2 - Torso Airbag	Yes	No	Yes	No
Knee Airbag	No	NA	No	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: 2013 Toyota Tacoma 4x4 Access Cab Pickup
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MD5118
 Test Date: 11/8/2012



**DATA SHEET NO. 12 ... (CONTINUED)
VEHICLE PROFILE MEASUREMENTS**

Test Vehicle: 2013 Toyota Tacoma 4x4 Access Cab Pickup
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MD5118
 Test Date: 11/8/2012

No.	Measurement Description	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	5,284	4,744	-540
2	Rear Surface of Vehicle (RSOV) to Front of Engine	4,683	4,625	-58
3	RSOV to Firewall	4,103	4,018	-85
4	RSOV to Upper Leading Edge of Right Door	3,850	3,831	-19
5	RSOV to Upper Leading Edge of Left Door	3,850	3,850	0
6	RSOV to Lower Leading Edge of Right Door	3,839	3,841	2
7	RSOV to Lower Leading Edge of Left Door	3,839	3,862	23
8	RSOV to Upper Trailing Edge of Right Door	2,795	2,776	-19
9	RSOV to Upper Trailing Edge of Left Door	2,794	2,792	-2
10	RSOV to Lower Trailing Edge of Right Door	2,775	2,781	6
11	RSOV to Lower Trailing Edge of Left Door	2,777	2,801	24
12	RSOV to Bottom of "A" Post of Right Side	3,887	3,869	-18
13	RSOV to Bottom of "A" Post of Left Side	3,889	3,887	-2
14	RSOV to Firewall, Right Side	4,130	4,111	-19
15	RSOV to Firewall, Left Side	4,132	4,117	-15
16	RSOV to Steering Column	3,402	3,443	41
17	Center of Steering Column to "A" Post	297	274	-23
18	Center of Steering Column to Headliner	424	451	27
19	RSOV to Right Side of Front Bumper	5,265	4,761	-504
20	RSOV to Left Side of Front Bumper	5,266	4,794	-472
21	Length of Engine Block	555	555	0
RD	RSOV to Right Side of Dash Panel	3,592	3,580	-12
CD	RSOV to Center of Dash Panel	3,552	3,550	-2
LD	RSOV to Left Side of Dash Panel	3,590	3,599	9

All Dimensions in mm

DATA SHEET NO. 13
ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2013 Toyota Tacoma 4x4 Access Cab Pickup
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MD5118
Test Date: 11/8/2012

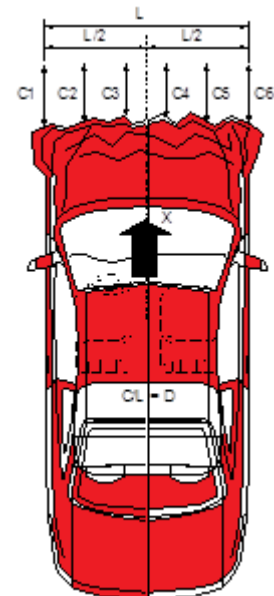
VEHICLE INFORMATION

VIN: 5TFUX4EN5DX016538
Vehicle Size Category: Passenger

Wheelbase (mm): 3,250
Test Weight (kg): 2,096.0

ACCELEROMETER DATA

Accelerometer Locations: Please See Data Sheet No. 7
Cal. Procedure / Interval: Calspan Procedure / 6 month
Integration Algorithm: Trapezoidal
Linearity: > 99%
Impact Velocity (km/h): 55.71
Velocity Change (km/h): 55.71
Time of Separation (ms): 129



CRUSH PROFILE

Collision Deformation Classification: 12FDEW2
Midpoint of Damage: Vehicle Centerline
Damage Region Length (mm): 942
Impact Mode: Frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush Zone 1 at Left Side	mm	5,276	4,773	-503
C2	Crush Zone 2 at Left Side	mm	5,284	4,779	-505
C3	Crush Zone 3 at Left Side	mm	5,285	4,780	-505
C4	Crush Zone 4 at Right Side	mm	5,285	4,773	-512
C5	Crush Zone 5 at Right Side	mm	5,284	4,761	-523
C6	Crush Zone 6 at Right Side	mm	5,275	4,754	-521
L	C1 to C6	mm	942	940	-2

DATA SHEET NO. 14
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2013 Toyota Tacoma 4x4 Access Cab Pickup
Test Program: NCAP Frontal Barrier Impact Test

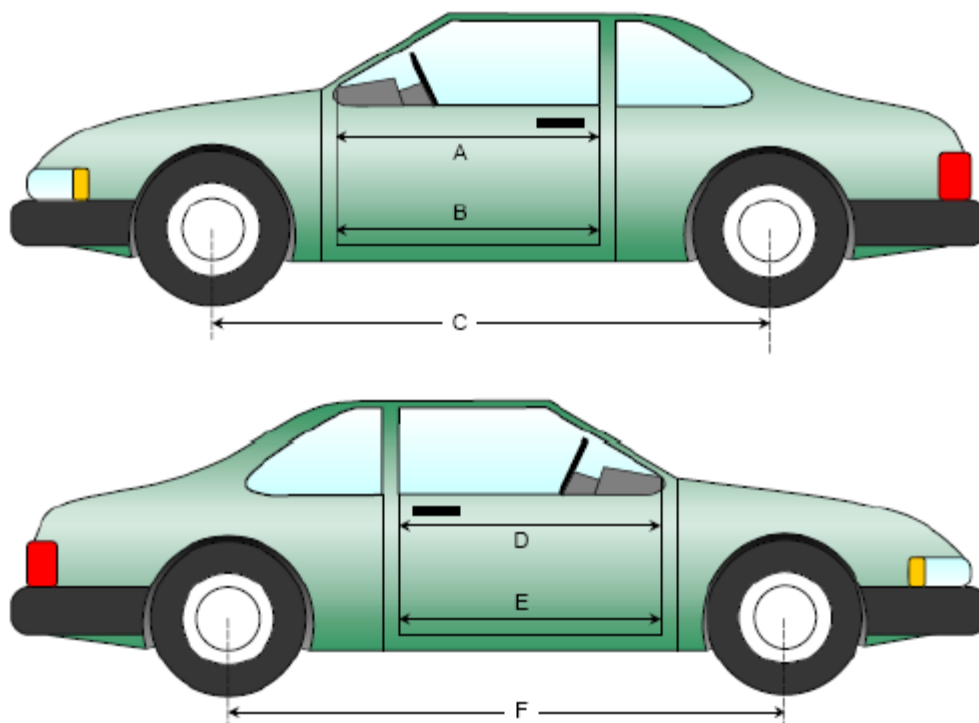
NHTSA No.: MD5118
Test Date: 11/8/2012

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	971	970	-1
B	Left Side Lower	mm	878	875	-3
D	Right Side Upper	mm	972	972	0
E	Right Side Lower	mm	893	891	-2

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	3,252	3,184	-68
F	Right Side Wheelbase	mm	3,247	3,204	-43



Left & Right Side Views

**DATA SHEET NO.14 ... (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS**

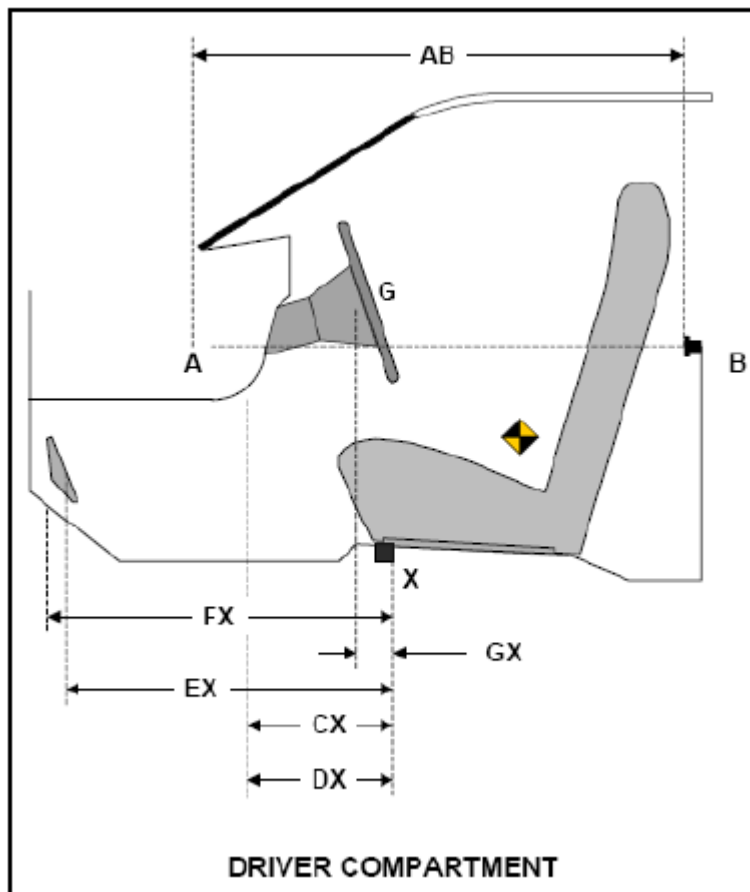
Test Vehicle: 2013 Toyota Tacoma 4x4 Access Cab Pickup
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MD5118
 Test Date: 11/8/2012

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	743	743	0
CX	Left Knee Bolster to X	mm	234	224	-10
DX	Right Knee Bolster to X	mm	234	219	-15
EX	Brake Pedal to X	mm	545	571	26
FX	Foot Rest to X	mm	583	574	-9
GX	Center of Steering Column Wheel Hub to X	mm	37	58	21

X = Front of Seat Track (Stationary)



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

Test Vehicle: 2013 Toyota Tacoma 4x4 Access Cab Pickup
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MD5118
 Test Date: 11/8/2012

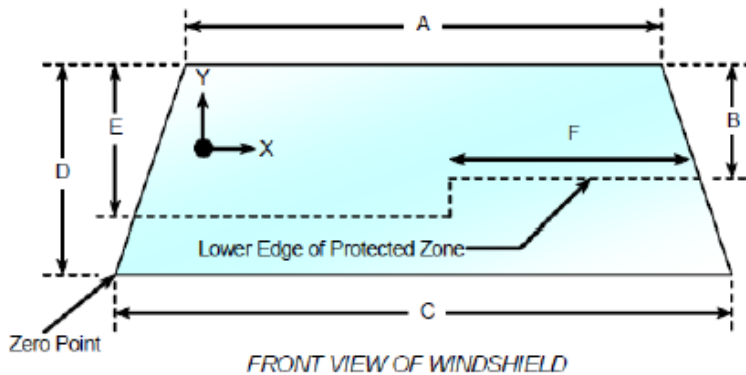
Windshield Mounting Details: A 0.8 mm trim surrounds the top and side of windshield while a plastic shroud is on the bottom.

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: 4 °C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% Retention
Left Side	2,015	2,015	100
Right Side	2,015	2,015	100
Total	4,030	4,030	100



Item	Units	Value
A	mm	1,229
B	mm	314
C	mm	1,480
D	mm	660
E	mm	418
F	mm	290

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.

- No Penetration

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.

- No Penetration

X	Y

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

Test Vehicle: 2013 Toyota Tacoma 4x4 Access Cab Pickup
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MD5118
Test Date: 11/8/2012

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact:

4 ° C

Test Time:

12:20pm

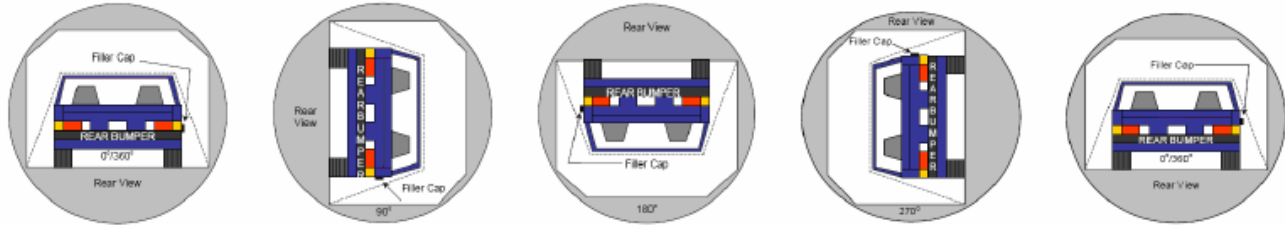
STODDARD SOLVENT SPILLAGE MEASUREMENTS

- A. From impact until vehicle motion ceases: 0 oz.
(Maximum allowable is 1 oz.)
- B. For the 5-minute period after motion ceases: 0 oz.
(Maximum allowable is 5 oz.)
- C. For the following 25 minutes: 0 oz.
(Maximum allowable is 1 oz./minute)
- D. Spillage: Total Spillage was 0 oz. No Spillage Occurred

**DATA SHEET NO. 16
FMVSS 301 STATIC ROLLOVER RESULTS**

Test Vehicle: 2013 Toyota Tacoma 4x4 Access Cab Pickup
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MD5118
 Test Date: 11/8/2012



0° TO 90° 90° TO 180° 180° TO 270° 270° TO 360°

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).
3. Details of Stoddard Solvent Spillage: Total Spillage was 0 oz. No Spillage Occurred

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	70	300	370
90° to 180°	62	300	362
180° to 270°	63	300	363
270° to 360°	69	300	369

FMVSS 301 SPILLAGE TABLE

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

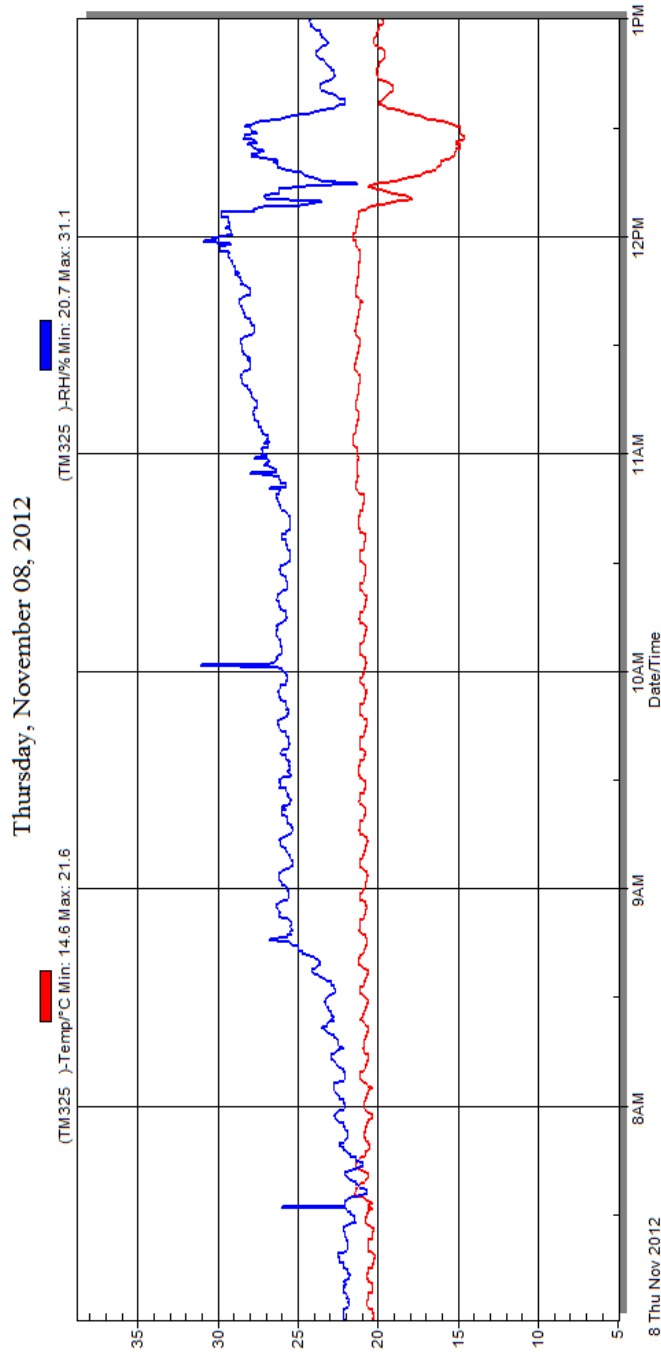
SOLVENT SPILLAGE LOCATION TABLE

Test Phase	Spillage Location
0° to 90°	N/A
90° to 180°	N/A
180° to 270°	N/A
270° to 360°	N/A

DATA SHEET NO. 17
DUMMY / VEHICLE TEMPERATURE STABILIZATION CHART

Test Vehicle: 2013 Toyota Tacoma 4x4 Access Cab Pickup
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MD5118
Test Date: 11/8/2012



Temperature and Humidity Stabilization Chart/Data for Dummies and Test Vehicle

APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

Fig.	Description	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	2013 Toyota Tacoma Frontal As Delivered	A-7
6	Left Rear 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 3-4 View	A-11
14	Post-Test Right Front 3-4 View	A-11
15	Pre-Test Left Rear 3-4 View	A-12
16	Post-Test Left Rear 3-4 View	A-12
17	Pre-Test Windshield View	A-13
18	Post-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 ¹	A-16
24	Post-Test Front Underbody View ¹	A-16
25	Pre-Test Rear Underbody View ¹	A-17
26	Post-Test Rear Underbody View ¹	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

Fig.	Description	Page
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 View of Belt Anchorage for Driver Dummy	A-23
38	Post-Test View of Belt Anchorage for Driver Dummy	A-23
39	Pre-Test Driver Dummy Feet	A-24
40	Post-Test Driver Dummy Feet	A-24
41	Pre-Test Driver's Side Knee Bolster	A-25
42	Post-Test Driver's Side Knee Bolster	A-25
43	Pre-Test Driver's Side Floorpan	A-26
44	Post-Test Driver's Side Floorpan	A-26
45	Post-Test Driver Dummy Face	A-27
46	Post-Test Driver Dummy Contact With Airbag	A-27
47	Post-Test Driver Dummy Contact With Headrest	A-28
48	Pre-Test View of the Steering Wheel	A-28
49	Post-Test View of the Steering Wheel	A-29
50	Pre-Test Passenger Dummy Front View	A-29
51	Post-Test Passenger Dummy Front View	A-30
52	Pre-Test Passenger Dummy Window View	A-30
53	Post-Test Passenger Dummy Window View	A-31
54	Pre-Test Passenger Dummy and Vehicle Interior View	A-31
55	Post-Test Passenger Dummy and Vehicle Interior View	A-32
56	Pre-Test Passenger's Seat Fore-Aft Markings	A-32
57	Post-Test Passenger's Seat Fore-Aft Markings	A-33
58	Pre-Test View of Belt Anchorage for Passenger Dummy	A-33
59	Post-Test View of Belt Anchorage for Passenger Dummy	A-34
60	Pre-Test Passenger Dummy Feet	A-34
61	Post-Test Passenger Dummy Feet	A-35
62	Pre-Test Passenger's Side Knee Bolster	A-35
63	Post-Test Passenger's Side Knee Bolster	A-36
64	Pre-Test Passenger's Side Floorpan	A-36
65	Post-Test Passenger's Side Floorpan	A-37
66	Post-Test Passenger Dummy Contact With Airbag	A-37
66a	Post-Test Passenger Dummy Contact With Headrest	A-38
66b	Post-Test Passenger Dummy Contact With Glovebox	A-38

Fig.	Description	Page
67	Photograph of Ballast Installed in Vehicle	A-39
68	Post-Test Stoddard Solvent Spillage Location View, if Required	A-39
69	Post-Test Speed Trap Read-Out	A-40
70	Vehicle at 0° on Static Rollover Device	A-40
71	Vehicle at 90° on Static Rollover Device	A-41
72	Vehicle at 180° on Static Rollover Device	A-41
73	Vehicle at 270° on Static Rollover Device	A-42
74	Vehicle at 360° on Static Rollover Device	A-42
75	2013 Toyota Tacoma Frontal Impact Event	A-43
76	Monroney Label Photograph	A-43

¹**NOTE:** *The underbody views should include the following vehicle components: fuel pump, fuel lines, sender unit, fuel tank filler pipe and any other visible system components.*

