REPORT NUMBER: NCAP-MGA-2004-001

NEW CAR ASSESSMENT PROGRAM
FRONTAL BARRIER IMPACT TEST

Ford Motor Company
2004 Ford Taurus SE
NHTSA NUMBER: M40201

PREPARED BY:
MGA RESEARCH CORPORATION
5000 WARREN ROAD
BURLINGTON, WI 53105

Test Date: October 16, 2003

Report Date: December 8, 2003

FINAL REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
RULEMAKING
OFFICE OF CRASHWORTHINESS STANDARDS
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Manager, New Car Assessment Program

_____
Date of Acceptance

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COTR, NCAP Frontal Impact Program

_____
Date of Acceptance

Technical Report Documentation Page

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16. Abstract

A 35.1 mph (56.5 km/h) frontal barrier impact was conducted on a 2004 Ford Taurus SE at MGA Research Corporation on October 16, 2003. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and foot well intrusion performance. The impact velocity was 56.5 km/h. The ambient temperature at the barrier face at the time of impact was 21 degrees Celsius. The vehicle's maximum post test static crush is 482 mm located at the vehicle left side. The test vehicle is equipped with a 3-point continuous belt system and an airbag in both front outboard seating positions. With respect to FMVSS 208 "Occupant Crash Protection", the occupant injury criteria summary is as follows:

Measurement Description	Units	Threshold	Driver ATD	Pass. ATD
Head Injury Criteria (HIC)	N/A	1000	512	254
Max. Thorax Accel. (3msec Clip)	G's	60	43	42
Left Femur force	Newton	10009	-3641	-2959
Right Femur force	Newton	10009	-5255	-2429

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SECTION 1

PURPOSE AND SUMMARY OF TEST

PURPOSE

This 56.5 kph frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under contract number DTNH22-01-D-12005. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for an impact in excess of the current 48.3 kph requirements.

SUMMARY

A load cell barrier consisting of 30 load cells was impacted by a 2004 Ford Taurus SE at a velocity of 56.5 kph. The test was performed at MGA Research Corporation on October 16, 2003. Pre-and post-test photographs of the vehicle and dummies can be found in Appendix A.

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

Two Part 572E, 50th percentile male anthropomorphic test devices (ATDs), were placed in the driver and right-front passenger seating positions according to dummy placement instructions specified in the Laboratory Indicant Test Procedure.

Both ATDs were fully instrumented with head, chest and pelvis tri-axial accelerometers, chest displacement potentiometer, upper neck transducers, right/left femur load cells, and lower leg instrumentation. The driver (position 1) ATD (Serial No. 065) and right-front passenger (position 2) ATD (Serial No. 066) were calibrated previous to this test. Certification details, along with instrumentation calibration data, are found in Appendix C.

The 148 channels of data were recorded on an on-board data acquisition system. Appendix B contains the vehicle, load cell barrier and dummy response data traces.

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

The maximum static crush of the vehicle was 482 mm and both the driver and passenger side doors remained closed and latched during the impact event and were operable after the impact.

The driver's head and chest contacted the airbag. The driver's head also contacted the headrest. The driver's knees contacted the bolster. The driver's abdomen contacted the airbag. The passenger's head, chest and abdomen contacted the airbag. The passenger's head contacted the headrest. The passenger's knees contacted the glove box.

The occupant data is summarized below:

ATD position	HIC	Clip (g)	Chest Disp. (mm)	Left Femur (N)	Right Femur (N)	Belt Spool (mm)
Driver	512	43	-27.7	-3641	-5255	*
Passenger	254	42	-22.0	-2959	-2429	*

* Not recorded at vehicle manufacturer's request.

SECTION 2

OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

Test Vehicle: 2004 Ford Taurus SE
Test Program: 35mph Frontal Impact

NHTSA No.: M40201
Test Date: 10/16/03

CONVERSION FACTORS USED IN THIS REPORT*

Quantity	Typical Application	English Units	Metric Unit	Multiply By
Mass	Vehicle Weight	lb	kg	0.4536
Linear Velocity	Impact Velocity	mile/h	km/h	1.609
Length or Distance	Measurements	in	mm	25.4
Volume	Fuel Systems	gal	liter	3.785
Volume	Small Fluids	oz	mL	29.573
Pressure	Tire Pressure	lbf/in^2	kPa	7.0
Volume	Liquid	gal	liter	3.785
Temperature	General Use	°F	°C	=(tf -32)/1.8
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf/ft	Nm	1.355

*Based on the Recommended Practice in SAE J916, May 85

DATA SHEET NO. 1
CRASH TEST SUMMARY

Test Vehicle: 2004 Ford Taurus SE
Test Program: 35mph Frontal Impact
NHTSA No.: M40201
Test Date: 10/16/03

PRIMARY IMPACT DATA

Measured Parameter	Units	Value
Velocity at Impact	km/hr	56.5
Test Weight	kg	1784.4
Average Rebound	mm	711
Maximum Static Crush	mm	482
Impact Angle	degrees	0

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Passenger
Front Door Opening	Door remained closed and latched; Door opened without tools	Door remained closed and latched; Door opened without tools
Rear Door Opening	Door remained closed and latched; Door opened without tools	Door remained closed and latched; Door opened without tools
Seat Track Shift (mm)	0	0
Seat Back Failure	None	None

TEST DUMMY INFORMATION

Description	Driver	Passenger
Dummy Type / Serial No.	H III 50th / 065	H III 50th / 066
Head Contact	Airbag, Headrest	Airbag, Headrest
Chest Contact	Airbag	Airbag
Abdomen Contact	Airbag	Airbag
Left Knee Contact	Knee Bolster	Glove Box
Right Knee Contact	Knee Bolster	Glove Box

16mm MOVIE COVERAGE

High Speed	16
Real Time	1
Total	17

Driver ATD Sensors	42
Passenger ATD Sensors	42
Belt Assessment Sensors	2
Vehicle Structure Accelerometers	9
Rigid Barrier Load Cells	6
Total	101

DATA SHEET NO. 2

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2004 Ford Taurus SE
Test Program: 35mph Frontal Impact

NHTSA No.: M40201
Test Date: 10/16/03

TEST VEHICLE INFORMATION

Manufacturer	Ford
Model	Taurus SE
Body Style	4 Door
NHTSA No.	M40201
VIN	1FAFP53U94G101400
Color	Maroon
Delivery Date	9/19/03
Odometer Reading (mile)	6
Dealer	Ricart Ford, Inc
Transmission	Automatic
Final Drive	Front Wheel
Number of Cylinders	6
Engine Displacement (L)	3.0
Engine Placement	Lateral

TEST VEHICLE OPTIONS

Driver Airbag	Yes
Passenger Airbag	Yes
Force Limiter	Yes
Pretensioner	Yes
Power Windows	Yes
Power Steering	Yes
Power Door Locks	Yes
Tilt Wheel	Yes
Air Conditioning	Yes
Power Brakes	Yes
Disc Brakes, Front	Yes
Disc Brakes, Rear	No
Anti-lock Brakes	No
AM/FM/Cassette	Yes
Anti-theft System	Yes
Cruise Control	Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Ford Motor Co
Date of Manufacture	8/03

GVWR (kg)	2124
GAWR Front (kg)	1157
GAWR Rear (kg)	967

DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	308	308
Cold Pressure (kPa)	205	205
Recommended Tire Size	P215/60R16	P215/60R16
Tire Size on Vehicle	P215/60R16	P215/60R16
Tire Manufacturer	Continental	Continental

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Split Bench	Bench	N/A	
Number Of Occupants	3	3	0	6
Capacity Wt. (VCW) (kg)				499
Cargo Wt. (RCLW) (kg)				90.7

DATA SHEET NO. 2... (continued)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2004 Ford Taurus SE NHTSA No.: M40201
Test Program: 35mph Frontal Impact Test Date: 10/16/03

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	500.7	271.2		533.4	351.1	
Right	kg	486.7	288.1		531.6	368.3	
Ratio	%	63.8	36.2		59.7	40.3	
Totals	kg	987.4	559.3	1546.7	1065.0	719.4	1784.4

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1546.7
Weight of 2 P572E ATDs	kg	156.0
Rated Cargo/Luggage Weight (RCLW)	kg	90.7
Calculated Vehicle Target Weight (TVTW)	kg	1793.4

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG(aft of front axle)
As Delivered	mm	715	716	698	703	985
As Tested	mm	695	695	658	654	1111
Post Test	mm	750	748	658	362	

Vehicle Wheelbase (mm): 2755

Weight of Ballast secured in cargo area (kg): 11.3

Vehicle Components Removed: Rear taillights, spare tire, trunk interior, both outside mirrors, jack and wheel caps.

Ballast weight does not include cameras, instrumentation, and data acquisition system.

FUEL SYSTEM DATA

Fuel System Capacity From Owner's Manual (L): 68.1

Usable Capacity Figure Furnished by COTR (L): N/A

Actual Test Volume (L): 62.8

Test Fluid Type: Stoddard Solvent ; Specific Gravity: 0.77

Is Vehicle Fuel Pump Electric or Mechanical? Electric

If electric, does pump operate with ignition switch "ON" & engine "OFF"? Yes

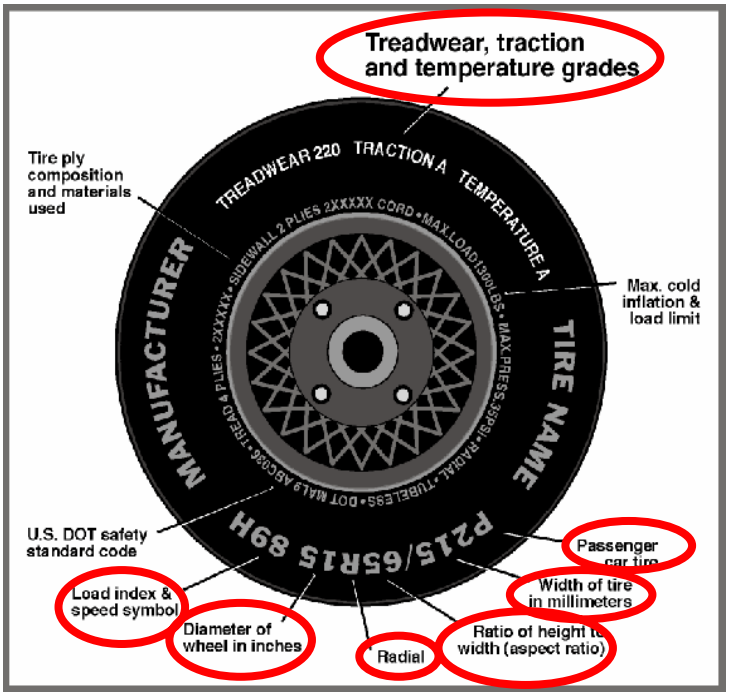
DATA SHEET NO. 3

TEST VEHICLE TIRE INFORMATION

Test Vehicle: 2004 Ford Taurus SE
Test Program: 35mph Frontal Impact

NHTSA No.: M40201
Test Date: 10/16/03

Vehicle Year	2004	Vehicle Make	Ford
VIN	1FAFP53U94G101400	Vehicle Model	Taurus SE



	Front	Rear
Tire Manufacturer	Continental	Continental
Tire Name	Touring Contact AS	Touring Contact AS
Tire Type	Touring	Touring
Tire Width (mm)	215	215
Ratio of Height to Width (aspect ratio)	60	60
Radial	R	R
Wheel Diameter	16	16
Load Index & Speed Symbol	94T	94T
Treadwear	520	520
Traction Grade	A	A
Temperature Grade	B	B

DATA SHEET NO. 4

POST IMPACT DATA

Test Vehicle: 2004 Ford Taurus SE
Test Program: 35mph Frontal Impact
NHTSA No.: M40201
Test Date: 10/16/03

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	55.5 – 57.1	56.5
Trap No. 1 Entry Distance	mm	<1524	1300
Trap No. 1 Exit Distance	mm	<1524	300
Trap No. 2 Velocity (Redundant)	km/h	55.5 – 57.1	56.6
Trap No. 2 Entry Distance	mm	<1524	1425
Trap No. 2 Exit Distance	mm	<1524	425

VEHICLE STATIC CRUSH

Measured Parameter	Units	Pre-Test	Post-Test	Difference
Left Side	mm	4775	4431	344
Center	mm	4932	4452	480
Right Side	mm	4763	4360	403

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	691
Center	mm	646
Right Side	mm	795
Average	mm	711

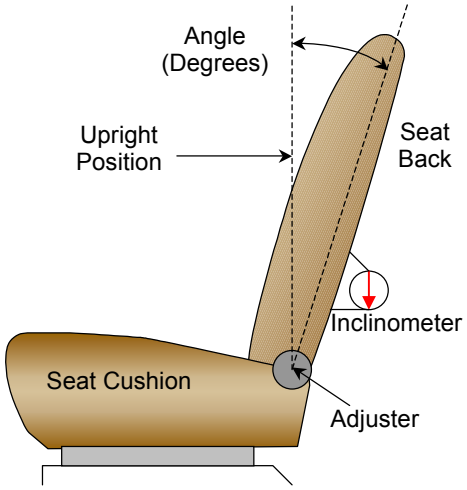
DATA SHEET NO. 5

TEST VEHICLE INFORMATION

Test Vehicle: 2004 Ford Taurus SE NHTSA No.: M40201
Test Program: 35mph Frontal Impact Test Date: 10/16/03

NORMAL DESIGN RIDING POSITION

The driver and passenger seat back is positioned to the manufacturer's designated angle. The procedure is as follows: The seat back angle is measured relative to the rocker sill. Remove the seat back panel and position inclinometer as shown in the drawing 13 inches above the back pivot point on the rear outboard seat frame. Avoid taking measurement on reinforcement plates. The designated angle is 28.1°.



FRONT SEAT ASSEMBLY

Driver seat back angle: 28.2°
Passenger seat back angle: 28.3°

SEAT FORE/AFT POSITIONS

Position the seat in the mechanical mid position. The driver and passenger are manual adjustable seats.

Driver seat fore/aft total travel: 13 notches
Passenger seat fore/aft total travel: 13 notches
Driver seat fore/aft position: 7 of 13
Passenger seat fore/aft position: 7 of 13

SEAT BELT UPPER ANCHORAGE

The front outboard D-rings were adjusted to the mid track position.

DATA SHEET NO. 5... (continued)

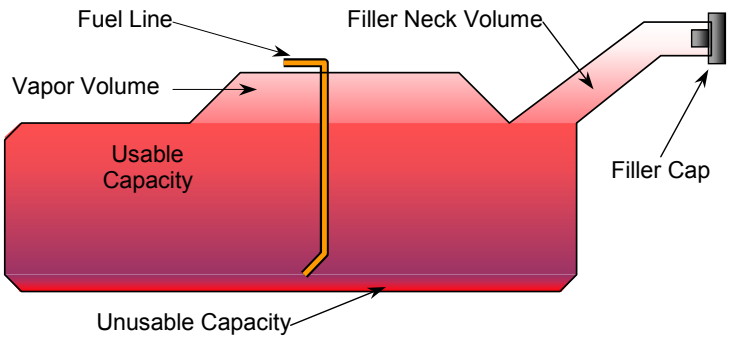
TEST VEHICLE INFORMATION

Test Vehicle: 2004 Ford Taurus SE NHTSA No.: M40201
Test Program: 35mph Frontal Impact Test Date: 10/16/03

FUEL TANK CAPACITY DATA

The "Usable Capacity" of the standard equipment fuel tank is: 68.1 liters
The "Usable Capacity" of any optional equipment fuel tank is: N/A liters
The "Usable Capacity" used for certification to FMVSS 301 requirements: 68.1 liters
Actual amount of Stoddard solvent added to vehicle for certification test: 62.8 liters

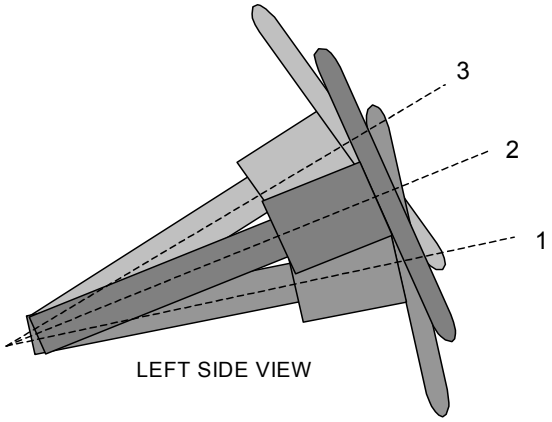
The electric fuel pump operates for 2 seconds to pressurize the fuel system following the actuation of the ignition. If no attempt has been made to start the engine within 2 seconds following ignition actuation, the fuel pump will shut off. The fuel pump operates continuously while the engine is running. If the engine stalls, the fuel pump is deactivated. Also, a fuel pump shut-off switch is provided, designed to stop fuel flow to the engine if the vehicle sustains an impact above a certain magnitude.



VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

Adjustable steering controls are adjusted so that the steering wheel hub is located at the geometric center of the locus it describes when it is moved through its full range of driving positions.



STEERING COLUMN ASSEMBLY

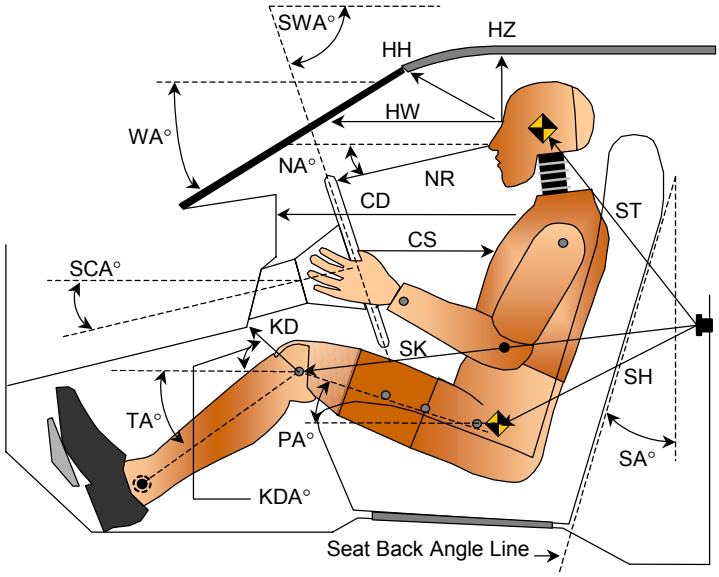
Lowermost position 1: 13.6°
Geometric center, position 2: 21.8°
Uppermost, position 3: 29.7°

DATA SHEET NO. 6

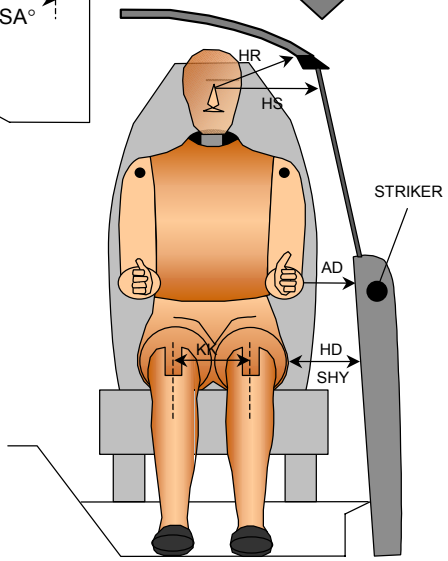
DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2004 Ford Taurus SE
Test Program: 35mph Frontal Impact
NHTSA No.: M40201
Test Date: 10/16/03

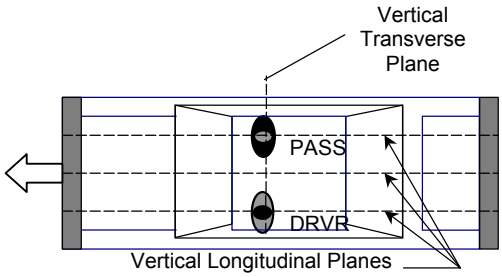
DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS



AD	Arm to Door
HD	H-Point to Door
HR	Head to Side Header
HS	Head to Side Window
KK	Knee to Knee
SHY	Striker to H-Point (Y Axis)



CD	Chest to Dash
CS	Chest to Steering Wheel Hub
HH	Head to Header
HW	Head to Windshield
HZ	Head to Roof
KDA	Knee to Dash Angle
KDL	Left Knee to Dash
KDR	Right Knee to Dash
NA	Nose to Rim Angle
NR	Nose to Rim
PA	Pelvic Angle
RA	Rim to Abdomen
SA	Seat Back Angle
SCA	Steering Column Angle
SH	Striker to H-Point
SK	Striker to Knee
ST	Striker to Head
SWA	Steering Wheel Angle
TA	Tibial Angle
WA	Windshield Angle



DATA SHEET NO. 6... (continued)

DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2004 Ford Taurus SE NHTSA No.: M40201
Test Program: 35mph Frontal Impact Test Date: 10/16/03

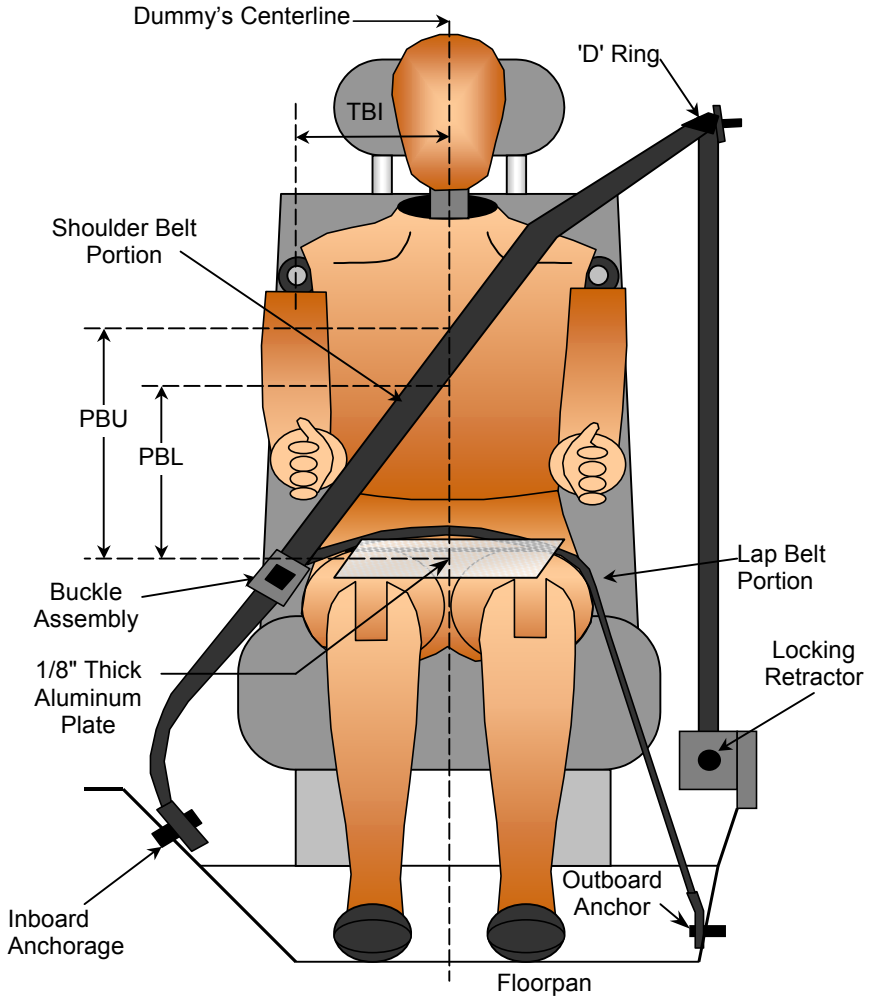
TEST DUMMY POSITION MEASUREMENTS

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA	Windshield Angle		26.0		
SWA	Steering Wheel Angle		68.4		
SCA	Steering Column Angle		21.8		
SA	Seat Back Angle		28.2		28.3
HZ	Head to Roof (Z)	143	90	142	90
HH	Head to Header	350	22	285	24
HW	Head to Windshield	562	0	551	0
HR	Head to Side Header (Y)	176		172	
NR	Nose to Rim	371	17		
CD	Chest to Dash	521		447	
CS	Chest to Steering Hub	312	22		
RA	Rim to Abdomen	163	13		
KDL	Left Knee to Dash	135	22	149	
KDR	Right Knee to Dash	123		149	0
PA	Pelvic Angle		24.6		24.9
TA	Tibia Angle		52.2		49.5
KK	Knee to Knee (Y)	329		294	
SK	Striker to Knee	609	92.5	593	92.4
ST	Striker to Head	562	8.0	534	10.7
SH	Striker to H-Point	222	108.2	247	118.2
SHY	Striker to H-Point (Y)	258		260	
HS	Head to Side Window	307		317	
HD	H-Point to Door (Y)	162		163	
AD	Arm to Door (Y)	102		124	
AA	Ankle to Ankle	351		191	

DATA SHEET NO. 7

SEAT BELT POSITIONING DATA

Test Vehicle: 2004 Ford Taurus SE
Test Program: 35mph Frontal Impact
NHTSA No.: M40201
Test Date: 10/16/03



SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
TBI - Dummy centerline to shoulder bolt	mm	170	170
PBU - Top surface of reference to belt upper edge	mm	326	315
PBL - To surface of reference to belt lower edge	mm	250	222

DATA SHEET NO. 8

VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY

Test Vehicle: 2004 Ford Taurus SE
Test Program: 35mph Frontal Impact

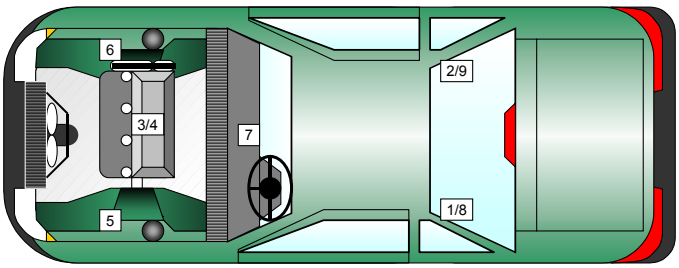
NHTSA No.: M40201
Test Date: 10/16/03

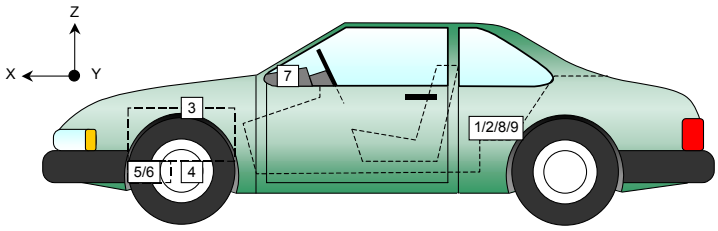
VEHICLE ACCELEROMETER PEAK DATA AND PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)			Peak Values				
		X	Y	Z	Units	Max	Time	Min	Time
1	Left Rear X-Member X	1992	-450	310	G's	2.6	133	-34.3	39
2	Right Rear X-Member X	1992	450	310	G's	3.0	133	-31.9	36
3	Engine Top X	3964	80	955	G's	*	*	*	*
4	Engine Bottom X	4170	65	160	G's	21.7	50	-62.5	31
5	Left Brake Caliper X	4010	-720	250	G's	25.9	71	-70.0	37
6	Right Brake Caliper X	4010	720	250	G's	12.2	67	-67.7	44
7	Instrument Panel X	3212	60	1055	G's	2.7	20	-54.9	73
8	Left Rear X-Member Z	1992	-450	310	G's	13.2	42	-4.3	63
9	Right Rear X-Member Z	1992	450	310	G's	2.5	119	-17.9	49

* No valid data after 45 msec.

Reference Points: X - Rear Surface of Vehicle (+ forward)
Y - Vehicle Centerline (+ to right)
Z - Ground Plane (+ up)





DATA SHEET NO. 9

HYBRID III ATD INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2004 Ford Taurus SE
Test Program: 35mph Frontal Impact

NHTSA No.: M40201
Test Date: 10/16/03

HEAD PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	2.0	200	-55.4	84	0.2	0	-37.7	78
Head CG	Y	G's	2.0	64	-7.6	92	14.4	56	-2.5	150
Head CG	Z	G's	19.8	66	-1.5	113	16.3	83	-0.5	136
Head CG Resultant	N/A	G's	57.3	84			41.2	81		

CHEST PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	2.9	195	-43.5	88	1.5	173	-43.4	77
Chest CG	Y	G's	1.7	117	-6.4	87	3.5	99	-1.2	90
Chest CG	Z	G's	4.5	69	-6.6	89	5.7	70	-5.7	109
Chest CG Resultant	N/A	G's	44.4	88			43.5	77		

FEMUR PEAK FORCES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Femur	Z	Newtons	271	39	-3641	58	175	100	-2959	49
Right Femur	Z	Newtons	544	99	-5255	60	428	41	-2429	56

SEAT BELT SENSOR PEAK VALUES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Lap Belt Force	N/A	Newtons	4116	56			4209	56		
Shoulder Belt Force	N/A	Newtons	*	*			*	*		

* Not recorded at vehicle manufacturer's request

HEAD INJURY CRITERIA (HIC)

Location	Driver				Passenger			
	HIC	Avg G's	T^1	T^2	HIC	Avg G's	T^1	T^2
Head CG Primary	512	45.8	62	98	254	34.6	61	97

CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T^1	T^2	CLIP	T^1	T^2
Chest CG Primary	43	87	90	42	75	78

DATA SHEET NO. 9... (continued)

HYBRID III ATD INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2004 Ford Taurus SE
Test Program: 35mph Frontal Impact
NHTSA No.: M40201
Test Date: 10/16/03

PELVIC PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Pelvis	X	G's	2.0	195	-64.9	59	2.5	133	-42.0	63
Pelvis	Y	G's	5.8	106	-16.7	62	6.8	49	-6.5	100
Pelvis	Z	G's	3.8	196	-19.5	56	1.6	159	-21.8	77

UPPER NECK PEAK FORCES AND MOMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Neck Force	X	Newtons	778	87	-334	55	129	54	-530	142
Neck Force	Y	Newtons	244	91	-102	132	84	101	-149	60
Neck Force	Z	Newtons	1285	67	-73	137	1253	63	-53	127
Neck Moment	X	N•m	4.9	101	-9.1	135	15.0	108	-8.2	151
Neck Moment	Y	N•m	47.7	74	-13.8	55	34.8	136	-27.6	105
Neck Moment	Z	N•m	17.2	110	-9.0	161	4.1	133	-12.6	69

FOOT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Foot Aft	X	G's	8.3	89	-32.5	45	43.8	87	-157.4	46
Left Foot Aft	Z	G's	0.8	198	-43.3	41	26.3	87	-61.9	42
Left Foot Fore	Z	G's	3.3	37	-66.0	40	26.0	63	-94.4	41
Right Foot Aft	X	G's	28.5	87	-176.4	50	19.9	85	-92.2	47
Right Foot Aft	Z	G's	22.2	78	-145.7	46	18.6	73	-69.8	47
Right Foot Fore	Z	G's	121.7	62	-256.5	46	34.6	73	-100.1	40

UPPER AND LOWER TIBIA PEAK FORCES AND MOMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Lower Moment	X	N•m	61.5	51	-9.9	25	6.9	98	-10.3	48
Left Lower Moment	Y	N•m	9.9	17	-50.0	79	29.8	62	-51.8	85
Left Lower Force	Z	Newtons	93	181	-1459	43	527	63	-5210	44
Left Upper Moment	X	N•m	13.2	134	-28.1	57	34.7	74	-31.0	48
Left Upper Moment	Y	N•m	14.0	145	-85.7	50	86.0	62	-165.0	86
Left Upper Force	Z	Newtons	80	174	-1205	43	1042	88	-3870	44
Right Lower Moment	X	N•m	116.6	49	-37.4	48	6.5	91	-71.7	49
Right Lower Moment	Y	N•m	53.2	48	-181.6	67	50.4	67	-29.6	41
Right Lower Force	Z	Newtons	112	161	-7231	49	154	87	-3967	47
Right Upper Moment	X	N•m	33.9	50	-76.8	48	25.2	102	-45.3	54
Right Upper Moment	Y	N•m	11.4	182	-213.5	52	12.6	178	-112.2	46
Right Upper Force	Z	Newtons	145	156	-5837	49	91	90	-3167	48

DATA SHEET NO. 9... (continued)

HYBRID III ATD INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2004 Ford Taurus SE
Test Program: 35mph Frontal Impact
NHTSA No.: M40201
Test Date: 10/16/03

CHEST PEAK DISPLACEMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	mm			-27.7	76			-22.0	79

HEAD REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	2.1	200	-54.9	84	0.2	12	-37.4	78
Head CG	Y	G's	2.1	64	-7.1	85	13.6	60	-2.7	142
Head CG	Z	G's	20.2	66	-1.6	139	16.0	83	-0.6	136
Head CG Resultant	N/A	G's	56.8	84			40.7	81		

CHEST REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	2.8	195	-43.4	88	1.5	170	-43.0	77
Chest CG	Y	G's	1.4	133	-6.1	87	3.8	71	-0.9	90
Chest CG	Z	G's	4.6	65	-6.8	89	5.8	84	-5.6	107
Chest CG Resultant	N/A	G's	44.2	88			43.1	77		

REDUNDANT HEAD INJURY CRITERIA (HIC)

Location	Driver				Passenger			
	HIC	Avg G's	T^1	T^2	HIC	Avg	T^1	T^2
Head CG Primary Redundant	503	45.5	62	98	248	34.3	61	97

REDUNDANT CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T^1	T^2	CLIP	T^1	T^2
Chest CG Primary Redundant	43	87	90	41	75	78

DATA SHEET NO. 10

SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

Test Vehicle: 2004 Ford Taurus SE
Test Program: 35mph Frontal Impact

NHTSA No.: M40201
Test Date: 10/16/03

SEAT BELT PLACEMENT MEASUREMENTS

Measurement Description	Units	Driver	Passenger
TBI - Dummy centerline to shoulder bolt	mm	170	170
PBU - Top surface of reference to belt upper edge	mm	326	315
PBL - Top surface of reference to belt lower edge	mm	250	222

BELT LENGTH DATA

Measurement Description	Units	Driver	Passenger
Retractor reel to "D" ring	mm	662	665
Shoulder belt length as measured on ATD	mm	837	842
Lap belt length as measured on ATD	mm	851	821
Remainder of belt on reel	mm	721	700
Total belt length for continuous webbing systems	mm	3071	3028

SHOULDER BELT SPOOL-OUT DATA

Measurement Description	Units	Driver	Passenger
As determined mechanically	mm	*	*
As determined electronically	mm	*	*

* Not recorded at vehicle manufacturer's request.

DATA SHEET NO. 11

SUMMARY OF FMVSS 212 DATA

Test Vehicle: 2004 Ford Taurus SE
Test Program: 35mph Frontal Impact
NHTSA No.: M40201
Test Date: 10/16/03

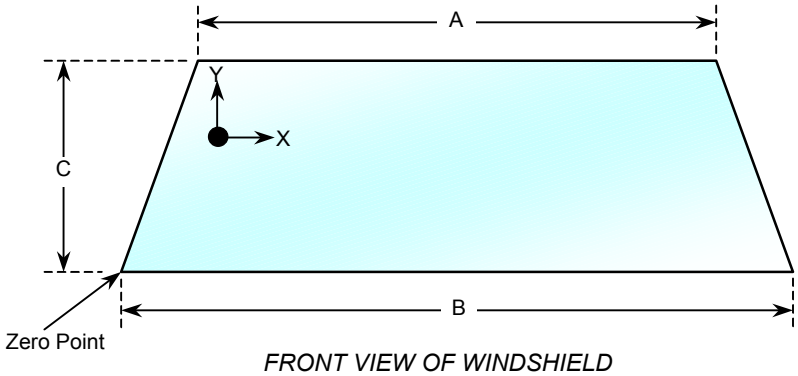
Windshield Mounting Details:
Windshield glass is secured to the vehicle frame with a rubber trim and glue.

The standard requires that the post-test retention measurement be a minimum of 75 percent of the pretest total periphery measurement for vehicles not equipped with occupant passive restraints and 50 percent 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)	% of Retention
Left Side	2241	2241	100
Right Side	2241	2241	100
Total	4482	4482	100



FRONT VIEW OF WINDSHIELD

WINDSHIELD DIMENSIONS

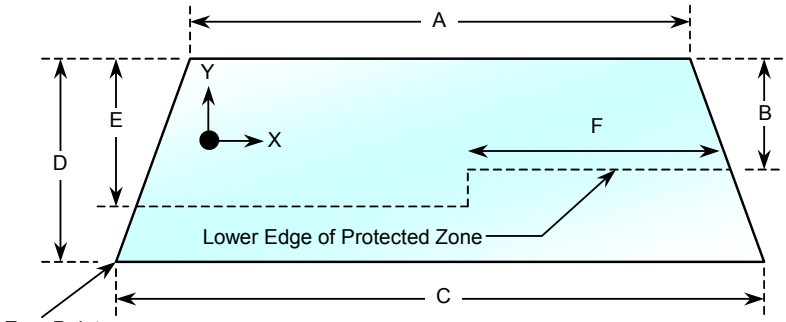
Item	Units	Segment Length	Molding Width
A	mm	1149	23
B	mm	1635	20
C	mm	849	22

DATA SHEET NO. 12

WINDSHIELD ZONE INTRUSION FMVSS 219 (Partial) DATA

Test Vehicle: 2004 Ford Taurus SE
Test Program: 35mph Frontal Impact

NHTSA No.: M40201
Test Date: 10/16/03



FRONT VIEW OF WINDSHIELD

Item	Units	Value
A	mm	1149
B	mm	389
C	mm	1635
D	mm	849
E	mm	480
F	mm	690

AREA OF PROTECTED ZONE FAILURES - NONE

A. Provide coordinates of the area that the protected zone was penetrated more than 0.25 inches by a vehicle component other than one that is normally in contact with the windshield. **None**

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. **None**

X	Y

DATA SHEET NO. 13

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Test Vehicle: 2004 Ford Taurus SE NHTSA No.: M40201
Test Program: 35mph Frontal Impact Test Date: 10/16/03

Temperature at Time of Impact: 21° C Test Time: 12:01 pm

Stoddard Solvent Spillage Measurements

A. From impact until vehicle motion ceases: 0 oz.
(Maximum Allowable = 1 ounce)

B. For the 5 minute period after motion ceases: 0 oz.
(Maximum Allowable = 5 ounces)

C. For the following 25 minutes: 0 oz.
(Maximum Allowable = 1 oz./minute)

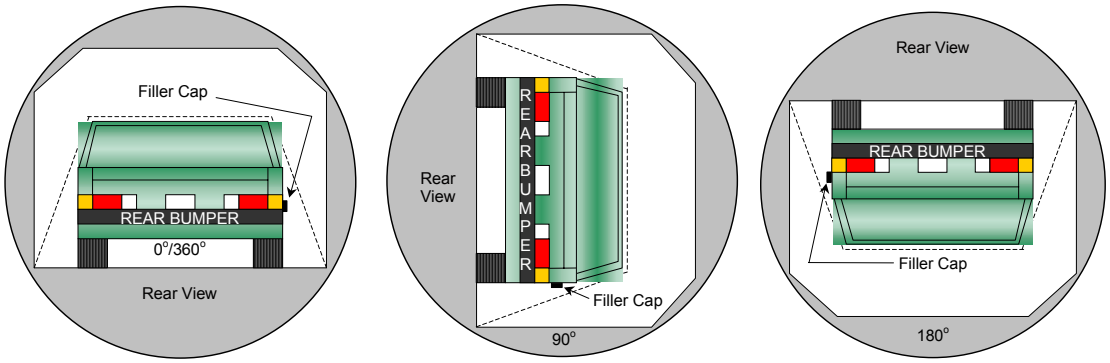
D. Spillage : None

DATA SHEET NO. 14

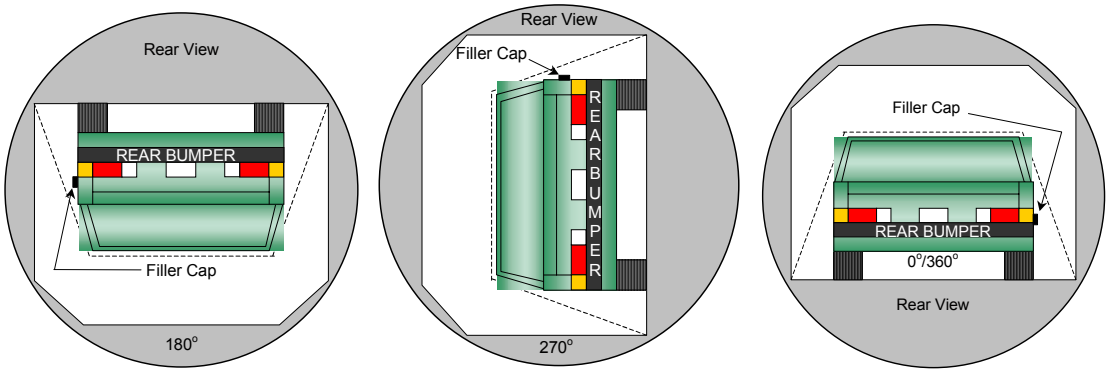
FMVSS 301 STATIC ROLLOVER DATA

Test Vehicle: 2004 Ford Taurus SE NHTSA No.: M40201
Test Program: 35mph Frontal Impact Test Date: 10/16/03

Test Time: 12:01 pm



0° TO 90° 90° TO 180°



180° TO 270° 270° TO 360°

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

Test Phase	Rotation Time (sec.)	Hold Time (sec.)	Spillage (oz.)
0° TO 90°	169	300	0
90° TO 180°	153	300	0
180° TO 270°	137	300	0
270° TO 360°	158	300	0

DATA SHEET NO. 15

VEHICLE MEASUREMENTS

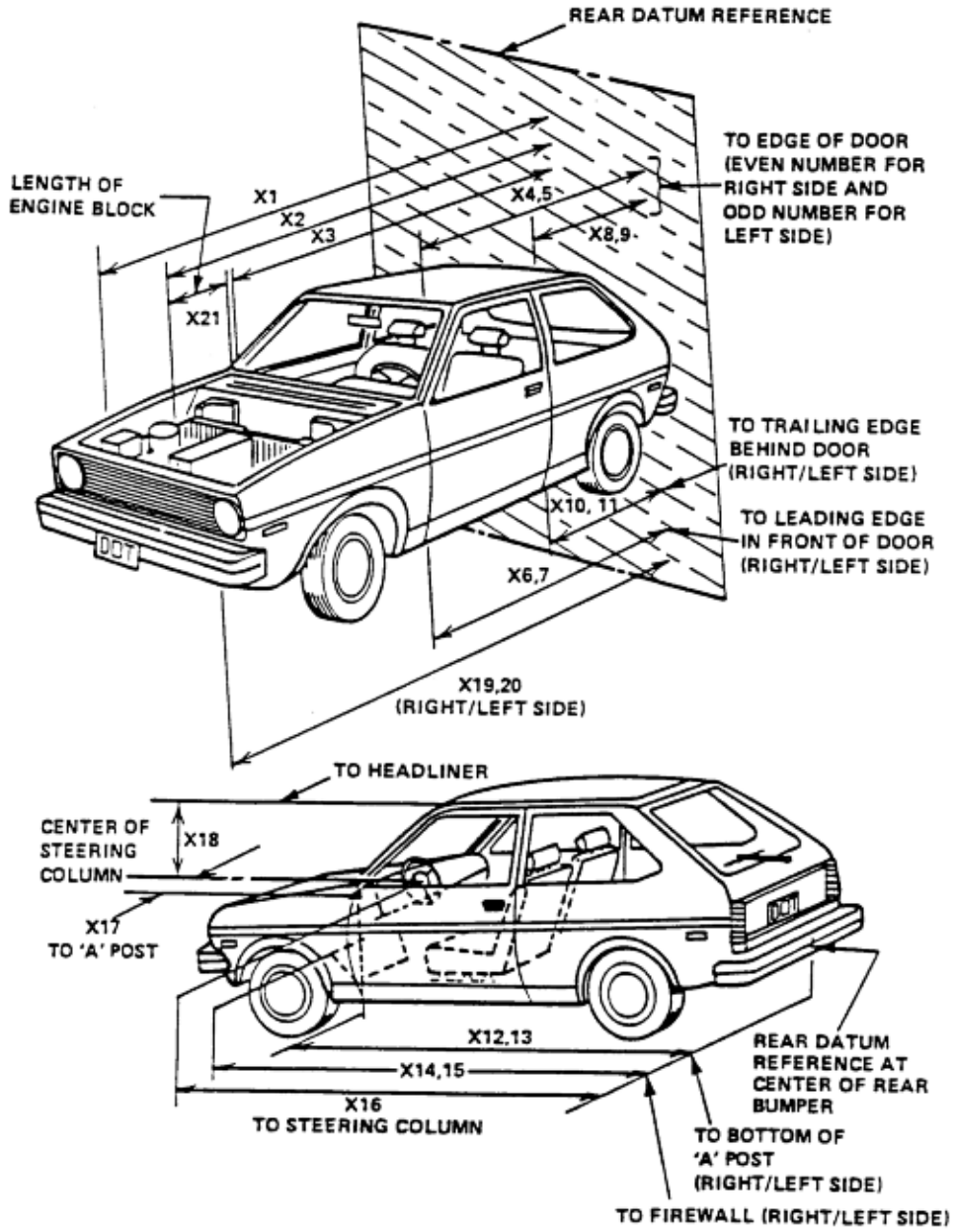
Test Vehicle: 2004 Ford Taurus SE
Test Program: 35mph Frontal Impact
NHTSA No.: M40201
Test Date: 10/16/03

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total length of vehicle at centerline	mm	4932	4452	480
2	RSOV to front of engine	mm	4345	4032	313
3	RSOV to firewall centerline	mm	3812	3742	70
4	RSOV to leading edge of right door	mm	3365	3368	-3
5	RSOV to leading edge of left door	mm	3368	3361	7
6	RSOV to lower leading edge of right door	mm	3329	3318	11
7	RSOV to lower leading edge of left door	mm	3321	3325	-4
8	RSOV to upper leading edge of right door	mm	2296	2287	9
9	RSOV to upper leading edge of left door	mm	2292	2297	-5
10	RSOV to lower trailing edge of right door	mm	2261	2255	6
11	RSOV to lower trailing edge of left door	mm	2258	2263	-5
12	RSOV to bottom of right 'A' pillar	mm	3336	3333	3
13	RSOV to bottom of left 'A' pillar	mm	3329	3327	2
14	RSOV to firewall on right side	mm	3707	3581	126
15	RSOV to firewall on left side	mm	3714	3629	85
16	RSOV to steering column	mm	2901	2935	-34
17	Center of steering column to left 'A' pillar	mm	358	321	37
18	Center of steering column to headlining	mm	405	357	48
19	RSOV to right side of front bumper	mm	4775	4331	444
20	RSOV to left side of front bumper	mm	4763	4360	403
21	Length of engine block	mm	450	450	0
RD	RSOV to right side of dash panel	mm	3091	3062	29
CD	RSOV to center of dash panel	mm	3148	3093	55
LD	RSOV to left side of dash panel	mm	3070	3070	0

DATA SHEET NO. 15...(continued)

VEHICLE MEASUREMENTS

Test Vehicle: 2004 Ford Taurus SE NHTSA No.: M40201
Test Program: 35mph Frontal Impact Test Date: 10/16/03



DATA SHEET NO. 15... (continued)

VEHICLE MEASUREMENTS

Test Vehicle: 2004 Ford Taurus SE NHTSA No.: M40201
Test Program: 35mph Frontal Impact Test Date: 10/16/03

Target Vehicle Structural Measurement

	Elements	Pre-Test (mm)
1	Total Length	4932
2	Total Width	1856
3	Bumper Top Height	565
4	Bumper Bottom Height	408
5	Longitudinal Member Top Height	273
6	Distance between Longitudinal Members	1095
7	Longitudinal Member Width	86
8	Engine Top Height	915
9	Engine Bottom Height	175
10	Engine and gearbox width	900
11	Front bumper-engine distance	610
12	Front shock absorber fixing height	875
13	Bonnet leading edge height	710
14	Front shock absorber fixing width	1135
15	Front bumper – front axle distance	935
16	Front axle – a pillar distance	548
17	A-pillar – B-pillar distance	1072
18	B-Pillar – rear axle distance	1132
19	B-pillar – C-pillar distance	720
20	Roof sill bottom height	1400
21	Roof sill top height	1450
22	Floor sill bottom height	205
23	Floor sill top height	283

DATA SHEET NO. 16

CAMERA LOCATIONS

Test Vehicle: 2004 Ford Taurus SE
Test Program: 35mph Frontal Impact

NHTSA No.: M40201
Test Date: 10/16/03

No.	Camera View	Location (mm) *			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Side View				13	24
2	Left Front View	1000	-8130	1440	25	1010
3	Steering Column Top	2000	-8340	1550	25	1000
4	Steering Column Bottom	2000	-8390	1020	25	1000
5	Driver Close-up	1510	-8000	1340	50	1000
6	Driver Angle	4800	-5100	2020	50	1205
7	Left Rear				13	505
8	Right Rear				13	526
9	Right Overall	1670	7440	1410	13	990
10	Right Passenger Half	770	7910	1390	25	1005
11	Right Close-up	1240	9370	1670	75	**
12	Right Angle	4800	5560	2100	50	909
13	Windshield	320	0	2920	13	1015
14	Top Driver	-120	-485	2300	13	1020
15	Top Passenger	-120	510	2300	13	1005
16	Pit Front	1000	0	-3150	13	1005
17	Pit Rear	2990	0	-3150	13	1000

*COORDINATES:

+X = film plane rearward of barrier

+Y = film plane to right of monorail centerline

+Z = film plane above ground level

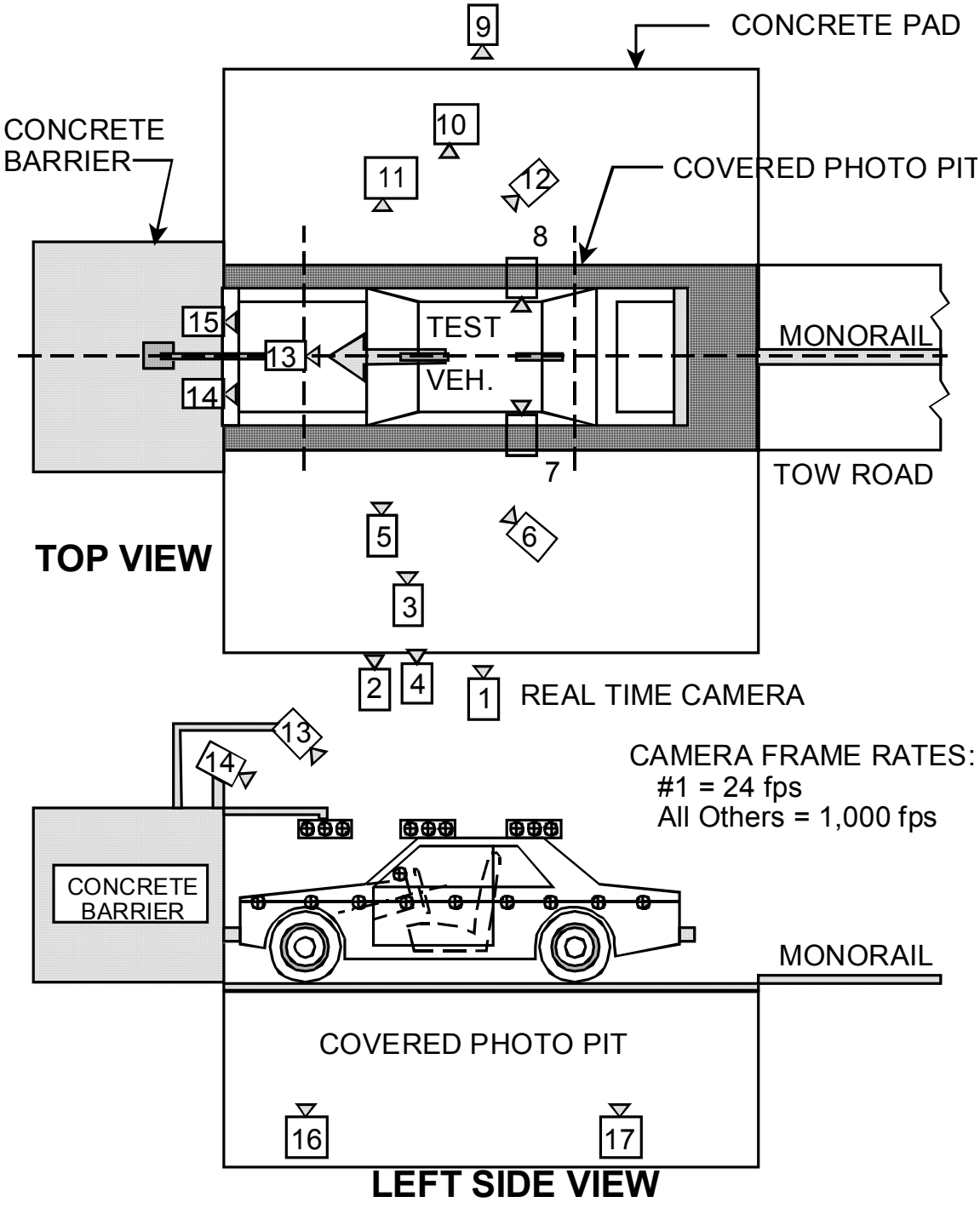
** No timing marks

DATA SHEET NO. 16... (continued)

CAMERA LOCATIONS

Test Vehicle:	2004 Ford Taurus SE	NHTSA No.:	M40201
Test Program:	35mph Frontal Impact	Test Date:	10/16/03

CAMERA POSITIONS FOR FRONTAL IMPACTS



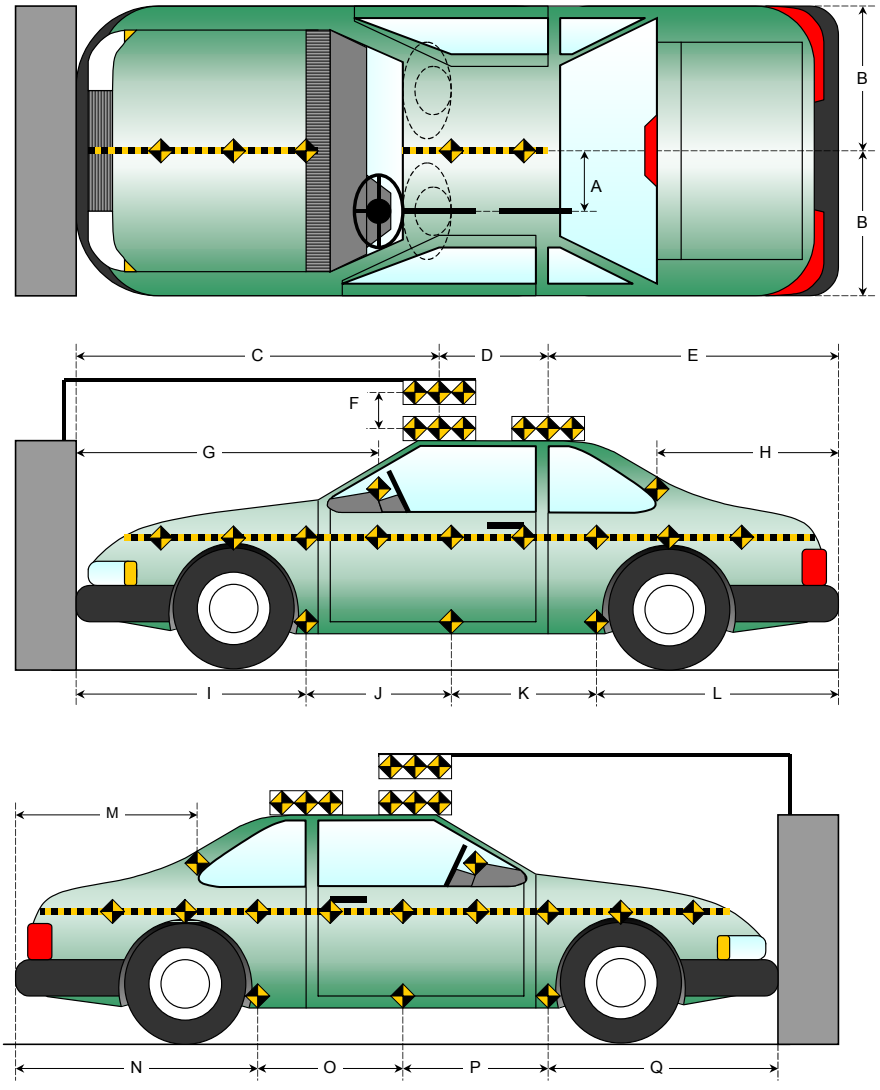
DATA SHEET NO. 17

PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2004 Ford Taurus SE
Test Program: 35mph Frontal Impact

NHTSA No.: M40201
Test Date: 10/16/03

Item	Value
A	380
B	930
C	2314
D	610
E	2008
F	104
G	N/A
H	1437
I	1592
J	910
K	900
L	1530
M	1450
N	1551
O	917
P	894
Q	1570



DATA SHEET NO. 18

VEHICLE INTRUSION MEASUREMENTS

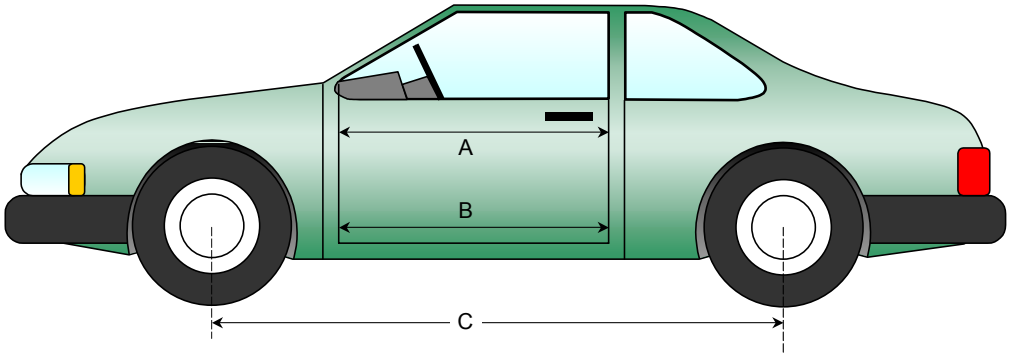
Test Vehicle: 2004 Ford Taurus SE
Test Program: 35mph Frontal Impact
NHTSA No.: M40201
Test Date: 10/16/03

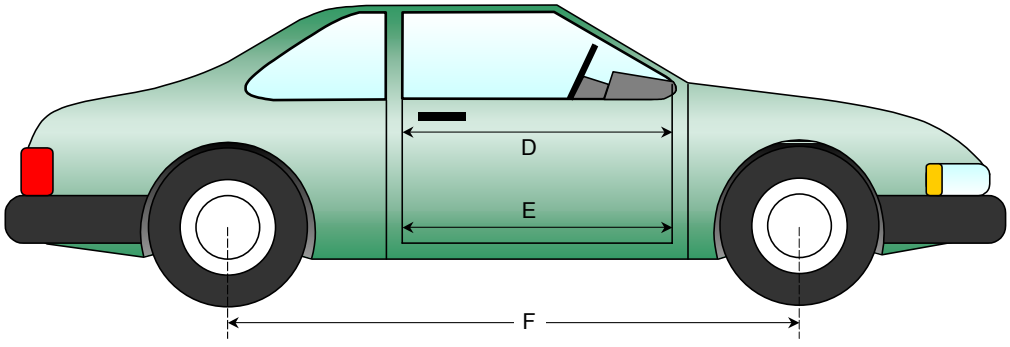
DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	909	902	7
B	Left Side Lower	mm	840	835	5
D	Right Side Upper	mm	910	897	13
E	Right Side Lower	mm	820	800	20

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2755	2649	106
F	Right Side Wheelbase	mm	2755	2625	130





DATA SHEET NO. 18... (continued)

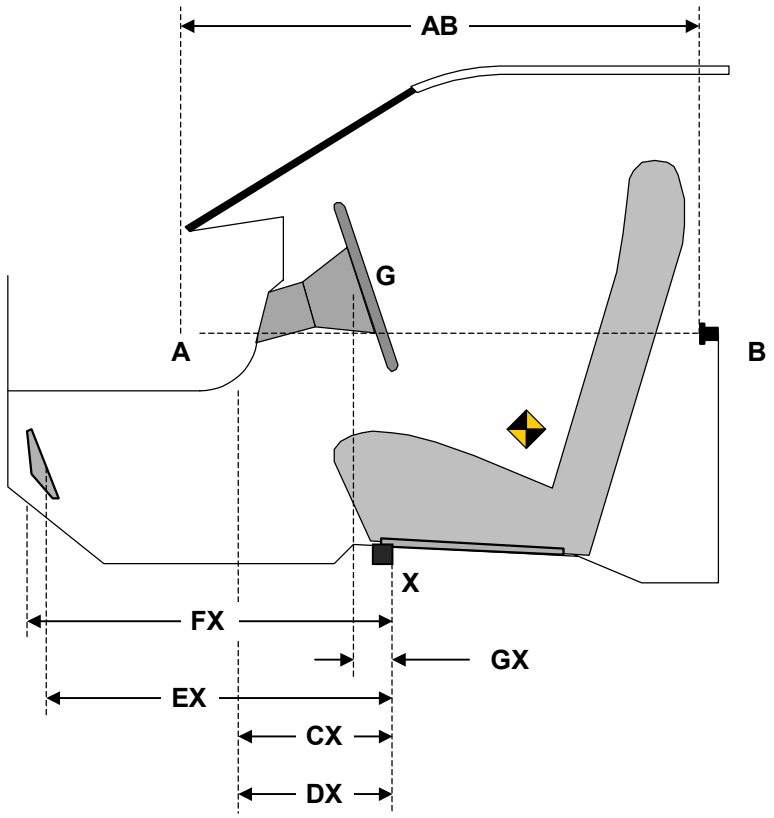
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2004 Ford Taurus SE
Test Program: 35mph Frontal Impact
NHTSA No.: M40201
Test Date: 10/16/03

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside window jam)	mm	985	977	8
CX	Left Knee Bolster to X	mm	257	268	-11
DX	Right Knee Bolster to X	mm	275	258	17
EX	Brake Pedal to X	mm	543	408	135
FX	Foot Rest to X	mm	548	481	67
GX	Center of Steering Column Wheel Hub to X	mm	38	92	-54

X = Left Front Seat Front Outboard Anchor Bolt Head



DRIVER COMPARTMENT

DATA SHEET NO. 18... (continued)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2004 Ford Taurus SE
Test Program: 35mph Frontal Impact

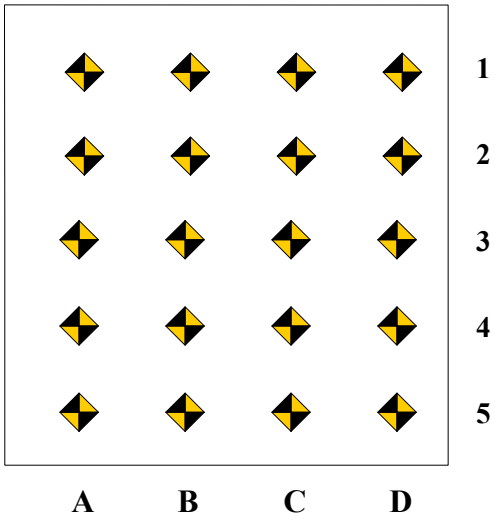
NHTSA No.: M40201
Test Date: 10/16/03

Measurement reference point for X and Z axis is the forward outboard seat mounting bolt.

Columns A through D are evenly spaced.

Rows 1 and 2 are on the toe kick portion of the floor pan. Rows 3, 4, and 5 are located on the most level portion of the floor pan.

Row 3 will be at the intersection of the toe kick and the level sections of the floor pan.



DRIVER FLOOR PAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1		680	680	673		579	552	519		101	128	154
2		544	568	571		458	454	447		86	114	124
3	360	363	358	353	337	300	295	277	23	63	63	76
4	205	205	205	197	190	167	171	174	15	38	34	23
5	55	55	60		40	32	37		15	23	23	

DRIVER FLOOR PAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1		16	4	3		10	3	0		6	1	3
2		-110	-98	-89		-108	-97	-100		-2	-1	11
3	-109	-109	-110	-110	-144	-171	-192	-181	35	62	82	71
4	-102	-100	-109	-108	-83	-160	-188	-176	-19	60	79	68
5	-83	-99	-103		-78	-104	-148		-5	5	45	

DATA SHEET NO. 18...(continued)

VEHICLE INTRUSION MEASUREMENTS

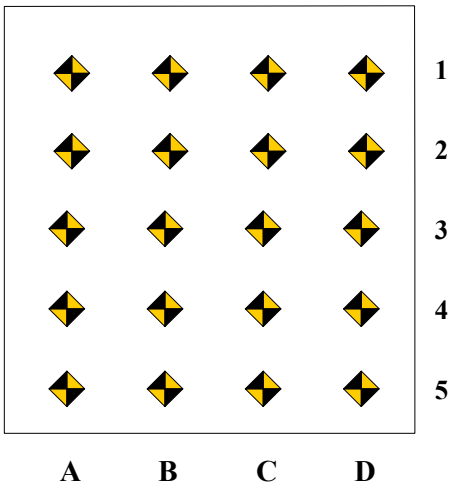
Test Vehicle: 2004 Ford Taurus SE
Test Program: 35mph Frontal Impact
NHTSA No.: M40201
Test Date: 10/16/03

Measurement reference point for X and Z axis is the forward outboard seat mounting bolt.

Columns A through D are evenly spaced.

Rows 1 and 2 are on the toe kick portion of the floor pan. Rows 3, 4, and 5 are located on the most level portion of the floor pan.

Row 3 will be at the intersection of the toe kick and the level sections of the floor pan.



PASSENGER FLOOR PAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	635	643	648		463	493	488		172	150	160	
2	530	543	537		393	417	421		137	126	116	
3	348	348	345	349	224	235	239	253	124	113	106	96
4	178	173	170	165	130	123	118	150	48	50	52	15
5		45	45	42		16	14	27		29	31	15

PASSENGER FLOOR PAN Z-AXIS

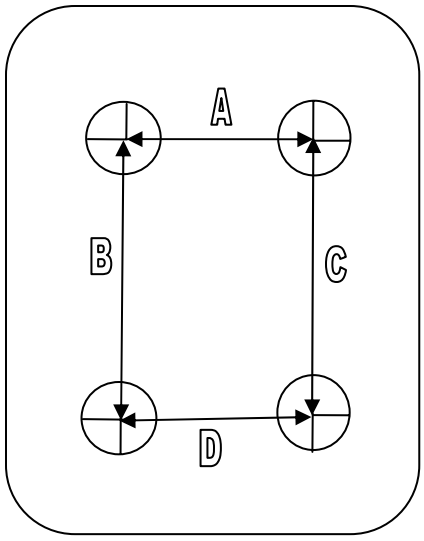
	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-20	-25	-5		-8	-13	32		-12	-12	-37	
2	-95	-80	-90		-101	-89	-103		6	9	13	
3	-107	-106	-105	-101	-140	-183	-180	-132	33	77	75	31
4	-109	-111	-97	-88	-190	-189	-172	-108	81	78	75	20
5		-105	-92	-90		-146	-113	-85		41	21	-5

DATA SHEET NO. 18...(continued)

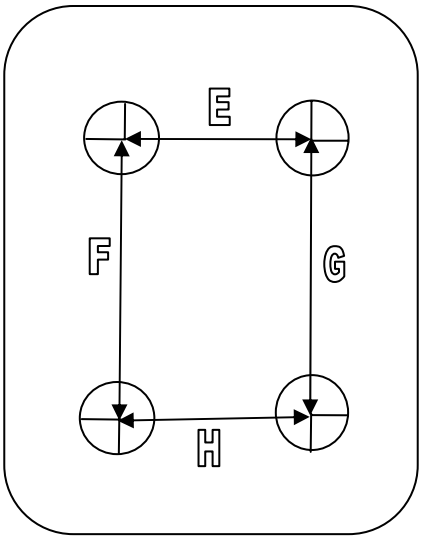
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2004 Ford Taurus SE
Test Program: 35mph Frontal Impact

NHTSA No.: M40201
Test Date: 10/16/03



Driver



Passenger

UNDERBODY FLOORBOARD DEFORMATION

Measurement	Pre-Test	Post-Test	Difference
A	215	205	10
B	537	469	68
C	529	433	96
D	214	200	14
E	225	217	8
F	497	418	79
G	517	434	83
H	209	192	17

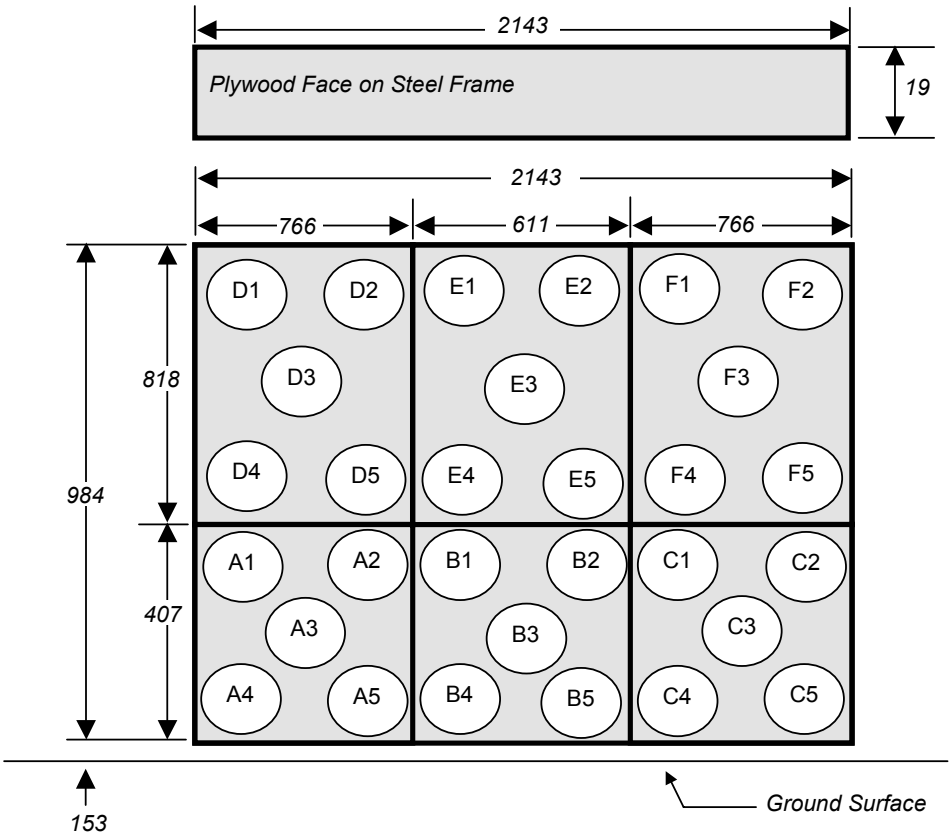
DATA SHEET NO. 19

LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle: 2004 Ford Taurus SE NHTSA No.: M40201
Test Program: 35mph Frontal Impact Test Date: 10/16/03

30 Load Cell Rigid Barrier

Load Cell Locations on Fixed Barrier



Group 4 D1-D5	Group 5 E1-E5	Group 6 F1-F5
Group 1 A1-A5	Group 2 B1-B5	Group 3 C1-C5

6 Groups of 5 Load Cells Each

The Data is presented in Appendix B with the following requirements:

1. Sum data from 6 groupings shown above (5 cells/group)
2. Sum of left 2 groupings, center 2 groupings and right 2 groupings.
3. Total or sum of all 30 individual load cells.
4. Total versus average rear seat cross member displacement.

