

REPORT NUMBER: NCAP-CAL-14-005

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

**Mazda Motor Co
2014 Mazda Mazda6
Four Door Sedan**

NHTSA No: M20145400

**PREPARED BY:
CALSPAN CORPORATION
P.O. BOX 400
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March 13, 2014

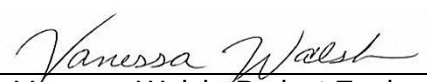
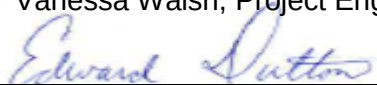
FINAL REPORT

**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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Prepared by:	 _____ Vanessa Walsh, Project Engineer	Date:	_____ March 13, 2014
Approved by:	 _____ Edward J. Dutton, Test Engineer Director Transportation Test Operations	Date:	_____ March 13, 2014

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

COTR, New Car Assessment Program
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Date: _____

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16. Abstract A 56.30 km/h (35 mph), NCAP Frontal Impact Test was conducted on a 2014 Mazda Mazda6 four door sedan 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 February 10, 2014. The impact velocity of the vehicle was 56.5 km/h, and the ambient temperature at the barrier face at the time of impact was 21°C. The target vehicle's maximum post-test static crush was 449 mm at the centerline. The test vehicle's occupant performance data is as follows: <table border="1"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th rowspan="2">Units</th> <th colspan="2">Driver ATD (Serial No. 064)</th> <th colspan="2">Passenger ATD (Serial No. 288)</th> </tr> <tr> <th>Threshold</th> <th>Result</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₁₅)</td> <td></td> <td>700</td> <td>186.70</td> <td>700</td> <td>308.57</td> </tr> <tr> <td>Maximum Chest Compression</td> <td>mm</td> <td>63</td> <td>-25.40</td> <td>52</td> <td>-17.36</td> </tr> <tr> <td>Nij</td> <td></td> <td>1</td> <td>0.27</td> <td>1</td> <td>0.42</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4,170</td> <td>1387.53</td> <td>2,620</td> <td>839.85</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4,000</td> <td>-53.36</td> <td>2,520</td> <td>-710.96</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10,008</td> <td>-519.27</td> <td>6,805</td> <td>-1819.87</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10,008</td> <td>-1283.87</td> <td>6,805</td> <td>-875.79</td> </tr> </tbody> </table>						Measurement Description	Units	Driver ATD (Serial No. 064)		Passenger ATD (Serial No. 288)		Threshold	Result	Threshold	Result	Head Injury Criteria (HIC ₁₅)		700	186.70	700	308.57	Maximum Chest Compression	mm	63	-25.40	52	-17.36	Nij		1	0.27	1	0.42	Neck Tension	N	4,170	1387.53	2,620	839.85	Neck Compression	N	4,000	-53.36	2,520	-710.96	Left Femur Force	N	10,008	-519.27	6,805	-1819.87	Right Femur Force	N	10,008	-1283.87	6,805	-875.79
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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 August 2013.

SUMMARY

A load cell barrier consisting of 36 load cells was impacted by a 2014 Mazda Mazda6 four door sedan at a velocity of 56.5 km/h. The test was performed at Calspan Corporation's Transportation Test Operations facility in Buffalo, New York on February 10, 2014. 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 14 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 seating position 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 shoulder belts to measure dummy torso loading. The driver (position 1) ATD (Serial No. 064) and the right-front passenger (position 2) ATD (Serial No. 288) 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 449 mm at the centerline. During and after the impact event, the driver's and passenger's side doors were 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 driver's side curtain and torso/pelvis airbags deployed during the impact event, however there appears to be no interaction.

The passenger's visible contact points were as follows: The passenger's head contacted the frontal airbag and then the head restraint. The upper torso contacted the frontal airbag. Both knees contacted the glove box.

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)	186.70	0.27	1387.53	-53.36	38.82	-25.40	-519.27	-1283.87
Passenger (5 th)	308.57	0.42	839.85	-710.96	50.15	-17.36	-1819.87	-875.79

GENERAL COMMENTS:

1. P1 (Driver) serial number - 064
2. P2 (Passenger) serial number - 288

Data Anomalies:

- Driver Shoulder Belt Force, Questionable data after 75 ms
- Engine Bottom X Acceleration, Questionable data from 60 to 72 ms
- Chest Redundant Z Acceleration, Questionable noise spikes

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: 2014 Mazda Mazda6 four door sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20145400
Test Date: 2/10/2014

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M20145400	Traction Control System (TCS)	Yes
Model Year	2014	Power Steering	Yes
Make	Mazda	Power Window Auto-Reverse	No
Model	Mazda6	Driver Frontal Airbag	Yes
Body Style	Four door sedan	Driver Curtain Airbag	Yes
VIN	JM1GJ1U62E1136888	Driver Head/Torso Airbag	No
Body Color	Light Blue	Driver Torso Airbag	No
Odometer Reading (km /mi)	164.2 km / 102 mi	Driver Torso/Pelvis Airbag	Yes
Engine Displacement (L)	2.5	Driver Pelvis Airbag	No
Type / No. Cylinders	I4	Driver Knee Airbag	No
Engine Placement	Transverse	Front Pass. Frontal Airbag	Yes
Transmission Type	Automatic	Front Pass. Curtain Airbag	Yes
Transmission Speeds	6-Speed	Front Pass. Head/Torso Airbag	No
Overdrive	Yes	Front Pass. Torso Airbag	No
Final Drive	Front Wheel Drive	Front Pass. Torso/Pelvis Airbag	Yes
Roof Rack	No	Front Pass. Pelvis Airbag	No
Sunroof / T-Top	No	Front Pass. Knee Airbag	No
Running Boards	No	Driver Pretensioner	Yes
Tilt Steering Wheel	Yes	Driver Load Limiter	Yes
Power Seats	No	Front Pass. Pretensioner	Yes
Anti-Lock Brakes (ABS)	Yes	Front Pass. Load Limiter	Yes
Automatic Door Locks (ADLs)	Yes	Other	-

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

Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Mazda Motor Co.	GVWR (kg)	1945
Date of Manufacture	07/13	GAWR Front (kg)	1029
		GAWR Rear (kg)	921

VEHICLE SEATING AND WEIGHT CAPACITY DATA

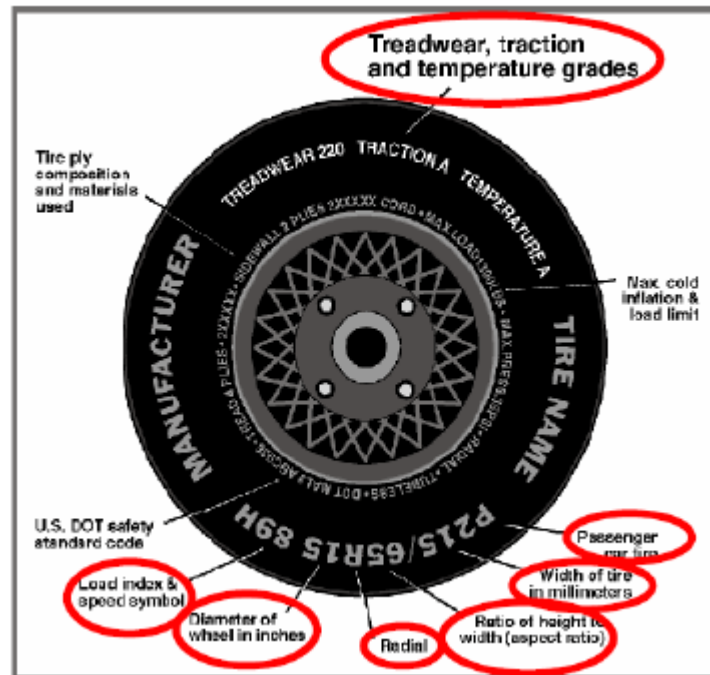
Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench	-	
Number of Occupants	2	3	-	5
Capacity Wt. (VCW) (kg)				385
Cargo Wt. (RCLW) (kg)				44.8

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

Test Vehicle: 2014 Mazda Mazda6 four door sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20145400
 Test Date: 2/10/2014

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)	250	250
Recommended Tire Size	P225/55R17	P225/55R17
Tire Size on Vehicle	P225/55R17	P225/55R17
Tire Manufacturer	Yokohama	Yokohama
Tire Model	Advan A83	Advan A83
Treadwear	280	280
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	1 Polyester	1 Polyester
Tire Plies Body	1 Polyester, 1 Steel, 1 Nylon	1 Polyester, 1 Steel, 1 Nylon
Load Index / Speed Symbol	95V	95V
Tire Material	Rubber	Rubber
DOT Safety Code Left	FDUP PFW2613	FDUP PFW2613
DOT Safety Code Right	FDUP PFW2613	FDUP PFW2613

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

Test Vehicle: 2014 Mazda Mazda6 four door sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20145400
 Test Date: 2/10/2014

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	446	292		473	362	
Right	kg	417	299		452	344	
Ratio	%	59.4%	40.6%		56.7%	43.3%	
Totals	kg	863	591	1454	925	706	1631

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1454	(A)
Weight of 1 P572E ATD & 1 P572O ATD	kg	140.7	(B)
Rated Cargo / Luggage Weight (RCLW)	kg	44.8	(C)
Calculated Vehicle Target Weight (TVTW)	kg	1639.5	(A+B+C)

TEST VEHICLE ATTITUDES AND CG

Condition	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	731	740	736	749	1149
As Tested	mm	727	733	716	722	1224
Post-Test	mm	769	778	731	720	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2828
Total Vehicle Length at Left Side	mm	4731
Total Vehicle Length at Centerline	mm	4866
Total Vehicle Length at Right Side	mm	4731
Weight of Ballast in Cargo Area	kg	15
Weight of Vehicle Components Removed	kg	20
Amount of Stoddard Solvent in Fuel Tank	L	57.7

LIST OF COMPONENTS REMOVED TO MEET TEST WEIGHT:

Trunk carpeting, spare tire, jack, and tail light.

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

Test Vehicle: 2014 Mazda Mazda6 four door sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20145400
 Test Date: 2/10/2014

TARGET VEHICLE STRUCTURAL MEASUREMENT

No.	Description	Pre-Test
1	Total Length	4866
2	Total Width	1823
3*	Bumper Top Height	481
4*	Bumper Bottom Height	388
5*	Longitudinal Member Top Height	563
6	Distance Between Longitudinal Members	1047
7	Longitudinal Member Width	56
8*	Engine Top Height	895
9*	Engine Bottom Height	190
10	Engine and Gearbox Width	568
11	Front Bumper-Engine Distance	516
12*	Front Shock Absorber Fixing Height	898
13*	Bonnet Leading Edge Height	795
14	Front Shock Absorber Fixing Width	1134
15	Front Bumper – Front Axle Distance	957
16	Front Axle – A Pillar Distance	531
17	A-Pillar – B-Pillar Distance	1130
18	B-Pillar – Rear Axle Distance	1165
19	B-Pillar – C-Pillar Distance	991
20*	Roof Sill Bottom Height	1300
21*	Roof Sill Top Height	1408
22*	Floor Sill Bottom Height	335
23*	Floor Sill Top Height	379

*Height Measurements are taken from the ground
 Note: All measurements are in millimeters

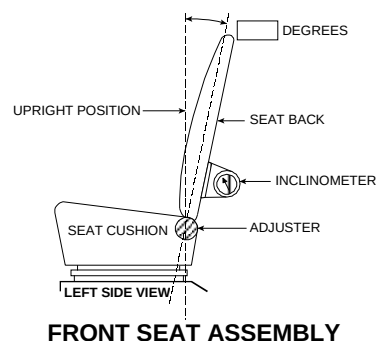
DATA SHEET NO. 2 SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

Test Vehicle: 2014 Mazda Mazda6 four door sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20145400
Test Date: 2/10/2014

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	10.0
Passenger Seat Back Angle	5.0

SEAT FORE / AFT POSITIONS

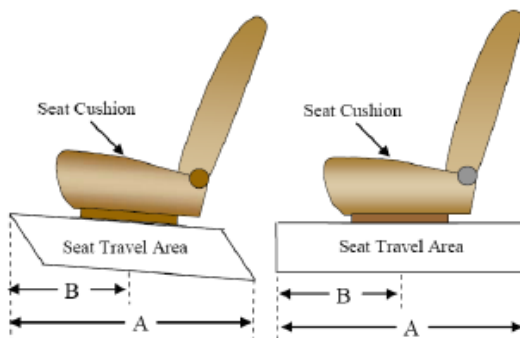
The driver's seat was positioned at the mid-point of fore/aft travel at its lowest position. The passenger's seat was positioned at the most forward position of fore/aft travel. Zero is defined as the forward most position.

Seating Position	Total Fore / Aft Travel	Placed in Position #
Driver Seat	26	11
Passenger Seat	26	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	3	0
Passenger Seat	3	0



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

Test Vehicle: 2014 Mazda Mazda6 four door sedan
 Test Program: NCAP Frontal Barrier Impact Test

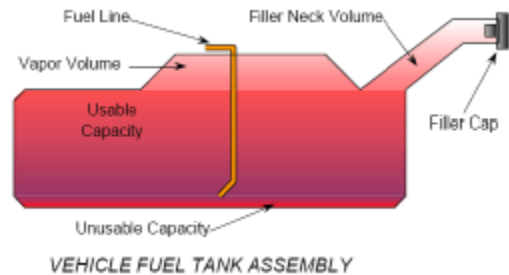
NHTSA No.: M20145400
 Test Date: 2/10/2014

FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank"	62.0
Usable Capacity of "Optional Tank"	N/A
92%-94% of Usable Capacity	57.0 – 58.3
Actual Amount of Solvent Used	57.7
1/3 of Usable Capacity	20.7

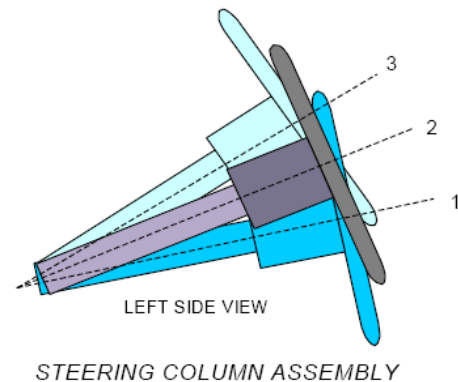
FUEL PUMP

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.



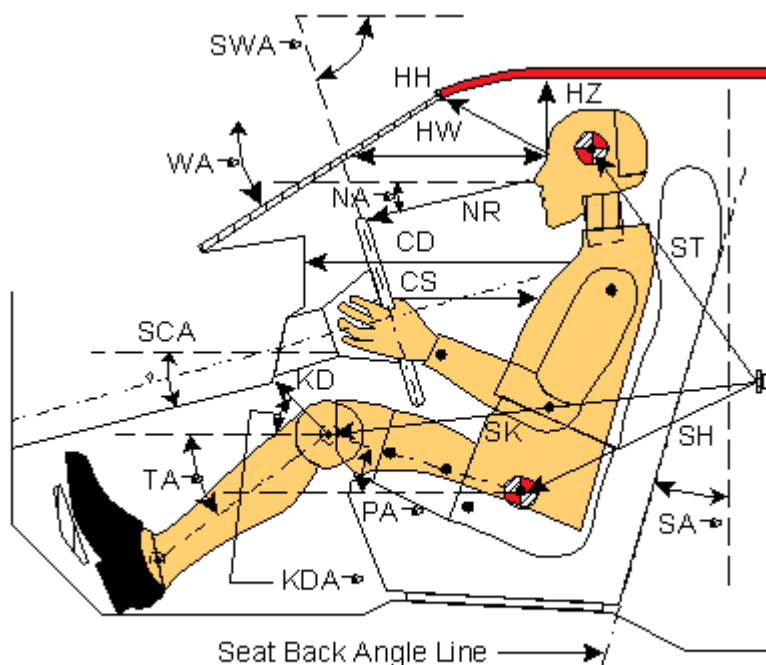
STEERING COLUMN POSITIONS

Description	Degrees	Fore / Aft Position (mm)
Lowermost position No. 1	19.7	
Geometric center position No. 2	22.1	
Uppermost position No. 3	24.6	
Telescoping Steering Wheel Travel		50
Test Position	22.1	25

DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2014 Mazda Mazda6 four door sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20145400
 Test Date: 2/10/2014



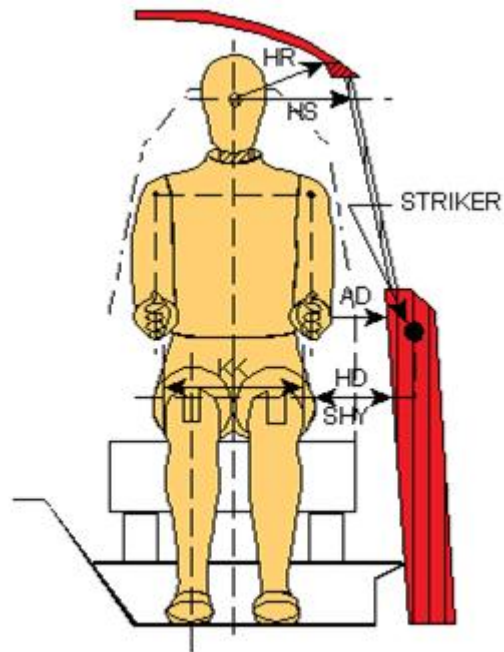
Left Side View

Code	Measurement Description	Driver (SN: 064)		Passenger (SN: 288)	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		24.9		
SWA°	Steering Wheel Angle		22.3		
SCA°	Steering Column Angle		67.7		
SA°	Seat Back Angle (on headrest post)		10.1		5.0
HZ	Head to Roof (Z)	199	90	190	90
HH	Head to Header	323	30.3	255	57.8
HW	Head to Windshield	643	0	571	0
NR	Nose to Rim	397	-6.6	407	27.8
CD	Chest to Dash	522		357	
CS	Chest to Steering Hub	300	-1.5		
RA	Rim to Abdomen	197	0		
KDL	Left Knee to Dash	170	32.5	105	37.8
KDR	Right Knee to Dash	168	37.1	112	38.6
PA°	Pelvic Angle		22.9		19.9
TA°	Tibia Angle		-26.4		-34.2
SK	Striker to Knee	592	-13.7	698	-12.9
ST	Striker to Head	440	-74.0	440	-51.8
SH	Striker to H-Point	302	-51.8	412	-31.0

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2014 Mazda Mazda6 four door sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20145400
 Test Date: 2/10/2014



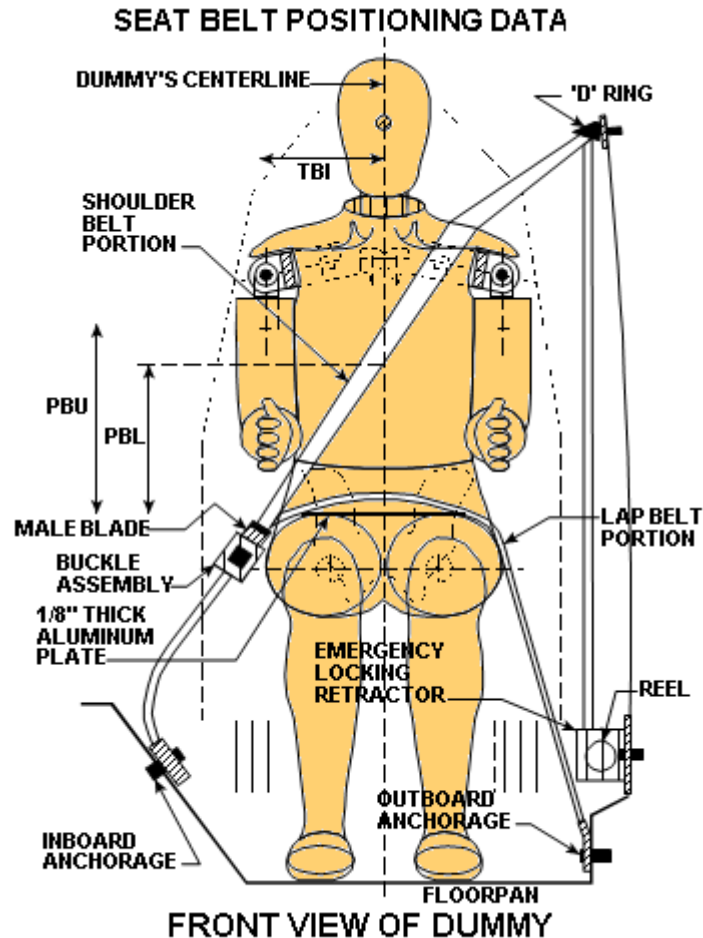
Front View

Code	Description	Driver (mm)	Passenger (mm)
AD	Arm to Door	138	86
HD	H-Point to Door	156	167
HR	Head to Side Header	231	244
HS	Head to Side Window	365	375
KK	Knee to Knee	325	165
SHY	Striker to H-Point (Y Direction)	270	285
AA	Ankle to Ankle	321	155

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

Test Vehicle: 2014 Mazda Mazda6 four door sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20145400
 Test Date: 2/10/2014



SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
PBU — Top surface of reference to belt upper edge	mm	375	325
PBL — Top surface of reference to belt lower edge	mm	300	250

BELT LENGTH DATA

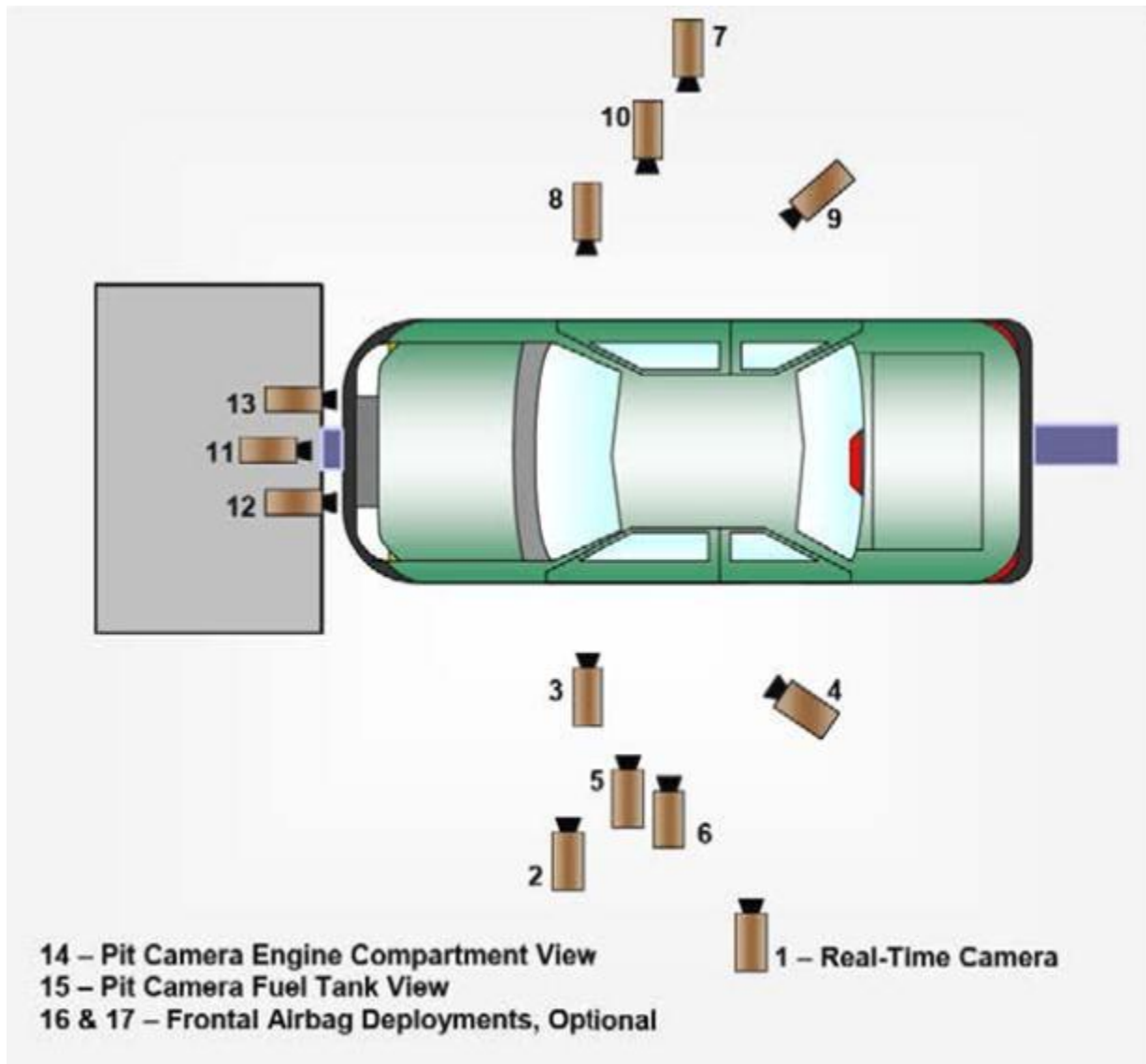
Measurement Description	Units	Driver	Passenger
Shoulder belt length as measured on ATD	mm	870	955
Lap Belt Length as measured on ATD	mm	690	780
Remainder of belt on reel	mm	890	715
Total belt length for continuous webbing systems	mm	2450	2450

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

Test Vehicle: 2014 Mazda Mazda6 four door sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20145400
Test Date: 2/10/2014

CAMERA POSITIONS FOR FRONTAL IMPACTS



Top View

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

Test Vehicle: 2014 Mazda Mazda6 four door sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20145400
 Test Date: 2/10/2014

CAMERA LOCATIONS

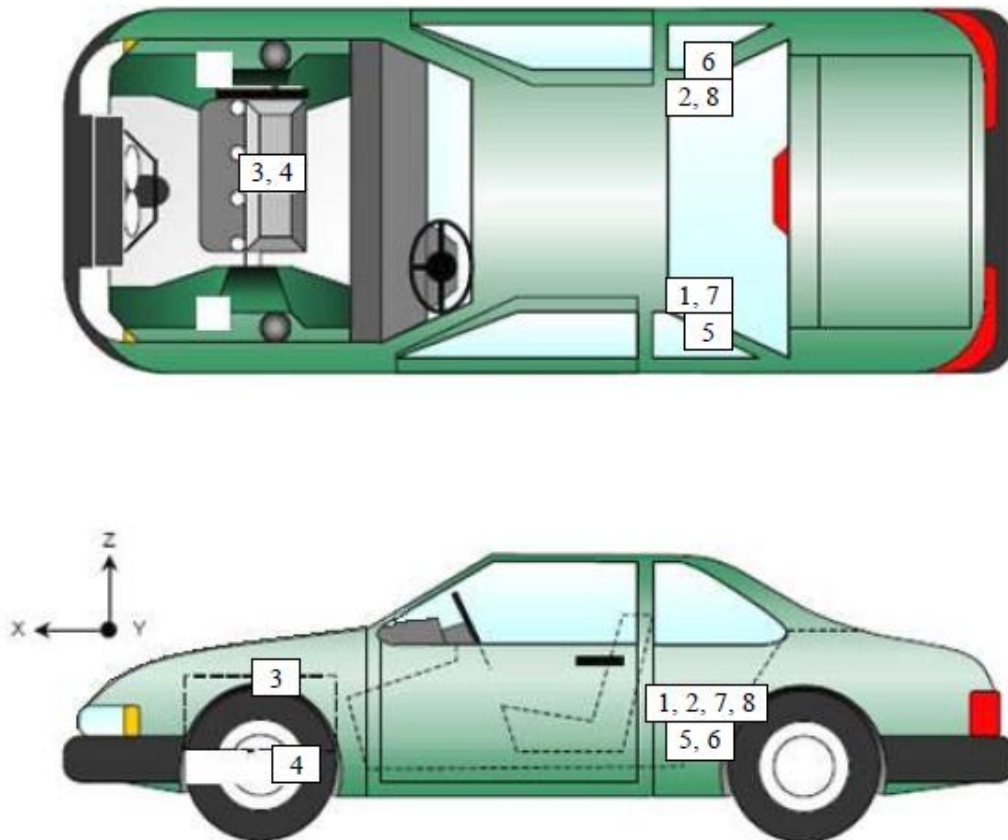
No.	Camera View	Location (mm)			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Overall	-	-	-		60
2	Driver Close-Up	1284	-8287	1512	50	1000
3	Left Front Half	784	-9809	1618	50	1000
4	Left Angle	2952	-2808	2101	28	1000
5	Steering Column - Top	1741	-8257	1961	24-70	1000
6	Steering Column - Bottom	1741	-8257	1370	24-70	1000
7	Right Overall	2051	9428	1037	24	1000
8	Passenger Close-Up	1745	9212	1201	50	1000
9	Right Front Half	1077	9711	989	50	1000
10	Right Angle	3004	3006	2162	28	1000
11	Windshield	-533	0	3265	24	1000
12	Driver Windshield	-191	-638	2026	25	1000
13	Passenger Windshield	-191	621	2026	25	1000
14	Pit Front	976	0	2052	12.5	1000
15	Pit Rear	2310	0	2052	12.5	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: 2014 Mazda Mazda6 four door sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20145400
 Test Date: 2/10/2014



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear Accelerometer – X Direction	1967	-600	414
2	Right Rear Accelerometer – X Direction	1965	587	406
3	Engine Top X	4056	35	-153
4	Engine Bottom X	4375	279	454
5	Left Rear Accelerometer – Z Direction	1966	569	408
6	Right Rear Accelerometer – Z Direction	1957	-622	394
7	Left Rear Accelerometer – X Direction Redundant	1967	-600	414
8	Right Rear Accelerometer – X Direction Redundant	1965	587	406

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

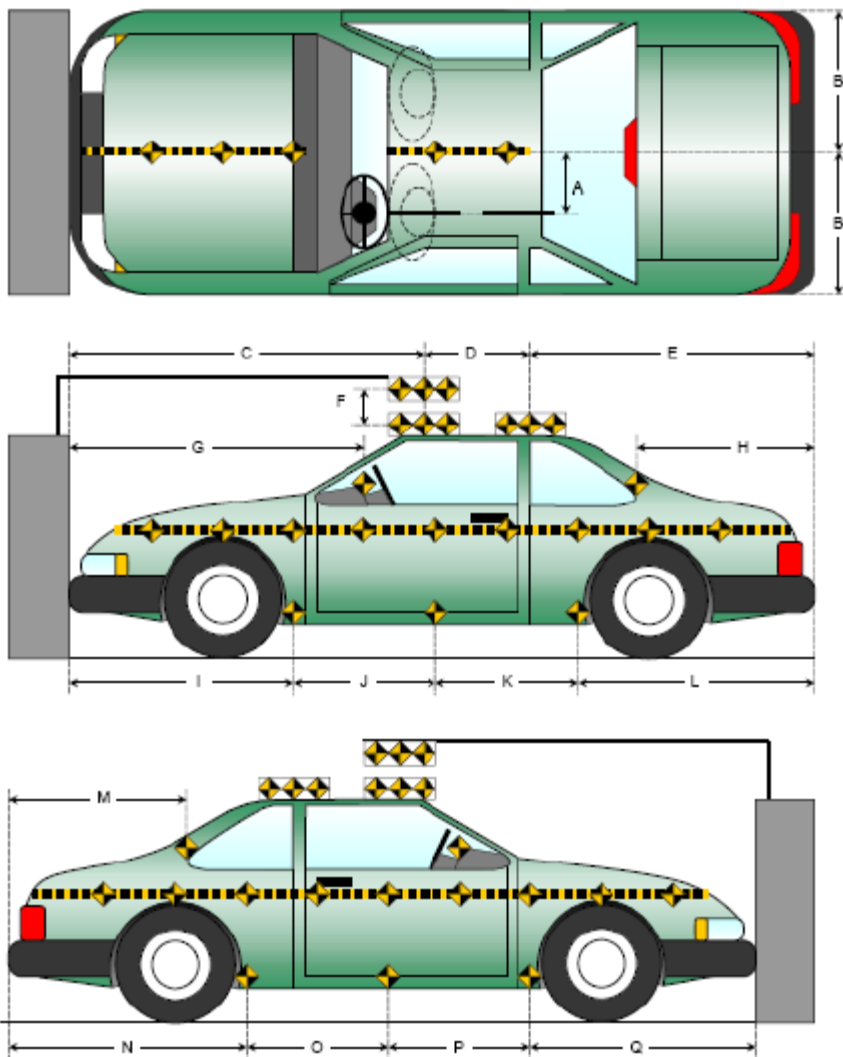
DATA SHEET NO. 8
PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2014 Mazda Mazda6 four door sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20145400
 Test Date: 2/10/2014

Item	Value
A	361
B	911
C	2450
D	911
E	1506
F	213
G	1853
H	1050
I	1406
J	963
K	960
L	1538
M	1053
N	1537
O	959
P	962
Q	1408

All units in millimeters



DATA SHEET NO. 9 **LOAD CELL LOCATIONS ON FIXED BARRIER**

Test Vehicle: 2014 Mazda Mazda6 four door sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20145400
 Test Date: 2/10/2014

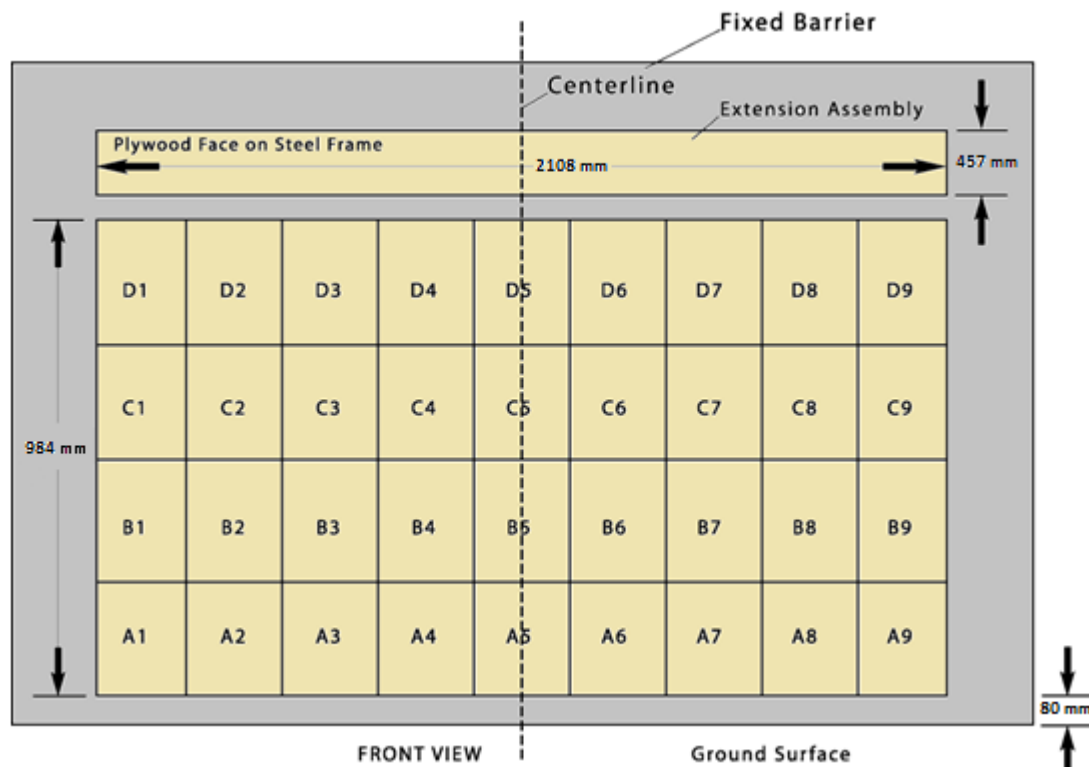


Figure 1 - Load Cell Locations on a 36-Load Cell Barrier with Plywood Height Extension

DATA SHEET NO. 10
TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle: 2014 Mazda Mazda6 four door sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20145400
 Test Date: 2/10/2014

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: 2014 Mazda Mazda6 four door sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20145400
Test Date: 2/10/2014

TEST DUMMY INFORMATION AND CONTACT LOCATIONS

Description	Driver	Passenger
Dummy Type / Serial No.	P572E 50 th Male / 064	P5720 5 th Female / 288
Head Contact	Front Airbag & Headrest	Front Airbag & Headrest
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 & Operational	Closed & Operational
Rear Door Opening	Closed & Operational	Closed & 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	Minor cracks
Window Damage	None
Other Notable Effects	None

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	385
Center	mm	340
Right Side	mm	365
Average	mm	363

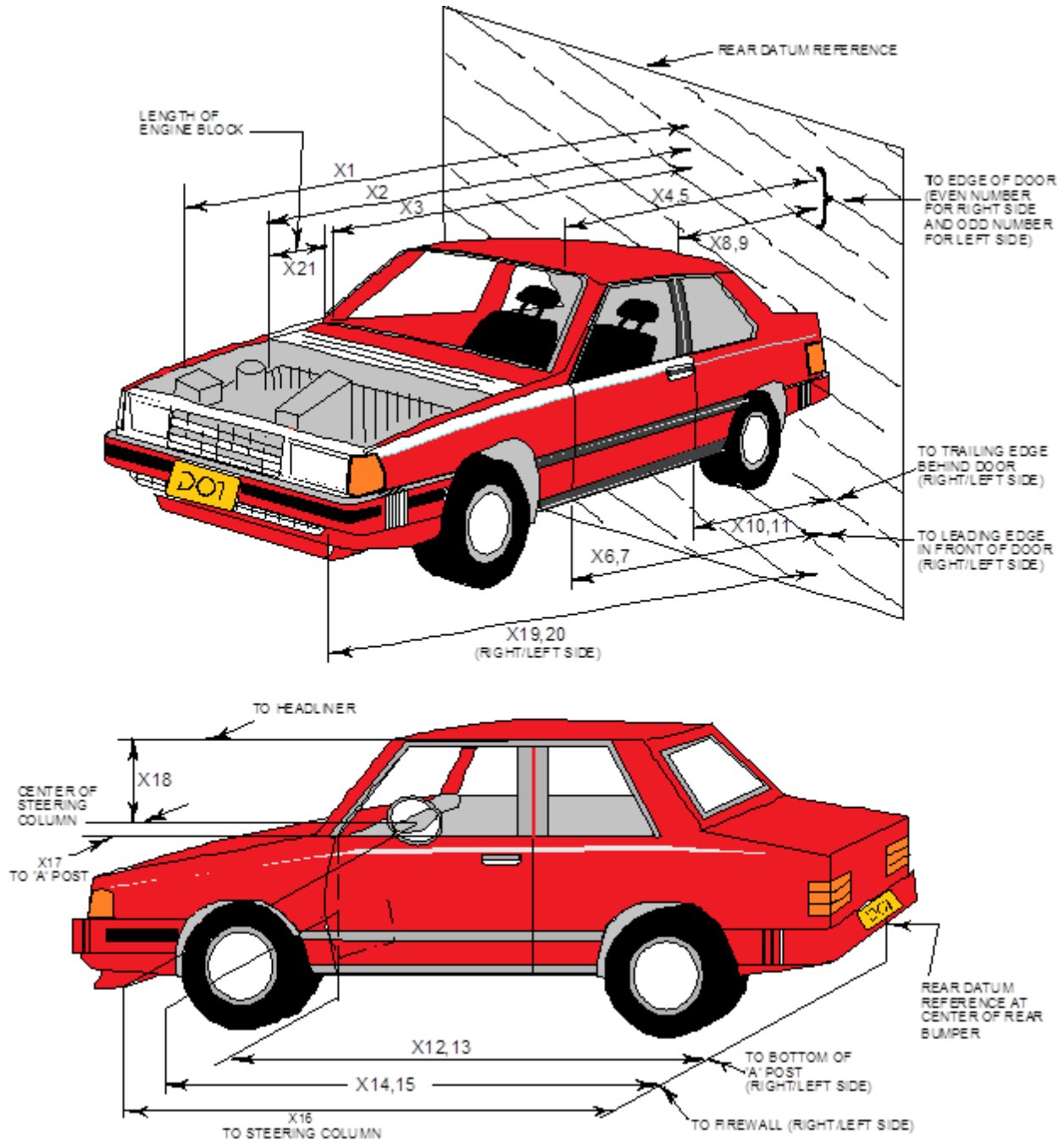
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Driver		Passenger	
	Installed	Deployed	Installed	Deployed
Front Airbag	Yes	Yes	Yes	Yes
Side Airbag 1 - Curtain	Yes	Yes	Yes	No
Side Airbag 2 - Torso/Pelvis Airbag	Yes	Yes	Yes	No
Knee Airbag	No	N/A	No	N/A
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: 2014 Mazda Mazda6 four door sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20145400
Test Date: 2/10/2014



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

Test Vehicle: 2014 Mazda Mazda6 four door sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20145400
 Test Date: 2/10/2014

No.	Measurement Description	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	4866	4417	-449
2	Rear Surface of Vehicle (RSOV) to Front of Engine	4351	4109	-242
3	RSOV to Firewall	3766	3728	-38
4	RSOV to Upper Leading Edge of Right Door	3316	3313	-3
5	RSOV to Upper Leading Edge of Left Door	3314	3315	1
6	RSOV to Lower Leading Edge of Right Door	3346	3341	-6
7	RSOV to Lower Leading Edge of Left Door	3344	3343	-1
8	RSOV to Upper Trailing Edge of Right Door	2250	2248	-2
9	RSOV to Upper Trailing Edge of Left Door	2251	2250	-1
10	RSOV to Lower Trailing Edge of Right Door	2283	2279	-5
11	RSOV to Lower Trailing Edge of Left Door	2282	2280	-2
12	RSOV to Bottom of "A" Post of Right Side	3321	3319	-2
13	RSOV to Bottom of "A" Post of Left Side	3325	3324	-1
14	RSOV to Firewall, Right Side	3664	3637	-27
15	RSOV to Firewall, Left Side	3663	3639	-23
16	RSOV to Steering Column	2852	2920	68
17	Center of Steering Column to "A" Post	292	288	-4
18	Center of Steering Column to Headliner	417	456	39
19	RSOV to Right Side of Front Bumper	4797	4430	-368
20	RSOV to Left Side of Front Bumper	4796	4475	-322
21	Length of Engine Block	408	408	0
RD	RSOV to Right Side of Dash Panel	3068	3073	5
CD	RSOV to Center of Dash Panel	3013	3013	1
LD	RSOV to Left Side of Dash Panel	3068	3069	1

All Dimensions in mm

DATA SHEET NO. 13
ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2014 Mazda Mazda6 four door sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20145400
Test Date: 2/10/2014

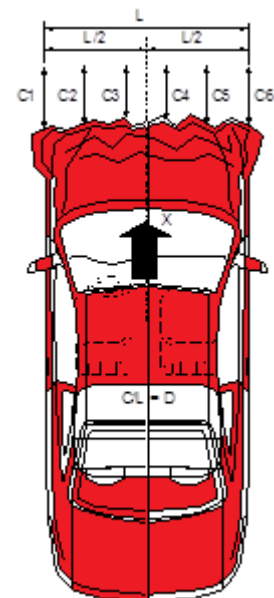
VEHICLE INFORMATION

VIN: JM1GJ1U62E1136888
Vehicle Size Category: Passenger

Wheelbase (mm): 2,828
Test Weight (kg): 1,631

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): 56.5
Velocity Change (km/h): 56.5
Time of Separation (ms): 119



CRUSH PROFILE

Collision Deformation Classification: 12FDEW2
Midpoint of Damage: Vehicle Centerline
Damage Region Length (mm): 1052
Impact Mode: Frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush Zone 1 at Left Side	mm	4739	4434	305
C2	Crush Zone 2 at Left Side	mm	4821	4442	379
C3	Crush Zone 3 at Left Side	mm	4843	4423	420
C4	Crush Zone 4 at Right Side	mm	4843	4400	443
C5	Crush Zone 5 at Right Side	mm	4821	4375	446
C6	Crush Zone 6 at Right Side	mm	4739	4372	367
L	C1 to C6	mm	1052	1082	-30

DATA SHEET NO. 14
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2014 Mazda Mazda6 four door sedan
 Test Program: NCAP Frontal Barrier Impact Test

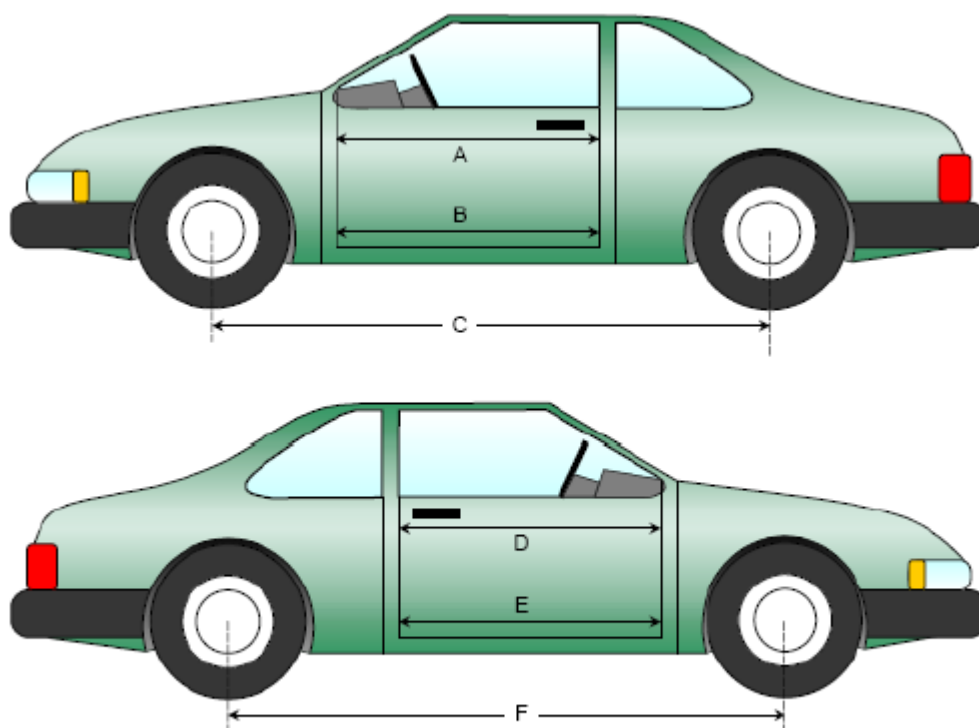
NHTSA No.: M20145400
 Test Date: 2/10/2014

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	991	989	-2
B	Left Side Lower	mm	804	804	0
D	Right Side Upper	mm	990	988	-2
E	Right Side Lower	mm	823	823	0

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2828	2747	-81
F	Right Side Wheelbase	mm	2828	2768	-60



Left & Right Side Views

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

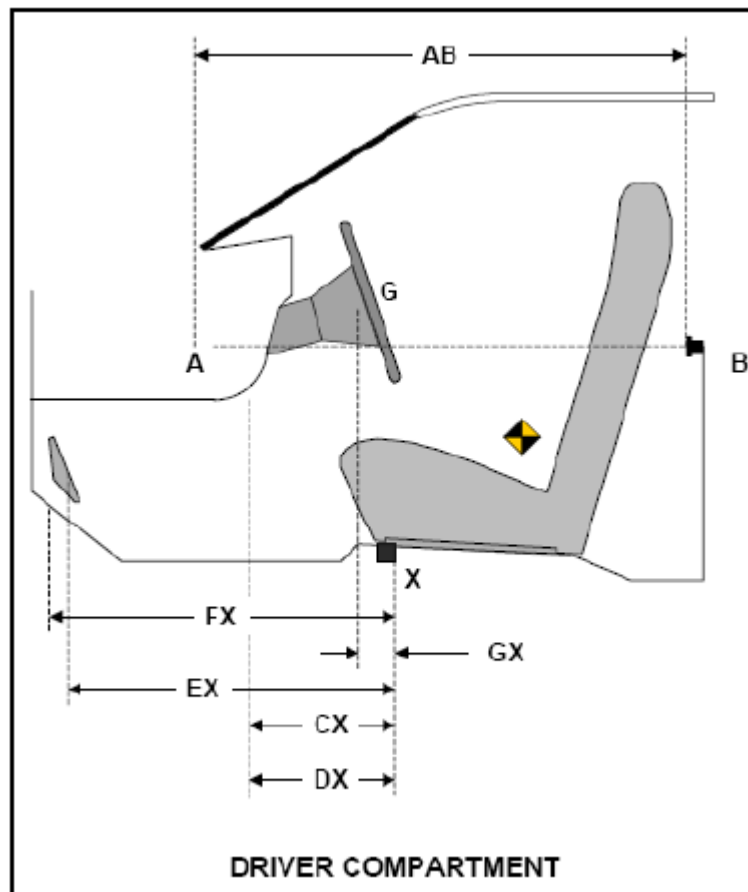
Test Vehicle: 2014 Mazda Mazda6 four door sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20145400
 Test Date: 2/10/2014

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	718	716	-2
CX	Left Knee Bolster to X	mm	252	247	-5
DX	Right Knee Bolster to X	mm	252	249	-3
EX	Brake Pedal to X	mm	554	473	-81
FX	Foot Rest to X	mm	610	605	-5
GX	Center of Steering Column Wheel Hub to X	mm	18	85	67

X = Front of Seat Track (Stationary)



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

Test Vehicle: 2014 Mazda Mazda6 four door sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20145400
 Test Date: 2/10/2014

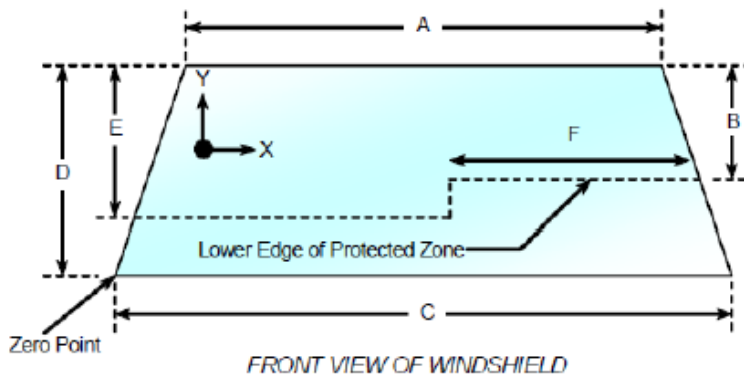
Windshield Mounting Details: A 0.8 mm trim surrounds the top and side of windshield while a plastic shroud is on the bottom.