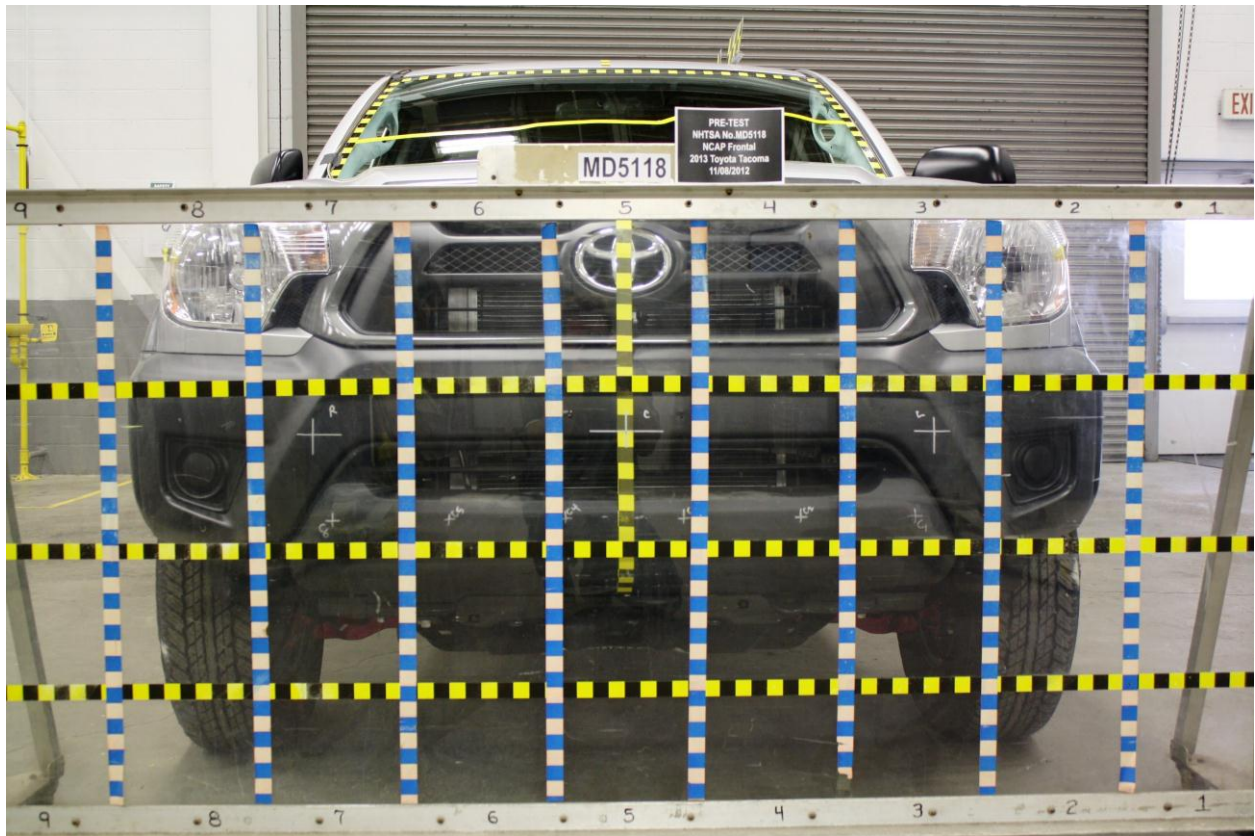


Figure A-1: Load Cell Location



Figure A-2: Load Cell Wall

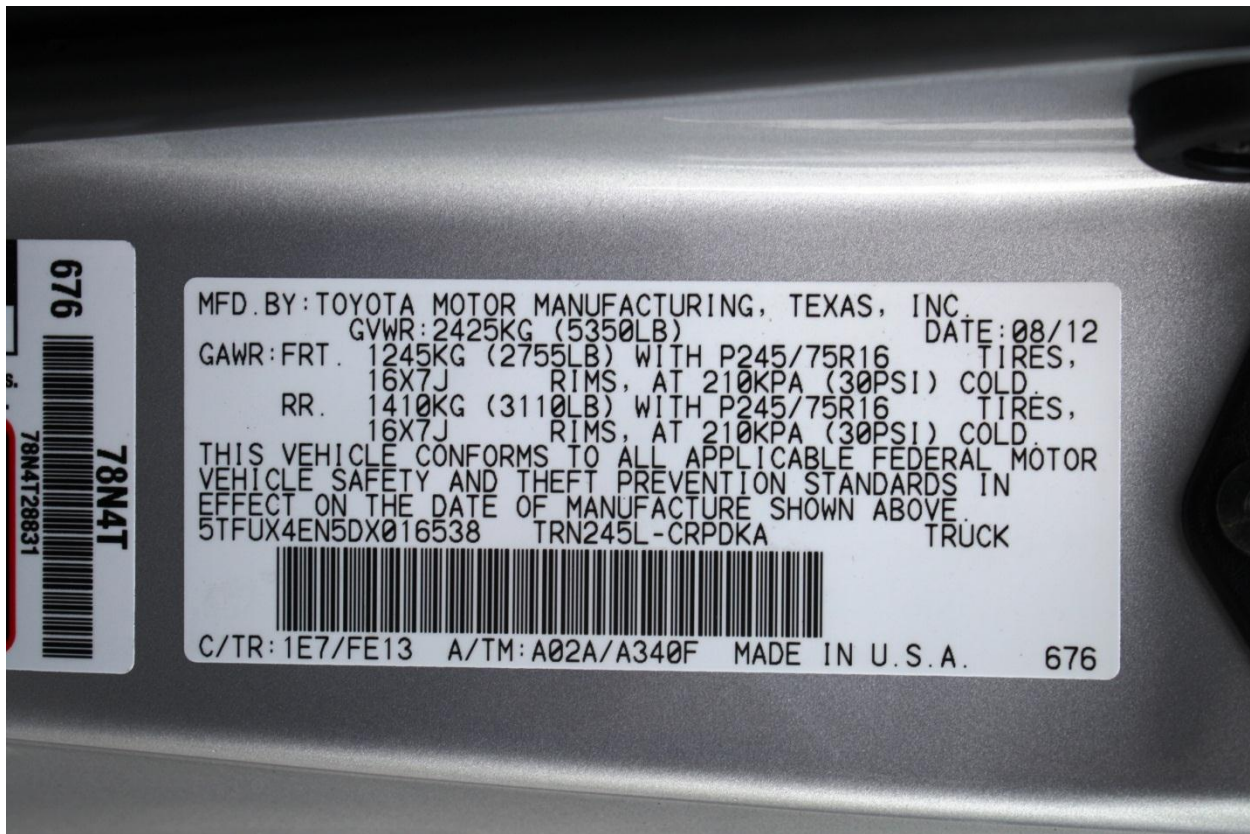


Figure A-3: Manufacturer's Label



Figure A-4: Tire Placard



Figure A-5: 2013 Toyota Tacoma Frontal As Delivered



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

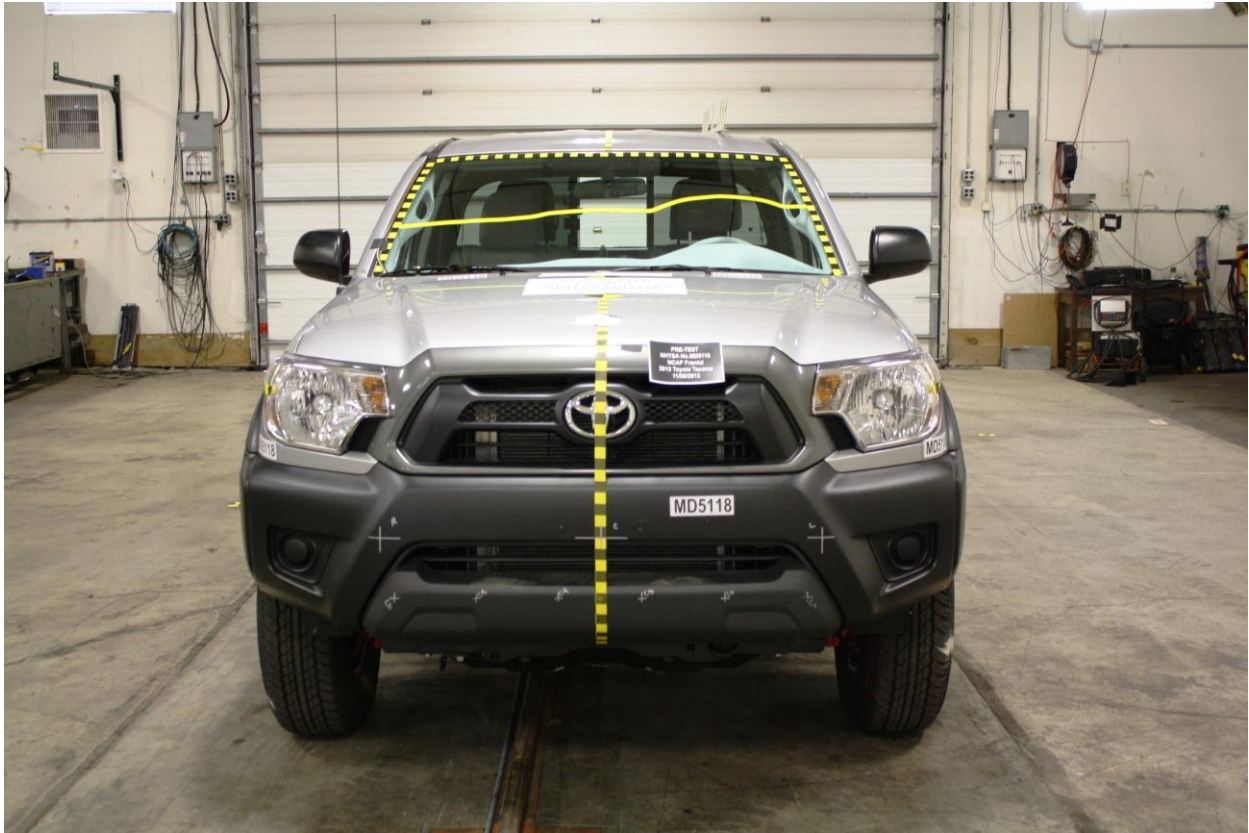


Figure A-7: Pre-Test Front View of Test Vehicle



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 Test Vehicle

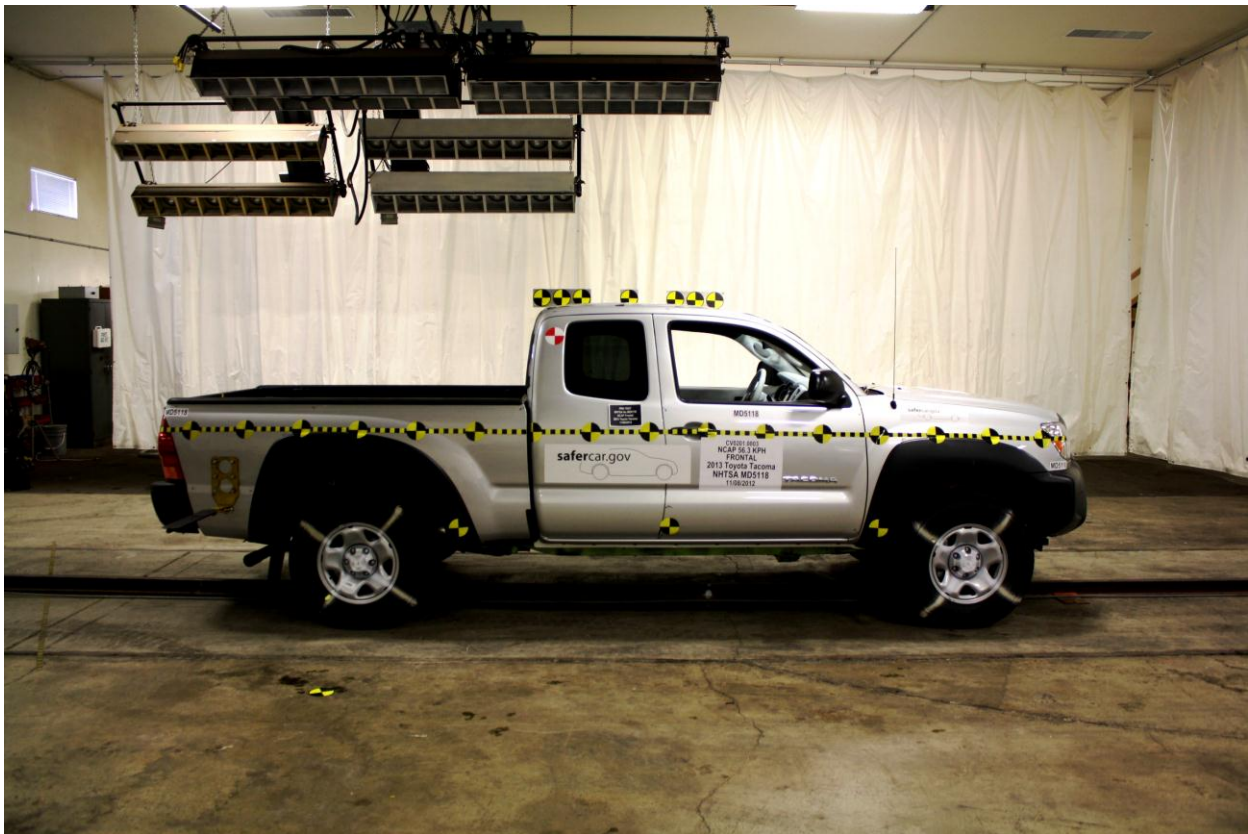


Figure A-11: Pre-Test Right View of Test Vehicle



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



Figure A-13: Pre-Test Right Front 3-4 View



Figure A-14: Post-Test Right Front 3-4 View



Figure A-15: Pre-Test Left Rear 3-4 View



Figure A-16: Post-Test Left Rear 3-4 View



Figure A-17: Pre-Test Windshield View



Figure A-18: Post-Test Windshield View

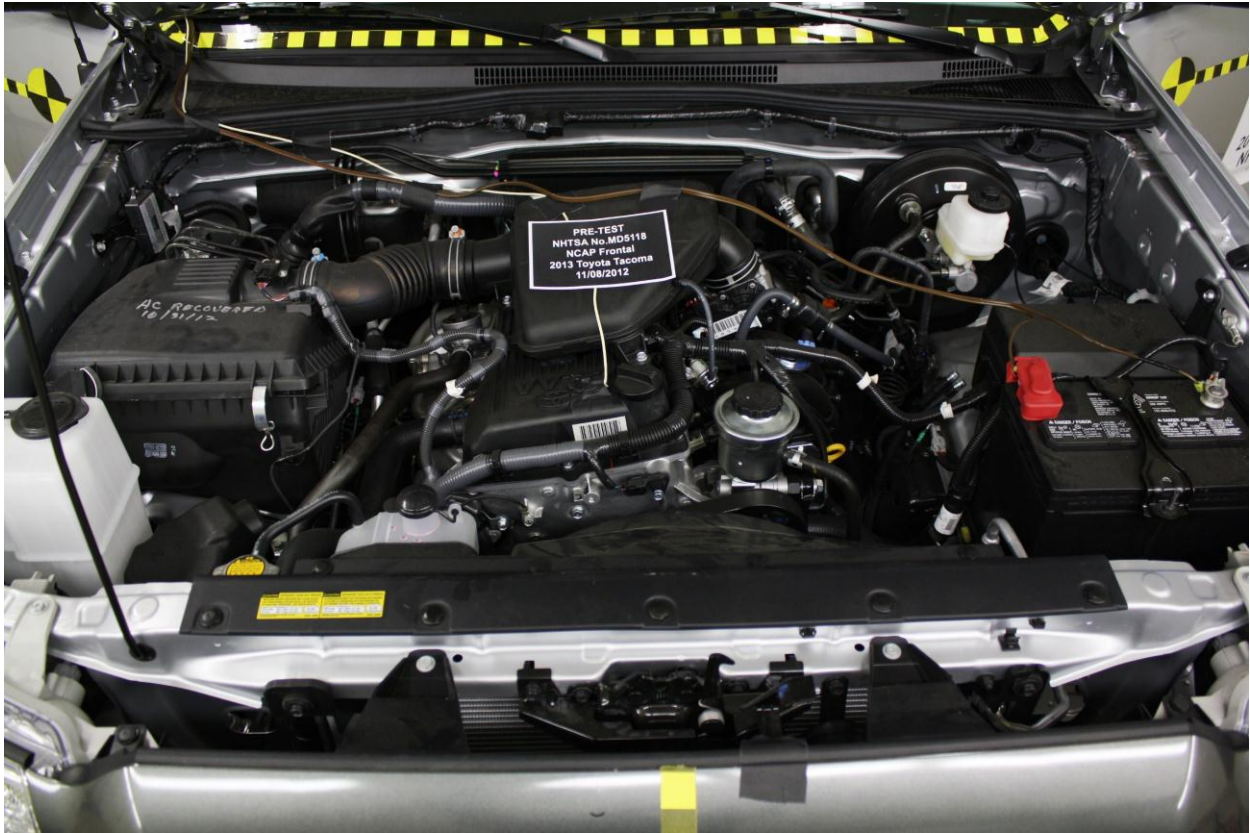


Figure A-19: Pre-Test Engine Compartment View

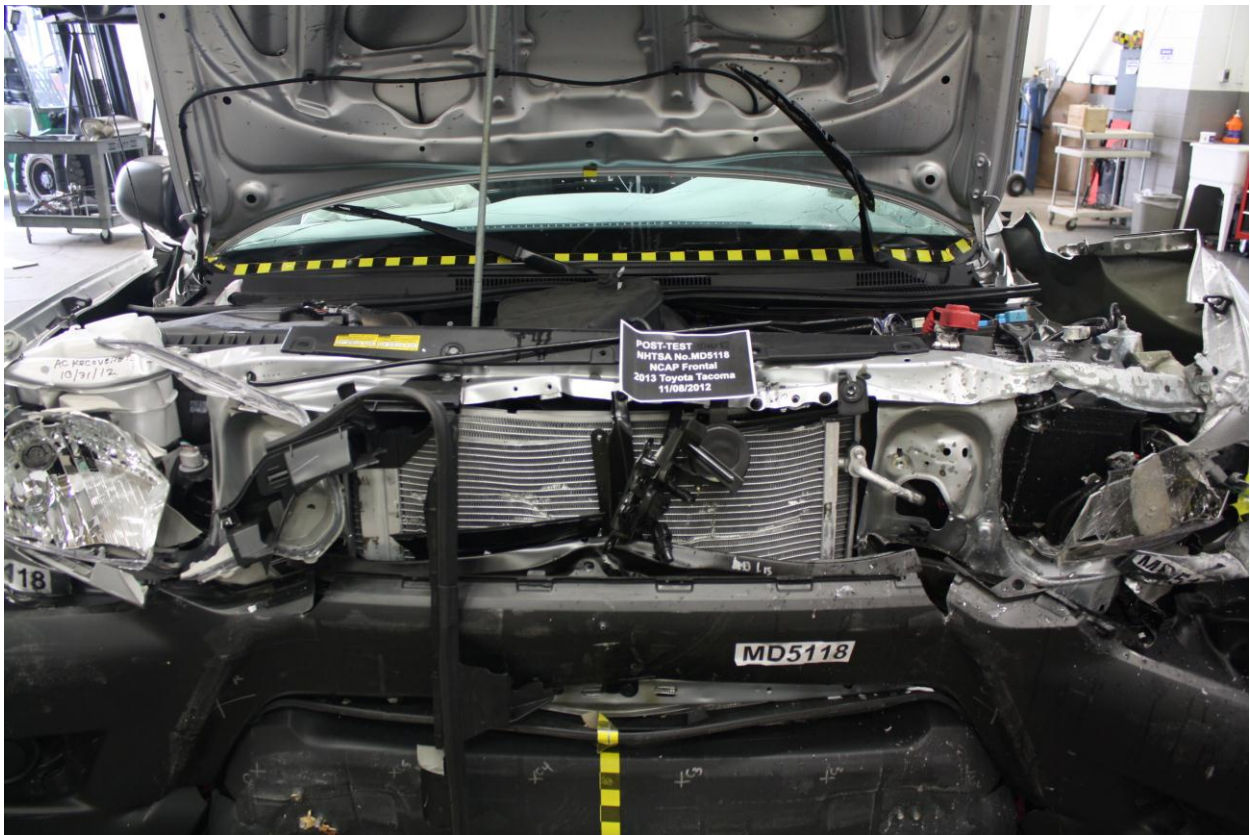


Figure A-20: Post-Test Engine Compartment View



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



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

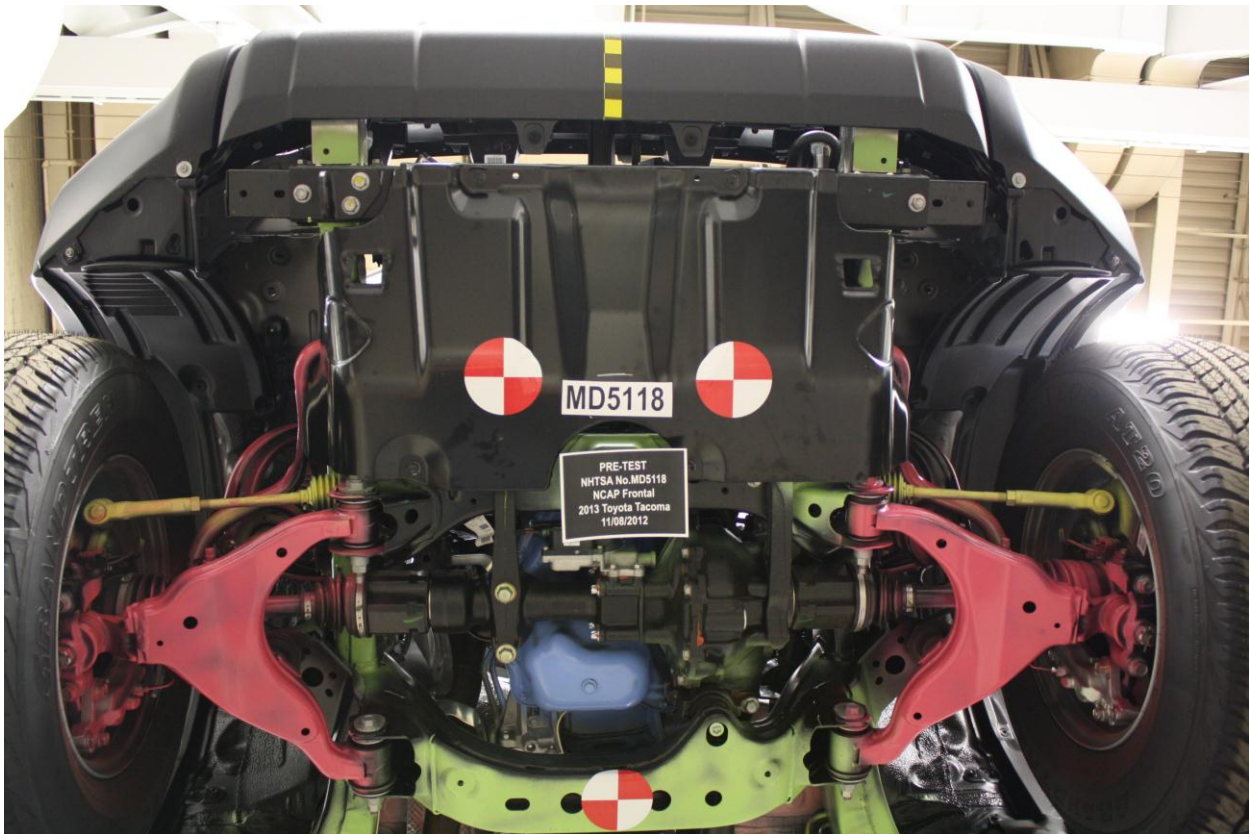


Figure A-23: Pre-Test Front Underbody View

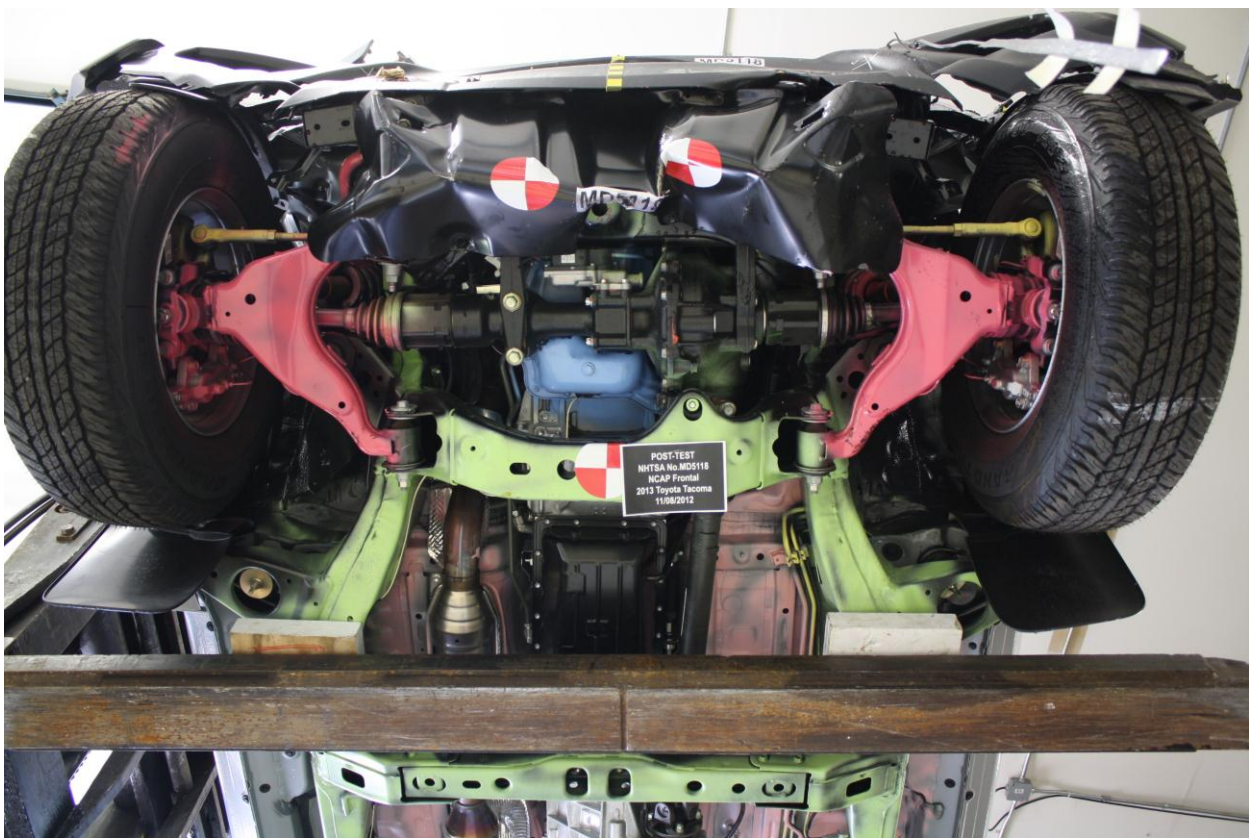


Figure A-24: Post-Test Front Underbody View



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

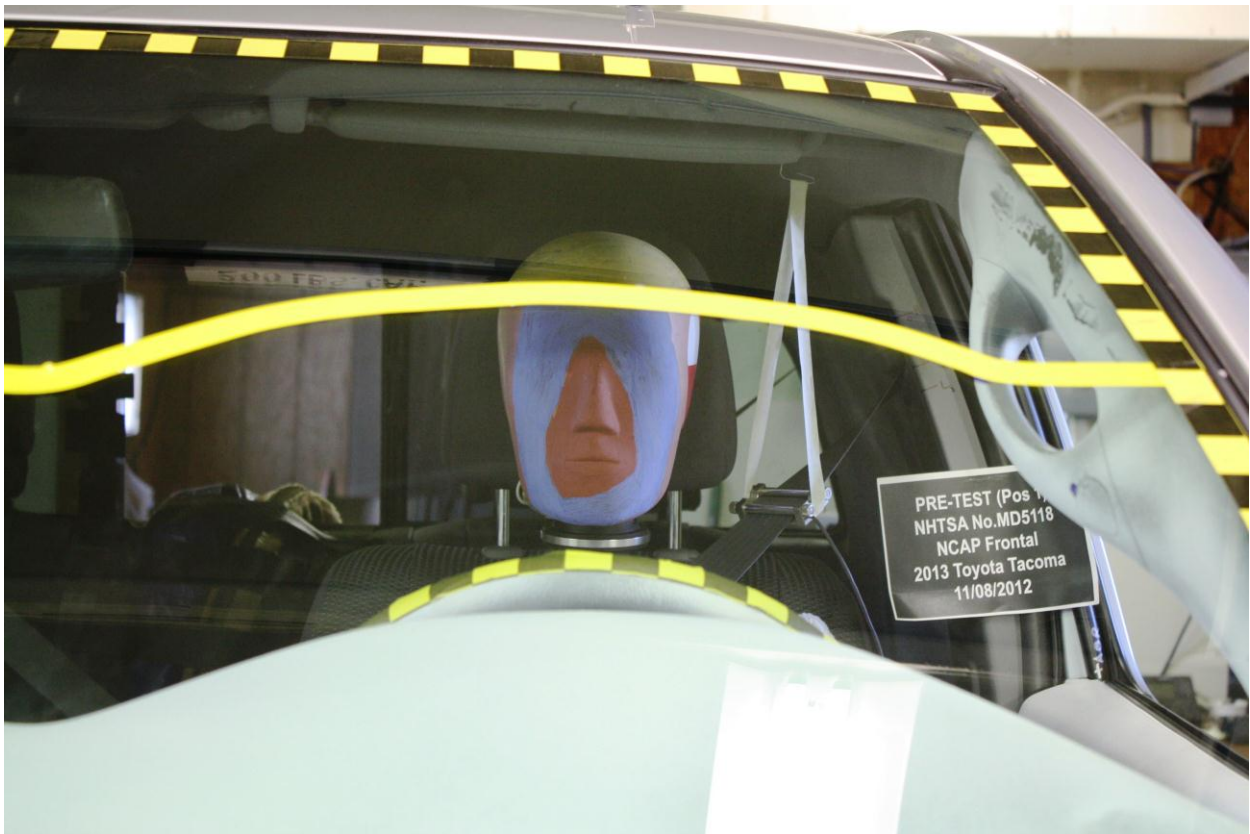


Figure A-29: Pre-Test Driver Dummy Front View

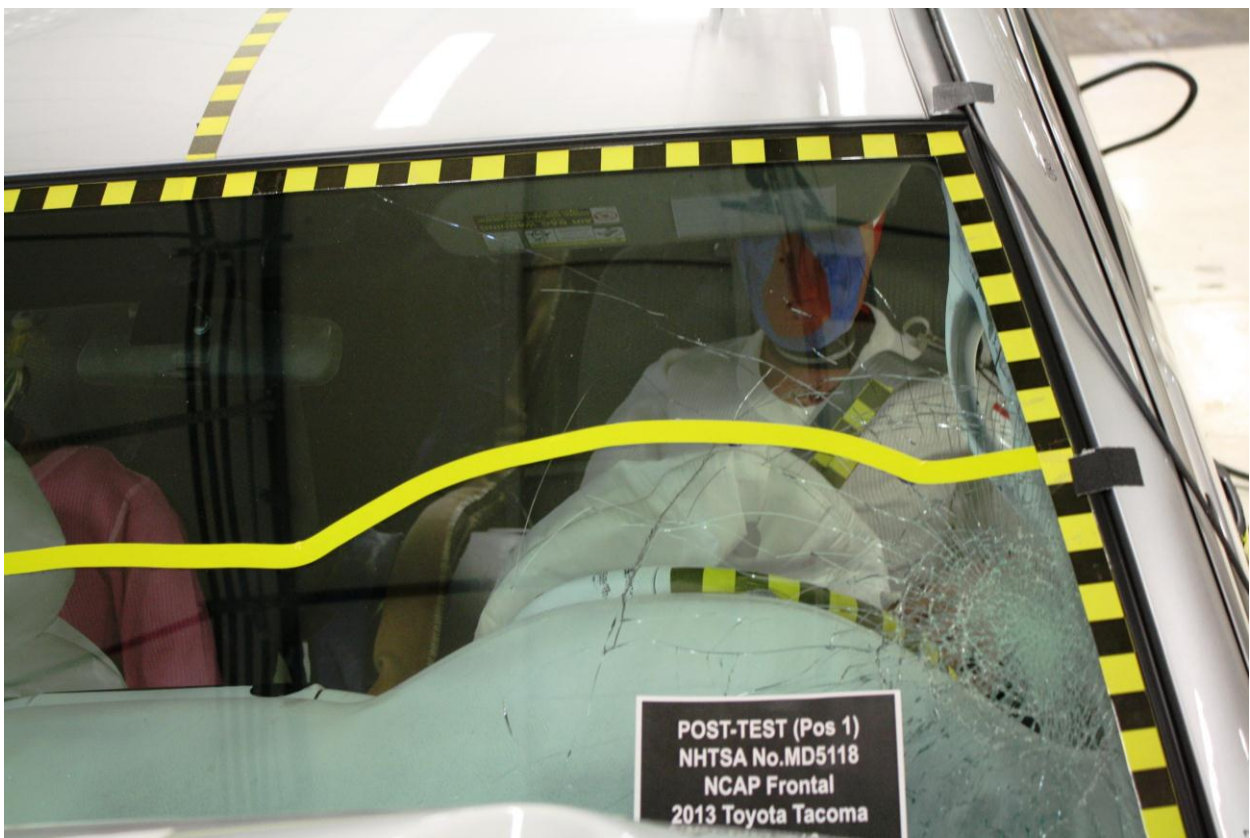


Figure A-30: Post-Test Driver Dummy Front View



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

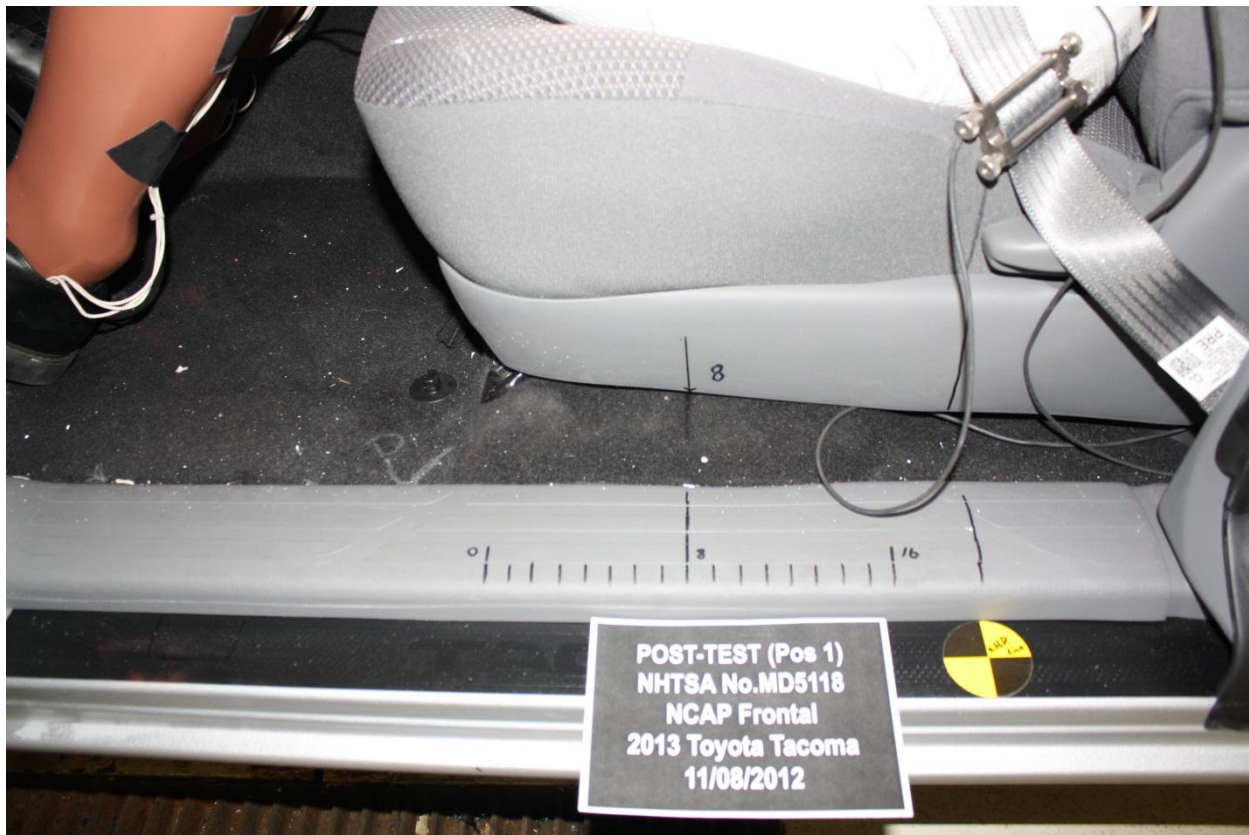


Figure A-36: Post-Test Driver's Seat Fore-Aft Markings



Figure A-37: Pre-Test View of Belt Anchorage for Driver Dummy



Figure A-38: Post-Test View of Belt Anchorage for Driver Dummy

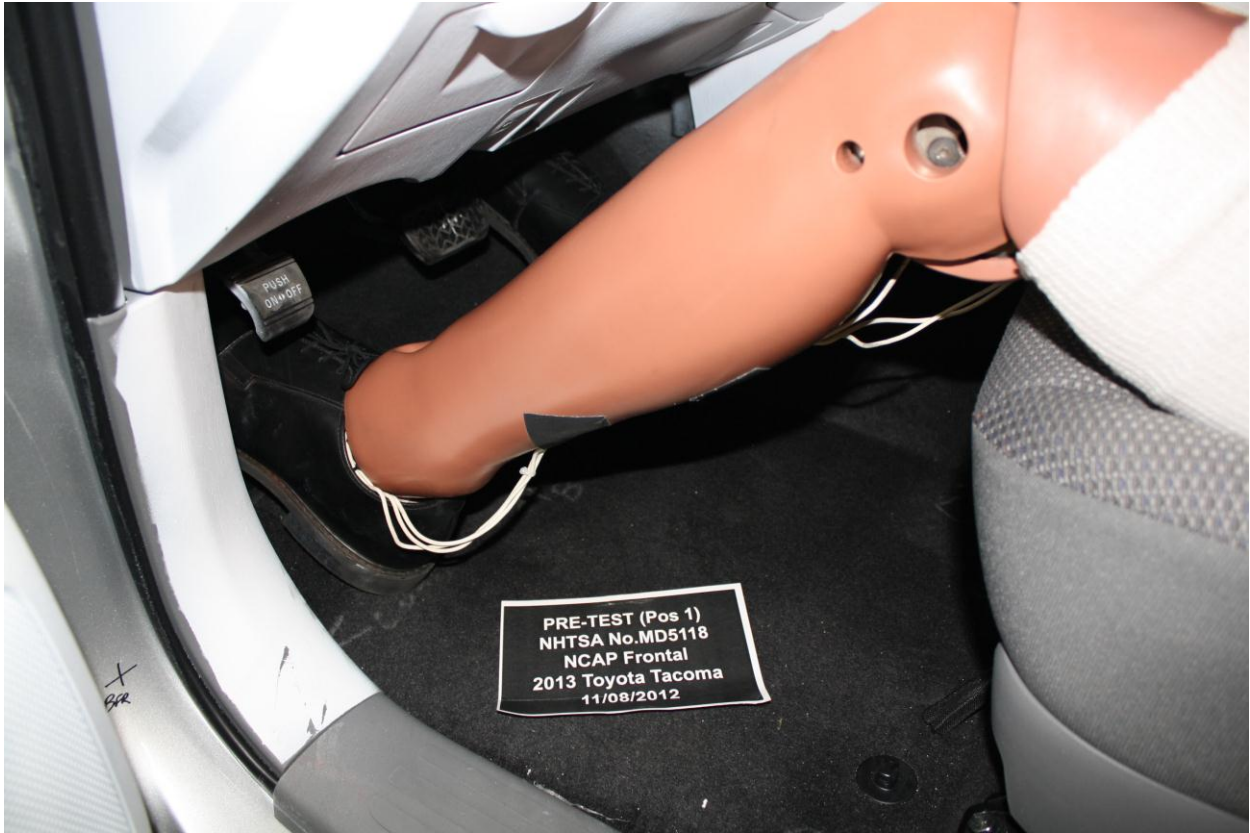


Figure A-39: Pre-Test Driver Dummy Feet

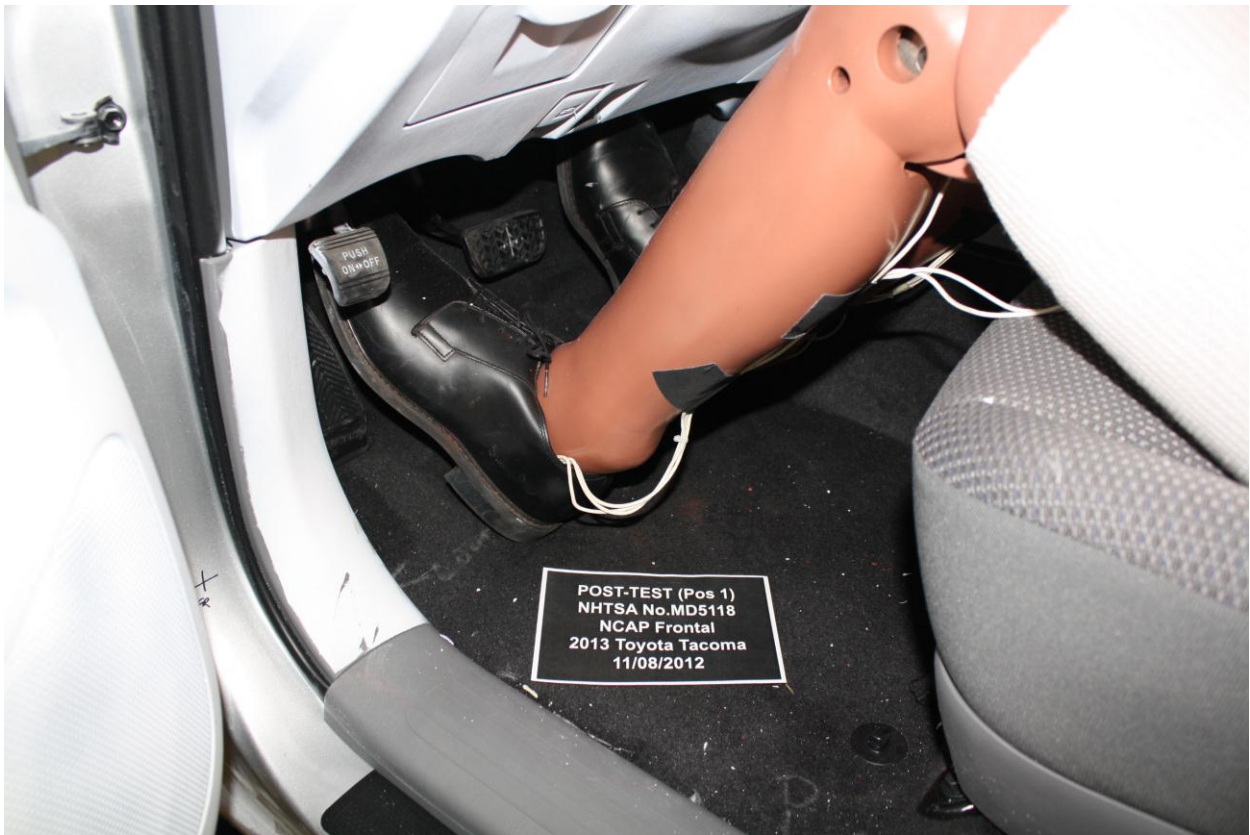


Figure A-40: Post-Test Driver Dummy Feet



Figure A-41: Pre-Test Driver's Side Knee Bolster



Figure A-42: Post-Test Driver's Side Knee Bolster



Figure A-43: Pre-Test Driver's Side Floorpan



Figure A-44: Post-Test Driver's Side Floorpan



Figure A-45: Post-Test Driver Dummy Face

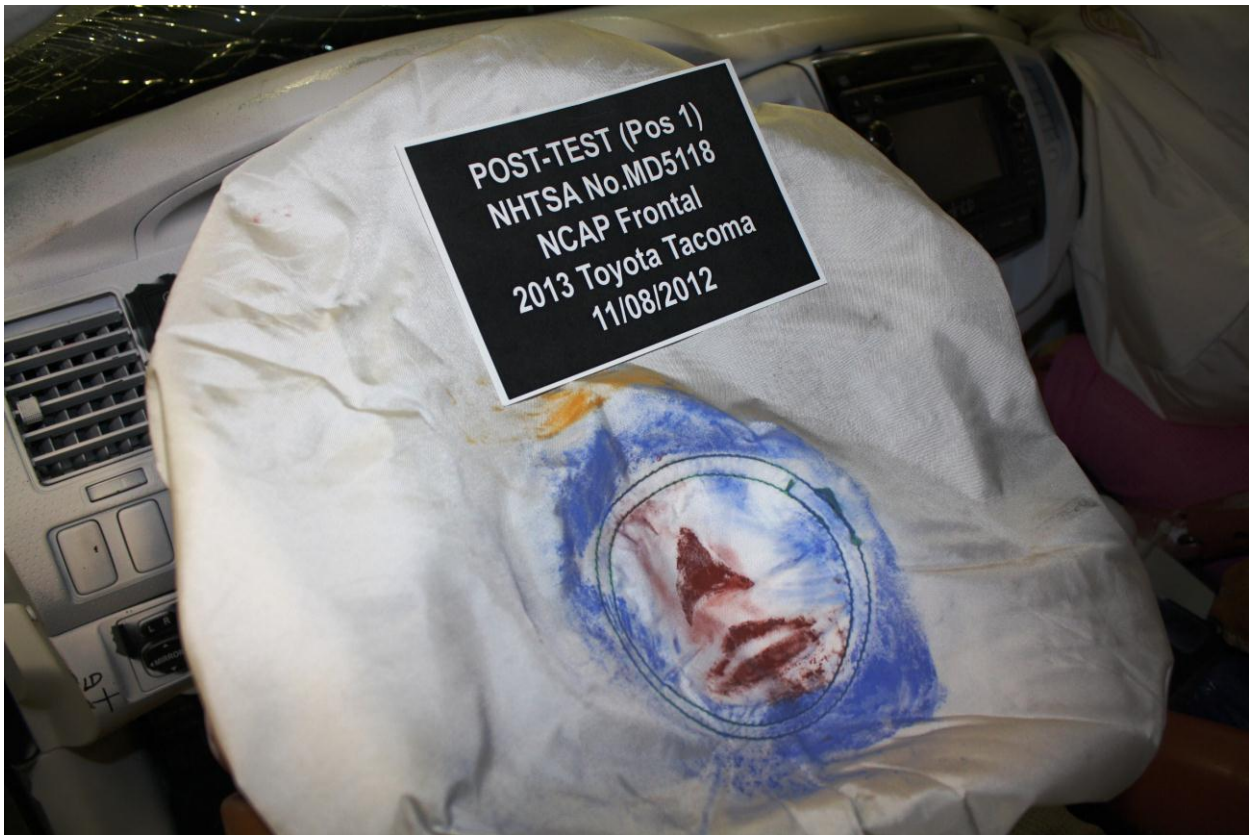


Figure A-46: Post-Test Driver Dummy Contact With Airbag



Figure A-47: Post-Test Driver Dummy Contact With Headrest



Figure A-48: Pre-Test View of the Steering Wheel



Figure A-49: Post-Test View of the Steering Wheel



Figure A-50: Pre-Test Passenger Dummy Front View



Figure A-51: Post-Test Passenger Dummy Front View



Figure A-52: Pre-Test Passenger Dummy Window View



Figure A-53: Post-Test Passenger Dummy Window View



Figure A-54: Pre-Test Passenger Dummy and Vehicle Interior View



Figure A-55: Post-Test Passenger Dummy and Vehicle Interior View

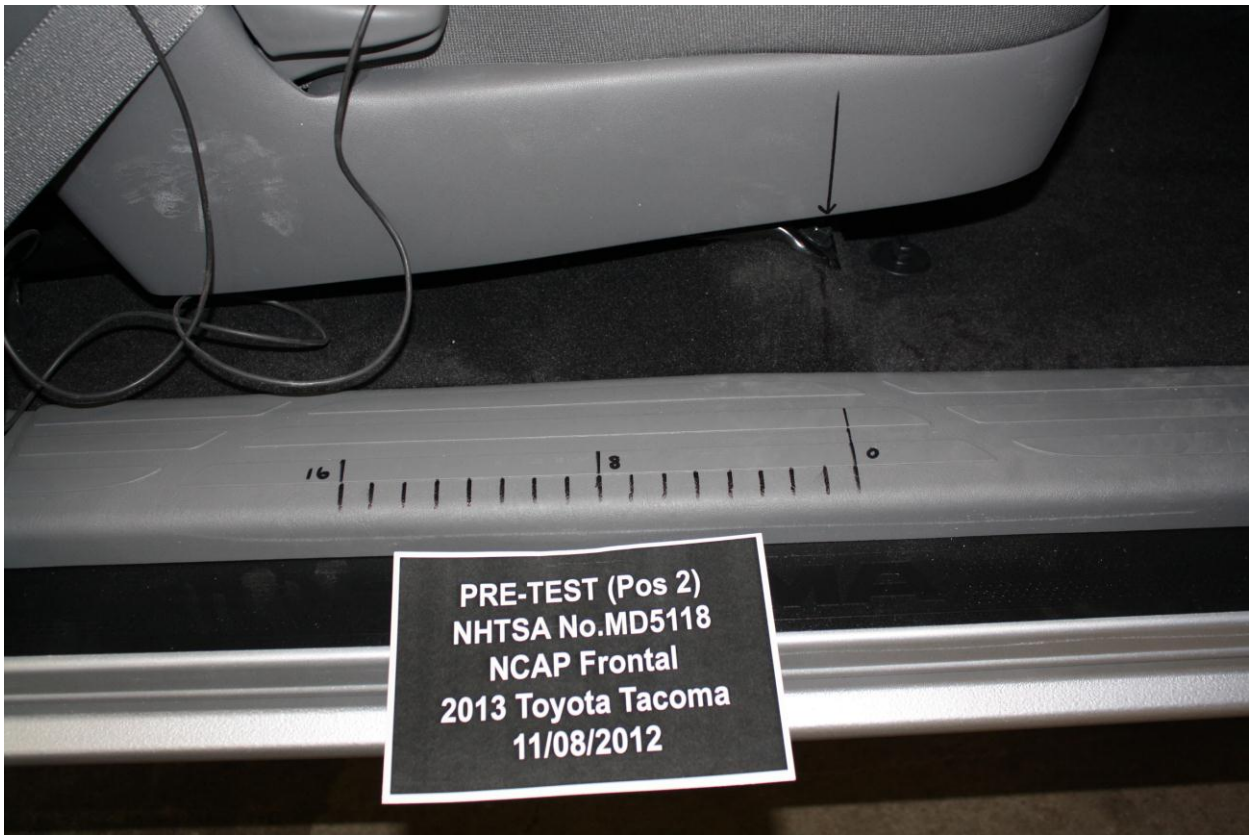


Figure A-56: Pre-Test Passenger's Seat Fore-Aft Markings

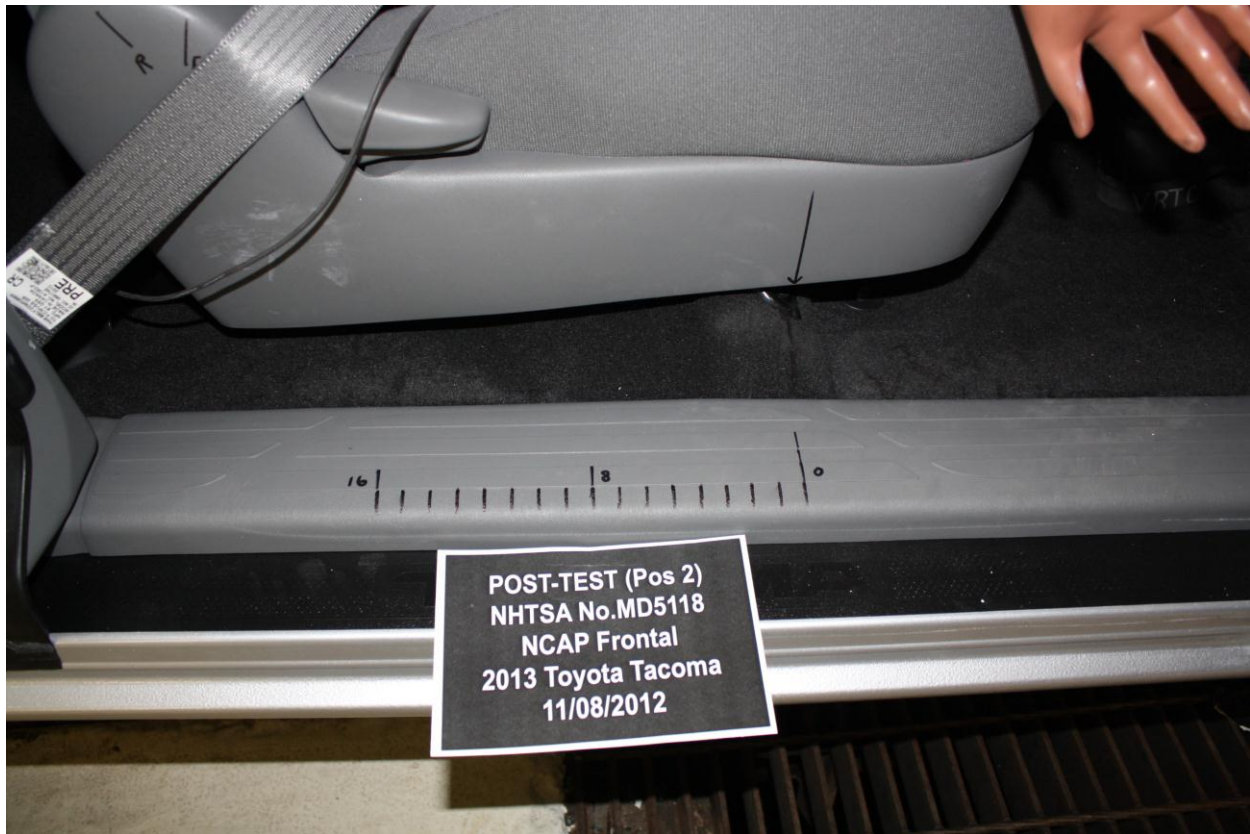


Figure A-57: Post-Test Passenger's Seat Fore-Aft Markings

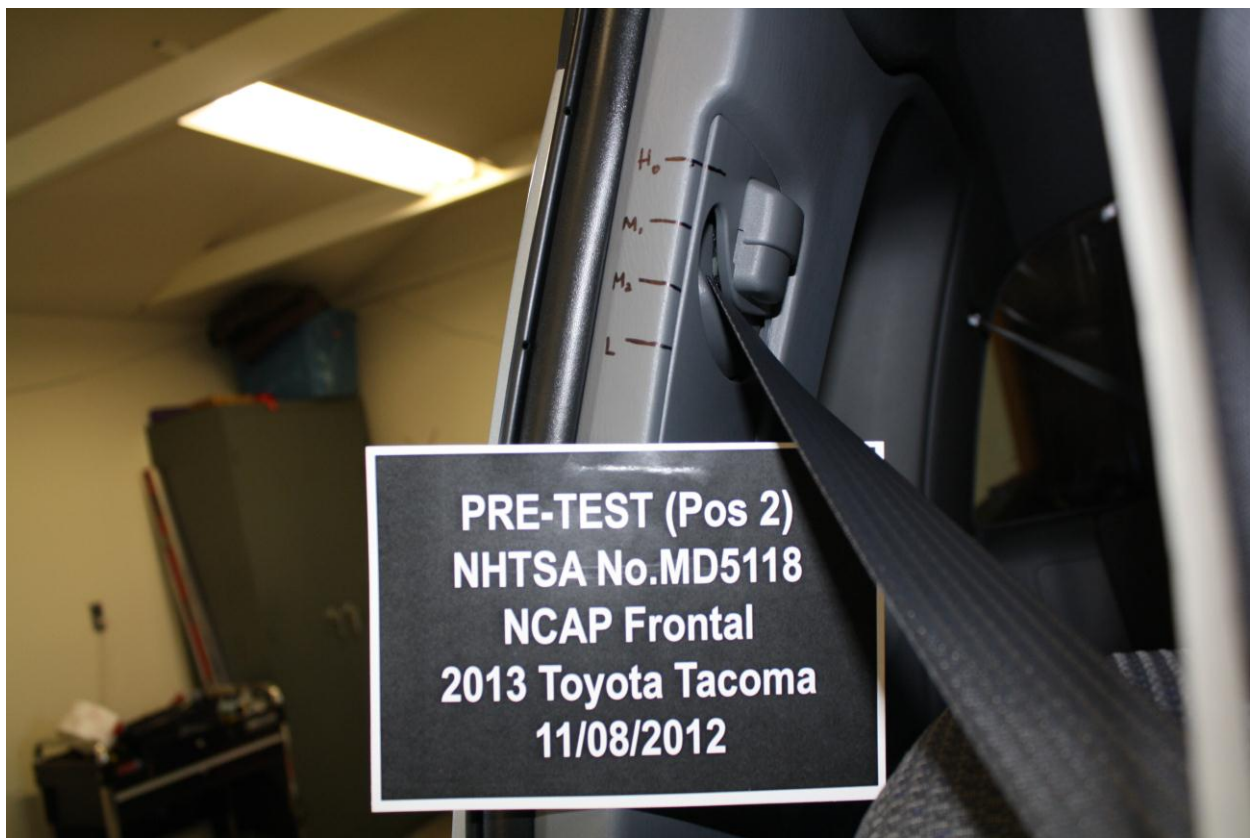


Figure A-58: Pre-Test View of Belt Anchorage for Passenger Dummy



Figure A-59: Post-Test View of Belt Anchorage for Passenger Dummy

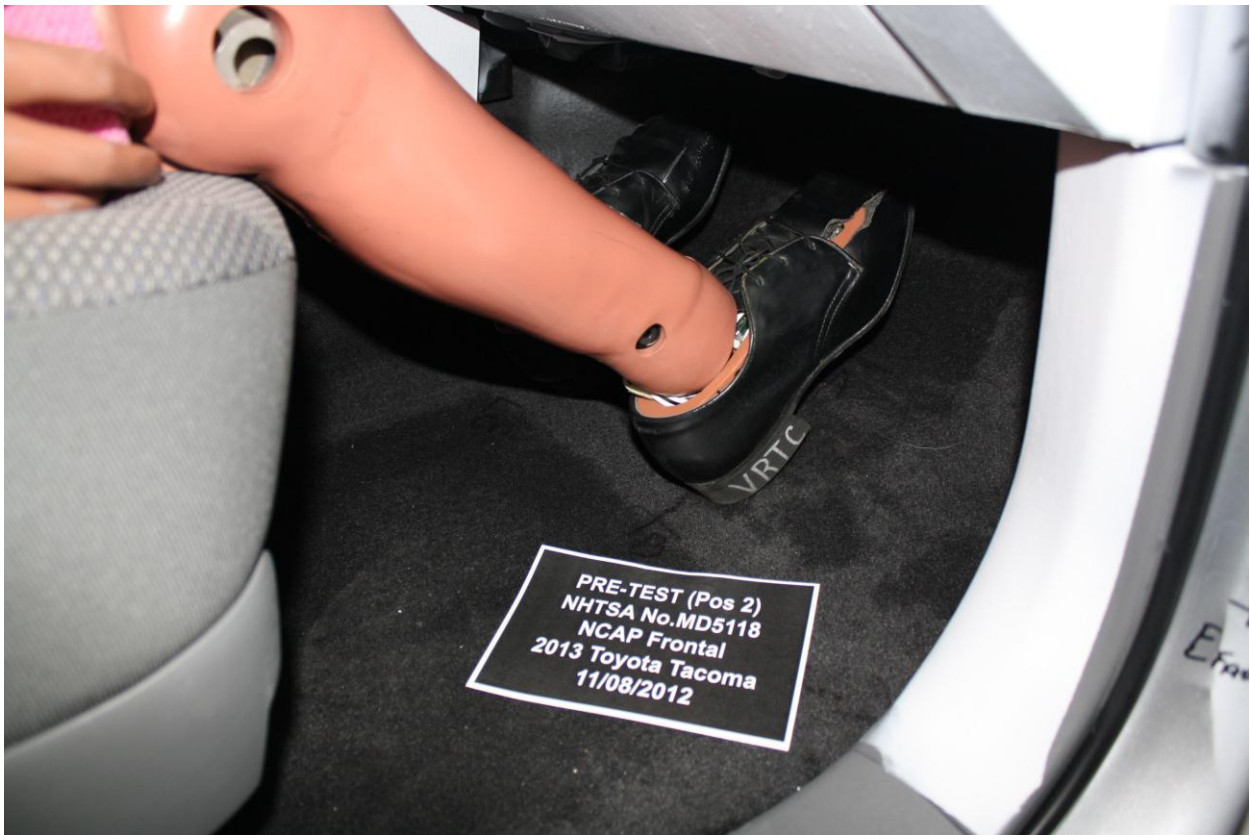


Figure A-60: Pre-Test Passenger Dummy Feet



Figure A-61: Post-Test Passenger Dummy Feet



Figure A-62: Pre-Test Passenger's Side Knee Bolster



Figure A-63: Post-Test Passenger's Side Knee Bolster



Figure A-64: Pre-Test Passenger's Side Floorpan



Figure A-65: Post-Test Passenger's Side Floorpan

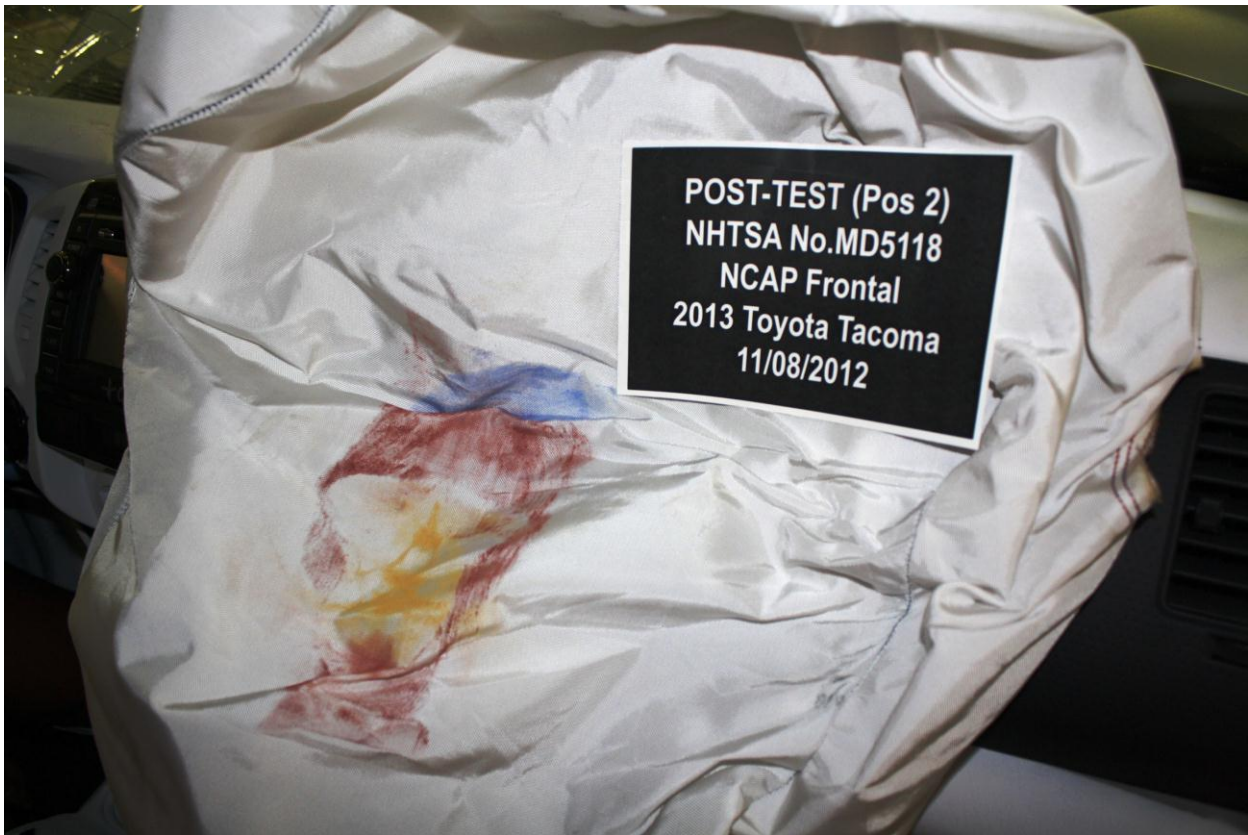


Figure A-66: Post-Test Passenger Dummy Contact With Airbag



Figure A-66a: Post-Test Passenger Dummy Contact With Headrest



Figure A-66b: Post-Test Passenger Dummy Contact With Glovebox

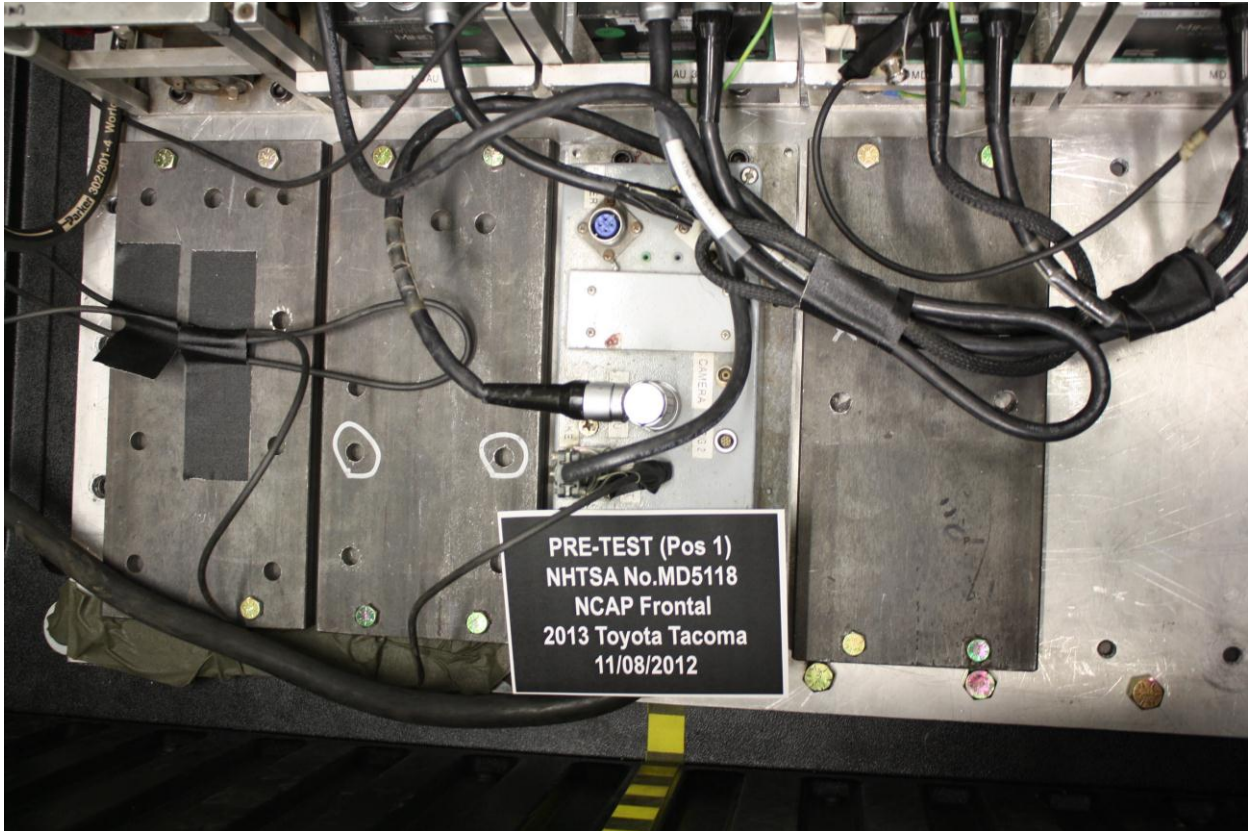


Figure A-67: Photograph of Ballast Installed in Vehicle

Photo Not Applicable

Figure A-68: Post-Test Stoddard Solvent Spillage Location View, If Required



Figure A-69: Post-Test Speed Trap Read-Out



Figure A-70: Vehicle at 0° on Static Rollover Device



Figure A-71: Vehicle at 90° on Static Rollover Device



Figure A-72: Vehicle at 180° on Static Rollover Device

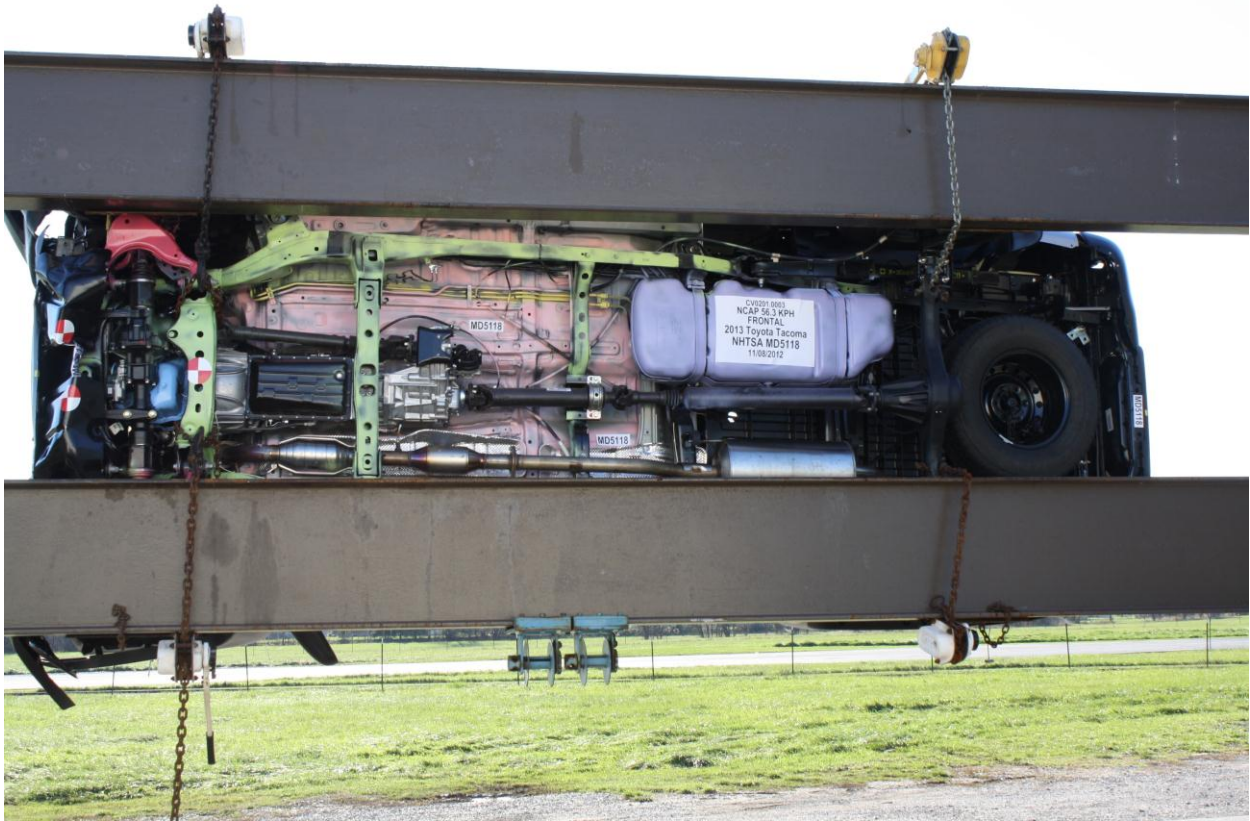


Figure A-73: Vehicle at 270° on Static Rollover Device



Figure A-74: Vehicle at 360° on Static Rollover Device



Figure A-75: 2013 Toyota Tacoma Frontal Impact Event

<p>TOYOTA moving forward</p>		<p>STANDARD EQUIPMENT</p> <p>MECHANICAL & PERFORMANCE</p> <ul style="list-style-type: none"> 2.7L I-4 158 HP 4Cyl VVT-i 240hp Engine 4-Speed ECT4 Automatic Transmission 4-Wheel Drive Part Time 4x4 Sys w/ 2-Speed Electronically Controlled Transfer Case Automatic Limited Slip Differential Coil-Spring Double Wishbone Front Susp Rear Leaf Spring Susp with Struts Outboard Mounted Gas Shock Absorbers Var-Axle Power Back-Adjusting Steering Power-Assisted Fr Disc/Rr Drum Brakes 16" Solid Steel Wheels, P235/75R16 Tires <p>SAFETY & CONVENIENCE</p> <ul style="list-style-type: none"> Star Safety System, includes Vehicle Stability Control, Traction Control, Anti-lock Brake System (ABS), Electronic Brake Force Distribution, Brake Assist, & Smart Stop Technology (SST) Daytime Running Lights (DRL) Dr & Fr Pass Advanced Airbag System Seat-Mounted Side & Side Curtain Airbags 3-Point Seatbelts for All Seating Positions: Driver-Side ELR & ALR/ELR on All Pass Sds, Dr & Fr Pass Active Hiest Side-impact Door Beams Tire Pressure Monitor System (TPMS) <p>EXTERIOR</p> <ul style="list-style-type: none"> Black Grille Insert, Bik Door Handles, Mirrors, Front/Rear Bumpers SAC, Inner Bed Liner, Color Bumpers Storage, Rail Caps & Removable Tailgate Deck Rail System w/ Adj. Tie-Down Cleats <p>INTERIOR</p> <ul style="list-style-type: none"> Air Conditioning Power Windows & Door Locks Cloth Bucket Fr Seats w/ Pass Fold-Flat 6.1" Touch-Screen, AM/FM CD, 8 Speakers, BT USB, Aux Jack, Hands-Free Phone Capable 18" Telescoping Steering Wheel 2-Speed Windshield Wipers Dual 12V Aux Power Outlets LED-Illuminated Gauges & Digital Clock Three Front Cup Holders ***Full Tank of Gas*** 	<p>MANUFACTURER'S SUGGESTED RETAIL PRICE \$25,050.00</p> <p>OPTIONAL EQUIPMENT</p> <ul style="list-style-type: none"> FE 50 State Emissions CP Convenience Package: Power Mirrors, Remote Keyless Entry System, Cruise Control, Sliding Rear Window w/ Privacy Glass, Steering Wheel with Audio Controls 1,005.00 CT All Weather Mats & Door Sill 165.00 																		
<p>DESC: TACOMA 4X4 ACCESS CAB</p> <p>VIN: 5TFUX4EN5DX016538</p> <p>YR/MDL: 2013/7514A</p> <p>CLR: SILVER STREAK MICA/F13 (01E7/13)</p> <p>PORT/PLANT: San Antonio, TX/TMTX RAILHEAD</p>		<p>GOVERNMENT 5-STAR SAFETY RATINGS</p> <p>Overall Vehicle Score Not Rated Based on the combined ratings of frontal, side and rollover. Should ONLY be compared to other vehicles of similar size and weight.</p> <table border="1"> <tr> <td>Frontal Crash</td> <td>Driver Passenger</td> <td>Not Rated</td> </tr> <tr> <td colspan="3">Based on the risk of injury in a frontal impact. Should ONLY be compared to other vehicles of similar size and weight.</td> </tr> <tr> <td>Side Crash</td> <td>Front seat Rear seat</td> <td>Not Rated</td> </tr> <tr> <td colspan="3">Based on the risk of injury in a side impact.</td> </tr> <tr> <td>Rollover</td> <td></td> <td>★★★★</td> </tr> <tr> <td colspan="3">Based on the risk of rollover in a single-vehicle crash.</td> </tr> </table> <p>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</p>		Frontal Crash	Driver Passenger	Not Rated	Based on the risk of injury in a frontal impact. Should ONLY be compared to other vehicles of similar size and weight.			Side Crash	Front seat Rear seat	Not Rated	Based on the risk of injury in a side impact.			Rollover		★★★★	Based on the risk of rollover in a single-vehicle crash.		
Frontal Crash	Driver Passenger	Not Rated																			
Based on the risk of injury in a frontal impact. Should ONLY be compared to other vehicles of similar size and weight.																					
Side Crash	Front seat Rear seat	Not Rated																			
Based on the risk of injury in a side impact.																					
Rollover		★★★★																			
Based on the risk of rollover in a single-vehicle crash.																					
<p>EPA DOT Fuel Economy and Environment</p> <p>Fuel Economy</p> <p>19 MPG combined city/hwy</p> <p>18 21 city highway</p> <p>5.3 gallons per 100 miles</p>		<p>Gasoline Vehicle</p> <p>You spend \$2,400 more in fuel costs over 5 years compared to the average new vehicle.</p>																			
<p>Annual fuel cost \$2,800</p> <p>Fuel Economy & Greenhouse Gas Rating 4 (Best)</p> <p>Smog Rating 5 (Best)</p>		<p>DELIVERY PROCESSING AND HANDLING FEE \$85.00</p> <p>TOTAL \$27,065.00</p> <p>The New Vehicle Limited Warranty provides 3-year/50,000-mile basic coverage. 5-year/100,000-mile powertrain coverage. See dealer for more information. See Owner's Manual and Government Guide for more details.</p> <p>Manufacturer's suggested retail price includes manufacturer's recommended pre-delivery service. Gasoline. Manufacturer's suggested retail price includes manufacturer's recommended pre-delivery service. Gasoline. Dealer sets this price. Applicable federal, state and local taxes and dealer and distributor selected options and accessories are not included in the manufacturer's suggested retail price.</p> <p>Toyota Care, which covers normal factory scheduled maintenance for five years or 100,000 miles, whichever occurs first, is included as part of the sales price of the vehicle for qualifying buyers. See participating dealer for availability and coverage details.</p>																			
<p>Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 23 MPG and costs \$11,600 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$3.00 per gallon. EPA's is miles per gallon gas equivalent. Vehicle emissions are a significant cause of climate change and smog.</p> <p>fuel economy.gov Calculate personalized estimates and compare vehicles</p>		<p>Get more info on this Toyota. Just snap and text this tag.</p> <p>Scan QR code</p> <p>Dealer Name / Address: 04637 MAGNUSSEY'S AUBURN TOYOTA 800 NEVADA STREET AUBURN CA 95603</p> <p>5hp to: 800 NEVADA STREET AUBURN CA 95603</p>																			