DATA SHEET NO. 20

ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2004 Ford Taurus SE NHTSA No.: M40201
Test Program: 35mph Frontal Impact Test Date: 10/16/03

VEHICLE INFORMATION

VIN: 1FAFP53U94G101400 Wheelbase (mm) : 2755
Vehicle Size Category: Sedan Test Weight (kg) : 1784.4

ACCELEROMETER DATA

Accelerometer Locations: As per measurements on Page 13
Cal. Procedure/Interval: MGA procedure / 6 month
Integration Algorithm: Trapezoidal Linearity: > 99%
Impact Velocity (km/h): 55.8
Velocity Change (km/h): 63.0 Time of Separation (msec): 108.5

CRUSH PROFILE

Collision Deformation Classification: Frontal Midpoint of Damage: Centerline
Damage Region Length (mm): 1408 Impact Mode: Frontal

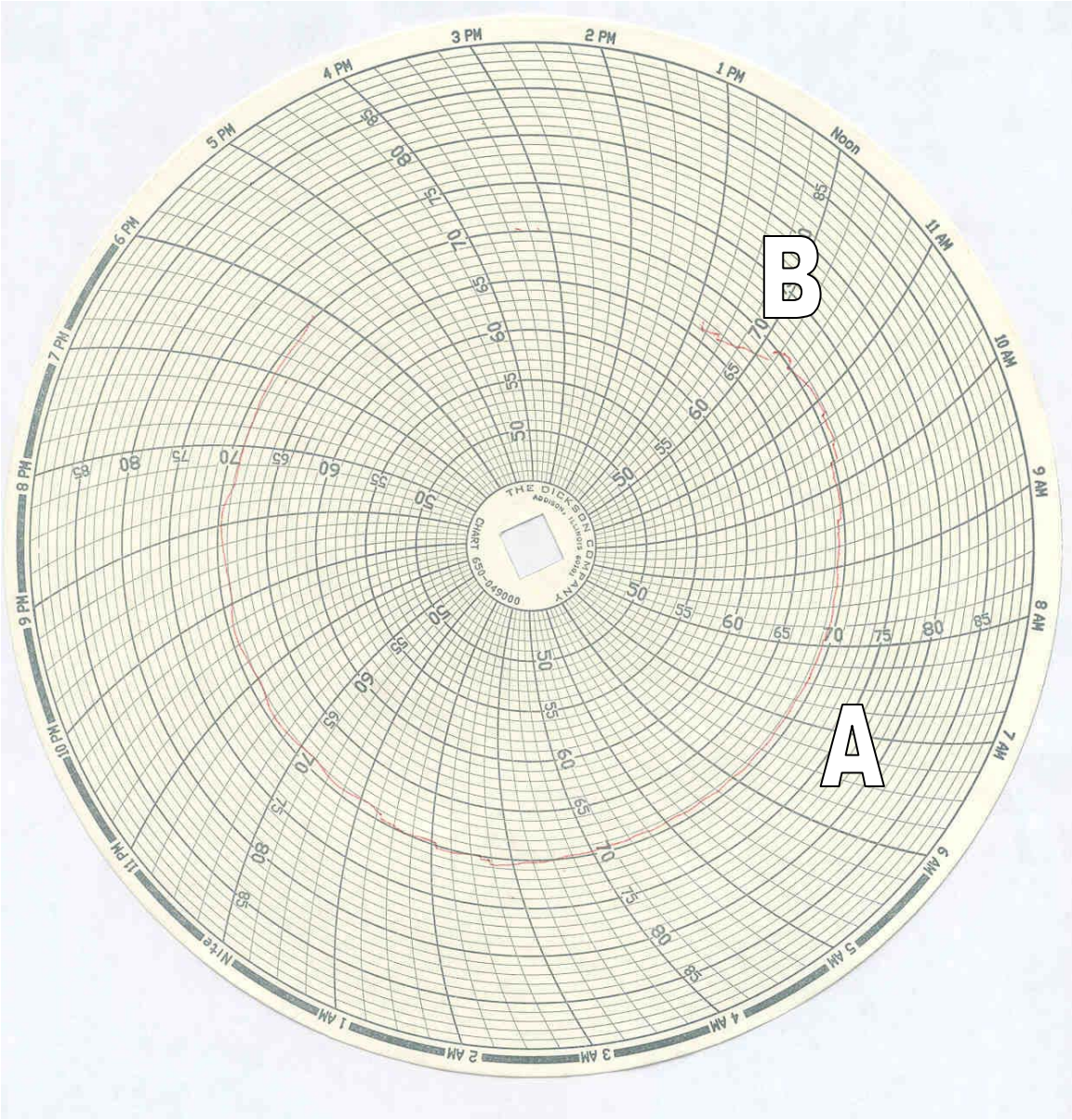
No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	4775	4431	344
C2	Crush zone 2 at left side	mm	4883	4405	478
C3	Crush zone 3 at left side	mm	4927	4445	482
C4	Crush zone 4 at right side	mm	4925	4454	471
C5	Crush zone 5 at right side	mm	4879	4419	460
C6	Crush zone 6 at right side	mm	4763	4360	403
L	C1 TO C6	mm	1408	1381	27

DATA SHEET NO. 21

DUMMY / VEHICLE TEMPERATURE STABILIZATION CHART

Test Vehicle: 2004 Ford Taurus SE
Test Program: 35mph Frontal Impact

NHTSA No.: M40201
Test Date: 10/16/03



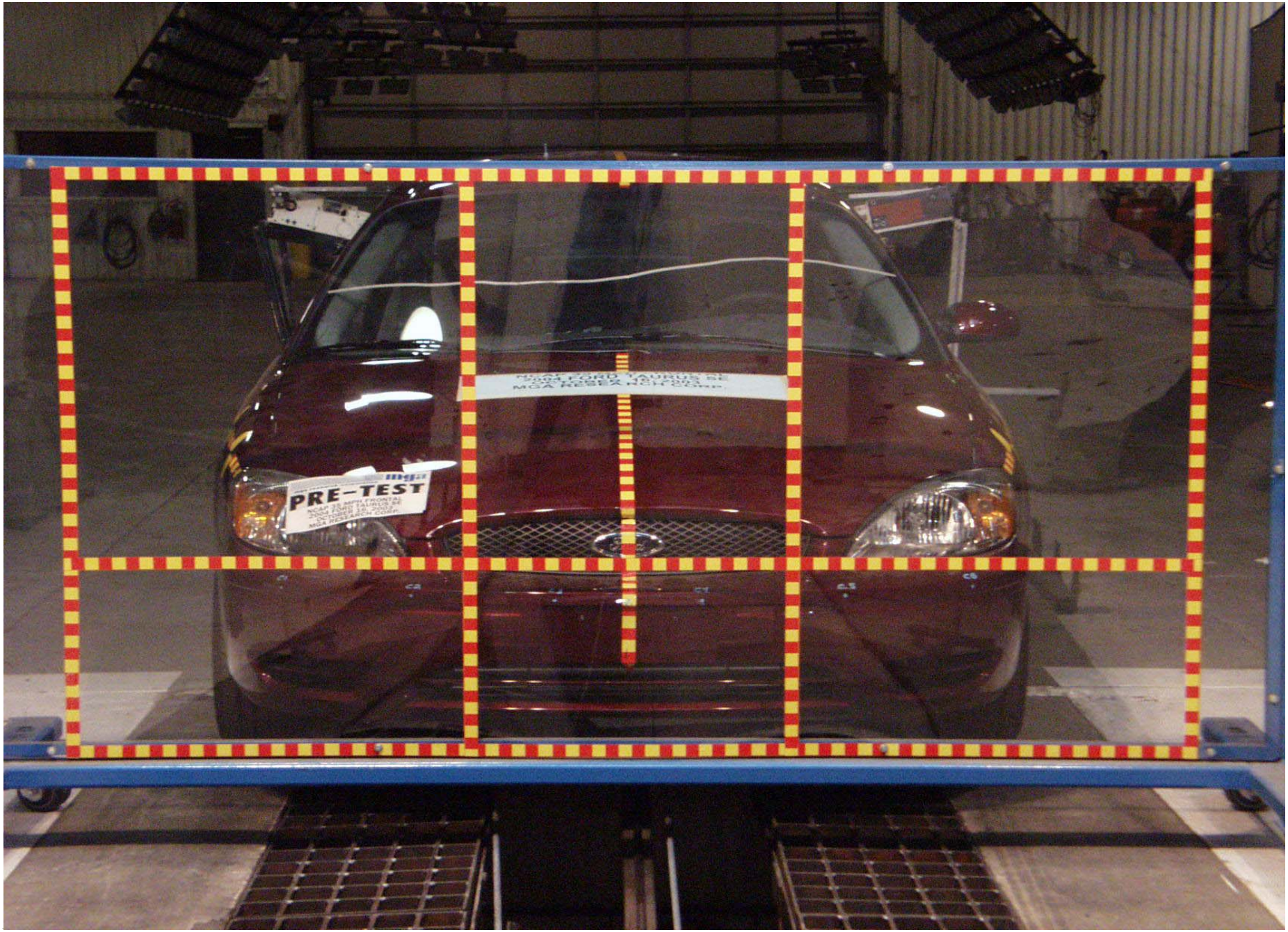
A = Dummies installed in vehicle at 7:00 a.m.

B = Test conducted at 12:01 p.m.

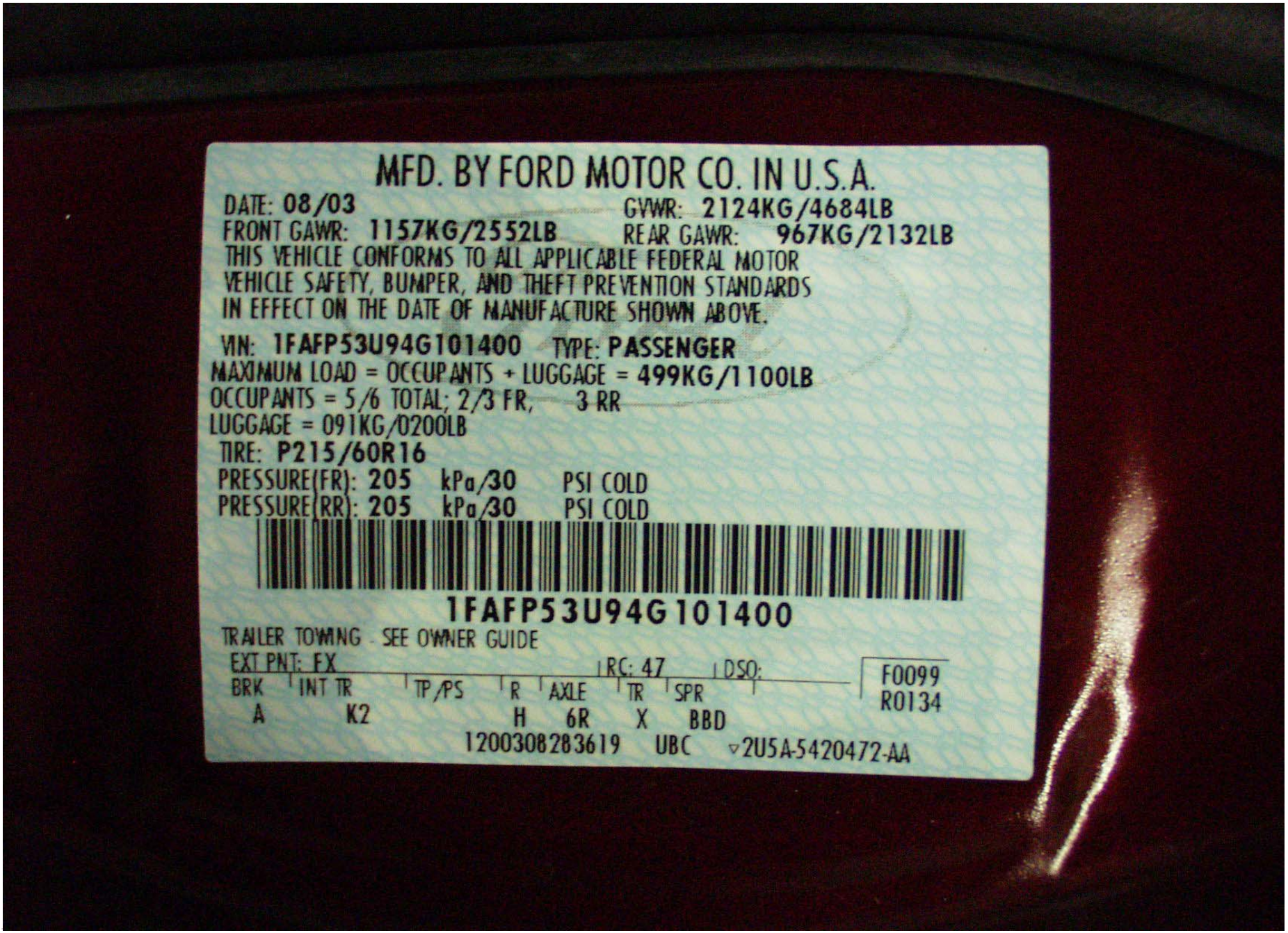
APPENDIX A

PHOTOGRAPHS

TABLE OF PHOTOGRAPHS



Load Cell Location



Vehicle Certification Label/Tire Placard

Right Front View of Test Vehicle, as received

Left Rear View of Test Vehicle, as received

Pre-Test Front View of Test Vehicle

Post-Test Front View of Test Vehicle

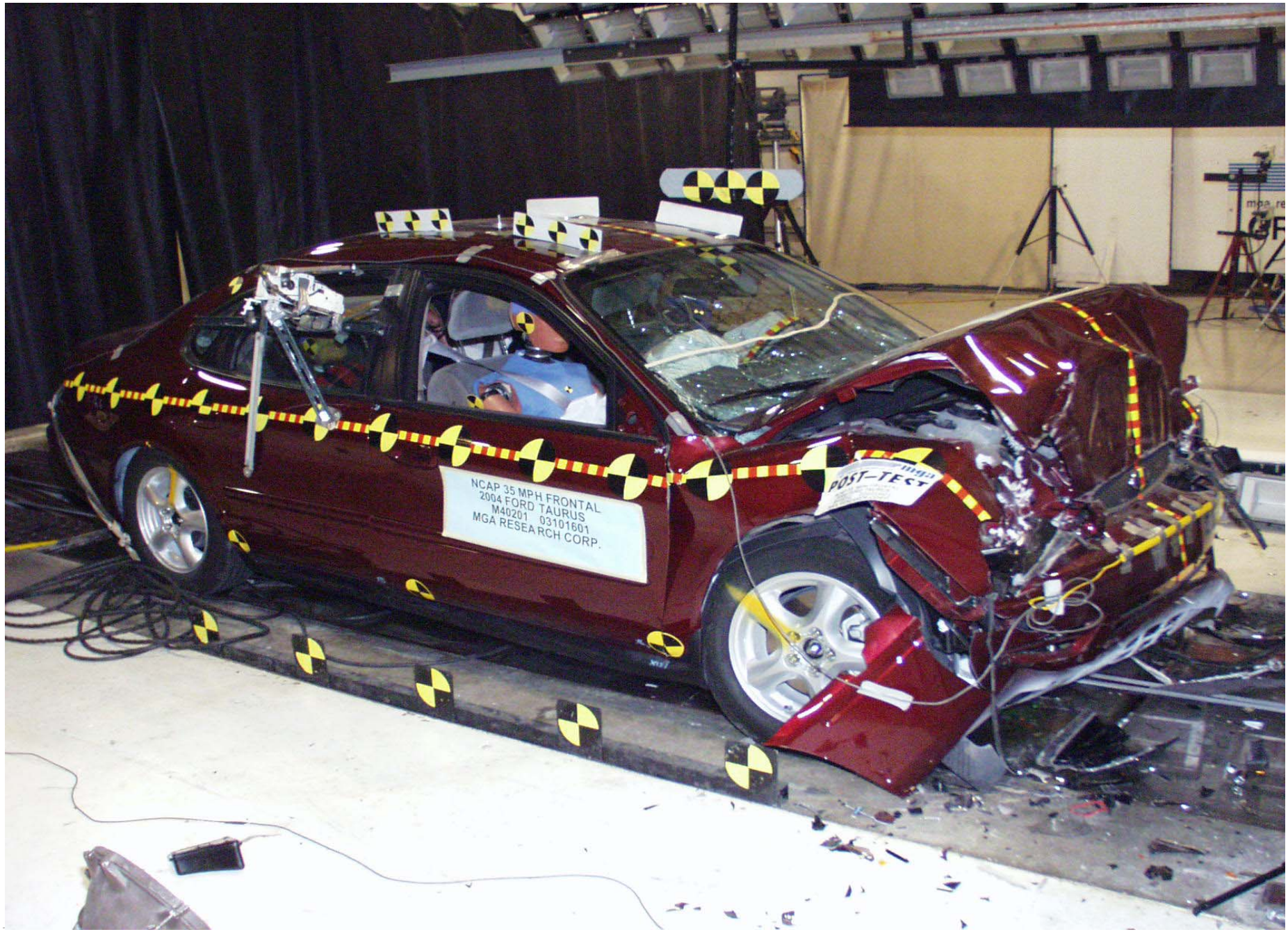
Pre-Test Left Side View of Test Vehicle

Post-Test Left Side View of Test Vehicle

Pre-Test Right Side View of Test Vehicle

Post-Test Right Side View of Test Vehicle

Pre-Test Right Front Three-Quarter View of Test Vehicle



Post-Test Right Front Three-Quarter View of Test Vehicle

Pre-Test Left Rear Three-Quarter View of Test Vehicle

Post-Test Left Rear Three-Quarter View of Test Vehicle

Post-Test Right Rear Three-Quarter View of Door After Impact

Pre-Test Windshield View

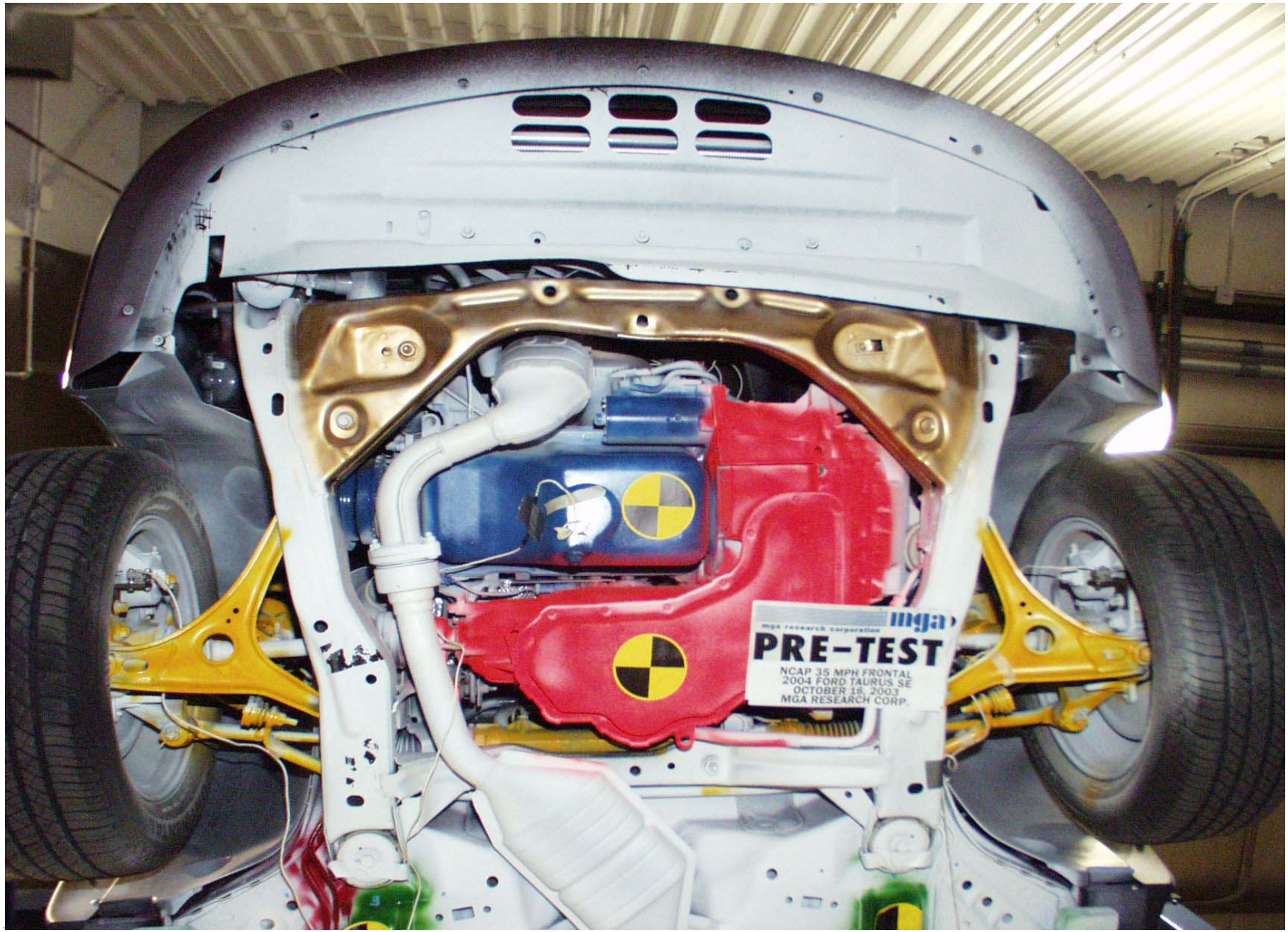
Post-Test Windshield View

Pre-Test Engine Compartment View

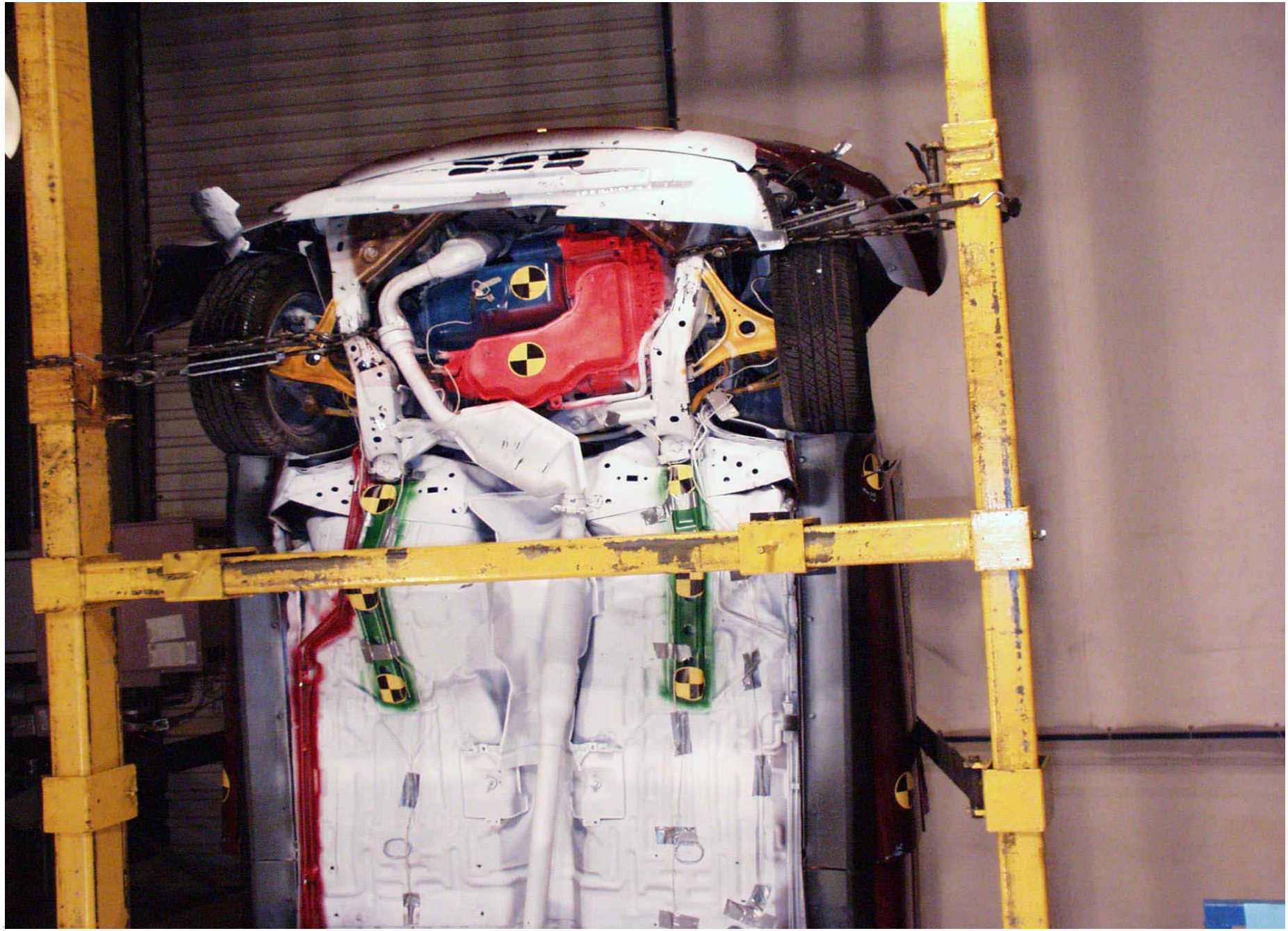
Post-Test Engine Compartment View

Pre-Test Fuel Filler Cap View

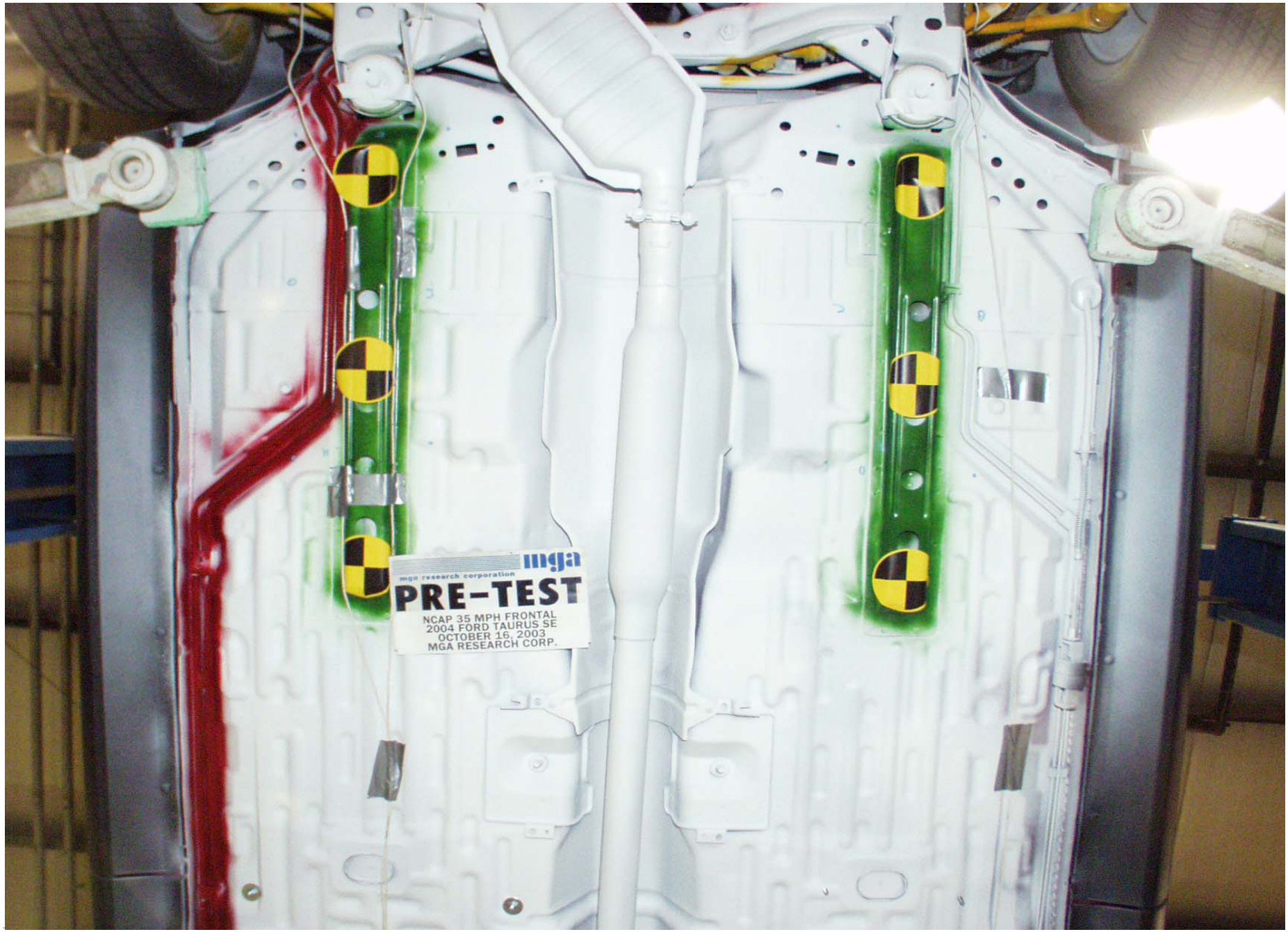
Post-Test Fuel Filler Cap View



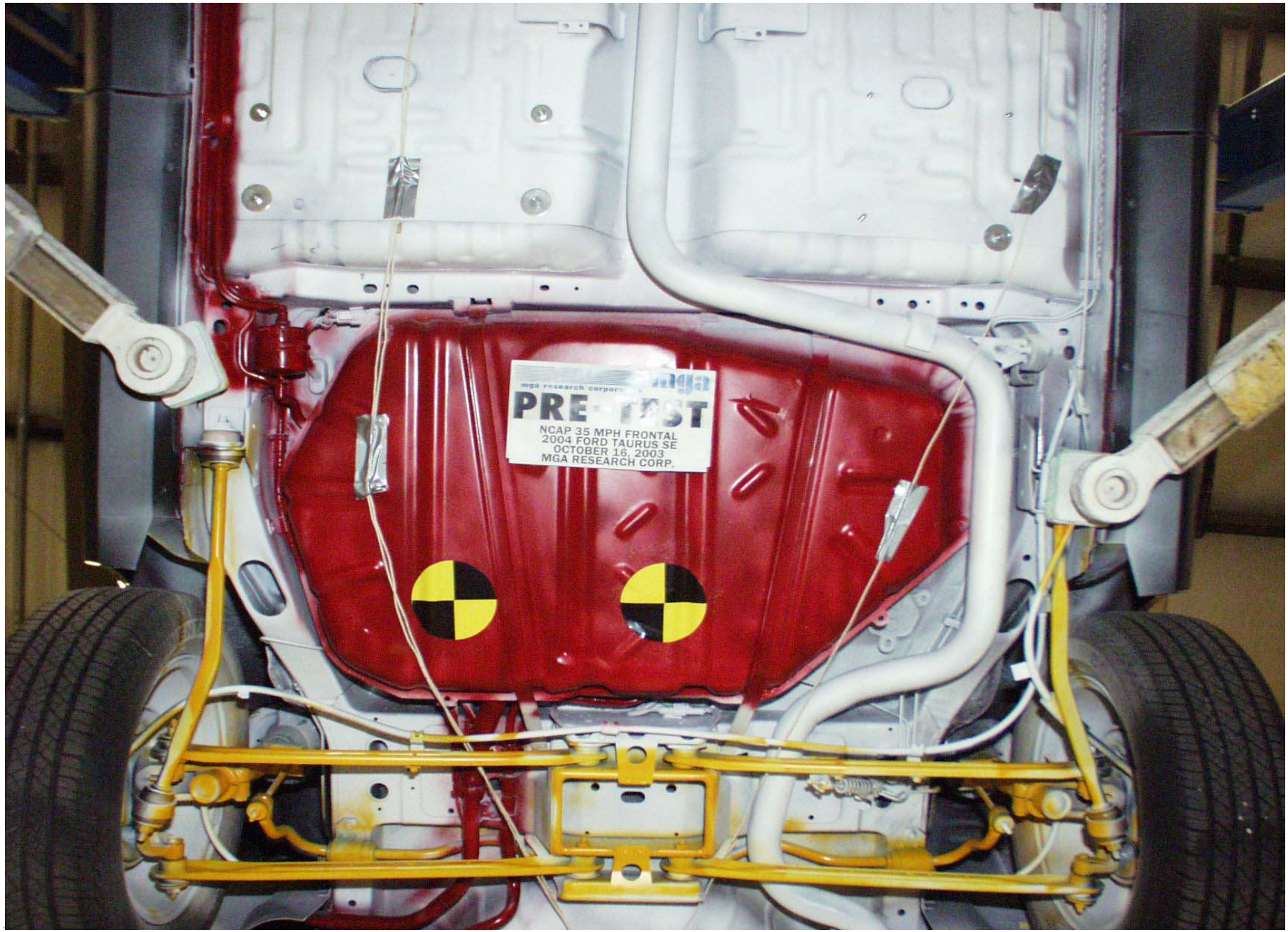
Pre-Test Front Underbody View



Post-Test Front Underbody View

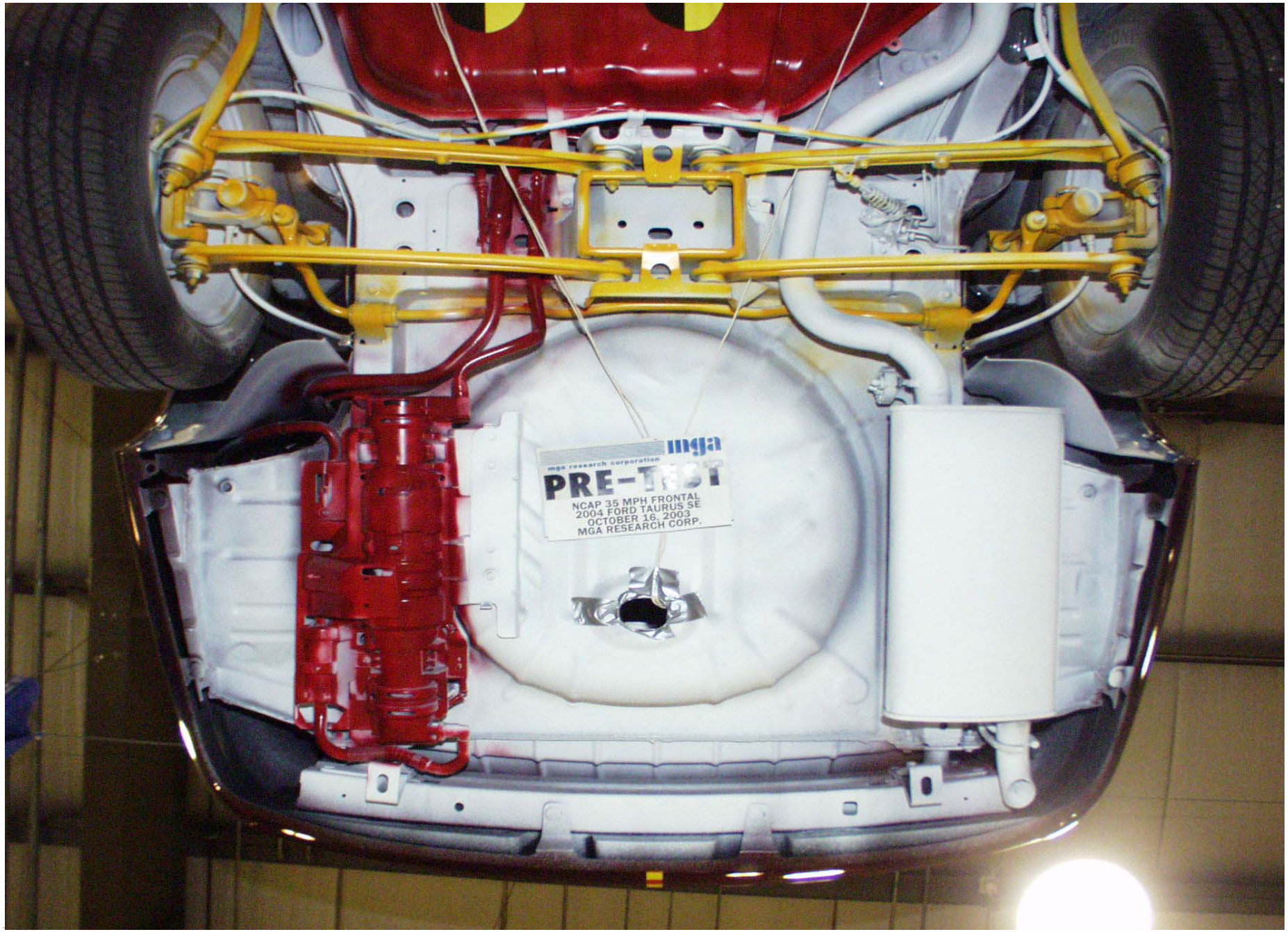


Pre-Test Mid Underbody

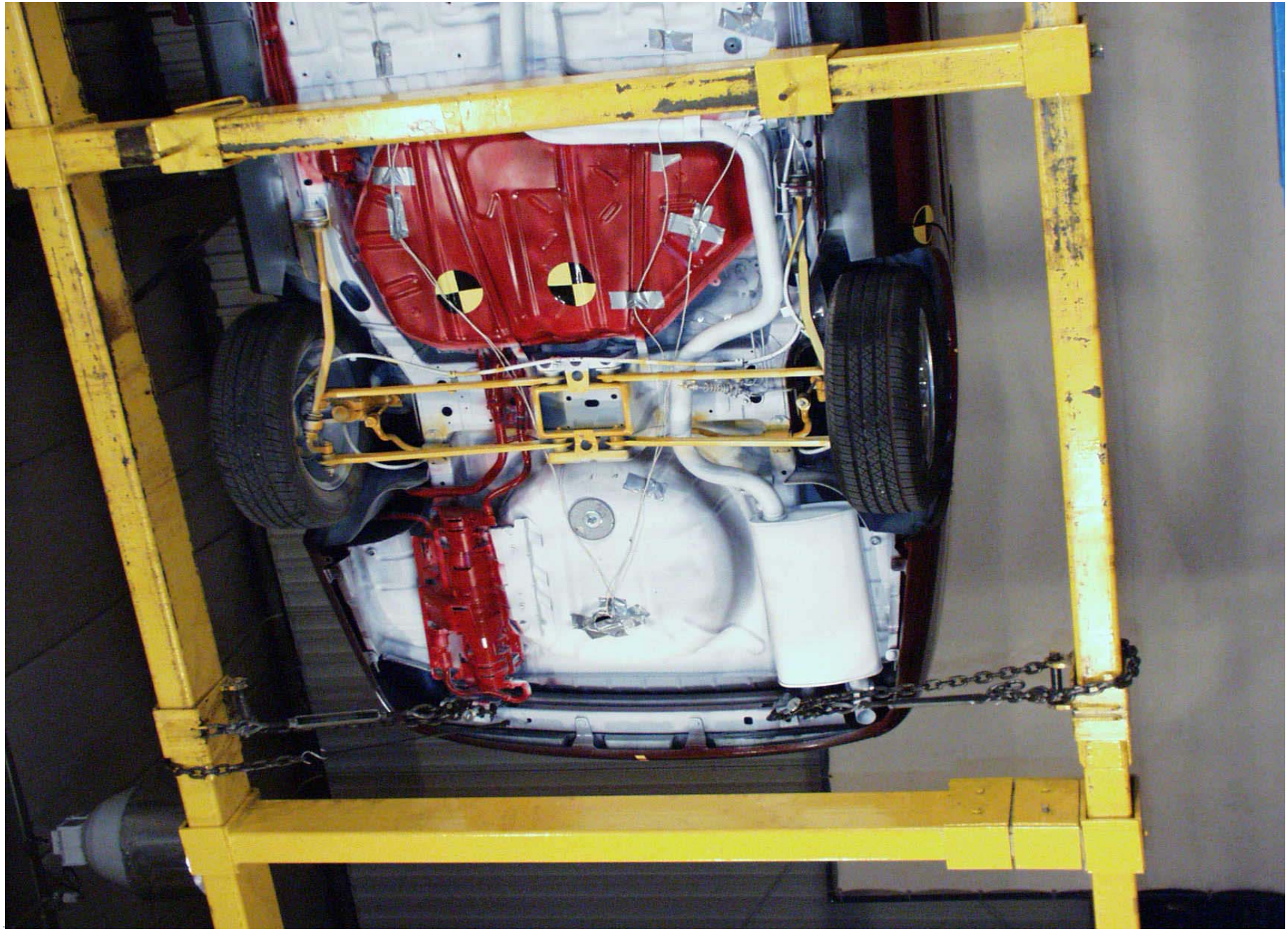


Pre-Test Mid Underbody

Post-Test Mid Underbody



Pre-Test Rear Underbody View



Post-Test Rear Underbody View

Pre-Test Driver Dummy Front View (head position)

Post-Test Driver Dummy Front View (head position)

Pre-Test Driver Dummy Position Left Side View

Post-Test Driver Dummy Position Left Side View

Pre-Test Driver Dummy Position Left Side View (Door Open)

Post-Test Driver Dummy Position Left Side View (Door Open)

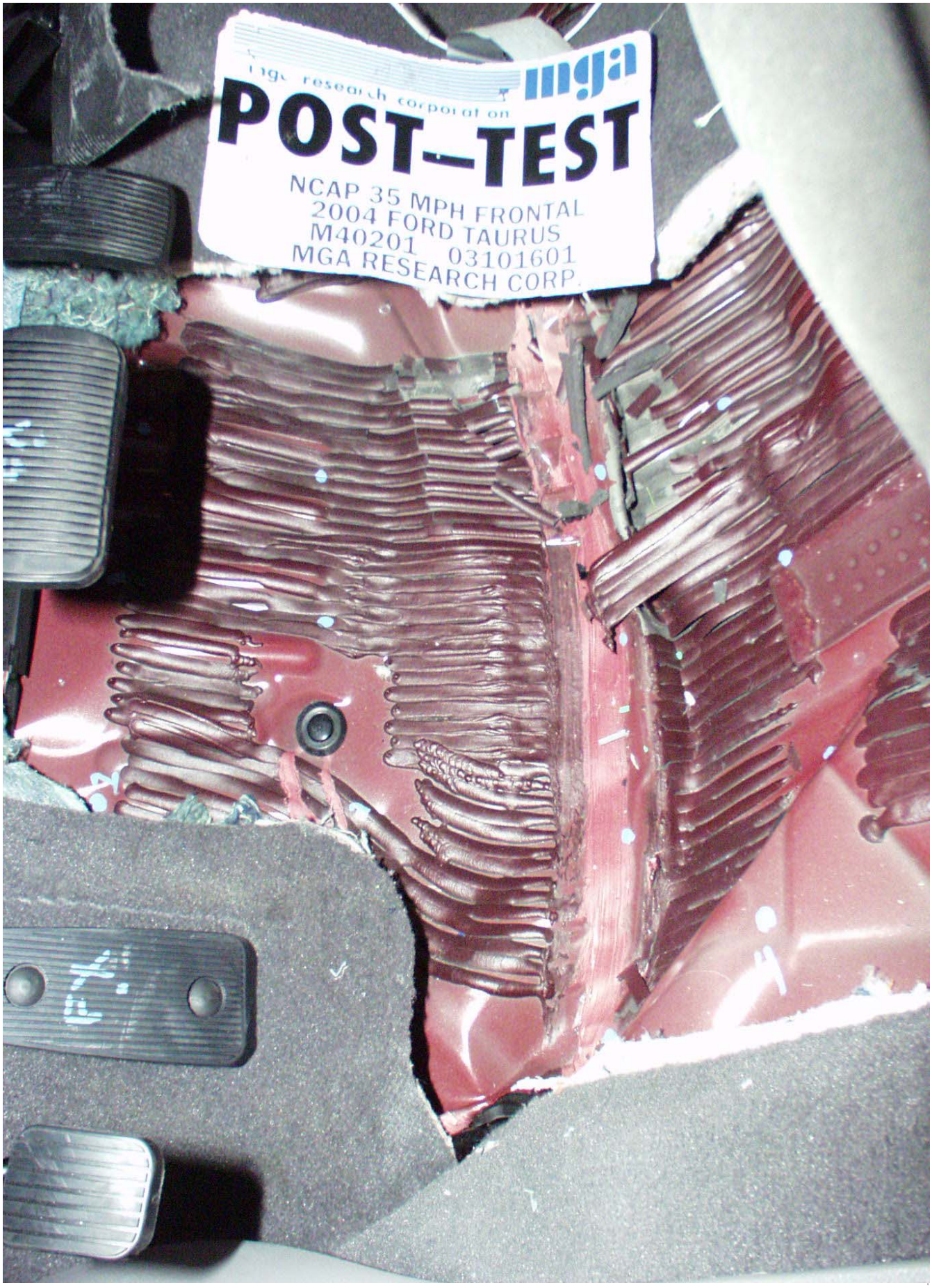
Pre-Test Driver Dummy Feet Position

Post-Test Driver Dummy Feet Position

Pre-Test Driver Side Knee Bolster View

Post-Test Driver Side Knee Bolster View

Pre-Test Driver Side Floor Pan View



Post-Test Driver Side Floor Pan View

Post-Test Driver Dummy Head Contact

Post-Test Driver Dummy Knee Contact

Post-Test Driver Dummy Airbag Contact

Pre-Test Passenger Dummy Front View (head position)

Post-Test Passenger Dummy Front View (head position)

Pre-Test Passenger Dummy Position Right Side View

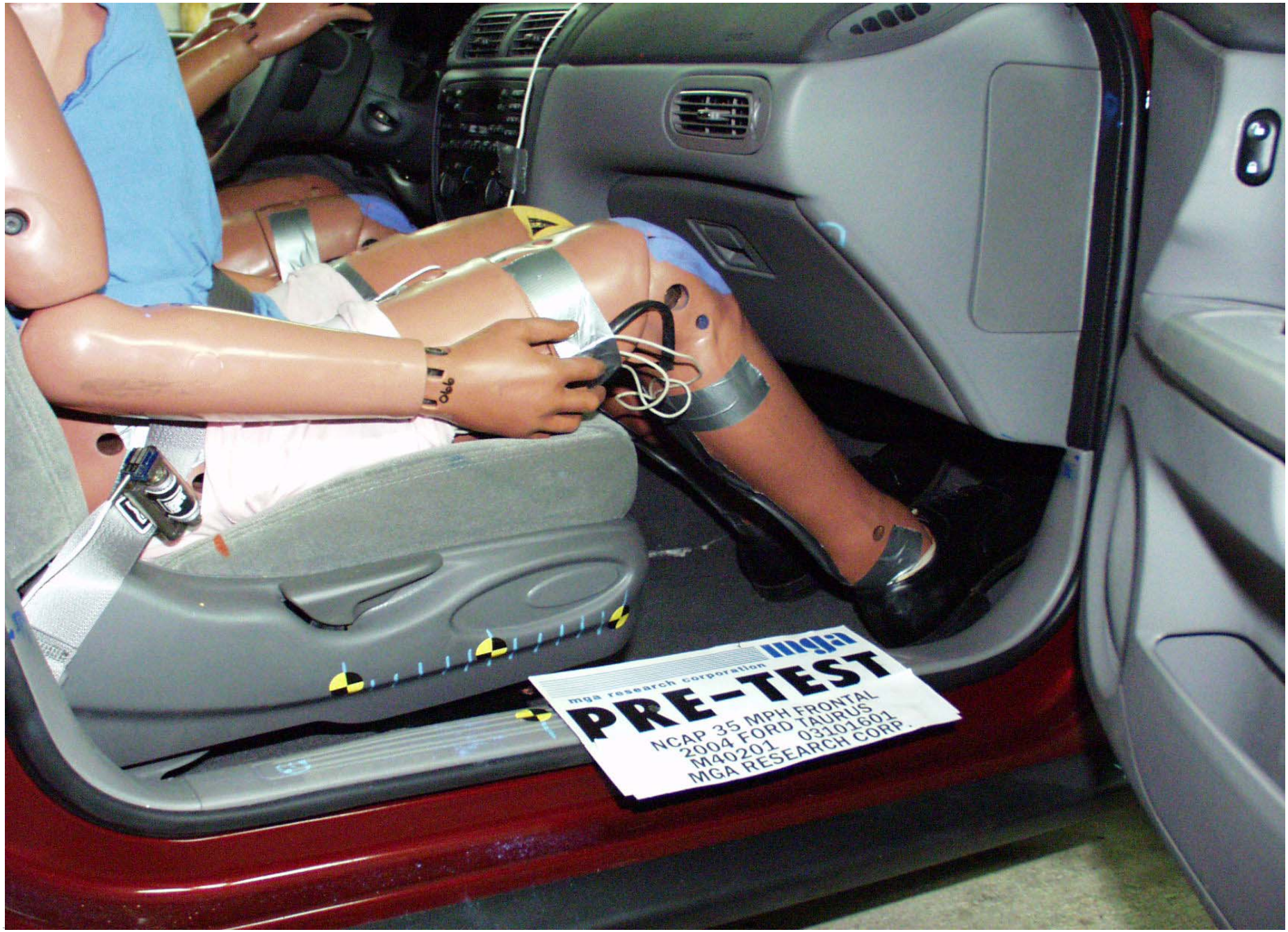
Post-Test Passenger Dummy Position Right Side View

Pre-Test Passenger Dummy Position Right Side View (Door Open)

Post-Test Passenger Dummy Position Right Side View (Door Open)

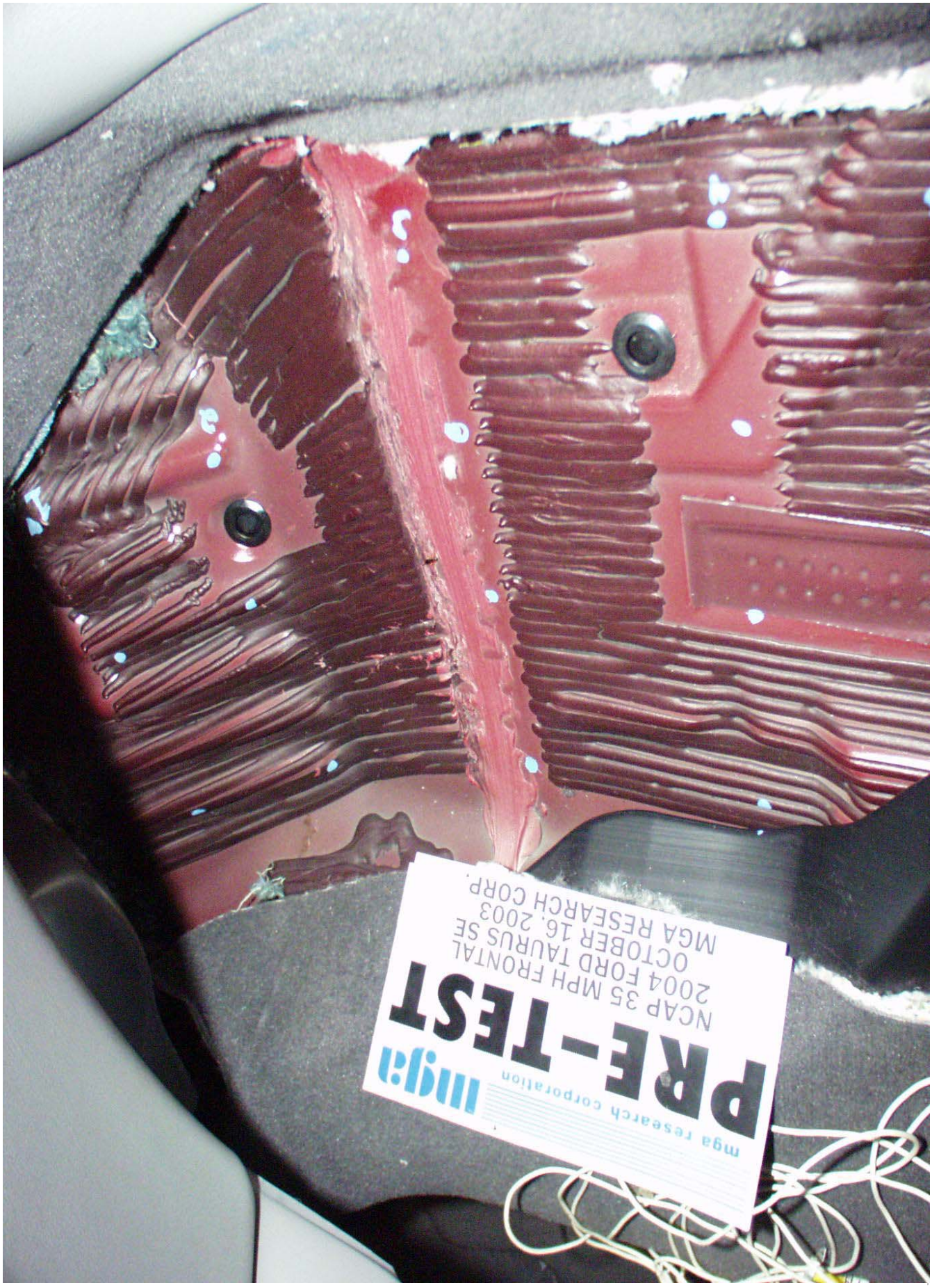
Pre-Test Passenger Dummy Feet Position

Post-Test Passenger Dummy Feet Position



Pre-Test Passenger Side Knee Bolster View

Post-Test Passenger Side Knee Bolster View



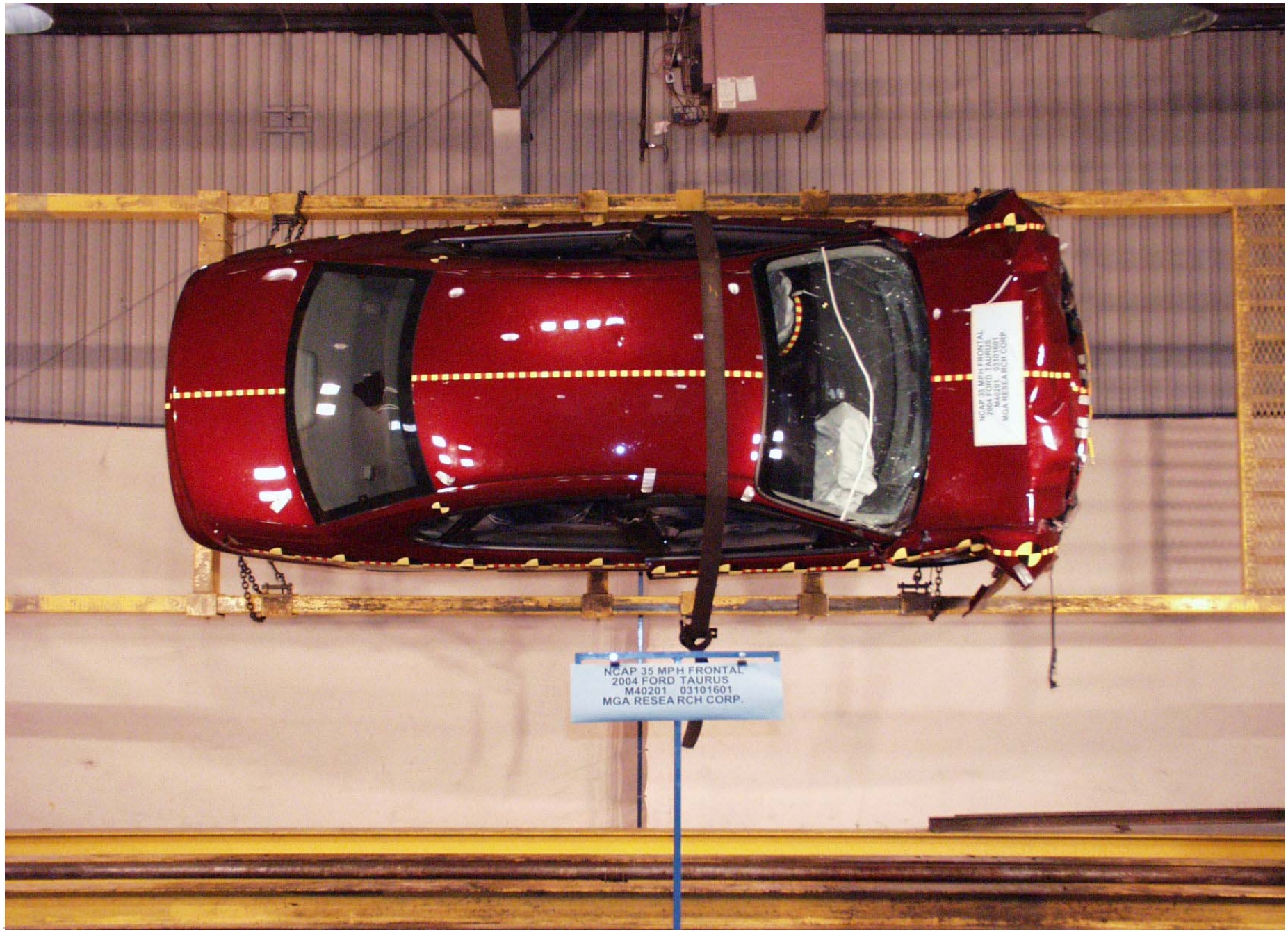
Pre-Test Passenger Side Floor Pan View

Post-Test Passenger Side Floor Pan View

Post-Test Passenger Dummy Head Contact

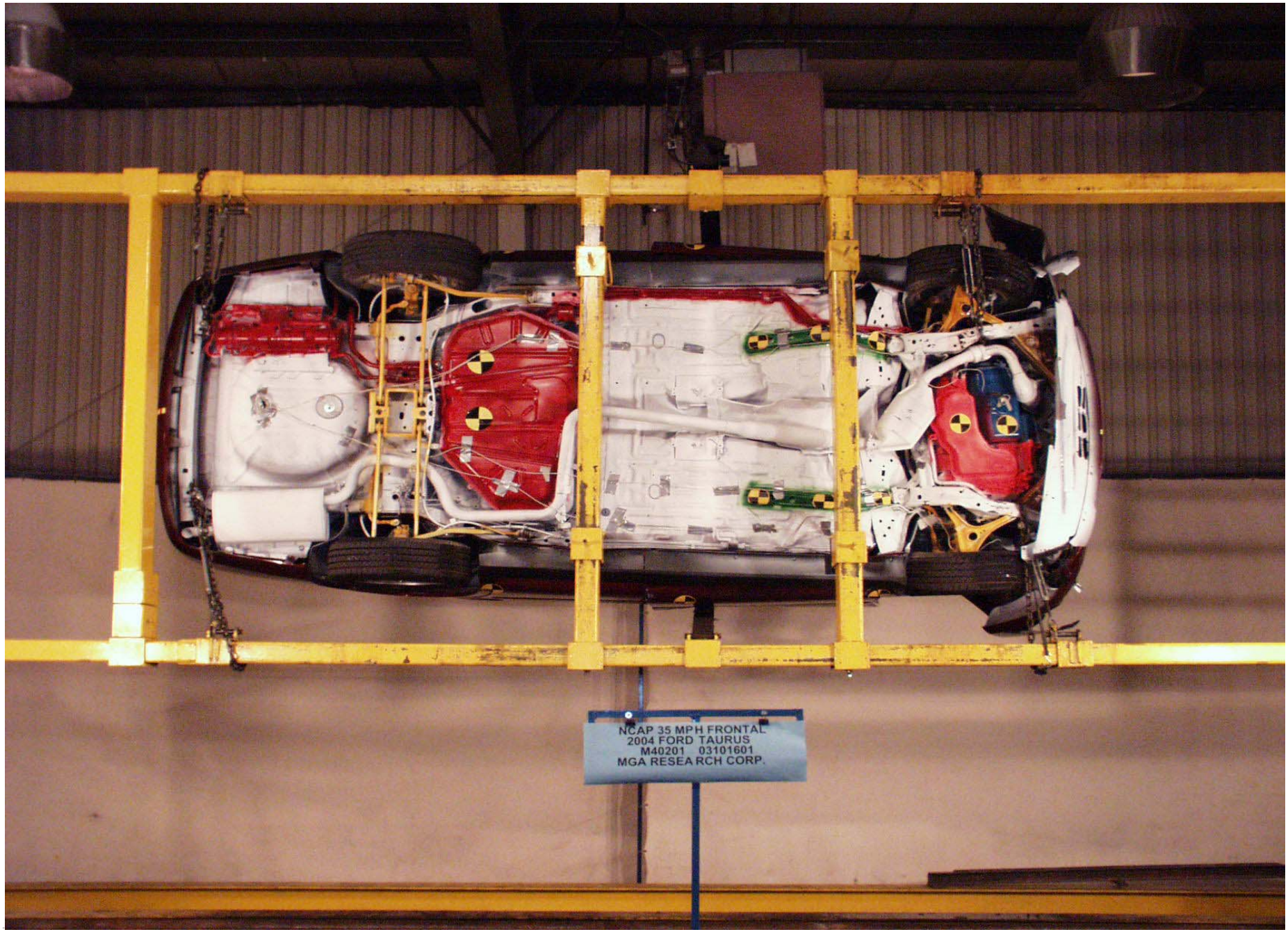
Post-Test Passenger Dummy Knee Contact

Post-Test Passenger Dummy Airbag Contact



Rollover 90 Degrees

Rollover 180 Degrees



Rollover 270 Degrees

Rollover 360 Degrees

Vehicle Impact

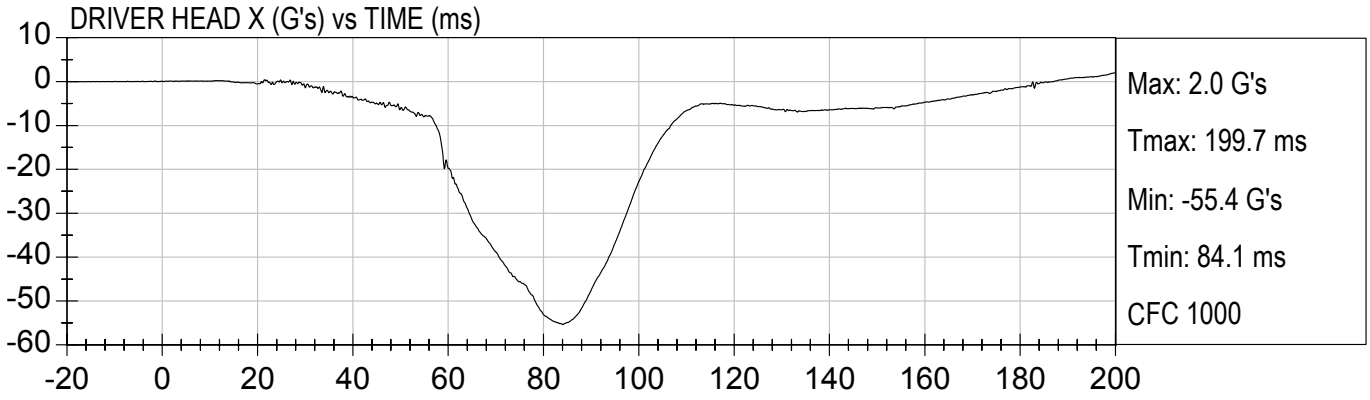
APPENDIX B

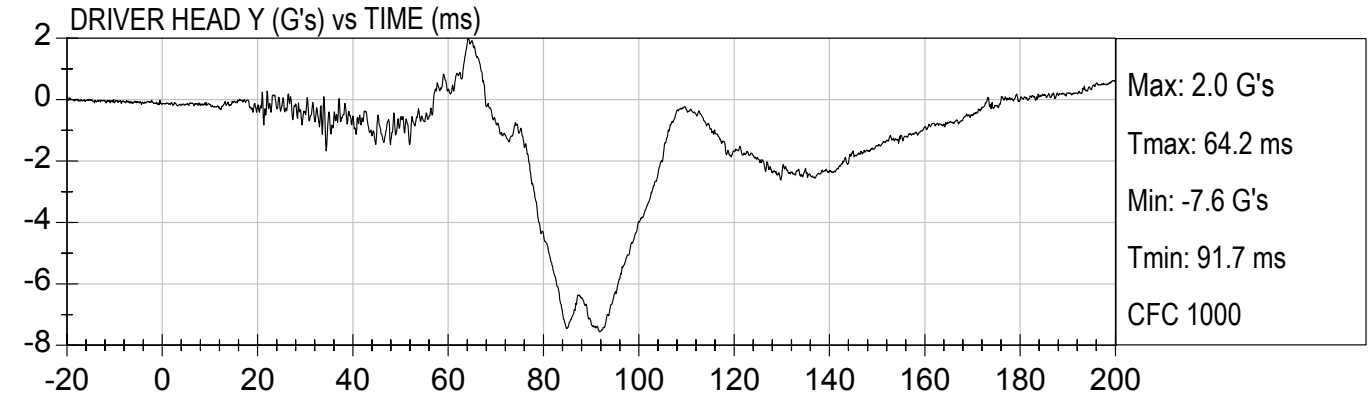
DUMMY AND VEHICLE RESPONSE DATA TRACES

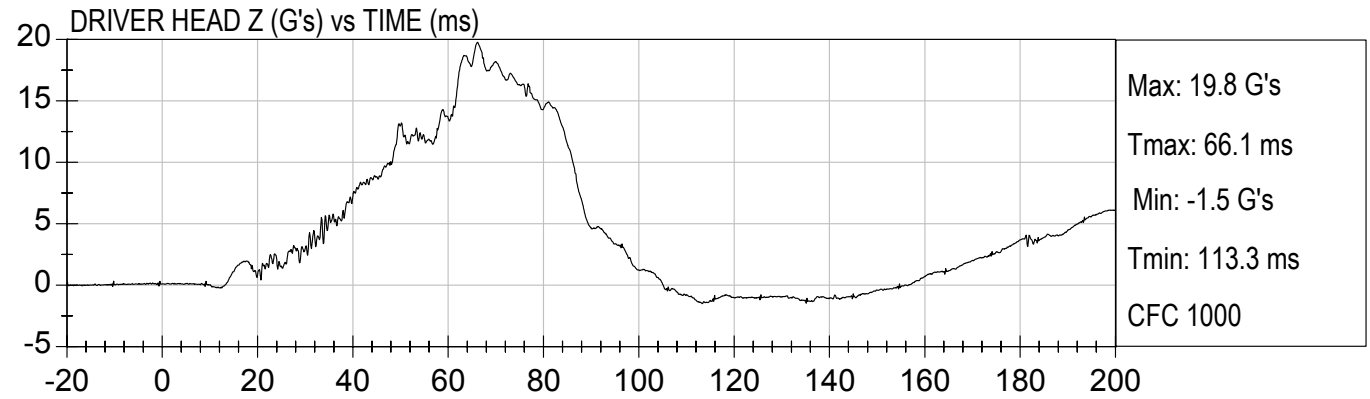
TABLE OF DATA PLOTS

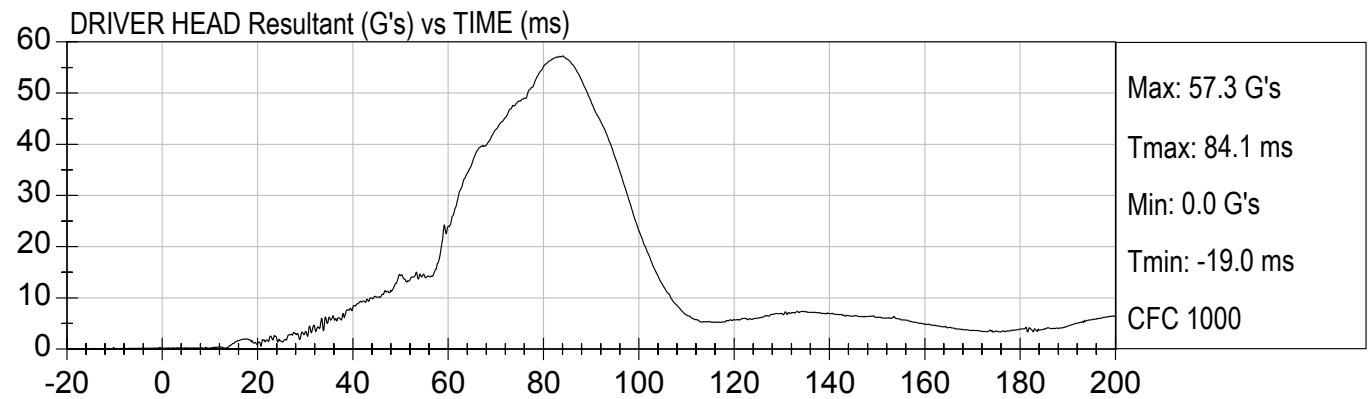
NCAP 35MPH FRONTAL
2004 FORD TAURUS (M40201)

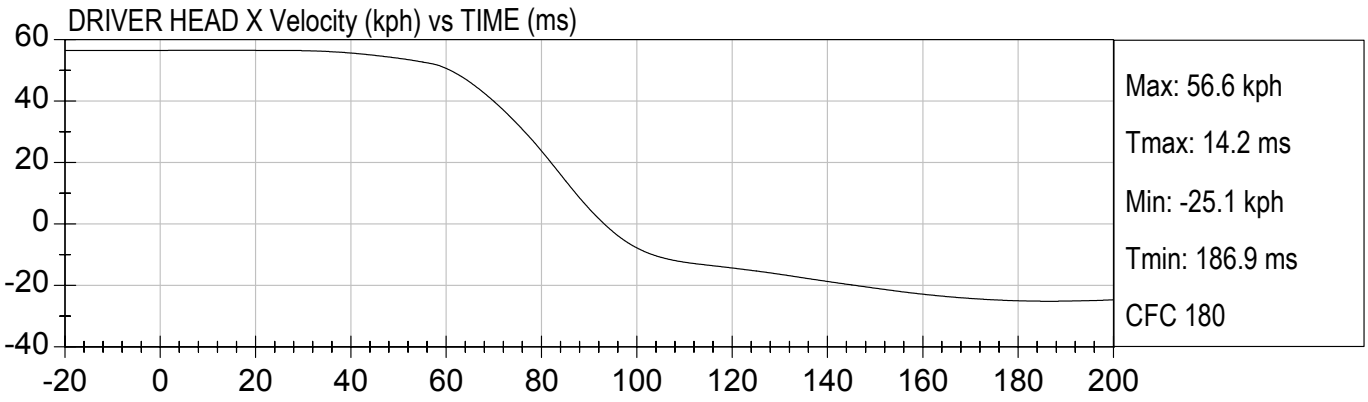
Test Date: 10/16/03
Speed: 35.1 mph (56.5 km/h)

