

REPORT NUMBER KAR21001-01

**NEW CAR ASSESSMENT PROGRAM
FRONTAL BARRIER IMPACT TEST**

**GENERAL MOTORS CORPORATION
2001 CHEVROLET MALIBU
4-DOOR SEDAN
NHTSA NUMBER: M10104**

**PREPARED BY:
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ADELANTO, CALIFORNIA 92301**



JANUARY 20, 2001

FINAL REPORT

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16. Abstract A 35 mph (56.3 km/h) frontal barrier impact was conducted on a 2001 Chevrolet Malibu at KARCO Engineering on 1/04/01. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and footwell intrusion performance. The impact velocity is 55.6 km/h. The ambient temperature at the barrier face at the time of impact is 17.7 degrees Celcius. The vehicle's maximum post test static crush is 563 mm at the vehile 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	725.3	500.3
Max. Thorax Accel. (3 msec Clip)		G's	60	51.0	45.4
Left Femur force		Newtons	10009	-4292.3	-4540.2
Right Femur Force		Newtons	10009	-3717.1	-1587.2
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SECTION 1

PURPOSE, TEST PROCEDURE AND SUMMARY OF TEST M10104

1.1 PURPOSE

The purpose of this 35 mph (56.3 km/h) frontal barrier impact test is to obtain vehicle crashworthiness, occupant restraint system performance, and lower leg data for frontal barrier impacts. The impact velocity used in this test is in excess of the current 30 mph (48.3 km/h) FMVSS 208/212/219/301 requirements.

1.2 TEST PROCEDURE

This 56.3 km/h frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards (OCS) New Car Assessment Program (NCAP) Laboratory Indicant Test Procedure, dated 01 October, 1996 and the corresponding KARCO Engineering Test Procedure KTP-001, dated October 18, 1996. Data was obtained indicant of FMVSS 208, "Occupant Crash Protection"; FMVSS 212, "Windshield Retention"; FMVSS 219, "Windshield Zone Intrusion (Partial)"; and FMVSS 301 "Fuel System Integrity" performance. Procedures for receiving, inspection testing and reporting of test results are described in the test procedures and are not repeated in this report.

The test was conducted at KARCO Engineering on January 4, 2001 at a speed of 55.6 km/h. The test vehicle was instrumented with eight (8) accelerometers to measure longitudinal axis accelerations. The driver and passenger's restraint systems were instrumented with four (4) seat belt load cells to measure lap and shoulder belt tension. The specified impact velocity range was 55.5 to 57.1 km/h. The frontal barrier impact event was documented by one (1) real-time panning motion picture camera and seventeen (17) high-speed motion picture cameras. The pre- and post-test conditions were recorded by one (1) real-time motion picture camera. Camera locations and pertinent camera information is documented in the data sheets. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

The test vehicle contained two (2) part 572E 50th percentile adult male anthropomorphic test devices (ATDs). Both ATDs were instrumented with head, chest, and pelvic tri-axial accelerometers, left and right femur load cells, upper and lower tibia sensors, and foot accelerometers. In addition, chest displacement and upper neck six-axis force and moment sensors were utilized. The ATDs were positioned in the front outboard seating positions according to the dummy placement procedures specified in the Laboratory Indicant Test Procedure. Ninety-six (96) channels of data were recorded with a PC based (TDAS) on-board data acquisition system. The data was digitally sampled at 10,000 samples per second and processed per section IP11 of the Laboratory Indicant Test Procedure.

The Driver ATD (Serial No. 34) and the right-front passenger ATD (Serial No. 35) were calibrated prior to this test. FMVSS 208 "Occupant Crash Protection" injury criteria were not exceeded by either ATD during this frontal barrier impact test.

1.3 SUMMARY OF FRONTAL BARRIER IMPACT TEST

A rigid load cell barrier was impacted by a 2001 Chevrolet Malibu 4 Door Sedan at a velocity of 55.6 km/h. The test vehicle weight is 1608 kilograms with two (2) part 572E 50th percentile adult male ATDs. Twenty-four (24) load cell barrier data channels were obtained in conducting the January 4, 2001 NCAP test. The test vehicle is a gasoline vehicle, equipped with a transverse mounted, 6-cylinder engine and a 4-speed automatic transmission.

The driver Head Injury Criteria (HIC) is 725.3. The maximum resultant chest deceleration over three (3) milliseconds is 51.0 g's. The left and right femur loads are -4292.3 and -3717.1 Newton's, respectively. Chest deflection for the driver ATD peaked at -28.1 mm. The driver ATD head contacted the airbag and headrest, its chest and abdomen contacted the airbag and seat belt, and both knees contacted the knee bolster.

The right front passenger's HIC is 500.3. The maximum resultant chest deceleration over three (3) milliseconds is 45.4 g's. The left and right femur loads are -4540.2 and -1587.2 Newton's, respectively. Chest deflection for the passenger ATD peaked at -29.0 mm. The passenger ATD head contacted the airbag and headrest, the chest and abdomen contacted the airbag and both knees contacted the glove box.

Maximum shoulder belt spool out as measured by on-board potentiometers is 193.7 mm for the driver ATD and 233.0 mm for the passenger ATD. The shoulder belt stretch was 0.236 mm/cm for the driver ATD and 0.141 mm/cm for the passenger ATD. Passenger side failed, check plot for time of failure.

There was 100 percent windshield retention (minimum 50 percent required for passive restraint systems). No intrusion occurred into the protected or unprotected zone of the windshield. No Stoddard solvent leakage occurred after impact or during any phase of the rollover.

The test vehicle sustained a maximum static crush of 563 mm located at the vehicle centerline. Both the driver and passenger side doors opened without the aid of tools.

1.4 GENERAL COMMENTS

The 2001 Chevrolet Malibu 4 Door Sedan passed the requirements of FMVSS 208, FMVSS 212, FMVSS 219 and FMVSS 301-75. Data pertaining to these standards are presented in the data sheets.

The vehicle, occupant, camera and measurement data are presented in Section 2. Appendix A contains the still photograph prints. Appendix B contains the dummy and vehicle 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 owner's manual instructions for the occupant seating and restraint systems.

SECTION 2
OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan
 Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10104
 Test Date: 01/04/01

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	°F	°C	=(tf -32)/1.8
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf/ft	Nm	1.355

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

**DATA SHEET NO. 1
CRASH TEST SUMMARY**

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan
Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10104
Test Date: 01/04/01

PRIMARY IMPACT DATA

Measured Parameter	Units	Value
Velocity at Impact	km/h	55.6
Test Weight	kg	1608
Impact Angle	degrees	0
Average Rebound	mm	626
Maximum Static Crush	mm	563

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Passenger
Front Door Opening	Opened	Opened
Rear Door Opening	Opened	Opened
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/Headrest	Airbag/Headrest
Chest Contact	Airbag	Airbag
Abdomen Contact	Airbag	Airbag
Left Knee Contact	Dash	Glove Box
Right Knee Contact	Dash	Glove Box

16mm MOVIE COVERAGE

High Speed	14
Real Time	1
Total	15

DATA CHANNELS

Driver ATD Sensors	40
Passenger ATD Sensors	40
Belt Assessment Sensors	8
Vehicle Structure Accelerometers	8
Rigid Barrier Load Cells	24
Total	120

DATA SHEET NO. 2
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan
 Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10104
 Test Date: 01/04/01

TEST VEHICLE INFORMATION

Make	Chevrolet
Model	Malibu
Body Style	4 Door Sedan
NHTSA No.	M10104
VIN	1G1ND52J716184616
Color	White
Delivery Date	12/20/00
Odometer Reading (mile)	60
Dealer	Crest Chevrolet
Transmission	4-Speed Automatic
Final Drive	Front
Number of Cylinders	6
Engine Displacement (L)	3.1
Engine Placement	Transverse

TEST VEHICLE OPTIONS

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

DATA FROM CERTIFICATION LABEL

Manufactured By	General Motors Corp	GVWR (kg)	1818
Date of Manufacture	October-00	GAWR Front (kg)	998
		GAWR Rear (kg)	820

DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	200	180
Cold Pressure (kPa)	200	180
Recommend Tire Size	P215/60/R15	P215/60/R15
Tire Size on Vehicle	P215/60/R15	P215/60/R15
Tire Manufacturer	Firestone	Firestone

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench	None	
Number of Occupants	2	3	0	5
Capacity Wt. (VCW) (kg)				435
Cargo Weight (RCLW) (kg)				76

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

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan
 Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10104
 Test Date: 01/04/01

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	443	251		476	333	
Right	kg	445	246		474	325	
Ratio	%	64.1	35.9		59.1	40.9	
Totals	kg	888	497	1385	950	658	1608

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1385
Weight of 2 P572 ATD's	kg	152
Rated Cargo/Luggage Weight (RCLW)	kg	76
Calculated Vehicle Target Weight (TVTW)	kg	1613

TEST VEHICLE ATTITUDE AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	712	707	704	707	976
As Tested	mm	693	694	661	667	1112

Vehicle Wheel base (mm): 2718

Weight of Ballast secured in cargo area (kg): 24

Vehicle Components Removed: Side mirrors, jack, tools, spare tire and paneling.

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

FUEL SYSTEM DATA

Fuel System Capacity From Owner's Manual (L): 54.1

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

Actual Test Volume with entire fuel System Filled (L): 50.3

Test Fluid Type: Stoddard Solvent ; Specific Gravity: 0.764

Kinematic Viscosity: as per ASTM Standard D484-71 ; Color: Red

Is Vehicle Fuel Pump Electric or Mechanical?: Electric

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

Fuel System Particulars: Driver side filler door, tank mounted at rear.

**DATA SHEET NO. 3
POST IMPACT DATA**

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan
Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10104
Test Date: 01/04/01

SPEED TRAP DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	55.51 to 57.12	55.56
Trap No. 1 Entry Distance	mm	< 1524	1524
Trap No. 1 Exit Distance	mm	< 1524	305
Trap No. 2 Velocity (Redundant)	km/h	55.51 to 57.12	56.15
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	4488	4081	-407
Center	mm	4830	4267	-563
Right Side	mm	4488	4062	-426

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	732
Center	mm	500
Right Side	mm	645
Average	mm	626

DATA SHEET NO. 4
TEST VEHICLE INFORMATION

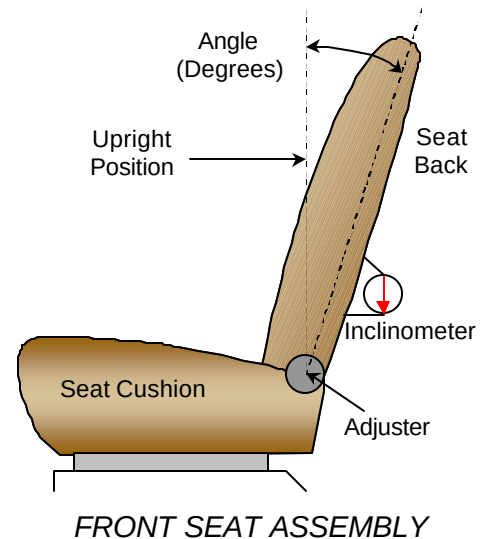
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan
Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10104
Test Date: 01/04/01

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.

Driver seat back angle: 27° with a seated dummy
Passenger seat back angle: 27° with a seated dummy



SEAT FORE/AFT POSITIONS

Both driver and passenger seats have 25 positions or detents. 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 driver and passenger.

Driver seat fore/aft total travel: 25 seating positions or detents
Passenger seat fore/aft total travel: 25 seating positions or detents
Driver seat fore/aft position: 13th detent from forward most
Passenger seat fore/aft position: 13th detent from forward most

SEAT BELT UPPER ANCHORAGE

The test vehicle is equipped with adjustable anchorages for both driver and passenger seat positions. There are 4 positions or detents. Both the driver and the passenger anchorages are placed in the 2nd position from the uppermost.

DATA SHEET NO. 4...(continued)

TEST VEHICLE INFORMATION

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

NHTSA No.: M10104

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 01/04/01

FUEL TANK CAPACITY DATA

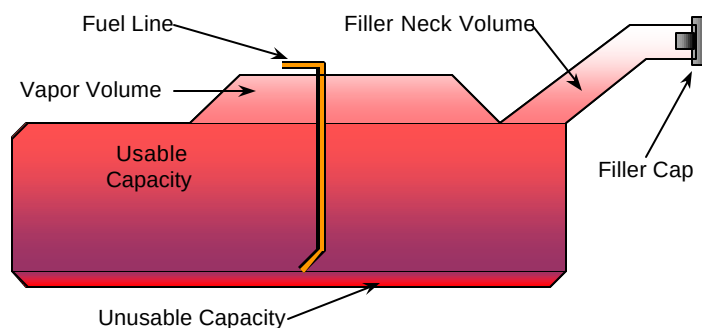
The "Usable Capacity" of the standard equipment fuel tank is: 54.1 liters

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

"Usable Capacity" used for certification tests FMVSS 301 requirements: 49.7 to 50.8 liters

Actual amount of Stoddard solvent added to vehicle for certification test: 50.3 liters

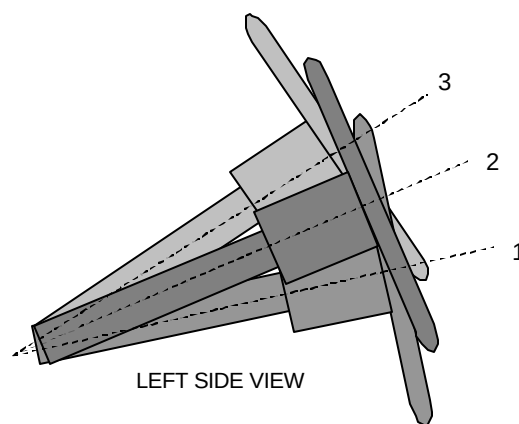
The test vehicle is equipped with an electric fuel pump. The fuel pump operates for approximately two seconds after the ignition is placed in the "ON" position, after which the fuel pump automatically shuts off. The fuel filler door is located on the left rear fender. The standard fuel tank occupies the area under the rear seat. Fuel lines run along the left side of the body to the engine compartment.



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. Of seven detents, this vehicle's steering column is at its geometric center (Position 2, diagram at right) when in detent four.



STEERING COLUMN ASSEMBLY

Lowermost; position 1: 11.0°

Geometric center; position 2: 23.0°

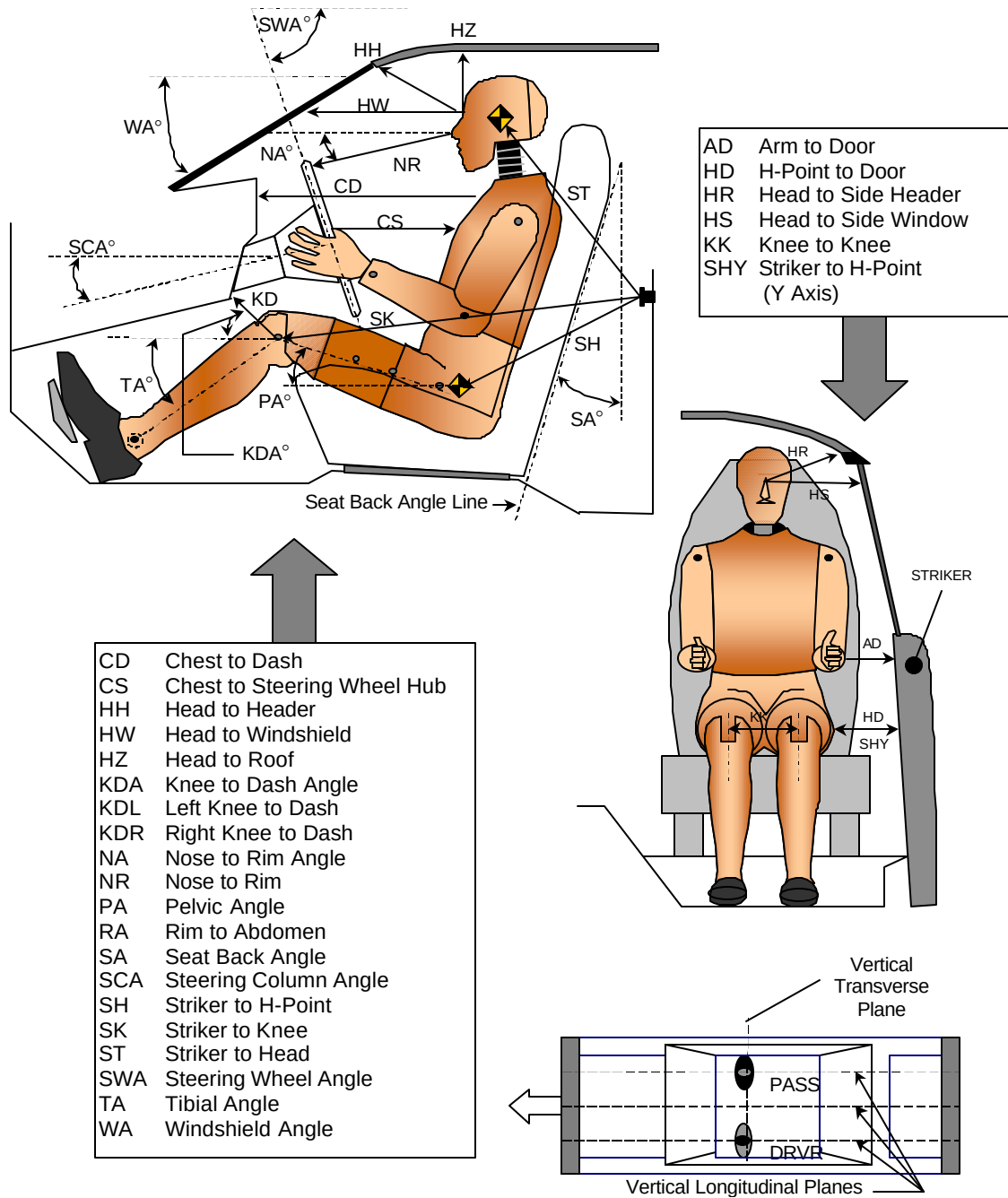
Uppermost position 3: 32.5°

DATA SHEET NO. 5

DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan
 Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10104
 Test Date: 01/04/01



DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS

DATA SHEET NO. 5...(continued)
DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan
 Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10104
 Test Date: 01/04/01

TEST DUMMY POSITION MEASUREMENTS

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA	Windshield Angle		29		
SWA	Steering Wheel Angle		67		
SCA	Steering Column Angle		23		
SA	Seat Back Angle		27		27
HZ	Head to Roof (Z)	196	90	182	90
HH	Head to Header	355	0	350	0
HW	Head to Windshield	658	0	640	0
HR	Head to Side Header (Y)	225		200	
NR	Nose to Rim	446	11		
CD	Chest to Dash	558		506	
CS	Chest to Steering Hub	360	0		
RA	Rim to Abdomen	230	0		
KDL	Left Knee to Dash	175	33	160	
KDR	Right Knee to Dash	175		160	36
PA	Pelvic Angle		25		25
TA	Tibia Angle		39		40
KK	Knee to Knee (Y)	210		200	
ST	Striker to Head	566	4	580	10
SK	Striker to Knee	550	1	600	2
SH	Striker to H-Point	197	27	220	26
SHY	Striker to H-Point (Y)	252		240	
HS	Head to Side Window	336		305	
HD	H-Point to Door (Y)	136		150	
AD	Arm to Door (Y)	123		52	

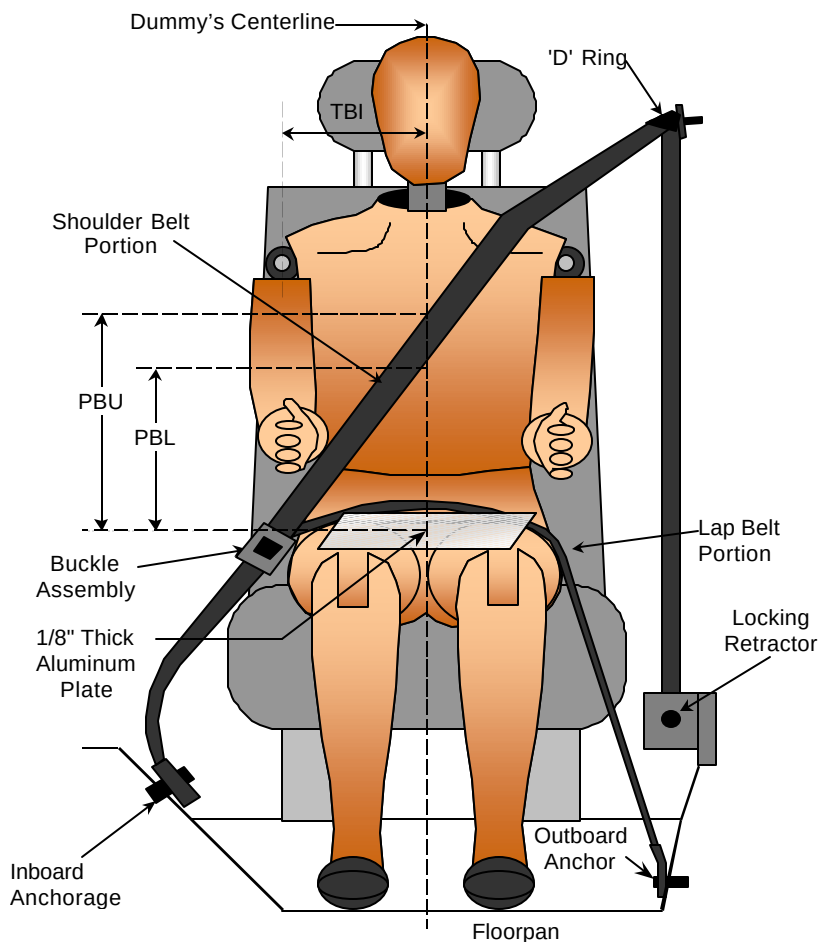
DATA SHEET NO. 6 **SEAT BELT POSITIONING DATA**

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

NHTSA No.: M10104

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 01/04/01



SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
TBI - Dummy C/L to Lap/Shoulder Belt Intersect	mm	170	170
PBU -Top surface of reference to belt upper edge	mm	310	345
PBL - Top surface of reference to belt lower edge	mm	230	265
Lap Belt tension	Newton's	10	10
Shoulder Belt tension	N/A	Retractor	Retractor

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

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

NHTSA No.: M10104

Test Program: 2001 NHTSA 35mph NCAP

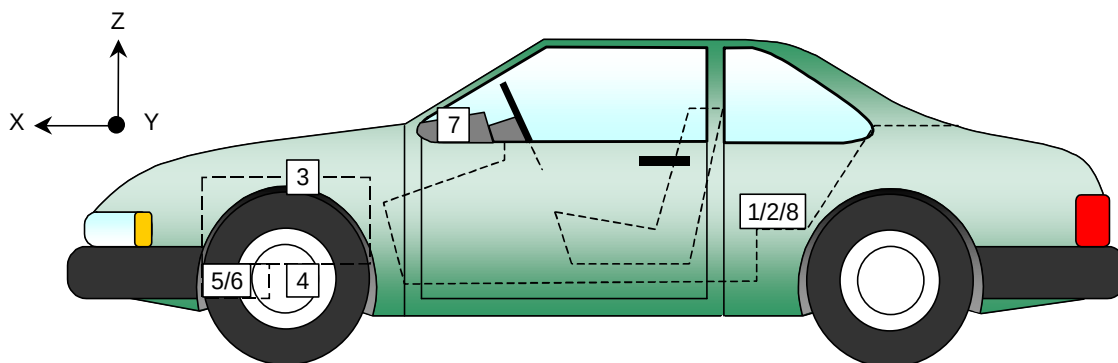
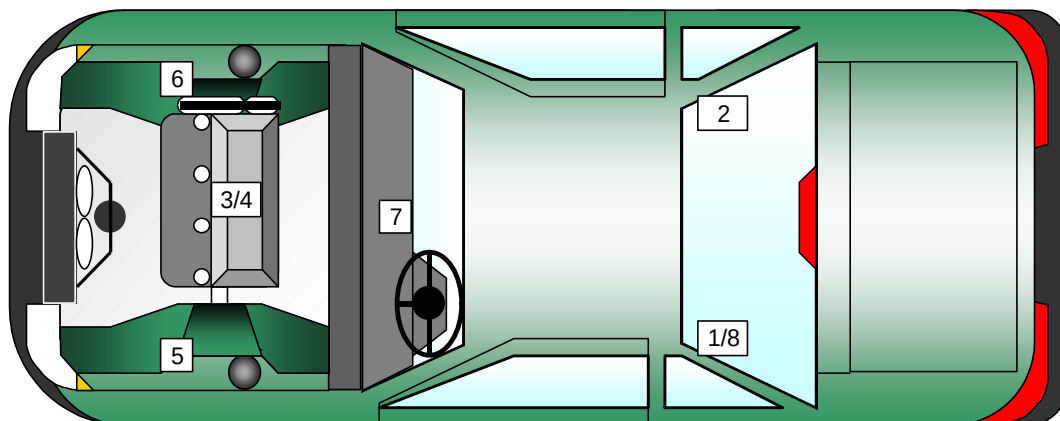
Test Date: 01/04/01

VEHICLE X-AXIS 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 (Pri.)	1990	-690	350	G's	1.8	133.2	-40.5	40.3
2	Right Rear X-Member (Pri.)	1985	690	350	G's	1.9	127.1	-38.7	39.2
3	Engine Top	4020	0	815	G's	41.1	46.9	-129.8	37.0
4	Engine Bottom	4050	60	158	G's	65.1	52.0	-111.6	38.4
5	Left Brake Caliper	3998	-565	310	G's	15.9	187.9	-80.1	45.9
6	Right Brake Caliper	3998	565	310	G's	0.0	0.0	0.0	0.0
7	Instrument Panel	3130	25	925	G's	24.5	29.9	-70.4	47.6
8	Left Rear X-Member (Rednt.)	1930	-690	350	G's	0.0	0.0	0.0	0.0

Reference Points X - From Rear Surface of Vehicle Y - Vehicle Centerline Z - Ground Plane

* Channels failed, no data



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

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

NHTSA No.: M10104

Test Program: 2001 NHTSA 35mph NCAP

Test Date: 01/04/01

HEAD PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	10.8	159.5	-71.8	72.5	15.5	218.6	-53.0	89.5
Head CG	Y	G's	12.7	212.6	-10.9	84.5	3.9	61.8	-10.4	90.5
Head CG	Z	G's	25.3	57.4	-23.1	90.2	26.9	57.8	-3.7	133.6
Head CG Resultant	N/A	G's	72.2	72.5			57.9	89.5		

CHEST PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	4.6	182.9	-52.5	82.6	4.0	255.6	-45.6	71.0
Chest CG	Y	G's	3.8	115.5	-10.0	71.7	7.7	70.0	-3.4	94.8
Chest CG	Z	G's	15.6	58.9	-9.2	98.6	10.6	56.6	-8.1	99.2
Chest CG Resultant	N/A	G's	53.4	82.6			46.5	71.0		

FEMUR PEAK FORCES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Femur	Z	Newtons	479.4	48.7	-4292.3	53.2	500.9	97.4	-4540.2	58.8
Right Femur	Z	Newtons	653.6	50.1	-3717.1	61.2	280.4	47.0	-1587.2	50.8

SEAT BELT SENSOR PEAK VALUES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Lap Belt Force	N/A	Newtons	6444.1	62.1	-2.0	299.9	6227.5	61.5	-0.8	0.0
Shoulder Belt Force	N/A	Newtons	4821.3	80.5	-47.2	271.1	6101.1	72.1	-22.4	274.2
Shoulder Belt Pullout	N/A	MM	193.7	88.7	0.9	0.0	233.0	96.4	0.4	0.0
Shoulder Belt Stretch	N/A	MM/CM	0.236	88.5	-0.002	36.9	0.141	61.2	0.000	65.5

* Passenger side failed, check plot for time of failure.

HEAD INJURY CRITERIA (HIC)

Location	Driver				Passenger			
	HIC	Avg G	T ¹	T ²	HIC	Avg G	T ¹	T ²
Head CG Primary	725.3	55.2	56.2	88.1	500.3	45.4	69.6	105.5

CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T ¹	T ²	CLIP	T ¹	T ²
Chest CG Primary	51.0	81.6	84.6	45.4	70.0	73.0

DATA SHEET NO. 8...(continued)

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

NHTSA No.: M10104

Test Program: 2001 NHTSA 35mph NCAP

Test Date: 01/04/01

PELVIC PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Pelvis	X	G's	3.6	127.4	-88.8	53.6	3.0	117.1	-58.2	57.4
Pelvis	Y	G's	7.1	104.6	-12.8	67.4	4.9	54.2	-10.7	106.4
Pelvis	Z	G's	7.0	54.8	-23.0	74.7	4.9	277.2	-23.8	72.7

UPPER NECK PEAK FORCES AND MOMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Neck Force	X	Newtons	1054.1	77.8	-310.0	174.4	144.2	280.7	-576.9	128.1
Neck Force	Y	Newtons	294.0	77.4	-283.5	245.3	211.9	76.2	-148.3	123.1
Neck Force	Z	Newtons	1976.6	65.5	-736.4	178.8	1640.8	73.1	-700.1	275.3
Neck Moment	X	N•m	2.5	238.5	-16.4	81.4	11.0	89.0	-7.8	70.8
Neck Moment	Y	N•m	37.9	75.4	-49.9	200.2	40.0	132.4	-28.9	247.2
Neck Moment	Z	N•m	25.2	104.0	-6.0	149.3	16.0	96.1	-4.5	147.7

FOOT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Foot Aft	X	G's	25.9	63.0	-139.8	51.1	9.9	62.6	-71.9	52.2
Left Foot Aft	Z	G's	5.2	77.0	-80.3	52.4	6.3	85.0	-60.0	54.4
Left Foot Fore	Z	G's	8.9	61.8	-82.2	49.8	19.7	50.8	-69.3	54.1
Right Foot Aft	X	G's	36.2	59.0	-255.3	53.5	11.7	81.7	-75.3	55.9
Right Foot Aft	Z	G's	11.2	77.5	-111.2	54.2	3.1	299.6	-57.6	55.5
Right Foot Fore	Z	G's	47.0	65.5	-188.3	49.2	42.9	51.6	-88.9	55.4

UPPER AND LOWER TIBIA PEAK FORCES AND MOMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Lower Moment	X	N•m	130.3	54.0	-13.1	48.3	11.0	60.7	-23.1	75.1
Left Lower Moment	Y	N•m	64.7	61.2	-35.2	50.1	0.0	0.0	0.0	0.0
Left Lower Force	Z	Newtons	144.9	184.6	-4367.0	53.4	156.1	128.4	-3037.0	53.6
Left Upper Moment	X	N•m	72.4	53.5	-38.8	49.1	18.5	61.3	-27.0	93.8
Left Upper Moment	Y	N•m	7.8	193.2	-167.6	53.2	14.0	144.9	-163.7	57.1
Right Lower Moment	X	N•m	10.0	48.0	-154.3	54.1	14.0	59.8	-44.5	74.1
Right Lower Moment	Y	N•m	68.5	68.2	-88.8	50.6	32.5	80.7	-60.7	56.9
Right Lower Force	Z	Newtons	255.8	193.2	-7239.3	53.1	156.5	158.1	-2351.7	51.7
Right Upper Moment	X	N•m	50.2	50.0	-53.0	54.6	29.8	67.3	-9.8	76.8
Right Upper Moment	Y	N•m	13.8	162.1	-219.6	54.7	14.9	144.8	-152.5	57.0

* Passenger side failed, check plot for time of failure.

DATA SHEET NO. 8...(continued)Test Vehicle: 2001 Chevrolet Malibu 4 Door SedanNHTSA No.: M10104Test Program: 2001 NHTSA 35mph NCAPTest Date: 01/04/01**CHEST PEAK DISPLACEMENTS**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	MM	0.2	20.9	-28.1	61.4	0.4	7.3	-29.0	75.5

HEAD REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	10.3	111.6	-71.2	72.7	16.6	218.5	-52.2	89.2
Head CG	Y	G's	14.8	160.9	-10.8	85.9	3.9	222.3	-8.8	91.4
Head CG	Z	G's	25.5	57.5	-24.4	85.7	27.7	71.8	-1.8	14.7
Head CG Resultant	N/A	G's	71.9	71.8			57.1	89.2		

CHEST REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	4.8	172.0	-52.9	82.6	4.2	277.0	-45.6	70.8
Chest CG	Y	G's	4.2	116.7	-10.8	68.7	10.4	75.5	-3.1	111.3
Chest CG	Z	G's	12.7	58.8	-9.2	98.6	10.5	56.6	-6.7	99.6
Chest CG Resultant	N/A	G's	53.8	82.6			47.1	70.7		

REDUNDANT HEAD INJURY CRITERIA (HIC)

Location	Driver				Passenger			
	HIC	Avg G	T ¹	T ²	HIC	Avg G	T ¹	T ²
Head CG Redundant	723.9	55.0	56.1	88.3	491.3	45.1	67.5	103.4

REDUNDANT CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T ¹	T ²	CLIP	T ¹	T ²
Chest CG Redundant	51.2	81.6	84.6	45.8	70.0	73.0

DATA SHEET NO. 9**SEAT BELT PERFORMANCE ASSESSMENT TEST DATA**Test Vehicle: 2001 Chevrolet Malibu 4 Door SedanNHTSA No.: M10104Test Program: 2001 NHTSA 35 mph NCAPTest Date: 01/04/01**SEAT BELT PLACEMENT MEASUREMENTS**

Measurement Description	Units	Driver	Passenger
TCI - Dummy C/L to Lap/Shoulder Belt Intersect	mm	170	170
PBU -Top surface of reference to belt upper edge	mm	310	345
PBL - Top surface of reference to belt lower edge	mm	230	265
Lap Belt tension	Newtons	10	10
Shoulder Belt tension	N/A	Retractor	Retractor

BELT LENGTH DATA

Measurement Description	Units	Driver	Passenger
Retractor reel to 'D' ring	mm	600	600
Shoulder belt length as measured on ATD	mm	775	790
Lap belt length as measured on ATD	mm	768	780
Remainder of belt on reel	mm	625	620
Total belt length for continuous webbing systems	mm	2768	2790

SHOULDER BELT SPOOL-OFF DATA

Measurement Description	Units	Driver	Passenger
As determined mechanically	mm	178.0	132.0
As determined electronically	mm	193.7	233.0

BELT STRETCH DATA

Measurement Description	Units	Driver	Passenger
Electronically from shoulder belt load cell and "D" ring	mm/cm	0.24	0.14
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: 2001 Chevrolet Malibu 4 Door Sedan

NHTSA No.: M10104

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 01/04/01

Windshield Mounting Details:

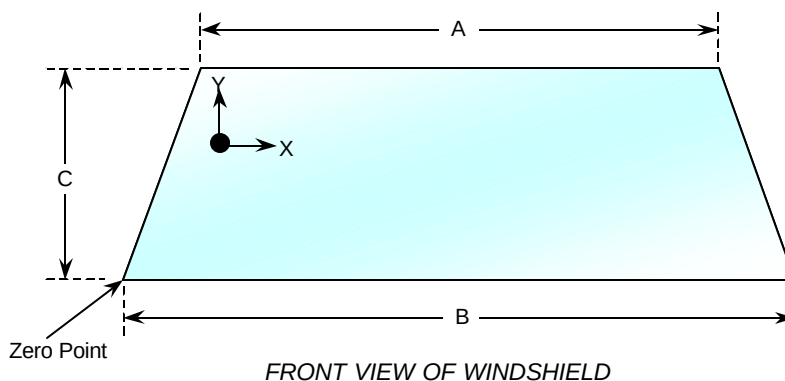
Windshield glass is secured to the vehicle frame with a rubber type adhesive. No molding covers the windshield periphery at any point.

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	2133.5	2133.5	100
Right Side	2133.5	2133.5	100
Total	4267.0	4267.0	100



WINDSHIELD DIMENSIONS

Item	Units	Segment Length	Molding Width
A	mm	1175	7
B	mm	441	N/A
C	mm	1440	23

DATA SHEET NO. 11

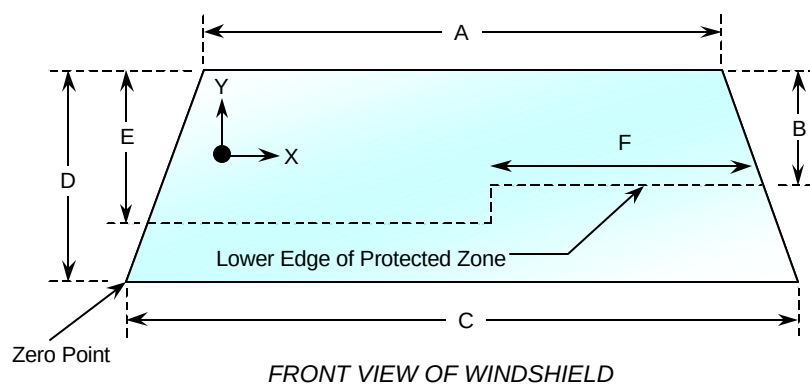
WINDSHIELD ZONE INTRUSION FMVSS 219 (PARTIAL) DATA

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

NHTSA No.: M10104

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 01/04/01



WINDSHIELD AND PROTECTED ZONE

Item	Units	Value
A	mm	1175
B	mm	441
C	mm	1440
D	mm	826
E	mm	520
F	mm	654

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: 2001 Chevrolet Malibu 4 Door Sedan

NHTSA No.: M10104

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 01/04/01

Test Time: 12:41 PM

Temperature at Time of Impact: 17.7 °C

STODDARD SOLVENT SPILLAGE MEASUREMENT

- 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 Details: No leakage occurred

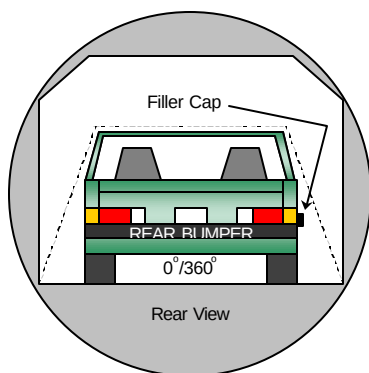
DATA SHEET NO. 13
FMVSS 301 STATIC ROLLOVER DATA SHEET

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

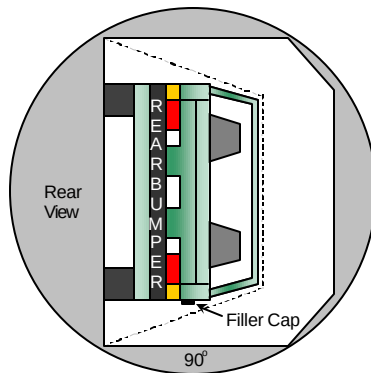
NHTSA No.: M10104

Test Program: 2001 NHTSA 35 mph NCAP

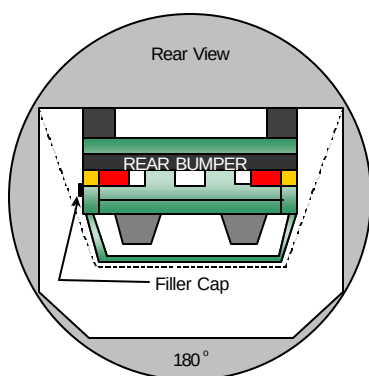
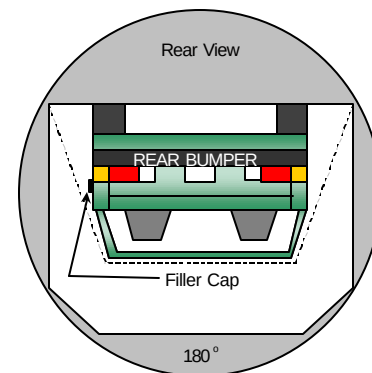
Test Date: 01/04/01



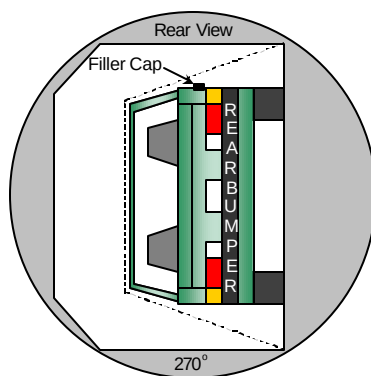
0° TO 90°



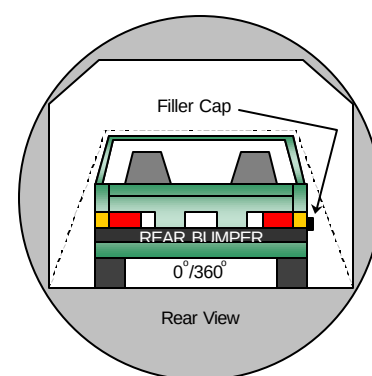
90° TO 180°



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.

Test Phase	Rotation Time (sec.)	Hold Time (sec.)	Spillage (oz.)
0° TO 90°	81	300	0.0
90° TO 180°	80	300	0.0
180° TO 270°	78	300	0.0
270° TO 360°	82	300	0.0

DATA SHEET NO. 14
VEHICLE MEASUREMENTS

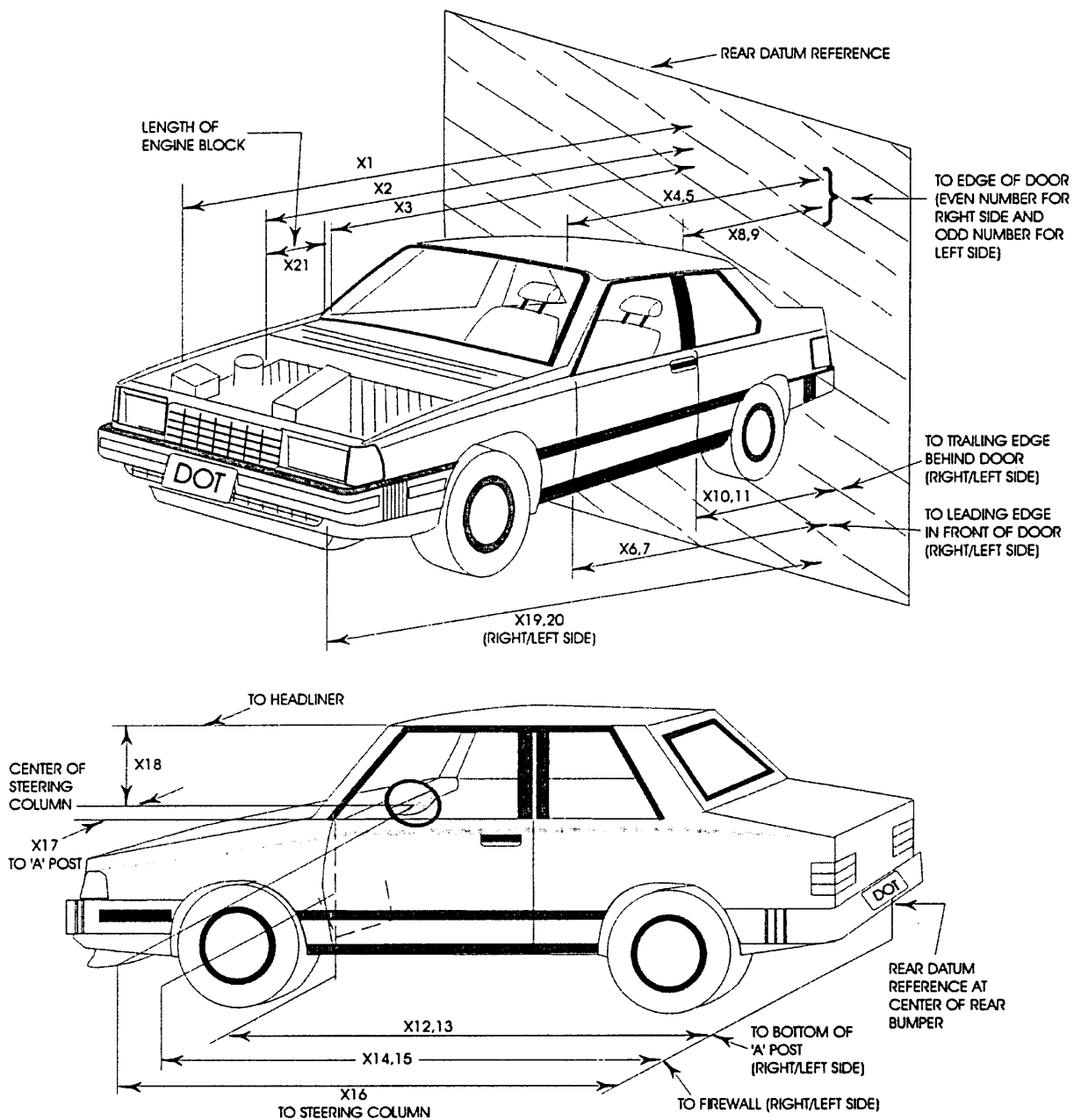
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

NHTSA No.: M10104

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 01/04/01

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total length of vehicle at centerline	mm	4830	4267	-563
2	RSOV to front of engine	mm	4250	4006	-244
3	RSOV to firewall centerline	mm	3700	3574	-126
4	RSOV to leading edge of right door	mm	3270	3275	5
5	RSOV to leading edge of left door	mm	3275	3274	-1
6	RSOV to lower leading edge of right door	mm	3274	3272	-2
7	RSOV to lower leading edge of left door	mm	3275	3276	1
8	RSOV to upper trailing edge of right door	mm	2240	2245	5
9	RSOV to upper trailing edge of left door	mm	2244	2239	-5
10	RSOV to lower trailing edge of right door	mm	2241	2241	0
11	RSOV to lower trailing edge of left door	mm	2240	2246	6
12	RSOV to bottom of right 'A' pillar	mm	3269	3268	-1
13	RSOV to bottom of left 'A' pillar	mm	3271	3268	-3
14	RSOV to firewall on right side	mm	3697	3546	-151
15	RSOV to firewall of left side	mm	3715	3623	-92
16	RSOV to steering column	mm	2848	2812	-36
17	Center of steering column to left 'A' pillar	mm	393	415	22
18	Center of steering column to headlining	mm	453	255	-198
19	RSOV to right side of front bumper	mm	4488	4062	-426
20	RSOV to left side of front bumper	mm	4488	4081	-407
21	Length of engine block	mm	415	415	0
RD	RSOV to right side of dash panel	mm	3017	3000	-17
CD	RSOV to center of dash panel	mm	2944	2866	-78
LD	RSOV to left side of dash panel	mm	2994	2989	-5



DATA SHEET NO. 15
CAMERA LOCATIONS

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

NHTSA No.: M10104

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 01/04/01

No.	Camera View	Location (mm)			Angle (Deg.)	Film Plane to Head	Lens (mm)	Speed (fps)
		X	Y	Z				
1	Right Side, Real Time	3454	10973	1245	0	1651	Zoom	24
2	Left Side, No. 1	1955	-8250	880	-1	7901	13	1020
3	Left Side, No. 2	1455	-8250	1460	-4	7932	35	1020
4	Left Side, No. 3	Did Not Run						
5	Left Side, No. 4	1455	-8250	3100	-16	8138	19	990
6	Left Side, No. 5	1455	-8250	2700	-13	8057	19	980
7	Right Side, No. 1	1955	8150	730	-1	8577	19	1030
8	Right Side, No. 2	1655	8150	1450	-4	8584	35	1010
9	Right Side, No. 3	7855	8900	2800	-9	N/A	80	980
10	Right Side, No. 4	970	12358	1150	-2	12840	50	970
11	Overhead Overall	251	0	4460	-86	N/A	13	970
12	Front View, Driver	-525	-380	2590	-43	N/A	12	880
13	Front View, Passenger	-525	380	2590	-44	N/A	13	1050
14	Pit Camera, Engine	638	0	1640	86	N/A	13	960
15	Pit Camera, Fuel Tank	Did Not Run						
16	Driver Belt	3260	-440	1078	-4	785	13	580
17	Passenger Belt	3268	382	1078	-4	1041	13	960
18	Left Side Extra	800	-6681	1450	-2	6514	24	1080

X - Barrier Face Y - Monorail Centerline Z - Ground

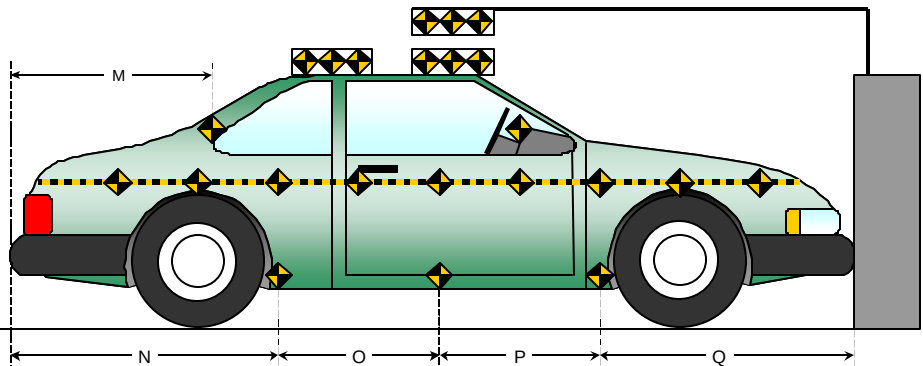
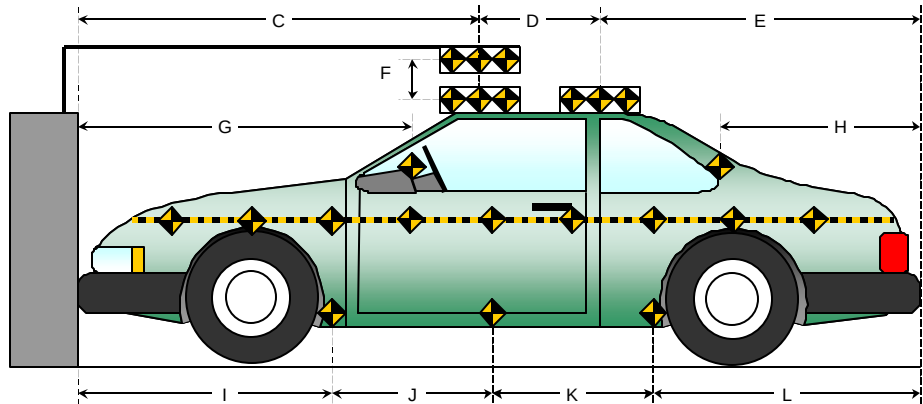
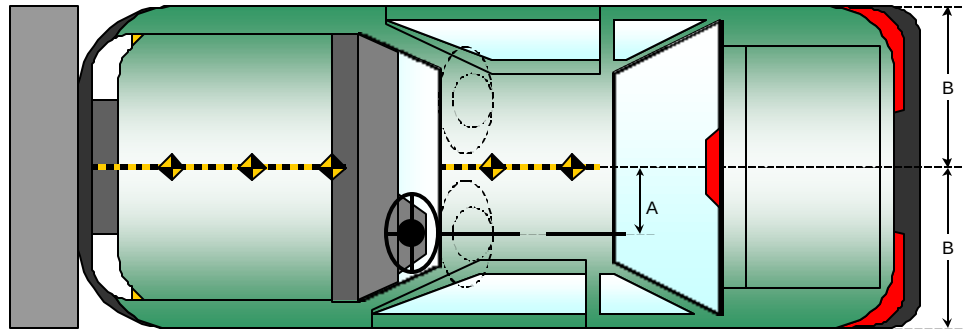
DATA SHEET NO. 16
PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan
 Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10104
 Test Date: 01/04/01

All Dimensions
in mm

Item	Value
A	353
B	880
C	2244
D	611
E	1975
F	155
G	1899
H	1163
I	1434
J	942
K	940
L	1514
M	1162
N	1505
O	950
P	941
Q	1430



DATA SHEET NO. 17
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

NHTSA No.: M10104

Test Program: 2001 NHTSA 35 mph NCAP

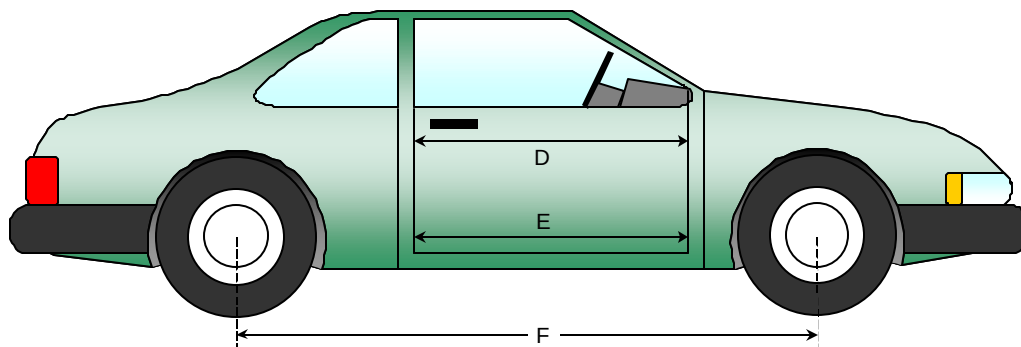
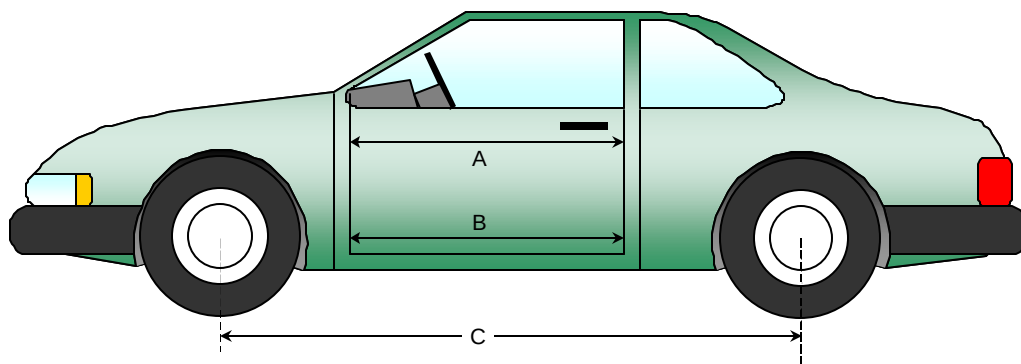
Test Date: 01/04/01

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	986	980	-6
B	Left Side Lower	mm	920	921	1
D	Right Side Upper	mm	986	985	-1
E	Right Side Lower	mm	913	917	4

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheel base	mm	2718	2625	-93
F	Right Side Wheel base	mm	2718	2626	-92



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

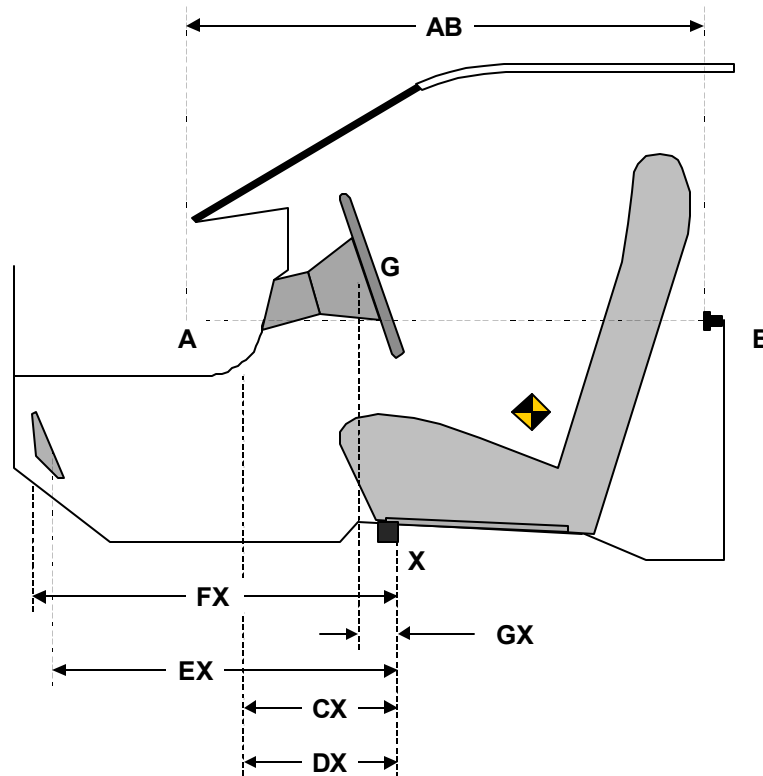
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan
 Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10104
 Test Date: 01/04/01

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside window jam)	mm	986	980	-6
CX	Left Knee Bolster to X	mm	258	226	-32
DX	Right Knee Bolster to X	mm	255	182	-73
EX	Brake Pedal to X	mm	570	447	-123
FX	Foot Rest to X	mm	N/A		
GX	Center of Steering Wheel Hub to X	mm	60	25	-35

X = Left Front Seat Outboard Anchor Bolt Head



DRIVER COMPARTMENT

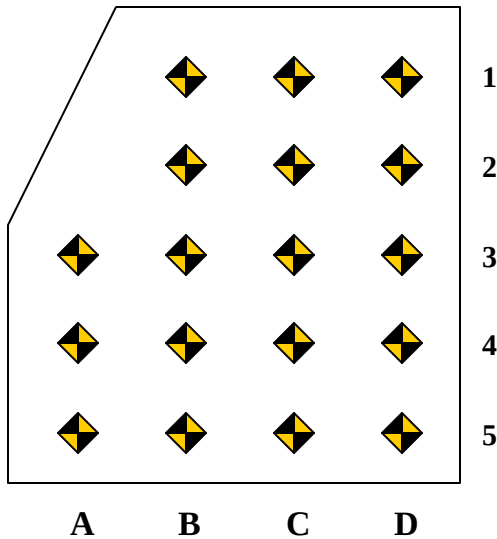
DATA SHEET NO. 17...(CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

NHTSA No.: M10104

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 01/04/01



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		649	655	660		573	569	589		-76	-86	-71
2		574	576	573		520	524	524		-54	-52	-49
3	476	475	475	474	455	447	430	420	-21	-28	-45	-54
4	378	375	375	373	361	354	345	336	-17	-21	-30	-37
5	277	275	274	275	261	257	255	263	-16	-18	-19	-12

DRIVER FLOOR PAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1		-57	-81	-80		-5	-38	-41		52	43	39
2		-118	-130	-125		-18	-138	-127		100	-8	-2
3	-135	-135	-132	-126	-126	-143	-148	-128	9	-8	-16	-2
4	-136	-134	-135	-136	-86	-96	-123	-141	50	38	12	-5
5	-141	-140	-142	-137	-66	-73	-72	-92	75	67	70	45

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

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan
 Test Program: 2001 NHTSA 35 mph NCAP

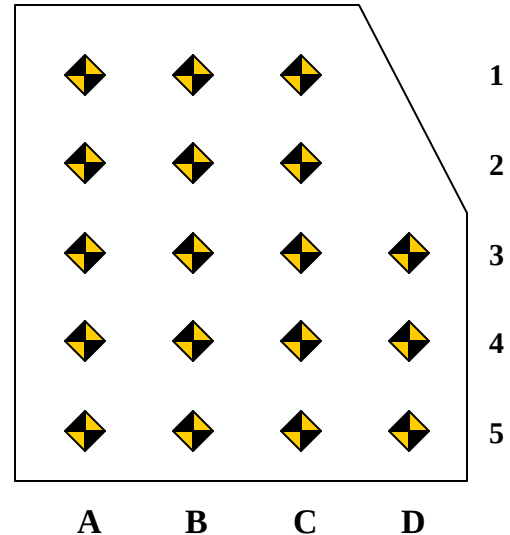
NHTSA No.: M10104
 Test Date: 01/04/01

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	686	687	685		611	613	619		-75	-74	-66	
2	608	603	602		548	558	554		-60	-45	-48	
3	506	506	508	509	453	465	474	480	-53	-41	-34	-29
4	408	405	407	406	364	366	377	383	-44	-39	-30	-23
5	310	305	309	314	285	283	288	288	-25	-22	-21	-26

PASSENGER FLOOR PAN Z-AXIS

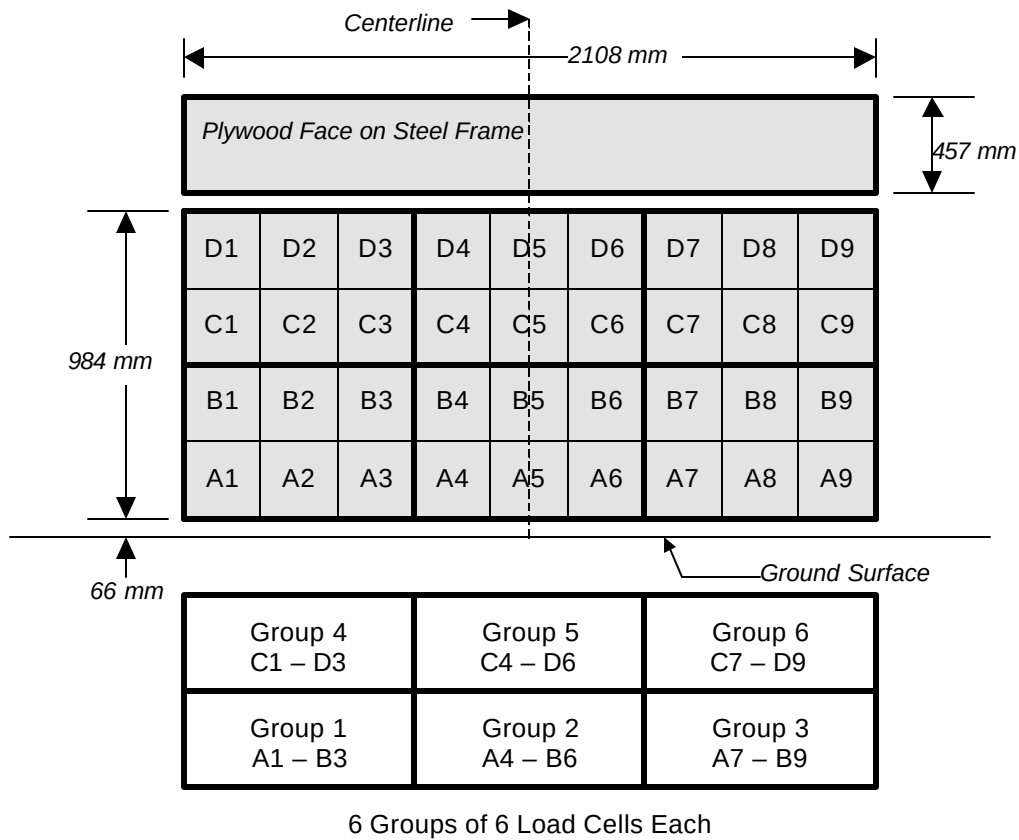
	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-46	-44	-29		-38	-22	-18		8	22	11	
2	-107	-99	-87		-133	-120	-108		-26	-21	-21	
3	-124	-130	-129	-129	-141	-143	-145	-143	-17	-13	-16	-14
4	-131	-129	-129	-134	-178	-166	-148	-146	-47	-37	-19	-12
5	-134	-134	-129	-131	-143	-143	-141	-136	-9	-9	-12	-5

DATA SHEET NO. 18
FIXED BARRIER TYPE

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan
 Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10104
 Test Date: 01/04/01

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



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 DATA

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan
Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10104
Test Date: 01/04/01

VEHICLE INFORMATION

VIN: 1G1ND52J716184616
Vehicle Size Category: 4 Door Sedan

Wheel base (mm): 2718
Test Weight (kg): 1608

ACCELEROMETER DATA

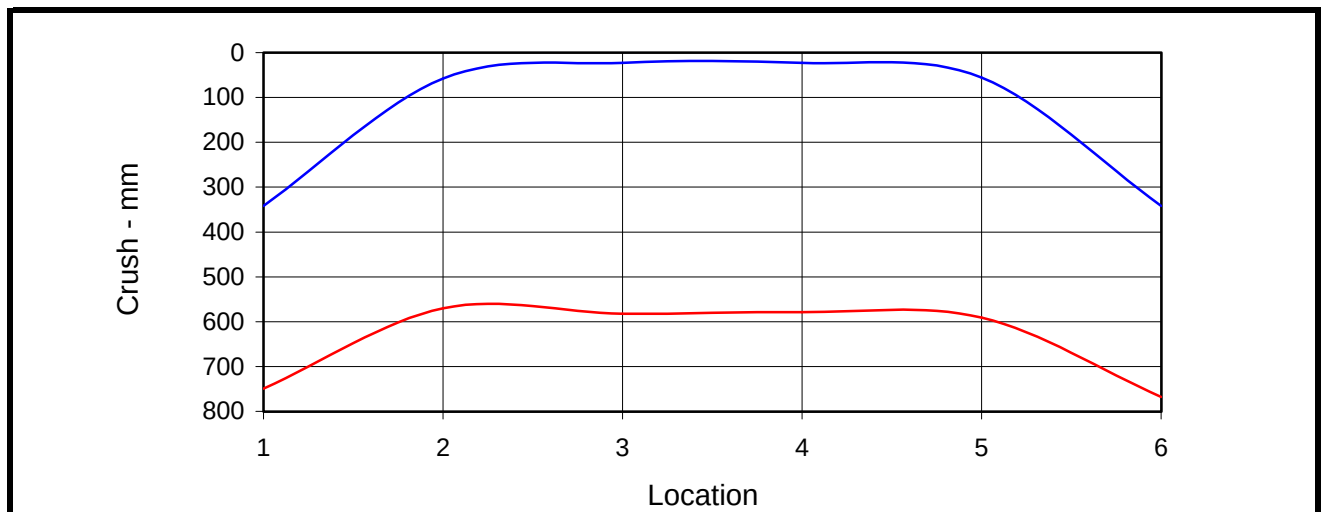
Accelerometer Location: Left rear floor pan
Cal. Procedure/Interval: 6 months / drop test
Integration Algorithm: NHTSA Standard
Impact Velocity (km/h): 55.56
Velocity Change (km/h): 61.02

Linearity: Good
Time of Separation (msec): 82.4

CRUSH PROFILE

Collision Deformation Classification: 12FDEW6 ; Midpoint of Damage: Vehicle Centerline
Damage Region Length (mm): 1570 ; Impact Mode: Full Frontal

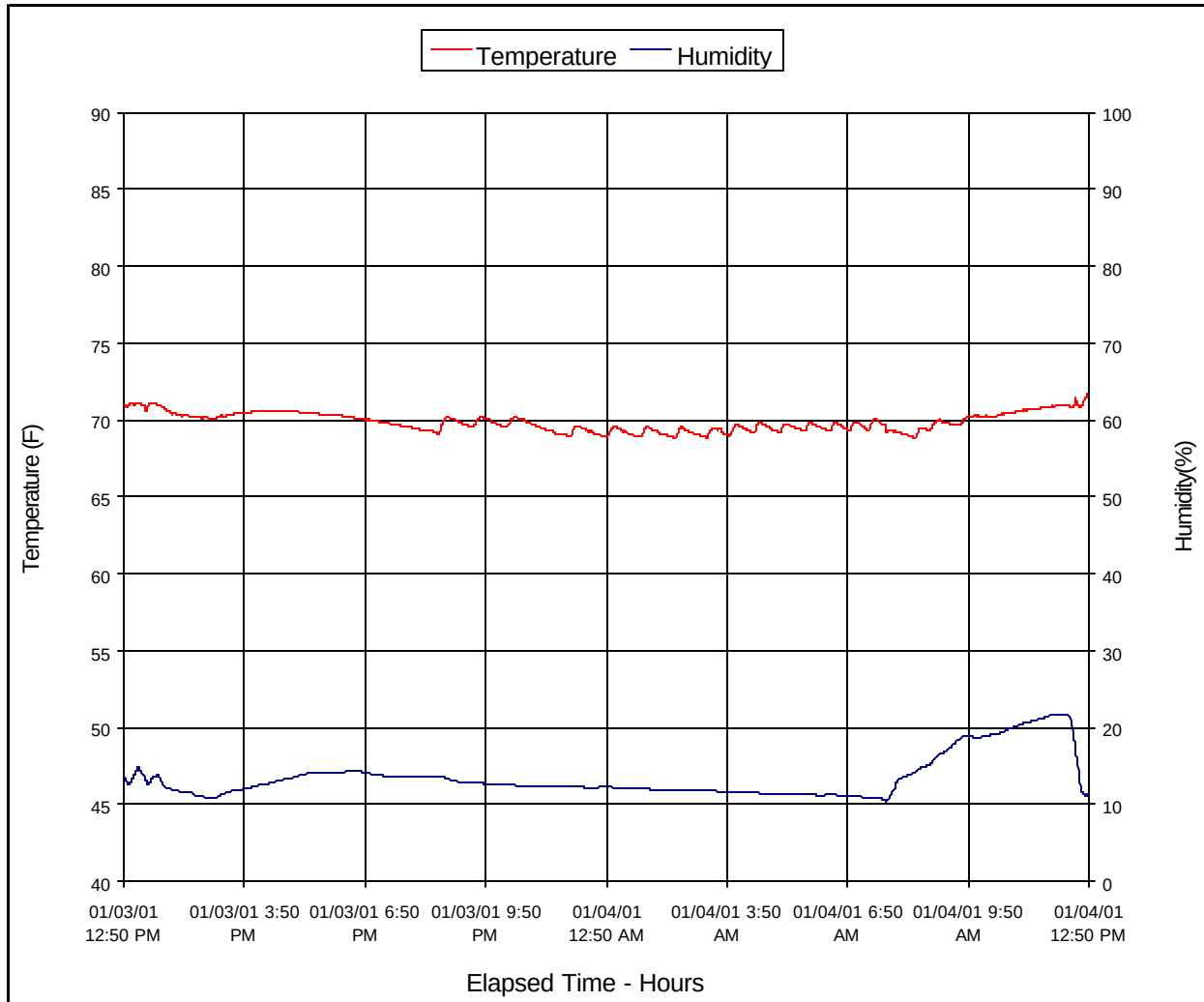
No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	342	749	-407
C2	Crush zone 2 on left side	mm	58	570	-512
C3	Crush zone 3 on left side	mm	23	582	-559
C4	Crush zone 4 on right side	mm	23	579	-556
C5	Crush zone 5 on right side	mm	56	591	-535
C6	Crush zone 6 at right side	mm	342	768	-426



DATA SHEET NO. 20
DUMMY/VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan
Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10104
Test Date: 01/04/01



APPENDIX A
PHOTOGRAPHS

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Figure A-1: Right Front, as Received



Figure A-2: Left Rear, as Received



Figure A-3: Vehicle Certification Label

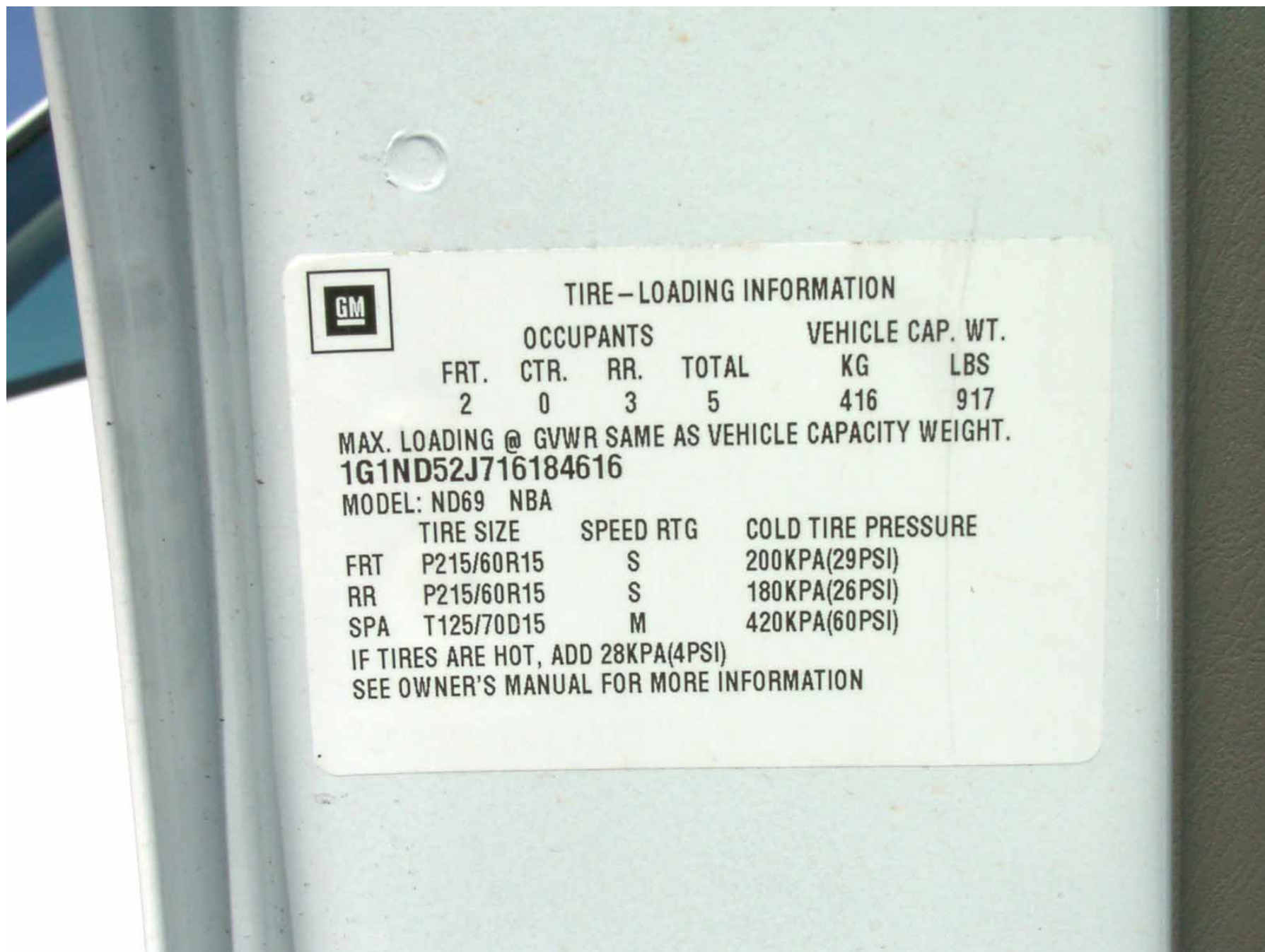


Figure A-4: Vehicle Tire Label



Figure A-5: Front View, Pre-Test



Figure A-6: Front View, Post-Test



Figure A-7: Left Side View, Pre-Test



Figure A-8: Left Side View, Post-Test



Figure A-9: Right Side View, Pre-Test



Figure A-10: Right Side View, Post-Test



Figure A-11: Right Front View, Pre-Test



Figure A-12: Right Front View, Post-Test



Figure A-13: Left Rear View, Pre-Test



Figure A-14: Left Rear View, Post-Test

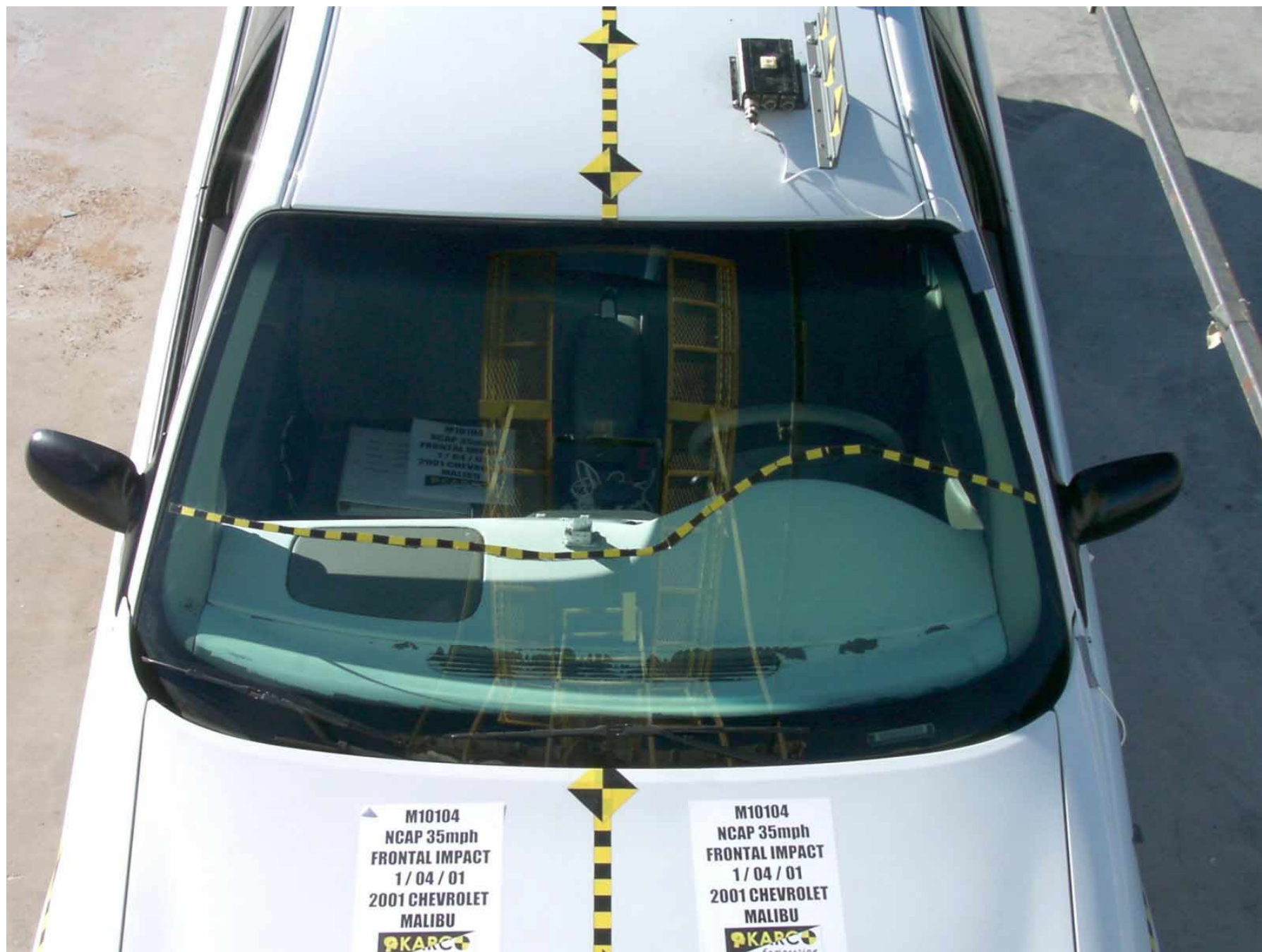


Figure A-15: Windshield, Pre-Test

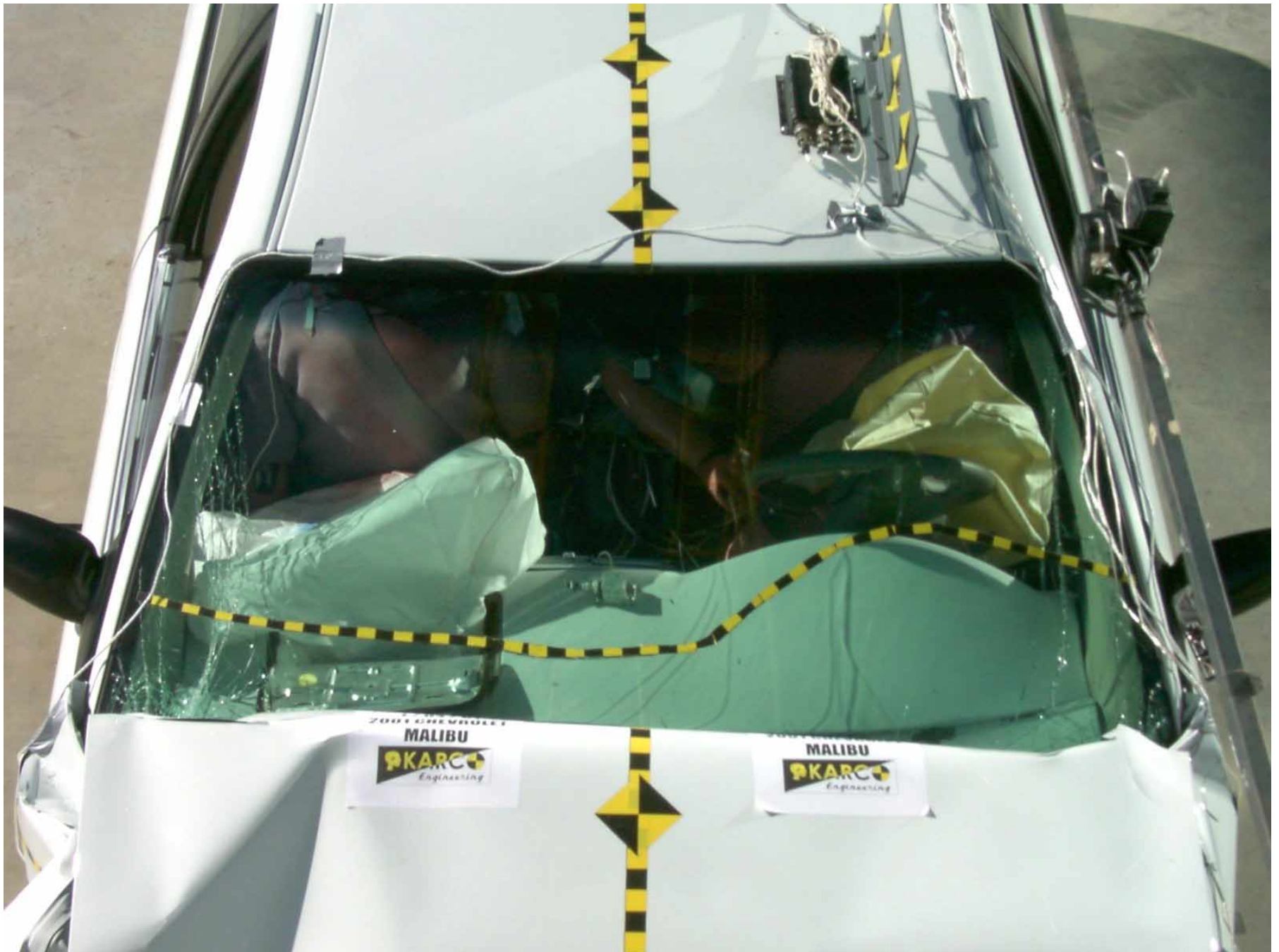


Figure A-16: Windshield, Post-Test

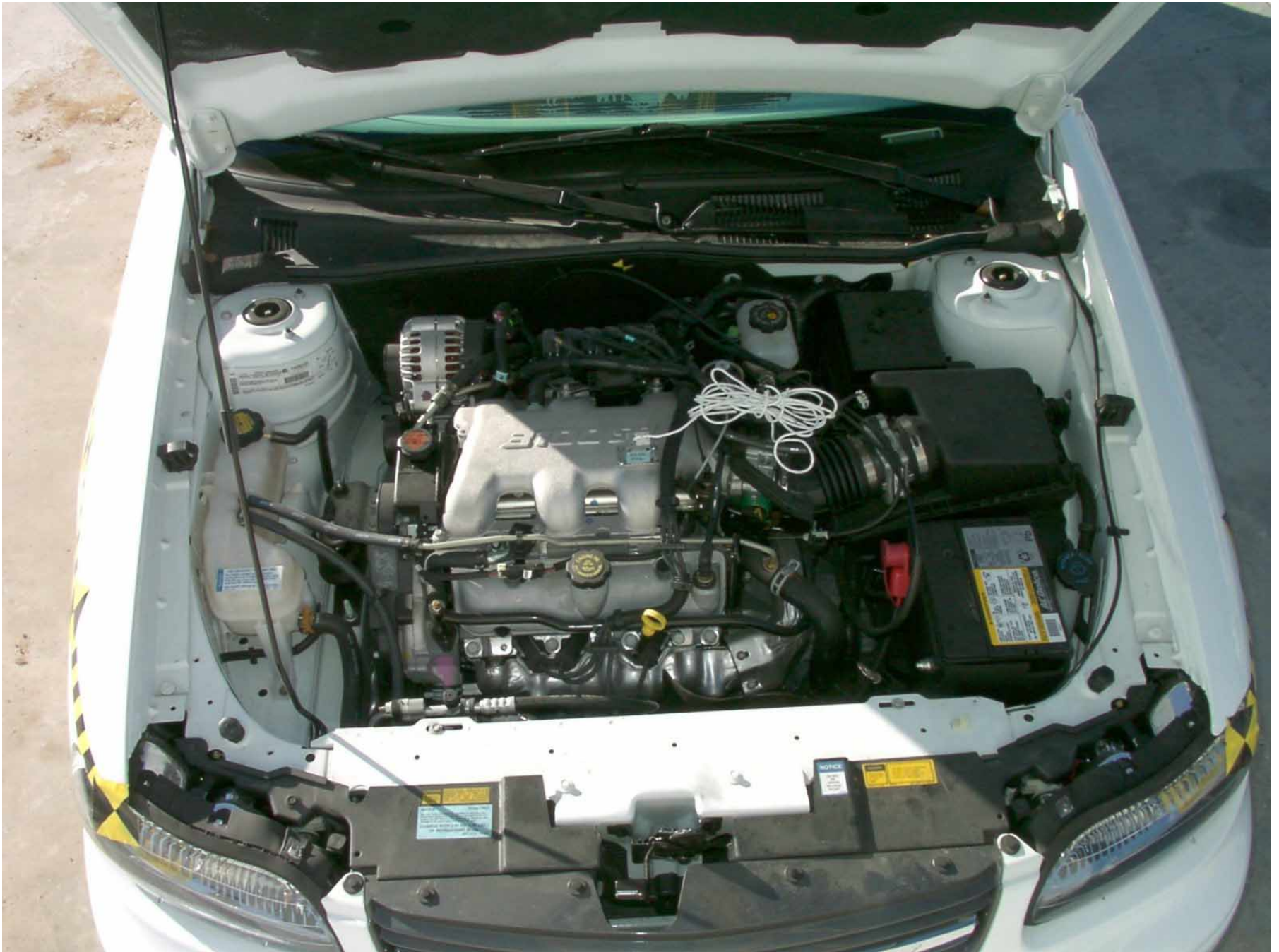


Figure A-17: Engine Compartment, Pre-Test

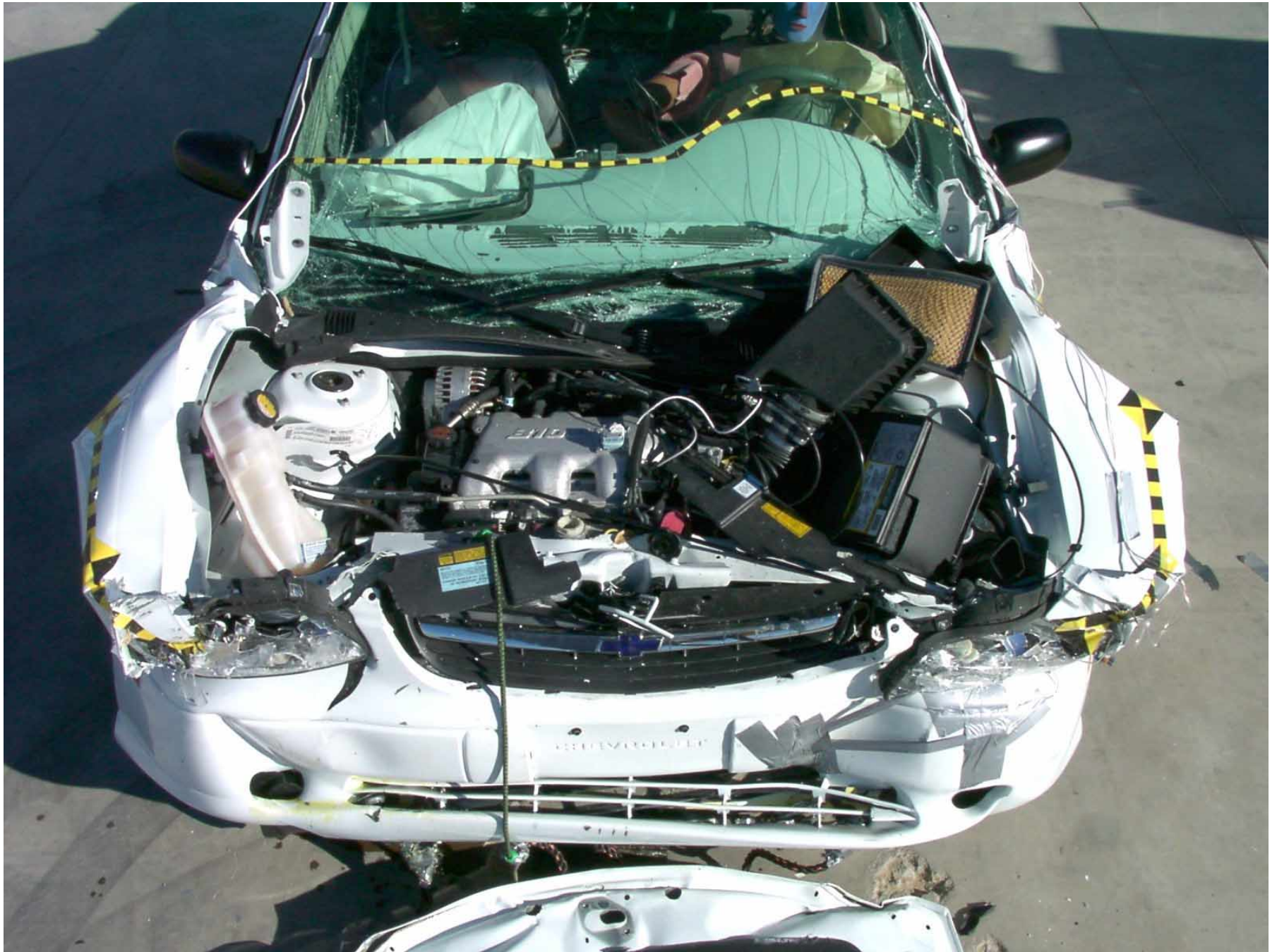


Figure A-18: Engine Compartment, Post-Test



Figure A-19: Fuel Cap, Pre-test



Figure A-20: Fuel Cap, Post-Test

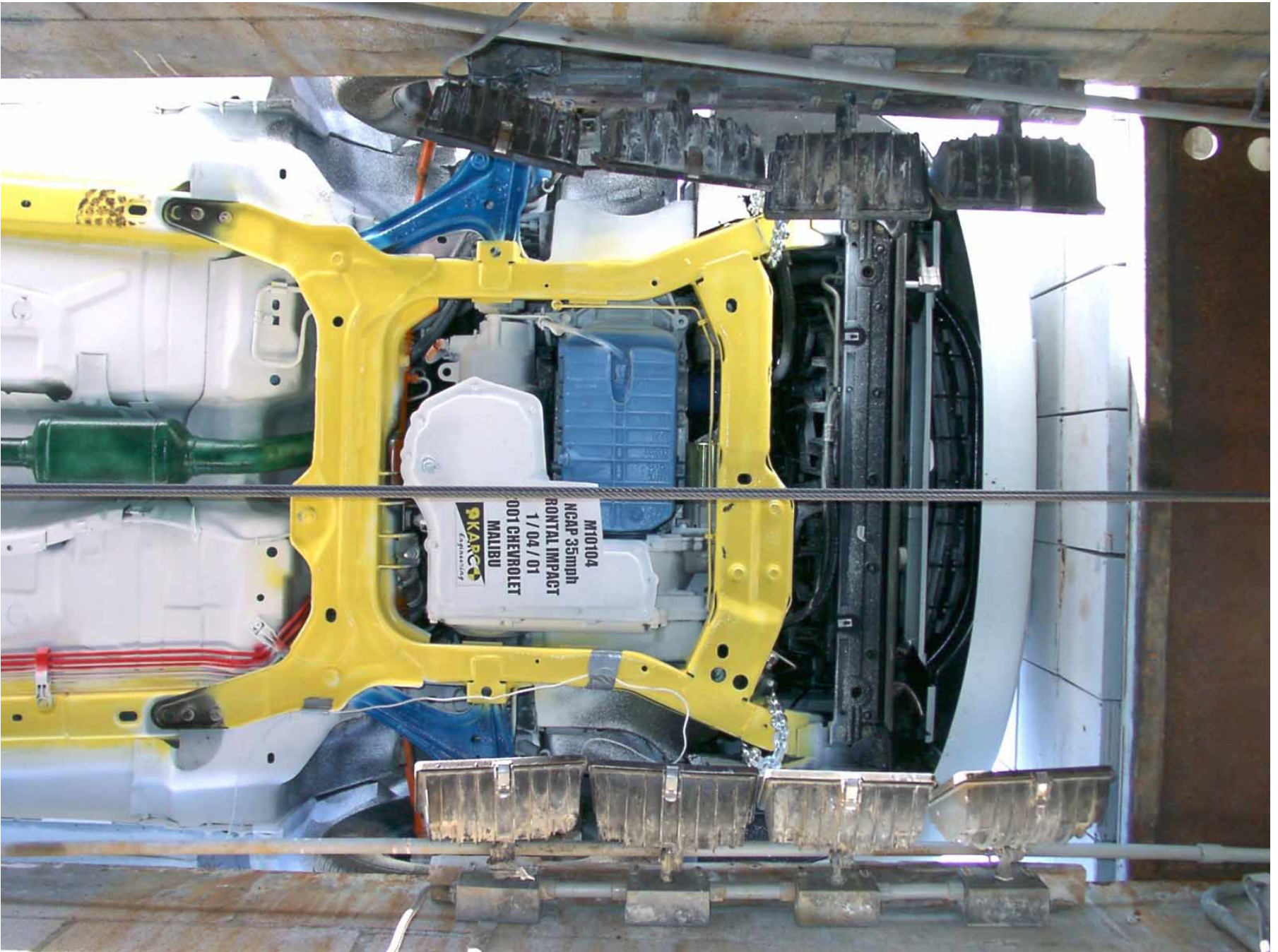


Figure A-21: Front Underside, Pre-Test

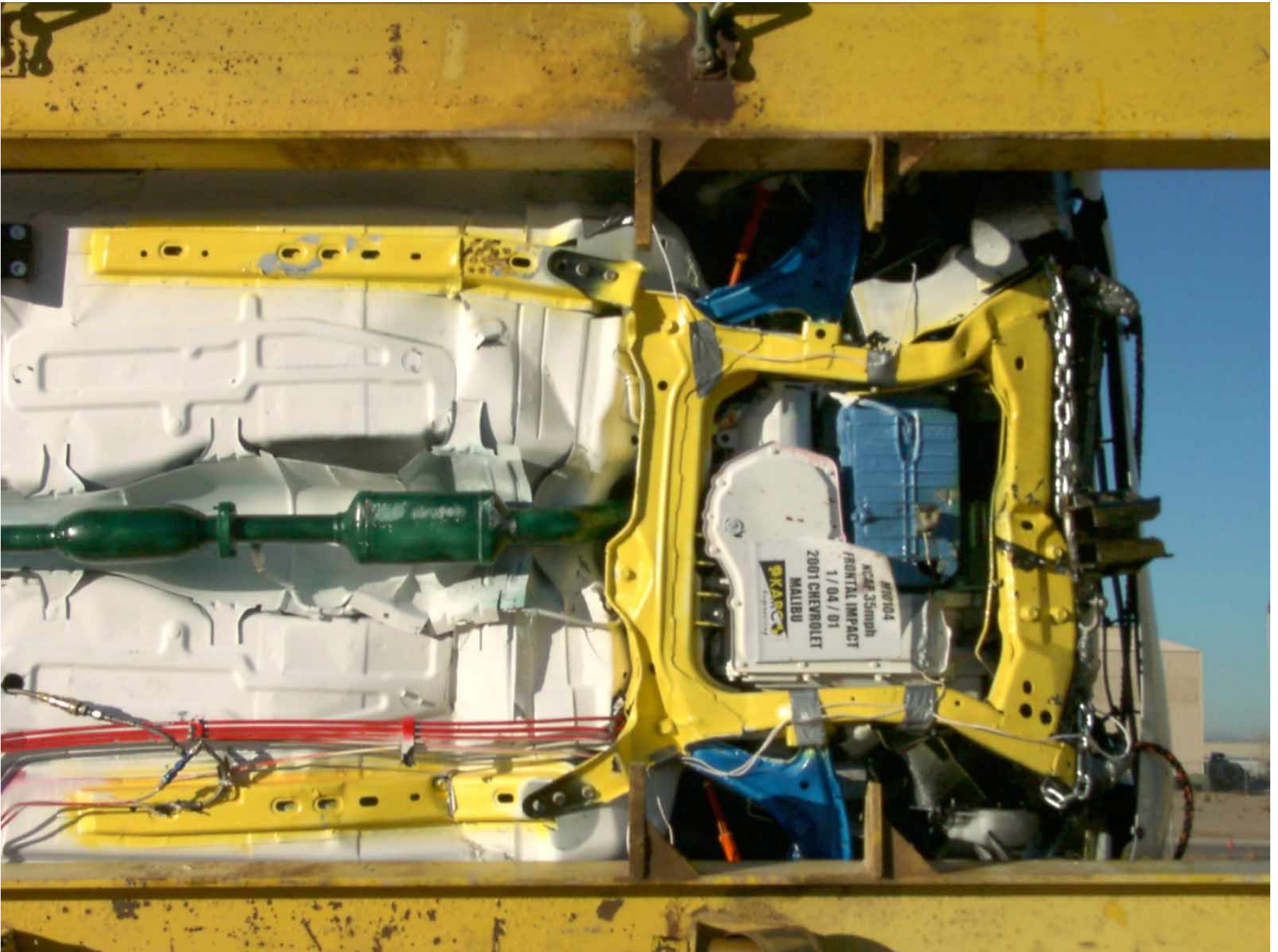


Figure A-22: Front Underside, Post-Test



Figure A-23: Rear Underside, Pre-Test

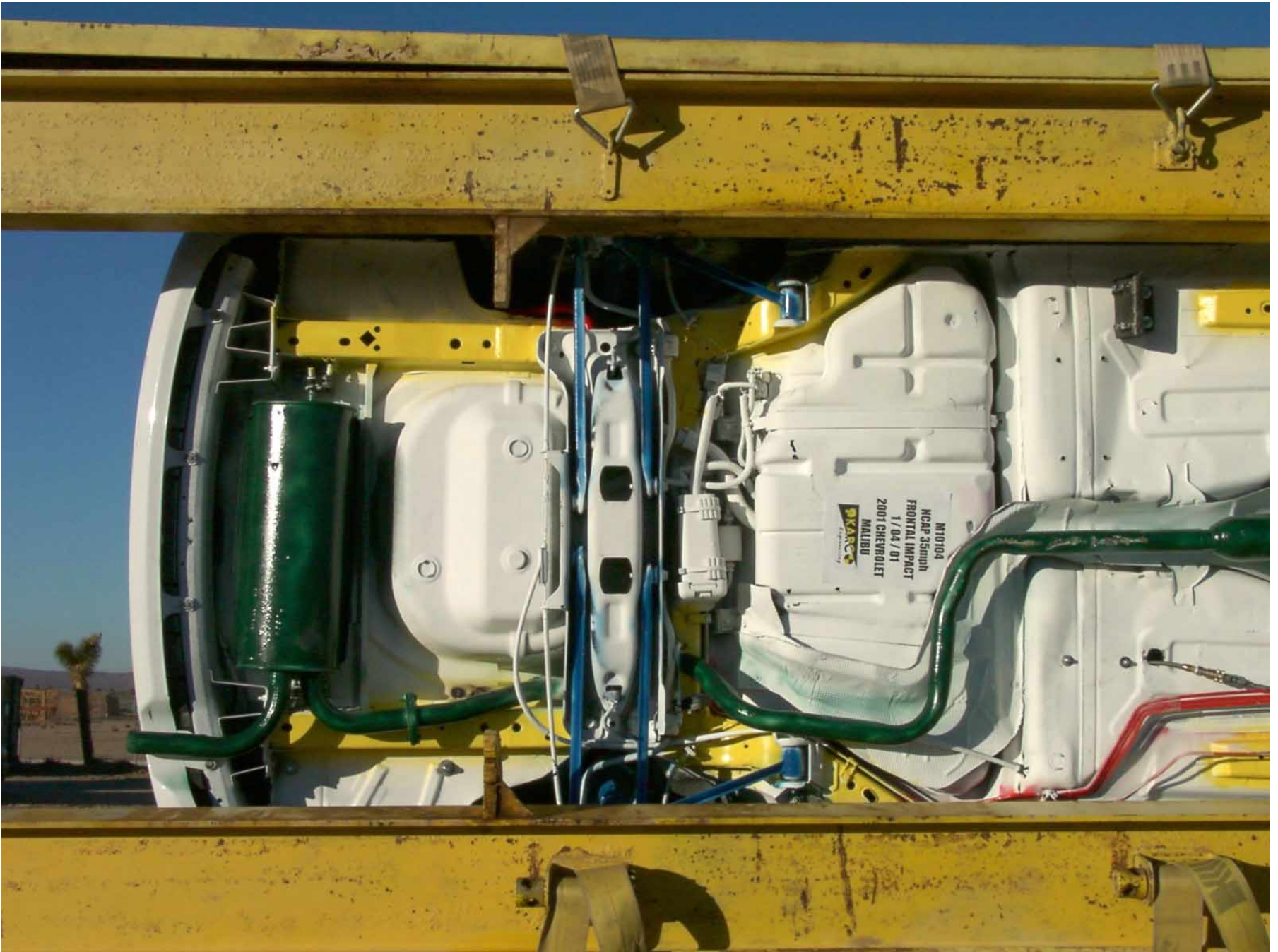


Figure A-24: Rear Underside, Post-Test

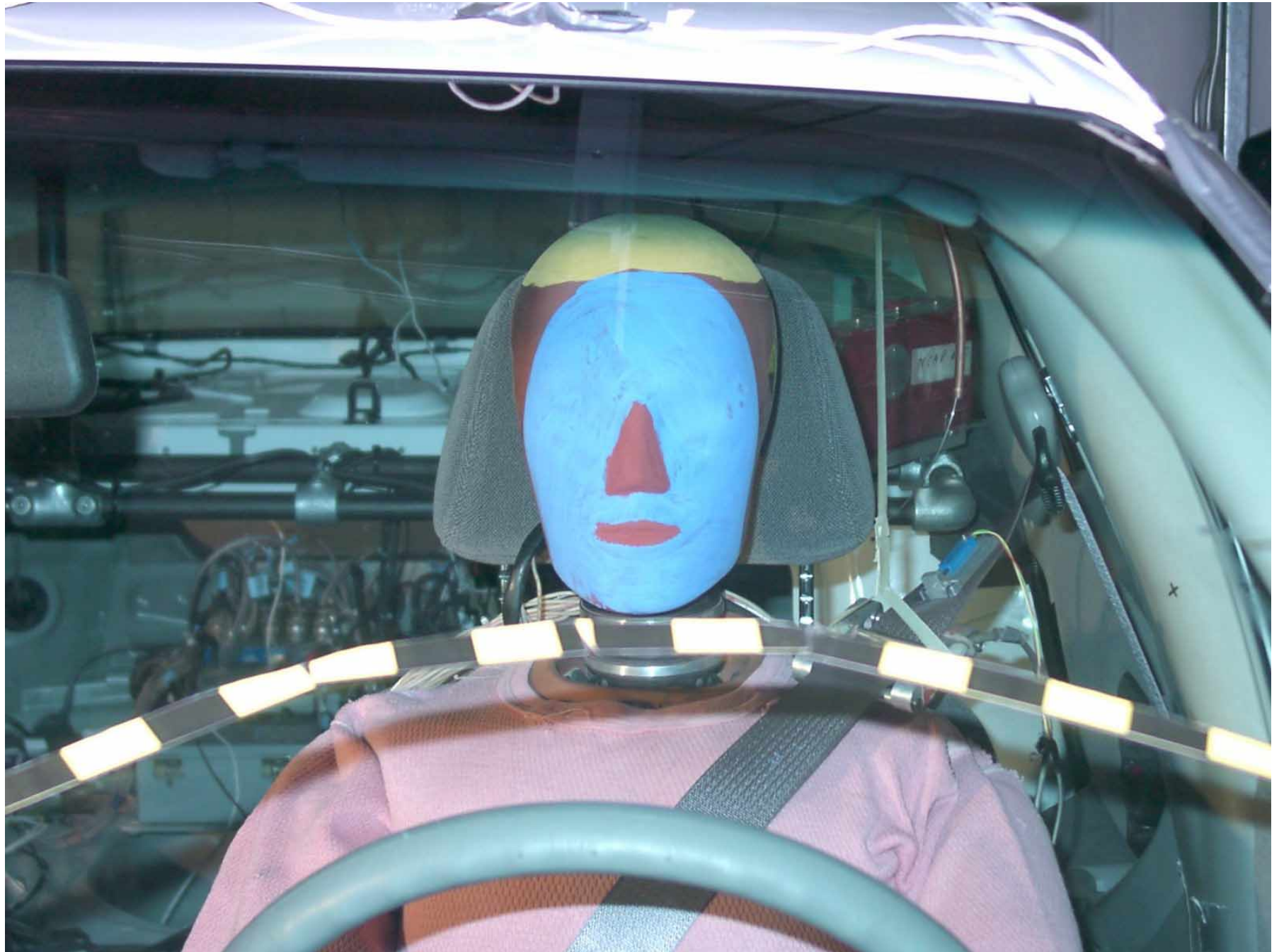


Figure A-25: Driver Dummy Front View, Pre-Test



Figure A-26: Driver Dummy Front View, Post-Test



Figure A-27: Driver Dummy Through Window, Pre-Test



Figure A-28: Driver Dummy Through Window, Post-Test



Figure A-29: Driver Dummy Door Open, Pre-Test



Figure A-30: Driver Dummy Door Open, Post-Test



Figure A-31: Driver Dummy 90° To Vehicle, Pre-Test



Figure A-32: Driver Dummy 90° To Vehicle, Post-Test



Figure A-33: Driver Dummy Feet, Pre-Test



Figure A-34: Driver Dummy Feet and Knee Contact, Post-Test



Figure A-35: Driver Side Knee Bolster, Pre-Test



Figure A-36: Driver Side Knee Bolster, Post-Test





Figure A-38: Driver Side Floor Pan, Post-Test



Figure A-39: Driver Dummy Head, Post-Test



Figure A-40: Driver Dummy Contact, Post-Test

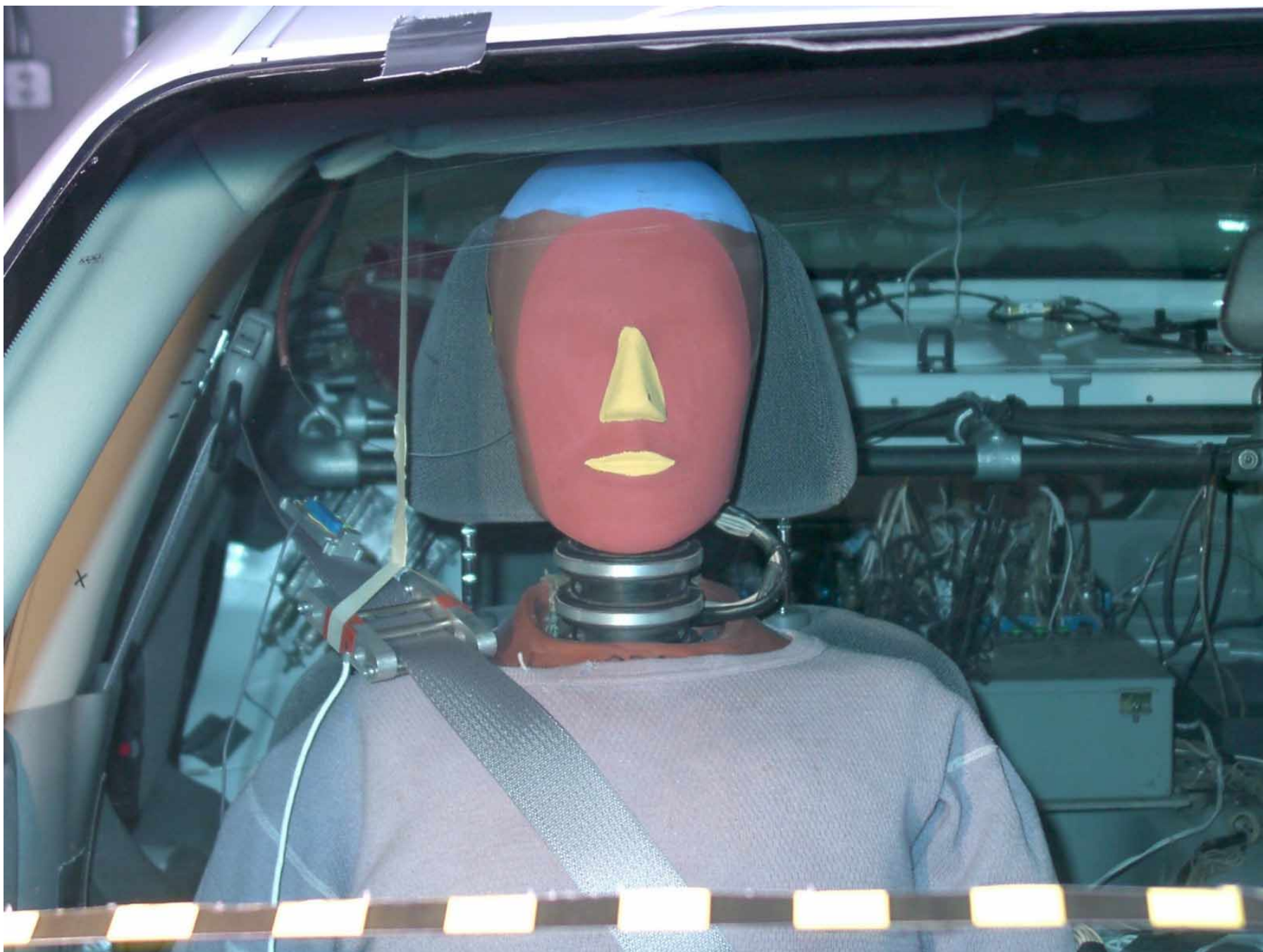


Figure A-41: Passenger Dummy Front View, Pre-Test



Figure A-42: Passenger Dummy Front View, Post-Test



Figure A-43: Passenger Dummy Through Window, Pre-Test



Figure A-44: Passenger Dummy Through Window, Post-Test



Figure A-45: Passenger Dummy Door Open, Pre-Test

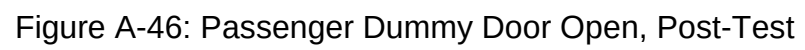




Figure A-47: Passenger Dummy 90° To Vehicle, Pre-Test



Figure A-48: Passenger Dummy 90° To Vehicle, Post-Test

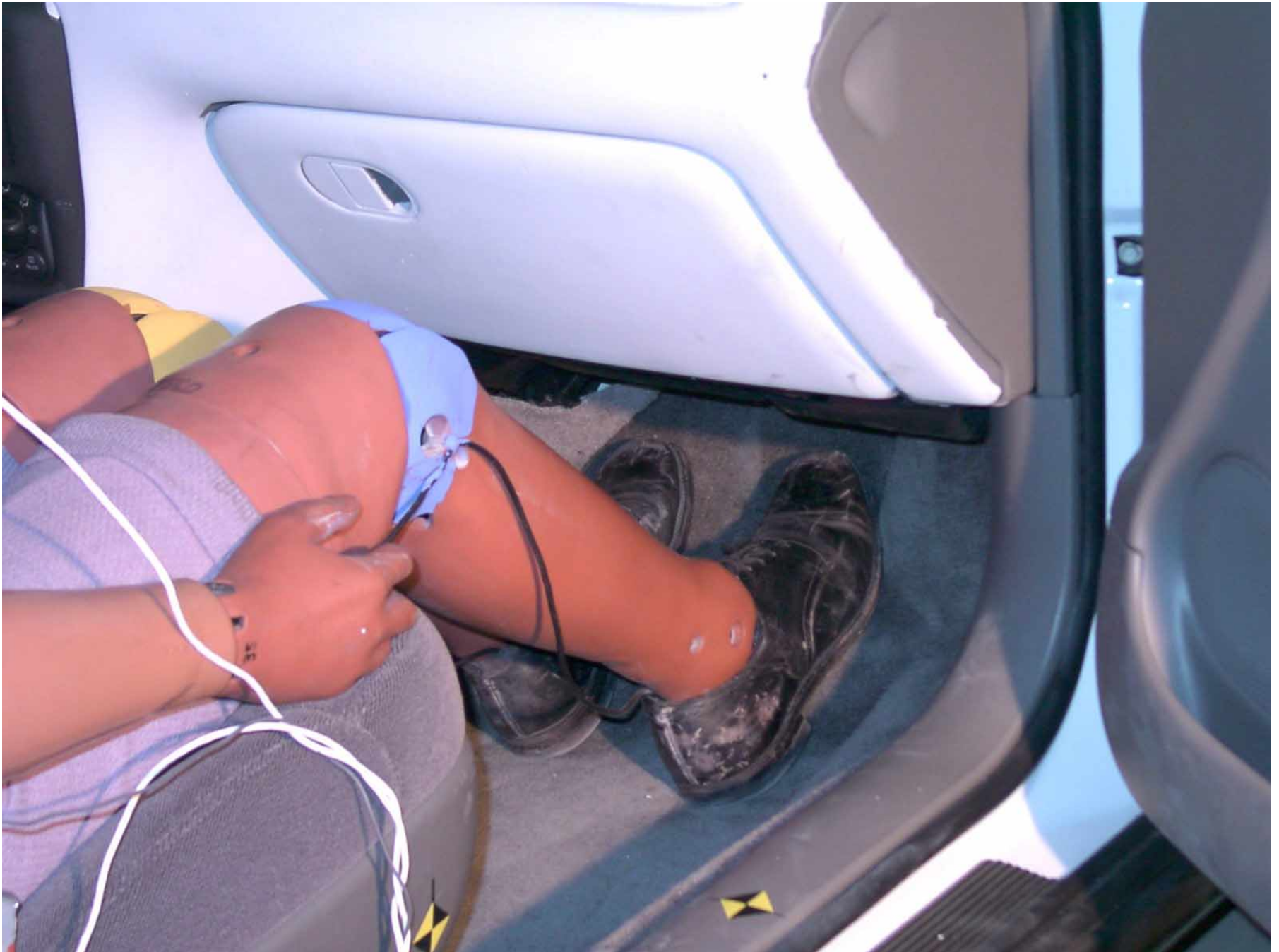


Figure A-49: Passenger Dummy Feet, Pre-Test



Figure A-50: Passenger Dummy Feet and Knee Contact, Post-Test



Figure A-51: Passenger Side Floor Pan, Pre-Test



Figure A-52: Passenger Side Floor Pan, Post-Test



Figure A-53: Passenger Side Knee Bolster, Pre-Test



Figure A-54: Passenger Side Knee Bolster, Post-Test



Figure A-55: Passenger Head, Post-Test



Figure A-56: Passenger Dummy Contact, Post-Test



Figure A-57: Vehicle on Rollover Device



Figure A-58: Vehicle During Impact

APPENDIX B

DUMMY AND VEHICLE RESPONSE DATA TRACES

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B-44 Driver Right Upper Tibia Moment X	B-44
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B-48 Driver Left Lower Tibia Force Z	B-48
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B-94	Passenger Chest Displacement X	B-94

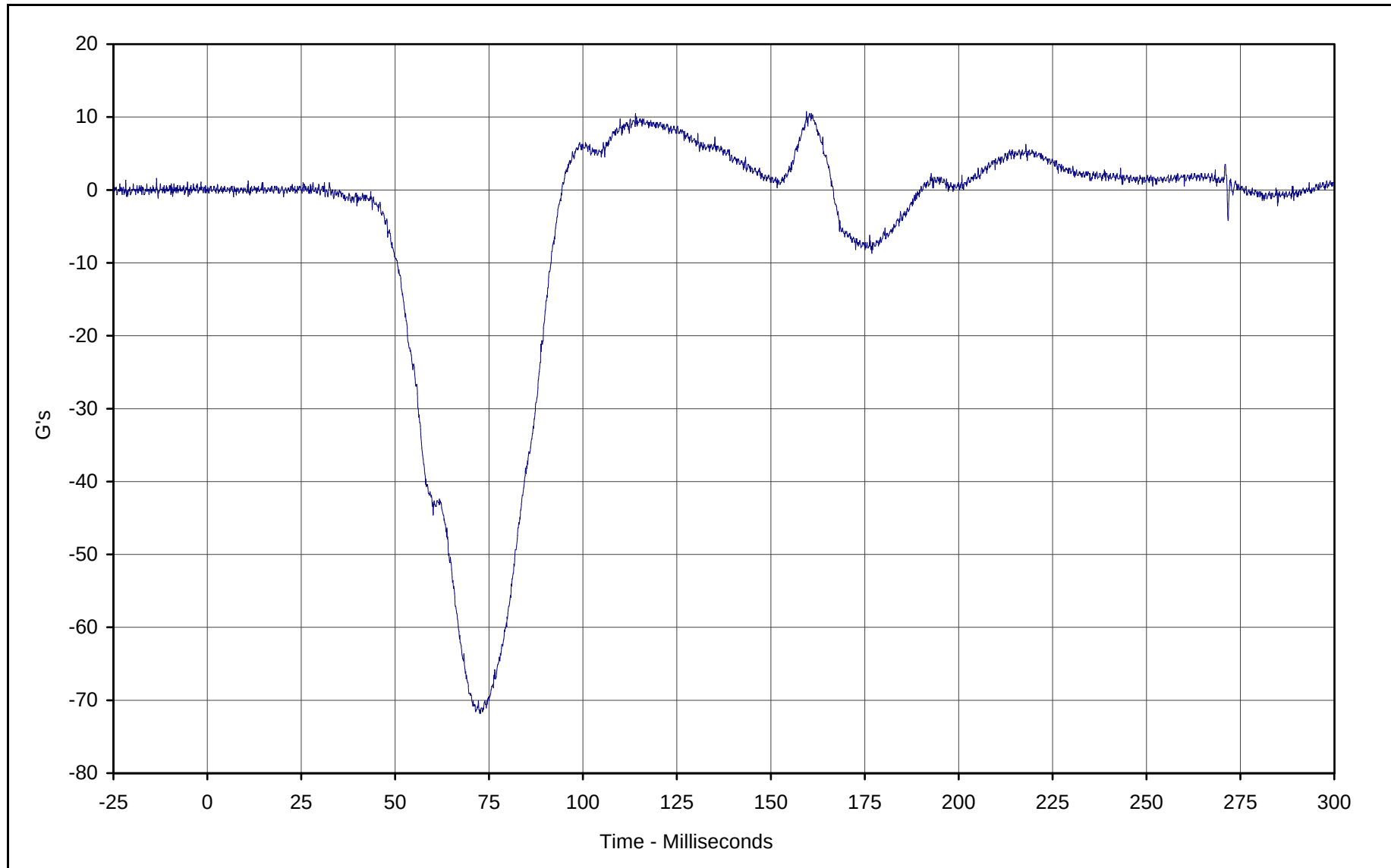
LIST OF DATA PLOTS...(Continued)

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B-95 Passenger Pelvis X	B-95
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B-1

