

REPORT NUMBER KAR21001-11

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

**MAZDA MOTOR CORPORATION
2001 MAZDA PROTEGE
4 DOOR SEDAN
NHTSA NUMBER: M15400**

**PREPARED BY:
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9270 HOLLY ROAD
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MARCH 19, 2001

FINAL REPORT

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16. Abstract A 35 mph (56.3 km/h) frontal barrier impact was conducted on a 2001 Mazda Protege 4 Door Sedan at KARCO Engineering on 2/14/01. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and footwell intrusion performance. The impact velocity is 55.78 km/h. The ambient temperature at the barrier face at the time of impact is 7.7 degrees Celcius. The vehicle's maximum post test static crush is 454 mm at the vehicle centerline. The test vehicle is equipped with a 3-point continuous belt system and second generation supplemental airbags in both front outboard seating positions. With respect to FMVSS 208 "Occupant Crash Protection", the occupant injury criteria summary is as follows:					
Measurement Description		Units	Threshold	Driver ATD	Passenger ATD
Head Injury Criteria (HIC)		N/A	1000	391.7	615.1
Max. Thorax Accel. (3 msec Clip)		G's	60	44.7	52.3
Left Femur force		Newtons	10009	-3328.9	-5437.3
Right Femur Force		Newtons	10009	-5801.4	-2884.3
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SECTION 1

PURPOSE, TEST PROCEDURE AND SUMMARY OF TEST M15400

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 February 14, 2001 at a speed of 55.78 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 fifteen (15) 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-two (92) 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. 35) and the right-front passenger ATD (Serial No. 34) were re-calibrated one test 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 Mazda Protege 4 Door Sedan at a velocity of 55.78 km/h. The test vehicle weight is 1316 kilograms with two (2) part 572E 50th percentile adult male ATDs. Twenty-four (24) load cell barrier data channels were obtained in conducting the February 14, 2001 NCAP test. The test vehicle is a gasoline vehicle, equipped with a transverse mounted, 4-cylinder engine and a 5-speed manual transmission.

The driver Head Injury Criteria (HIC) is 391.7. The maximum resultant chest deceleration over three (3) milliseconds is 44.7 g's. The left and right femur loads are -3328.9 and -5801.4 Newton's, respectively. Chest deflection for the driver ATD peaked at -24.6 mm. The driver ATD head contacted the airbag/headrest, its chest and abdomen contacted the seat belt and airbag, and both knees contacted the steering column and dash.

The right front passenger's HIC is 615.1. The maximum resultant chest deceleration over three (3) milliseconds is 52.3 g's. The left and right femur loads are -5437.36 and -2884.3 Newton's respectively. Chest deflection for the passenger ATD peaked at -21.7 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 140.6 mm for the driver ATD and 294.3 mm for the passenger ATD. Shoulder belt stretch is not measured with pretensioners.

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 454 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 Mazda Protege 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 Mazda Protege 4 Door Sedan

NHTSA No.: M15400

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 02/14/01

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	$=(t_f - 32)/1.8$
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 Mazda Protégé 4 Door Sedan
Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M15400
Test Date: 02/14/01

PRIMARY IMPACT DATA

Measured Parameter	Units	Value
Velocity at Impact	km/h	55.78
Test Weight	kg	1316
Impact Angle	degrees	0
Average Rebound	mm	907
Maximum Static Crush	mm	454

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. 35	50% Male Hybrid III / No. 34
Head Contact	Airbag/Headrest	Airbag/Headrest
Chest Contact	Airbag/Belt	Airbag/Belt
Abdomen Contact	Belt	Airbag/Belt
Left Knee Contact	Steering Column/Dash	Glove Box
Right Knee Contact	Steering Column/Dash	Glove Box

16mm MOVIE COVERAGE

High Speed	15
Real Time	1
Total	16

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 Mazda Protégé 4 Door Sedan

NHTSA No.: M15400

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 02/14/01

TEST VEHICLE INFORMATION

Make	Mazda
Model	Protégé
Body Style	4 Door Sedan
NHTSA No.	M15400
VIN	JM1BJ222210407867
Color	Red
Delivery Date	2/3/01
Odometer Reading (mile)	3
Dealer	Romero Mazda
Transmission	5-Speed Manual
Final Drive	Front
Number of Cylinders	4
Engine Displacement (L)	1.6
Engine Placement	Transverse

TEST VEHICLE OPTIONS

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

DATA FROM CERTIFICATION LABEL

Manufactured By	Mazda Motor Corporation	GVWR (kg)	1600
Date of Manufacture	December-00	GAWR Front (kg)	850
		GAWR Rear (kg)	760

DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	220	220
Cold Pressure (kPa)	220	220
Recommend Tire Size	P185/65/R14	P185/65/R14
Tire Size on Vehicle	P185/65/R14	P185/65/R14
Tire Manufacturer	Toyo	Toyo