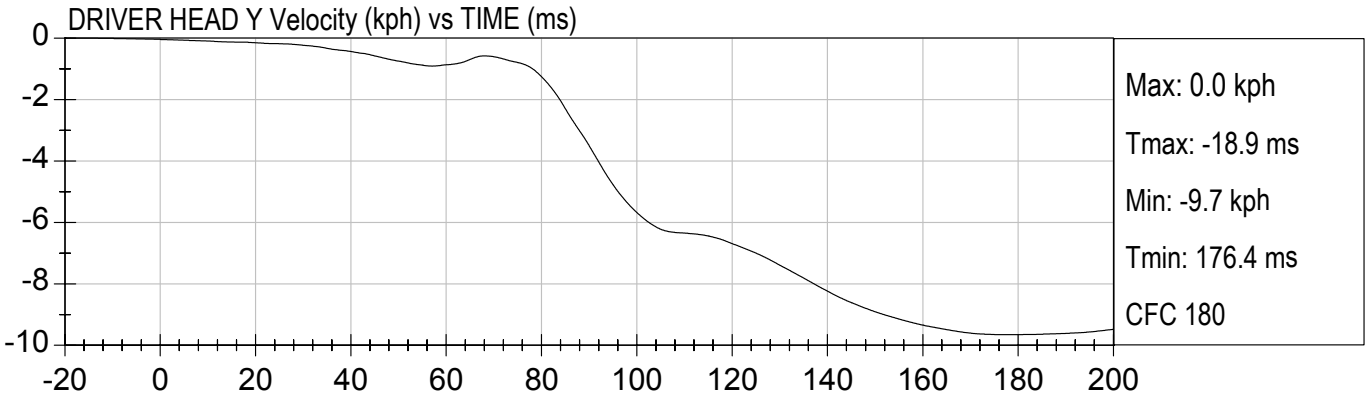


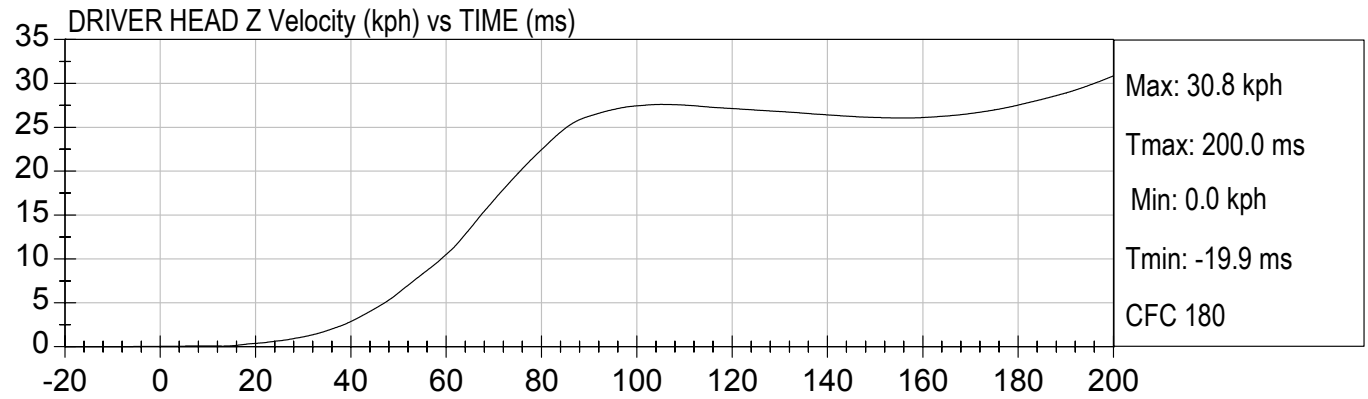






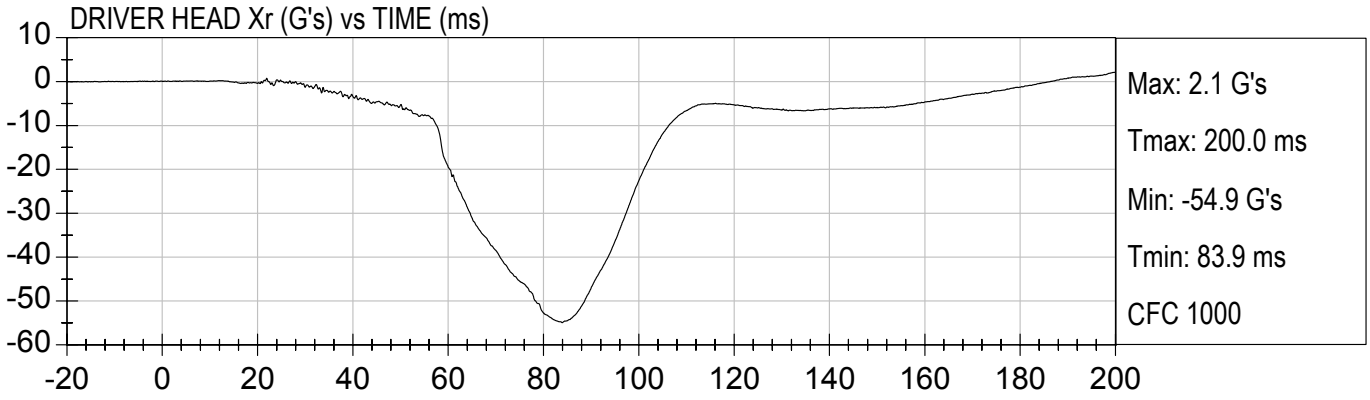

DRIVER HEAD X Velocity (kph) vs TIME (ms)
60
40
20
0
-20
-40
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 56.6 kph
Tmax: 14.2 ms
Min: -25.1 kph
Tmin: 186.9 ms
CFC 180

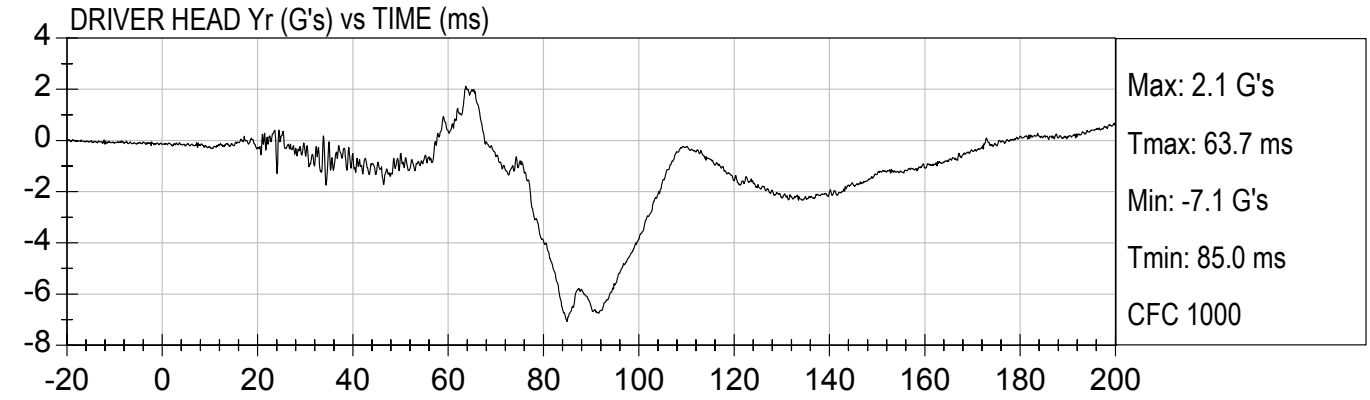

DRIVER HEAD Y Velocity (kph) vs TIME (ms)
0
-2
-4
-6
-8
-10
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 0.0 kph
Tmax: -18.9 ms
Min: -9.7 kph
Tmin: 176.4 ms
CFC 180

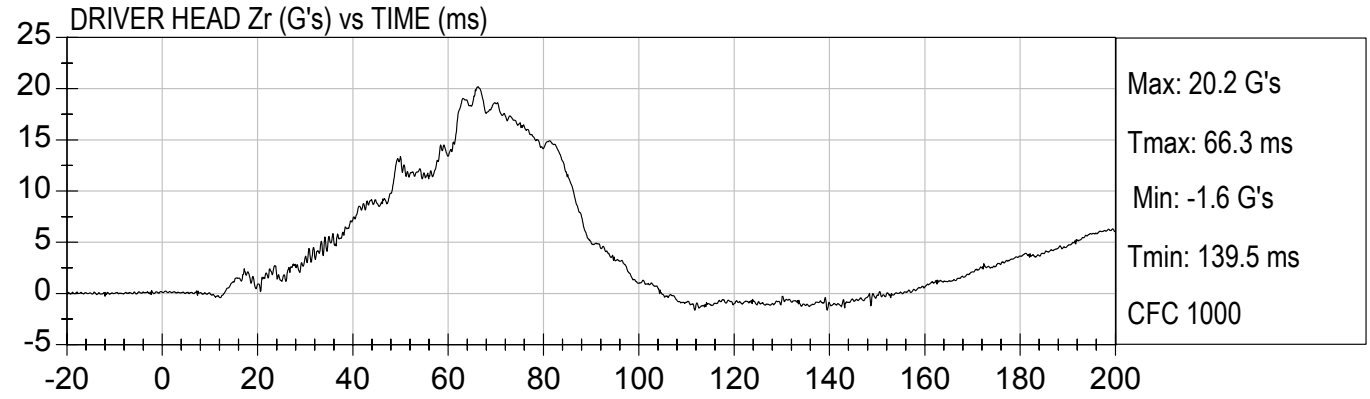

DRIVER HEAD Z Velocity (kph) vs TIME (ms)
35
30
25
20
15
10
5
0
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 30.8 kph
Tmax: 200.0 ms
Min: 0.0 kph
Tmin: -19.9 ms
CFC 180

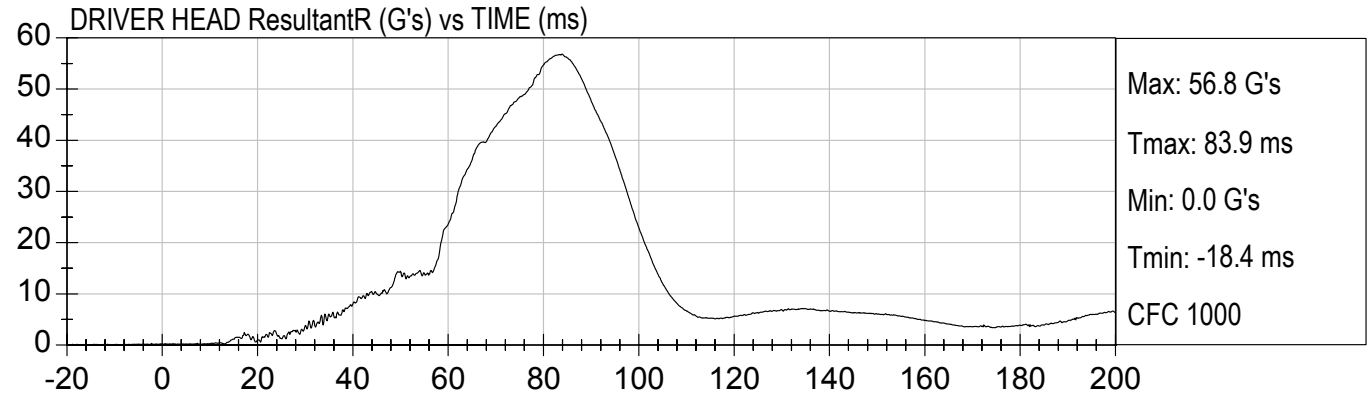
NCAP 35MPH FRONTAL
2004 FORD TAURUS (M40201)

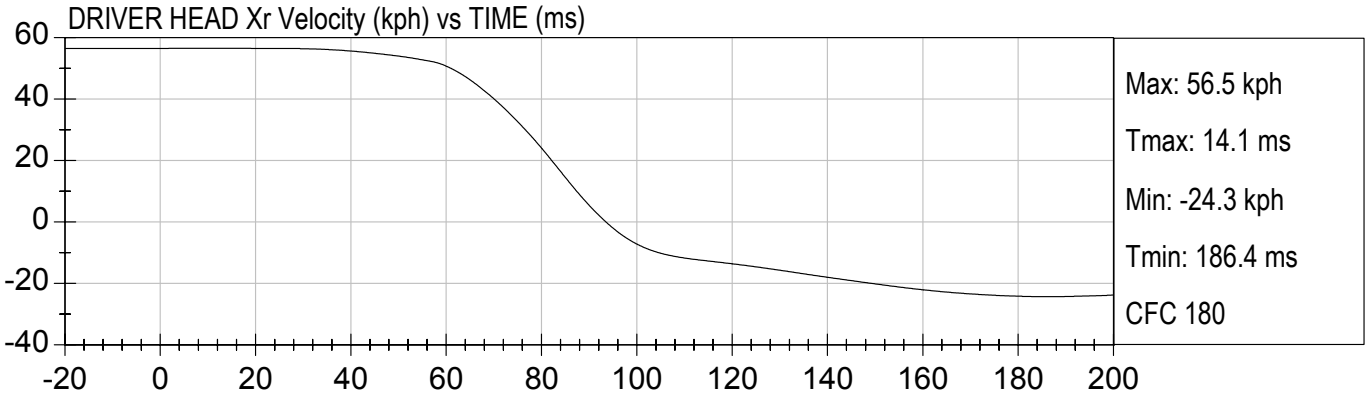
Test Date: 10/16/03
Speed: 35.1 mph (56.5 km/h)

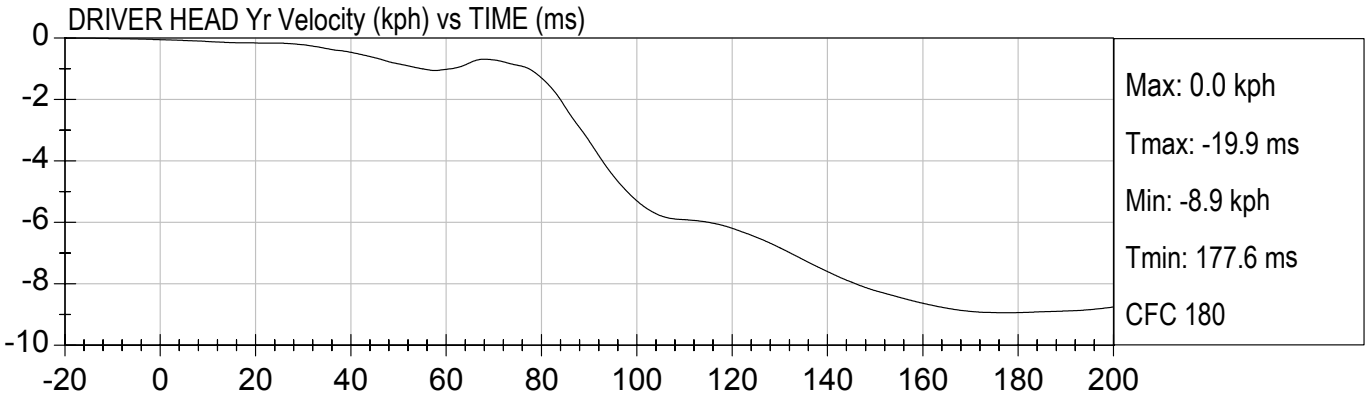


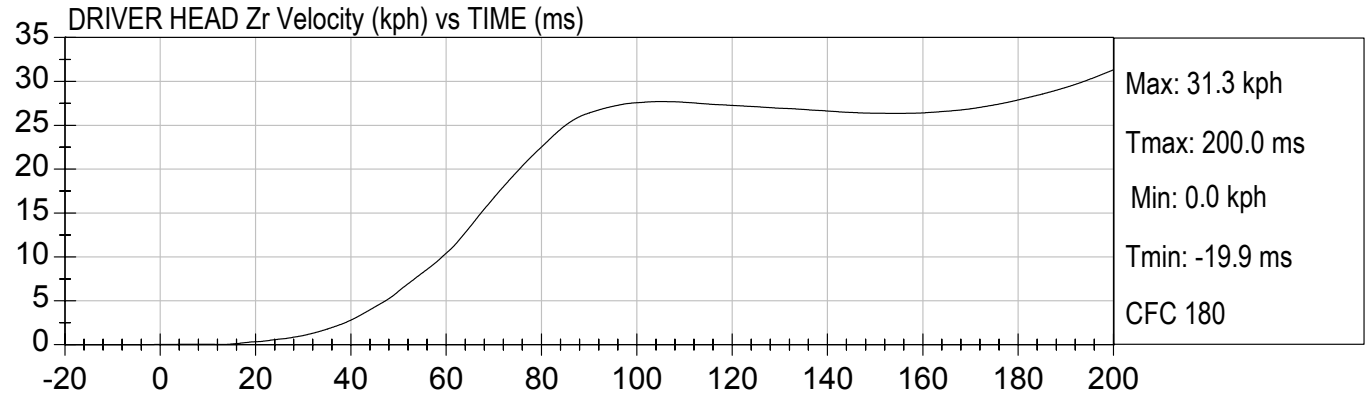






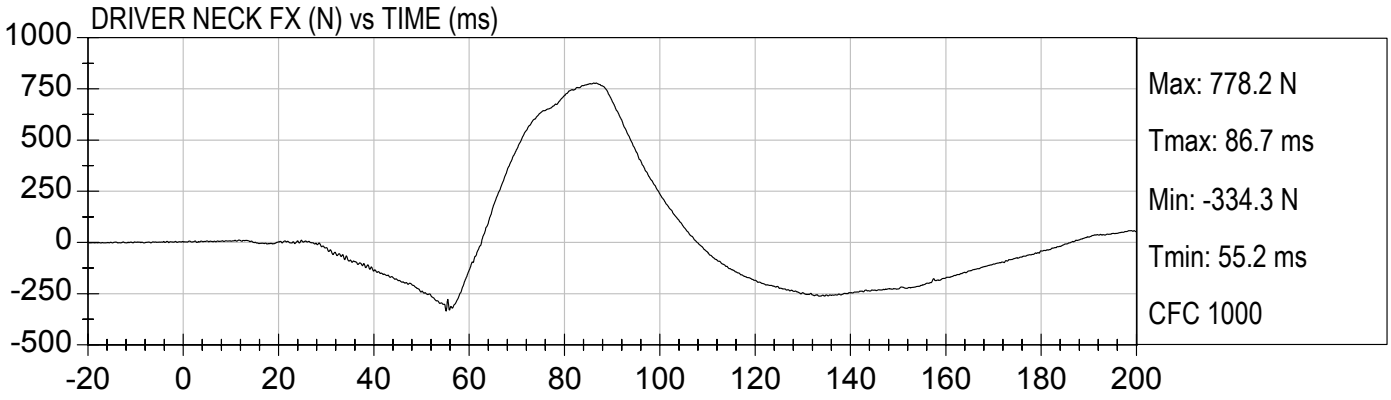

DRIVER HEAD Xr Velocity (kph) vs TIME (ms)
60
40
20
0
-20
-40
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 56.5 kph
Tmax: 14.1 ms
Min: -24.3 kph
Tmin: 186.4 ms
CFC 180

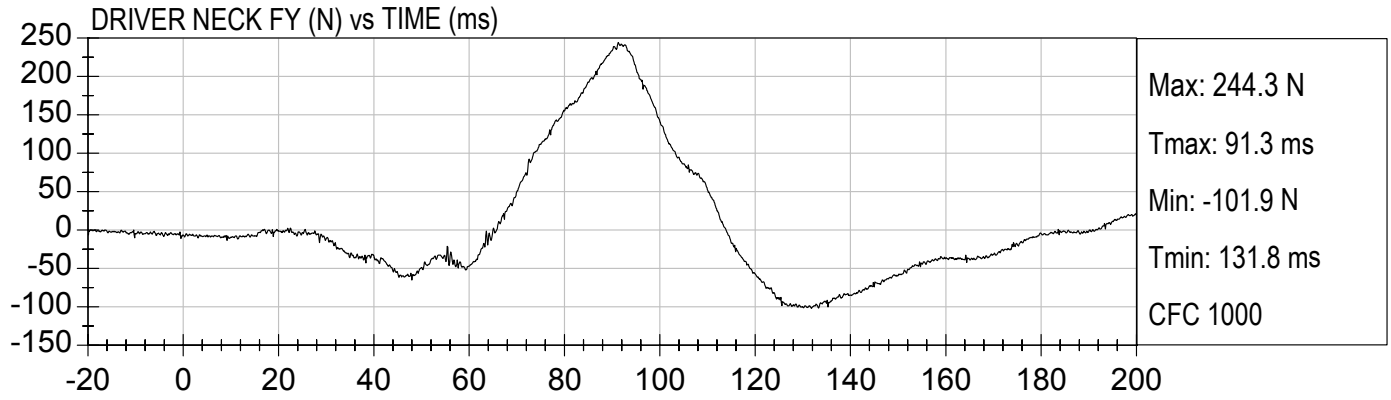

DRIVER HEAD Yr Velocity (kph) vs TIME (ms)
0
-2
-4
-6
-8
-10
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 0.0 kph
Tmax: -19.9 ms
Min: -8.9 kph
Tmin: 177.6 ms
CFC 180

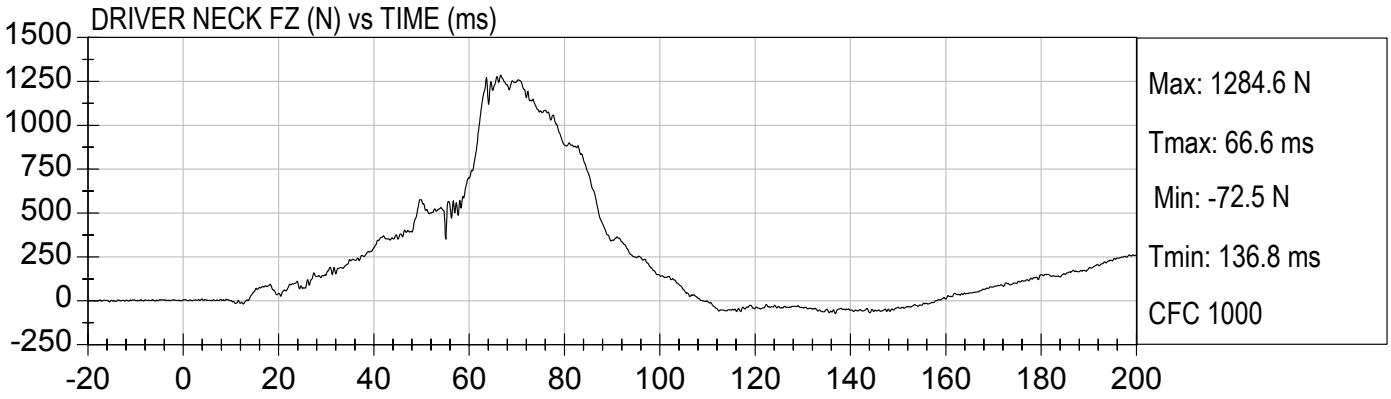

DRIVER HEAD Zr Velocity (kph) vs TIME (ms)
35
30
25
20
15
10
5
0
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 31.3 kph
Tmax: 200.0 ms
Min: 0.0 kph
Tmin: -19.9 ms
CFC 180

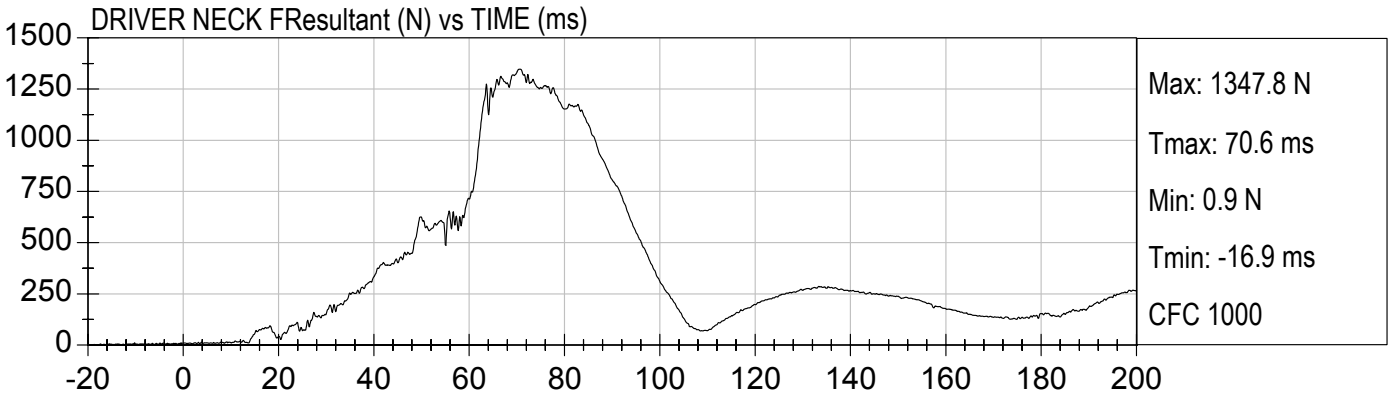
NCAP 35MPH FRONTAL
2004 FORD TAURUS (M40201)

Test Date: 10/16/03
Speed: 35.1 mph (56.5 km/h)



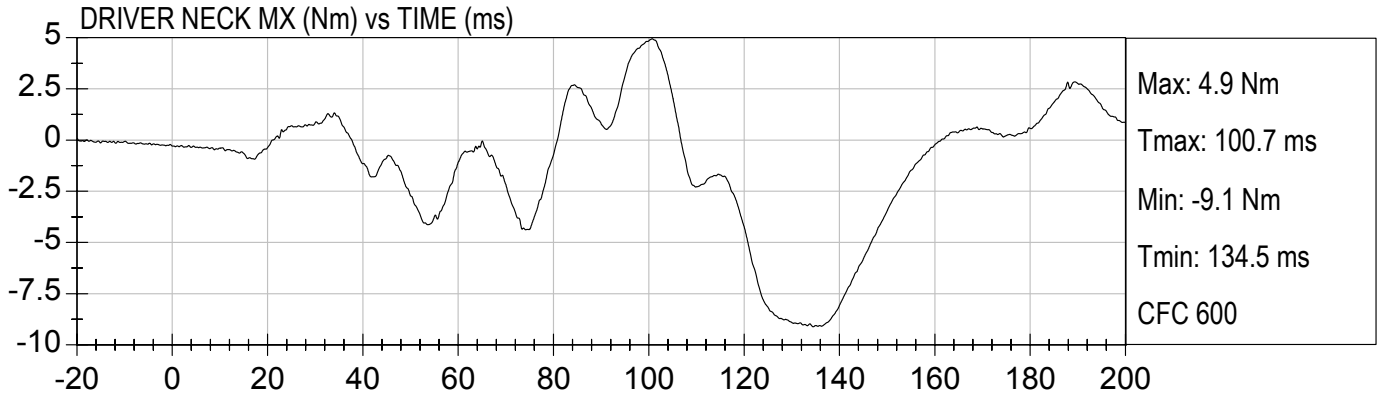


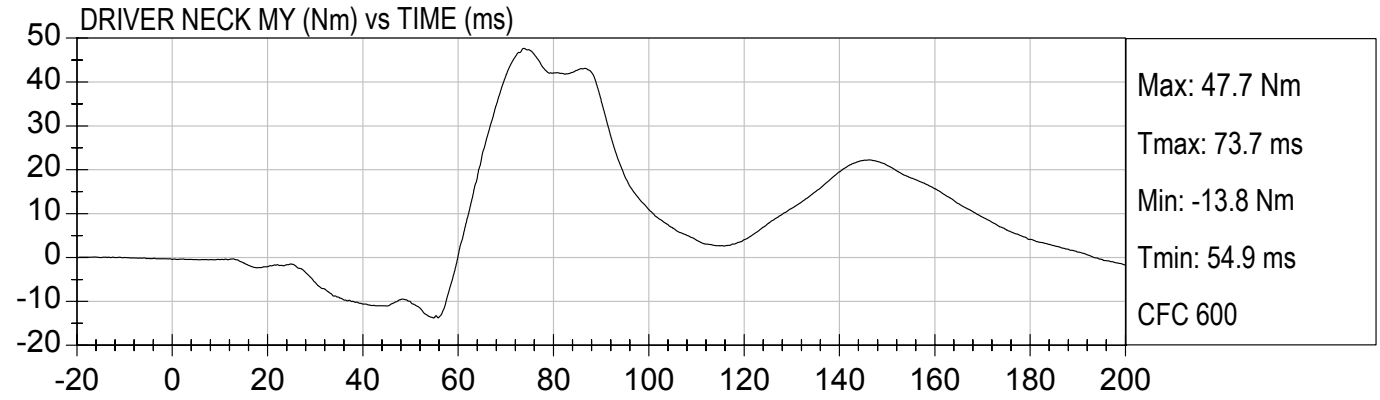


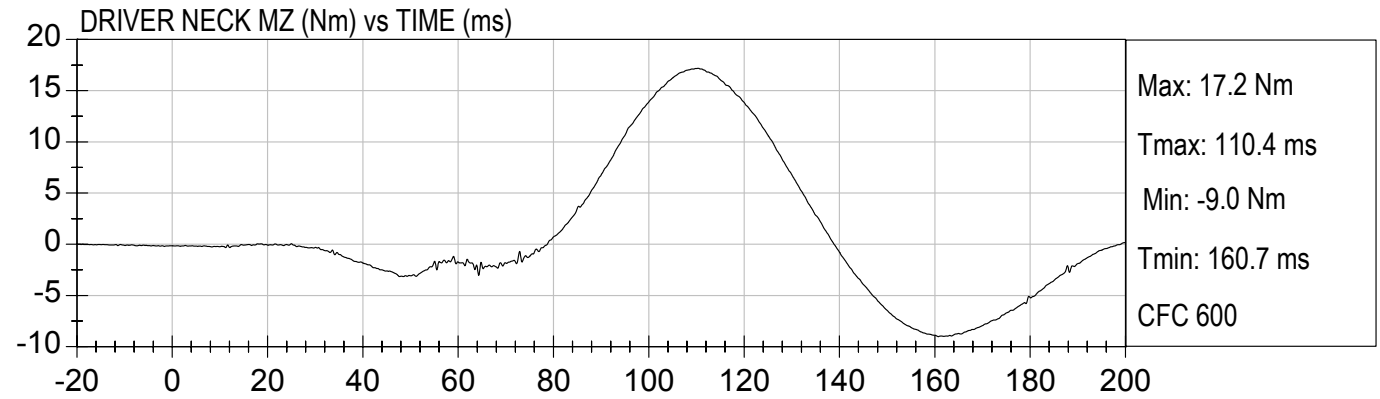


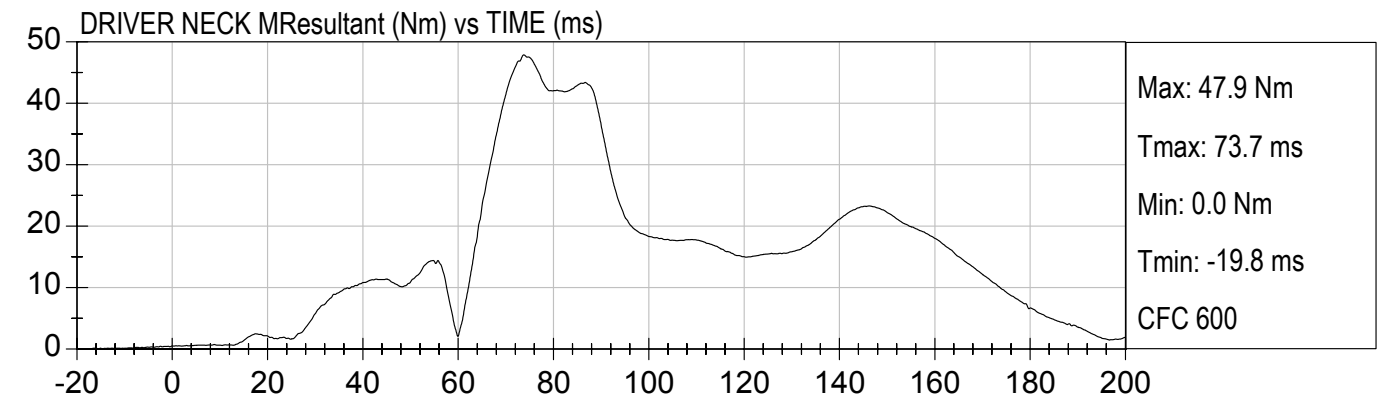
NCAP 35MPH FRONTAL
2004 FORD TAURUS (M40201)

Test Date: 10/16/03
Speed: 35.1 mph (56.5 km/h)



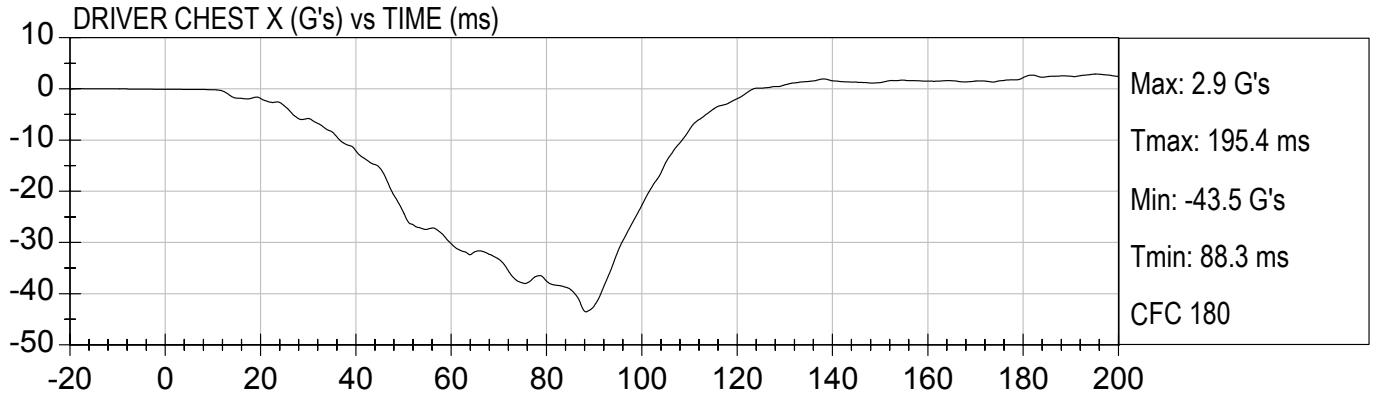


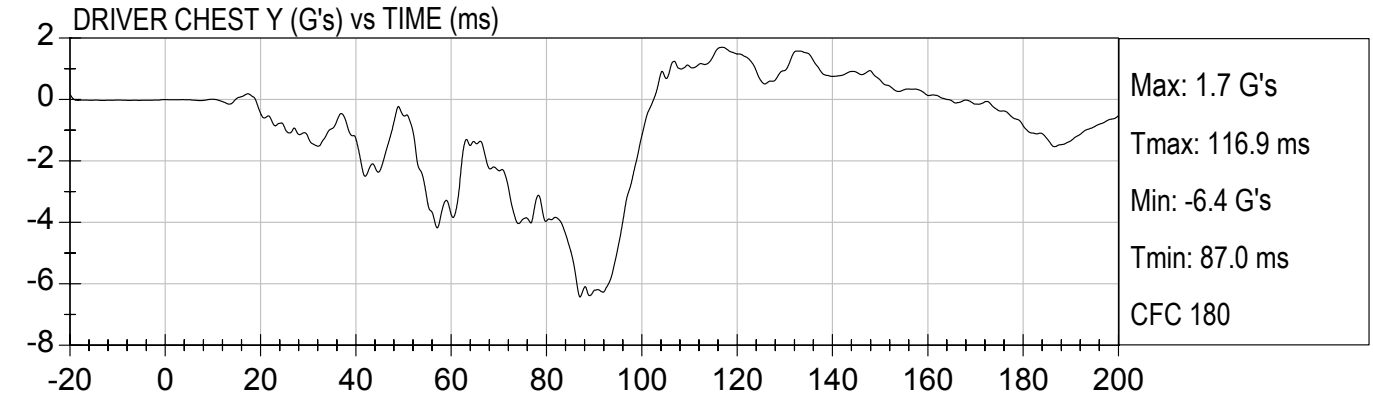


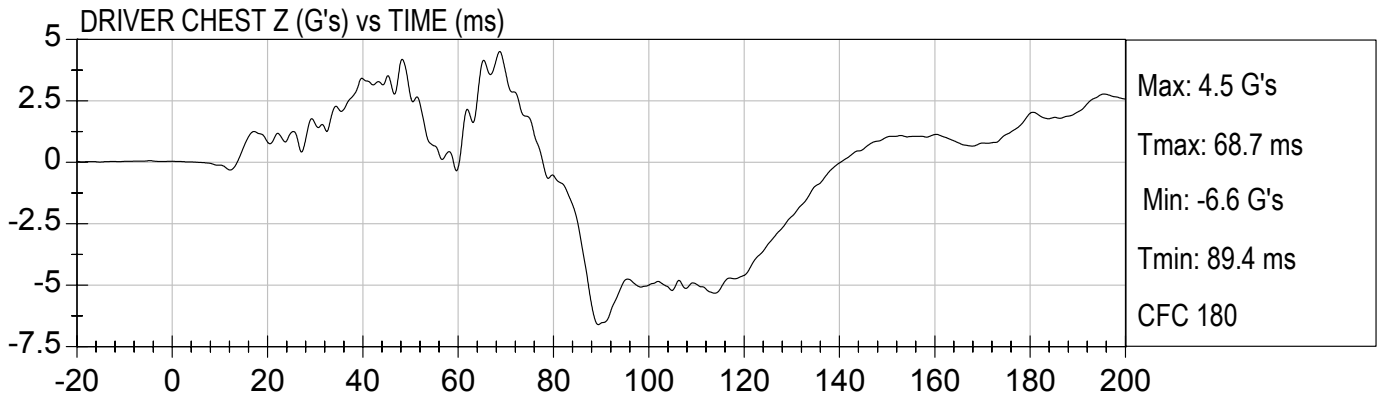


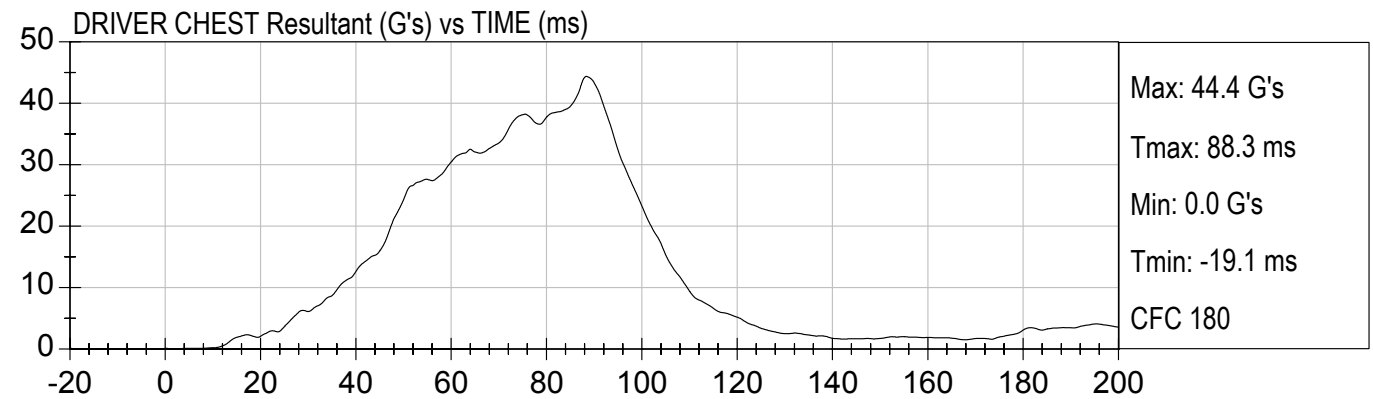
NCAP 35MPH FRONTAL
2004 FORD TAURUS (M40201)

Test Date: 10/16/03
Speed: 35.1 mph (56.5 km/h)



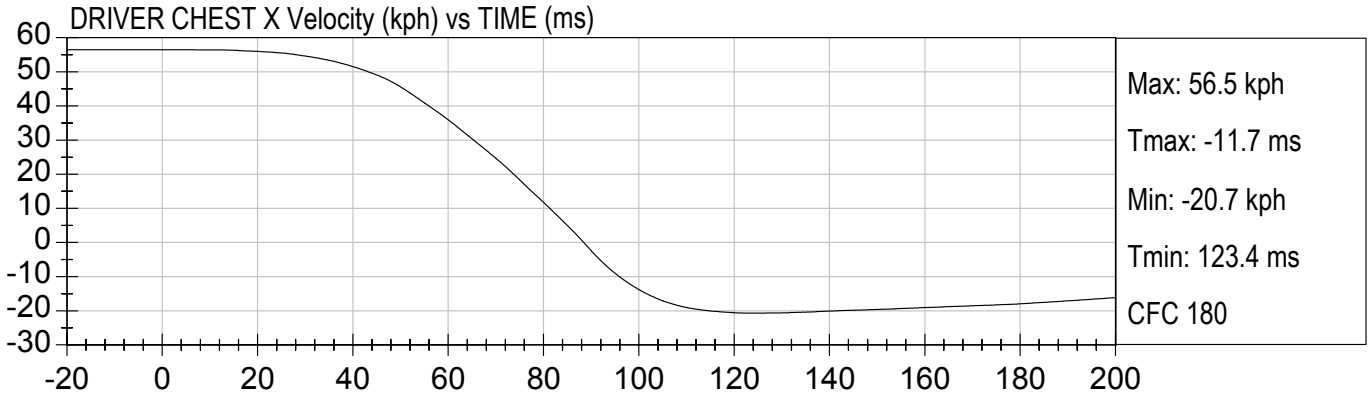


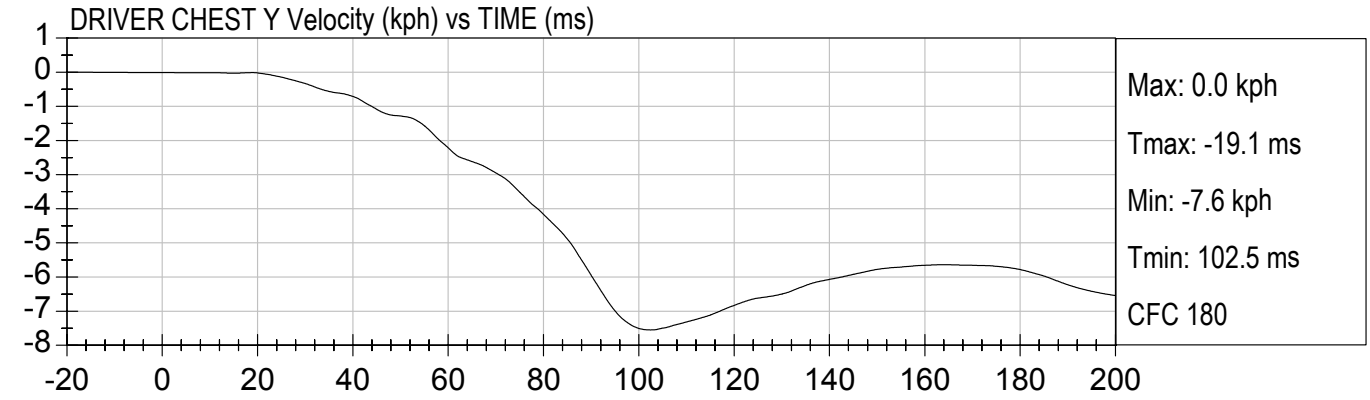


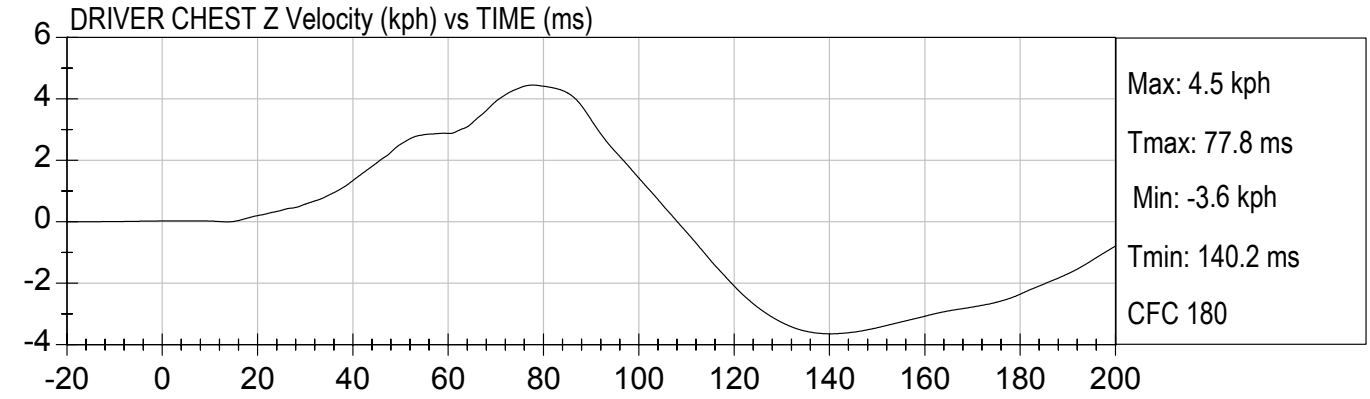


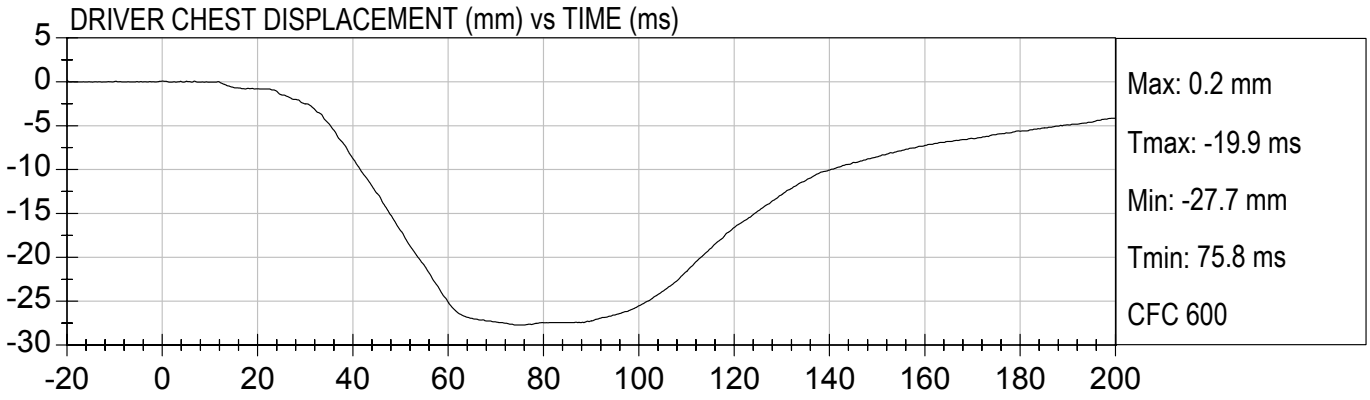
NCAP 35MPH FRONTAL
2004 FORD TAURUS (M40201)

Test Date: 10/16/03
Speed: 35.1 mph (56.5 km/h)



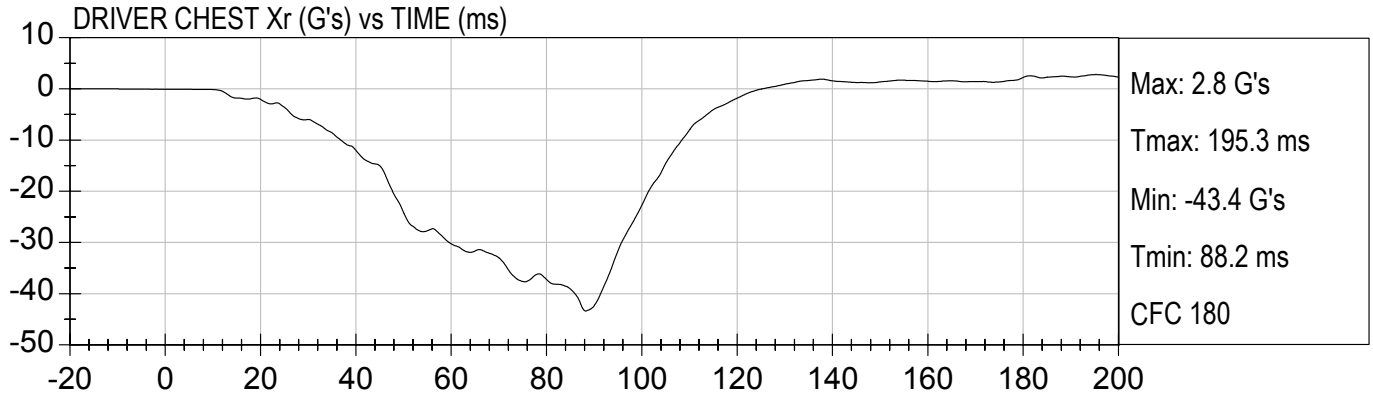


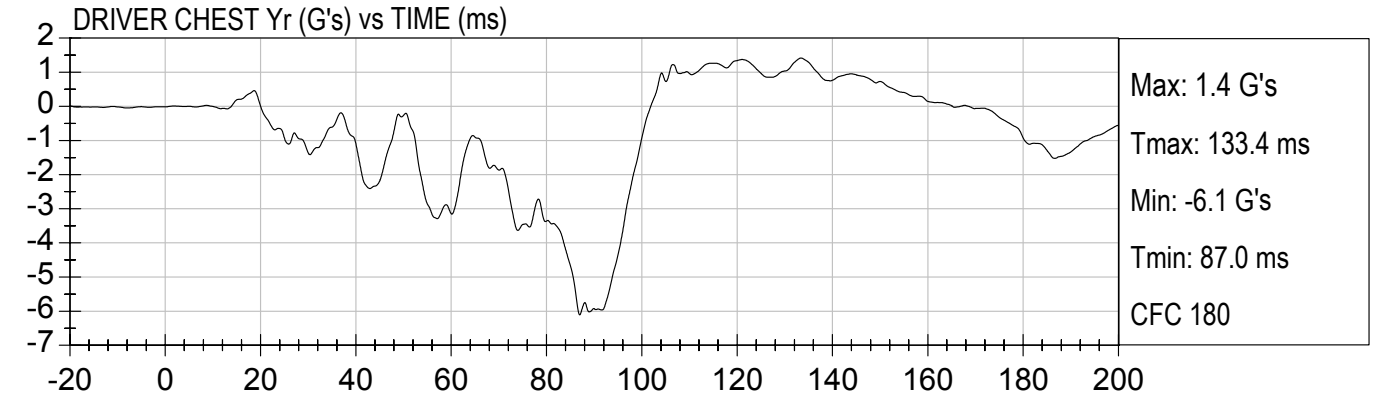


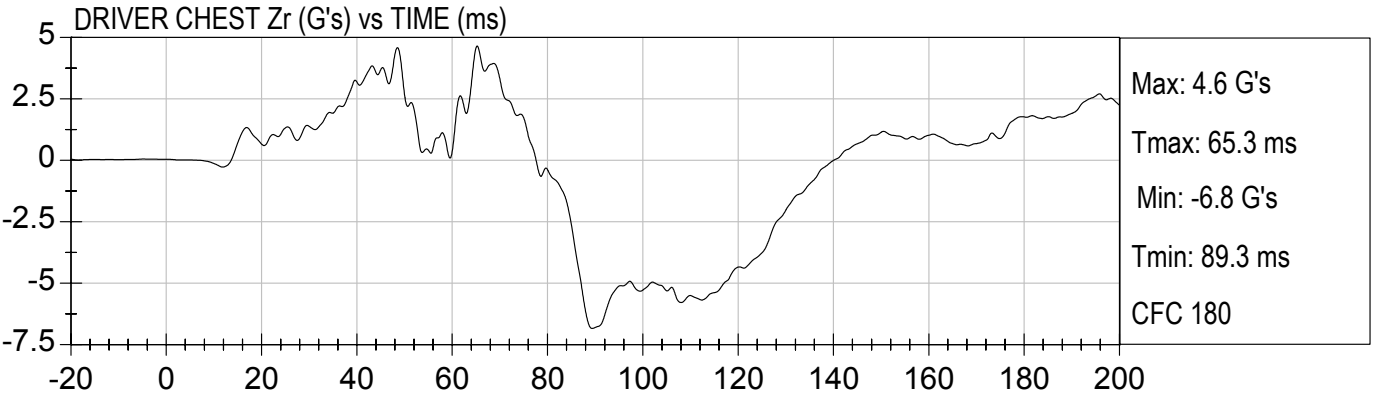


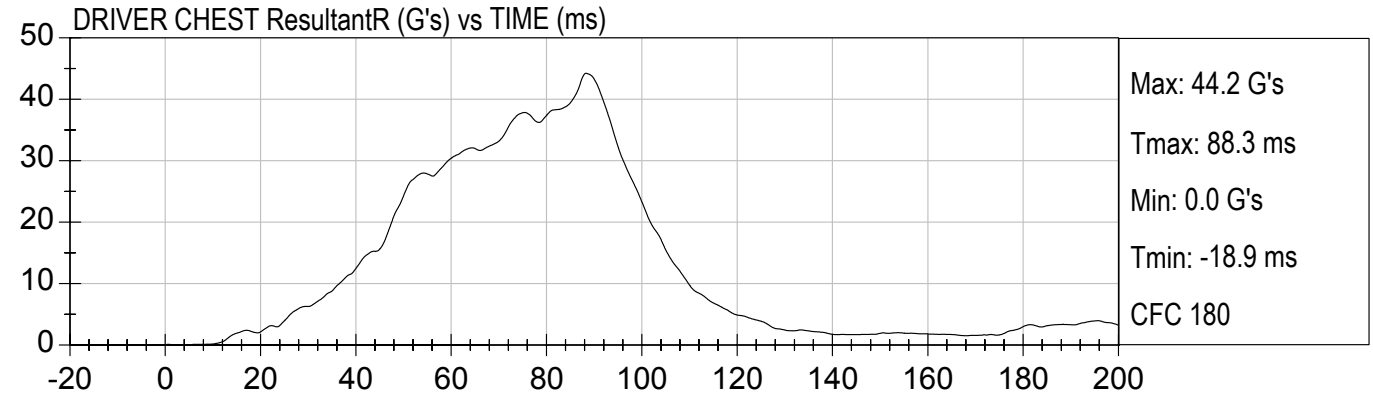
NCAP 35MPH FRONTAL
2004 FORD TAURUS (M40201)

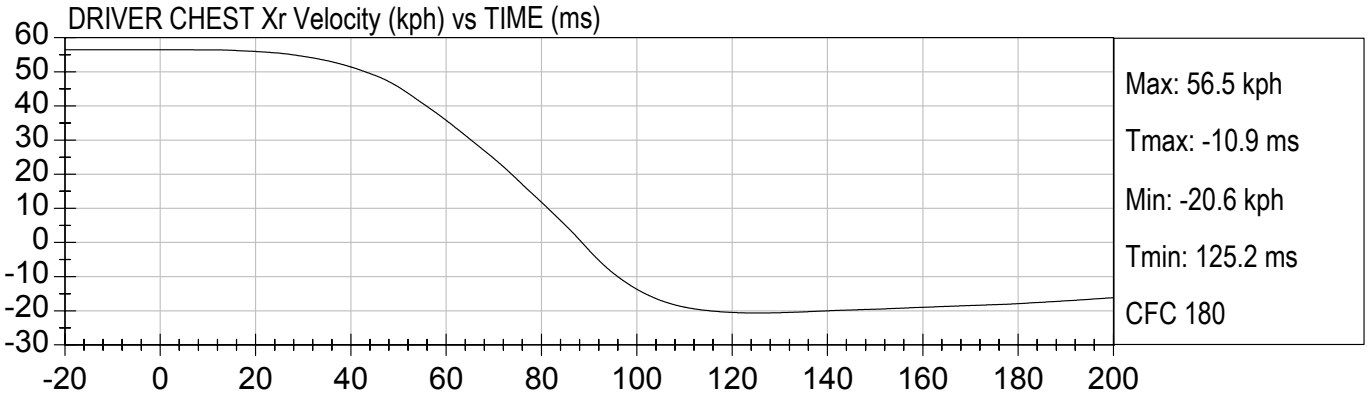
Test Date: 10/16/03
Speed: 35.1 mph (56.5 km/h)

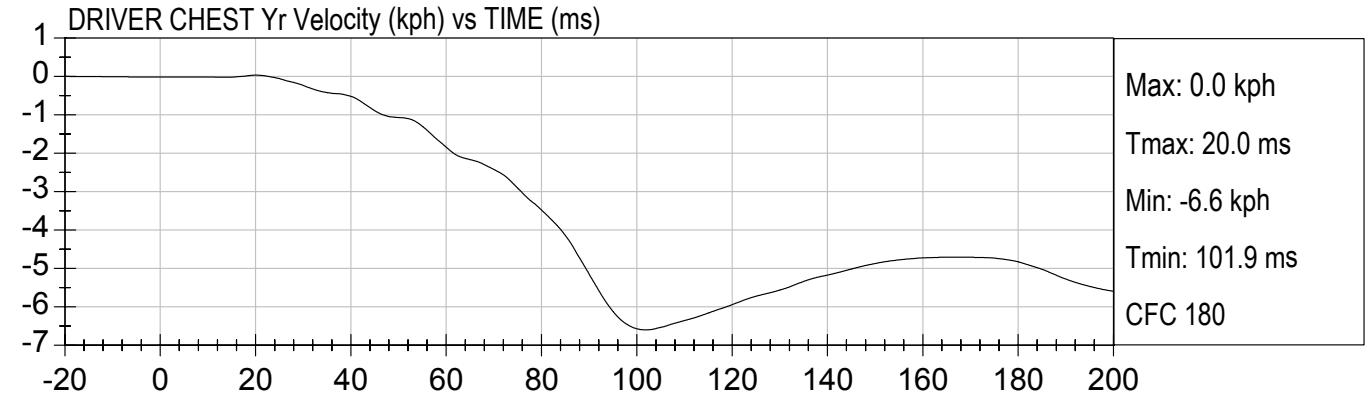


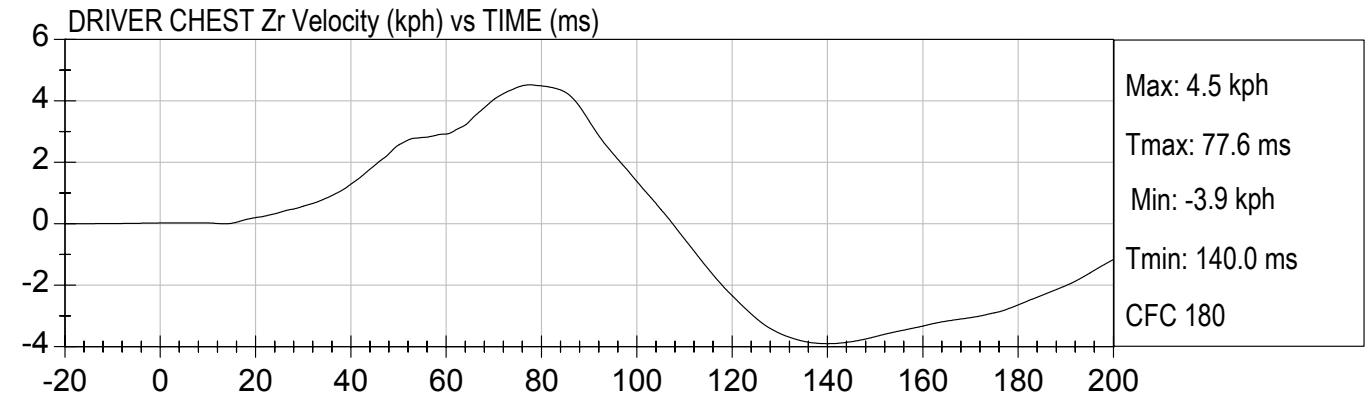






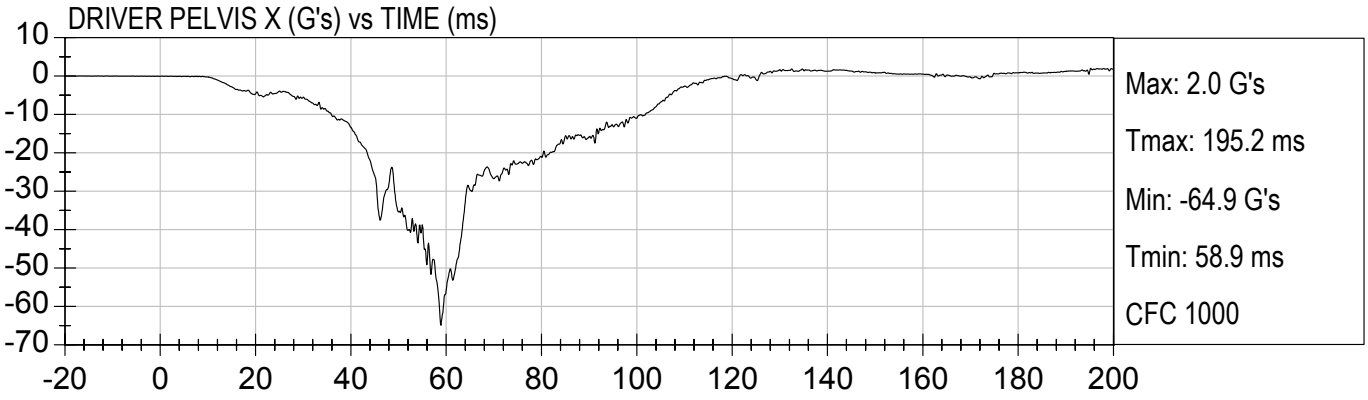

DRIVER CHEST Xr Velocity (kph) vs TIME (ms)
60
50
40
30
20
10
0
-10
-20
-30
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 56.5 kph
Tmax: -10.9 ms
Min: -20.6 kph
Tmin: 125.2 ms
CFC 180

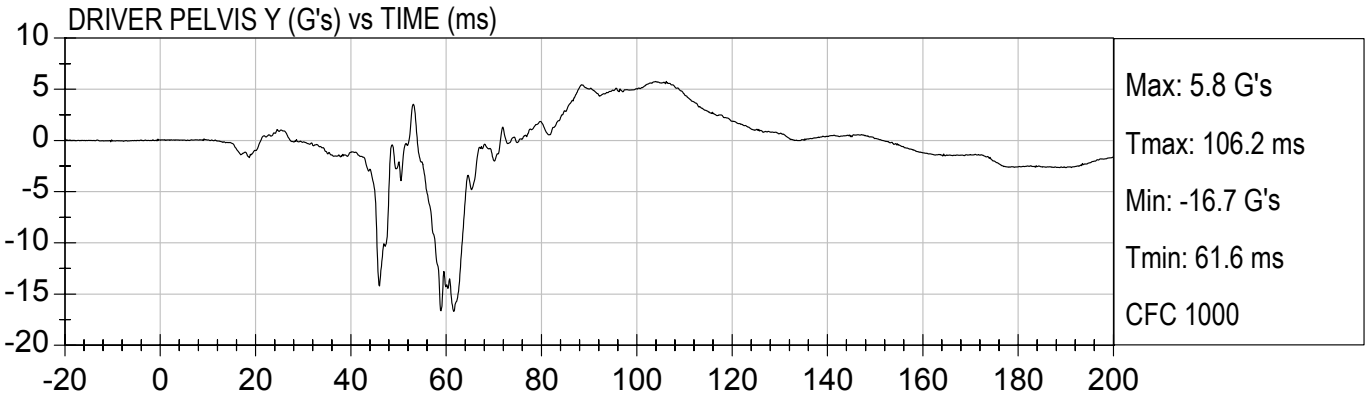

DRIVER CHEST Yr Velocity (kph) vs TIME (ms)
1
0
-1
-2
-3
-4
-5
-6
-7
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 0.0 kph
Tmax: 20.0 ms
Min: -6.6 kph
Tmin: 101.9 ms
CFC 180

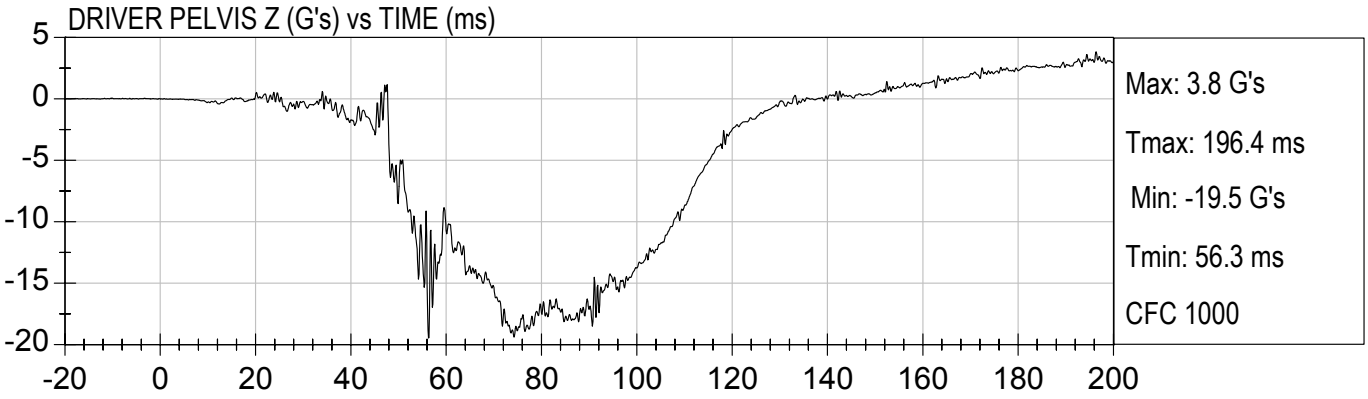

DRIVER CHEST Zr Velocity (kph) vs TIME (ms)
6
4
2
0
-2
-4
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 4.5 kph
Tmax: 77.6 ms
Min: -3.9 kph
Tmin: 140.0 ms
CFC 180

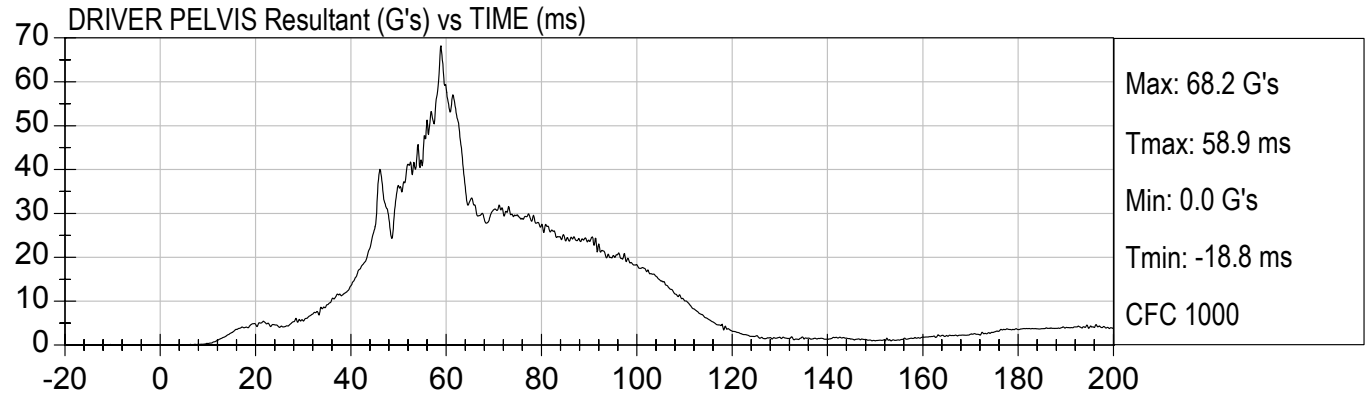
NCAP 35MPH FRONTAL
2004 FORD TAURUS (M40201)

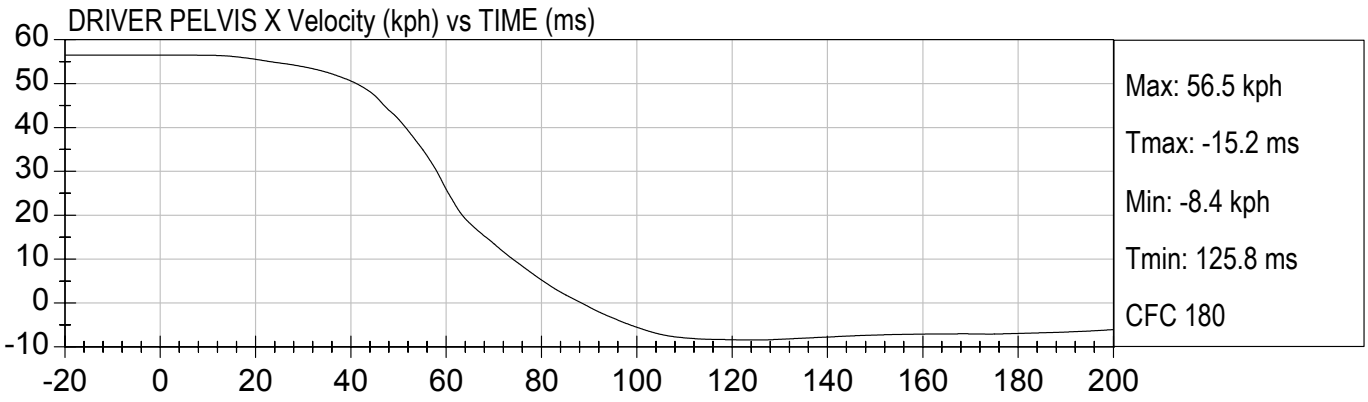
Test Date: 10/16/03
Speed: 35.1 mph (56.5 km/h)

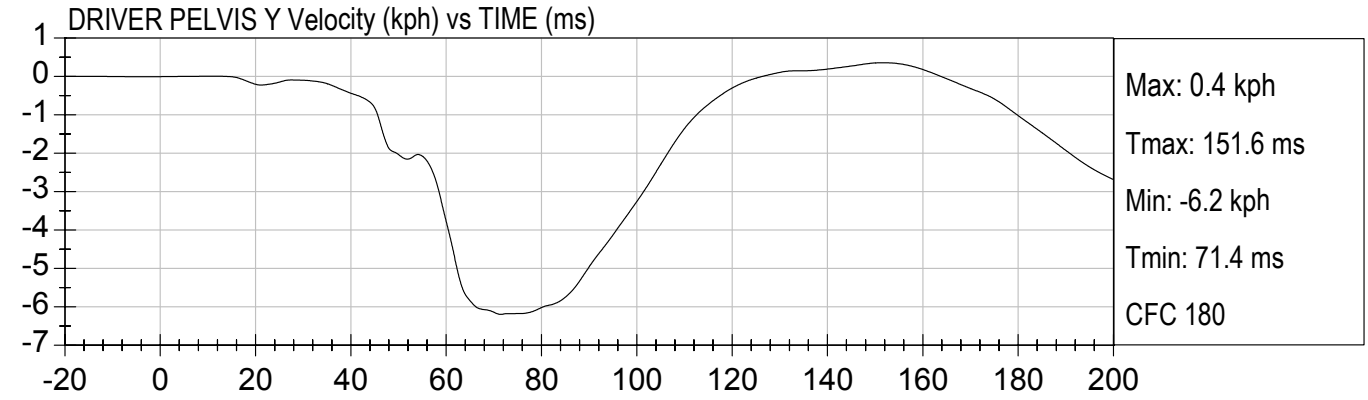


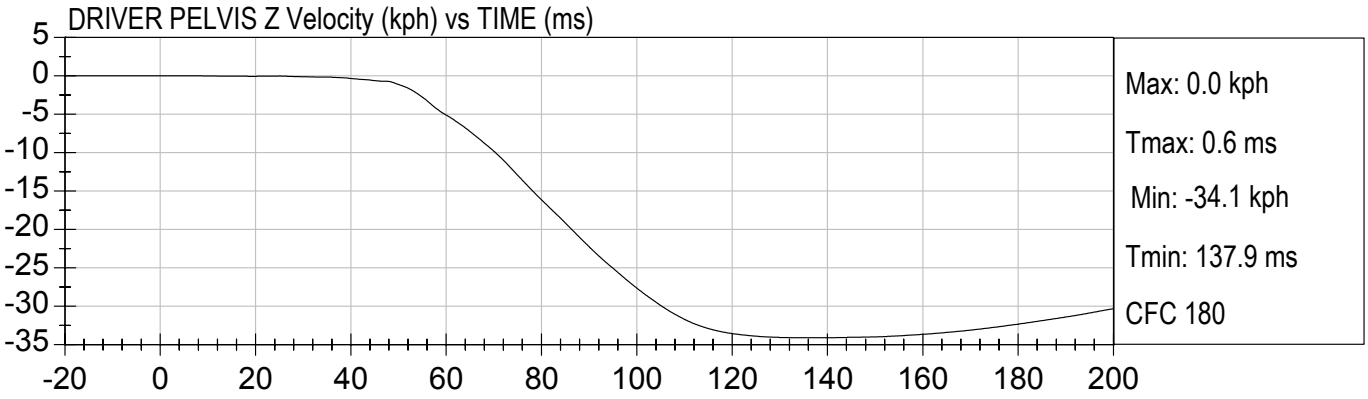






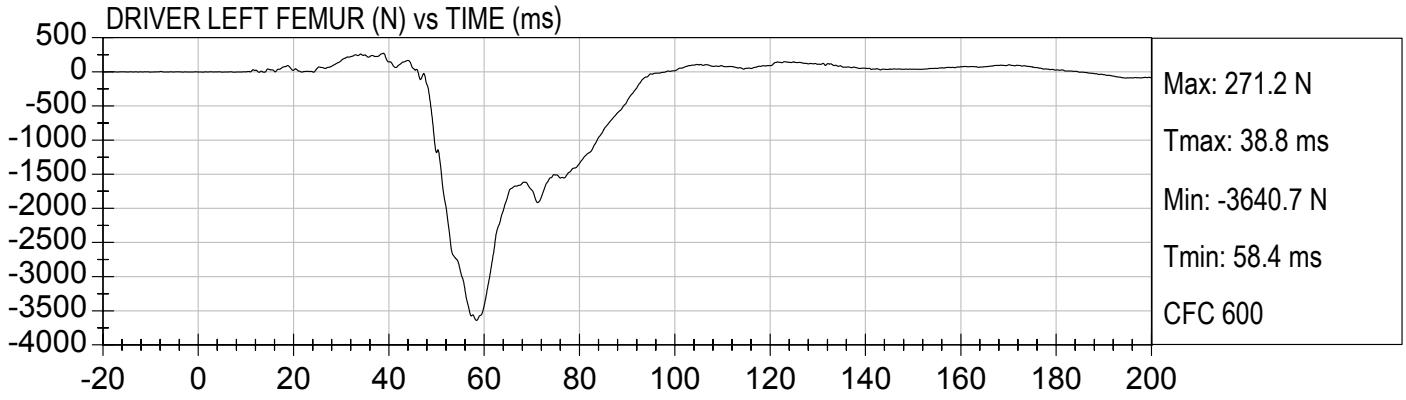

DRIVER PELVIS X Velocity (kph) vs TIME (ms)
60
50
40
30
20
10
0
-10
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 56.5 kph
Tmax: -15.2 ms
Min: -8.4 kph
Tmin: 125.8 ms
CFC 180

