REPORT NUMBER: NCAP-MGA-2004-005

NEW CAR ASSESSMENT PROGRAM
FRONTAL BARRIER IMPACT TEST

Ford Motor Company
2004 Ford F-150 Supercrew 4-Door
NHTSA NUMBER: M40204

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

Test Date: January 6, 2004

Report Date: February 13, 2004

FINAL REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
RULEMAKING
OFFICE OF CRASHWORTHINESS STANDARDS
400 SEVENTH STREET, SW, ROOM 5311
WASHINGTON, D.C. 20590

This final test report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, in response to Contract Number DTNH22-01-D-12005.

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Reviewed by: David Winkelbauer Date: 2/13/04
David Winkelbauer, Facility Director

FINAL REPORT ACCEPTED BY:

_____
Manager, New Car Assessment Program

_____
Date of Acceptance

_____
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 F-150 Supercrew 4-Dr at MGA Research Corporation on January 6, 2004. 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 607 mm located at the vehicle centerline. 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	551	590
Max. Thorax Accel. (3msec Clip)	G's	60	38	40
Left Femur Force	Newton	10009	-2397	-2260
Right Femur Force	Newton	10009	-3116	-3072

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PURPOSE AND SUMMARY OF TEST

PURPOSE

This 56.5 km/h frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under contract 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 F-150 Supercrew 4-Dr at a velocity of 56.5 kph. The test was performed at MGA Research Corporation on January 6, 2004. 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 161 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 607 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	551	38	-29	-2397	-3116	*
Passenger	590	40	-26	-2260	-3072	*

* Not recorded

SECTION 2

OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

Test Vehicle: 2004 Ford F-150 Supercrew 4-Dr
Test Program: 35mph Frontal Impact
NHTSA No.: M40204
Test Date: 01/06/04

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 F-150 Supercrew 4-Dr NHTSA No.: M40204
Test Program: 35mph Frontal Impact Test Date: 01/06/04

PRIMARY IMPACT DATA

Measured Parameter	Units	Value
Velocity at Impact	km/hr	56.5
Test Weight	kg	2661.8
Average Rebound	mm	545
Maximum Static Crush	mm	607
Impact Angle	degrees	0

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Passenger
Locked/Unlocked Doors	Doors were unlocked	Doors were unlocked
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.	HIII 50th/ 065	HIII 50th/ 066
Head Contact	Airbag, Head Rest	Airbag, Head Rest
Chest Contact	Airbag	Airbag
Abdomen Contact	Airbag	Airbag
Left Knee Contact	Knee Bolster	Glovebox
Right Knee Contact	Knee Bolster	Glovebox

16mm MOVIE COVERAGE

High Speed	16
Real Time	1
Total	17

Driver ATD Sensors	48
Passenger ATD Sensors	48
Belt Assessment Sensors	4
Vehicle Structure Accelerometers	9
Rigid Barrier Load Cells	6
Total	115

DATA SHEET NO. 2

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2004 Ford F-150 Supercrew 4-Dr
Test Program: 35mph Frontal Impact
NHTSA No.: M40204
Test Date: 01/06/04

TEST VEHICLE INFORMATION

Manufacturer	Ford
Model	F150 SuperCrew
Body Style	Truck
NHTSA No.	M40204
VIN	1FTRW12W24KA12416
Color	Gray
Delivery Date	12/19/03
Odometer Reading (mile)	26.5
Dealer	Ricart Ford
Transmission	Automatic
Final Drive	Rear
Number of Cylinders	8
Engine Displacement (L)	4.6
Engine Placement	Longitudinal
Automatic Door Lock (ADL)	No
Owner's Manual Details Instructions on Disabling ADLs	Not Applicable

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	Yes
Anti-lock Brakes	Yes
AM/FM/Cassette	Yes
Anti-theft System	Yes
Cruise Control	Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Ford Motor Company
Date of Manufacture	08/03

GVWR (kg)	3084
GAWR Front (kg)	1564
GAWR Rear (kg)	1723

DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	240	240
Cold Pressure (kPa)	240	240
Recommended Tire Size	P255/65R17	P255/65R17
Tire Size on Vehicle	P255/65R17	P255/65R17
Tire Manufacturer	Continental	Continental

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Split Bench	NA	
Number Of Occupants	3	3	0	6
Capacity Wt. (VCW) (kg)				706.1
Cargo Wt. (RCLW) (kg)				136.1

DATA SHEET NO. 2... (continued)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2004 Ford F-150 Supercrew 4-Dr NHTSA No.: M40204
Test Program: 35mph Frontal Impact Test Date: 01/06/04

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	674.5	536.2		717.6	609.2	
Right	kg	649.6	517.6		725.8	609.2	
Ratio	%	55.7	44.3		54.2	45.8	
Totals	kg	1324.1	1053.8	2377.9	1443.4	1218.4	2661.8

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	2377.9
Weight of 2 P572E ATDs	kg	156.0
Rated Cargo/Luggage Weight (RCLW)	kg	136.1
Calculated Vehicle Target Weight (TVTW)	kg	2670.0

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG(aft of front axle)
As Delivered	mm	882	878	951	941	1559
As Tested	mm	872	864	929	924	1610
Post Test	mm	858	740	1003	845	

Vehicle Wheelbase (mm): 3517

Weight of Ballast secured in cargo area (kg): 0

Vehicle Components Removed: Spare tire, jack, tail lights, head lights

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

FUEL SYSTEM DATA

Fuel System Capacity From Owner's Manual (L): 113.6

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

Actual Test Volume (L): 106.7

Test Fluid Type: Stoddard Solvent; Specific Gravity: 0.77

Is Vehicle Fuel Pump Electric or Mechanical? Electric

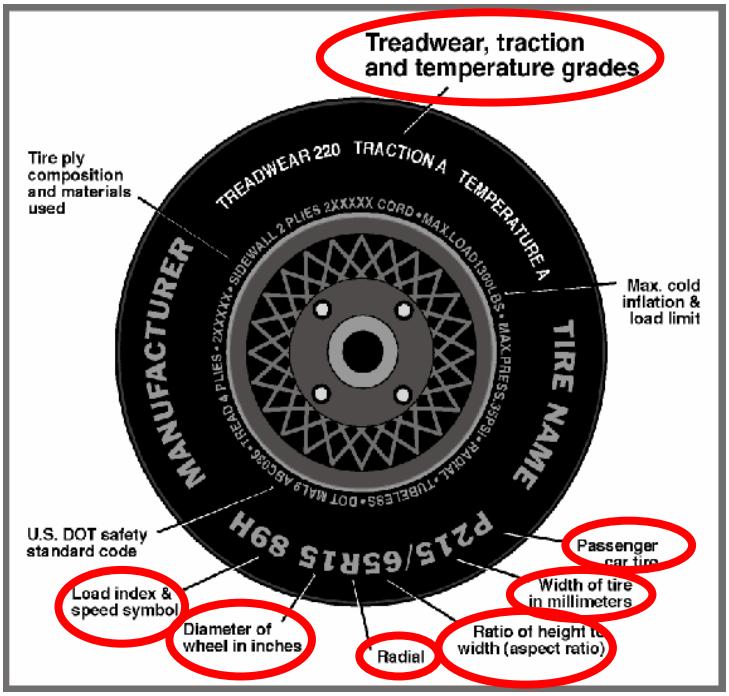
If electric, does pump operate with ignition switch "ON" & engine "OFF"? Yes

DATA SHEET NO. 3

TEST VEHICLE TIRE INFORMATION

Test Vehicle: 2004 Ford F-150 Supercrew 4-Dr NHTSA No.: M40204
Test Program: 35mph Frontal Impact Test Date: 01/06/04

Vehicle Year	2004	Vehicle Make	Ford
VIN	1FTRW12W24KA12416	Vehicle Model	F-150 SuperCrew



	Front	Rear
Tire Manufacturer	Continental	Continental
Tire Name	Contitrac	Contitrac
Tire Type	Tubeless Radial	Tubeless Radial
Tire Width (mm)	255	255
Ratio of Height to Width (aspect ratio)	65	65
Radial	R	R
Wheel Diameter	17 inches	17 inches
Load Index & Speed Symbol	108S	108S
Treadwear	520	520
Traction Grade	A	A
Temperature Grade	B	B

DATA SHEET NO. 4

POST IMPACT DATA

Test Vehicle: 2004 Ford F-150 Supercrew 4-Dr NHTSA No.: M40204
Test Program: 35mph Frontal Impact Test Date: 01/06/04

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	56.5
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	5554	5138	416
Center	mm	5694	5087	607
Right Side	mm	5552	5144	408

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	525
Center	mm	574
Right Side	mm	537
Average	mm	545

DATA SHEET NO. 5

TEST VEHICLE INFORMATION

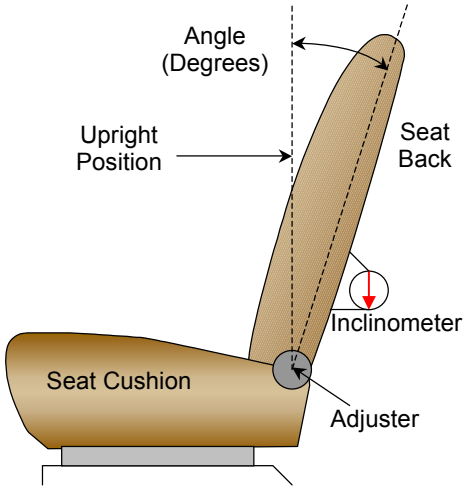
Test Vehicle: 2004 Ford F-150 Supercrew 4-Dr NHTSA No.: M40204
Test Program: 35mph Frontal Impact Test Date: 01/06/04

NORMAL DESIGN RIDING POSITION

The driver and passenger seat back is positioned to the manufacturer's designated angle. The procedure is as follows:

The designated seat back angle is 18.5°. The seat back angle is measured relative to the rocker sill. Remove the seat back panel and position inclinometer 13 inches above the back pivot point on the rear outboard seat frame.

Driver seat back angle: 19.4°
Passenger seat back angle: 19.0°



FRONT SEAT ASSEMBLY

SEAT FORE/AFT POSITIONS

For all seats: Position the seat in the mechanical mid-position. Reference points are scribed on the seat and the seat track. The total seat travel is measured and the seat is then positioned in the center of seat travel. On manual seats, position at the mid-point track location or the next closest position to the rear of the mid-point travel location.

Driver seat fore/aft total travel: 220 mm
Passenger seat fore/aft total travel: 23 notches
Driver seat fore/aft position: 110 mm
Passenger seat fore/aft position: 12 of 23

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 F-150 Supercrew 4-Dr	NHTSA No.:	M40204
Test Program:	35mph Frontal Impact	Test Date:	01/06/04

FUEL TANK CAPACITY DATA

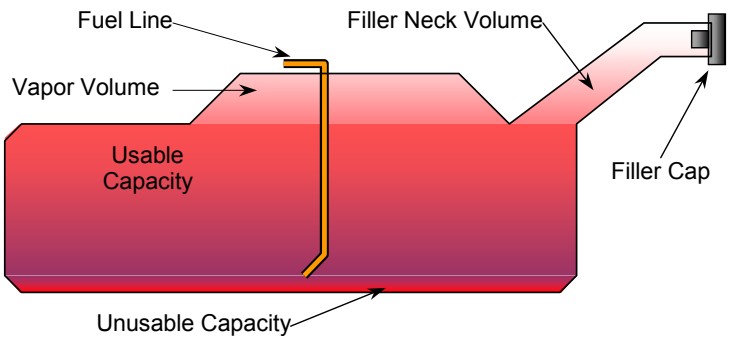
The "Usable Capacity" of the standard equipment fuel tank is: 113.6 liters

The "Usable Capacity" of any optional equipment fuel tank is: N/A liters

The "Usable Capacity" used for certification to FMVSS 301 requirements: 102.2-107.9 liters

Actual amount of Stoddard solvent added to vehicle for certification test: 106.7 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 still running. If the engine stalls the engine 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. The fuel tank is packaged on the driver side along the frame rail with straps attached to the 3rd and 4th frame cross members.



VEHICLE FUEL TANK ASSEMBLY

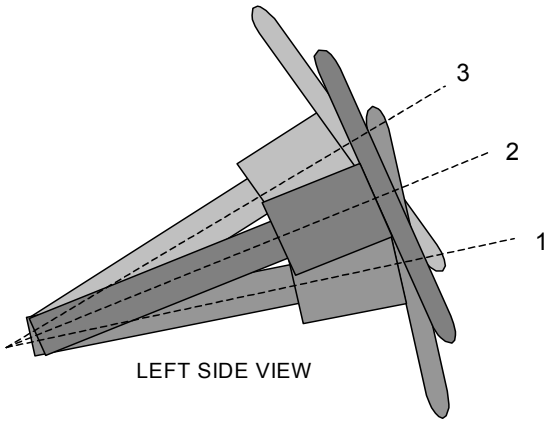
STEERING COLUMN ADJUSTMENT

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

Lowermost, position 1: 17.4 °

Geometric center, position 2: 20.6 °

Uppermost. Position 3: 23.8°



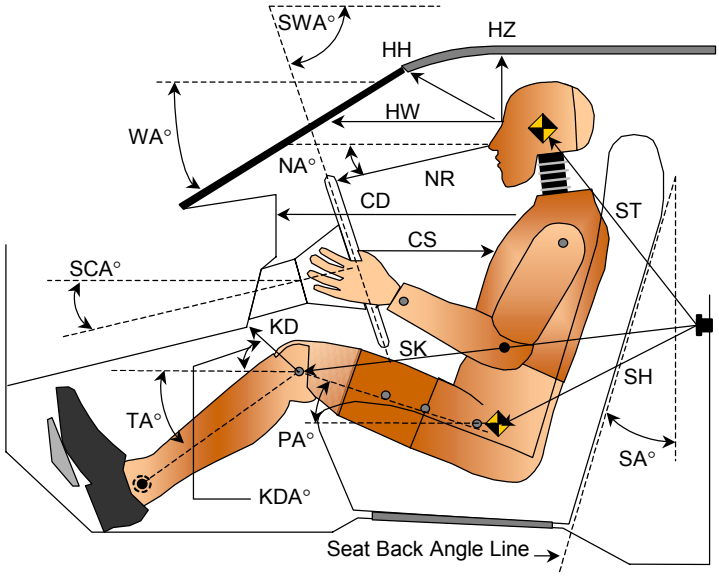
STEERING COLUMN ASSEMBLY

DATA SHEET NO. 6

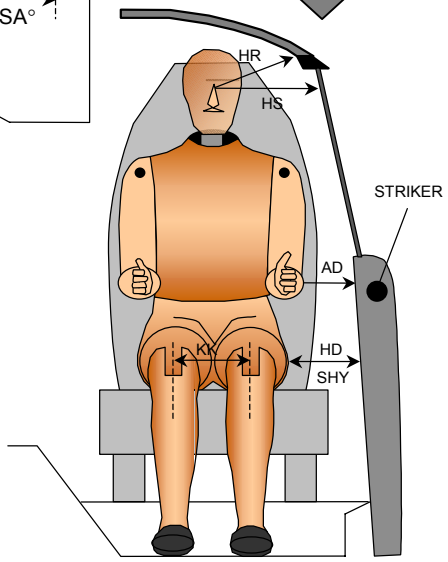
DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2004 Ford F-150 Supercrew 4-Dr NHTSA No.: M40204
Test Program: 35mph Frontal Impact Test Date: 01/06/04

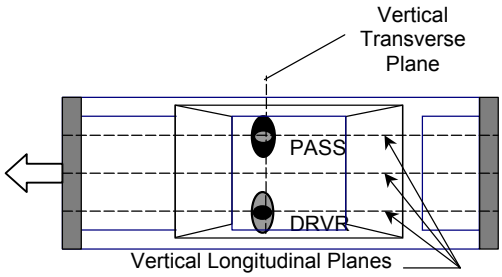
DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS



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 F-150 Supercrew 4-Dr NHTSA No.: M40204
Test Program: 35mph Frontal Impact Test Date: 01/06/04

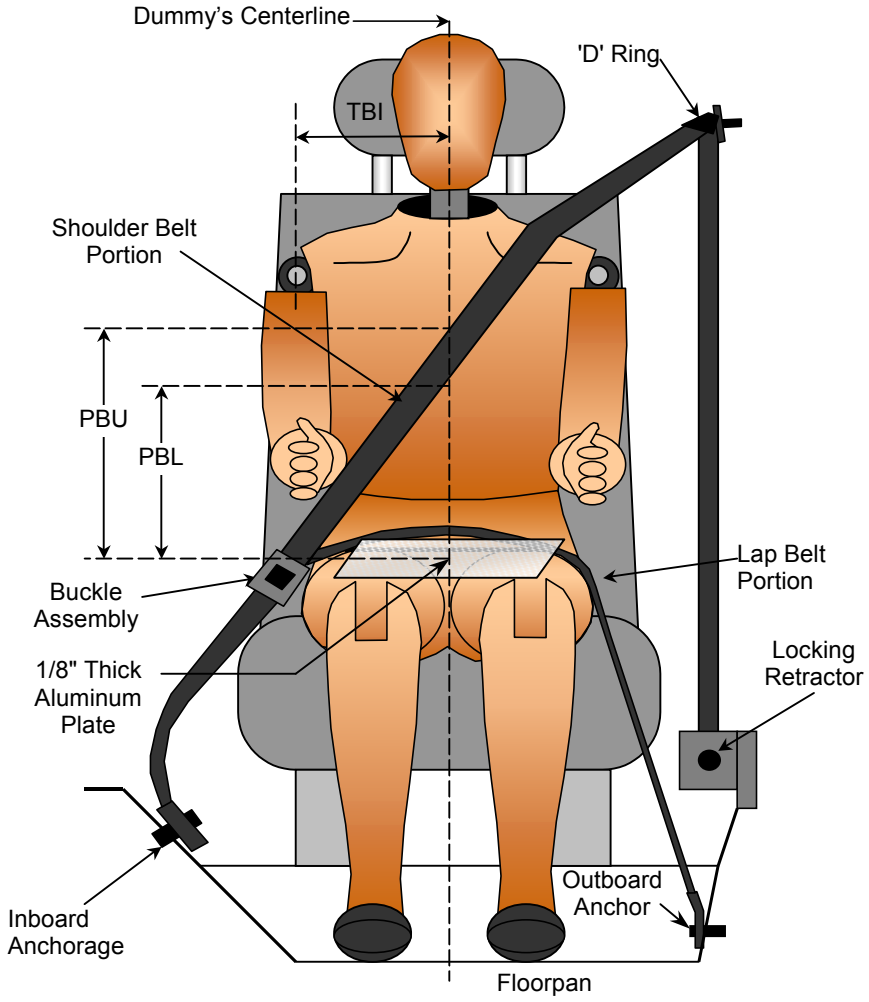
TEST DUMMY POSITION MEASUREMENTS

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA	Windshield Angle		35.8		
SWA	Steering Wheel Angle		69.4		
SCA	Steering Column Angle		20.7		
SA	Seat Back Angle		19.4		19.0
HZ	Head to Roof (Z)	218	90.0	200	90.0
HH	Head to Header	443	18.4	444	15.4
HW	Head to Windshield	651	0.0	657	0.0
HR	Head to Side Header (Y)	214		202	
NR	Nose to Rim	389	19.0		
CD	Chest to Dash	602		605	
CS	Chest to Steering Hub	331	13.6		
RA	Rim to Abdomen	197	0.0		
KDL	Left Knee to Dash	173	27.0	165	
KDR	Right Knee to Dash	165		164	22.5
PA	Pelvic Angle		21.8		21.3
TA	Tibia Angle		48.6		55.0
KK	Knee to Knee (Y)	305		276	
SK	Striker to Knee	600	90.3	609	90.9
ST	Striker to Head	617	11.3	631	9.4
SH	Striker to H-Point	191	104.0	206	102.2
SHY	Striker to H-Point (Y)	292		280	
HS	Head to Side Window	347		346	
HD	H-Point to Door (Y)	200		187	
AD	Arm to Door (Y)	147		140	
AA	Ankle to Ankle	287		214	

DATA SHEET NO. 7

SEAT BELT POSITIONING DATA

Test Vehicle: 2004 Ford F-150 Supercrew 4-Dr NHTSA No.: M40204
Test Program: 35mph Frontal Impact Test Date: 01/06/04



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	334	334
PBL - To surface of reference to belt lower edge	mm	256	252

DATA SHEET NO. 8

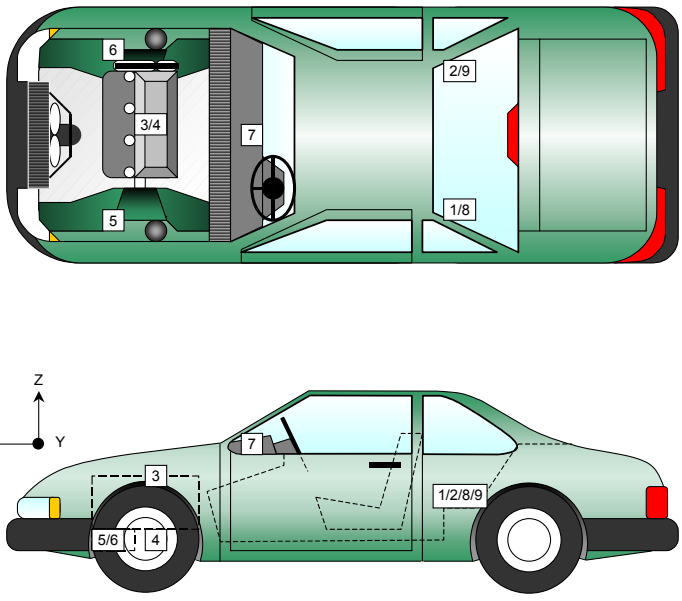
VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY

Test Vehicle: 2004 Ford F-150 Supercrew 4-Dr NHTSA No.: M40204
Test Program: 35mph Frontal Impact Test Date: 01/06/04

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	2416	-702	850	G's	2.1	153	-33.1	27
2	Right Rear X-Member X	2403	703	851	G's	1.9	152	-35.7	40
3	Engine Top X	4700	-15	1050	G's	7.7	66	-63.8	48
4	Engine Bottom X	4795	45	390	G's	36.3	73	-70.3	53
5	Left Brake Caliper X	4620	-727	265	G's	46.1	62	-113.3	45
6	Right Brake Caliper X	4615	727	261	G's	33.9	60	-118.0	47
7	Instrument Panel X	3939	0	1365	G's	16.8	92	-71.7	65
8	Left Rear X-Member Z	2416	-702	850	G's	16.4	55	-13.2	115
9	Right Rear X-Member Z	2403	703	851	G's	34.9	41	-24.6	47

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 F-150 Supercrew 4-Dr
Test Program: 35mph Frontal Impact
NHTSA No.: M40204
Test Date: 01/06/04

HEAD PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	1.6	30	-47.5	89	4.7	27	-67.9	83
Head CG	Y	G's	11.8	107	-8.3	29	7.2	71	-7.6	138
Head CG	Z	G's	30.6	77	-2.6	140	28.0	72	-3.5	127
Head CG Resultant	N/A	G's	54.2	89			70.5	83		

CHEST PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	2.4	140	-37.3	51	1.6	185	-39.1	79
Chest CG	Y	G's	7.7	93	-9.4	53	4.1	51	-10.7	83
Chest CG	Z	G's	9.1	71	-6.4	123	13.2	91	-10.1	124
Chest CG Resultant	N/A	G's	38.5	51			40.5	80		

FEMUR PEAK FORCES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Femur	Z	Newtons	673	42	-2397	51	800	46	-2260	58
Right Femur	Z	Newtons	1045	42	-3116	56	877	43	-3072	63

SEAT BELT SENSOR PEAK VALUES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Lap Belt Force	N/A	Newtons	7346	55			7726	57		
Shoulder Belt Force	N/A	Newtons	4861	50			4588	51		

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	550.9	47.2	69.2	105.2	590.2	50.9	70.1	102

CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T^1	T^2	CLIP	T^1	T^2
Chest CG Primary	37.9	50.3	53.3	39.5	78.4	81.4

DATA SHEET NO. 9... (continued)

HYBRID III ATD INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2004 Ford F-150 Supercrew 4-Dr NHTSA No.: M40204
Test Program: 35mph Frontal Impact Test Date: 01/06/04

PELVIC PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Pelvis	X	G's	3.7	128	-63.8	55	8.4	119	-65.6	57
Pelvis	Y	G's	13.5	83	-9.2	52	*	*	*	*
Pelvis	Z	G's	1.6	151	-16.4	60	3.4	31	-18.1	71

* No Valid Data collected after 40ms

UPPER NECK PEAK FORCES AND MOMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Neck Force	X	Newtons	244	69	-419	121	295	95	-518	156
Neck Force	Y	Newtons	292	130	-92	90	294	82	-302	138
Neck Force	Z	Newtons	1777	78	-155	140	2232	81	-156	129
Neck Moment	X	N•m	15.4	137	-8.5	107	19.0	111	-21.3	149
Neck Moment	Y	N•m	33.5	101	-18.4	50	37.6	166	-35.9	81
Neck Moment	Z	N•m	5.1	174	-9.7	119	16.3	109	-13.2	163

FOOT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Foot Aft	X	G's	18.3	87	-70.8	48	22.2	73	-89.7	39
Left Foot Aft	Z	G's	8.7	60	-25.5	88	9.1	36	-39.9	62
Left Foot Fore	Z	G's	19.9	59	-32	67	36.3	76	-88.1	42
Right Foot Aft	X	G's	16.2	82	-101.8	44	16.4	87	-69.4	55
Right Foot Aft	Z	G's	13.1	71	-84.3	51	3.8	38	-23.5	64
Right Foot Fore	Z	G's	34.9	70	-161.7	51	22.2	68	-77.5	45

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	12.2	51	-3.5	185	6.1	33	-13.5	85
Left Lower Moment	Y	N•m	36.1	53	-28.1	86	63.1	62	-17.3	94
Left Lower Force	Z	Newtons	92	27	-1415	88	118	27	-1669	94
Left Upper Moment	X	N•m	39.1	51	-12.8	185	28.0	66	-23.0	51
Left Upper Moment	Y	N•m	33.0	44	-81.2	53	5.7	105	-89.1	65
Left Upper Force	Z	Newtons	138	32	-1543	51	196	146	-1258	94
Right Lower Moment	X	N•m	21.3	72	-18.2	52	16.3	45	-4.1	119
Right Lower Moment	Y	N•m	55.3	52	-97.8	72	20.1	43	-81.2	65
Right Lower Force	Z	Newtons	236	33	-1548	59	202	52	-1278	83
Right Upper Moment	X	N•m	67.4	53	-7.9	197	16.3	113	-57.1	51
Right Upper Moment	Y	N•m	32.1	46	-55.2	65	134.4	65	-25.1	43
Right Upper Force	Z	Newtons	312	39	-1328	59	177	34	-1800	82

DATA SHEET NO. 9... (continued)

HYBRID III ATD INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2004 Ford F-150 Supercrew 4-Dr
Test Program: 35mph Frontal Impact
NHTSA No.: M40204
Test Date: 01/06/04

CHEST PEAK DISPLACEMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	mm			-29.0	92			-26.1	89

HEAD REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	2.1	28	-46.2	92	3.8	29	-65.3	87
Head CG	Y	G's	10.6	107	-7.7	30	7.6	71	-8.5	138
Head CG	Z	G's	32.3	76	-6.2	134	29.3	73	-4.3	123
Head CG Resultant	N/A	G's	52.0	91			67.2	85		

CHEST REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	2.1	139	-37.2	51	1.8	185	-39.4	80
Chest CG	Y	G's	7.7	94	-8.5	53	3.4	49	-10.0	83
Chest CG	Z	G's	9.9	70	-7.0	129	13.7	84	-10.0	131
Chest CG Resultant	N/A	G's	38.5	51			41.0	80		

REDUNDANT HEAD INJURY CRITERIA (HIC)

Location	Driver				Passenger			
	HIC	Avg.	T^1	T^2	HIC	Avg.	T^1	T^2
Head CG Primary Redundant	532.8	46.6	68.8	104.8	597.8	50.9	69.9	102.1

REDUNDANT CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T^1	T^2	CLIP	T^1	T^2
Chest CG Primary Redundant	37.9	50.0	53.0	39.8	78.8	81.8

DATA SHEET NO. 10

SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

Test Vehicle: 2004 Ford F-150 Supercrew 4-Dr
Test Program: 35mph Frontal Impact
NHTSA No.: M40204
Test Date: 01/06/04

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	334	334
PBL - Top surface of reference to belt lower edge	mm	256	252

BELT LENGTH DATA

Measurement Description	Units	Driver	Passenger
Retractor reel to "D" ring	mm	229	229
Shoulder belt length as measured on ATD	mm	839	836
Lap belt length as measured on ATD	mm	836	841
Remainder of belt on reel	mm	1189	1198
Total belt length for continuous webbing systems	mm	3093	3104

SHOULDER BELT SPOOL-OUT DATA

Measurement Description	Units	Driver	Passenger
As determined mechanically	mm	Not recorded	
As determined electronically	mm	Not recorded	

DATA SHEET NO. 11

SUMMARY OF FMVSS 212 DATA

Test Vehicle: 2004 Ford F-150 Supercrew 4-Dr
Test Program: 35mph Frontal Impact
NHTSA No.: M40204
Test Date: 01/06/04

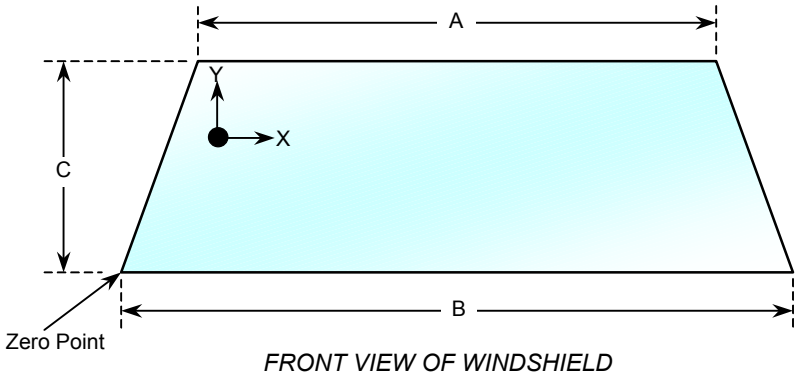
Windshield Mounting Details:
Windshield glass is secured to the vehicle frame with a rubber trim and glue.

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	2387	2387	100
Right Side	2387	2387	100
Total	4774	4774	100



FRONT VIEW OF WINDSHIELD

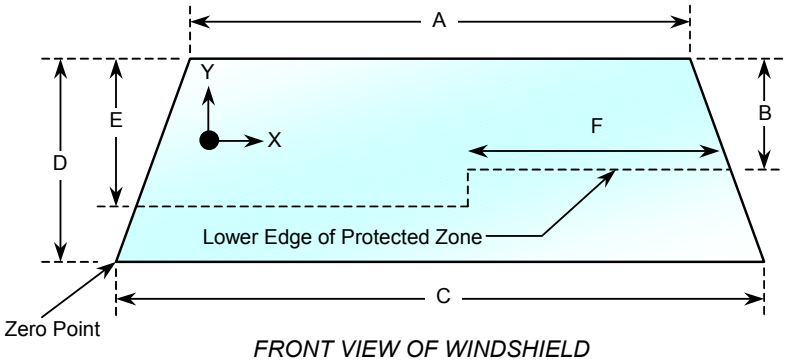
WINDSHIELD DIMENSIONS

Item	Units	Segment Length	Molding Width
A	mm	1429	6
B	mm	1804	0
C	mm	770	27

DATA SHEET NO. 12

WINDSHIELD ZONE INTRUSION FMVSS 219 (Partial) DATA

Test Vehicle: 2004 Ford F-150 Supercrew 4-Dr NHTSA No.: M40204
Test Program: 35mph Frontal Impact Test Date: 01/06/04



FRONT VIEW OF WINDSHIELD

Item	Units	Value
A	mm	1429
B	mm	510
C	mm	1804
D	mm	770
E	mm	505
F	mm	590

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 F-150 Supercrew 4-Dr NHTSA No.: M40204
Test Program: 35mph Frontal Impact Test Date: 01/06/04

Temperature at Time of Impact: 21° C Test Time: 11:32 am

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)

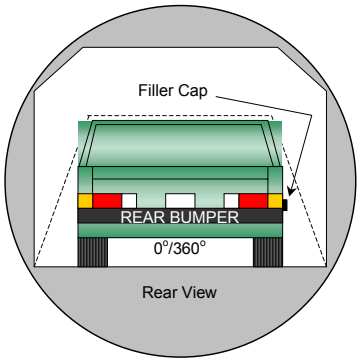
D. Spillage: None

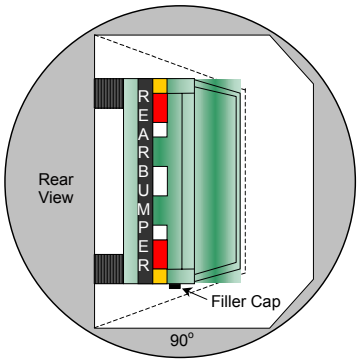
DATA SHEET NO. 14

FMVSS 301 STATIC ROLLOVER DATA

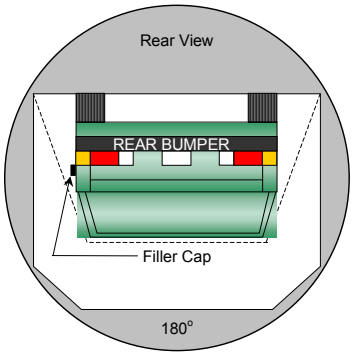
Test Vehicle: 2004 Ford F-150 Supercrew 4-Dr NHTSA No.: M40204
Test Program: 35mph Frontal Impact Test Date: 01/06/04

Test Time: 11:32 am

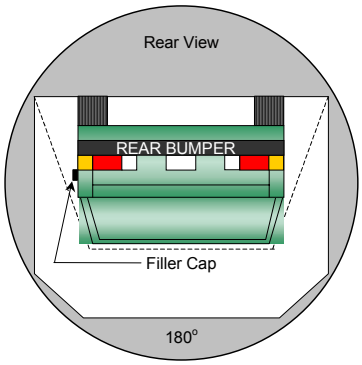




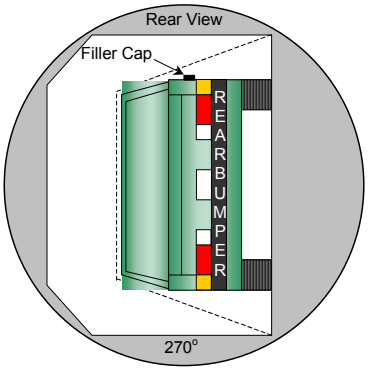
0° to 90°

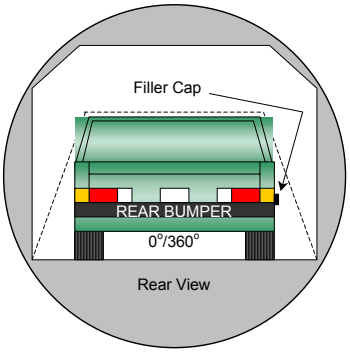


90° to 180°



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°	164	300	0
90° to 180°	156	300	0
180° to 270°	139	300	0
270° to 360°	162	300	0

DATA SHEET NO. 15

VEHICLE MEASUREMENTS

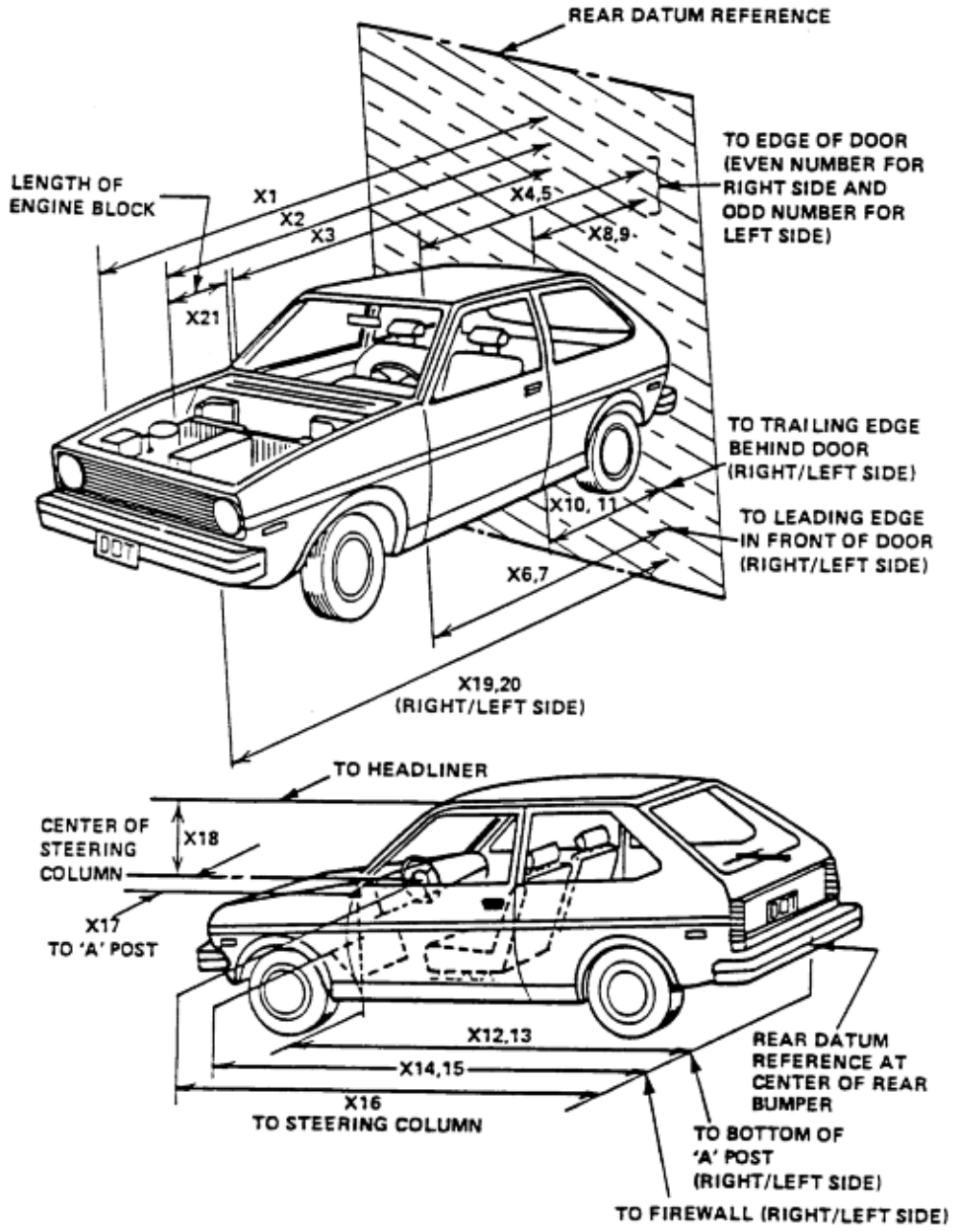
Test Vehicle: 2004 Ford F-150 Supercrew 4-Dr NHTSA No.: M40204
Test Program: 35mph Frontal Impact Test Date: 01/06/04

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total length of vehicle at centerline	mm	5694	5087	607
2	RSOV to front of engine	mm	4885	4712	173
3	RSOV to firewall centerline	mm	4593	4387	206
4	RSOV to leading edge of right door	mm	4130	4123	7
5	RSOV to leading edge of left door	mm	4127	4125	2
6	RSOV to lower leading edge of right door	mm	4088	4090	-2
7	RSOV to lower leading edge of left door	mm	4095	4099	-4
8	RSOV to upper leading edge of right door	mm	3047	3041	6
9	RSOV to upper leading edge of left door	mm	3052	3042	10
10	RSOV to lower trailing edge of right door	mm	3040	3024	16
11	RSOV to lower trailing edge of left door	mm	3031	3034	-3
12	RSOV to bottom of right 'A' pillar	mm	4052	4048	4
13	RSOV to bottom of left 'A' pillar	mm	4055	4050	5
14	RSOV to firewall on right side	mm	4440	4442	-2
15	RSOV to firewall on left side	mm	4449	4416	33
16	RSOV to steering column	mm	3653	3649	4
17	Center of steering column to left 'A' pillar	mm	455	442	13
18	Center of steering column to headlining	mm	460	437	23
19	RSOV to right side of front bumper	mm	5552	5144	408
20	RSOV to left side of front bumper	mm	5554	5138	416
21	Length of engine block	mm	560	560	0
RD	RSOV to right side of dash panel	mm	3635	3917	-282
CD	RSOV to center of dash panel	mm	3901	3903	-2
LD	RSOV to left side of dash panel	mm	3670	3914	-244

DATA SHEET NO. 15... (continued)

VEHICLE MEASUREMENTS

Test Vehicle:	2004 Ford F-150 Supercrew 4-Dr	NHTSA No.:	M40204
Test Program:	35mph Frontal Impact	Test Date:	01/06/04



DATA SHEET NO. 15... (continued)

VEHICLE MEASUREMENTS

Test Vehicle: 2004 Ford F-150 Supercrew 4-Dr NHTSA No.: M40204
Test Program: 35mph Frontal Impact Test Date: 01/06/04

Target Vehicle Structural Measurement

	Elements	Pre-Test (mm)
1	Total Length	5694
2	Total Width	1984
3	Bumper Top Height	710
4	Bumper Bottom Height	393
5	Longitudinal Member Top Height	549
6	Distance between Longitudinal Members	765
7	Longitudinal Member Width	95
8	Engine Top Height	1140
9	Engine Bottom Height	275
10	Engine and gearbox width	720
11	Front bumper-engine distance	785
12	Front shock absorber fixing height	820
13	Bonnet leading edge height	738
14	Front shock absorber fixing width	960
15	Front bumper – front axle distance	992
16	Front axle – a pillar distance	570
17	A-pillar – B-pillar distance	1150
18	B-Pillar – rear axle distance	1795
19	B-pillar – C-pillar distance	950
20	Roof sill bottom height	1770
21	Roof sill top height	1840
22	Floor sill bottom height	388
23	Floor sill top height	427

DATA SHEET NO. 16

CAMERA LOCATIONS

Test Vehicle: 2004 Ford F-150 Supercrew 4-Dr NHTSA No.: M40204
Test Program: 35mph Frontal Impact Test Date: 01/06/04

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	-8470	1570	25	1015
3	Steering Column Top	2280	-8510	1570	25	1005
4	Steering Column Bottom	2280	-8510	1030	25	905
5	Driver Close-up	1560	-8300	1570	50	1000
6	Driver Angle	4880	-5000	2010	50	1198
7	Left Rear				13	*
8	Right Rear				13	541
9	Right Overall	2230	8280	1670	13	599
10	Right Passenger Half	840	8310	1630	25	510
11	Right Close-up	1530	9850	1650	50	581
12	Right Angle	4900	5510	2110	50	1010
13	Windshield	460	0	2960	13	1015
14	Top Driver	-120	-500	2280	13	1010
15	Top Passenger	-120	530	2280	13	1010
16	Pit Front	1020	0	-3020	13	1005
17	Pit Rear	2970	0	-3010	13	1015

*COORDINATES:

+X = film plane rearward of barrier

+Y = film plane to right of monorail centerline

+Z = film plane above ground level

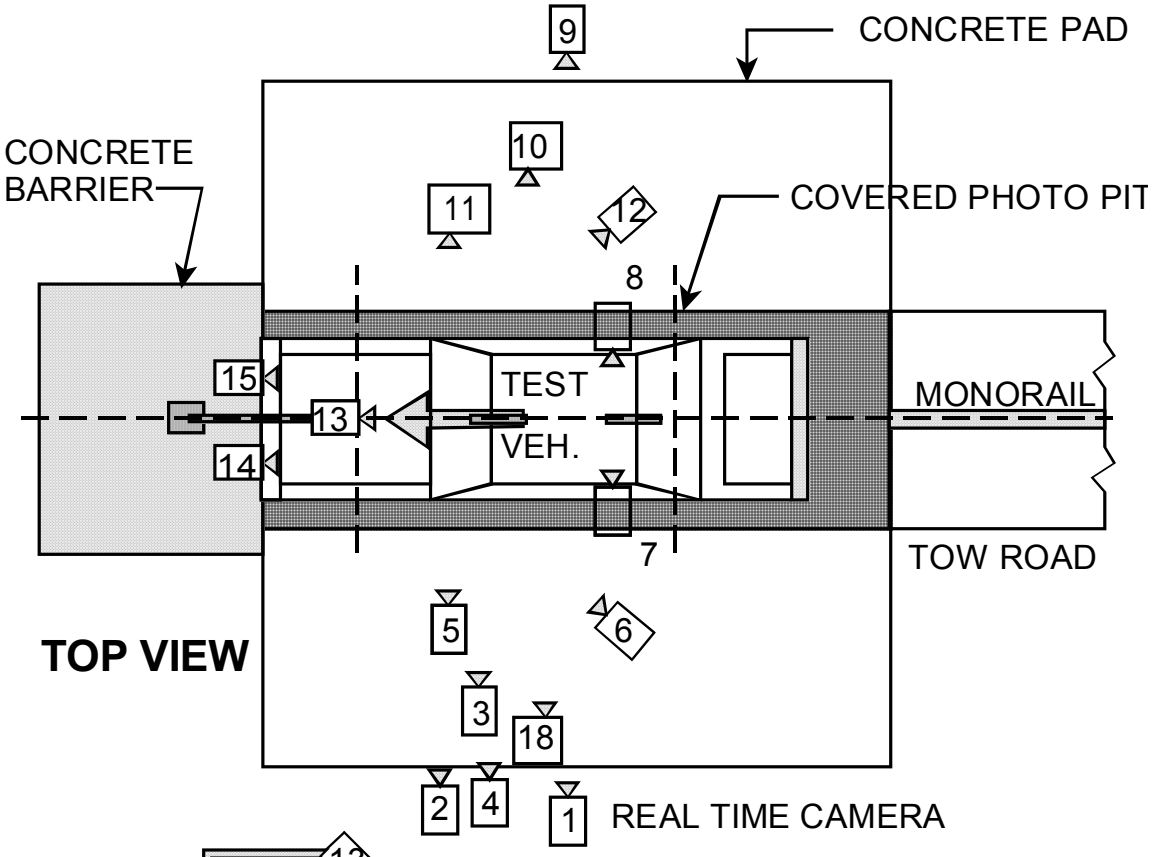
* no timing marks

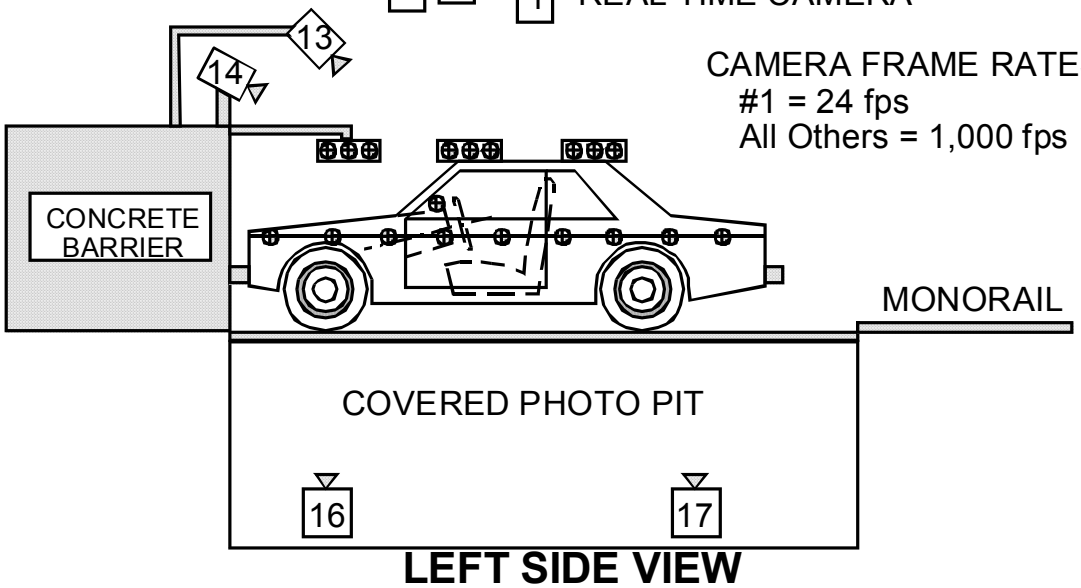
DATA SHEET NO. 16... (continued)

CAMERA LOCATIONS

Test Vehicle: 2004 Ford F-150 Supercrew 4-Dr NHTSA No.: M40204
Test Program: 35mph Frontal Impact Test Date: 01/06/04

CAMERA POSITIONS FOR FRONTAL IMPACTS



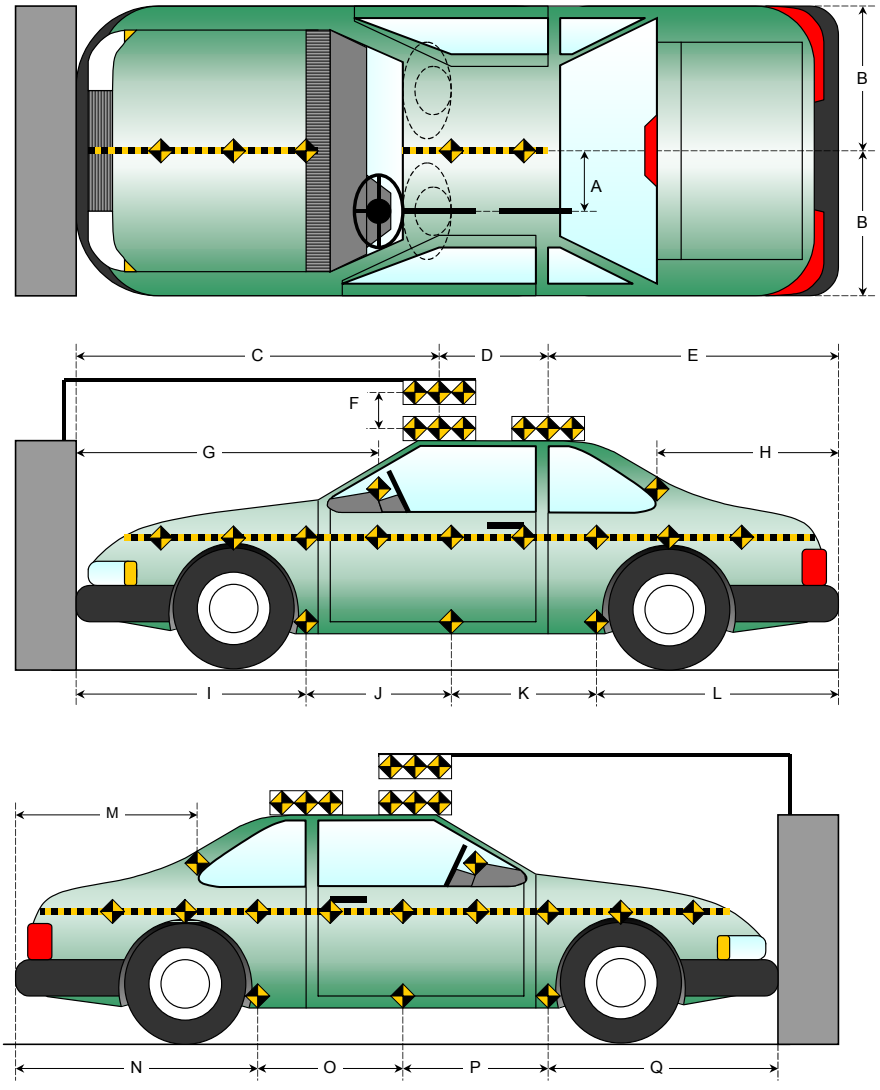


DATA SHEET NO. 17

PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2004 Ford F-150 Supercrew 4-Dr
Test Program: 35mph Frontal Impact
NHTSA No.: M40204
Test Date: 01/06/04

Item	Value
A	665
B	914
C	
D	
E	
F	
G	
H	2048
I	1515
J	603
K	591
L	2985
M	2054
N	3005
O	587
P	618
Q	1484



DATA SHEET NO. 18

VEHICLE INTRUSION MEASUREMENTS

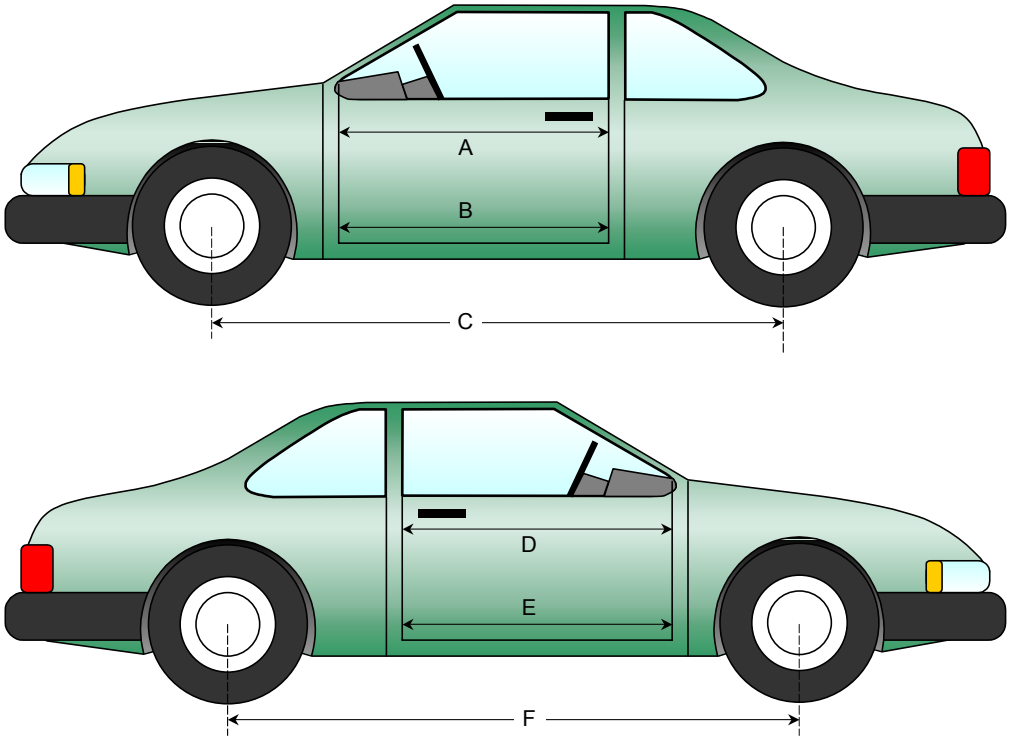
Test Vehicle: 2004 Ford F-150 Supercrew 4-Dr
Test Program: 35mph Frontal Impact
NHTSA No.: M40204
Test Date: 01/06/04

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	989	982	7
B	Left Side Lower	mm	970	967	3
D	Right Side Upper	mm	976	970	6
E	Right Side Lower	mm	971	968	3

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	3519	3419	100
F	Right Side Wheelbase	mm	3524	3427	97



DATA SHEET NO. 18... (continued)

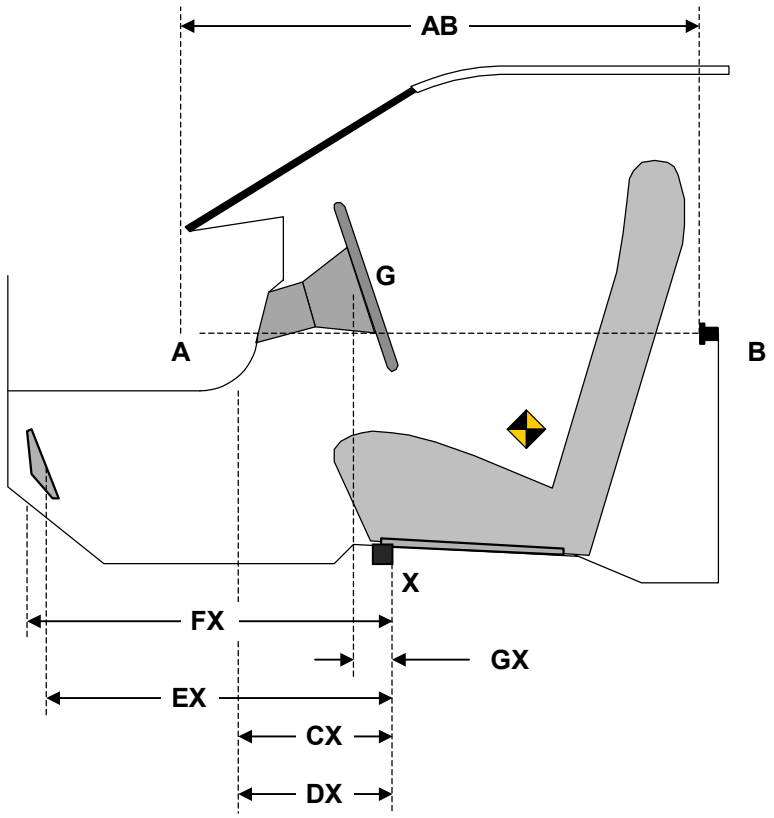
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2004 Ford F-150 Supercrew 4-Dr NHTSA No.: M40204
Test Program: 35mph Frontal Impact Test Date: 01/06/04

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside window jam)	mm	989	982	7
CX	Left Knee Bolster to X	mm	292	293	-1
DX	Right Knee Bolster to X	mm	301	287	14
EX	Brake Pedal to X	mm	520	498	22
FX	Foot Rest to X	mm	585	573	12
GX	Center of Steering Column Wheel Hub to X	mm	65	48	17

X = Left Front Seat Front Outboard Anchor Bolt Head



DRIVER COMPARTMENT

DATA SHEET NO. 18... (continued)

VEHICLE INTRUSION MEASUREMENTS

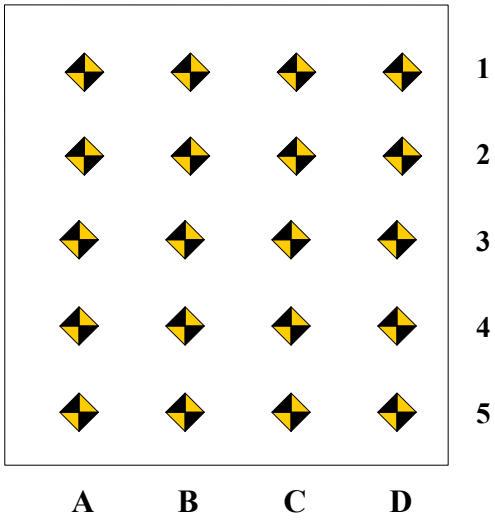
Test Vehicle: 2004 Ford F-150 Supercrew 4-Dr
Test Program: 35mph Frontal Impact
NHTSA No.: M40204
Test Date: 01/06/04

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		706	699	680		702	679	650		4	20	30
2		653	639	640		638	638	617		15	1	23
3	505	495	496	494	492	492	487	486	13	3	9	8
4	303	300	302	303	289	292	299	302	14	8	3	1
5	83	84	79	80	81	82	84	85	2	2	-5	-5

DRIVER FLOOR PAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1		-53	-40	-21		-42	-46	-28		-11	6	7
2		-110	-67	-77		-90	-69	-46		-20	2	-31
3	-135	-127	-131	-133	-125	-129	-122	-121	-10	2	-9	-12
4	-138	-130	-127	-130	-127	-126	-120	-131	-11	-4	-7	1
5	-115	-127	-73	-80	-123	-118	-61	-66	8	-9	-12	-14

DATA SHEET NO. 18... (continued)

VEHICLE INTRUSION MEASUREMENTS

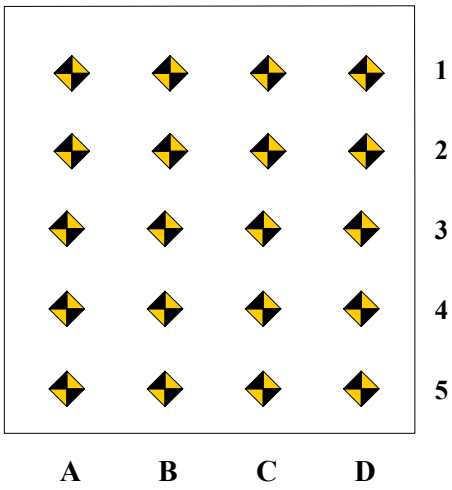
Test Vehicle: 2004 Ford F-150 Supercrew 4-Dr NHTSA No.: M40204
Test Program: 35mph Frontal Impact Test Date: 01/06/04

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	675	727	724		633	691	704		42	36	20	
2	615	620	635		592	605	628		23	15	7	
3	507	517	516	521	490	503	504	505	17	14	12	16
4	396	295	303	300	385	293	294	296	11	2	9	4
5	88	91	90	95	82	83	86	91	6	8	4	4

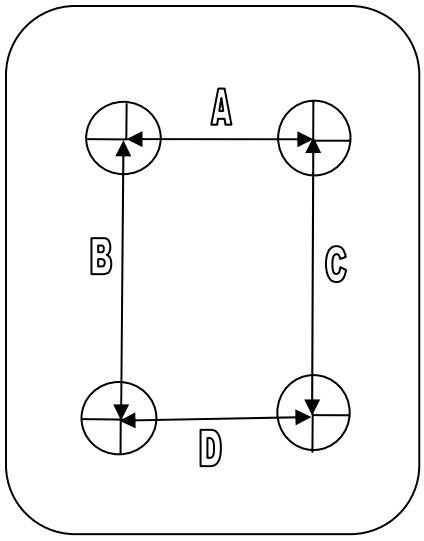
PASSENGER FLOOR PAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	0	-13	-5		20	7	2		-20	-20	-7	
2	-73	-71	-105		-67	-68	-102		-6	-3	-3	
3	-126	-133	-130	-133	-134	-143	-136	-130	8	10	6	-3
4	-124	-123	-129	-131	-147	-130	-128	-129	23	7	-1	-2
5	-90	-95	-122	-125	-94	-90	-120	-122	4	-5	-2	-3

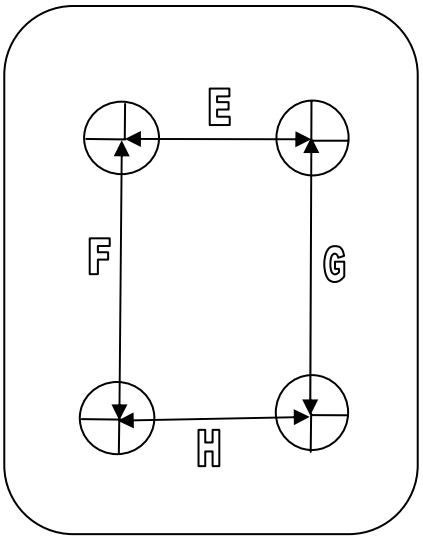
DATA SHEET NO. 18... (continued)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2004 Ford F-150 Supercrew 4-Dr NHTSA No.: M40204
Test Program: 35mph Frontal Impact Test Date: 01/06/04



Driver



Passenger

UNDERBODY FLOORBOARD DEFORMATION

Measurement	Pre-Test	Post-Test	Difference
A	385	408	-23
B	616	615	1
C	580	573	7
D	442	442	0
E	426	415	11
F	560	550	10
G	633	624	9
H	438	435	3

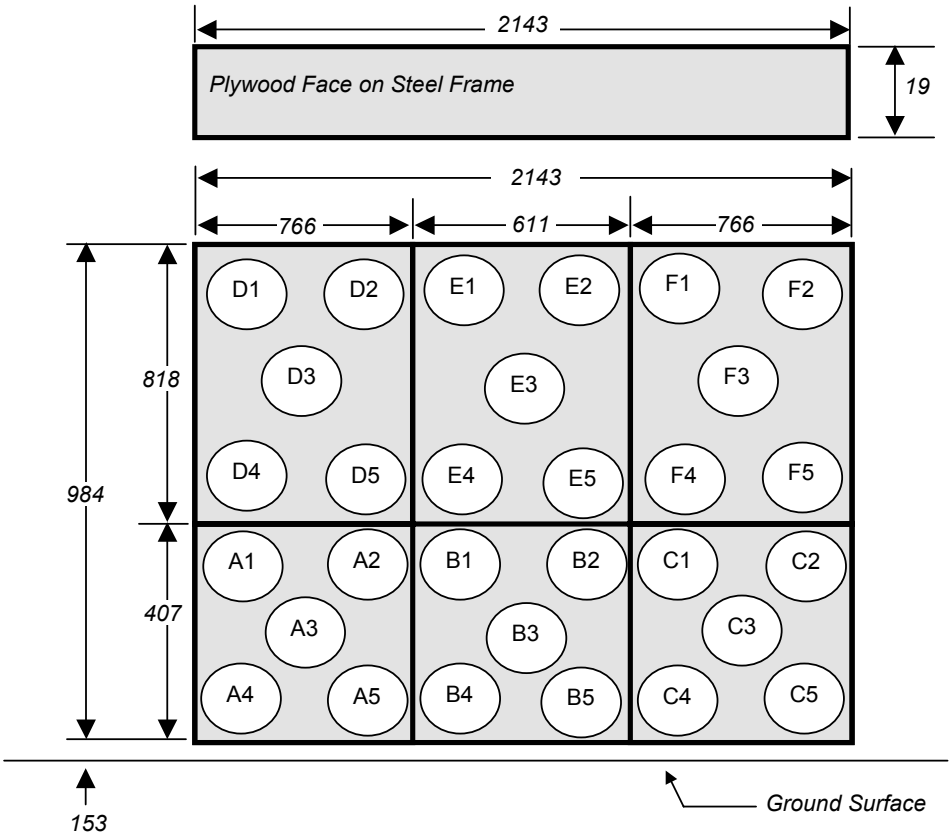
DATA SHEET NO. 19

LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle: 2004 Ford F-150 Supercrew 4-Dr NHTSA No.: M40204
Test Program: 35mph Frontal Impact Test Date: 01/06/04

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 F-150 Supercrew 4-Dr NHTSA No.: M40204
Test Program: 35mph Frontal Impact Test Date: 01/06/04

VEHICLE INFORMATION

VIN: 1FTRW12W24KA12416 Wheelbase (mm) : 3517
Vehicle Size Category: Truck Test Weight (kg) : 2661.8

ACCELEROMETER DATA

Accelerometer Locations: As per measurements on Page 14
Cal. Procedure/Interval: MGA procedure / 6 month
Integration Algorithm: Trapezoidal Linearity: > 99%
Impact Velocity (km/h): 56.5
Velocity Change (km/h): 60.9 Time of Separation (msec): 130

CRUSH PROFILE

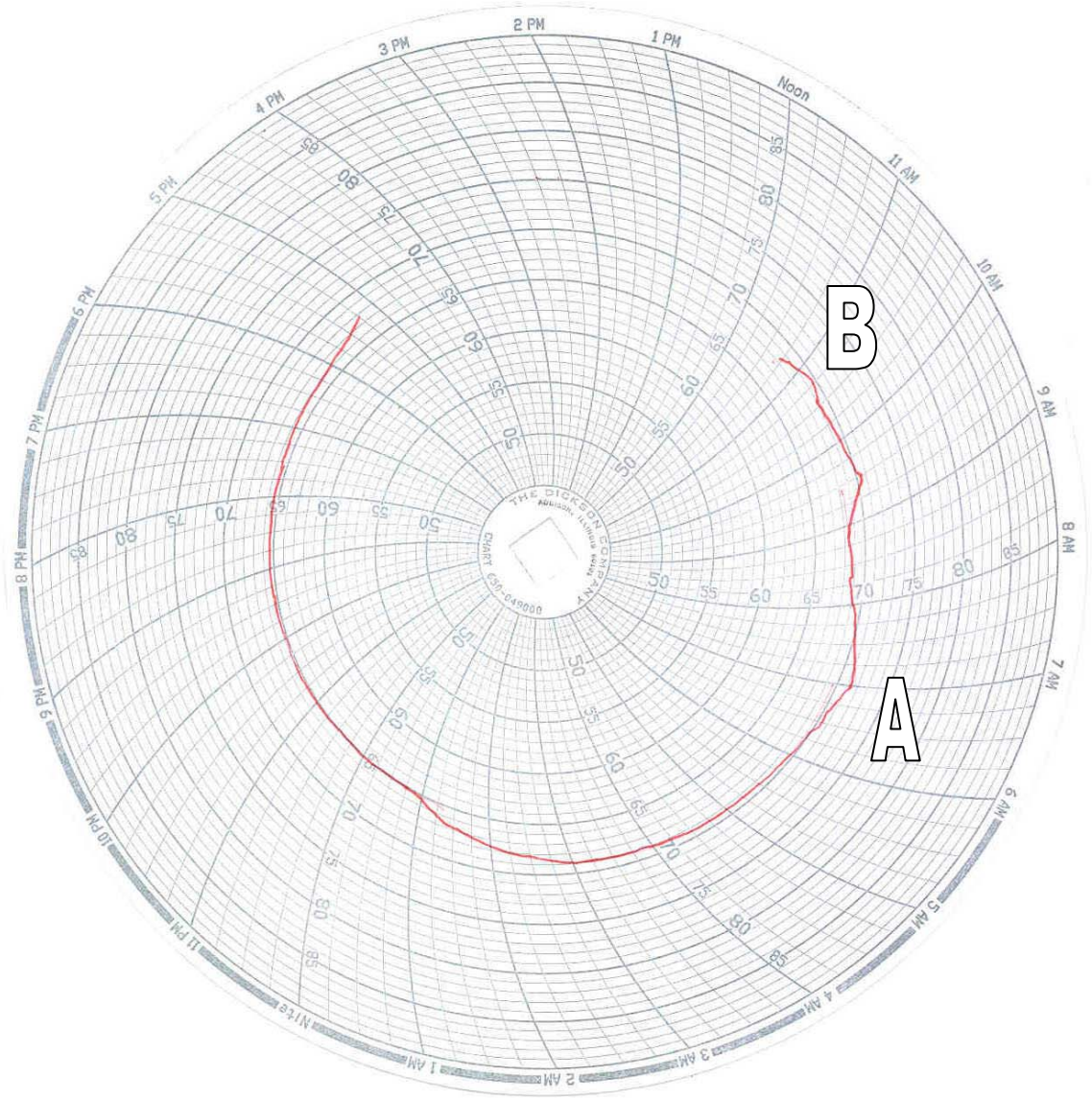
Collision Deformation Classification: Frontal Midpoint of Damage: Centerline
Damage Region Length (mm): 1524 Impact Mode: Frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	5554	5138	416
C2	Crush zone 2 at left side	mm	5657	5115	542
C3	Crush zone 3 at left side	mm	5680	5088	592
C4	Crush zone 4 at right side	mm	5680	5090	590
C5	Crush zone 5 at right side	mm	5653	5089	564
C6	Crush zone 6 at right side	mm	5552	5144	408
L	C1 TO C6	mm	1524	1469	55

DATA SHEET NO. 21

DUMMY / VEHICLE TEMPERATURE STABILIZATION CHART

Test Vehicle: 2004 Ford F-150 Supercrew 4-Dr NHTSA No.: M40204
Test Program: 35mph Frontal Impact Test Date: 01/06/04



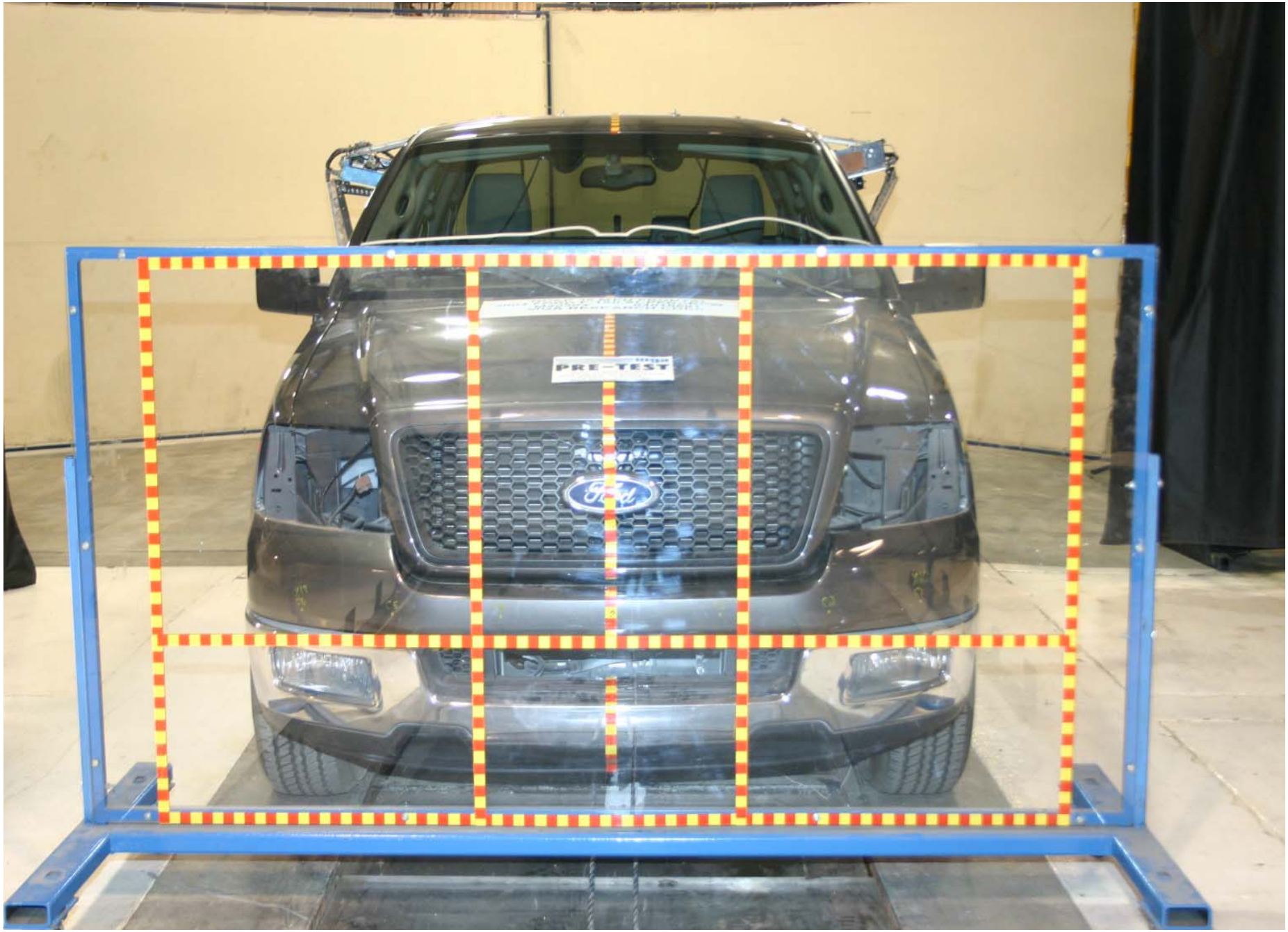
A = Dummies installed in vehicle at 7:00 a.m.

B = Test conducted at 11:32 a.m.