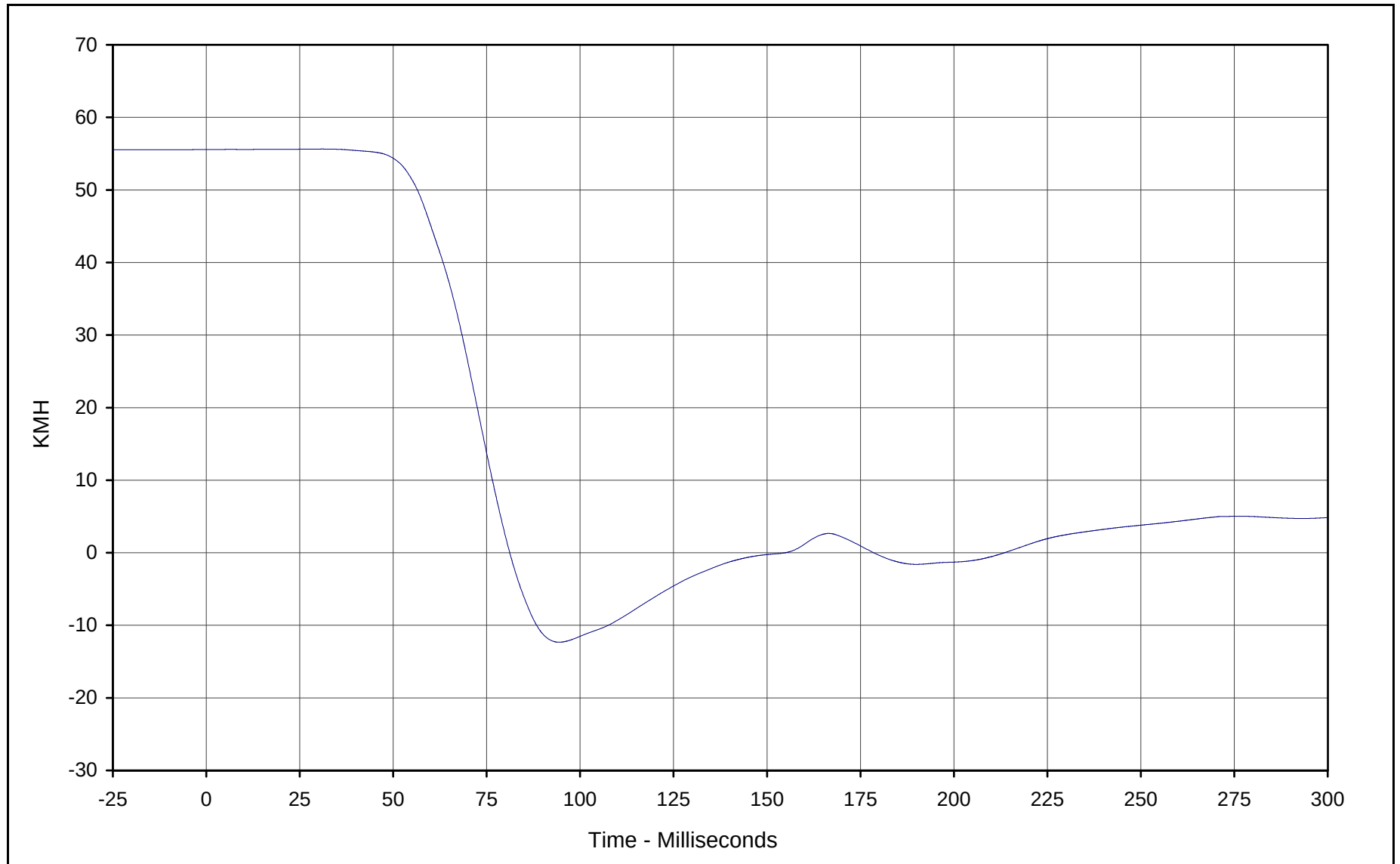


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Maximum Value: 10.8 at 159.5 Milliseconds
Minimum Value: -71.8 at 72.5 Milliseconds
SAE Filter Class: 1000
Date of Test: 01/04/01
Curve Number: FIL-001

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



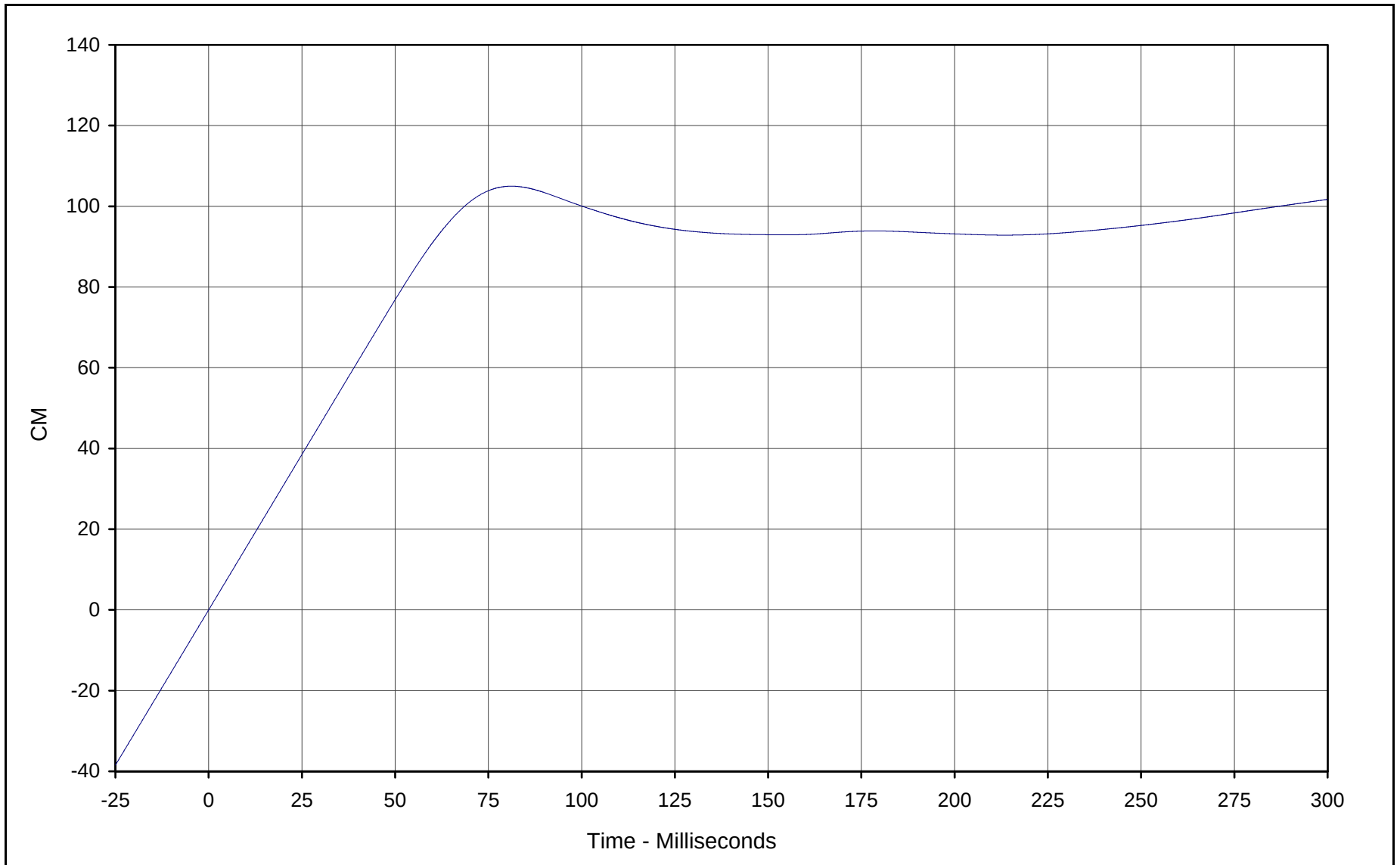
KAR21001-01



Curve Description: Driver Head Primary X Velocity
Maximum Value: 55.6 at 31.0 Milliseconds
Minimum Value: -12.3 at 94.4 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: IN1-001

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

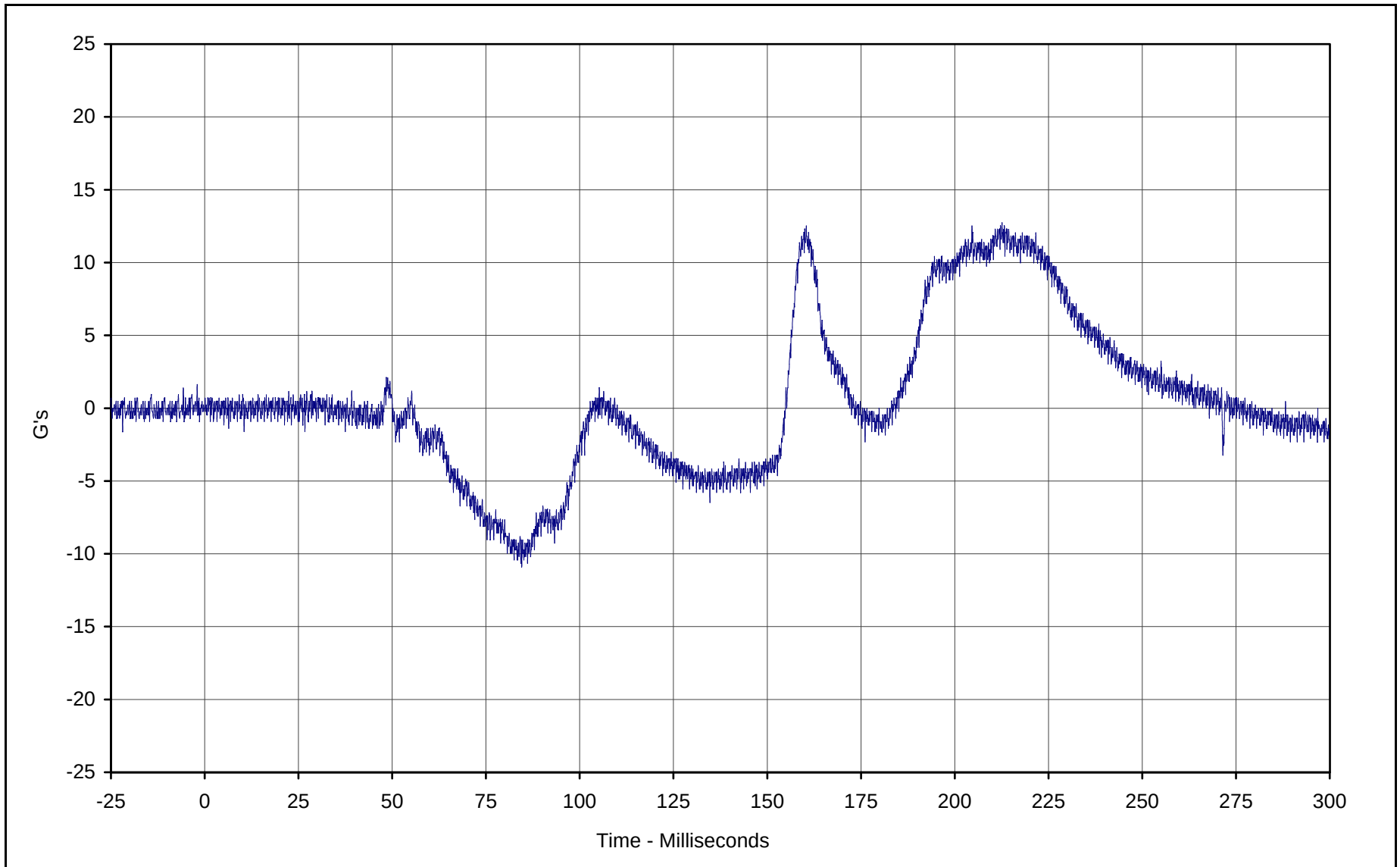




Curve Description: Driver Head Primary X Displ.
Maximum Value: 105.0 at 81.2 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: IN2-001

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

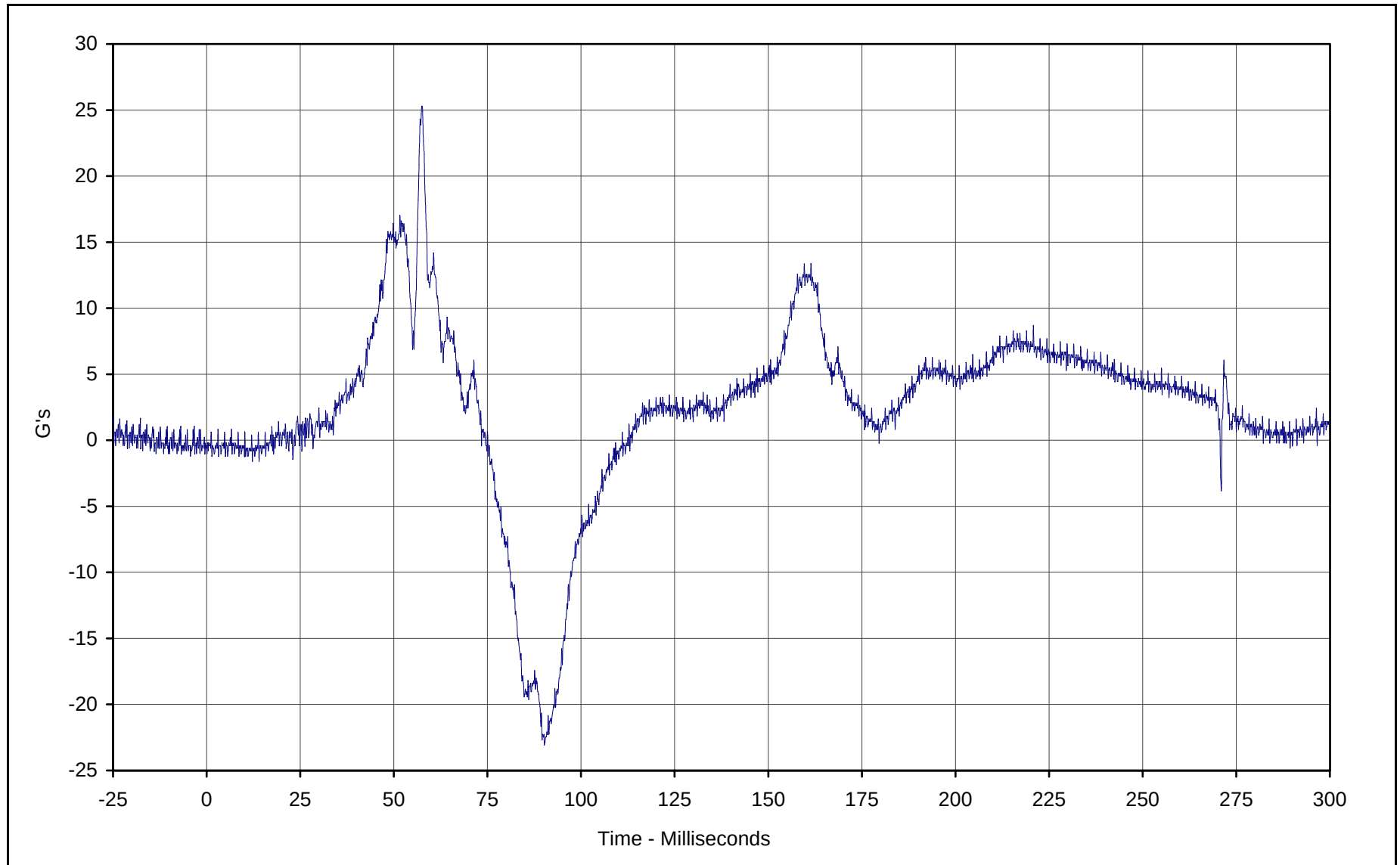




Curve Description: Driver Head Primary Y
Maximum Value: 12.7 at 212.6 Milliseconds
Minimum Value: -10.9 at 84.5 Milliseconds
SAE Filter Class: 1000
Date of Test: 01/04/01
Curve Number: FIL-002

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

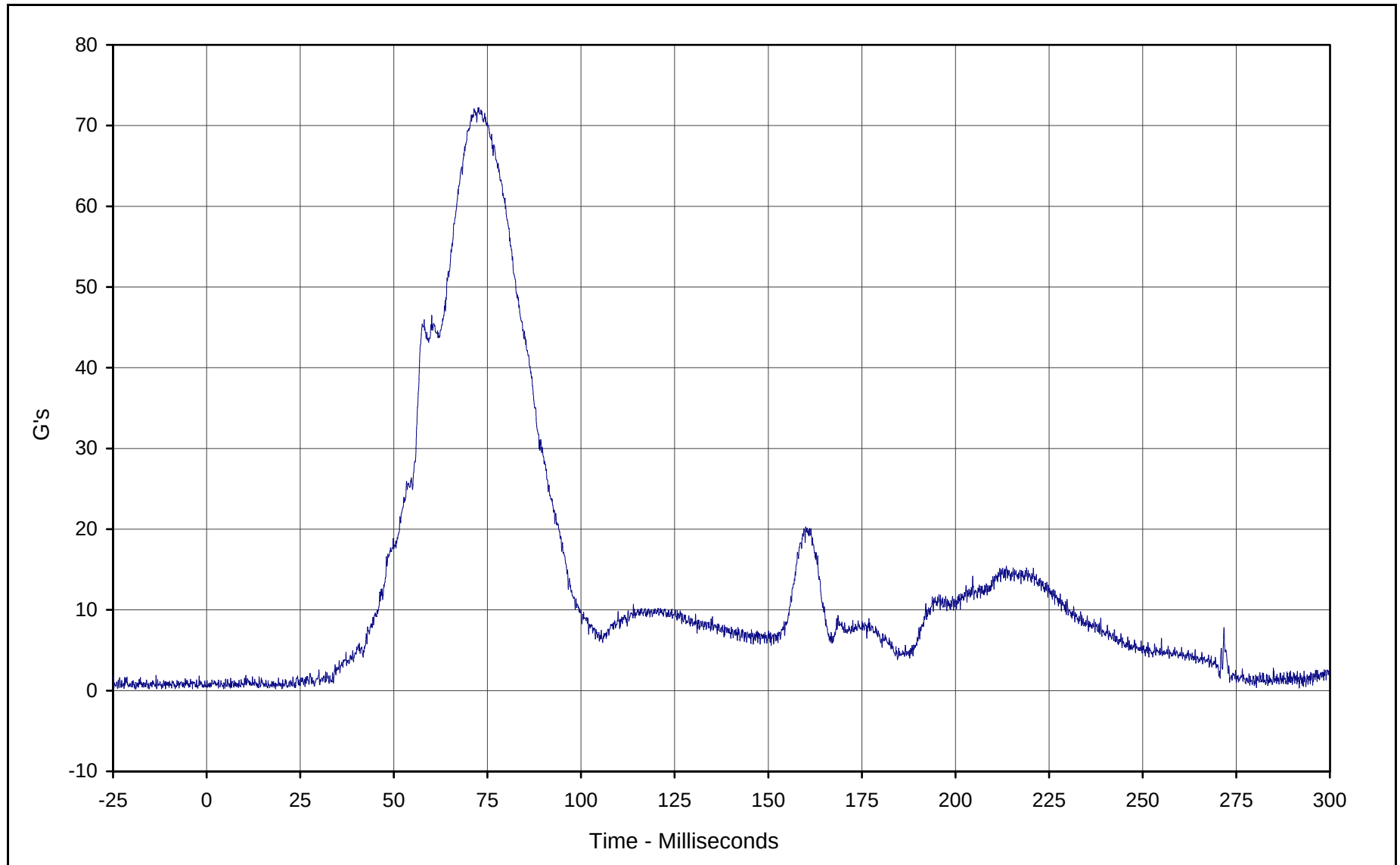




Curve Description: Driver Head Primary Z
Maximum Value: 25.3 at 57.4 Milliseconds
Minimum Value: -23.1 at 90.2 Milliseconds
SAE Filter Class: 1000
Date of Test: 01/04/01
Curve Number: FIL-003

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

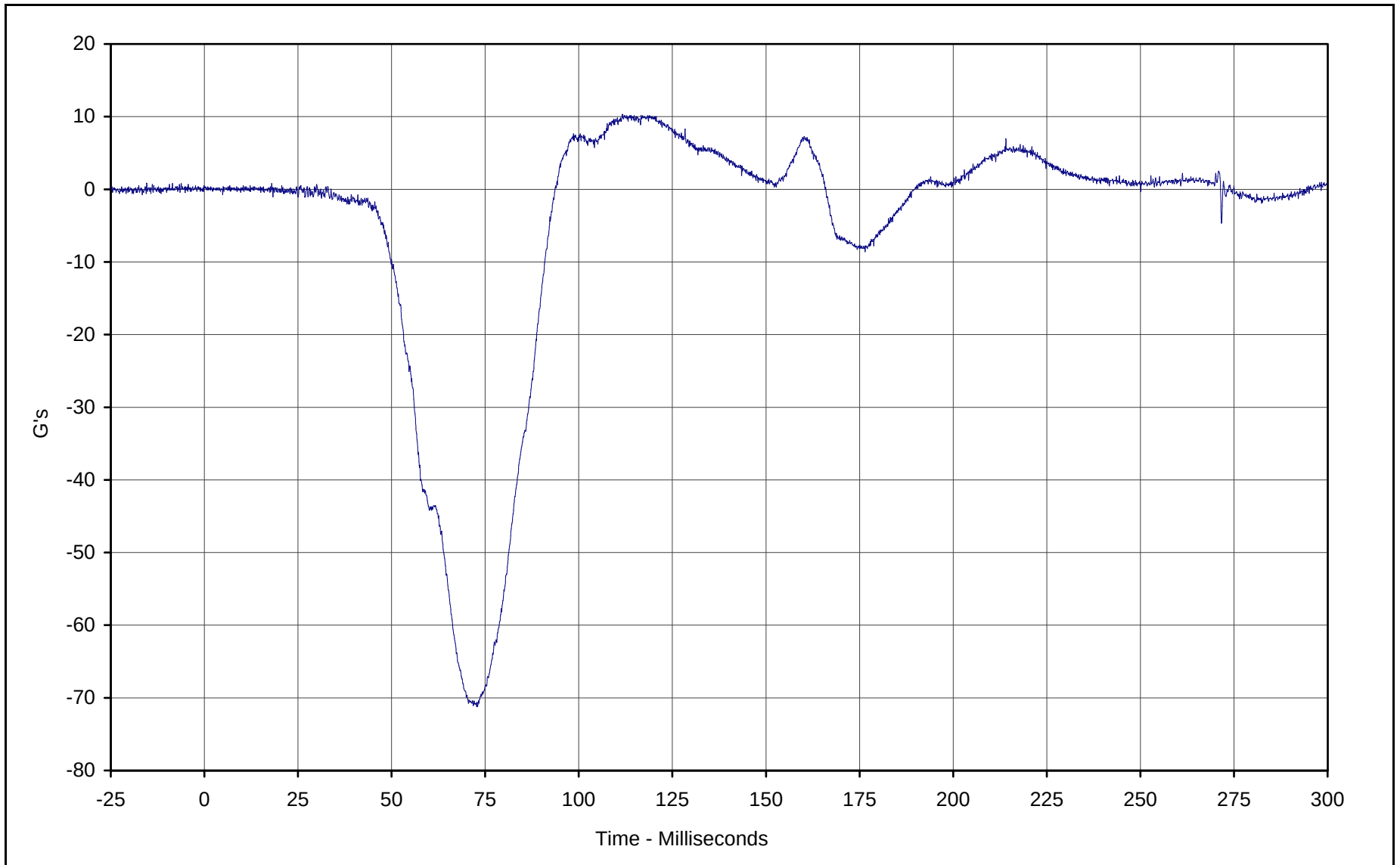




Curve Description: Driver Head Resultant Primary
Maximum Value: 72.2 at 72.5 Milliseconds
Minimum Value: 0.2 at 4.5 Milliseconds
SAE Filter Class: 1000
Date of Test: 01/04/01
Curve Number: RES-001

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

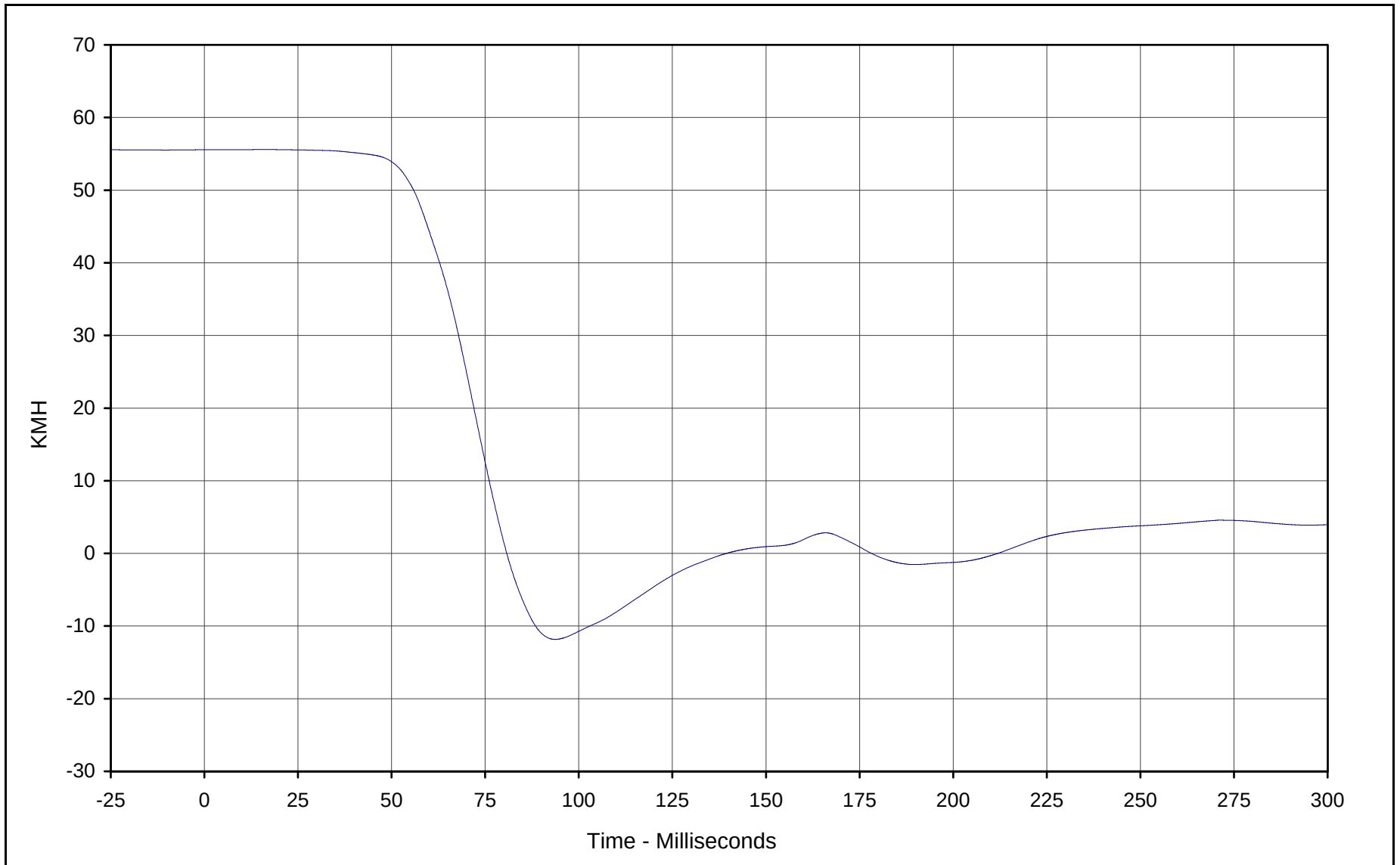




Curve Description: Driver Head Redundant X
Maximum Value: 10.3 at 111.6 Milliseconds
Minimum Value: -71.2 at 72.7 Milliseconds
SAE Filter Class: 1000
Date of Test: 01/04/01
Curve Number: FIL-004

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

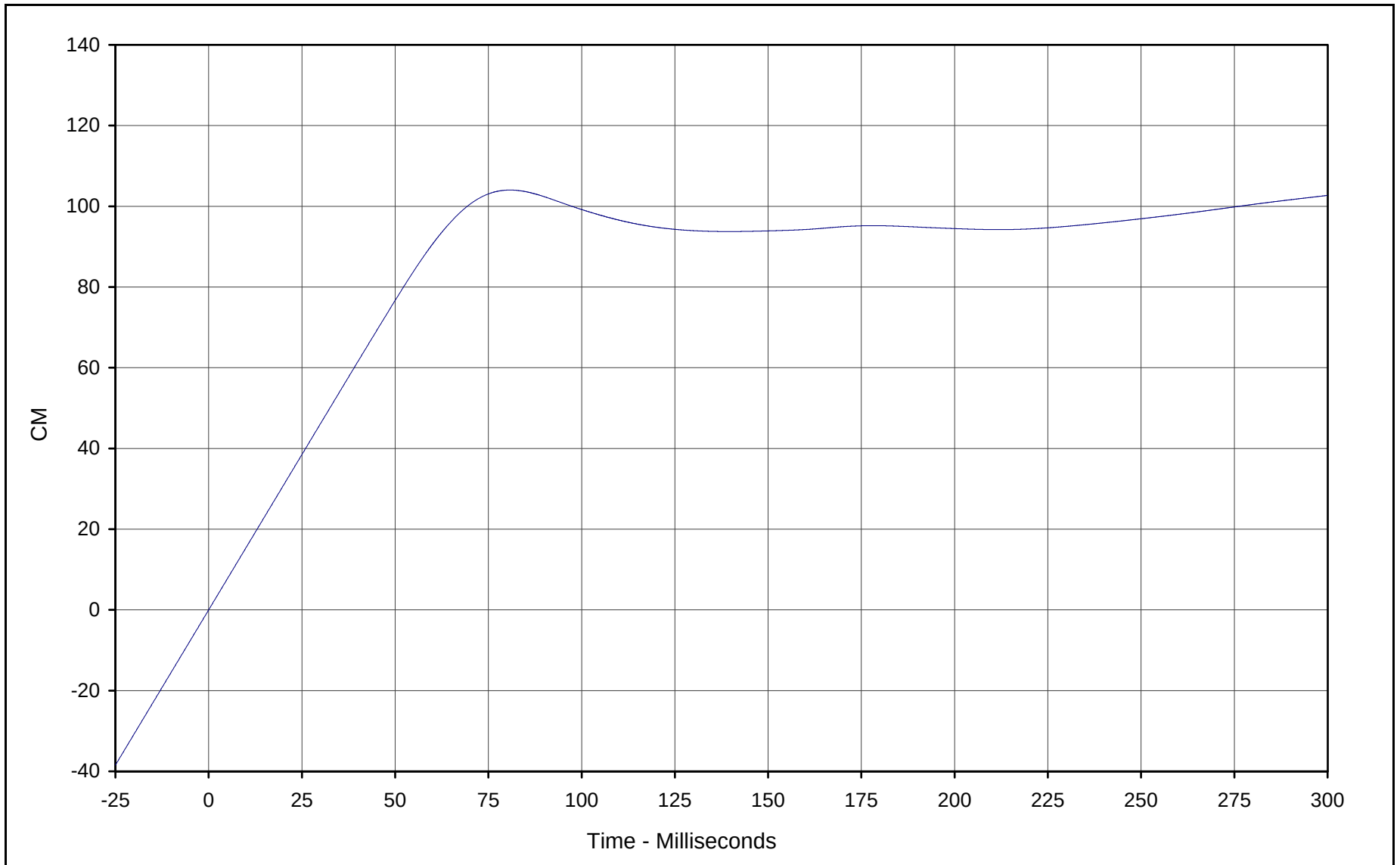




Curve Description: Driver Head Redundant X Velocity
Maximum Value: 55.6 at 15.2 Milliseconds
Minimum Value: -11.8 at 93.8 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: IN1-004

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



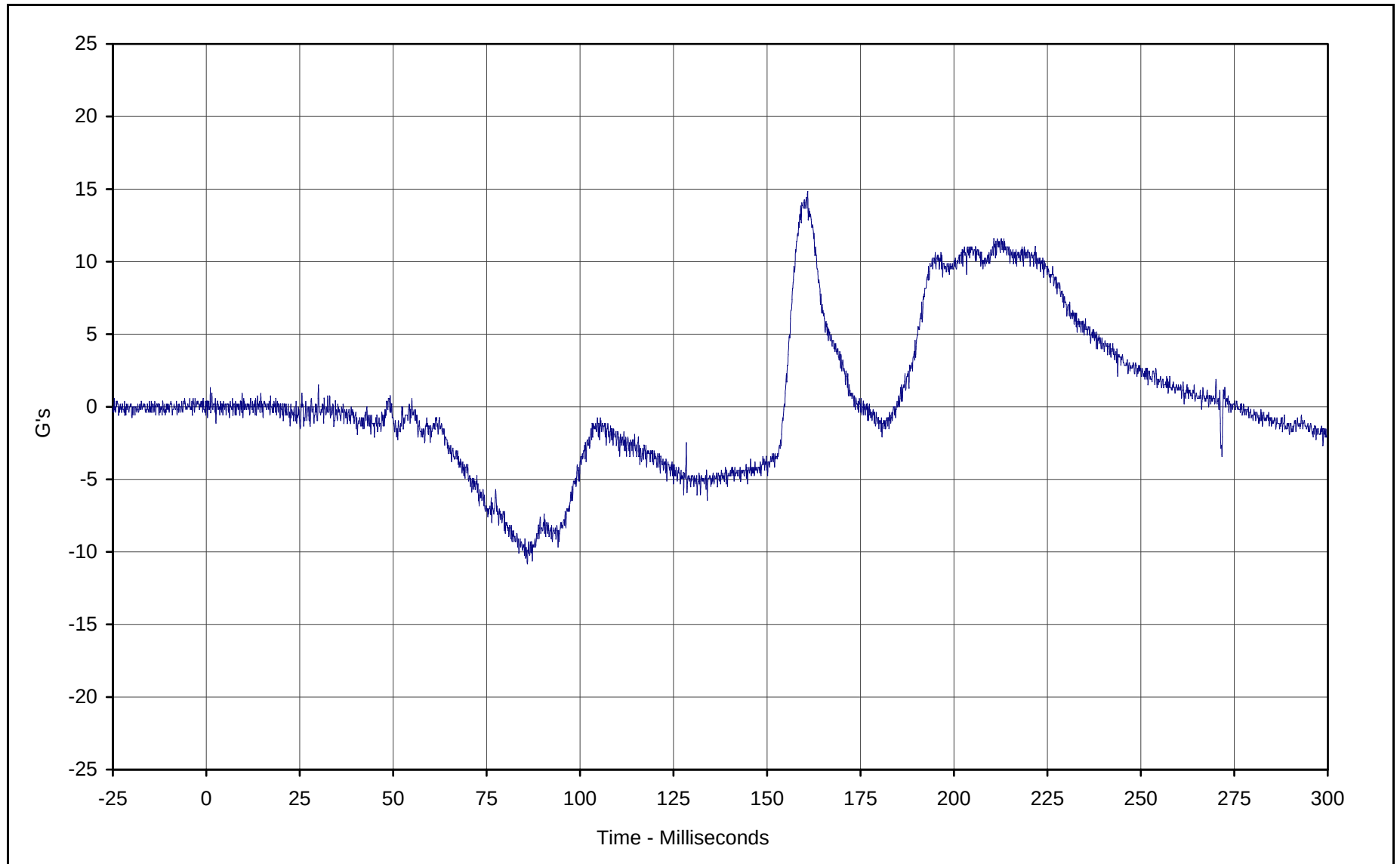


Curve Description: Driver Head Redundant X Displ.
Maximum Value: 104.0 at 80.8 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: IN2-004

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



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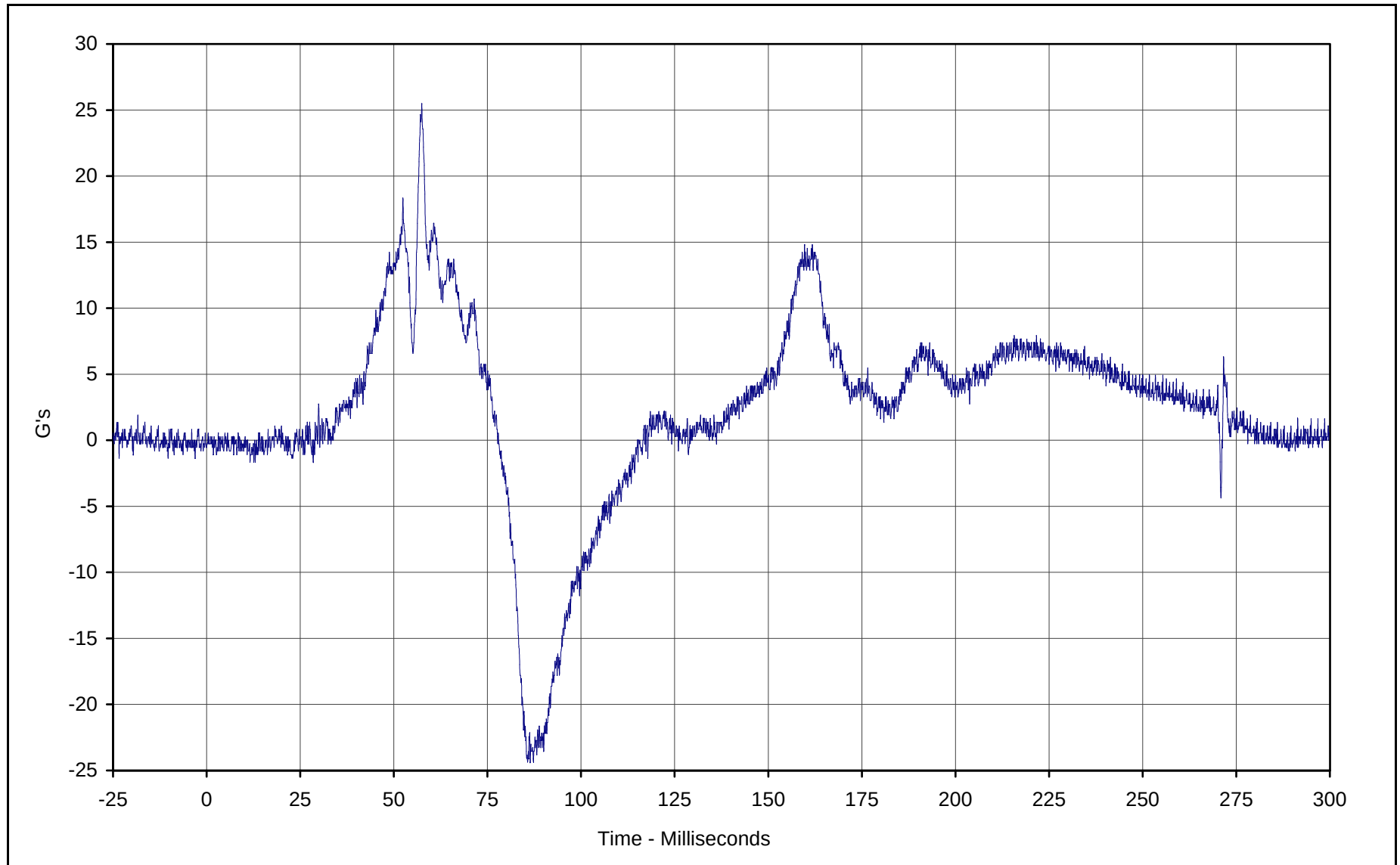


Curve Description: Driver Head Redundant Y
Maximum Value: 14.8 at 160.9 Milliseconds
Minimum Value: -10.8 at 85.9 Milliseconds
SAE Filter Class: 1000
Date of Test: 01/04/01
Curve Number: FIL-005

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



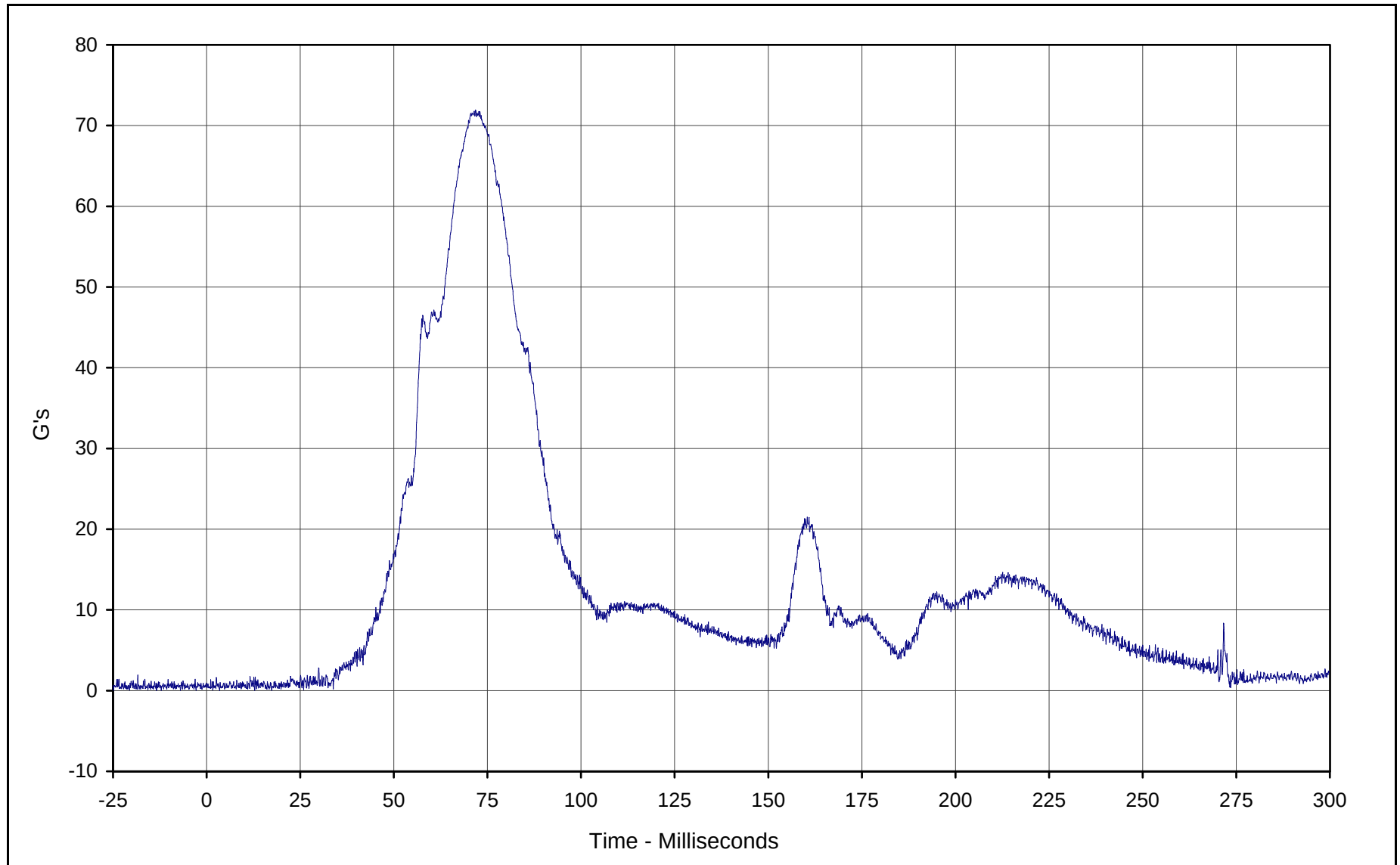
KAR21001-01



Curve Description: Driver Head Redundant Z
Maximum Value: 25.5 at 57.5 Milliseconds
Minimum Value: -24.4 at 85.7 Milliseconds
SAE Filter Class: 1000
Date of Test: 01/04/01
Curve Number: FIL-006

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

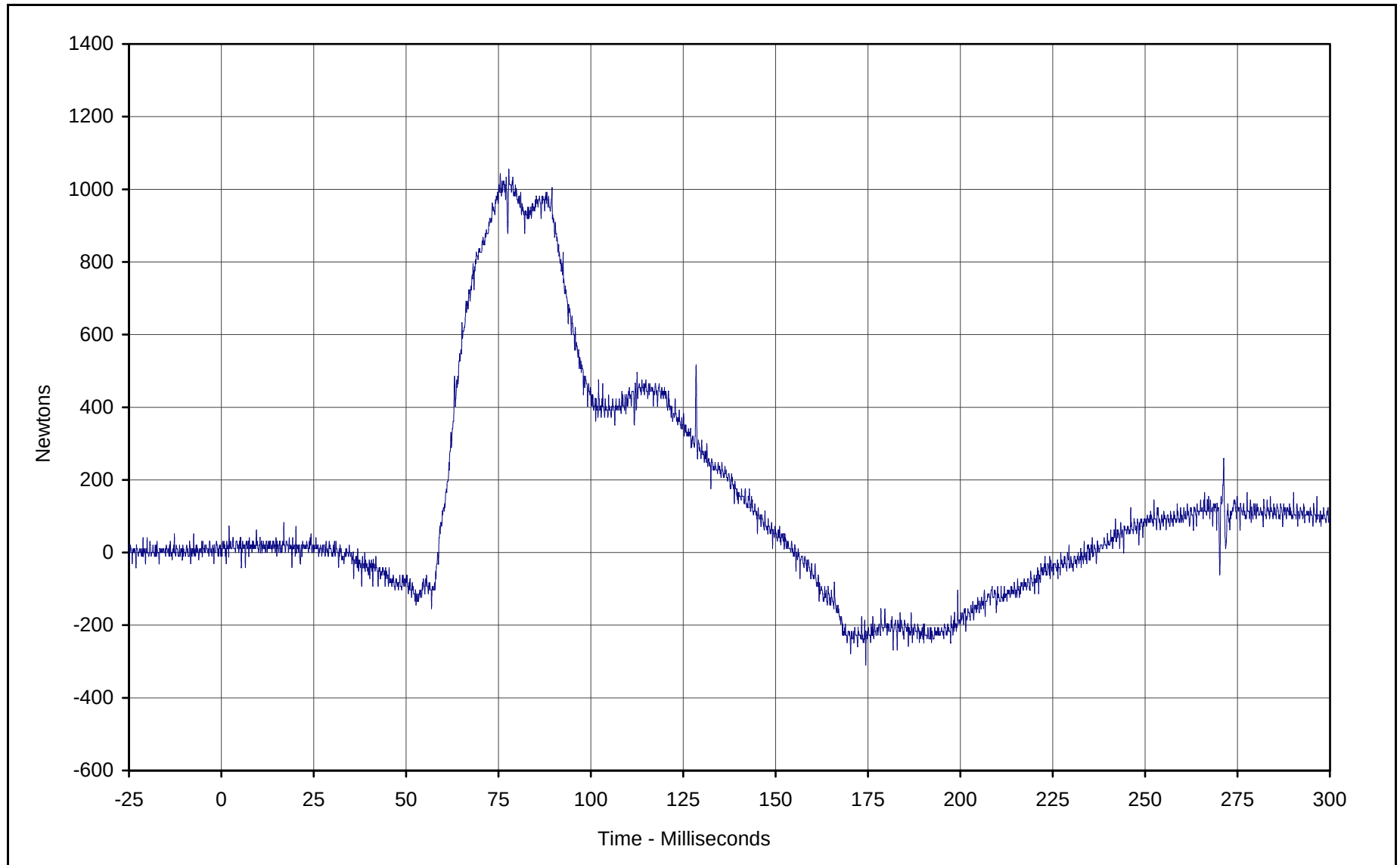




Curve Description: Driver Head Resultant Redundant
Maximum Value: 71.9 at 71.8 Milliseconds
Minimum Value: 0.0 at 3.5 Milliseconds
SAE Filter Class: 1000
Date of Test: 01/04/01
Curve Number: RES-004

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

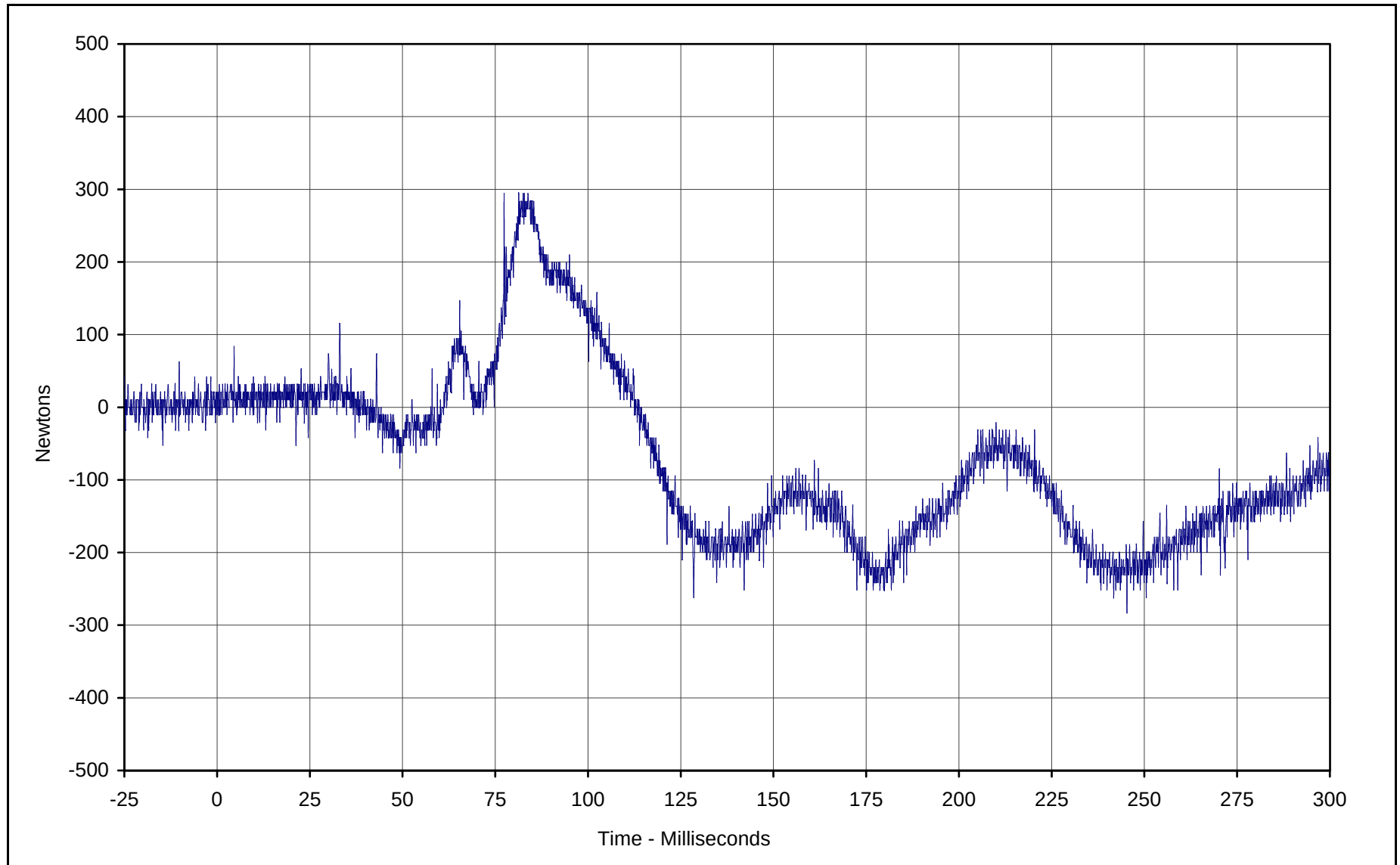




Curve Description: Driver Neck Force X
Maximum Value: 1054.1 at 77.8 Milliseconds
Minimum Value: -310.0 at 174.4 Milliseconds
SAE Filter Class: 1000
Date of Test: 01/04/01
Curve Number: FIL-007

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

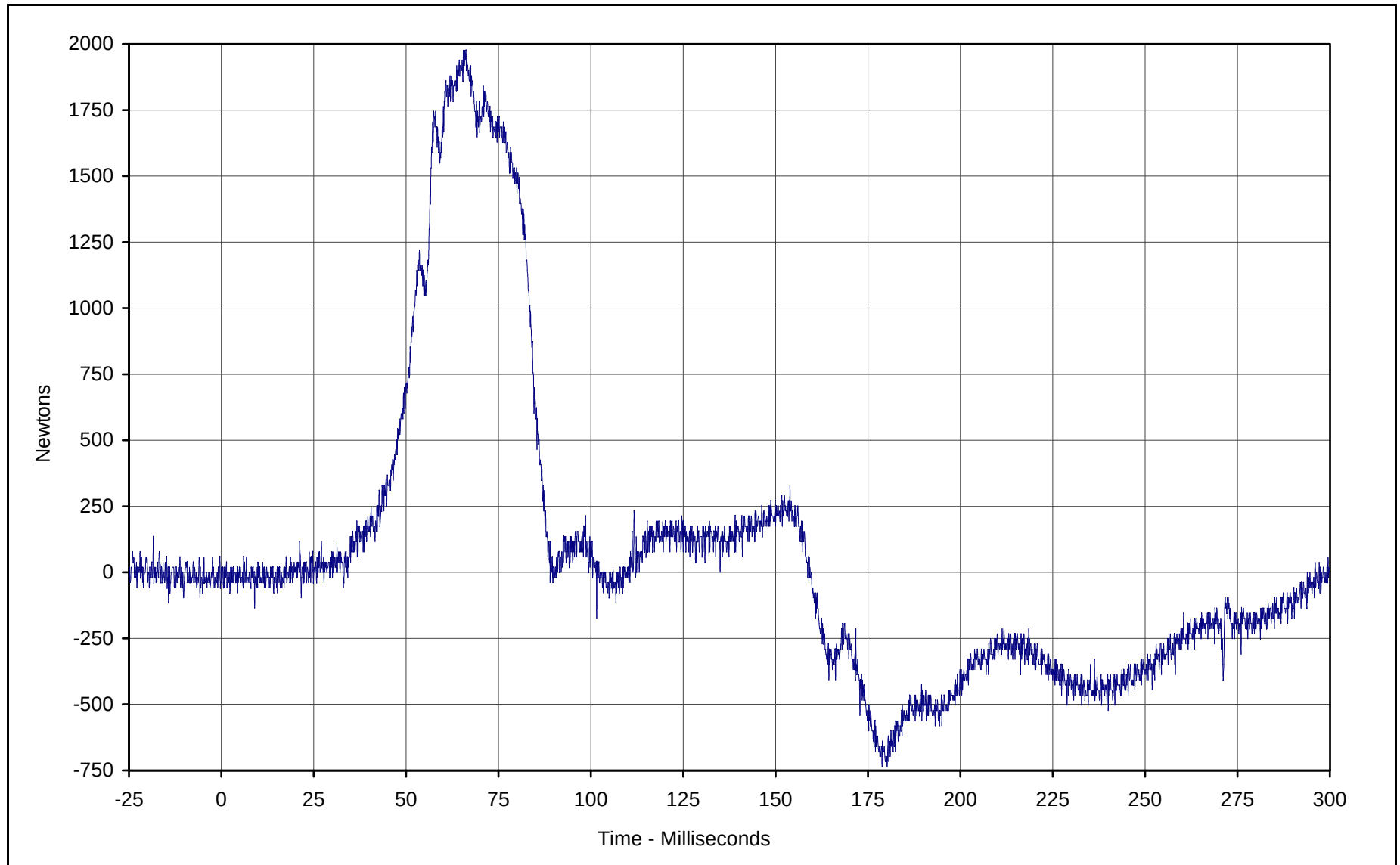




Curve Description: Driver Neck Force Y
Maximum Value: 294.0 at 77.4 Milliseconds
Minimum Value: -283.5 at 245.3 Milliseconds
SAE Filter Class: 1000
Date of Test: 01/04/01
Curve Number: FIL-008

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

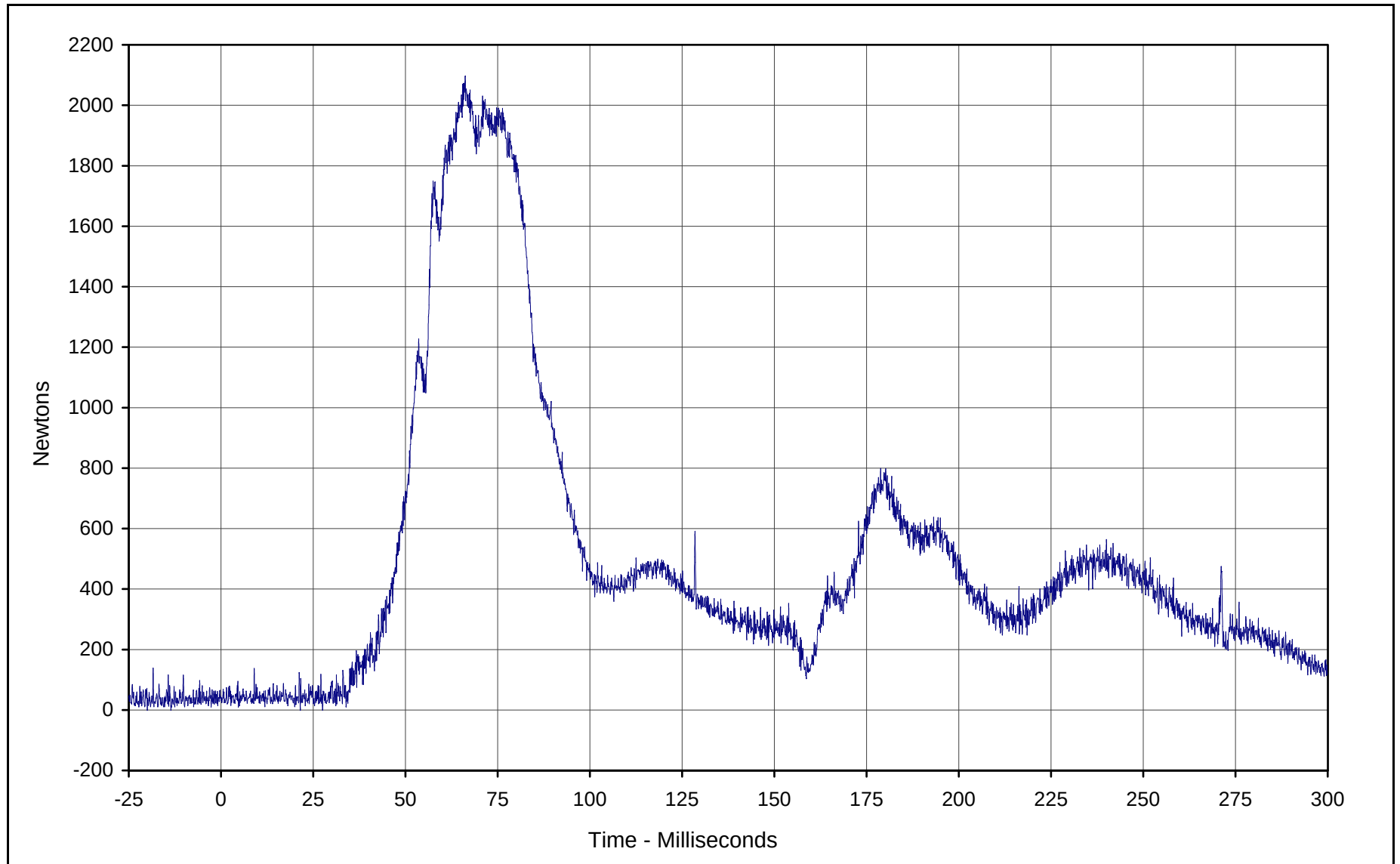




Curve Description: Driver Neck Force Z
Maximum Value: 1976.6 at 65.5 Milliseconds
Minimum Value: -736.4 at 178.8 Milliseconds
SAE Filter Class: 1000
Date of Test: 01/04/01
Curve Number: FIL-009

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

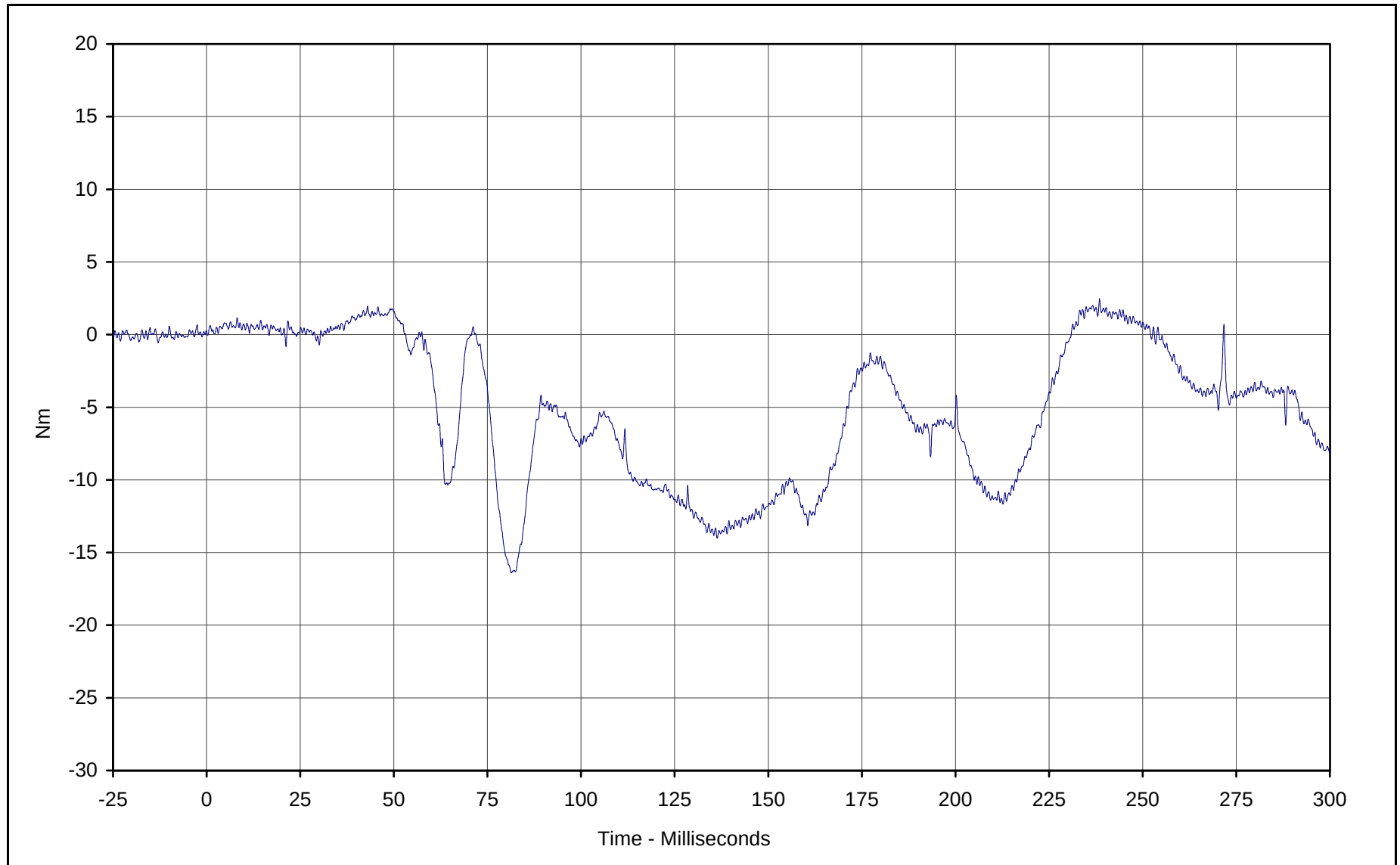




Curve Description: Driver Neck Force Resultant
Maximum Value: 2095.6 at 66.2 Milliseconds
Minimum Value: 0.0 at 21.5 Milliseconds
SAE Filter Class: 1000
Date of Test: 01/04/01
Curve Number: RES-007

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



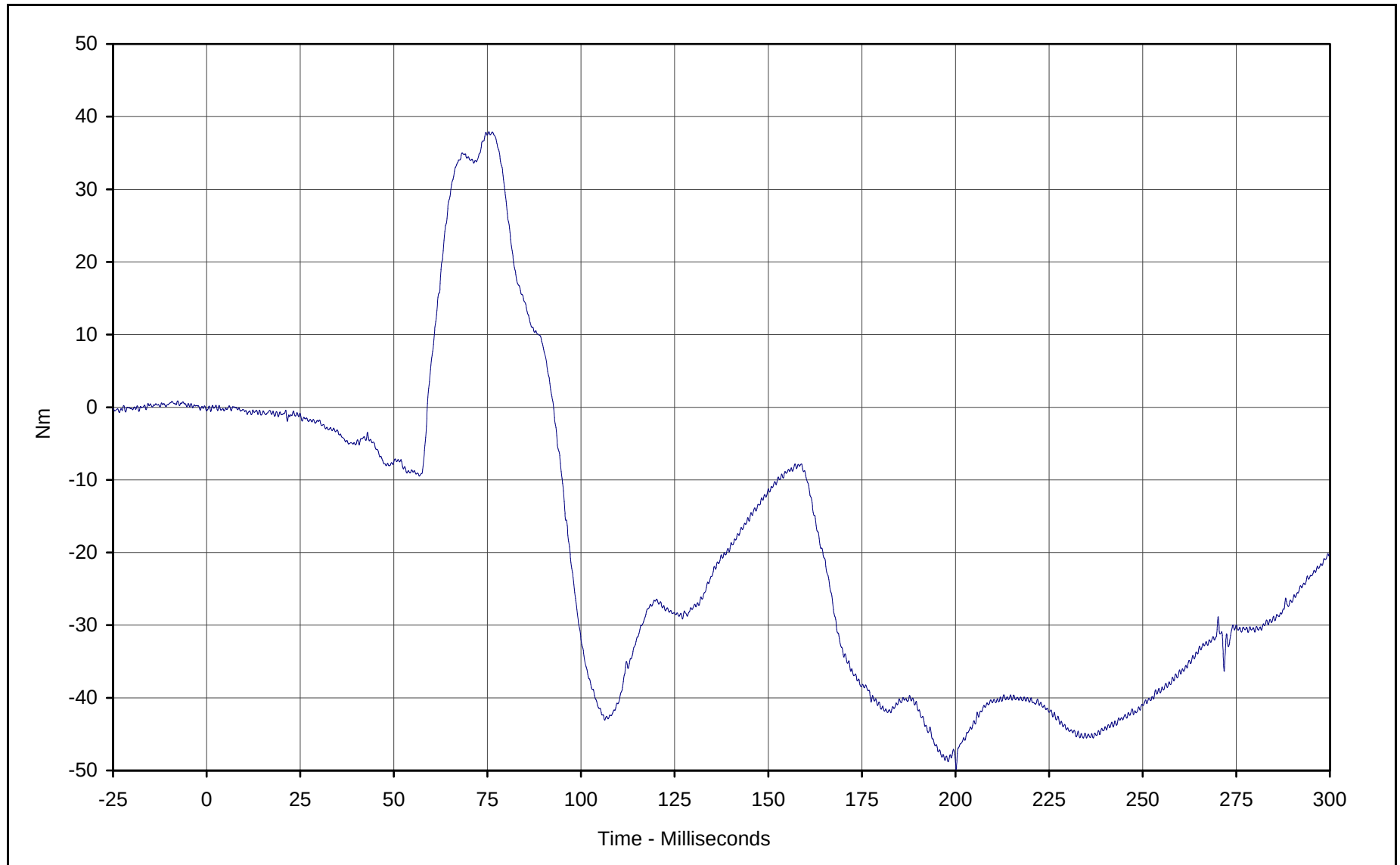


Curve Description: Driver Neck Moment X
Maximum Value: 2.5 at 238.5 Milliseconds
Minimum Value: -16.4 at 81.4 Milliseconds
SAE Filter Class: 600
Date of Test: 01/04/01
Curve Number: FIL-010

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



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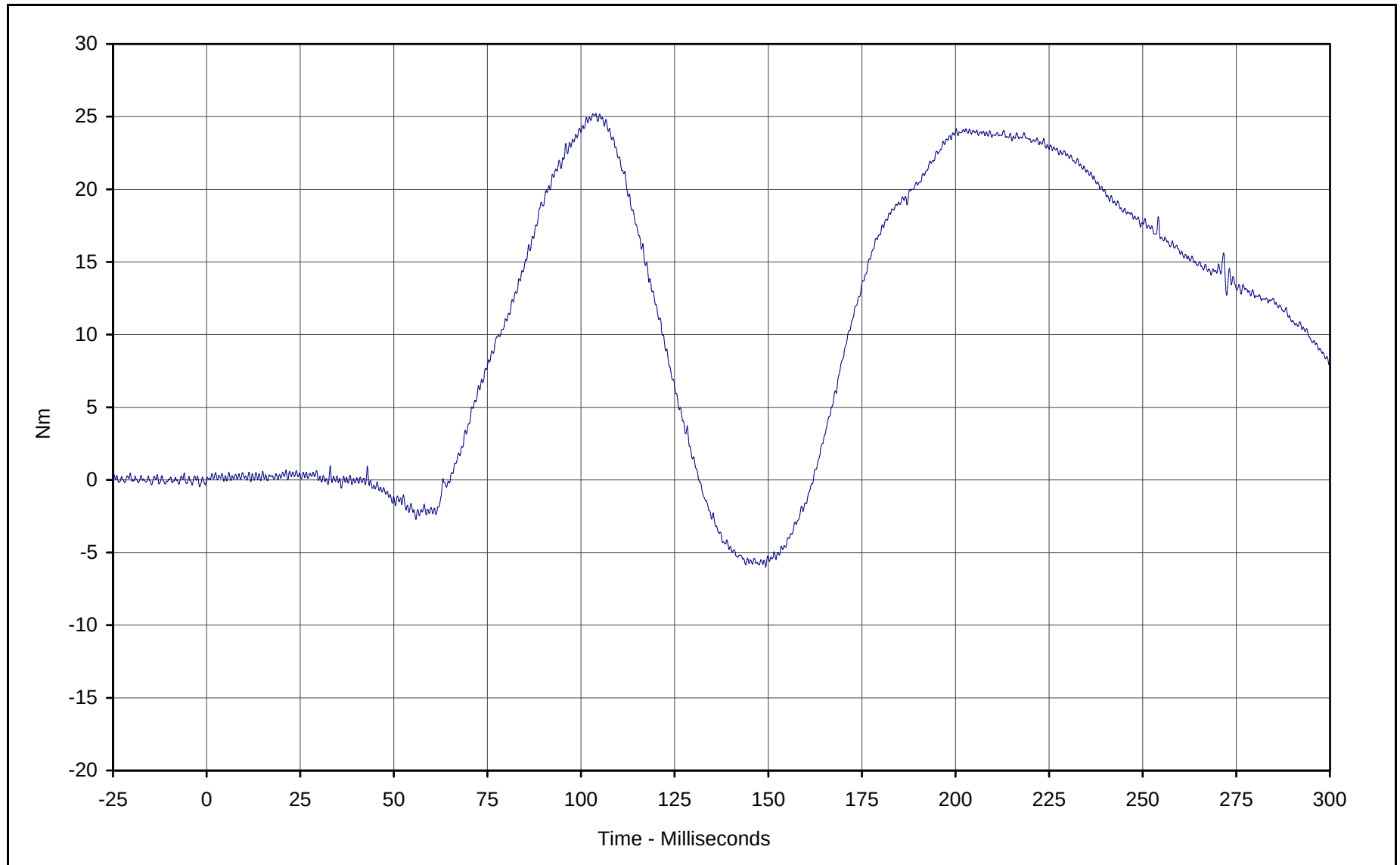


Curve Description: Driver Neck Moment Y
Maximum Value: 37.9 at 75.4 Milliseconds
Minimum Value: -49.9 at 200.2 Milliseconds
SAE Filter Class: 600
Date of Test: 01/04/01
Curve Number: FIL-011

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



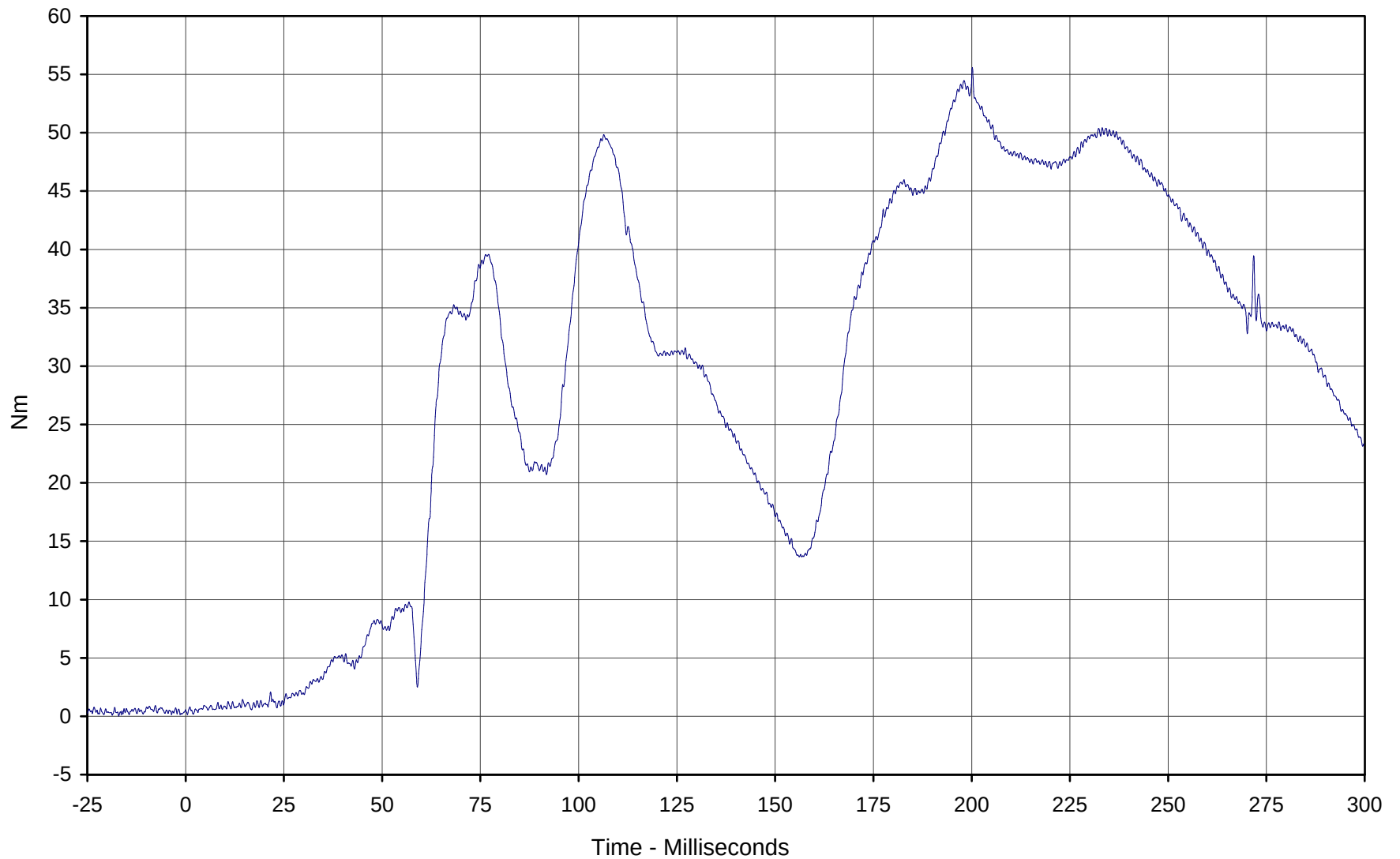
KAR21001-01



Curve Description: Driver Neck Moment Z
Maximum Value: 25.2 at 104.0 Milliseconds
Minimum Value: -6.0 at 149.3 Milliseconds
SAE Filter Class: 600
Date of Test: 01/04/01
Curve Number: FIL-012

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



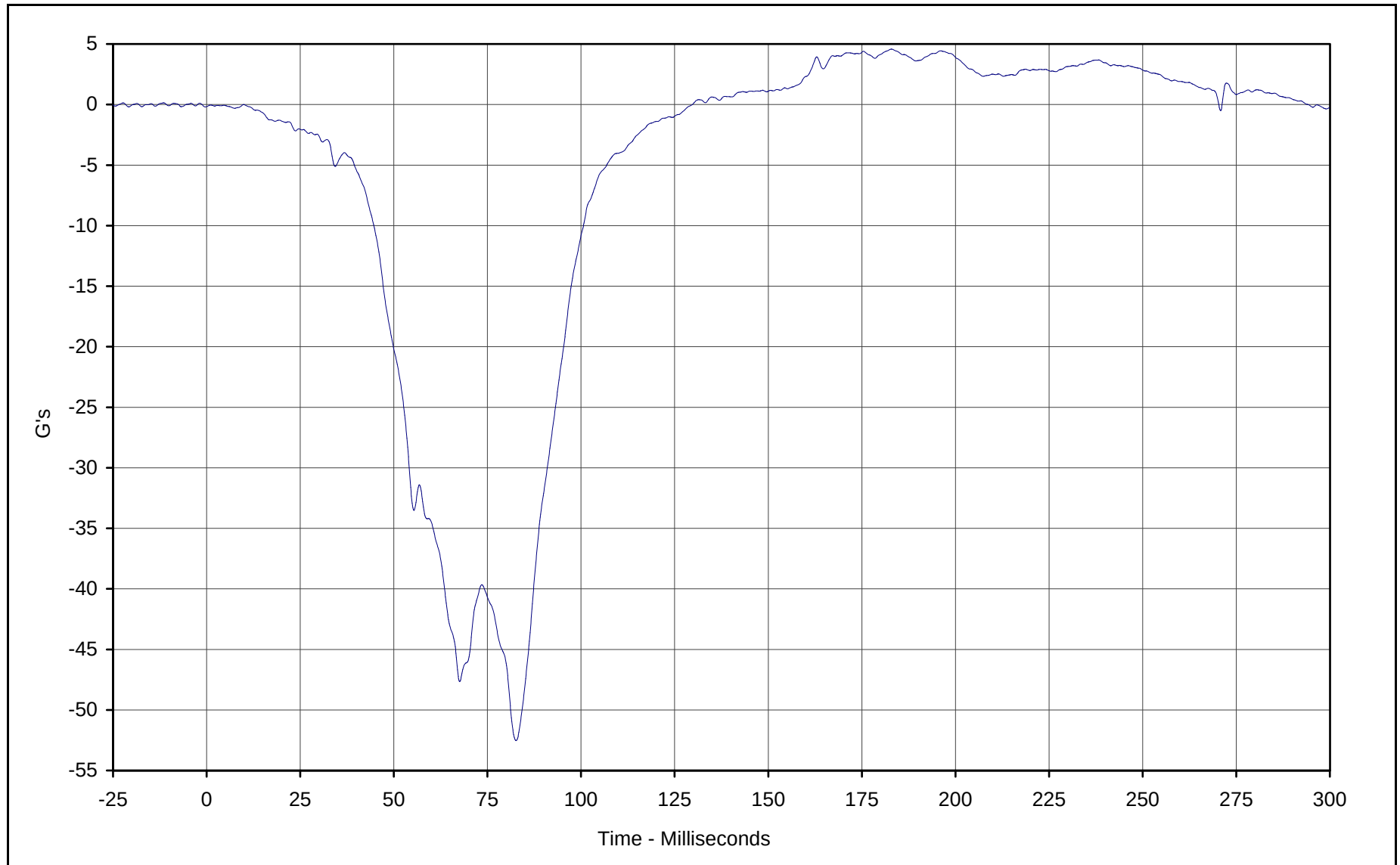


Curve Description: Driver Neck Moment Resultant
Maximum Value: 55.6 at 200.2 Milliseconds
Minimum Value: 0.1 at 0.5 Milliseconds
SAE Filter Class: 600
Date of Test: 01/04/01
Curve Number: RES-010

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



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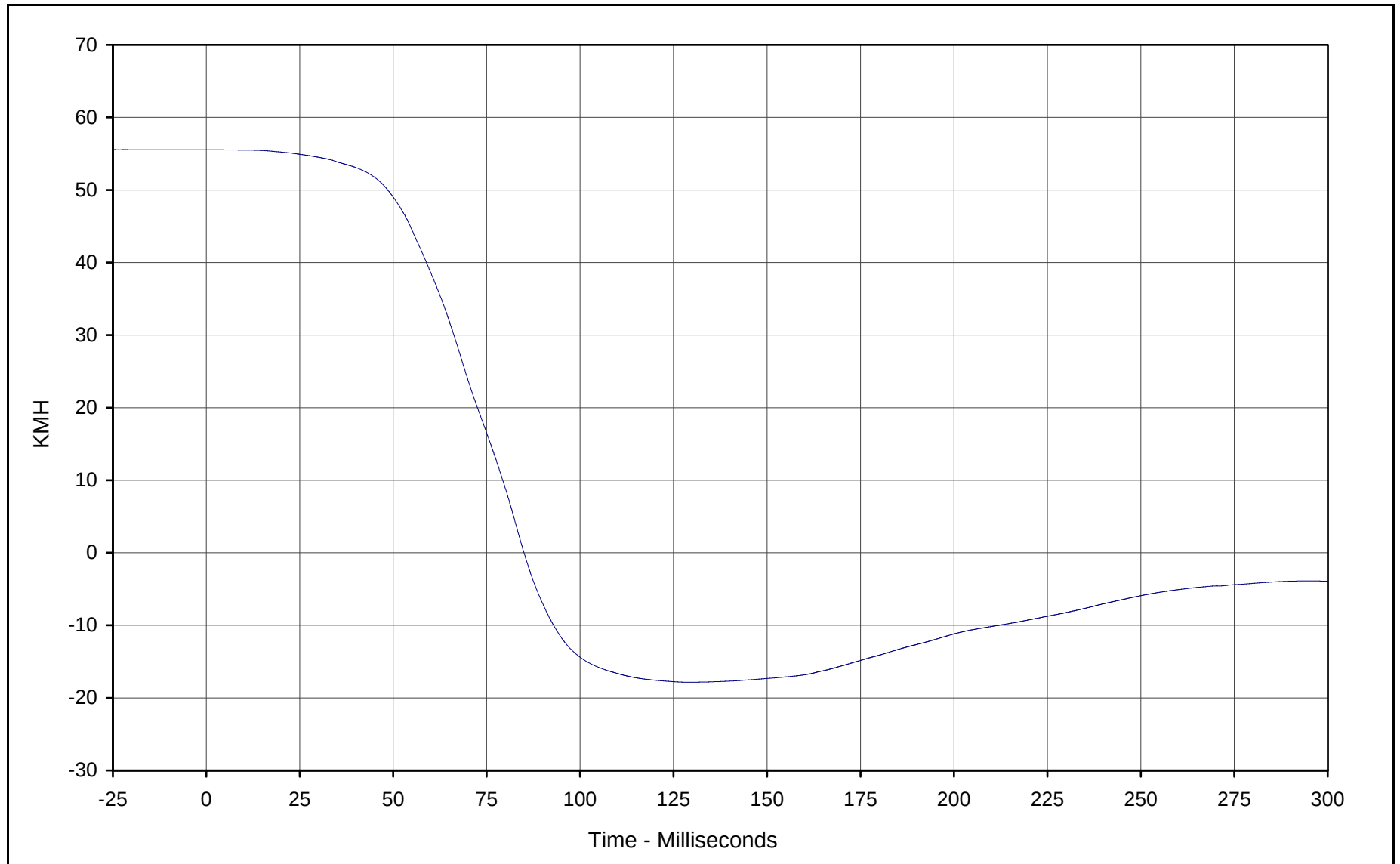


Curve Description: Driver Chest Primary X
Maximum Value: 4.6 at 182.9 Milliseconds
Minimum Value: -52.5 at 82.6 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: FIL-013

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



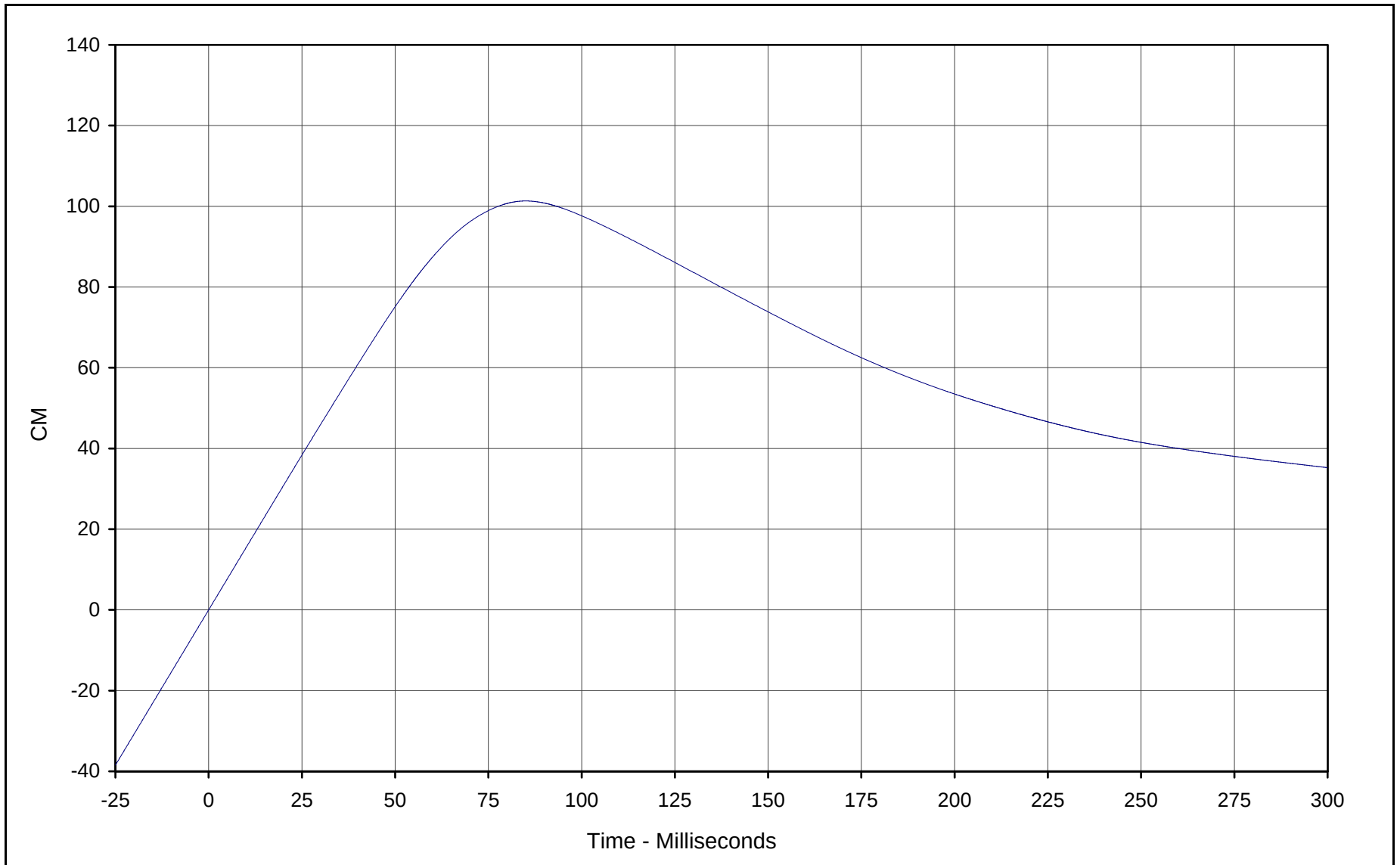
KAR21001-01



Curve Description: Driver Chest Primary X Velocity
Maximum Value: 55.5 at 0.0 Milliseconds
Minimum Value: -17.9 at 129.7 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: IN1-013

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

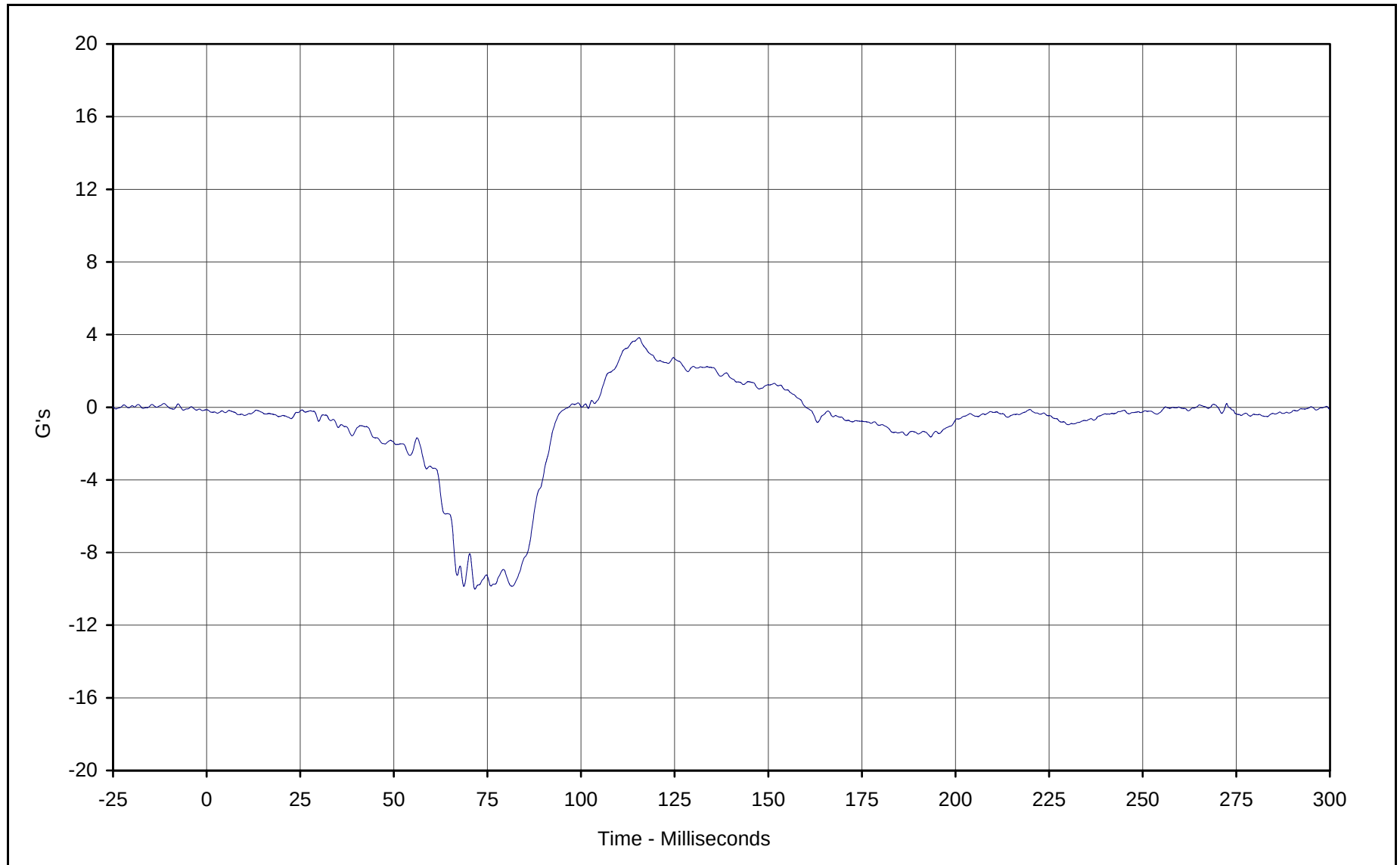




Curve Description: Driver Chest Primary X Displ.
Maximum Value: 101.3 at 85.0 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: IN2-013

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



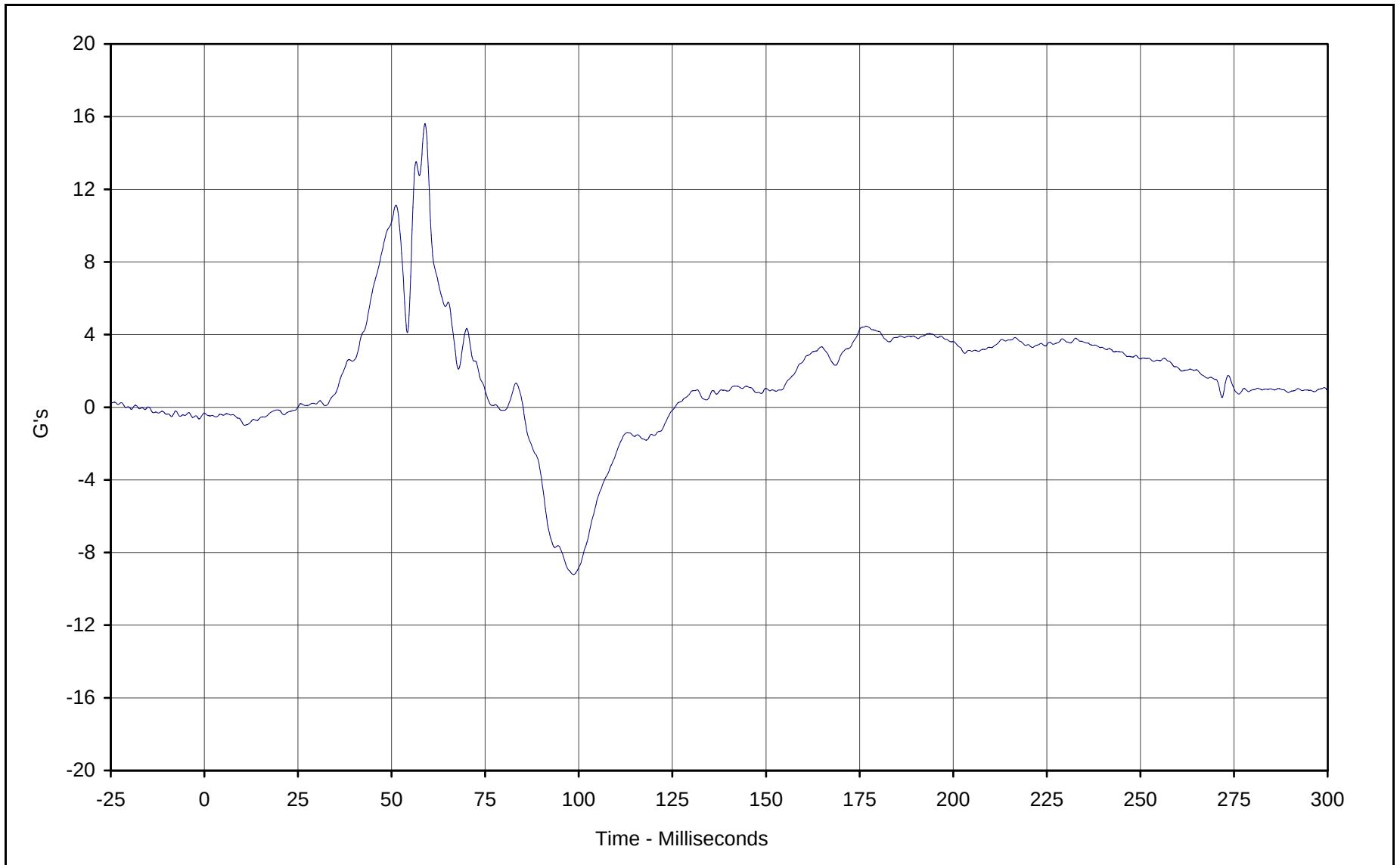


Curve Description: Driver Chest Primary Y
Maximum Value: 3.8 at 115.5 Milliseconds
Minimum Value: -10.0 at 71.7 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: FIL-014

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



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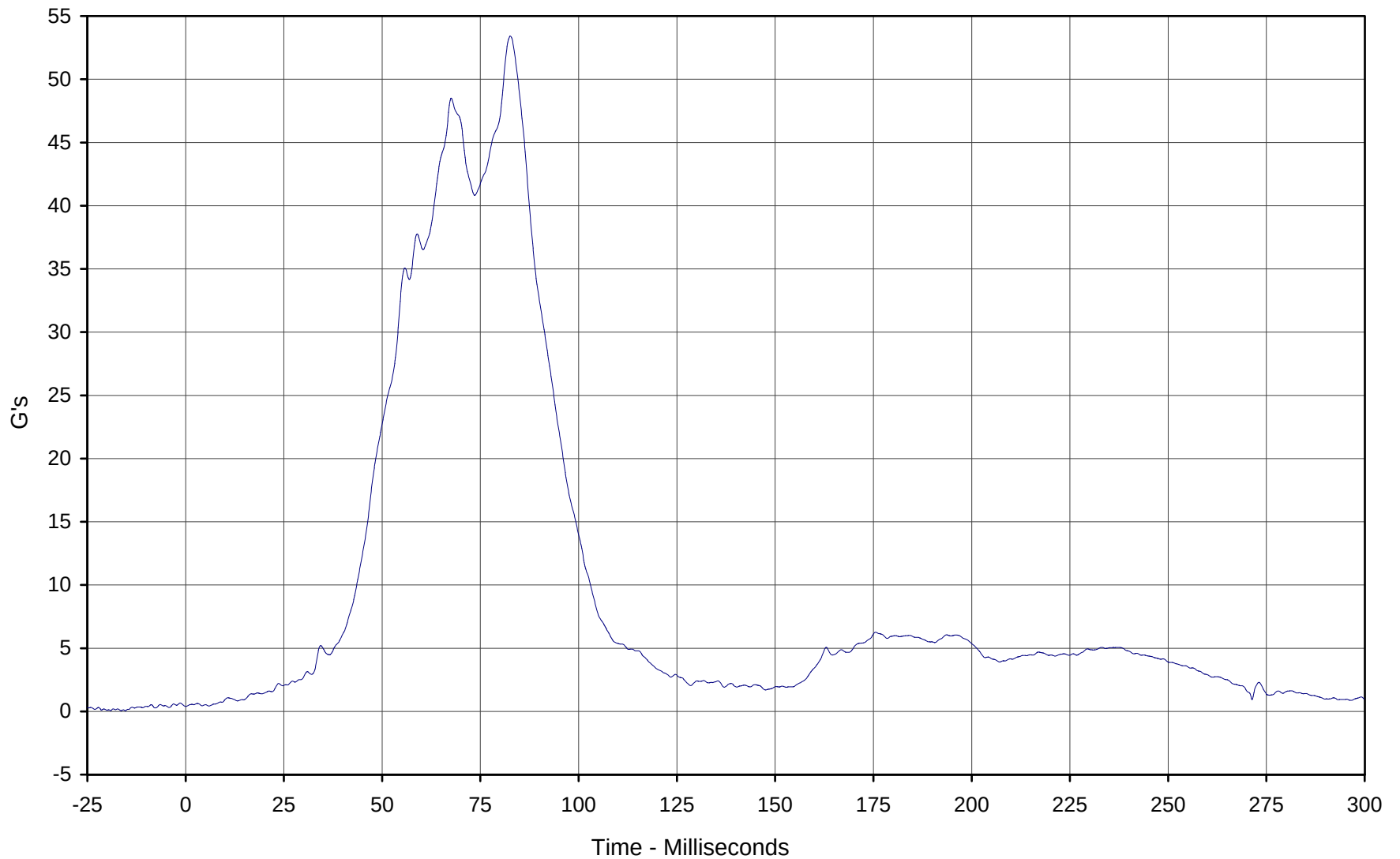


Curve Description: Driver Chest Primary Z
Maximum Value: 15.6 at 58.9 Milliseconds
Minimum Value: -9.2 at 98.6 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: FIL-015

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



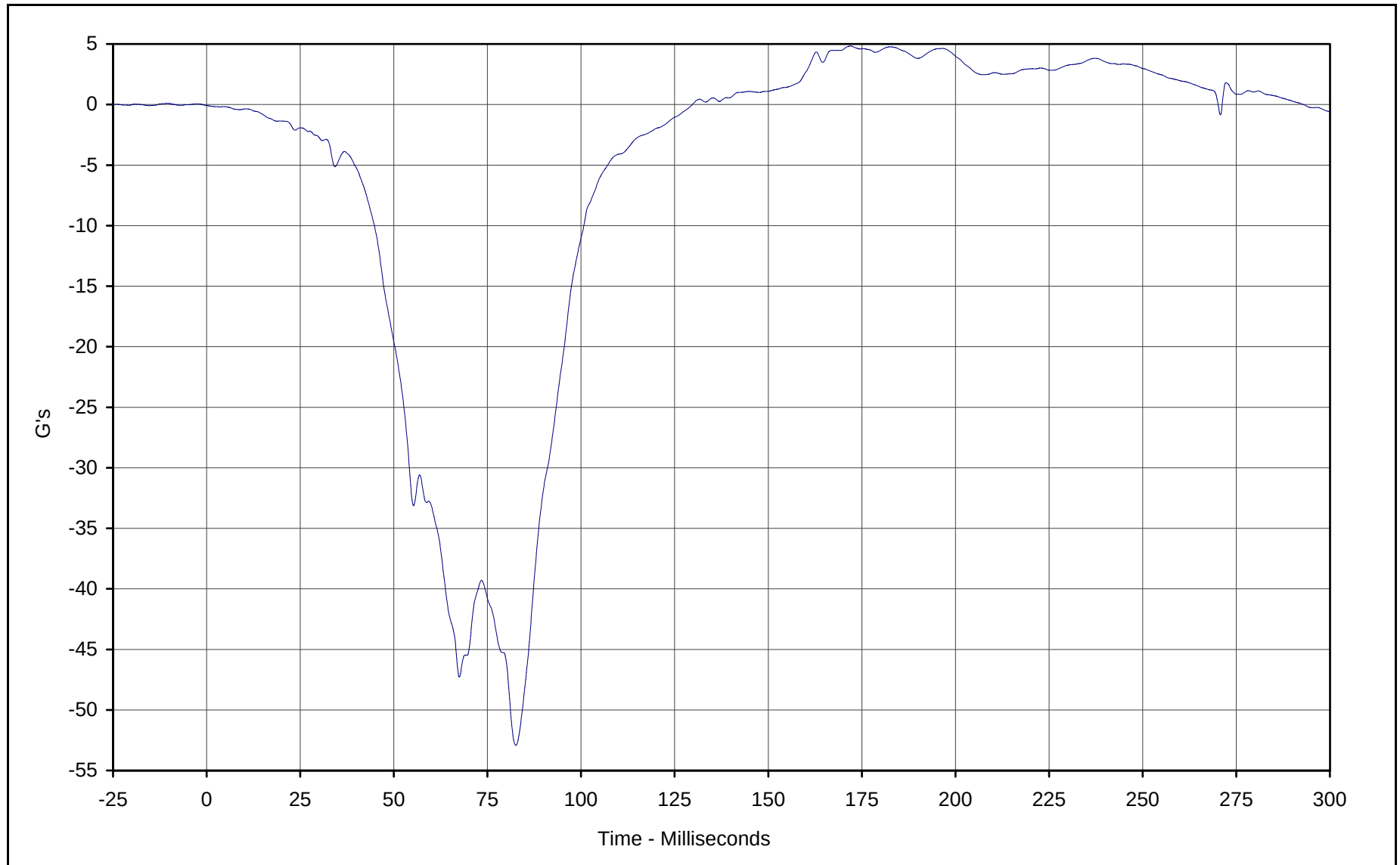
KAR21001-01



Curve Description: Driver Chest Resultant Primary
Maximum Value: 53.4 at 82.6 Milliseconds
Minimum Value: 0.4 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: RES-013

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

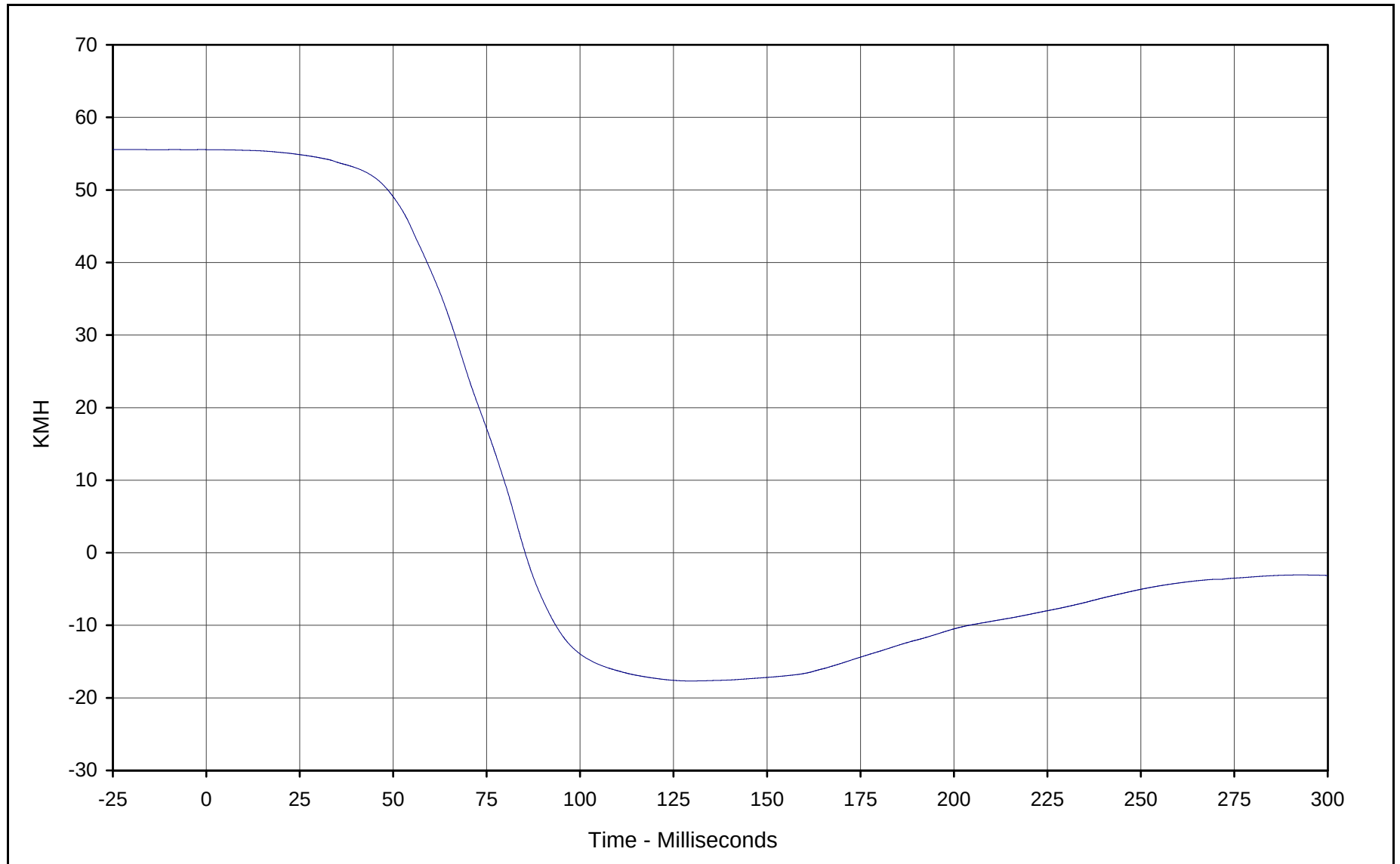




Curve Description: Driver Chest Redundant X
Maximum Value: 4.8 at 172.0 Milliseconds
Minimum Value: -52.9 at 82.6 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: FIL-016

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

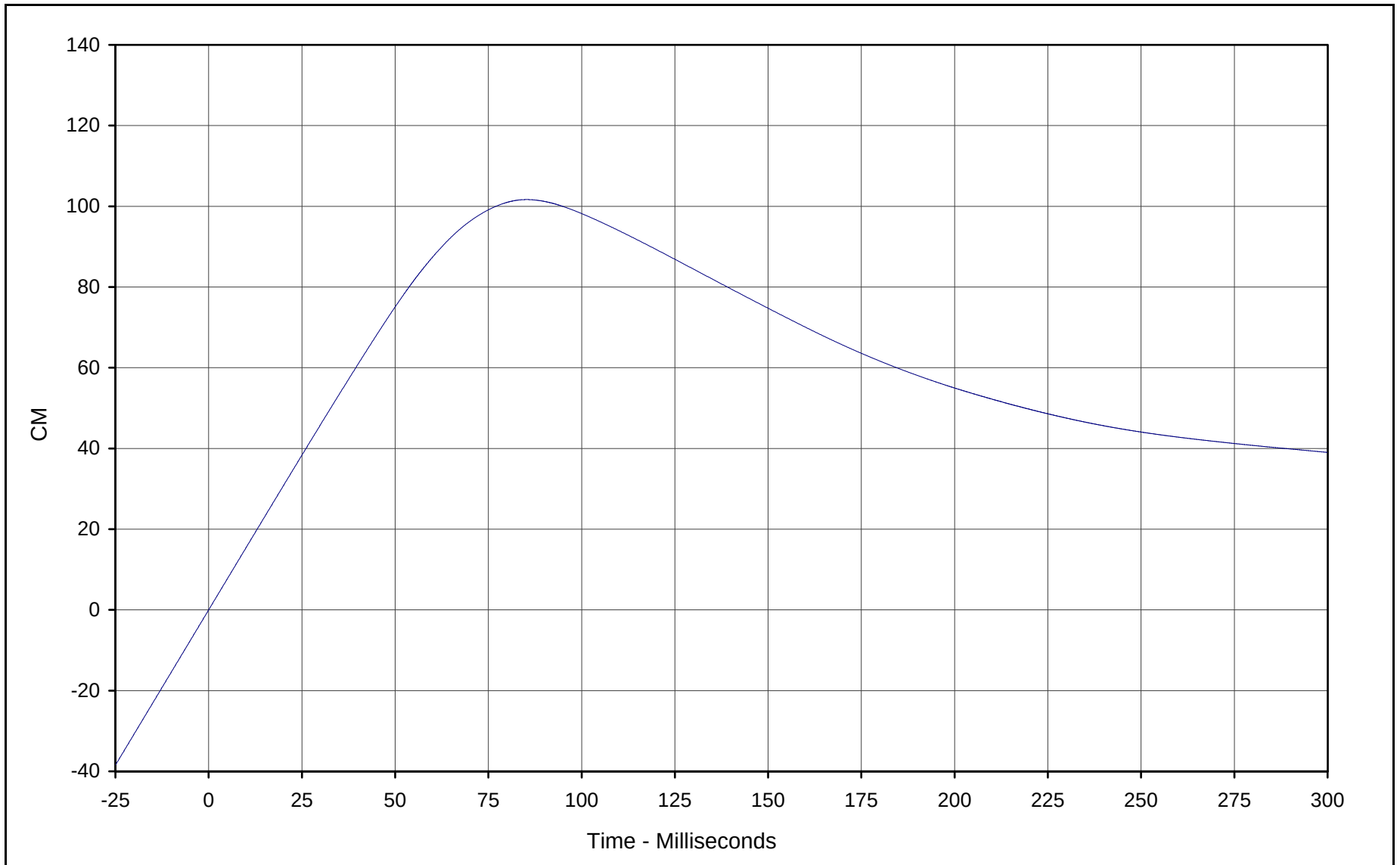




Curve Description: Driver Chest Redundant X Velocity
Maximum Value: 55.6 at 0.0 Milliseconds
Minimum Value: -17.7 at 129.7 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: IN1-016

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



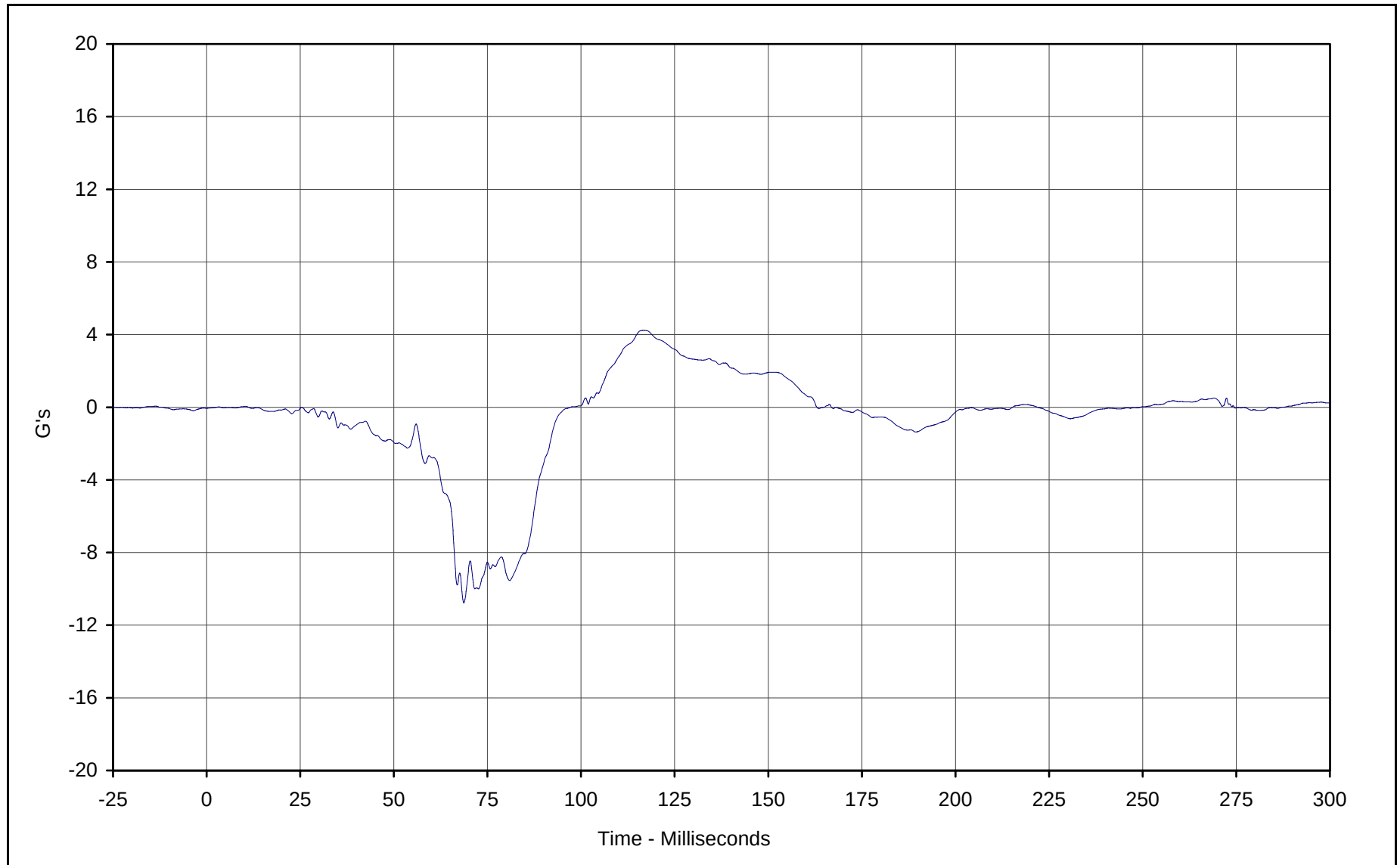


Curve Description: Driver Chest Redundant X Displ.
Maximum Value: 101.7 at 85.3 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: IN2-016

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



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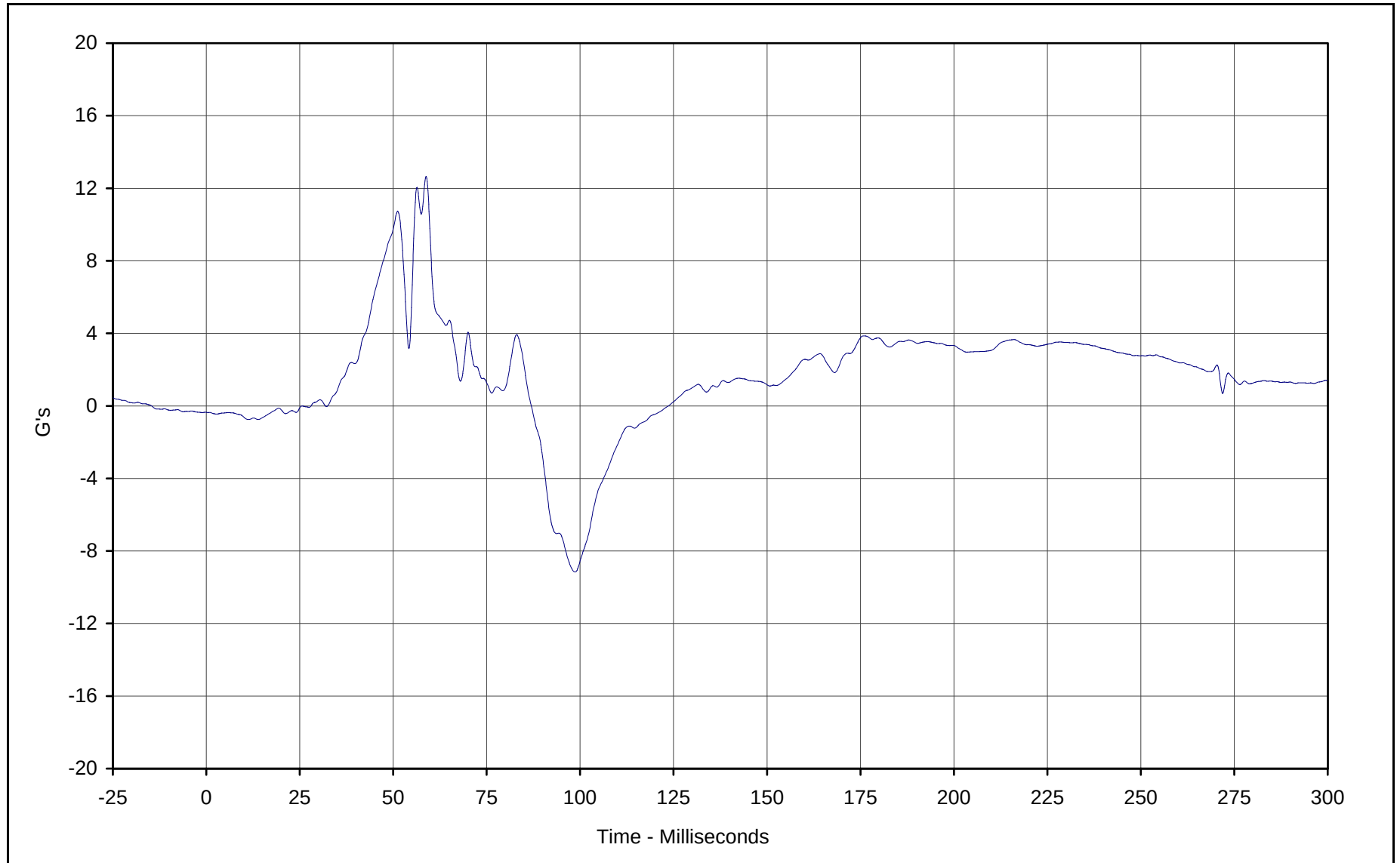


Curve Description: Driver Chest Redundant Y
Maximum Value: 4.2 at 116.7 Milliseconds
Minimum Value: -10.8 at 68.7 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: FIL-017

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



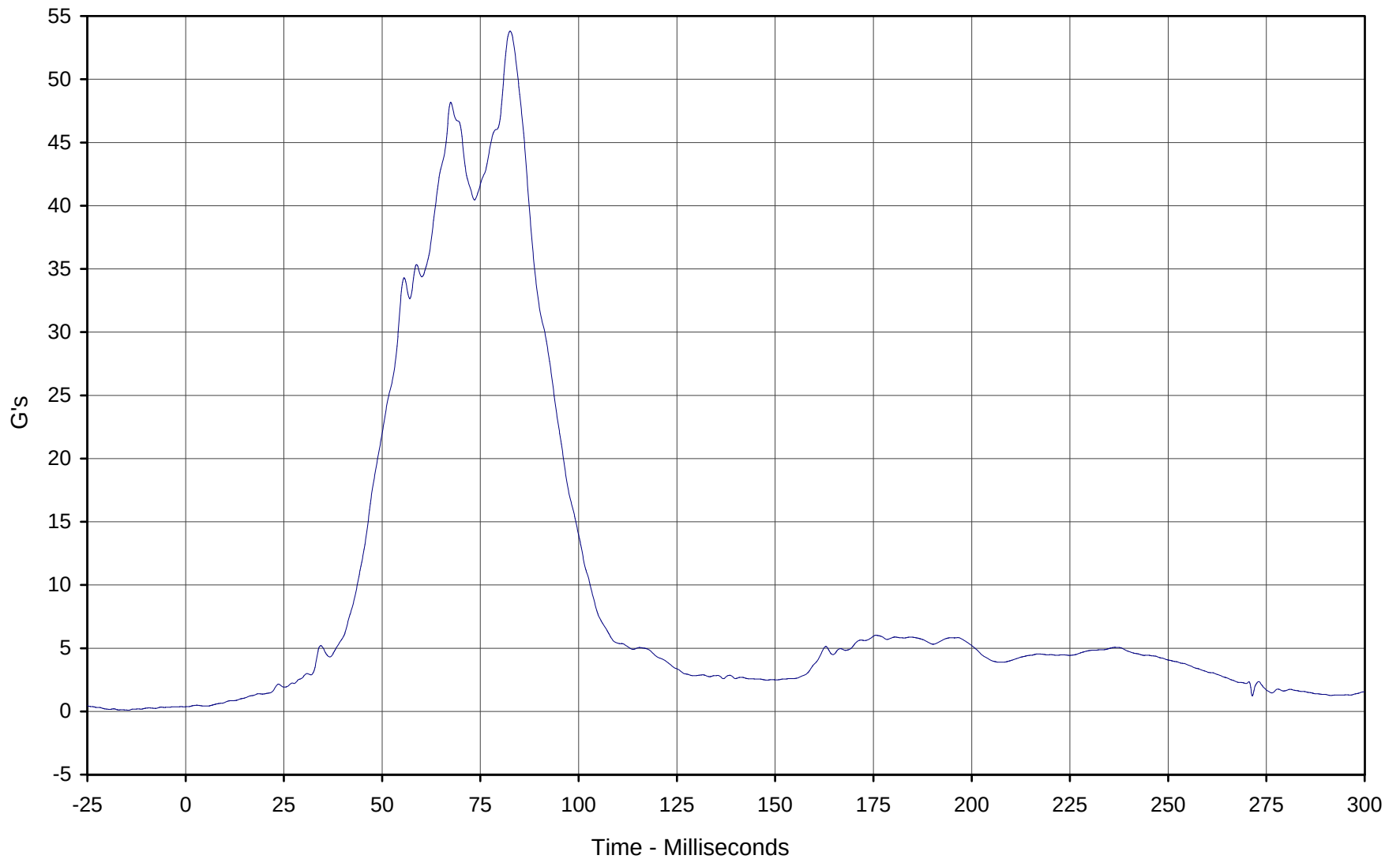
KAR21001-01



Curve Description: Driver Chest Redundant Z
Maximum Value: 12.7 at 58.8 Milliseconds
Minimum Value: -9.2 at 98.6 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: FIL-018

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

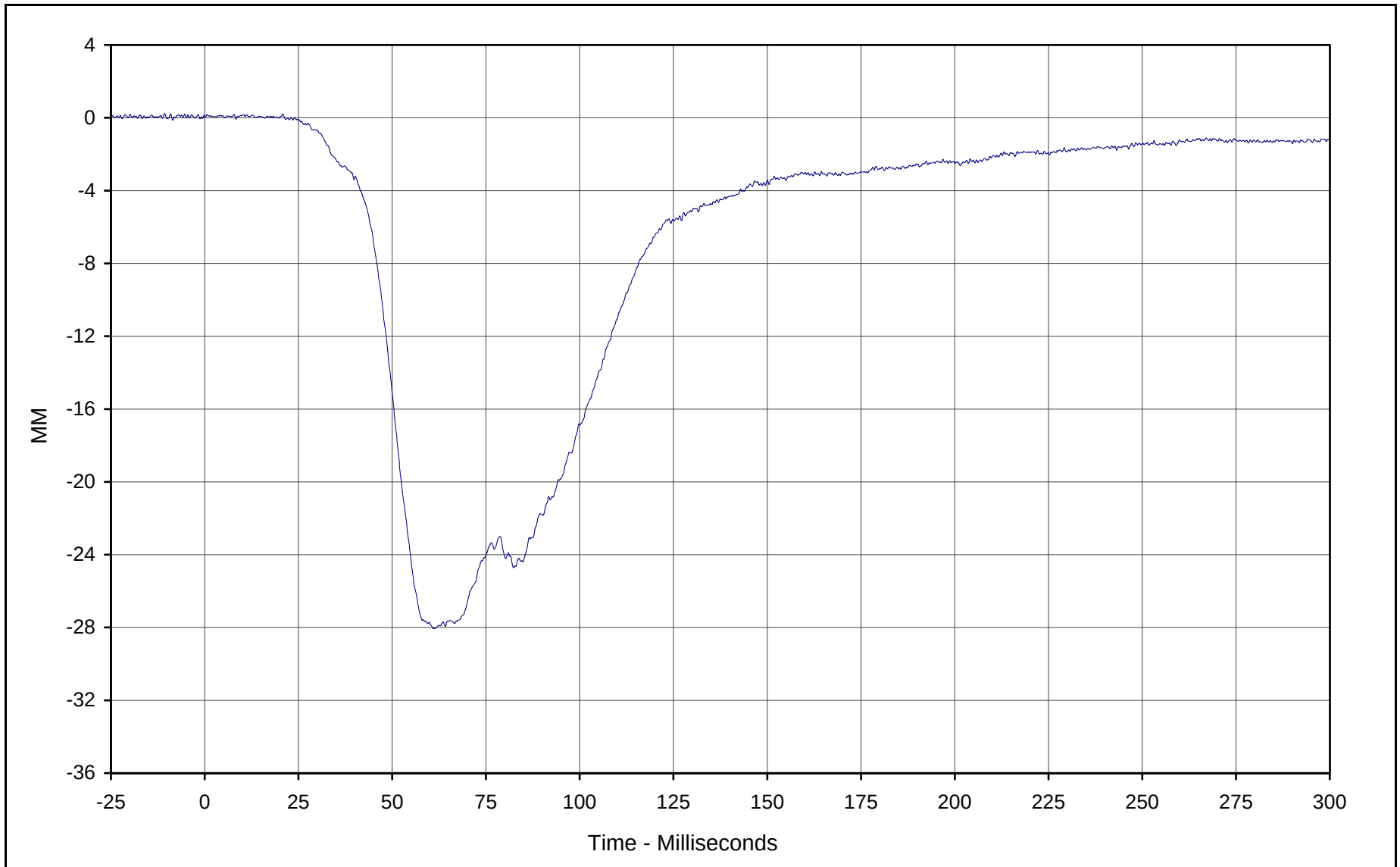




Curve Description: Driver Chest Resultant Redundant
Maximum Value: 53.8 at 82.6 Milliseconds
Minimum Value: 0.4 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: RES-016

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

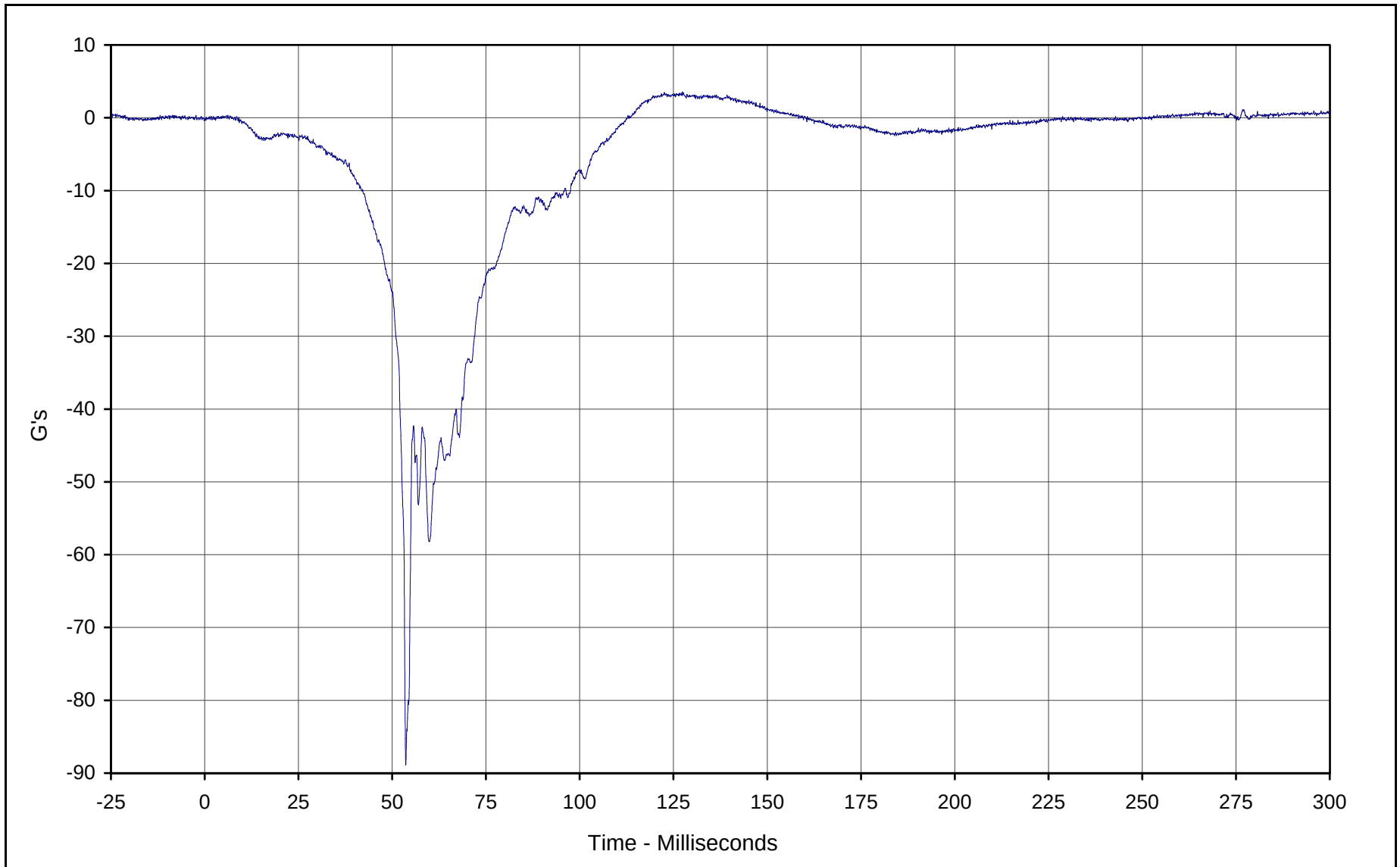




Curve Description: Driver Chest Displacement X
Maximum Value: 0.2 at 20.9 Milliseconds
Minimum Value: -28.1 at 61.4 Milliseconds
SAE Filter Class: 600
Date of Test: 01/04/01
Curve Number: FIL-019

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Driver Pelvis X

Maximum Value: 3.6 at 127.4 Milliseconds

Minimum Value: -88.8 at 53.6 Milliseconds

SAE Filter Class: 1000

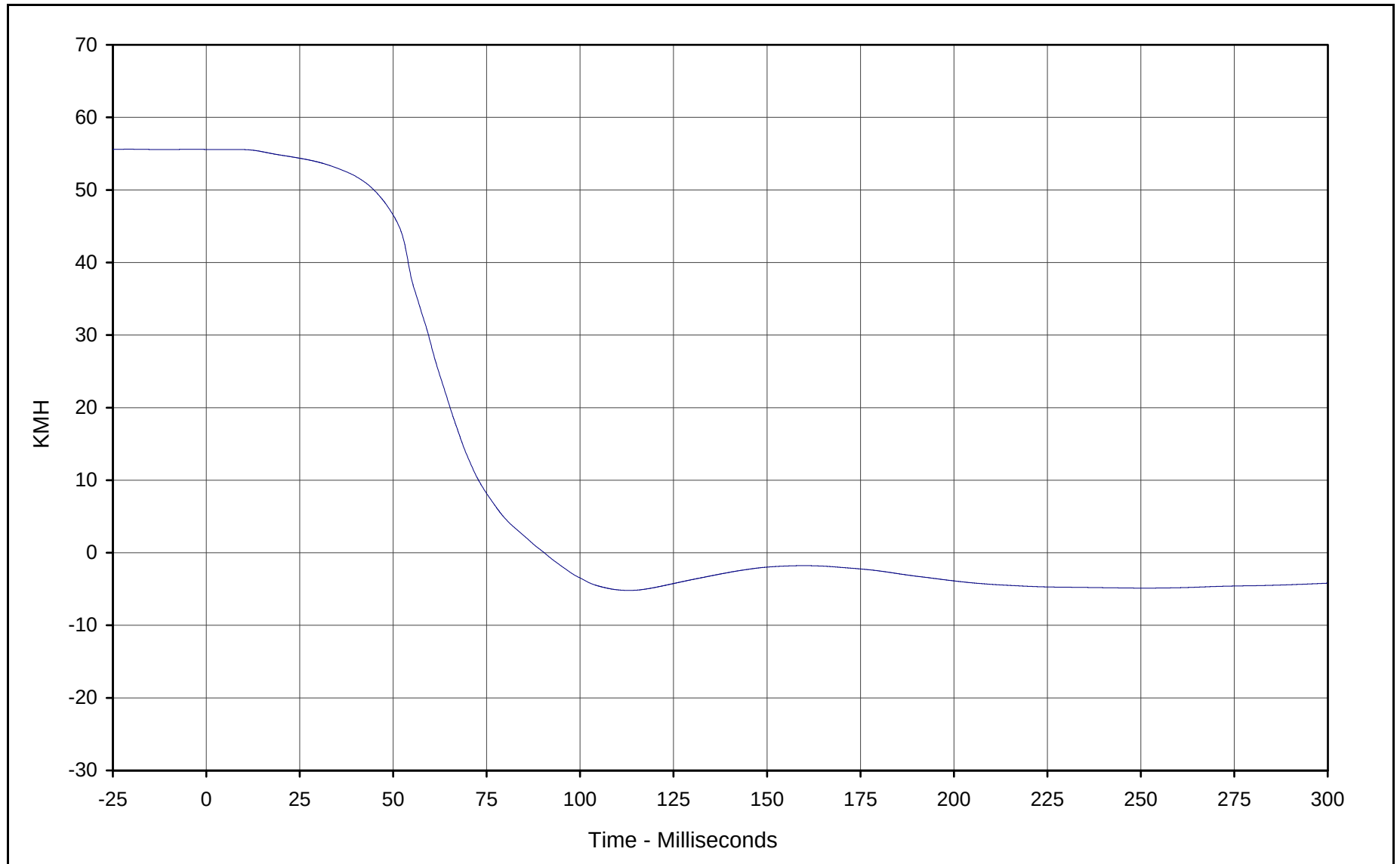
Date of Test: 01/04/01

Curve Number: FIL-020

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Driver Pelvis X Velocity

Maximum Value: 55.6 at 7.4 Milliseconds

Minimum Value: -5.2 at 112.9 Milliseconds

SAE Filter Class: 180

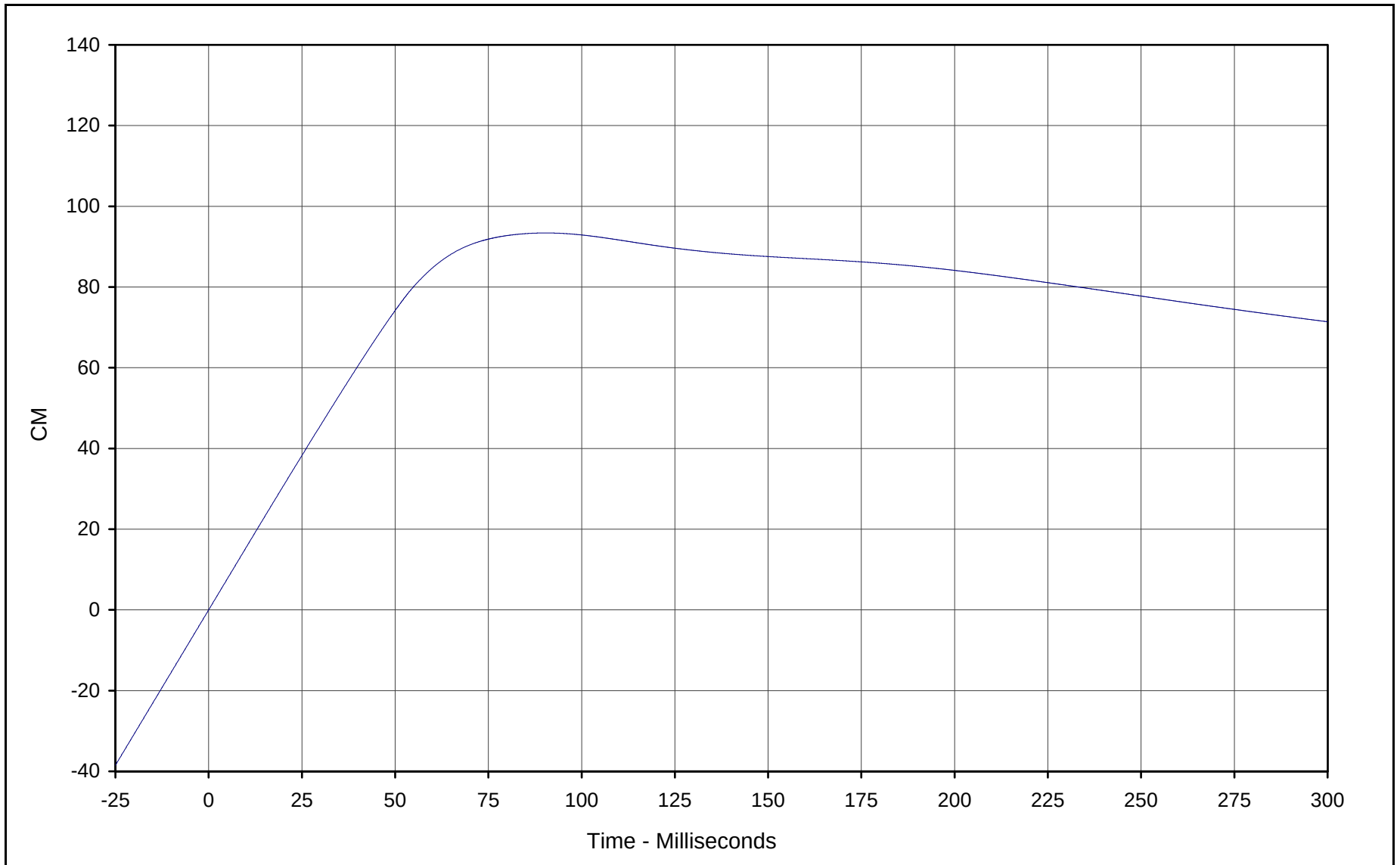
Date of Test: 01/04/01

Curve Number: IN1-020

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Driver Pelvis X Displ.