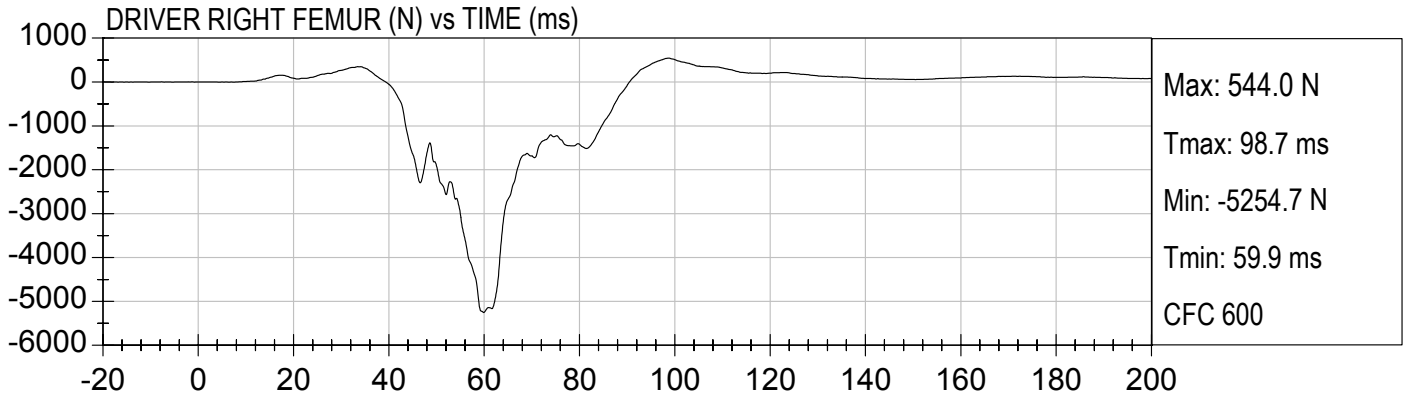

DRIVER PELVIS Y Velocity (kph) vs TIME (ms)
1
0
-1
-2
-3
-4
-5
-6
-7
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 0.4 kph
Tmax: 151.6 ms
Min: -6.2 kph
Tmin: 71.4 ms
CFC 180

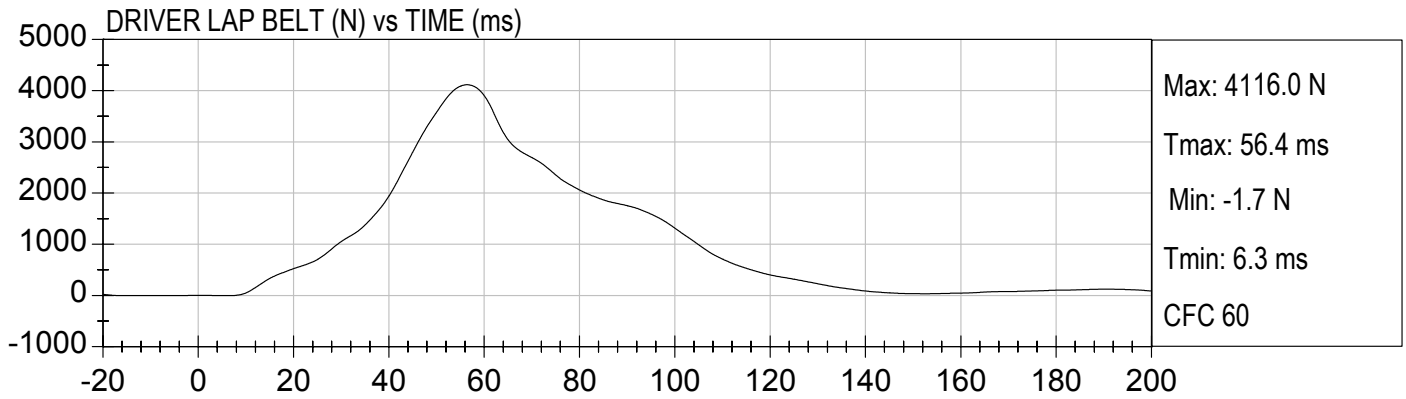

DRIVER PELVIS Z Velocity (kph) vs TIME (ms)
5
0
-5
-10
-15
-20
-25
-30
-35
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 0.0 kph
Tmax: 0.6 ms
Min: -34.1 kph
Tmin: 137.9 ms
CFC 180

NCAP 35MPH FRONTAL
2004 FORD TAURUS (M40201)

Test Date: 10/16/03
Speed: 35.1 mph (56.5 km/h)

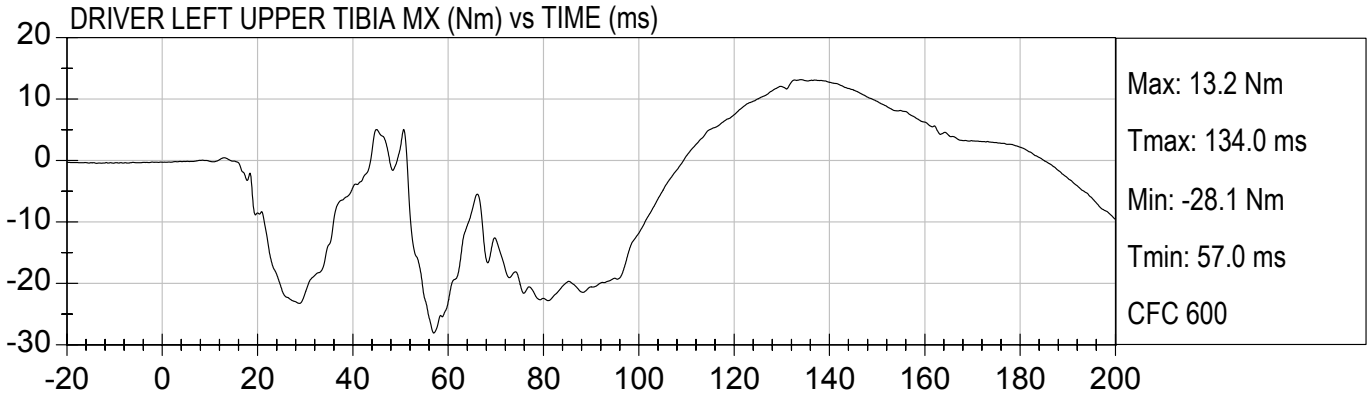


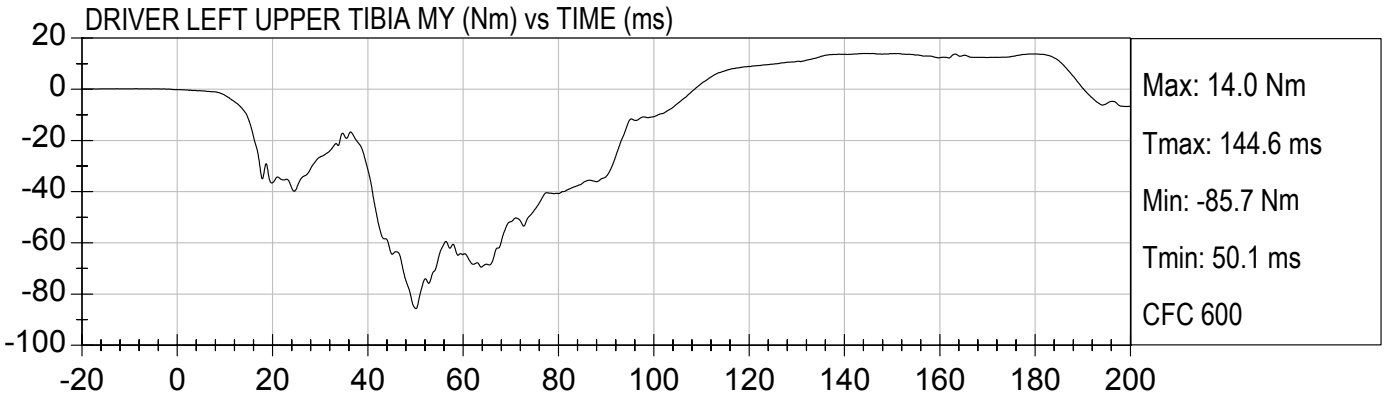


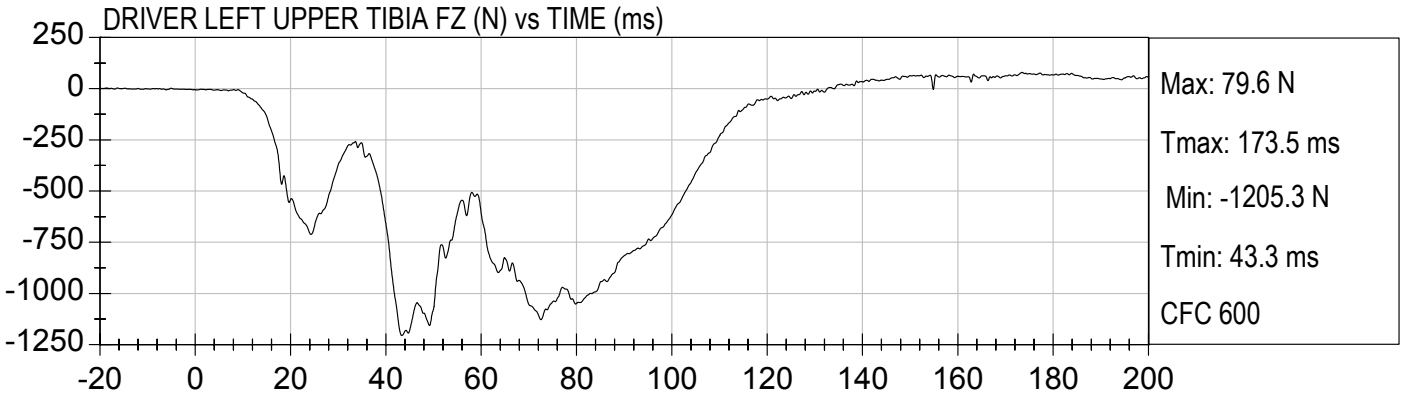


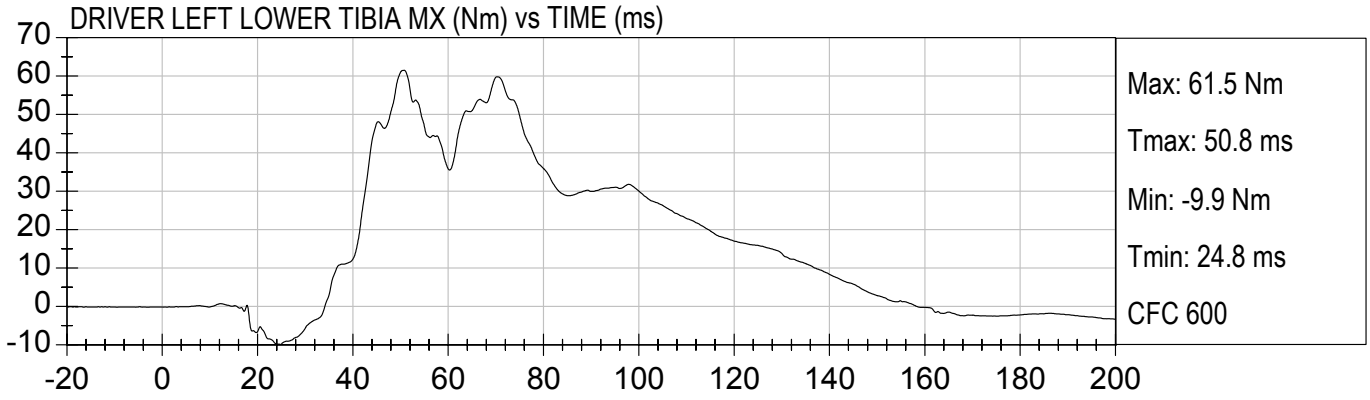
NCAP 35MPH FRONTAL
2004 FORD TAURUS (M40201)

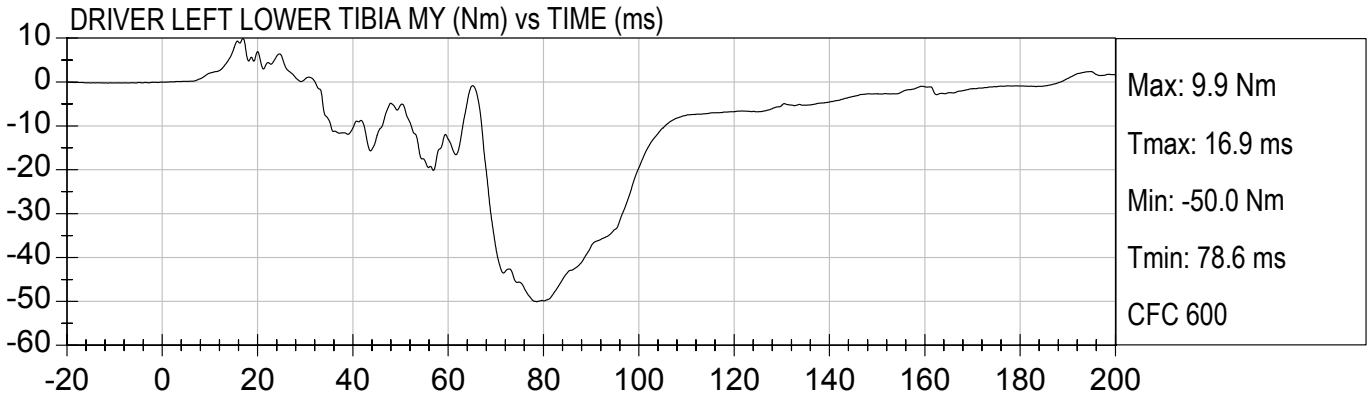
Test Date: 10/16/03
Speed: 35.1 mph (56.5 km/h)

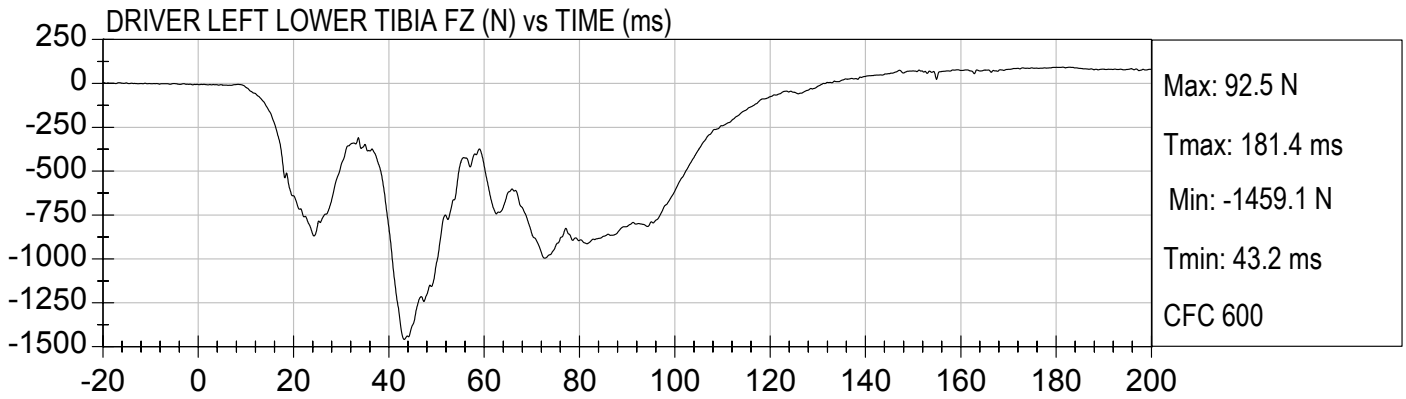






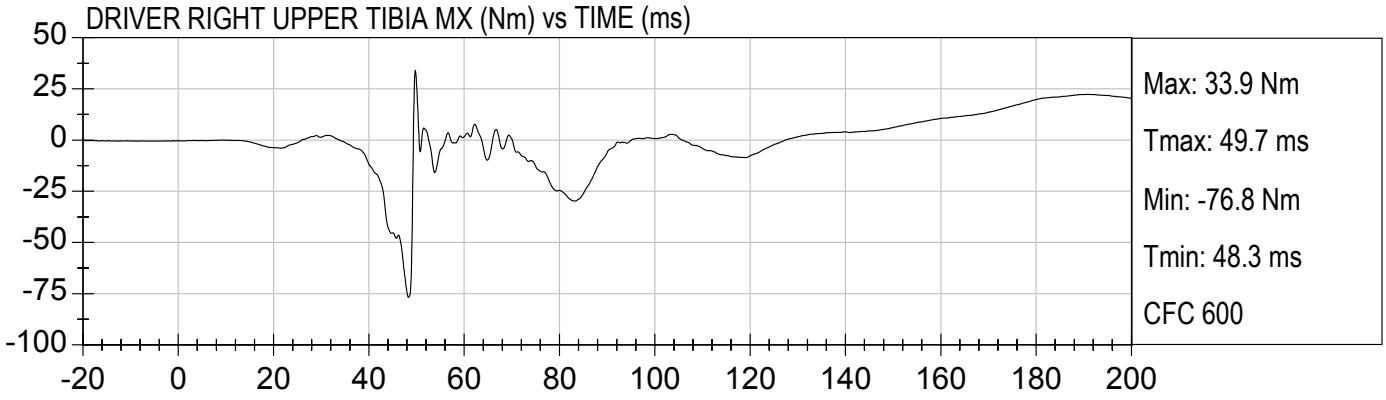

DRIVER LEFT LOWER TIBIA MX (Nm) vs TIME (ms)
70
60
50
40
30
20
10
0
-10
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 61.5 Nm
Tmax: 50.8 ms
Min: -9.9 Nm
Tmin: 24.8 ms
CFC 600

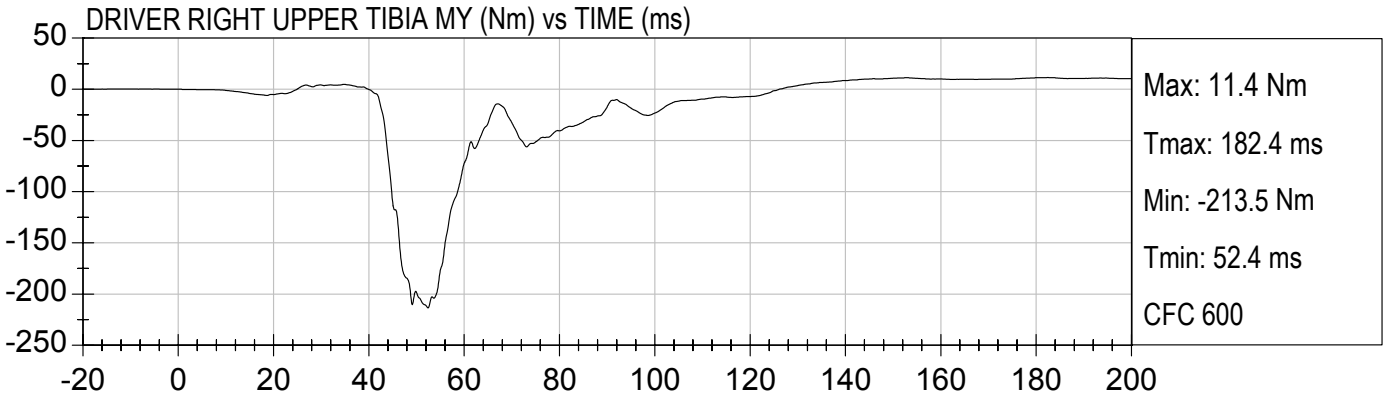

DRIVER LEFT LOWER TIBIA MY (Nm) vs TIME (ms)
10
0
-10
-20
-30
-40
-50
-60
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 9.9 Nm
Tmax: 16.9 ms
Min: -50.0 Nm
Tmin: 78.6 ms
CFC 600

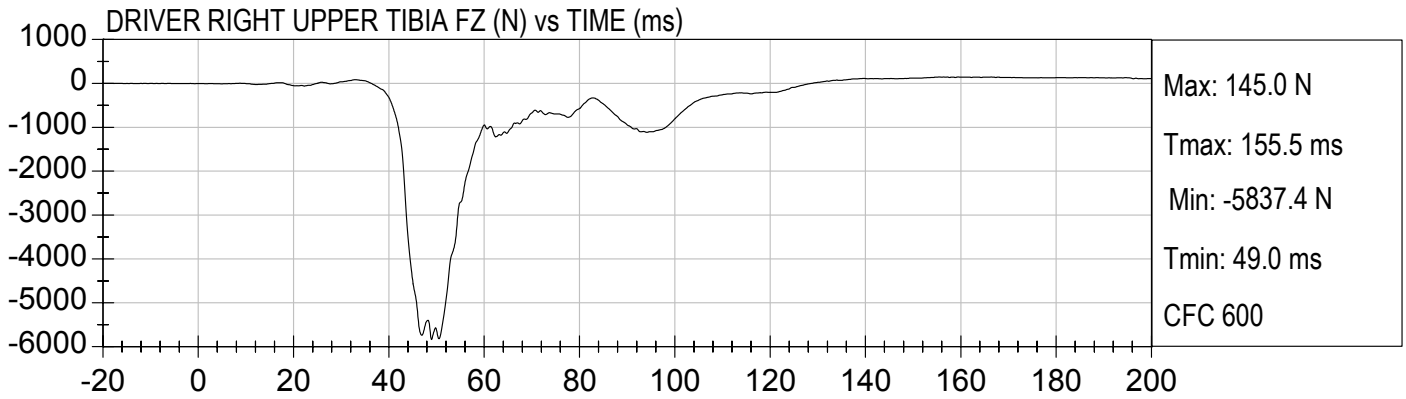

DRIVER LEFT LOWER TIBIA FZ (N) vs TIME (ms)
250
0
-250
-500
-750
-1000
-1250
-1500
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 92.5 N
Tmax: 181.4 ms
Min: -1459.1 N
Tmin: 43.2 ms
CFC 600

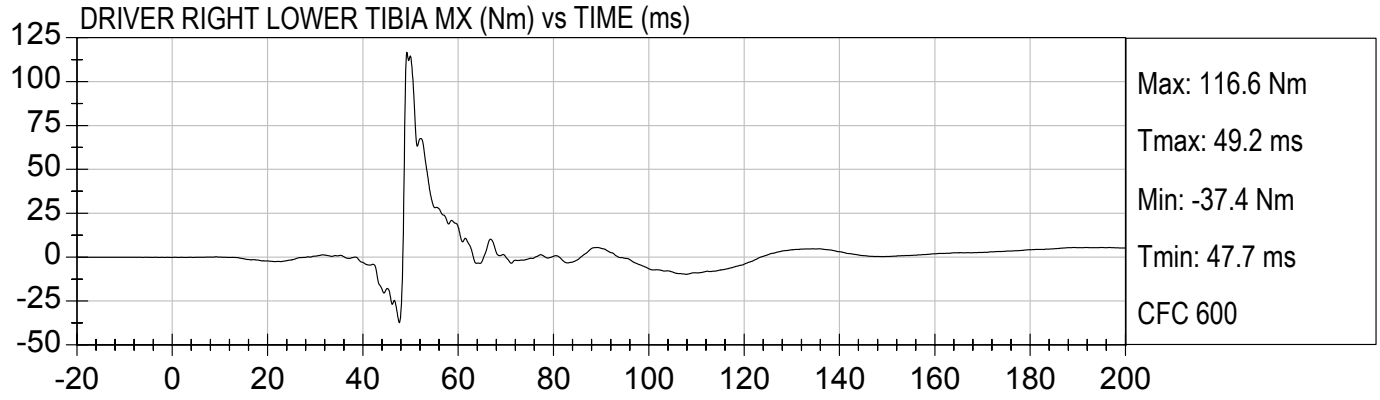
NCAP 35MPH FRONTAL
2004 FORD TAURUS (M40201)

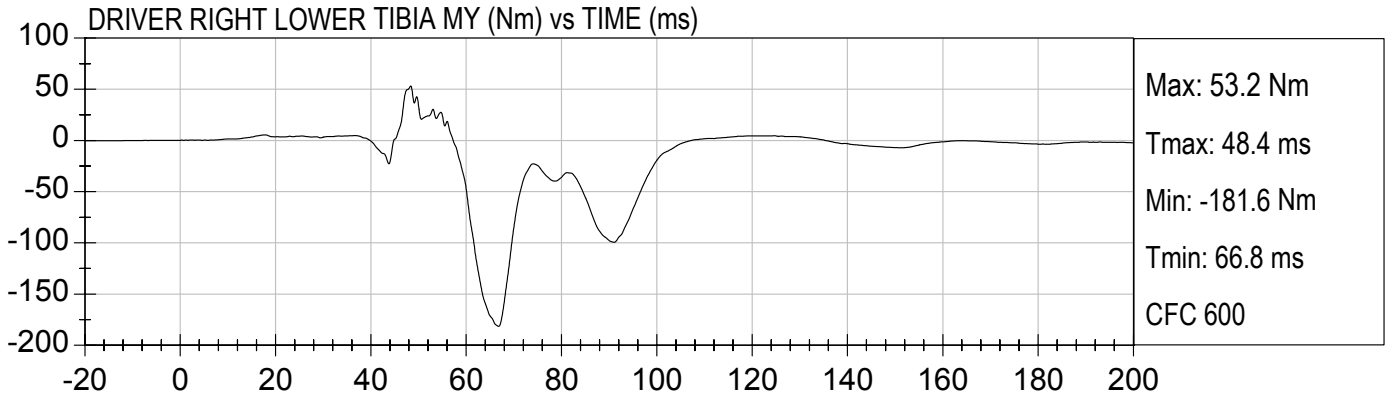
Test Date: 10/16/03
Speed: 35.1 mph (56.5 km/h)

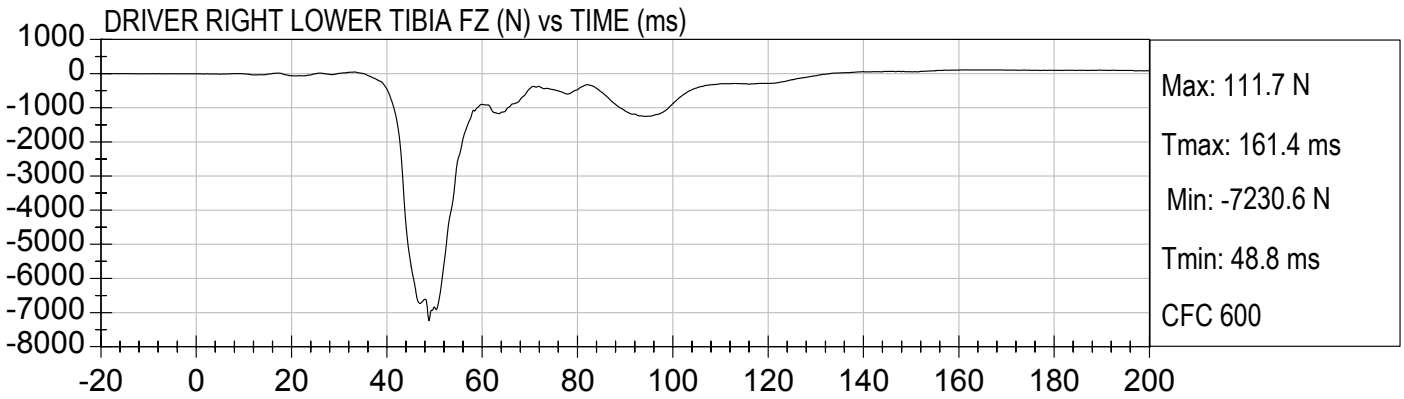


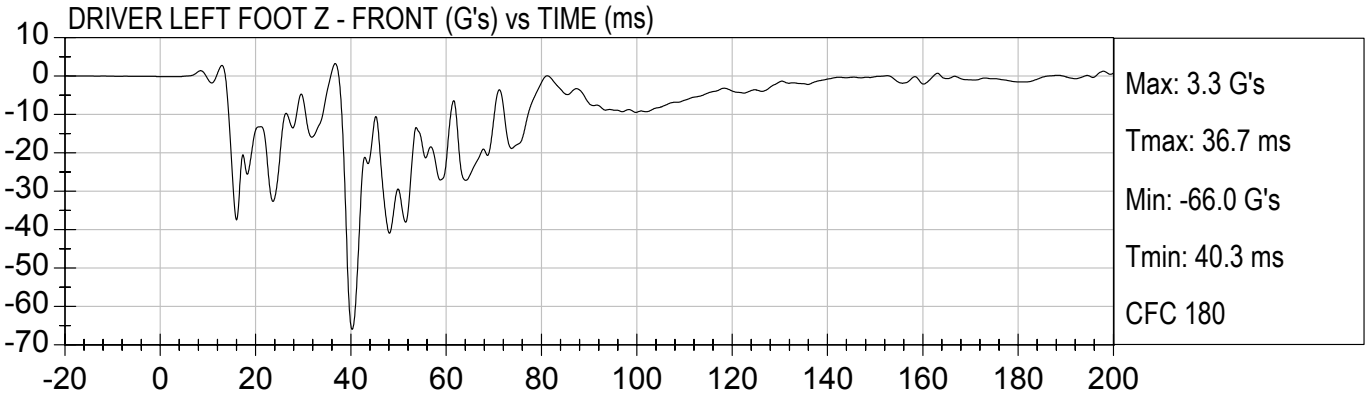


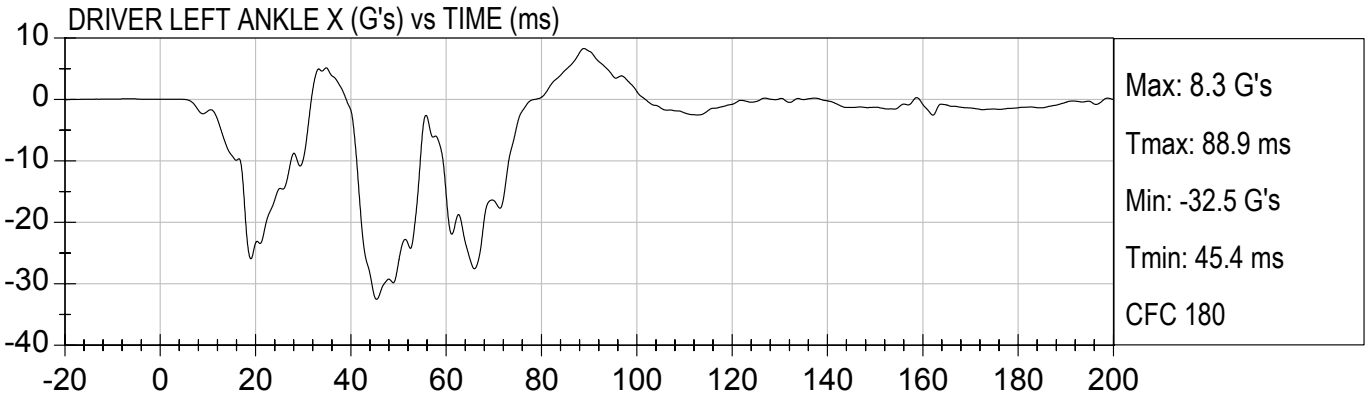


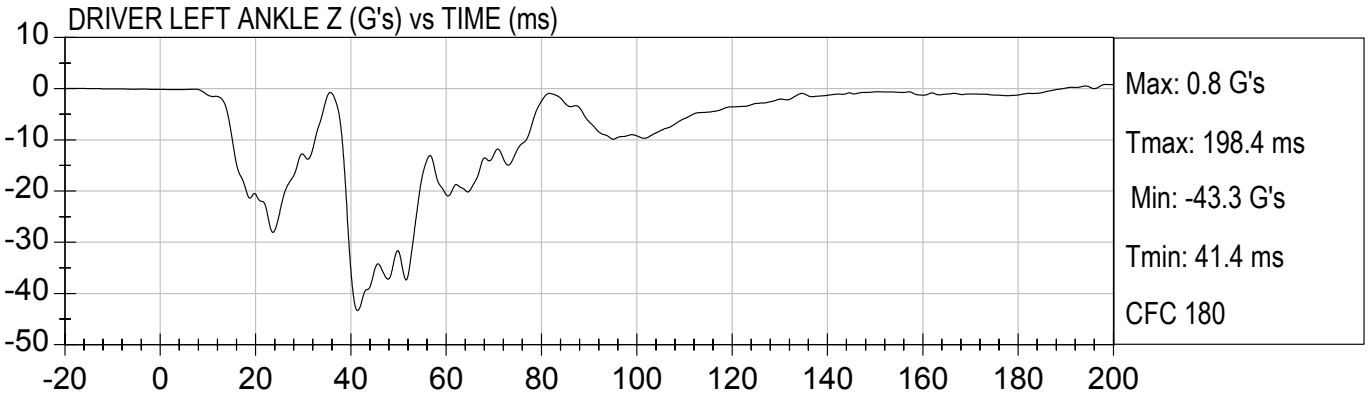

DRIVER RIGHT LOWER TIBIA MX (Nm) vs TIME (ms)
125
100
75
50
25
0
-25
-50
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 116.6 Nm
Tmax: 49.2 ms
Min: -37.4 Nm
Tmin: 47.7 ms
CFC 600


DRIVER RIGHT LOWER TIBIA MY (Nm) vs TIME (ms)
100
50
0
-50
-100
-150
-200
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 53.2 Nm
Tmax: 48.4 ms
Min: -181.6 Nm
Tmin: 66.8 ms
CFC 600


DRIVER RIGHT LOWER TIBIA FZ (N) vs TIME (ms)
1000
0
-1000
-2000
-3000
-4000
-5000
-6000
-7000
-8000
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 111.7 N
Tmax: 161.4 ms
Min: -7230.6 N
Tmin: 48.8 ms
CFC 600

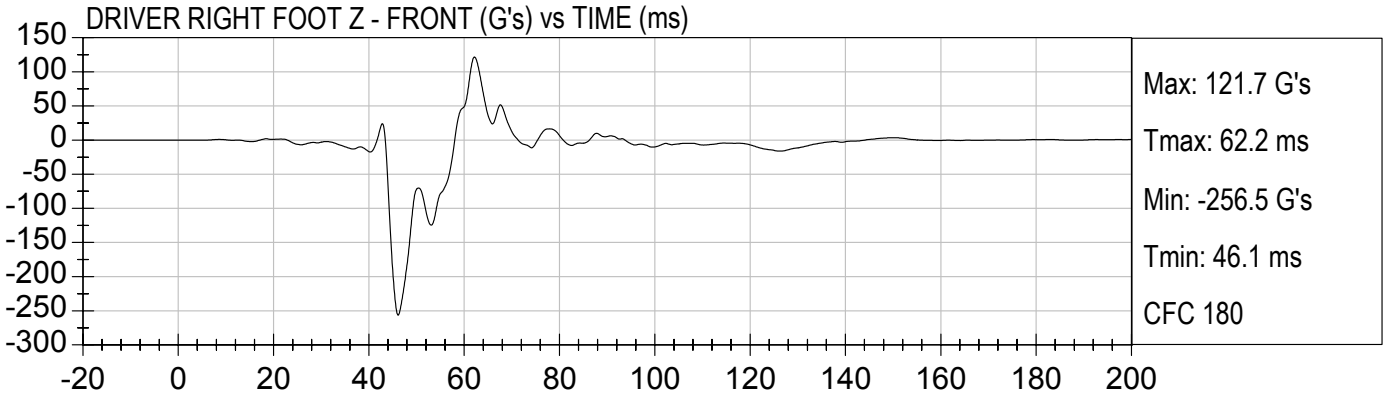

DRIVER LEFT FOOT Z - FRONT (G's) vs TIME (ms)
10
0
-10
-20
-30
-40
-50
-60
-70
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 3.3 G's
Tmax: 36.7 ms
Min: -66.0 G's
Tmin: 40.3 ms
CFC 180

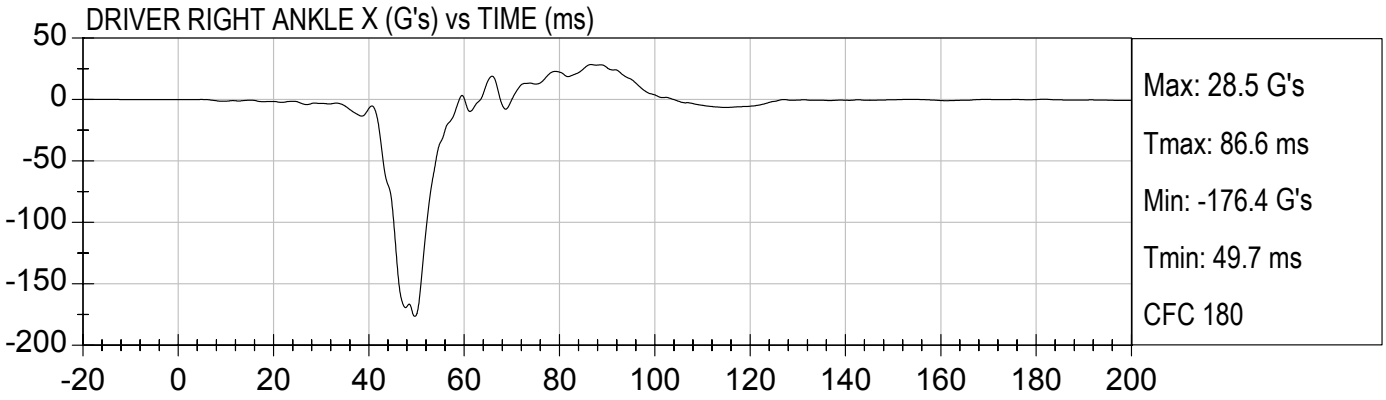

DRIVER LEFT ANKLE X (G's) vs TIME (ms)
10
0
-10
-20
-30
-40
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 8.3 G's
Tmax: 88.9 ms
Min: -32.5 G's
Tmin: 45.4 ms
CFC 180

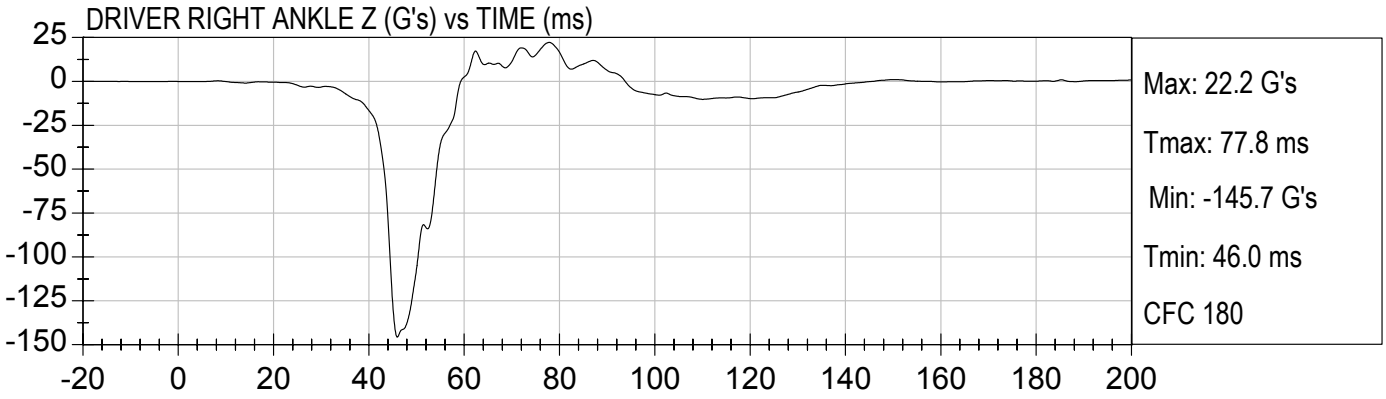

DRIVER LEFT ANKLE Z (G's) vs TIME (ms)
10
0
-10
-20
-30
-40
-50
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 0.8 G's
Tmax: 198.4 ms
Min: -43.3 G's
Tmin: 41.4 ms
CFC 180

NCAP 35MPH FRONTAL
2004 FORD TAURUS (M40201)

Test Date: 10/16/03
Speed: 35.1 mph (56.5 km/h)

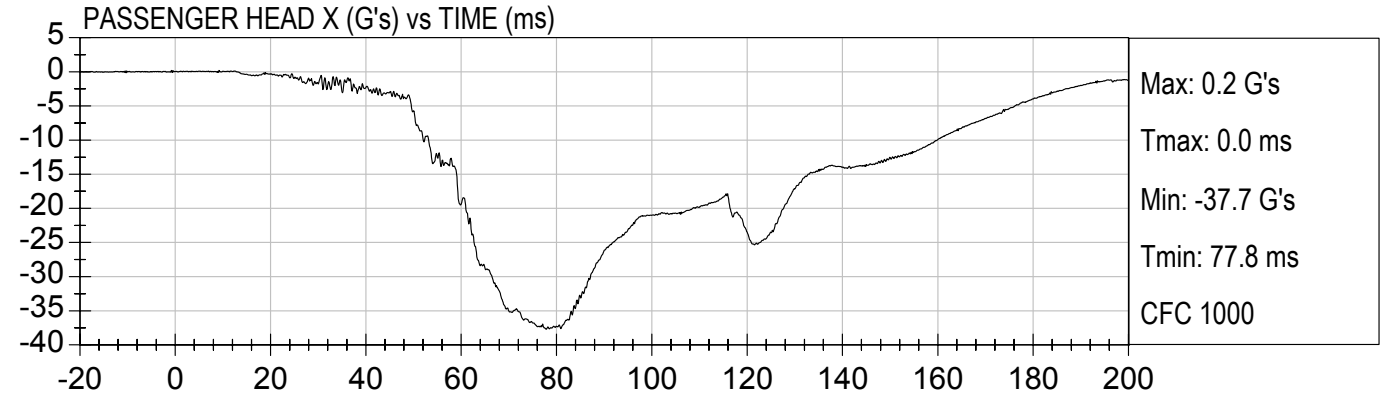


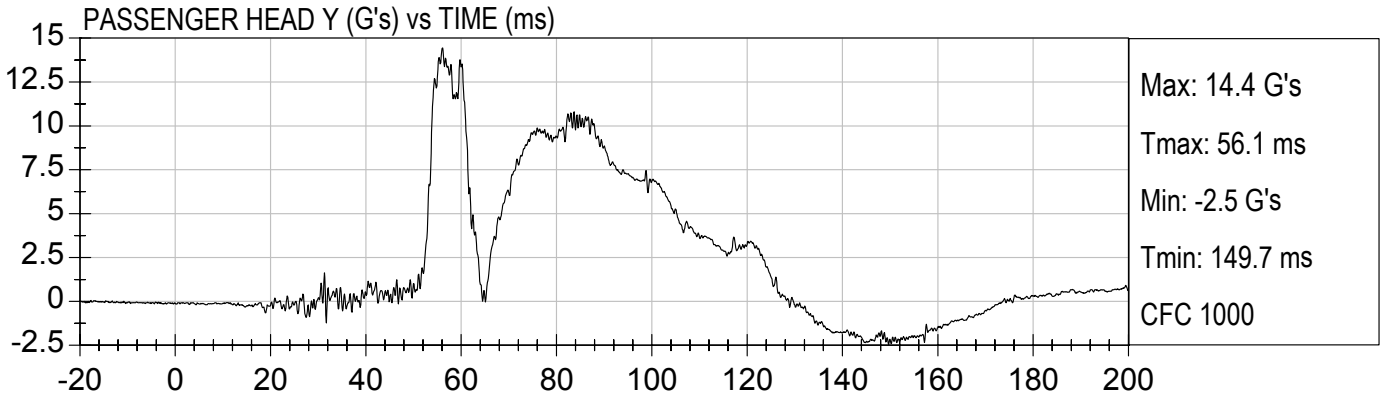


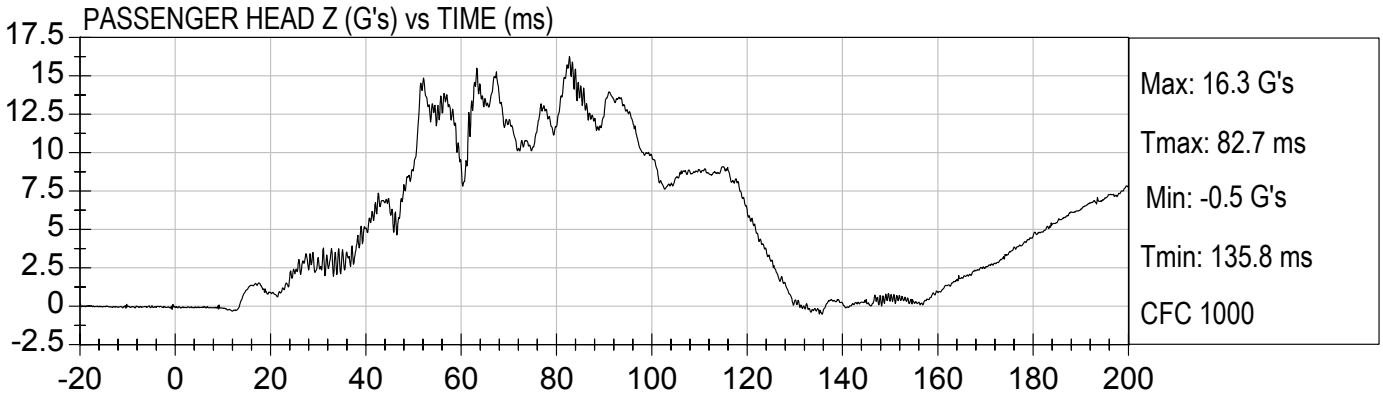


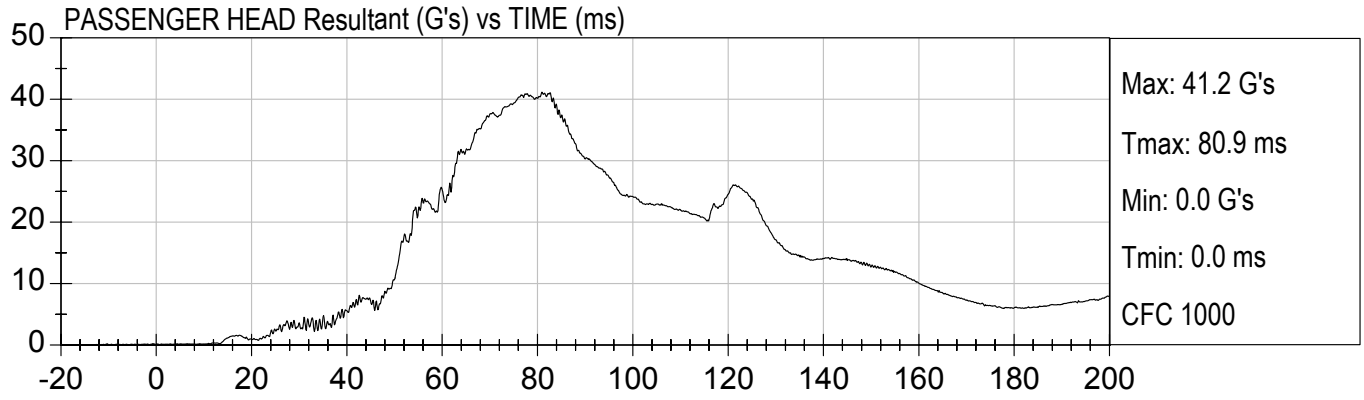
NCAP 35MPH FRONTAL
2004 FORD TAURUS (M40201)

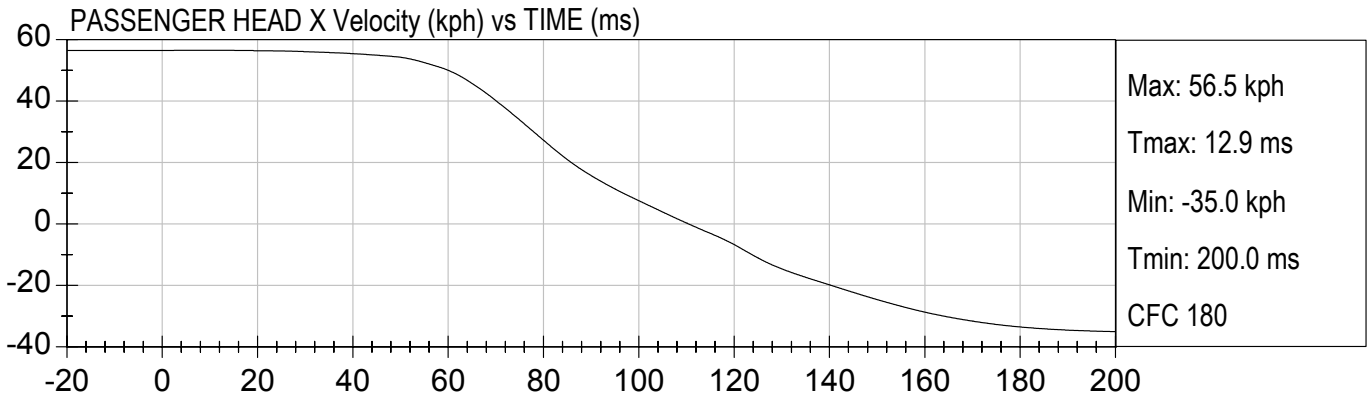
Test Date: 10/16/03
Speed: 35.1 mph (56.5 km/h)

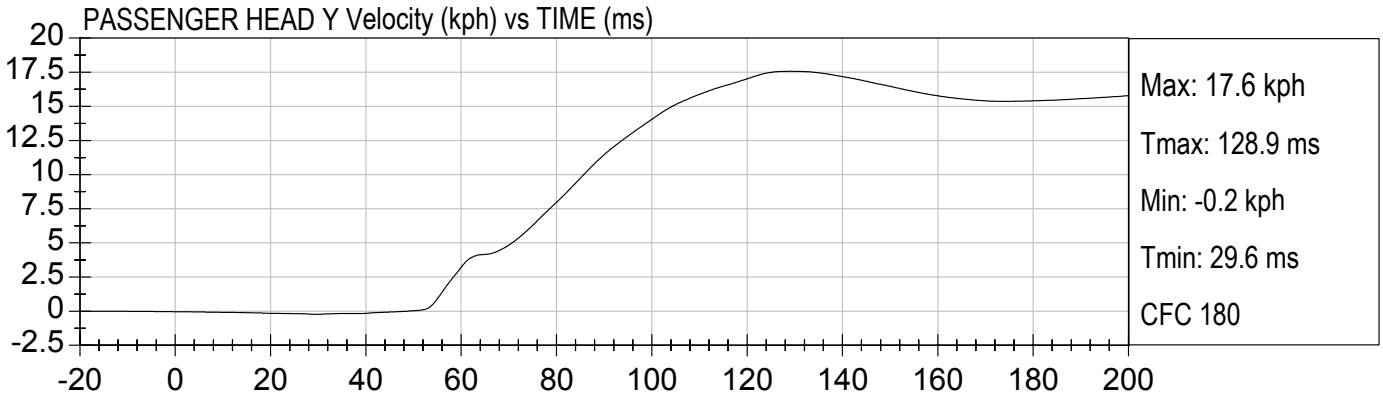


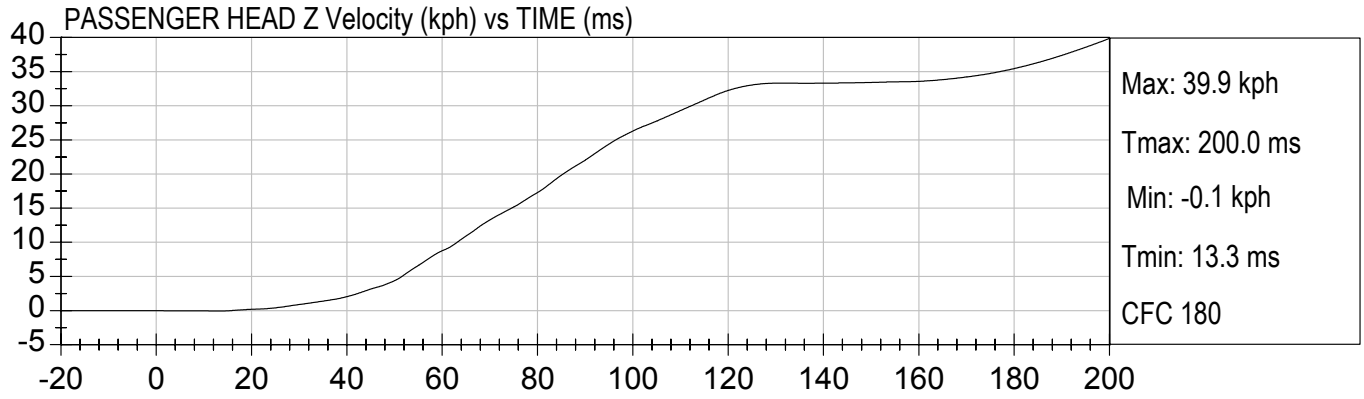






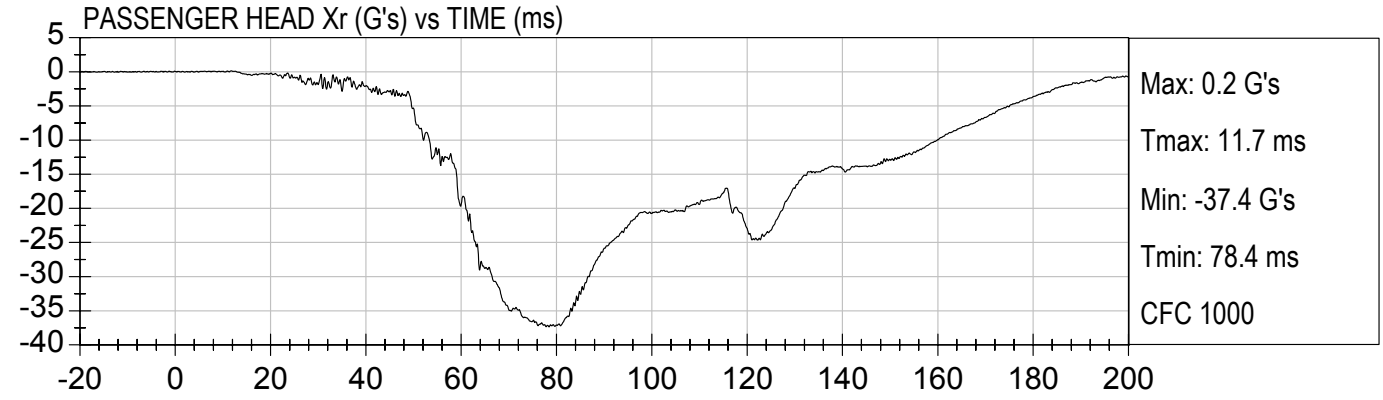

PASSENGER HEAD X Velocity (kph) vs TIME (ms)
60
40
20
0
-20
-40
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 56.5 kph
Tmax: 12.9 ms
Min: -35.0 kph
Tmin: 200.0 ms
CFC 180

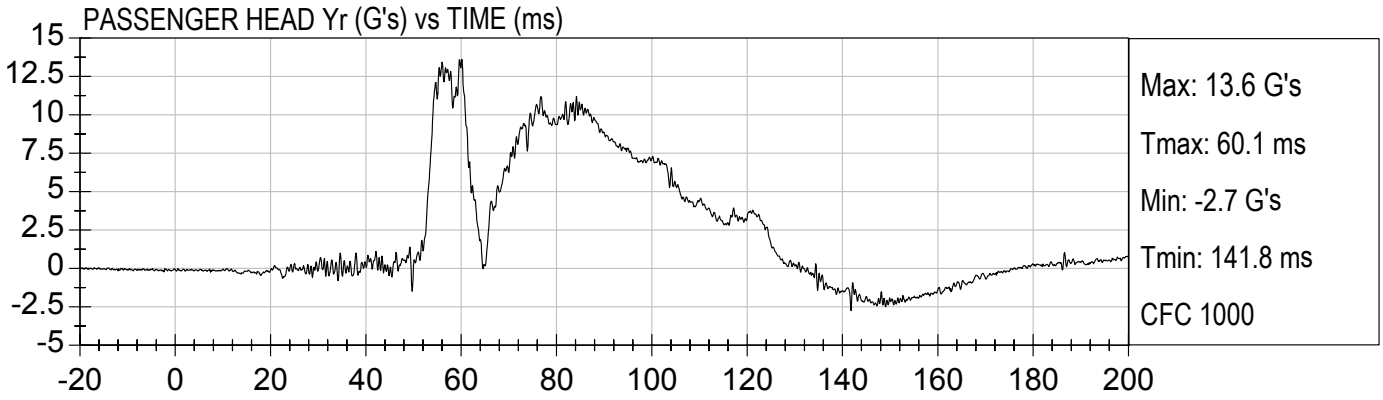

PASSENGER HEAD Y Velocity (kph) vs TIME (ms)
20
17.5
15
12.5
10
7.5
5
2.5
0
-2.5
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 17.6 kph
Tmax: 128.9 ms
Min: -0.2 kph
Tmin: 29.6 ms
CFC 180

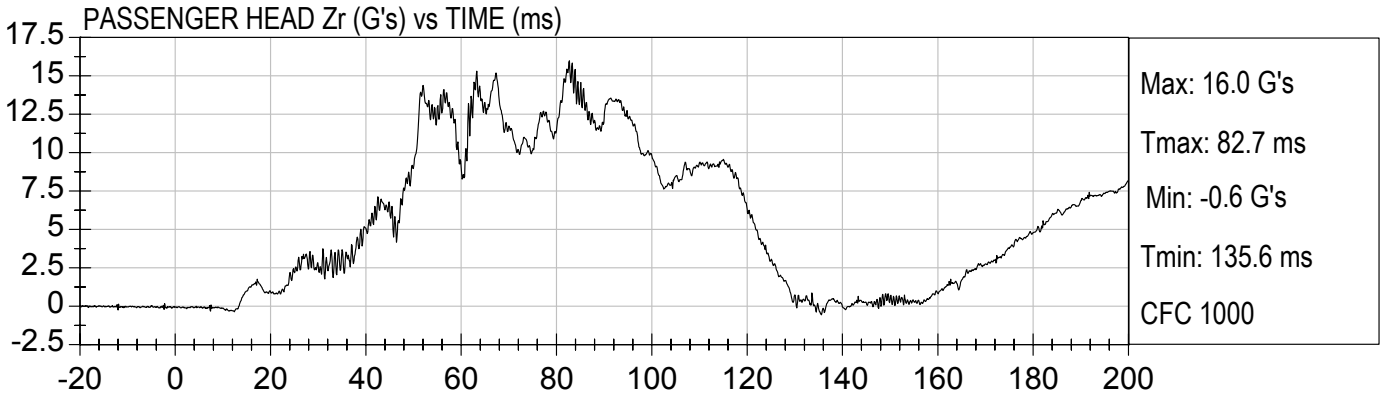

PASSENGER HEAD Z Velocity (kph) vs TIME (ms)
40
35
30
25
20
15
10
5
0
-5
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 39.9 kph
Tmax: 200.0 ms
Min: -0.1 kph
Tmin: 13.3 ms
CFC 180

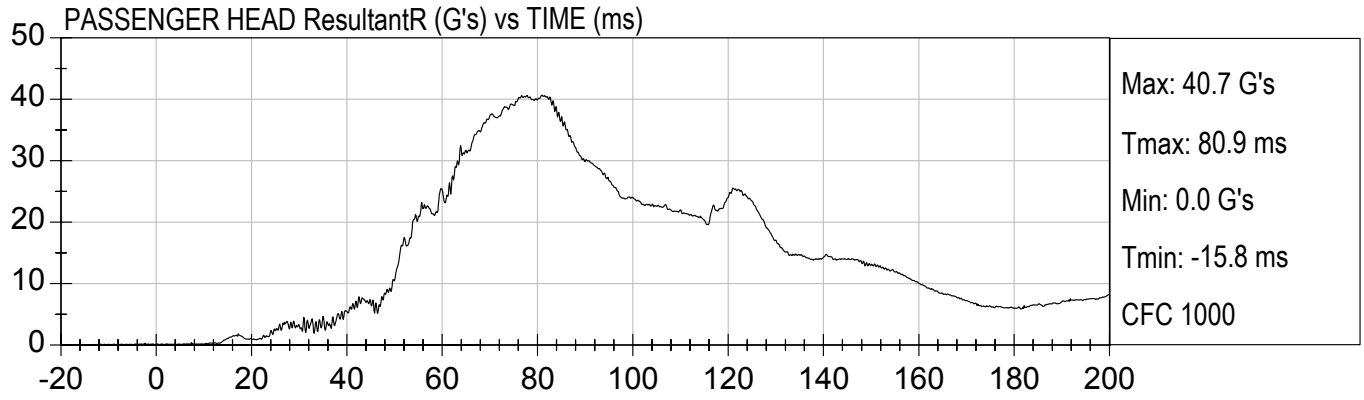
NCAP 35MPH FRONTAL
2004 FORD TAURUS (M40201)

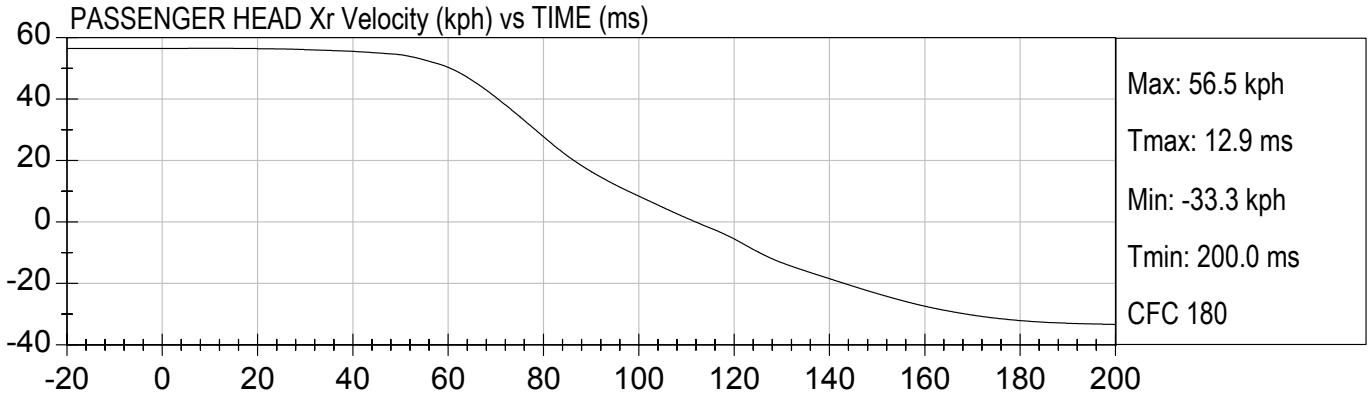
Test Date: 10/16/03
Speed: 35.1 mph (56.5 km/h)

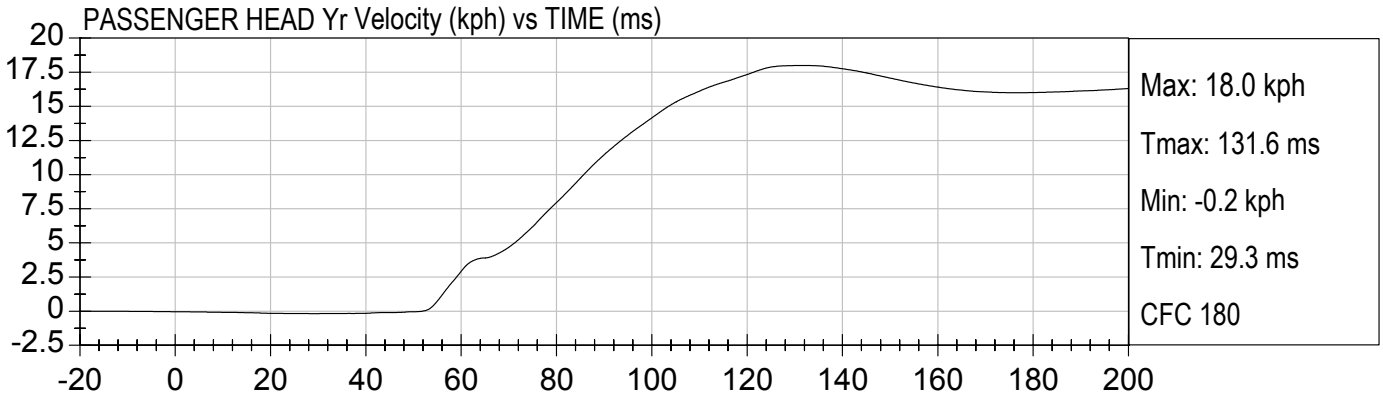


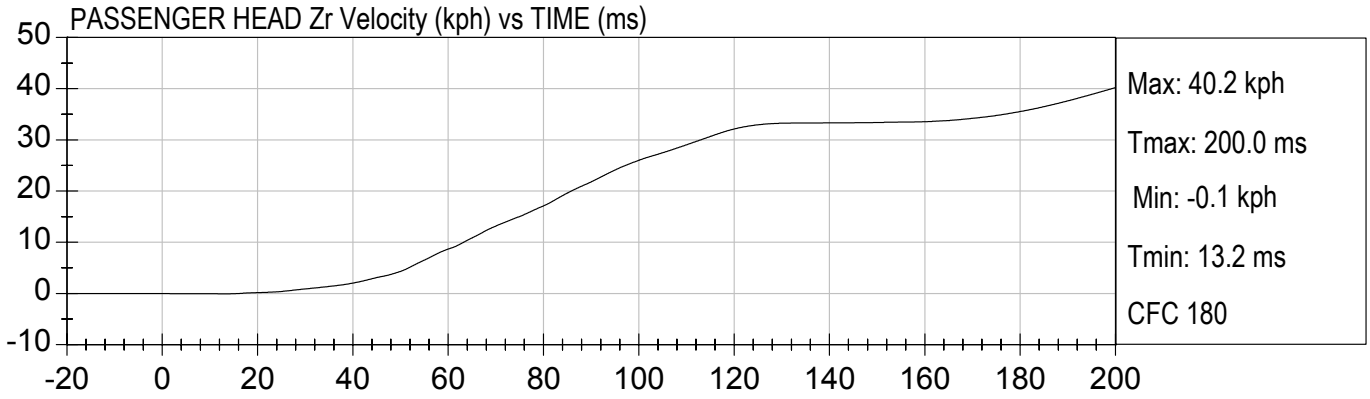






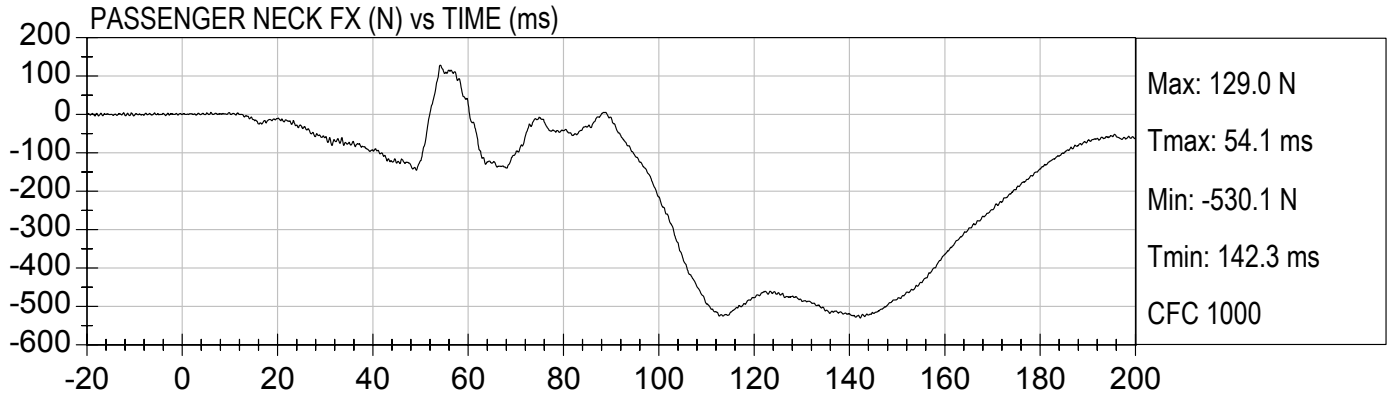

PASSENGER HEAD Xr Velocity (kph) vs TIME (ms)
60
40
20
0
-20
-40
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 56.5 kph
Tmax: 12.9 ms
Min: -33.3 kph
Tmin: 200.0 ms
CFC 180

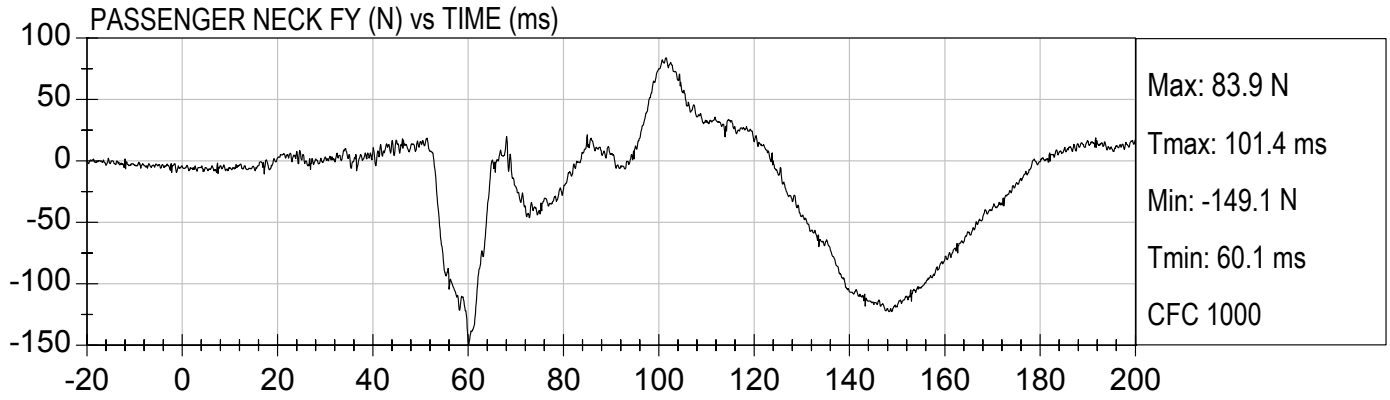

PASSENGER HEAD Yr Velocity (kph) vs TIME (ms)
20
17.5
15
12.5
10
7.5
5
2.5
0
-2.5
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 18.0 kph
Tmax: 131.6 ms
Min: -0.2 kph
Tmin: 29.3 ms
CFC 180