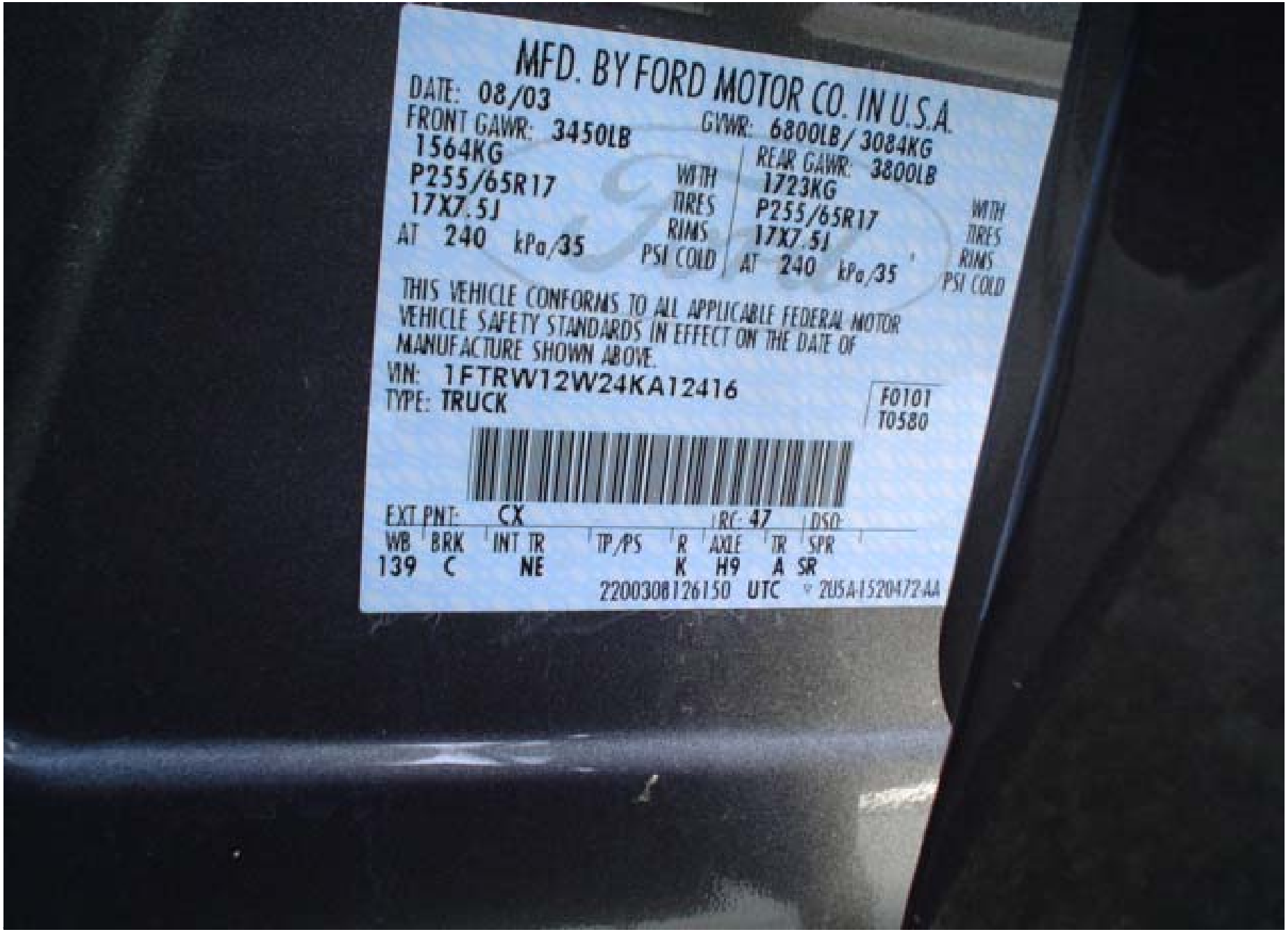
APPENDIX A

PHOTOGRAPHS

TABLE OF PHOTOGRAPHS



Load Cell Location



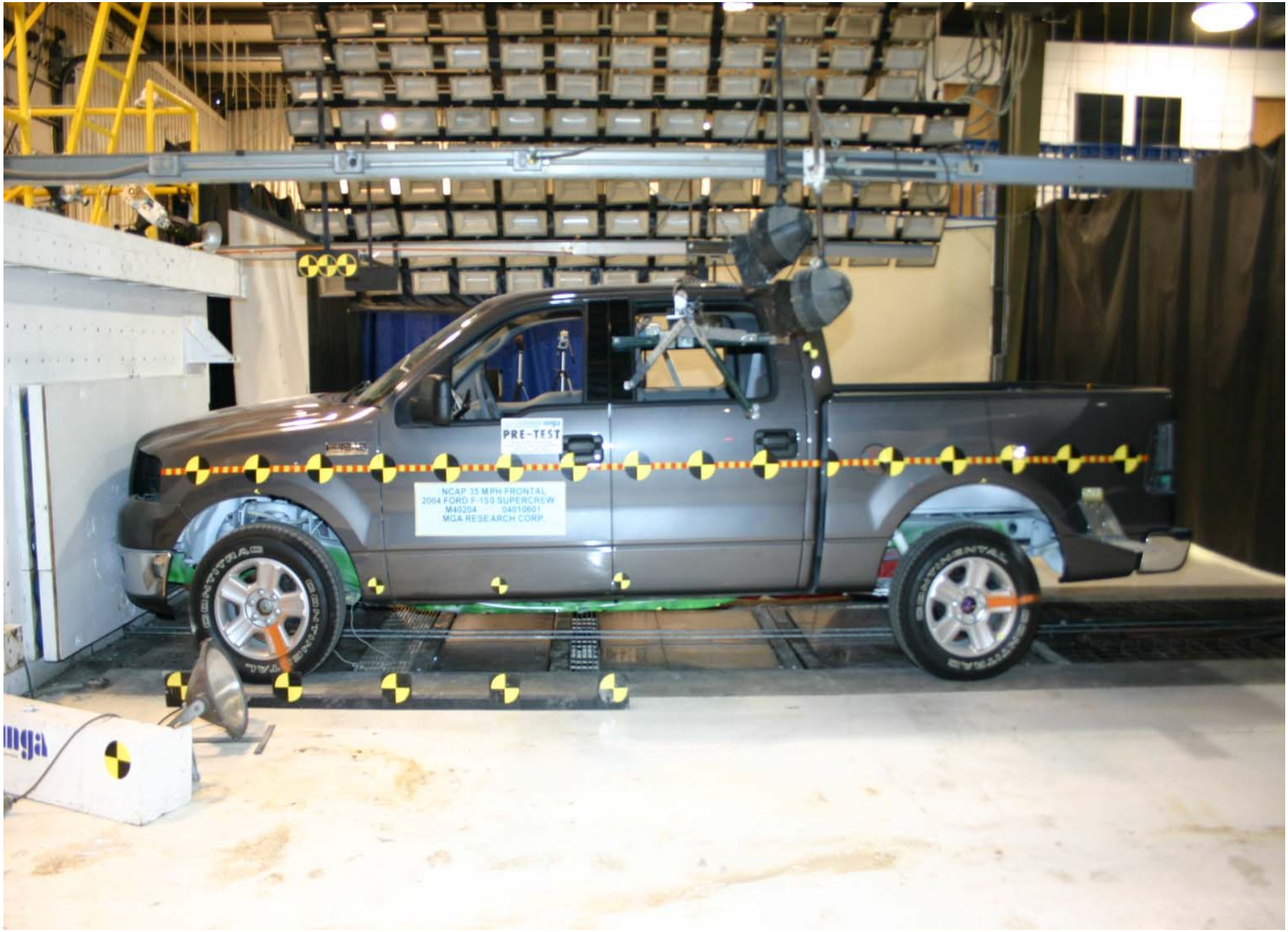
Vehicle Certification Label/Tire Placard

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

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

Pre-Test Windshield View

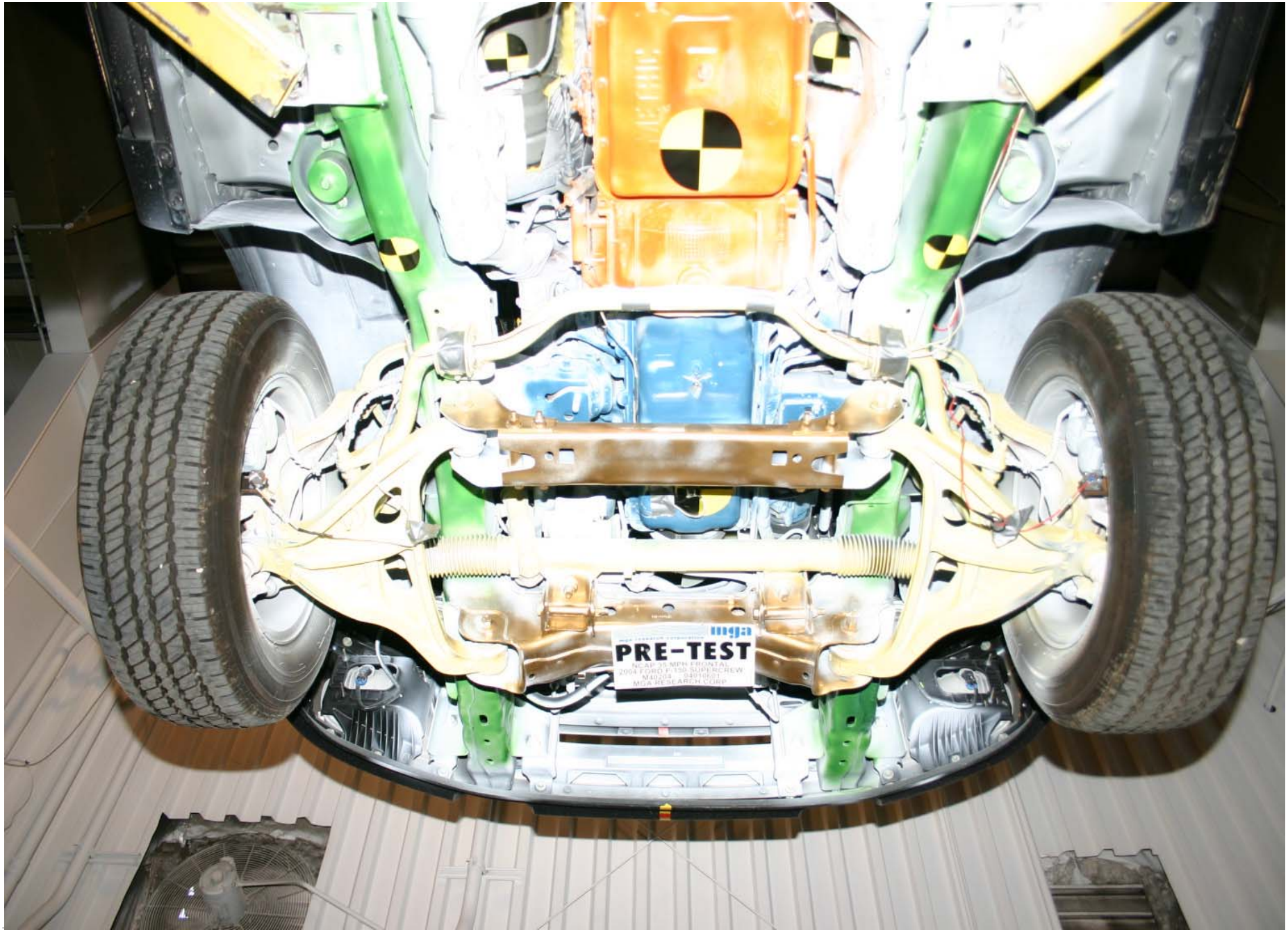
Post-Test Windshield View

Pre-Test Engine Compartment View

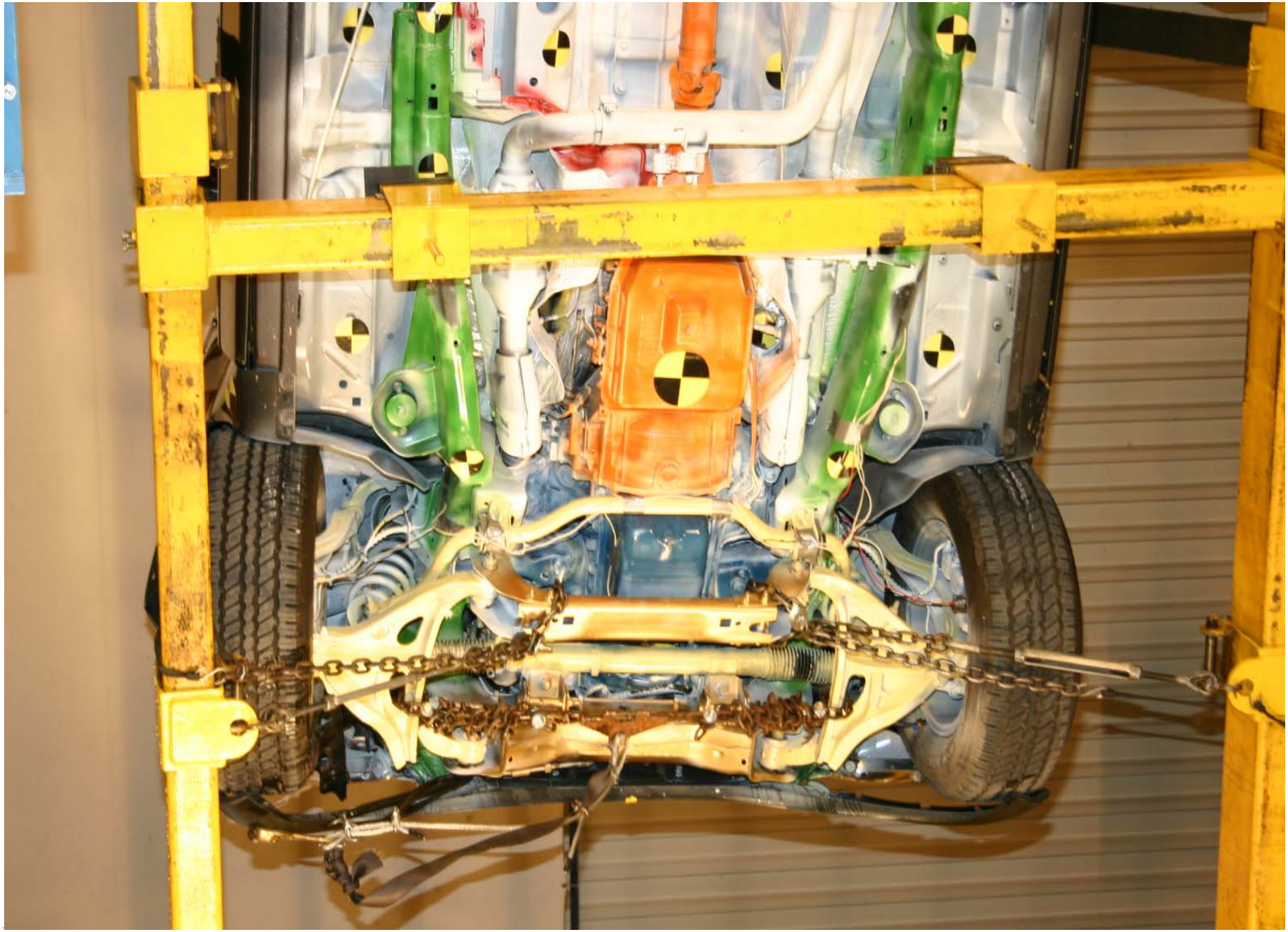
Post-Test Engine Compartment View

Pre-Test Fuel Filler Cap View

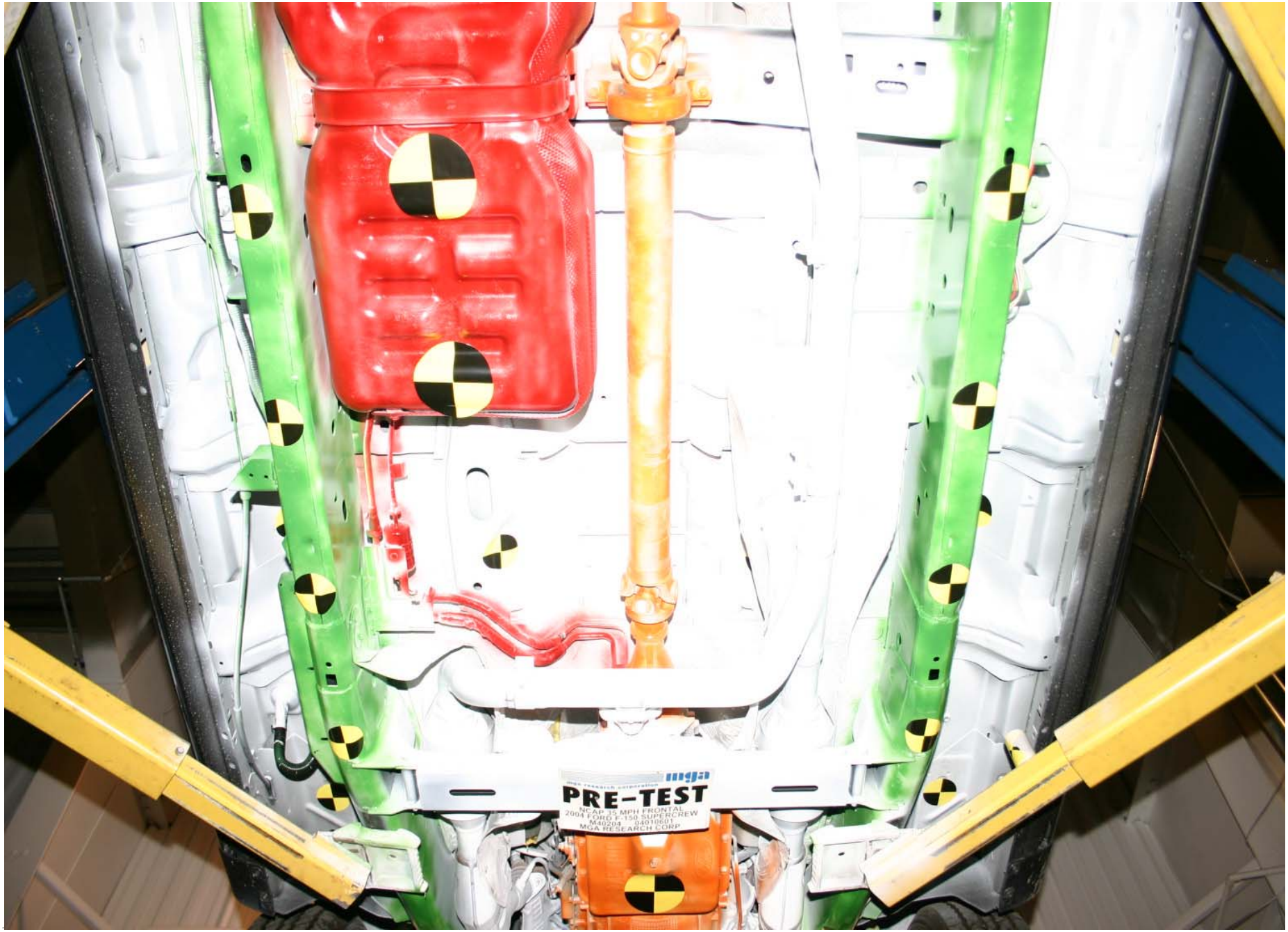
Post-Test Fuel Filler Cap View



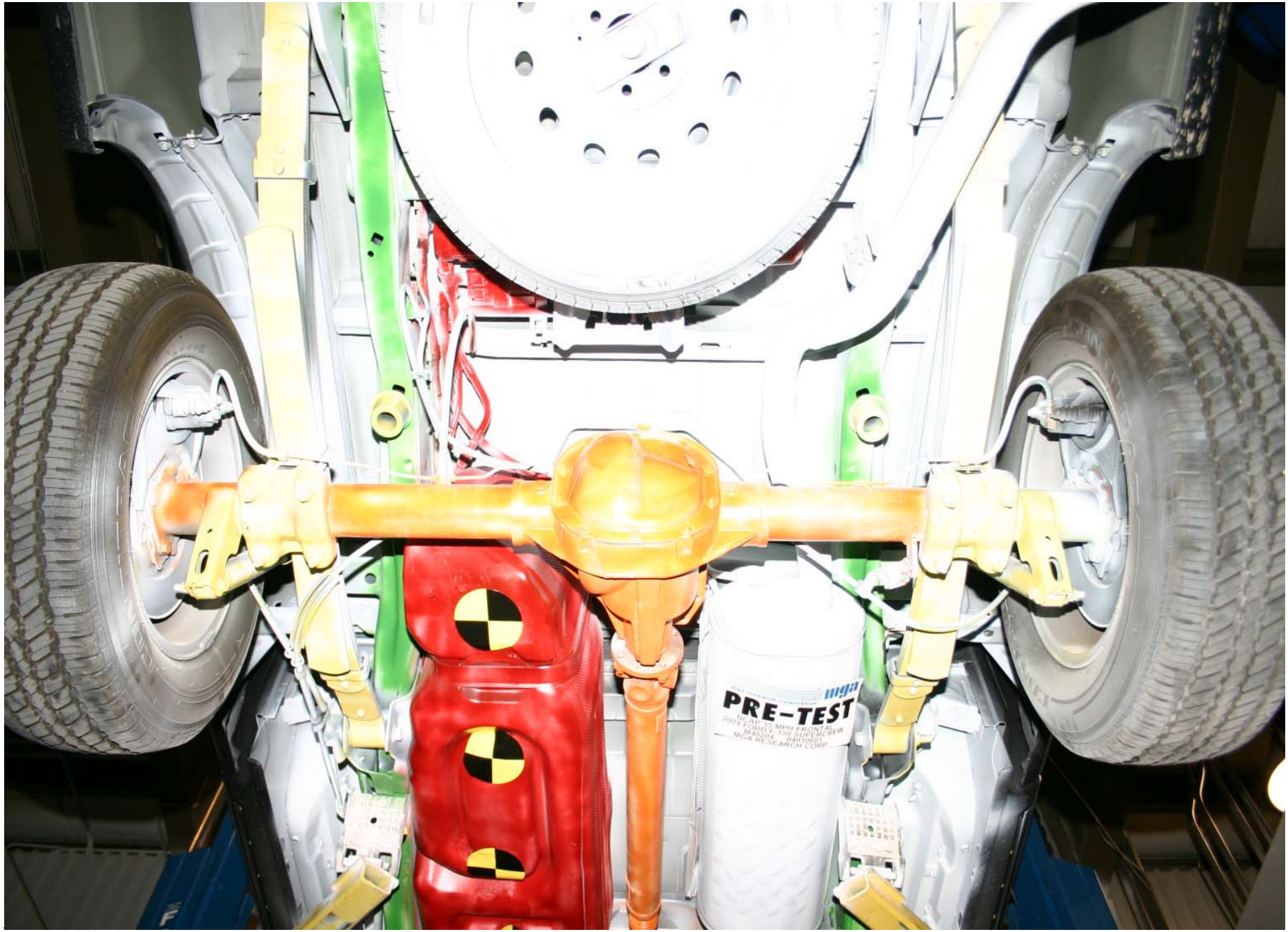
Pre-Test Front Underbody View



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

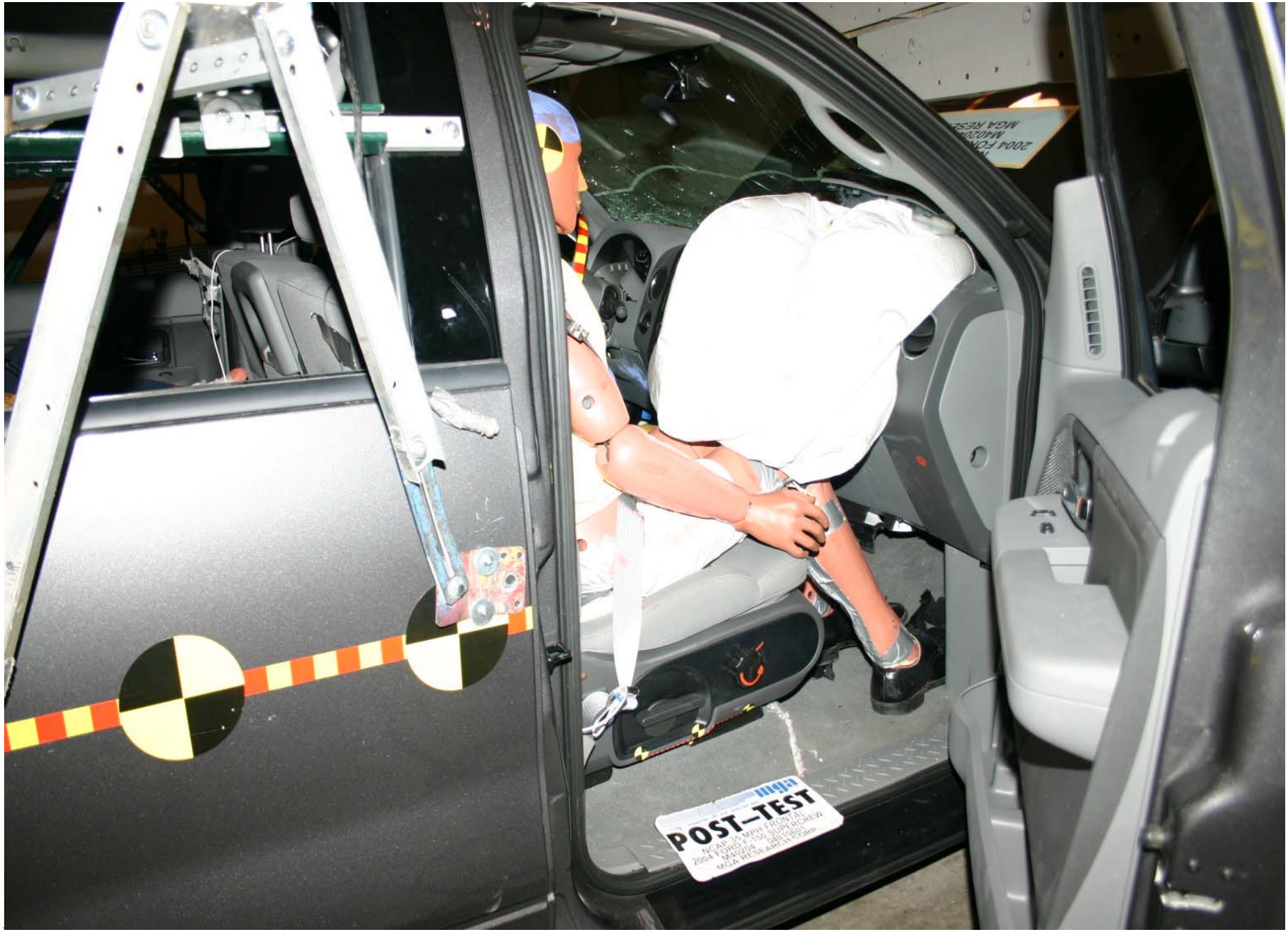
Pre-Test Passenger Dummy Front View (head position)

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

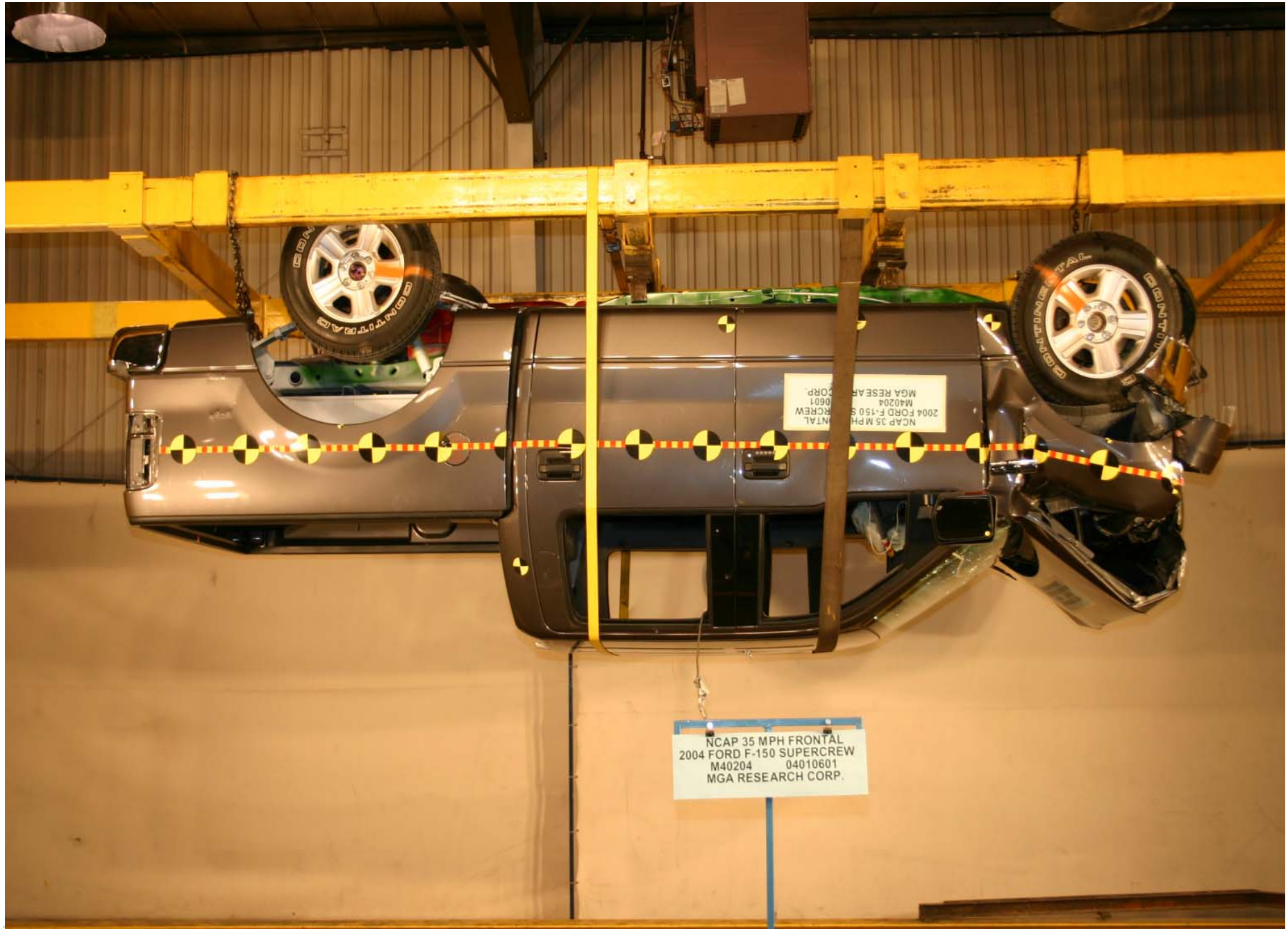
Post-Test Passenger Side Floor Pan View

Post-Test Passenger Dummy Head Contact

Post-Test Passenger Dummy Knee Contact

Post-Test Passenger Dummy Airbag Contact

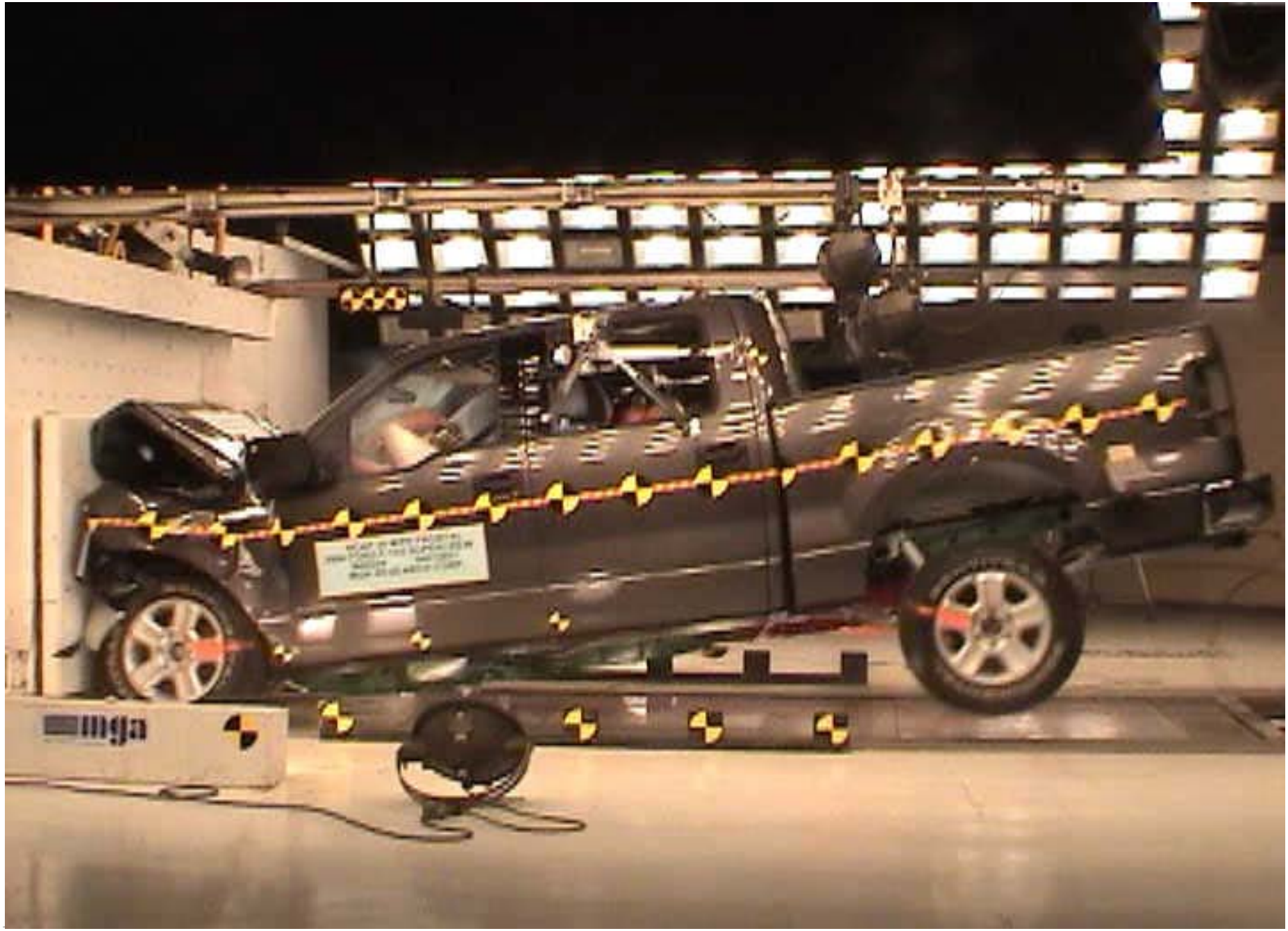
Rollover 90 Degrees



Rollover 180 Degrees

Rollover 270 Degrees

Rollover 360 Degrees



Vehicle Impact

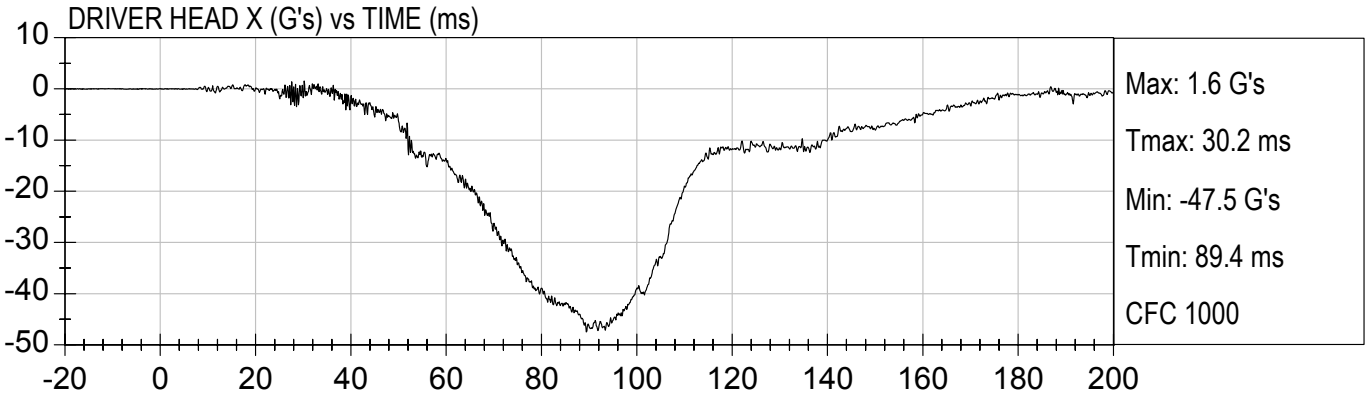
APPENDIX B

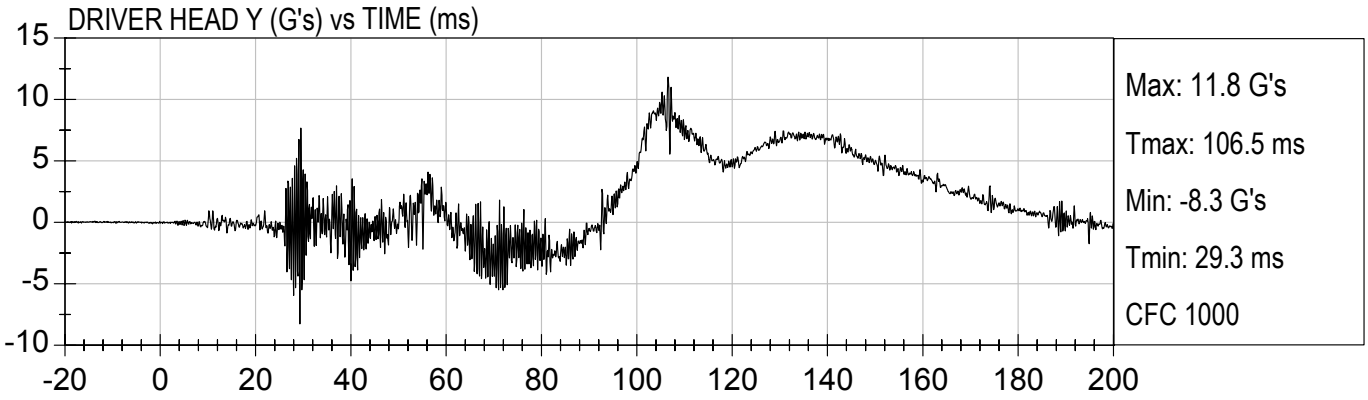
DUMMY AND VEHICLE RESPONSE DATA TRACES

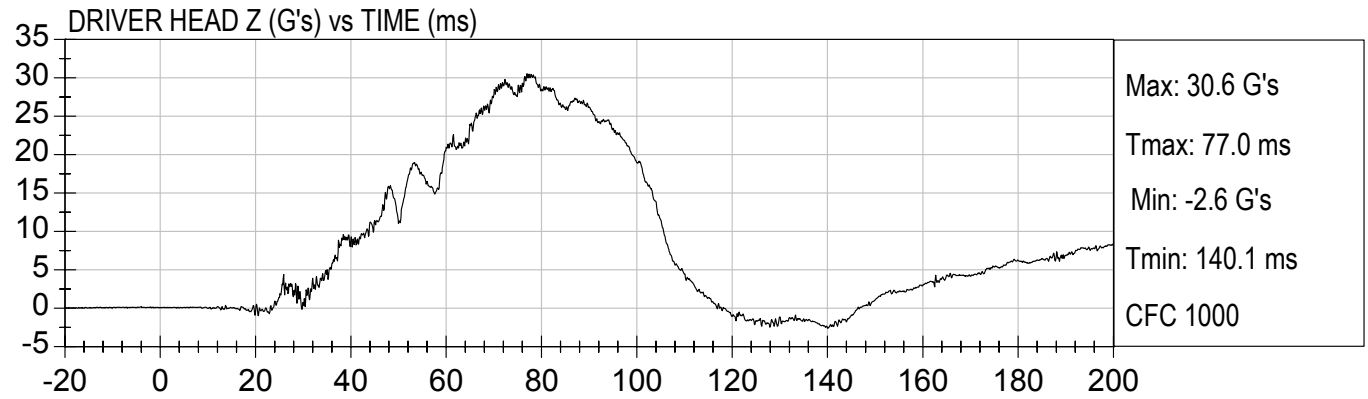
TABLE OF DATA PLOTS

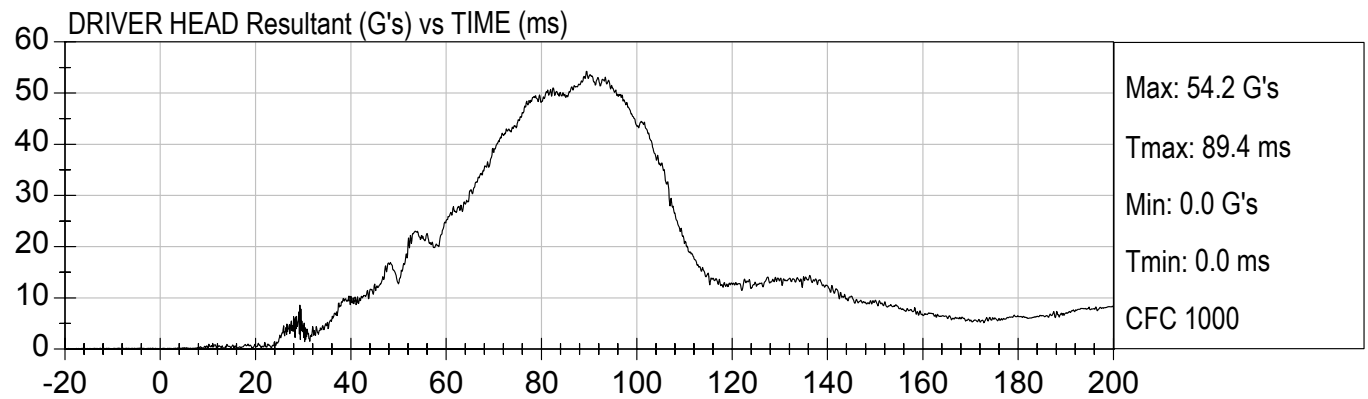
NCAP 35MPH FRONTAL (M40204)
2004 FORD F-150 SUPERCREW

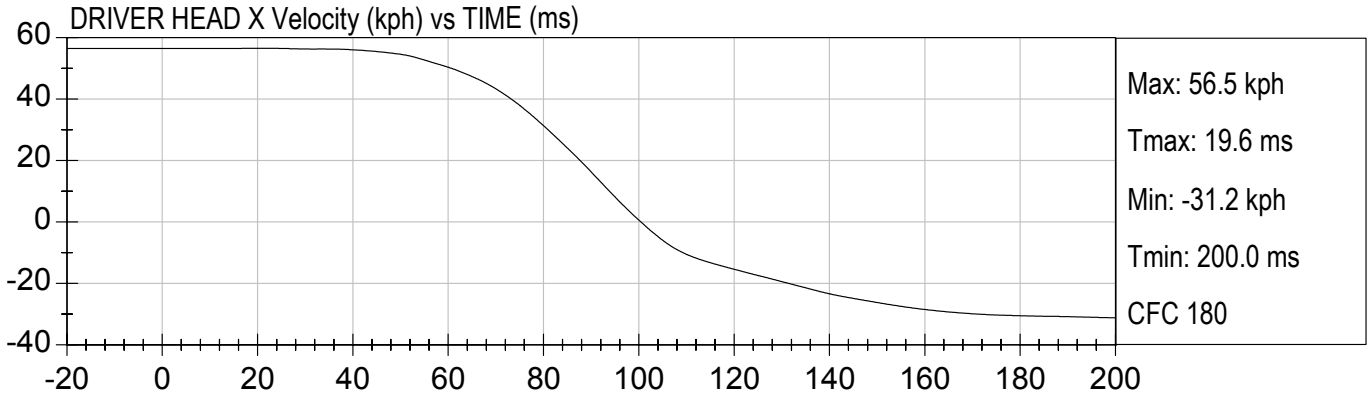
Test Date: 01/06/04
Speed: 35.1 mph (56.5 km/h)

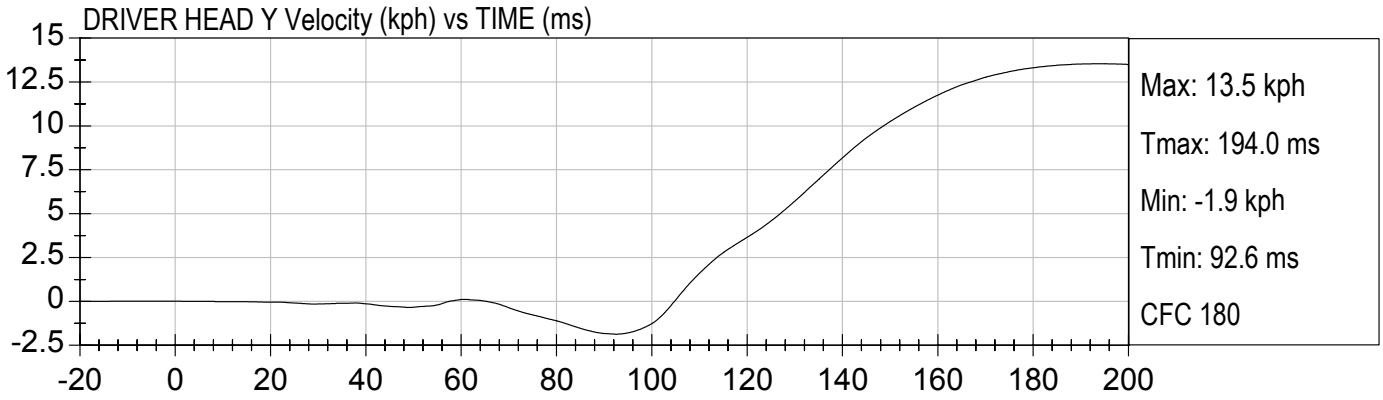


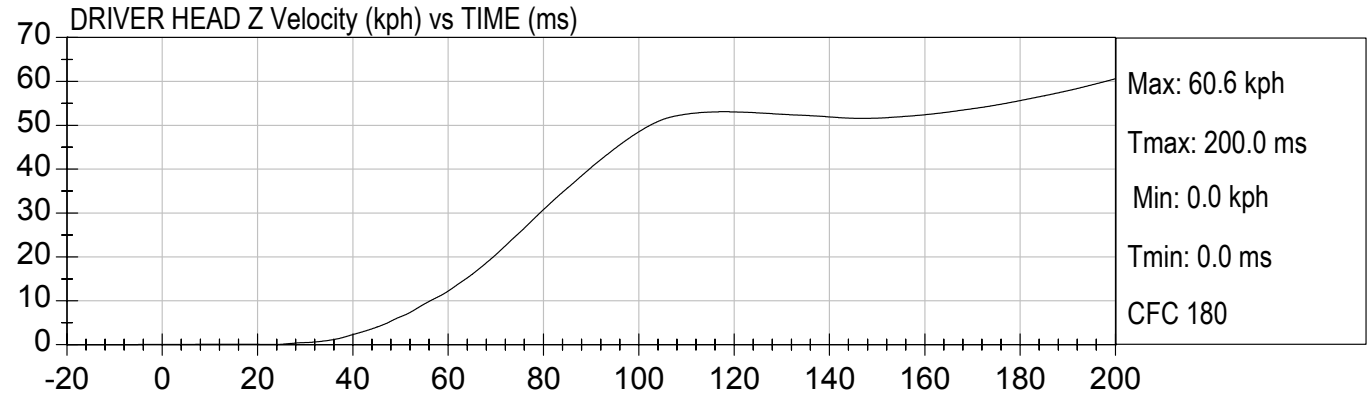






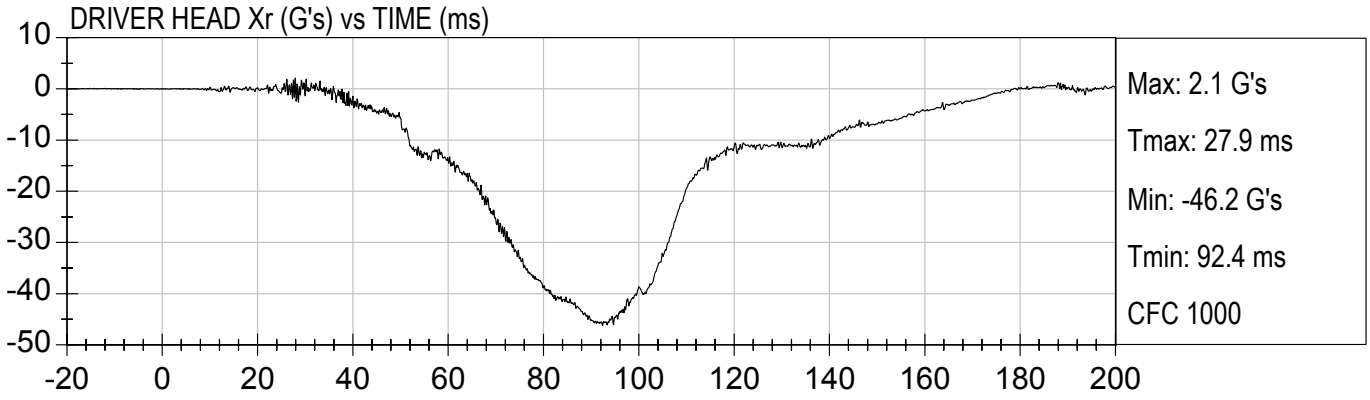

DRIVER HEAD X Velocity (kph) vs TIME (ms)
60
40
20
0
-20
-40
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 56.5 kph
Tmax: 19.6 ms
Min: -31.2 kph
Tmin: 200.0 ms
CFC 180

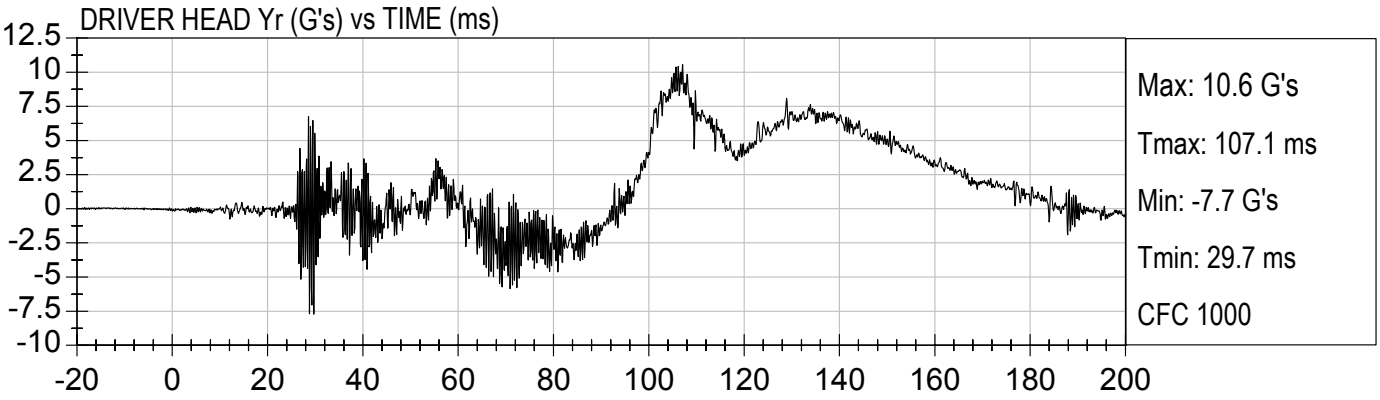

DRIVER HEAD Y Velocity (kph) vs TIME (ms)
15
12.5
10
7.5
5
2.5
0
-2.5
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 13.5 kph
Tmax: 194.0 ms
Min: -1.9 kph
Tmin: 92.6 ms
CFC 180

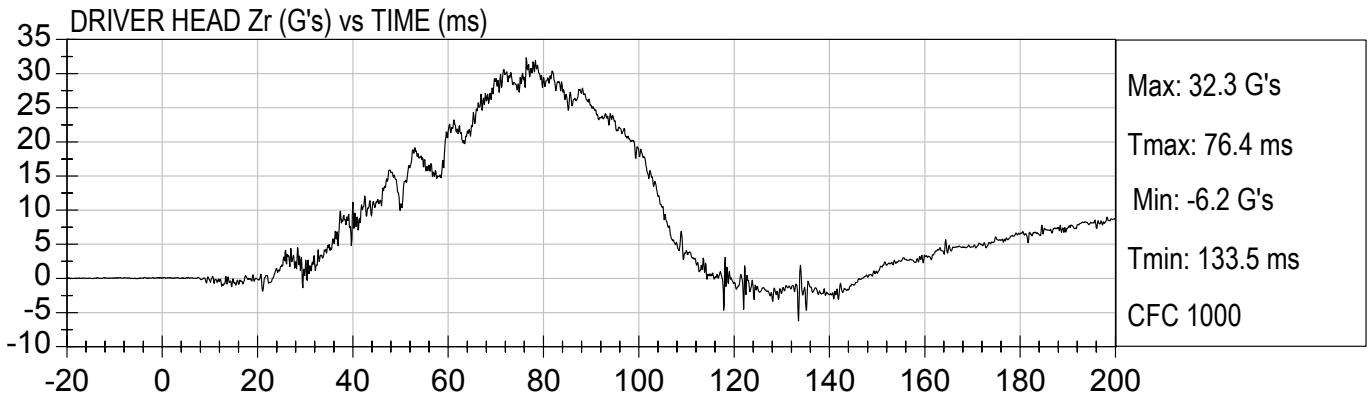

DRIVER HEAD Z Velocity (kph) vs TIME (ms)
70
60
50
40
30
20
10
0
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 60.6 kph
Tmax: 200.0 ms
Min: 0.0 kph
Tmin: 0.0 ms
CFC 180

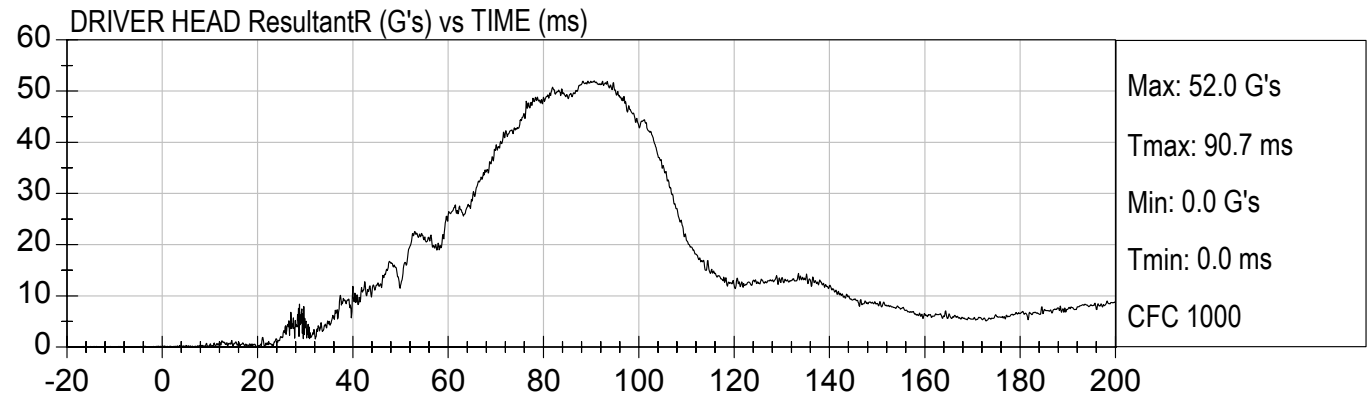
NCAP 35MPH FRONTAL (M40204)
2004 FORD F-150 SUPERCREW

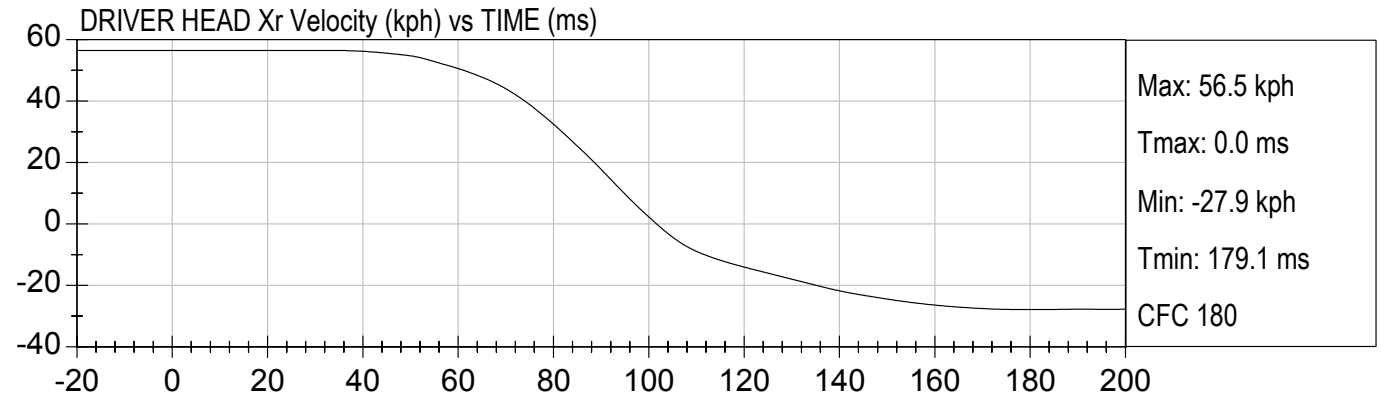
Test Date: 01/06/04
Speed: 35.1 mph (56.5 km/h)

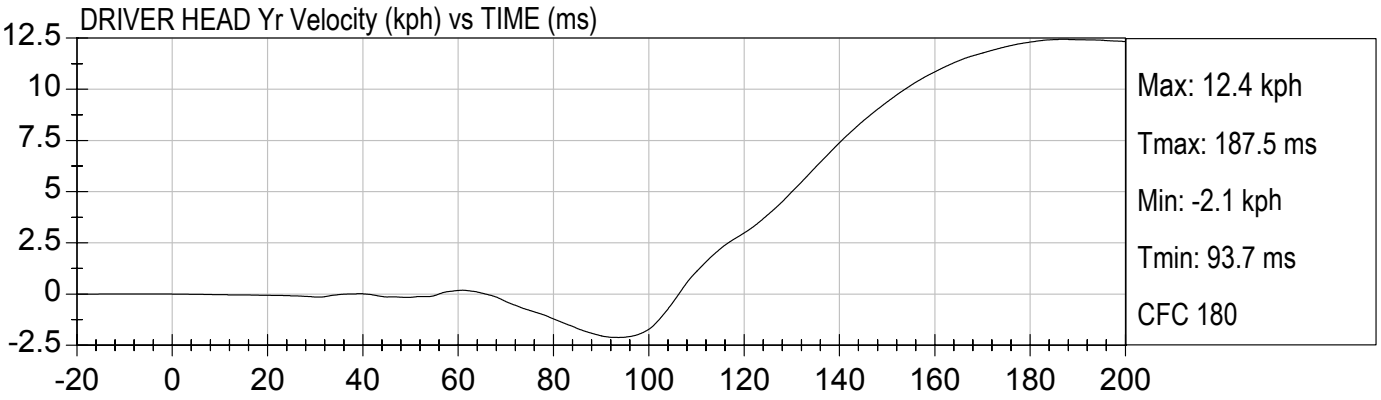


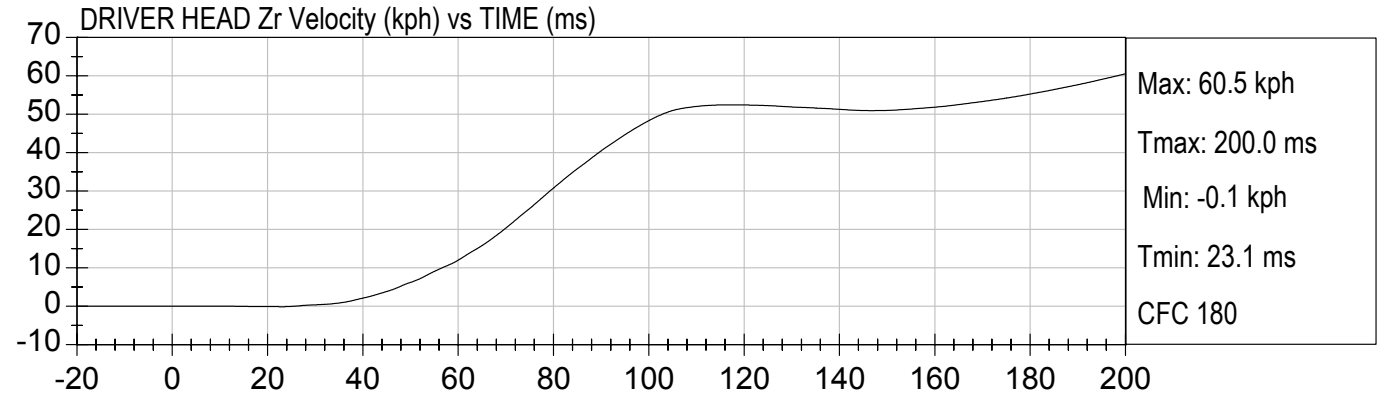






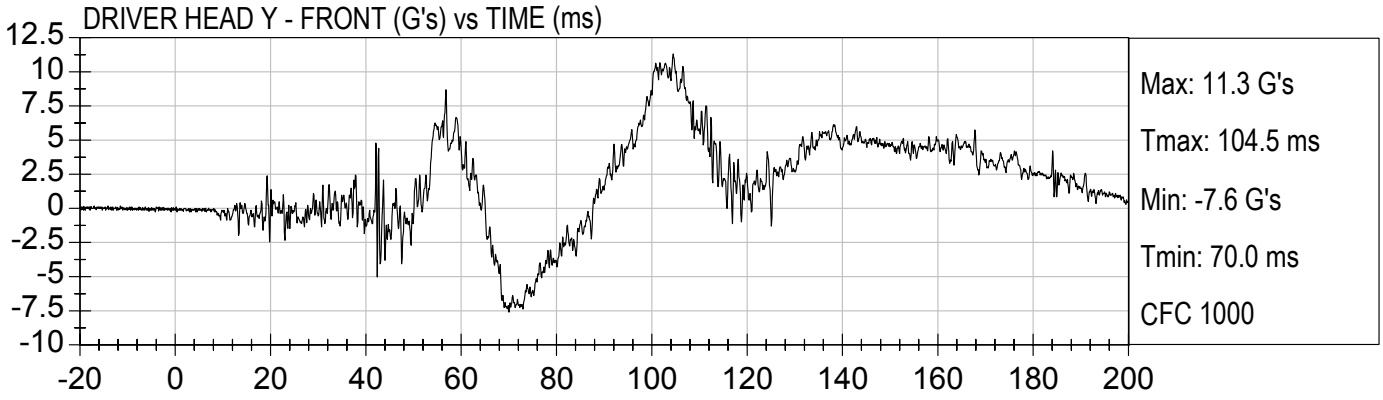

DRIVER HEAD Xr Velocity (kph) vs TIME (ms)
60
40
20
0
-20
-40
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 56.5 kph
Tmax: 0.0 ms
Min: -27.9 kph
Tmin: 179.1 ms
CFC 180

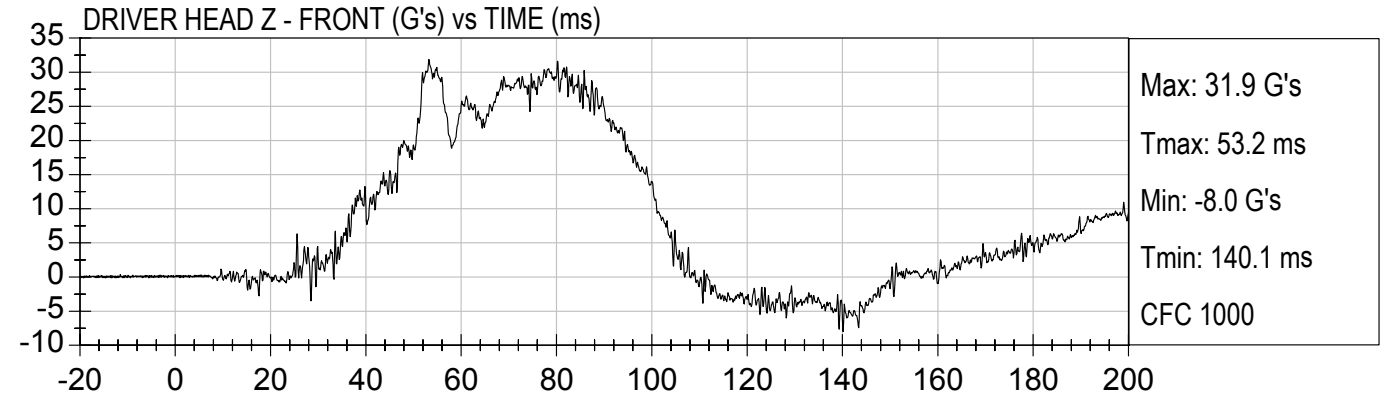

DRIVER HEAD Yr Velocity (kph) vs TIME (ms)
12.5
10
7.5
5
2.5
0
-2.5
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 12.4 kph
Tmax: 187.5 ms
Min: -2.1 kph
Tmin: 93.7 ms
CFC 180

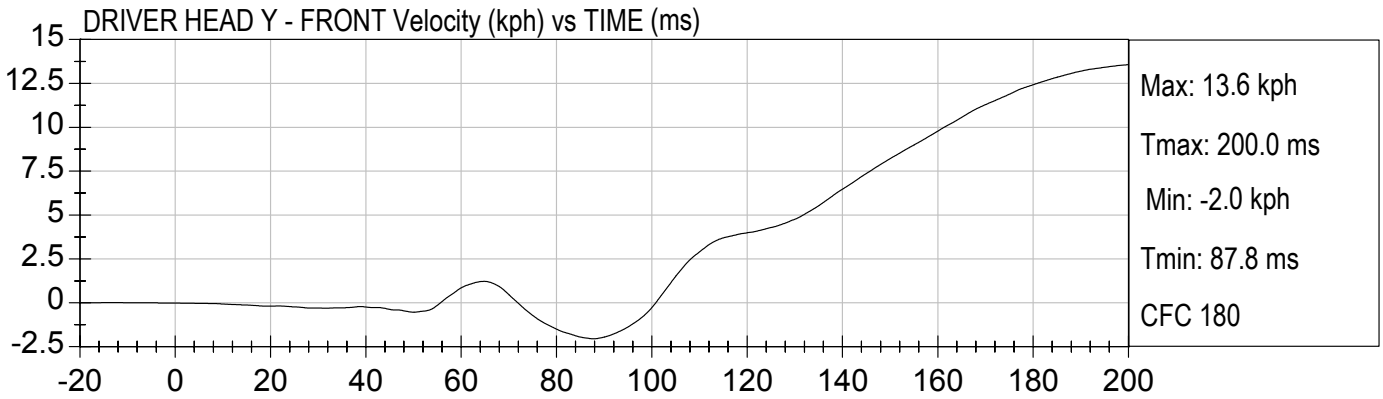

DRIVER HEAD Zr Velocity (kph) vs TIME (ms)
70
60
50
40
30
20
10
0
-10
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 60.5 kph
Tmax: 200.0 ms
Min: -0.1 kph
Tmin: 23.1 ms
CFC 180

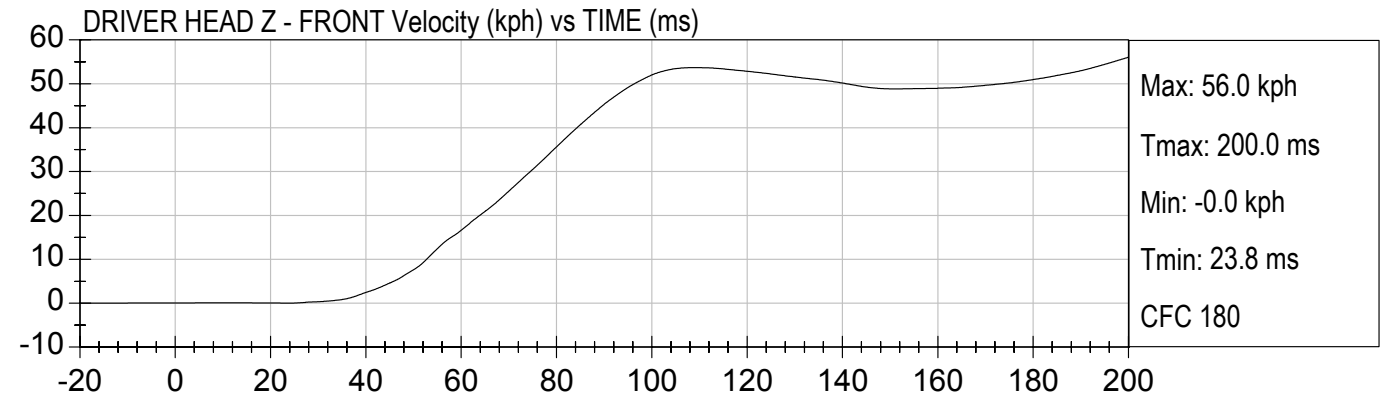
NCAP 35MPH FRONTAL (M40204)
2004 FORD F-150 SUPERCREW

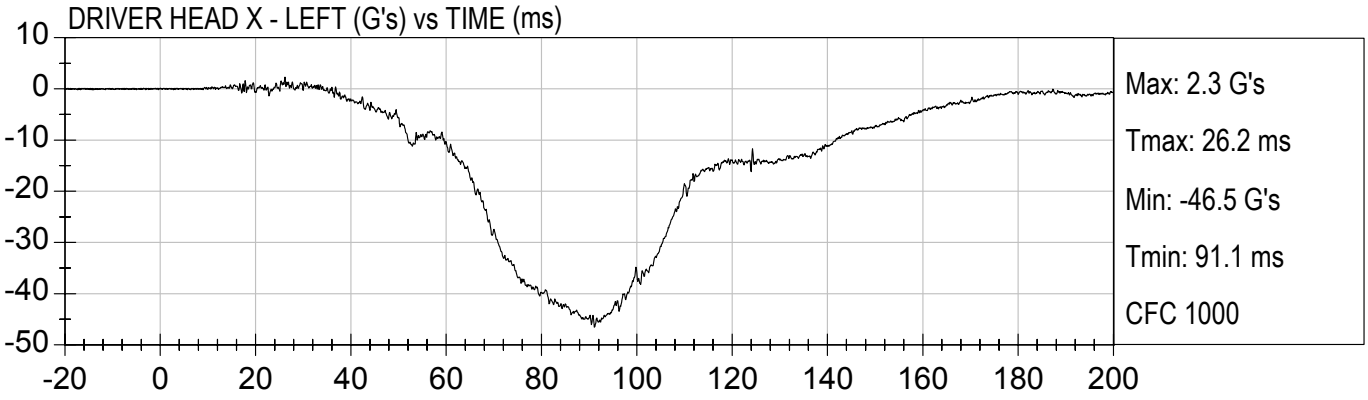
Test Date: 01/06/04
Speed: 35.1 mph (56.5 km/h)

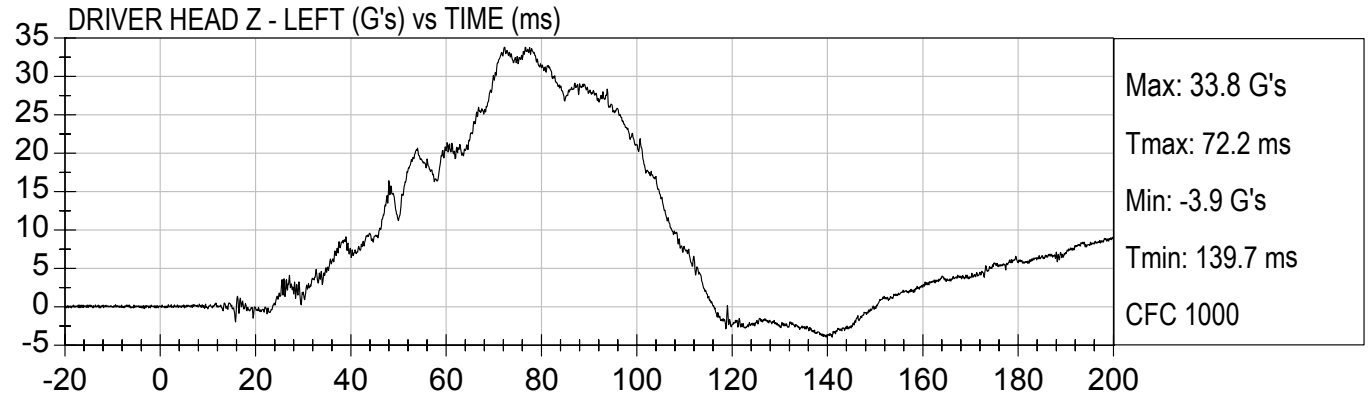


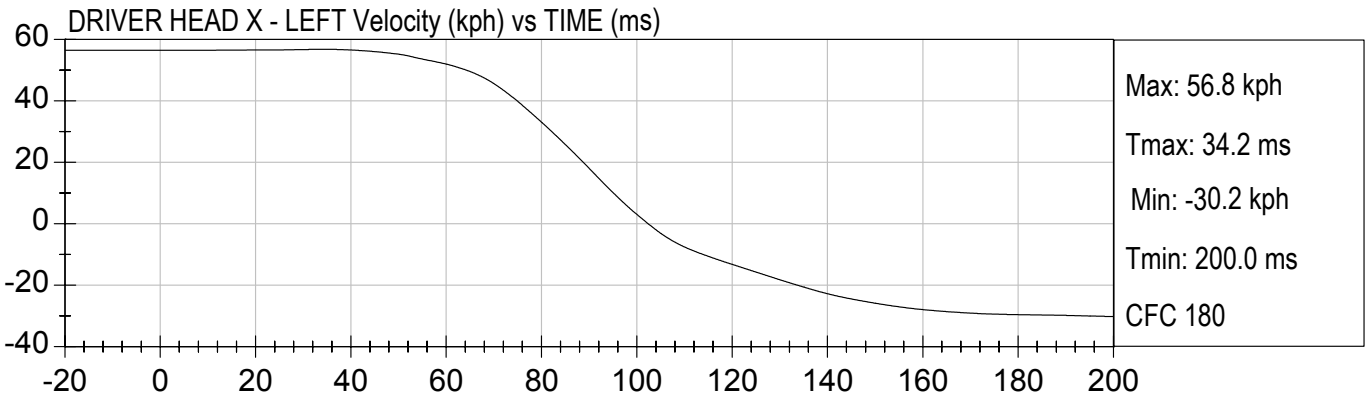


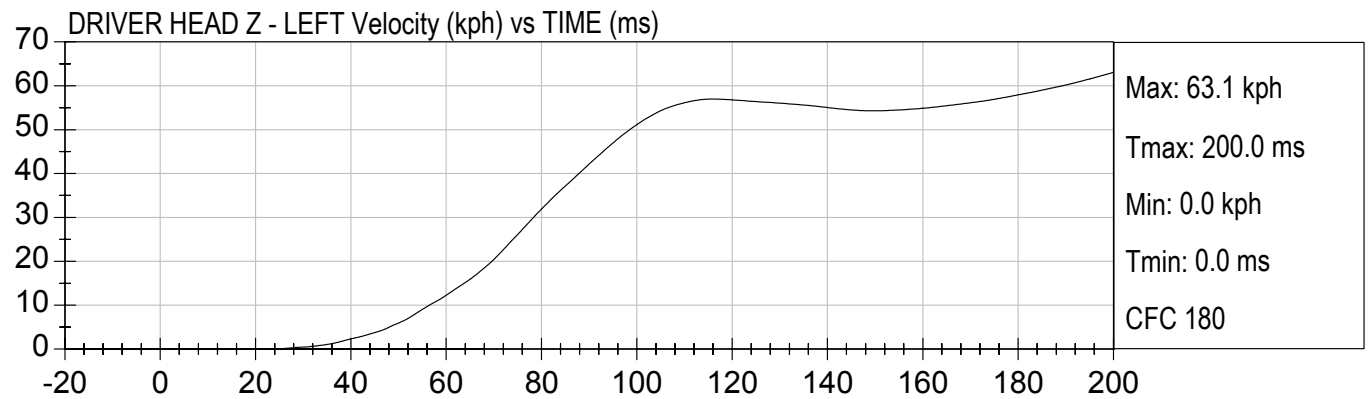





DRIVER HEAD X - LEFT (G's) vs TIME (ms)
10
0
-10
-20
-30
-40
-50
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 2.3 G's
Tmax: 26.2 ms
Min: -46.5 G's
Tmin: 91.1 ms
CFC 1000