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: 21 °C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% Retention
Left Side	2190	2190	100%
Right Side	2190	2190	100%
Total	4380	4380	100%



Item	Units	Value
A	mm	1240
B	mm	455
C	mm	1430
D	mm	855
E	mm	508
F	mm	308

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: 2014 Mazda Mazda6 four door sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20145400
Test Date: 2/10/2014

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 21 ° C

Test Time: 2:12 PM

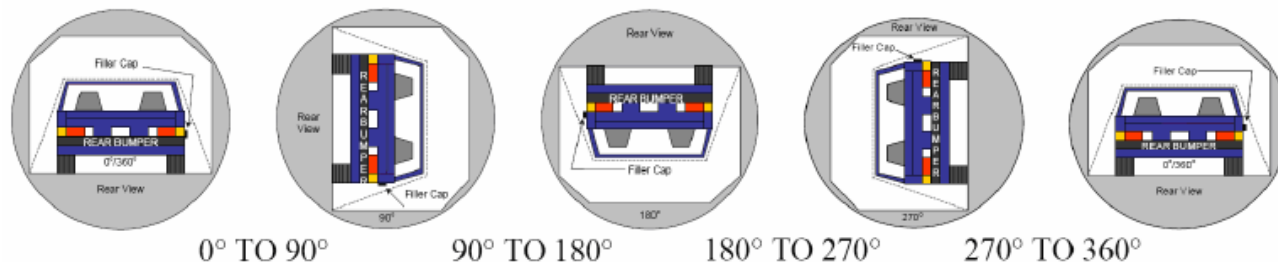
STODDARD SOLVENT SPILLAGE MEASUREMENTS

- 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: No Spillage Occurred

DATA SHEET NO. 16
FMVSS 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2014 Mazda Mazda6 four door sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20145400
 Test Date: 2/10/2014



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: No Spillage Occurred

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	76	300	376
90° to 180°	62	300	362
180° to 270°	60	300	360
270° to 360°	62	300	362

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	

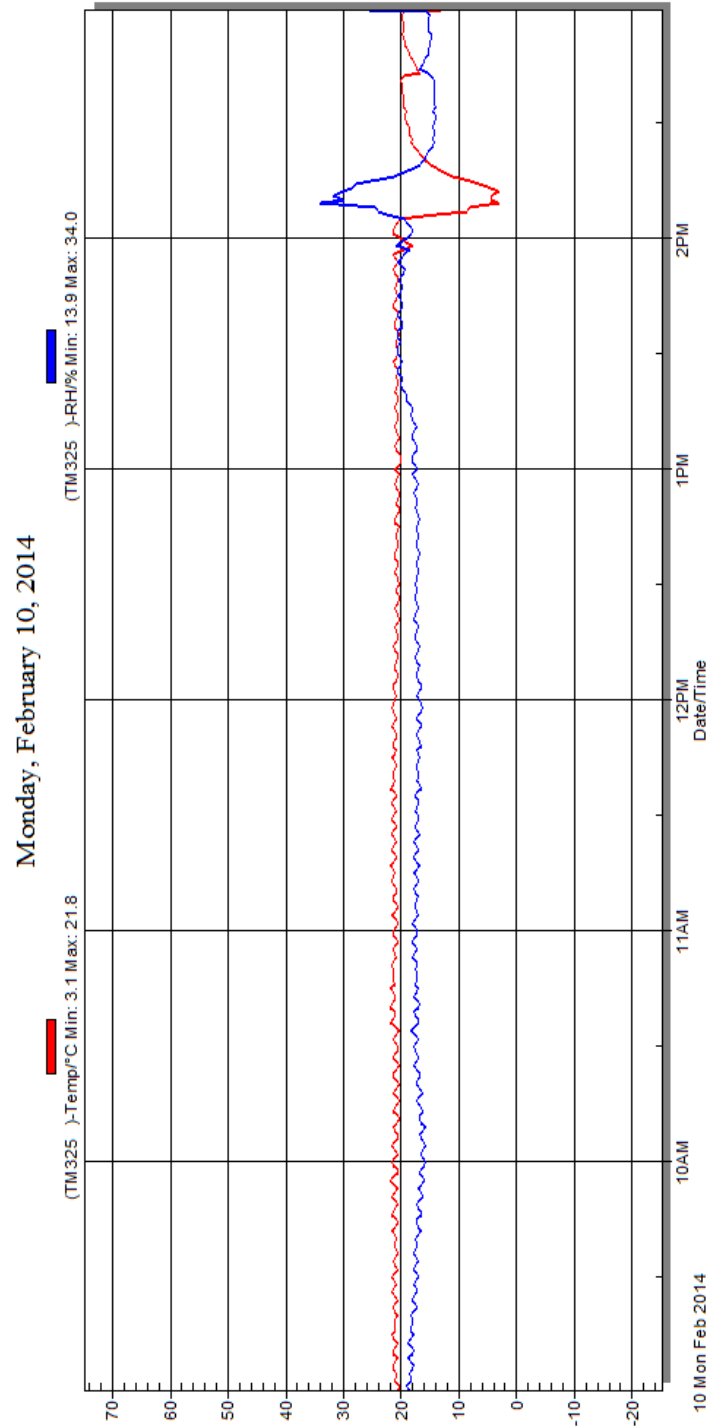
SOLVENT SPILLAGE LOCATION TABLE

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

DATA SHEET NO. 17
DUMMY / VEHICLE TEMPERATURE STABILIZATION CHART

Test Vehicle: 2014 Mazda Mazda6 four door sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20145400
 Test Date: 2/10/2014



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

APPENDIX A
PHOTOGRAPHS

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39	Pre-Test Driver Dummy Feet	A-24
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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
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48	Pre-Test View of the Steering Wheel	A-28
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59	Post-Test View of Belt Anchorage for Passenger Dummy	A-34
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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
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74	Vehicle at 180° on Static Rollover Device	A-41
75	Vehicle at 270° on Static Rollover Device	A-42
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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.*

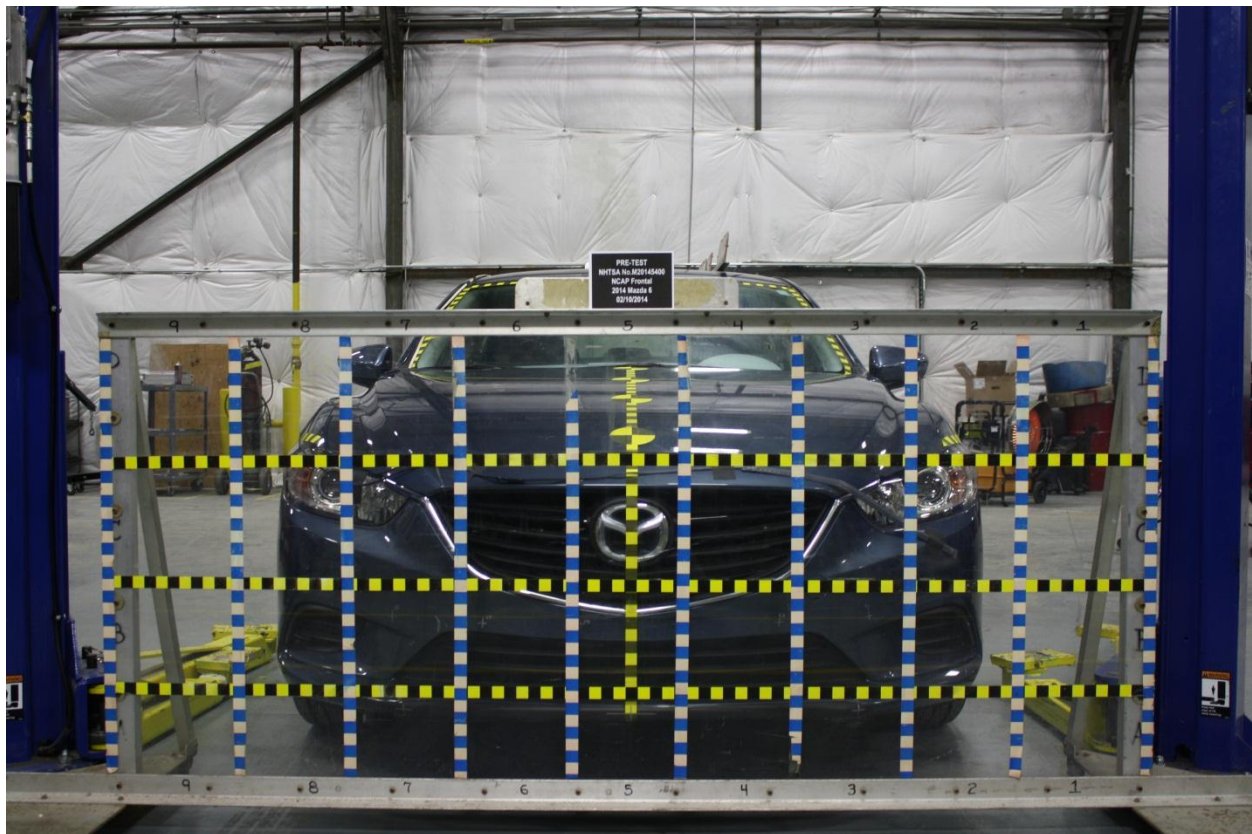


Figure A-1: Load Cell Location



Figure A-2: Load Cell Wall

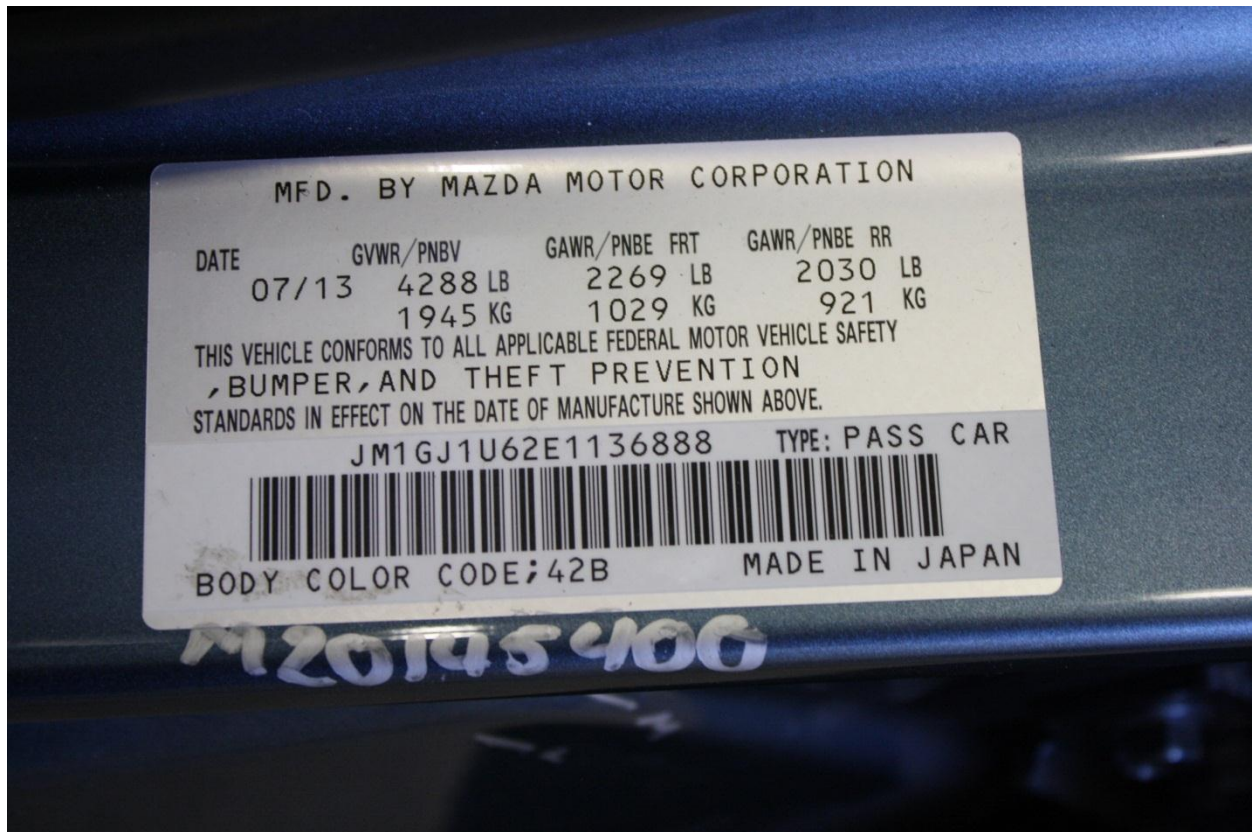


Figure A-3: Manufacturer's Label



Figure A-4: Tire Placard



Figure A-5: 2014 Mazda Mazda6 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

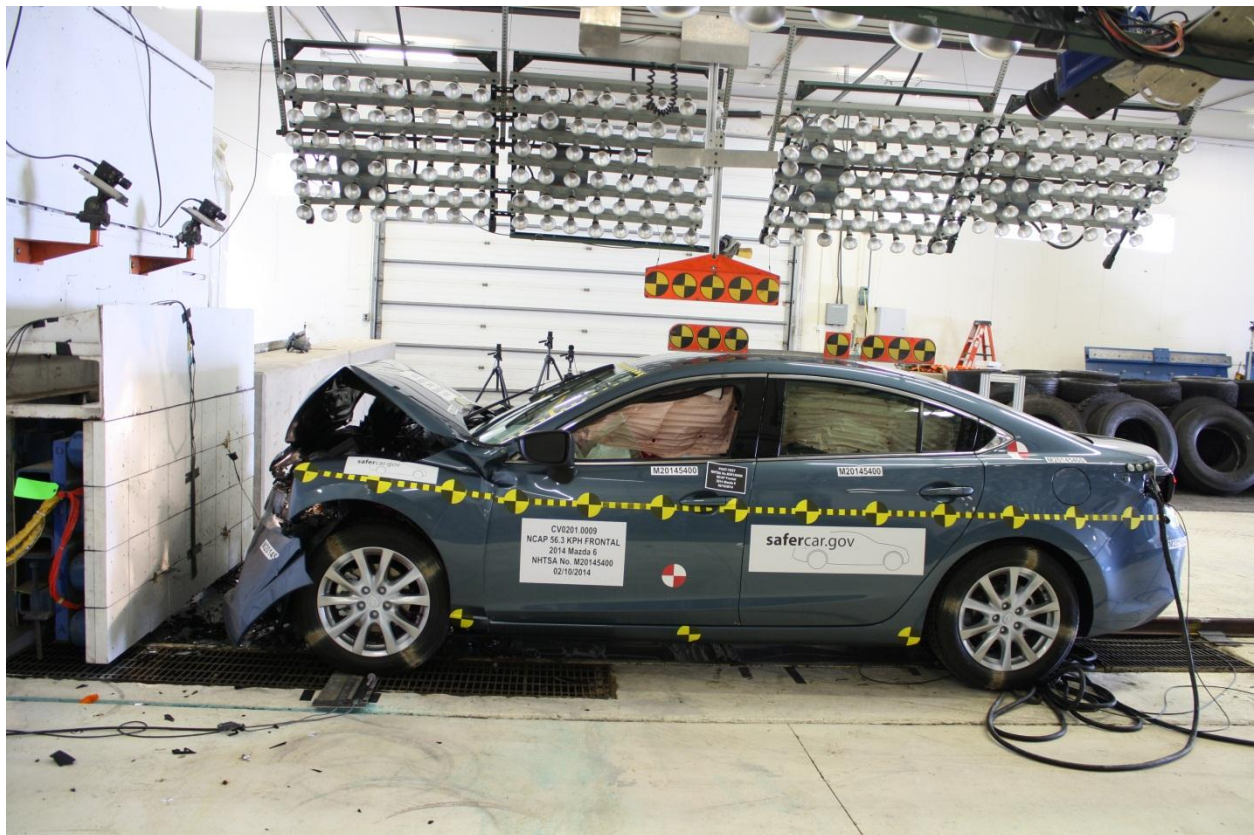


Figure A-10: Post-Test Left View of Test Vehicle



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



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

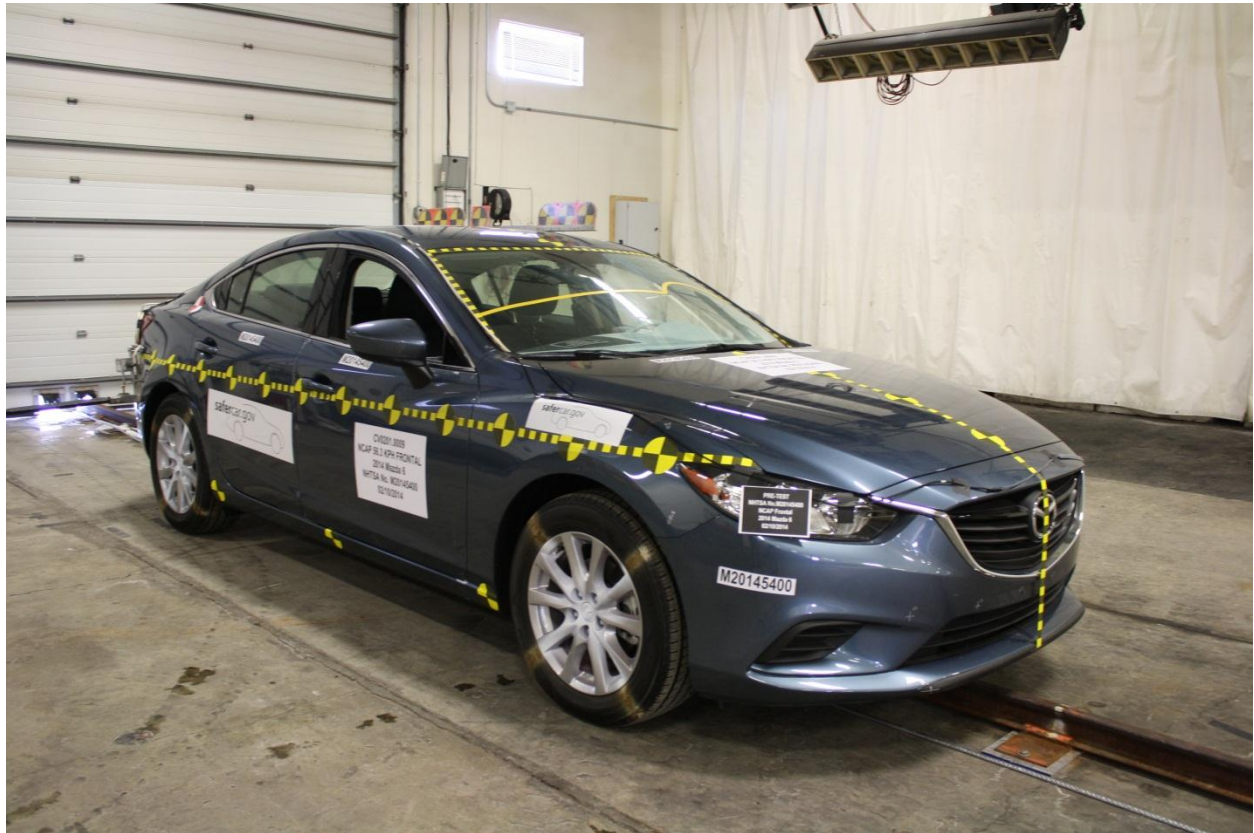


Figure A-13: Pre-Test Right Front 3-4 View



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

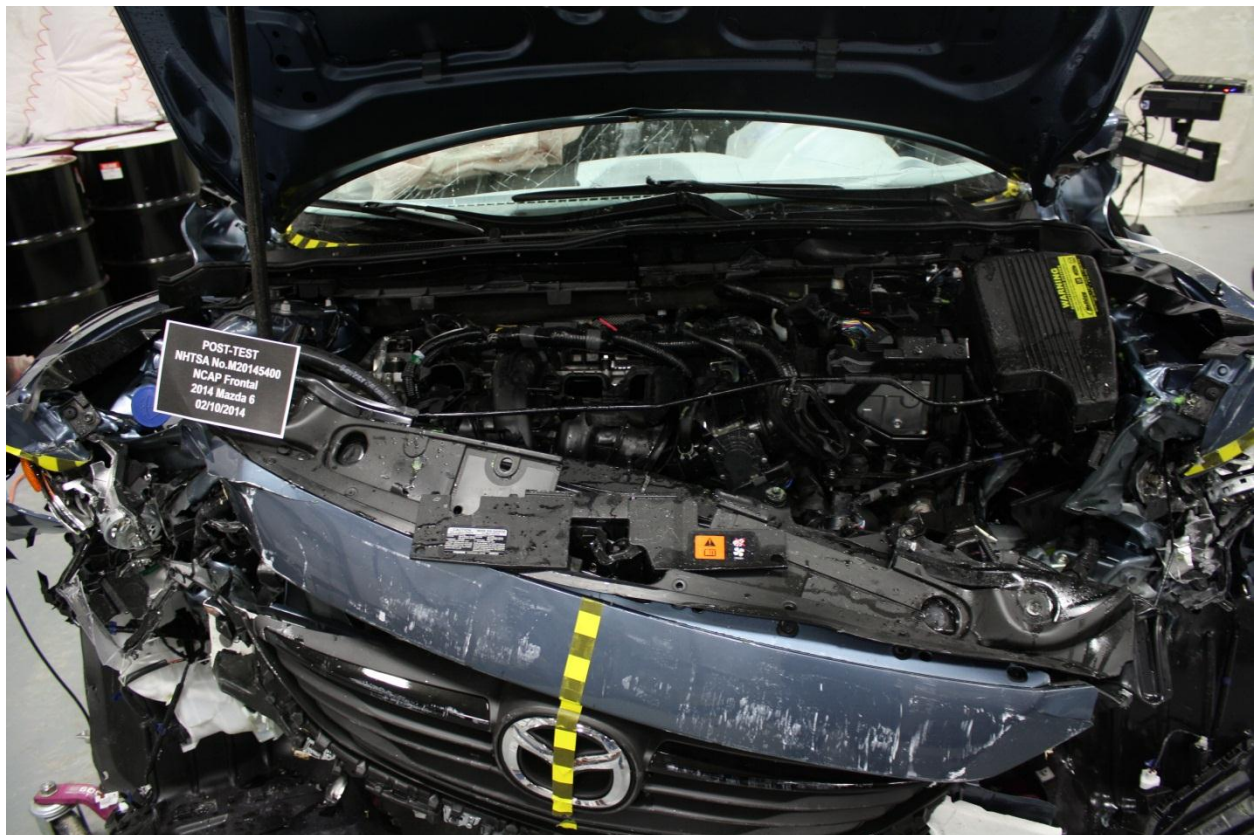


Figure A-20: Post-Test Engine Compartment View



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



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

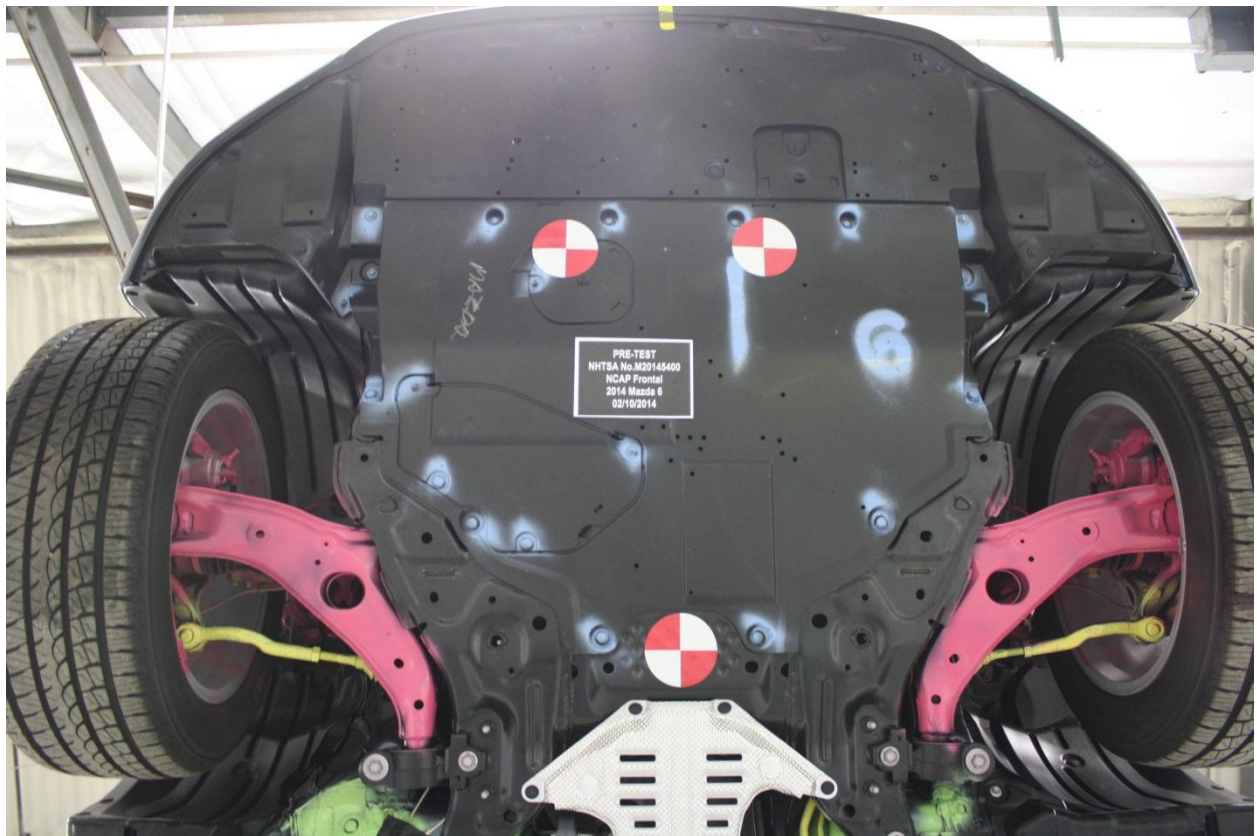


Figure A-23: Pre-Test Front Underbody View

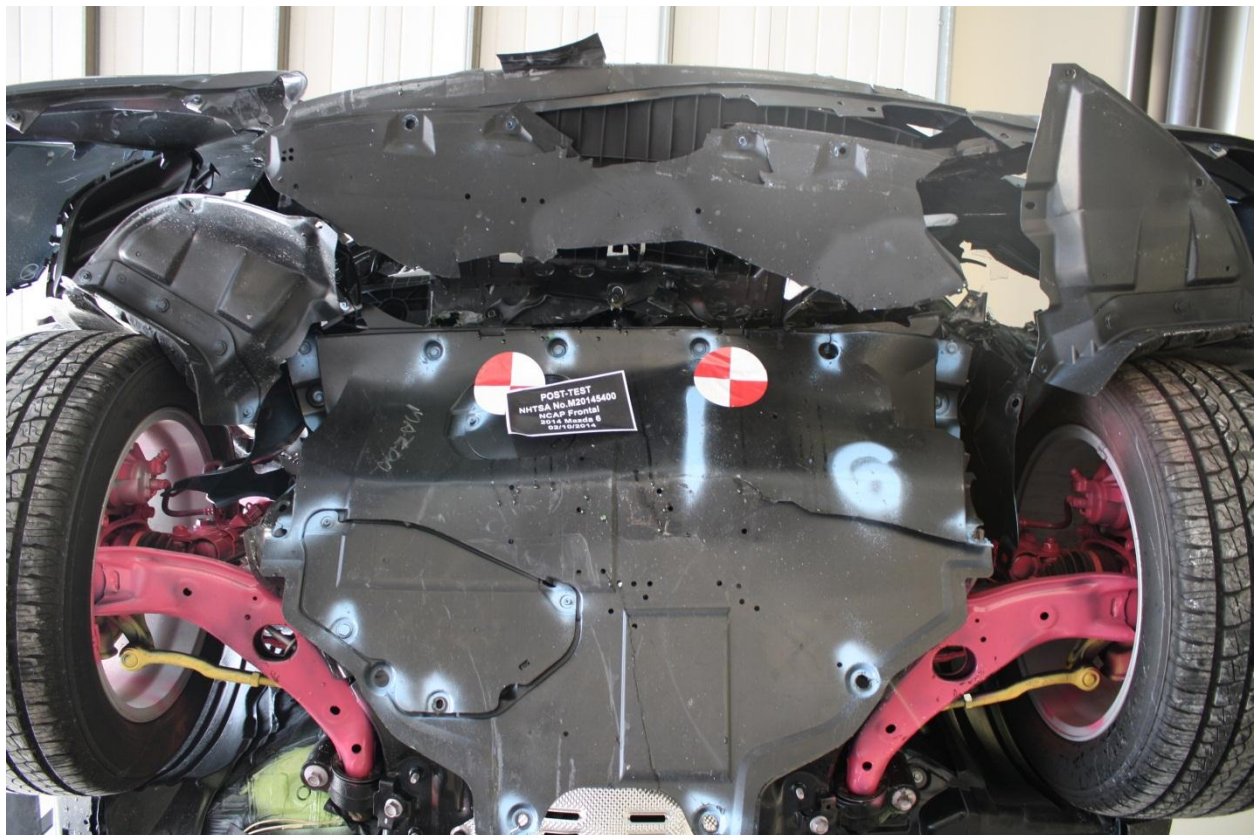


Figure A-24: Post-Test Front Underbody View



Figure A-25: Pre-Test Rear Underbody View

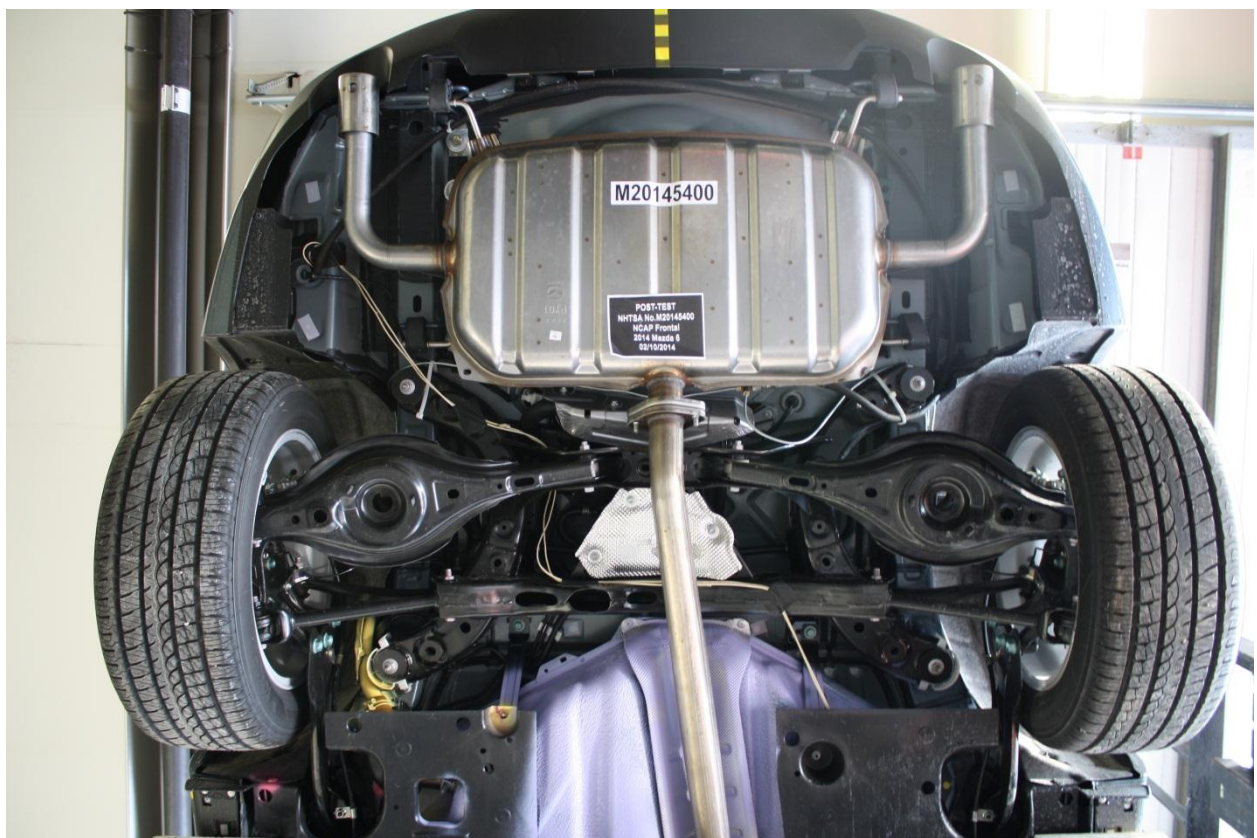


Figure A-26: Post-Test Rear Underbody View



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

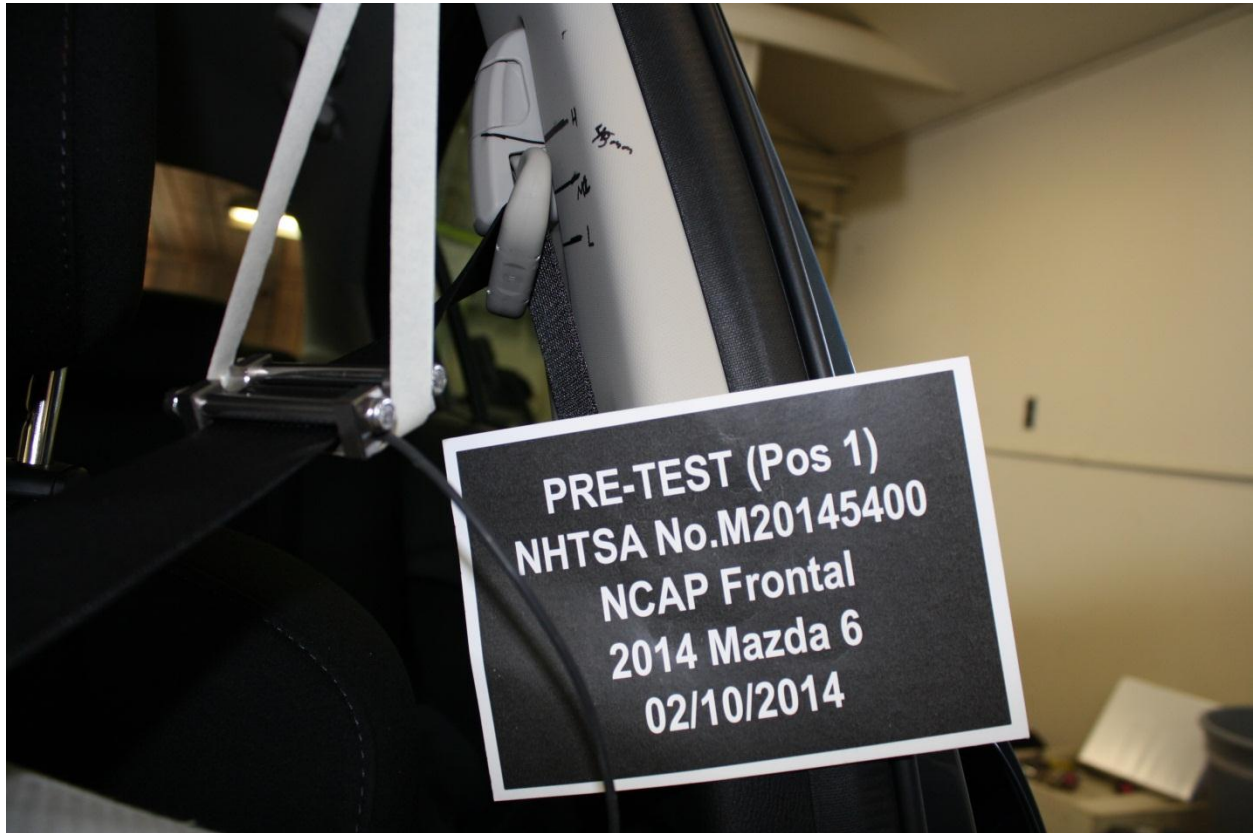


Figure A-37: Pre-Test View of Belt Anchorage for Driver Dummy



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

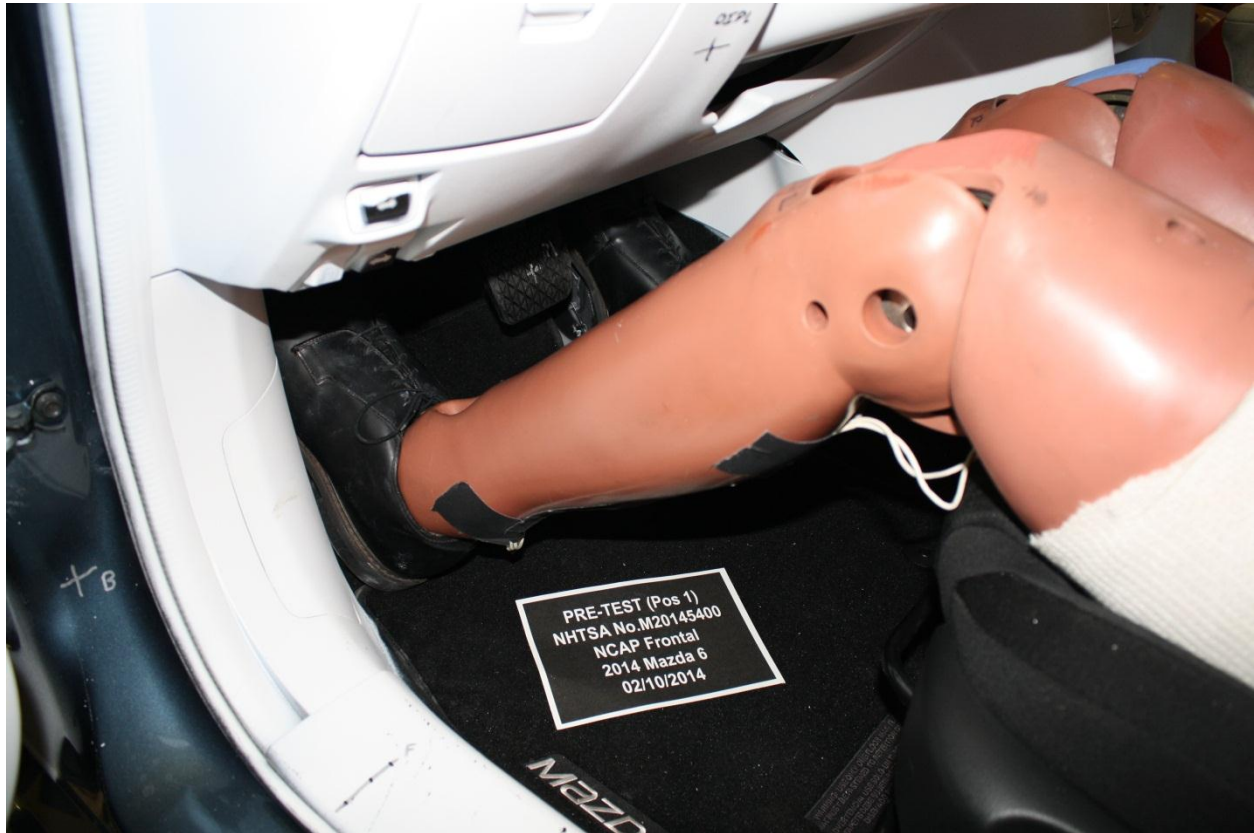


Figure A-39: Pre-Test Driver Dummy Feet

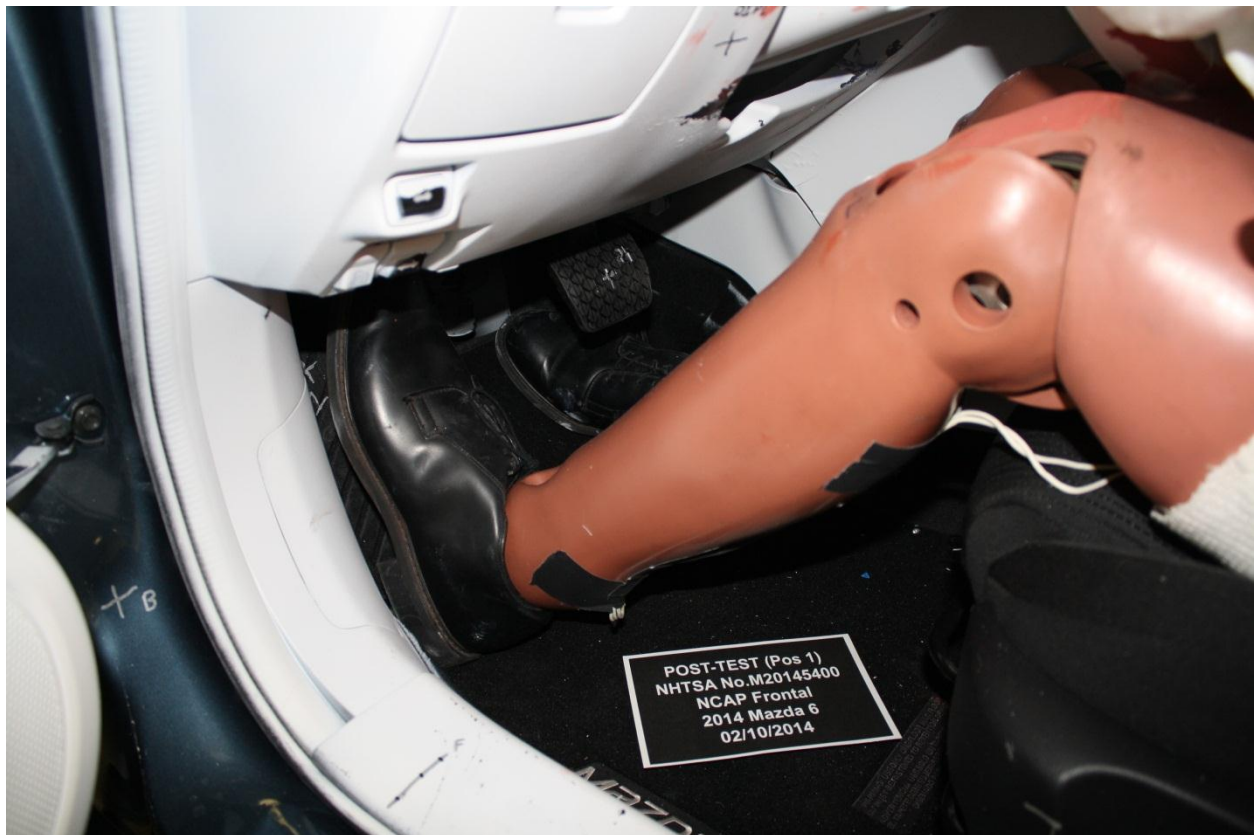


Figure A-40: Post-Test Driver Dummy Feet



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

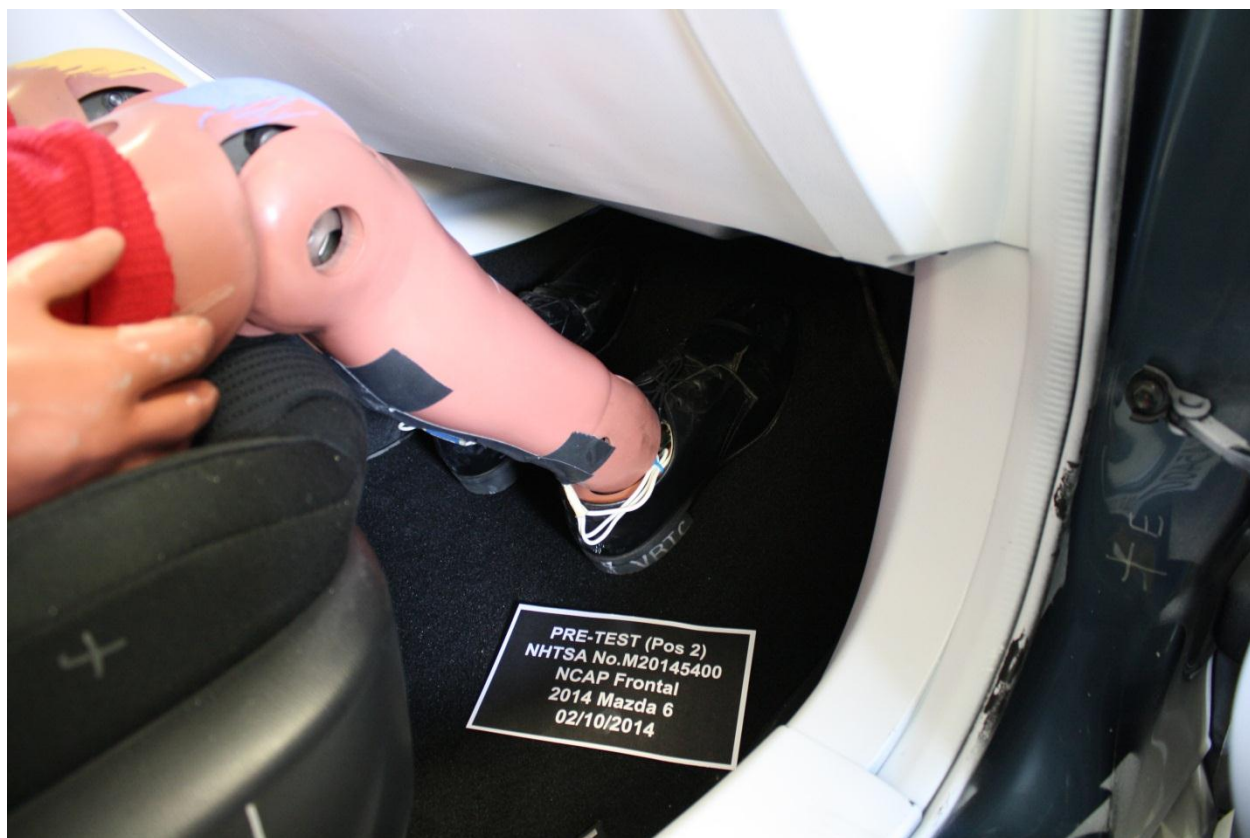


Figure A-60: Pre-Test Passenger Dummy Feet



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 Face



Figure A-67: Post-Test Passenger Dummy Contact With Airbag



Figure A-68: Post-Test Passenger Dummy Contact With Headrest

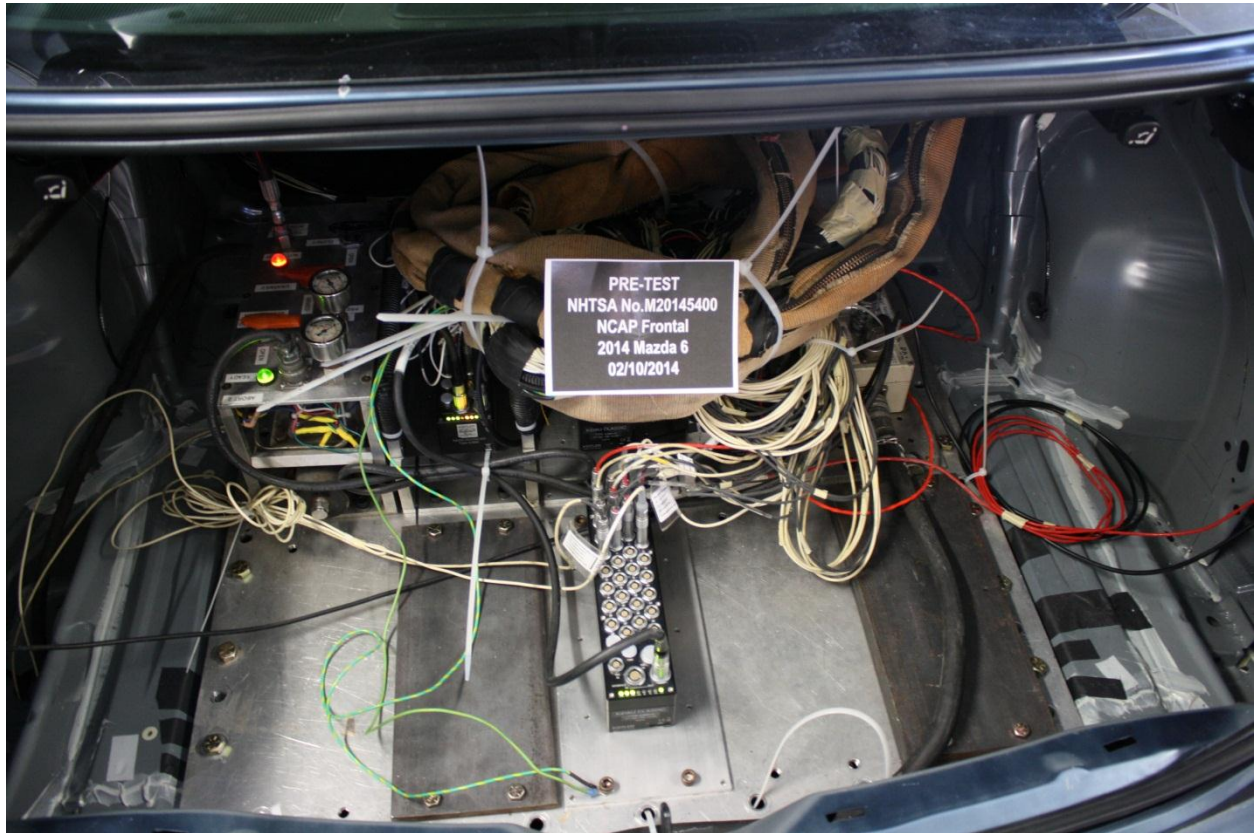


Figure A-69: Photograph of Ballast Installed in Vehicle

Photo Not Applicable

Figure A-70: Post-Test Stoddard Solvent Spillage Location View, If Required



Figure A-71: Post-Test Speed Trap Read-Out



Figure A-72: Vehicle at 0° on Static Rollover Device



Figure A-73: Vehicle at 90° on Static Rollover Device



Figure A-74: Vehicle at 180° on Static Rollover Device



Figure A-75: Vehicle at 270° on Static Rollover Device



Figure A-76: Vehicle at 360° on Static Rollover Device



Figure A-77: 2014 Mazda Mazda6 Frontal Impact Event

2014 MAZDA6

Model: 2014 MAZDA6 I SPORT
Exterior Color: BLUE REFLEX
Interior Color: BLACK

EPA DOT Fuel Economy and Environment

Fuel Economy

30 MPG combined city/hwy
26 city
38 highway
3.3 gallons per 100 miles

You save \$2,750 in fuel costs over 5 years compared to the average new vehicle.

Annual fuel cost \$1,750

Fuel Economy & Greenhouse Gas Rating (baipipe only) **Smog Rating** (baipipe only)

1 8 10 1 5 10

This vehicle emits 291 grams CO₂ per mile. The best emits 0 grams per mile (baipipe only). Producing and distributing fuel also create emissions. Learn more at fuelconomy.gov.

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 \$1,500 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$3.50 per gallon. MPGe is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

fuelconomy.gov
Calculate personalized estimates and compare vehicles

PARTS CONTENT INFORMATION:

FOR VEHICLES IN THIS CARLINE: U.S./CANADIAN PARTS CONTENT: 5%
MAJOR SOURCES OF FOREIGN PARTS CONTENT: JAPAN 90%

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

FOR THIS VEHICLE: FINAL ASSEMBLY POINT: HONOLULU, JAPAN
COUNTRY OF ORIGIN: JAPAN
TRANSMISSION: JAPAN

This label is affixed pursuant to the Federal Automobile Disclosure Act. Gasoline, License and Title fees, State and Local taxes, and Dealer installed options are not included.

STANDARD EQUIPMENT

ENGINE/MECHANICAL FEATURES

- SKYACTIV-G 2.5L DOHC 4-CYL. ENGINE
- SKYACTIV-DRIVE 6-SPEED SPORT AT
- 184 HORSEPOWER, 185 LB-FT TORQUE
- FRONT-WHEEL DRIVE

EXTERIOR FEATURES

- 17-INCH ALLOY WHEELS
- P225/55 R17 ALL-SEASON TIRES
- VARIABLE-INTERMITTENT WIPERS
- POWER SIDE MIRRORS WITH TURN LAMPS
- DUAL EXHAUST W/RIGHT OUTLETS

INTERIOR FEATURES

- CLOTH-TRIMMED SPORT SEATS
- 6-WAY MANUAL DRIVER'S SEAT
- TILT & TELESCOPIC STEERING COLUMN
- 5.8" COLOR TOUCH-SCREEN DISPLAY
- REARVIEW CAMERA
- AM/FM/COMPACT DISC 6-SPEAKER AUDIO
- USB AUDIO INPUT & HD RADIO
- BLUETOOTH HANDS-FREE PHONE/AUDIO
- STEERING WHEEL MOUNTED CONTROLS
- LEATHER-WRAPPED STEERING WHEEL
- CRUISE CONTROL

SAFETY AND SECURITY FEATURES

- 36-MONTH/36,000 MILE BUMPER-TO-BUMPER WARRANTY
- 60 MONTH/60,000 MILE POWERTRAIN WARRANTY
- 24-HOUR ROADSIDE ASSISTANCE
- 5-PASSENGER 3-POINT SAFETY BELTS
- LATCH CHILD SAFETY SEAT ANCHORS
- ANTI-THEFT ENGINE IMMOBILIZER
- TIRE PRESSURE MONITORING SYSTEM

4-WHEEL DISC BRAKES

- ELECTRIC POWER ASSISTED STEERING
- INDEPENDENT FRONT/REAR SUSPENSION
- FRONT/REAR STABILIZER BARS
- HALOGEN HEADLIGHTS W/AUTO OFF
- HALOGEN DAYTIME RUNNING LIGHTS
- LED COMBINATION TAILLIGHTS
- IN-GLASS ANTENNA
- REAR WINDOW DEFROGGER
- MID W/TRIP COMPUTER
- POWER AUTOMATIC DOOR LOCKS
- POWER WINDOWS W/DRIVER ONE-TOUCH
- REMOTE KEYLESS ENTRY
- PUSH BUTTON ENGINE START
- AIR CONDITIONING W/POLLEN FILTER
- DUAL VANITY MIRRORS
- CENTER ARMREST W/COVERED STORAGE
- 60/40 SPLIT FOLD-DOWN REAR SEAT
- REAR SEAT ARMREST W/CUPHOLDERS
- CARPETED FLOOR MATS
- ANTI-LOCK BRAKE SYSTEM (ABS) WITH EBD & BRAKE ASSIST
- DYNAMIC STABILITY CONTROL (DSC)
- TRACTION CONTROL SYSTEM (TCS)
- HILL LAUNCH ASSIST
- ADVANCED DUAL FRONT AIR BAGS
- FRONT SIDE IMPACT AIR BAGS
- FRONT & REAR SIDE AIR CURTAINS
- SKYACTIV BODY RING STRUCTURE

MSRP \$22,695

Total Vehicle and Options \$22,695
Delivery, Processing and Handling Fee \$795
Total MSRP \$23,490

GOVERNMENT 5-STAR SAFETY RATINGS

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.