Maximum Value: 93.4 at 90.4 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

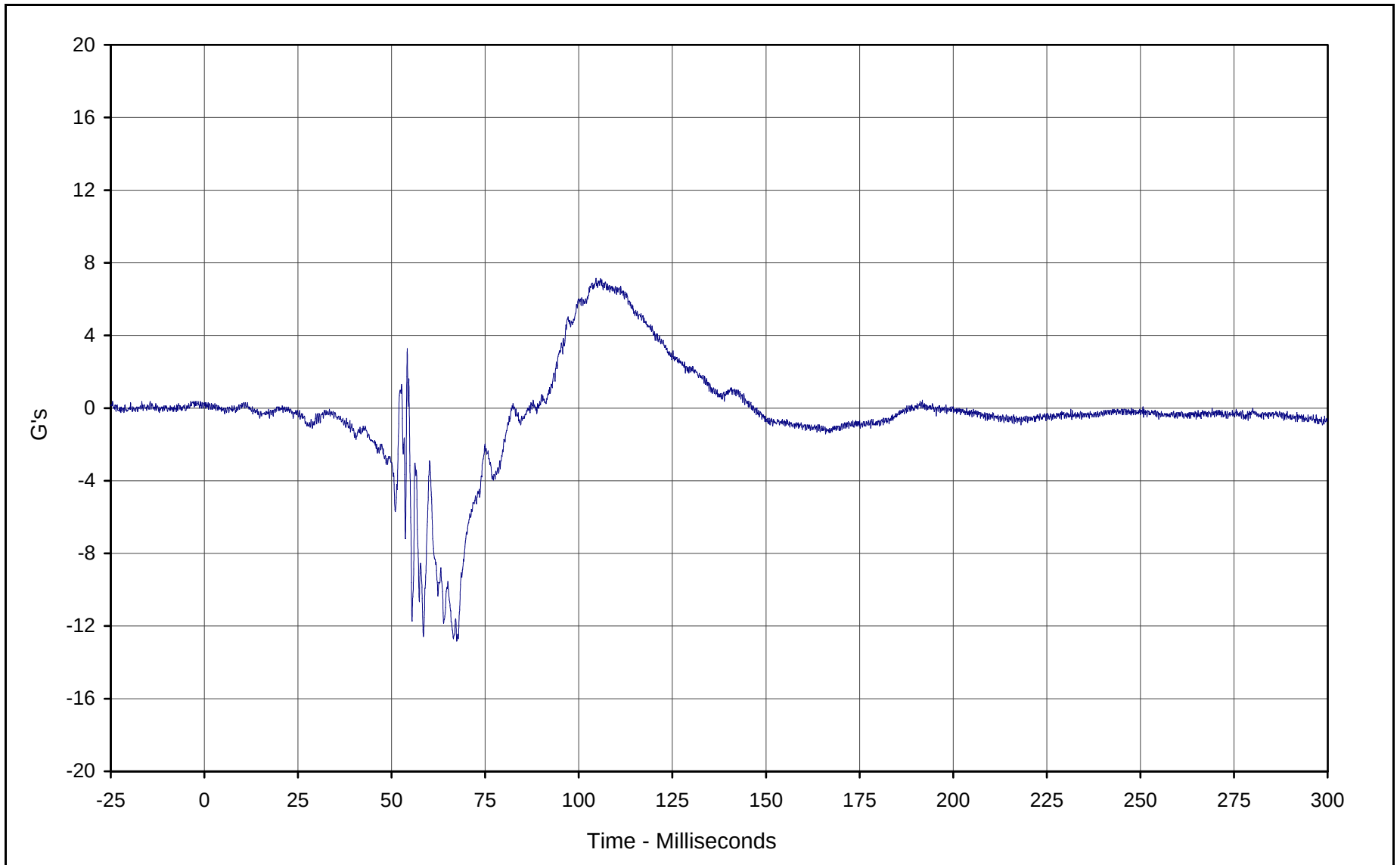
Date of Test: 01/04/01

Curve Number: IN2-020

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Driver Pelvis Y

Maximum Value: 7.1 at 104.6 Milliseconds

Minimum Value: -12.8 at 67.4 Milliseconds

SAE Filter Class: 1000

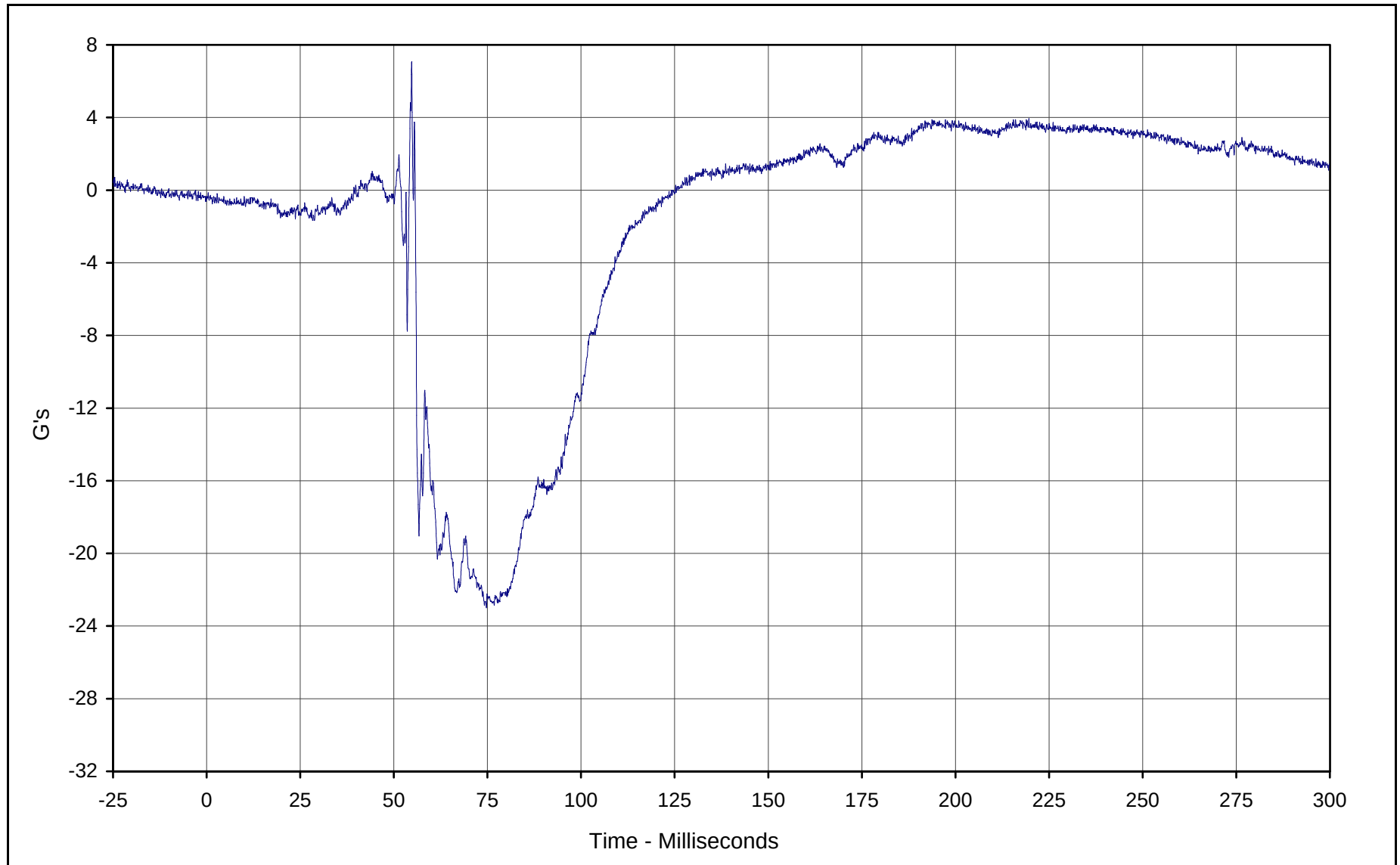
Date of Test: 01/04/01

Curve Number: FIL-021

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Driver Pelvis Z

Maximum Value: 7.0 at 54.8 Milliseconds

Minimum Value: -23.0 at 74.7 Milliseconds

SAE Filter Class: 1000

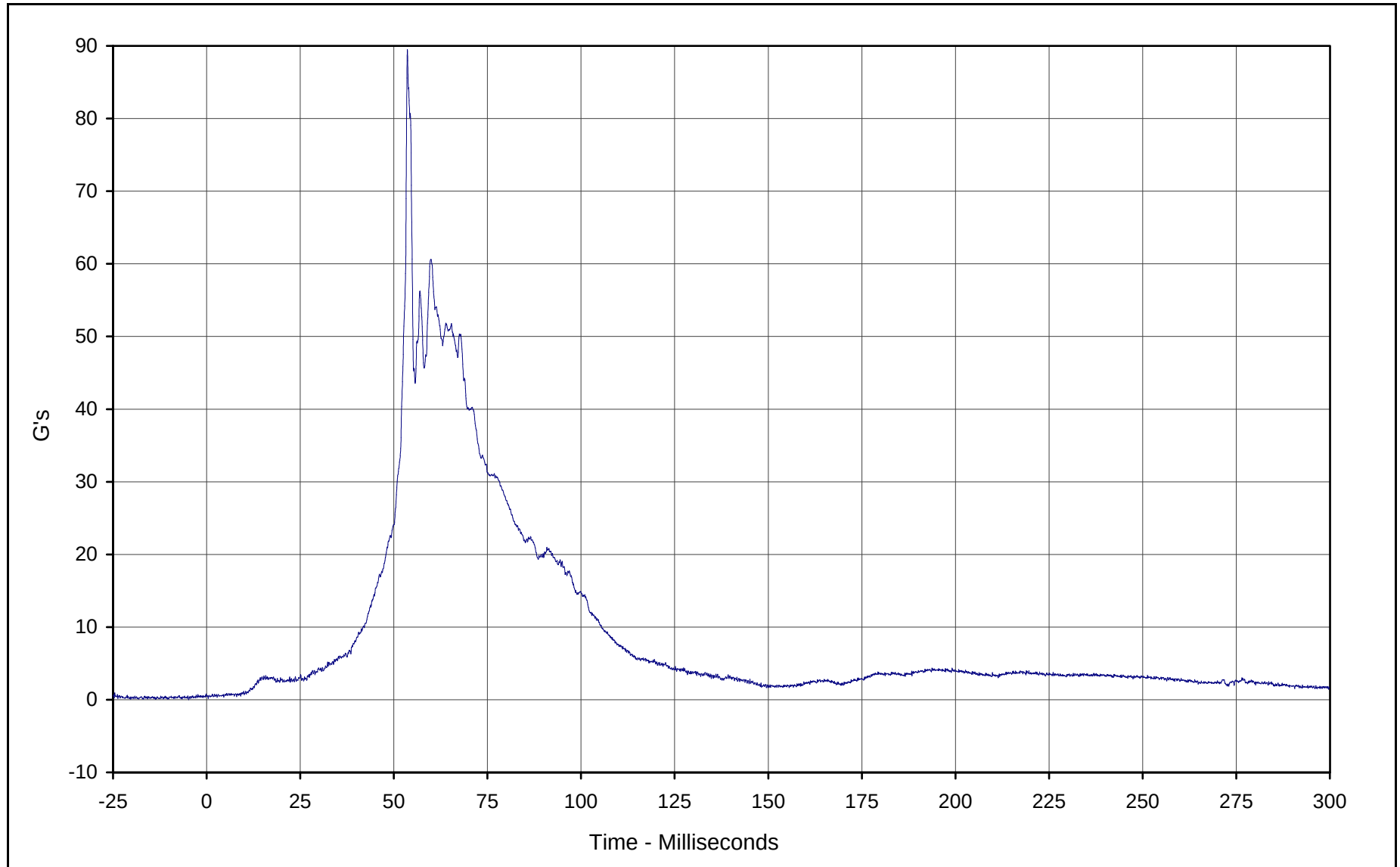
Date of Test: 01/04/01

Curve Number: FIL-022

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Driver Pelvis Resultant

Maximum Value: 89.4 at 53.6 Milliseconds

Minimum Value: 0.2 at 0.4 Milliseconds

SAE Filter Class: 1000

Date of Test: 01/04/01

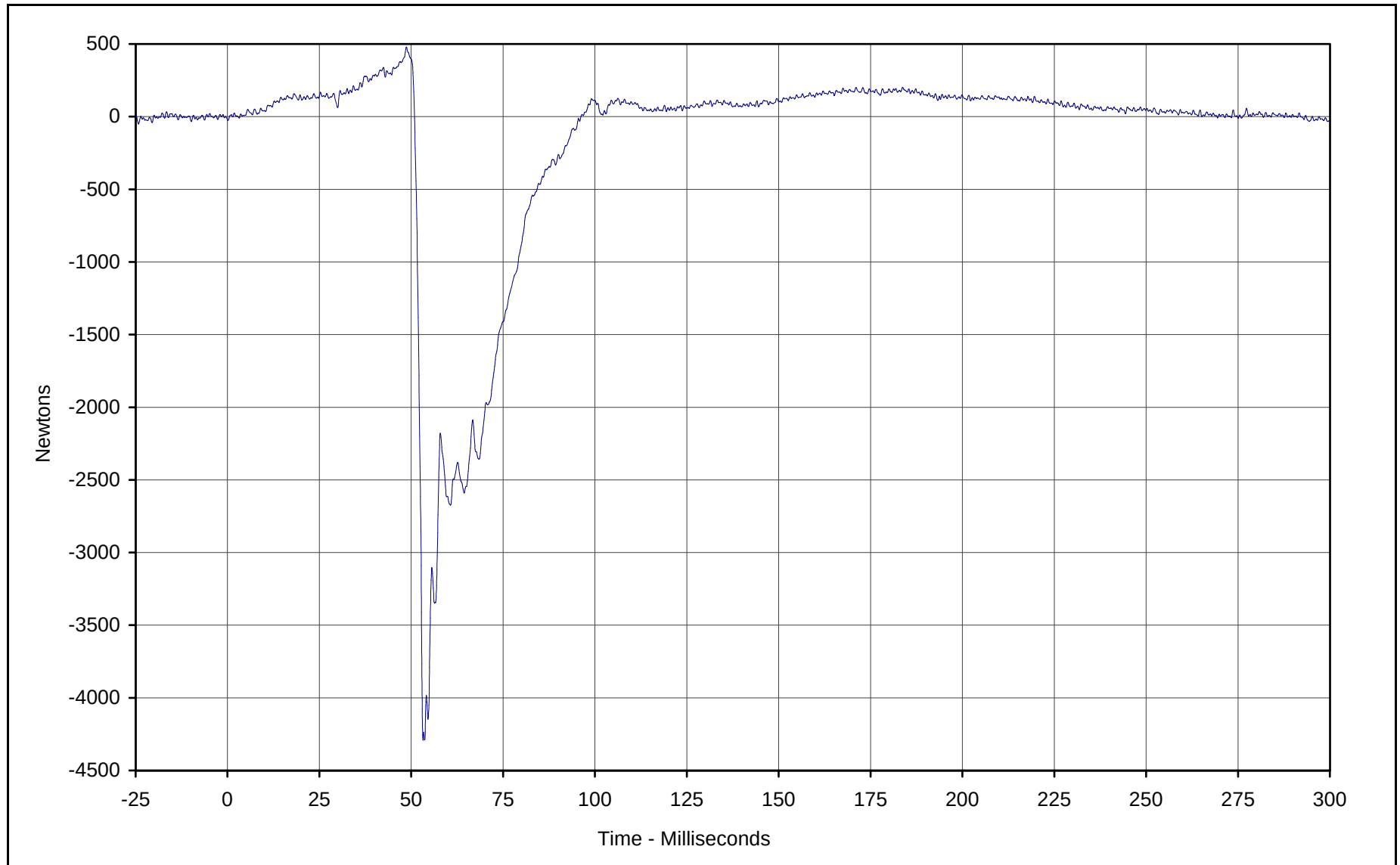
Curve Number: RES-020

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



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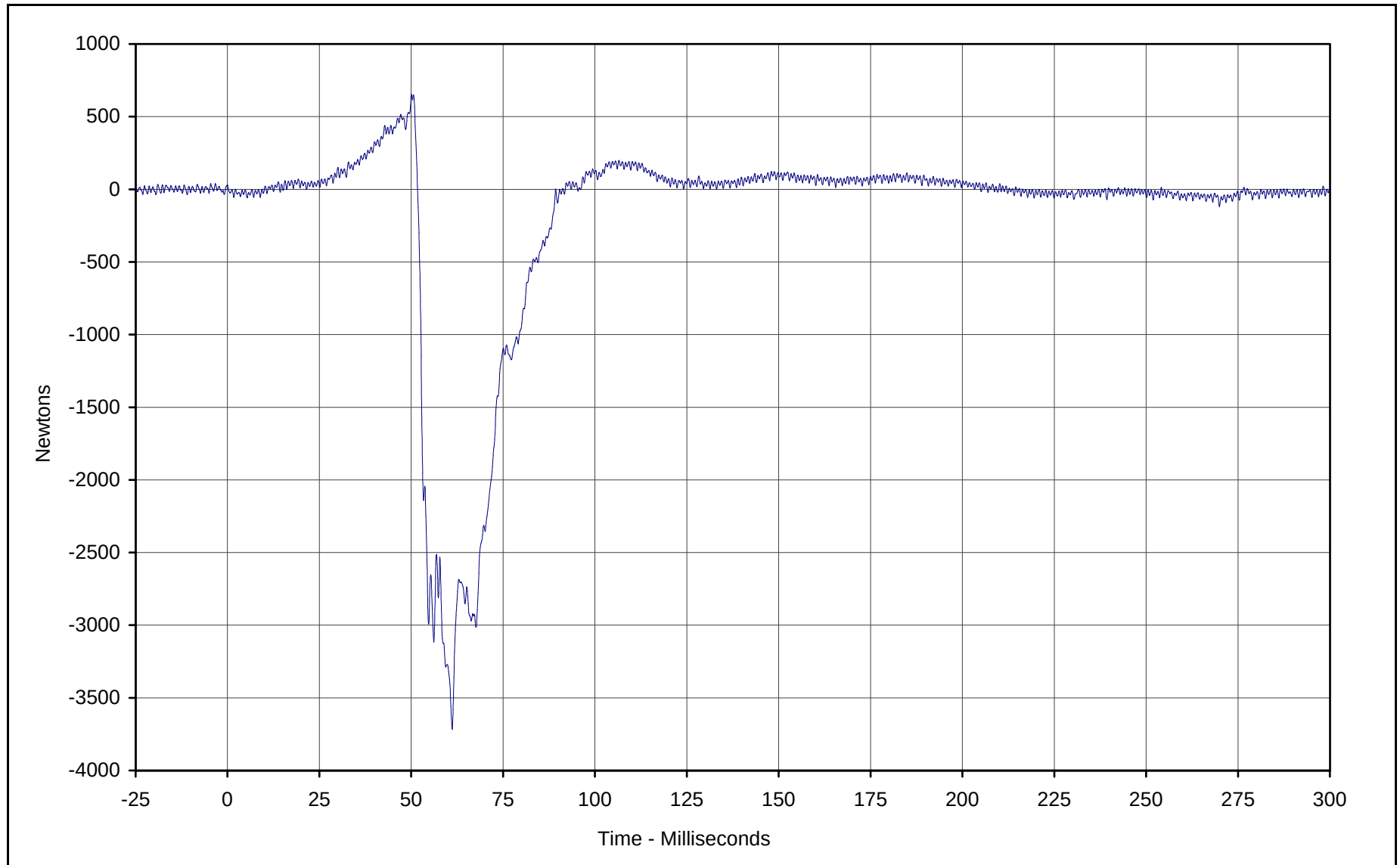
Curve Description: Driver Left Femur Force
Maximum Value: 479.4 at 48.7 Milliseconds
Minimum Value: -4292.3 at 53.2 Milliseconds
SAE Filter Class: 600
Date of Test: 01/04/01
Curve Number: FIL-023

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



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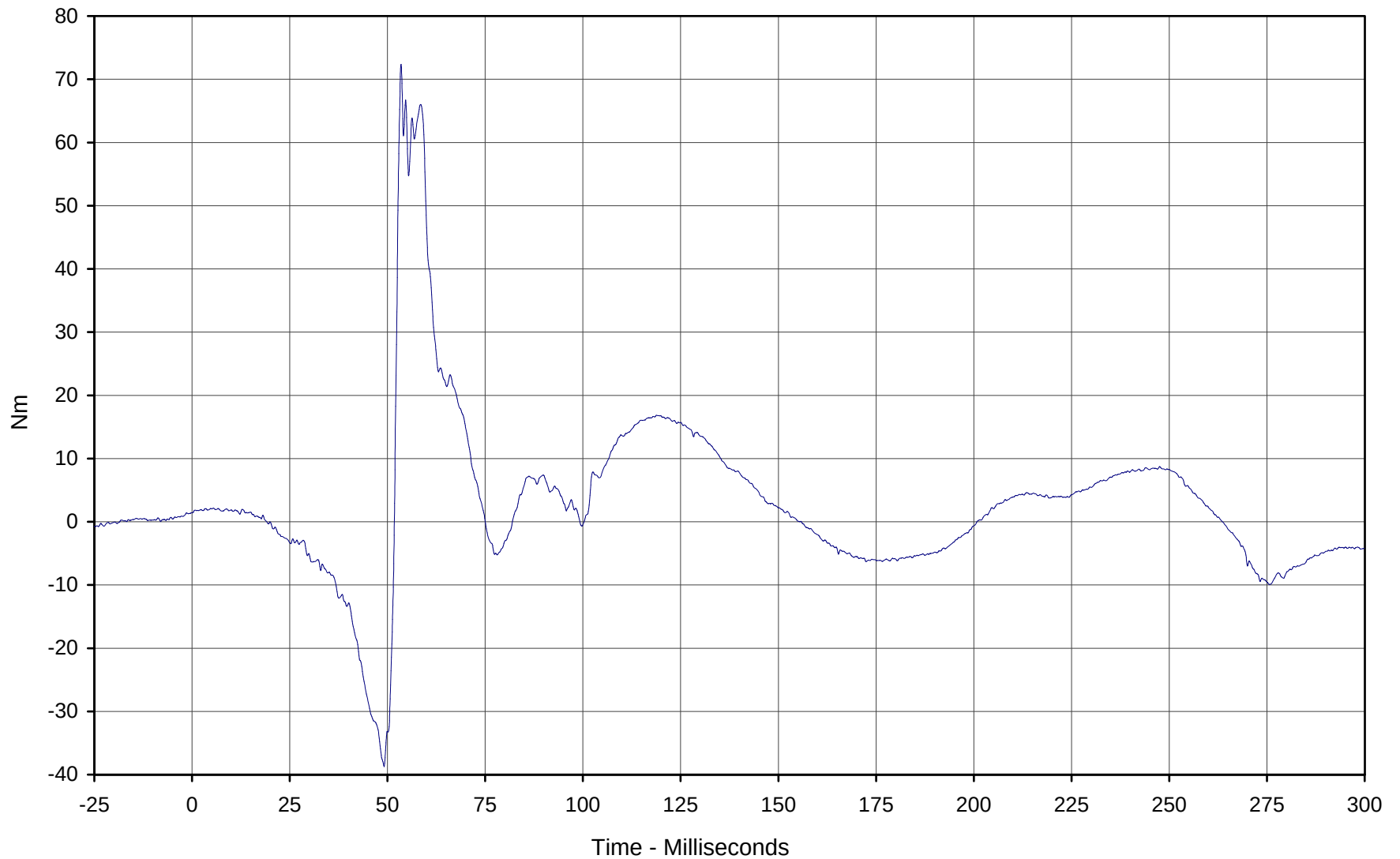


Curve Description: Driver Right Femur Force
Maximum Value: 653.6 at 50.1 Milliseconds
Minimum Value: -3717.1 at 61.2 Milliseconds
SAE Filter Class: 600
Date of Test: 01/04/01
Curve Number: FIL-024

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



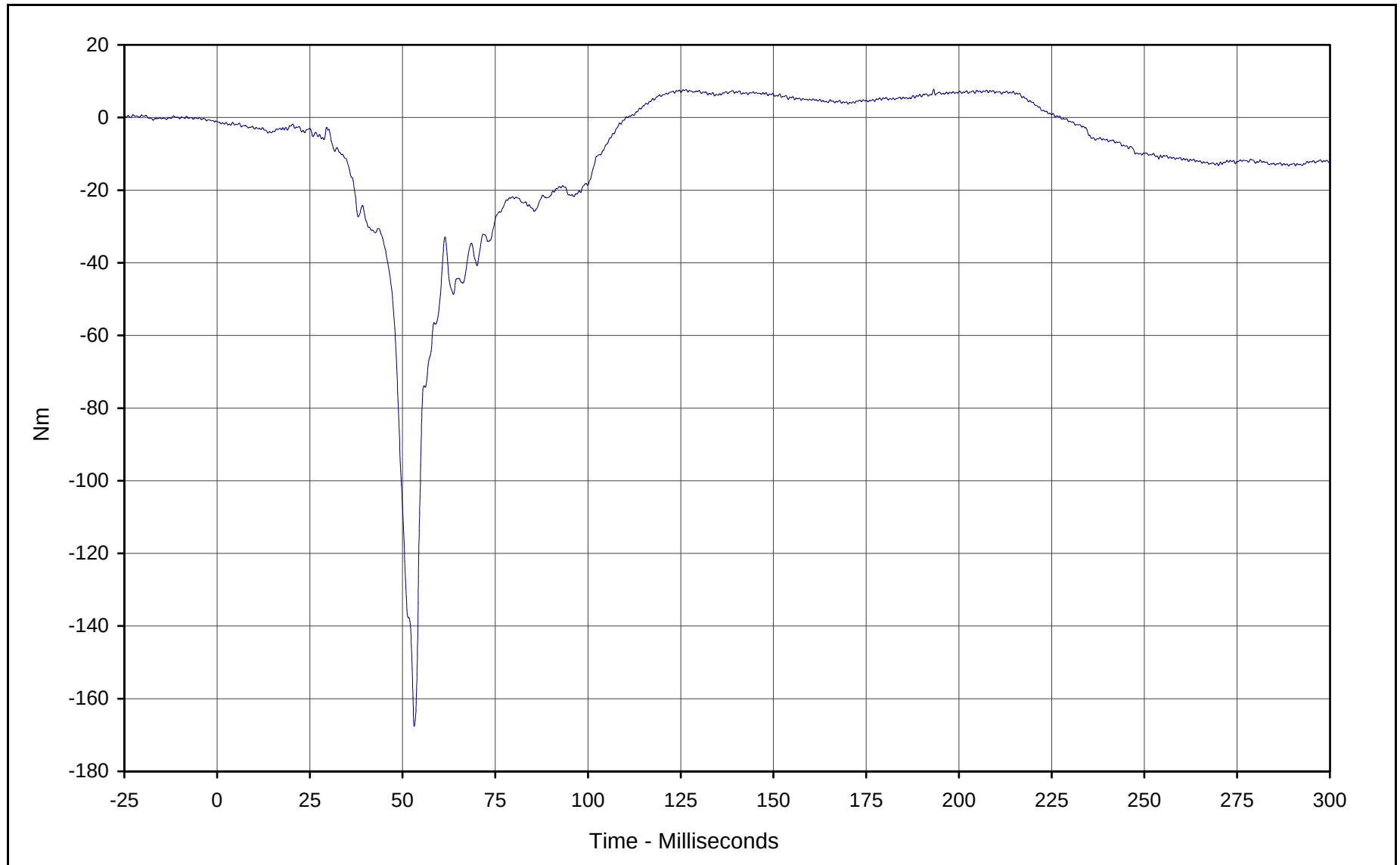
KAR21001-01



Curve Description: Driver Left Upper Tibia Moment X
Maximum Value: 72.4 at 53.5 Milliseconds
Minimum Value: -38.8 at 49.1 Milliseconds
SAE Filter Class: 600
Date of Test: 01/04/01
Curve Number: FIL-025

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

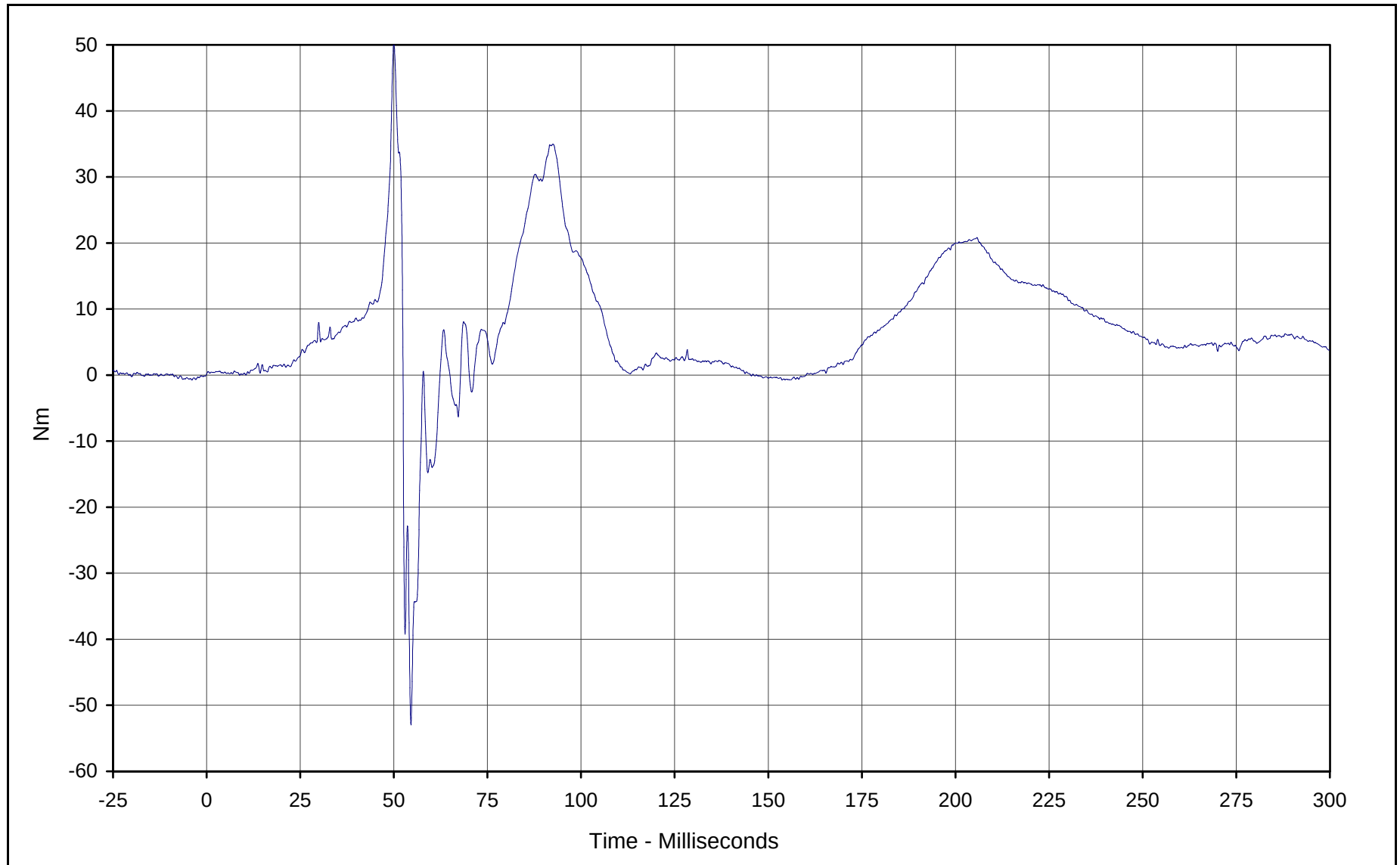




Curve Description: Driver Left Upper Tibia Moment Y
Maximum Value: 7.8 at 193.2 Milliseconds
Minimum Value: -167.6 at 53.2 Milliseconds
SAE Filter Class: 600
Date of Test: 01/04/01
Curve Number: FIL-026

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



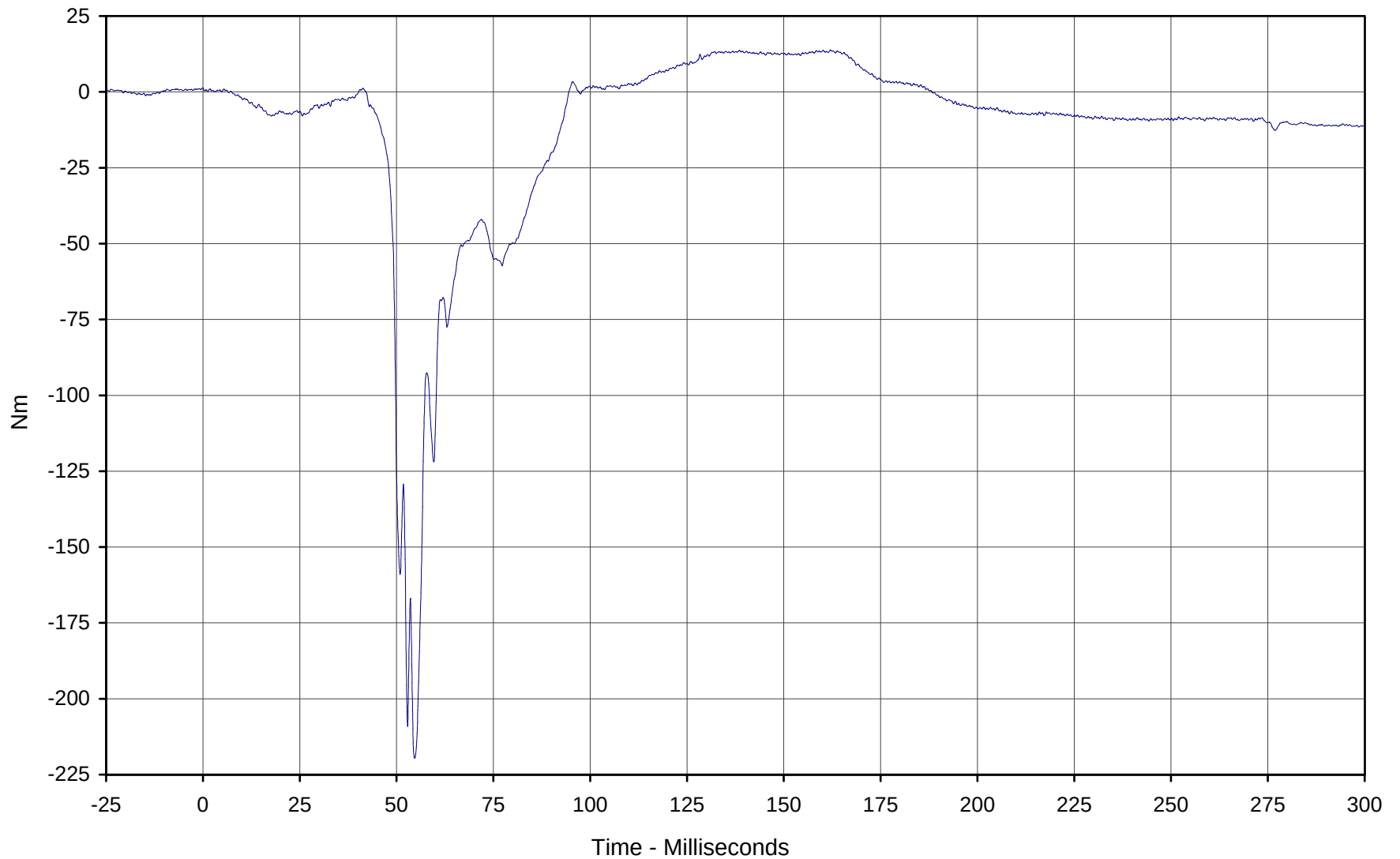


Curve Description: Driver Right Upper Tibia Moment X
Maximum Value: 50.2 at 50.0 Milliseconds
Minimum Value: -53.0 at 54.6 Milliseconds
SAE Filter Class: 600
Date of Test: 01/04/01
Curve Number: FIL-027

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

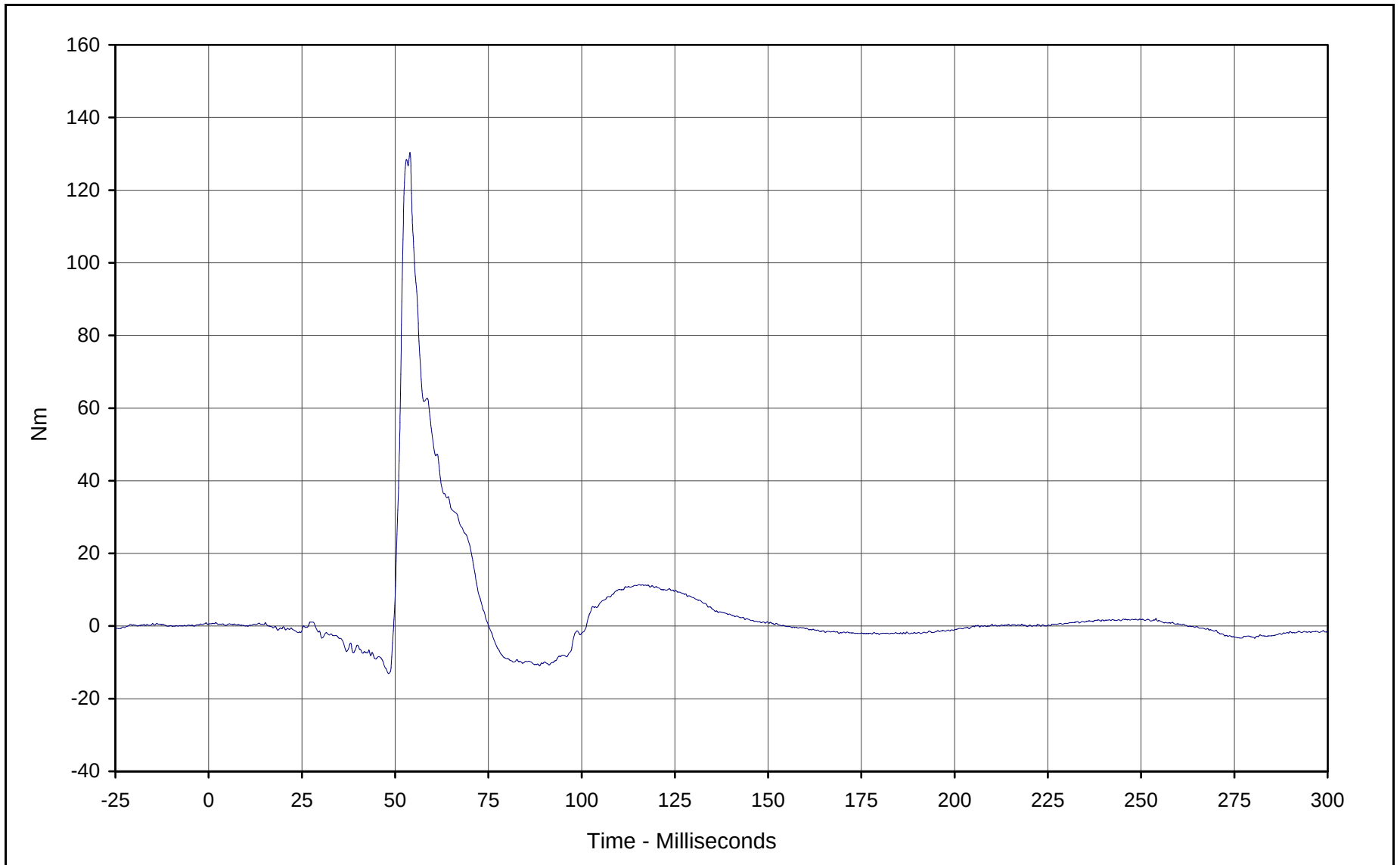




Curve Description: Driver Right Upper Tibia Moment Y
Maximum Value: 13.8 at 162.1 Milliseconds
Minimum Value: -219.6 at 54.7 Milliseconds
SAE Filter Class: 600
Date of Test: 01/04/01
Curve Number: FIL-028

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

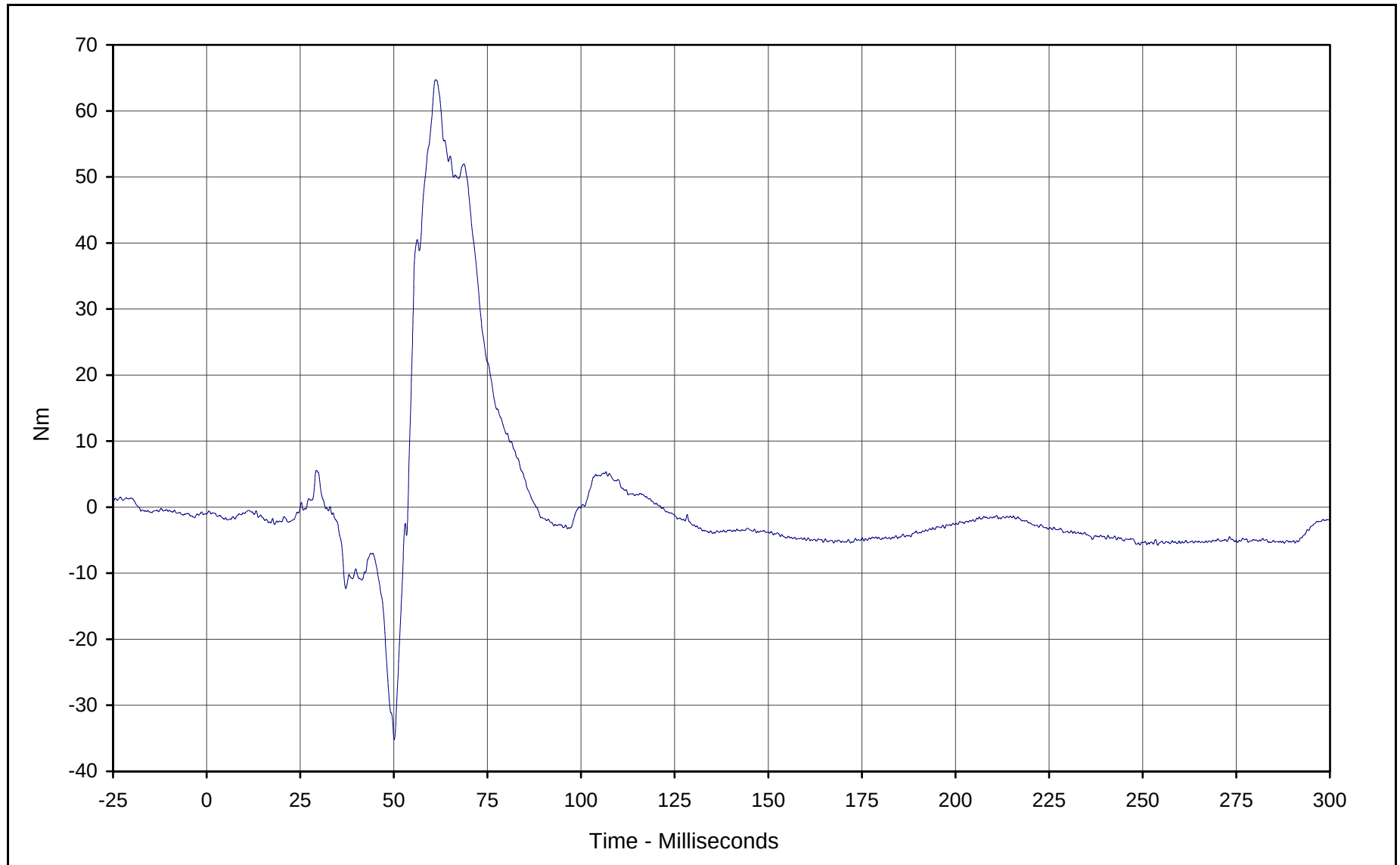




Curve Description: Driver Left Lower Tibia Moment X
Maximum Value: 130.3 at 54.0 Milliseconds
Minimum Value: -13.1 at 48.3 Milliseconds
SAE Filter Class: 600
Date of Test: 01/04/01
Curve Number: FIL-029

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

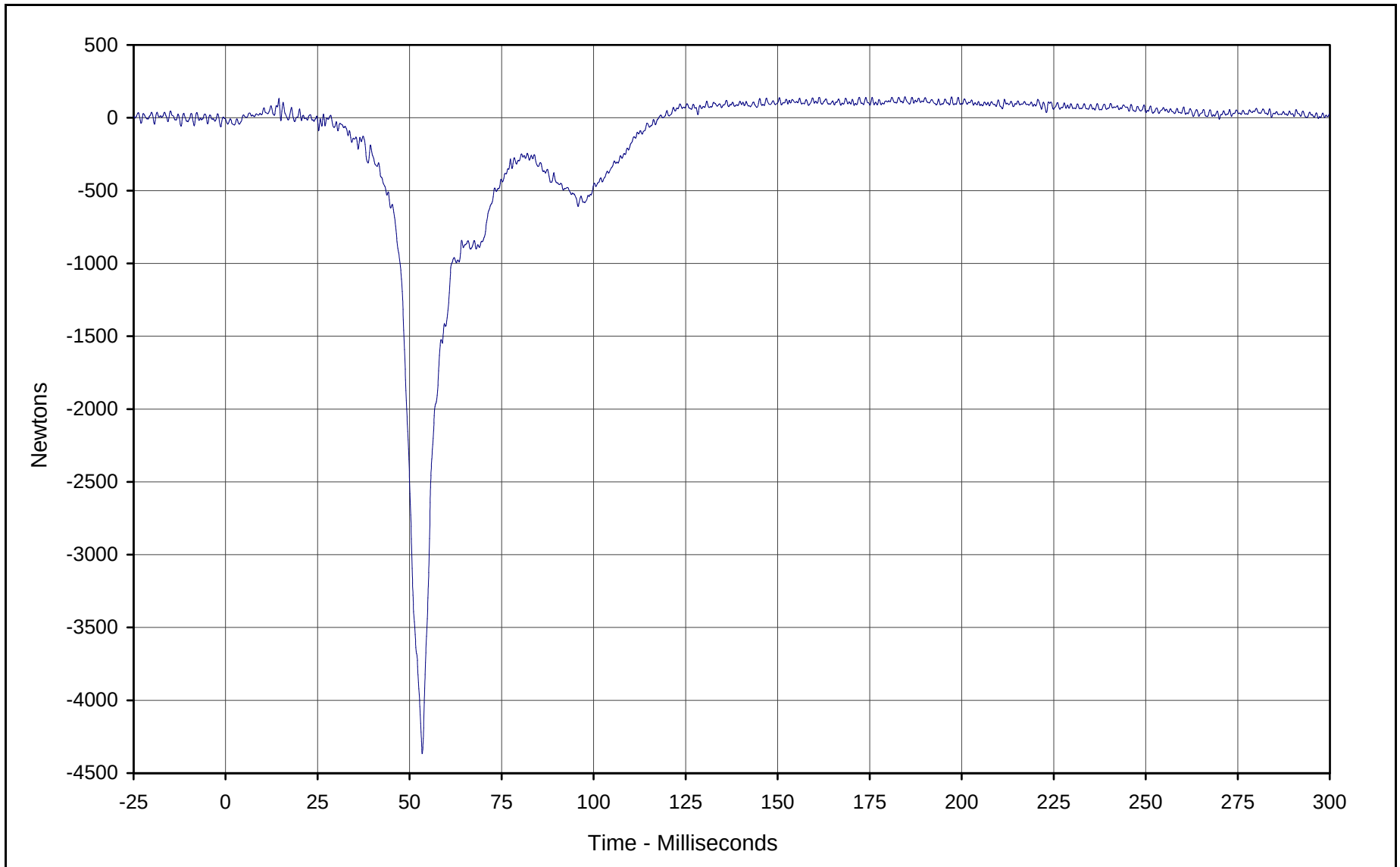




Curve Description: Driver Left Lower Tibia Moment Y
Maximum Value: 64.7 at 61.2 Milliseconds
Minimum Value: -35.2 at 50.1 Milliseconds
SAE Filter Class: 600
Date of Test: 01/04/01
Curve Number: FIL-030

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

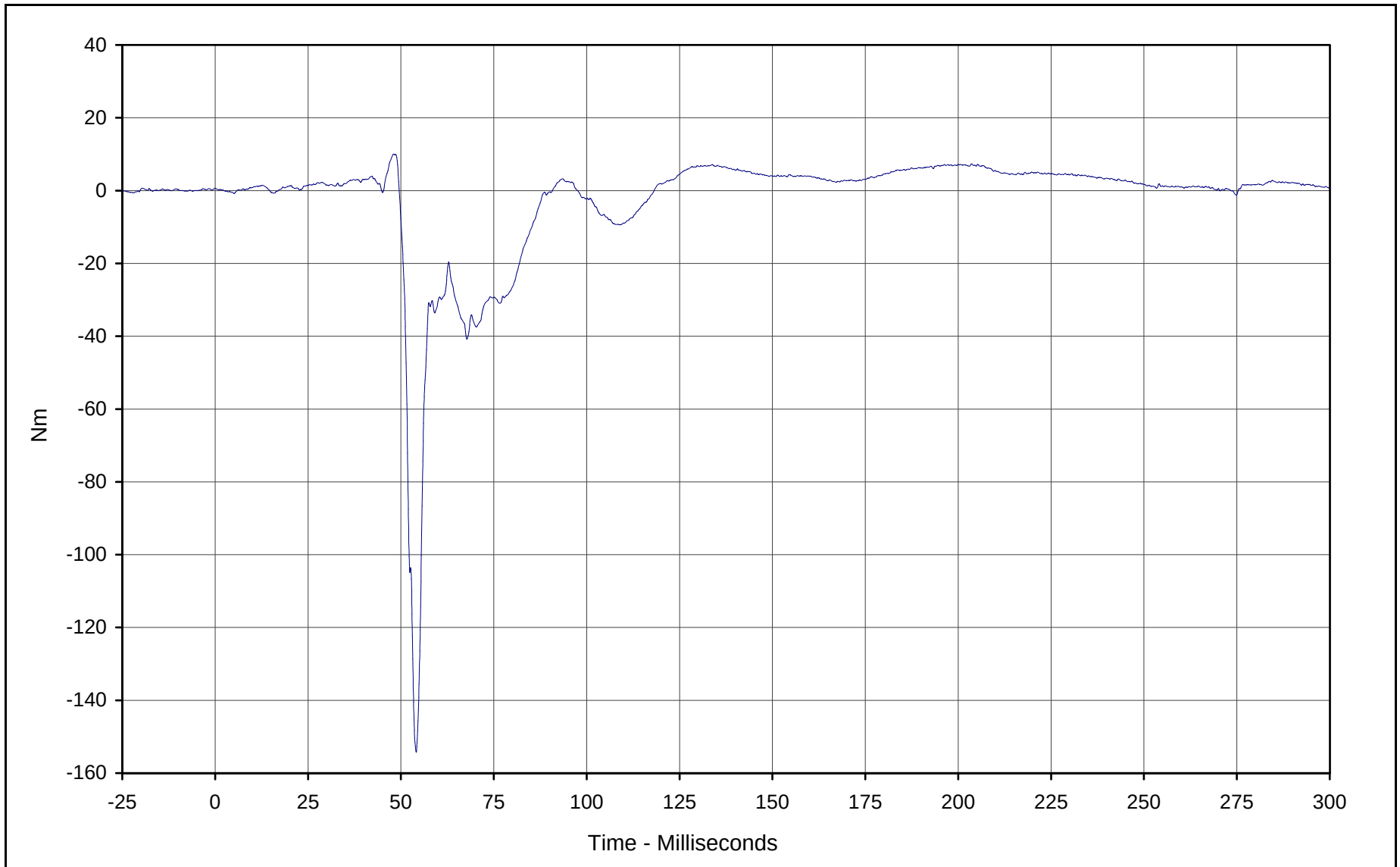




Curve Description: Driver Left Lower Tibia Force Z
Maximum Value: 144.9 at 184.6 Milliseconds
Minimum Value: -4367.0 at 53.4 Milliseconds
SAE Filter Class: 600
Date of Test: 01/04/01
Curve Number: FIL-031

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

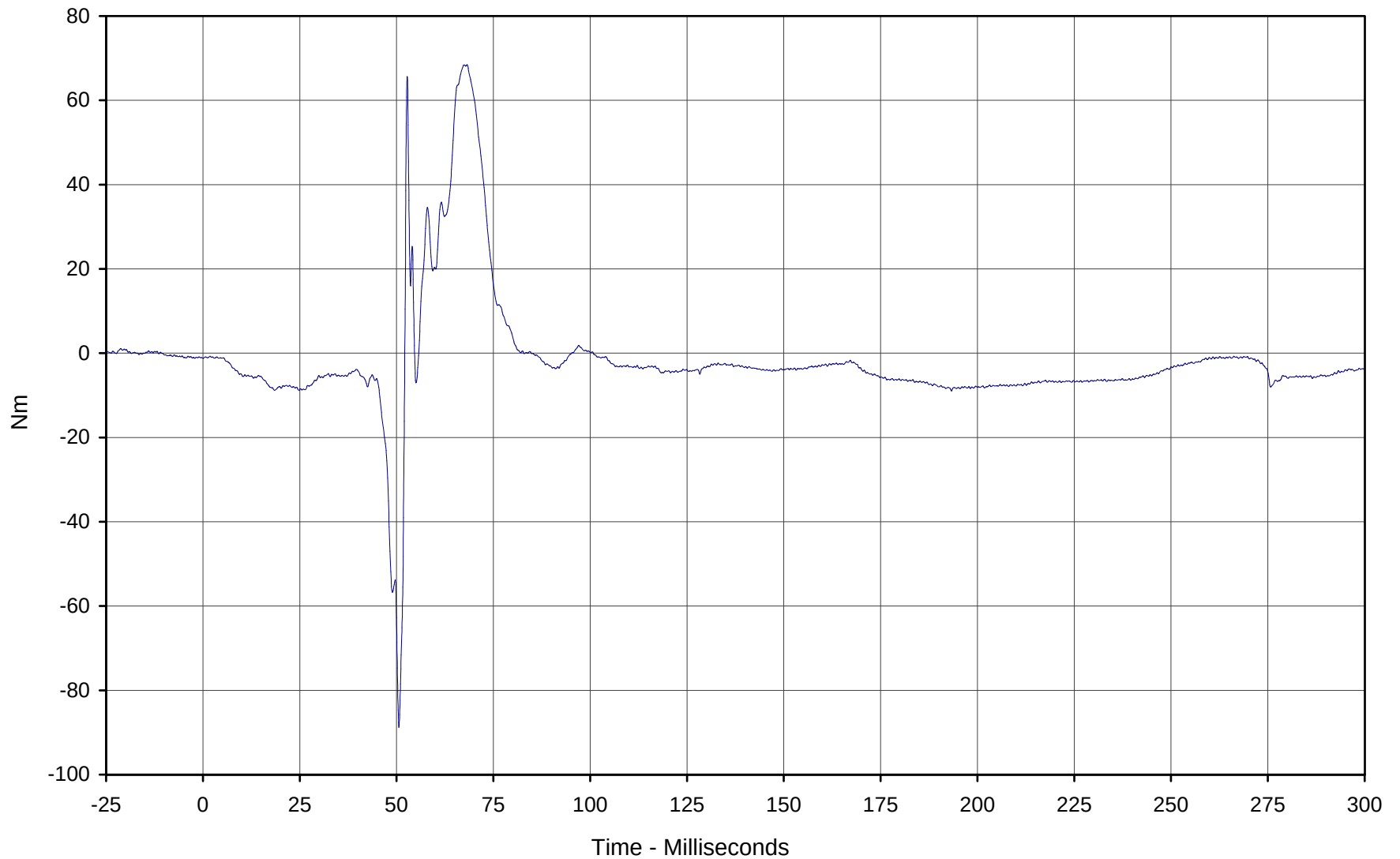




Curve Description: Driver Right Lower Tibia Moment X
Maximum Value: 10.0 at 48.0 Milliseconds
Minimum Value: -154.3 at 54.1 Milliseconds
SAE Filter Class: 600
Date of Test: 01/04/01
Curve Number: FIL-032

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

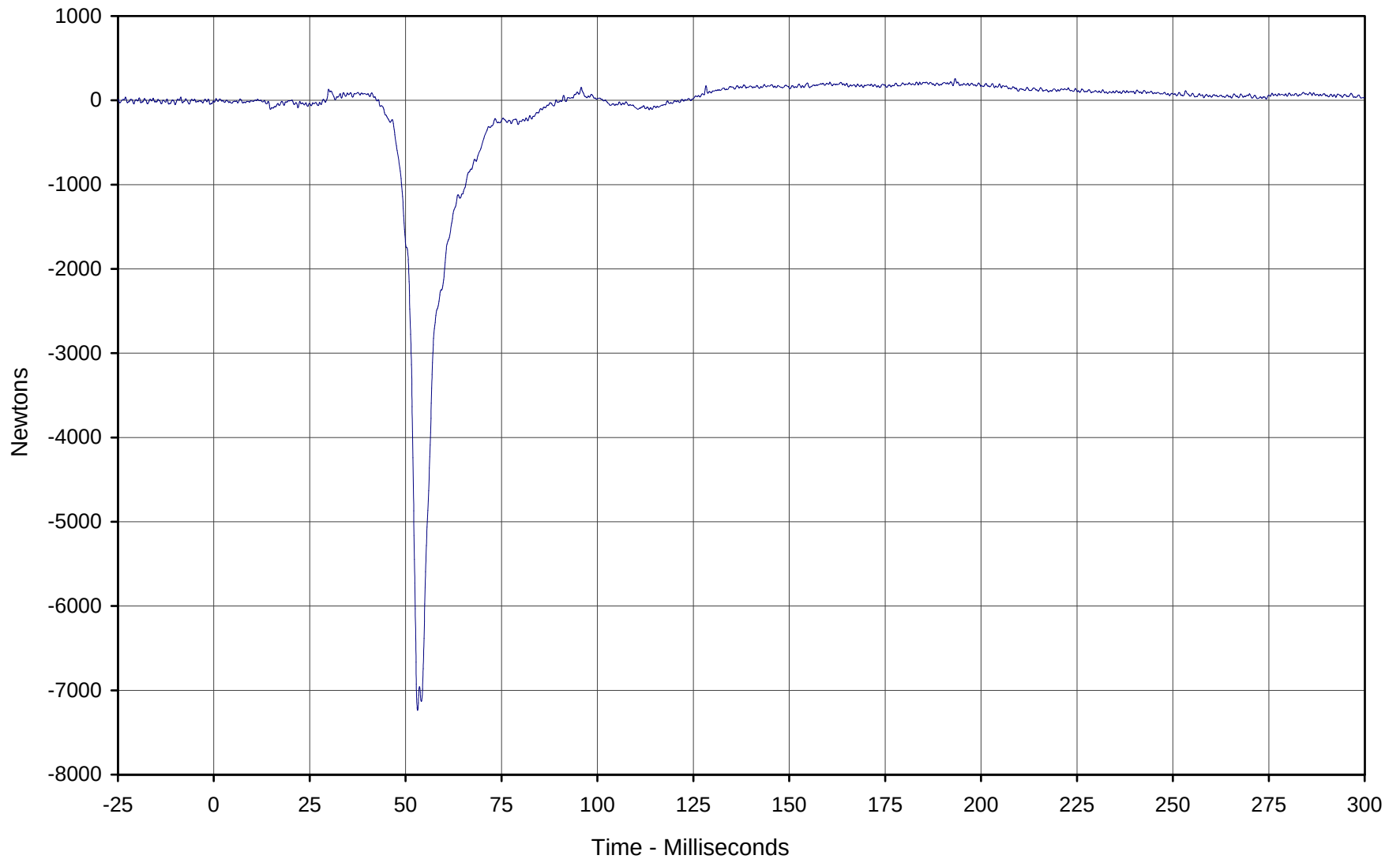




Curve Description: Driver Right Lower Tibia Moment Y
Maximum Value: 68.5 at 68.2 Milliseconds
Minimum Value: -88.8 at 50.6 Milliseconds
SAE Filter Class: 600
Date of Test: 01/04/01
Curve Number: FIL-033

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

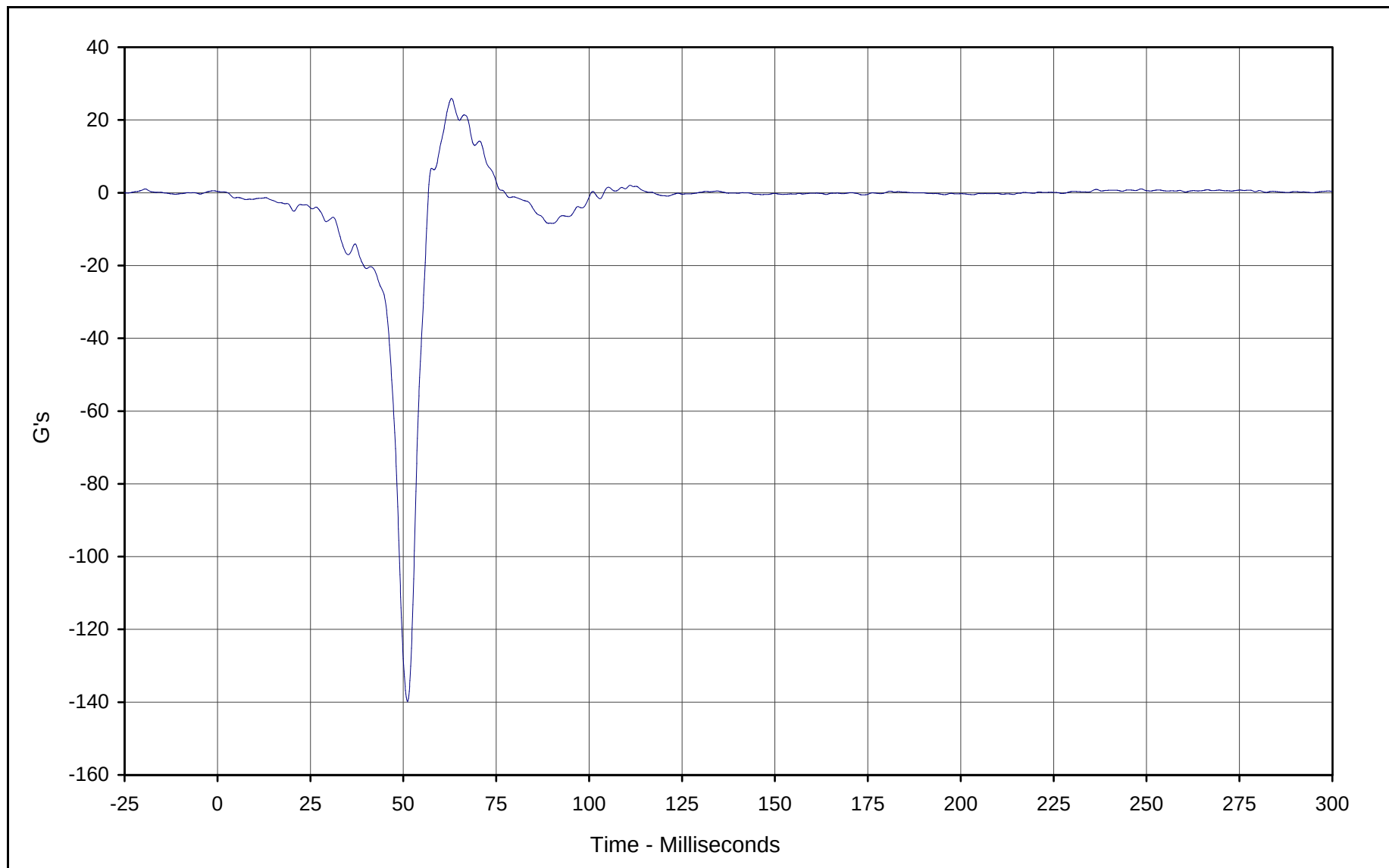




Curve Description: Driver Right Lower Tibia Force Z
Maximum Value: 255.8 at 193.2 Milliseconds
Minimum Value: -7239.3 at 53.1 Milliseconds
SAE Filter Class: 600
Date of Test: 01/04/01
Curve Number: FIL-034

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Driver Left Foot Aft X

Maximum Value: 25.9 at 63.0 Milliseconds

Minimum Value: -139.8 at 51.1 Milliseconds

SAE Filter Class: 180

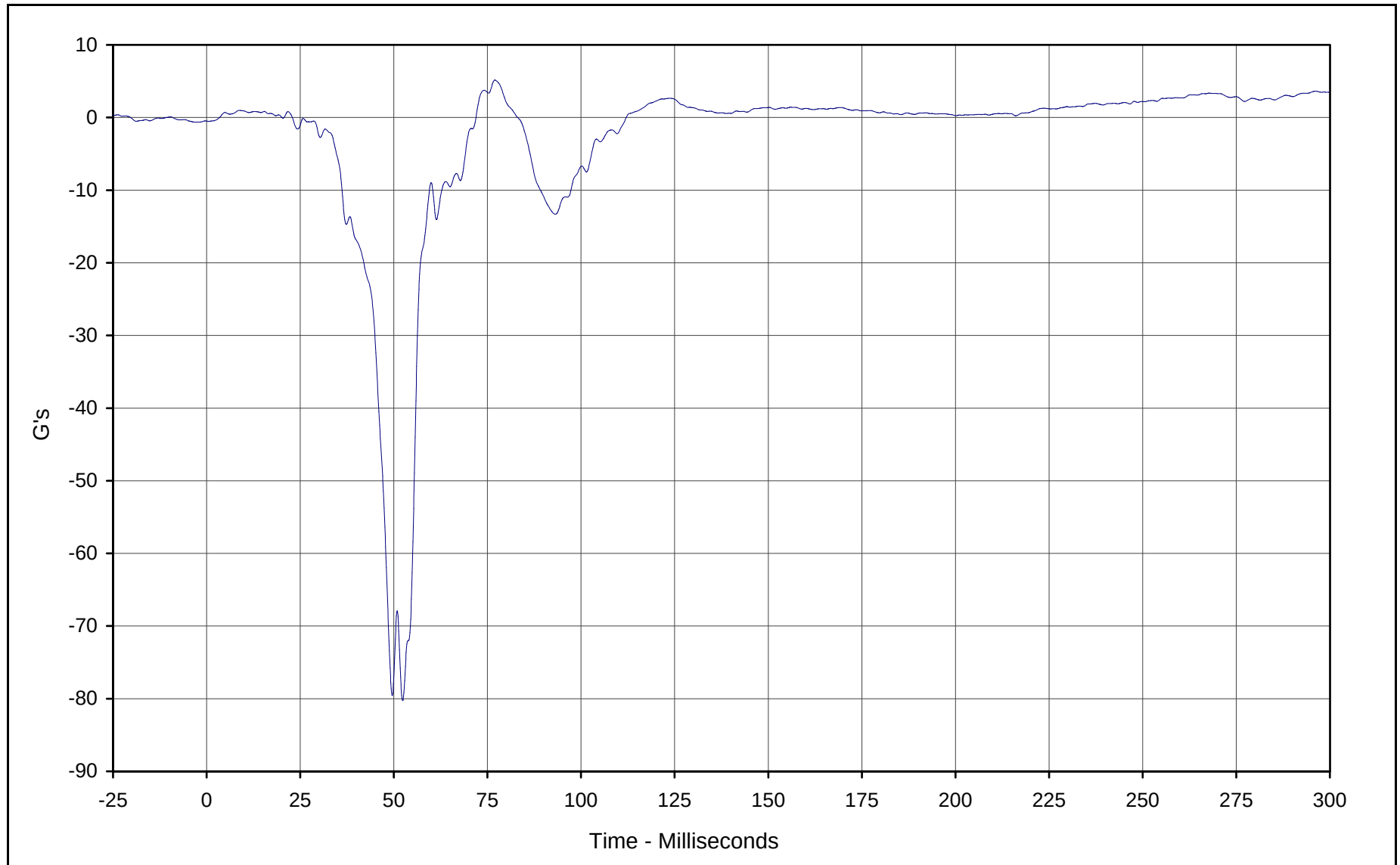
Date of Test: 01/04/01

Curve Number: FIL-035

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





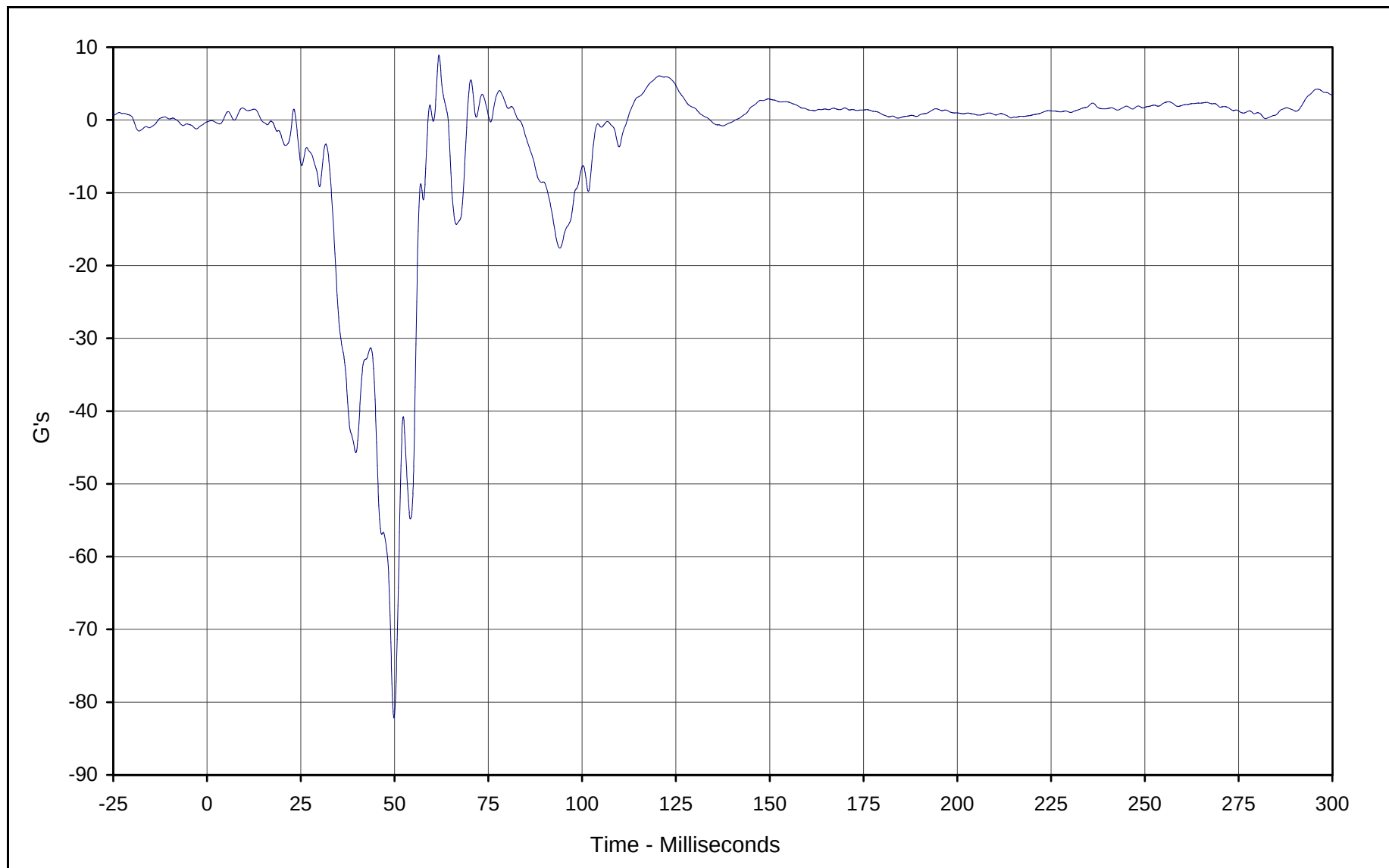
Curve Description: Driver Left Foot Aft Z

Maximum Value:	5.2	at	77.0	Milliseconds
Minimum Value:	-80.3	at	52.4	Milliseconds
SAE Filter Class:	180			
Date of Test:	01/04/01			
Curve Number:	FIL-036			

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





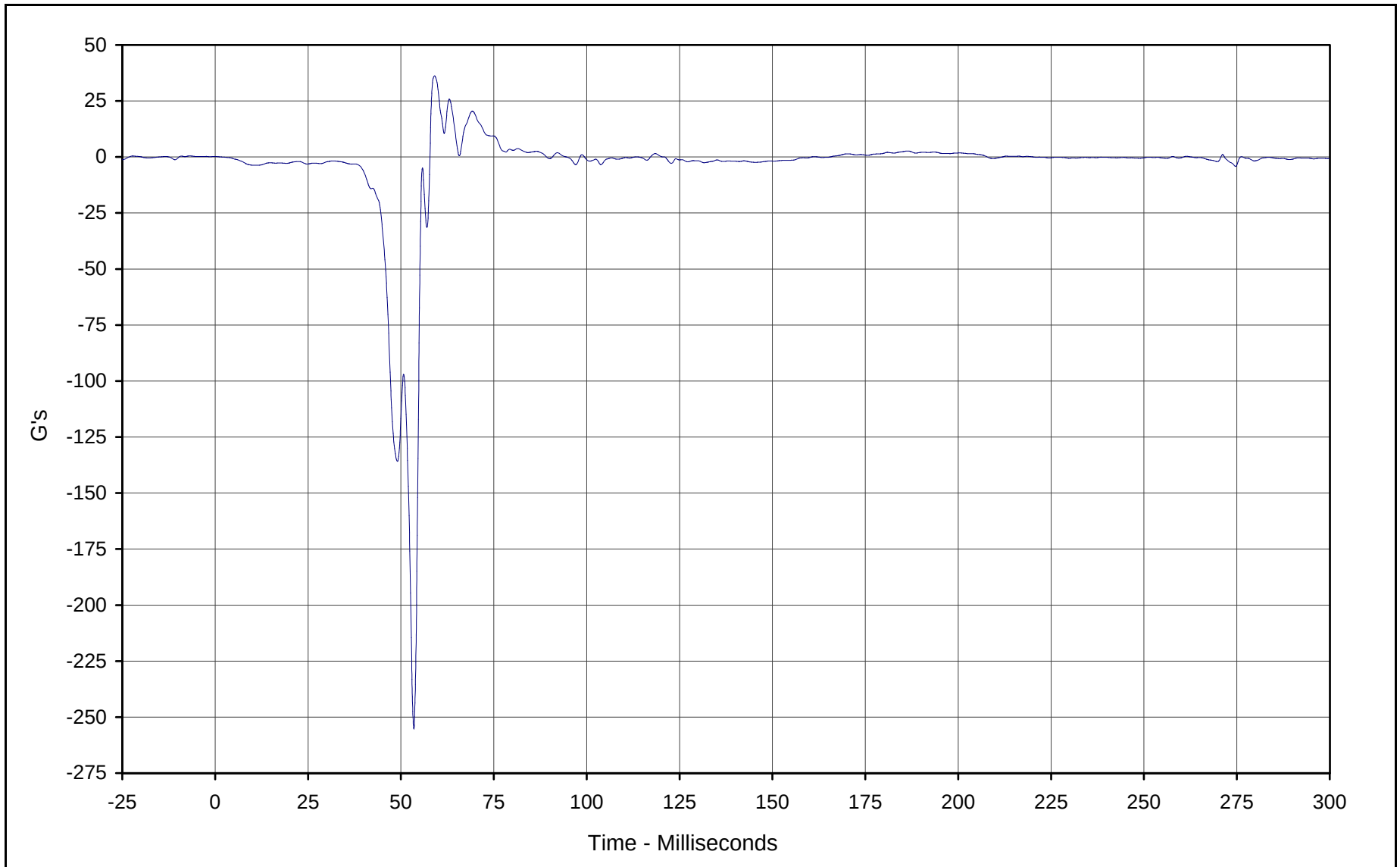
Curve Description: Driver Left Foot Fore Z

Maximum Value:	8.9	at	61.8	Milliseconds
Minimum Value:	-82.2	at	49.8	Milliseconds
SAE Filter Class:	180			
Date of Test:	01/04/01			
Curve Number:	FIL-037			

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





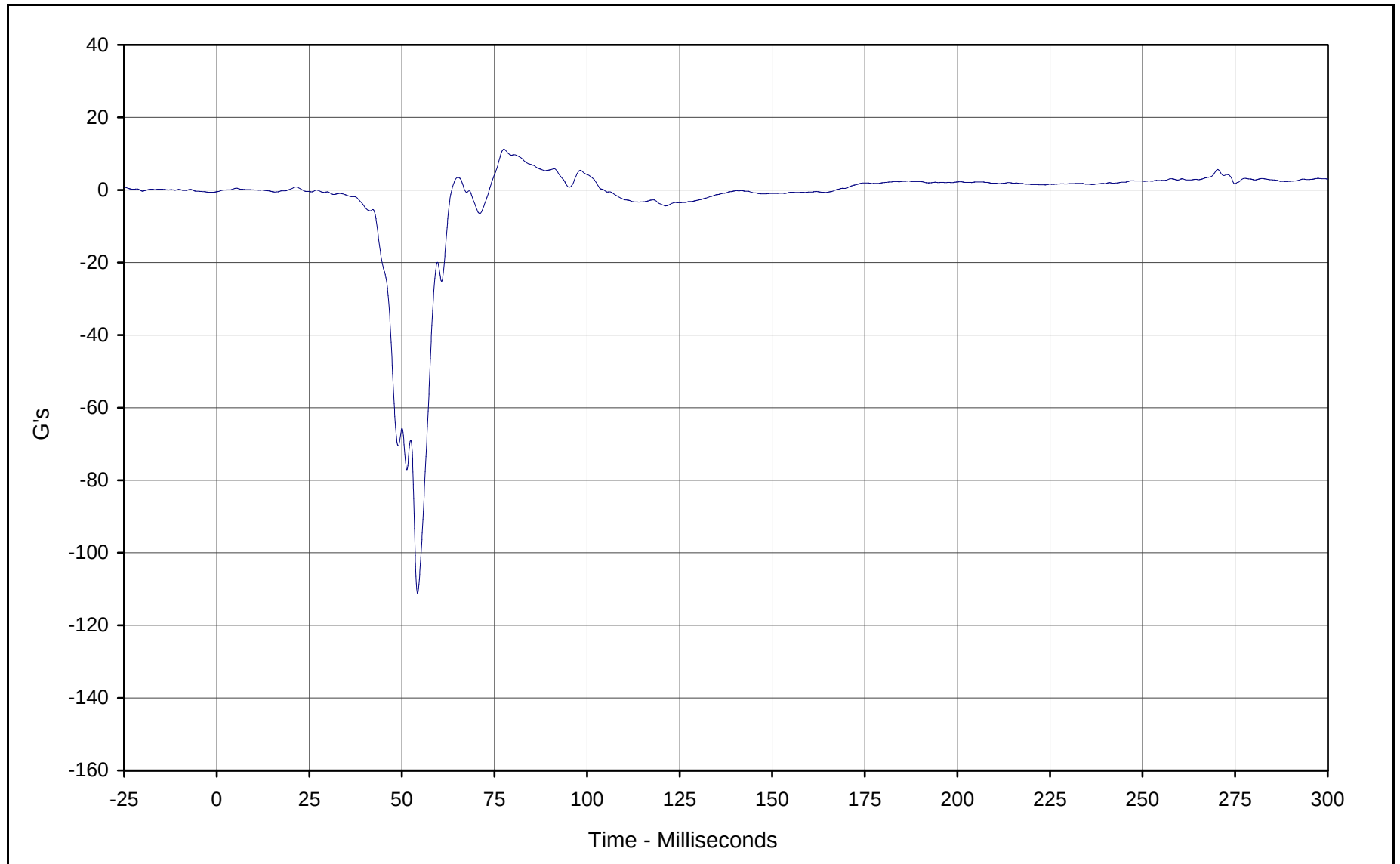
Curve Description: Driver Right Foot Aft X

Maximum Value:	36.2	at	59.0	Milliseconds
Minimum Value:	-255.3	at	53.5	Milliseconds
SAE Filter Class:	180			
Date of Test:	01/04/01			
Curve Number:	FIL-038			

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





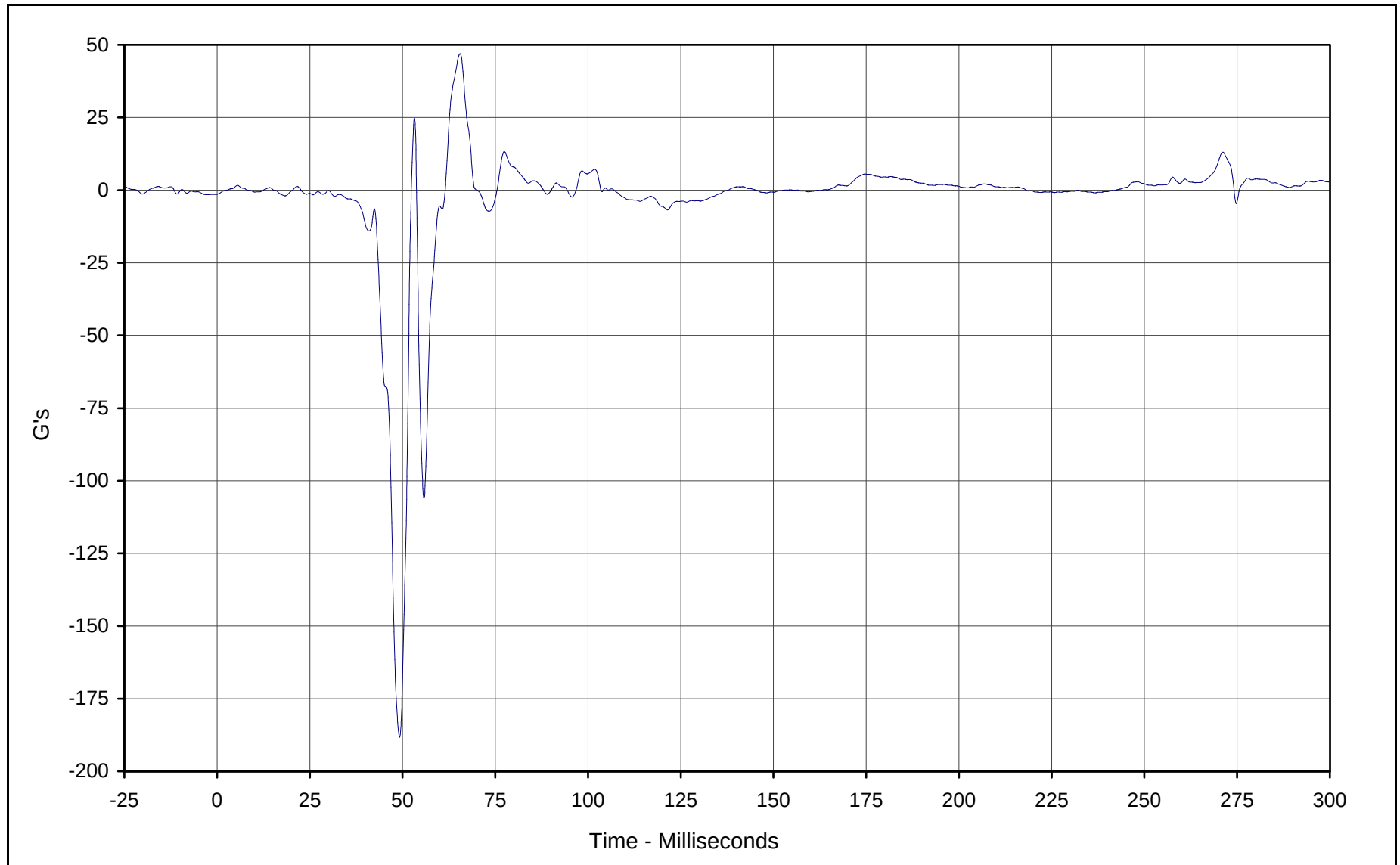
Curve Description: Driver Right Foot Aft Z

Maximum Value:	11.2	at	77.5	Milliseconds
Minimum Value:	-111.2	at	54.2	Milliseconds
SAE Filter Class:	180			
Date of Test:	01/04/01			
Curve Number:	FIL-039			

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Driver Right Foot Fore Z

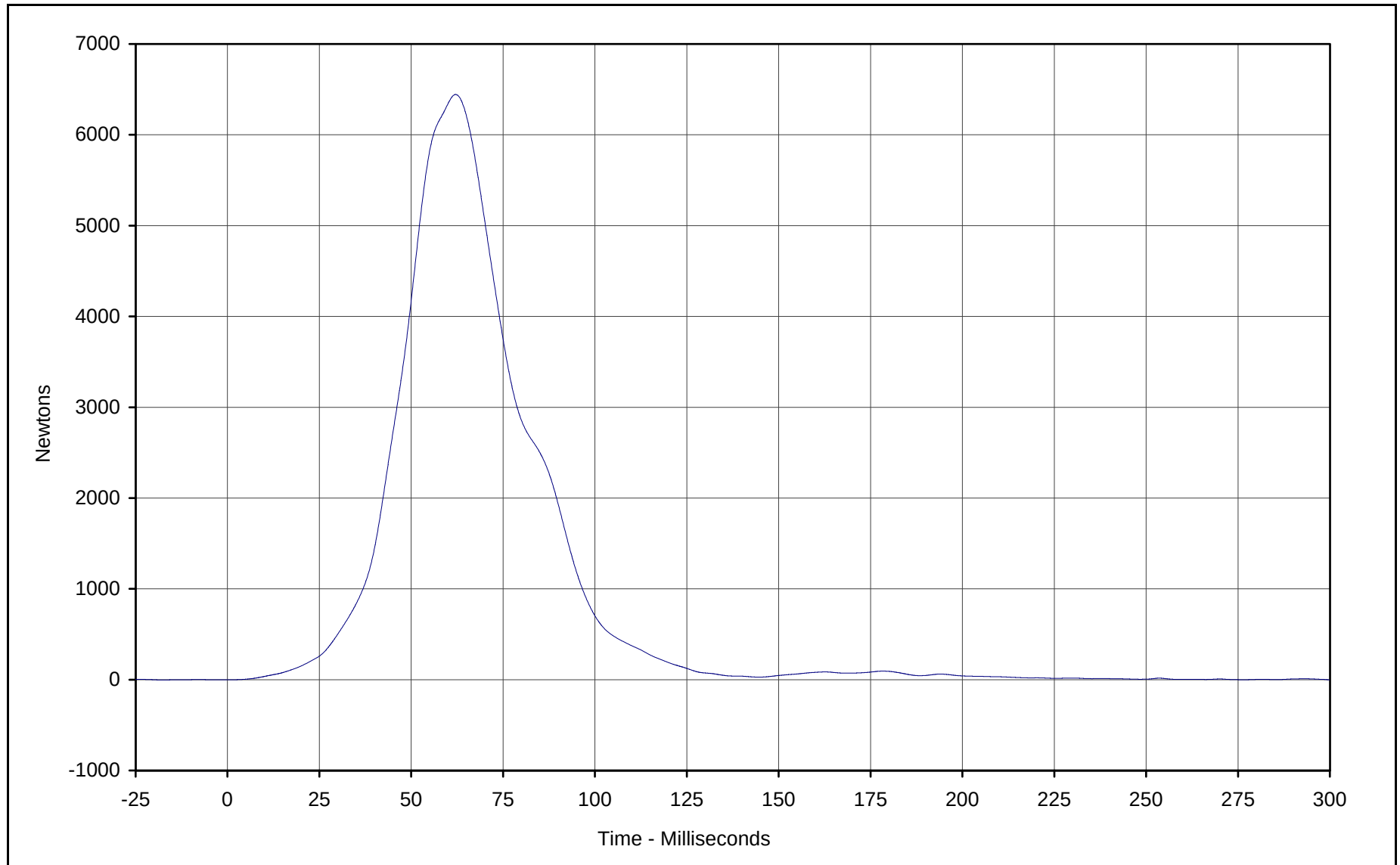
Maximum Value:	47.0	at	65.5	Milliseconds
Minimum Value:	-188.3	at	49.2	Milliseconds
SAE Filter Class:	180			
Date of Test:	01/04/01			
Curve Number:	FIL-040			

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



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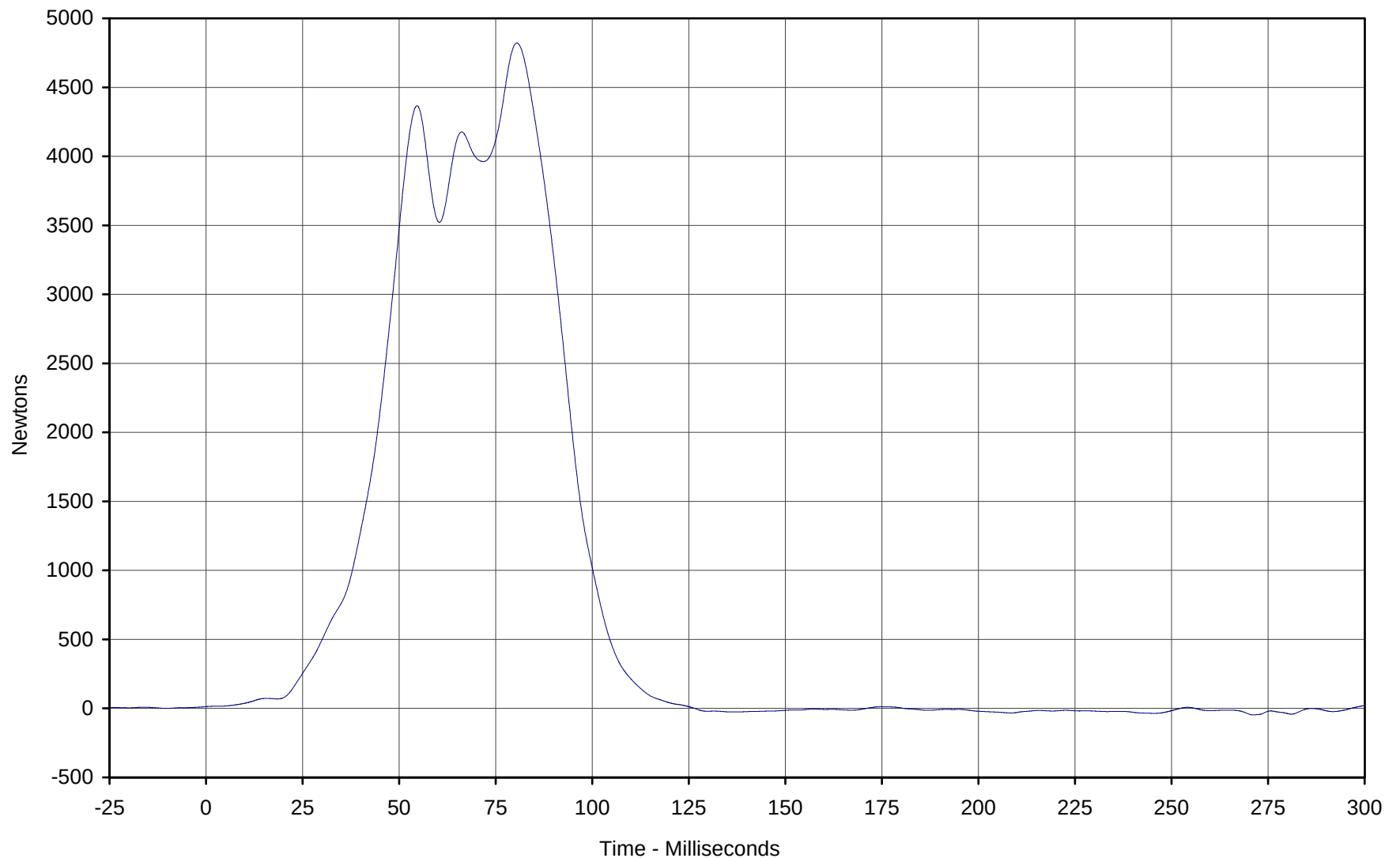
Curve Description: Driver Lap Belt Force
Maximum Value: 6444.1 at 62.1 Milliseconds
Minimum Value: -2.0 at 299.9 Milliseconds
SAE Filter Class: 60
Date of Test: 01/04/01
Curve Number: FIL-041

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



KAR21001-01

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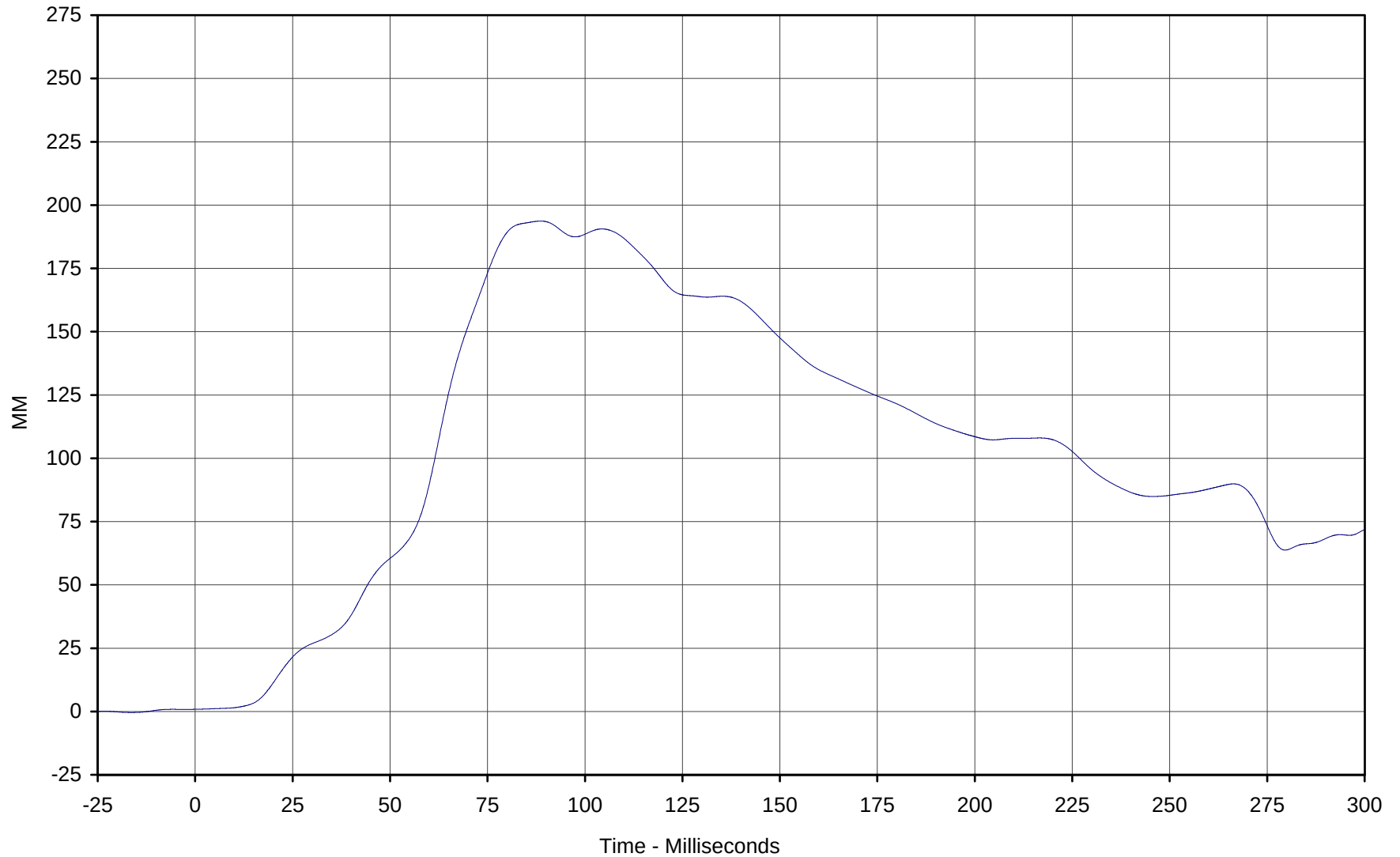
Curve Description: Driver Shoulder Belt Force
Maximum Value: 4821.3 at 80.5 Milliseconds
Minimum Value: -47.2 at 271.1 Milliseconds
SAE Filter Class: 60
Date of Test: 01/04/01
Curve Number: FIL-042

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



KAR21001-01

B-60



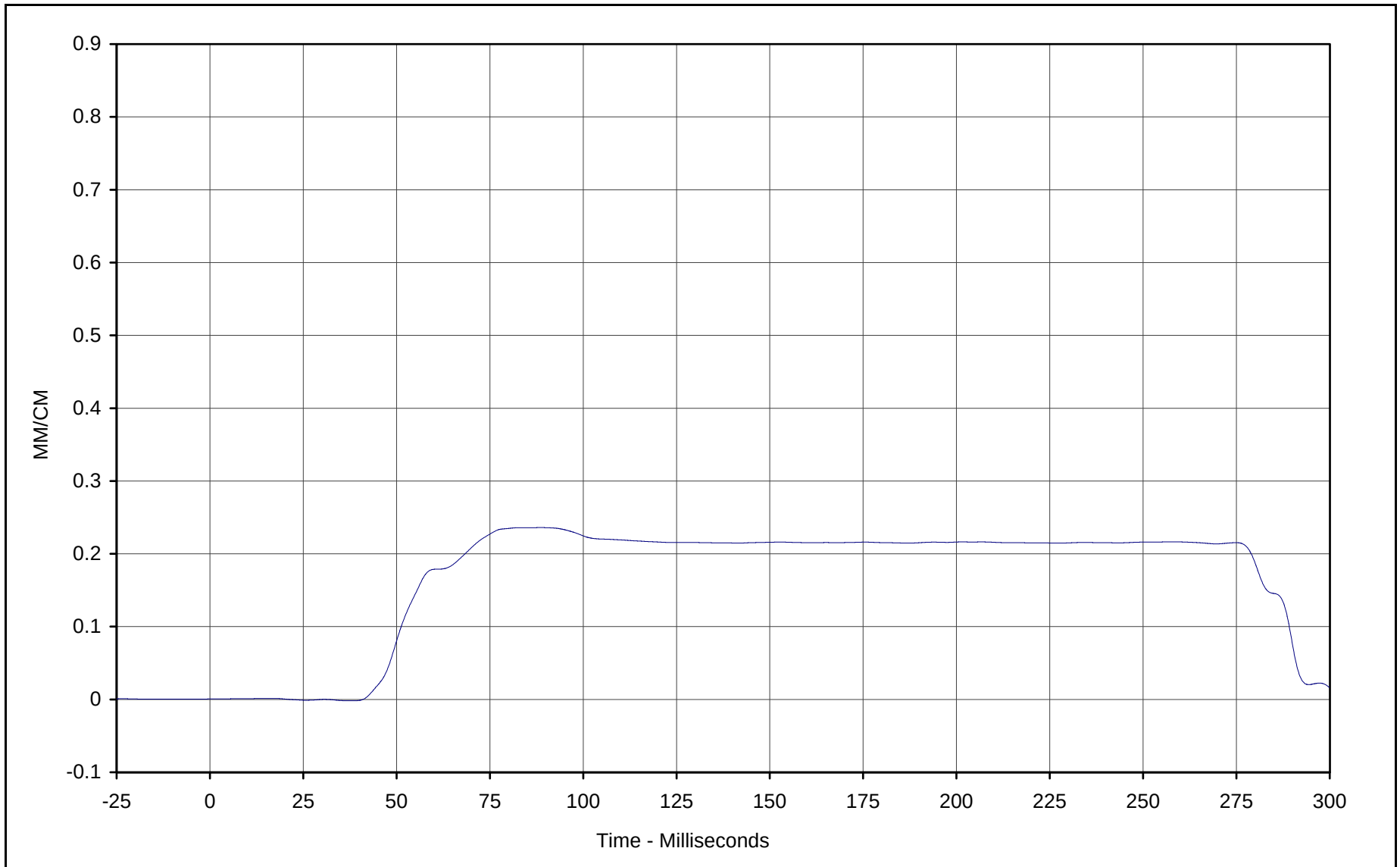
Curve Description: Driver Shoulder Belt Pullout
Maximum Value: 193.7 at 88.7 Milliseconds
Minimum Value: 0.9 at 0.0 Milliseconds
SAE Filter Class: 60
Date of Test: 01/04/01
Curve Number: FIL-043

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



KAR21001-01

B-61

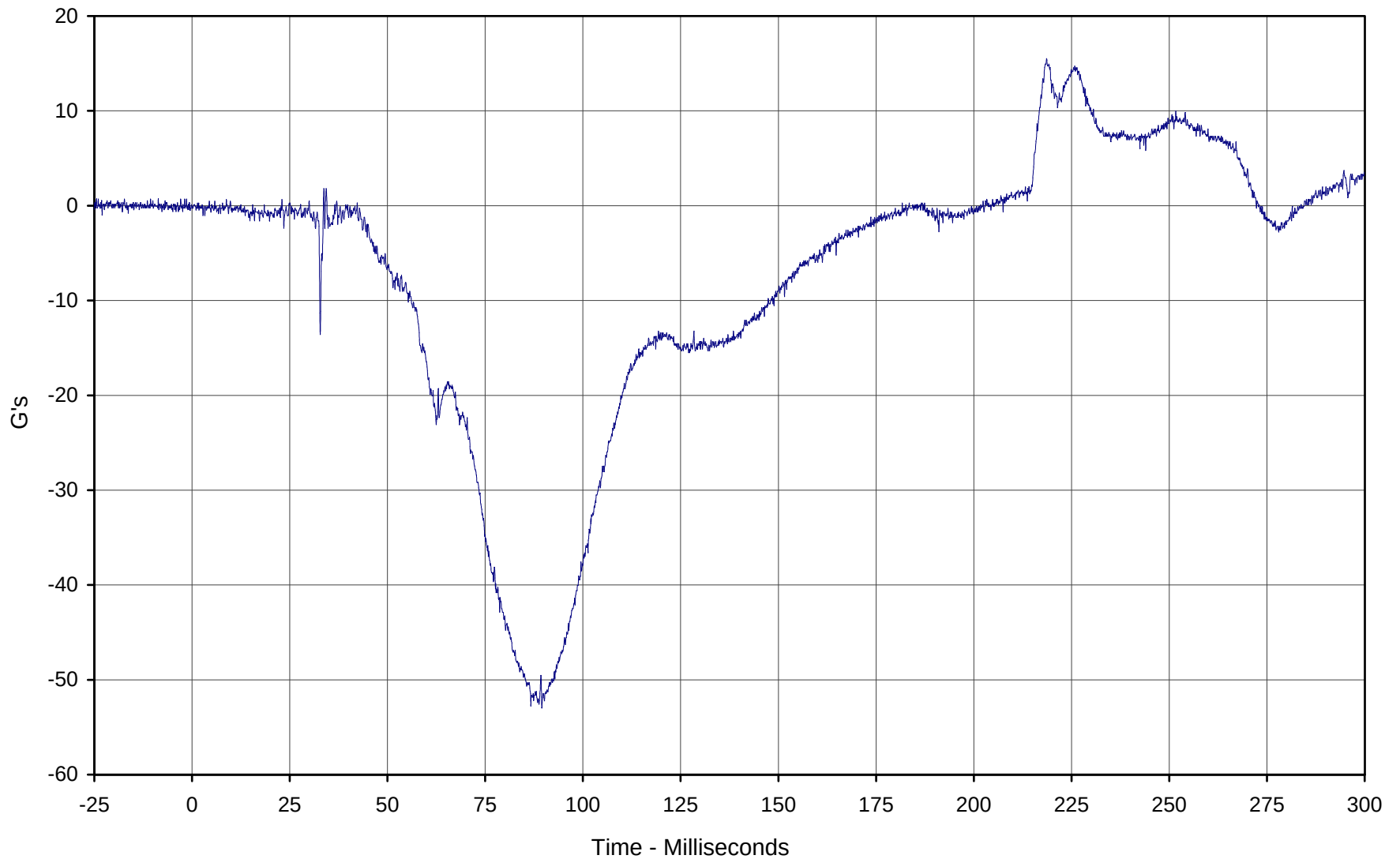


Curve Description: Driver Shoulder Belt Elongation
Maximum Value: 0.2 at 88.5 Milliseconds
Minimum Value: 0.0 at 36.9 Milliseconds
SAE Filter Class: 60
Date of Test: 01/04/01
Curve Number: FIL-044