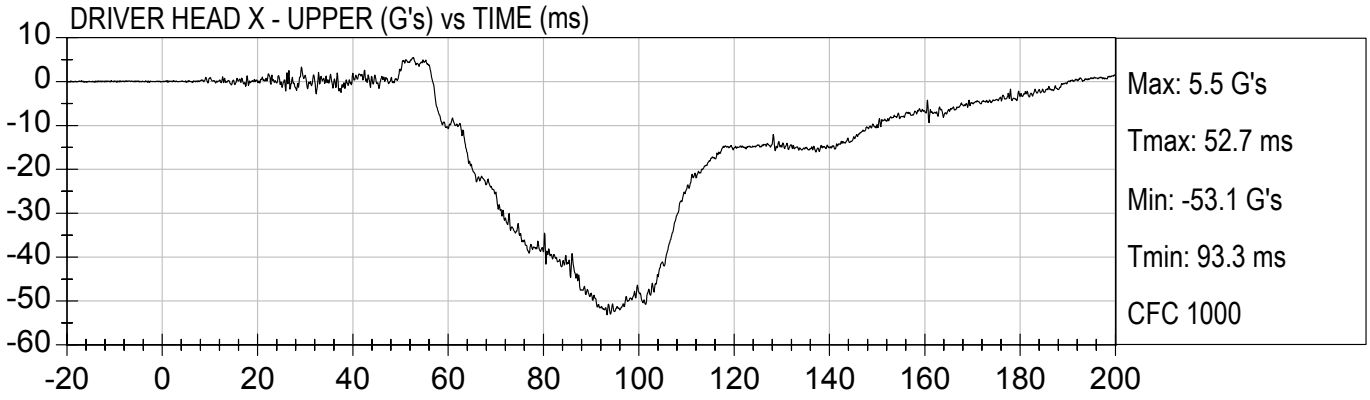

DRIVER HEAD Z - LEFT (G's) vs TIME (ms)
35
30
25
20
15
10
5
0
-5
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 33.8 G's
Tmax: 72.2 ms
Min: -3.9 G's
Tmin: 139.7 ms
CFC 1000

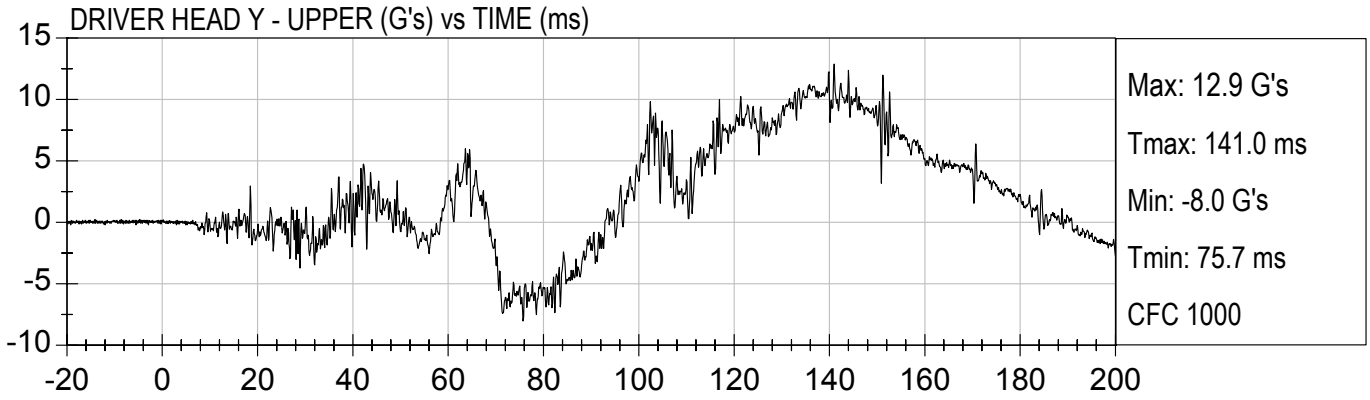

DRIVER HEAD X - LEFT Velocity (kph) vs TIME (ms)
60
40
20
0
-20
-40
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 56.8 kph
Tmax: 34.2 ms
Min: -30.2 kph
Tmin: 200.0 ms
CFC 180

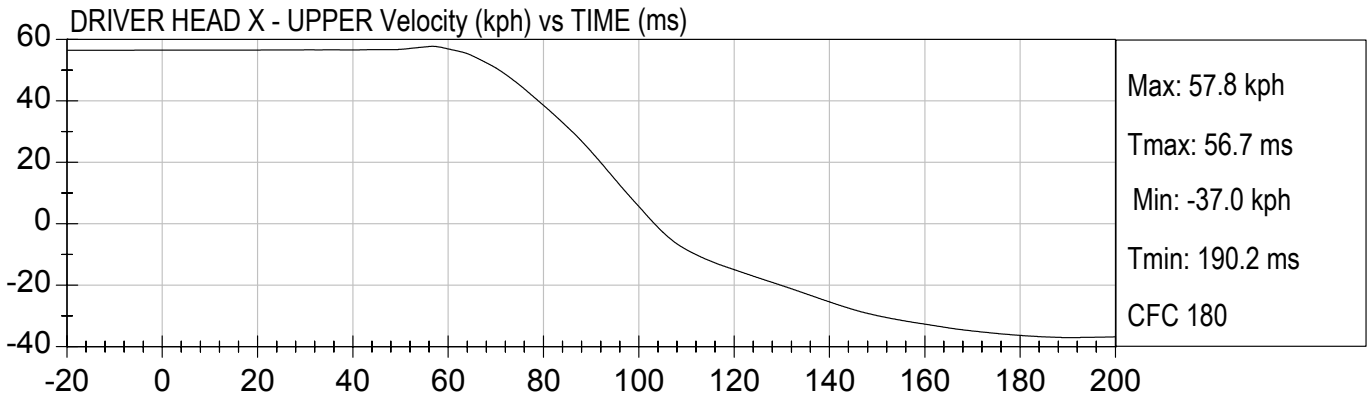

DRIVER HEAD Z - LEFT Velocity (kph) vs TIME (ms)
70
60
50
40
30
20
10
0
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 63.1 kph
Tmax: 200.0 ms
Min: 0.0 kph
Tmin: 0.0 ms
CFC 180

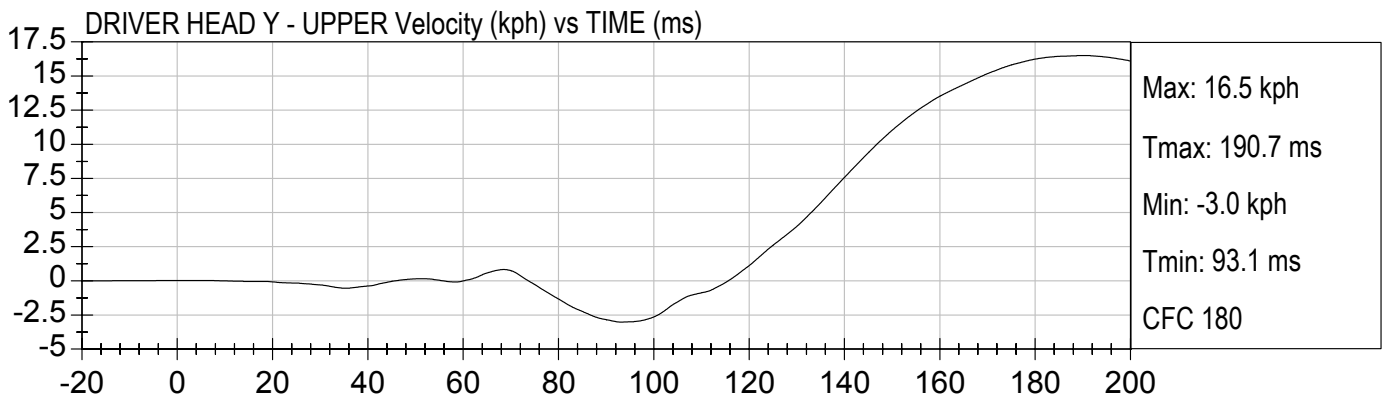
NCAP 35MPH FRONTAL (M40204)
2004 FORD F-150 SUPERCREW

Test Date: 01/06/04
Speed: 35.1 mph (56.5 km/h)



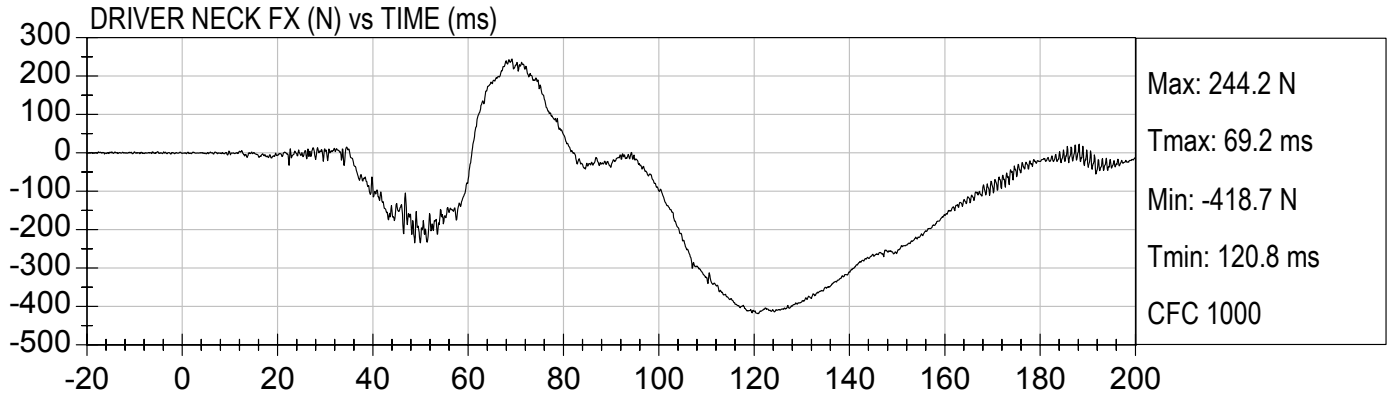


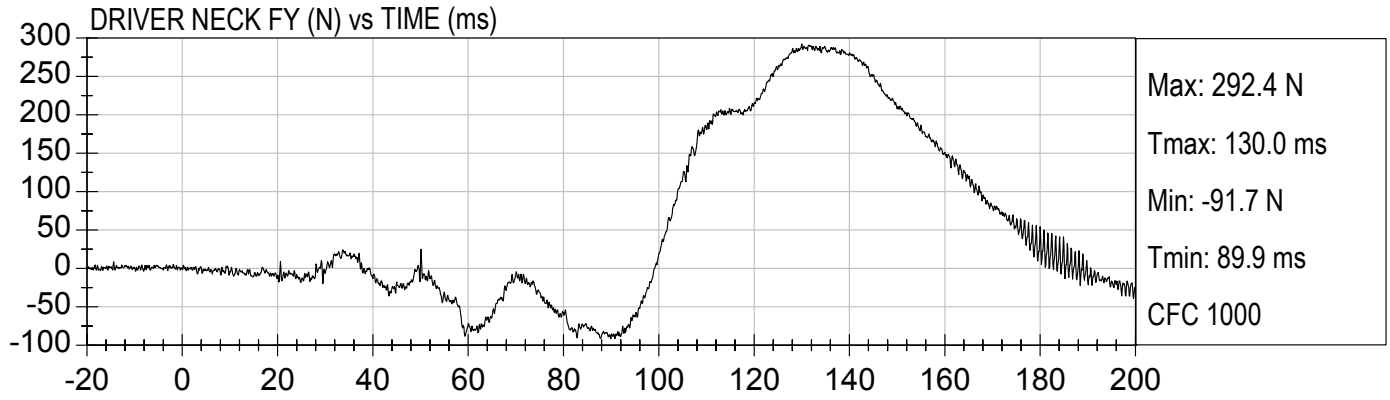


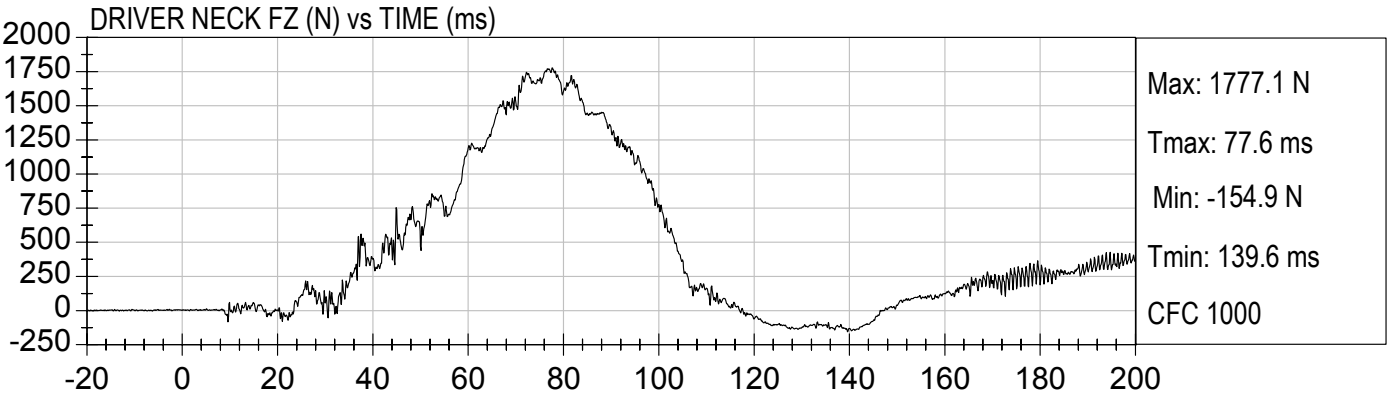


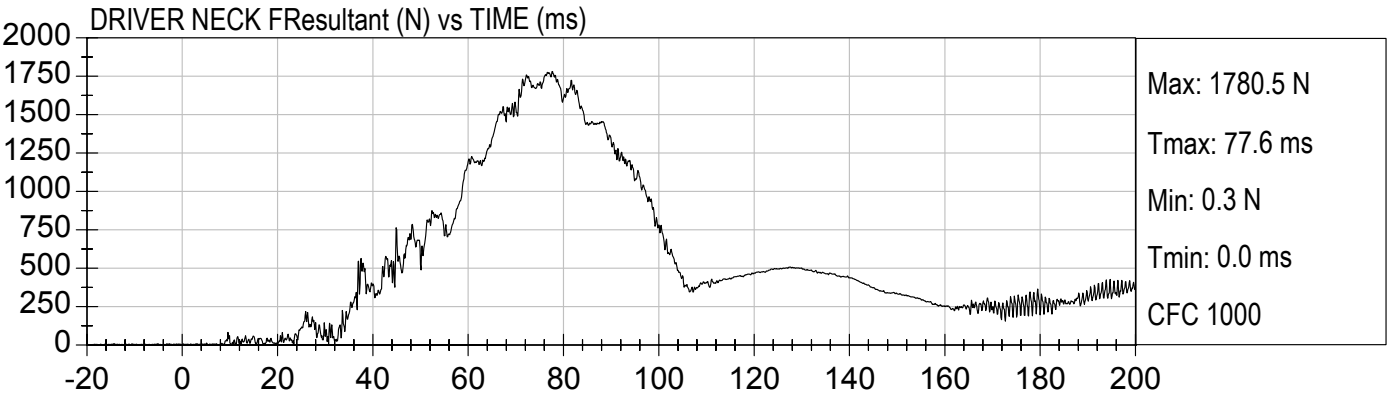
NCAP 35MPH FRONTAL (M40204)
2004 FORD F-150 SUPERCREW

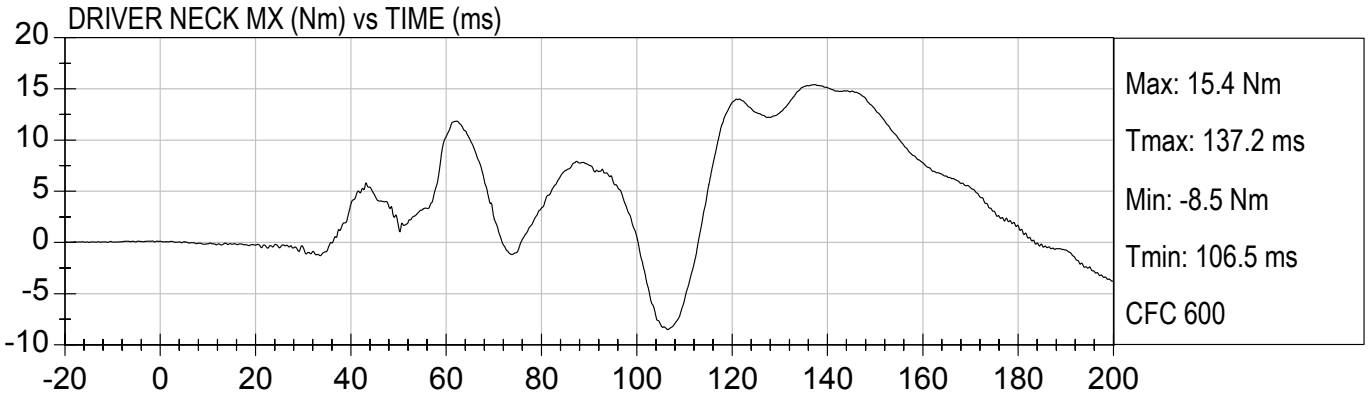
Test Date: 01/06/04
Speed: 35.1 mph (56.5 km/h)

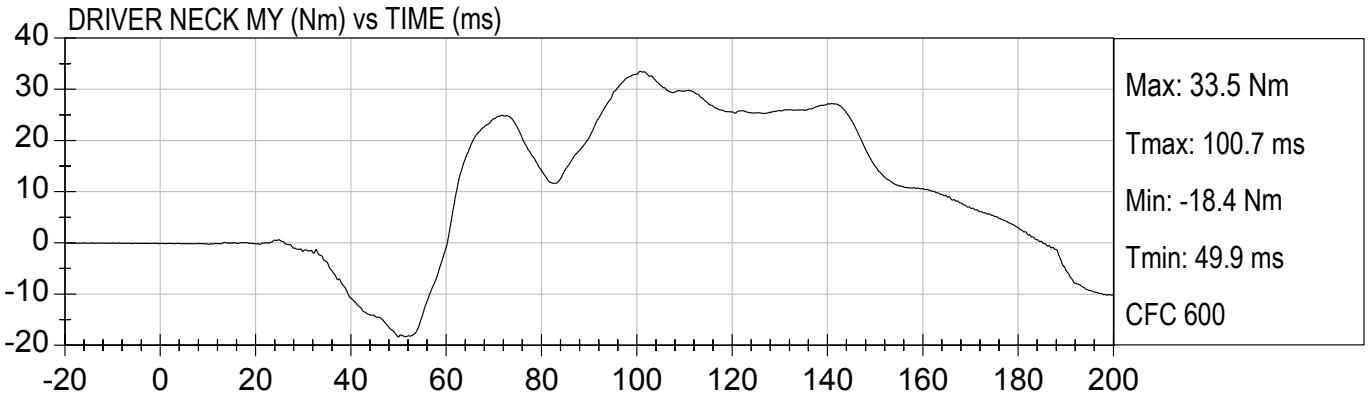


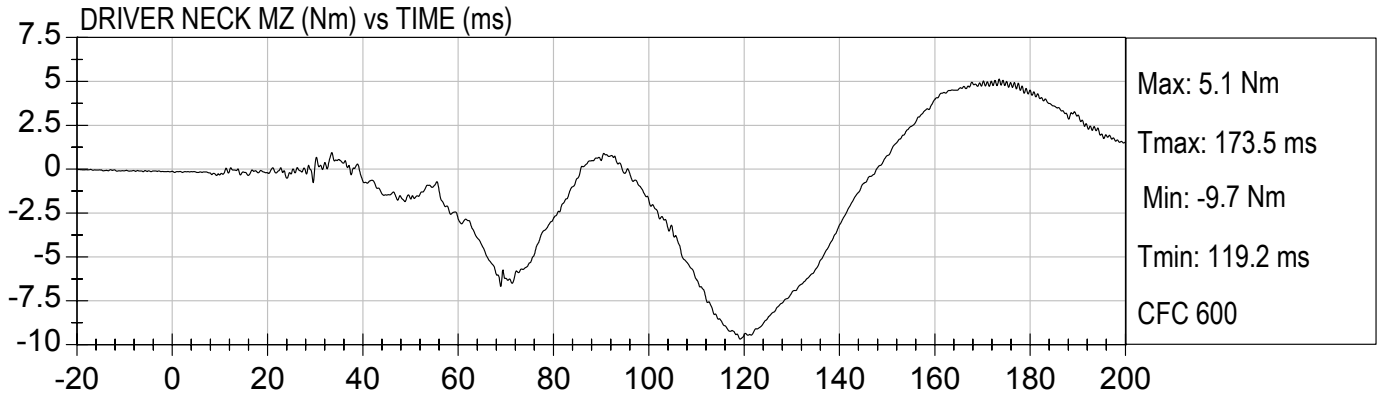


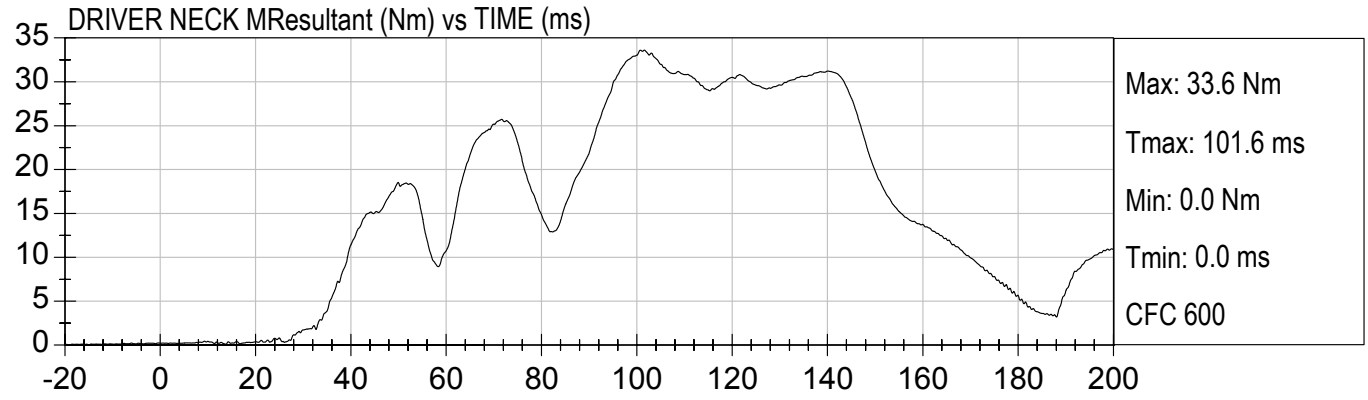





DRIVER NECK MX (Nm) vs TIME (ms)
20
15
10
5
0
-5
-10
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 15.4 Nm
Tmax: 137.2 ms
Min: -8.5 Nm
Tmin: 106.5 ms
CFC 600

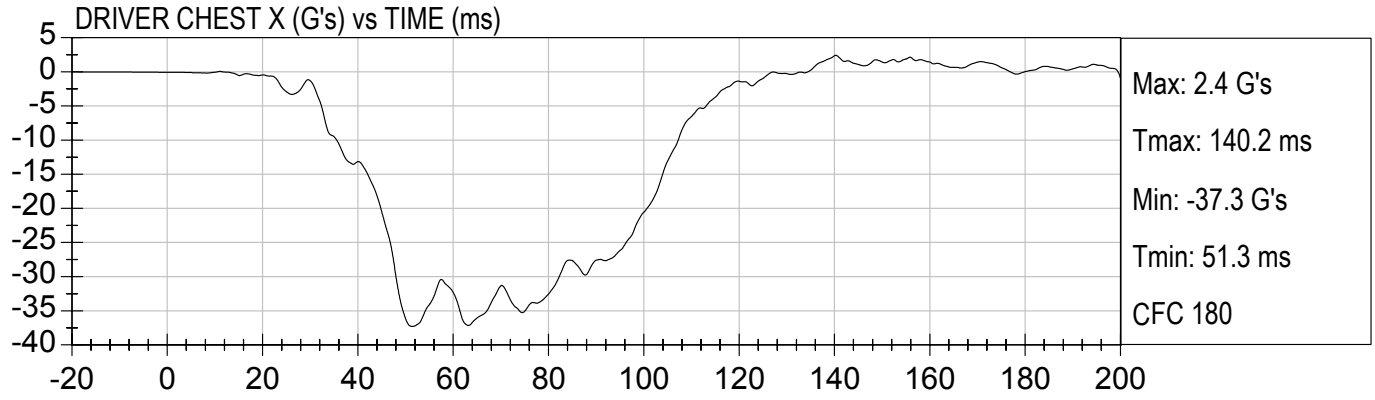

DRIVER NECK MY (Nm) vs TIME (ms)
40
30
20
10
0
-10
-20
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 33.5 Nm
Tmax: 100.7 ms
Min: -18.4 Nm
Tmin: 49.9 ms
CFC 600

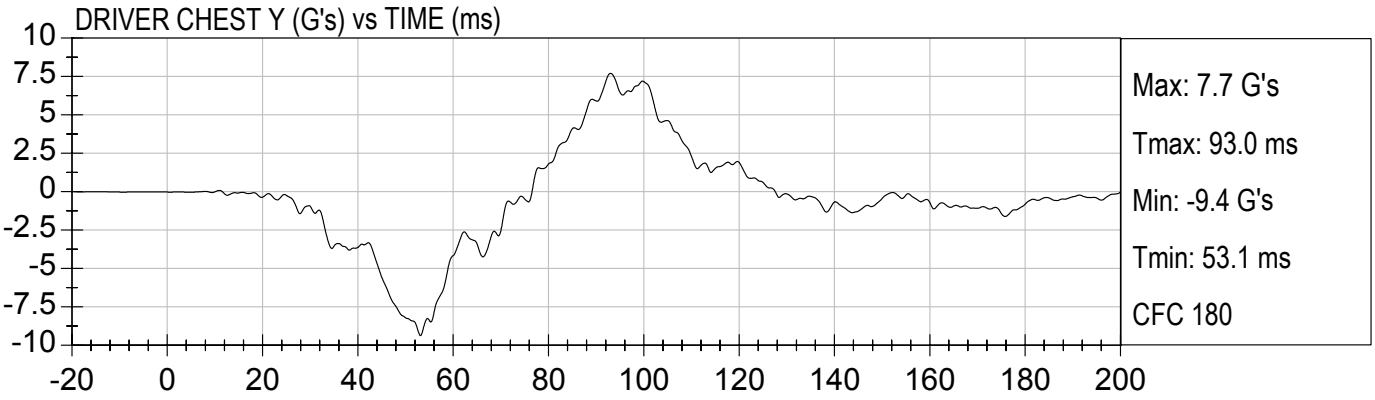

DRIVER NECK MZ (Nm) vs TIME (ms)
7.5
5
2.5
0
-2.5
-5
-7.5
-10
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 5.1 Nm
Tmax: 173.5 ms
Min: -9.7 Nm
Tmin: 119.2 ms
CFC 600

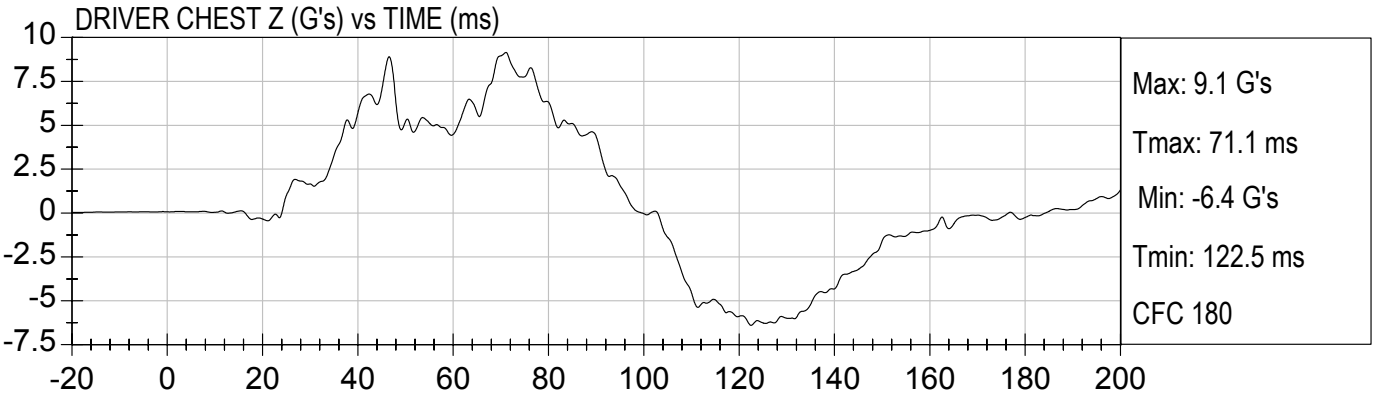

DRIVER NECK MResultant (Nm) vs TIME (ms)
35
30
25
20
15
10
5
0
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 33.6 Nm
Tmax: 101.6 ms
Min: 0.0 Nm
Tmin: 0.0 ms
CFC 600

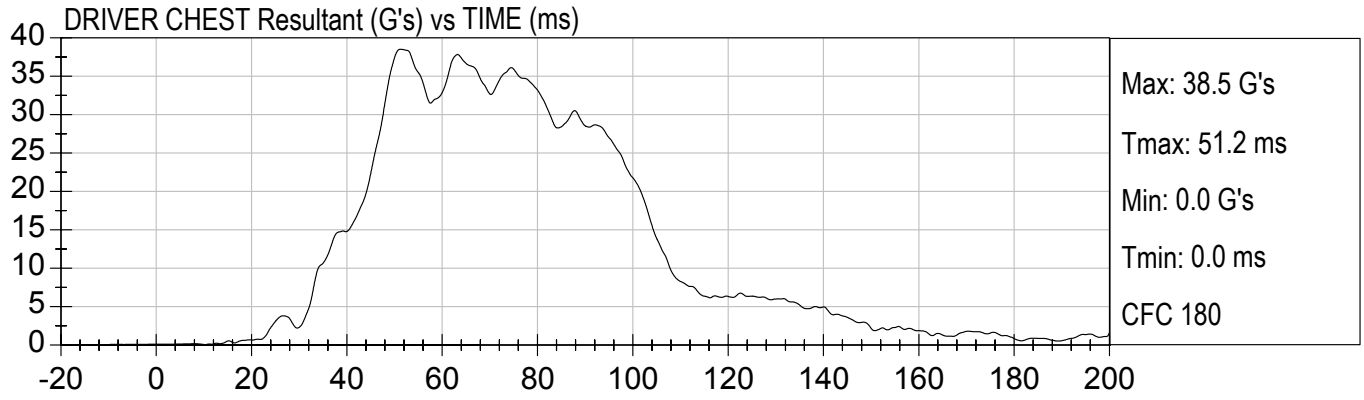
NCAP 35MPH FRONTAL (M40204)
2004 FORD F-150 SUPERCREW

Test Date: 01/06/04
Speed: 35.1 mph (56.5 km/h)



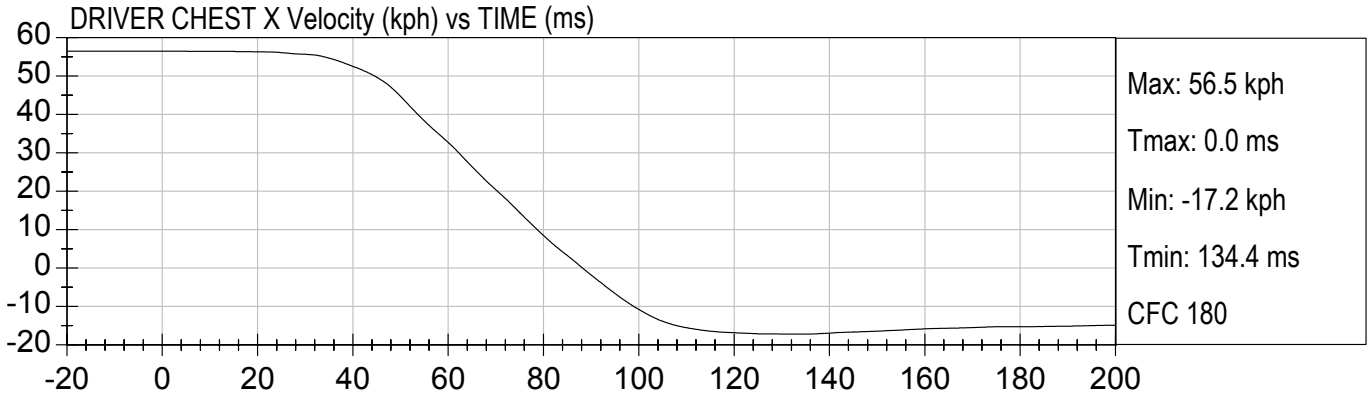


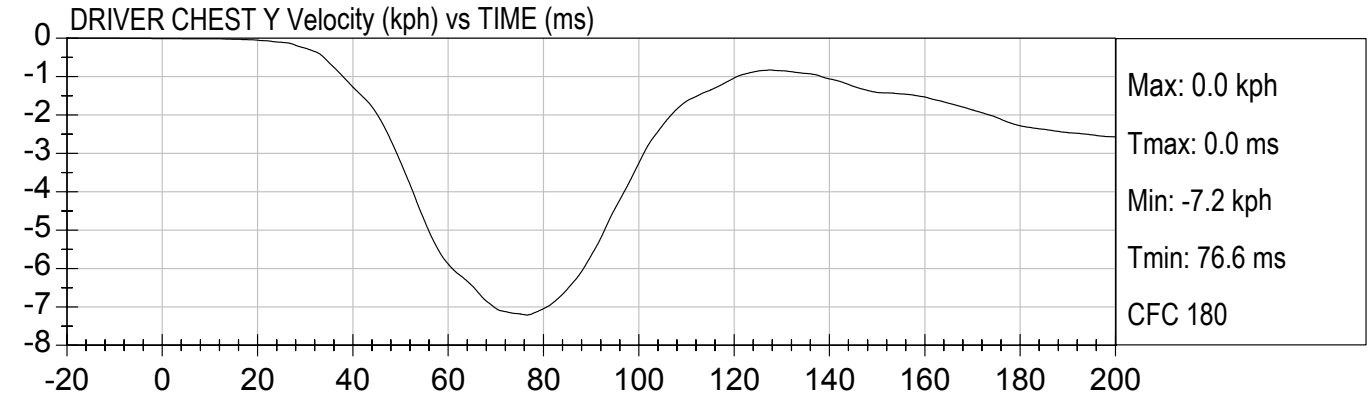


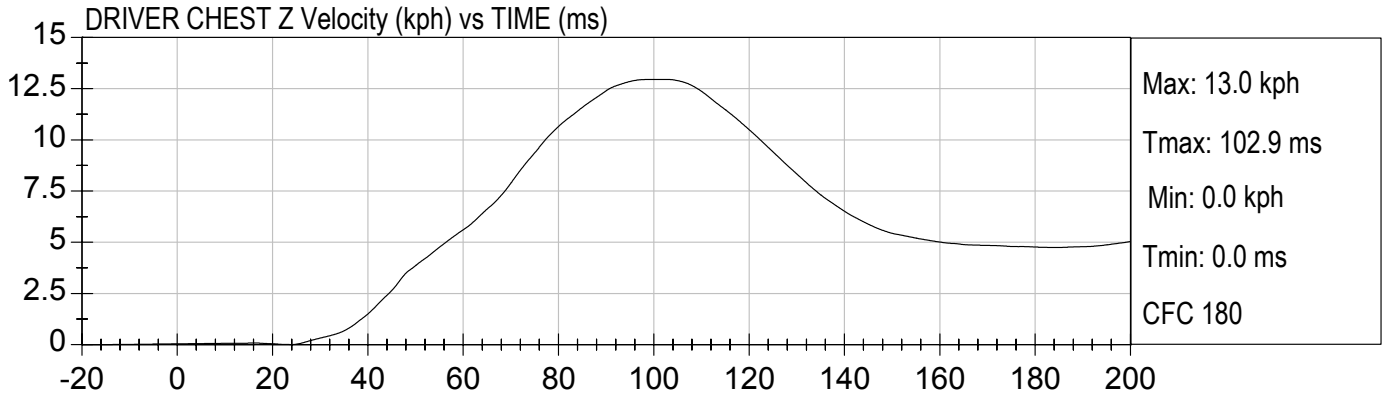


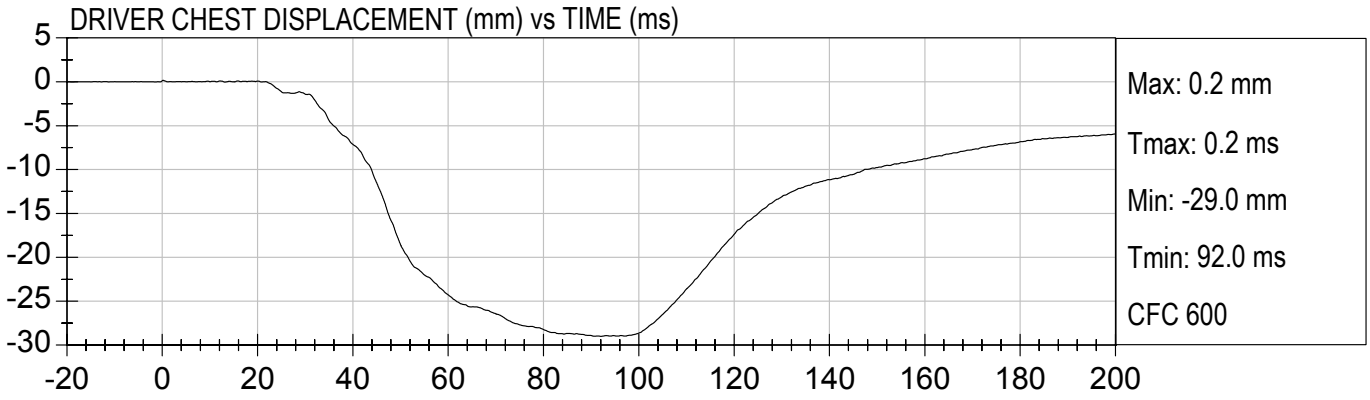
NCAP 35MPH FRONTAL (M40204)
2004 FORD F-150 SUPERCREW

Test Date: 01/06/04
Speed: 35.1 mph (56.5 km/h)



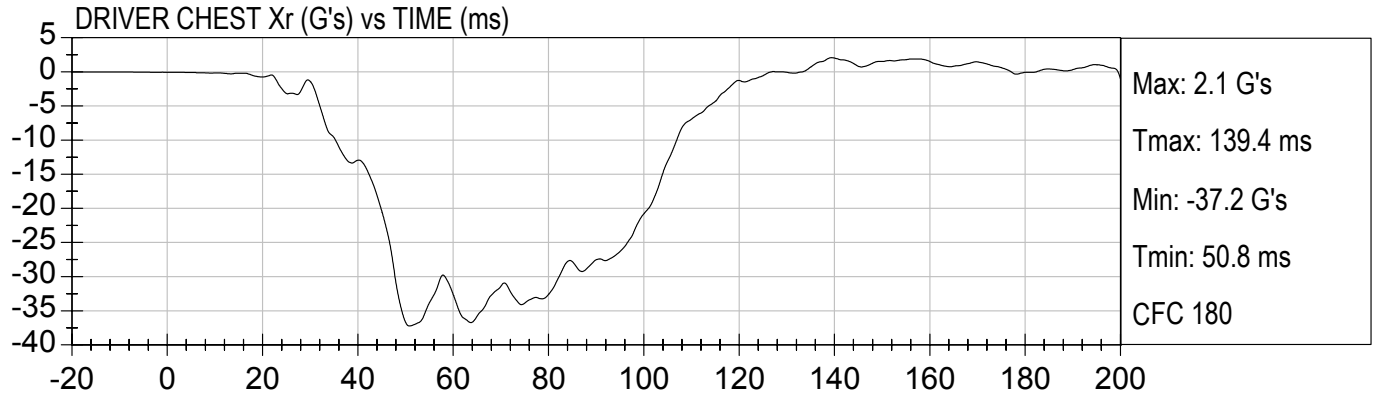


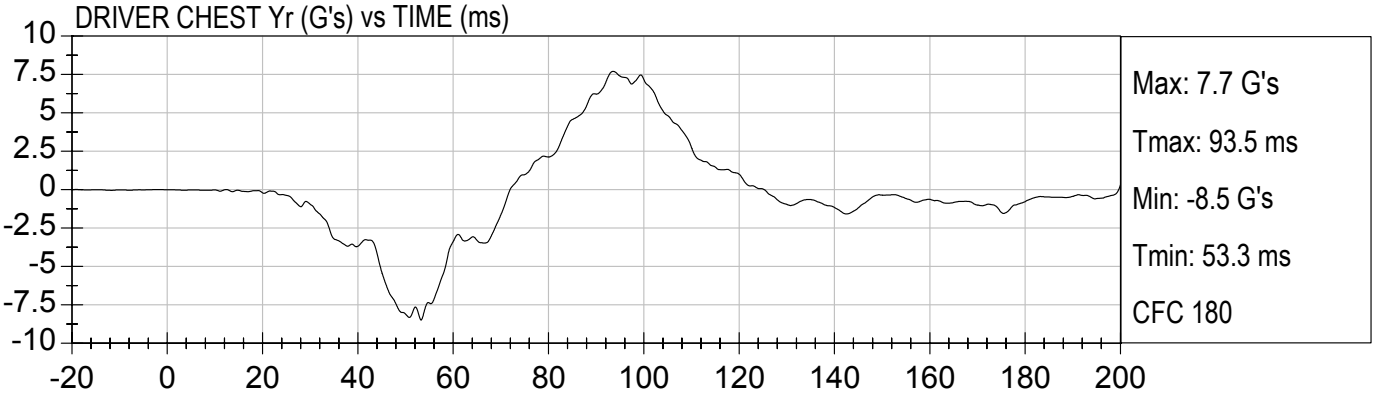


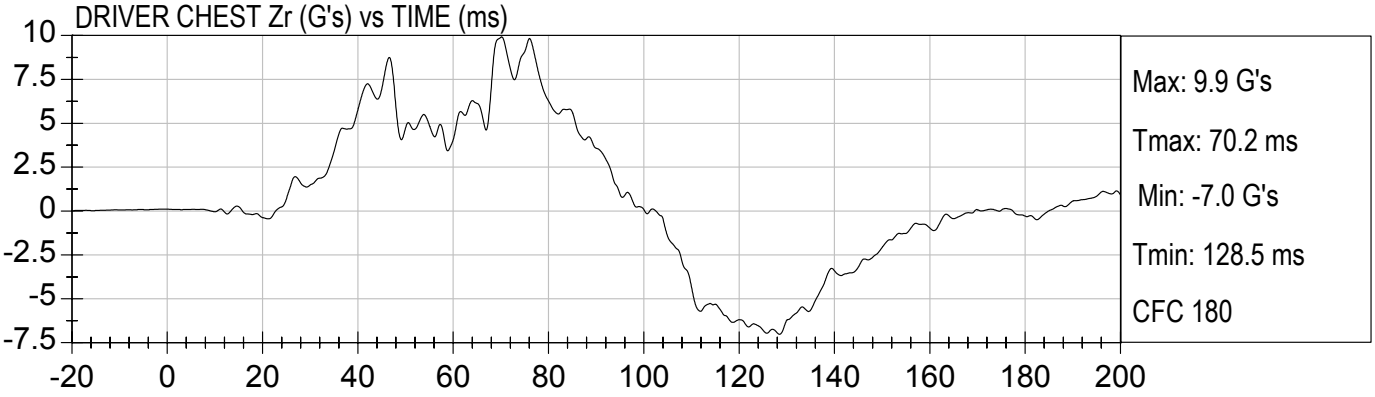


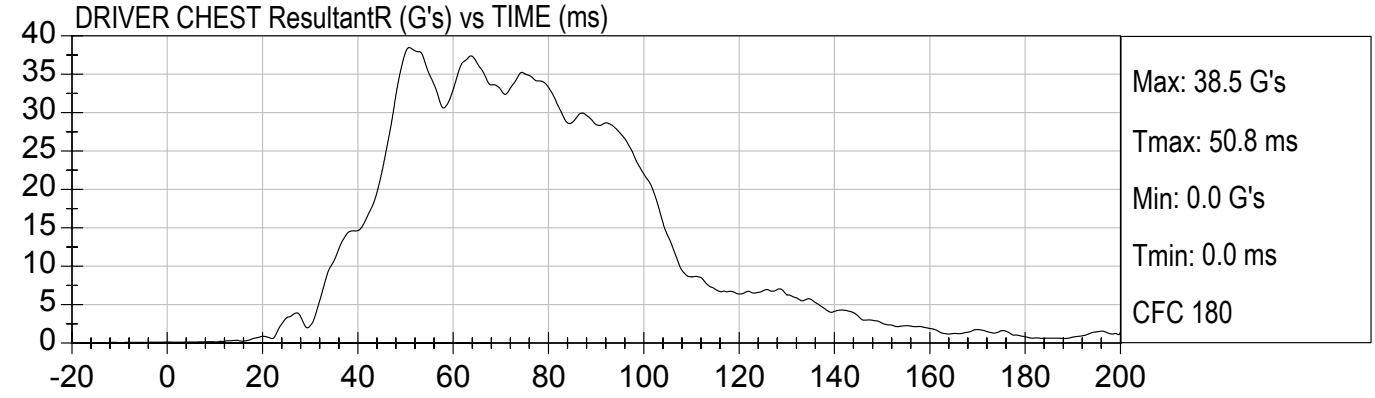
NCAP 35MPH FRONTAL (M40204)
2004 FORD F-150 SUPERCREW

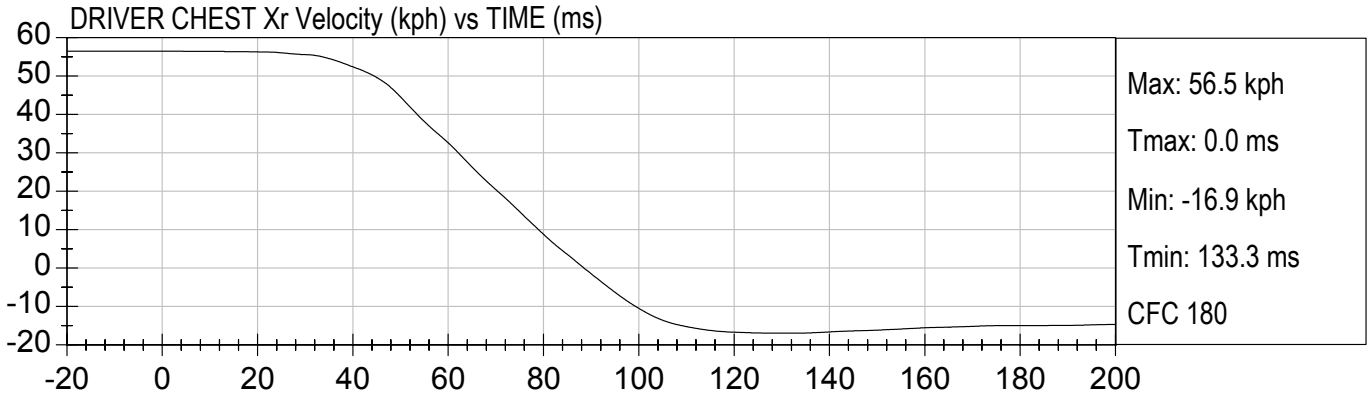
Test Date: 01/06/04
Speed: 35.1 mph (56.5 km/h)

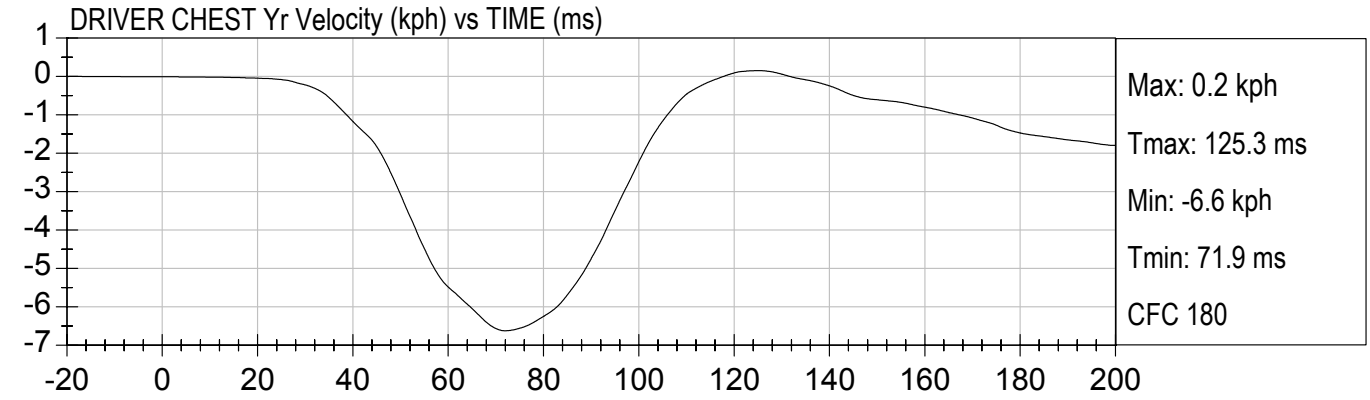


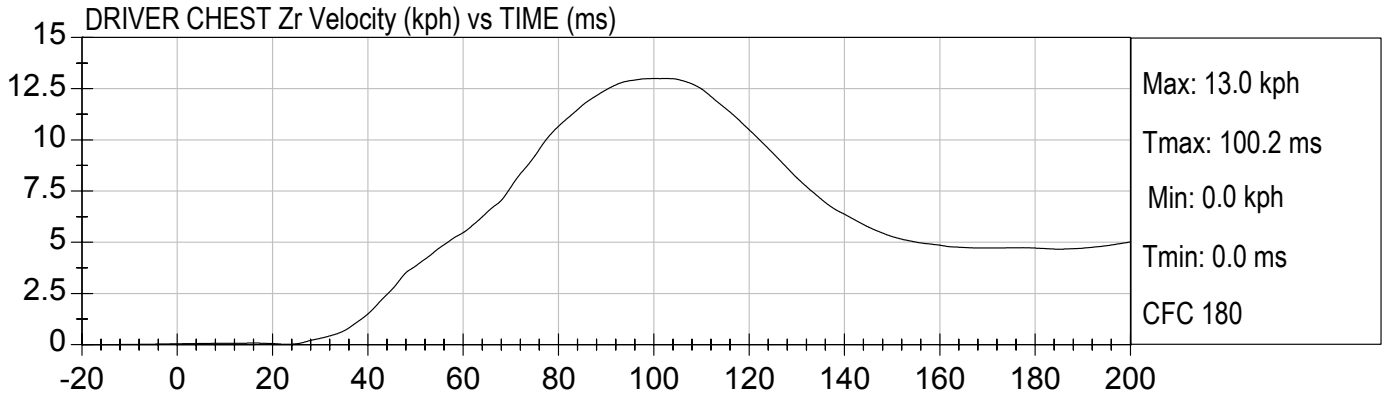






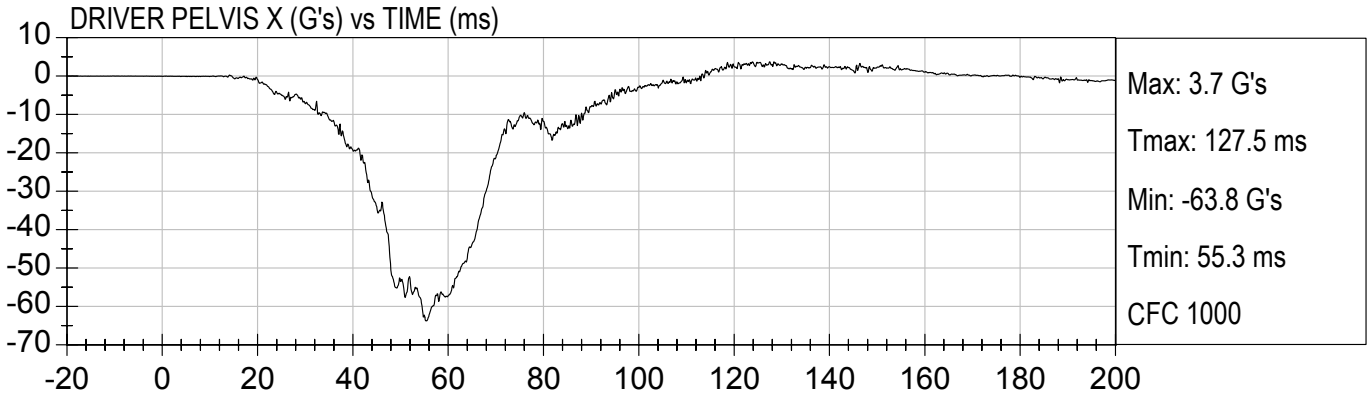

DRIVER CHEST Xr Velocity (kph) vs TIME (ms)
60
50
40
30
20
10
0
-10
-20
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 56.5 kph
Tmax: 0.0 ms
Min: -16.9 kph
Tmin: 133.3 ms
CFC 180

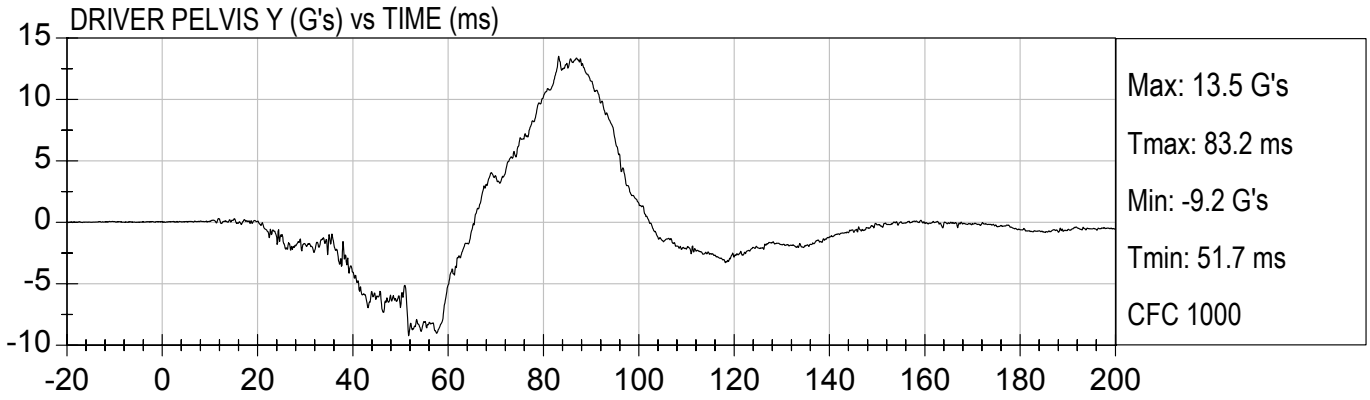

DRIVER CHEST Yr Velocity (kph) vs TIME (ms)
1
0
-1
-2
-3
-4
-5
-6
-7
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 0.2 kph
Tmax: 125.3 ms
Min: -6.6 kph
Tmin: 71.9 ms
CFC 180

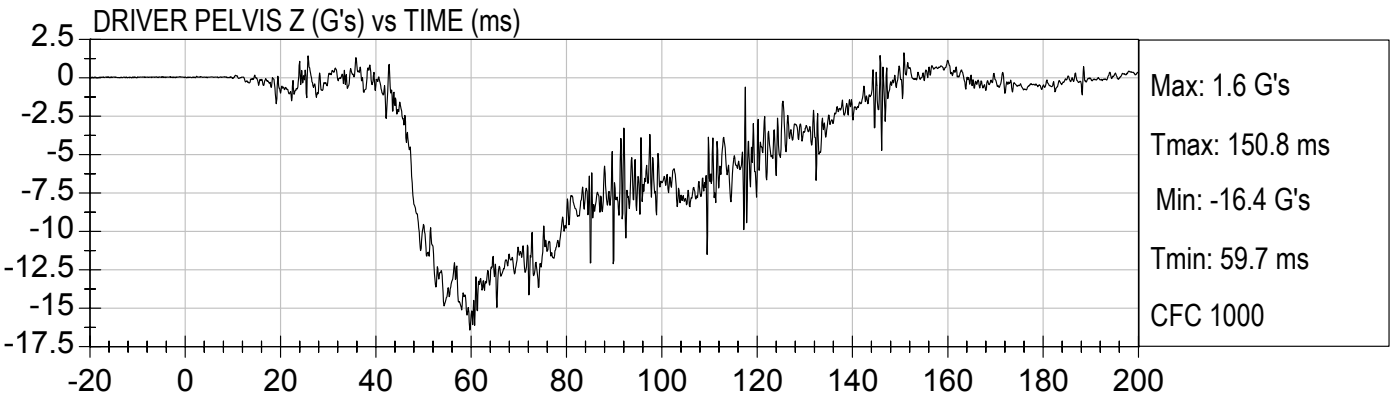

DRIVER CHEST Zr Velocity (kph) vs TIME (ms)
15
12.5
10
7.5
5
2.5
0
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 13.0 kph
Tmax: 100.2 ms
Min: 0.0 kph
Tmin: 0.0 ms
CFC 180

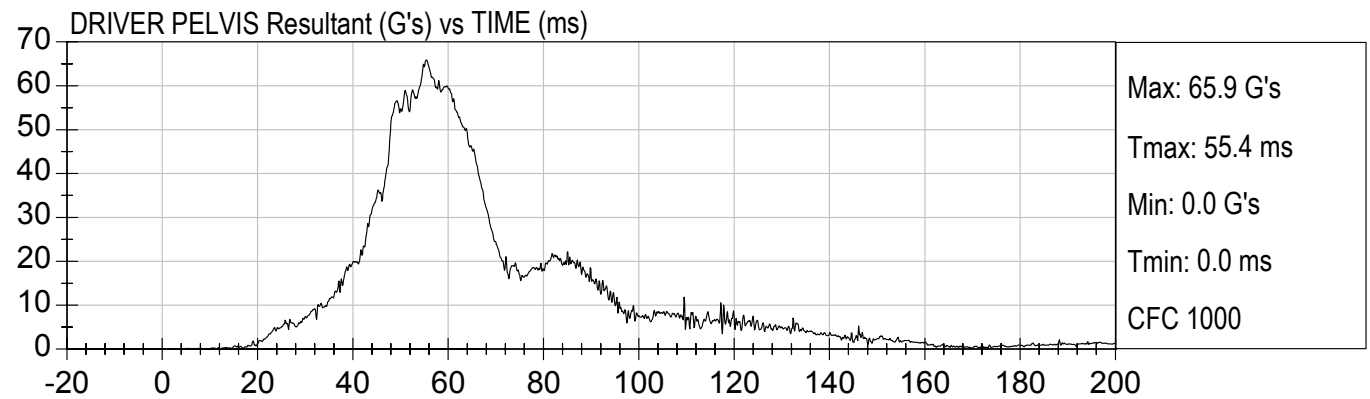
NCAP 35MPH FRONTAL (M40204)
2004 FORD F-150 SUPERCREW

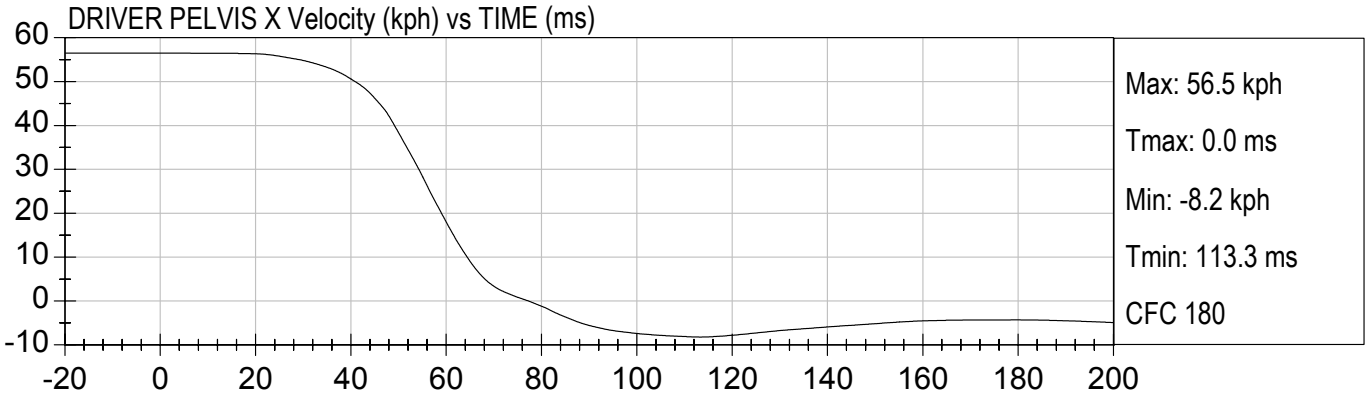
Test Date: 01/06/04
Speed: 35.1 mph (56.5 km/h)

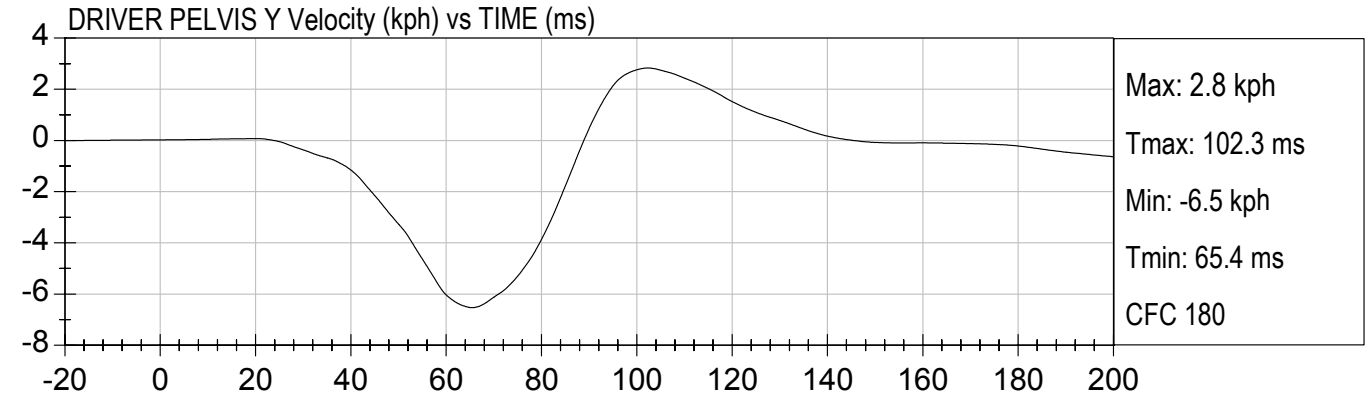


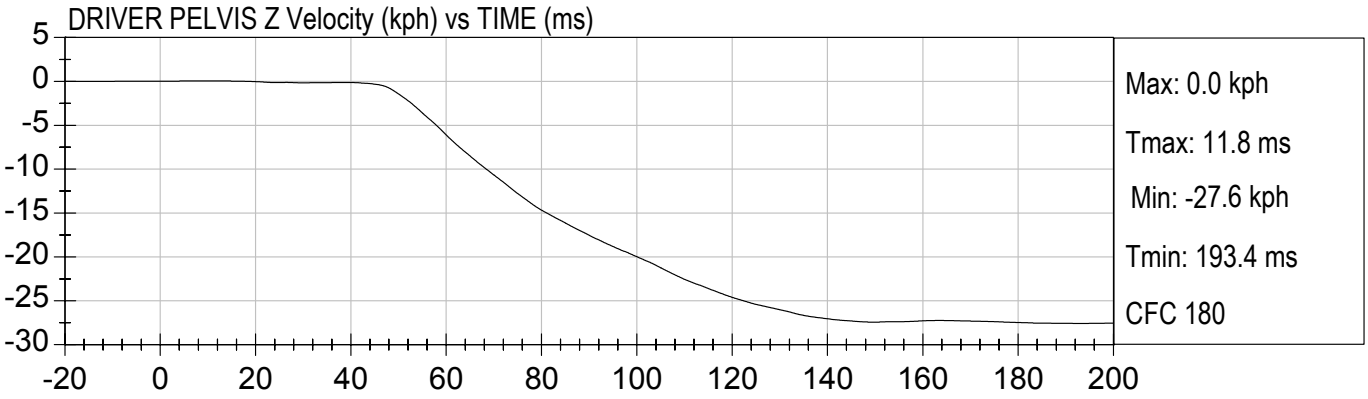






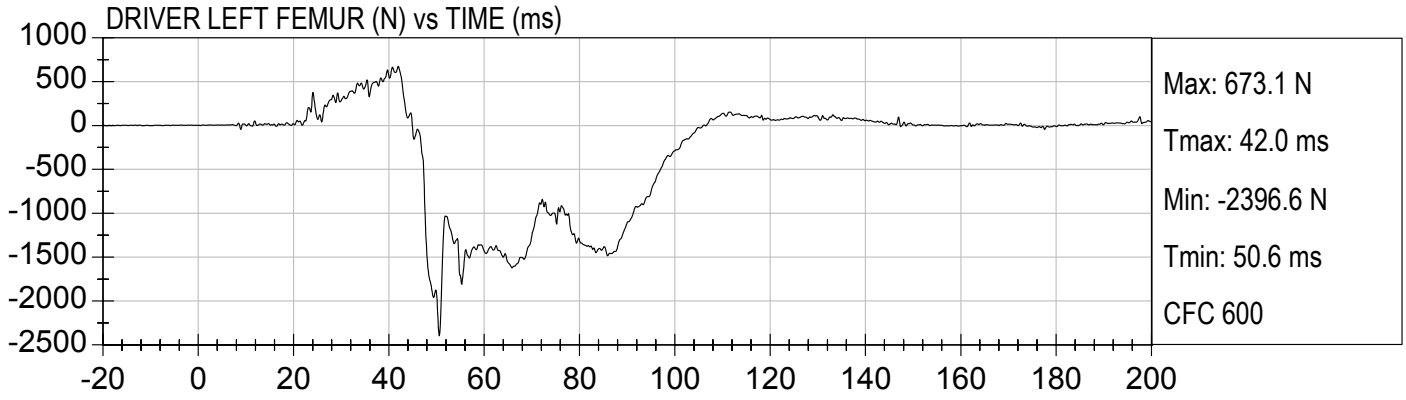

DRIVER PELVIS X Velocity (kph) vs TIME (ms)
60
50
40
30
20
10
0
-10
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 56.5 kph
Tmax: 0.0 ms
Min: -8.2 kph
Tmin: 113.3 ms
CFC 180

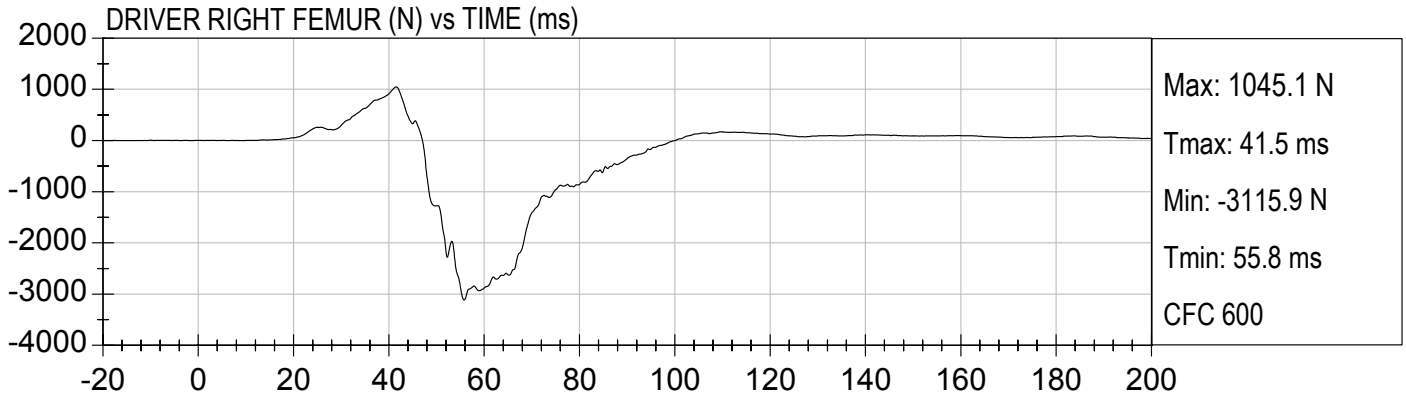

DRIVER PELVIS Y Velocity (kph) vs TIME (ms)
4
2
0
-2
-4
-6
-8
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 2.8 kph
Tmax: 102.3 ms
Min: -6.5 kph
Tmin: 65.4 ms
CFC 180

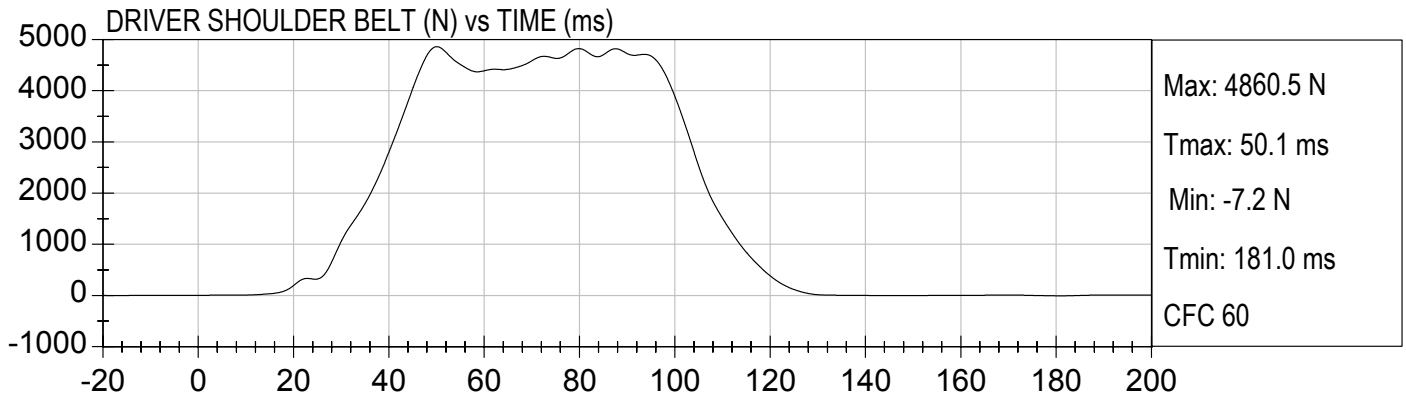

DRIVER PELVIS Z Velocity (kph) vs TIME (ms)
5
0
-5
-10
-15
-20
-25
-30
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 0.0 kph
Tmax: 11.8 ms
Min: -27.6 kph
Tmin: 193.4 ms
CFC 180

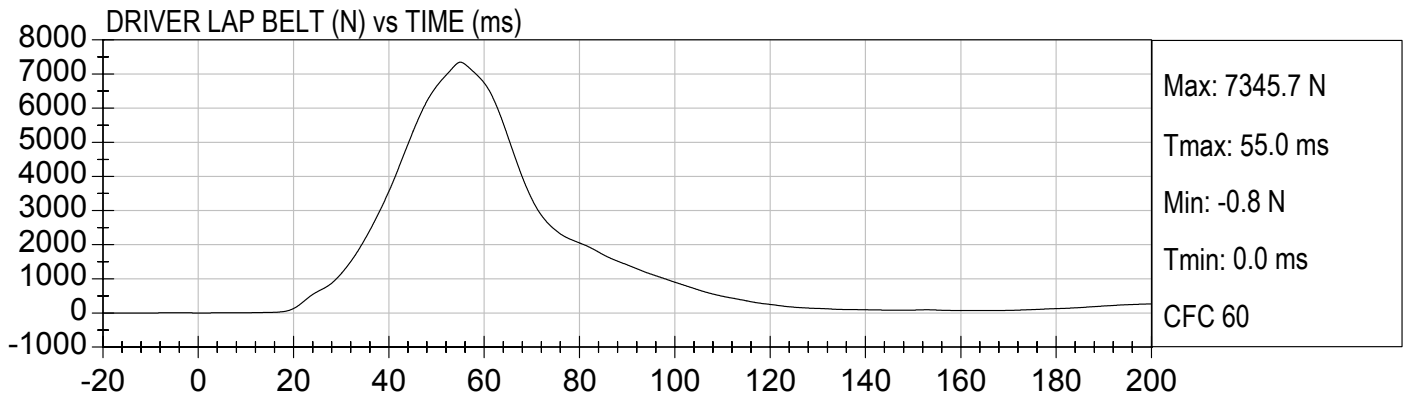
NCAP 35MPH FRONTAL (M40204)
2004 FORD F-150 SUPERCREW

Test Date: 01/06/04
Speed: 35.1 mph (56.5 km/h)