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)				385
Cargo Weight (RCLW) (kg)				45

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

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan
 Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M15400
 Test Date: 02/14/01

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	335	236		377	282	
Right	kg	336	220		383	274	
Ratio	%	59.5	40.5		57.8	42.2	
Totals	kg	671	456	1127	760	556	1316

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1127
Weight of 2 P572 ATD's	kg	152
Rated Cargo/Luggage Weight (RCLW)	kg	45
Calculated Vehicle Target Weight (TVTW)	kg	1324

TEST VEHICLE ATTITUDE AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	669	671	658	663	1059
As Tested	mm	647	650	624	630	1103

Vehicle Wheel base (mm): 2614

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

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): 49.9

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

Actual Test Volume with entire fuel System Filled (L): 46.4

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 Mazda Protégé 4 Door Sedan

NHTSA No.: M15400

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 02/14/01

SPEED TRAP DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	55.51 to 57.12	55.78
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	55.94
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	4111	3754	-357
Center	mm	4457	4003	-454
Right Side	mm	4111	3774	-337

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	962
Center	mm	753
Right Side	mm	1006
Average	mm	907

DATA SHEET NO. 4
TEST VEHICLE INFORMATION

Test Vehicle: 2001 Mazda Protege 4 Door Sedan

NHTSA No.: M15400

Test Program: 2001 NHTSA 35 mph NCAP

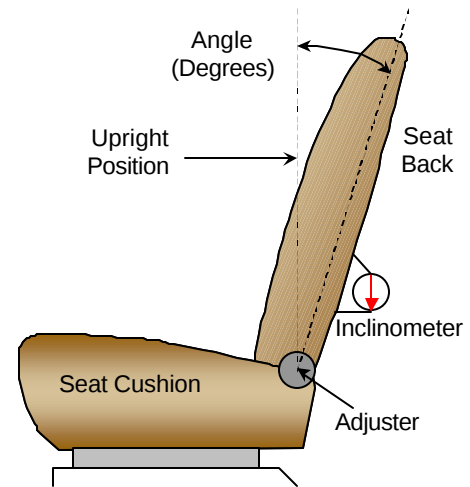
Test Date: 02/14/01

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: 14° with a seated dummy

Passenger seat back angle: 14° with a seated dummy



FRONT SEAT ASSEMBLY

SEAT FORE/AFT POSITIONS

Both driver and passenger seats have 17 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: 17 seating positions or detents

Passenger seat fore/aft total travel: 17 seating positions or detents

Driver seat fore/aft position: 9th detent from forward most

Passenger seat fore/aft position: 9th detent from forward most

SEAT BELT UPPER ANCHORAGE

The test vehicle was equipped with adjustable anchorages for both driver and passenger seats. Both have 4 positions; they are set in the 2nd position from the top.

DATA SHEET NO. 4...(continued)

TEST VEHICLE INFORMATION

Test Vehicle: 2001 Mazda Protege 4 Door Sedan

NHTSA No.: M15400

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 02/14/01

FUEL TANK CAPACITY DATA

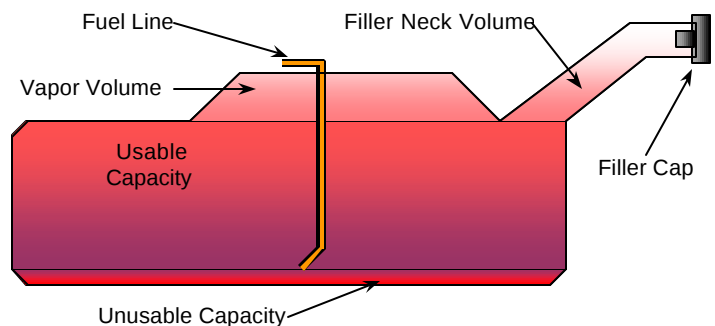
The "Usable Capacity" of the standard equipment fuel tank is: 50.0 liters

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

"Usable Capacity" used for certification tests FMVSS 301 requirements: 45.9 to 46.9 liters

Actual amount of Stoddard solvent added to vehicle for certification test: 46.4 liters

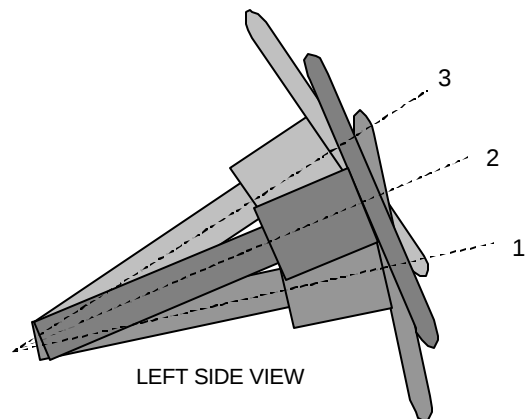
The test vehicle is equipped with an electric fuel pump. The fuel pump operates for approximately two seconds after the ignition is placed to the "ON" position, after which the fuel pump automatically shuts off. The fuel filler door is located on the left rear fender. The standard fuel tank occupies 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 it is moved through its full range of motion. An aluminum plate is placed across the rim of the steering wheel, an inclinometer is placed onto the plate and the angle is measured. The tested vehicle has its steering column set to the geometric center, or position 2.