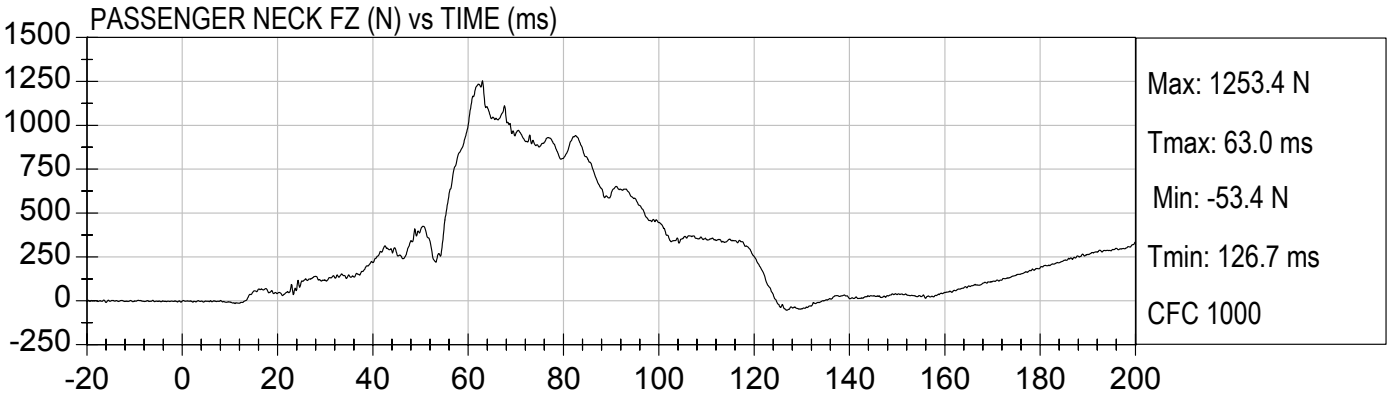

PASSENGER HEAD Zr Velocity (kph) vs TIME (ms)
50
40
30
20
10
0
-10
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 40.2 kph
Tmax: 200.0 ms
Min: -0.1 kph
Tmin: 13.2 ms
CFC 180

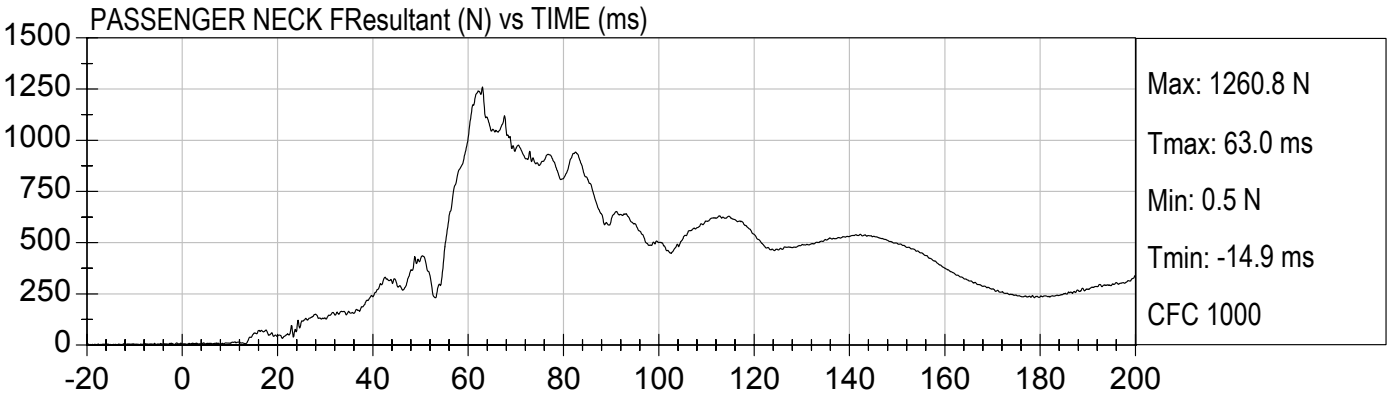
NCAP 35MPH FRONTAL
2004 FORD TAURUS (M40201)

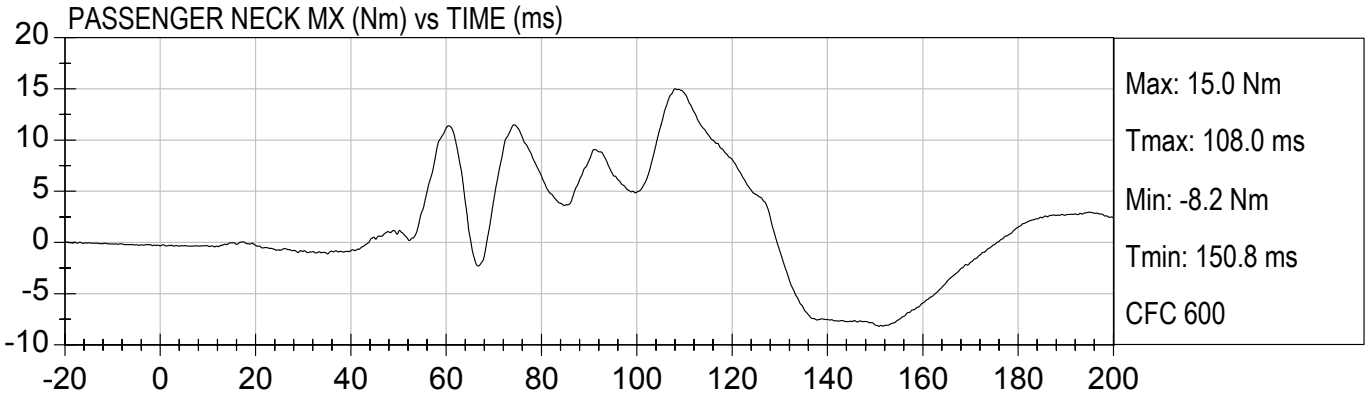
Test Date: 10/16/03
Speed: 35.1 mph (56.5 km/h)

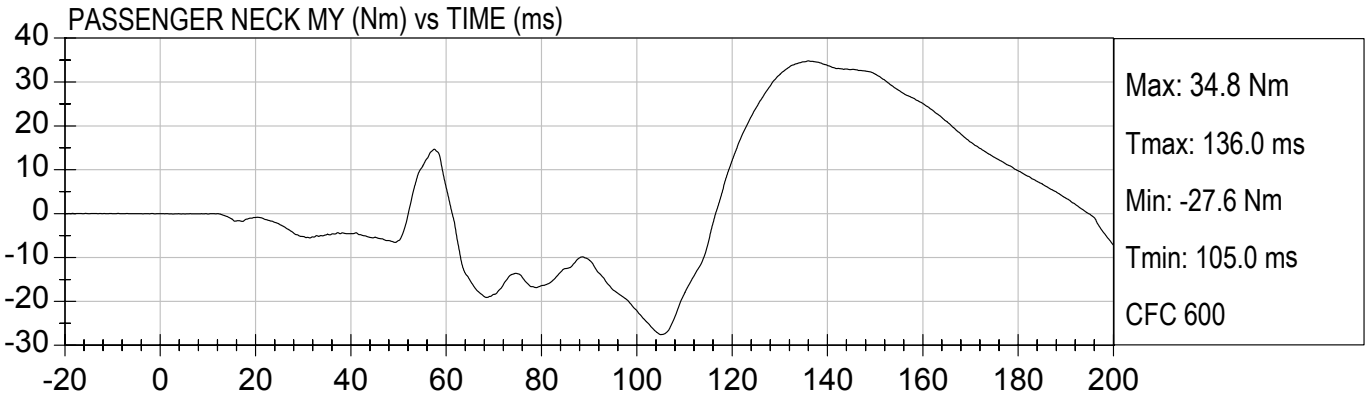


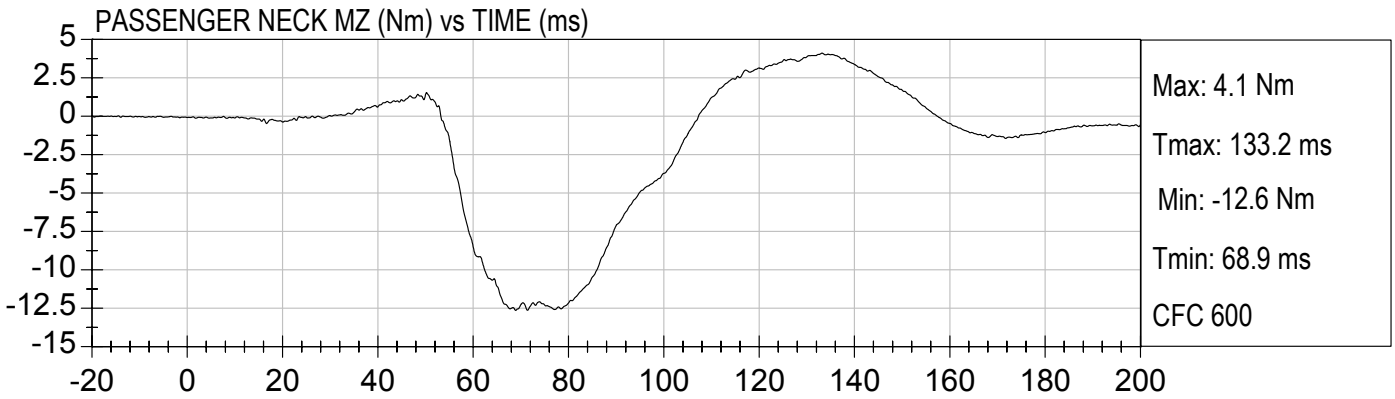


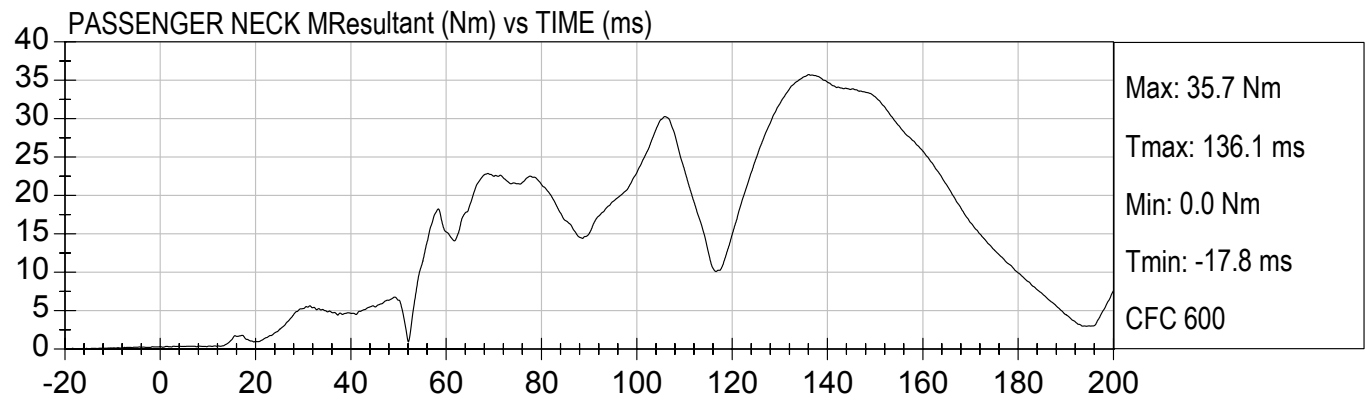





PASSENGER NECK MX (Nm) vs TIME (ms)
Max: 15.0 Nm
Tmax: 108.0 ms
Min: -8.2 Nm
Tmin: 150.8 ms
CFC 600

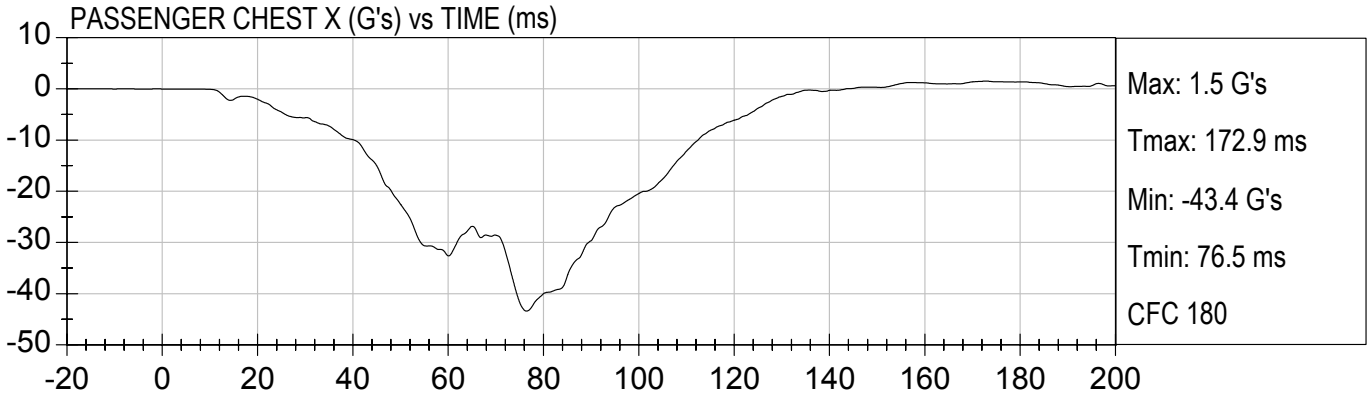

PASSENGER NECK MY (Nm) vs TIME (ms)
Max: 34.8 Nm
Tmax: 136.0 ms
Min: -27.6 Nm
Tmin: 105.0 ms
CFC 600

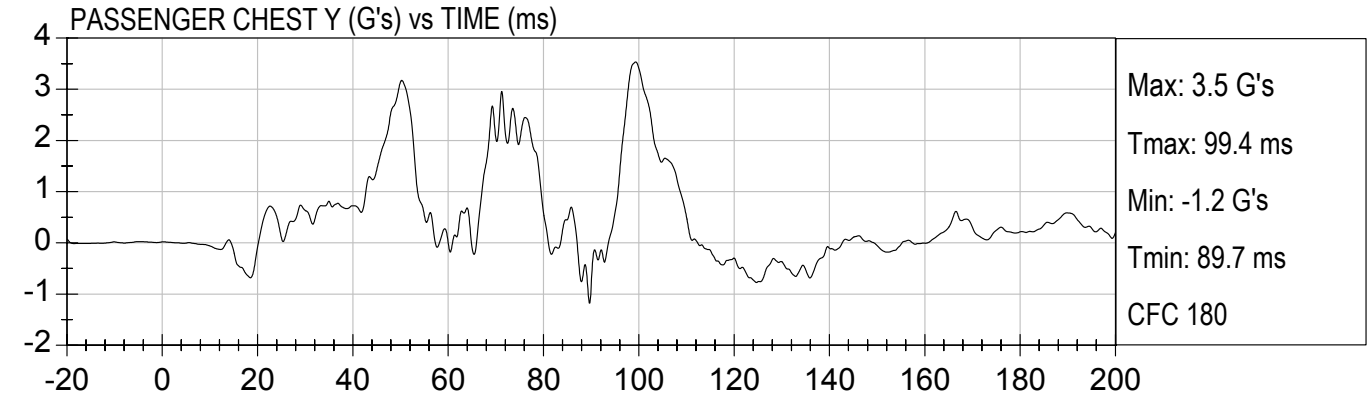

PASSENGER NECK MZ (Nm) vs TIME (ms)
Max: 4.1 Nm
Tmax: 133.2 ms
Min: -12.6 Nm
Tmin: 68.9 ms
CFC 600

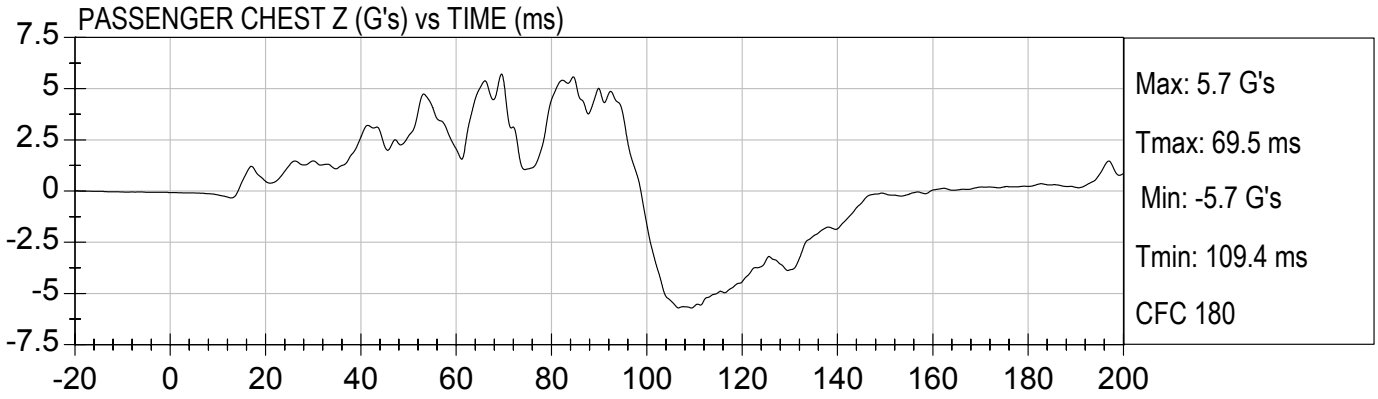

PASSENGER NECK MResultant (Nm) vs TIME (ms)
Max: 35.7 Nm
Tmax: 136.1 ms
Min: 0.0 Nm
Tmin: -17.8 ms
CFC 600

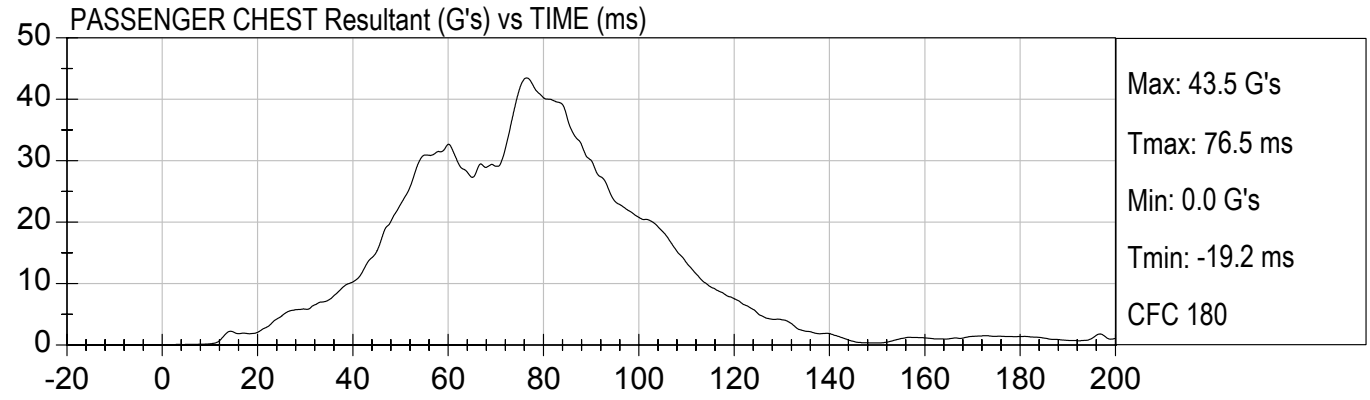
NCAP 35MPH FRONTAL
2004 FORD TAURUS (M40201)

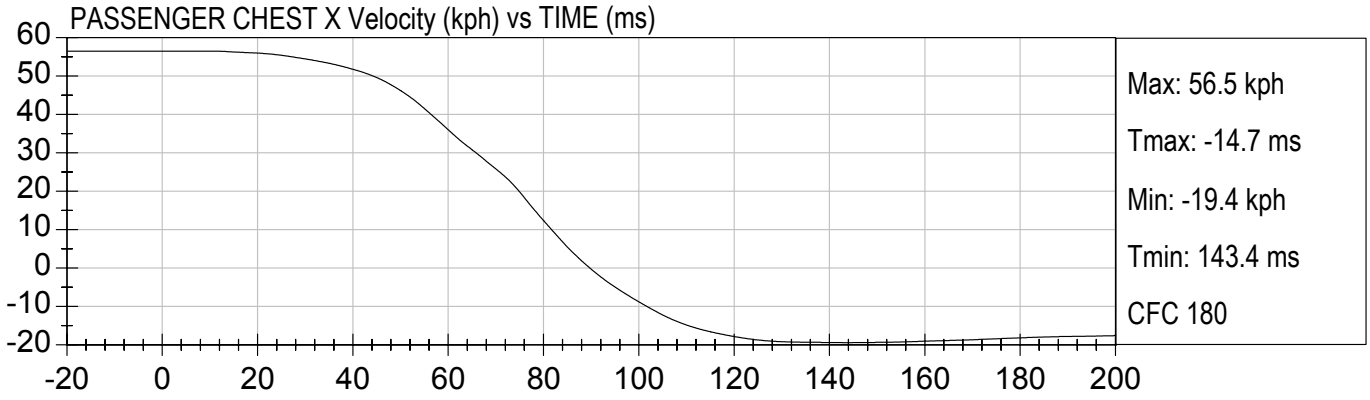
Test Date: 10/16/03
Speed: 35.1 mph (56.5 km/h)

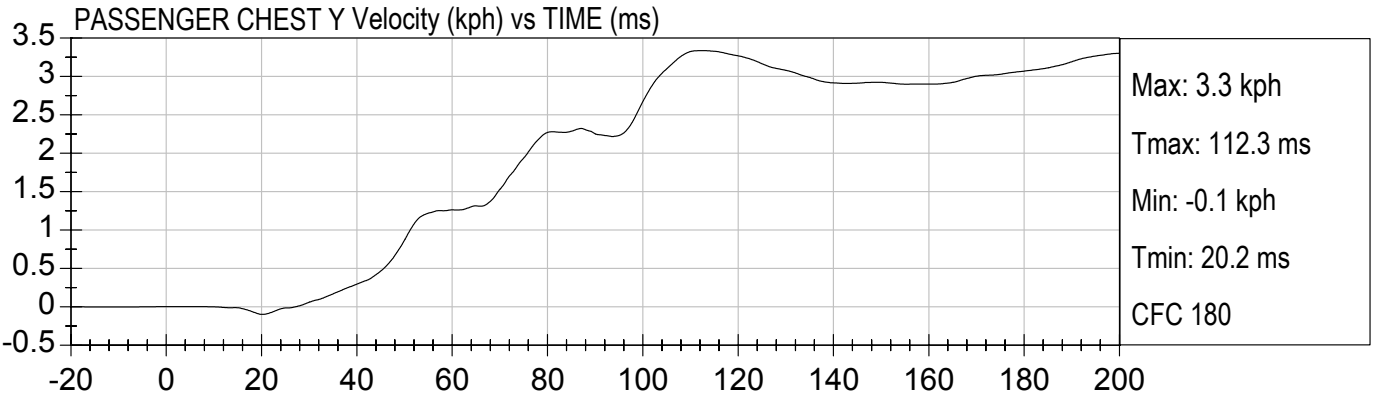


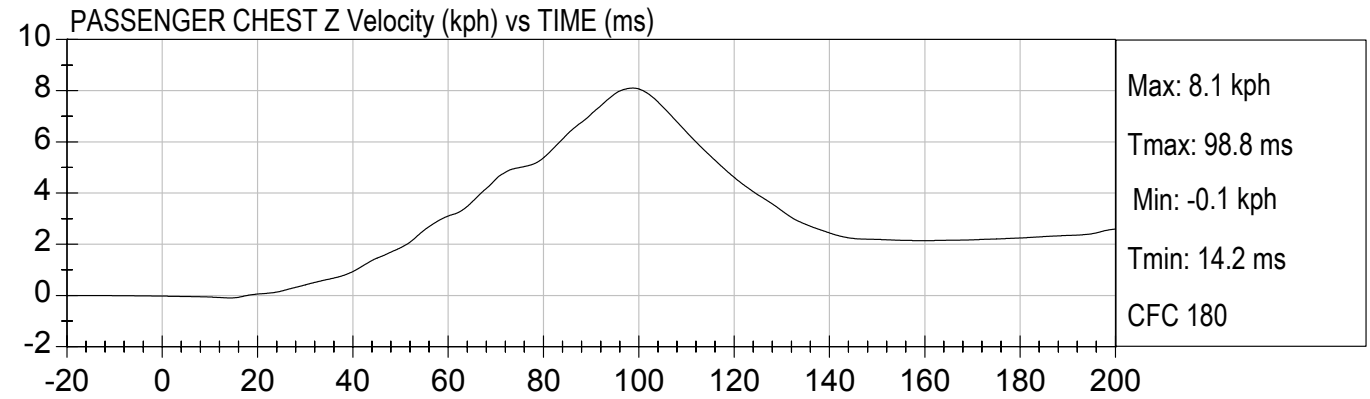


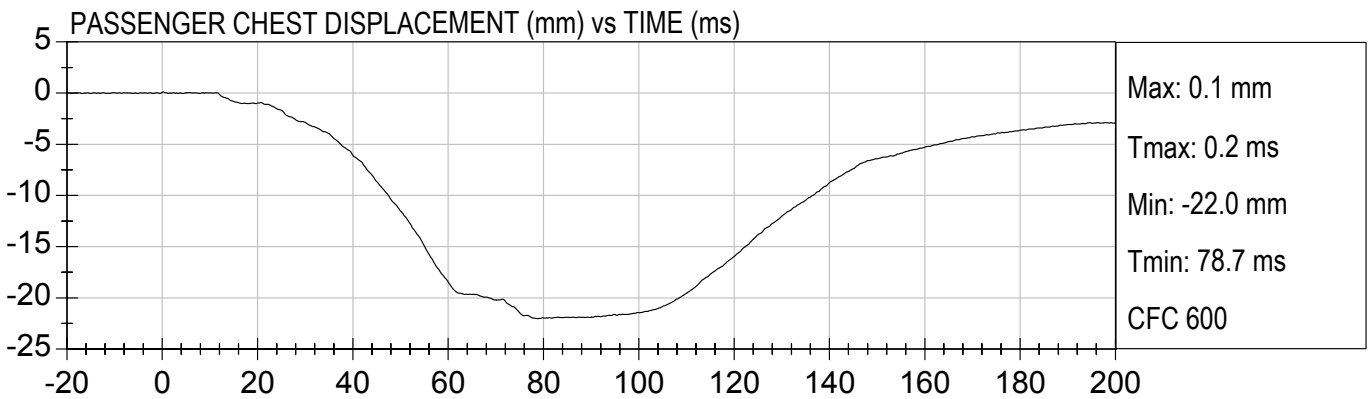





PASSENGER CHEST X Velocity (kph) vs TIME (ms)
60
50
40
30
20
10
0
-10
-20
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 56.5 kph
Tmax: -14.7 ms
Min: -19.4 kph
Tmin: 143.4 ms
CFC 180

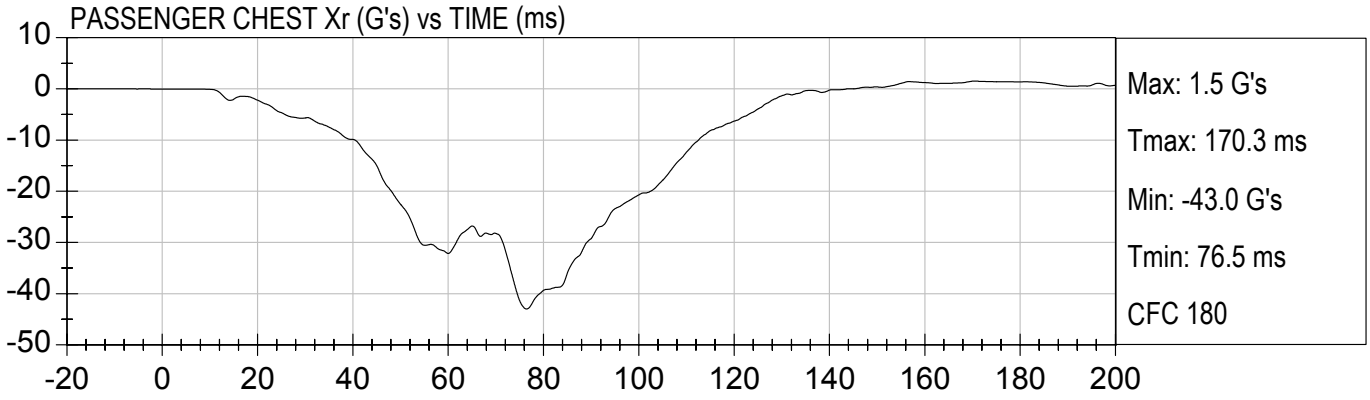

PASSENGER CHEST Y Velocity (kph) vs TIME (ms)
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 3.3 kph
Tmax: 112.3 ms
Min: -0.1 kph
Tmin: 20.2 ms
CFC 180

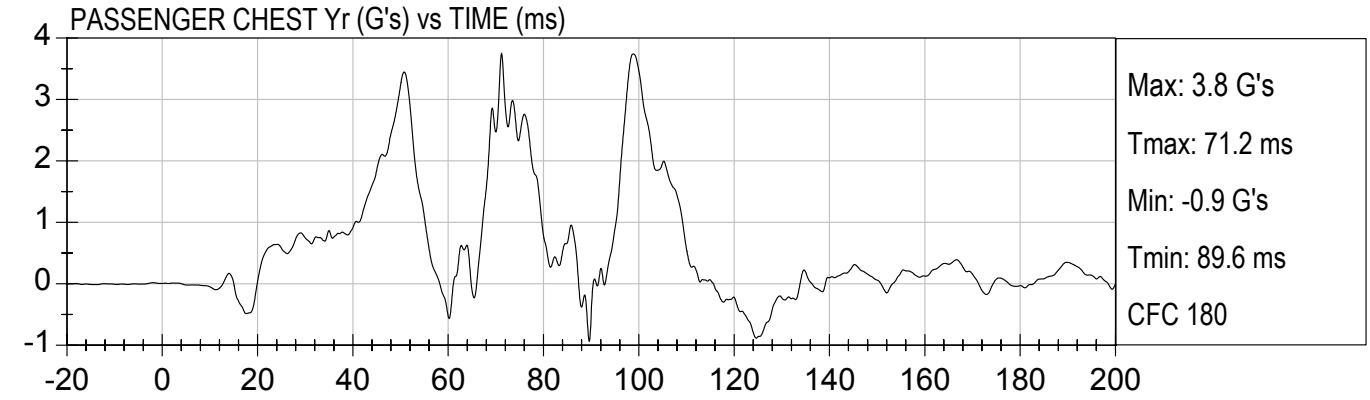

PASSENGER CHEST Z Velocity (kph) vs TIME (ms)
10
8
6
4
2
0
-2
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 8.1 kph
Tmax: 98.8 ms
Min: -0.1 kph
Tmin: 14.2 ms
CFC 180

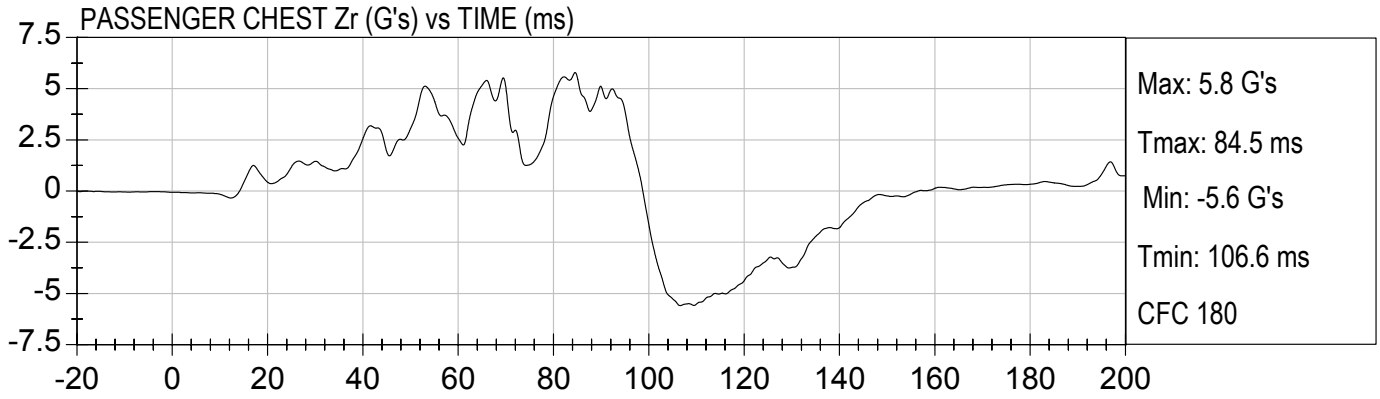

PASSENGER CHEST DISPLACEMENT (mm) vs TIME (ms)
5
0
-5
-10
-15
-20
-25
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 0.1 mm
Tmax: 0.2 ms
Min: -22.0 mm
Tmin: 78.7 ms
CFC 600

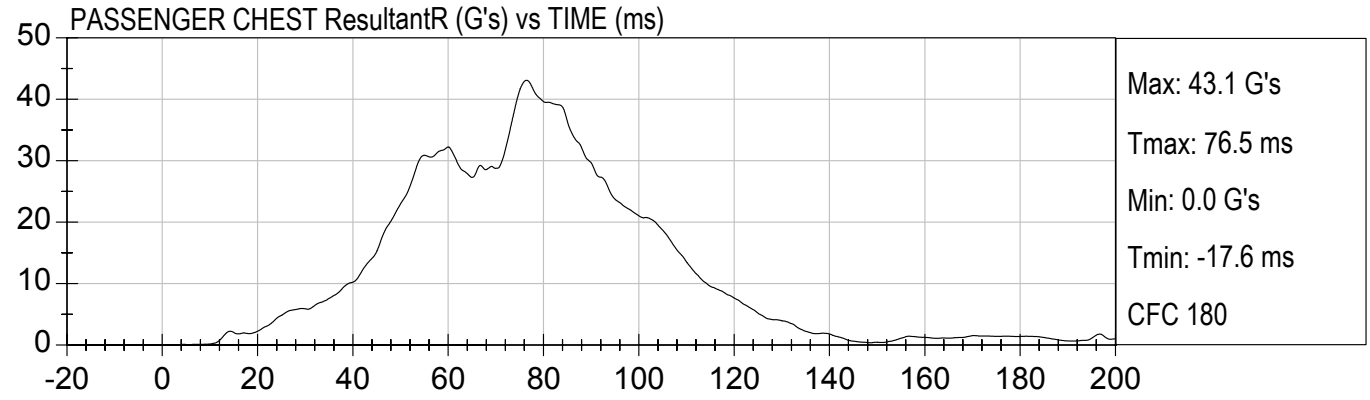
NCAP 35MPH FRONTAL
2004 FORD TAURUS (M40201)

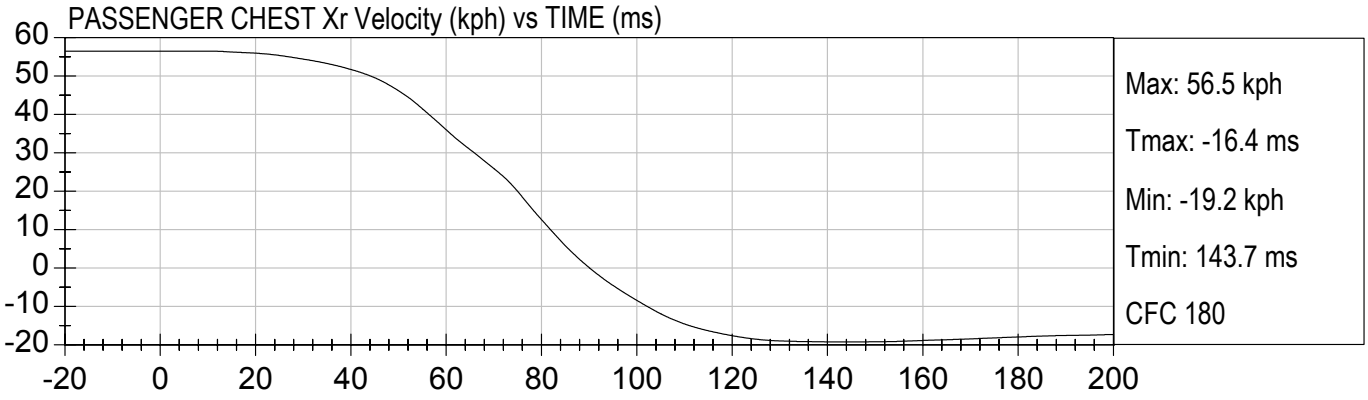
Test Date: 10/16/03
Speed: 35.1 mph (56.5 km/h)

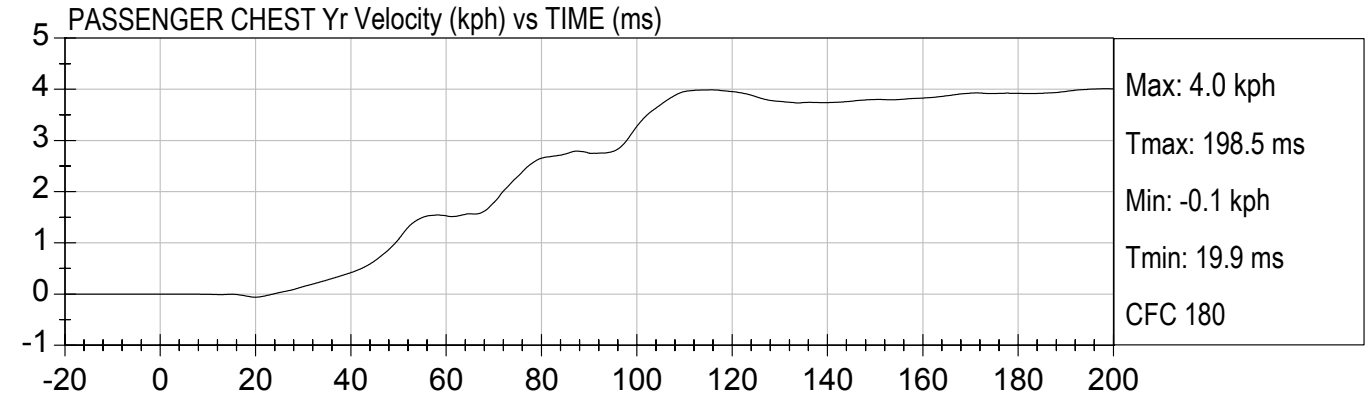


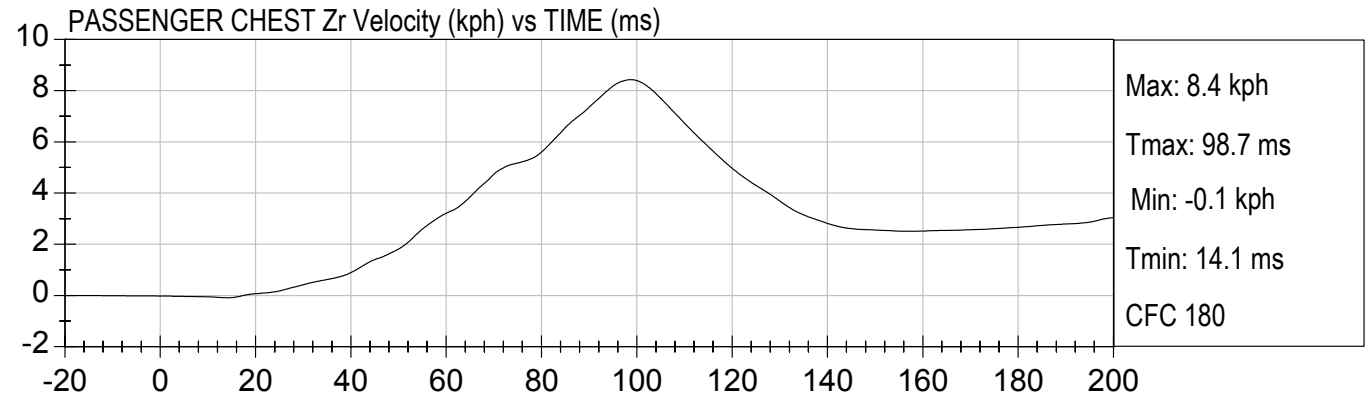






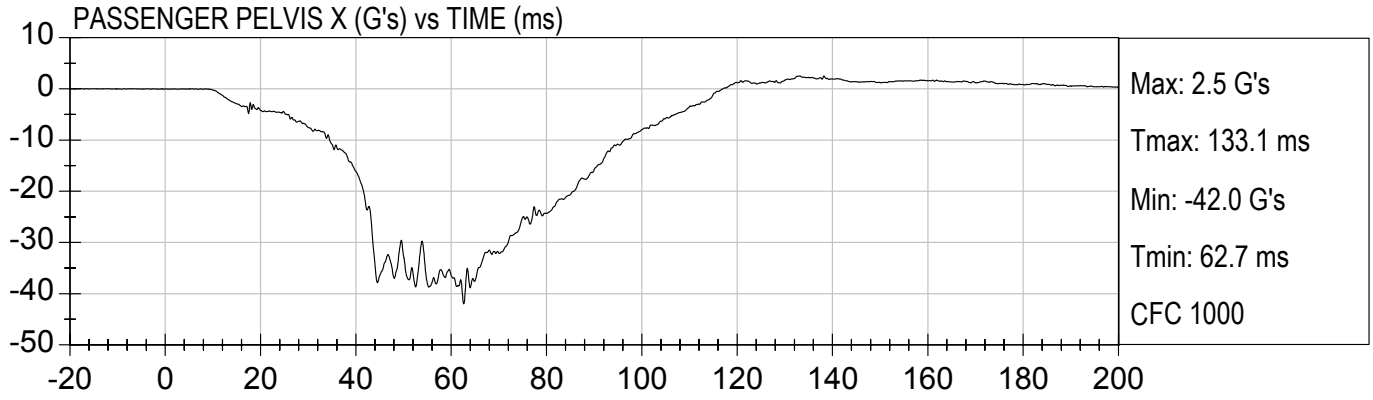

PASSENGER CHEST Xr Velocity (kph) vs TIME (ms)
60
50
40
30
20
10
0
-10
-20
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 56.5 kph
Tmax: -16.4 ms
Min: -19.2 kph
Tmin: 143.7 ms
CFC 180

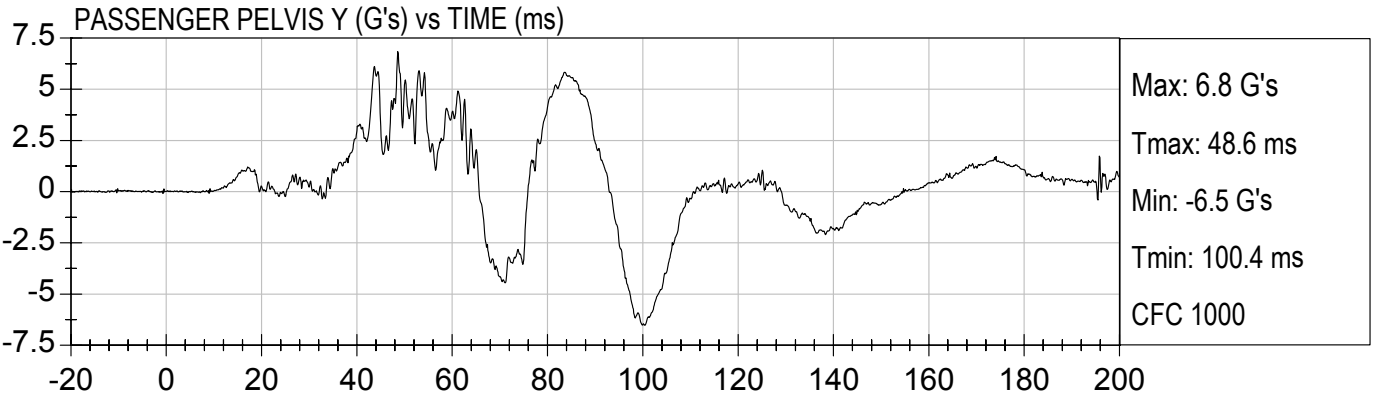

PASSENGER CHEST Yr Velocity (kph) vs TIME (ms)
5
4
3
2
1
0
-1
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 4.0 kph
Tmax: 198.5 ms
Min: -0.1 kph
Tmin: 19.9 ms
CFC 180

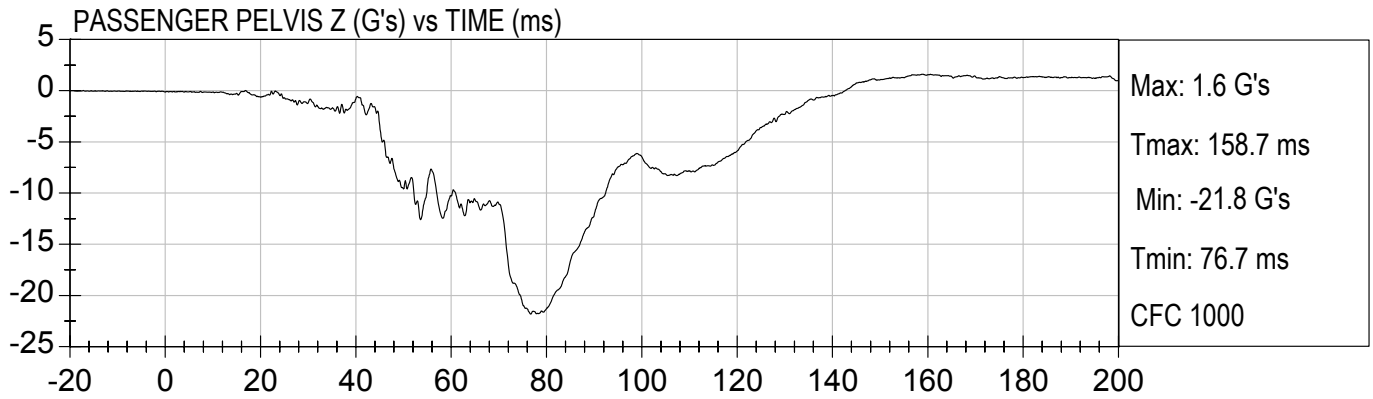

PASSENGER CHEST Zr Velocity (kph) vs TIME (ms)
10
8
6
4
2
0
-2
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 8.4 kph
Tmax: 98.7 ms
Min: -0.1 kph
Tmin: 14.1 ms
CFC 180

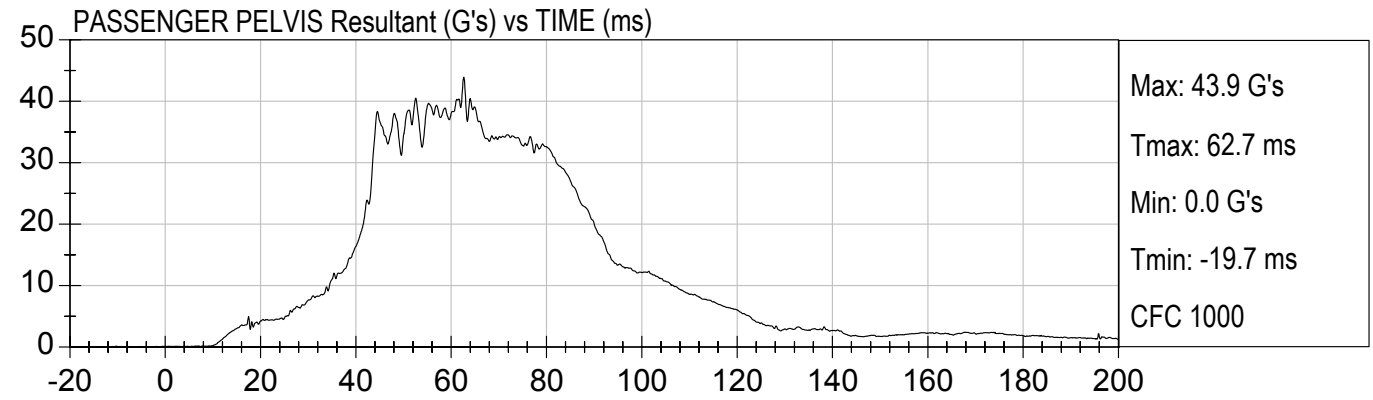
NCAP 35MPH FRONTAL
2004 FORD TAURUS (M40201)

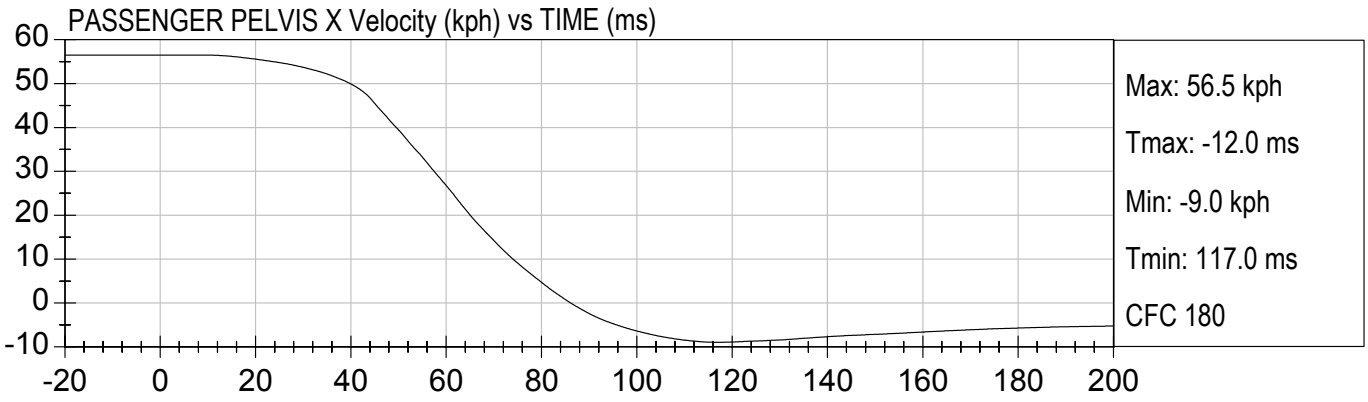
Test Date: 10/16/03
Speed: 35.1 mph (56.5 km/h)

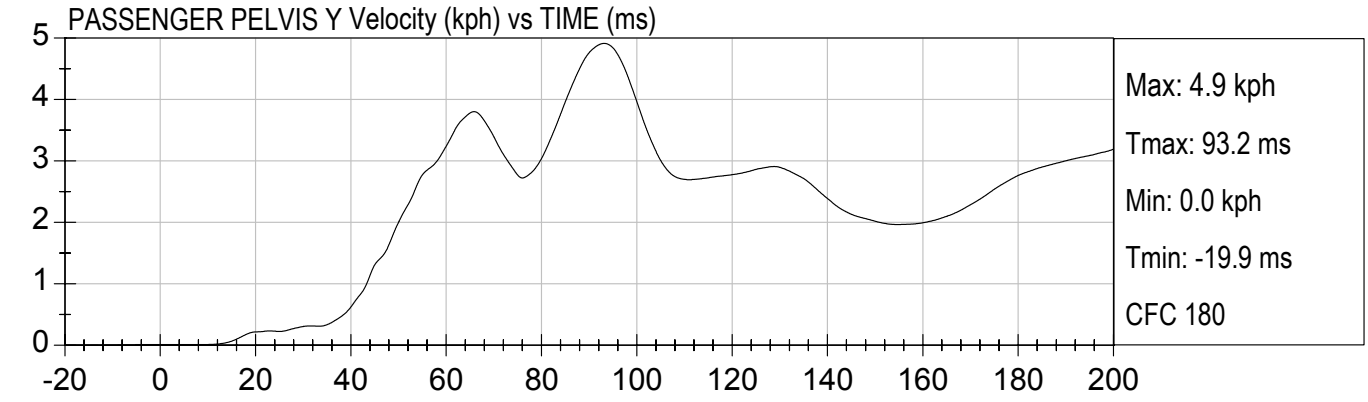


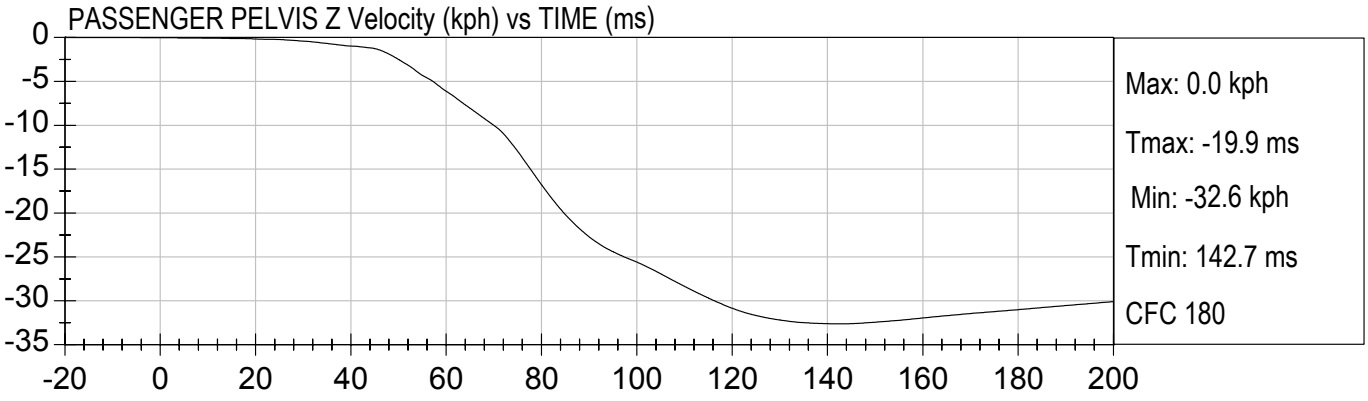






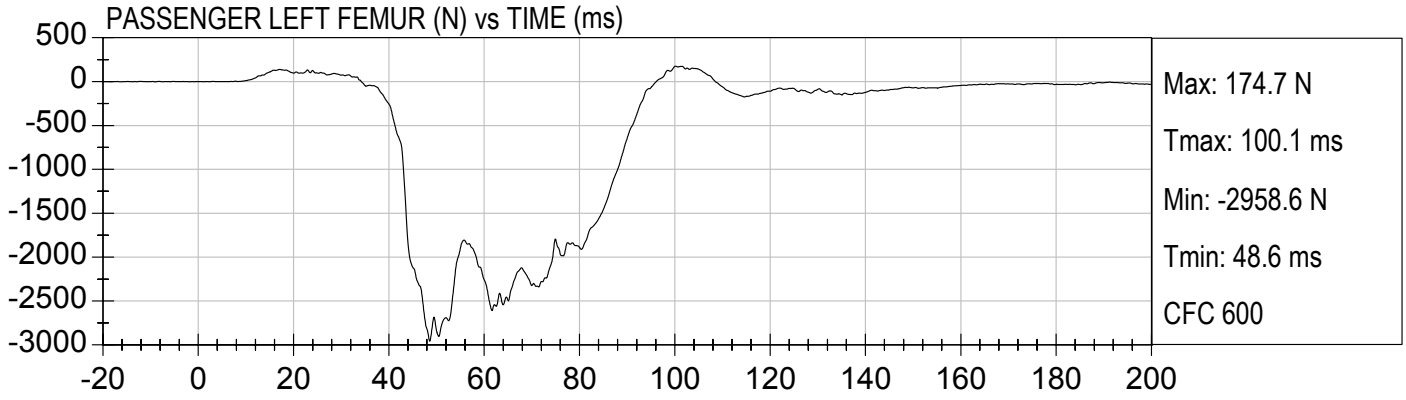

PASSENGER PELVIS X Velocity (kph) vs TIME (ms)
60
50
40
30
20
10
0
-10
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 56.5 kph
Tmax: -12.0 ms
Min: -9.0 kph
Tmin: 117.0 ms
CFC 180

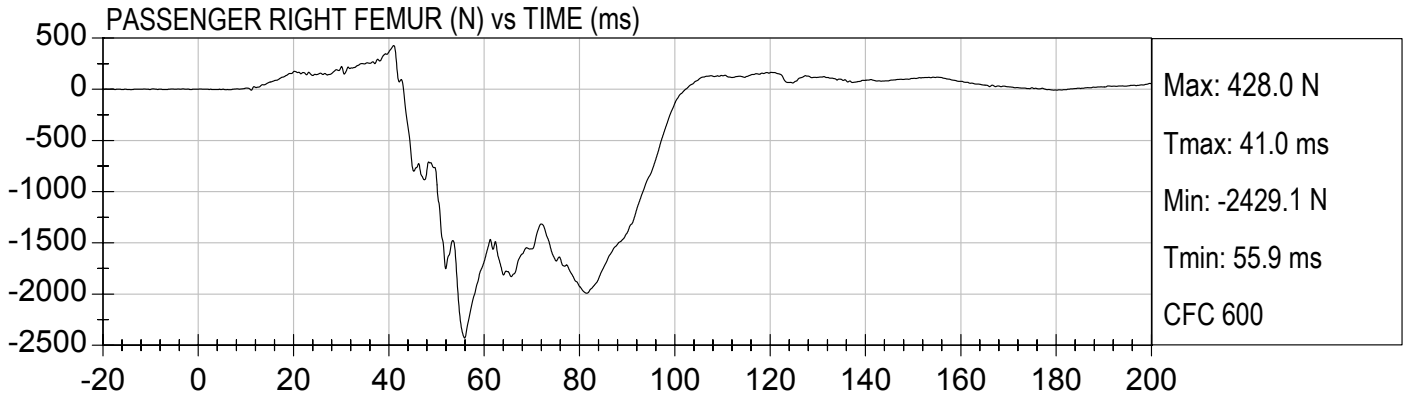

PASSENGER PELVIS Y Velocity (kph) vs TIME (ms)
5
4
3
2
1
0
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 4.9 kph
Tmax: 93.2 ms
Min: 0.0 kph
Tmin: -19.9 ms
CFC 180

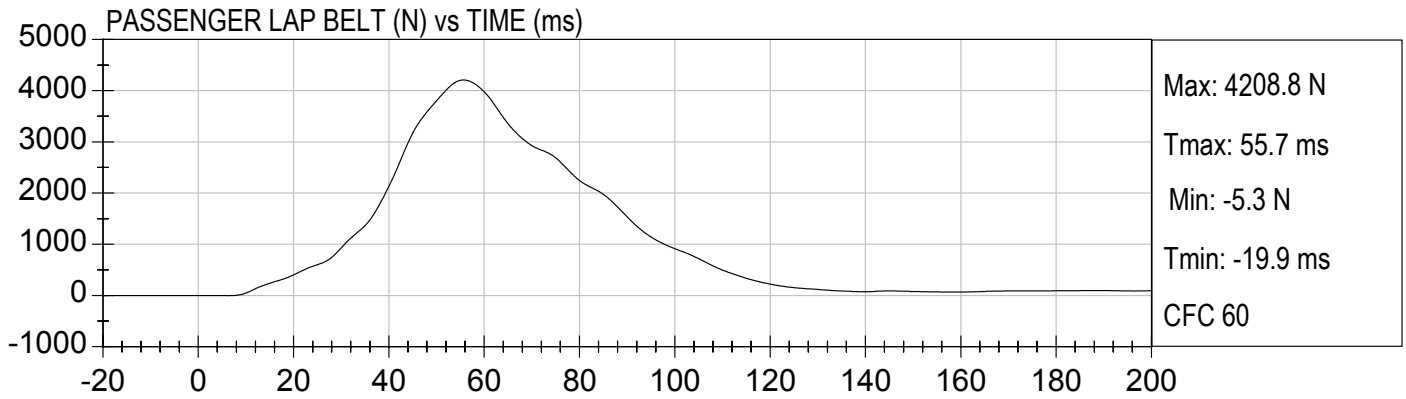

PASSENGER PELVIS Z Velocity (kph) vs TIME (ms)
0
-5
-10
-15
-20
-25
-30
-35
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 0.0 kph
Tmax: -19.9 ms
Min: -32.6 kph
Tmin: 142.7 ms
CFC 180

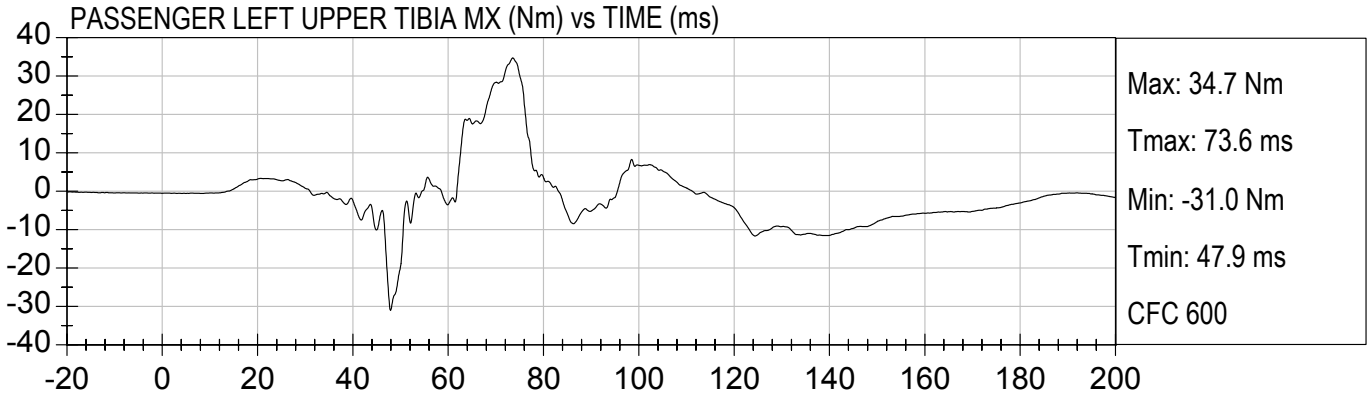
NCAP 35MPH FRONTAL
2004 FORD TAURUS (M40201)

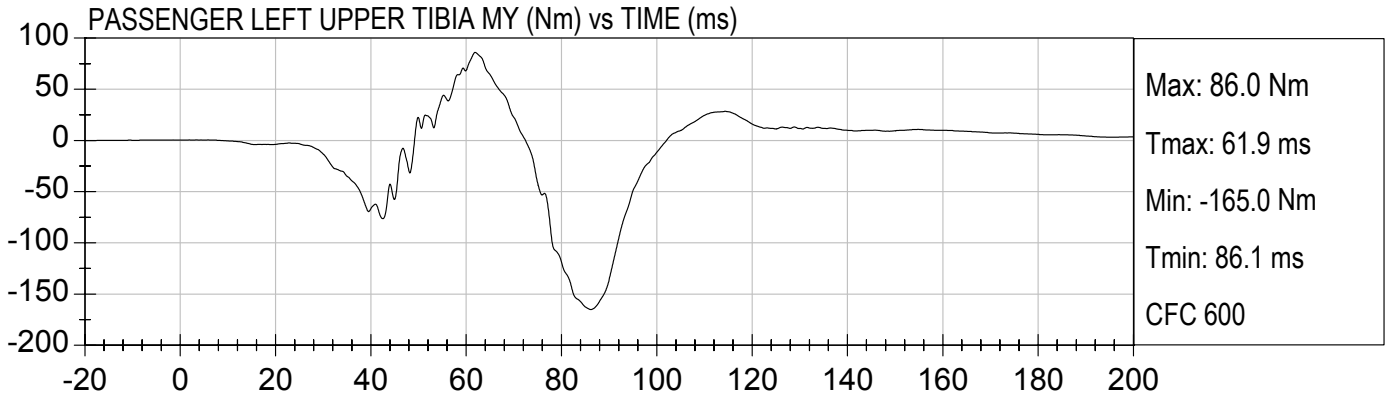
Test Date: 10/16/03
Speed: 35.1 mph (56.5 km/h)

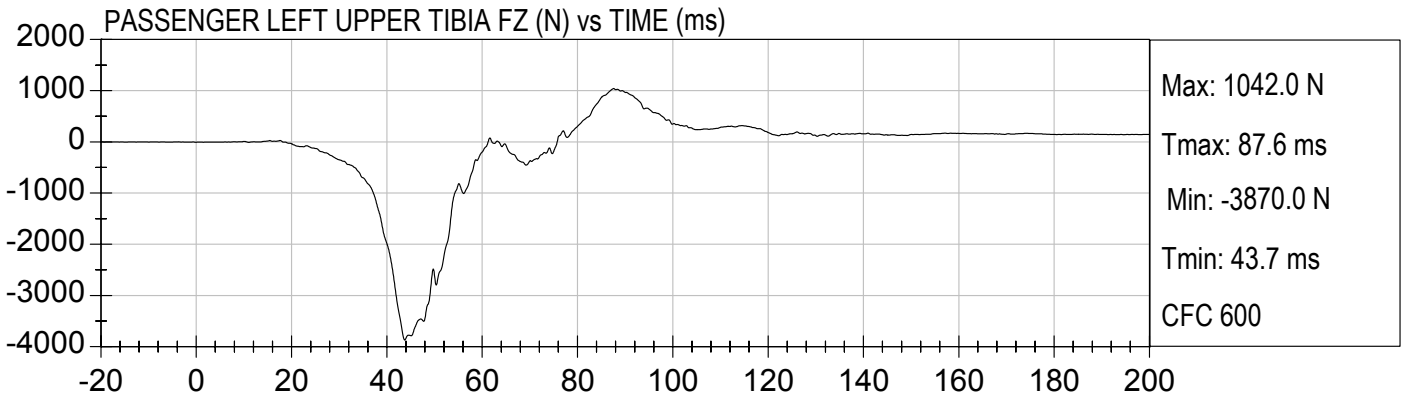






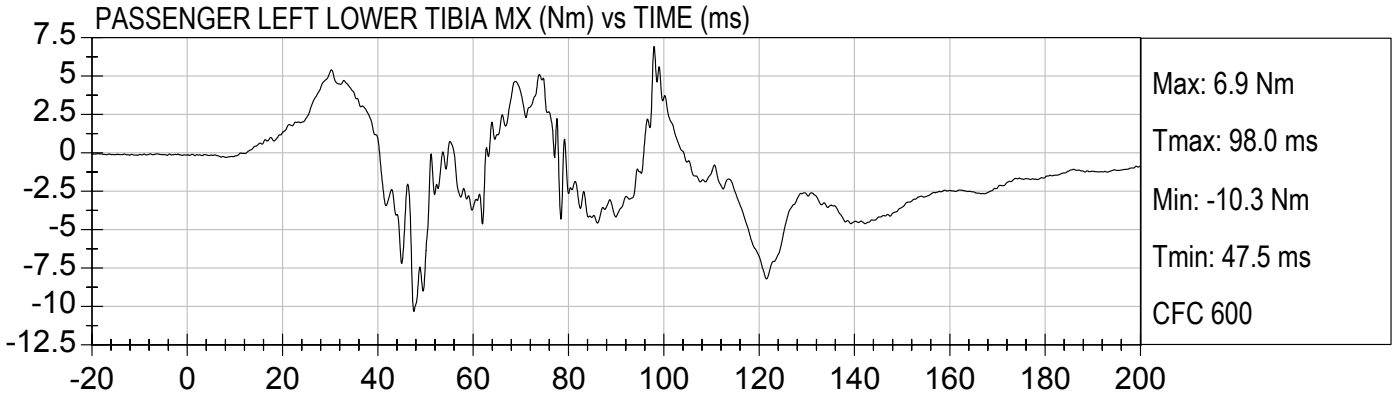

PASSENGER LEFT UPPER TIBIA MX (Nm) vs TIME (ms)
40
30
20
10
0
-10
-20
-30
-40
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 34.7 Nm
Tmax: 73.6 ms
Min: -31.0 Nm
Tmin: 47.9 ms
CFC 600

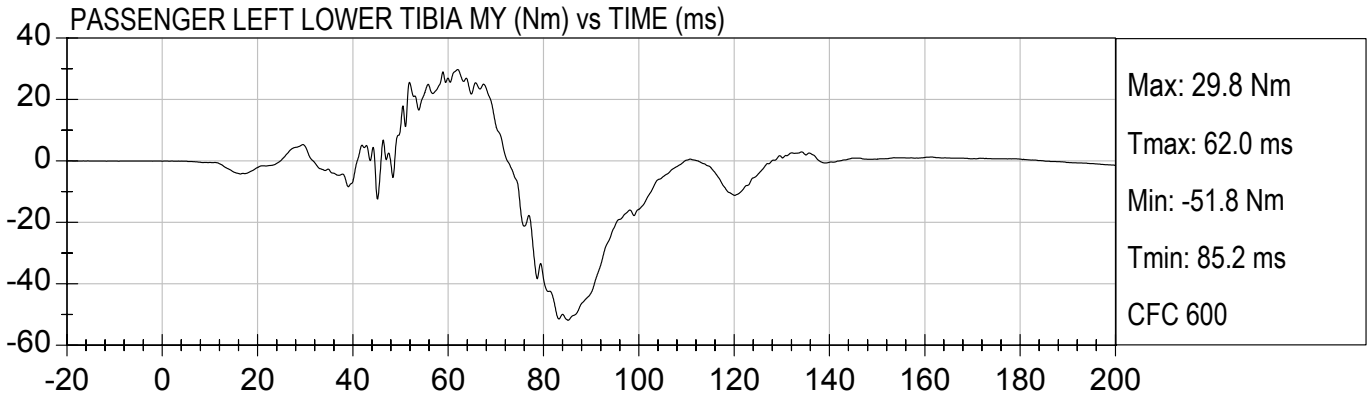

PASSENGER LEFT UPPER TIBIA MY (Nm) vs TIME (ms)
100
50
0
-50
-100
-150
-200
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 86.0 Nm
Tmax: 61.9 ms
Min: -165.0 Nm
Tmin: 86.1 ms
CFC 600

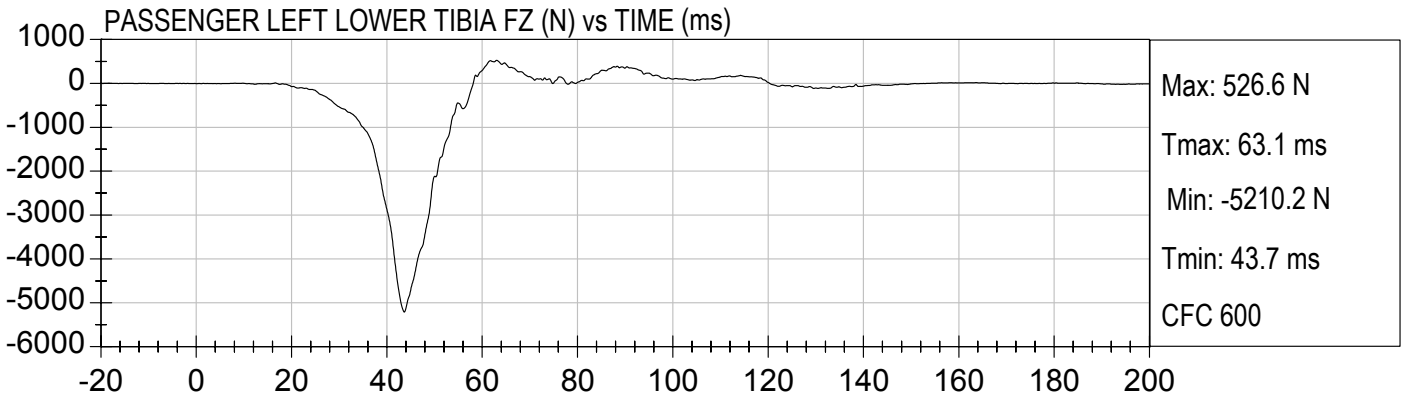

PASSENGER LEFT UPPER TIBIA FZ (N) vs TIME (ms)
2000
1000
0
-1000
-2000
-3000
-4000
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 1042.0 N
Tmax: 87.6 ms
Min: -3870.0 N
Tmin: 43.7 ms
CFC 600