Frontal Crash Driver Not Rated
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 Not Rated
Rear seat Not Rated
Based on the risk of injury in a side impact.

Rollover Not Rated
Based on the risk of rollover in a single vehicle crash.

Star ratings range from 1 to 5 stars (★★★★★) with 5 being the highest.
Source: National Highway Traffic Safety Administration (NHTSA)
www.safercar.gov or 1-888-327-4236

SOLD TO: 61420
HOLIDAY MAZDA
390 N. ROLLING MEADOWS RD.
FOND DU LAC, WI 54937

SHIP TO: 61420 DY
HOLIDAY MAZDA
390 N. ROLLING MEADOWS RD.
FOND DU LAC, WI 54937

JM1GJ1U62E1136888

MazdaUSA.COM

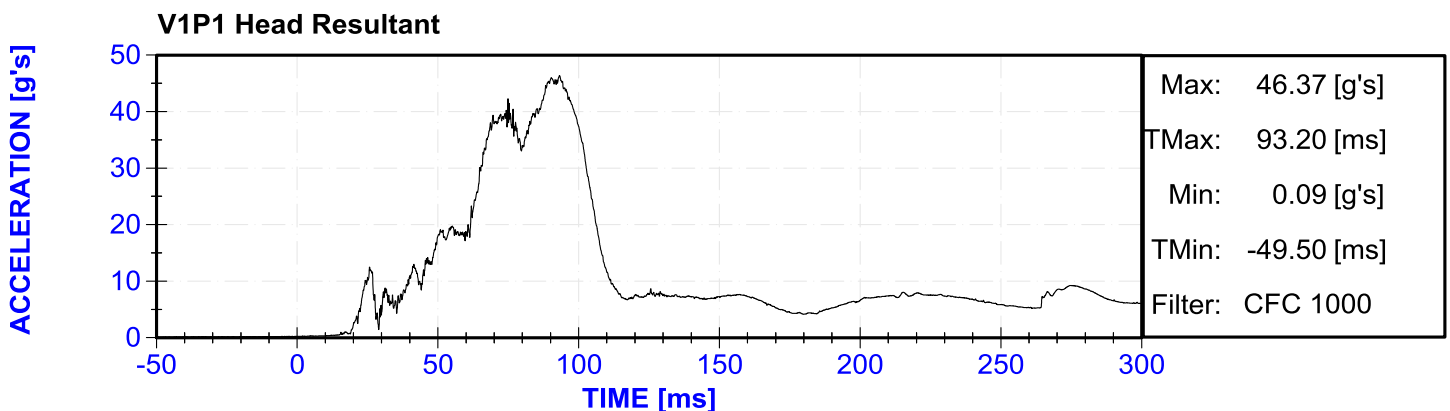
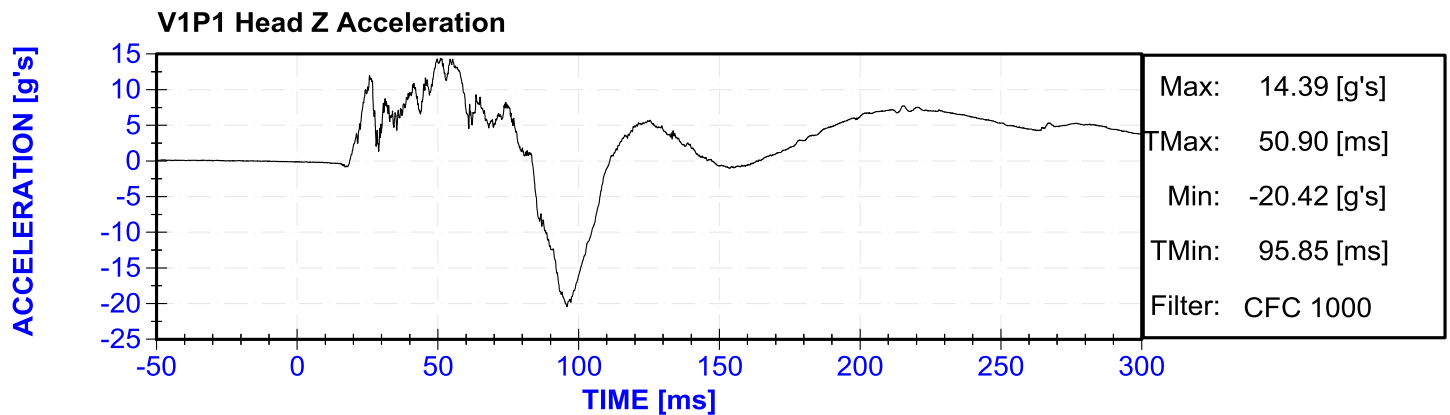
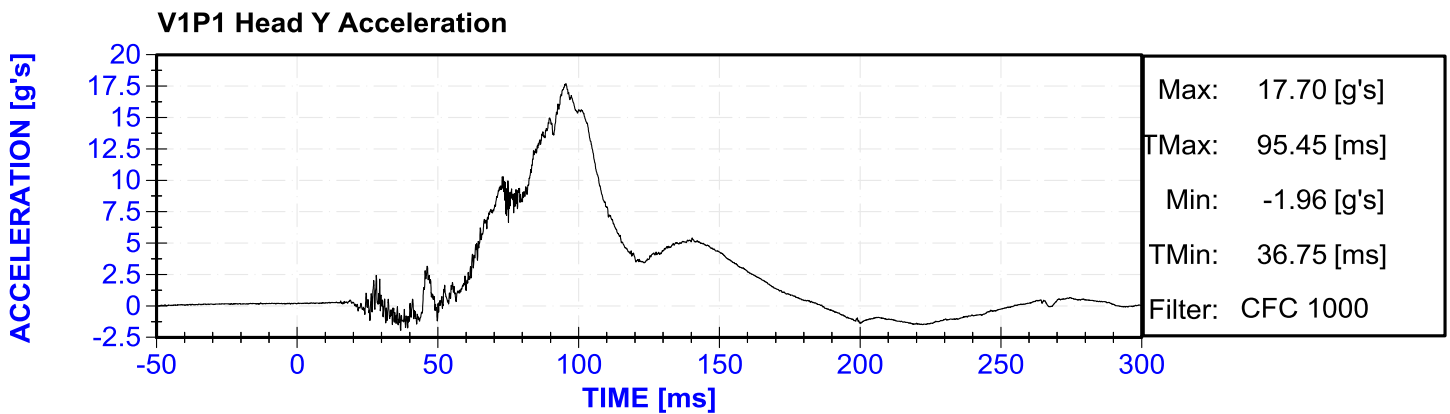
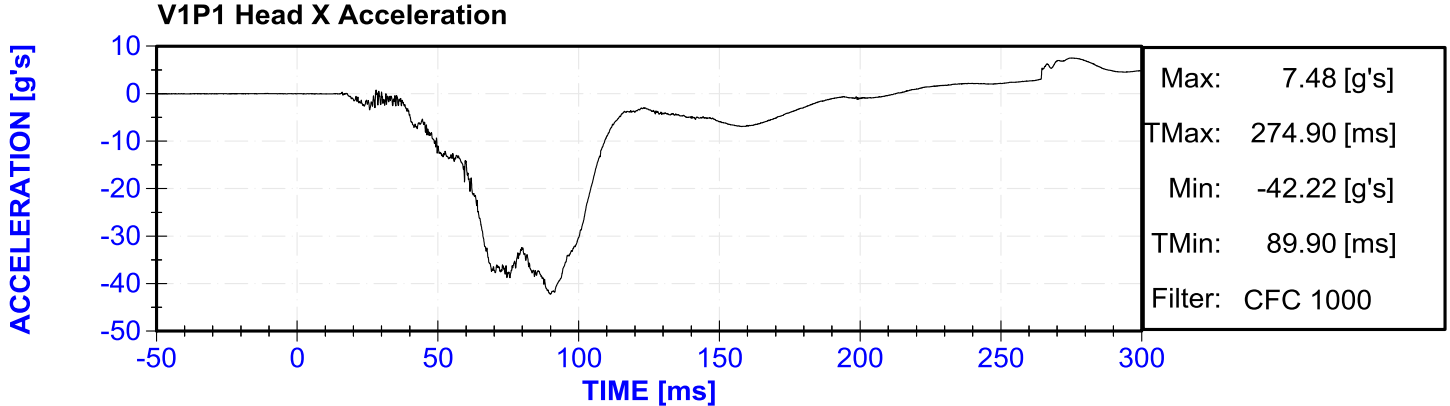
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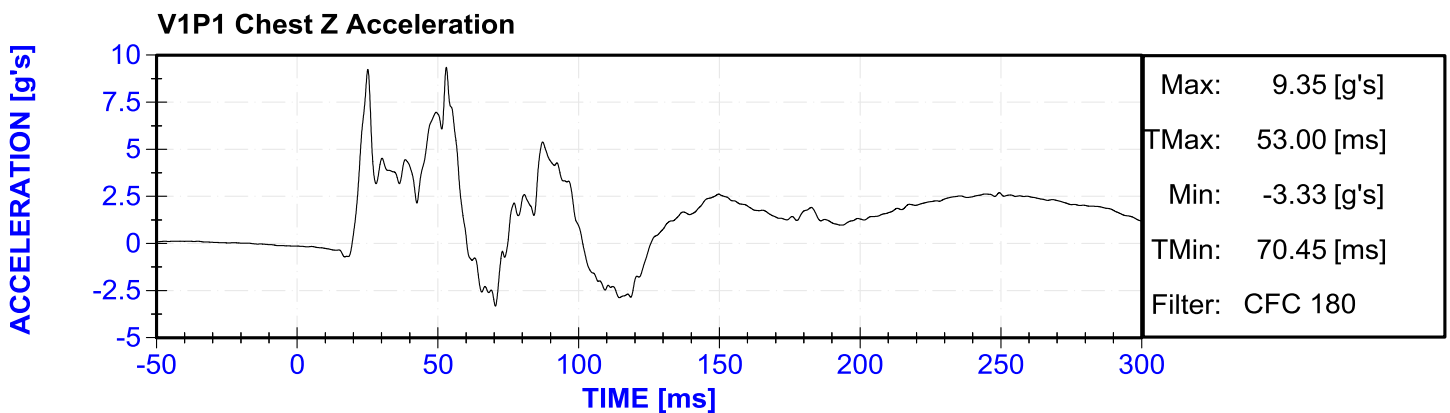
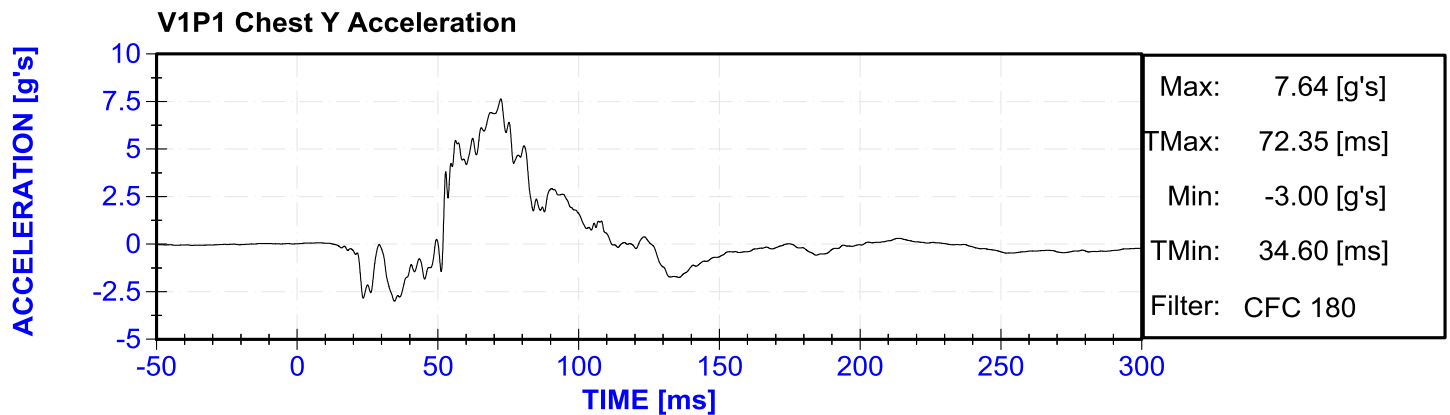
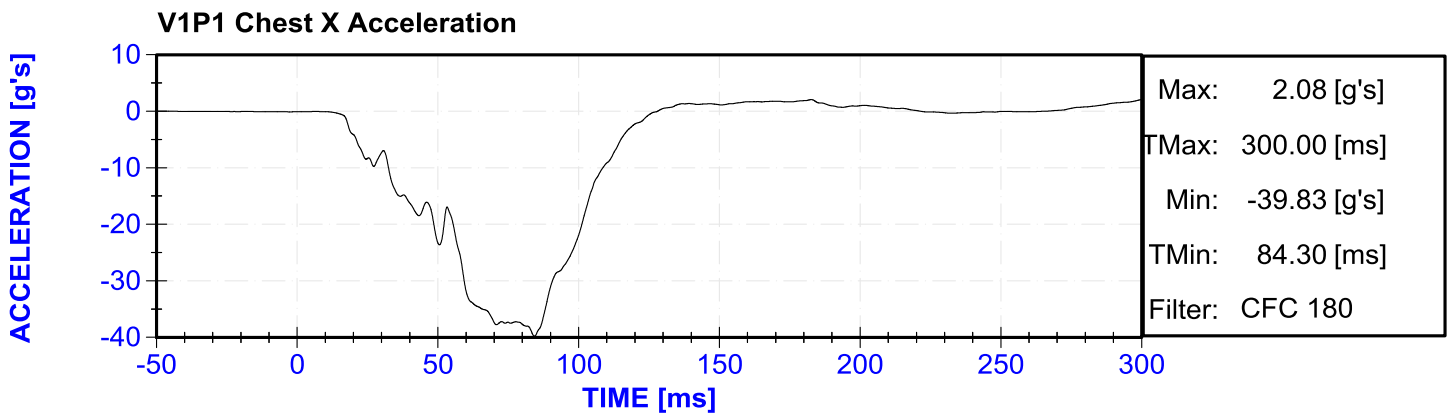
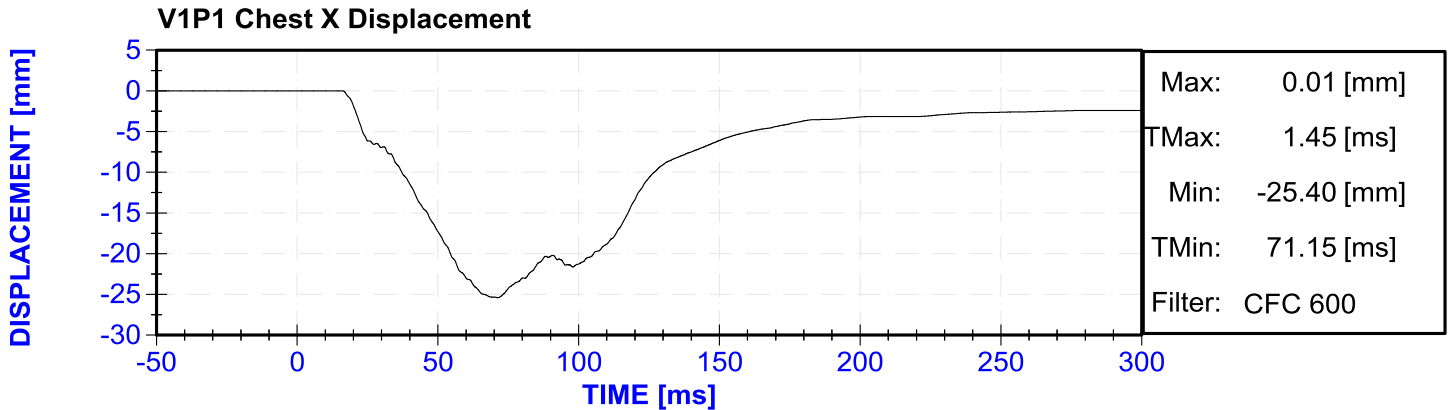
Figure A-78: Monroney Label Photograph

APPENDIX B
VEHICLE & DUMMY RESPONSE DATA TRACES

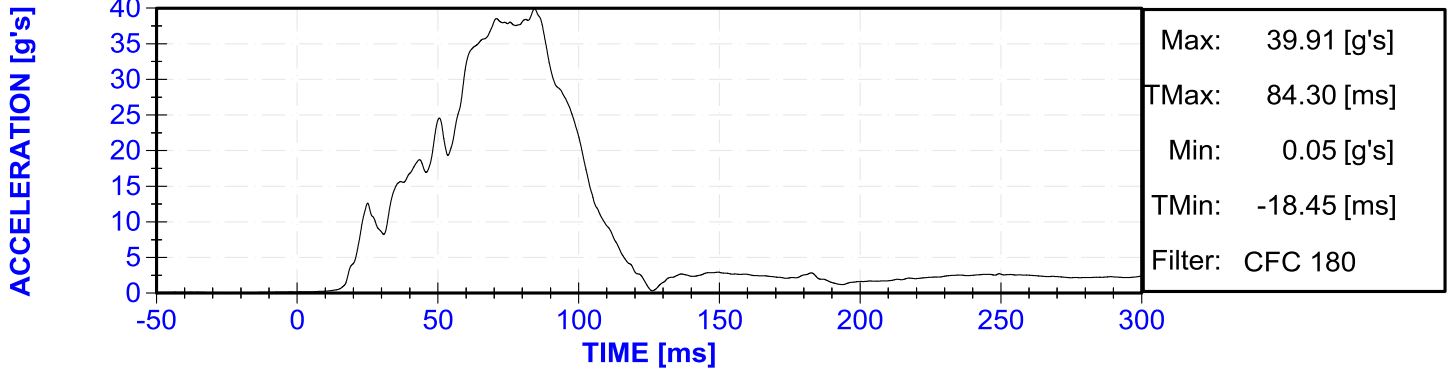
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No.	Description	Page
Plot 1	V1P1 Head X Acceleration	B-3
Plot 2	V1P1 Head Y Acceleration	B-3
Plot 3	V1P1 Head Z Acceleration	B-3
Plot 4	V1P1 Head Resultant	B-3
Plot 5	V1P1 Chest X Displacement	B-4
Plot 6	V1P1 Chest X Acceleration	B-4
Plot 7	V1P1 Chest Y Acceleration	B-4
Plot 8	V1P1 Chest Z Acceleration	B-4
Plot 9	V1P1 Chest Resultant	B-5
Plot 10	V1P1 Upper Neck X Force	B-5
Plot 11	V1P1 Upper Neck Z Force	B-5
Plot 12	V1P1 Upper Neck Y Moment	B-5
Plot 13	V1P1 Total Neck Injury	B-6
Plot 14	V1P1 Left Femur Z Force	B-6
Plot 15	V1P1 Right Femur Z Force	B-6
Plot 16	V1P2 Head X Acceleration	B-6
Plot 17	V1P2 Head Y Acceleration	B-7
Plot 18	V1P2 Head Z Acceleration	B-7
Plot 19	V1P2 Head Resultant	B-7
Plot 20	V1P2 Chest X Displacement	B-7
Plot 21	V1P2 Chest X Acceleration	B-8
Plot 22	V1P2 Chest Y Acceleration	B-8
Plot 23	V1P2 Chest Z Acceleration	B-8
Plot 24	V1P2 Chest Resultant	B-8
Plot 25	V1P2 Upper Neck X Force	B-9
Plot 26	V1P2 Upper Neck Z Force	B-9
Plot 27	V1P2 Upper Neck Y Moment	B-9
Plot 28	V1P2 Total Neck Injury	B-9
Plot 29	V1P2 Left Femur Z Force	B-10
Plot 30	V1P2 Right Femur Z Force	B-10

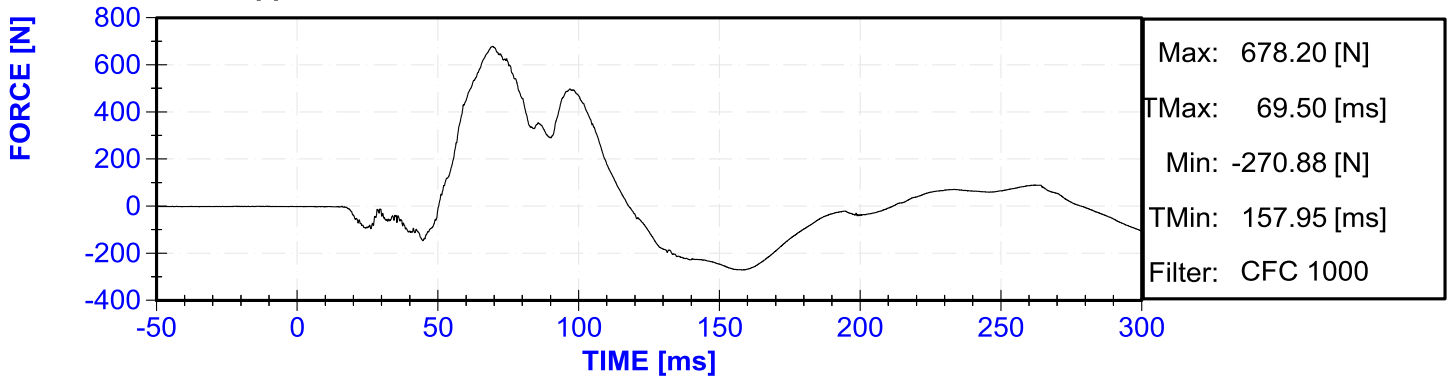




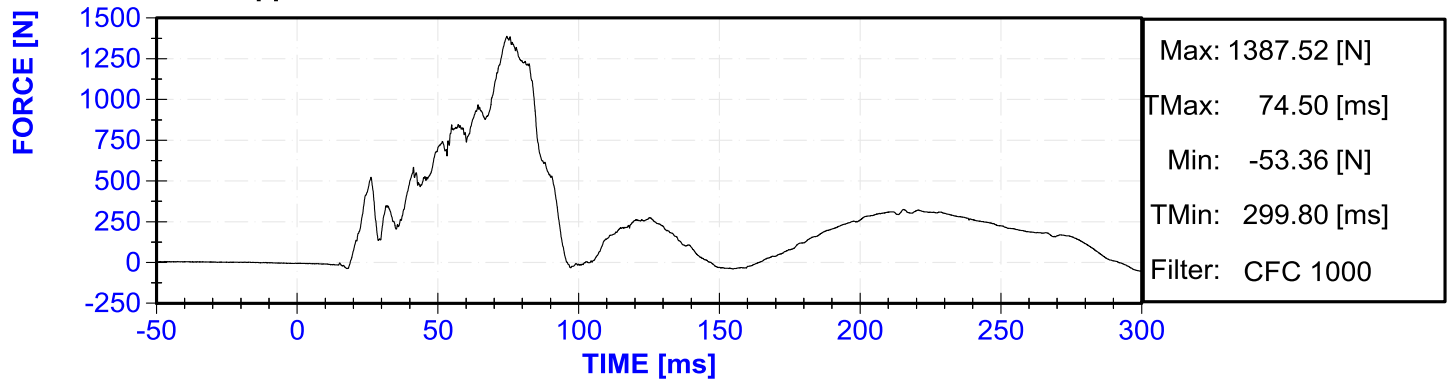
V1P1 Chest Resultant



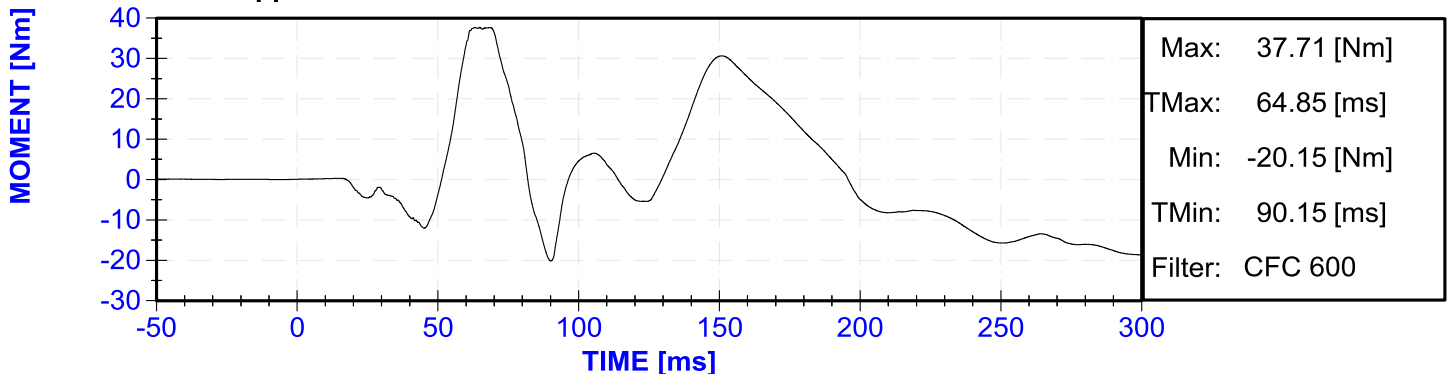
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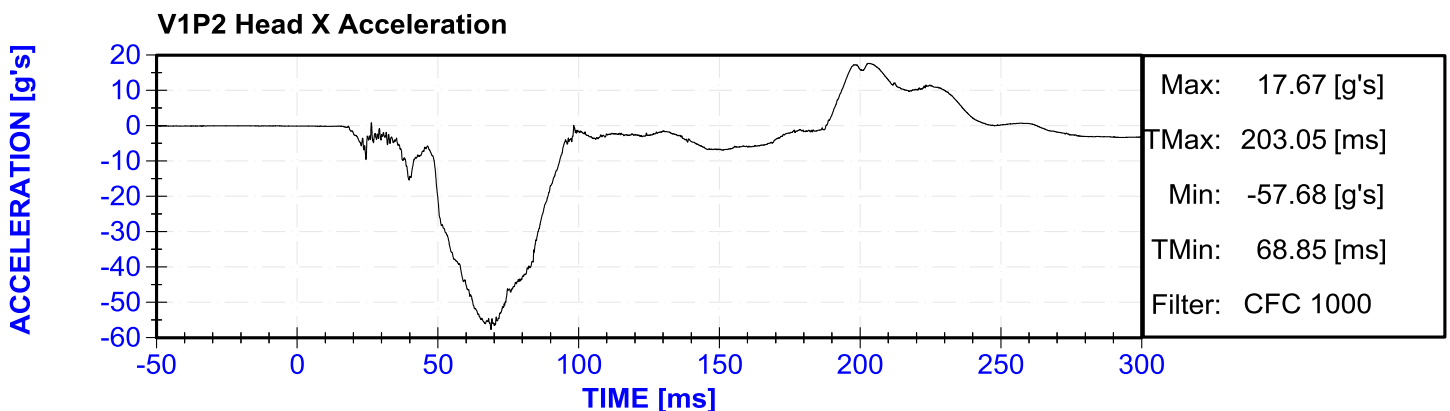
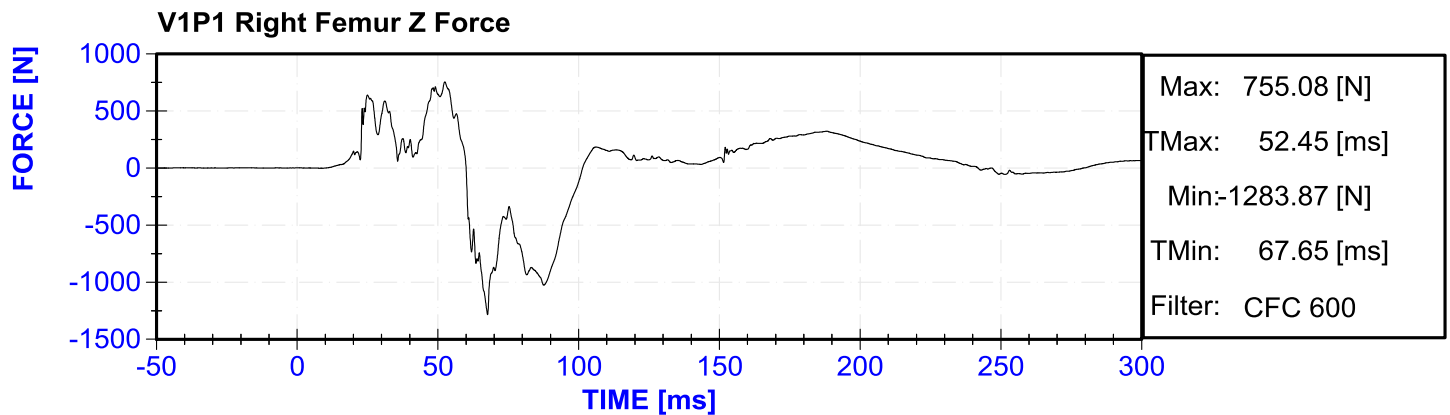
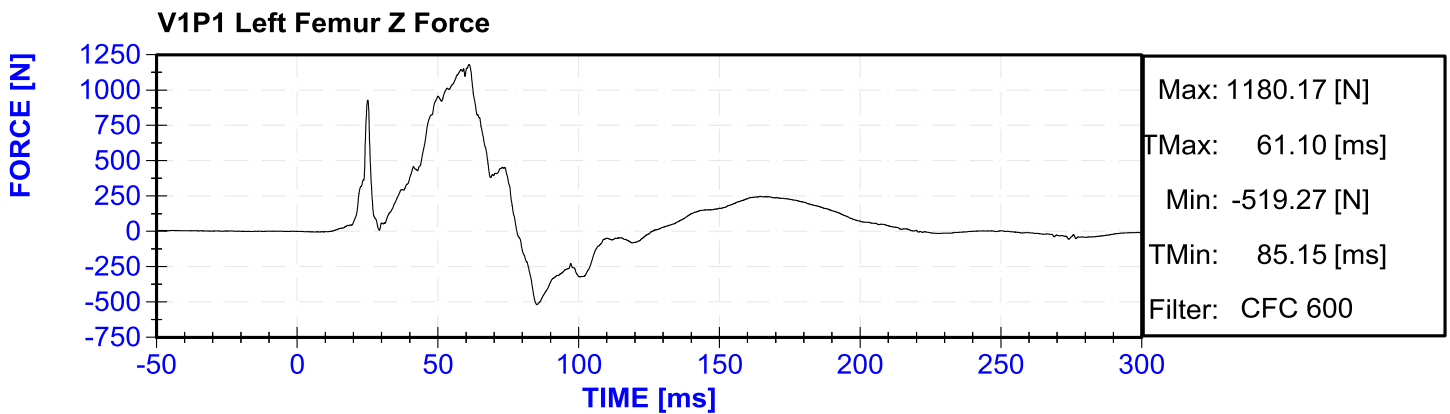
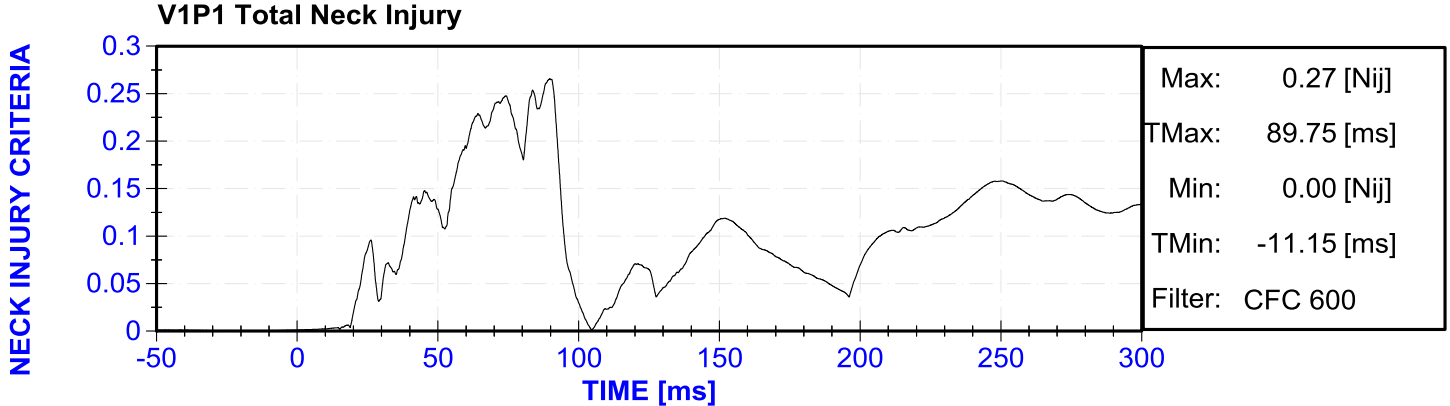


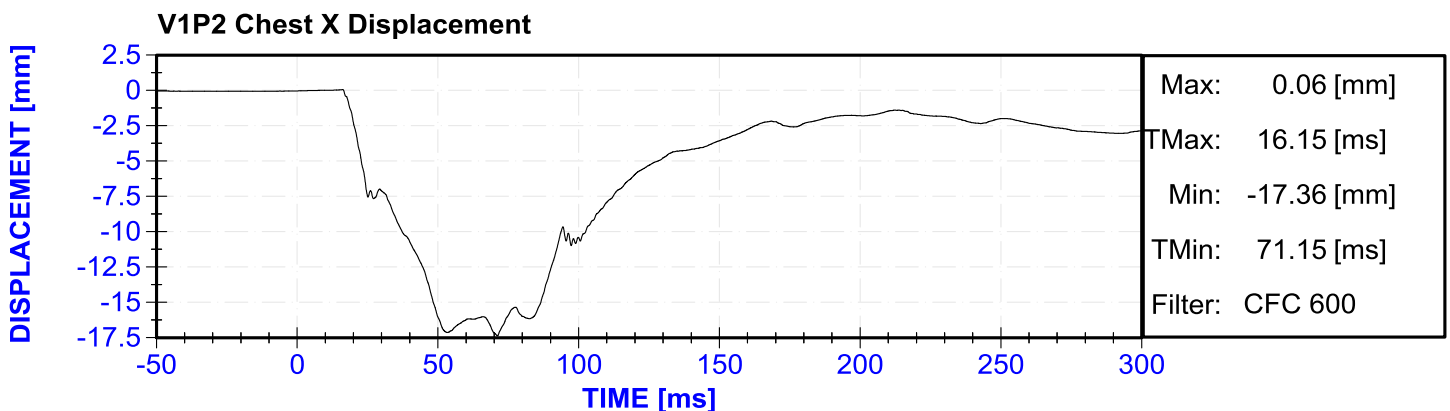
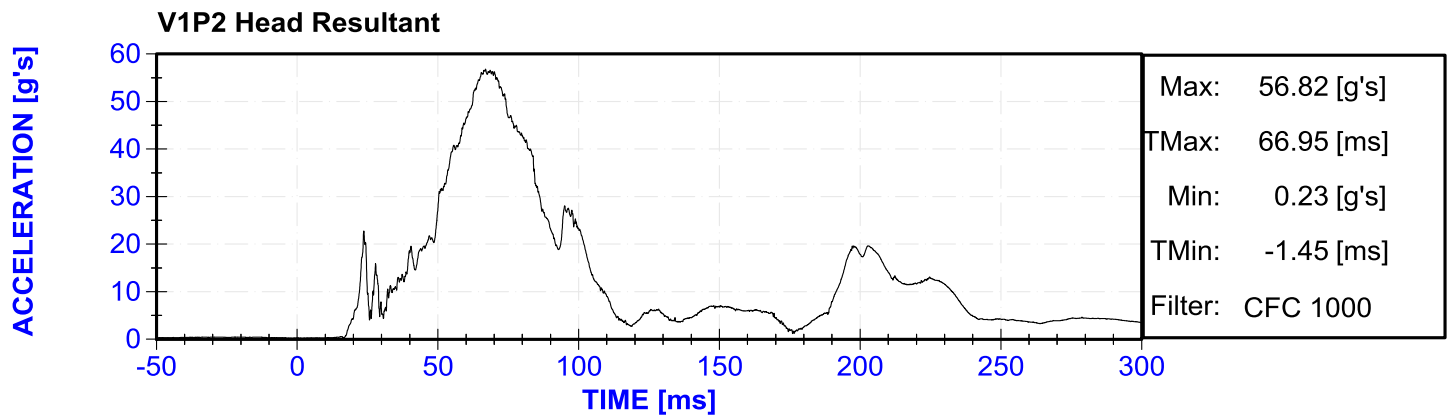
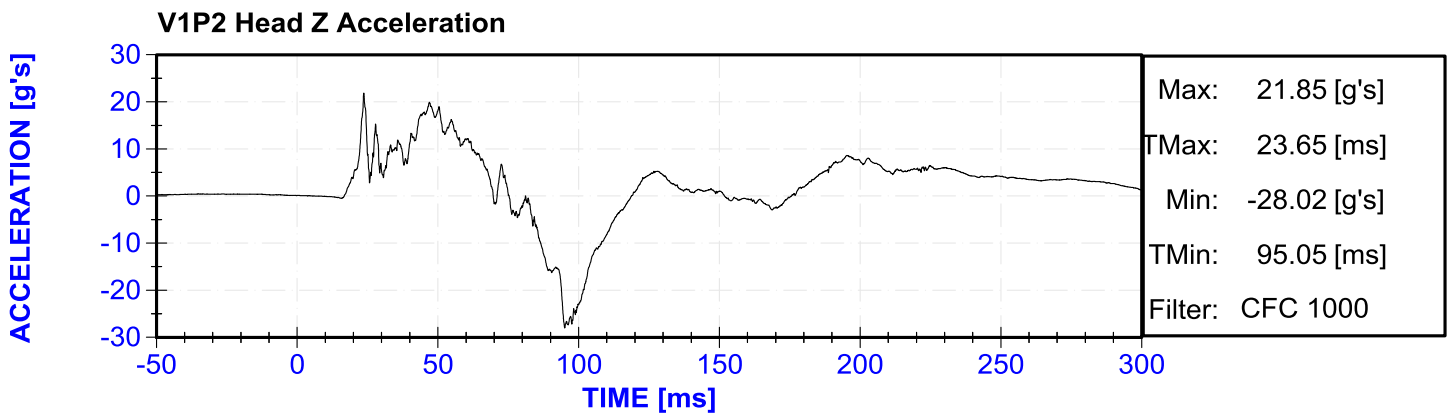
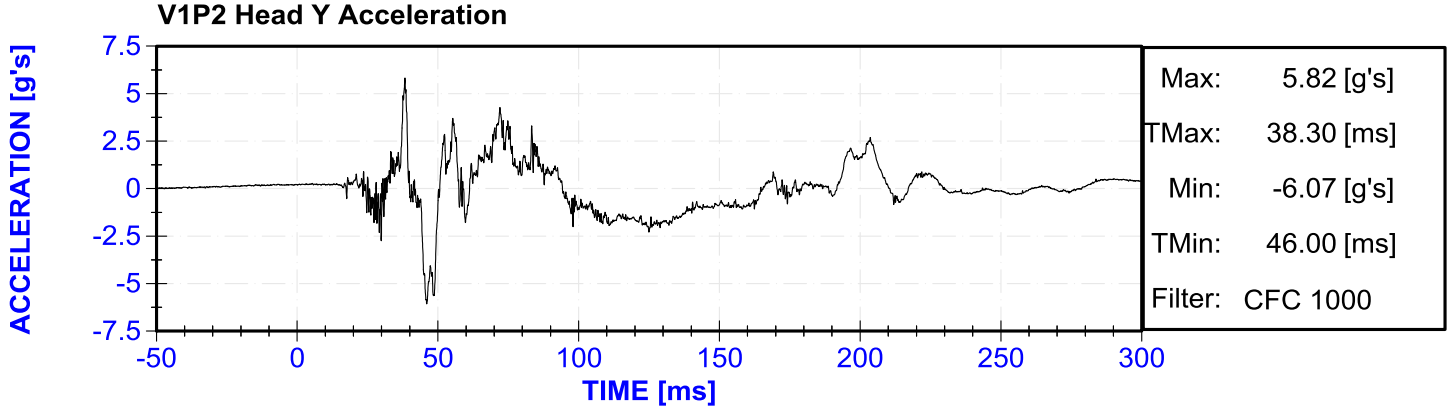
V1P1 Upper Neck Z Force

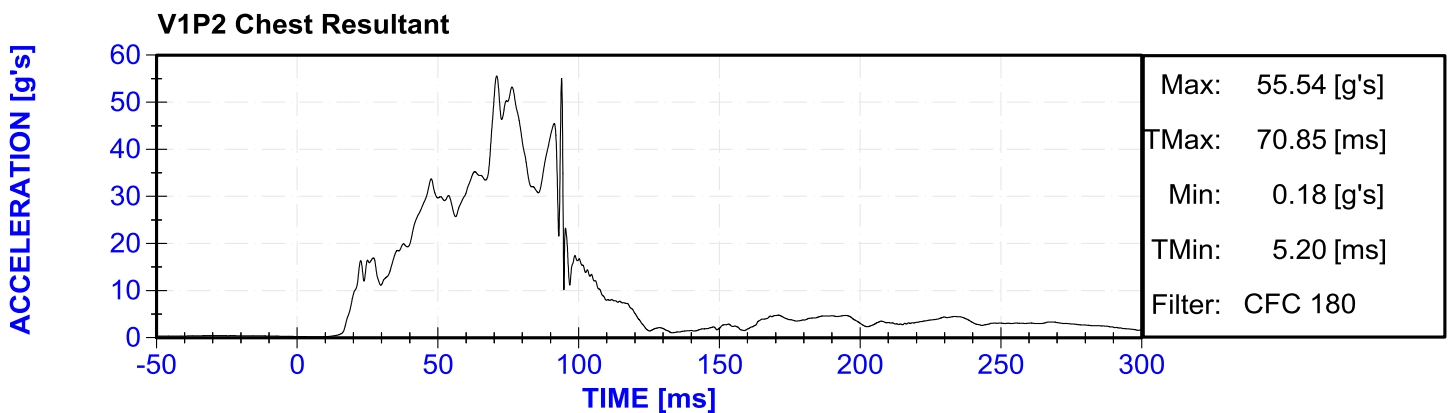
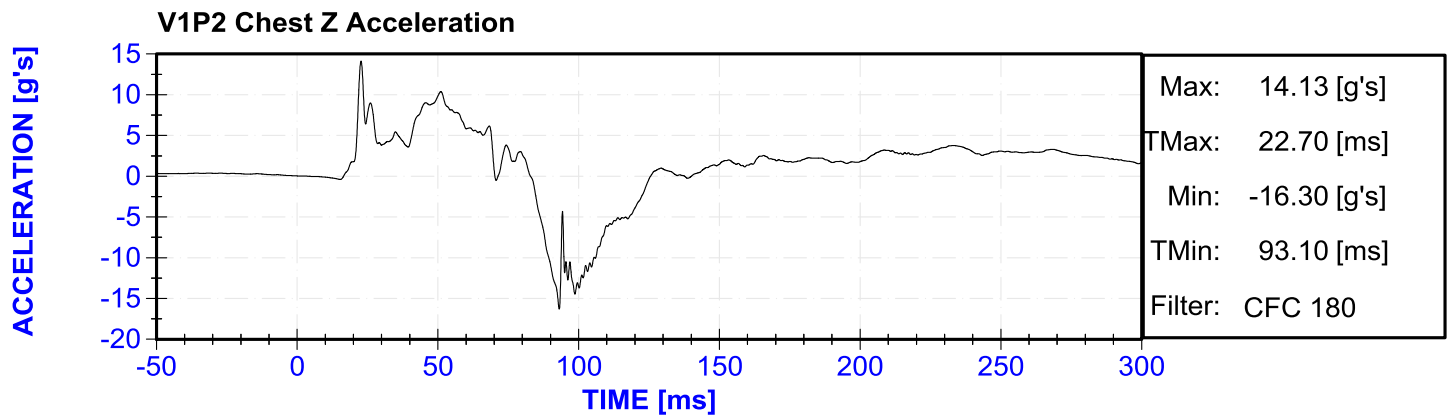
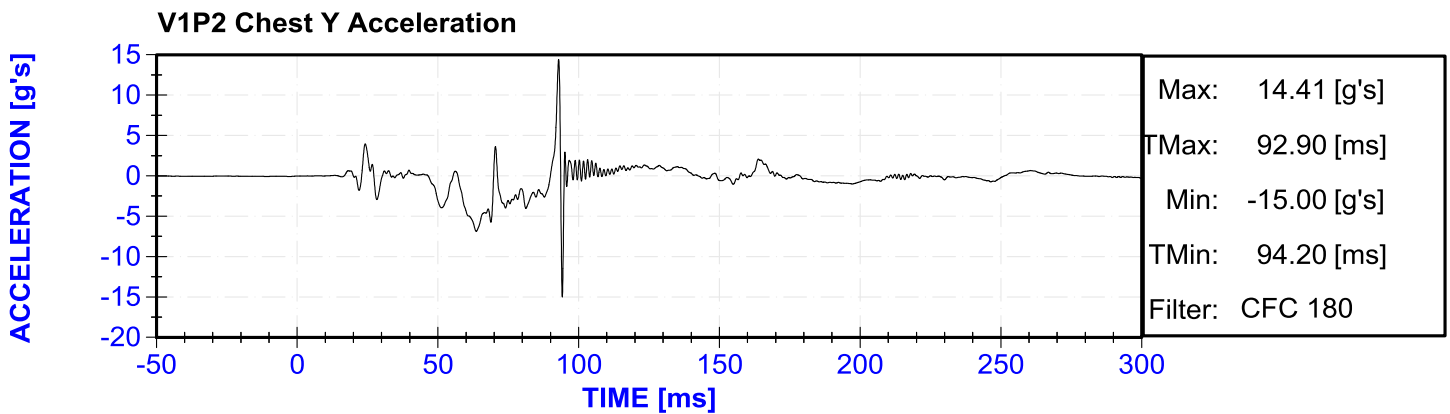
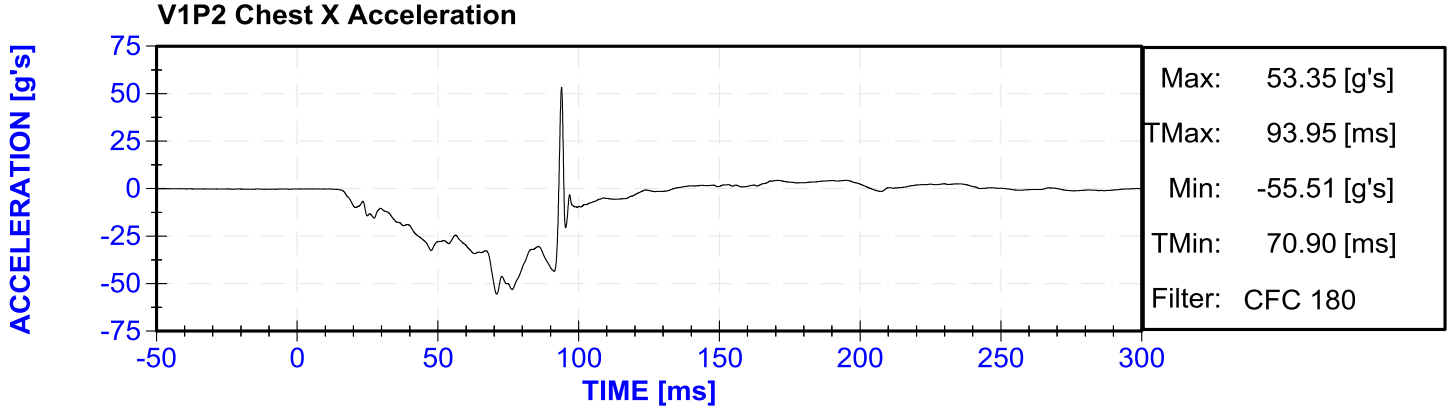