STEERING COLUMN ASSEMBLY

Lowermost, position 1: 19.5°

Geometric center, position 2: 22.0°

Uppermost, position 3: 24.5°

DATA SHEET NO. 5

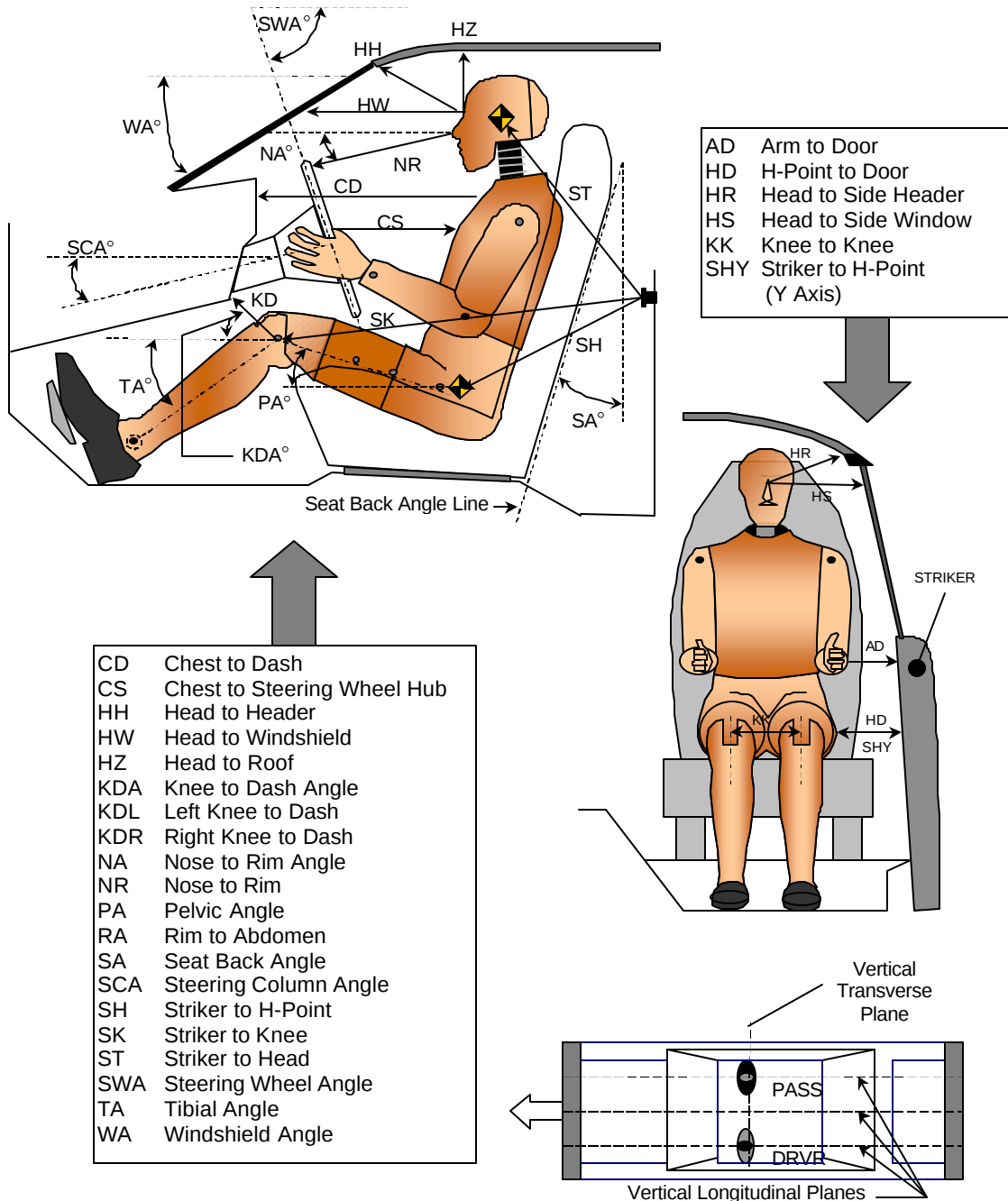
DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2001 Mazda Protege 4 Door Sedan

