REPORT NUMBER TR-P24001-03-NC

NEW CAR ASSESSMENT PROGRAM
FRONTAL BARRIER IMPACT TEST

HYUNDAI MOTOR COMPANY
2004 HYUNDAI TIBURON
2 DOOR COUPE

NHTSA NUMBER: M40501

PREPARED BY:
KARCO ENGINEERING, LLC
9270 HOLLY ROAD
ADELANTO, CALIFORNIA 92301

12/10/03

FINAL REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
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Date of Acceptance

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15. Supplementary Notes

16. Abstract

A 35 mph (56.3 km/h) frontal barrier impact was conducted on a 2004 Hyundai Tiburon 2 Door Coupe at Karco Engineering, LLC on 12/10/03. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and footwell intrusion performance. The impact velocity is 55.59 km/h. The ambient temperature at the barrier face at the time of impact is 11.7 degrees Celcius. The vehicle's maximum post test static crush is 510 mm at the vehicle centerline. The test vehicle is equipped with a 3-point continuous belt system and second generation supplemental airbags 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	Passenger ATD
Head Injury Criteria (HIC)	N/A	1000	249.5	343.1
Max. Chest Accel. (3 msec Clip)	G's	60	42.5	54.0
Left Femur Force	Newtons	10008	-3512.1	-2161.0
Right Femur Force	Newtons	10008	-2498.9	-1622.8

17. Key Words	18. Distribution of Statement
56.3 km/h NCAP Frontal Barrier Impact Test New Car Assessment Program (NCAP) 2004 Hyundai Tiburon 2 Door Coupe NHTSA No. M40501	Copies of this report available from: NHTSA Technical Reference Division National Highway Traffic Safety Admin. 400 Seventh St., SW, Room 5108 Washington, D.C. 20590

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SECTION 1

PURPOSE AND SUMMARY OF TEST M40501

1.1 PURPOSE

This 35 mph (56.3 km/h) frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-01-D-02005. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for an impact speed in excess of the current 30 mph (48.3 km/h) requirements.

The 35 mph (56.3 km/h) frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards Laboratory Test Procedure.

1.2 SUMMARY

A load cell barrier consisting of 36 load cells was impacted by a 2004 Hyundai Tiburon 2 Door Coupe at a velocity of 55.59 km/h. The test was performed at Karco Engineering, LLC on December 10, 2003.

One real-time and 13 (thirteen) 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 nine accelerometer array head, chest and pelvis triaxial accelerometers, chest displacement potentiometers, six-axis upper neck transducers, right/left femur load cells, and lower leg instrumentation. Seat belt load cells were also placed on the driver's and passenger's lap and shoulder belts to measure dummy torso and pelvic section loading. The driver (position 1) ATD (Serial No. 34) and the right-front passenger (position 2) ATD (Serial No. 35) were calibrated two tests prior to his test.

One Hundred and Nine (109) channels of data were recorded using an on-board data acquisition system. Appendix A contains Pre and Post-Test Photographs, Appendix B contains the vehicle and dummy response data traces. Appendix C contains Load Cell Barrier information. Appendix D contains the Instrumentation Data Channel assignments. Appendix E contains the Dummy Calibration data and Appendix F contains the Child Restraint System (CRS), NOT USED FOR THIS TEST. Appendix G contains the Nine Accelerometer Head Array data.

There was 100 percent windshield retention and no intrusion into the protected zone of the windshield during the impact 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 510 mm and both the driver and the passenger side doors remained closed during the impact event and were operable after the impact.

The driver's visible contact points were as follows: The driver ATD head and chest contacted the airbag. The abdomen had no contact. Both knees contacted the steering column/knee bolster.

The passenger's visible contact points were as follows: The passenger ATD head and chest contacted the airbag. The abdomen had no contact. Both knees contacted the glove box.

Occupant injury data is contained in table below.

OCCUPANT DATA SUMMARY

ATD Position	HIC	Clip (g)	Chest Disp. (mm)	Left Femur (N)	Right Femur (N)	Belt Spool (mm)
Driver	249.5	42.5	-16.6	-3512.1	-2498.9	152.7
Passenger	343.1	54.0	-22.5	-2161.0	-1622.8	234.3

SECTION 2
OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501
Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03

CONVERSION FACTORS USED IN THIS REPORT*

Quantity	Typical Application	Std 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 Pressures	lbf/in^2	kPa	7.0
Volume	Liquid	gal	liter	3.785
Temperature	General Use	^oF	^oC	=(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 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501
Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03

PRIMARY IMPACT DATA

Measured Parameter	Units	Value
Velocity at Impact	km/h	55.59
Test Weight	kg	1555
Impact Angle	degrees	0
Average Rebound	mm	956
Maximum Static Crush	mm	510

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Passenger
Front Door opening	Remained closed, opened w/o tools	Remained closed, opened w/o tools
Rear Door Opening	N/A	N/A
Seat Track Shift (mm)	None	None
Seat Back Failure	None	None

TEST DUMMY INFORMATION

Description	Driver	Passenger
Dummy Type/ Serial No.	50% Male Hybrid III No. 34	50% Male Hybrid III No. 35
Head Contact	Airbag	Airbag
Chest Contact	Airbag	Airbag
Abdomen Contact	None	None
Left Knee Contact	Steering Column/Bolster	Glovebox
Right Knee Contact	Steering Column/Bolster	Glovebox

16mm MOVIE COVERAGE

High Speed	13
Real Time	1
Total	14

DATA CHANNELS

Driver ATD Sensors	46
Passenger ATD Sensors	46
Belt Assessment Sensors	8
Vehicle Structure Accelerometers	9
Rigid Barrier Load Cells	36
Total	145

DATA SHEET NO. 2
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501
Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M40501	Anti-Lock Brakes	No
Make	Hyundai	All Wheel Drive	No
Model	Tiburon	Power Steering	Yes
Body Style	2-Door Coupe	Driver Front Airbag	Yes
Vin No.	KMHHM65D14U107686	Driver Side Airbag	Yes
Color	Black	Driver Head Airbag	No
Delivery Date	11/24/2003	Driver Curtain Airbag	No
Odometer	25	Pass. Airbag	Yes
Dealer	Romero Hyundai	Pass. Side Airbag	Yes
Transmission	4 Speed Automatic	Pass. Head Airbag	No
Final Drive	Front	Pass. Curtain Airbag	No
Type/No. Cyl.	In-Line 4	Pre-Tensioners	Yes
Engine Disp. (L)	2.0	Load Limiters	Yes
Engine Placement	Transverse	Bucket Seats	Yes
Roof Rack	No	Air. Cond.	Yes
Sunroof/T-Top	No	AM/FM Cassette	Yes
Tinted Glass	No	Tilt Steering	Yes
Traction Control	No	Power Door Locks	Yes
Power Brakes	Yes	Power Windows	Yes
Front Disc	Yes	Power Seats	No
Rear Disc	Yes	Other	None

DATA FROM CERTIFICATION LABEL

Manufactured By	Hyundai Motor Company	GVWR (kg)	1740
Date of Manufacture	Aug-03	GAWR Front (kg)	1000
		GAWR Rear (kg)	860

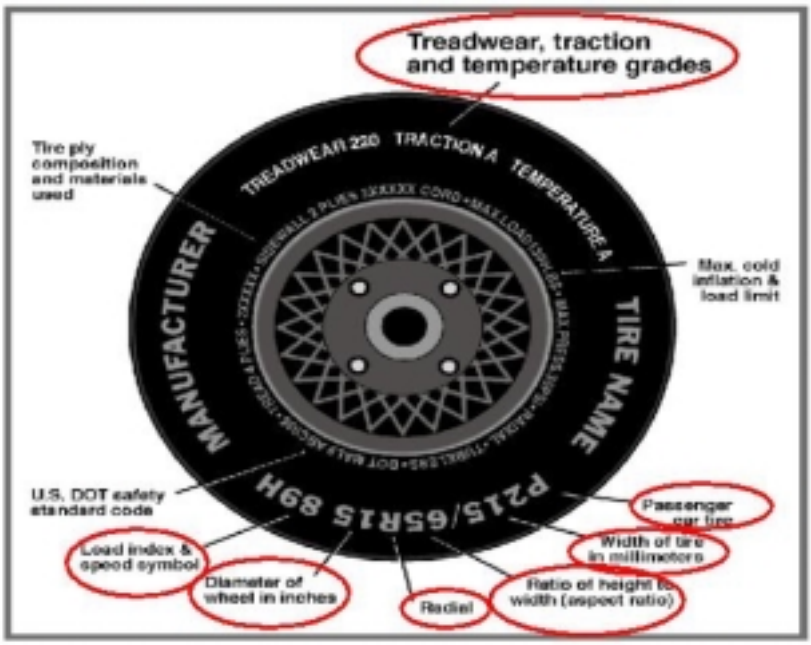
VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bucket	None	
Number of Occupants	2	2	N/A	4
Capacity Weight (VCW) (kg)				318
Cargo Weight (RCLW) (kg)				45

DATA SHEET NO. 2…..(CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501
Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03

Collect year, make, model, VIN, items circled in red, and tire manufacturer and tire name.



TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	308	308
Cold Pressure (kpa)	210	210
Recommened Tire Size	P205/55R16	P205/55R16
Tire Size on Vehicle	P205/55R16	P205/55R16
Tire Manufacturer	Michelin	Michelin
Treadwear	400	400
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	2	2
Tire Plies Body	2	2
Load Index/Speed Symbol	89 Y	89 Y
Tire Material	Polyester/Steel	Polyester/Steel
DOT Safety Code Right	EDWCFN4X2503	EDWCFN4X2503
DOT Safety Code Left	EDWCFN4X2503	EDWCFN4X2503

DATA SHEET NO. 2.....(CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501

Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	435	268		465	328	
Right	kg	427	236		458	304	
Ratio	%	63.1	36.9		59.3	40.7	
Totals	kg	862	504	1366	923	632	1555

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1366
Weight of 2 P572 ATD's	kg	152
Rated Cargo/Luggage Wt. (RCLW)	kg	45
Calculated Vehicle Target Wt. (TVTW)	kg	1564

TEST VEHICLE ATTITUDE AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	693	693	687	687	934
As Tested	mm	678	678	655	654	1029

Vehicle Wheel Base (mm) 2530

Weight of Ballast Secured in cargo area (kg) 0

Vehicle Components Removed Rear hatch, rear bumper, rear lights, spare tire,rear windows

* Ballast weight does not include cameras, instrumentation and brake abort system.

FUEL SYSTEM DATA

Fuel System Capacity From Owners Manual (L) 54.89

Usable Capacity Furnished by COTR (L) 54.89

Actual Test Volume with entire fuel System Filled (L) 51.03

1/3 of Usable Capacity (L) 18.30

Test Fluid Type: Stoddard Solvent

Kinematic Viscosity: as per ASTM Standard D484-71 Purple

Is Vehicle Fuel Pump Electric or Mechanical? Electric

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

Fuel System Particulars: Key operated w/automatic shutoof.

DATA SHEET NO. 3
POST TEST IMPACT DATA

Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501
Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03

SPEED TRAP DATA

Measured Parameter	Units	Requirement	Value
Trap No.1 Velocity (Primary)	km/h	55.51 to 57.12	55.59
Trap No. 1 Entry Distance	mm	<1524	1524
Trap No.1 Exit Distance	mm	<1524	305
Trap No.2 Velocity (Redun.)	km/h	55.51 to 57.12	55.61
Trap No.2 Entry Distance	mm	<1524	1524
Trap No.2 Exit Distance	mm	<1524	305

VEHICLE STATIC CRUSH

Measured Parameter	Units	Pre-Test	Post-Test	Difference
Left Side	mm	4177	3782	-395
Center	mm	4392	3882	-510
Right Side	mm	4177	3801	-376

VEHICLE REBOUND FROM BARRIER

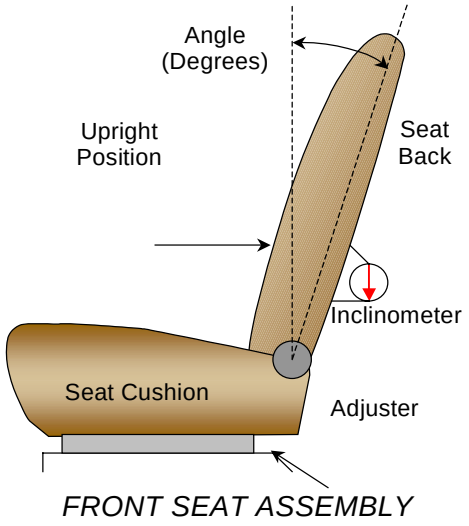
Measured Parameter	Units	Value
Left Side	mm	980
Center	mm	910
Right Side	mm	978
Average	mm	956

DATA SHEET NO. 4
TEST VEHICLE INFORMATION

Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501
Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03

NOMINAL DESIGN RIDING POSITION

The driver and passenger seat backs are positioned to the manufacturers designated angle. The procedure is as follows: A special application tool with pointed probes is inserted through the fabric to make contact with the rigid portion of the lower seat frame assembly, approximately 13 inches above the pivot point of the seat back. An inclinometer is placed against the flat surface of the tool and the seat back angle is measured directly from the dial face.



FRONT SEAT ASSEMBLY

SEAT BACK ANGLES

	Deg.
Driver w/seated dummy	22.5
Passenger w/seated Dummy	22.5

SEAT FORE/AFT POSITIONS

The first or forward most position is counted as number one (1). The fore/aft position is set aft of the middle position for both the driver and passenger.

SEAT FORE/AFT POSITIONING

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	25	13
Passenger Seat	25	13

SEAT BELT UPPER ANCHORAGE

Position number one (1) is the uppermost position.

SEAT BELT UPPER ANCHORAGE

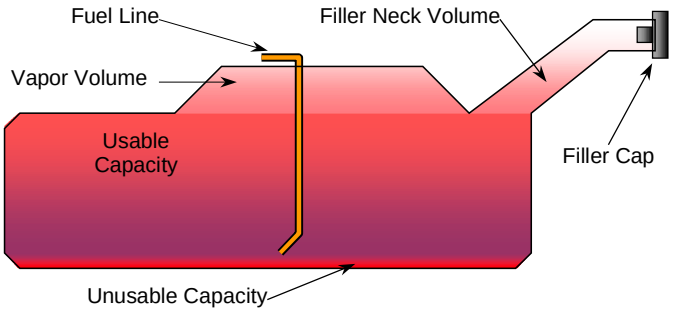
	Total # of Positions	Placed in Position #
Driver Seat	4	2
Passenger Seat	4	2

Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501
Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	54.89
Usable Capacity of "Optional" Tank	N/A
Usable Capacity used for FMVSS 301	50.50 to 51.60
Actual Amount of Solvent used	51.03
1/3 of Usable Capacity	18.30

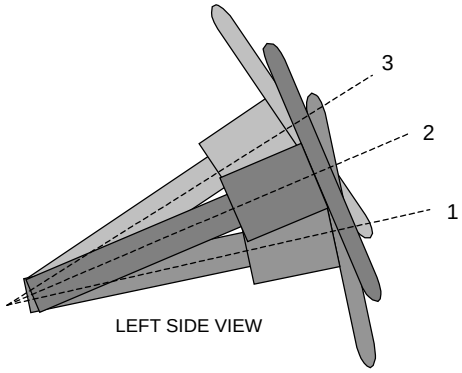
The test vehicle is equipped with an electric fuel pump. The fuel pump operates for approximately two seconds after the ignition is placed in the “ON” position, after which the fuel pump automatically shuts off. The fuel filler door is located on the left rear fender. The standard fuel tank occupies the area under the rear seat.



VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when moved through its full range of motion. An aluminum plate is placed across the rim of the steering wheel, an inclinometer is placed on the plate and the angle is measured.



STEERING COLUMN ASSEMBLY

STEERING COLUMN POSITIONS

	Degrees
Lowermost positon No. 1	13.4
Geometric center position No. 2	20.0
Uppermost position No. 3	27.0

DATA SHEET NO. 5
DUMMY POSITIONING IN VEHICLE

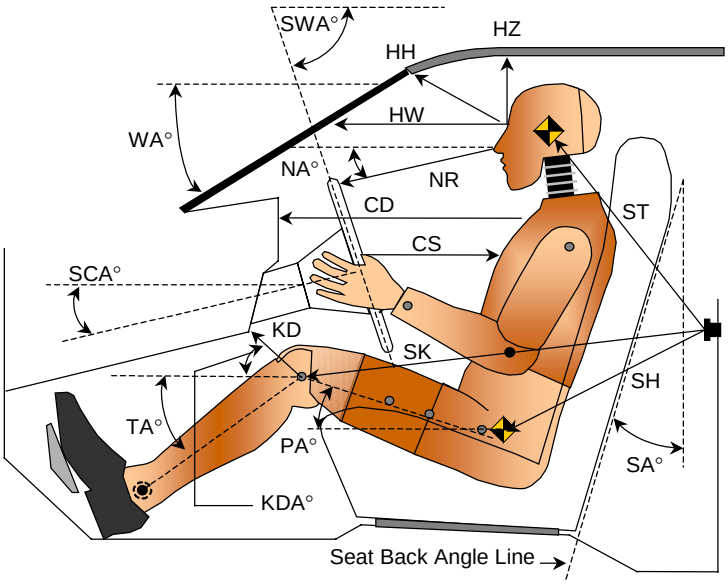
Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501
Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03

TEST DUMMY POSITION MEASUREMENTS

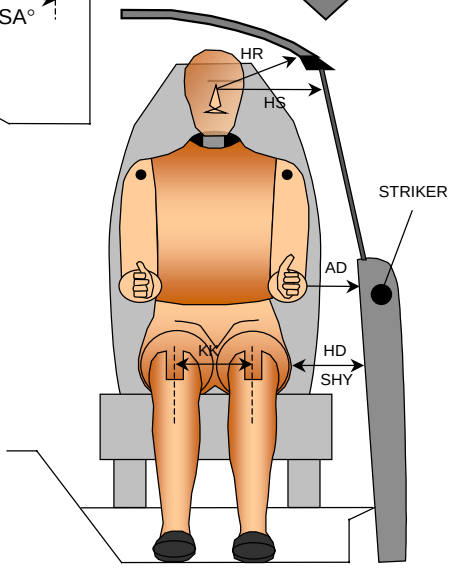
Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (deg)	Length (mm)	Angle (deg)
WA	Windshield Angle		65		
SWA	Steering Wheel Angle		70.0		
SCA	Steering Column Angle		20.0		
SA	Seat Back Angle		22.5		22.5
HZ	Head to Roof (Z)	160	90	150	90
HH	Head to Header	320		325	
HW	Head to Windshield	588		618	
HR	Head to Side Header (Y)	263		265	
NR	Nose to Rim	400	8		
CD	Chest to Dash	505		530	
CS	Chest to Steering Hub	308			
RA	Rim to Abdomen	188			
KDL	Left Knee to Dash	145	16	202	
KDR	Right Knee to Dash	155		225	20
PA	Pelvic Angle		24		22.5
TA	Tibia Angle		44		32
KK	Knee to Knee (Y0	290		278	
SK	Striker to Knee	850	4	558	9
ST	Striker to Head	533	50	860	50
SH	Striker to H-Point	530	31	500	29
SHY	Striker to H-Point (Y)	255		235	
HS	Head to Side Window	315		310	
HD	H-Point to Door (Y)	168		168	
AD	Arm to Door (Y)	103		40	

DATA SHEET NO. 5…(CONTINUED
DUMMY POSITIONING IN VEHICLE

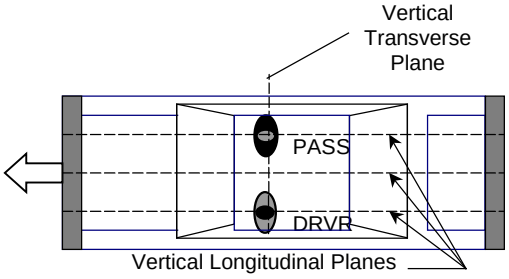
Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501
Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03



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)



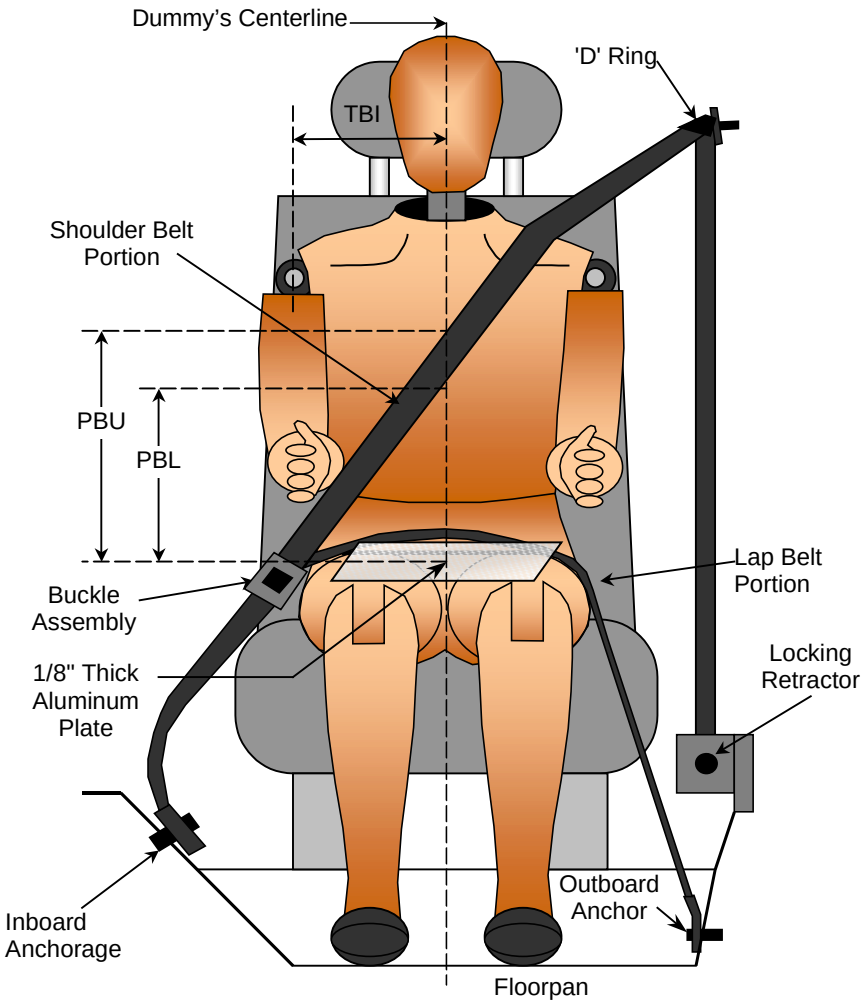
CD	Chest to Dash
CS	Chest to Steering Wheel Hub
HH	Head to Header
HW	Head to Windshield
HZ	Head to Roof
KDA	Knee to Dash Angle
KDL	Left Knee to Dash
KDR	Right Knee to Dash
NA	Nose to Rim Angle
NR	Nose to Rim
PA	Pelvic Angle
RA	Rim to Abdomen
SA	Seat Back Angle
SCA	Steering Column Angle
SH	Striker to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



DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS

DATA SHEET NO. 6
SEAT BELT POSITIONING DATA

Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501
Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03



SEAT BELT POSITIONING MEASUREMENTS

Measured Parameter	Units	Driver	Passenger
TBI -Dummy C/L to Lap/Shoulder Belt Intersect	mm	225	220
PBU - Top Surface of reference to belt upper edge	mm	310	330
PBL - Top Surface of reference to belt lower edge	mm	230	250
Lap Belt Tension	Newtons	10	10
Shoulder Belt Tension	N/A	Retractor	Retractor

DATA SHEET NO. 7 - VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY

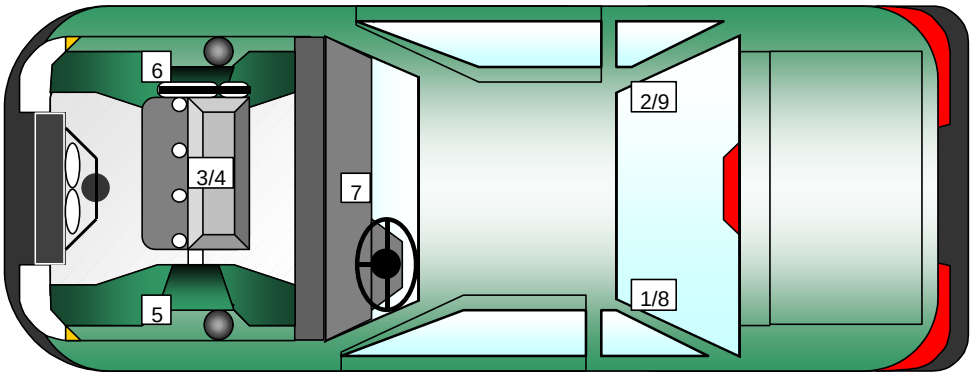
Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501

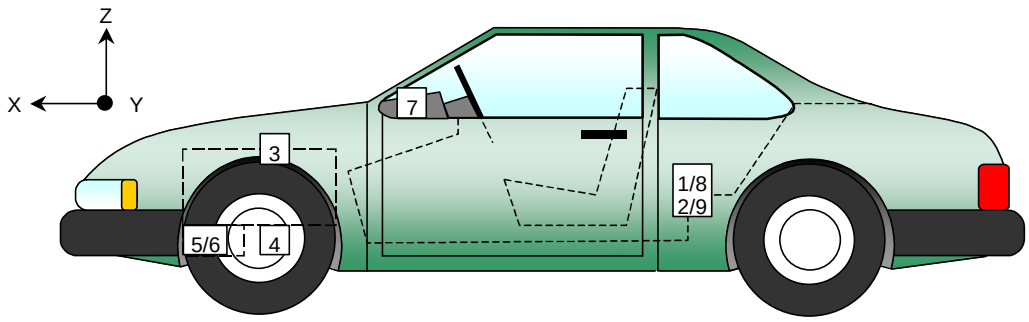
Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03

VEHICLE ACCELEROMETER PEAK DATA AND PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)			Peak Values				
		X	Y	Z	Units	Max	Time	Min	Time
1	Left Rear X-Member	1820	-640	210	G's	2.2	130.1	-40.3	51.5
2	Right Rear X-Member	1820	640	210	G's	1.9	128.0	-35.2	51.9
3	Engine Top	3680	50	820	G's	43.4	43.9	-167.4	34.1
4	Engine Bottom	3620	390	160	G's	50.2	47.0	-142.6	28.6
5	Left Brake Caliper	3530	-670	230	G's	50.6	64.8	-115.6	43.9
6	Right Brake Caliper	3530	670	230	G's	56.2	68.5	-119.2	51.7
7	Instrument Panel	2790	0	930	G's	51.8	31.4	-94.1	36.1
8	Left Rear X-Member (Z-Axis)	1700	-560	200	G's	7.1	87.9	-10.3	60.2
9	Right Rear X-Member (Z-Axis)	1700	560	200	G's	10.0	88.4	-9.1	24.7

Reference Planes: X=From Rear Surface of Vehicle, Y=Vehicle Centerline, Z=Ground Plane





DATA SHEET NO. 8 - HYBRID III ATD INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501

Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03

HEAD PRIMARY PEAK ACCELERATIONS

			Driver				Passenger			
Location	Axis	Units	Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	5.7	195.4	-45.8	73.4	0.3	17.6	-47.4	61.2
Head CG	Y	G's	4.8	114.2	-4.3	65.8	7.4	51.9	-9.3	44.7
Head CG	Z	G's	12.2	44.1	-1.2	41.3	12.5	55.4	-19.5	83.7
Head CG Resultant	N/A	G's	46.6	73.0			47.8	61.2		

CHEST PRIMARY PEAK ACCELERATIONS

			Driver				Passenger			
Location	Axis	Units	Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	2.0	162.5	-41.7	65.4	2.5	170.7	-55.2	77.7
Chest CG	Y	G's	8.3	62.3	-2.7	35.6	2.6	33.5	-4.3	69.6
Chest CG	Z	G's	5.2	23.9	-15.4	82.5	9.7	57.7	-6.3	81.5
Chest CG Resultant	N/A	G's	43.1	78.6			55.3	77.7		

FEMUR PEAK FORCES

			Driver				Passenger			
Location	Axis	Units	Max	Time	Min	Time	Max	Time	Min	Time
Left Femur	Z	Newtons	682.8	46.0	-3512.1	64.0	1066.6	66.7	-2161.0	38.8
Right Femur	Z	Newtons	990.4	71.0	-2498.9	40.8	678.2	57.5	-1622.8	65.4

SEAT BELT SENSOR PEAK VALUES

			Driver				Passenger			
Location	Axis	Units	Max	Time	Min	Time	Max	Time	Min	Time
Shoulder Belt Pullout	N/A	MM	152.7	88.0	-35.3	35.5	234.3	101.8	-15.8	40.9
Shoulder Belt Stretch	N/A	MM/CM	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0 [1]
Lap Belt Force	N/A	Newtons	4715.0	61.1	-20.2	12.7	7100.3	77.7	-19.5	168.7
Shoulder Belt Force	N/A	Newtons	4114.8	72.5	-43.6	11.1	4732.5	78.5	-49.2	156.2

1.) Not used with pre-tensioners

	Driver				Passenger			
Location	HIC	T^1	T^2	Avg G	HIC	T^1	T^2	Avg G
Head CG Primary	249.5	53.5	89.5	34.4	343.1	51.7	87.7	39.0

PRIMARY CHEST CLIP (3MSEC)

	Driver			Passenger		
Location	CLIP	T^1	T^2	CLIP	T^1	T^2
Chest CG Primary	42.5	77.1	80.1	54.0	76.5	79.5

Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501

Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03

PELVIC PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Pelvis	X	G's	4.6	200.0	-43.0	63.7	3.6	199.8	-42.0	76.7
Pelvis	Y	G's	6.8	61.4	-6.6	40.8	5.1	51.4	-12.2	65.5
Pelvis	Z	G's	3.7	195.8	-37.7	79.3	3.0	197.5	-34.1	79.2
Pelvis Resultant	N/A	G's	50.1	63.7			54.1	76.7		

UPPER NECK PEAK FORCES AND MOMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Neck Force	X	Newtons	277.6	61.4	-471.4	99.2	13.2	17.8	-677.0	59.9
Neck Force	Y	Newtons	194.2	114.7	-108.2	68.9	159.2	47.5	-157.3	124.7
Neck Force	Z	Newtons	1071.5	48.2	-53.1	18.1	2116.8	66.8	-46.7	18.3
Neck Force Resultant	N/A	Newtons	1072.5	48.2			2194.5	66.7		
Neck Moment	X	N•m	14.9	68.8	-6.7	94.5	3.7	82.7	-24.5	49.3
Neck Moment	Y	N•m	37.4	114.3	-19.2	76.6	25.1	148.2	-61.3	81.7
Neck Moment	Z	N•m	4.6	130.9	-4.4	89.0	7.4	54.3	-3.0	162.2
Neck Moment Resultant	N/A	N•m	39.1	115.3			61.4	81.8		

FOOT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Foot Aft	X	G's	7.7	28.7	-44.8	43.6	16.7	66.9	-58.5	47.8
Left Foot Aft	Z	G's	1.9	132.5	-50.6	43.9	30.7	74.5	-69.6	51.7
Left Foot Fore	Z	G's	43.0	52.9	-79.5	43.3	45.2	80.4	-72.9	37.6
Right Foot Aft	X	G's	9.0	69.9	-114.7	48.1	12.7	69.3	-63.1	53.0
Right Foot Aft	Z	G's	19.0	71.7	-95.7	42.8	19.7	74.4	-58.4	56.3
Right Foot Fore	Z	G's	24.6	74.8	-202.9	45.7	29.6	69.5	-126.7	56.8

UPPER AND LOWER TIBIA PEAK FORCES AND MOMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Upper Moment	X	N•m	48.9	63.9	-10.7	148.5	29.7	84.9	-36.2	58.2
Left Upper Moment	Y	N•m	12.7	199.4	-78.0	56.8	16.3	193.0	-124.1	53.3
Right Upper Moment	X	N•m	26.1	148.4	-41.1	72.5	30.7	39.3	-32.4	94.1
Right Upper Moment	Y	N•m	25.3	151.8	-228.6	48.8	19.7	195.2	-96.9	54.4
Left Lower Moment	X	N•m	15.8	28.6	-40.2	57.1	36.1	85.5	-14.3	36.8
Left Lower Moment	Y	N•m	54.8	68.7	-26.3	41.3	42.3	52.1	-44.5	36.9
Left Lower Force	Z	Newtons	101.0	146.0	-2064.3	51.3	55.6	169.6	-5741.9	52.1
Right Lower Moment	X	N•m	95.4	50.4	-3.1	84.3	14.7	36.6	-54.3	42.9
Right Lower Moment	Y	N•m	47.5	40.0	-86.8	48.7	45.4	73.5	-26.4	52.3
Right Lower Force	Z	Newtons	154.7	164.5	-7153.9	41.0	190.6	169.0	-2971.3	39.8

DATA SHEET NO. 8…(continued)

Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501

Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03

CHEST PEAK DISPLACEMENTS

			Driver				Passenger			
Location	Axis	Units	Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	MM	0.0	7.3	-16.6	90.8	0.0	3.4	-22.5	70.5

HEAD REDUNDANT PEAK ACCELERATIONS

			Driver				Passenger			
Location	Axis	Units	Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	6.3	195.5	-46.0	73.5	0.3	17.4	-47.3	61.1
Head CG	Y	G's	4.8	112.4	-4.1	65.9	8.1	51.9	-9.1	44.7
Head CG	Z	G's	12.0	44.2	-1.4	41.3	12.6	55.3	-19.5	83.6
Head CG Resultant	N/A	G's	46.6	73.5			47.7	61.1		

CHEST REDUNDANT PEAK ACCELERATIONS

			Driver				Passenger			
Location	Axis	Units	Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	2.0	162.7	-41.6	65.5	2.5	178.8	-55.4	77.6
Chest CG	Y	G's	8.8	62.5	-3.1	35.7	2.6	33.5	-4.4	69.6
Chest CG	Z	G's	5.4	23.9	-15.5	82.2	9.6	57.5	-6.4	81.5
Chest CG Resultant	N/A	G's	43.4	78.8			55.5	77.6		

REDUNDANT HEAD INJURY CRITERA (HIC)

	Driver				Passenger			
Location	HIC	T^1	T^2	Avg G	HIC	T^1	T^2	Avg G
Head CG Redundant	254.9	53.2	89.2	34.6	344.8	51.7	87.7	39.1

REDUNDANT CHEST CLIP (3MSEC)

	Driver			Passenger		
Location	CLIP	T^1	T^2	CLIP	T^1	T^2
Chest CG Redundant	42.8	77.3	80.3	54.0	76.4	79.4

DATA SHEET NO. 9
SEATBELT ASSESSMENT TEST DATA

Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501
Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03

SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
TBI -Dummy C/L to Lap/Shoulder Belt Intersect	mm	225	220
PBU - Top Surface of reference to belt upper edge	mm	310	330
PBL - Top Surface of reference to belt lower edge	mm	230	250
Lap Belt Tension	Newtons	10	10
Shoulder Belt Tension	N/A	Retractor	Retractor

SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
Retractor Reel to "D" ring	mm	635	635
Shoulder Belt length as measured on ATD	mm	930	945
Lap Belt length as measured on ATD	mm	760	715
Remainder of belt on reel	mm	1045	1050
Total belt length for continuous webbing systems	mm	3370	3345

SHOULDER BELT SPOOL-OFF DATA

Measurement Description	Units	Driver	Passenger
As determined mechanically	mm	100.0	110.0
As determined electronically	mm	152.7	234.3

BELT STRETCH DATA

Measuerment Description	Units	Driver	Passenger
Electronically between belt load cell and "D" ring	mm/cm	*	*
Mechanically	mm/cm	N/A	N/A

* Not used with shoulder belt pre-tensioner systems

DATA SHEET NO. 10
SUMMARY OF FMVSS 212 DATA

Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501
Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03

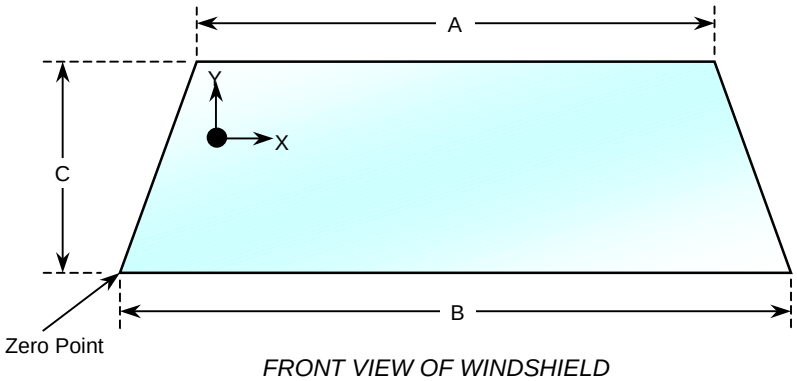
Windshield Mounting Details: Windshield glass is secured to the vehicle frame with a rubber type adhesive. No molding covers the windshield periphery at any point.

The standard requires that the posttest 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 that are equipped with occupant passive restraints.

Temperature of windshield molding during test: 21.1 °C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test(mm)	Post-Test(mm)	% of Retention
Left Side	1933.5	1933.5	100.0
Right Side	1933.5	1933.5	100.0
Total	3867.0	3867.0	100.0



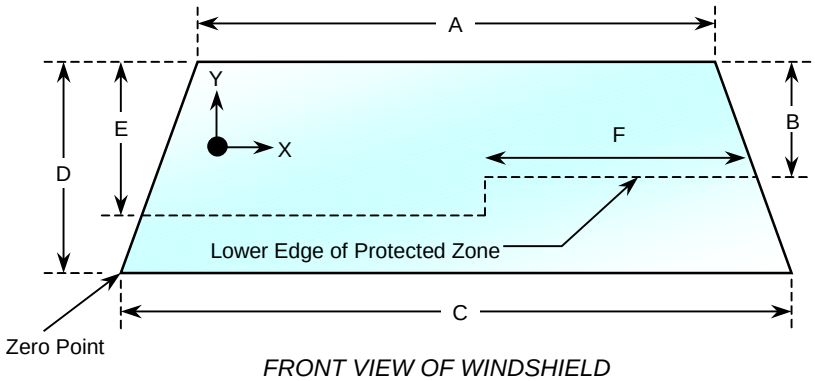
FRONT VIEW OF WINDSHIELD

WINDSHIELD DIMENSIONS

Item	Units	Segment Length	Molding Width
A	mm	1120.0	11.0
B	mm	1427.0	7.0
C-Left	mm	660.0	16.0
C-Right	mm	660.0	16.0

DATA SHEET NO. 11
WINDSHIELD ZONE INTRUSION FMVSS 219 DATA (PARTIAL)

Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501
Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03



FRONT VIEW OF WINDSHIELD

WINDSHIELD AND PROTECTED ZONE

Item	Units	Value
A	mm	1120
B	mm	302
C	mm	1427
D	mm	660
E	mm	430
F	mm	539

AREA OF PROTECTED ZONE FAILURES

A. Provide coordinates of the area that the protected zone was penetrated more than 0.25 in. by a vehicle component other than one that is normally in contact with the windshield.

X	Y
N/A	N/A
N/A	N/A
N/A	N/A
N/A	N/A

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

X	Y
N/A	N/A
N/A	N/A
N/A	N/A
N/A	N/A

DATA SHEET NO. 12
FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501
Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03

Test Time: 11:01 AM Temperature: 11.7 Deg. C.

STODDARD SOLVENT SPILLAGE MEASUREMENTS

A. From impact until vehicle motion ceases: 0.0 oz.
(Maximum Allowable = 1 ounce)

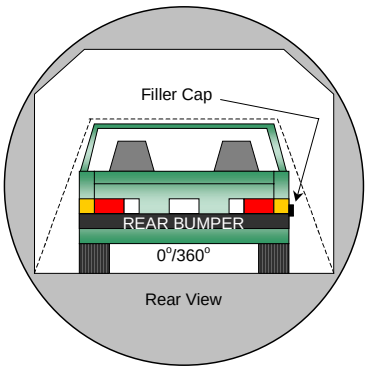
B. For the 5 minute period after motion ceases: 0.0 oz.
(Maximum Allowable = 5 ounces)

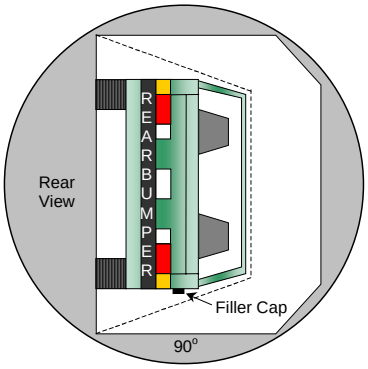
C. For the following 25 minutes: 0.0 oz.
(Maximum Allowable = 1 oz./minute)

D. Spillage Location Details: No leakage occurred

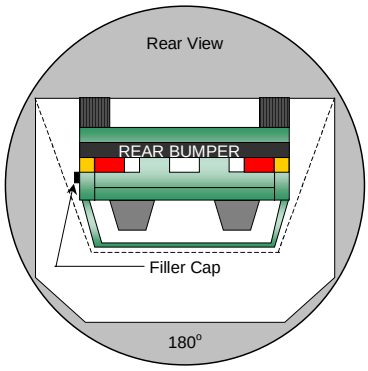
DATA SHEET NO. 13
FMVSS 301 STATIC ROLLOVER DATA

Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501
Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03

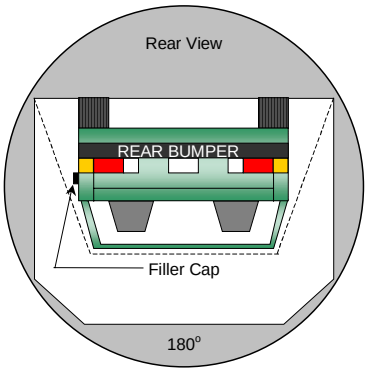




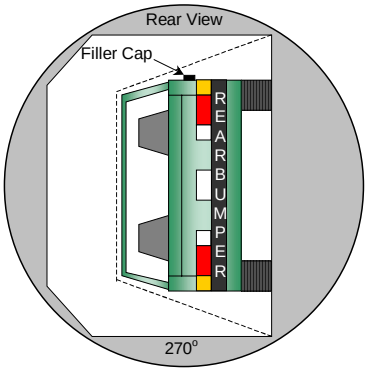
0° to 90°

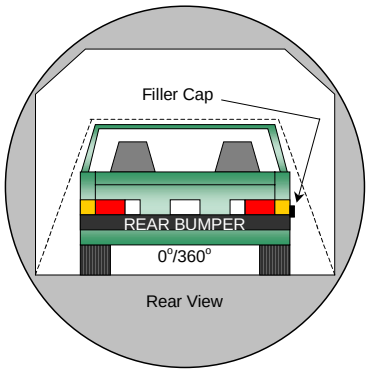


90° to 180°



180° to 270°





270° to 360°

1. The specified fixture rollover rate for each 90° of rotation is 60 to 120 seconds.
2. The position hold time at each position is 300 seconds (minimum).
3. No solvent leakage occurred during rollover.

DATA SHEET NO. 13….(CONTINUED)
FMVSS 301 STATIC ROLLOVER DATA

Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501
Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	84	300	384
90° to 180°	79	300	379
180° to 270°	78	300	378
270° to 360°	80	300	380

FMVSS 301 SPILLAGE TABLE REQUIREMENT (oz.)

First 5 Minutes	5.0
Sixth Minute	1.0
Seventh Minute	1.0
Eighth Minute	1.0

ACTUAL TEST VEHICLE SOLVENT SPILLAGE TABLE (oz.)

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

SOLVENT SPILLAGE LOCATION TABLE

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

DATA SHEET NO. 14
VEHICLE MEASUREMENTS

Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501
Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03

VEHICLE MEASUREMENT TABLE

No.	Measurement Description	Units	Pre-Test	Post-Test	Diff.
1	Total length of vehicle at centerline	mm	4392	3882	-510
2	RSOV to front of engine	mm	3726	3550	-176
3	RSOV to firewall centerline	mm	3234	3173	-61
4	RSOV to leading edge of right door	mm	2843	2842	-1
5	RSOV to leading edge of left door	mm	2849	2840	-9
6	RSOV to lower leading edge of right door	mm	2889	2889	0
7	RSOV to lower leading edge of left door	mm	2892	2886	-6
8	RSOV to upper trailing edge of right door	mm	1675	1674	-1
9	RSOV to upper trailing edge of left door	mm	1679	1672	-7
10	RSOV to lower trailing edge of right door	mm	1700	1703	3
11	RSOV to lower trailing edge of left door	mm	1700	1705	5
12	RSOV to bottom of right 'A' pillar	mm	2879	2798	-81
13	RSOV to bottom of left 'A' pillar	mm	2888	2874	-14
14	RSOV to firewall on right side	mm	3201	3169	-32
15	RSOV to firewall on left side	mm	3210	3168	-42
16	RSOV to steering column	mm	2491	2540	49
17	Center of steering column to left 'A' pillar	mm	395	424	29
18	Center of steering column to headlining	mm	400	384	-16
19	RSOV to right side of front bumper	mm	4177	3801	-376
20	RSOV to left side of front bumper	mm	4177	3782	-395
21	Length of engine block	mm	555	555	0
RD	RSOV to right side of dash panel	mm	2642	2640	-2
CD	RSOV to center of dash panel	mm	2664	2640	-24
LD	RSOV to left side of dash panel	mm	2647	2636	-11

All measurements in millimeters

DATA SHEET NO. 14…..(CONTINUED)
VEHICLE STRUCTURAL MEASUREMENTS

Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501
Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03

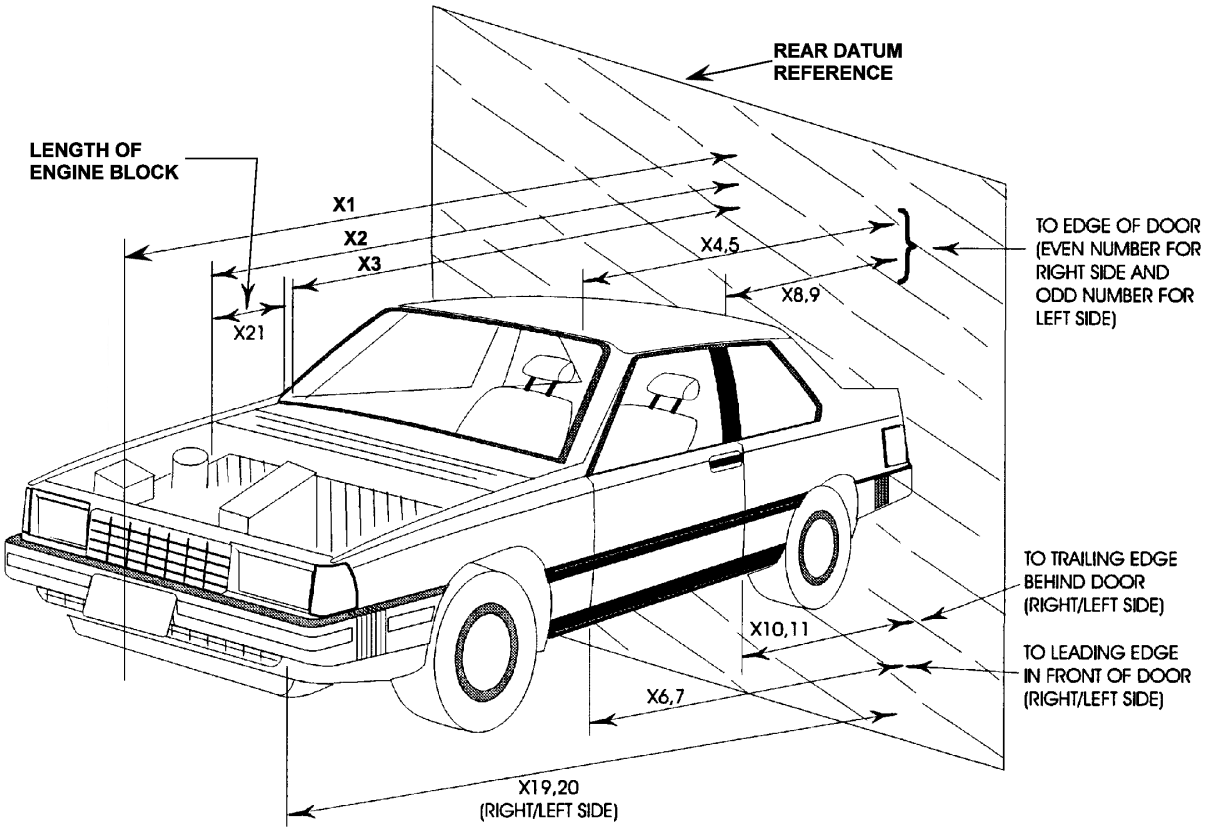
VEHICLE STRUCTURAL MEASUREMENT TABLE

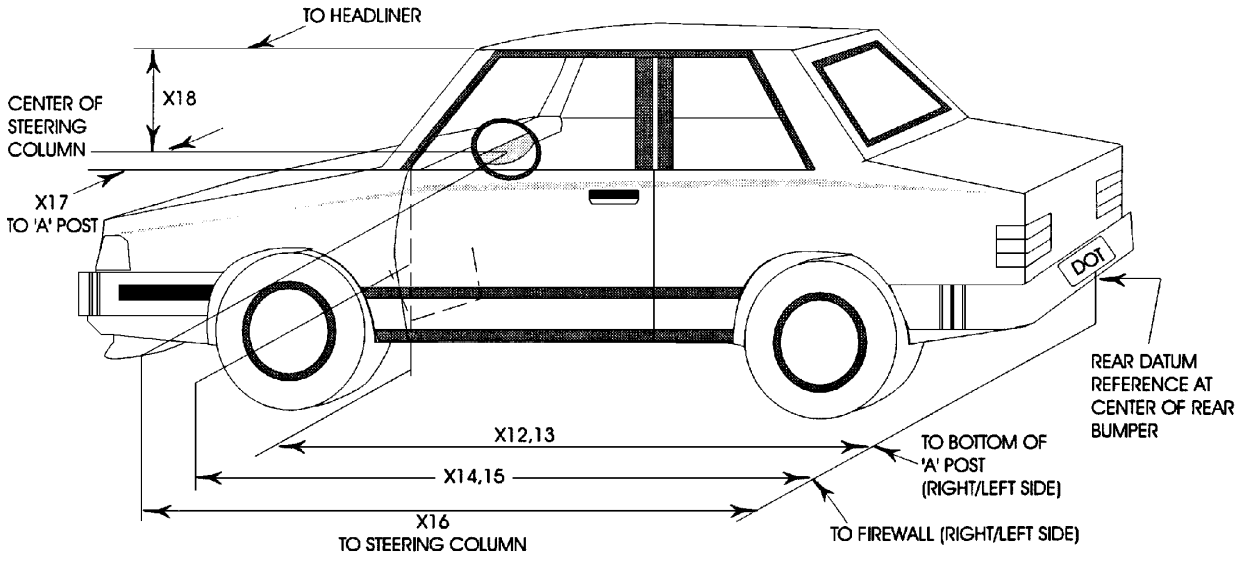
No.	Measurement Description	Units	Pre-Test	Post-Test	Diff.
1	Total length	mm	4392	3882	-510
2	Total width	mm	1755	1755	0
3	Bumper top height	mm	619	604	-15
4	Bumper bottom height	mm	224	190	-34
5	Longitudinal member top height	mm	578	625	47
6	Longitudinal member bottom height	mm	445	527	82
7	Distance between longitudinal members	mm	964	945	-19
8	Longitudunal member width	mm	133	98	-35
9	Engine top height	mm	813	804	-9
10	Engine bottom height	mm	176	187	11
11	Engine and gear box width	mm	485	485	0
12	Front bumper to engine distance	mm	710	367	-343
13	Front shock absorber fixing width	mm	856	891	35
14	Bonnet leading edge height	mm	631	715	84
15	Front shock absorber fixing width	mm	1137	1055	-82
16	Front bumper to front axle distance	mm	970	550	-420
17	Front axle to 'A' pillar distance	mm	525	444	-81
18	'A' pillar to 'B' pillar distance	mm	1192	1196	4
19	'B' pillar to rear axle distance	mm	821	794	-27
20	'B' pillar to 'C' pillar distance	mm	577	575	-2
21	Roof sill bottom height	mm	1203	1225	22
22	Roof sill top height	mm	1304	1330	26
23	Floor sill bottom height	mm	203	206	3
24	Floor sill top height	mm	270	294	24

All measurements in millimeters

DATA SHEET NO. 14…(CONTINUED)
VEHICLE MEASUREMENTS

Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501
Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03





DATA SHEET NO. 15
CAMERA LOCATIONS

Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501
Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03

VEHICLE CAMERA MEASUREMENT TABLE

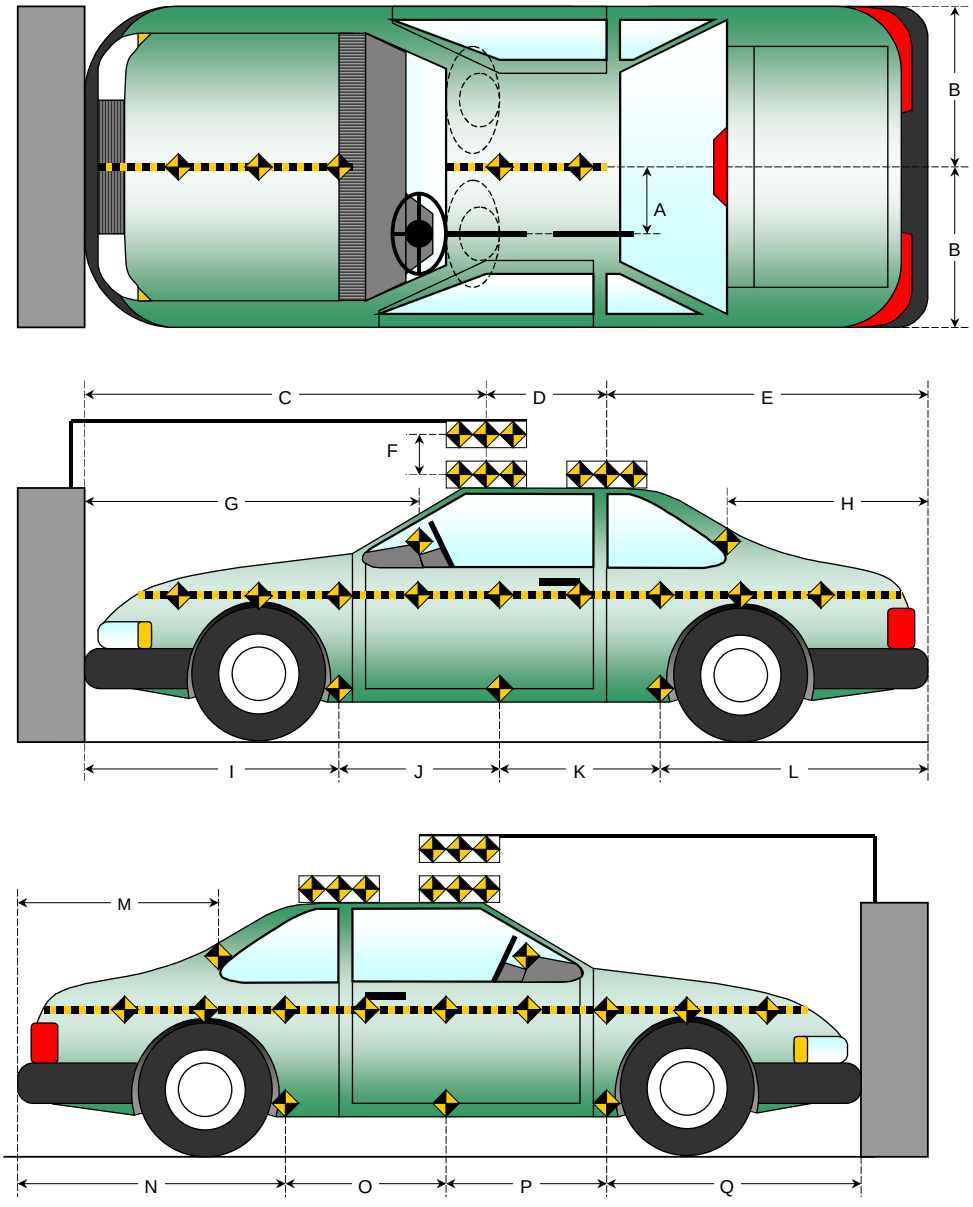
No.	Camera View	Location (mm)			Angle (deg.)	Film Plane to Head	Lens (mm)	Speed (fps)
		X	Y	Z				
1	Real Time	18288	-22860	2540	10	N/A	17-70	24
2	Driver Overall	1930	8357	1321	4	7910	13	1010
2B	Driver Overall	1626	8230	1092	4	7803	17	NTM
3	Driver Close-Up	1626	8230	1600	4	7815	35	910
3B	Driver Close-Up	1930	8230	1600	4	7794	35	1010
4	3/4 Driver	6477	10185	4648	13	11140	105	990
5	Steering Column	1524	8230	3404	20	8126	19	DNR
6	Steering Column	1524	8230	2997	16	8023	19	DNR
7	No Child dummies	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7B	No Child dummies	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8	Passenger Overall	2286	-8230	1524	6	7781	13	1010
9	Passenger Close-Up	1219	-6096	1524	4	5754	35	1000
10	3/4 passenger	8026	-8941	2997	9	10391	80	960
11	Passenger Door	1626	-8836	1702	4	8423	50	1000
12	No Child dummies	N/A	N/A	N/A	N/A	N/A	N/A	N/A
12B	No Child dummies	N/A	N/A	N/A	N/A	N/A	N/A	N/A
13	Overhead	610	0	6172	90	N/A	13	1120
14	Driver Front	-610	406	2743	40	N/A	13	DNR
15	Passenger Front	-610	406	2743	40	N/A	13	1080
16	Pit Engine	762	0	-1499	90	N/A	9	620
17	Pit Fuel Tank	3658	0	-1499	90	N/A	6	1020

X = Barrier Face Y = Monorail Centerline Z = Ground DNR = Did Not Run NTM = No Time Marks

DATA SHEET NO. 16
PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501
Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03

All Dimensions in (mm)	
Item	Value
A	380
B	677
C	2118
D	612
E	1670
F	155
G	1761
H	1111
I	1403
J	834
K	834
L	1324
M	1107
N	1310
O	833
P	841
Q	1412



DATA SHEET NO. 17
VEHICLE INTRUSION MEASUREMENTS

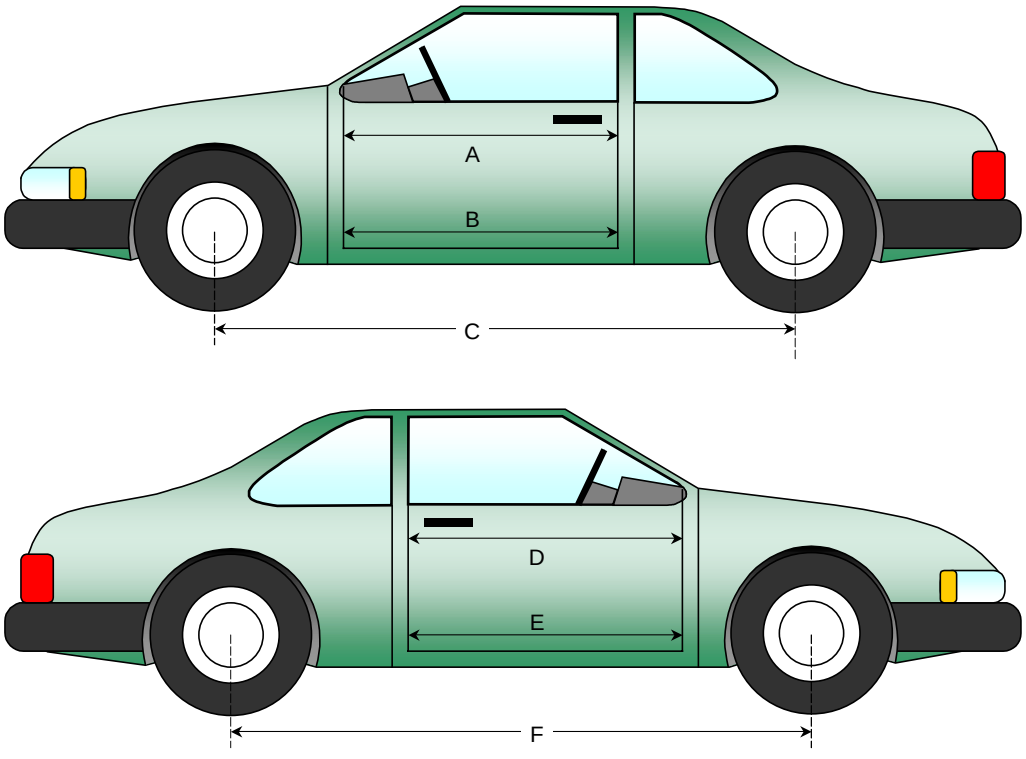
Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501
Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03

DOOR OPENING WIDTH TABLE

Item	Description	Units	Pre-Test	Post-Test	Diff.
A	Left Side Upper	mm	1207	1195	-12
B	Left Side Lower	mm	1172	1176	4
D	Right Side Upper	mm	1206	1196	-10
E	Right Side Lower	mm	1165	1162	-3

WHEELBASE MEASUREMENT TABLE

Item	Description	Units	Pre-Test	Post-Test	Diff.
C	Left Side Wheel Base	mm	2530	2441	-89
F	Right Side Wheel Base	mm	2530	2450	-80



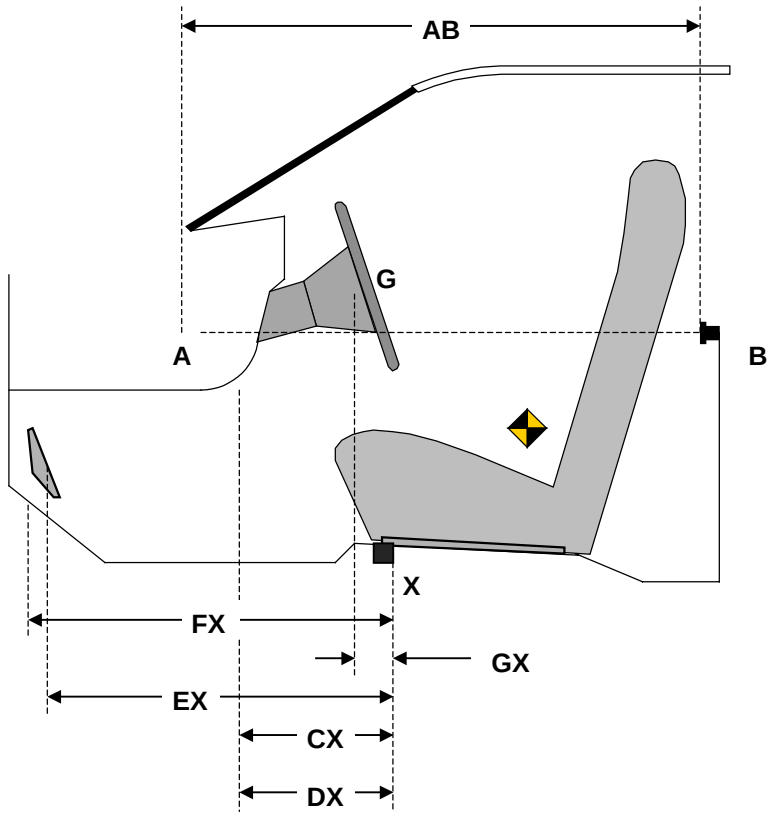
DATA SHEET NO. 17…(CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501
Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03

DRIVER COMPARTMENT INTRUSION TABLE

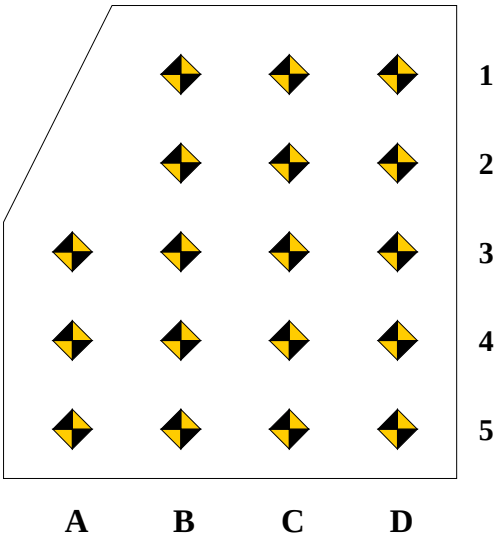
Item	Description	Units	Pre-Test	Post-Test	Diff.
AB	Door Opening (Inside window jam)	mm	1207	1195	-12
CX	Left Knee Bolster to X	mm	481	425	-56
DX	Right Knee Bolster to X	mm	630	620	-10
EX	Brake Pedal to X	mm	620	551	-69
FX	Foot Rest to X	mm	595	511	-84
GX	Center of Steering Wheel Hub to X	mm	32	32	0

X = Left Front Seat Outboard Anchor Bolt Head



DATA SHEET NO. 17…(CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501
Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03



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

Columns A through D are evenly spaced.