Figure A-76: Monroney Label Photograph

APPENDIX B
DUMMY RESPONSE DATA TRACES

TABLE OF DATA PLOTS

Driver & Passenger Dummy Instrumentation Plots

Fig.	Description	Page
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

Additional Driver Dummy Instrumentation Data

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 Left Femur Redundant
Driver Right Femur Redundant
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
Driver Shoulder Belt Force
Driver Lap Belt Force

Additional Passenger Dummy Instrumentation Data

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

Additional Passenger Dummy Instrumentation Data ... (continued)

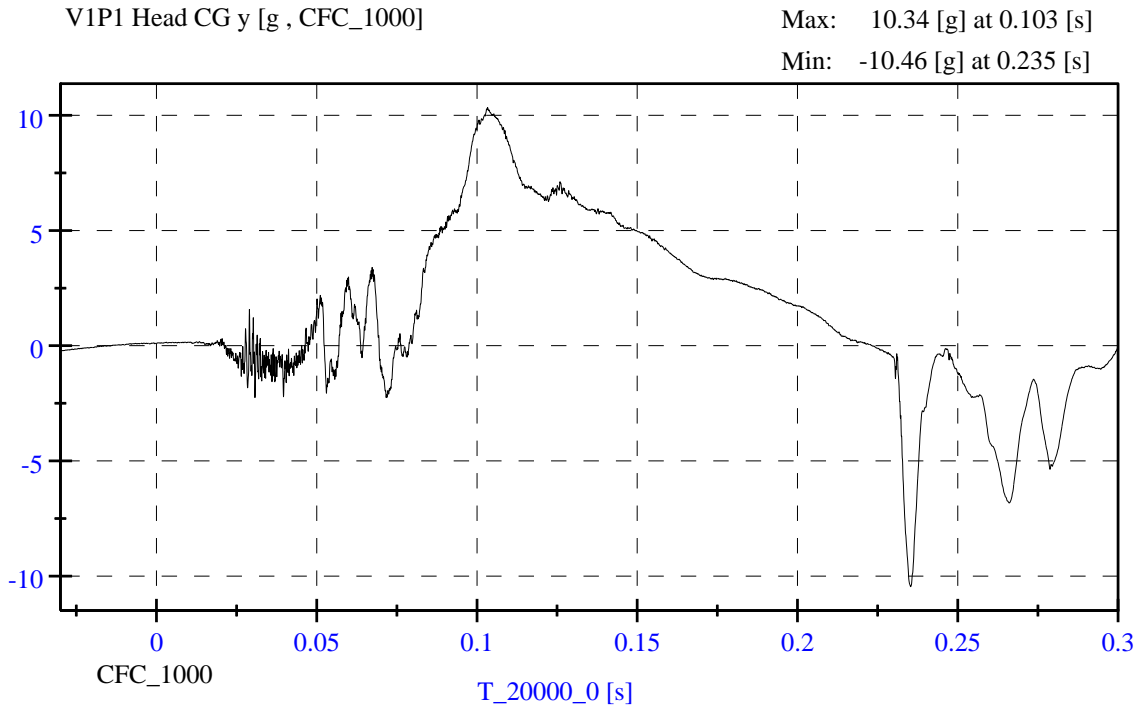
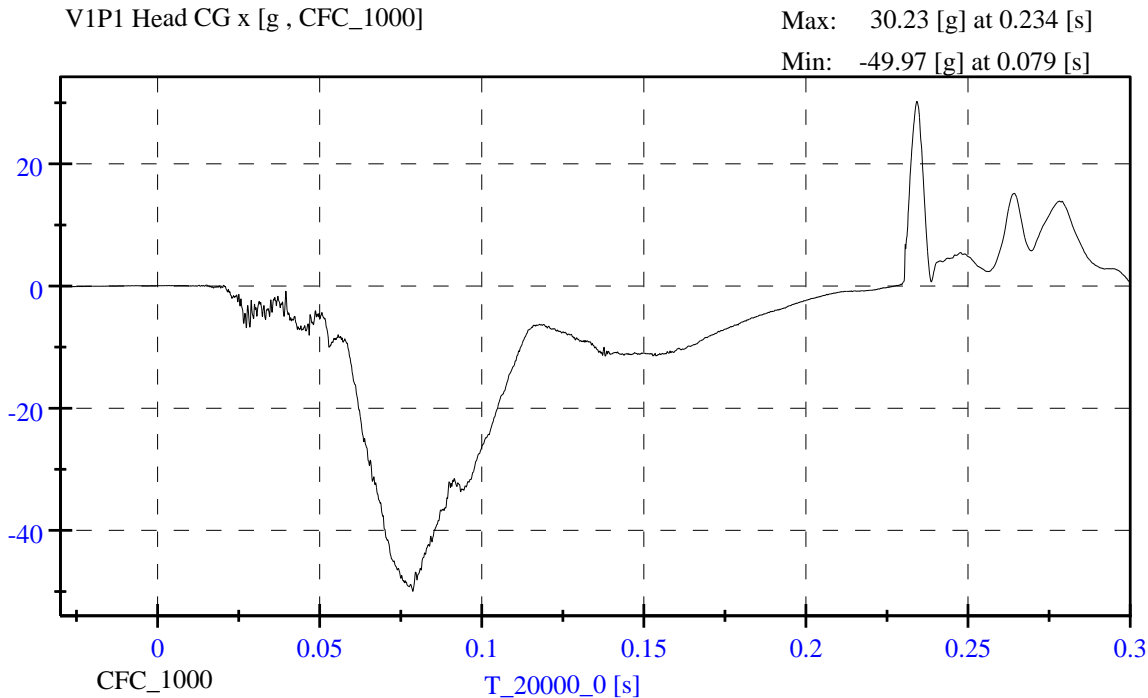
Passenger Pelvis Y
Passenger Pelvis Z
Passenger Left Femur Redundant
Passenger Right Femur Redundant
Passenger Left Upper Tibia Moment X
Passenger Left Upper Tibia Moment Y
Passenger Left Upper Tibia Force Z
Passenger Left Lower Tibia Moment X
Passenger Left Lower Tibia Moment Y
Passenger Left Lower 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
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Passenger Right Foot Aft X
Passenger Right Foot Aft Z
Passenger Shoulder Belt Force
Passenger Lap Belt Force

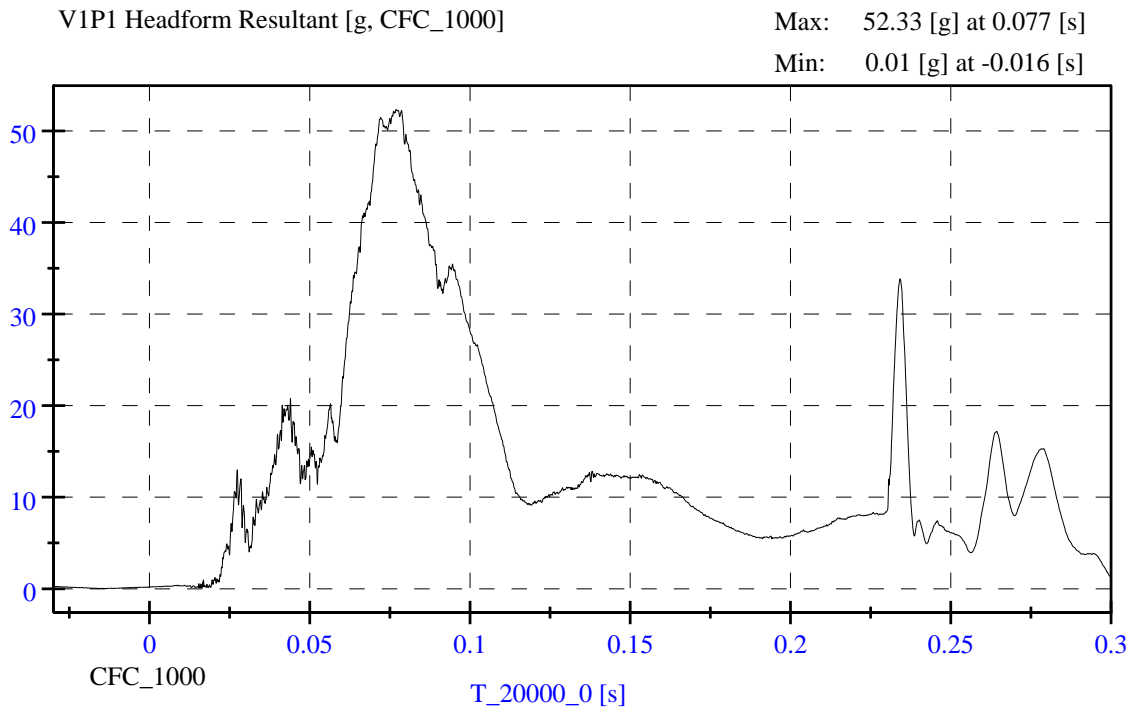
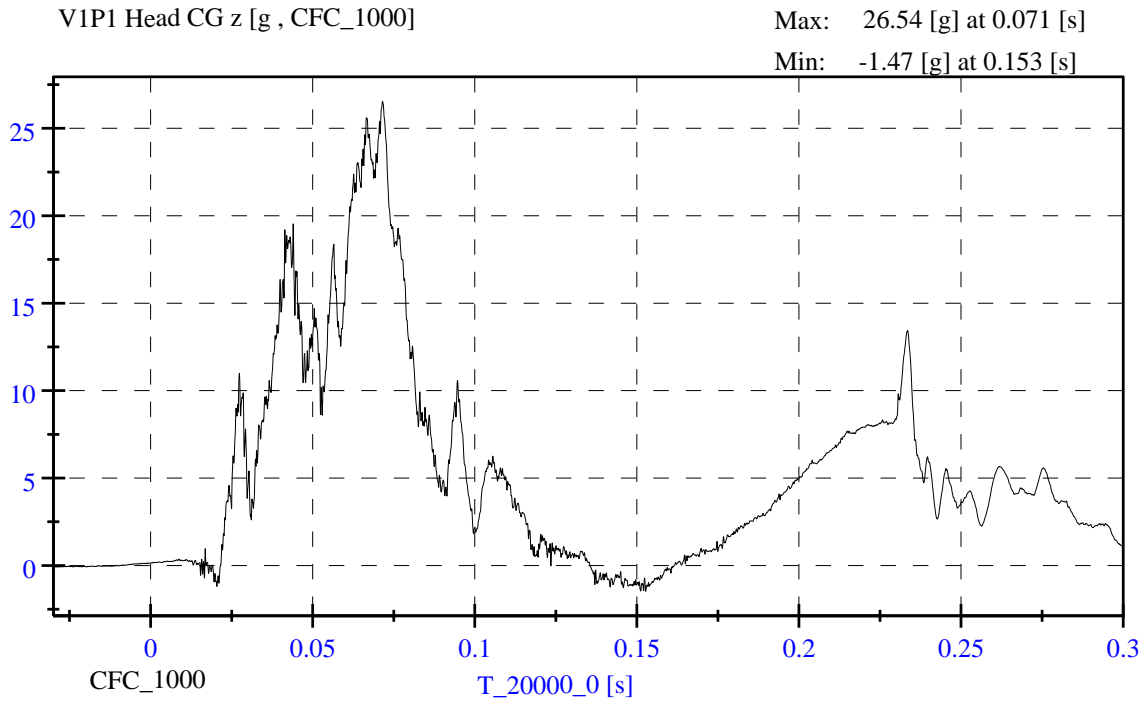
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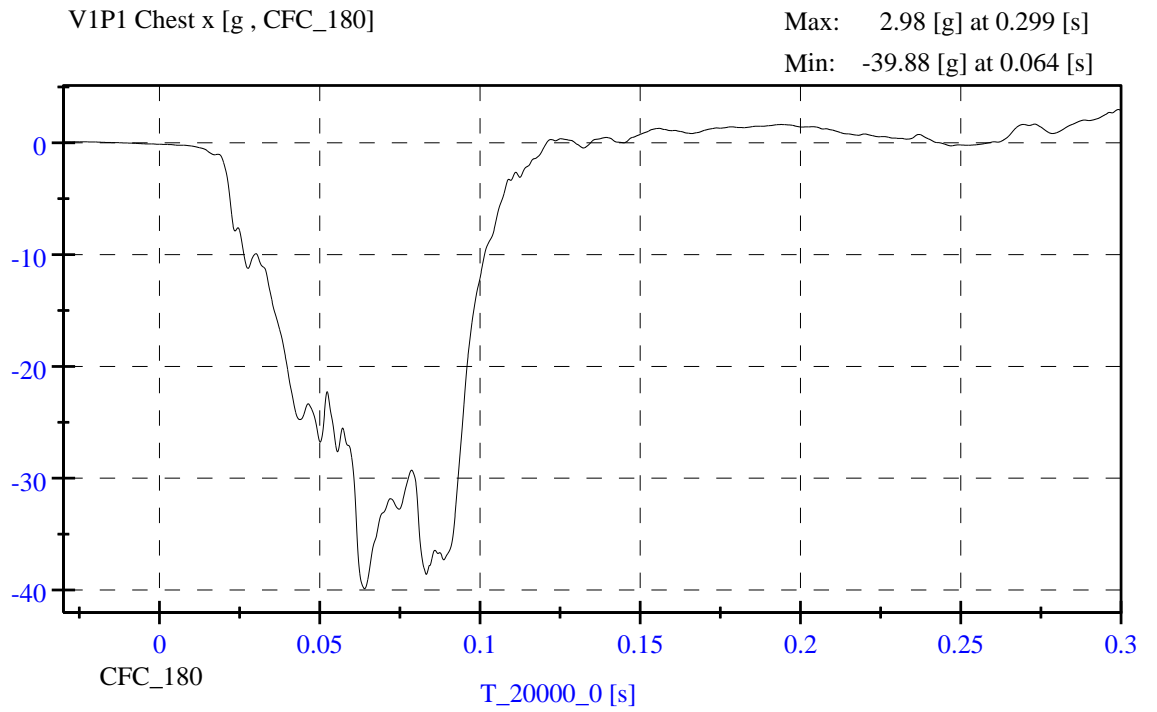
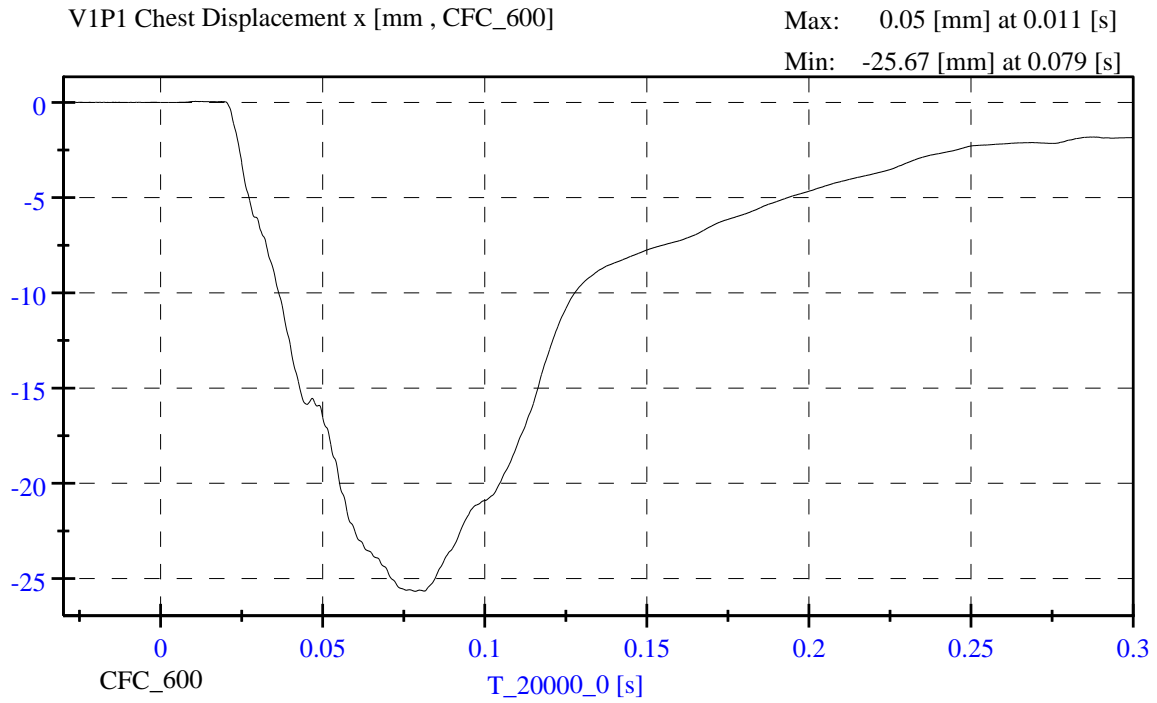
Left Rear Seat Crossmember X
Left Rear Seat Crossmember Z
Right Rear Seat Crossmember X
Right Rear Seat Crossmember Z
Left Rear Seat Crossmember X Redundant
Right Rear Seat Crossmember X Redundant
Vehicle Engine Top X
Vehicle Engine Bottom X

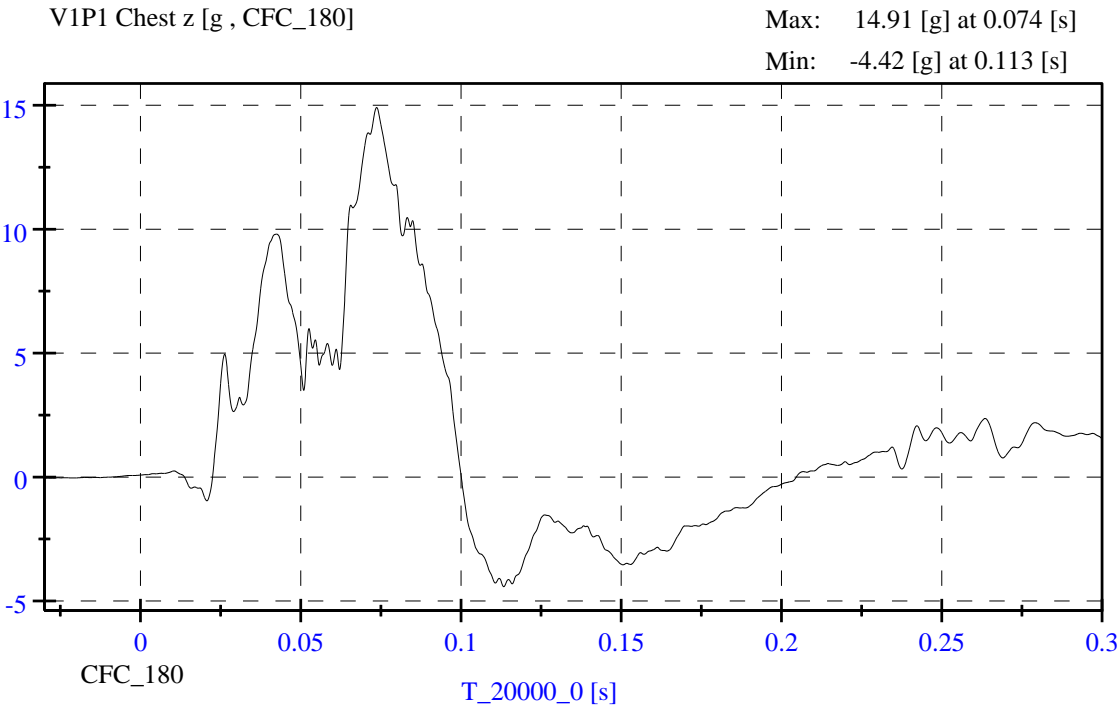
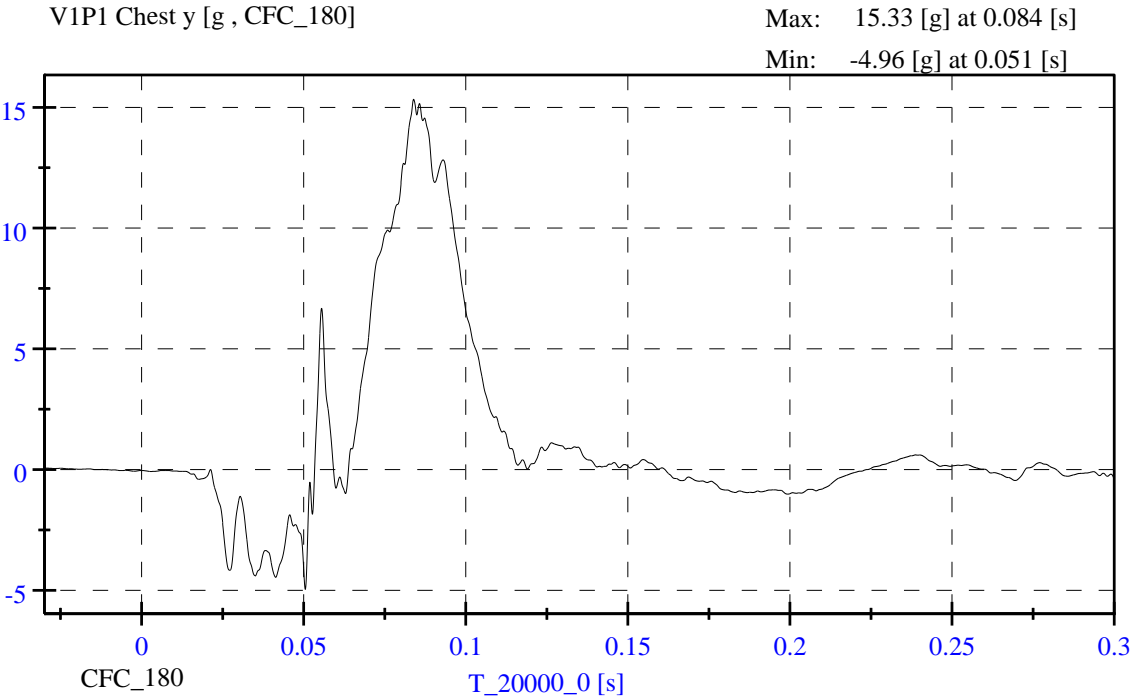
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Load Cell Barrier B1-A9
Load Cell Barrier C1-A9
Load Cell Barrier D1-A9





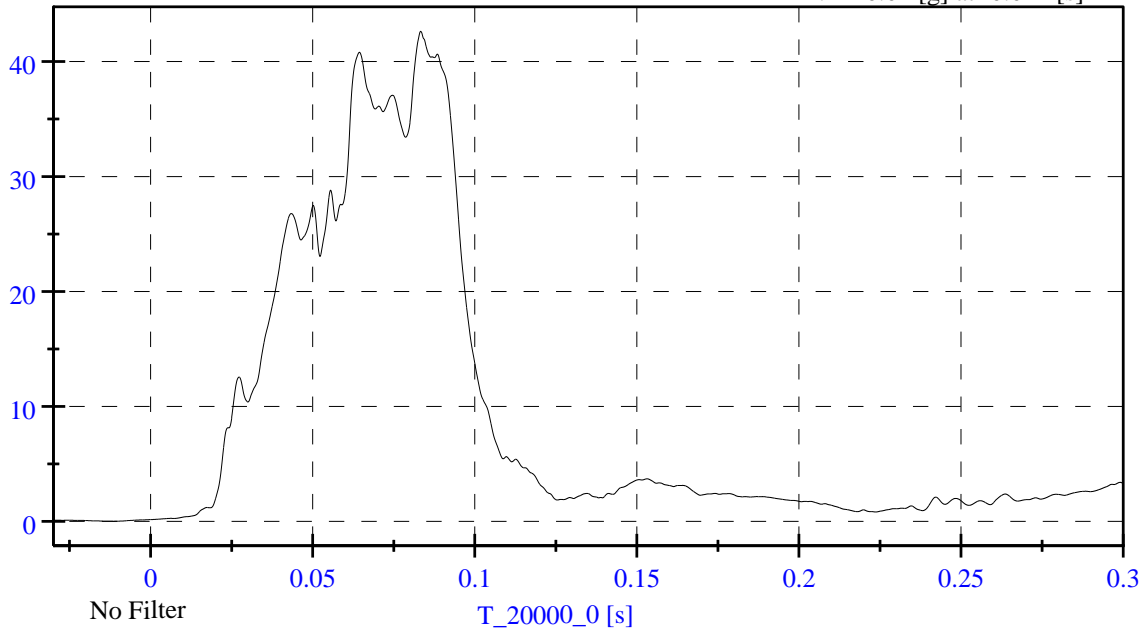




VIP1 Chest Resultant

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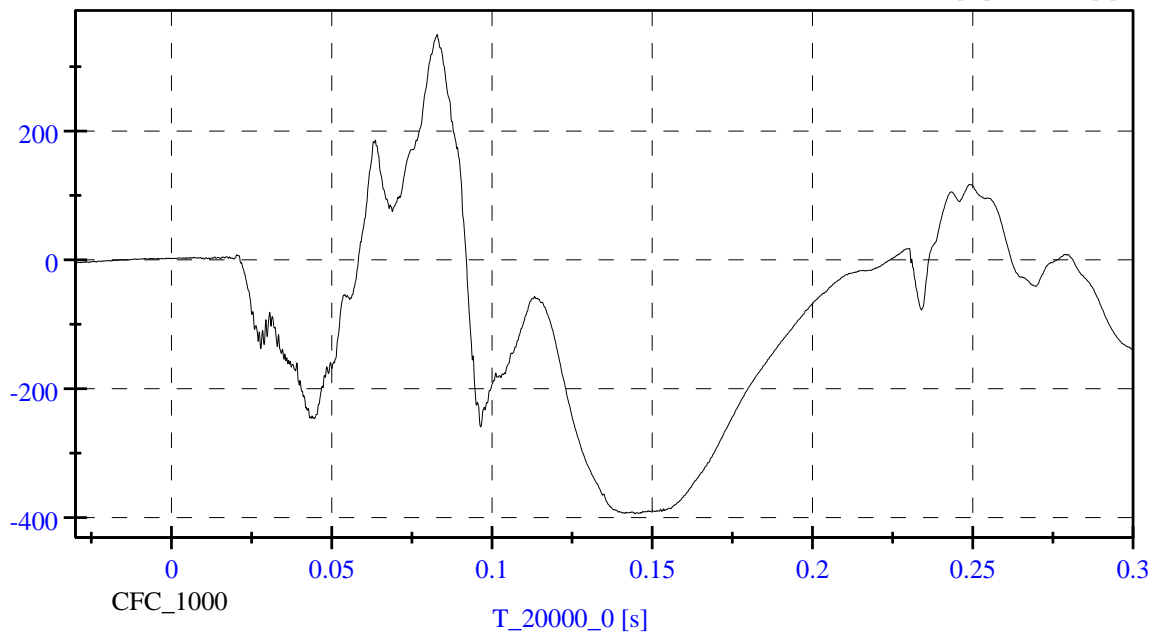
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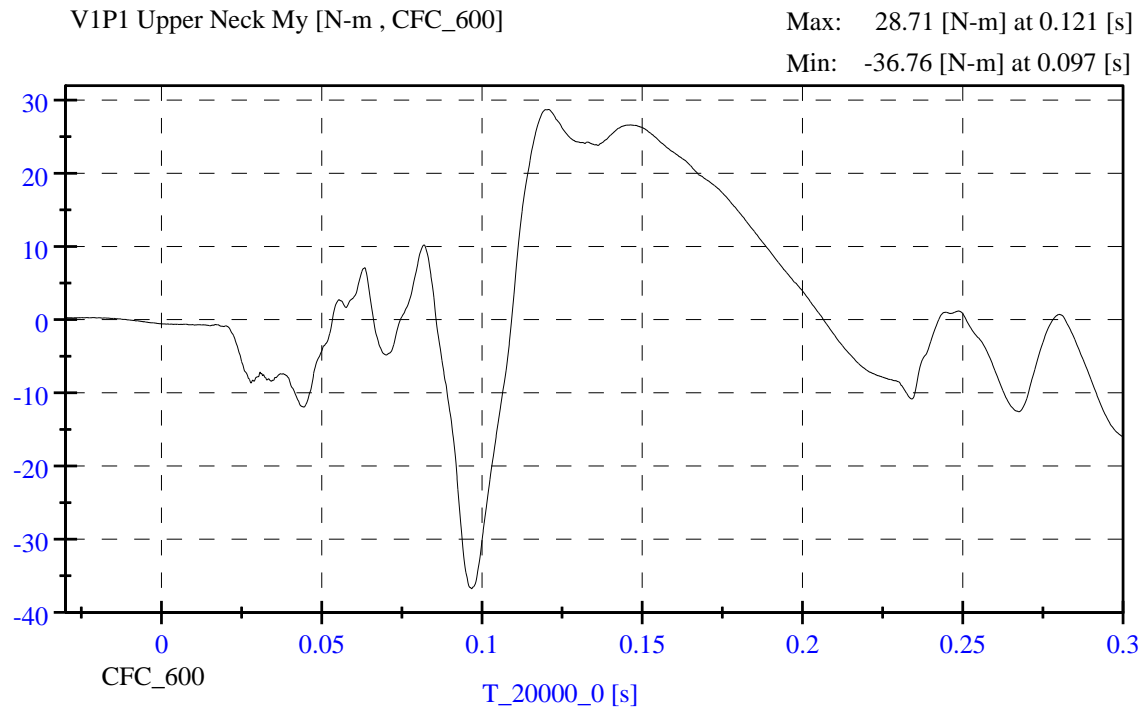
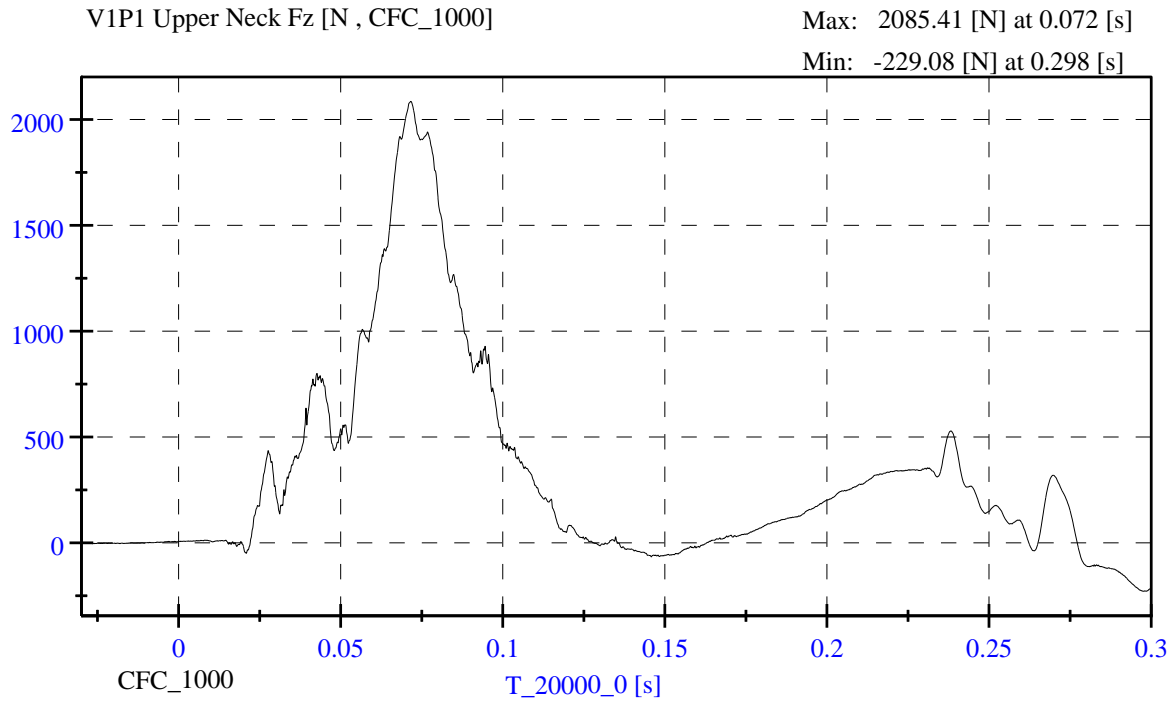


VIP1 Upper Neck Fx [N , CFC_1000]

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Min: -393.90 [N] at 0.145 [s]

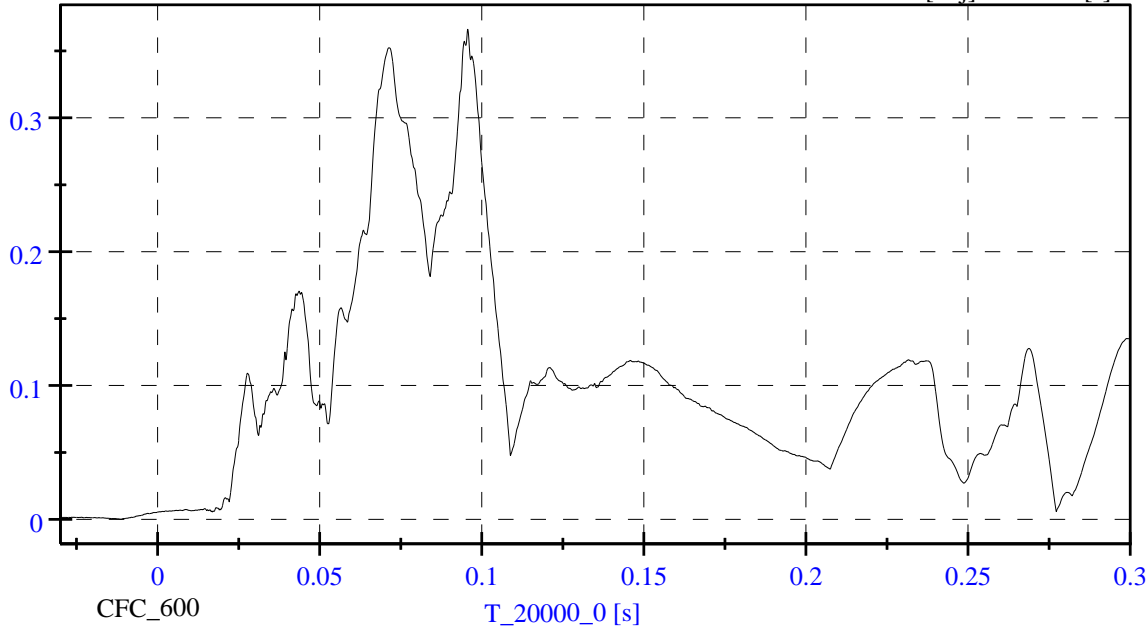




V1P1 Upper Neck Nij [Nij, CFC_600]

Max: 0.37 [Nij] at 0.096 [s]

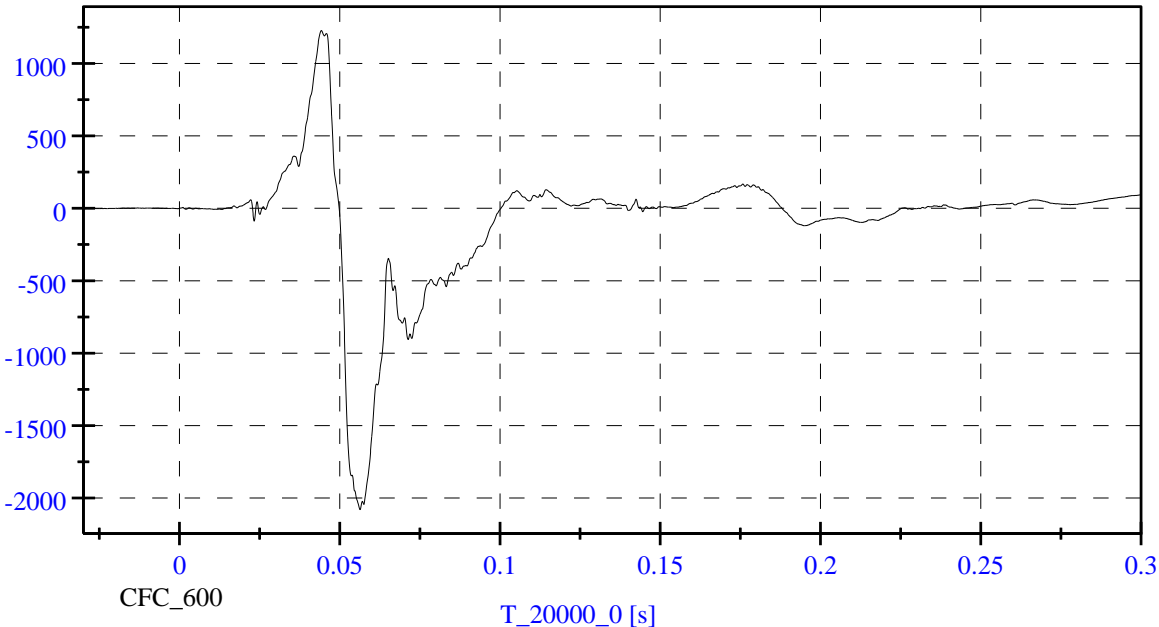
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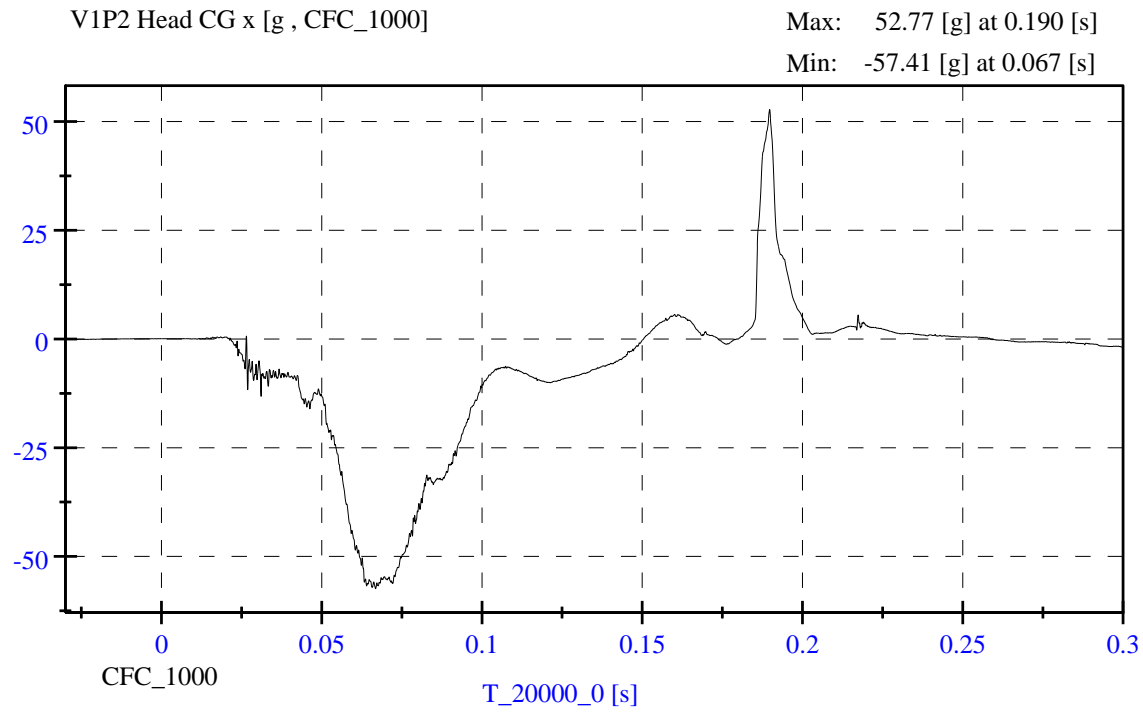
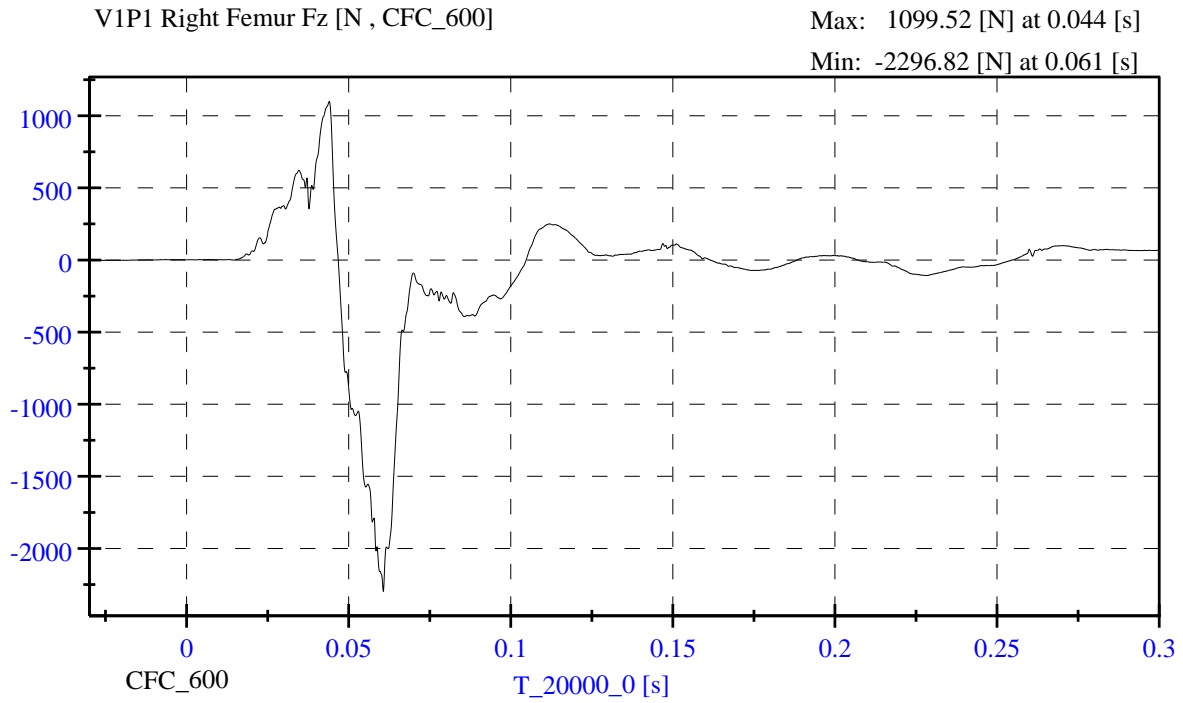