NHTSA No.: M15400

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 02/14/01



DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS

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

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan
 Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M15400
 Test Date: 02/14/01

TEST DUMMY POSITION MEASUREMENTS

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA	Windshield Angle		29		
SWA	Steering Wheel Angle		68		
SCA	Steering Column Angle		22		
SA	Seat Back Angle		14		14
HZ	Head to Roof (Z)	181	90	161	90
HH	Head to Header	280	0	275	0
HW	Head to Windshield	542	0	520	0
HR	Head to Side Header (Y)	220		220	
NR	Nose to Rim	359	10		
CD	Chest to Dash	503		496	
CS	Chest to Steering Hub	278	0		
RA	Rim to Abdomen	175	0		
KDL	Left Knee to Dash	145	27	138	
KDR	Right Knee to Dash	140		145	24
PA	Pelvic Angle		23		23
TA	Tibia Angle		38		43
KK	Knee to Knee (Y)	275		210	
SK	Striker to Head	600	4	590	2
ST	Striker to Knee	549	11	548	18
SH	Striker to H-Point	246	34	240	32
SHY	Striker to H-Point (Y)	220		226	
HS	Head to Side Window	311		290	
HD	H-Point to Door (Y)	134		157	
AD	Arm to Door (Y)	118		107	

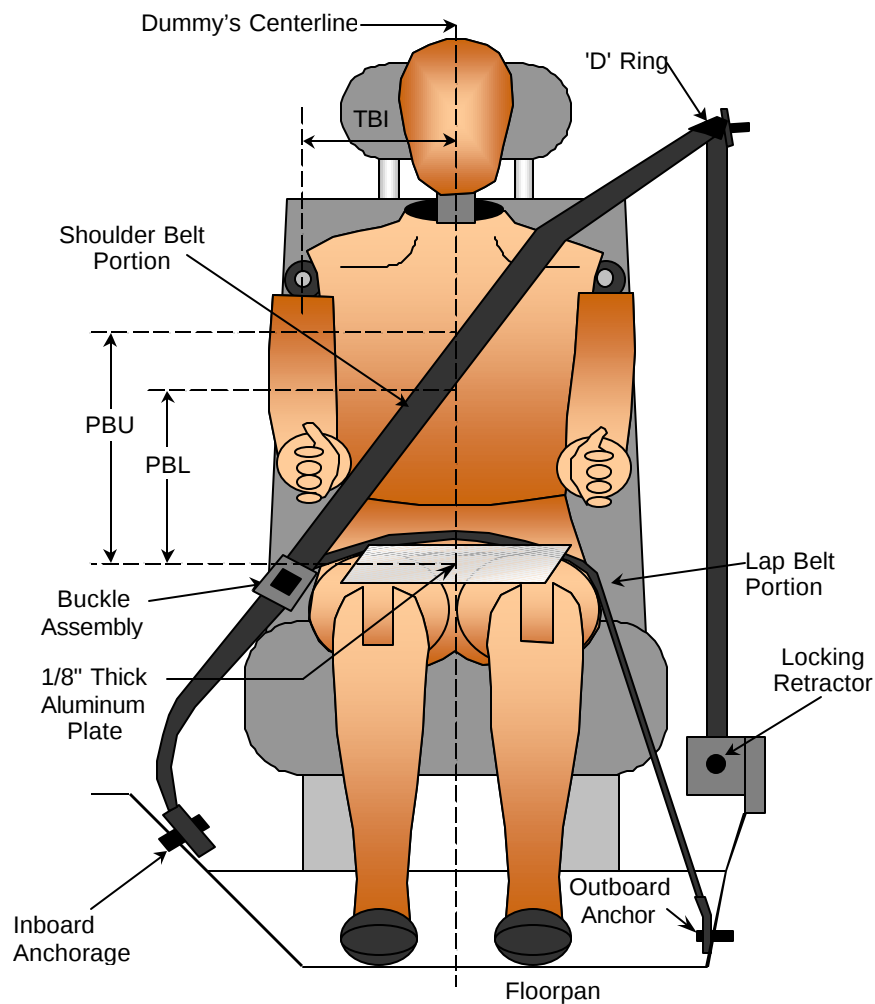
DATA SHEET NO. 6
SEAT BELT POSITIONING DATA

Test Vehicle: 2001 Mazda Protege 4 Door Sedan

NHTSA No.: M15400

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 02/14/01



SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
TBI - Dummy CL to Lap/Shoulder Belt Intersect	mm	200	180
PBU - Top surface of reference to belt upper edge	mm	290	250
PBL - Top surface of reference to belt lower edge	mm	210	225
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 Mazda Protégé 4 Door Sedan