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

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

DRIVER FLOOR PAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1		735	735	752		589	608	629		-146	-127	-123
2		660	665	671		537	530	550		-123	-135	-121
3	578	570	575	575	554	541	517	523	-24	-29	-58	-52
4	478	480	485	487	456	445	427	429	-22	-35	-58	-58
5	370	374	371	371	364	345	334	325	-6	-29	-37	-46

DRIVER FLOOR PAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1		51	57	53		137	136	122		86	79	69
2		-12	1	2		67	73	65		79	72	63
3	-77	-77	-67	-67	-25	-25	-32	-28	52	52	35	39
4	-77	-77	-73	-83	-55	-55	-50	-55	22	22	23	28
5	-86	-75	-76	-67	-100	-88	-84	-58	-14	-13	-8	9

DATA SHEET NO. 17…(CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

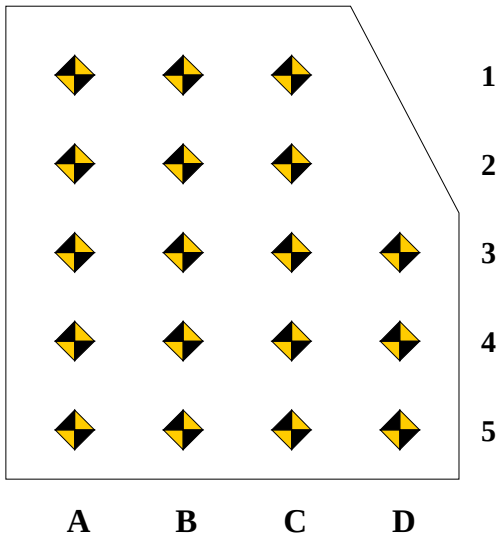
Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501
Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03

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

Columns A through D are evenly spaced.

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

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



PASSENGER FLOOR PAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	706	708	706		577	622	677		-129	-86	-29	
2	619	625	628		541	547	575		-78	-78	-53	
3	537	533	528	535	485	504	519	529	-52	-29	-9	-6
4	437	432	426	432	385	400	427	426	-52	-32	1	-6
5	335	332	326	333	290	321	324	325	-45	-11	-2	-8

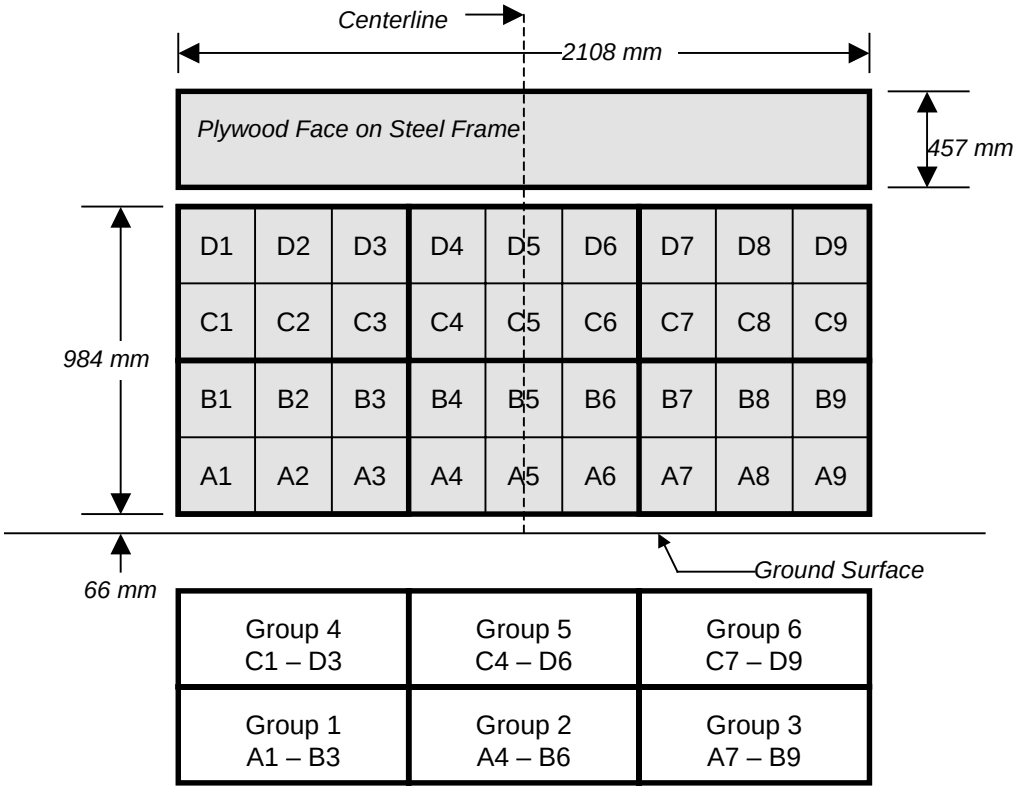
PASSENGER FLOOR PAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	15	23	34		140	97	62		125	74	28	
2	-32	-32	-25		30	36	21		62	68	46	
3	-75	-84	-81	-78	-44	-45	-52	-53	31	39	29	25
4	-90	-80	-75	-72	-70	-88	-94	-74	20	-8	-19	-2
5	-84	-78	-72	-79	-66	-110	-102	-86	18	-32	-30	-7

DATA SHEET NO. 18
FIXED BARRIER LOAD CELL LOCATIONS

Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501
Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03

36 Load Cell Rigid Barrier (NHTSA Standard)
Load Cell Locations on Fixed Barrier



6 Groups of 6 Load Cells Each

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

1.) Data from 36 individual load cells

2.) Sum data from 6 groupings shown above (6 cells/group)

3.) Total or sum of all 36 individual load cells

4.) Sum of all 36 individual load cells vs. vehicle dynamic crush

DATA SHEET NO. 19
ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501
Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03

VEHICLE INFORMATION

VIN: KMHHM65D14U107686 Wheel base (mm): 2530
Vehicle Size Category: 2-Door Coupe Test Weight (kg): 1555

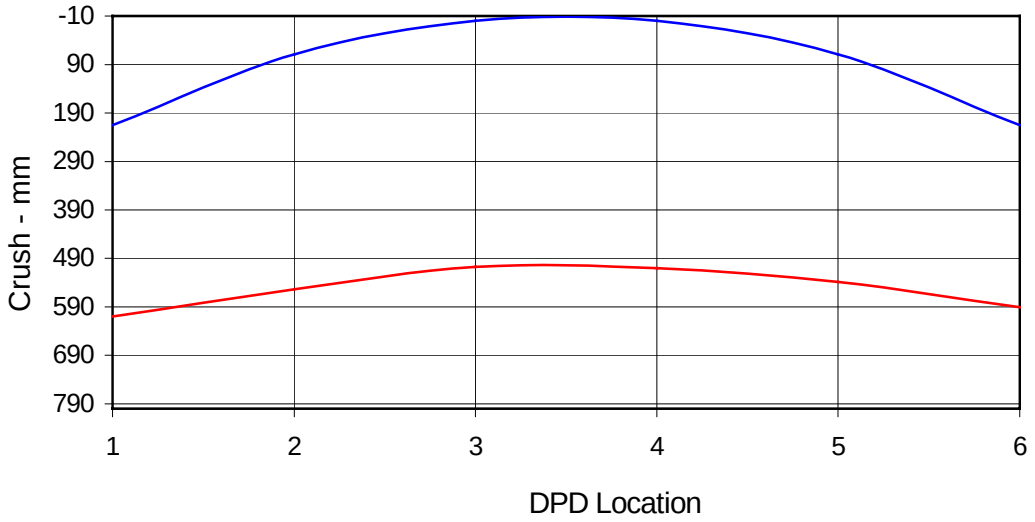
ACCELEROMETER DATA

Accelerometer Location: Left rear floor pan
Cal. Procedure/Interval: 6 months / drop test
Integration Algorithm: NHTSA Standard Linearity: Good
Impact Velocity (km/h): 55.59
Velocity Change (km/h): 63.65 Time of Separation (msec): 73.4

CRUSH PROFILE

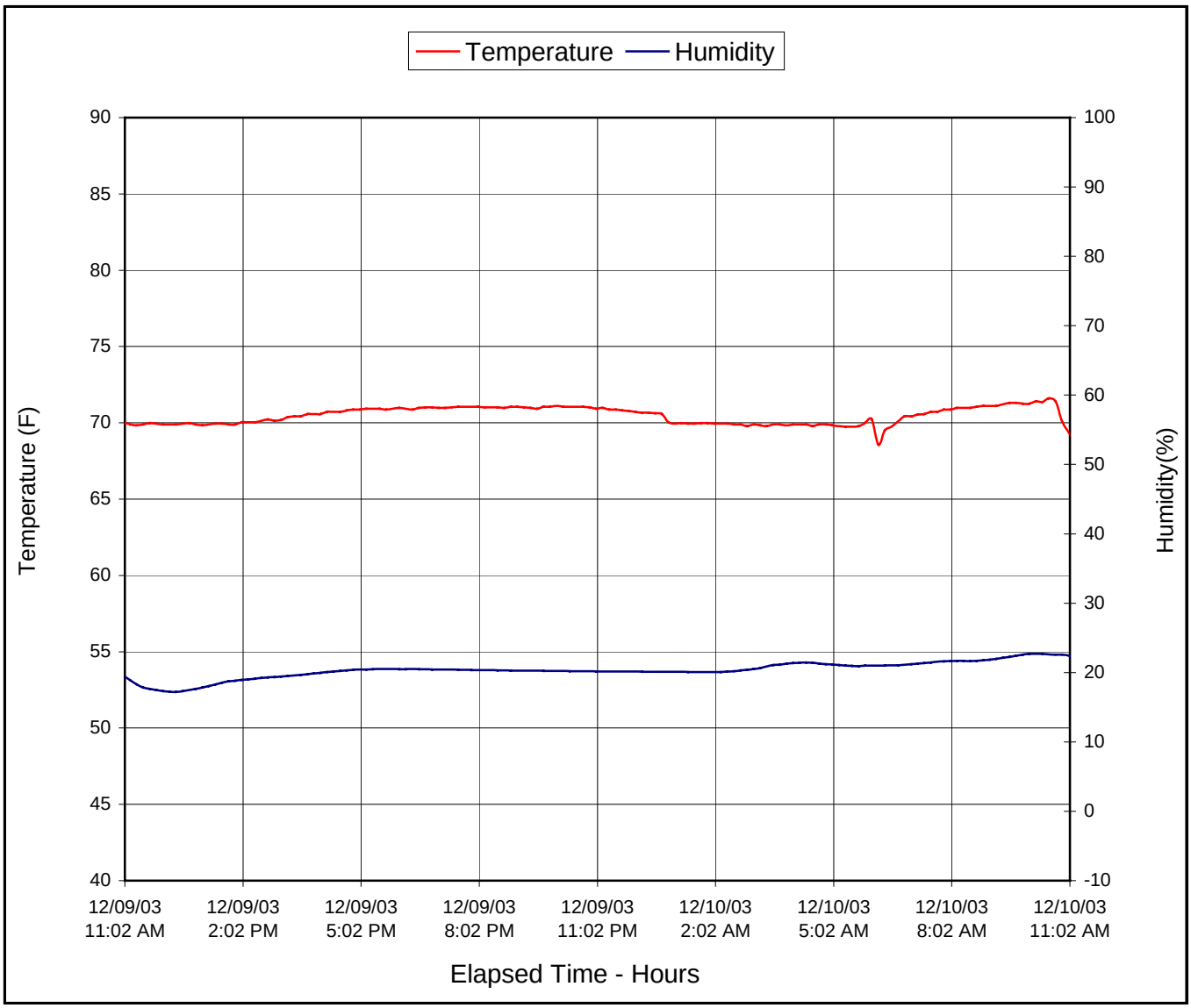
Collision Deformation Classification: 12FDEW6 Midpoint of Damage: Vehicle Centerline
Damage Region Length (mm): 1355 Impact Mode: Full Frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	215	610	-395
C2	Crush zone 2 on left side	mm	69	554	-485
C3	Crush zone 3 on left side	mm	0	507	-507
C4	Crush zone 4 on right side	mm	0	510	-510
C5	Crush zone 5 on right side	mm	69	539	-470
C6	Crush zone 6 at right side	mm	215	591	-376



DATA SHEET NO. 20
DUMMY/VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501
Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03



APPENDIX A

PHOTOGRAPHS

LIST OF PHOTOGRAPHS

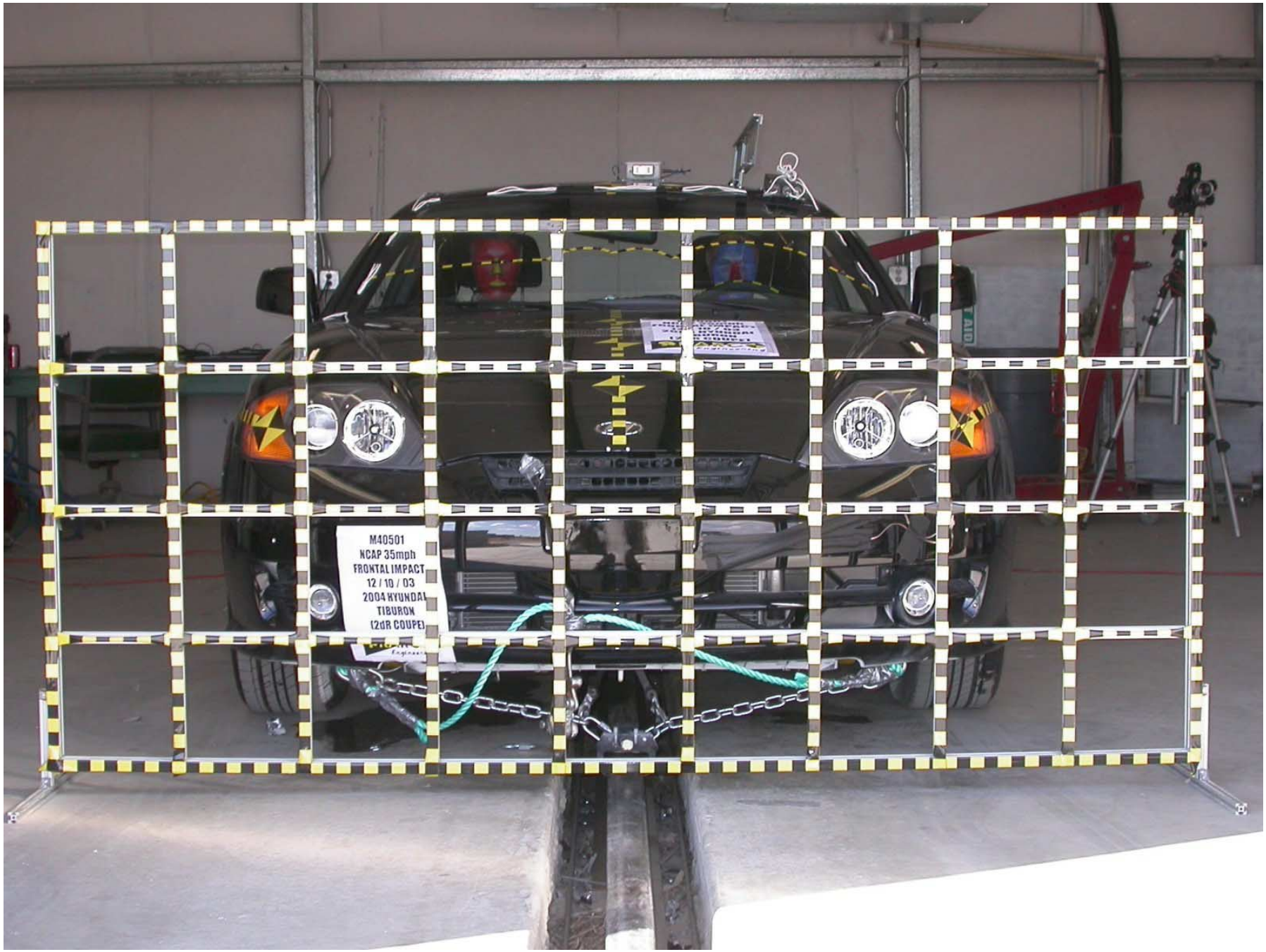


Figure A-1: Load Cell Location

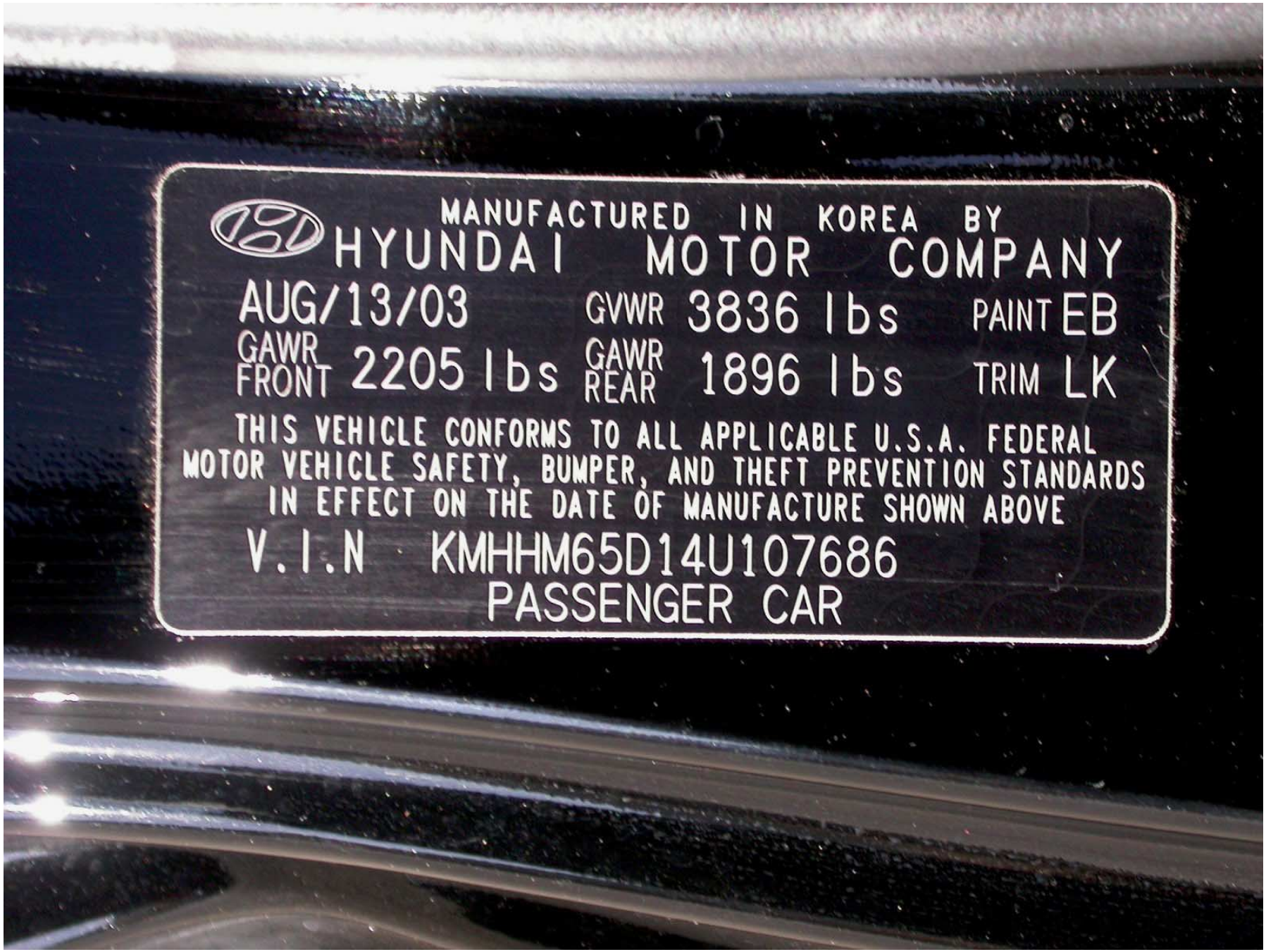


Figure A-2: Vehicle Certification Label

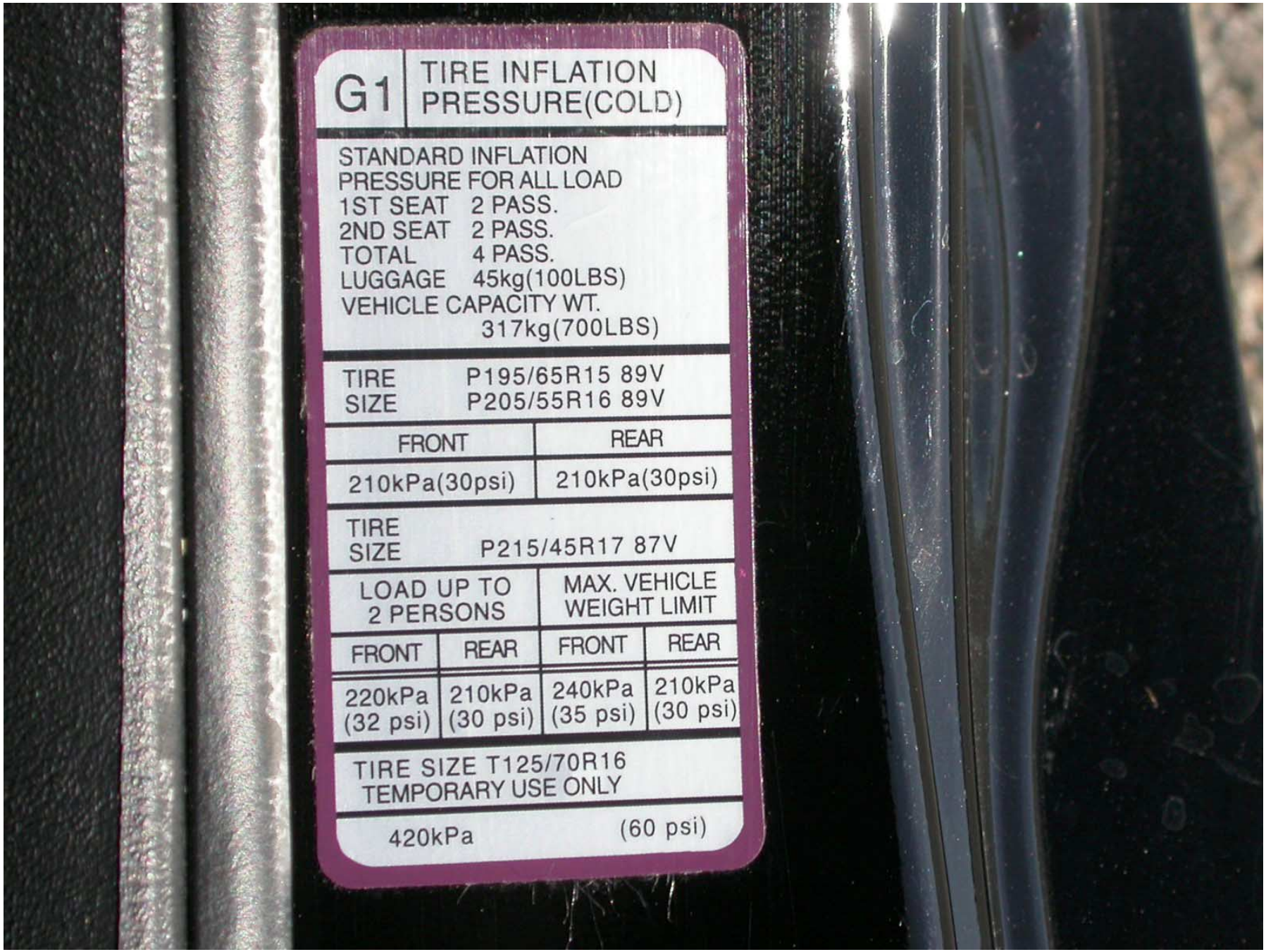


Figure A-3: Vehicle Tire Label

Figure A-4: Right Front ¾ View, As Received

Figure A-5: Left Rear ¾ View, as Received

Figure A-6: Pre-Test Front View

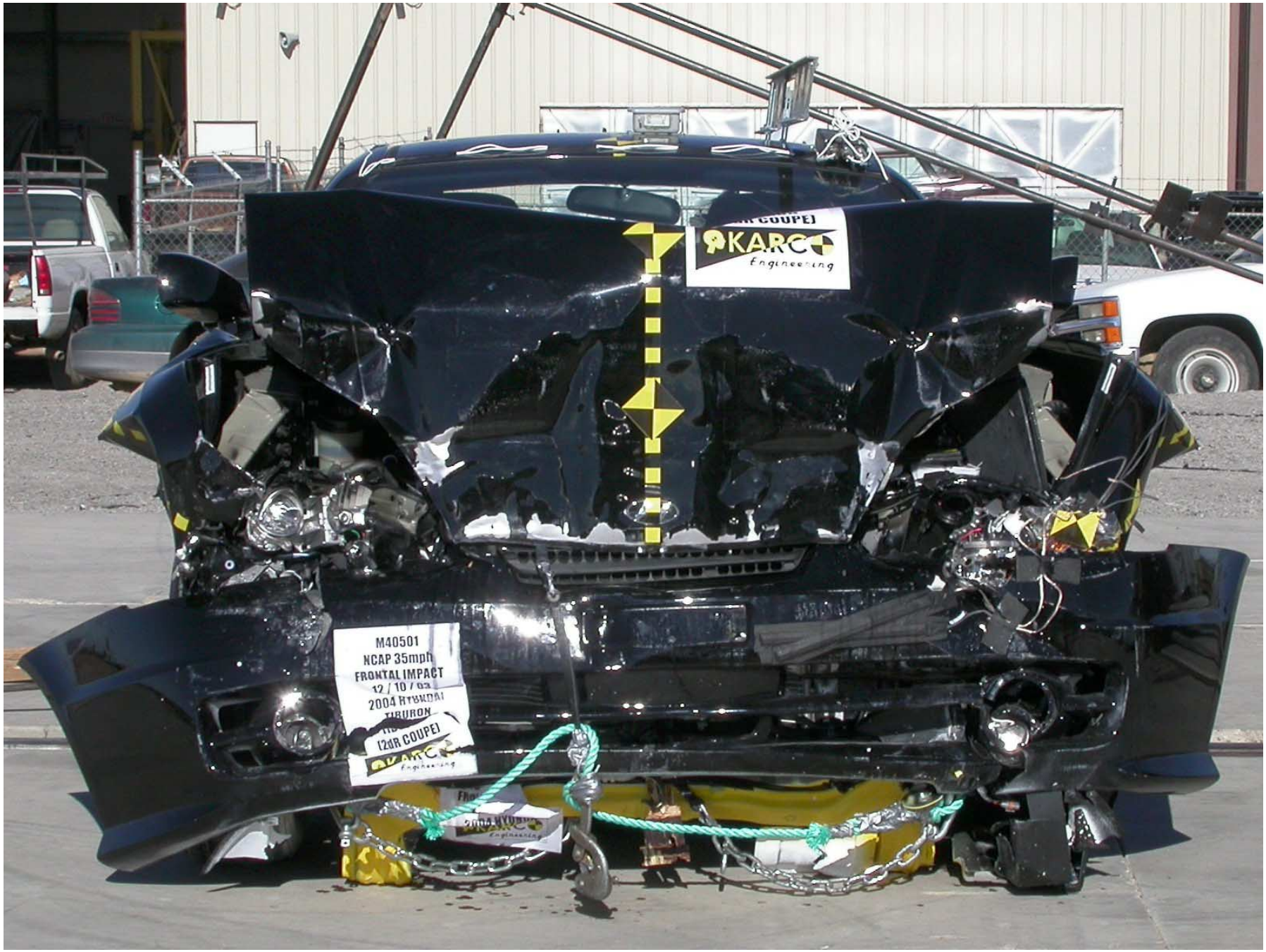


Figure A-7: Post-Test Front View (Vehicle Moved)

Figure A-8: Pre-Test Left Side View

Figure A-9: Post-Test Left Side View

Figure A-10: Pre-Test Right Side View

Figure A-11: Post-Test Right Side View

Figure A-12: Pre-Test Right Front ¾ View

Figure A-13: Post-Test Right Front ¾ View

Figure A-14: Pre-Test Left Rear ¾ View

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

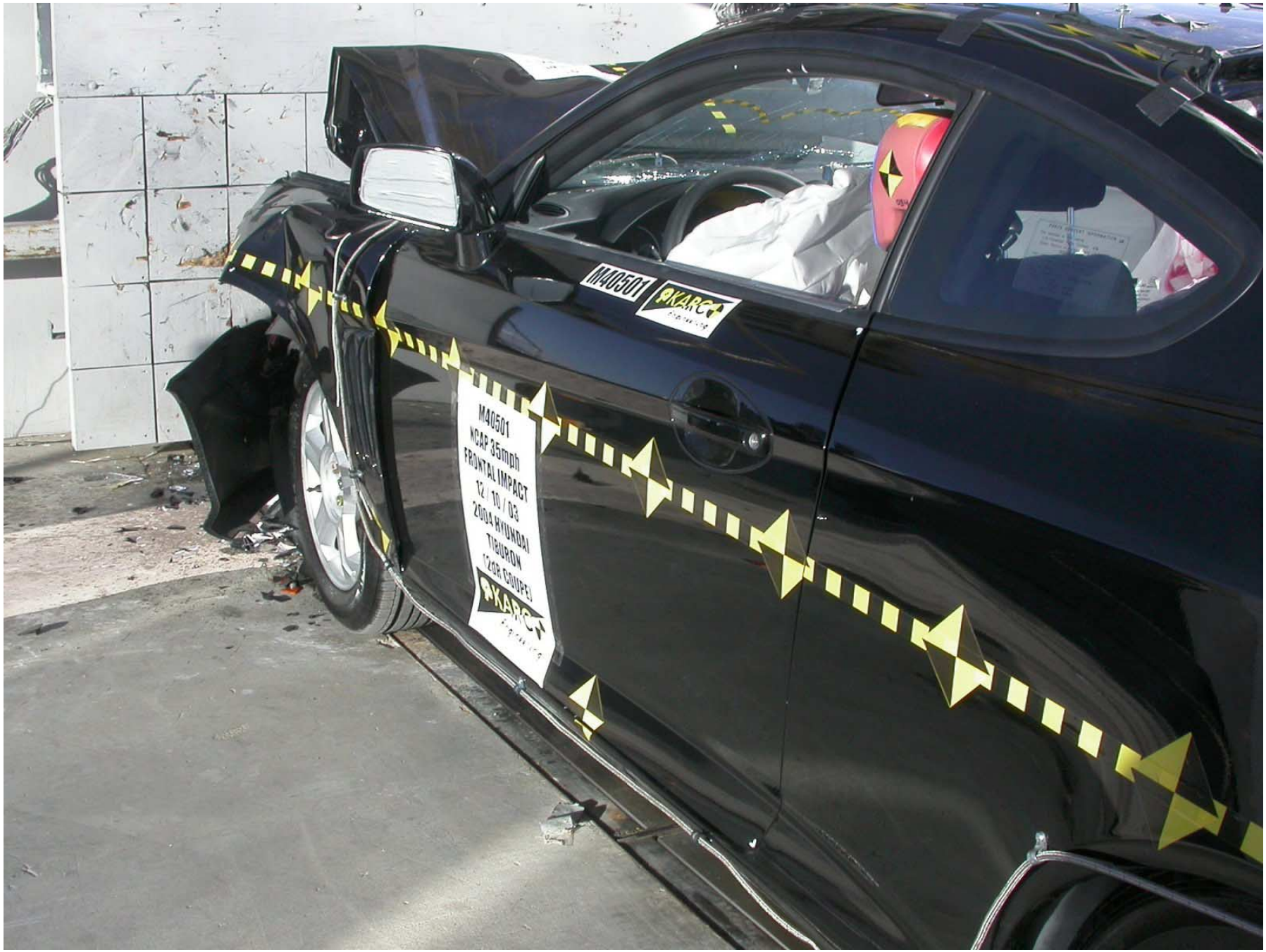


Figure A-16: Left Rear ¾ View of Doors After Impact

Figure A-17: Right Rear ¾ View of Doors After Impact

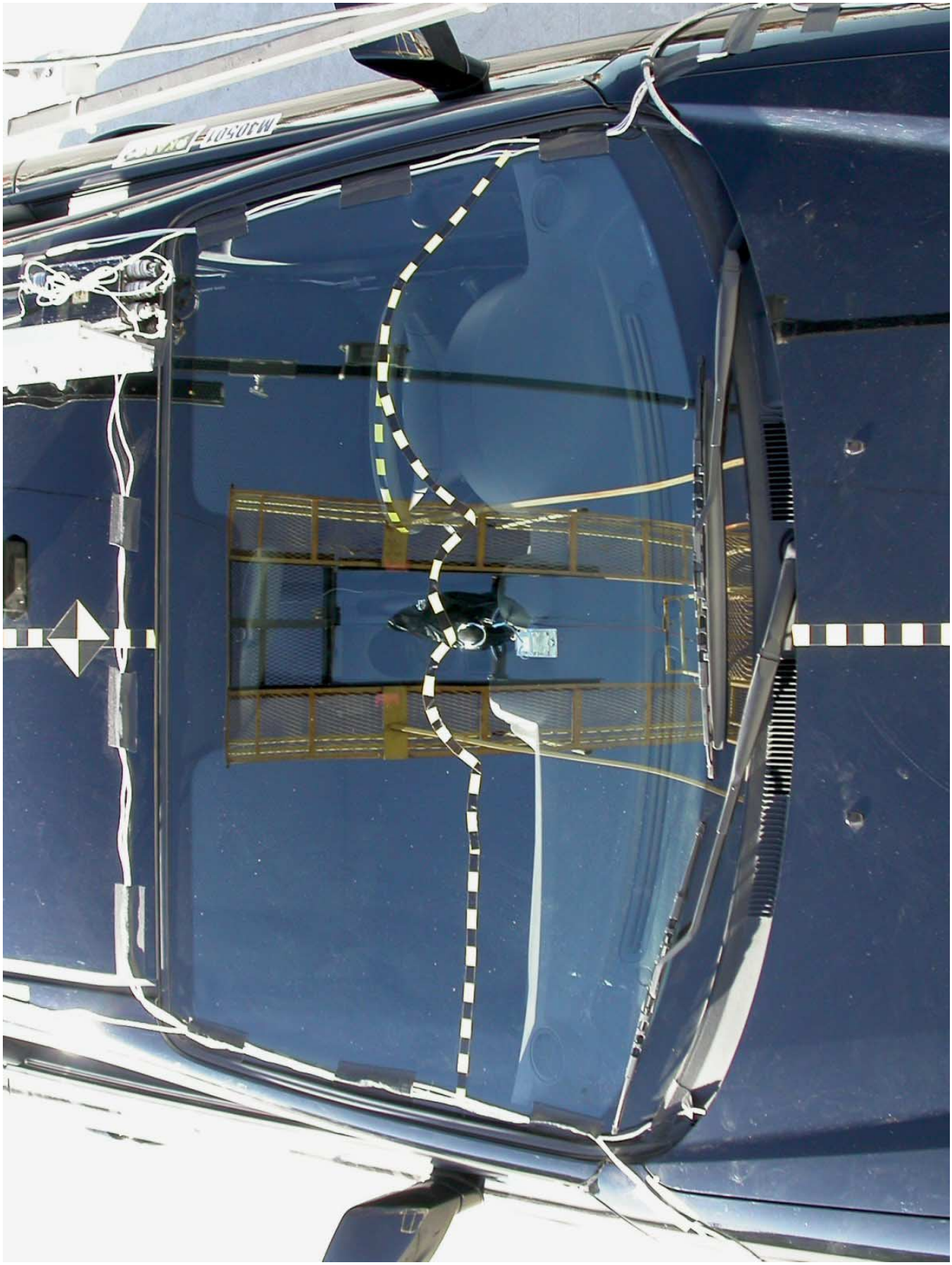


Figure A-18: Pre-Test Windshield View

Figure A-19: Post-Test Windshield View

Figure A-20: Pre-Test Engine Compartment

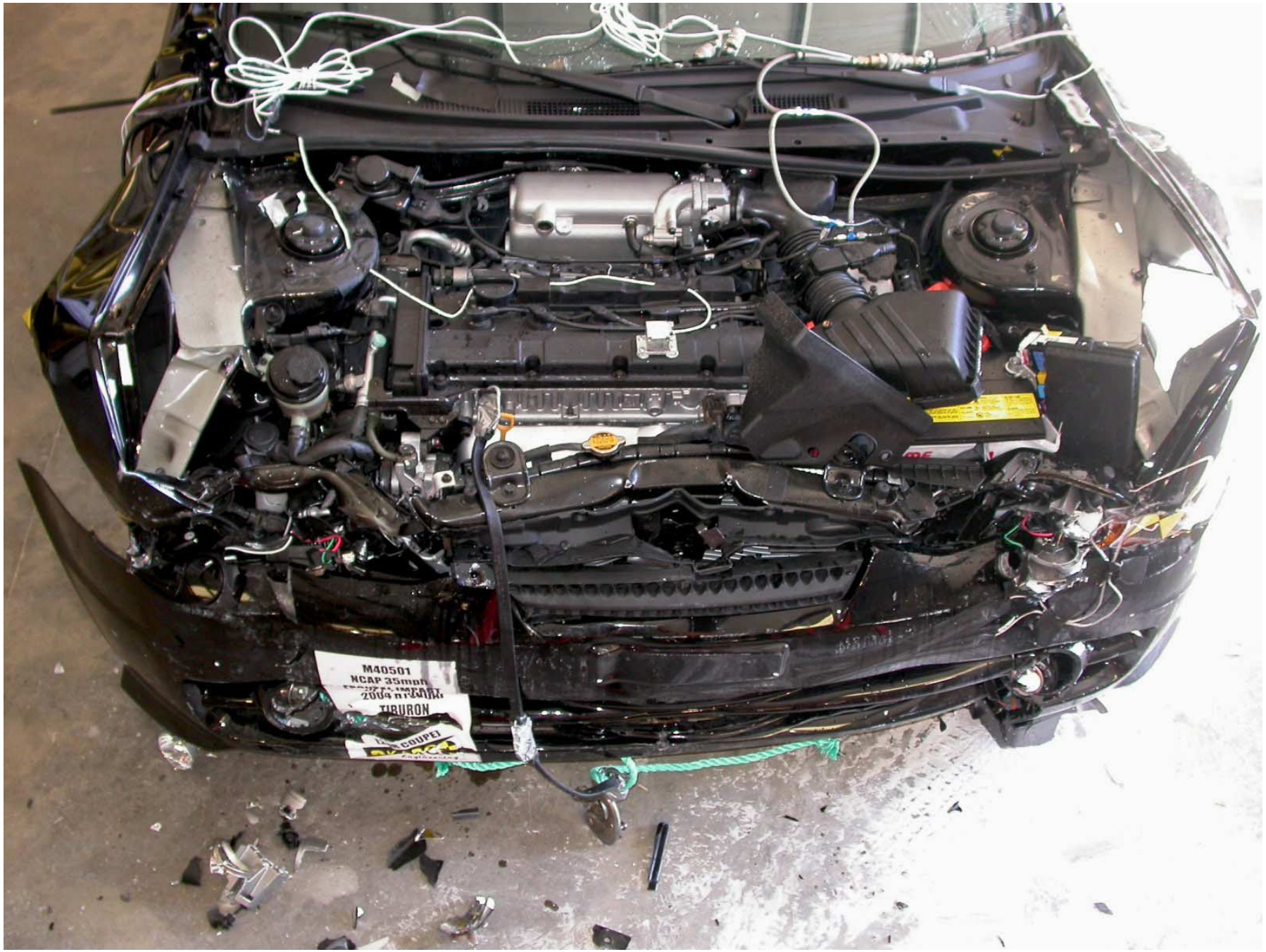


Figure A-21: Post-Test Engine Compartment (Vehicle Moved)

Figure A-22: Pre-Test Fuel Cap

Figure A-23: Post-Test Fuel Cap

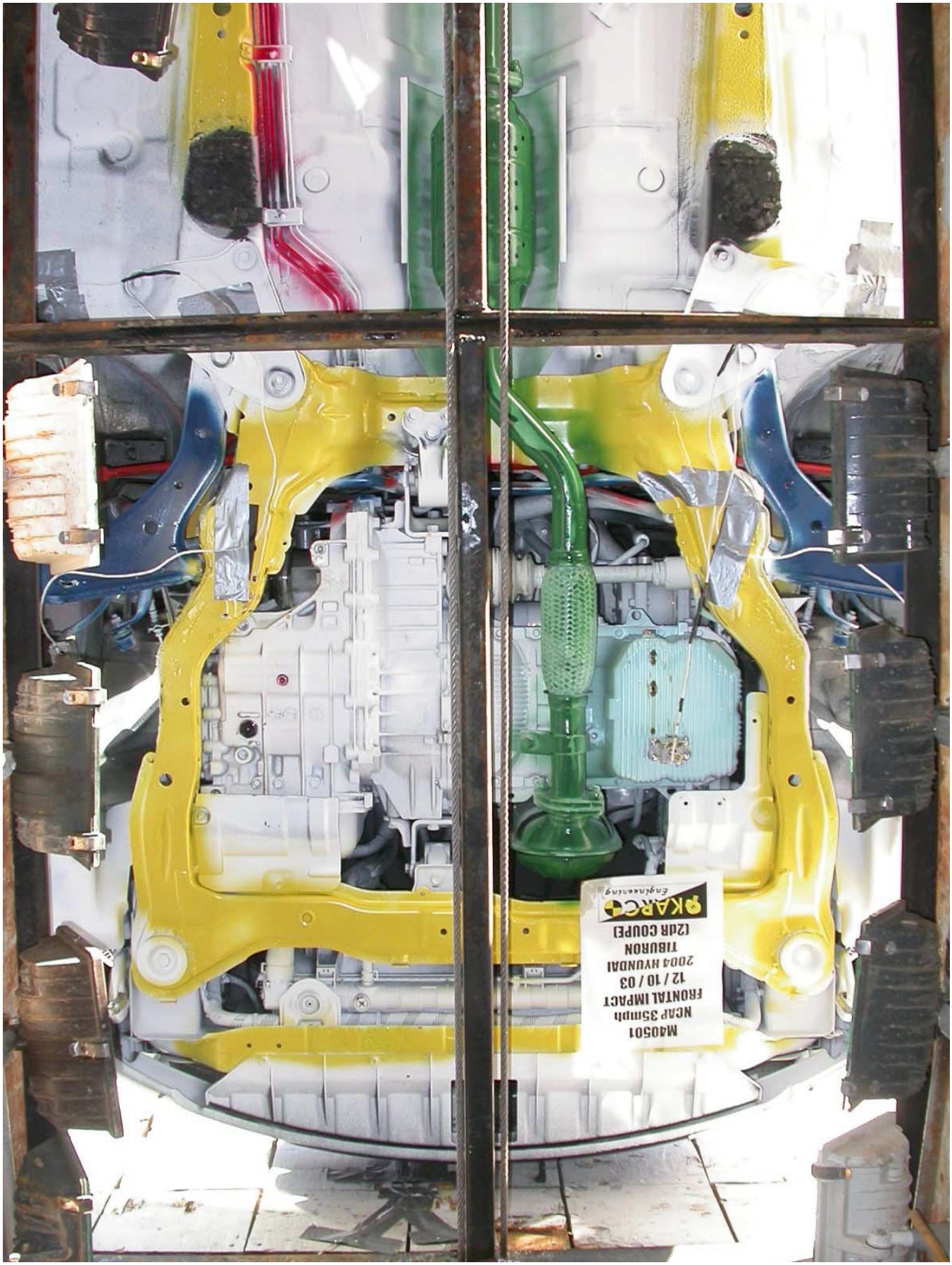


Figure A-24: Pre-Test Front Underbody View

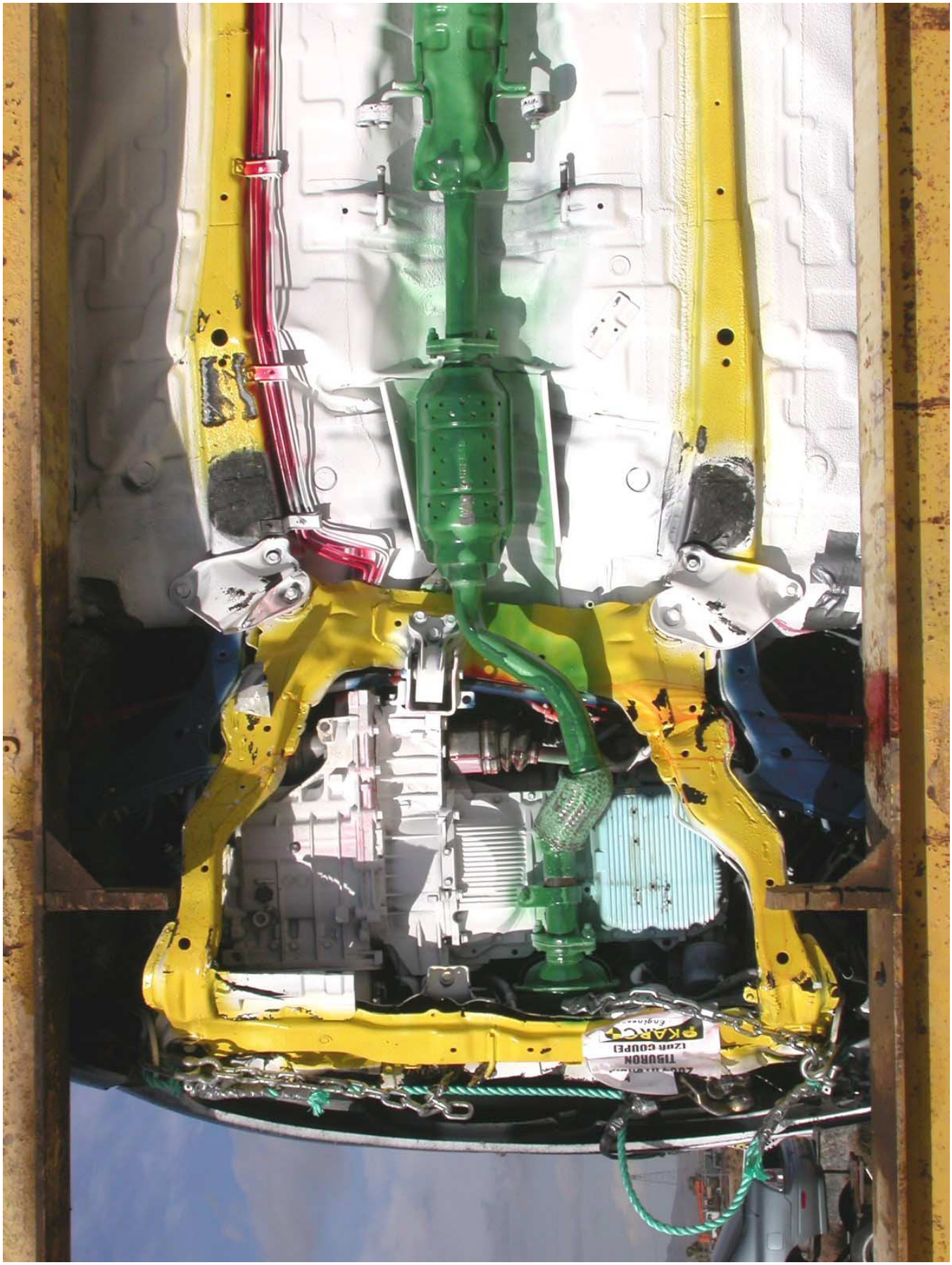


Figure A-25: Post-Test Front Underbody View

Figure A-26: Pre-Test Mid Underbody View

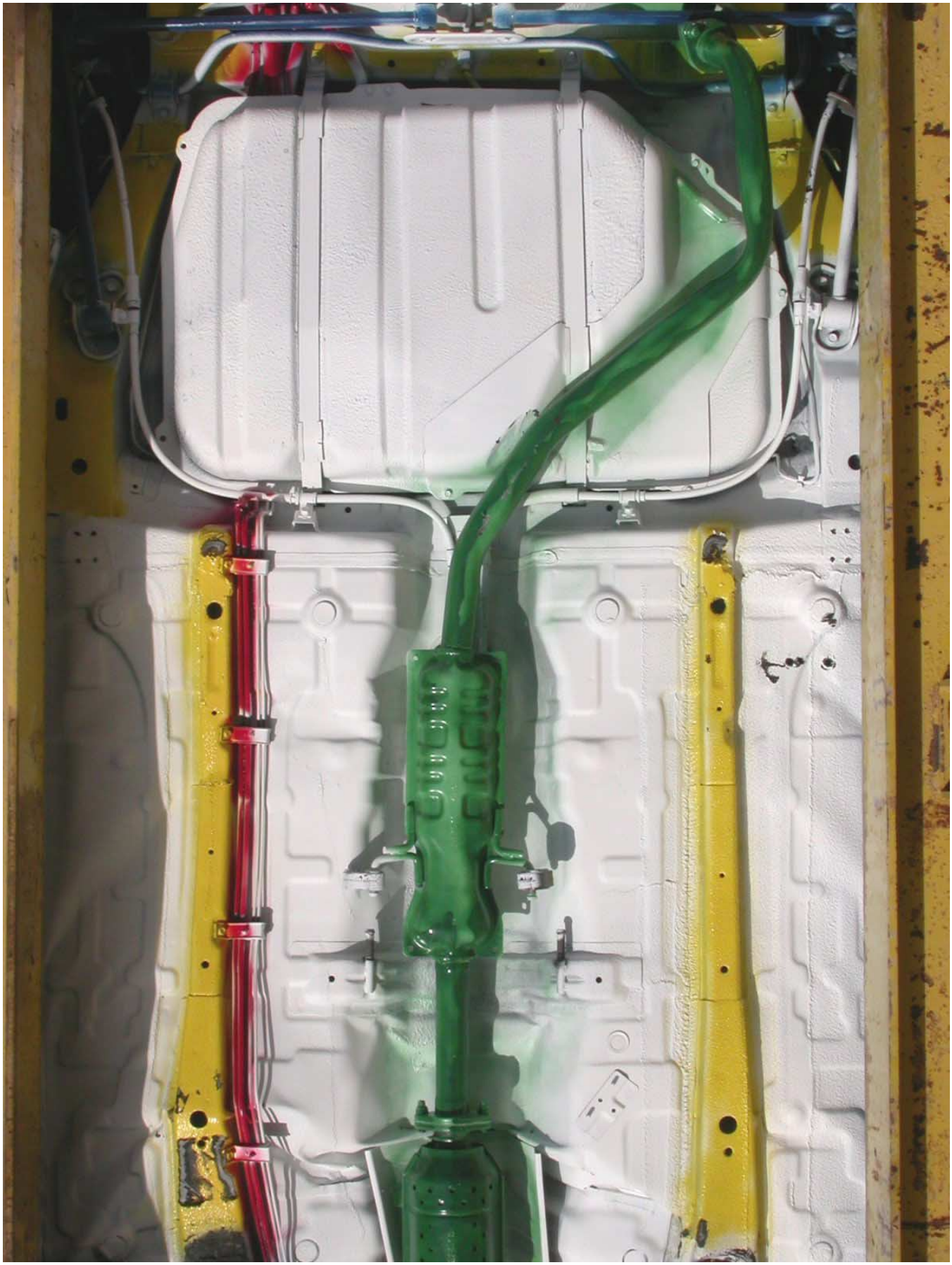


Figure A-27: Post-Test Mid Underbody View

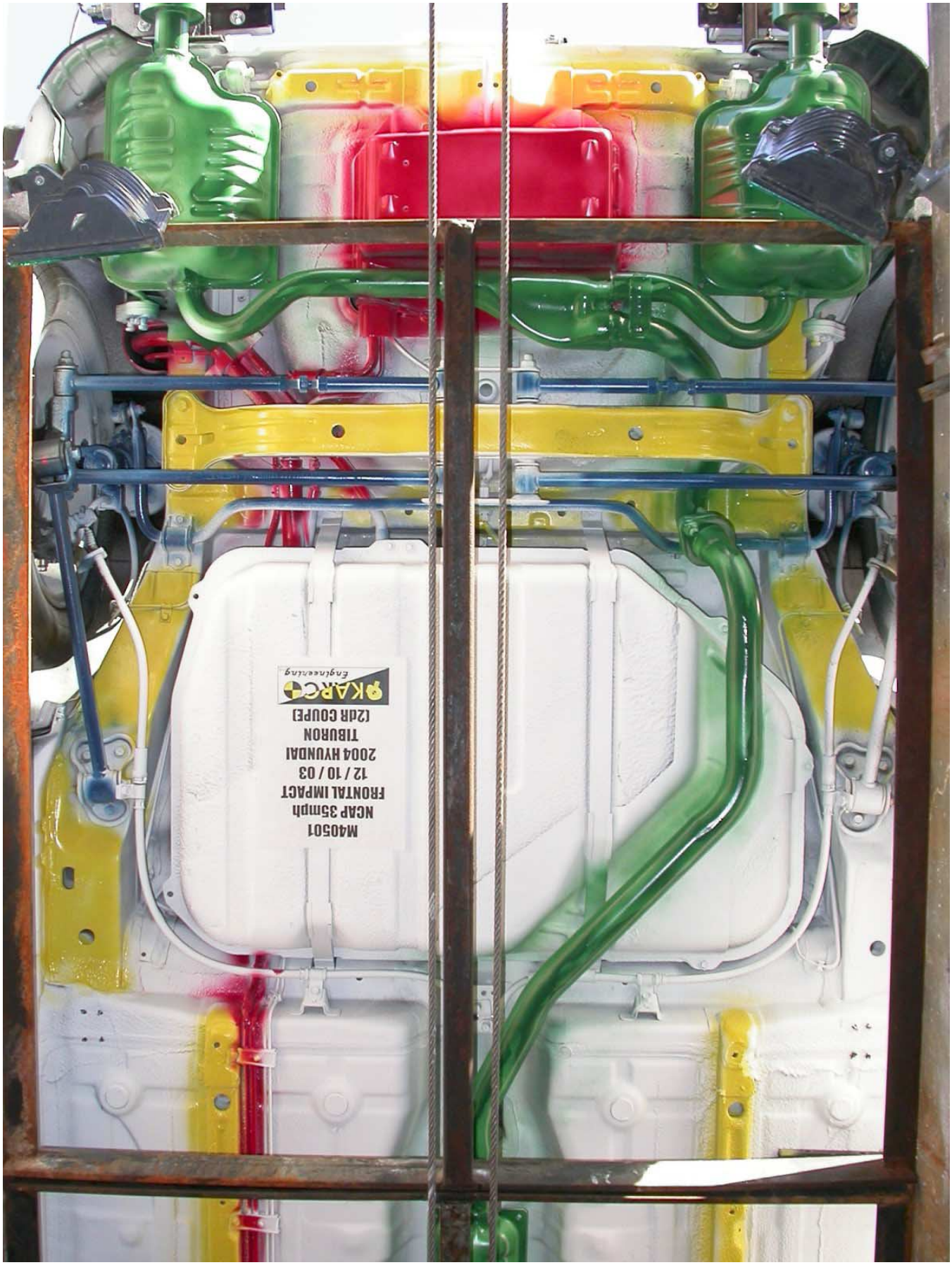


Figure A-28: Pre-Test Rear Underbody View

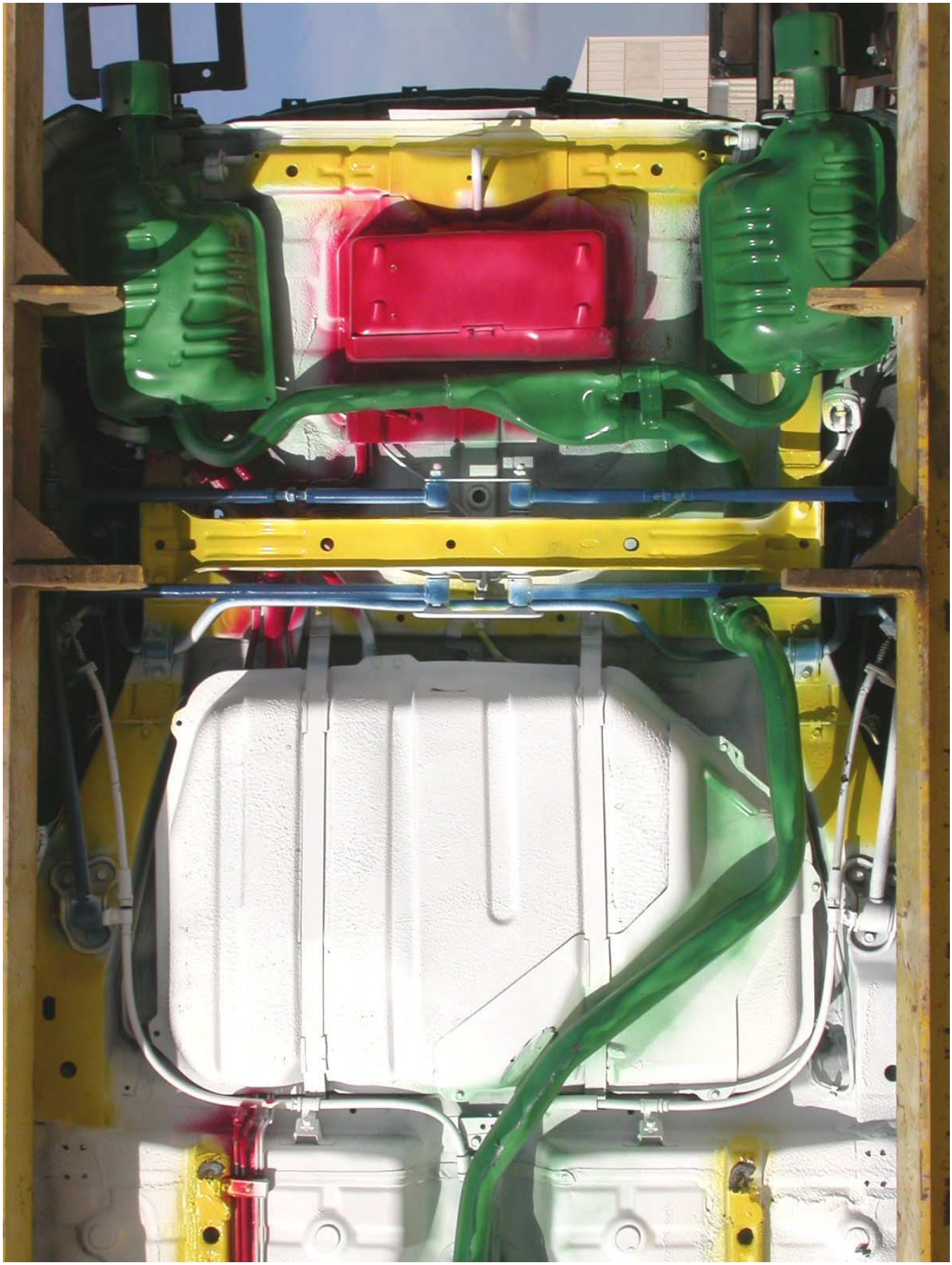


Figure A-29: Post-Test Rear Underbody View

Figure A-30: Pre-Test Driver Dummy Front View (Head Position)

Figure A-31: Post-Test Driver Dummy Front View (Head Position)

Figure A-32: Pre-Test Driver Dummy Front Through Window

Figure A-33: Post-Test Driver Dummy Front Through Window

Figure A-34: Pre-Test Driver Dummy Door Open

Figure A-35: Post-Test Driver Dummy Door Open

Figure A-36: Pre-Test Driver Dummy Feet

Figure A-37: Post-Test Driver Dummy Feet

Figure A-38: Pre-Test Driver Side Knee Bolster

Figure A-39: Post-Test Driver Side Knee Bolster

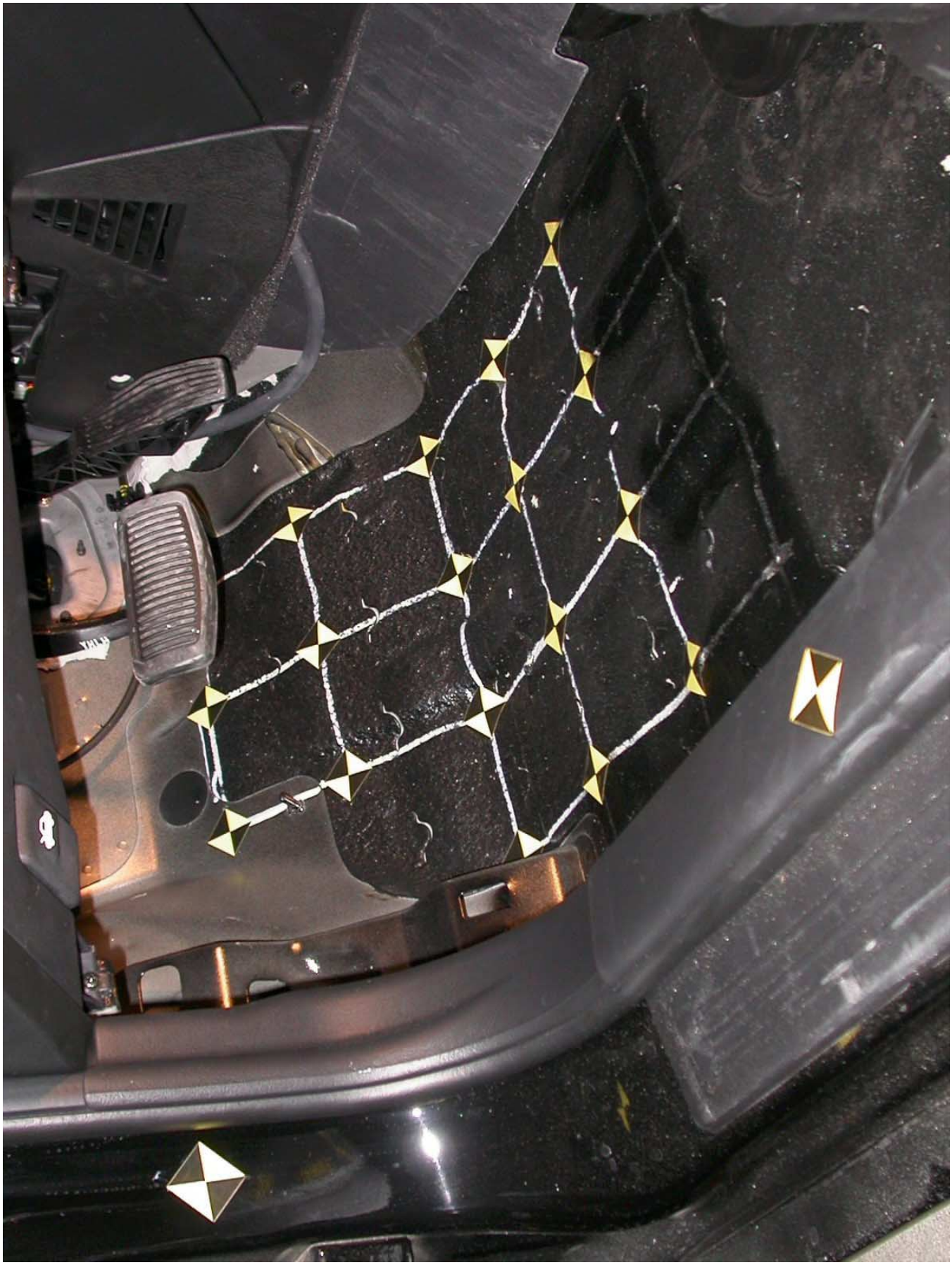


Figure A-40: Pre-Test Driver Side Floor Pan

Figure A-41: Post-Test Driver Side Floor Pan

Figure A-42: Post-Test Driver Dummy Head

Figure A-43: Post-Test Driver Dummy Contact to Air Bag

Figure A-44: Pre-Test Passenger Dummy Front View (Head Position)

Figure A-45: Post-Test Passenger Dummy Front View (Head Position)