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



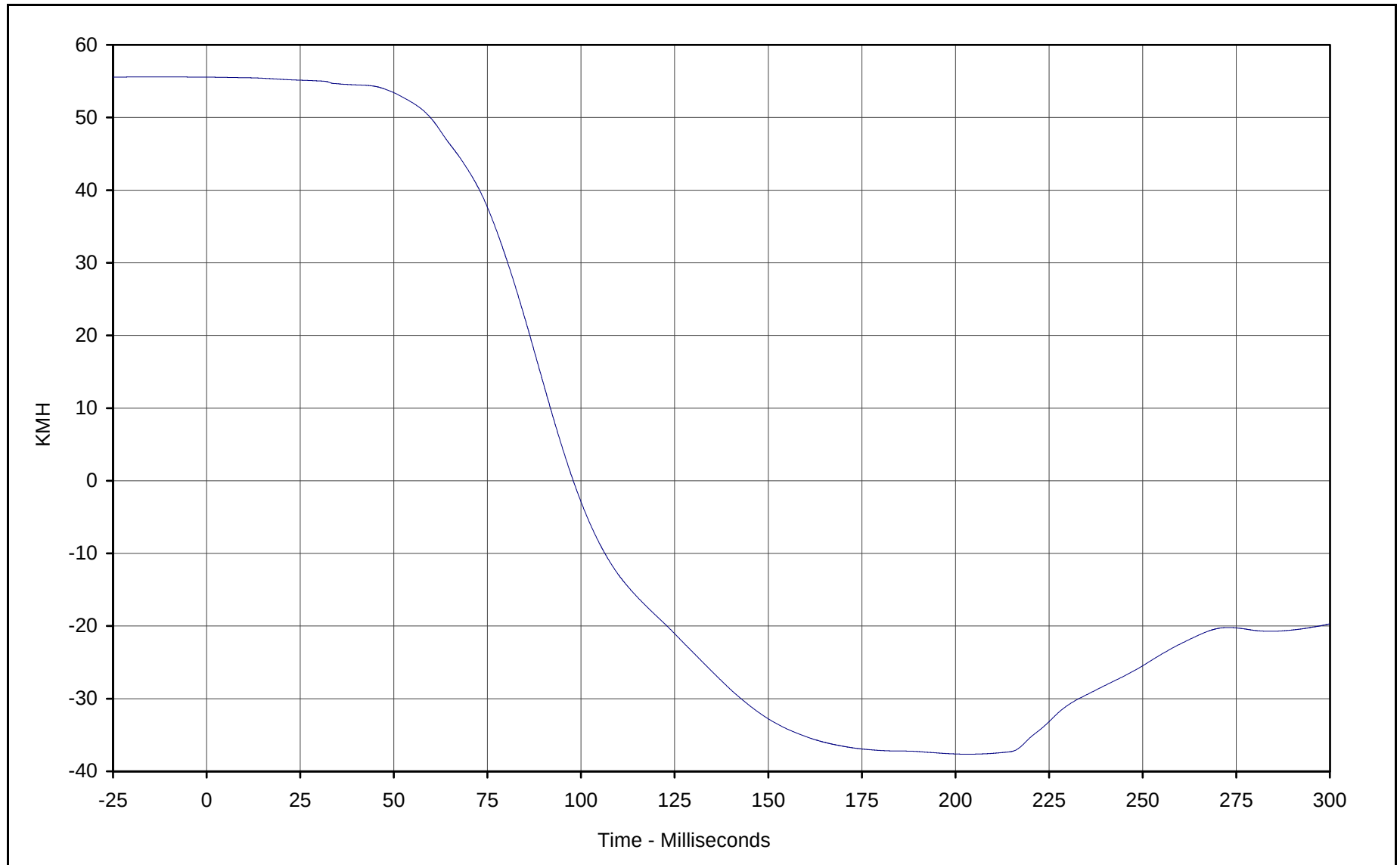
KAR21001-01



Curve Description: Passenger Head Primary X
Maximum Value: 15.5 at 218.6 Milliseconds
Minimum Value: -53.0 at 89.5 Milliseconds
SAE Filter Class: 1000
Date of Test: 01/04/01
Curve Number: FIL-045

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

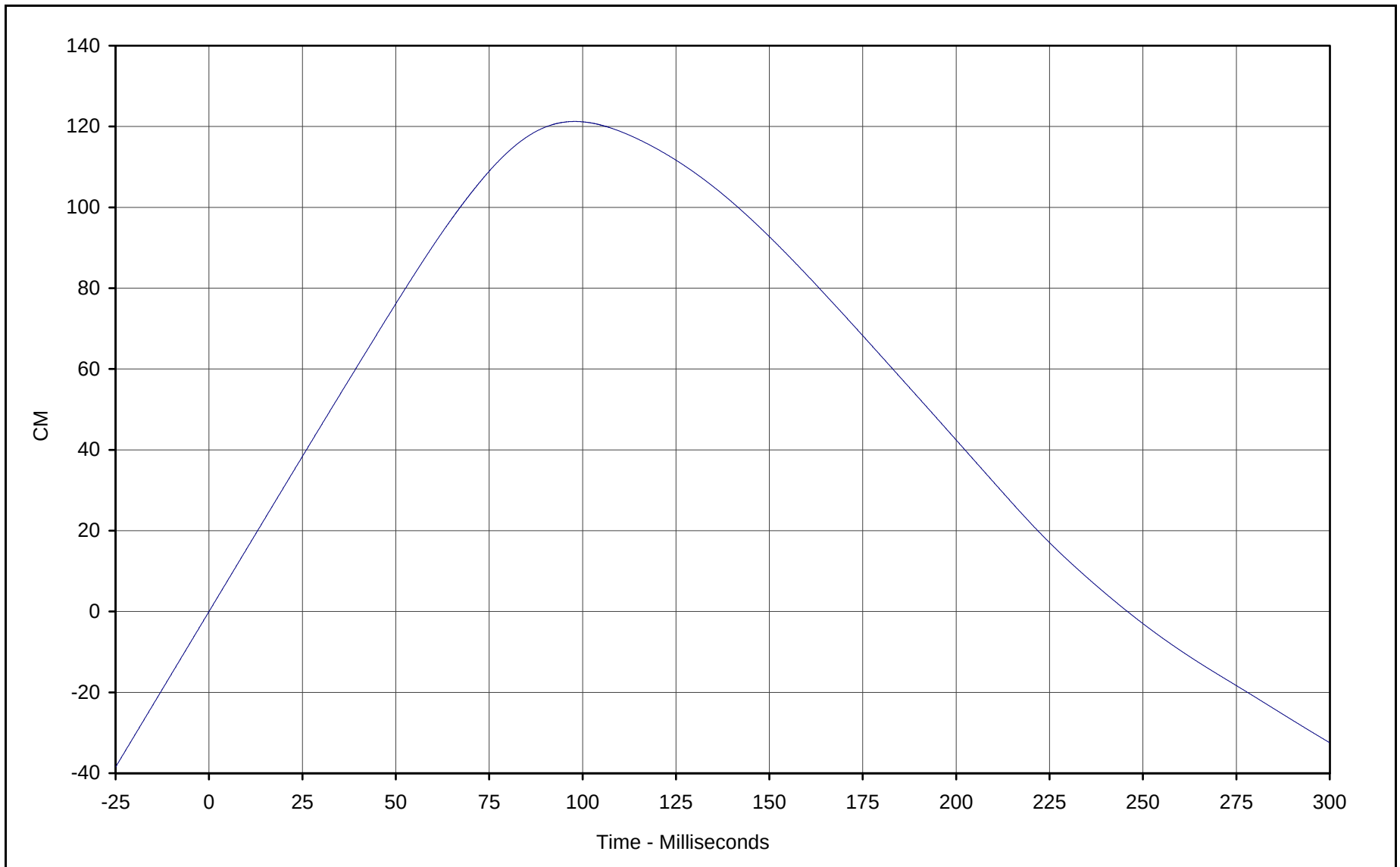




Curve Description: Passenger Head Primary X Velocity
Maximum Value: 55.6 at 0.0 Milliseconds
Minimum Value: -37.6 at 202.6 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: IN1-045

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

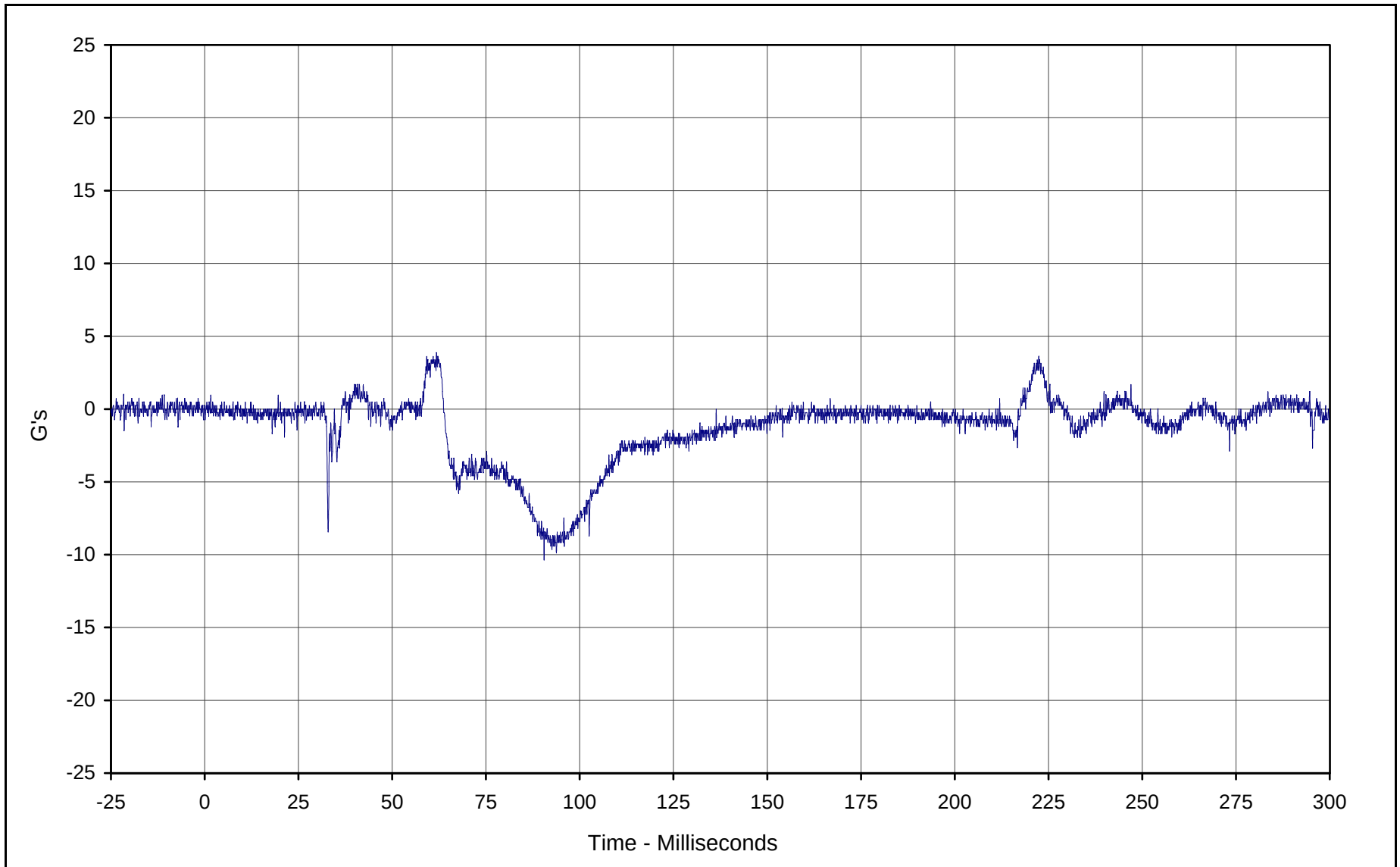




Curve Description: Passenger Head Primary X Displ.
Maximum Value: 121.2 at 97.9 Milliseconds
Minimum Value: -32.4 at 299.9 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: IN2-045

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

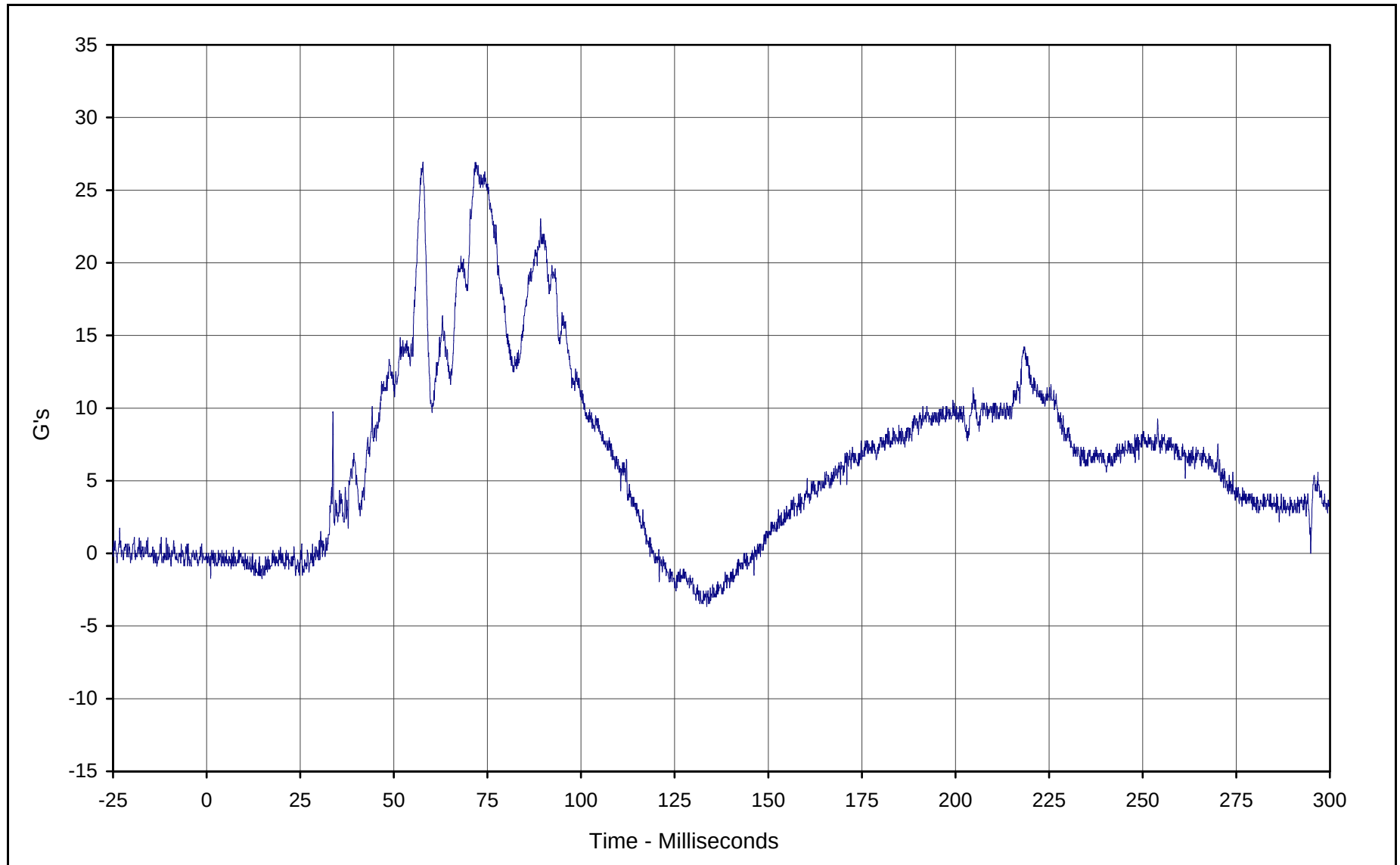




Curve Description: Passenger Head Primary Y
Maximum Value: 3.9 at 61.8 Milliseconds
Minimum Value: -10.4 at 90.5 Milliseconds
SAE Filter Class: 1000
Date of Test: 01/04/01
Curve Number: FIL-046

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

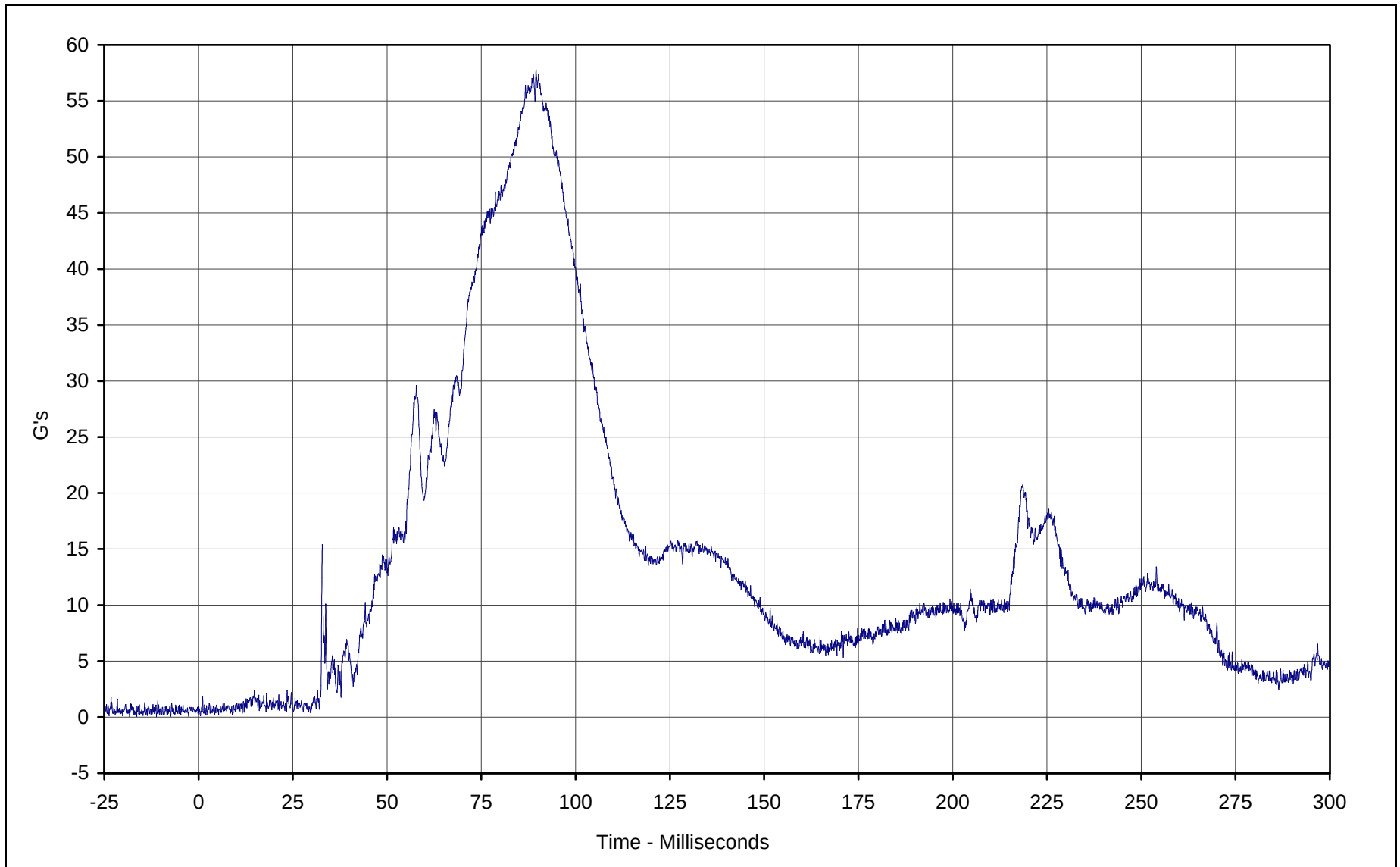




Curve Description: Passenger Head Primary Z
Maximum Value: 26.9 at 57.8 Milliseconds
Minimum Value: -3.7 at 133.6 Milliseconds
SAE Filter Class: 1000
Date of Test: 01/04/01
Curve Number: FIL-047

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

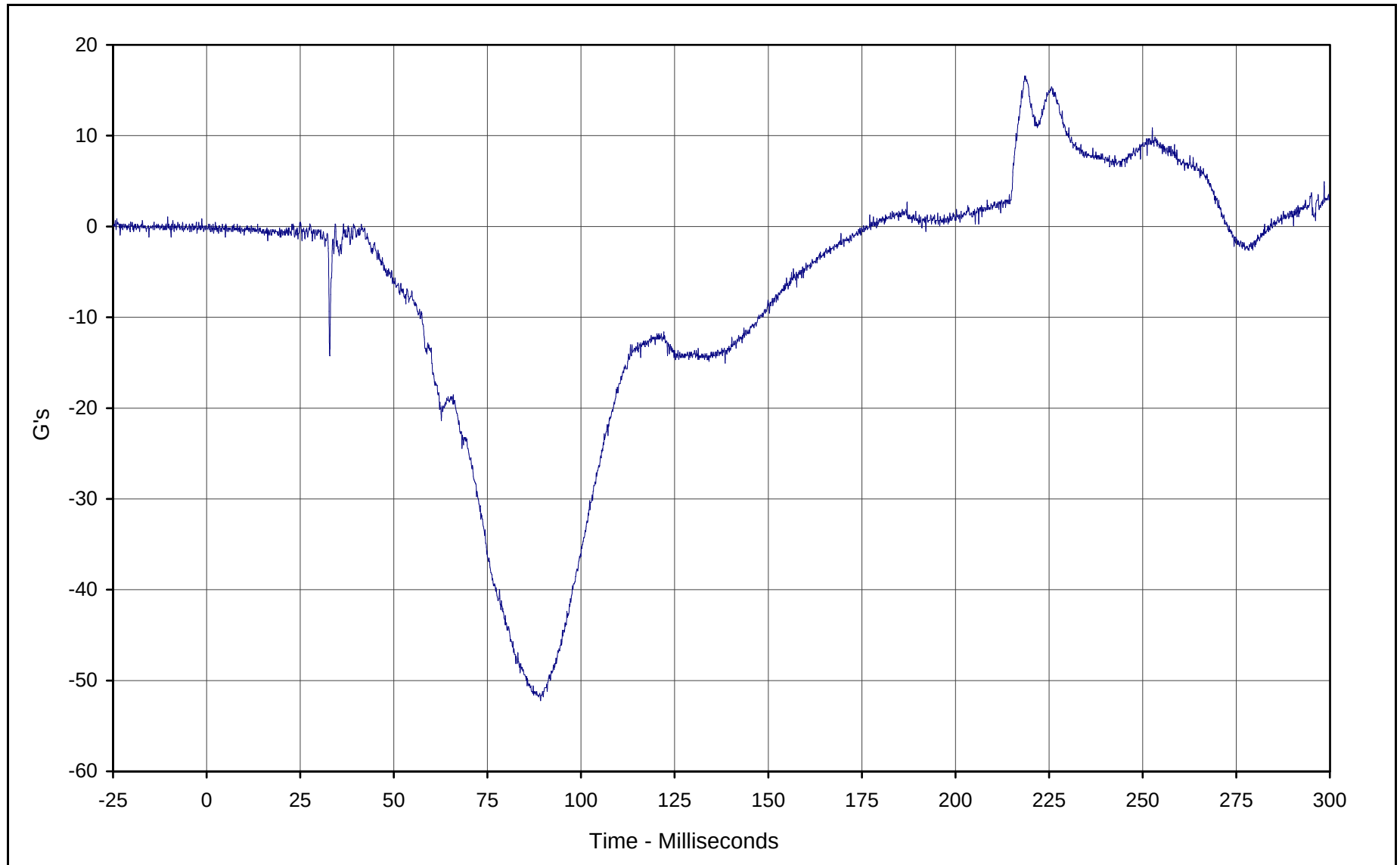




Curve Description: Passenger Head Resultant Primary
Maximum Value: 57.9 at 89.5 Milliseconds
Minimum Value: 0.1 at 0.5 Milliseconds
SAE Filter Class: 1000
Date of Test: 01/04/01
Curve Number: RES-045

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

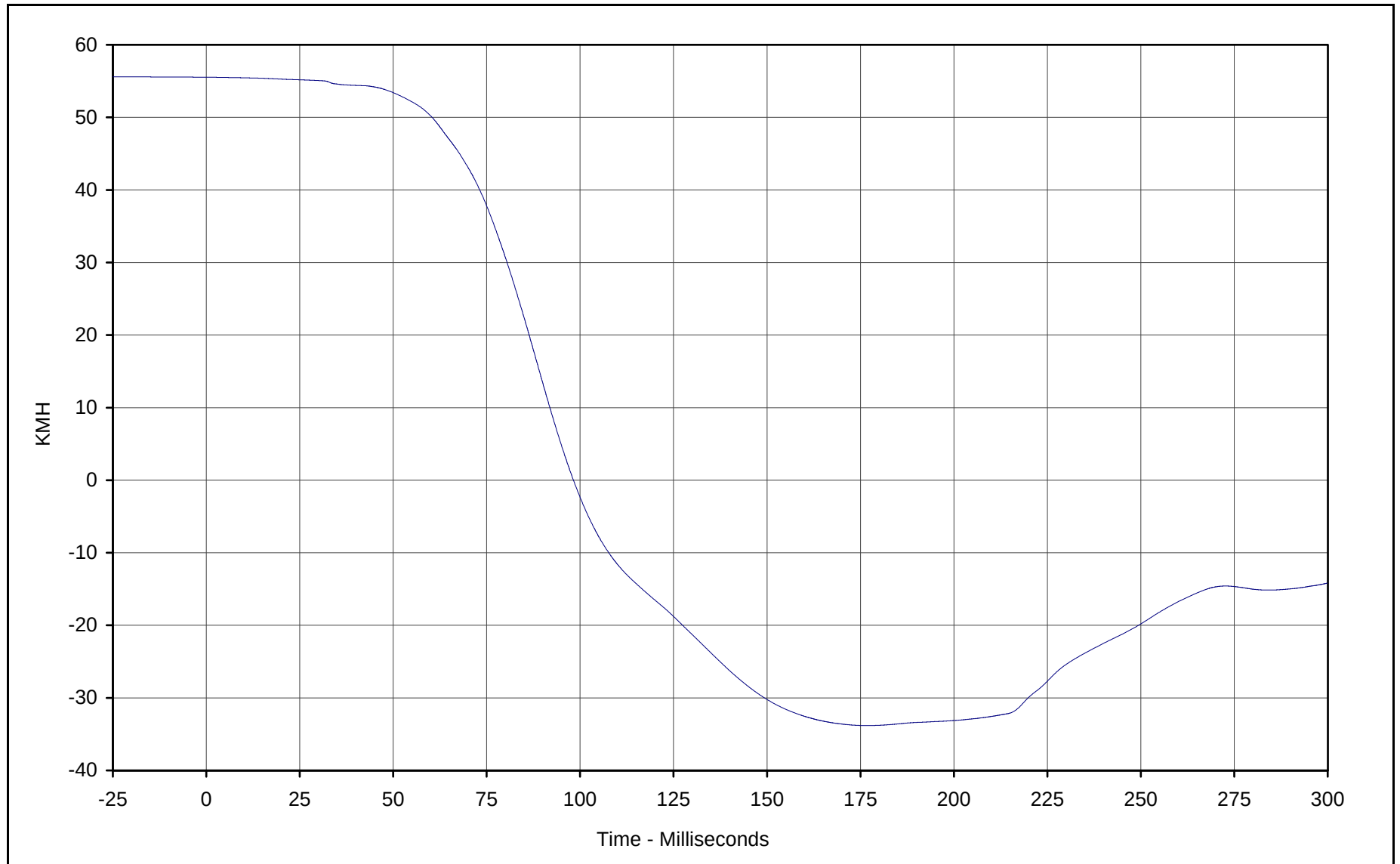




Curve Description: Passenger Head Redundant X
Maximum Value: 16.6 at 218.5 Milliseconds
Minimum Value: -52.2 at 89.2 Milliseconds
SAE Filter Class: 1000
Date of Test: 01/04/01
Curve Number: FIL-048

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Passenger Head Redundant X Velocity

Maximum Value: 55.5 at 0.0 Milliseconds

Minimum Value: -33.8 at 176.7 Milliseconds

SAE Filter Class: 180

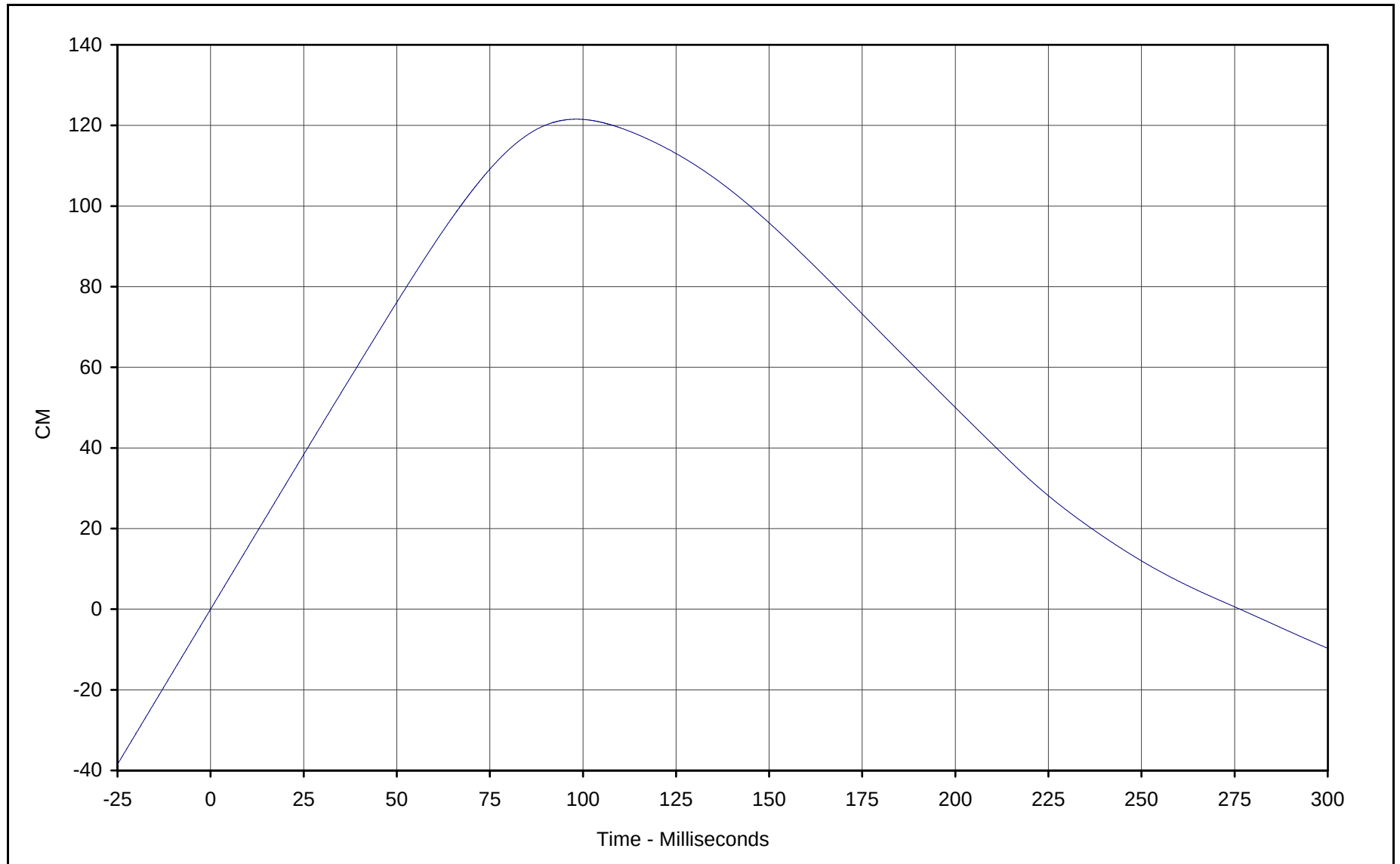
Date of Test: 01/04/01

Curve Number: IN1-048

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Passenger Head Redundant X Displ.

Maximum Value: 121.5 at 98.2 Milliseconds

Minimum Value: -9.7 at 299.9 Milliseconds

SAE Filter Class: 180

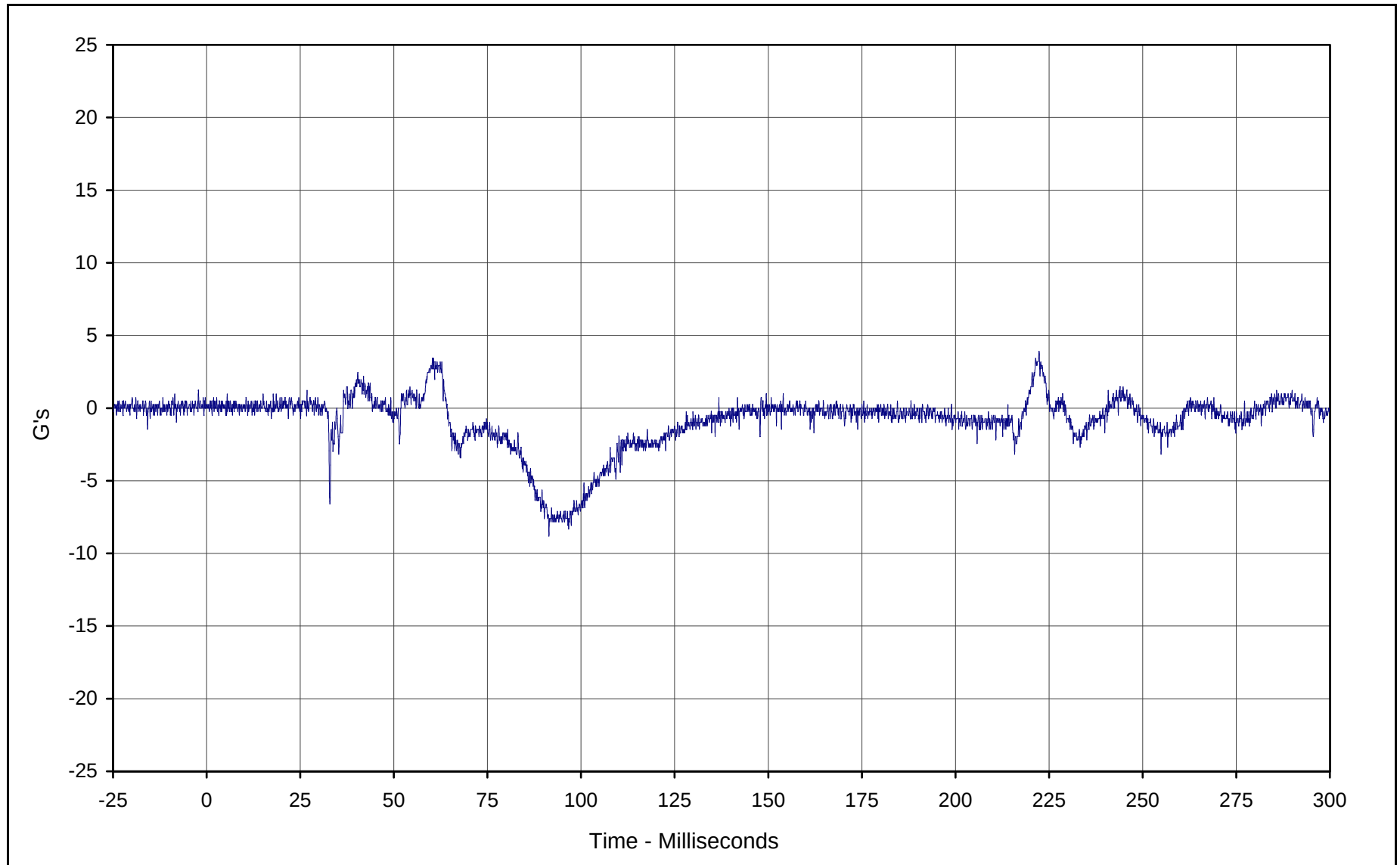
Date of Test: 01/04/01

Curve Number: IN2-048

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

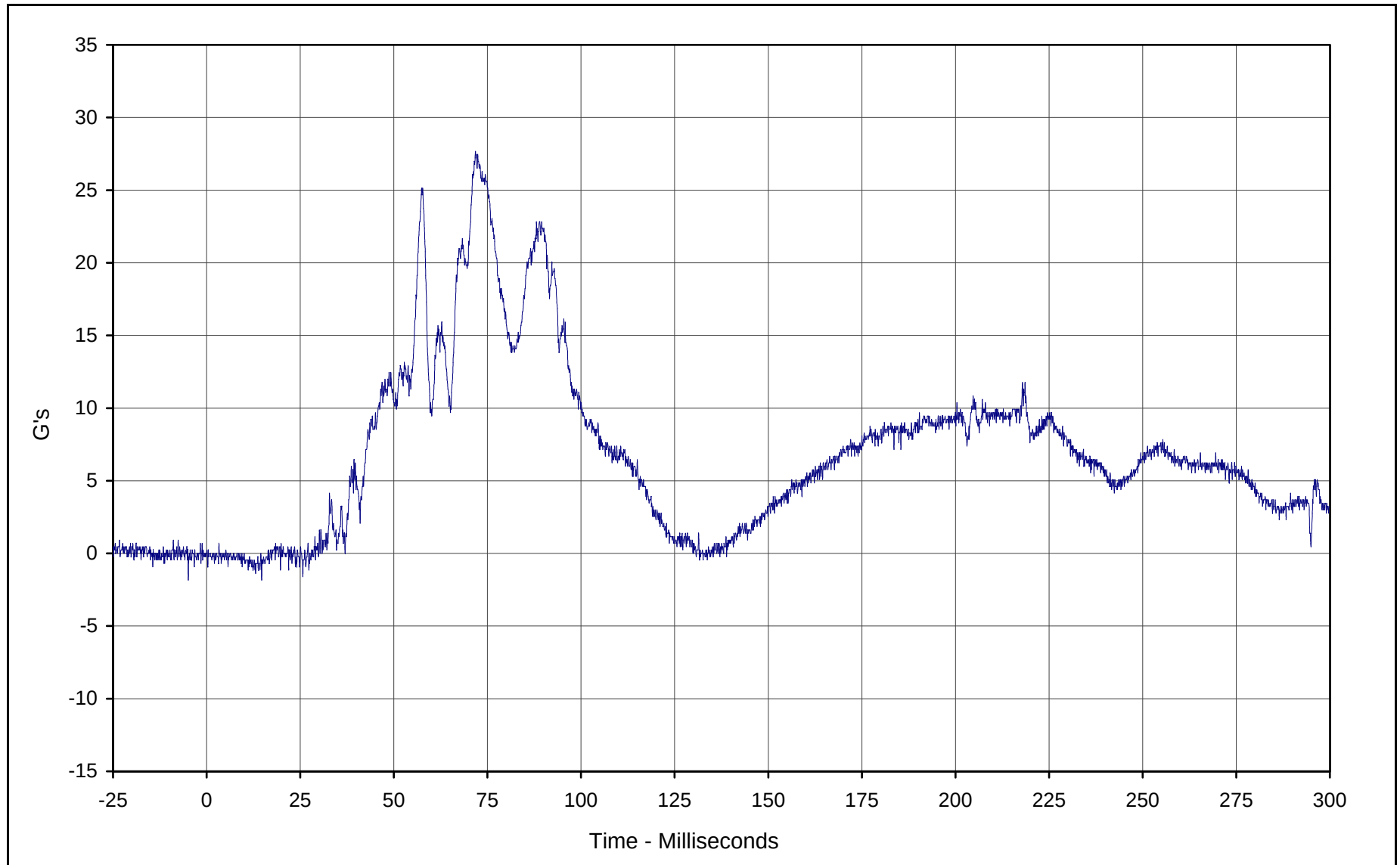




Curve Description: Passenger Head Redundant Y
Maximum Value: 3.9 at 222.3 Milliseconds
Minimum Value: -8.8 at 91.4 Milliseconds
SAE Filter Class: 1000
Date of Test: 01/04/01
Curve Number: FIL-049

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

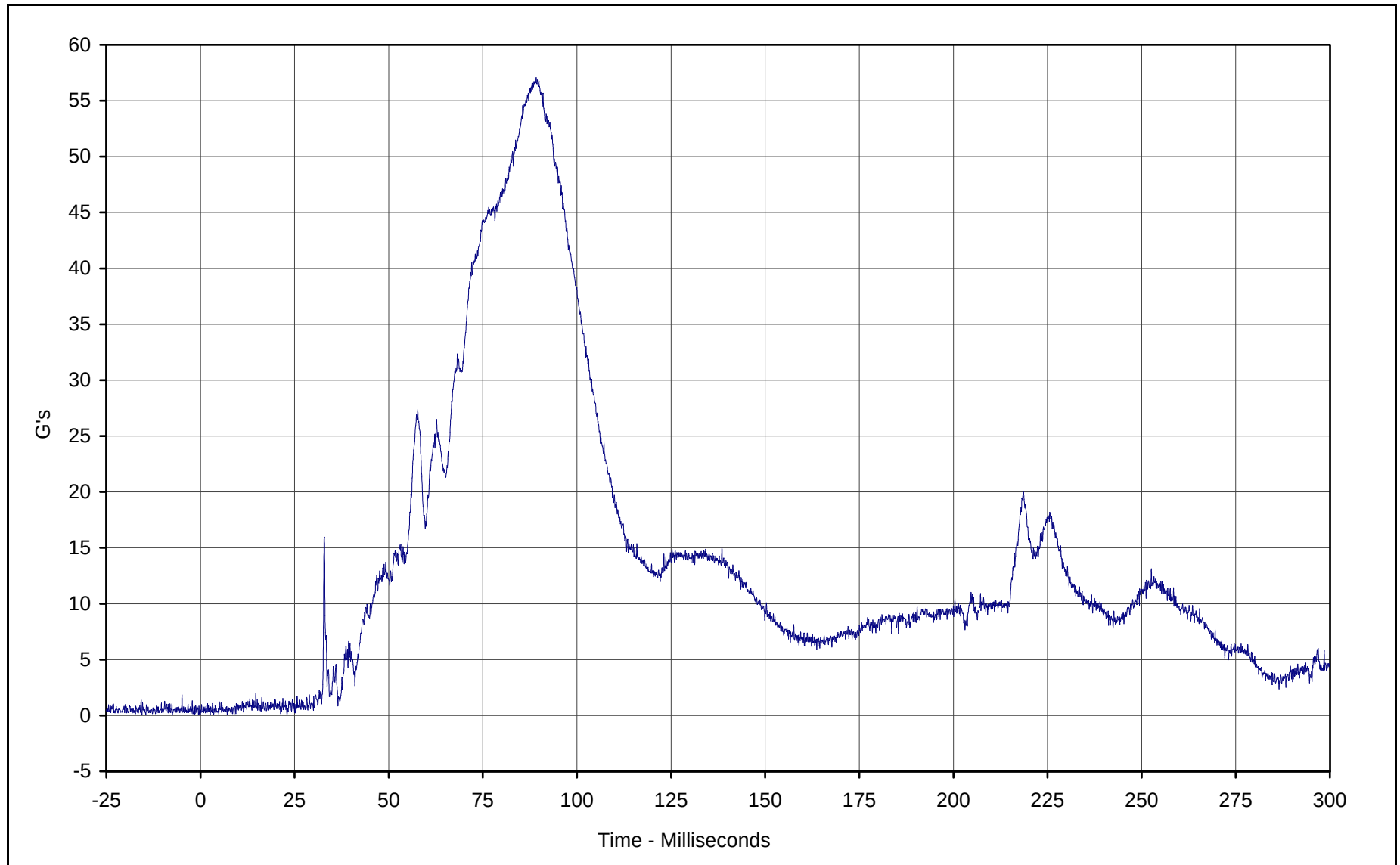




Curve Description: Passenger Head Redundant Z
Maximum Value: 27.7 at 71.8 Milliseconds
Minimum Value: -1.8 at 14.7 Milliseconds
SAE Filter Class: 1000
Date of Test: 01/04/01
Curve Number: FIL-050

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Passenger Head Resultant Redundant

Maximum Value: 57.1 at 89.2 Milliseconds

Minimum Value: 0.1 at 2.6 Milliseconds

SAE Filter Class: 1000

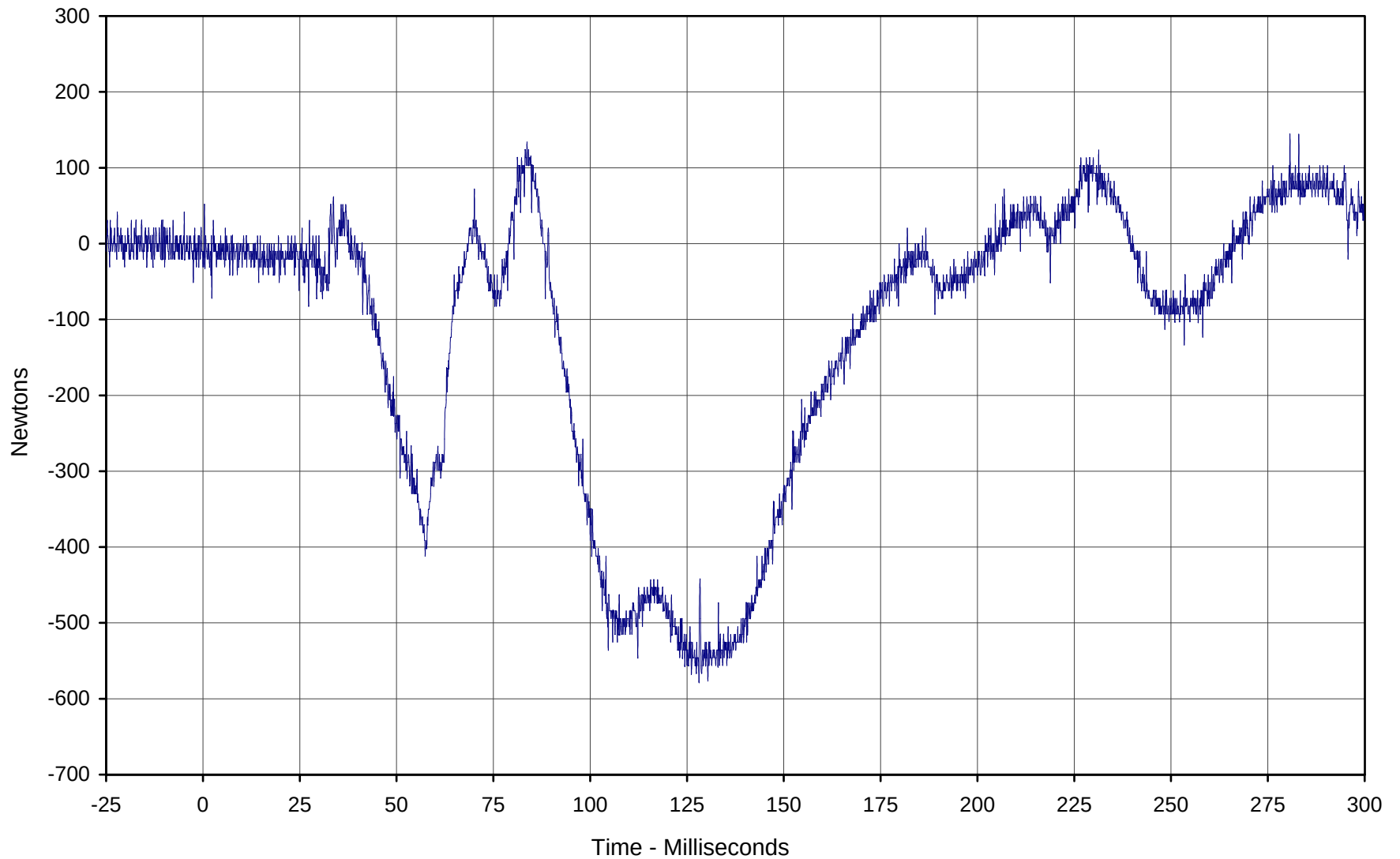
Date of Test: 01/04/01

Curve Number: RES-048

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

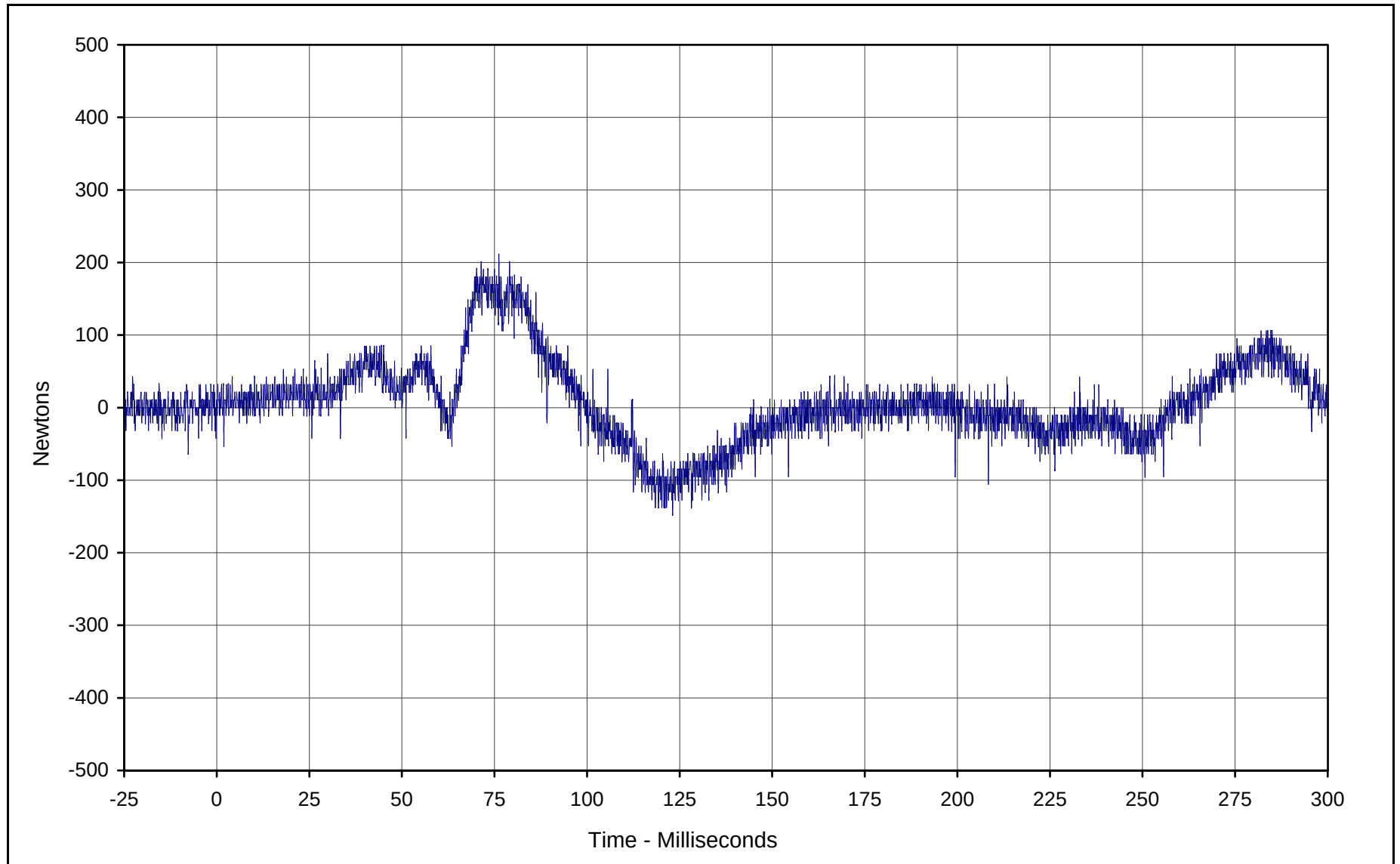




Curve Description: Passenger Neck Force X
Maximum Value: 144.2 at 280.7 Milliseconds
Minimum Value: -576.9 at 128.1 Milliseconds
SAE Filter Class: 1000
Date of Test: 01/04/01
Curve Number: FIL-051

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

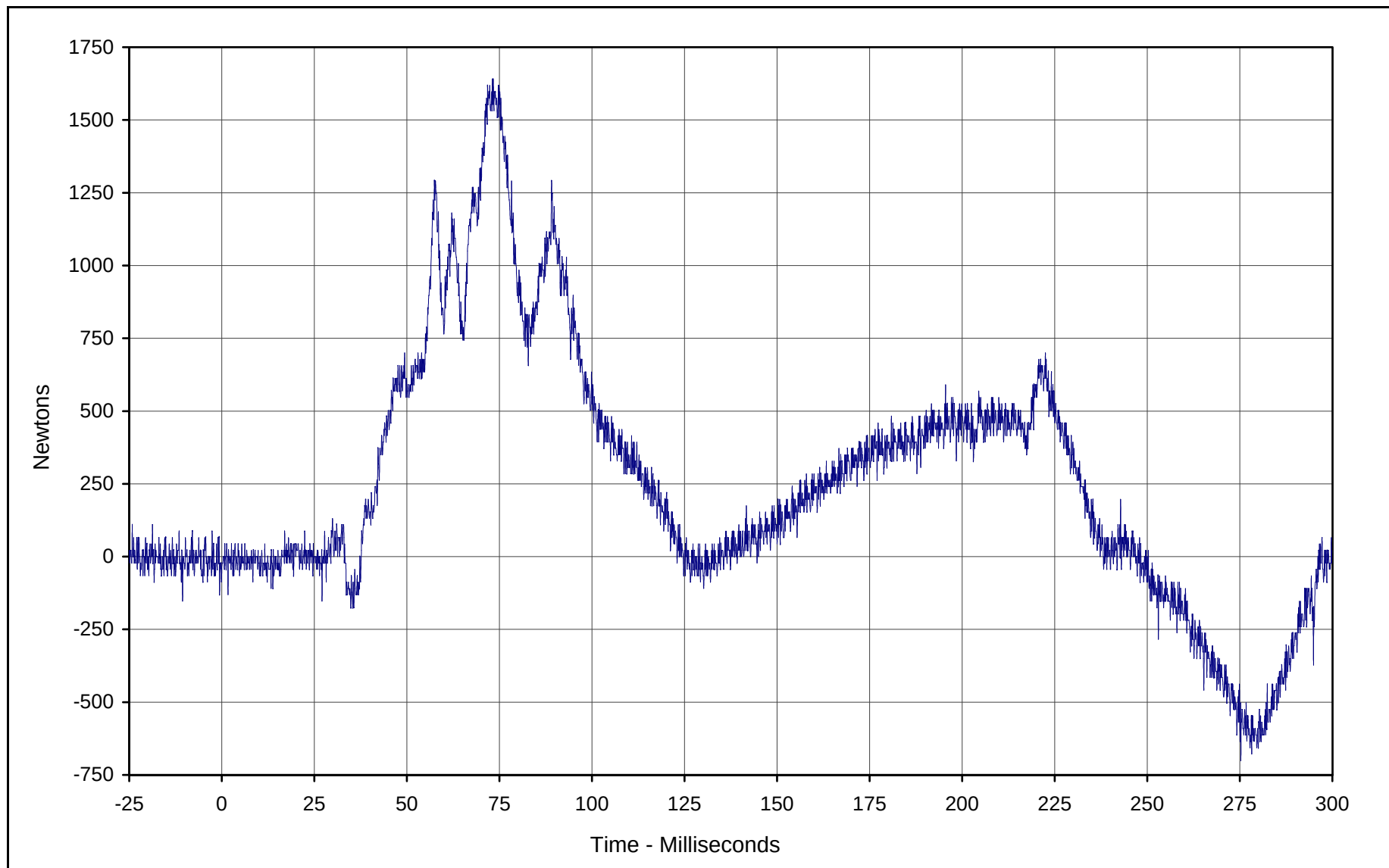




Curve Description: Passenger Neck Force Y
Maximum Value: 211.9 at 76.2 Milliseconds
Minimum Value: -148.3 at 123.1 Milliseconds
SAE Filter Class: 1000
Date of Test: 01/04/01
Curve Number: FIL-052

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

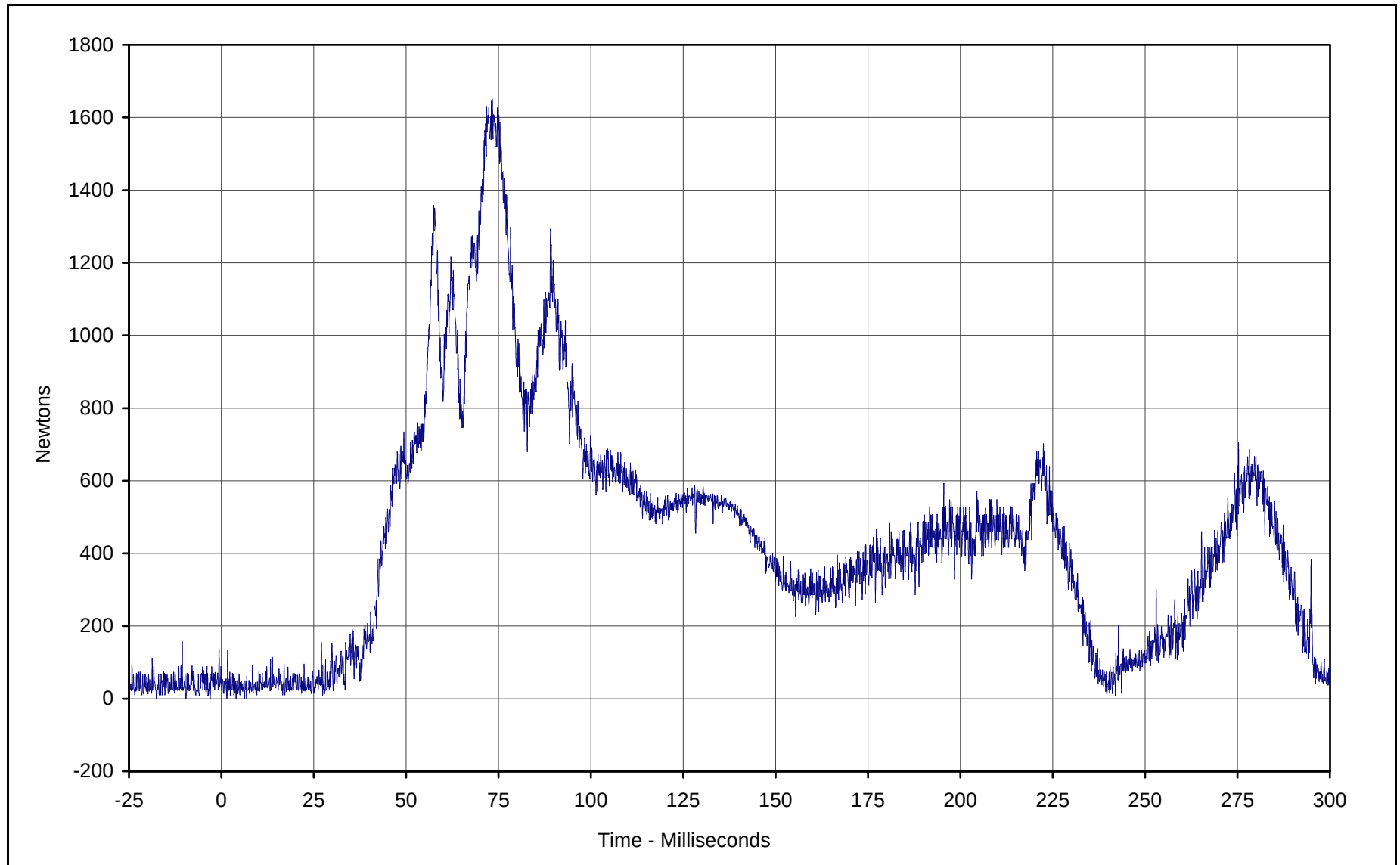




Curve Description: Passenger Neck Force Z
Maximum Value: 1640.8 at 73.1 Milliseconds
Minimum Value: -700.1 at 275.3 Milliseconds
SAE Filter Class: 1000
Date of Test: 01/04/01
Curve Number: FIL-053

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

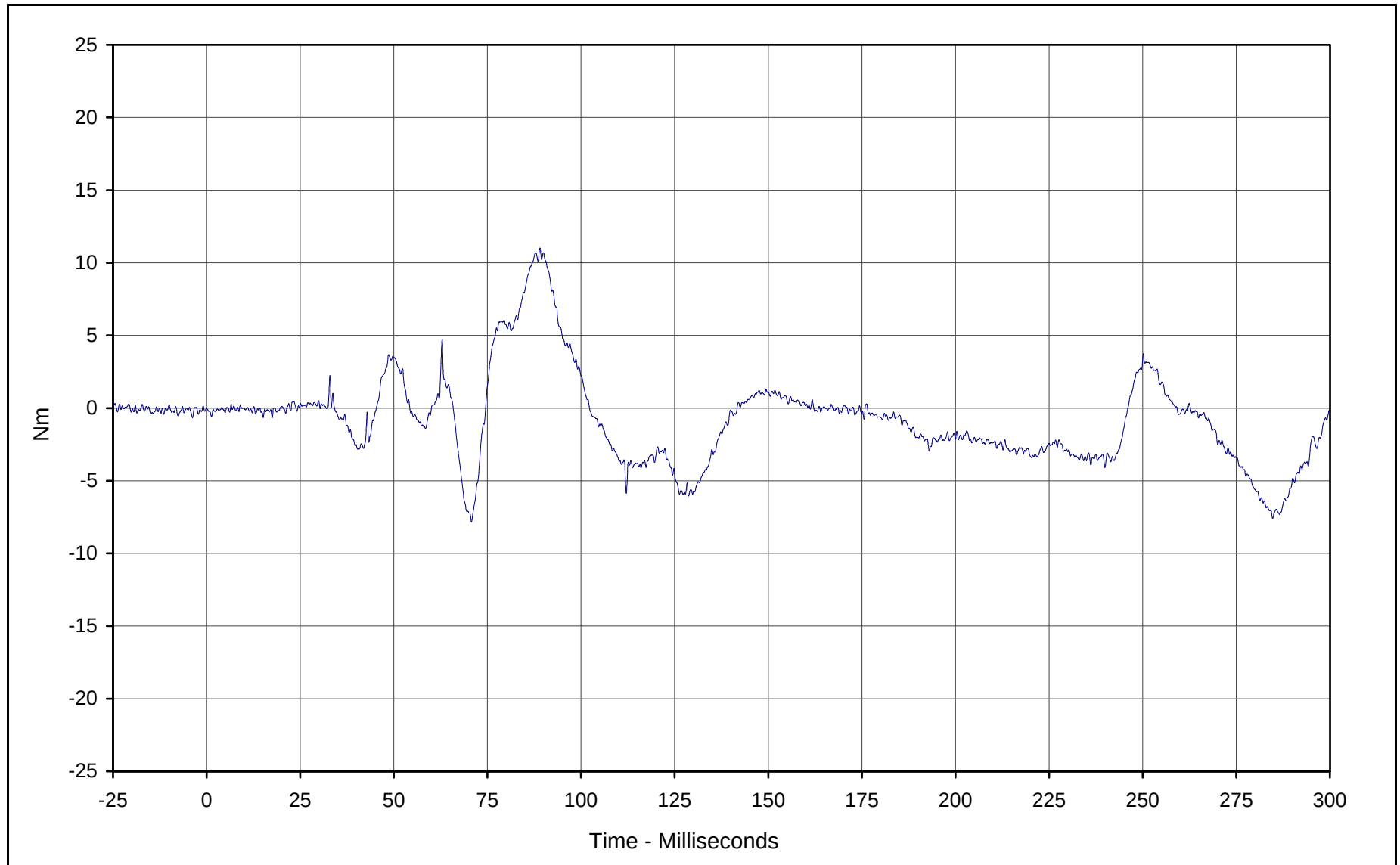




Curve Description: Passenger Neck Force Resultant
Maximum Value: 1649.7 at 73.3 Milliseconds
Minimum Value: 0.0 at 1.5 Milliseconds
SAE Filter Class: 1000
Date of Test: 01/04/01
Curve Number: RES-051

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

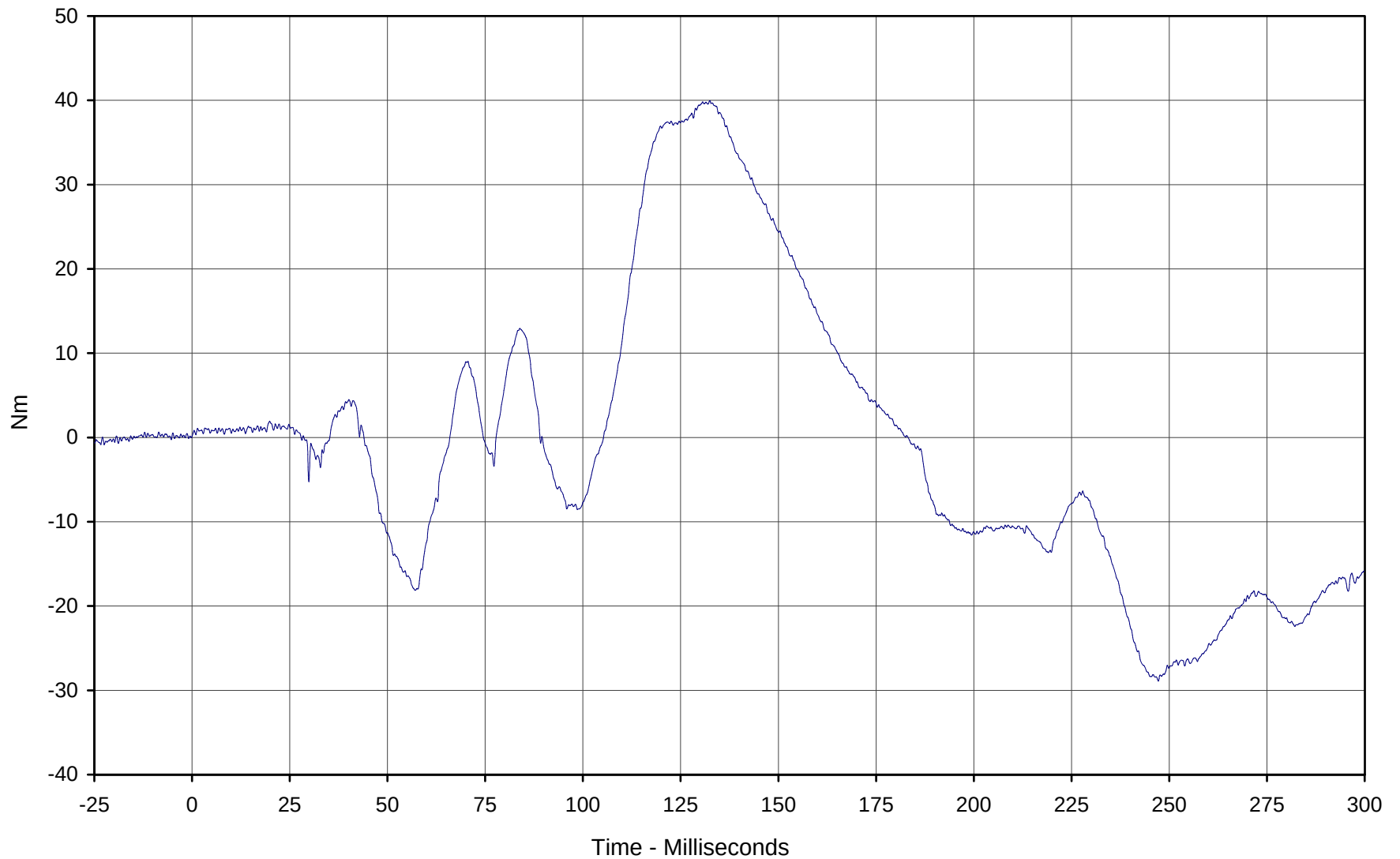




Curve Description: Passenger Neck Moment X
Maximum Value: 11.0 at 89.0 Milliseconds
Minimum Value: -7.8 at 70.8 Milliseconds
SAE Filter Class: 600
Date of Test: 01/04/01
Curve Number: FIL-054

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

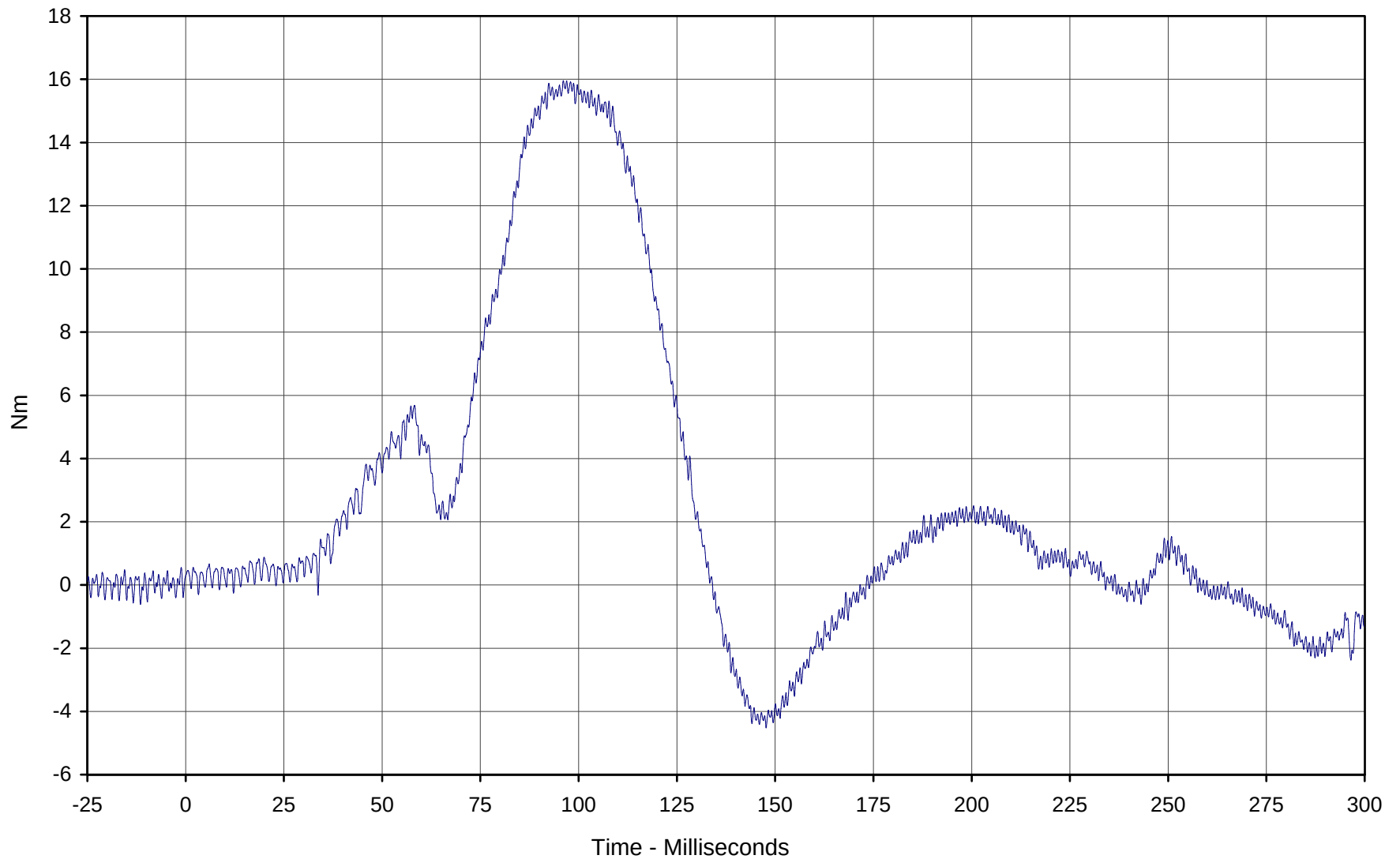




Curve Description: Passenger Neck Moment Y
Maximum Value: 40.0 at 132.4 Milliseconds
Minimum Value: -28.9 at 247.2 Milliseconds
SAE Filter Class: 600
Date of Test: 01/04/01
Curve Number: FIL-055

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

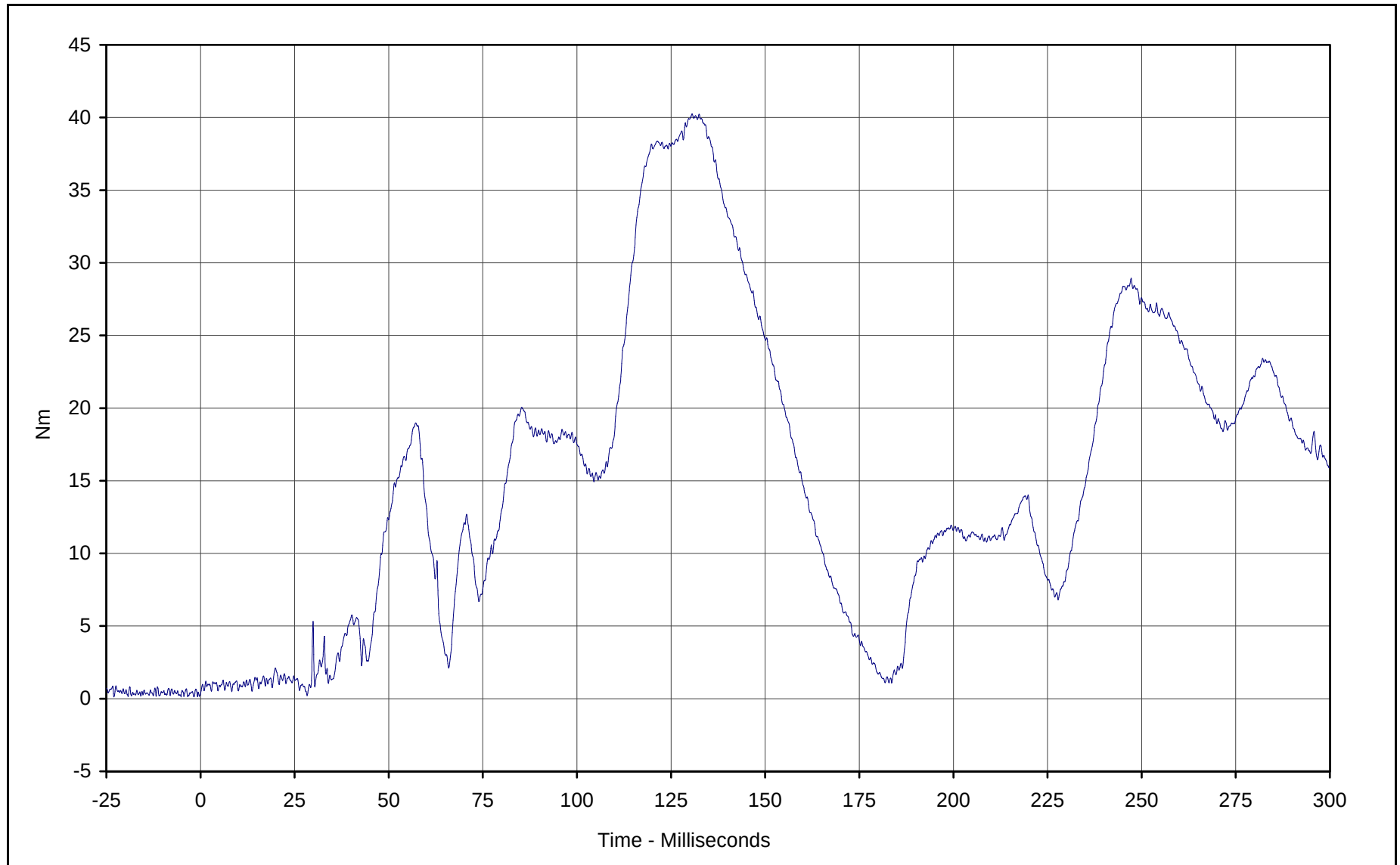




Curve Description: Passenger Neck Moment Z
Maximum Value: 16.0 at 96.1 Milliseconds
Minimum Value: -4.5 at 147.7 Milliseconds
SAE Filter Class: 600
Date of Test: 01/04/01
Curve Number: FIL-056

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

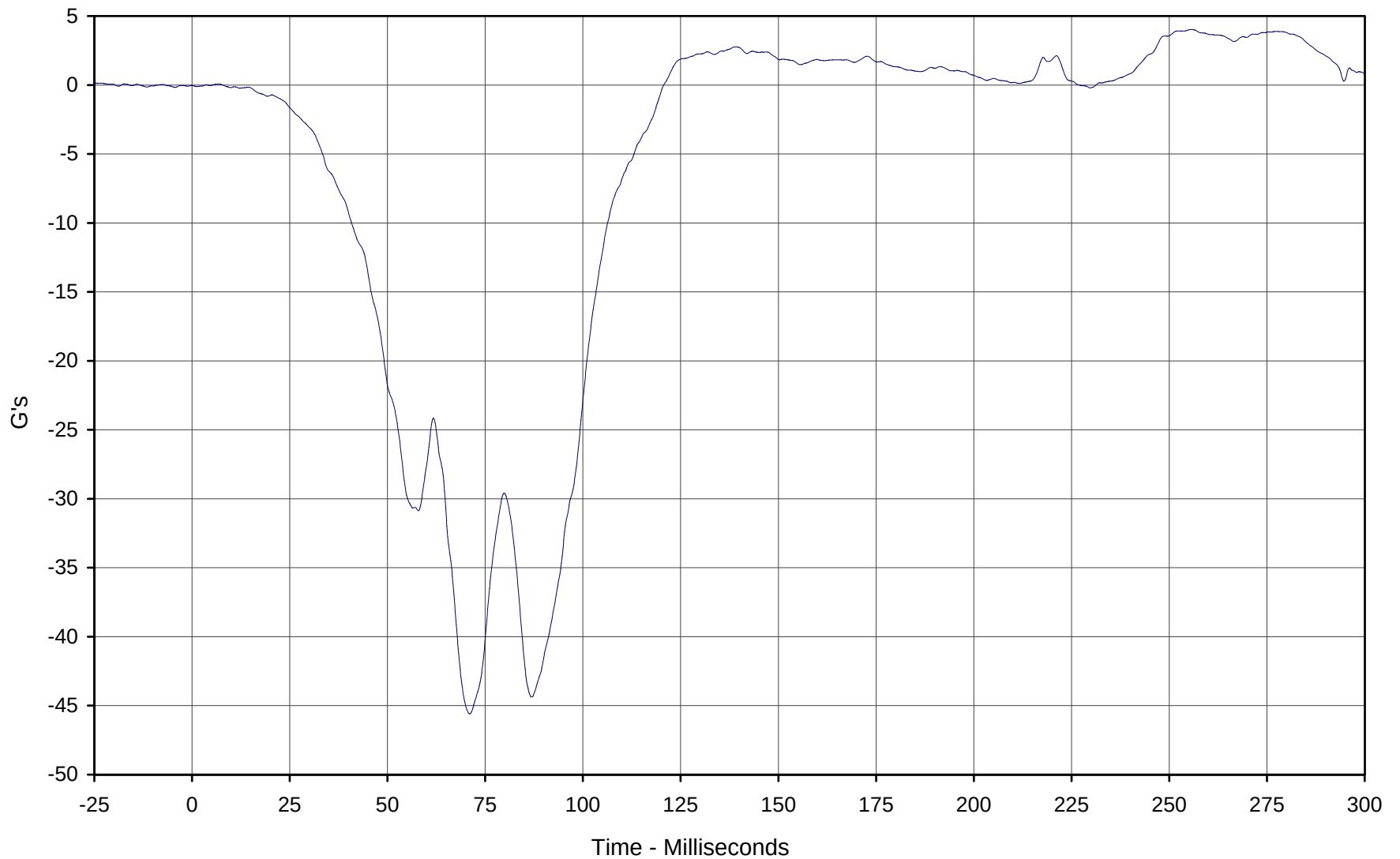




Curve Description: Passenger Neck Moment Resultant
Maximum Value: 40.2 at 130.6 Milliseconds
Minimum Value: 0.2 at 28.3 Milliseconds
SAE Filter Class: 600
Date of Test: 01/04/01
Curve Number: RES-054

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

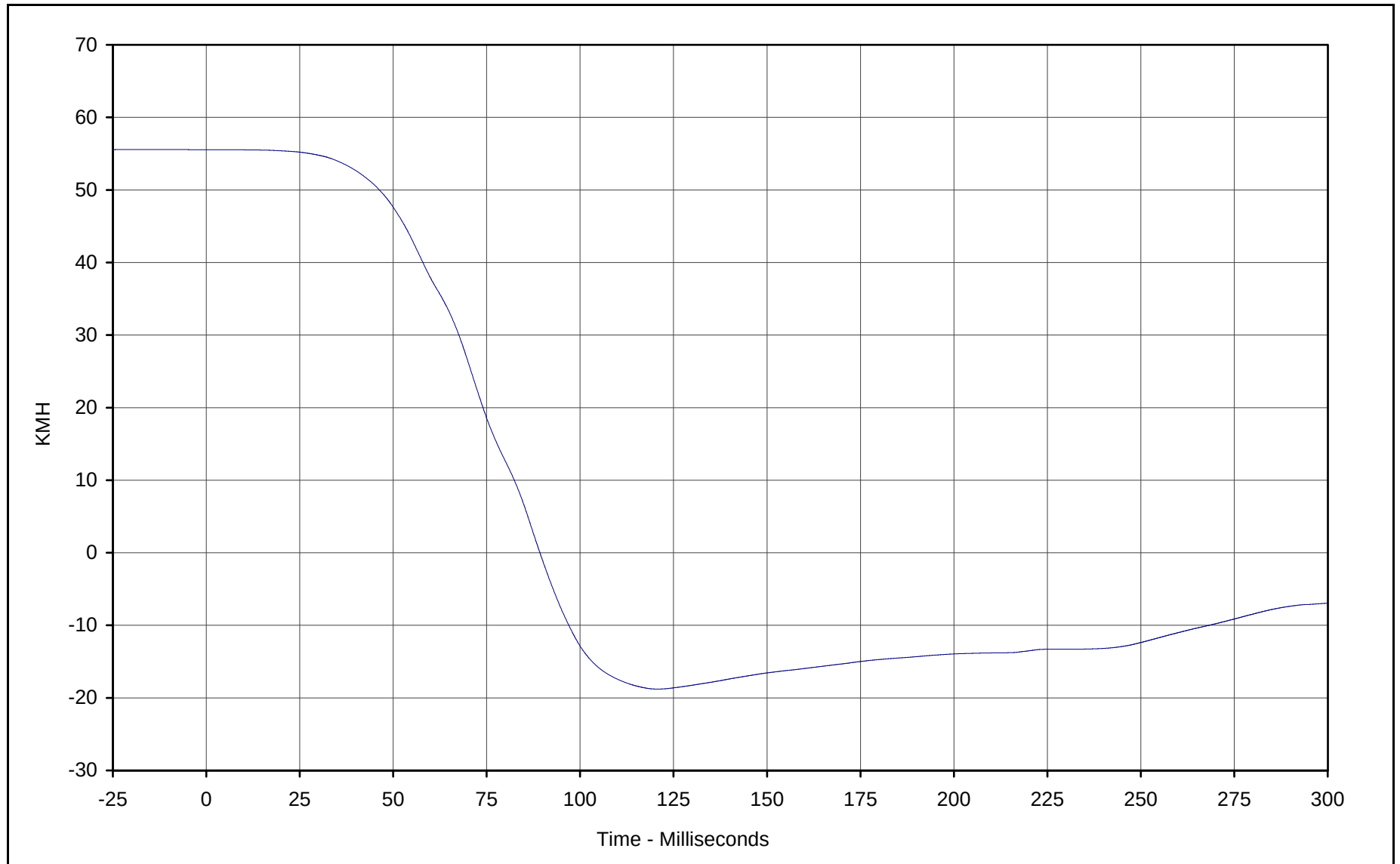




Curve Description: Passenger Chest Primary X
Maximum Value: 4.0 at 255.6 Milliseconds
Minimum Value: -45.6 at 71.0 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: FIL-057

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

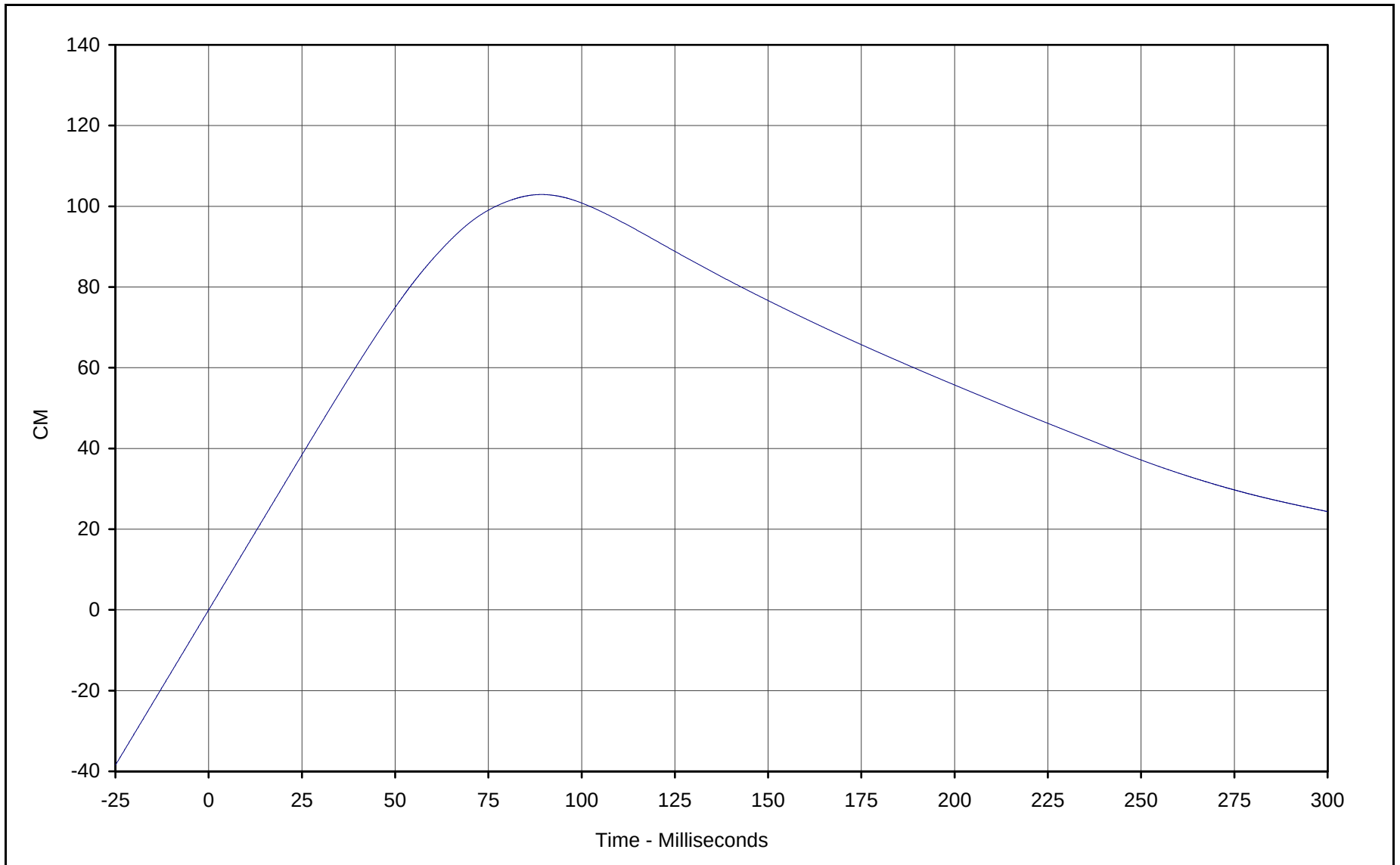




Curve Description: Passenger Chest Primary X Velocity
Maximum Value: 55.5 at 0.0 Milliseconds
Minimum Value: -18.8 at 120.6 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: IN1-057

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

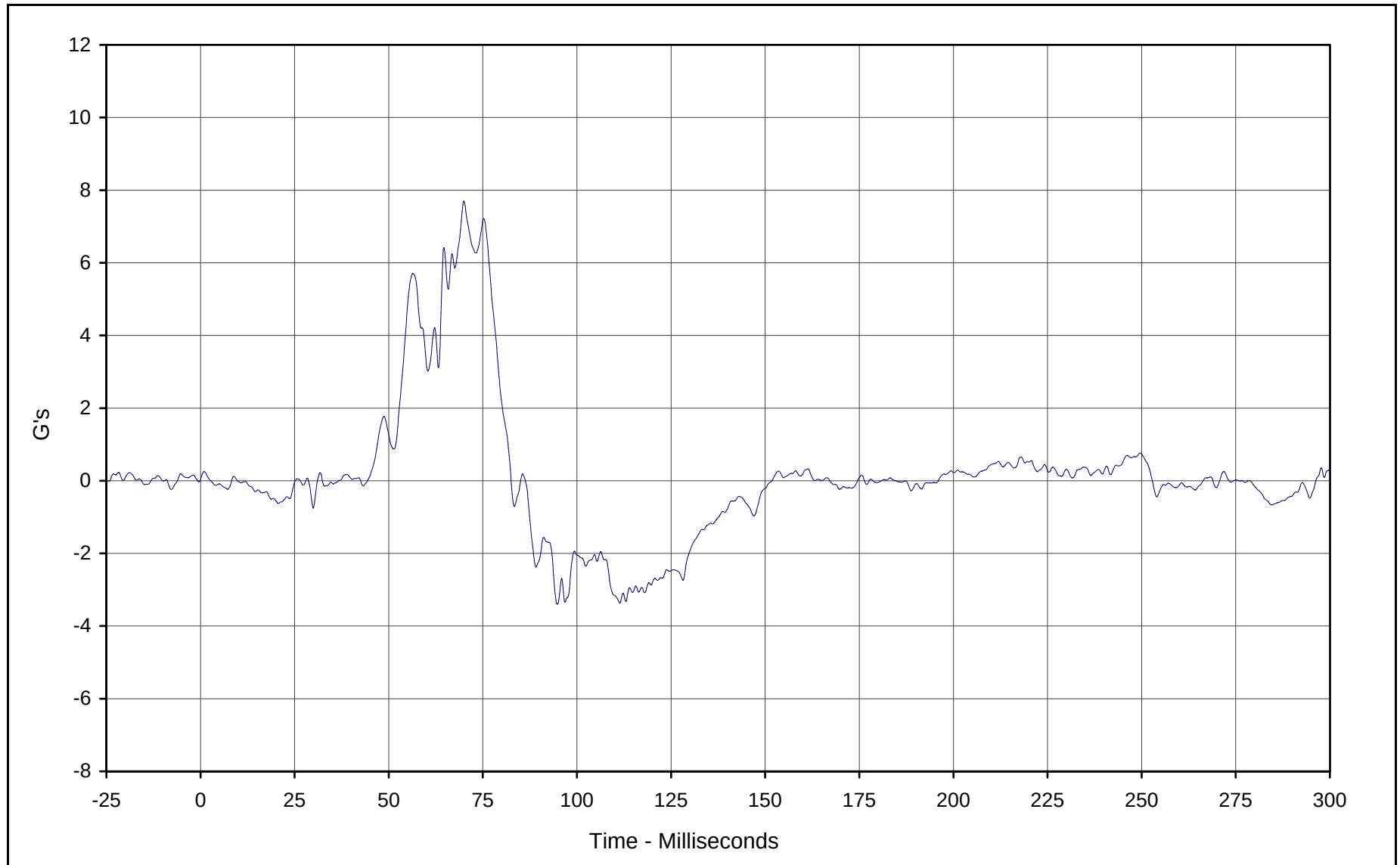




Curve Description: Passenger Chest Primary X Displ.
Maximum Value: 102.9 at 89.2 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: IN2-057

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

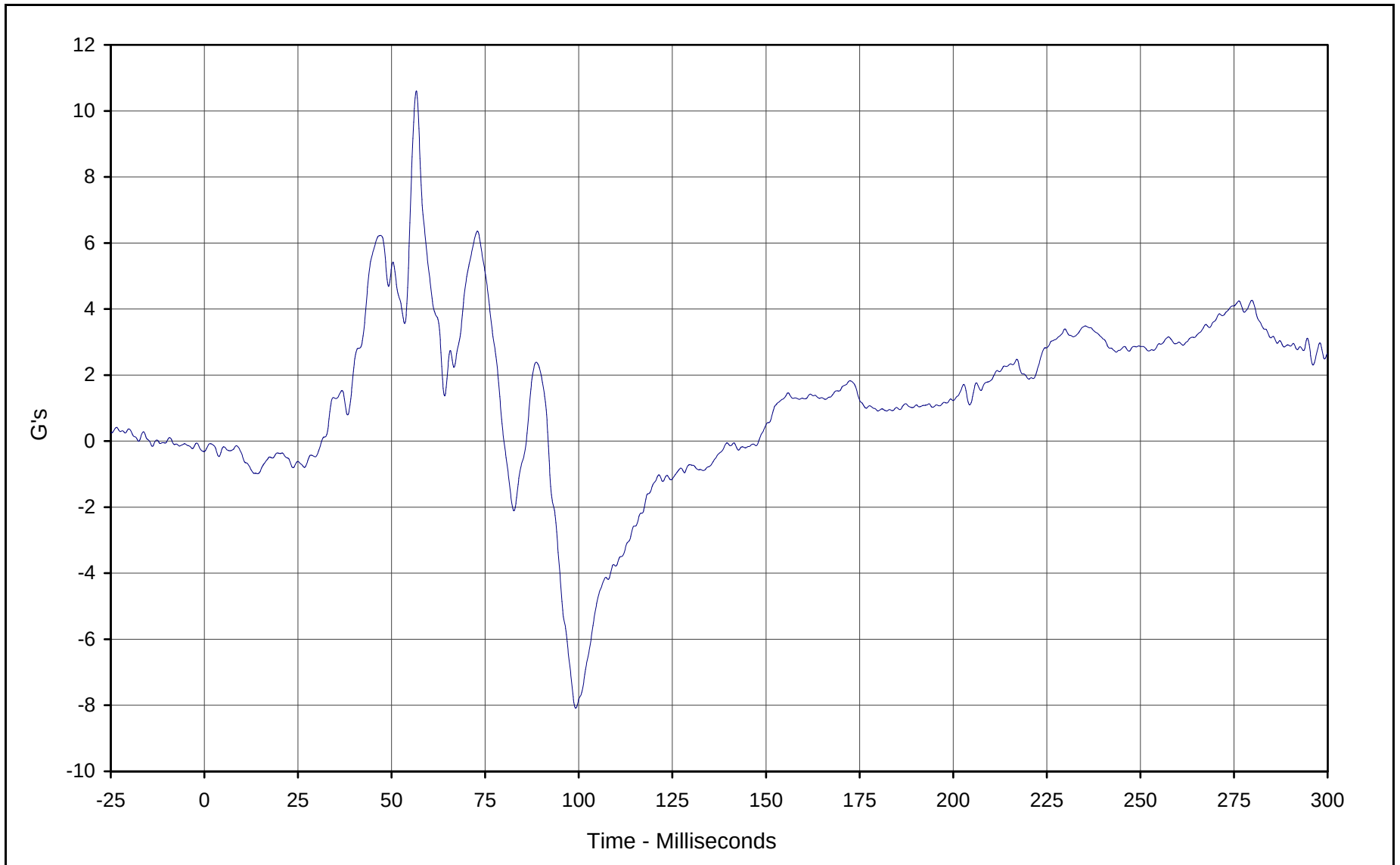




Curve Description: Passenger Chest Primary Y
Maximum Value: 7.7 at 70.0 Milliseconds
Minimum Value: -3.4 at 94.8 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: FIL-058

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

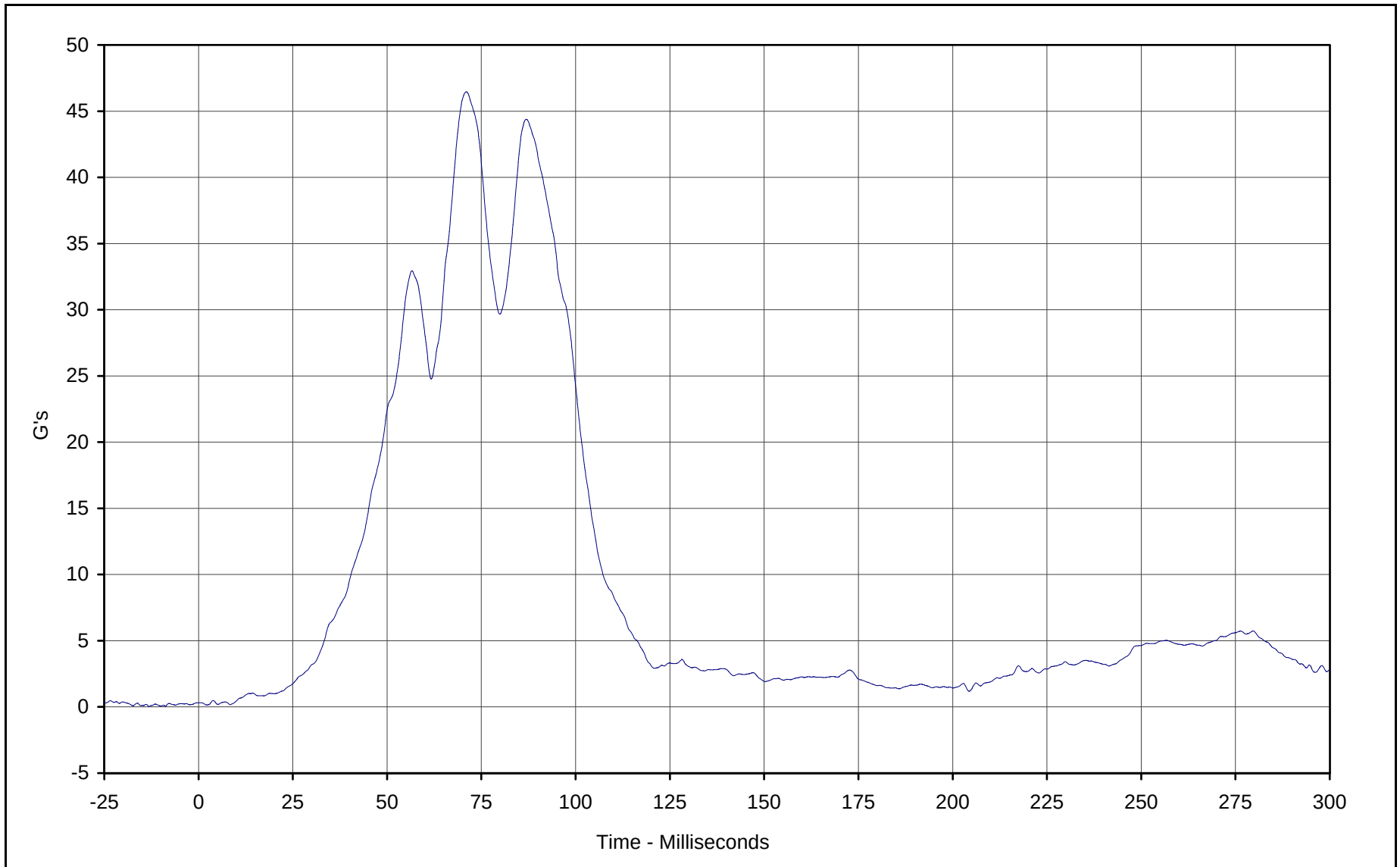




Curve Description: Passenger Chest Primary Z
Maximum Value: 10.6 at 56.6 Milliseconds
Minimum Value: -8.1 at 99.2 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: FIL-059

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

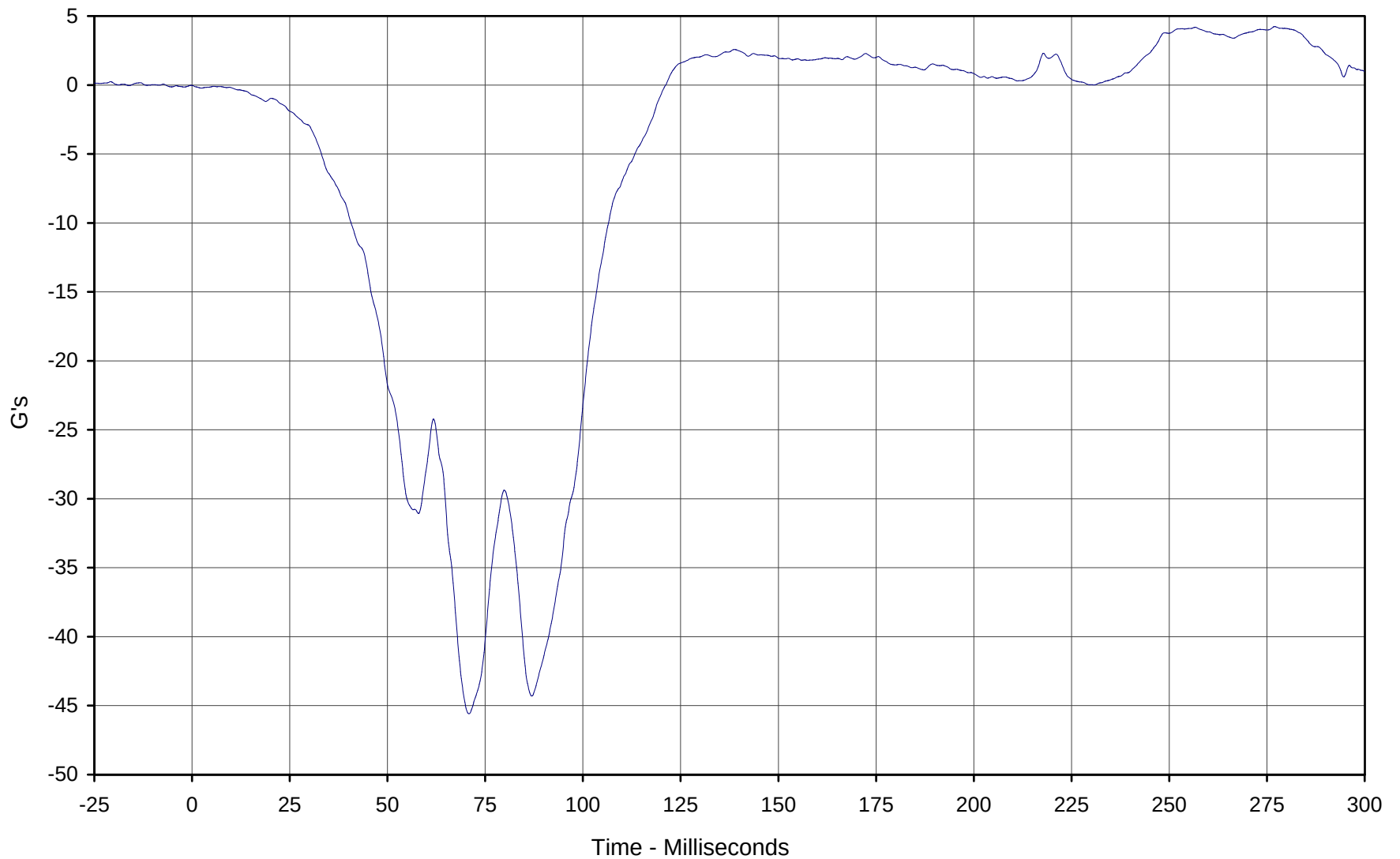




Curve Description: Passenger Chest Resultant Primary
Maximum Value: 46.5 at 71.0 Milliseconds
Minimum Value: 0.1 at 2.2 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: RES-057

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

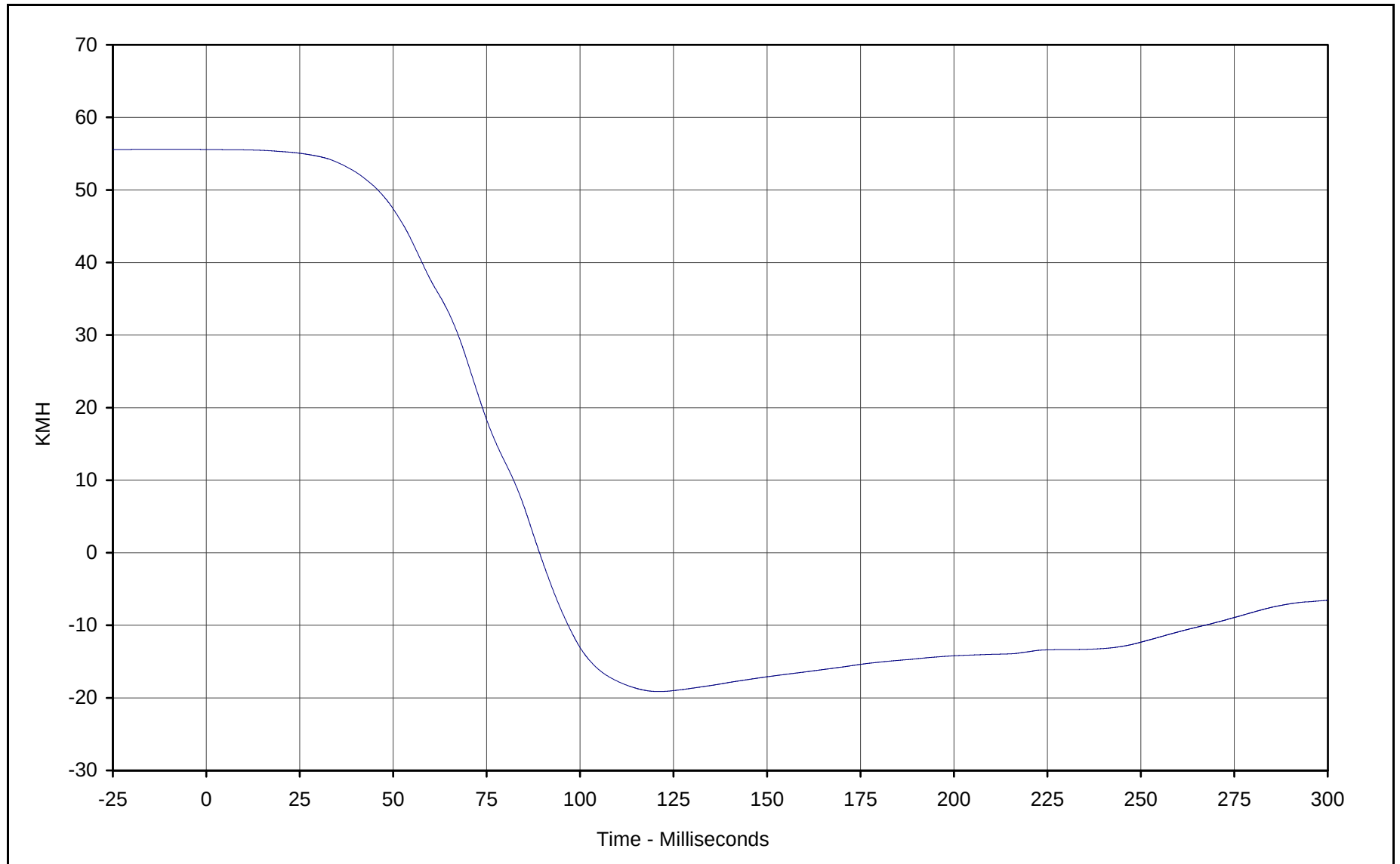




Curve Description: Passenger Chest Redundant X
Maximum Value: 4.2 at 277.0 Milliseconds
Minimum Value: -45.6 at 70.8 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: FIL-060

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Passenger Chest Redundant X Velocity

Maximum Value: 55.6 at 0.0 Milliseconds

Minimum Value: -19.1 at 121.2 Milliseconds

SAE Filter Class: 180

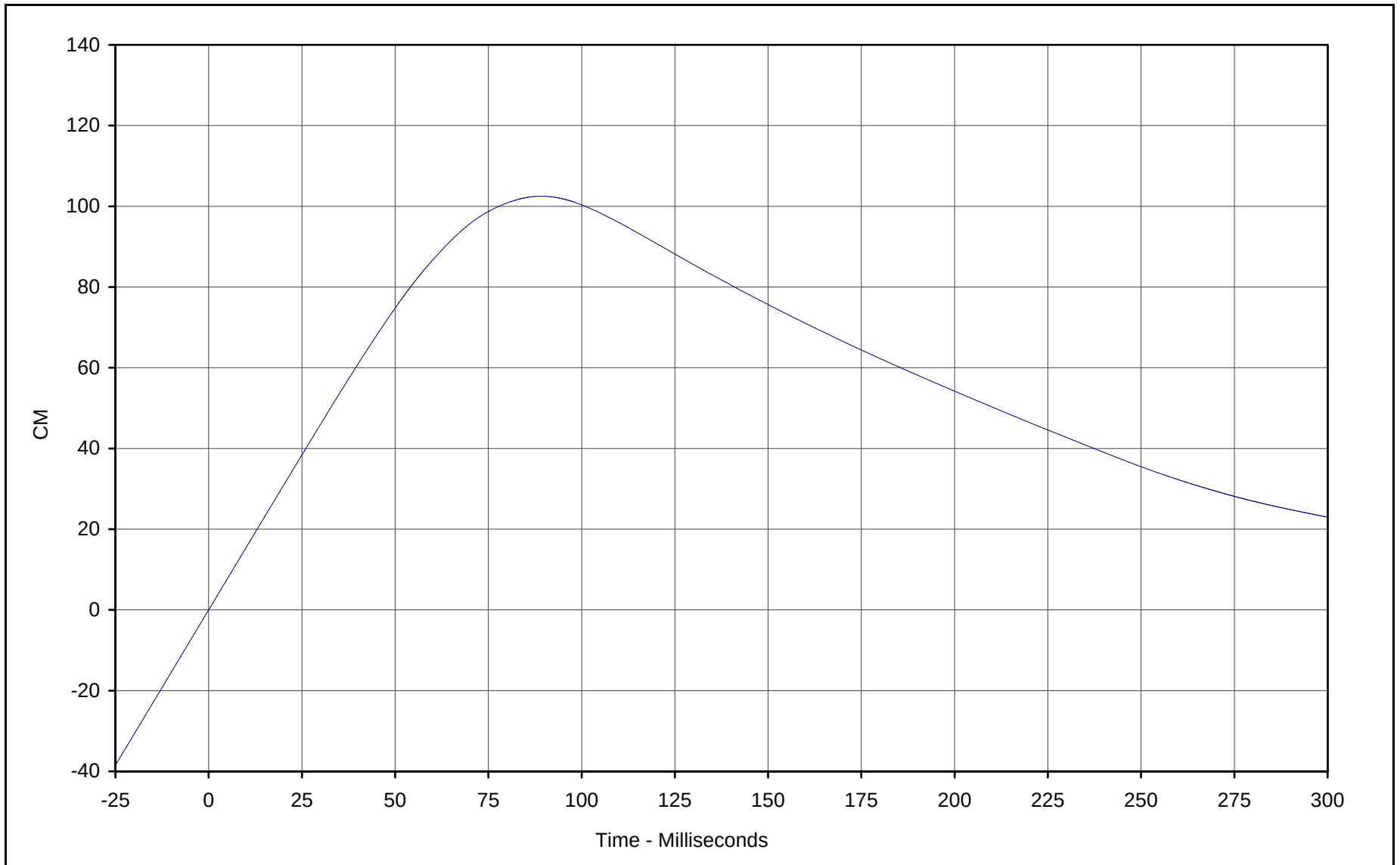
Date of Test: 01/04/01

Curve Number: IN1-060

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Passenger Chest Redundant X Displ.