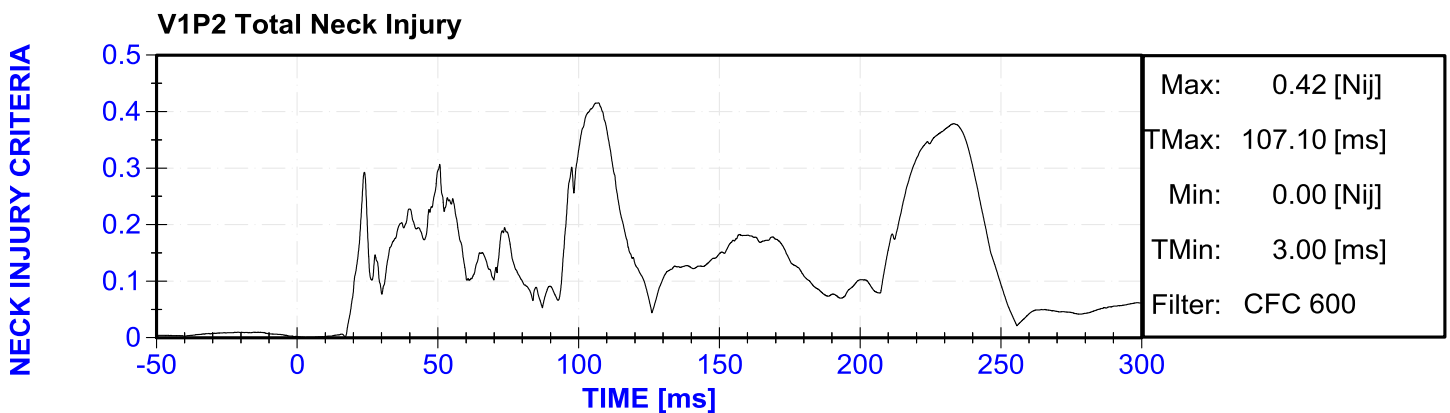
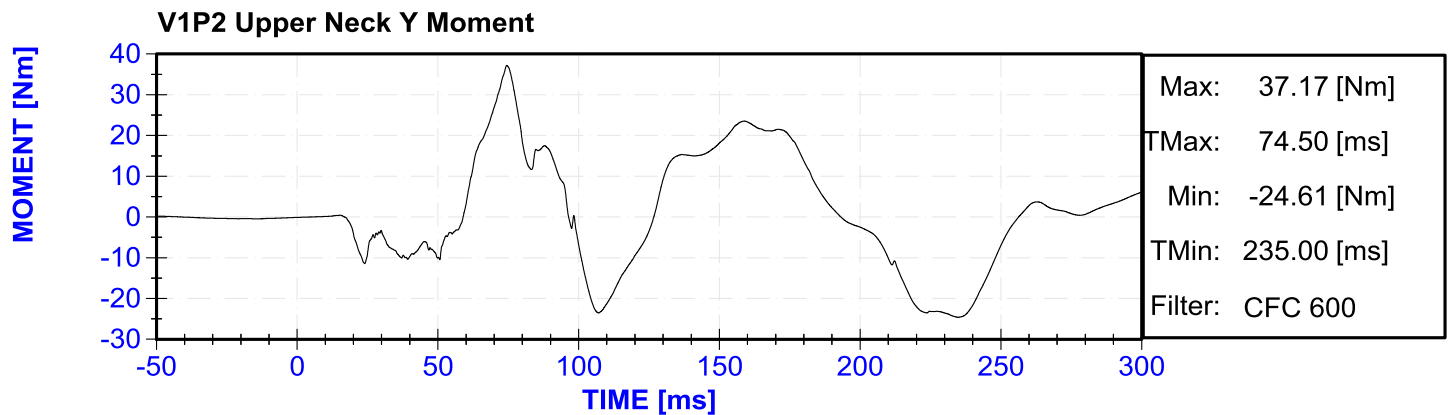
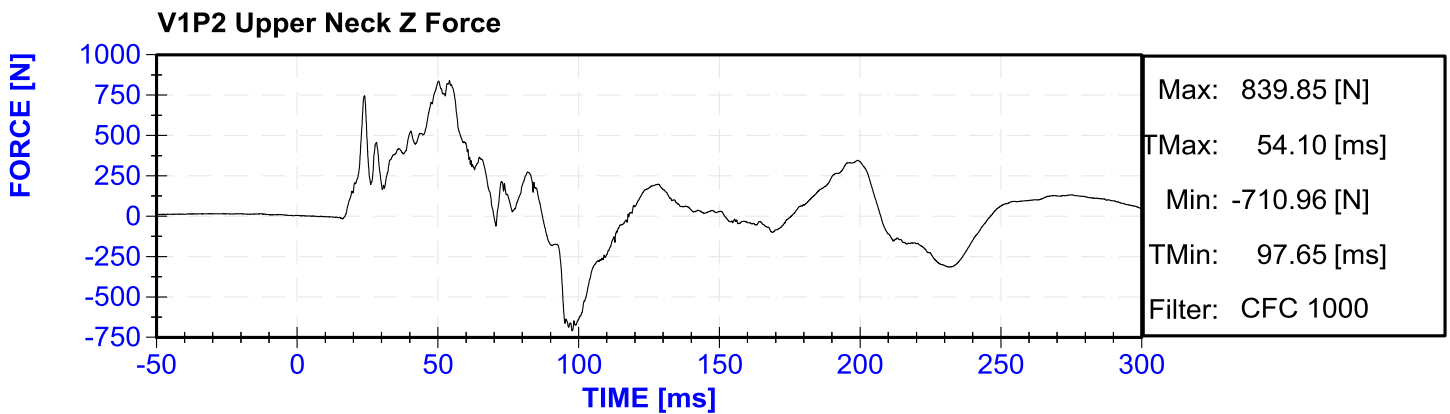
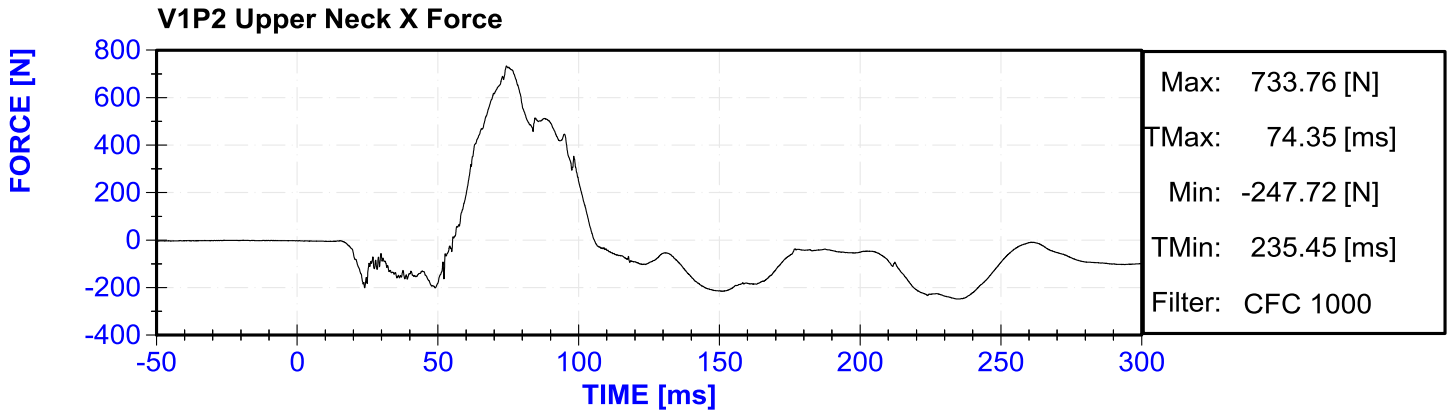
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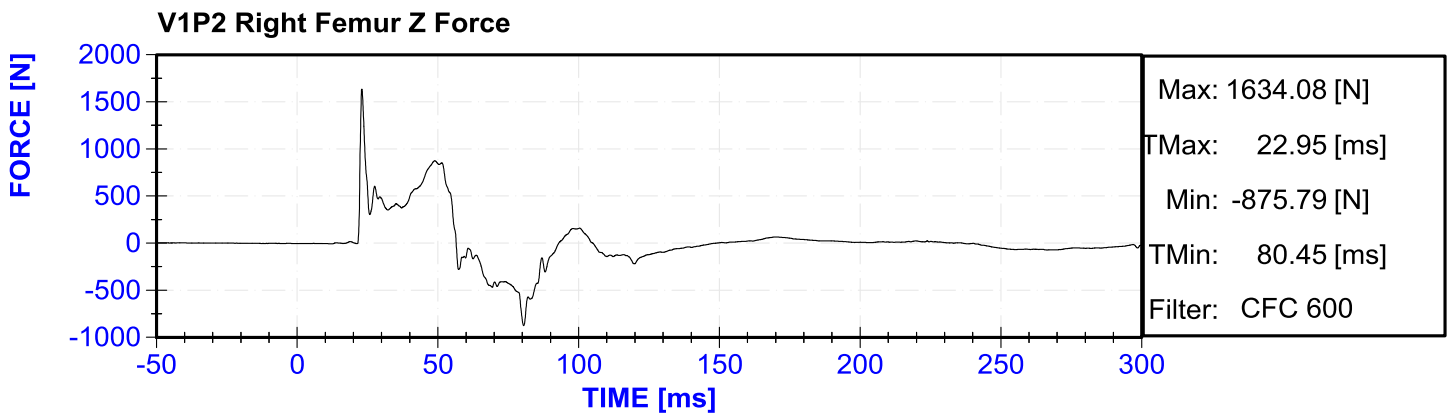
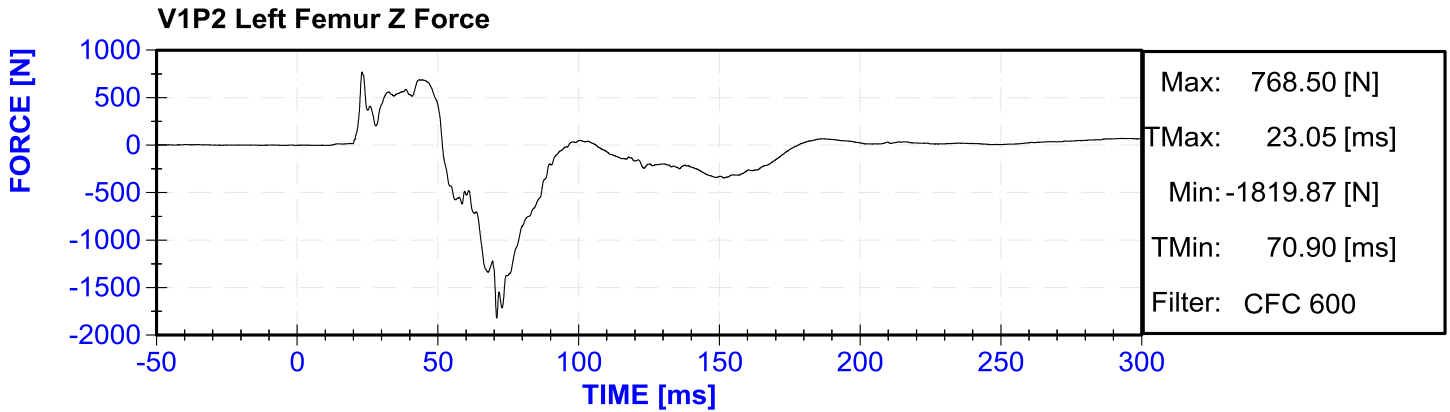












APPENDIX C

DUMMY CALIBRATION AND PERFORMANCE VERIFICATION DATA

CALIBRATION TEST RESULTS

PRE-TEST

HYBRID III 50TH PERCENTILE MALE - DRIVER ATD

SERIAL NO: 064



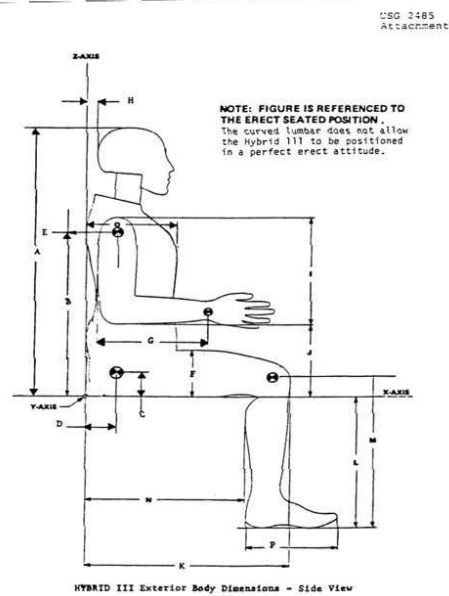
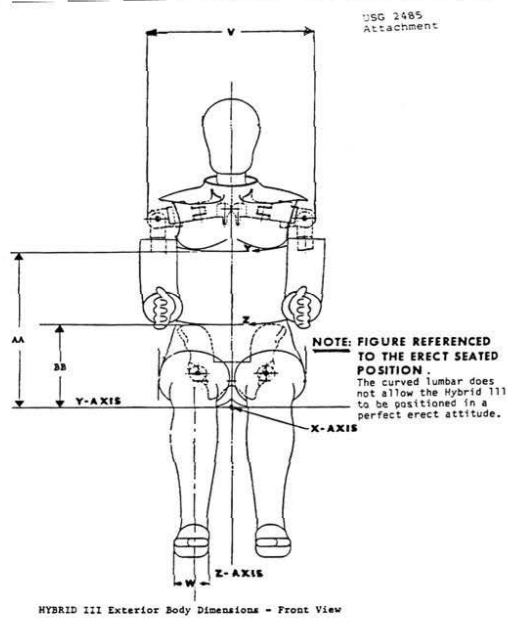
50th Male External Measurements

S/N 064

Symbol	Description	Specification	Results	Pass
		in	In	
A	Sitting Height	34.6 – 35.0	34.7	Yes
B	Shoulder Pivot Height	19.9 – 20.5	20.0	Yes
C	H-Point Height	3.3 – 3.5	3.3	Yes
D	H-Point from Backline	5.3 – 5.5	5.4	Yes
E	Shoulder Pivot from Backline	3.3 – 3.7	3.4	Yes
F	Thigh Clearance	5.5 – 6.1	6.0	Yes
G	Back of Elbow to Wrist Pivot	11.4 – 12.0	11.5	Yes
H	Head Back to Backline	1.6 – 1.8	1.7	Yes
I	Shoulder to Elbow Length	13.0 – 13.6	13.0	Yes
J	Elbow Rest Height	7.5 – 8.3	8.1	Yes
K	Buttock to Knee Length	22.8 – 23.8	23.0	Yes
L	Popliteal Height	16.9 – 17.9	17.1	Yes
M	Knee Pivot Height	19.1 – 19.7	19.3	Yes
N	Buttock Popliteal Length	17.8 – 18.8	18.5	Yes
O	Chest Depth without Jacket	8.4 – 9.0	8.5	Yes
P	Foot Length (right)	9.9 – 10.5	10.3	Yes
V	Shoulder Breadth	16.3 – 17.2	16.8	Yes
W	Foot Breadth	3.6 – 4.2	3.9	Yes
Y	Chest Circumference with Jacket	38.2 – 39.4	39.0	Yes
Z	Waist Circumference	32.9 – 34.1	33.6	Yes
AA	Reference Location (Chest Circumference)	16.9 – 17.1	17.0	Yes
BB	Reference Location (Waist Circumference)	8.9 – 9.1	9.0	Yes

Technician: R. Weil

01/06/2014





VERIFICATION REPORT

Test Name:	Head Drop	Revision:	7/15/2002
Sub Test Name:			
ATD Type:	Hybrid 3 - 50th Male -NEW		
ATD Serial Number:	064		
Test ID:	Head Drop	Test Date:	1/6/2014
		Test Time:	3:52:48 PM

Component Part Number	Component Serial Number
Head Skin - 78051-228	7997
Cap Skin - 78051-229	2494

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	21.6 deg C P
Humidity	10 -- 70	19.0 %RH P
Resultant Acceleration	225 -- 275	256.0 g P
Oscillation	0 -- 10	1.9 % P
Lateral Acceleration	-15 -- 15	-2.4 g P

All test parameters are within specifications

Technician: R. Weil

Supervisor: E. Dutton



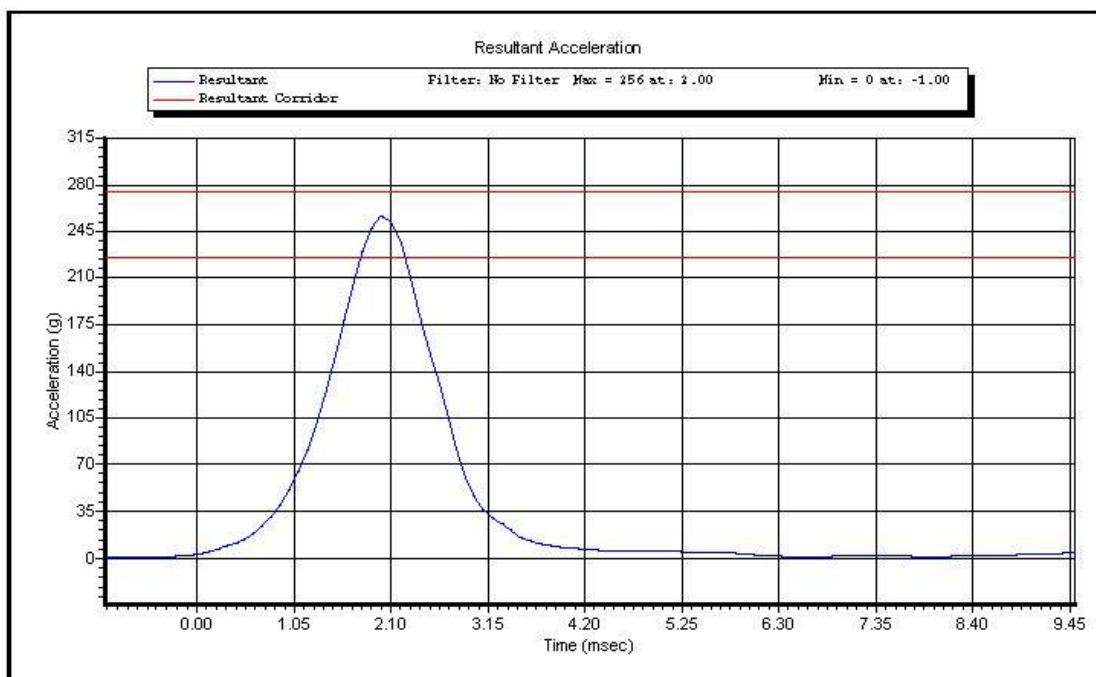
VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Endevco	7264-2000	P58904	12/5/2013
Endevco	7264-2000	P58911	12/5/2013
Endevco	7264-2000	P58776	12/5/2013



Test Name:	Head Drop
Sub Test Name:	
ATD Type:	Hybrid 3 - 50th Male -NEW
ATD Serial Number:	064

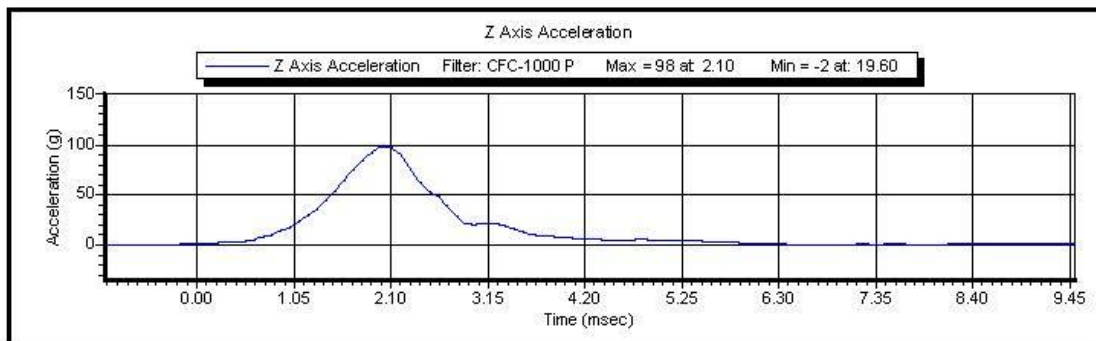
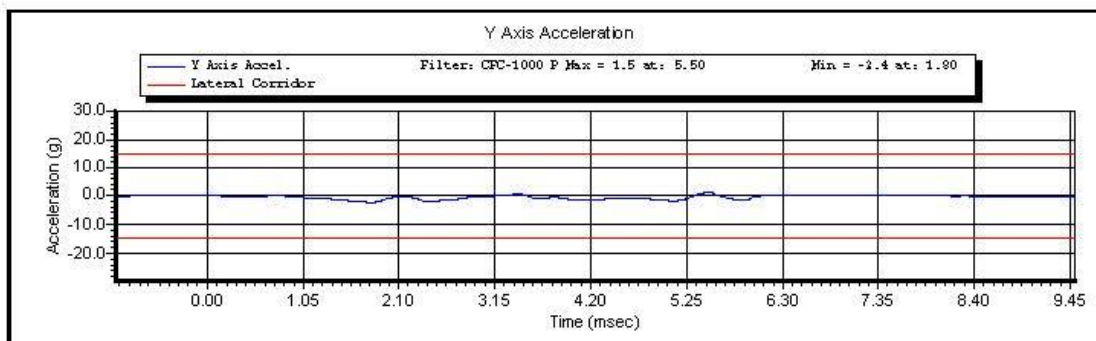
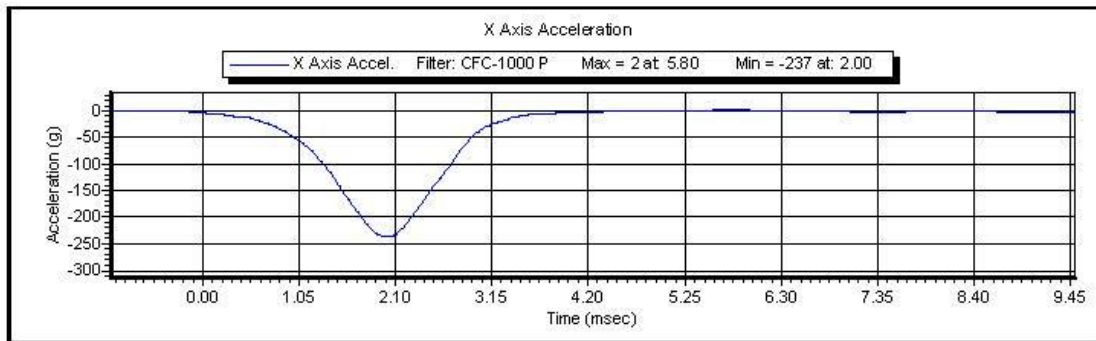


Test ID: **Head Drop**

Test Time: **3:52:48 PM**

Test Date: **1/6/2014**

Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0



Test ID: **Head Drop**

Test Time: **3:52:48 PM**

Test Date: **1/6/2014**

Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0



VERIFICATION REPORT

Test Name:	Neck Extension	Revision:	10/1/2001
Sub Test Name:			
ATD Type:	Hybrid 3 - 50th Male		
ATD Serial Number:	064		
Test ID:	Neck Extension	Test Date:	1/8/2014
		Test Time:	2:28:23 PM

Component Part Number	Component Serial Number
Neck - 78051-336	021692

Test Parameters		Test Specifications		Test Results	
Temperature		20.6	-- 22.2	22.1 deg C	P
Humidity		10	-- 70	16.9 %RH	P
Velocity		5.94	-- 6.19	6.117 m/s	P
Pendulum Deceleration at	10 ms	17.2	-- 21.2	19.18 g	P
Pendulum Deceleration at	20 ms	14	-- 19	16.4 g	P
Pendulum Deceleration at	30 ms	11	-- 16	13.0 g	P
Max Pendulum Deceleration after	30 ms	0	-- 22	13.7 g	P
Decel Time to	5 g	38	-- 46	42.7 ms	P
D Plane Rotation		81	-- 106	98.6 degrees	P
Time at Max Rotation		72	-- 82	80.1 ms	P
Rotation Decay to Zero		147	-- 174	159.6 ms	P
Moment About Occipital Condyle		-80.0	-- -52.9	-64.90 Nm	P
Time at Max Moment		65	-- 79	75.9 ms	P
Moment Decay to Zero		120	-- 148	147.3 ms	P

All test parameters are within specifications

Technician: **R. Weil**

Supervisor: **E. Dutton**



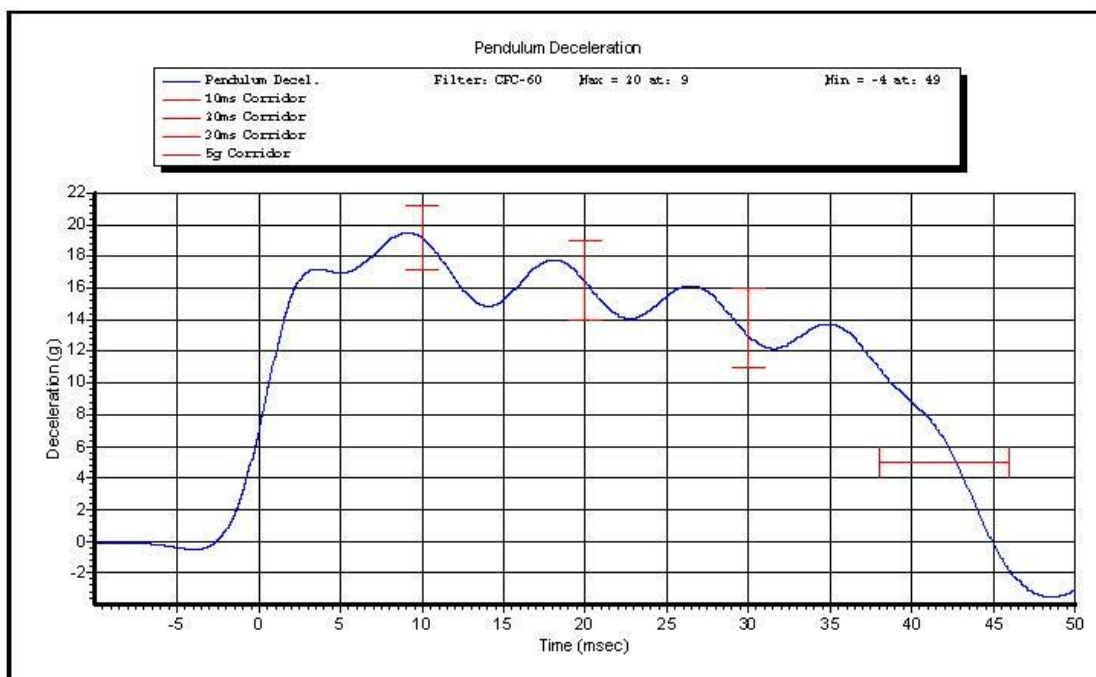
VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2013
Endevco	7231CT	AH5F3	10/16/2013
DentonATD	78051-342	PENDULUM POT	1/25/2013
DentonATD	78051-342	CONDYLE POT	4/19/2013
Denton	1716A	LC-2186 My	5/23/2013
Denton	1716A	LC-2186 Fx	5/23/2013

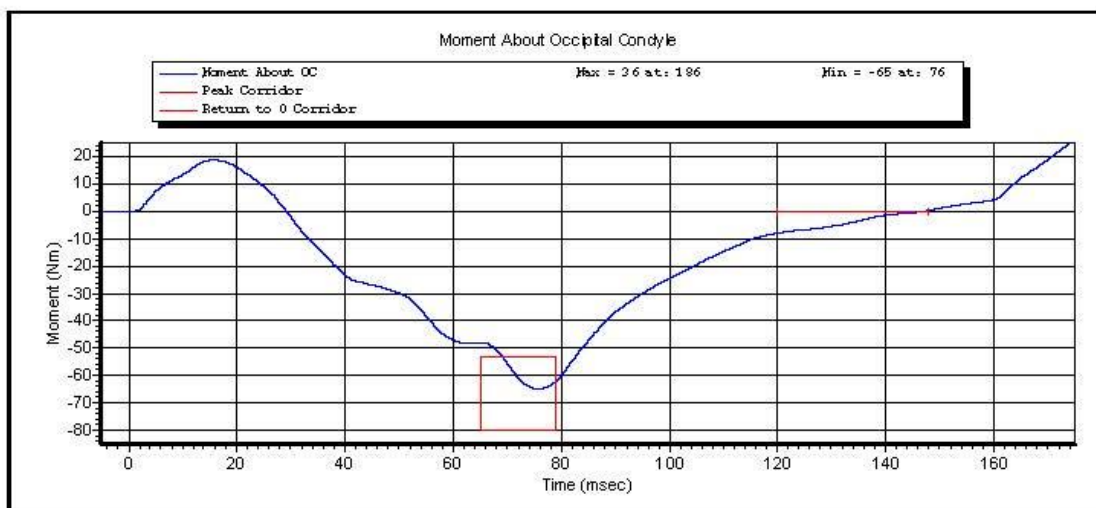
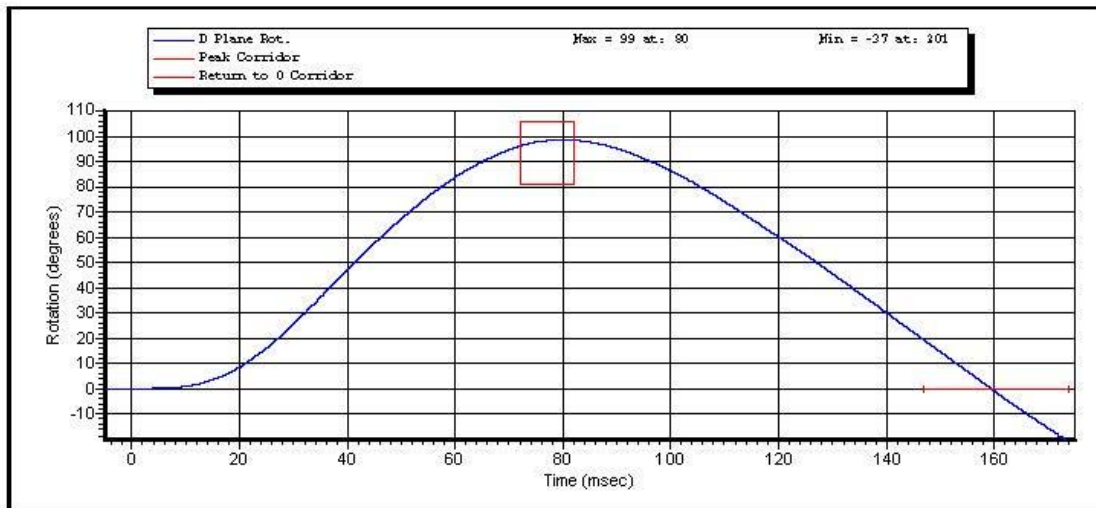


Name of Test:	Neck Extension
Name of Sub Test:	
Type of ATD:	Hybrid 3 - 50th Male
ATD Serial Number:	064



ID of Test: **Neck Extension** Time of Test: **2:28:23 PM**
Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0

Date of Test: **1/8/2014**

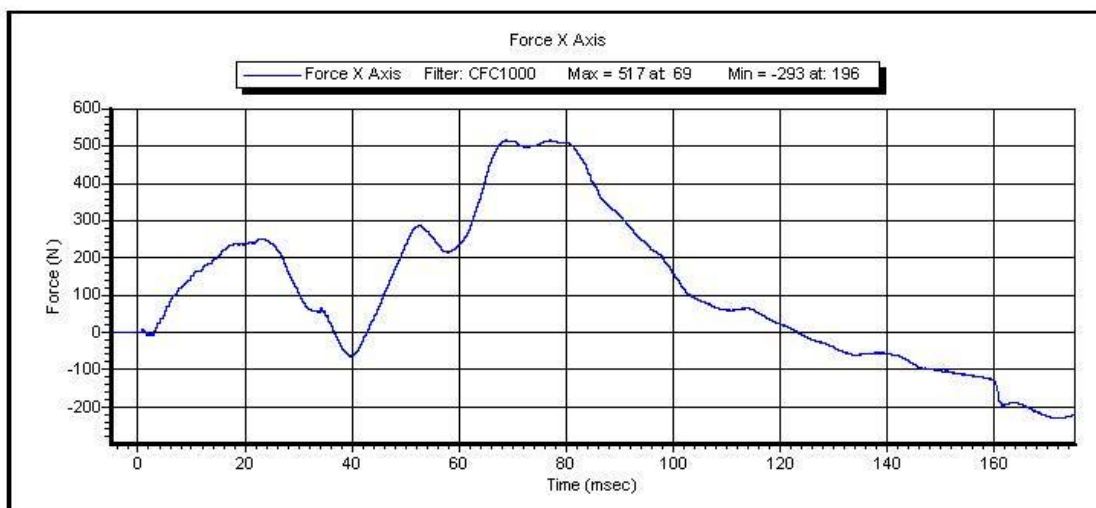
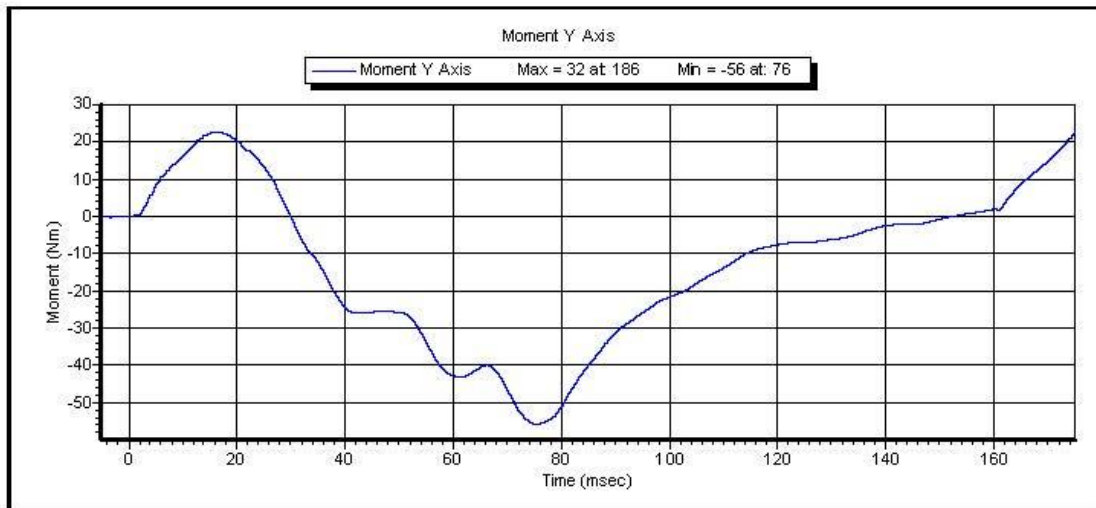


ID of Test: **Neck Extension**

Time of Test: **2:28:23 PM**

Date of Test: **1/8/2014**

Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0



ID of Test: **Neck Extension** Time of Test: **2:28:23 PM**
Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0

Date of Test: **1/8/2014**



VERIFICATION REPORT

Test Name:	Neck Flexion	Revision:	10/1/2001
Sub Test Name:			
ATD Type:	Hybrid 3 - 50th Male		
ATD Serial Number:	064		
Test ID:	Neck Flexion	Test Date:	1/8/2014
		Test Time:	12:17:46 PM

Component Part Number	Component Serial Number
Neck - 78051-336	021692

Test Parameters		Test Specifications		Test Results	
Temperature		20.6	-- 22.2	21.2 deg C	P
Humidity		10	-- 70	17.5 %RH	P
Velocity		6.89	-- 7.13	7.063 m/s	P
Pendulum Deceleration at	10 ms	22.5	-- 27.5	25.49 g	P
Pendulum Deceleration at	20 ms	17.6	-- 22.6	19.84 g	P
Pendulum Deceleration at	30 ms	12.5	-- 18.5	14.38 g	P
Max Pendulum Deceleration After	30 ms	0	-- 29	14.4 g	P
Deceleration time to	5 g	34	-- 42	39.3 ms	P
D Plane Rotation		-78	-- -64	-73.0 degrees	P
Time at max rotation		57	-- 64	59.0 ms	P
Rotation Decay to Zero		113	-- 128	114.7 ms	P
Moment about OC		88.1	-- 108.4	96.16 Nm	P
Time at Max Moment		47	-- 58	53.0 ms	P
Moment Decay to Zero		97	-- 107	99.1 ms	P

All test parameters are within specifications

Technician: **R. Weil**

Supervisor: **E. Dutton**



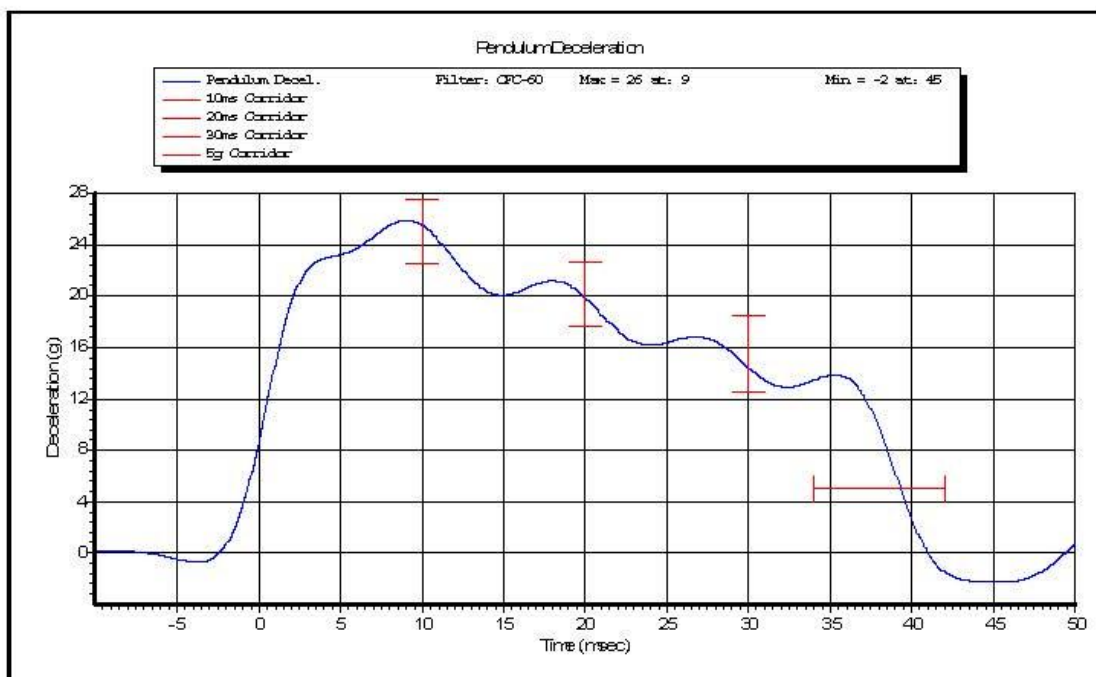
VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2013
Endevco	7231CT	AH5F3	10/16/2013
DentonATD	78051-342	PENDULUM POT	1/25/2013
DentonATD	78051-342	CONDYLE POT	4/19/2013
Denton	1716A	LC-2186 My	5/23/2013
Denton	1716A	LC-2186 Fx	5/23/2013



Name of Test:	Neck Flexion
Name of Sub Test:	
Type of ATD:	Hybrid 3 - 50th Male
ATD Serial Number:	064

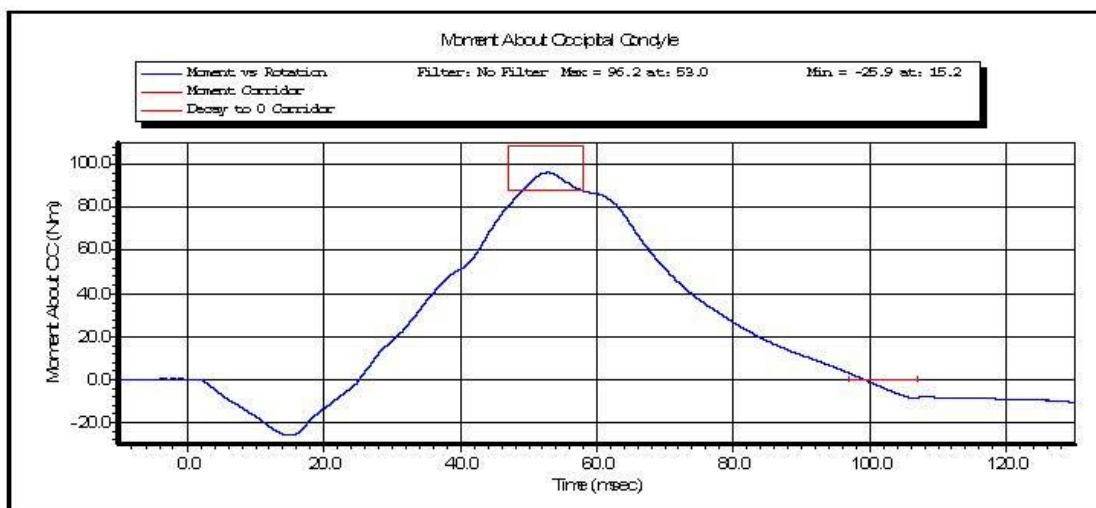
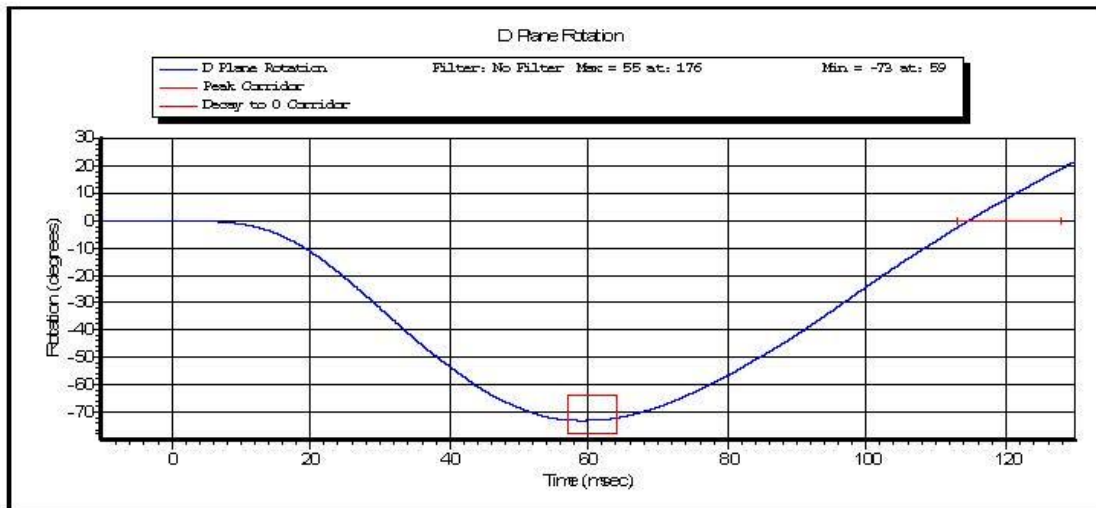


ID of Test: **Neck Flexion**

Time of Test: **12:17:46 PM**

Date of Test: **1/8/2014**

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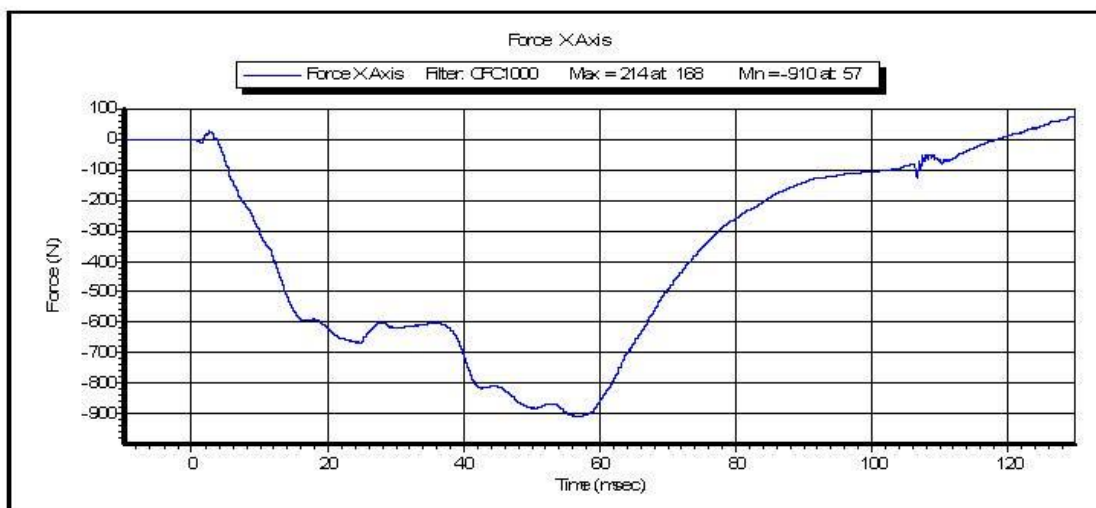
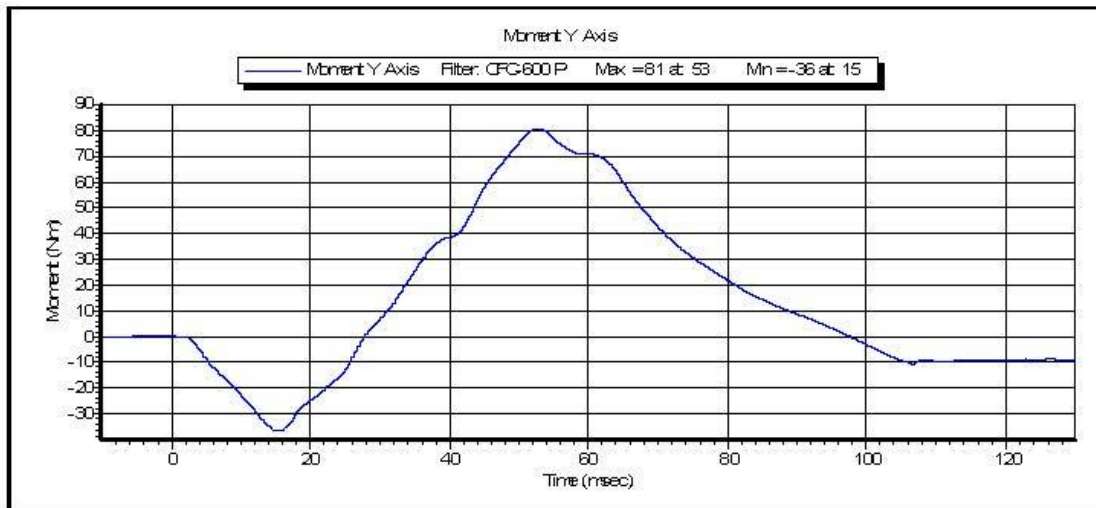


ID of Test: **Neck Flexion**

Time of Test: **12:17:46 PM**

Date of Test: **1/8/2014**

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ID of Test: **Neck Flexion**

Time of Test: **12:17:46 PM**

Date of Test: **1/8/2014**

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VERIFICATION REPORT

Test Name:	Thorax Impact	Revision:	10/1/2001
Sub Test Name:			
ATD Type:	Hybrid 3 - 50th Male		
ATD Serial Number:	064		
Test ID:	Thorax Impact	Test Date:	1/9/2014
		Test Time:	8:11:11 AM

Component Part Number	Component Serial Number
Chest Jacket - 78051-169	DL7598

Test Parameters	Test Specifications			Test Results	
Temperature	20.6	--	22.2	20.6 deg C	P
Humidity	10	--	70	12.0 %RH	P
Velocity	6.59	--	6.83	6.733 m/s	P
Resistive Force	-5.894	--	-5.160	-5.4402 kN	P
Sternum Displacement	-72.6	--	-63.5	-72.34 mm	P
Hysteresis	69	--	85	69.5 %	P

All test parameters are within specifications

Technician: **R. Weil**

Supervisor: **E. Dutton**



VERIFICATION REPORT

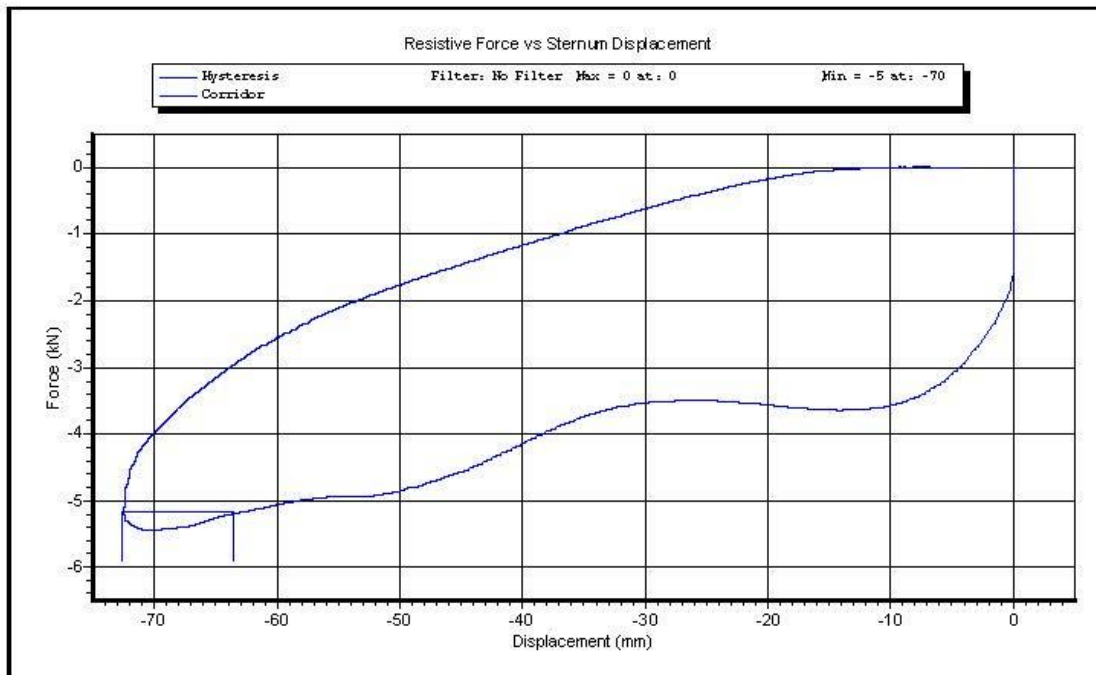
REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2013
Endevco	7231CT	C14953	12/4/2013
DentonATD	78051-342	DS-064	6/18/2013

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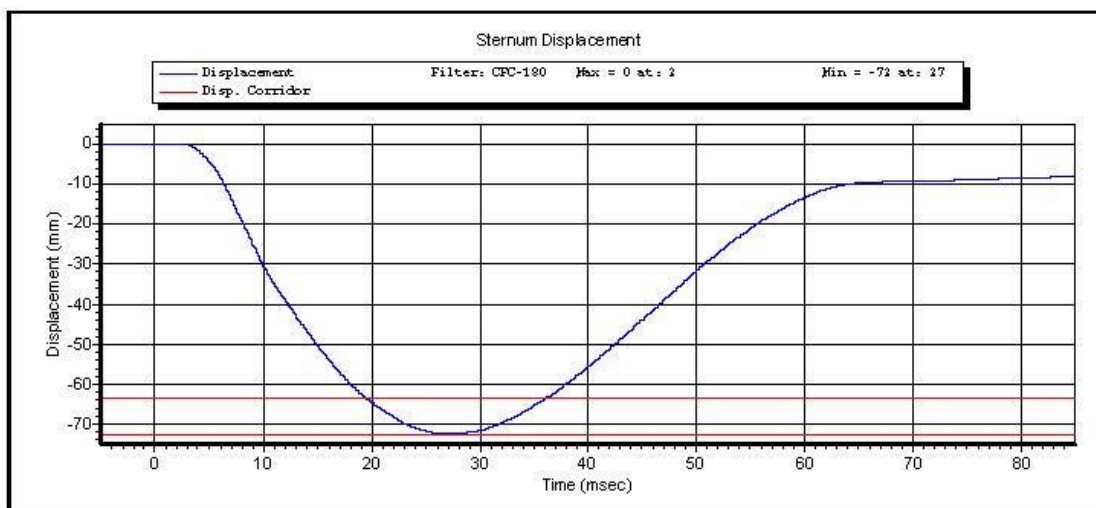
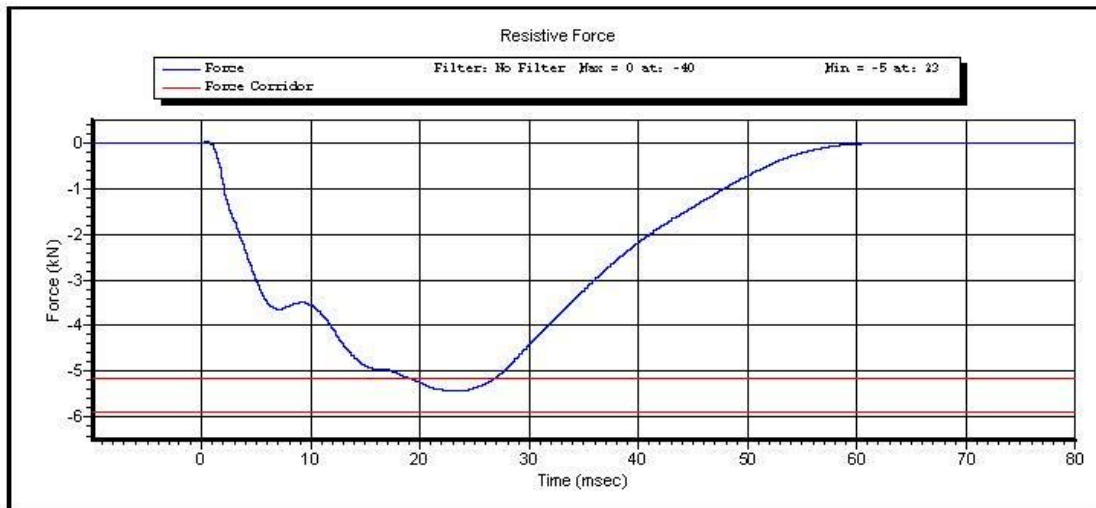


Test Name:	Thorax Impact
Sub Test Name:	
ATD Type:	Hybrid 3 - 50th Male
ATD Serial Number:	064



Test ID: Thorax Impact Test Time: 8:11:11 AM Test Date: 1/9/2014

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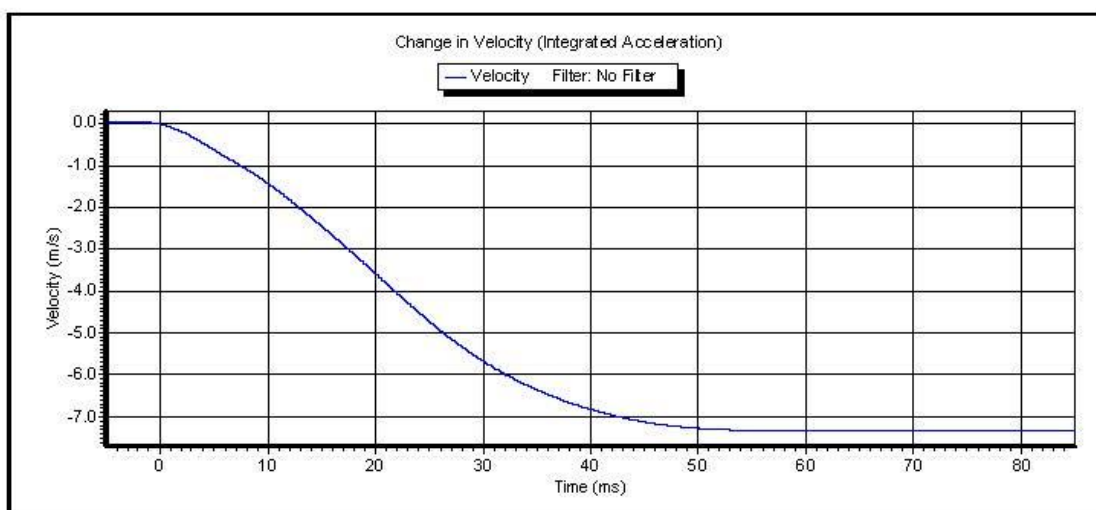
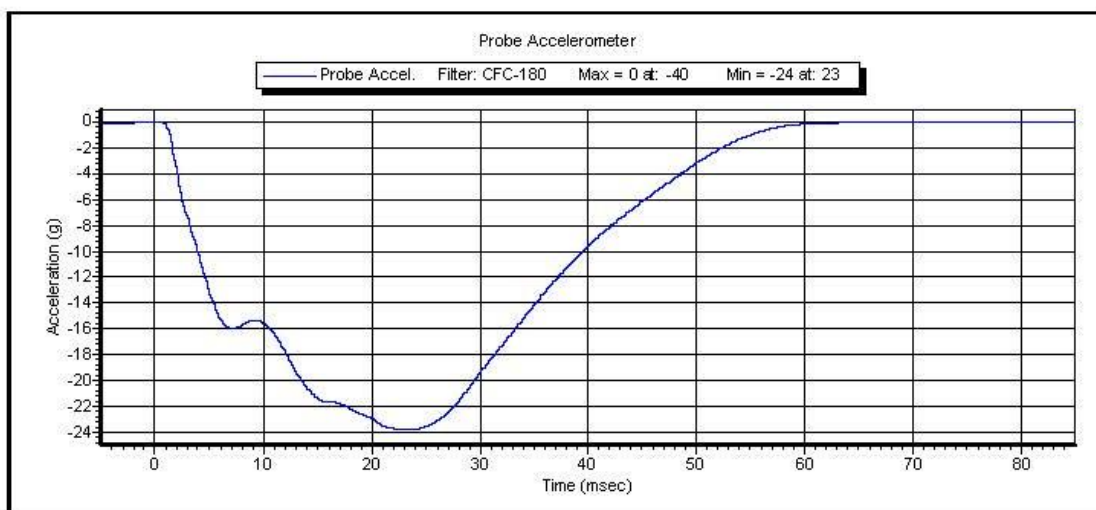