Figure A-46: Pre-Test Passenger Dummy Front Through Window

Figure A-47: Post-Test Passenger Dummy Front Through Window

Figure A-48: Pre-Test Passenger Dummy Door Open

Figure A-49: Post-Test Passenger Dummy Door Open

Figure A-50: Pre-Test Passenger Dummy Feet

Figure A-51: Post-Test Passenger Dummy Feet

Figure A-52: Pre-Test Passenger Side Knee Bolster

Figure A-53: Post-Test Passenger Side Knee Bolster

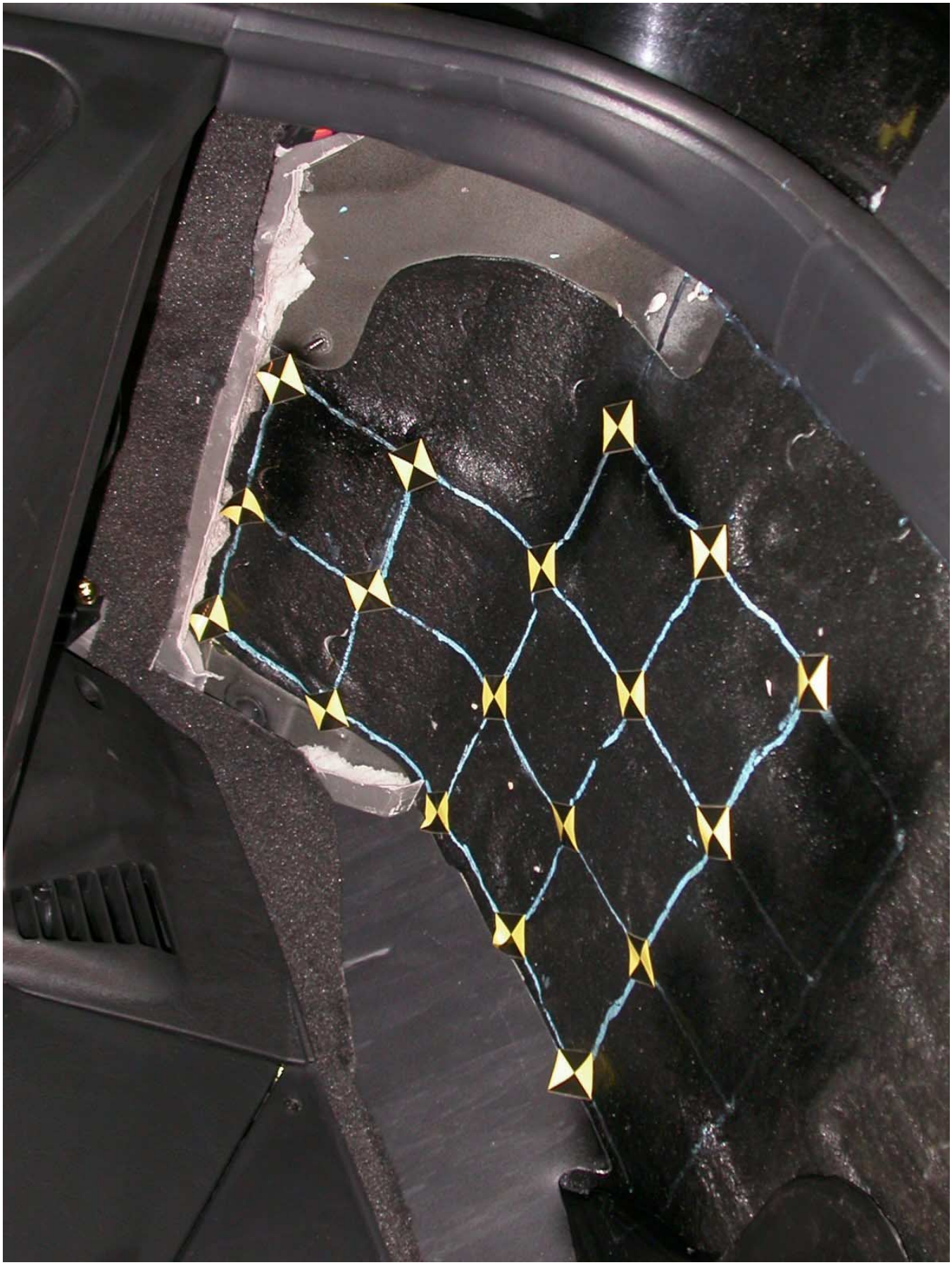


Figure A-54: Pre-Test Passenger Side Floor Pan

Figure A-55: Post-Test Passenger Side Floor Pan

Figure A-56: Post-Test Passenger Dummy Head

Figure A-57: Post-Test Passenger Dummy Contact to Air Bag

Figure A-58: Vehicle on Rollover Device

Figure A-59: Vehicle on Rollover Device

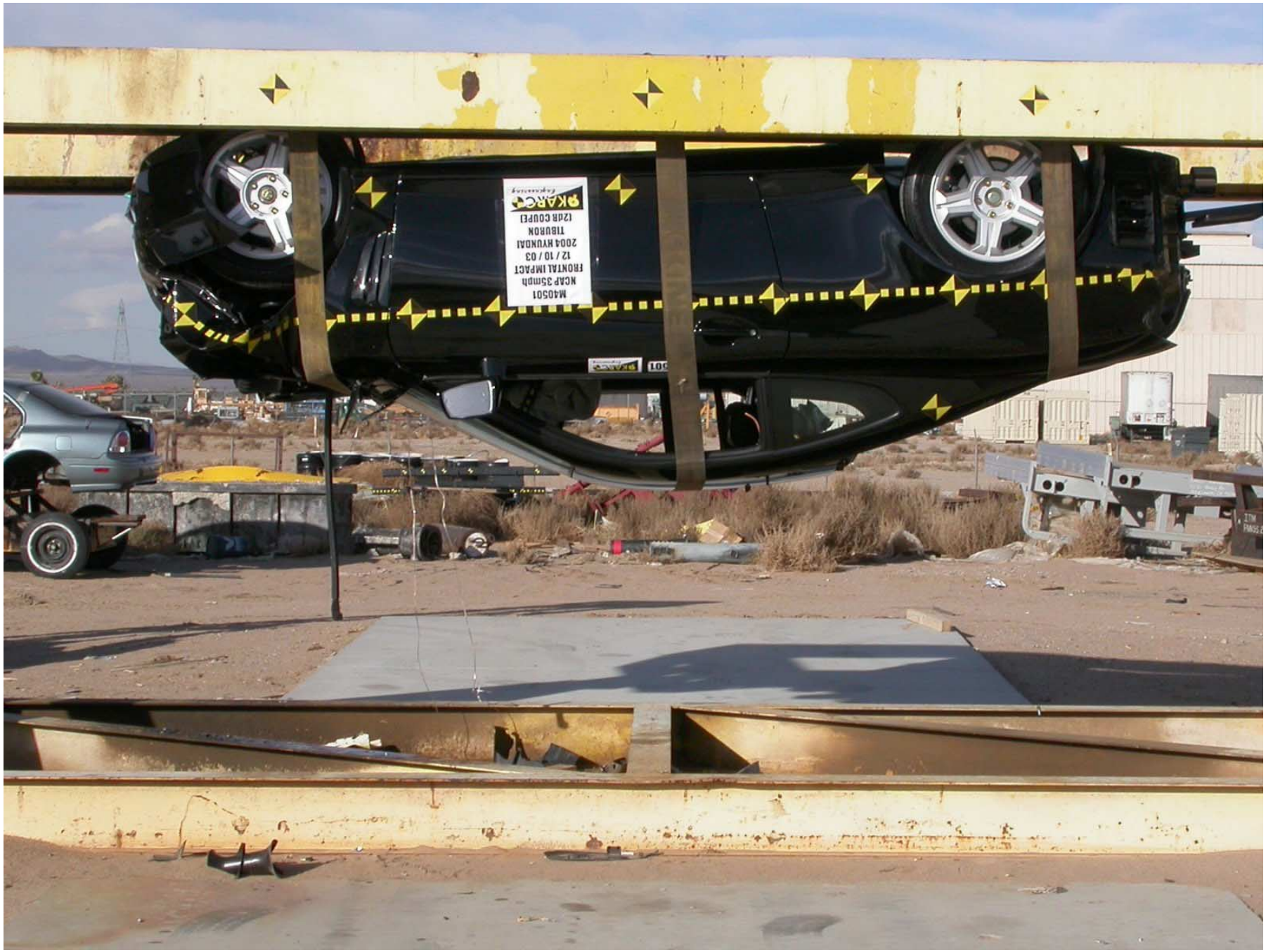


Figure A-60: Vehicle on Rollover Device

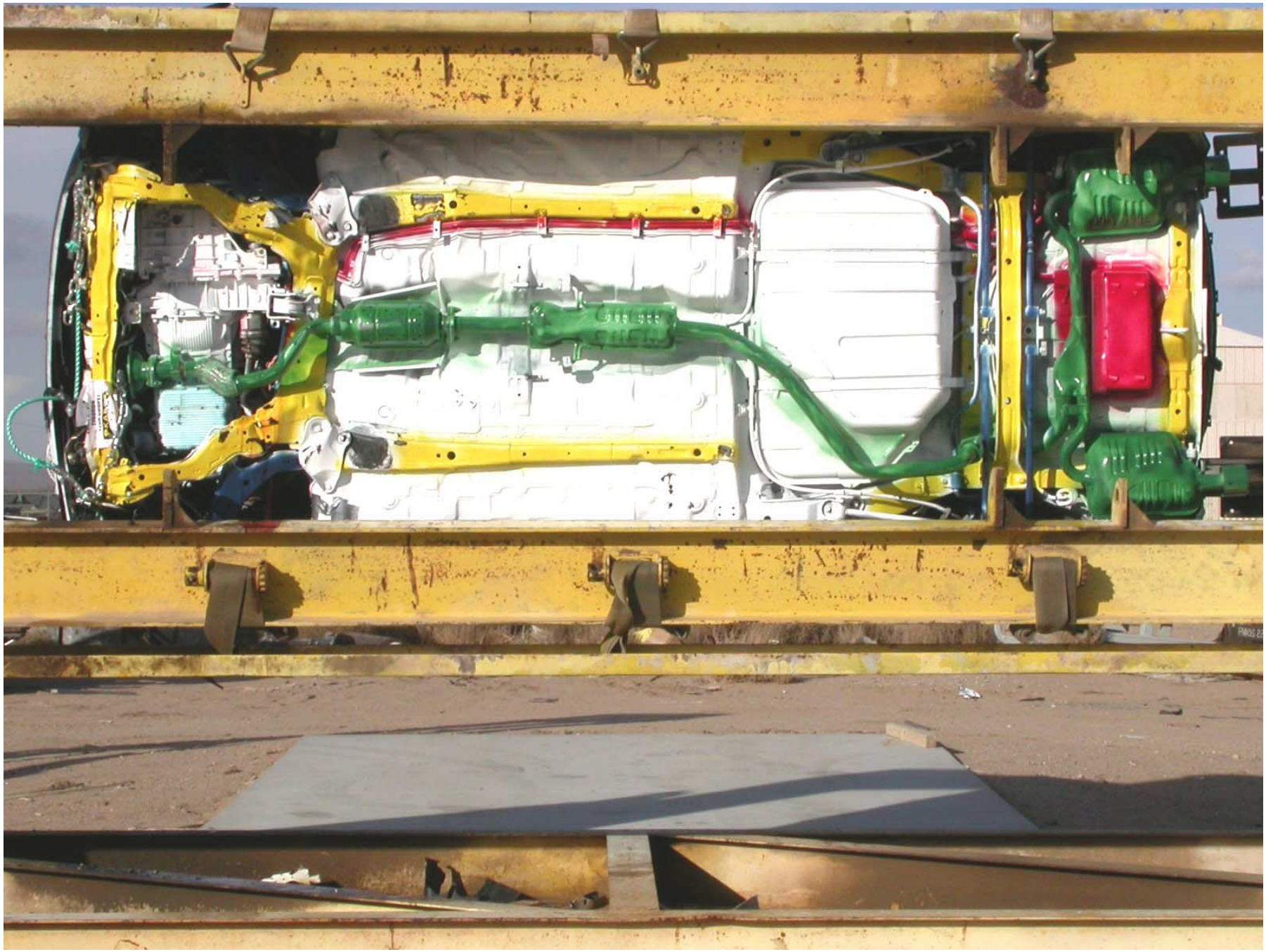


Figure A-61: Vehicle on Rollover Device

Figure A-62: Vehicle During Impact

APPENDIX B

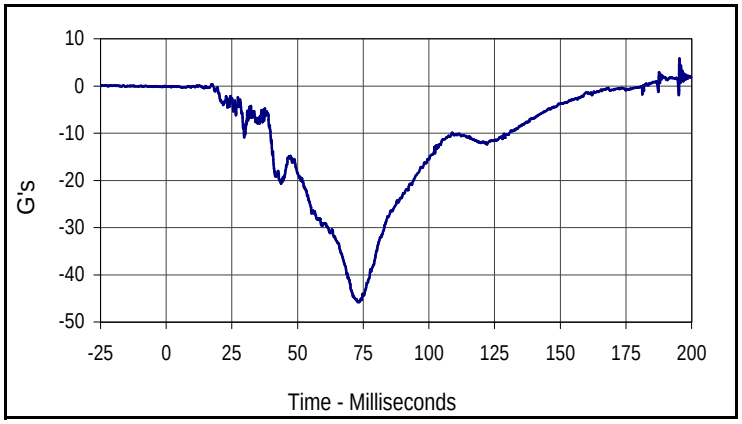
DATA PLOTS

LIST OF DATA PLOTS

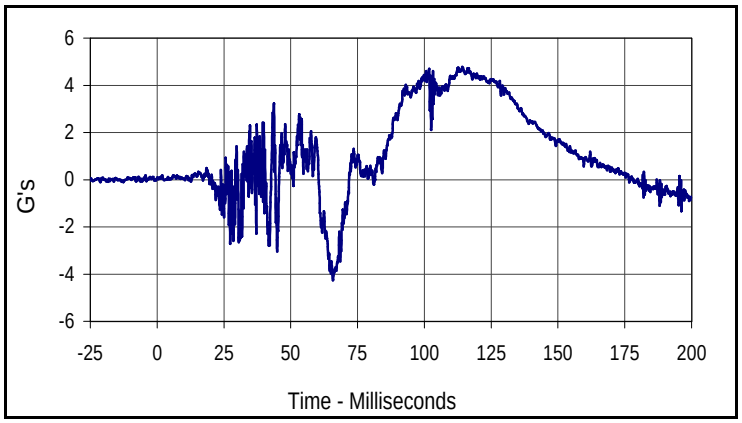
LIST OF DATA PLOTS…(Continued)

LIST OF DATA PLOTS…(Continued)

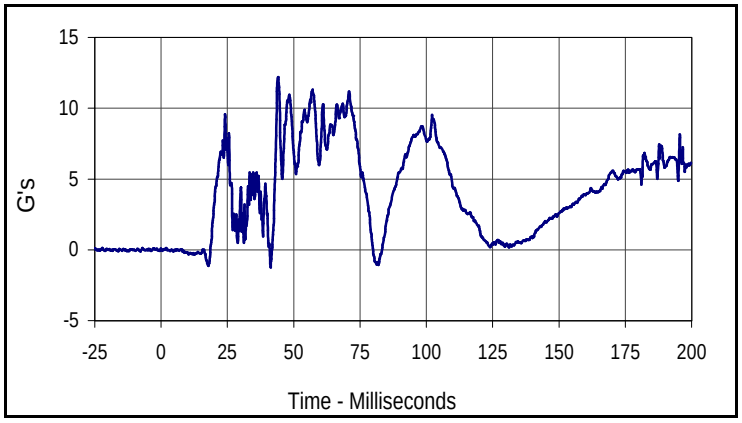
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



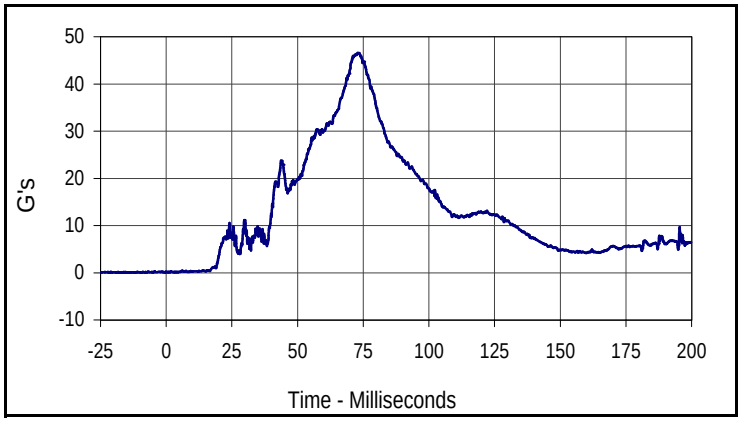
Curve Description			
Driver Head Primary X			
CURNO	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
5.7	195.4	-45.8	73.4



Curve Description			
Driver Head Primary Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
4.8	114.2	-4.3	65.8

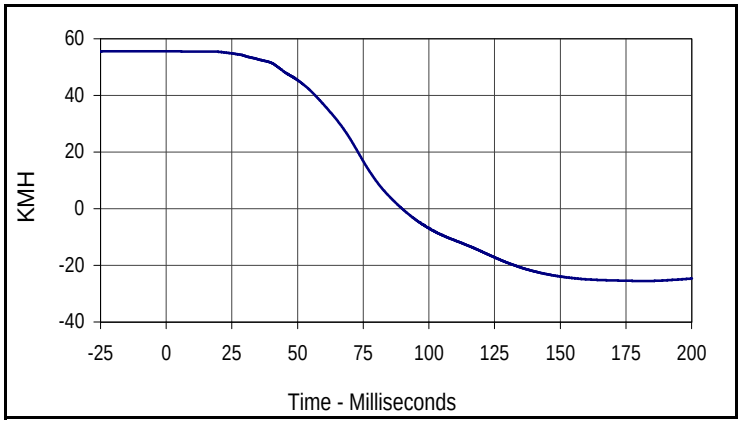


Curve Description			
Driver Head Primary Z			
CURNO	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
12.2	44.1	-1.2	41.3

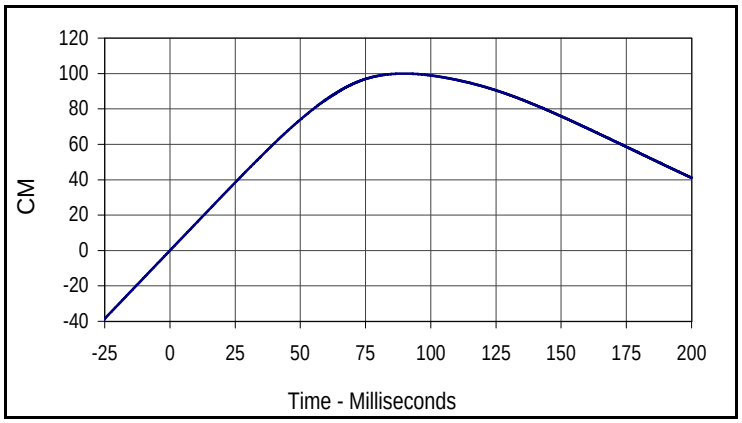


Curve Description			
Driver Head Resultant Primary			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
46.6	73.0	0.1	2.4

Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501

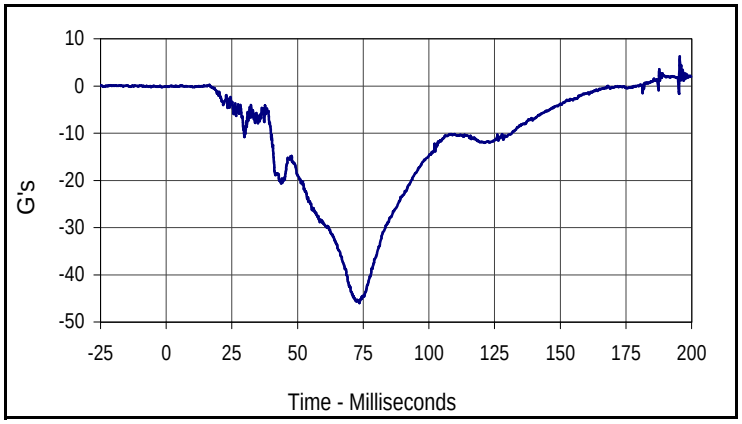


Curve Description			
Driver Head Primary X Velocity			
CURNO	Type	SAE Class	Units
001	IN1	180	KMH
Max	Time	Min	Time
55.6	0.0	-25.5	182.3

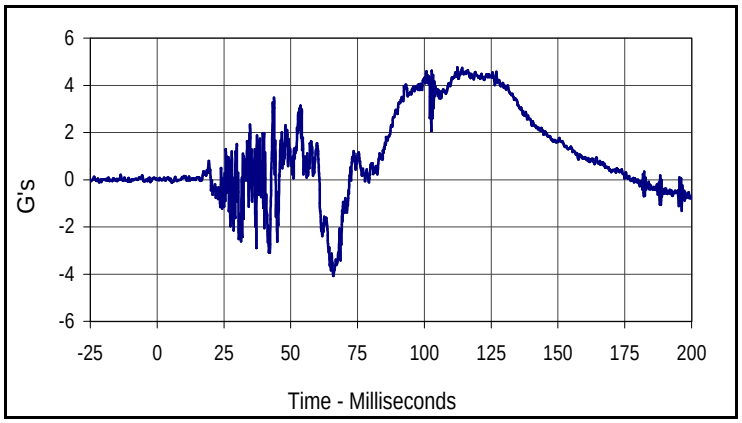


Curve Description			
Driver Head Primary X Displacement			
CURNO	Type	SAE Class	Units
001	IN2	180	CM
Max	Time	Min	Time
100.0	89.8	0.0	0.0

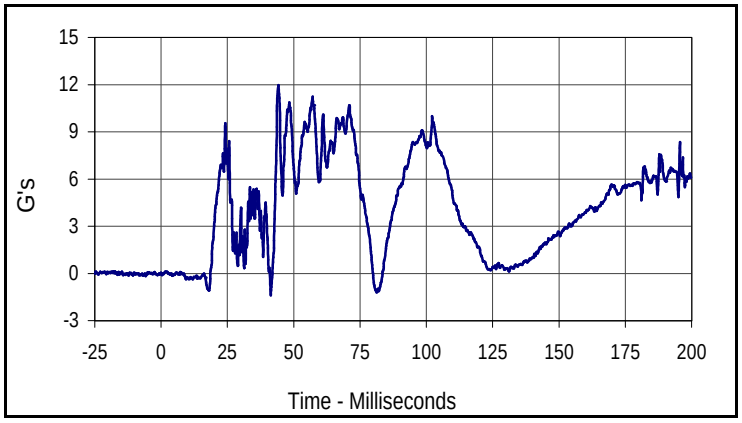
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



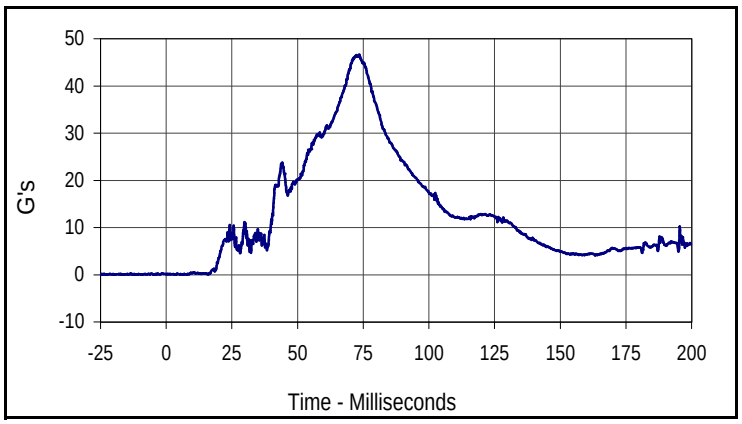
Curve Description			
Driver Head Redundant X			
CURNO	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
6.3	195.5	-46.0	73.5



Curve Description			
Driver Head Redundant Y			
CURNO	Type	SAE Class	Units
005	FIL	1000	G's
Max	Time	Min	Time
4.8	112.4	-4.1	65.9

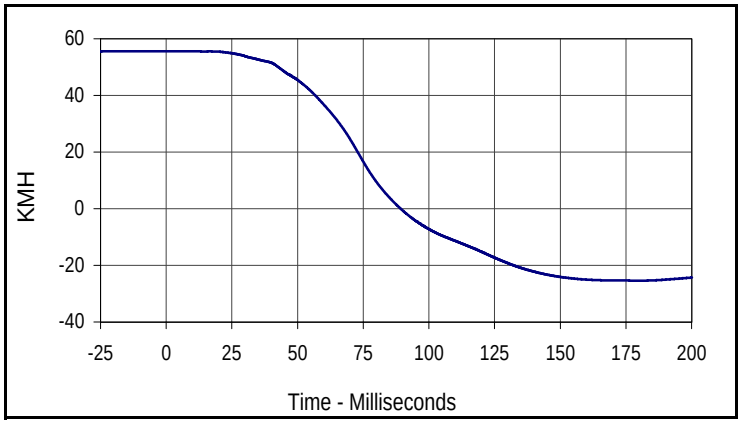


Curve Description			
Driver Head Redundant Z			
CURNO	Type	SAE Class	Units
006	FIL	1000	G's
Max	Time	Min	Time
12.0	44.2	-1.4	41.3

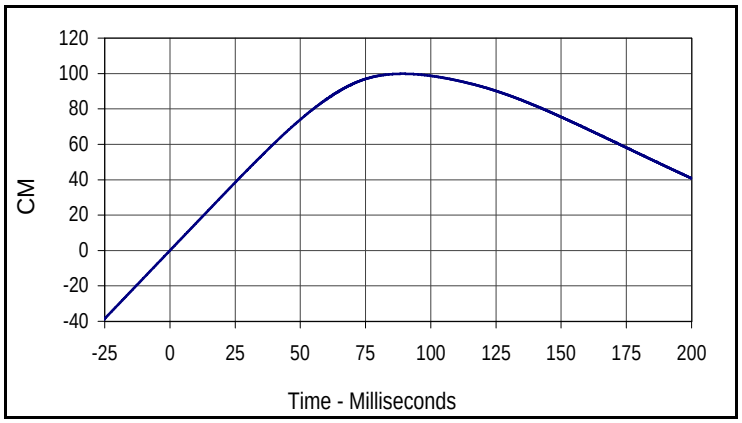


Curve Description			
Driver Head Resultant Redundant			
CURNO	Type	SAE Class	Units
004	RES	1000	G's
Max	Time	Min	Time
46.6	73.5	0.0	7.8

Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501

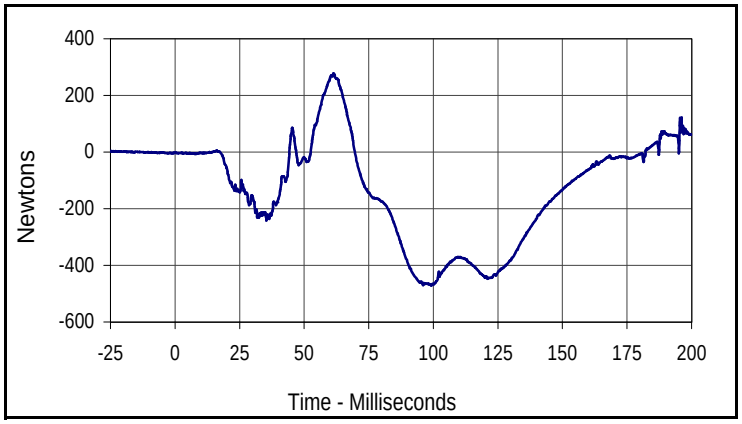


Curve Description			
Driver Head Redundant X Velocity			
CURNO	Type	SAE Class	Units
004	IN1	180	KMH
Max	Time	Min	Time
55.6	0.0	-25.4	181.9

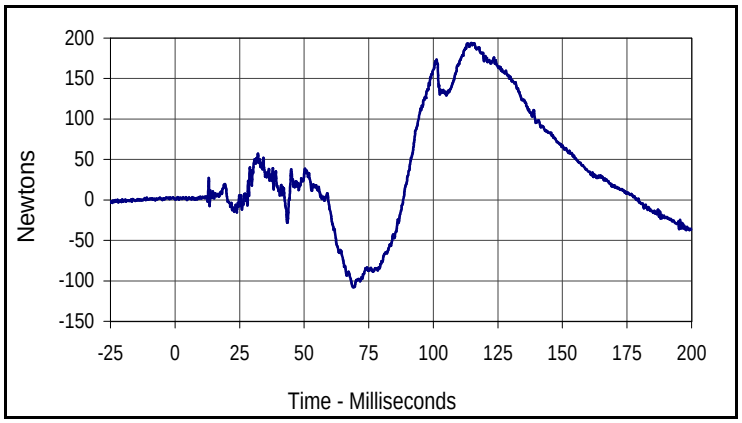


Curve Description			
Driver Head Redundant X Displacement			
CURNO	Type	SAE Class	Units
004	IN2	180	CM
Max	Time	Min	Time
99.9	89.3	0.0	0.0

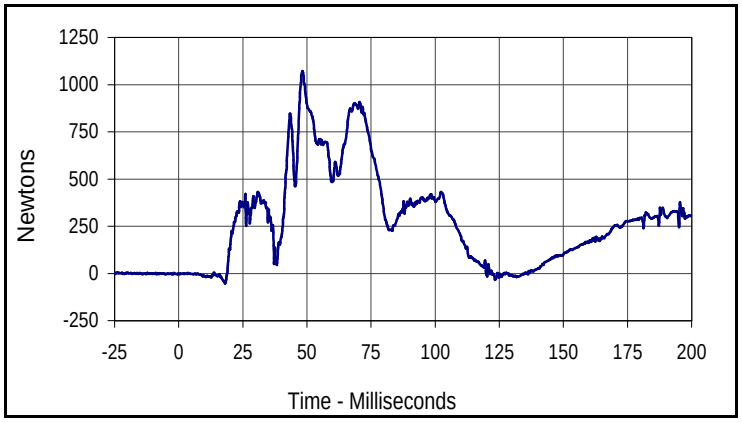
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



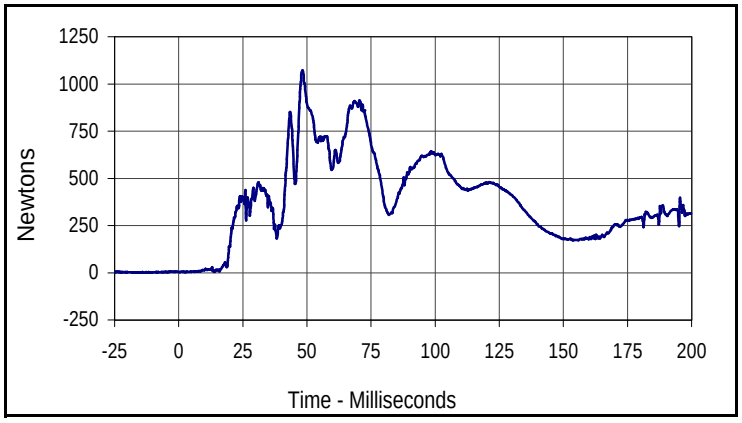
Curve Description			
Driver Upper Neck Force X			
CURNO	Type	SAE Class	Units
007	FIL	1000	Newtons
Max	Time	Min	Time
277.6	61.4	-471.4	99.2



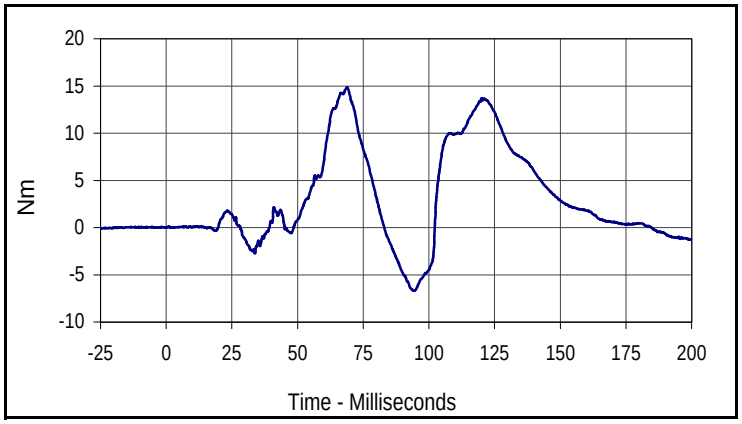
Curve Description			
Driver Upper Neck Force Y			
CURNO	Type	SAE Class	Units
008	FIL	1000	Newtons
Max	Time	Min	Time
194.2	114.7	-108.2	68.9



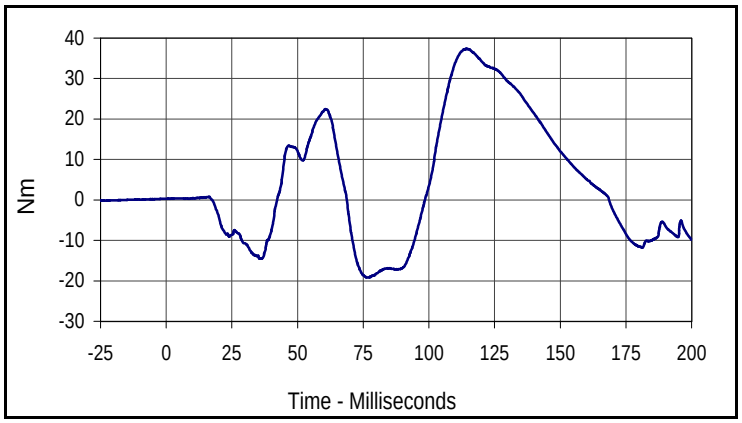
Curve Description			
Driver Upper Neck Force Z			
CURNO	Type	SAE Class	Units
009	FIL	1000	Newtons
Max	Time	Min	Time
1071.5	48.2	-53.1	18.1



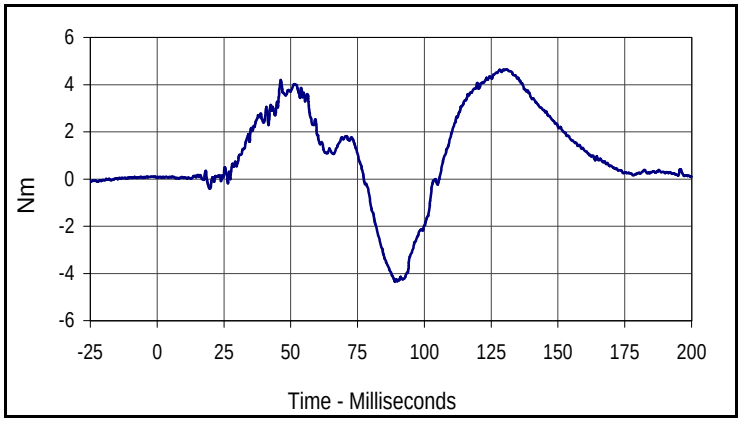
Curve Description			
Driver Upper Neck Force Res.			
CURNO	Type	SAE Class	Units
007	RES	1000	Newtons
Max	Time	Min	Time
1072.5	48.2	2.6	0.6



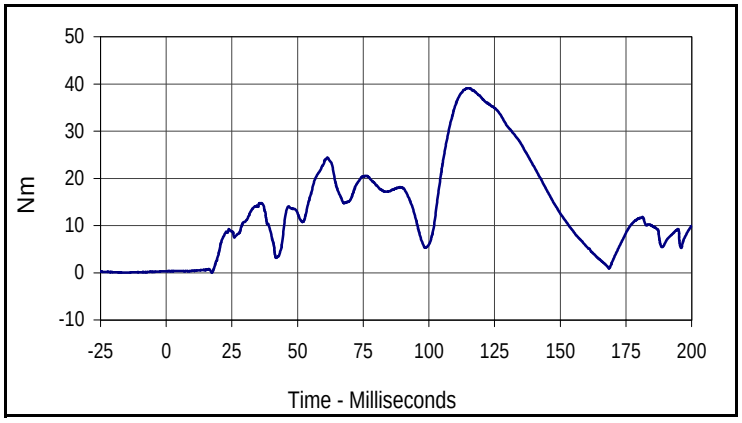
Curve Description			
Driver Upper Neck Moment X			
CURNO	Type	SAE Class	Units
010	FIL	600	Nm
Max	Time	Min	Time
14.9	68.8	-6.7	94.5



Curve Description			
Driver Upper Neck Moment Y			
CURNO	Type	SAE Class	Units
011	FIL	600	Nm
Max	Time	Min	Time
37.4	114.3	-19.2	76.6

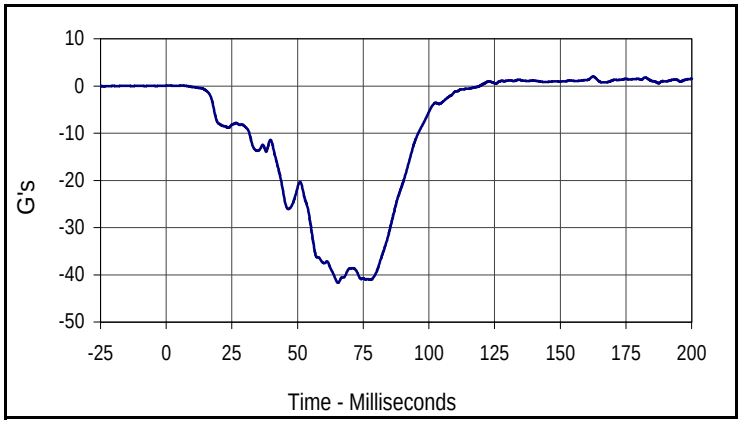


Curve Description			
Driver Upper Neck Moment Z			
CURNO	Type	SAE Class	Units
012	FIL	600	Nm
Max	Time	Min	Time
4.6	130.9	-4.4	89.0

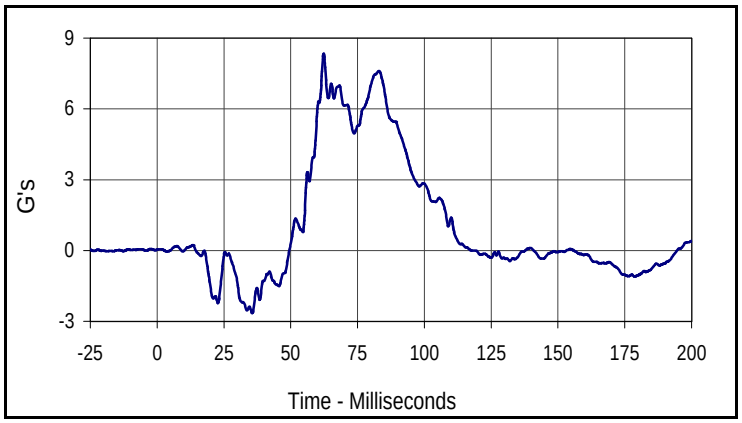


Curve Description			
Driver Upper Neck Moment Res.			
CURNO	Type	SAE Class	Units
010	RES	600	Nm
Max	Time	Min	Time
39.1	115.3	0.1	17.4

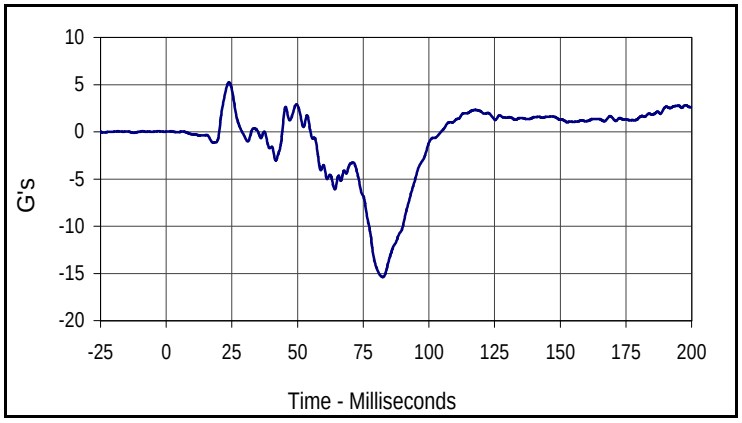
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



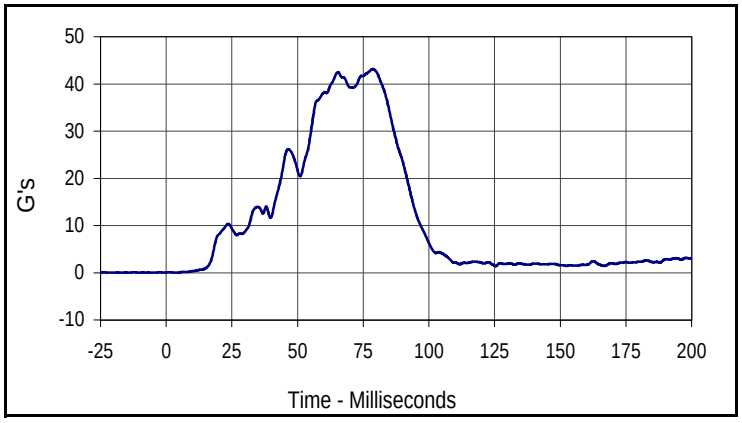
Curve Description			
Driver Chest Primary X			
CURNO	Type	SAE Class	Units
013	FIL	180	G's
Max	Time	Min	Time
2.0	162.5	-41.7	65.4



Curve Description			
Driver Chest Primary Y			
CURNO	Type	SAE Class	Units
014	FIL	180	G's
Max	Time	Min	Time
8.3	62.3	-2.7	35.6

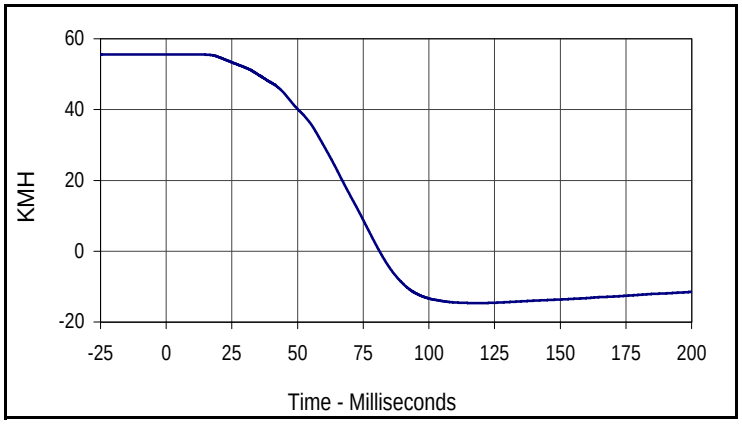


Curve Description			
Driver Chest Primary Z			
CURNO	Type	SAE Class	Units
015	FIL	180	G's
Max	Time	Min	Time
5.2	23.9	-15.4	82.5

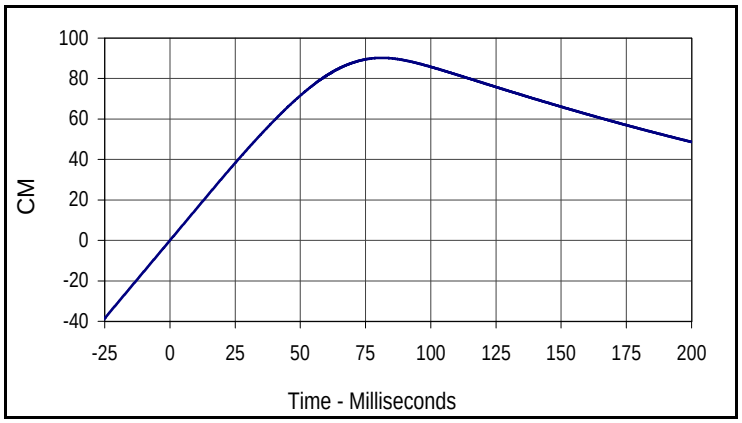


Curve Description			
Driver Chest Resultant Primary			
CURNO	Type	SAE Class	Units
013	RES	180	G's
Max	Time	Min	Time
43.1	78.6	0.0	2.9

Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501

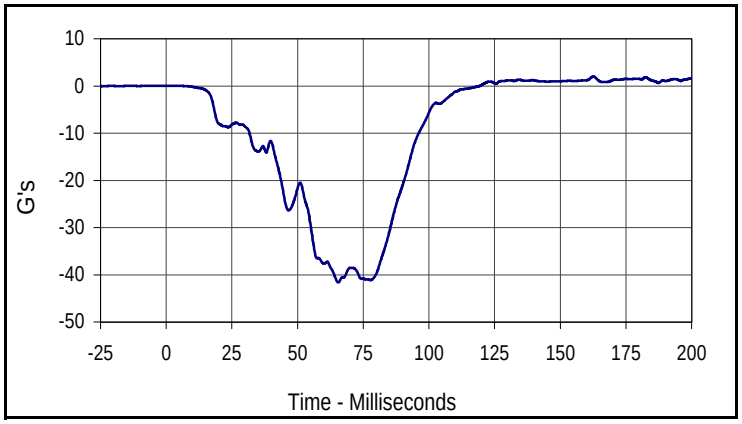


Curve Description			
Driver Chest Primary X Velocity			
CURNO	Type	SAE Class	Units
013	IN1	180	KMH
Max	Time	Min	Time
55.6	7.8	-14.7	119.3

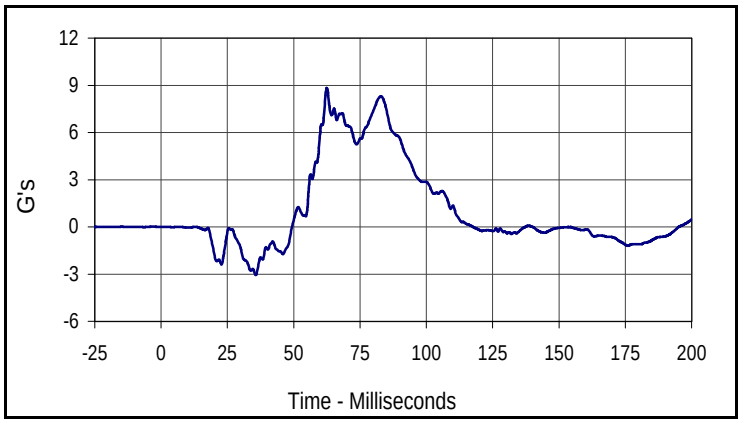


Curve Description			
Driver Chest Primary X Displacement			
CURNO	Type	SAE Class	Units
013	IN2	180	CM
Max	Time	Min	Time
90.2	81.2	0.0	0.0

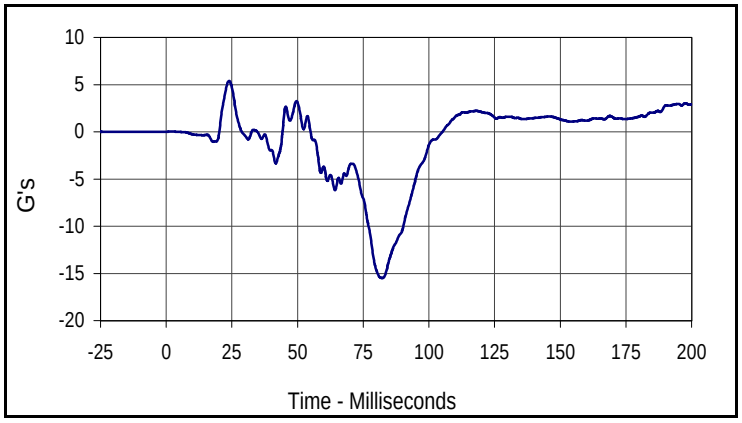
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



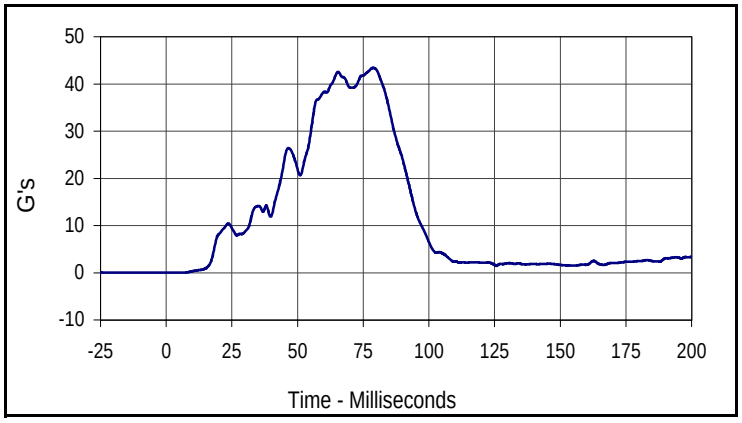
Curve Description			
Driver Chest Redundant X			
CURNO	Type	SAE Class	Units
016	FIL	180	G's
Max	Time	Min	Time
2.0	162.7	-41.6	65.5



Curve Description			
Driver Chest Redundant Y			
CURNO	Type	SAE Class	Units
017	FIL	180	G's
Max	Time	Min	Time
8.8	62.5	-3.1	35.7

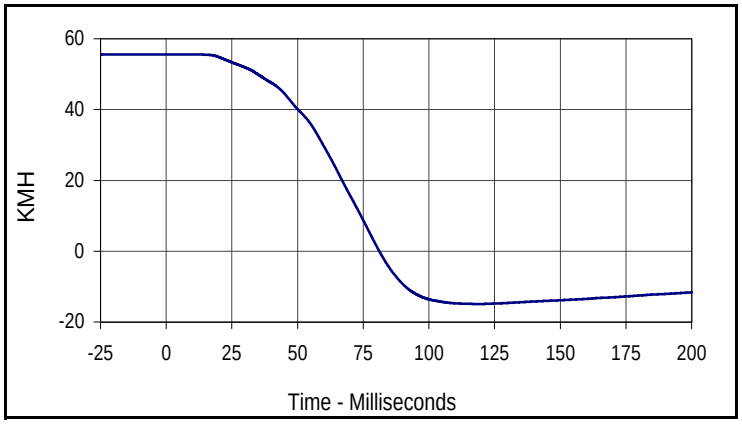


Curve Description			
Driver Chest Redundant Z			
CURNO	Type	SAE Class	Units
018	FIL	180	G's
Max	Time	Min	Time
5.4	23.9	-15.5	82.2

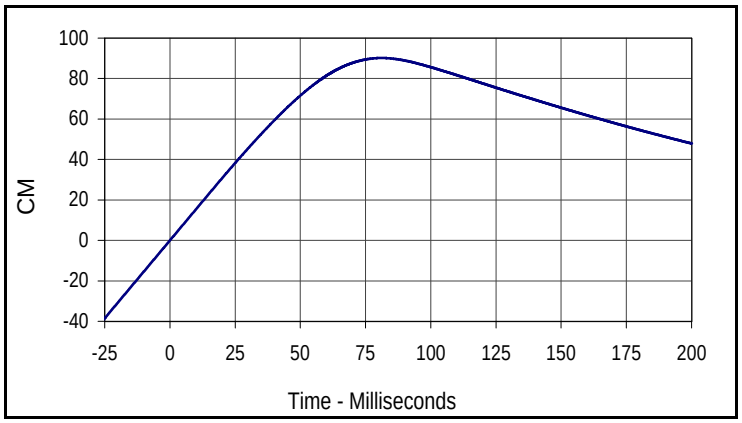


Curve Description			
Driver Chest Resultant Redundant			
CURNO	Type	SAE Class	Units
016	RES	180	G's
Max	Time	Min	Time
43.4	78.8	0.0	5.4

Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501

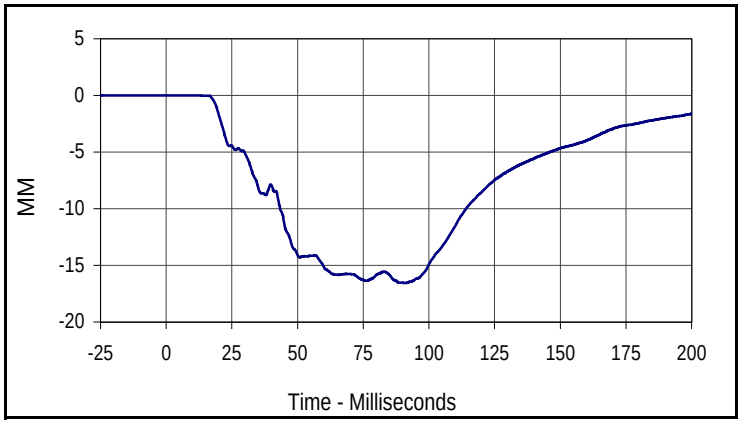


Curve Description			
Driver Chest Redundant X Velocity			
CURNO	Type	SAE Class	Units
016	IN1	180	KMH
Max	Time	Min	Time
55.6	6.4	-14.9	119.4



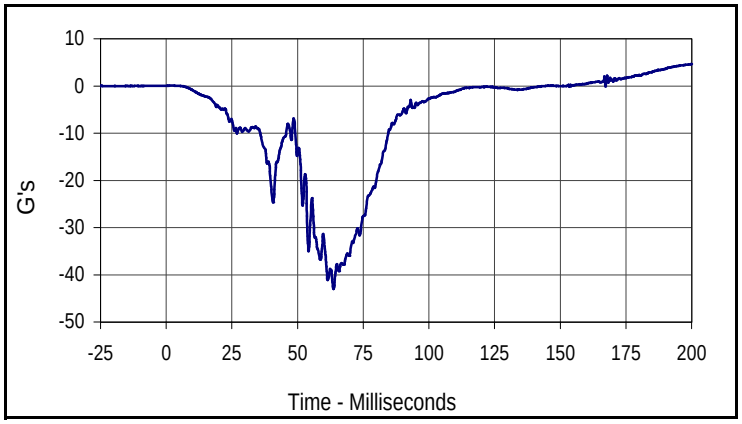
Curve Description			
Driver Chest Redundant X Displacement			
CURNO	Type	SAE Class	Units
016	IN2	180	CM
Max	Time	Min	Time
90.2	81.1	0.0	0.0

Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501

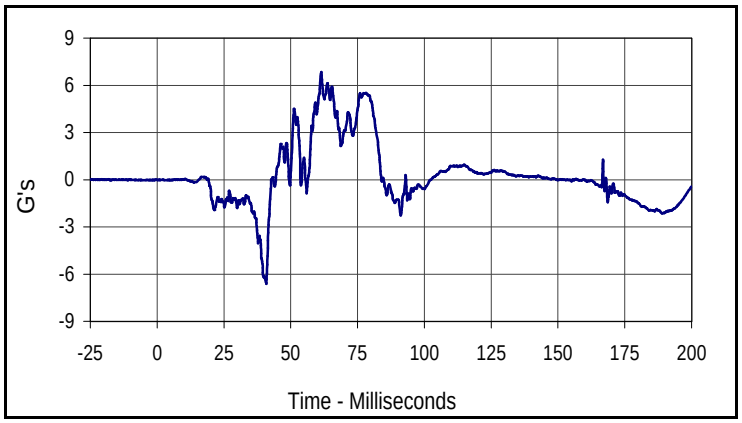


Curve Description			
Driver Chest Displacement			
CURNO	Type	SAE Class	Units
019	FIL	600	MM
Max	Time	Min	Time
0.0	7.3	-16.6	90.8

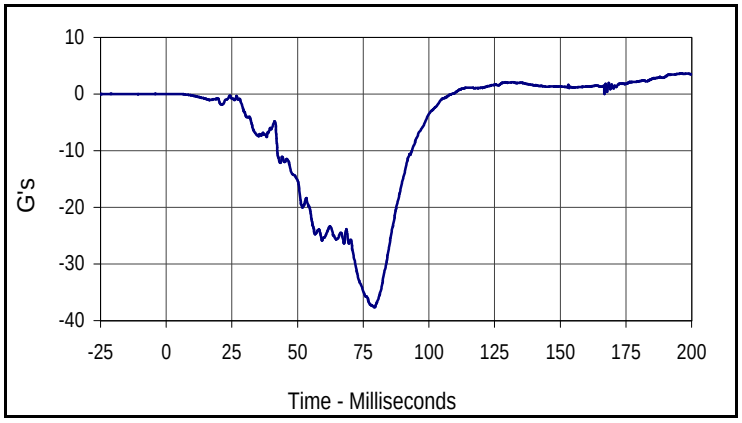
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



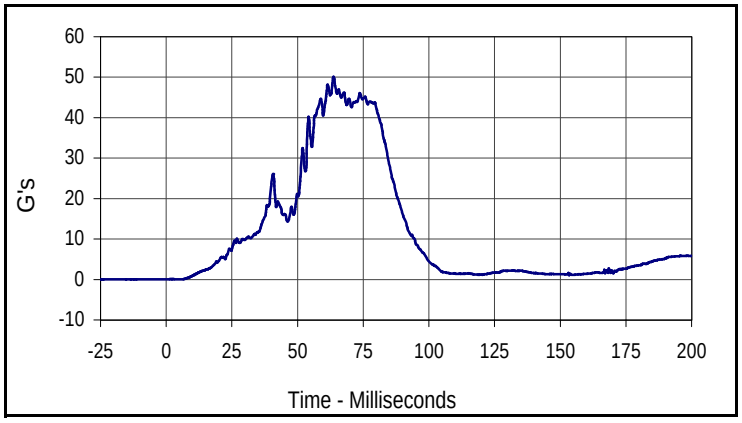
Curve Description			
Driver Pelvis X			
CURNO	Type	SAE Class	Units
020	FIL	1000	G's
Max	Time	Min	Time
4.6	200.0	-43.0	63.7



Curve Description			
Driver Pelvis Y			
CURNO	Type	SAE Class	Units
021	FIL	1000	G's
Max	Time	Min	Time
6.8	61.4	-6.6	40.8

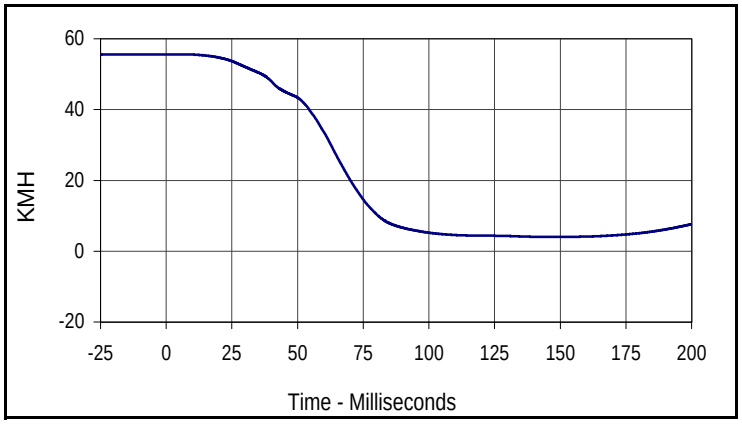


Curve Description			
Driver Pelvis Z			
CURNO	Type	SAE Class	Units
022	FIL	1000	G's
Max	Time	Min	Time
3.7	195.8	-37.7	79.3

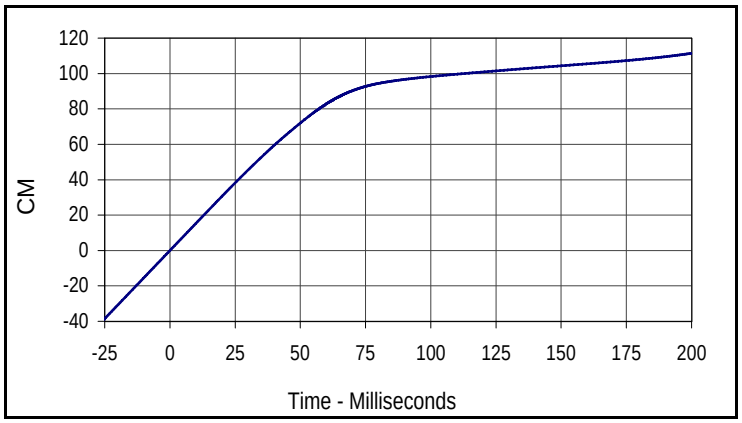


Curve Description			
Driver Pelvis Resultant			
CURNO	Type	SAE Class	Units
020	RES	1000	G's
Max	Time	Min	Time
50.1	63.7	0.0	5.5

Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501

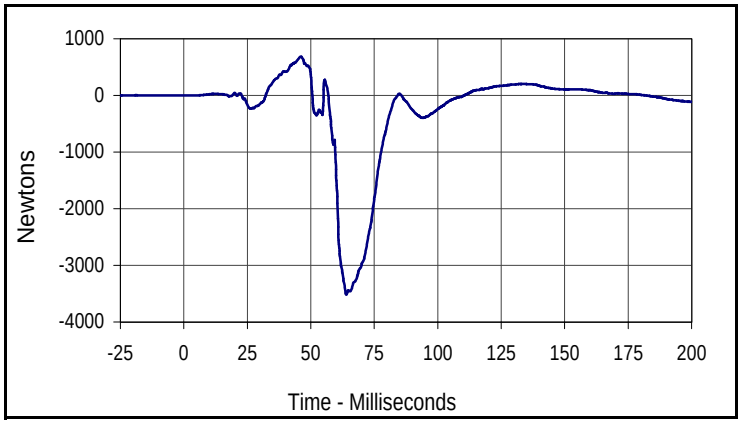


Curve Description			
Driver Pelvis X Velocity			
CURNO	Type	SAE Class	Units
020	IN1	180	KMH
Max	Time	Min	Time
55.6	5.5	4.1	144.2

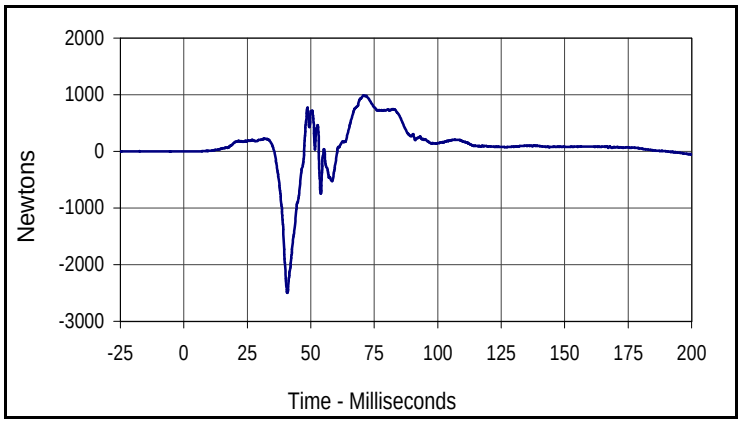


Curve Description			
Driver Pelvis X Displacement			
CURNO	Type	SAE Class	Units
020	IN2	180	CM
Max	Time	Min	Time
111.4	200.0	0.0	0.0

Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501

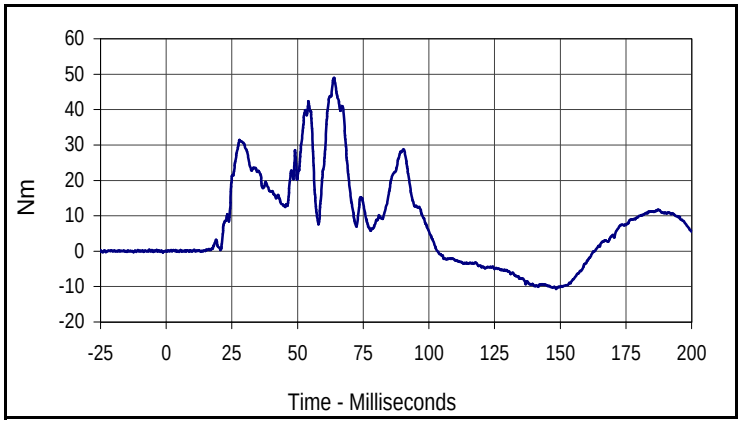


Curve Description			
Driver Left Femur Force			
CURNO	Type	SAE Class	Units
023	FIL	600	Newtons
Max	Time	Min	Time
682.8	46.0	-3512.1	64.0

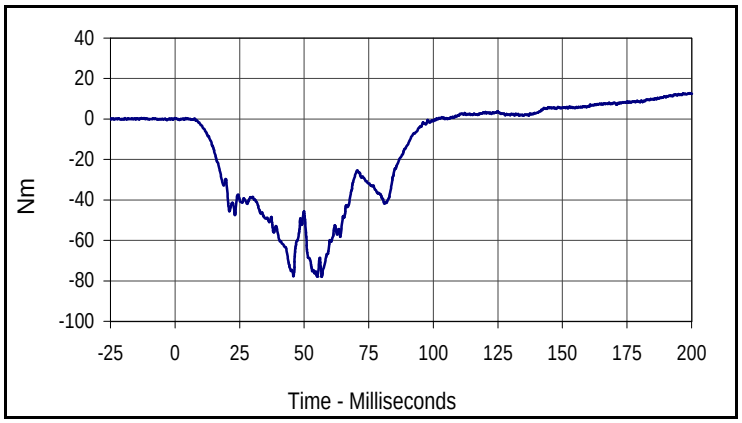


Curve Description			
Driver Right Femur Force			
CURNO	Type	SAE Class	Units
024	FIL	600	Newtons
Max	Time	Min	Time
990.4	71.0	-2498.9	40.8

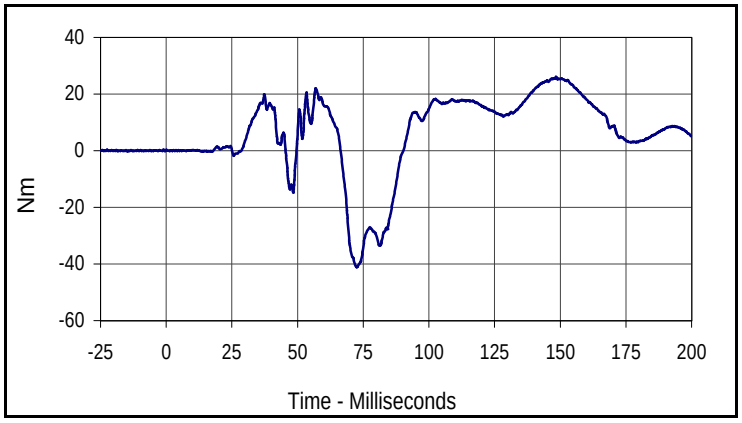
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



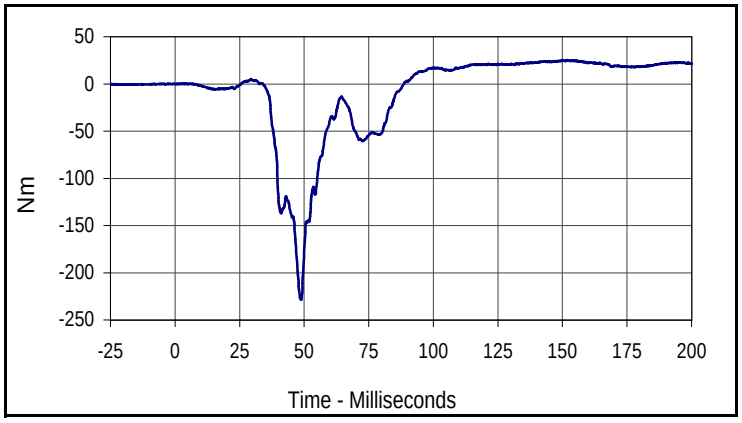
Curve Description			
Driver Left Upper Tibia Moment X			
CURNO	Type	SAE Class	Units
025	FIL	600	Nm
Max	Time	Min	Time
48.9	63.9	-10.7	148.5



Curve Description			
Driver Left Upper Tibia Moment Y			
CURNO	Type	SAE Class	Units
026	FIL	600	Nm
Max	Time	Min	Time
12.7	199.4	-78.0	56.8