Maximum Value: 102.5 at 89.1 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

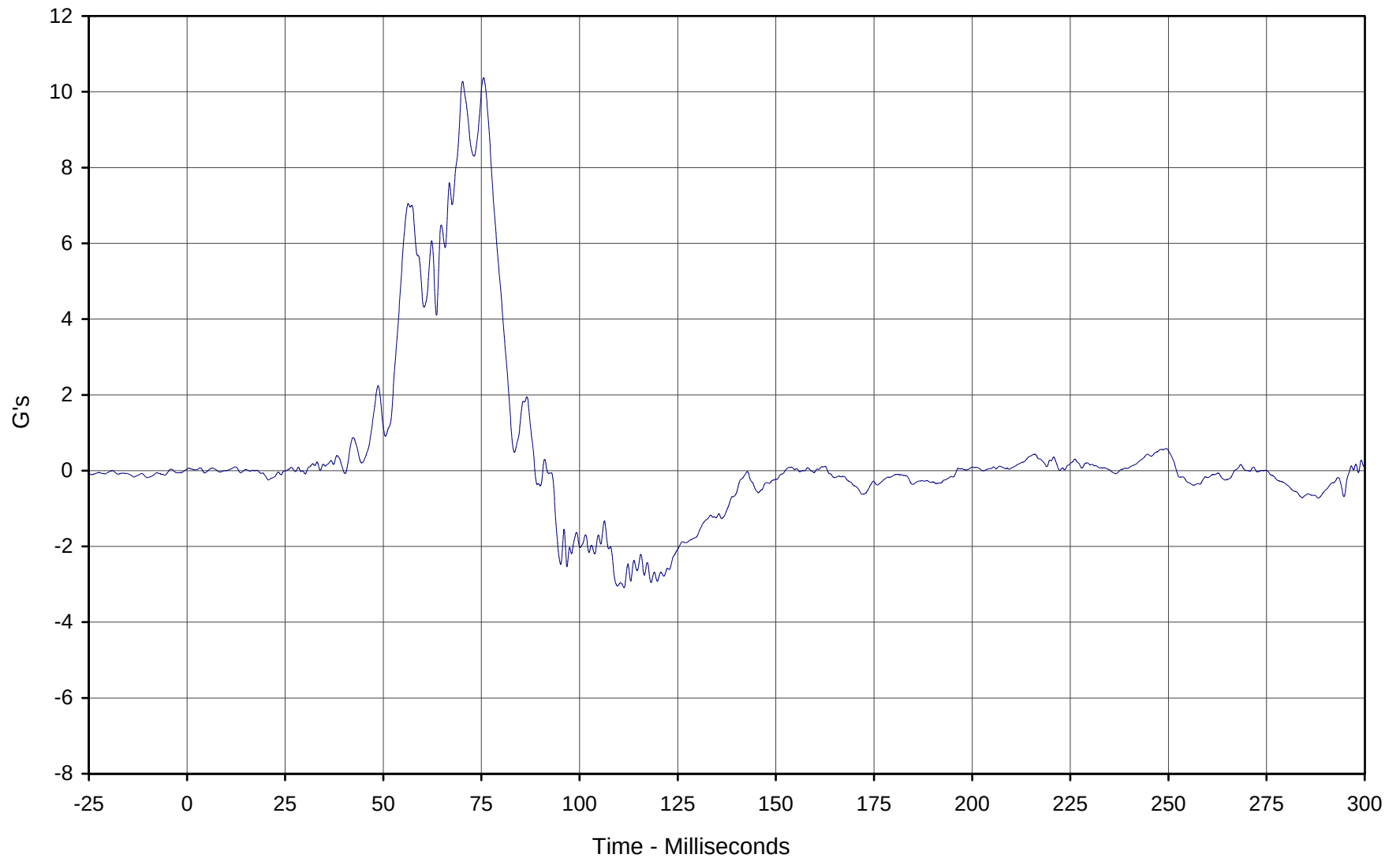
Date of Test: 01/04/01

Curve Number: IN2-060

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

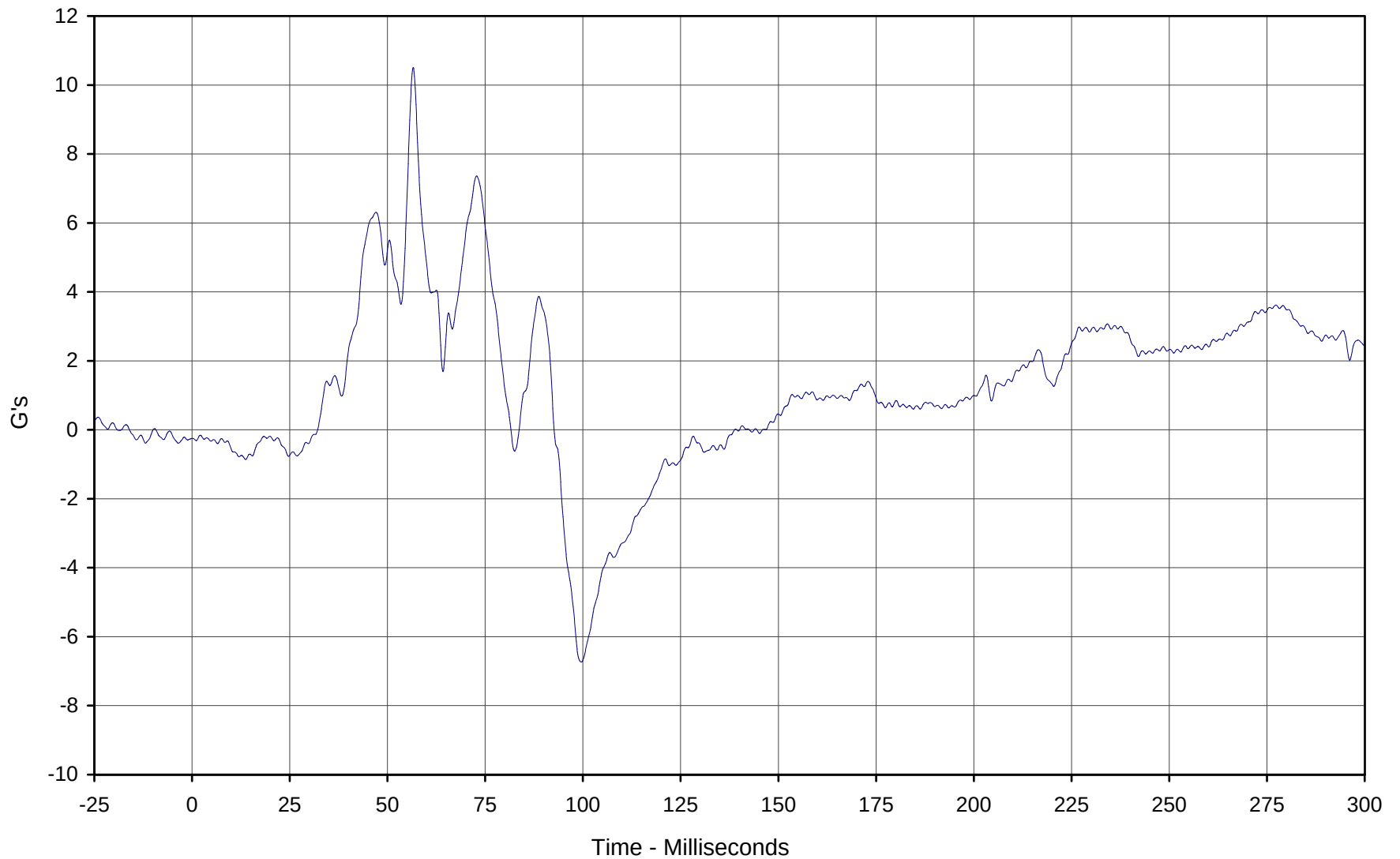




Curve Description: Passenger Chest Redundant Y
Maximum Value: 10.4 at 75.5 Milliseconds
Minimum Value: -3.1 at 111.3 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: FIL-061

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

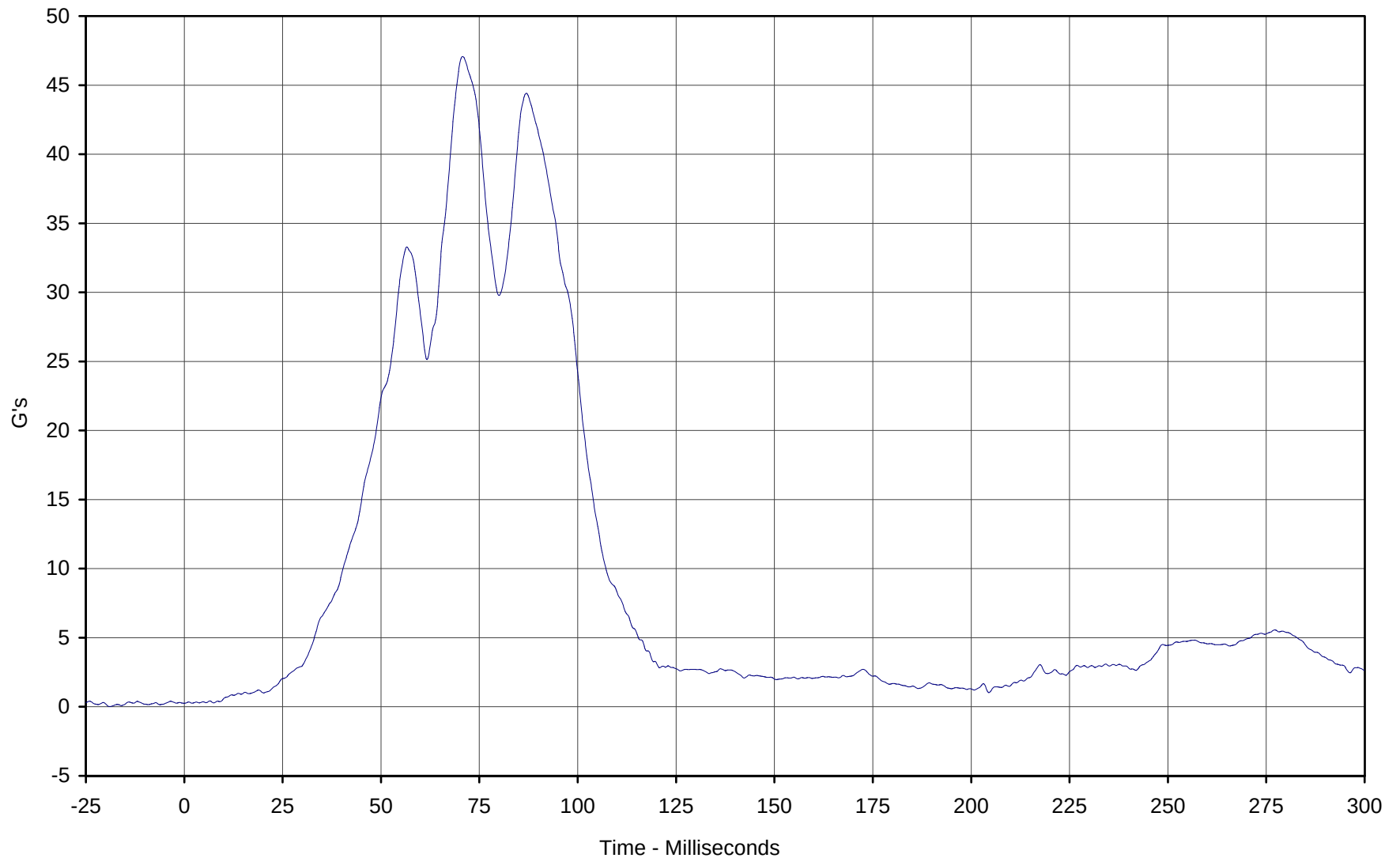




Curve Description: Passenger Chest Redundant Z
Maximum Value: 10.5 at 56.6 Milliseconds
Minimum Value: -6.7 at 99.6 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: FIL-062

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Passenger Chest Resultant Redundant

Maximum Value: 47.1 at 70.7 Milliseconds

Minimum Value: 0.3 at 0.0 Milliseconds

SAE Filter Class: 180

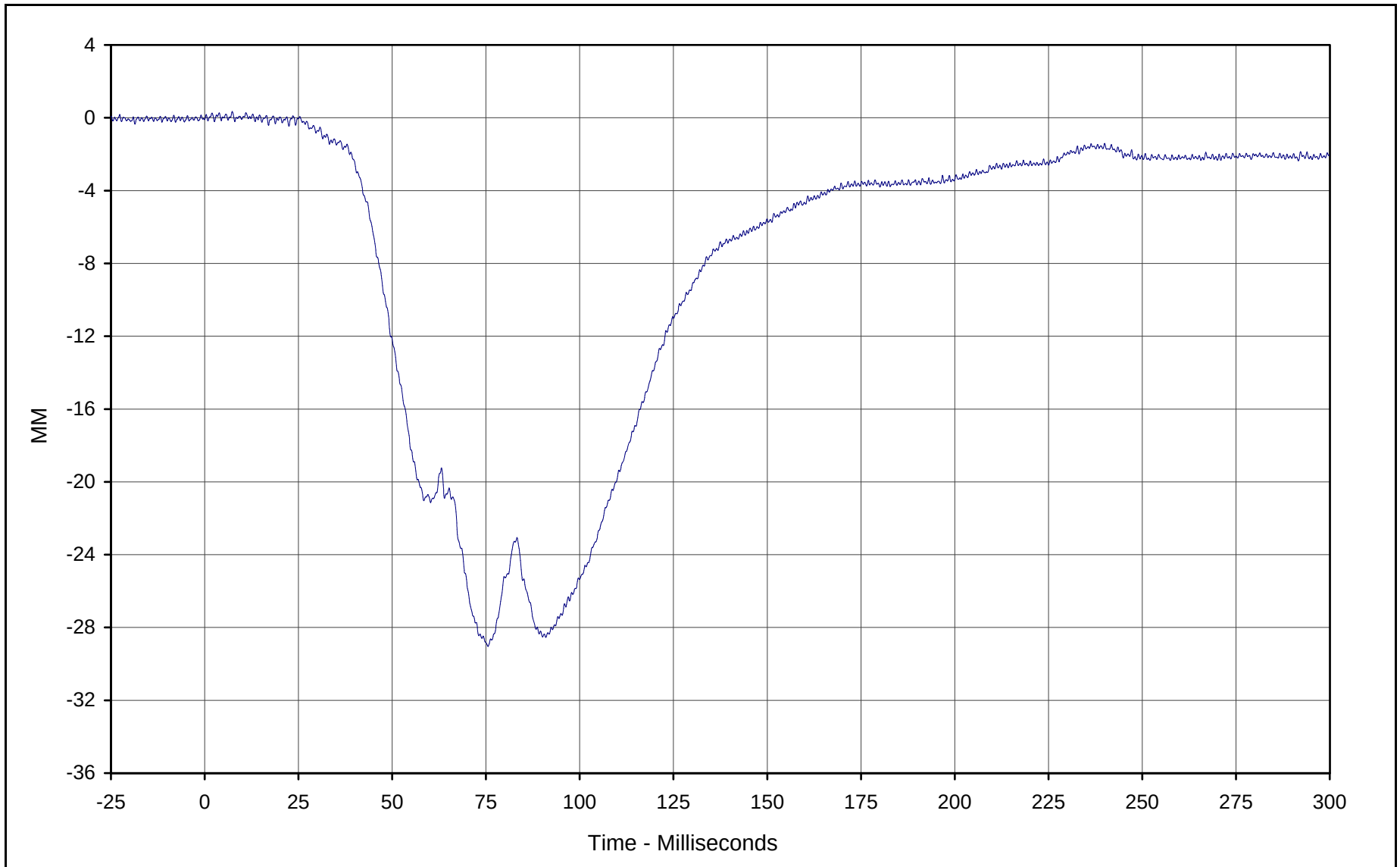
Date of Test: 01/04/01

Curve Number: RES-060

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



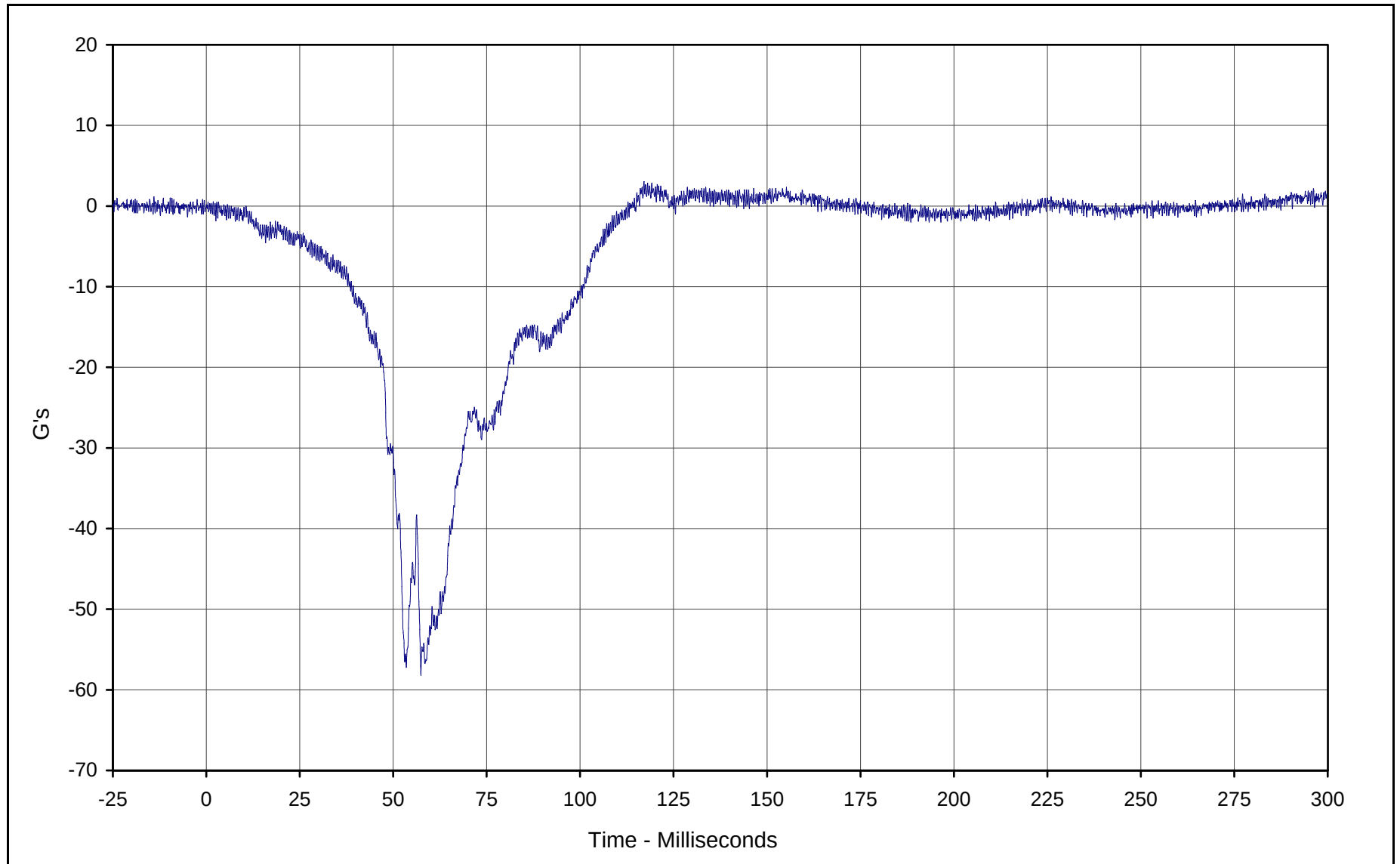


Curve Description: Passenger Chest Displacement X
Maximum Value: 0.4 at 7.3 Milliseconds
Minimum Value: -29.0 at 75.5 Milliseconds
SAE Filter Class: 600
Date of Test: 01/04/01
Curve Number: FIL-063

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



B-95



Curve Description: Passenger Pelvis X

Maximum Value: 3.0 at 117.1 Milliseconds

Minimum Value: -58.2 at 57.4 Milliseconds

SAE Filter Class: 1000

Date of Test: 01/04/01

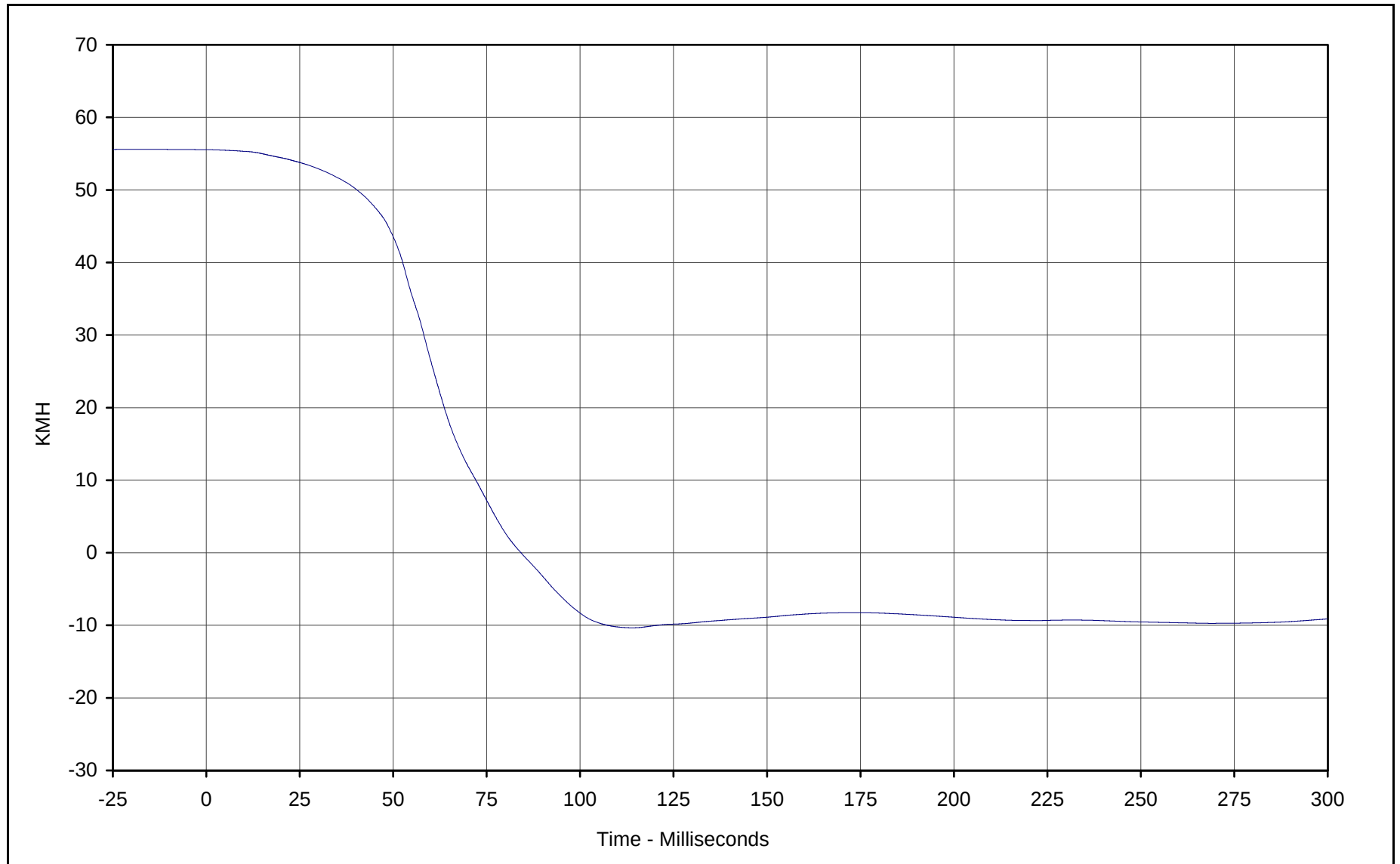
Curve Number: FIL-064

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



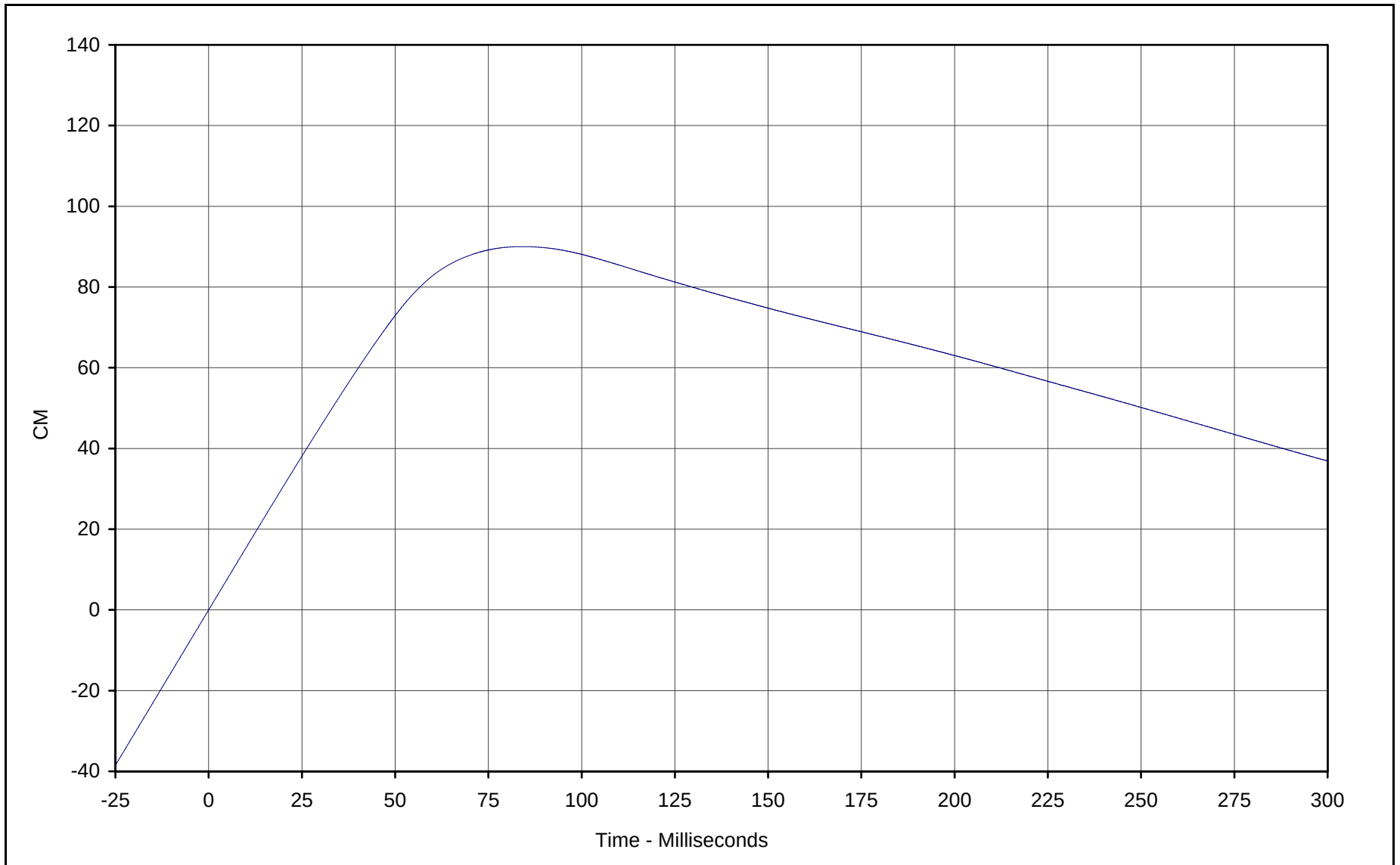
KAR21001-01



Curve Description: Passenger Pelvis X Velocity
Maximum Value: 55.5 at 0.0 Milliseconds
Minimum Value: -10.3 at 113.8 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: IN1-064

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



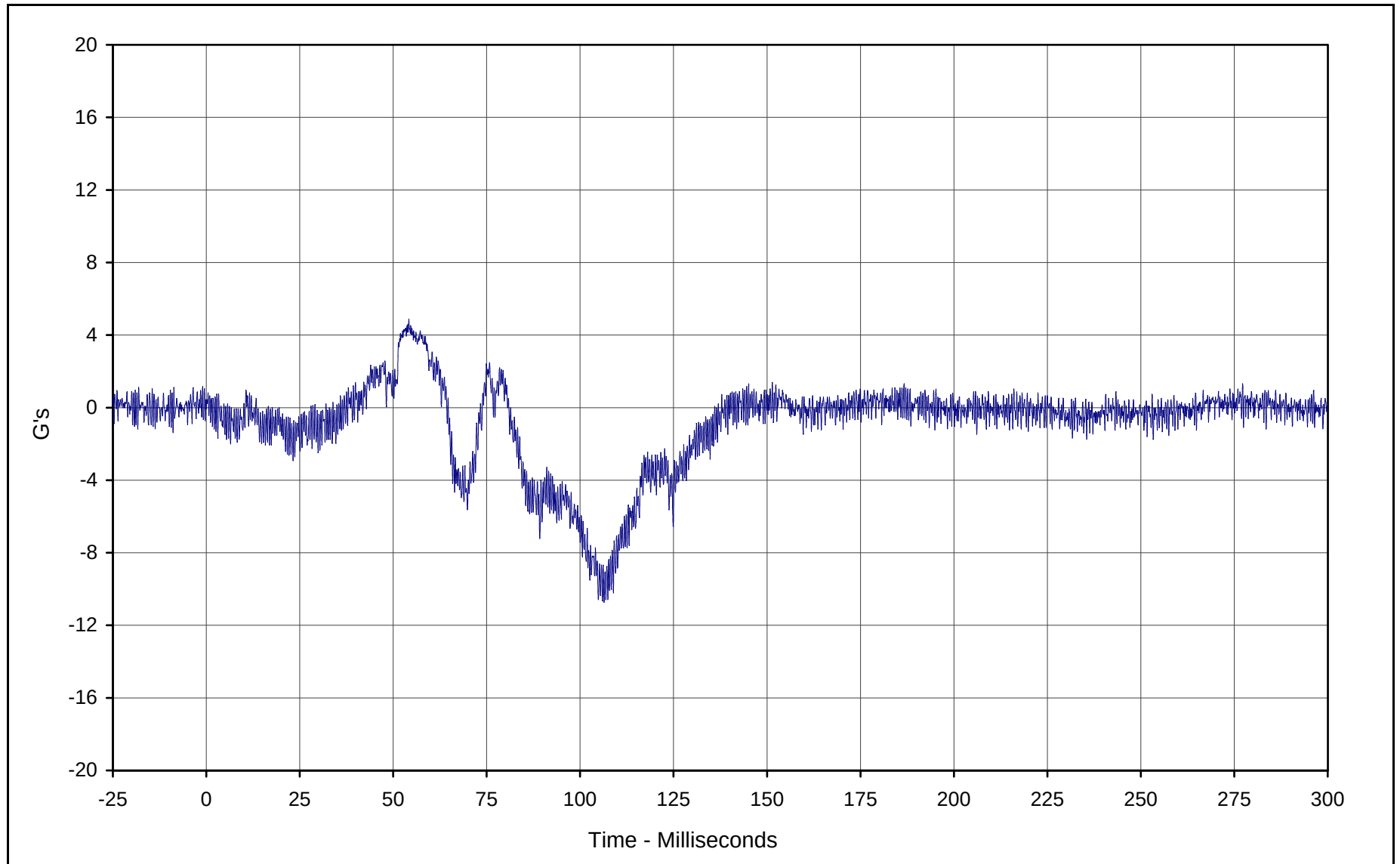


Curve Description: Passenger Pelvis X Displ.
Maximum Value: 90.0 at 84.2 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: IN2-064

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



B-98



Curve Description: Passenger Pelvis Y

Maximum Value: 4.9 at 54.2 Milliseconds

Minimum Value: -10.7 at 106.4 Milliseconds

SAE Filter Class: 1000

Date of Test: 01/04/01

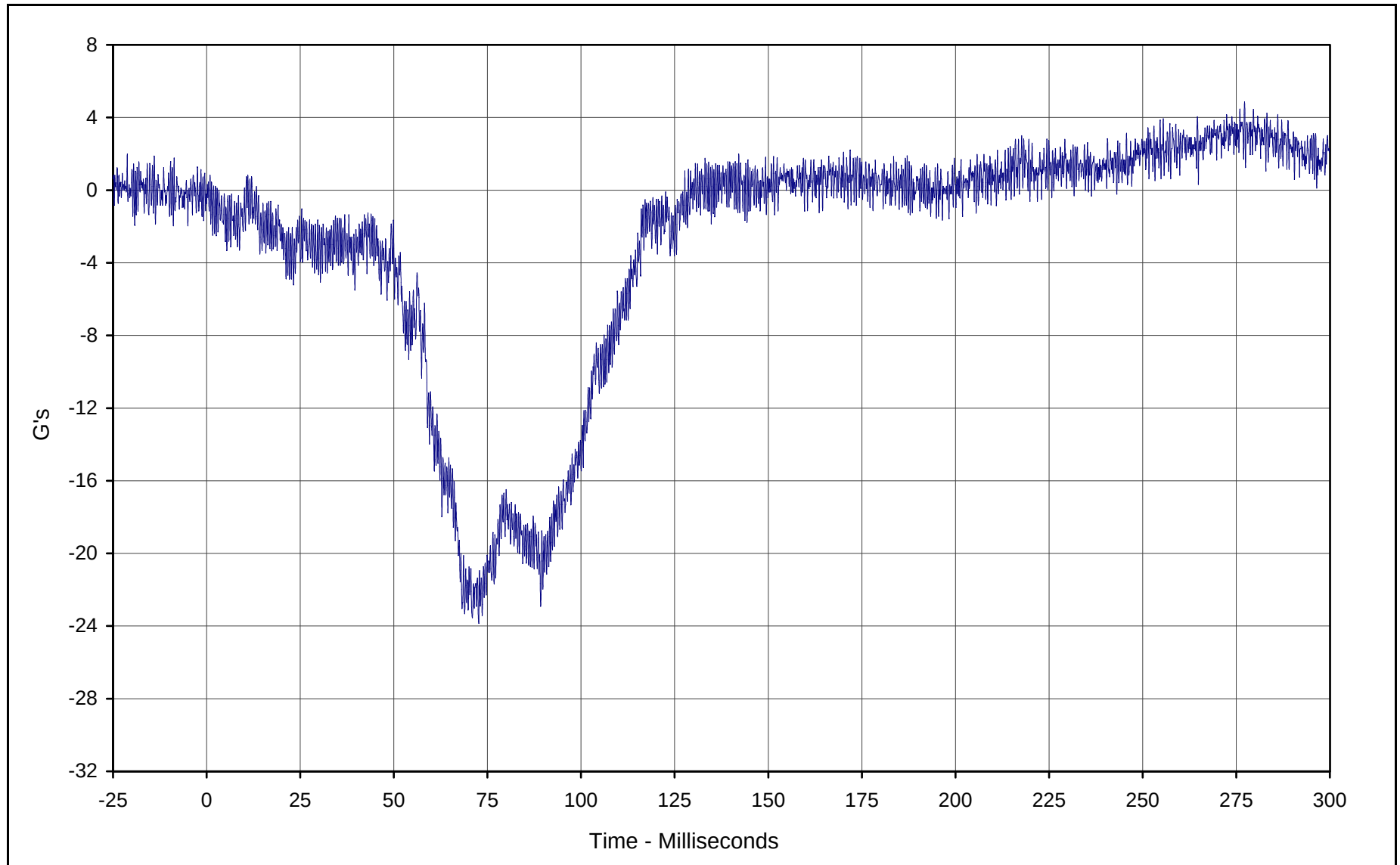
Curve Number: FIL-065

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



KAR21001-01



Curve Description: Passenger Pelvis Z

Maximum Value: 4.9 at 277.2 Milliseconds

Minimum Value: -23.8 at 72.7 Milliseconds

SAE Filter Class: 1000

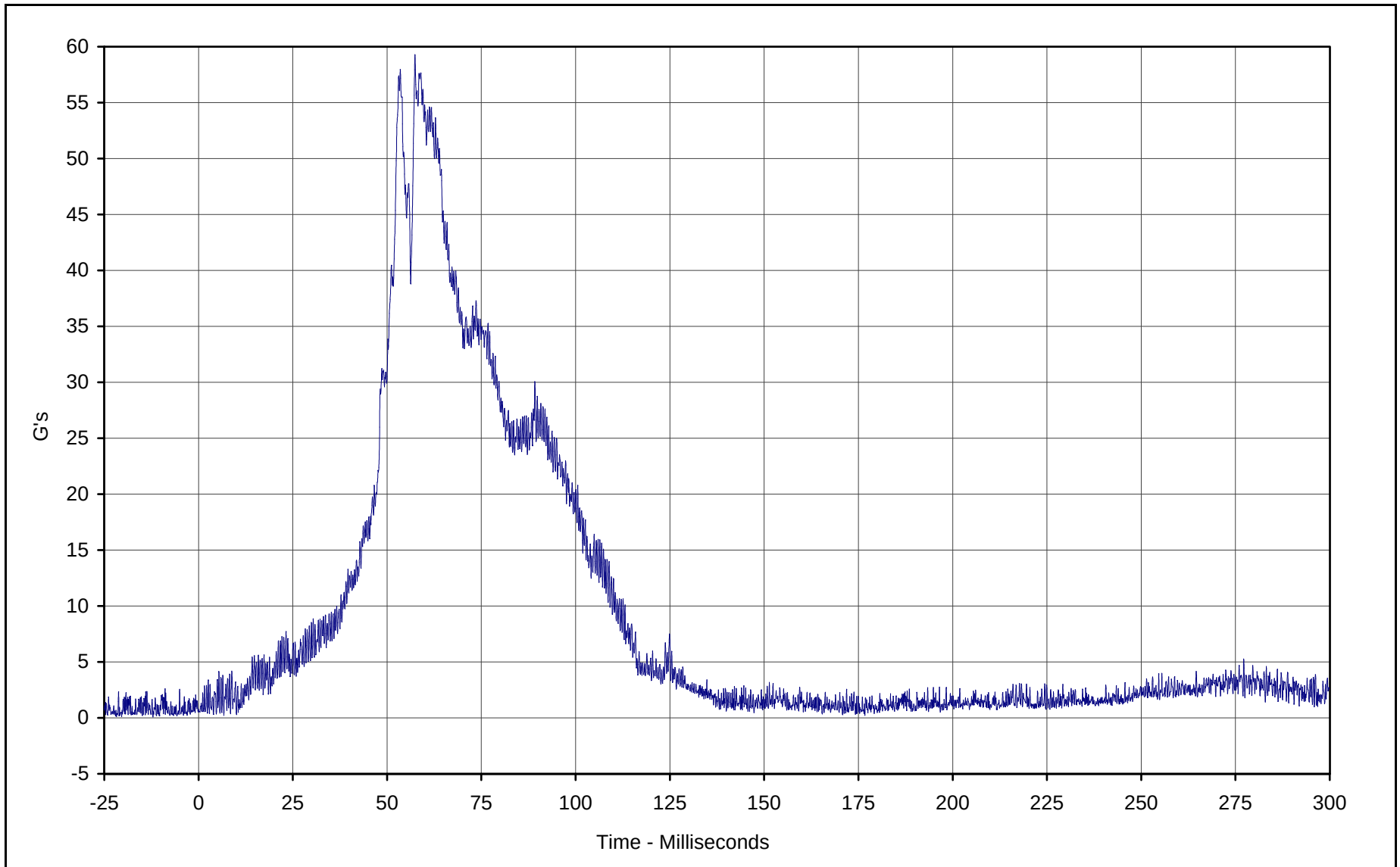
Date of Test: 01/04/01

Curve Number: FIL-066

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



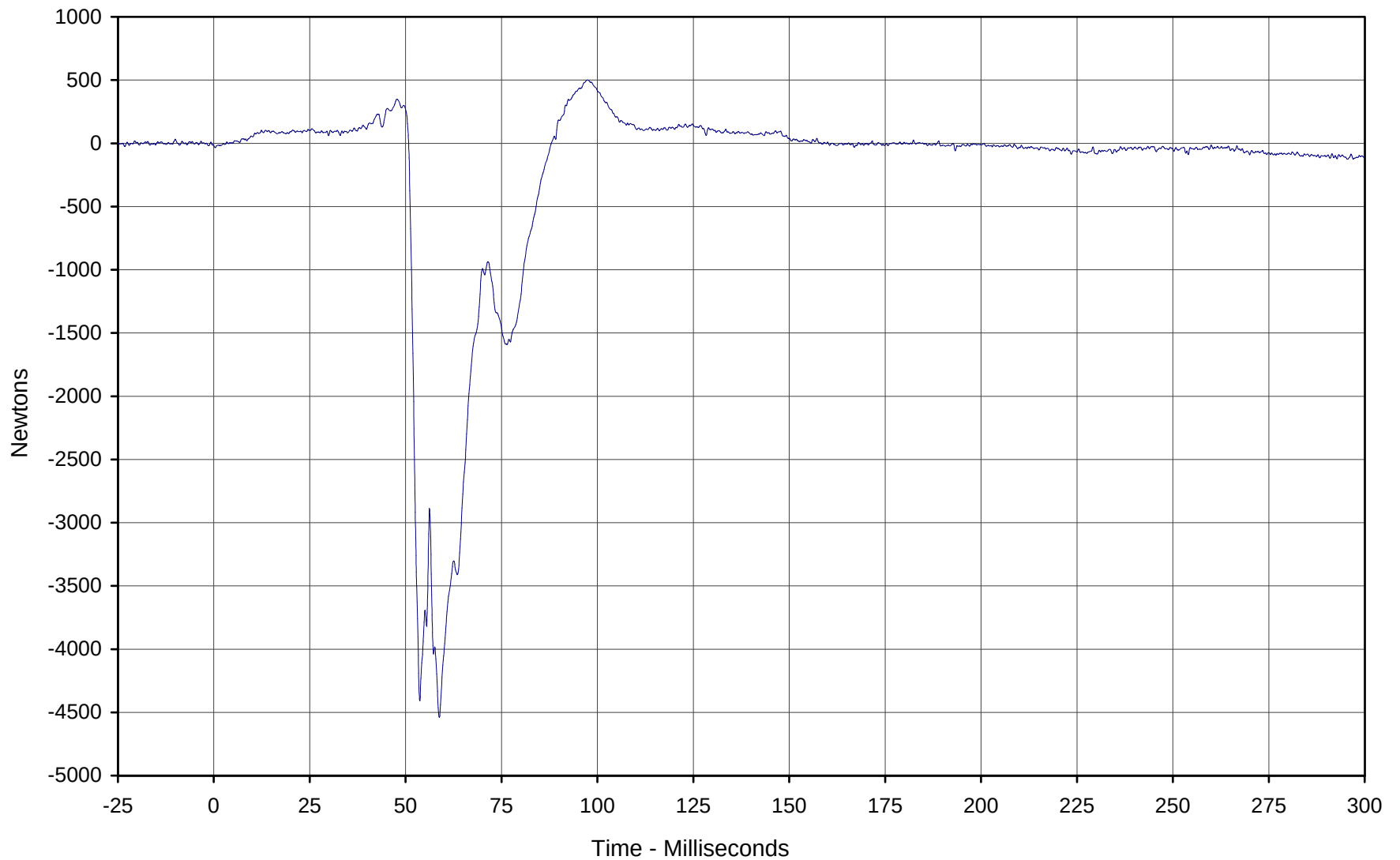


Curve Description: Passenger Pelvis Resultant
Maximum Value: 59.3 at 57.4 Milliseconds
Minimum Value: 0.2 at 6.7 Milliseconds
SAE Filter Class: 1000
Date of Test: 01/04/01
Curve Number: RES-064

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



B-101

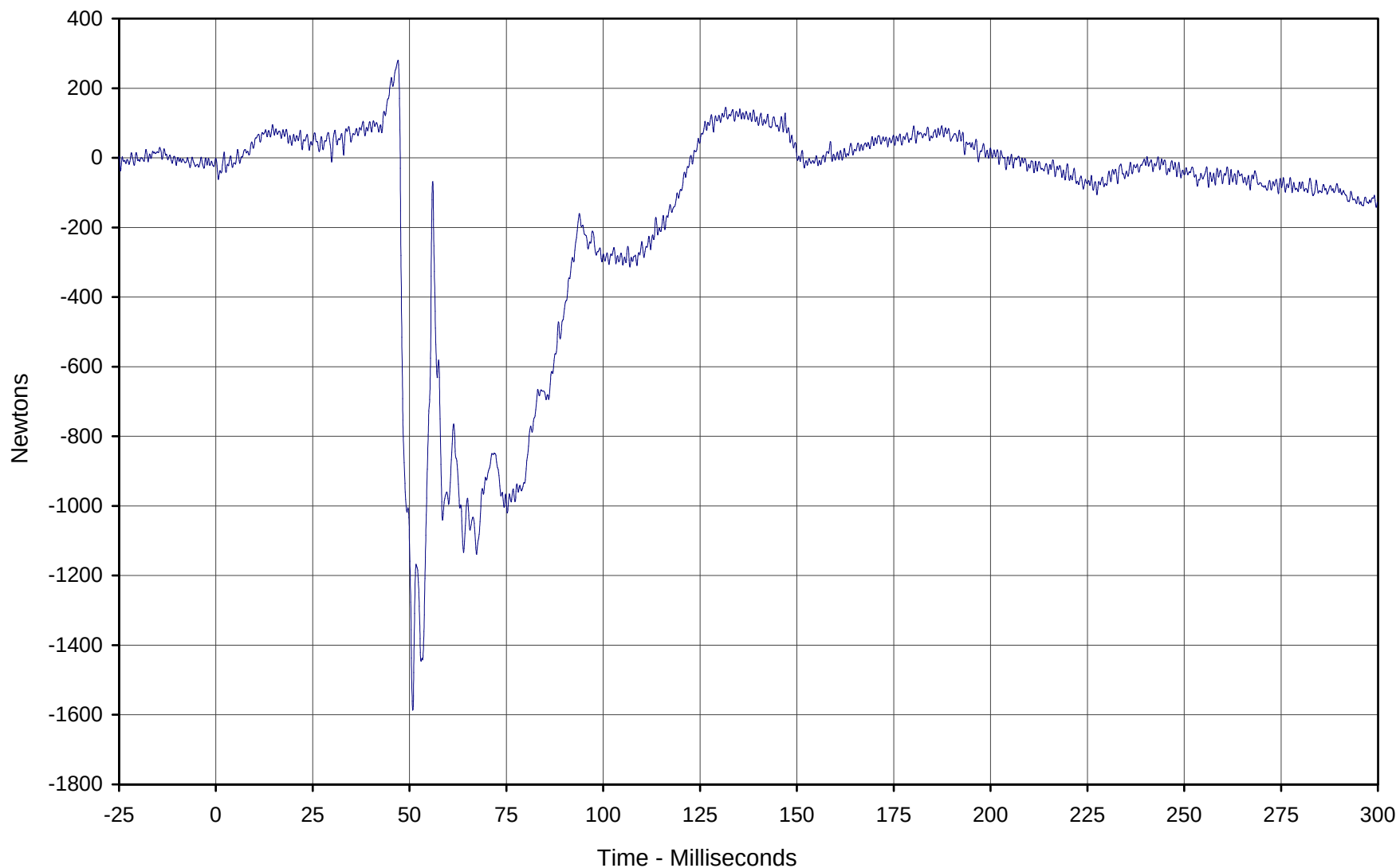


Curve Description: Passenger Left Femur Force
Maximum Value: 500.9 at 97.4 Milliseconds
Minimum Value: -4540.2 at 58.8 Milliseconds
SAE Filter Class: 600
Date of Test: 01/04/01
Curve Number: FIL-067

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



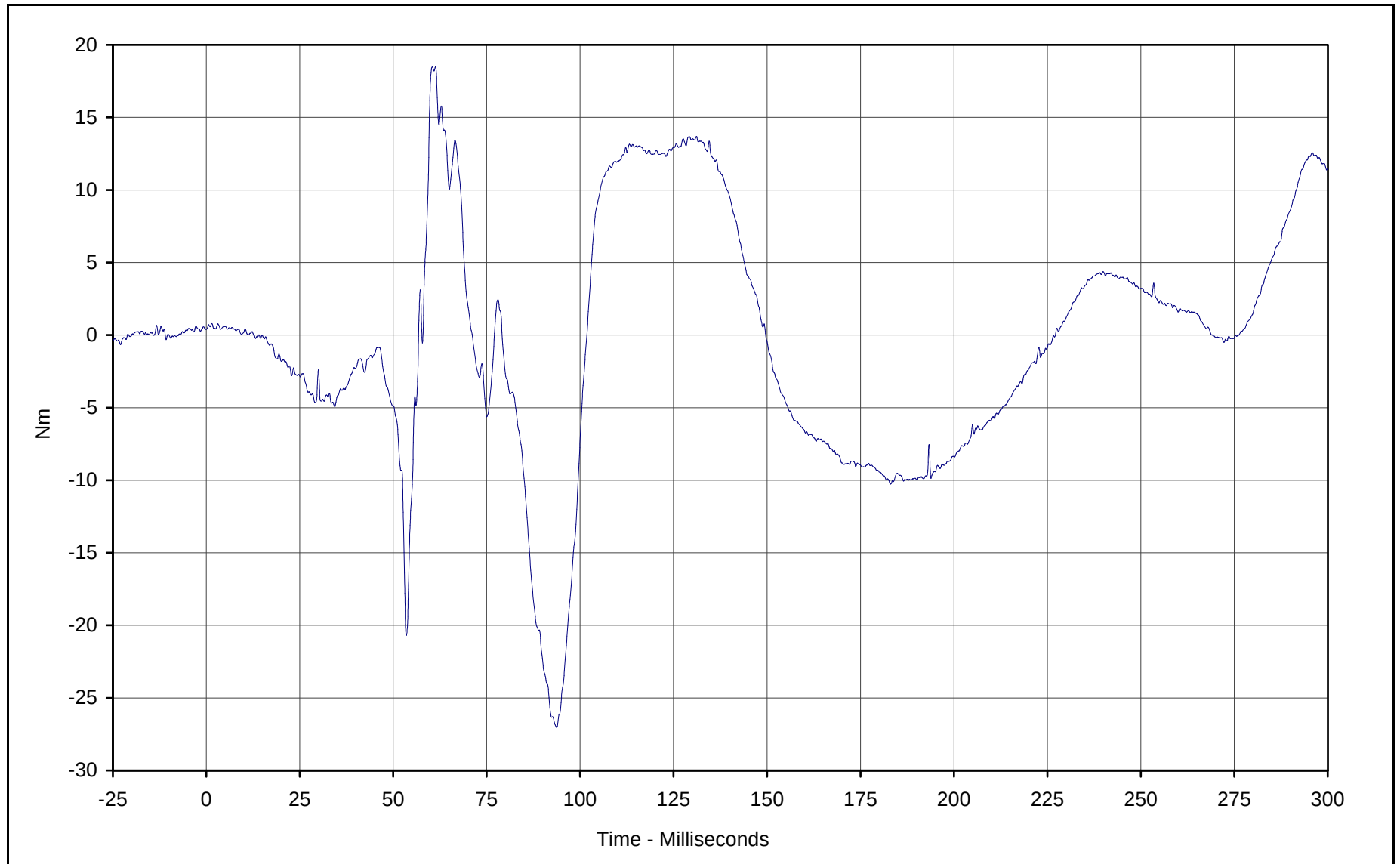
KAR21001-01



Curve Description: Passenger Right Femur Force
Maximum Value: 280.4 at 47.0 Milliseconds
Minimum Value: -1587.2 at 50.8 Milliseconds
SAE Filter Class: 600
Date of Test: 01/04/01
Curve Number: FIL-068

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Passenger Left Upper Tibia Moment X

Maximum Value: 18.5 at 61.3 Milliseconds

Minimum Value: -27.0 at 93.8 Milliseconds

SAE Filter Class: 600

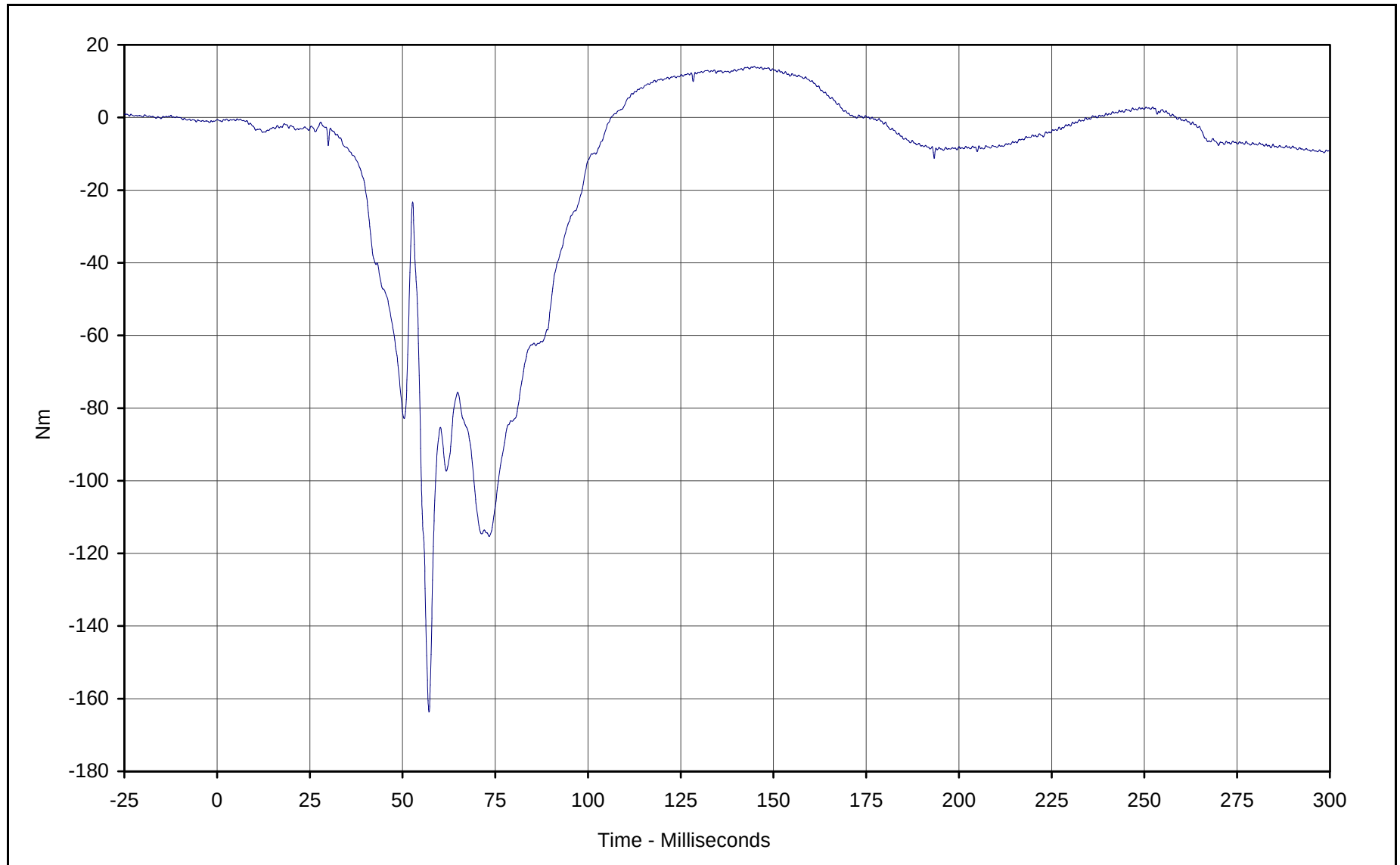
Date of Test: 01/04/01

Curve Number: FIL-069

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Passenger Left Upper Tibia Moment Y

Maximum Value: 14.0 at 144.9 Milliseconds

Minimum Value: -163.7 at 57.1 Milliseconds

SAE Filter Class: 600

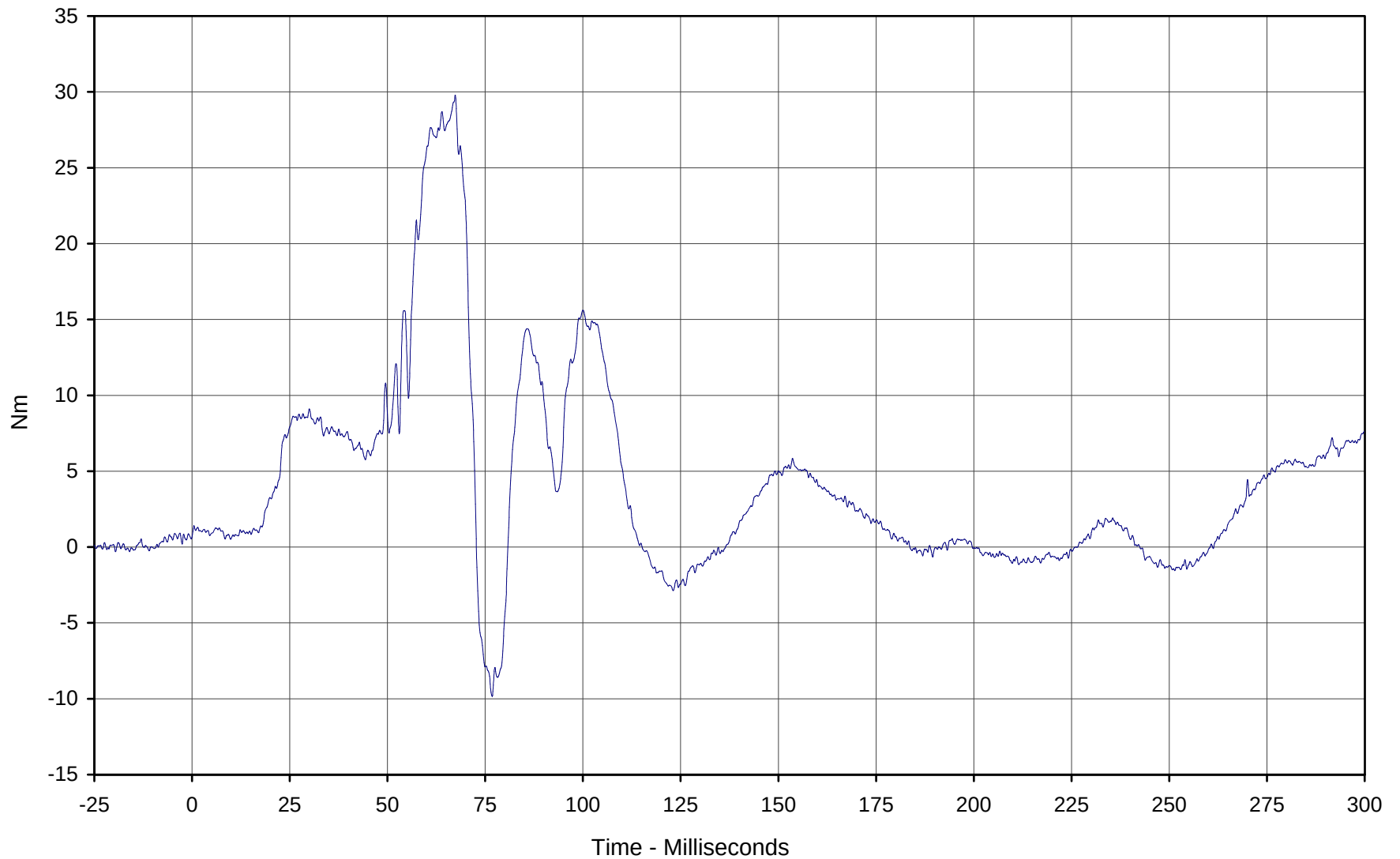
Date of Test: 01/04/01

Curve Number: FIL-070

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Passenger Right Upper Tibia Moment X

Maximum Value: 29.8 at 67.3 Milliseconds

Minimum Value: -9.8 at 76.8 Milliseconds

SAE Filter Class: 600

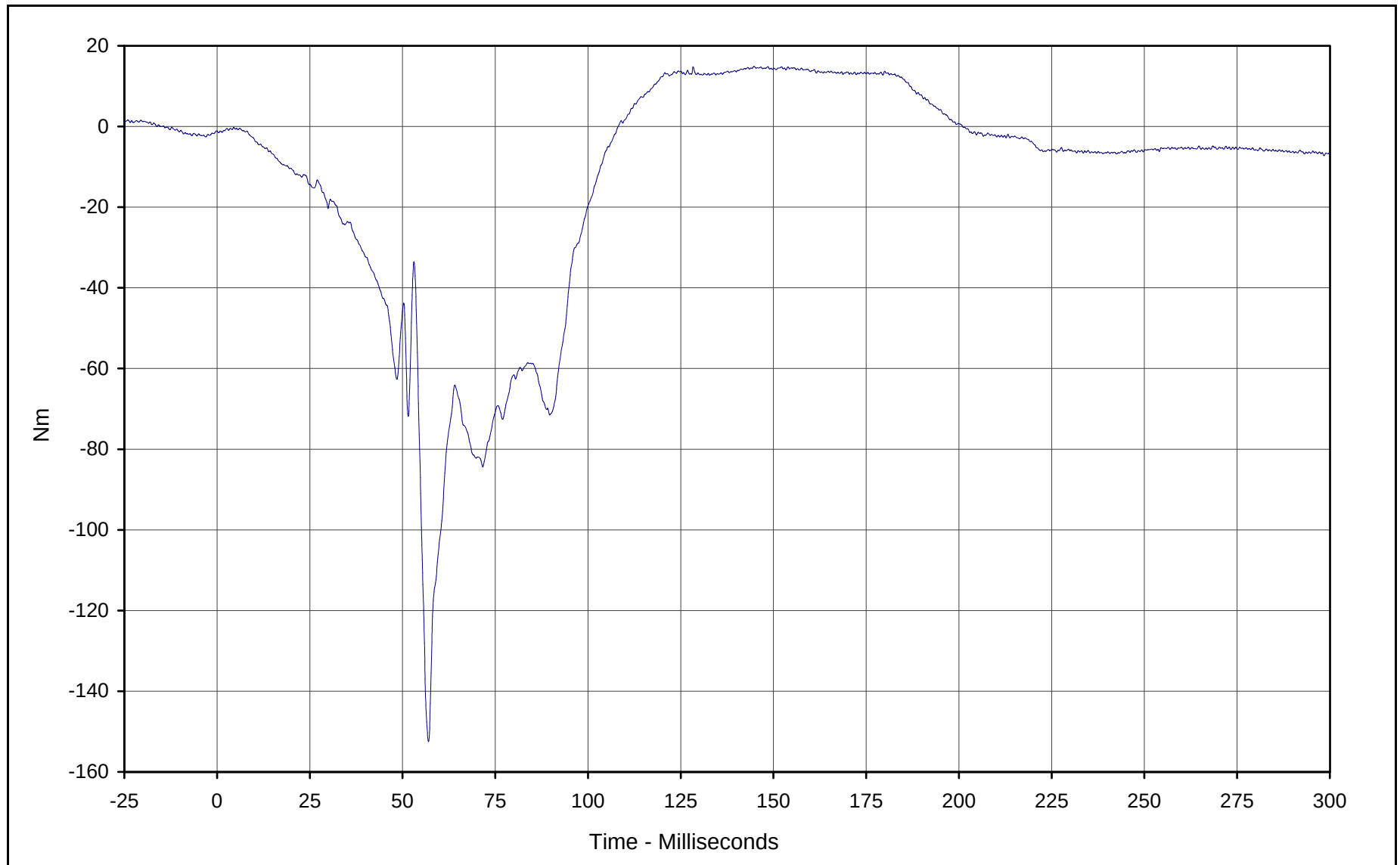
Date of Test: 01/04/01

Curve Number: FIL-071

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Passenger Right Upper Tibia Moment Y

Maximum Value: 14.9 at 144.8 Milliseconds

Minimum Value: -152.5 at 57.0 Milliseconds

SAE Filter Class: 600

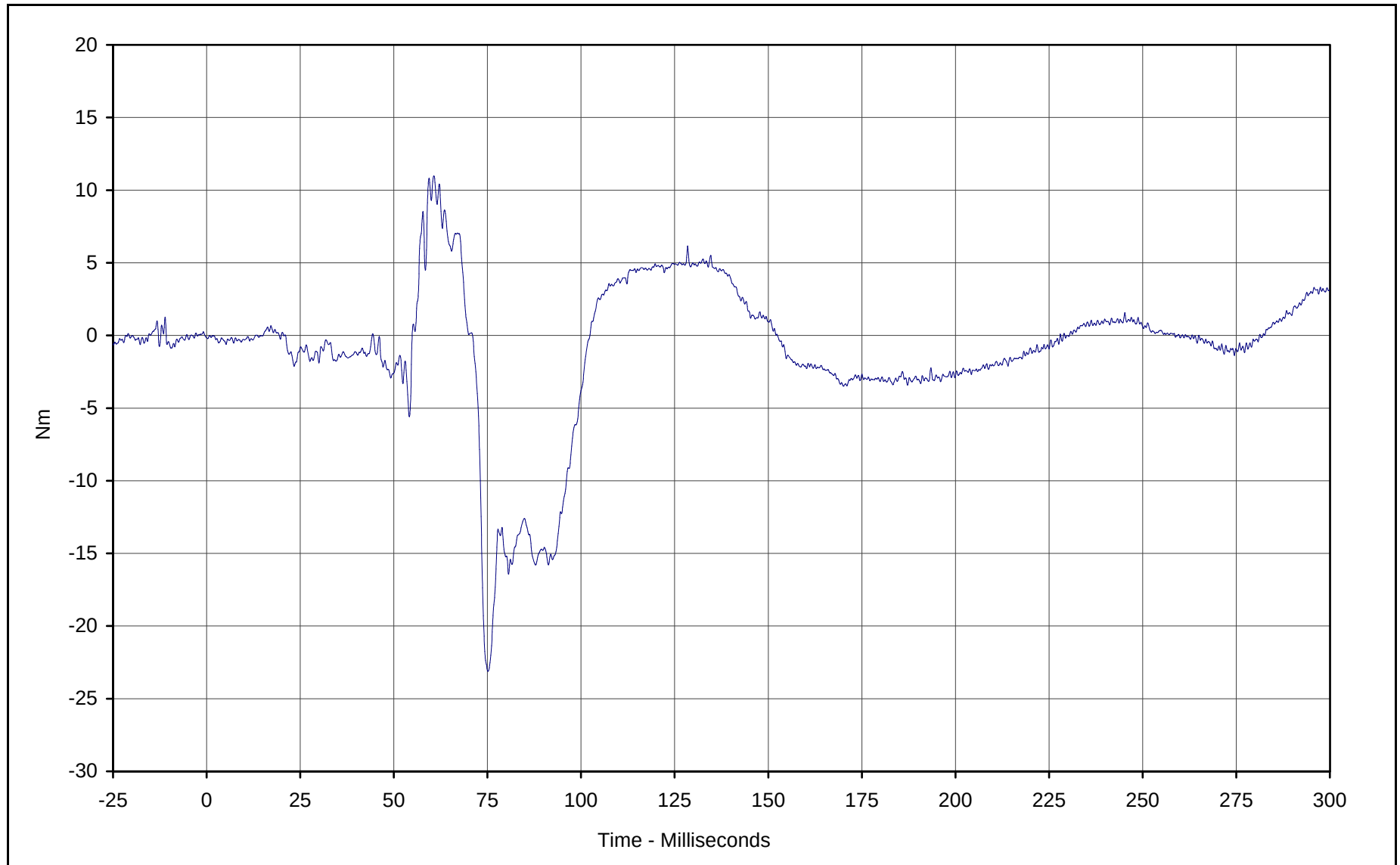
Date of Test: 01/04/01

Curve Number: FIL-072

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Passenger Left Lower Tibia Moment X

Maximum Value: 11.0 at 60.7 Milliseconds

Minimum Value: -23.1 at 75.1 Milliseconds

SAE Filter Class: 600

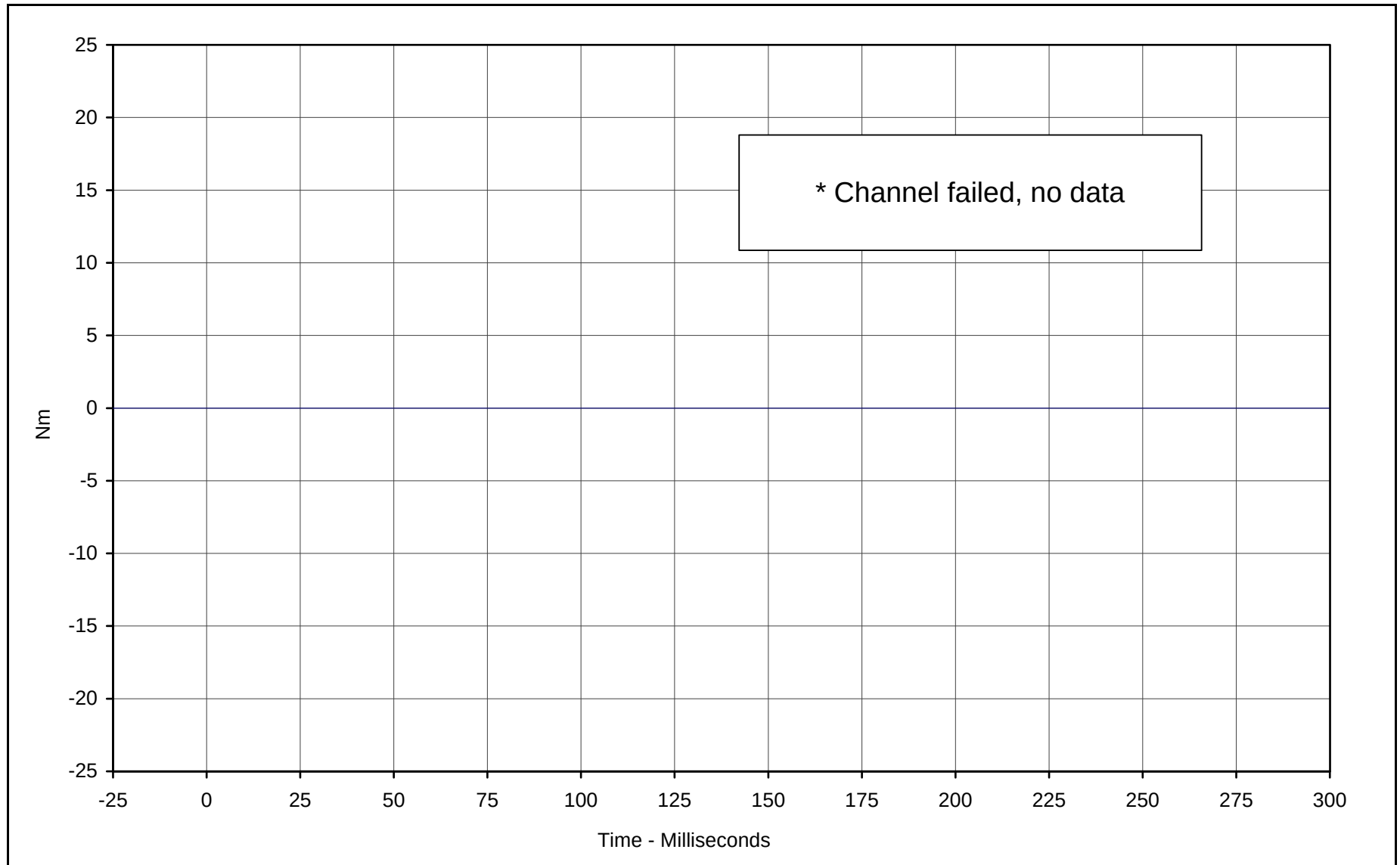
Date of Test: 01/04/01

Curve Number: FIL-073

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Passenger Left Lower Tibia Moment Y *

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Maximum Value: 0.0 at 0.0 Milliseconds

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

Minimum Value: 0.0 at 0.0 Milliseconds

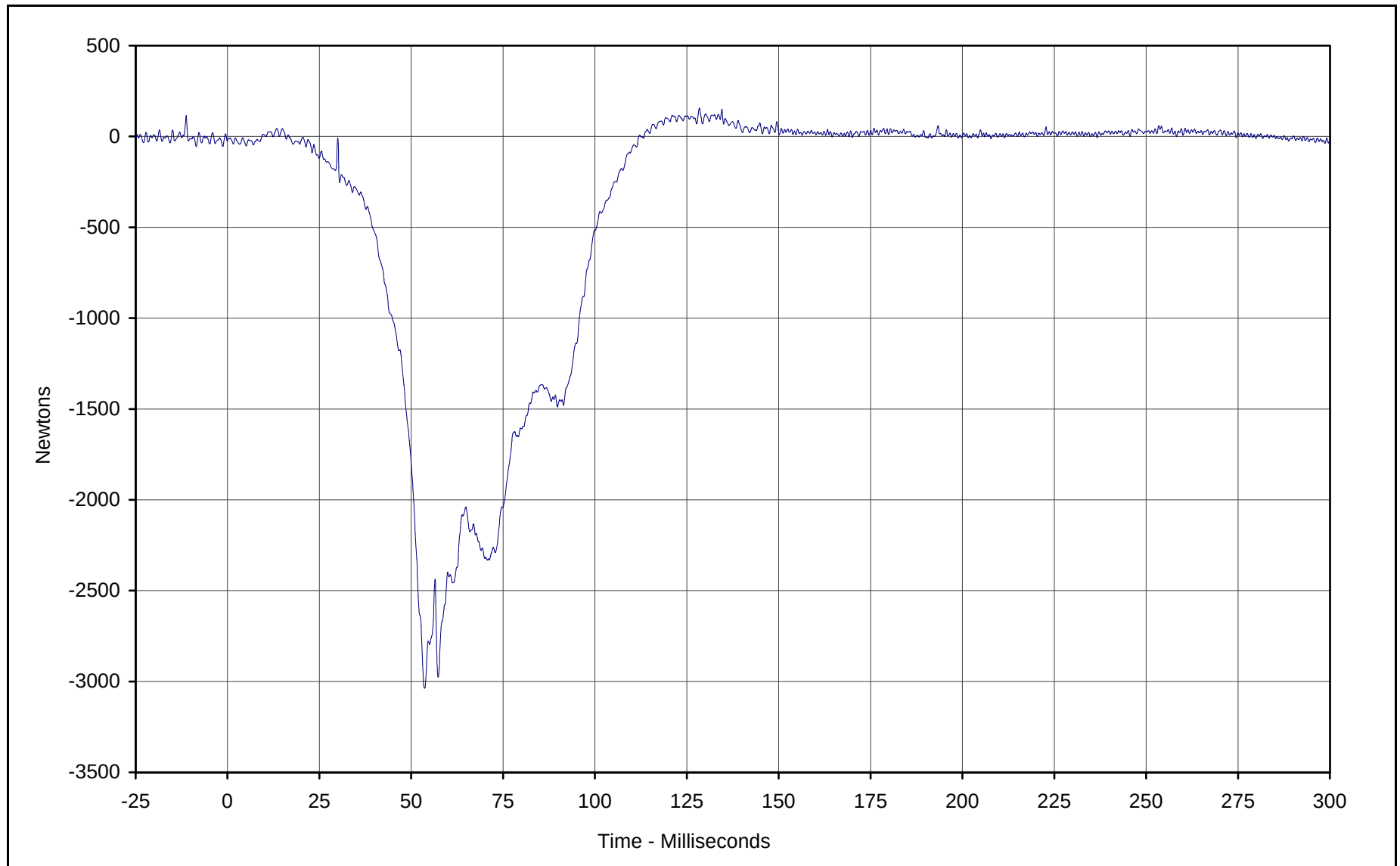
SAE Filter Class: 600

Date of Test: 01/04/01

Curve Number: FIL-074

* Channel failed, no data





Curve Description: Passenger Left Lower Tibia Force Z

Maximum Value: 156.1 at 128.4 Milliseconds

Minimum Value: -3037.0 at 53.6 Milliseconds

SAE Filter Class: 600

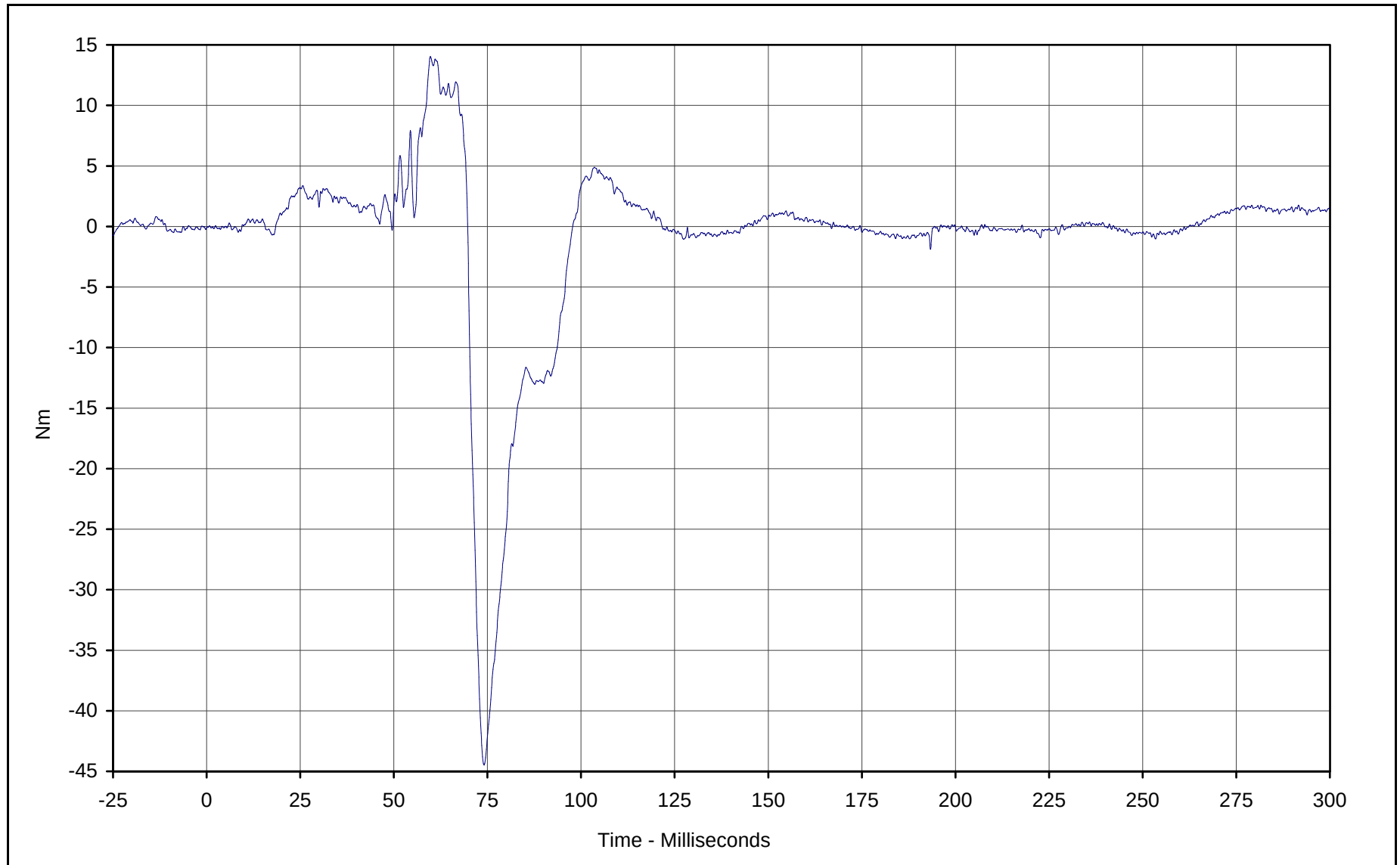
Date of Test: 01/04/01

Curve Number: FIL-075

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Passenger Right Lower Tibia Moment X

Maximum Value: 14.0 at 59.8 Milliseconds

Minimum Value: -44.5 at 74.1 Milliseconds

SAE Filter Class: 600

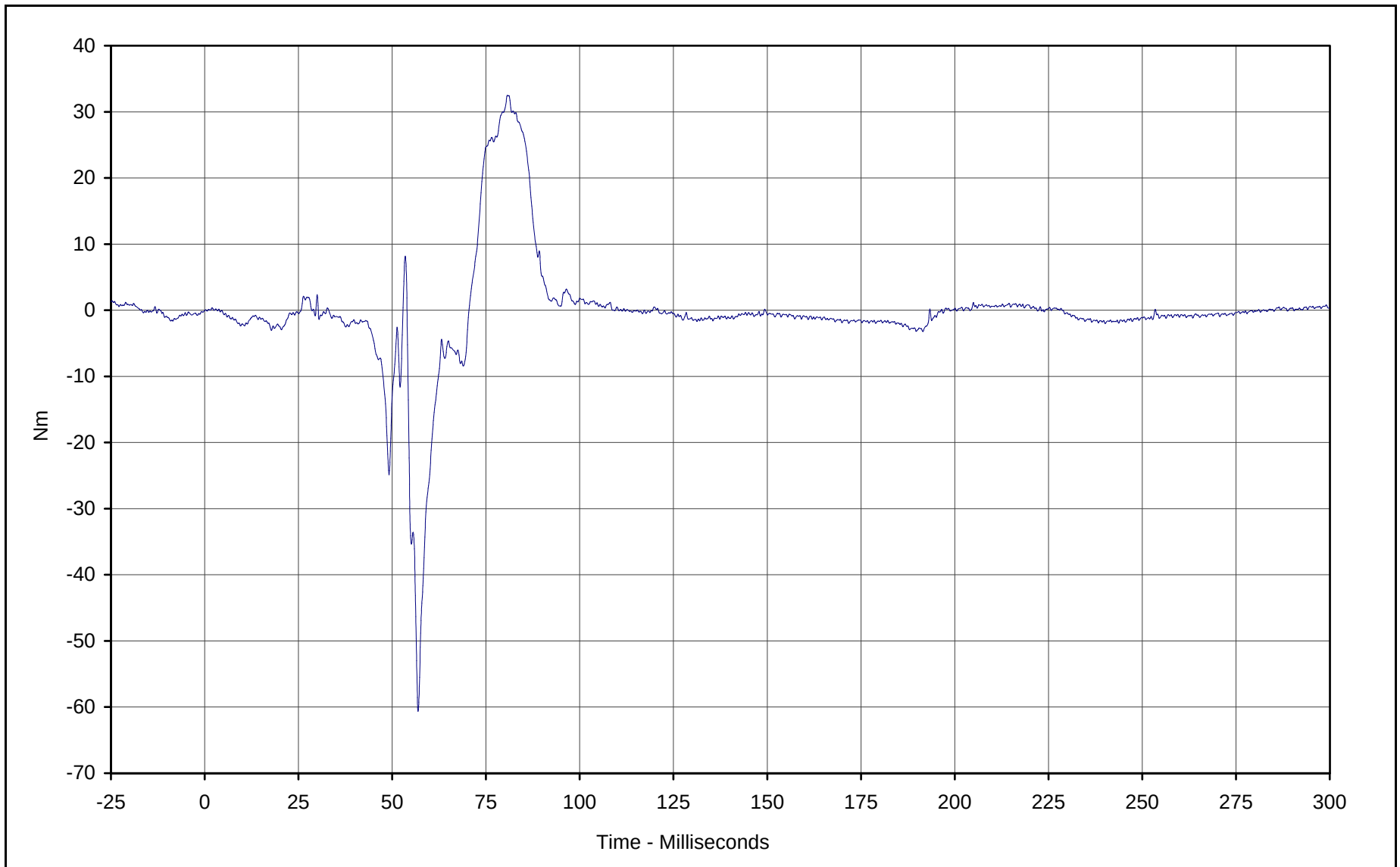
Date of Test: 01/04/01

Curve Number: FIL-076

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Passenger Right Lower Tibia Moment Y

Maximum Value: 32.5 at 80.7 Milliseconds

Minimum Value: -60.7 at 56.9 Milliseconds

SAE Filter Class: 600

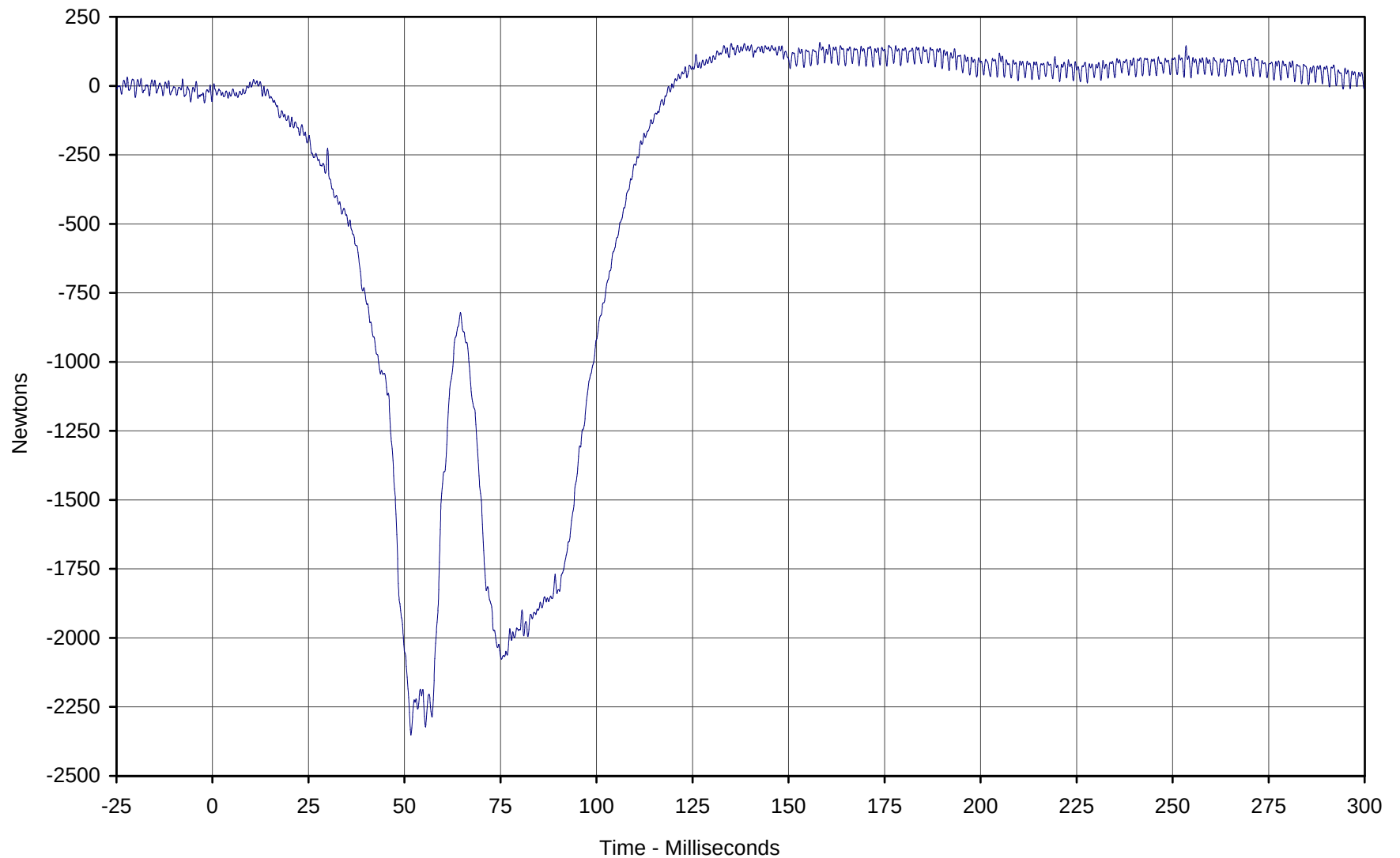
Date of Test: 01/04/01

Curve Number: FIL-077

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Passenger Right lower Tibia Force Z

Maximum Value: 156.5 at 158.1 Milliseconds

Minimum Value: -2351.7 at 51.7 Milliseconds

SAE Filter Class: 600

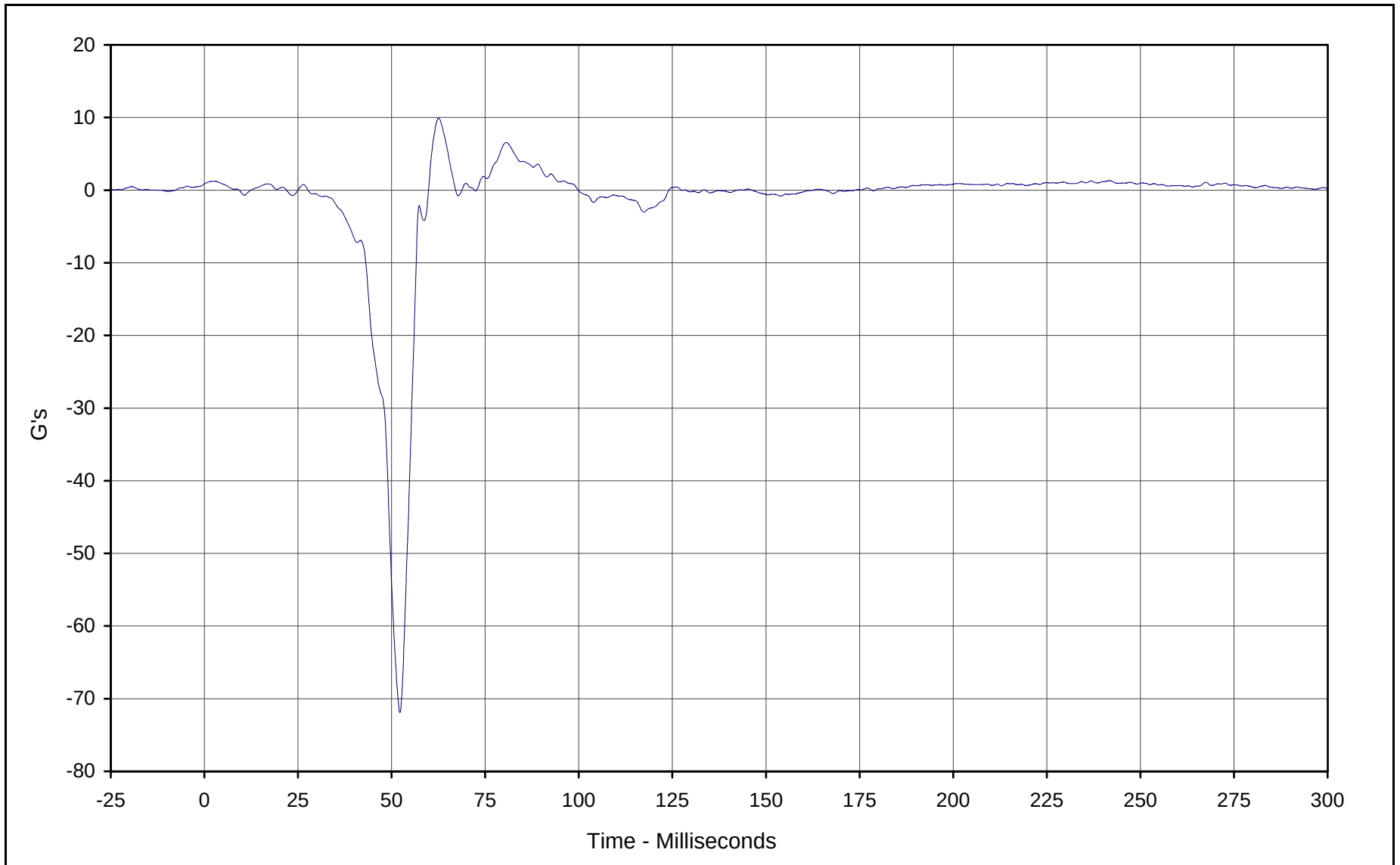
Date of Test: 01/04/01

Curve Number: FIL-078

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

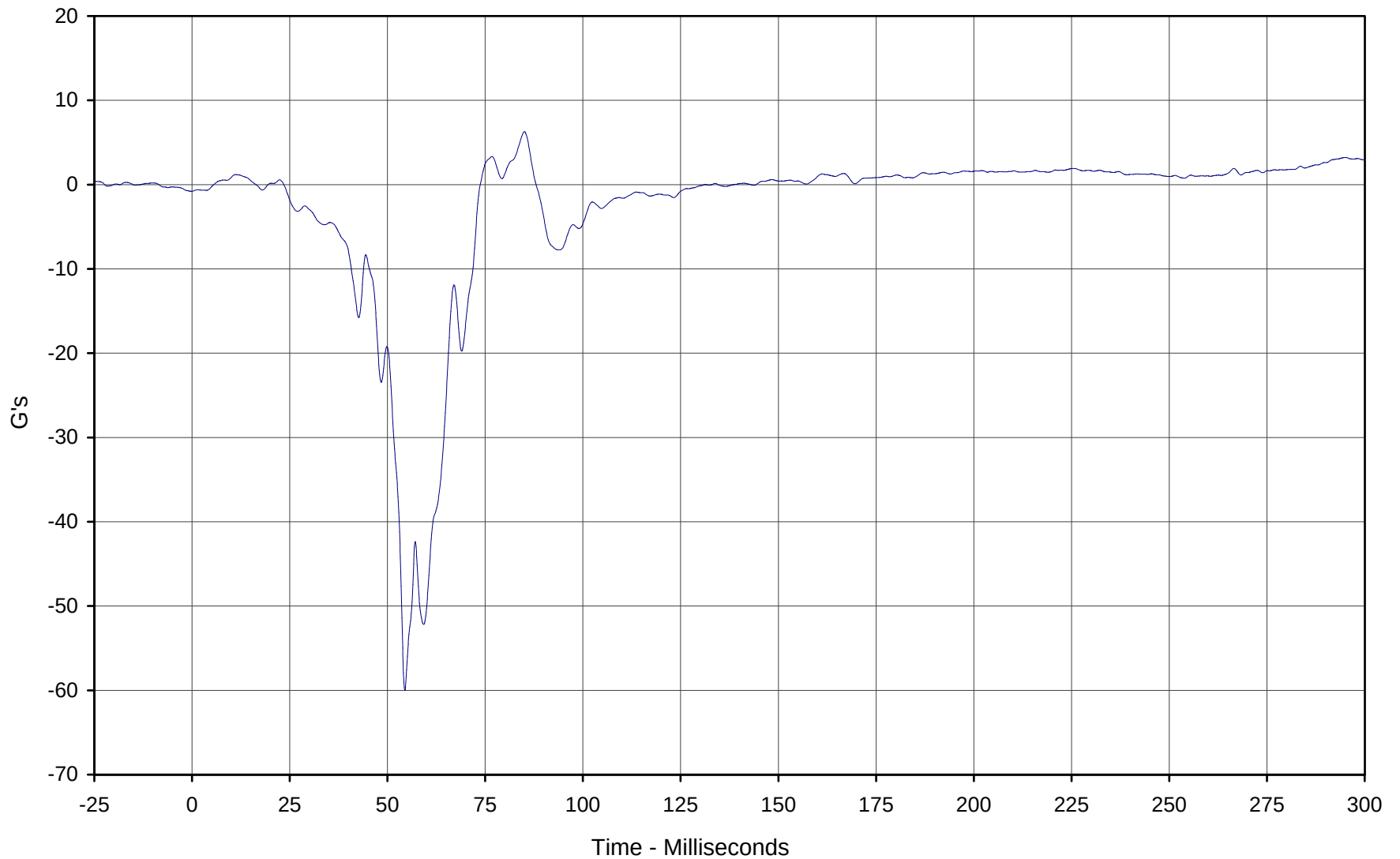




Curve Description: Passenger Left Foot Aft X
Maximum Value: 9.9 at 62.6 Milliseconds
Minimum Value: -71.9 at 52.2 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: FIL-079

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

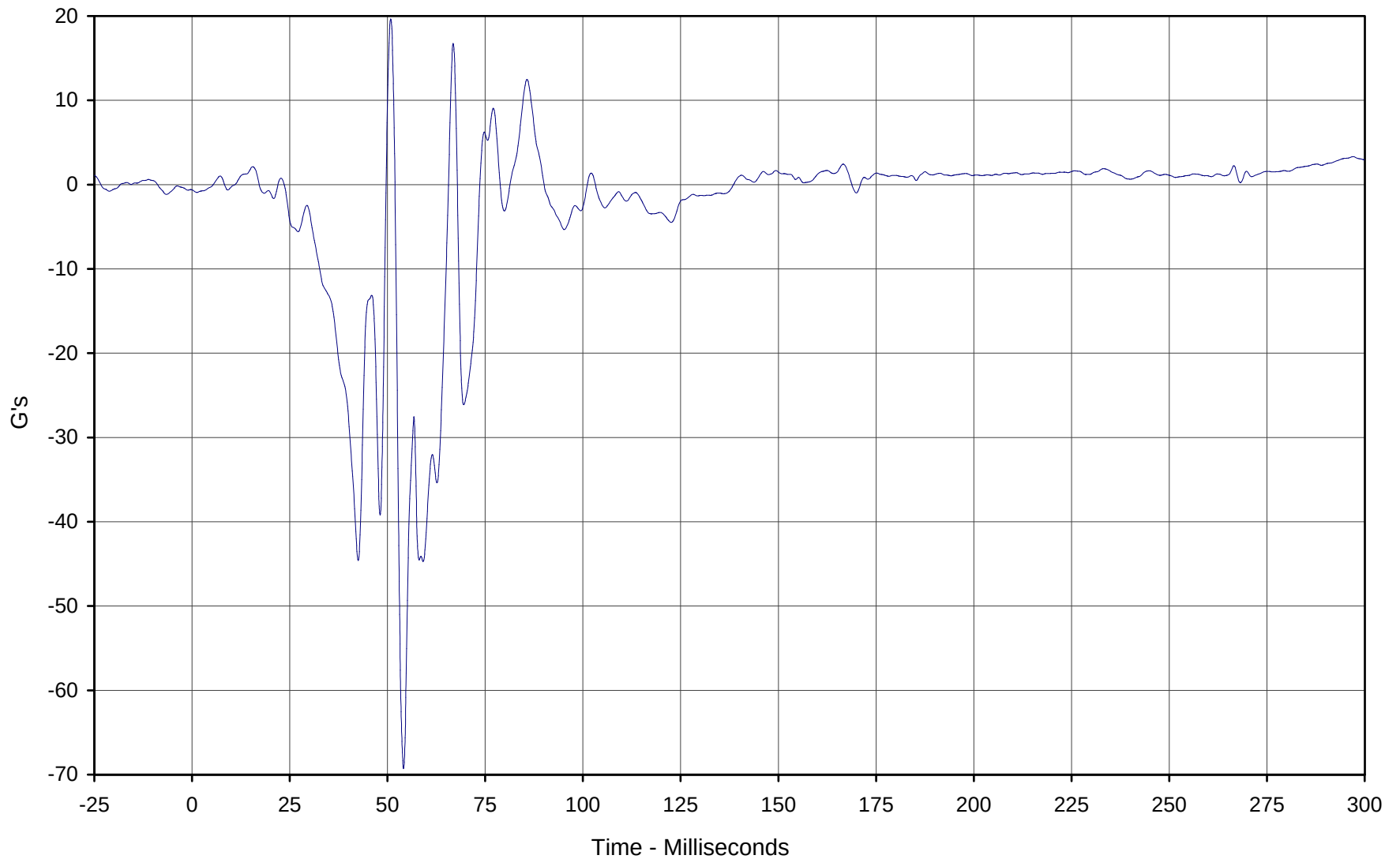




Curve Description: Passenger Left Foot Aft Z
Maximum Value: 6.3 at 85.0 Milliseconds
Minimum Value: -60.0 at 54.4 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: FIL-080

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

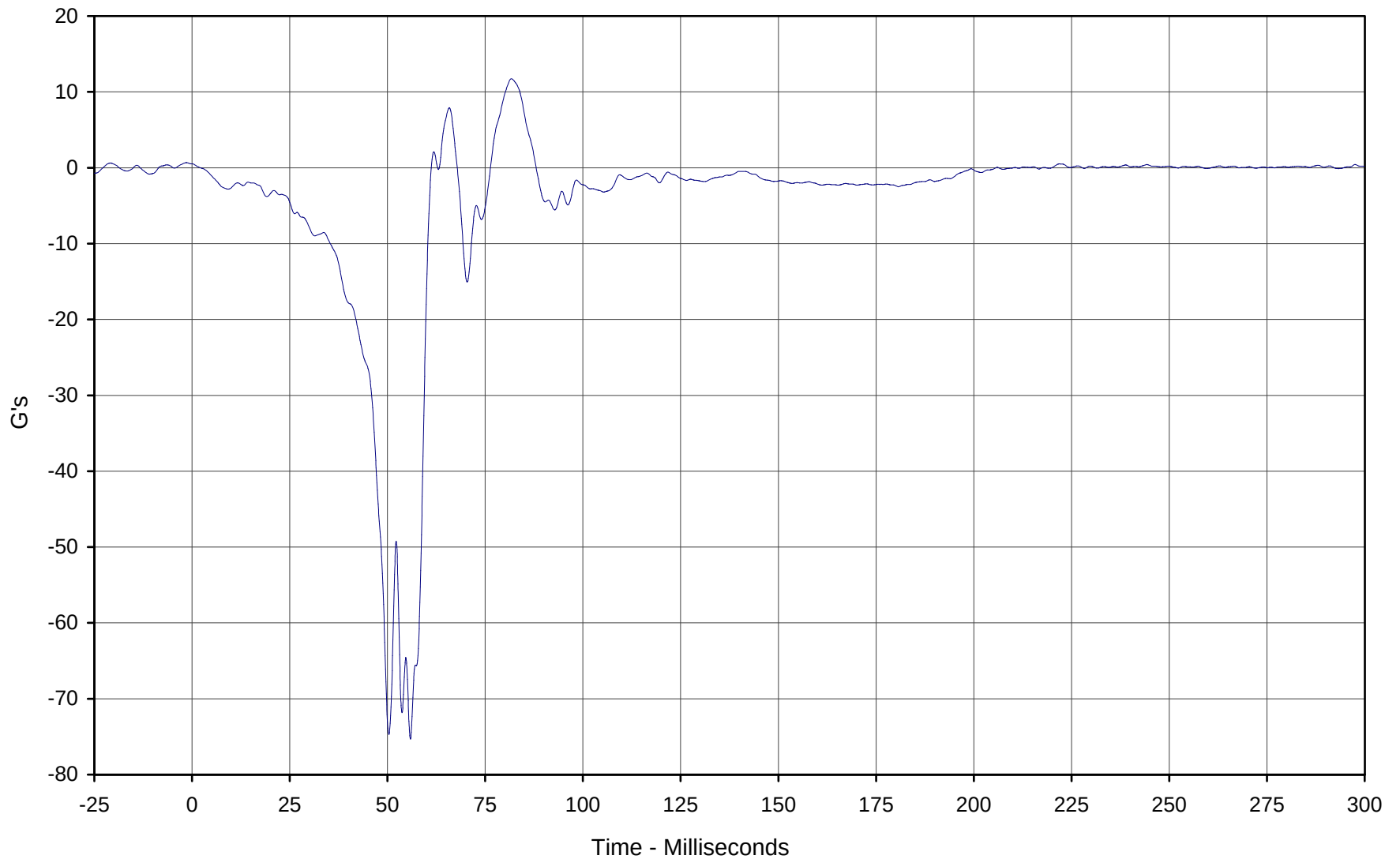




Curve Description: Passenger Left Foot Fore Z
Maximum Value: 19.7 at 50.8 Milliseconds
Minimum Value: -69.3 at 54.1 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: FIL-081

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

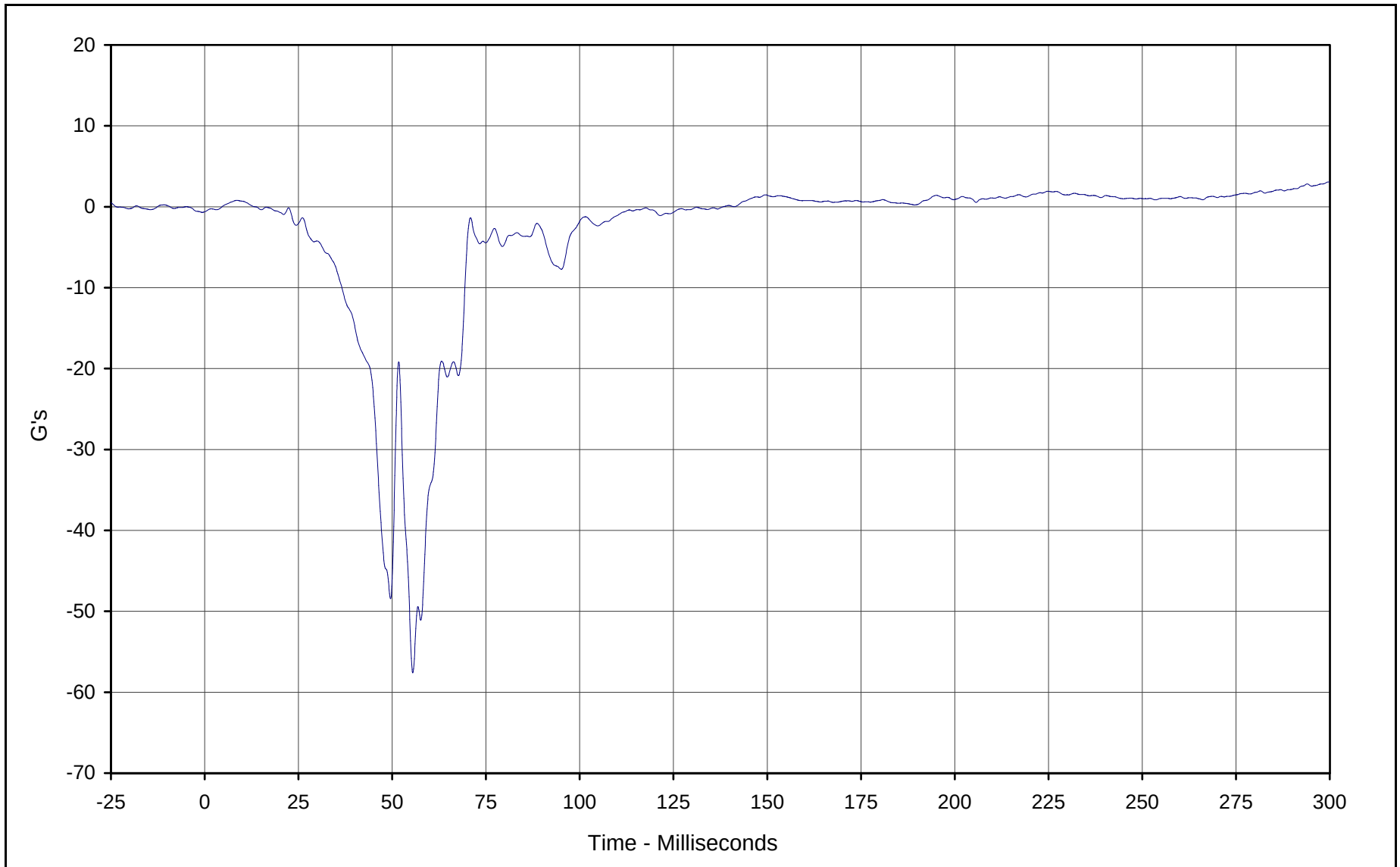




Curve Description: Passenger Right Foot Aft X
Maximum Value: 11.7 at 81.7 Milliseconds
Minimum Value: -75.3 at 55.9 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: FIL-082

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

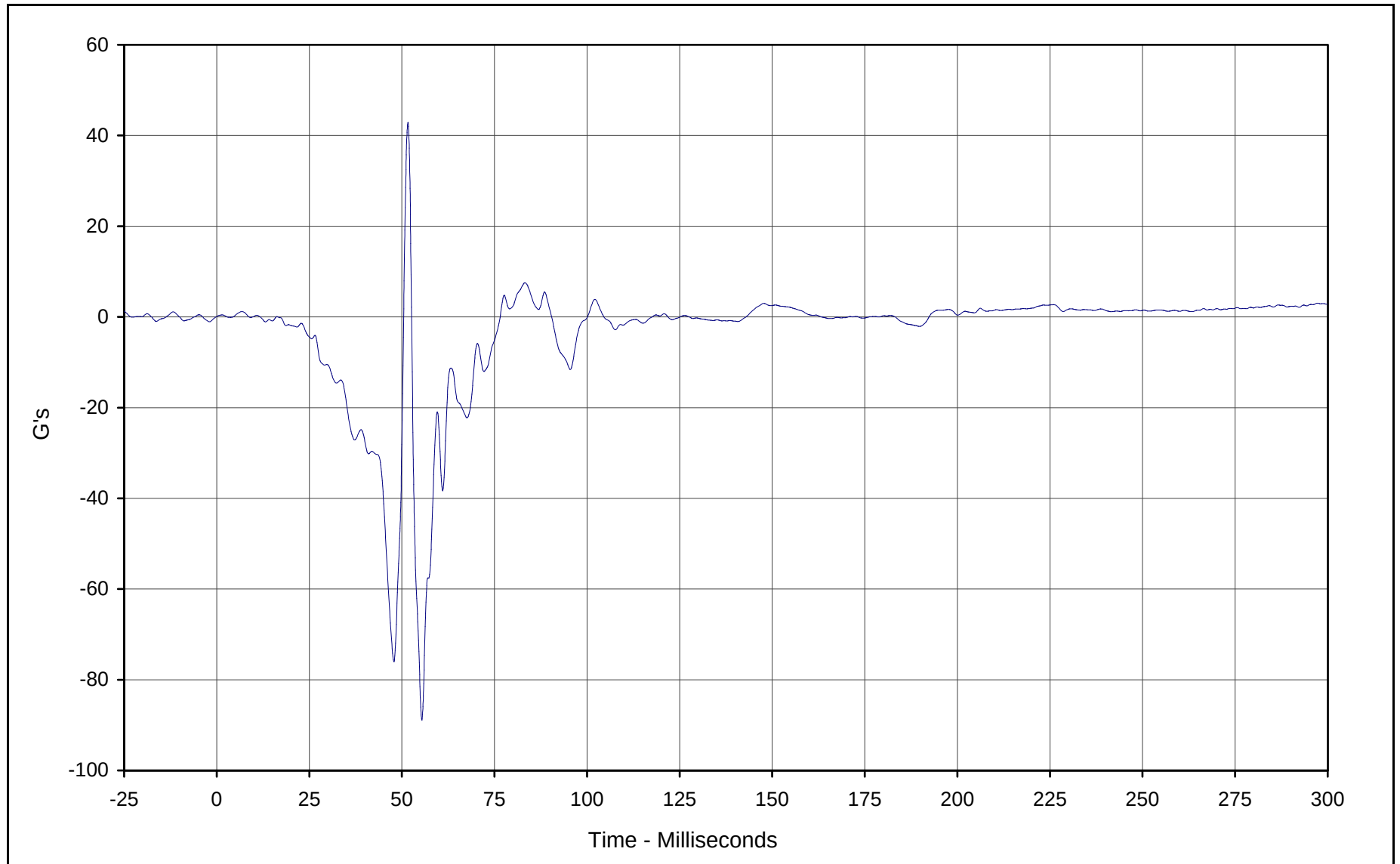




Curve Description: Passenger Right Foot Aft Z
Maximum Value: 3.1 at 299.6 Milliseconds
Minimum Value: -57.6 at 55.5 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: FIL-083

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

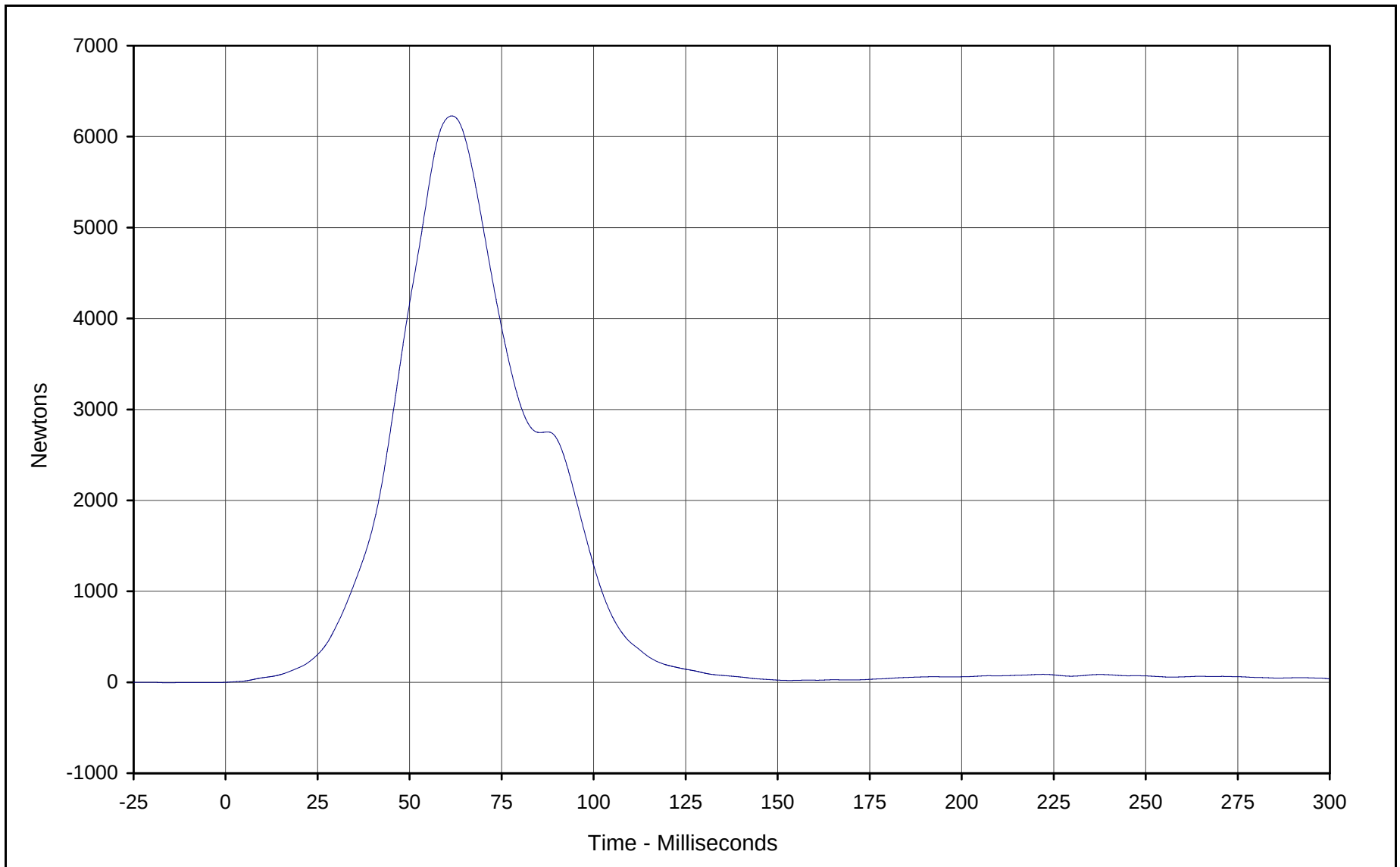




Curve Description: Passenger Right Foot Fore Z
Maximum Value: 42.9 at 51.6 Milliseconds
Minimum Value: -88.9 at 55.4 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: FIL-084

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

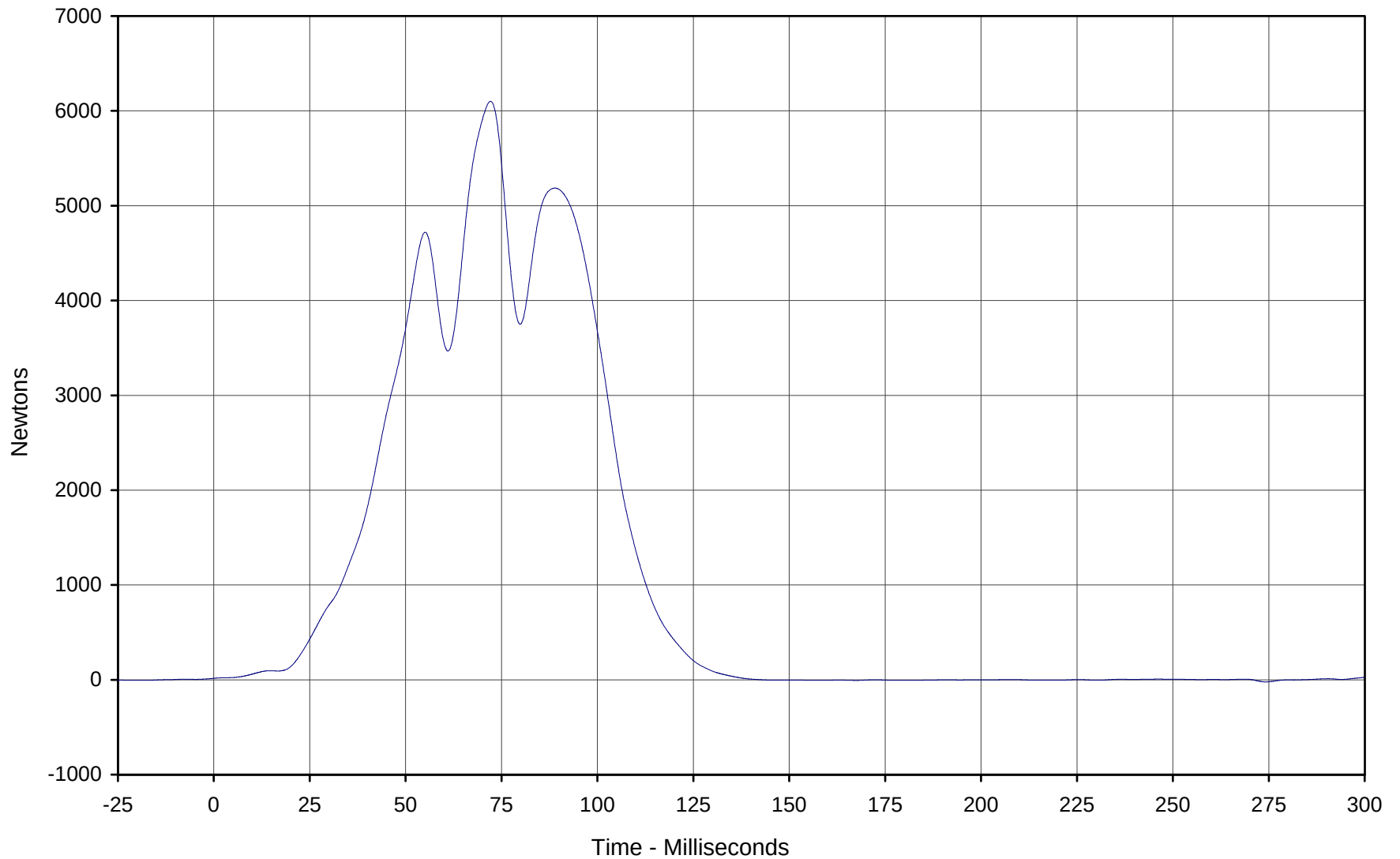




Curve Description: Passenger Lap Belt Force
Maximum Value: 6227.5 at 61.5 Milliseconds
Minimum Value: -0.8 at 0.0 Milliseconds
SAE Filter Class: 60
Date of Test: 01/04/01
Curve Number: FIL-085

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

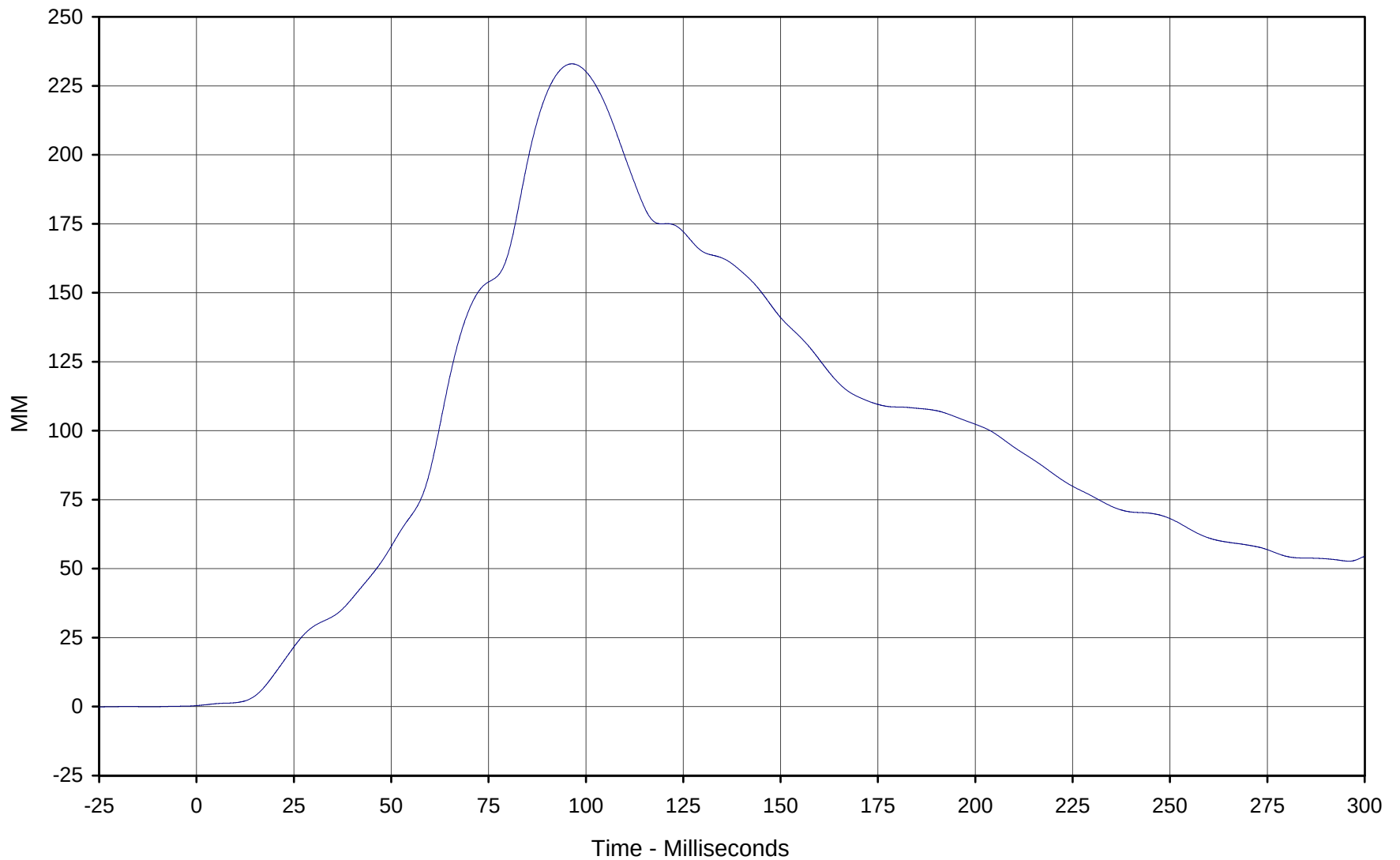




Curve Description: Passenger Shoulder Belt Force
Maximum Value: 6101.1 at 72.1 Milliseconds
Minimum Value: -22.4 at 274.2 Milliseconds
SAE Filter Class: 60
Date of Test: 01/04/01
Curve Number: FIL-086

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

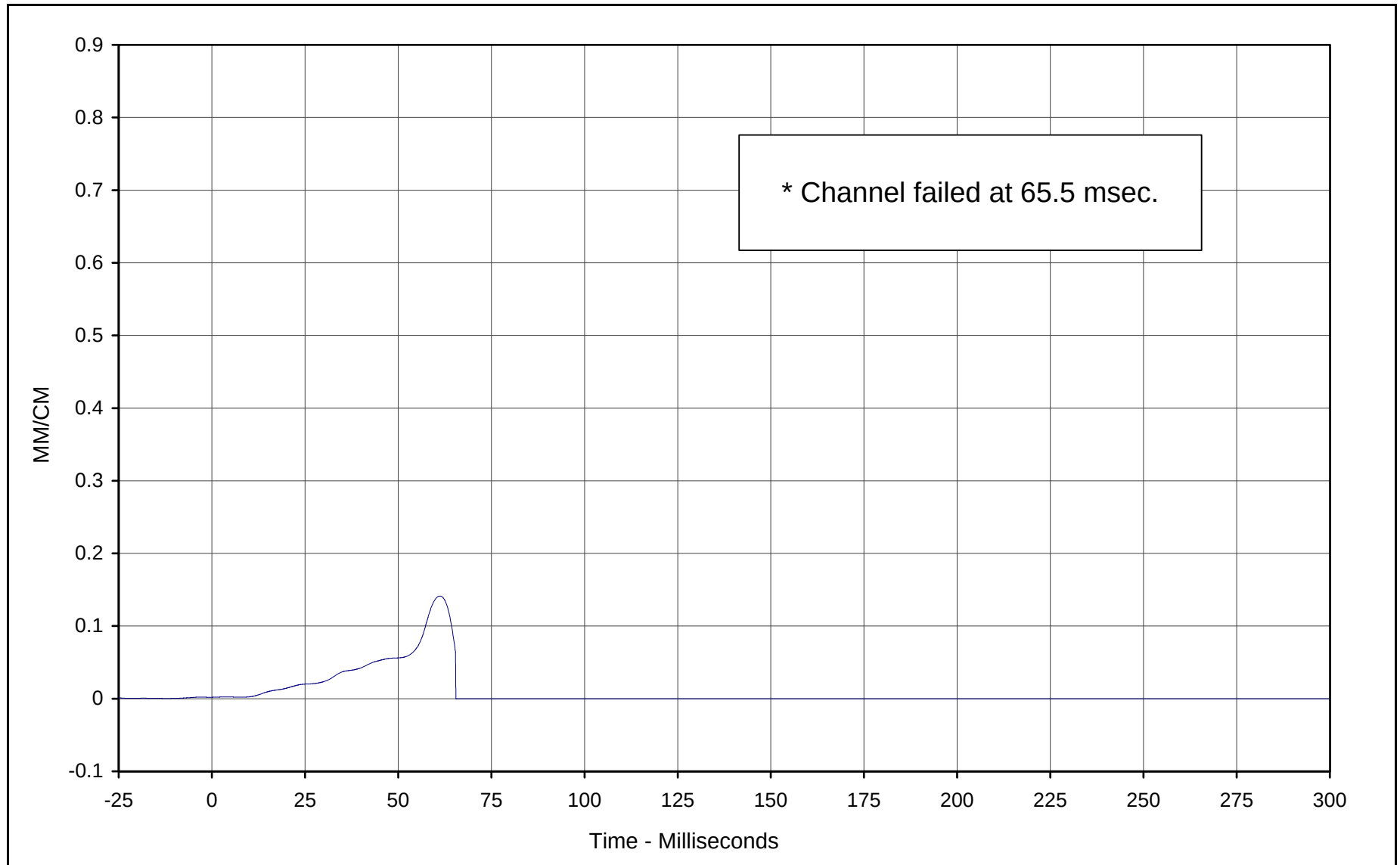




Curve Description: Passenger Shoulder Belt Pullout
Maximum Value: 233.0 at 96.4 Milliseconds
Minimum Value: 0.4 at 0.0 Milliseconds
SAE Filter Class: 60
Date of Test: 01/04/01
Curve Number: FIL-087

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Passenger Shoulder Belt Elongation *

Maximum Value: 0.14 at 61.2 Milliseconds

Minimum Value: 0.00 at 65.5 Milliseconds

SAE Filter Class: 60

Date of Test: 01/04/01

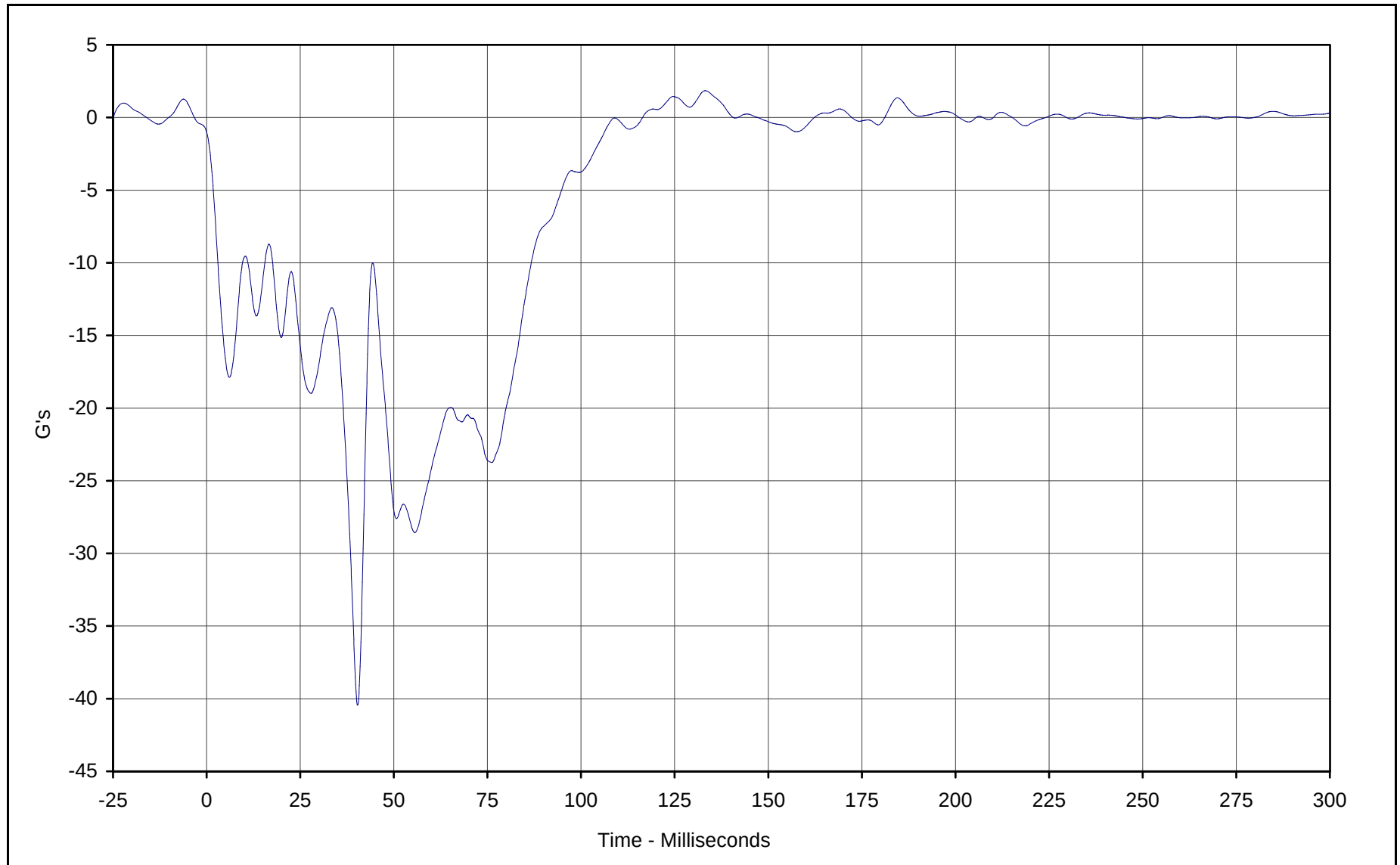
Curve Number: FIL-088

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

* Channel failed at 65.5 msec.