NHTSA No.: M15400

Test Program: 2001 NHTSA 35mph NCAP

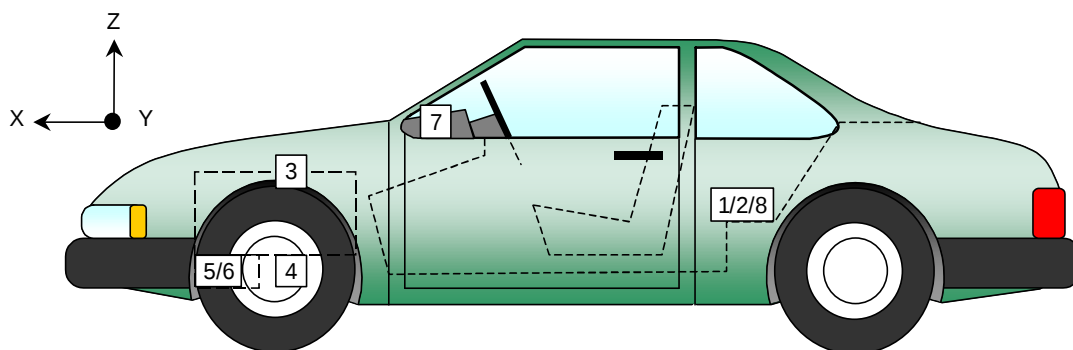
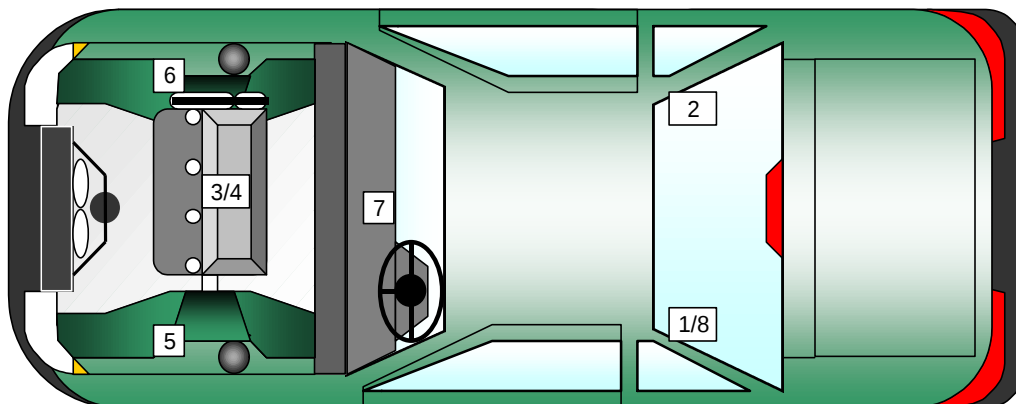
Test Date: 02/14/01

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.)	1570	-660	360	G's	0.8	200.2	-49.6	32.0
2	Right Rear X-Member (Pri.)	1570	570	360	G's	1.7	115.3	-41.5	45.4
3	Engine Top	3785	0	775	G's	11.6	44.7	-101.4	18.9
4	Engine Bottom	4025	180	255	G's	53.2	33.2	-141.3	19.9
5	Left Brake Caliper	3765	-710	220	G's	26.9	62.7	-82.2	42.9
6	Right Brake Caliper	3765	710	220	G's	0.0	45.1	-54.4	42.0 *
7	Instrument Panel	2905	0	880	G's	22.0	79.9	-99.5	39.3
8	Left Rear X-Member (Rednt.)	1570	-640	360	G's	1.0	121.8	-47.8	32.1

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

* Channel failed at 45.1 msec.



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

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan

NHTSA No.: M15400

Test Program: 2001 NHTSA 35mph NCAP

Test Date: 02/14/01

HEAD PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	11.3	216.6	-48.4	53.6	16.4	233.5	-61.2	78.9
Head CG	Y	G's	5.7	56.3	-5.7	34.6	7.0	39.7	-12.7	92.1
Head CG	Z	G's	23.8	36.3	-12.1	80.8	37.5	66.3	-15.1	90.2
Head CG Resultant	N/A	G's	50.1	53.6			62.7	78.5		

CHEST PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	4.0	282.4	-46.4	54.7	2.9	299.9	-50.1	70.3
Chest CG	Y	G's	4.9	86.3	-5.6	51.5	2.3	82.8	-5.8	73.3
Chest CG	Z	G's	14.0	43.6	-5.9	97.2	23.6	68.1	-5.5	92.3
Chest CG Resultant	N/A	G's	47.0	54.7			54.3	70.1		

FEMUR PEAK FORCES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Femur	Z	Newtons	1255.6	56.7	-3328.9	46.7	464.5	42.3	-5437.3	49.2
Right Femur	Z	Newtons	1010.5	43.6	-5801.4	50.8	648.1	90.0	-2884.3	44.7

SEAT BELT SENSOR PEAK VALUES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Lap Belt Force	N/A	Newtons	7496.8	57.3	-2.2	2.8	7821.9	58.4	-8.1	0.0
Shoulder Belt Force	N/A	Newtons	4519.8	45.9	-32.8	200.8	4829.0	75.0	-16.1	294.5
Shoulder Belt Pullout	N/A	MM	140.6	85.2	-28.8	44.3	294.3	87.0	-1.8	11.5
Shoulder Belt Stretch	N/A	MM/CM	0.000	0.0	0.000	0.0	0.000	0.0	0.000	0.0

* Not used with pre-tensioners.