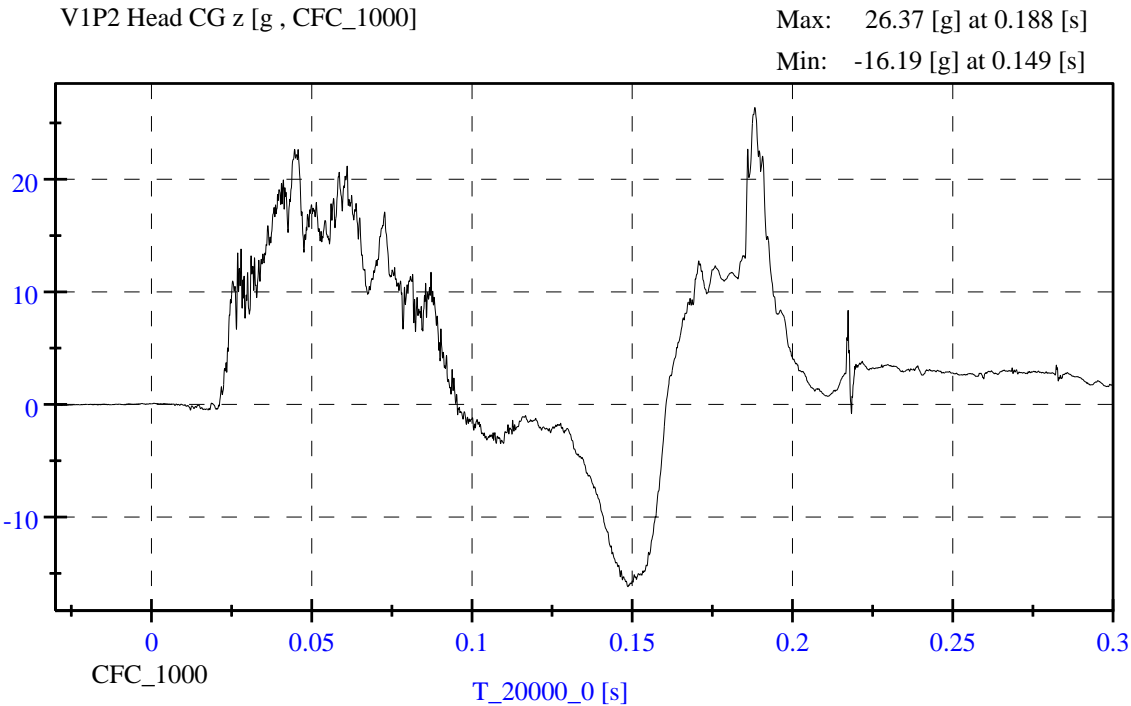
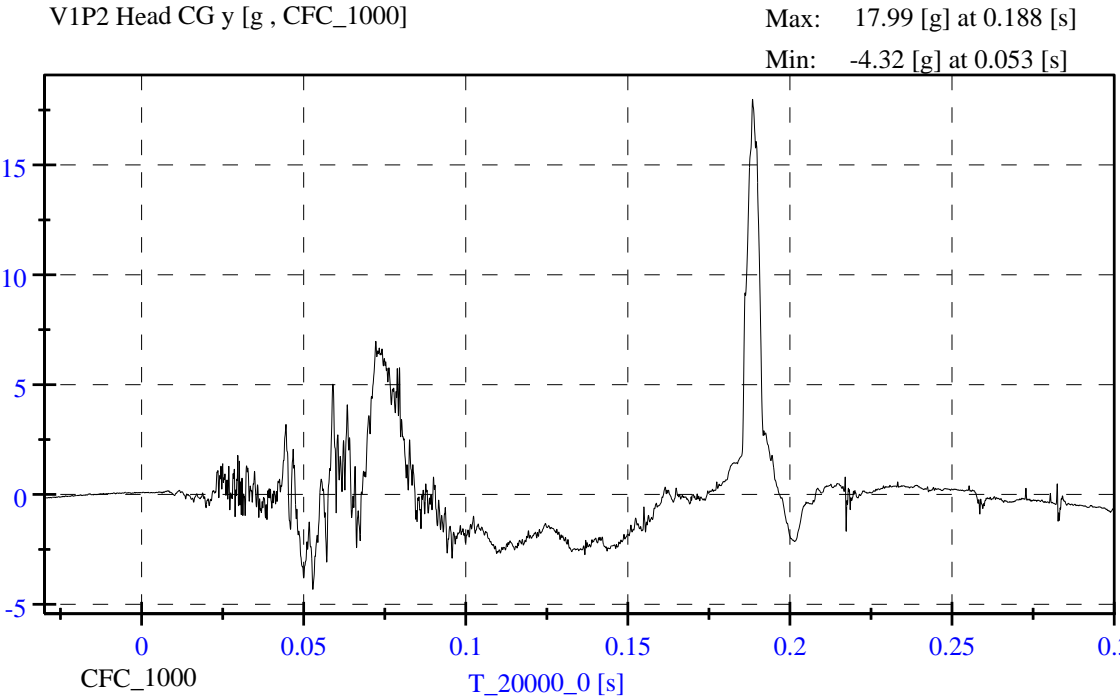
V1P1 Left Femur Fz [N , CFC_600]

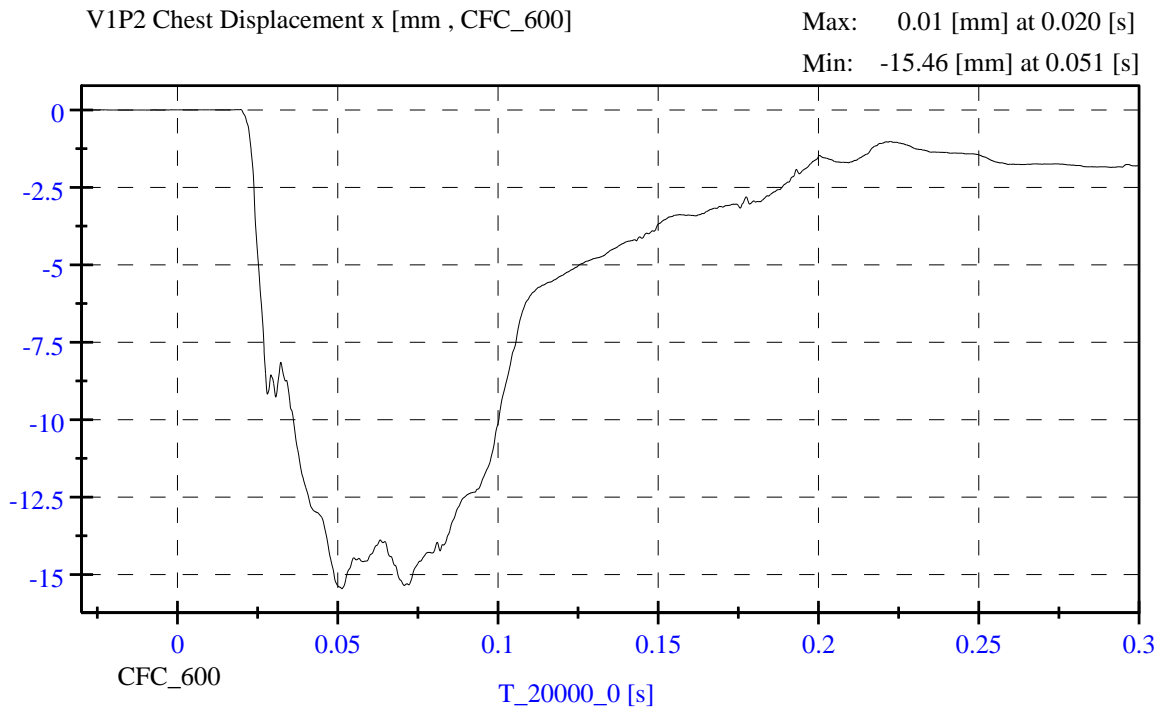
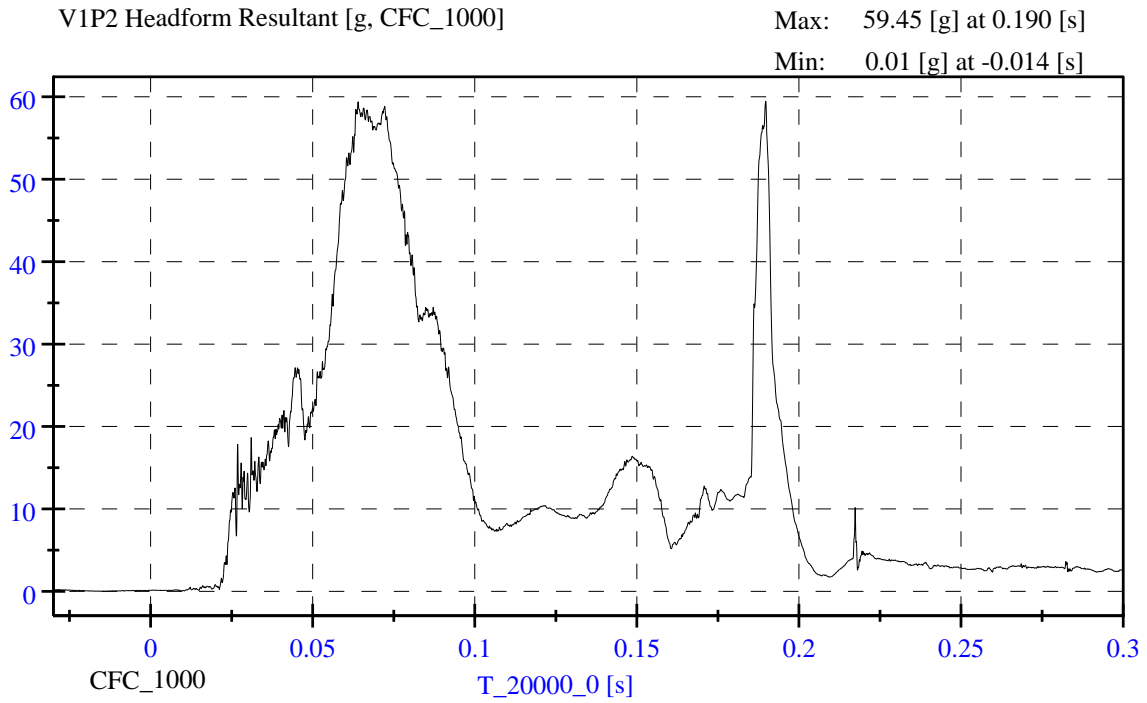
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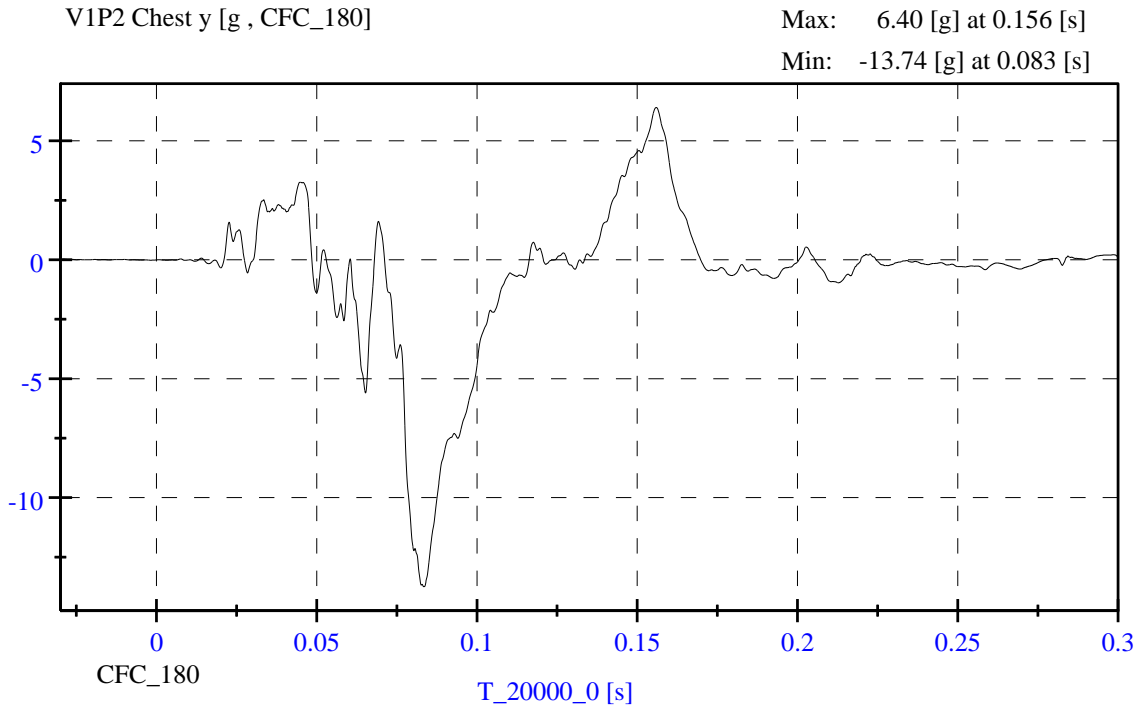
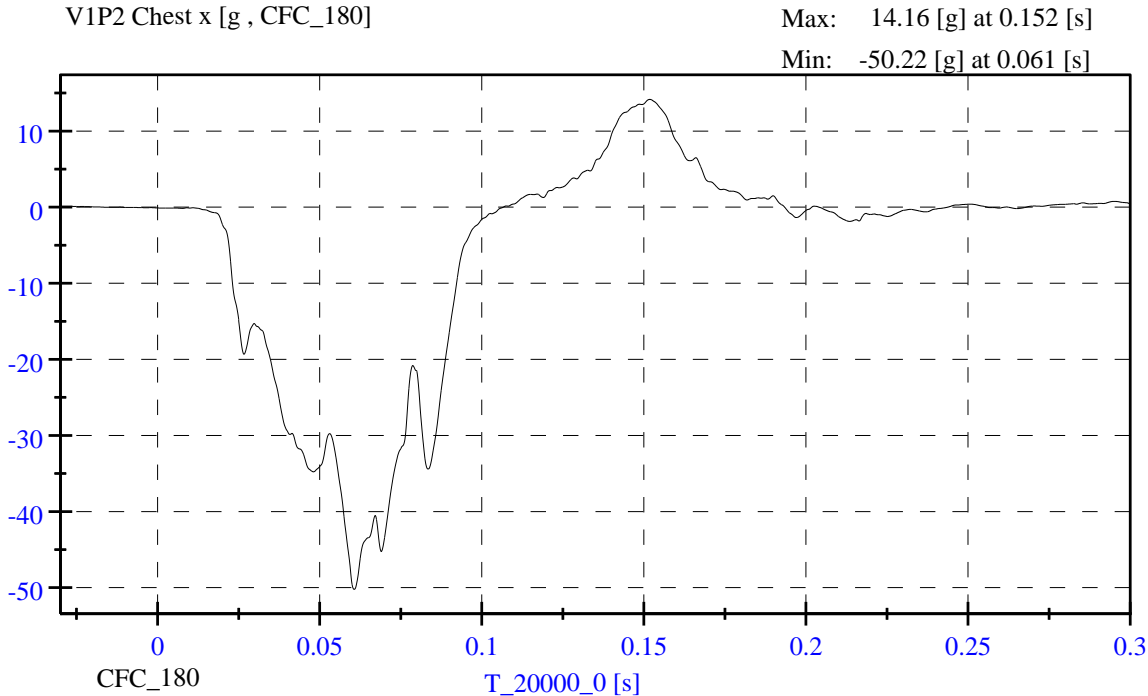
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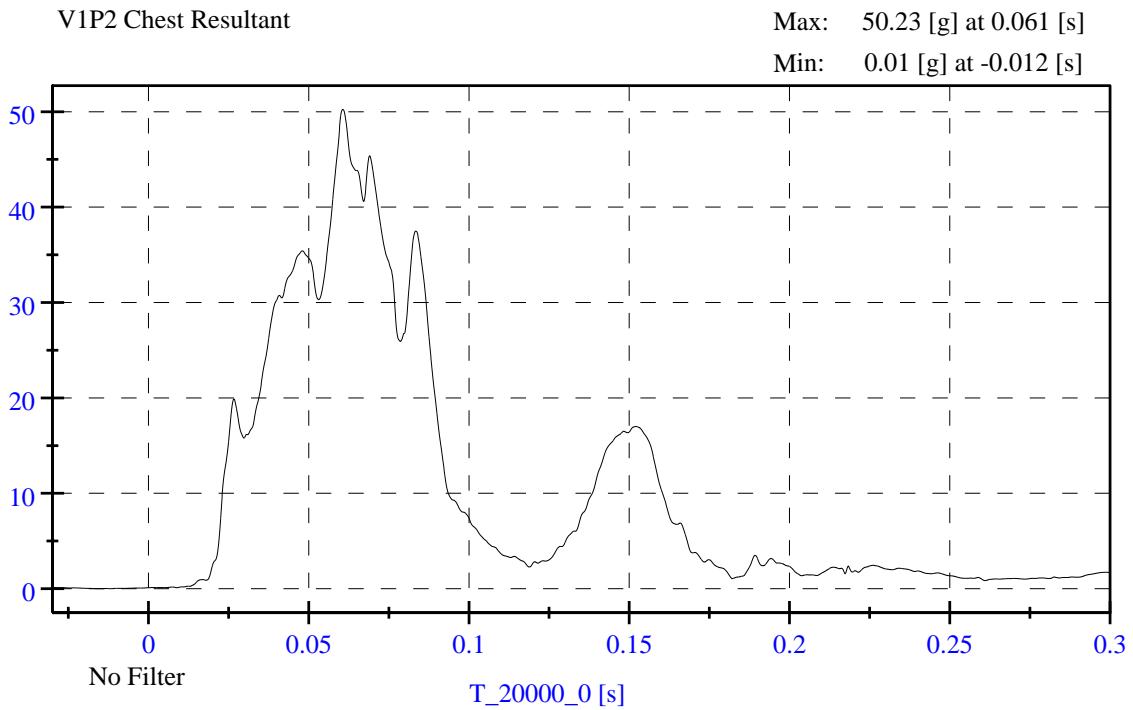
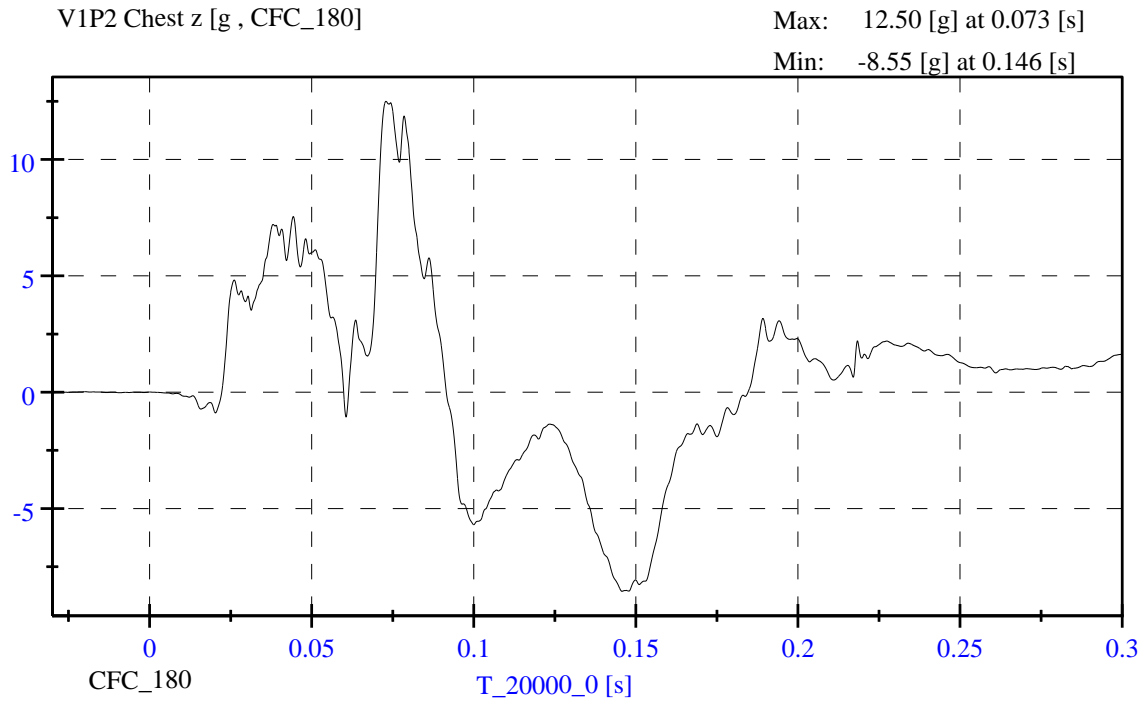


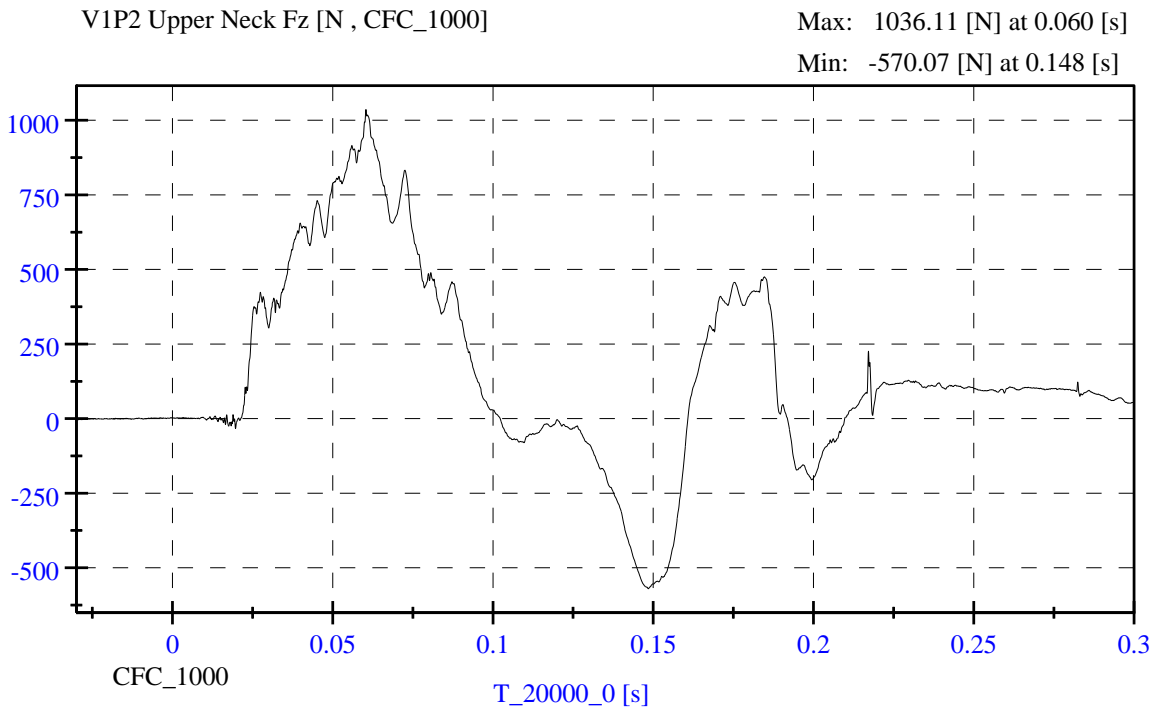
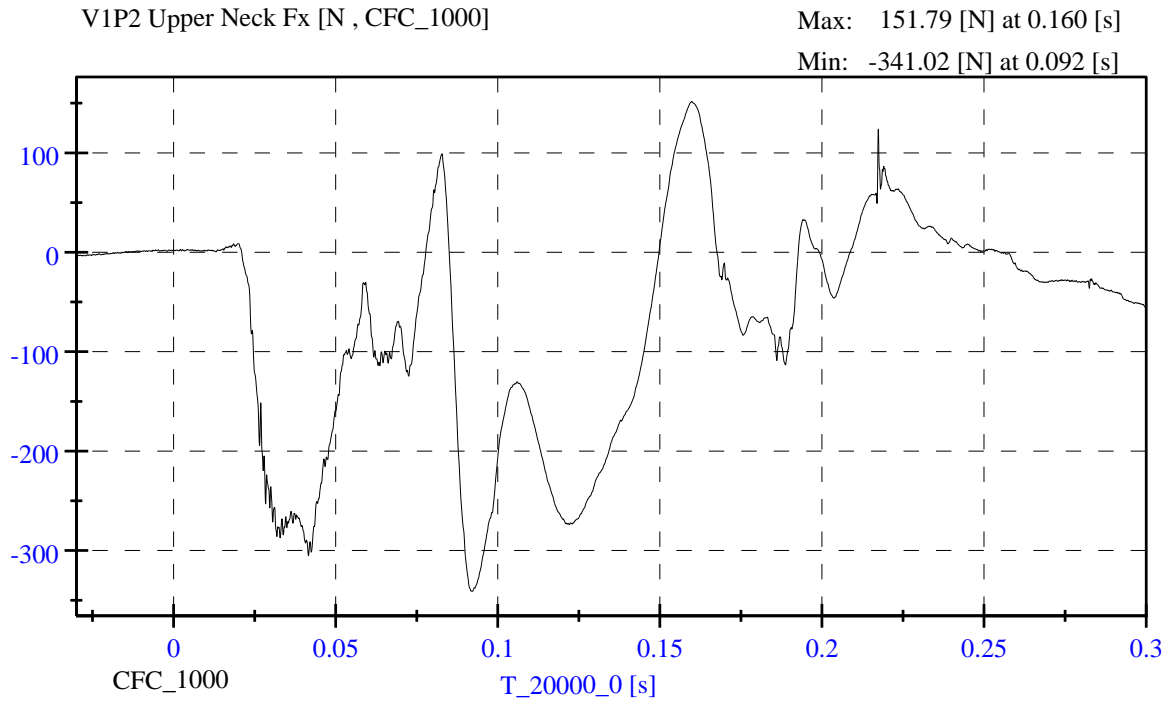


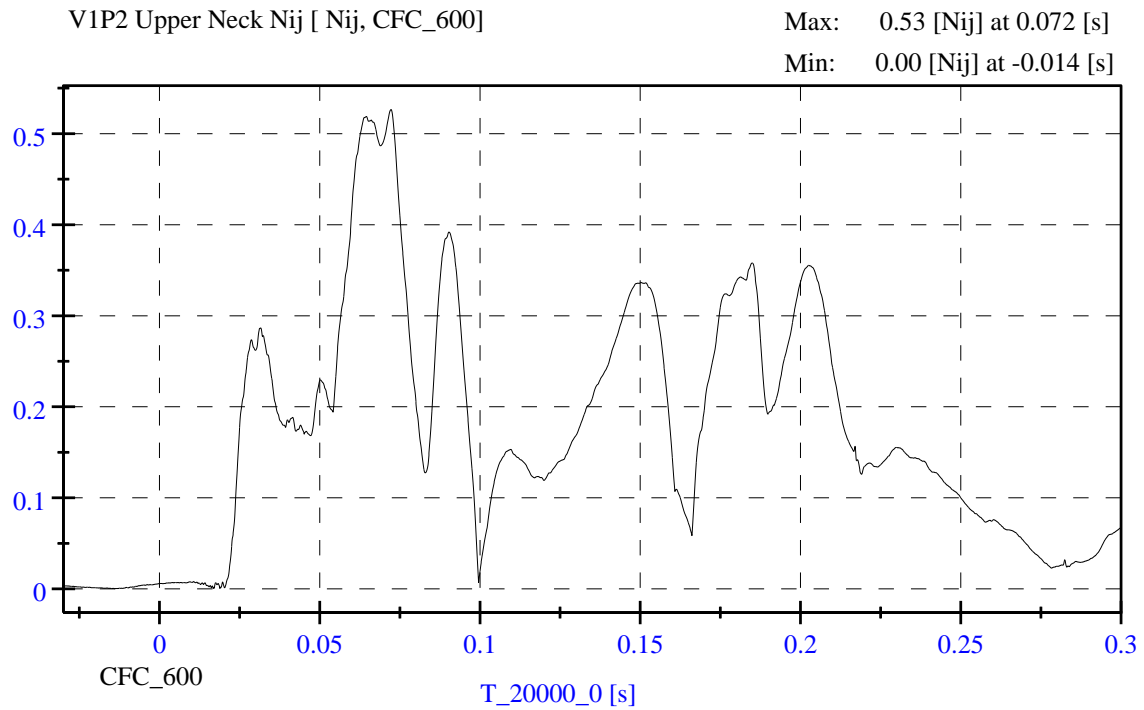
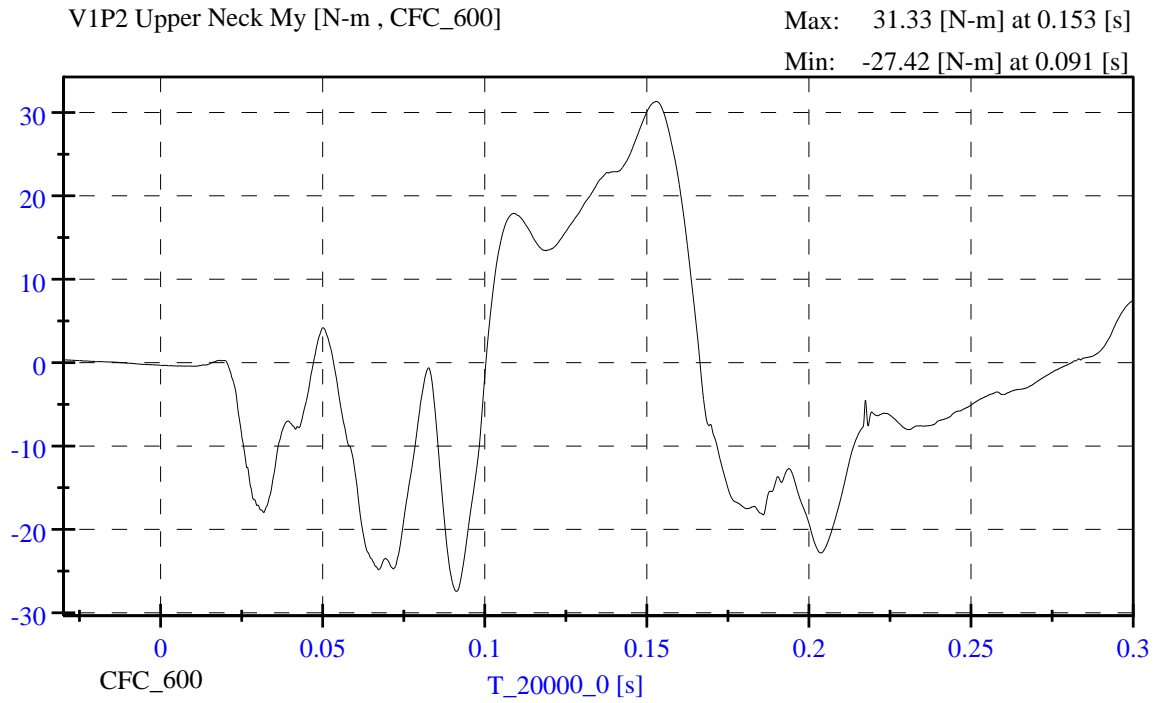


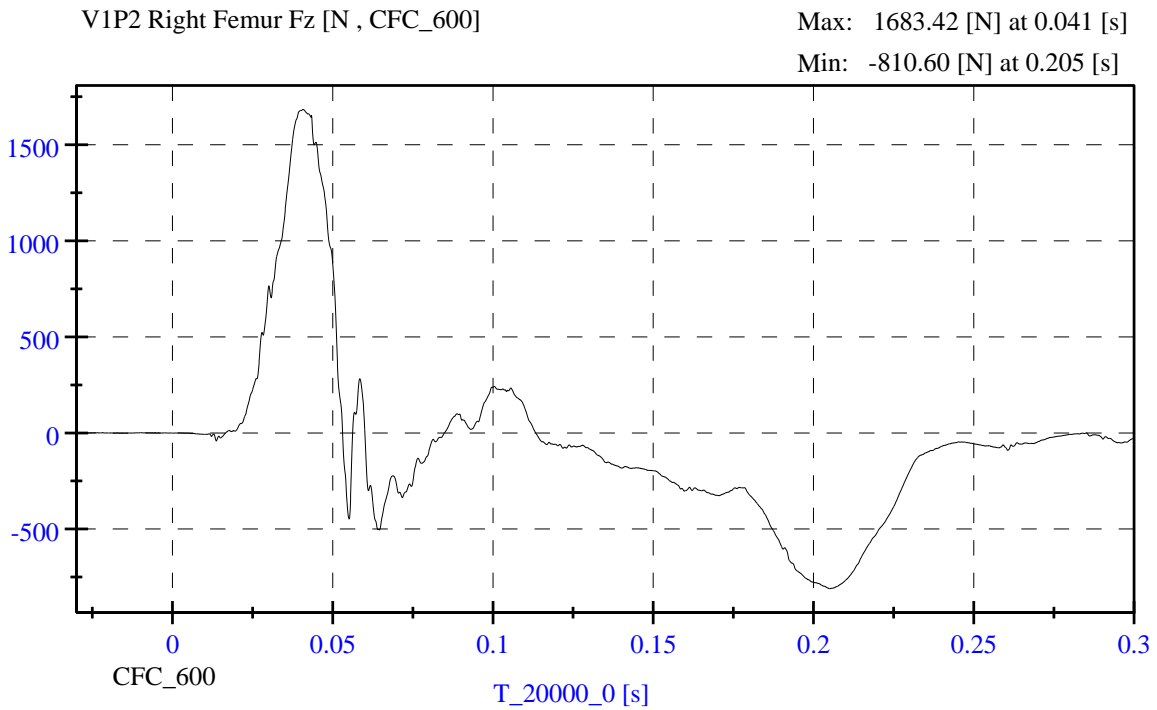
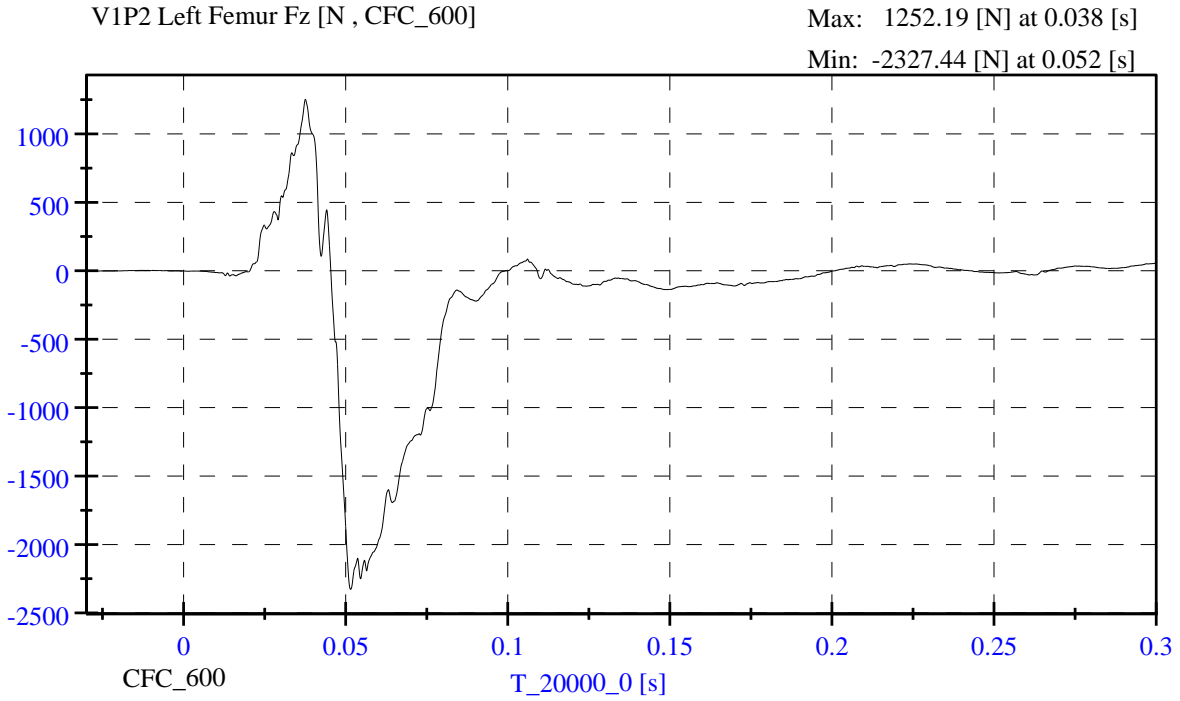












APPENDIX C

DUMMY CALIBRATION AND PERFORMANCE VERIFICATION DATA

CALIBRATION TEST RESULTS

PRE-TEST

HYBRID III 50TH PERCENTILE MALE - DRIVER ATD

SERIAL NO: 64



50th Male External Measurements

S/N 064

Symbol	Description	Specification	Results	Pass
		in	in	
A	Sitting Height	34.6 – 35.0	34.8	Yes
B	Shoulder Pivot Height	19.9 - 20.5	20.2	Yes
C	H-Point Height	3.3 – 3.5	3.4	Yes
D	H-Point from Backline	5.3 – 5.5	5.5	Yes
E	Shoulder Pivot from Backline	3.3 – 3.7	3.5	Yes
F	Thigh Clearance	5.5 – 6.1	6.1	Yes
G	Back of Elbow to Wrist Pivot	11.4 – 12.0	11.6	Yes
H	Head Back to Backline	1.6 – 1.8	1.7	Yes
I	Shoulder to Elbow Length	13.0 – 13.6	13.4	Yes
J	Elbow Rest Height	7.5 – 8.3	7.8	Yes
K	Buttock to Knee Length	22.8 – 23.8	23.2	Yes
L	Popliteal Height	16.9 – 17.9	17.3	Yes
M	Knee Pivot Height	19.1 – 19.7	19.4	Yes
N	Buttock Popliteal Length	17.8 – 18.8	18.8	Yes
O	Chest Depth without Jacket	8.4 – 9.0	8.5	Yes
P	Foot Length (right)	9.9 – 10.5	10.2	Yes
V	Shoulder Breadth	16.3 – 17.2	16.9	Yes
W	Foot Breadth	3.6 – 4.2	3.9	Yes
Y	Chest Circumference with Jacket	38.2 – 39.4	38.9	Yes
Z	Waist Circumference	32.9 – 34.1	33.7	Yes
AA	Reference Location (Chest Circumference)	16.9 – 17.1	16.9	Yes
BB	Reference Location (Waist Circumference)	8.9 – 9.1	9.0	Yes

Technician: SPZ

10/15/2012



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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:	064		
Test ID:		Test Date:	10/15/2012
Test Number:	1	Test Time:	3:55:28 PM

Component Part Number	Component Serial Number
Head Skin - 78051-228	7997

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	22.2 deg C P
Humidity	10 -- 70	38 %RH P
Resultant Acceleration	225 -- 275	256 g P
Oscillation	0.0 -- 10.0	2.4 % P
Lateral Acceleration	-15.00 -- 15.00	-4.39 g P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test Time: **3:55:28 PM**

Test Date: **10/15/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Endevco	7264-2000	P58871	5/16/2012
Endevco	7264-2000	P12359	5/23/2012
Endevco	7264-2000	P52133	5/16/2012

Test Time: **3:55:28 PM**

Test Date: **10/15/2012**

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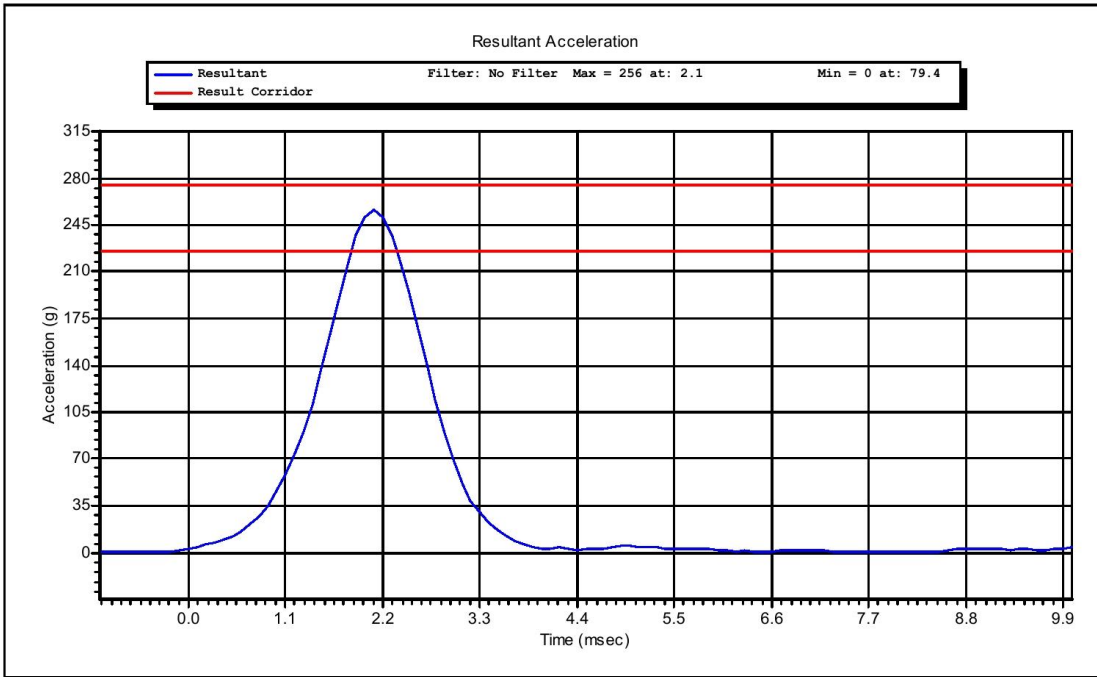


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Test Name:	Head Drop	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	064		
Test ID:		Test Date:	10/15/2012
Test Number:	1	Test Time:	3:55:28 PM



Test Time: **3:55:28 PM**

Test Date: **10/15/2012**

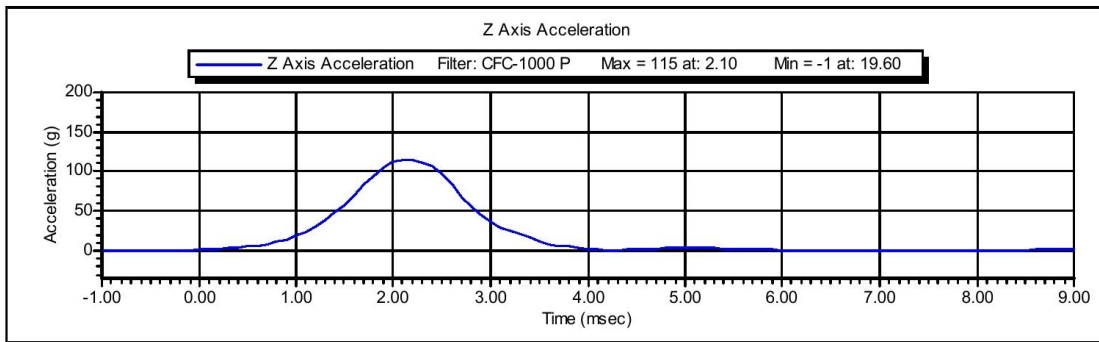
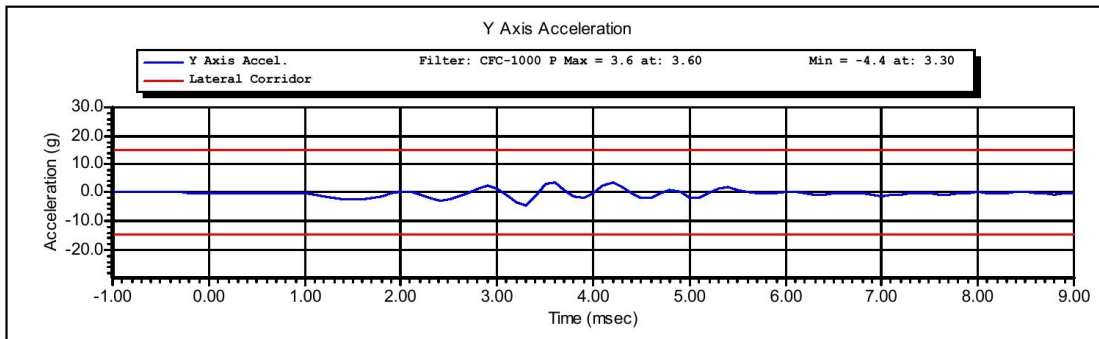
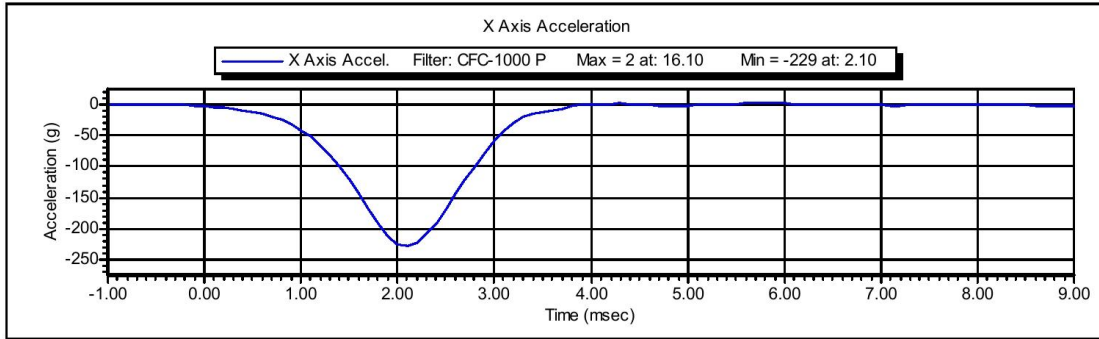
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Test Time: 3:55:28 PM

Test Date: 10/15/2012

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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:	064		
Test ID:		Test Date:	10/16/2012
Test Number:	3	Test Time:	11:56:02 AM