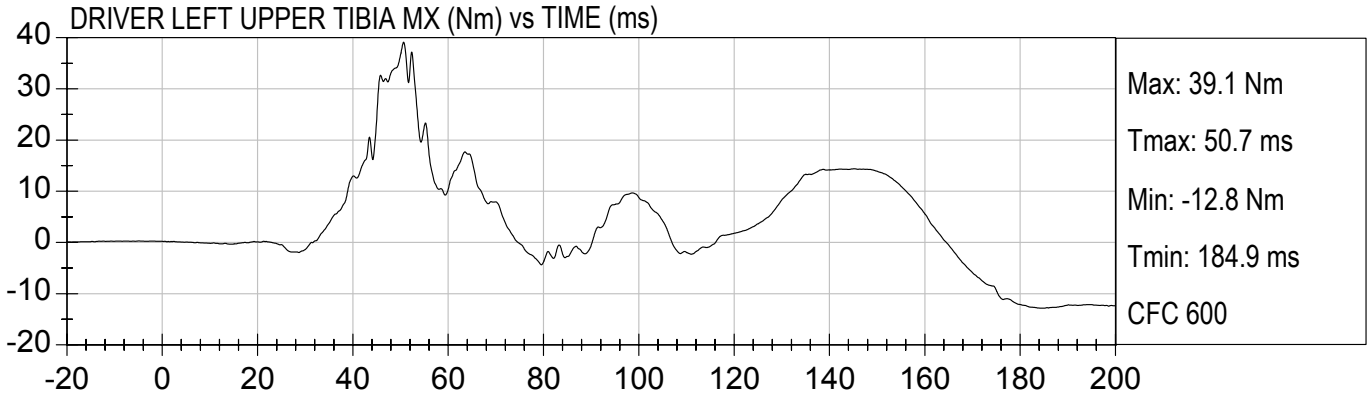


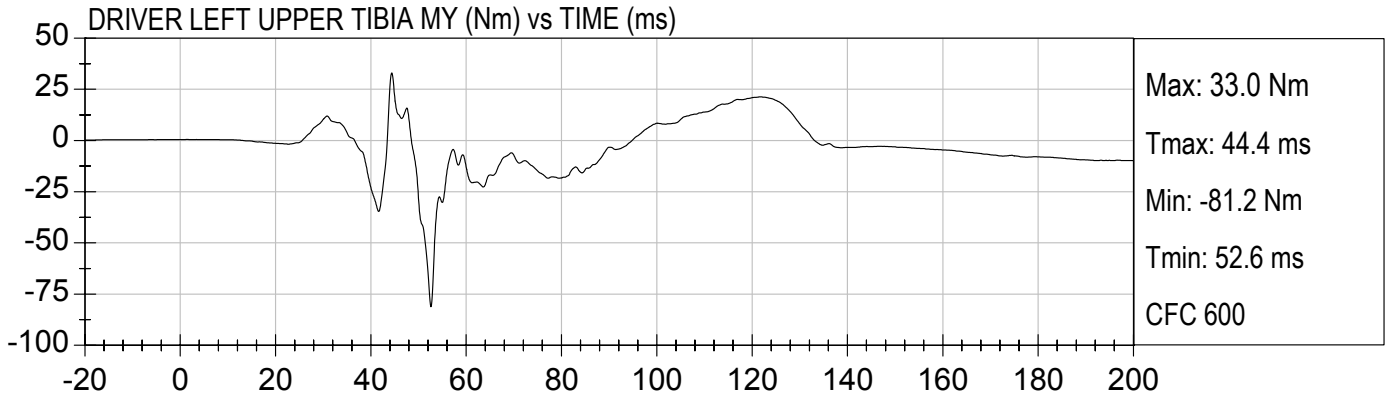


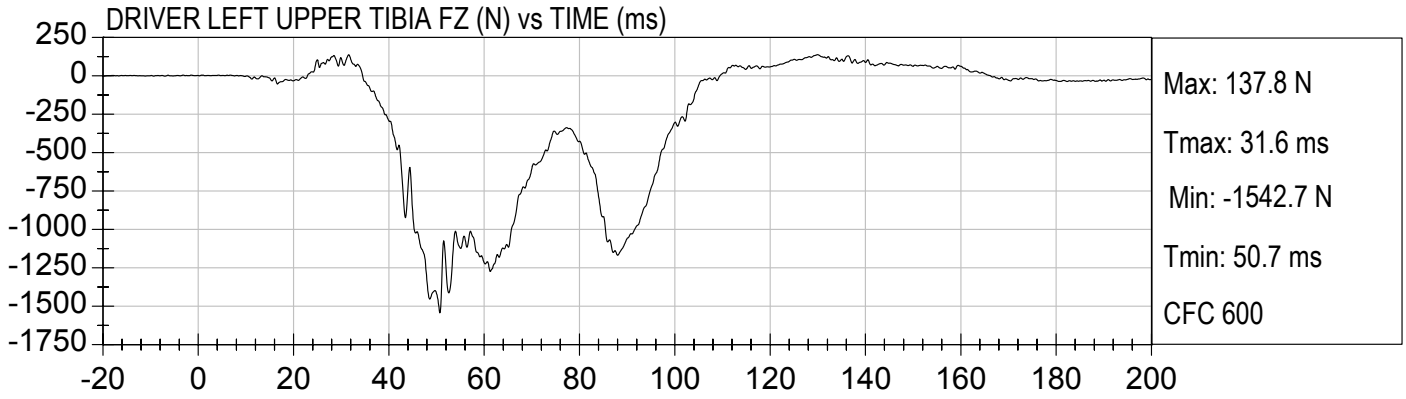


NCAP 35MPH FRONTAL (M40204)
2004 FORD F-150 SUPERCREW

Test Date: 01/06/04
Speed: 35.1 mph (56.5 km/h)

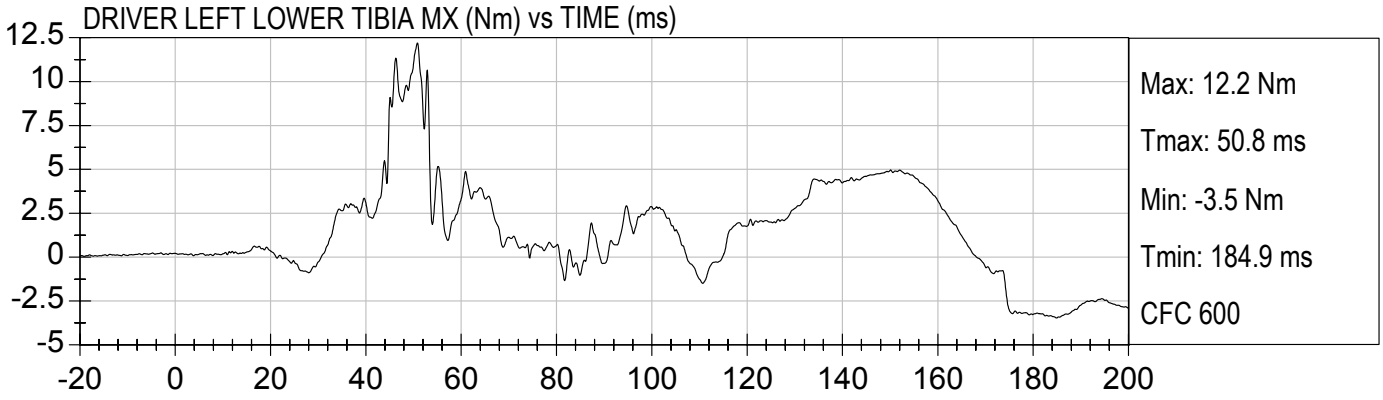


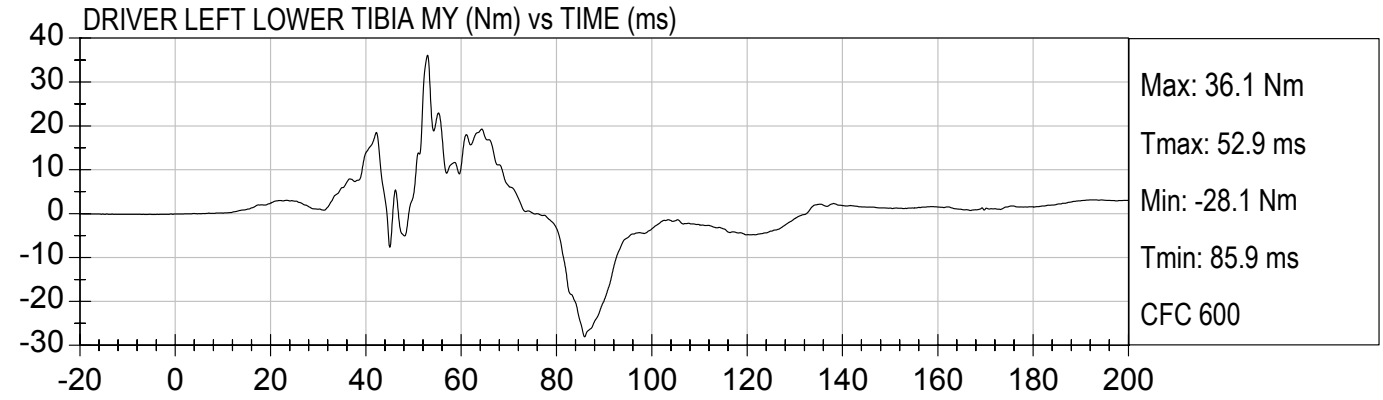


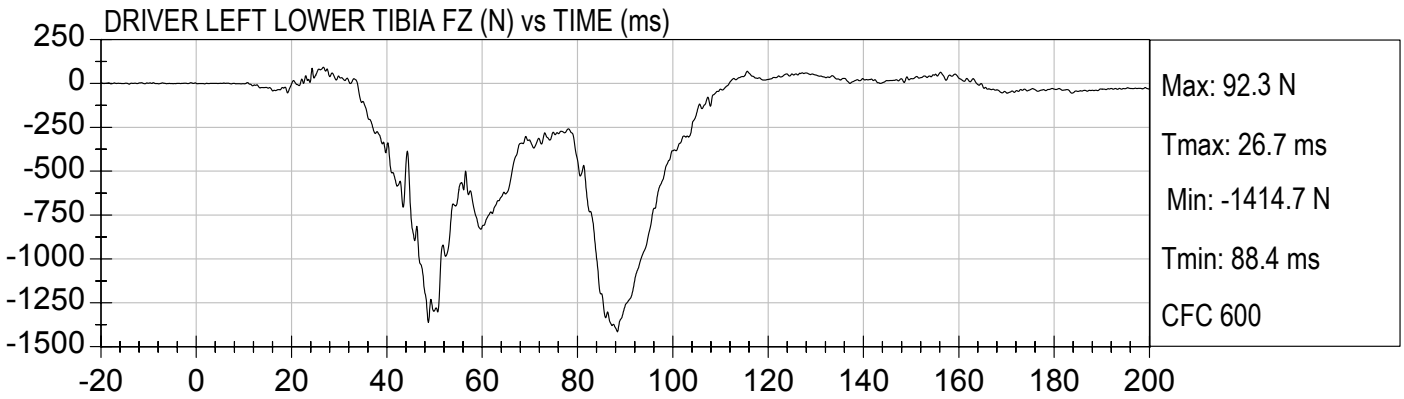


NCAP 35MPH FRONTAL (M40204)
2004 FORD F-150 SUPERCREW

Test Date: 01/06/04
Speed: 35.1 mph (56.5 km/h)

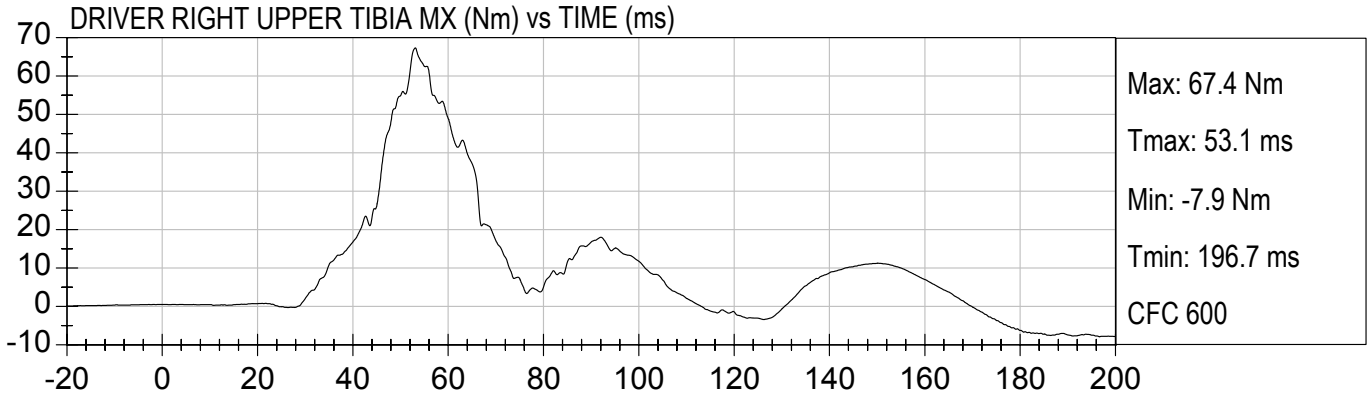


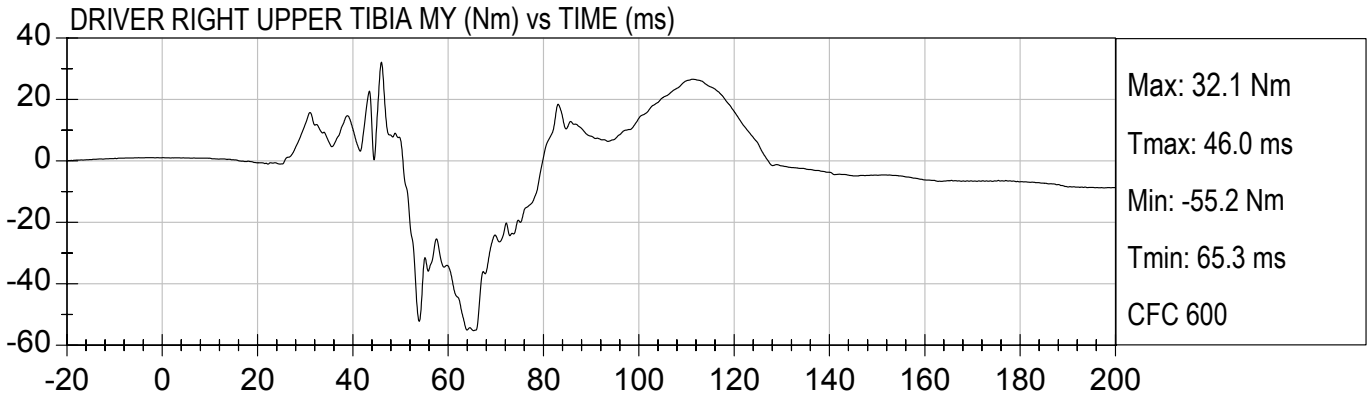


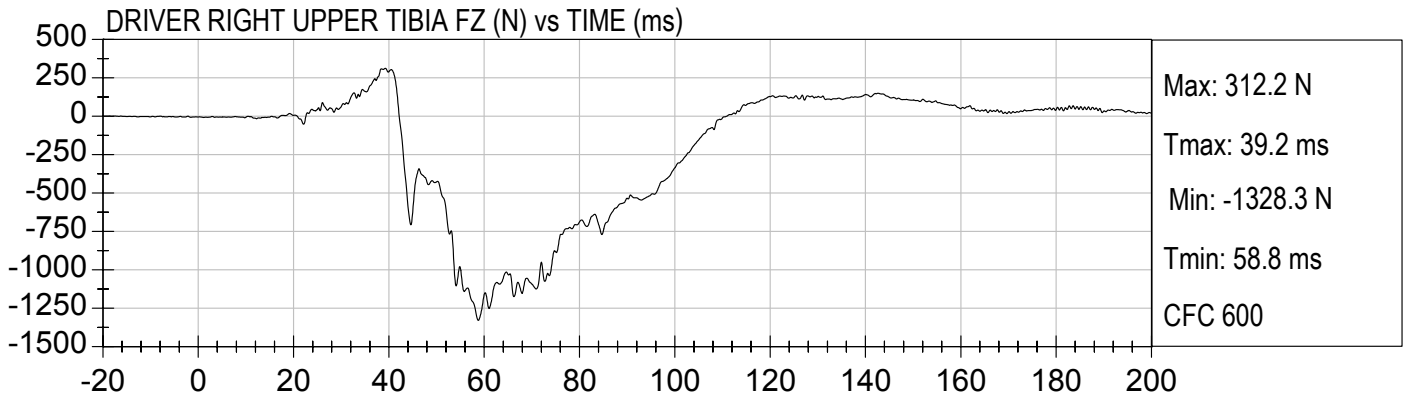


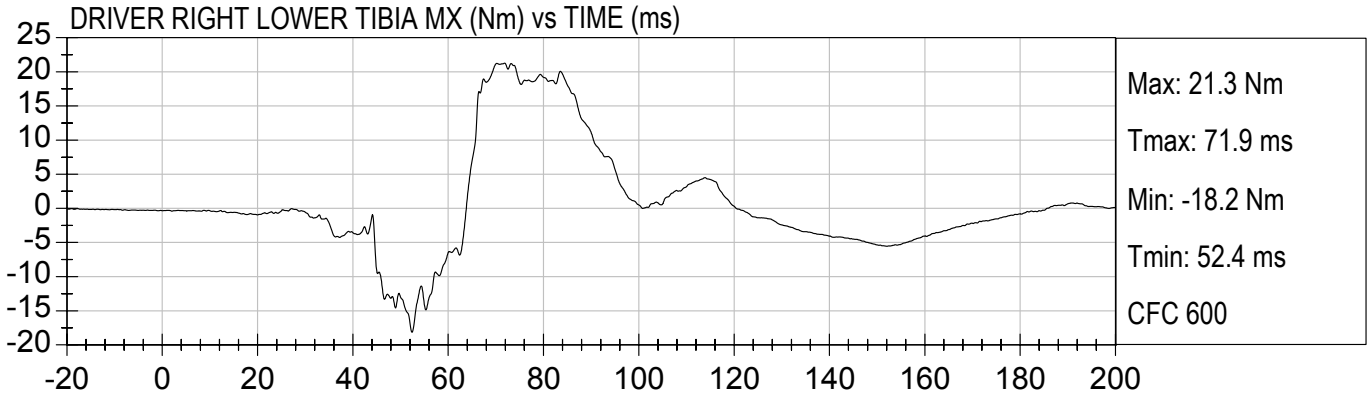
NCAP 35MPH FRONTAL (M40204)
2004 FORD F-150 SUPERCREW

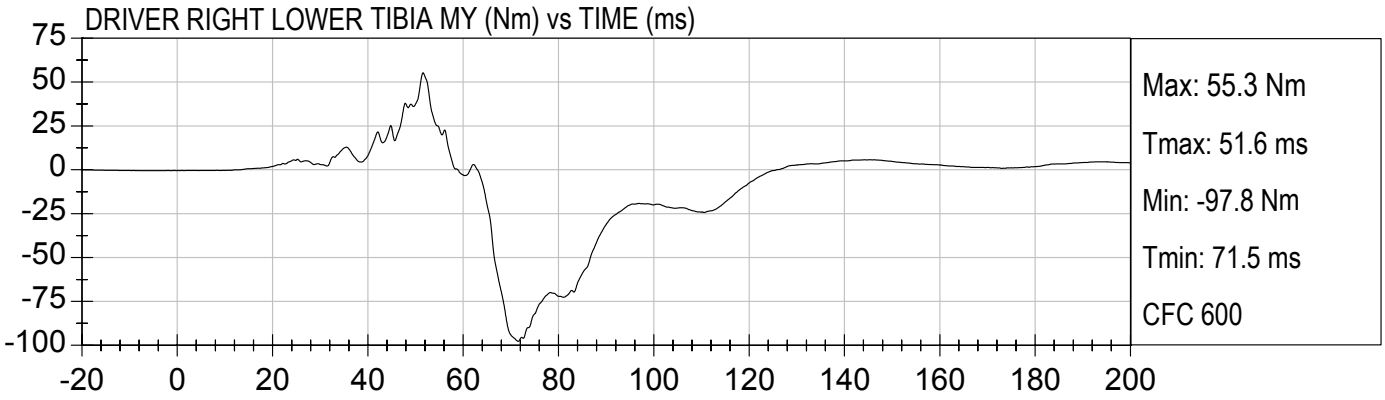
Test Date: 01/06/04
Speed: 35.1 mph (56.5 km/h)

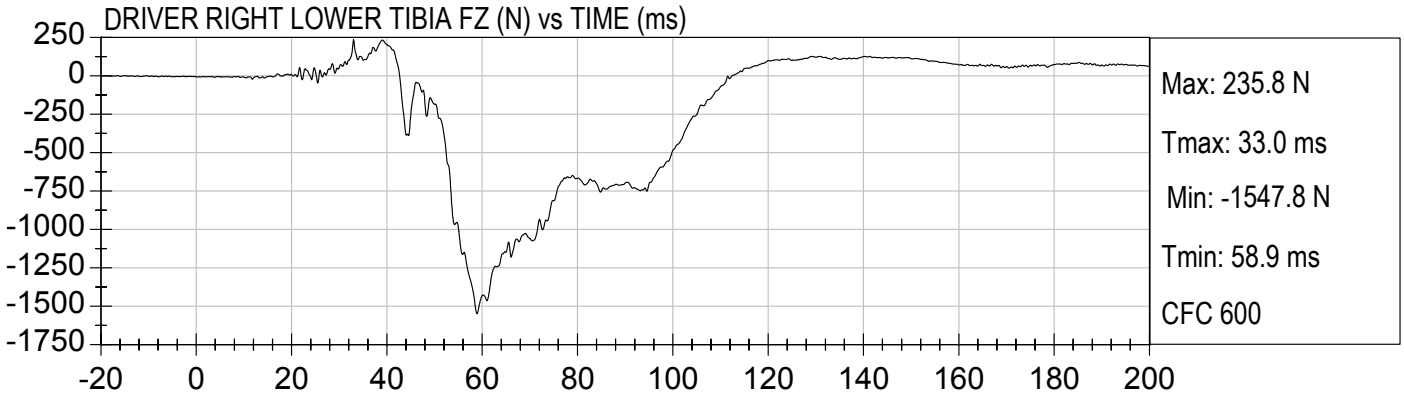


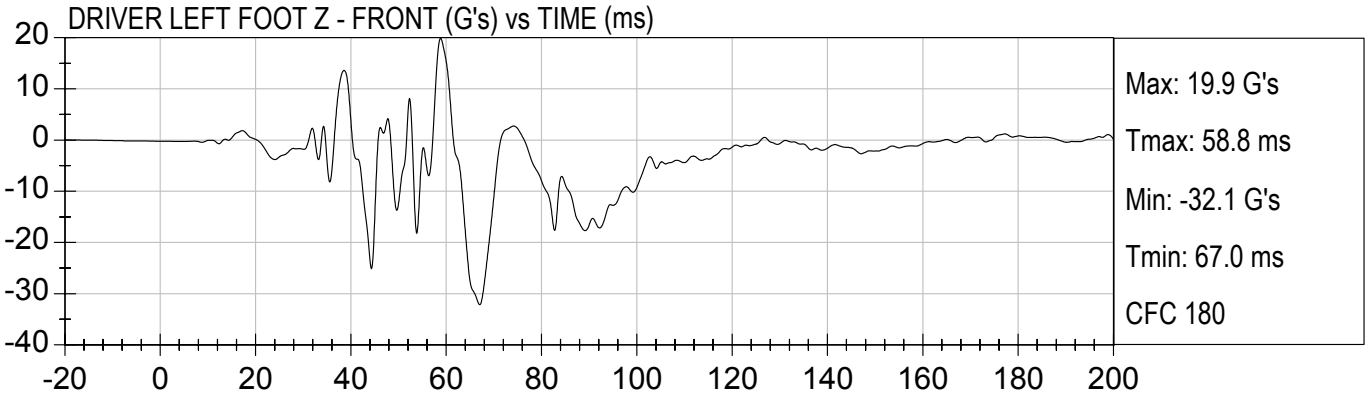


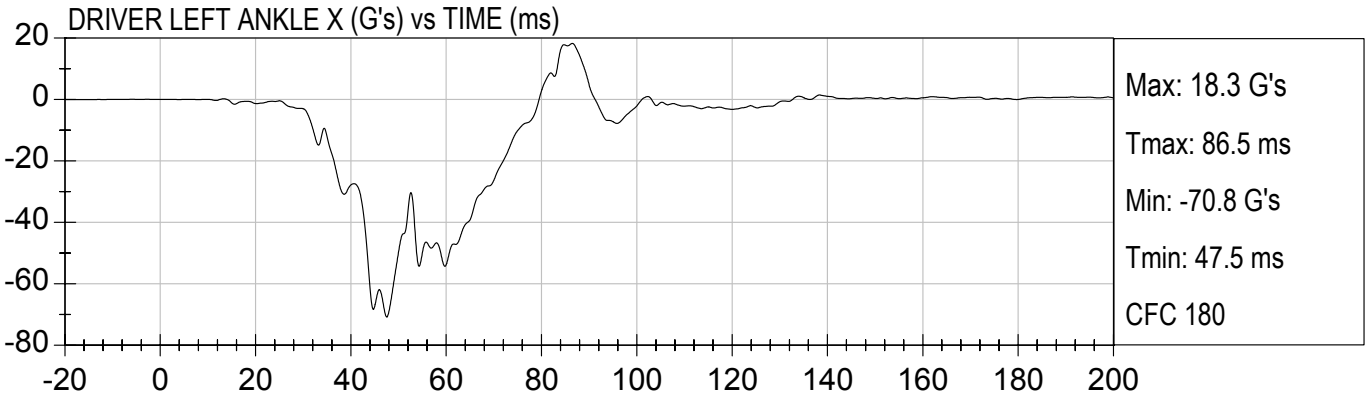


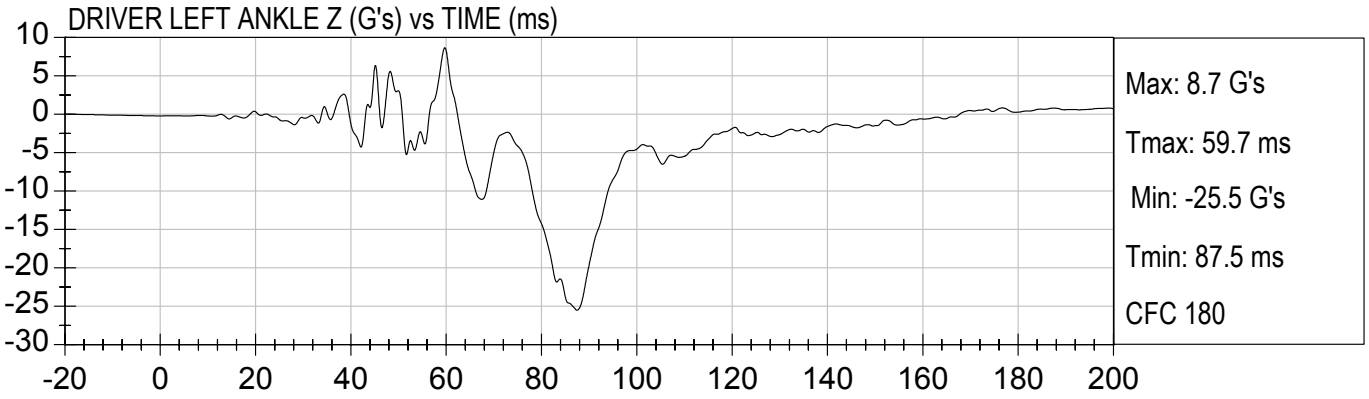

DRIVER RIGHT LOWER TIBIA MX (Nm) vs TIME (ms)
25
20
15
10
5
0
-5
-10
-15
-20
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 21.3 Nm
Tmax: 71.9 ms
Min: -18.2 Nm
Tmin: 52.4 ms
CFC 600

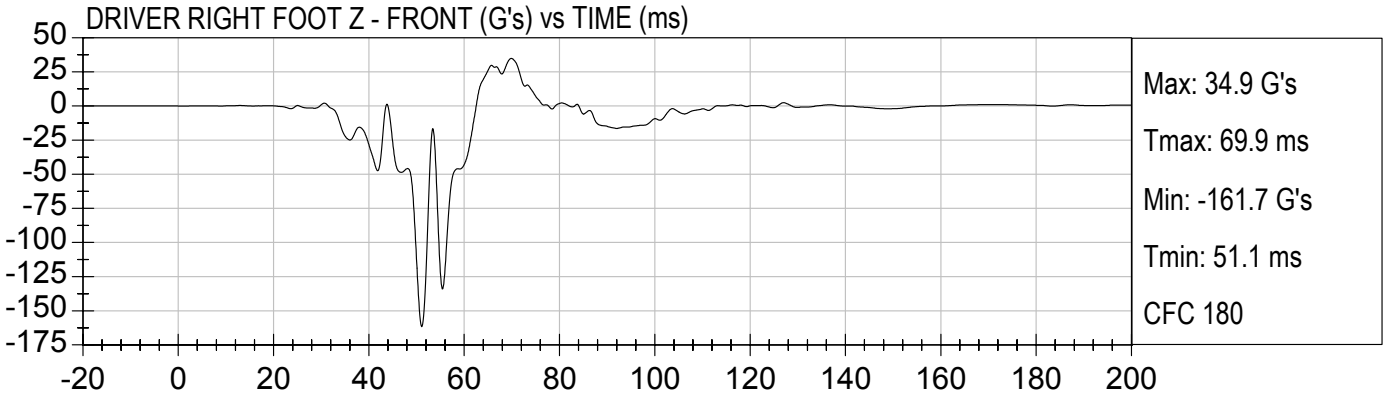

DRIVER RIGHT LOWER TIBIA MY (Nm) vs TIME (ms)
75
50
25
0
-25
-50
-75
-100
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 55.3 Nm
Tmax: 51.6 ms
Min: -97.8 Nm
Tmin: 71.5 ms
CFC 600

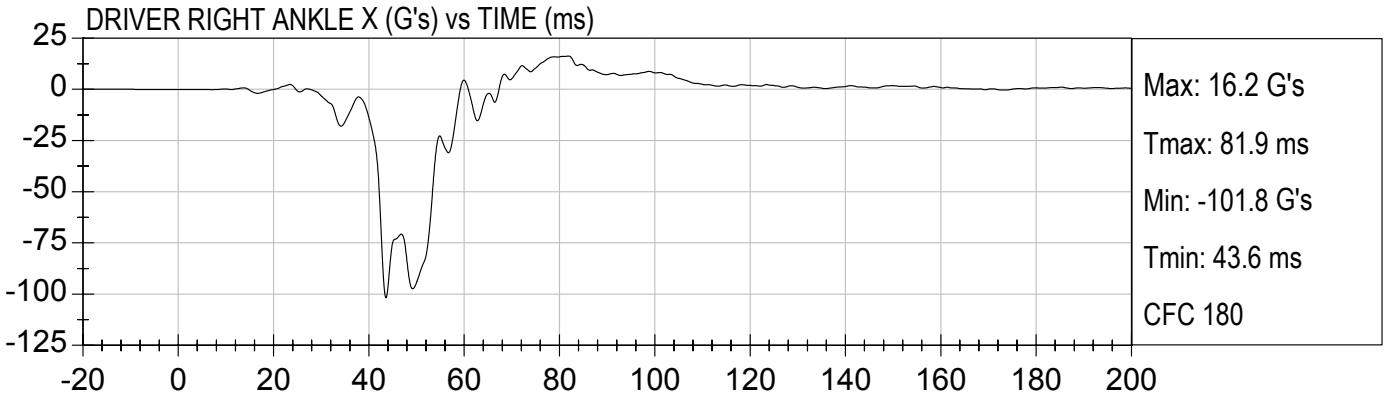

DRIVER RIGHT LOWER TIBIA FZ (N) vs TIME (ms)
250
0
-250
-500
-750
-1000
-1250
-1500
-1750
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 235.8 N
Tmax: 33.0 ms
Min: -1547.8 N
Tmin: 58.9 ms
CFC 600

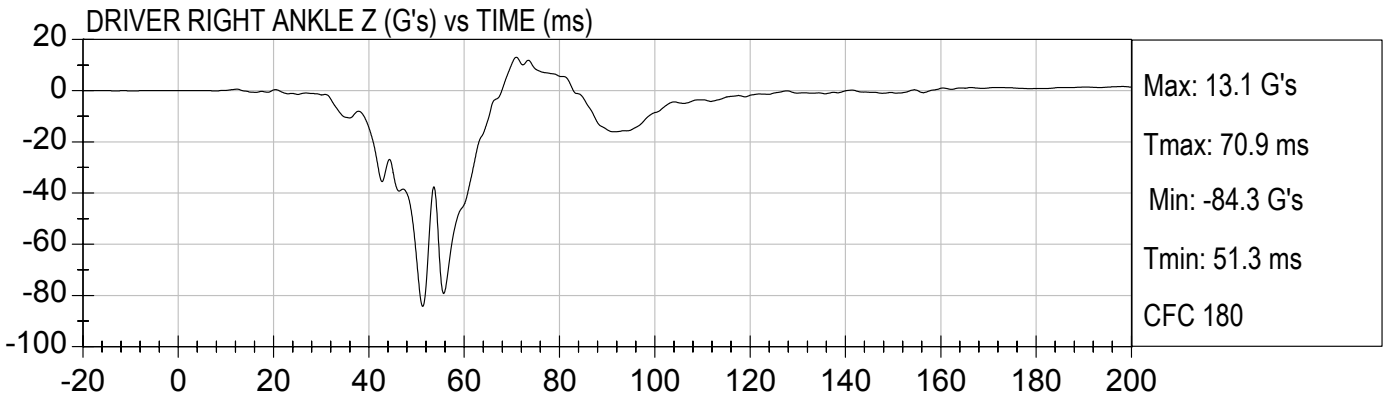

DRIVER LEFT FOOT Z - FRONT (G's) vs TIME (ms)
20
10
0
-10
-20
-30
-40
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 19.9 G's
Tmax: 58.8 ms
Min: -32.1 G's
Tmin: 67.0 ms
CFC 180


DRIVER LEFT ANKLE X (G's) vs TIME (ms)
20
0
-20
-40
-60
-80
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 18.3 G's
Tmax: 86.5 ms
Min: -70.8 G's
Tmin: 47.5 ms
CFC 180


DRIVER LEFT ANKLE Z (G's) vs TIME (ms)
10
5
0
-5
-10
-15
-20
-25
-30
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 8.7 G's
Tmax: 59.7 ms
Min: -25.5 G's
Tmin: 87.5 ms
CFC 180

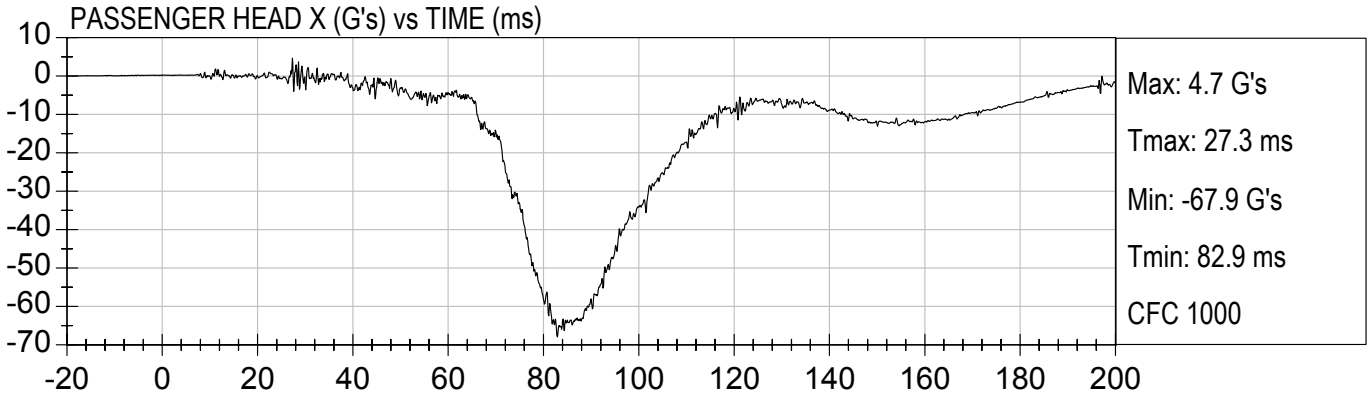

DRIVER RIGHT FOOT Z - FRONT (G's) vs TIME (ms)
50
25
0
-25
-50
-75
-100
-125
-150
-175
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 34.9 G's
Tmax: 69.9 ms
Min: -161.7 G's
Tmin: 51.1 ms
CFC 180

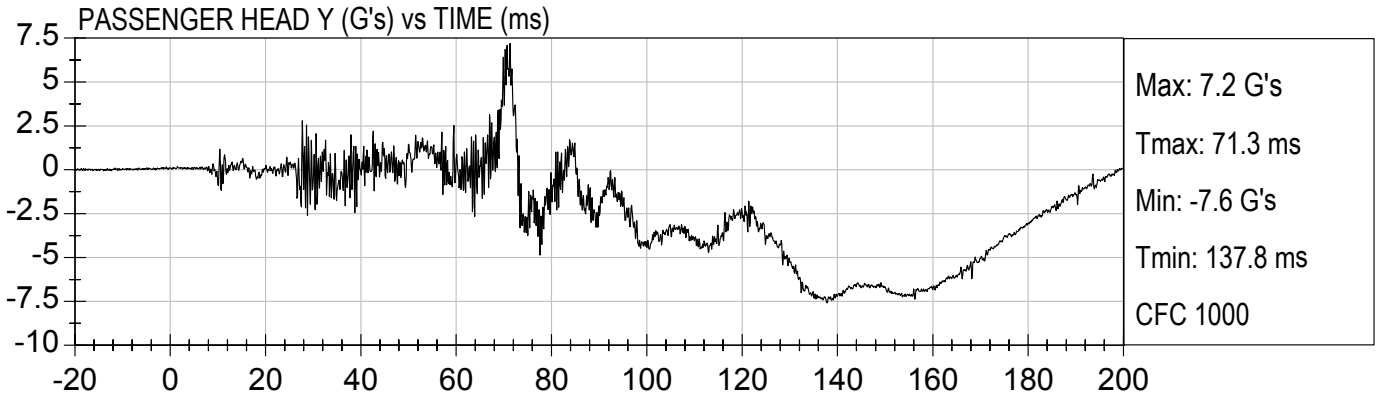

DRIVER RIGHT ANKLE X (G's) vs TIME (ms)
25
0
-25
-50
-75
-100
-125
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 16.2 G's
Tmax: 81.9 ms
Min: -101.8 G's
Tmin: 43.6 ms
CFC 180

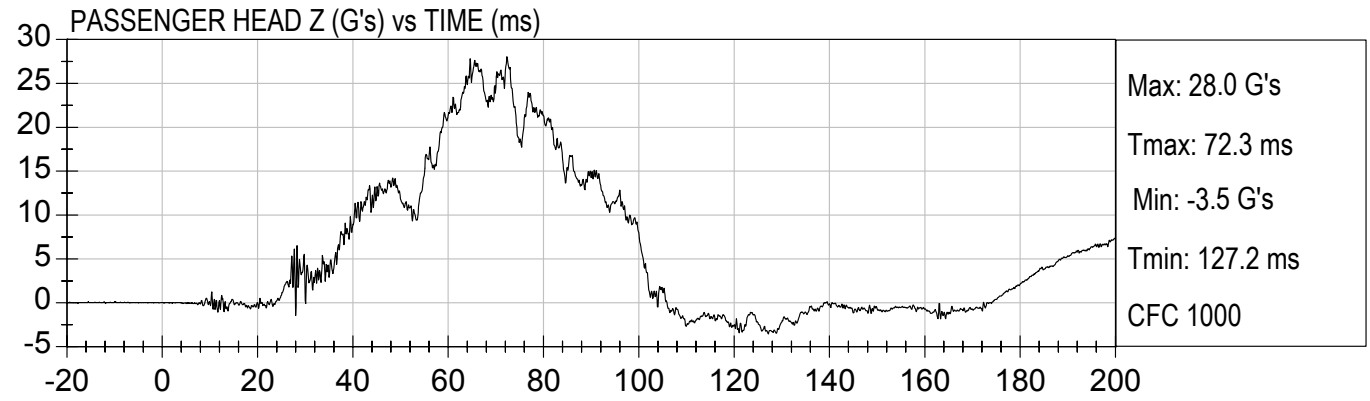

DRIVER RIGHT ANKLE Z (G's) vs TIME (ms)
20
0
-20
-40
-60
-80
-100
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 13.1 G's
Tmax: 70.9 ms
Min: -84.3 G's
Tmin: 51.3 ms
CFC 180

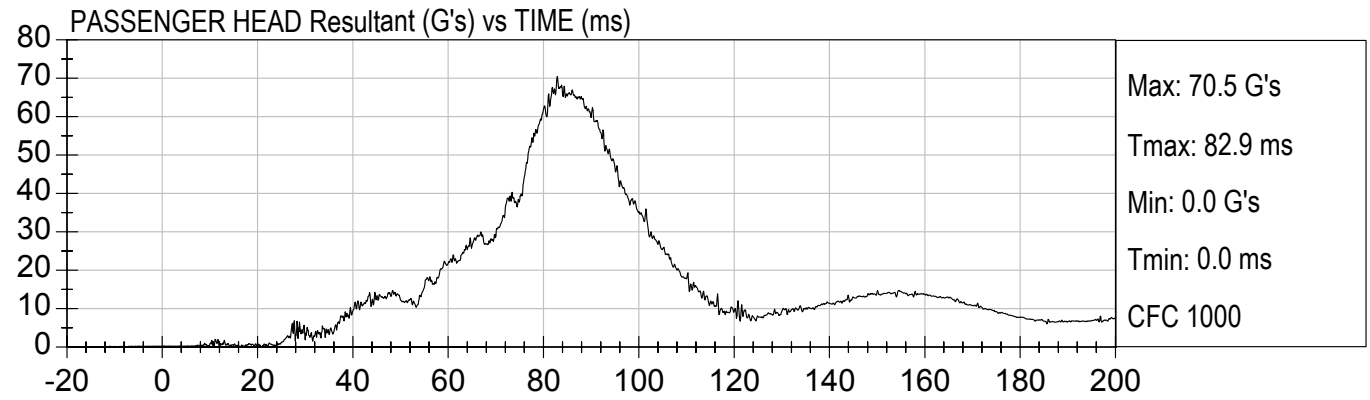
NCAP 35MPH FRONTAL (M40204)
2004 FORD F-150 SUPERCREW

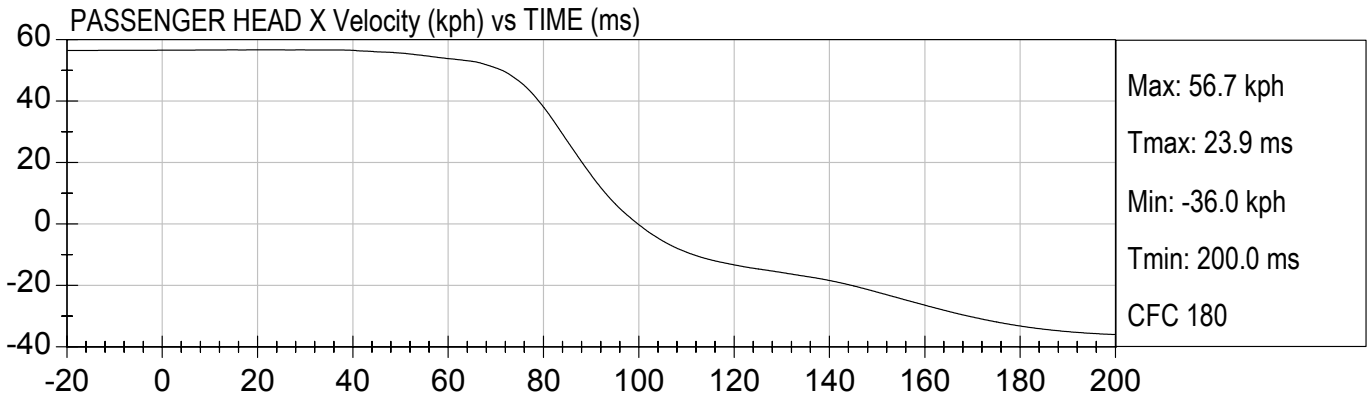
Test Date: 01/06/04
Speed: 35.1 mph (56.5 km/h)

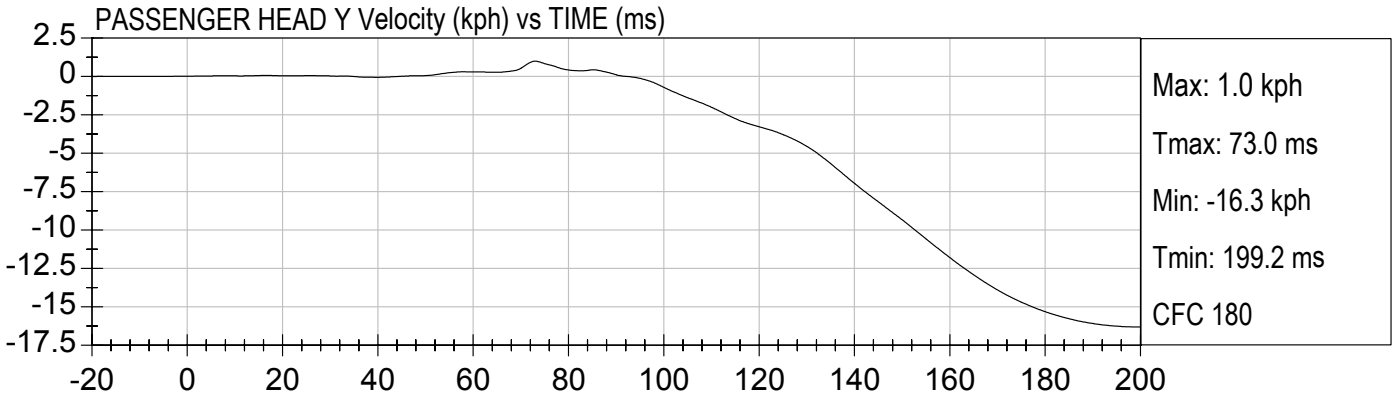


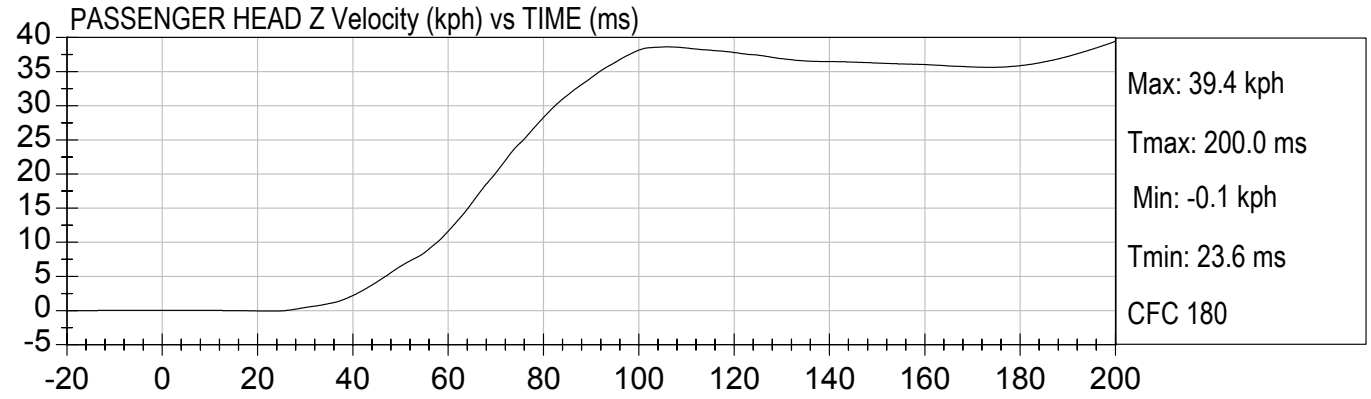


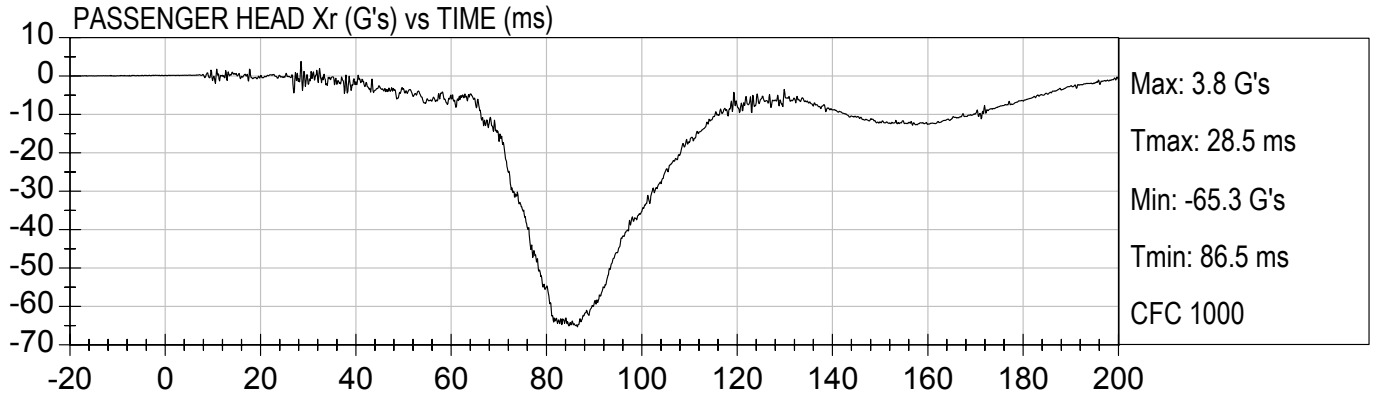


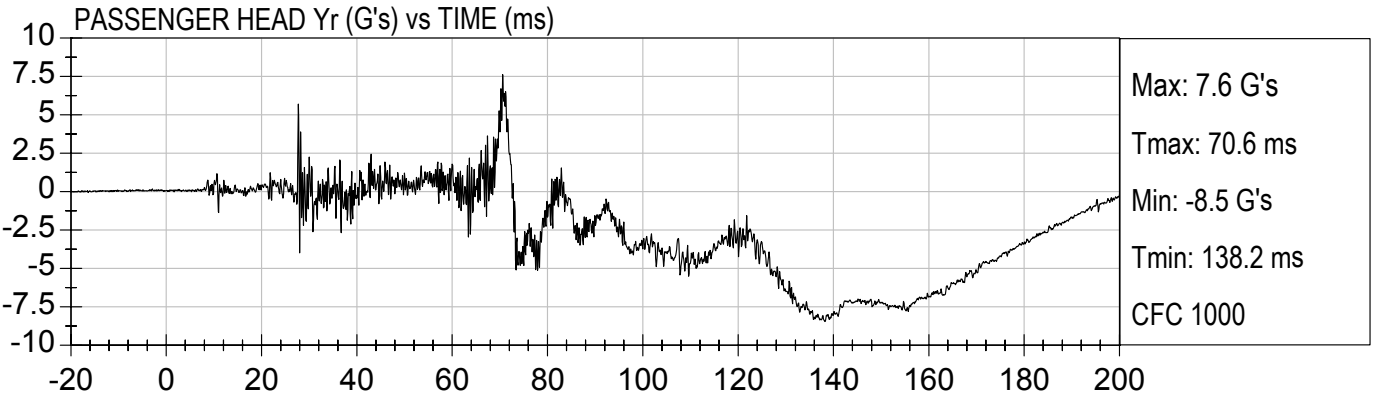


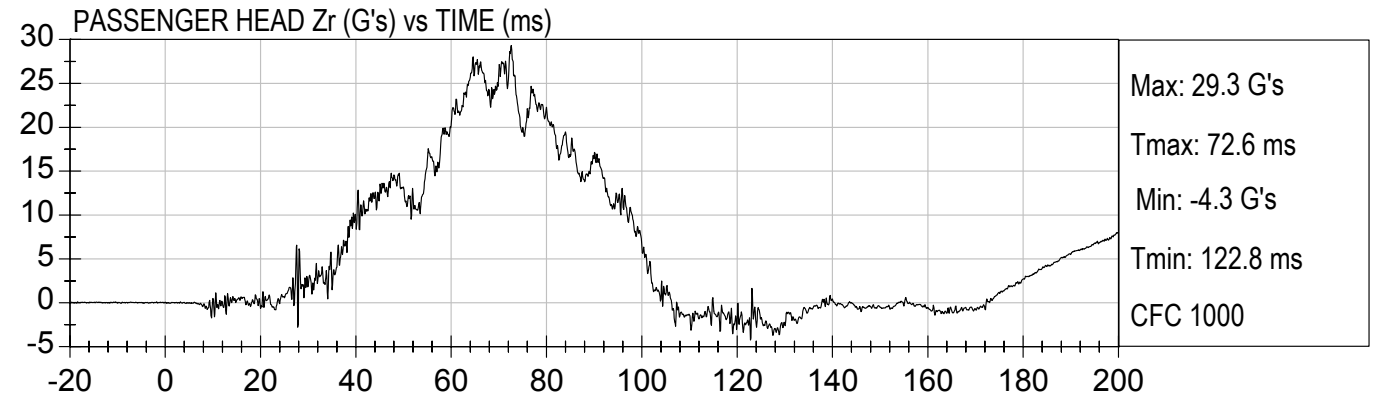

PASSENGER HEAD X Velocity (kph) vs TIME (ms)
60
40
20
0
-20
-40
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 56.7 kph
Tmax: 23.9 ms
Min: -36.0 kph
Tmin: 200.0 ms
CFC 180

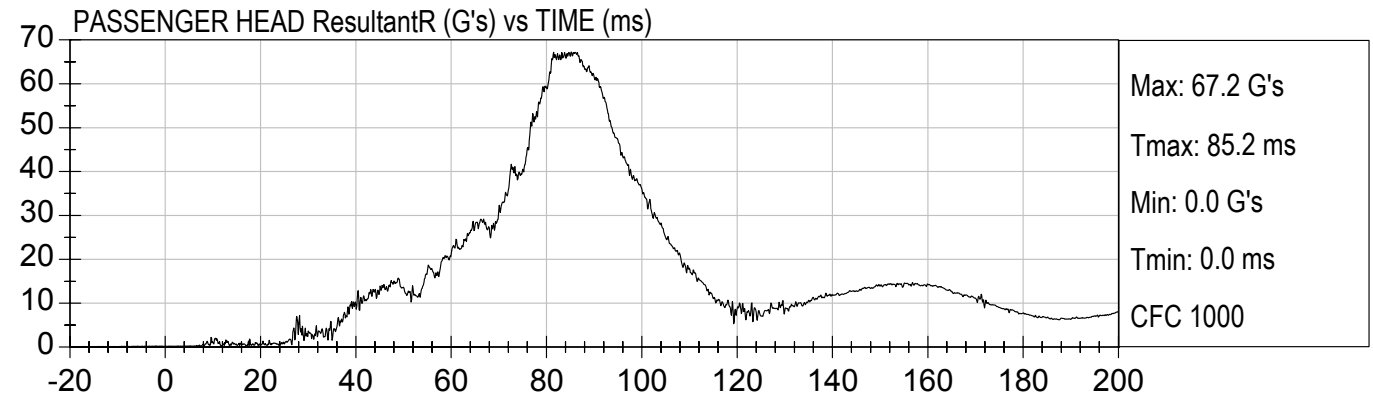

PASSENGER HEAD Y Velocity (kph) vs TIME (ms)
2.5
0
-2.5
-5
-7.5
-10
-12.5
-15
-17.5
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 1.0 kph
Tmax: 73.0 ms
Min: -16.3 kph
Tmin: 199.2 ms
CFC 180

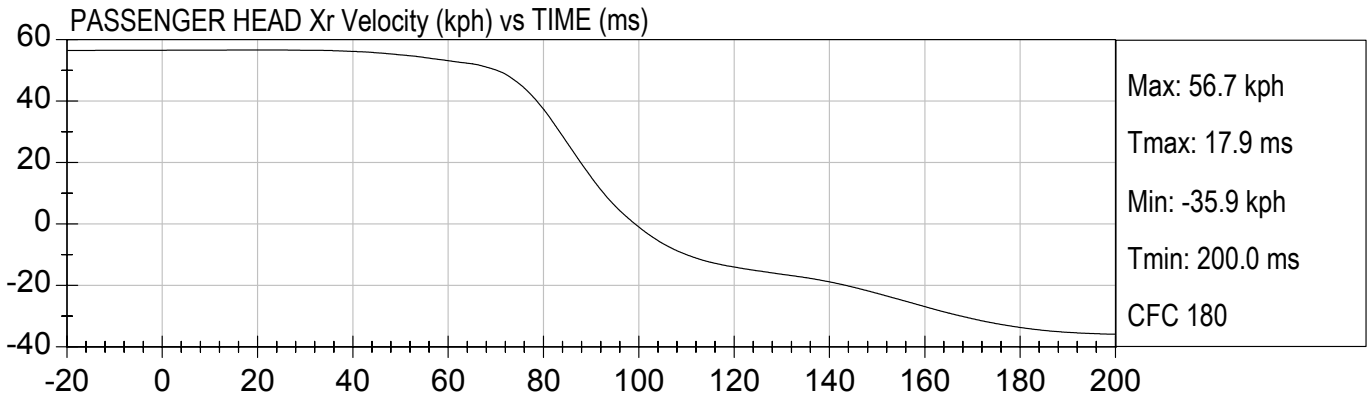

PASSENGER HEAD Z Velocity (kph) vs TIME (ms)
40
35
30
25
20
15
10
5
0
-5
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 39.4 kph
Tmax: 200.0 ms
Min: -0.1 kph
Tmin: 23.6 ms
CFC 180

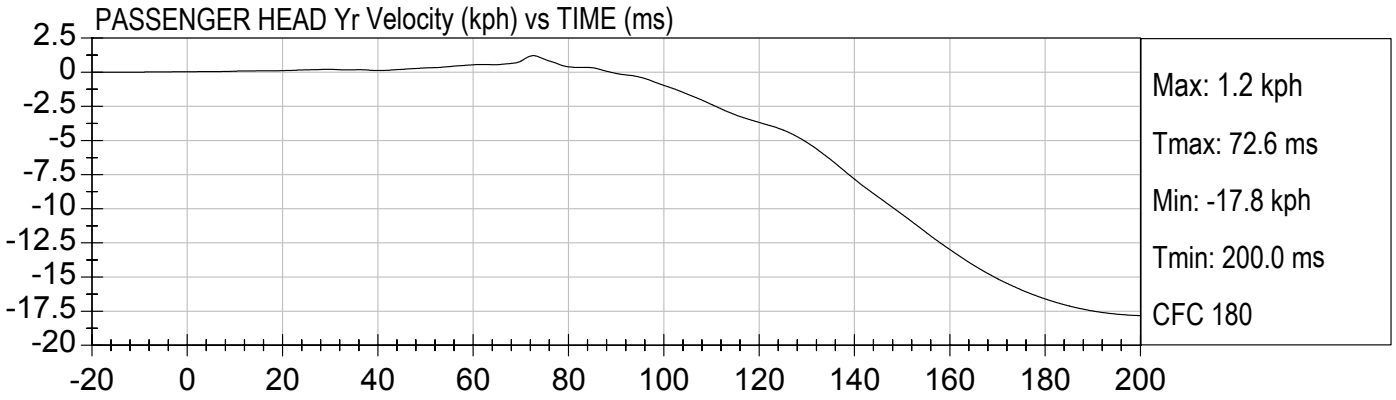

PASSENGER HEAD Xr (G's) vs TIME (ms)
10
0
-10
-20
-30
-40
-50
-60
-70
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 3.8 G's
Tmax: 28.5 ms
Min: -65.3 G's
Tmin: 86.5 ms
CFC 1000

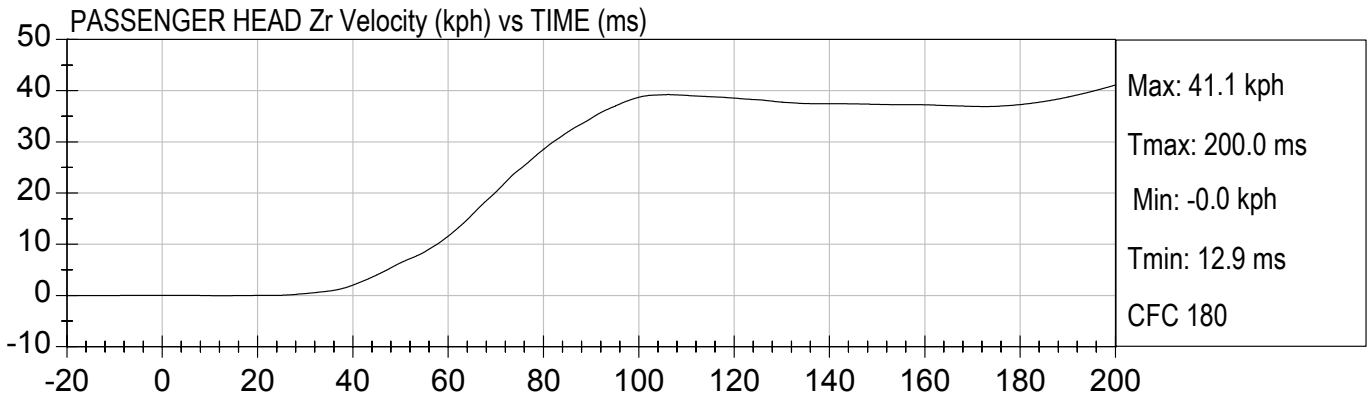

PASSENGER HEAD Yr (G's) vs TIME (ms)
10
7.5
5
2.5
0
-2.5
-5
-7.5
-10
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 7.6 G's
Tmax: 70.6 ms
Min: -8.5 G's
Tmin: 138.2 ms
CFC 1000


PASSENGER HEAD Zr (G's) vs TIME (ms)
30
25
20
15
10
5
0
-5
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 29.3 G's
Tmax: 72.6 ms
Min: -4.3 G's
Tmin: 122.8 ms
CFC 1000


PASSENGER HEAD ResultantR (G's) vs TIME (ms)
70
60
50
40
30
20
10
0
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 67.2 G's
Tmax: 85.2 ms
Min: 0.0 G's
Tmin: 0.0 ms
CFC 1000

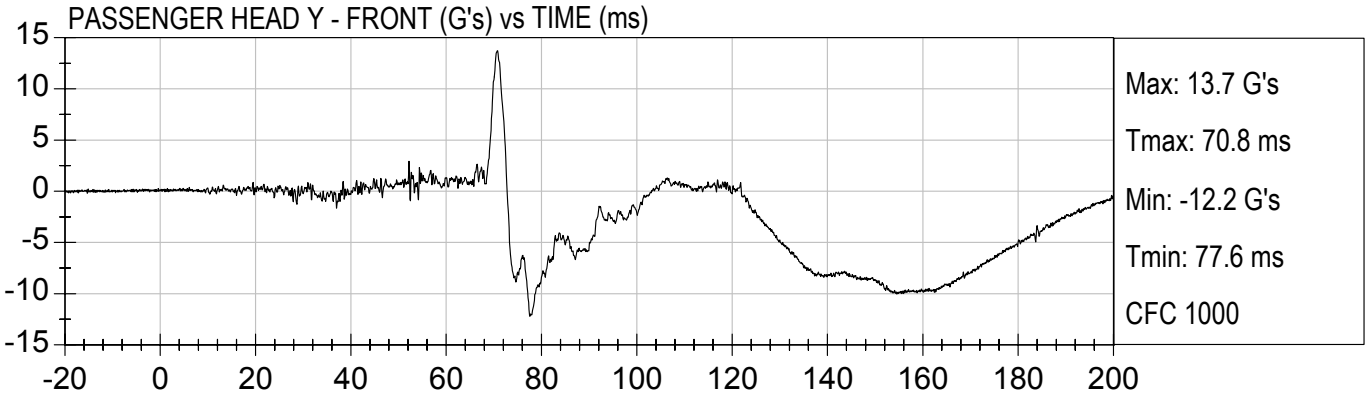

PASSENGER HEAD Xr Velocity (kph) vs TIME (ms)
60
40
20
0
-20
-40
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 56.7 kph
Tmax: 17.9 ms
Min: -35.9 kph
Tmin: 200.0 ms
CFC 180

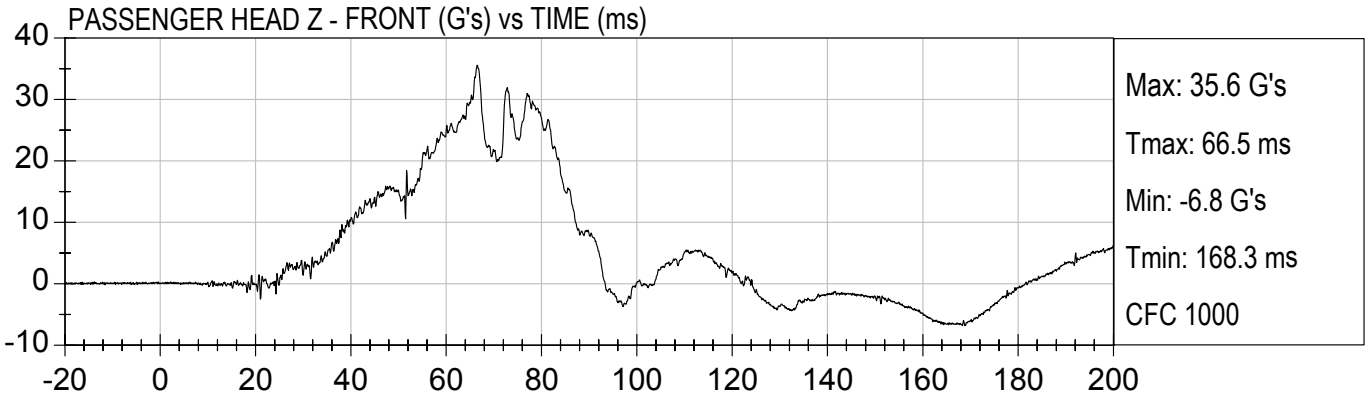

PASSENGER HEAD Yr Velocity (kph) vs TIME (ms)
2.5
0
-2.5
-5
-7.5
-10
-12.5
-15
-17.5
-20
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 1.2 kph
Tmax: 72.6 ms
Min: -17.8 kph
Tmin: 200.0 ms
CFC 180

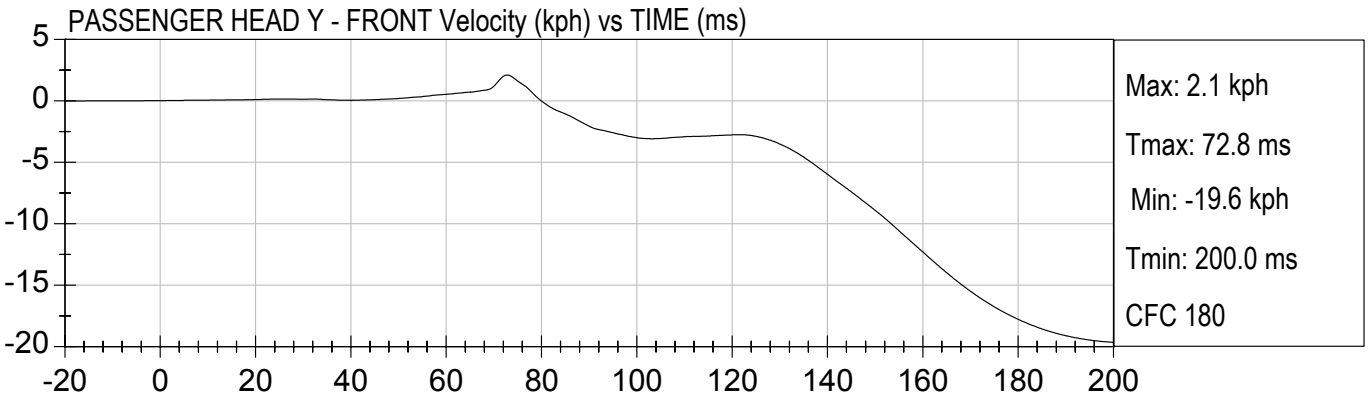

PASSENGER HEAD Zr Velocity (kph) vs TIME (ms)
50
40
30
20
10
0
-10
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 41.1 kph
Tmax: 200.0 ms
Min: -0.0 kph
Tmin: 12.9 ms
CFC 180

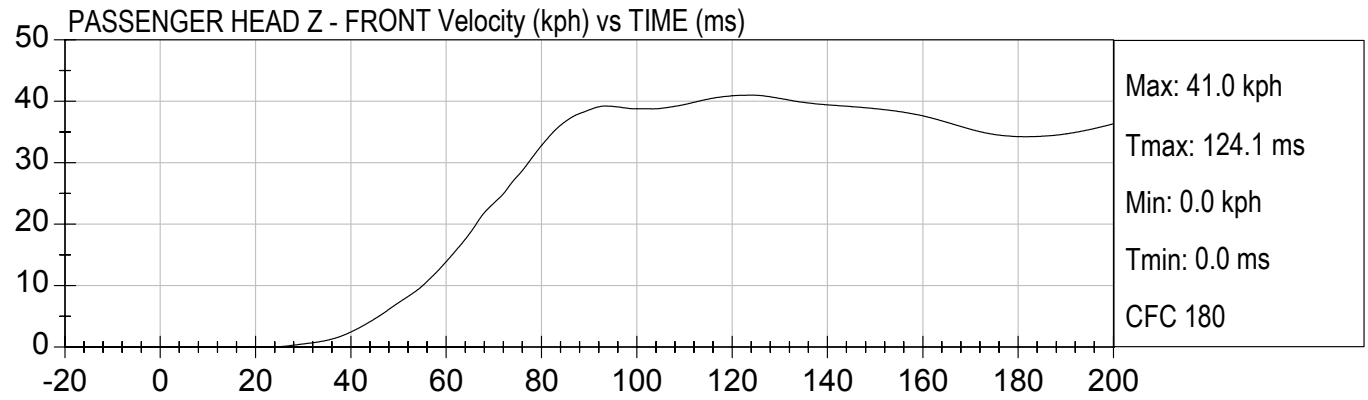
NCAP 35MPH FRONTAL (M40204)
2004 FORD F-150 SUPERCREW

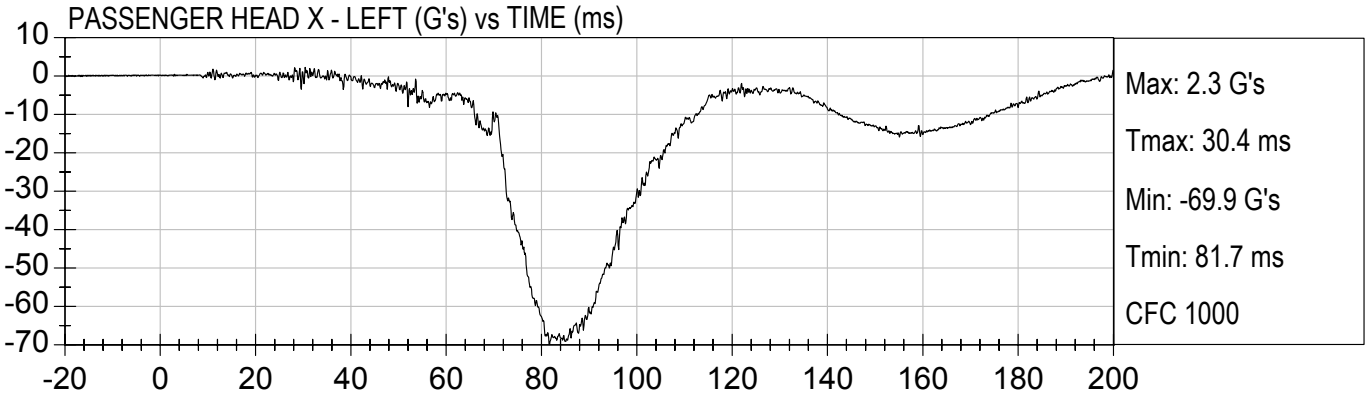
Test Date: 01/06/04
Speed: 35.1 mph (56.5 km/h)

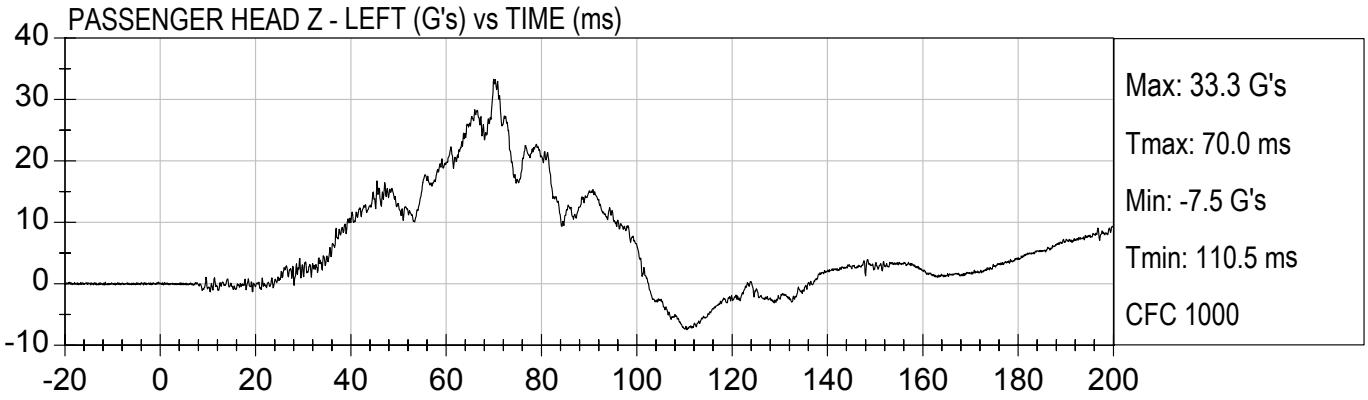


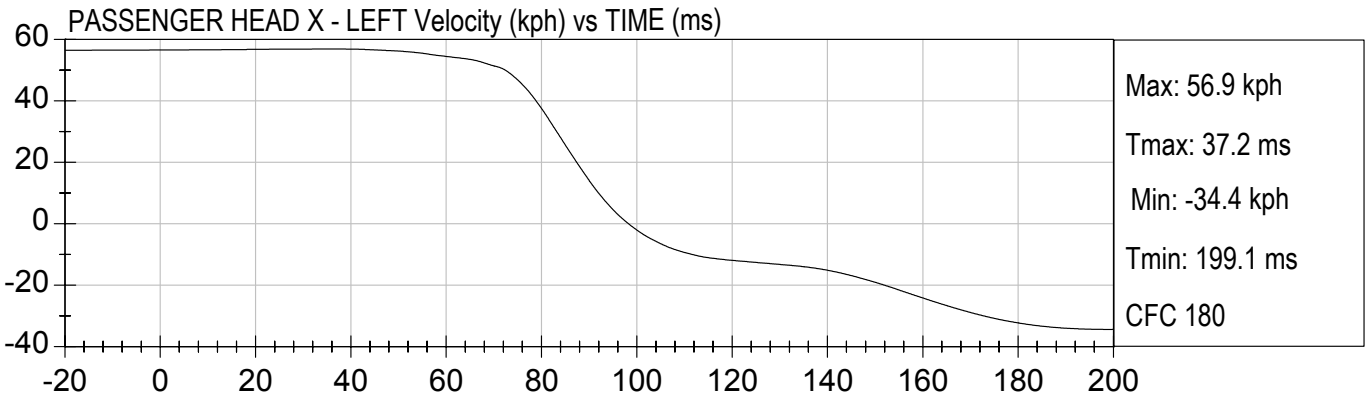


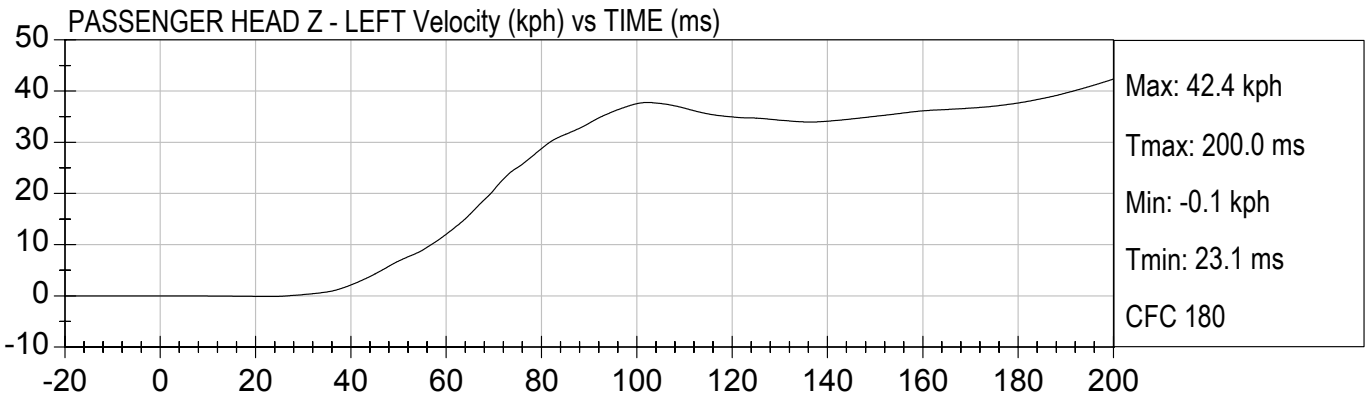





PASSENGER HEAD X - LEFT (G's) vs TIME (ms)
10
0
-10
-20
-30
-40
-50
-60
-70
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 2.3 G's
Tmax: 30.4 ms
Min: -69.9 G's
Tmin: 81.7 ms
CFC 1000