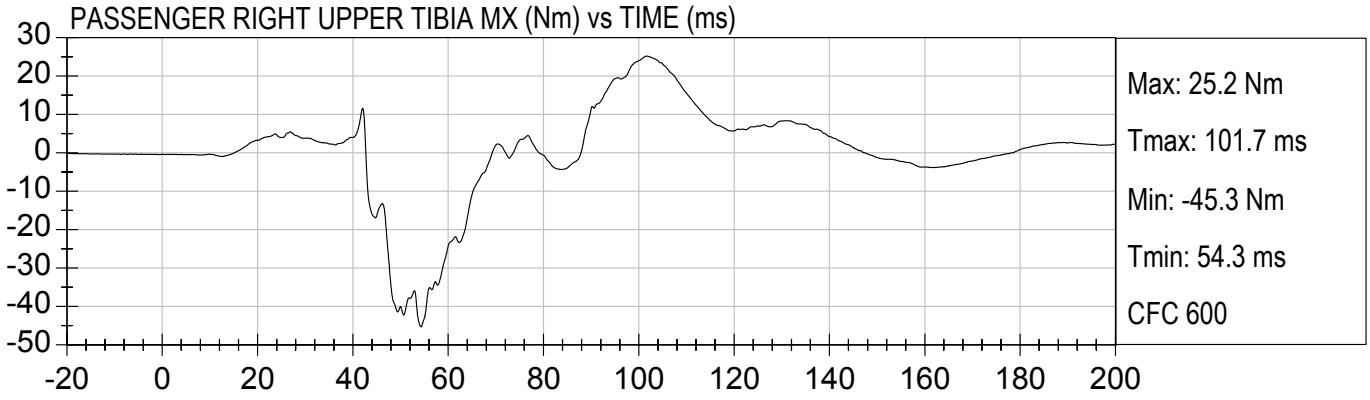
NCAP 35MPH FRONTAL
2004 FORD TAURUS (M40201)

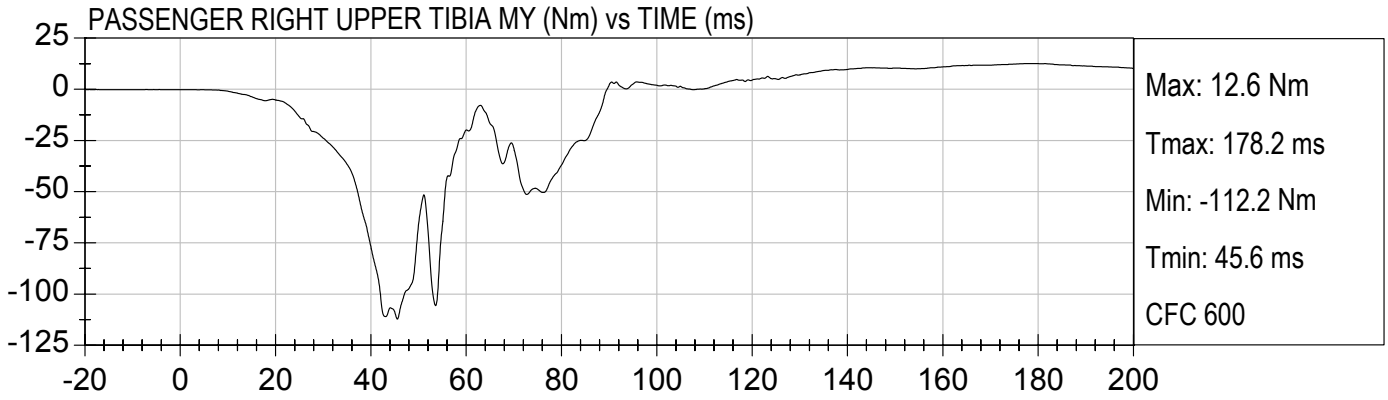
Test Date: 10/16/03
Speed: 35.1 mph (56.5 km/h)

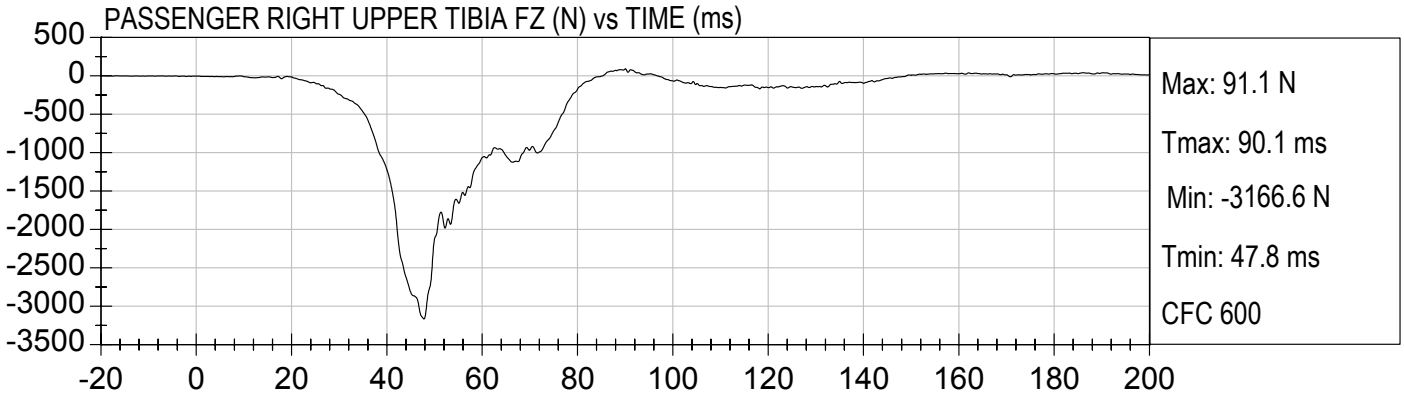


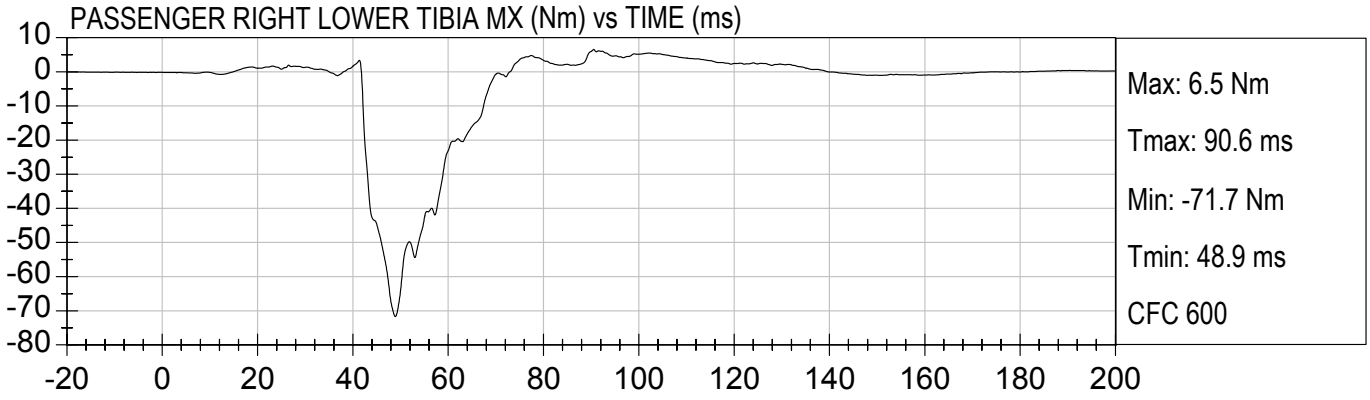


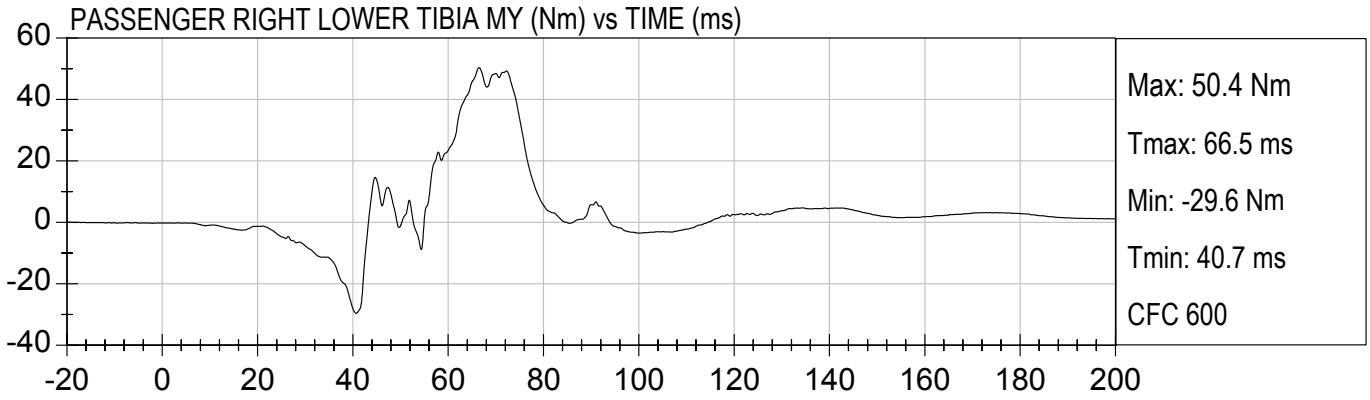


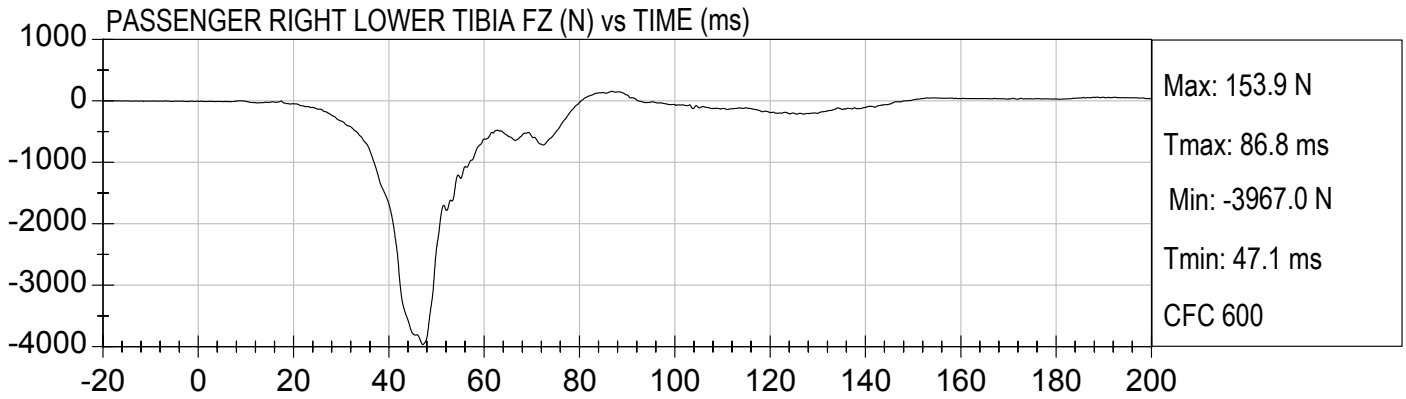

PASSENGER RIGHT UPPER TIBIA MX (Nm) vs TIME (ms)
30
20
10
0
-10
-20
-30
-40
-50
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 25.2 Nm
Tmax: 101.7 ms
Min: -45.3 Nm
Tmin: 54.3 ms
CFC 600

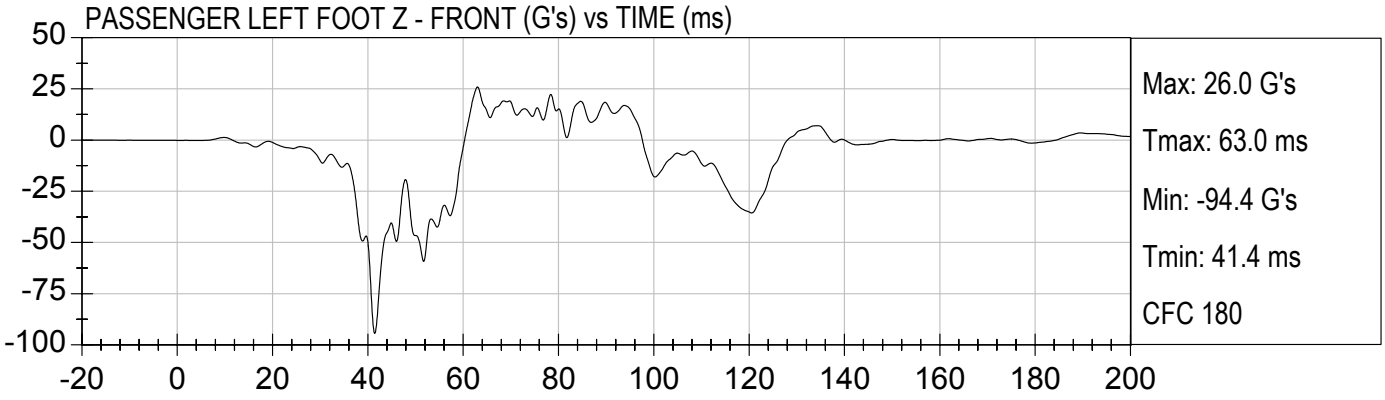

PASSENGER RIGHT UPPER TIBIA MY (Nm) vs TIME (ms)
25
0
-25
-50
-75
-100
-125
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 12.6 Nm
Tmax: 178.2 ms
Min: -112.2 Nm
Tmin: 45.6 ms
CFC 600

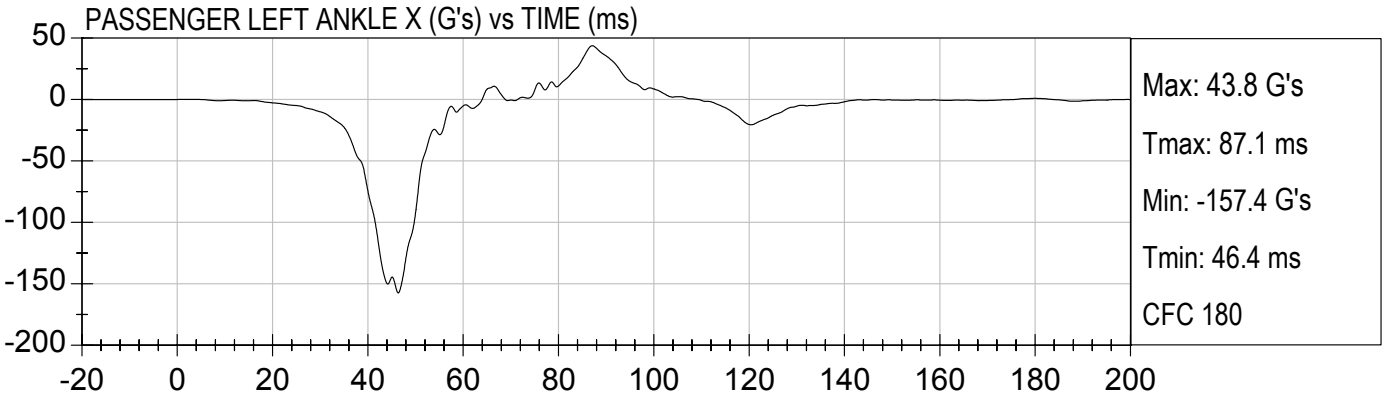

PASSENGER RIGHT UPPER TIBIA FZ (N) vs TIME (ms)
500
0
-500
-1000
-1500
-2000
-2500
-3000
-3500
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 91.1 N
Tmax: 90.1 ms
Min: -3166.6 N
Tmin: 47.8 ms
CFC 600

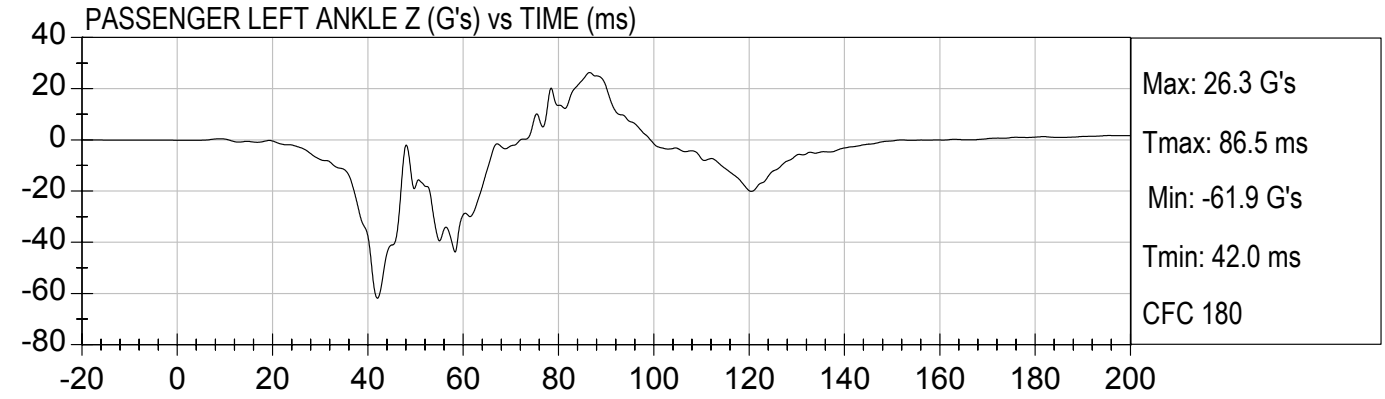

PASSENGER RIGHT LOWER TIBIA MX (Nm) vs TIME (ms)
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 6.5 Nm
Tmax: 90.6 ms
Min: -71.7 Nm
Tmin: 48.9 ms
CFC 600

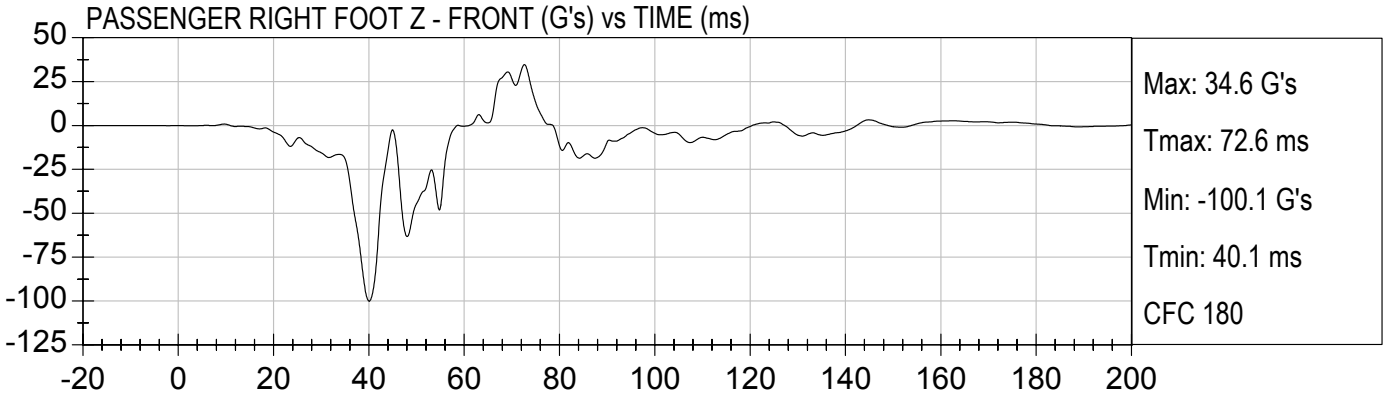

PASSENGER RIGHT LOWER TIBIA MY (Nm) vs TIME (ms)
60
40
20
0
-20
-40
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 50.4 Nm
Tmax: 66.5 ms
Min: -29.6 Nm
Tmin: 40.7 ms
CFC 600

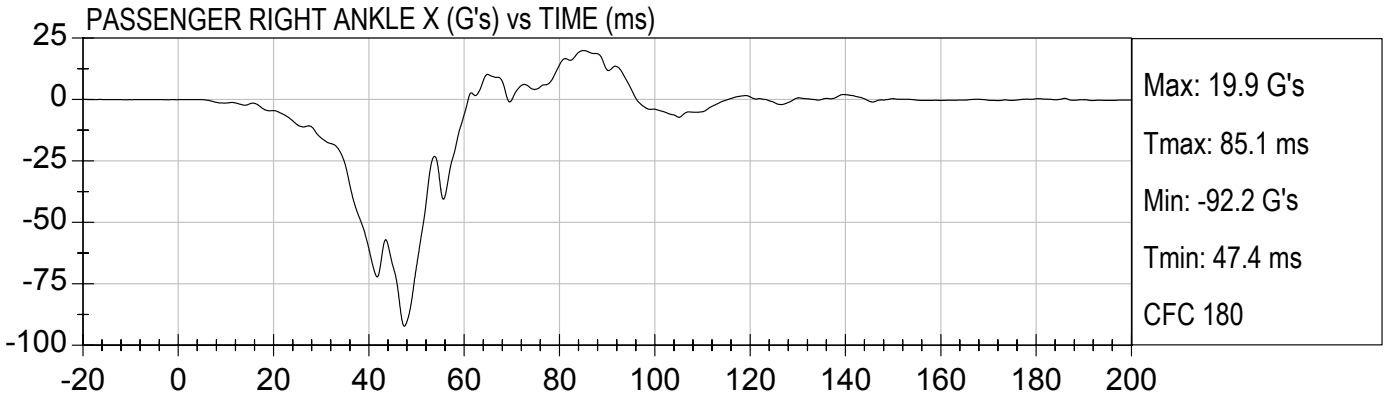

PASSENGER RIGHT LOWER TIBIA FZ (N) vs TIME (ms)
1000
0
-1000
-2000
-3000
-4000
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 153.9 N
Tmax: 86.8 ms
Min: -3967.0 N
Tmin: 47.1 ms
CFC 600

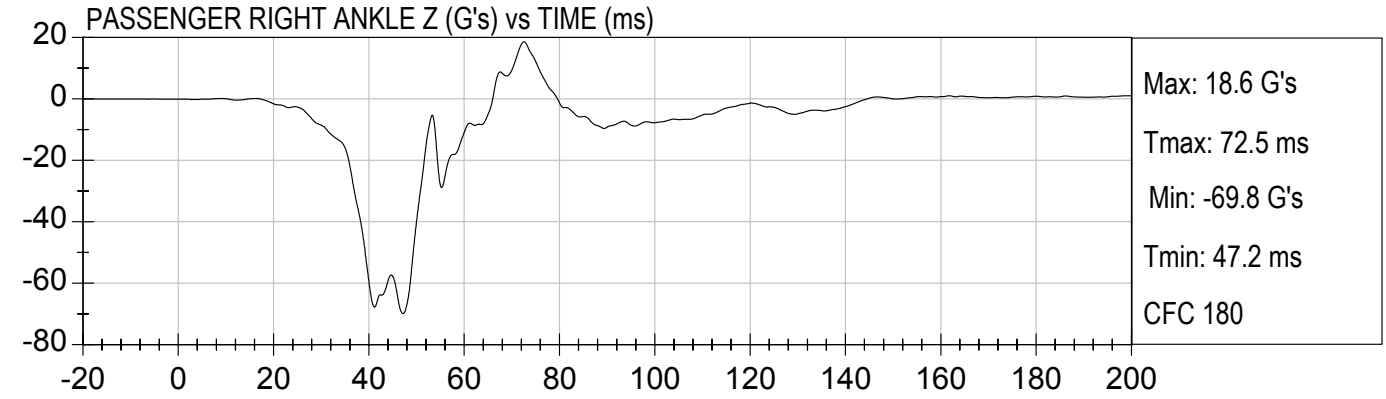

PASSENGER LEFT FOOT Z - FRONT (G's) vs TIME (ms)
50
25
0
-25
-50
-75
-100
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 26.0 G's
Tmax: 63.0 ms
Min: -94.4 G's
Tmin: 41.4 ms
CFC 180


PASSENGER LEFT ANKLE X (G's) vs TIME (ms)
50
0
-50
-100
-150
-200
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 43.8 G's
Tmax: 87.1 ms
Min: -157.4 G's
Tmin: 46.4 ms
CFC 180


PASSENGER LEFT ANKLE Z (G's) vs TIME (ms)
40
20
0
-20
-40
-60
-80
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 26.3 G's
Tmax: 86.5 ms
Min: -61.9 G's
Tmin: 42.0 ms
CFC 180

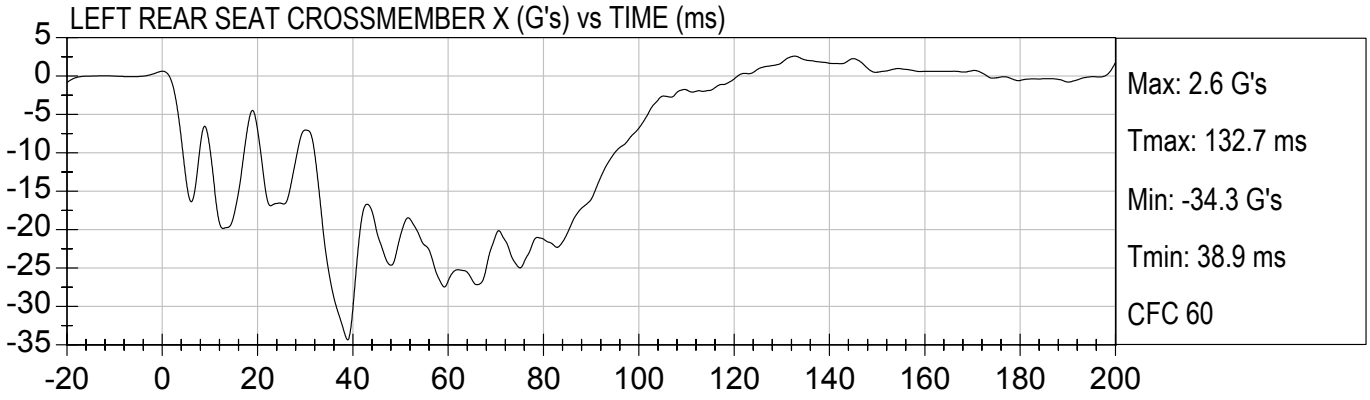

PASSENGER RIGHT FOOT Z - FRONT (G's) vs TIME (ms)
50
25
0
-25
-50
-75
-100
-125
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 34.6 G's
Tmax: 72.6 ms
Min: -100.1 G's
Tmin: 40.1 ms
CFC 180

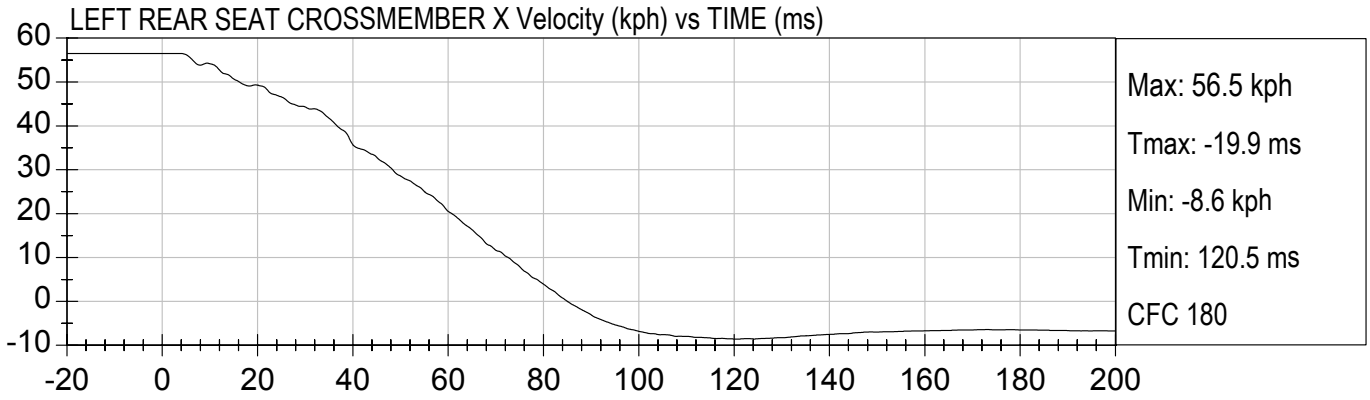

PASSENGER RIGHT ANKLE X (G's) vs TIME (ms)
25
0
-25
-50
-75
-100
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 19.9 G's
Tmax: 85.1 ms
Min: -92.2 G's
Tmin: 47.4 ms
CFC 180

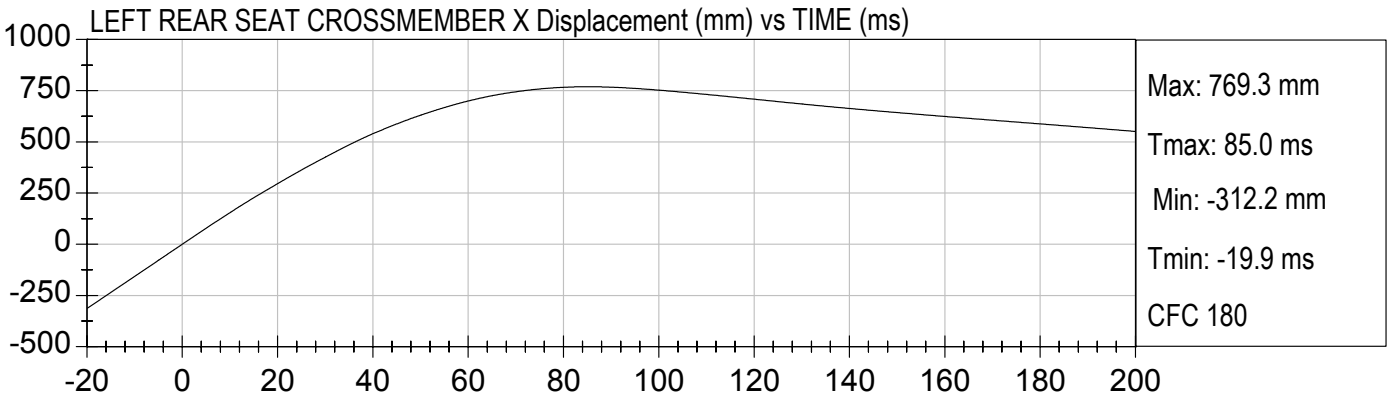

PASSENGER RIGHT ANKLE Z (G's) vs TIME (ms)
20
0
-20
-40
-60
-80
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 18.6 G's
Tmax: 72.5 ms
Min: -69.8 G's
Tmin: 47.2 ms
CFC 180

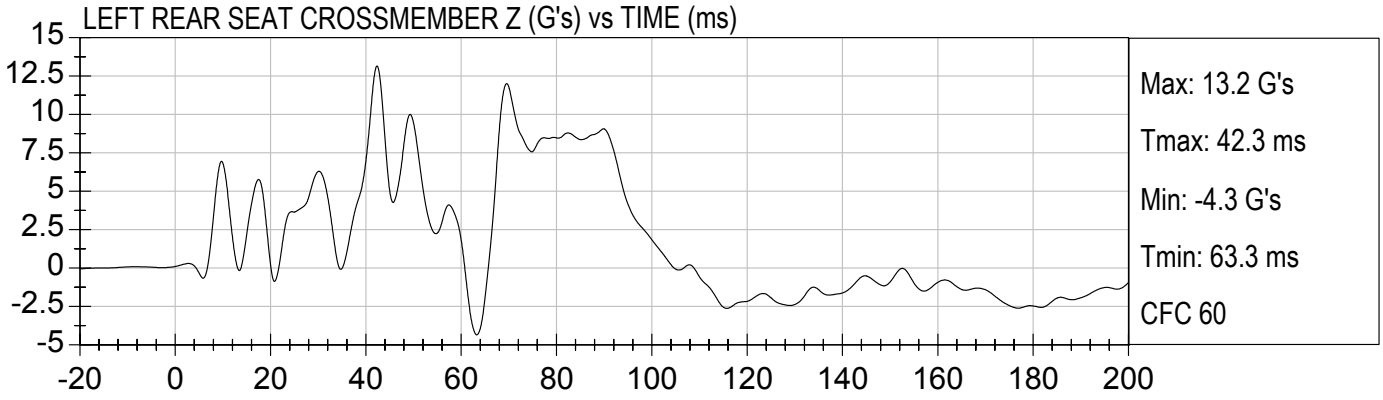
NCAP 35MPH FRONTAL
2004 FORD TAURUS (M40201)

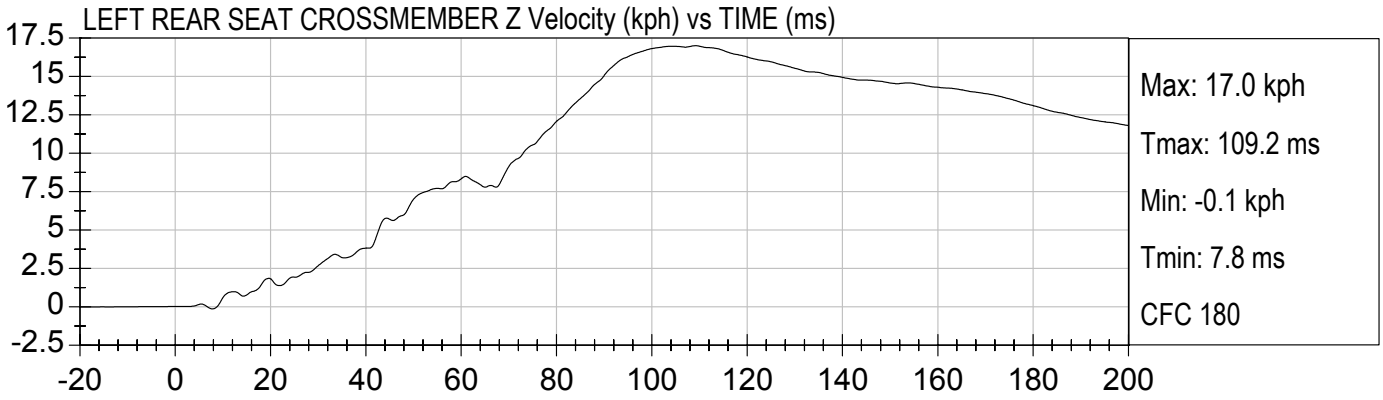
Test Date: 10/16/03
Speed: 35.1 mph (56.5 km/h)

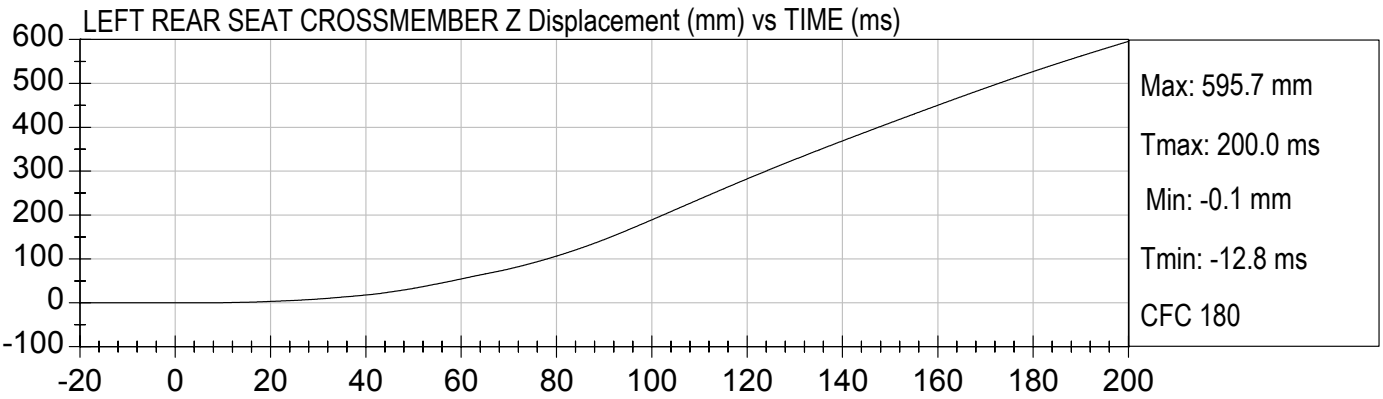


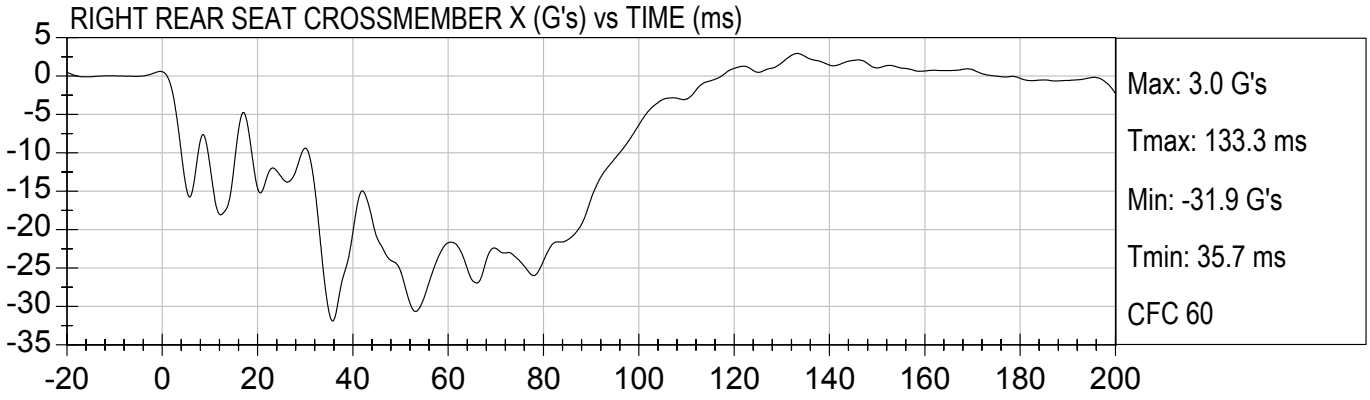


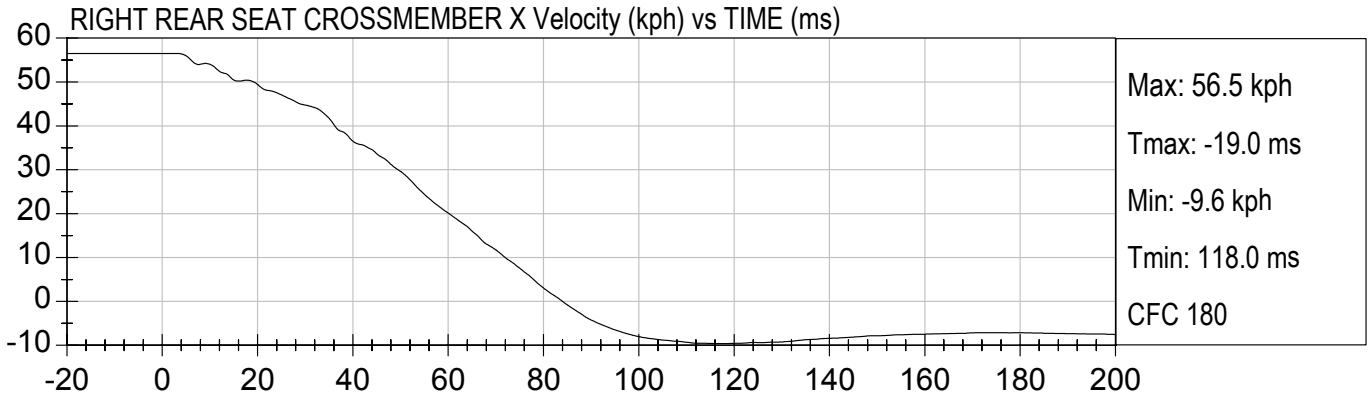


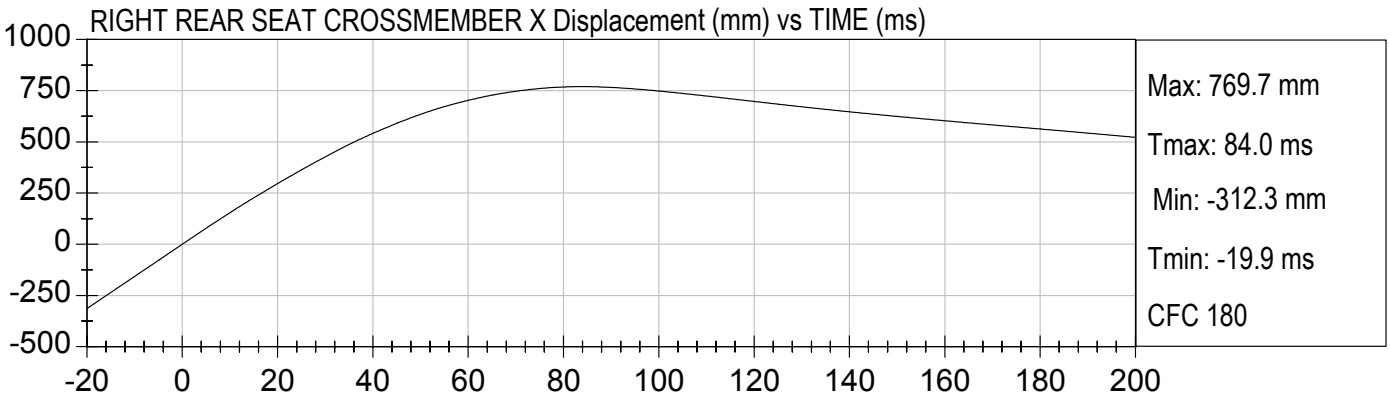

LEFT REAR SEAT CROSSMEMBER Z (G's) vs TIME (ms)
15
12.5
10
7.5
5
2.5
0
-2.5
-5
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 13.2 G's
Tmax: 42.3 ms
Min: -4.3 G's
Tmin: 63.3 ms
CFC 60

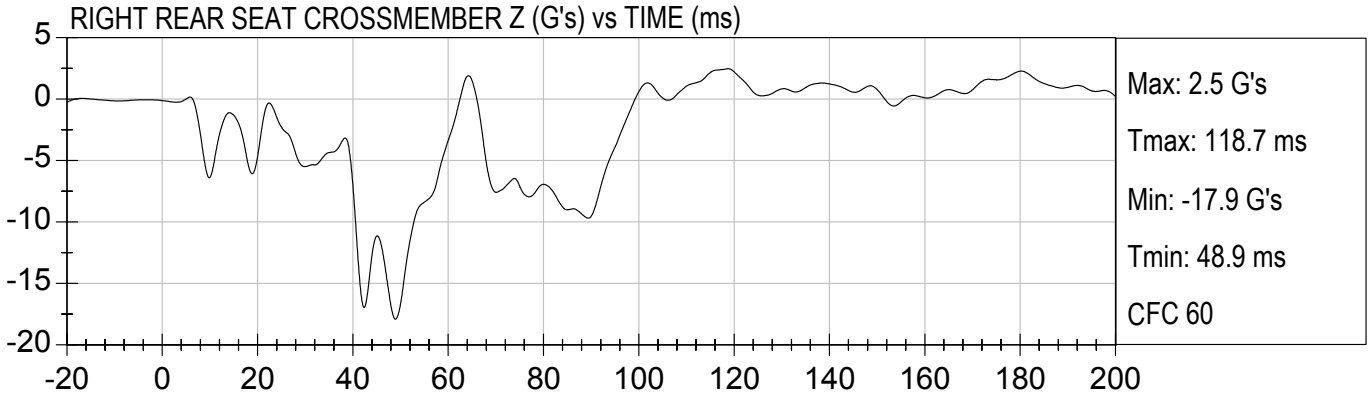

LEFT REAR SEAT CROSSMEMBER Z Velocity (kph) vs TIME (ms)
17.5
15
12.5
10
7.5
5
2.5
0
-2.5
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 17.0 kph
Tmax: 109.2 ms
Min: -0.1 kph
Tmin: 7.8 ms
CFC 180

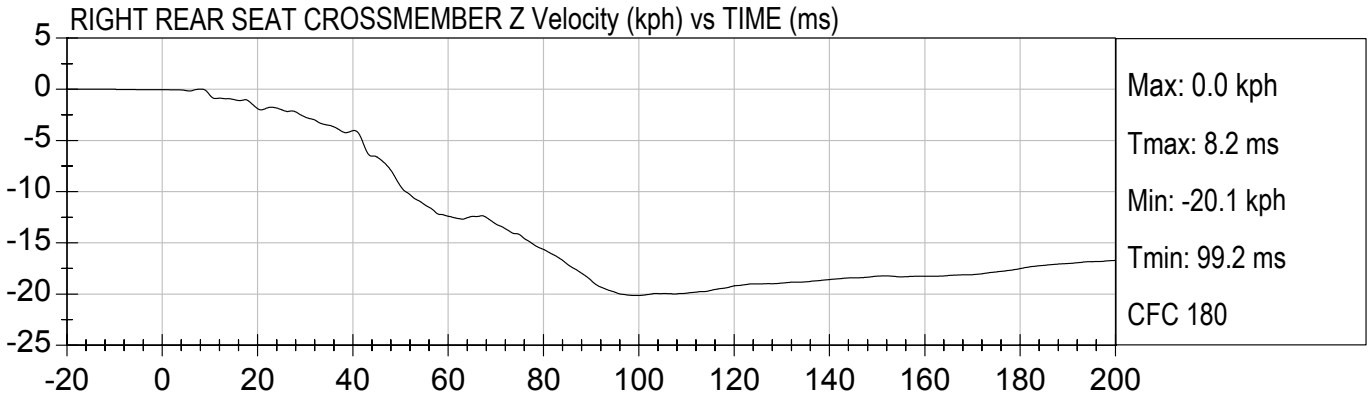

LEFT REAR SEAT CROSSMEMBER Z Displacement (mm) vs TIME (ms)
600
500
400
300
200
100
0
-100
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 595.7 mm
Tmax: 200.0 ms
Min: -0.1 mm
Tmin: -12.8 ms
CFC 180

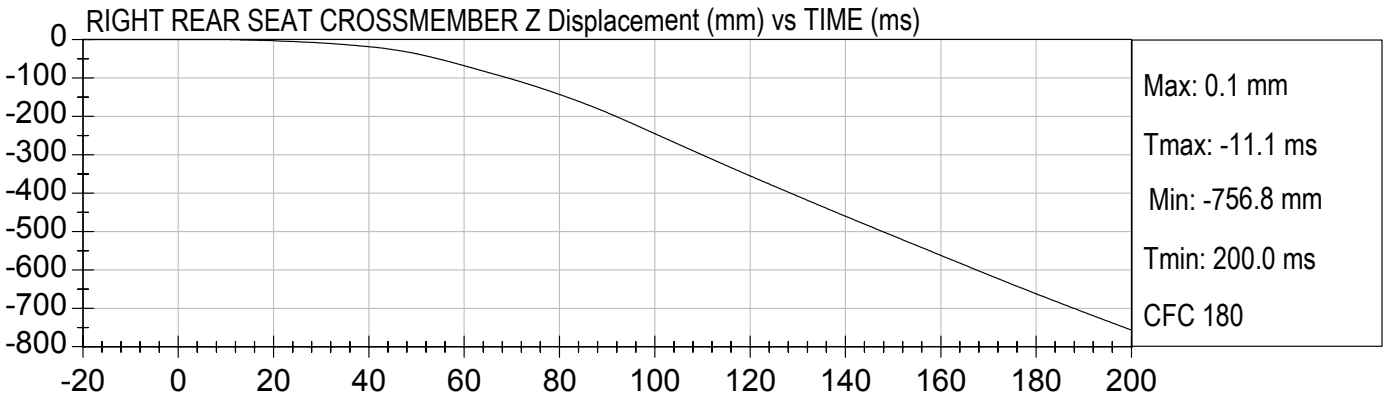

RIGHT REAR SEAT CROSSMEMBER X (G's) vs TIME (ms)
5
0
-5
-10
-15
-20
-25
-30
-35
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 3.0 G's
Tmax: 133.3 ms
Min: -31.9 G's
Tmin: 35.7 ms
CFC 60

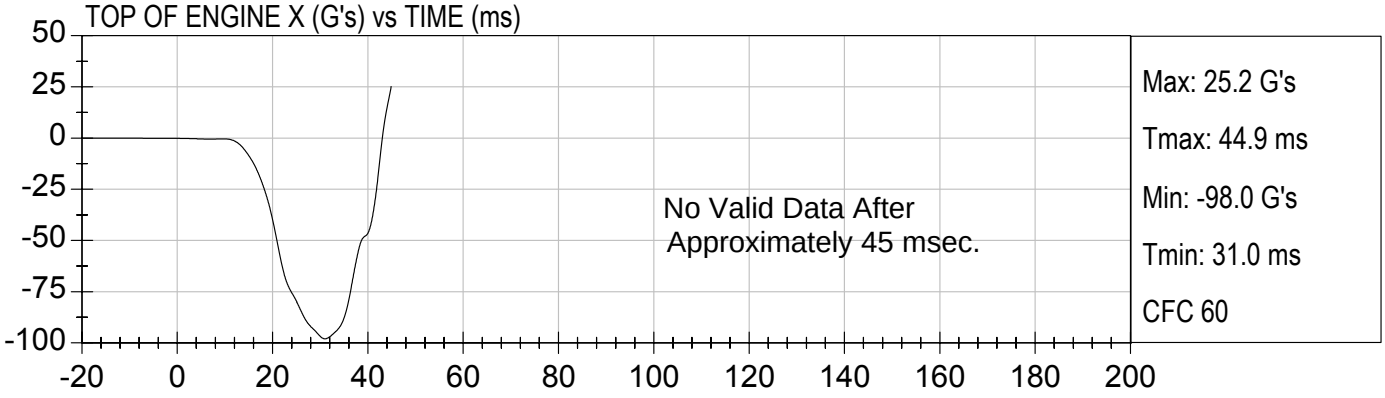

RIGHT REAR SEAT CROSSMEMBER X Velocity (kph) vs TIME (ms)
60
50
40
30
20
10
0
-10
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 56.5 kph
Tmax: -19.0 ms
Min: -9.6 kph
Tmin: 118.0 ms
CFC 180

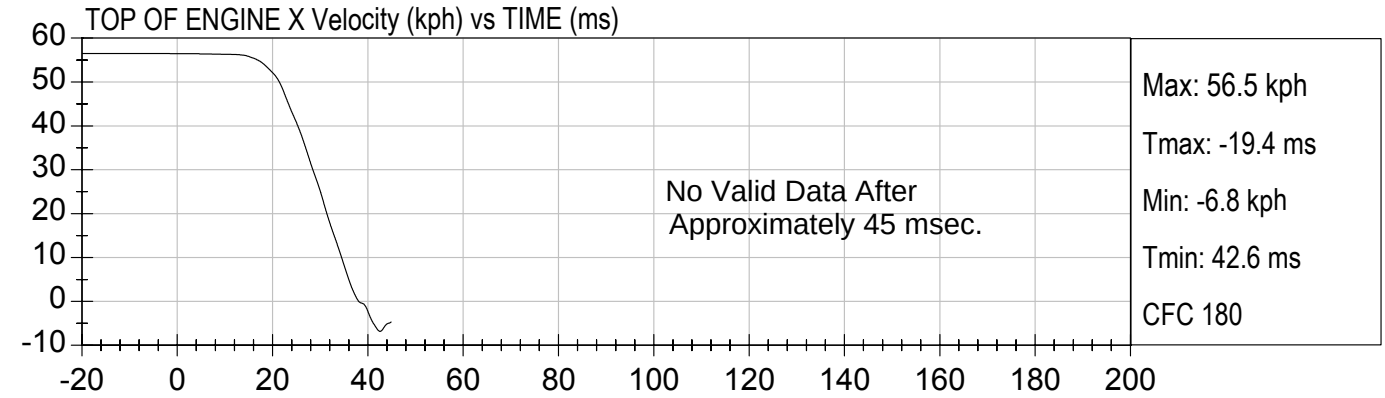

RIGHT REAR SEAT CROSSMEMBER X Displacement (mm) vs TIME (ms)
1000
750
500
250
0
-250
-500
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 769.7 mm
Tmax: 84.0 ms
Min: -312.3 mm
Tmin: -19.9 ms
CFC 180

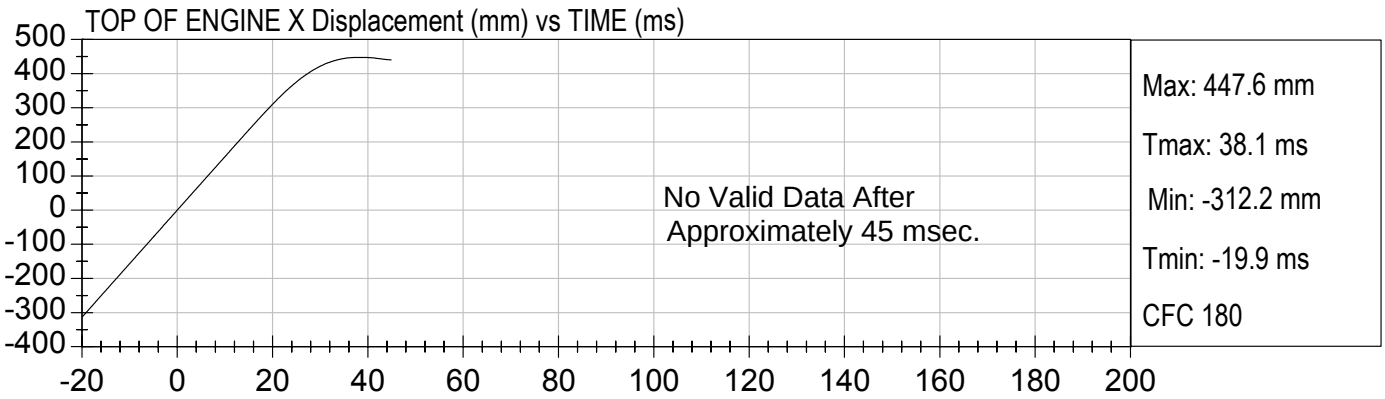

RIGHT REAR SEAT CROSSMEMBER Z (G's) vs TIME (ms)
5
0
-5
-10
-15
-20
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 2.5 G's
Tmax: 118.7 ms
Min: -17.9 G's
Tmin: 48.9 ms
CFC 60

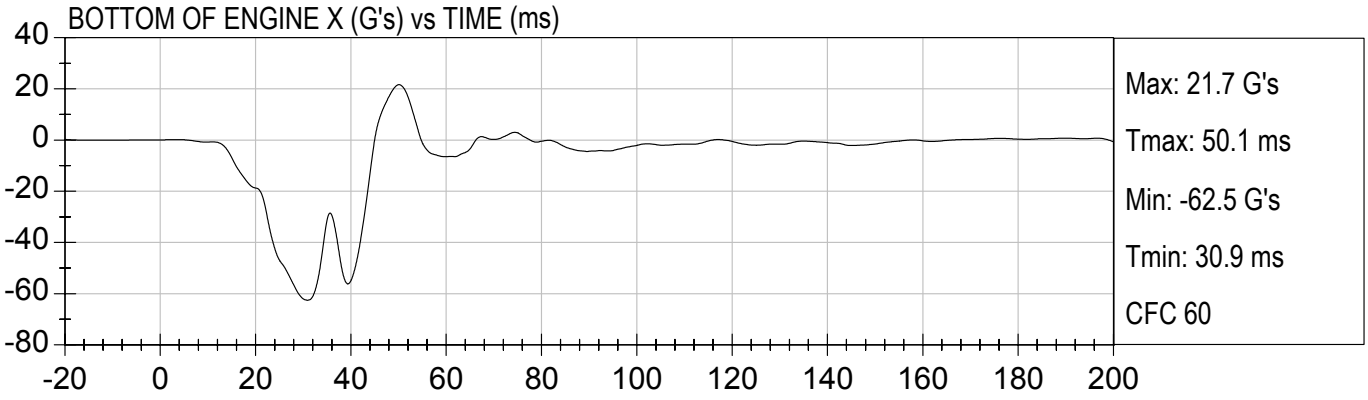

RIGHT REAR SEAT CROSSMEMBER Z Velocity (kph) vs TIME (ms)
5
0
-5
-10
-15
-20
-25
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 0.0 kph
Tmax: 8.2 ms
Min: -20.1 kph
Tmin: 99.2 ms
CFC 180

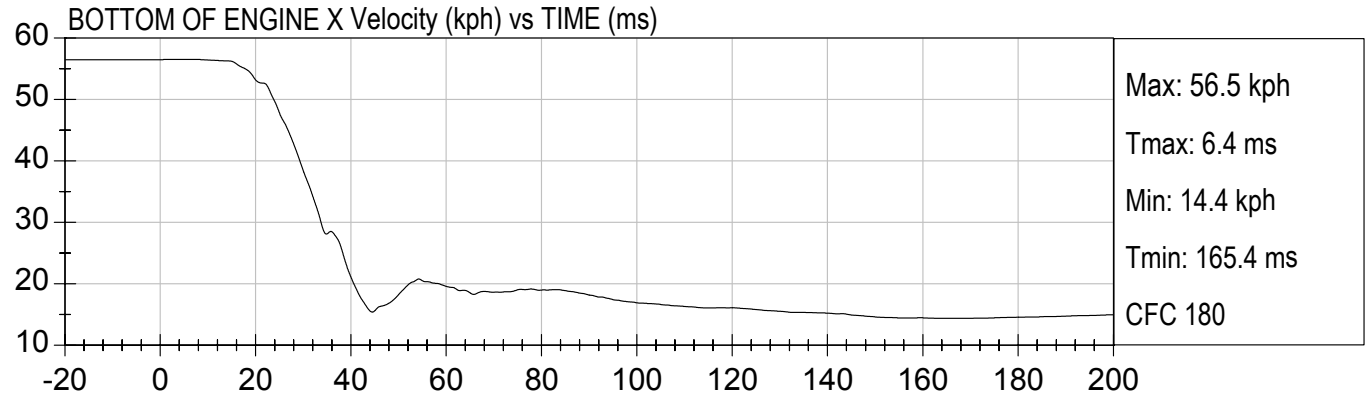

RIGHT REAR SEAT CROSSMEMBER Z Displacement (mm) vs TIME (ms)
0
-100
-200
-300
-400
-500
-600
-700
-800
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 0.1 mm
Tmax: -11.1 ms
Min: -756.8 mm
Tmin: 200.0 ms
CFC 180

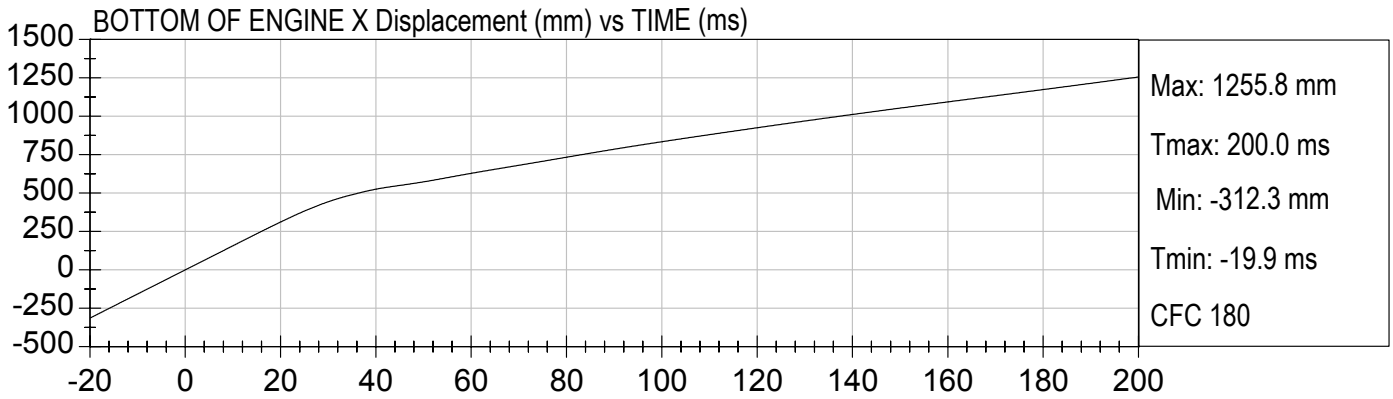

TOP OF ENGINE X (G's) vs TIME (ms)
50
25
0
-25
-50
-75
-100
-20
0
20
40
60
80
100
120
140
160
180
200
No Valid Data After
Approximately 45 msec.
Max: 25.2 G's
Tmax: 44.9 ms
Min: -98.0 G's
Tmin: 31.0 ms
CFC 60

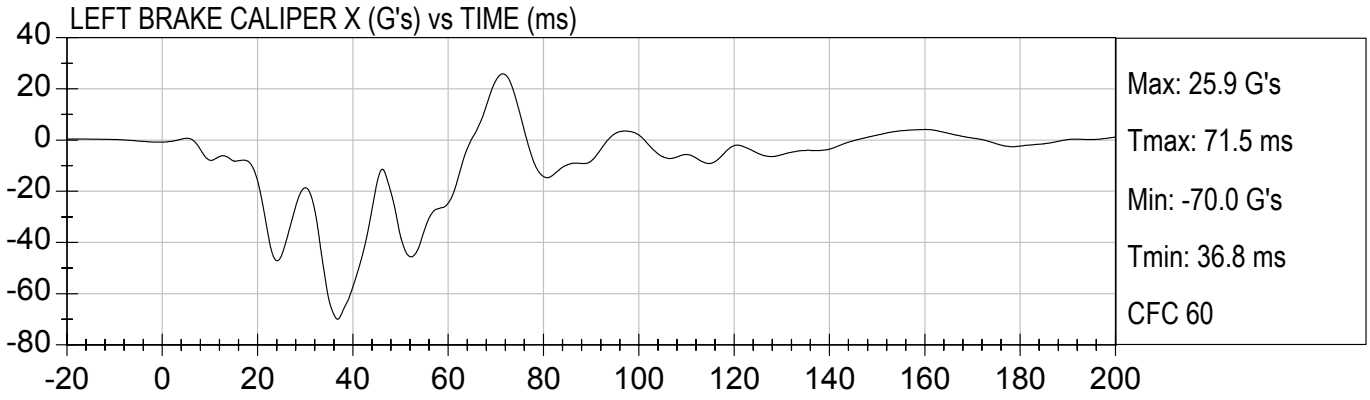

TOP OF ENGINE X Velocity (kph) vs TIME (ms)
60
50
40
30
20
10
0
-10
-20
0
20
40
60
80
100
120
140
160
180
200
No Valid Data After
Approximately 45 msec.
Max: 56.5 kph
Tmax: -19.4 ms
Min: -6.8 kph
Tmin: 42.6 ms
CFC 180

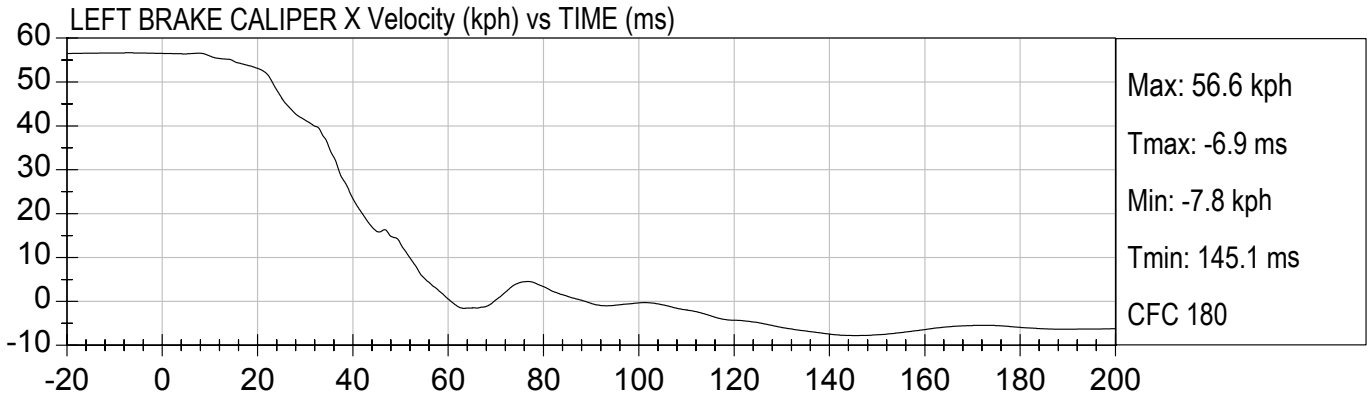

TOP OF ENGINE X Displacement (mm) vs TIME (ms)
500
400
300
200
100
0
-100
-200
-300
-400
-20
0
20
40
60
80
100
120
140
160
180
200
No Valid Data After
Approximately 45 msec.
Max: 447.6 mm
Tmax: 38.1 ms
Min: -312.2 mm
Tmin: -19.9 ms
CFC 180

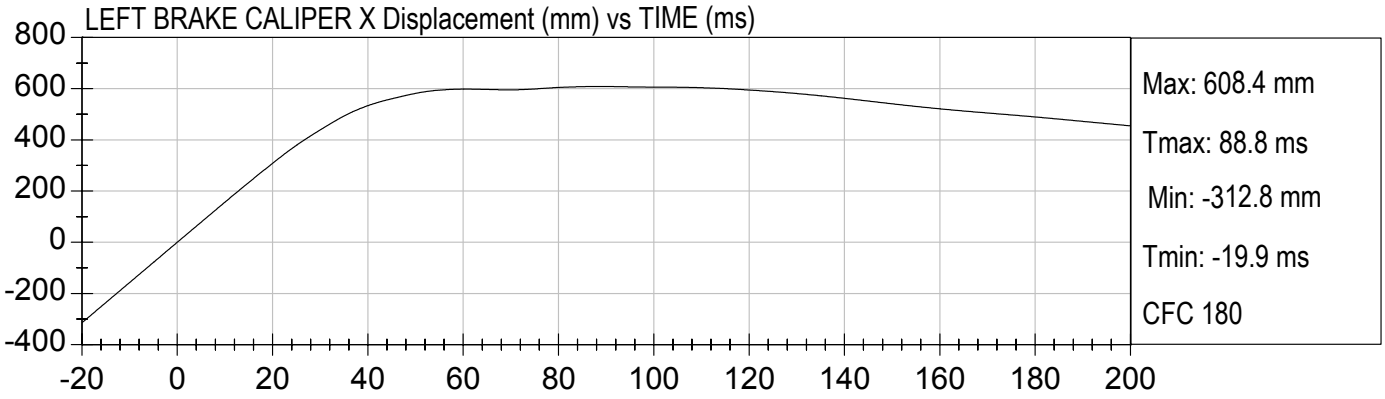

BOTTOM OF ENGINE X (G's) vs TIME (ms)
40
20
0
-20
-40
-60
-80
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 21.7 G's
Tmax: 50.1 ms
Min: -62.5 G's
Tmin: 30.9 ms
CFC 60


BOTTOM OF ENGINE X Velocity (kph) vs TIME (ms)
60
50
40
30
20
10
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 56.5 kph
Tmax: 6.4 ms
Min: 14.4 kph
Tmin: 165.4 ms
CFC 180


BOTTOM OF ENGINE X Displacement (mm) vs TIME (ms)
1500
1250
1000
750
500
250
0
-250
-500
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 1255.8 mm
Tmax: 200.0 ms
Min: -312.3 mm
Tmin: -19.9 ms
CFC 180

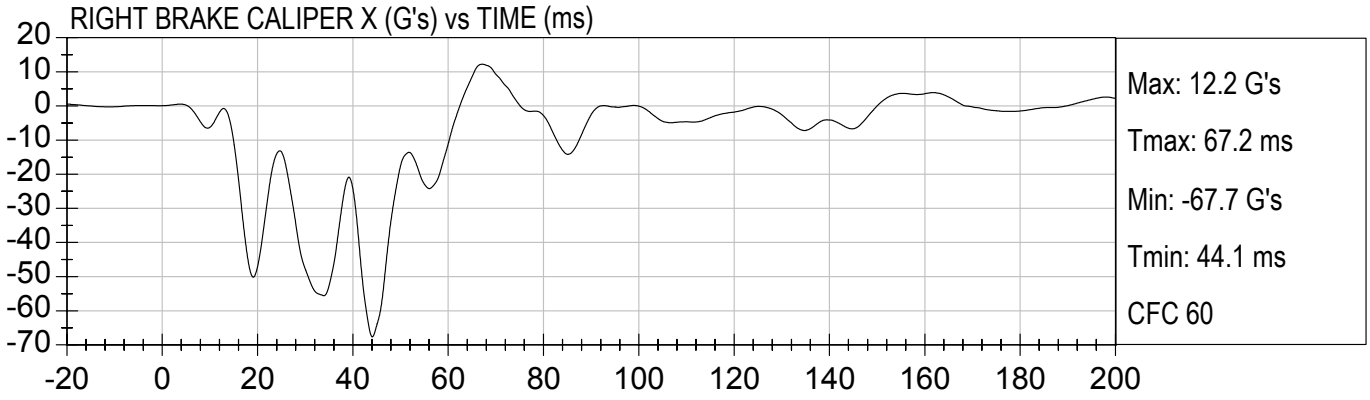

LEFT BRAKE CALIPER X (G's) vs TIME (ms)
40
20
0
-20
-40
-60
-80
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 25.9 G's
Tmax: 71.5 ms
Min: -70.0 G's
Tmin: 36.8 ms
CFC 60

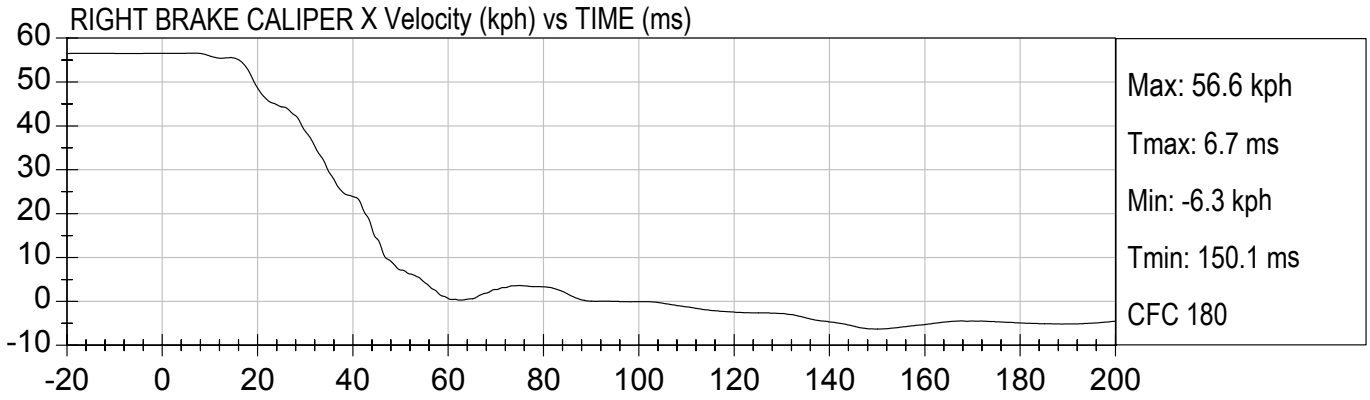

LEFT BRAKE CALIPER X Velocity (kph) vs TIME (ms)
60
50
40
30
20
10
0
-10
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 56.6 kph
Tmax: -6.9 ms
Min: -7.8 kph
Tmin: 145.1 ms
CFC 180

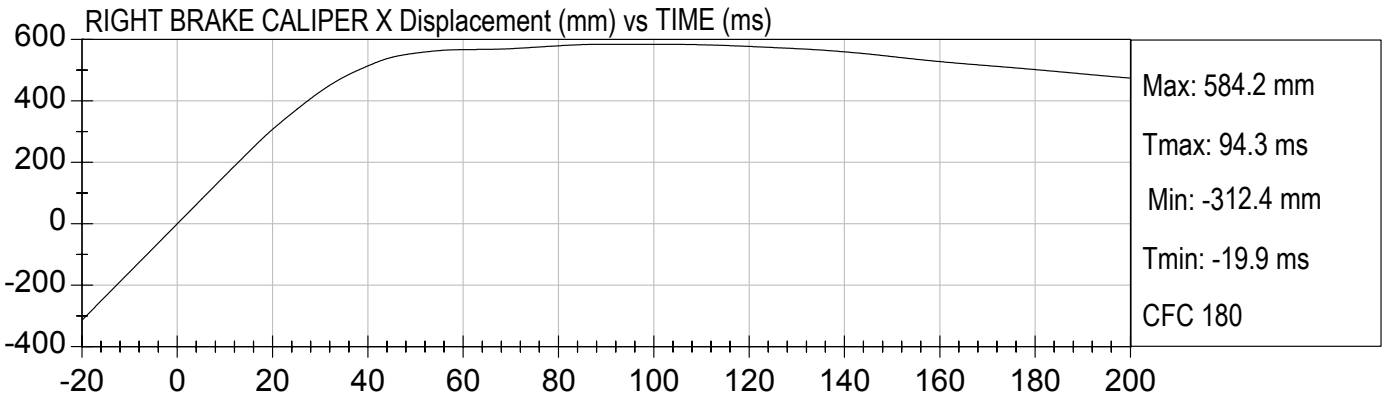

LEFT BRAKE CALIPER X Displacement (mm) vs TIME (ms)
800
600
400
200
0
-200
-400
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 608.4 mm
Tmax: 88.8 ms
Min: -312.8 mm
Tmin: -19.9 ms
CFC 180