HEAD INJURY CRITERIA (HIC)

Location	Driver				Passenger			
	HIC	Avg G	T ¹	T ²	HIC	Avg G	T ¹	T ²
Head CG Primary	391.7	41.2	45.2	81.1	615.1	50.3	58.7	92.9

CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T ¹	T ²	CLIP	T ¹	T ²
Chest CG Primary	44.7	53.3	56.3	52.3	68.7	71.7

DATA SHEET NO. 8...(continued)

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan

NHTSA No.: M15400

Test Program: 2001 NHTSA 35mph NCAP

Test Date: 02/14/01

PELVIC PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Pelvis	X	G's	2.6	89.3	-75.3	46.5	3.4	100.2	-66.2	49.2
Pelvis	Y	G's	4.8	68.2	-12.8	46.2	7.3	48.5	-6.3	60.0
Pelvis	Z	G's	4.3	255.1	-22.8	63.1	5.1	235.1	-20.3	59.7

UPPER NECK PEAK FORCES AND MOMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Neck Force	X	Newtons	103.5	204.3	-931.5	45.0	876.3	74.5	-279.2	139.0
Neck Force	Y	Newtons	148.8	158.2	-170.1	86.5	115.8	88.3	-272.1	122.3
Neck Force	Z	Newtons	2928.1	56.3	-198.1	120.6	1230.5	66.0	-961.3	237.6
Neck Moment	X	N•m	17.0	62.2	-8.1	102.6	19.6	94.6	-21.6	127.4
Neck Moment	Y	N•m	30.7	117.7	-45.8	45.3	42.0	76.0	-10.4	223.1
Neck Moment	Z	N•m	4.4	126.3	-5.5	88.0	31.6	107.8	-13.6	153.2

FOOT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Foot Aft	X	G's	9.5	39.1	-22.9	34.0	20.3	88.2	-100.6	36.4
Left Foot Aft	Z	G's	4.5	296.5	-51.1	34.8	28.3	71.2	-76.2	35.4
Left Foot Fore	Z	G's	10.9	60.0	-65.0	32.8	25.1	48.2	-113.6	34.7
Right Foot Aft	X	G's	145.8	50.2	-149.7	40.8	27.6	74.4	-84.0	36.1
Right Foot Aft	Z	G's	80.9	50.5	-201.7	42.0	18.0	68.7	-49.6	35.9
Right Foot Fore	Z	G's	115.1	54.8	-361.5	37.9	13.7	68.9	-55.7	35.1

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	31.7	56.0	-3.6	264.5	34.9	86.2	-6.6	37.3
Left Lower Moment	Y	N•m	41.1	72.4	-36.2	48.8	294.8	85.8	-59.1	36.4
Left Lower Force	Z	Newtons	303.9	148.5	-1914.5	39.2	314.2	248.6	-2773.3	86.2
Left Upper Moment	X	N•m	55.9	56.1	-14.8	268.1	15.8	80.4	-30.7	49.2
Left Upper Moment	Y	N•m	9.6	242.0	-113.7	47.5	34.1	82.5	-109.8	50.4
Right Lower Moment	X	N•m	115.5	54.2	-43.8	43.8	43.2	57.1	-11.2	38.3
Right Lower Moment	Y	N•m	408.0	58.6	-97.6	43.1	138.0	76.1	-42.9	34.4
Right Lower Force	Z	Newtons	342.6	141.4	-3835.0	52.0	349.4	129.0	-2681.3	78.4
Right Upper Moment	X	N•m	33.3	54.6	-58.9	44.5	20.5	90.1	-24.5	100.7
Right Upper Moment	Y	N•m	68.6	51.4	-194.3	43.0	12.6	180.7	-125.4	57.2

DATA SHEET NO. 8...(continued)Test Vehicle: 2001 Mazda Protégé 4 Door SedanNHTSA No.: M15400Test Program: 2001 NHTSA 35mph NCAPTest Date: 02/14/01**CHEST PEAK DISPLACEMENTS**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	MM	0.2	2.6	-24.6	57.0	0.4	8.0	-21.7	73.2