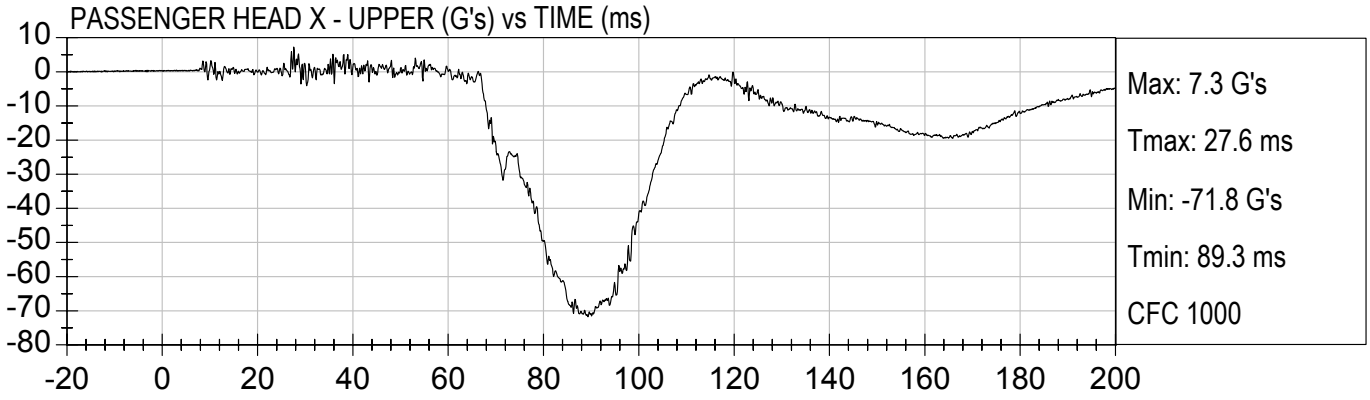

PASSENGER HEAD Z - LEFT (G's) vs TIME (ms)
40
30
20
10
0
-10
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 33.3 G's
Tmax: 70.0 ms
Min: -7.5 G's
Tmin: 110.5 ms
CFC 1000

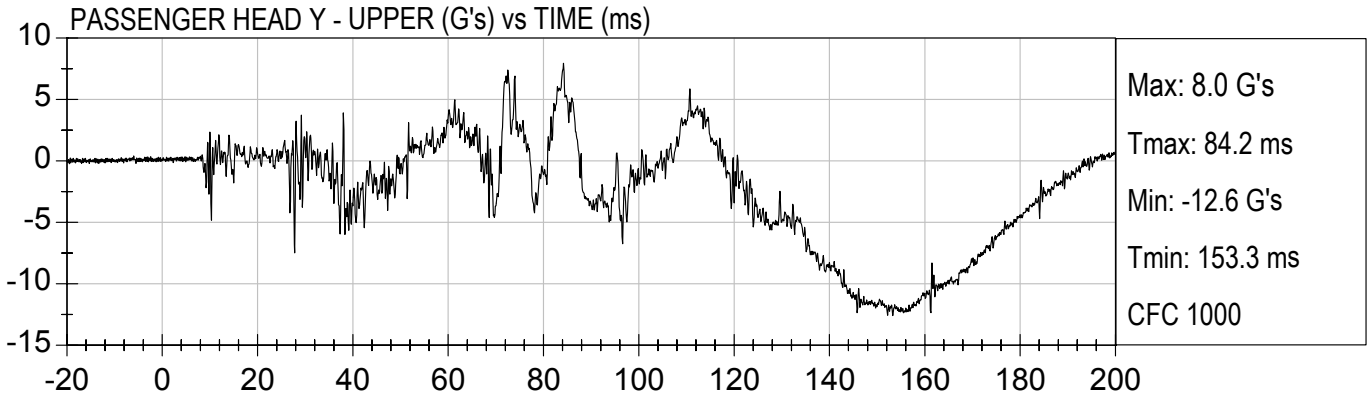

PASSENGER HEAD X - LEFT Velocity (kph) vs TIME (ms)
60
40
20
0
-20
-40
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 56.9 kph
Tmax: 37.2 ms
Min: -34.4 kph
Tmin: 199.1 ms
CFC 180

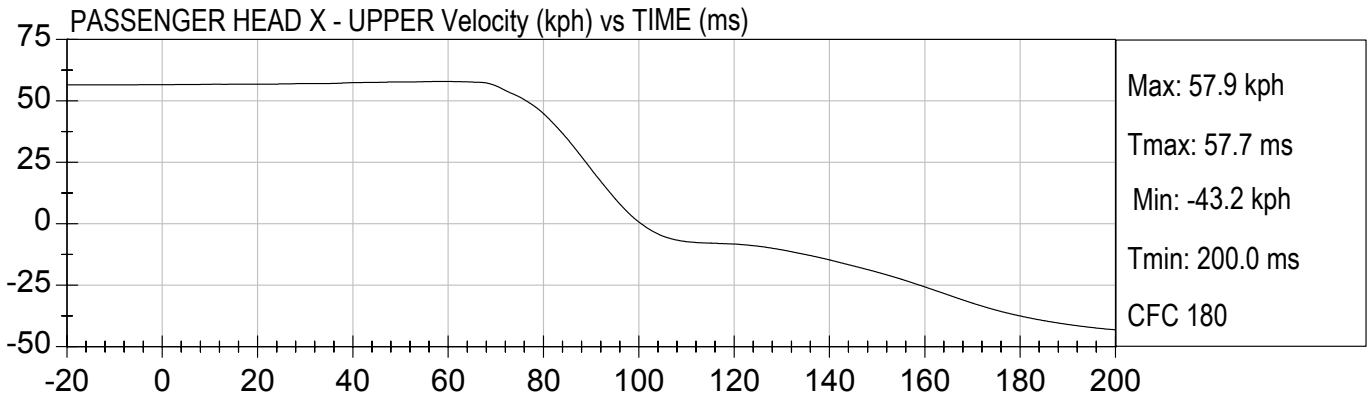

PASSENGER HEAD Z - LEFT Velocity (kph) vs TIME (ms)
50
40
30
20
10
0
-10
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 42.4 kph
Tmax: 200.0 ms
Min: -0.1 kph
Tmin: 23.1 ms
CFC 180

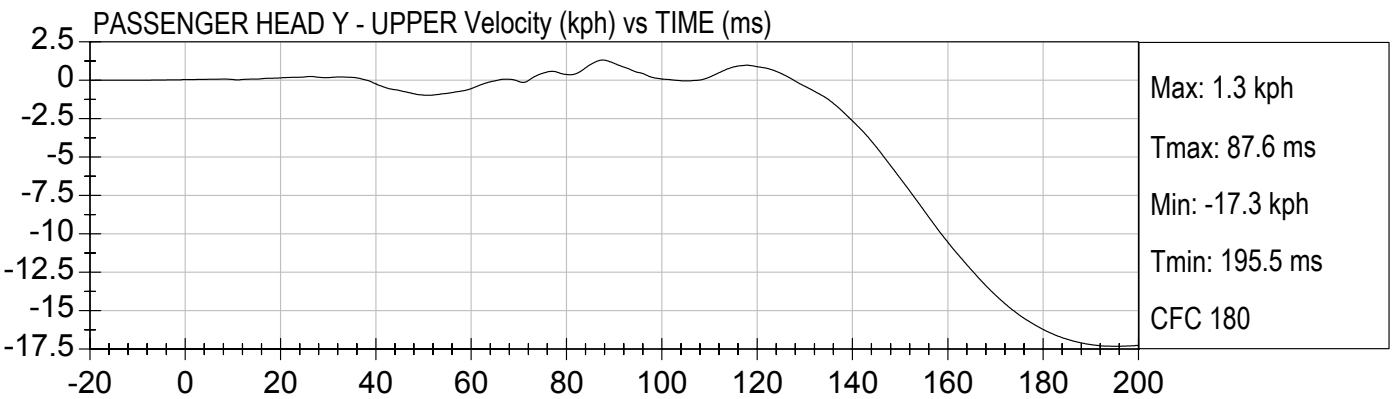
NCAP 35MPH FRONTAL (M40204)
2004 FORD F-150 SUPERCREW

Test Date: 01/06/04
Speed: 35.1 mph (56.5 km/h)



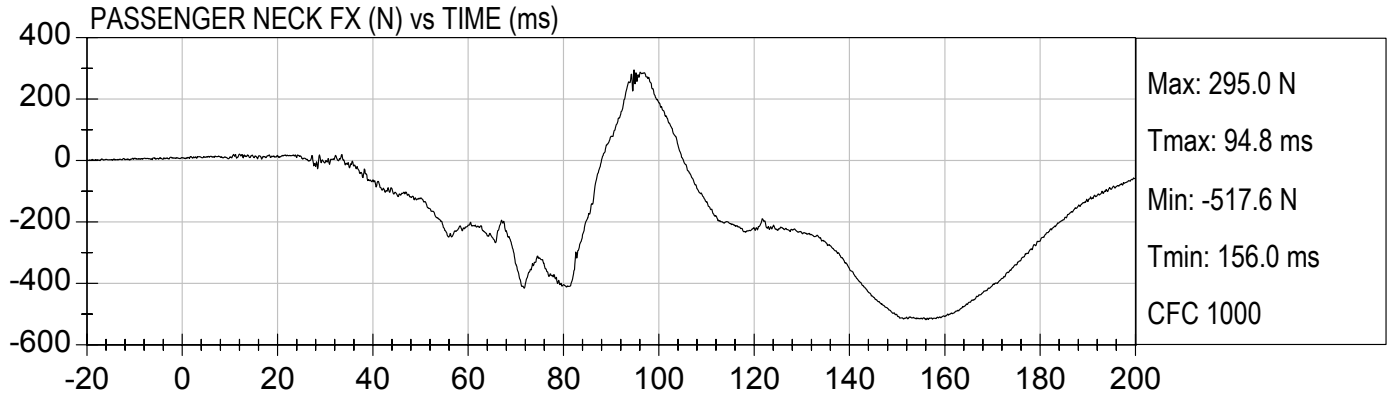


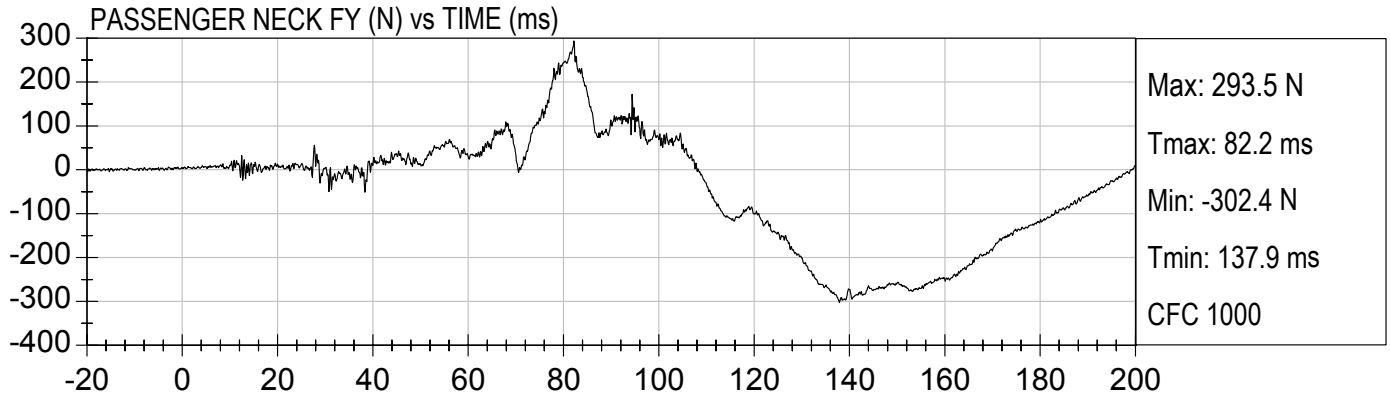


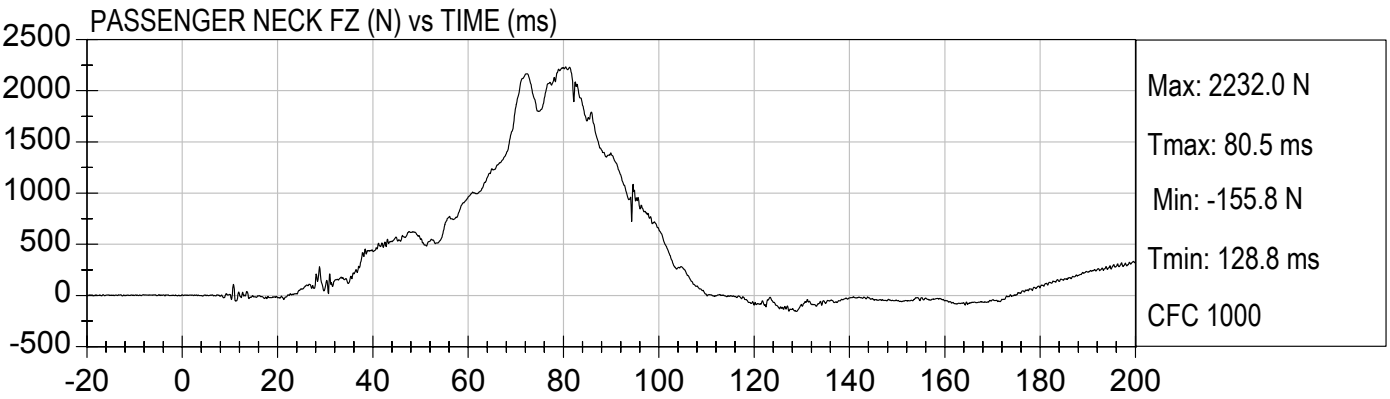


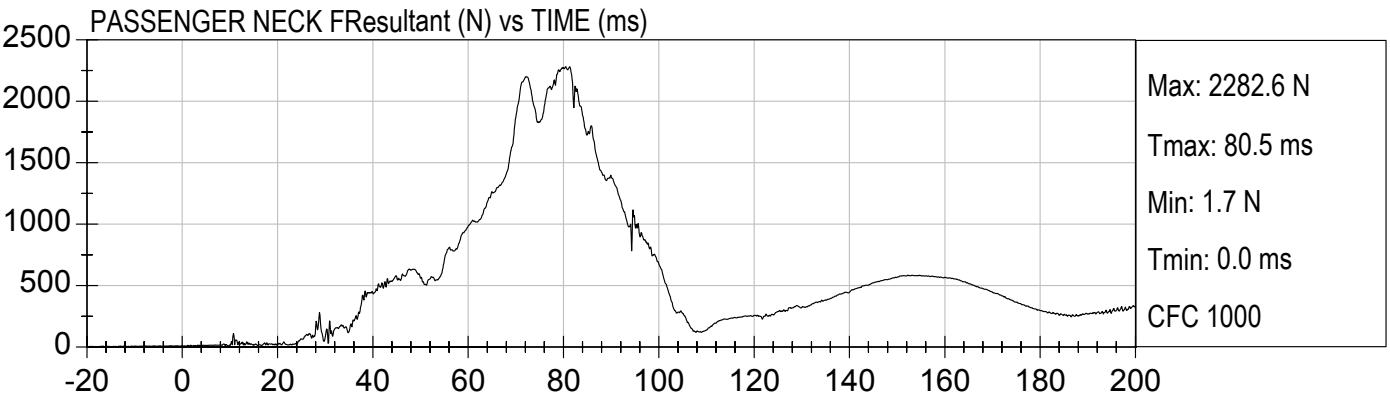
NCAP 35MPH FRONTAL (M40204)
2004 FORD F-150 SUPERCREW

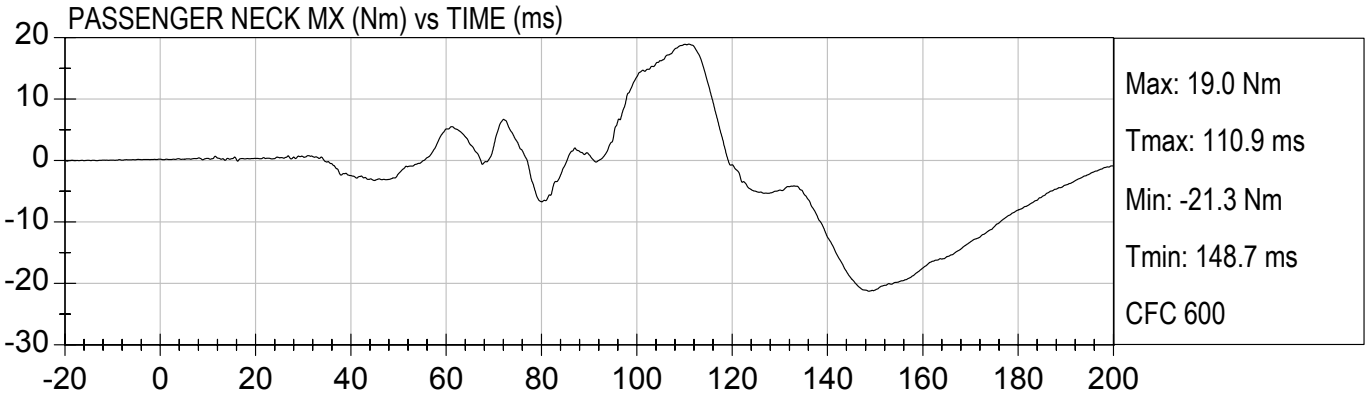
Test Date: 01/06/04
Speed: 35.1 mph (56.5 km/h)

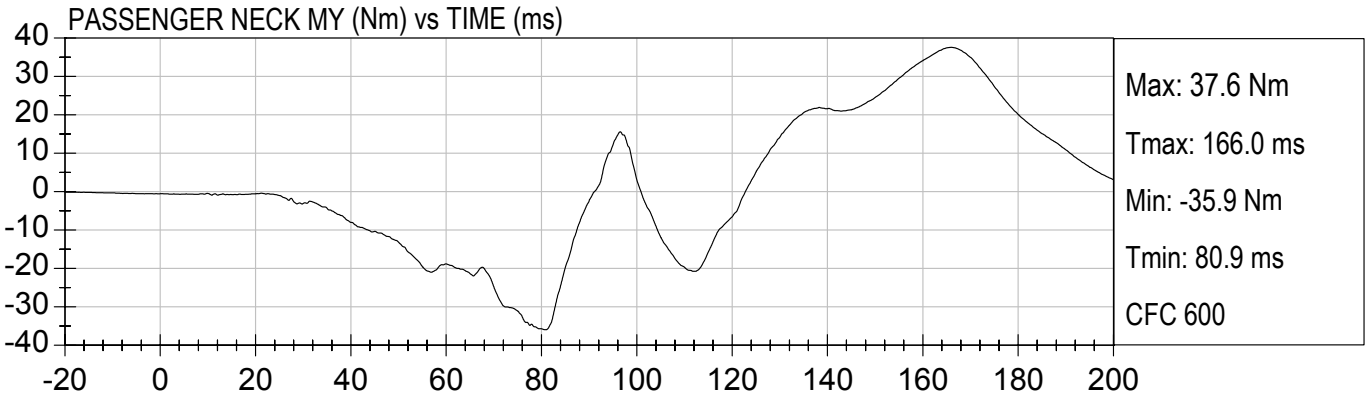


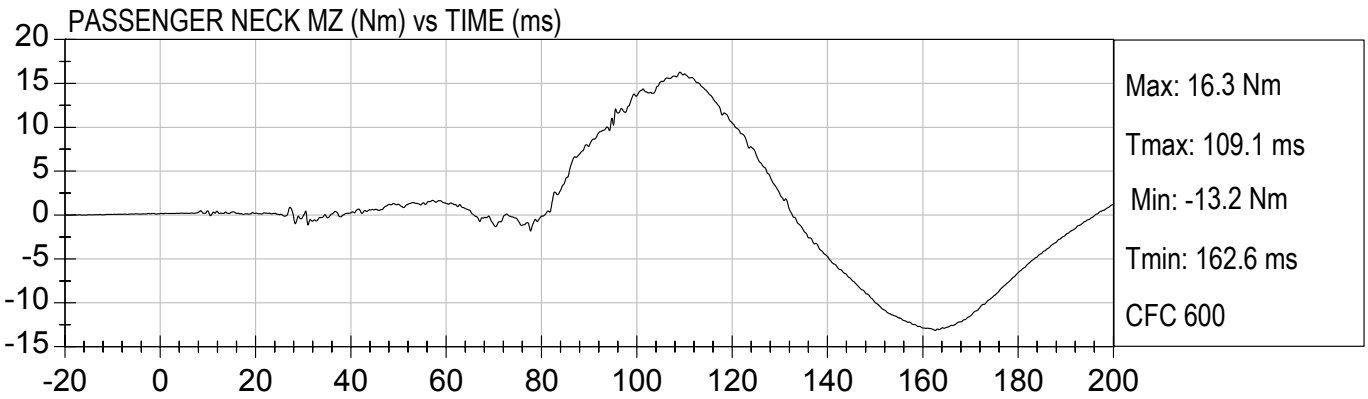


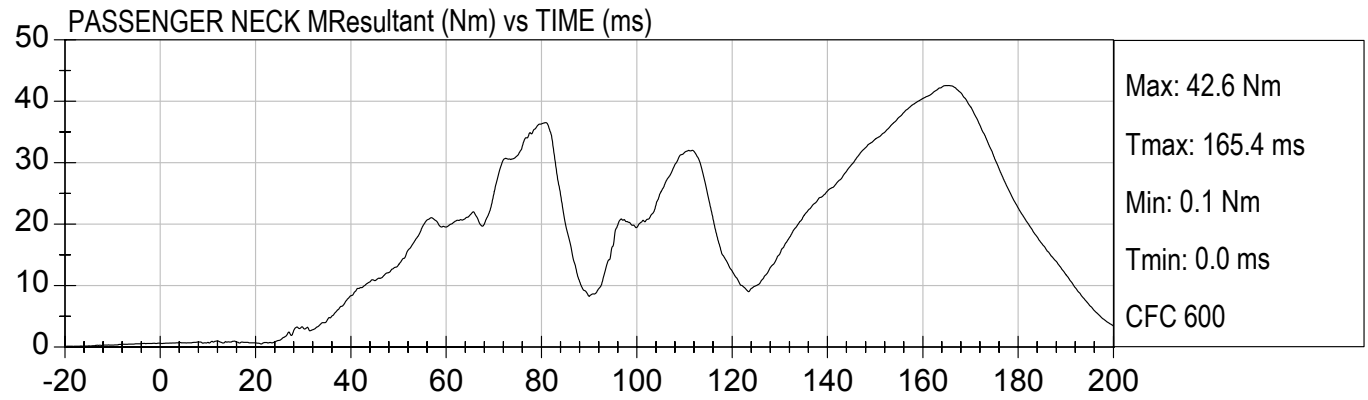





PASSENGER NECK MX (Nm) vs TIME (ms)
20
10
0
-10
-20
-30
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 19.0 Nm
Tmax: 110.9 ms
Min: -21.3 Nm
Tmin: 148.7 ms
CFC 600

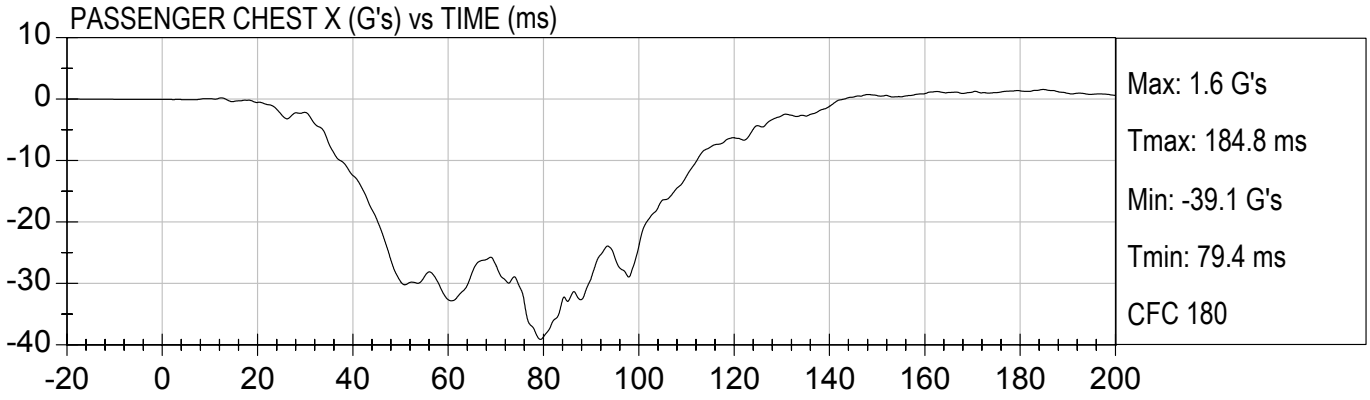

PASSENGER NECK MY (Nm) vs TIME (ms)
40
30
20
10
0
-10
-20
-30
-40
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 37.6 Nm
Tmax: 166.0 ms
Min: -35.9 Nm
Tmin: 80.9 ms
CFC 600

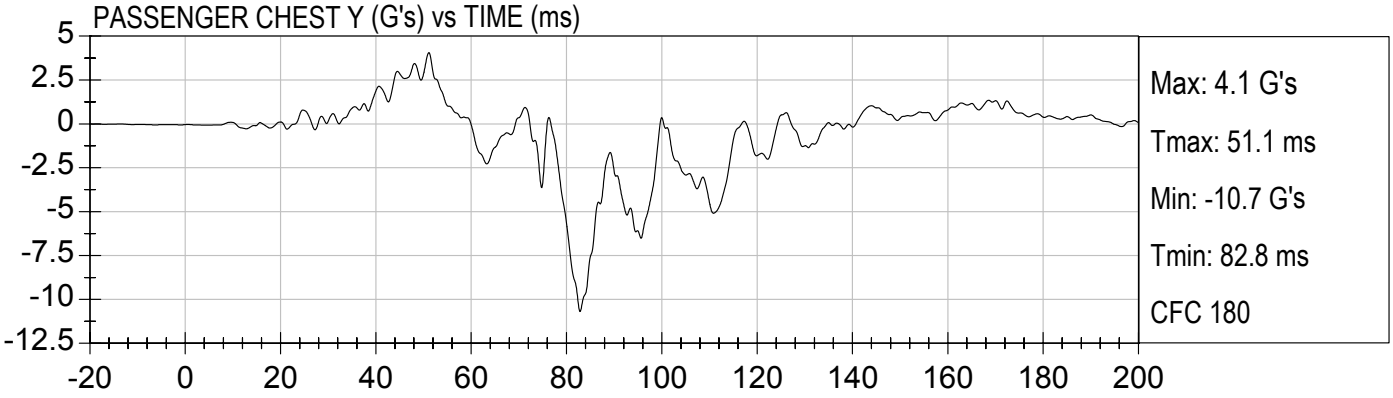

PASSENGER NECK MZ (Nm) vs TIME (ms)
20
15
10
5
0
-5
-10
-15
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 16.3 Nm
Tmax: 109.1 ms
Min: -13.2 Nm
Tmin: 162.6 ms
CFC 600

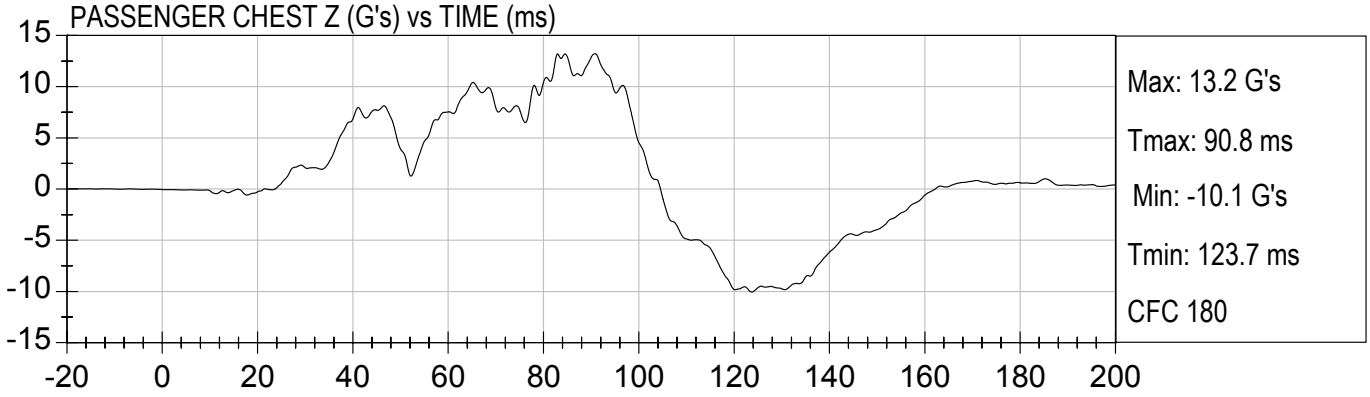

PASSENGER NECK MResultant (Nm) vs TIME (ms)
50
40
30
20
10
0
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 42.6 Nm
Tmax: 165.4 ms
Min: 0.1 Nm
Tmin: 0.0 ms
CFC 600

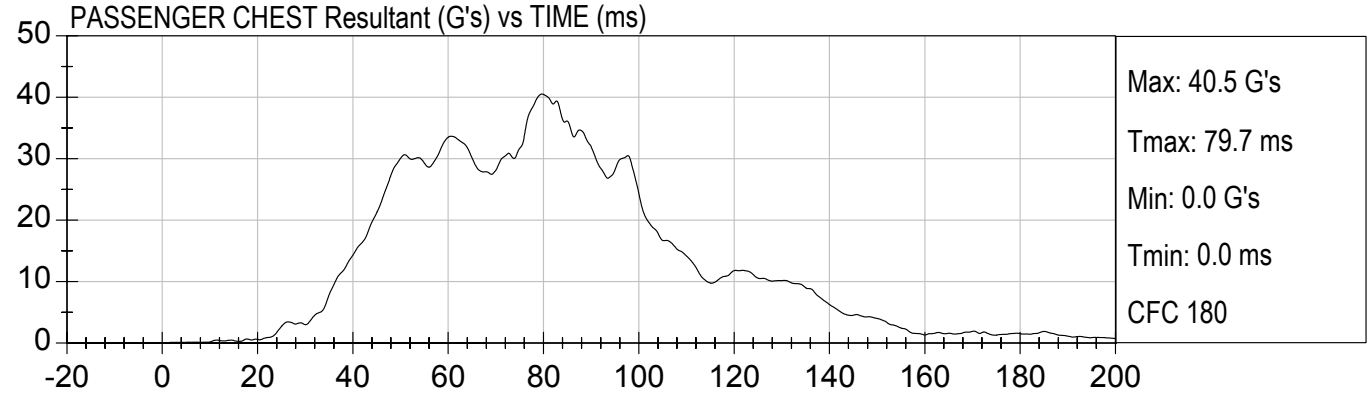
NCAP 35MPH FRONTAL (M40204)
2004 FORD F-150 SUPERCREW

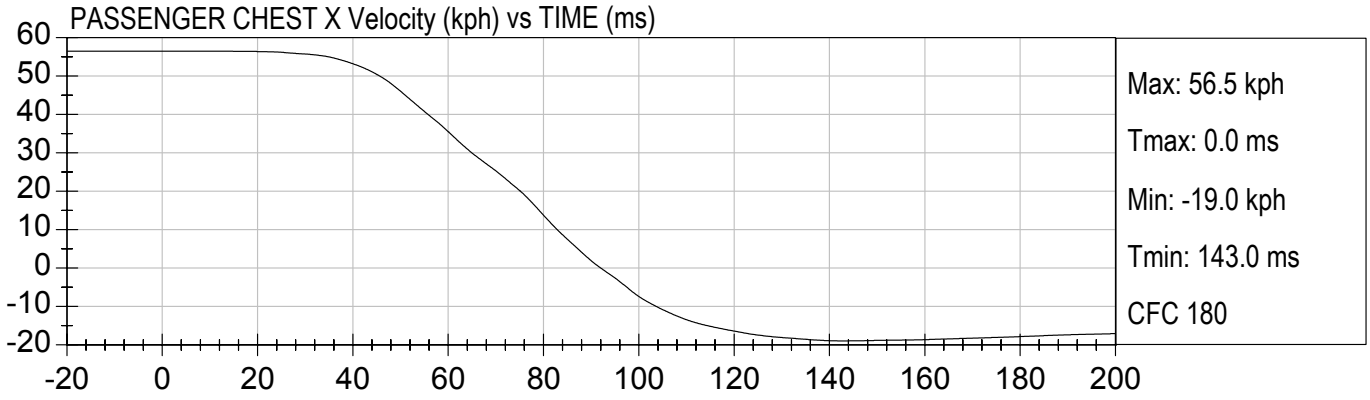
Test Date: 01/06/04
Speed: 35.1 mph (56.5 km/h)

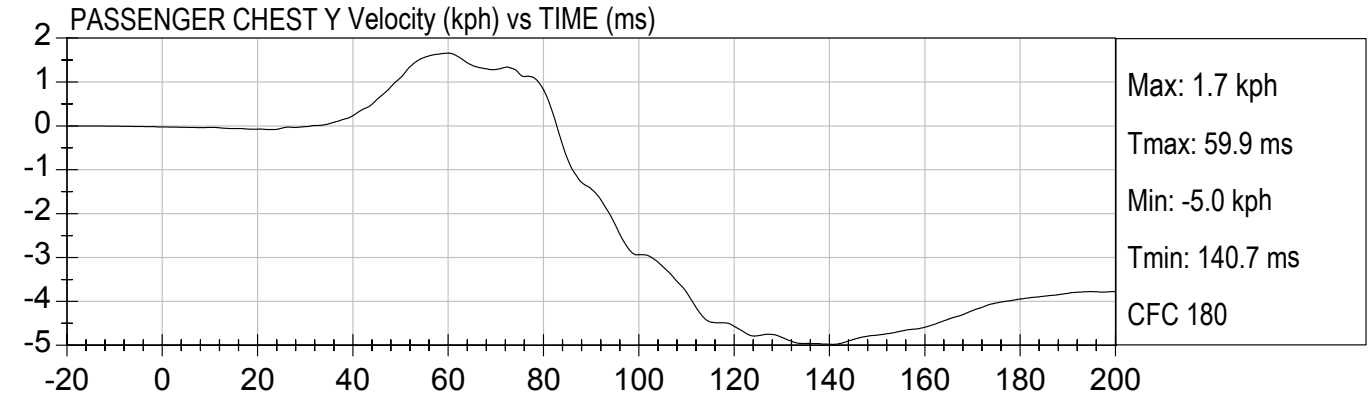


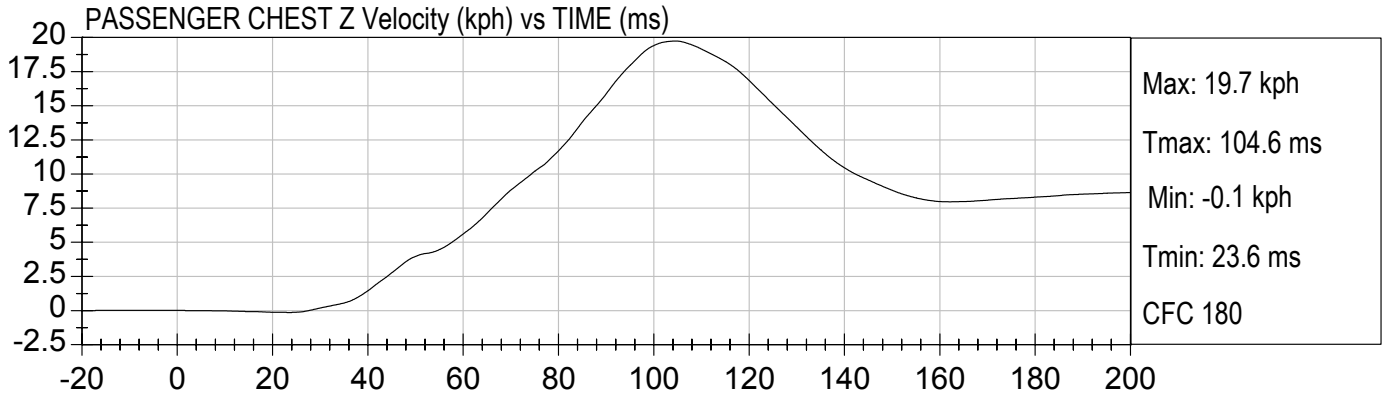


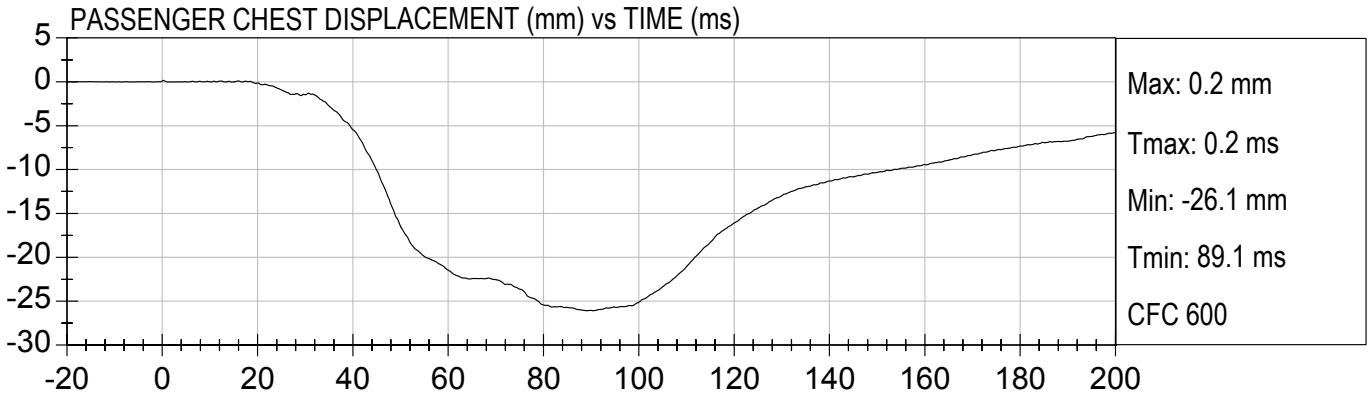





PASSENGER CHEST X Velocity (kph) vs TIME (ms)
60
50
40
30
20
10
0
-10
-20
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 56.5 kph
Tmax: 0.0 ms
Min: -19.0 kph
Tmin: 143.0 ms
CFC 180

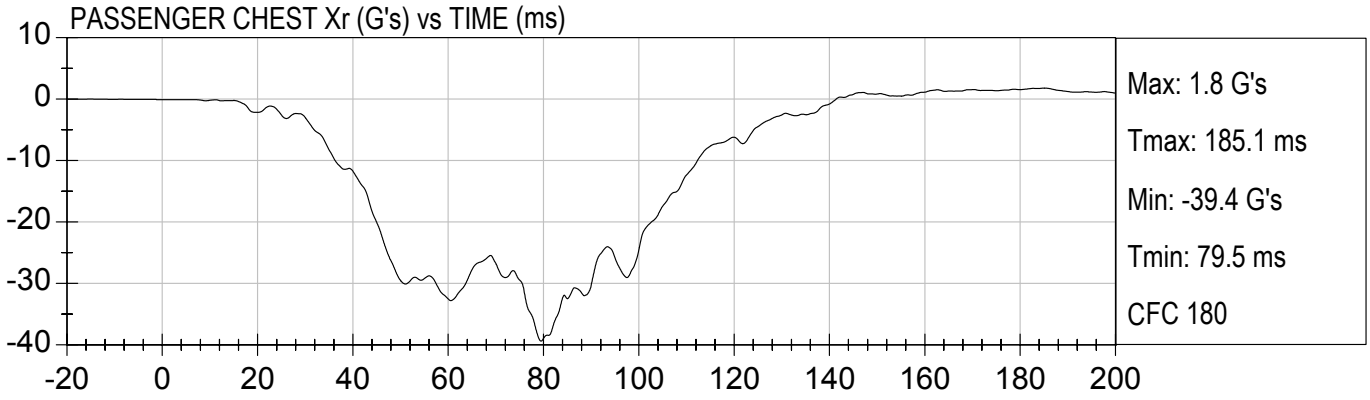

PASSENGER CHEST Y Velocity (kph) vs TIME (ms)
2
1
0
-1
-2
-3
-4
-5
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 1.7 kph
Tmax: 59.9 ms
Min: -5.0 kph
Tmin: 140.7 ms
CFC 180

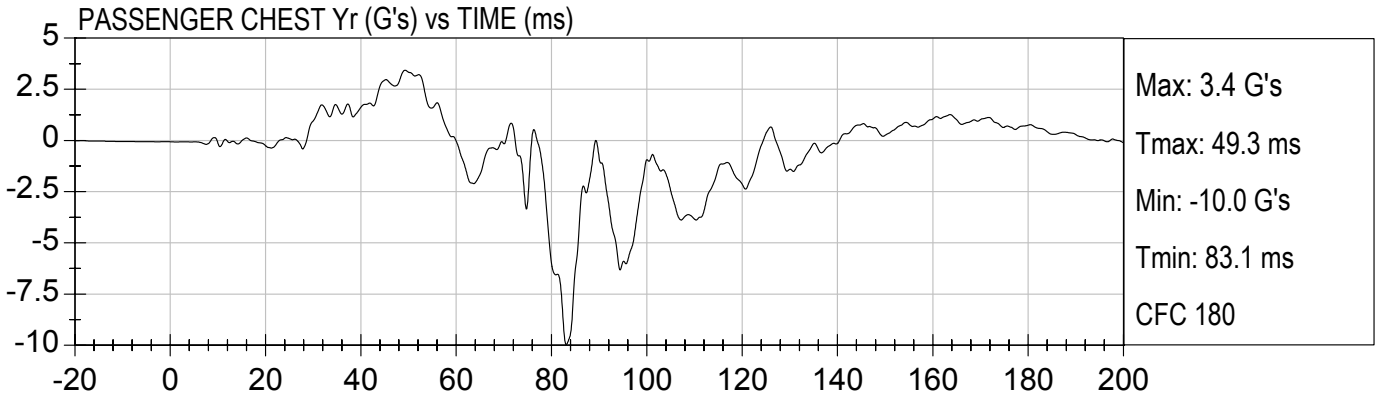

PASSENGER CHEST Z Velocity (kph) vs TIME (ms)
20
17.5
15
12.5
10
7.5
5
2.5
0
-2.5
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 19.7 kph
Tmax: 104.6 ms
Min: -0.1 kph
Tmin: 23.6 ms
CFC 180

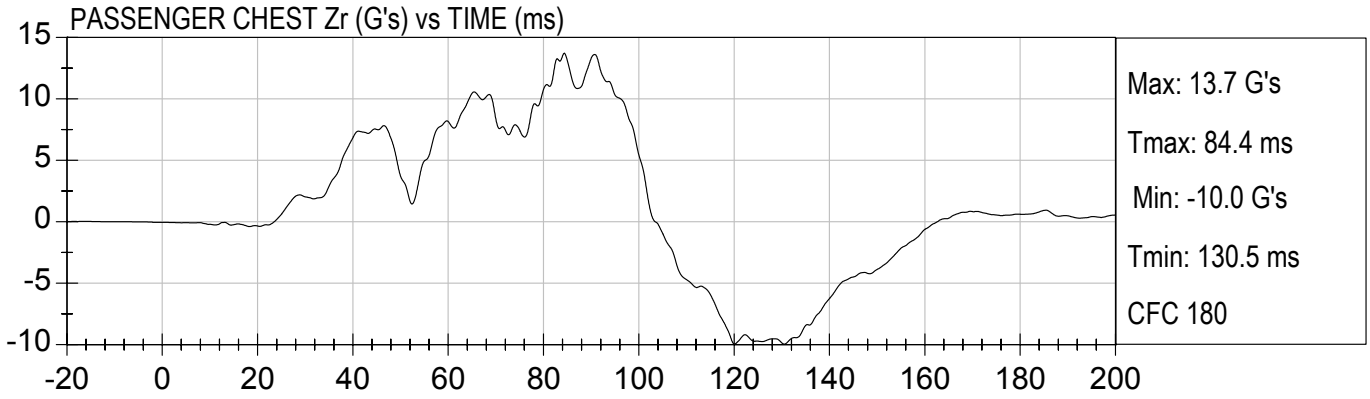

PASSENGER CHEST DISPLACEMENT (mm) vs TIME (ms)
5
0
-5
-10
-15
-20
-25
-30
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 0.2 mm
Tmax: 0.2 ms
Min: -26.1 mm
Tmin: 89.1 ms
CFC 600

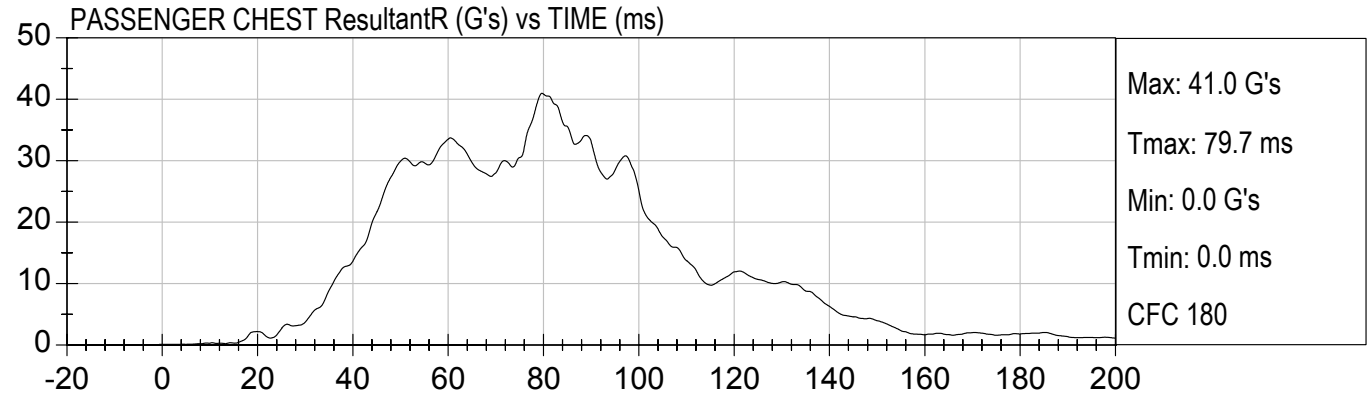
NCAP 35MPH FRONTAL (M40204)
2004 FORD F-150 SUPERCREW

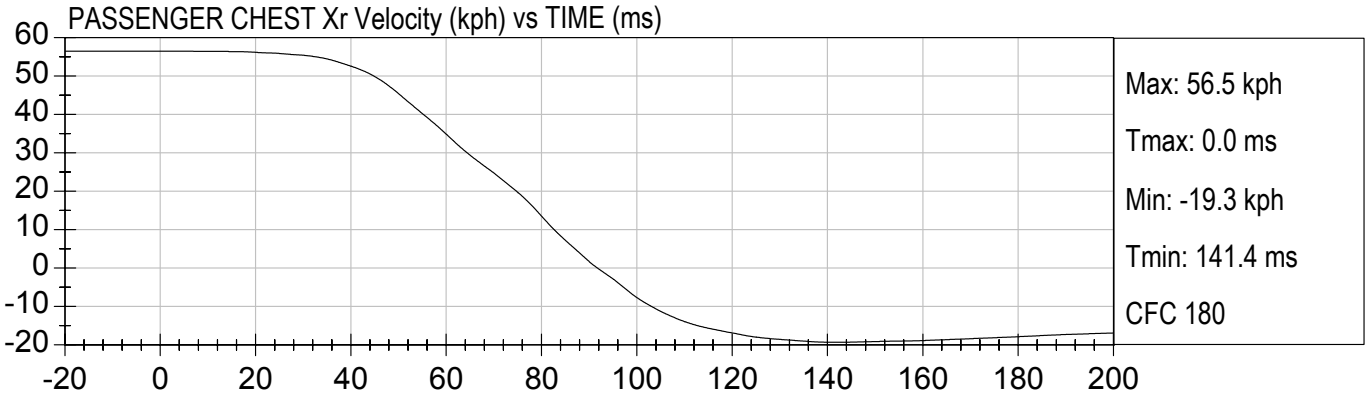
Test Date: 01/06/04
Speed: 35.1 mph (56.5 km/h)

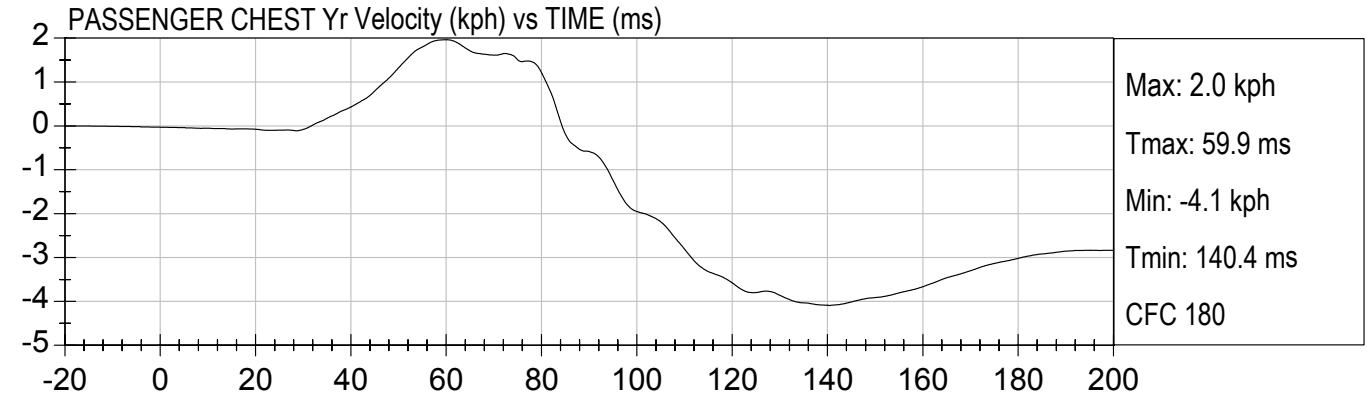


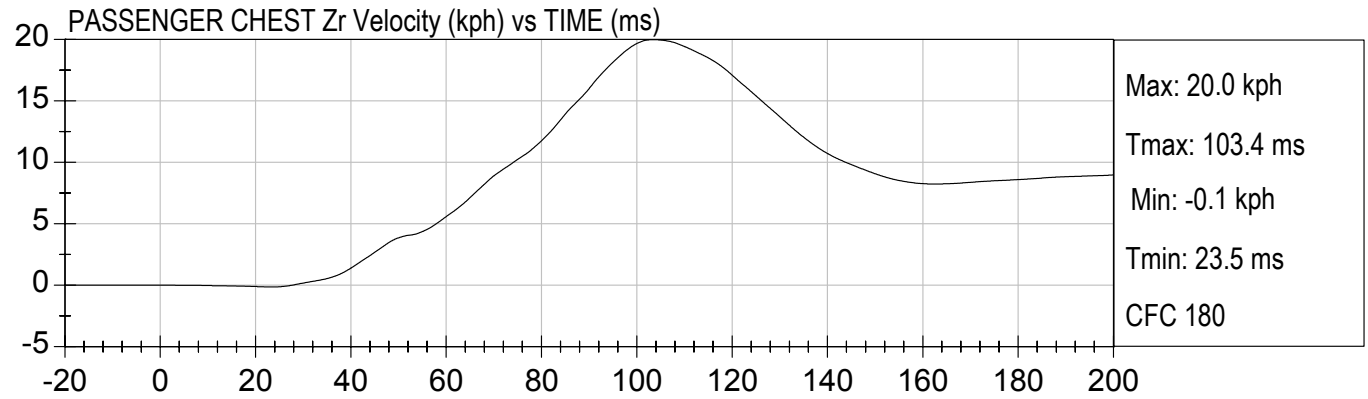






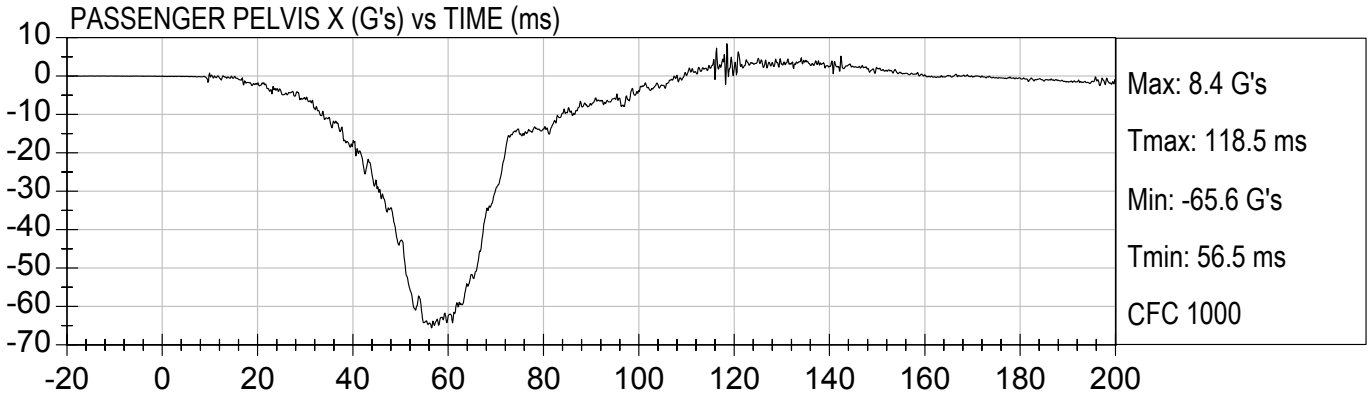

PASSENGER CHEST Xr Velocity (kph) vs TIME (ms)
60
50
40
30
20
10
0
-10
-20
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 56.5 kph
Tmax: 0.0 ms
Min: -19.3 kph
Tmin: 141.4 ms
CFC 180

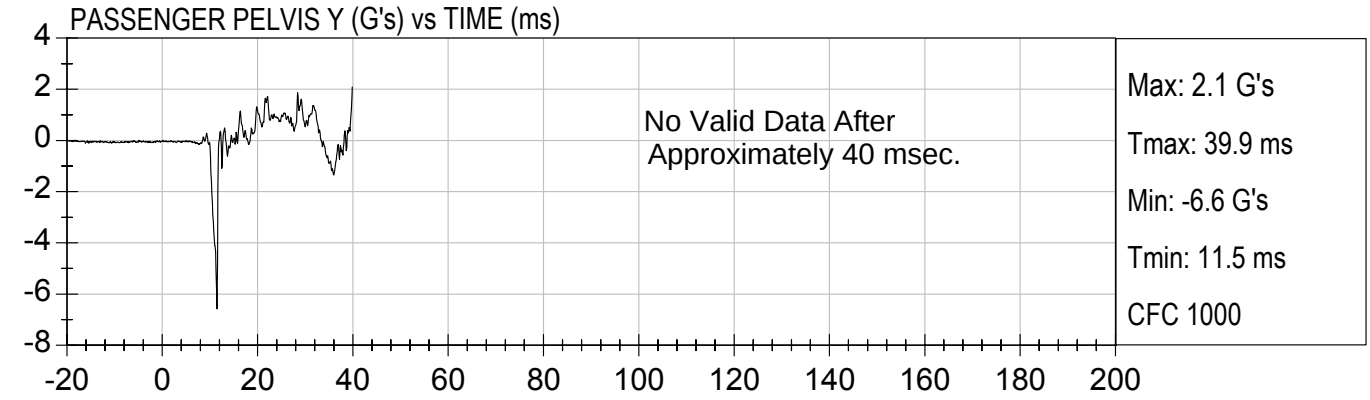

PASSENGER CHEST Yr Velocity (kph) vs TIME (ms)
2
1
0
-1
-2
-3
-4
-5
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 2.0 kph
Tmax: 59.9 ms
Min: -4.1 kph
Tmin: 140.4 ms
CFC 180

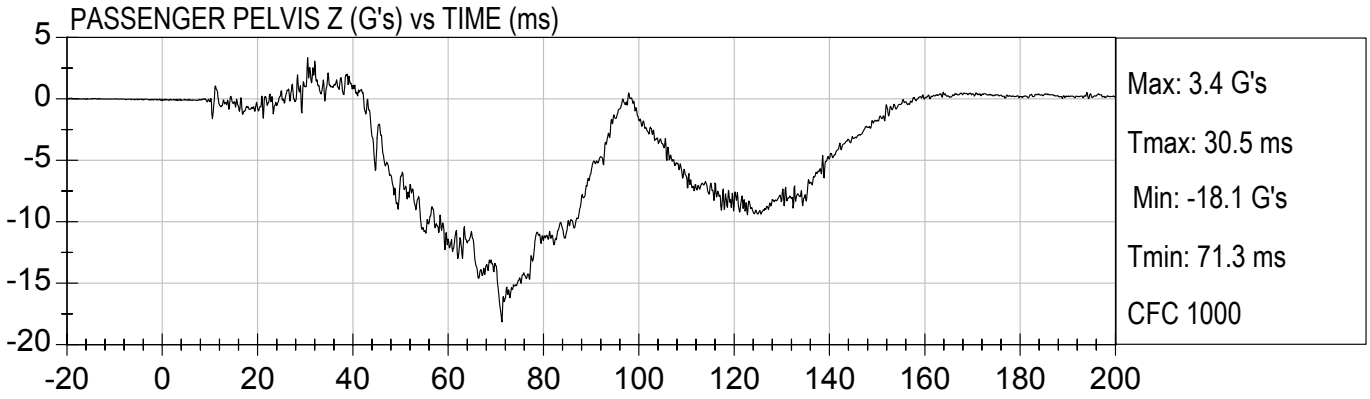

PASSENGER CHEST Zr Velocity (kph) vs TIME (ms)
20
15
10
5
0
-5
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 20.0 kph
Tmax: 103.4 ms
Min: -0.1 kph
Tmin: 23.5 ms
CFC 180

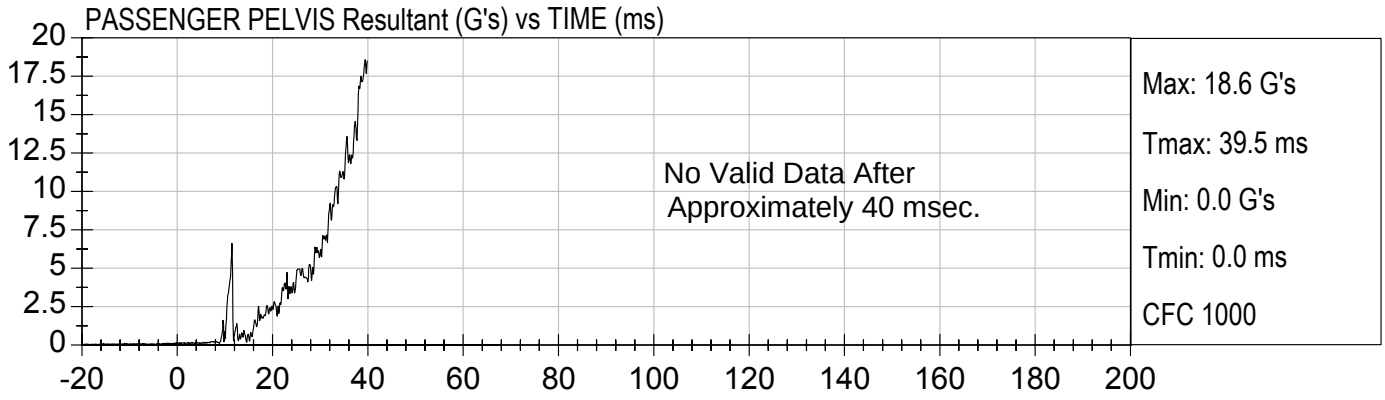
NCAP 35MPH FRONTAL (M40204)
2004 FORD F-150 SUPERCREW

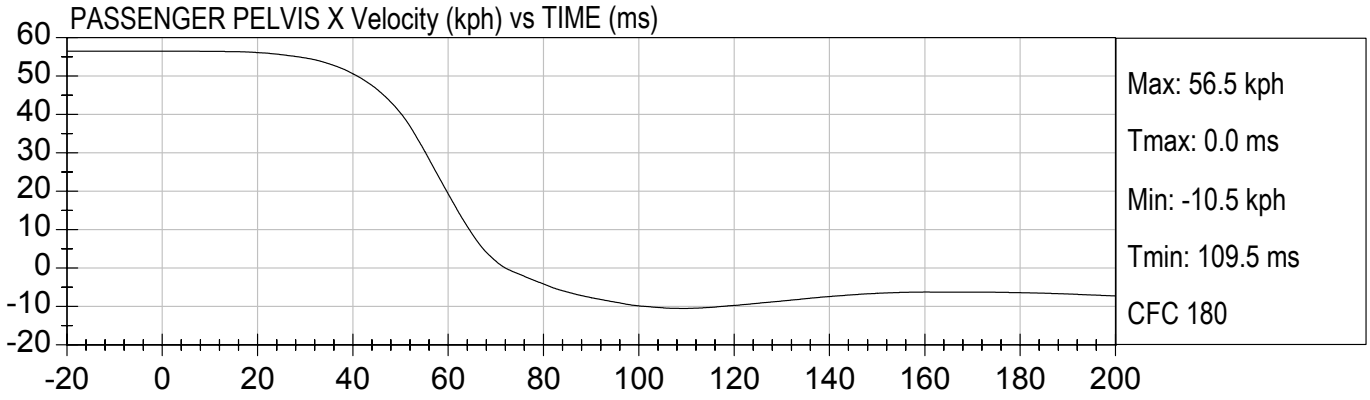
Test Date: 01/06/04
Speed: 35.1 mph (56.5 km/h)

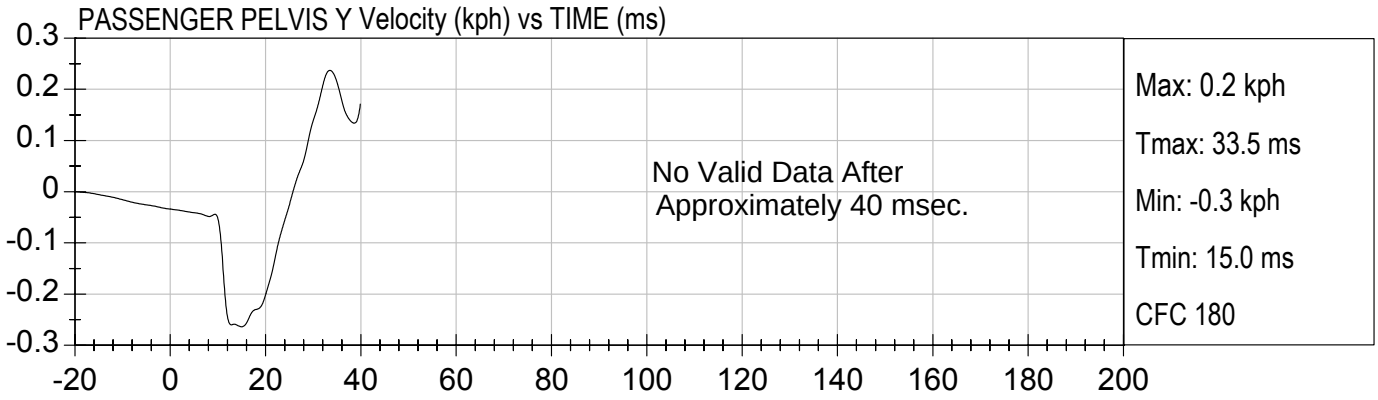


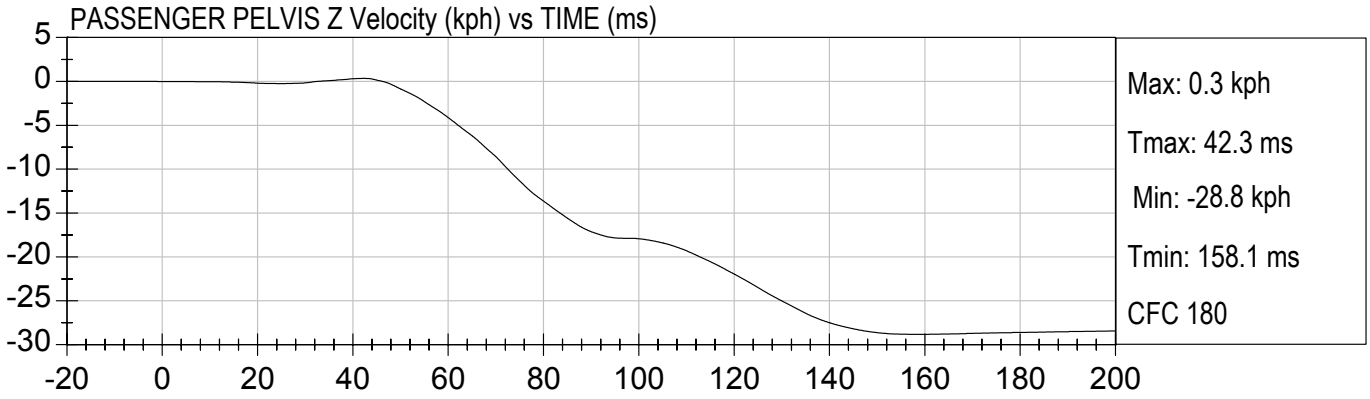






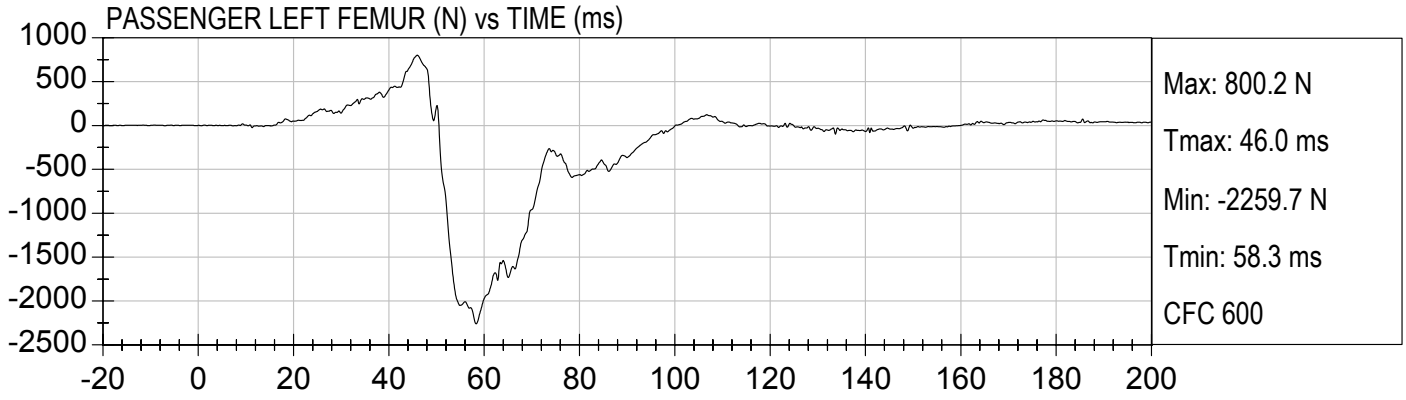

PASSENGER PELVIS X Velocity (kph) vs TIME (ms)
60
50
40
30
20
10
0
-10
-20
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 56.5 kph
Tmax: 0.0 ms
Min: -10.5 kph
Tmin: 109.5 ms
CFC 180

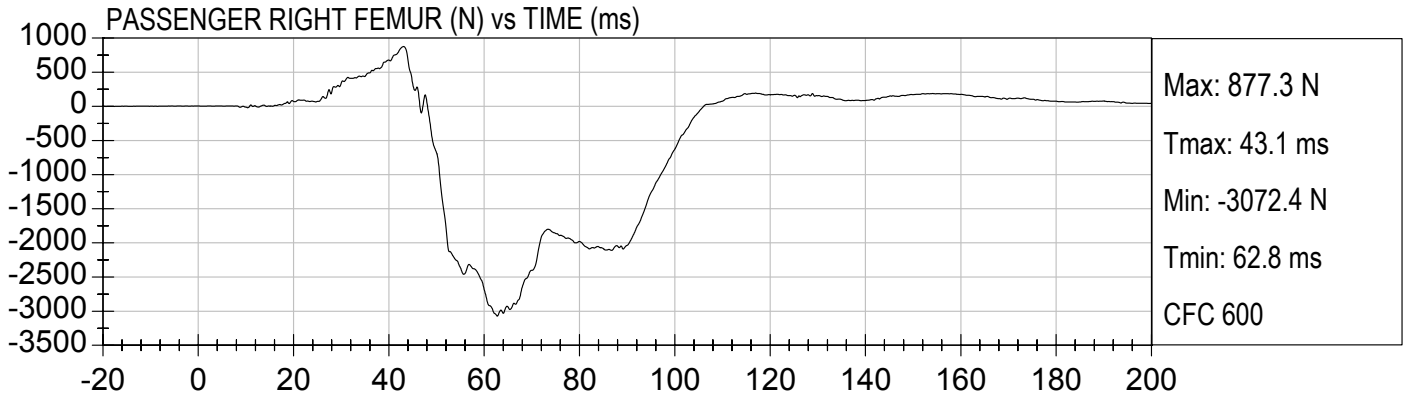

PASSENGER PELVIS Y Velocity (kph) vs TIME (ms)
0.3
0.2
0.1
0
-0.1
-0.2
-0.3
-20 0 20 40 60 80 100 120 140 160 180 200
No Valid Data After
Approximately 40 msec.
Max: 0.2 kph
Tmax: 33.5 ms
Min: -0.3 kph
Tmin: 15.0 ms
CFC 180

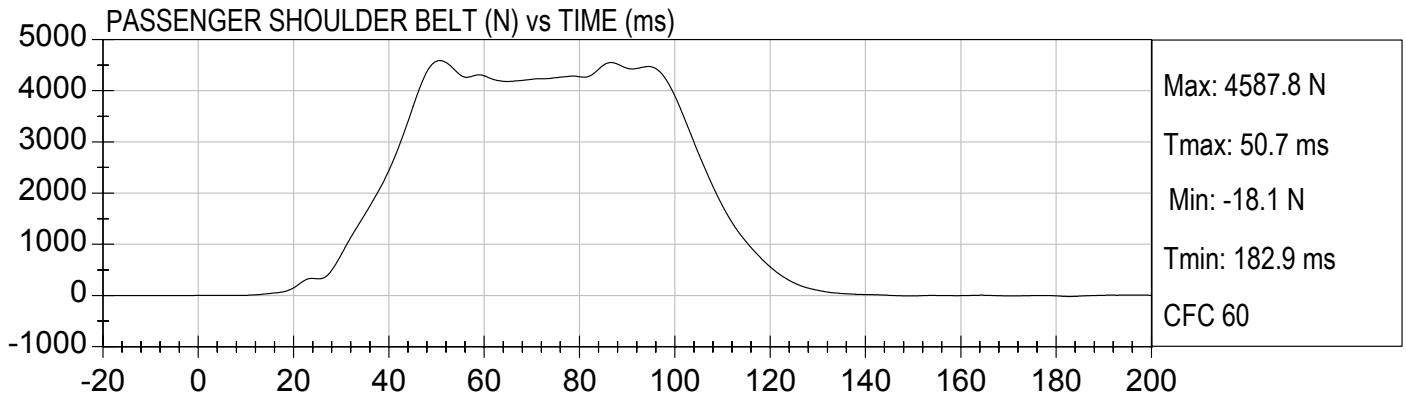

PASSENGER PELVIS Z Velocity (kph) vs TIME (ms)
5
0
-5
-10
-15
-20
-25
-30
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 0.3 kph
Tmax: 42.3 ms
Min: -28.8 kph
Tmin: 158.1 ms
CFC 180

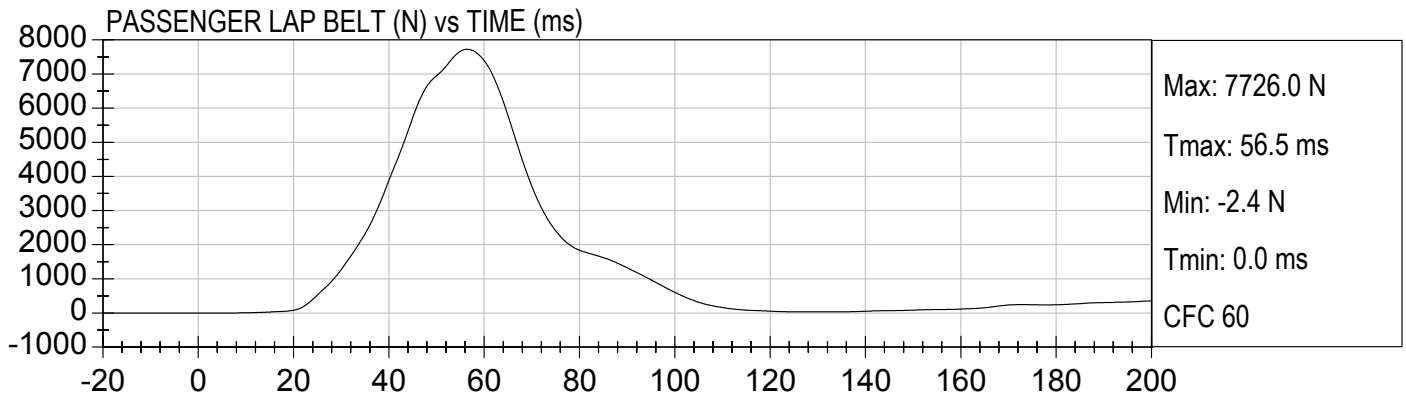
NCAP 35MPH FRONTAL (M40204)
2004 FORD F-150 SUPERCREW