NCAP 35MPH FRONTAL
2004 FORD TAURUS (M40201)

Test Date: 10/16/03
Speed: 35.1 mph (56.5 km/h)

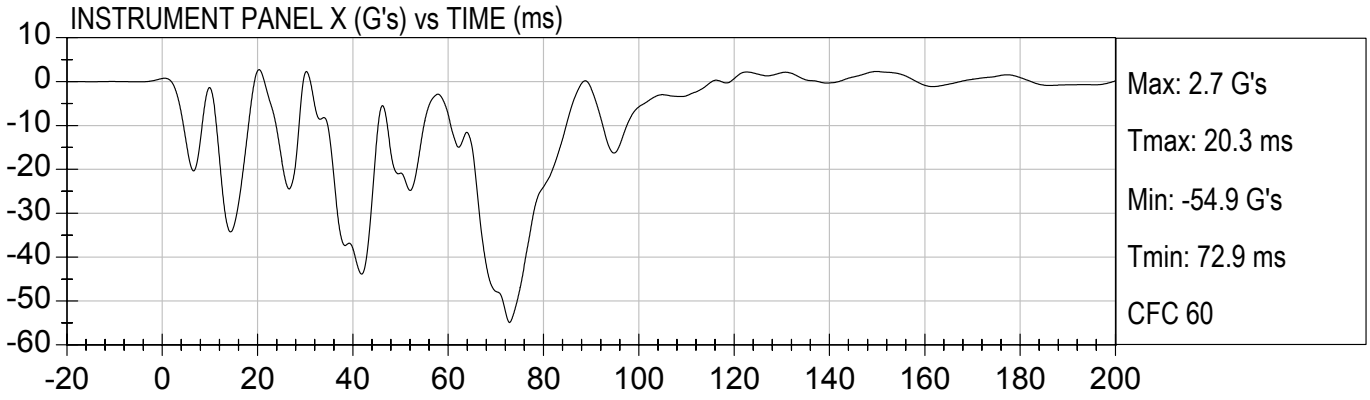


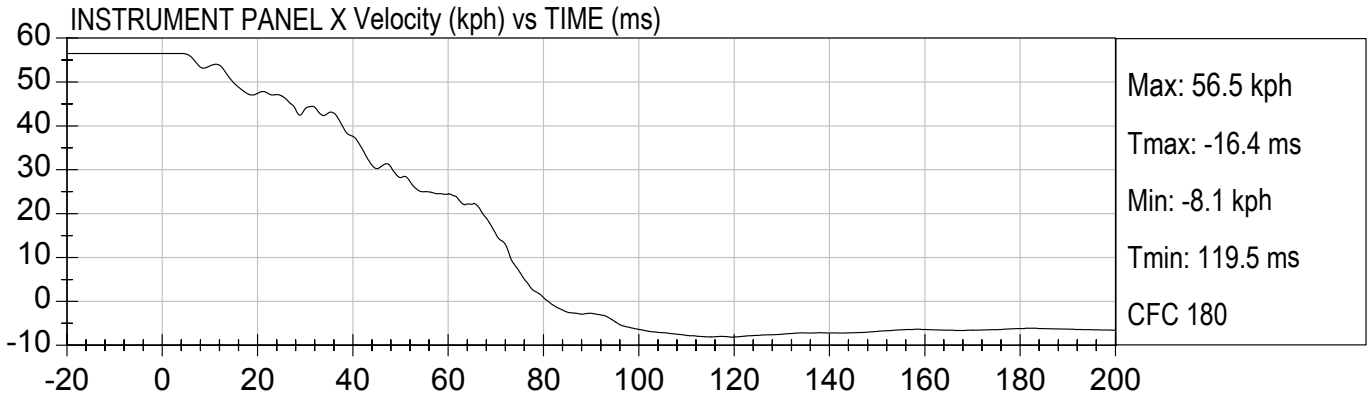


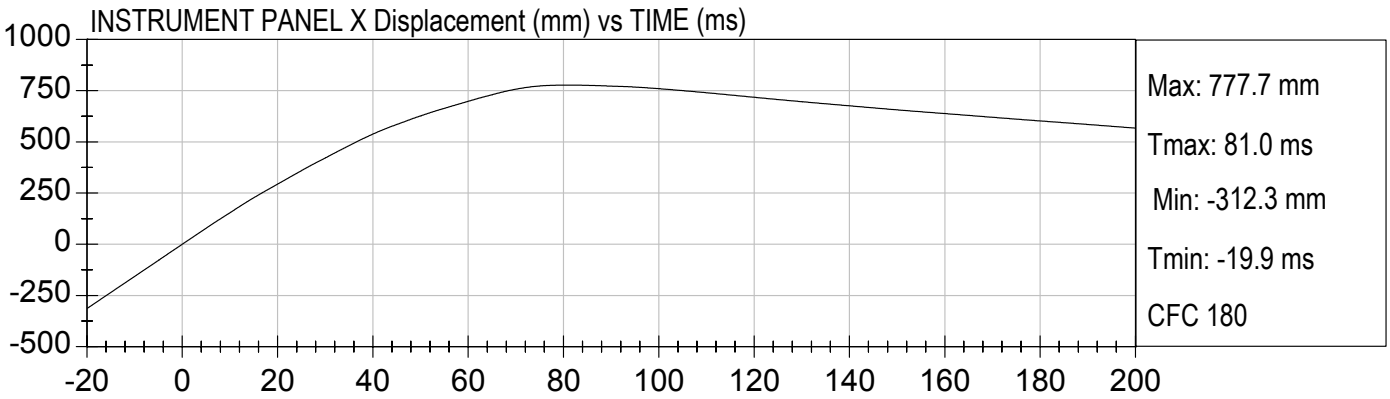


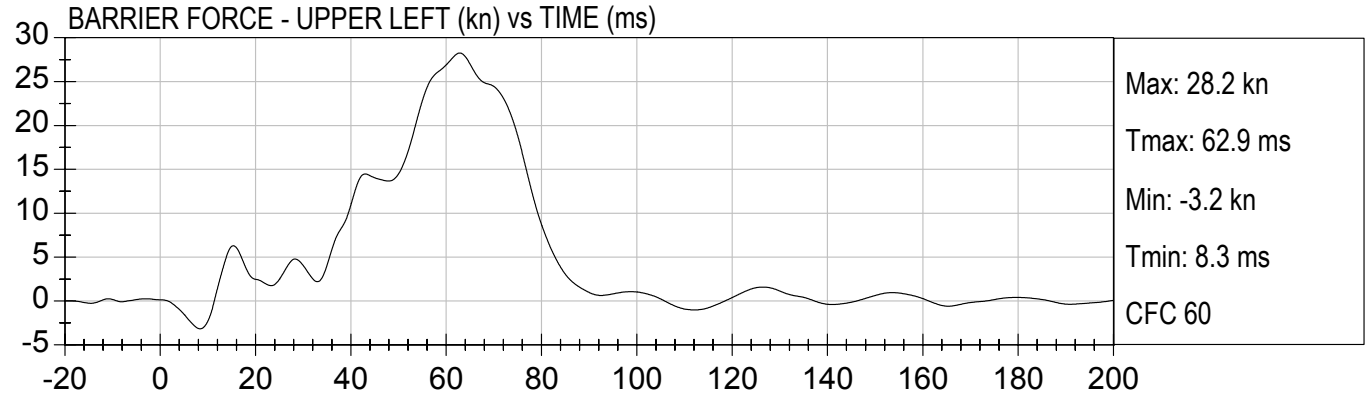
NCAP 35MPH FRONTAL
2004 FORD TAURUS (M40201)

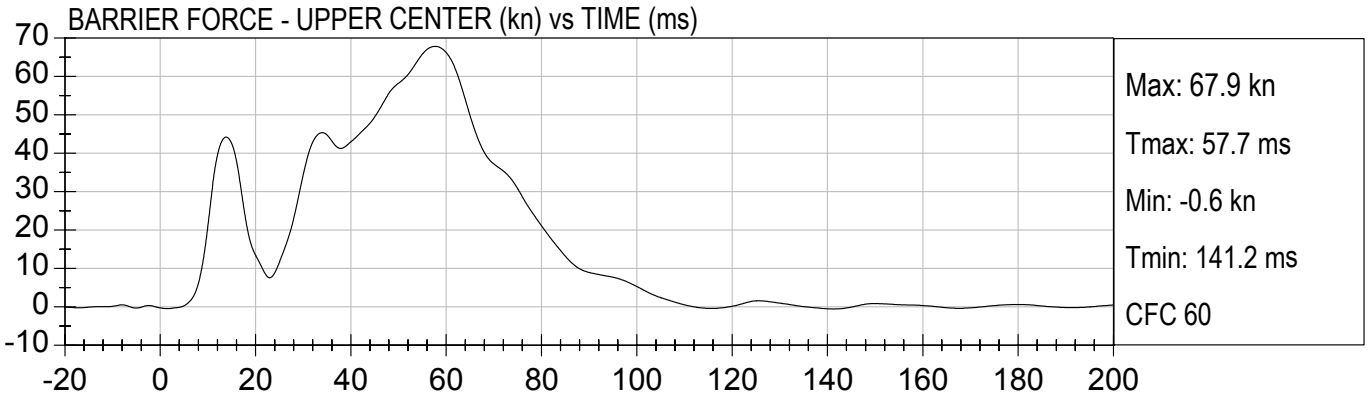
Test Date: 10/16/03
Speed: 35.1 mph (56.5 km/h)

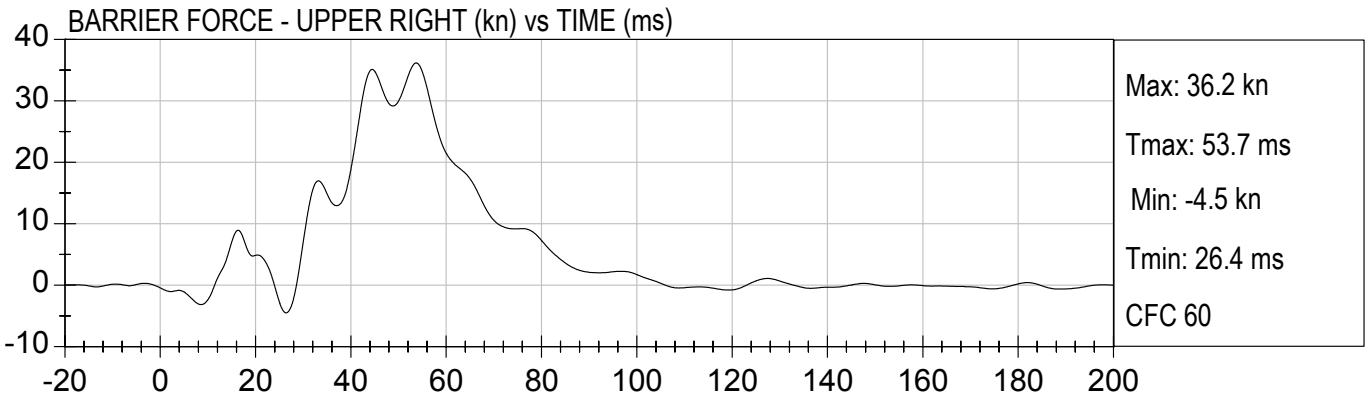


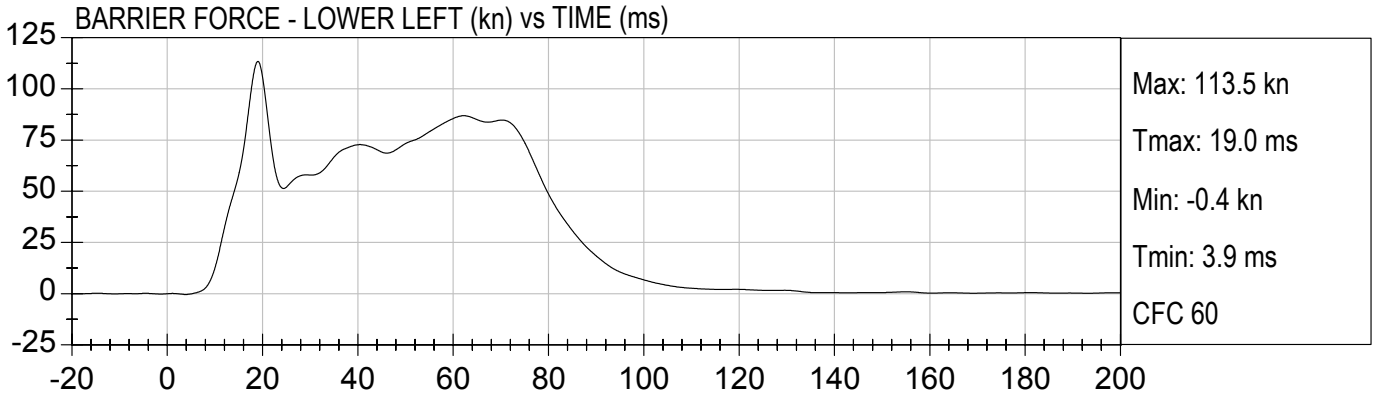


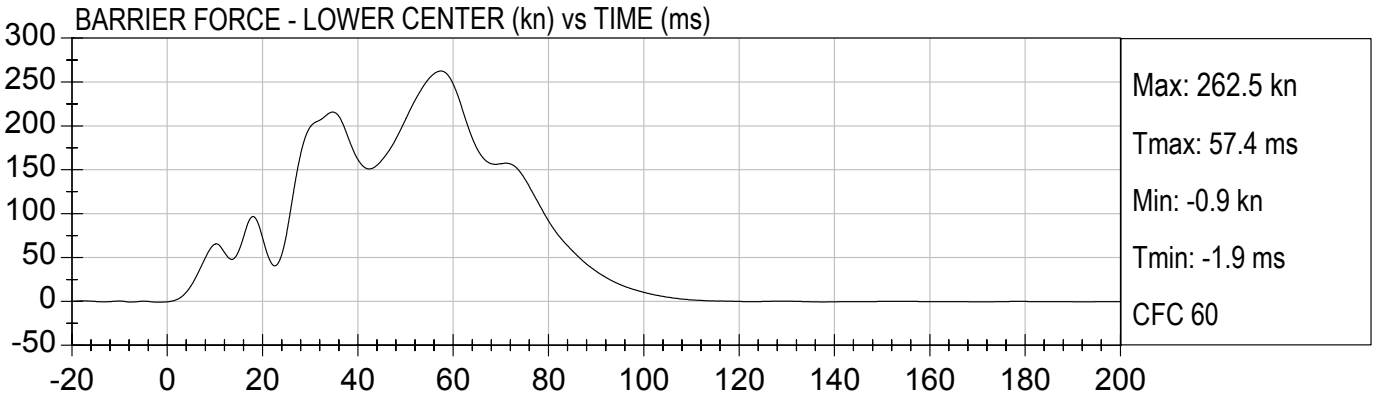


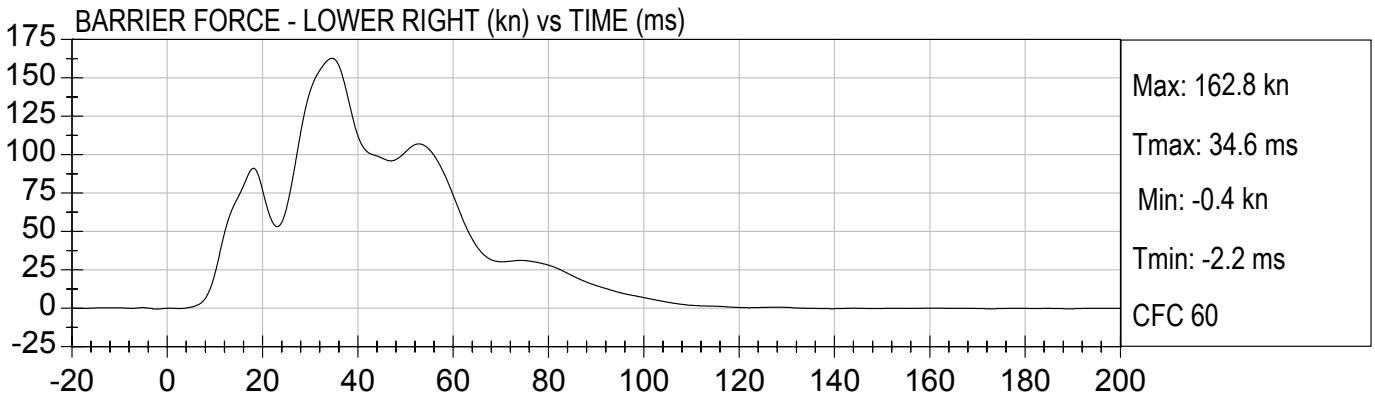

BARRIER FORCE - UPPER LEFT (kn) vs TIME (ms)
30
25
20
15
10
5
0
-5
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 28.2 kn
Tmax: 62.9 ms
Min: -3.2 kn
Tmin: 8.3 ms
CFC 60


BARRIER FORCE - UPPER CENTER (kn) vs TIME (ms)
70
60
50
40
30
20
10
0
-10
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 67.9 kn
Tmax: 57.7 ms
Min: -0.6 kn
Tmin: 141.2 ms
CFC 60


BARRIER FORCE - UPPER RIGHT (kn) vs TIME (ms)
40
30
20
10
0
-10
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 36.2 kn
Tmax: 53.7 ms
Min: -4.5 kn
Tmin: 26.4 ms
CFC 60

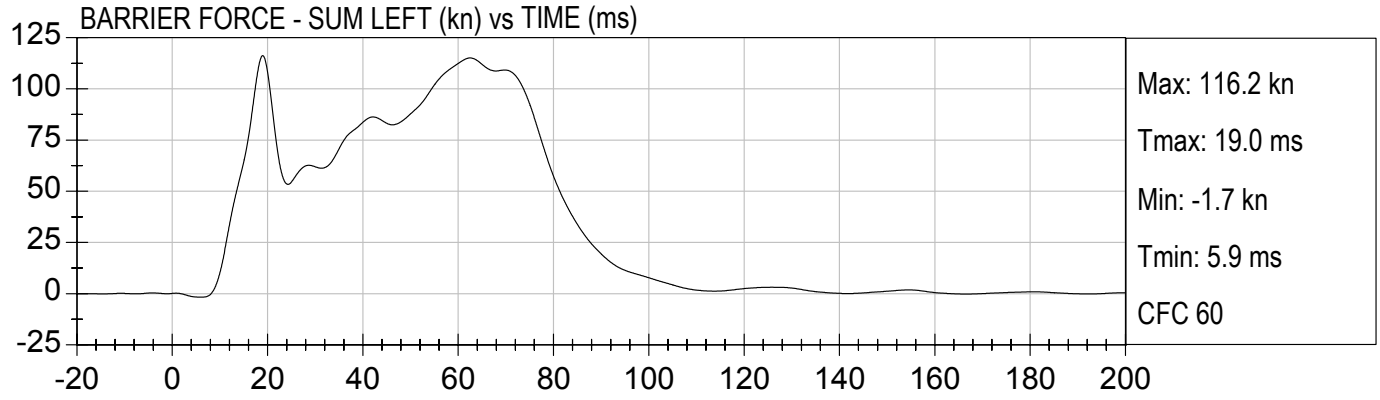

BARRIER FORCE - LOWER LEFT (kn) vs TIME (ms)
125
100
75
50
25
0
-25
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 113.5 kn
Tmax: 19.0 ms
Min: -0.4 kn
Tmin: 3.9 ms
CFC 60

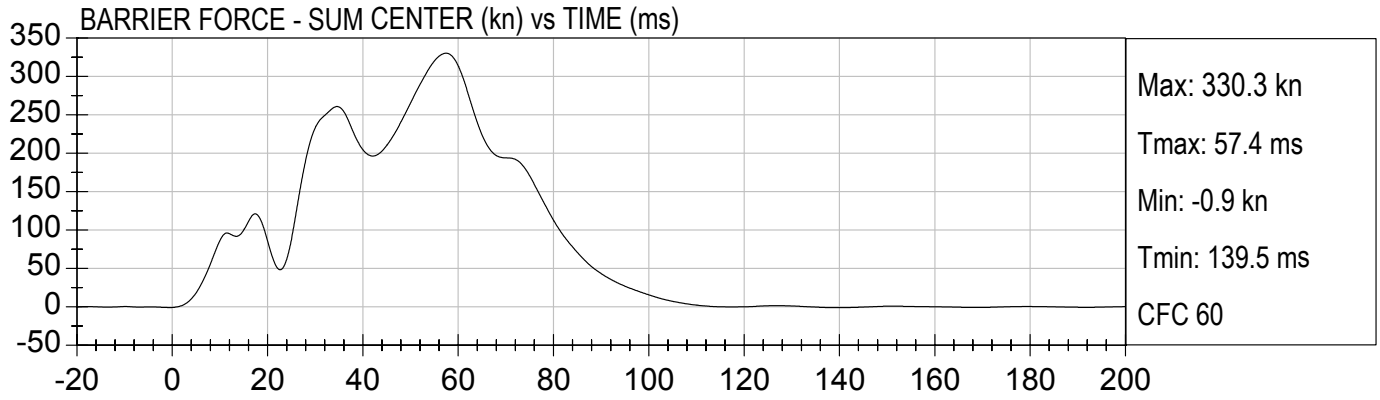

BARRIER FORCE - LOWER CENTER (kn) vs TIME (ms)
300
250
200
150
100
50
0
-50
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 262.5 kn
Tmax: 57.4 ms
Min: -0.9 kn
Tmin: -1.9 ms
CFC 60

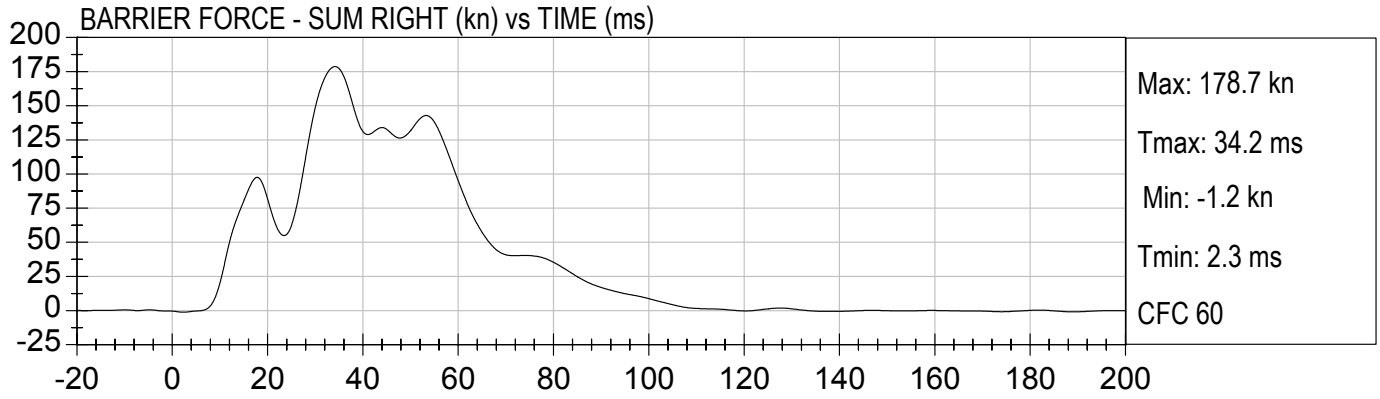

BARRIER FORCE - LOWER RIGHT (kn) vs TIME (ms)
175
150
125
100
75
50
25
0
-25
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 162.8 kn
Tmax: 34.6 ms
Min: -0.4 kn
Tmin: -2.2 ms
CFC 60

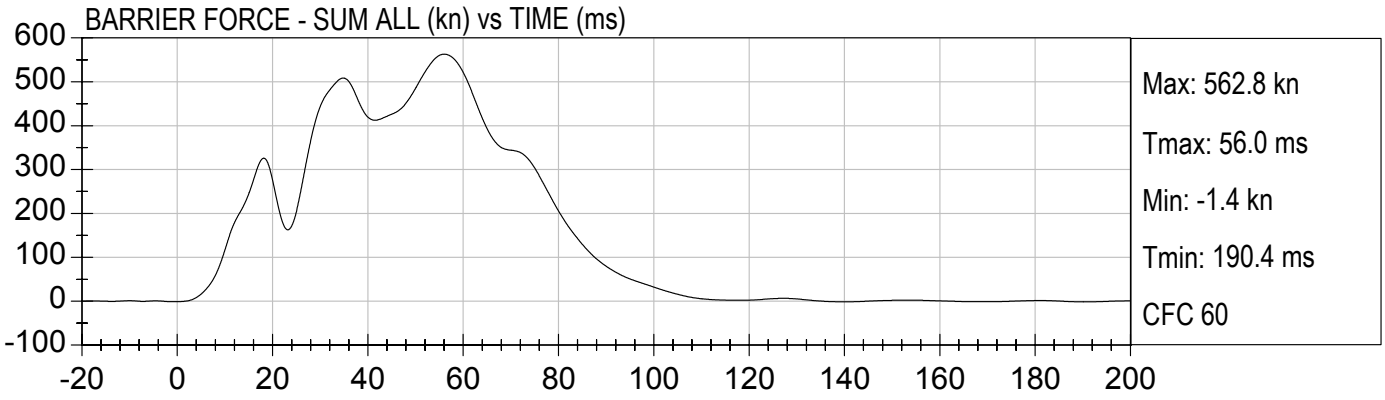
NCAP 35MPH FRONTAL
2004 FORD TAURUS (M40201)

Test Date: 10/16/03
Speed: 35.1 mph (56.5 km/h)





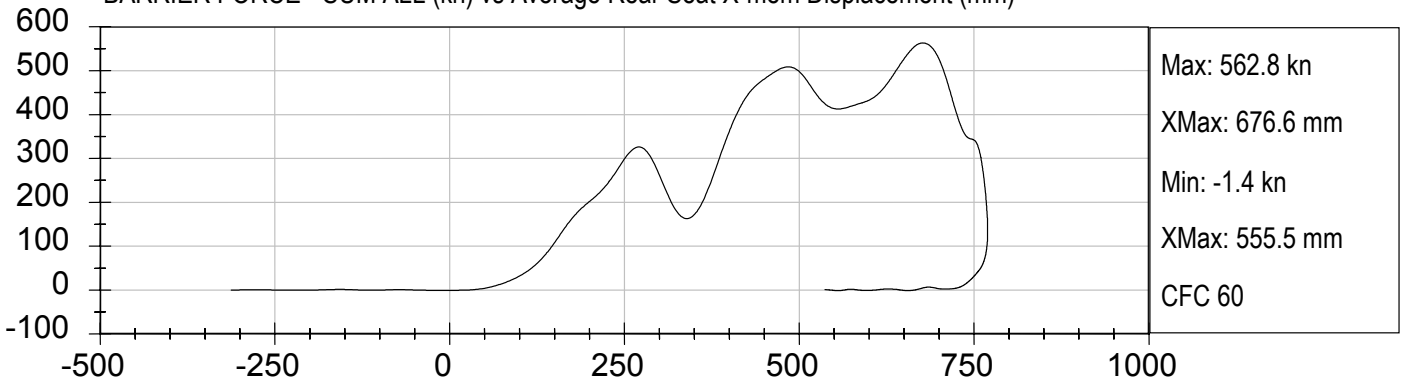




NCAP 35mph FRONTAL
2004 FORD TAURUS (M40201)

Test Date: 10/16/03
Speed: 35.1 mph (56.5 km/h)

BARRIER FORCE - SUM ALL (kn) vs Average Rear Seat X-mem Displacement (mm)



APPENDIX C

DUMMY CALIBRATION DATA TRACES AND TABLES

CERTIFICATION DATA

Dummy Serial Number: 065

Calibration Test Results Summary

Dummy Serial Number: 065

Calibration

External Dimensions:	The dummy passed all external dimension requirements.
Head Drop Test:	The head passed all drop test requirements.
Neck Flexion Test:	The neck passed all flexion test requirements.
Neck Extension Test:	The neck passed all extension test requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Knee Impact Tests:	Both knees passed all impact test requirements.
Hip-Femur Flexion Tests:	Both femurs passed all flexion test requirements.

HYBRID III DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Dummy Serial Number: 065

Date of Verification: 9/29/03

Test Number: D03167

DESCRIPTION	SPECIFICATION	TEST RESULTS
Temperature (°F)	20.6 – 22.2	21.1
Relative Humidity	10 – 70 %	30
AA - Location for Chest Circumference	429.3 – 434.3 mm	431.8
BB - Location for Waist Circumference	226.1 – 231.1 mm	228.6
A - Total Sitting Height	878.8 – 889.0 mm	882.7
B – Shoulder Pivot Height	505.5 – 520.7 mm	508.0
C – H Point Height	82.9 – 88.9 mm	88.9
D – H Point from Seat Back	134.7 – 139.7 mm	139.7
E – Shoulder Pivot From Backline	84.8 – 94.0 mm	94.0
F – Thigh Clearance	139.7 – 154.9 mm	146.1
G – Back of Elbow to Wrist Pivot	289.6 – 304.8 mm	292.1
H – Skull Cap Skin to Backline	40.7 – 45.7 mm	44.5
I – Shoulder Elbow Length	330.2 – 345.4 mm	330.2
J – Elbow Rest Height	190.5 – 210.9 mm	196.9
K – Buttock Knee Length	579.1 – 604.5 mm	603.3
L – Popliteal Height	429.3 – 454.7 mm	444.5
M – Knee Pivot Height	485.2 – 500.4 mm	488.2
N – Buttock Popliteal Length	452.1 – 477.5 mm	469.9
O – Chest Depth at 3rd Rib	213.4 – 228.6 mm	215.9
P – Foot Length	251.5 – 266.7 mm	254.0
V – Shoulder Breadth	421.7 – 436.9 mm	434.3
W – Foot Breadth	91.5 – 106.7 mm	98.4
Y – Chest Circumference	970.3 – 1000.7 mm	977.9
Z – Waist Circumference	835.7 – 866.1 mm	844.6

Technician: Jessica Gall

Approved By: Shefalika Jgarwal

Hybrid III Calibration Data Sheet

50th Percentile Male

Head Drop Calibration

ATD Serial No: 065 **Test I.D:** D031671

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	234.9	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	10.9	Pass
Is Acceleration Unimodal?	Yes/No	< 10% Peak	Yes	Pass
		Overall Test Results		Pass

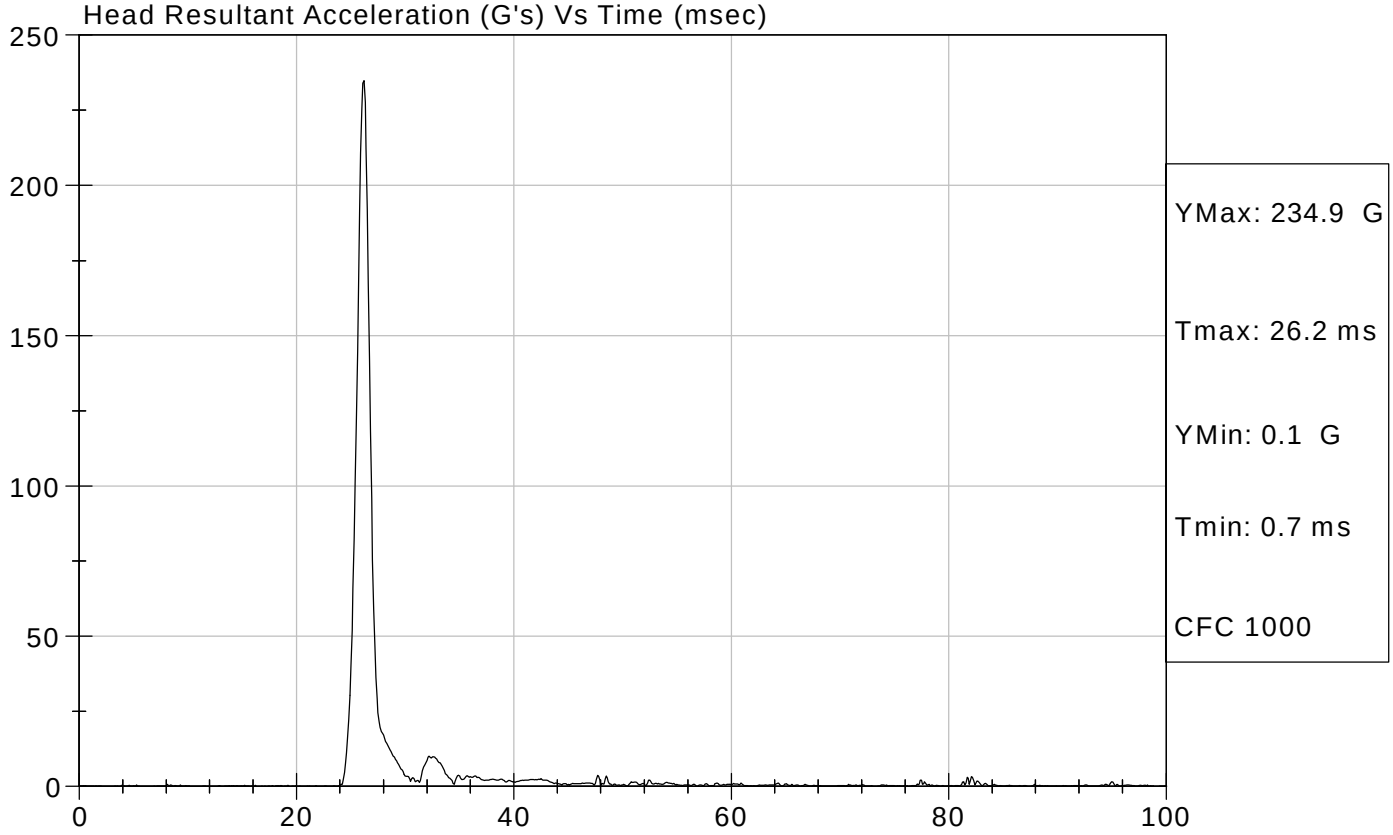
Jessica Gall
Laboratory Technician

09/29/2003
Test Date

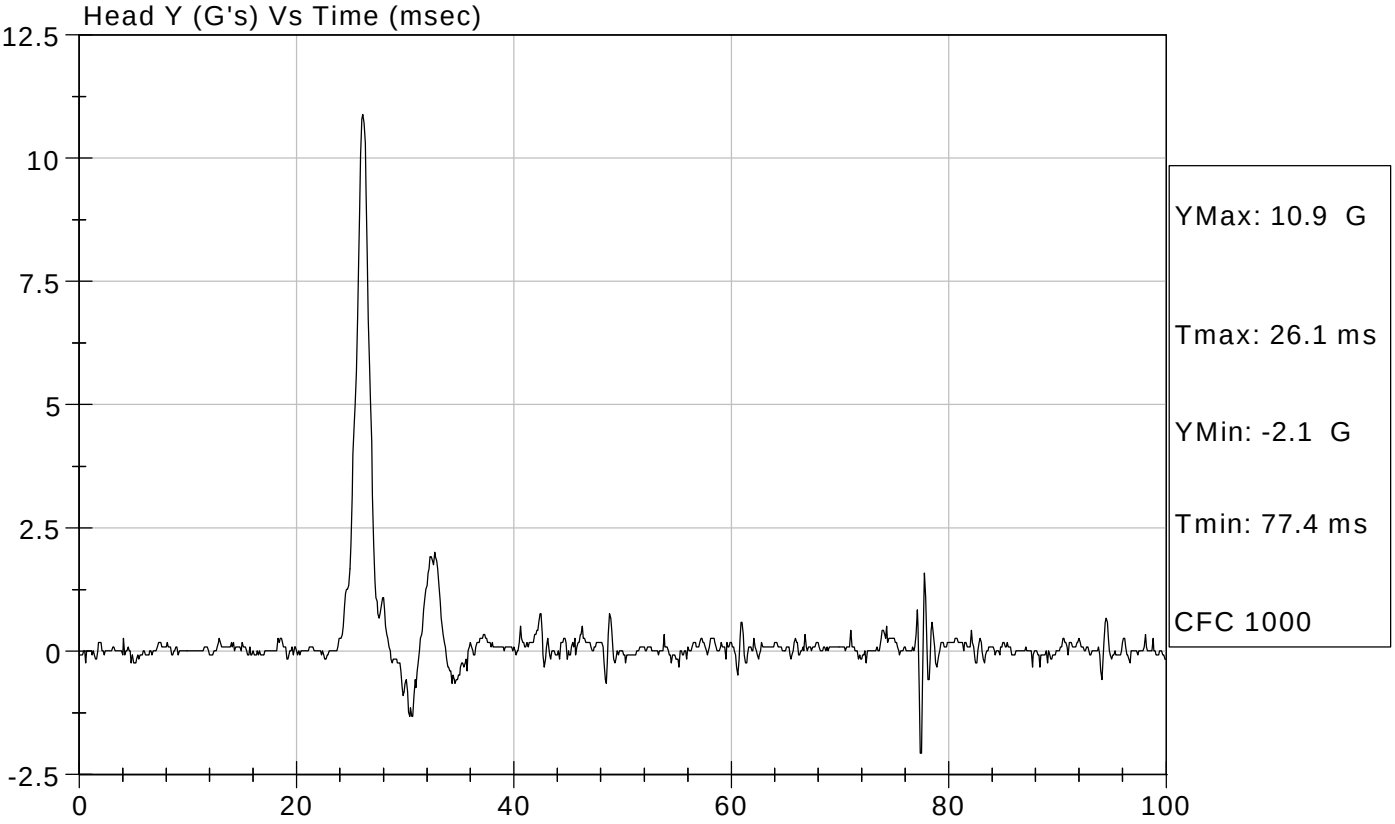
Shefalika Jgarwal
Approved By

	Test Description: Head Drop	Test Date: 09/29/2003
	Component: D031671	Speed: 0 ft/s, 0.00 m/s

Head Resultant Acceleration (G's) Vs Time (msec)



Head Y (G's) Vs Time (msec)



Hybrid III Calibration Data Sheet

50th Percentile Male

Neck Flexion Test

ATD Serial No: 065 **Test I.D:** D031672

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	26	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.89	Pass
Pendulum Deceleration	10 msec	G's	22.50 to 27.50	23.94	Pass
	20 msec	G's	17.60 to 22.60	20.02	Pass
	30 msec	G's	12.50 to 18.50	13.89	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 29.0	13.89	Pass
Deceleration Decay Time to Cross 5 G's		msec	34.0 to 42.0	36.7	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	74.3	Pass
	Time	msec	57.0 to 64.0	58.4	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	113.0 to 128.0	113.4	Pass
Moment About Occipital Condyle	Maximum	N m	84.1 to 108.5	95.6	Pass
	Time	msec	47.0 to 58.0	49.4	Pass
Positive Moment Decay Time To Zero Crossing		msec	97.0 to 107.0	102.2	Pass
			Overall Test Results		Pass

Jessica Gall
Laboratory Technician

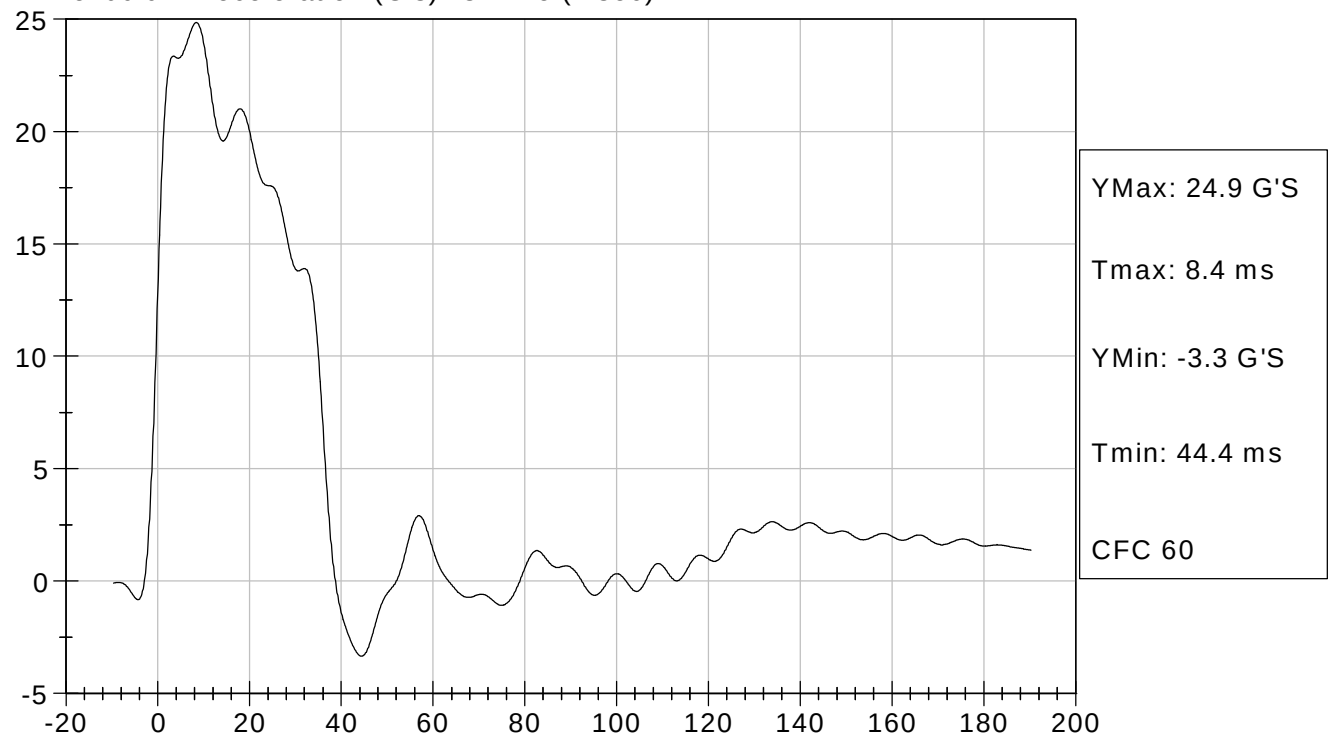
09/30/2003
Test Date

Shefalika Jgarwal
Approved By

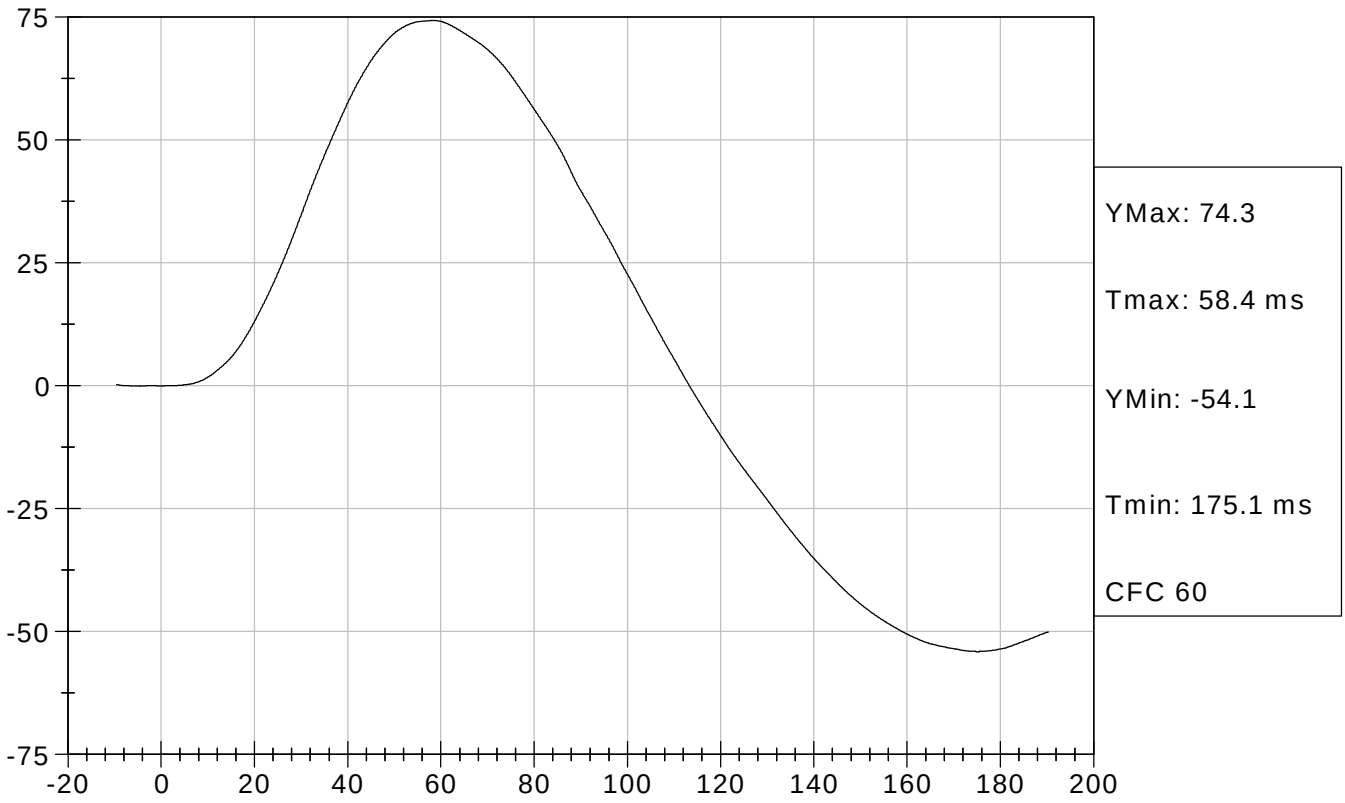
Test Desc: Neck Flexion
Component ID: D031672

Test Date: 09/30/2003
Speed: 22.61 ft/sec, 6.89 m/sec

Pendulum Deceleration (G's) vs Time (msec)

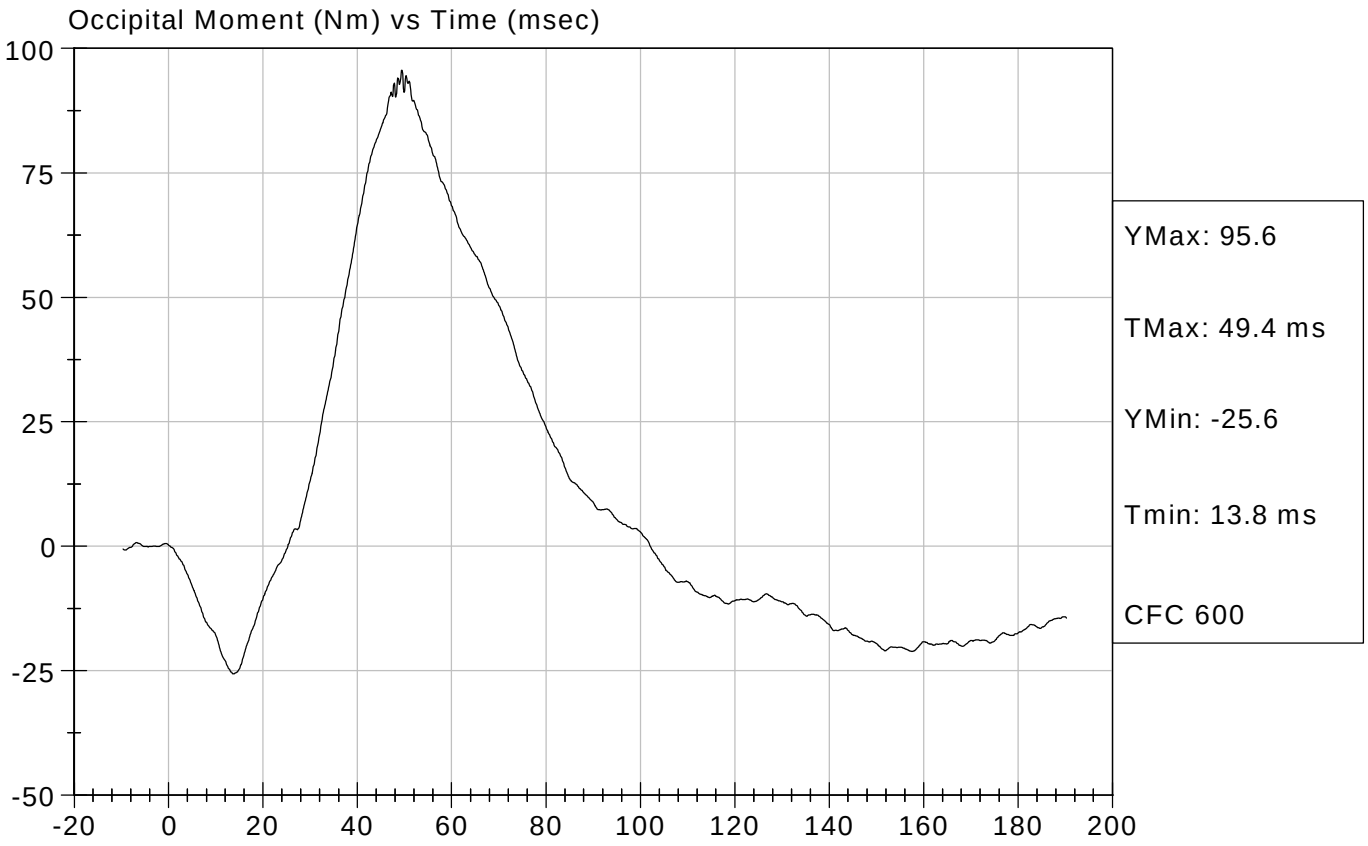


Neck Rotation (DEG) vs Time (msec)



Test Desc: Neck Flexion
Component ID: D031672

Test Date: 09/30/2003
Speed: 22.61 ft/sec, 6.89 m/sec



Hybrid III Calibration Data Sheet

50th Percentile Male

Neck Extension Test

ATD Serial No: 065 **Test I.D:** D031673

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity		%	10 to 70	26	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.01	Pass
Pendulum Deceleration	10 msec	G's	17.20 to 21.20	18.87	Pass
	20 msec	G's	14.00 to 19.00	17.13	Pass
	30 msec	G's	11.00 to 16.00	12.61	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 22.0	13.1	Pass
Deceleration Decay Time to Cross 5 G's		msec	38.0 to 46.0	39.5	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	100.0	Pass
	Time	msec	72.0 to 82.0	75.9	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	147.0 to 174.0	155.4	Pass
Moment About Occipital Condyle	Minimum	N m	-52.9 to -79.9	-65.5	Pass
	Time	msec	65.0 to 79.0	72.1	Pass
Negative Moment Decay Time To Zero Crossing		msec	120.0 to 148.0	141.1	Pass
			Overall Test Results		Pass

Jessica Gall
Laboratory Technician

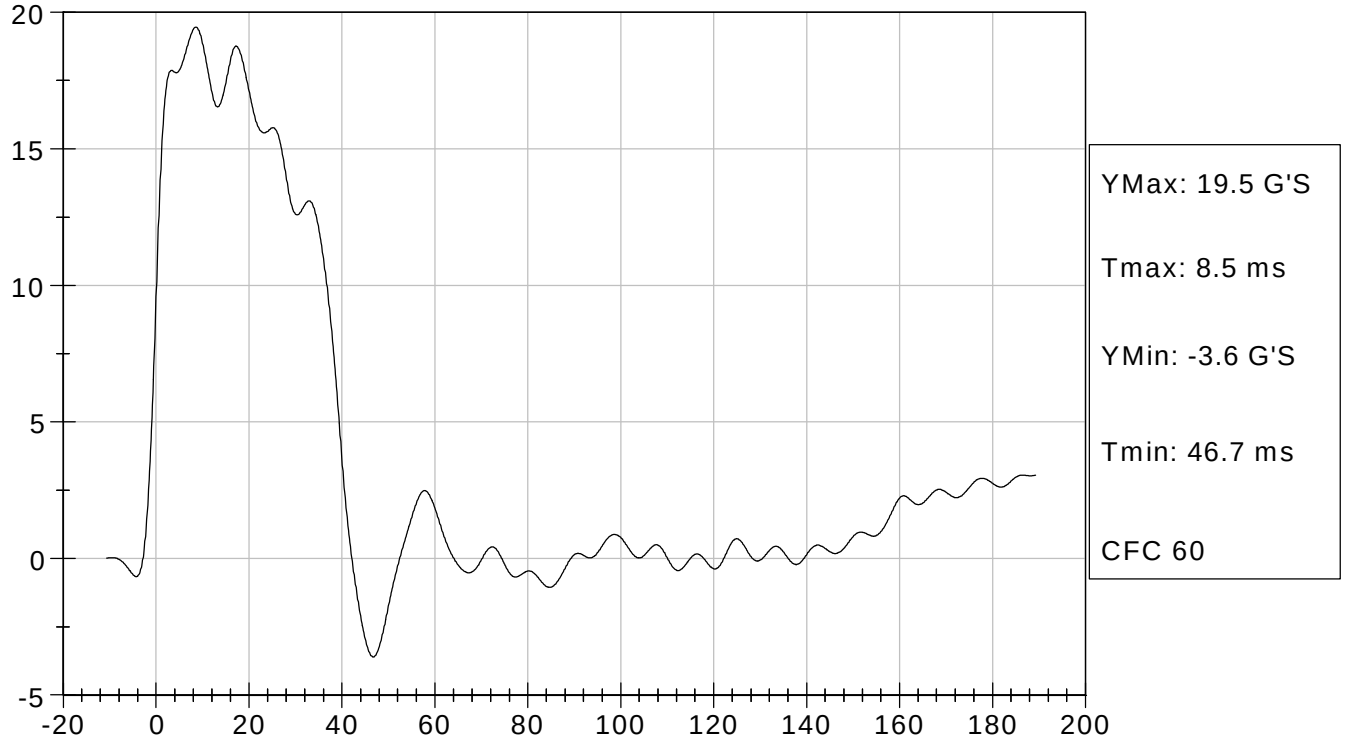
09/30/2003
Test Date

Shefalika Jgarwal
Approved By

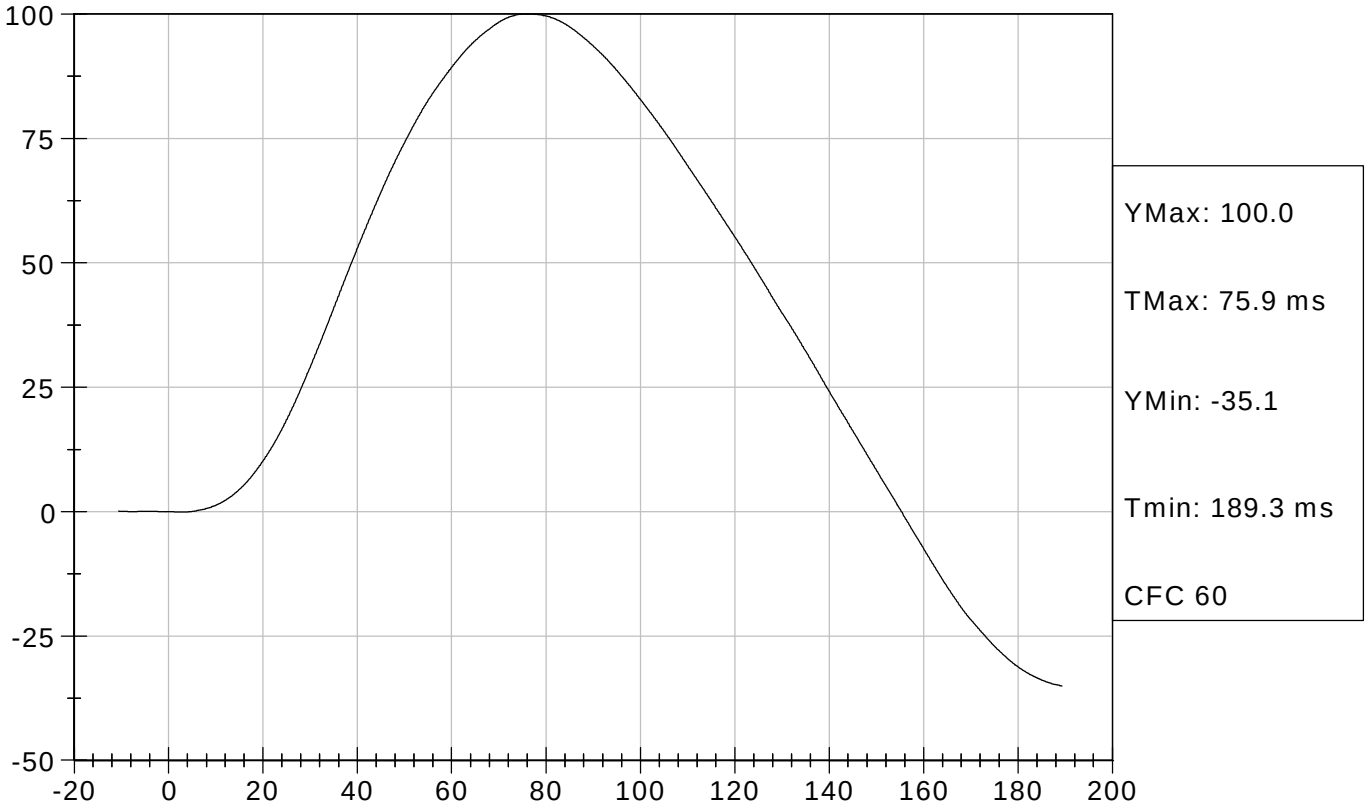
Test Desc: Neck Extension
Component ID: D031673

Test Date: 09/30/2003
Speed: 19.72 ft/sec, 6.01 m/sec

Pendulum Deceleration (G's) vs Time (msec)

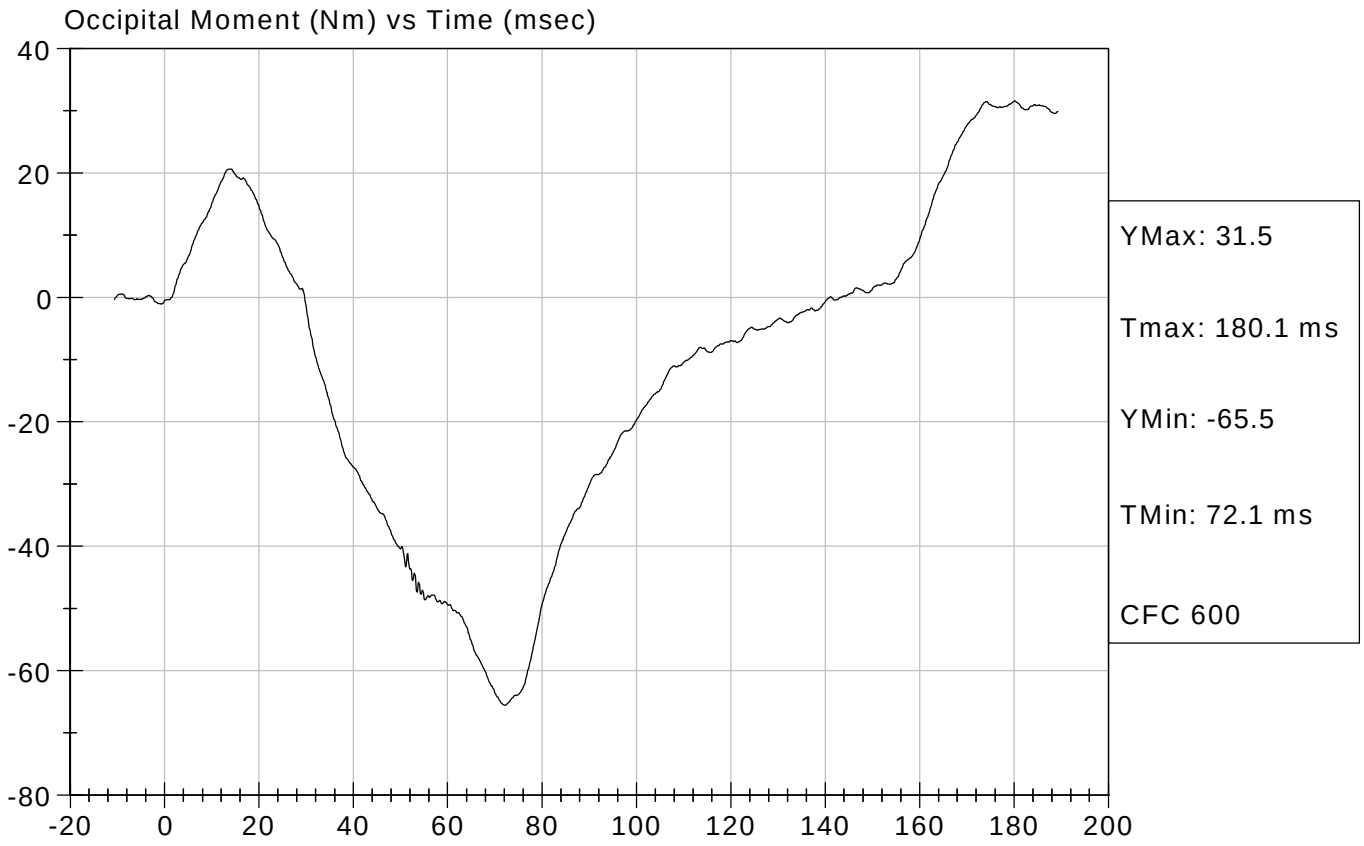


Neck Rotation (DEG) vs Time (msec)



Test Desc: Neck Extension
Component ID: D031673

Test Date: 09/30/2003
Speed: 19.72 ft/sec, 6.01 m/sec



Hybrid III Calibration Data Sheet

50th Percentile Male

Thorax Impact Test

ATD Serial No: 065 **Test I.D:** D031674

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.9	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Probe Velocity	m/s	6.58 to 6.82	6.73	Pass
Peak Probe Force	Newtons	5159 to 5893	5,536	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.85	Pass
Internal Hysteresis	%	69 to 85	71	Pass
		Overall Test Results		Pass

Jessica Gall
Laboratory Technician

10/02/2003
Test Date

Shefalika Jgarwal
Approved By

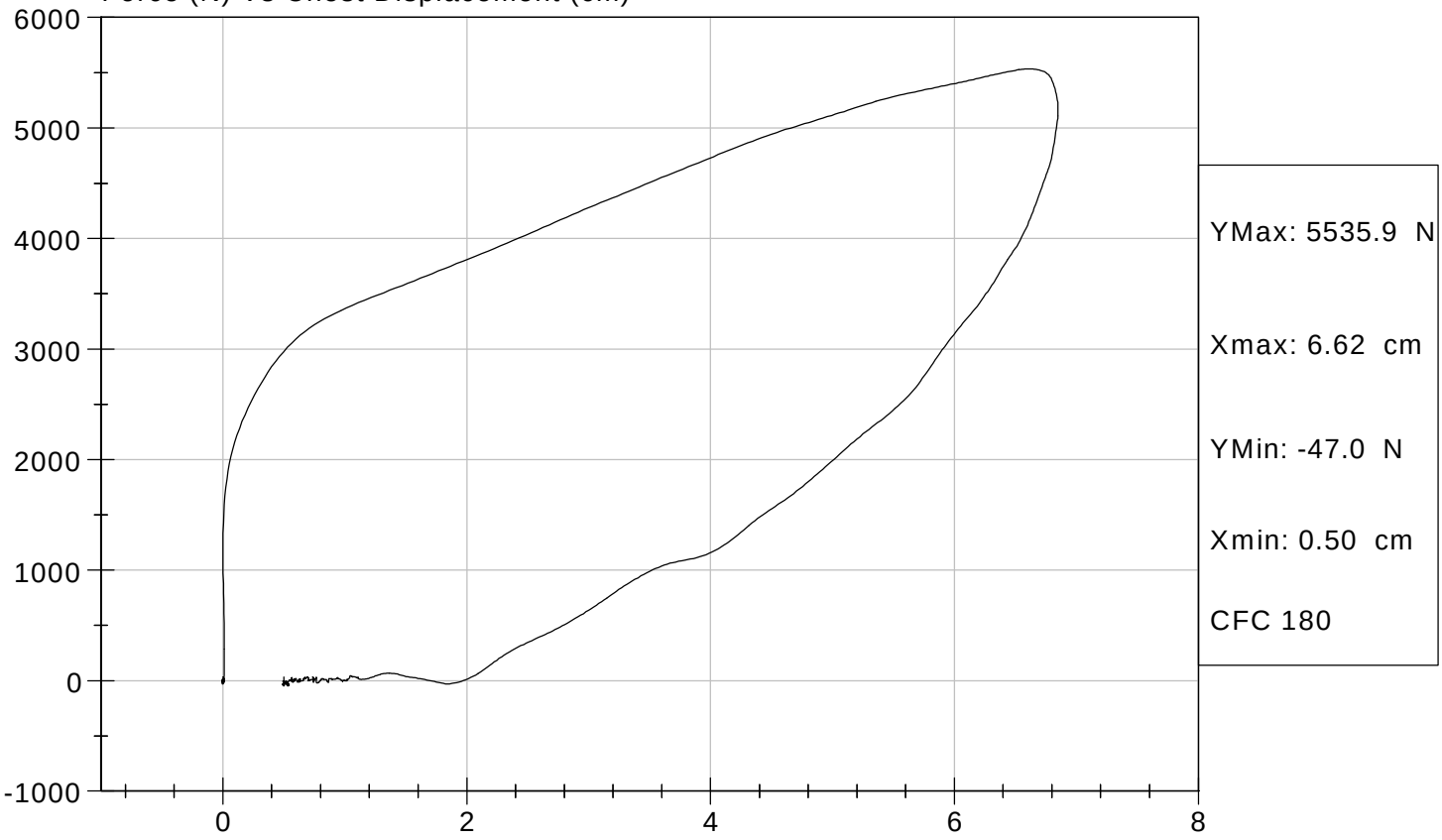
Test Description: Thorax Impact

Test Date: 10/02/2003

Component: D031674

Speed: 22.07 ft/sec, 6.73 m/sec

Force (N) Vs Chest Displacement (cm)



Hybrid III Calibration Data Sheet

50th Percentile Male

Right Knee Impact Test

ATD Serial No: 065 **Test I.D:** D031675

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Probe Velocity	m/s	2.07 to 2.13	2.12	Pass
Peak Probe Force	Newtons	4715 to 5782	5,401	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

09/30/2003
Test Date

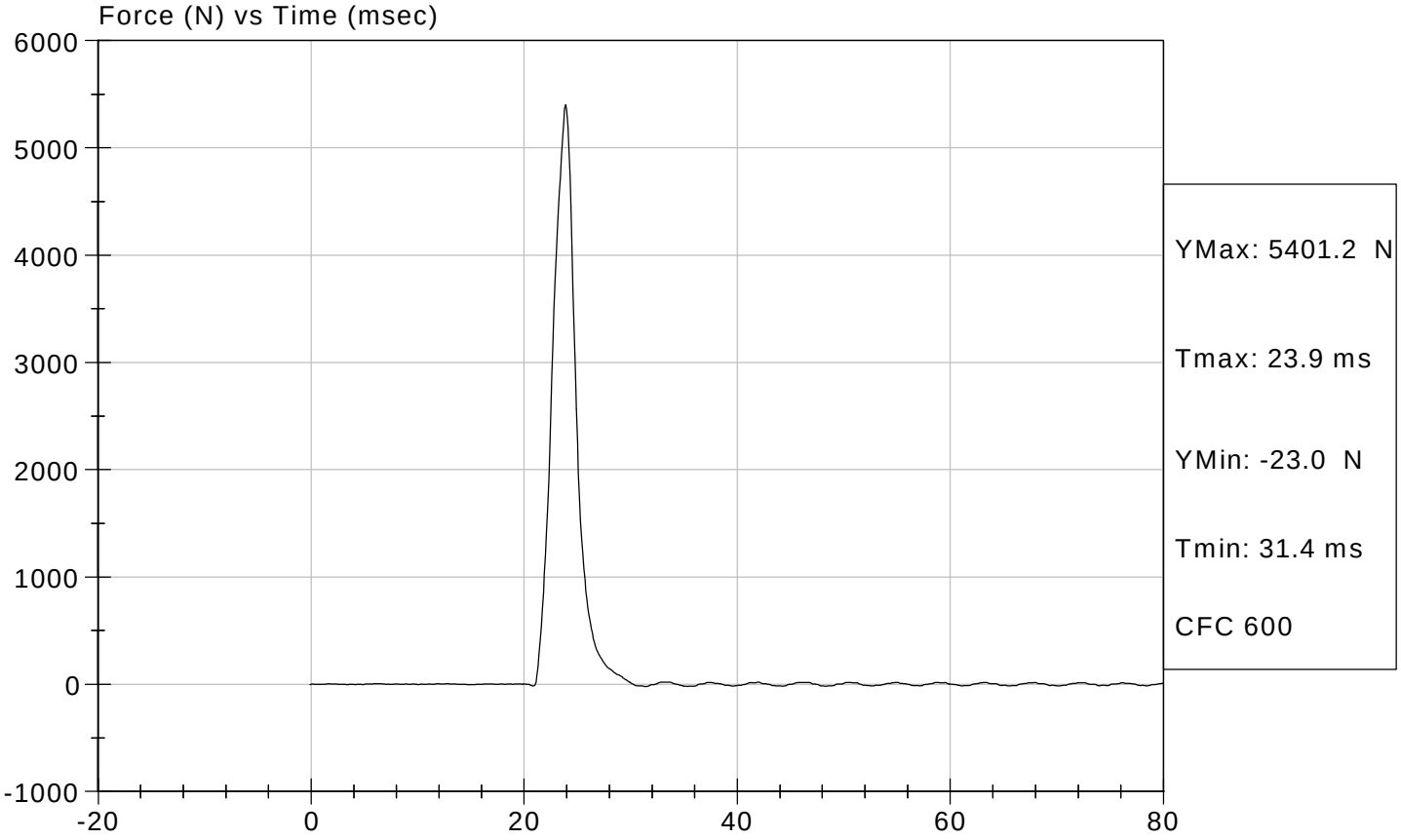
Shefalika Jgarwal
Approved By

Test Description: Right Knee

Test Date: 09/30/2003

Component: D031675

Speed: 6.96 ft/sec, 2.121 m/sec



Hybrid III Calibration Data Sheet

50th Percentile Male

Left Knee Impact Test

ATD Serial No: 065 **Test I.D:** D031676

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Probe Velocity	m/s	2.07 to 2.13	2.08	Pass
Peak Probe Force	Newtons	4715 to 5782	5,234	Pass
		Overall Test Results		Pass