Component Part Number	Component Serial Number
Neck - 78051-336	02-1692

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.4 deg C P
Humidity	10 -- 70	34 %RH P
Velocity	6.89 -- 7.13	7.07 m/s P
Pendulum Deceleration at 10 ms	22.5 -- 27.5	23.6 g P
Pendulum Deceleration at 20 ms	17.6 -- 22.6	21.8 g P
Pendulum Deceleration at 30 ms	12.5 -- 18.5	16.3 g P
Max Pendulum Deceleration After 30 ms	0.0 -- 29.0	16.3 g P
Deceleration time to 5 g	34.0 -- 42.0	37.5 ms P
D Plane Rotation	-78.0 -- -64.0	-65.3 degrees P
Time at max rotation	57.0 -- 64.0	59.2 ms P
Rotation Decay to Zero	113.0 -- 128.0	114.8 ms P
Moment about OC	88.1 -- 108.4	94.1 Nm P
Time at Max Moment	47.0 -- 58.0	48.5 ms P
Moment Decay to Zero	97.0 -- 107.0	98.6 ms P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test Time: **11:56:02 AM**

Test Date: **10/16/2012**



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2012
Endevco	7231CT	C15016	8/15/2012
DentonATD	78051-342	PENDULUM POT	1/25/2012
DentonATD	78051-342	CONDYLE POT	1/25/2012
Denton	1716A	LC-2186 My	5/21/2012
Denton	1716A	LC-2186 Fx	5/21/2012

Test Time: 11:56:02 AM

Test Date: 10/16/2012

Copyright 2006 Denton ATD, Inc. LabPaq II Version: 1.8.5.0

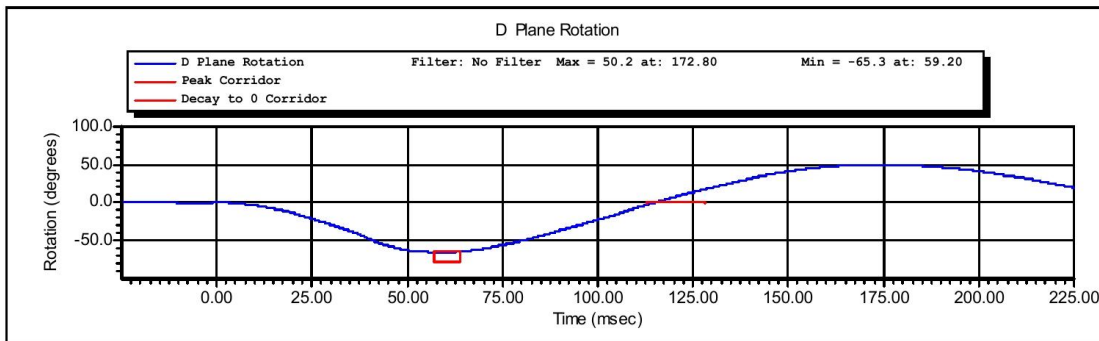
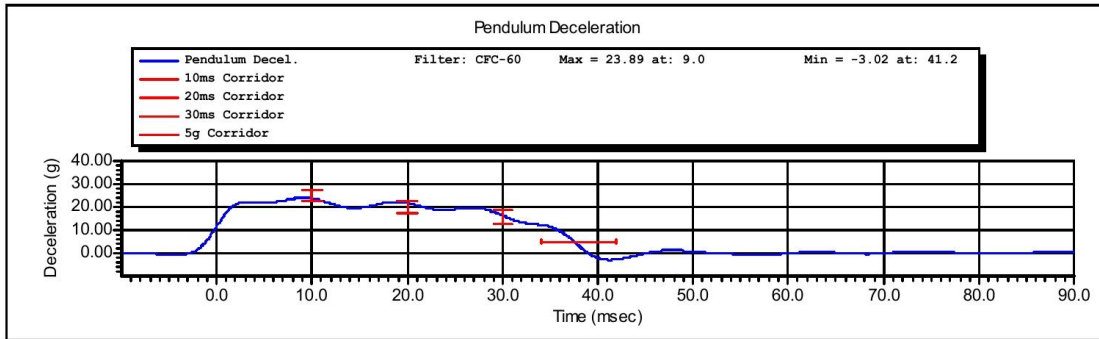


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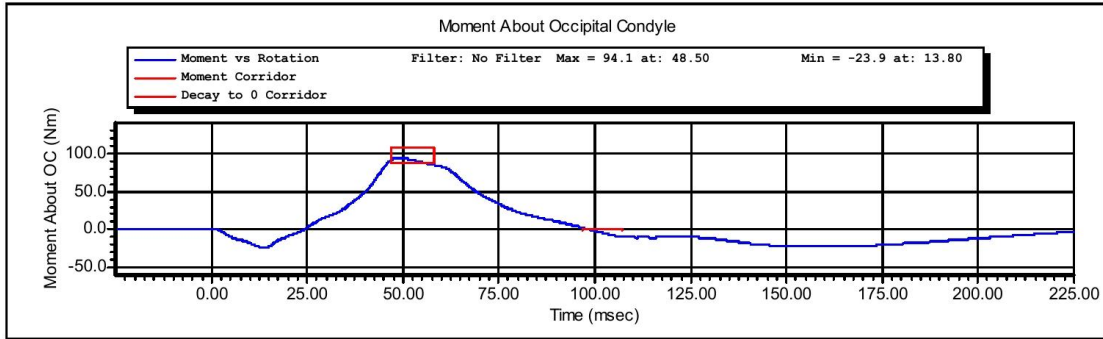
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Name of Sub Test:		Type of Spec:	NHTSA
Type of ATD:	Hybrid III 50'th		
ATD Serial Number:	064		
ID of Test:		Date:	10/16/2012
Number of Test:	3	Time of Test:	11:56:02 AM



Time of Test: **11:56:02 AM**

Date of Test: **10/16/2012**

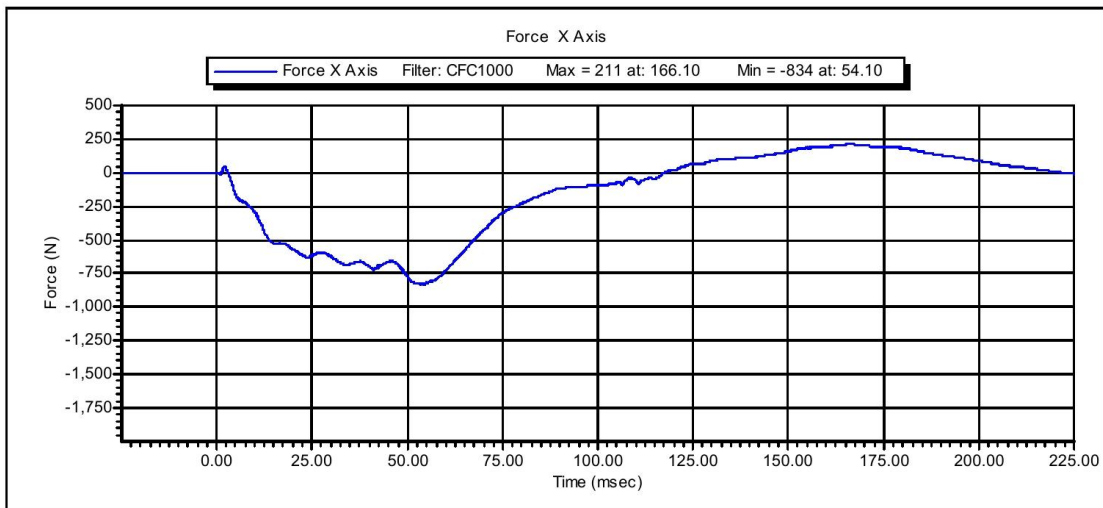
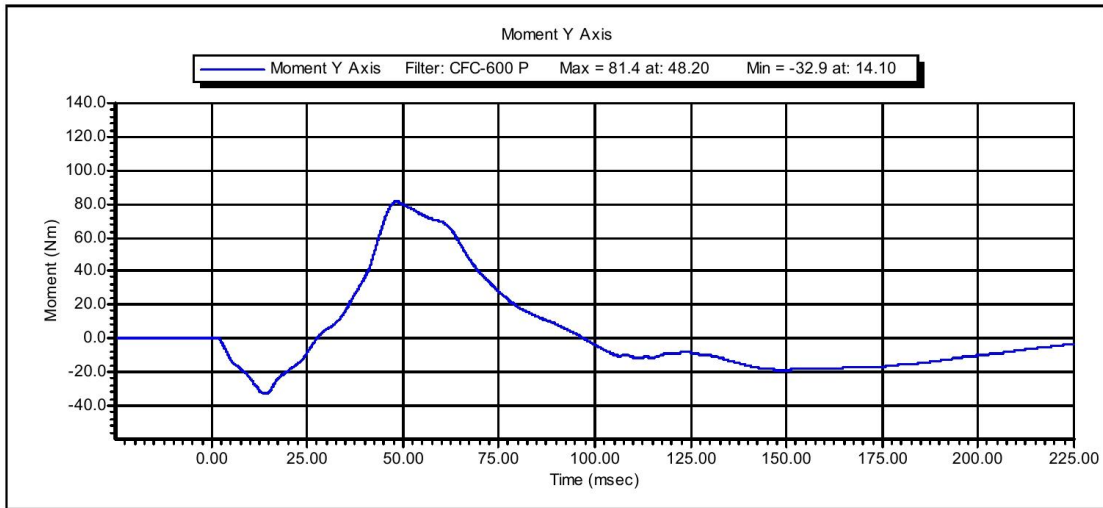
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Time of Test: 11:56:02 AM

Date of Test: 10/16/2012

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Time of Test: 11:56:02 AM

Date of Test: 10/16/2012

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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:			
Test ID:		Test Date:	10/16/2012
Test Number:	1	Test Time:	1:18:24 PM

Component Part Number	Component Serial Number
Neck - 78051-336	02-1692

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.4 deg C P
Humidity	10 -- 70	33 %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	16.4 g P
Pendulum Deceleration at 30 ms	11.0 -- 16.0	13.1 g P
Max Pendulum Deceleration after 30 ms	0.0 -- 22.0	13.1 g P
Decel Time to 5 g	38.0 -- 46.0	43.2 ms P
D Plane Rotation	81.0 -- 106.0	91.6 degrees P
Time at Max Rotation	72.0 -- 82.0	79.3 ms P
Rotation Decay to Zero	147.0 -- 174.0	158.6 ms P
Moment About Occipital Condyle	-80.0 -- -52.9	-58.8 Nm P
Time at Max Moment	65.0 -- 79.0	74.9 ms P
Moment Decay to Zero	120.0 -- 148.0	144.2 ms P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test Time: **1:18:24 PM**

Test Date: **10/16/2012**



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2012
Endevco	7231CT	C15016	8/15/2012
DentonATD	78051-342	PENDULUM POT	1/25/2012
DentonATD	78051-342	CONDYLE POT	1/25/2012
Denton	1716A	LC-2186 My	5/21/2012
Denton	1716A	LC-2186 Fx	5/21/2012

Test Time: **1:18:24 PM**

Test Date: **10/16/2012**

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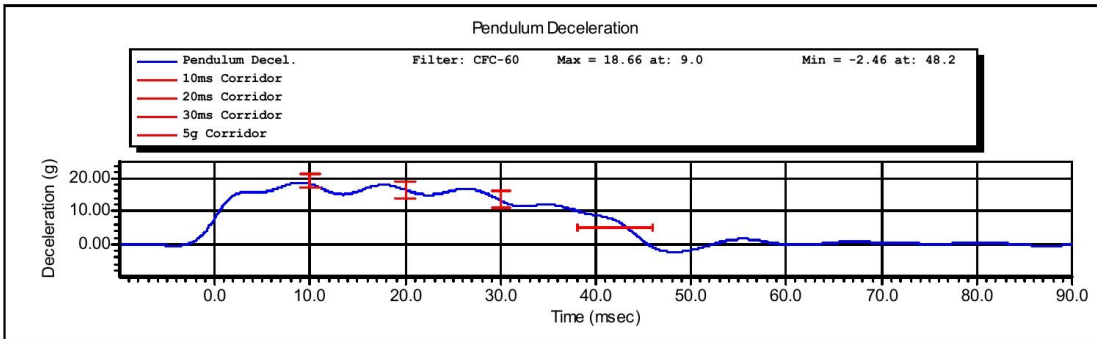
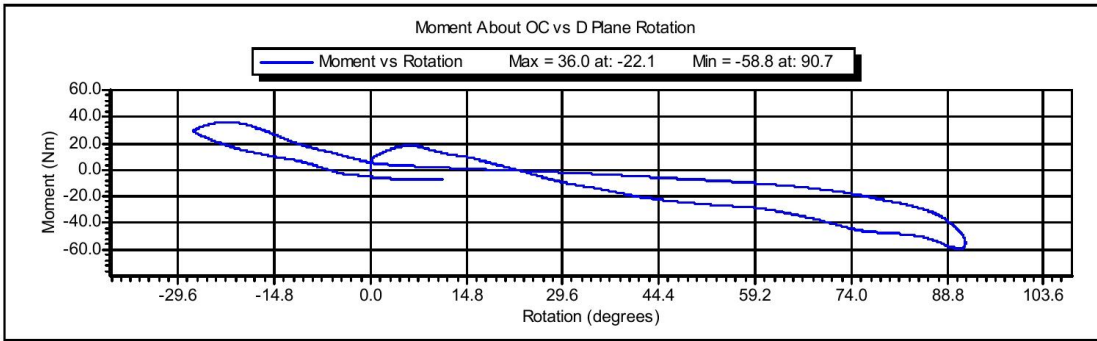


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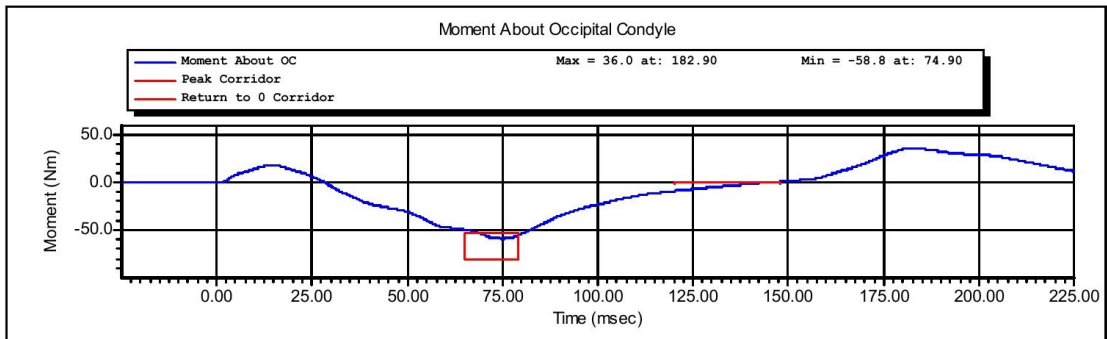
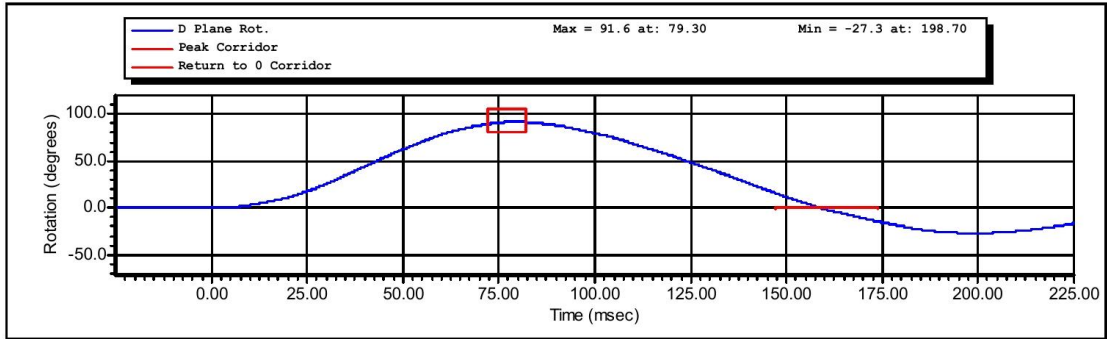
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Name of Sub Test:		Type of Spec:	NHTSA
Type of ATD:	Hybrid III 50'th		
ATD Serial Number:			
ID of Test:		Date:	10/16/2012
Number of Test:	1	Time of Test:	1:18:24 PM



Time of Test: **1:18:24 PM**

Date of Test: **10/16/2012**

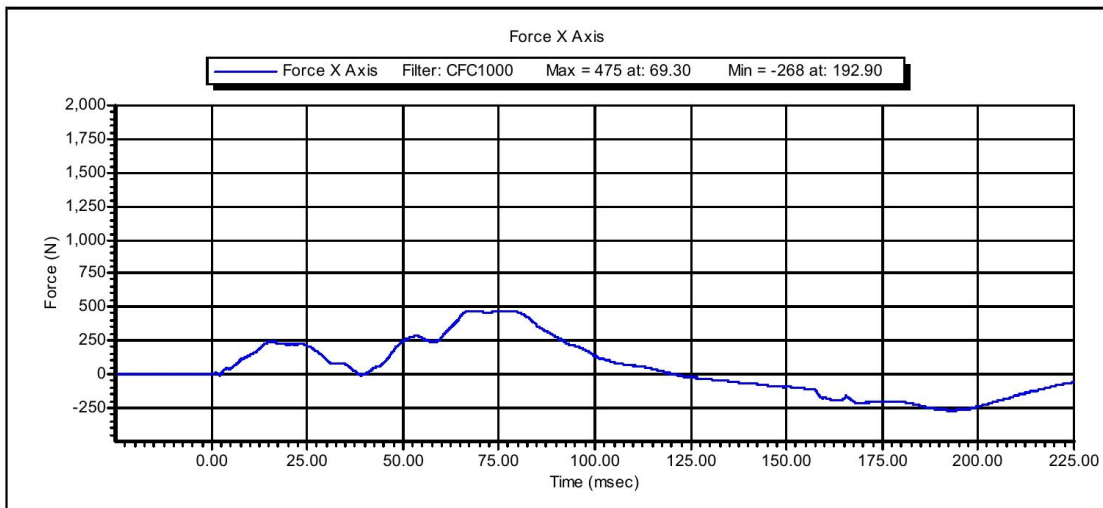
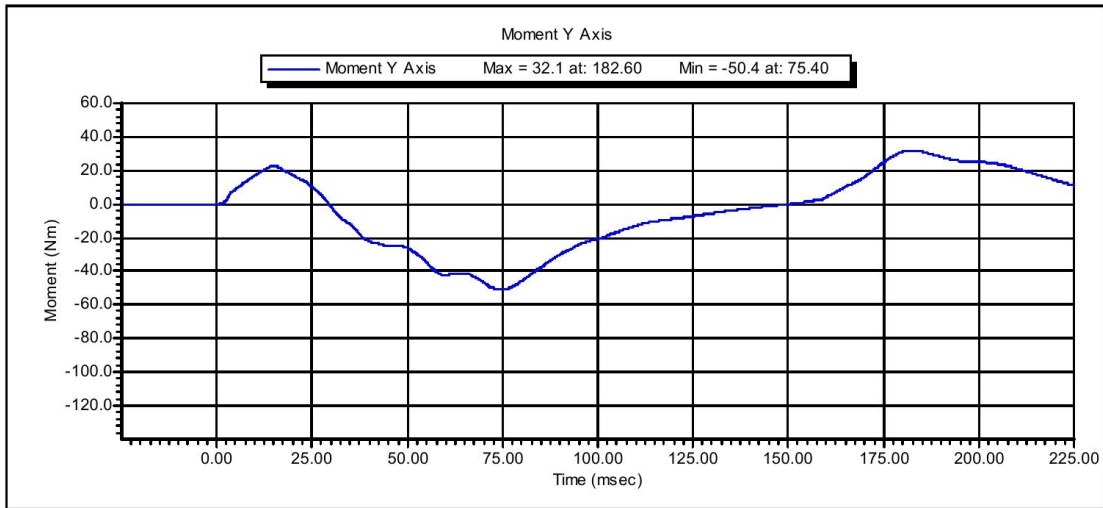
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Time of Test: 1:18:24 PM

Date of Test: 10/16/2012

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Time of Test: 1:18:24 PM

Date of Test: 10/16/2012

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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:	064		
Test ID:		Test Date:	10/17/2012
Test Number:	1	Test Time:	8:02:39 AM

Component Part Number	Component Serial Number
Ribs 78051-RS	3964
Chest Jacket - 78051-169	2589

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.0 deg C P
Humidity	10.0 -- 70.0	31.0 %RH P
Velocity	6.59 -- 6.83	6.76 m/s P
Resistive Force	-5.894 -- -5.160	-5.502 kN P
Sternum Displacement	-72.6 -- -63.5	-66.6 mm P
Hysteresis	69 -- 85	75 % P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test Time: **8:02:39 AM**

Test Date: **10/17/2012**



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2012
Endevco	7231CT	C14953	5/25/2012
DentonATD	78051-342	DS-064	5/18/2012

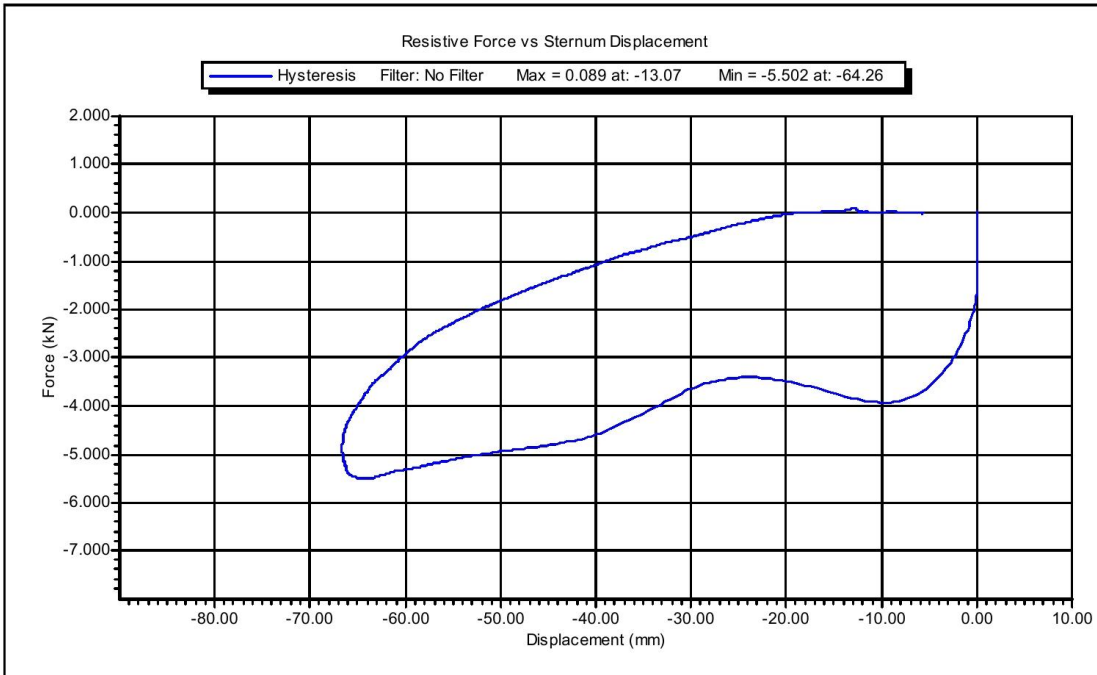
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Test Date: **10/17/2012**

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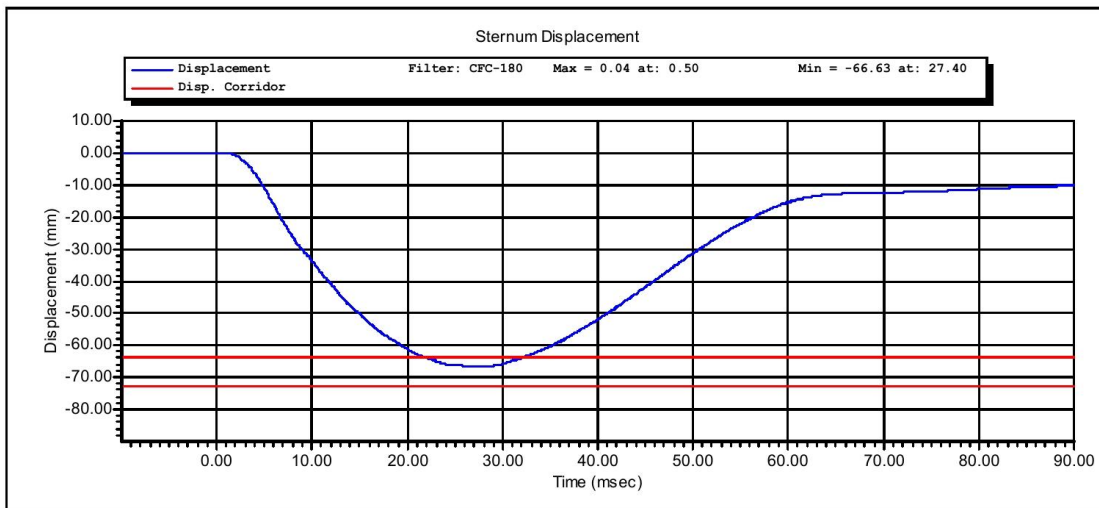
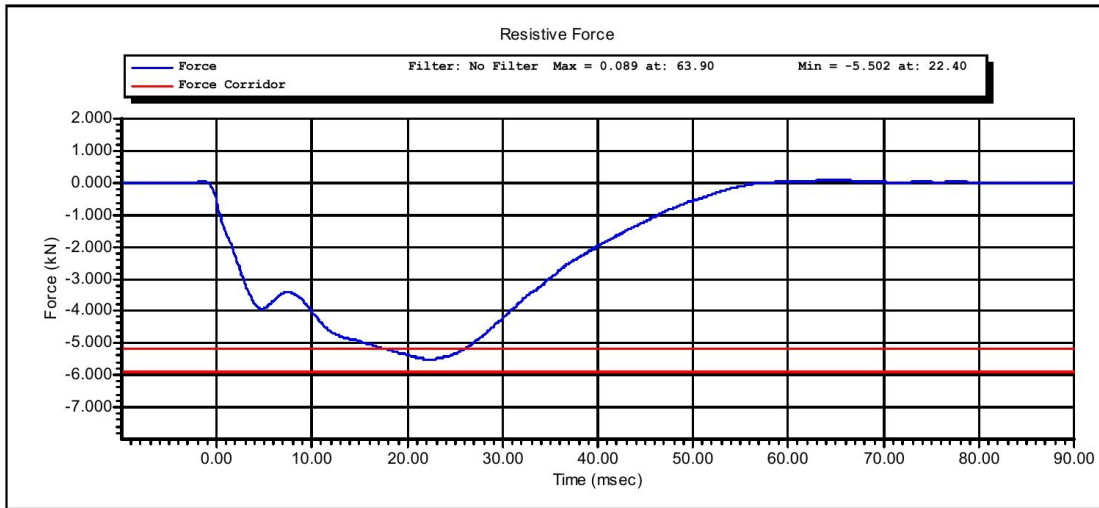
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Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	064		
Test ID:		Test Date:	10/17/2012
Test Number:	1	Test Time:	8:02:39 AM



Test Time: **8:02:39 AM**

Test Date: **10/17/2012**

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Test Time: 8:02:39 AM

Test Date: 10/17/2012

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VERIFICATION REPORT

Test Name:	Knee Impact PENDULUM	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	064		
Test ID:	Knee Impact Left	Test Date:	10/16/2012
Test Number:	1	Test Time:	2:18:14 PM

Component Part Number	Component Serial Number
Knee Skin - 78051(L)	2882

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	21.9 deg C P
Humidity	10.0 -- 70.0	28.7 %RH P
Velocity	2.07 -- 2.13	2.10 m/s P
Resistive Force	-5.78 -- -4.72	-5.38 kN P

All test parameters are within specifications

Technician: **M. Goehle**

Supervisor: **D. Travale**

Test Time: **2:18:14 PM**

Test Date: **10/16/2012**



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2012
Endevco	7264-2000	P66927	6/15/2012

Test Time: **2:18:14 PM**

Test Date: **10/16/2012**

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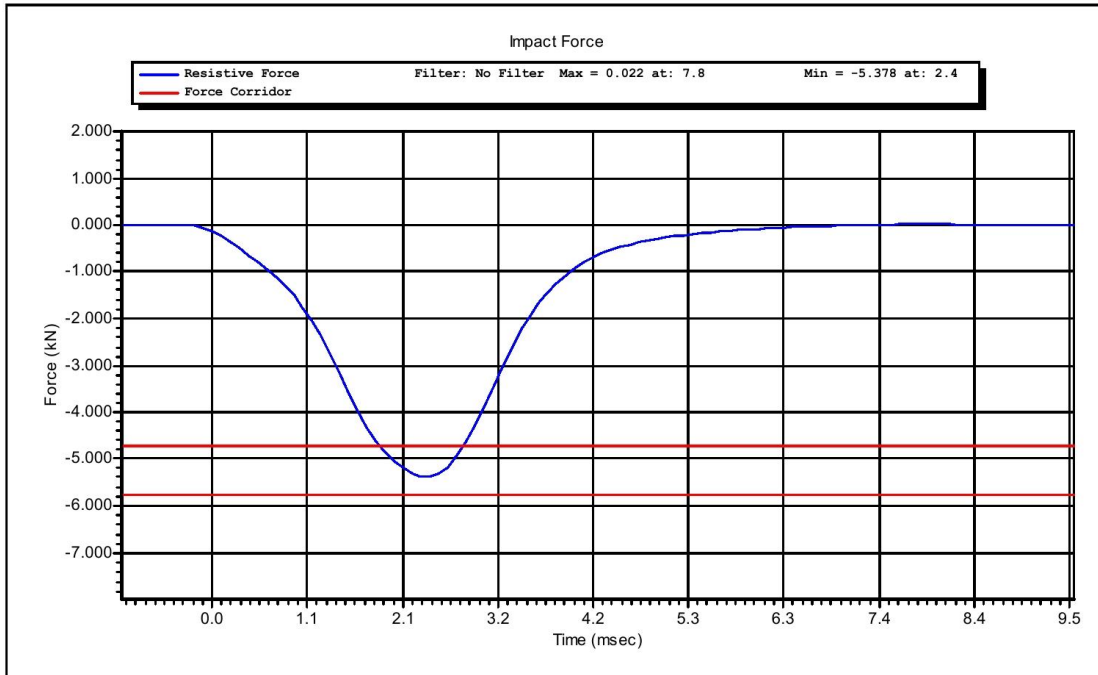


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Test Name:	Knee Impact PENDULUM	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	064		
Test ID:	Knee Impact Left	Test Date:	10/16/2012
Test Number:	1	Test Time:	2:18:14 PM



Test Time: **2:18:14 PM**

Test Date: **10/16/2012**

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VERIFICATION REPORT

Test Name:	Knee Impact PENDULUM	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	Knee Impact Right		
Test ID:	064	Test Date:	10/16/2012
Test Number:	1	Test Time:	2:45:58 PM

Component Part Number	Component Serial Number
Knee Skin - 78051(L) or 6(R)	2531

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	22.1 deg C P
Humidity	10.0 -- 70.0	29.0 %RH P
Velocity	2.07 -- 2.13	2.10 m/s P
Resistive Force	-5.78 -- -4.72	-5.51 kN P

All test parameters are within specifications

Technician: **M. Goehle**

Supervisor: **D. Travale**

Test Time: **2:45:58 PM**

Test Date: **10/16/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2012
Endevco	7264-2000	P66927	6/15/2012

Test Time: **2:45:58 PM**

Test Date: **10/16/2012**

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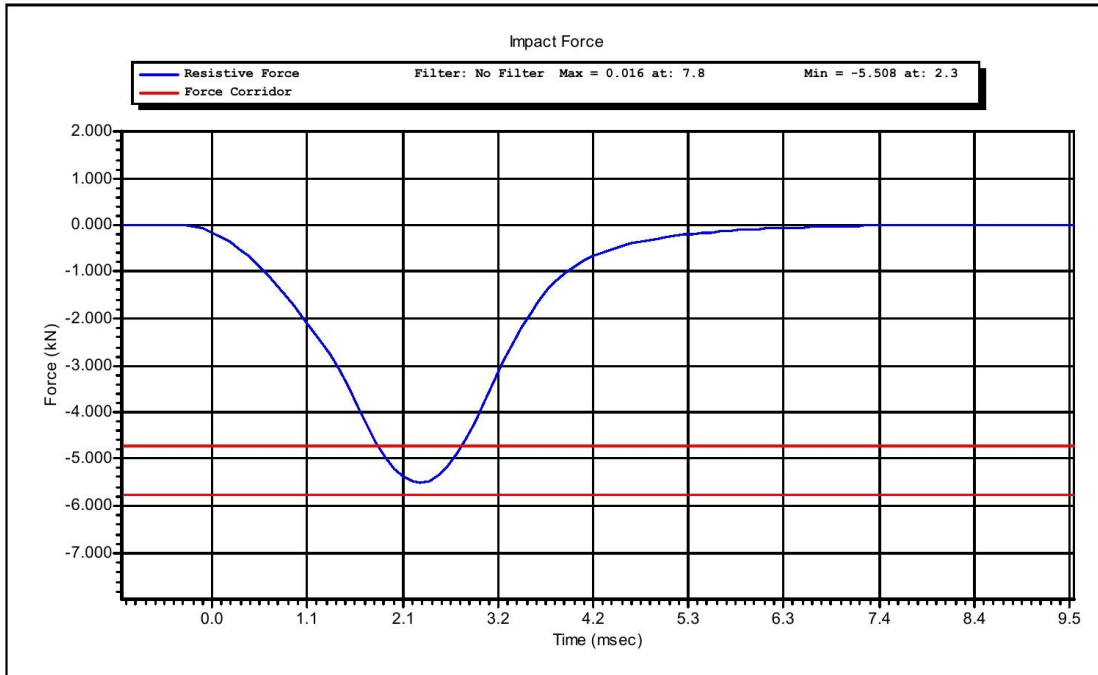


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Test Name:	Knee Impact PENDULUM	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	Knee Impact Right		
Test ID:	064	Test Date:	10/16/2012
Test Number:	1	Test Time:	2:45:58 PM



Test Time: **2:45:58 PM**

Test Date: **10/16/2012**

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VERIFICATION REPORT

Test Name:	Hip Flexion (ROM)	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	064		
Test ID:	Hip ROM Right	Test Date:	10/16/2012
Test Number:	1	Test Time:	9:27:44 AM

Component Part Number	Component Serial Number
Pelvis Assembly 78051-60	1445

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	21.5 deg C P
Humidity	10 -- 70	36 %RH P
Average Velocity	5.0 -- 10.0	6.9 deg/s P
Angle at 203 Nm	40.0 -- 50.0	40.0 degrees P
Moment at 30 degrees	0.0 -- 94.9	89.2 Nm P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test Time: **9:27:44 AM**

Test Date: **10/16/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Key	2301-02	115	12/15/2011
Transducers/PCB	14CB1-3615	0008	3/16/2012
DentonATD	Velocity Trap	1	1/11/2012
DentonATD			

Test Time: 9:27:44 AM

Test Date: 10/16/2012

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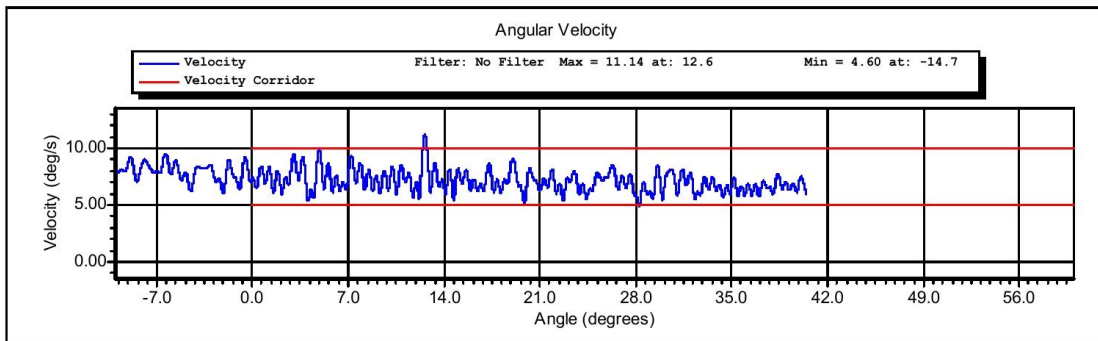
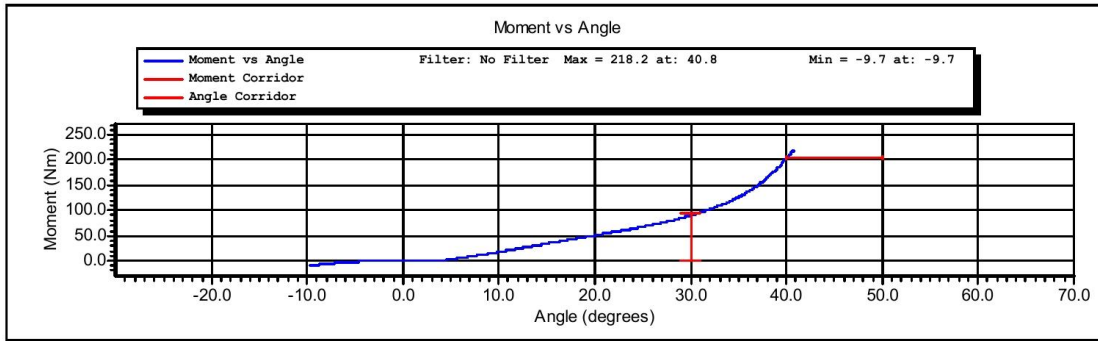


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Test Name:	Hip Flexion (ROM)	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	064		
Test ID:	Hip ROM Right	Test Date:	10/16/2012
Test Number:	1	Test Time:	9:27:44 AM



Test Time: **9:27:44 AM**

Test Date: **10/16/2012**

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VERIFICATION REPORT

Test Name:	Hip Flexion (ROM)	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	064		
Test ID:	Hip ROM Left	Test Date:	10/16/2012
Test Number:	1	Test Time:	9:51:05 AM

Component Part Number	Component Serial Number
Pelvis Assembly 78051-60	1445

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	21.4 deg C P
Humidity	10 -- 70	36 %RH P
Average Velocity	5.0 -- 10.0	6.7 deg/s P
Angle at 203 Nm	40.0 -- 50.0	41.2 degrees P
Moment at 30 degrees	0.0 -- 94.9	75.4 Nm P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test Time: **9:51:05 AM**

Test Date: **10/16/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Key	2301-02	115	12/15/2011
Transducers/PCB	14CB1-3615	0008	3/16/2012
DentonATD	Velocity Trap	1	1/11/2012
DentonATD			

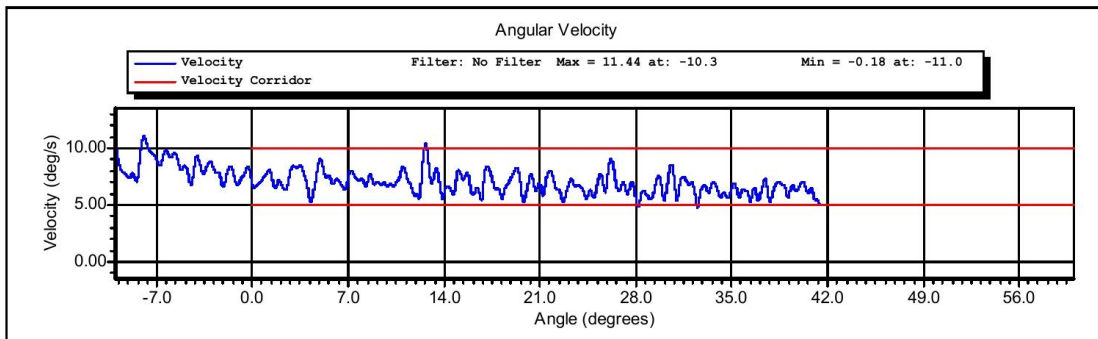
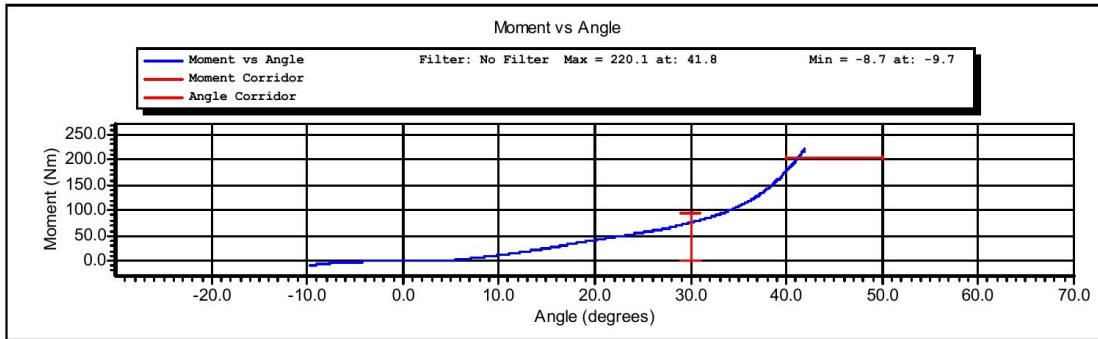
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Test Date: **10/16/2012**

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Test Name:	Hip Flexion (ROM)	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	064		
Test ID:	Hip ROM Left	Test Date:	10/16/2012
Test Number:	1	Test Time:	9:51:05 AM



Test Time: 9:51:05 AM

Test Date: 10/16/2012

CALIBRATION TEST RESULTS

PRE-TEST

HYBRID III 5TH PERCENTILE FEMALE - PASSENGER ATD

SERIAL NO: 139



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External Measurements

5th Female SN 139

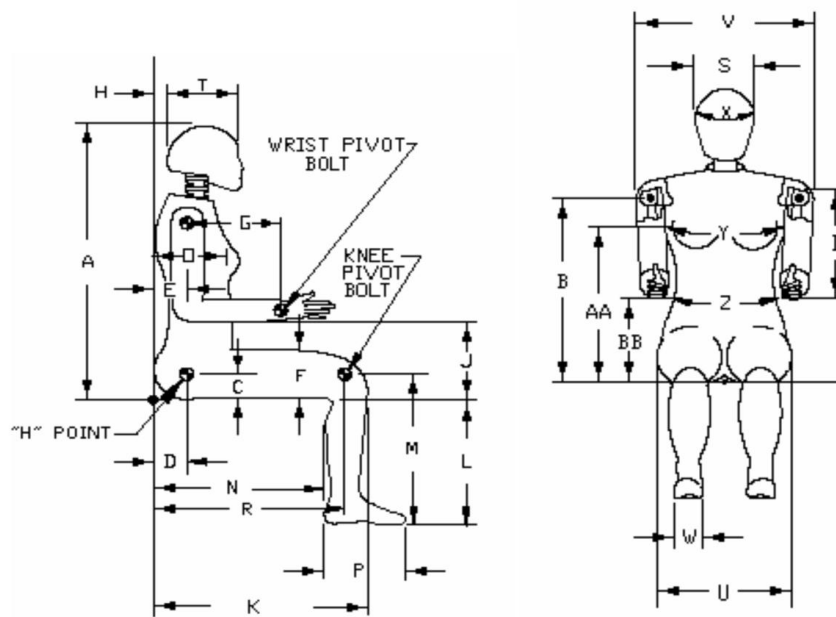
Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	774.7 – 800.1	783	Yes
B	Shoulder Pivot Height	431.8 – 457.2	447	Yes
C	H-Point Height	81.3 – 86.3	85.5	Yes
D	H-Point from Backline	144.8 – 149.8	147	Yes
E	Shoulder Pivot from Backline	68.6 - 83.8	72	Yes
F	Thigh Clearance	119.4 – 134.6	134	Yes
G	Back of Elbow to Wrist Pivot	243.9 – 259.1	245	Yes
H	Head Back to Backline	43.2 – 48.2	46	Yes
I	Shoulder to Elbow Length	276.8 – 297.2	285	Yes
J	Elbow Rest Height	182.8 – 203.2	190	Yes
K	Buttock to Knee Length	520.7 – 546.1	544	Yes
L	Popliteal Height	355.6 - 376	357	Yes
M	Knee Pivot Height	393.7 – 419.1	395	Yes
N	Buttock Popliteal Length	414 – 439.4	435	Yes
O	Chest Depth without Jacket	175.3 – 190.5	188	Yes
P	Foot Length (right)	218.5 – 233.7	219	Yes
R	Buttock To Knee Pivot Length	457.2 – 482.6	480	Yes
S	Head Breadth	137.1 – 147.3	143.5	Yes
T	Head Depth	177.8 - 188	185	Yes
U	Hip Breadth	299.7 – 314.9	303	Yes
V	Shoulder Breadth	350.5 – 365.7	361	Yes
W	Foot Breadth	78.8 - 94	82	Yes
X	Head Circumference	528.3 – 548.7	542	Yes
Y	Chest Circumference with Jacket	850.9 – 881.3	858	Yes
Z	Waist Circumference	759.5 – 789.9	770	Yes
AA	Reference Location (Chest Circumference)	332.7 – 358.1	345	Yes
BB	Reference Location (Waist Circumference)	160.1 – 170.2	166	Yes

Technician: SPZ

Date: 10/17/2012

Hybrid III 5th Female External Measurements

Reference Diagram





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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:	139		
Test ID:		Test Date:	10/16/2012
Test Number:	1	Test Time:	2:17:37 PM

Component Part Number	Component Serial Number
Head Skin - 78051-228	05067

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	21.4 deg C P
Humidity	10 -- 70	33 %RH P
Resultant Acceleration	250 -- 300	260 g P
Oscillation	0.0 -- 10.0	0.0 % P
Lateral Acceleration	-15.00 -- 15.00	-3.03 g P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test Time: **2:17:37 PM**

Test Date: **10/16/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Endevco	7264-2000	P58833	5/18/2012
Endevco	7264-2000	P51667	5/18/2012
Endevco	7264-2000	P52114	5/18/2012