Test ID: **Thorax Impact**

Test Time: **8:11:11 AM**

Test Date: **1/9/2014**

Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0



Test ID: **Thorax Impact**

Test Time: **8:11:11 AM**

Test Date: **1/9/2014**

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VERIFICATION REPORT

Test Name:	Hip ROM	Revision:	10/1/2001
Sub Test Name:			
ATD Type:	Hybrid 3 - 50th Male		
ATD Serial Number:	064		
Test ID:	Hip ROM Left	Test Date:	1/6/2014
		Test Time:	10:47:36 AM

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

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	22.7 deg C P
Humidity	10 -- 70	23.2 %RH P
Average Velocity	5 -- 10	6.0 deg/s P
Angle at 203 Nm	40 -- 50	42.7 degrees P
Moment at 30 degrees	0.0 -- 94.9	71.99 Nm P

All test parameters are within specifications

Technician: R. Weil
Supervisor: E. Dutton



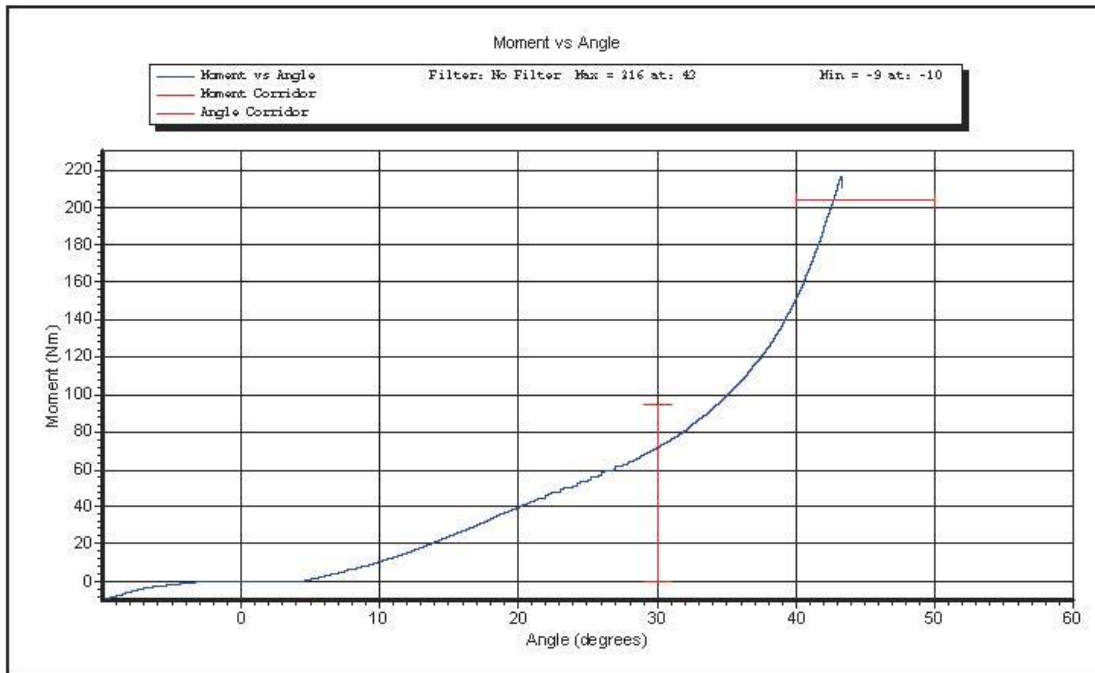
VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Key Trans/PCB	2301-02	115	3/19/2013
DentonATD	14CB1-3615	0008	2/21/2013
DentonATD	Velocity Trap	1	1/11/2013



Test Name:	Hip ROM
Sub Test Name:	
ATD Type:	Hybrid 3 - 50th Male
ATD Serial Number:	064



Test ID: **Hip ROM Left** Test Time: **10:47:36 AM** Test Date: **1/6/2014**

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VERIFICATION REPORT

Test Name:	Hip ROM	Revision:	10/1/2001
Sub Test Name:			
ATD Type:	Hybrid 3 - 50th Male		
ATD Serial Number:	064		
Test ID:	Hip ROM Right	Test Date:	1/6/2014
		Test Time:	11:12:29 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	24.3 %RH P
Average Velocity	5 -- 10	5.5 deg/s P
Angle at 203 Nm	40 -- 50	41.4 degrees P
Moment at 30 degrees	0.0 -- 94.9	81.90 Nm P

All test parameters are within specifications

Technician: R. Weil
Supervisor: E. Dutton



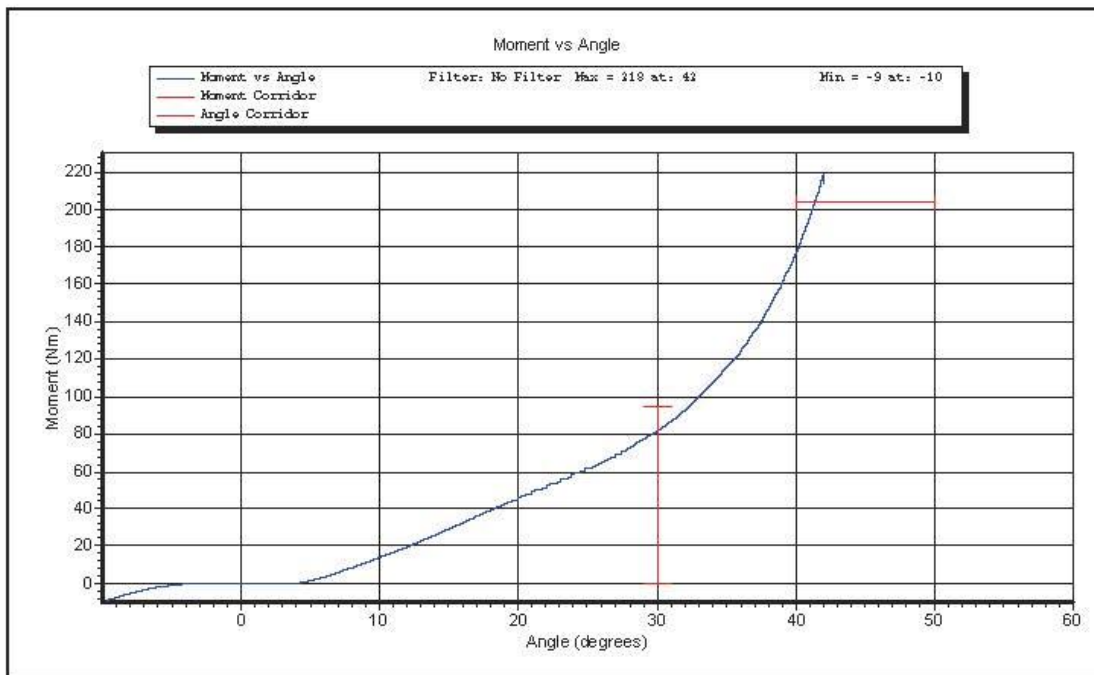
VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Key Trans/PCB	2301-02	115	3/19/2013
DentonATD	14CB1-3615	0008	2/21/2013
DentonATD	Velocity Trap	1	1/11/2013



Test Name:	Hip ROM
Sub Test Name:	
ATD Type:	Hybrid 3 - 50th Male
ATD Serial Number:	064



Test ID: **Hip ROM Right** Test Time: **11:12:29 AM** Test Date: **1/6/2014**

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VERIFICATION REPORT

Test Name:	Knee Impact	Revision:	10/1/2001
Sub Test Name:			
ATD Type:	Hybrid 3 - 50th Male		
ATD Serial Number:	064		
Test ID:	Knee Impact Left	Test Date:	1/6/2014
		Test Time:	10:00:39 AM

Component Part Number	Component Serial Number
Knee Skin - 78051(L) or 6(R)	2882

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	21.4 deg C P
Humidity	10 -- 70	22.2 %RH P
Velocity	2.07 -- 2.13	2.106 m/s P
Resistive Force	-5.78 -- -4.72	-4.875 kN P

All test parameters are within specifications

Technician: **M. Geesey**

Supervisor: **E. Dutton**



VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2013
Endevco	7231CT	C14953	12/4/2013

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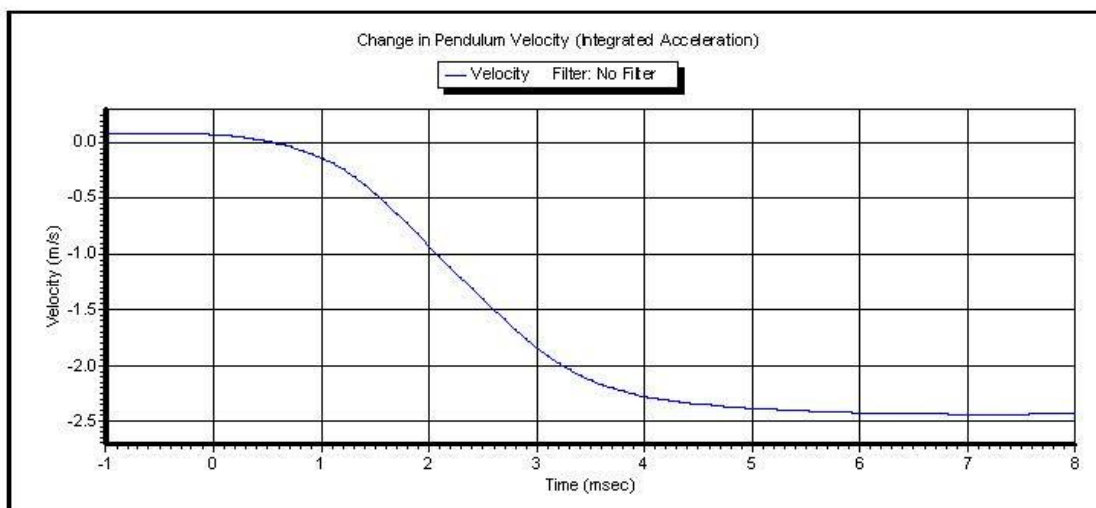
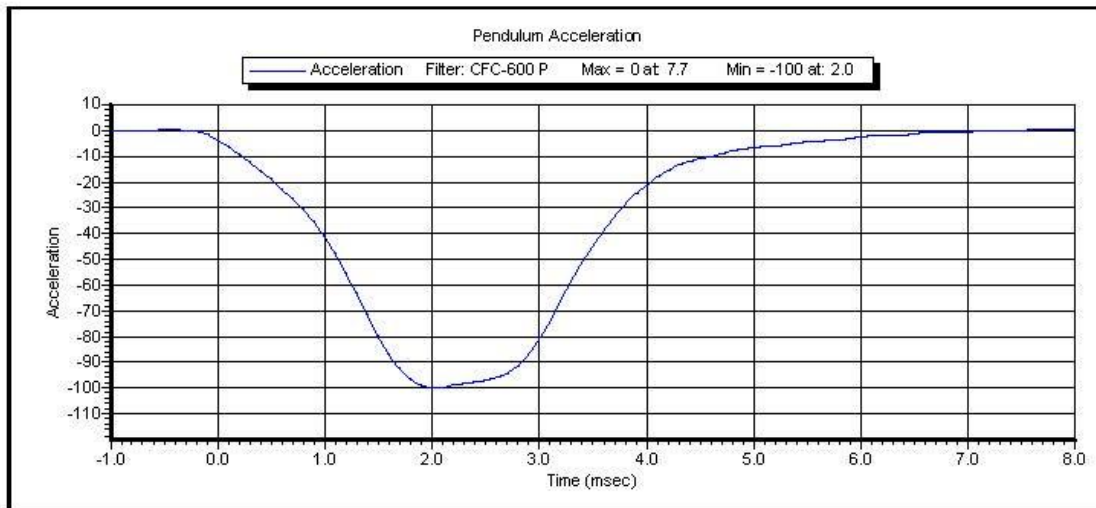


Test Name:	Knee Impact
Sub Test Name:	
ATD Type:	Hybrid 3 - 50th Male
ATD Serial Number:	064



Test ID: **Knee Impact Left** Test Time: **10:00:39 AM**
Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0

Test Date: **1/6/2014**



Test ID: **Knee Impact Left** Test Time: **10:00:39 AM**
Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0

Test Date: **1/6/2014**



VERIFICATION REPORT

Test Name:	Knee Impact	Revision:	10/1/2001
Sub Test Name:			
ATD Type:	Hybrid 3 - 50th Male		
ATD Serial Number:	064		
Test ID:	Knee Impact Right	Test Date:	1/6/2014
		Test Time:	9:53:48 AM

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	21.4 deg C	P
Humidity	10	--	70	22.2 %RH	P
Velocity	2.07	--	2.13	2.111 m/s	P
Resistive Force	-5.78	--	-4.72	-5.292 kN	P

All test parameters are within specifications

Technician: **M. Geesey**

Supervisor: **E. Dutton**



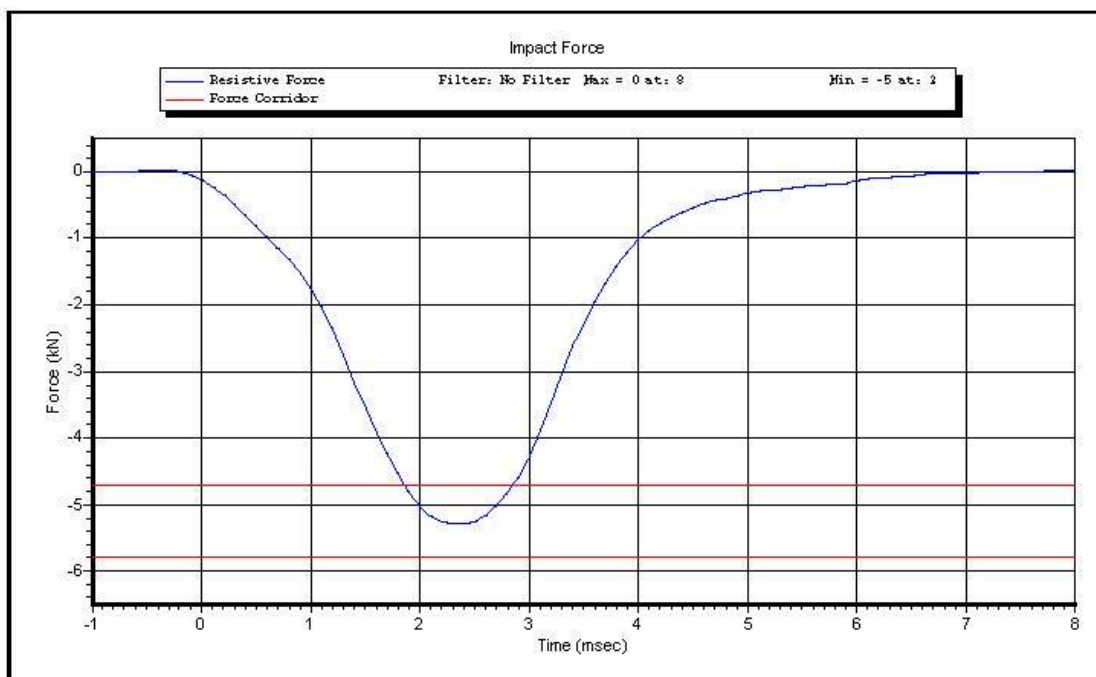
VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2013
Endevco	7231CT	C14953	12/4/2013

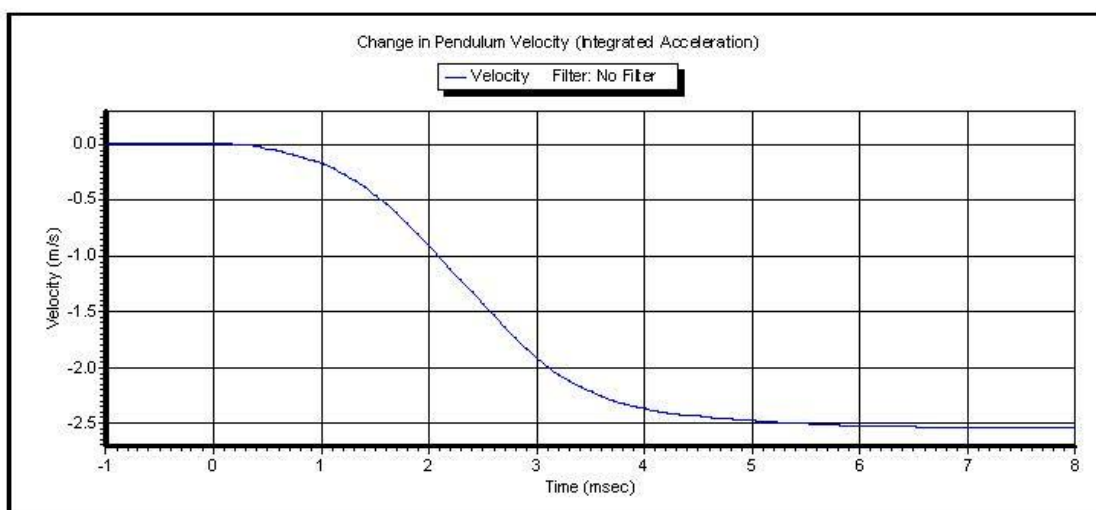
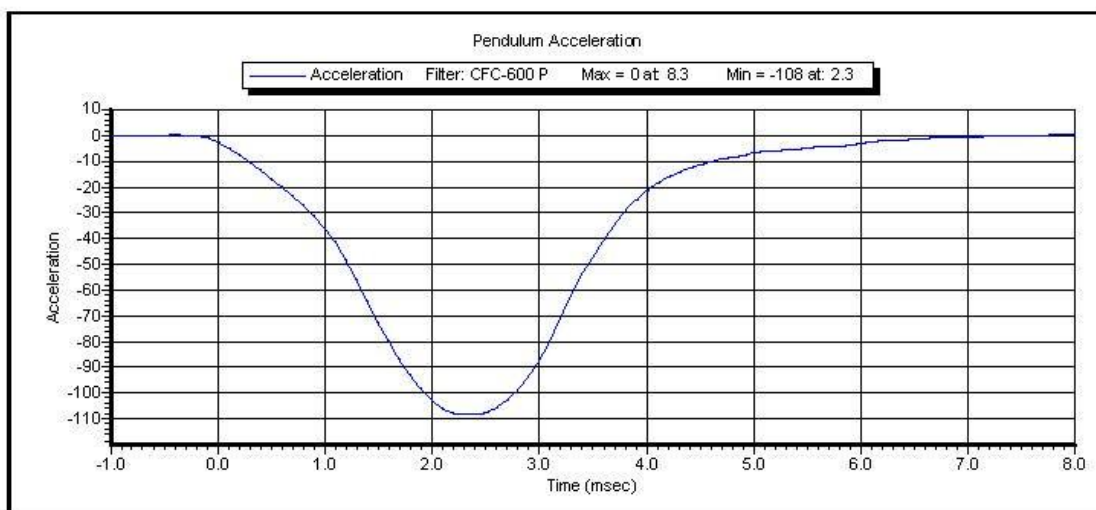


Test Name:	Knee Impact
Sub Test Name:	
ATD Type:	Hybrid 3 - 50th Male
ATD Serial Number:	064



Test ID: **Knee Impact Right** Test Time: **9:53:48 AM**
Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0

Test Date: **1/6/2014**



Test ID: **Knee Impact Right** Test Time: **9:53:48 AM**
Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0

Test Date: **1/6/2014**

CALIBRATION TEST RESULTS

PRE-TEST

HYBRID III 5TH PERCENTILE FEMALE - PASSENGER ATD

SERIAL NO: 288



External Measurements

5th Female SN 288

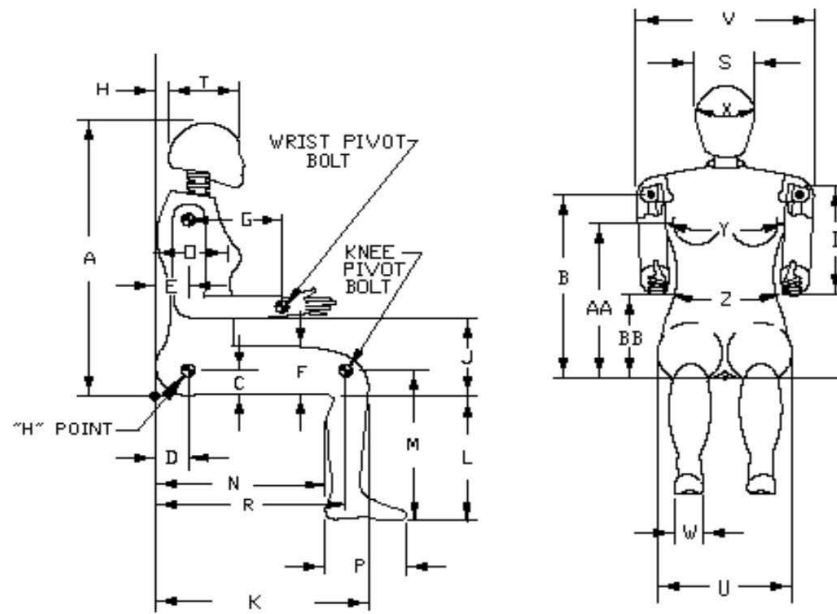
Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	774.7 – 800.1	785	Yes
B	Shoulder Pivot Height	431.8 – 457.2	452	Yes
C	H-Point Height	81.3 – 86.3	83	Yes
D	H-Point from Backline	144.8 – 149.8	146	Yes
E	Shoulder Pivot from Backline	68.6 – 83.8	76	Yes
F	Thigh Clearance	119.4 – 134.6	130	Yes
G	Back of Elbow to Wrist Pivot	243.9 – 259.1	248	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	193	Yes
K	Buttock to Knee Length	520.7 – 546.1	534	Yes
L	Popliteal Height	355.6 – 376	359	Yes
M	Knee Pivot Height	393.7 – 419.1	398	Yes
N	Buttock Popliteal Length	414 – 439.4	420	Yes
O	Chest Depth without Jacket	175.3 – 190.5	185	Yes
P	Foot Length (right)	218.5 – 233.7	219	Yes
R	Buttock To Knee Pivot Length	457.2 – 482.6	469	Yes
S	Head Breadth	137.1 – 147.3	143	Yes
T	Head Depth	177.8 – 188	183	Yes
U	Hip Breadth	299.7 – 314.9	311	Yes
V	Shoulder Breadth	350.5 – 365.7	356	Yes
W	Foot Breadth	78.8 – 94	81	Yes
X	Head Circumference	528.3 – 548.7	536	Yes
Y	Chest Circumference with Jacket	850.9 – 881.3	861	Yes
Z	Waist Circumference	759.5 – 789.9	770	Yes
AA	Reference Location (Chest Circumference)	332.7 – 358.1	346	Yes
BB	Reference Location (Waist Circumference)	160.1 – 170.2	164	Yes

Technician: M. Goehle

Date: 1/09/2014

Hybrid III 5th Female External Measurements

Reference Diagram





VERIFICATION REPORT

Test Name:	Head Drop	Revision:	7/15/2002
Sub Test Name:			
ATD Type:	Hybrid 3 - 5th Female		
ATD Serial Number:	288		
Test ID:	Head Drop	Test Date:	1/6/2014
		Test Time:	11:59:39 AM

Component Part Number	Component Serial Number
Head Skin - 78051-228	912

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	22.0 deg C P
Humidity	10 -- 70	20.7 %RH P
Resultant Acceleration	250 -- 300	275.2 g P
Oscillation	0 -- 10	1.3 % P
Lateral Acceleration	-15 -- 15	-6.6 g P

All test parameters are within specifications

Technician: **M. Geesey**

Supervisor: **E. Dutton**



VERIFICATION REPORT

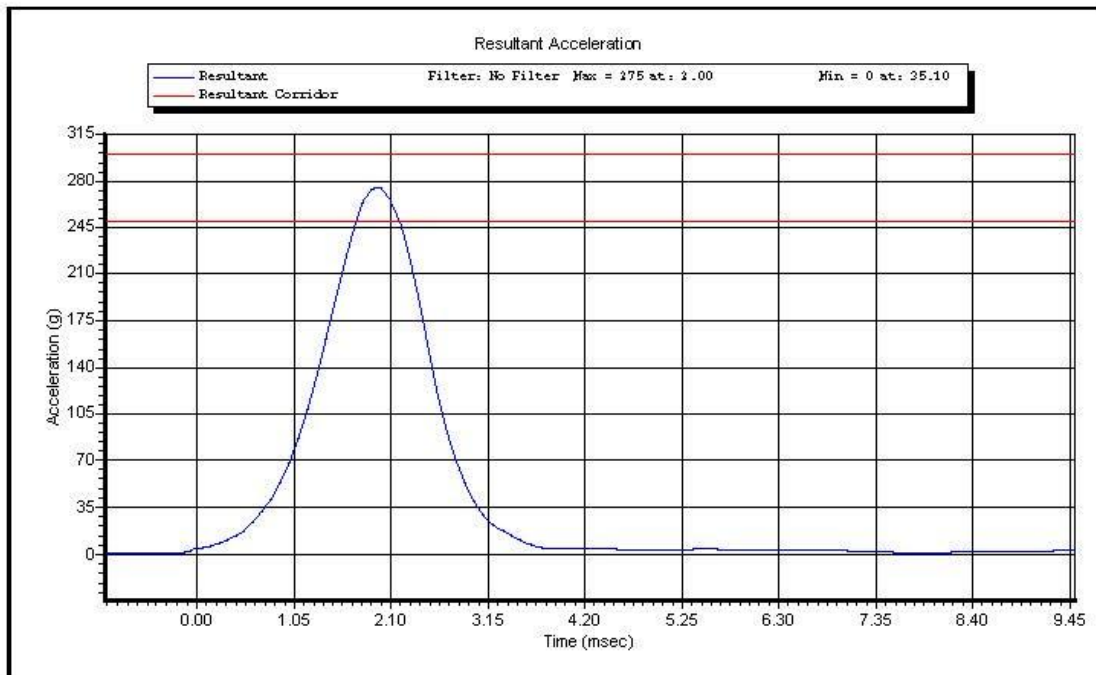
REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Endevco	7264-2000	P51682	11/21/2013
Endevco	7264-2000	P51685	11/21/2013
Endevco	7264-2000	P51699	11/21/2013

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Test Name:	Head Drop
Sub Test Name:	
ATD Type:	Hybrid 3 - 5th Female
ATD Serial Number:	288

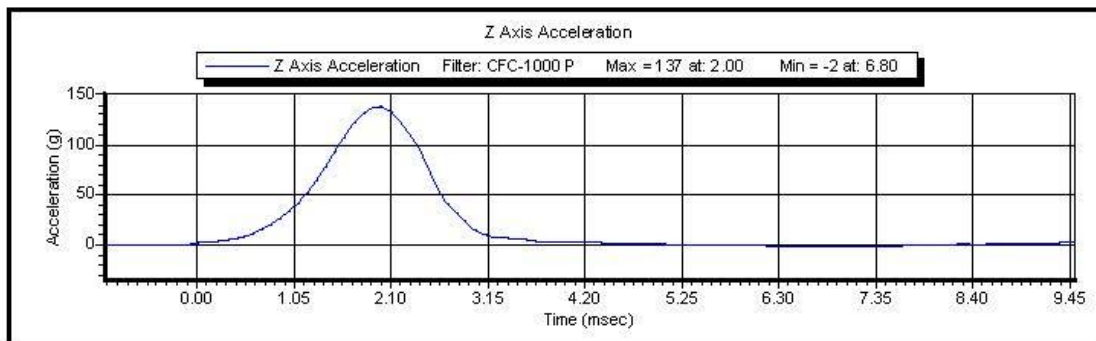
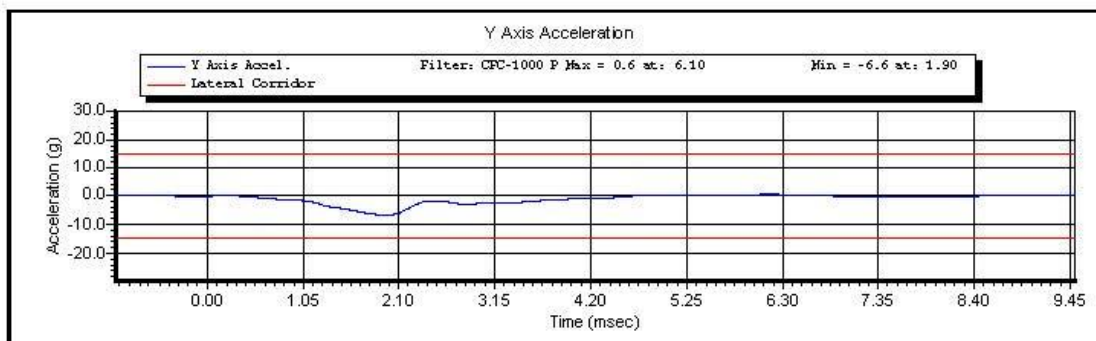
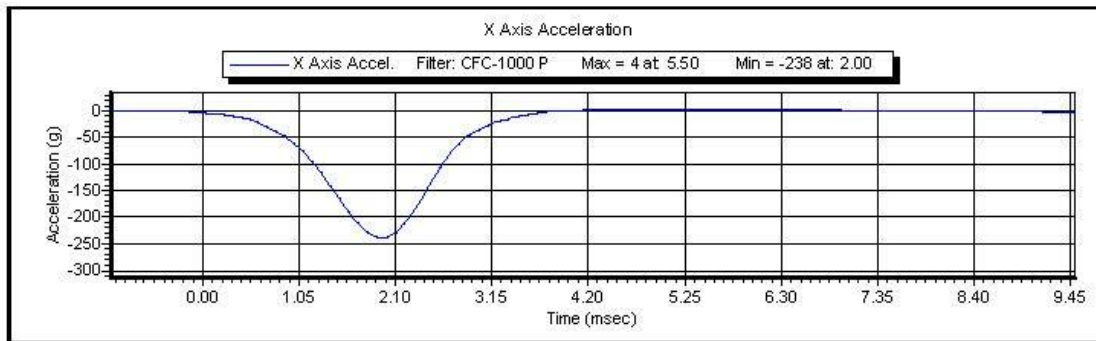


Test ID: **Head Drop**

Test Time: **11:59:39 AM**

Test Date: **1/6/2014**

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Test ID: **Head Drop**

Test Time: **11:59:39 AM**

Test Date: **1/6/2014**

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VERIFICATION REPORT

Test Name:	Neck Extension	Revision:	7/15/2002
Sub Test Name:			
ATD Type:	Hybrid 3 - 5th Female		
ATD Serial Number:	288		
Test ID:	Neck Extension	Test Date:	1/6/2014
		Test Time:	2:42:48 PM

Component Part Number	Component Serial Number
Neck - 880105-255	7121
Head Skin - 880105-109	912

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	20.9 deg C P
Humidity	10 -- 70	20.9 %RH P
Velocity	5.95 -- 6.19	6.140 m/s P
Pendulum Impulse at 10 ms	1.5 -- 1.9	1.60 m/s P
Pendulum Impulse at 20 ms	3.1 -- 3.9	3.22 m/s P
Pendulum Impulse at 30 ms	4.6 -- 5.6	4.68 m/s P
D Plane Rotation	99 -- 114	104.3 degrees P
Moment During Rotation Interval	-65 -- -53	-54.6 Nm P
Moment Decay to -10.0 Nm	94 -- 114	103.7 ms P

All test parameters are within specifications

Technician: **M. Geesey**

Supervisor: **E. Dutton**



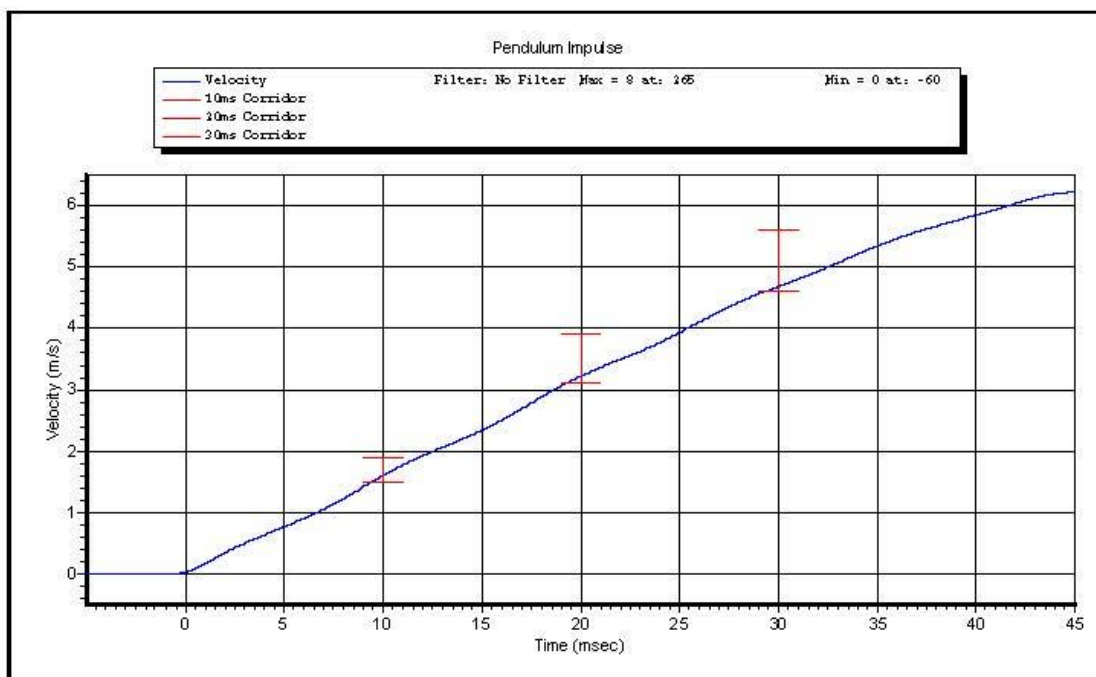
VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2013
Endevco	7231CT	AH5F3	10/16/2013
DentonATD	78051-342	PENDULUM POT	1/25/2013
DentonATD	78051-342	CONDYLE POT	4/19/2013
Denton	1716A	LC-2206My	5/23/2013
Denton	1716A	LC-2206Fx	5/23/2013



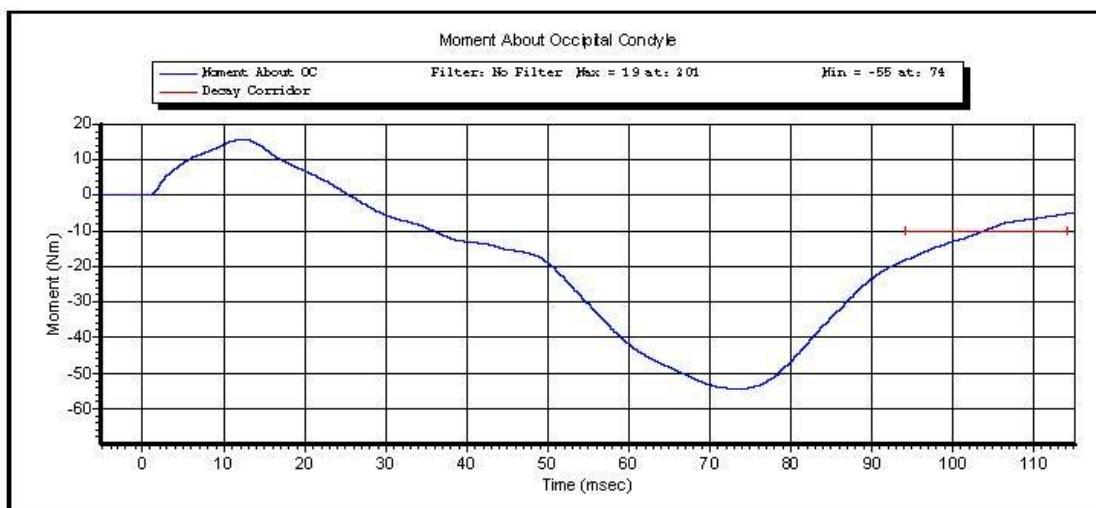
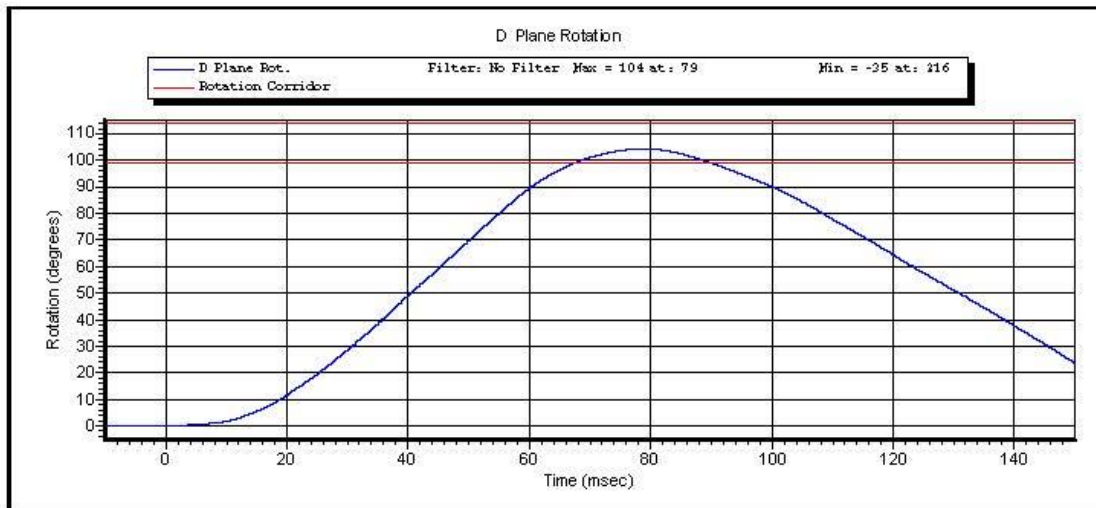
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Sub Test Name:	
ATD Type:	Hybrid 3 - 5th Female
ATD Serial Number:	288



Test ID: Neck Extension Test Time: 2:42:48 PM

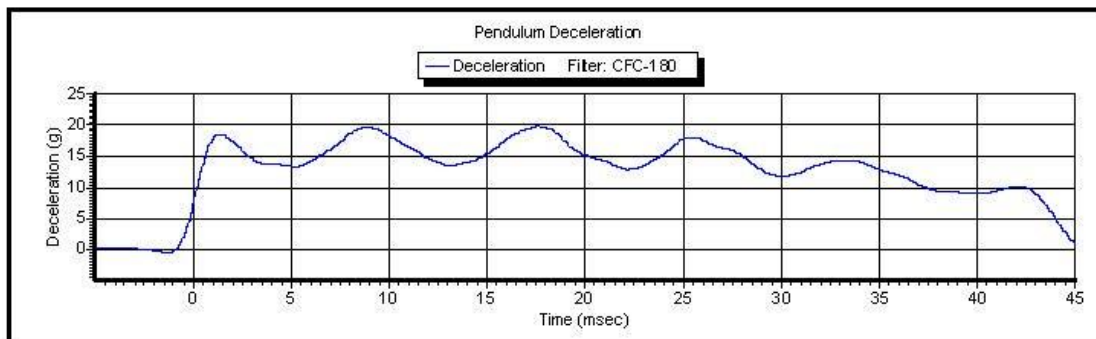
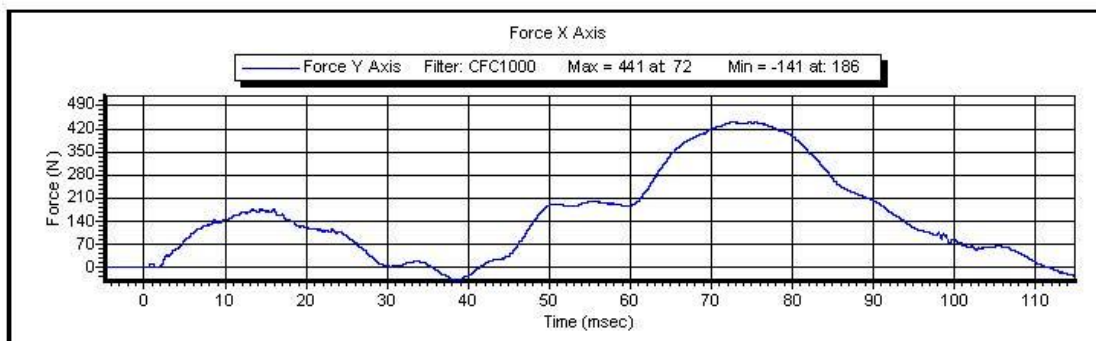
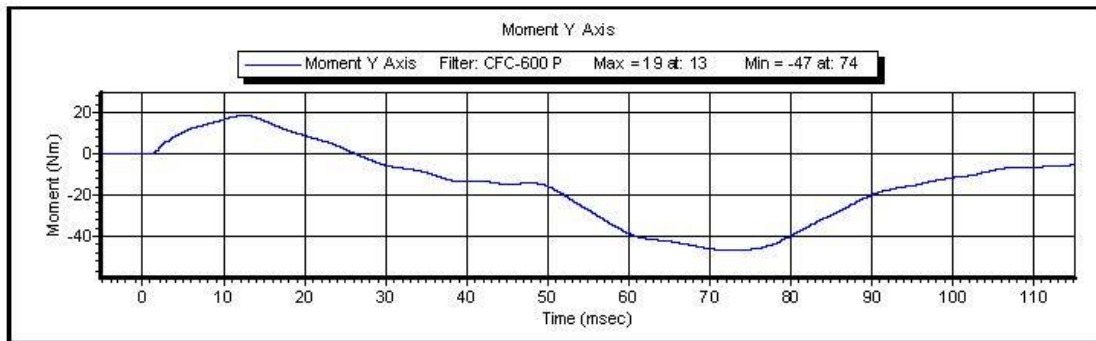
Test Date: 1/6/2014

Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0



Test ID: **Neck Extension** Test Time: **2:42:48 PM**
Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0

Test Date: **1/6/2014**



Test ID: **Neck Extension** Test Time: **2:42:48 PM**

Test Date: **1/6/2014**

Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0



VERIFICATION REPORT

Test Name:	Neck Flexion	Revision:	7/15/2002
Sub Test Name:			
ATD Type:	Hybrid 3 - 5th Female		
ATD Serial Number:	288		
Test ID:	Neck Flexion	Test Date:	1/6/2014
		Test Time:	2:11:25 PM

Component Part Number	Component Serial Number
Neck - 880105-255	7121
Head Skin - 880105-109	912

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	20.9 deg C P
Humidity	10 -- 70	20.7 %RH P
Velocity	6.89 -- 7.13	7.093 m/s P
Pendulum Impulse at 10 ms	2.1 -- 2.5	2.31 m/s P
Pendulum Impulse at 20 ms	4 -- 5	4.6 m/s P
Pendulum Impulse at 30 ms	5.8 -- 7.0	6.56 m/s P
D Plane Rotation	-91 -- -77	-81.3 degrees P
Moment During Rotation Interval	69 -- 83	72.3 Nm P
Moment Decay to 10.0 Nm	80 -- 100	88.4 ms P

All test parameters are within specifications

Technician: **M. Geesey**
Supervisor: **E. Dutton**



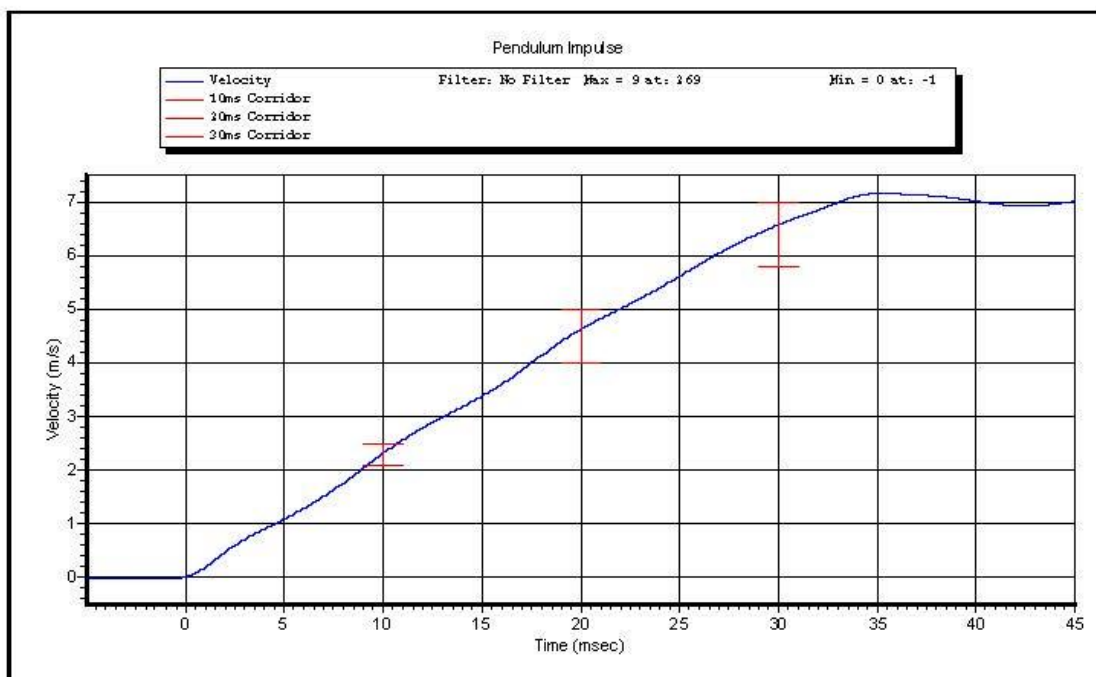
VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2013
Endevco	7231CT	AH5F3	10/16/2013
DentonATD	78051-342	PENDULUM POT	1/25/2013
DentonATD	78051-342	CONDYLE POT	4/19/2013
Denton	1716A	LC-2206My	5/23/2013
Denton	1716A	LC-2206Fx	5/23/2013



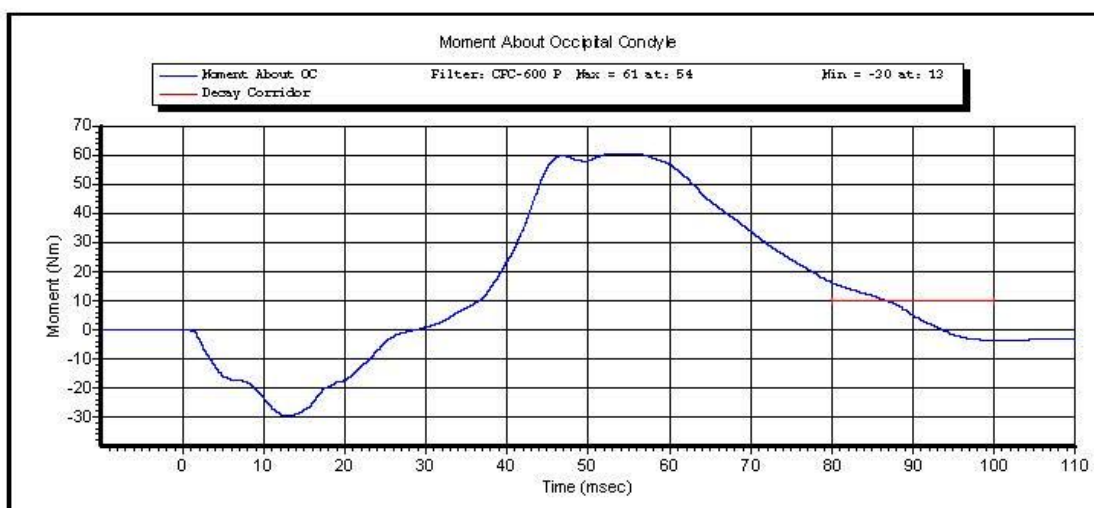
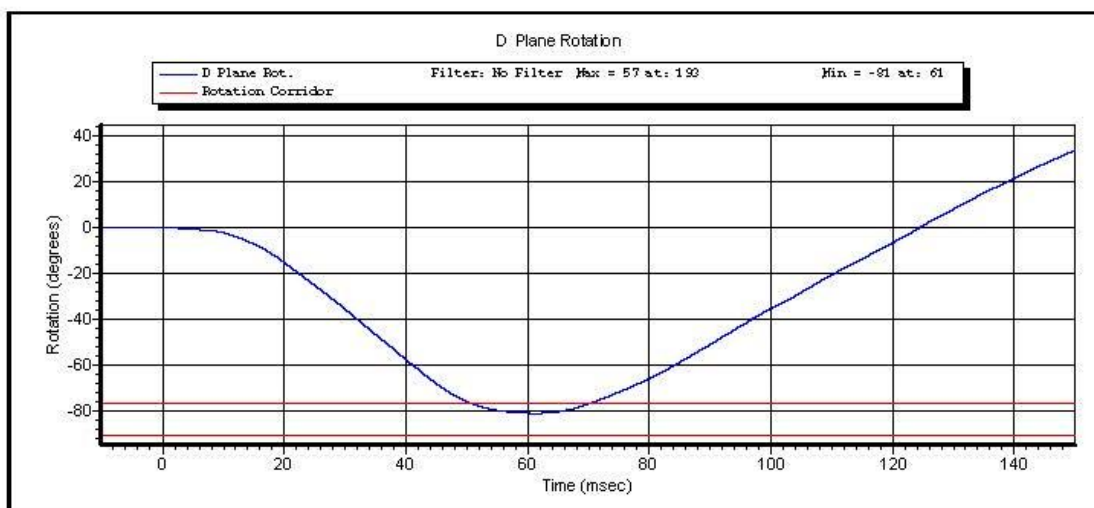
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Sub Test Name:	
ATD Type:	Hybrid 3 - 5th Female
ATD Serial Number:	288