HEAD REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	11.1	214.0	-49.2	53.6	15.7	234.5	-61.6	75.0
Head CG	Y	G's	5.1	56.3	-6.1	34.8	6.6	64.0	-12.2	92.2
Head CG	Z	G's	24.2	36.2	-16.5	79.9	34.7	66.9	-14.4	90.2
Head CG Resultant	N/A	G's	50.6	53.6			64.5	73.7		

CHEST REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	3.9	257.8	-46.3	54.9	3.5	294.3	-49.8	70.2
Chest CG	Y	G's	4.9	79.1	-6.7	51.6	5.9	82.1	-5.8	70.6
Chest CG	Z	G's	13.5	43.8	-5.5	97.7	23.8	68.2	-4.6	107.5
Chest CG Resultant	N/A	G's	46.8	54.8			54.5	70.0		

REDUNDANT HEAD INJURY CRITERA (HIC)

Location	Driver				Passenger			
	HIC	Avg G	T ¹	T ²	HIC	Avg G	T ¹	T ²
Head CG Redundant	415.9	42.2	45.6	81.5	620.0	51.6	58.9	91.3

REDUNDANT CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T ¹	T ²	CLIP	T ¹	T ²
Chest CG Redundant	44.6	53.6	56.6	52.1	69.2	72.2

DATA SHEET NO. 9
SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

Test Vehicle: 2001 Mazda Protege 4 Door Sedan

NHTSA No.: M15400

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 02/14/01

SEAT BELT PLACEMENT MEASUREMENTS

Measurement Description	Units	Driver	Passenger
TCI - Dummy CL to Lap/Shoulder Belt Intersect	mm	200	180
PBU -Top surface of reference to belt upper edge	mm	290	250
PBL - Top surface of reference to belt lower edge	mm	310	325
Lap Belt tension	Newton's	10	10
Shoulder Belt tension	N/A	Retractor	Retractor

BELT LENGTH DATA

Measurement Description	Units	Driver	Passenger
Retractor reel to 'D' ring	mm	685	685
Shoulder belt length as measured on ATD	mm	830	820
Lap belt length as measured on ATD	mm	765	775
Remainder of belt on reel	mm	710	710
Total belt length for continuous webbing systems	mm	2990	2990

SHOULDER BELT SPOOL-OFF DATA

Measurement Description	Units	Driver	Passenger
As determined mechanically	mm	136.0	279.0
As determined electronically	mm	140.6	294.3

BELT STRETCH DATA

Measurement Description	Units	Driver	Passenger
Electronically from shoulder belt load cell and "D" ring	mm/cm	N/A	N/A
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 Mazda Protege 4 Door Sedan

NHTSA No.: M15400

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 02/14/01

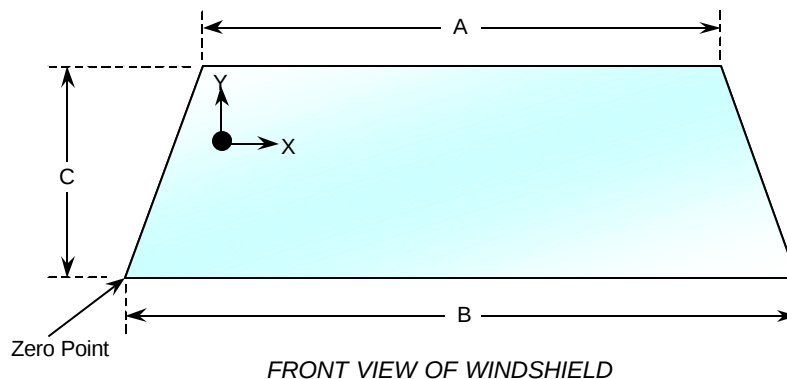
Windshield Mounting Details: Windshield glass is secured to the vehicle frame with a rubber type adhesive. There is no molding that covers the windshield periphery at any point.

The standard requires that the post test retention measurement be a minimum of 75 percent of the pretest total periphery measurement for vehicles not equipped with occupant passive restraints and 50 percent for each side of the windshield for vehicles which are equipped with occupant passive restraints.

Temperature of windshield molding during test: 21.1 °C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test(mm)	Post-Test (mm)	% of Retention
Left Side	2089.5	2089.5	100
Right Side	2089.5	2089.5	100
Total	4179.0	4179.0	100