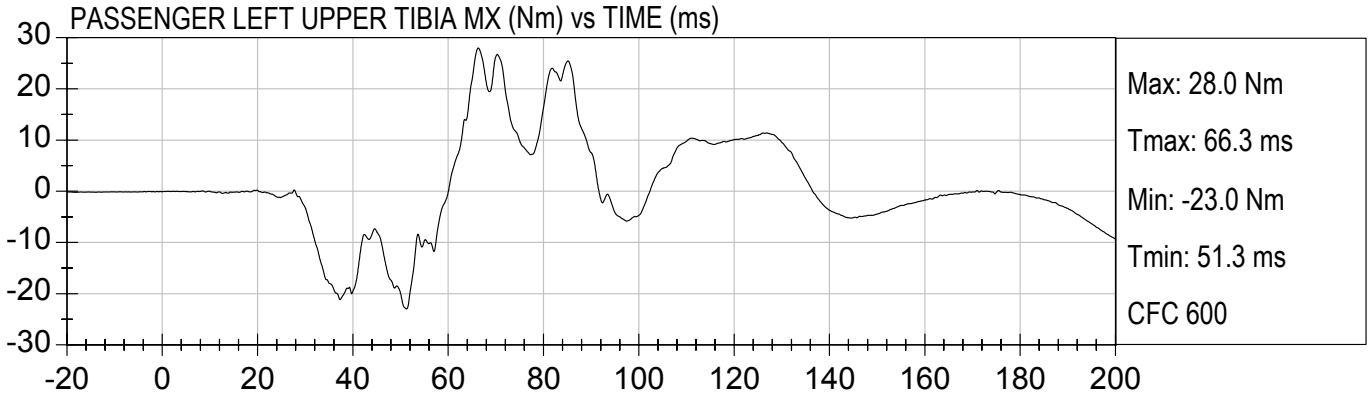
Test Date: 01/06/04
Speed: 35.1 mph (56.5 km/h)

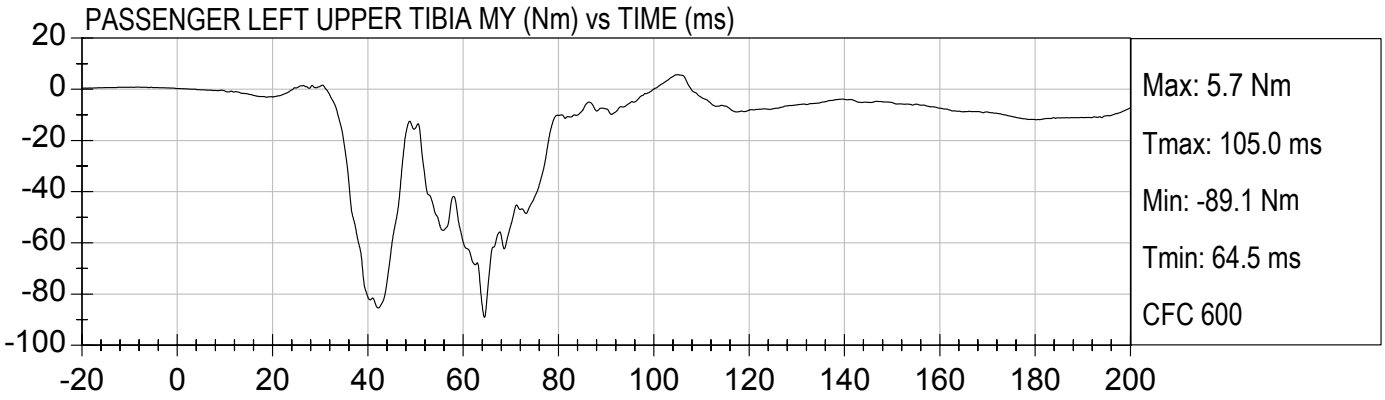


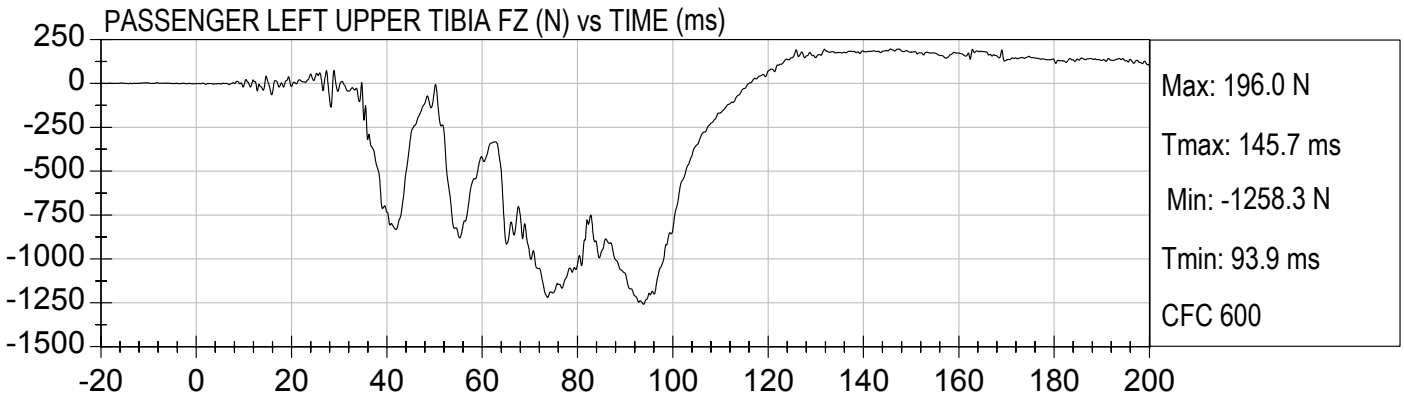


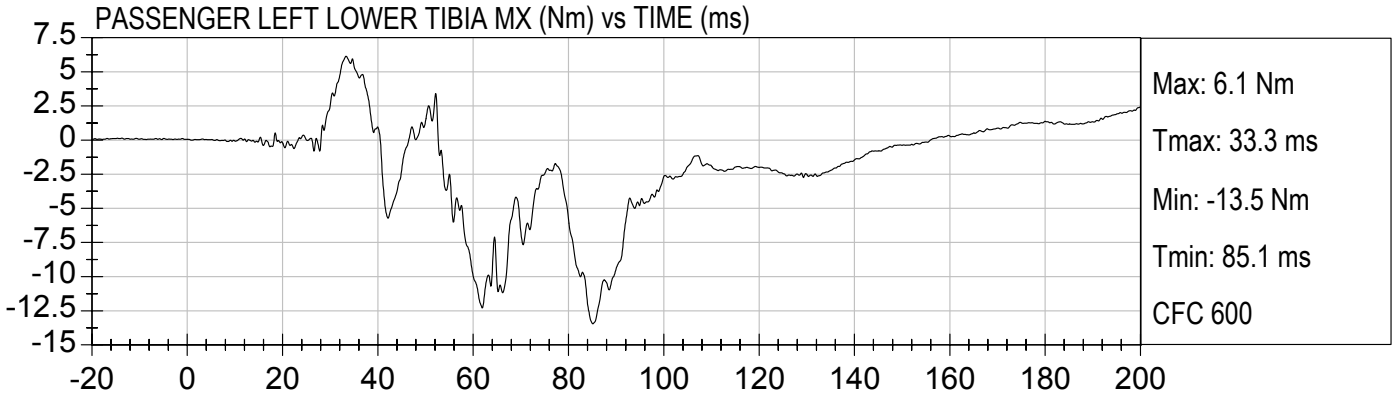


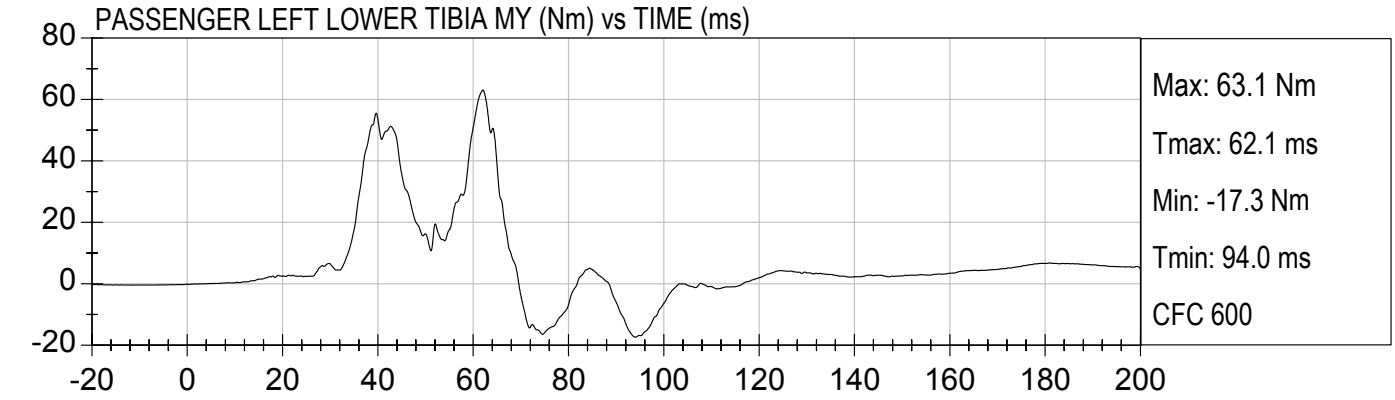


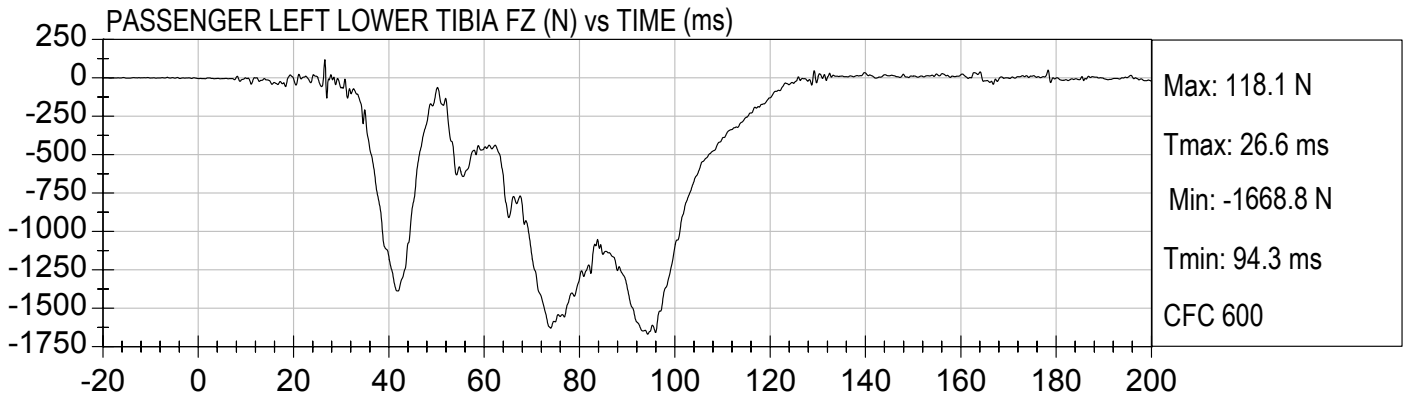

PASSENGER LEFT UPPER TIBIA MX (Nm) vs TIME (ms)
30
20
10
0
-10
-20
-30
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 28.0 Nm
Tmax: 66.3 ms
Min: -23.0 Nm
Tmin: 51.3 ms
CFC 600

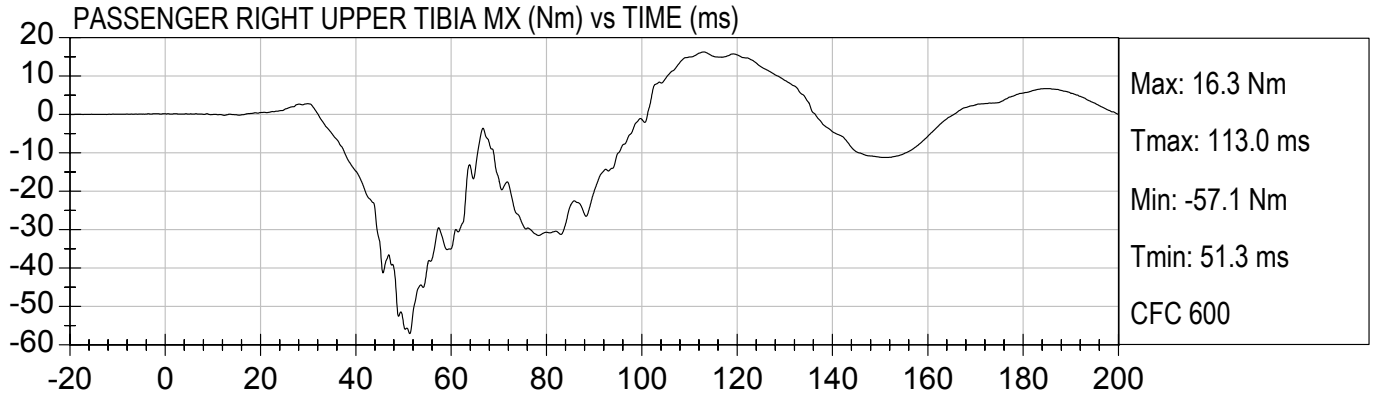

PASSENGER LEFT UPPER TIBIA MY (Nm) vs TIME (ms)
20
0
-20
-40
-60
-80
-100
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 5.7 Nm
Tmax: 105.0 ms
Min: -89.1 Nm
Tmin: 64.5 ms
CFC 600

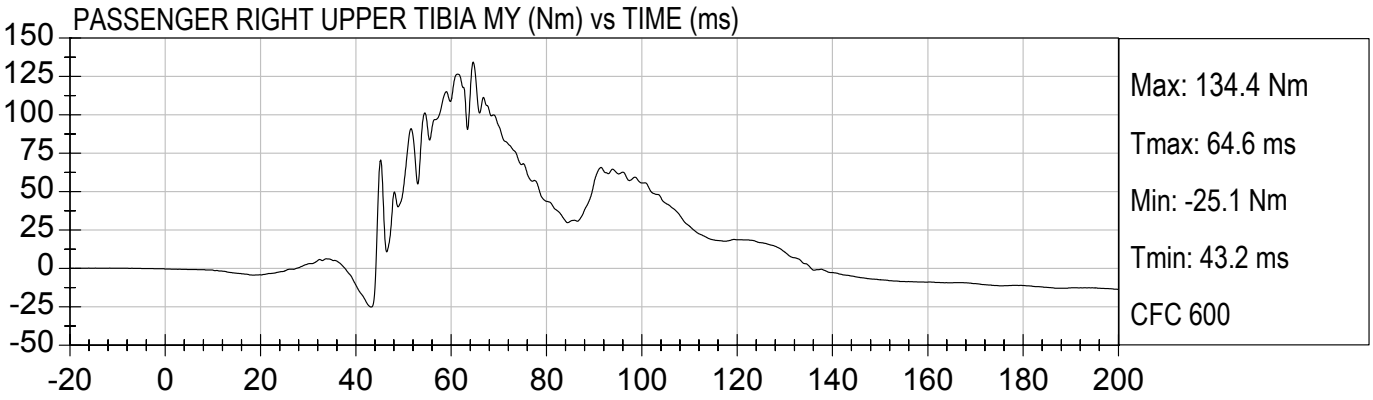

PASSENGER LEFT UPPER TIBIA FZ (N) vs TIME (ms)
250
0
-250
-500
-750
-1000
-1250
-1500
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 196.0 N
Tmax: 145.7 ms
Min: -1258.3 N
Tmin: 93.9 ms
CFC 600

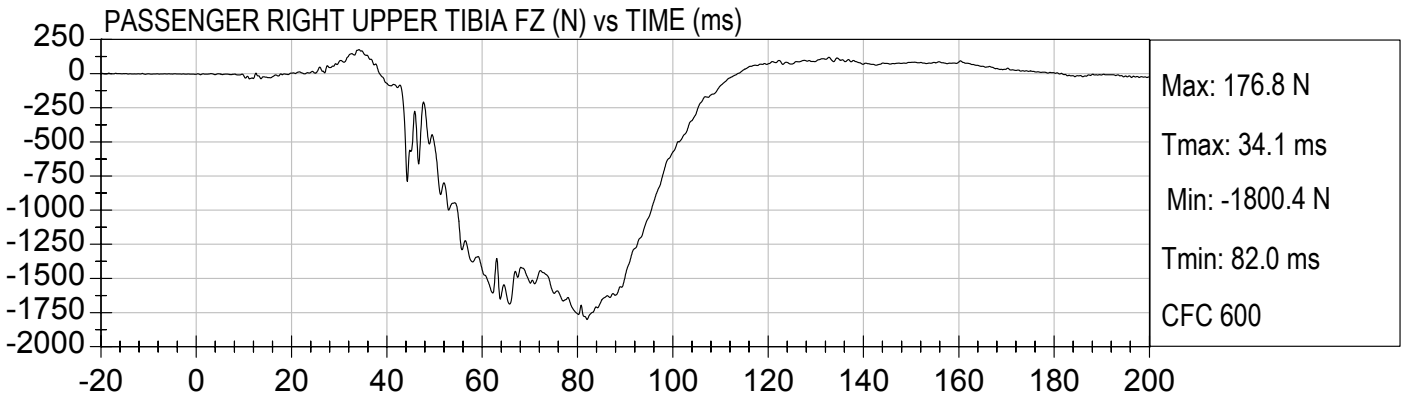

PASSENGER LEFT LOWER TIBIA MX (Nm) vs TIME (ms)
7.5
5
2.5
0
-2.5
-5
-7.5
-10
-12.5
-15
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 6.1 Nm
Tmax: 33.3 ms
Min: -13.5 Nm
Tmin: 85.1 ms
CFC 600

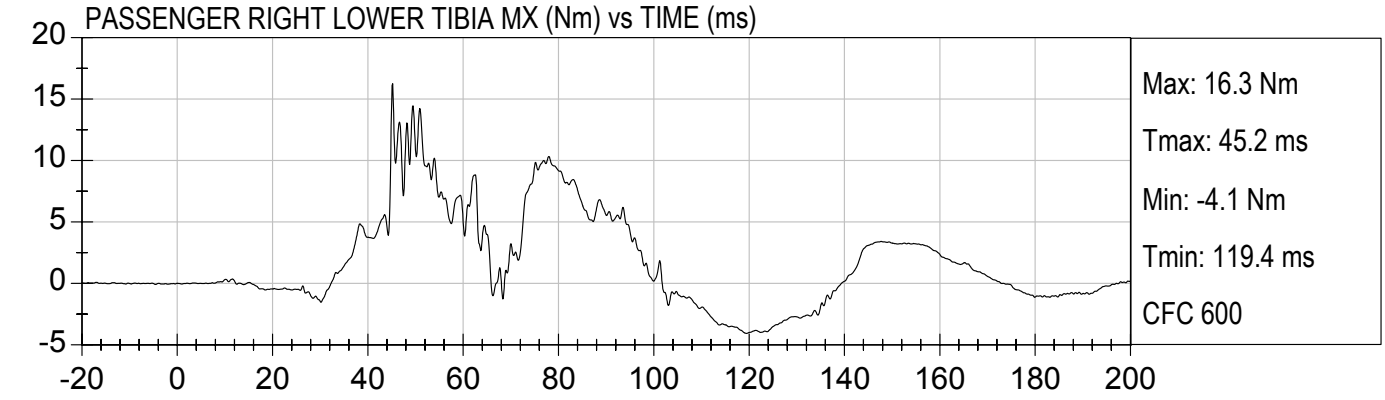

PASSENGER LEFT LOWER TIBIA MY (Nm) vs TIME (ms)
80
60
40
20
0
-20
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 63.1 Nm
Tmax: 62.1 ms
Min: -17.3 Nm
Tmin: 94.0 ms
CFC 600

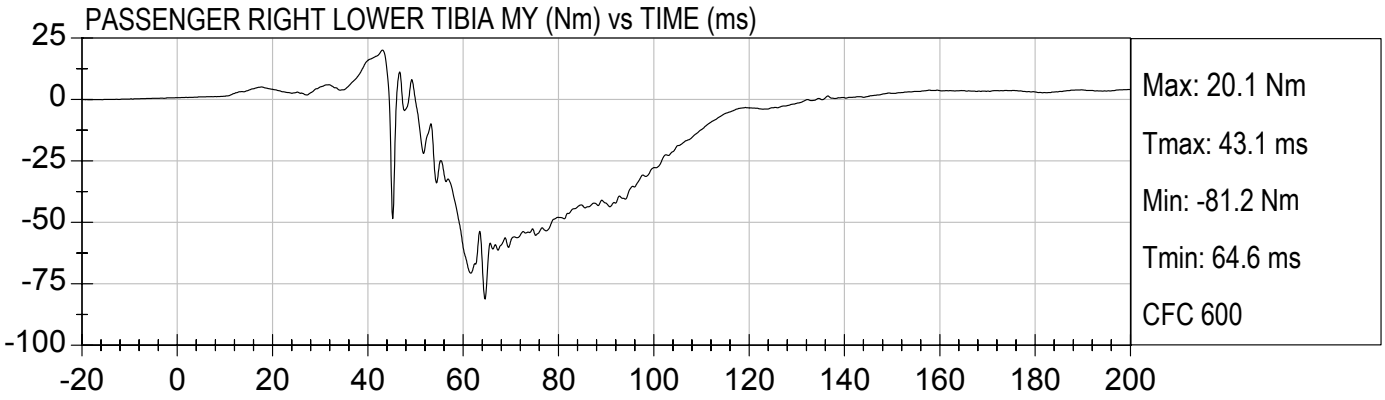

PASSENGER LEFT LOWER TIBIA FZ (N) vs TIME (ms)
250
0
-250
-500
-750
-1000
-1250
-1500
-1750
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 118.1 N
Tmax: 26.6 ms
Min: -1668.8 N
Tmin: 94.3 ms
CFC 600

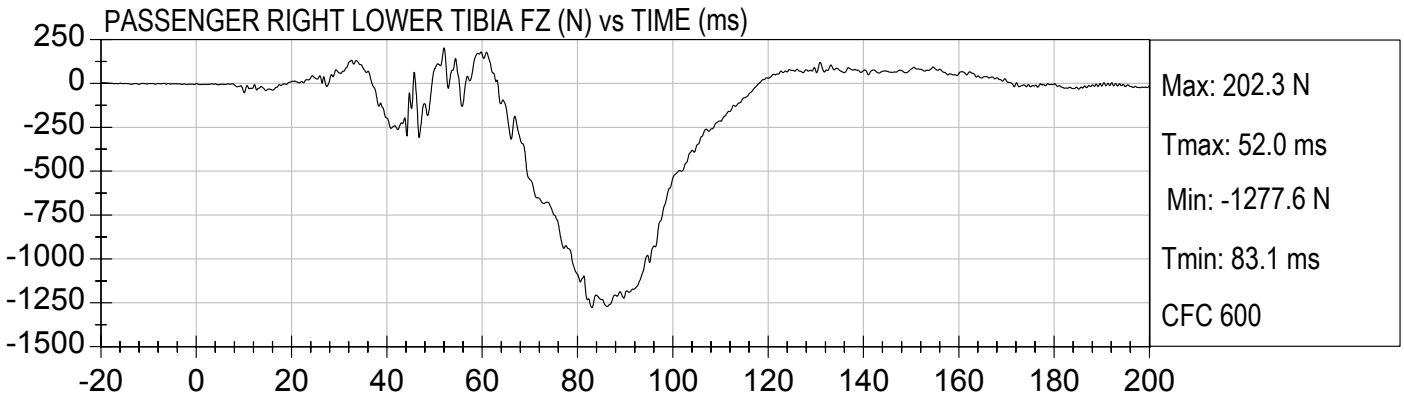

PASSENGER RIGHT UPPER TIBIA MX (Nm) vs TIME (ms)
20
10
0
-10
-20
-30
-40
-50
-60
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 16.3 Nm
Tmax: 113.0 ms
Min: -57.1 Nm
Tmin: 51.3 ms
CFC 600

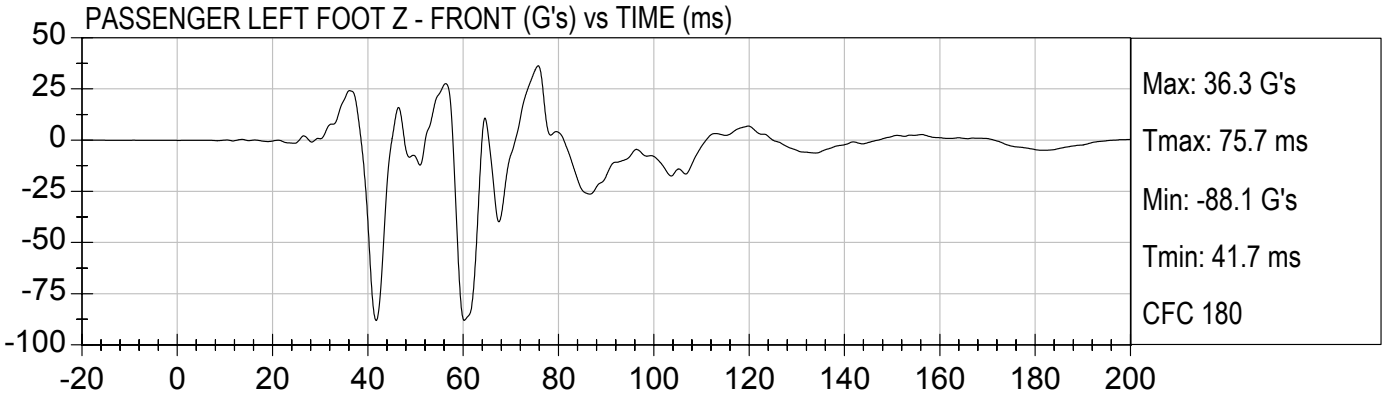

PASSENGER RIGHT UPPER TIBIA MY (Nm) vs TIME (ms)
150
125
100
75
50
25
0
-25
-50
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 134.4 Nm
Tmax: 64.6 ms
Min: -25.1 Nm
Tmin: 43.2 ms
CFC 600

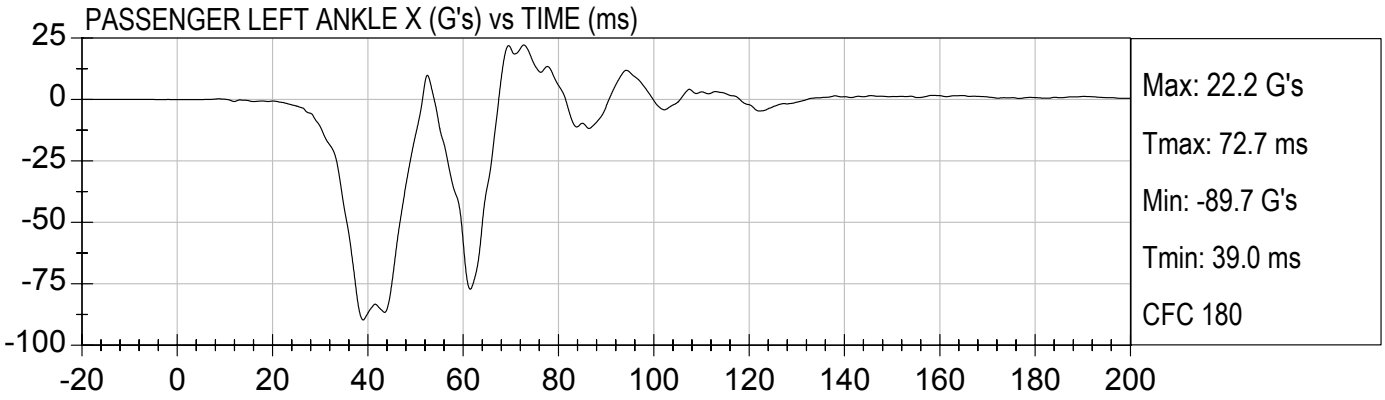

PASSENGER RIGHT UPPER TIBIA FZ (N) vs TIME (ms)
250
0
-250
-500
-750
-1000
-1250
-1500
-1750
-2000
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 176.8 N
Tmax: 34.1 ms
Min: -1800.4 N
Tmin: 82.0 ms
CFC 600

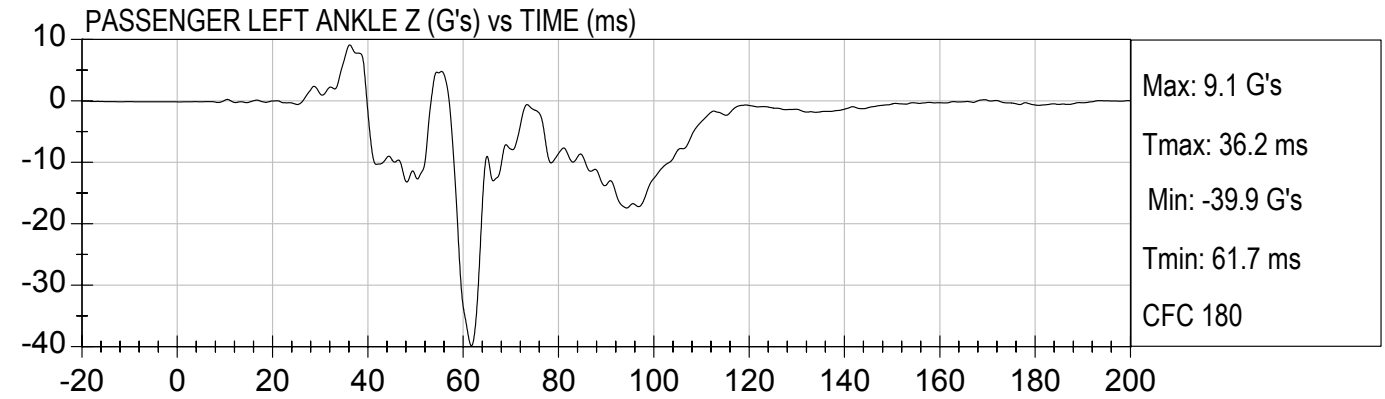

PASSENGER RIGHT LOWER TIBIA MX (Nm) vs TIME (ms)
20
15
10
5
0
-5
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 16.3 Nm
Tmax: 45.2 ms
Min: -4.1 Nm
Tmin: 119.4 ms
CFC 600

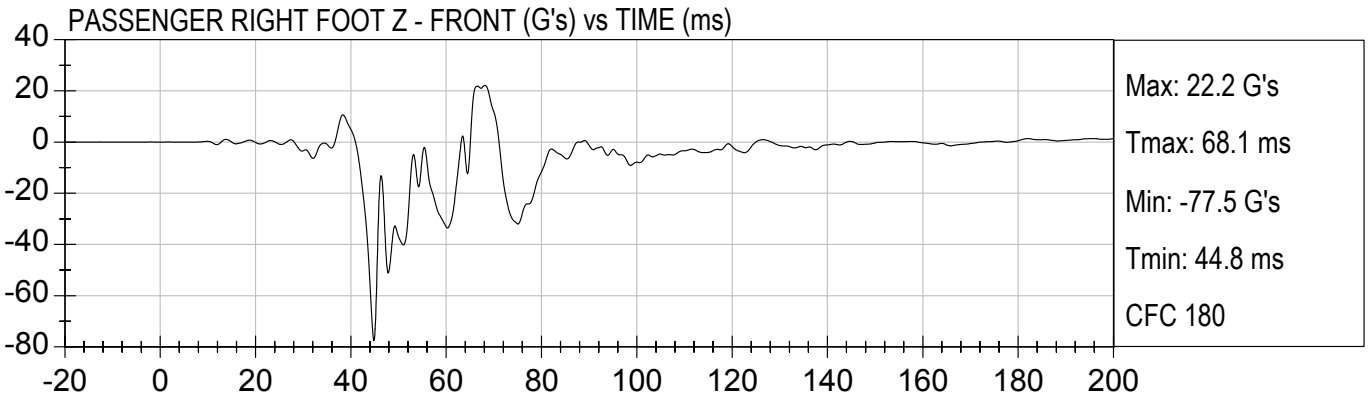

PASSENGER RIGHT LOWER TIBIA MY (Nm) vs TIME (ms)
25
0
-25
-50
-75
-100
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 20.1 Nm
Tmax: 43.1 ms
Min: -81.2 Nm
Tmin: 64.6 ms
CFC 600

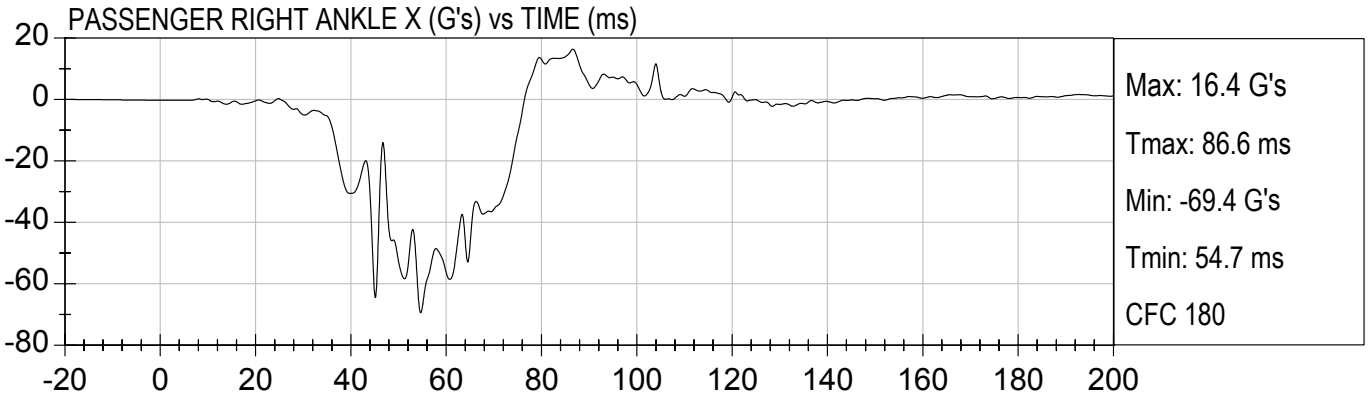

PASSENGER RIGHT LOWER TIBIA FZ (N) vs TIME (ms)
250
0
-250
-500
-750
-1000
-1250
-1500
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 202.3 N
Tmax: 52.0 ms
Min: -1277.6 N
Tmin: 83.1 ms
CFC 600

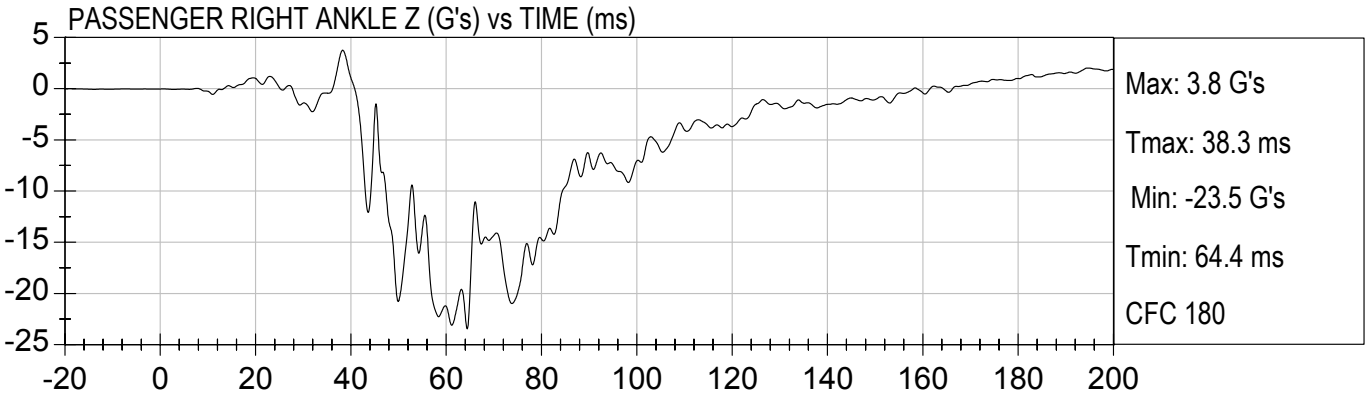

PASSENGER LEFT FOOT Z - FRONT (G's) vs TIME (ms)
50
25
0
-25
-50
-75
-100
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 36.3 G's
Tmax: 75.7 ms
Min: -88.1 G's
Tmin: 41.7 ms
CFC 180

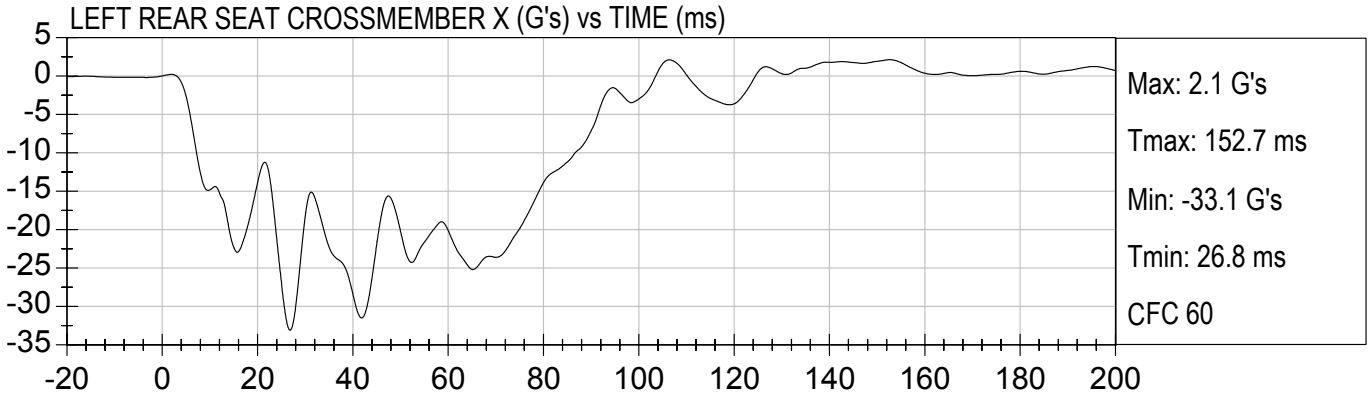

PASSENGER LEFT ANKLE X (G's) vs TIME (ms)
25
0
-25
-50
-75
-100
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 22.2 G's
Tmax: 72.7 ms
Min: -89.7 G's
Tmin: 39.0 ms
CFC 180

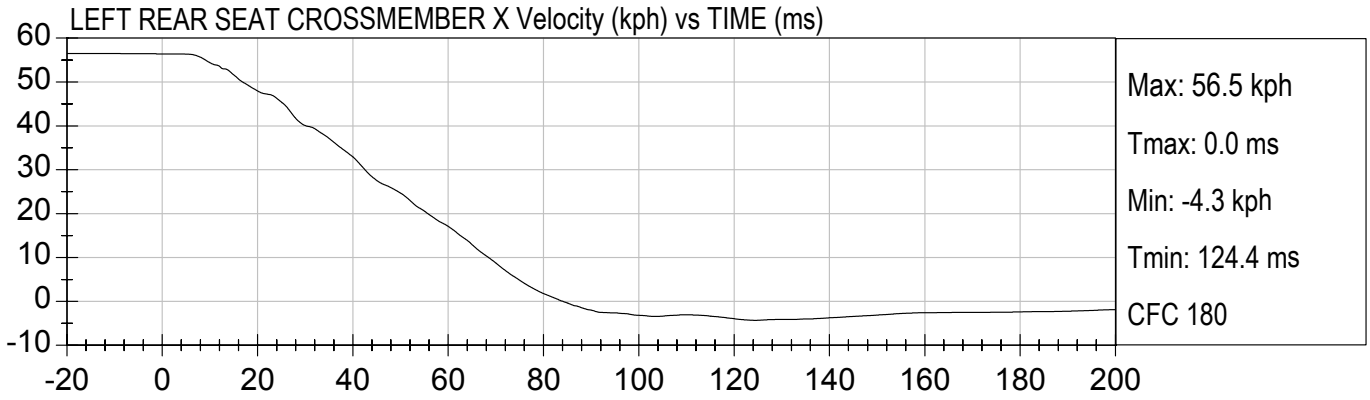

PASSENGER LEFT ANKLE Z (G's) vs TIME (ms)
10
0
-10
-20
-30
-40
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 9.1 G's
Tmax: 36.2 ms
Min: -39.9 G's
Tmin: 61.7 ms
CFC 180

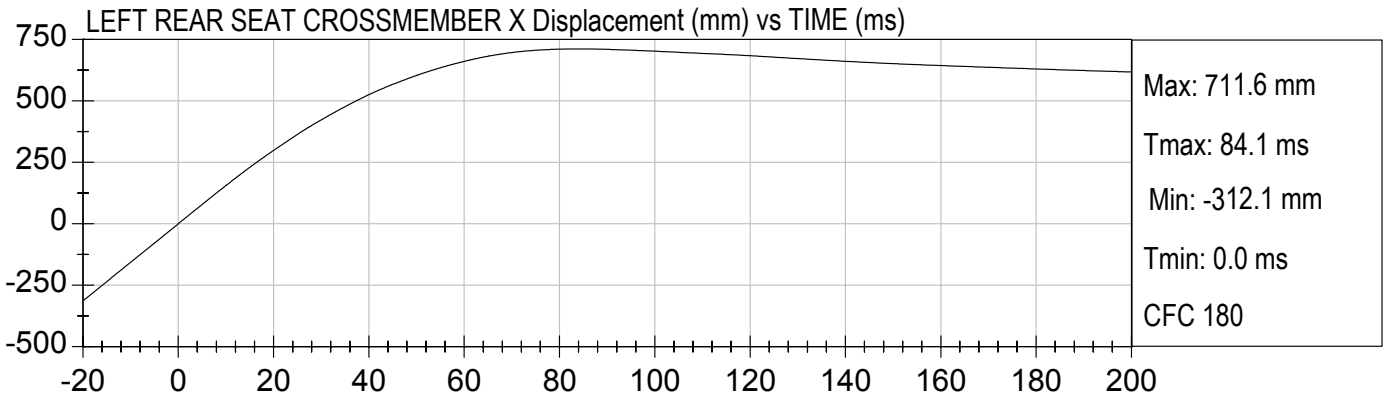

PASSENGER RIGHT FOOT Z - FRONT (G's) vs TIME (ms)
40
20
0
-20
-40
-60
-80
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 22.2 G's
Tmax: 68.1 ms
Min: -77.5 G's
Tmin: 44.8 ms
CFC 180

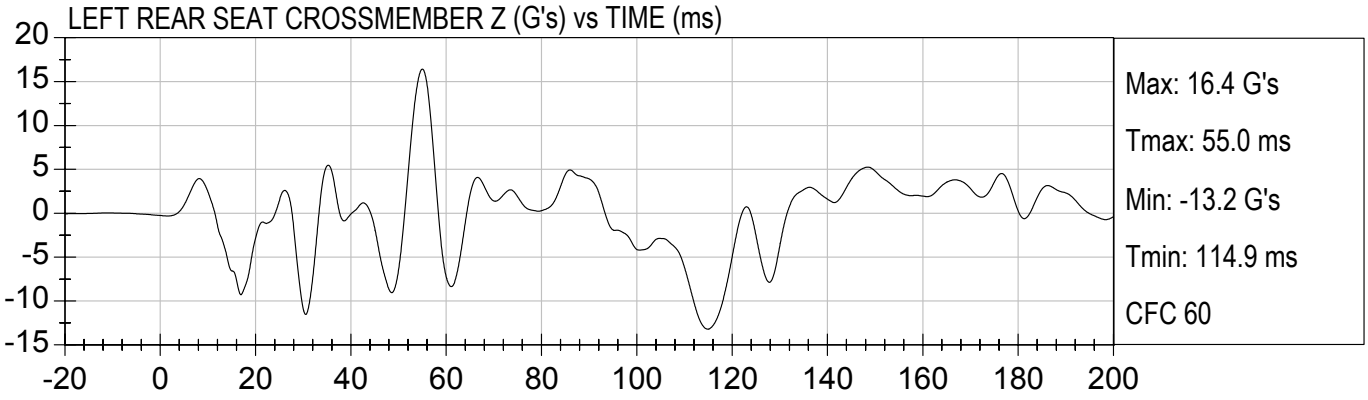

PASSENGER RIGHT ANKLE X (G's) vs TIME (ms)
20
0
-20
-40
-60
-80
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 16.4 G's
Tmax: 86.6 ms
Min: -69.4 G's
Tmin: 54.7 ms
CFC 180

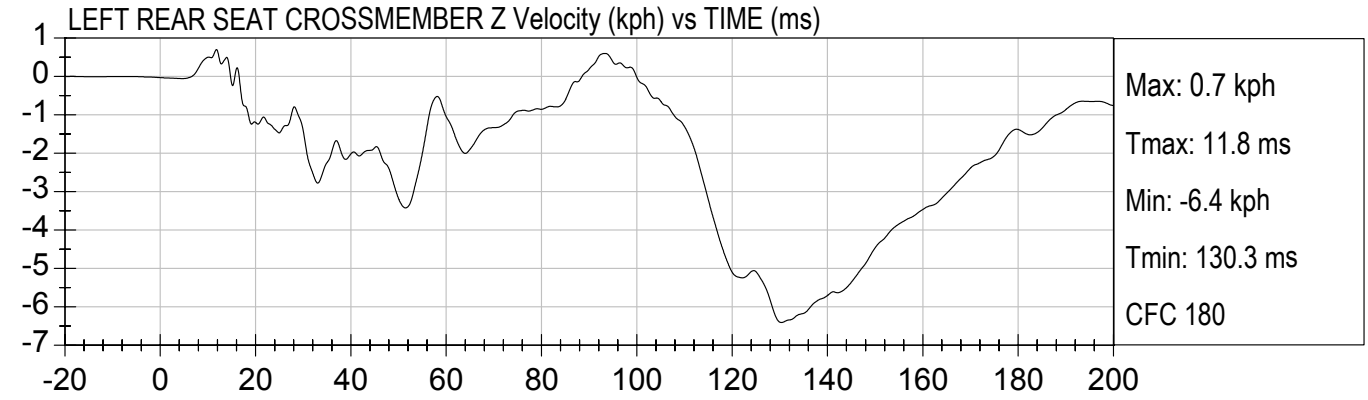

PASSENGER RIGHT ANKLE Z (G's) vs TIME (ms)
5
0
-5
-10
-15
-20
-25
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 3.8 G's
Tmax: 38.3 ms
Min: -23.5 G's
Tmin: 64.4 ms
CFC 180

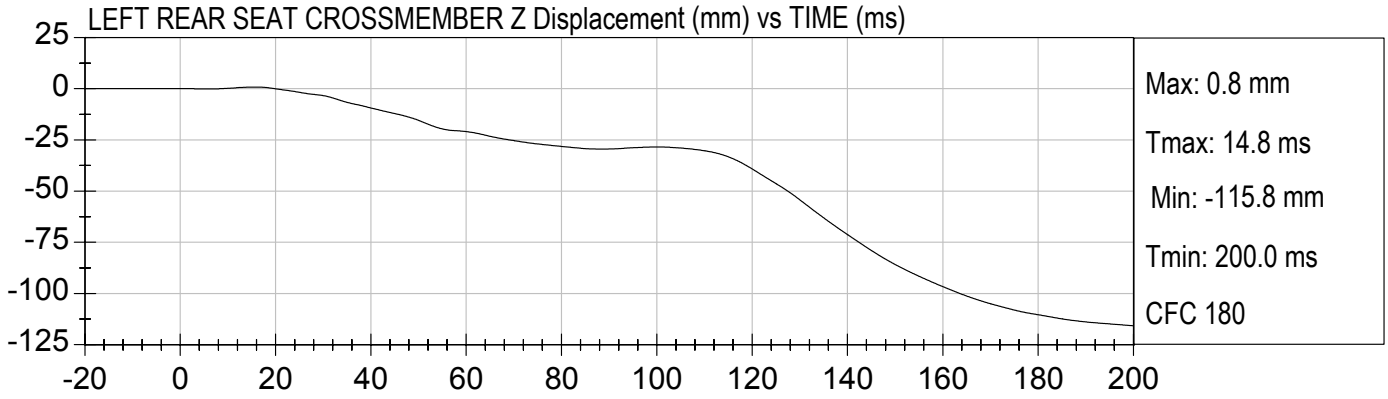

LEFT REAR SEAT CROSSMEMBER X (G's) vs TIME (ms)
5
0
-5
-10
-15
-20
-25
-30
-35
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 2.1 G's
Tmax: 152.7 ms
Min: -33.1 G's
Tmin: 26.8 ms
CFC 60

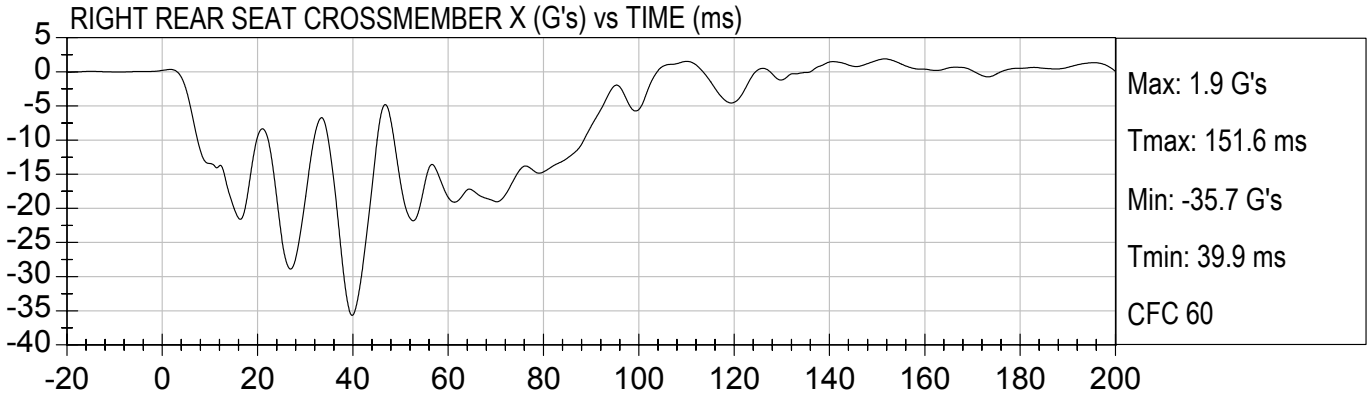

LEFT REAR SEAT CROSSMEMBER X Velocity (kph) vs TIME (ms)
60
50
40
30
20
10
0
-10
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 56.5 kph
Tmax: 0.0 ms
Min: -4.3 kph
Tmin: 124.4 ms
CFC 180

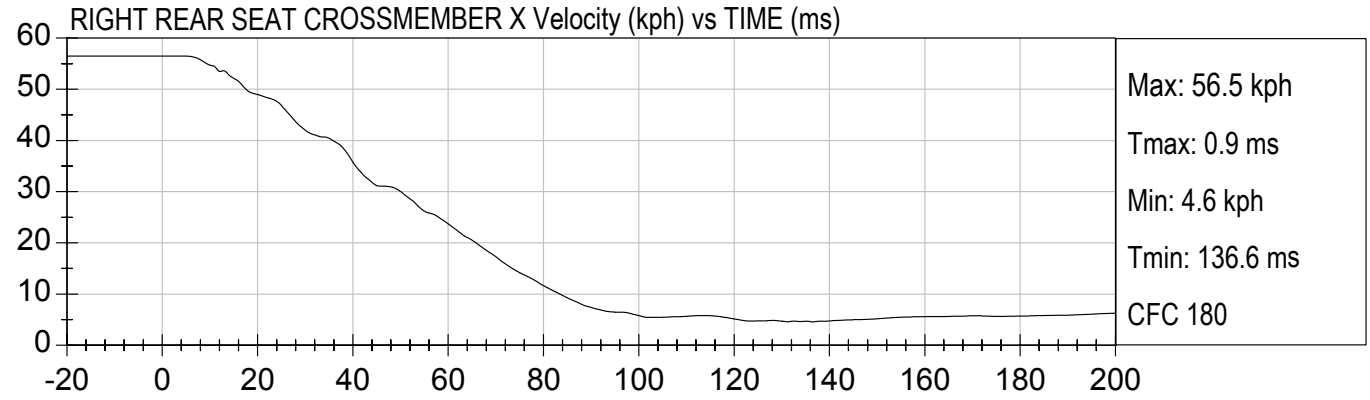

LEFT REAR SEAT CROSSMEMBER X Displacement (mm) vs TIME (ms)
750
500
250
0
-250
-500
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 711.6 mm
Tmax: 84.1 ms
Min: -312.1 mm
Tmin: 0.0 ms
CFC 180

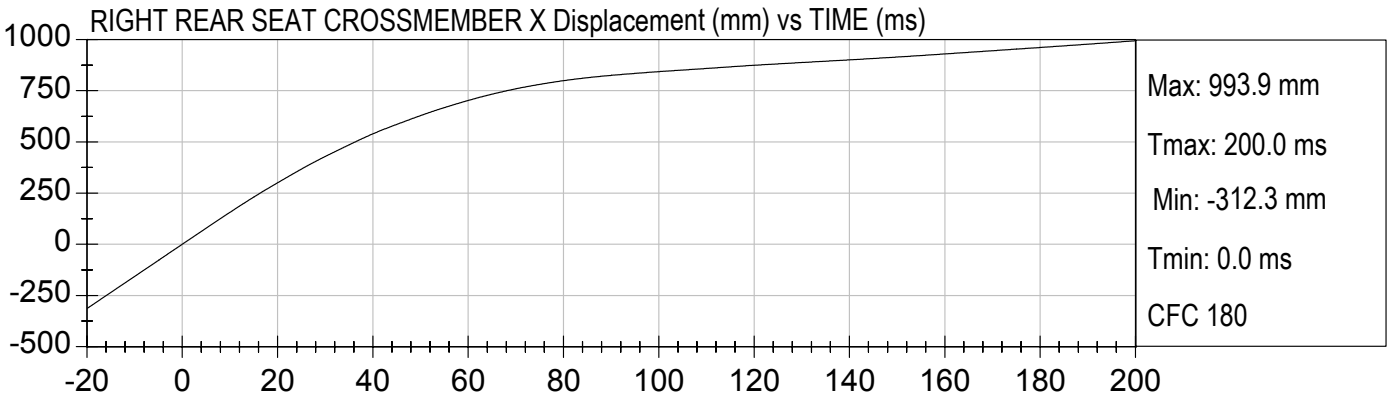

LEFT REAR SEAT CROSSMEMBER Z (G's) vs TIME (ms)
20
15
10
5
0
-5
-10
-15
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 16.4 G's
Tmax: 55.0 ms
Min: -13.2 G's
Tmin: 114.9 ms
CFC 60

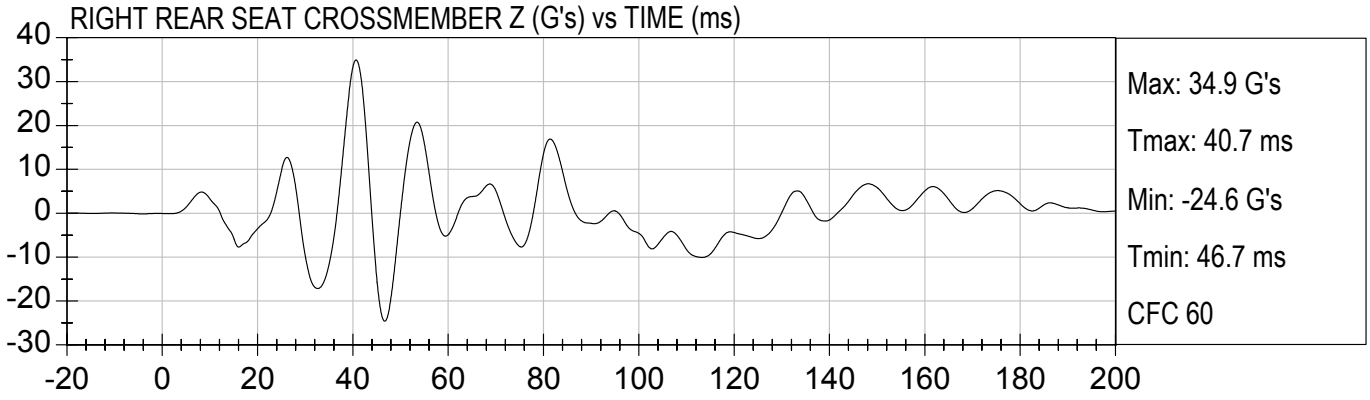

LEFT REAR SEAT CROSSMEMBER Z Velocity (kph) vs TIME (ms)
1
0
-1
-2
-3
-4
-5
-6
-7
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 0.7 kph
Tmax: 11.8 ms
Min: -6.4 kph
Tmin: 130.3 ms
CFC 180

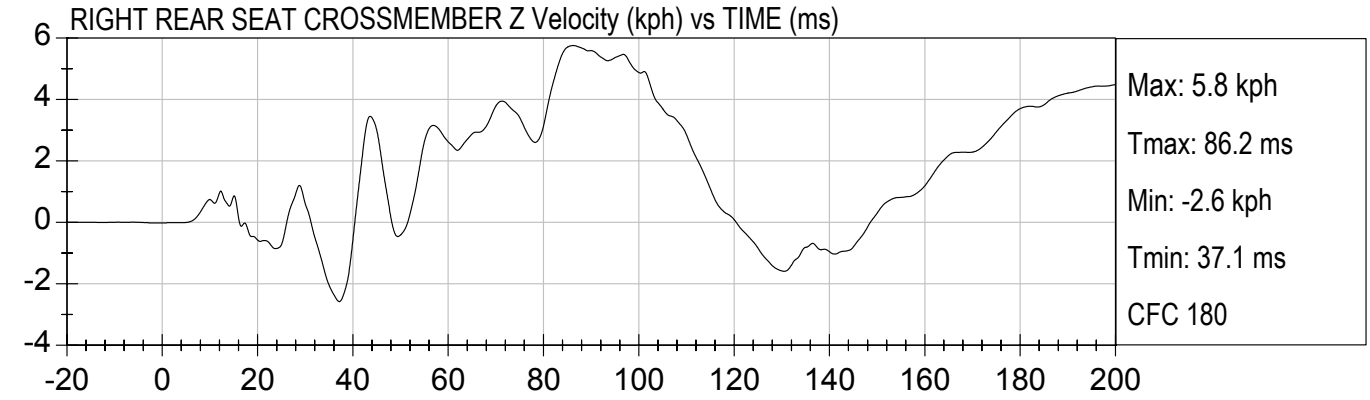

LEFT REAR SEAT CROSSMEMBER Z Displacement (mm) vs TIME (ms)
25
0
-25
-50
-75
-100
-125
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 0.8 mm
Tmax: 14.8 ms
Min: -115.8 mm
Tmin: 200.0 ms
CFC 180

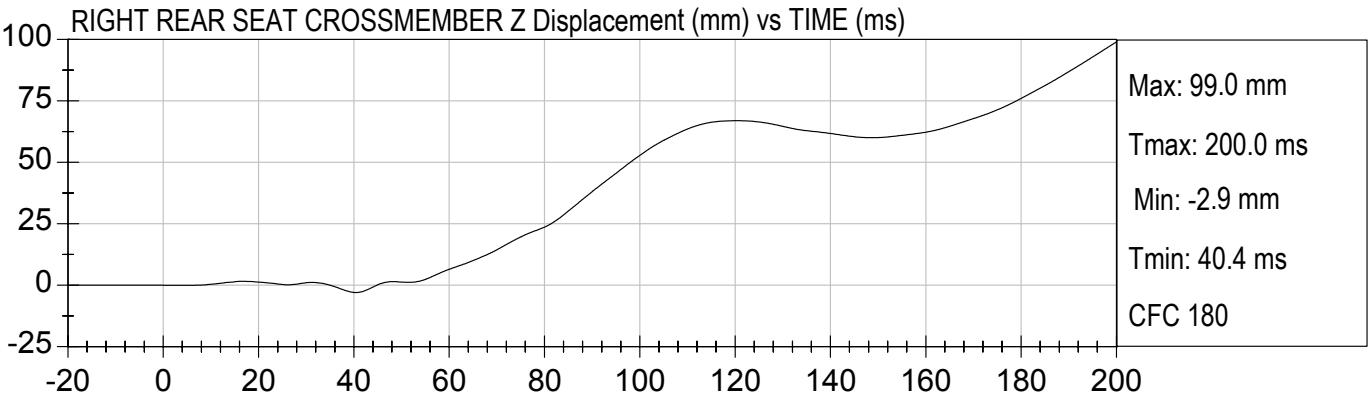

RIGHT REAR SEAT CROSSMEMBER X (G's) vs TIME (ms)
5
0
-5
-10
-15
-20
-25
-30
-35
-40
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 1.9 G's
Tmax: 151.6 ms
Min: -35.7 G's
Tmin: 39.9 ms
CFC 60

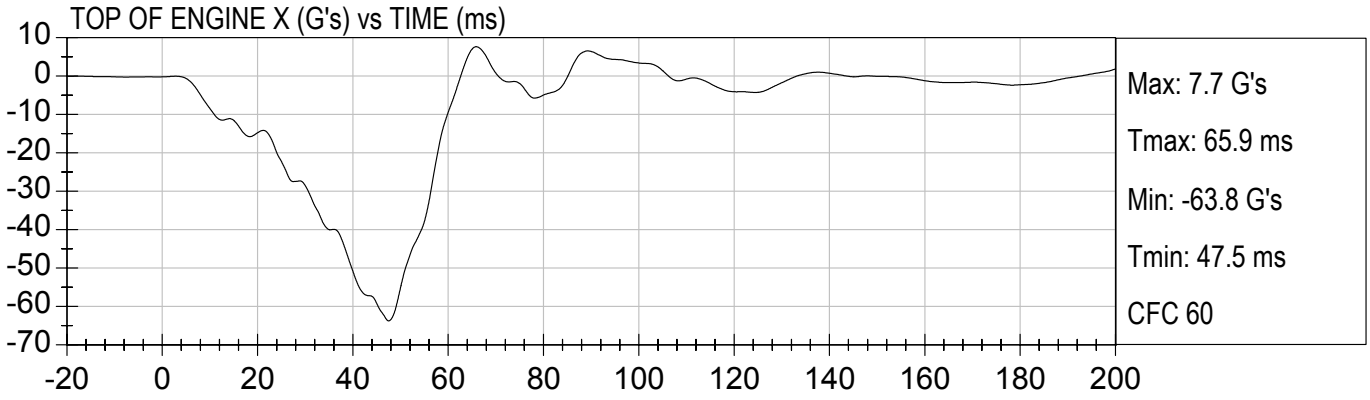

RIGHT REAR SEAT CROSSMEMBER X Velocity (kph) vs TIME (ms)
60
50
40
30
20
10
0
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 56.5 kph
Tmax: 0.9 ms
Min: 4.6 kph
Tmin: 136.6 ms
CFC 180

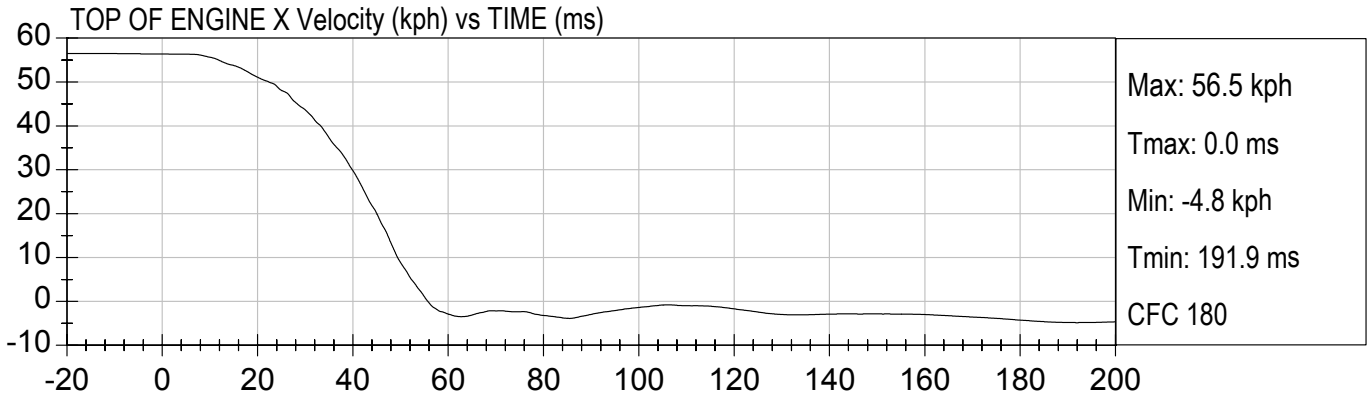

RIGHT REAR SEAT CROSSMEMBER X Displacement (mm) vs TIME (ms)
1000
750
500
250
0
-250
-500
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 993.9 mm
Tmax: 200.0 ms
Min: -312.3 mm
Tmin: 0.0 ms
CFC 180

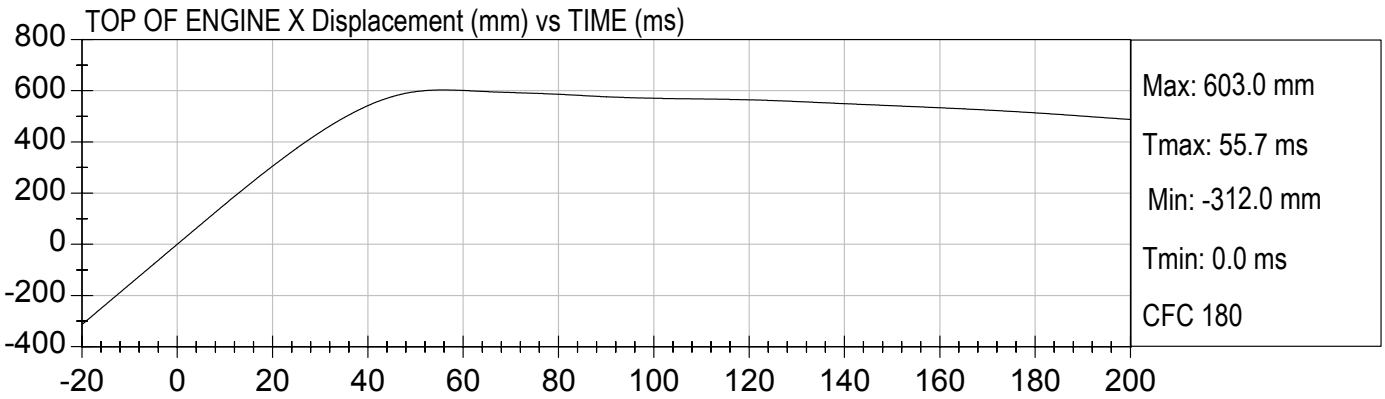

RIGHT REAR SEAT CROSSMEMBER Z (G's) vs TIME (ms)
40
30
20
10
0
-10
-20
-30
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 34.9 G's
Tmax: 40.7 ms
Min: -24.6 G's
Tmin: 46.7 ms
CFC 60

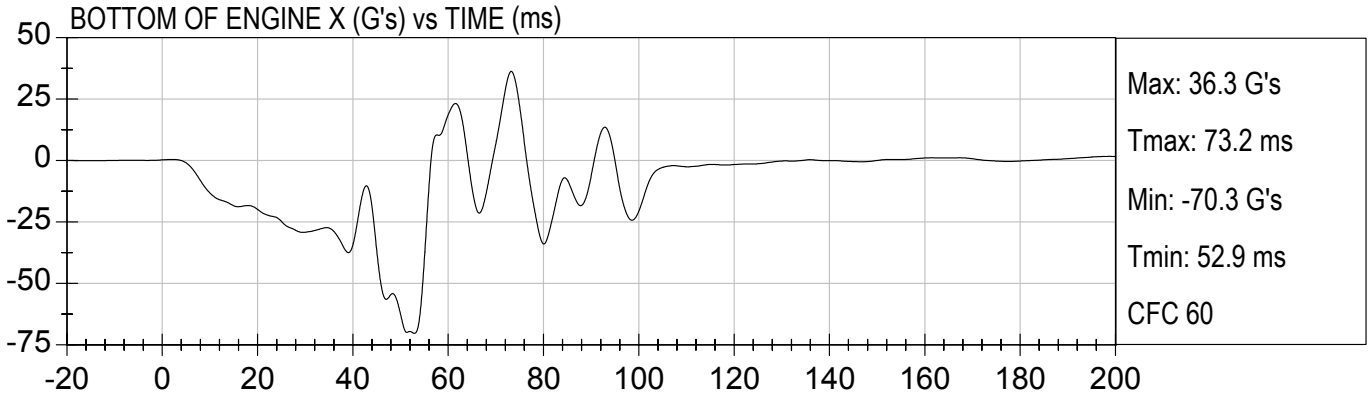

RIGHT REAR SEAT CROSSMEMBER Z Velocity (kph) vs TIME (ms)
6
4
2
0
-2
-4
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 5.8 kph
Tmax: 86.2 ms
Min: -2.6 kph
Tmin: 37.1 ms
CFC 180

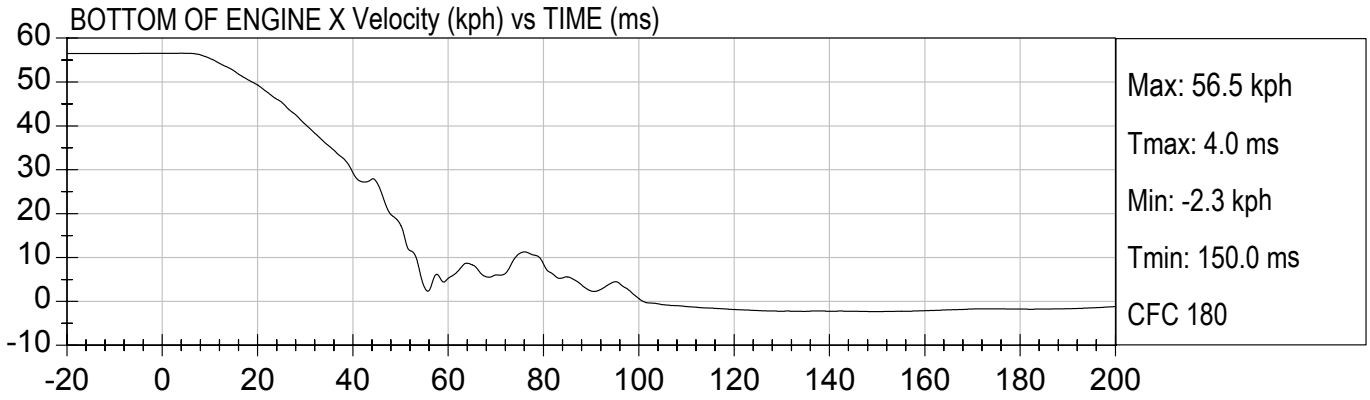

RIGHT REAR SEAT CROSSMEMBER Z Displacement (mm) vs TIME (ms)
100
75
50
25
0
-25
-20 0 20 40 60 80 100 120 140 160 180 200
Max: 99.0 mm
Tmax: 200.0 ms
Min: -2.9 mm
Tmin: 40.4 ms
CFC 180

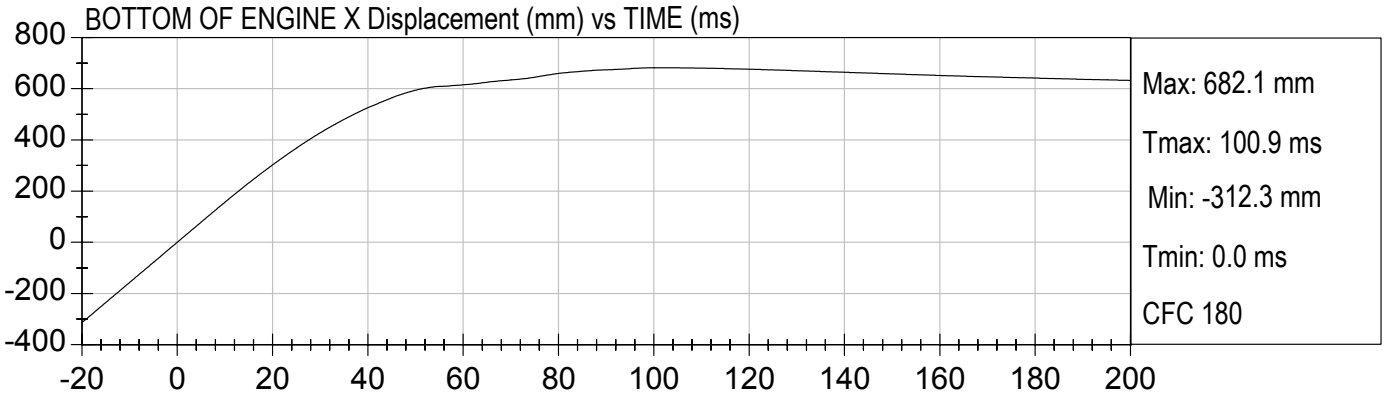

TOP OF ENGINE X (G's) vs TIME (ms)
10
0
-10
-20
-30
-40
-50
-60
-70
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 7.7 G's
Tmax: 65.9 ms
Min: -63.8 G's
Tmin: 47.5 ms
CFC 60