Curve Description: Vehicle Left Rear Primary

Maximum Value: 1.8 at 133.2 Milliseconds

Minimum Value: -40.5 at 40.3 Milliseconds

SAE Filter Class: 60

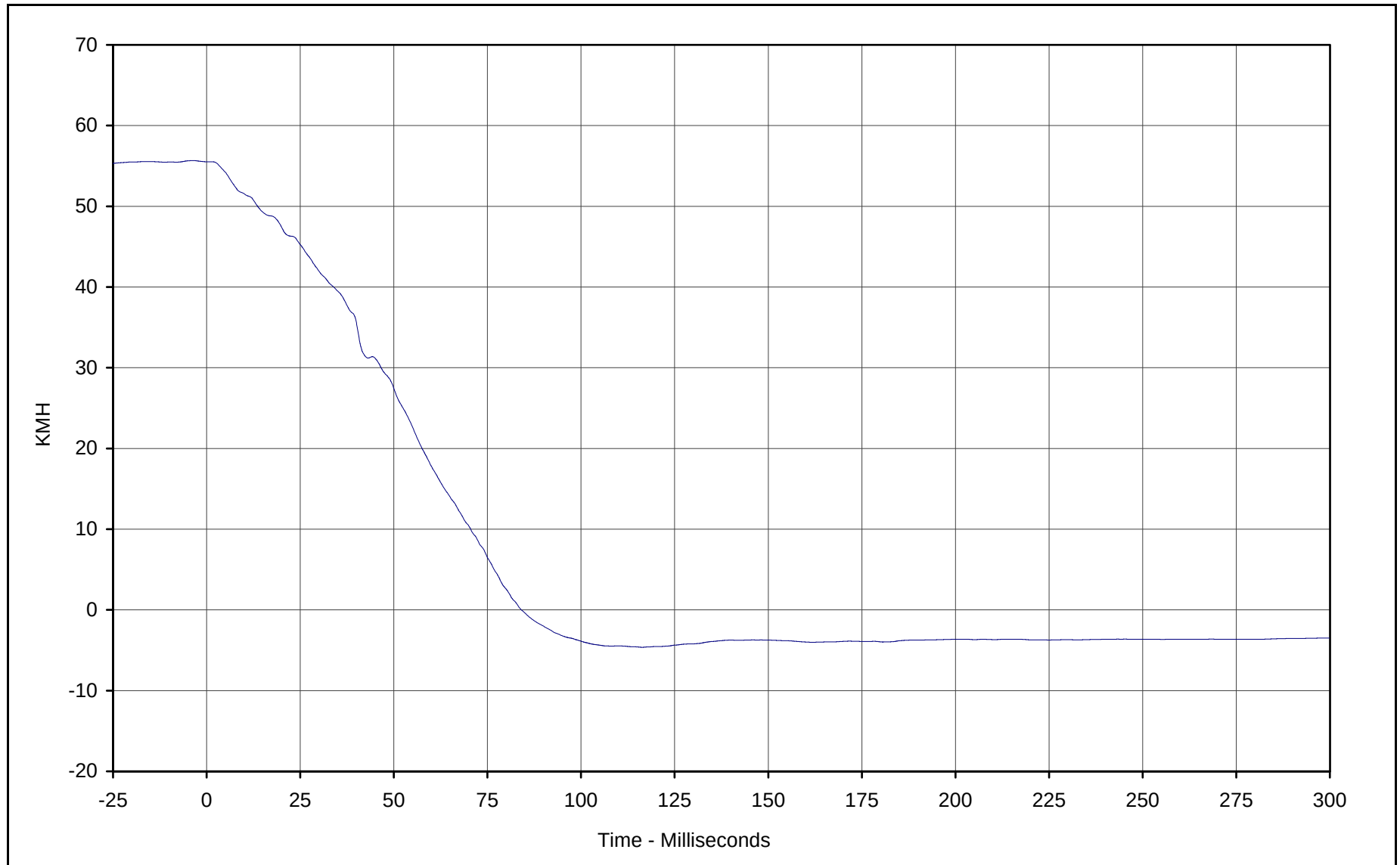
Date of Test: 01/04/01

Curve Number: FIL-089

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



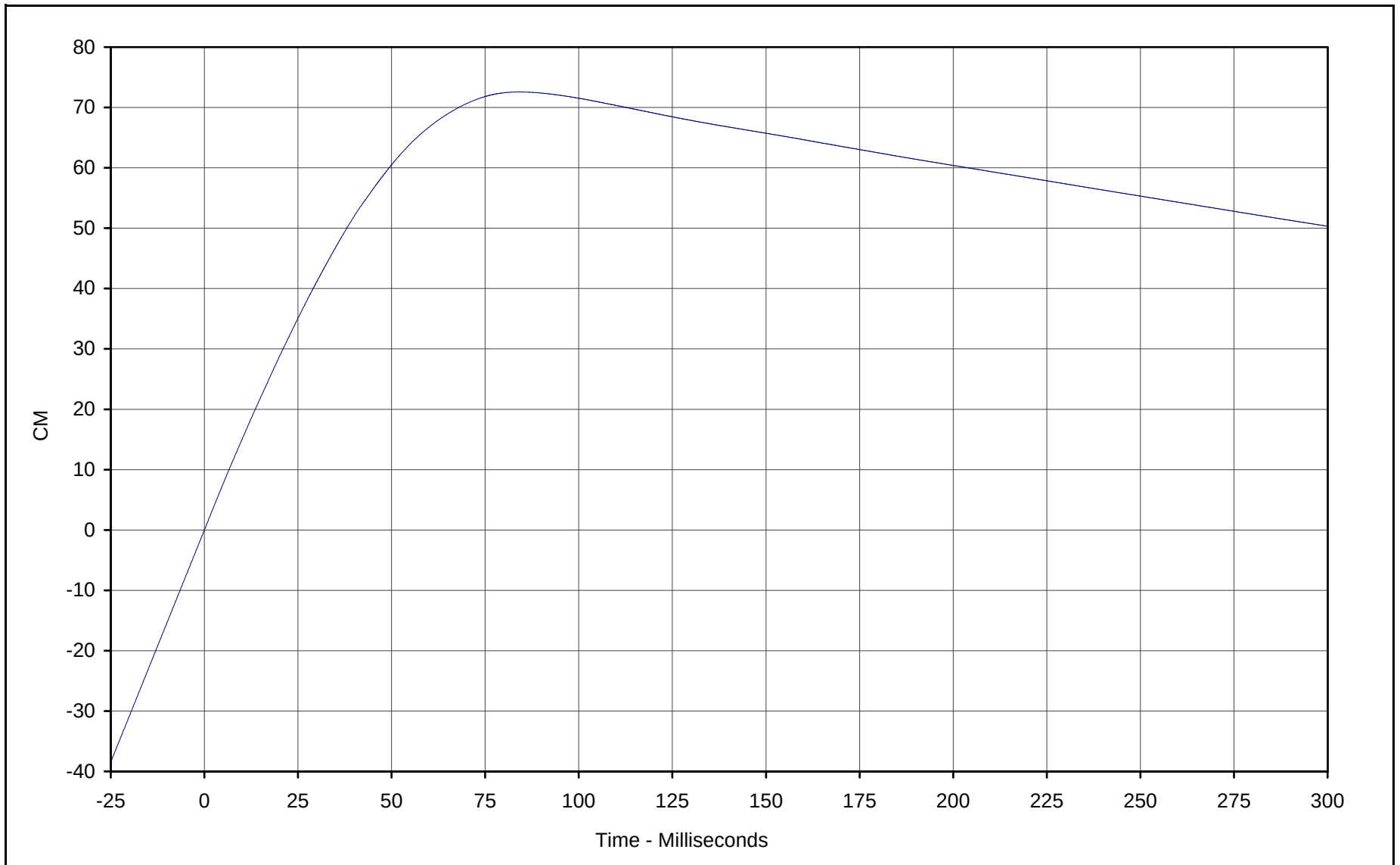


Curve Description: Vehicle Left Rear Primary Velocity
Maximum Value: 55.5 at 1.3 Milliseconds
Minimum Value: -4.6 at 116.4 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: IN1-089

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



B-125

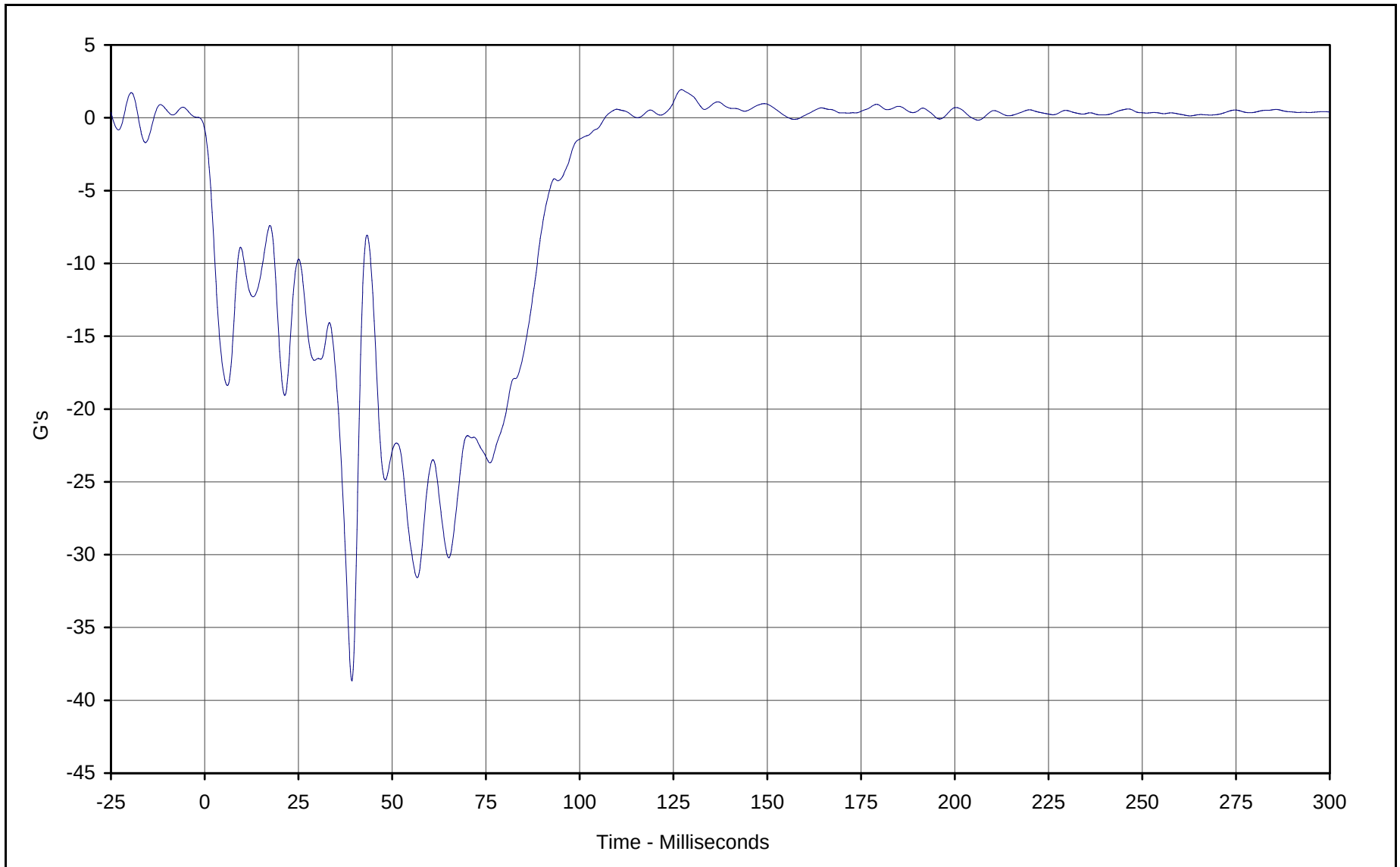


Curve Description: Vehicle Left Rear Primary Displ.
Maximum Value: 72.6 at 84.1 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: IN2-089

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



KAR21001-01



Curve Description: Vehicle Right Rear Primary

Maximum Value: 1.9 at 127.1 Milliseconds

Minimum Value: -38.7 at 39.2 Milliseconds

SAE Filter Class: 60

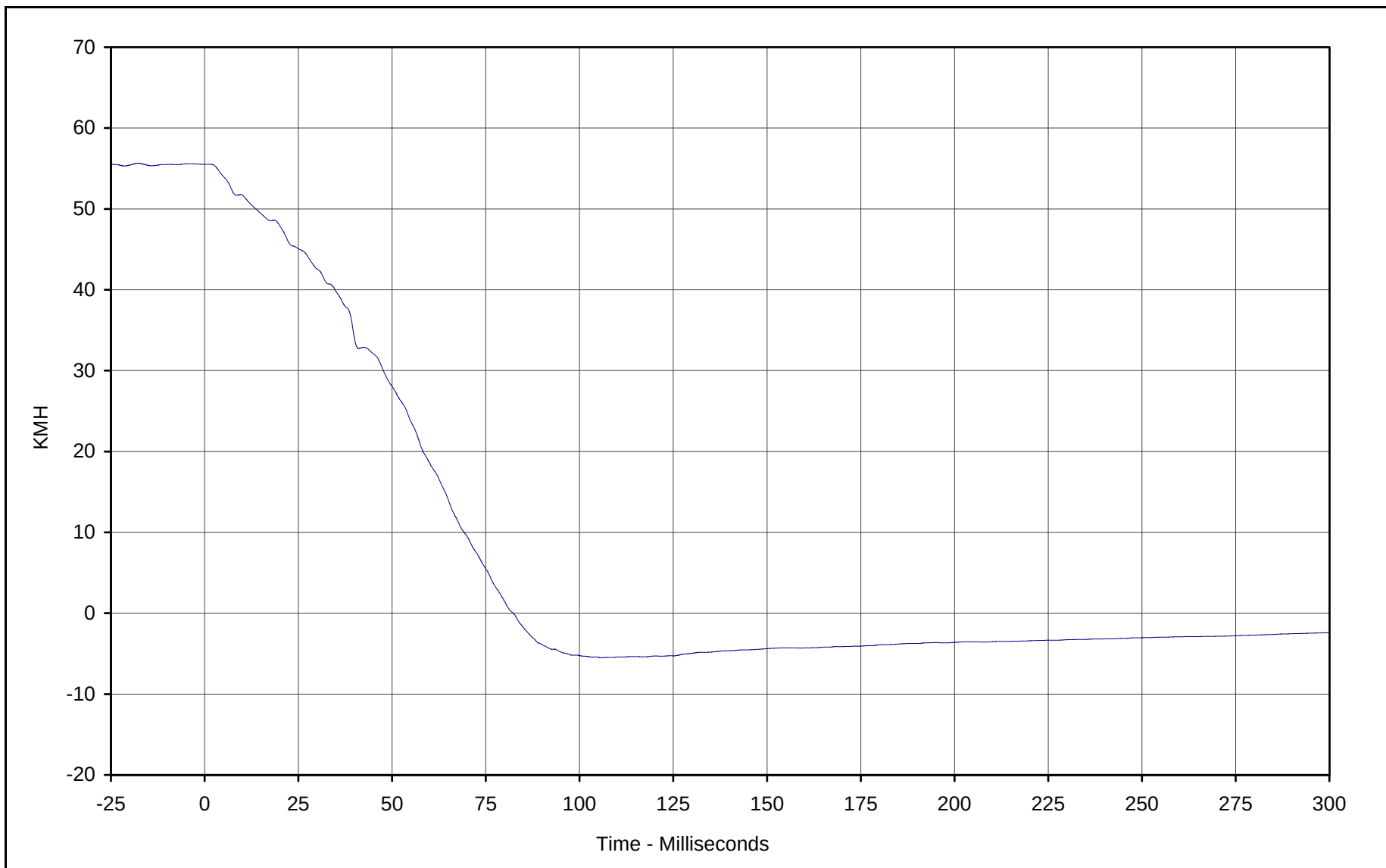
Date of Test: 01/04/01

Curve Number: FIL-090

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Vehicle Right Rear Primary Velocity

Maximum Value: 55.5 at 1.4 Milliseconds

Minimum Value: -5.5 at 106.1 Milliseconds

SAE Filter Class: 180

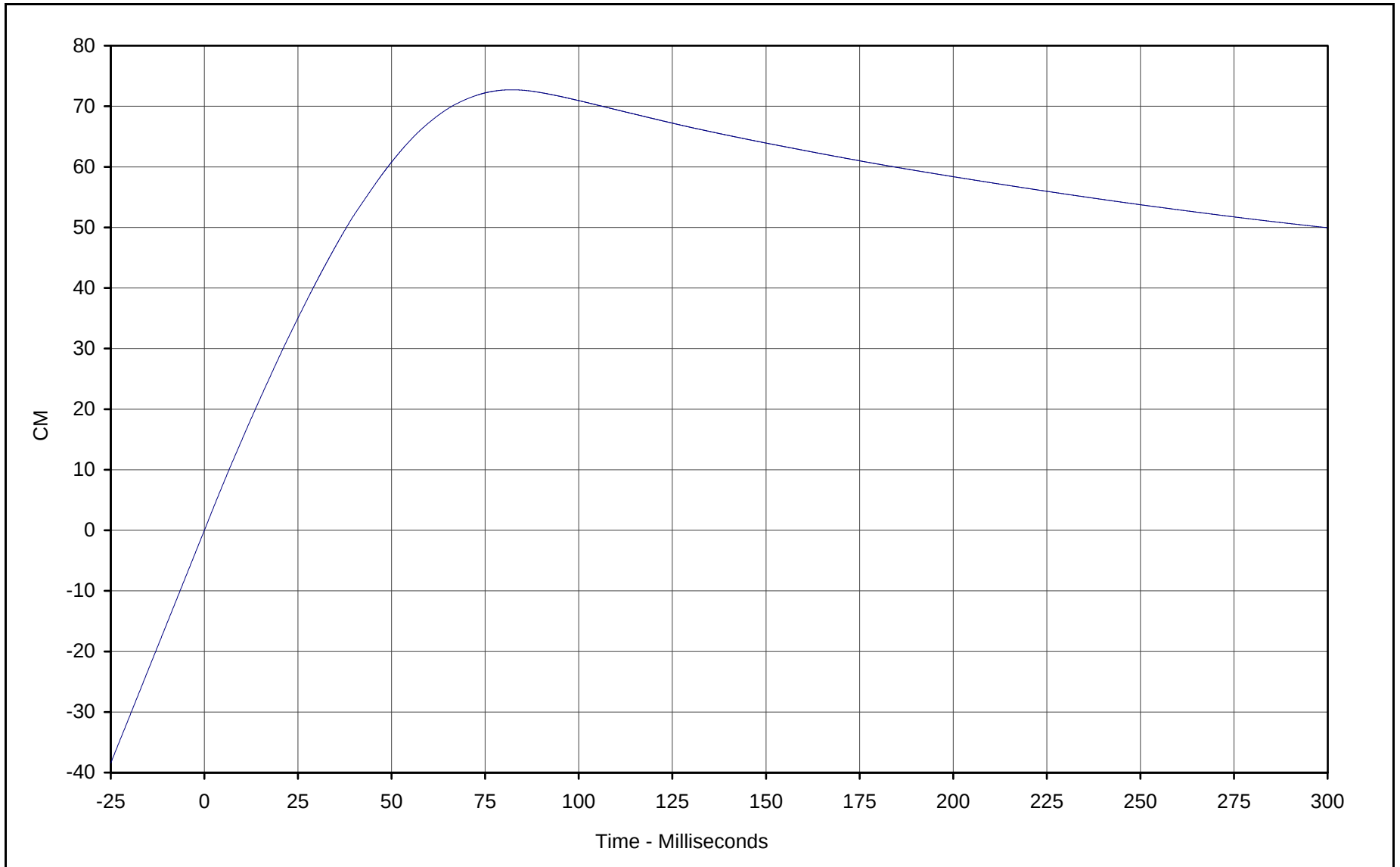
Date of Test: 01/04/01

Curve Number: IN1-090

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

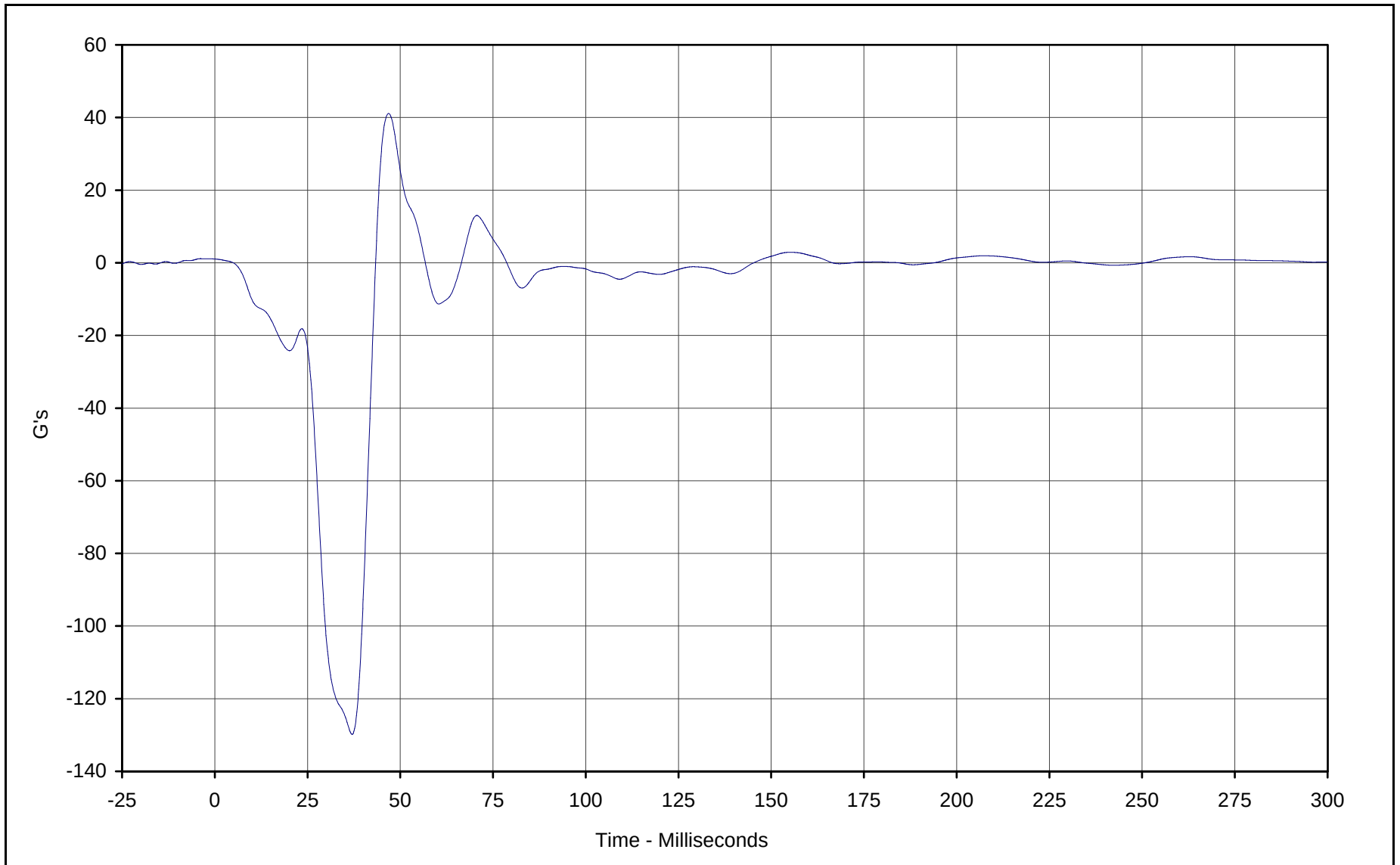




Curve Description: Vehicle Right Rear Primary Displ.
Maximum Value: 72.7 at 82.3 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: IN2-090

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Vehicle Engine Top

Maximum Value: 41.1 at 46.9 Milliseconds

Minimum Value: -129.8 at 37.0 Milliseconds

SAE Filter Class: 60

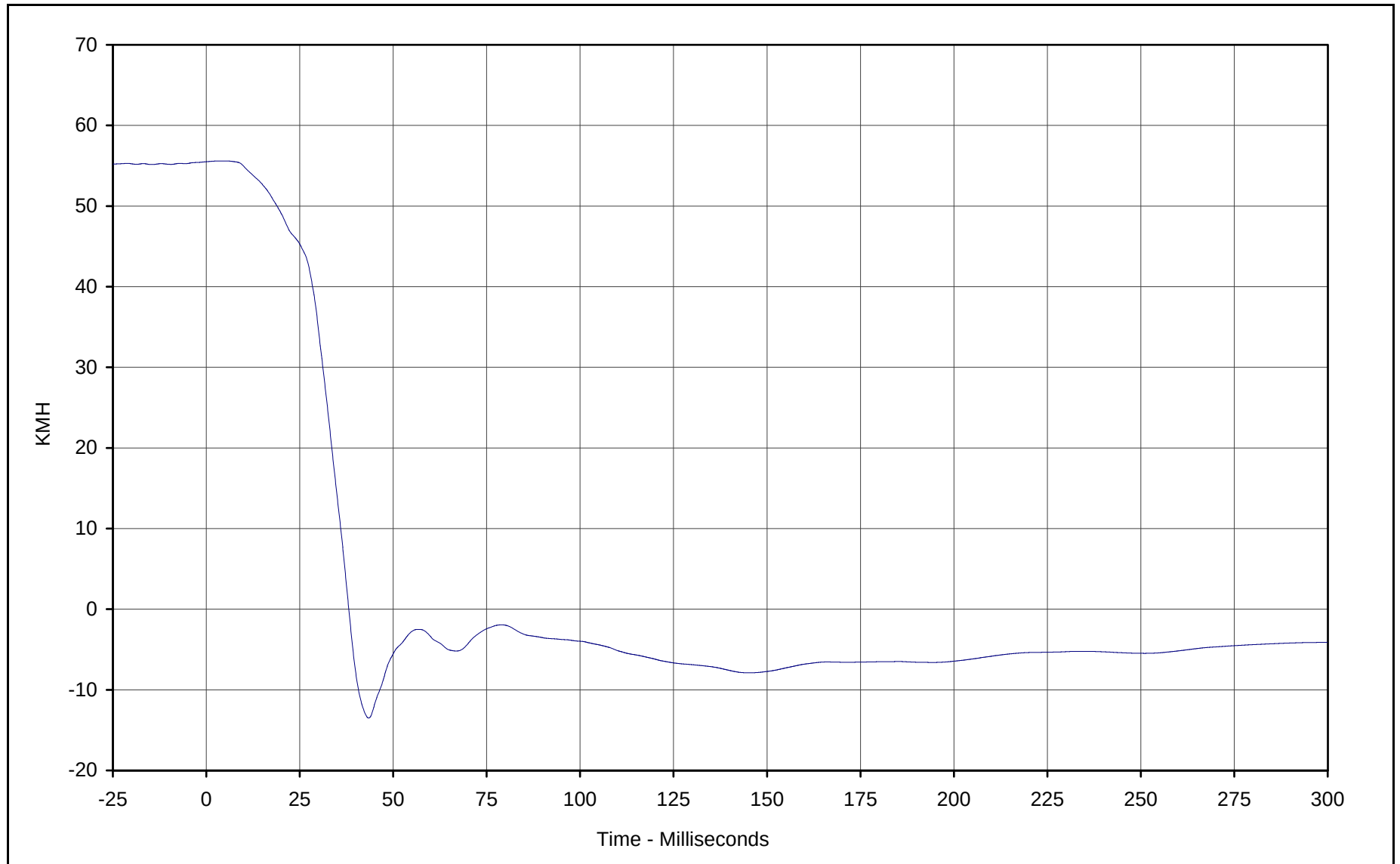
Date of Test: 01/04/01

Curve Number: FIL-091

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

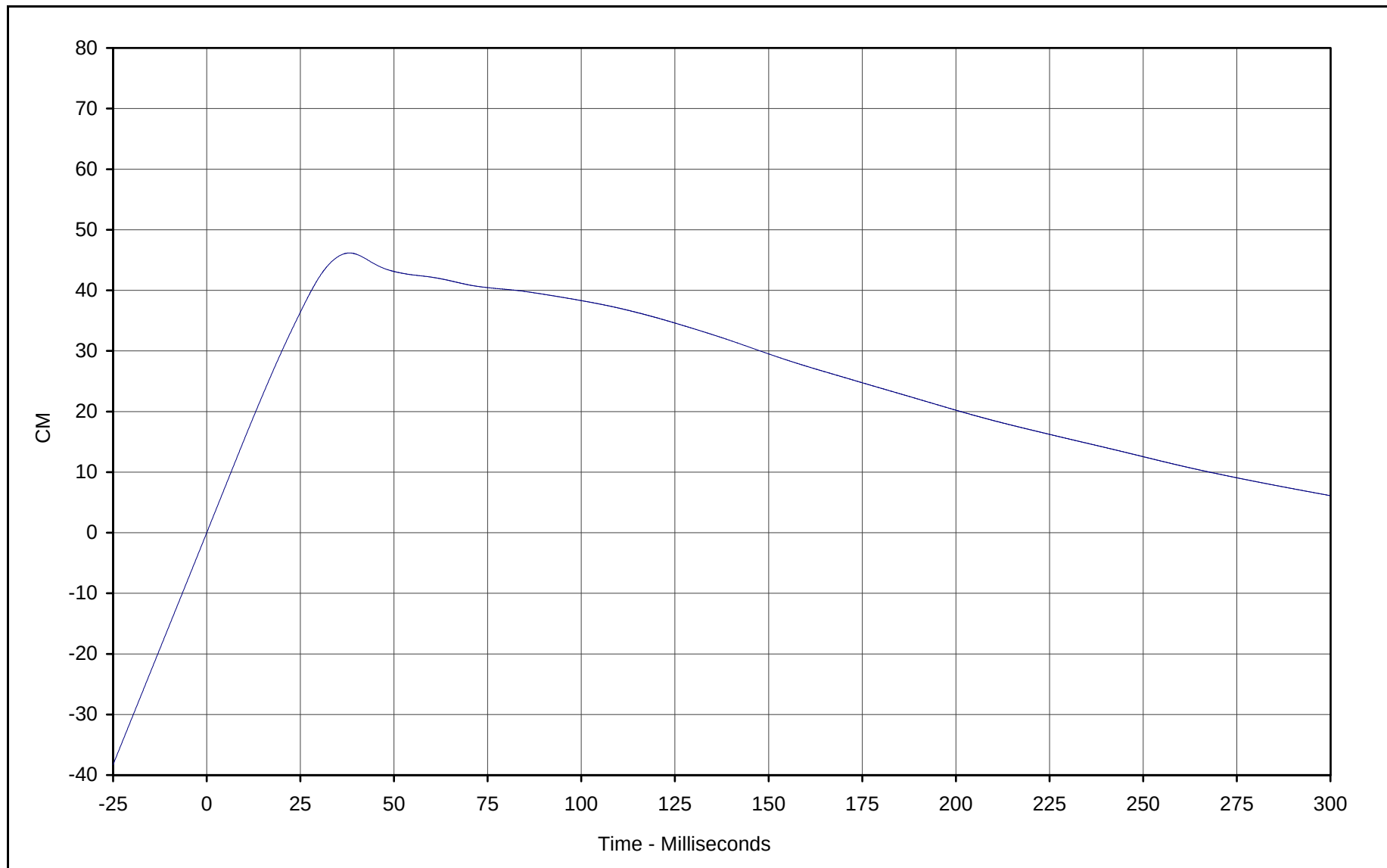




Curve Description: Vehicle Engine Top Velocity
Maximum Value: 55.6 at 5.4 Milliseconds
Minimum Value: -13.5 at 43.4 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: IN1-091

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

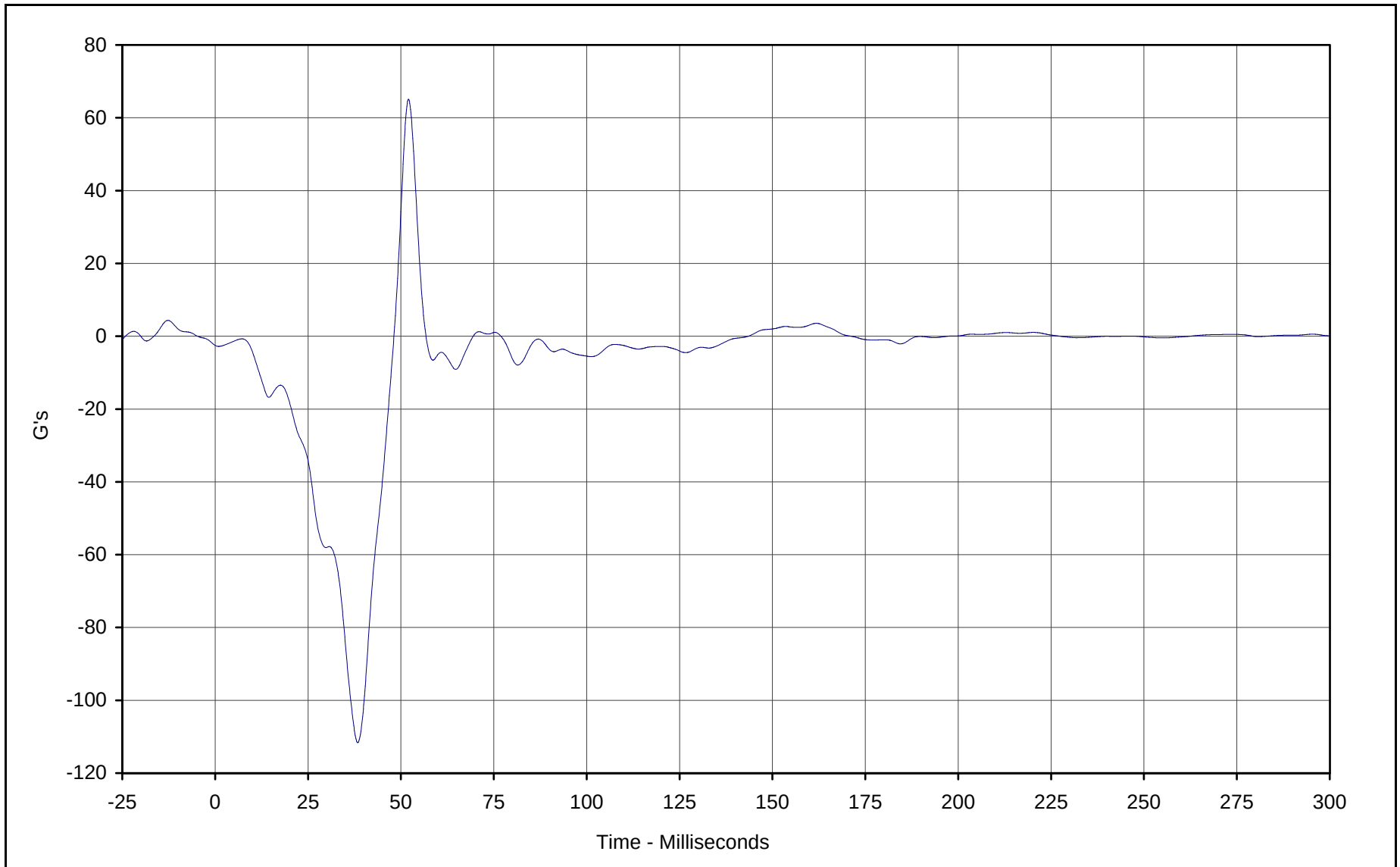




Curve Description: Vehicle Engine Top Displacement
Maximum Value: 46.2 at 38.1 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: IN2-091

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Vehicle Engine Bottom

Maximum Value: 65.1 at 52.0 Milliseconds

Minimum Value: -111.6 at 38.4 Milliseconds

SAE Filter Class: 60

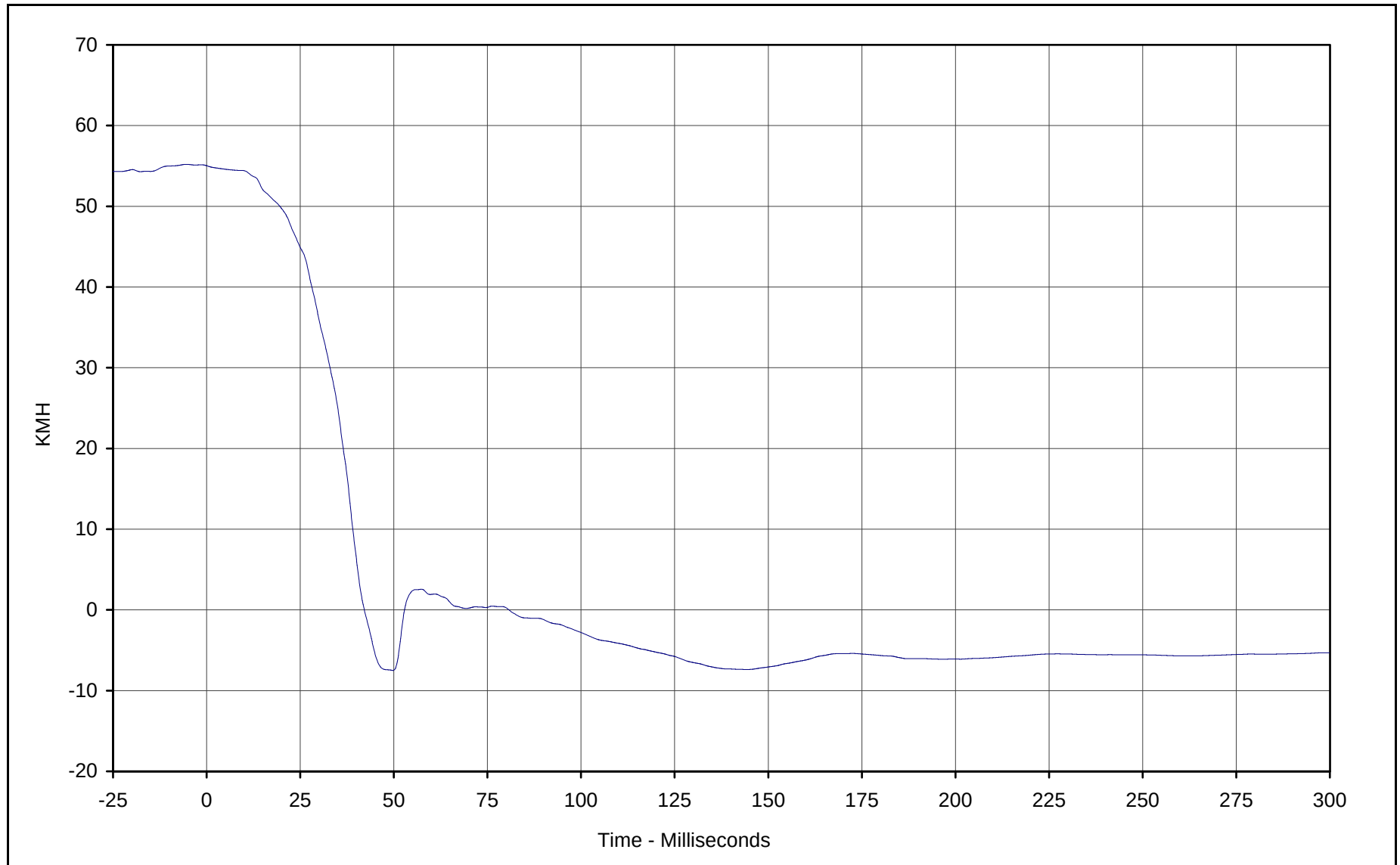
Date of Test: 01/04/01

Curve Number: FIL-092

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

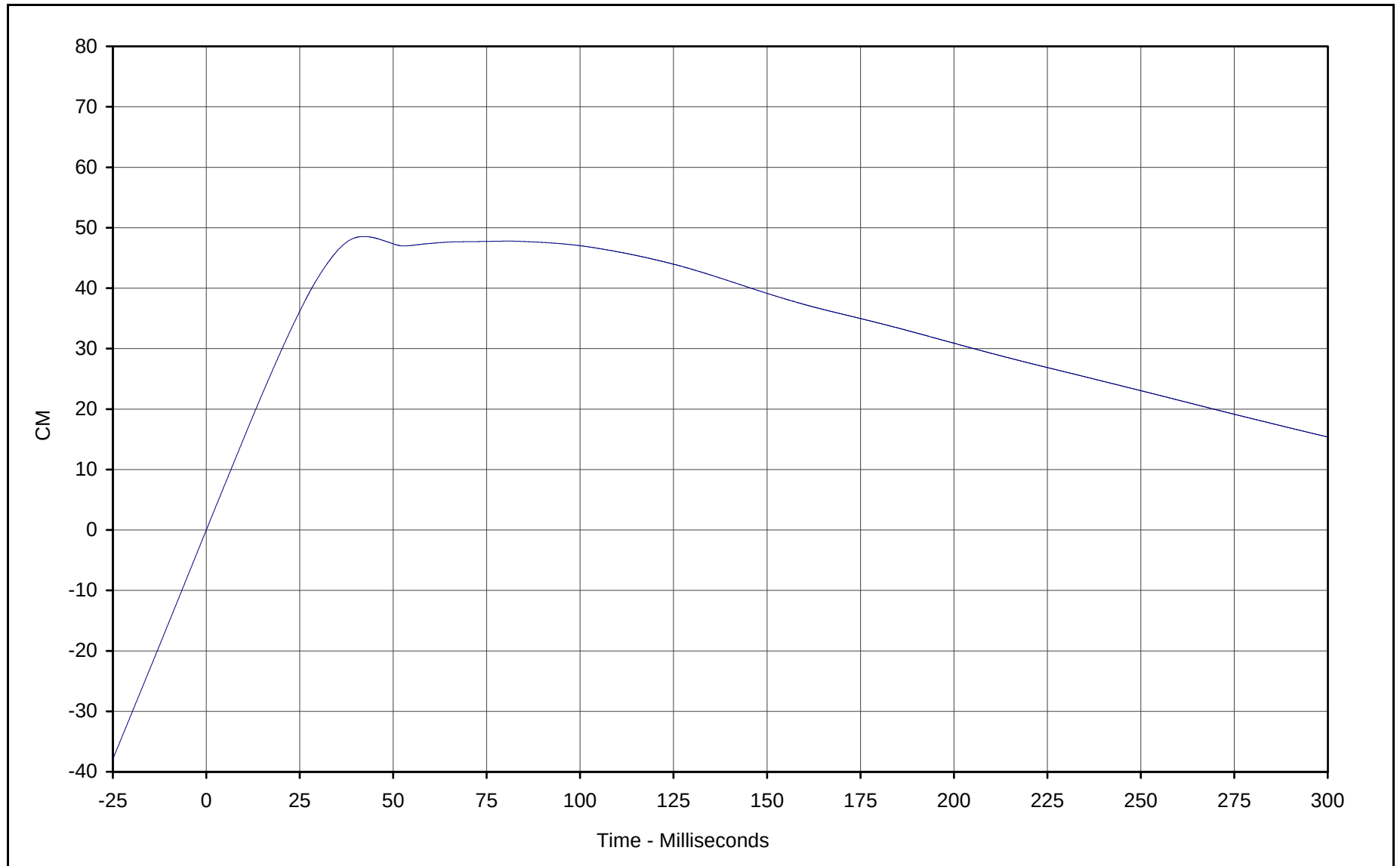




Curve Description: Vehicle Engine Bottom Velocity
Maximum Value: 55.0 at 0.0 Milliseconds
Minimum Value: -7.5 at 49.7 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: IN1-092

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

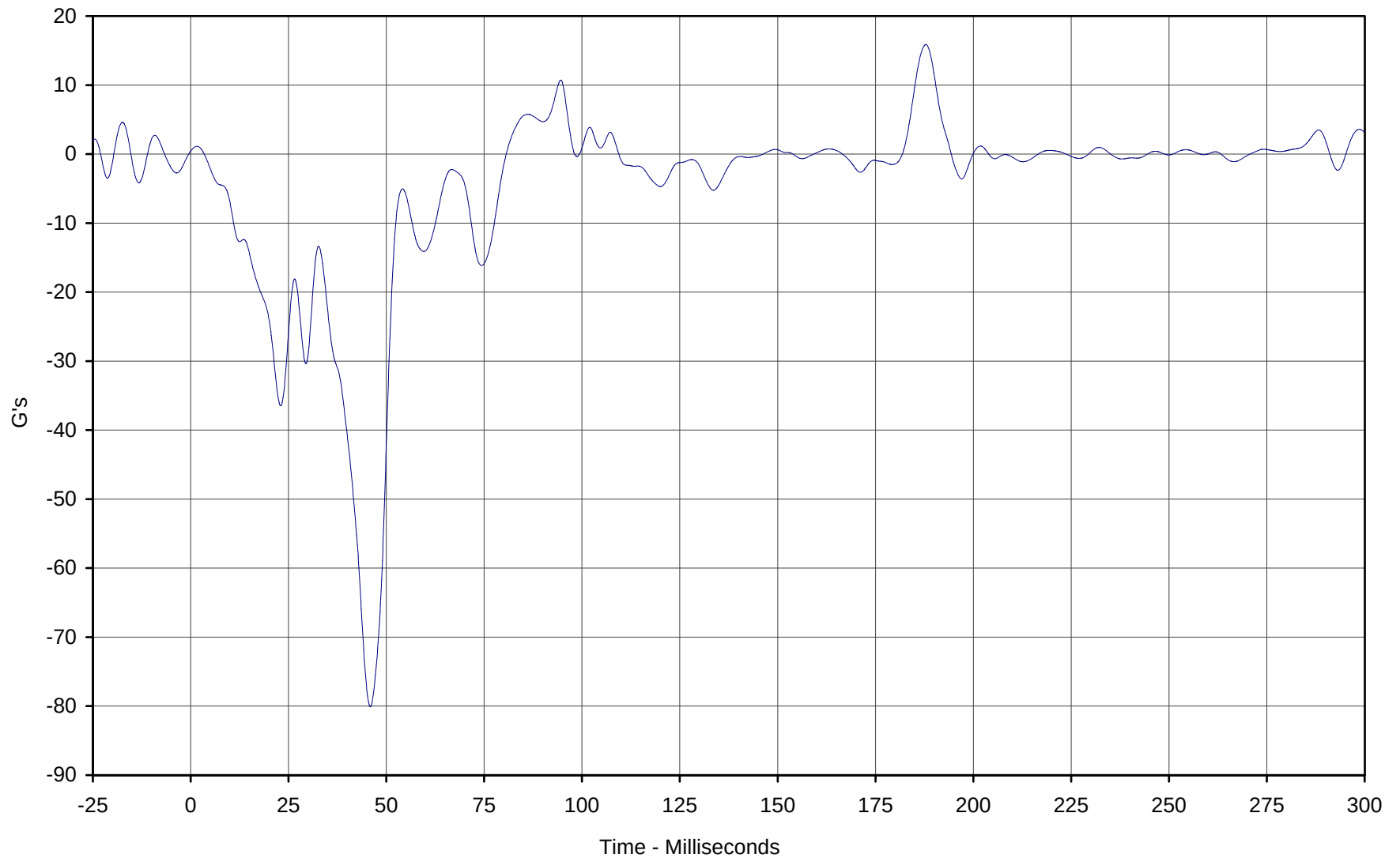




Curve Description: Vehicle Engine Bottom Displacement
Maximum Value: 48.5 at 42.1 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: IN2-092

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Vehicle Left Brake Caliper

Maximum Value: 15.9 at 187.9 Milliseconds

Minimum Value: -80.1 at 45.9 Milliseconds

SAE Filter Class: 60

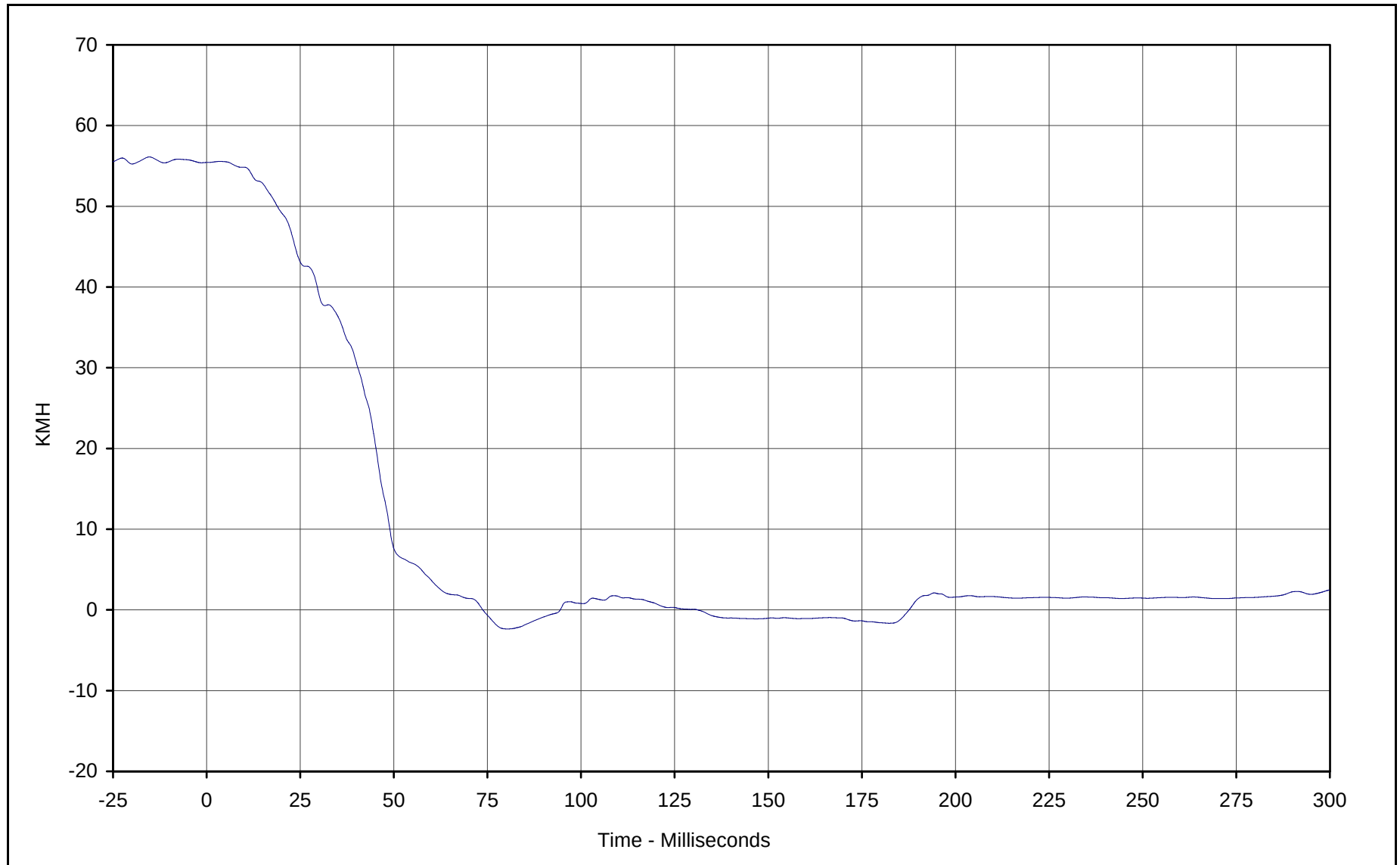
Date of Test: 01/04/01

Curve Number: FIL-093

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

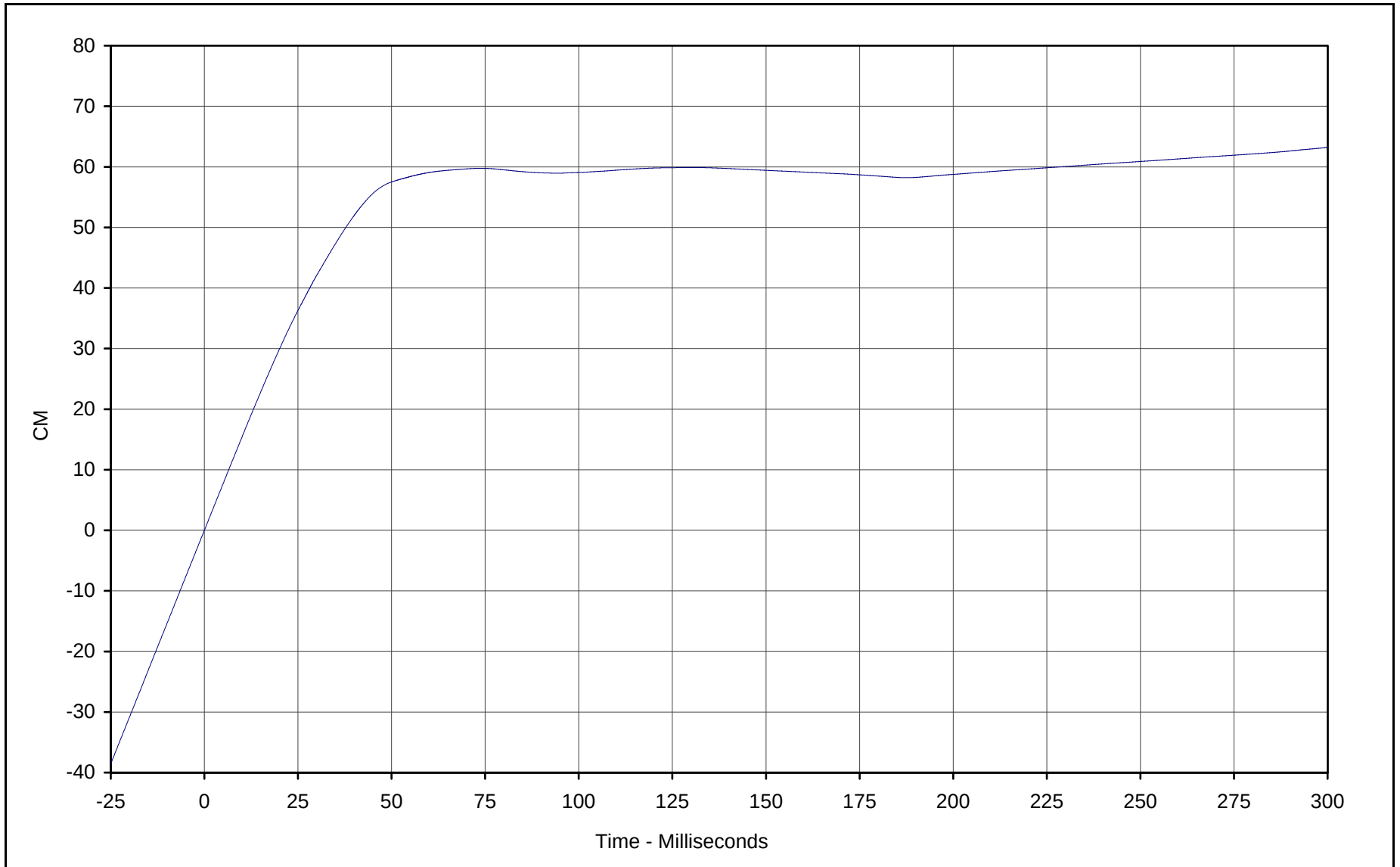




Curve Description: Vehicle Left Brake Caliper Velocity
Maximum Value: 55.6 at 3.5 Milliseconds
Minimum Value: -2.4 at 80.3 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: IN1-093

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

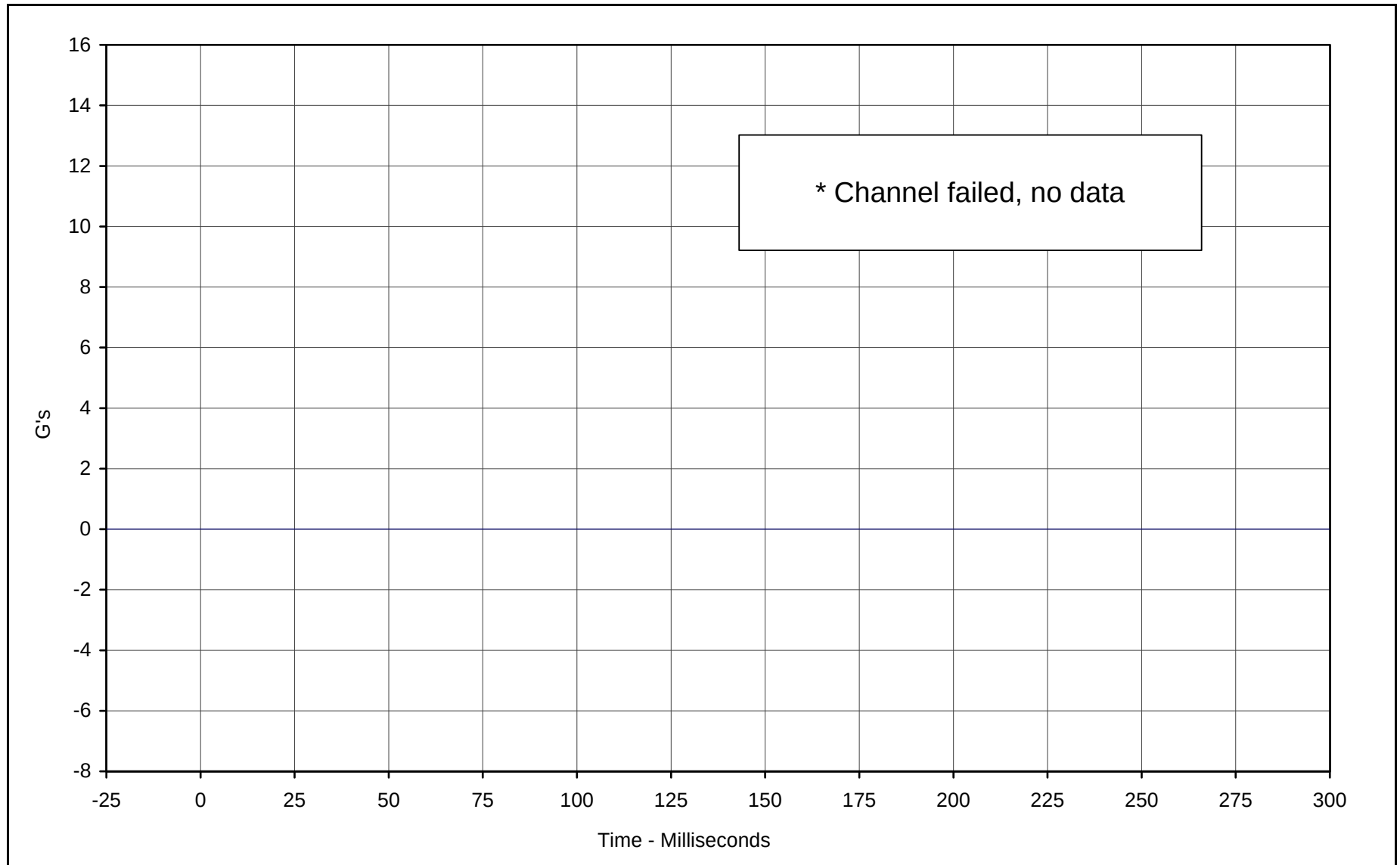




Curve Description: Vehicle Left Brake Caliper Displ.
Maximum Value: 63.2 at 299.9 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: IN2-093

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Vehicle Right Brake Caliper *

Maximum Value: 0.0 at 0.0 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 60

Date of Test: 01/04/01

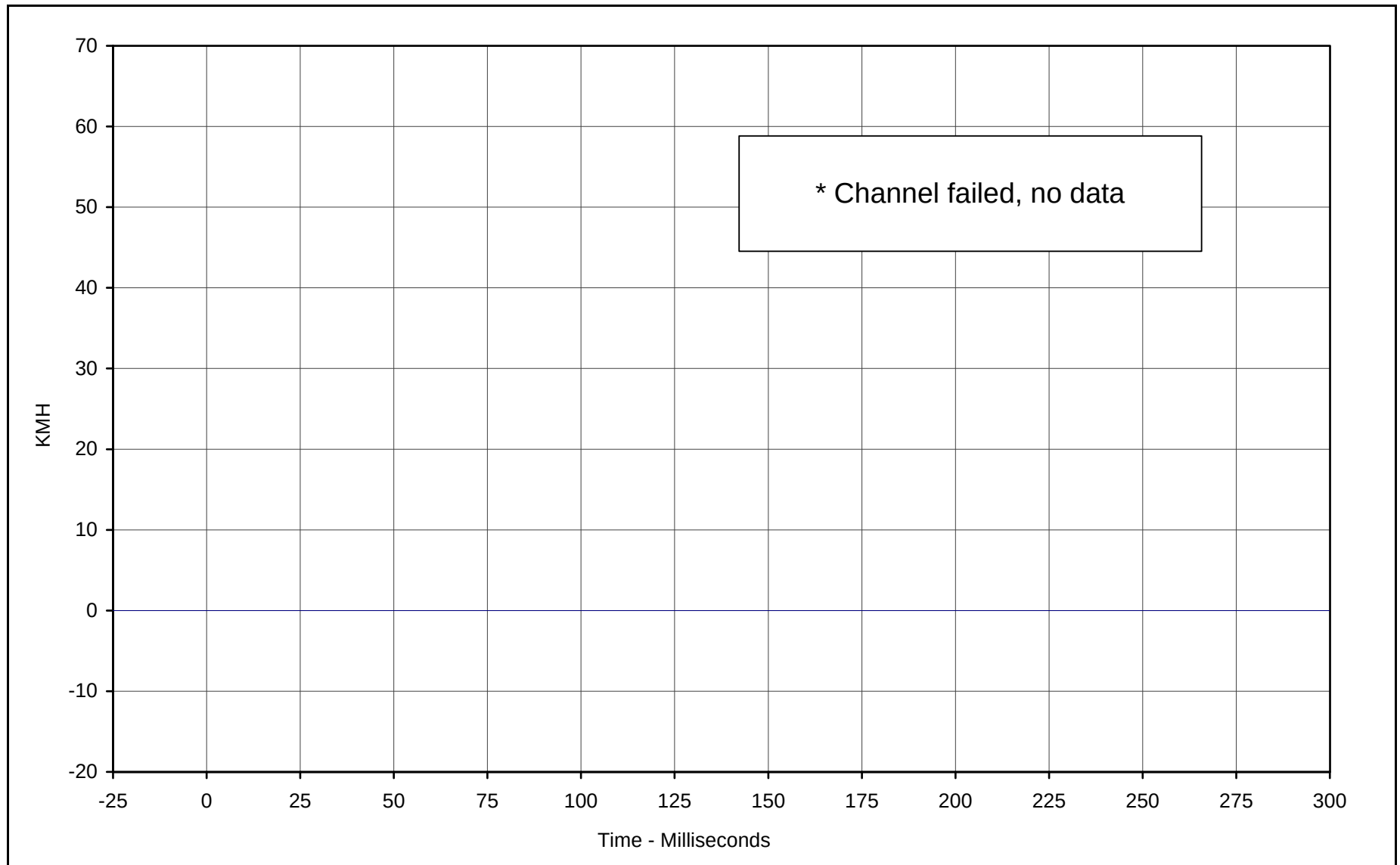
Curve Number: FIL-094

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

* Channel failed, no data





Curve Description: Vehicle Right Brake Caliper Velocity *

Maximum Value: 0.0 at 0.0 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 01/04/01

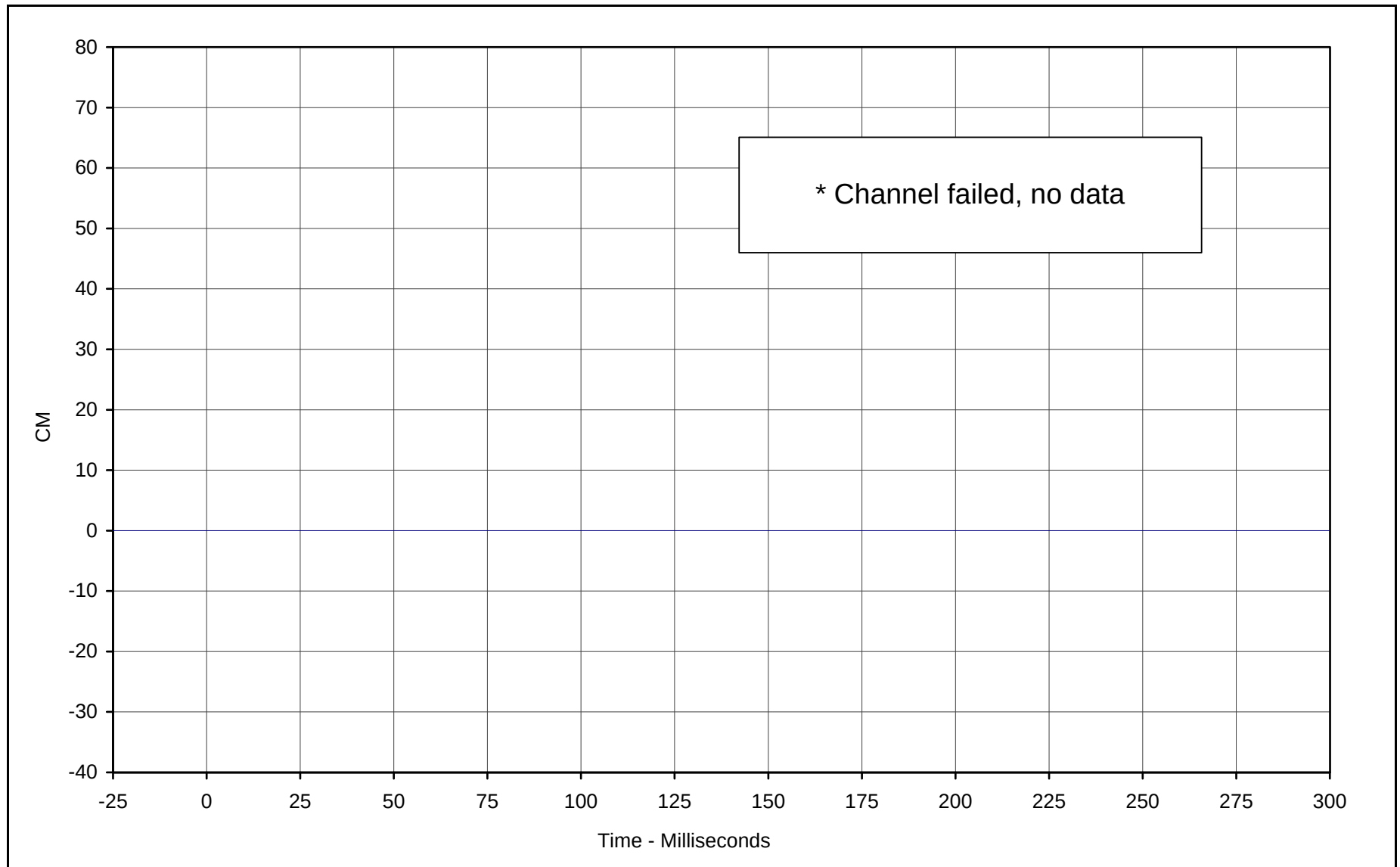
Curve Number: IN1-094

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

* Channel failed, no data





Curve Description: Vehicle Right Brake Caliper Displ. *

Maximum Value: 0.0 at 0.0 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 01/04/01

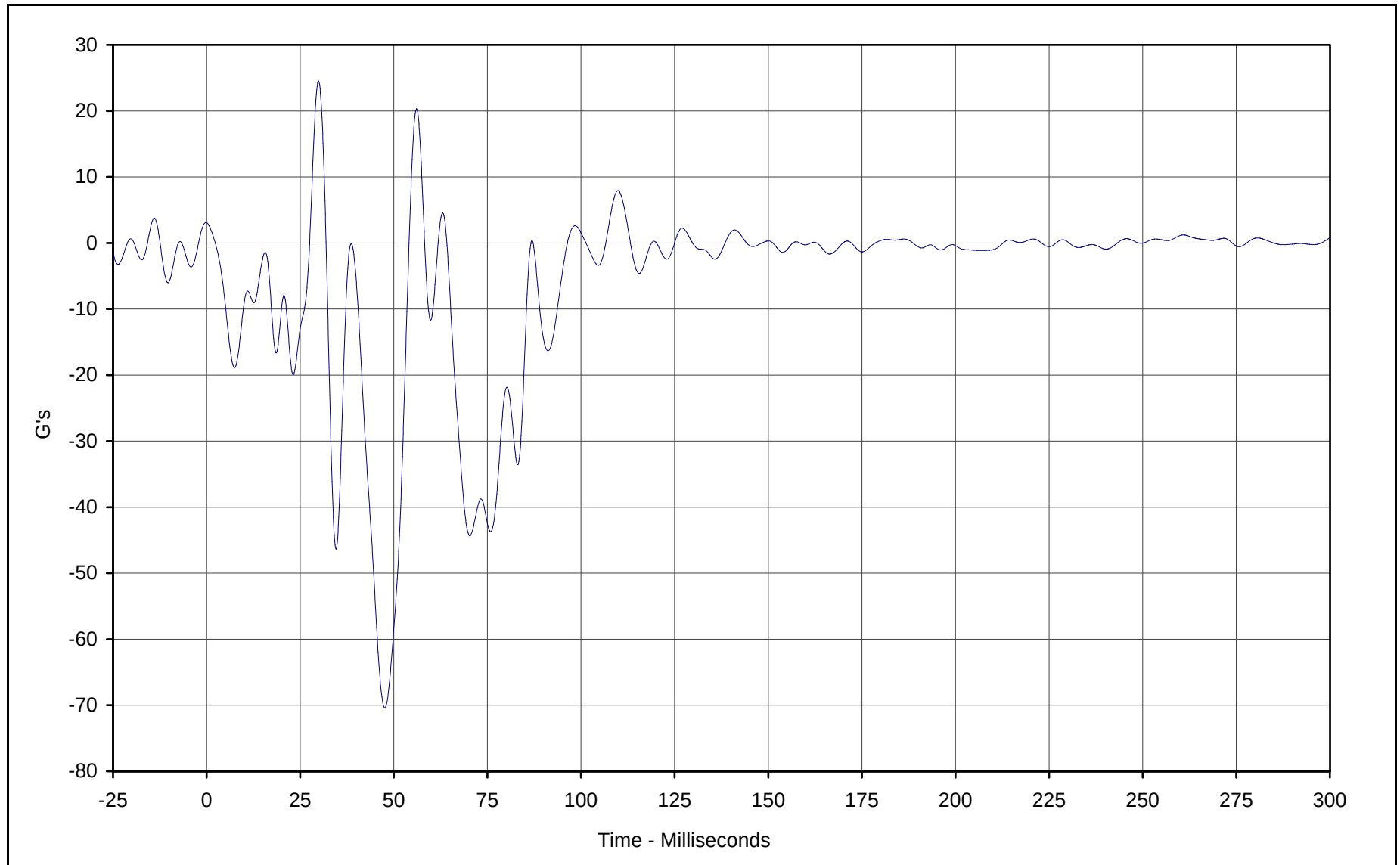
Curve Number: IN2-094

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

* Channel failed, no data





Curve Description: Vehicle Instrument Panel

Maximum Value: 24.5 at 29.9 Milliseconds

Minimum Value: -70.4 at 47.6 Milliseconds

SAE Filter Class: 60

Date of Test: 01/04/01

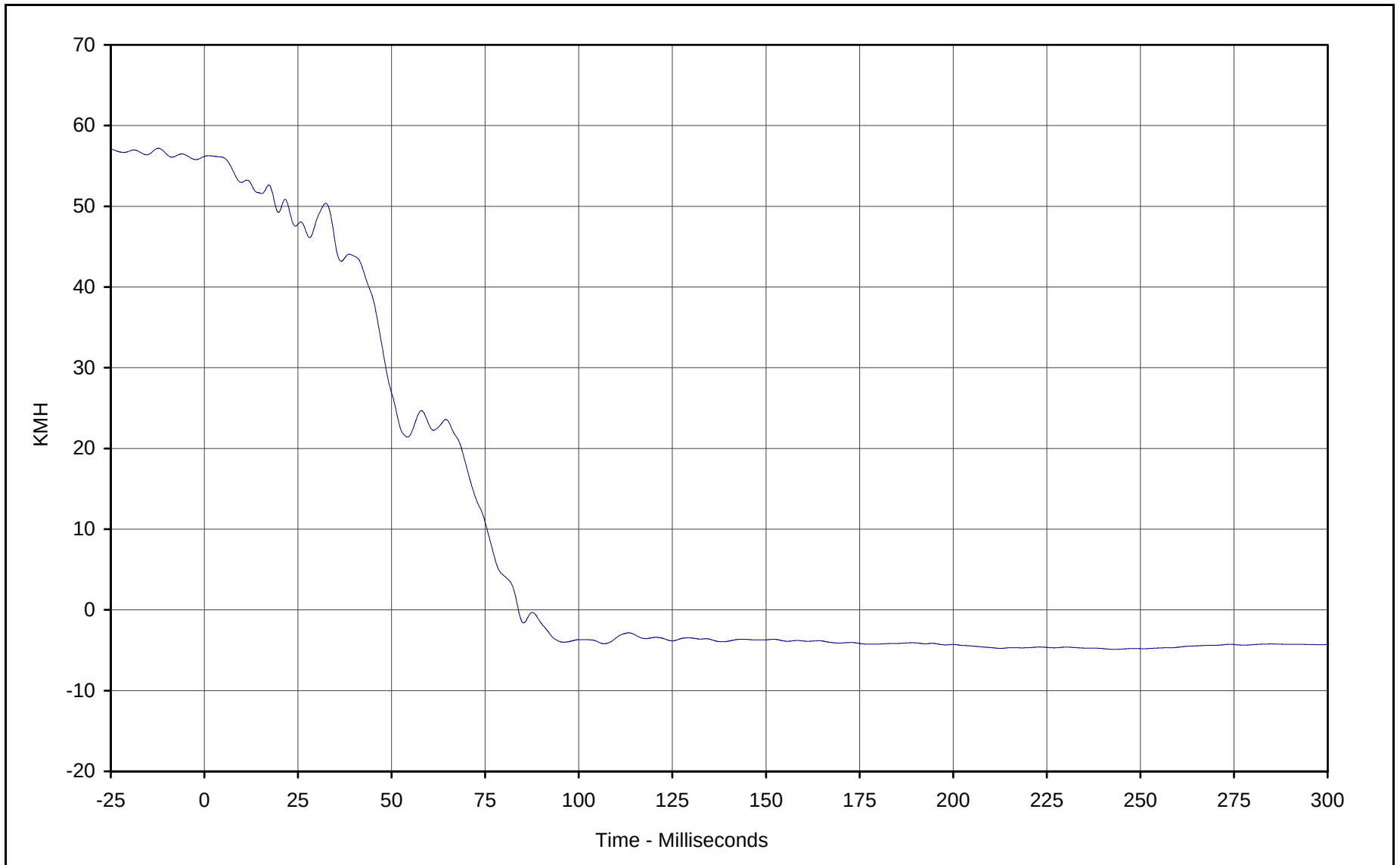
Curve Number: FIL-095

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



B-142

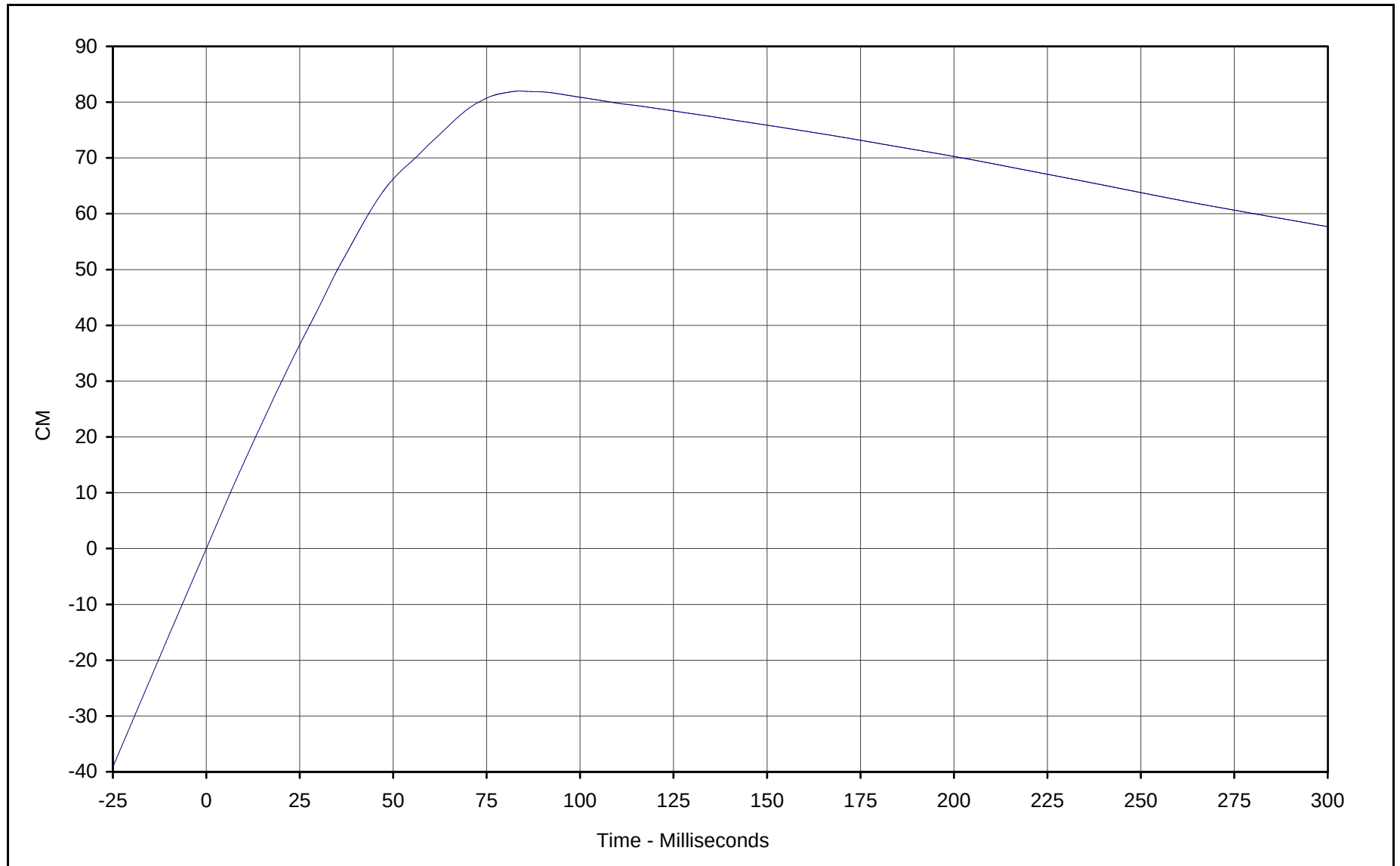


Curve Description: Vehicle Instrument Panel Velocity
Maximum Value: 56.3 at 1.2 Milliseconds
Minimum Value: -4.9 at 243.0 Milliseconds
SAE Filter Class: 180
Date of Test: 01/04/01
Curve Number: IN1-095

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



KAR21001-01



Curve Description: Vehicle Instrument Panel Displacement

Maximum Value: 82.0 at 83.9 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

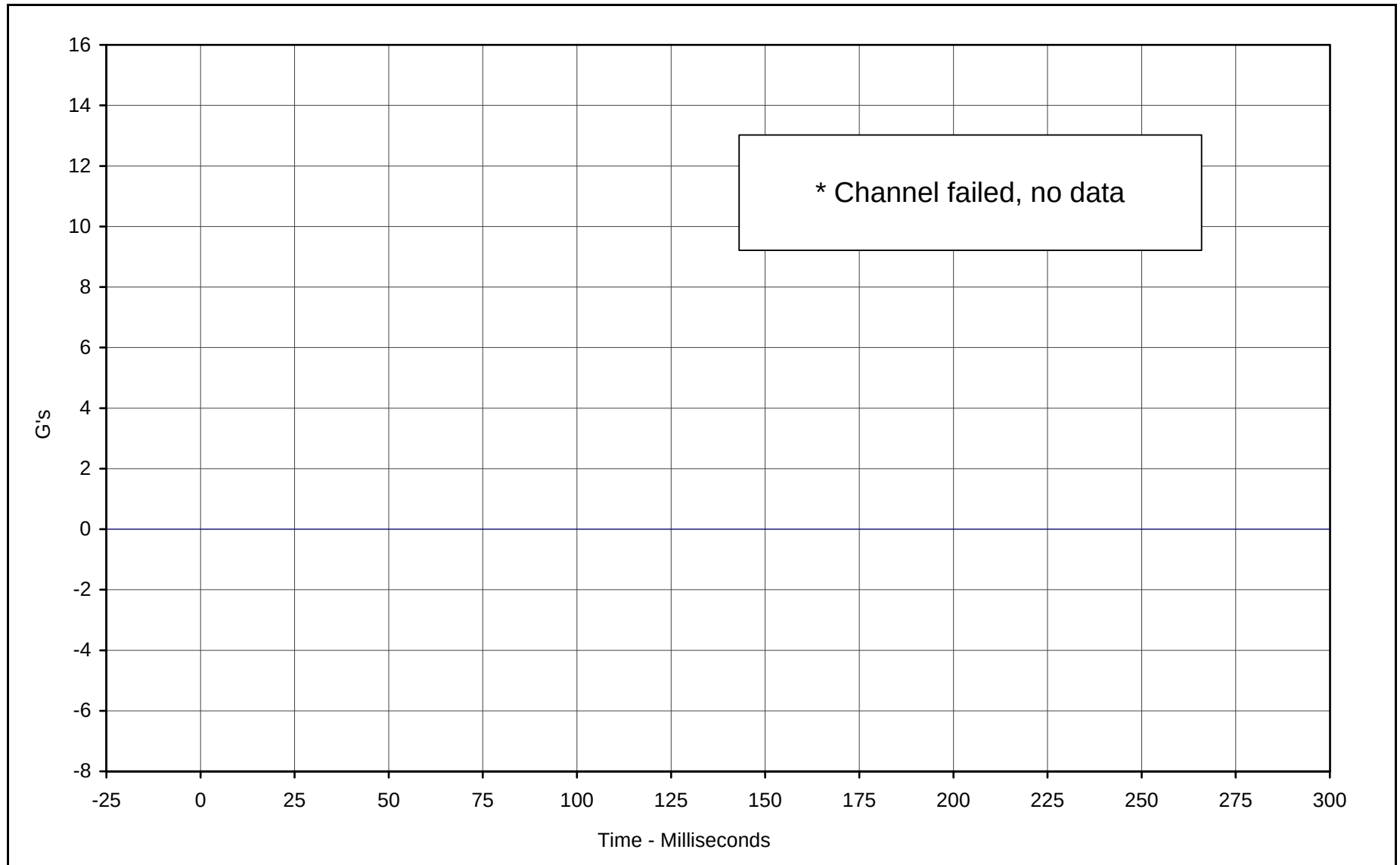
Date of Test: 01/04/01

Curve Number: IN2-095

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Vehicle Left Rear Redundant *

Maximum Value: 0.0 at 0.0 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 60

Date of Test: 01/04/01

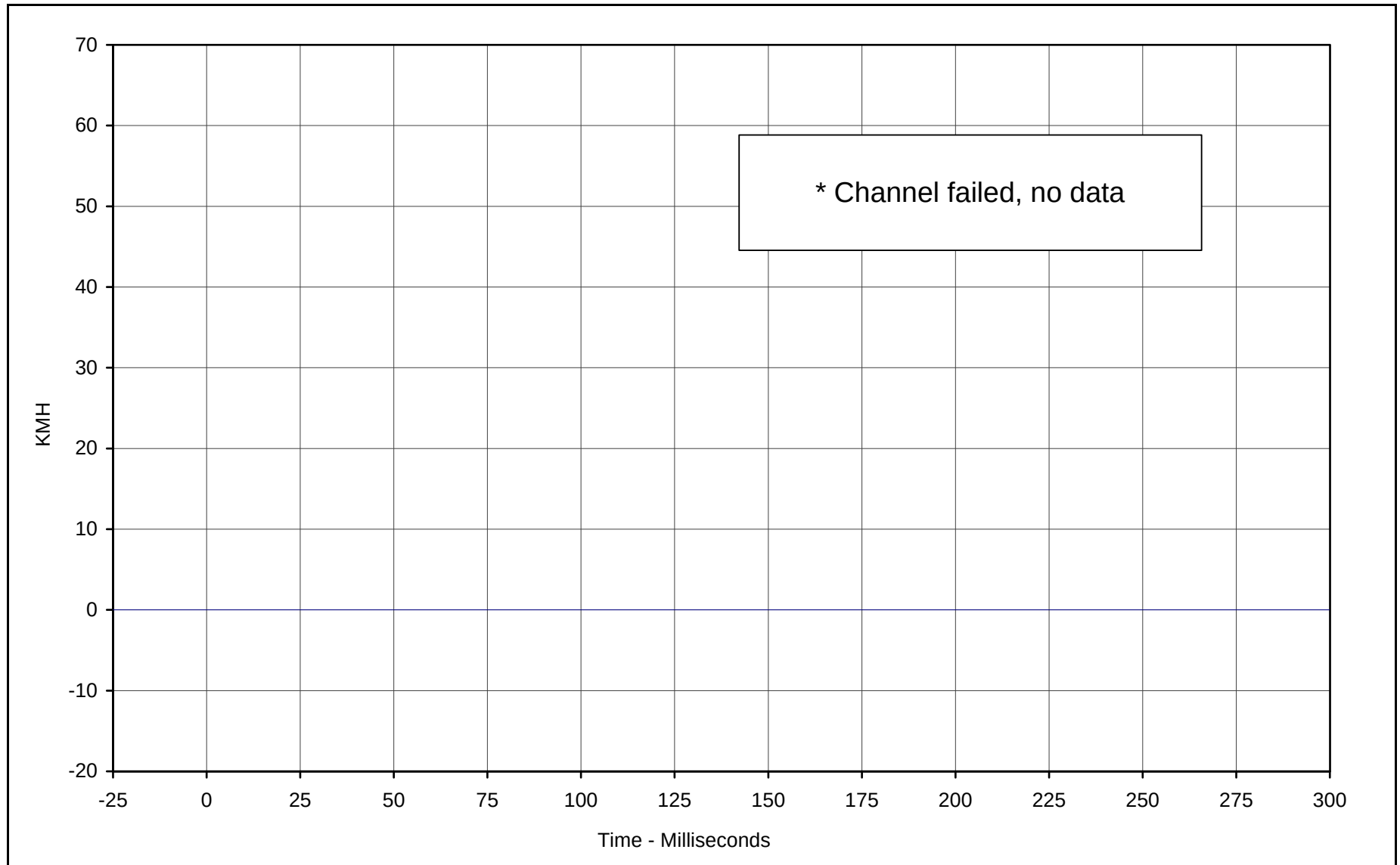
Curve Number: FIL-096

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

* Channel failed, no data





Curve Description: Vehicle Left Rear Redundant Velocity *

Maximum Value: 0.0 at 0.0 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 01/04/01

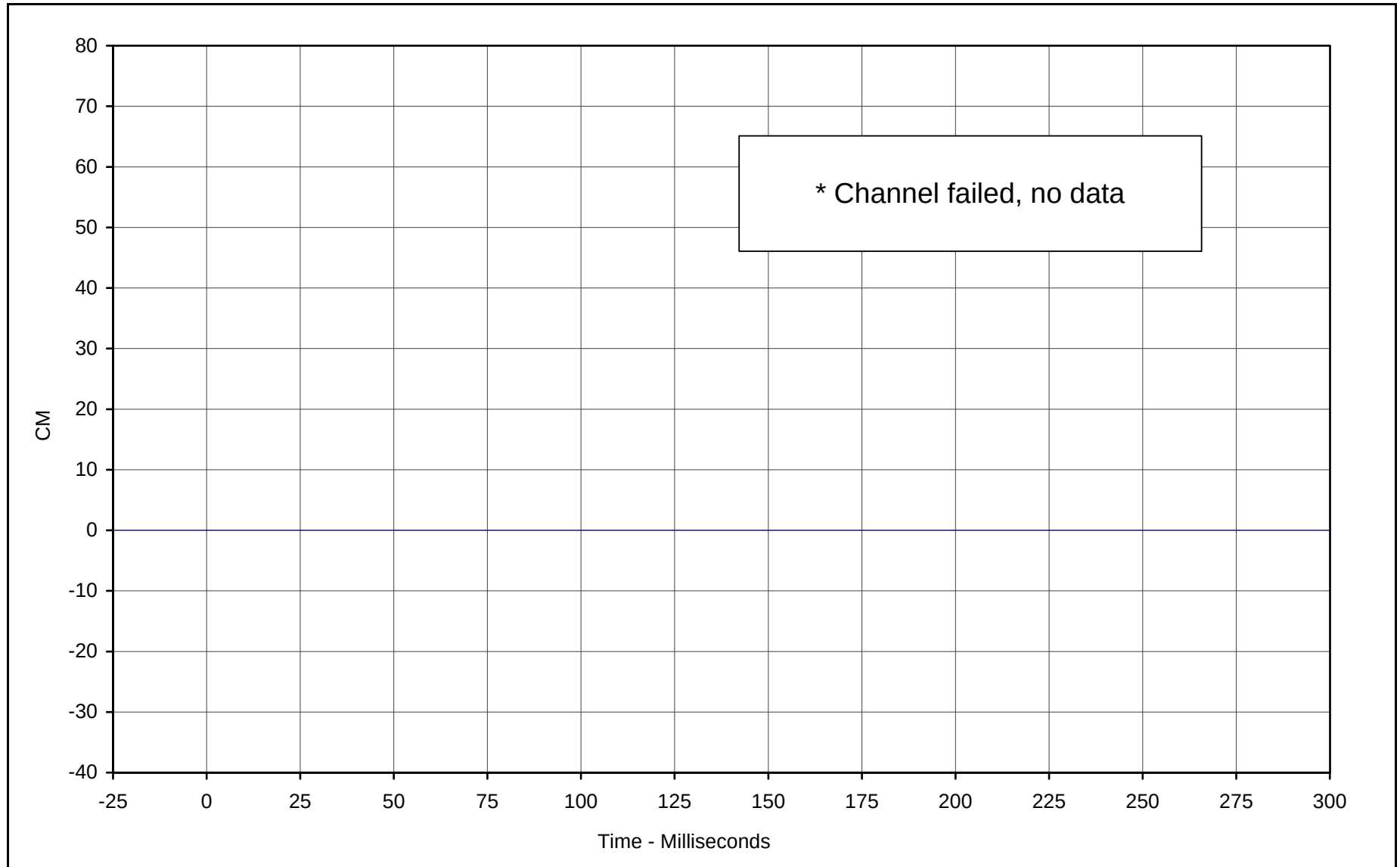
Curve Number: IN1-096

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

* Channel failed, no data





Curve Description: Vehicle Left Rear Redundant Displ. *

Maximum Value: 0.0 at 0.0 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 01/04/01

Curve Number: IN2-096

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

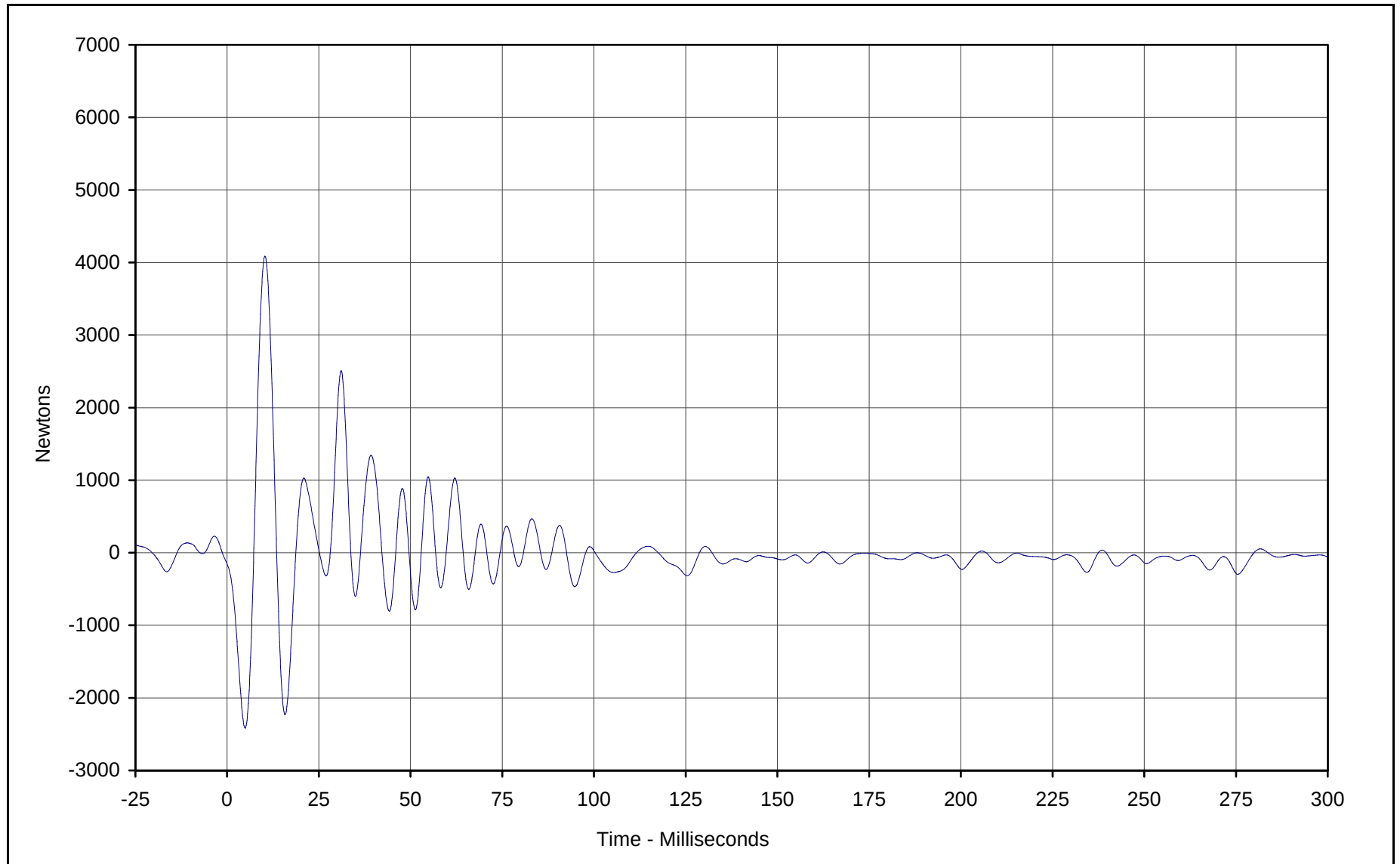
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

* Channel failed, no data



APPENDIX C
LOAD CELL BARRIER INFORMATION

C-1



Curve Description: Barrier Force A2

Maximum Value: 4088.2 at 10.3 Milliseconds

Minimum Value: -2416.8 at 4.9 Milliseconds

SAE Filter Class: 60

Date of Test: 01/04/01

Curve Number: FIL-099

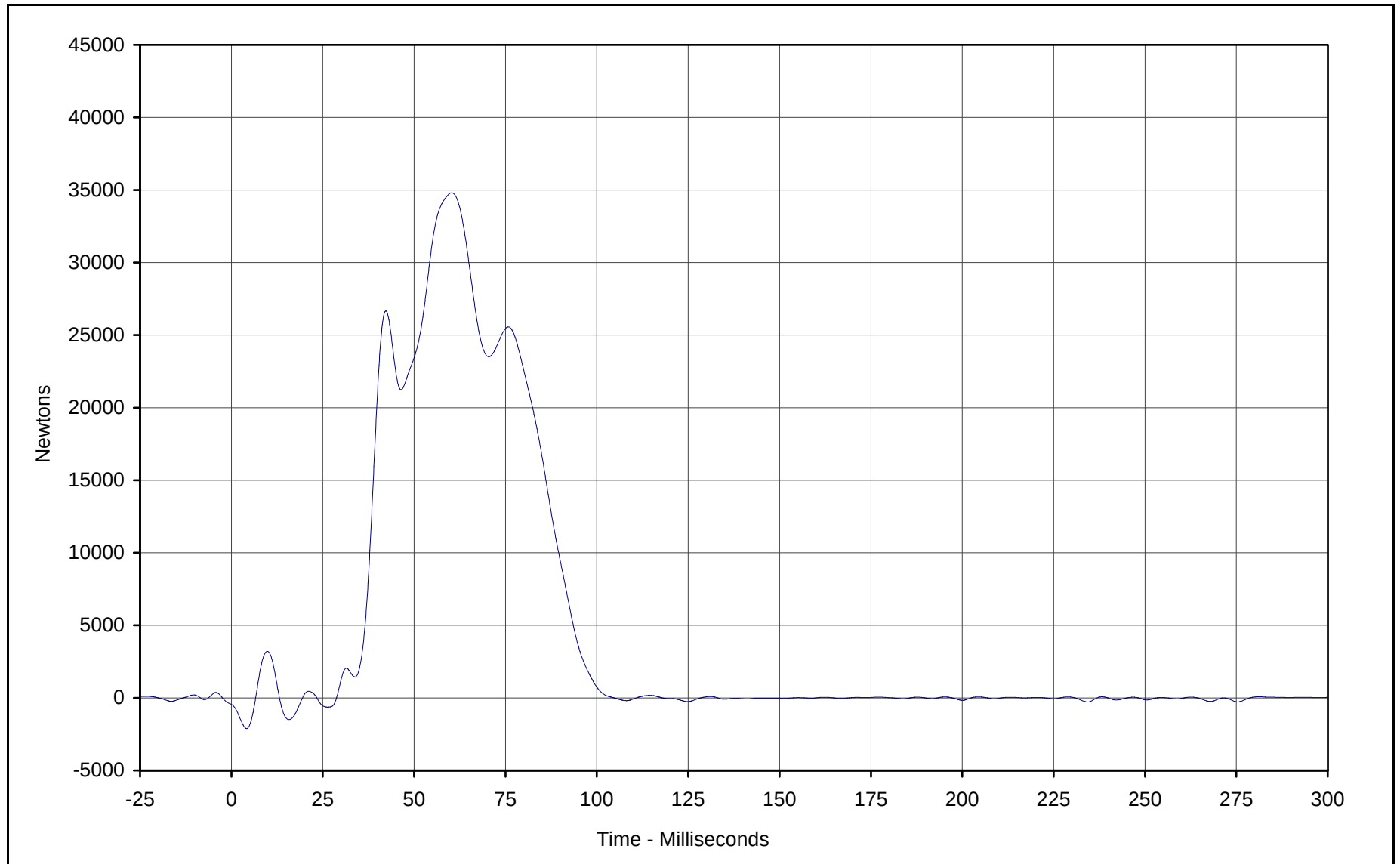
Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



KAR21001-01

C-2



Curve Description: Barrier Force A3

Maximum Value: 34806.7 at 60.3 Milliseconds

Minimum Value: -2113.3 at 4.2 Milliseconds

SAE Filter Class: 60

Date of Test: 01/04/01

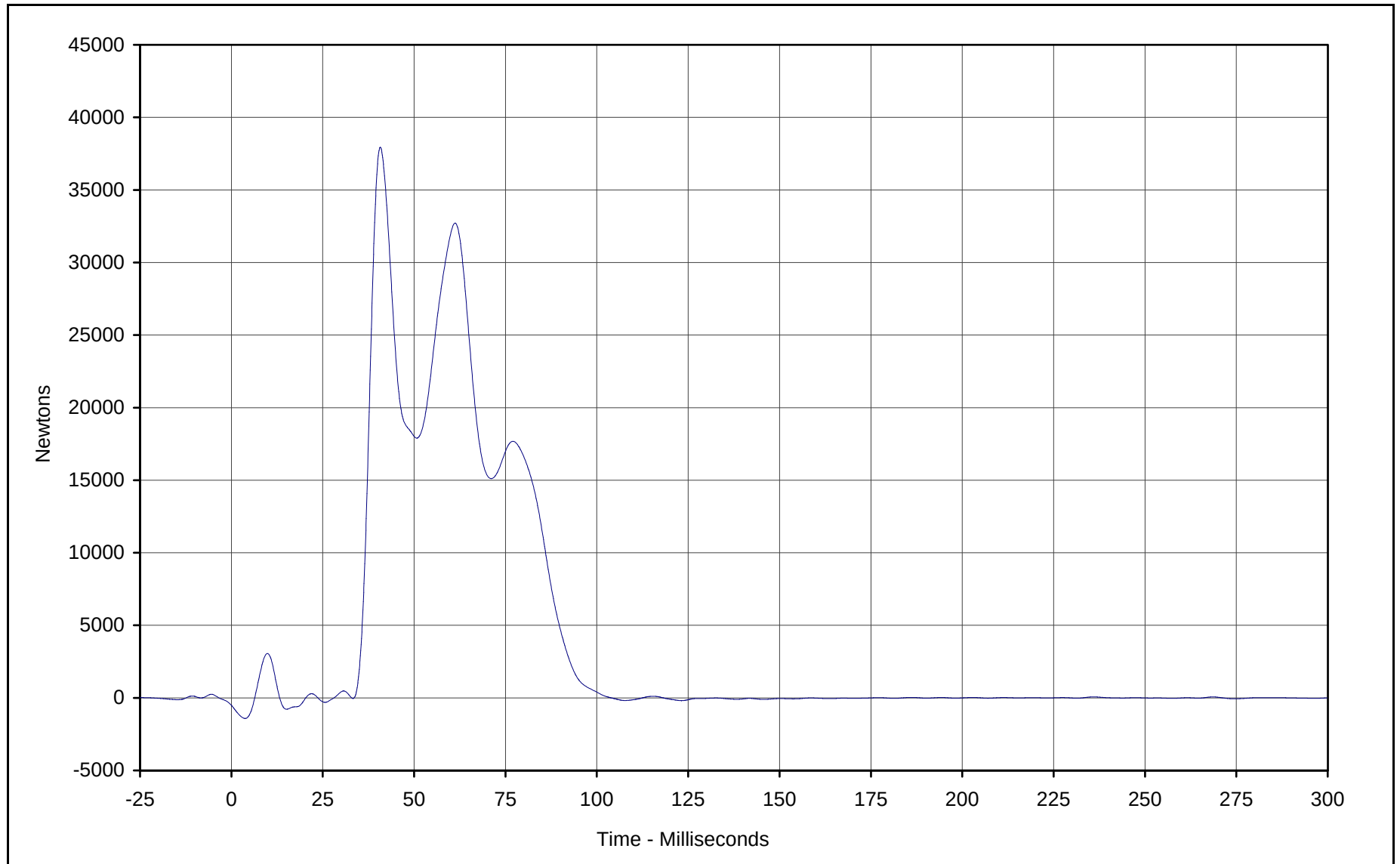
Curve Number: FIL-100

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



KAR21001-01



Curve Description: Barrier Force A4

Maximum Value: 37940.1 at 40.7 Milliseconds

Minimum Value: -1420.0 at 3.8 Milliseconds

SAE Filter Class: 60

Date of Test: 01/04/01

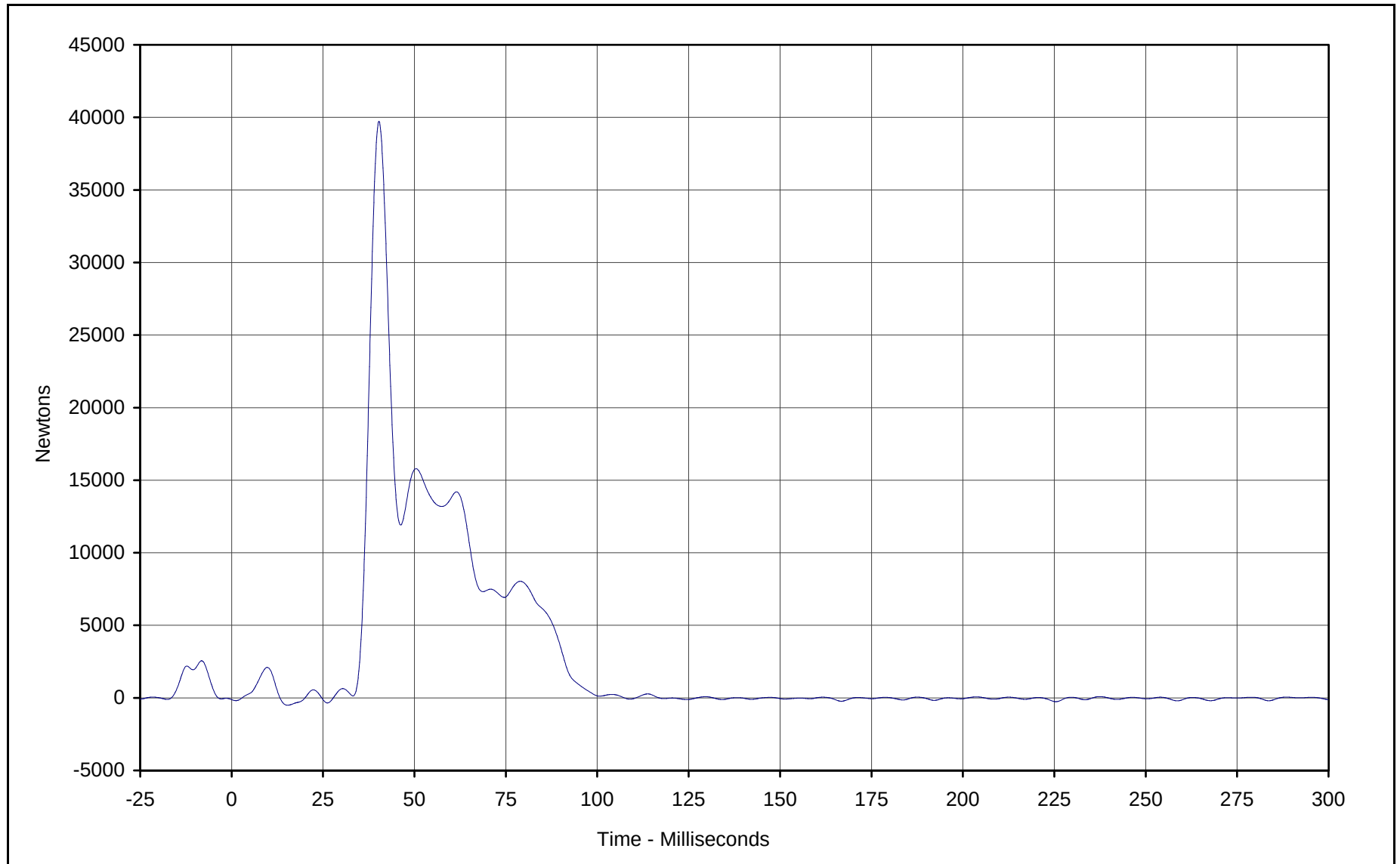
Curve Number: FIL-101

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



C-4



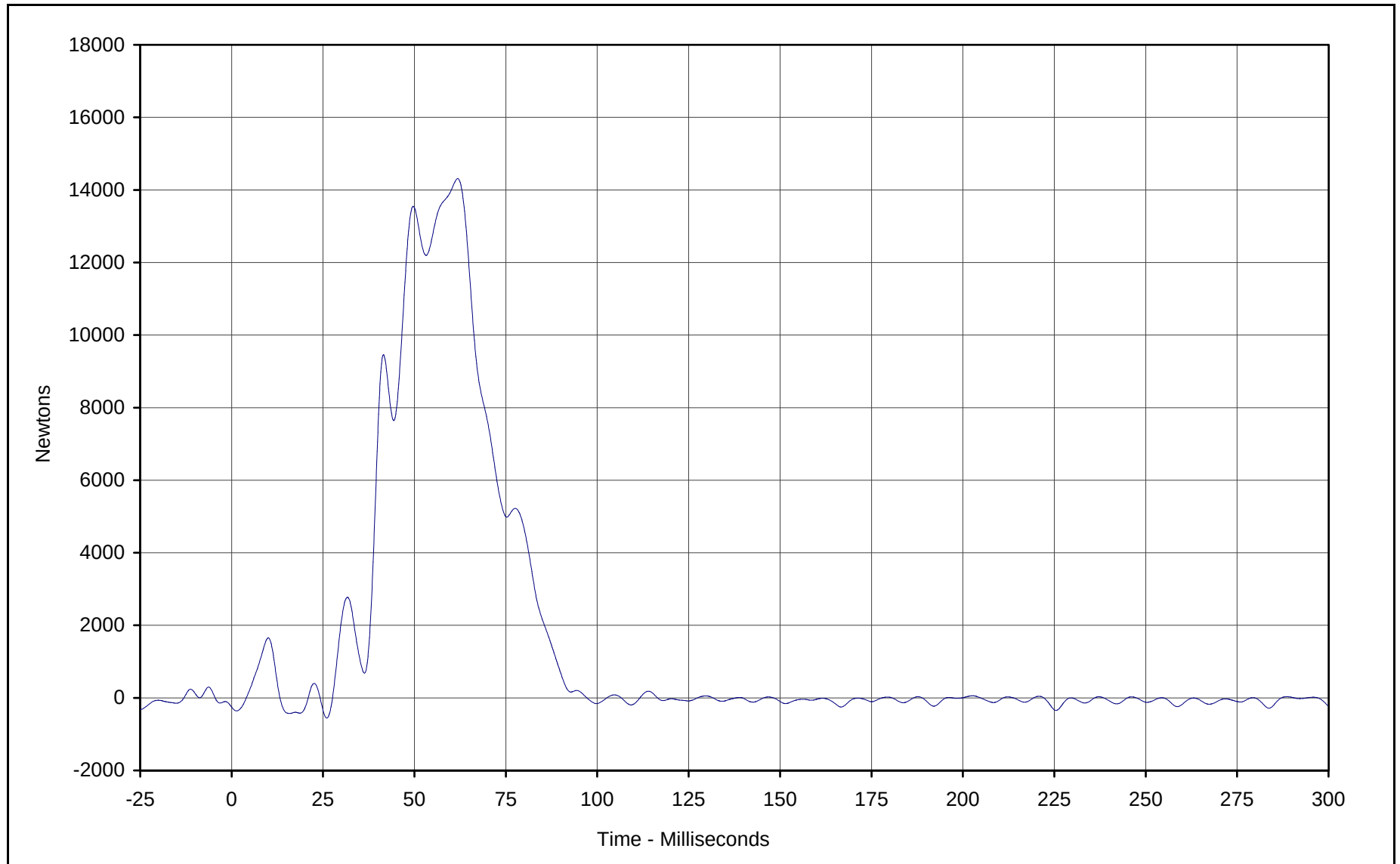
Curve Description: Barrier Force A5

Maximum Value:	<u>39729.8</u>	at	<u>40.3</u>	Milliseconds
Minimum Value:	<u>-505.7</u>	at	<u>15.3</u>	Milliseconds
SAE Filter Class:	<u>60</u>			
Date of Test:	<u>01/04/01</u>			
Curve Number:	<u>FIL-102</u>			

Test Program:	<u>2001 NHTSA 35mph NCAP No.: M10104</u>
Test Vehicle:	<u>2001 Chevrolet Malibu 4 Door Sedan</u>



KAR21001-01



Curve Description: Barrier Force A6

Maximum Value: 14312.9 at 61.8 Milliseconds

Minimum Value: -557.1 at 26.0 Milliseconds

SAE Filter Class: 60

Date of Test: 01/04/01

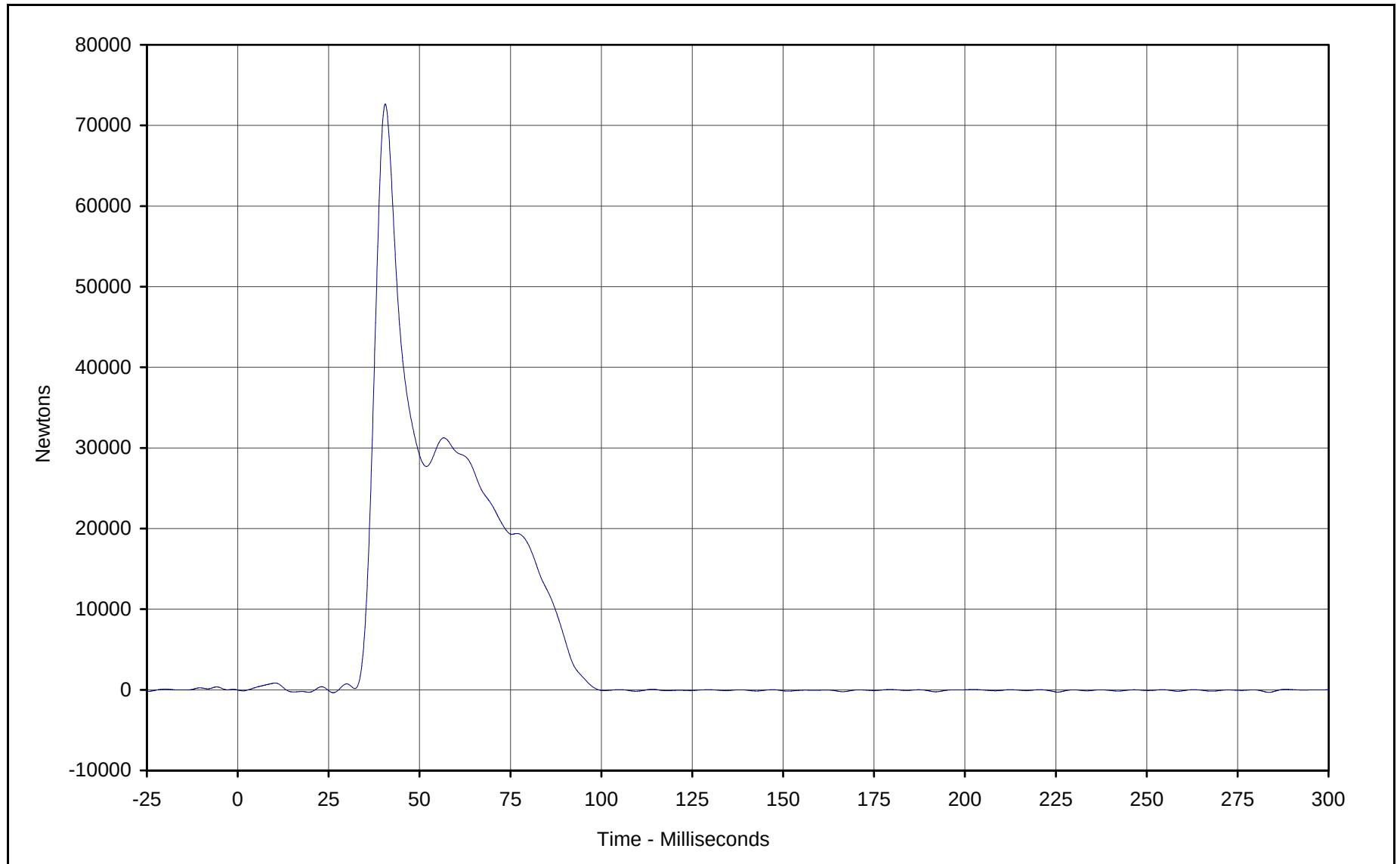
Curve Number: FIL-103

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



C-6



Curve Description: Barrier Force A7

Maximum Value: 72655.8 at 40.6 Milliseconds

Minimum Value: -352.3 at 26.2 Milliseconds

SAE Filter Class: 60

Date of Test: 01/04/01

Curve Number: FIL-104

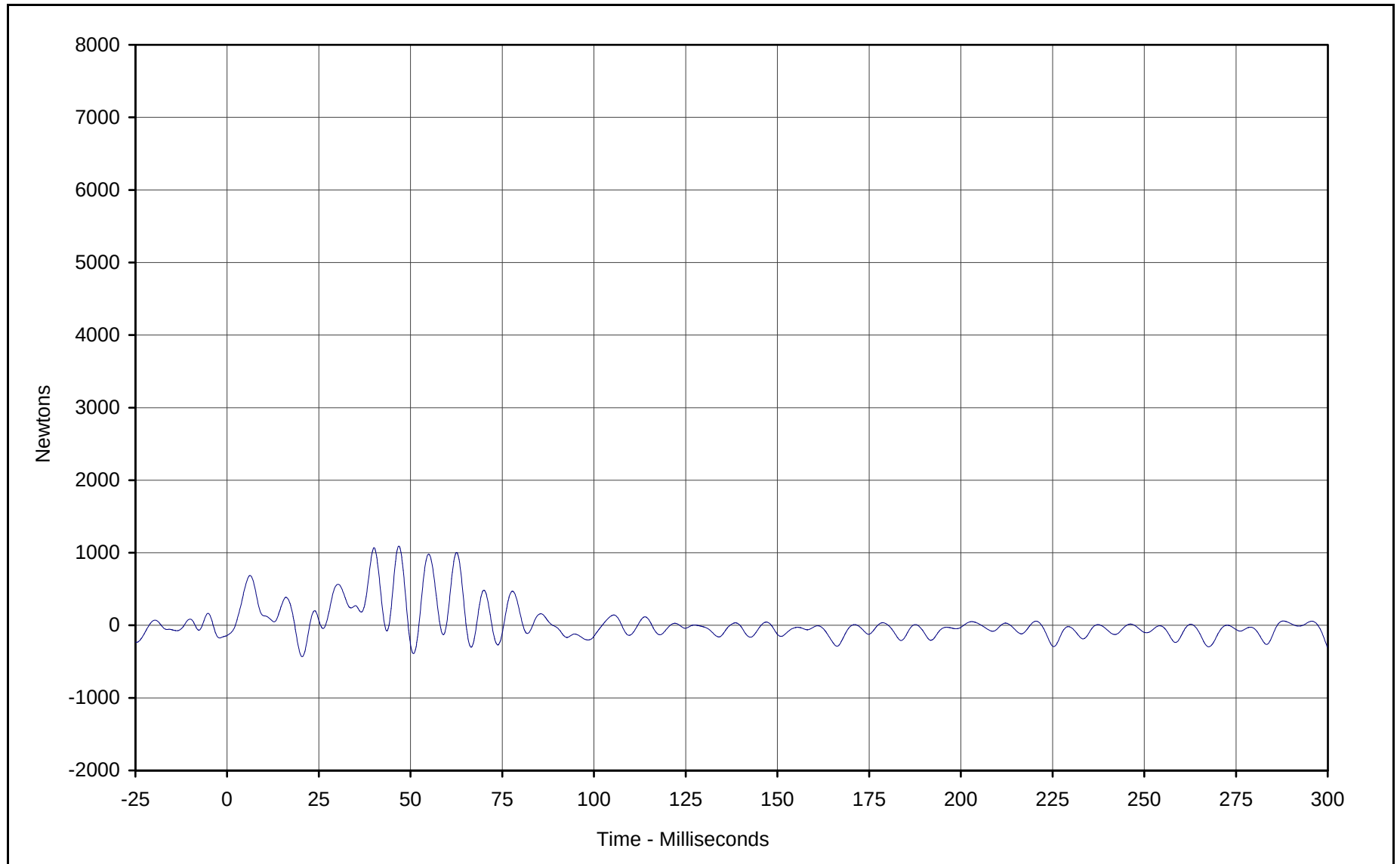
Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