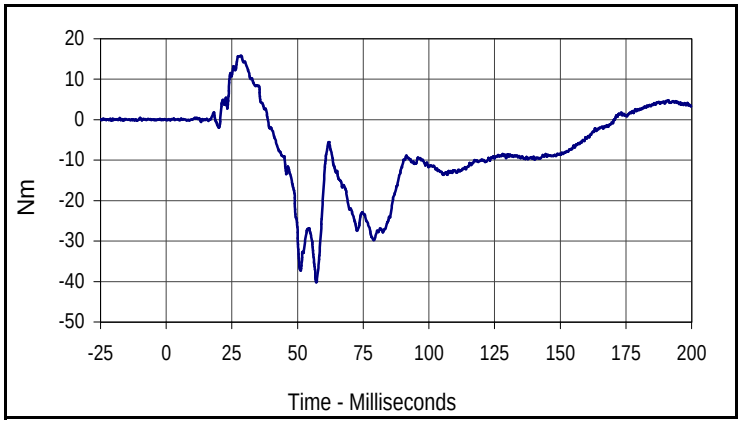


Curve Description			
Driver Right Upper Tibia Moment X			
CURNO	Type	SAE Class	Units
027	FIL	600	Nm
Max	Time	Min	Time
26.1	148.4	-41.1	72.5

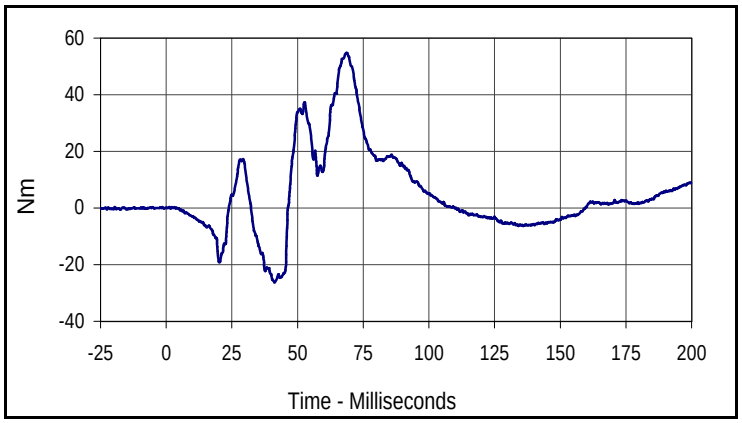


Curve Description			
Driver Right Upper Tibia Moment Y			
CURNO	Type	SAE Class	Units
028	FIL	600	Nm
Max	Time	Min	Time
25.3	151.8	-228.6	48.8

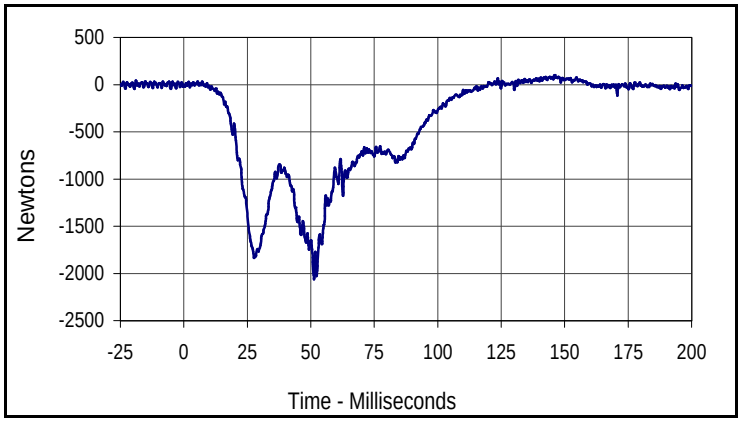
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



Curve Description			
Driver Left Lower Tibia Moment X			
CURNO	Type	SAE Class	Units
029	FIL	600	Nm
Max	Time	Min	Time
15.8	28.6	-40.2	57.1

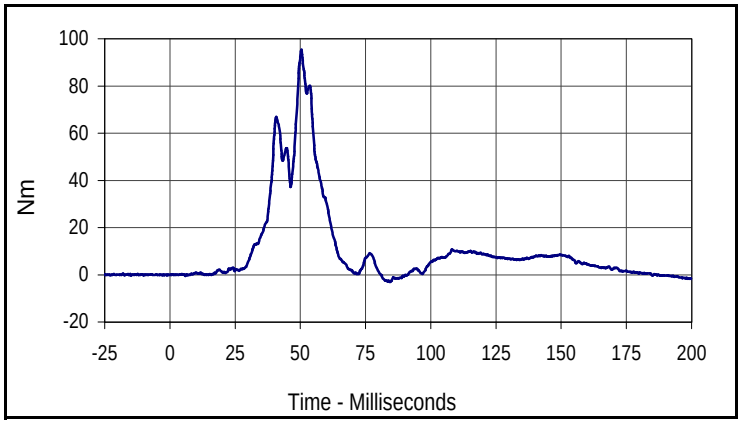


Curve Description			
Driver Left Lower Tibia Moment Y			
CURNO	Type	SAE Class	Units
030	FIL	600	Nm
Max	Time	Min	Time
54.8	68.7	-26.3	41.3

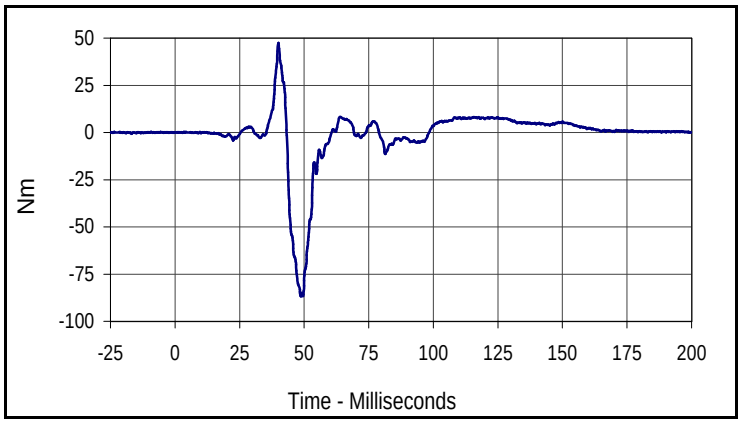


Curve Description			
Driver Left Lower Tibia Force Z			
CURNO	Type	SAE Class	Units
031	FIL	600	Newtons
Max	Time	Min	Time
101.0	146.0	-2064.3	51.3

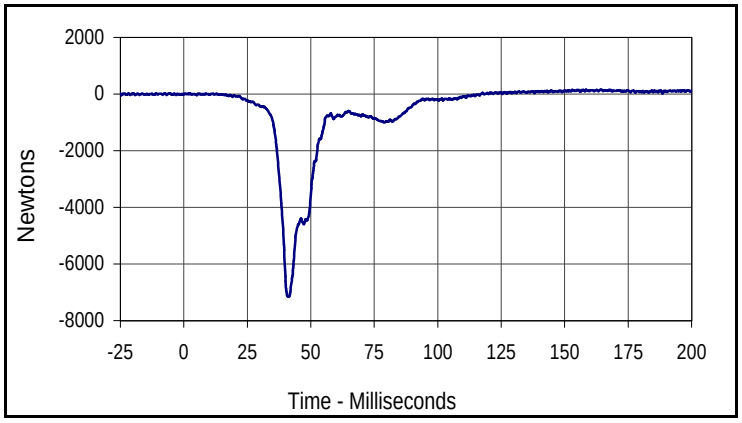
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



Curve Description			
Driver Right Lower Tibia Moment X			
CURNO	Type	SAE Class	Units
032	FIL	600	Nm
Max	Time	Min	Time
95.4	50.4	-3.1	84.3

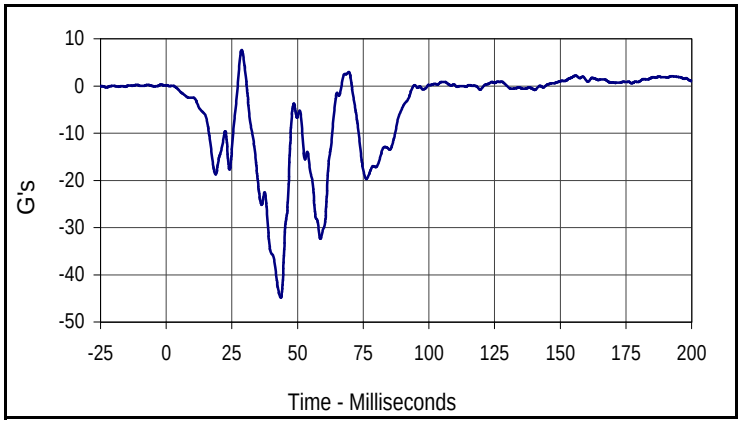


Curve Description			
Driver Right Lower Tibia Moment Y			
CURNO	Type	SAE Class	Units
033	FIL	600	Nm
Max	Time	Min	Time
47.5	40.0	-86.8	48.7

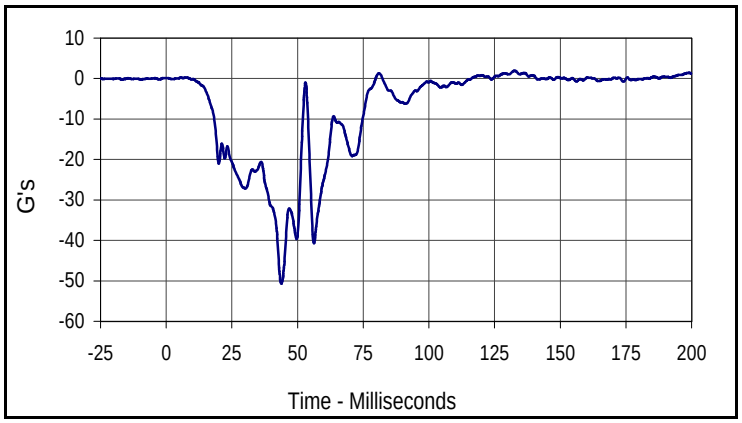


Curve Description			
Driver Right Lower Tibia Force Z			
CURNO	Type	SAE Class	Units
034	FIL	600	Newtons
Max	Time	Min	Time
154.7	164.5	-7153.9	41.0

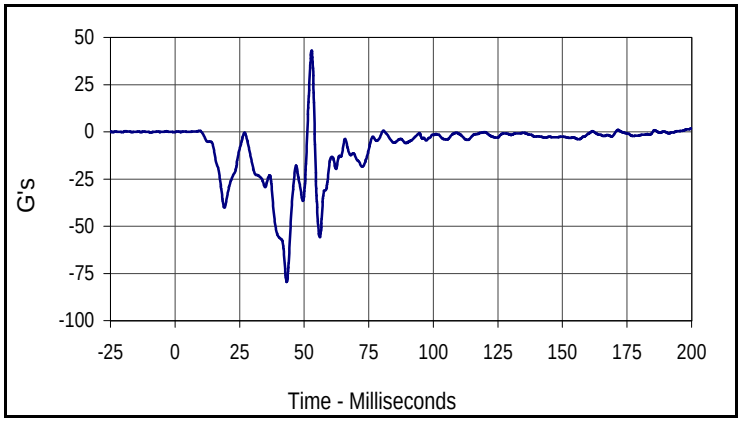
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



Curve Description			
Driver Left Foot Aft X			
CURNO	Type	SAE Class	Units
035	FIL	180	G's
Max	Time	Min	Time
7.7	28.7	-44.8	43.6



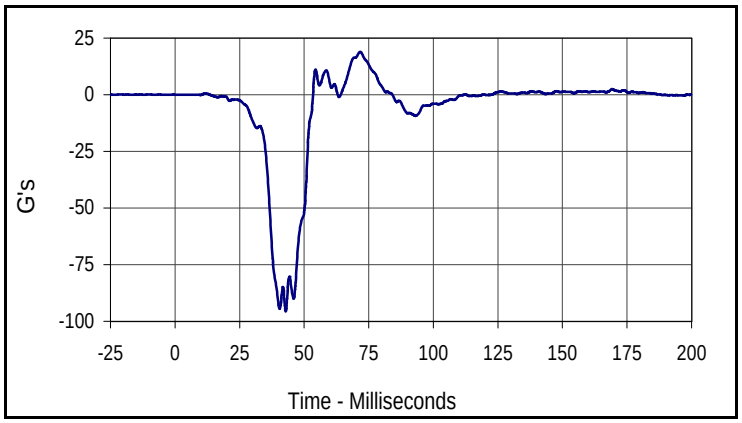
Curve Description			
Driver Left Foot Aft Z			
CURNO	Type	SAE Class	Units
036	FIL	180	G's
Max	Time	Min	Time
1.9	132.5	-50.6	43.9



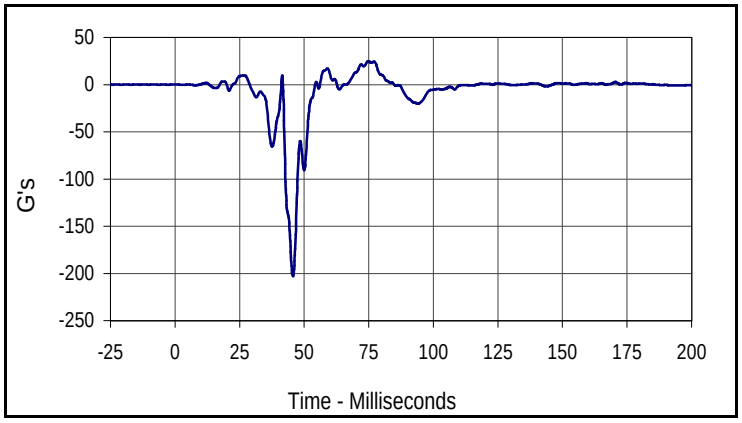
Curve Description			
Driver Left Foot Fore Z			
CURNO	Type	SAE Class	Units
037	FIL	180	G's
Max	Time	Min	Time
43.0	52.9	-79.5	43.3

Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501

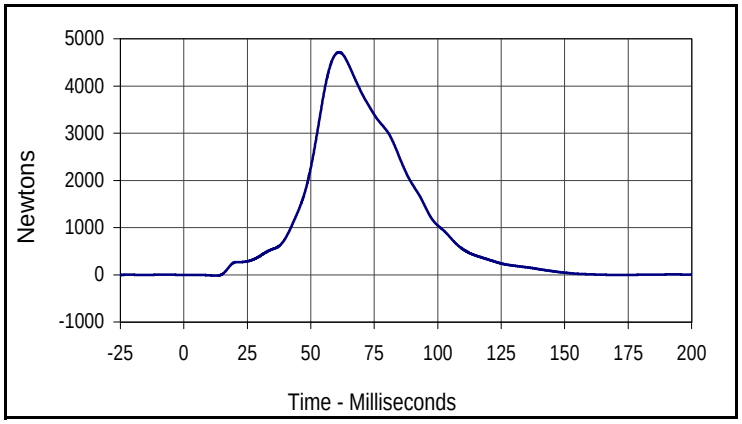
Curve Description			
Driver Right Foot Aft X			
CURNO	Type	SAE Class	Units
038	FIL	180	G's
Max	Time	Min	Time
9.0	69.9	-114.7	48.1



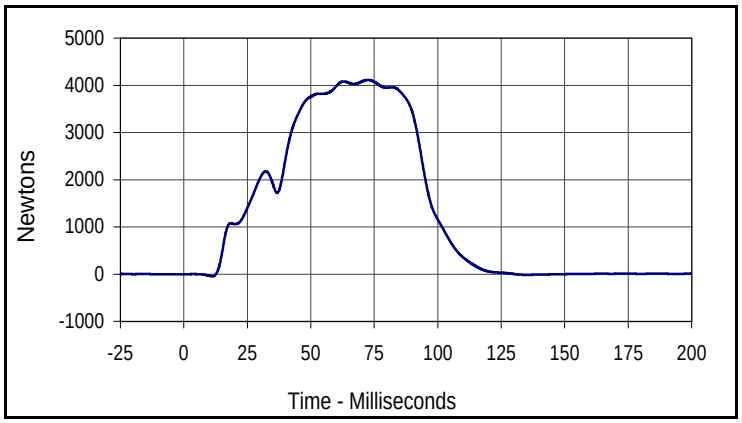
Curve Description			
Driver Right Foot Aft Z			
CURNO	Type	SAE Class	Units
039	FIL	180	G's
Max	Time	Min	Time
19.0	71.7	-95.7	42.8



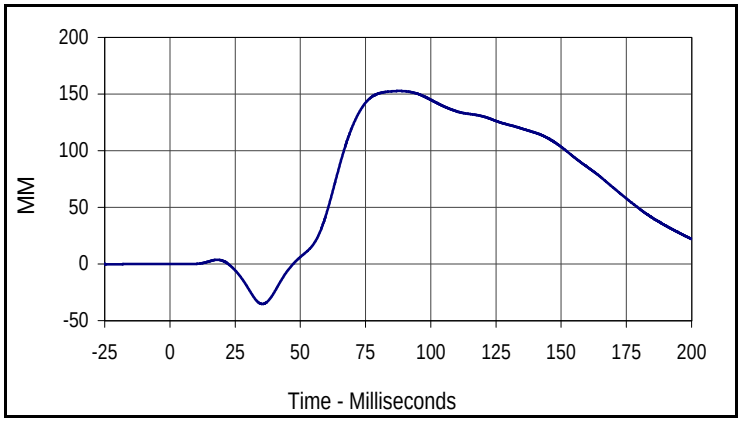
Curve Description			
Driver Right Foot Fore Z			
CURNO	Type	SAE Class	Units
040	FIL	180	G's
Max	Time	Min	Time
24.6	74.8	-202.9	45.7



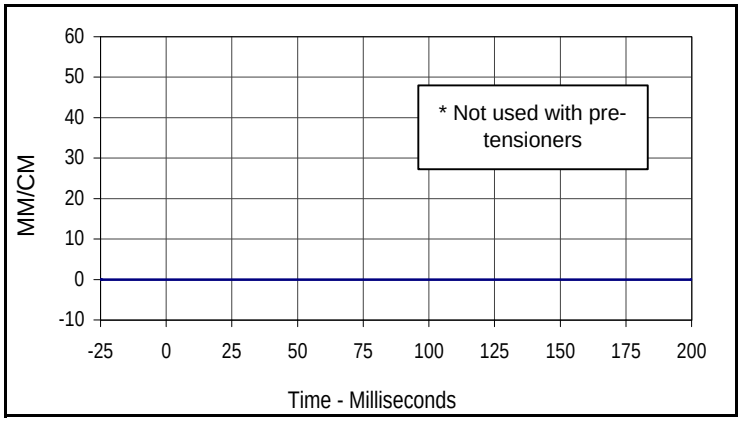
Curve Description			
Driver Lap Belt Force			
CURNO	Type	SAE Class	Units
041	FIL	60	Newtons
Max	Time	Min	Time
4715.0	61.1	-20.2	12.7



Curve Description			
Driver Shoulder Belt Force			
CURNO	Type	SAE Class	Units
042	FIL	60	Newtons
Max	Time	Min	Time
4114.8	72.5	-43.6	11.1



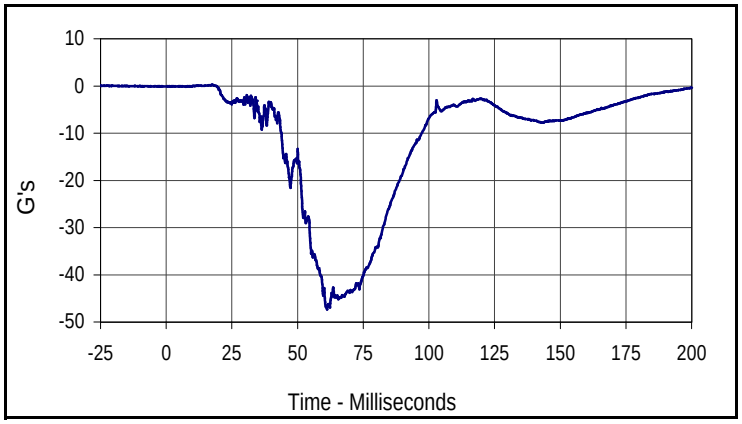
Curve Description			
Driver Shoulder Belt Pullout			
CURNO	Type	SAE Class	Units
043	FIL	60	MM
Max	Time	Min	Time
152.7	88.0	-35.3	35.5



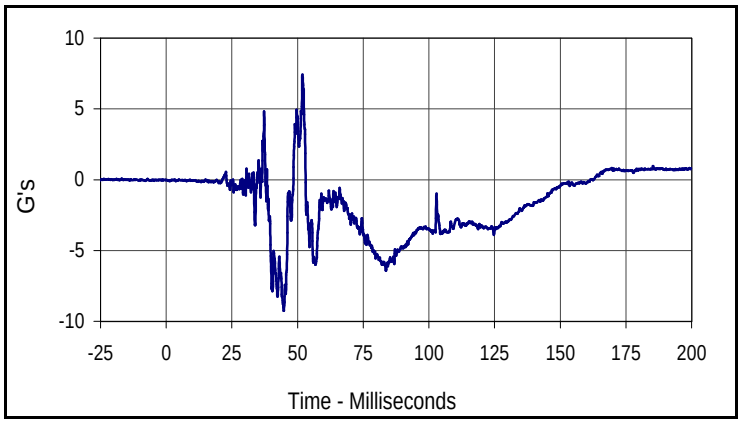
Curve Description			
Driver Shoulder Belt Elongation			
CURNO	Type	SAE Class	Units
044	FIL	60	MM/CM
Max	Time	Min	Time
0.0	0.0	0.0	0.0

* Not used with pre-tensioners

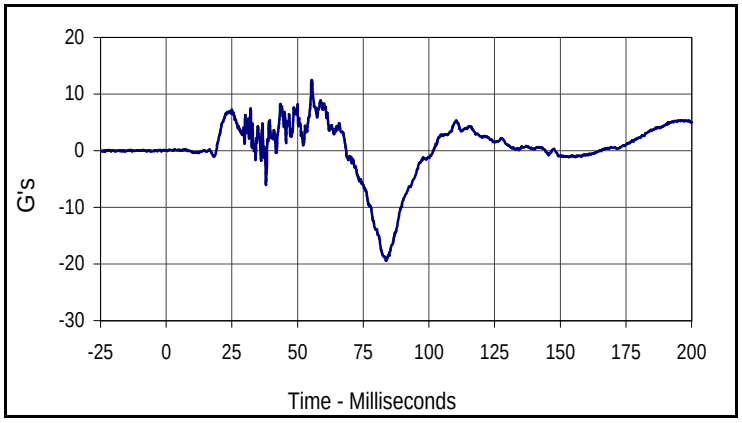
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



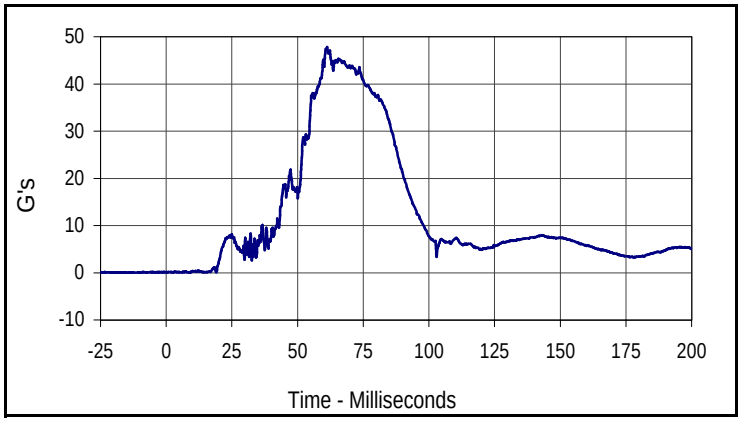
Curve Description			
Passenger Head Primary X			
CURNO	Type	SAE Class	Units
045	FIL	1000	G's
Max	Time	Min	Time
0.3	17.6	-47.4	61.2



Curve Description			
Passenger Head Primary Y			
CURNO	Type	SAE Class	Units
046	FIL	1000	G's
Max	Time	Min	Time
7.4	51.9	-9.3	44.7

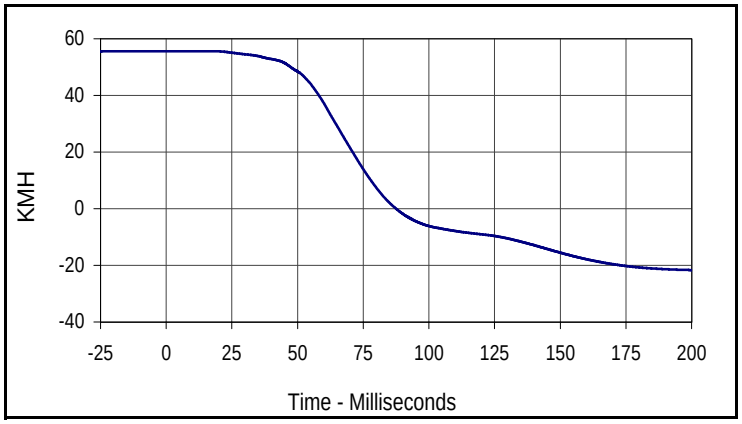


Curve Description			
Passenger Head Primary Z			
CURNO	Type	SAE Class	Units
047	FIL	1000	G's
Max	Time	Min	Time
12.5	55.4	-19.5	83.7

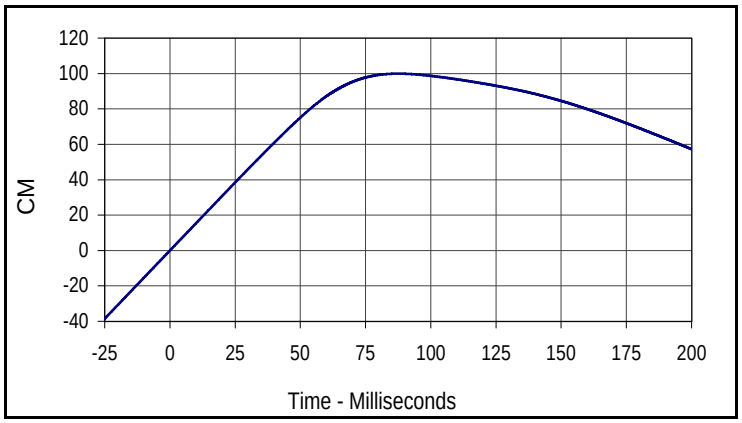


Curve Description			
Passenger Head Resultant Primary			
CURNO	Type	SAE Class	Units
045	RES	1000	G's
Max	Time	Min	Time
47.8	61.2	0.0	8.9

Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501

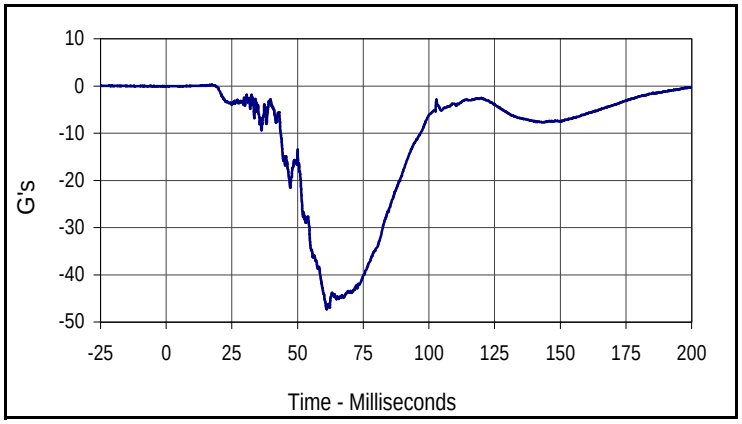


Curve Description			
Passenger Head Primary X Velocity			
CURNO	Type	SAE Class	Units
045	IN1	180	KMH
Max	Time	Min	Time
55.6	0.0	-21.7	200.0

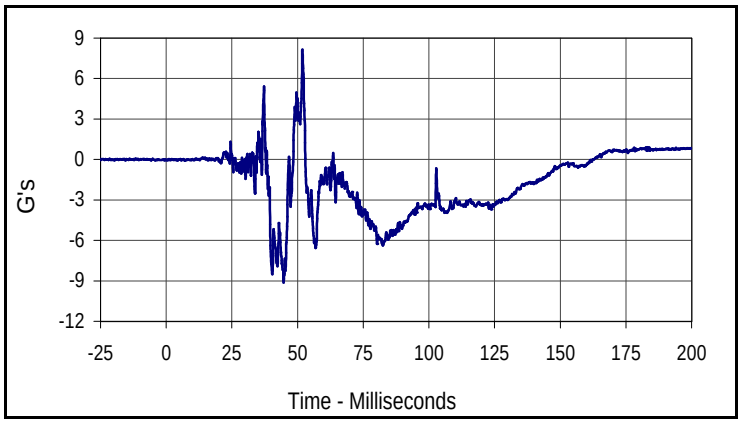


Curve Description			
Passenger Head Primary X Displacement			
CURNO	Type	SAE Class	Units
045	IN2	180	CM
Max	Time	Min	Time
99.9	87.5	0.0	0.0

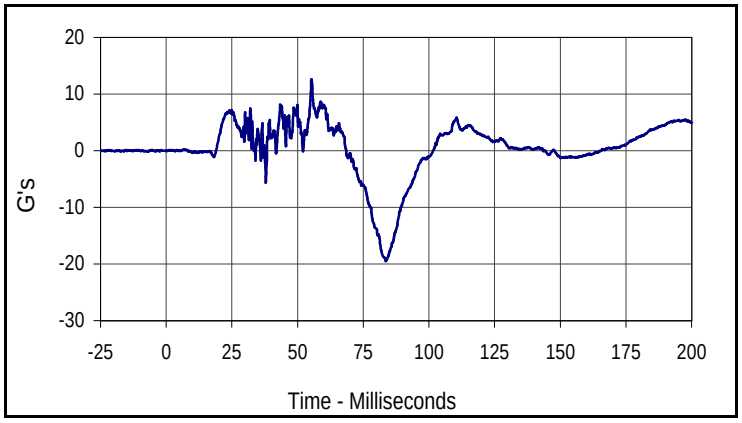
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



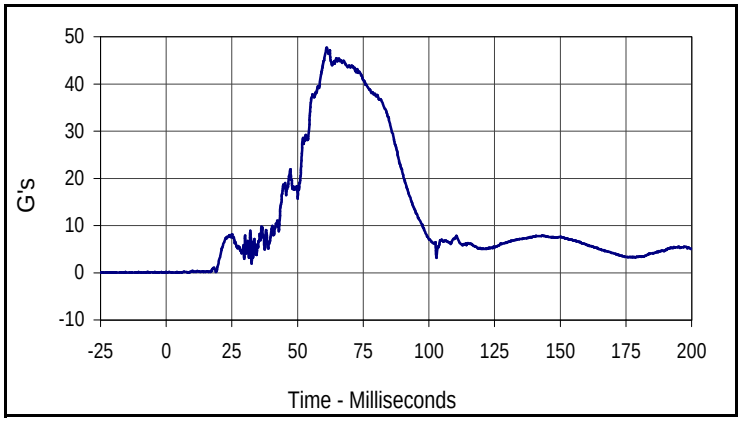
Curve Description			
Passenger Head Redundant X			
CURNO	Type	SAE Class	Units
048	FIL	1000	G's
Max	Time	Min	Time
0.3	17.4	-47.3	61.1



Curve Description			
Passenger Head Redundant Y			
CURNO	Type	SAE Class	Units
049	FIL	1000	G's
Max	Time	Min	Time
8.1	51.9	-9.1	44.7

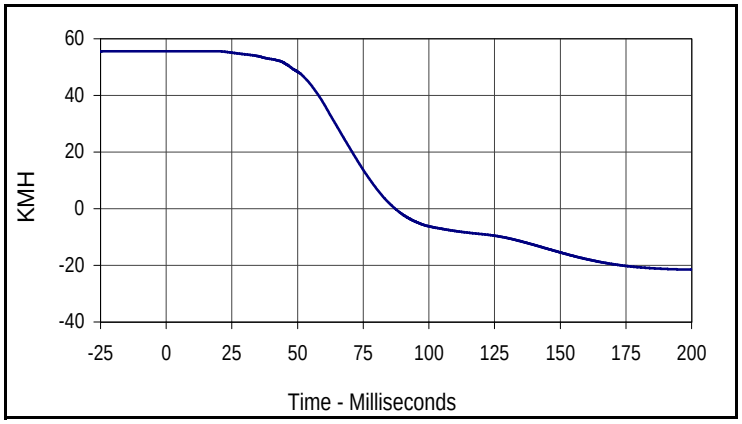


Curve Description			
Passenger Head Redundant Z			
CURNO	Type	SAE Class	Units
050	FIL	1000	G's
Max	Time	Min	Time
12.6	55.3	-19.5	83.6

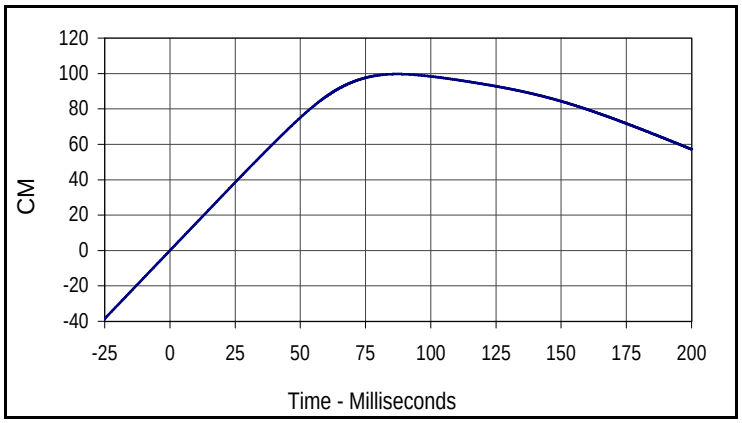


Curve Description			
Passenger Head Resultant Redundant			
CURNO	Type	SAE Class	Units
048	RES	1000	G's
Max	Time	Min	Time
47.7	61.1	0.0	4.9

Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501

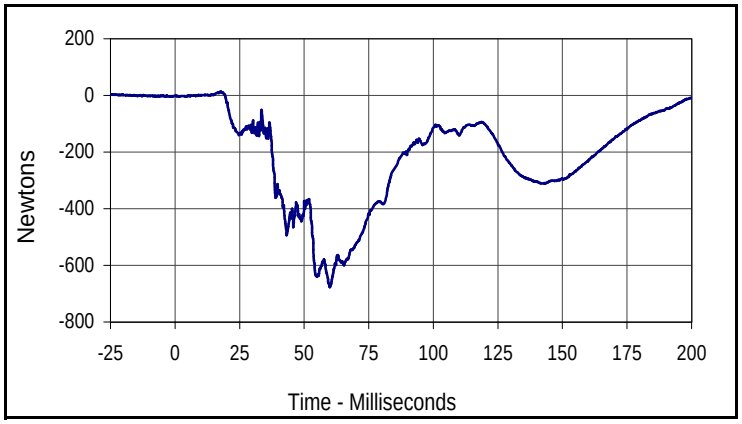


Curve Description			
Passenger Head Redundant X Velocity			
CURNO	Type	SAE Class	Units
048	IN1	180	KMH
Max	Time	Min	Time
55.6	18.8	-21.5	200.0

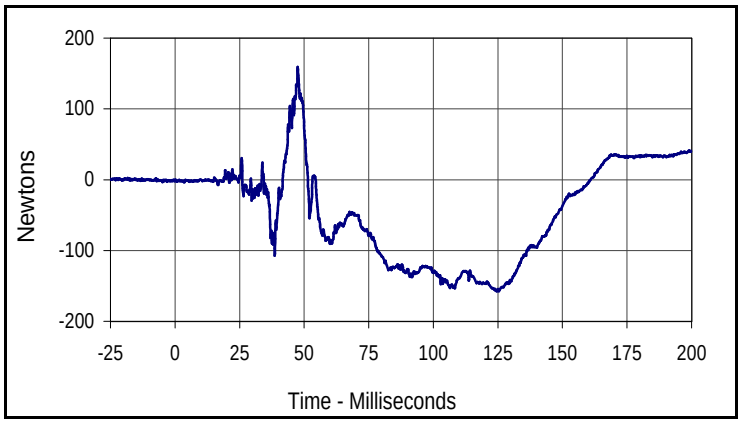


Curve Description			
Passenger Head Redundant X Displacement			
CURNO	Type	SAE Class	Units
048	IN2	180	CM
Max	Time	Min	Time
99.7	87.2	0.0	0.0

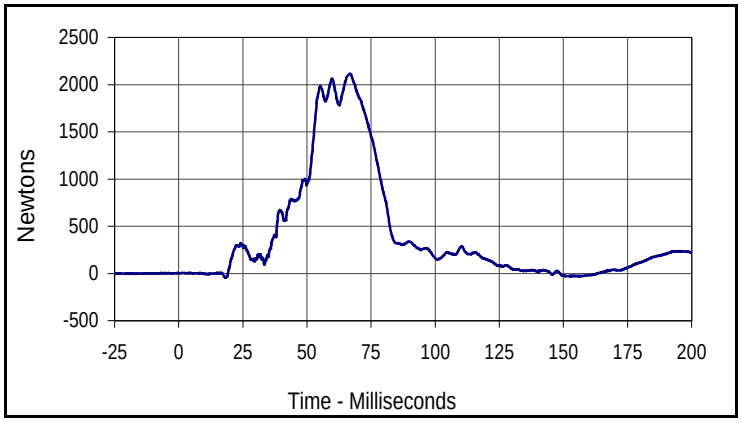
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



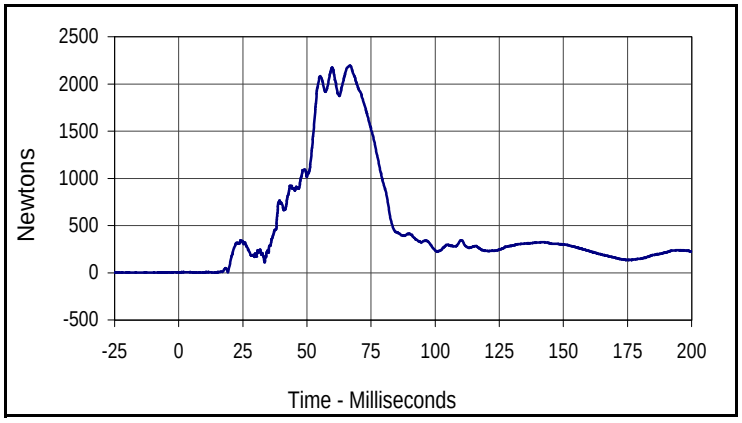
Curve Description			
Passenger Upper Neck Force X			
CURNO	Type	SAE Class	Units
051	FIL	1000	Newtons
Max	Time	Min	Time
13.2	17.8	-677.0	59.9



Curve Description			
Passenger Upper Neck Force Y			
CURNO	Type	SAE Class	Units
052	FIL	1000	Newtons
Max	Time	Min	Time
159.2	47.5	-157.3	124.7

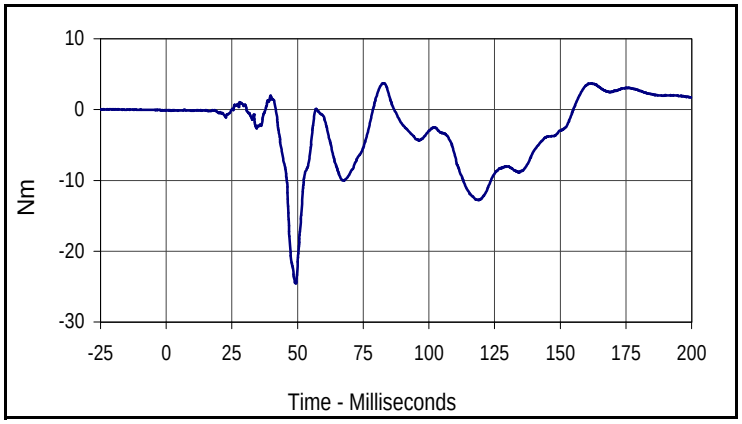


Curve Description			
Passenger Upper Neck Force Z			
CURNO	Type	SAE Class	Units
053	FIL	1000	Newtons
Max	Time	Min	Time
2116.8	66.8	-46.7	18.3

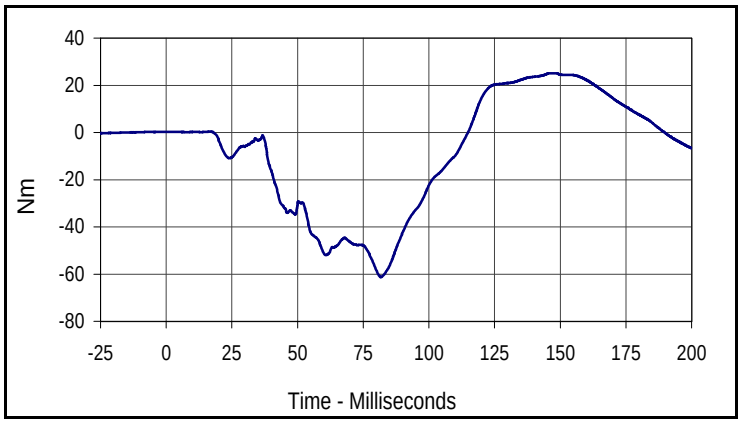


Curve Description			
Passenger Upper Neck Force Res.			
CURNO	Type	SAE Class	Units
051	RES	1000	Newtons
Max	Time	Min	Time
2194.5	66.7	0.6	7.7

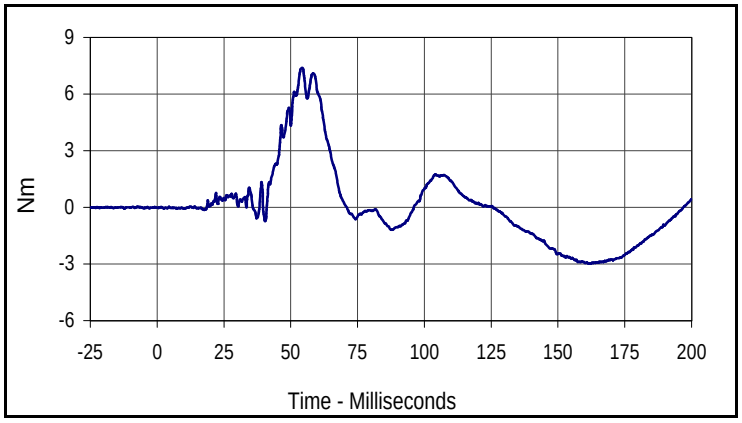
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



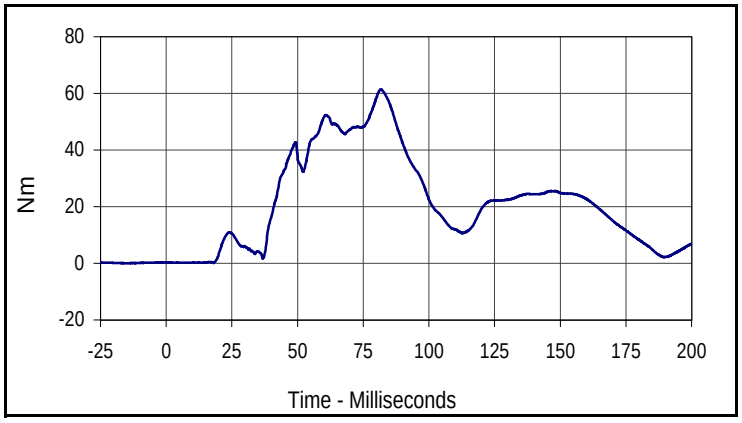
Curve Description			
Passenger Upper Neck Moment X			
CURNO	Type	SAE Class	Units
054	FIL	600	Nm
Max	Time	Min	Time
3.7	82.7	-24.5	49.3



Curve Description			
Passenger Upper Neck Moment Y			
CURNO	Type	SAE Class	Units
055	FIL	600	Nm
Max	Time	Min	Time
25.1	148.2	-61.3	81.7

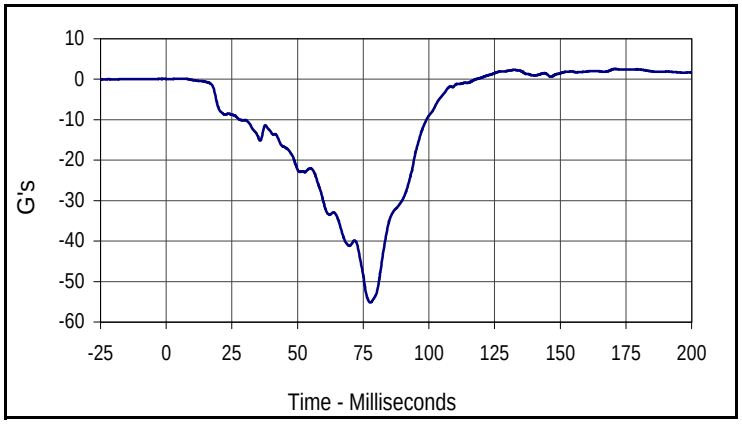


Curve Description			
Passenger Upper Neck Moment Z			
CURNO	Type	SAE Class	Units
056	FIL	600	Nm
Max	Time	Min	Time
7.4	54.3	-3.0	162.2

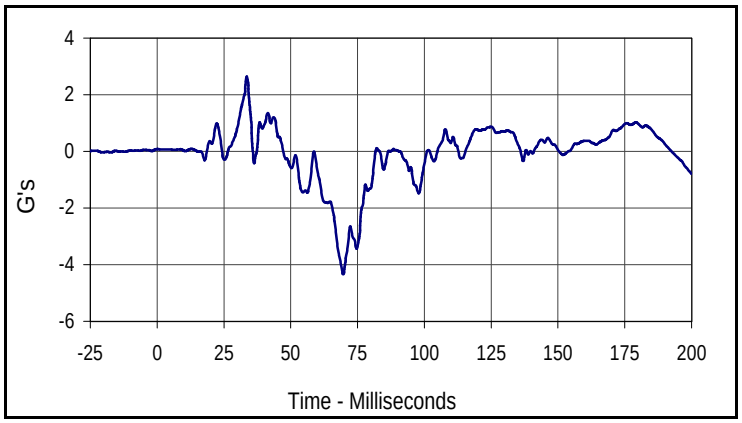


Curve Description			
Passenger Upper Neck Moment Res.			
CURNO	Type	SAE Class	Units
054	RES	600	Nm
Max	Time	Min	Time
61.4	81.8	0.2	18.0

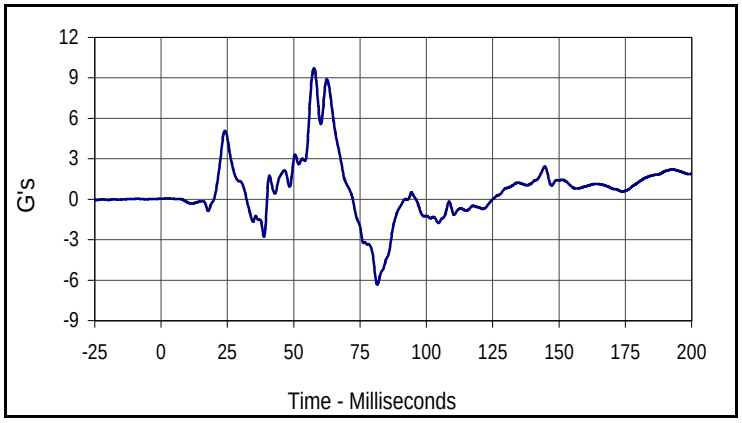
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



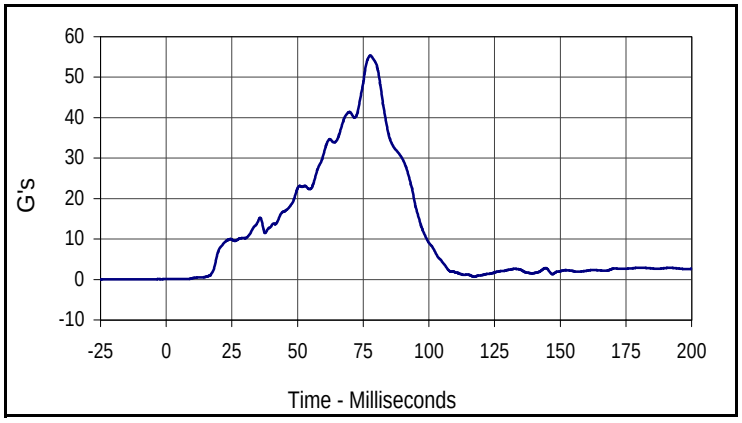
Curve Description			
Passenger Chest Primary X			
CURNO	Type	SAE Class	Units
057	FIL	180	G's
Max	Time	Min	Time
2.5	170.7	-55.2	77.7



Curve Description			
Passenger Chest Primary Y			
CURNO	Type	SAE Class	Units
058	FIL	180	G's
Max	Time	Min	Time
2.6	33.5	-4.3	69.6

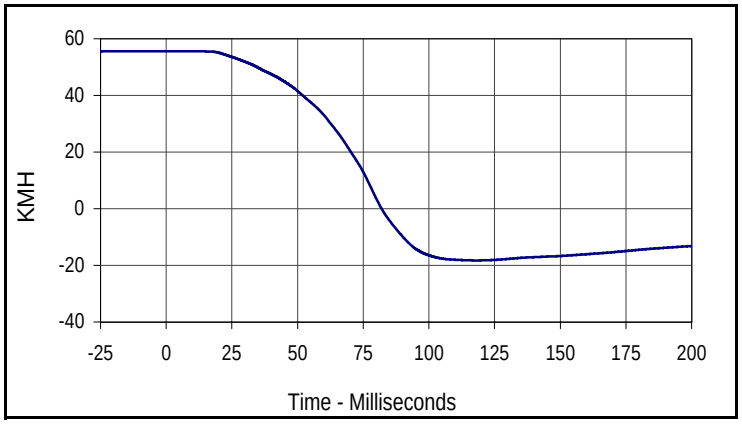


Curve Description			
Passenger Chest Primary Z			
CURNO	Type	SAE Class	Units
059	FIL	180	G's
Max	Time	Min	Time
9.7	57.7	-6.3	81.5

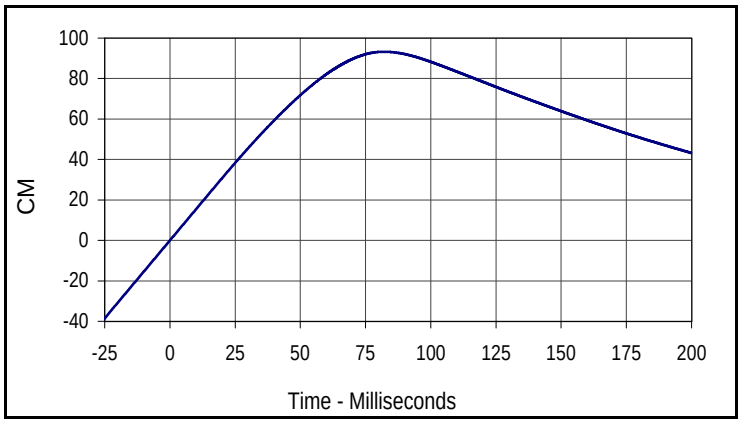


Curve Description			
Passenger Chest Resultant Primary			
CURNO	Type	SAE Class	Units
057	RES	180	G's
Max	Time	Min	Time
55.3	77.7	0.1	8.2

Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501

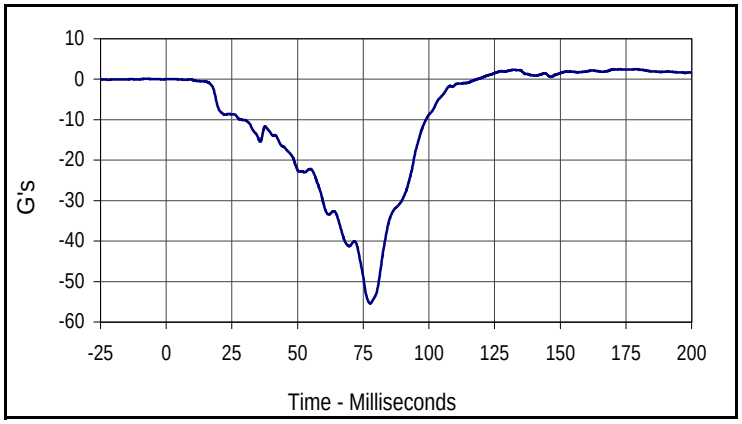


Curve Description			
Passenger Chest Primary X Velocity			
CURNO	Type	SAE Class	Units
057	IN1	180	KMH
Max	Time	Min	Time
55.6	8.6	-18.3	117.9

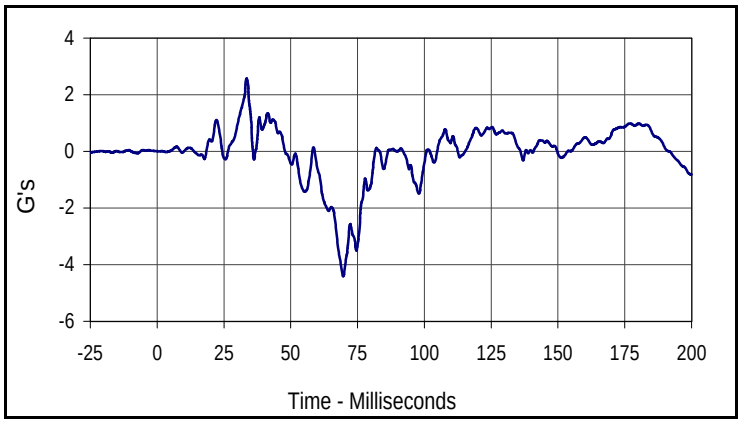


Curve Description			
Passenger Chest Primary X Displacement			
CURNO	Type	SAE Class	Units
057	IN2	180	CM
Max	Time	Min	Time
93.3	82.0	0.0	0.0

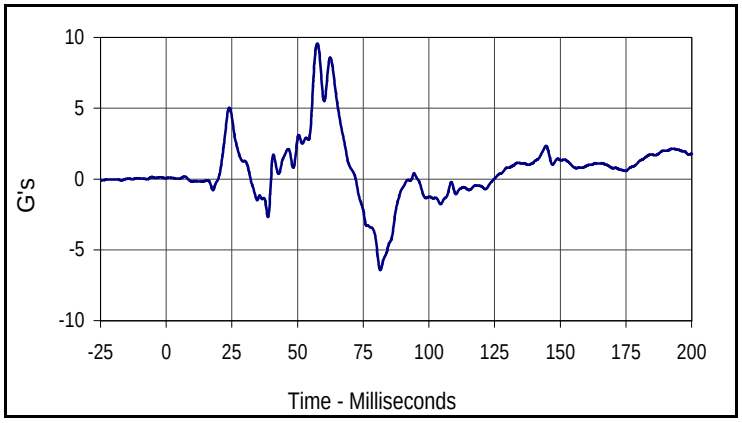
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



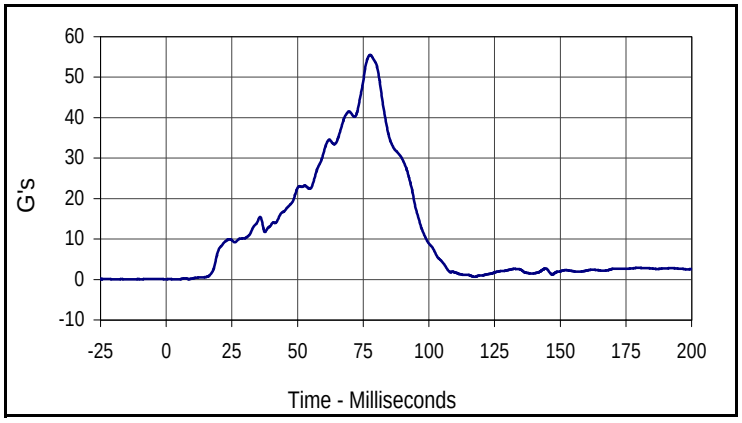
Curve Description			
Passenger Chest Redundant X			
CURNO	Type	SAE Class	Units
060	FIL	180	G's
Max	Time	Min	Time
2.5	178.8	-55.4	77.6



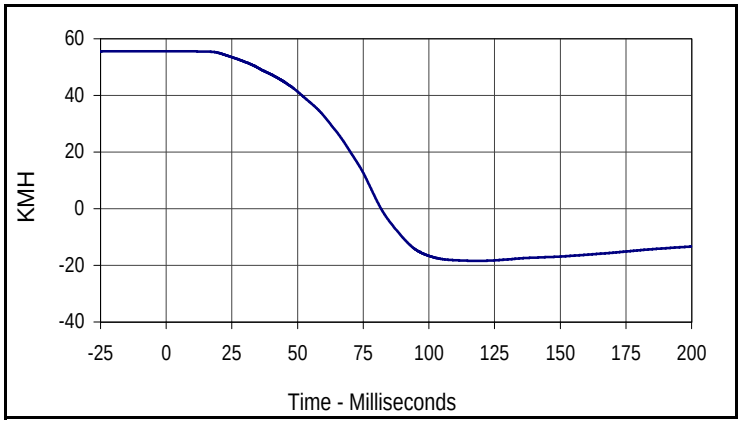
Curve Description			
Passenger Chest Redundant Y			
CURNO	Type	SAE Class	Units
061	FIL	180	G's
Max	Time	Min	Time
2.6	33.5	-4.4	69.6



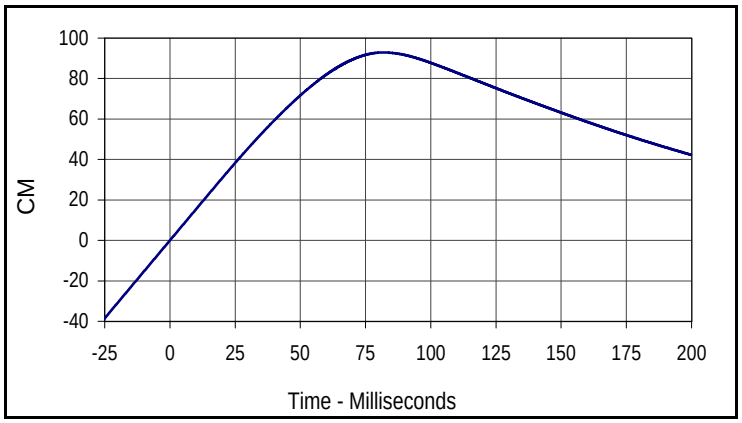
Curve Description			
Passenger Chest Redundant Z			
CURNO	Type	SAE Class	Units
062	FIL	180	G's
Max	Time	Min	Time
9.6	57.5	-6.4	81.5



Curve Description			
Passenger Chest Resultant Redundant			
CURNO	Type	SAE Class	Units
060	RES	180	G's
Max	Time	Min	Time
55.5	77.6	0.0	4.3

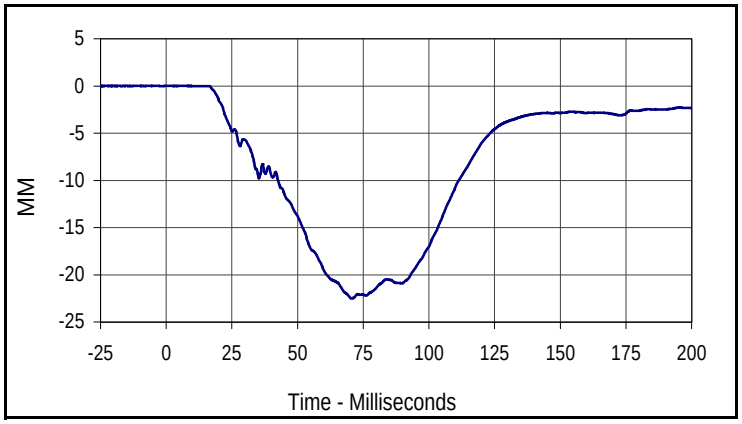


Curve Description			
Passenger Chest Redundant X Velocity			
CURNO	Type	SAE Class	Units
060	IN1	180	KMH
Max	Time	Min	Time
55.6	4.2	-18.4	118.2



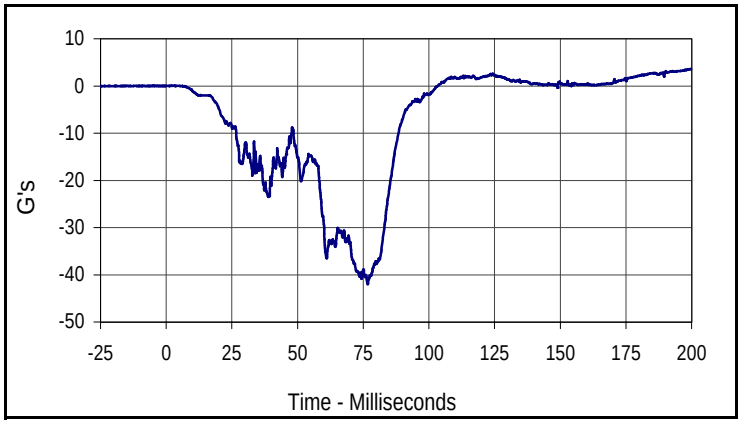
Curve Description			
Passenger Chest Redundant X Displacement			
CURNO	Type	SAE Class	Units
060	IN2	180	CM
Max	Time	Min	Time
92.9	81.8	0.0	0.0

Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501

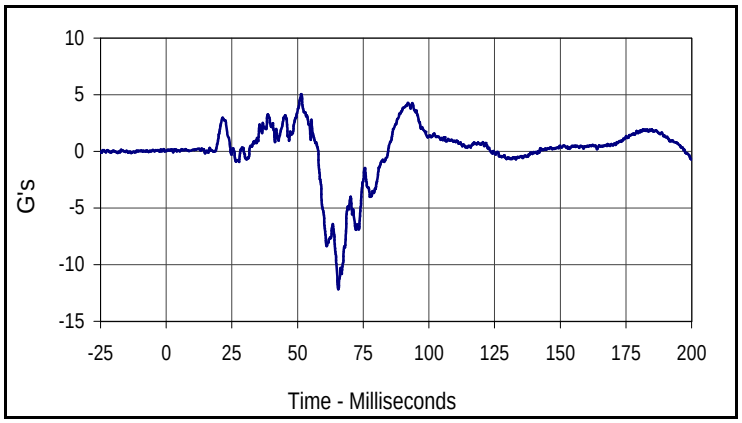


Curve Description			
Passenger Chest Displacement			
CURNO	Type	SAE Class	Units
063	FIL	600	MM
Max	Time	Min	Time
0.0	3.4	-22.5	70.5

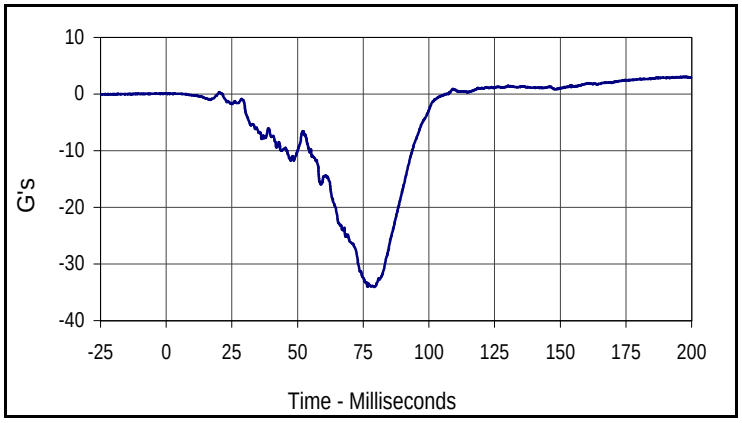
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



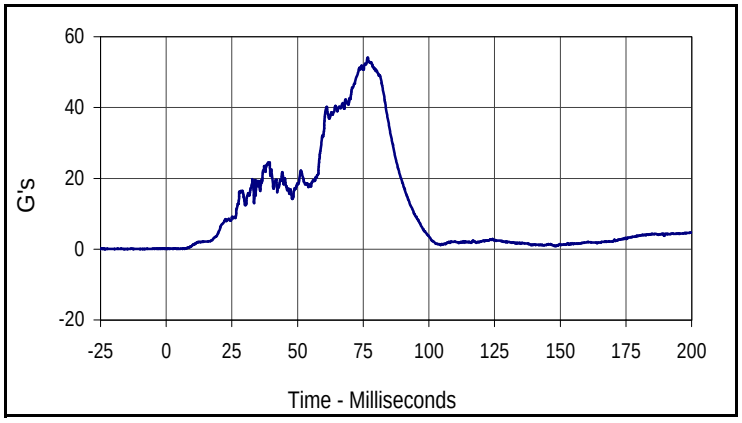
Curve Description			
Passenger Pelvis X			
CURNO	Type	SAE Class	Units
064	FIL	1000	G's
Max	Time	Min	Time
3.6	199.8	-42.0	76.7



Curve Description			
Passenger Pelvis Y			
CURNO	Type	SAE Class	Units
065	FIL	1000	G's
Max	Time	Min	Time
5.1	51.4	-12.2	65.5

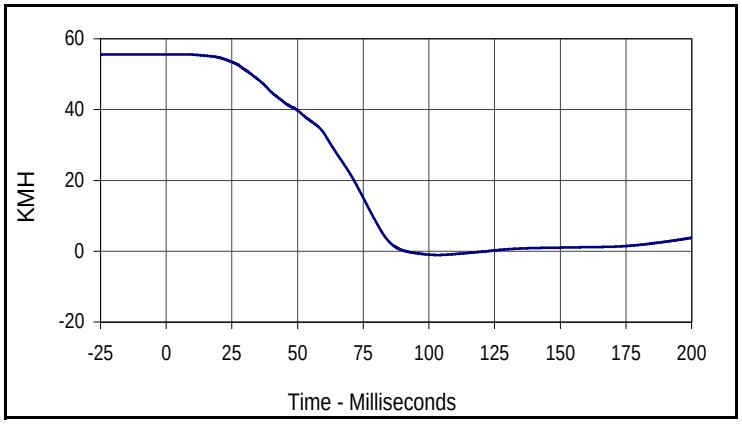


Curve Description			
Passenger Pelvis Z			
CURNO	Type	SAE Class	Units
066	FIL	1000	G's
Max	Time	Min	Time
3.0	197.5	-34.1	79.2