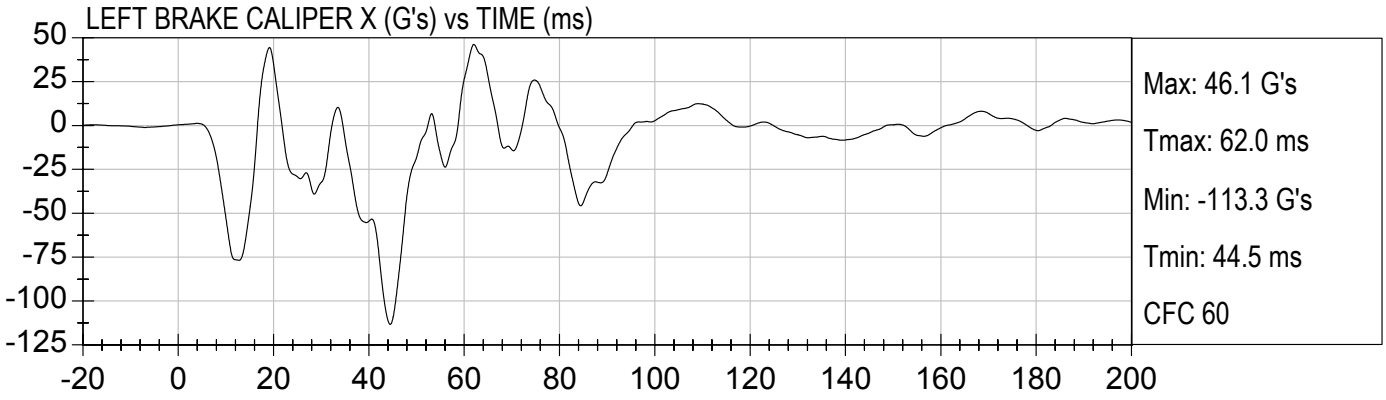

TOP OF ENGINE X Velocity (kph) vs TIME (ms)
60
50
40
30
20
10
0
-10
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 56.5 kph
Tmax: 0.0 ms
Min: -4.8 kph
Tmin: 191.9 ms
CFC 180

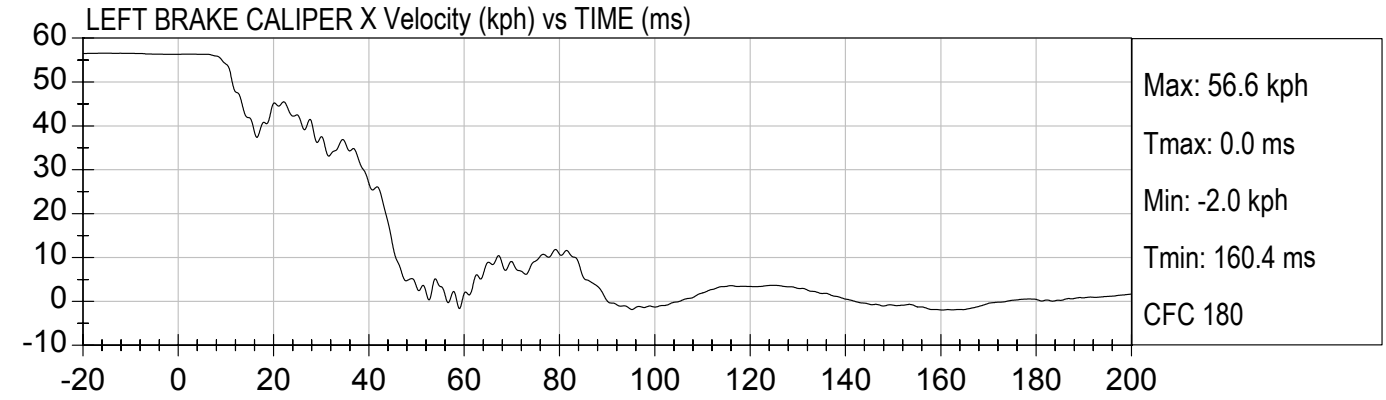

TOP OF ENGINE X Displacement (mm) vs TIME (ms)
800
600
400
200
0
-200
-400
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 603.0 mm
Tmax: 55.7 ms
Min: -312.0 mm
Tmin: 0.0 ms
CFC 180

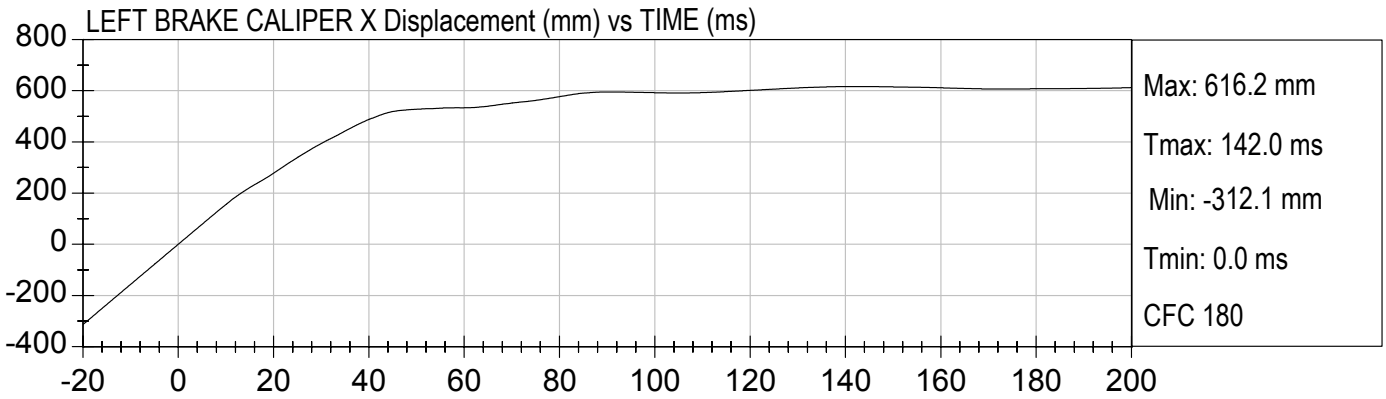

BOTTOM OF ENGINE X (G's) vs TIME (ms)
50
25
0
-25
-50
-75
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 36.3 G's
Tmax: 73.2 ms
Min: -70.3 G's
Tmin: 52.9 ms
CFC 60

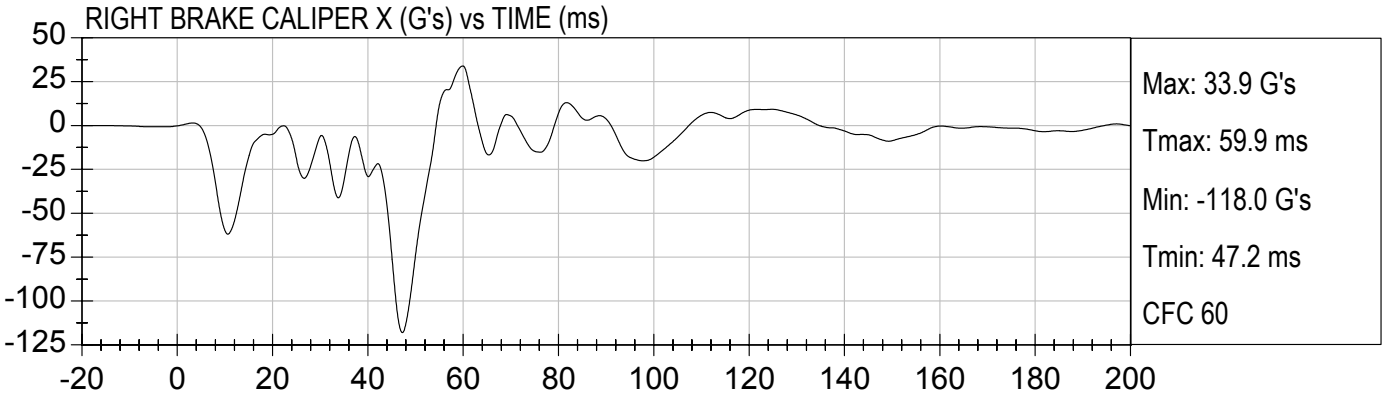

BOTTOM OF ENGINE X Velocity (kph) vs TIME (ms)
60
50
40
30
20
10
0
-10
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 56.5 kph
Tmax: 4.0 ms
Min: -2.3 kph
Tmin: 150.0 ms
CFC 180

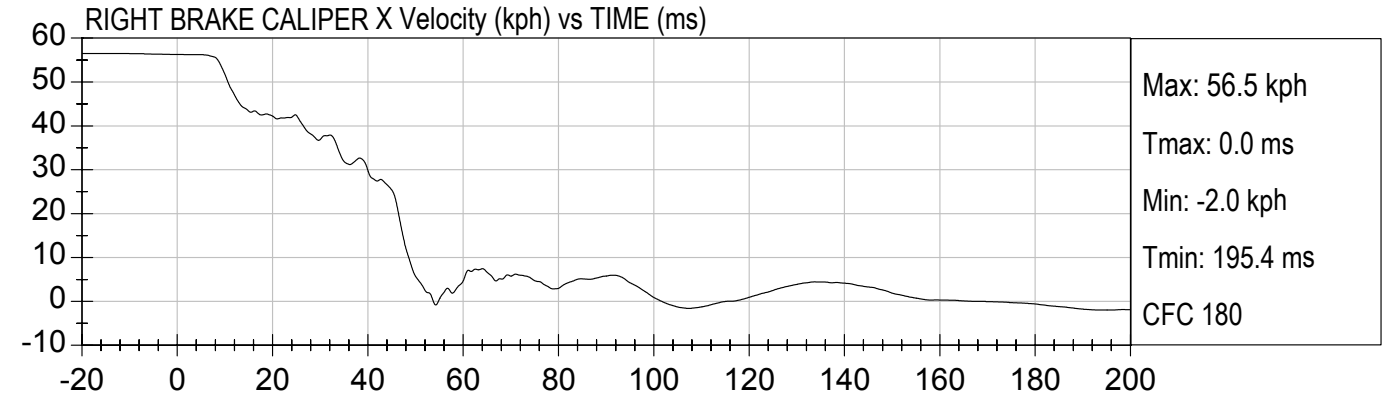

BOTTOM OF ENGINE X Displacement (mm) vs TIME (ms)
800
600
400
200
0
-200
-400
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 682.1 mm
Tmax: 100.9 ms
Min: -312.3 mm
Tmin: 0.0 ms
CFC 180

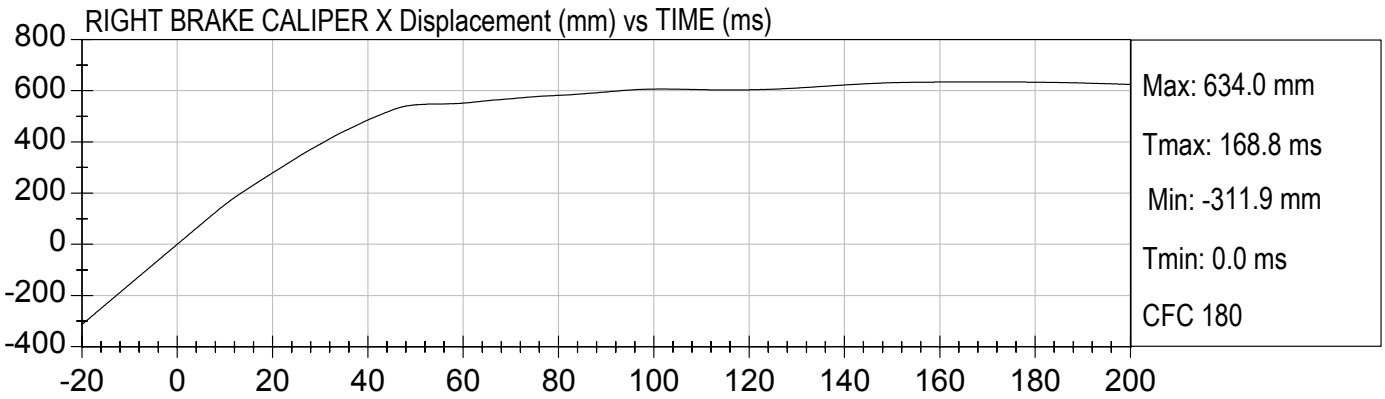

LEFT BRAKE CALIPER X (G's) vs TIME (ms)
50
25
0
-25
-50
-75
-100
-125
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 46.1 G's
Tmax: 62.0 ms
Min: -113.3 G's
Tmin: 44.5 ms
CFC 60

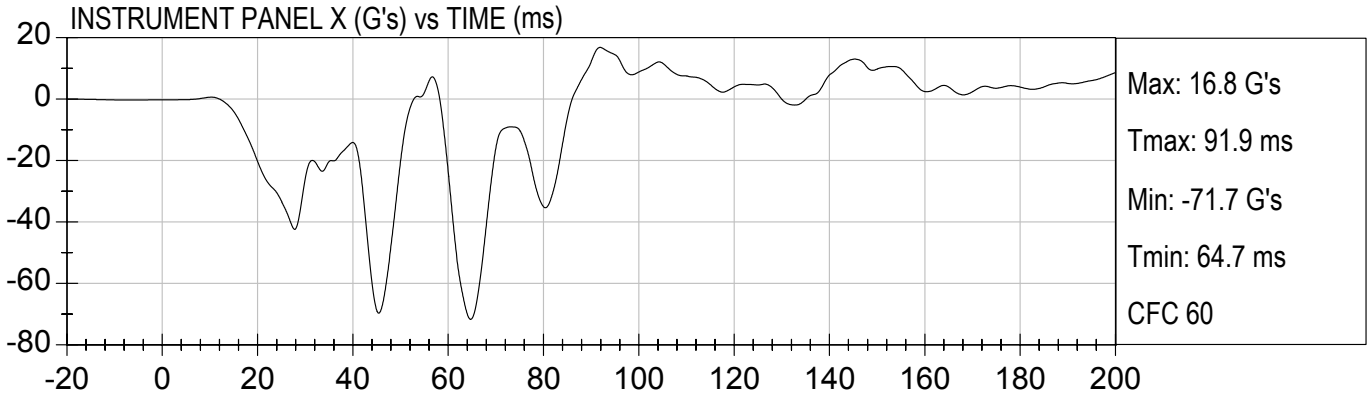

LEFT BRAKE CALIPER X Velocity (kph) vs TIME (ms)
60
50
40
30
20
10
0
-10
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 56.6 kph
Tmax: 0.0 ms
Min: -2.0 kph
Tmin: 160.4 ms
CFC 180

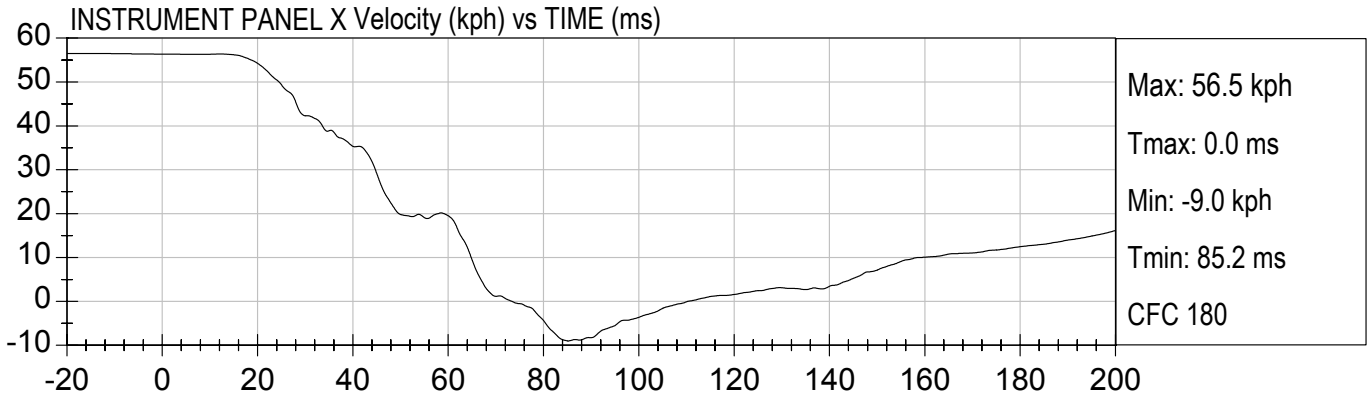

LEFT BRAKE CALIPER X Displacement (mm) vs TIME (ms)
800
600
400
200
0
-200
-400
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 616.2 mm
Tmax: 142.0 ms
Min: -312.1 mm
Tmin: 0.0 ms
CFC 180

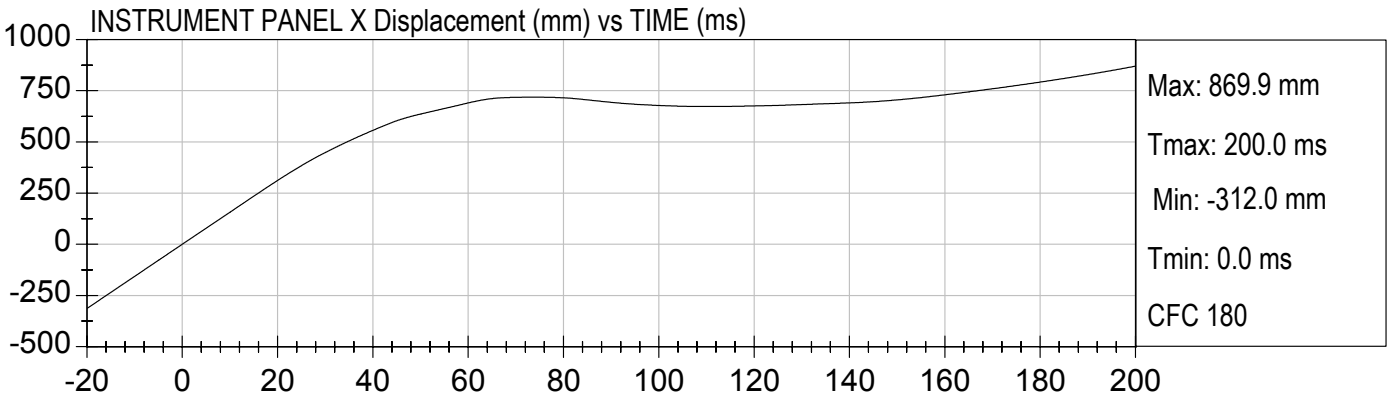

RIGHT BRAKE CALIPER X (G's) vs TIME (ms)
50
25
0
-25
-50
-75
-100
-125
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 33.9 G's
Tmax: 59.9 ms
Min: -118.0 G's
Tmin: 47.2 ms
CFC 60


RIGHT 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: 56.5 kph
Tmax: 0.0 ms
Min: -2.0 kph
Tmin: 195.4 ms
CFC 180


RIGHT 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: 634.0 mm
Tmax: 168.8 ms
Min: -311.9 mm
Tmin: 0.0 ms
CFC 180

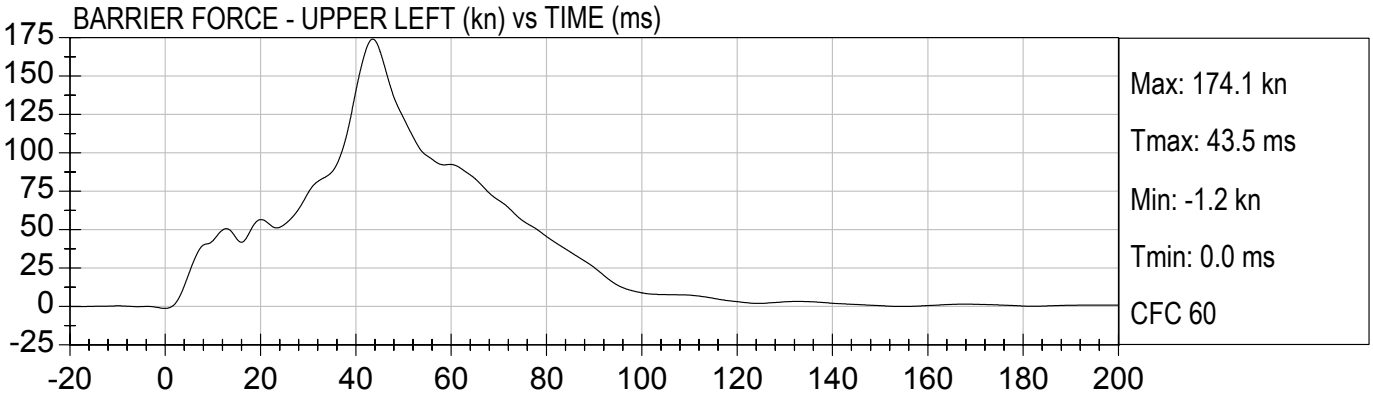

INSTRUMENT PANEL X (G's) vs TIME (ms)
20
0
-20
-40
-60
-80
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 16.8 G's
Tmax: 91.9 ms
Min: -71.7 G's
Tmin: 64.7 ms
CFC 60

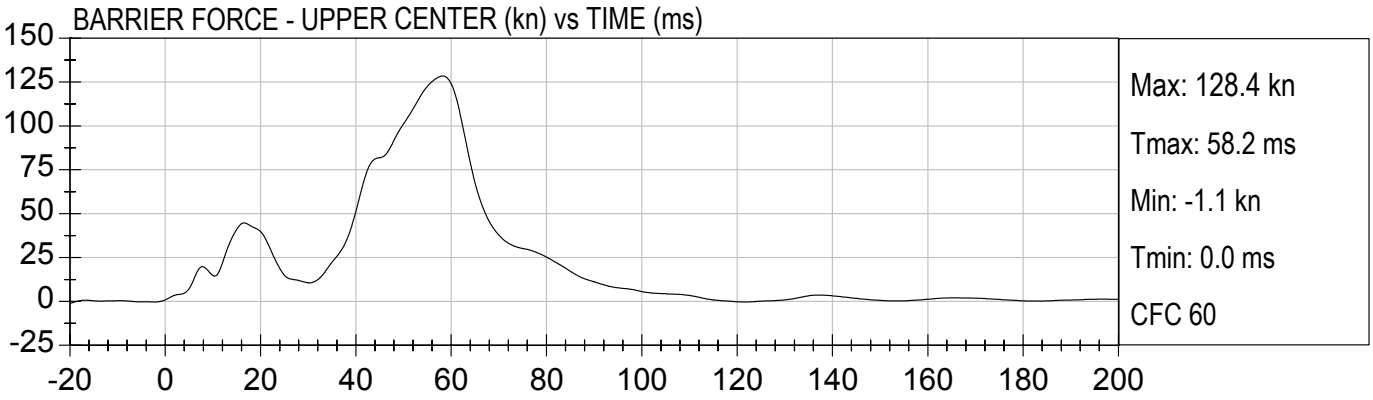

INSTRUMENT PANEL X Velocity (kph) vs TIME (ms)
60
50
40
30
20
10
0
-10
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 56.5 kph
Tmax: 0.0 ms
Min: -9.0 kph
Tmin: 85.2 ms
CFC 180

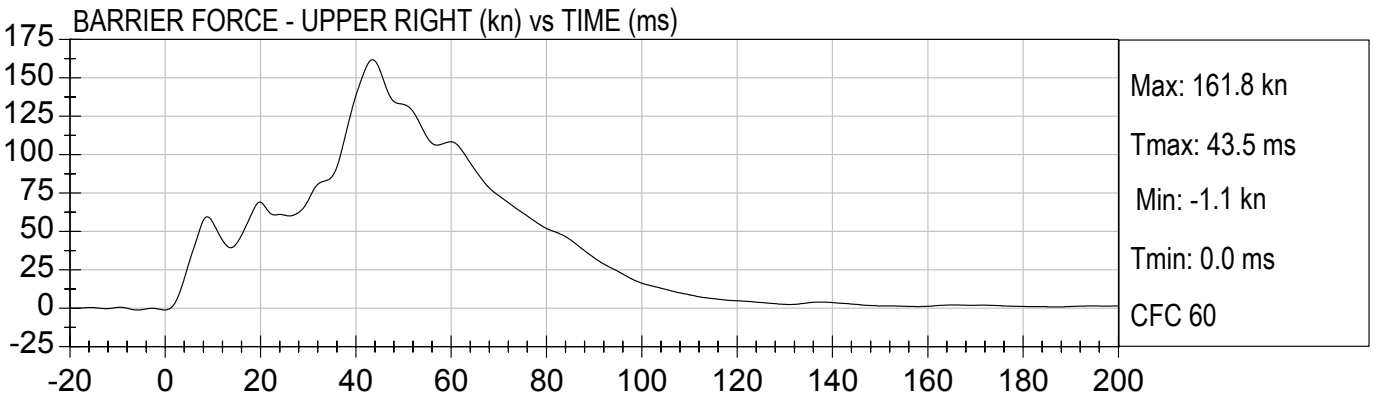

INSTRUMENT PANEL X Displacement (mm) vs TIME (ms)
1000
750
500
250
0
-250
-500
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 869.9 mm
Tmax: 200.0 ms
Min: -312.0 mm
Tmin: 0.0 ms
CFC 180

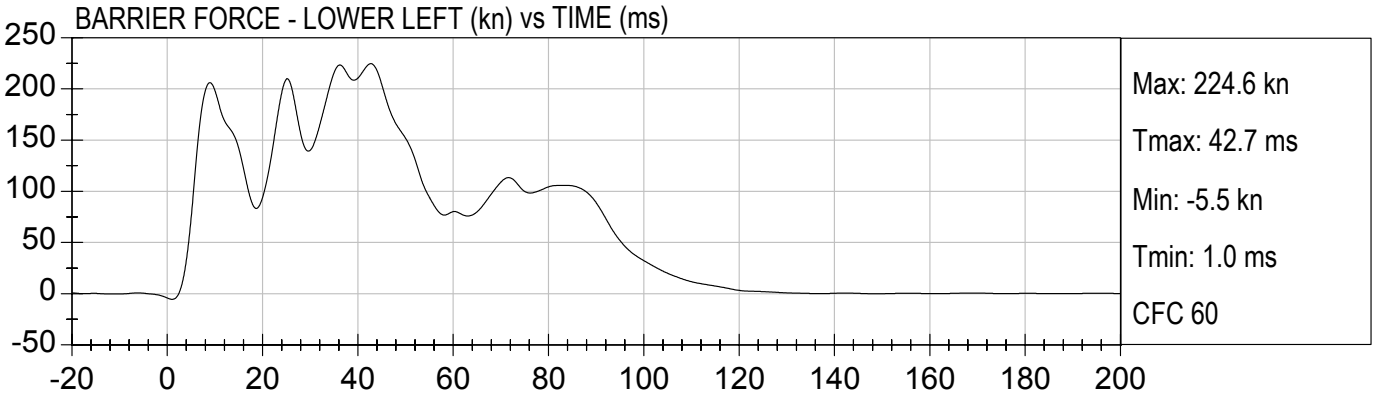
NCAP 35MPH FRONTAL (M40204)
2004 FORD F-150 SUPERCREW

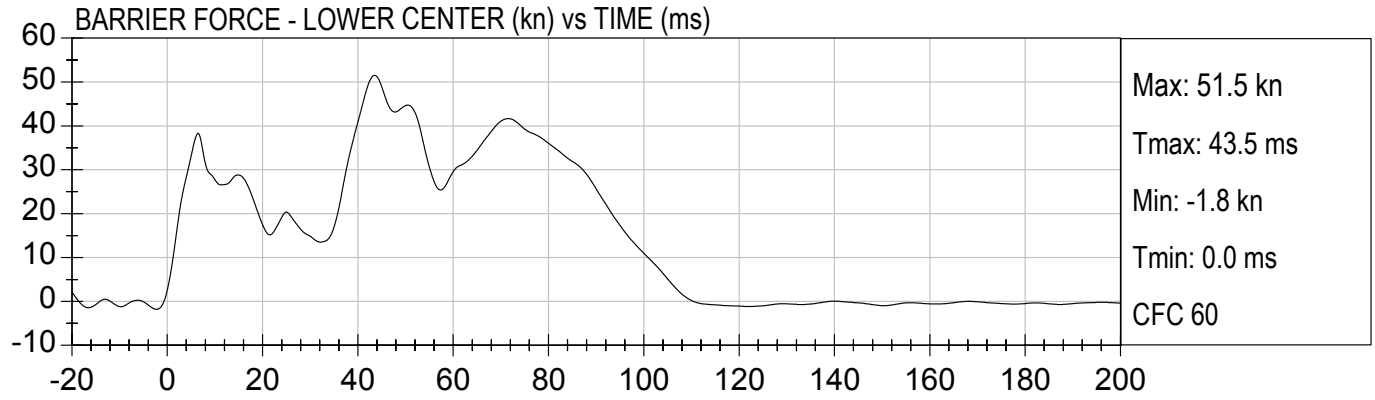
Test Date: 01/06/04
Speed: 35.1 mph (56.5 km/h)

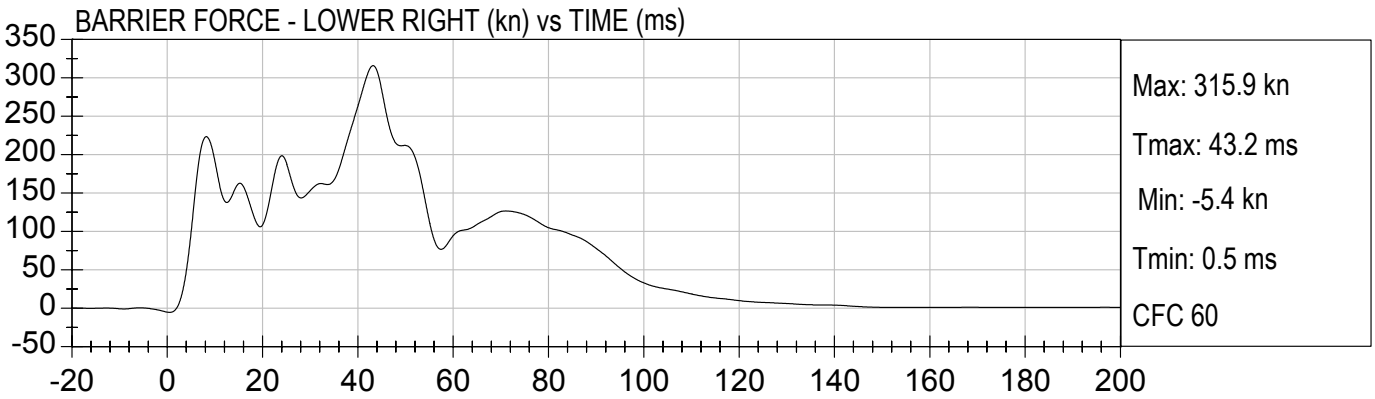






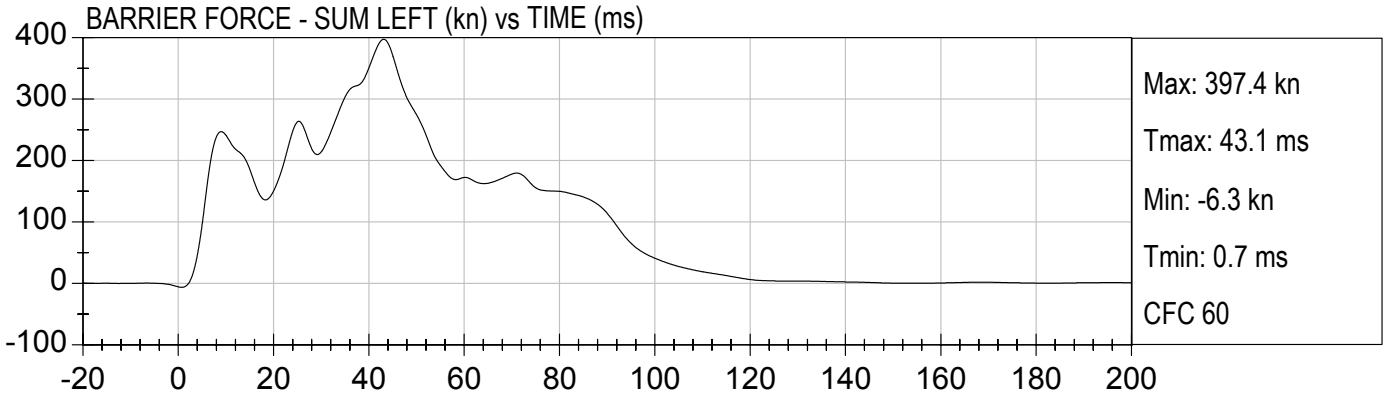

BARRIER FORCE - LOWER LEFT (kn) vs TIME (ms)
250
200
150
100
50
0
-50
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 224.6 kn
Tmax: 42.7 ms
Min: -5.5 kn
Tmin: 1.0 ms
CFC 60

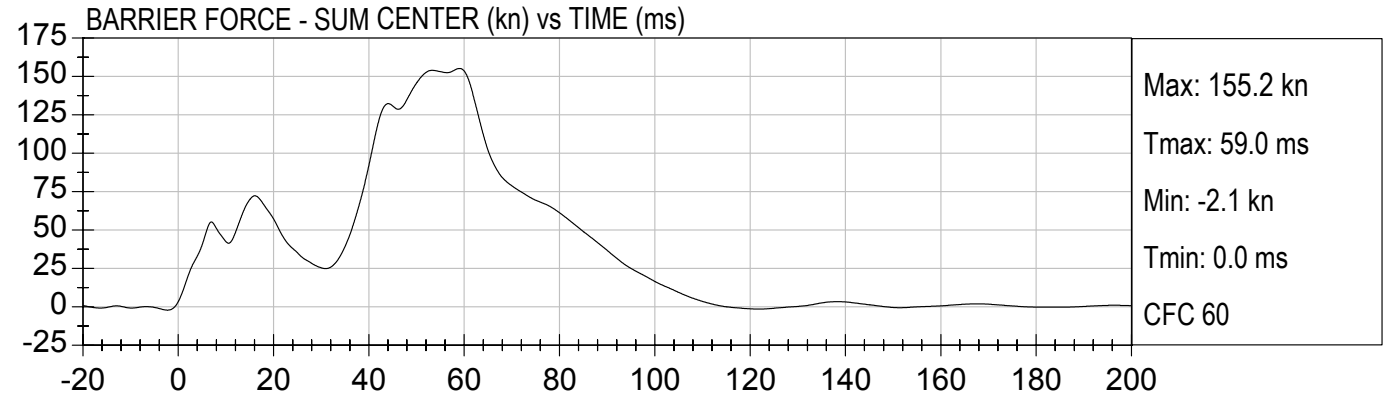

BARRIER FORCE - LOWER CENTER (kn) vs TIME (ms)
60
50
40
30
20
10
0
-10
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 51.5 kn
Tmax: 43.5 ms
Min: -1.8 kn
Tmin: 0.0 ms
CFC 60

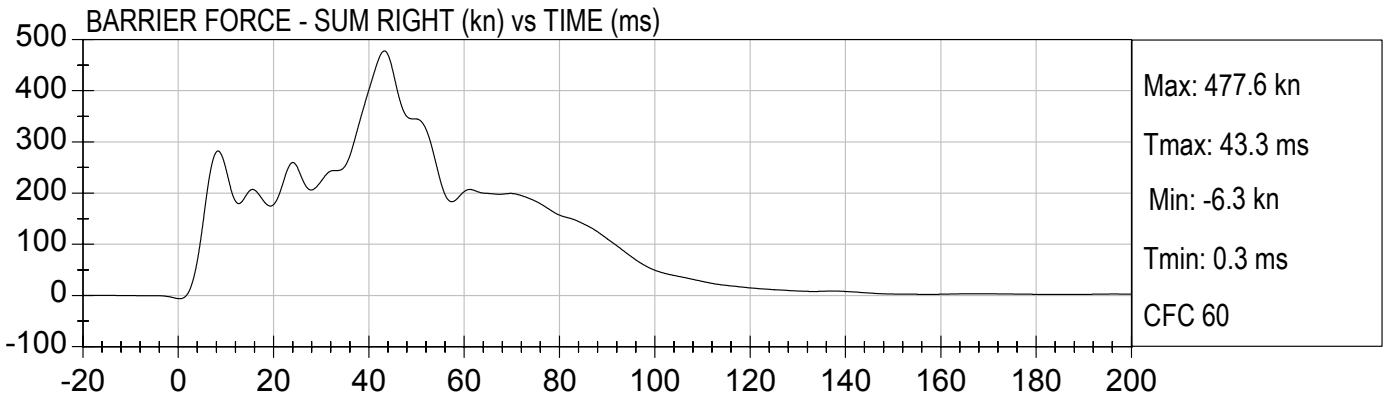

BARRIER FORCE - LOWER RIGHT (kn) vs TIME (ms)
350
300
250
200
150
100
50
0
-50
-20
0
20
40
60
80
100
120
140
160
180
200
Max: 315.9 kn
Tmax: 43.2 ms
Min: -5.4 kn
Tmin: 0.5 ms
CFC 60

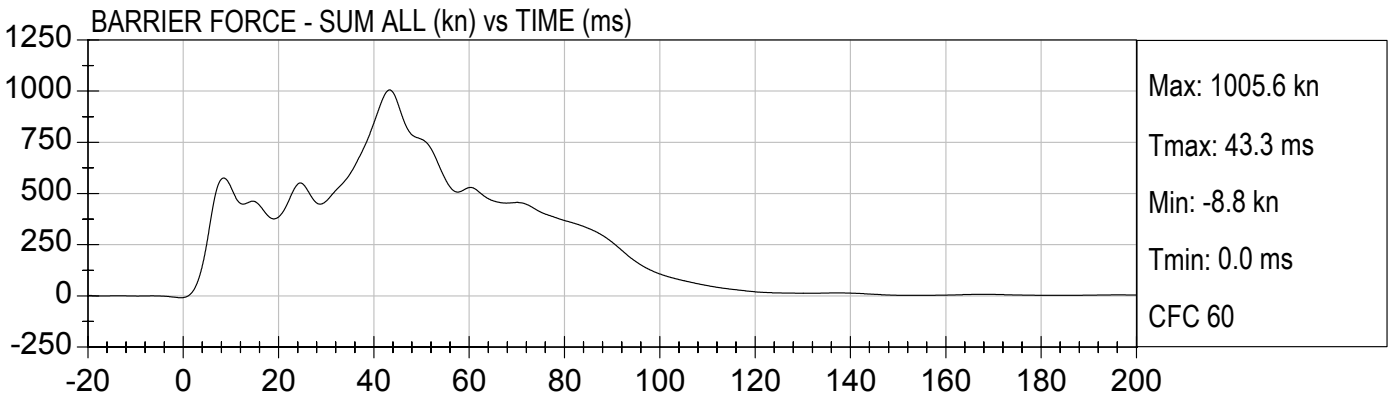
NCAP 35MPH FRONTAL (M40204)
2004 FORD F-150 SUPERCREW

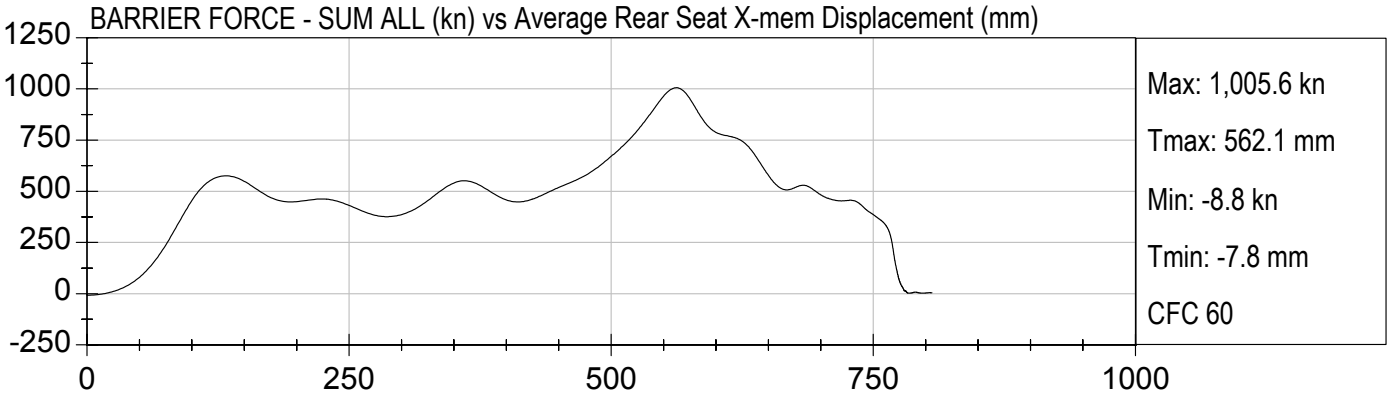
Test Date: 01/06/04
Speed: 35.1 mph (56.5 km/h)










BARRIER FORCE - SUM ALL (kn) vs Average Rear Seat X-mem Displacement (mm)
1250
1000
750
500
250
0
-250
0
250
500
750
1000
Max: 1,005.6 kn
Tmax: 562.1 mm
Min: -8.8 kn
Tmin: -7.8 mm
CFC 60

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: D03189

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 Hall

Approved By: Shefalika Jaiswal

Hybrid III Calibration Data Sheet

50th Percentile Male

Head Drop Calibration

ATD Serial No: 065 **Test I.D:** D031891

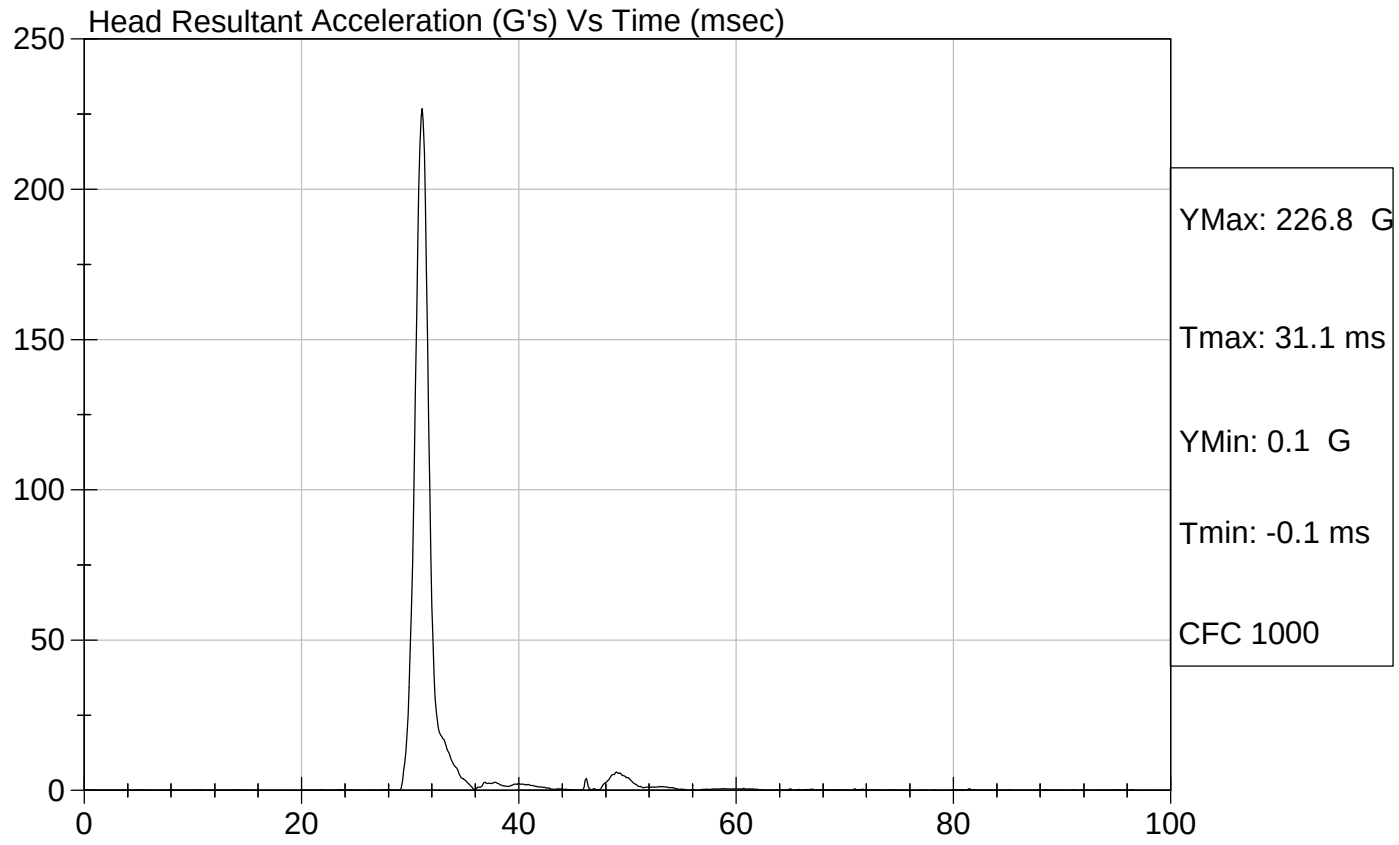
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	29	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	226.8	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	12.3	Pass
Is Acceleration Unimodal?	Yes/No	< 10% Peak	Yes	Pass
		Overall Test Results		Pass

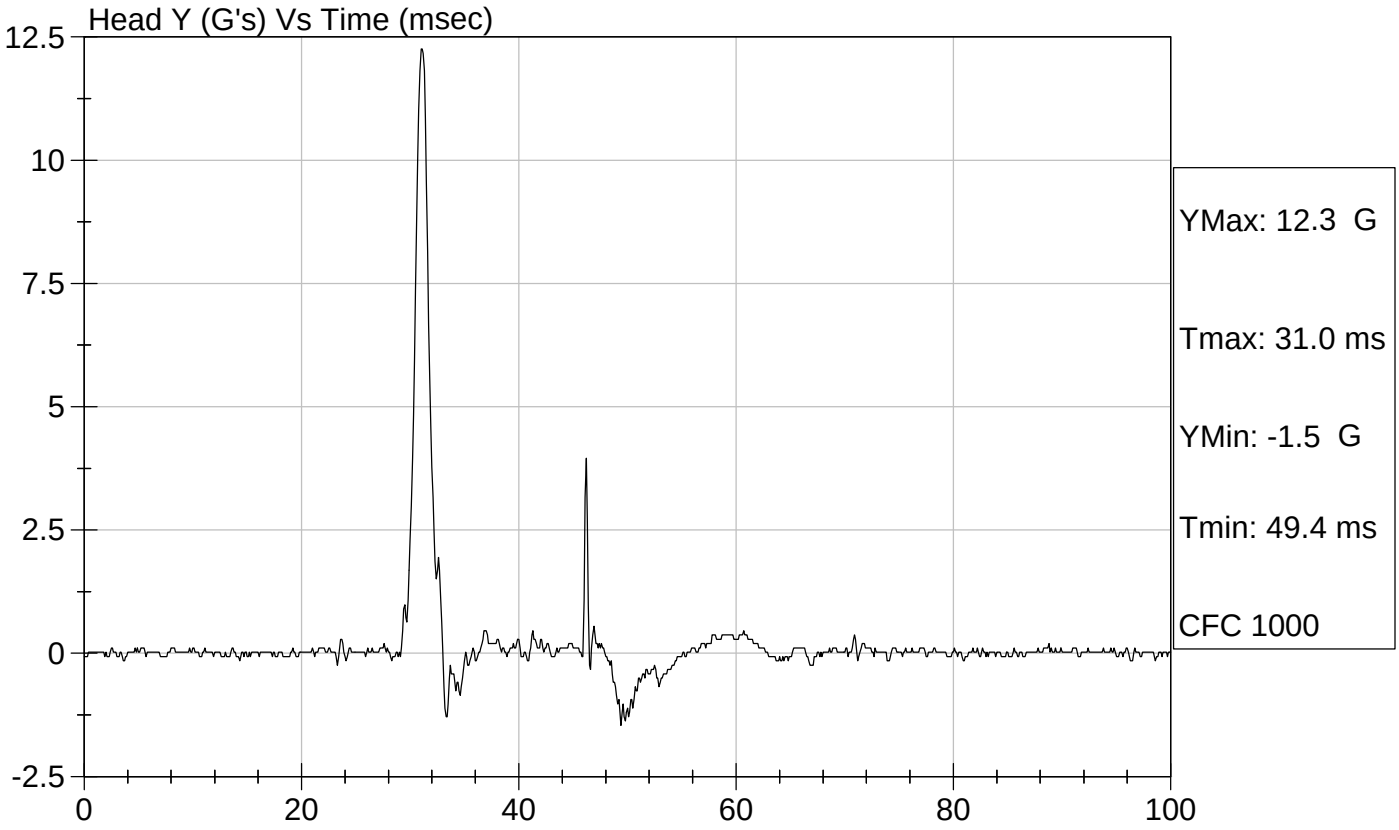
Jessica Hall
Laboratory Technician

11/19/2003
Test Date

Shafaliba Agarwal
Approved By

	Test Description: Head Drop	Test Date: 11/19/2003
	Component: D031891	Speed: 0 ft/s, 0.00 m/s





Hybrid III Calibration Data Sheet

50th Percentile Male

Neck Flexion Test

ATD Serial No: 065 **Test I.D:** D031892

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity		%	10 to 70	28	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.89	Pass
Pendulum Deceleration	10 msec	G's	22.50 to 27.50	22.58	Pass
	20 msec	G's	17.60 to 22.60	19.05	Pass
	30 msec	G's	12.50 to 18.50	14.62	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 29.0	14.62	Pass
Deceleration Decay Time to Cross 5 G's		msec	34.0 to 42.0	38.5	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	65.9	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	114.3	Pass
Moment About Occipital Condyle	Maximum	N m	84.1 to 108.5	85.5	Pass
	Time	msec	47.0 to 58.0	50.7	Pass
Positive Moment Decay Time To Zero Crossing		msec	97.0 to 107.0	104.3	Pass
			Overall Test Results		Pass

Jessica Hall
Laboratory Technician

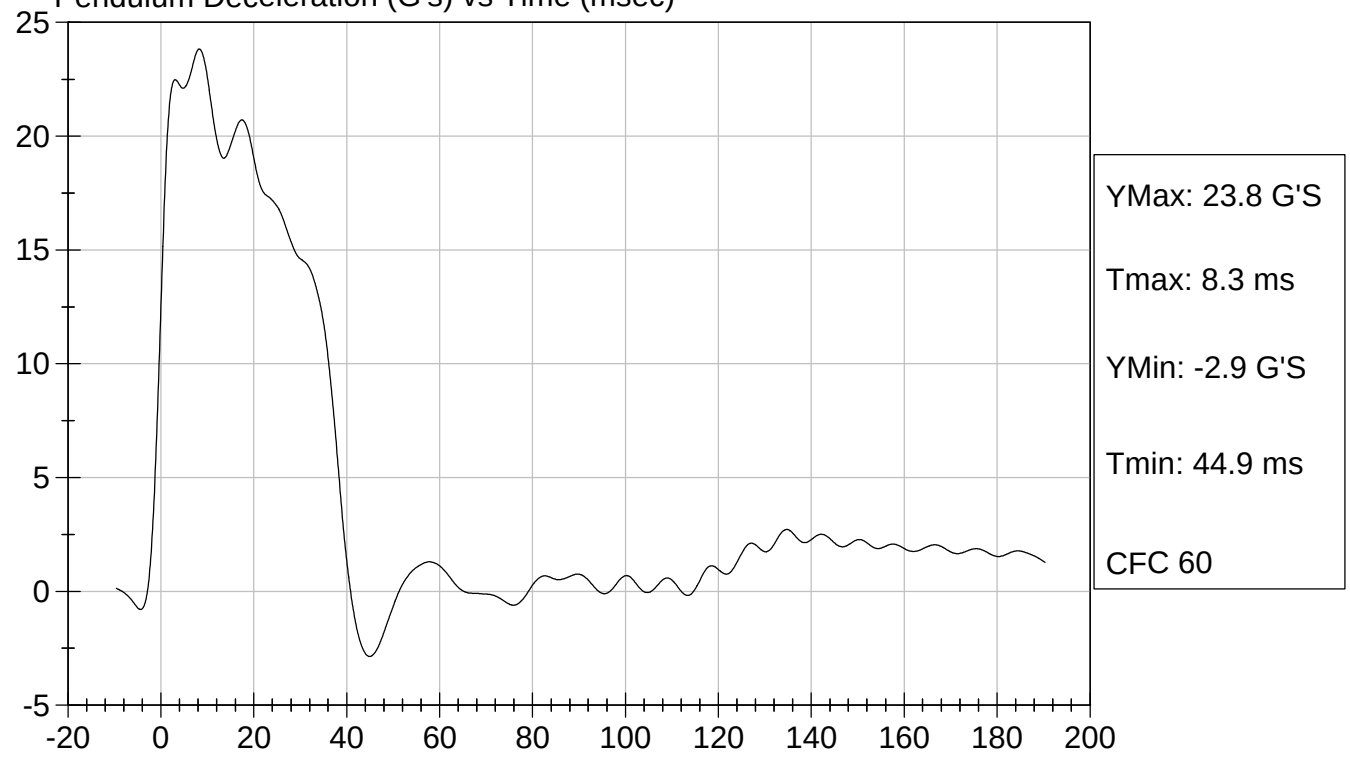
11/19/2003
Test Date

Shefalika Jgarwal
Approved By

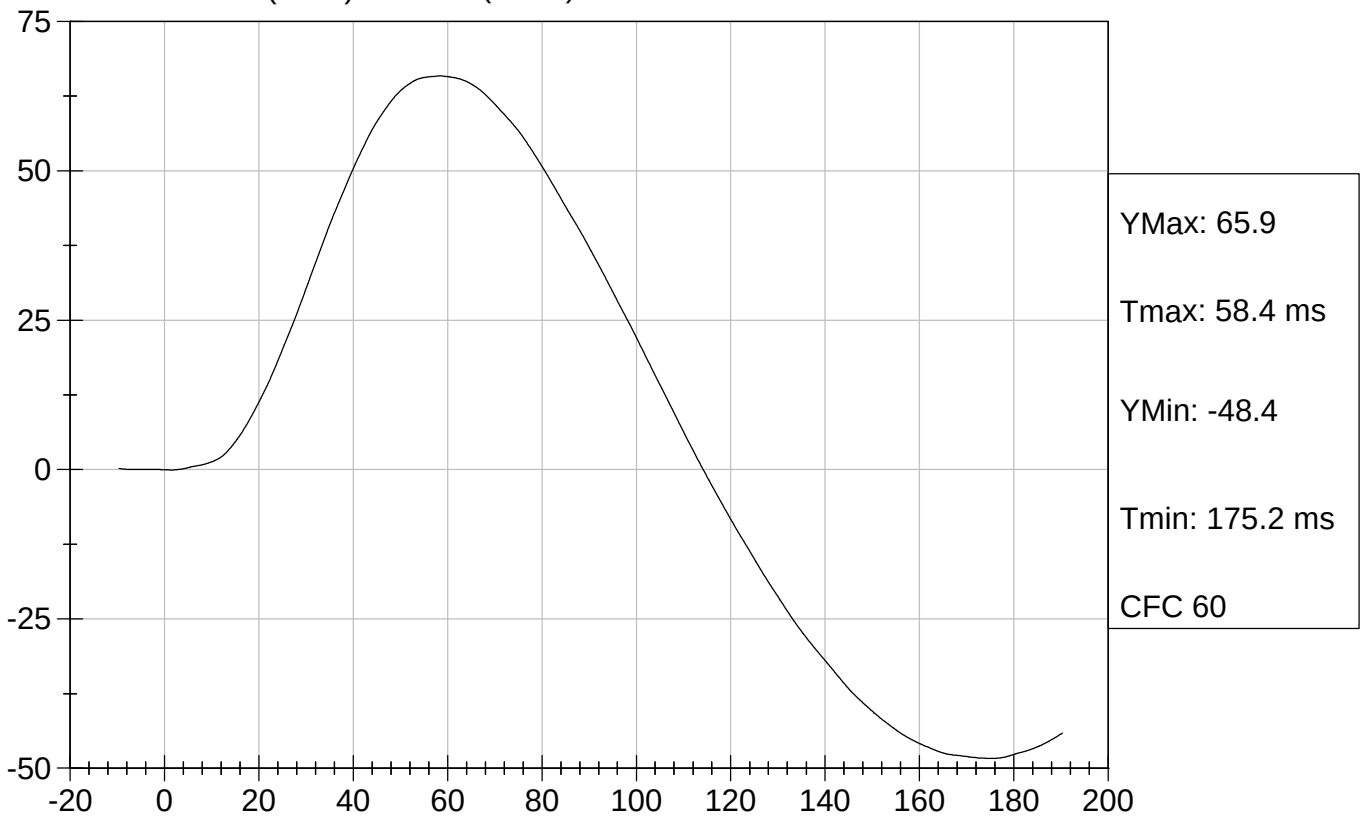
Test Desc: Neck Flexion
Component ID: D031892

Test Date: 11/19/2003
Speed: 22.61 ft/sec, 6.89 m/sec

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

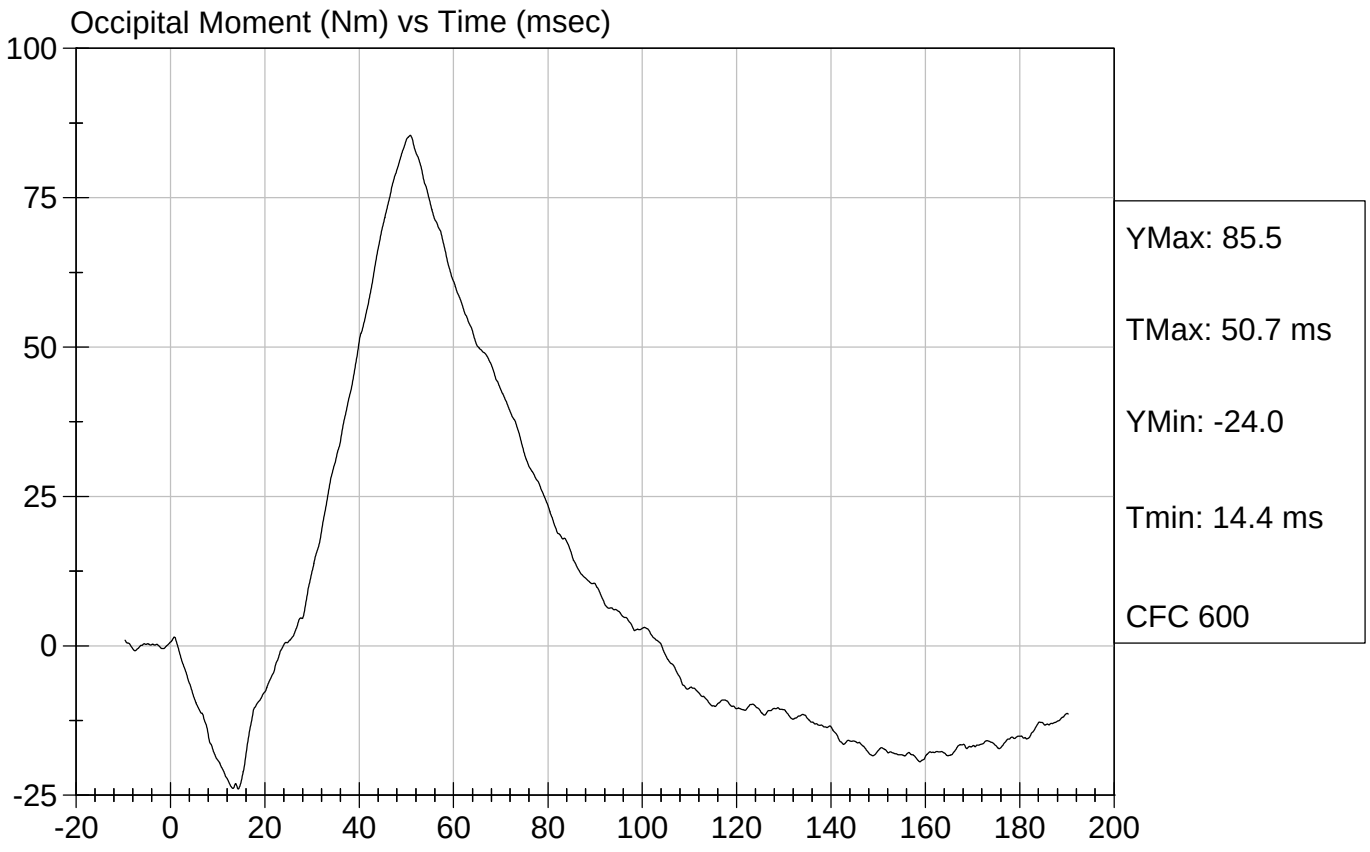


Neck Rotation (DEG) vs Time (msec)



Test Desc: Neck Flexion
Component ID: D031892

Test Date: 11/19/2003
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:** D031893

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity		%	10 to 70	28	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.12	Pass
Pendulum Deceleration	10 msec	G's	17.20 to 21.20	19.43	Pass
	20 msec	G's	14.00 to 19.00	16.84	Pass
	30 msec	G's	11.00 to 16.00	13.41	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 22.0	13.7	Pass
Deceleration Decay Time to Cross 5 G's		msec	38.0 to 46.0	38.8	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	101.4	Pass
	Time	msec	72.0 to 82.0	75.0	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	147.0 to 174.0	153.9	Pass
Moment About Occipital Condyle	Minimum	N m	-52.9 to -79.9	-71.2	Pass
	Time	msec	65.0 to 79.0	70.7	Pass
Negative Moment Decay Time To Zero Crossing		msec	120.0 to 148.0	139.3	Pass
			Overall Test Results		Pass

Jessica Hall
Laboratory Technician

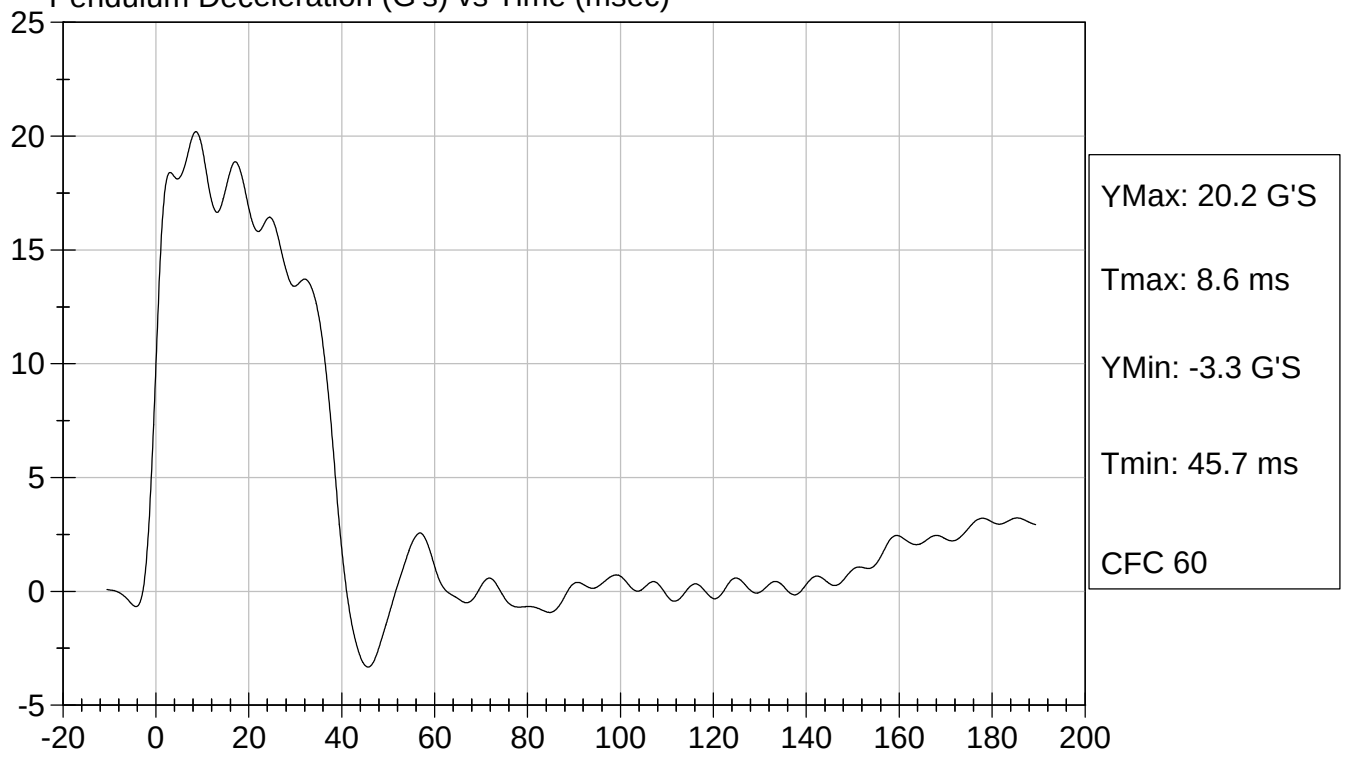
11/19/2003
Test Date

Shafaliba Agarwal
Approved By

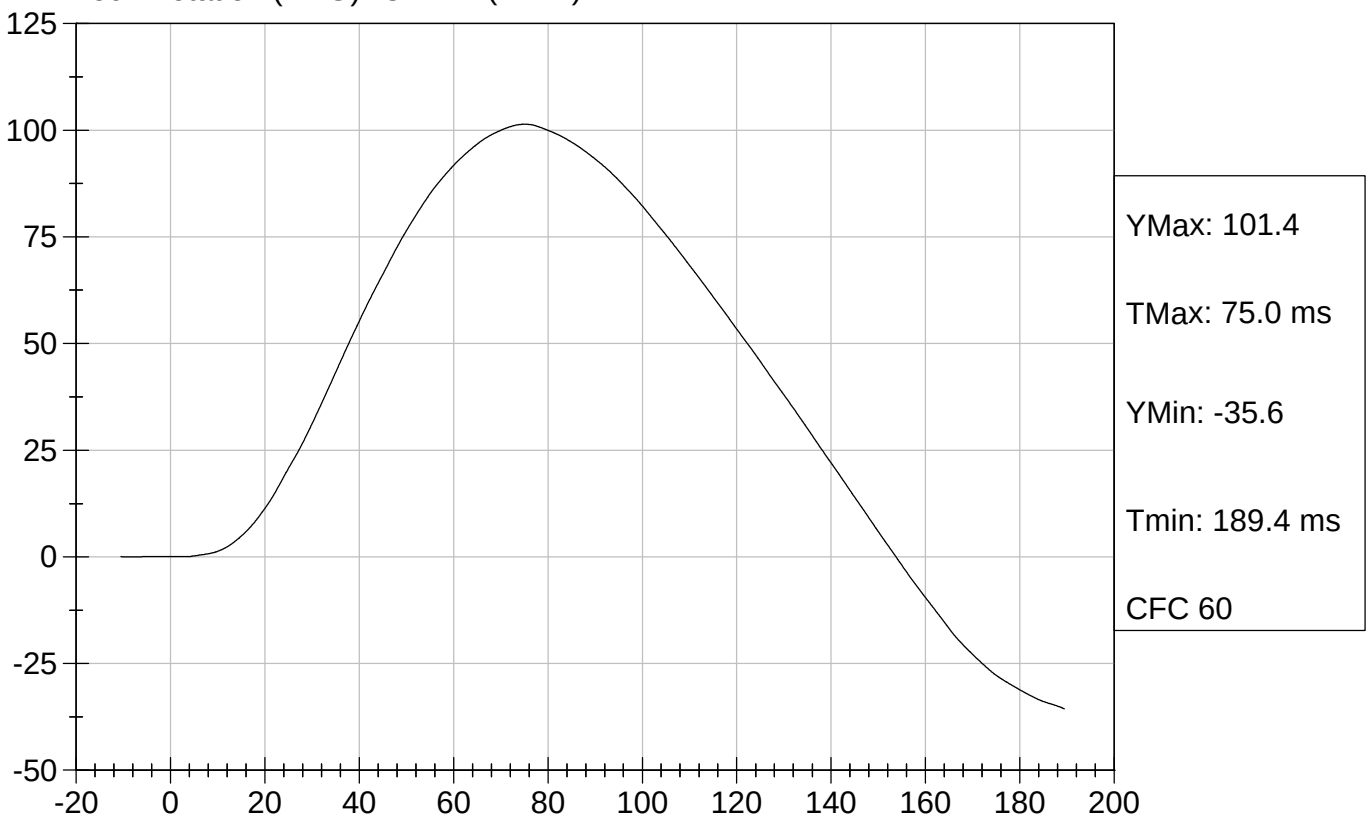
Test Desc: Neck Extension
Component ID: D031893

Test Date: 11/19/2003
Speed: 20.07 ft/sec, 6.12 m/sec

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

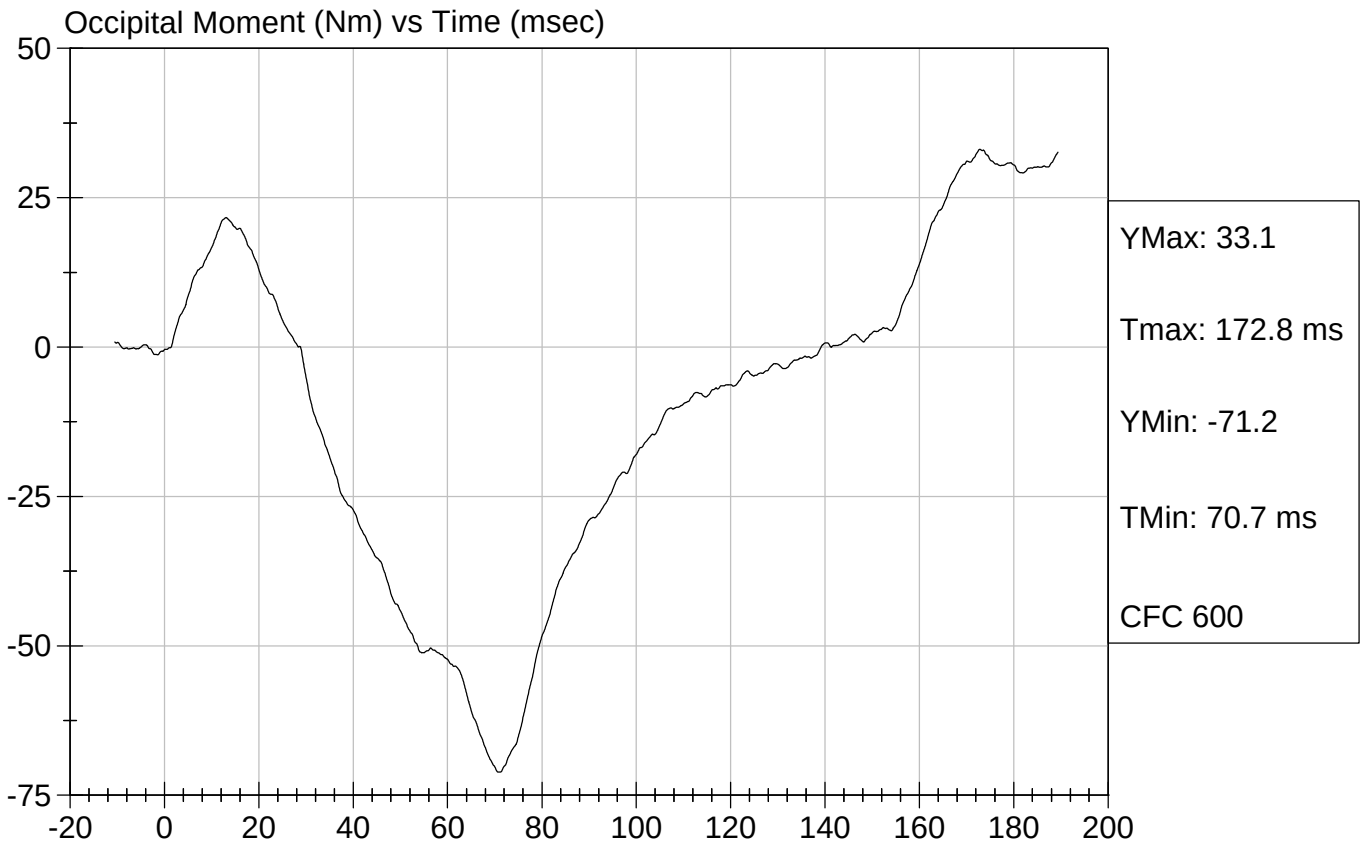


Neck Rotation (DEG) vs Time (msec)



Test Desc: Neck Extension
Component ID: D031893

Test Date: 11/19/2003
Speed: 20.07 ft/sec, 6.12 m/sec



Hybrid III Calibration Data Sheet

50th Percentile Male

Thorax Impact Test

ATD Serial No: 065 **Test I.D:** D031894

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	16	Pass
Probe Velocity	m/s	6.58 to 6.82	6.72	Pass
Peak Probe Force	Newtons	5159 to 5893	5,515	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.55	Pass
Internal Hysteresis	%	69 to 85	72	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

11/24/2003
Test Date

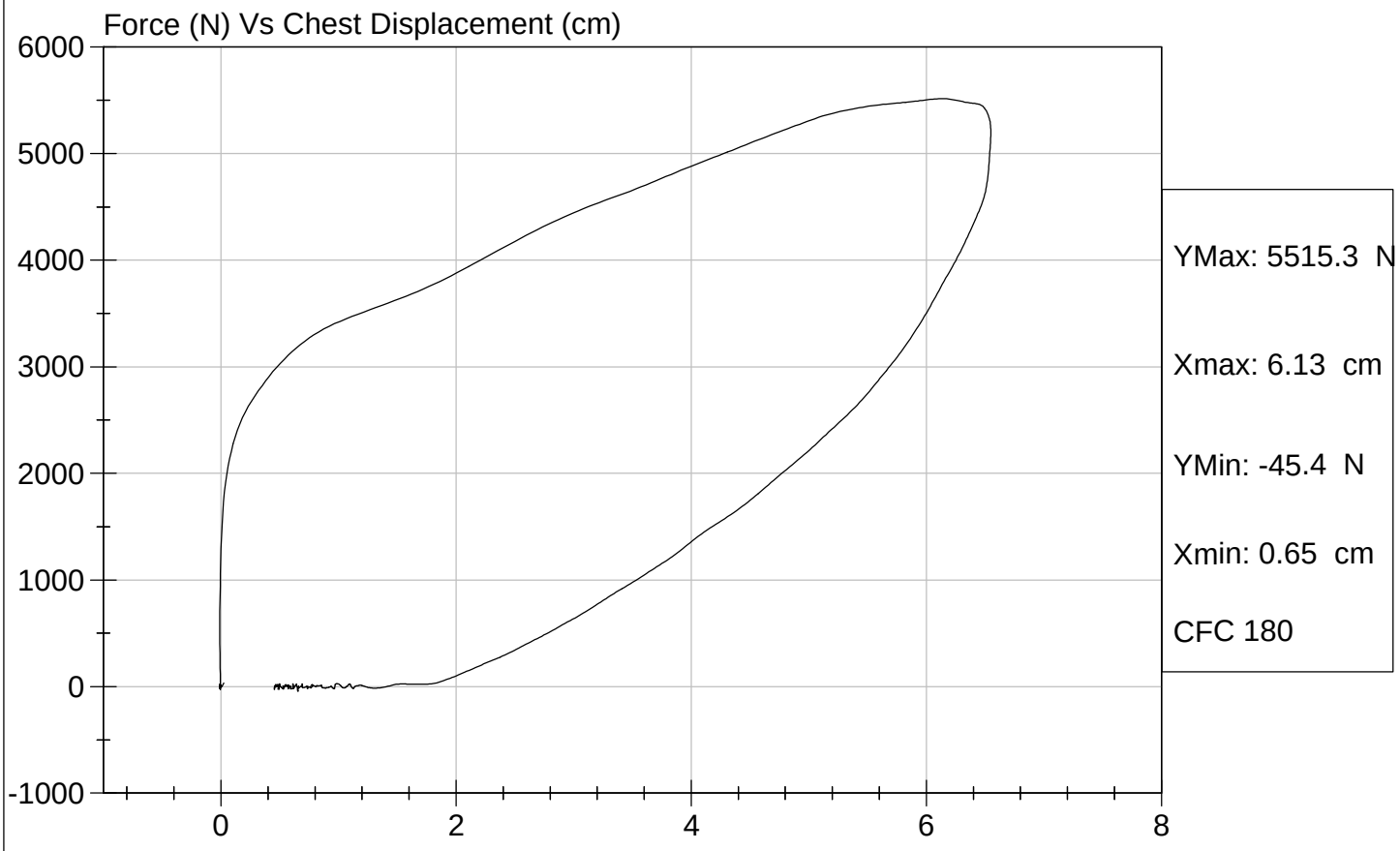
Shafaliba Agarwal
Approved By

Test Description: Thorax Impact

Test Date: 11/24/2003

Component: D031894

Speed: 22.06 ft/sec, 6.72 m/sec



Hybrid III Calibration Data Sheet

50th Percentile Male

Right Knee Impact Test

ATD Serial No: 065 **Test I.D:** D031895

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.7	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	5,371	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