Test ID: Neck Flexion Test Time: 2:11:25 PM

Test Date: 1/6/2014

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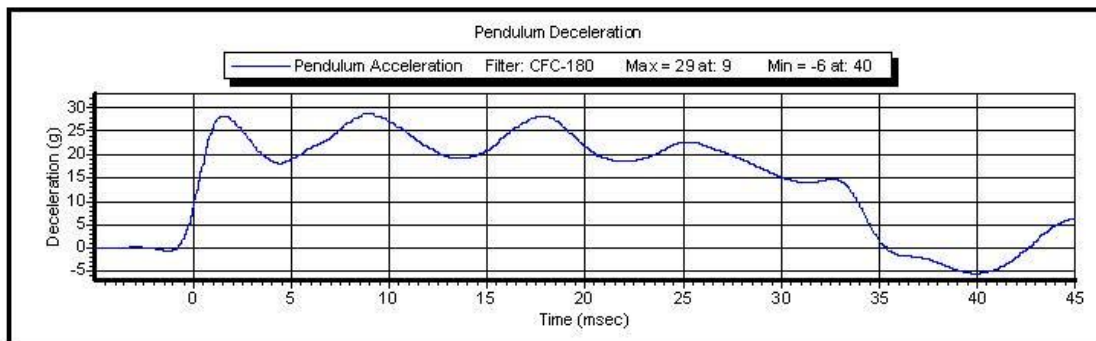
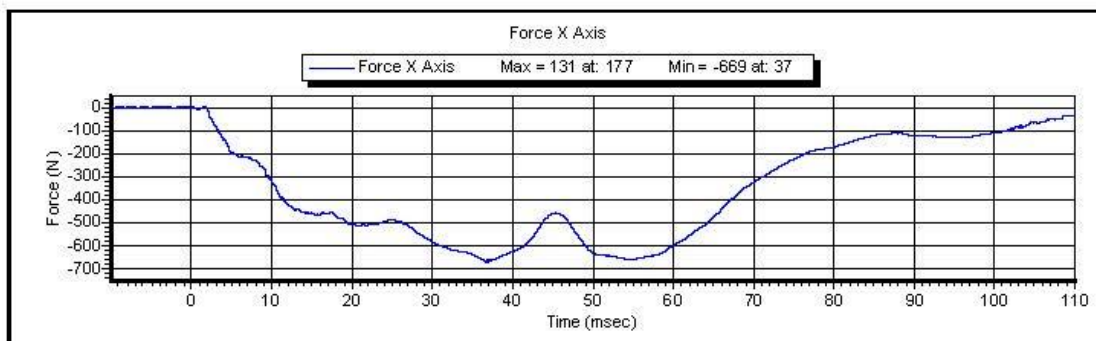
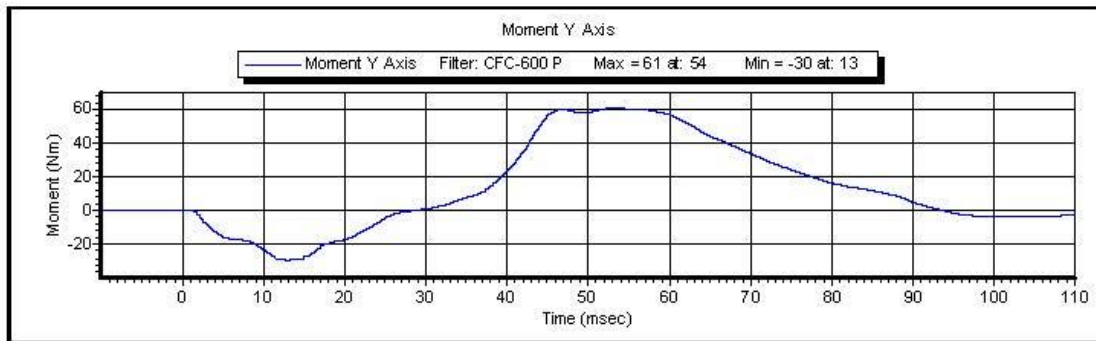


Test ID: **Neck Flexion**

Test Time: **2:11:25 PM**

Test Date: **1/6/2014**

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Test ID: **Neck Flexion**

Test Time: **2:11:25 PM**

Test Date: **1/6/2014**

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Torso Flexion

Part 5720 HIII 5% Female

ATD Serial No: 288

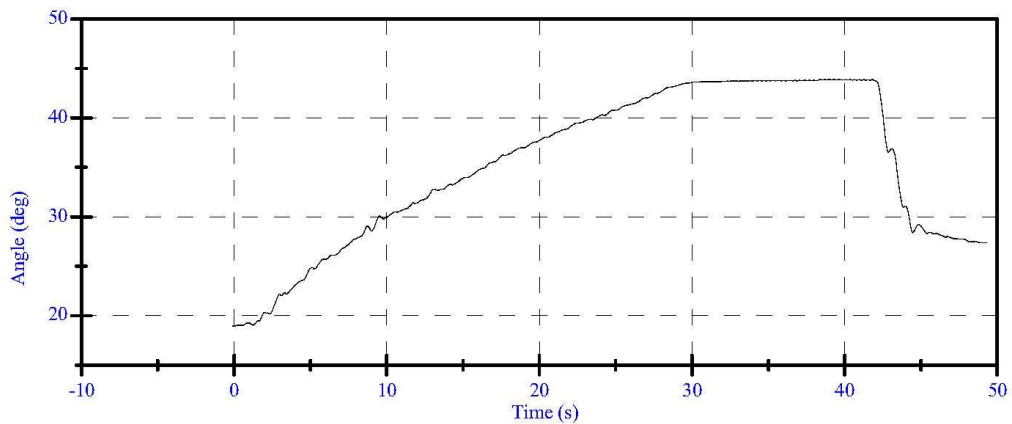
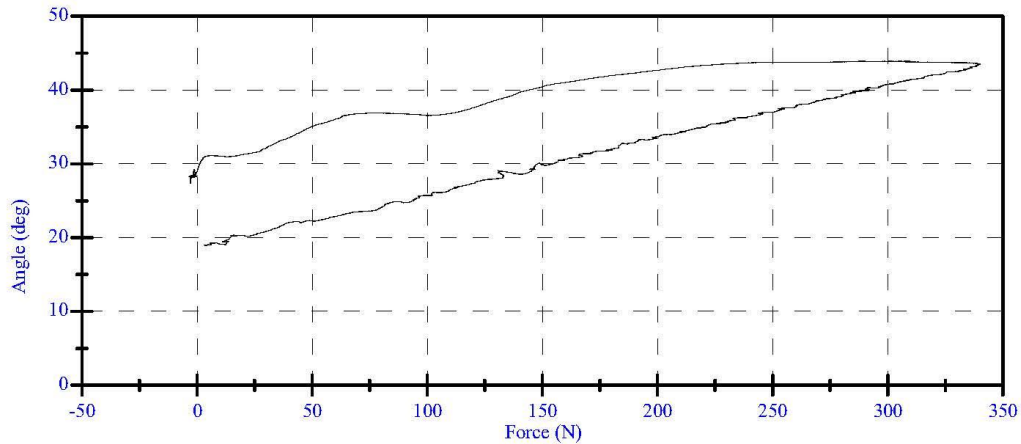
Laboratory Supervisor: E. Dutton

Date: 1/10/2014

Laboratory Technician: M. Goehle

TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	18.9-25.6 C	22.1 C	Passed
Lab Humidity:	10-70 %	24.3 %	Passed
Initial Angle:	0.00-20.00 Deg	18.95 Deg	Passed
Force at 45 Deg	320.00-390.00 N	340.27 N	Passed
Return Angle	8 Deg Max from Initial	22.40 deg	Passed

LUMBAR SPINE FLEXION TEST



01.10.2014 08:41:45



VERIFICATION REPORT

Test Name:	Thorax Impact	Revision:	7/15/2002
Sub Test Name:			
ATD Type:	Hybrid 3 - 5th Female		
ATD Serial Number:	288		
Test ID:	Thorax Impact	Test Date:	1/8/2014
		Test Time:	2:46:32 PM

Component Part Number	Component Serial Number
Chest Jacket - 880105-355-E	DG 8843
Lumbar Spine - 880105-1095	288

Test Parameters	Test Specifications			Test Results	
Temperature	20.6	--	22.2	21.9 deg C	P
Humidity	10	--	70	11.8 %RH	P
Velocity	6.59	--	6.83	6.826 m/s	P
Sternum Displacement	-58	--	-50	-50.9 mm	P
Force During Displacement Interval	-4400	--	-3900	-4313.6 N	P
Force -18.0 to -50.0 Displacement	-4600	--	0	-4364.0 N	P
Hysteresis	69	--	85	73.6 %	P

All test parameters are within specifications

Technician: **M. Geesey**
Supervisor: **E. Dutton**



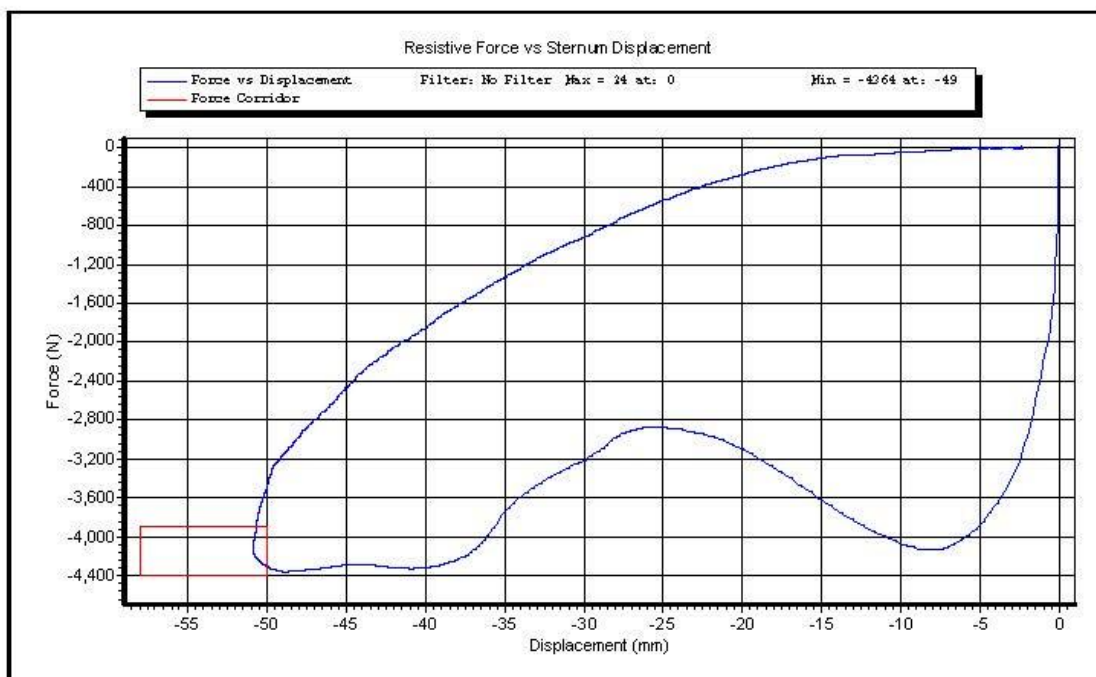
VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2013
Endevco	7231CT	C14953	12/4/2013
SERVO	14 CB1-2897	DS-288	11/21/2013

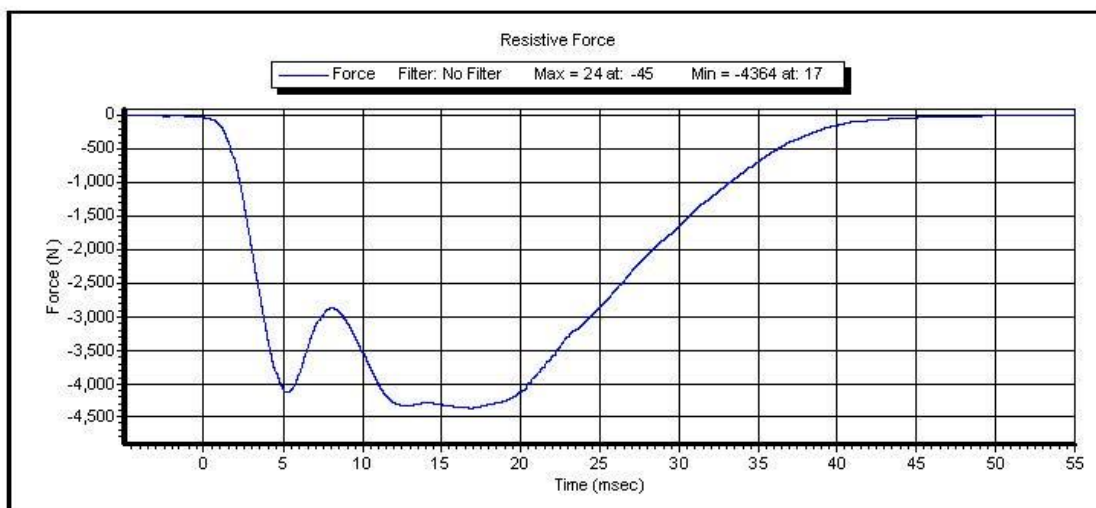
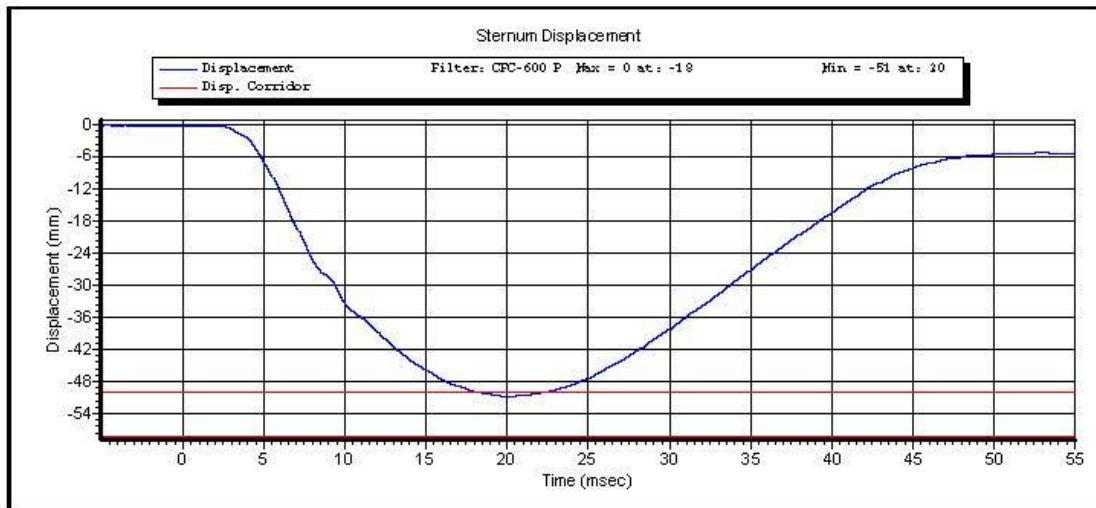


Test Name:	Thorax Impact
Sub Test Name:	
ATD Type:	Hybrid 3 - 5th Female
ATD Serial Number:	288



Test ID: Thorax Impact Test Time: 2:46:32 PM
Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0

Test Date: 1/8/2014

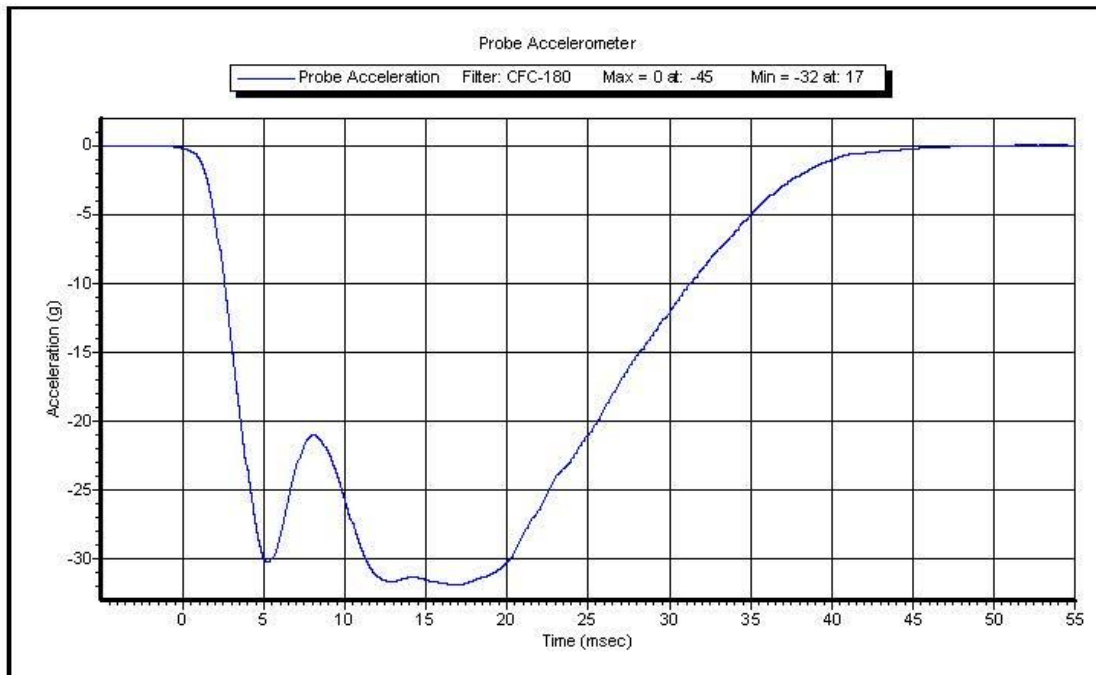


Test ID: **Thorax Impact**

Test Time: **2:46:32 PM**

Test Date: **1/8/2014**

Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0



Test ID: **Thorax Impact**

Test Time: **2:46:32 PM**

Test Date: **1/8/2014**

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VERIFICATION REPORT

Test Name:	Knee Impact	Revision:	7/15/2002
Sub Test Name:			
ATD Type:	Hybrid 3 - 5th Female		
ATD Serial Number:	288		
Test ID:	Knee Impact Left	Test Date:	1/6/2014
		Test Time:	8:54:45 AM

Component Part Number	Component Serial Number
Knee Skin - 880105-508	1729

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	21.6 deg C P
Humidity	10 -- 70	14.5 %RH P
Velocity	2.07 -- 2.13	2.106 m/s P
Resistive Force	-4060 -- -3450	-3588.2 N P

All test parameters are within specifications

Technician: **M. Geesey**

Supervisor: **E. Dutton**



VERIFICATION REPORT

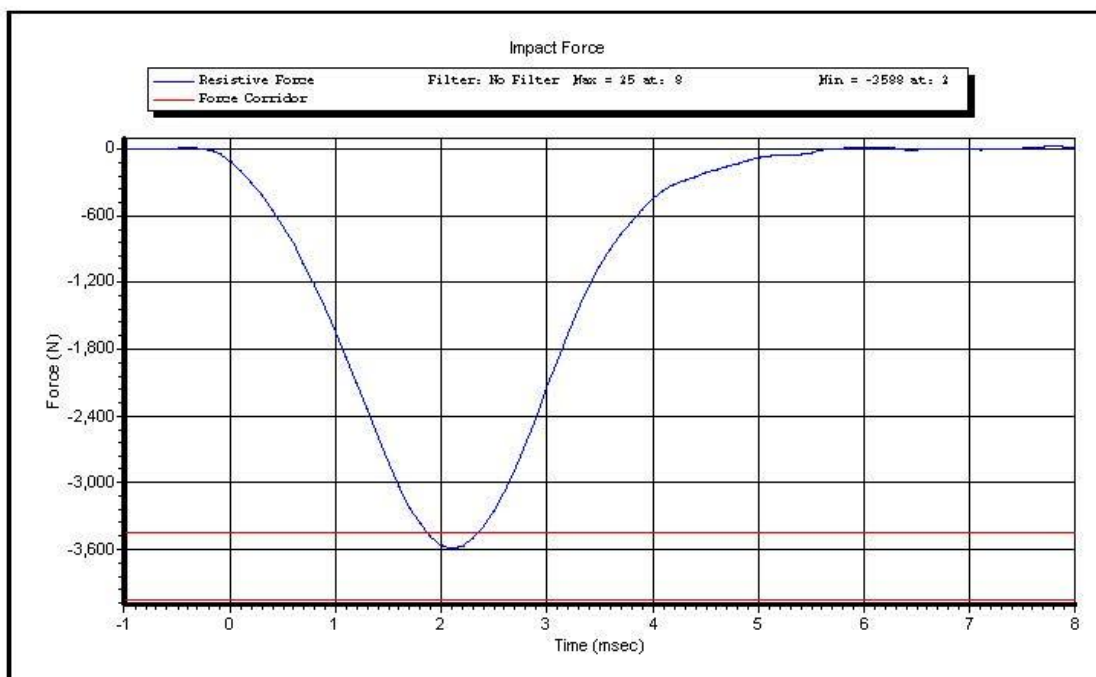
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<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2013
Endevco	7231CT	C14953	12/4/2013

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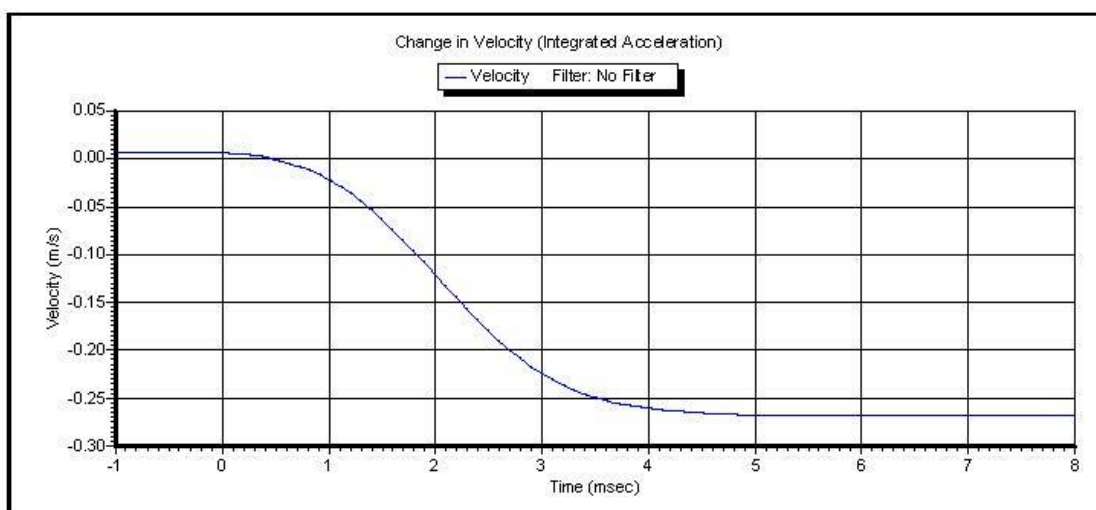
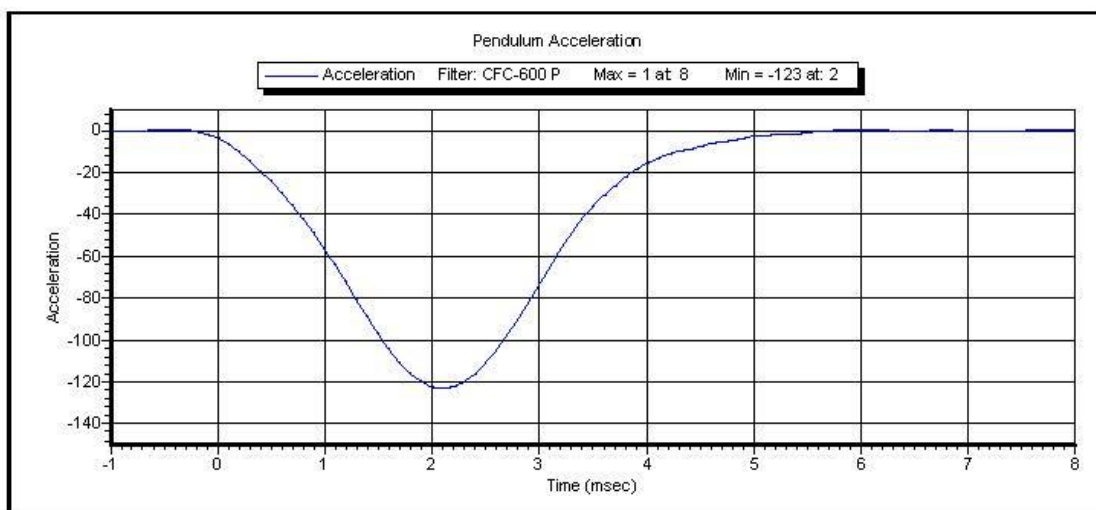


Test Name:	Knee Impact
Sub Test Name:	
ATD Type:	Hybrid 3 - 5th Female
ATD Serial Number:	288



Test ID: **Knee Impact Left** Test Time: **8:54:45 AM**
Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0

Test Date: **1/6/2014**



Test ID: **Knee Impact Left** Test Time: **8:54:45 AM**
Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0

Test Date: **1/6/2014**



VERIFICATION REPORT

Test Name:	Knee Impact	Revision:	7/15/2002
Sub Test Name:			
ATD Type:	Hybrid 3 - 5th Female		
ATD Serial Number:	288		
Test ID:	Knee Impact Right	Test Date:	1/6/2014
		Test Time:	9:00:07 AM

Component Part Number	Component Serial Number
Knee Skin - 880105-508	1728

Test Parameters	Test Specifications			Test Results	
Temperature	18.9	--	25.6	21.6 deg C	P
Humidity	10	--	70	14.5 %RH	P
Velocity	2.07	--	2.13	2.101 m/s	P
Resistive Force	-4060	--	-3450	-3487.6 N	P

All test parameters are within specifications

Technician: **M. Geesey**

Supervisor: **E. Dutton**



VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2013
Endevco	7231CT	C14953	12/4/2013

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

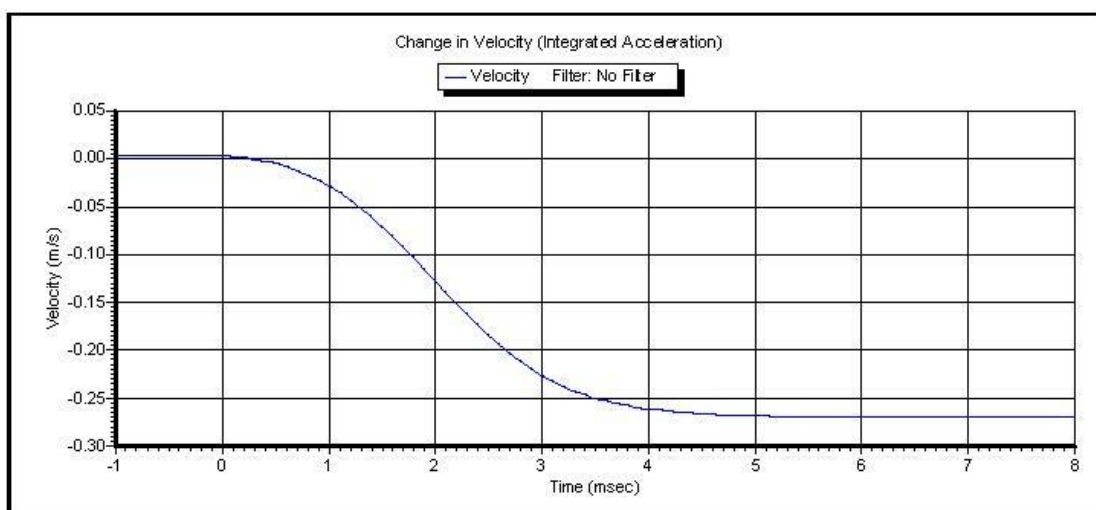
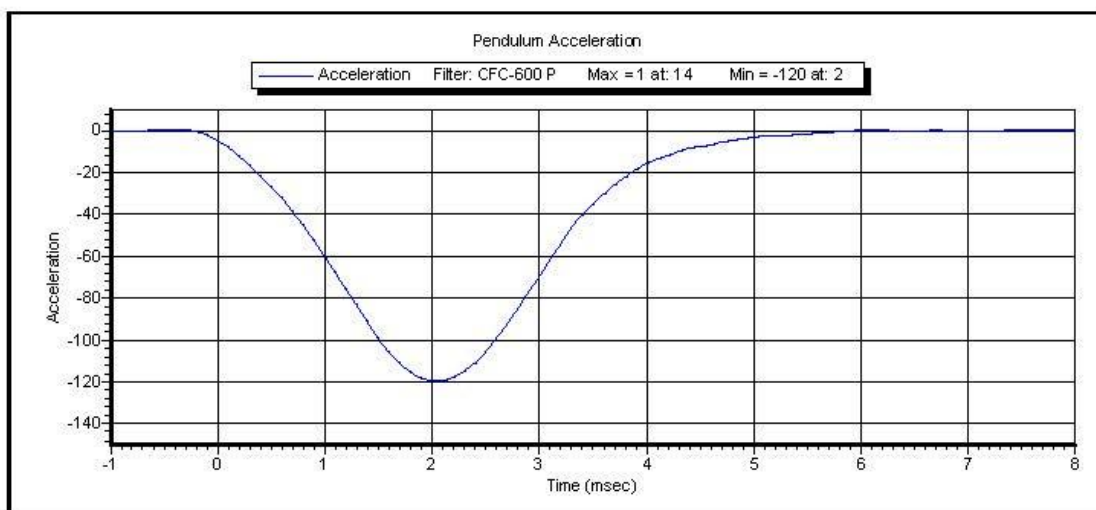


Test Name:	Knee Impact
Sub Test Name:	
ATD Type:	Hybrid 3 - 5th Female
ATD Serial Number:	288



Test ID: **Knee Impact Right** Test Time: **9:00:07 AM**
Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0

Test Date: **1/6/2014**



Test ID: **Knee Impact Right** Test Time: **9:00:07 AM**
Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0

Test Date: **1/6/2014**

CALIBRATION TEST RESULTS

POST-TEST

HYBRID III 5TH PERCENTILE FEMALE - PASSENGER ATD

SERIAL NO: 064



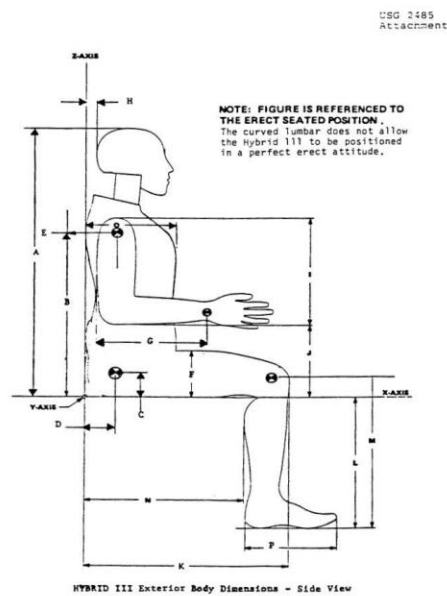
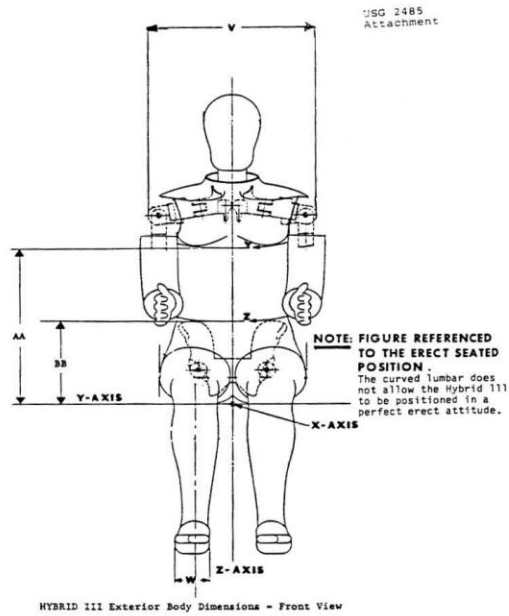
50th Male External Measurements

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	20.0	Yes
C	H-Point Height	3.3 – 3.5	3.3	Yes
D	H-Point from Backline	5.3 – 5.5	5.4	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	11.5	Yes
H	Head Back to Backline	1.6 – 1.8	1.7	Yes
I	Shoulder to Elbow Length	13.0 – 13.6	13.0	Yes
J	Elbow Rest Height	7.5 – 8.3	8.1	Yes
K	Buttock to Knee Length	22.8 – 23.8	23.1	Yes
L	Popliteal Height	16.9 – 17.9	17.1	Yes
M	Knee Pivot Height	19.1 – 19.7	19.3	Yes
N	Buttock Popliteal Length	17.8 – 18.8	18.5	Yes
O	Chest Depth without Jacket	8.4 – 9.0	8.5	Yes
P	Foot Length (right)	9.9 – 10.5	10.3	Yes
V	Shoulder Breadth	16.3 – 17.2	16.8	Yes
W	Foot Breadth	3.6 – 4.2	3.9	Yes
Y	Chest Circumference with Jacket	38.2 – 39.4	39.0	Yes
Z	Waist Circumference	32.9 – 34.1	33.6	Yes
AA	Reference Location (Chest Circumference)	16.9 – 17.1	17.0	Yes
BB	Reference Location (Waist Circumference)	8.9 – 9.1	9.0	Yes

Technician: M. Geesey

02/13/2014





VERIFICATION REPORT

Test Name:	Head Drop	Revision:	7/15/2002
Sub Test Name:			
ATD Type:	Hybrid 3 - 50th Male		
ATD Serial Number:	064		
Test ID:	Head Drop	Test Date:	2/12/2014
		Test Time:	6:54:03 AM

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

Test Parameters	Test Specifications			Test Results	
Temperature	18.9	--	25.6	21.40 deg C	P
Humidity	10	--	70	12.60 %RH	P
Resultant Acceleration	225	--	275	256.9 G's	P
Oscillation	0	--	10	2.2 %	P
Lateral Acceleration	-15	--	15	6.1 G's	P

All test parameters are within specifications

Technician: **R. Weil**

Supervisor: **E. Dutton**



VERIFICATION REPORT

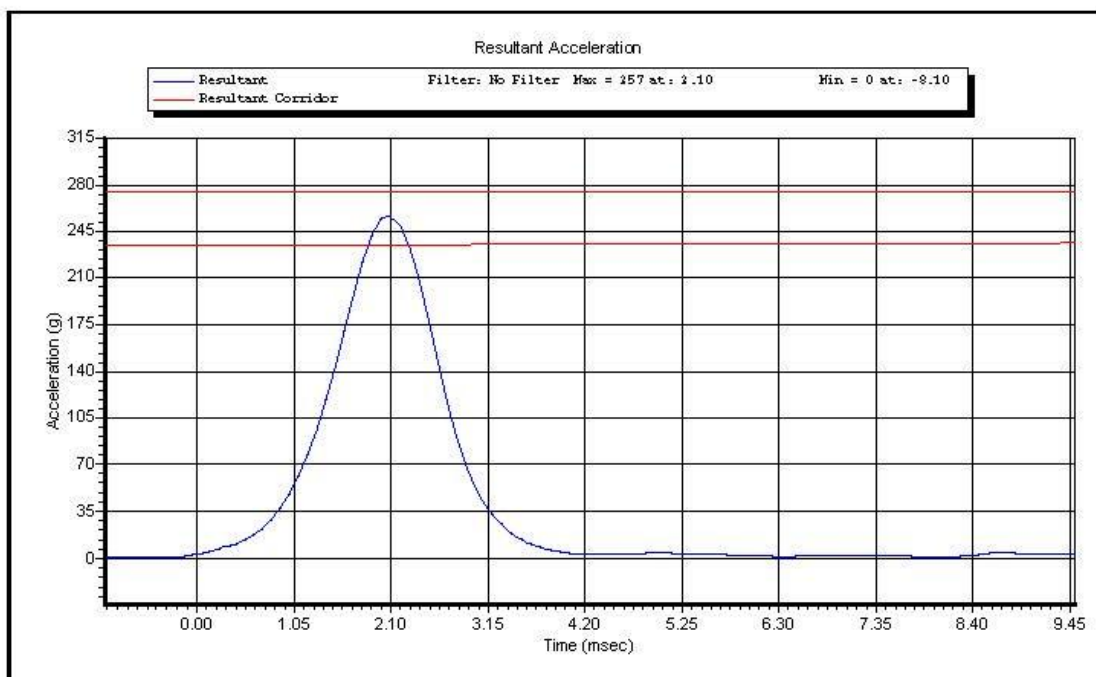
REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Endevco	7264-2000	P58904	12/5/2013
Endevco	7264-2000	P58911	12/5/2013
Endevco	7264-2000	P58776	12/5/2013

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Test Name:	Head Drop
Sub Test Name:	
ATD Type:	Hybrid 3 - 50th Male
ATD Serial Number:	064

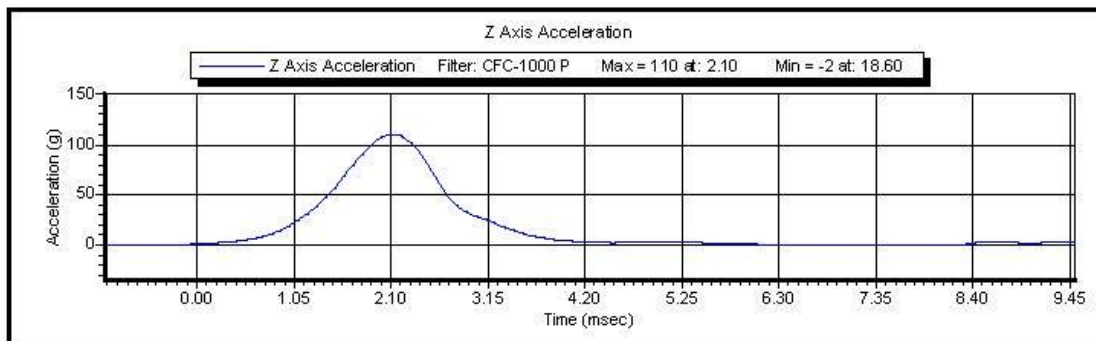
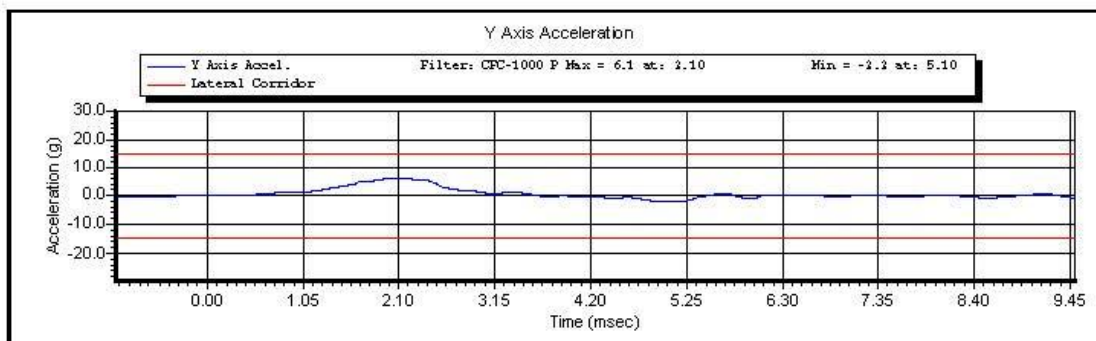
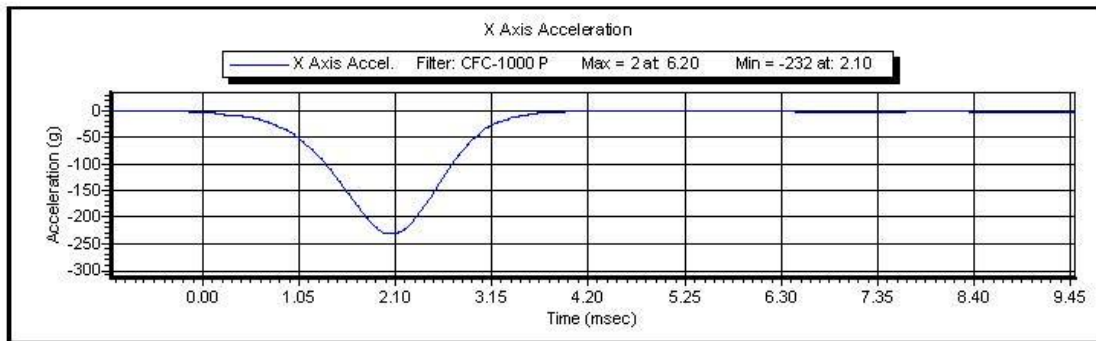


Test ID: **Head Drop**

Test Time: **6:54:03 AM**

Test Date: **2/12/2014**

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Test ID: **Head Drop**

Test Time: **6:54:03 AM**

Test Date: **2/12/2014**

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VERIFICATION REPORT

Test Name:	Neck Extension	Revision:	10/1/2001
Sub Test Name:			
ATD Type:	Hybrid 3 - 50th Male		
ATD Serial Number:	064		
Test ID:	Neck Extension	Test Date:	2/13/2014
		Test Time:	9:25:39 AM

Component Part Number	Component Serial Number
Neck - 78051-336	021692

Test Parameters		Test Specifications		Test Results	
Temperature		20.6	-- 22.2	21.40 deg C	P
Humidity		10	-- 70	16.00 %RH	P
Velocity		5.94	-- 6.19	6.030 m/s	P
Pendulum Deceleration at	10 ms	17.2	-- 21.2	18.62 G's	P
Pendulum Deceleration at	20 ms	14.0	-- 19.0	16.42 G's	P
Pendulum Deceleration at	30 ms	11.0	-- 16.0	13.29 G's	P
Max Pendulum Deceleration after	30 ms	0.0	-- 22.0	15.09 G's	P
Deceleration Time to	5 G's	38	-- 46	41.5 ms	P
D Plane Rotation		81	-- 106	98.8 degrees	P
Time at Max Rotation		72	-- 82	78.1 ms	P
Rotation Decay to Zero		147	-- 174	158.4 ms	P
Moment About Occipital Condyle		-80.0	-- -52.9	-66.06 Nm	P
Time at Maximum Moment		65	-- 79	73.7 ms	P
Moment Decay to Zero		120	-- 148	145.4 ms	P

All test parameters are within specifications

Technician: **M. Goehle**

Supervisor: **E. Dutton**



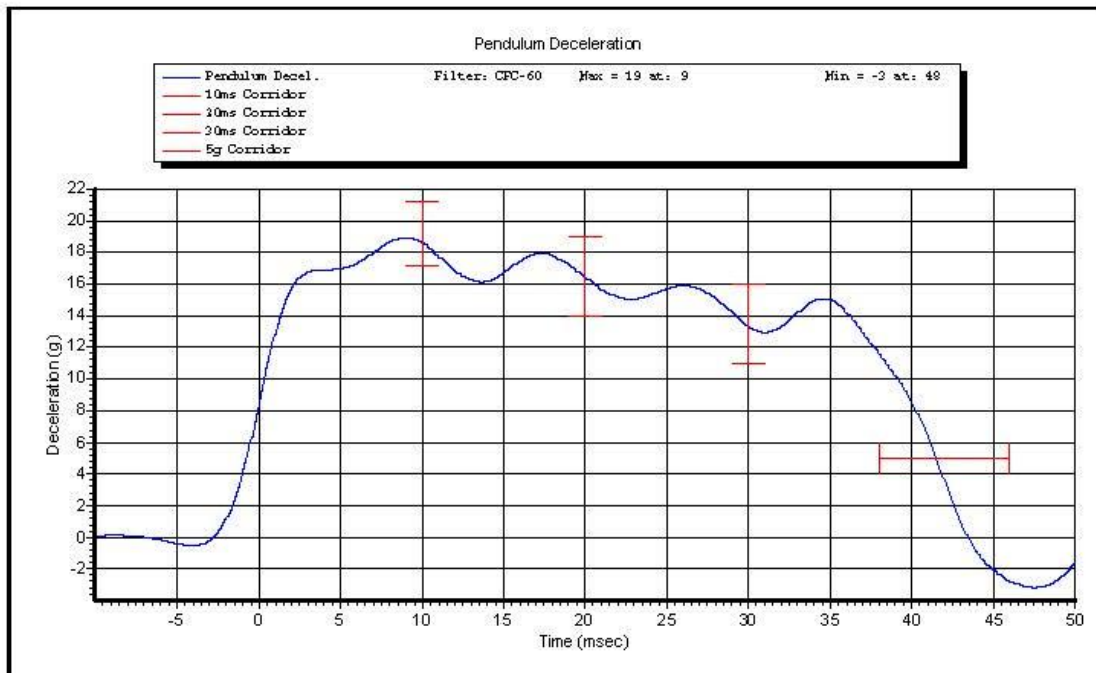
VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2014
Endevco	7231CT	AH5F3	10/16/2013
DentonATD	78051-342	PENDULUM POT	1/31/2014
DentonATD	78051-342	CONDYLE POT	1/31/2014
Denton	1716A	LC-2186 My	5/23/2013
Denton	1716A	LC-2186 Fx	5/23/2013

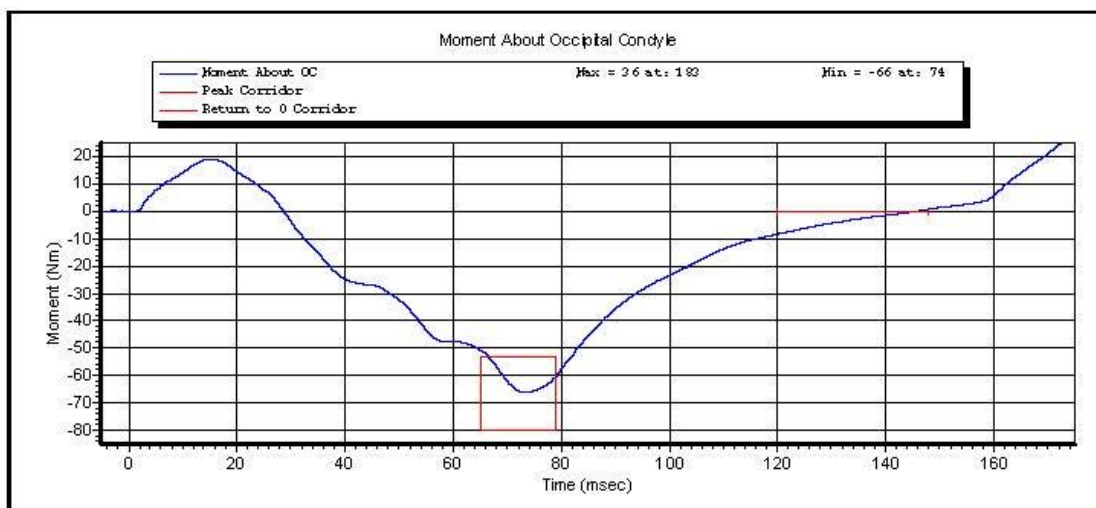
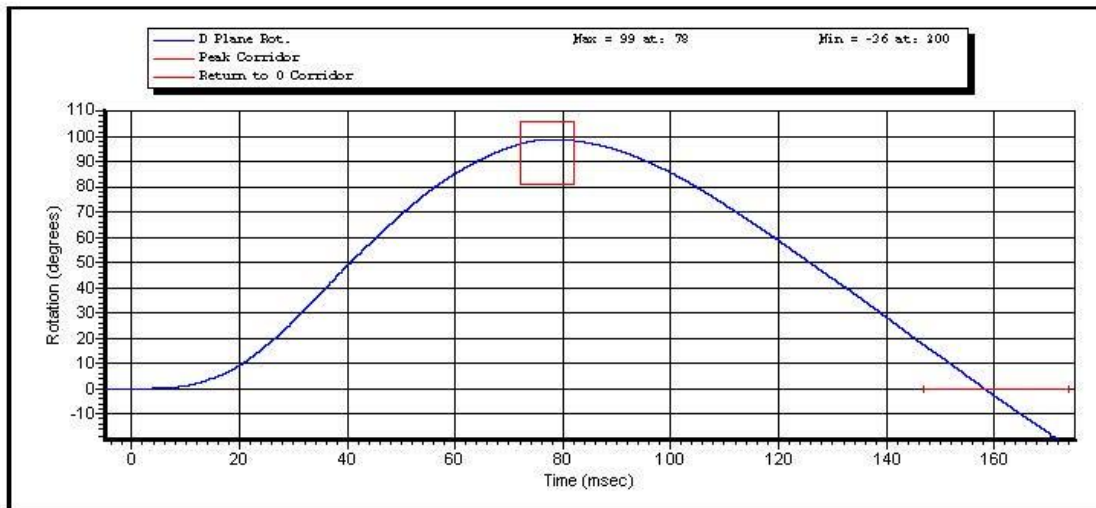


Name of Test:	Neck Extension
Name of Sub Test:	
Type of ATD:	Hybrid 3 - 50th Male
ATD Serial Number:	064



ID of Test: **Neck Extension** Time of Test: **9:25:39 AM**
Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0

Date of Test: **2/13/2014**

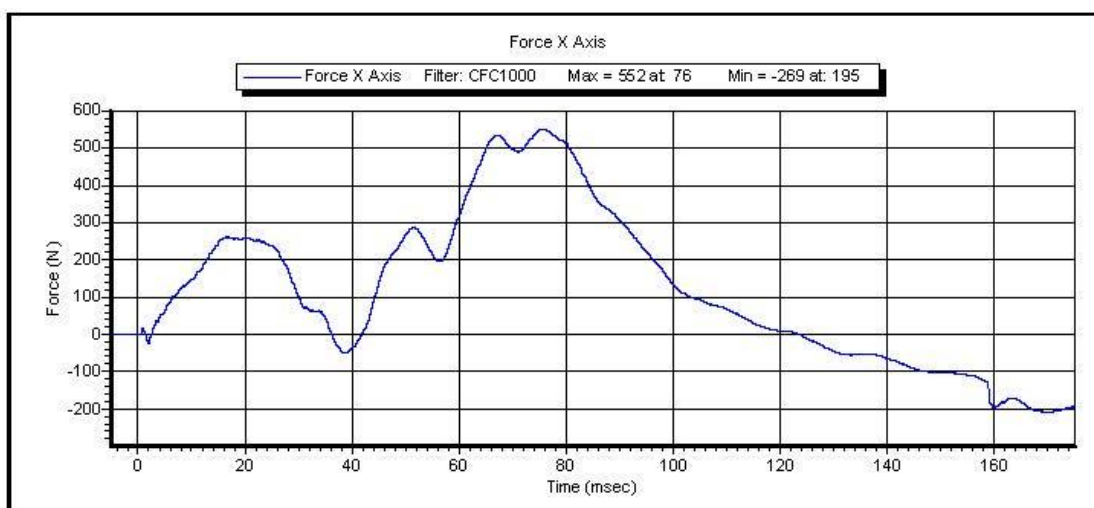
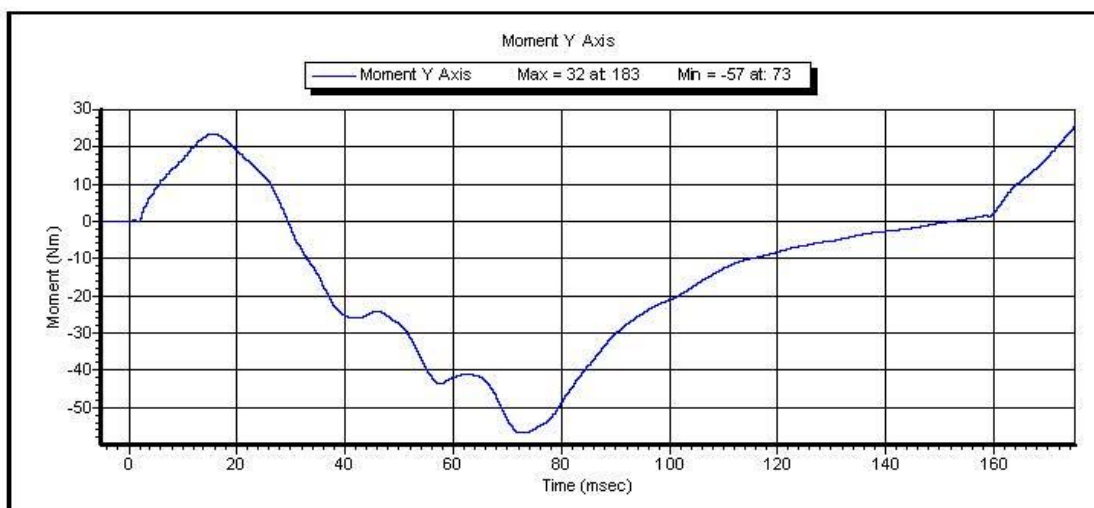


ID of Test: **Neck Extension**

Time of Test: **9:25:39 AM**

Date of Test: **2/13/2014**

Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0



ID of Test: **Neck Extension**

Time of Test: **9:25:39 AM**

Date of Test: **2/13/2014**

Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0



VERIFICATION REPORT

Test Name:	Neck Flexion	Revision:	10/1/2001
Sub Test Name:			
ATD Type:	Hybrid 3 - 50th Male		
ATD Serial Number:	064		
Test ID:	Neck Flexion	Test Date:	2/12/2014
		Test Time:	12:04:13 PM

Component Part Number	Component Serial Number
Neck - 78051-336	021692

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.00 deg C P
Humidity	10 -- 70	14.60 %RH P
Velocity	6.89 -- 7.13	6.896 m/s P
Pendulum Deceleration at 10 ms	22.5 -- 27.5	24.35 G's P
Pendulum Deceleration at 20 ms	17.6 -- 22.6	21.46 G's P
Pendulum Deceleration at	12.5 -- 18.5	14.83 G's P
Maximum Pendulum Deceleration After 30 ms	0 -- 29	14.8 G's P
Deceleration Time to 5 ms	34 -- 42	37.4 ms P
D Plane Rotation	-78 -- -64	-72.8 degrees P
Time at Maximum Rotation	57 -- 64	59.1 ms P
Rotation Decay to Zero	113 -- 128	113.1 ms P
Moment About Occipital Condyle	88.1 -- 108.4	94.51 Nm P
Time at Maximum Moment	47 -- 58	52.1 ms P
Moment Decay to Zero	97.0 -- 107.0	98.2 ms P