KAR21001-01

C-7



Curve Description: Barrier Force A8

Maximum Value: 1091.8 at 46.8 Milliseconds

Minimum Value: -432.1 at 20.5 Milliseconds

SAE Filter Class: 60

Date of Test: 01/04/01

Curve Number: FIL-105

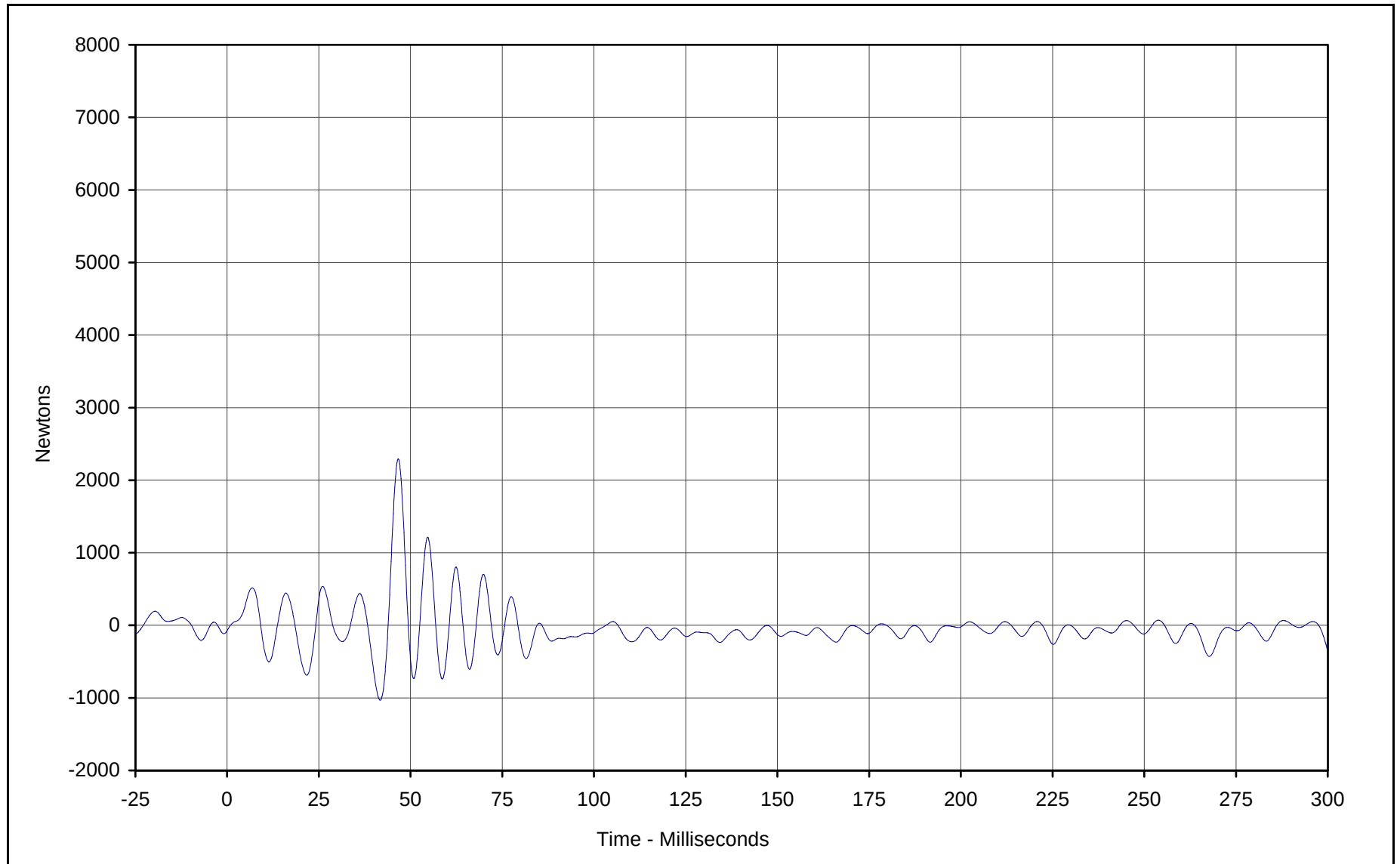
Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



KAR21001-01

C-8



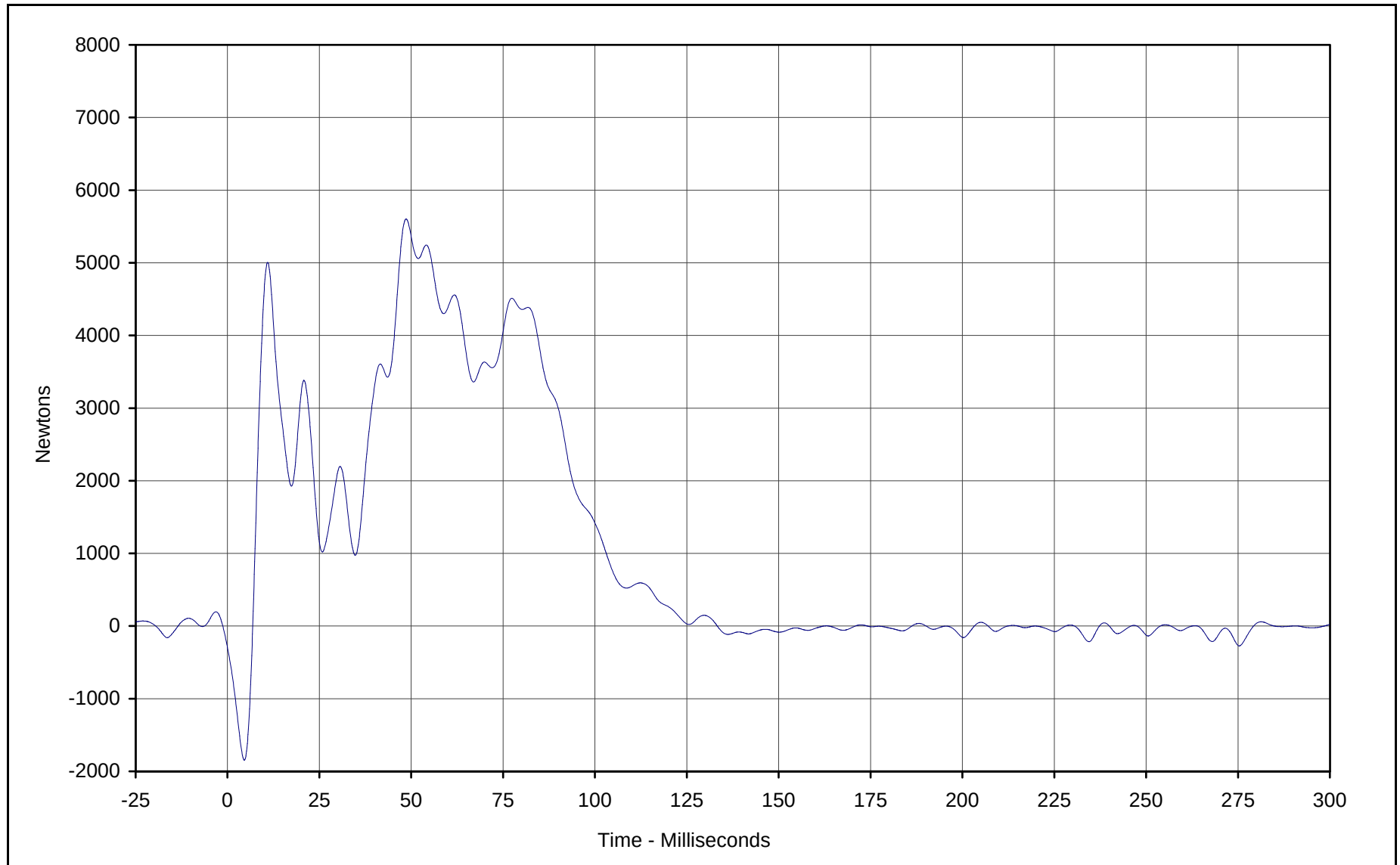
Curve Description: Barrier Force A9

Maximum Value:	<u>2294.0</u>	at	<u>46.6</u>	Milliseconds
Minimum Value:	<u>-1033.2</u>	at	<u>41.7</u>	Milliseconds
SAE Filter Class:	<u>60</u>			
Date of Test:	<u>01/04/01</u>			
Curve Number:	<u>FIL-106</u>			

Test Program:	<u>2001 NHTSA 35mph NCAP No.: M10104</u>
Test Vehicle:	<u>2001 Chevrolet Malibu 4 Door Sedan</u>



KAR21001-01



Curve Description: Barrier Force B2

Maximum Value: 5602.8 at 48.6 Milliseconds

Minimum Value: -1846.1 at 4.6 Milliseconds

SAE Filter Class: 60

Date of Test: 01/04/01

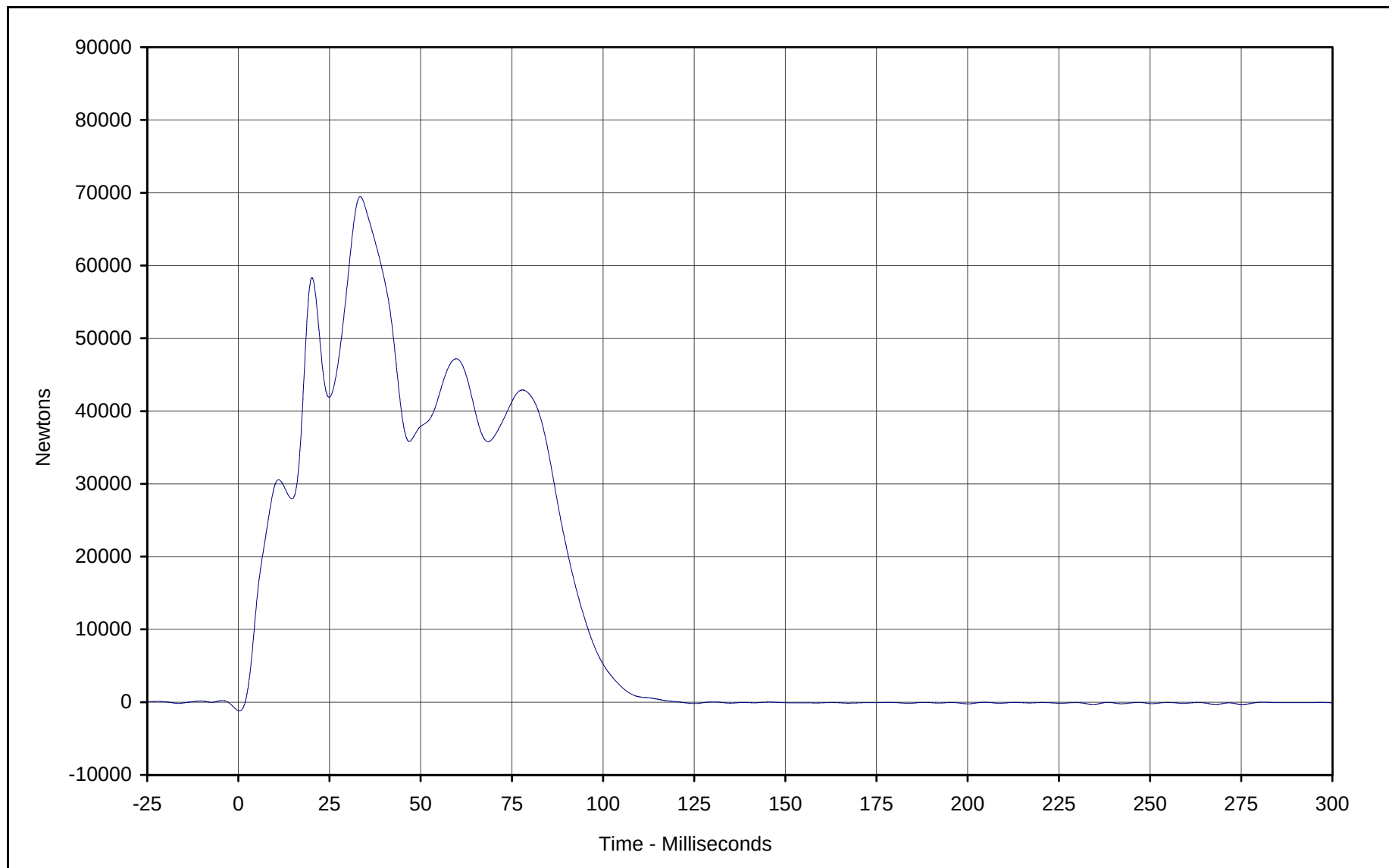
Curve Number: FIL-108

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



C-10



Curve Description: Barrier Force B3

Maximum Value: 69475.3 at 33.4 Milliseconds

Minimum Value: -1210.7 at 0.3 Milliseconds

SAE Filter Class: 60

Date of Test: 01/04/01

Curve Number: FIL-109

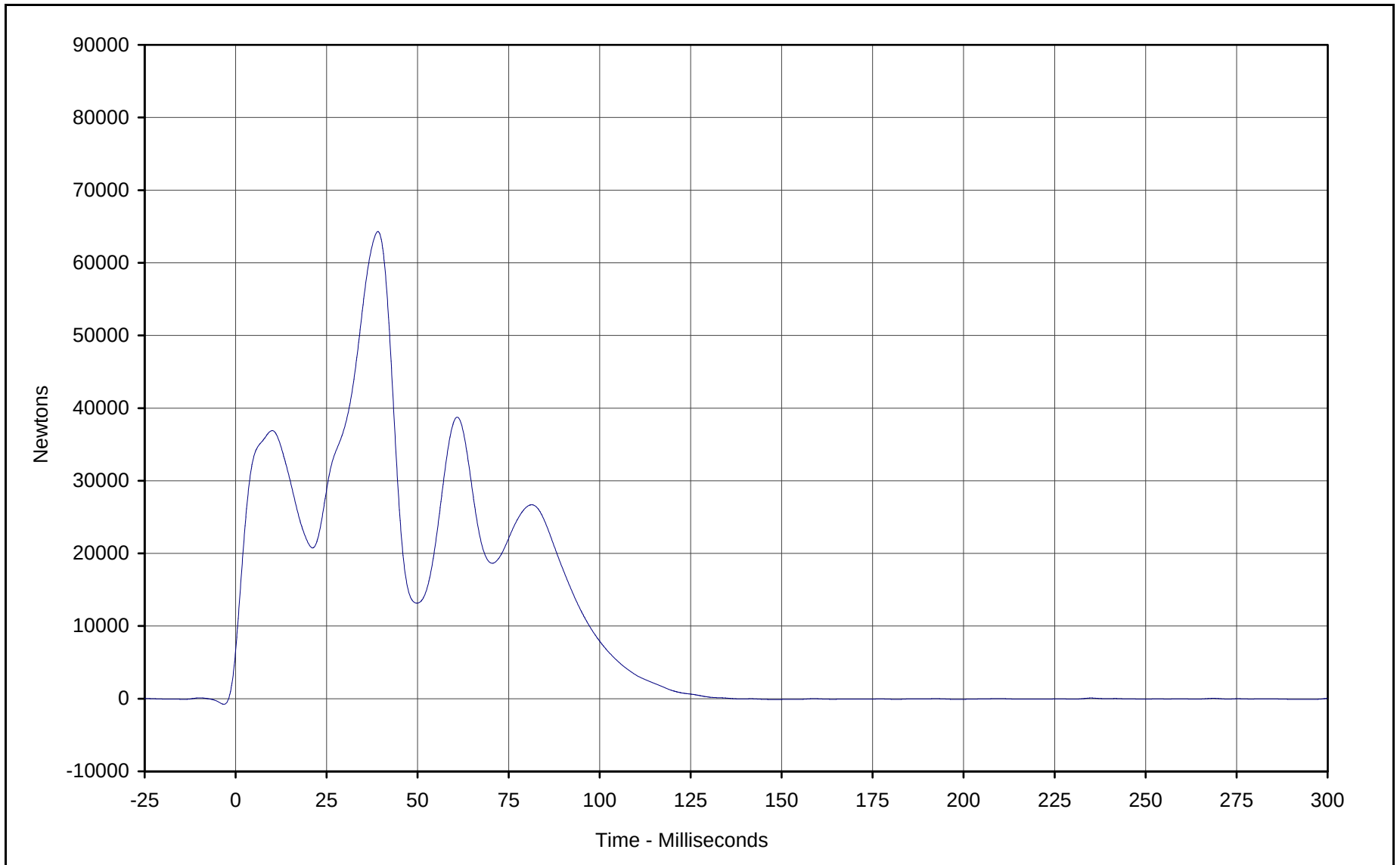
Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



KAR21001-01

C-11



Curve Description: Barrier Force B4

Maximum Value: 64301.9 at 39.1 Milliseconds

Minimum Value: -123.4 at 148.1 Milliseconds

SAE Filter Class: 60

Date of Test: 01/04/01

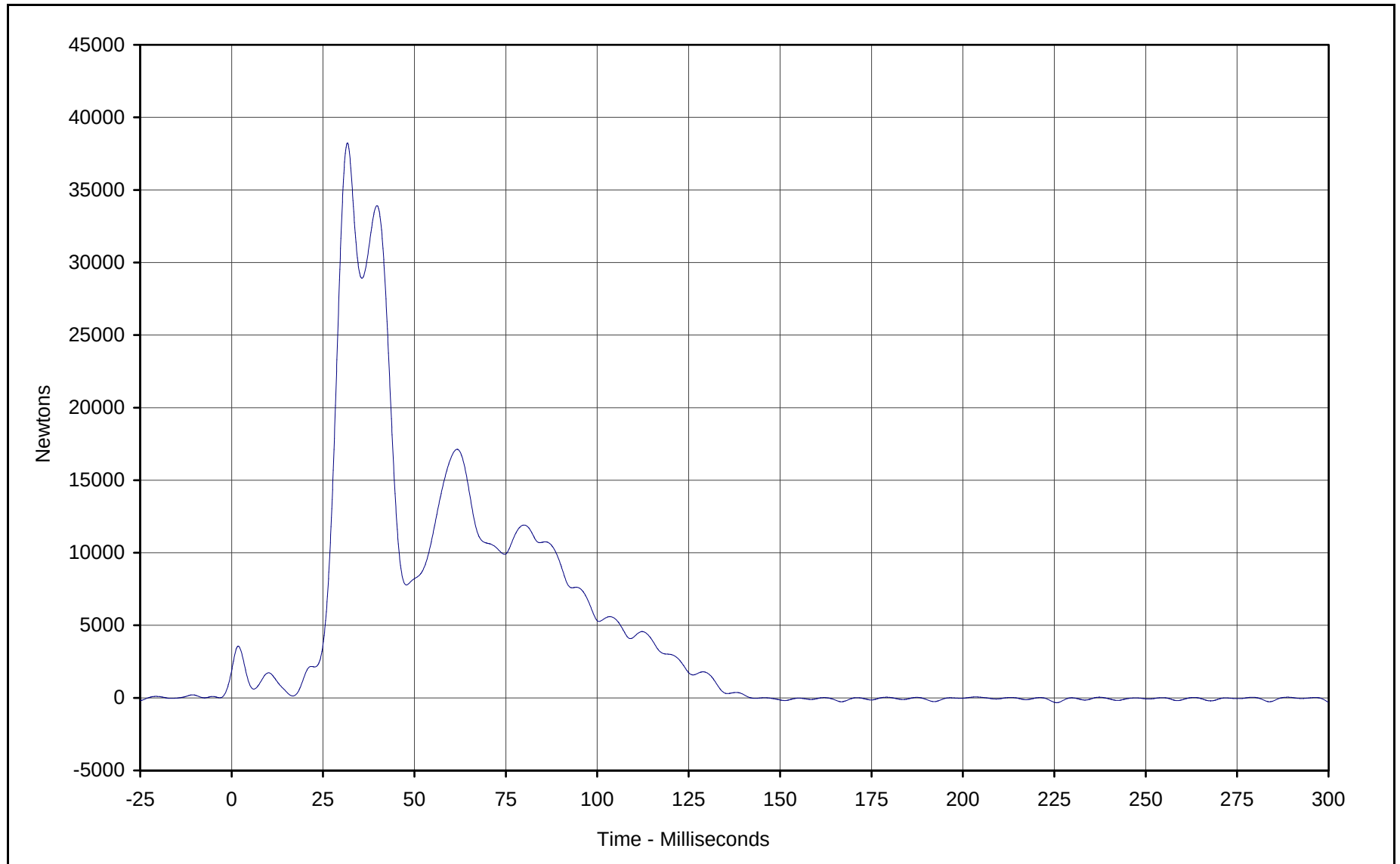
Curve Number: FIL-110

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



KAR21001-01



Curve Description: Barrier Force B5

Maximum Value: 38239.8 at 31.7 Milliseconds

Minimum Value: -330.7 at 225.6 Milliseconds

SAE Filter Class: 60

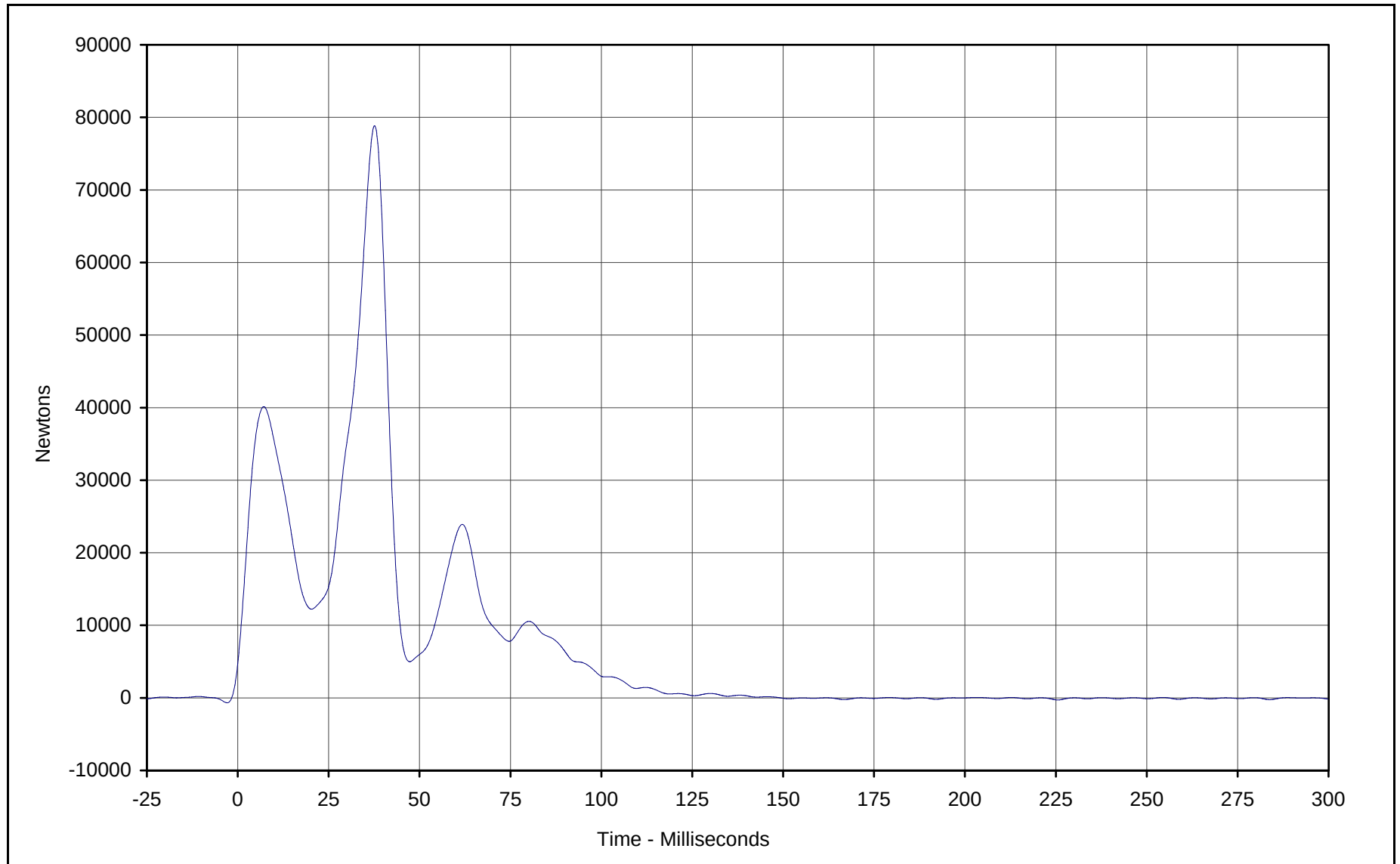
Date of Test: 01/04/01

Curve Number: FIL-111

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Barrier Force B6

Maximum Value: 78853.3 at 37.6 Milliseconds

Minimum Value: -290.9 at 225.5 Milliseconds

SAE Filter Class: 60

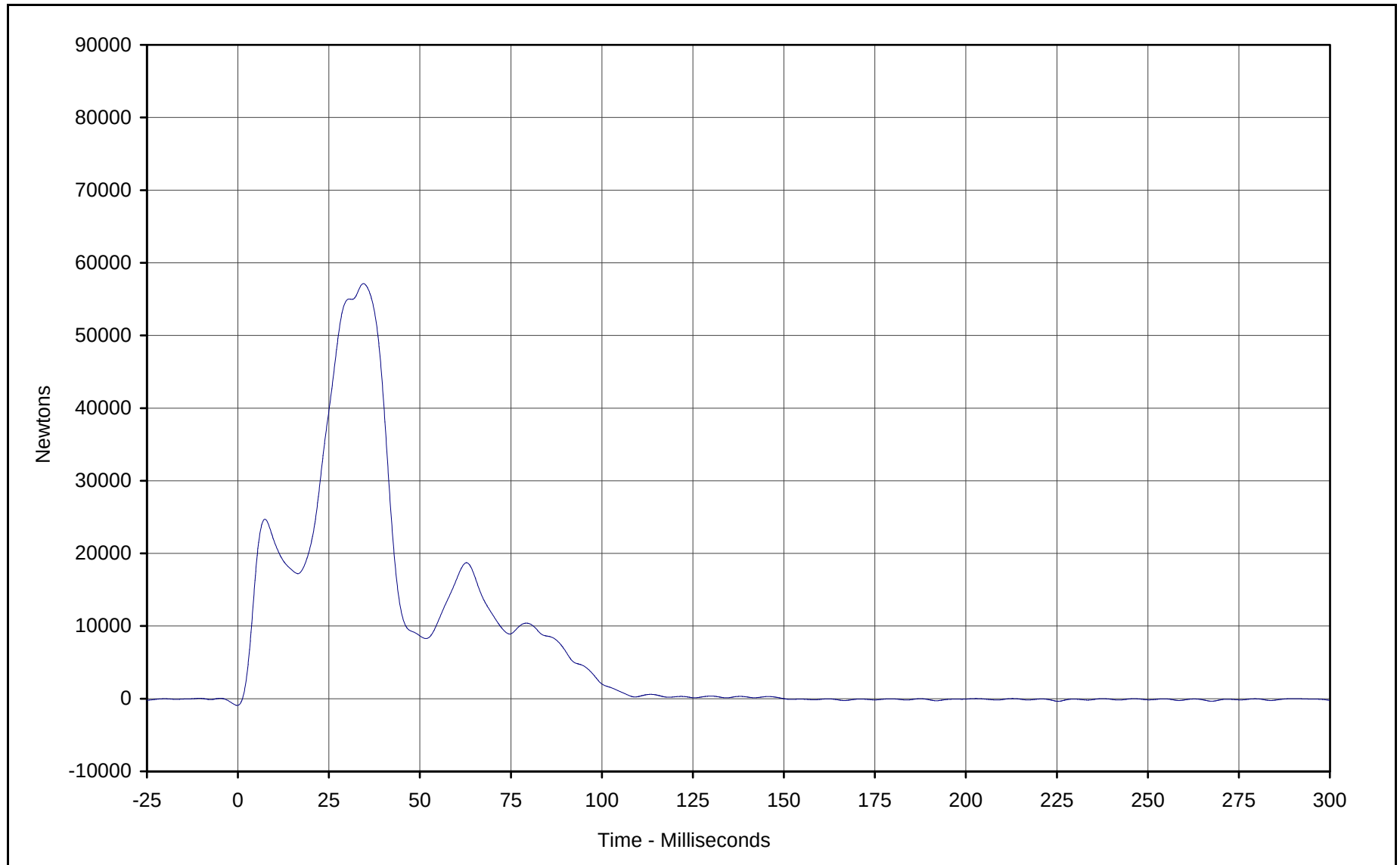
Date of Test: 01/04/01

Curve Number: FIL-112

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Barrier Force B7

Maximum Value: 57138.7 at 34.5 Milliseconds

Minimum Value: -914.1 at 0.0 Milliseconds

SAE Filter Class: 60

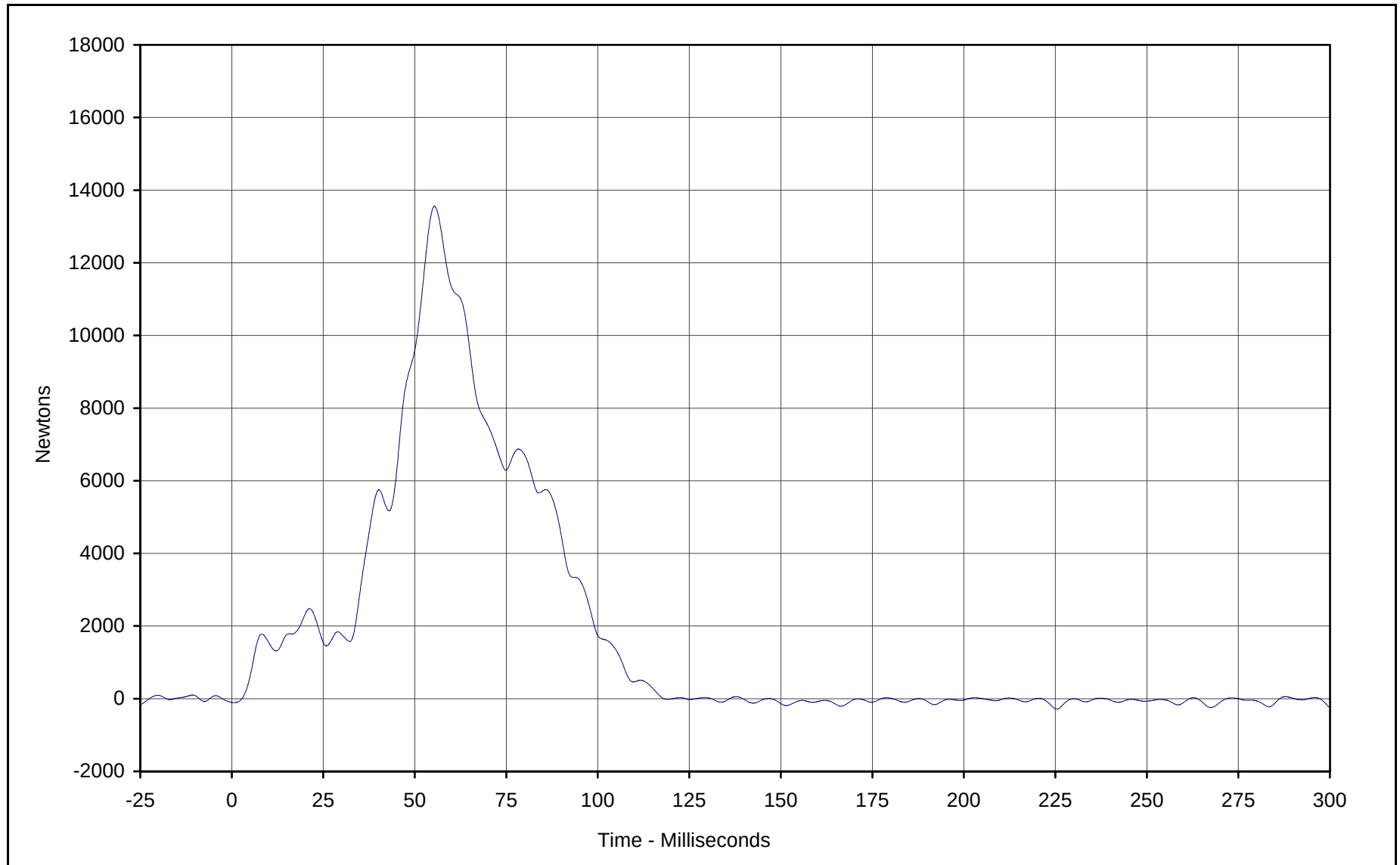
Date of Test: 01/04/01

Curve Number: FIL-113

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Barrier Force B8

Maximum Value: 13555.8 at 55.4 Milliseconds

Minimum Value: -287.0 at 225.4 Milliseconds

SAE Filter Class: 60

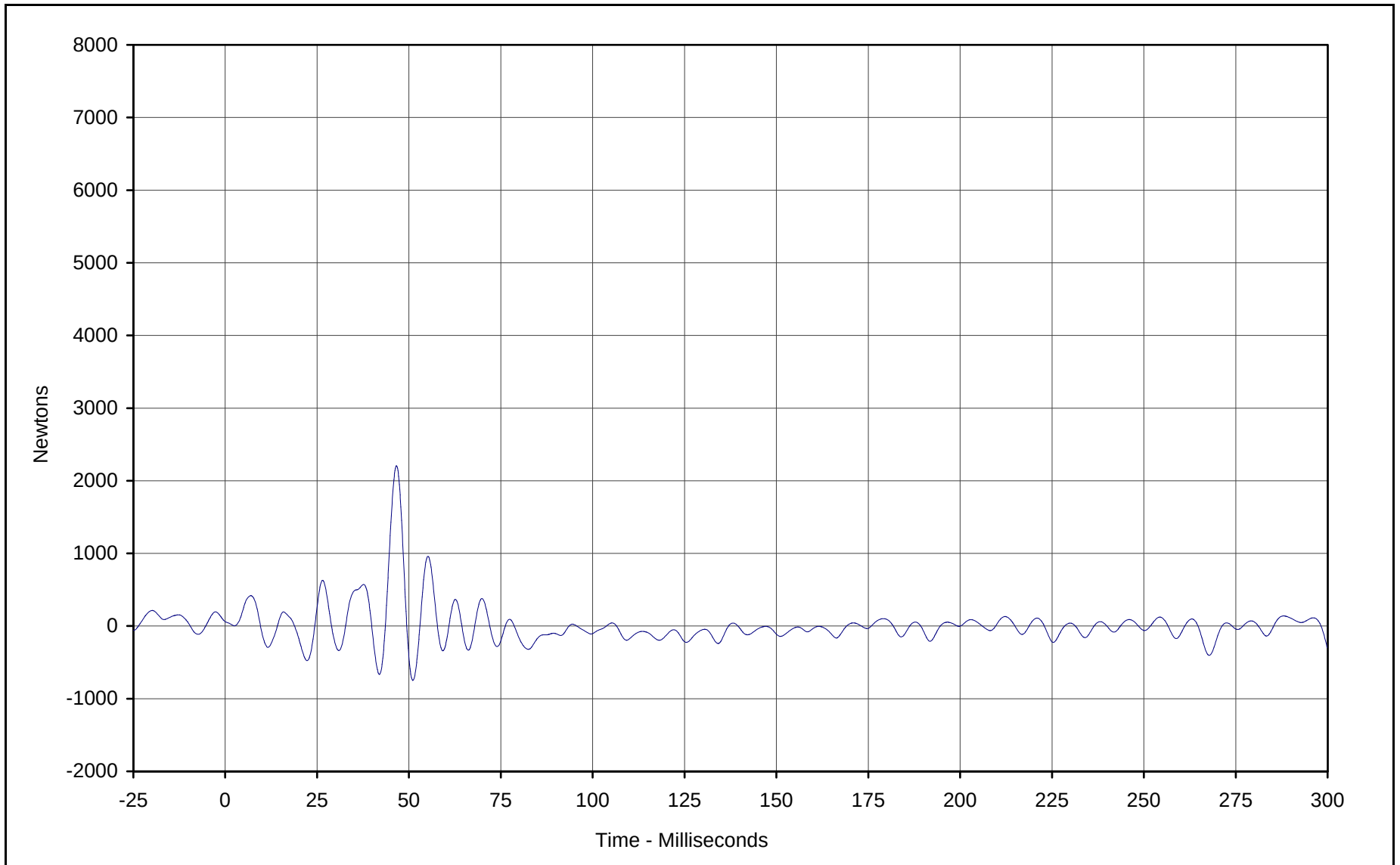
Date of Test: 01/04/01

Curve Number: FIL-114

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Barrier Force B9

Maximum Value: 2206.6 at 46.6 Milliseconds

Minimum Value: -747.8 at 51.1 Milliseconds

SAE Filter Class: 60

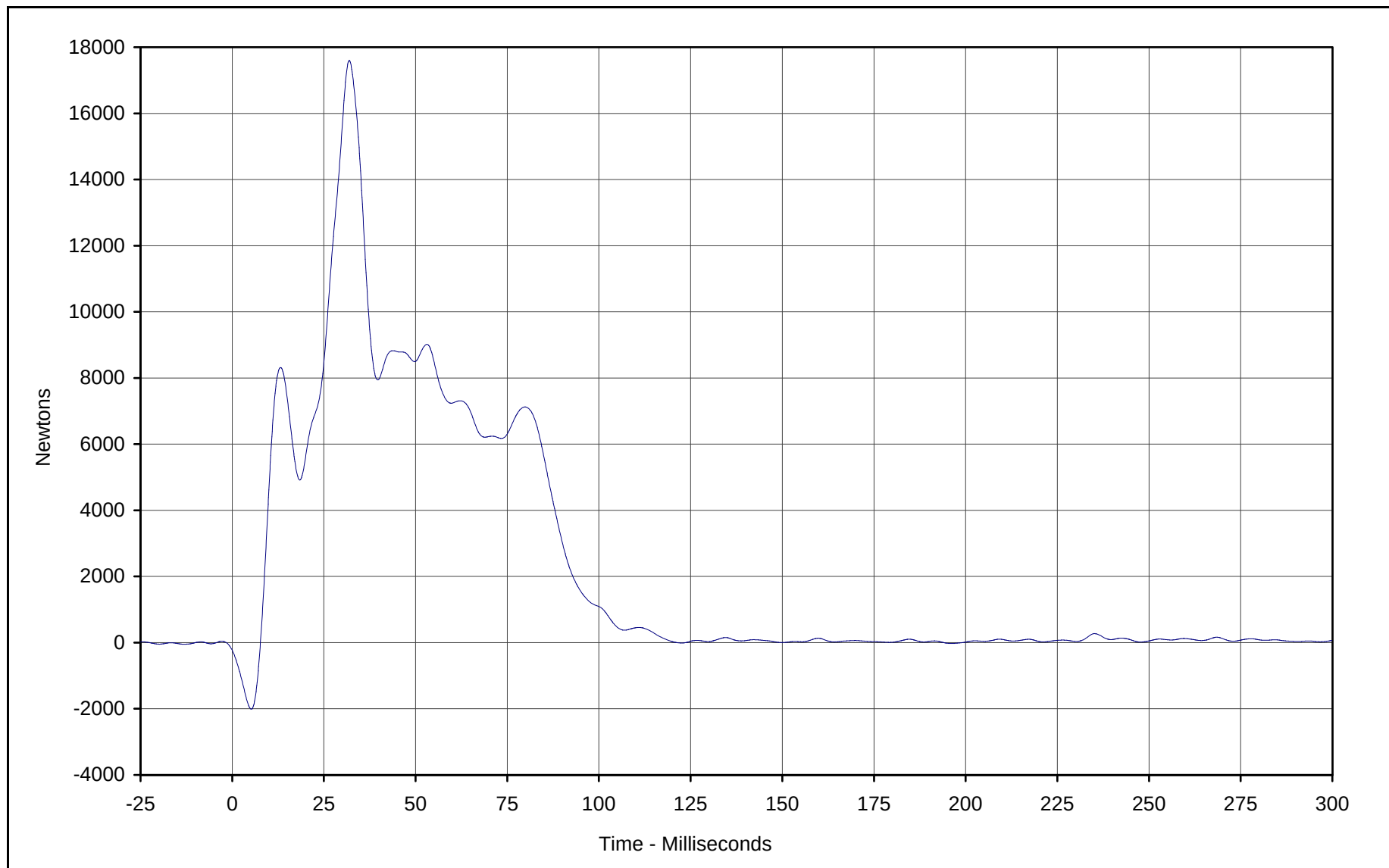
Date of Test: 01/04/01

Curve Number: FIL-115

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Barrier Force C2

Maximum Value: 17599.4 at 31.9 Milliseconds

Minimum Value: -2011.9 at 5.2 Milliseconds

SAE Filter Class: 60

Date of Test: 01/04/01

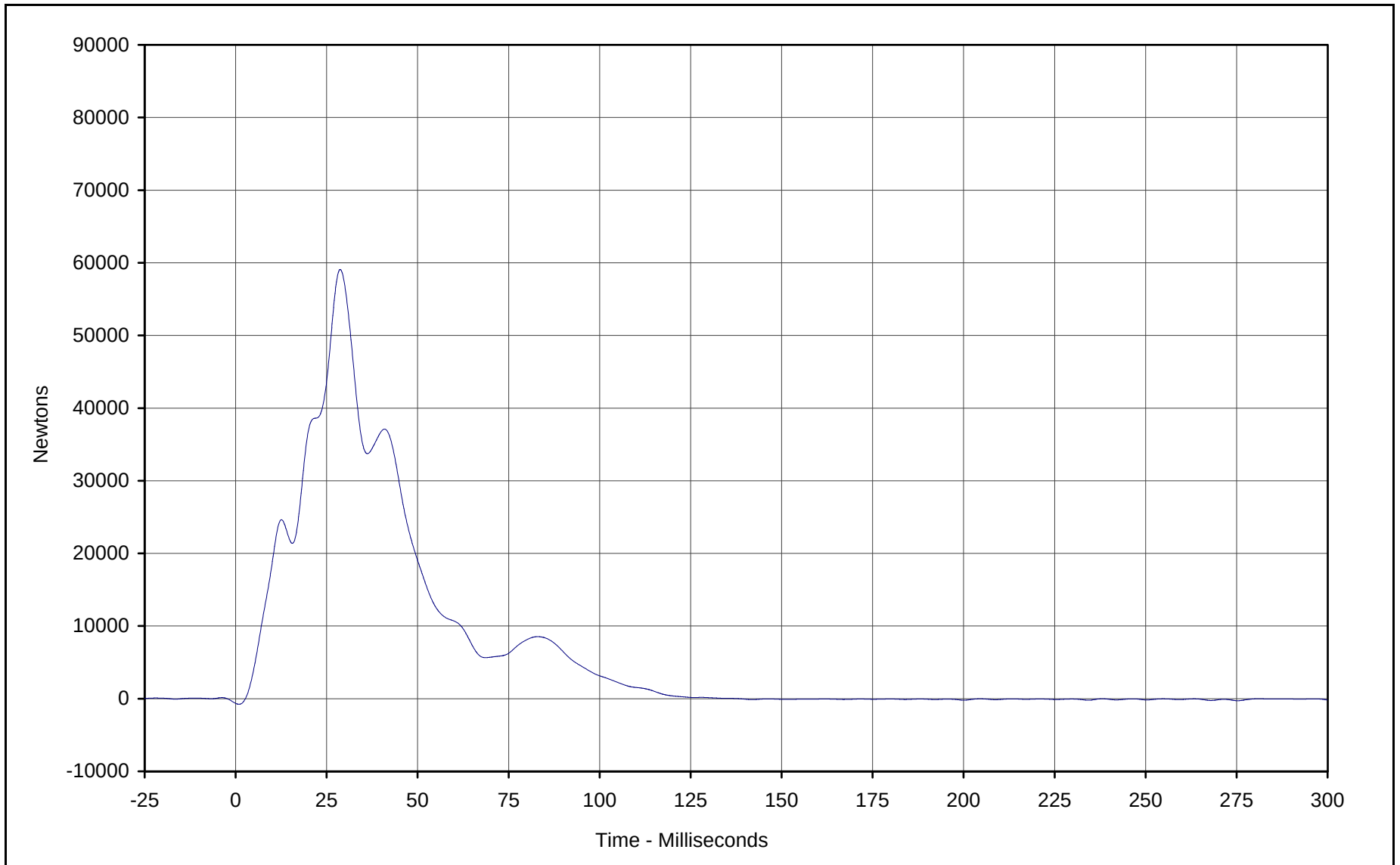
Curve Number: FIL-117

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



C-18



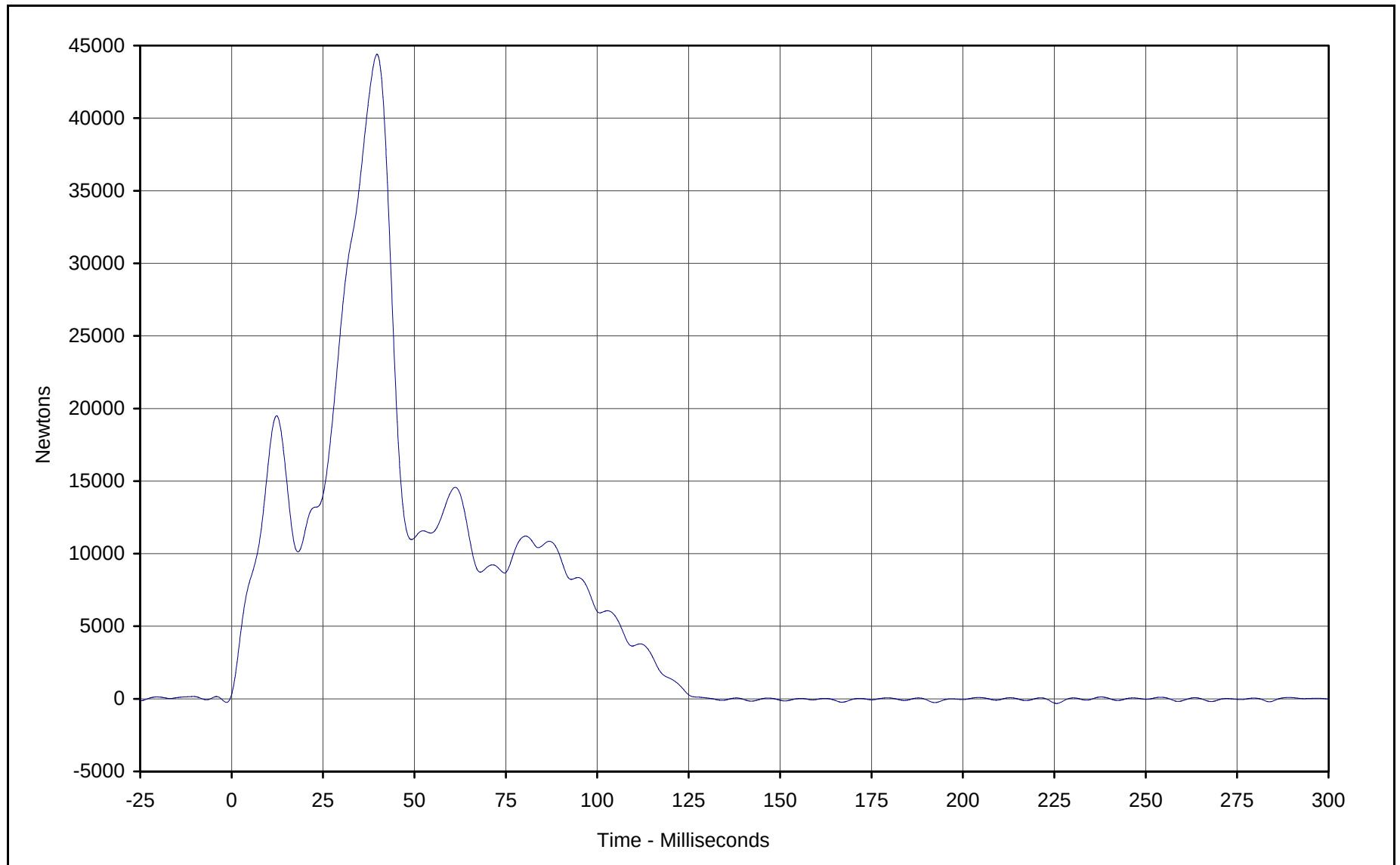
Curve Description: Barrier Force C3

Maximum Value:	<u>59088.3</u>	at	<u>28.7</u>	Milliseconds
Minimum Value:	<u>-770.7</u>	at	<u>0.9</u>	Milliseconds
SAE Filter Class:	<u>60</u>			
Date of Test:	<u>01/04/01</u>			
Curve Number:	<u>FIL-118</u>			

Test Program:	<u>2001 NHTSA 35mph NCAP No.: M10104</u>
Test Vehicle:	<u>2001 Chevrolet Malibu 4 Door Sedan</u>



KAR21001-01



Curve Description: Barrier Force C4

Maximum Value: 44398.3 at 39.8 Milliseconds

Minimum Value: -318.6 at 225.6 Milliseconds

SAE Filter Class: 60

Date of Test: 01/04/01

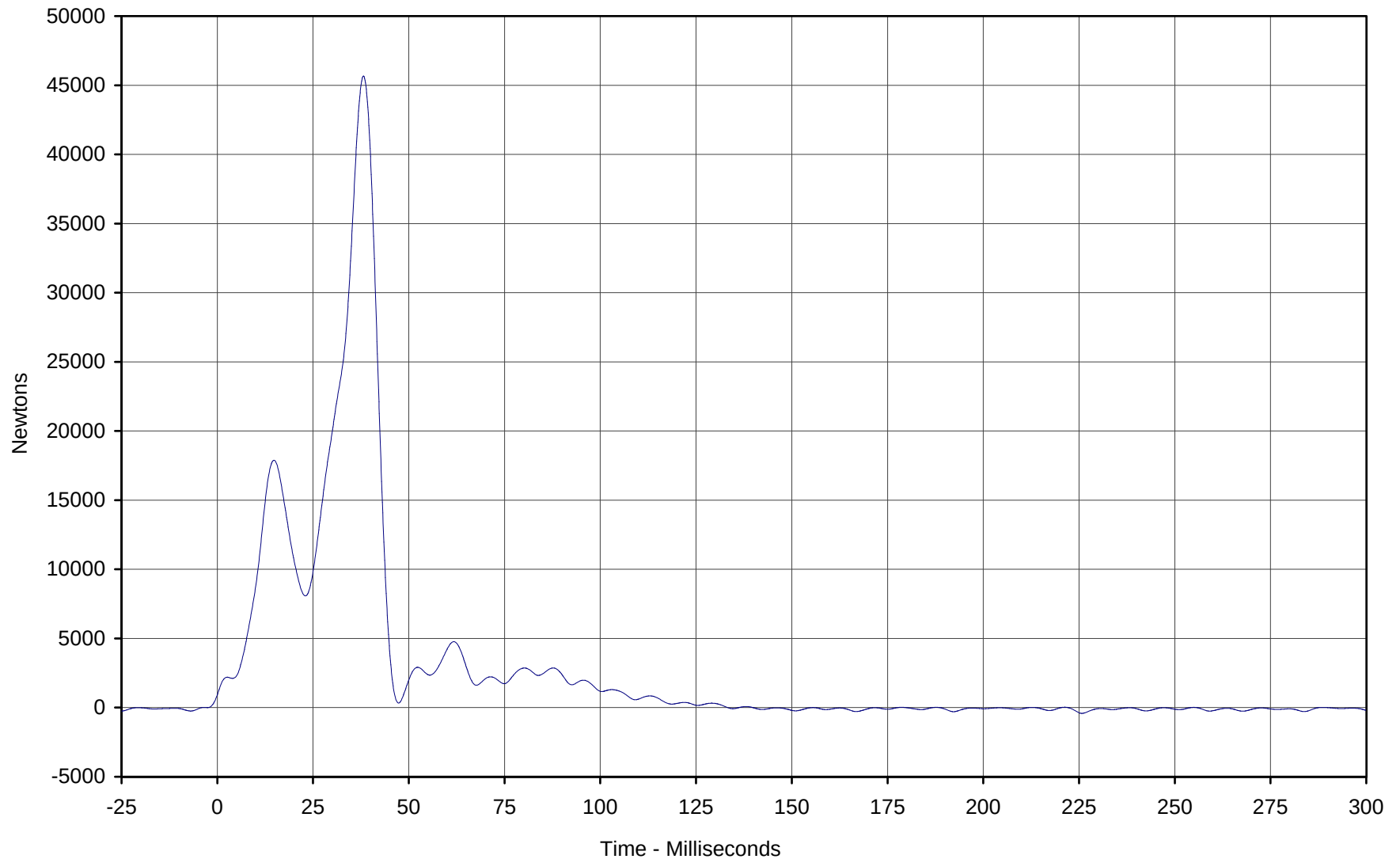
Curve Number: FIL-119

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



C-20

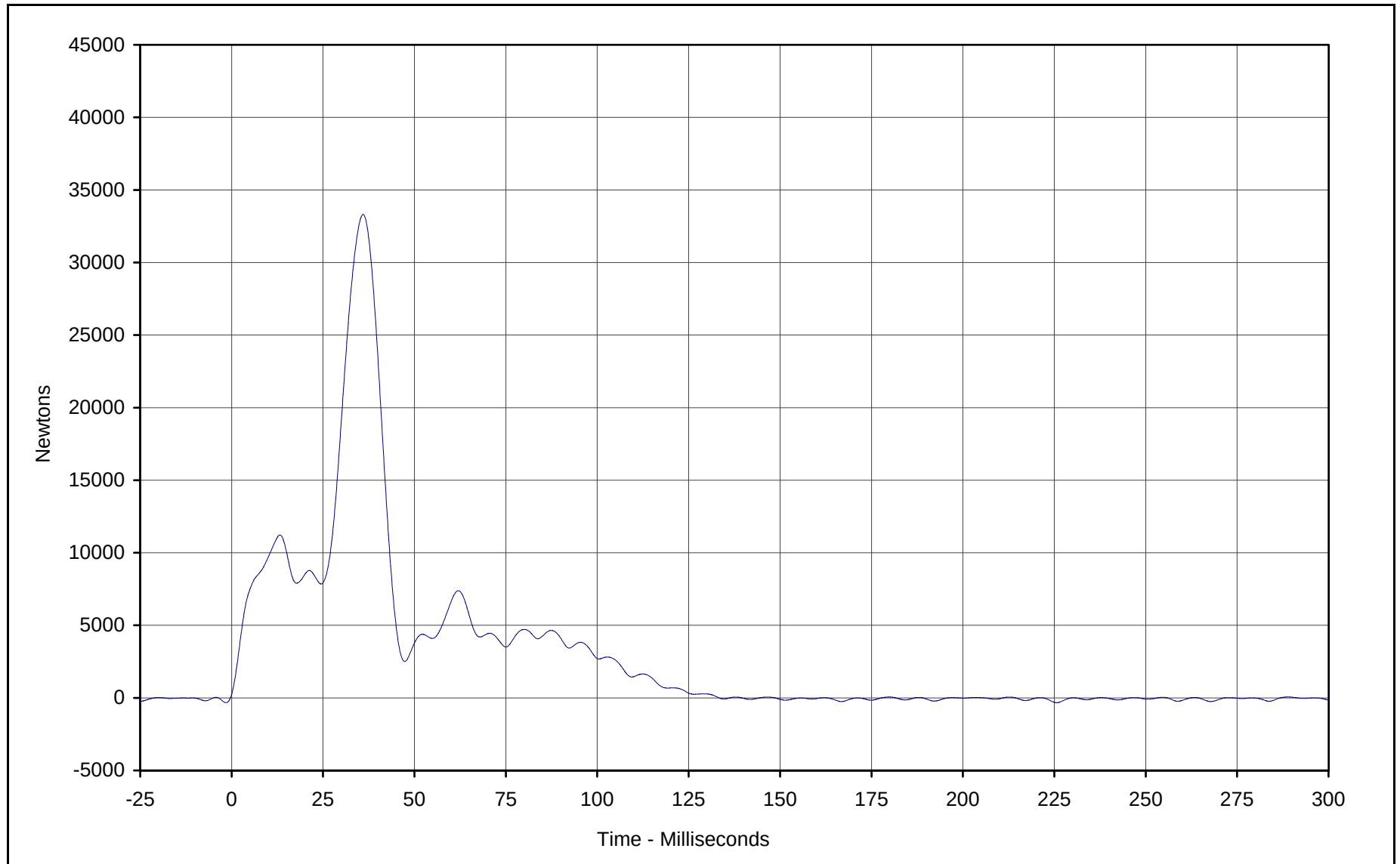


Curve Description: Barrier Force C5
Maximum Value: 45657.5 at 38.2 Milliseconds
Minimum Value: -416.4 at 225.8 Milliseconds
SAE Filter Class: 60
Date of Test: 01/04/01
Curve Number: FIL-120

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



KAR21001-01



Curve Description: Barrier Force C6

Maximum Value: 33312.0 at 36.0 Milliseconds

Minimum Value: -330.5 at 225.6 Milliseconds

SAE Filter Class: 60

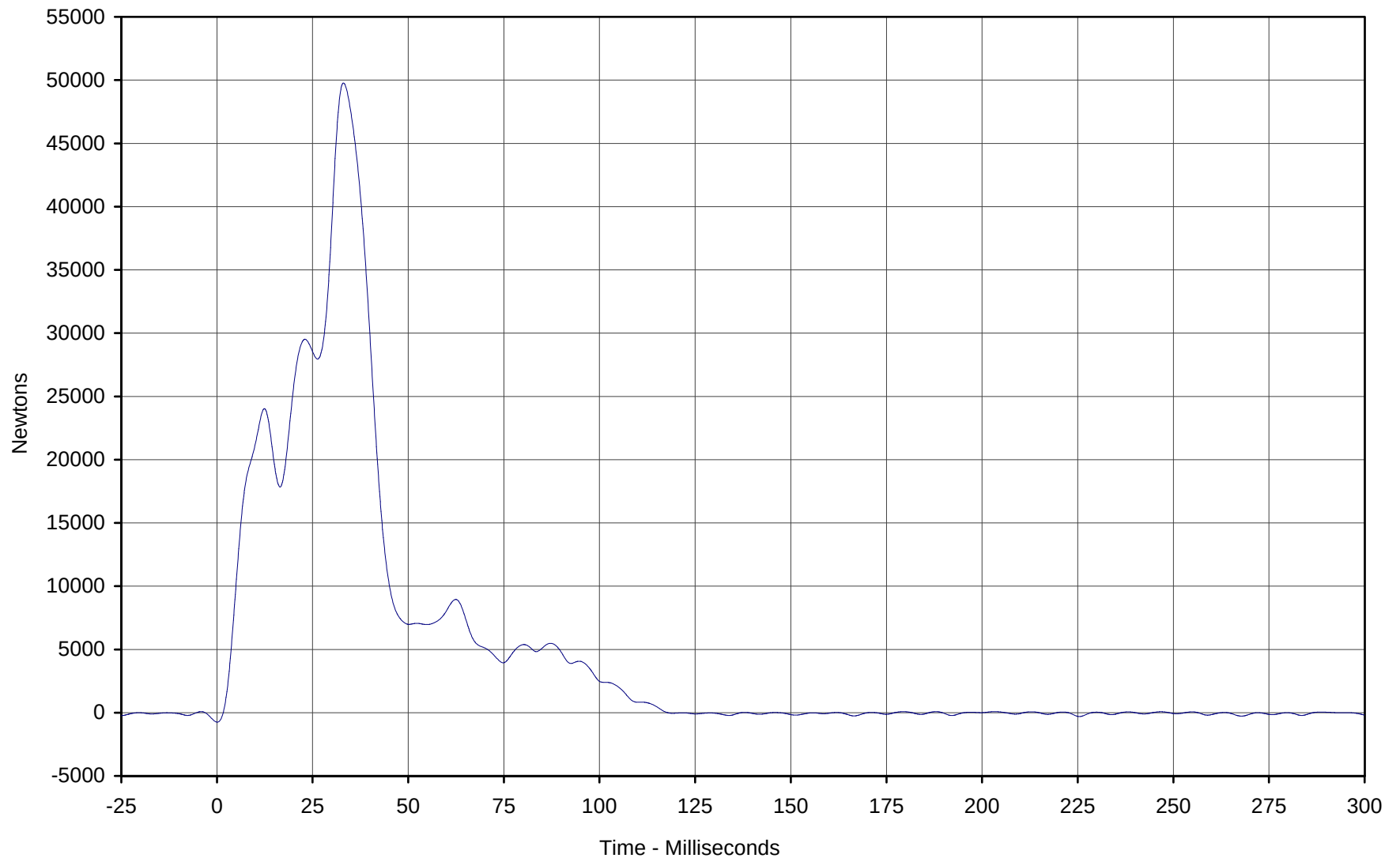
Date of Test: 01/04/01

Curve Number: FIL-121

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Barrier Force C7

Maximum Value: 49776.7 at 33.1 Milliseconds

Minimum Value: -749.9 at 0.1 Milliseconds

SAE Filter Class: 60

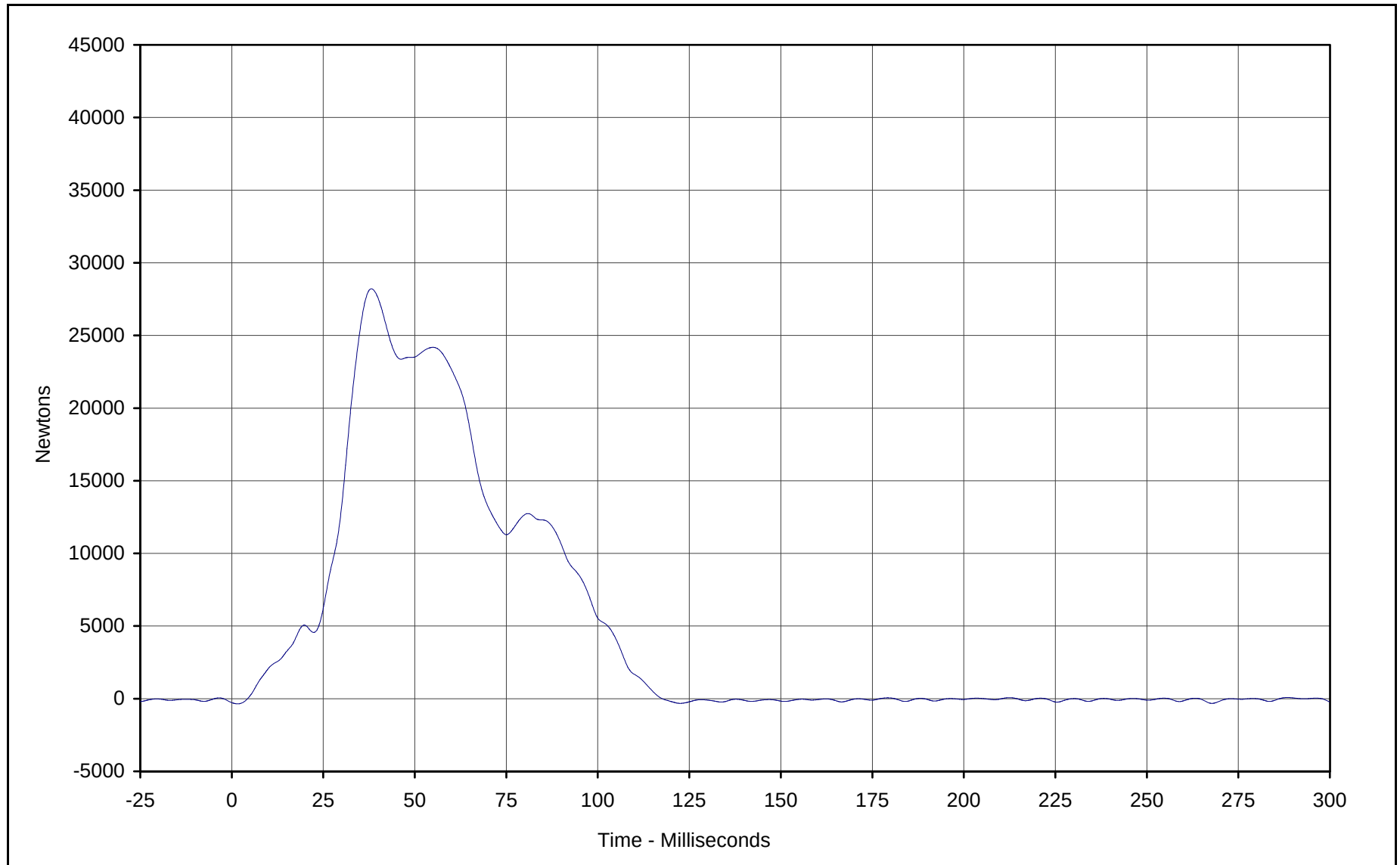
Date of Test: 01/04/01

Curve Number: FIL-122

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Barrier Force C8

Maximum Value: 28210.7 at 38.1 Milliseconds

Minimum Value: -356.7 at 1.6 Milliseconds

SAE Filter Class: 60

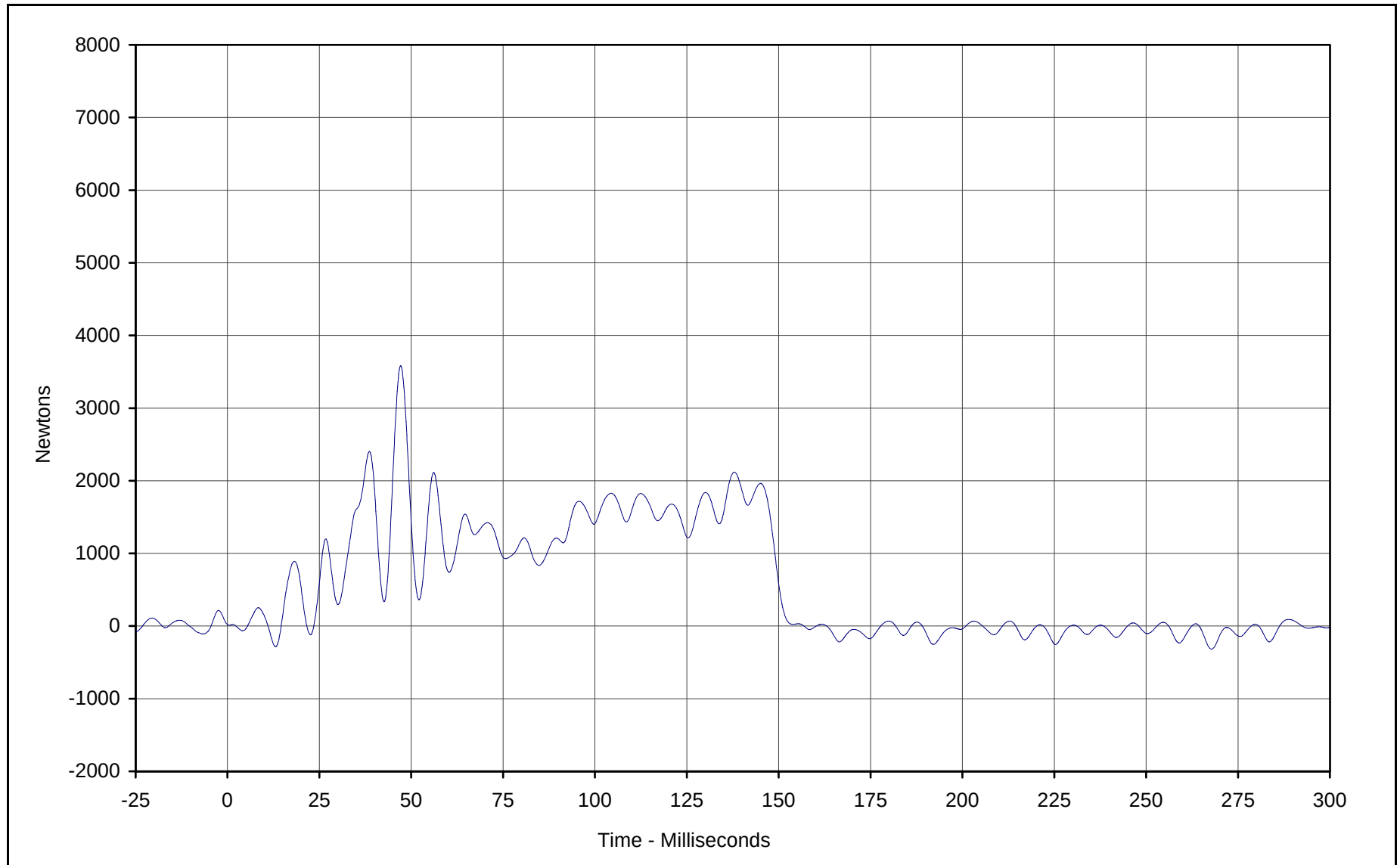
Date of Test: 01/04/01

Curve Number: FIL-123

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Barrier Force C9

Maximum Value: 3584.9 at 47.1 Milliseconds

Minimum Value: -318.6 at 267.8 Milliseconds

SAE Filter Class: 60

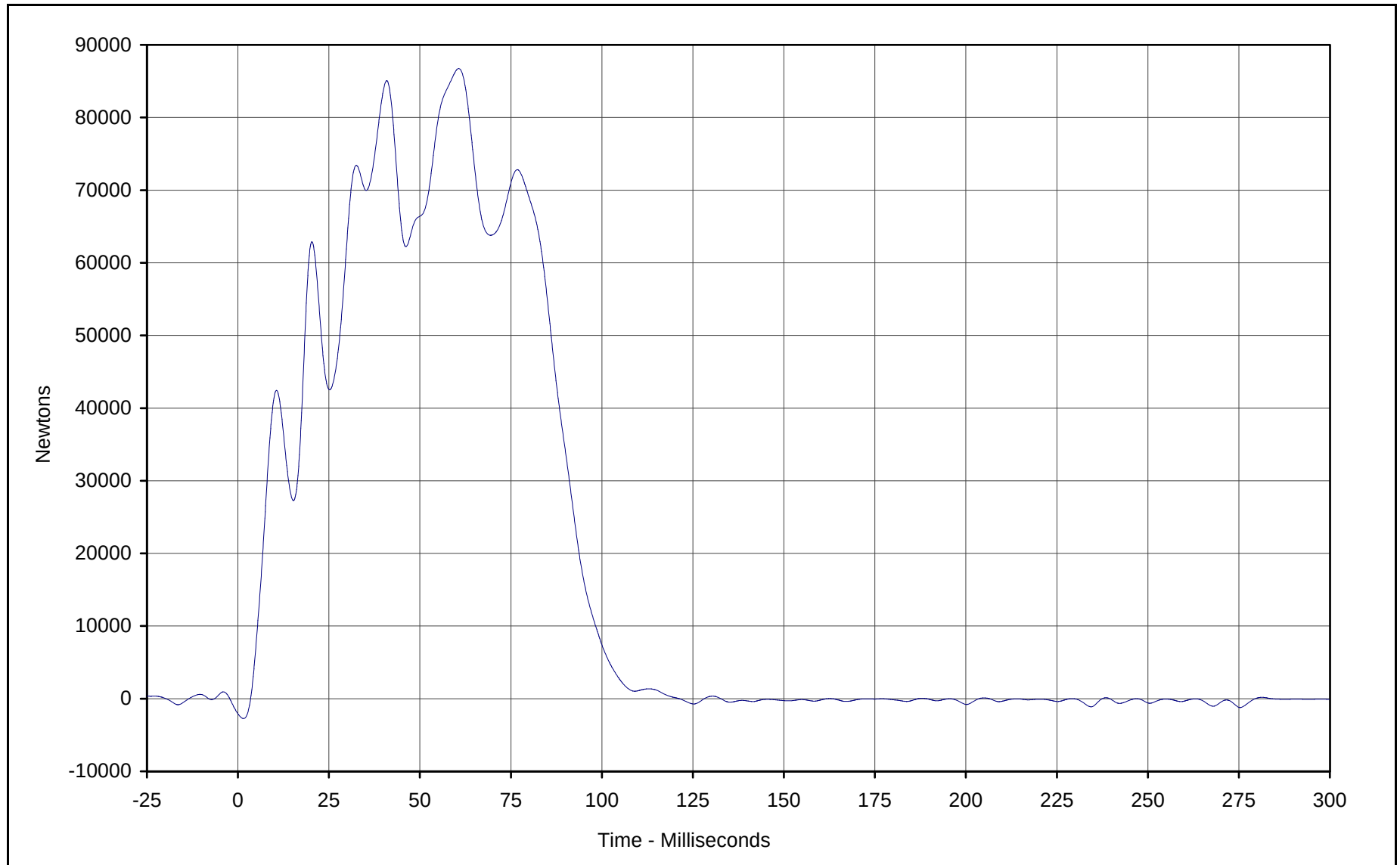
Date of Test: 01/04/01

Curve Number: FIL-124

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

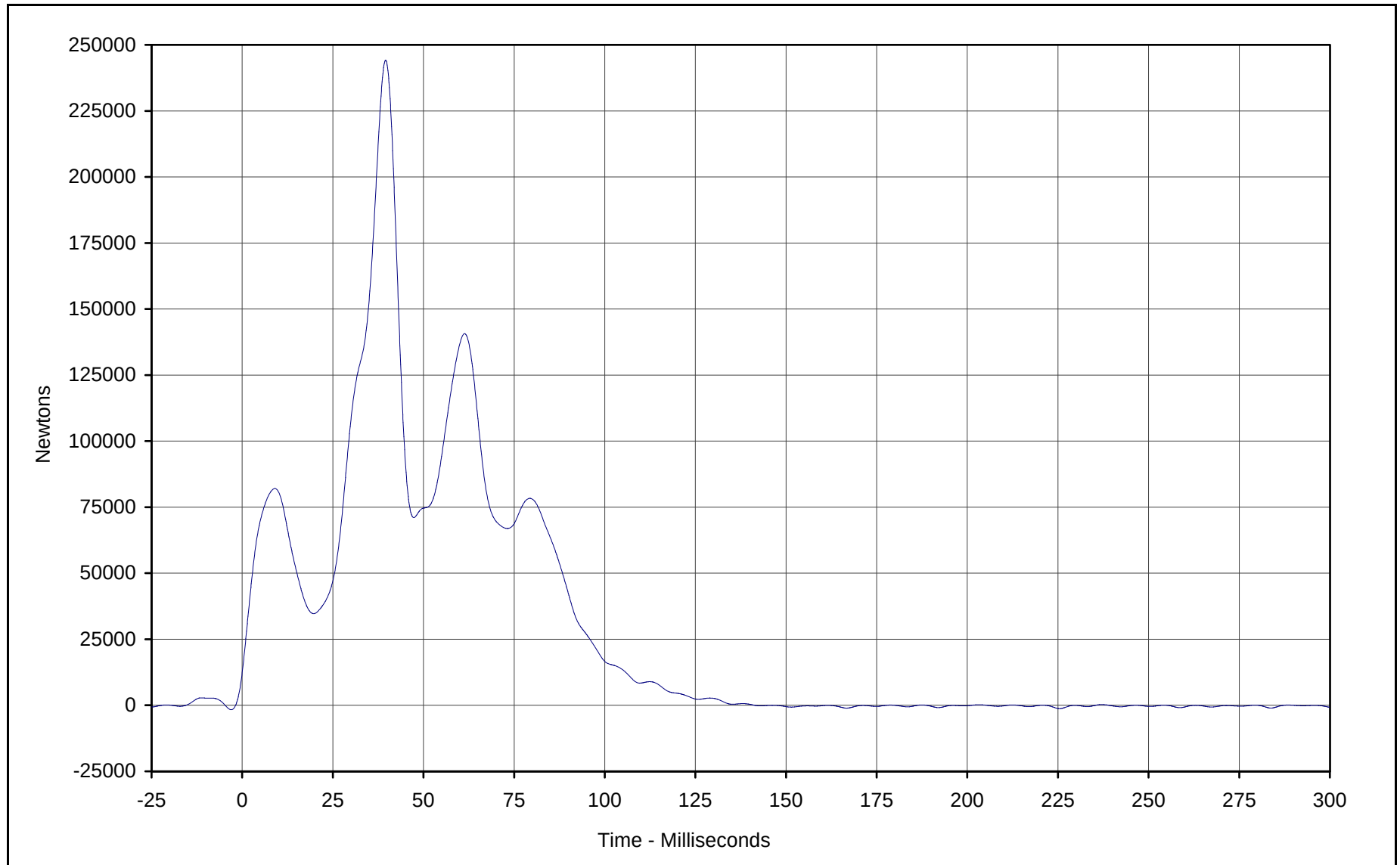




Curve Description: Barrier Force Sum Group 1
Maximum Value: 86746.9 at 60.7 Milliseconds
Minimum Value: -2735.3 at 1.6 Milliseconds
SAE Filter Class: 60
Date of Test: 01/04/01
Curve Number: SUM-001

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

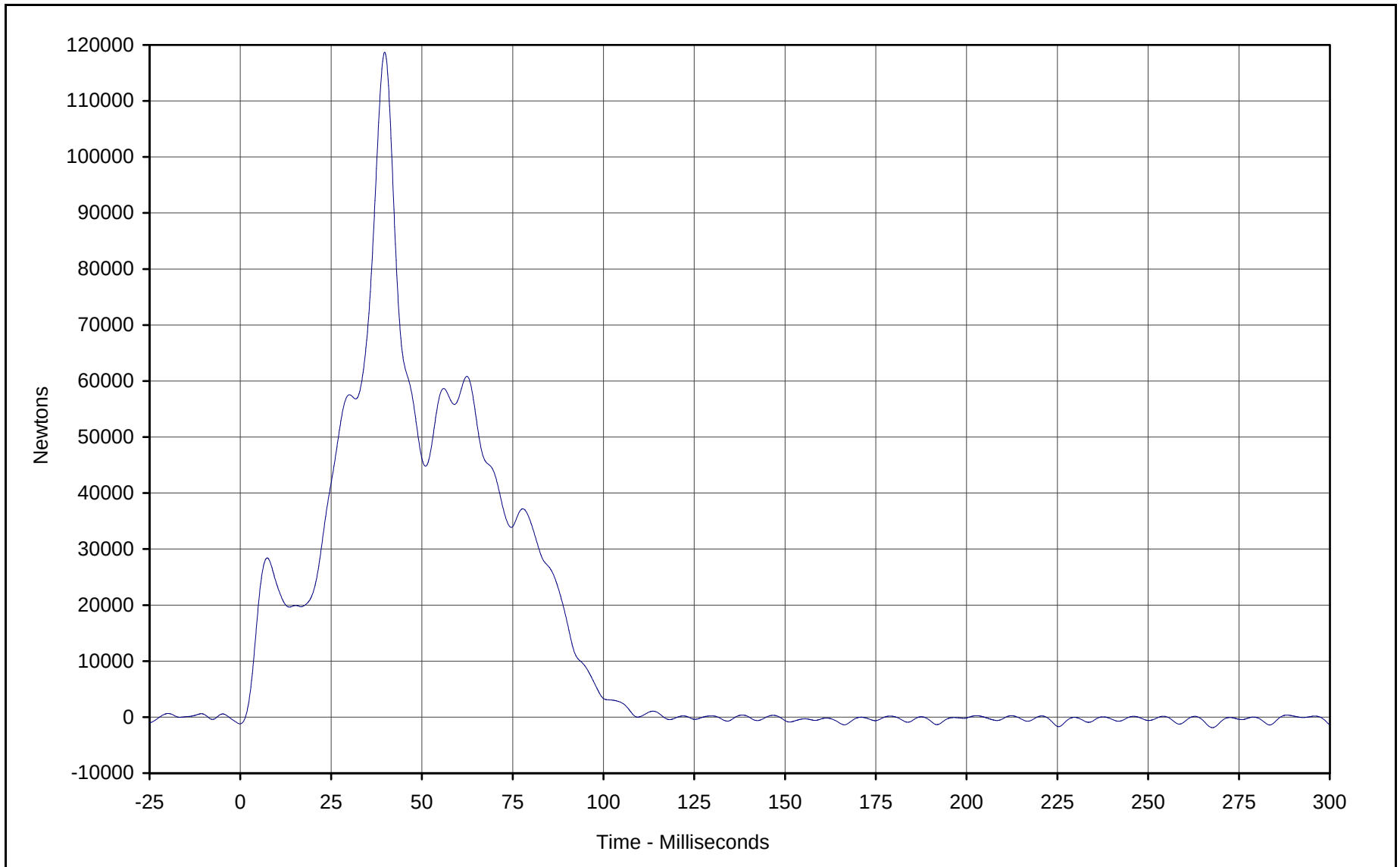




Curve Description: Barrier Force Sum Group 2
Maximum Value: 244193.4 at 39.6 Milliseconds
Minimum Value: -1261.0 at 225.5 Milliseconds
SAE Filter Class: 60
Date of Test: 01/04/01
Curve Number: SUM-002

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

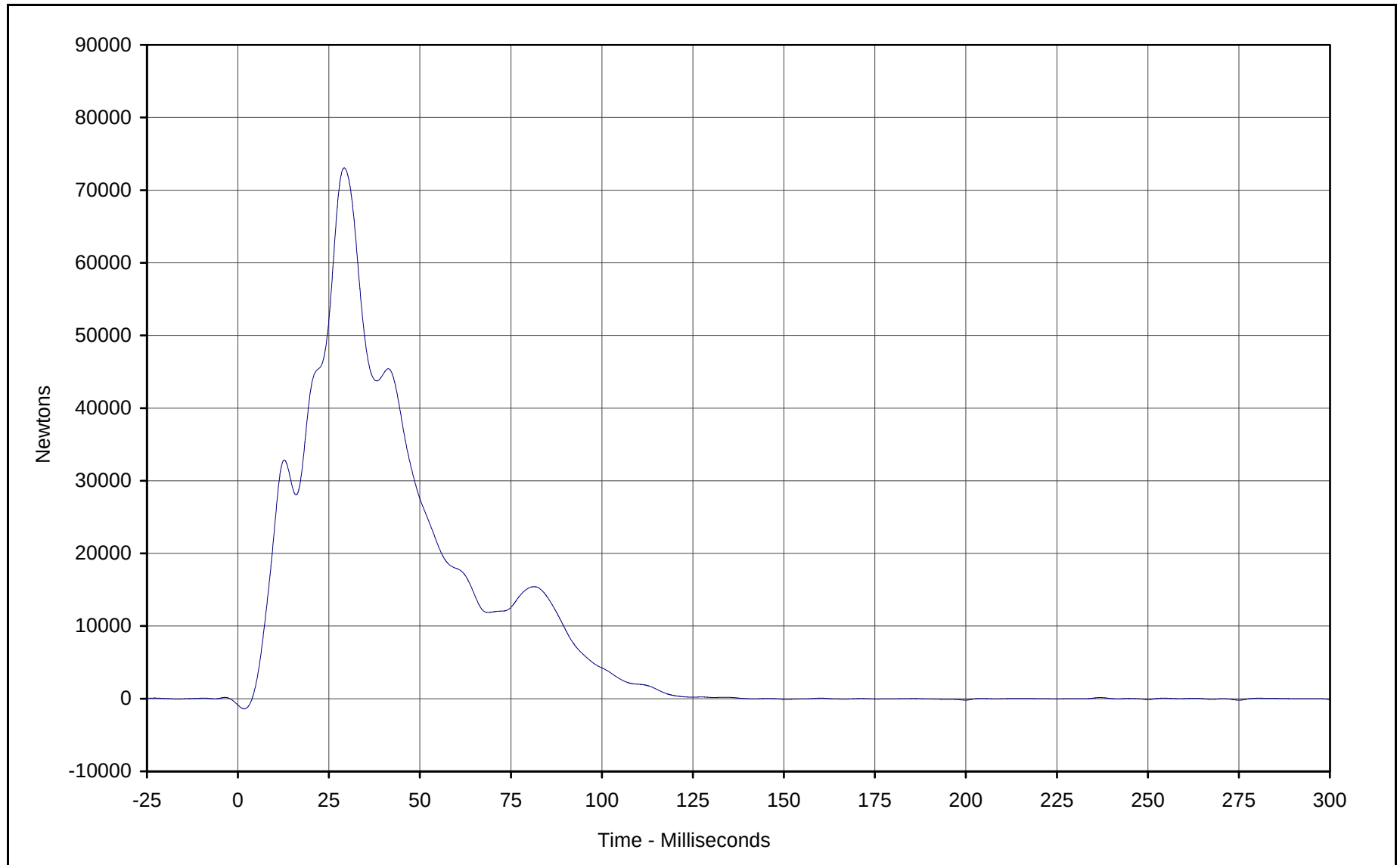




Curve Description: Barrier Force Sum Group 3
Maximum Value: 118702.1 at 39.8 Milliseconds
Minimum Value: -1881.7 at 267.7 Milliseconds
SAE Filter Class: 60
Date of Test: 01/04/01
Curve Number: SUM-003

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

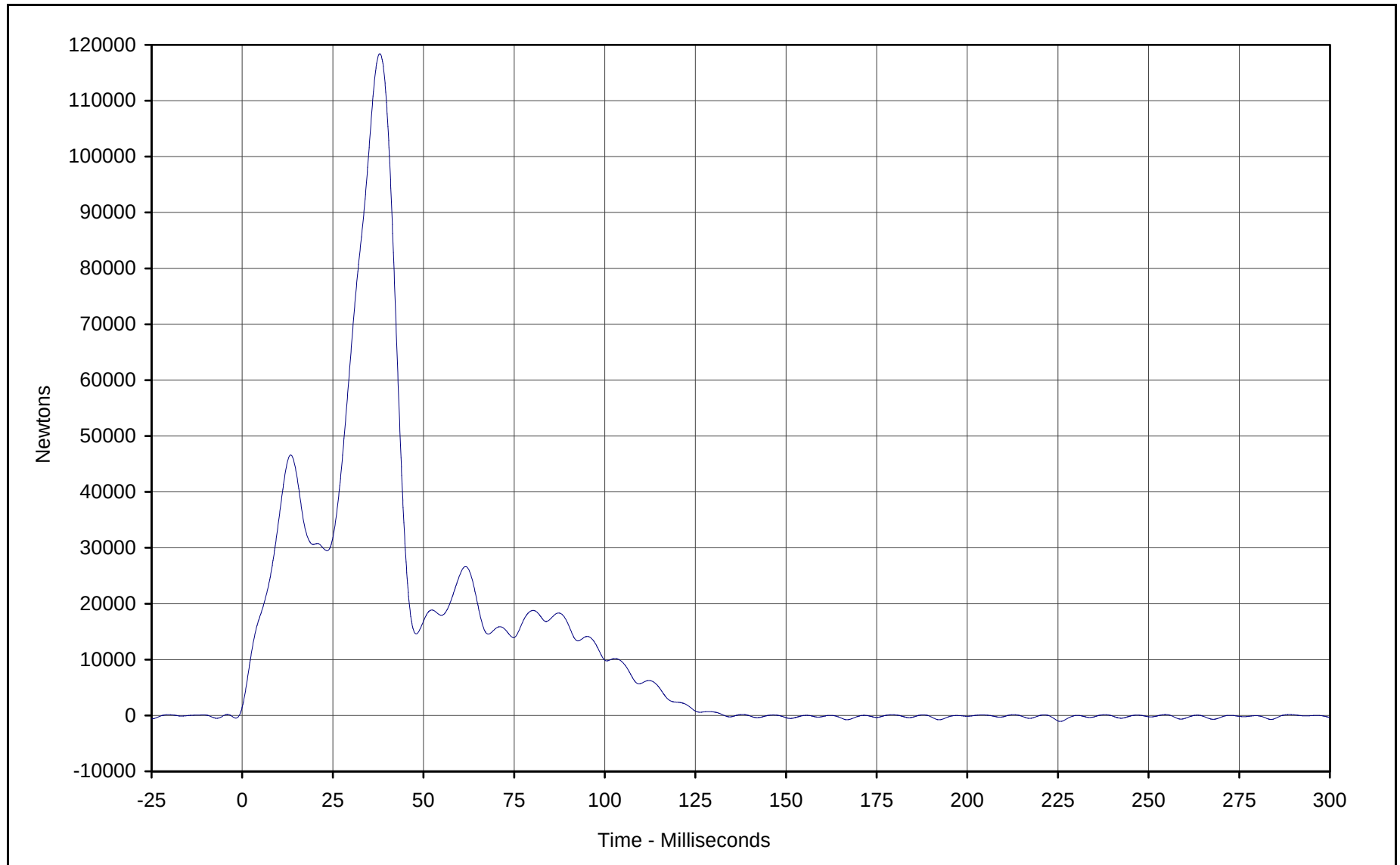




Curve Description: Barrier Force Sum Group 4
Maximum Value: 73062.3 at 29.2 Milliseconds
Minimum Value: -1391.3 at 1.7 Milliseconds
SAE Filter Class: 60
Date of Test: 01/04/01
Curve Number: SUM-004

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

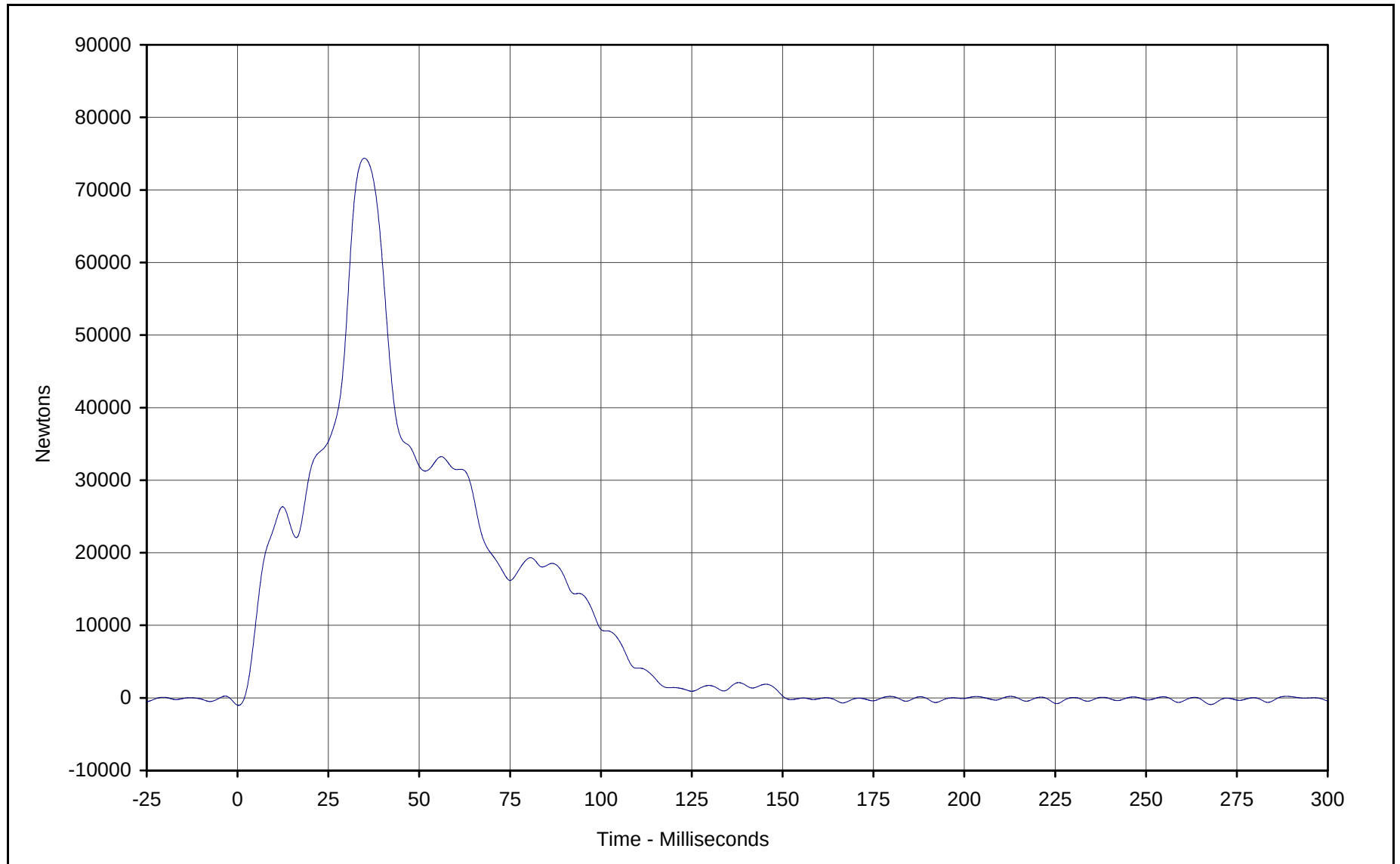




Curve Description: Barrier Force Sum Group 5
Maximum Value: 118413.0 at 38.0 Milliseconds
Minimum Value: -1064.4 at 225.7 Milliseconds
SAE Filter Class: 60
Date of Test: 01/04/01
Curve Number: SUM-005

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan





Curve Description: Barrier Force Sum Group 6

Maximum Value: 74374.8 at 34.9 Milliseconds

Minimum Value: -1024.4 at 0.3 Milliseconds

SAE Filter Class: 60

Date of Test: 01/04/01

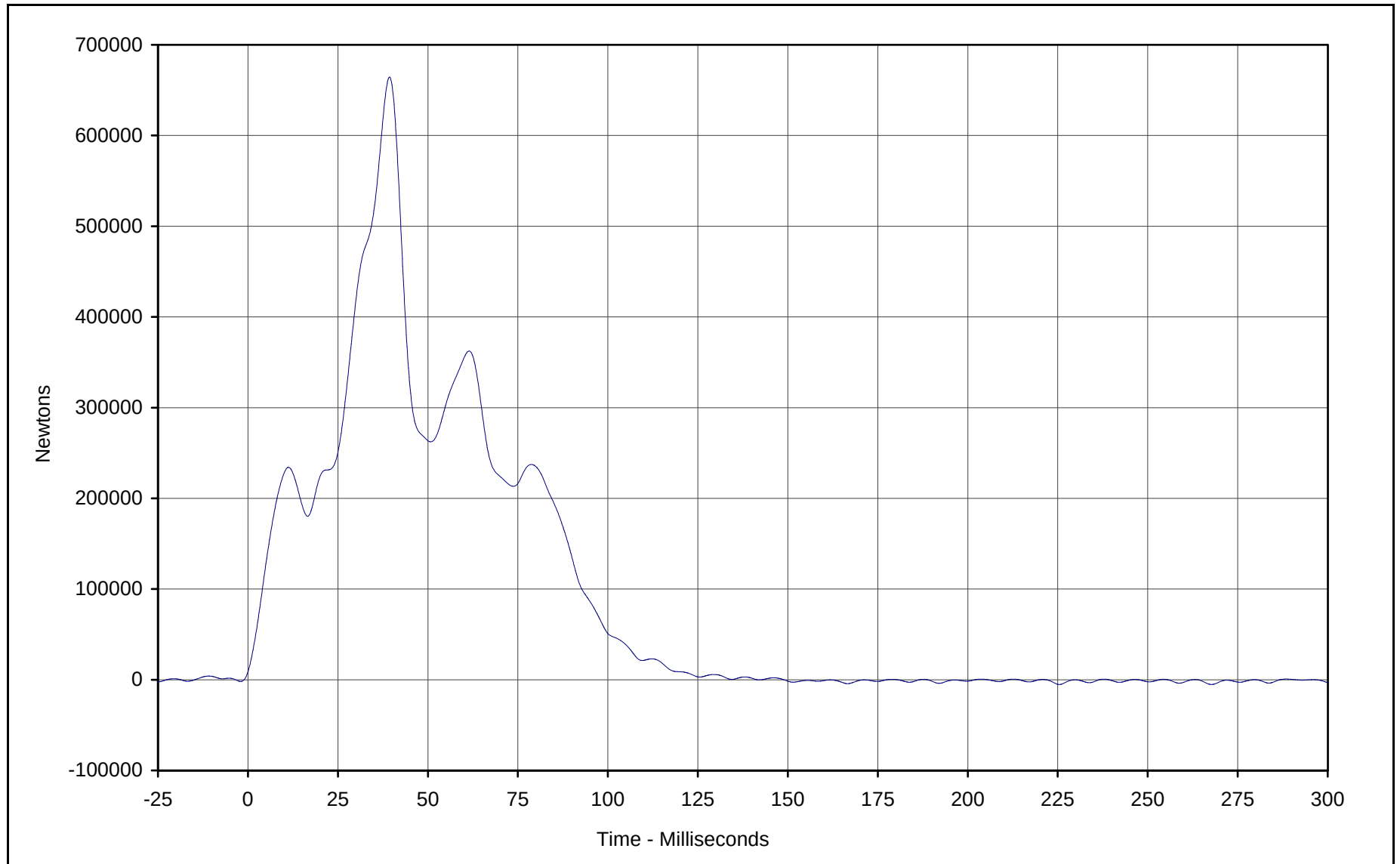
Curve Number: SUM-006

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



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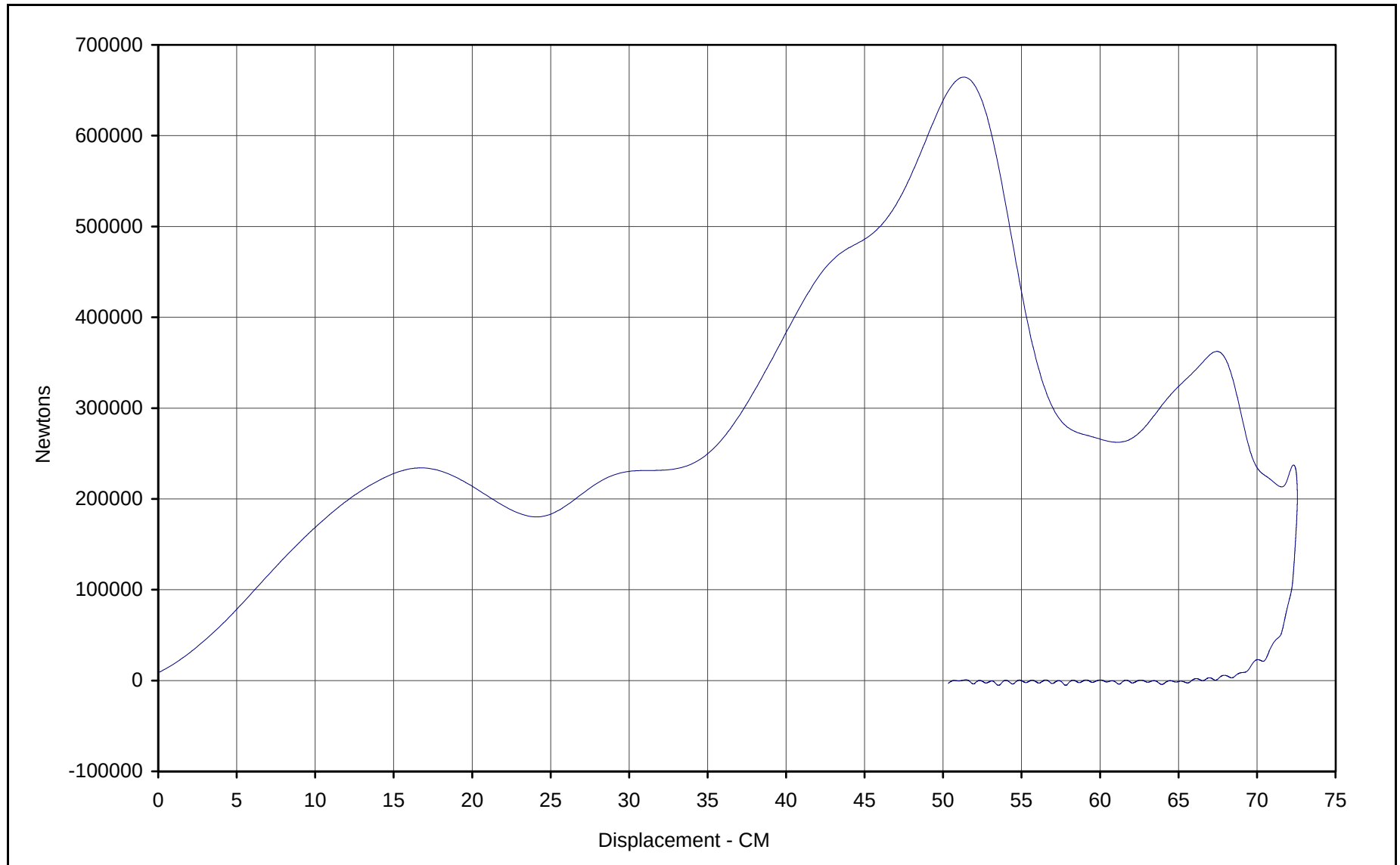


Curve Description: Barrier Force Sum Total
Maximum Value: 664448.2 at 39.3 Milliseconds
Minimum Value: -5239.3 at 267.7 Milliseconds
SAE Filter Class: 60
Date of Test: 01/04/01
Curve Number: SUM-007

Test Program: 2001 NHTSA 35mph NCAP No.: M10104
Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



KAR21001-01



Curve Description: Sum Force Total vs. Dynamic Crush

Maximum Displ.: 72.6 at 84.1 Milliseconds

Maximum Force: 664448.2 at 39.3 Milliseconds

Measured Energy: 206,565 joules

Date of Test: 01/04/01

Curve Number: XVY-001

Test Program: 2001 NHTSA 35mph NCAP No.: M10104

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan



BARRIER LOAD CELL SUMMARY DATA

Test Vehicle: 2001 Chevrolet Malibu 4 Door Sedan

NHTSA No.: M10104

Test Program: 2001 NHTSA 35mph NCAP

Test Date: 01/04/01

BARRIER LOAD CELL PEAK FORCES

Location	Units	Max	Time	Min	Time
Barrier Force A2	Newtons	4088.2	10.3	-2416.8	4.9
Barrier Force A3	Newtons	34806.7	60.3	-2113.3	4.2
Barrier Force A4	Newtons	37940.1	40.7	-1420.0	3.8
Barrier Force A5	Newtons	39729.8	40.3	-505.7	15.3
Barrier Force A6	Newtons	14312.9	61.8	-557.1	26.0
Barrier Force A7	Newtons	72655.8	40.6	-352.3	26.2
Barrier Force A8	Newtons	1091.8	46.8	-432.1	20.5
Barrier Force A9	Newtons	2294.0	46.6	-1033.2	41.7
Barrier Force B2	Newtons	5602.8	48.6	-1846.1	4.6
Barrier Force B3	Newtons	69475.3	33.4	-1210.7	0.3
Barrier Force B4	Newtons	64301.9	39.1	-123.4	148.1
Barrier Force B5	Newtons	38239.8	31.7	-330.7	225.6
Barrier Force B6	Newtons	78853.3	37.6	-290.9	225.5
Barrier Force B7	Newtons	57138.7	34.5	-914.1	0.0
Barrier Force B8	Newtons	13555.8	55.4	-287.0	225.4
Barrier Force B9	Newtons	2206.6	46.6	-747.8	51.1
Barrier Force C2	Newtons	17599.4	31.9	-2011.9	5.2
Barrier Force C3	Newtons	59088.3	28.7	-770.7	0.9
Barrier Force C4	Newtons	44398.3	39.8	-318.6	225.6
Barrier Force C5	Newtons	45657.5	38.2	-416.4	225.8
Barrier Force C6	Newtons	33312.0	36.0	-330.5	225.6
Barrier Force C7	Newtons	49776.7	33.1	-749.9	0.1
Barrier Force C8	Newtons	28210.7	38.1	-356.7	1.6
Barrier Force C9	Newtons	3584.9	47.1	-318.6	267.8
Barrier Force Sum Group 1	Newtons	86746.9	60.7	-2735.3	1.6
Barrier Force Sum Group 2	Newtons	244193.4	39.6	-1261.0	225.5
Barrier Force Sum Group 3	Newtons	118702.1	39.8	-1881.7	267.7
Barrier Force Sum Group 4	Newtons	73062.3	29.2	-1391.3	1.7
Barrier Force Sum Group 5	Newtons	118413.0	38.0	-1064.4	225.7
Barrier Force Sum Group 6	Newtons	74374.8	34.9	-1024.4	0.3
Barrier Force Sum Total	Newtons	664448.2	39.3	-5239.3	267.7

Barrier Load cells A1,B1,C1, and D1 through D9 (12 locations) were not recorded.