11/22/2003
Test Date

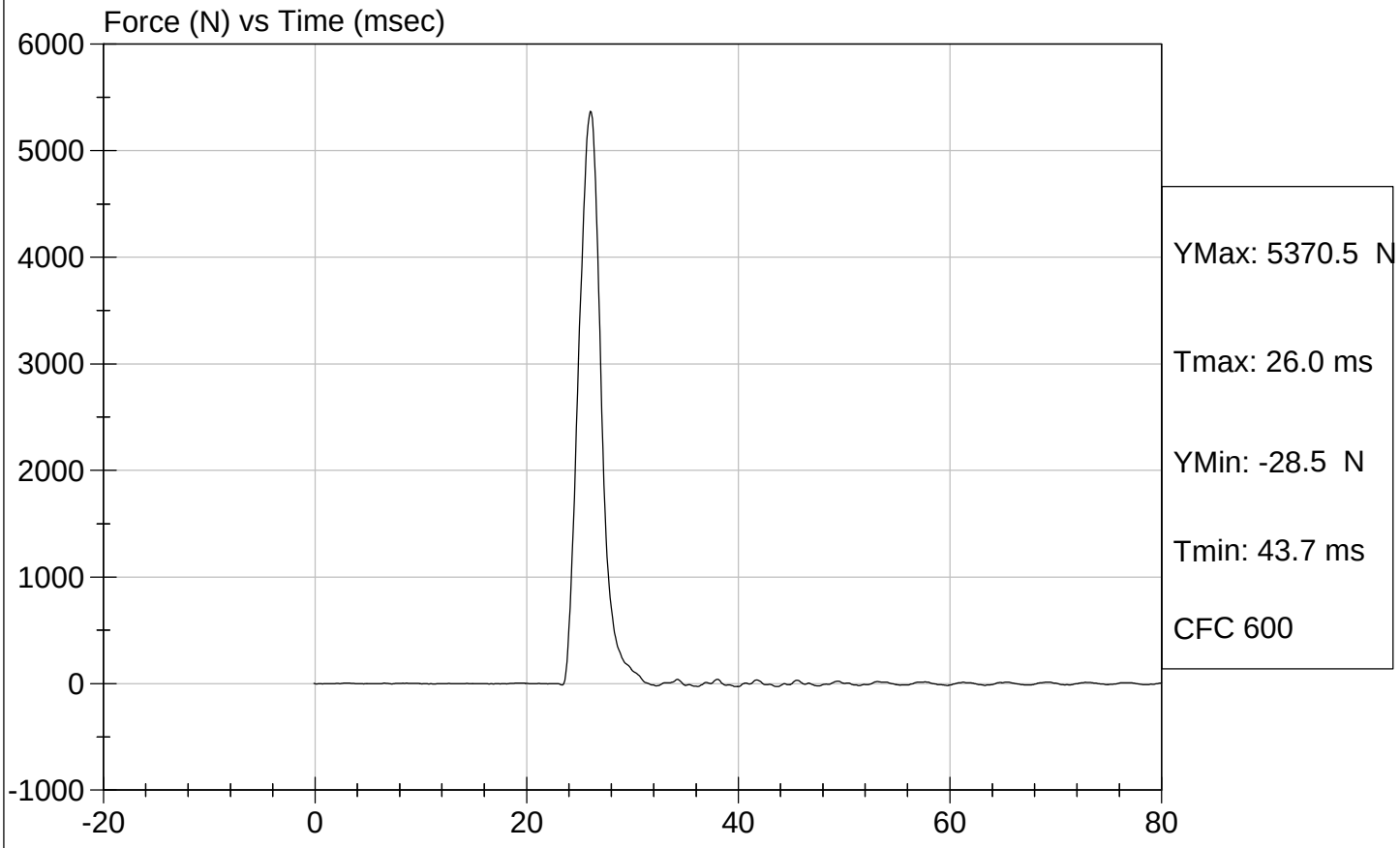
Shafaliha Agarwal
Approved By

Test Description: Right Knee

Test Date: 11/22/2003

Component: D031895

Speed: 6.81 ft/sec, 2.076 m/sec



Hybrid III Calibration Data Sheet

50th Percentile Male

Left Knee Impact Test

ATD Serial No: 065 **Test I.D:** D031896

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.7	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	5,216	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

11/22/2003
Test Date

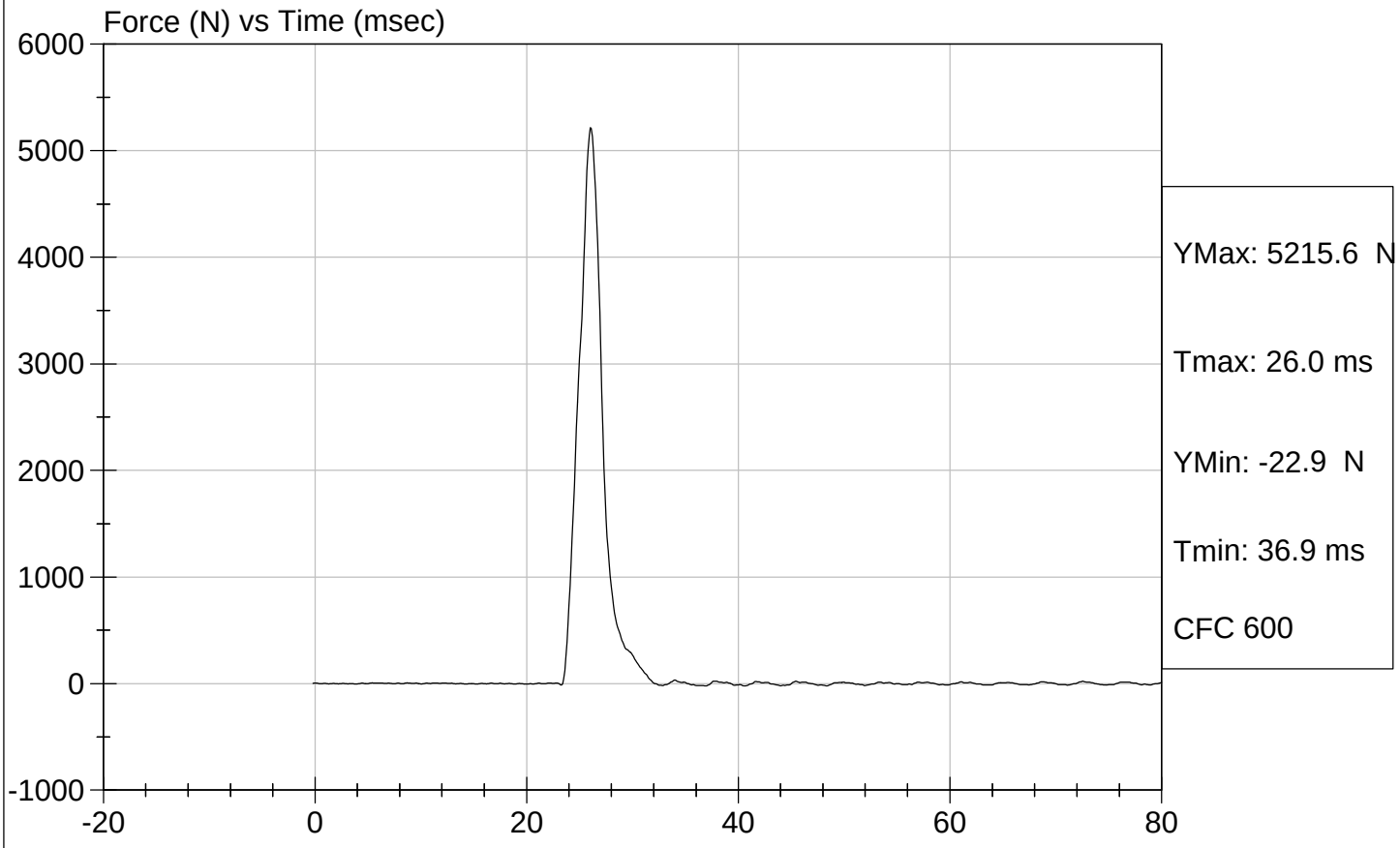
Shafaliha Agarwal
Approved By

Test Description: Left Knee

Test Date: 11/22/2003

Component: D031896

Speed: 6.81 ft/sec, 2.076 m/sec



Hybrid III Calibration Data Sheet

50th Percentile Male

Hip-Femur Flexion Test

ATD Serial No: 065 **Test I.D:** D031890

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	30	30	Pass
Rotation Rate	deg/sec	5 -10	8	8	Pass
30 Degrees	Nm	94.9 Nm Max	61.3	63.8	Pass
150 ft-lbf / 203.4 Nm	Deg	40- 50 Degree Max Rotation	47	44	Pass
		Overall Test Results			Pass

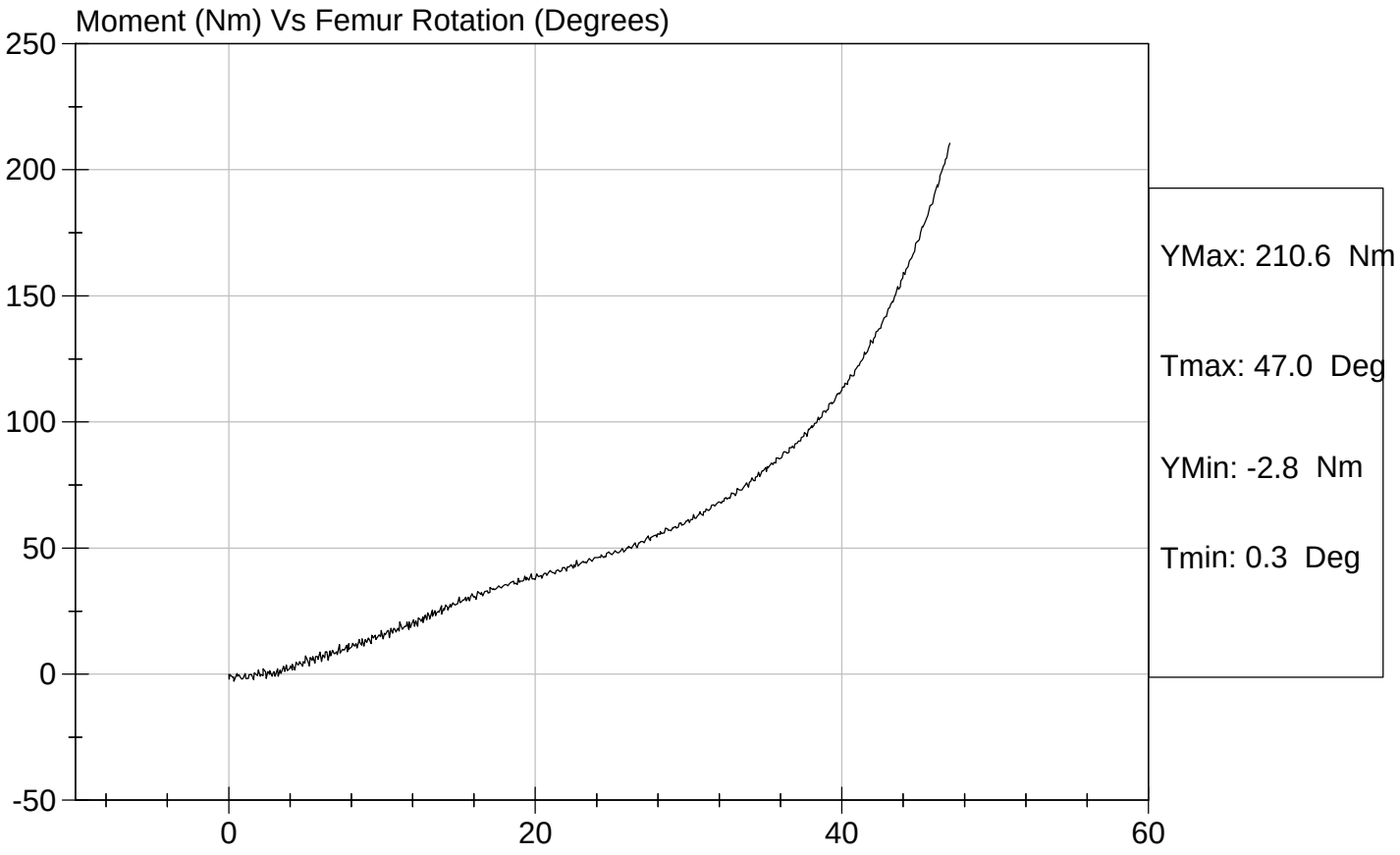
Jessica Hall
Laboratory Technician

11/21/2003
Test Date

Shafaliba Agarwal
Approved By

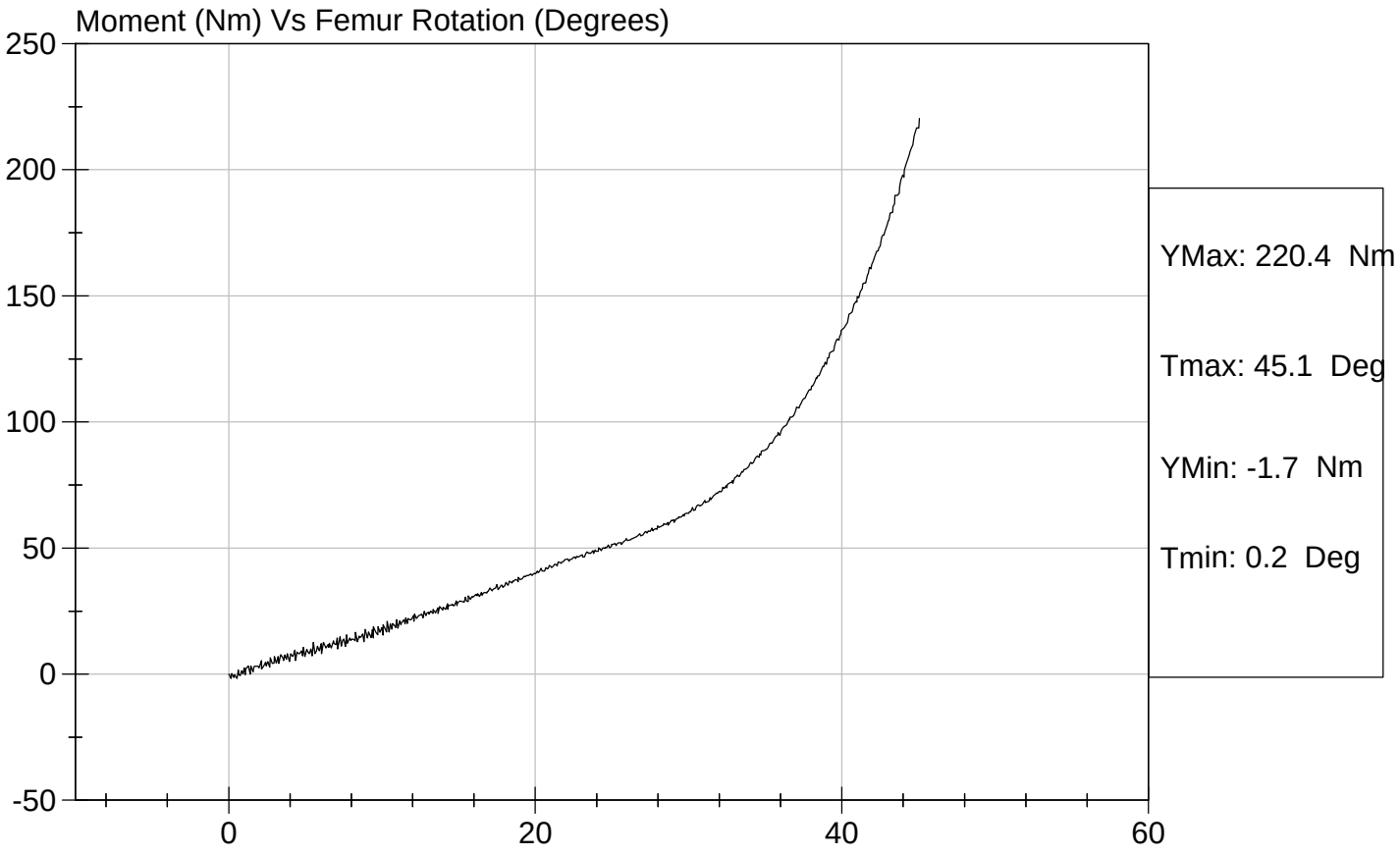
Test Description: Hip Femur Flexion | Test Date: 11/20/2003

Component: D031899 | Speed: 0 ft/sec, 0.00 m/sec



Test Description: Hip Femur Flexion | Test Date: 11/21/2003

Component: D031890 | Speed: 0 ft/sec, 0.00 m/sec



DUMMY INSPECTION CHECKLIST

Type: Hybrid III

Dummy Serial Number: 065

Inspected By: Jessica Gall

Date: 11/24/03

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: D03190

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 Jaiswal

Hybrid III Calibration Data Sheet

50th Percentile Male

Head Drop Calibration

ATD Serial No: 066 **Test I.D:** D031901

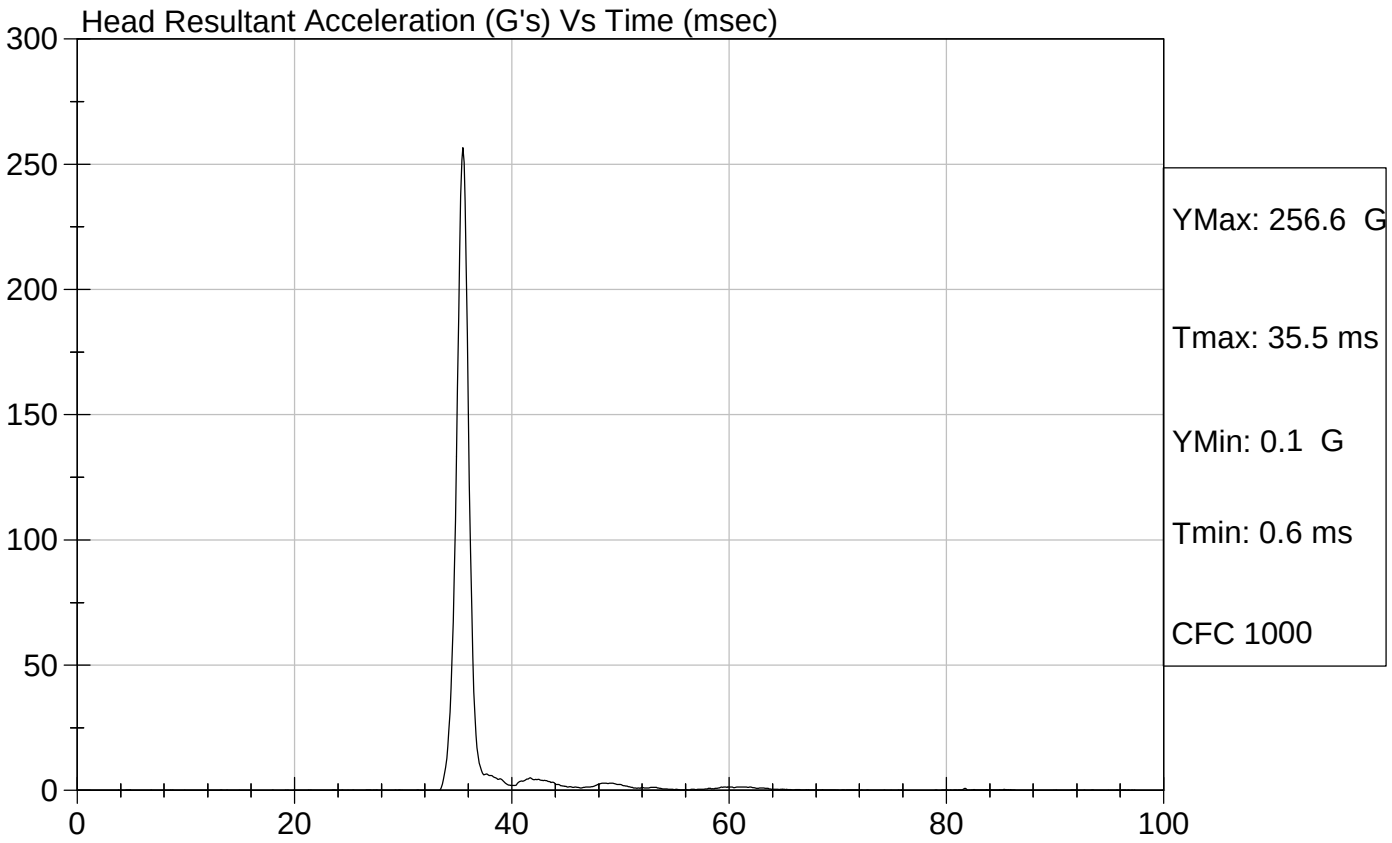
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	29	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	256.6	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	1.1	Pass
Is Acceleration Unimodal?	Yes/No	< 10% Peak	Yes	Pass
		Overall Test Results		Pass

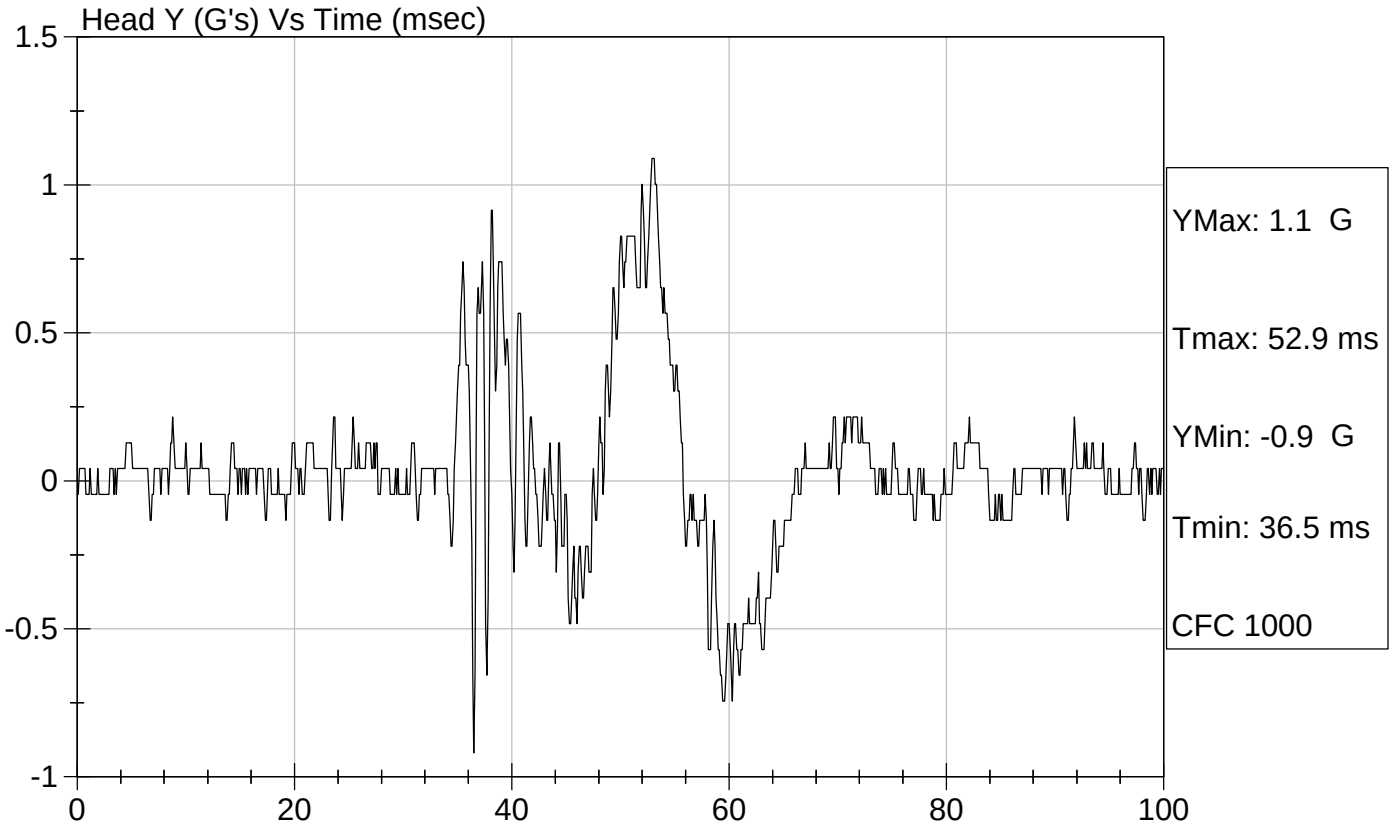
Jessica Hall
Laboratory Technician

11/19/2003
Test Date

Mustafiha Jamal
Approved By

	Test Description: Head Drop	Test Date: 11/19/2003
	Component: D031901	Speed: 0 ft/s, 0.00 m/s





Hybrid III Calibration Data Sheet

50th Percentile Male

Neck Flexion Test

ATD Serial No: 066 **Test I.D:** D031902

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity		%	10 to 70	26	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.12	Pass
Pendulum Deceleration	10 msec	G's	22.50 to 27.50	23.05	Pass
	20 msec	G's	17.60 to 22.60	19.52	Pass
	30 msec	G's	12.50 to 18.50	15.93	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 29.0	15.93	Pass
Deceleration Decay Time to Cross 5 G's		msec	34.0 to 42.0	39.5	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	73.3	Pass
	Time	msec	57.0 to 64.0	57.9	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	113.0 to 128.0	113.0	Pass
Moment About Occipital Condyle	Maximum	N m	84.1 to 108.5	94.5	Pass
	Time	msec	47.0 to 58.0	52.5	Pass
Positive Moment Decay Time To Zero Crossing		msec	97.0 to 107.0	101.0	Pass
			Overall Test Results		Pass

Jessica Hall
Laboratory Technician

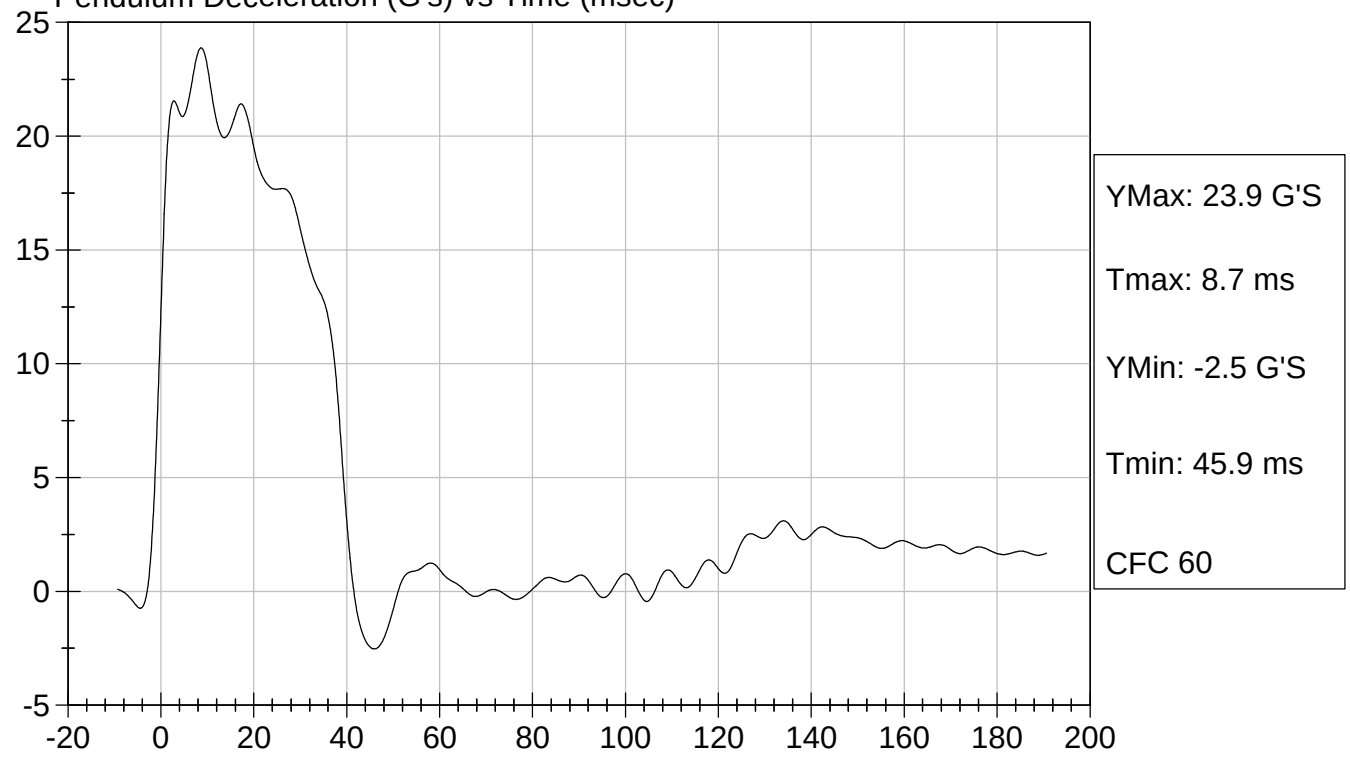
11/22/2003
Test Date

Shefalika Jgarwal
Approved By

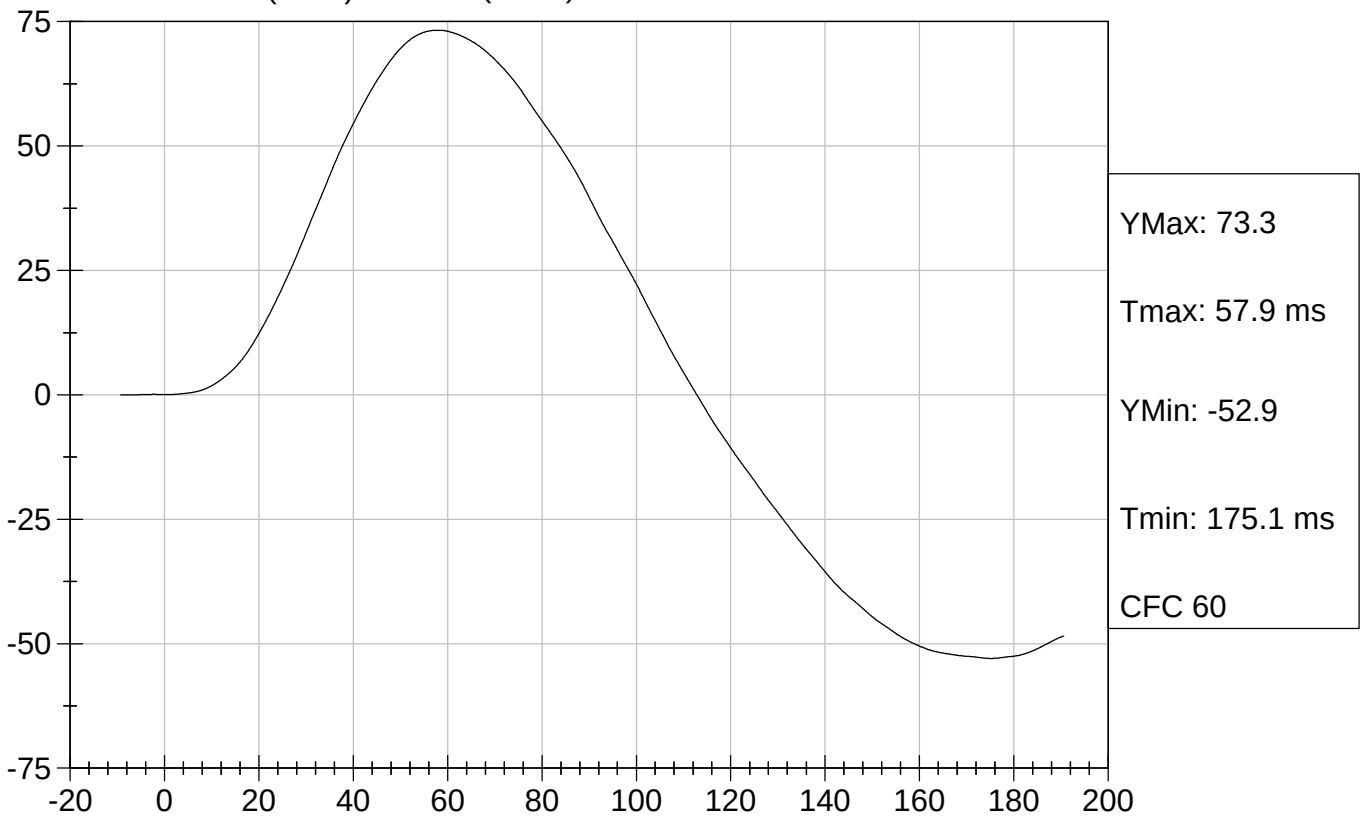
Test Desc: Neck Flexion
Component ID: D031902

Test Date: 11/22/2003
Speed: 23.36 ft/sec, 7.12 m/sec

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

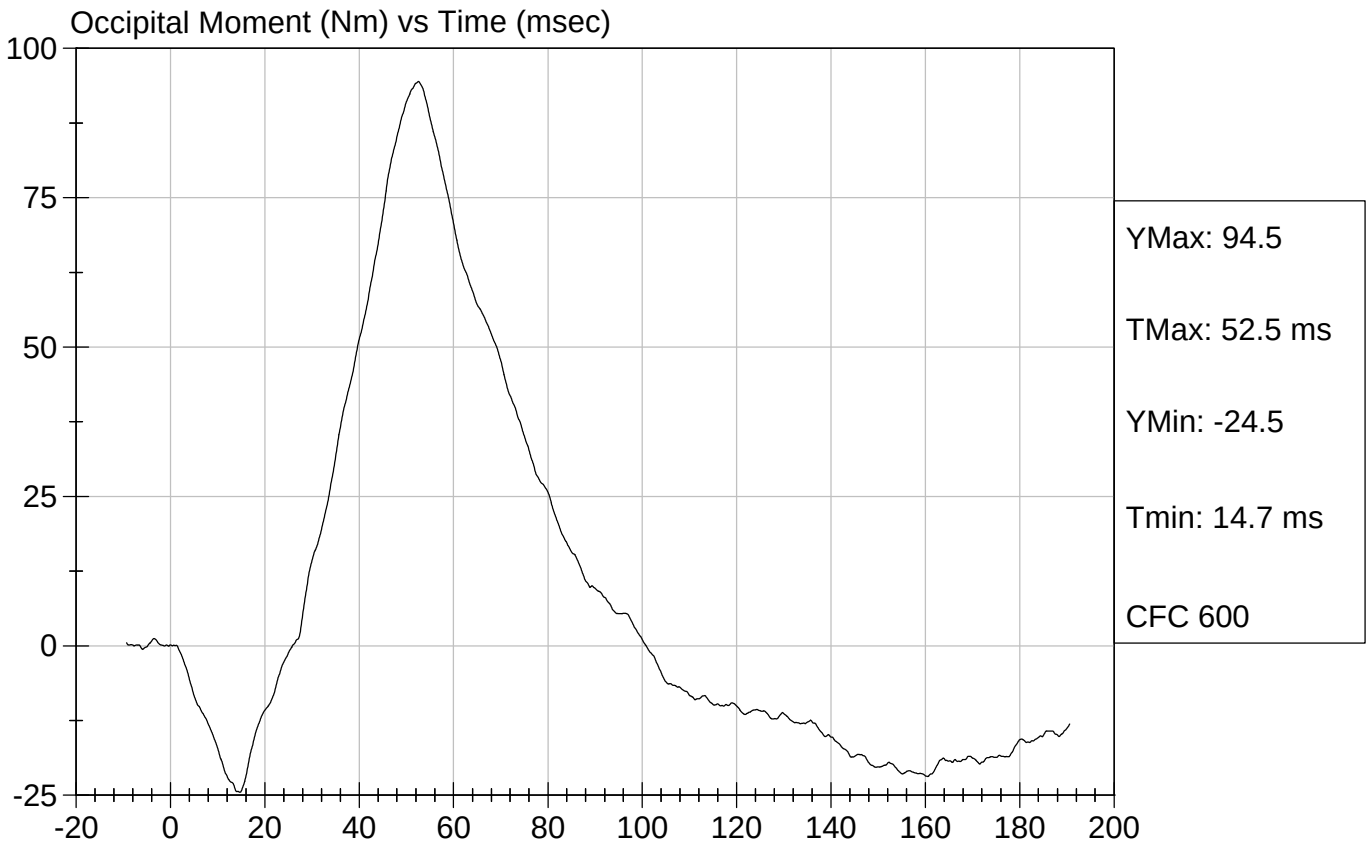


Neck Rotation (DEG) vs Time (msec)



Test Desc: Neck Flexion
Component ID: D031902

Test Date: 11/22/2003
Speed: 23.36 ft/sec, 7.12 m/sec



Hybrid III Calibration Data Sheet

50th Percentile Male

Neck Extension Test

ATD Serial No: 066 **Test I.D:** D031903

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity		%	10 to 70	26	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.18	Pass
Pendulum Deceleration	10 msec	G's	17.20 to 21.20	18.81	Pass
	20 msec	G's	14.00 to 19.00	15.74	Pass
	30 msec	G's	11.00 to 16.00	13.25	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 22.0	13.3	Pass
Deceleration Decay Time to Cross 5 G's		msec	38.0 to 46.0	42.6	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	99.4	Pass
	Time	msec	72.0 to 82.0	76.4	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	147.0 to 174.0	151.5	Pass
Moment About Occipital Condyle	Minimum	N m	-52.9 to -79.9	-68.7	Pass
	Time	msec	65.0 to 79.0	71.5	Pass
Negative Moment Decay Time To Zero Crossing		msec	120.0 to 148.0	140.8	Pass
			Overall Test Results		Pass

Jessica Hall
Laboratory Technician

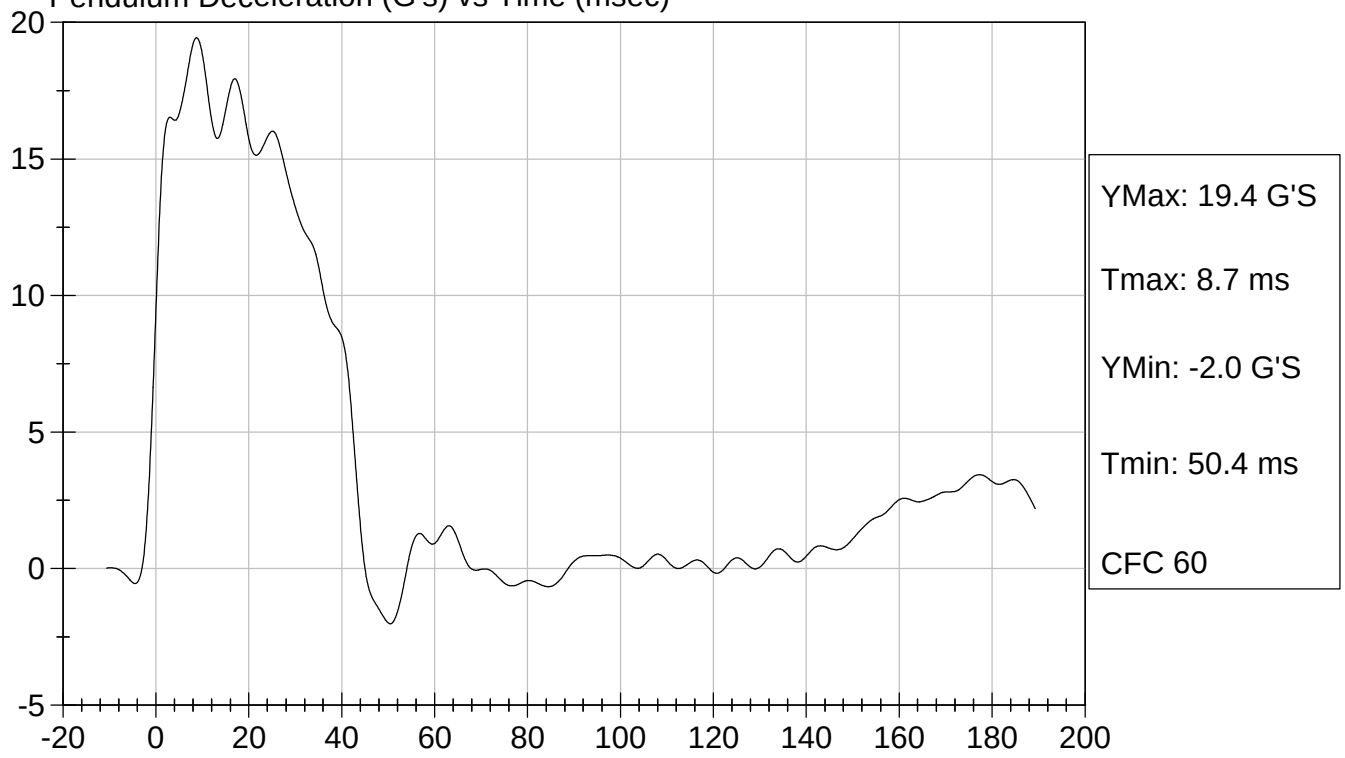
11/22/2003
Test Date

Shafaliba Agarwal
Approved By

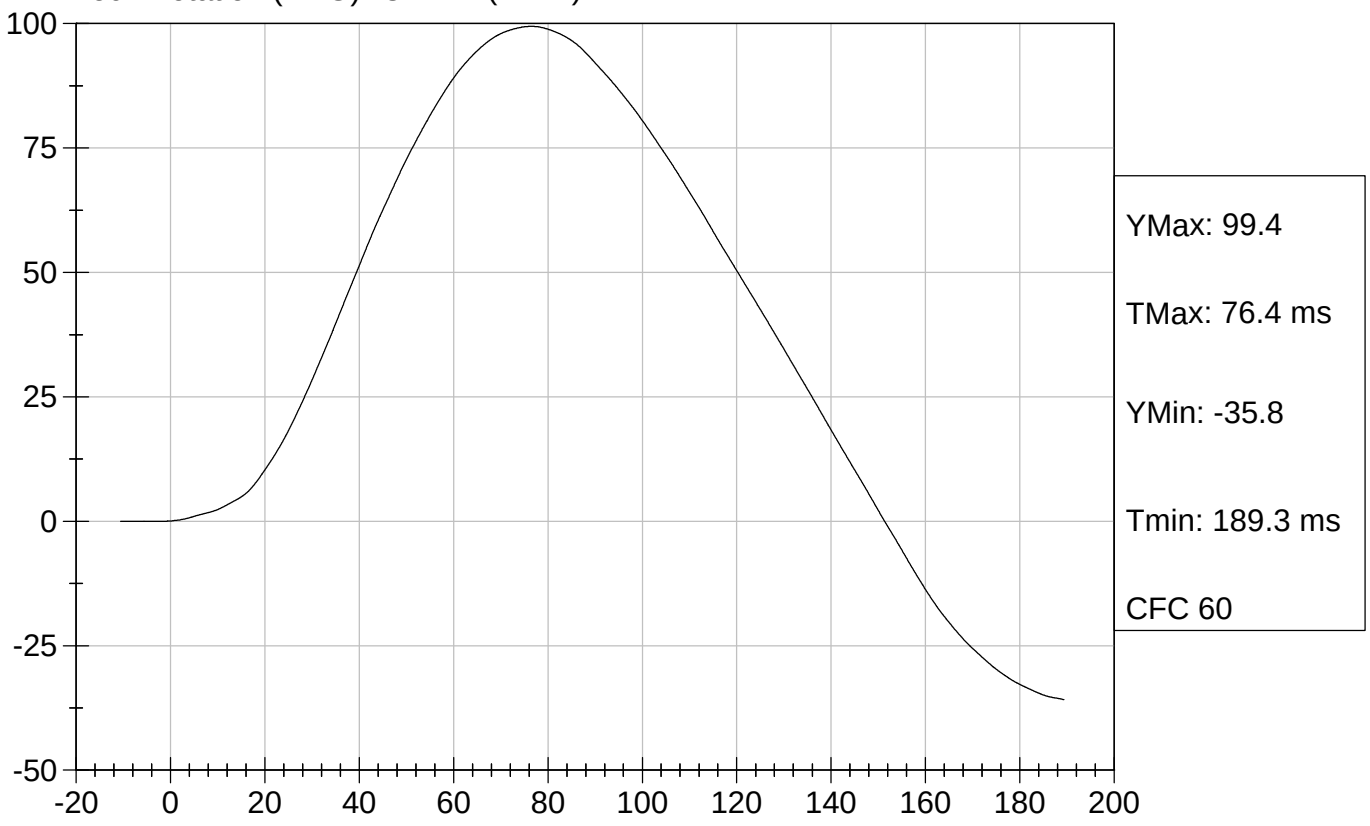
Test Desc: Neck Extension
Component ID: D031903

Test Date: 11/22/2003
Speed: 20.28 ft/sec, 6.18 m/sec

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

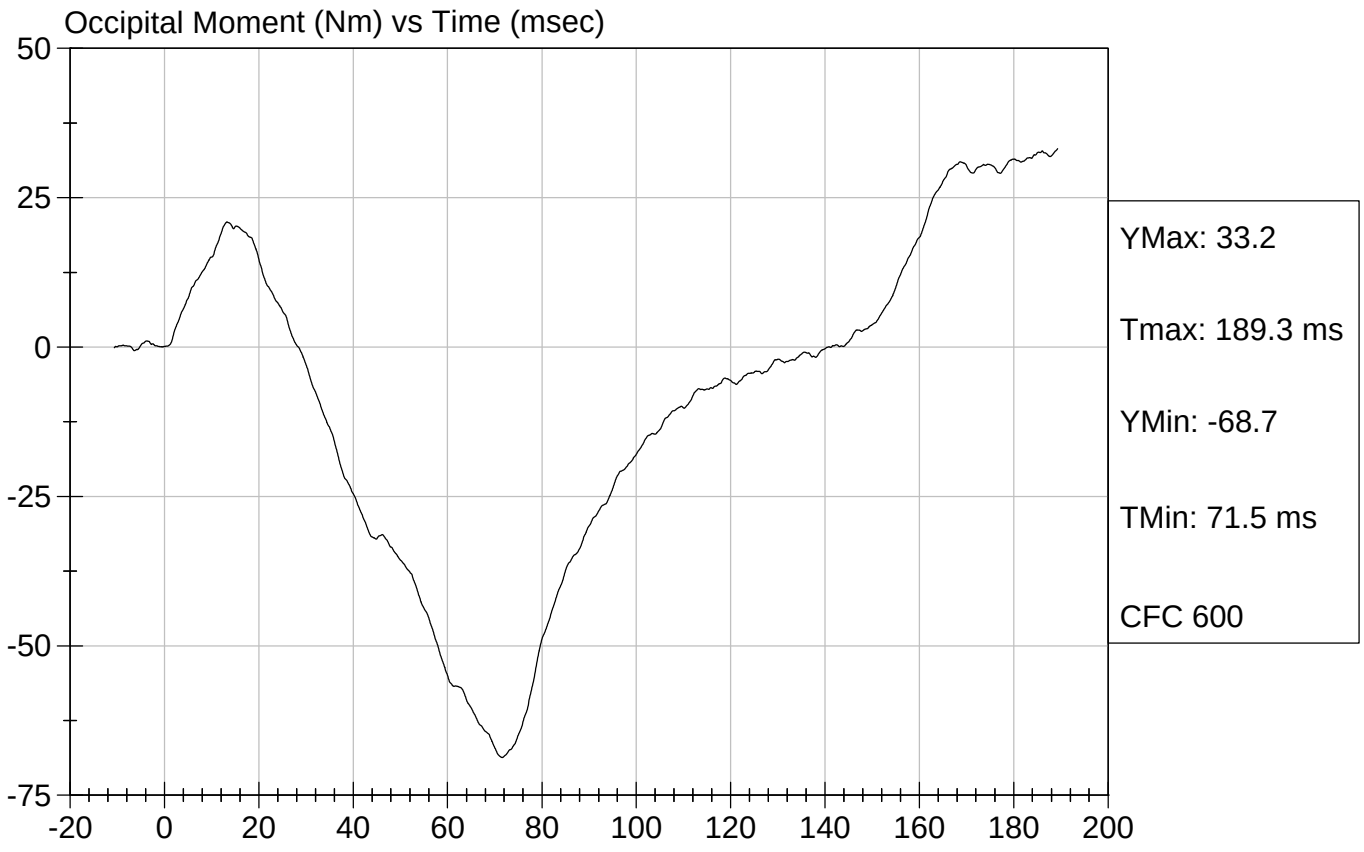


Neck Rotation (DEG) vs Time (msec)



Test Desc: Neck Extension
Component ID: D031903

Test Date: 11/22/2003
Speed: 20.28 ft/sec, 6.18 m/sec



Hybrid III Calibration Data Sheet

50th Percentile Male

Thorax Impact Test

ATD Serial No: 066 **Test I.D:** D031904

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	17	Pass
Probe Velocity	m/s	6.58 to 6.82	6.82	Pass
Peak Probe Force	Newtons	5159 to 5893	5,595	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.57	Pass
Internal Hysteresis	%	69 to 85	72	Pass
		Overall Test Results		Pass

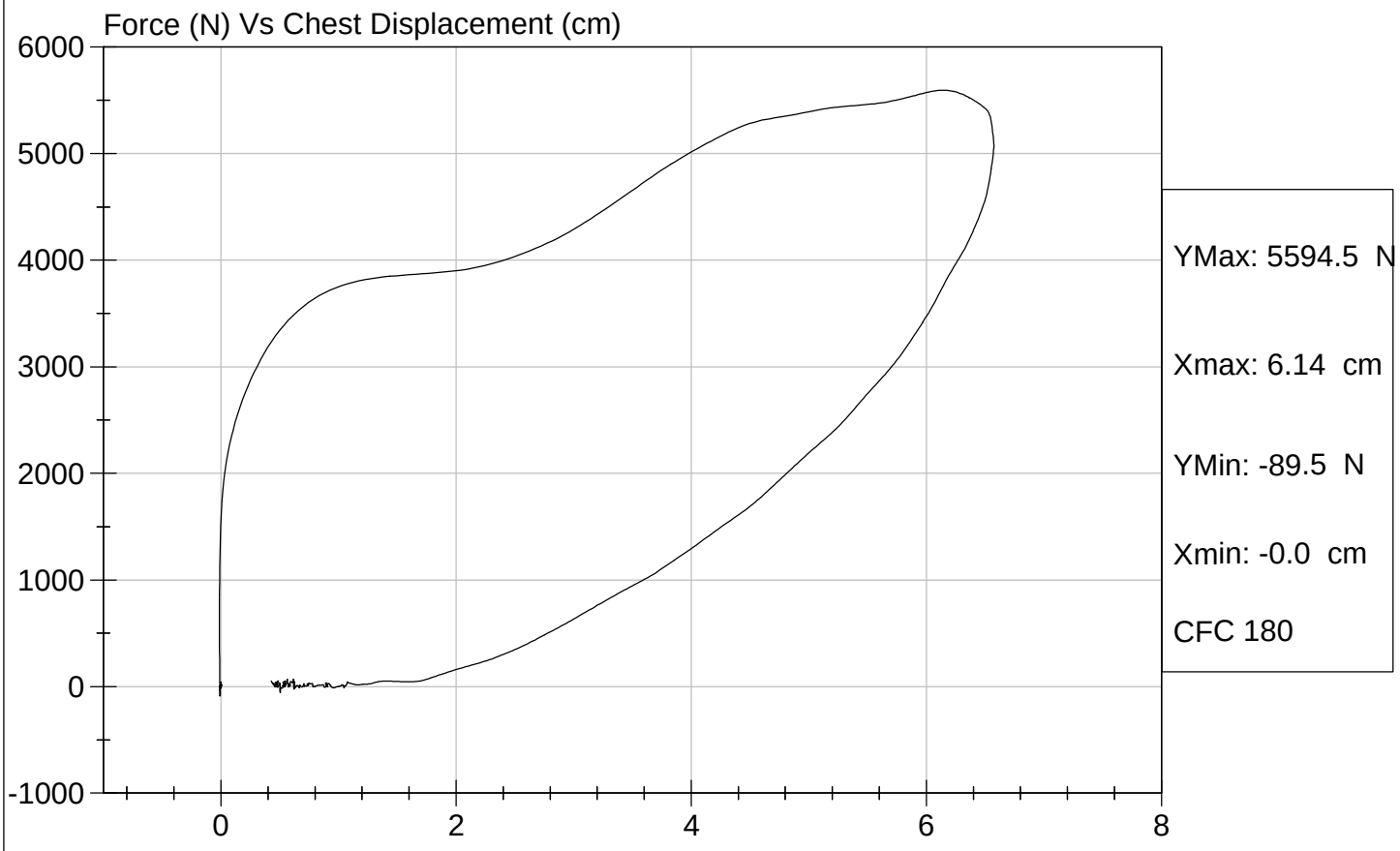
Jessica Hall
Laboratory Technician

11/24/2003
Test Date

Shafaliha Agarwal
Approved By

Test Description: Thorax Impact | Test Date: 11/24/2003

Component: D031904 | Speed: 22.37 ft/sec, 6.82 m/sec



Hybrid III Calibration Data Sheet

50th Percentile Male

Right Knee Impact Test

ATD Serial No: 066 **Test I.D:** D031905

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Probe Velocity	m/s	2.07 to 2.13	2.07	Pass
Peak Probe Force	Newtons	4715 to 5782	5,277	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

11/22/2003
Test Date

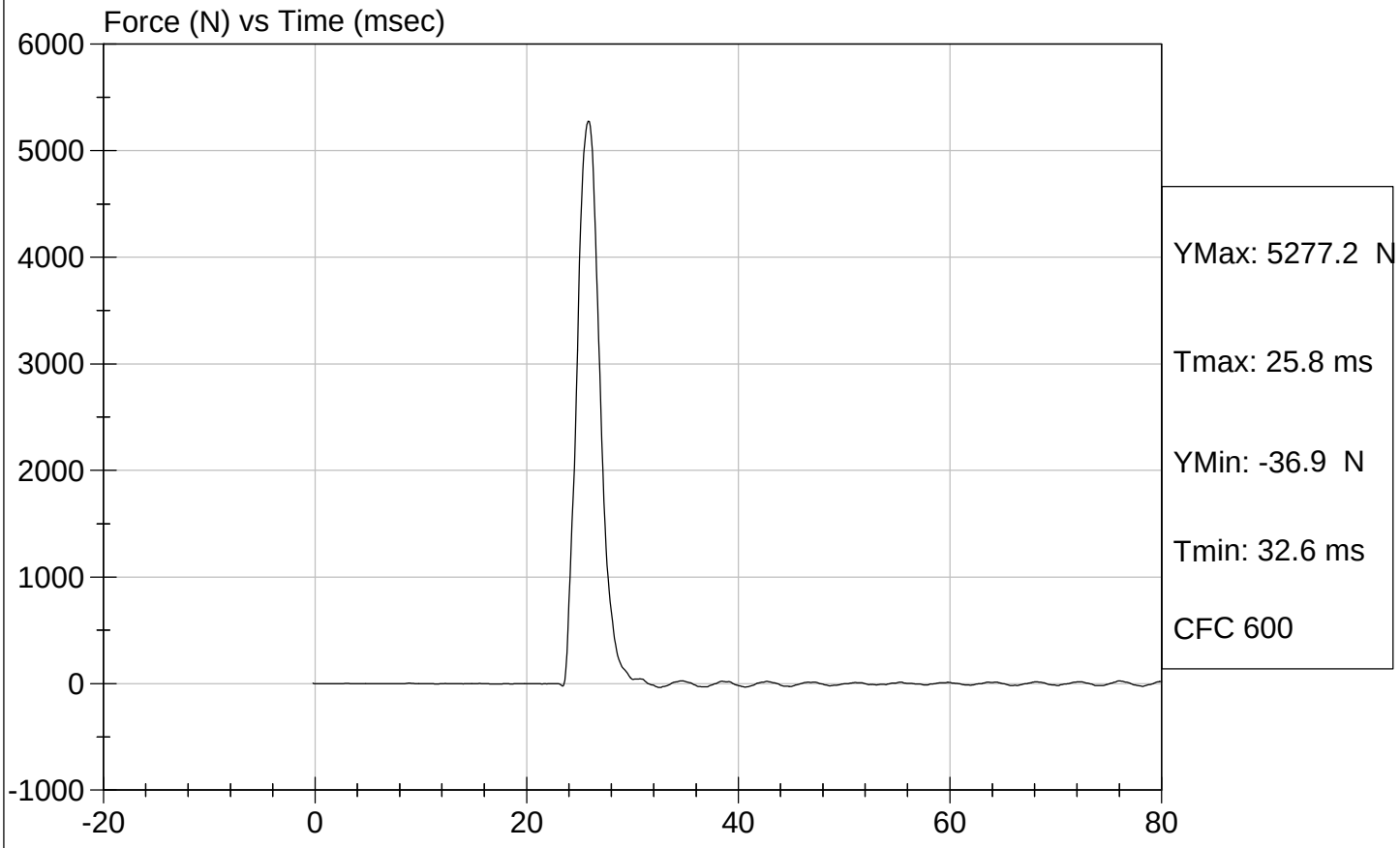
Shafaliha Agarwal
Approved By

Test Description: Right Knee

Test Date: 11/22/2003

Component: D031905

Speed: 6.8 ft/sec, 2.073 m/sec



Hybrid III Calibration Data Sheet

50th Percentile Male

Left Knee Impact Test

ATD Serial No: 066 **Test I.D:** D031906

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Probe Velocity	m/s	2.07 to 2.13	2.09	Pass
Peak Probe Force	Newtons	4715 to 5782	5,105	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

11/22/2003
Test Date

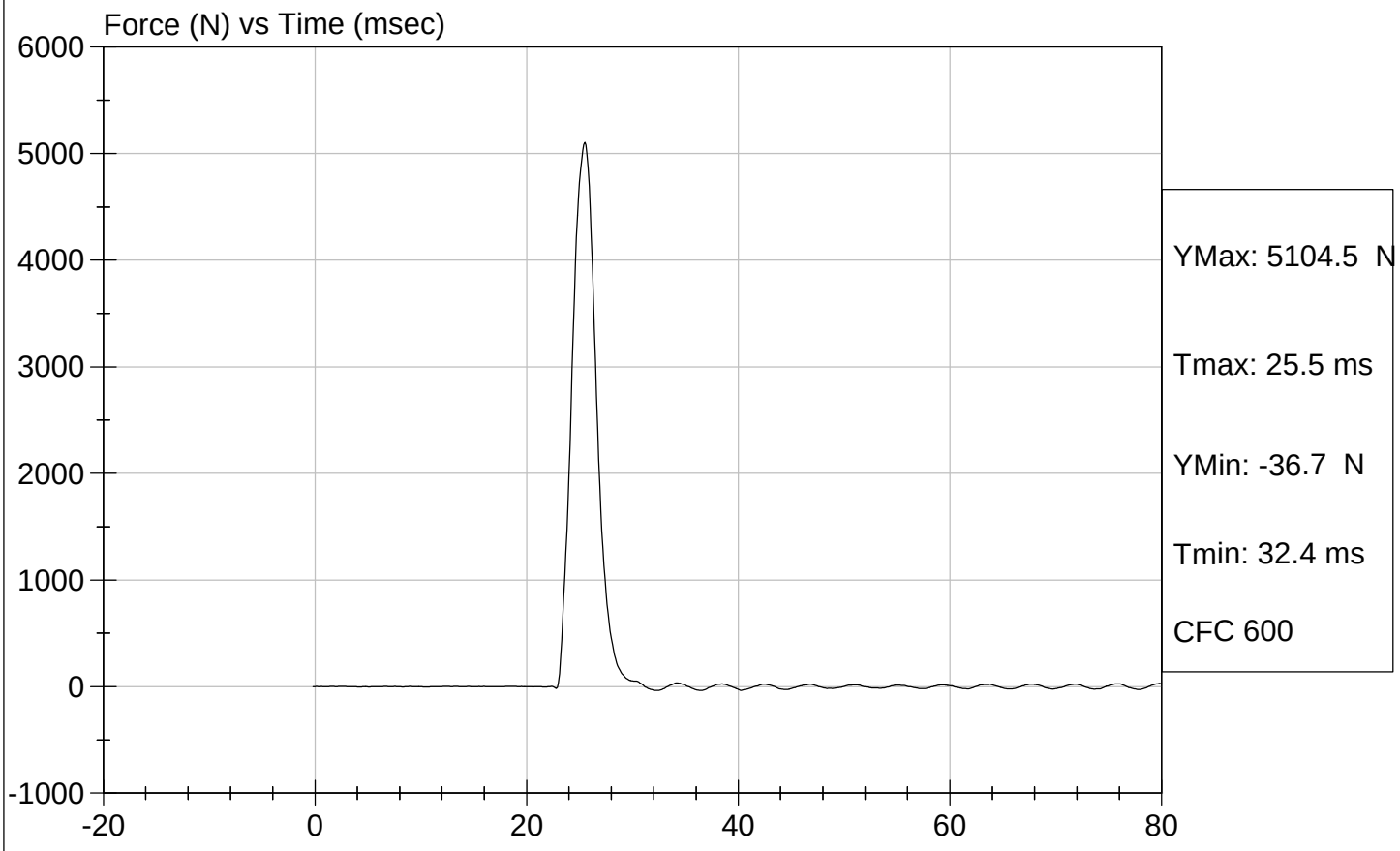
Shafaliha Agarwal
Approved By

Test Description: Left Knee

Test Date: 11/22/2003

Component: D031906

Speed: 6.84 ft/sec, 2.085 m/sec



Hybrid III Calibration Data Sheet

50th Percentile Male

Hip-Femur Flexion Test

ATD Serial No: 066 **Test I.D:** D031900

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	30	30	Pass
Rotation Rate	deg/sec	5 -10	8	8	Pass
30 Degrees	Nm	94.9 Nm Max	78.1	81.2	Pass
150 ft-lbf / 203.4 Nm	Deg	40- 50 Degree Max Rotation	44	40	Pass
		Overall Test Results			Pass

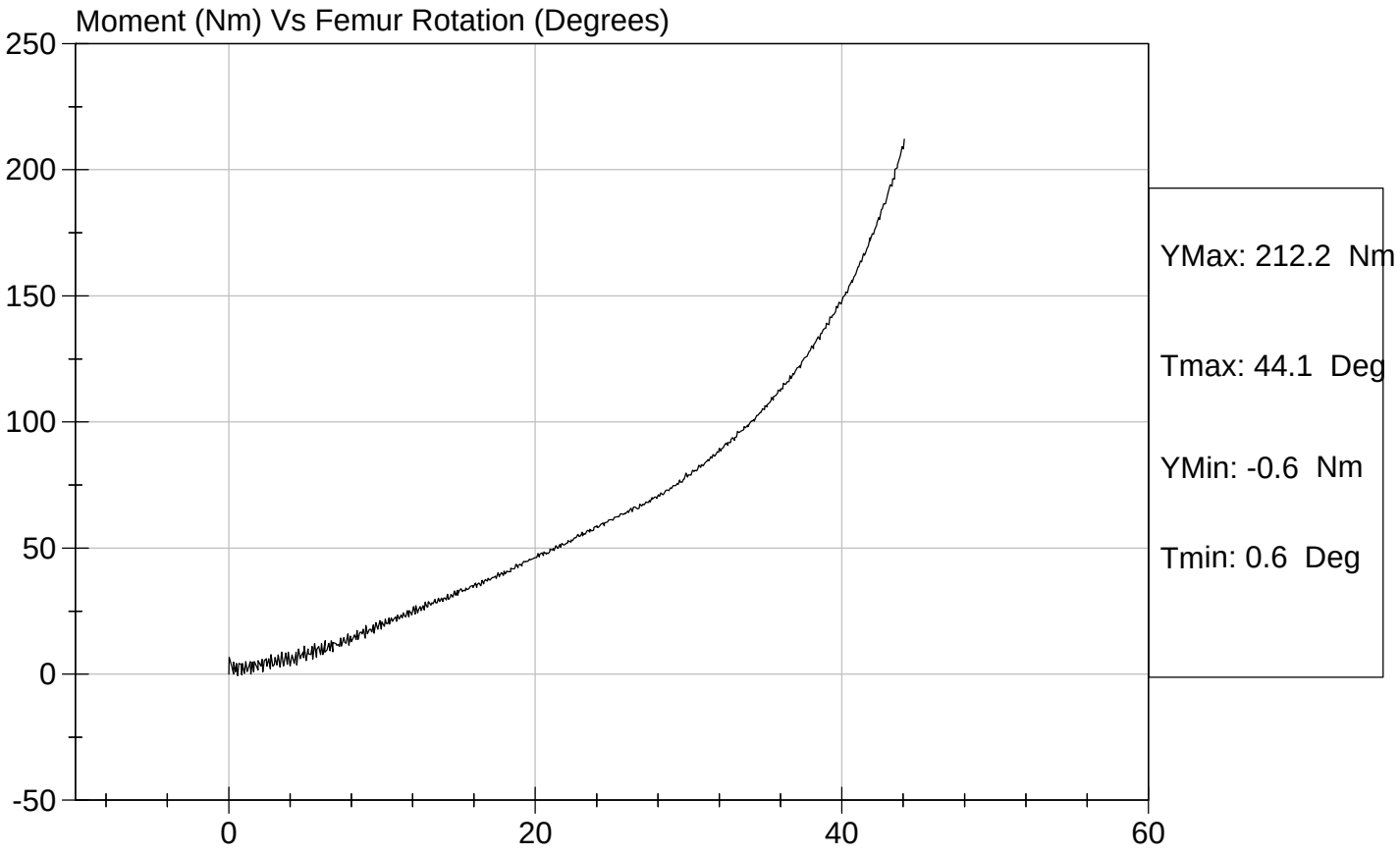
Jessica Hall
Laboratory Technician

11/21/2003
Test Date

Shafaliba Agarwal
Approved By

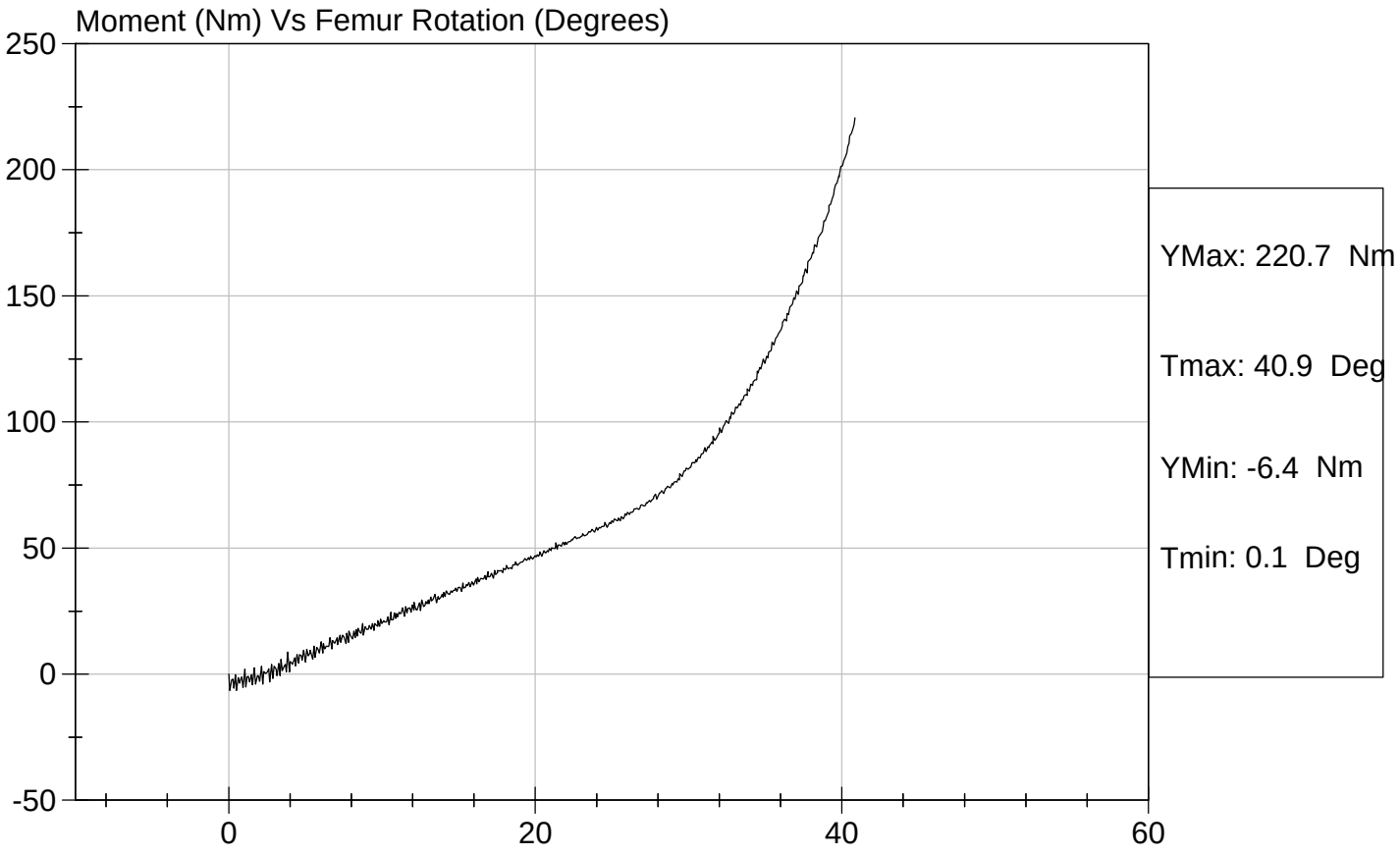
Test Description: Hip Femur Flexion | Test Date: 11/21/2003

Component: D031909 | Speed: 0 ft/sec, 0.00 m/sec



Test Description: Hip Femur Flexion | Test Date: 11/21/2003

Component: D031900 | Speed: 0 ft/sec, 0.00 m/sec



DUMMY INSPECTION CHECKLIST

Type: Hybrid III

Dummy Serial Number: 066

Inspected By: Jessica Gall

Date: 11/24/03

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	J13941	Endevco	10/06/03
Head Y	ACCY6	Endevco	10/03/03
Head Z	AAMW5	Endevco	10/03/03
Head X Redundant	J18724	Endevco	10/06/03
Head Y Redundant	J14235	Endevco	10/08/03
Head Z Redundant	AJ5R0	Endevco	10/03/03
Head Y – Front	ALBA7	Endevco	11/10/03
Head Z – Front	AMP82	Endevco	11/10/03
Head X – Left	AKAA6	Endevco	11/10/03
Head Z – Left	AP2C4	Endevco	11/10/03
Head X – Upper	J18953	Endevco	11/10/03
Head Y – Upper	J18843	Endevco	11/10/03
Neck Load Cell	442	Denton	8/20/03
Chest X	ACC78	Endevco	10/03/03
Chest Y	ACCE6	Endevco	10/03/03
Chest Z	ACCY3	Endevco	10/03/03
Chest Deflection Gauge	065	Servo	9/30/03
Chest X Redundant	J19927	Endevco	10/03/03
Chest Y Redundant	J20580	Endevco	10/03/03
Chest Z Redundant	J23914	Endevco	10/03/03
Pelvis X	AHTN3	Endevco	10/03/03
Pelvis Y	AH0C3	Endevco	10/03/03
Pelvis Z	AHT12	Endevco	10/03/03
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	8/20/03
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	10/08/03
Left Ankle X	J23774	Endevco	10/06/03
Left Ankle Z	APYY3	Endevco	10/08/03
Right Foot Z – Front	J18736	Endevco	10/06/03
Right Ankle X	J23946	Endevco	10/06/03
Right Ankle Z	J27513	Endevco	10/06/03
Shoulder Belt Load Cell	158	Denton	8/21/03
Lap Belt Load Cell	191	Denton	6/09/03

INSTRUMENTS FOR PASSENGER DUMMY NO. 066

	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Head X	ACC61	Endevco	10/03/03
Head Y	AAMN8	Endevco	10/03/03
Head Z	ACCW9	Endevco	10/03/03
Head X Redundant	J21988	Endevco	10/03/03
Head Y Redundant	J19884	Endevco	10/03/03
Head Z Redundant	J28986	Endevco	10/03/03
Head Y – Front	AH0D1	Endevco	12/05/03
Head Z – Front	AH0M0	Endevco	12/05/03
Head X – Left	J22034	Endevco	12/05/03
Head Z – Left	AHRP6	Endevco	12/05/03
Head X – Upper	AP170	Endevco	12/05/03
Head Y – Upper	AP2G9	Endevco	12/05/03
Neck Load Cell	443	Denton	8/20/03
Chest X	ACCY1	Endevco	10/06/03
Chest Y	ACCC8	Endevco	10/06/03
Chest Z	ACCT7	Endevco	10/06/03
Chest Displacement	066	Servo	9/30/03
Chest X Redundant	J13541	Endevco	10/06/03
Chest Y Redundant	J20093	Endevco	10/06/03
Chest Z Redundant	J19440	Endevco	10/06/03
Pelvis X	J22033	Endevco	10/03/03
Pelvis Y	J21691	Endevco	10/03/03
Pelvis Z	J21970	Endevco	10/03/03
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	10/03/03
Left Ankle X	J22036	Endevco	10/03/03
Left Ankle Z	J20569	Endevco	10/03/03
Right Foot Z – Front	J20382	Endevco	8/07/03
Right Ankle X	J20165	Endevco	8/07/03
Right Ankle Z	J28708	Endevco	8/07/03
Shoulder Belt Load Cell	172	Denton	10/11/03
Lap Belt Load Cell	198	Denton	6/09/03

INSTRUMENTS FOR VEHICLE AND LABORATORY

	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Left Rear Seat Crossmember X	E01-F17	Entran	11/11/03
Left Rear Seat Crossmember Z	K21-N05	Entran	8/13/03
Right Rear Seat Crossmember X	H01-N12	Entran	9/11/03
Right Rear Seat Crossmember Z	E01-F02	Entran	11/12/03
Top of Engine X	H20-R10	Entran	10/09/03
Bottom of Engine X	F20-G10	Entran	10/08/03
Left Brake Caliper X	A08-M06	Entran	9/11/03
Right Brake Caliper X	99F254	Entran	10/08/03
Instrument Panel X	D07-N01	Entran	11/11/03

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