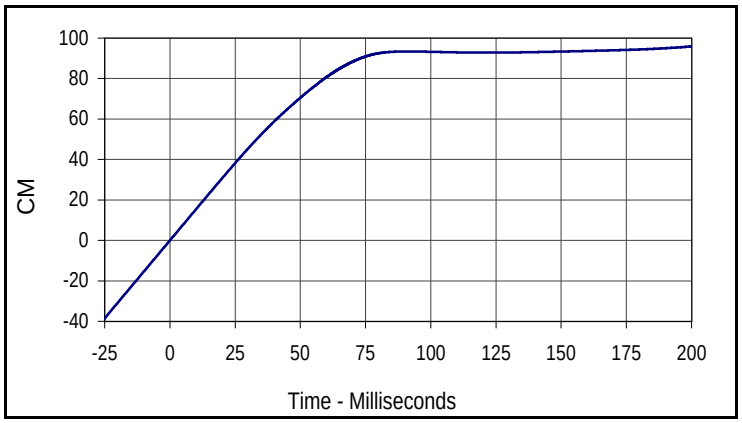


Curve Description			
Passenger Pelvis Resultant			
CURNO	Type	SAE Class	Units
064	RES	1000	G's
Max	Time	Min	Time
54.1	76.7	0.0	5.1

Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501

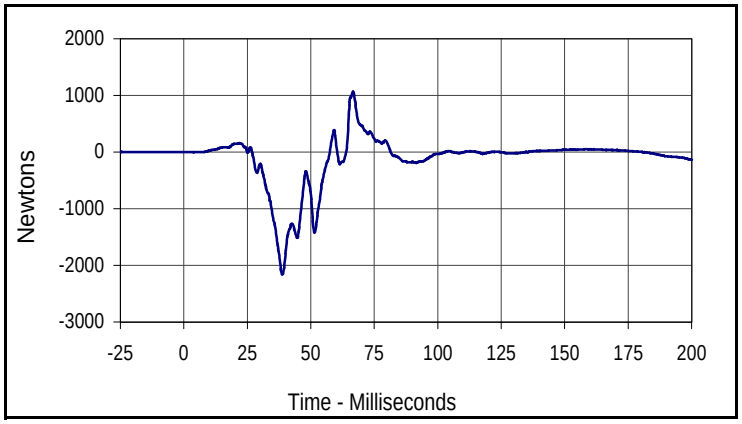


Curve Description			
Passenger Pelvis X Velocity			
CURNO	Type	SAE Class	Units
064	IN1	180	KMH
Max	Time	Min	Time
55.6	5.4	-1.1	103.3

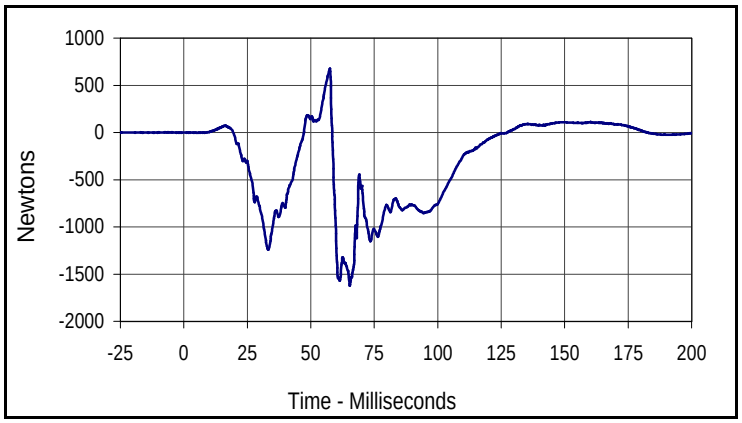


Curve Description			
Passenger Pelvis X Displacement			
CURNO	Type	SAE Class	Units
064	IN2	180	CM
Max	Time	Min	Time
95.9	200.0	0.0	0.0

Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501

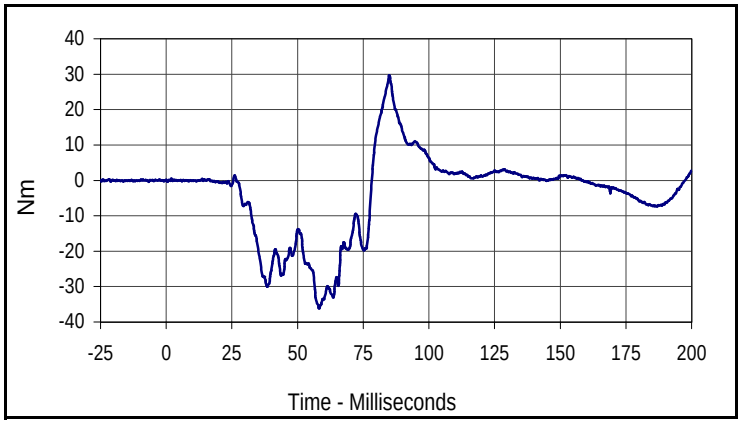


Curve Description			
Passenger Left Femur Force			
CURNO	Type	SAE Class	Units
067	FIL	600	Newtons
Max	Time	Min	Time
1066.6	66.7	-2161.0	38.8

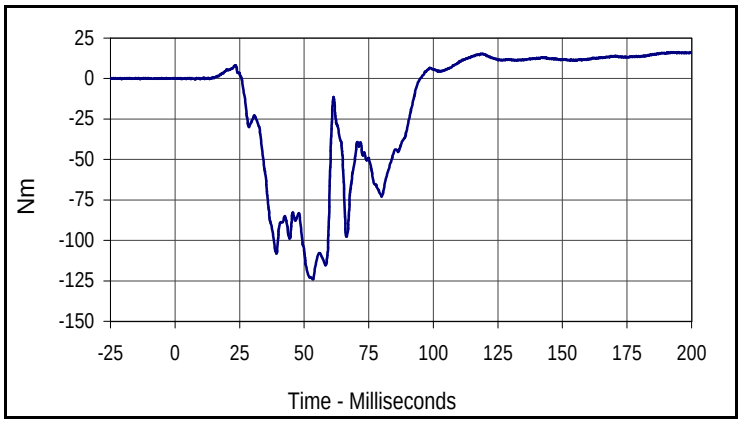


Curve Description			
Passenger Right Femur Force			
CURNO	Type	SAE Class	Units
068	FIL	600	Newtons
Max	Time	Min	Time
678.2	57.5	-1622.8	65.4

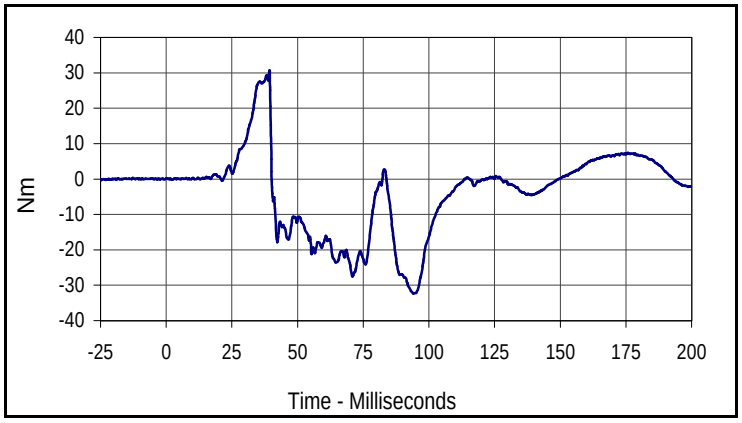
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



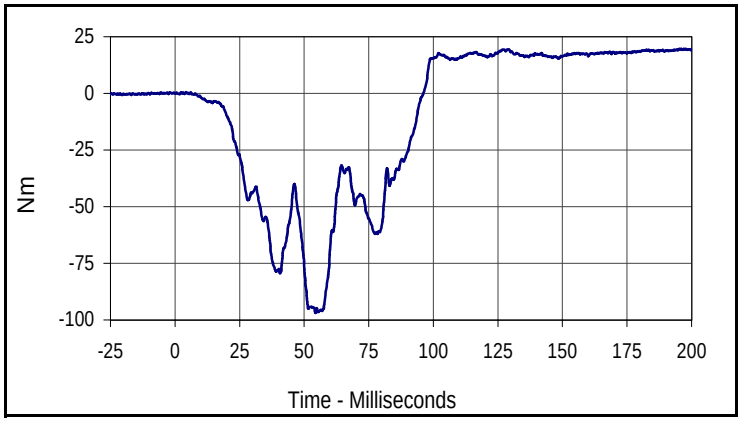
Curve Description			
Passenger Left Upper Tibia Moment X			
CURNO	Type	SAE Class	Units
069	FIL	600	Nm
Max	Time	Min	Time
29.7	84.9	-36.2	58.2



Curve Description			
Passenger Left Upper Tibia Moment Y			
CURNO	Type	SAE Class	Units
070	FIL	600	Nm
Max	Time	Min	Time
16.3	193.0	-124.1	53.3

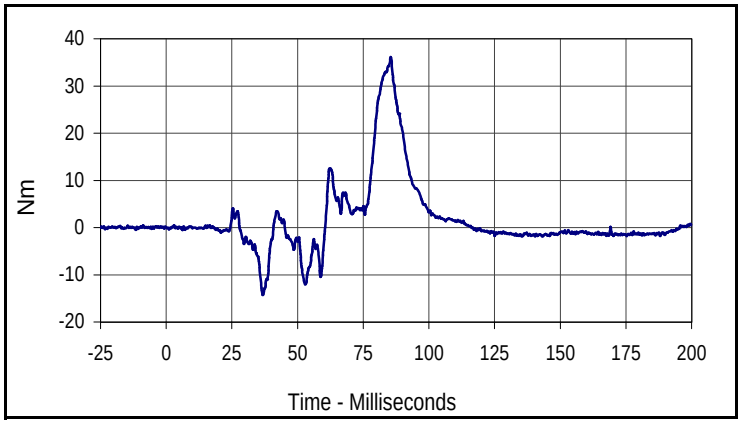


Curve Description			
Passenger Right Upper Tibia Moment X			
CURNO	Type	SAE Class	Units
071	FIL	600	Nm
Max	Time	Min	Time
30.7	39.3	-32.4	94.1

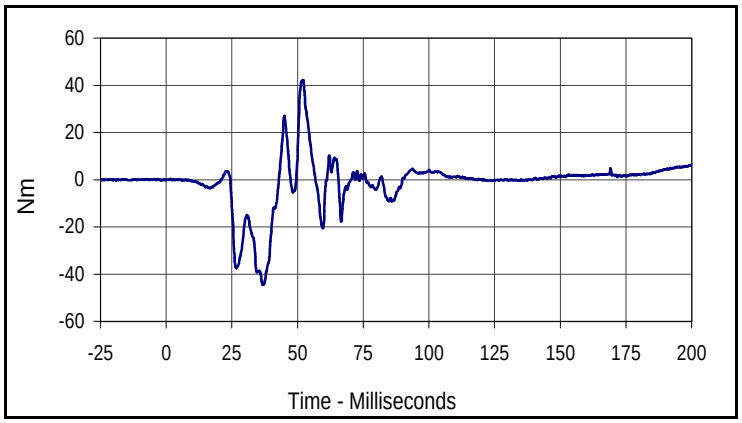


Curve Description			
Passenger Right Upper Tibia Moment Y			
CURNO	Type	SAE Class	Units
072	FIL	600	Nm
Max	Time	Min	Time
19.7	195.2	-96.9	54.4

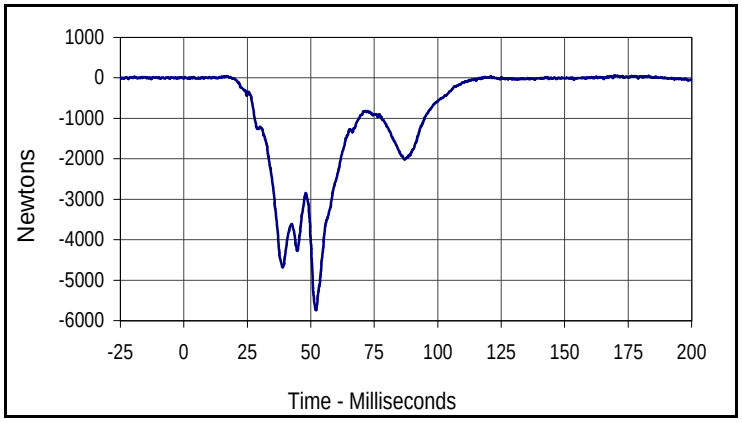
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



Curve Description			
Passenger Left Lower Tibia Moment X			
CURNO	Type	SAE Class	Units
073	FIL	600	Nm
Max	Time	Min	Time
36.1	85.5	-14.3	36.8

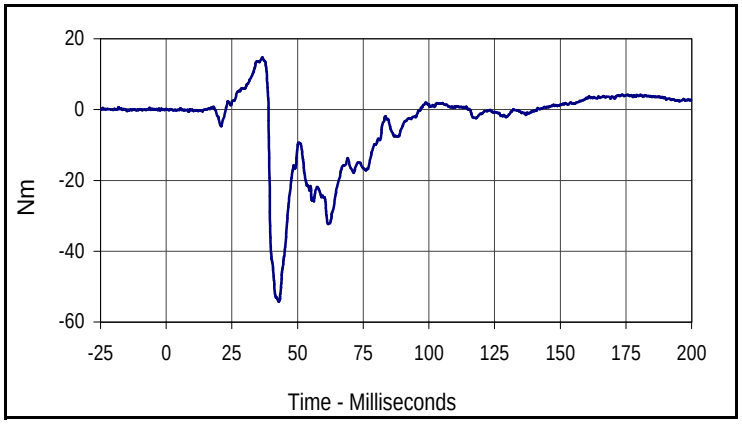


Curve Description			
Passenger Left Lower Tibia Moment Y			
CURNO	Type	SAE Class	Units
074	FIL	600	Nm
Max	Time	Min	Time
42.3	52.1	-44.5	36.9

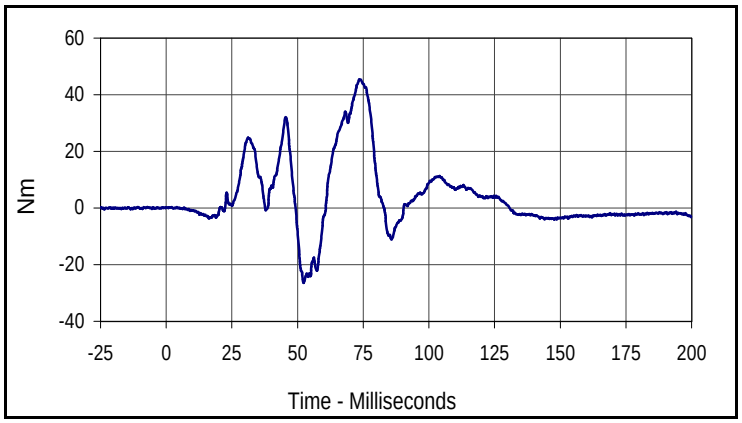


Curve Description			
Passenger Left Lower Tibia Force Z			
CURNO	Type	SAE Class	Units
075	FIL	600	Newtons
Max	Time	Min	Time
55.6	169.6	-5741.9	52.1

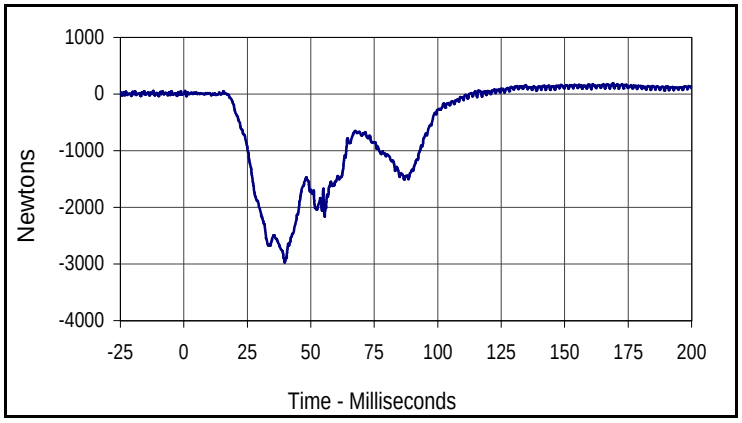
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



Curve Description			
Passenger Right Lower Tibia Moment X			
CURNO	Type	SAE Class	Units
076	FIL	600	Nm
Max	Time	Min	Time
14.7	36.6	-54.3	42.9

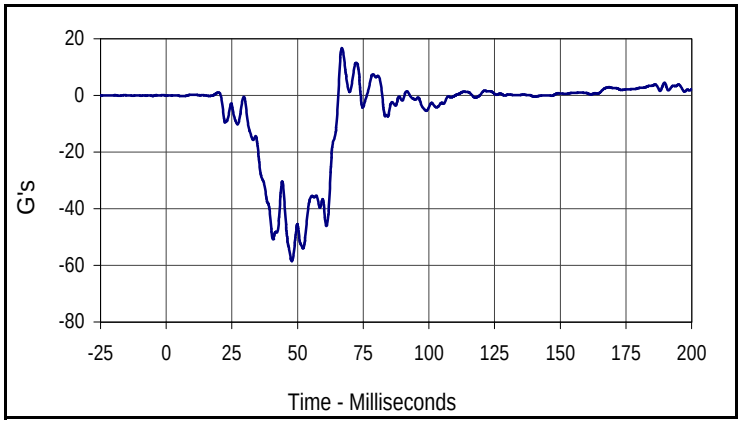


Curve Description			
Passenger Right Lower Tibia Moment Y			
CURNO	Type	SAE Class	Units
077	FIL	600	Nm
Max	Time	Min	Time
45.4	73.5	-26.4	52.3

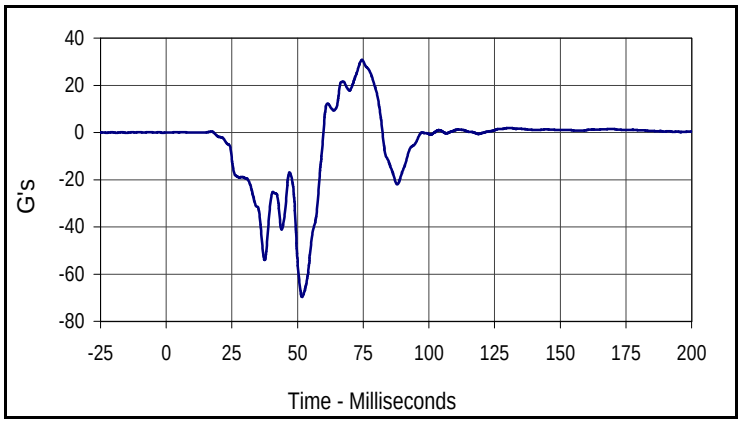


Curve Description			
Passenger Right lower Tibia Force Z			
CURNO	Type	SAE Class	Units
078	FIL	600	Newtons
Max	Time	Min	Time
190.6	169.0	-2971.3	39.8

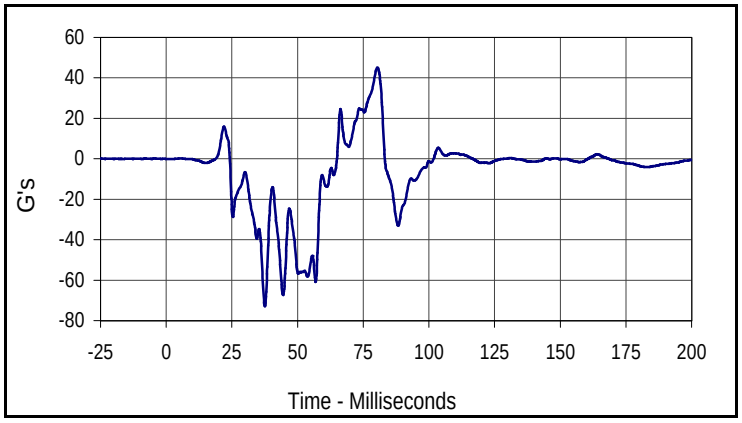
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



Curve Description			
Passenger Left Foot Aft X			
CURNO	Type	SAE Class	Units
079	FIL	180	G's
Max	Time	Min	Time
16.7	66.9	-58.5	47.8

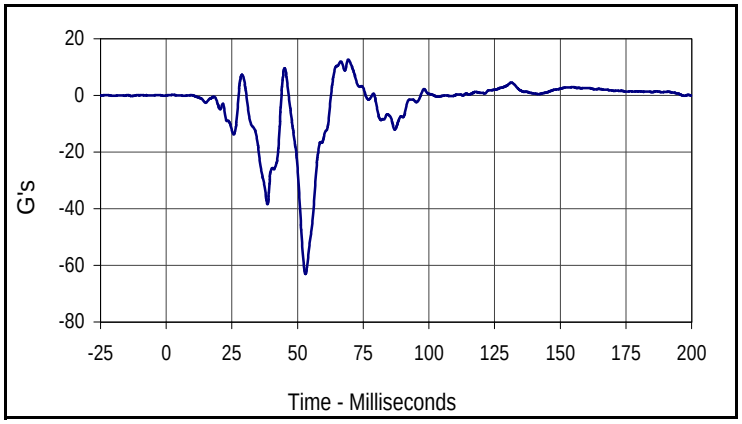


Curve Description			
Passenger Left Foot Aft Z			
CURNO	Type	SAE Class	Units
080	FIL	180	G's
Max	Time	Min	Time
30.7	74.5	-69.6	51.7

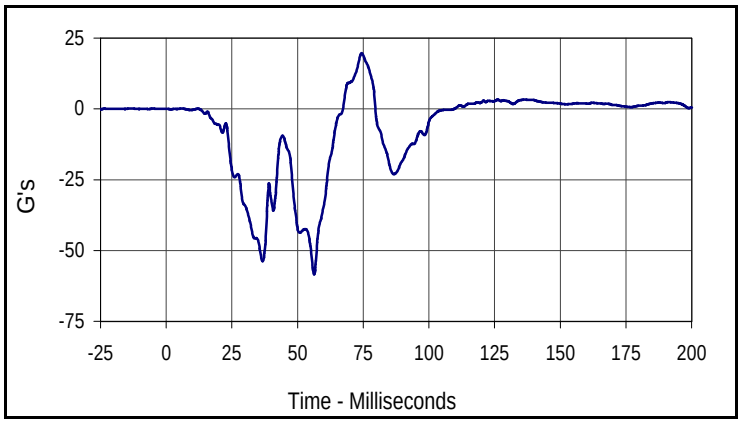


Curve Description			
Passenger Left Foot Fore Z			
CURNO	Type	SAE Class	Units
081	FIL	180	G's
Max	Time	Min	Time
45.2	80.4	-72.9	37.6

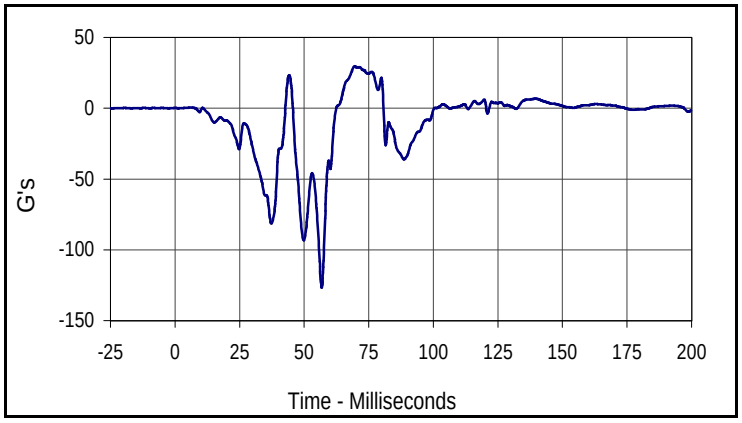
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



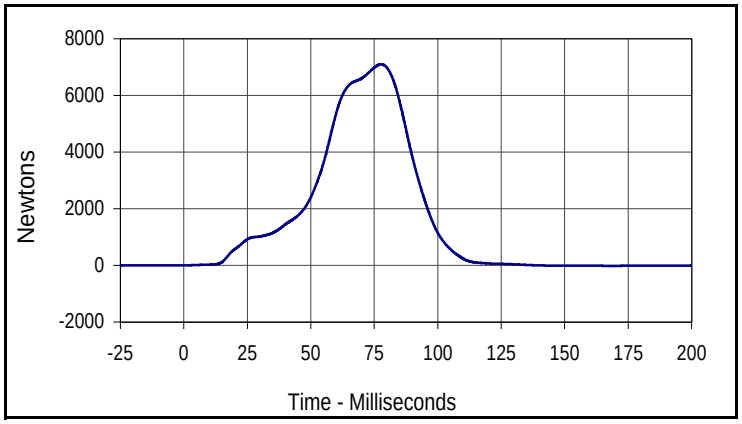
Curve Description			
Passenger Right Foot Aft X			
CURNO	Type	SAE Class	Units
082	FIL	180	G's
Max	Time	Min	Time
12.7	69.3	-63.1	53.0



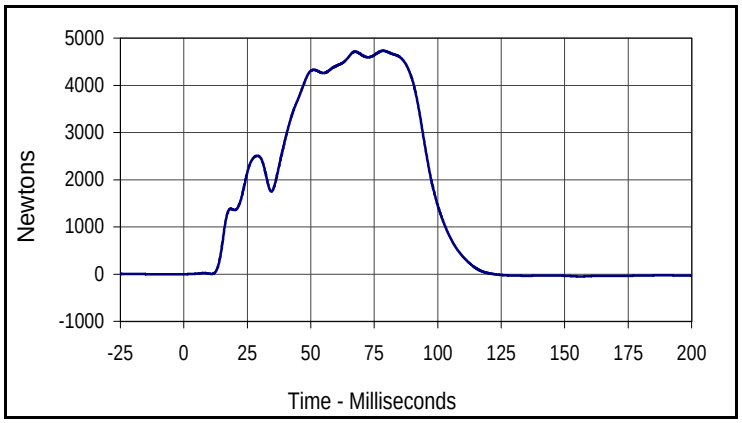
Curve Description			
Passenger Right Foot Aft Z			
CURNO	Type	SAE Class	Units
083	FIL	180	G's
Max	Time	Min	Time
19.7	74.4	-58.4	56.3



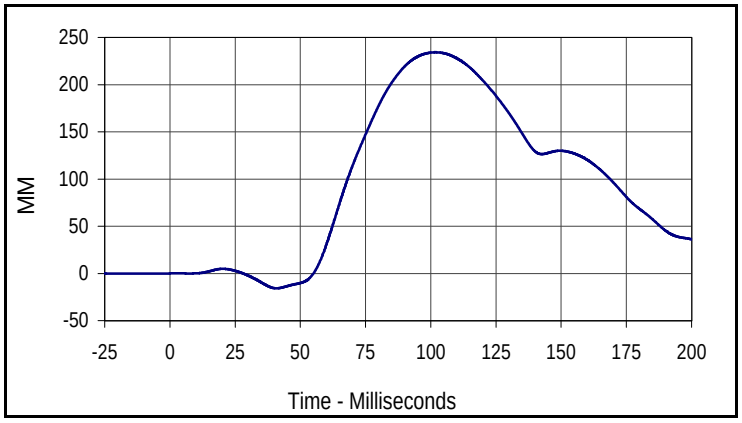
Curve Description			
Passenger Right Foot Fore Z			
CURNO	Type	SAE Class	Units
084	FIL	180	G's
Max	Time	Min	Time
29.6	69.5	-126.7	56.8



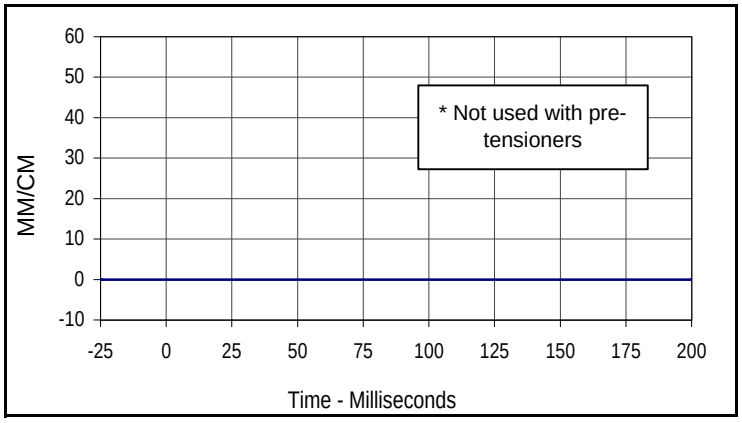
Curve Description			
Passenger Lap Belt Force			
CURNO	Type	SAE Class	Units
085	FIL	60	Newtons
Max	Time	Min	Time
7100.3	77.7	-19.5	168.7



Curve Description			
Passenger Shoulder Belt Force			
CURNO	Type	SAE Class	Units
086	FIL	60	Newtons
Max	Time	Min	Time
4732.5	78.5	-49.2	156.2



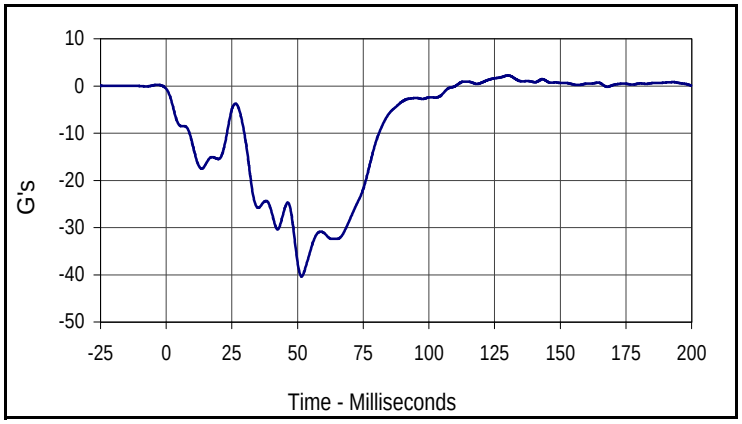
Curve Description			
Passenger Shoulder Belt Pullout			
CURNO	Type	SAE Class	Units
087	FIL	60	MM
Max	Time	Min	Time
234.3	101.8	-15.8	40.9



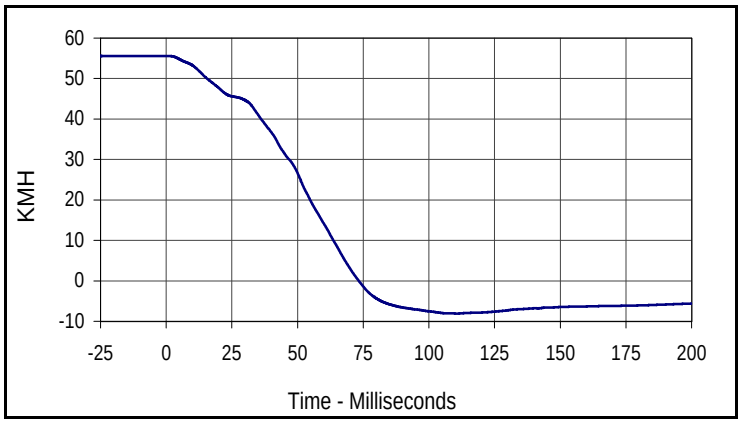
Curve Description			
Passenger Shoulder Belt Elongation			
CURNO	Type	SAE Class	Units
088	FIL	60	MM/CM
Max	Time	Min	Time
0.0	0.0	0.0	0.0

* Not used with pre-tensioners

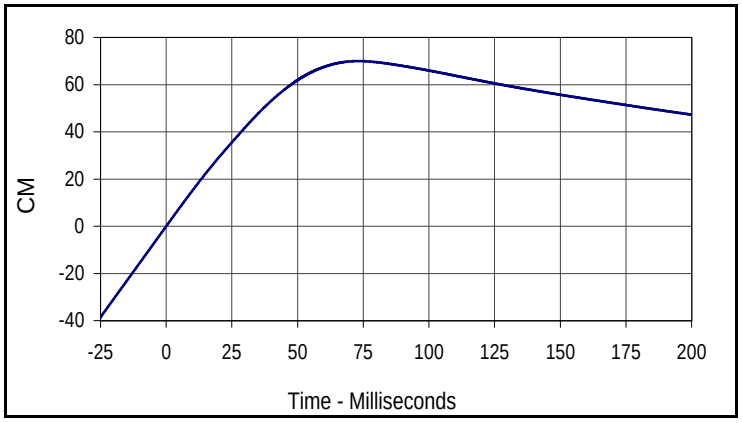
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



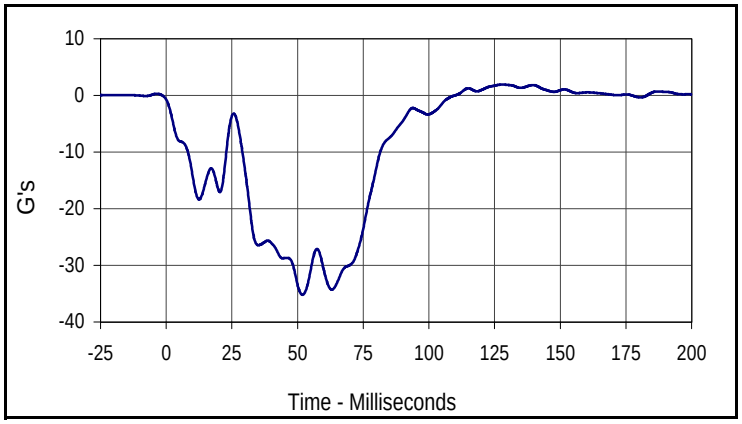
Curve Description			
Vehicle Left Rear X			
CURNO	Type	SAE Class	Units
089	FIL	60	G's
Max	Time	Min	Time
2.2	130.1	-40.3	51.5



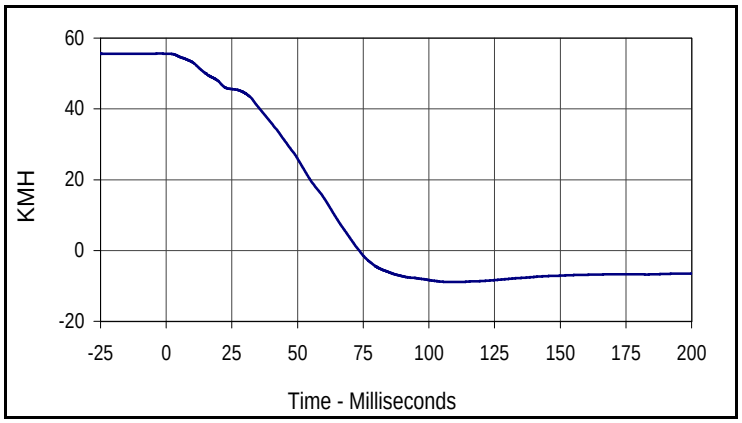
Curve Description			
Vehicle Left Rear X Velocity			
CURNO	Type	SAE Class	Units
089	IN1	180	KMH
Max	Time	Min	Time
55.6	0.0	-8.1	110.7



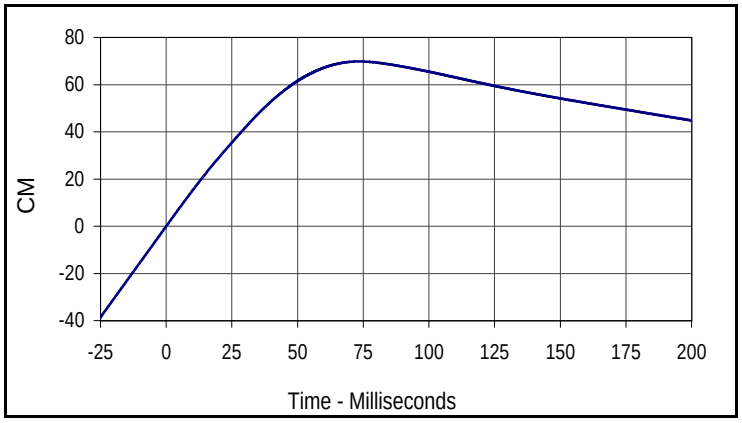
Curve Description			
Vehicle Left Rear X Displacement			
CURNO	Type	SAE Class	Units
089	IN2	180	CM
Max	Time	Min	Time
70.0	73.3	0.0	0.0



Curve Description			
Vehicle Right Rear X			
CURNO	Type	SAE Class	Units
090	FIL	60	G's
Max	Time	Min	Time
1.9	128.0	-35.2	51.9

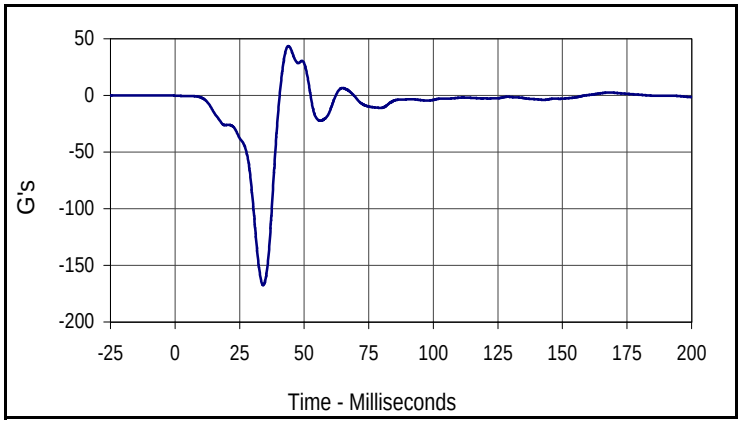


Curve Description			
Vehicle Right Rear X Velocity			
CURNO	Type	SAE Class	Units
090	IN1	180	KMH
Max	Time	Min	Time
55.6	0.0	-8.9	108.2

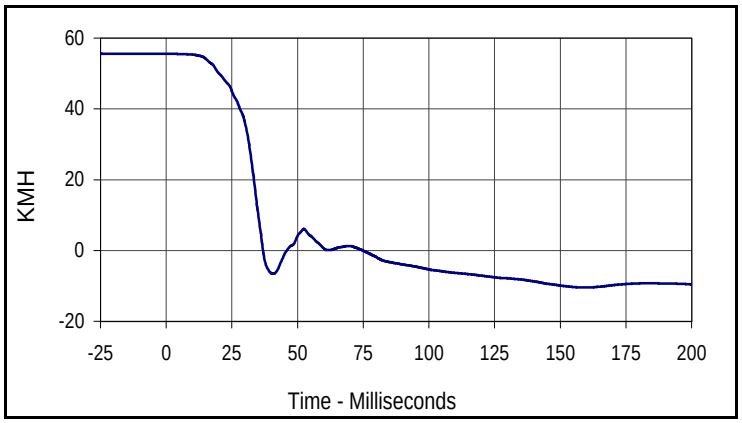


Curve Description			
Vehicle Right Rear X Displacement			
CURNO	Type	SAE Class	Units
090	IN2	180	CM
Max	Time	Min	Time
69.8	73.4	0.0	0.0

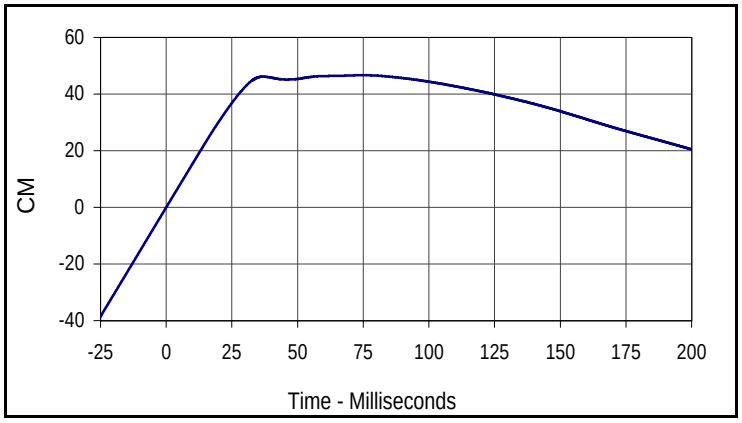
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



Curve Description			
Vehicle Engine Top			
CURNO	Type	SAE Class	Units
091	FIL	60	G's
Max	Time	Min	Time
43.4	43.9	-167.4	34.1

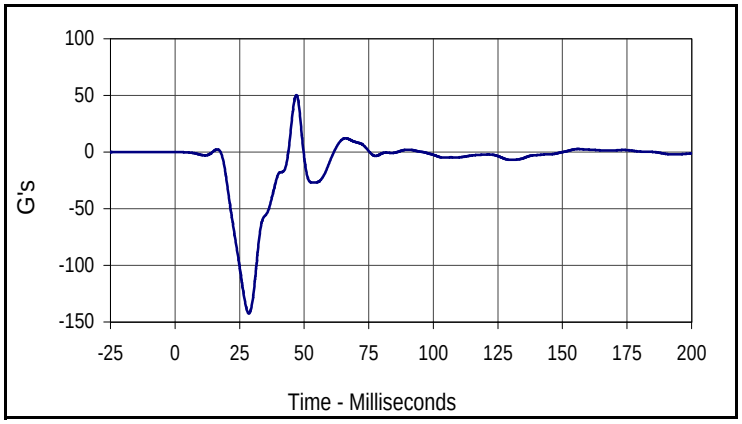


Curve Description			
Vehicle Engine Top Velocity			
CURNO	Type	SAE Class	Units
091	IN1	180	KMH
Max	Time	Min	Time
55.6	0.0	-10.4	158.4

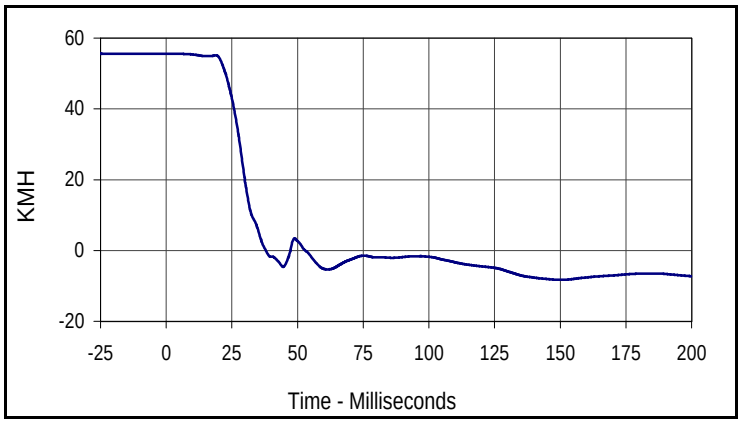


Curve Description			
Vehicle Engine Top Displacement			
CURNO	Type	SAE Class	Units
091	IN2	180	CM
Max	Time	Min	Time
46.7	74.9	0.0	0.0

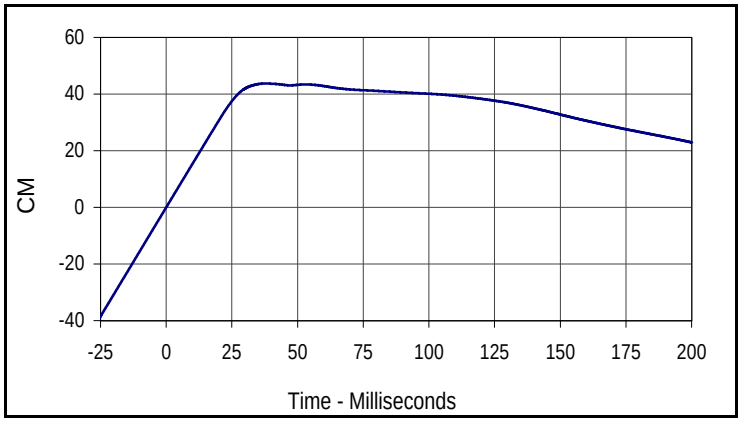
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



Curve Description			
Vehicle Engine Bottom			
CURNO	Type	SAE Class	Units
092	FIL	60	G's
Max	Time	Min	Time
50.2	47.0	-142.6	28.6

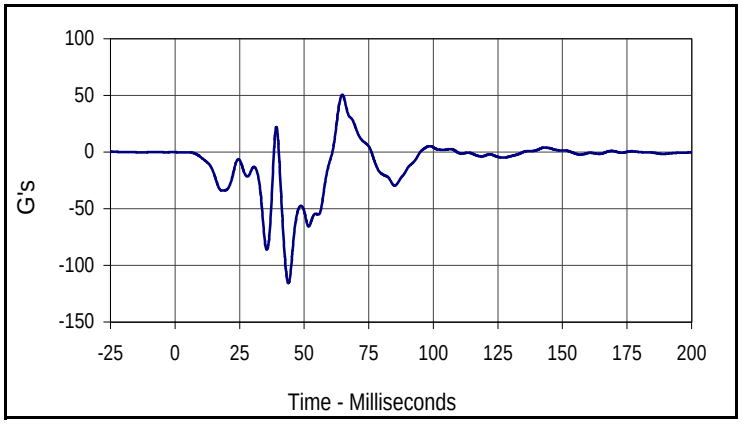


Curve Description			
Vehicle Engine Bottom Velocity			
CURNO	Type	SAE Class	Units
092	IN1	180	KMH
Max	Time	Min	Time
55.6	0.0	-8.3	148.9

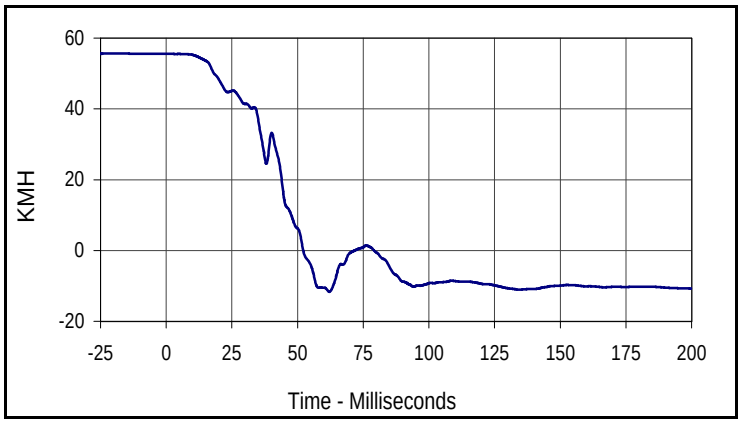


Curve Description			
Vehicle Engine Bottom Displacement			
CURNO	Type	SAE Class	Units
092	IN2	180	CM
Max	Time	Min	Time
43.7	37.9	0.0	0.0

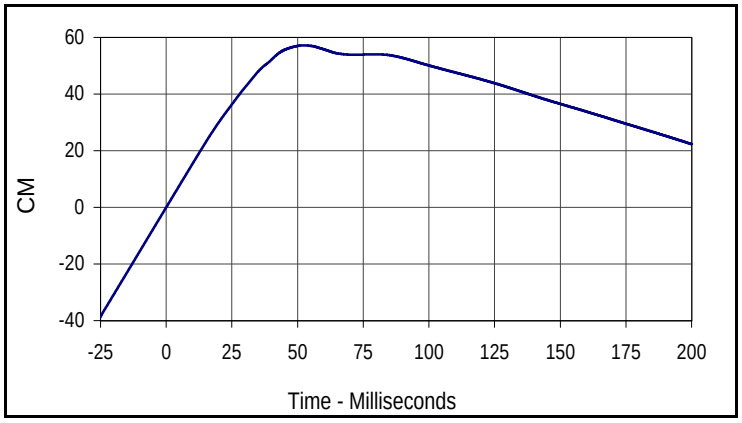
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



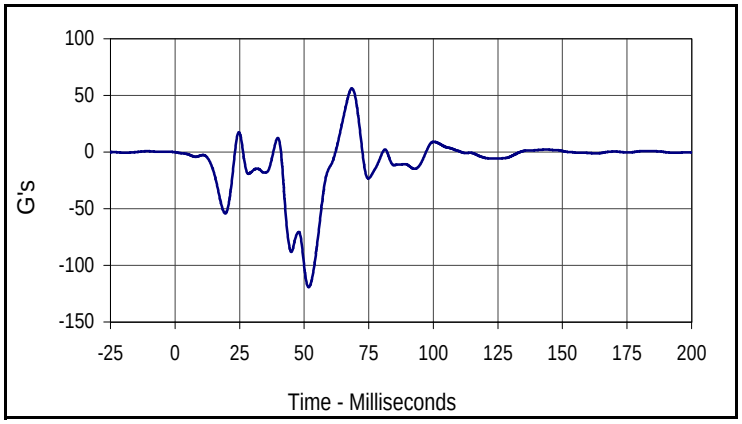
Curve Description			
Vehicle Left Brake Caliper			
CURNO	Type	SAE Class	Units
093	FIL	60	G's
Max	Time	Min	Time
50.6	64.8	-115.6	43.9



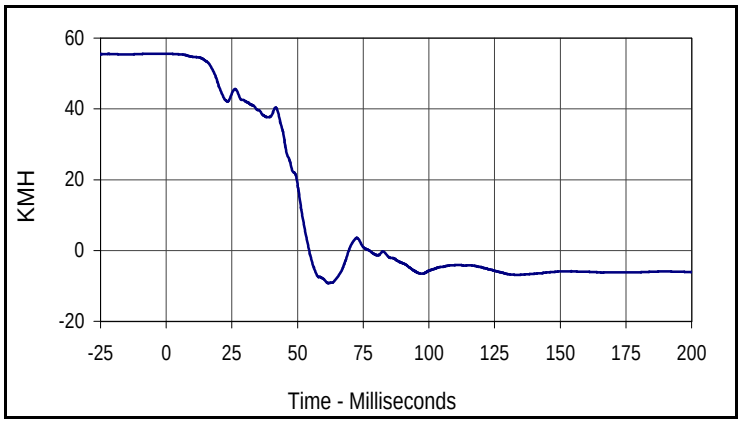
Curve Description			
Vehicle Left Brake Caliper Velocity			
CURNO	Type	SAE Class	Units
093	IN1	180	KMH
Max	Time	Min	Time
55.6	0.8	-11.6	62.1



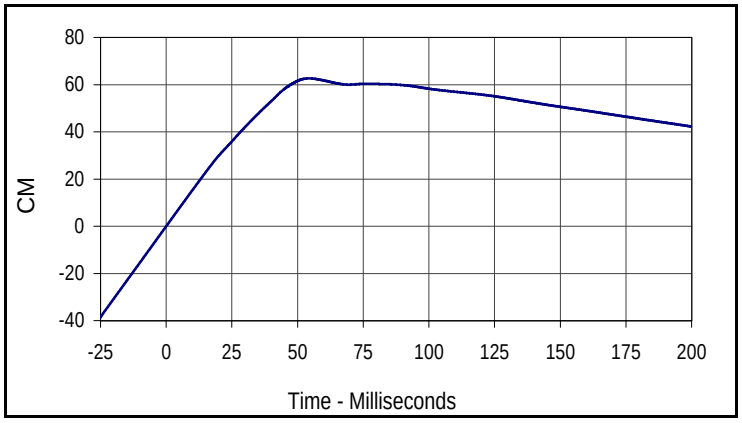
Curve Description			
Vehicle Left Brake Caliper Displacement			
CURNO	Type	SAE Class	Units
093	IN2	180	CM
Max	Time	Min	Time
57.2	52.2	0.0	0.0



Curve Description			
Vehicle Right Brake Caliper			
CURNO	Type	SAE Class	Units
094	FIL	60	G's
Max	Time	Min	Time
56.2	68.5	-119.2	51.7

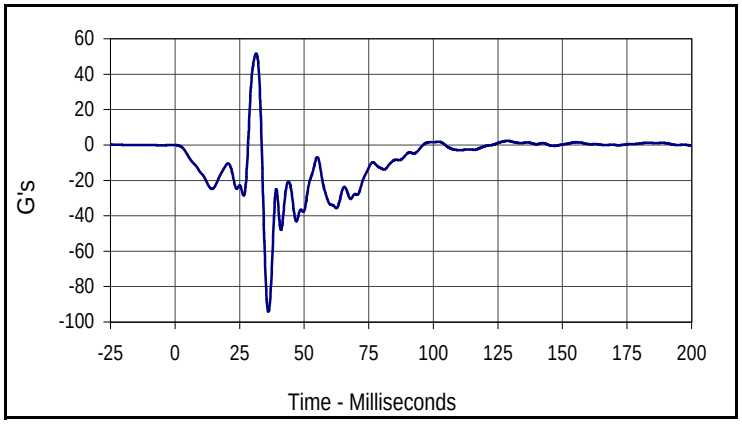


Curve Description			
Vehicle Right Brake Caliper Velocity			
CURNO	Type	SAE Class	Units
094	IN1	180	KMH
Max	Time	Min	Time
55.6	0.4	-9.2	61.7

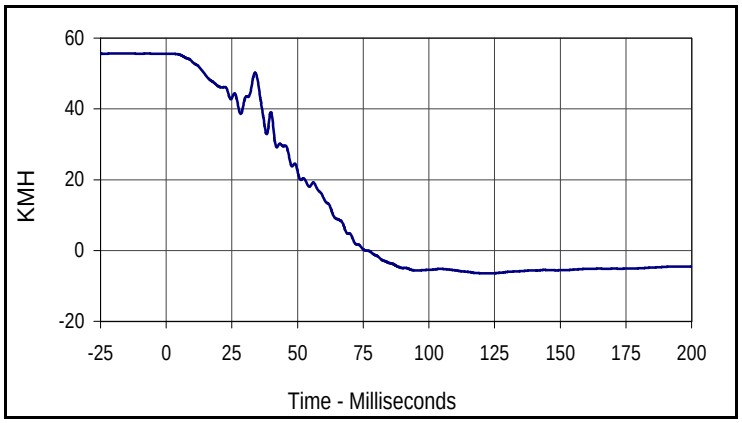


Curve Description			
Vehicle Right Brake Caliper Displacement			
CURNO	Type	SAE Class	Units
094	IN2	180	CM
Max	Time	Min	Time
62.6	54.4	0.0	0.0

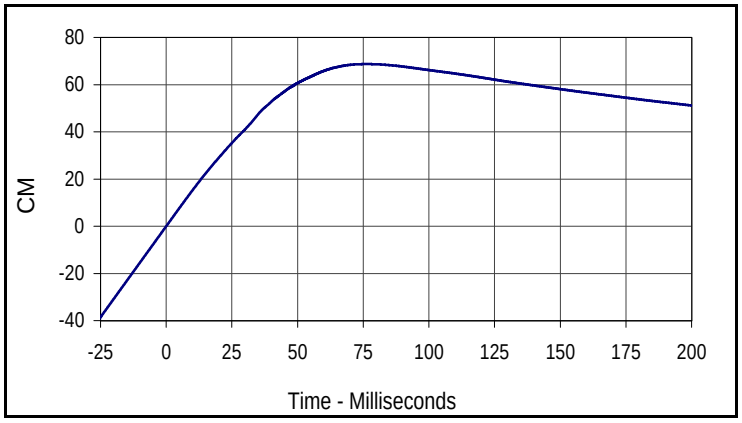
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



Curve Description			
Vehicle Instrument Panel			
CURNO	Type	SAE Class	Units
095	FIL	60	G's
Max	Time	Min	Time
51.8	31.4	-94.1	36.1

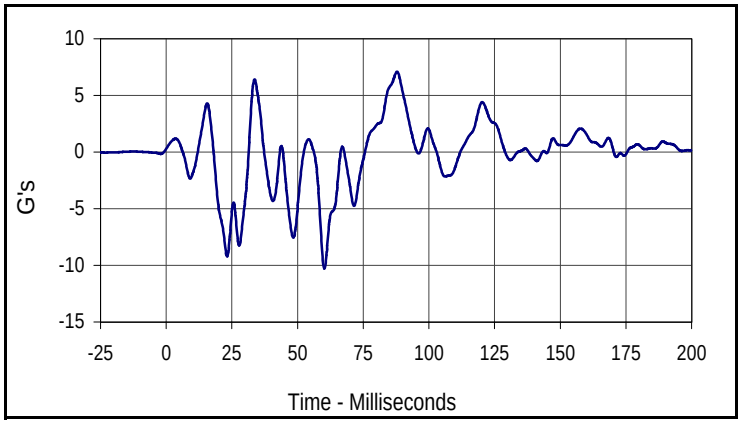


Curve Description			
Vehicle Instrument Panel Velocity			
CURNO	Type	SAE Class	Units
095	IN1	180	KMH
Max	Time	Min	Time
55.6	0.0	-6.5	123.6

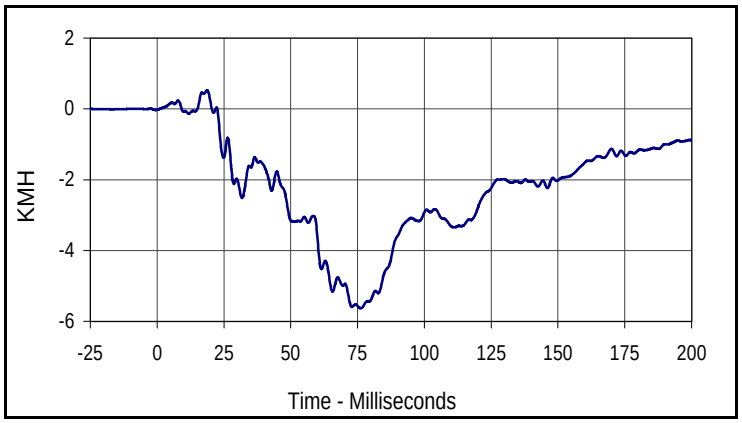


Curve Description			
Vehicle Instrument Panel Displacement			
CURNO	Type	SAE Class	Units
095	IN2	180	CM
Max	Time	Min	Time
68.7	76.2	0.0	0.0

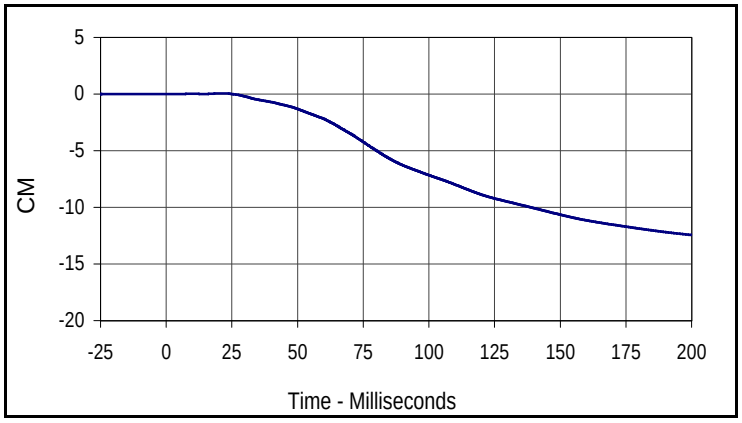
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



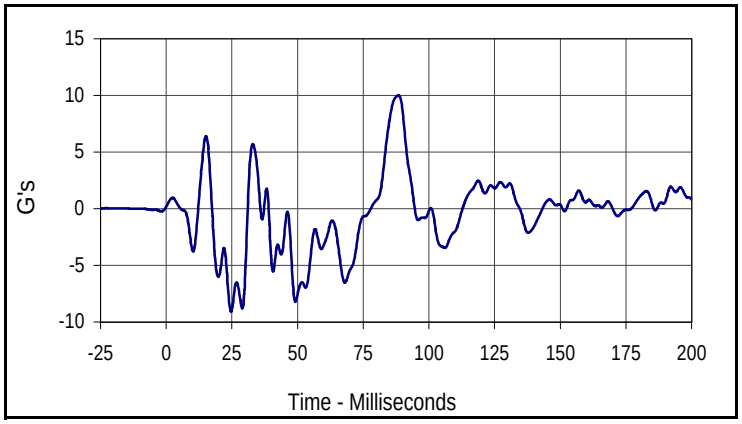
Curve Description			
Vehicle Left Rear Z			
CURNO	Type	SAE Class	Units
096	FIL	60	G's
Max	Time	Min	Time
7.1	87.9	-10.3	60.2



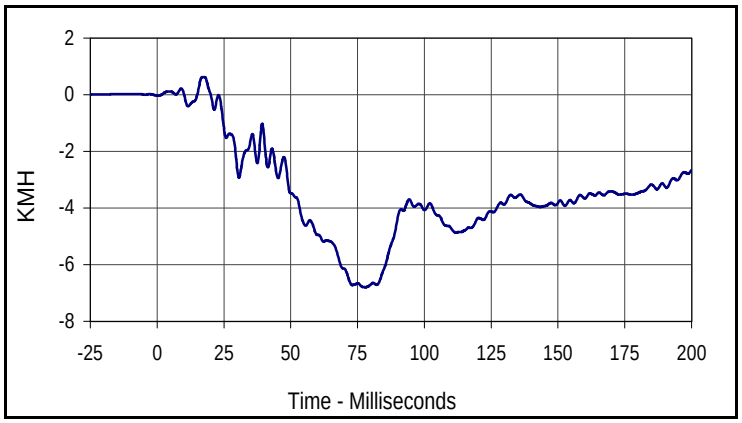
Curve Description			
Vehicle Left Rear Z Velocity			
CURNO	Type	SAE Class	Units
096	IN1	180	KMH
Max	Time	Min	Time
0.5	18.7	-5.6	76.3



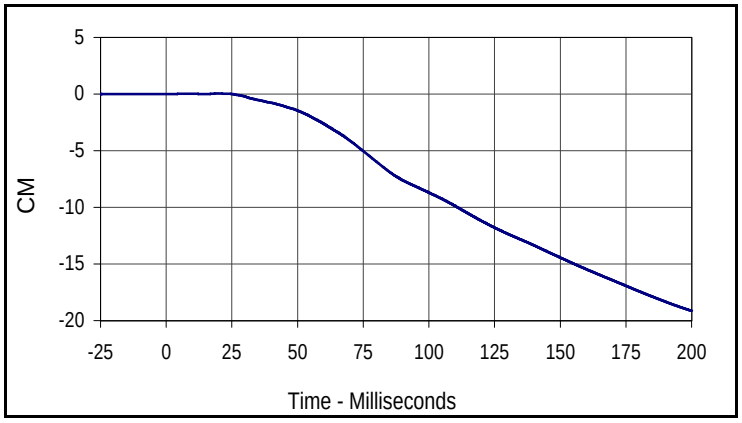
Curve Description			
Vehicle Left Rear Z Displacement			
CURNO	Type	SAE Class	Units
096	IN2	180	CM
Max	Time	Min	Time
0.1	20.5	-12.4	200.0



Curve Description			
Vehicle Right Rear Z			
CURNO	Type	SAE Class	Units
097	FIL	60	G's
Max	Time	Min	Time
10.0	88.4	-9.1	24.7



Curve Description			
Vehicle Right Rear Z Velocity			
CURNO	Type	SAE Class	Units
097	IN1	180	KMH
Max	Time	Min	Time
0.6	17.7	-6.8	78.0

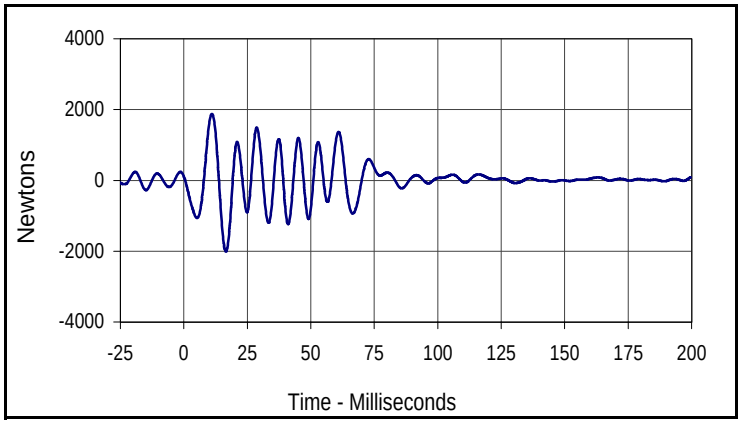


Curve Description			
Vehicle Right Rear Z Displacement			
CURNO	Type	SAE Class	Units
097	IN2	180	CM
Max	Time	Min	Time
0.1	20.1	-19.1	200.0

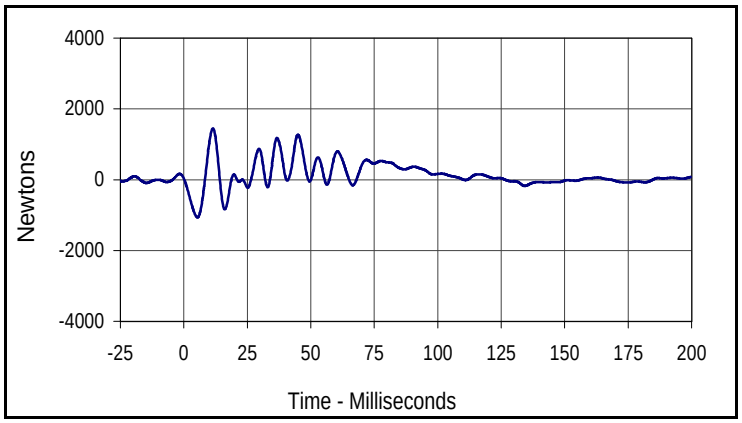
APPENDIX C

LOAD CELL BARRIER DATA PLOTS

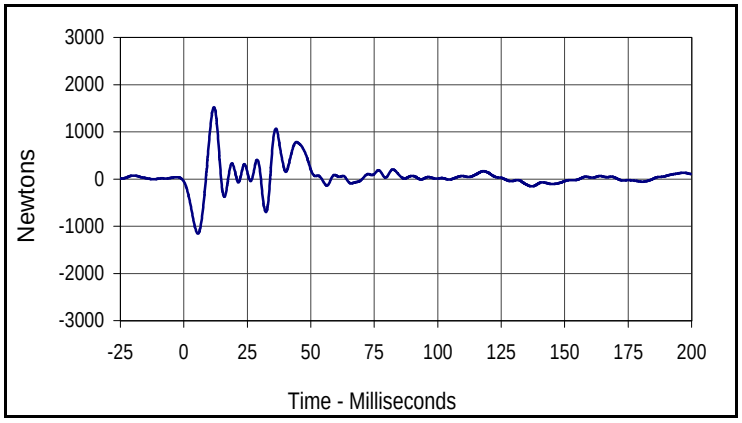
Test Vehicle:	2004 Hyundai Tiburon	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