All test parameters are within specifications

Technician: **R. Weil**

Supervisor: **E. Dutton**



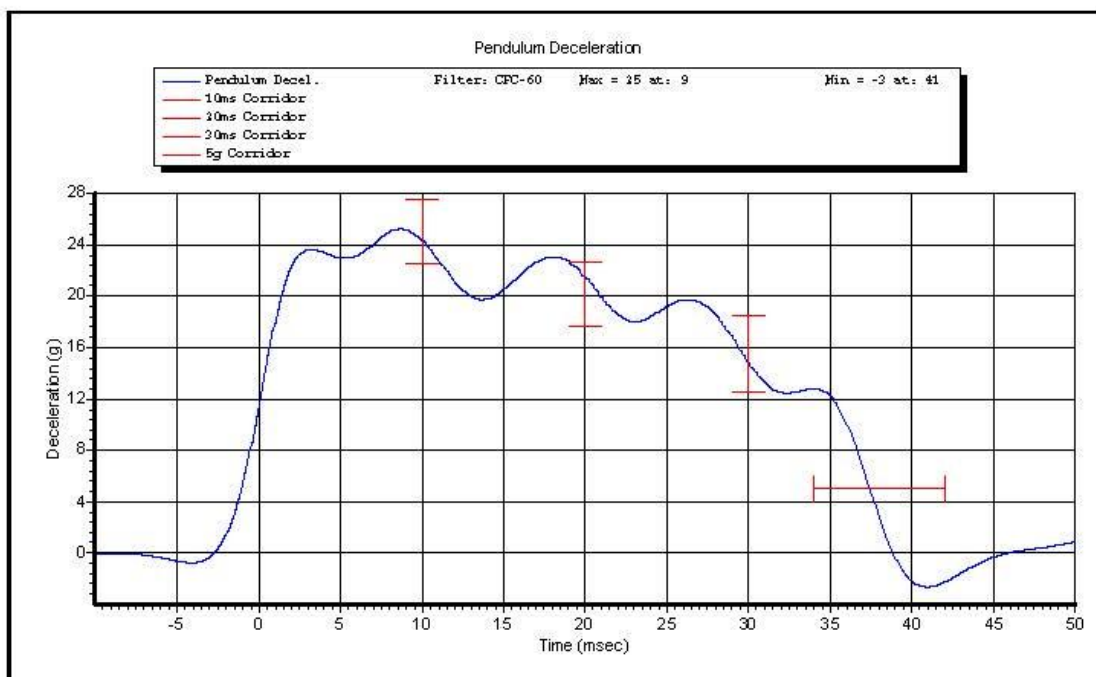
VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2014
Endevco	7231CT	AH5F3	10/16/2013
DentonATD	78051-342	PENDULUM POT	1/31/2014
DentonATD	78051-342	CONDYLE POT	1/31/2014
First Technology	IF-205	LC-161 My	4/30/2013
First Technology	IF-205	LC-161 Fx	4/30/2013



Name of Test:	Neck Flexion
Name of Sub Test:	
Type of ATD:	Hybrid 3 - 50th Male
ATD Serial Number:	064

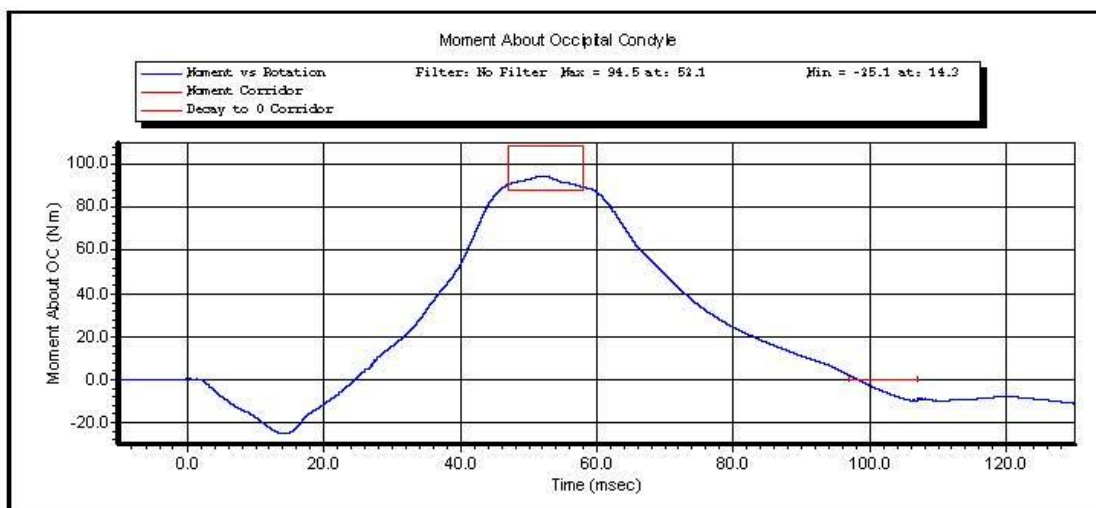
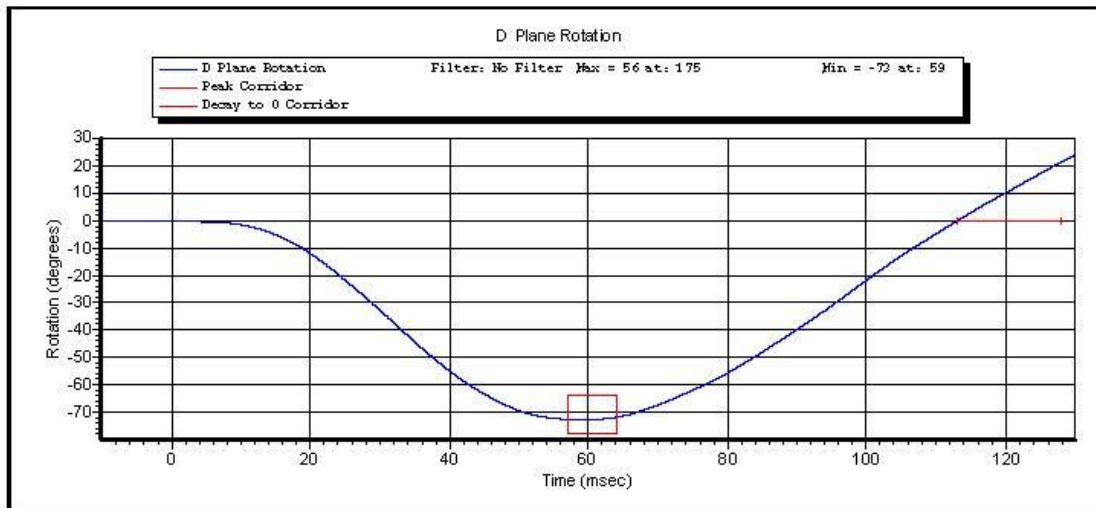


ID of Test: **Neck Flexion**

Time of Test: **12:04:13 PM**

Date of Test: **2/12/2014**

Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0

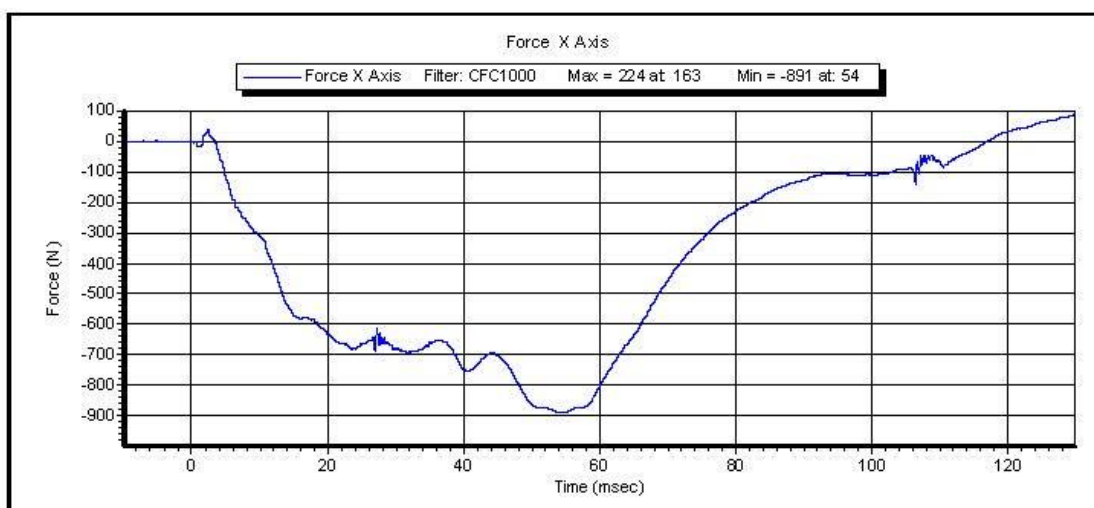
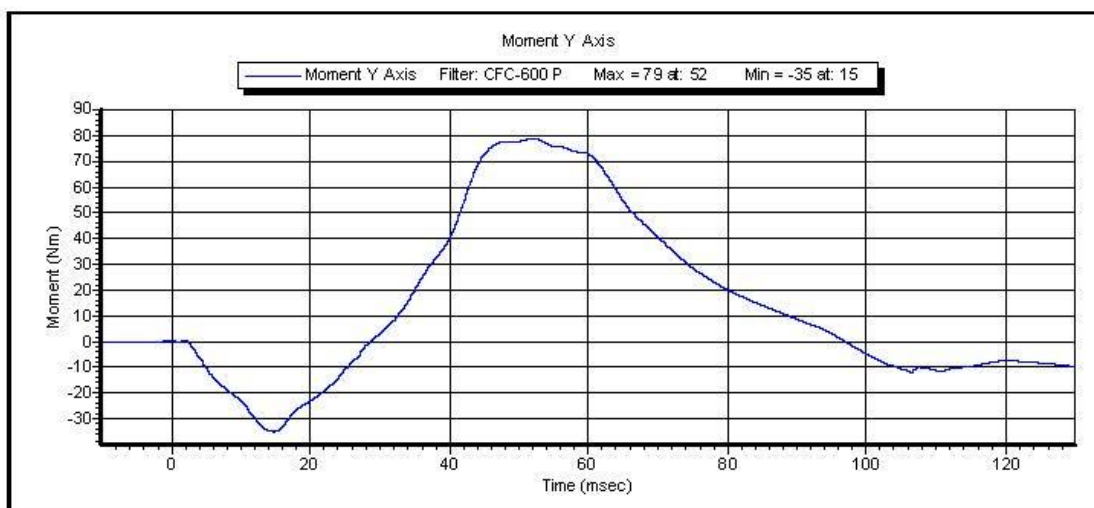


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Time of Test: **12:04:13 PM**

Date of Test: **2/12/2014**

Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0



ID of Test: **Neck Flexion**

Time of Test: **12:04:13 PM**

Date of Test: **2/12/2014**

Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0



VERIFICATION REPORT

Test Name:	Thorax Impact	Revision:	10/1/2001
Sub Test Name:			
ATD Type:	Hybrid 3 - 50th Male		
ATD Serial Number:	064		
Test ID:	Thorax Impact	Test Date:	2/13/2014
		Test Time:	12:37:04 PM

Component Part Number	Component Serial Number
-----------------------	-------------------------

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.70 deg C P
Humidity	10 -- 70	12.00 %RH P
Velocity	6.59 -- 6.83	6.726 m/s P
Chest Deflection	-72.6 -- -63.5	-72.11 mm P
Resistive Force	-5.894 -- -5.160	-5.4329 kN P
Hysteresis	69 -- 85	69.6 % P

All test parameters are within specifications

Technician: **M. Goehle**

Supervisor: **E. Dutton**



VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2014
Endevco	7231CT	C14953	12/4/2013
DentonATD	78051-342	DS-064	6/18/2013

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Test Name:	Thorax Impact
Sub Test Name:	
ATD Type:	Hybrid 3 - 50th Male
ATD Serial Number:	064

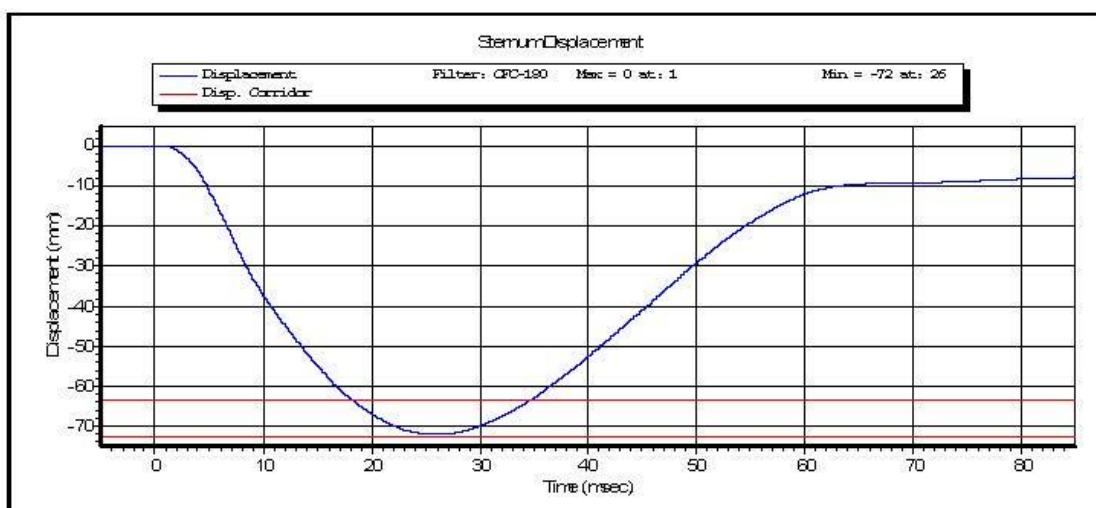
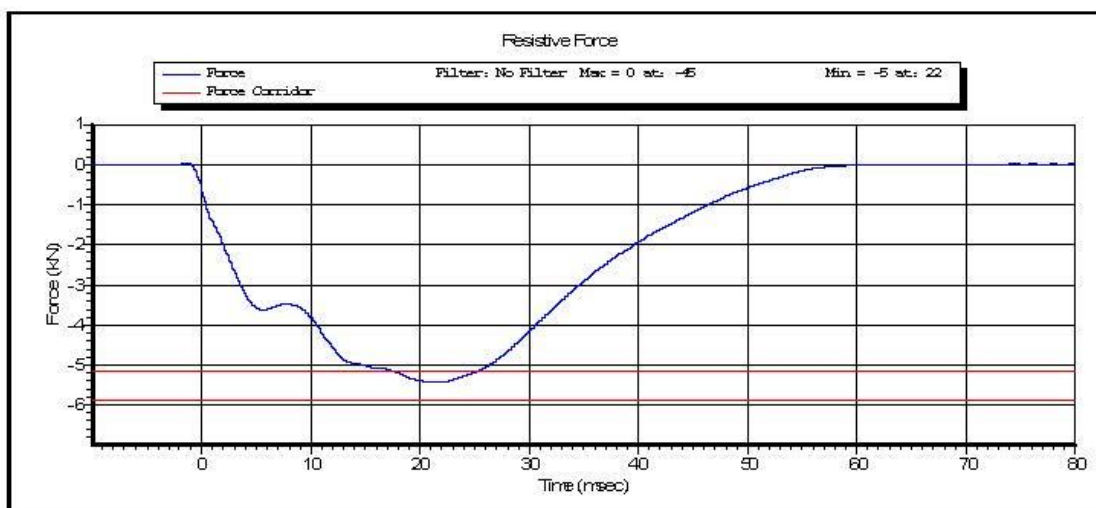


Test ID: **Thorax Impact**

Test Time: **12:37:04 PM**

Test Date: **2/13/2014**

Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0

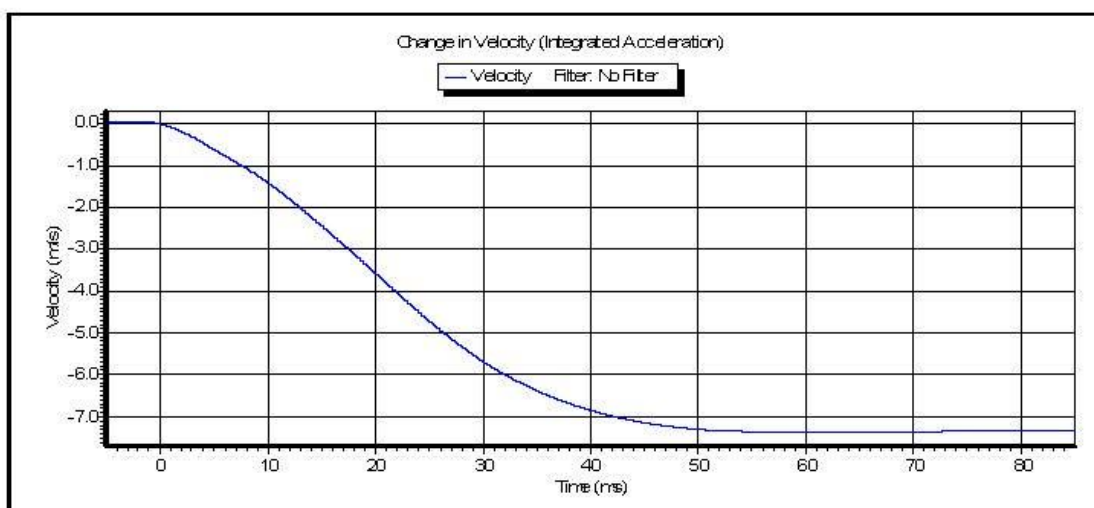
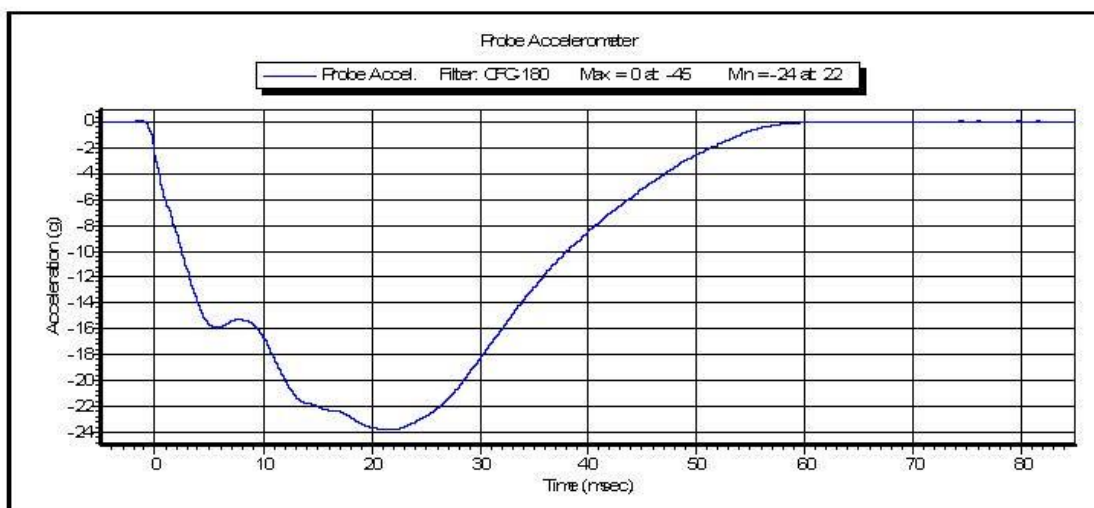


Test ID: **Thorax Impact**

Test Time: **12:37:04 PM**

Test Date: **2/13/2014**

Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0



Test ID: **Thorax Impact**

Test Time: **12:37:04 PM**

Test Date: **2/13/2014**

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VERIFICATION REPORT

Test Name:	Hip ROM	Revision:	10/1/2001
Sub Test Name:			
ATD Type:	Hybrid 3 - 50th Male		
ATD Serial Number:	064		
Test ID:	Hip ROM Left	Test Date:	2/11/2014
		Test Time:	10:09:52 AM

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

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	21.70 deg C P
Humidity	10 -- 70	17.80 %RH P
Average Velocity	5 -- 10	6.0 deg/s P
Angle at 203 Nm	40 -- 50	43.0 degrees P
Moment at 30 degrees	0.0 -- 94.9	68.84 Nm P

All test parameters are within specifications

Technician: **R. Weil**

Supervisor: **E. Dutton**

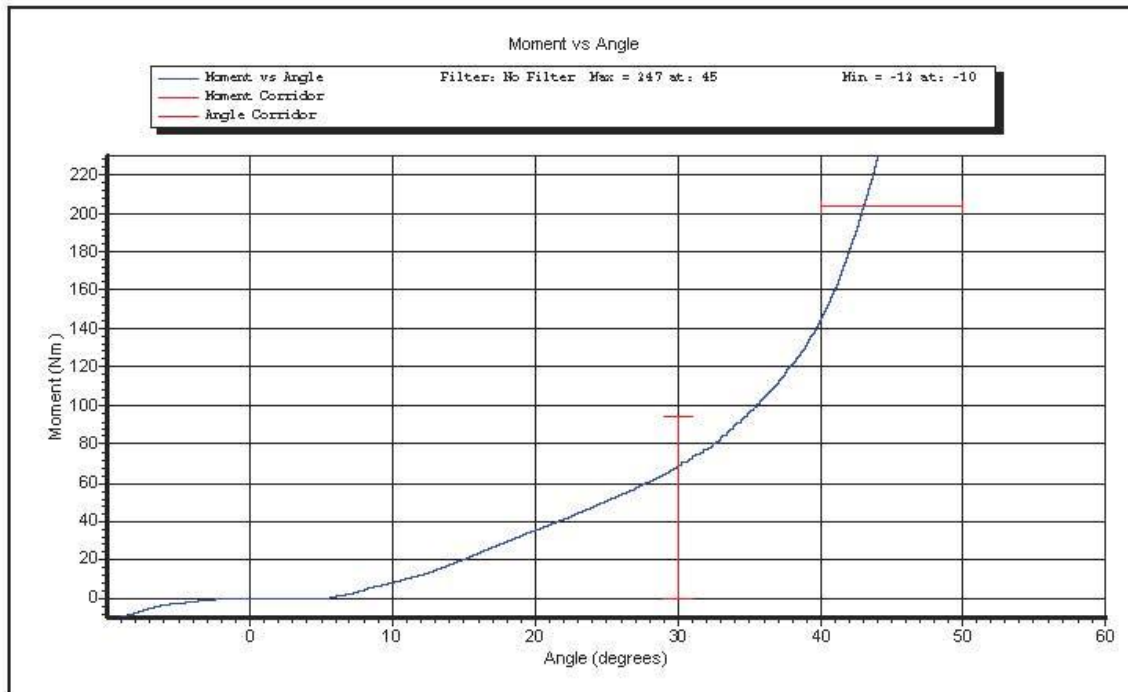


REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Key Trans/PCB	2301-02	115	3/19/2013
DentonATD	14 CB1-3615	0008	2/21/2013
DentonATD	A0 Output	1	1/11/2014



Test Name:	Hip ROM
Sub Test Name:	
ATD Type:	Hybrid 3 - 50th Male
ATD Serial Number:	064



Test ID: **Hip ROM Left** Test Time: **10:09:52 AM** Test Date: **2/11/2014**
Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0



VERIFICATION REPORT

Test Name:	Hip ROM	Revision:	10/1/2001
Sub Test Name:			
ATD Type:	Hybrid 3 - 50th Male		
ATD Serial Number:	064		
Test ID:	Hip ROM Right	Test Date:	2/11/2014
		Test Time:	9:43:54 AM

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

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	21.70 deg C P
Humidity	10 -- 70	17.80 %RH P
Average Velocity	5 -- 10	6.7 deg/s P
Angle at 203 Nm	40 -- 50	41.8 degrees P
Moment at 30 degrees	0.0 -- 94.9	82.43 Nm P

All test parameters are within specifications

Technician: **R. Weil**

Supervisor: **E. Dutton**



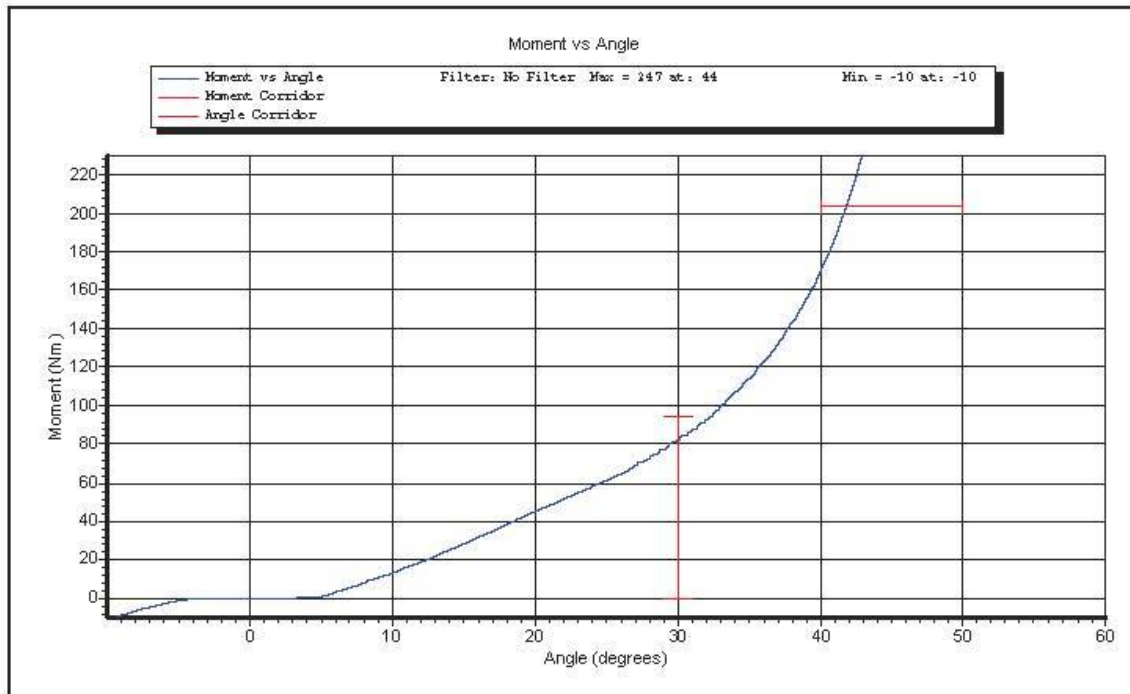
VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Key Trans/PCB	2301-02	115	3/19/2013
DentonATD	14 CB1-3615	0008	2/21/2013
DentonATD	A0 Output	1	1/11/2014



Test Name:	Hip ROM
Sub Test Name:	
ATD Type:	Hybrid 3 - 50th Male
ATD Serial Number:	064



Test ID: **Hip ROM Right** Test Time: **9:43:54 AM** Test Date: **2/11/2014**
Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0



VERIFICATION REPORT

Test Name:	Knee Impact	Revision:	10/1/2001
Sub Test Name:			
ATD Type:	Hybrid 3 - 50th Male		
ATD Serial Number:	064		
Test ID:	Knee Left	Test Date:	2/12/2014
		Test Time:	8:30:57 AM

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

Test Parameters	Test Specifications			Test Results	
Temperature	18.9	--	25.6	20.50 deg C	P
Humidity	10	--	70	13.10 %RH	P
Velocity	2.07	--	2.13	2.098 m/s	P
Resistive Force	-5.780	--	-4.720	-4.728 kN	P

All test parameters are within specifications

Technician: **R. Weil**

Supervisor: **E. Dutton**



VERIFICATION REPORT

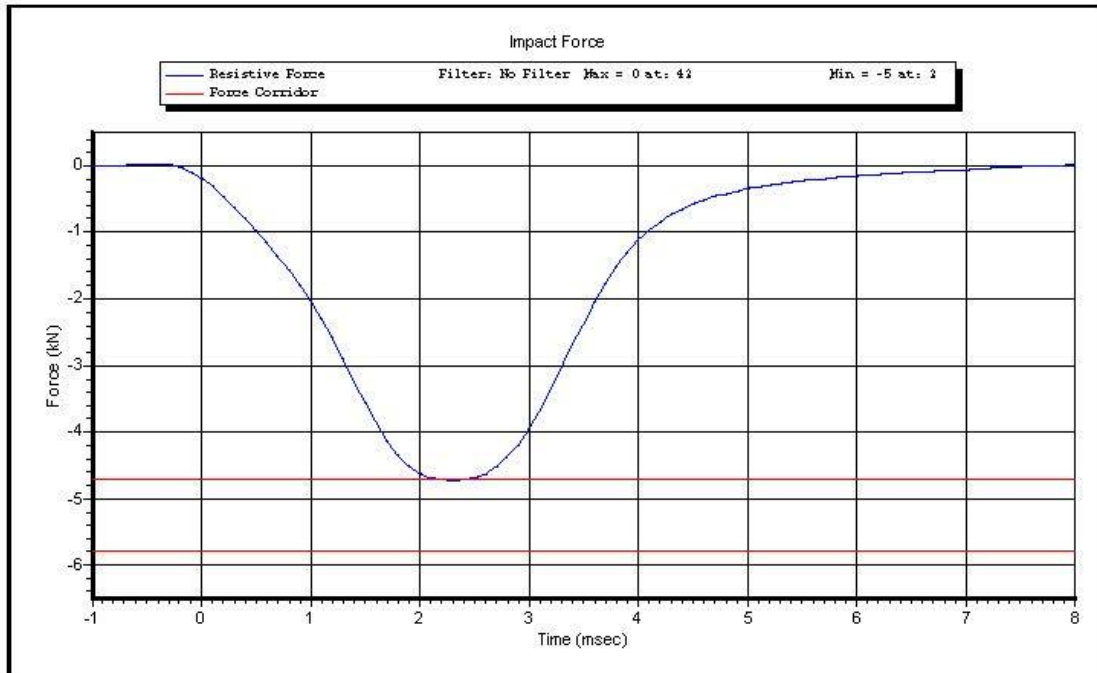
REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD Endevco	Velocity Trap 7231CT	1 C14953	1/11/2014 12/4/2013

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



Test Name:	Knee Impact
Sub Test Name:	
ATD Type:	Hybrid 3 - 50th Male
ATD Serial Number:	064

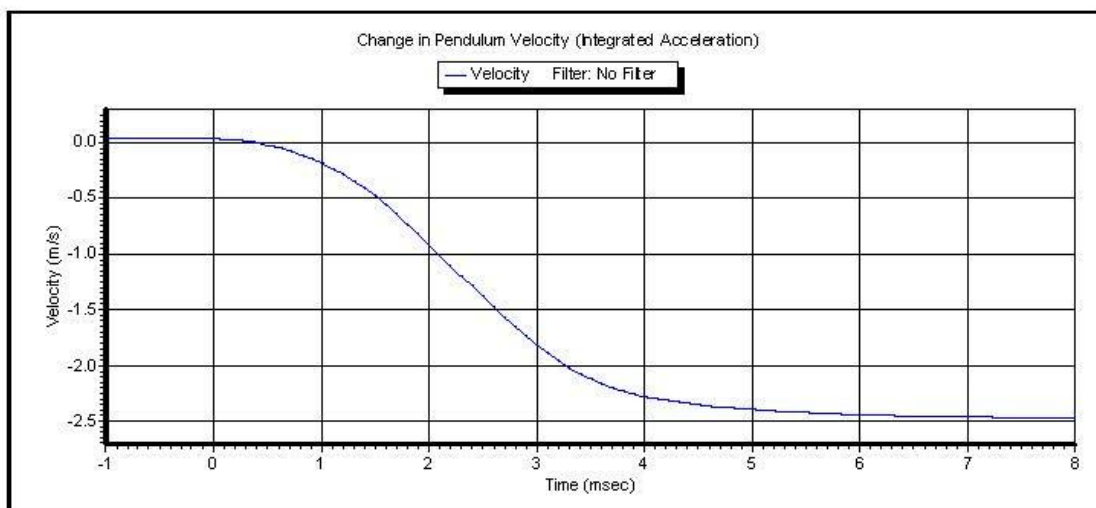
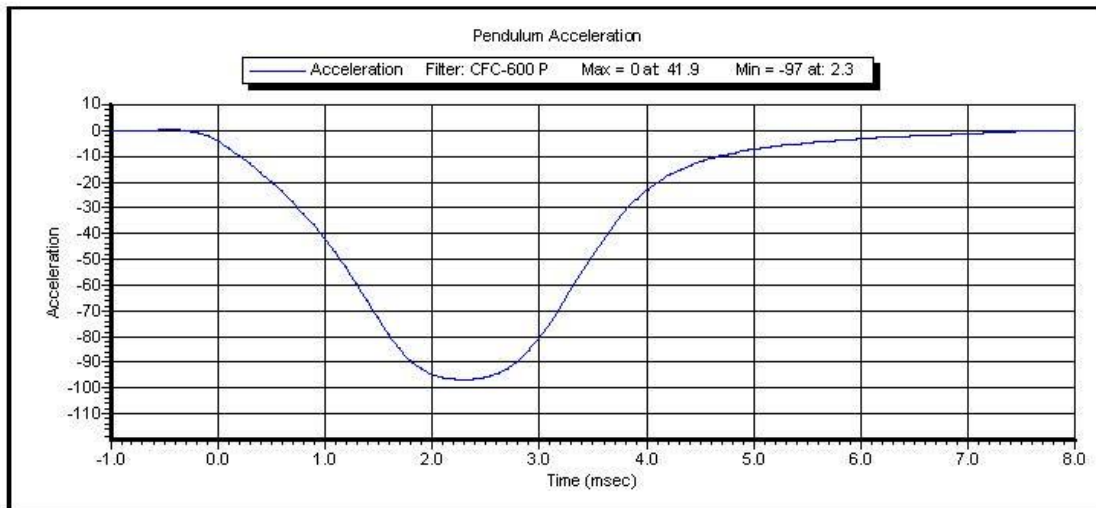


Test ID: **Knee Left**

Test Time: **8:30:57 AM**

Test Date: **2/12/2014**

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Test ID: **Knee Left**

Test Time: **8:30:57 AM**

Test Date: **2/12/2014**

Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0



VERIFICATION REPORT

Test Name:	Knee Impact	Revision:	10/1/2001
Sub Test Name:			
ATD Type:	Hybrid 3 - 50th Male		
ATD Serial Number:	064		
Test ID:	Right Knee	Test Date:	2/12/2014
		Test Time:	8:03:14 AM

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

Test Parameters	Test Specifications			Test Results	
Temperature	18.9	--	25.6	19.70 deg C	P
Humidity	10	--	70	13.10 %RH	P
Velocity	2.07	--	2.13	2.095 m/s	P
Resistive Force	-5.780	--	-4.720	-5.160 kN	P

All test parameters are within specifications

Technician: **R. Weil**

Supervisor: **E. Dutton**



VERIFICATION REPORT

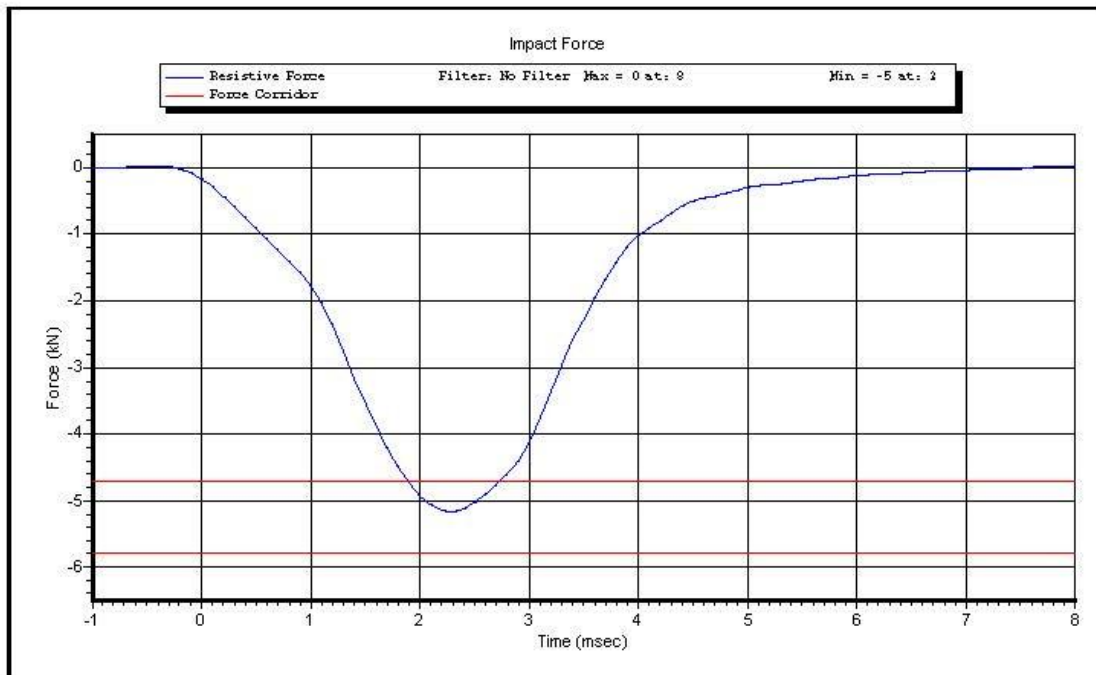
REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD Endevco	Velocity Trap 7231CT	1 C14953	1/11/2014 12/4/2013

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



Test Name:	Knee Impact
Sub Test Name:	
ATD Type:	Hybrid 3 - 50th Male
ATD Serial Number:	064

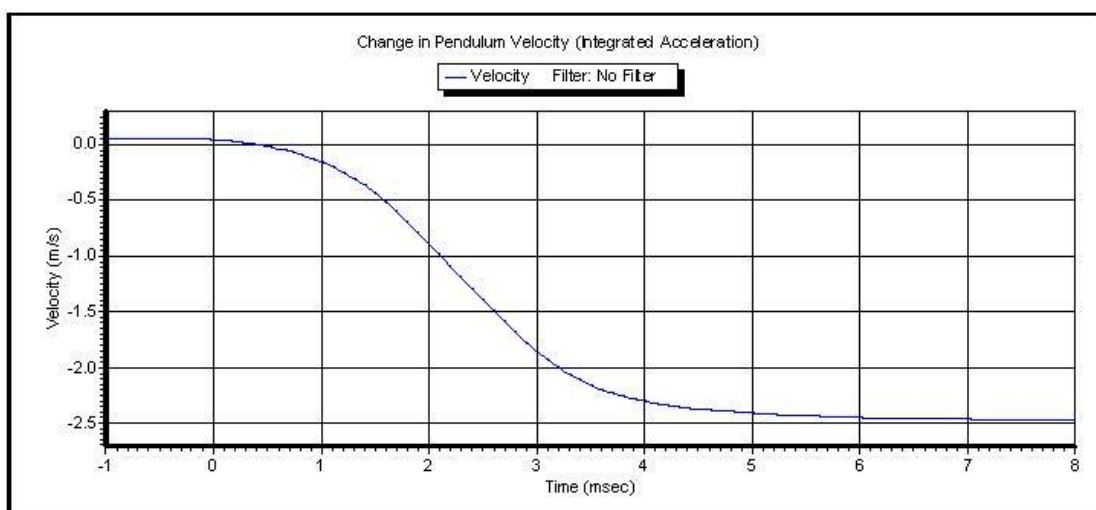
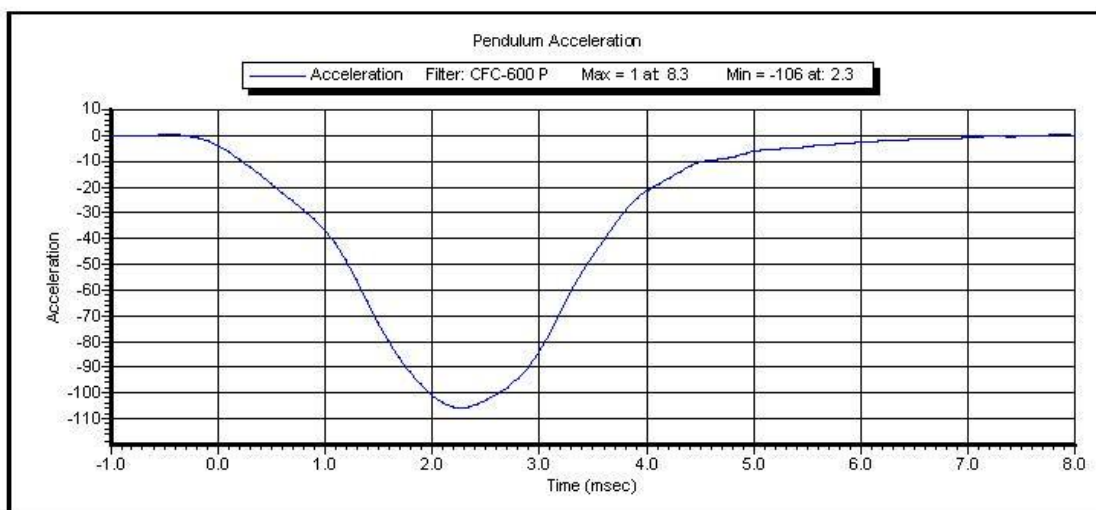


Test ID: **Right Knee**

Test Time: **8:03:14 AM**

Test Date: **2/12/2014**

Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0



Test ID: **Right Knee**

Test Time: **8:03:14 AM**

Test Date: **2/12/2014**

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CALIBRATION TEST RESULTS

POST-TEST

HYBRID III 5TH PERCENTILE FEMALE - PASSENGER ATD

SERIAL NO: 288



External Measurements

5th Female SN 288

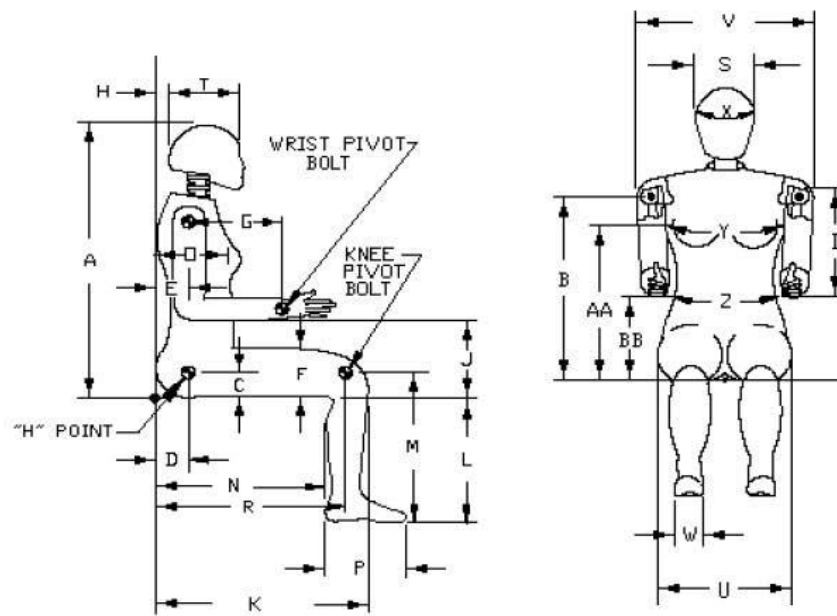
Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	774.7 – 800.1	780	Yes
B	Shoulder Pivot Height	431.8 – 457.2	439	Yes
C	H-Point Height	81.3 – 86.3	83	Yes
D	H-Point from Backline	144.8 – 149.8	146	Yes
E	Shoulder Pivot from Backline	68.6 – 83.8	74	Yes
F	Thigh Clearance	119.4 – 134.6	123	Yes
G	Back of Elbow to Wrist Pivot	243.9 – 259.1	247	Yes
H	Head Back to Backline	43.2 – 48.2	44	Yes
I	Shoulder to Elbow Length	276.8 – 297.2	280	Yes
J	Elbow Rest Height	182.8 – 203.2	188	Yes
K	Buttock to Knee Length	520.7 – 546.1	540	Yes
L	Popliteal Height	355.6 – 376	368	Yes
M	Knee Pivot Height	393.7 – 419.1	398	Yes
N	Buttock Popliteal Length	414 – 439.4	430	Yes
O	Chest Depth without Jacket	175.3 – 190.5	179	Yes
P	Foot Length (right)	218.5 – 233.7	223	Yes
R	Buttock To Knee Pivot Length	457.2 – 482.6	461	Yes
S	Head Breadth	137.1 – 147.3	142	Yes
T	Head Depth	177.8 – 188	181	Yes
U	Hip Breadth	299.7 – 314.9	302	Yes
V	Shoulder Breadth	350.5 – 365.7	358	Yes
W	Foot Breadth	78.8 – 94	82	Yes
X	Head Circumference	528.3 – 548.7	540	Yes
Y	Chest Circumference with Jacket	850.9 – 881.3	855	Yes
Z	Waist Circumference	759.5 – 789.9	781	Yes
AA	Reference Location (Chest Circumference)	332.7 – 358.1	343	Yes
BB	Reference Location (Waist Circumference)	160.1 – 170.2	164	Yes

Technician: M. Geesey

Date: 02/11/2014

Hybrid III 5th Female External Measurements

Reference Diagram





VERIFICATION REPORT

Test Name:	Head Drop	Revision:	7/15/2002
Sub Test Name:			
ATD Type:	Hybrid 3 - 5th Female		
ATD Serial Number:	288		
Test ID:	Head Drop	Test Date:	2/13/2014
		Test Time:	3:46:25 PM

Component Part Number	Component Serial Number
Head Skin - 78051-228	912

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	21.30 deg C P
Humidity	10 -- 70	18.60 %RH P
Resultant Acceleration	250 -- 300	270.3 G's P
Oscillation	0 -- 10	0.0 % P
Lateral Acceleration	-15 -- 15	-9.6 G's P

All test parameters are within specifications

Technician: **M. Goehle**

Supervisor: **E. Dutton**



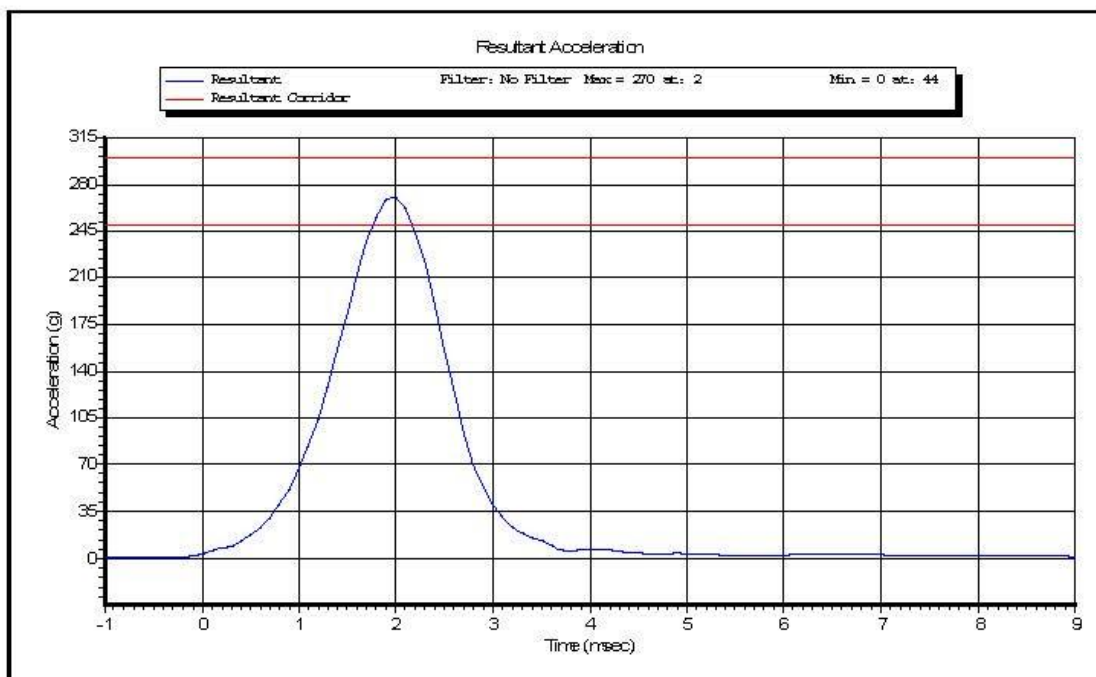
VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Endevco	7264-2000	P51682	11/21/2013
Endevco	7264-2000	P51685	11/21/2013
Endevco	7264-2000	P51699	11/21/2013



Test Name:	Head Drop
Sub Test Name:	
ATD Type:	Hybrid 3 - 5th Female
ATD Serial Number:	288

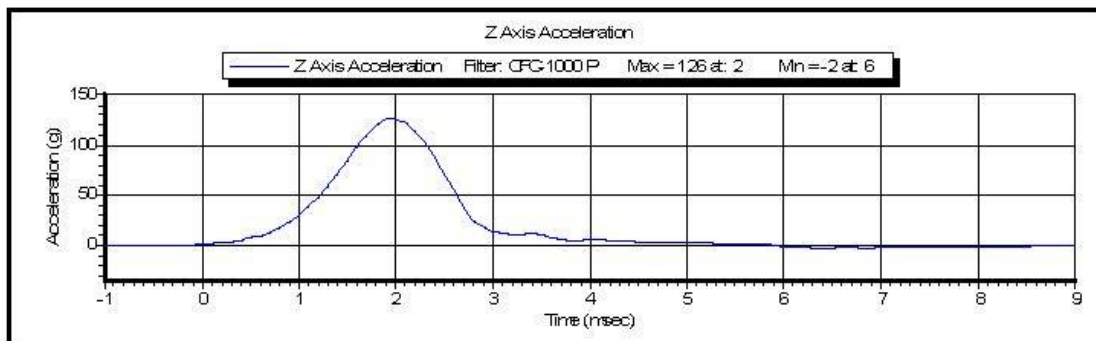
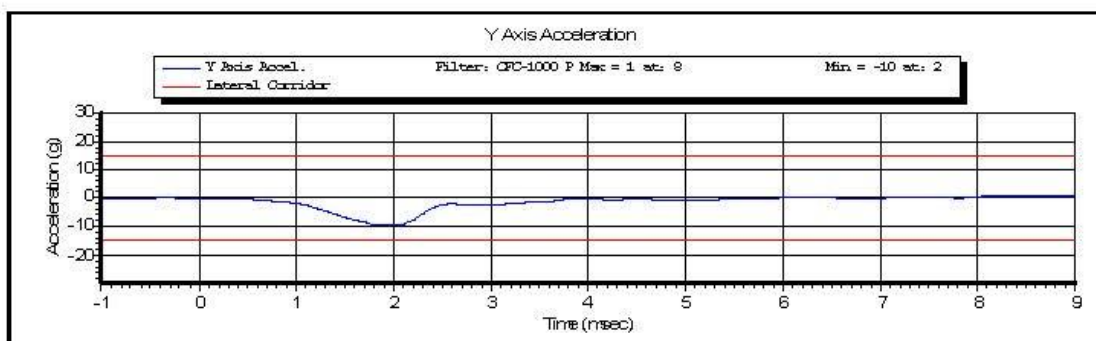
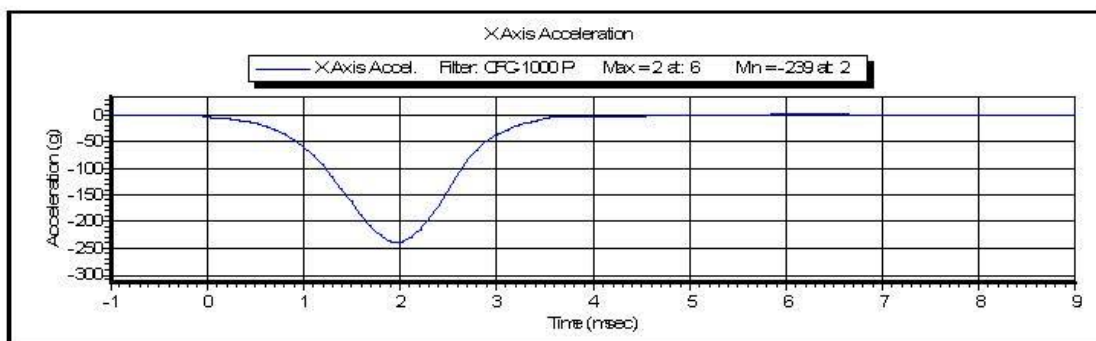