APPENDIX D

INSTRUMENTATION DATA CHANNEL ASSIGNMENTS

2001 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Driver A.T.D. Serial Number 34
01/04/01
2001 Chevrolet Malibu 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
1	HEAD, PRIMARY	X	GPAC027	Accel., 1/2 bridge	Endevco	7264-2000	G
2	HEAD, PRIMARY	Y	GPAC002	Accel., 1/2 bridge	Endevco	7264-2000	G
3	HEAD, PRIMARY	Z	GPAC003	Accel., 1/2 bridge	Endevco	7264-2000	G
4	HEAD, REDUNDANT	X	GPAC032	Accel., 1/2 bridge	Endevco	7264-2000	G
5	HEAD, REDUNDANT	Y	GPAC021	Accel., 1/2 bridge	Endevco	7264-2000	G
6	HEAD, REDUNDANT	Z	GPAC026	Accel., 1/2 bridge	Endevco	7264-2000	G
7	NECK FORCE	X	GPUN01FX	Load cell, six axis neck	R. A. Denton	1716A	N
8	NECK FORCE	Y	GPUN01FY	Load cell, six axis neck	R. A. Denton	1716A	N
9	NECK FORCE	Z	GPUN01FZ	Load cell, six axis neck	R. A. Denton	1716A	N
10	NECK MOMENT	X	GPUN01MX	Load cell, six axis neck	R. A. Denton	1716A	Nm
11	NECK MOMENT	Y	GPUN01MY	Load cell, six axis neck	R. A. Denton	1716A	Nm
12	NECK MOMENT	Z	GPUN01MZ	Load cell, six axis neck	R. A. Denton	1716A	Nm
13	CHEST , PRIMARY	X	GPAC005	Accel., 1/2 bridge	Endevco	7264-2000	G
14	CHEST , PRIMARY	Y	GPAC011	Accel., 1/2 bridge	Endevco	7264-2000	G
15	CHEST , PRIMARY	Z	GPAC010	Accel., 1/2 bridge	Endevco	7264-2000	G
16	CHEST , REDUNDANT	X	GPAC034	Accel., 1/2 bridge	Endevco	7264-2000	G
17	CHEST , REDUNDANT	Y	GPAC023	Accel., 1/2 bridge	Endevco	7264-2000	G
18	CHEST , REDUNDANT	Z	GPAC020	Accel., 1/2 bridge	Endevco	7264-2000	G
19	CHEST DISPLACEMENT	X	GPCP002	Rotary Pot Chest	Servo	14CBI	MM
20	PELVIS, PRIMARY	X	GPAC025	Accel., 1/2 bridge	Endevco	7264-2000	G
21	PELVIS, PRIMARY	Y	GPAC022	Accel., 1/2 bridge	Endevco	7264-2000	G
22	PELVIS, PRIMARY	Z	GPAC019	Accel., 1/2 bridge	Endevco	7264-2000	G
23	LEFT FEMUR FORCE	Z	KEFF003	Load cell, Femur	R.A. Denton	2121	N
24	RIGHT FEMUR FORCE	Z	KEFF004	Load cell, Femur	R.A. Denton	2121	N

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KAR21001-01

2001 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Driver A.T.D. Serial Number 34
01/04/01
2001 Chevrolet Malibu 4 Door Sedan

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	X	KEIC002X	Accel., Foot Triax	I.C. Sensor	3031-500	G
36	FOOT LEFT	Y	KEIC002Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
37	FOOT LEFT	Z	KEIC002Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
38	FOOT RIGHT	X	KEIC001X	Accel., Foot Triax	I.C. Sensor	3031-500	G
39	FOOT RIGHT	Y	KEIC001Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
40	FOOT RIGHT	Z	KEIC001Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
41	LAP BELT FORCE	X	KELC003	Load cell, Seat belt	Lebow	3371	N
42	SHOULDER BELT FORCE	X	KELC004	Load cell, Seat belt	Lebow	3371	N
43	SHOULDER BELT SPOOL	X	KEPP001	Pullout pot	Celesco	PTX101-0030	MM
44	SHOULDER BELT ELONG.	X	KEEP001	Linear pot., belt stretch	E.T.I.	LCP8-10 10K	MM/CM

2001 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Passenger A.T.D. Serial Number 35
01/04/01
2001 Chevrolet Malibu 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
45	HEAD, PRIMARY	X	KEAC039	Accel., 1/2 bridge	Endevco	7264-2000	G
46	HEAD, PRIMARY	Y	KEAC038	Accel., 1/2 bridge	Endevco	7264-2000	G
47	HEAD, PRIMARY	Z	KEAC027	Accel., 1/2 bridge	Endevco	7264-2000	G
48	HEAD, REDUNDANT	X	KEAC031	Accel., 1/2 bridge	Endevco	7264-2000	G
49	HEAD, REDUNDANT	Y	KEAC032	Accel., 1/2 bridge	Endevco	7264-2000	G
50	HEAD, REDUNDANT	Z	KEAC026	Accel., 1/2 bridge	Endevco	7264-2000	G
51	NECK FORCE	X	GPUN02FX	Load cell, six axis neck	R. A. Denton	1716A	N
52	NECK FORCE	Y	GPUN02FY	Load cell, six axis neck	R. A. Denton	1716A	N
53	NECK FORCE	Z	GPUN02FZ	Load cell, six axis neck	R. A. Denton	1716A	N
54	NECK MOMENT	X	GPUN02MX	Load cell, six axis neck	R. A. Denton	1716A	Nm
55	NECK MOMENT	Y	GPUN02MY	Load cell, six axis neck	R. A. Denton	1716A	Nm
56	NECK MOMENT	Z	GPUN02MZ	Load cell, six axis neck	R. A. Denton	1716A	Nm
57	CHEST , PRIMARY	X	GPAC031	Accel., 1/2 bridge	Endevco	7264-2000	G
58	CHEST , PRIMARY	Y	GPAC024	Accel., 1/2 bridge	Endevco	7264-2000	G
59	CHEST , PRIMARY	Z	GPAC029	Accel., 1/2 bridge	Endevco	7264-2000	G
60	CHEST , REDUNDANT	X	KEAC023	Accel., 1/2 bridge	Endevco	7264-200	G
61	CHEST , REDUNDANT	Y	KEAC022	Accel., 1/2 bridge	Endevco	7264-200	G
62	CHEST , REDUNDANT	Z	KEAC024	Accel., 1/2 bridge	Endevco	7264-200	G
63	CHEST DISPLACEMENT	X	GPCP001	Rotary Pot Chest	Servo	14CBI	MM
64	PELVIS, PRIMARY	X	KEAC019	Accel., 1/2 bridge	Endevco	7264-200	G
65	PELVIS, PRIMARY	Y	KEAC020	Accel., 1/2 bridge	Endevco	7264-200	G
66	PELVIS, PRIMARY	Z	KEAC021	Accel., 1/2 bridge	Endevco	7264-200	G
67	LEFT FEMUR FORCE	Z	KEFF001	Load cell, Femur	R.A. Denton	2121	N
68	RIGHT FEMUR FORCE	Z	KEFF002	Load cell, Femur	R.A. Denton	2121	N

2001 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Passenger A.T.D. Serial Number 35
01/04/01
2001 Chevrolet Malibu 4 Door Sedan

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	X	KEIC003X	Accel., Foot Triax	I.C. Sensor	3031-500	G
80	FOOT LEFT	Y	KEIC003Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
81	FOOT LEFT	Z	KEIC003Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
82	FOOT RIGHT	X	KEIC004X	Accel., Foot Triax	I.C. Sensor	3031-500	G
83	FOOT RIGHT	Y	KEIC004Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
84	FOOT RIGHT	Z	KEIC004Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
85	LAP BELT FORCE	X	KELC001	Load cell, Seat belt	Lebow	3371	N
86	SHOULDER BELT FORCE	X	KELC002	Load cell, Seat belt	Lebow	3371	N
87	SHOULDER BELT SPOOL	X	KEPP001	Pullout pot	Celesco	PTX101-0030	CM
88	SHOULDER BELT ELONG.	X	KEEP001	Linear pot., belt stretch	E.T.I.	LCP8-10 10K	MM/CM

2001 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Vehicle Accelerometers and Reference Channel
01/04/01
2001 Chevrolet Malibu 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
89	Left Rear Primary	X	KEVA010	Accel., Vehicle block	I.C. Sensor	3031-200	G
90	Right Rear Primary	Y	KEVA006	Accel., Vehicle block	I.C. Sensor	3031-200	G
91	Engine Top	X	KEVA001	Accel., Vehicle block	I.C. Sensor	3031-500	G
92	Engine Bottom	Y	KEVA008	Accel., Vehicle block	I.C. Sensor	3031-500	G
93	Left Brake Caliper	X	KEVA004	Accel., Vehicle block	I.C. Sensor	3031-500	G
94	Right Brake Caliper	Y	KEVA009	Accel., Vehicle block	I.C. Sensor	3031-500	G
95	Instrument Panel	X	KEVA003	Accel., Vehicle block	I.C. Sensor	3031-500	G
96	Left Rear Redundant	Y	KEVA011	Accel., Vehicle block	I.C. Sensor	3031-200	G
97	Zero Reference	N/A	N/A	N/A	N/A	N/A	N/A

2001 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Rigid Load Cell Barrier
01/04/01
2001 Chevrolet Malibu 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
98	BARRIER FORCE A1	X	BARRIER	Not Used	N/A	N/A	N/A
99	BARRIER FORCE A2	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
100	BARRIER FORCE A3	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
101	BARRIER FORCE A4	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
102	BARRIER FORCE A5	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
103	BARRIER FORCE A6	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
104	BARRIER FORCE A7	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
105	BARRIER FORCE A8	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
106	BARRIER FORCE A9	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
107	BARRIER FORCE B1	X	BARRIER	Not Used	N/A	N/A	N/A
108	BARRIER FORCE B2	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
109	BARRIER FORCE B3	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
110	BARRIER FORCE B4	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
111	BARRIER FORCE B5	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
112	BARRIER FORCE B6	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
113	BARRIER FORCE B7	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
114	BARRIER FORCE B8	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
115	BARRIER FORCE B9	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N

2001 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Rigid Load Cell Barrier
01/04/01
2001 Chevrolet Malibu 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
116	BARRIER FORCE C1	X	BARRIER	Not Used	N/A	N/A	N/A
117	BARRIER FORCE C2	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
118	BARRIER FORCE C3	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
119	BARRIER FORCE C4	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
120	BARRIER FORCE C5	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
121	BARRIER FORCE C6	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
122	BARRIER FORCE C7	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
123	BARRIER FORCE C8	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
124	BARRIER FORCE C9	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
125	BARRIER FORCE D1	X	BARRIER	Not Used	N/A	N/A	N/A
126	BARRIER FORCE D2	X	BARRIER	Not Used	N/A	N/A	N/A
127	BARRIER FORCE D3	X	BARRIER	Not Used	N/A	N/A	N/A
128	BARRIER FORCE D4	X	BARRIER	Not Used	N/A	N/A	N/A
129	BARRIER FORCE D5	X	BARRIER	Not Used	N/A	N/A	N/A
130	BARRIER FORCE D6	X	BARRIER	Not Used	N/A	N/A	N/A
131	BARRIER FORCE D7	X	BARRIER	Not Used	N/A	N/A	N/A
132	BARRIER FORCE D8	X	BARRIER	Not Used	N/A	N/A	N/A
133	BARRIER FORCE D9	X	BARRIER	Not Used	N/A	N/A	N/A

APPENDIX E
DUMMY CALIBRATION DATA



Hybrid III Calibration Data Sheet

50TH Percentile Male

Left Knee Impact Test

ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: LK01A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	2.073 to 2.134	2.119	Pass
Peak Probe Force	Newtons	4715 to 5782	5659.9	Pass
Overall Test Results				Pass

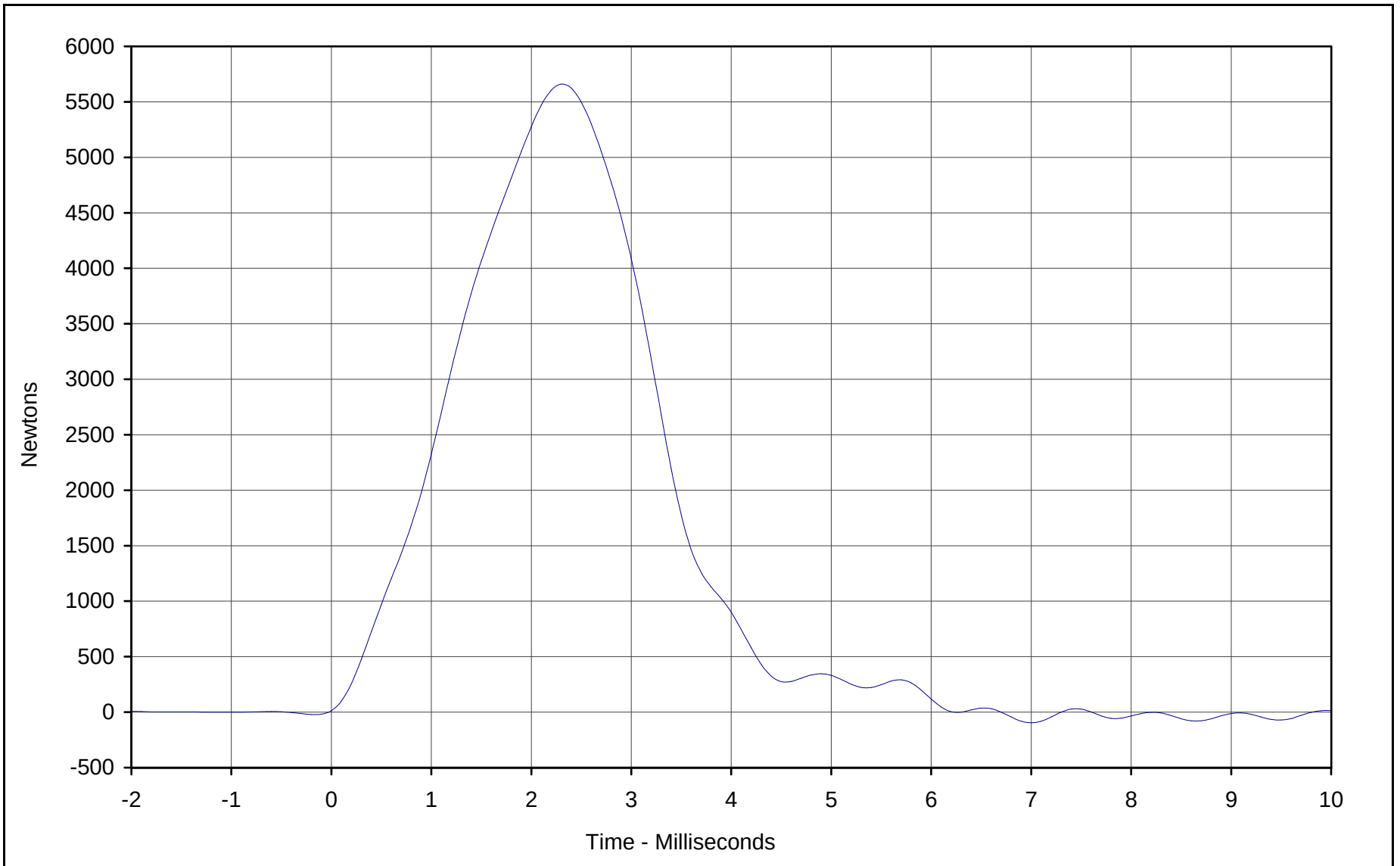
Laboratory Technician

January 2, 2001
Test Date

Approved By

Date

E-2



Curve Description: Probe Force

Maximum Value:	<u>5659.9</u>	at	<u>2.3</u>	Milliseconds
Minimum Value:	<u>-96.7</u>	at	<u>7.0</u>	Milliseconds
SAE Filter Class:	<u>600</u>			
Date of Test:	<u>1/2/01</u>			
ATD Serial No.:	<u>034</u>			

Testing Program: Hybrid III Left Knee Impact Test

Test Information: Part S/N: N/A Test I.D.: LK01A



KAR21001-01



Hybrid III Calibration Data Sheet

50TH Percentile Male

Right Knee Impact Test

ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: LK01B

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	2.073 to 2.134	2.125	Pass
Peak Probe Force	Newtons	4715 to 5782	5758.2	Pass
Overall Test Results				Pass

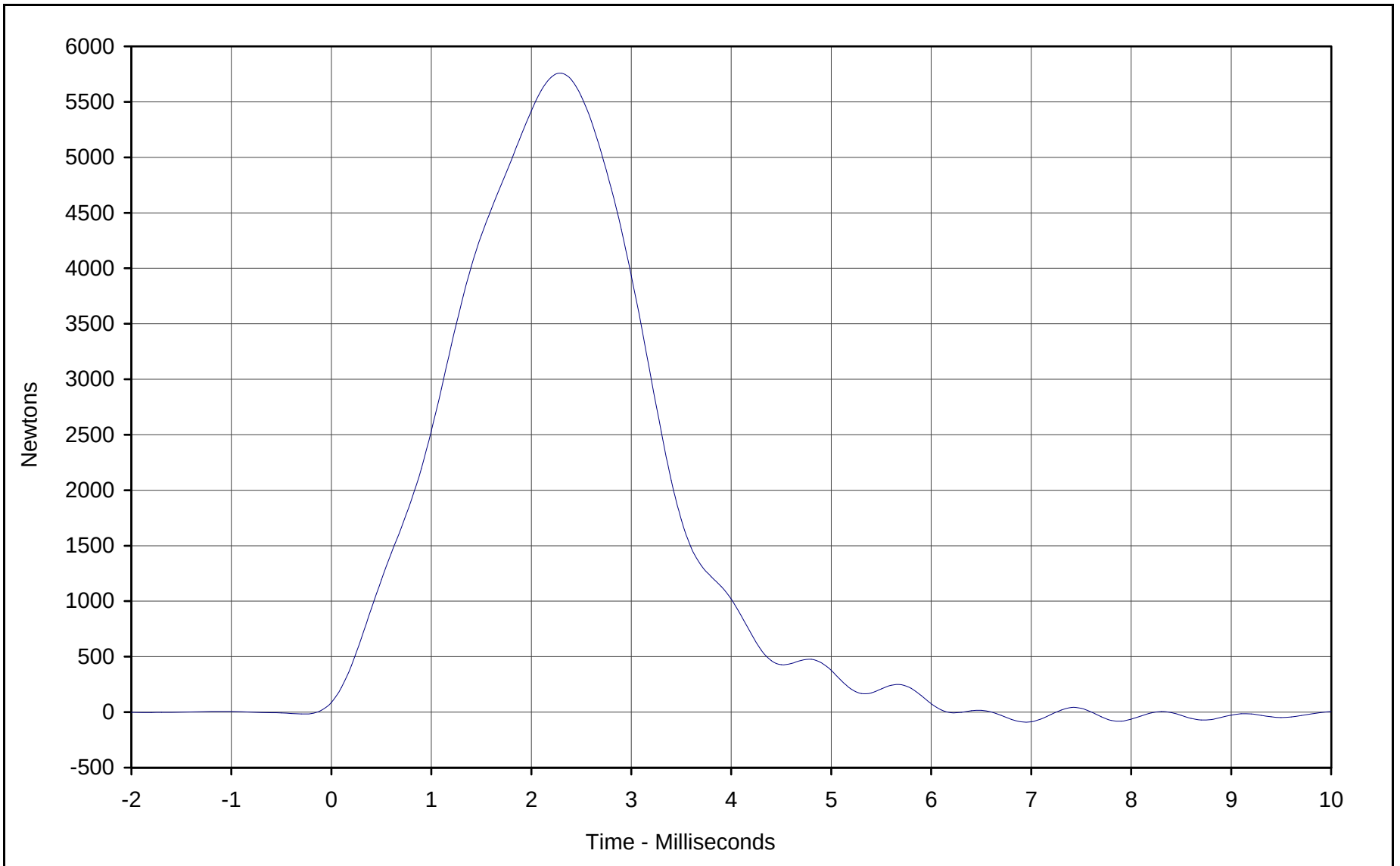
Laboratory Technician

January 2, 2001
Test Date

Approved By

Date

E-4



Curve Description: Probe Force

Maximum Value:	<u>5758.2</u>	at	<u>2.3</u>	Milliseconds
Minimum Value:	<u>-87.5</u>	at	<u>6.9</u>	Milliseconds
SAE Filter Class:	<u>600</u>			
Date of Test:	<u>1/2/01</u>			
ATD Serial No.:	<u>034</u>			

Testing Program: Hybrid III Right Knee Impact Test

Test Information: Part S/N: N/A Test I.D.: LK01B



KAR21001-01



Hybrid III Calibration Data Sheet

50TH Percentile Male

Head Drop Calibration

ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: HD01A

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	247.2	Pass
Peak Lateral Acceleration	G's	≤15.0	2.6	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

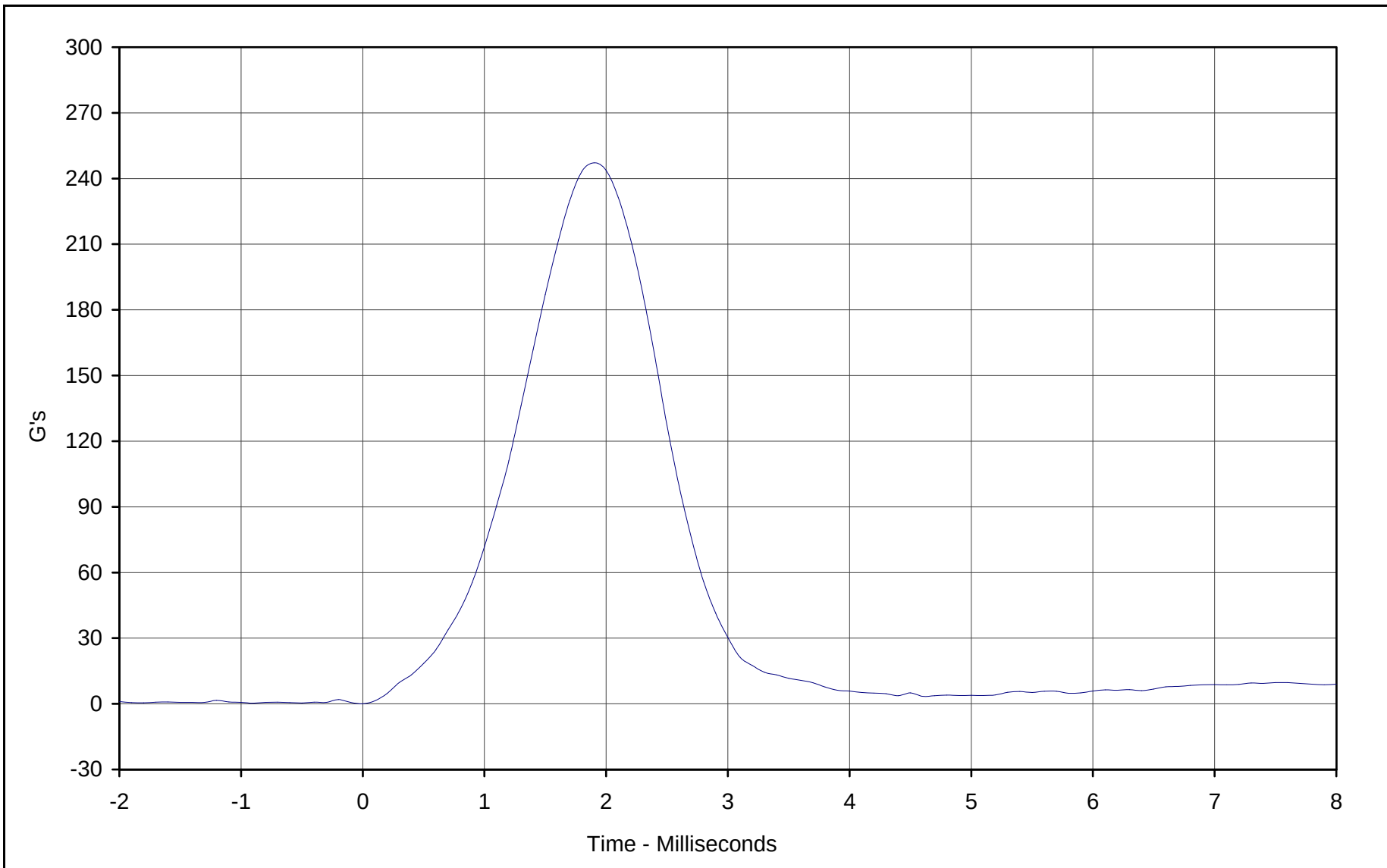
Laboratory Technician

January 2, 2001
Test Date

Approved By

Date

E-6



Curve Description: Head Resultant Acceleration

Maximum Value:	<u>247.2</u>	at	<u>1.9</u>	Milliseconds
Minimum Value:	<u>0.0</u>	at	<u>0.0</u>	Milliseconds
SAE Filter Class:	<u>1000</u>			
Date of Test:	<u>1/2/01</u>			
ATD Serial No.:	<u>034</u>			

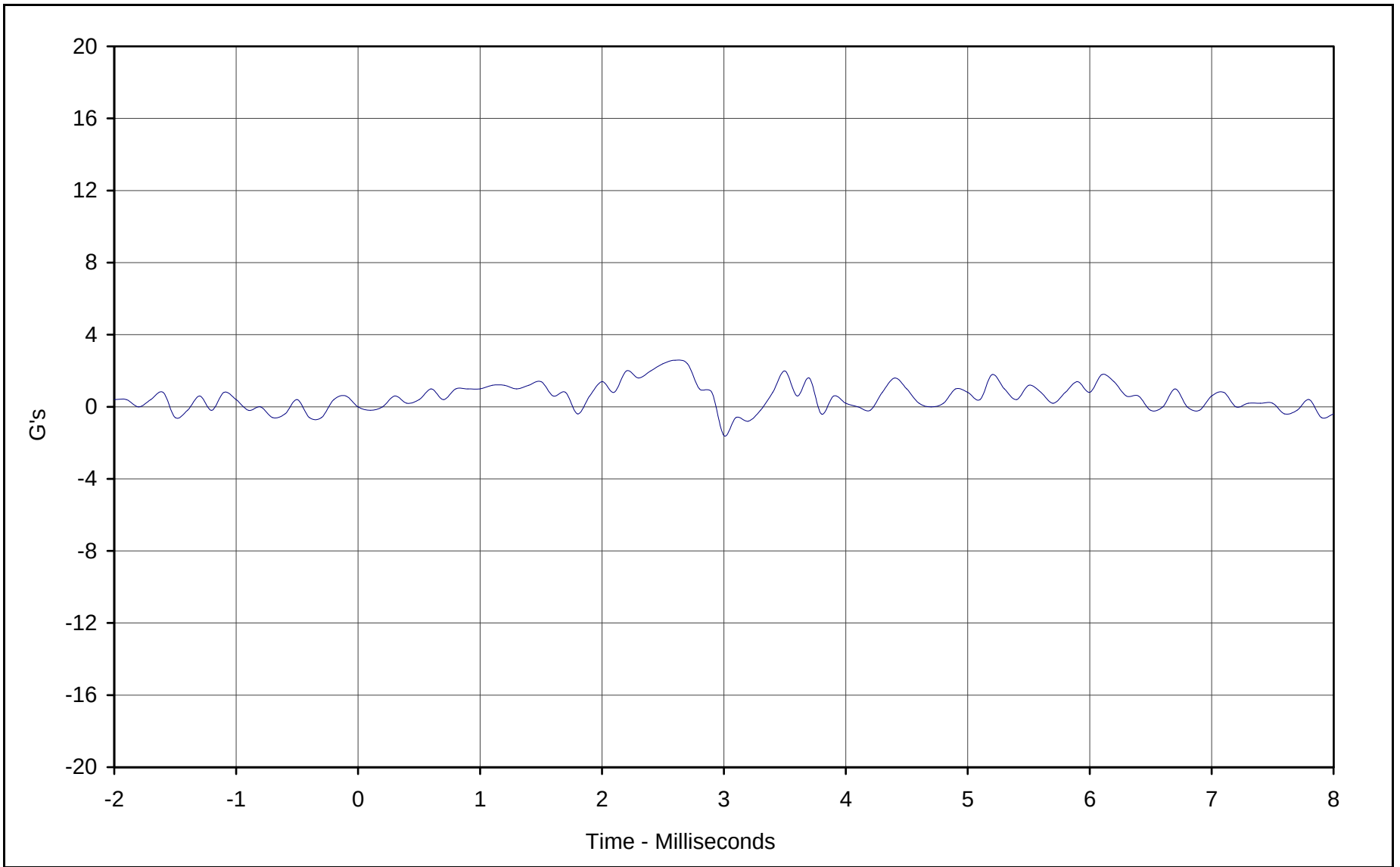
Testing Program: Hybrid III Head Drop Calibration (Male)

Test Information: S/N of Part: N/A Test I.D.: HD01A



KAR21001-01

E-7



Curve Description: Head Acceleration Y Axis

Maximum Value: 2.6 at 2.6 Milliseconds

Minimum Value: -1.6 at 3.0 Milliseconds

SAE Filter Class: 1000

Date of Test: 1/2/01

ATD Serial No.: 034

Testing Program: Hybrid III Head Drop Calibration (Male)

Test Information: S/N of Part: N/A Test I.D.: HD01A



KAR21001-01



Hybrid III Calibration Data Sheet

50TH Percentile Male

Thorax Impact Test

ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: CH07A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.2	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	5616	Pass
Peak Sternum Displacement	CM	6.35 to 7.26	6.93	Pass
Internal Hysteresis	%	69 to 85	73.1	Pass
Overall Test Results				Pass

Laboratory Technician

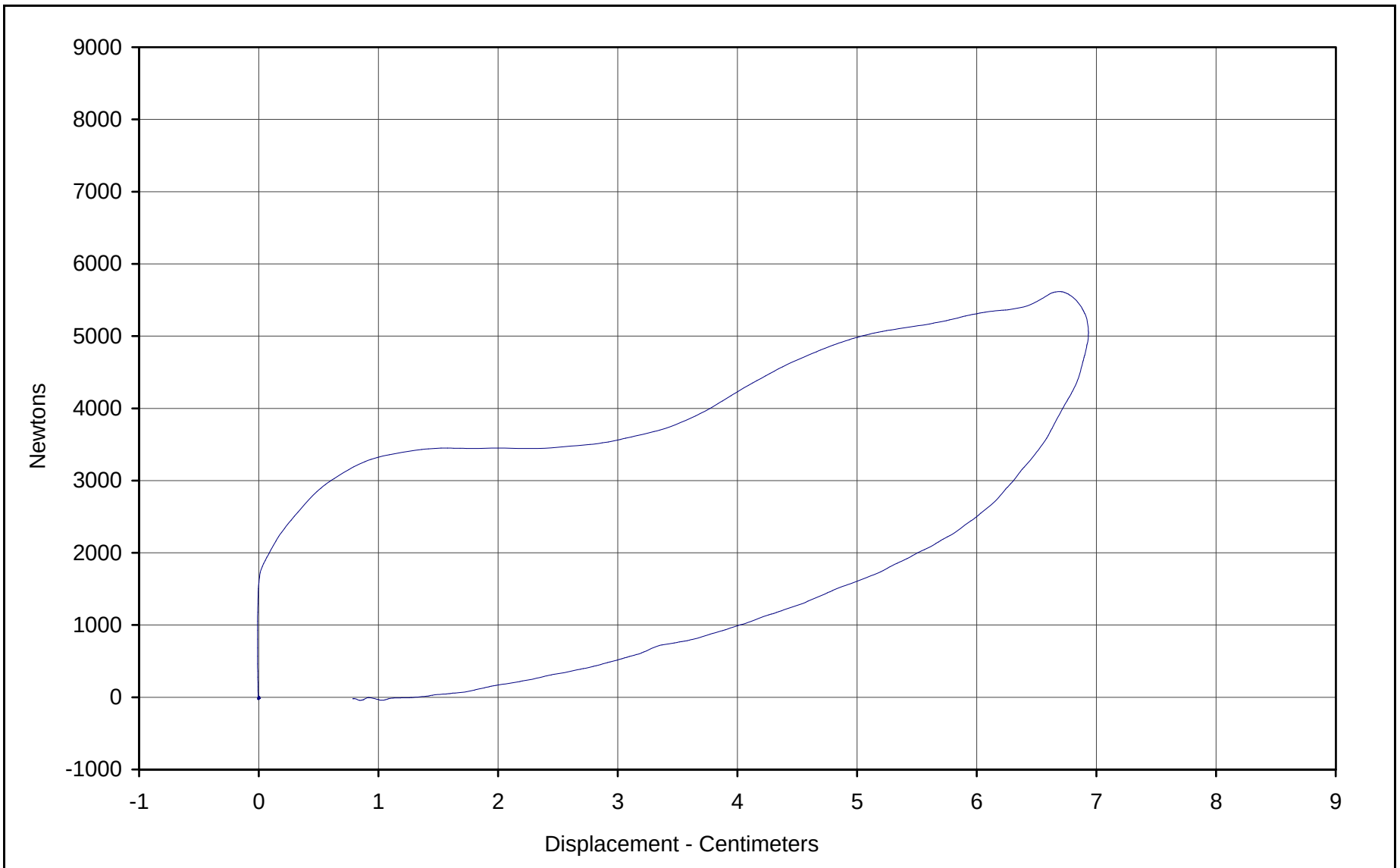
January 3, 2001

Test Date

Approved By

Date

E-9



Curve Description: Probe Force vs. Chest Displacement

Probe Force: 5616.1 Newtons

Chest Displ.: 6.93 Centimeters

SAE Filter Class: 180

Date of Test: 1/3/01

ATD Serial No.: 034

Testing Program: Hybrid III Thorax Impact Test

Test Information: S/N of Part: N/A Test I.D.: CH07A



KAR21001-01



Hybrid III Calibration Data Sheet

50TH Percentile Male

Neck Flexion Test

ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: NF01A

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	6.89	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	23.5	Pass
	20 Msec.	G's	17.6 to 22.6	20.1	Pass
	30 Msec.	G's	12.5 to 18.5	18.5	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	18.5	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	38.3	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	68.1	Pass
	Time	Msec.	57.0 to 64.0	60.5	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	113.6	Pass
Moment About Occipital Condyle	Maximum	N·m	84.1 to 108.5	88.0	Pass
	Time	Msec.	47.0 to 58.0	57.7	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	102.7	Pass
Overall Test Results					Pass

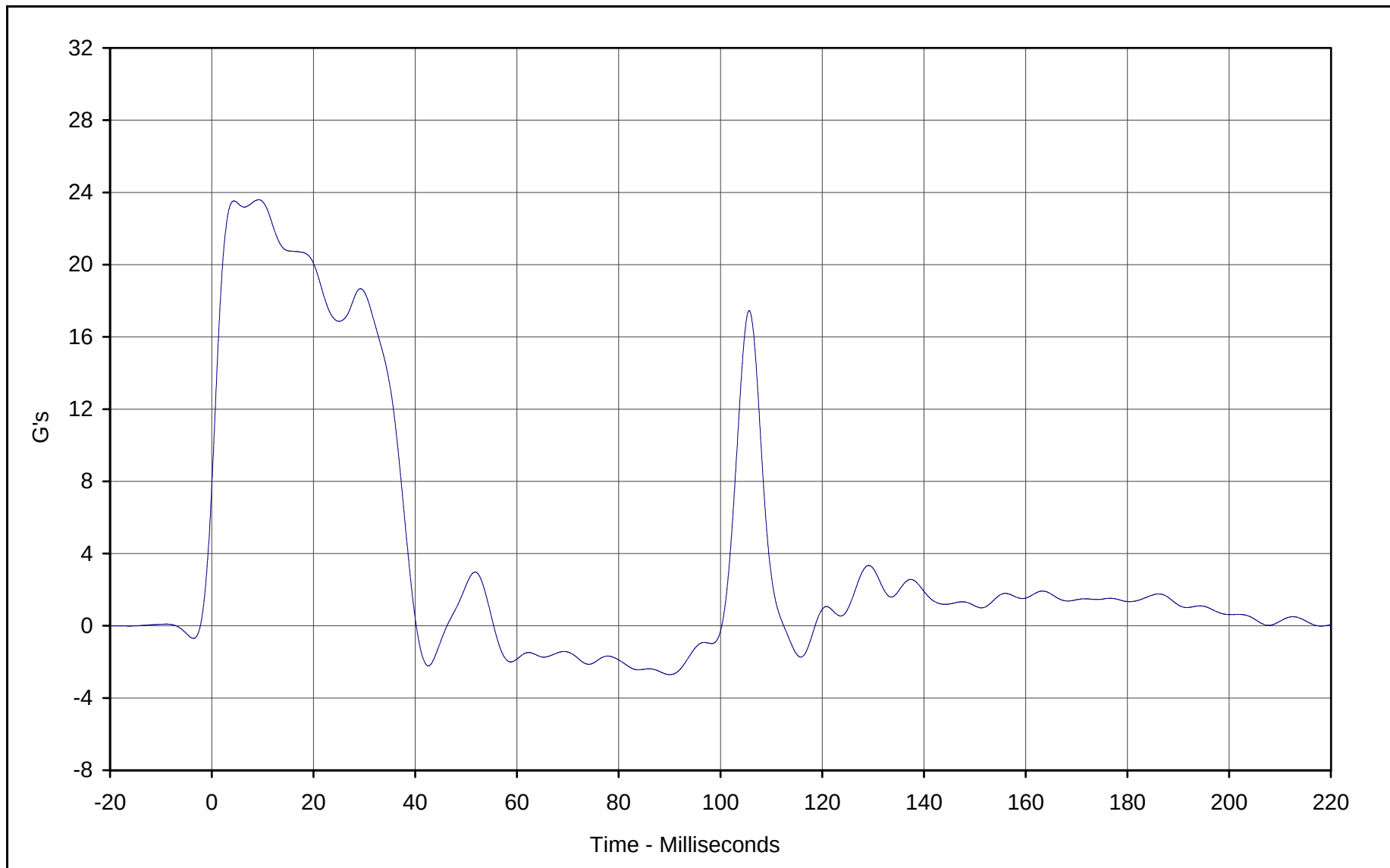
Laboratory Technician

January 3, 2001
Test Date

Approved By

Date

E-11



Curve Description: Pendulum Deceleration

Maximum Value:	<u>23.6</u>	at	<u>9.2</u>	Milliseconds
Minimum Value:	<u>-2.7</u>	at	<u>90.0</u>	Milliseconds
SAE Filter Class:	<u>60</u>			
Date of Test:	<u>1/3/01</u>			
ATD Serial No.:	<u>034</u>			

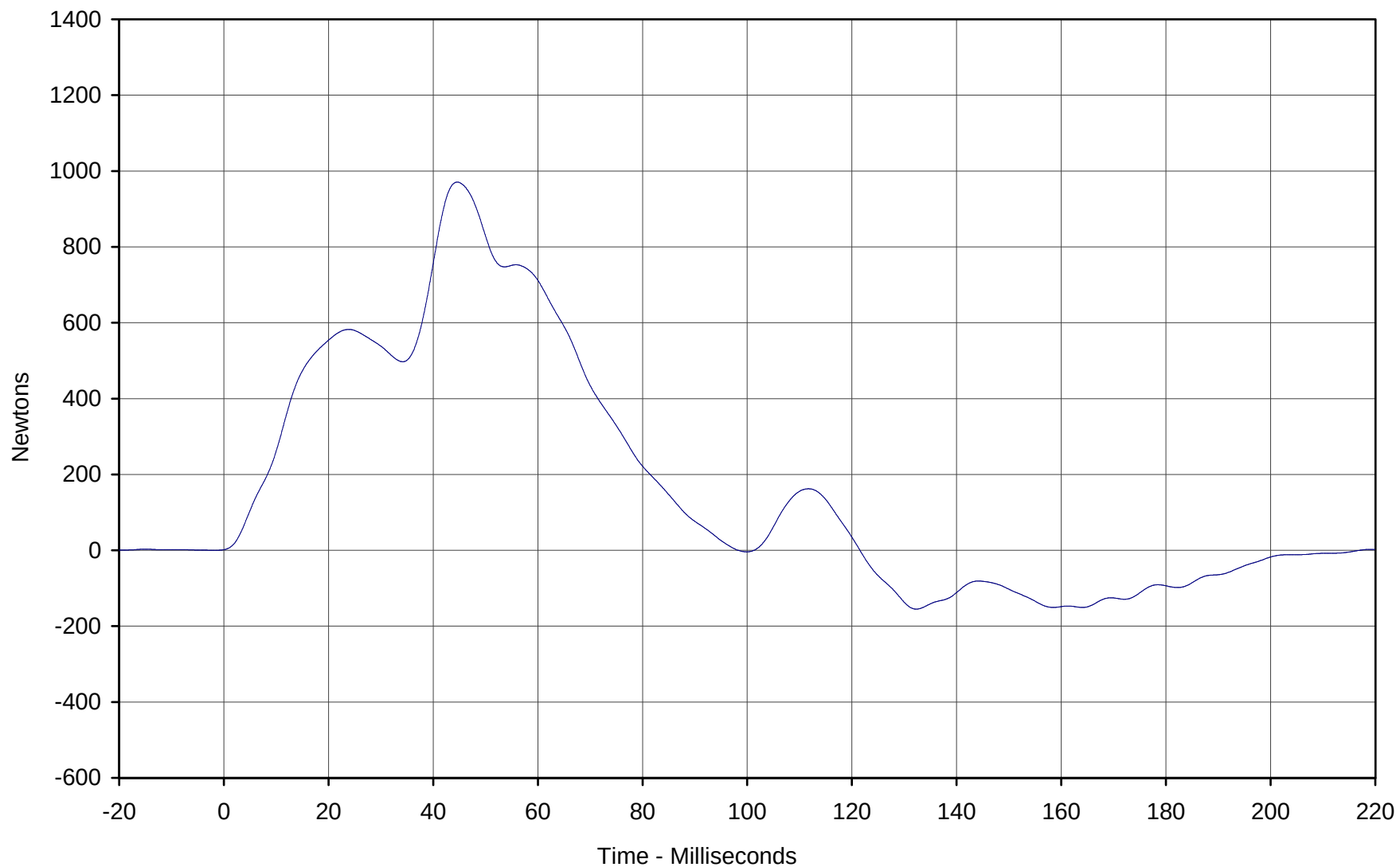
Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF01A



KAR21001-01

E-12



Curve Description: Neck Force X

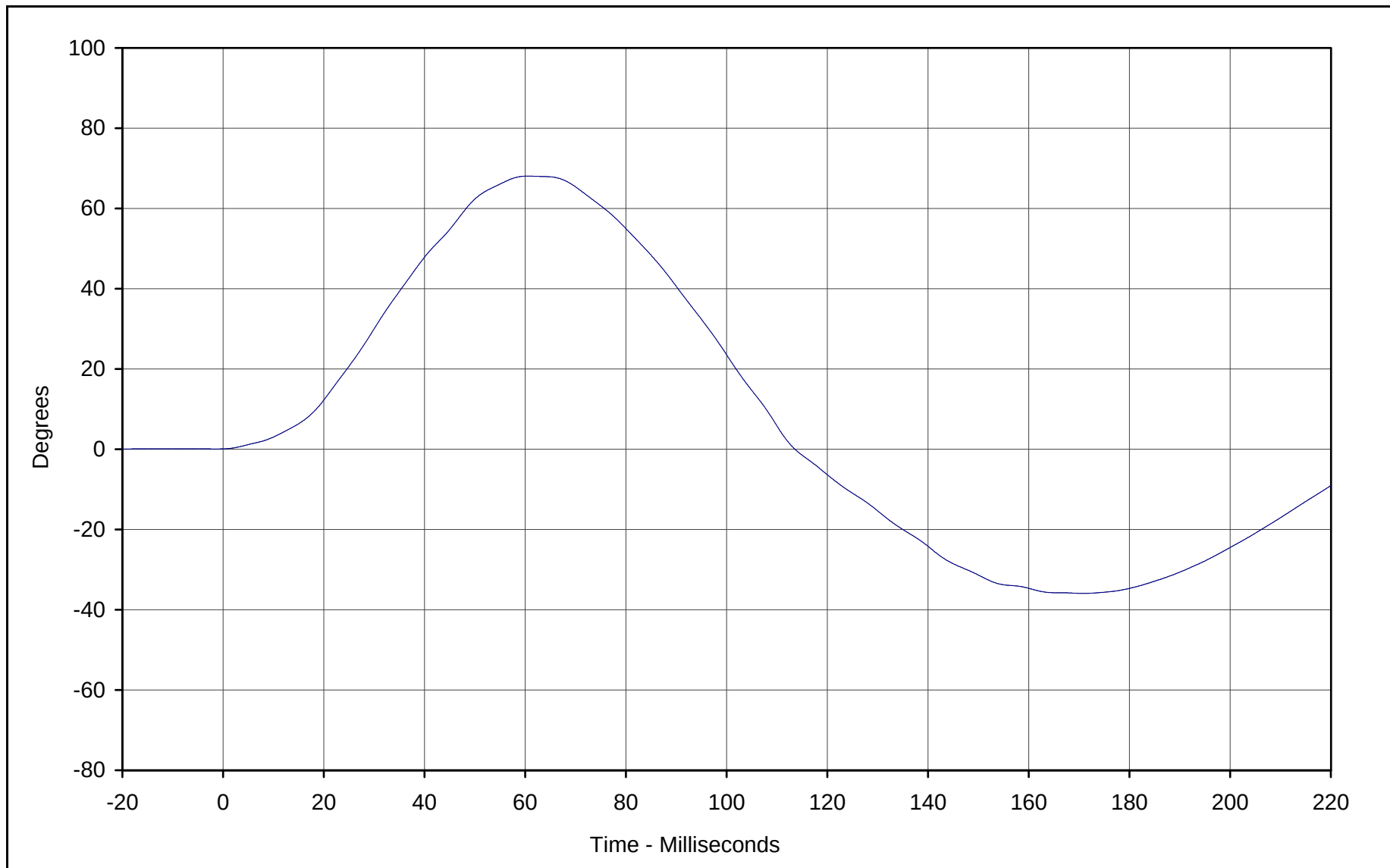
Maximum Value:	970.7	at	44.6	Milliseconds
Minimum Value:	-155.2	at	132.3	Milliseconds
SAE Filter Class:	60			
Date of Test:	1/3/01			
ATD Serial No.:	034			

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF01A



KAR21001-01



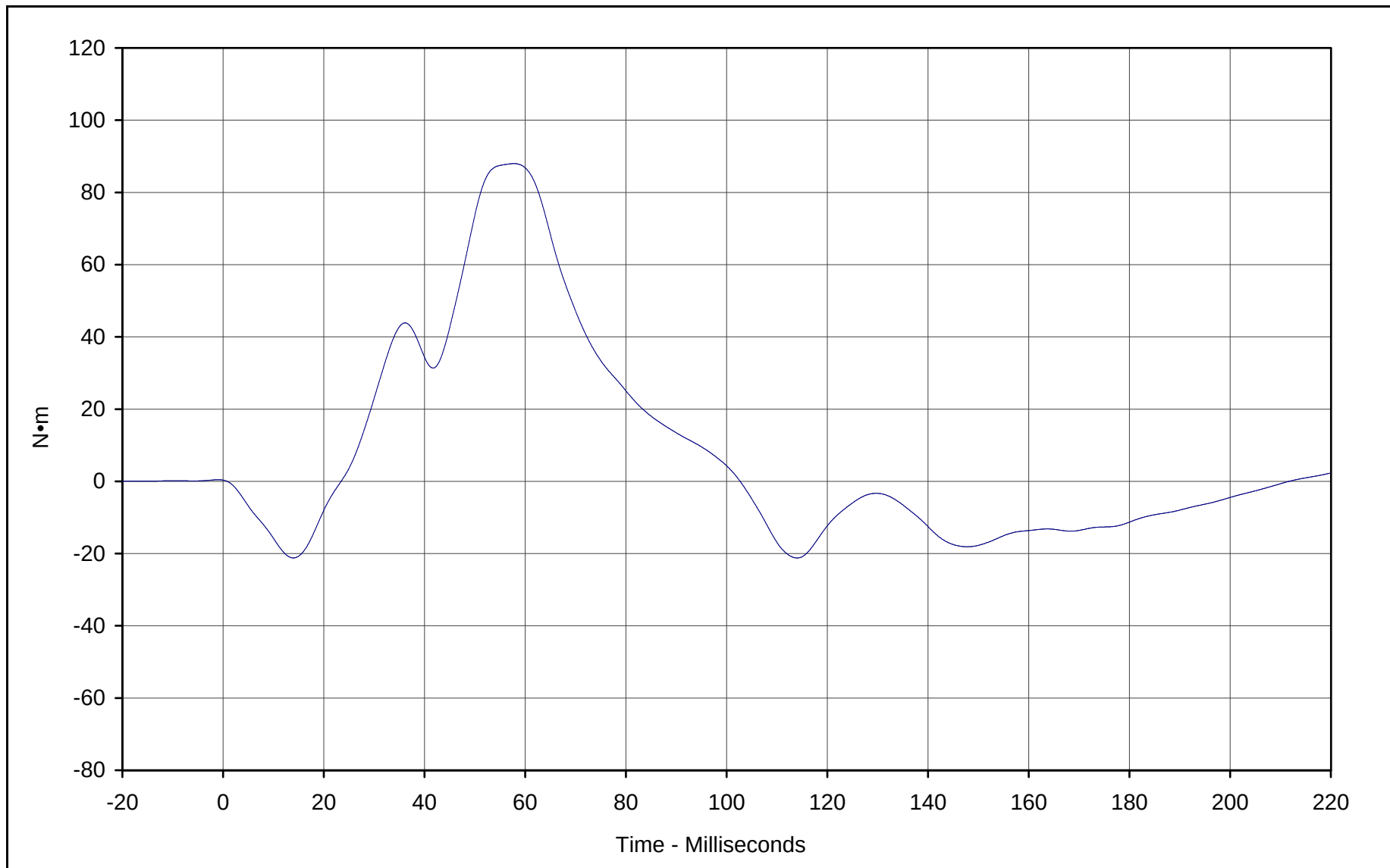
Curve Description: "D" Plane Rotation

Maximum Value:	68.1	at	60.5	Milliseconds
Minimum Value:	-35.9	at	170.8	Milliseconds
SAE Filter Class:	60			
Date of Test:	1/3/01			
ATD Serial No.:	034			

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF01A





Curve Description: Moment About Occipital Condyles

Maximum Value: 88.0 at 57.7 Milliseconds

Minimum Value: -21.2 at 114.0 Milliseconds

SAE Filter Class: 60

Date of Test: 1/3/01

ATD Serial No.: 034

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF01A





Hybrid III Calibration Data Sheet

50TH Percentile Male

Neck Extension Test

ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: NE01A

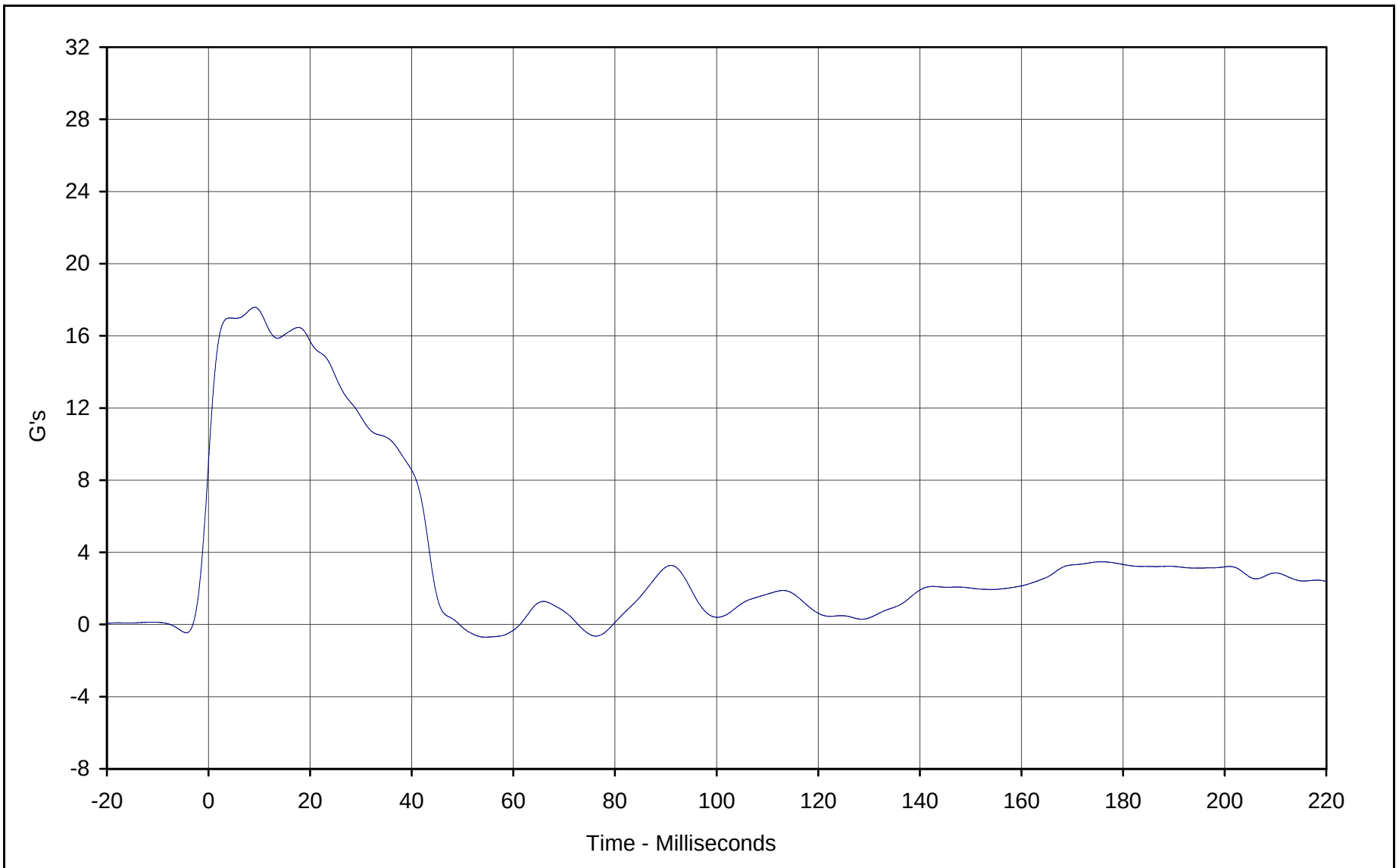
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.15	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	17.4	Pass
	20 Msec.	G's	14.0 to 19.0	15.7	Pass
	30 Msec.	G's	11.0 to 16.0	11.5	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	11.5	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	43.1	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	91.8	Pass
	Time	Msec.	72.0 to 82.0	81.3	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	155.6	Pass
Moment About Occipital Condyle	Maximum	N•m	-52.9 to- 79.9	-76.3	Pass
	Time	Msec.	65.0 to 79.0	68.0	Pass
Negative Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	136.8	Pass
Overall Test Results					Pass

Laboratory Technician

January 3, 2001
Test Date

Approved By

Date



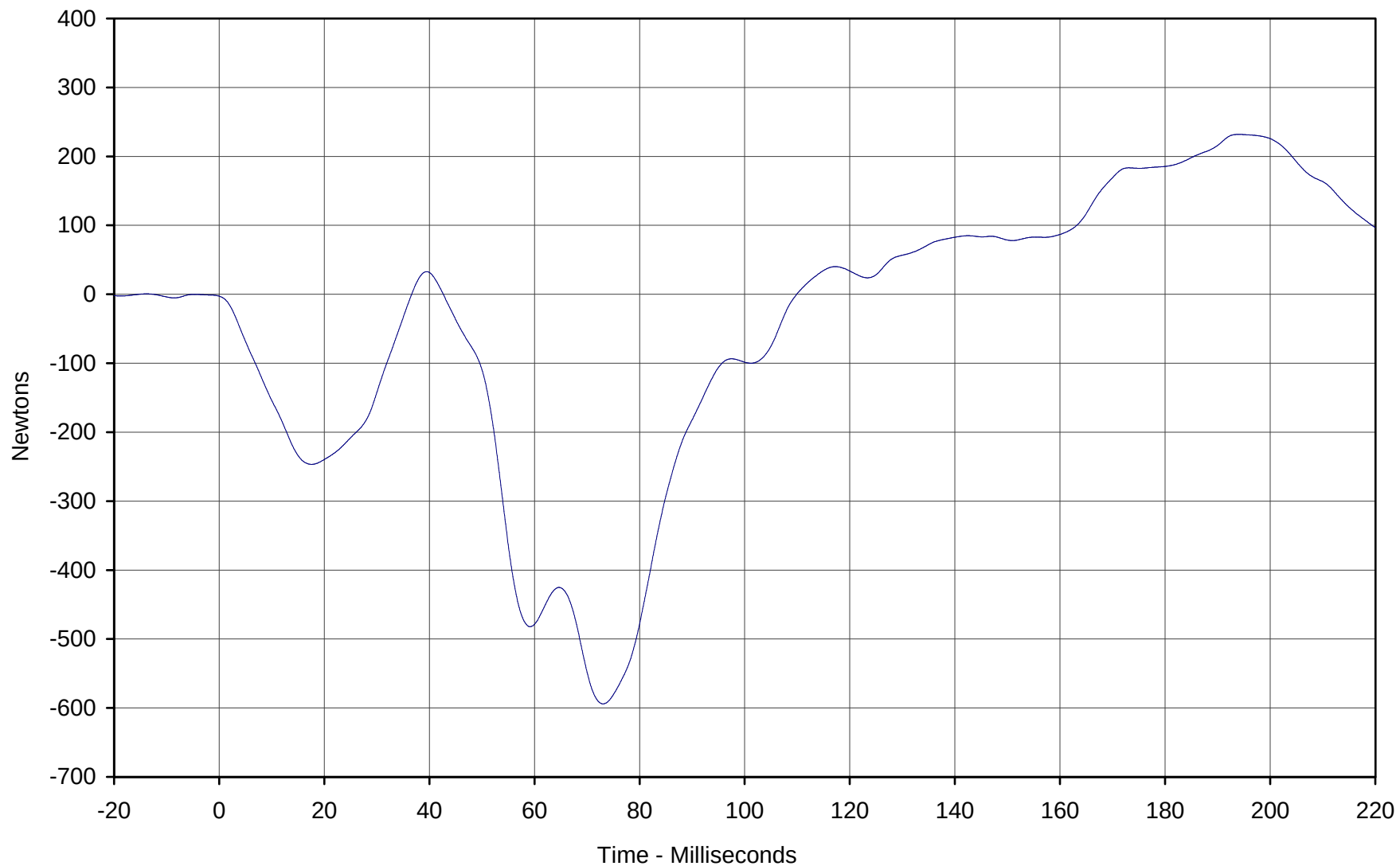
Curve Description: Pendulum Deceleration

Maximum Value:	<u>17.6</u>	at	<u>9.1</u>	Milliseconds
Minimum Value:	<u>-0.7</u>	at	<u>54.4</u>	Milliseconds
SAE Filter Class:	<u>60</u>			
Date of Test:	<u>1/3/01</u>			
ATD Serial No.:	<u>034</u>			

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE01A





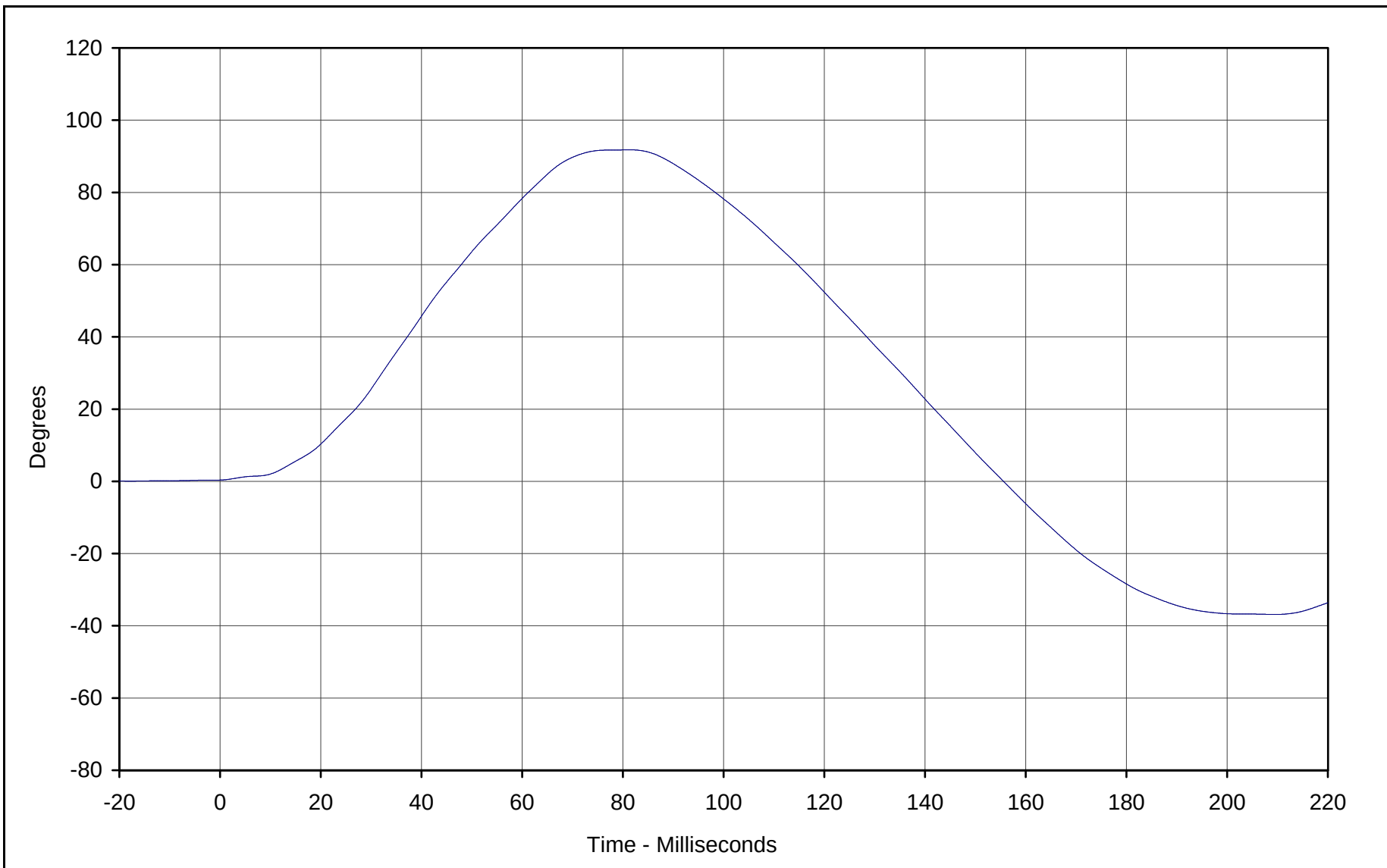
Curve Description: Neck Force X

Maximum Value:	231.9	at	194.0	Milliseconds
Minimum Value:	-594.1	at	73.0	Milliseconds
SAE Filter Class:	60			
Date of Test:	1/3/01			
ATD Serial No.:	034			

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE01A





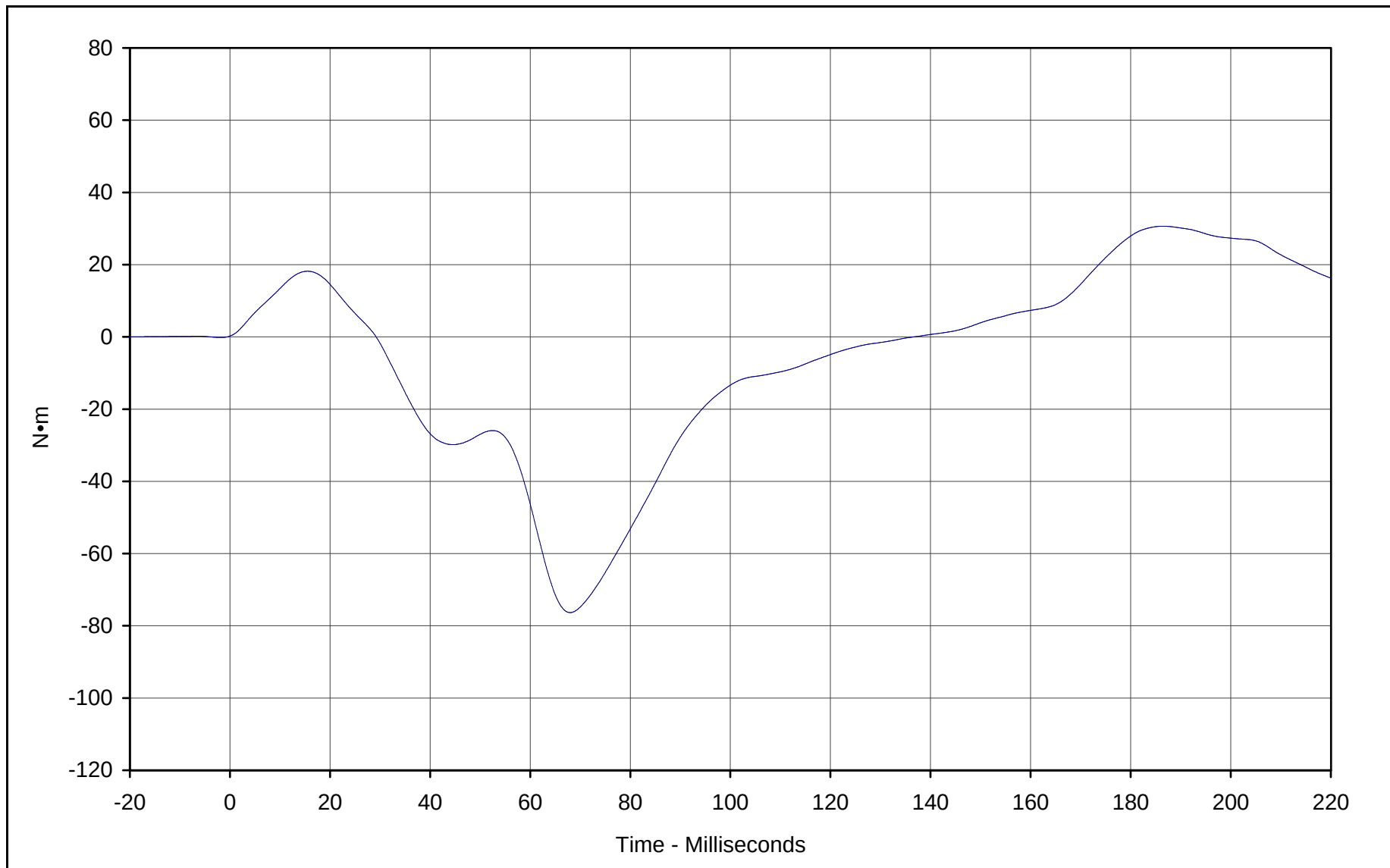
Curve Description: "D" Plane Rotation

Maximum Value:	91.8	at	81.3	Milliseconds
Minimum Value:	-36.9	at	209.5	Milliseconds
SAE Filter Class:	60			
Date of Test:	1/3/01			
ATD Serial No.:	034			

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE01A





Curve Description: Moment About Occipital Condyles

Maximum Value: 30.7 at 186.5 Milliseconds

Minimum Value: -76.3 at 68.0 Milliseconds

SAE Filter Class: 60

Date of Test: 1/3/01

ATD Serial No.: 034

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE01A





Hybrid III Calibration Data Sheet

50TH Percentile Male

External Measurements

ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: N/A

External Measurement Data				
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory temperature	°C	20.4 to 22.1	20.9	Pass
Laboratory relative humidity	%	10 to 70	43	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	87	Pass
D - "H" point from seat back	mm	135 to 140	135	Pass
E - Shoulder pivot from back	mm	84 to 94	92	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	43	Pass
I - Shoulder to elbow length	mm	330 to 345	342	Pass
J - Elbow rest height	mm	190 to 211	204	Pass
K - Buttock to knee length	mm	579 to 604	585	Pass
L - Popliteal length	mm	429 to 455	434	Pass
M - Knee pivot height	mm	485 to 500	492	Pass
N - Buttock popliteal length	mm	452 to 477	470	Pass
O - Chest depth	mm	213 to 229	215	Pass
P - Foot length	mm	251 to 267	260	Pass
V - Shoulder breadth	mm	422 to 437	431	Pass
W - Foot breadth	mm	91 to 107	102	Pass
Y - Chest circumference	mm	970 to 1001	986	Pass
Z - Waist circumference	mm	836 to 866	850	Pass
AA - Location for chest circumference	mm	429 to 434	433	Pass
BB - Location for waist circumference	mm	226 to 231	229	Pass
Overall Test Results				Pass

Laboratory Technician

January 3, 2001
Test Date

Approved By

Date



Hybrid III Calibration Data Sheet

50TH Percentile Male

Left Knee Impact Test

ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: LK01C

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	2.073 to 2.134	2.125	Pass
Peak Probe Force	Newtons	4715 to 5782	5182.5	Pass
Overall Test Results				Pass

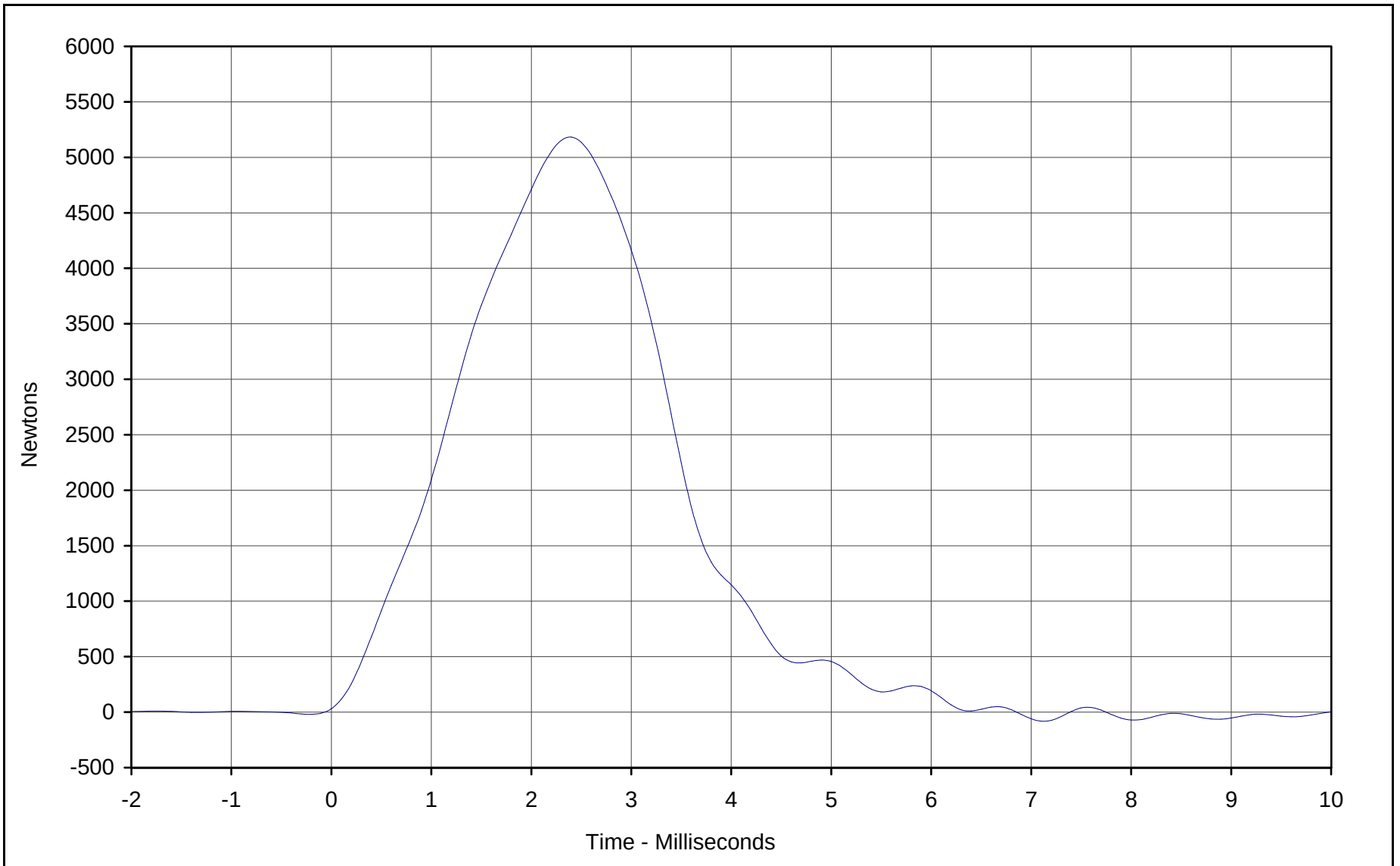
Laboratory Technician

January 2, 2001
Test Date

Approved By

Date

E-22



Curve Description:	Probe Force
Maximum Value:	5182.5 at 2.4 Milliseconds
Minimum Value:	-81.4 at 7.1 Milliseconds
SAE Filter Class:	600
Date of Test:	1/2/01
ATD Serial No.:	035

Testing Program:	Hybrid III Left Knee Impact Test
Test Information:	Part S/N: N/A Test I.D.: LK01C



KAR21001-01



Hybrid III Calibration Data Sheet

50TH Percentile Male

Right Knee Impact Test

ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: RK01A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	2.073 to 2.134	2.125	Pass
Peak Probe Force	Newtons	4715 to 5782	4918.6	Pass
Overall Test Results				Pass

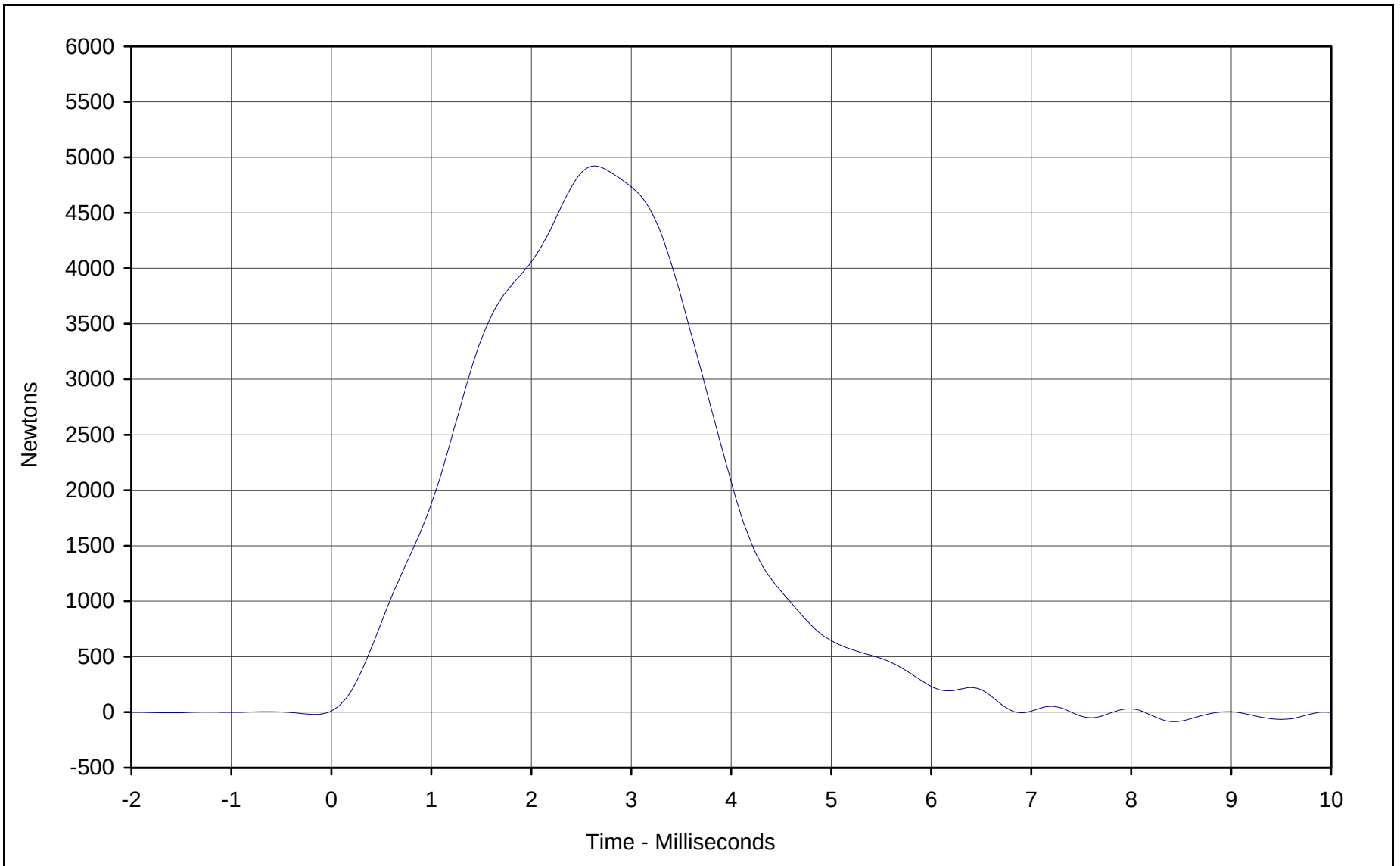
Laboratory Technician

January 2, 2001
Test Date

Approved By

Date

E-24



Curve Description: Probe Force

Maximum Value:	<u>4918.6</u>	at	<u>2.6</u>	Milliseconds
Minimum Value:	<u>-50.2</u>	at	<u>7.6</u>	Milliseconds
SAE Filter Class:	<u>600</u>			
Date of Test:	<u>1/2/01</u>			
ATD Serial No.:	<u>035</u>			

Testing Program: Hybrid III Right Knee Impact Test

Test Information: Part S/N: N/A Test I.D.: RK01A



KAR21001-01



Hybrid III Calibration Data Sheet

50TH Percentile Male

Head Drop Calibration

ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: HD01B

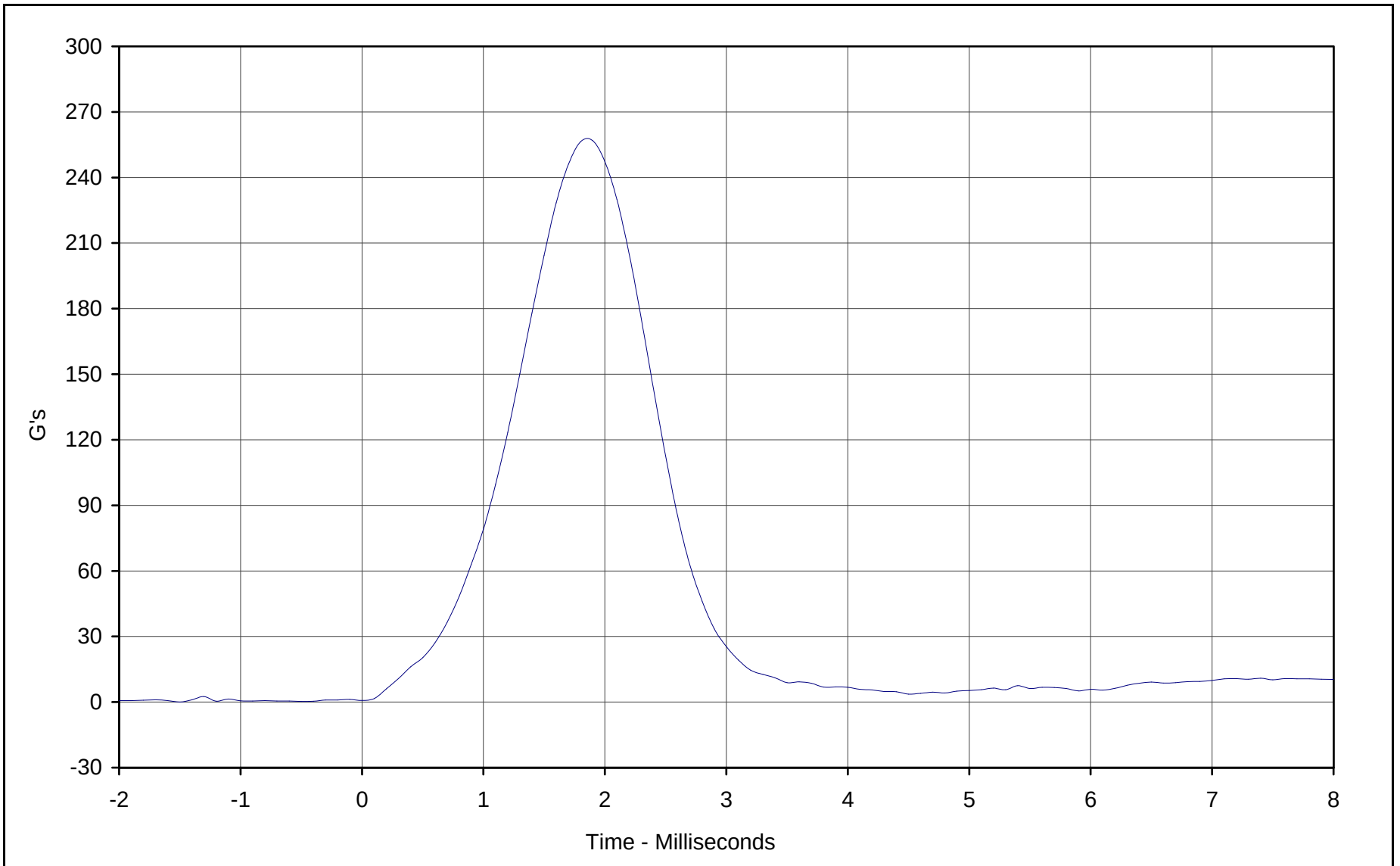
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	256.8	Pass
Peak Lateral Acceleration	G's	≤15.0	6.4	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

Laboratory Technician

January 2, 2001
Test Date

Approved By

Date



Curve Description: Head Resultant Acceleration

Maximum Value: 256.8 at 1.9 Milliseconds

Minimum Value: 0.0 at -1.5 Milliseconds

SAE Filter Class: 1000

Date of Test: 1/2/01

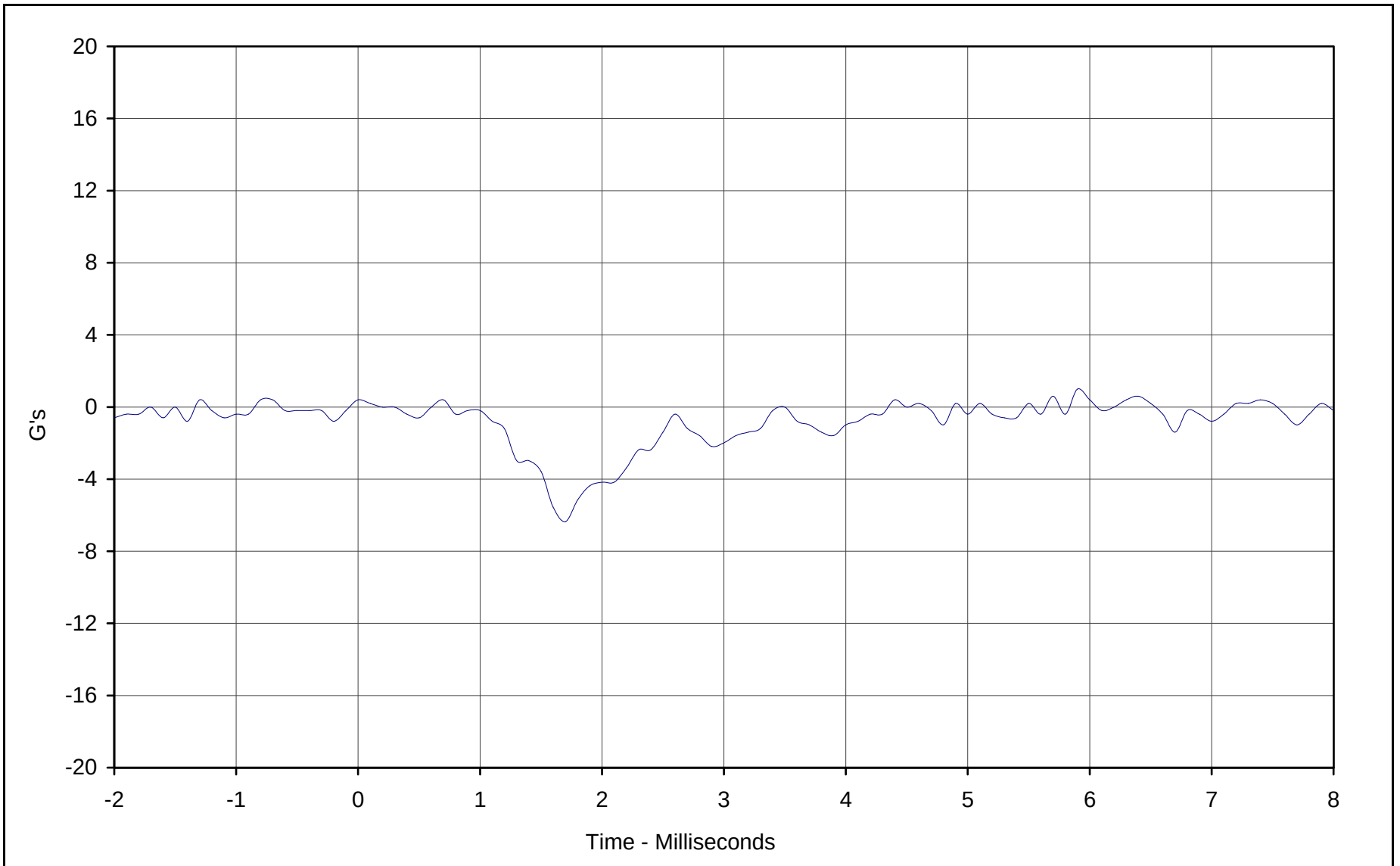
ATD Serial No.: 035

Testing Program: Hybrid III Head Drop Calibration (Male)

Test Information: S/N of Part: N/A Test I.D.: HD01B



E-27



Curve Description: Head Acceleration Y Axis

Maximum Value:	<u>1.0</u>	at	<u>5.9</u>	Milliseconds
Minimum Value:	<u>-6.4</u>	at	<u>1.7</u>	Milliseconds
SAE Filter Class:	<u>1000</u>			
Date of Test:	<u>1/2/01</u>			
ATD Serial No.:	<u>035</u>			

Testing Program: Hybrid III Head Drop Calibration (Male)

Test Information: S/N of Part: N/A Test I.D.: HD01B



KAR21001-01



Hybrid III Calibration Data Sheet

50TH Percentile Male

Thorax Impact Test

ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: CH07B

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.2	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	5318	Pass
Peak Sternum Displacement	CM	6.35 to 7.26	6.85	Pass
Internal Hysteresis	%	69 to 85	74.8	Pass
Overall Test Results				Pass

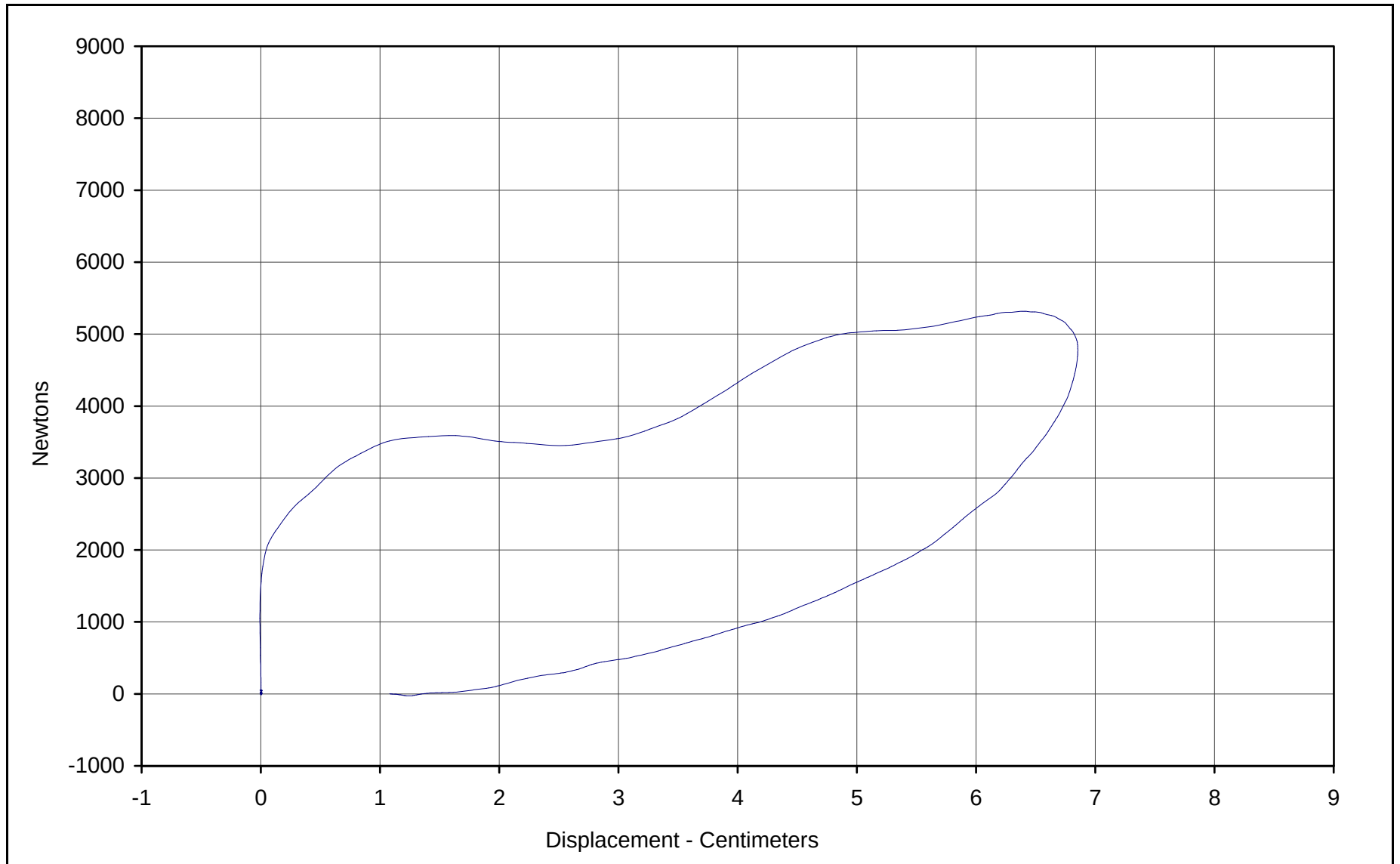
Laboratory Technician

January 3, 2001

Test Date

Approved By

Date



Curve Description: Probe Force vs. Chest Displacement

Probe Force: 5317.8 Newtons

Chest Displ.: 6.85 Centimeters

SAE Filter Class: 180

Date of Test: 1/3/01

ATD Serial No.: 035

Testing Program: Hybrid III Thorax Impact Test

Test Information: S/N of Part: N/A Test I.D.: CH07B





Hybrid III Calibration Data Sheet

50TH Percentile Male

Neck Flexion Test

ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: NF06B

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	6.89	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	22.7	Pass
	20 Msec.	G's	17.6 to 22.6	19.6	Pass
	30 Msec.	G's	12.5 to 18.5	13.0	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	13.0	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	38.0	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	69.1	Pass
	Time	Msec.	57.0 to 64.0	63.3	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	118.0	Pass
Moment About Occipital Condyle	Maximum	N•m	84.1 to 108.5	92.9	Pass
	Time	Msec.	47.0 to 58.0	54.4	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	97.7	Pass
Overall Test Results					Pass

Laboratory Technician

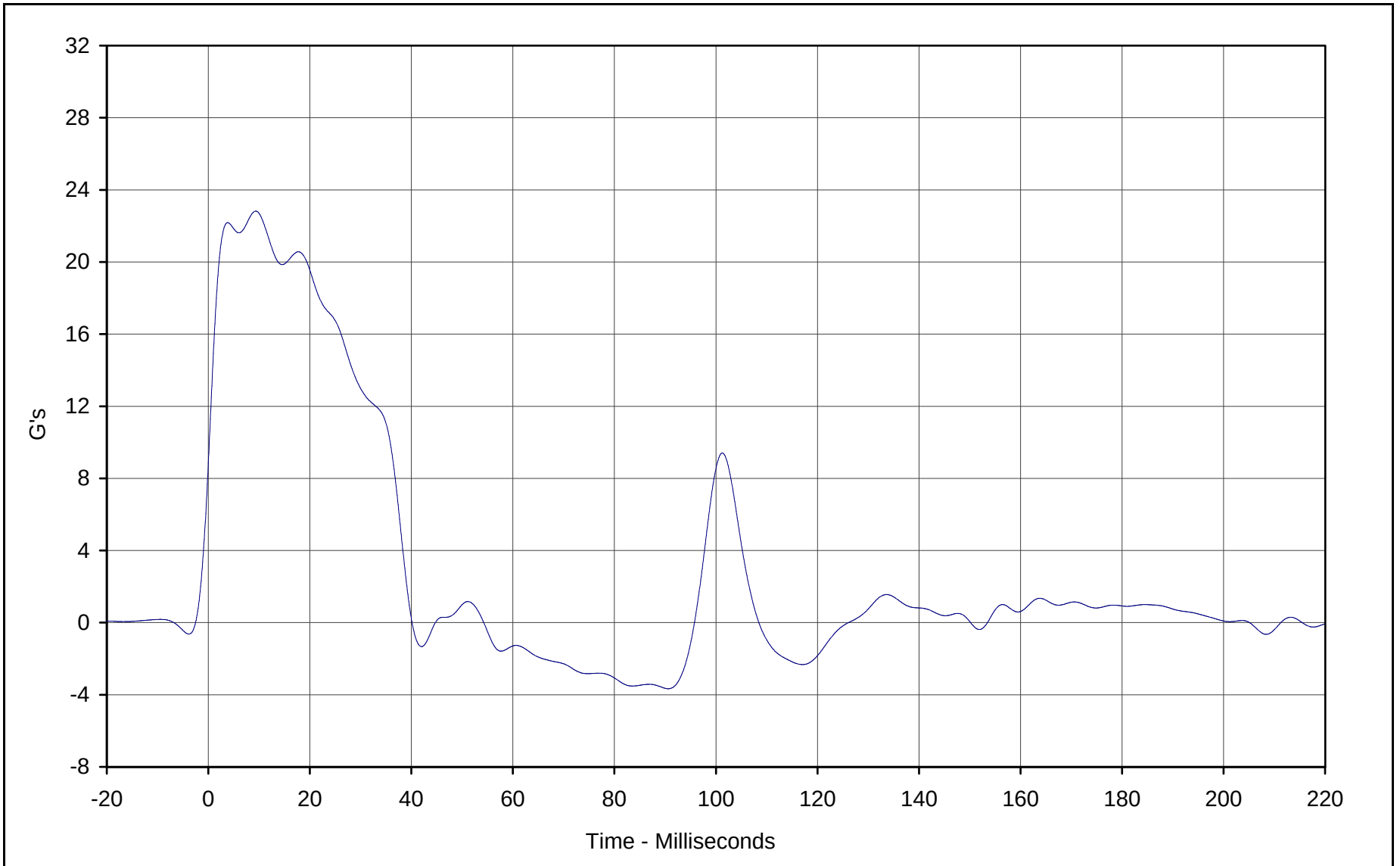
January 3, 2001

Test Date

Approved By

Date

E-31



Curve Description: Pendulum Deceleration

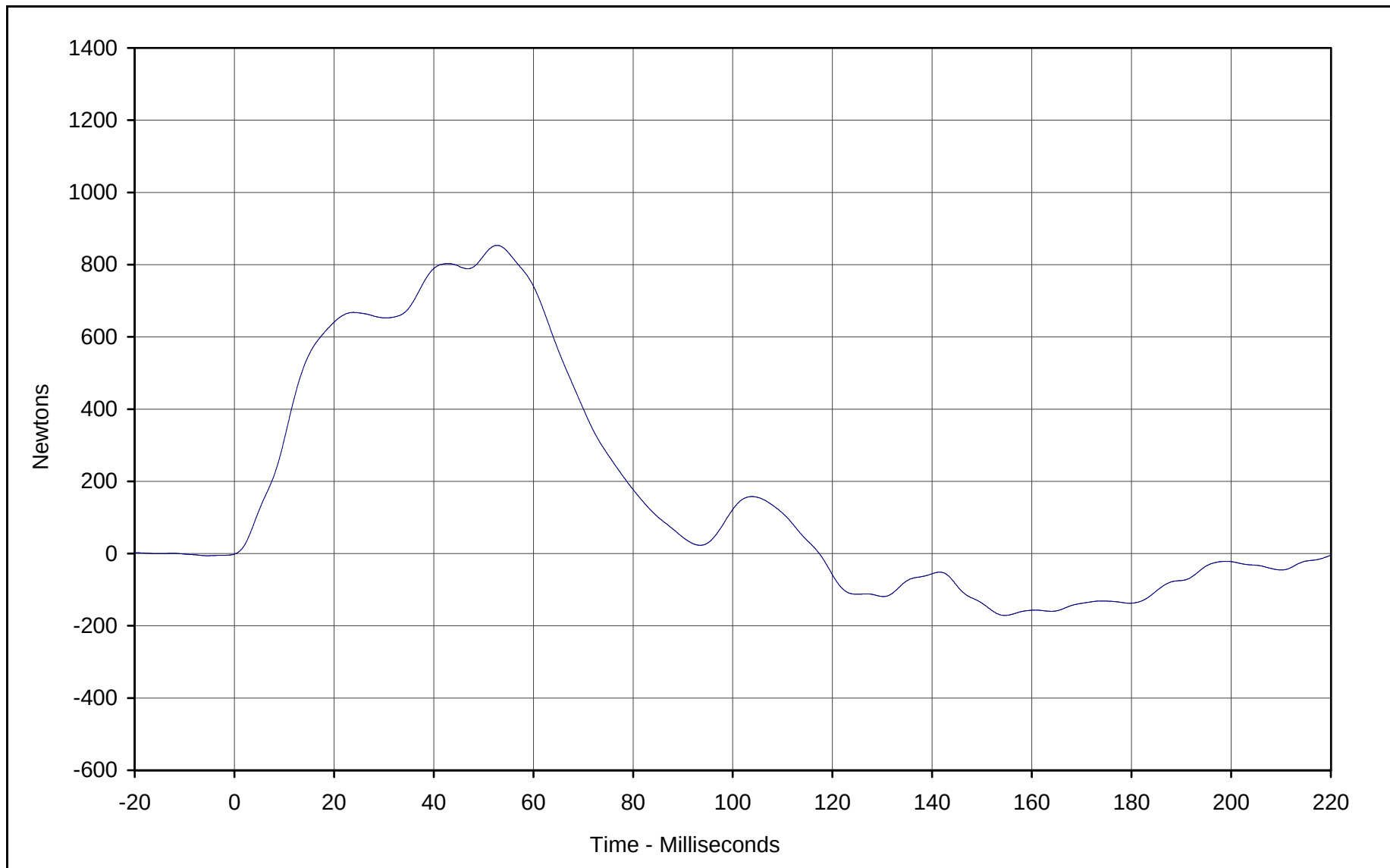
Maximum Value:	<u>22.8</u>	at	<u>9.3</u>	Milliseconds
Minimum Value:	<u>-3.7</u>	at	<u>90.6</u>	Milliseconds
SAE Filter Class:	<u>60</u>			
Date of Test:	<u>1/3/01</u>			
ATD Serial No.:	<u>035</u>			

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF06B



KAR21001-01



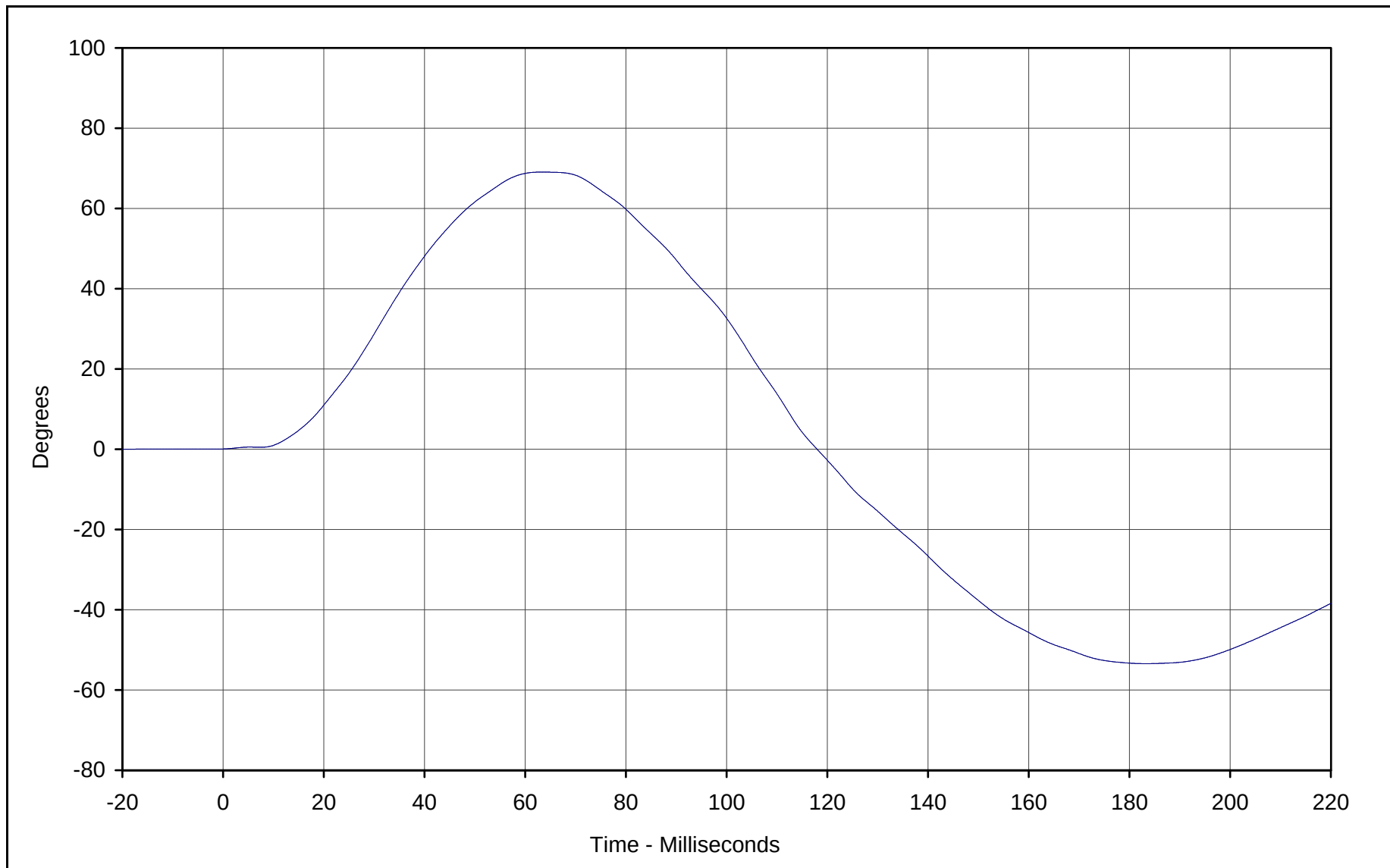
Curve Description: Neck Force X

Maximum Value:	853.4	at	52.7	Milliseconds
Minimum Value:	-171.4	at	154.6	Milliseconds
SAE Filter Class:	60			
Date of Test:	1/3/01			
ATD Serial No.:	035			

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF06B





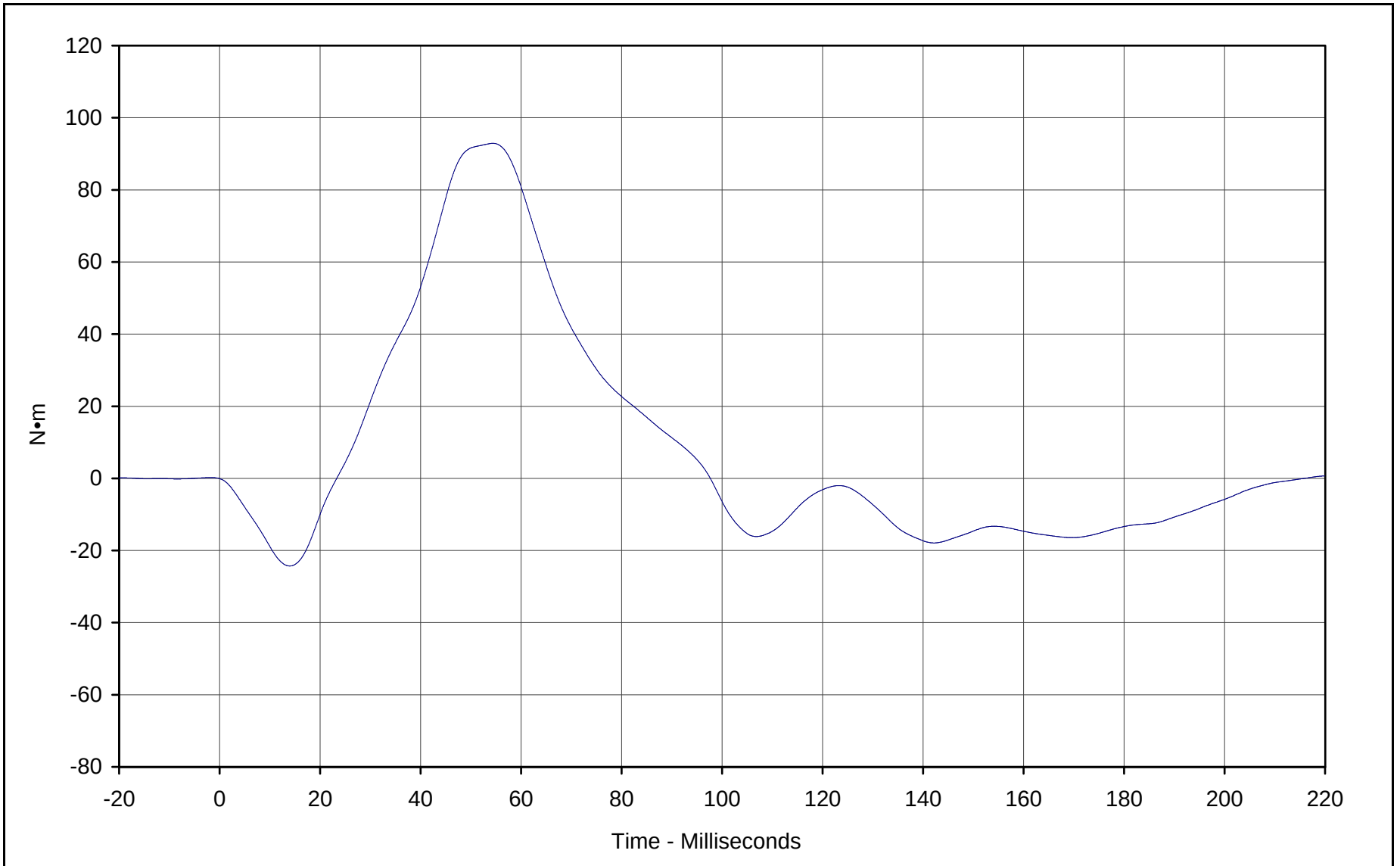
Curve Description: "D" Plane Rotation

Maximum Value:	69.1	at	63.3	Milliseconds
Minimum Value:	-53.4	at	183.3	Milliseconds
SAE Filter Class:	60			
Date of Test:	1/3/01			
ATD Serial No.:	035			

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF06B





Curve Description: Moment About Occipital Condyles

Maximum Value: 92.9 at 54.4 Milliseconds

Minimum Value: -24.3 at 14.0 Milliseconds

SAE Filter Class: 60

Date of Test: 1/3/01

ATD Serial No.: 035

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF06B





Hybrid III Calibration Data Sheet

50TH Percentile Male

Neck Extension Test

ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: NE01B

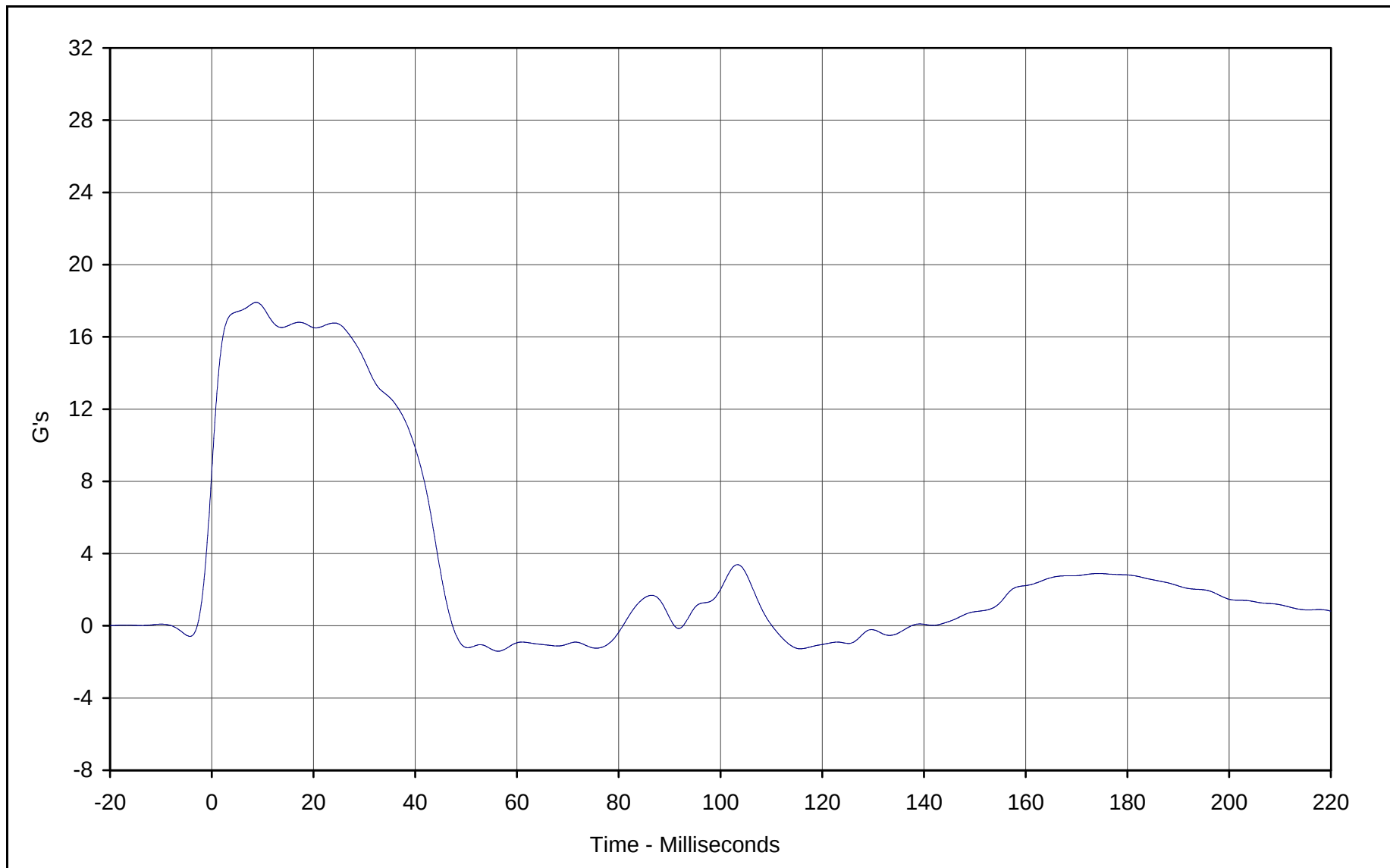
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.15	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	17.7	Pass
	20 Msec.	G's	14.0 to 19.0	16.5	Pass
	30 Msec.	G's	11.0 to 16.0	14.7	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	14.7	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	43.8	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	93.2	Pass
	Time	Msec.	72.0 to 82.0	78.5	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	149.9	Pass
Moment About Occipital Condyle	Maximum	N•m	-52.9 to- 79.9	-68.2	Pass
	Time	Msec.	65.0 to 79.0	66.0	Pass
Negative Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	135.7	Pass
Overall Test Results					Pass

Laboratory Technician

January 3, 2001
Test Date

Approved By

Date

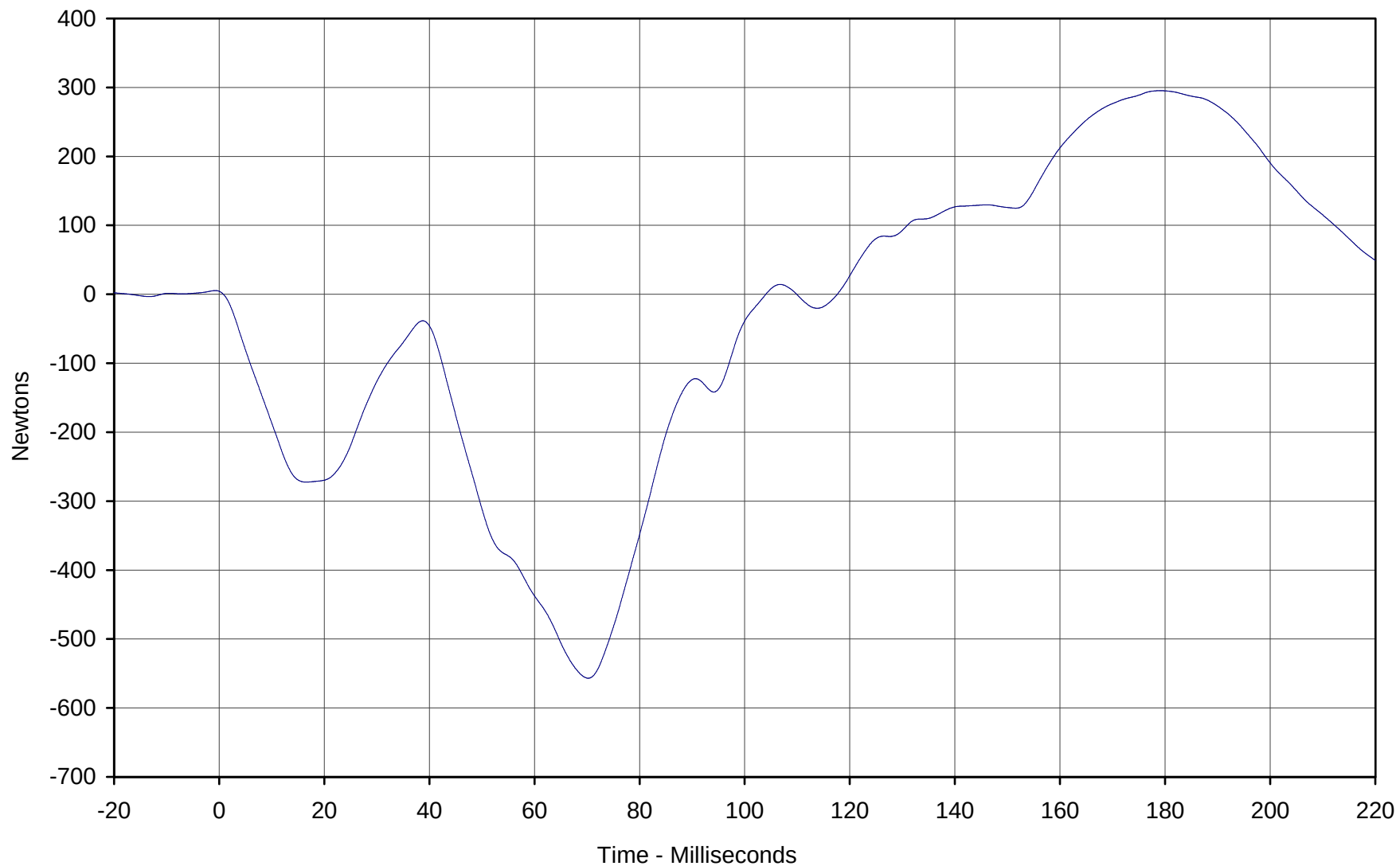


Curve Description:	Pendulum Deceleration		
Maximum Value:	17.9	at	8.7 Milliseconds
Minimum Value:	-1.4	at	56.3 Milliseconds
SAE Filter Class:	60		
Date of Test:	1/3/01		
ATD Serial No.:	035		

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE01B





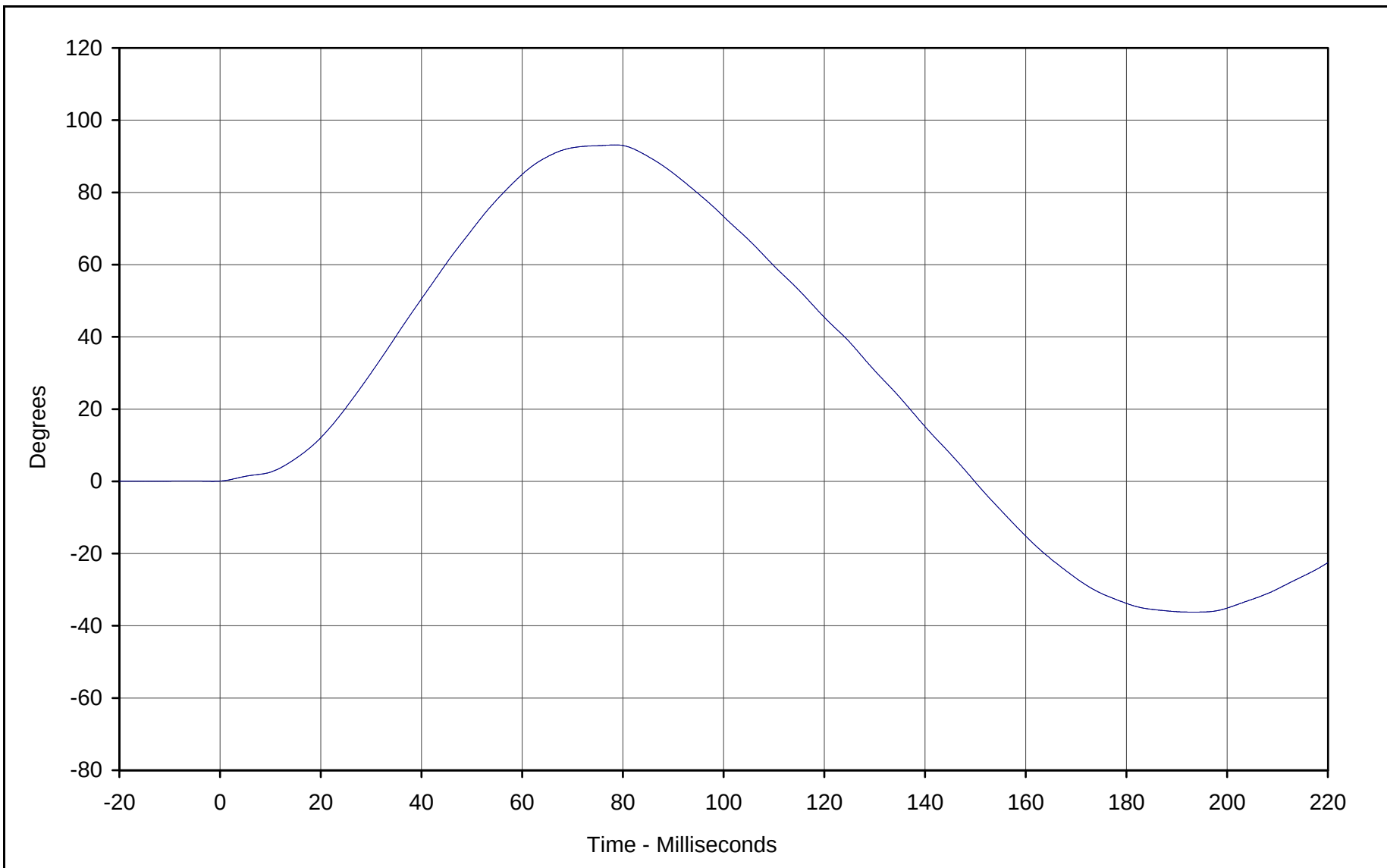
Curve Description: Neck Force X

Maximum Value:	295.3	at	179.1	Milliseconds
Minimum Value:	-556.9	at	70.2	Milliseconds
SAE Filter Class:	60			
Date of Test:	1/3/01			
ATD Serial No.:	035			

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE01B





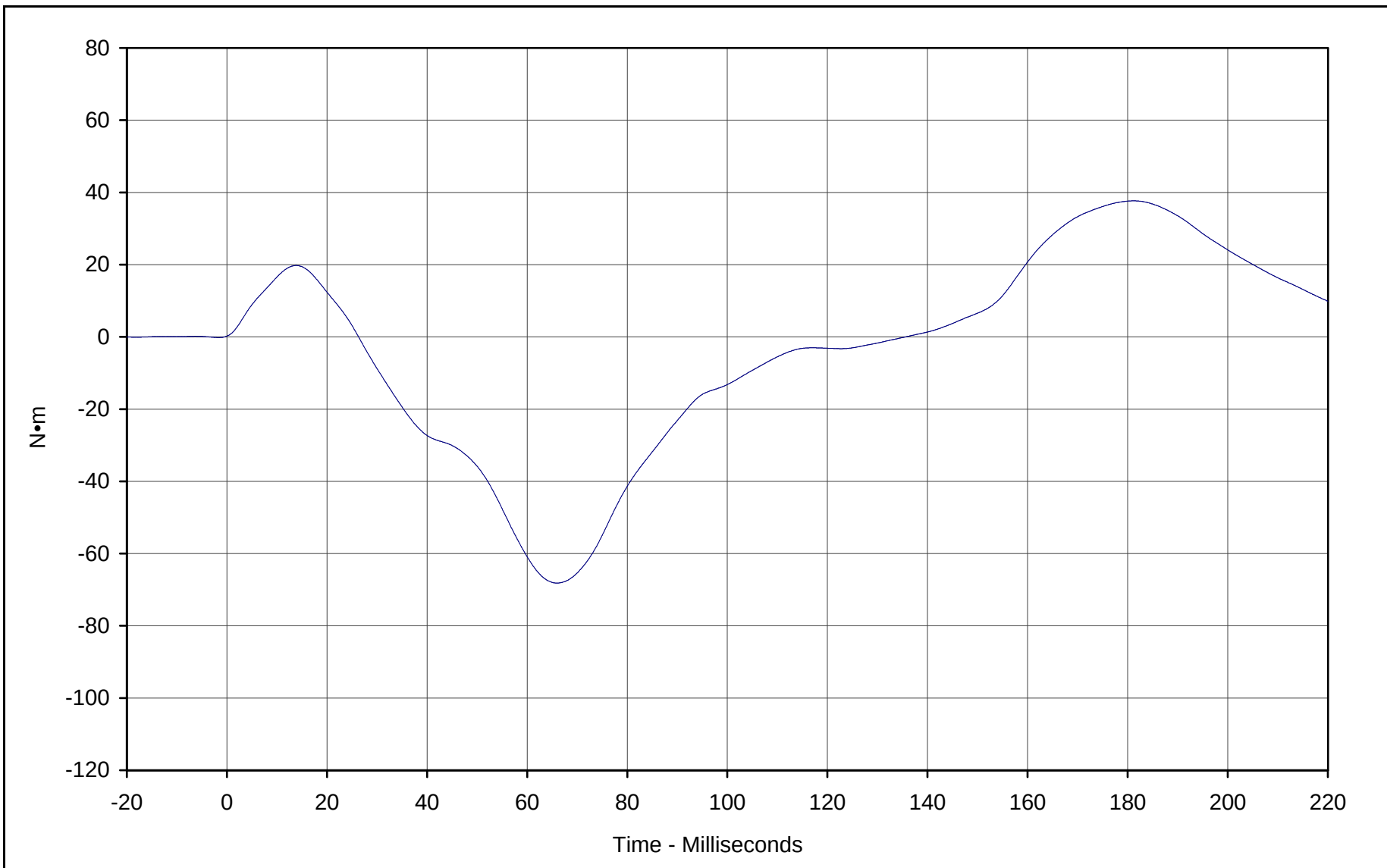
Curve Description: "D" Plane Rotation

Maximum Value:	93.2	at	78.5	Milliseconds
Minimum Value:	-36.2	at	193.3	Milliseconds
SAE Filter Class:	60			
Date of Test:	1/3/01			
ATD Serial No.:	035			

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE01B





Curve Description: Moment About Occipital Condyles

Maximum Value: 37.7 at 181.2 Milliseconds

Minimum Value: -68.2 at 66.0 Milliseconds

SAE Filter Class: 60

Date of Test: 1/3/01

ATD Serial No.: 035

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE01B





Hybrid III Calibration Data Sheet

50TH Percentile Male

External Measurements

ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: N/A

External Measurement Data				
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory temperature	°C	20.4 to 22.1	20.9	Pass
Laboratory relative humidity	%	10 to 70	43	Pass
A - Total sitting height	mm	879 to 889	885	Pass
B - Shoulder pivot height	mm	505 to 521	510	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	92	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	44	Pass
I - Shoulder to elbow length	mm	330 to 345	340	Pass
J - Elbow rest height	mm	190 to 211	205	Pass
K - Buttock to knee length	mm	579 to 604	585	Pass
L - Popliteal length	mm	429 to 455	435	Pass
M - Knee pivot height	mm	485 to 500	490	Pass
N - Buttock popliteal length	mm	452 to 477	465	Pass
O - Chest depth	mm	213 to 229	220	Pass
P - Foot length	mm	251 to 267	260	Pass
V - Shoulder breadth	mm	422 to 437	430	Pass
W - Foot breadth	mm	91 to 107	100	Pass
Y - Chest circumference	mm	970 to 1001	985	Pass
Z - Waist circumference	mm	836 to 866	850	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

January 3, 2001
Test Date

Approved By

Date

APPENDIX F
VEHICLE OWNER'S MANUAL
OCCUPANT RESTRAINT INSTRUCTIONS

Seats and Seat Controls

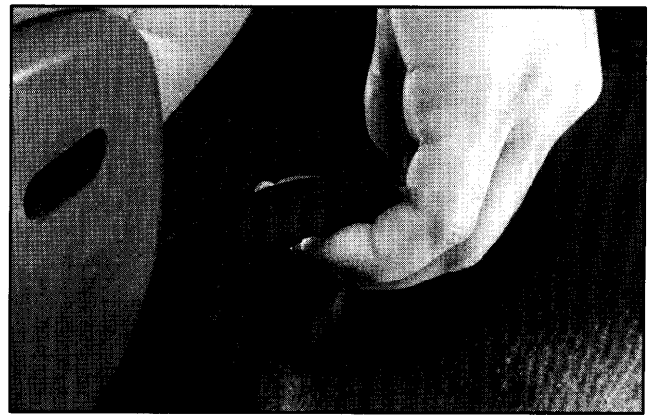
This section tells you about the seats -- how to adjust them -- and also about reclining seatbacks and head restraints.

Manual Front Seats

CAUTION:

You can lose control of the vehicle if you try to adjust a manual driver's seat while the vehicle is moving. The sudden movement could startle and confuse you, or make you push a pedal when you don't want to. Adjust the driver's seat only when the vehicle is not moving.

Your vehicle has one of the following manual front seat controls.



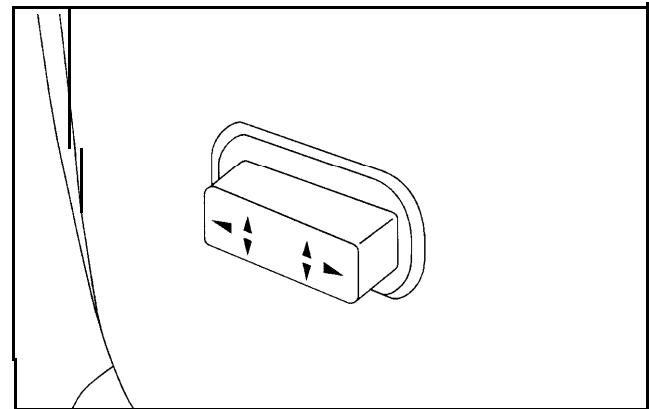
Lift the lever located under the front seat to unlock it. Slide the seat to where you want it and release the lever. Then try to move the seat with your body to make sure the seat is locked into place.

I-2



Lift the bar located under the front seat to unlock it. Slide the seat to where you want it and release the bar. Then try to move the seat with your body to make sure the seat is locked into place.

6-Way Power Seat (If Equipped)



The power seat control is located on the outboard side of the driver's seat. This control allows you to move the seat up, down, forward or backward. It will also move the front or rear of the seat cushion up or down.

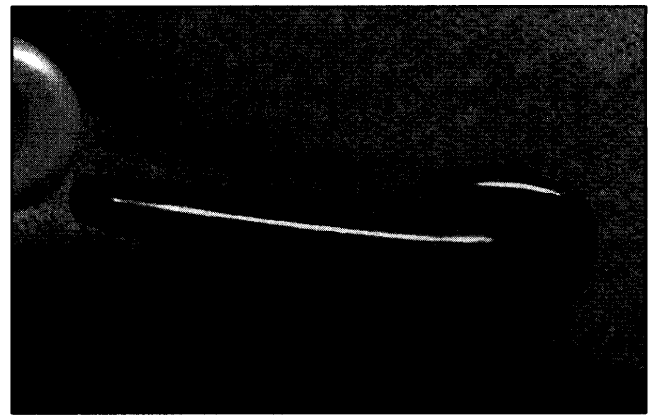
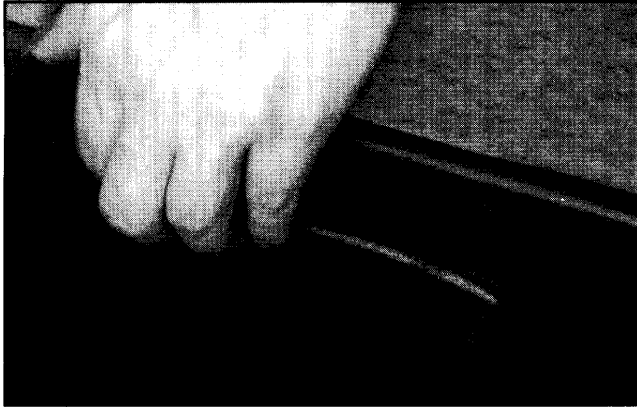
To adjust the power seat, do the following:

- Move the seat forward or backward by pushing the control to the front or back.
- Raise or lower the entire seat cushion by holding the whole control up or down.

- Raise or lower the front of the seat cushion by holding the front part of the control up or down.
- Raise or lower the rear of the seat cushion by holding the rear part of the control up or down.

Reclining Front Seatbacks

Your vehicle has one of the following reclining front seatback controls.

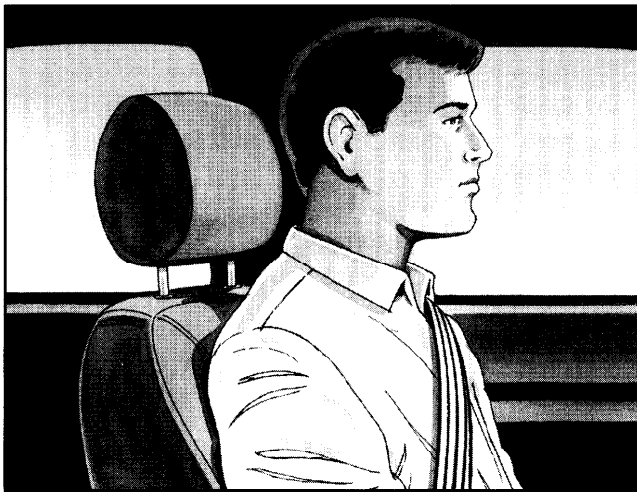


To adjust the seatback, lift the lever located on the outboard side of the seat. Move the seatback to where you want it and release the lever. Check to see that the handle returns to the original position and that the seatback is securely locked.

Pull up on the lever and the seat will go to an upright position.

I-4

Head Restraints



Slide the head restraint up or down so that the top of the restraint is closest to the top of your ears. This position reduces the chance of a neck injury in a crash.

Rear Seats

Folding Rear Seat



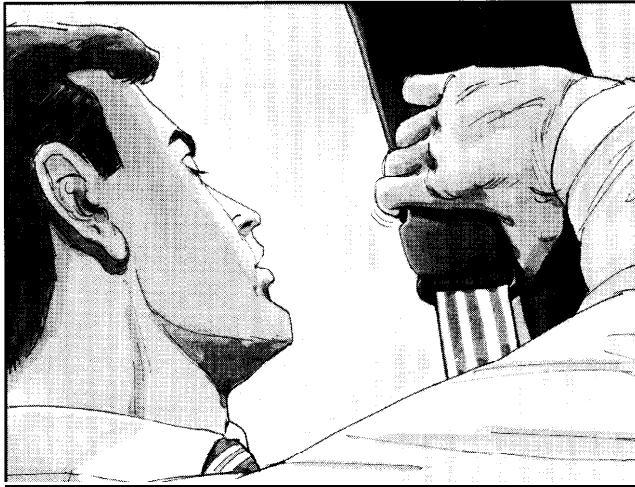
To open the folding rear seat, open the trunk and pull one or both of the tethers located on the driver's side of the trunk. The left tether will open the larger side of the seatback. The right tether will open the smaller side of the seatback. Once a tether is pulled, the seatback can be pushed open through the trunk, or pulled open from inside the vehicle.

To close the split folding rear seat, push the seatback up until you hear a click. Then pull on the seatback to make sure it is secure.

I-6

Shoulder Belt Height Adjuster

Before you begin to drive, move the shoulder belt adjuster to the height that is right for you.



To move it down, squeeze the release button and move the height adjuster to the desired position. You can move the adjuster up **just** by pushing up on the shoulder belt guide. After you move the adjuster to where you want it, try to move it down without squeezing the release button to make sure it has locked into position.

Adjust the height so that the shoulder portion of the belt is centered on your shoulder. The belt should be away from your face and neck, but not falling off **your** shoulder.

I-15

⚠CAUTION:

It can be dangerous to get out of your vehicle if the shift lever is not fully in **PARK (P)** with the parking brake firmly set. Your vehicle can roll. Don't leave your vehicle when the engine is running unless you have to. If you've left the engine running, the vehicle can move suddenly. You or others could be injured. To be sure your vehicle won't move, even when you're on fairly level ground, always set your parking brake and move the shift lever to **PARK (P)**.

Follow the proper steps to be sure your vehicle won't move. See "Shifting Into PARK (P)" in the Index.

If you are parking on a hill and if you're pulling a trailer, also see "Towing a Trailer" in the Index.

Horn

You can sound the horn by pressing the horn symbol on your steering wheel.

Tilt Wheel

A tilt steering wheel allows you to adjust the steering wheel before you drive.

You can also raise it to the highest level to give your legs more room when you exit and enter the vehicle.



To tilt the wheel, hold the steering wheel and pull the lever toward you.

Move the steering wheel to a comfortable level, then release the lever to lock the wheel in place.

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