Jessica Gall
Laboratory Technician

09/30/2003
Test Date

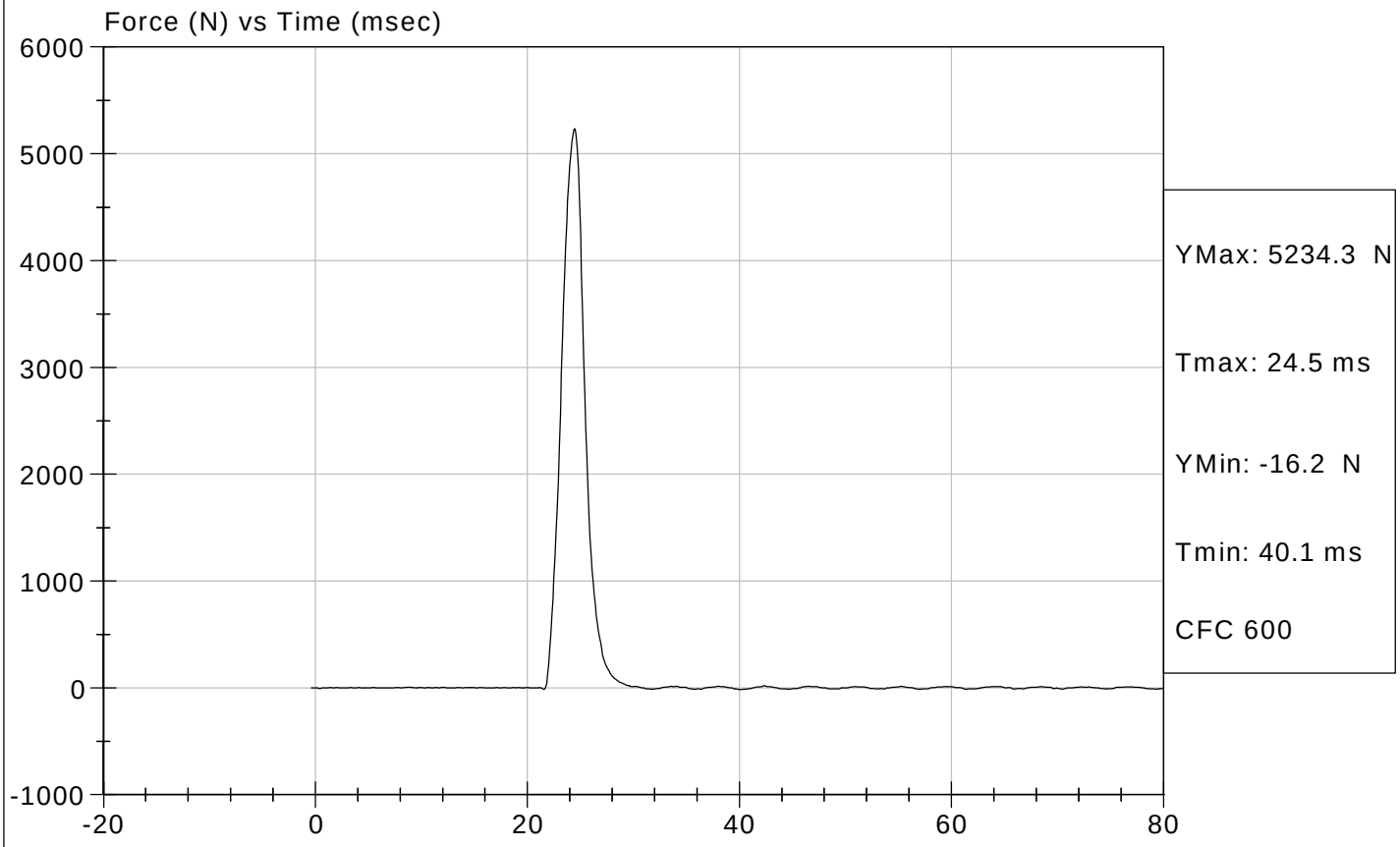
Shefalika Agarwal
Approved By

Test Description: Left Knee

Test Date: 09/30/2003

Component: D031676

Speed: 6.83 ft/sec, 2.082 m/sec



Hybrid III Calibration Data Sheet

50th Percentile Male

Hip-Femur Flexion Test

ATD Serial No: 065 **Test I.D:** D031670

Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.1	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	26	26	Pass
Rotation Rate	deg/sec	5 -10	8	8	Pass
30 Degrees	Nm	94.9 Nm Max	69.2	68.5	Pass
150 ft-lbf / 203.4 Nm	Deg	40- 50 Degree Max Rotation	45	45	Pass
		Overall Test Results			Pass

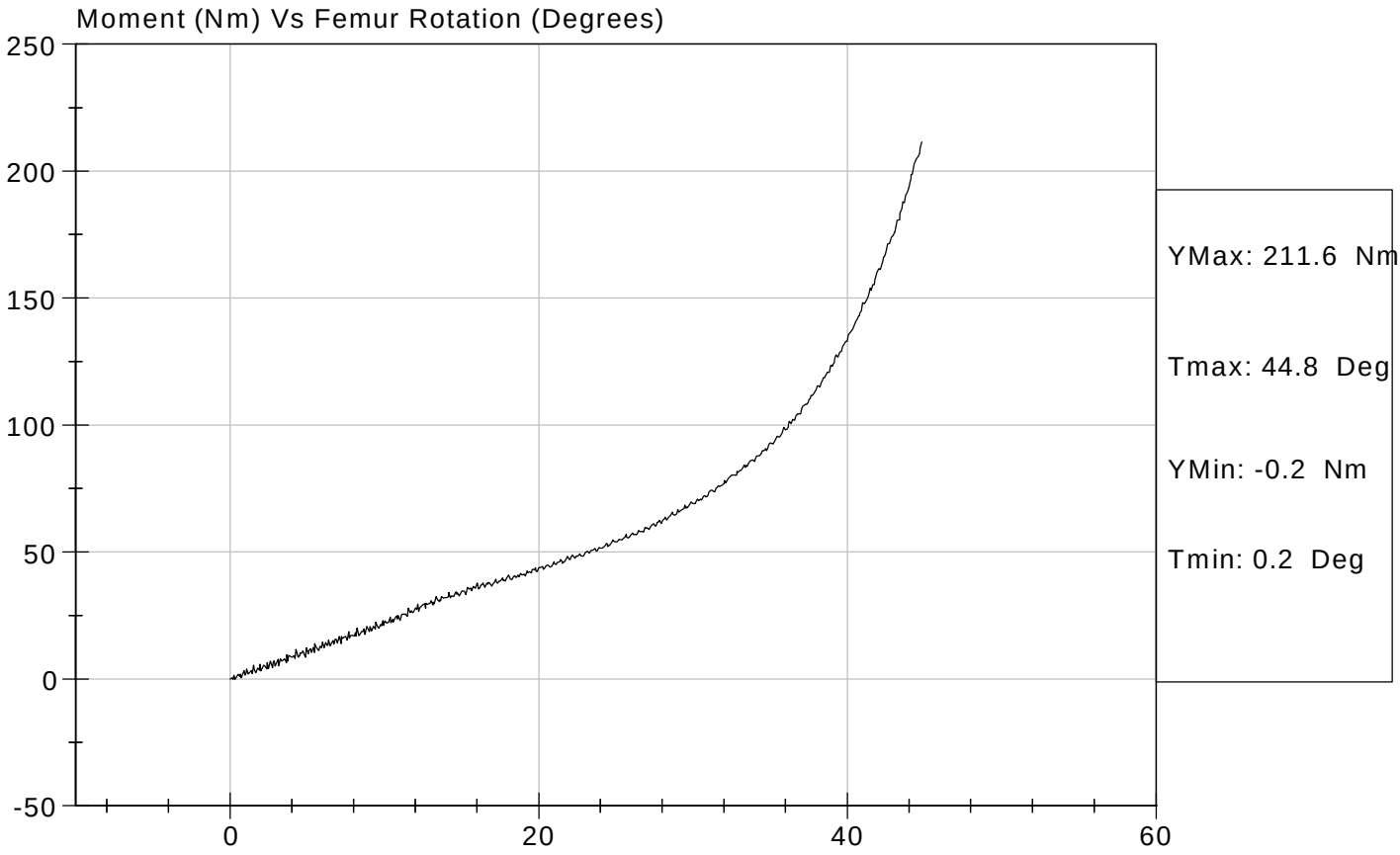
Jessica Hall
Laboratory Technician

09/30/2003
Test Date

Shefalika Jgarwal
Approved By

Test Description: Hip Femur Flexion | Test Date: 09/30/2003

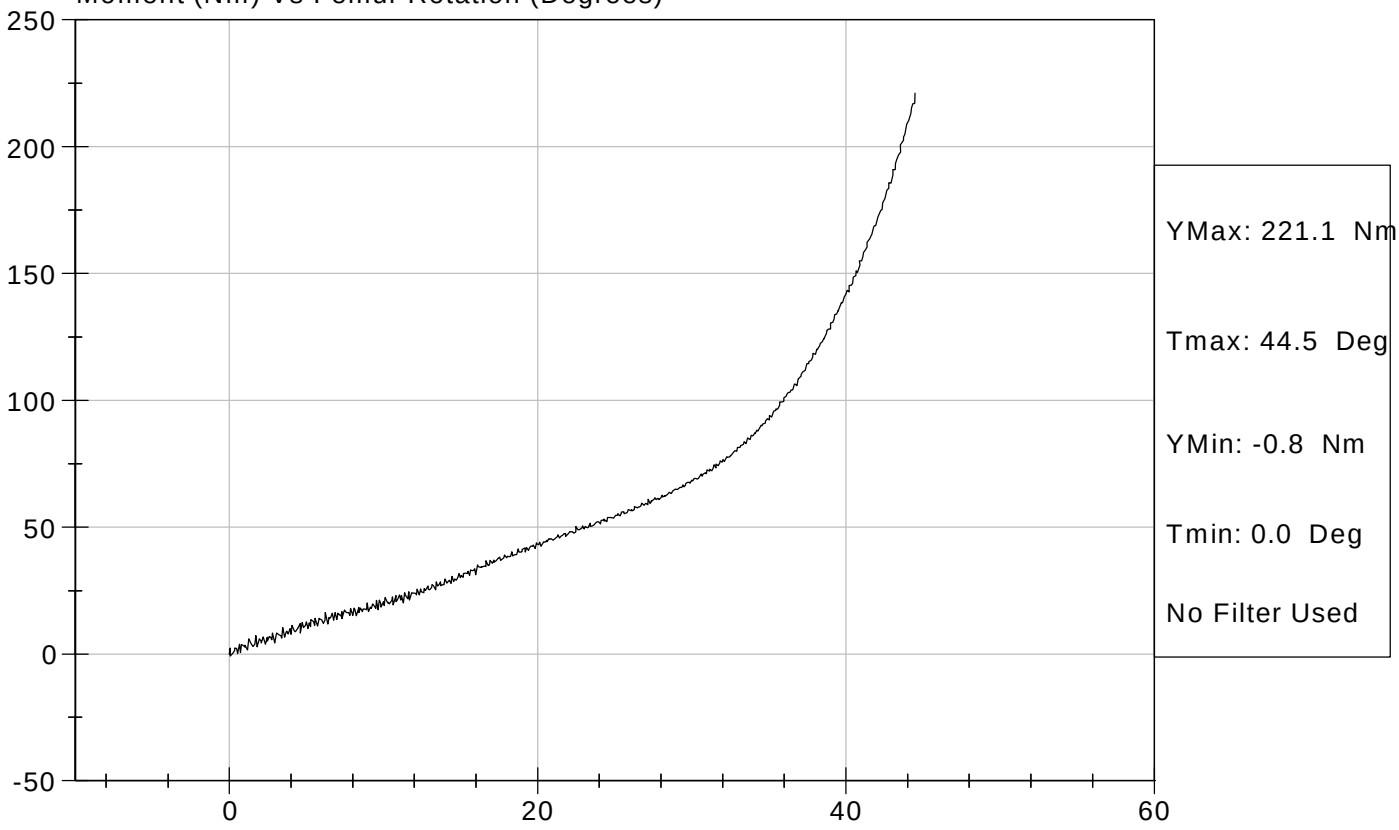
Component: D031679 | Speed: 0 ft/sec, 0.00 m/sec



Test Description: Hip Femur Flexion | Test Date: 09/30/2003

Component: D031670 | Speed: 0 ft/sec, 0.00 m/sec

Moment (Nm) Vs Femur Rotation (Degrees)



DUMMY INSPECTION CHECKLIST

Type: Hybrid III

Dummy Serial Number: 065

Inspected By: Tim Michnay

Date: 10/2/03

Part	Items Checked	Comments
Skin	visual inspection	OK
Head	visual, ballast, accelerometer mount	OK
Neck	visual, cable torque, nodding blocks	OK
Clavicles	visual, bumpers, range of motion	OK
Arms/Hands	visual, bumpers, range of motion	OK
Spine box	visual, ballast, weldment, accelerometer mount	OK
Rib cage	visual, measure, stiffeners	OK
Sternum	visual, bumpers	OK
Lumbar spine	visual, cable torque	OK
Abdomen	visual	OK
Pelvis	visual, palpate, accelerometer mount	OK
Upper legs	visual, load cell bolts	OK
Knees	visual, stops, inserts, sliders	OK
Lower legs	visual, range of motion	OK
Ankles	visual, range of motion	OK
Feet	visual, range of motion	OK
Joints	1 to 2 g range	OK
Other		

Notes (include component/problem/action/reason):

CERTIFICATION DATA

Dummy Serial Number: 066

Calibration Test Results Summary

Dummy Serial Number: 066

Calibration

External Dimensions:	The dummy passed all external dimension requirements.
Head Drop Test:	The head passed all drop test requirements.
Neck Flexion Test:	The neck passed all flexion test requirements.
Neck Extension Test:	The neck passed all extension test requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Knee Impact Tests:	Both knees passed all impact test requirements.
Hip-Femur Flexion Tests:	Both femurs passed all flexion test requirements.

HYBRID III DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Dummy Serial Number: 066

Date of Verification: 9/29/03

Test Number: D03168

DESCRIPTION	SPECIFICATION	TEST RESULTS
Temperature (°F)	20.6 – 22.2	21.7
Relative Humidity	10 – 70 %	29
AA - Location for Chest Circumference	429.3 – 434.3 mm	431.8
BB - Location for Waist Circumference	226.1 – 231.1 mm	228.6
A - Total Sitting Height	878.8 – 889.0 mm	879.5
B – Shoulder Pivot Height	505.5 – 520.7 mm	514.4
C – H Point Height	82.9 – 88.9 mm	88.9
D – H Point from Seat Back	134.7 – 139.7 mm	136.5
E – Shoulder Pivot From Backline	84.8 – 94.0 mm	94.0
F – Thigh Clearance	139.7 – 154.9 mm	146.1
G – Back of Elbow to Wrist Pivot	289.6 – 304.8 mm	292.1
H – Skull Cap Skin to Backline	40.7 – 45.7 mm	44.5
I – Shoulder Elbow Length	330.2 – 345.4 mm	330.2
J – Elbow Rest Height	190.5 – 210.9 mm	205.7
K – Buttock Knee Length	579.1 – 604.5 mm	596.9
L – Popliteal Height	429.3 – 454.7 mm	438.2
M – Knee Pivot Height	485.2 – 500.4 mm	495.3
N – Buttock Popliteal Length	452.1 – 477.5 mm	463.6
O – Chest Depth at 3rd Rib	213.4 – 228.6 mm	215.9
P – Foot Length	251.5 – 266.7 mm	260.4
V – Shoulder Breadth	421.7 – 436.9 mm	436.9
W – Foot Breadth	91.5 – 106.7 mm	101.6
Y – Chest Circumference	970.3 – 1000.7 mm	984.3
Z – Waist Circumference	835.7 – 866.1 mm	866.1

Technician: Jessica Gall

Approved By: Shefalika Jgarwal

Hybrid III Calibration Data Sheet

50th Percentile Male

Head Drop Calibration

ATD Serial No: 066 **Test I.D:** D031681

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	28	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	253.1	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	12.7	Pass
Is Acceleration Unimodal?	Yes/No	< 10% Peak	Yes	Pass
		Overall Test Results		Pass

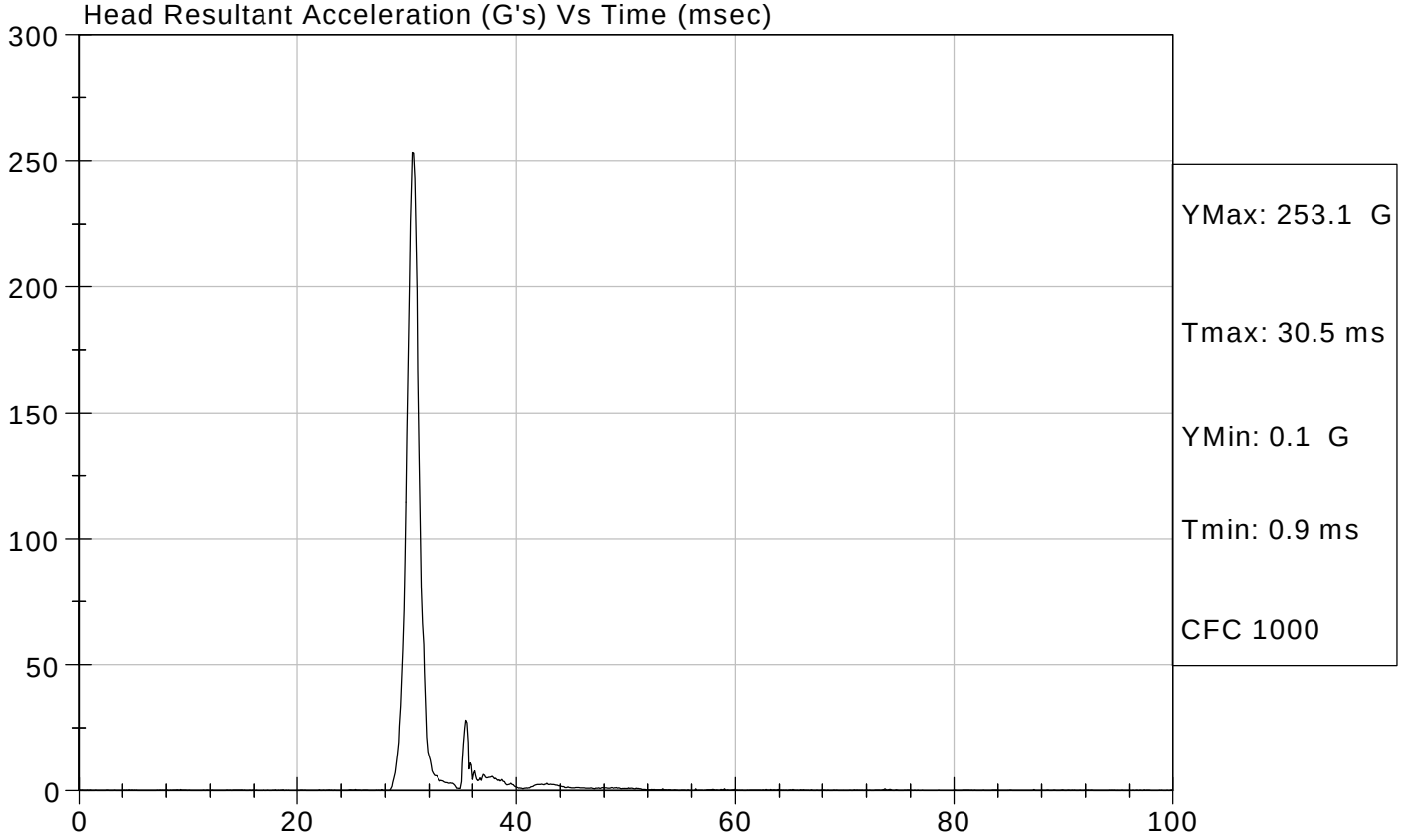
Jessica Gall
Laboratory Technician

09/29/2003
Test Date

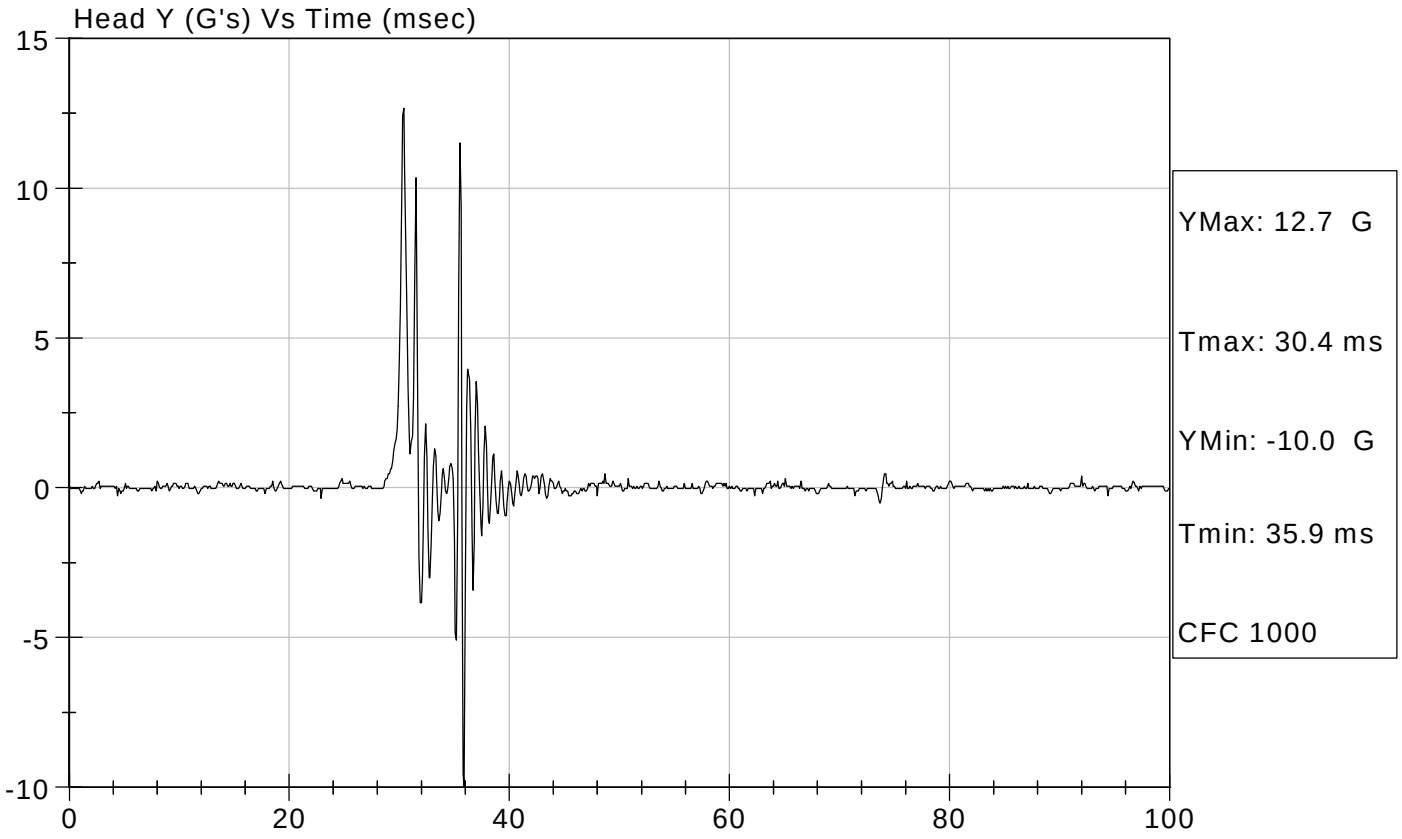
Shefalika Jgarwal
Approved By

	Test Description: Head Drop	Test Date: 09/29/2003
	Component: D031681	Speed: 0 ft/s, 0.00 m/s

Head Resultant Acceleration (G's) Vs Time (msec)



Head Y (G's) Vs Time (msec)



Hybrid III Calibration Data Sheet

50th Percentile Male

Neck Flexion Test

ATD Serial No: 066 **Test I.D:** D031682

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	20.7	Pass
Laboratory Relative Humidity		%	10 to 70	27	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.98	Pass
Pendulum Deceleration	10 msec	G's	22.50 to 27.50	23.03	Pass
	20 msec	G's	17.60 to 22.60	20.05	Pass
	30 msec	G's	12.50 to 18.50	15.09	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 29.0	15.09	Pass
Deceleration Decay Time to Cross 5 G's		msec	34.0 to 42.0	37.2	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	72.3	Pass
	Time	msec	57.0 to 64.0	58.0	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	113.0 to 128.0	115.2	Pass
Moment About Occipital Condyle	Maximum	N m	84.1 to 108.5	94.5	Pass
	Time	msec	47.0 to 58.0	49.2	Pass
Positive Moment Decay Time To Zero Crossing		msec	97.0 to 107.0	100.7	Pass
			Overall Test Results		Pass

Jessica Gall
Laboratory Technician

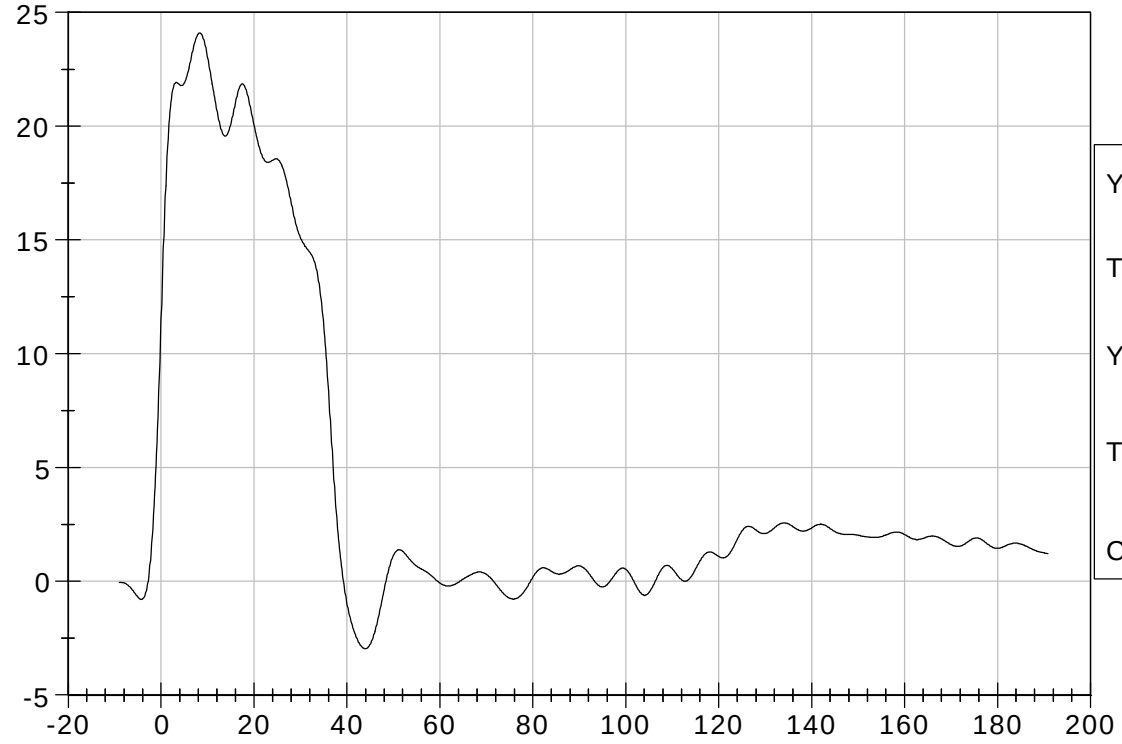
09/30/2003
Test Date

Shefalika Jgarwal
Approved By

Test Desc: Neck Flexion
Component ID: D031682

Test Date: 09/30/2003
Speed: 22.89 ft/sec, 6.98 m/sec

Pendulum Deceleration (G's) vs Time (msec)



YMax: 24.1 G'S

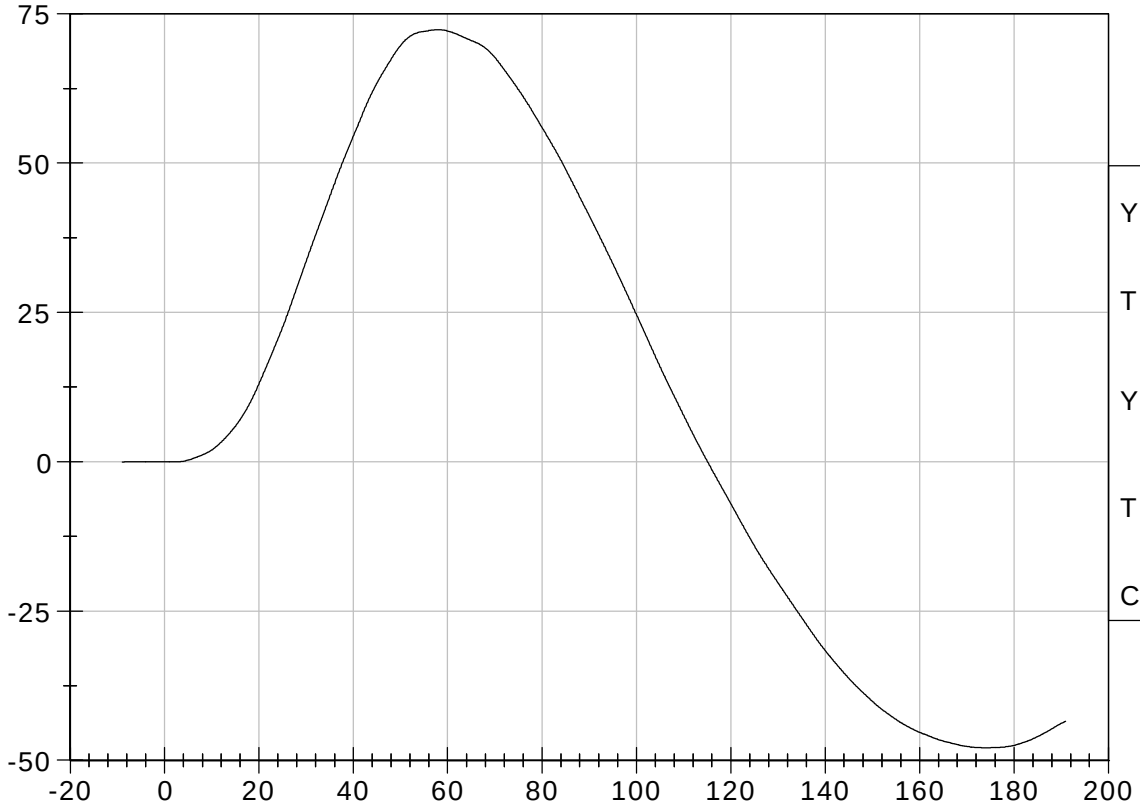
Tmax: 8.3 ms

YMin: -3.0 G'S

Tmin: 43.9 ms

CFC 60

Neck Rotation (DEG) vs Time (msec)



YMax: 72.3

Tmax: 58.0 ms

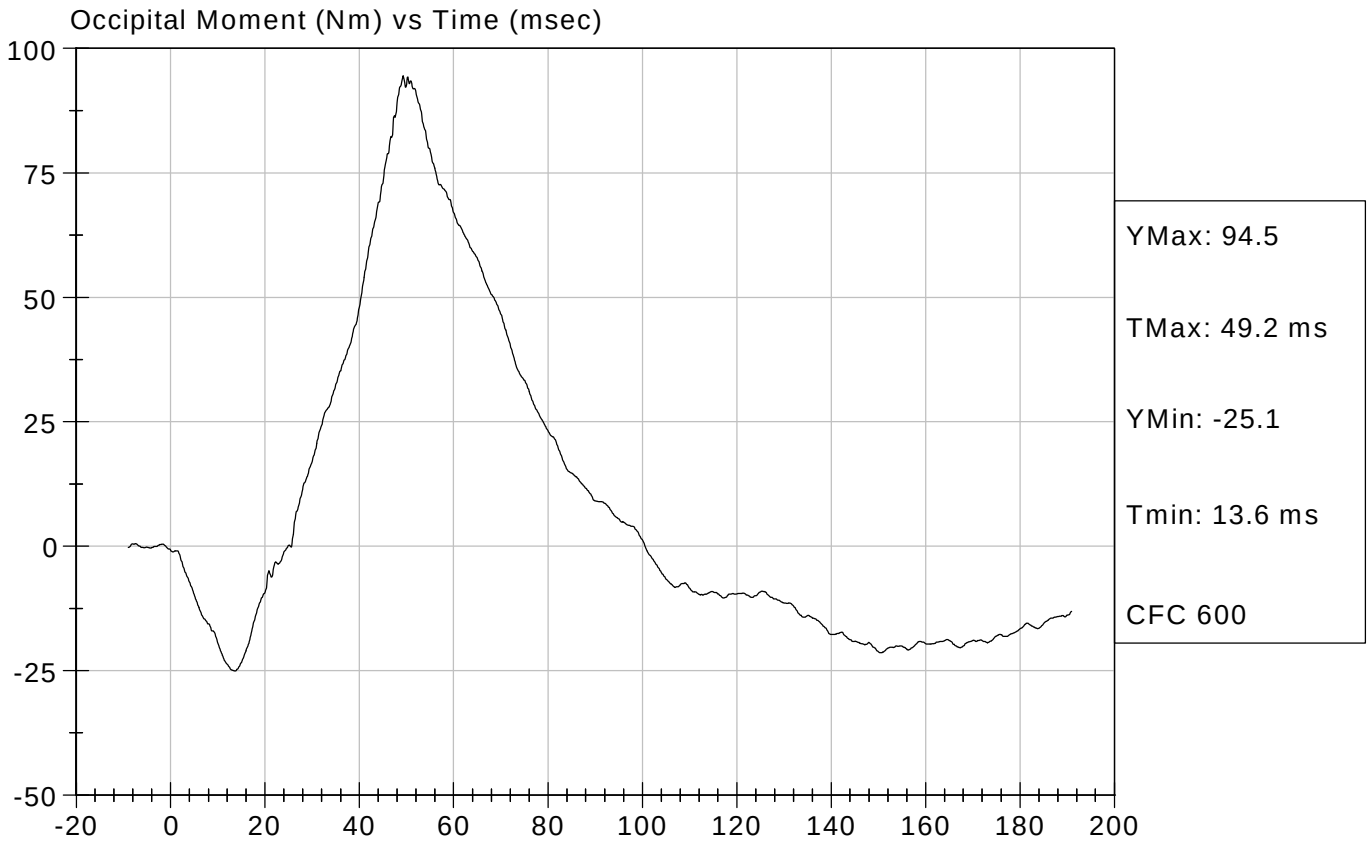
YMin: -47.9

Tmin: 174.0 ms

CFC 60

Test Desc: Neck Flexion
Component ID: D031682

Test Date: 09/30/2003
Speed: 22.89 ft/sec, 6.98 m/sec



Hybrid III Calibration Data Sheet

50th Percentile Male

Neck Extension Test

ATD Serial No: 066 **Test I.D:** D031683

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	20.9	Pass
Laboratory Relative Humidity		%	10 to 70	24	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.12	Pass
Pendulum Deceleration	10 msec	G's	17.20 to 21.20	17.85	Pass
	20 msec	G's	14.00 to 19.00	15.19	Pass
	30 msec	G's	11.00 to 16.00	12.45	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 22.0	13.1	Pass
Deceleration Decay Time to Cross 5 G's		msec	38.0 to 46.0	43.3	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	97.2	Pass
	Time	msec	72.0 to 82.0	78.0	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	147.0 to 174.0	155.4	Pass
Moment About Occipital Condyle	Minimum	N m	-52.9 to -79.9	-64.1	Pass
	Time	msec	65.0 to 79.0	73.4	Pass
Negative Moment Decay Time To Zero Crossing		msec	120.0 to 148.0	143.5	Pass
			Overall Test Results		Pass

Jessica Gall
Laboratory Technician

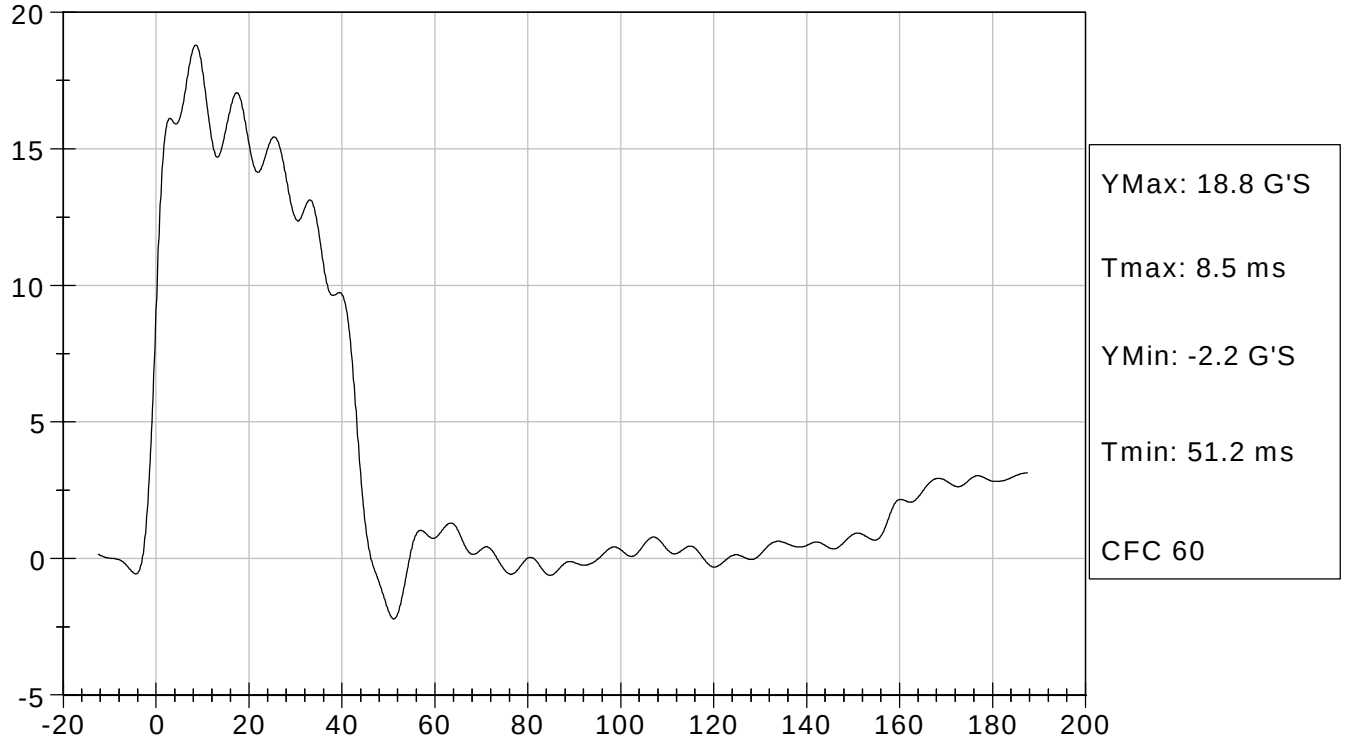
10/01/2003
Test Date

Shefalika Jgarwal
Approved By

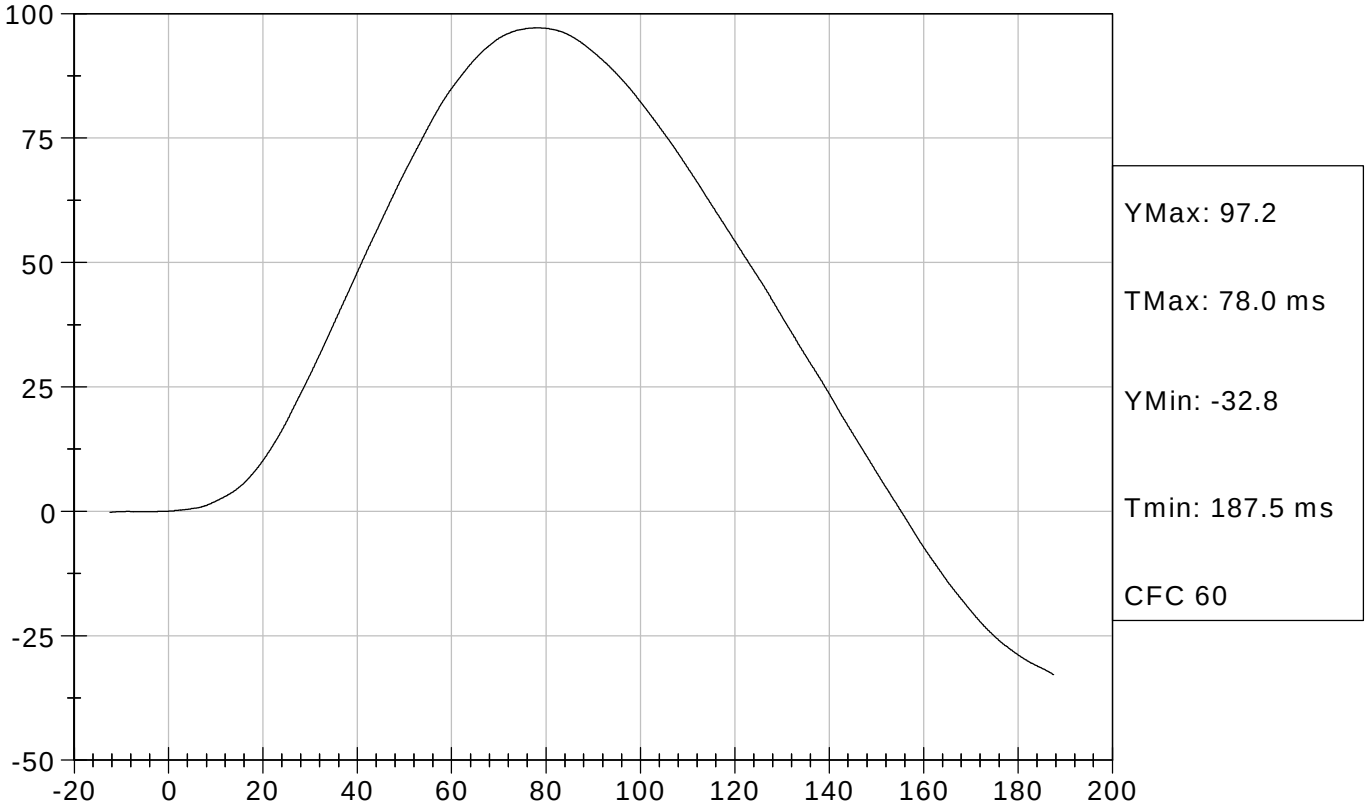
Test Desc: Neck Extension
Component ID: D031683

Test Date: 10/01/2003
Speed: 20.08 ft/sec, 6.12 m/sec

Pendulum Deceleration (G's) vs Time (msec)

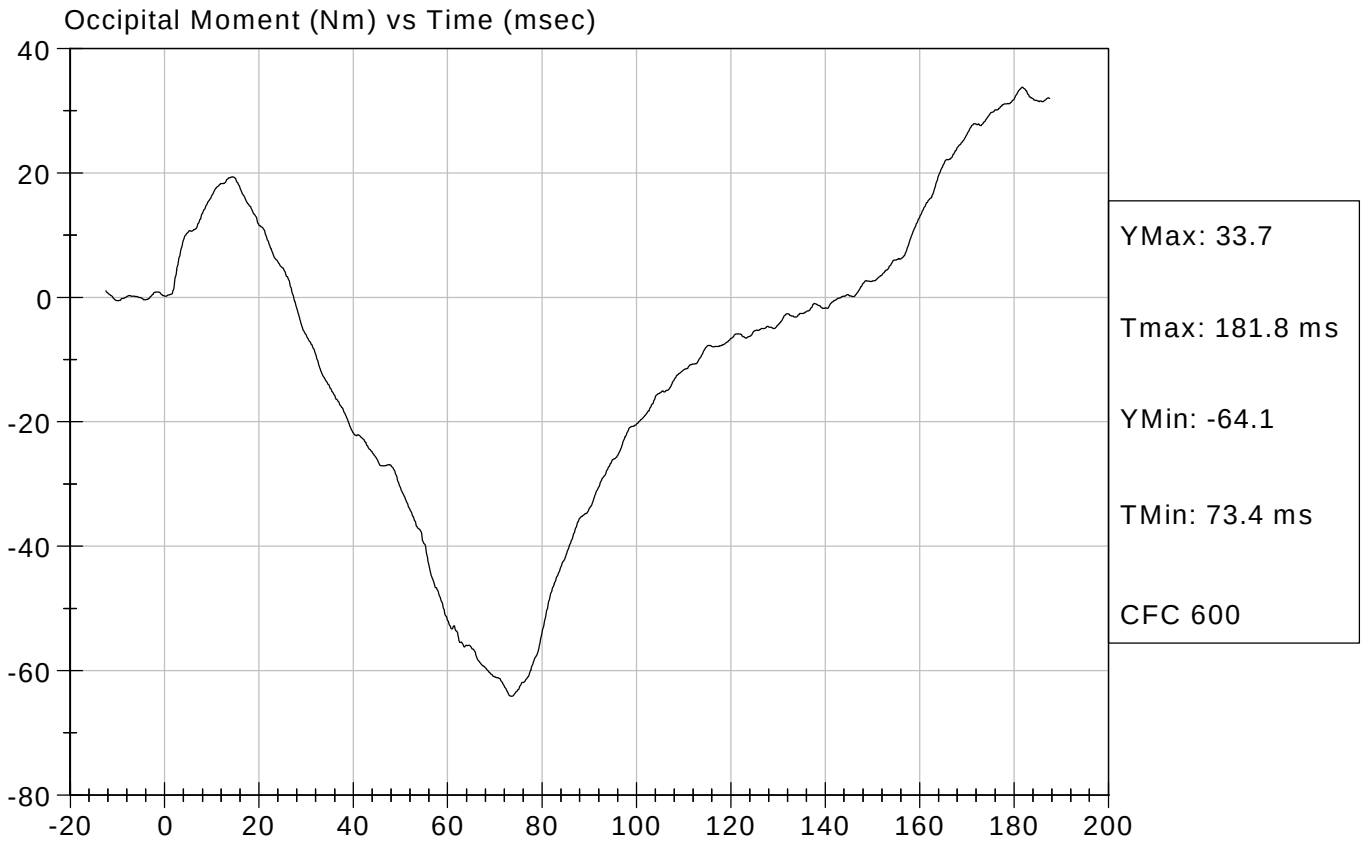


Neck Rotation (DEG) vs Time (msec)



Test Desc: Neck Extension
Component ID: D031683

Test Date: 10/01/2003
Speed: 20.08 ft/sec, 6.12 m/sec



Hybrid III Calibration Data Sheet

50th Percentile Male

Thorax Impact Test

ATD Serial No: 066 **Test I.D:** D031684

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	22.1	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Probe Velocity	m/s	6.58 to 6.82	6.73	Pass
Peak Probe Force	Newtons	5159 to 5893	5,471	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.42	Pass
Internal Hysteresis	%	69 to 85	72	Pass
		Overall Test Results		Pass

Jessica Gall
Laboratory Technician

10/02/2003
Test Date

Shefalika Jgarwal
Approved By

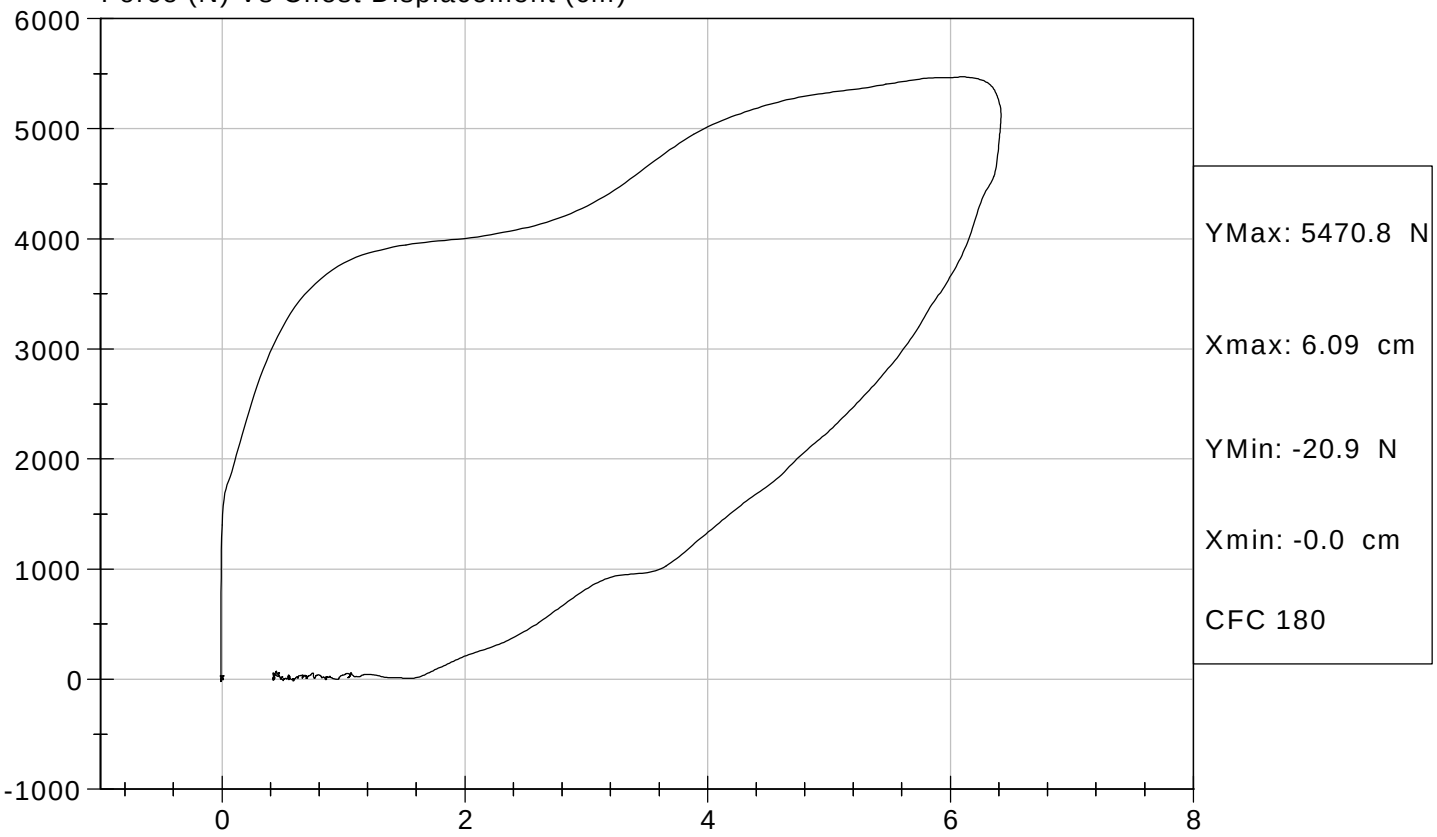
Test Description: Thorax Impact

Test Date: 10/02/2003

Component: D031684

Speed: 22.07 ft/sec, 6.73 m/sec

Force (N) Vs Chest Displacement (cm)



Hybrid III Calibration Data Sheet

50th Percentile Male

Right Knee Impact Test

ATD Serial No: 066 **Test I.D:** D031685

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Probe Velocity	m/s	2.07 to 2.13	2.10	Pass
Peak Probe Force	Newtons	4715 to 5782	4,832	Pass
		Overall Test Results		Pass

Jessica Gall
Laboratory Technician

09/30/2003
Test Date

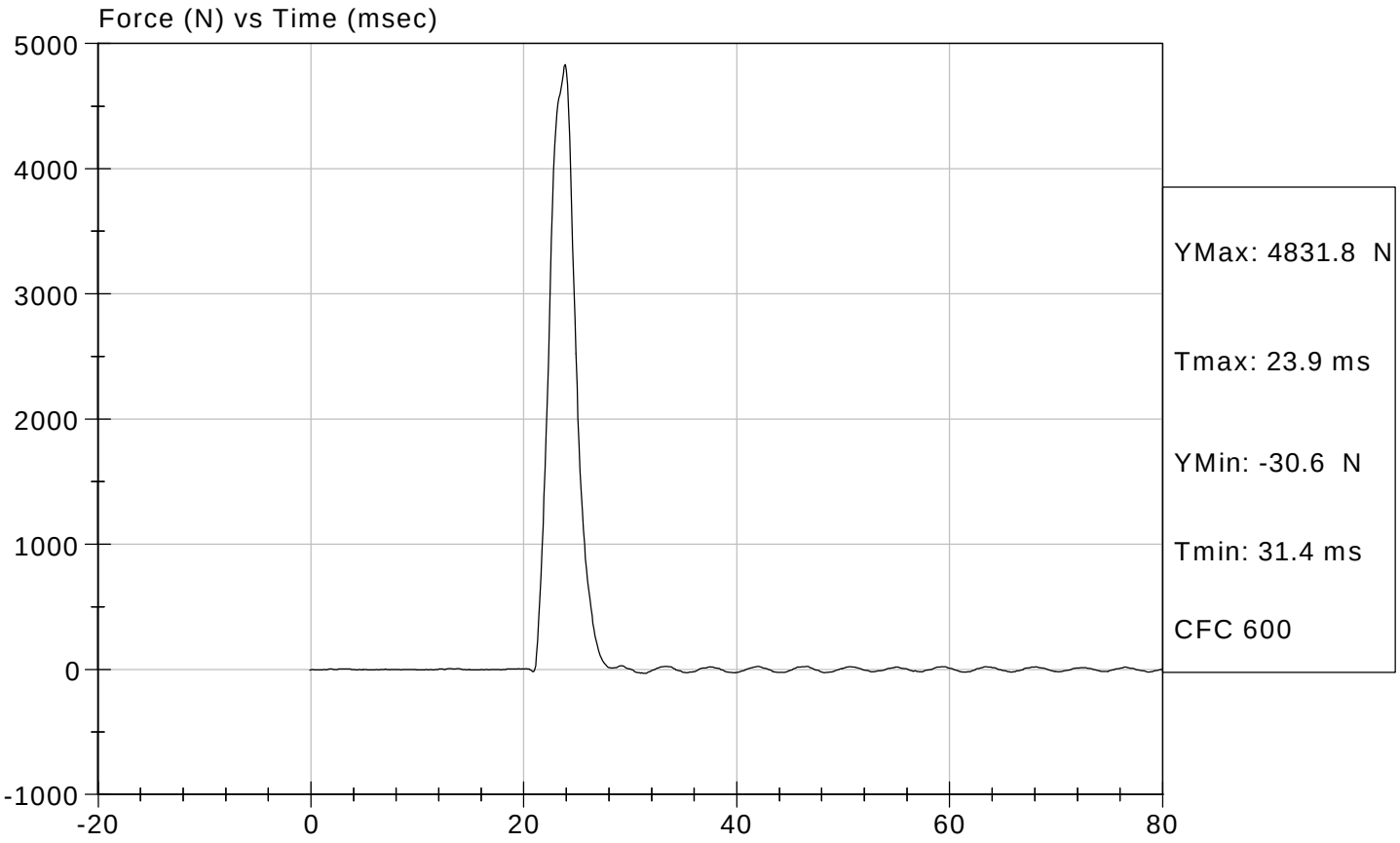
Shefalika Agarwal
Approved By

Test Description: Right Knee

Test Date: 09/30/2003

Component: D031685

Speed: 6.89 ft/sec, 2.100 m/sec



Hybrid III Calibration Data Sheet

50th Percentile Male

Left Knee Impact Test

ATD Serial No: 066 **Test I.D:** D031686

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Probe Velocity	m/s	2.07 to 2.13	2.11	Pass
Peak Probe Force	Newtons	4715 to 5782	5,740	Pass
		Overall Test Results		Pass

Jessica Gall
Laboratory Technician

09/30/2003
Test Date

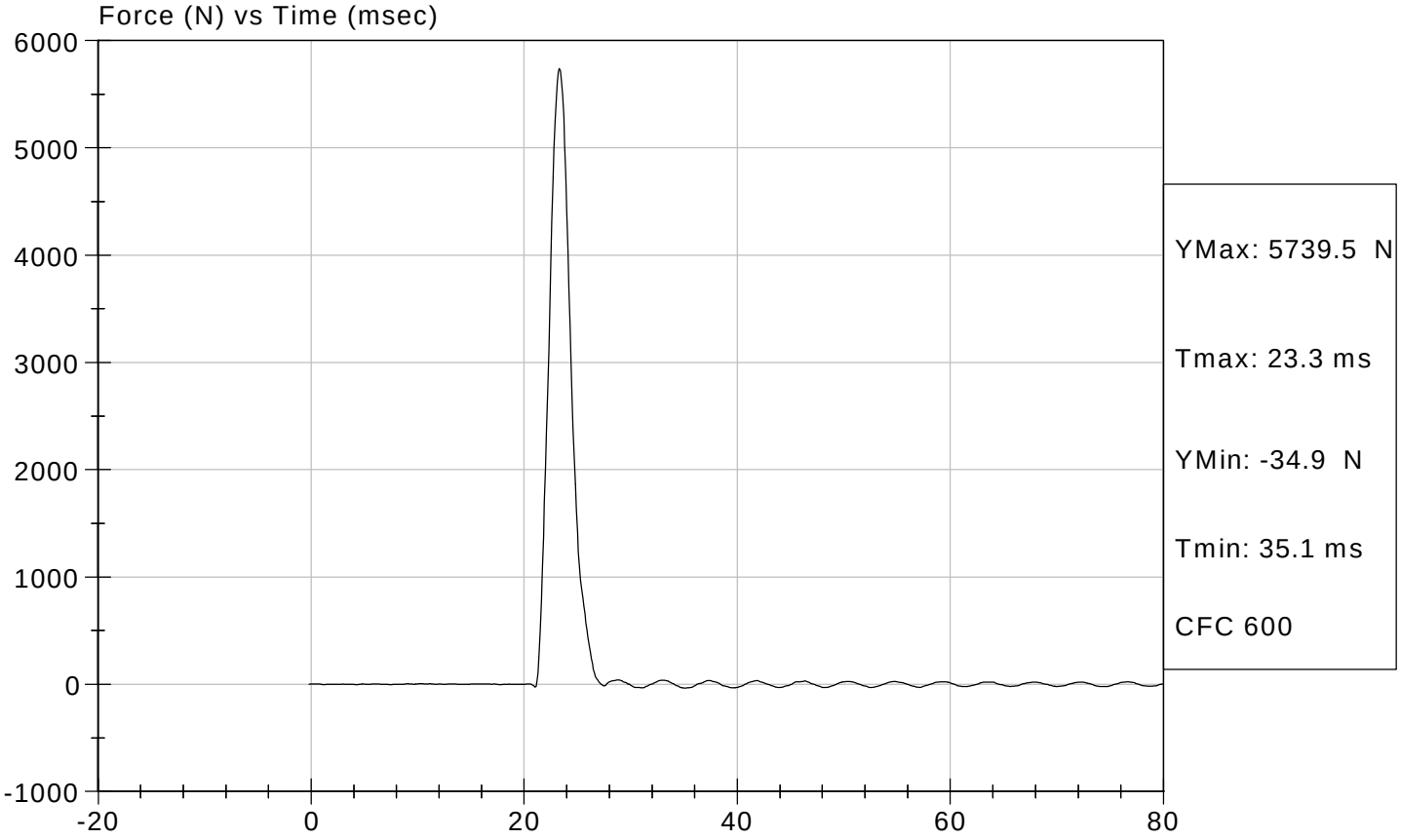
Shefalika Jgarwal
Approved By

Test Description: Left Knee

Test Date: 09/30/2003

Component: D031686

Speed: 6.91 ft/sec, 2.106 m/sec



Hybrid III Calibration Data Sheet

50th Percentile Male

Hip-Femur Flexion Test

ATD Serial No: 066 **Test I.D:** D031680

Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.3	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	26	26	Pass
Rotation Rate	deg/sec	5 -10	8	8	Pass
30 Degrees	Nm	94.9 Nm Max	84.8	82.6	Pass
150 ft-lbf / 203.4 Nm	Deg	40- 50 Degree Max Rotation	43	41	Pass
		Overall Test Results			Pass

Jessica Gall
Laboratory Technician

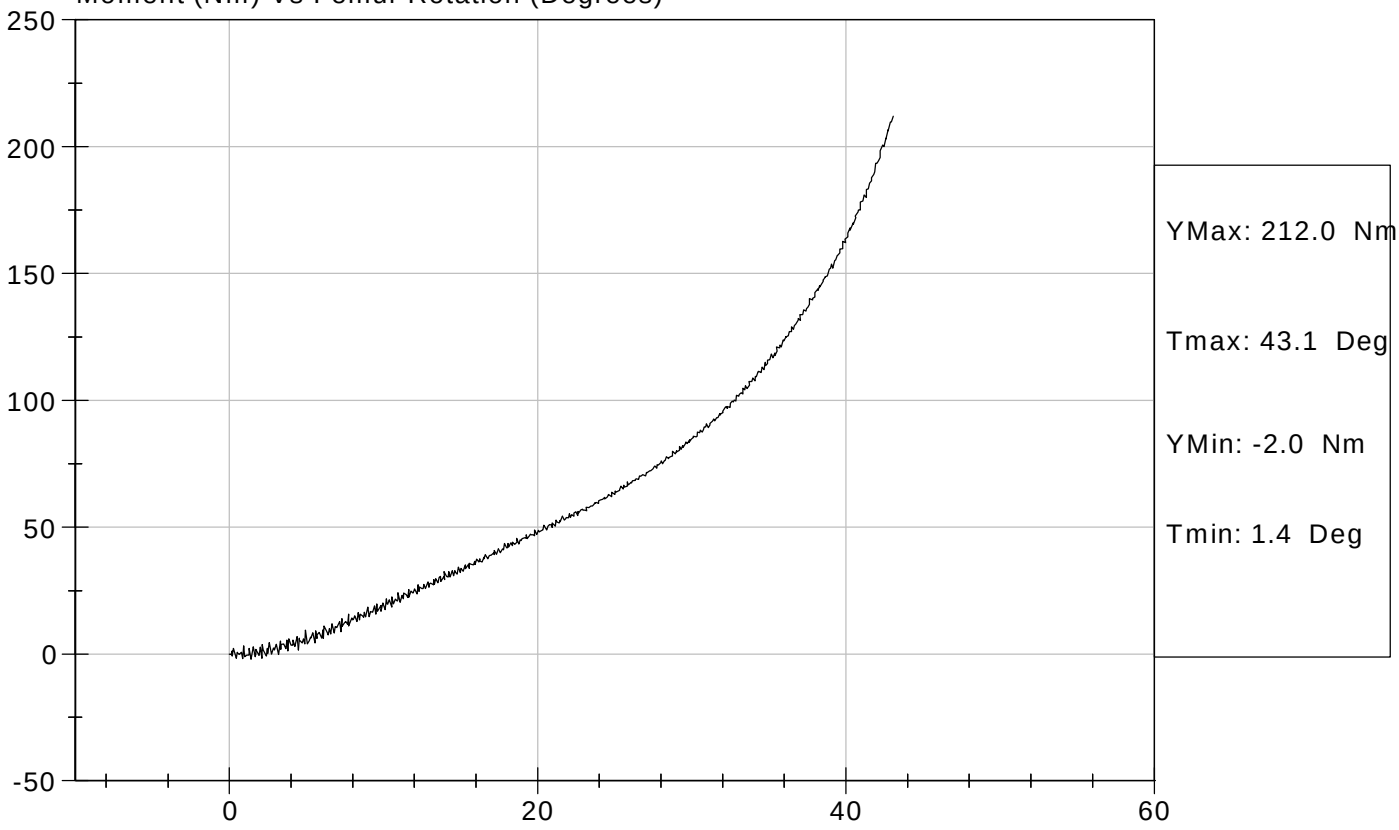
09/30/2003
Test Date

Shefalika Jgarwal
Approved By

Test Description: Hip Femur Flexion | Test Date: 09/30/2003

Component: D031689 | Speed: 0 ft/sec, 0.00 m/sec

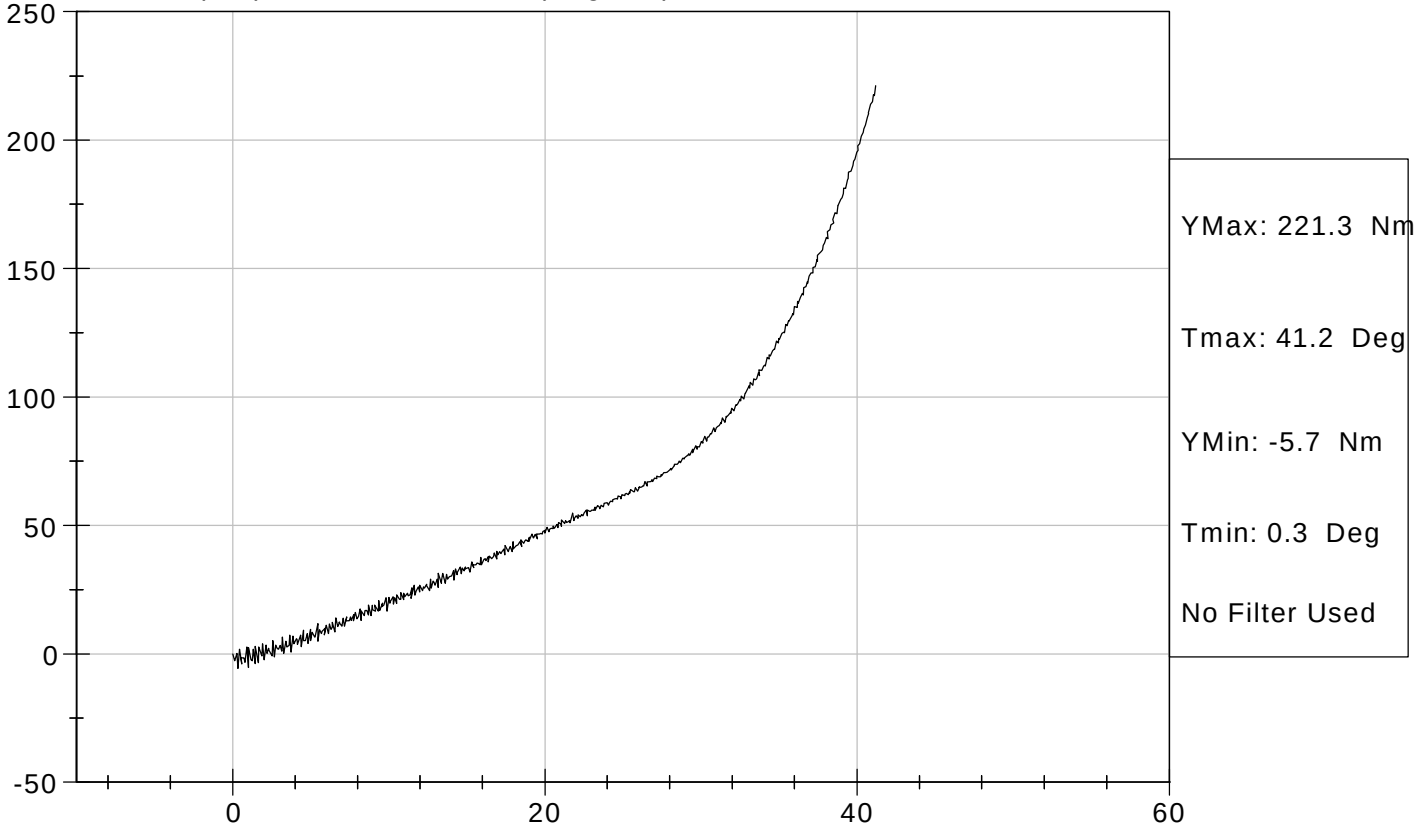
Moment (Nm) Vs Femur Rotation (Degrees)



Test Description: Hip Femur Flexion | Test Date: 09/30/2003

Component: D031680 | Speed: 0 ft/sec, 0.00 m/sec

Moment (Nm) Vs Femur Rotation (Degrees)



DUMMY INSPECTION CHECKLIST

Type: Hybrid III

Dummy Serial Number: 066

Inspected By: Tim Michnay

Date: 10/2/03

Part	Items Checked	Comments
Skin	visual inspection	OK
Head	visual, ballast, accelerometer mount	OK
Neck	visual, cable torque, nodding blocks	OK
Clavicles	visual, bumpers, range of motion	OK
Arms/Hands	visual, bumpers, range of motion	OK
Spine box	visual, ballast, weldment, accelerometer mount	OK
Rib cage	visual, measure, stiffeners	OK
Sternum	visual, bumpers	OK
Lumbar spine	visual, cable torque	OK
Abdomen	visual	OK
Pelvis	visual, palpate, accelerometer mount	OK
Upper legs	visual, load cell bolts	OK
Knees	visual, stops, inserts, sliders	OK
Lower legs	visual, range of motion	OK
Ankles	visual, range of motion	OK
Feet	visual, range of motion	OK
Joints	1 to 2 g range	OK
Other		

Notes (include component/problem/action/reason):

APPENDIX D

TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION

INSTRUMENTS FOR DRIVER DUMMY NO. 065

	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Head X	ACCY6	Endevco	10/3/03
Head Y	J13941	Endevco	10/6/03
Head Z	AAMW5	Endevco	10/3/03
Head X Redundant	J18724	Endevco	10/6/03
Head Y Redundant	J14235	Endevco	10/8/03
Head Z Redundant	AJ5R0	Endevco	10/3/03
Neck Load Cell	442	Denton	8/20/03
Chest X	ACC78	Endevco	10/3/03
Chest Y	ACCE6	Endevco	10/3/03
Chest Z	ACCY3	Endevco	10/3/03
Chest Deflection Gauge	065	Servo	9/30/03
Chest X Redundant	J19927	Endevco	10/3/03
Chest Y Redundant	J20580	Endevco	10/3/03
Chest Z Redundant	J23914	Endevco	10/3/03
Pelvis X	AHTN3	Endevco	10/3/03
Pelvis Y	AH0C3	Endevco	10/3/03
Pelvis Z	AHT12	Endevco	10/3/03
Left Femur Load Cell	259	Denton	8/20/03
Right Femur Load Cell	256	Denton	8/20/03
Left Upper Tibia Load Cell	105	Denton	8/2/0/03
Left Lower Tibia Load Cell	133	Denton	8/19/03
Right Upper Tibia Load Cell	103	Denton	8/19/03
Right Lower Tibia Load Cell	134	Denton	8/20/03
Left Foot Z – Front	J14120	Endevco	10/8/03
Left Ankle X	J23774	Endevco	10/6/03
Left Ankle Z	APYY3	Endevco	10/8/03
Right Foot Z – Front	J18736	Endevco	10/6/03
Right Ankle X	J23946	Endevco	10/6/03
Right Ankle Z	J27513	Endevco	10/6/03
Lap Belt Load Cell	191	Denton	6/9/03

INSTRUMENTS FOR PASSENGER DUMMY NO. 066

	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Head X	AAMN8	Endevco	10/3/03
Head Y	ACC61	Endevco	10/3/03
Head Z	ACCW9	Endevco	10/3/03
Head X Redundant	J19884	Endevco	10/3/03
Head Y Redundant	J21988	Endevco	10/3/03
Head Z Redundant	J28986	Endevco	10/3/03
Neck Load Cell	443	Denton	8/20/03
Chest X	ACCY1	Endevco	10/6/03
Chest Y	ACCC8	Endevco	10/6/03
Chest Z	ACCT7	Endevco	10/6/03
Chest Deflection Gauge	066	Servo	9/30/03
Chest X Redundant	J13541	Endevco	10/6/03
Chest Y Redundant	J20093	Endevco	10/6/03
Chest Z Redundant	J19440	Endevco	10/6/03
Pelvis X	J22033	Endevco	10/3/03
Pelvis Y	J21691	Endevco	10/3/03
Pelvis Z	J21970	Endevco	10/3/03
Left Femur Load Cell	262	Denton	8/20/03
Right Femur Load Cell	261	Denton	8/20/03
Left Upper Tibia Load Cell	109	Denton	8/19/03
Left Lower Tibia Load Cell	138	Denton	8/19/03
Right Upper Tibia Load Cell	106	Denton	8/20/03
Right Lower Tibia Load Cell	135	Denton	8/20/03
Left Foot Z – Front	J28988	Endevco	10/3/03
Left Ankle X	J22036	Endevco	10/3/03
Left Ankle Z	J20569	Endevco	10/3/03
Right Foot Z – Front	J20382	Endevco	8/7/03
Right Ankle X	J20165	Endevco	8/7/03
Right Ankle Z	J28708	Endevco	8/7/03
Lap Belt Load Cell	195	Denton	9/4/03

INSTRUMENTS FOR VEHICLE AND LABORATORY

	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Left Rear Seat Crossmember X	D07-N02	Entran	5/7/03
Left Rear Seat Crossmember Z	F04-N09	Entran	8/13/03
Right Rear Seat Crossmember X	G03-N06	Entran	8/13/03
Right Rear Seat Crossmember Z	H01-N31	Entran	8/13/03
Top of Engine X	H01-N19	Entran	6/2/03
Bottom of Engine X	G13-F15	Entran	8/13/03
Left Brake Caliper X	H01-N32	Entran	6/2/03
Right Brake Caliper X	H01-N15	Entran	8/13/03
Instrument Panel X	H01-N23	Entran	6/2/03

Note: All Endevco accelerometers are Model No. 7264-2000
All Entran accelerometers are Model No. EGE-72