Test Time: **2:17:37 PM**

Test Date: **10/16/2012**

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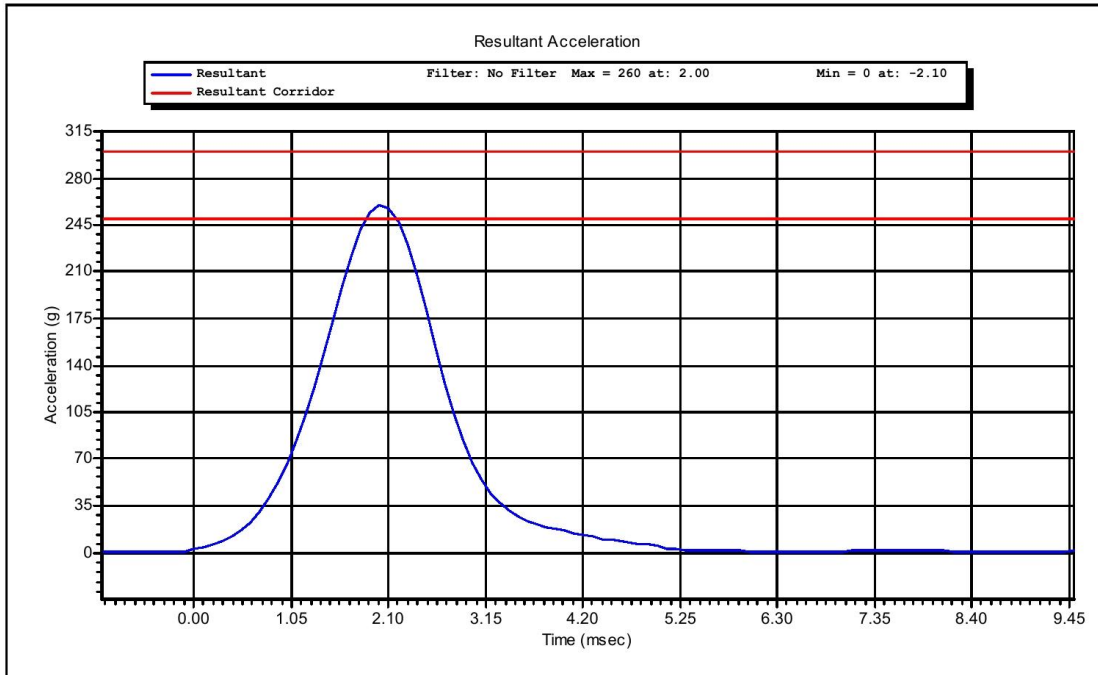


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Test Name:	Head Drop	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	139		
Test ID:		Test Date:	10/16/2012
Test Number:	1	Test Time:	2:17:37 PM



Test Time: **2:17:37 PM**

Test Date: **10/16/2012**

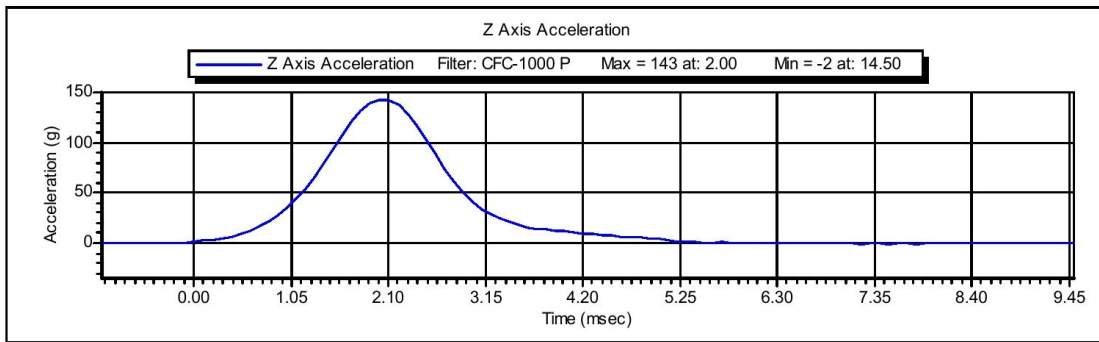
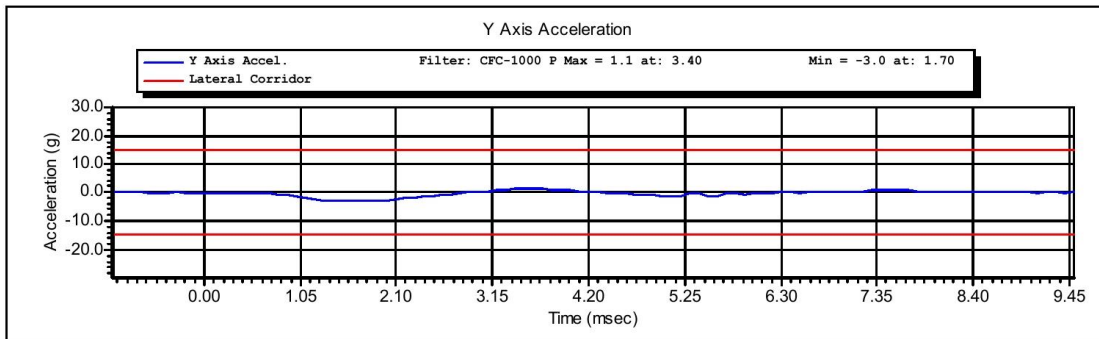
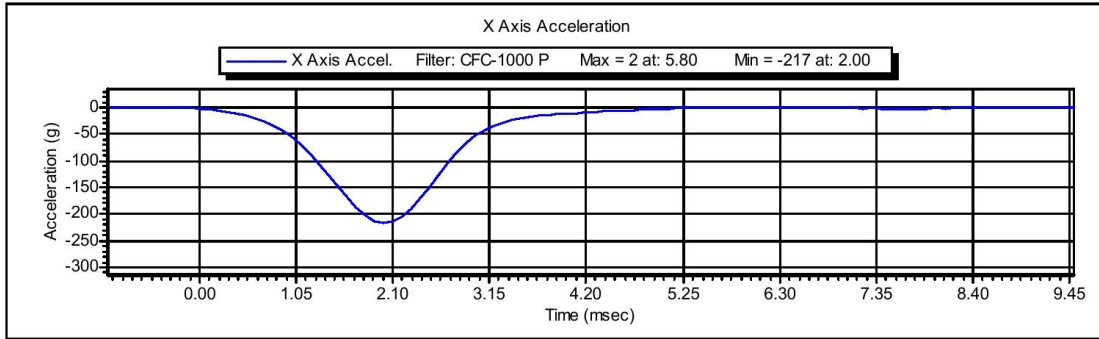
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Test Time: 2:17:37 PM

Test Date: 10/16/2012

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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:	139		
Test ID:		Test Date:	11/2/2012
Test Number:	2	Test Time:	1:32:34 PM

Component Part Number	Component Serial Number
Neck - 880105-255	DJ1701 NEW Neck
Front Nodding Block - 78051-351	85
Rear Nodding Block - 78051-351	85

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.6 deg C P
Humidity	10 -- 70	30 %RH P
Velocity	6.89 -- 7.13	7.12 m/s P
Pendulum Impulse at 10 ms	2.10 -- 2.50	2.34 m/s P
Pendulum Impulse at 20 ms	4.00 -- 5.00	4.68 m/s P
Pendulum Impulse at 30 ms	5.80 -- 7.00	6.72 m/s P
D Plane Rotation	-91.0 -- -77.0	-78.7 degrees P
Moment During Rotation Interval	69.0 -- 83.0	70.3 Nm P
Moment Decay to 10.0 Nm	80.0 -- 100.0	84.1 ms P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test Time: **1:32:34 PM**

Test Date: **11/2/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2012
Endevco	7231CT	C15016	8/15/2012
DentonATD	78051-342	PENDULUM POT	1/25/2012
DentonATD	78051-342	CONDYLE POT	1/25/2012
Denton	1716A	LC-2018My	5/21/2012
Denton	1716A	LC-2018Fx	5/21/2012

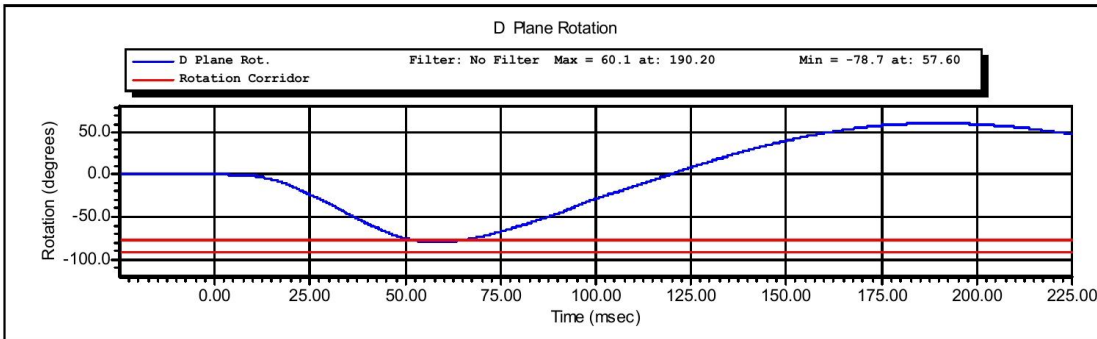
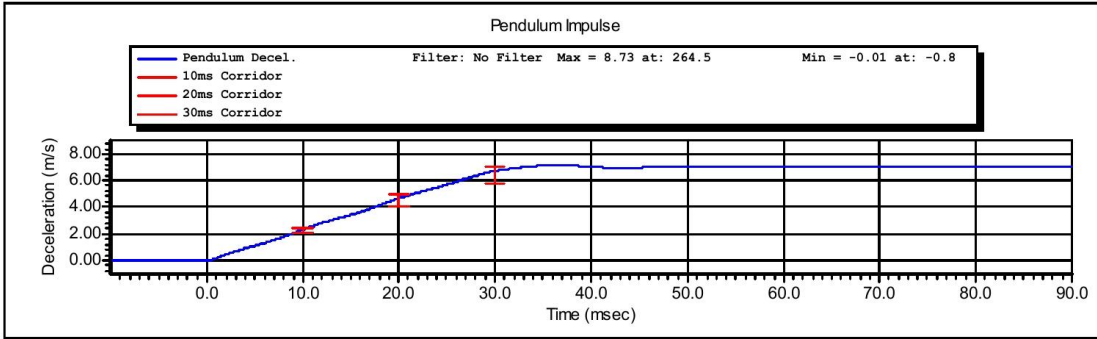
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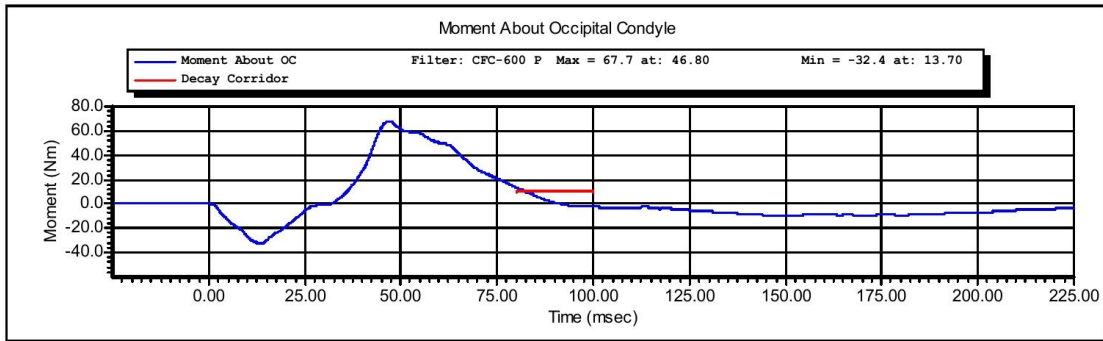


Test Name:	Neck Flexion	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	139		
Test ID:		Test Date:	11/2/2012
Test Number:	2	Test Time:	1:32:34 PM



Test Time: **1:32:34 PM**

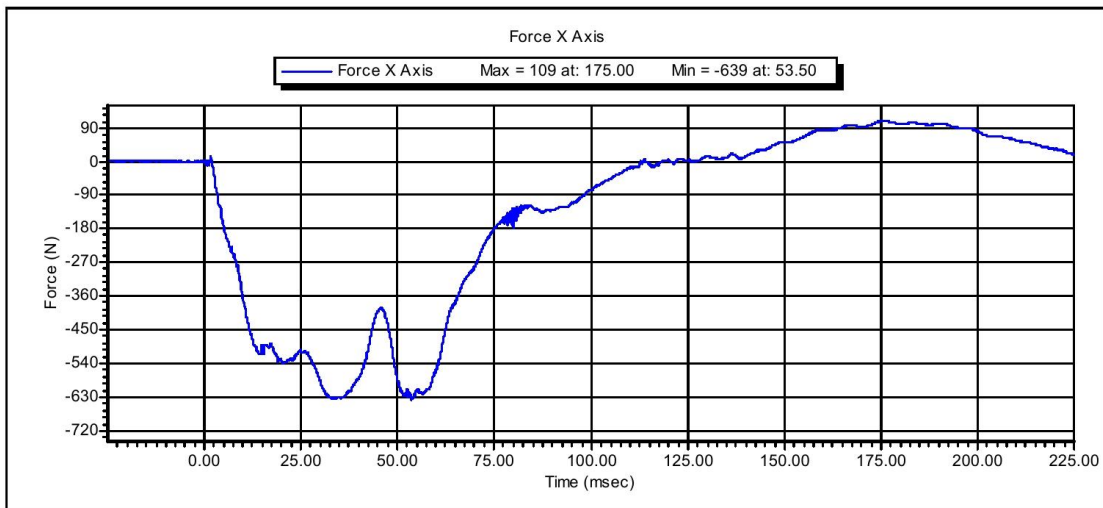
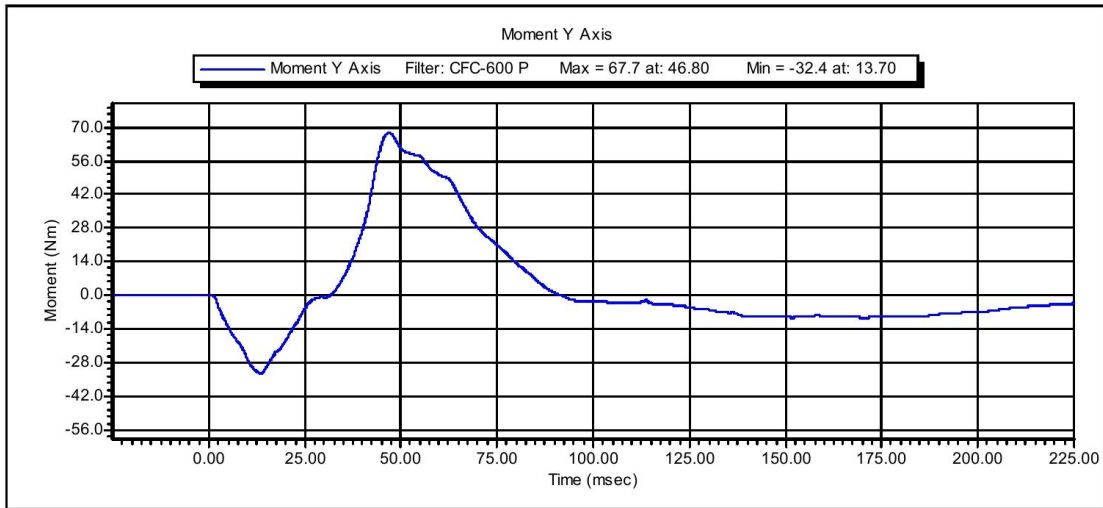
Test Date: **11/2/2012**



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Test Date: 11/2/2012

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Test Time: 1:32:34 PM

Test Date: 11/2/2012

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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:	139		
Test ID:		Test Date:	11/2/2012
Test Number:	1	Test Time:	2:26:02 PM

Component Part Number	Component Serial Number
Neck - 880105-255	DJ1701 NEW Neck
Front Nodding Block - 78051-351	85
Rear Nodding Block - 78051-351	85

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.3 deg C P
Humidity	10 -- 70	30 %RH P
Velocity	5.95 -- 6.19	6.17 m/s P
Pendulum Impulse at 10 ms	1.50 -- 1.90	1.80 m/s P
Pendulum Impulse at 20 ms	3.10 -- 3.90	3.65 m/s P
Pendulum Impulse at 30 ms	4.60 -- 5.60	5.40 m/s P
D Plane Rotation	99.0 -- 114.0	109.6 degrees P
Moment During Rotation Interval	-65.0 -- -53.0	-53.1 Nm P
Moment Decay to -10.0 Nm	94.0 -- 114.0	101.3 ms P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test Time: **2:26:02 PM**

Test Date: **11/2/2012**



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2012
Endevco	7231CT	C15016	8/15/2012
DentonATD	78051-342	PENDULUM POT	1/25/2012
DentonATD	78051-342	CONDYLE POT	1/25/2012
Denton	1716A	LC-2018My	5/21/2012
Denton	1716A	LC-2018Fx	5/21/2012

Test Time: **2:26:02 PM**

Test Date: **11/2/2012**

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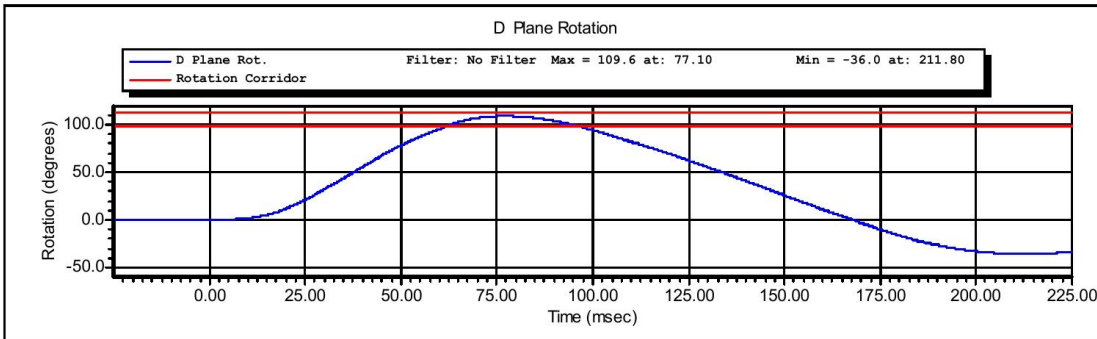
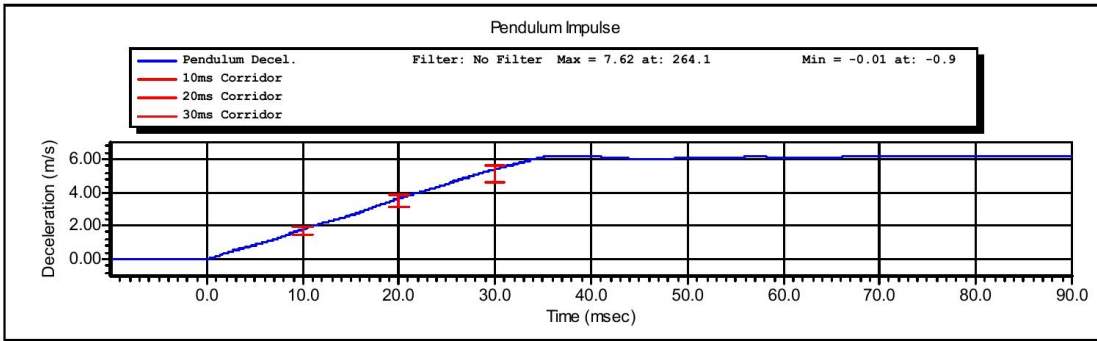


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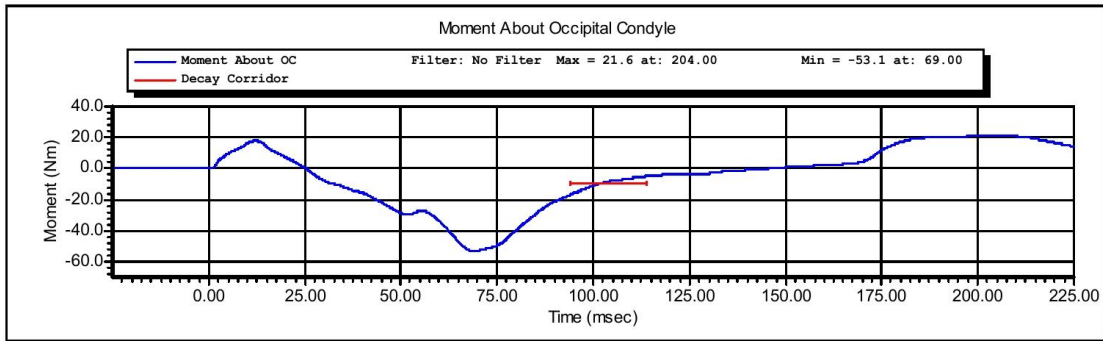
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Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	139		
Test ID:		Test Date:	11/2/2012
Test Number:	1	Test Time:	2:26:02 PM



Test Time: **2:26:02 PM**

Test Date: **11/2/2012**

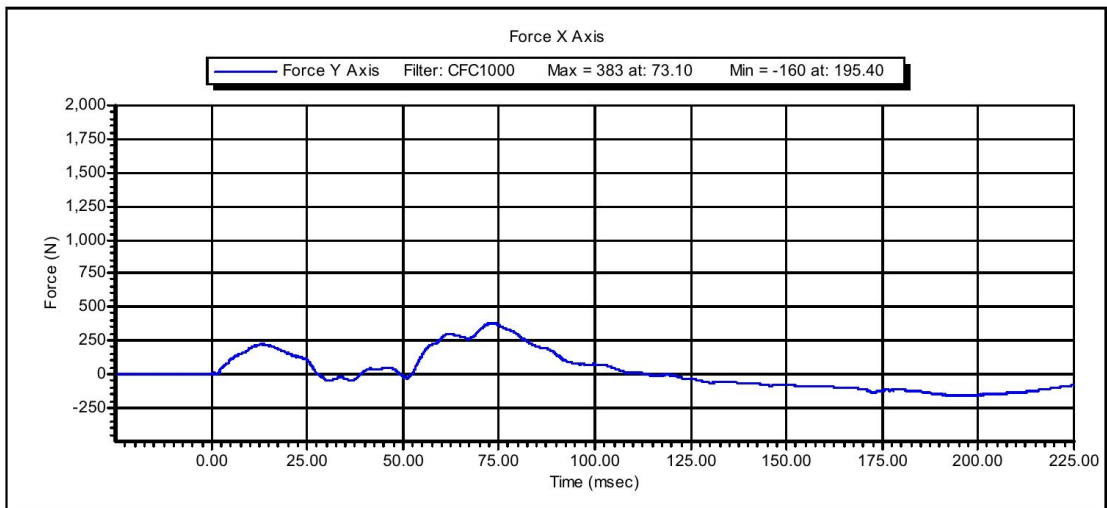
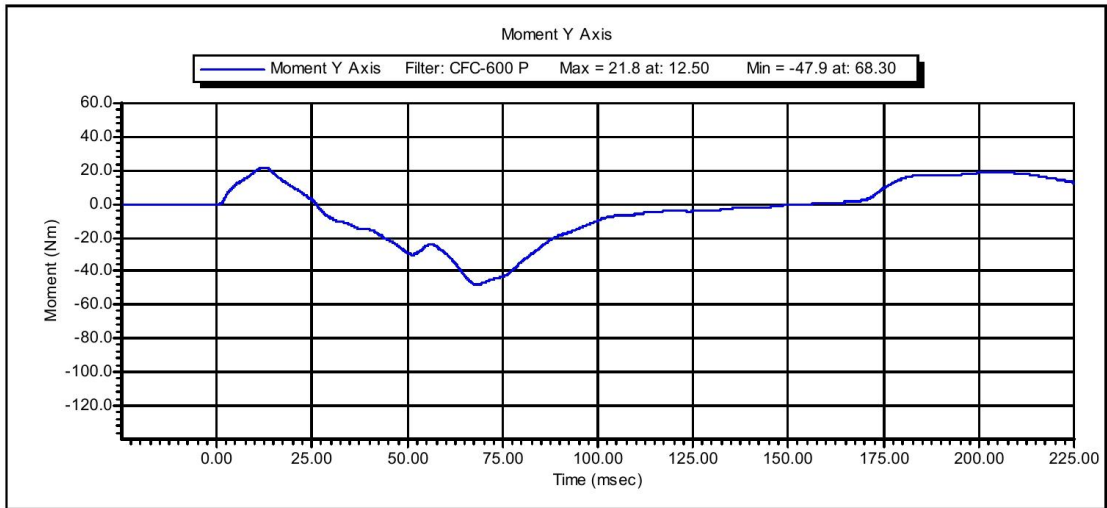
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Test Time: 2:26:02 PM

Test Date: 11/2/2012

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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:	139		
Test ID:		Test Date:	10/17/2012
Test Number:	1	Test Time:	11:28:37 AM

Component Part Number	Component Serial Number
Ribs 880105-RS	05032011A
Chest Jacket - 880105-355-E	05177
Lumbar Spine - 880105-1095	050327

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.9 deg C P
Humidity	10.0 -- 70.0	30.0 %RH P
Velocity	6.59 -- 6.83	6.59 m/s P
Sternum Displacement	-58.0 -- -50.0	-51.5 mm P
Force During Displacement Interval	-4400 -- -3900	-4157 N P
Force -18.0 to -50.0 Displacement	-4600 -- 0	-4157 N P
Hysteresis	69 -- 85	74 % P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test Time: **11:28:37 AM**

Test Date: **10/17/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2012
Endevco	7231CT	C14953	5/25/2012
DentonATD	H3CD	DS-139	5/21/2012

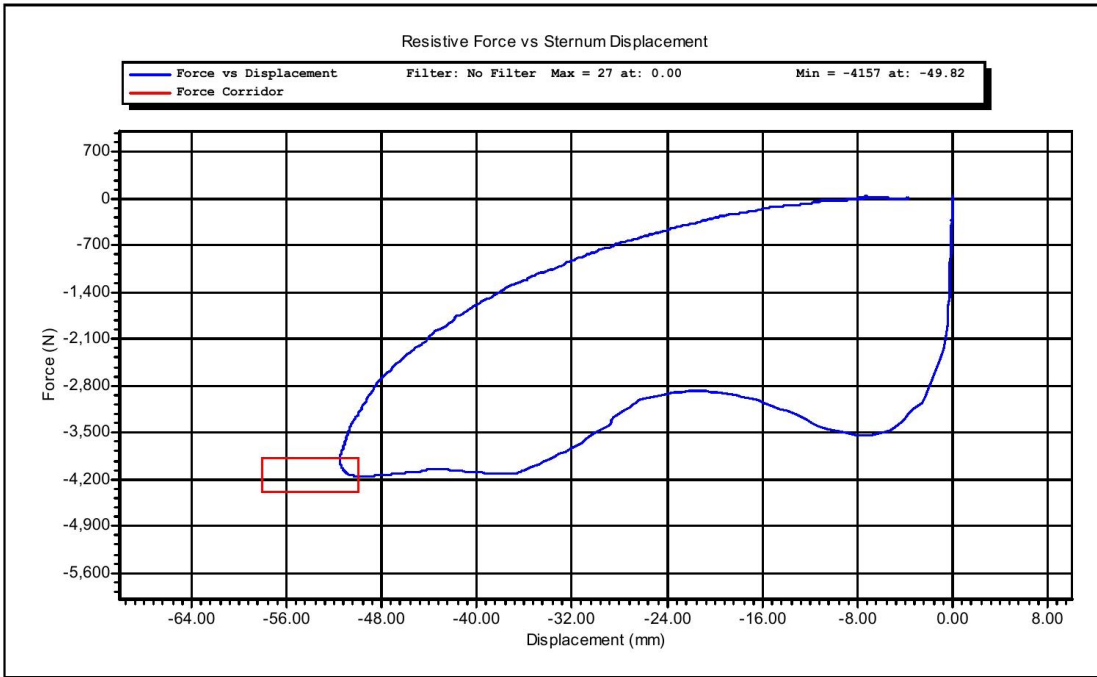
Test Time: 11:28:37 AM

Test Date: 10/17/2012

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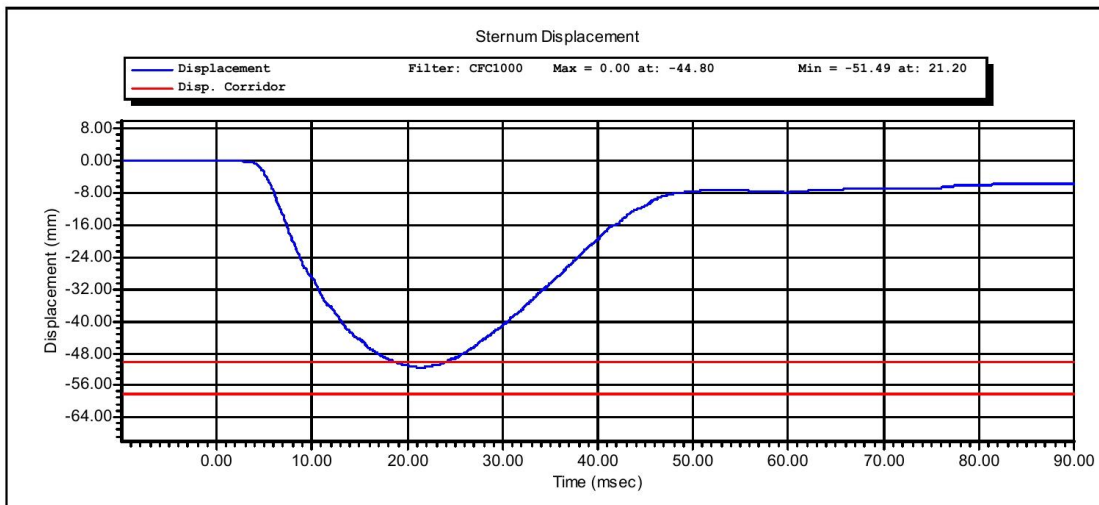
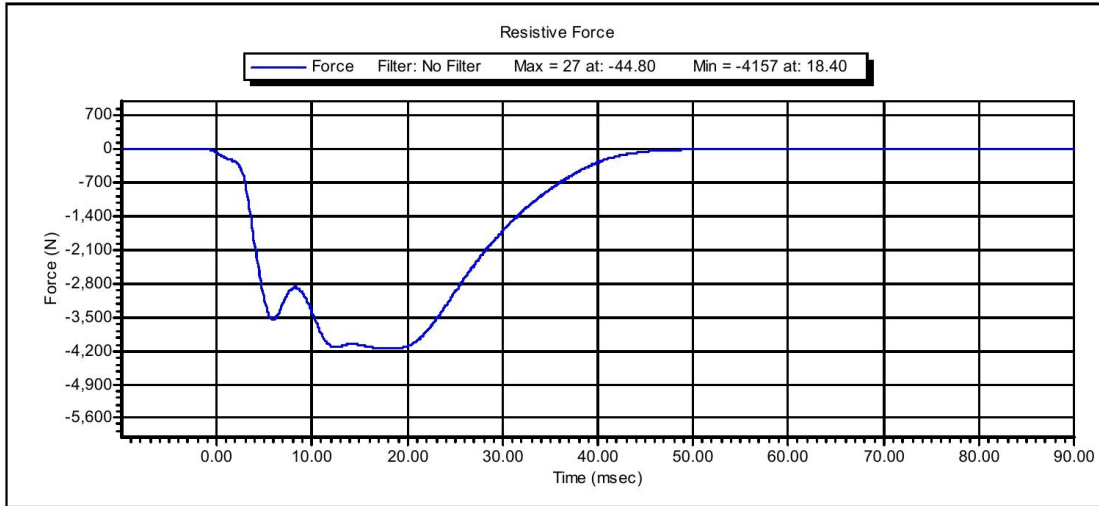
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Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	139		
Test ID:		Test Date:	10/17/2012
Test Number:	1	Test Time:	11:28:37 AM



Test Time: 11:28:37 AM

Test Date: 10/17/2012

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Test Time: 11:28:37 AM

Test Date: 10/17/2012

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VERIFICATION REPORT

Test Name:	Knee Impact PENDULUM	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	139		
Test ID:	Knee Impact Left	Test Date:	10/16/2012
Test Number:	1	Test Time:	1:32:19 PM

Component Part Number	Component Serial Number
Knee Skin - 880105-508	1350

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	21.7 deg C P
Humidity	10.0 -- 70.0	30.0 %RH P
Velocity	2.07 -- 2.13	2.10 m/s P
Resistive Force	-4060 -- -3450	-3833 N P

All test parameters are within specifications

Technician: **M. Goehle**

Supervisor: **D. Travale**

Test Time: **1:32:19 PM**

Test Date: **10/16/2012**



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2012
Endevco	7264-2000	P66927	6/15/2012

Test Time: **1:32:19 PM**

Test Date: **10/16/2012**

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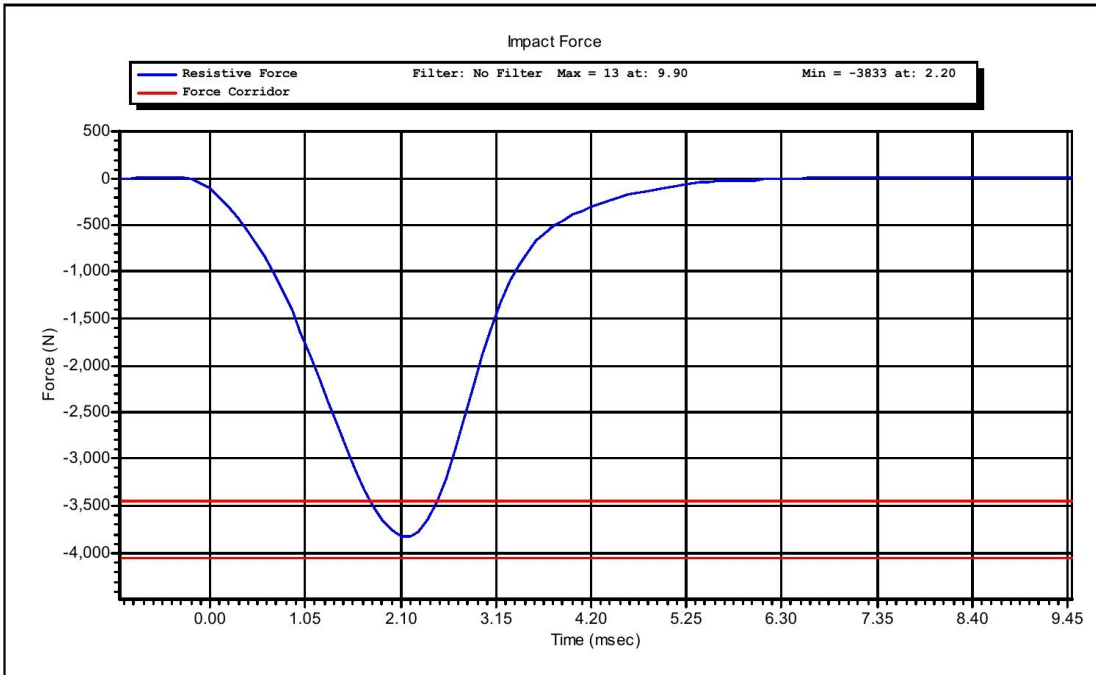


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Test Name:	Knee Impact PENDULUM	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	139		
Test ID:	Knee Impact Left	Test Date:	10/16/2012
Test Number:	1	Test Time:	1:32:19 PM



Test Time: **1:32:19 PM**

Test Date: **10/16/2012**

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VERIFICATION REPORT

Test Name:	Knee Impact PENDULUM	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	139		
Test ID:		Test Date:	10/16/2012
Test Number:	1	Test Time:	1:51:13 PM

Component Part Number	Component Serial Number
Knee Skin - 880105-508	1359

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	21.4 deg C P
Humidity	10.0 -- 70.0	30.0 %RH P
Velocity	2.07 -- 2.13	2.11 m/s P
Resistive Force	-4060 -- -3450	-3890 N P

All test parameters are within specifications

Technician: **M. Goehle**

Supervisor: **D. Travale**

Test Time: **1:51:13 PM**

Test Date: **10/16/2012**



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2012
Endevco	7264-2000	P66927	6/15/2012

Test Time: **1:51:13 PM**

Test Date: **10/16/2012**

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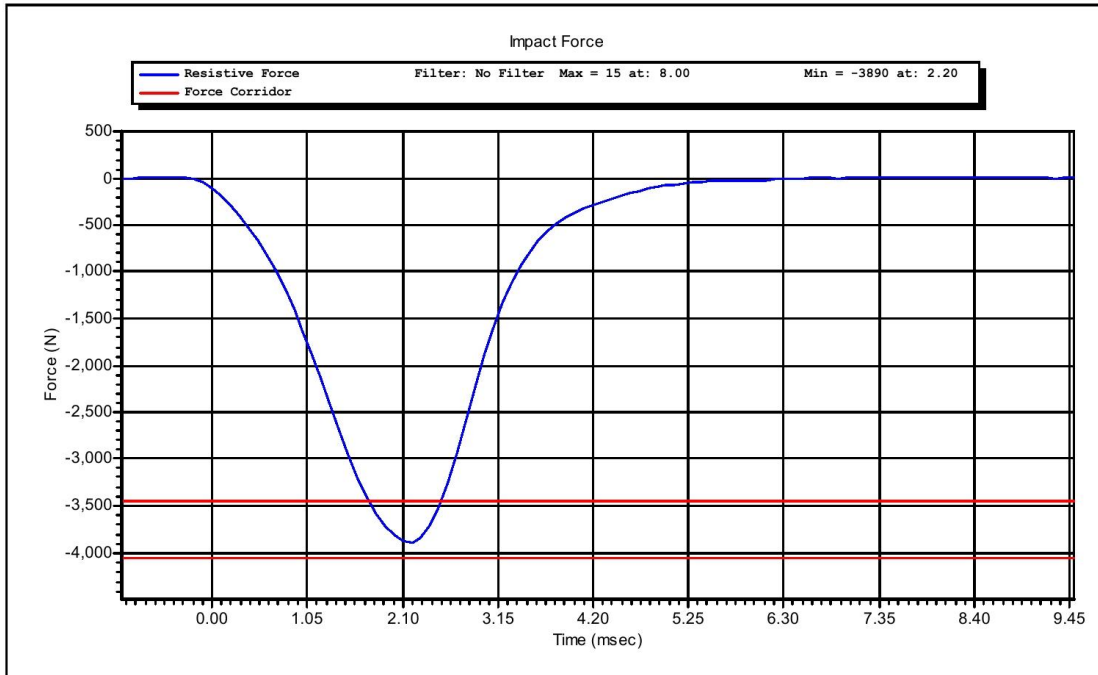


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Test Name:	Knee Impact PENDULUM	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	139		
Test ID:		Test Date:	10/16/2012
Test Number:	1	Test Time:	1:51:13 PM



Test Time: 1:51:13 PM

Test Date: 10/16/2012

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Torso Flexion

Pre-Test

Part 5720HIII 5%Female

ATD Serial No: 139

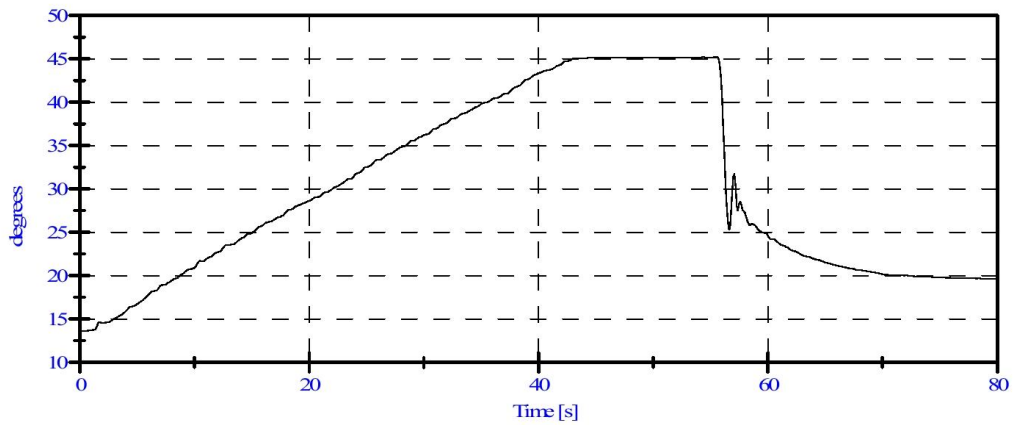
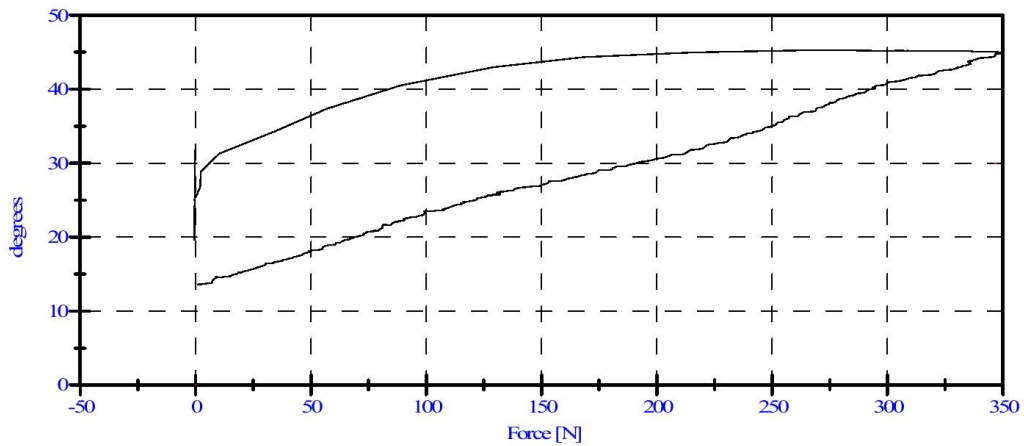
Laboratory Supervisor: D. Travale

Date: 10/16/2012

Laboratory Technician: M. Goehle

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.6 C	21.0 C	Passed
Lab Humidity:	10-70 %	29.00 %	Passed
Initial Angle:	0.00-20.00 deg	13.58 deg	Passed
Force at 45 Deg	320.00-390.00 N	349.88 N	Passed
Return Angle	8 Deg Max from Initial	19.02 deg	Passed

LUMBAR SPINE FLEXION TEST



CALIBRATION TEST RESULTS

POST-TEST

HYBRID III 50TH PERCENTILE MALE - DRIVER ATD

SERIAL NO: 64



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50th Male External Measurements

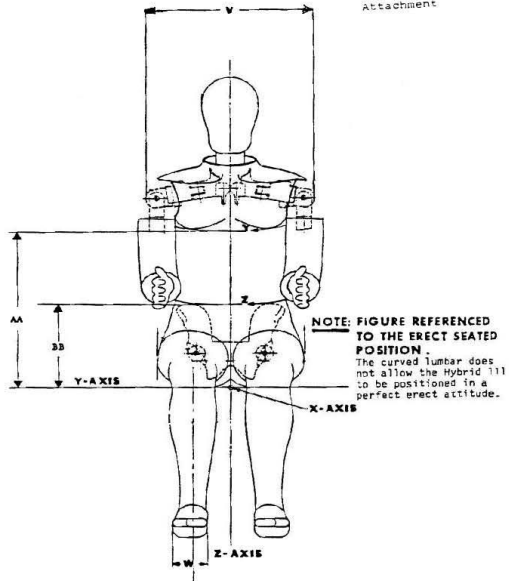
S/N 064

Symbol	Description	Specification	Results	Pass
		in	in	
A	Sitting Height	34.6 – 35.0	34.9	Yes
B	Shoulder Pivot Height	19.9 - 20.5	20.2	Yes
C	H-Point Height	3.3 – 3.5	3.4	Yes
D	H-Point from Backline	5.3 – 5.5	5.5	Yes
E	Shoulder Pivot from Backline	3.3 – 3.7	3.5	Yes
F	Thigh Clearance	5.5 – 6.1	6.0	Yes
G	Back of Elbow to Wrist Pivot	11.4 – 12.0	11.6	Yes
H	Head Back to Backline	1.6 – 1.8	1.7	Yes
I	Shoulder to Elbow Length	13.0 – 13.6	13.4	Yes
J	Elbow Rest Height	7.5 – 8.3	7.8	Yes
K	Buttock to Knee Length	22.8 – 23.8	23.1	Yes
L	Popliteal Height	16.9 – 17.9	17.3	Yes
M	Knee Pivot Height	19.1 – 19.7	19.4	Yes
N	Buttock Popliteal Length	17.8 – 18.8	18.7	Yes
O	Chest Depth without Jacket	8.4 – 9.0	8.5	Yes
P	Foot Length (right)	9.9 – 10.5	10.2	Yes
V	Shoulder Breadth	16.3 – 17.2	16.9	Yes
W	Foot Breadth	3.6 – 4.2	3.9	Yes
Y	Chest Circumference with Jacket	38.2 – 39.4	38.9	Yes
Z	Waist Circumference	32.9 – 34.1	33.7	Yes
AA	Reference Location (Chest Circumference)	16.9 – 17.1	16.9	Yes
BB	Reference Location (Waist Circumference)	8.9 – 9.1	9.0	Yes

Technician: M. Goehle

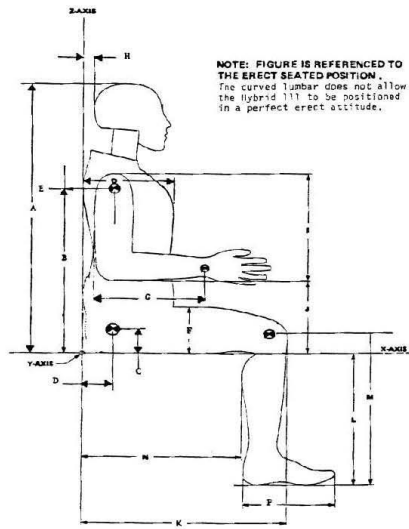
11/14/2012

USC 2485
Attachment



HYBRID III Exterior Body Dimensions - Front View

USC 2485
Attachment



HYBRID III Exterior Body Dimensions - Side View



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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:	064		
Test ID:		Test Date:	11/14/2012
Test Number:	1	Test Time:	9:12:13 AM

Component Part Number	Component Serial Number
Head Skin - 78051-228	7997

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	22.0 deg C P
Humidity	10 -- 70	24 %RH P
Resultant Acceleration	225 -- 275	248 g P
Oscillation	0.0 -- 10.0	2.1 % P
Lateral Acceleration	-15.00 -- 15.00	2.50 g P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test Time: **9:12:13 AM**

Test Date: **11/14/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Endevco	7264-2000	P58871	5/16/2012
Endevco	7264-2000	P12359	5/23/2012
Endevco	7264-2000	P52133	5/16/2012