Test ID: **Head Drop**

Test Time: **3:46:25 PM**

Test Date: **2/13/2014**

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Test ID: **Head Drop**

Test Time: **3:46:25 PM**

Test Date: **2/13/2014**

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VERIFICATION REPORT

Test Name:	Neck Extension	Revision:	7/15/2002
Sub Test Name:			
ATD Type:	Hybrid 3 - 5th Female		
ATD Serial Number:	288		
Test ID:	Neck Extension	Test Date:	2/13/2014
		Test Time:	3:01:27 PM

Component Part Number	Component Serial Number
Neck - 880105-255	7121

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.40 deg C P
Humidity	10 -- 70	18.30 %RH P
Velocity	5.95 -- 6.19	6.033 m/s P
Pendulum Impulse at 10 ms	1.5 -- 1.9	1.83 m/s P
Pendulum Impulse at 20 ms	3.1 -- 3.9	3.61 m/s P
Pendulum Impulse at	4.6 -- 5.6	5.14 m/s P
D Plane Rotation	99 -- 114	104.5 degrees P
Moment During Rotation Interval	-65 -- -53	-60.5 Nm P
Moment Decay to -10.0 Nm	94 -- 114	98.3 ms P

All test parameters are within specifications

Technician: **M. Goehle**
Supervisor: **E. Dutton**



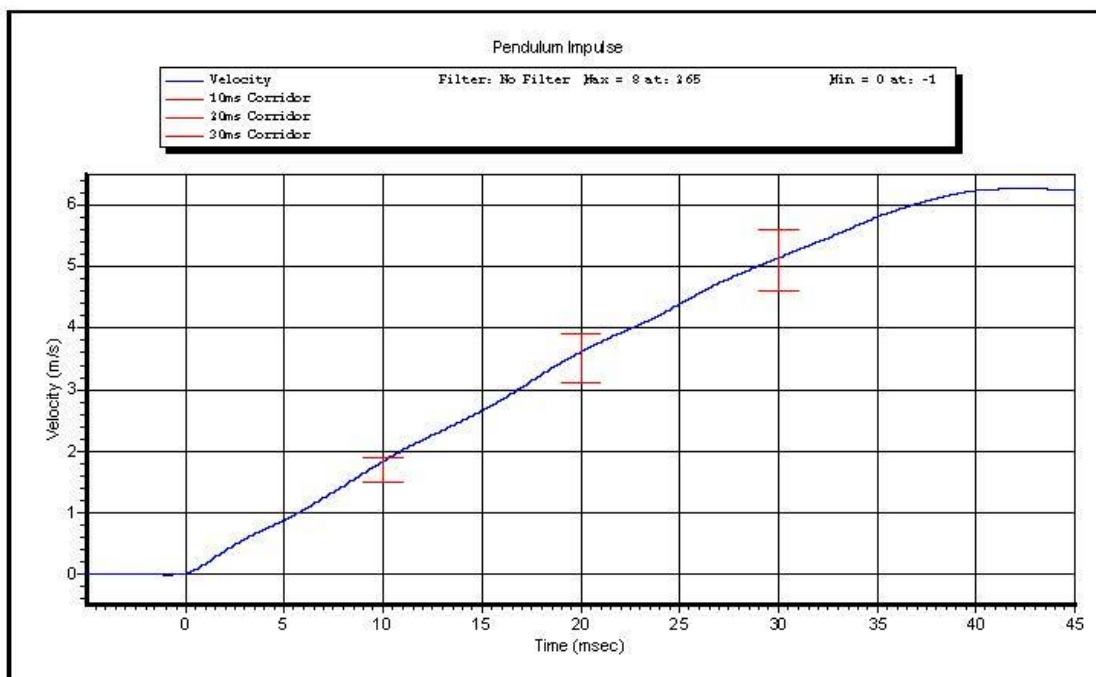
VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2014
Endevco	7231CT	AH5F3	10/16/2013
DentonATD	78051-342	PENDULUM POT	1/31/2014
DentonATD	78051-342	CONDYLE POT	1/31/2014
Denton	1716A	LC-2206My	5/23/2013
Denton	1716A	LC-2206Fx	5/23/2013



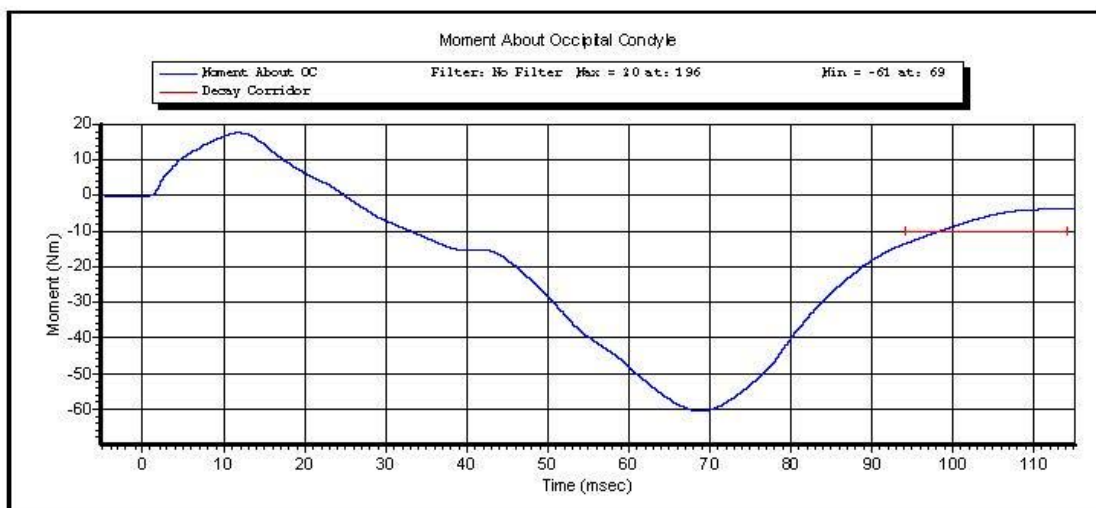
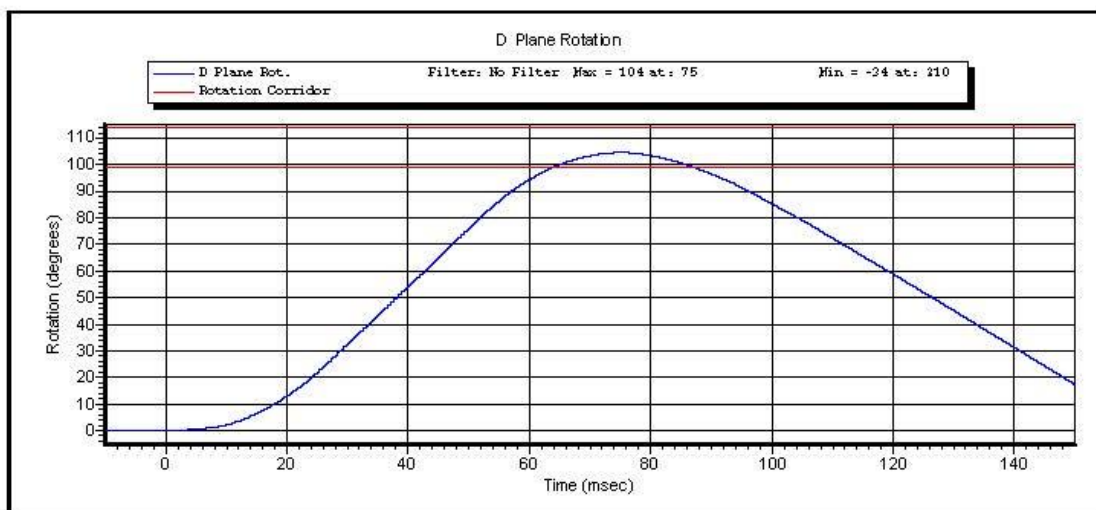
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Sub Test Name:	
ATD Type:	Hybrid 3 - 5th Female
ATD Serial Number:	288



Test ID: Neck Extension Test Time: 3:01:27 PM

Test Date: 2/13/2014

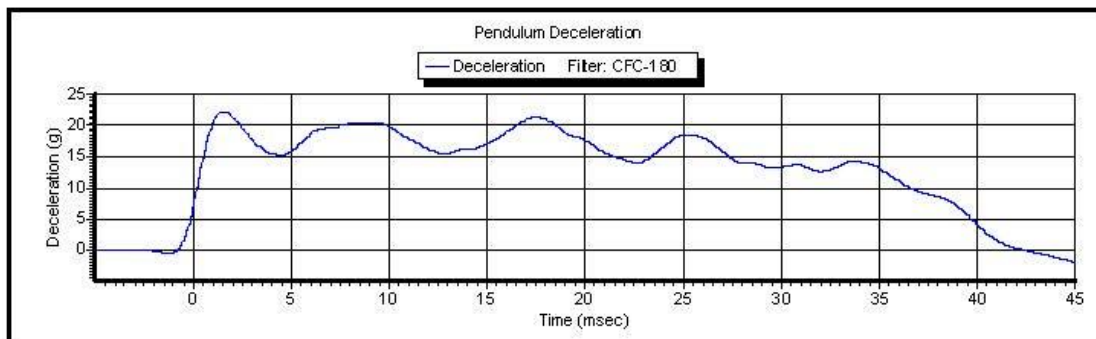
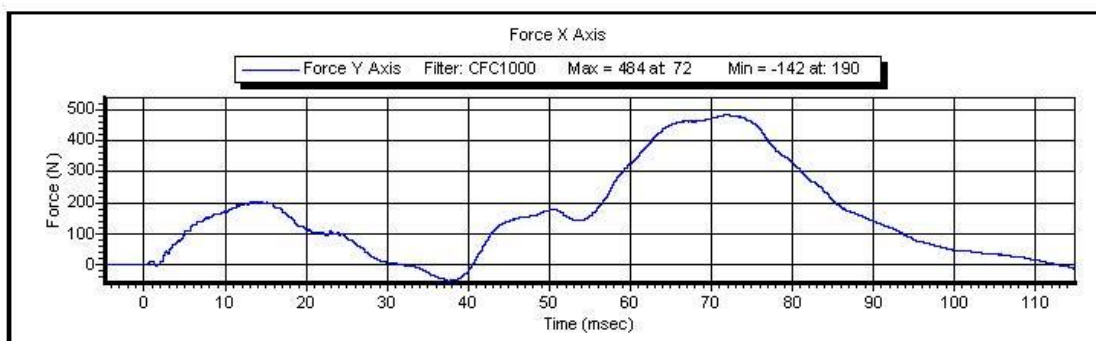
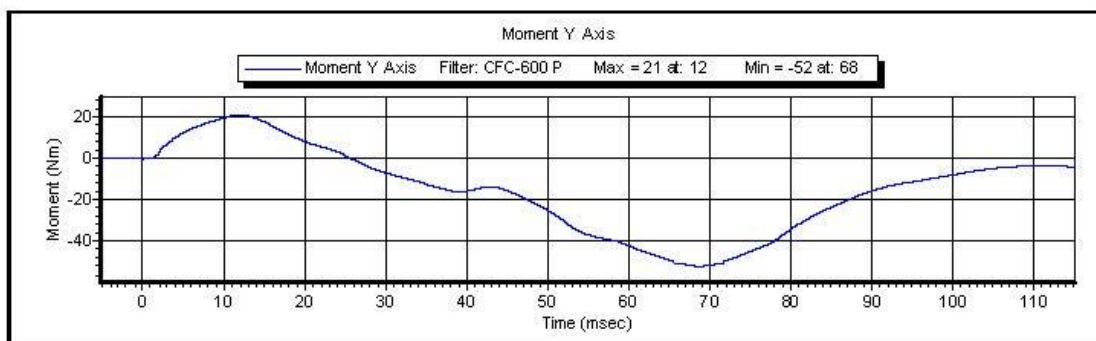
Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0



Test ID: Neck Extension Test Time: 3:01:27 PM

Test Date: 2/13/2014

Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0



Test ID: **Neck Extension** Test Time: **3:01:27 PM**

Test Date: **2/13/2014**

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VERIFICATION REPORT

Test Name:	Neck Flexion	Revision:	7/15/2002
Sub Test Name:			
ATD Type:	Hybrid 3 - 5th Female		
ATD Serial Number:	288		
Test ID:	Neck Flexion	Test Date:	2/13/2014
		Test Time:	2:30:19 PM

Component Part Number	Component Serial Number
Neck - 880105-255	7121
Head Skin - 880105-109	912

Test Parameters	Test Specifications	Test Results
Temperature	21 -- 22	21.60 deg C P
Humidity	10 -- 70	17.90 %RH P
Velocity	6.89 -- 7.13	6.987 m/s P
Pendulum Impulse at 10 ms	2.1 -- 2.5	2.15 m/s P
Pendulum Impulse at 20 ms	4 -- 5	4.3 m/s P
Pendulum Impulse at 30 ms	5.8 -- 7.0	6.08 m/s P
D Plane Rotation	-91 -- -77	-81.1 degrees P
Moment During Rotation Interval	69 -- 83	76.1 Nm P
Moment Decay to 10.0 Nm	80 -- 100	89.6 ms P

All test parameters are within specifications

Technician: **M. Geesey**
Supervisor: **E. Dutton**



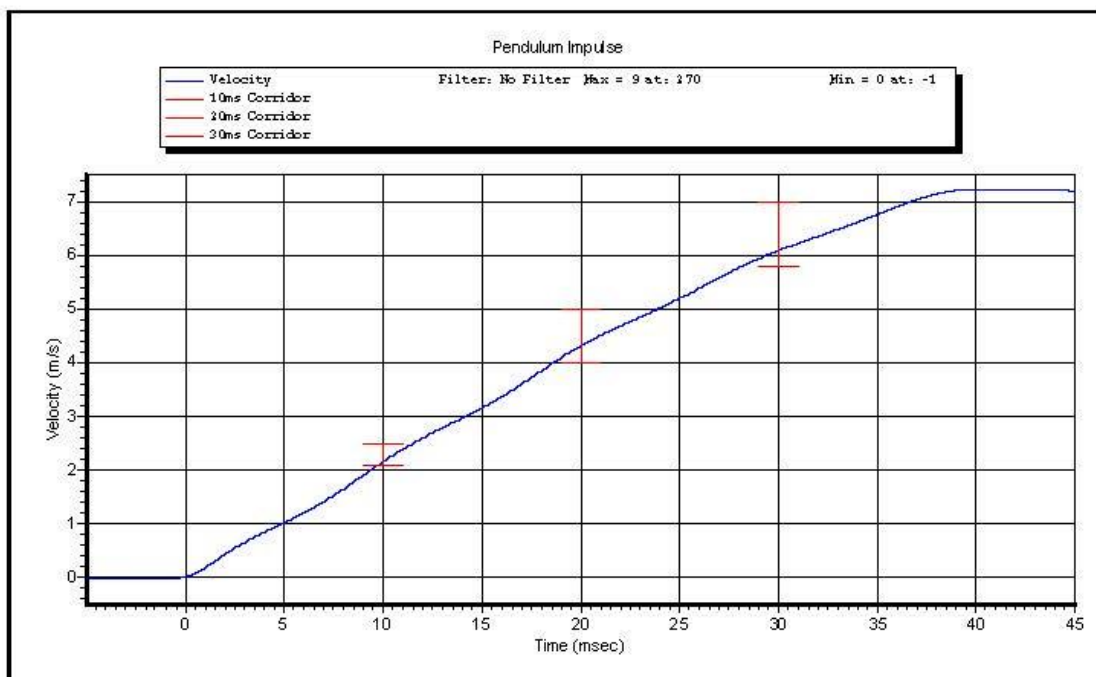
VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2014
Endevco	7231CT	AH5F3	10/16/2013
DentonATD	78051-342	PENDULUM POT	1/31/2014
DentonATD	78051-342	CONDYLE POT	1/31/2014
Denton	1716A	LC-2206My	5/23/2013
Denton	1716A	LC-2206Fx	5/23/2013



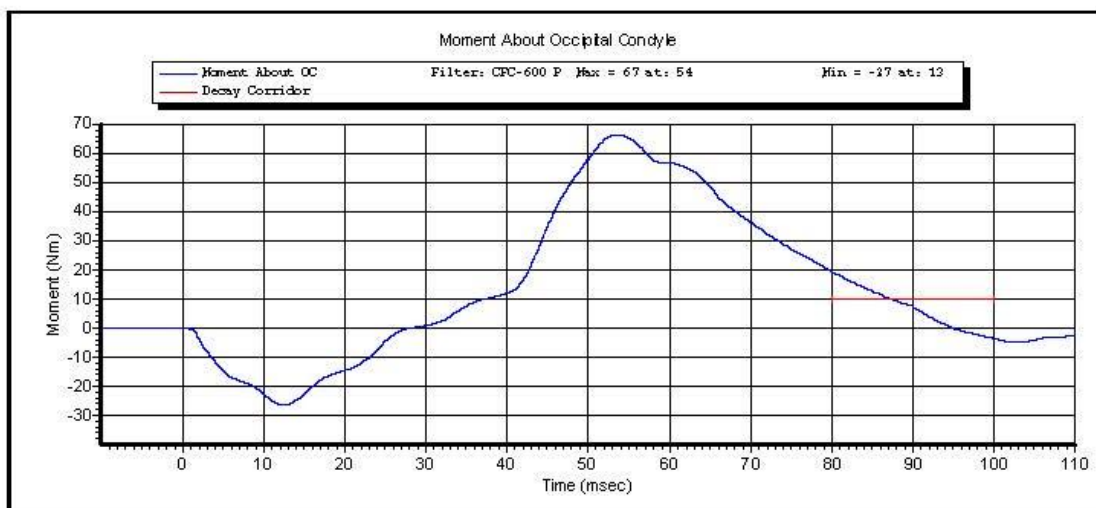
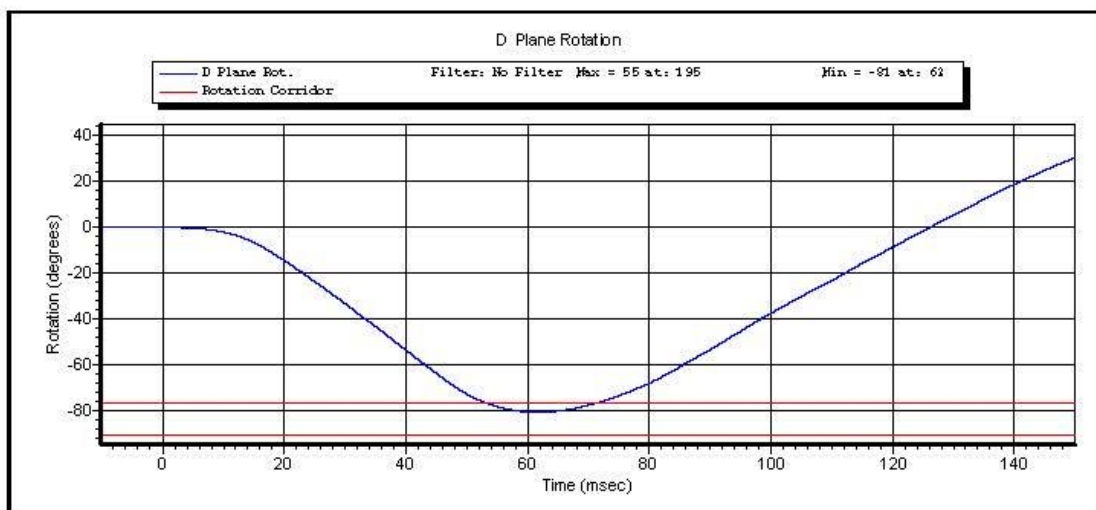
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Sub Test Name:	
ATD Type:	Hybrid 3 - 5th Female
ATD Serial Number:	288



Test ID: Neck Flexion Test Time: 2:30:19 PM

Test Date: 2/13/2014

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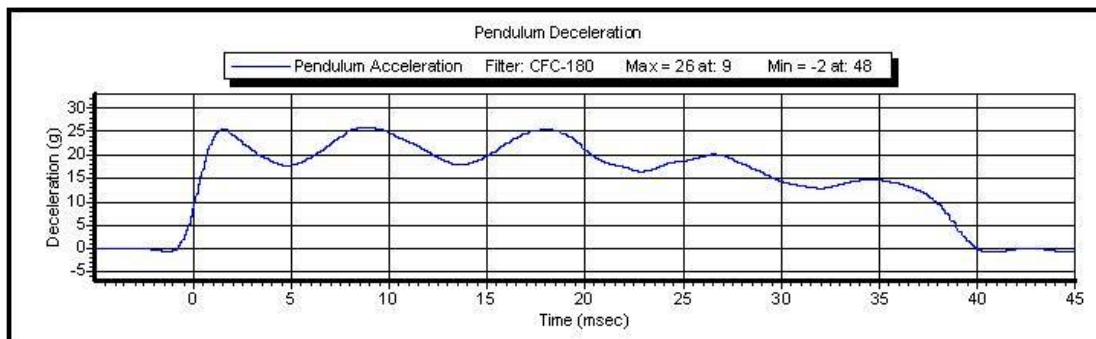
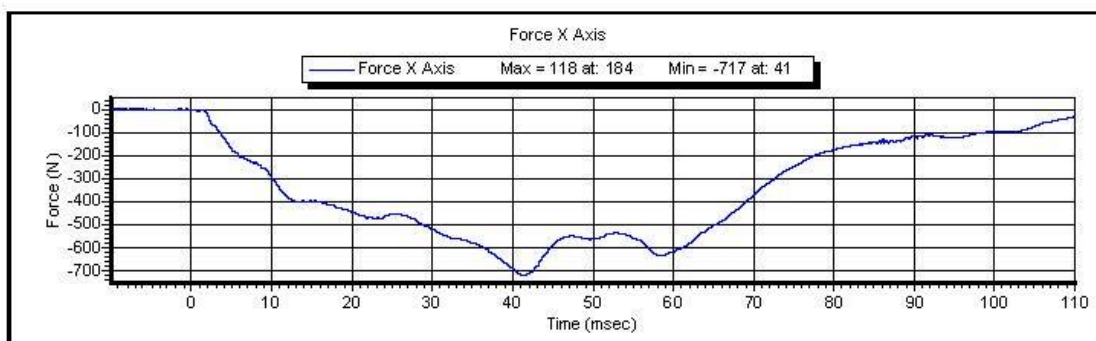
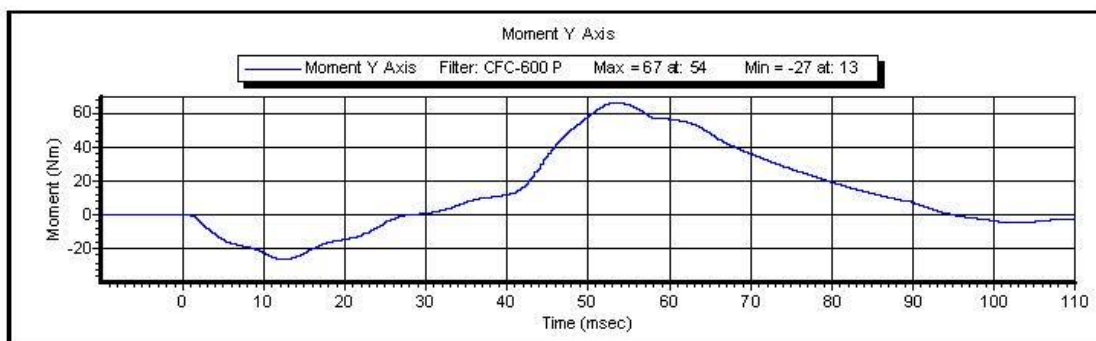


Test ID: **Neck Flexion**

Test Time: **2:30:19 PM**

Test Date: **2/13/2014**

Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0



Test ID: **Neck Flexion**

Test Time: **2:30:19 PM**

Test Date: **2/13/2014**

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Torso Flexion

Part 5720 HIII 5% Female

ATD Serial No: 288

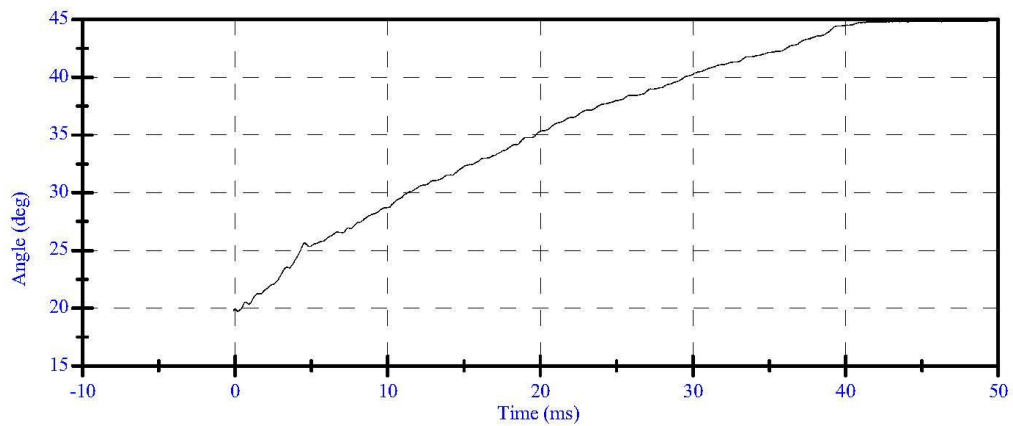
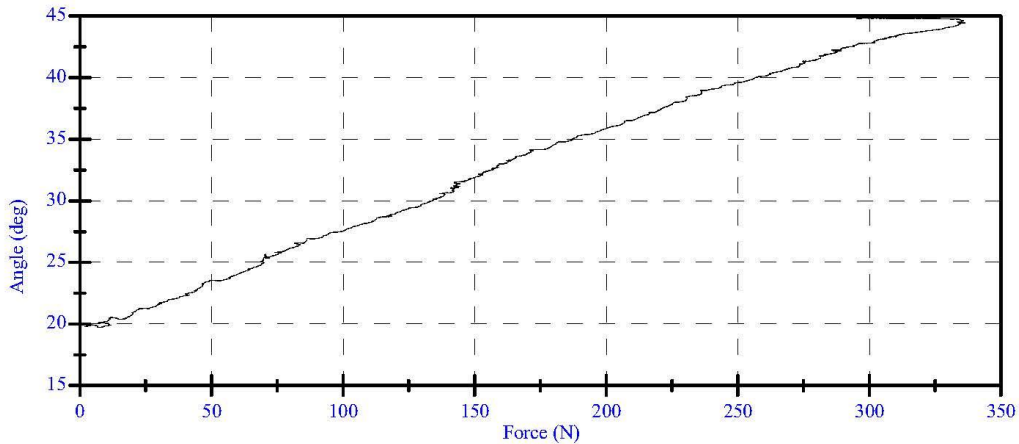
Laboratory Supervisor: E. Dutton

Date: 2/13/2014

Laboratory Technician: M. Goehle

TEST PARAMETER	SPECIFICATION	TEST RESULTS	STATUS
Lab Temperature:	18.9-25.6 C	22.1 C	Passed
Lab Humidity:	10-70 %	24.3 %	Passed
Initial Angle:	0.00-20.00 Deg	19.7 Deg	Passed
Force at 45 Deg	320.00-390.00 N	334.46 N	Passed
Return Angle	8 Deg Max from Initial	22.9 deg	Passed

LUMBAR SPINE FLEXION TEST





VERIFICATION REPORT

Test Name:	Thorax Impact	Revision:	7/15/2002
Sub Test Name:			
ATD Type:	Hybrid 3 - 5th Female		
ATD Serial Number:	288		
Test ID:	Thorax Impact	Test Date:	2/11/2014
		Test Time:	12:11:19 PM

Component Part Number	Component Serial Number
Chest Jacket - 880105-355-E	DG8843

Test Parameters	Test Specifications			Test Results	
Temperature	20.6	--	22.2	21.40 deg C	P
Humidity	10	--	70	15.80 %RH	P
Velocity	6.59	--	6.83	6.815 m/s	P
Sternum Displacement	-58	--	-50	-52.4 mm	P
Force During Displacement Interval	-4400	--	-3900	-4173.7 N	P
Force During -18mm to -50mm Displacem	-4600	--	0	-4170.7 N	P
Hysteresis	69	--	85	72.4 %	P

All test parameters are within specifications

Technician: **M. Geesey**

Supervisor: **E. Dutton**



VERIFICATION REPORT

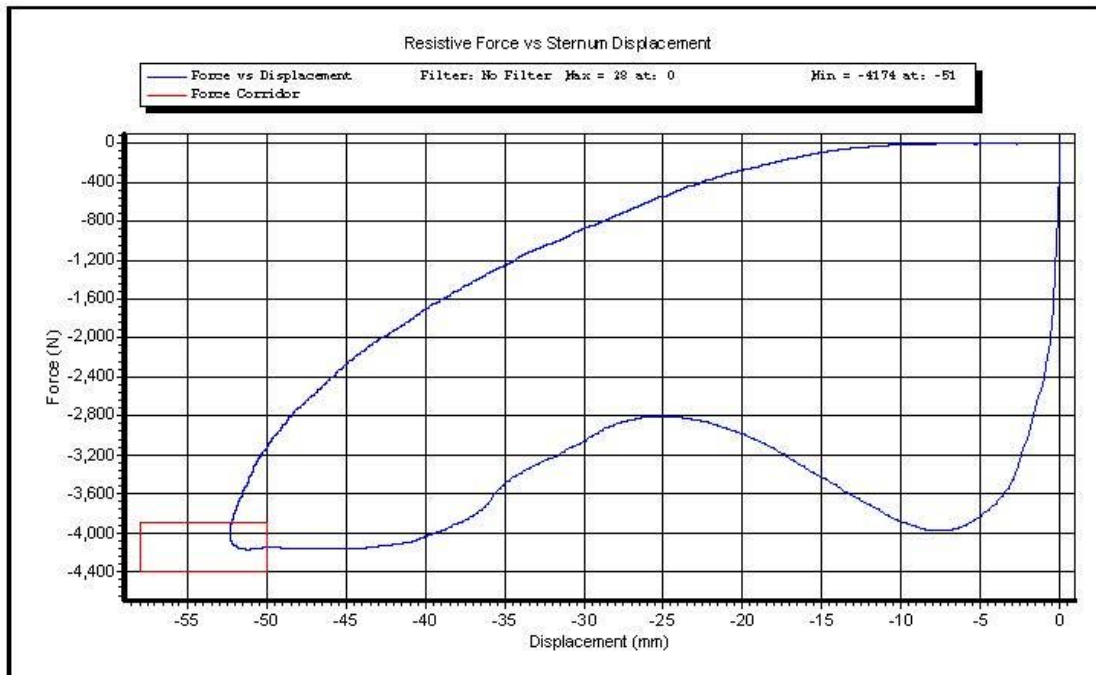
REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2014
Endevco	7231CT	C14953	12/4/2013
SERVO	14 CB1-2897	DS-288	11/21/2013

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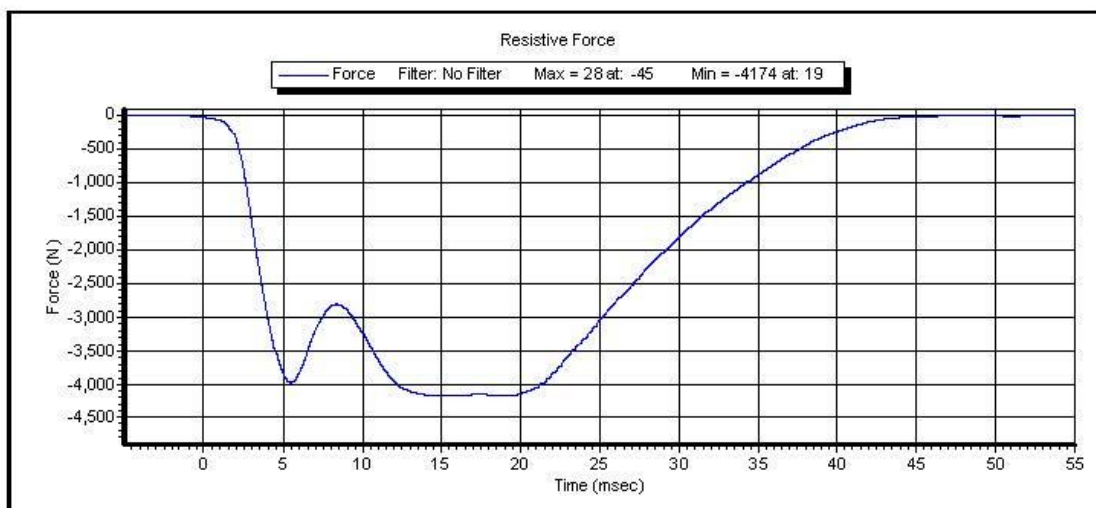
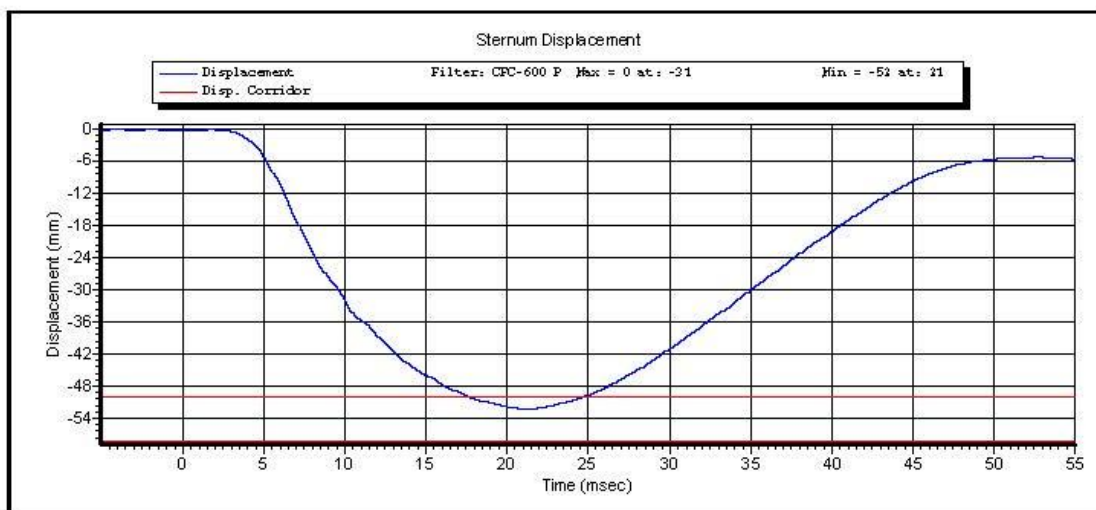
Test Name:	Thorax Impact
Sub Test Name:	
ATD Type:	Hybrid 3 - 5th Female
ATD Serial Number:	288



Test ID: Thorax Impact Test Time: 12:11:19 PM

Test Date: 2/11/2014

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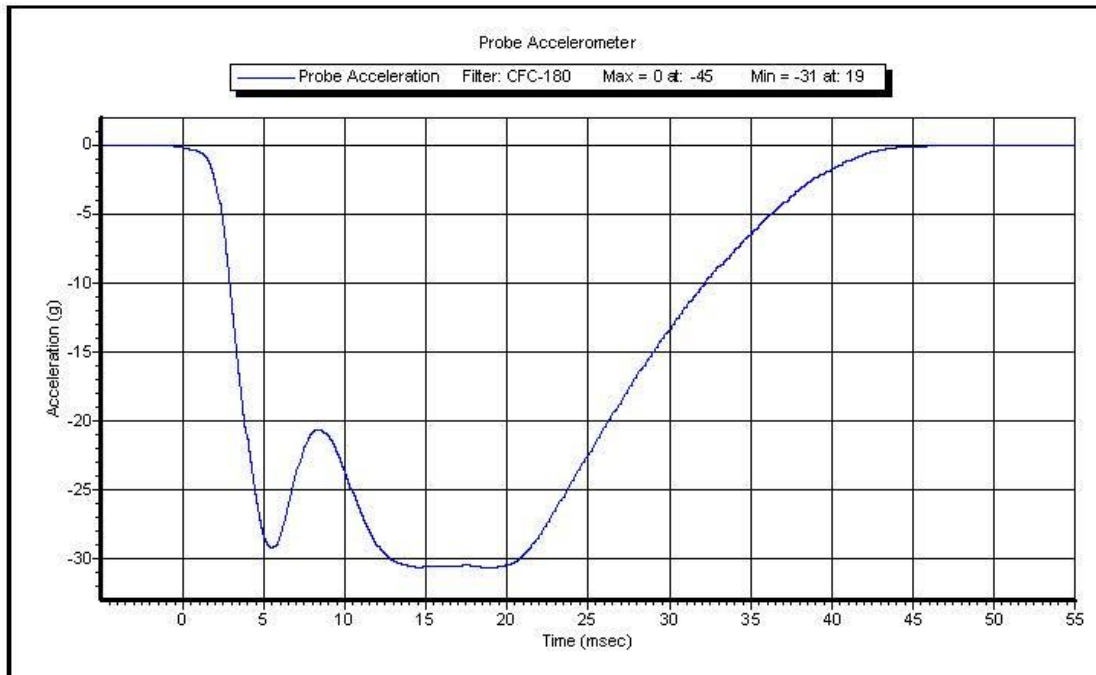


Test ID: **Thorax Impact**

Test Time: **12:11:19 PM**

Test Date: **2/11/2014**

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Test ID: **Thorax Impact**

Test Time: **12:11:19 PM**

Test Date: **2/11/2014**

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VERIFICATION REPORT

Test Name:	Knee Impact	Revision:	7/15/2002
Sub Test Name:			
ATD Type:	Hybrid 3 - 5th Female		
ATD Serial Number:	288		
Test ID:	Knee Impact Left	Test Date:	2/11/2014
		Test Time:	2:41:54 PM

Component Part Number	Component Serial Number
Knee Skin - 880105-508	1729

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	21.40 deg C P
Humidity	10 -- 70	15.50 %RH P
Velocity	2.07 -- 2.13	2.110 m/s P
Resistive Force	-4060 -- -3450	-3533.1 N P

All test parameters are within specifications

Technician: **M. Geesey**

Supervisor: **E. Dutton**



VERIFICATION REPORT

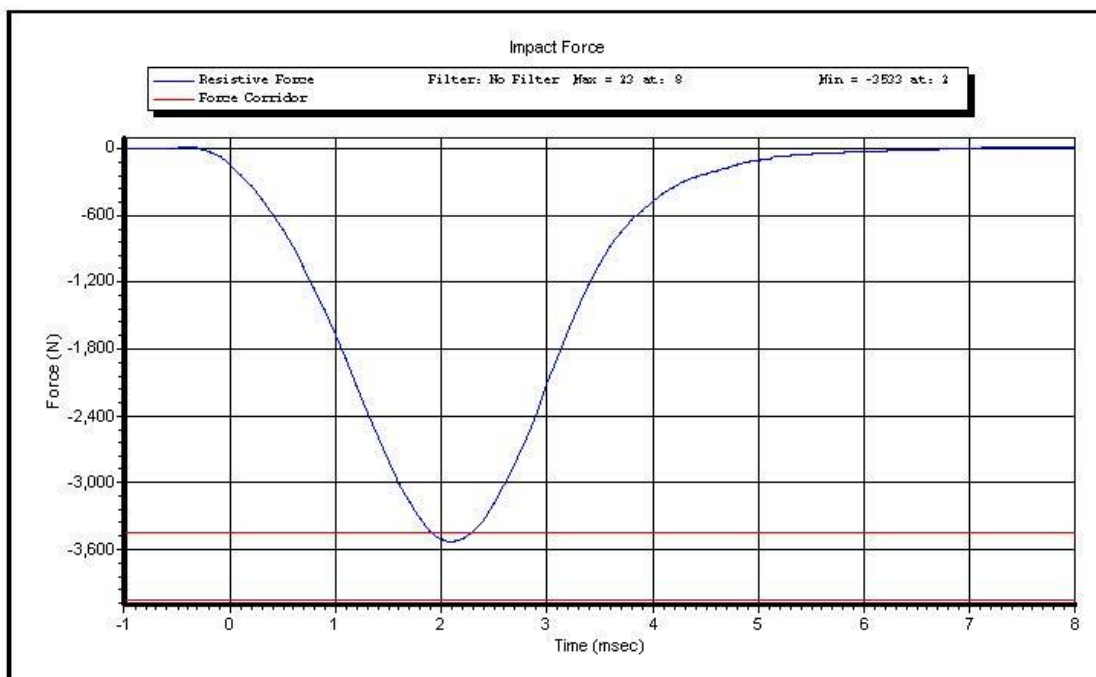
REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD Endevco	Velocity Trap 7231CT	1 C14953	1/11/2014 12/4/2013

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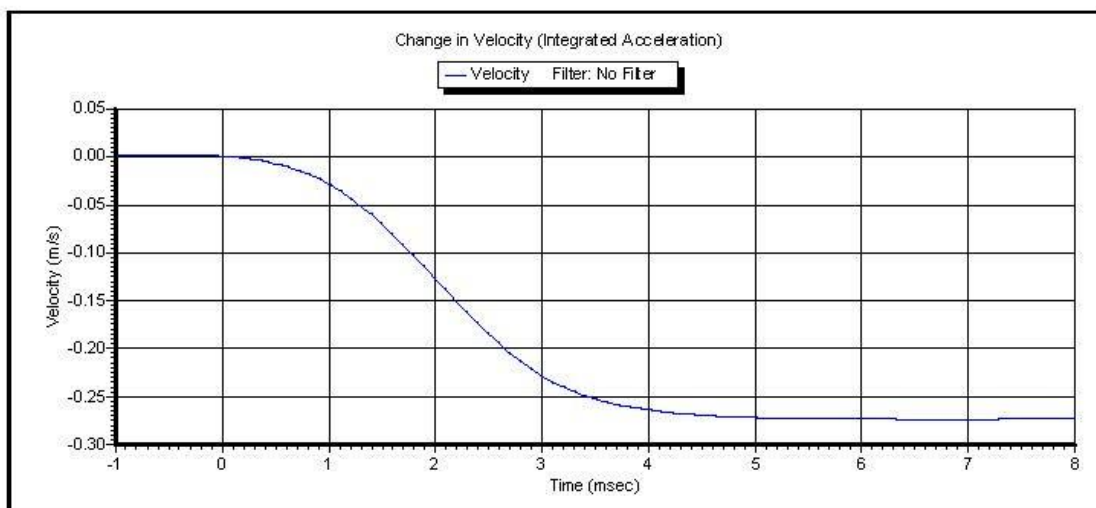
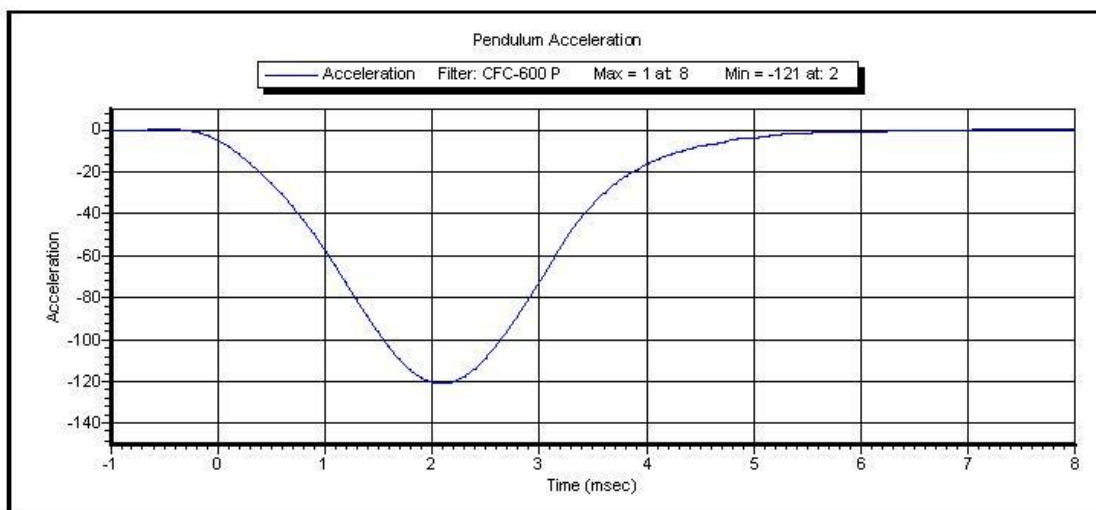


Test Name:	Knee Impact
Sub Test Name:	
ATD Type:	Hybrid 3 - 5th Female
ATD Serial Number:	288



Test ID: **Knee Impact Left** Test Time: **2:41:54 PM**
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Test Date: **2/11/2014**



Test ID: **Knee Impact Left** Test Time: **2:41:54 PM**

Test Date: **2/11/2014**

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VERIFICATION REPORT

Test Name:	Knee Impact	Revision:	7/15/2002
Sub Test Name:			
ATD Type:	Hybrid 3 - 5th Female		
ATD Serial Number:	288		
Test ID:	Knee Impact Right	Test Date:	2/11/2014
		Test Time:	2:31:41 PM

Component Part Number	Component Serial Number
Knee Skin - 880105-508	1728

Test Parameters	Test Specifications	Test Results
Temperature	18.9 -- 25.6	21.20 deg C P
Humidity	10 -- 70	15.40 %RH P
Velocity	2.07 -- 2.13	2.103 m/s P
Resistive Force	-4060 -- -3450	-3453.1 N P

All test parameters are within specifications

Technician: **M. Geesey**

Supervisor: **E. Dutton**



VERIFICATION REPORT

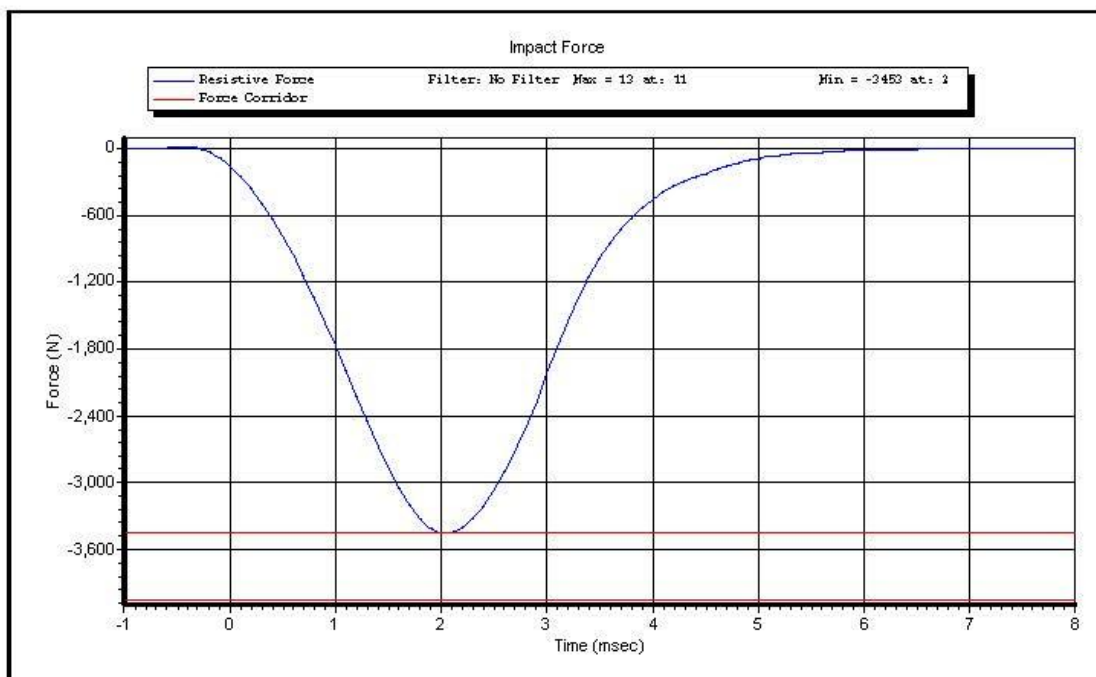
REFERENCE EQUIPMENT

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DentonATD Endevco	Velocity Trap 7231CT	1 C14953	1/11/2014 12/4/2013

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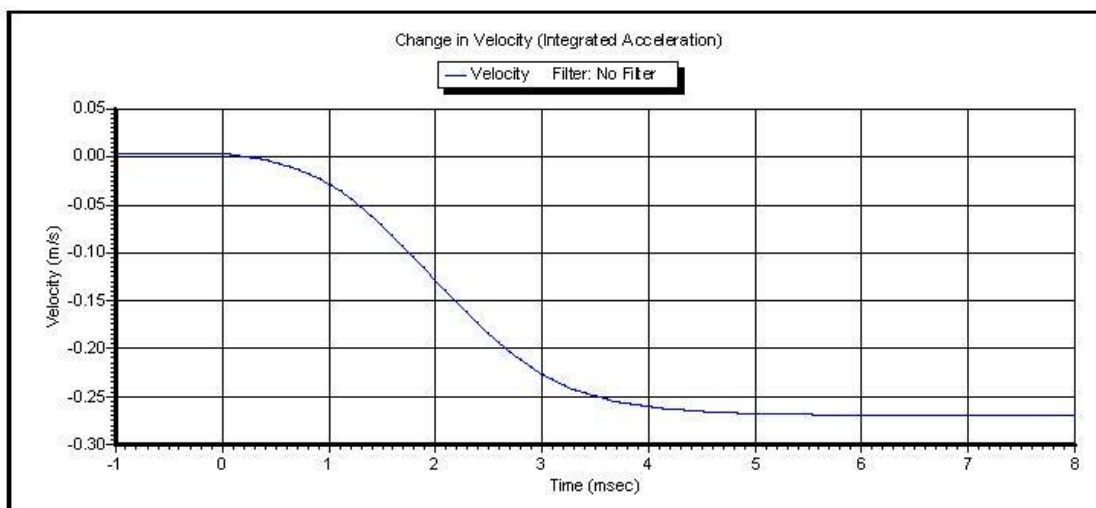
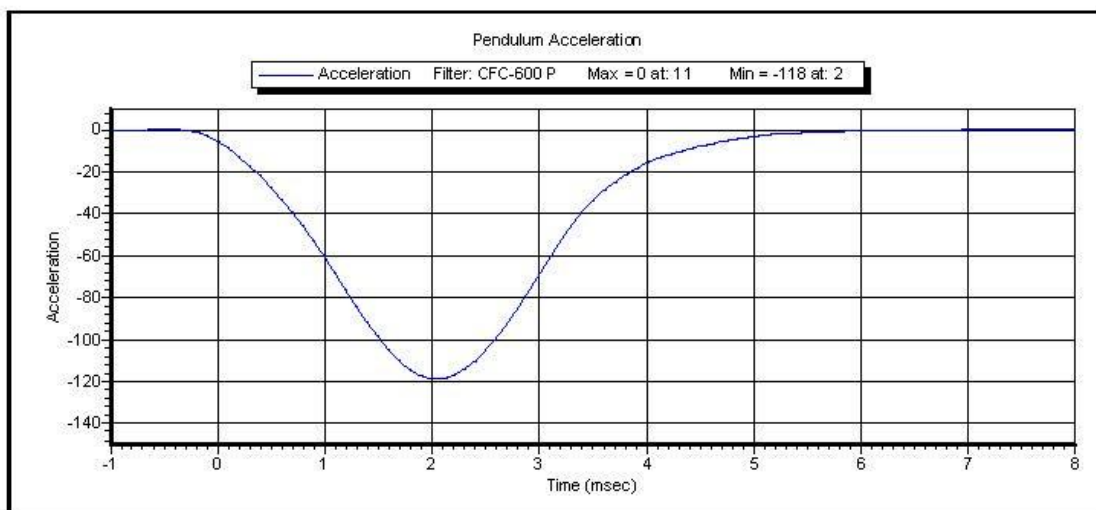


Test Name:	Knee Impact
Sub Test Name:	
ATD Type:	Hybrid 3 - 5th Female
ATD Serial Number:	288



Test ID: **Knee Impact Right** Test Time: **2:31:41 PM**
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Test Date: **2/11/2014**



Test ID: **Knee Impact Right** Test Time: **2:31:41 PM**

Test Date: **2/11/2014**

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