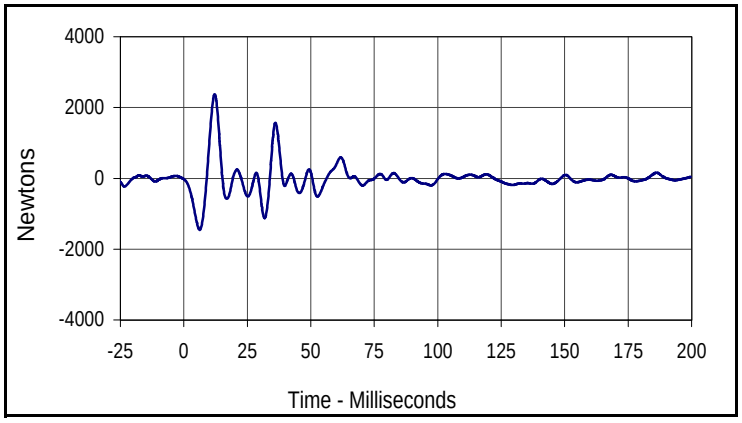
Curve Description			
Barrier Force A1			
CURNO	Type	SAE Class	Units
098	FIL	60	Newtons
Max	Time	Min	Time
1879.3	11.1	-2008.0	16.6



Curve Description			
Barrier Force B1			
CURNO	Type	SAE Class	Units
107	FIL	60	Newtons
Max	Time	Min	Time
1447.9	11.4	-1063.7	5.3

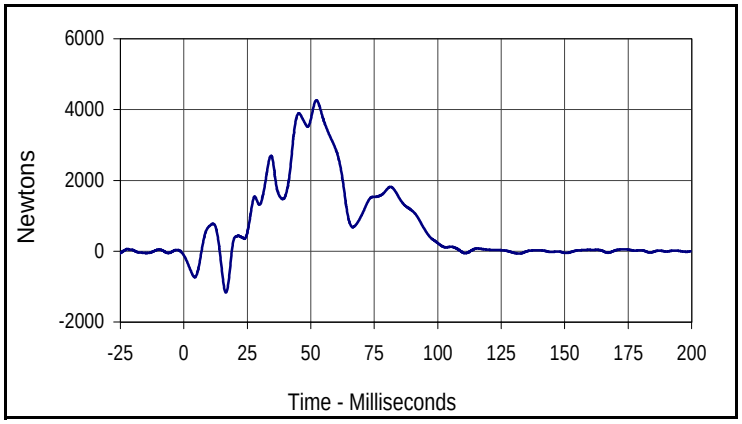


Curve Description			
Barrier Force C1			
CURNO	Type	SAE Class	Units
116	FIL	60	Newtons
Max	Time	Min	Time
1523.1	11.8	-1158.7	5.5

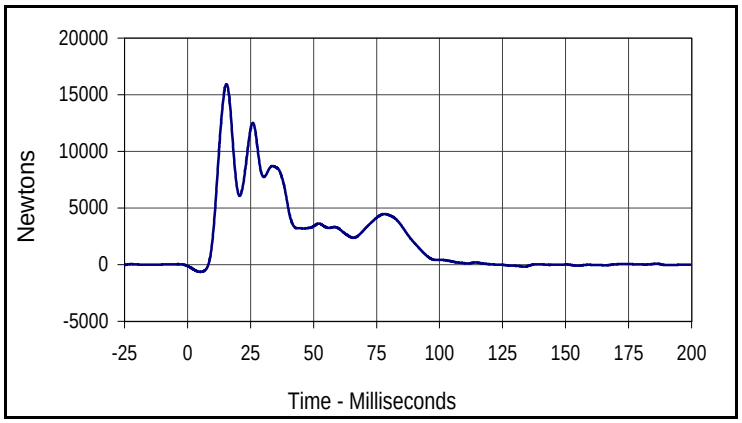


Curve Description			
Barrier Force D1			
CURNO	Type	SAE Class	Units
125	FIL	60	Newtons
Max	Time	Min	Time
2374.9	12.1	-1456.7	6.2

Test Vehicle:	2004 Hyundai Tiburon	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501

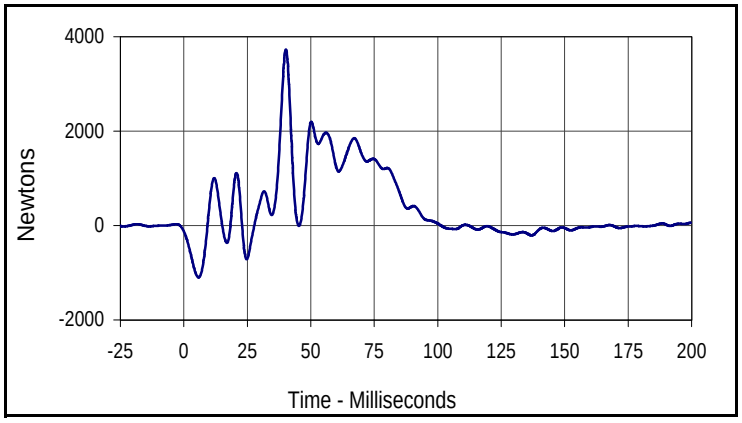


Curve Description			
Barrier Force A2			
CURNO	Type	SAE Class	Units
099	FIL	60	Newtons
Max	Time	Min	Time
4264.6	52.2	-1167.0	16.6



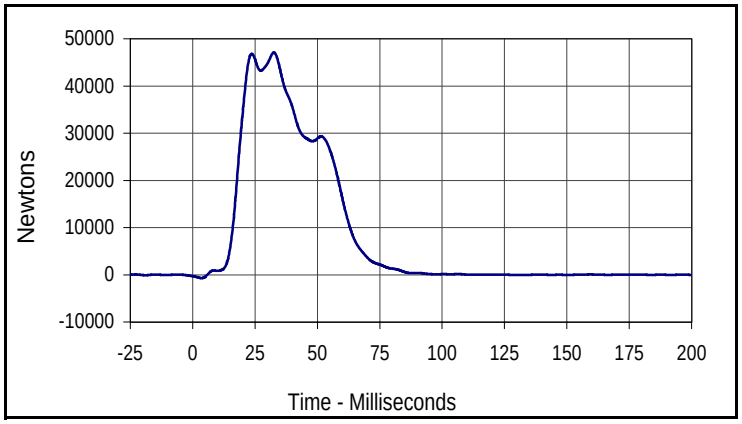
Curve Description			
Barrier Force B2			
CURNO	Type	SAE Class	Units
108	FIL	60	Newtons
Max	Time	Min	Time
15940.0	15.4	-635.8	5.1

Curve Description			
Barrier Force C2			
CURNO	Type	SAE Class	Units
117	FIL	60	Newtons
Max	Time	Min	Time
18135.4	39.2	-749.1	4.6

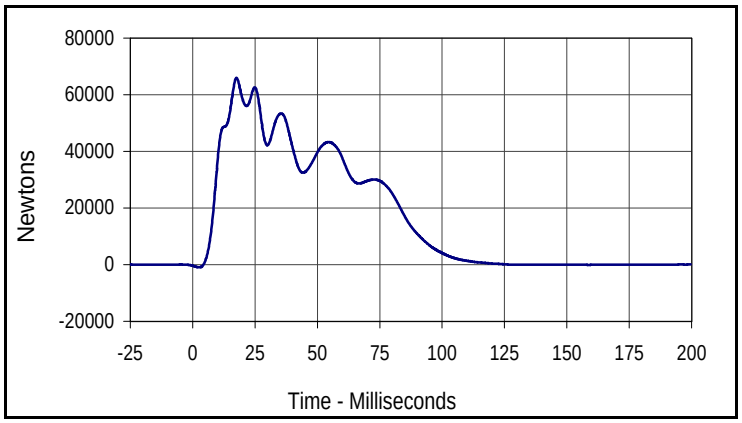


Curve Description			
Barrier Force D2			
CURNO	Type	SAE Class	Units
126	FIL	60	Newtons
Max	Time	Min	Time
3728.6	40.2	-1096.5	5.8

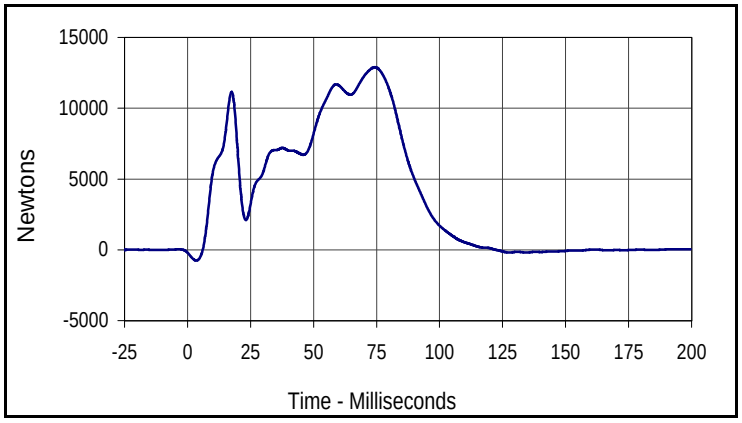
Test Vehicle:	2004 Hyundai Tiburon	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



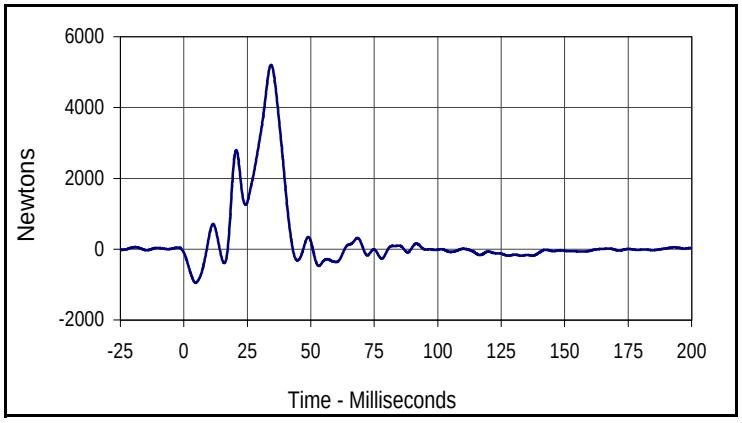
Curve Description			
Barrier Force A3			
CURNO	Type	SAE Class	Units
100	FIL	60	Newtons
Max	Time	Min	Time
47079.1	32.6	-710.0	3.6



Curve Description			
Barrier Force B3			
CURNO	Type	SAE Class	Units
109	FIL	60	Newtons
Max	Time	Min	Time
65951.4	17.6	-943.7	2.6

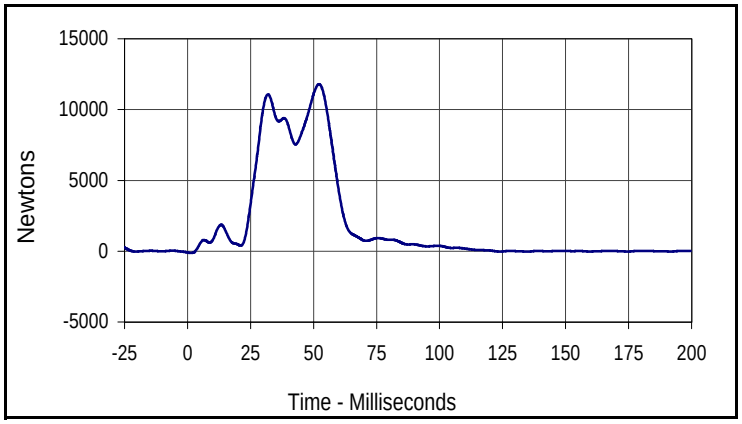


Curve Description			
Barrier Force C3			
CURNO	Type	SAE Class	Units
118	FIL	60	Newtons
Max	Time	Min	Time
12889.3	74.2	-755.1	3.5

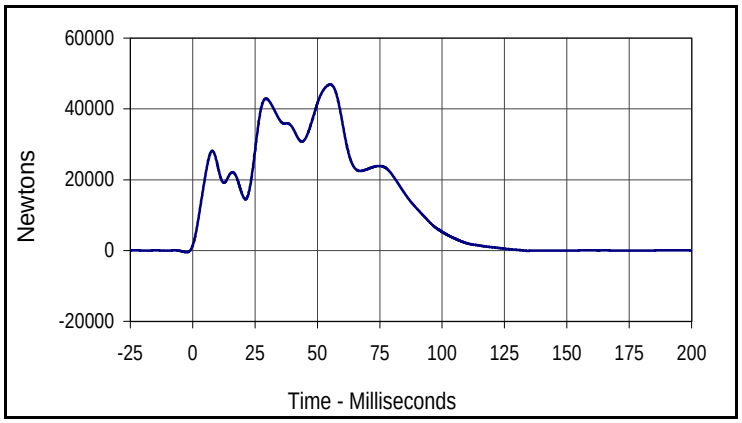


Curve Description			
Barrier Force D3			
CURNO	Type	SAE Class	Units
127	FIL	60	Newtons
Max	Time	Min	Time
5204.5	34.4	-948.0	4.6

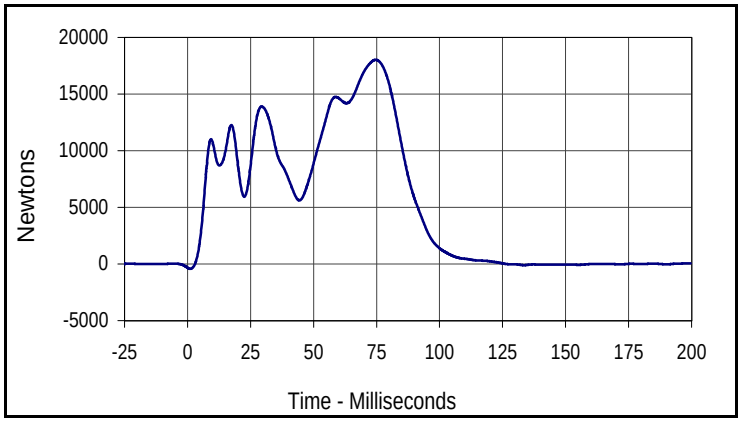
Test Vehicle:	2004 Hyundai Tiburon	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



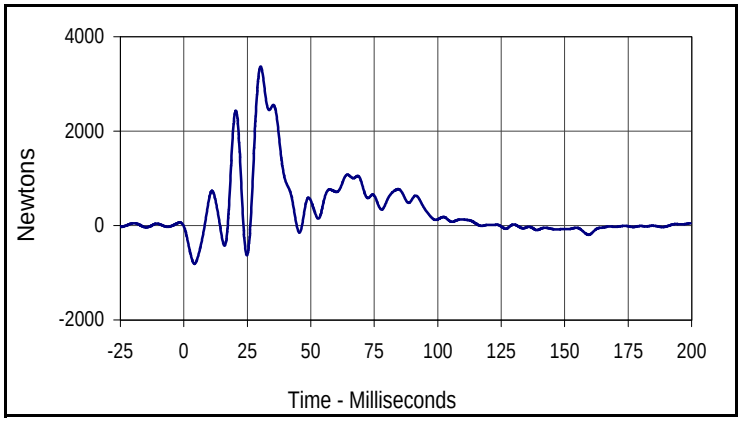
Curve Description			
Barrier Force A4			
CURNO	Type	SAE Class	Units
101	FIL	60	Newtons
Max	Time	Min	Time
11799.9	52.2	-128.8	1.4



Curve Description			
Barrier Force B4			
CURNO	Type	SAE Class	Units
110	FIL	60	Newtons
Max	Time	Min	Time
46886.8	55.1	-78.3	134.3

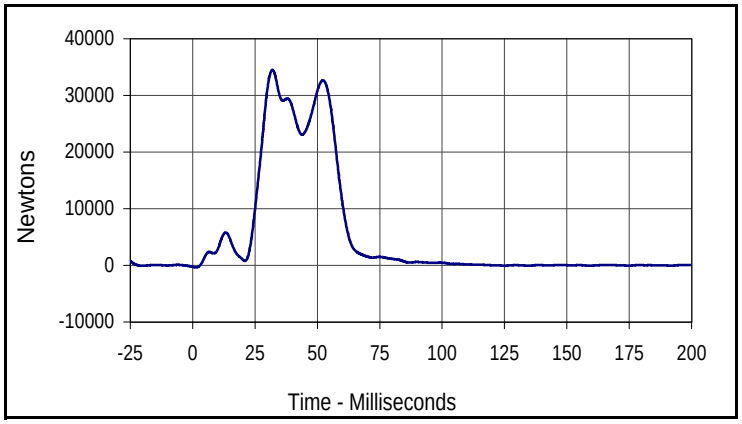


Curve Description			
Barrier Force C4			
CURNO	Type	SAE Class	Units
119	FIL	60	Newtons
Max	Time	Min	Time
18021.6	74.7	-431.2	1.1

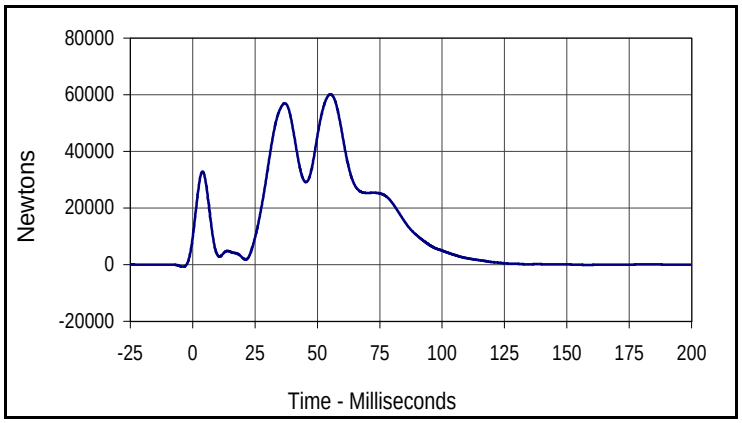


Curve Description			
Barrier Force D4			
CURNO	Type	SAE Class	Units
128	FIL	60	Newtons
Max	Time	Min	Time
3367.2	30.2	-810.6	4.2

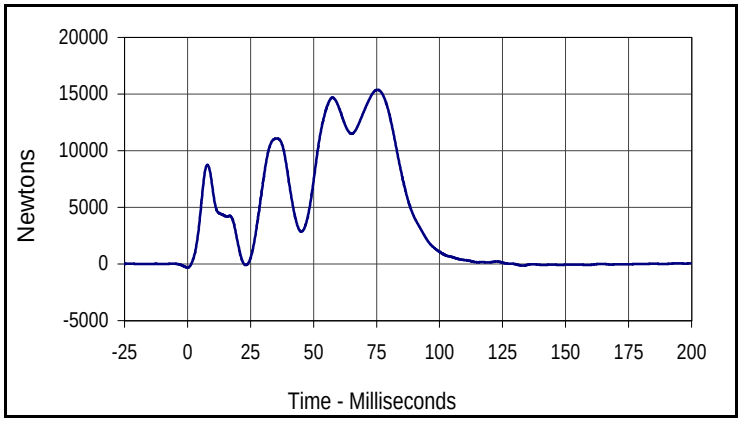
Test Vehicle:	2004 Hyundai Tiburon	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



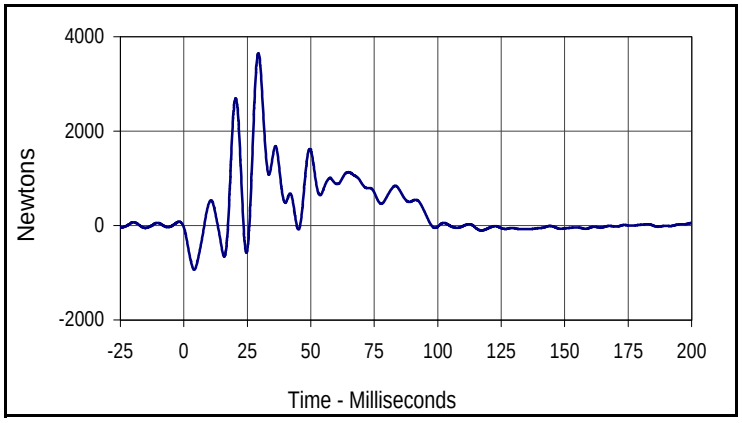
Curve Description			
Barrier Force A5			
CURNO	Type	SAE Class	Units
102	FIL	60	Newtons
Max	Time	Min	Time
34525.2	32.0	-344.1	1.2



Curve Description			
Barrier Force B5			
CURNO	Type	SAE Class	Units
111	FIL	60	Newtons
Max	Time	Min	Time
60125.7	55.2	-100.3	158.6

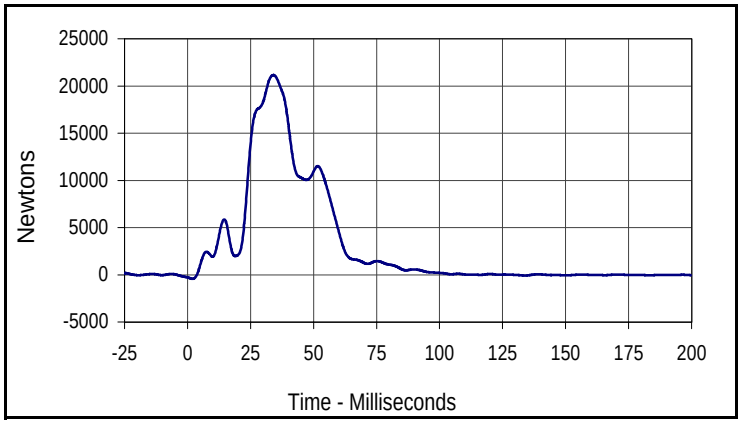


Curve Description			
Barrier Force C5			
CURNO	Type	SAE Class	Units
120	FIL	60	Newtons
Max	Time	Min	Time
15378.8	75.3	-311.1	0.0

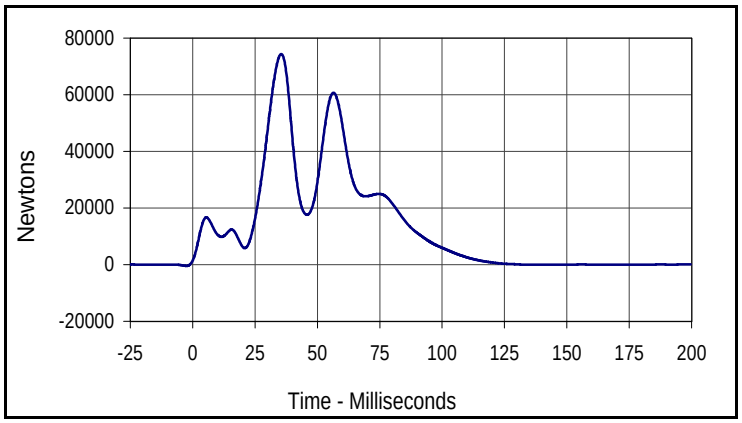


Curve Description			
Barrier Force D5			
CURNO	Type	SAE Class	Units
129	FIL	60	Newtons
Max	Time	Min	Time
3647.6	29.3	-936.4	4.1

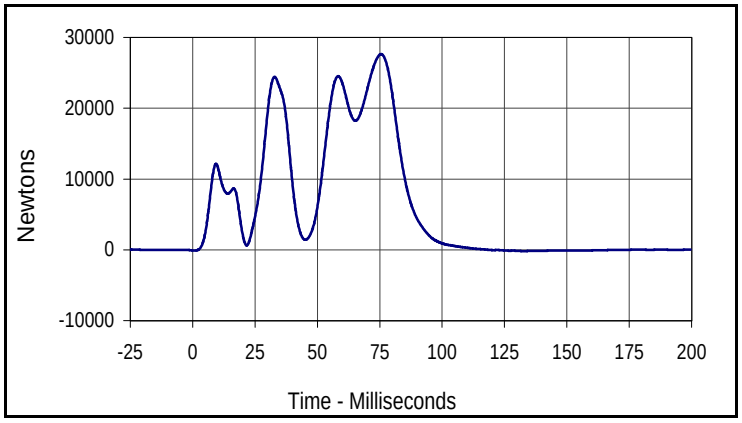
Test Vehicle:	2004 Hyundai Tiburon	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



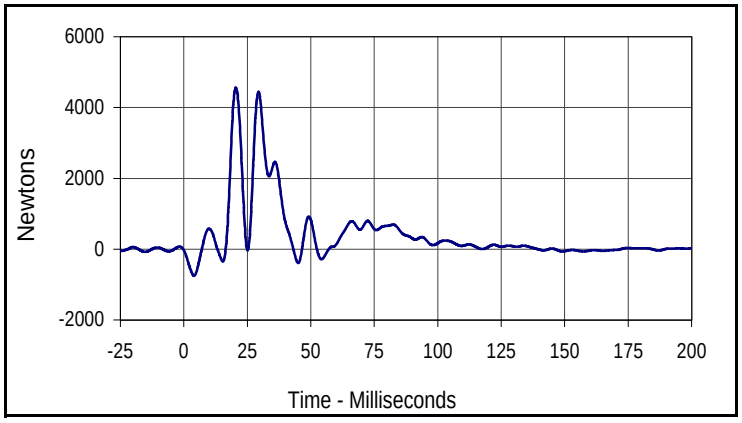
Curve Description			
Barrier Force A6			
CURNO	Type	SAE Class	Units
103	FIL	60	Newtons
Max	Time	Min	Time
21157.5	34.1	-417.5	2.0



Curve Description			
Barrier Force B6			
CURNO	Type	SAE Class	Units
112	FIL	60	Newtons
Max	Time	Min	Time
74381.1	35.5	-51.1	134.3

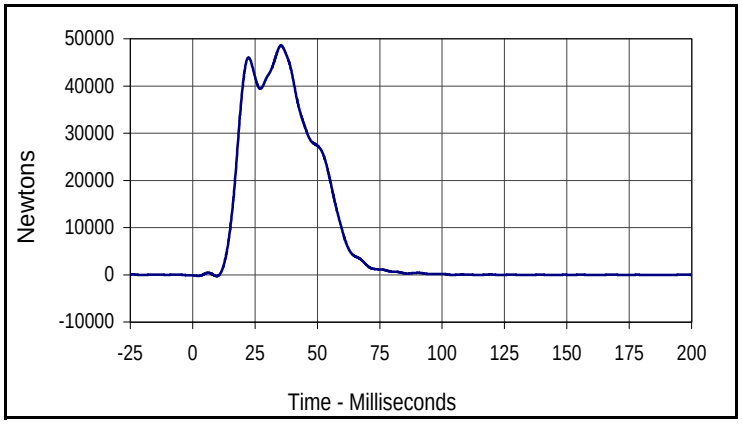


Curve Description			
Barrier Force C6			
CURNO	Type	SAE Class	Units
121	FIL	60	Newtons
Max	Time	Min	Time
27630.9	75.5	-181.6	132.7

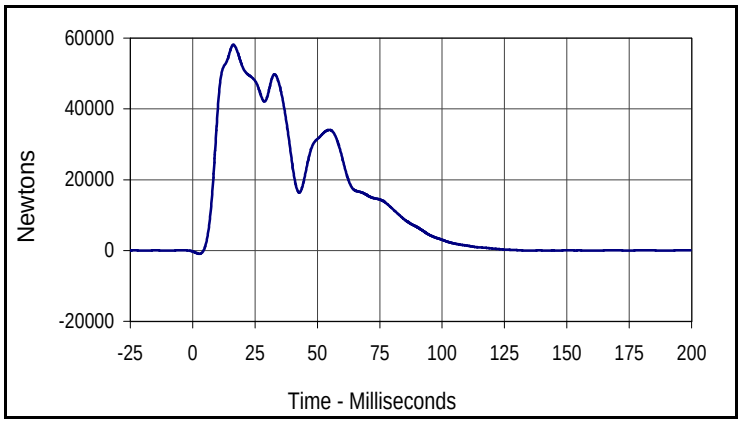


Curve Description			
Barrier Force D6			
CURNO	Type	SAE Class	Units
130	FIL	60	Newtons
Max	Time	Min	Time
4561.4	20.5	-748.9	4.0

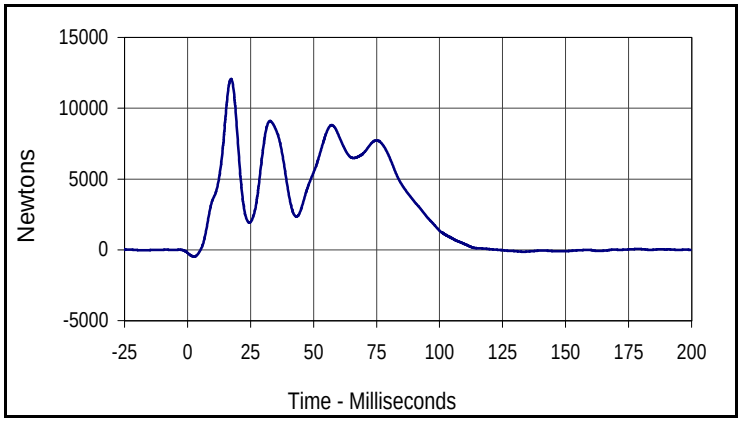
Test Vehicle:	2004 Hyundai Tiburon	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



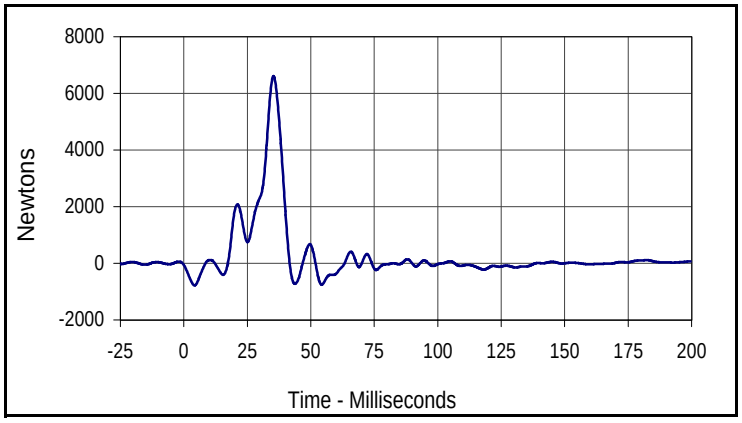
Curve Description			
Barrier Force A7			
CURNO	Type	SAE Class	Units
104	FIL	60	Newtons
Max	Time	Min	Time
48557.0	35.4	-280.8	9.7



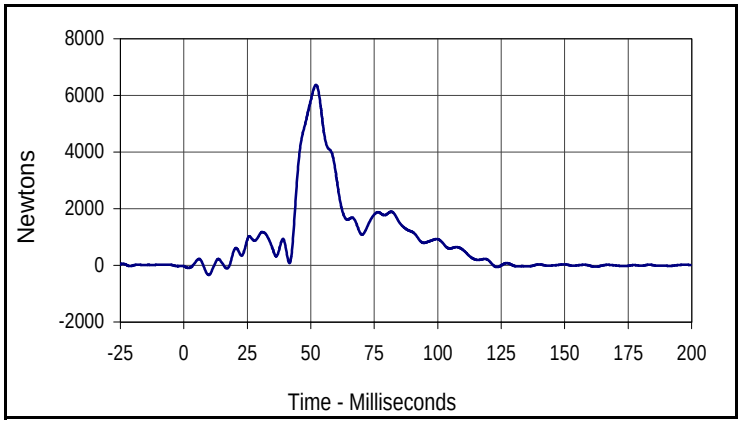
Curve Description			
Barrier Force B7			
CURNO	Type	SAE Class	Units
113	FIL	60	Newtons
Max	Time	Min	Time
58089.9	16.3	-929.5	2.7



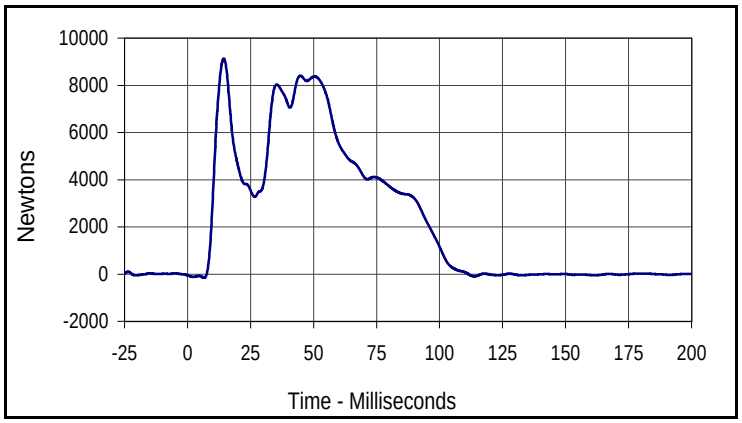
Curve Description			
Barrier Force C7			
CURNO	Type	SAE Class	Units
122	FIL	60	Newtons
Max	Time	Min	Time
12072.9	17.2	-479.4	2.6



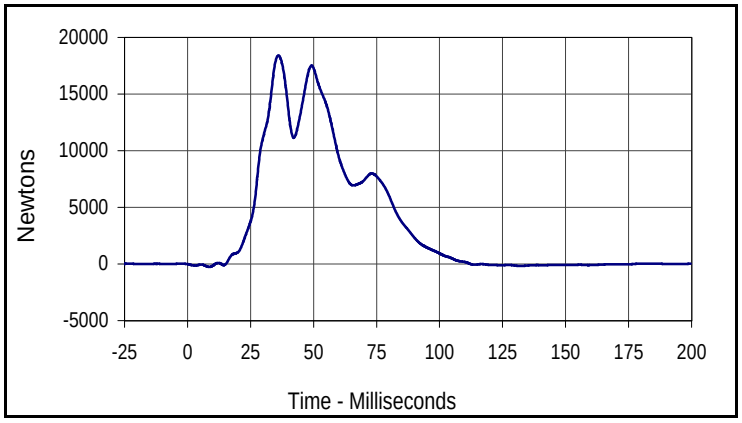
Curve Description			
Barrier Force D7			
CURNO	Type	SAE Class	Units
131	FIL	60	Newtons
Max	Time	Min	Time
6610.7	35.3	-780.0	4.2



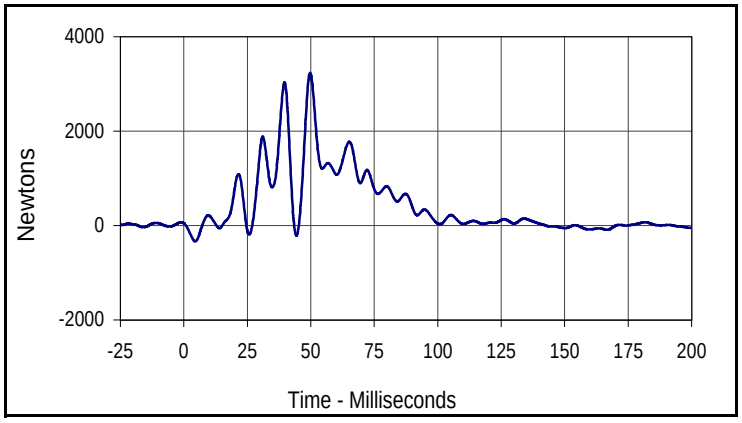
Curve Description			
Barrier Force A8			
CURNO	Type	SAE Class	Units
105	FIL	60	Newtons
Max	Time	Min	Time
6374.9	52.0	-334.0	9.8



Curve Description			
Barrier Force B8			
CURNO	Type	SAE Class	Units
114	FIL	60	Newtons
Max	Time	Min	Time
9137.7	14.4	-157.4	6.6

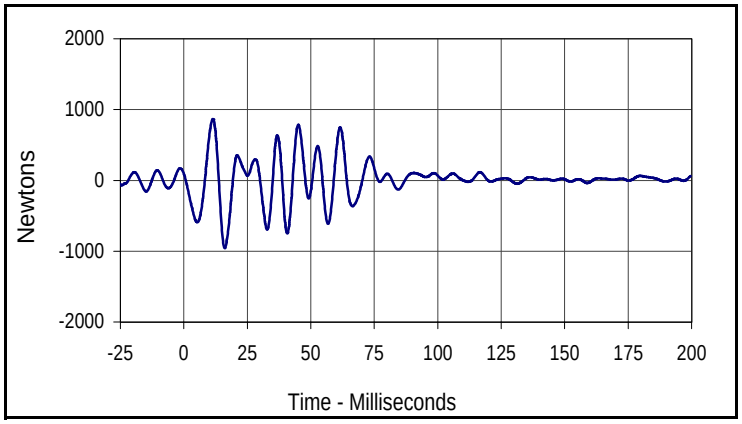


Curve Description			
Barrier Force C8			
CURNO	Type	SAE Class	Units
123	FIL	60	Newtons
Max	Time	Min	Time
18392.4	36.1	-263.2	8.7

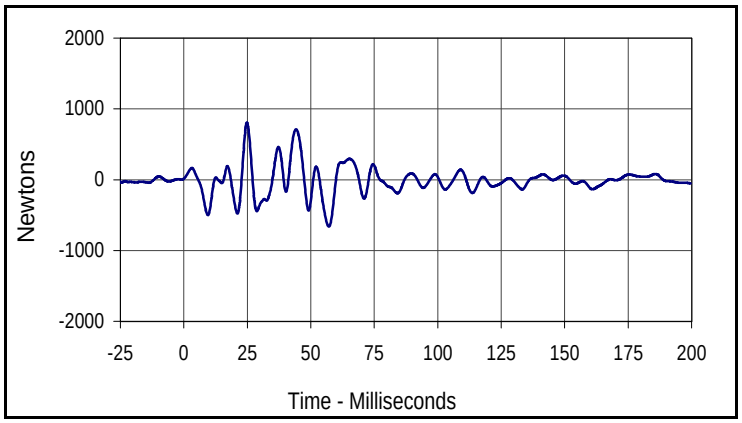


Curve Description			
Barrier Force D8			
CURNO	Type	SAE Class	Units
132	FIL	60	Newtons
Max	Time	Min	Time
3232.1	49.7	-334.8	4.4

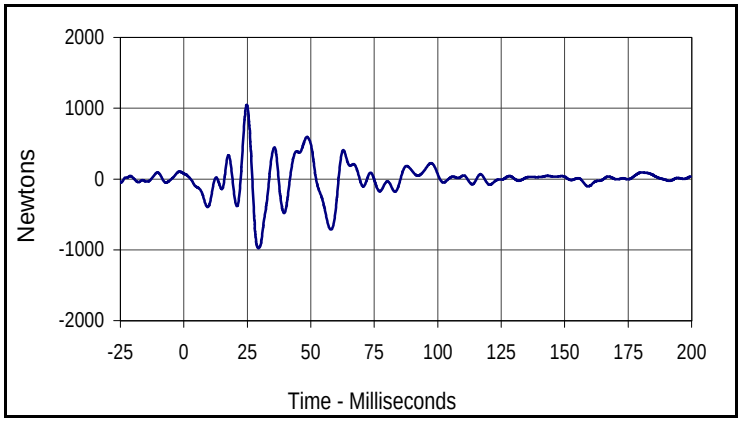
Test Vehicle:	2004 Hyundai Tiburon	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



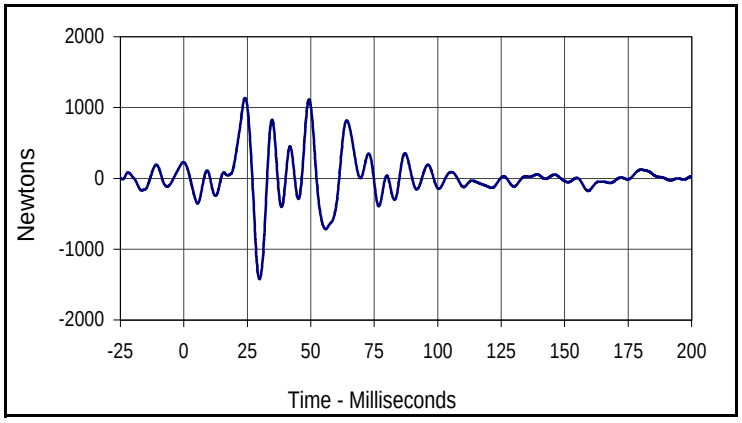
Curve Description			
Barrier Force A9			
CURNO	Type	SAE Class	Units
106	FIL	60	Newtons
Max	Time	Min	Time
863.5	11.4	-955.4	16.1



Curve Description			
Barrier Force B9			
CURNO	Type	SAE Class	Units
115	FIL	60	Newtons
Max	Time	Min	Time
806.0	24.8	-662.4	57.1

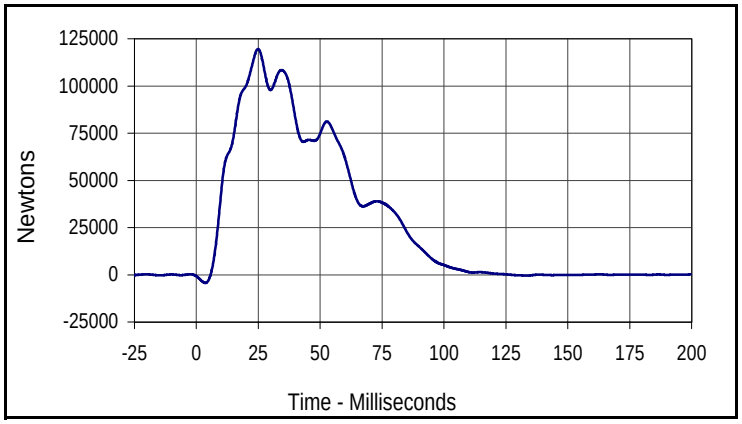


Curve Description			
Barrier Force C9			
CURNO	Type	SAE Class	Units
124	FIL	60	Newtons
Max	Time	Min	Time
1045.3	24.8	-977.3	29.4

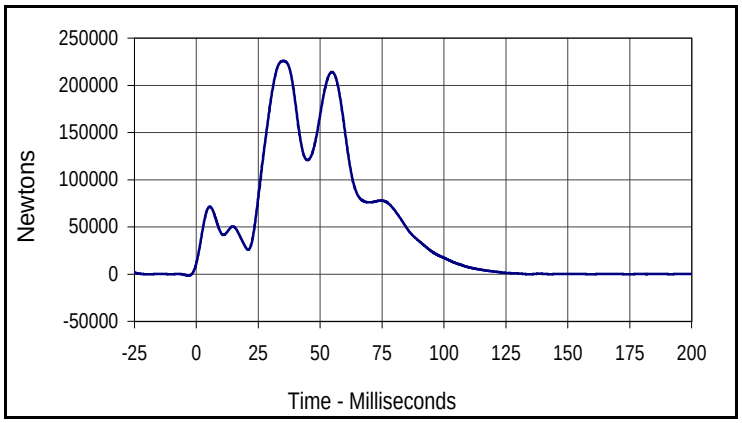


Curve Description			
Barrier Force D9			
CURNO	Type	SAE Class	Units
133	FIL	60	Newtons
Max	Time	Min	Time
1136.1	24.1	-1423.2	29.8

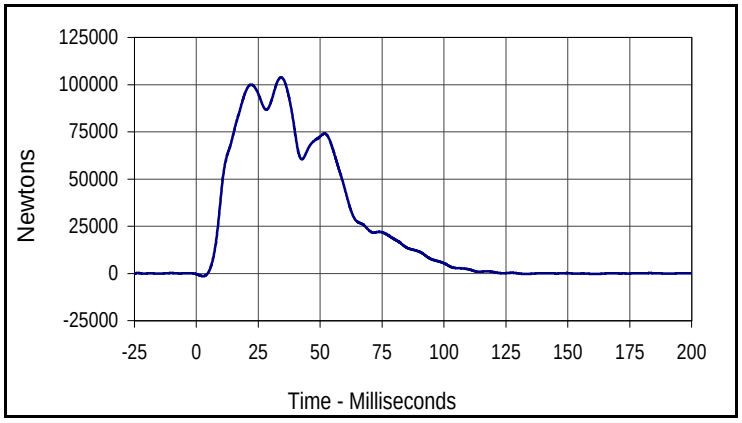
Test Vehicle:	2004 Hyundai Tiburon	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



Curve Description			
Barrier Force Sum Group 1			
CURNO	Type	SAE Class	Units
001	SUM	60	Newtons
Max	Time	Min	Time
119631.6	24.9	-4295.7	3.6

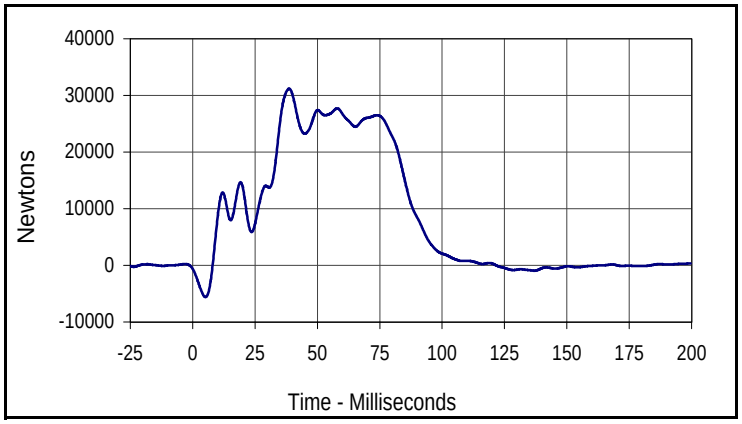


Curve Description			
Barrier Force Sum Group 2			
CURNO	Type	SAE Class	Units
002	SUM	60	Newtons
Max	Time	Min	Time
225798.4	35.1	-197.5	134.3

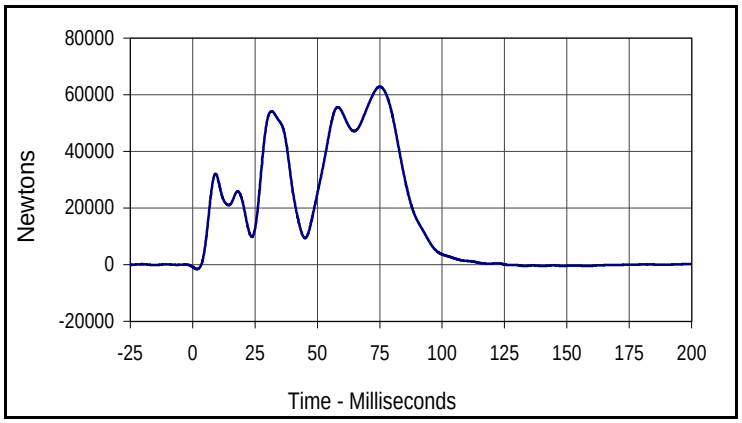


Curve Description			
Barrier Force Sum Group 3			
CURNO	Type	SAE Class	Units
003	SUM	60	Newtons
Max	Time	Min	Time
103793.1	34.2	-1468.3	2.7

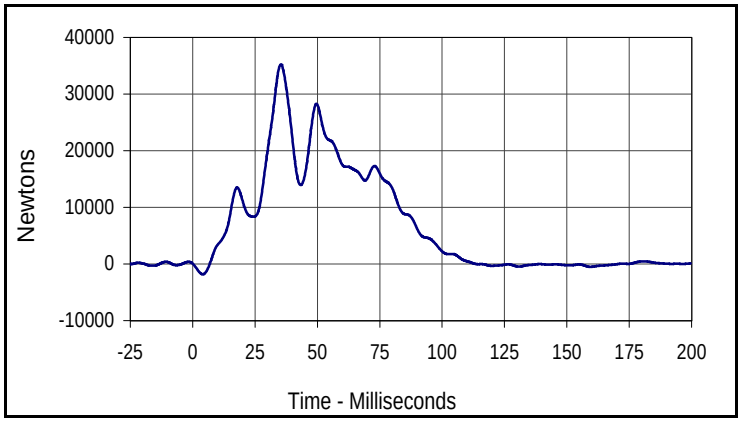
Test Vehicle:	2004 Hyundai Tiburon	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



Curve Description			
Barrier Force Sum Group 4			
CURNO	Type	SAE Class	Units
004	SUM	60	Newtons
Max	Time	Min	Time
31172.2	38.6	-5595.5	5.1

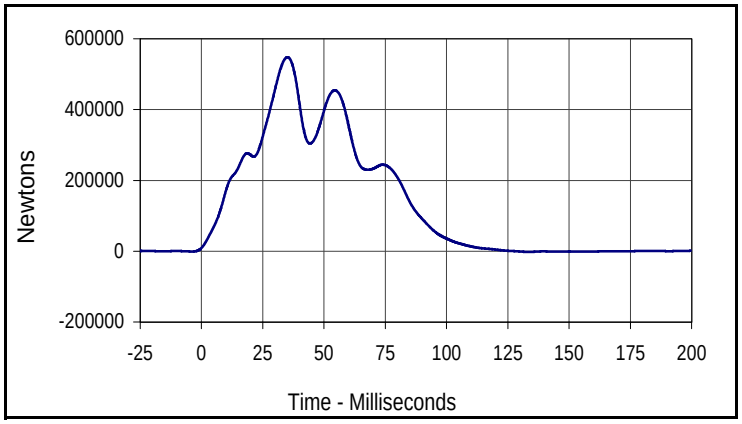


Curve Description			
Barrier Force Sum Group 5			
CURNO	Type	SAE Class	Units
005	SUM	60	Newtons
Max	Time	Min	Time
62847.6	75.0	-1545.6	1.8

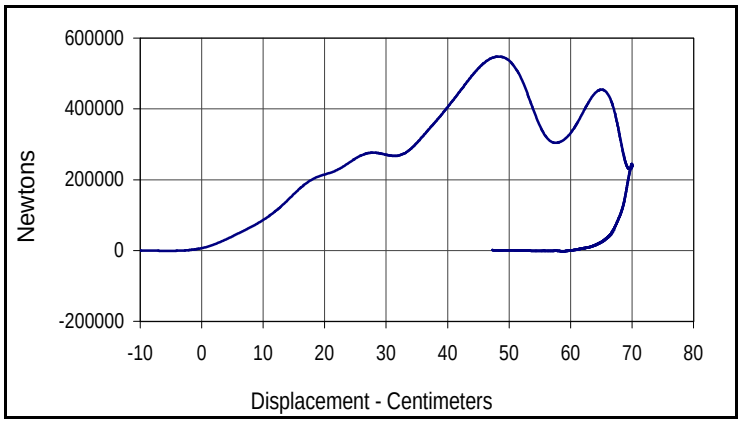


Curve Description			
Barrier Force Sum Group 6			
CURNO	Type	SAE Class	Units
006	SUM	60	Newtons
Max	Time	Min	Time
35200.2	35.3	-1826.9	4.1

Test Vehicle:	2004 Hyundai Tiburon	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



Curve Description			
Barrier Force Total Sum			
CURNO	Type	SAE Class	Units
007	SUM	60	Newtons
Max	Time	Min	Time
547816.7	35.1	-2409.1	133.7



Curve Description			
Barrier Force Total Sum vs. Displ.			
CURNO	Type	SAE Class	Units
001	XVY	60	Newtons
Max	CM	Min	CM
547816.7	48.3	-2409.1	58.7

BARRIER LOAD CELL SUMMARY DATA

Test Vehicle: 2004 Hyundai Tiburon 2 Door Coupe NHTSA No.: M40501

Test Program: 2004 NHTSA 35mph NCAP Test Date: 12/10/03

Location	Units	Max	Time	Min	Time
Barrier Force A1	Newtons	1879.3	11.1	-2008.0	16.6
Barrier Force A2	Newtons	4264.6	52.2	-1167.0	16.6
Barrier Force A3	Newtons	47079.1	32.6	-710.0	3.6
Barrier Force A4	Newtons	11799.9	52.2	-128.8	1.4
Barrier Force A5	Newtons	34525.2	32.0	-344.1	1.2
Barrier Force A6	Newtons	21157.5	34.1	-417.5	2.0
Barrier Force A7	Newtons	48557.0	35.4	-280.8	9.7
Barrier Force A8	Newtons	6374.9	52.0	-334.0	9.8
Barrier Force A9	Newtons	863.5	11.4	-955.4	16.1
Barrier Force B1	Newtons	1447.9	11.4	-1063.7	5.3
Barrier Force B2	Newtons	15940.0	15.4	-635.8	5.1
Barrier Force B3	Newtons	65951.4	17.6	-943.7	2.6
Barrier Force B4	Newtons	46886.8	55.1	-78.3	134.3
Barrier Force B5	Newtons	60125.7	55.2	-100.3	158.6
Barrier Force B6	Newtons	74381.1	35.5	-51.1	134.3
Barrier Force B7	Newtons	58089.9	16.3	-929.5	2.7
Barrier Force B8	Newtons	9137.7	14.4	-157.4	6.6
Barrier Force B9	Newtons	806.0	24.8	-662.4	57.1
Barrier Force C1	Newtons	1523.1	11.8	-1158.7	5.5
Barrier Force C2	Newtons	18135.4	39.2	-749.1	4.6
Barrier Force C3	Newtons	12889.3	74.2	-755.1	3.5
Barrier Force C4	Newtons	18021.6	74.7	-431.2	1.1
Barrier Force C5	Newtons	15378.8	75.3	-311.1	0.0
Barrier Force C6	Newtons	27630.9	75.5	-181.6	132.7
Barrier Force C7	Newtons	12072.9	17.2	-479.4	2.6
Barrier Force C8	Newtons	18392.4	36.1	-263.2	8.7
Barrier Force C9	Newtons	1045.3	24.8	-977.3	29.4
Barrier Force D1	Newtons	2374.9	12.1	-1456.7	6.2
Barrier Force D2	Newtons	3728.6	40.2	-1096.5	5.8
Barrier Force D3	Newtons	5204.5	34.4	-948.0	4.6
Barrier Force D4	Newtons	3367.2	30.2	-810.6	4.2
Barrier Force D5	Newtons	3647.6	29.3	-936.4	4.1
Barrier Force D6	Newtons	4561.4	20.5	-748.9	4.0
Barrier Force D7	Newtons	6610.7	35.3	-780.0	4.2
Barrier Force D8	Newtons	3232.1	49.7	-334.8	4.4
Barrier Force D9	Newtons	1136.1	24.1	-1423.2	29.8
Barrier Force Sum Group 1	Newtons	119631.6	24.9	-4295.7	3.6
Barrier Force Sum Group 2	Newtons	225798.4	35.1	-197.5	134.3
Barrier Force Sum Group 3	Newtons	103793.1	34.2	-1468.3	2.7
Barrier Force Sum Group 4	Newtons	31172.2	38.6	-5595.5	5.1
Barrier Force Sum Group 5	Newtons	62847.6	75.0	-1545.6	1.8
Barrier Force Sum Group 6	Newtons	35200.2	35.3	-1826.9	4.1
Barrier Force Total Sum	Newtons	547816.7	35.1	-2409.1	133.7

APPENDIX D

INSTRUMENTATION DATA CHANNEL ASSIGNMENTS

2004 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Driver A.T.D. Serial Number 34
12/10/03
2004 Hyundai Tiburon 2 Door Coupe

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
1	HEAD, PRIMARY	X	KEAC039	Accel.,1/2 bridge	Endevco	7264-2000	G
2	HEAD, PRIMARY	Y	KEAC038	Accel.,1/2 bridge	Endevco	7264-2000	G
3	HEAD, PRIMARY	Z	KEAC027	Accel.,1/2 bridge	Endevco	7264-2000	G
4	HEAD, REDUNDANT	X	KEAC031	Accel.,1/2 bridge	Endevco	7264-2000	G
5	HEAD, REDUNDANT	Y	KEAC032	Accel.,1/2 bridge	Endevco	7264-2000	G
6	HEAD, REDUNDANT	Z	KEAC026	Accel.,1/2 bridge	Endevco	7264-2000	G
7	NECK FORCE	X	GPUN02FX	Load cell, six axis neck	R. A. Denton	1716A	N
8	NECK FORCE	Y	GPUN02FY	Load cell, six axis neck	R. A. Denton	1716A	N
9	NECK FORCE	Z	GPUN02FZ	Load cell, six axis neck	R. A. Denton	1716A	N
10	NECK MOMENT	X	GPUN02MX	Load cell, six axis neck	R. A. Denton	1716A	Nm
11	NECK MOMENT	Y	GPUN02MY	Load cell, six axis neck	R. A. Denton	1716A	Nm
12	NECK MOMENT	Z	GPUN02MZ	Load cell, six axis neck	R. A. Denton	1716A	Nm
13	CHEST , PRIMARY	X	GPAC031	Accel., 1/2 bridge	Endevco	7264-2000	G
14	CHEST , PRIMARY	Y	GPAC024	Accel., 1/2 bridge	Endevco	7264-2000	G
15	CHEST , PRIMARY	Z	GPAC029	Accel., 1/2 bridge	Endevco	7264-2000	G
16	CHEST , REDUNDANT	X	KEAC023	Accel.,1/2 bridge	Endevco	7264-200	G
17	CHEST , REDUNDANT	Y	KEAC022	Accel.,1/2 bridge	Endevco	7264-200	G
18	CHEST , REDUNDANT	Z	KEAC024	Accel.,1/2 bridge	Endevco	7264-200	G
19	CHEST DISPLACEMENT	X	GPCP001	Rotary Pot Chest	Servo	14CBI	MM
20	PELVIS, PRIMARY	X	KEAC019	Accel.,1/2 bridge	Endevco	7264-200	G
21	PELVIS, PRIMARY	Y	KEAC020	Accel.,1/2 bridge	Endevco	7264-200	G
22	PELVIS, PRIMARY	Z	KEAC021	Accel.,1/2 bridge	Endevco	7264-200	G
23	LEFT FEMUR FORCE	Z	KEFF001	Load cell, Femur	R.A. Denton	2121	N
24	RIGHT FEMUR FORCE	Z	KEFF002	Load cell, Femur	R.A. Denton	2121	N

2004 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Driver A.T.D. Serial Number 34
12/10/03
2004 Hyundai Tiburon 2 Door Coupe

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
25	UP. TIBIA LEFT MOM.	X	GPUT09MX	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
26	UP. TIBIA LEFT MOM.	Y	GPUT09MY	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
27	UP. TIBIA RIGHT MOM.	X	GPUT09MX	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
28	UP. TIBIA RIGHT MOM.	Y	GPUT09MY	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
29	LWR. TIBIA LEFT MOM.	X	GPLT09MX	3 ch., lower tibia gage	R. A. Denton	3093	Nm
30	LWR. TIBIA LEFT MOM.	Y	GPLT09MY	3 ch., lower tibia gage	R. A. Denton	3093	Nm
31	LWR. TIBIA LEFT FORCE	Z	GPLT09FZ	3 ch., lower tibia gage	R. A. Denton	3093	N
32	LWR. TIBIA RIGHT MOM.	X	GPLT09MX	3 ch., lower tibia gage	R. A. Denton	3093	Nm
33	LWR. TIBIA RIGHT MOM.	Y	GPLT09MY	3 ch., lower tibia gage	R. A. Denton	3093	Nm
34	LWR. TIBIA RIGHT FORCE	Z	GPLT09FZ	3 ch., lower tibia gage	R. A. Denton	3093	N
35	FOOT LEFT, AFT	X	KEIC003X	Accel., Foot Triax	I.C. Sensor	3031-500	G
36	FOOT LEFT, AFT	Z	KEIC003Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
37	FOOT LEFT, FORE	Z	KEIC003Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
38	FOOT RIGHT, AFT	X	KEIC004X	Accel., Foot Triax	I.C. Sensor	3031-500	G
39	FOOT RIGHT, AFT	Z	KEIC004Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
40	FOOT RIGHT, FORE	Z	KEIC004Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
41	LAP BELT FORCE	N/A	BL134	Load cell, Seat belt	FGP	FN4060	N
42	SHOULDER BELT FORCE	N/A	BL135	Load cell, Seat belt	FGP	FN4060	N
43	SHOULDER BELT SPOOL	N/A	KEPP001	Pullout pot	Celesco	PTX101-0030	MM
44	SHOULDER BELT ELONG.	N/A	KEEP001	Linear pot., belt stretch	E.T.I.	LCP8-10 10K	MM/CM

2004 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Passenger A.T.D. Serial Number 35
12/10/03
2004 Hyundai Tiburon 2 Door Coupe

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
45	HEAD, PRIMARY	X	GPAC027	Accel., 1/2 bridge	Endevco	7264-2000	G
46	HEAD, PRIMARY	Y	GPAC002	Accel., 1/2 bridge	Endevco	7264-2000	G
47	HEAD, PRIMARY	Z	GPAC003	Accel., 1/2 bridge	Endevco	7264-2000	G
48	HEAD, REDUNDANT	X	GPAC032	Accel., 1/2 bridge	Endevco	7264-2000	G
49	HEAD, REDUNDANT	Y	GPAC021	Accel., 1/2 bridge	Endevco	7264-2000	G
50	HEAD, REDUNDANT	Z	GPAC026	Accel., 1/2 bridge	Endevco	7264-2000	G
51	NECK FORCE	X	GPUN01FX	Load cell, six axis neck	R. A. Denton	1716A	N
52	NECK FORCE	Y	GPUN01FY	Load cell, six axis neck	R. A. Denton	1716A	N
53	NECK FORCE	Z	GPUN01FZ	Load cell, six axis neck	R. A. Denton	1716A	N
54	NECK MOMENT	X	GPUN01MX	Load cell, six axis neck	R. A. Denton	1716A	Nm
55	NECK MOMENT	Y	GPUN01MY	Load cell, six axis neck	R. A. Denton	1716A	Nm
56	NECK MOMENT	Z	GPUN01MZ	Load cell, six axis neck	R. A. Denton	1716A	Nm
57	CHEST , PRIMARY	X	GPAC005	Accel., 1/2 bridge	Endevco	7264-2000	G
58	CHEST , PRIMARY	Y	GPAC011	Accel., 1/2 bridge	Endevco	7264-2000	G
59	CHEST , PRIMARY	Z	GPAC010	Accel., 1/2 bridge	Endevco	7264-2000	G
60	CHEST , REDUNDANT	X	GPAC034	Accel., 1/2 bridge	Endevco	7264-2000	G
61	CHEST , REDUNDANT	Y	GPAC023	Accel., 1/2 bridge	Endevco	7264-2000	G
62	CHEST , REDUNDANT	Z	GPAC020	Accel., 1/2 bridge	Endevco	7264-2000	G
63	CHEST DISPLACEMENT	X	GPCP002	Rotary Pot Chest	Servo	14CBI	MM
64	PELVIS, PRIMARY	X	GPAC025	Accel., 1/2 bridge	Endevco	7264-2000	G
65	PELVIS, PRIMARY	Y	GPAC022	Accel., 1/2 bridge	Endevco	7264-2000	G
66	PELVIS, PRIMARY	Z	GPAC019	Accel., 1/2 bridge	Endevco	7264-2000	G
67	LEFT FEMUR FORCE	Z	KEFF003	Load cell, Femur	R.A. Denton	2121	N
68	RIGHT FEMUR FORCE	Z	KEFF004	Load cell, Femur	R.A. Denton	2121	N

2004 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Passenger A.T.D. Serial Number 35
12/10/03
2004 Hyundai Tiburon 2 Door Coupe

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
69	UP. TIBIA LEFT MOM.	X	GPUT09MX	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
70	UP. TIBIA LEFT MOM.	Y	GPUT09MY	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
71	UP. TIBIA RIGHT MOM.	X	GPUT09MX	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
72	UP. TIBIA RIGHT MOM.	Y	GPUT09MY	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
73	LWR. TIBIA LEFT MOM.	X	GPLT09MX	3 ch., lower tibia gage	R. A. Denton	3093	Nm
74	LWR. TIBIA LEFT MOM.	Y	GPLT09MY	3 ch., lower tibia gage	R. A. Denton	3093	Nm
75	LWR. TIBIA LEFT FORCE	Z	GPLT09FZ	3 ch., lower tibia gage	R. A. Denton	3093	N
76	LWR. TIBIA RIGHT MOM.	X	GPLT09MX	3 ch., lower tibia gage	R. A. Denton	3093	Nm
77	LWR. TIBIA RIGHT MOM.	Y	GPLT09MY	3 ch., lower tibia gage	R. A. Denton	3093	Nm
78	LWR. TIBIA RIGHT FORCE	Z	GPLT09FZ	3 ch., lower tibia gage	R. A. Denton	3093	N
79	FOOT LEFT, AFT	X	KEIC002X	Accel., Foot Triax	I.C. Sensor	3031-500	G
80	FOOT LEFT, AFT	Z	KEIC002Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
81	FOOT LEFT, FORE	Z	KEIC002Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
82	FOOT RIGHT, AFT	X	KEIC001X	Accel., Foot Triax	I.C. Sensor	3031-500	G
83	FOOT RIGHT, AFT	Z	KEIC001Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
84	FOOT RIGHT, FORE	Z	KEIC001Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
85	LAP BELT FORCE	N/A	BL168	Load cell, Seat belt	First Tech	IF-964	N
86	SHOULDER BELT FORCE	N/A	BL169	Load cell, Seat belt	First Tech	IF-964	N
87	SHOULDER BELT SPOOL	N/A	KEPP001	Pullout pot	Celesco	PTX101-0030	MM
88	SHOULDER BELT ELONG.	N/A	KEEP001	Linear pot., belt stretch	E.T.I.	LCP8-10 10K	MM/CM