Test Time: 9:12:13 AM

Test Date: 11/14/2012

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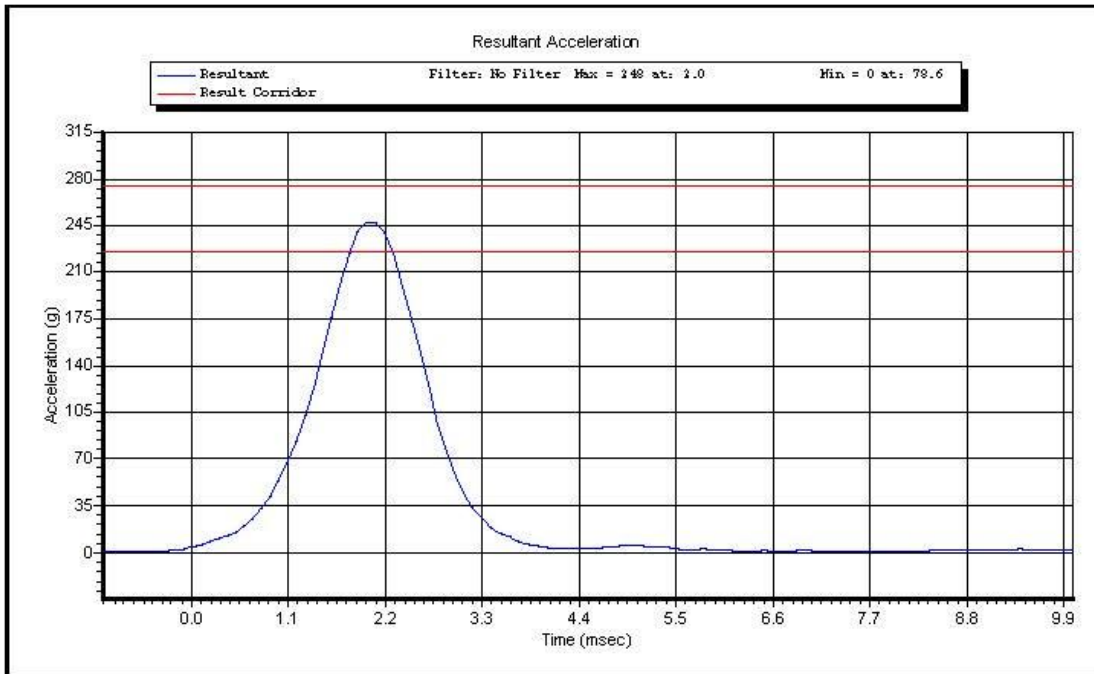


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Test Name:	Head Drop	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	064		
Test ID:		Test Date:	11/14/2012
Test Number:	1	Test Time:	9:12:13 AM



Test Time: **9:12:13 AM**

Test Date: **11/14/2012**

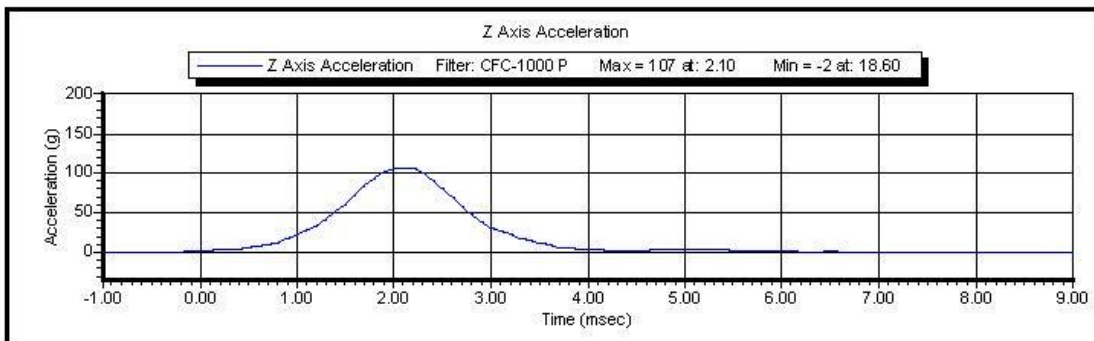
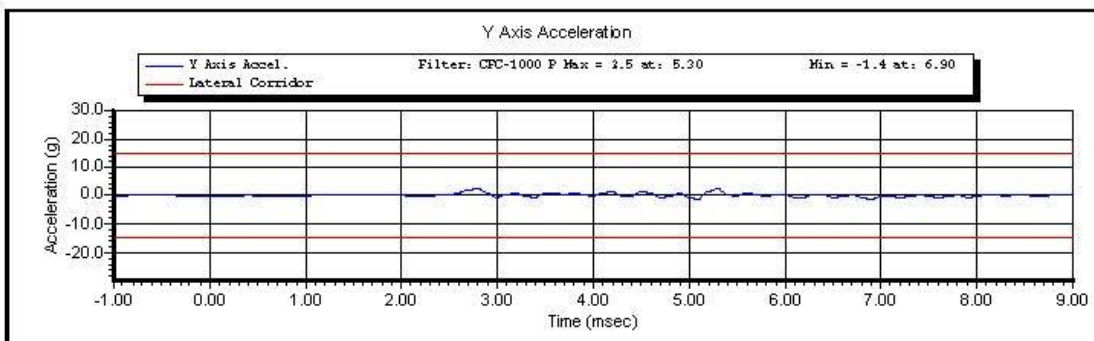
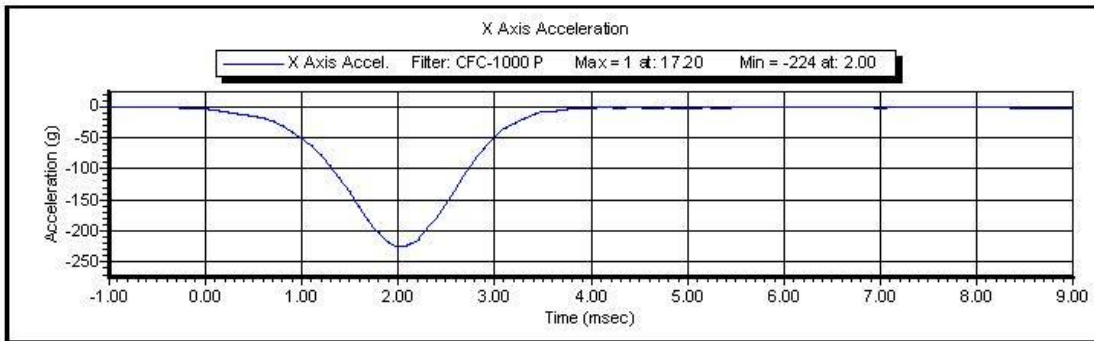
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Test Time: 9:12:13 AM

Test Date: 11/14/2012

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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:	064		
Test ID:		Test Date:	11/14/2012
Test Number:	3	Test Time:	11:14:20 AM

Component Part Number	Component Serial Number
Neck - 78051-336	02-1692

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	22.1 deg C P
Humidity	10 -- 70	24 %RH P
Velocity	6.89 -- 7.13	7.06 m/s P
Pendulum Deceleration at 10 ms	22.5 -- 27.5	24.4 g P
Pendulum Deceleration at 20 ms	17.6 -- 22.6	20.8 g P
Pendulum Deceleration at 30 ms	12.5 -- 18.5	14.3 g P
Max Pendulum Deceleration After 30 ms	0.0 -- 29.0	14.3 g P
Deceleration time to 5 g	34.0 -- 42.0	37.3 ms P
D Plane Rotation	-78.0 -- -64.0	-74.2 degrees P
Time at max rotation	57.0 -- 64.0	59.3 ms P
Rotation Decay to Zero	113.0 -- 128.0	113.3 ms P
Moment about OC	88.1 -- 108.4	91.0 Nm P
Time at Max Moment	47.0 -- 58.0	52.3 ms P
Moment Decay to Zero	97.0 -- 107.0	99.4 ms P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test Time: **11:14:20 AM**

Test Date: **11/14/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2012
Endevco	7231CT	C15016	8/15/2012
DentonATD	78051-342	PENDULUM POT	1/25/2012
DentonATD	78051-342	CONDYLE POT	1/25/2012
Denton	1716A	LC-2186 My	5/21/2012
Denton	1716A	LC-2186 Fx	5/21/2012

Test Time: 11:14:20 AM

Test Date: 11/14/2012

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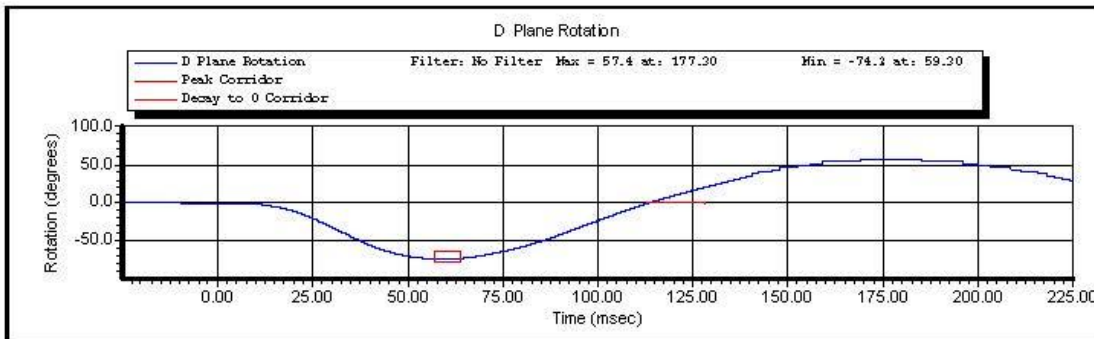
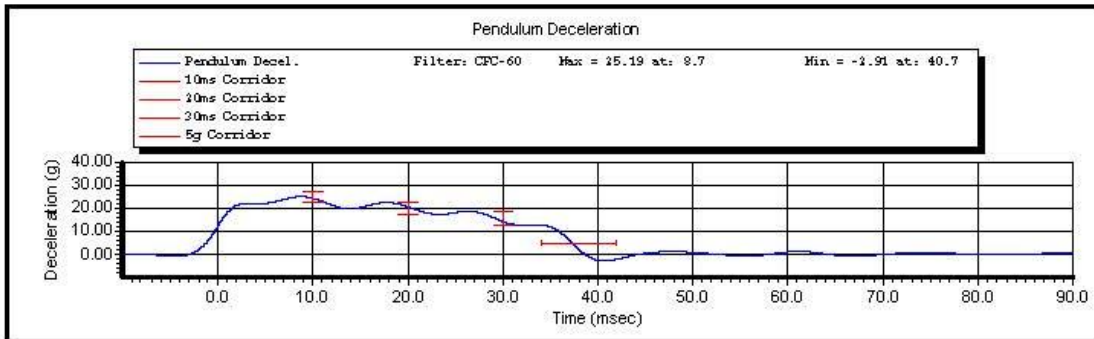


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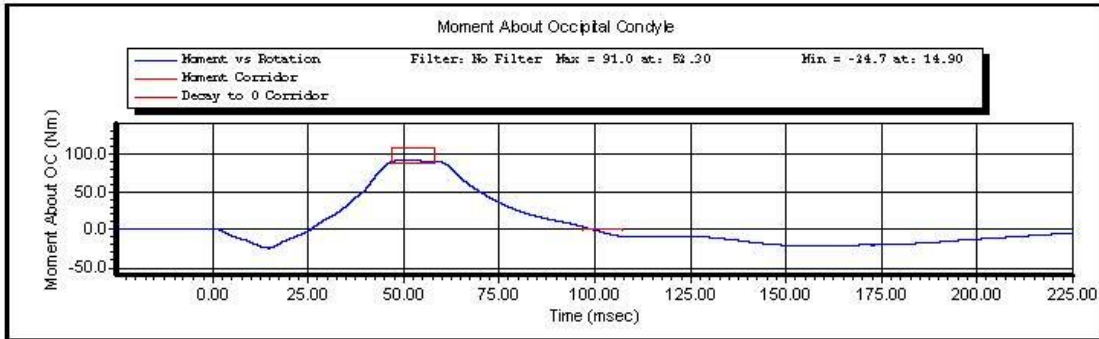
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Name of Sub Test:		Type of Spec:	NHTSA
Type of ATD:	Hybrid III 50'th		
ATD Serial Number:	064		
ID of Test:		Date:	11/14/2012
Number of Test:	3	Time of Test:	11:14:20 AM



Time of Test: **11:14:20 AM**

Date of Test: **11/14/2012**

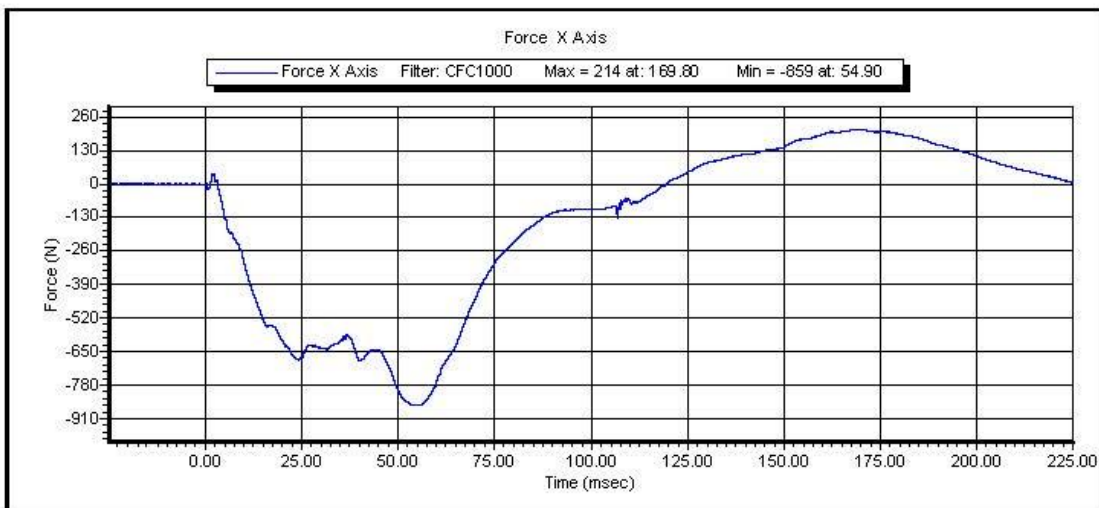
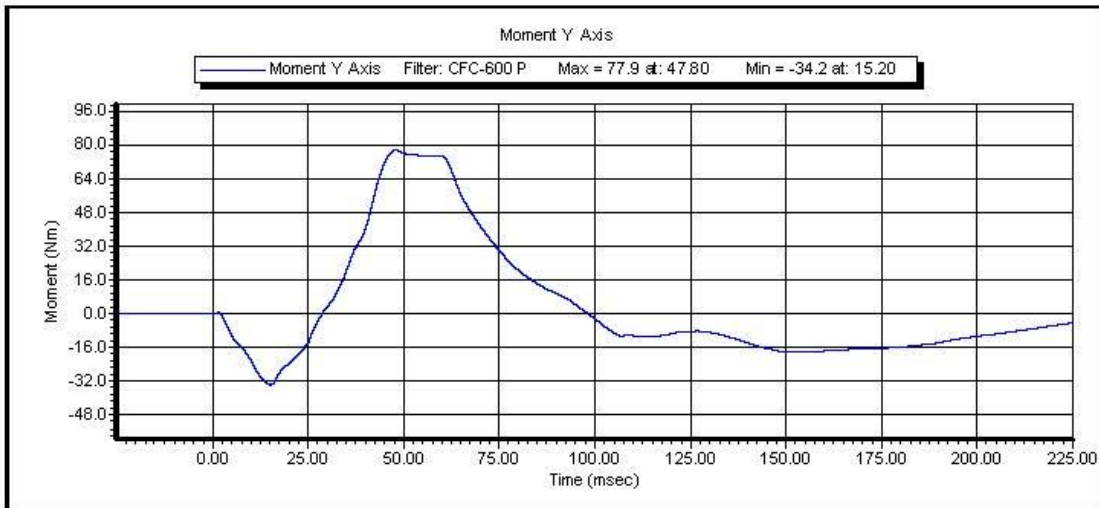
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Time of Test: 11:14:20 AM

Date of Test: 11/14/2012

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Time of Test: 11:14:20 AM

Date of Test: 11/14/2012

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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:	064		
Test ID:	Neck Extension	Test Date:	11/14/2012
Test Number:	2	Test Time:	1:50:27 PM

Component Part Number	Component Serial Number
Neck - 78051-336	02-1692

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	22.0 deg C P
Humidity	10 -- 70	24 %RH P
Velocity	5.94 -- 6.19	6.10 m/s P
Pendulum Deceleration at 10 ms	17.2 -- 21.2	19.0 g P
Pendulum Deceleration at 20 ms	14.0 -- 19.0	16.7 g P
Pendulum Deceleration at 30 ms	11.0 -- 16.0	13.7 g P
Max Pendulum Deceleration after 30 ms	0.0 -- 22.0	13.7 g P
Decel Time to 5 g	38.0 -- 46.0	40.5 ms P
D Plane Rotation	81.0 -- 106.0	91.2 degrees P
Time at Max Rotation	72.0 -- 82.0	79.0 ms P
Rotation Decay to Zero	147.0 -- 174.0	156.9 ms P
Moment About Occipital Condyle	-80.0 -- -52.9	-63.4 Nm P
Time at Max Moment	65.0 -- 79.0	74.5 ms P
Moment Decay to Zero	120.0 -- 148.0	143.5 ms P

All test parameters are within specifications

Technician: **M. Goehle**

Supervisor: **D. Travale**

Test Time: **1:50:27 PM**

Test Date: **11/14/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2012
Endevco	7231CT	C15016	8/15/2012
DentonATD	78051-342	PENDULUM POT	1/25/2012
DentonATD	78051-342	CONDYLE POT	1/25/2012
Denton	1716A	LC-2186 My	5/21/2012
Denton	1716A	LC-2186 Fx	5/21/2012

Test Time: 1:50:27 PM

Test Date: 11/14/2012

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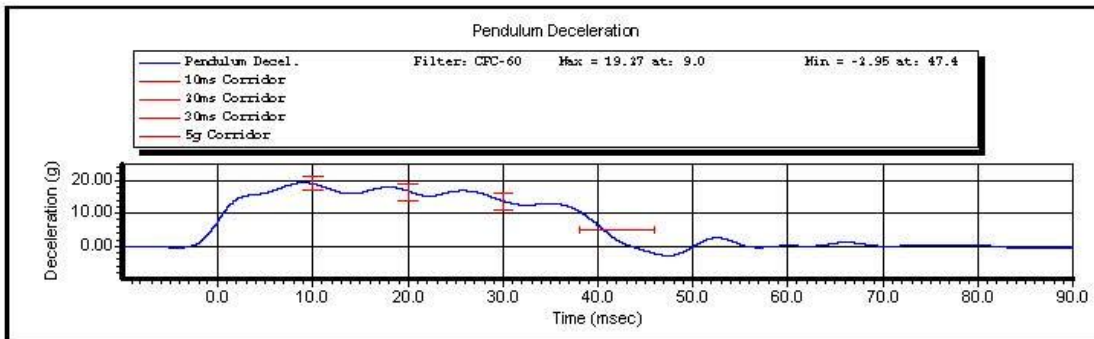
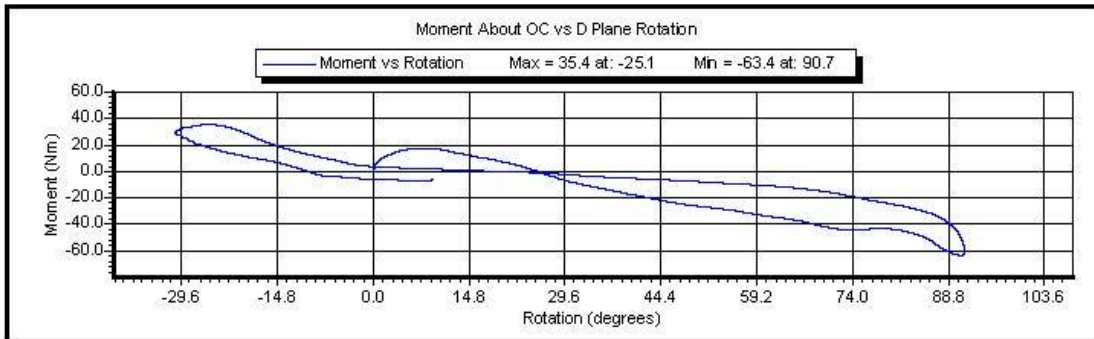


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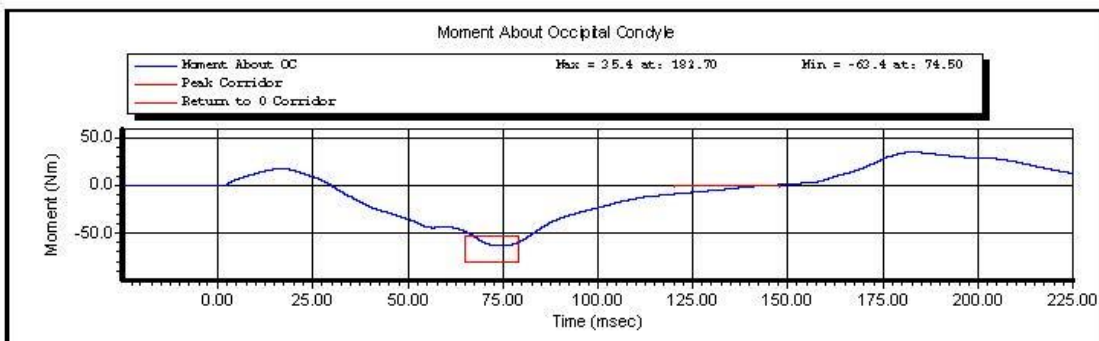
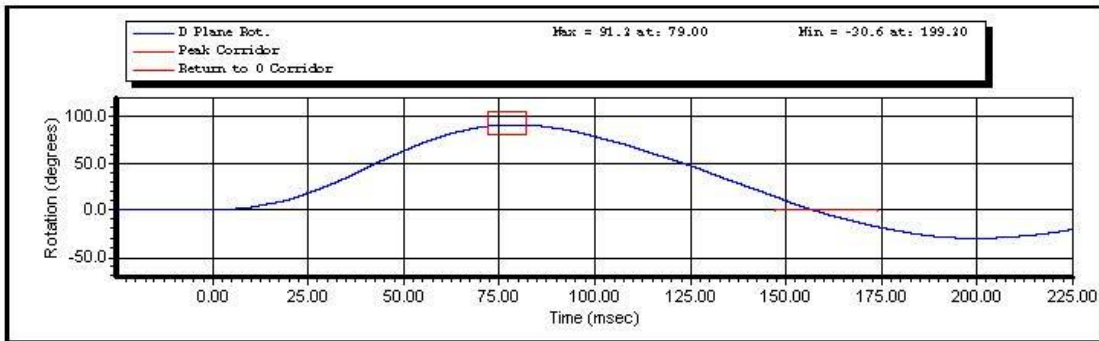
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Name of Sub Test:		Type of Spec:	NHTSA
Type of ATD:	Hybrid III 50'th		
ATD Serial Number:	064		
ID of Test:	Neck Extension	Date:	11/14/2012
Number of Test:	2	Time of Test:	1:50:27 PM



Time of Test: **1:50:27 PM**

Date of Test: **11/14/2012**

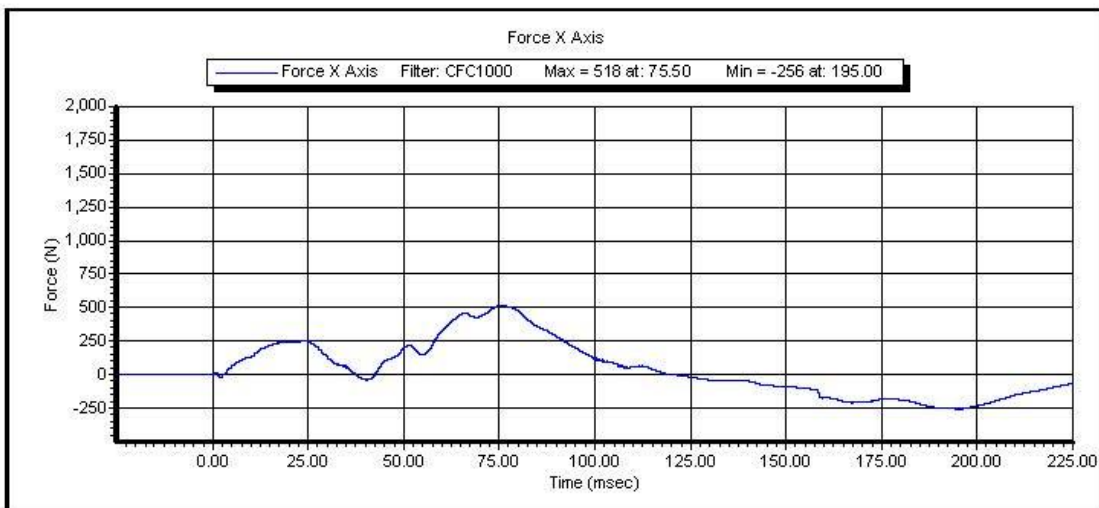
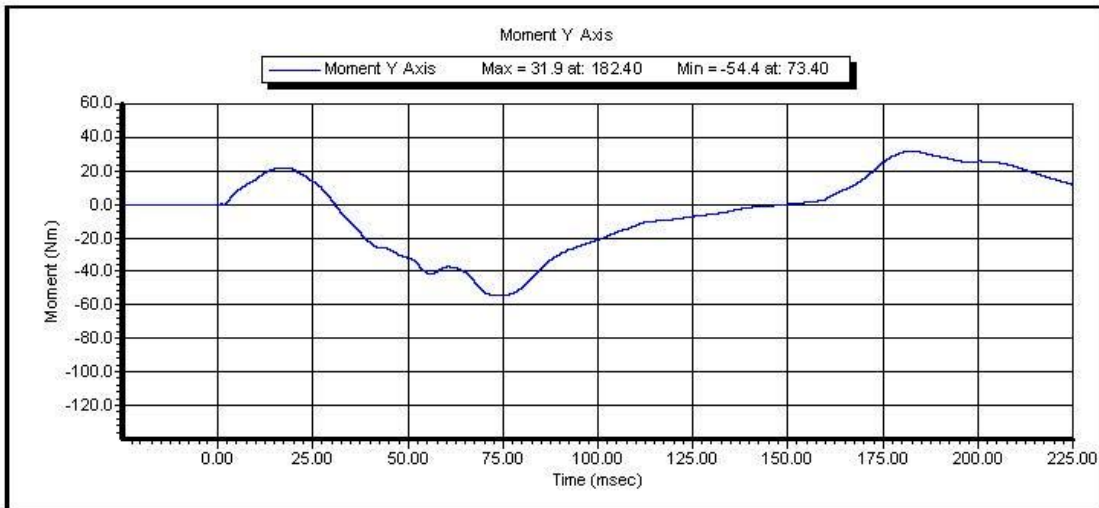
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Time of Test: 1:50:27 PM

Date of Test: 11/14/2012

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Time of Test: 1:50:27 PM

Date of Test: 11/14/2012

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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:	064		
Test ID:	Thorax Impact	Test Date:	11/12/2012
Test Number:	2	Test Time:	4:35:46 PM

Component Part Number	Component Serial Number
Ribs 78051-RS	3964
Chest Jacket - 78051-169	2589

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	22.1 deg C P
Humidity	10.0 -- 70.0	35.7 %RH P
Velocity	6.59 -- 6.83	6.78 m/s P
Resistive Force	-5.894 -- -5.160	-5.691 kN P
Sternum Displacement	-72.6 -- -63.5	-63.7 mm P
Hysteresis	69 -- 85	76 % P

All test parameters are within specifications

Technician: **M. Goehle**

Supervisor: **D. Travale**

Test Time: **4:35:46 PM**

Test Date: **11/12/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

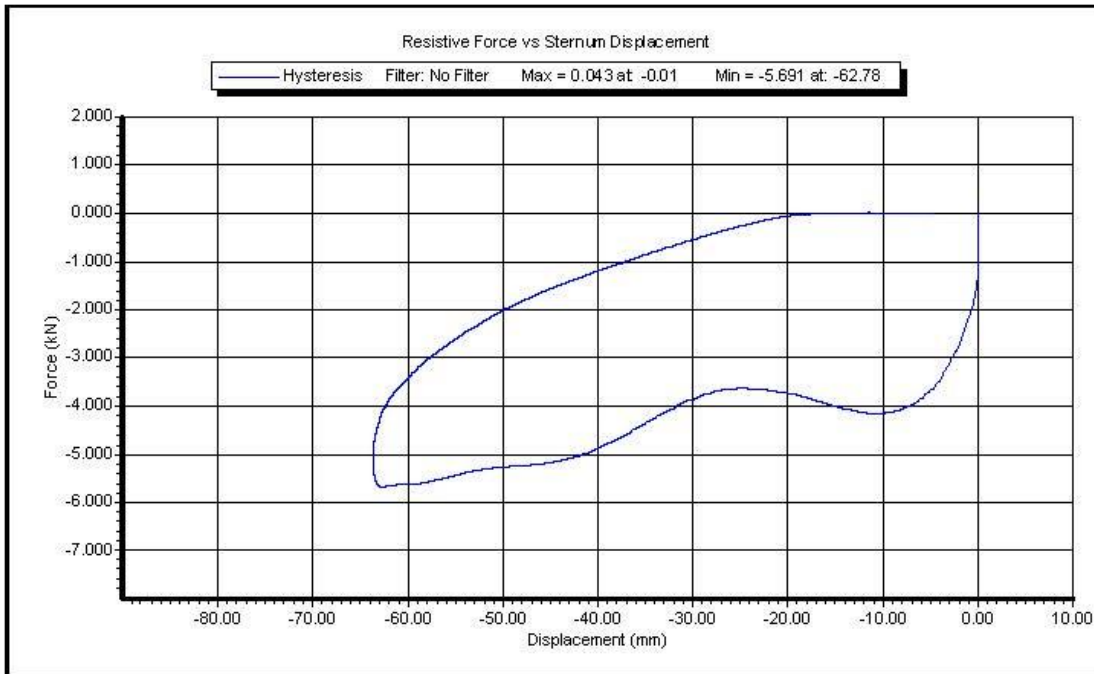
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DentonATD	Velocity Trap	1	1/11/2012
Endevco	7231CT	C14953	5/25/2012
DentonATD	78051-342	DS-064	5/18/2012

Test Time: 4:35:46 PM

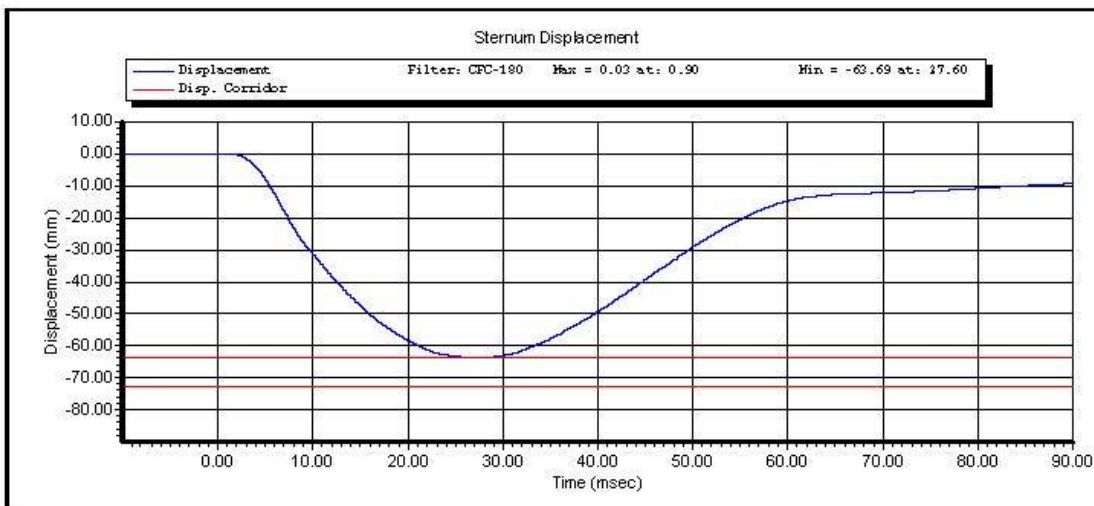
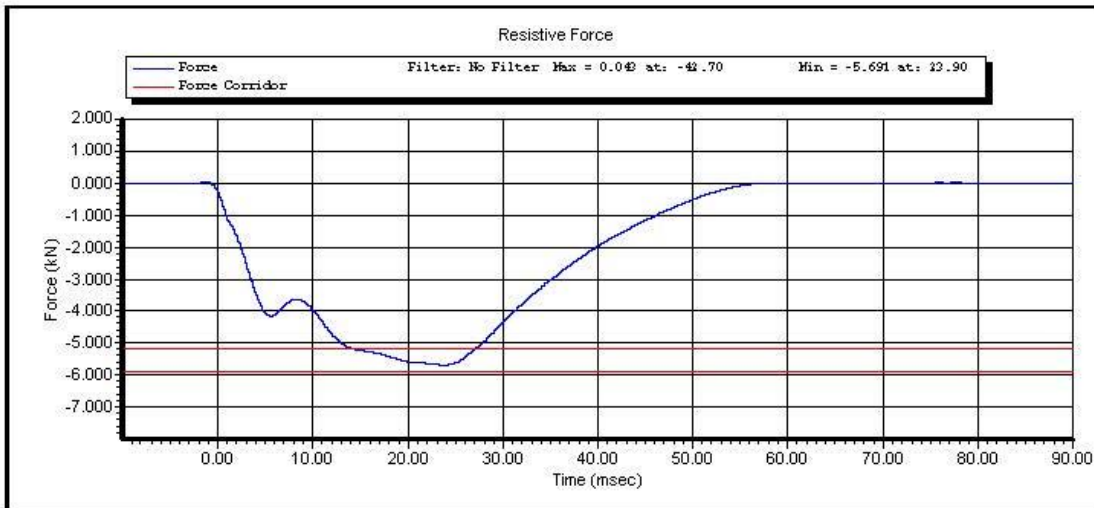
Test Date: 11/12/2012

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Test Name:	Thorax Impact	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	064		
Test ID:	Thorax Impact	Test Date:	11/12/2012
Test Number:	2	Test Time:	4:35:46 PM

Test Time: **4:35:46 PM**Test Date: **11/12/2012**

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Test Time: 4:35:46 PM

Test Date: 11/12/2012

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VERIFICATION REPORT

Test Name:	Hip Flexion (ROM)	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	064		
Test ID:	Hip ROM Left	Test Date:	11/13/2012
Test Number:	1	Test Time:	10:26:46 AM

Component Part Number	Component Serial Number
Pelvis Assembly 78051-60	1445

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	22.1 deg C P
Humidity	10 -- 70	26 %RH P
Average Velocity	5.0 -- 10.0	6.8 deg/s P
Angle at 203 Nm	40.0 -- 50.0	41.1 degrees P
Moment at 30 degrees	0.0 -- 94.9	79.4 Nm P

All test parameters are within specifications

Technician: **M. Goehle**

Supervisor: **D. Travale**

Test Time: **10:26:46 AM**

Test Date: **11/13/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Key	2301.02	115	12/15/2011
Transducers/PCB	14 CB1-3615	0008	3/16/2012
DentonATD	Velocity Trap	1	1/11/2012
DentonATD			

Test Time: **10:26:46 AM**

Test Date: **11/13/2012**

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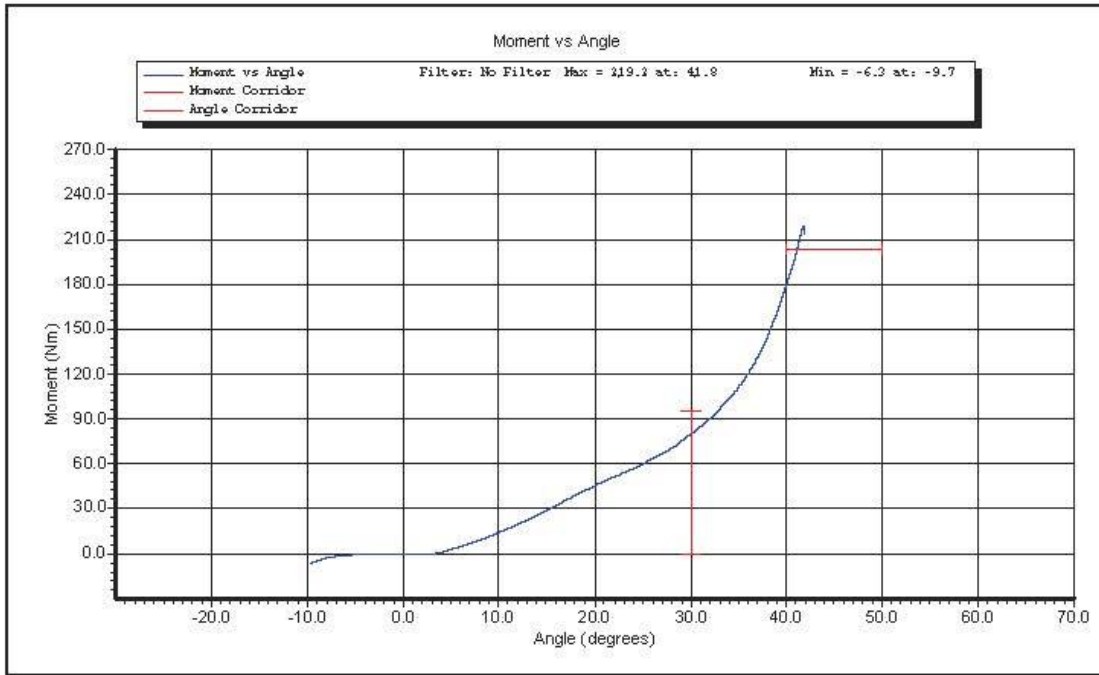


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Test Name:	Hip Flexion (ROM)	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	064		
Test ID:	Hip ROM Left	Test Date:	11/13/2012
Test Number:	1	Test Time:	10:26:46 AM



Test Time: **10:26:46 AM**

Test Date: **11/13/2012**

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VERIFICATION REPORT

Test Name:	Hip Flexion (ROM)	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	064		
Test ID:	Hip ROM Right	Test Date:	11/13/2012
Test Number:	2	Test Time:	1:27:13 PM

Component Part Number	Component Serial Number
Pelvis Assembly 78051-60	1445

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	21.6 deg C P
Humidity	10 -- 70	27 %RH P
Average Velocity	5.0 -- 10.0	6.9 deg/s P
Angle at 203 Nm	40.0 -- 50.0	40.02 degrees P
Moment at 30 degrees	0.0 -- 94.9	78.5 Nm P

All test parameters are within specifications

Technician: **M. Goehle**

Supervisor: **D. Travale**

Test Time: **1:27:13 PM**

Test Date: **11/13/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Key	2301.02	115	12/15/2011
Transducers/PCB	14 CB1-3615	0008	3/16/2012
DentonATD	Velocity Trap	1	1/11/2012
DentonATD			

Test Time: 1:27:13 PM

Test Date: 11/13/2012

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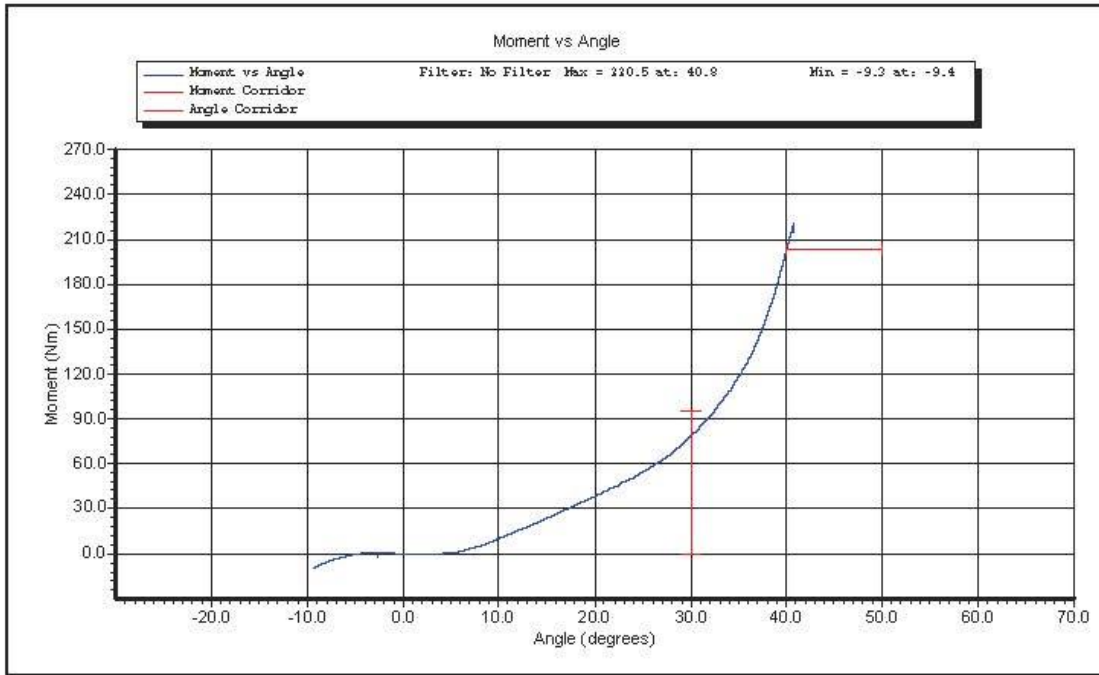


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Test Name:	Hip Flexion (ROM)	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	064		
Test ID:	Hip ROM Right	Test Date:	11/13/2012
Test Number:	2	Test Time:	1:27:13 PM



Test Time: **1:27:13 PM**

Test Date: **11/13/2012**

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VERIFICATION REPORT

Test Name:	Knee Impact PENDULUM	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	064		
Test ID:	Knee Impact Left	Test Date:	11/12/2012
Test Number:	1	Test Time:	1:43:14 PM

Component Part Number	Component Serial Number
Knee Skin - 78051(L)	2882

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	22.1 deg C P
Humidity	10.0 -- 70.0	33.8 %RH P
Velocity	2.07 -- 2.13	2.11 m/s P
Resistive Force	-5.78 -- -4.72	-5.33 kN P

All test parameters are within specifications

Technician: **M. Goehle**
Supervisor: **D. Travale**

Test Time: **1:43:14 PM**

Test Date: **11/12/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2012
Endevco	7264-2000	P66927	6/15/2012

Test Time: 1:43:14 PM

Test Date: 11/12/2012

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Test Name:	Knee Impact PENDULUM	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	064		
Test ID:	Knee Impact Left	Test Date:	11/12/2012
Test Number:	1	Test Time:	1:43:14 PM



Test Time: **1:43:14 PM**

Test Date: **11/12/2012**

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VERIFICATION REPORT

Test Name:	Knee Impact PENDULUM	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	064		
Test ID:	Knee Impact Right	Test Date:	11/12/2012
Test Number:	1	Test Time:	2:00:06 PM

Component Part Number	Component Serial Number
Knee Skin - 78056(R)	2531

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	22.1 deg C P
Humidity	10.0 -- 70.0	34.4 %RH P
Velocity	2.07 -- 2.13	2.11 m/s P
Resistive Force	-5.78 -- -4.72	-5.51 kN P

All test parameters are within specifications

Technician: **M. Goehle**
Supervisor: **D. Travale**

Test Time: **2:00:06 PM**

Test Date: **11/12/2012**

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REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2012
Endevco	7264-2000	P66927	6/15/2012

Test Time: **2:00:06 PM**

Test Date: **11/12/2012**

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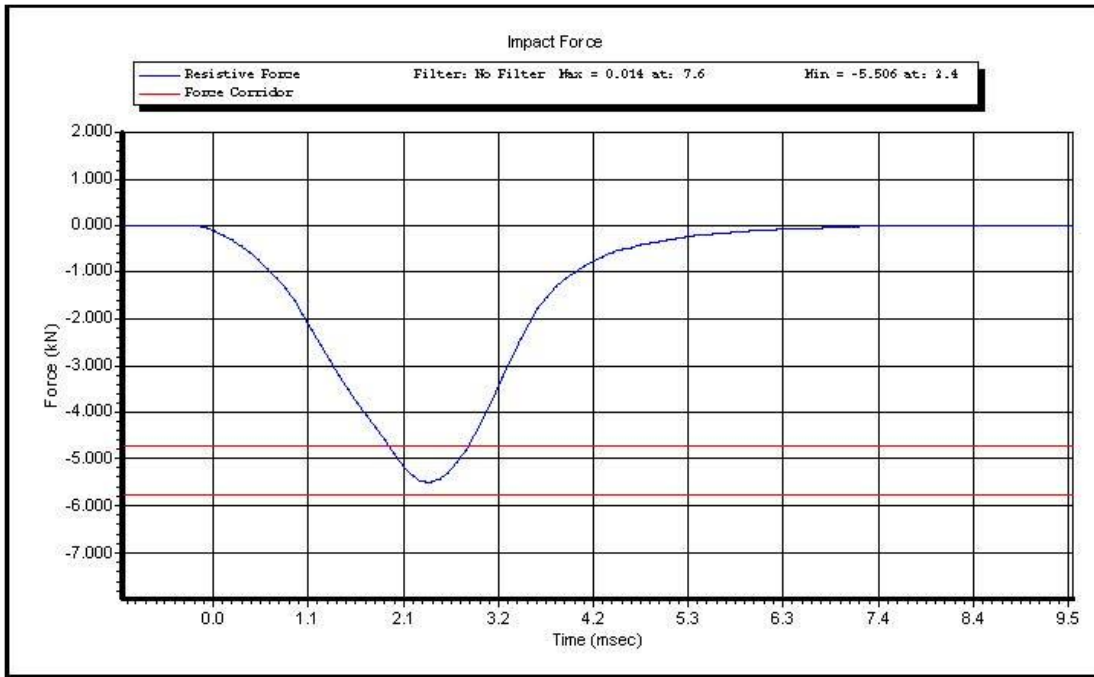


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Test Name:	Knee Impact PENDULUM	Revision:	10/1/2001
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 50'th		
ATD Serial Number:	064		
Test ID:	Knee Impact Right	Test Date:	11/12/2012
Test Number:	1	Test Time:	2:00:06 PM



Test Time: **2:00:06 PM**

Test Date: **11/12/2012**

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CALIBRATION TEST RESULTS

POST-TEST

HYBRID III 5TH PERCENTILE FEMALE - PASSENGER ATD

SERIAL NO: 139



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External Measurements

5th Female SN 139

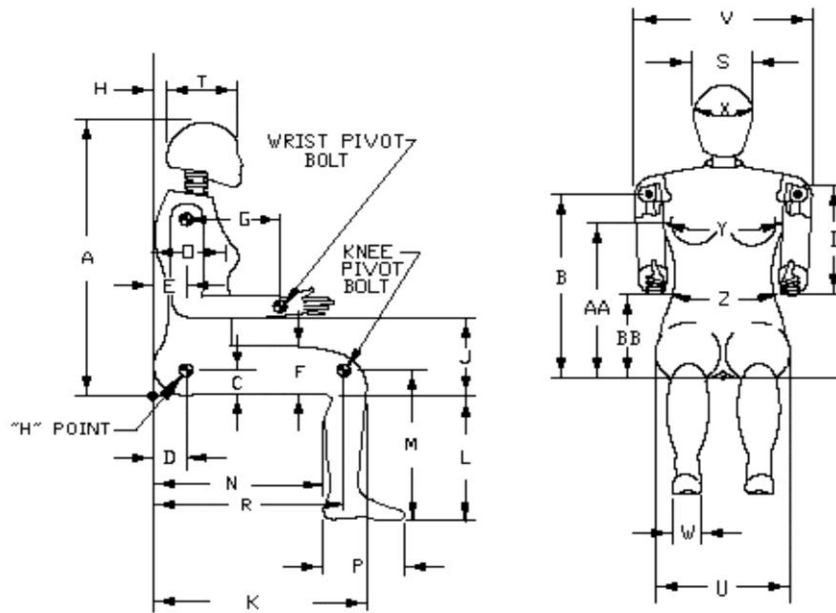
Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	774.7 – 800.1	785	Yes
B	Shoulder Pivot Height	431.8 – 457.2	448	Yes
C	H-Point Height	81.3 – 86.3	85	Yes
D	H-Point from Backline	144.8 – 149.8	147	Yes
E	Shoulder Pivot from Backline	68.6 – 83.8	72	Yes
F	Thigh Clearance	119.4 – 134.6	133	Yes
G	Back of Elbow to Wrist Pivot	243.9 – 259.1	245	Yes
H	Head Back to Backline	43.2 – 48.2	46	Yes
I	Shoulder to Elbow Length	276.8 – 297.2	285	Yes
J	Elbow Rest Height	182.8 – 203.2	190	Yes
K	Buttock to Knee Length	520.7 – 546.1	542	Yes
L	Popliteal Height	355.6 – 376	357	Yes
M	Knee Pivot Height	393.7 – 419.1	395	Yes
N	Buttock Popliteal Length	414 – 439.4	433	Yes
O	Chest Depth without Jacket	175.3 – 190.5	188	Yes
P	Foot Length (right)	218.5 – 233.7	220	Yes
R	Buttock To Knee Pivot Length	457.2 – 482.6	480	Yes
S	Head Breadth	137.1 – 147.3	142	Yes
T	Head Depth	177.8 – 188	185	Yes
U	Hip Breadth	299.7 – 314.9	303	Yes
V	Shoulder Breadth	350.5 – 365.7	361	Yes
W	Foot Breadth	78.8 – 94	82	Yes
X	Head Circumference	528.3 – 548.7	542	Yes
Y	Chest Circumference with Jacket	850.9 – 881.3	858	Yes
Z	Waist Circumference	759.5 – 789.9	770	Yes
AA	Reference Location (Chest Circumference)	332.7 – 358.1	345	Yes
BB	Reference Location (Waist Circumference)	160.1 – 170.2	166	Yes

Technician: M. Goehle

Date: 11/13/2012

Hybrid III 5th Female External Measurements

Reference Diagram





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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:	139		
Test ID:	Head Drop	Test Date:	11/13/2012
Test Number:	1	Test Time:	8:21:58 AM

Component Part Number	Component Serial Number
Head Skin - 78051-228	05067

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	20.9 deg C P
Humidity	10 -- 70	27 %RH P
Resultant Acceleration	250 -- 300	259 g P
Oscillation	0.0 -- 10.0	0.0 % P
Lateral Acceleration	-15.00 -- 15.00	4.52 g P

All test parameters are within specifications

Technician: **M. Goehle**

Supervisor: **D. Travale**

Test Time: **8:21:58 AM**

Test Date: **11/13/2012**

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REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Endevco	7264-2000	P58833	5/18/2012
Endevco	7264-2000	P51667	5/18/2012
Endevco	7264-2000	P52114	5/18/2012

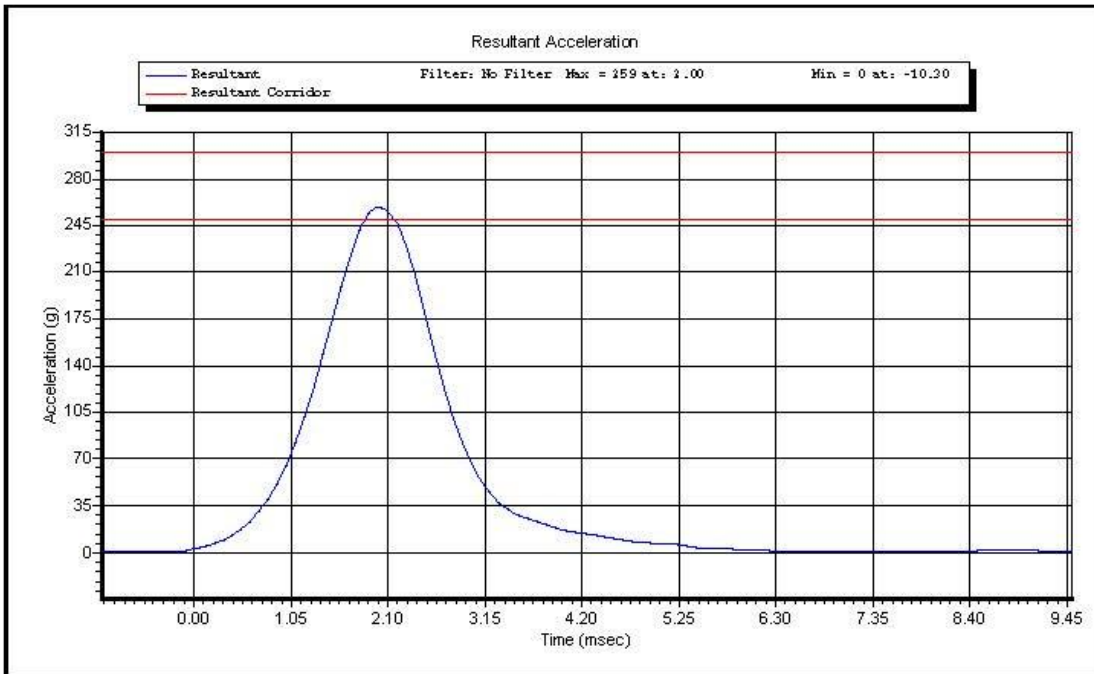
Test Time: **8:21:58 AM**

Test Date: **11/13/2012**

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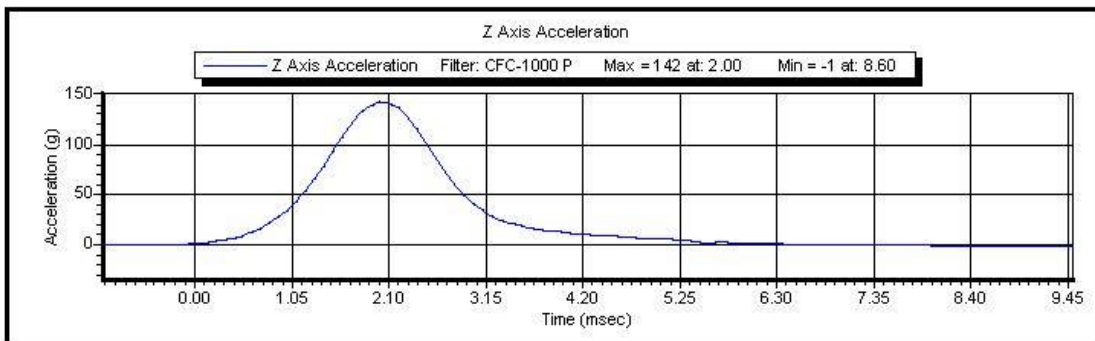
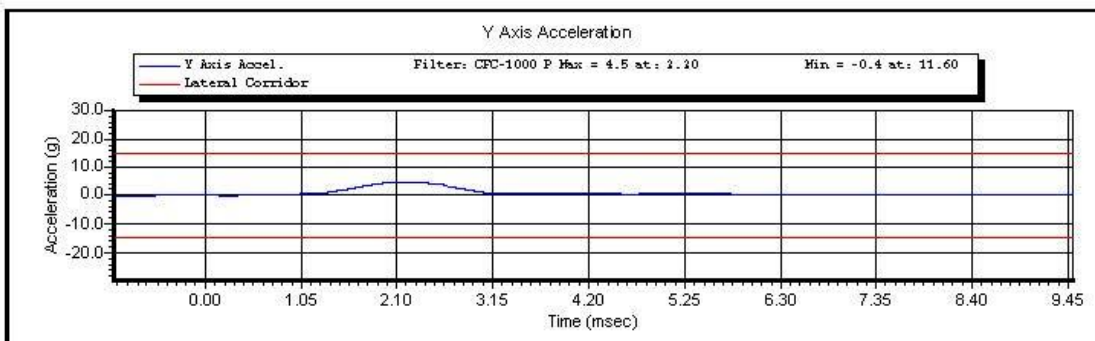
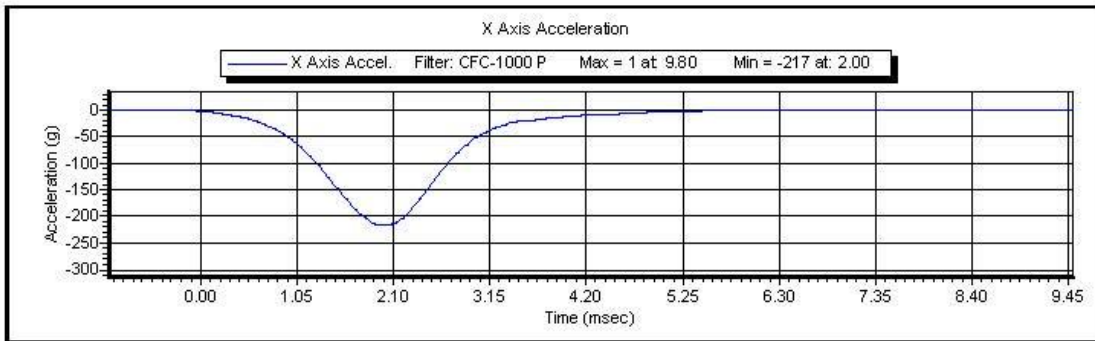
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Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	139		
Test ID:	Head Drop	Test Date:	11/13/2012
Test Number:	1	Test Time:	8:21:58 AM



Test Time: **8:21:58 AM**

Test Date: **11/13/2012**

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Test Time: 8:21:58 AM

Test Date: 11/13/2012

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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:	139		
Test ID:	Neck Flexion	Test Date:	11/13/2012
Test Number:	3	Test Time:	11:26:40 AM

Component Part Number	Component Serial Number
Neck - 880105-255	DJ1701
Front Nodding Block - 78051-351	85
Rear Nodding Block - 78051-351	85

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.8 deg C P
Humidity	10 -- 70	26 %RH P
Velocity	6.89 -- 7.13	7.10 m/s P
Pendulum Impulse at 10 ms	2.10 -- 2.50	2.32 m/s P
Pendulum Impulse at 20 ms	4.00 -- 5.00	4.60 m/s P
Pendulum Impulse at 30 ms	5.80 -- 7.00	6.62 m/s P
D Plane Rotation	-91.0 -- -77.0	-80.7 degrees P
Moment During Rotation Interval	69.0 -- 83.0	69.6 Nm P
Moment Decay to 10.0 Nm	80.0 -- 100.0	87.3 ms P

All test parameters are within specifications

Technician: **M. Goehle**

Supervisor: **D. Travale**

Test Time: **11:26:40 AM**

Test Date: **11/13/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2012
Endevco	7231CT	C15016	8/15/2012
DentonATD	78051-342	PENDULUM POT	1/25/2012
DentonATD	78051-342	CONDYLE POT	1/25/2012
Denton	1716A	LC-2018My	5/21/2012
Denton	1716A	LC-2018Fx	5/21/2012

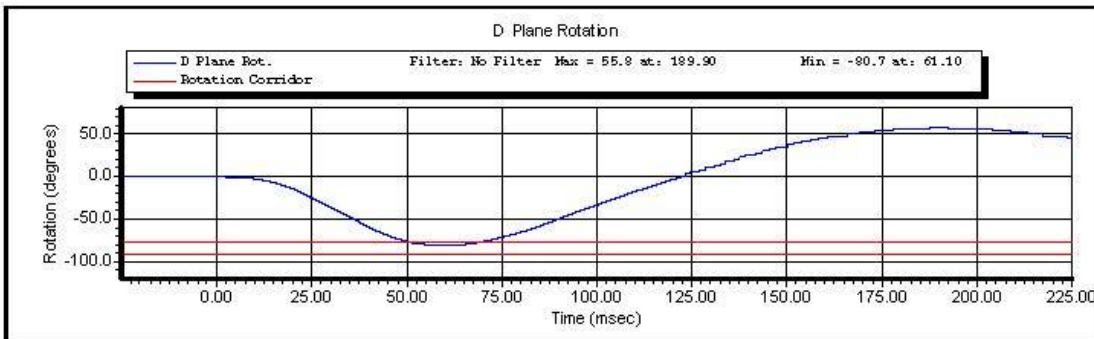
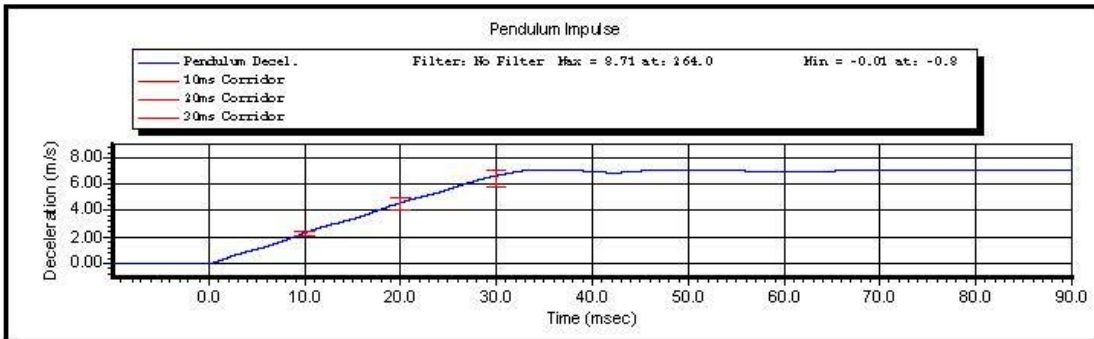
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Test Date: 11/13/2012

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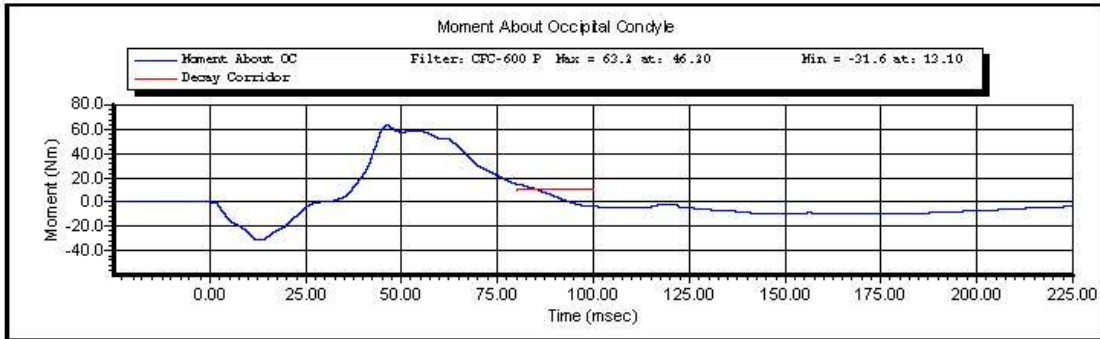
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Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	139		
Test ID:	Neck Flexion	Test Date:	11/13/2012
Test Number:	3	Test Time:	11:26:40 AM



Test Time: **11:26:40 AM**

Test Date: **11/13/2012**

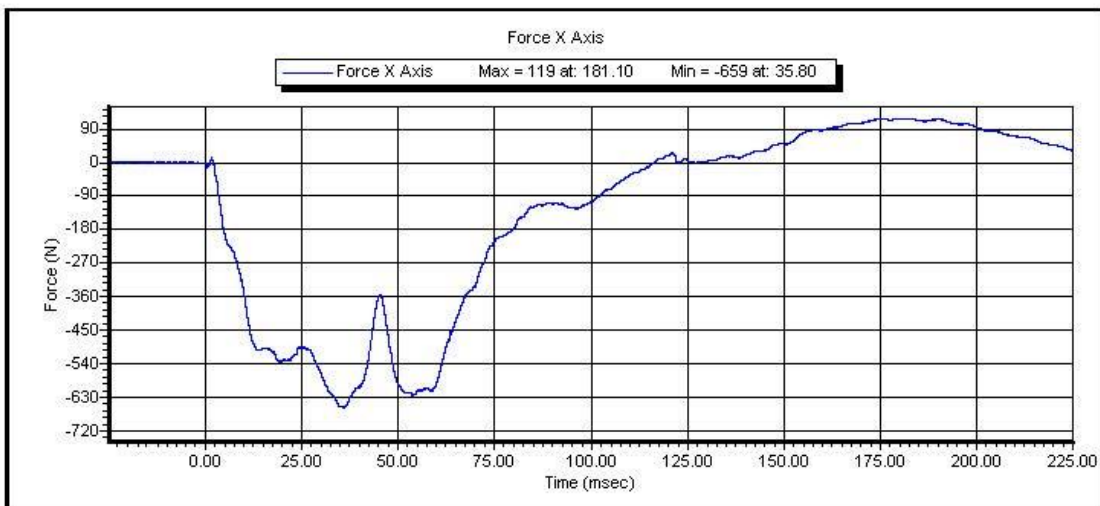
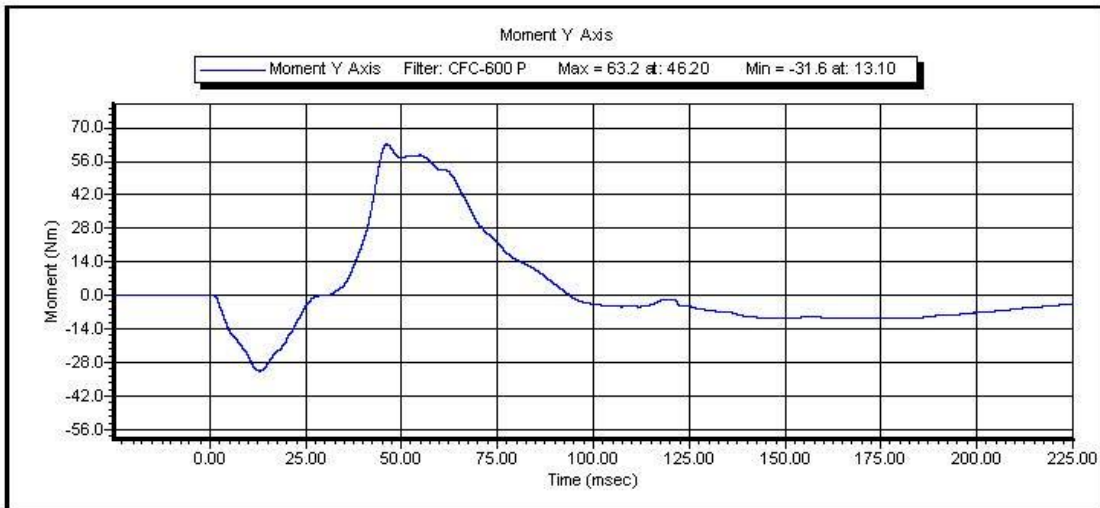
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Test Time: 11:26:40 AM

Test Date: 11/13/2012

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Test Time: 11:26:40 AM

Test Date: 11/13/2012

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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:	139		
Test ID:		Test Date:	11/13/2012
Test Number:	2	Test Time:	1:16:15 PM

Component Part Number	Component Serial Number
Neck - 880105-255	DJ1701
Front Nodding Block - 78051-351	85
Rear Nodding Block - 78051-351	85

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.4 deg C P
Humidity	10 -- 70	26 %RH P
Velocity	5.95 -- 6.19	6.15 m/s P
Pendulum Impulse at 10 ms	1.50 -- 1.90	1.74 m/s P
Pendulum Impulse at 20 ms	3.10 -- 3.90	3.49 m/s P
Pendulum Impulse at 30 ms	4.60 -- 5.60	5.15 m/s P
D Plane Rotation	99.0 -- 114.0	106.2 degrees P
Moment During Rotation Interval	-65.0 -- -53.0	-56.4 Nm P
Moment Decay to -10.0 Nm	94.0 -- 114.0	104.0 ms P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test Time: **1:16:15 PM**

Test Date: **11/13/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2012
Endevco	7231CT	C15016	8/15/2012
DentonATD	78051-342	PENDULUM POT	1/25/2012
DentonATD	78051-342	CONDYLE POT	1/25/2012
Denton	1716A	LC-2018My	5/21/2012
Denton	1716A	LC-2018Fx	5/21/2012

Test Time: 1:16:15 PM

Test Date: 11/13/2012

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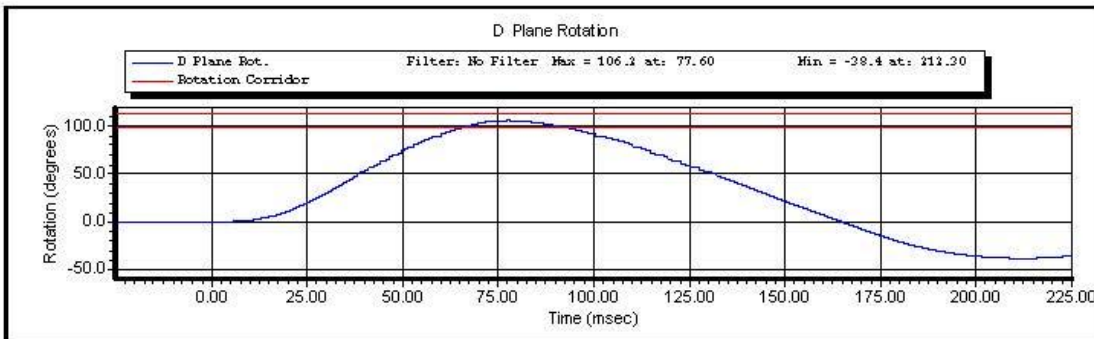
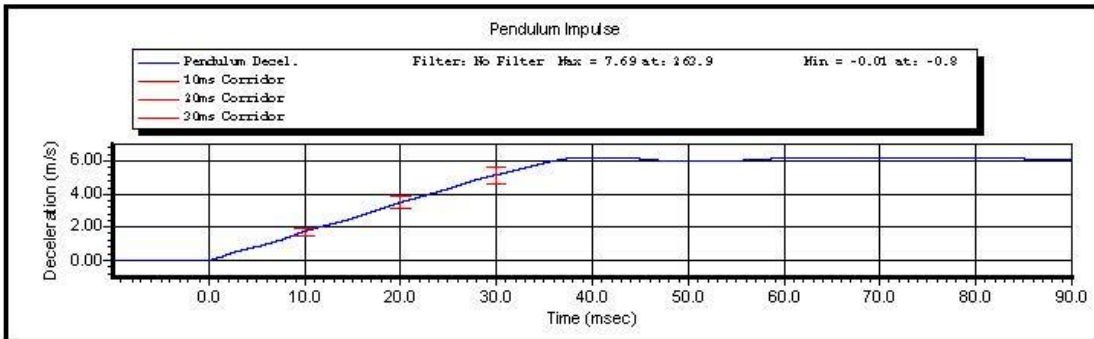


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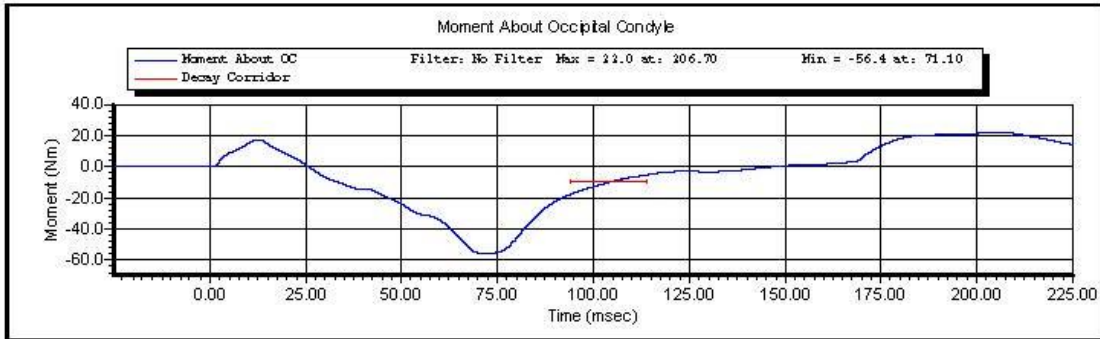
Test Name:	Neck Extension	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	139		
Test ID:		Test Date:	11/13/2012
Test Number:	2	Test Time:	1:16:15 PM



Test Time: **1:16:15 PM**

Test Date: **11/13/2012**

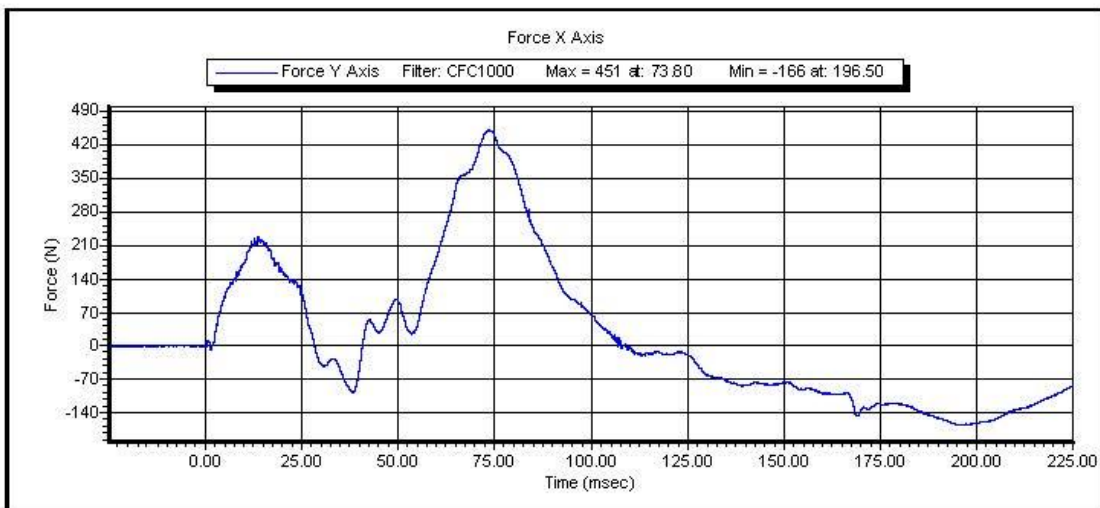
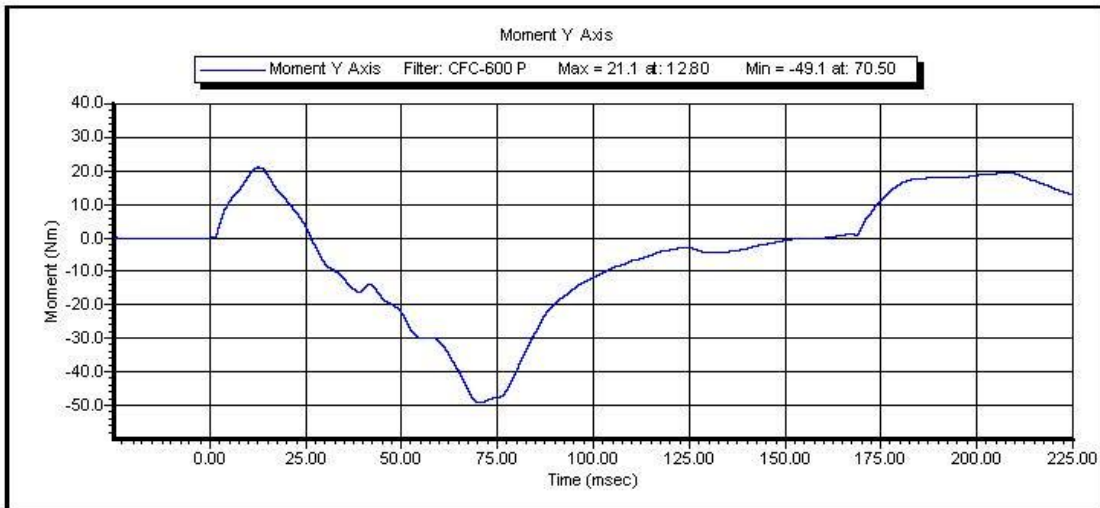
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Test Time: 1:16:15 PM

Test Date: 11/13/2012

Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0



Test Time: 1:16:15 PM

Test Date: 11/13/2012

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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:	139		
Test ID:	Thorax	Test Date:	11/12/2012
Test Number:	2	Test Time:	11:28:40 AM

Component Part Number	Component Serial Number
Ribs 880105-RS	05032011A
Chest Jacket - 880105-355-E	05177
Lumbar Spine - 880105-1095	050327

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	22.0 deg C P
Humidity	10.0 -- 70.0	32.2 %RH P
Velocity	6.59 -- 6.83	6.61 m/s P
Sternum Displacement	-58.0 -- -50.0	-50.4 mm P
Force During Displacement Interval	-4400 -- -3900	-4166 N P
Force -18.0 to -50.0 Displacement	-4600 -- 0	-4291 N P
Hysteresis	69 -- 85	74 % P

All test parameters are within specifications

Technician: **M. Goehle**
Supervisor: **D. Travale**

Test Time: **11:28:40 AM**

Test Date: **11/12/2012**

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REFERENCE EQUIPMENT

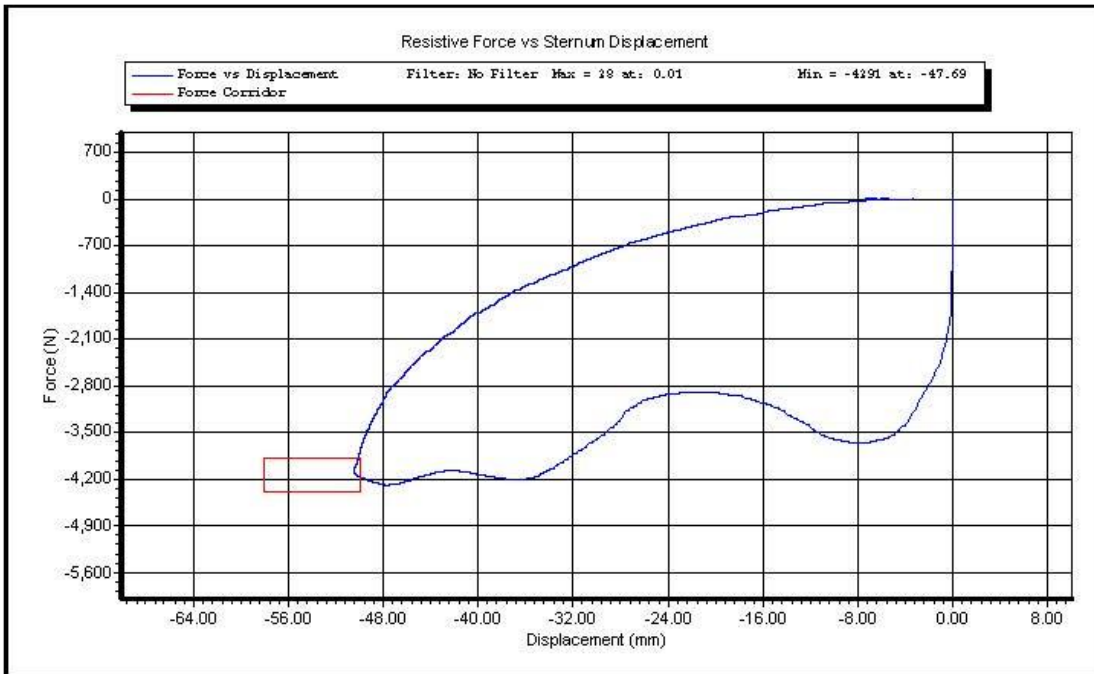
<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2012
Endevco	7231CT	C14953	5/25/2012
DentonATD	H3CD	DS-139	5/21/2012

Test Time: **11:28:40 AM**

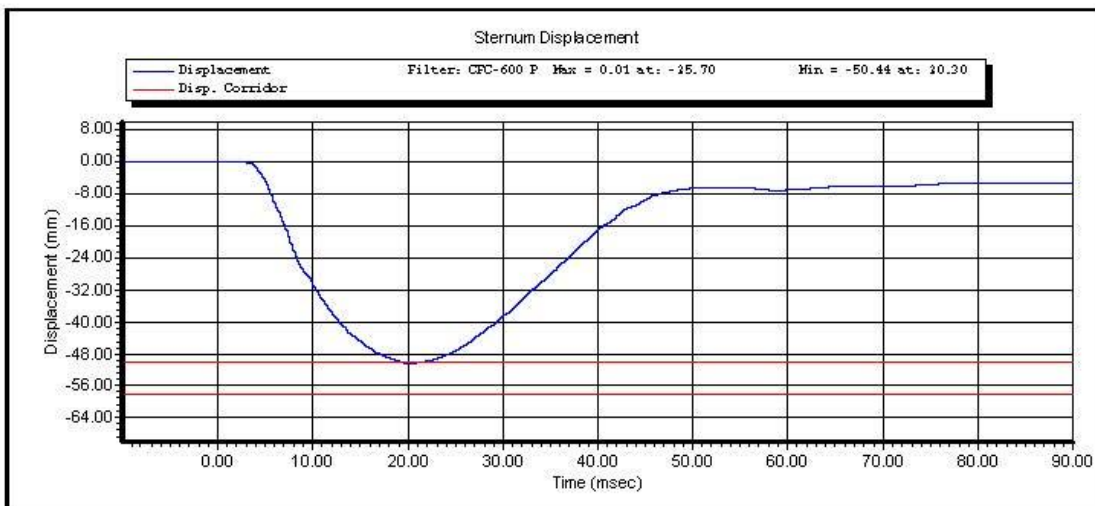
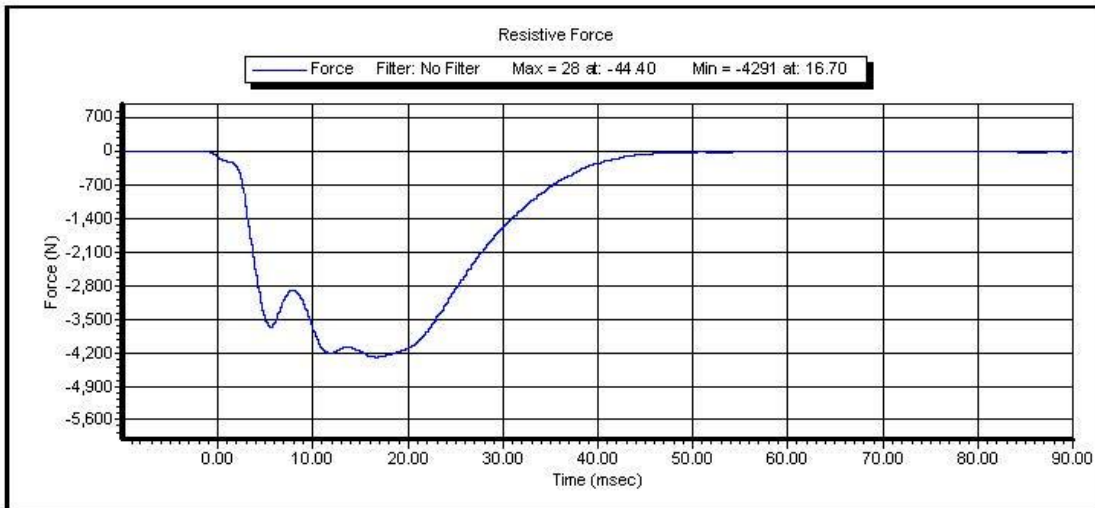
Test Date: **11/12/2012**

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Test Name:	Thorax Impact	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	139		
Test ID:	Thorax	Test Date:	11/12/2012
Test Number:	2	Test Time:	11:28:40 AM

Test Time: **11:28:40 AM**Test Date: **11/12/2012**

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Test Time: 11:28:40 AM

Test Date: 11/12/2012

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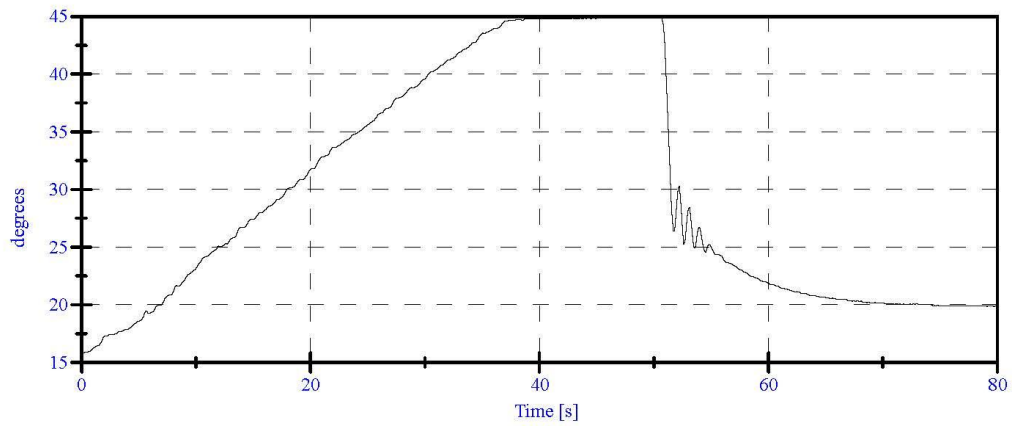
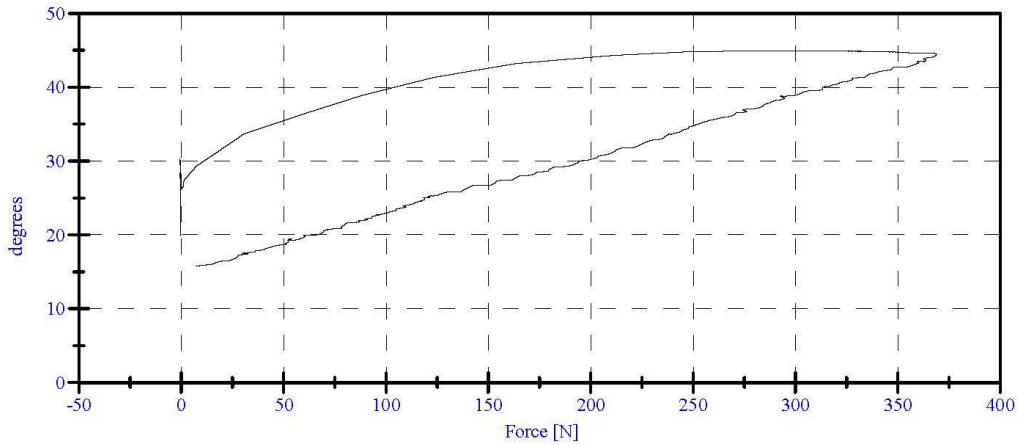
**Torso Flexion
Pre-Test
Part 572O HIII 5% Female**

ATD Serial No: 139
Date: 11/13/2012

Laboratory Supervisor: D. Travale
Laboratory Technician: M. Gohle

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.6 C	21.3 C	Passed
Lab Humidity:	10-70 %	25.7 %	Passed
Initial Angle:	0.00-20.00 deg	15.83 deg	Passed
Force at 45 Deg	320.00-390.00 N	369.13 N	Passed
Return Angle	8 Deg Max from Initial	19.37 deg	Passed

LUMBAR SPINE FLEXION TEST





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VERIFICATION REPORT

Test Name:	Knee Impact PENDULUM	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	139		
Test ID:	Knee Impact Left	Test Date:	11/12/2012
Test Number:	1	Test Time:	12:58:02 PM

Component Part Number	Component Serial Number
Knee Skin - 880105-508	1350

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	22.1 deg C P
Humidity	10.0 -- 70.0	33.5 %RH P
Velocity	2.07 -- 2.13	2.11 m/s P
Resistive Force	-4060 -- -3450	-3870 N P

All test parameters are within specifications

Technician: **M. Goehle**
Supervisor: **D. Travale**

Test Time: **12:58:02 PM**

Test Date: **11/12/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2012
Endevco	7264-2000	P66927	6/15/2012

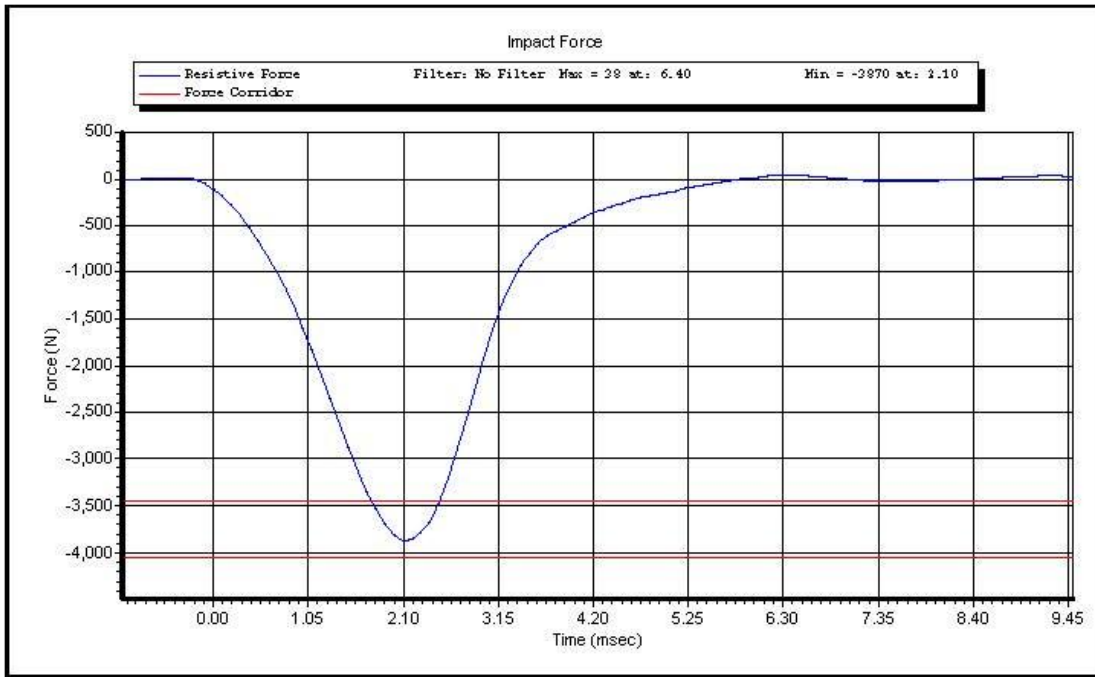
Test Time: 12:58:02 PM

Test Date: 11/12/2012

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Test Name:	Knee Impact PENDULUM	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	139		
Test ID:	Knee Impact Left	Test Date:	11/12/2012
Test Number:	1	Test Time:	12:58:02 PM



Test Time: **12:58:02 PM**

Test Date: **11/12/2012**

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VERIFICATION REPORT

Test Name:	Knee Impact PENDULUM	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	139		
Test ID:	Knee Impact Right	Test Date:	11/12/2012
Test Number:	1	Test Time:	1:15:12 PM

Component Part Number	Component Serial Number
Knee Skin - 880105-508	1359

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	22.1 deg C P
Humidity	10.0 -- 70.0	33.4 %RH P
Velocity	2.07 -- 2.13	2.12 m/s P
Resistive Force	-4060 -- -3450	-4001 N P

All test parameters are within specifications

Technician: **M. Goehle**
Supervisor: **D. Travale**

Test Time: **1:15:12 PM**

Test Date: **11/12/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2012
Endevco	7264-2000	P66927	6/15/2012

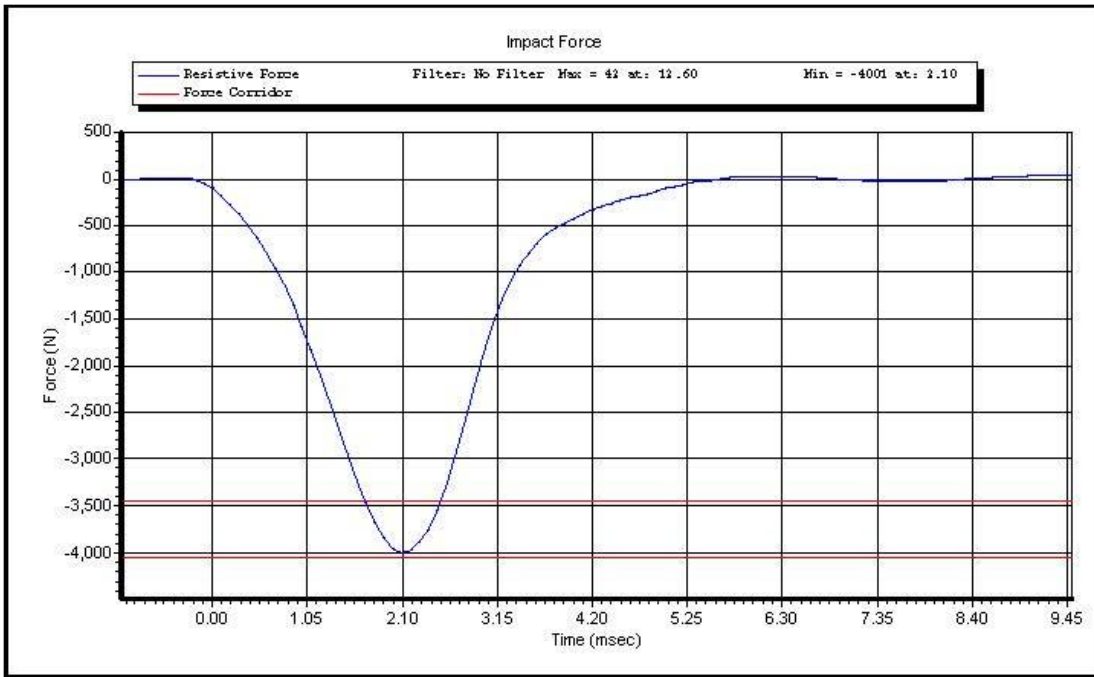
Test Time: **1:15:12 PM**

Test Date: **11/12/2012**

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Test Name:	Knee Impact PENDULUM	Revision:	7/15/2002
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	Hybrid III 5'th		
ATD Serial Number:	139		
Test ID:	Knee Impact Right	Test Date:	11/12/2012
Test Number:	1	Test Time:	1:15:12 PM



Test Time: **1:15:12 PM**

Test Date: **11/12/2012**

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