2004 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Vehicle Accelerometers
12/10/03
2004 Hyundai Tiburon 2 Door Coupe

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
89	LEFT REAR	X	KEVA002	Accel., Pre-Amp	I.C.S/Karco	3031-500	G
90	RIGHT REAR	X	KEVA006	Accel., Vehicle block	I.C. Sensor	3031-200	G
91	ENGINE TOP	X	KEVA009	Accel., Vehicle block	I.C. Sensor	3031-500	G
92	ENGINE BOTTOM	X	KEVA007	Accel., Vehicle block	I.C. Sensor	3031-500	G
93	LEFT BRAKE CALIPER	X	KEVA008	Accel., Vehicle block	I.C. Sensor	3031-500	G
94	RIGHT BRAKE CALIPER	X	KEVA012	Accel., Vehicle block	I.C. Sensor	3031-500	G
95	INSTRUMENT PANEL	X	KEVA011	Accel., Vehicle block	I.C. Sensor	3031-200	G
96	LEFT REAR	Z	KEVA001	Accel., Vehicle block	I.C. Sensor	3031-500	G
97	RIGHT REAR	Z	KEVA010	Accel., Vehicle block	I.C. Sensor	3031-200	G

2004 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Rigid Load Cell Barrier
12/10/03
2004 Hyundai Tiburon 2 Door Coupe

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
98	BARRIER FORCE A1	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
99	BARRIER FORCE A2	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
100	BARRIER FORCE A3	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
101	BARRIER FORCE A4	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
102	BARRIER FORCE A5	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
103	BARRIER FORCE A6	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
104	BARRIER FORCE A7	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
105	BARRIER FORCE A8	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
106	BARRIER FORCE A9	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
107	BARRIER FORCE B1	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
108	BARRIER FORCE B2	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
109	BARRIER FORCE B3	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
110	BARRIER FORCE B4	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
111	BARRIER FORCE B5	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
112	BARRIER FORCE B6	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
113	BARRIER FORCE B7	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
114	BARRIER FORCE B8	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
115	BARRIER FORCE B9	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N

2004 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Rigid Load Cell Barrier
12/10/03
2004 Hyundai Tiburon 2 Door Coupe

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
116	BARRIER FORCE C1	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
117	BARRIER FORCE C2	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
118	BARRIER FORCE C3	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
119	BARRIER FORCE C4	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
120	BARRIER FORCE C5	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
121	BARRIER FORCE C6	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
122	BARRIER FORCE C7	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
123	BARRIER FORCE C8	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
124	BARRIER FORCE C9	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
125	BARRIER FORCE D1	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
126	BARRIER FORCE D2	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
127	BARRIER FORCE D3	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
128	BARRIER FORCE D4	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
129	BARRIER FORCE D5	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
130	BARRIER FORCE D6	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
131	BARRIER FORCE D7	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
132	BARRIER FORCE D8	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
133	BARRIER FORCE D9	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N

2004 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Rigid Load Cell Barrier
12/10/03
2004 Hyundai Tiburon 2 Door Coupe

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
134	DRIVER X-ARM	Y	GPAC016	Accel., 1/2 bridge	Endevco	7264-2000	G
135	DRIVER X-ARM	Z	GPAC015	Accel., 1/2 bridge	Endevco	7264-2000	G
136	DRIVER Y-ARM	X	GPAC004	Accel., 1/2 bridge	Endevco	7264-2000	G
137	DRIVER Y-ARM	Z	GPAC018	Accel., 1/2 bridge	Endevco	7264-2000	G
138	DRIVER Z-ARM	X	GPAC006	Accel., 1/2 bridge	Endevco	7264-2000	G
139	DRIVER Z-ARM	Y	GPAC007	Accel., 1/2 bridge	Endevco	7264-2000	G
140	PASS. X-ARM	Y	GPAC012	Accel., 1/2 bridge	Endevco	7264-2000	G
141	PASS. X-ARM	Z	GPAC001	Accel., 1/2 bridge	Endevco	7264-2000	G
142	PASS. Y-ARM	X	GPAC036	Accel., 1/2 bridge	Endevco	7264-2000	G
143	PASS. Y-ARM	Z	GPAC014	Accel., 1/2 bridge	Endevco	7264-2000	G
144	PASS. Z-ARM	X	GPAC030	Accel., 1/2 bridge	Endevco	7264-2000	G
145	PASS. Z-ARM	Y	GPAC037	Accel., 1/2 bridge	Endevco	7264-2000	G

APPENDIX E

DUMMY CALIBRATION DATA

Calibration Data Sheet
Hybrid III 50th Percentile Male
Knee Impact Test

ATD Serial No.: 034 Location: Left Knee Test I.D.: LK11D

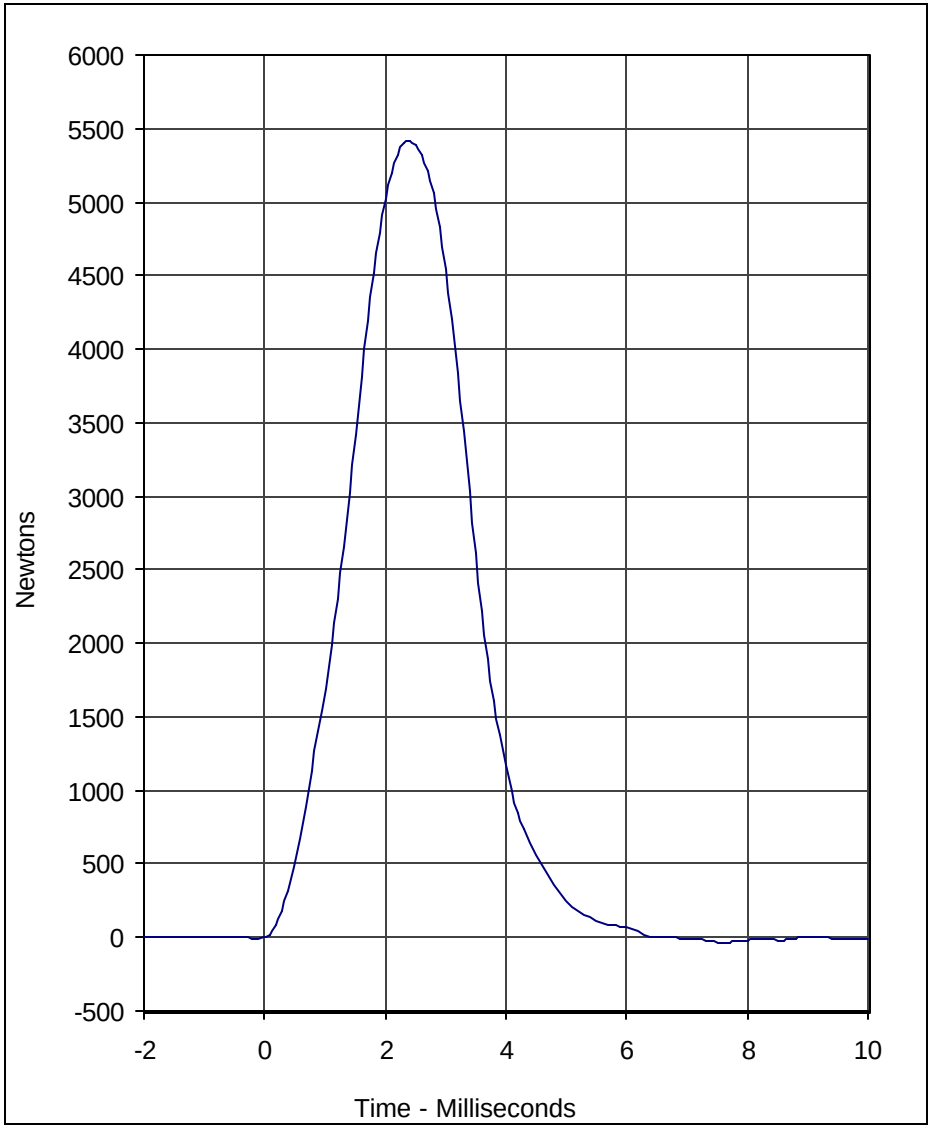
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	^{o}C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force	N	4715 to 5782	5418	Pass
		Overall Test Results		Pass

ATD Serial No.: 034 Location: Right Knee Test I.D.: RK11E

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	^{o}C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	N	4715 to 5782	5455	Pass
		Overall Test Results		Pass

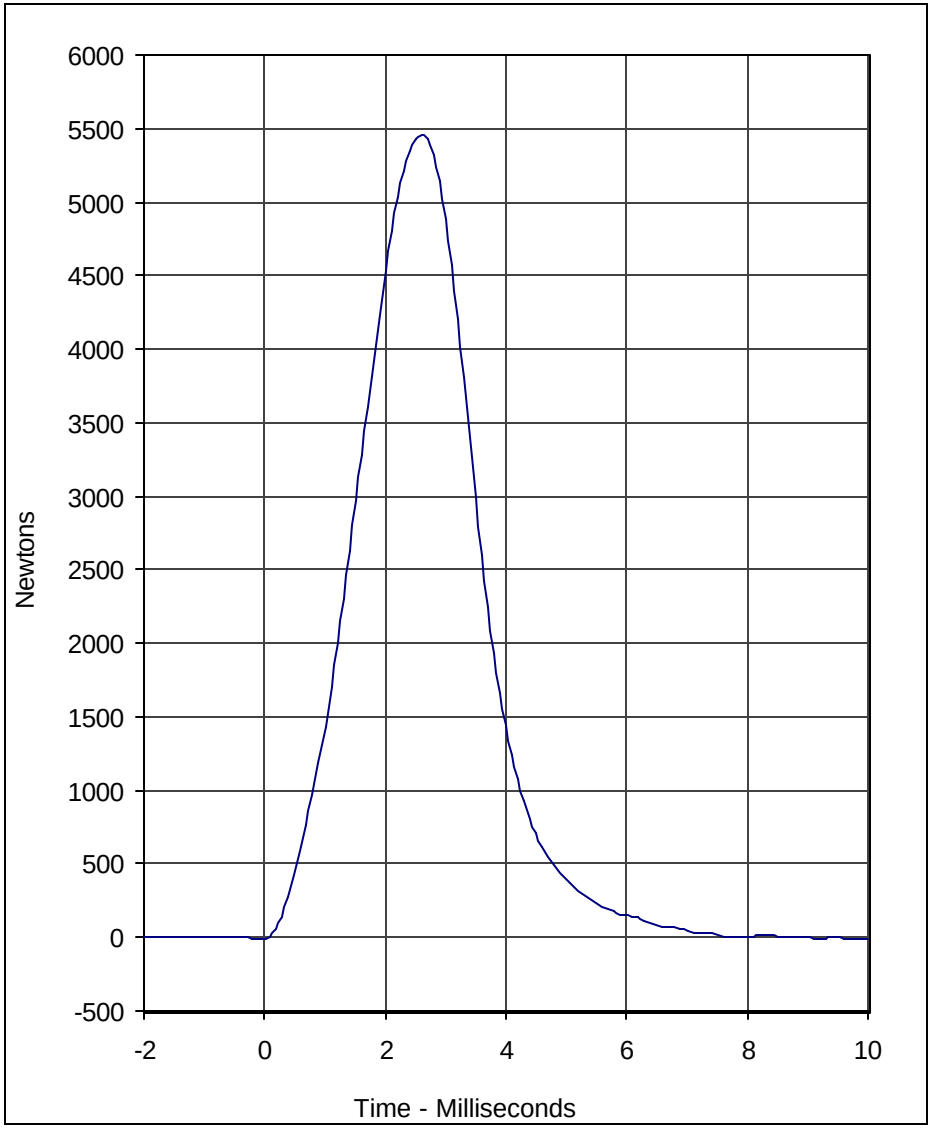
Laboratory Technician

December 1, 2003
Test Date



Curve Description	Location	Test I.D.	CURNO	Type
Probe Force	Left Knee	LK11D	001	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	5417.8	2.4	-36.7	7.5	600



Curve Description	Location	Test I.D.	CURNO	Type
Probe Force	Right Knee	RK11E	002	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	5455.0	2.6	-14.7	0.0	600

Test Program: Hybrid III 50th Percentile Male Knee Impact Test

A.T.D. Serial No.: 034

Test Date: 12/1/03

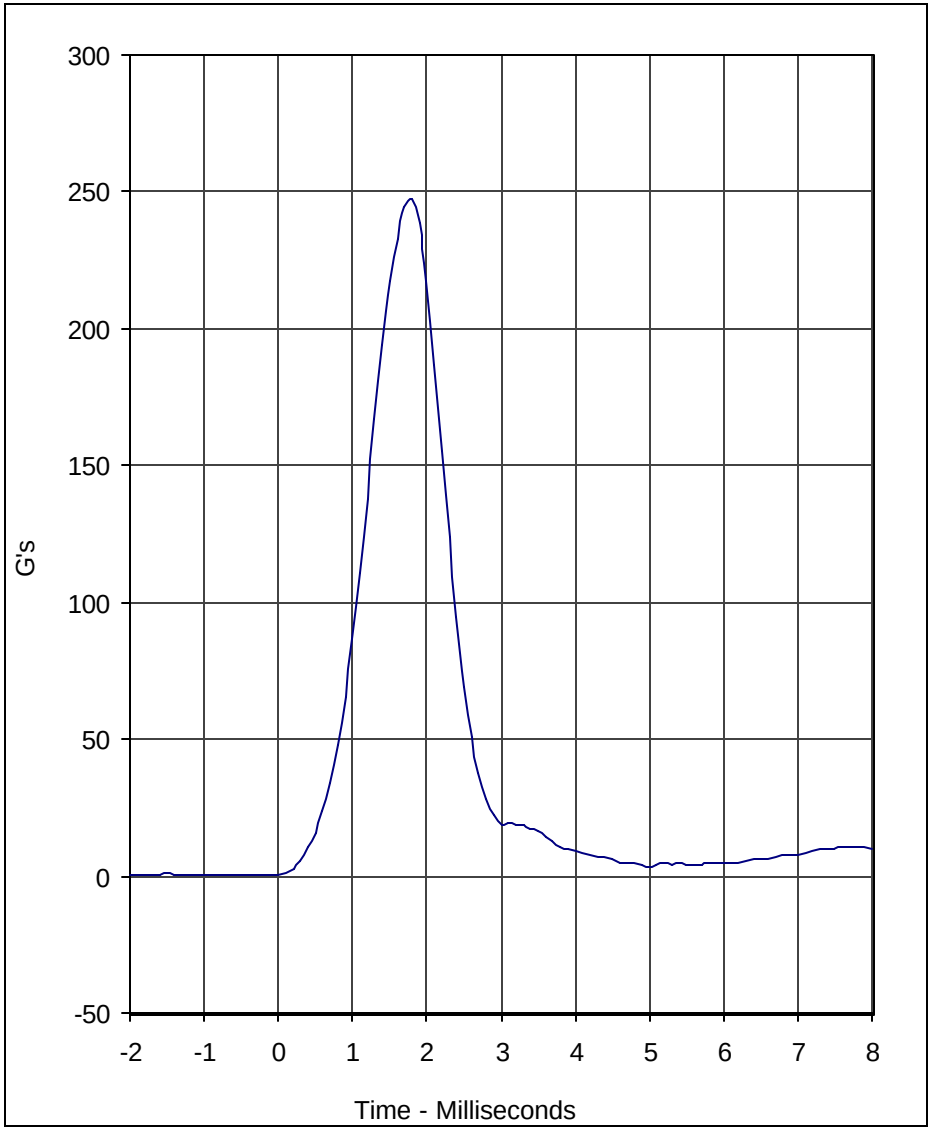
Calibration Data Sheet
Hybrid III 50th Percentile Male
Head Drop Test

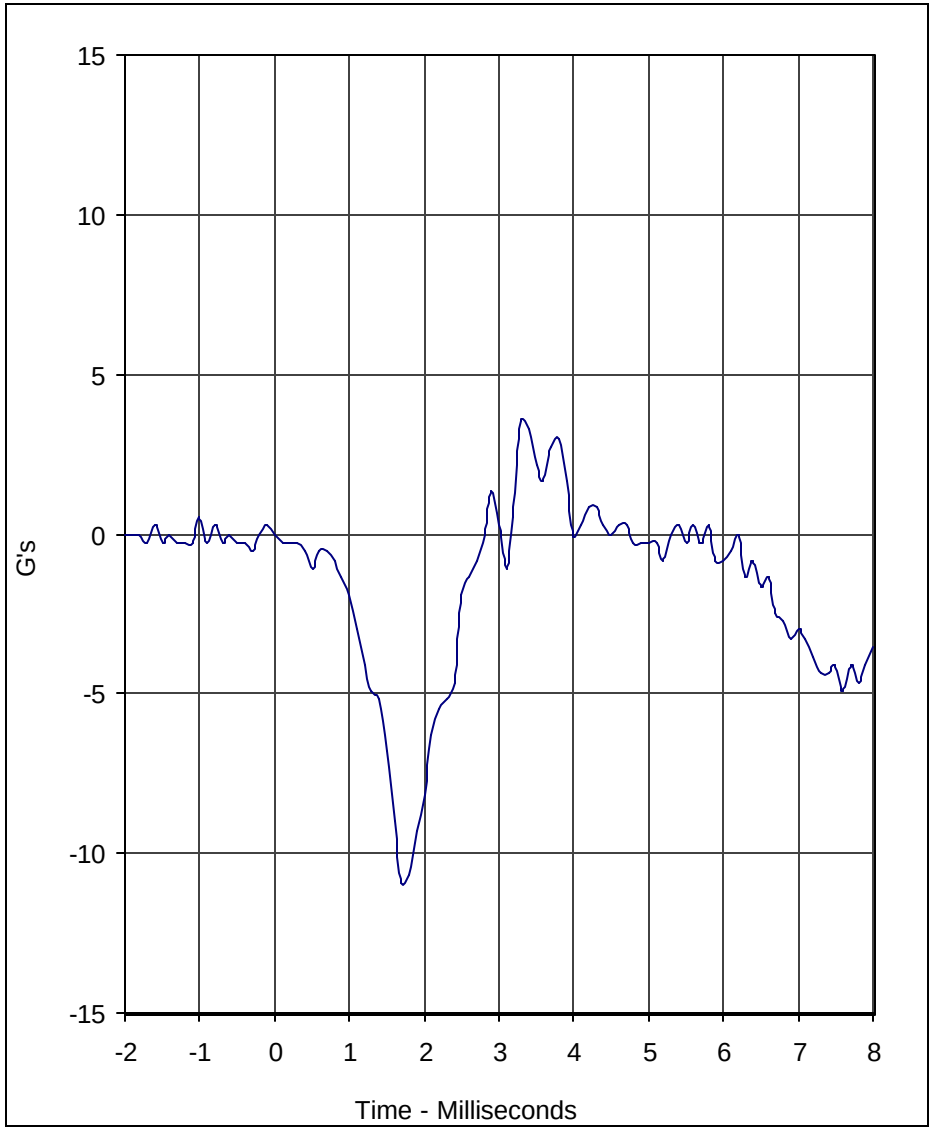
ATD Serial No.: 034 Test I.D.: HD08F

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	247.7	Pass
Peak Lateral Acceleration	G's	≤15.0	10.9	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
		Overall Test Results		Pass

Laboratory Technician

December 1, 2003
Test Date





Curve Description	CURNO	Type
Head Resultant	001	RES

Units	Max	Time	Min	Time	SAE Class
G's	247.7	1.8	0.3	-1.9	1000

Curve Description	CURNO	Type
Head Y	002	FIL

Units	Max	Time	Min	Time	SAE Class
G's	3.5	3.3	-10.9	1.7	1000

Test Program: Hybrid III 50th Percentile Male Head Drop Test

Test Date: 12/1/03

A.T.D. Serial No.: 034

Test I.D.: HD08F

KARCO Engineering

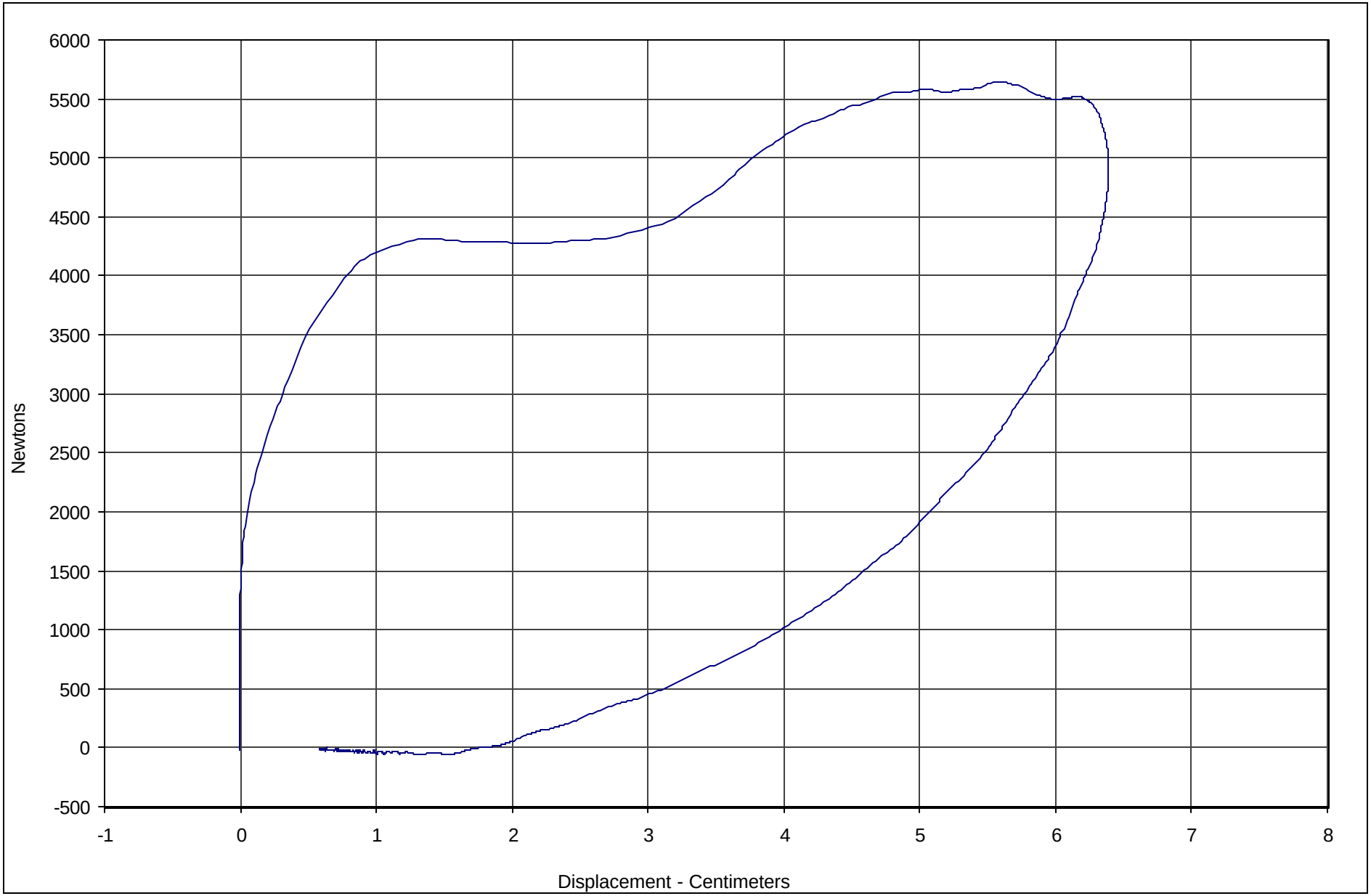
Calibration Data Sheet
Hybrid III 50th Percentile Male
Thorax Impact Test

ATD Serial No.: 034 Test I.D.: ch12a

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	^{o}C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	6.58 to 6.82	6.61	Pass
Peak Probe Force	Newtons	5159 to 5893	5647	Pass
Peak Sternum Displacement	CM	6.35 to 7.26	6.39	Pass
Internal Hysterysis	%	69 to 85	78.1	Pass
		Overall Test Results		Pass

Laboratory Technician

December 2, 2003
Test Date



Curve Description	CURNO	Type	Hysterysis	Peak Chest Displ.	Peak Probe Force	SAE Class
Probe Force vs. Chest Displacement	001	FIL	78.1	6.39	5646.5	180

Test Program: Hybrid III 50th Percentile Male Thorax Impact

A.T.D. Serial No.: 034

Test Date: 12/2/03

Test I.D.: ch12a

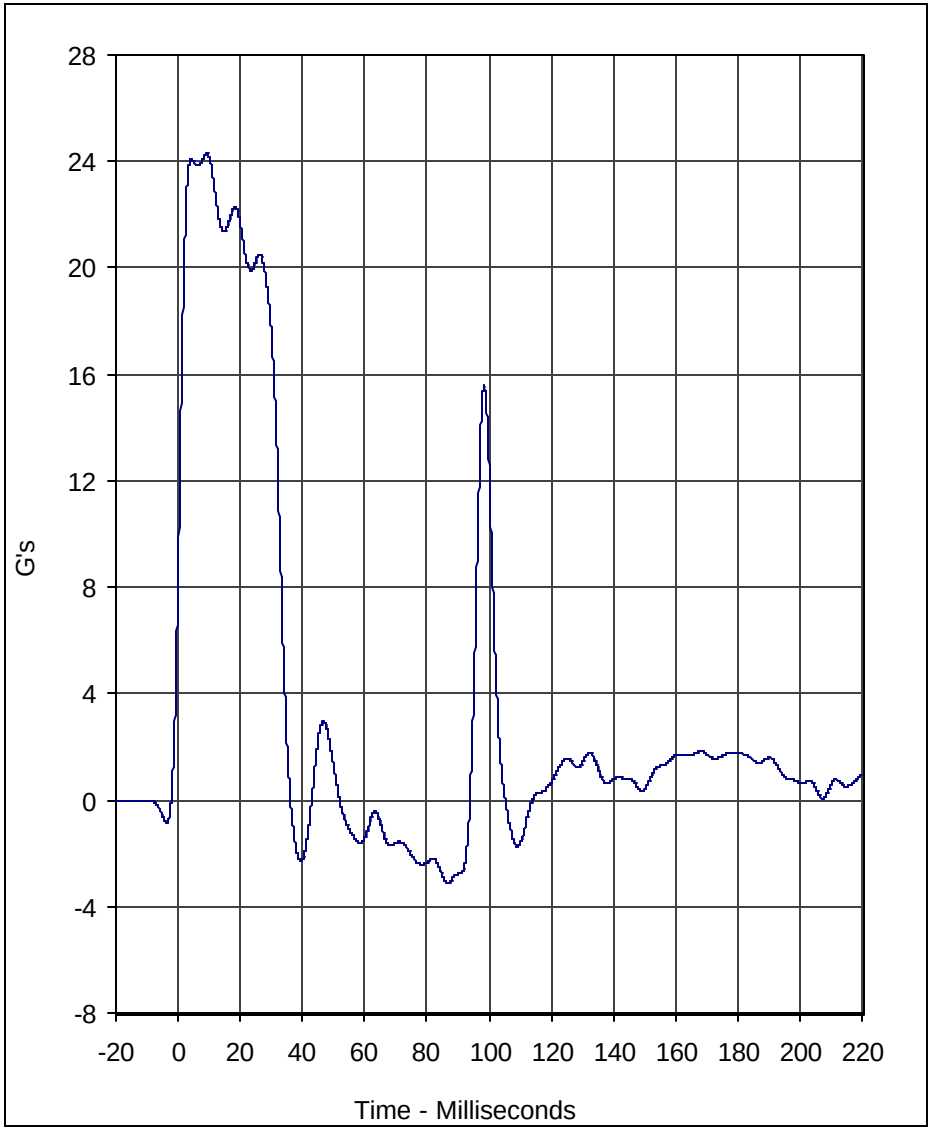
Calibration Data Sheet
Hybrid III 50th Percentile Male
Neck Flexion Test

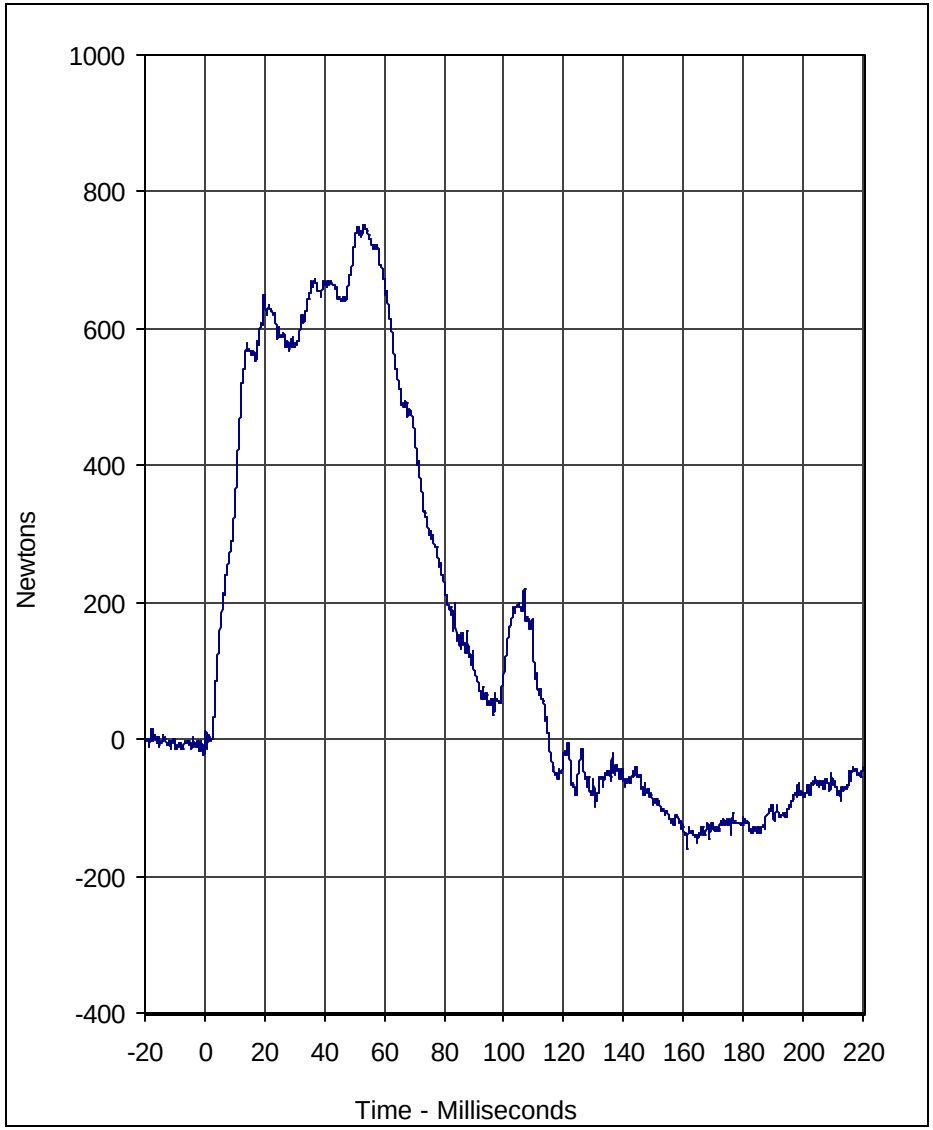
ATD Serial No.: 034 Test I.D.: NF12A

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		^{o}C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.07	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	24.1	Pass
	20 Msec.	G's	17.6 to 22.6	21.7	Pass
	30 Msec.	G's	12.5 to 18.5	17.6	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	17.6	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	34.1	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	74.1	Pass
	Time	Msec.	57.0 to 64.0	61.2	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	122.9	Pass
Moment About Occipital Condyle	Maximum	Nm	84.1 to 108.5	84.6	Pass
	Time	Msec.	47.0 to 58.0	47.9	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	100.4	Pass
			Overall Test Results		Pass

Laboratory Technician

December 1, 2003
Test Date





Curve Description	CURNO	Type
Pendulum Deceleration	001	FIL

Units	Max	Time	Min	Time	SAE Class
G's	24.3	9.1	-3.1	86.8	60

Curve Description	CURNO	Type
Neck Force X	002	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	751.6	53.4	-159.0	161.2	600

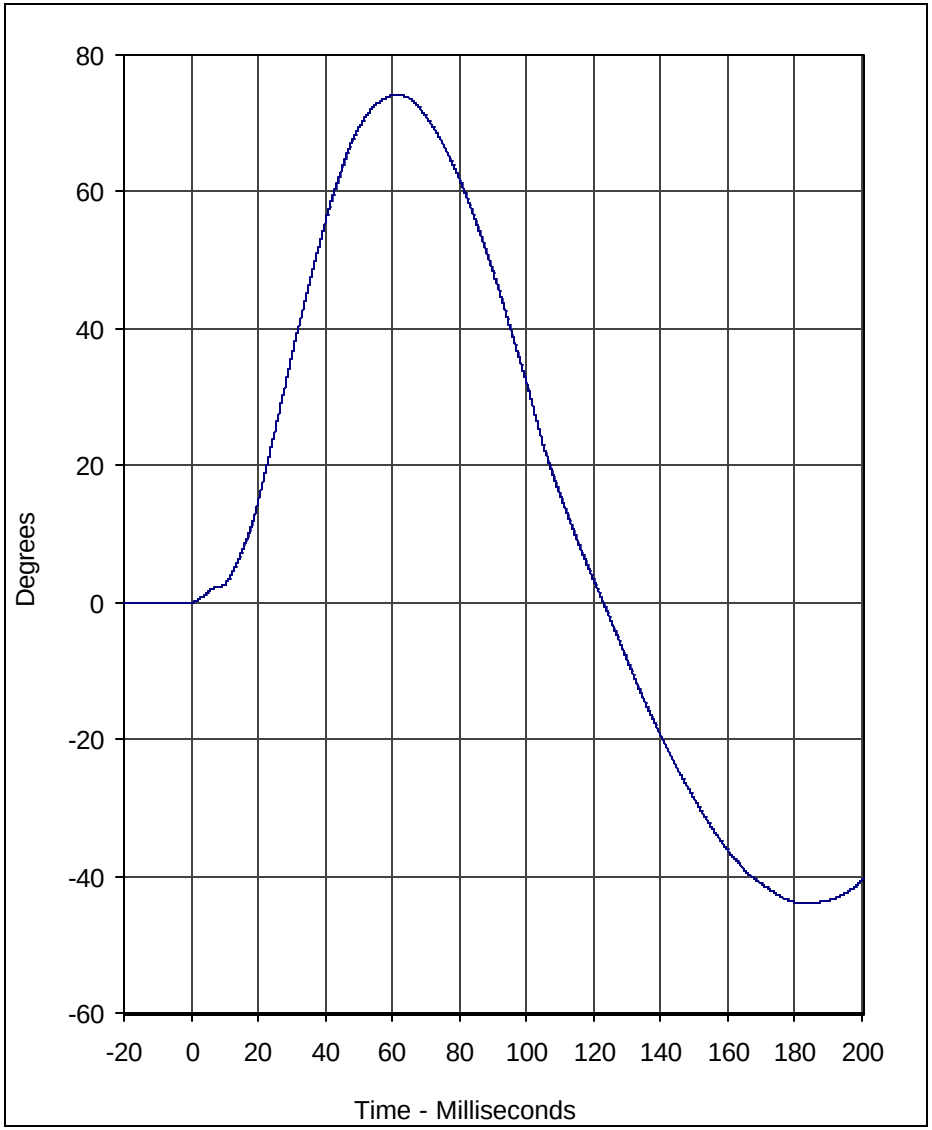
Test Program: Hybrid III 50th Percentile Male Neck Flexion Test

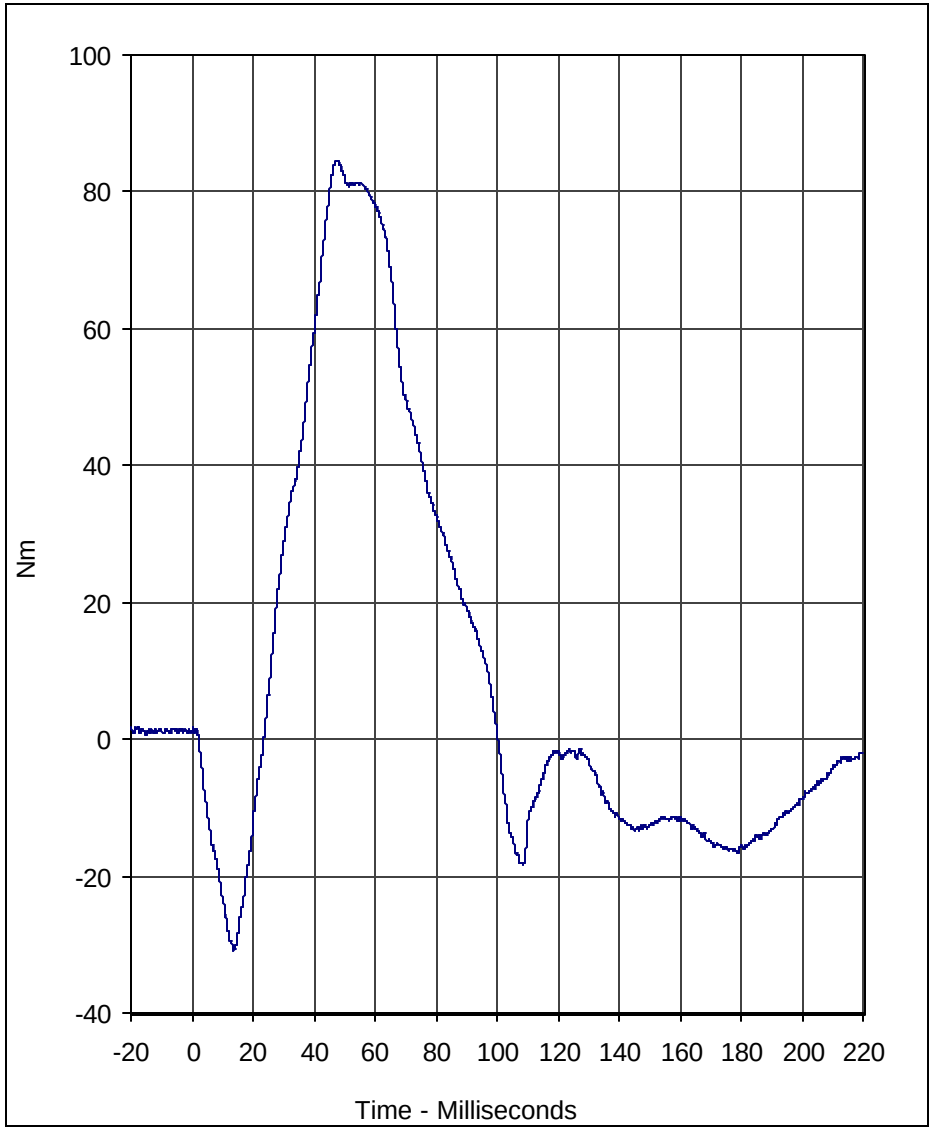
Test Date: 12/1/03

A.T.D. Serial No.: 034

Test I.D.: NF12A

KARCO Engineering





Curve Description	CURNO	Type
"D" Plane Rotation	003	FIL

Units	Max	Time	Min	Time	SAE Class
Degrees	74.1	61.2	-43.9	182.9	60

Curve Description	CURNO	Type
Moment About Occipital Condyle	004	FIL

Units	Max	Time	Min	Time	SAE Class
Nm	84.6	47.9	-30.8	13.7	600

Test Program: Hybrid III 50th Percentile Male Neck Flexion Test

Test Date: 12/1/03

A.T.D. Serial No.: 034

Test I.D.: NF12A

KARCO Engineering

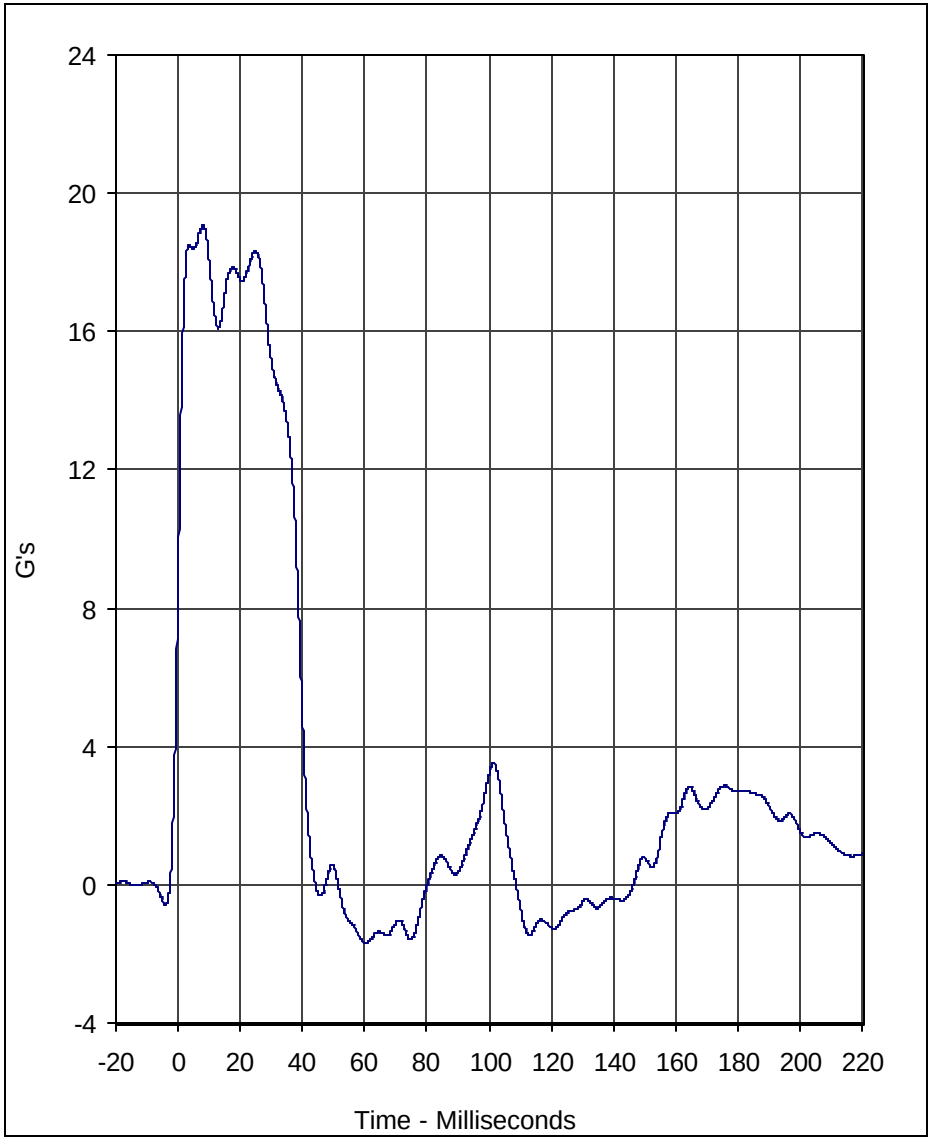
Calibration Data Sheet
Hybrid III 50th Percentile Male
Neck Extension Test

ATD Serial No.: 034 Test I.D.: NE12A

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.13	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	18.1	Pass
	20 Msec.	G's	14.0 to 19.0	17.5	Pass
	30 Msec.	G's	11.0 to 16.0	15.1	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	15.1	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	40.0	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	93.7	Pass
	Time	Msec.	72.0 to 82.0	75.7	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	155.0	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to- 79.9	-61.8	Pass
	Time	Msec.	65.0 to 79.0	66.2	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	137.4	Pass
			Overall Test Results		Pass

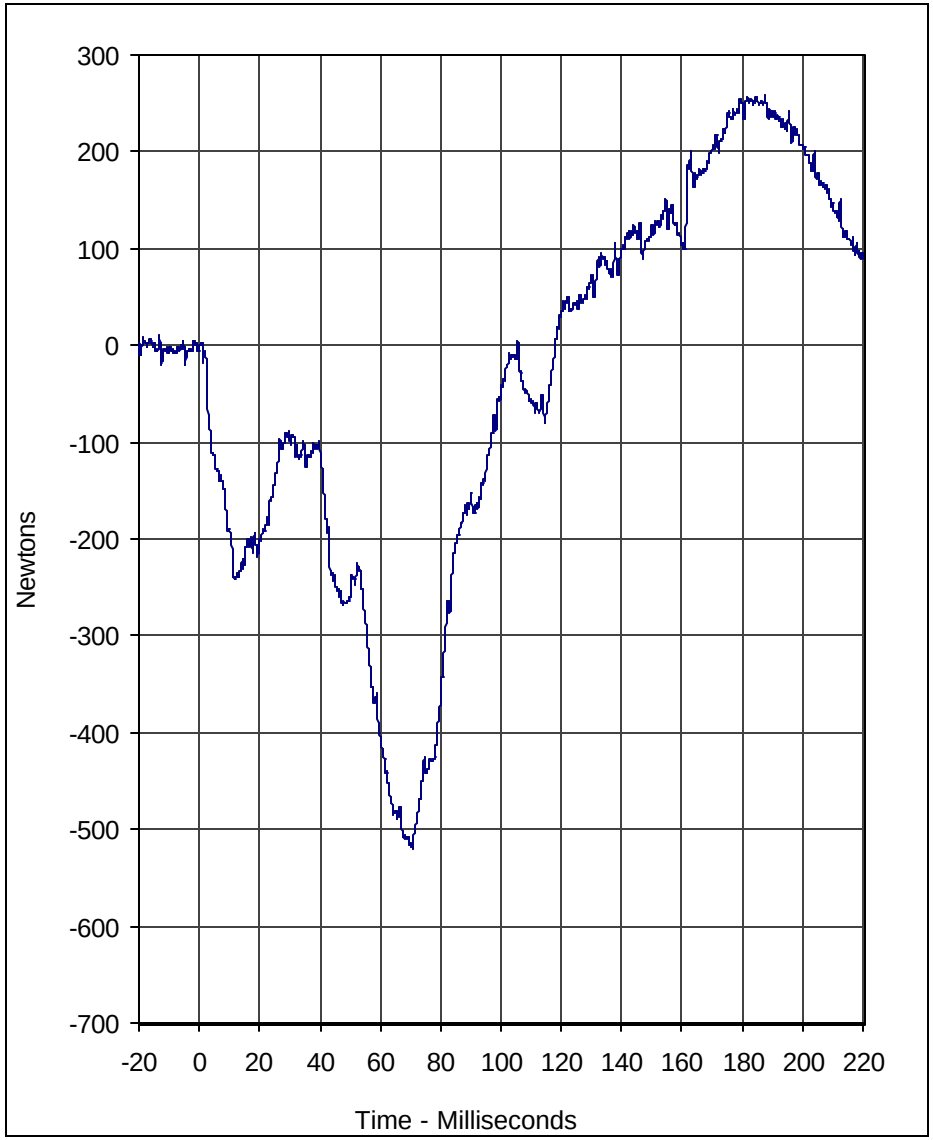
Laboratory Technician

December 1, 2003
Test Date



Curve Description	CURNO	Type
Pendulum Deceleration	001	FIL

Units	Max	Time	Min	Time	SAE Class
G's	19.1	8.0	-1.7	60.3	60



Curve Description	CURNO	Type
Neck Force X	002	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	259.3	187.4	-520.3	70.6	600

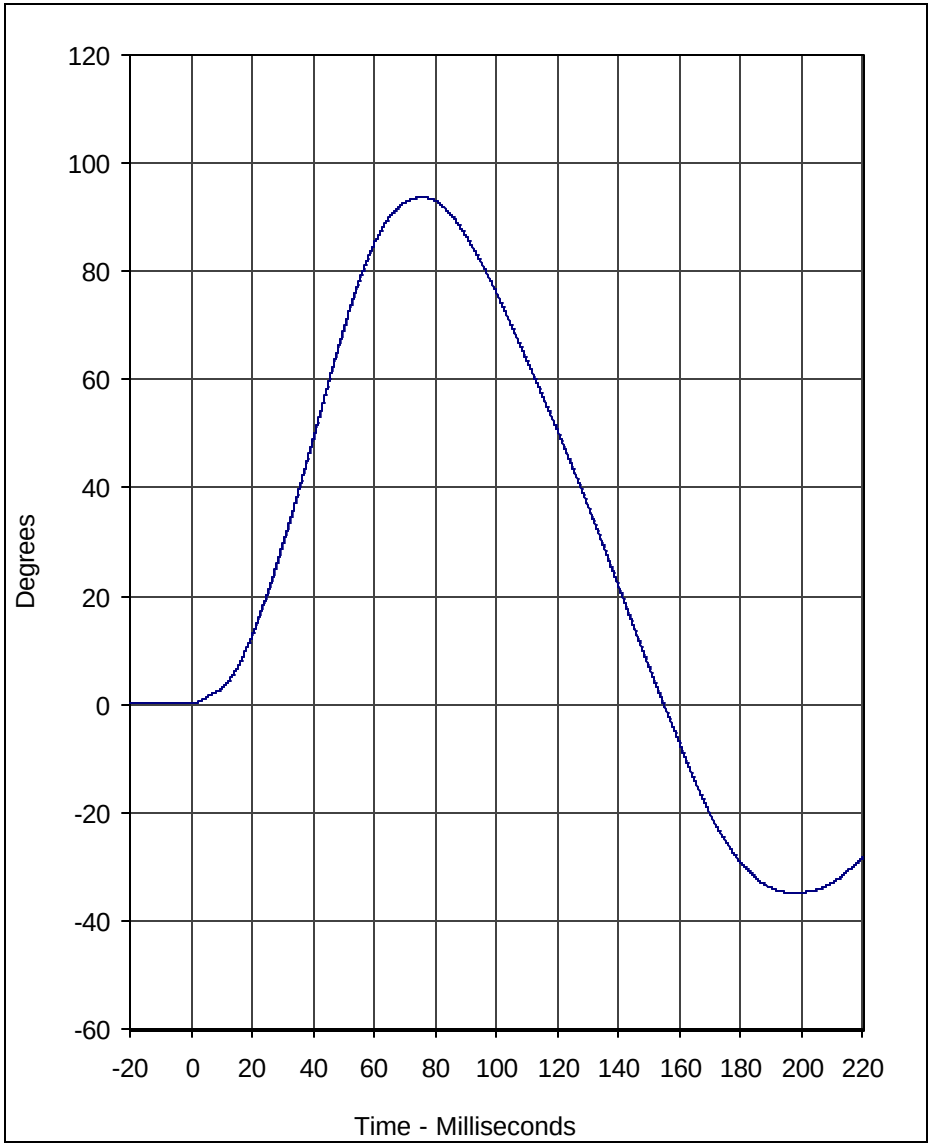
Test Program: Hybrid III 50th Percentile Male Neck Extension Test

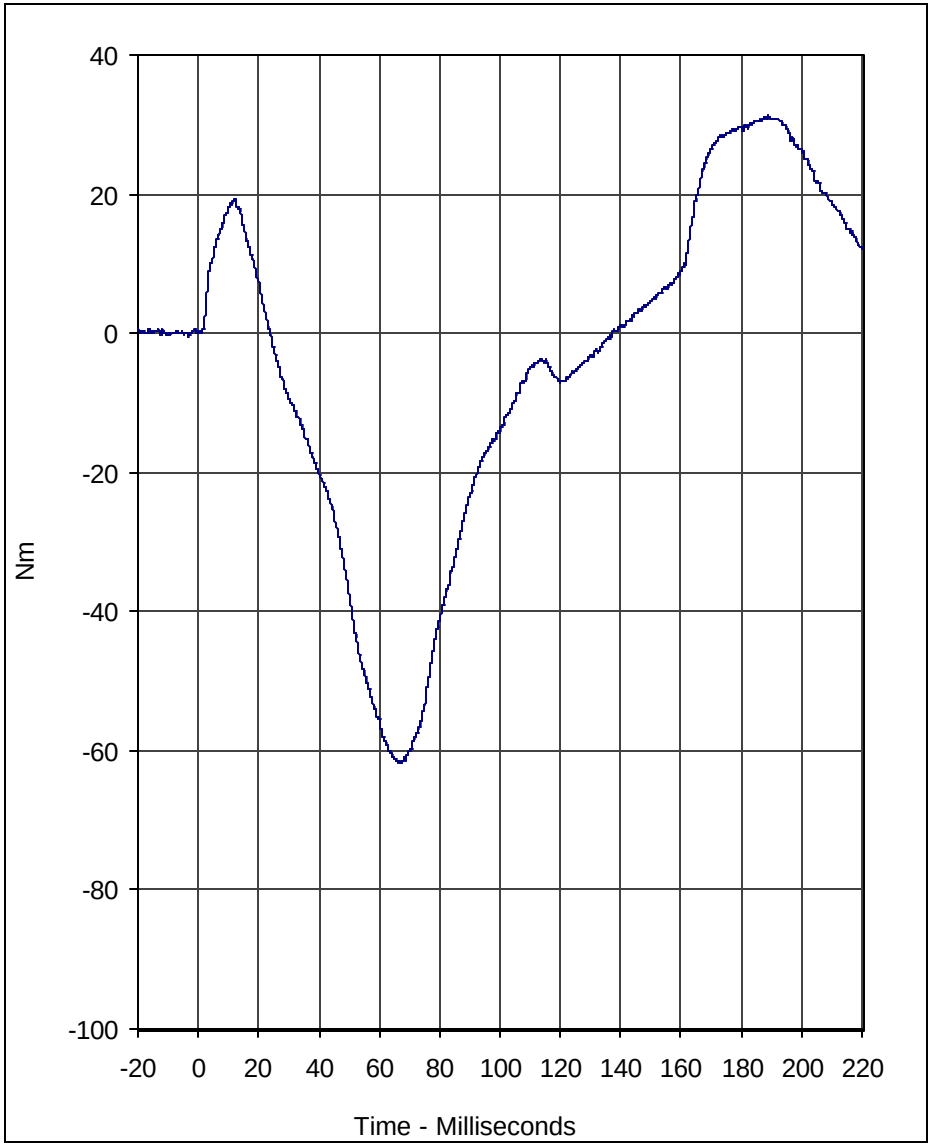
Test Date: 12/1/03

A.T.D. Serial No.: 034

Test I.D.: NE12A

KARCO Engineering





Curve Description	CURNO	Type
"D" Plane Rotation	003	FIL

Units	Max	Time	Min	Time	SAE Class
Degrees	93.7	75.7	-34.8	198.1	60

Curve Description	CURNO	Type
Moment About Occipital Condyle	004	FIL

Units	Max	Time	Min	Time	SAE Class
Nm	31.3	189.0	-61.8	66.2	600

Test Program: Hybrid III 50th Percentile Male Neck Extension Test

Test Date: 12/1/03

A.T.D. Serial No.: 034

Test I.D.: NE12A

KARCO Engineering

Calibration Data Sheet
Hybrid III 50th Percentile Male
External Measurements

ATD Serial No.: 034

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	879 to 889	880	Pass
B - Shoulder pivot height	mm	505 to 521	520	Pass
C - "H" point height	mm	84 to 89	85	Pass
D - "H" point from seat back	mm	135 to 140	135	Pass
E - Shoulder pivot from back	mm	84 to 94	90	Pass
F - Thigh clearance	mm	140 to 155	150	Pass
G - Elbow back to wrist pivot	mm	290 to 305	300	Pass
H - Skull cap to back line	mm	41 to 46	45	Pass
I - Shoulder to elbow length	mm	330 to 345	340	Pass
J - Elbow rest height	mm	190 to 211	195	Pass
K - Buttock to knee length	mm	579 to 604	590	Pass
L - Poplipteal length	mm	429 to 455	440	Pass
M - Knee pivot height	mm	485 to 500	490	Pass
N - Buttock poplipteal length	mm	452 to 477	475	Pass
O - Chest depth	mm	213 to 229	225	Pass
P - Foot length	mm	251 to 267	255	Pass
V - Shoulder breadth	mm	422 to 437	430	Pass
W - Foot breadth	mm	91 to 107	105	Pass
Y - Chest circumference	mm	970 to 1001	1000	Pass
Z - Waist circumference	mm	836 to 866	845	Pass
AA - Location for chest circumference	mm	429 to 434	430	Pass
BB - Location for waist circumference	mm	226 to 231	230	Pass
		Overall Test Results		Pass

Laboratory Technician

December 2, 2003
Test Date

Calibration Data Sheet
Hybrid III 50th Percentile Male
Knee Impact Test

ATD Serial No.: 035 Location: Left Knee Test I.D.: LK11F

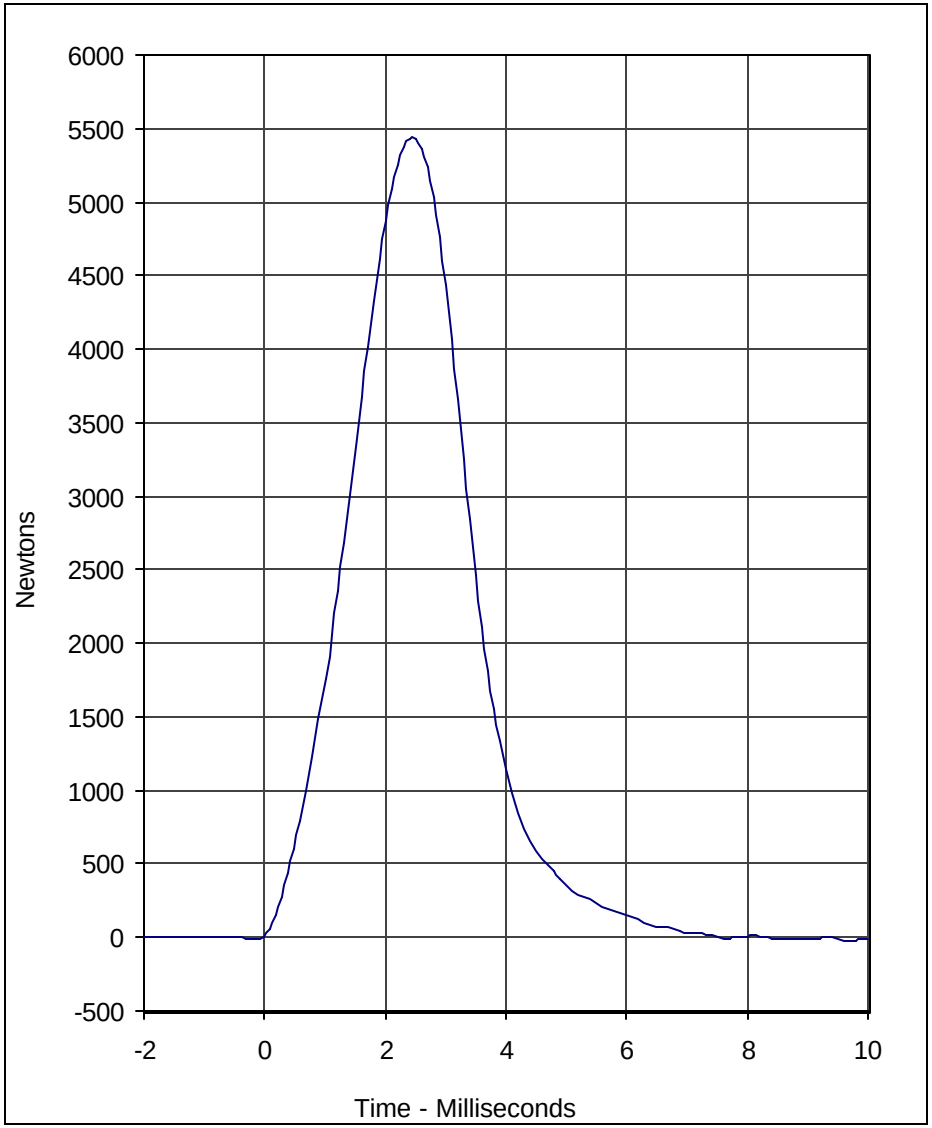
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	^{o}C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.12	Pass
Peak Probe Force	N	4715 to 5782	5434	Pass
		Overall Test Results		Pass

ATD Serial No.: 035 Location: Right Knee Test I.D.: RK11F

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	^{o}C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.12	Pass
Peak Probe Force	N	4715 to 5782	5094	Pass
		Overall Test Results		Pass

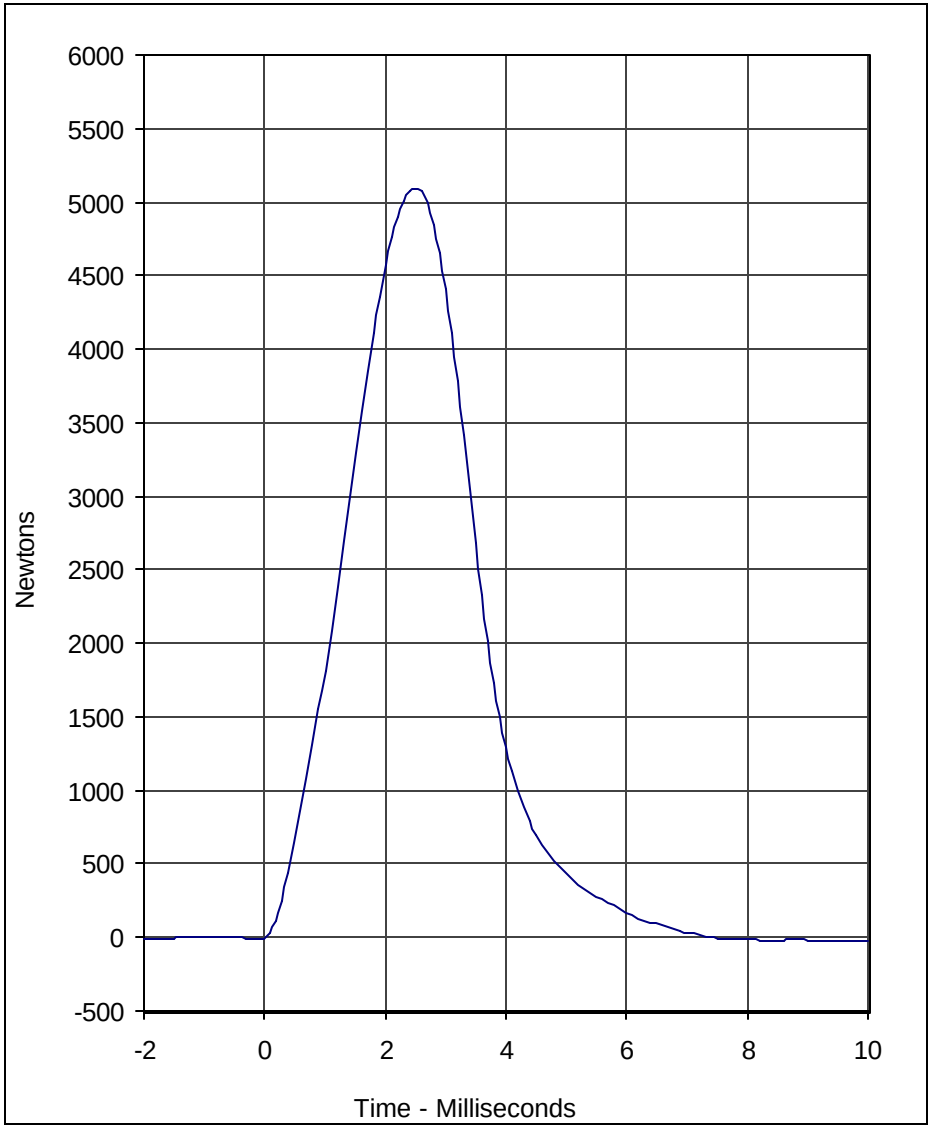
Laboratory Technician

December 1, 2003
Test Date



Curve Description	Location	Test I.D.	CURNO	Type
Probe Force	Left Knee	LK11F	001	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	5433.8	2.4	-20.4	9.7	600



Curve Description	Location	Test I.D.	CURNO	Type
Probe Force	Right Knee	RK11F	002	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	5094.2	2.5	-29.6	8.4	600

Test Program: Hybrid III 50th Percentile Male Knee Impact Test

A.T.D. Serial No.: 035

Test Date: 12/1/03

KARCO Engineering

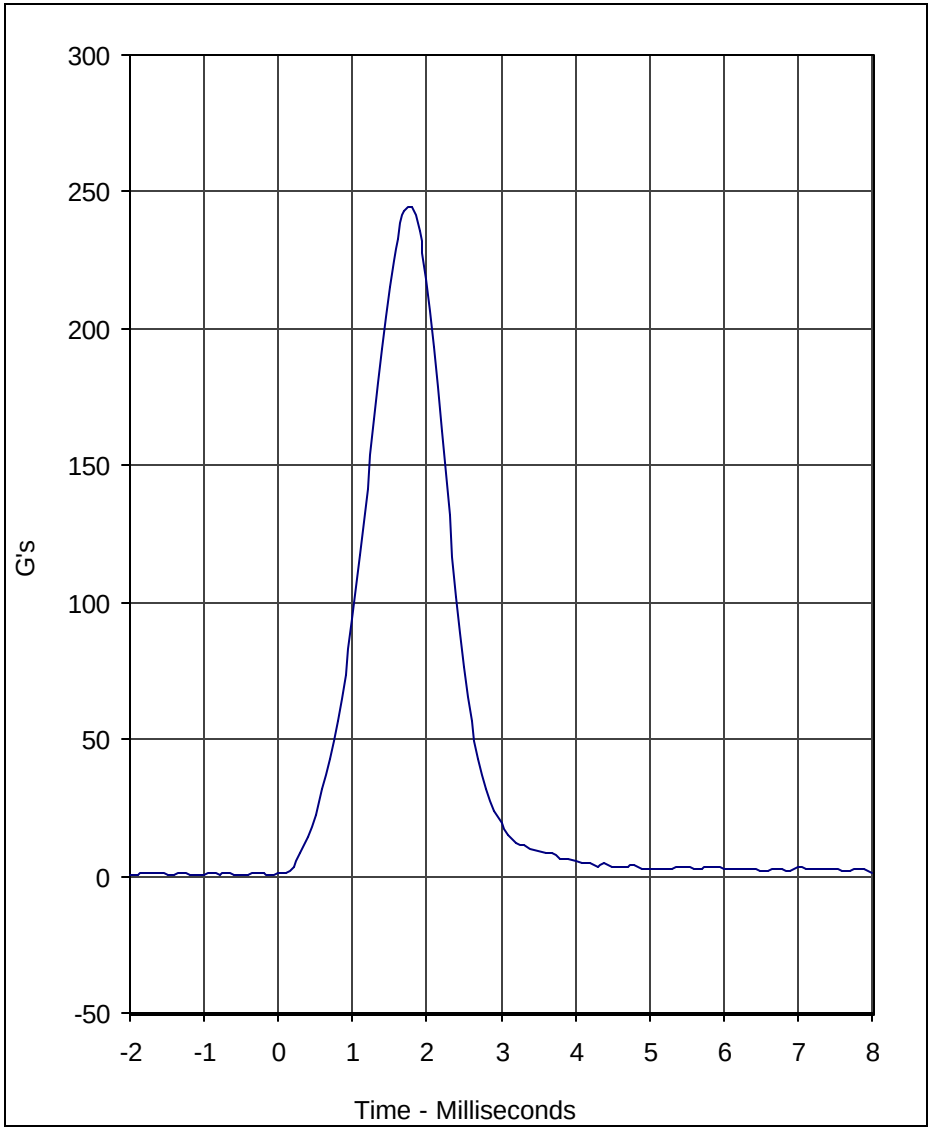
Calibration Data Sheet
Hybrid III 50th Percentile Male
Head Drop Test

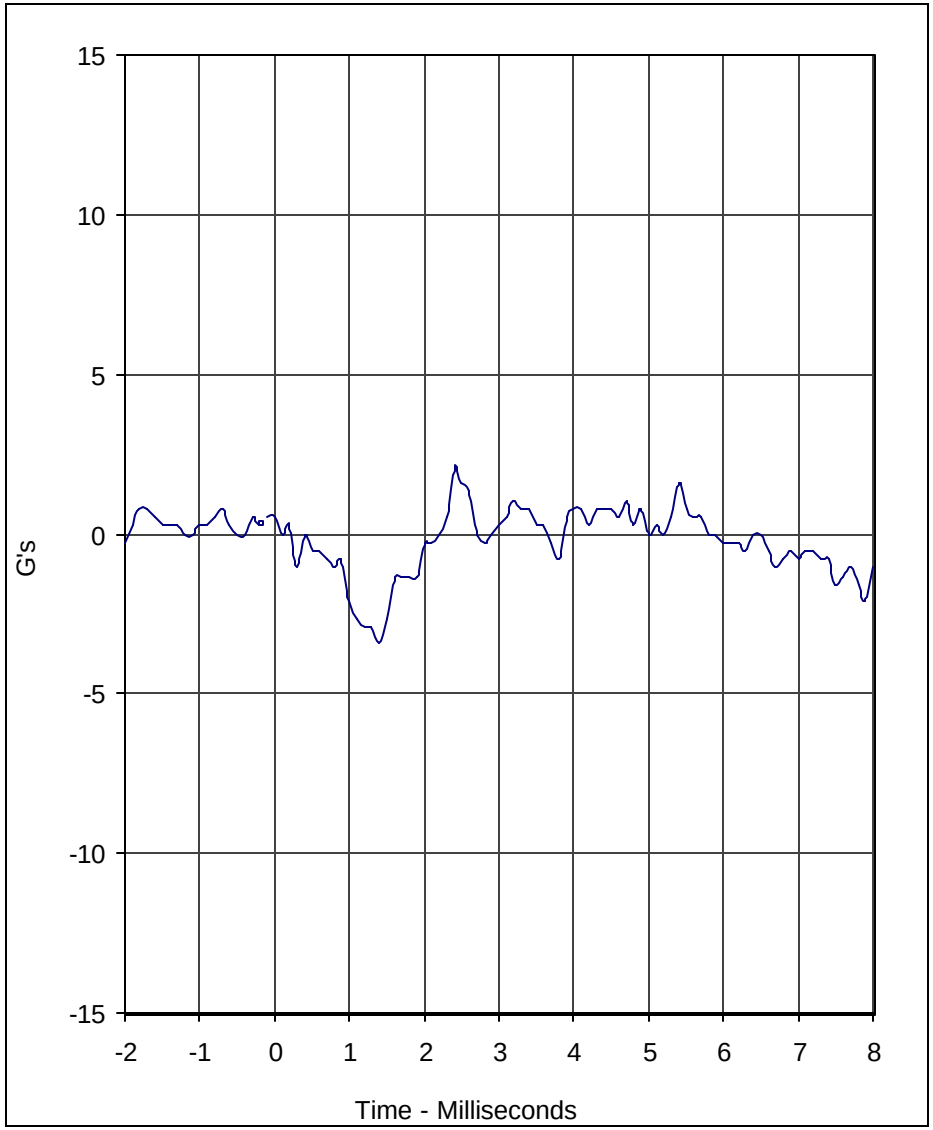
ATD Serial No.: 035 Test I.D.: HD11C

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	244.5	Pass
Peak Lateral Acceleration	G's	≤15.0	3.4	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
		Overall Test Results		Pass

Laboratory Technician

December 1, 2003
Test Date





Curve Description	CURNO	Type
Head Resultant	001	RES

Units	Max	Time	Min	Time	SAE Class
G's	244.5	1.8	0.3	-0.4	1000

Curve Description	CURNO	Type
Head Y	002	FIL

Units	Max	Time	Min	Time	SAE Class
G's	2.1	2.4	-3.4	1.4	1000

Test Program: Hybrid III 50th Percentile Male Head Drop Test

Test Date: 12/1/03

A.T.D. Serial No.: 035

Test I.D.: HD11C

KARCO Engineering

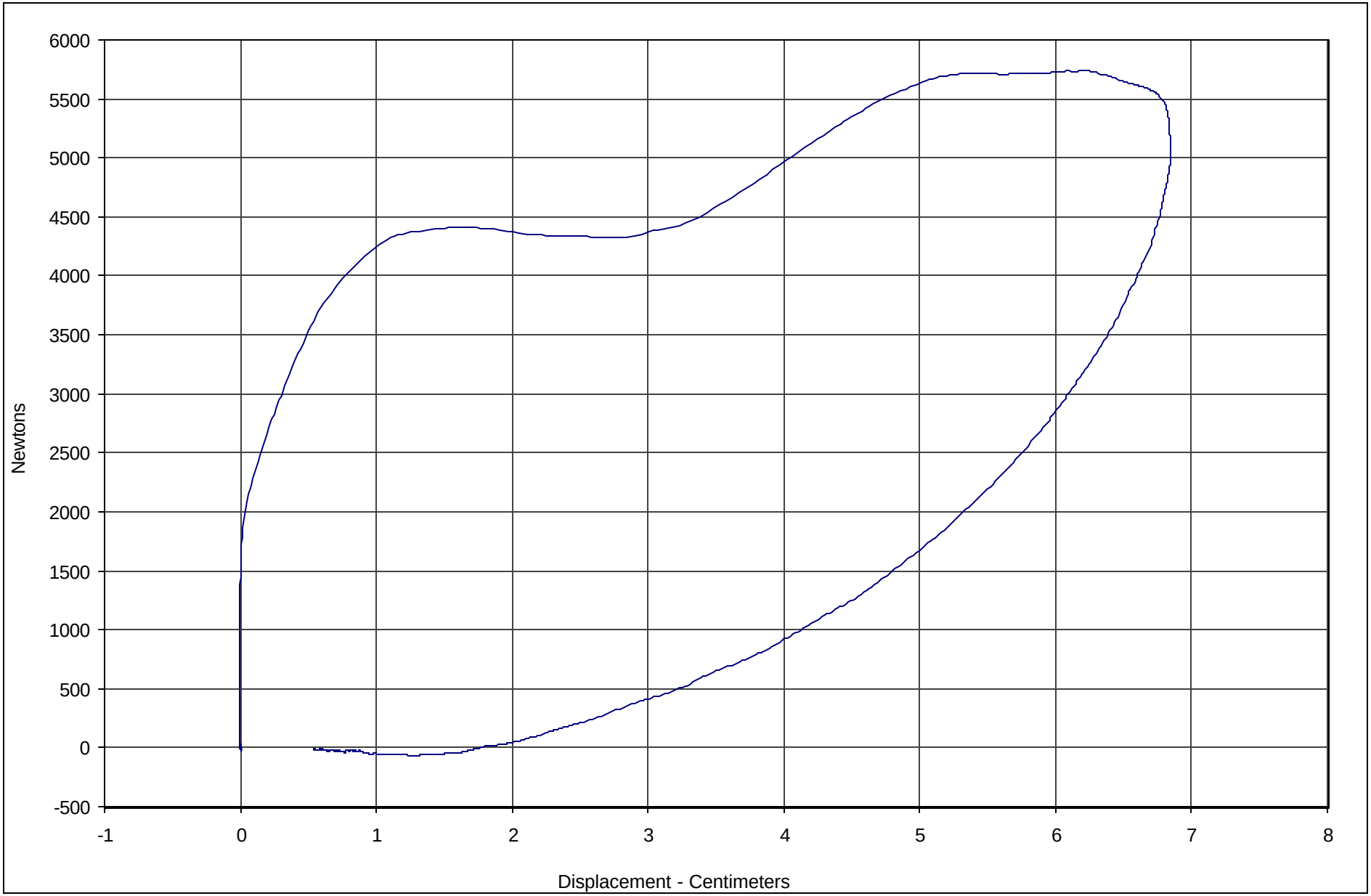
Calibration Data Sheet
Hybrid III 50th Percentile Male
Thorax Impact Test

ATD Serial No.: 035 Test I.D.: ch12b

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	^{o}C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	6.58 to 6.82	6.74	Pass
Peak Probe Force	Newtons	5159 to 5893	5737	Pass
Peak Sternum Displacement	CM	6.35 to 7.26	6.84	Pass
Internal Hysterysis	%	69 to 85	77.1	Pass
		Overall Test Results		Pass

Laboratory Technician

December 2, 2003
Test Date



Curve Description	CURNO	Type	Hysterysis	Peak Chest Displ.	Peak Probe Force	SAE Class
Probe Force vs. Chest Displacement	001	FIL	77.1	6.84	5737.2	180

Test Program: Hybrid III 50th Percentile Male Thorax Impact

A.T.D. Serial No.: 035

Test Date: 12/2/03

Test I.D.: ch12b

Calibration Data Sheet
Hybrid III 50th Percentile Male
Neck Flexion Test

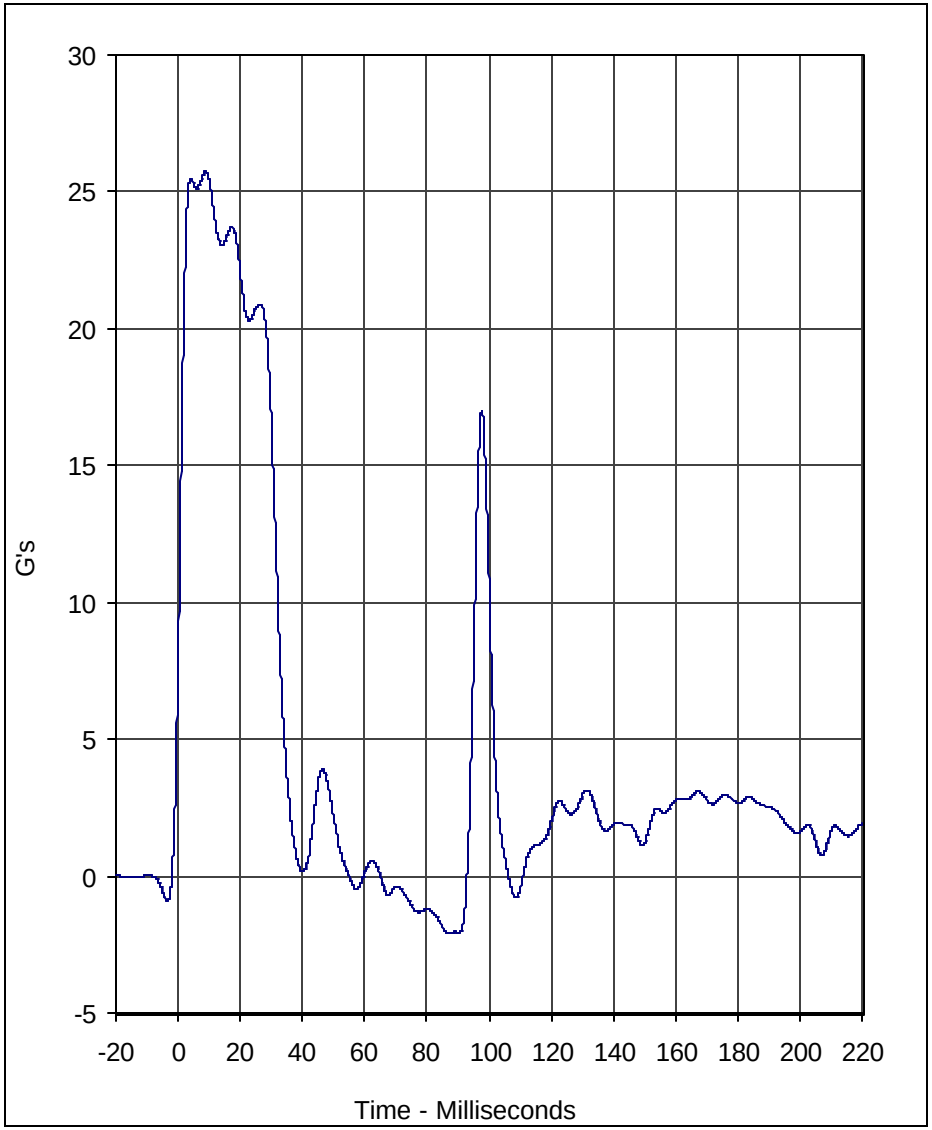
ATD Serial No.: 035 Test I.D.: NF12B

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.98	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	25.4	Pass
	20 Msec.	G's	17.6 to 22.6	22.1	Pass
	30 Msec.	G's	12.5 to 18.5	16.7	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	17.0	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	34.2	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	74.5	Pass
	Time	Msec.	57.0 to 64.0	61.2	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	122.3	Pass
Moment About Occipital Condyle	Maximum	Nm	84.1 to 108.5	90.1	Pass
	Time	Msec.	47.0 to 58.0	51.0	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	104.7	Pass
			Overall Test Results		Pass

December 1, 2003

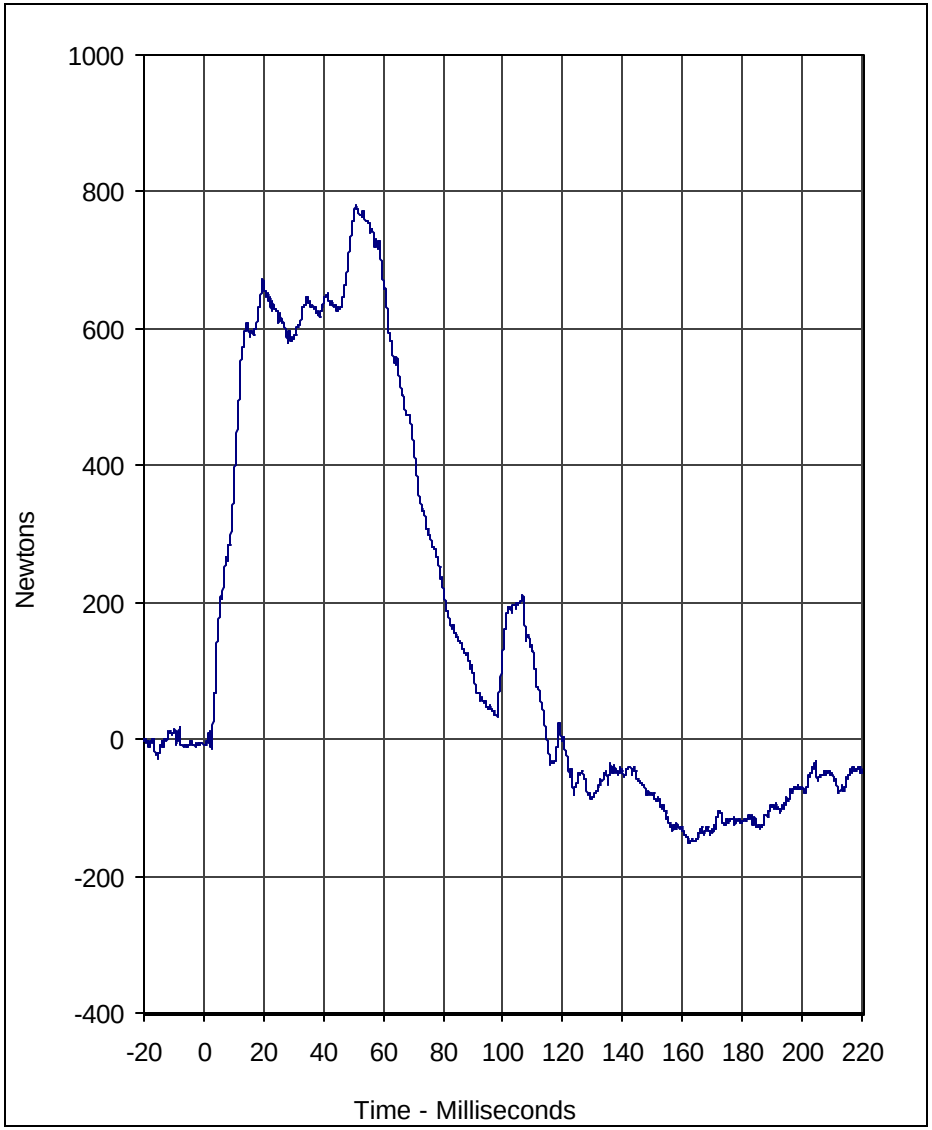
Laboratory Technician

Test Date



Curve Description	CURNO	Type
Pendulum Deceleration	001	FIL

Units	Max	Time	Min	Time	SAE Class
G's	25.7	8.9	-2.1	87.2	60



Curve Description	CURNO	Type
Neck Force X	002	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	779.7	50.7	-152.7	162.2	600

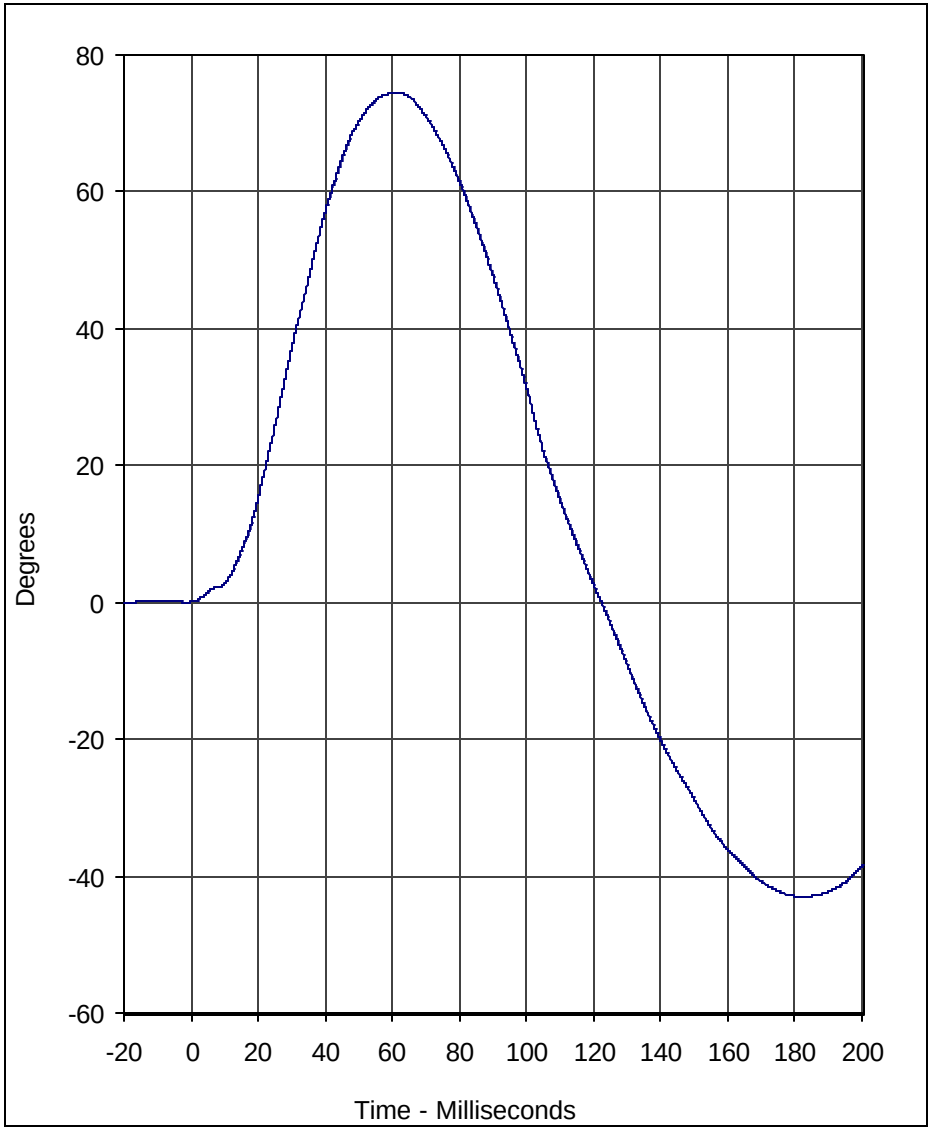
Test Program: Hybrid III 50th Percentile Male Neck Flexion Test

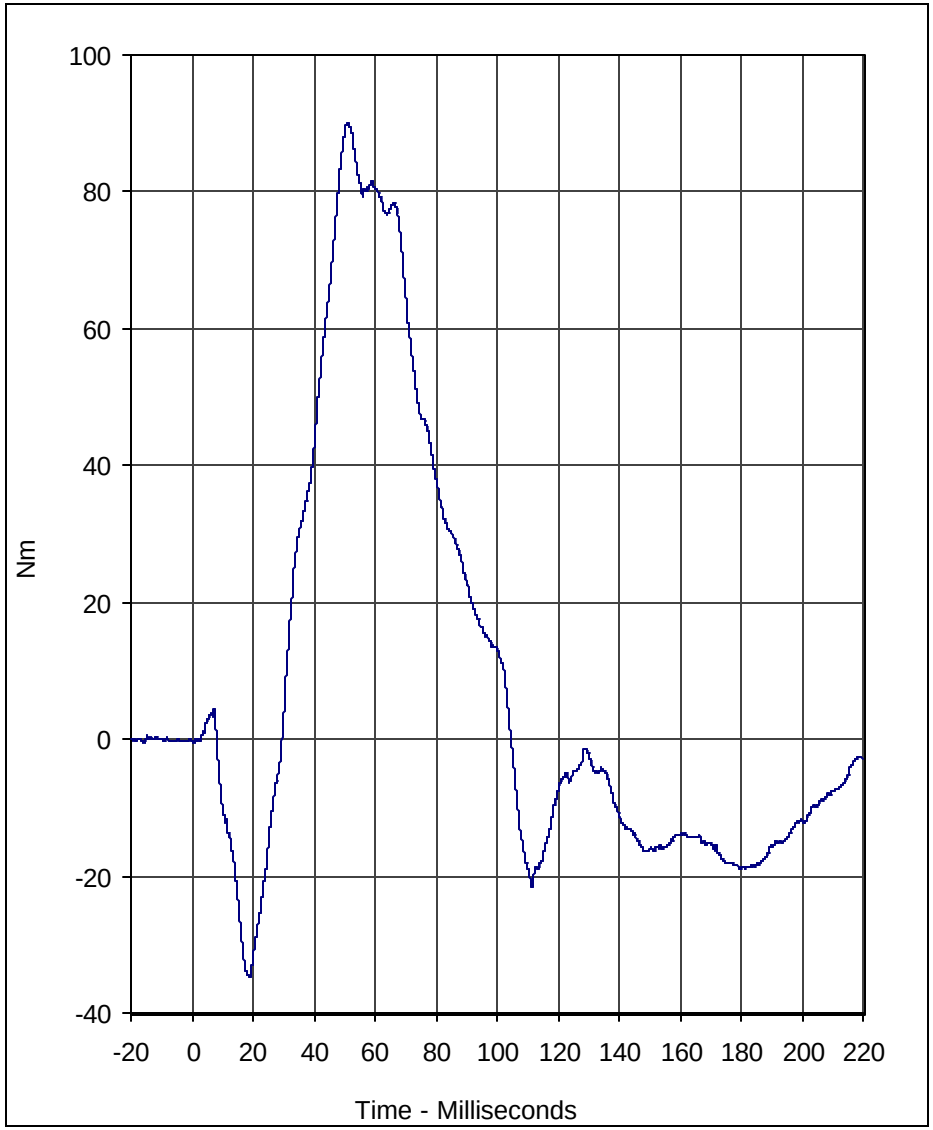
Test Date: 12/1/03

A.T.D. Serial No.: 035

Test I.D.: NF12B

KARCO Engineering





Curve Description	CURNO	Type
"D" Plane Rotation	003	FIL

Units	Max	Time	Min	Time	SAE Class
Degrees	74.5	61.2	-43.0	182.7	60

Curve Description	CURNO	Type
Moment About Occipital Condyle	004	FIL

Units	Max	Time	Min	Time	SAE Class
Nm	90.1	51.0	-34.9	18.9	600

Test Program: Hybrid III 50th Percentile Male Neck Flexion Test

Test Date: 12/1/03

A.T.D. Serial No.: 035

Test I.D.: NF12B

KARCO Engineering

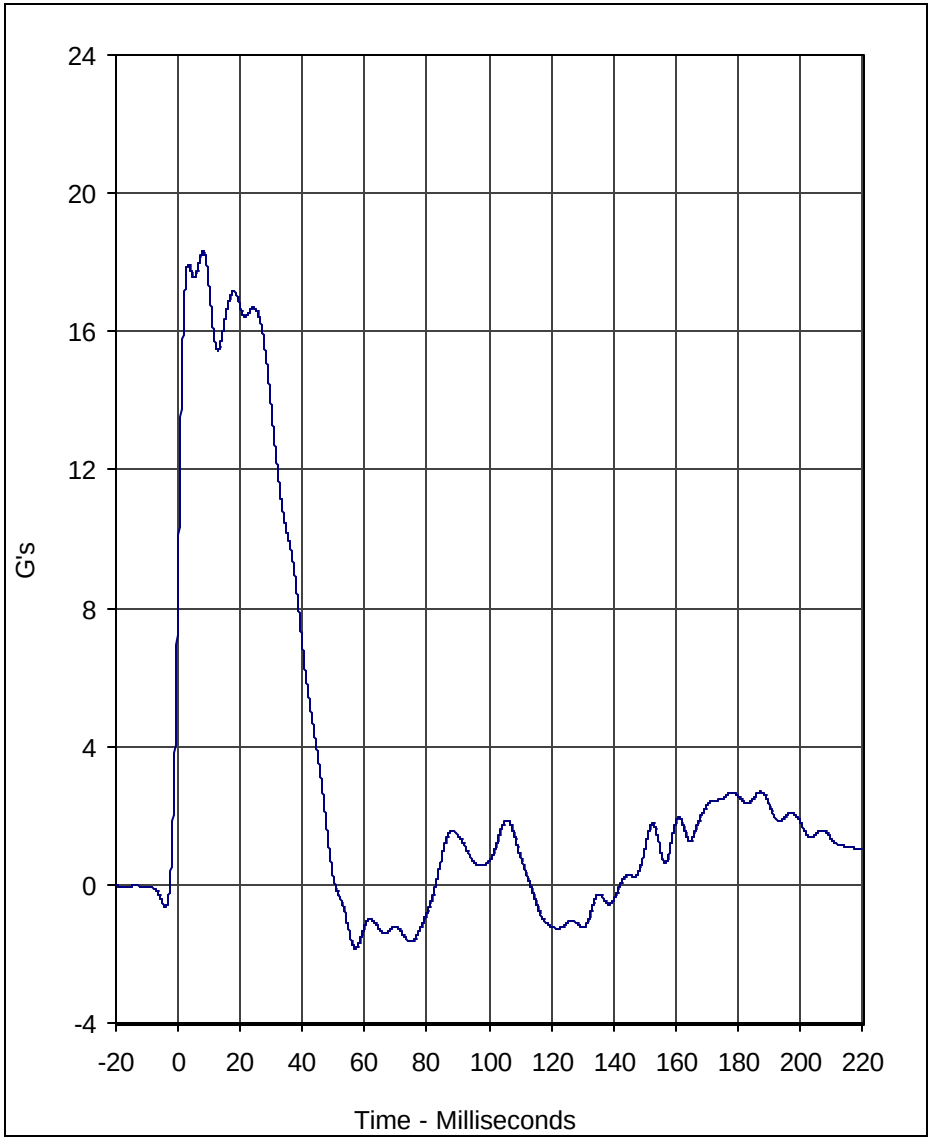
Calibration Data Sheet
Hybrid III 50th Percentile Male
Neck Extension Test

ATD Serial No.: 035 Test I.D.: NE12B

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.04	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	17.3	Pass
	20 Msec.	G's	14.0 to 19.0	16.7	Pass
	30 Msec.	G's	11.0 to 16.0	13.8	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	13.8	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	42.8	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	96.7	Pass
	Time	Msec.	72.0 to 82.0	78.4	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	158.4	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to- 79.9	-63.3	Pass
	Time	Msec.	65.0 to 79.0	68.1	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	141.9	Pass
			Overall Test Results		Pass

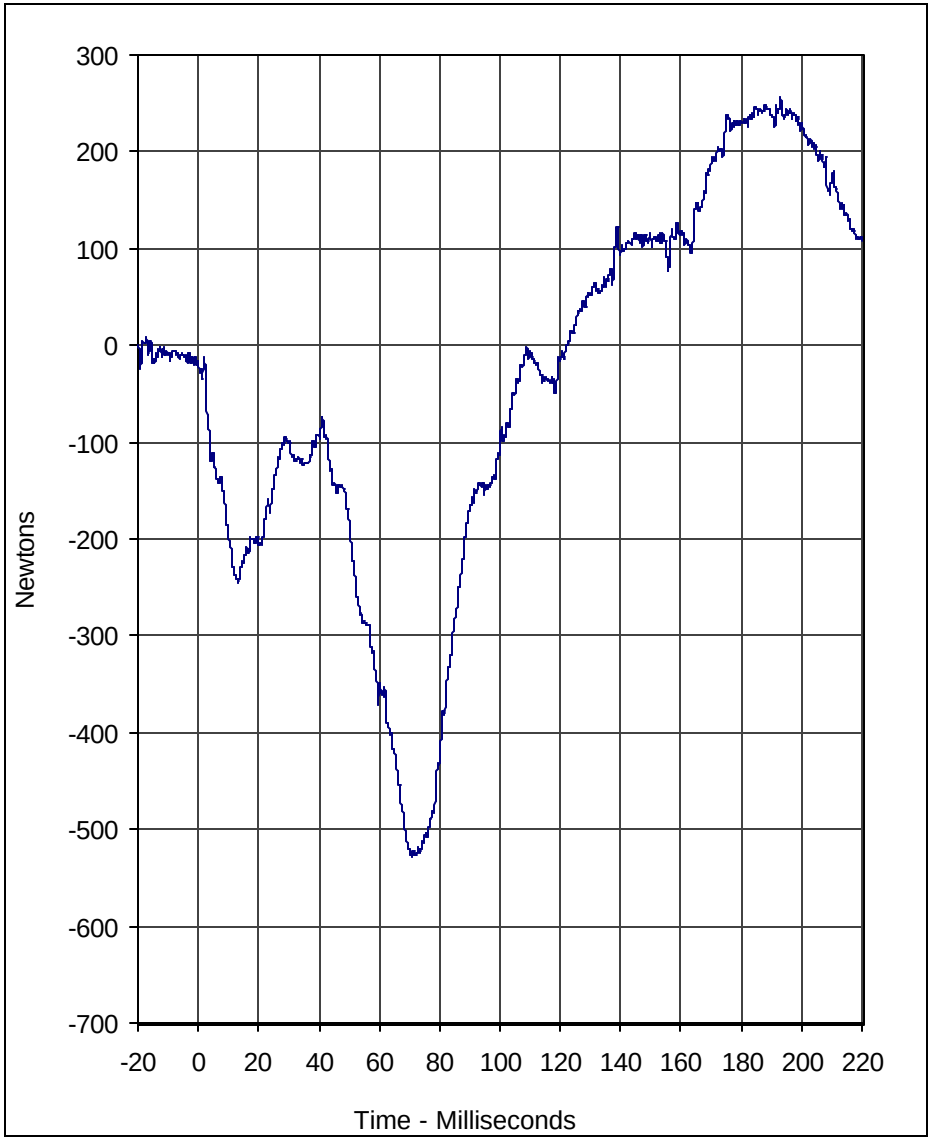
Laboratory Technician

December 1, 2003
Test Date



Curve Description	CURNO	Type
Pendulum Deceleration	001	FIL

Units	Max	Time	Min	Time	SAE Class
G's	18.3	8.1	-1.8	57.0	60



Curve Description	CURNO	Type
Neck Force X	002	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	257.2	193.0	-528.7	70.7	600

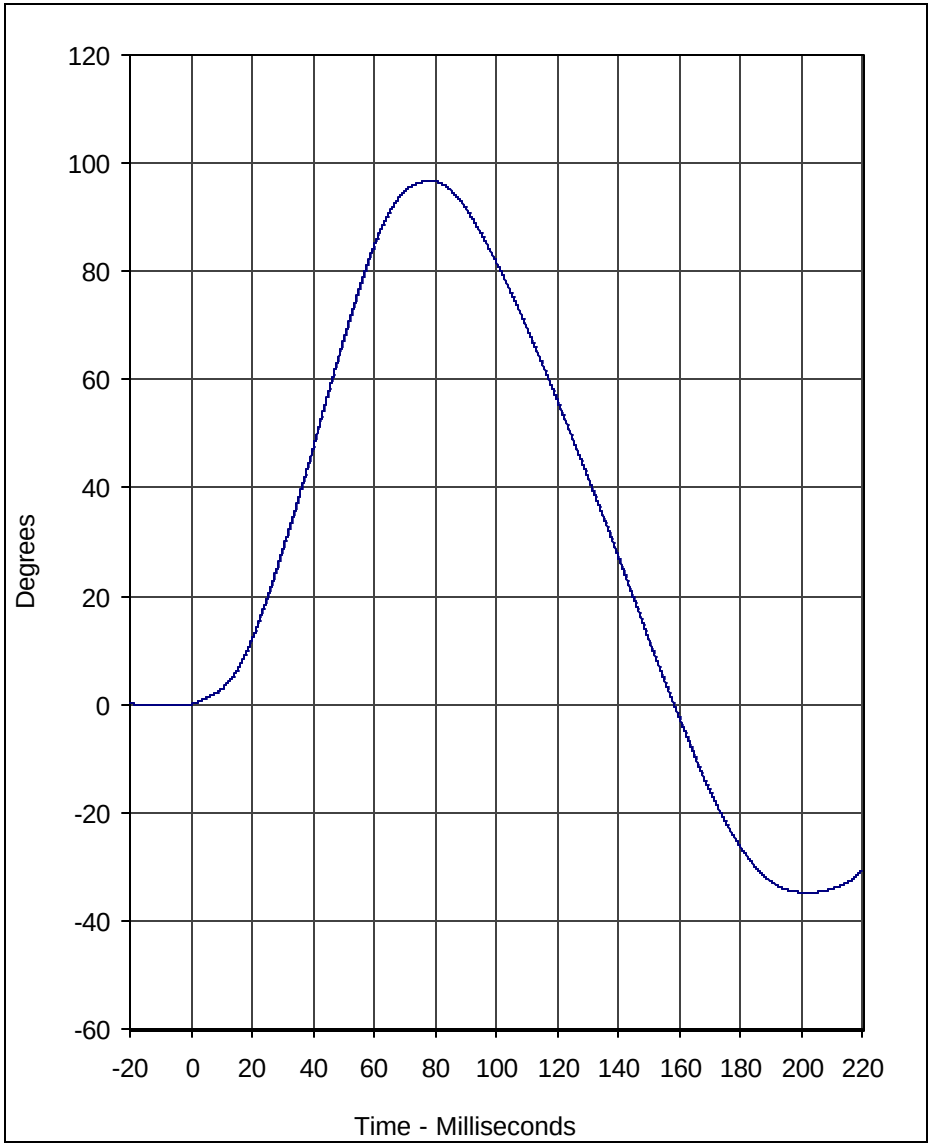
Test Program: Hybrid III 50th Percentile Male Neck Extension Test

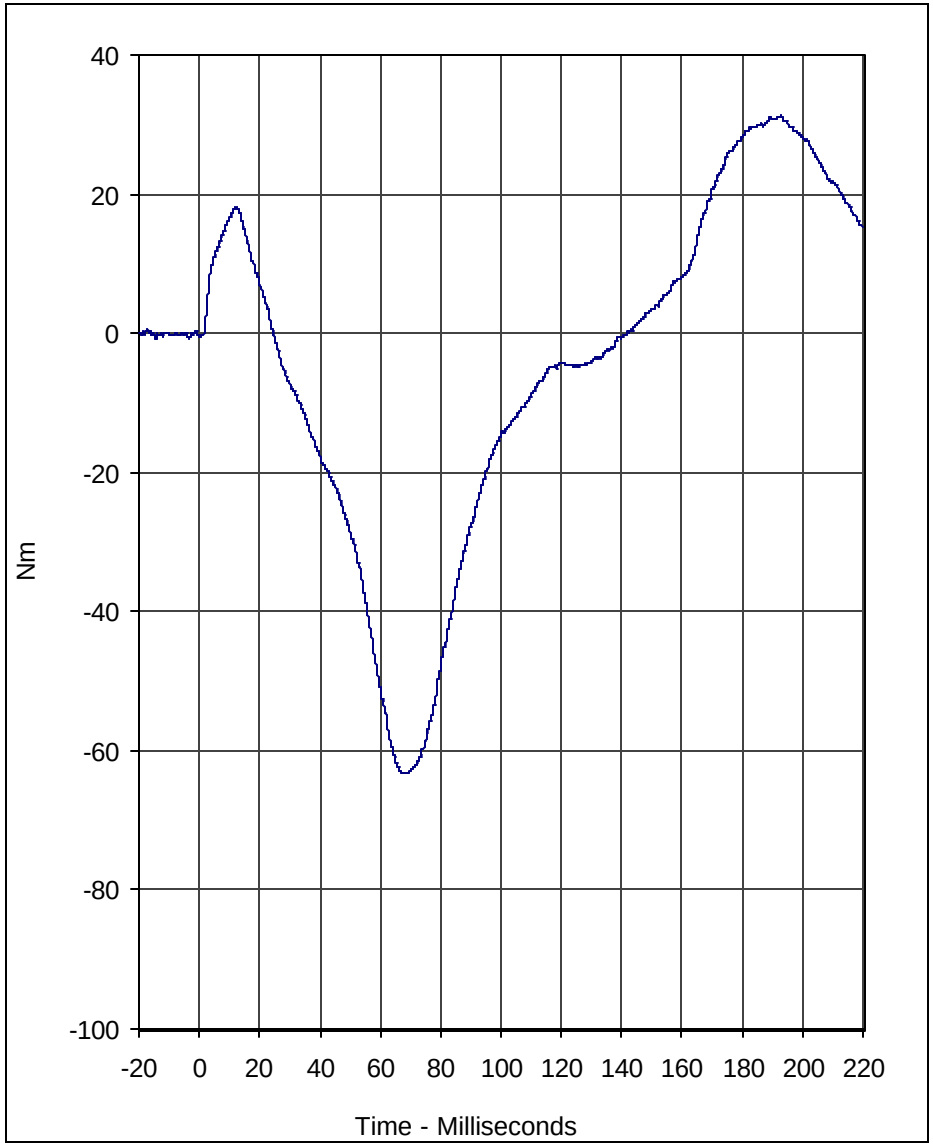
Test Date: 12/1/03

A.T.D. Serial No.: 035

Test I.D.: NE12B

KARCO Engineering





Curve Description	CURNO	Type
"D" Plane Rotation	003	FIL

Units	Max	Time	Min	Time	SAE Class
Degrees	96.7	78.4	-34.8	203.5	60

Curve Description	CURNO	Type
Moment About Occipital Condyle	004	FIL

Units	Max	Time	Min	Time	SAE Class
Nm	31.2	193.0	-63.3	68.1	600

Test Program: Hybrid III 50th Percentile Male Neck Extension Test

Test Date: 12/1/03

A.T.D. Serial No.: 035

Test I.D.: NE12B

KARCO Engineering

Calibration Data Sheet
Hybrid III 50th Percentile Male
External Measurements

ATD Serial No.: 035

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	879 to 889	885	Pass
B - Shoulder pivot height	mm	505 to 521	515	Pass
C - "H" point height	mm	84 to 89	85	Pass
D - "H" point from seat back	mm	135 to 140	135	Pass
E - Shoulder pivot from back	mm	84 to 94	90	Pass
F - Thigh clearance	mm	140 to 155	145	Pass
G - Elbow back to wrist pivot	mm	290 to 305	295	Pass
H - Skull cap to back line	mm	41 to 46	45	Pass
I - Shoulder to elbow length	mm	330 to 345	340	Pass
J - Elbow rest height	mm	190 to 211	210	Pass
K - Buttock to knee length	mm	579 to 604	600	Pass
L - Poplipteal length	mm	429 to 455	440	Pass
M - Knee pivot height	mm	485 to 500	495	Pass
N - Buttock poplipteal length	mm	452 to 477	470	Pass
O - Chest depth	mm	213 to 229	225	Pass
P - Foot length	mm	251 to 267	255	Pass
V - Shoulder breadth	mm	422 to 437	430	Pass
W - Foot breadth	mm	91 to 107	105	Pass
Y - Chest circumference	mm	970 to 1001	985	Pass
Z - Waist circumference	mm	836 to 866	860	Pass
AA - Location for chest circumference	mm	429 to 434	430	Pass
BB - Location for waist circumference	mm	226 to 231	230	Pass
		Overall Test Results		Pass

Laboratory Technician

December 2, 2003
Test Date

APPENDIX F

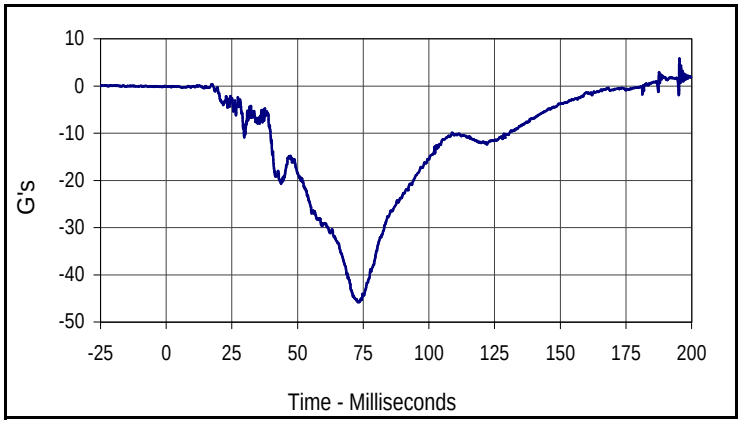
CHILD RESTRAINT SYSTEM

NOT USED FOR THIS TEST

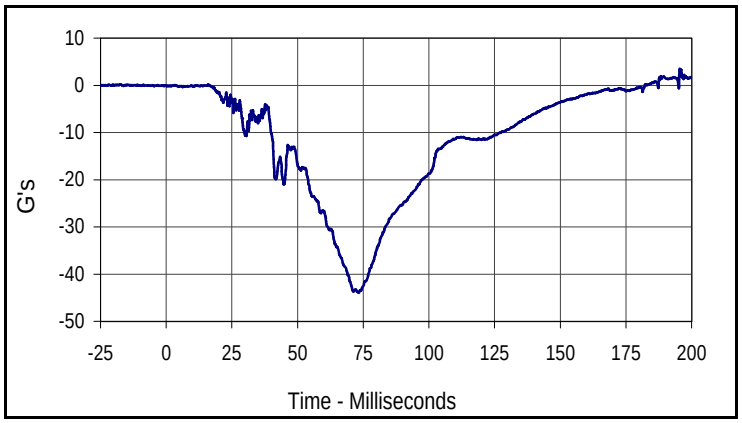
APPENDIX G

NINE ACCELEROMETER ARRAY HEAD

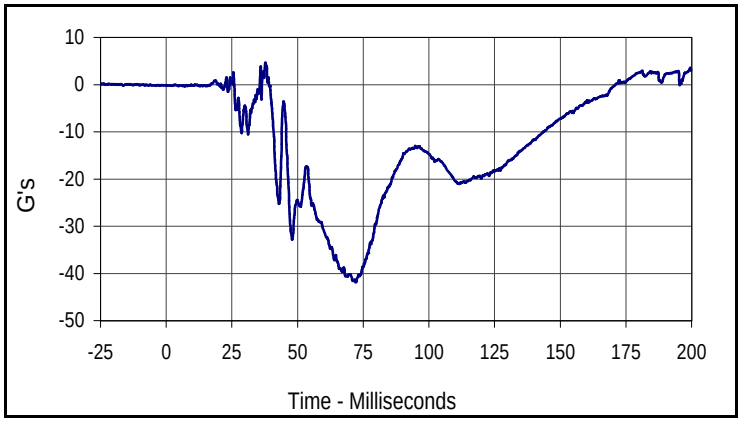
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



Curve Description			
Driver Head Primary X			
CURNO	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
5.7	195.4	-45.8	73.4

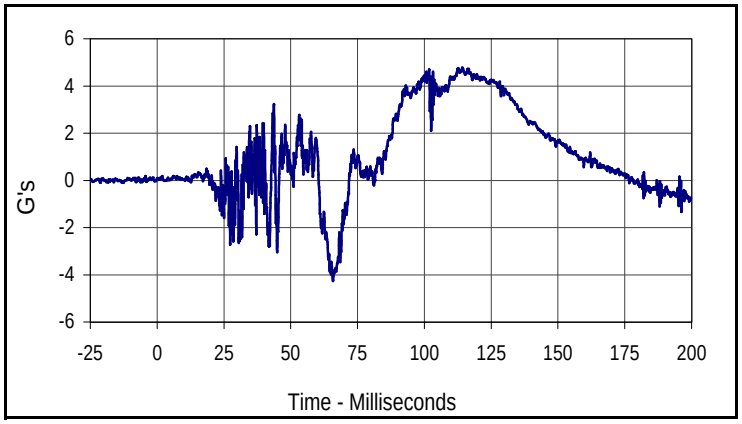


Curve Description			
Driver NAHA Yarm-X			
CURNO	Type	SAE Class	Units
136	FIL	1000	G's
Max	Time	Min	Time
3.5	195.5	-44.0	73.2

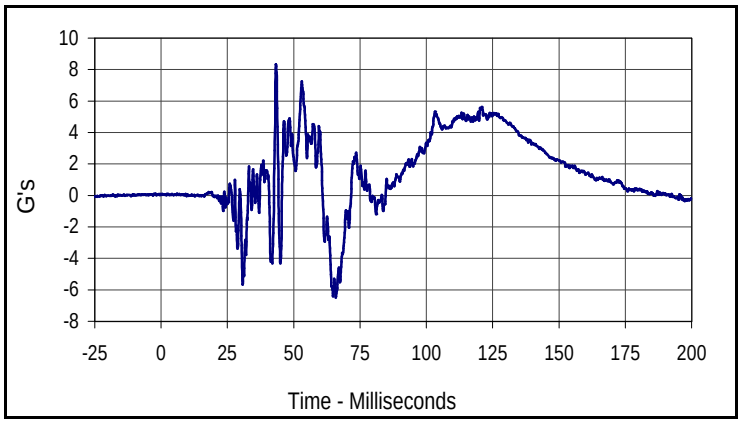


Curve Description			
Driver NAHA Zarm-X			
CURNO	Type	SAE Class	Units
138	FIL	1000	G's
Max	Time	Min	Time
4.7	37.7	-41.9	72.2

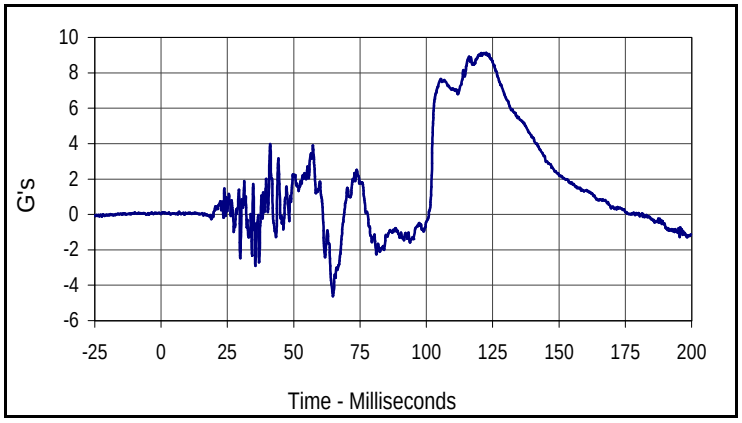
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



Curve Description			
Driver Head Primary Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
4.8	114.2	-4.3	65.8

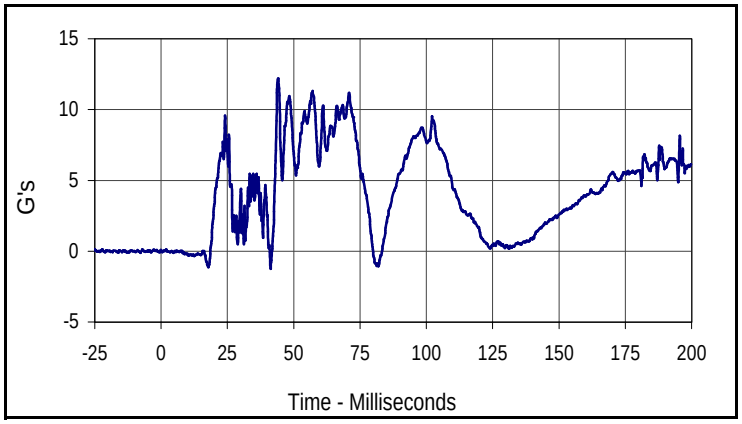


Curve Description			
Driver NAHA Xarm-Y			
CURNO	Type	SAE Class	Units
134	FIL	1000	G's
Max	Time	Min	Time
8.3	43.3	-6.5	65.9

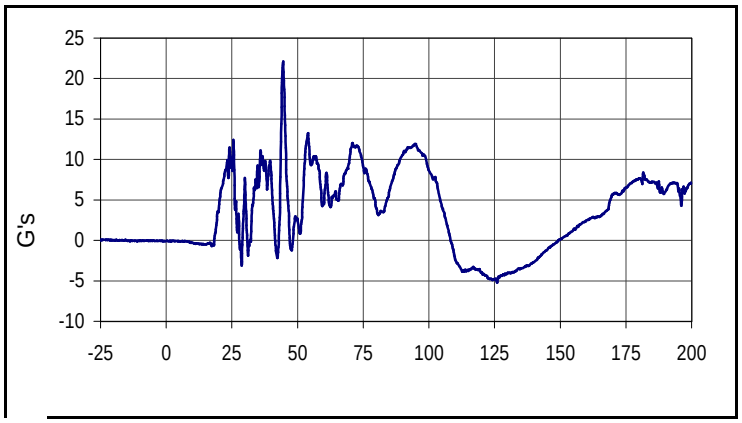


Curve Description			
Driver NAHA Zarm-Y			
CURNO	Type	SAE Class	Units
139	FIL	1000	G's
Max	Time	Min	Time
9.1	122.6	-4.6	64.8

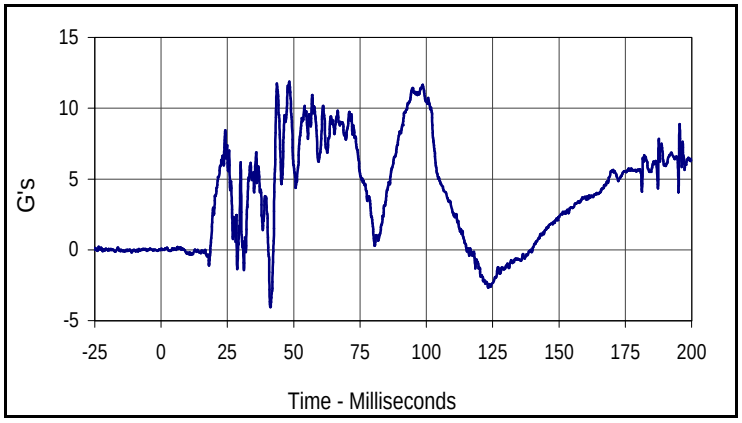
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



Curve Description			
Driver Head Primary Z			
CURNO	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
12.2	44.1	-1.2	41.3

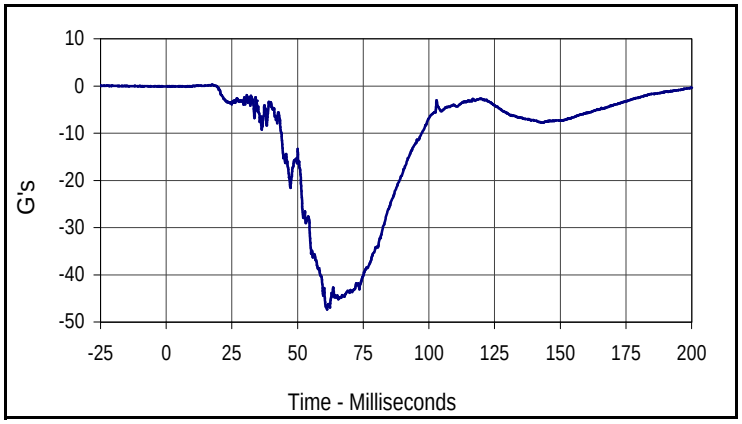


Curve Description			
Driver NAHA Xarm-Z			
CURNO	Type	SAE Class	Units
135	FIL	1000	G's
Max	Time	Min	Time
22.1	44.5	-5.2	125.9

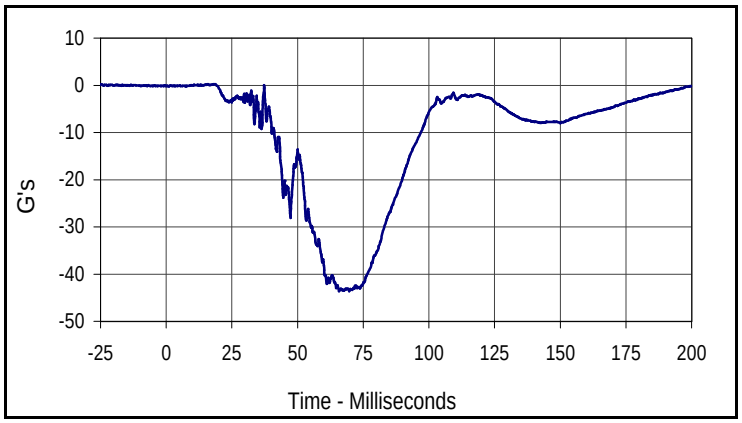


Curve Description			
Driver NAHA Yarm-Z			
CURNO	Type	SAE Class	Units
137	FIL	1000	G's
Max	Time	Min	Time
11.9	48.3	-4.0	41.2

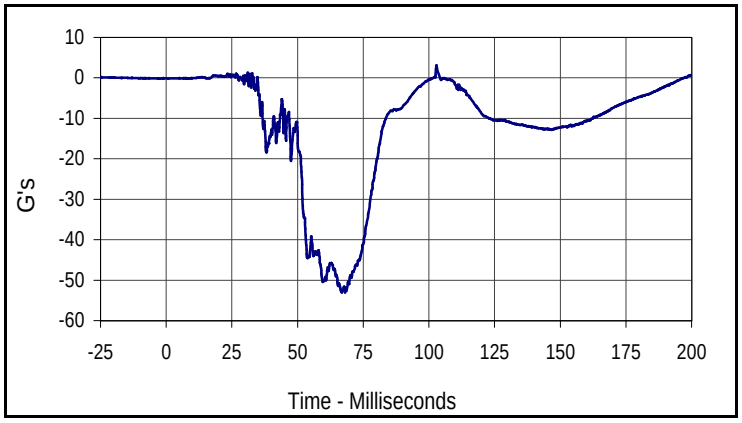
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



Curve Description			
Passenger Head Primary X			
CURNO	Type	SAE Class	Units
045	FIL	1000	G's
Max	Time	Min	Time
0.3	17.6	-47.4	61.2

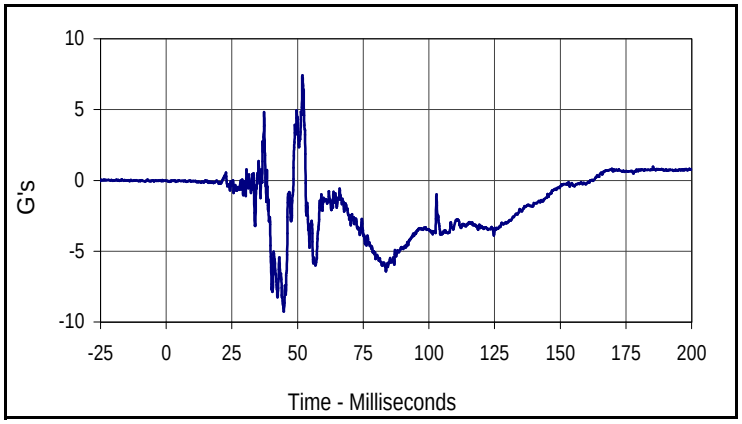


Curve Description			
Passenger NAHA Yarm-X			
CURNO	Type	SAE Class	Units
142	FIL	1000	G's
Max	Time	Min	Time
0.2	18.5	-43.6	65.8

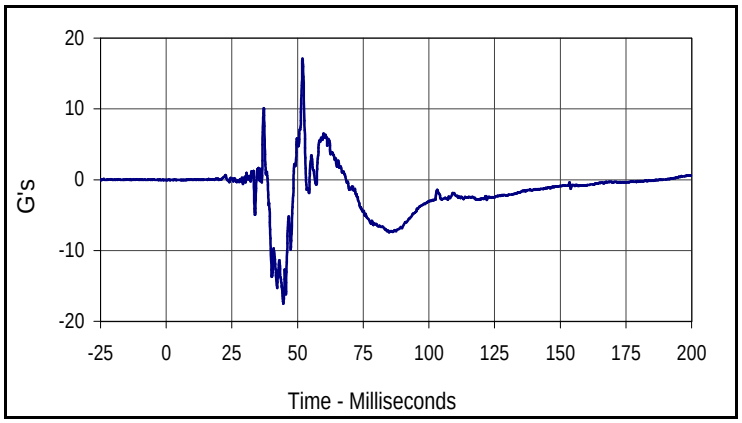


Curve Description			
Passenger NAHA Zarm-X			
CURNO	Type	SAE Class	Units
144	FIL	1000	G's
Max	Time	Min	Time
3.1	102.9	-53.0	66.8

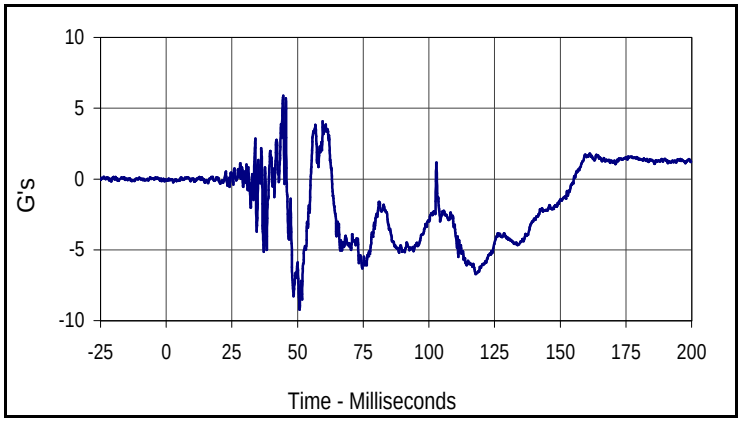
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



Curve Description			
Passenger Head Primary Y			
CURNO	Type	SAE Class	Units
046	FIL	1000	G's
Max	Time	Min	Time
7.4	51.9	-9.3	44.7

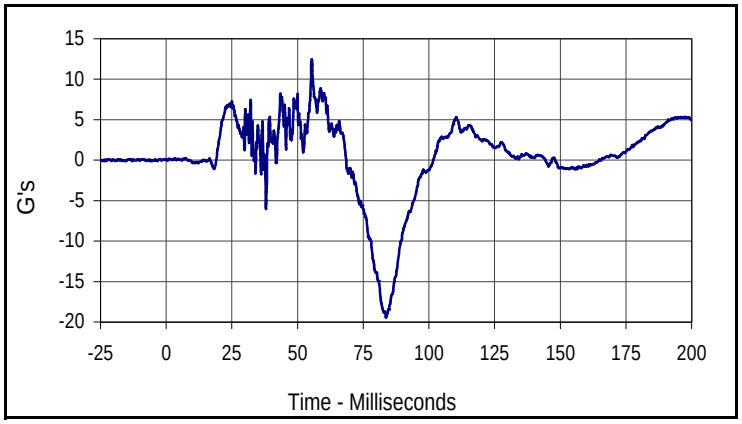


Curve Description			
Passenger NAHA Xarm-Y			
CURNO	Type	SAE Class	Units
140	FIL	1000	G's
Max	Time	Min	Time
17.1	51.9	-17.5	44.5

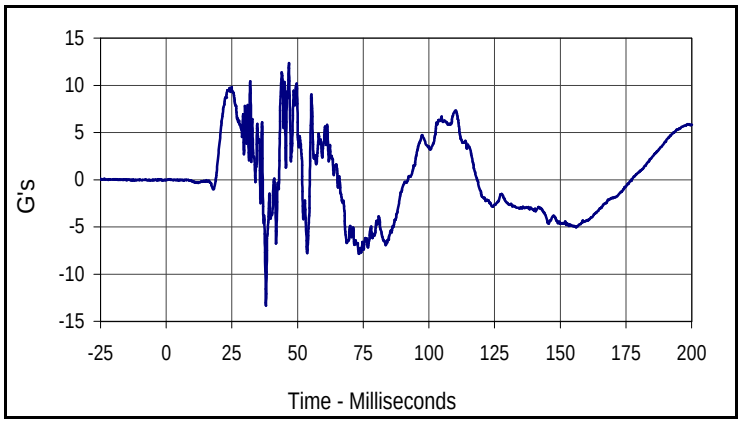


Curve Description			
Passenger NAHA Zarm-Y			
CURNO	Type	SAE Class	Units
145	FIL	1000	G's
Max	Time	Min	Time
5.9	44.5	-9.2	50.8

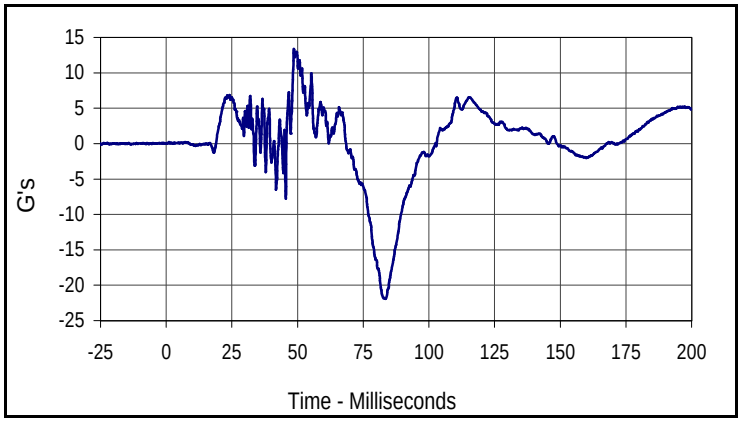
Test Vehicle:	2004 Hyundai Tiburon 2 Door Coupe	Test Date:	12/10/03
Test Program:	2004 NHTSA 35mph NCAP	NHTSA No.:	M40501



Curve Description			
Passenger Head Primary Z			
CURNO	Type	SAE Class	Units
047	FIL	1000	G's
Max	Time	Min	Time
12.5	55.4	-19.5	83.7



Curve Description			
Passenger NAHA Xarm-Z			
CURNO	Type	SAE Class	Units
141	FIL	1000	G's
Max	Time	Min	Time
12.4	46.7	-13.3	38.0



Curve Description			
Passenger NAHA Yarm-Z			
CURNO	Type	SAE Class	Units
143	FIL	1000	G's
Max	Time	Min	Time
13.4	48.6	-21.9	83.5