WINDSHIELD DIMENSIONS

Item	Units	Segment Length	Molding Width
A	mm	1125	9
B	mm	1500	N/A
C	mm	777	9

DATA SHEET NO. 11

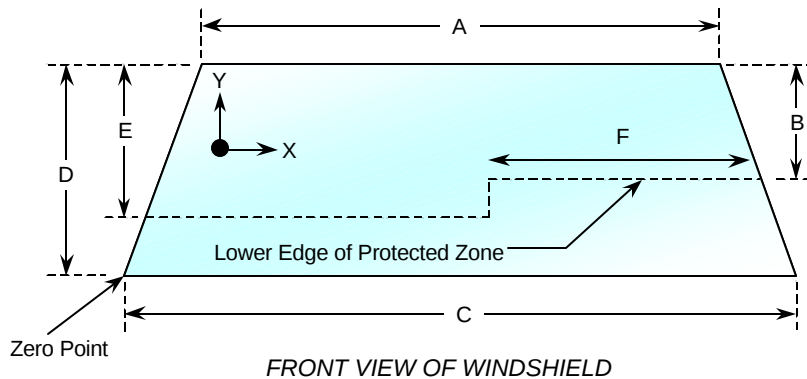
WINDSHIELD ZONE INTRUSION FMVSS 219 (PARTIAL) DATA

Test Vehicle: 2001 Mazda Protege 4 Door Sedan

NHTSA No.: M15400

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 02/14/01



WINDSHIELD AND PROTECTED ZONE

Item	Units	Value
A	mm	1125
B	mm	506
C	mm	1500
D	mm	777
E	mm	534
F	mm	791

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 Mazda Protege 4 Door Sedan

NHTSA No.: M15400

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 02/14/01

Test Time: 1:53 PM

Temperature at Time of Impact: 7.7 °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

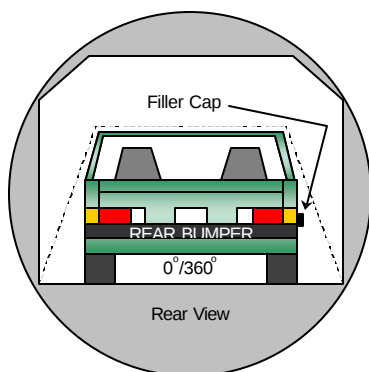
DATA SHEET NO. 13
FMVSS 301 STATIC ROLLOVER DATA SHEET

Test Vehicle: 2001 Mazda Protege 4 Door Sedan

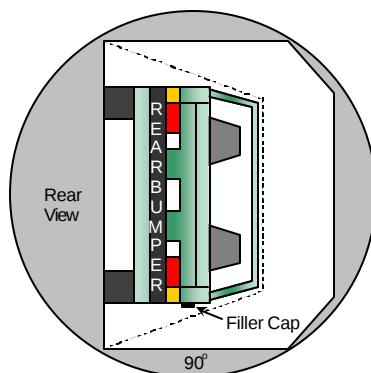
NHTSA No.: M15400

Test Program: 2001 NHTSA 35 mph NCAP

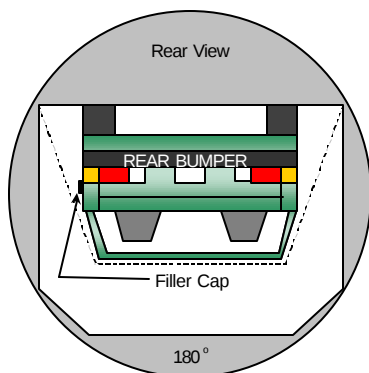
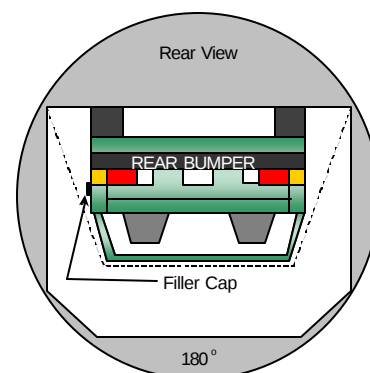
Test Date: 02/14/01



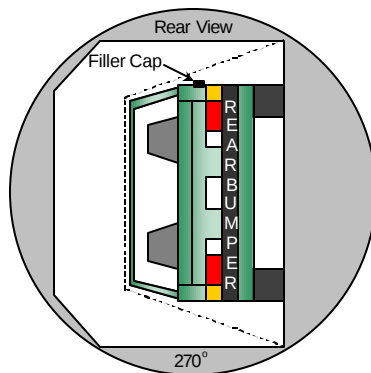
0° TO 90°



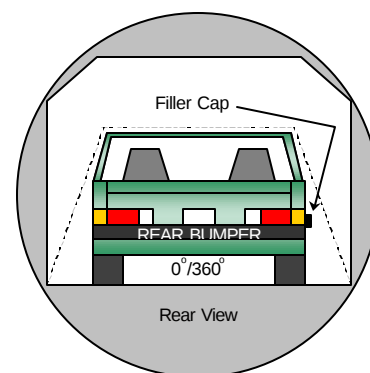
90° TO 180°



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°	80	300	0.0
90° TO 180°	78	300	0.0
180° TO 270°	81	300	0.0
270° TO 360°	78	300	0.0

DATA SHEET NO. 14
VEHICLE MEASUREMENTS

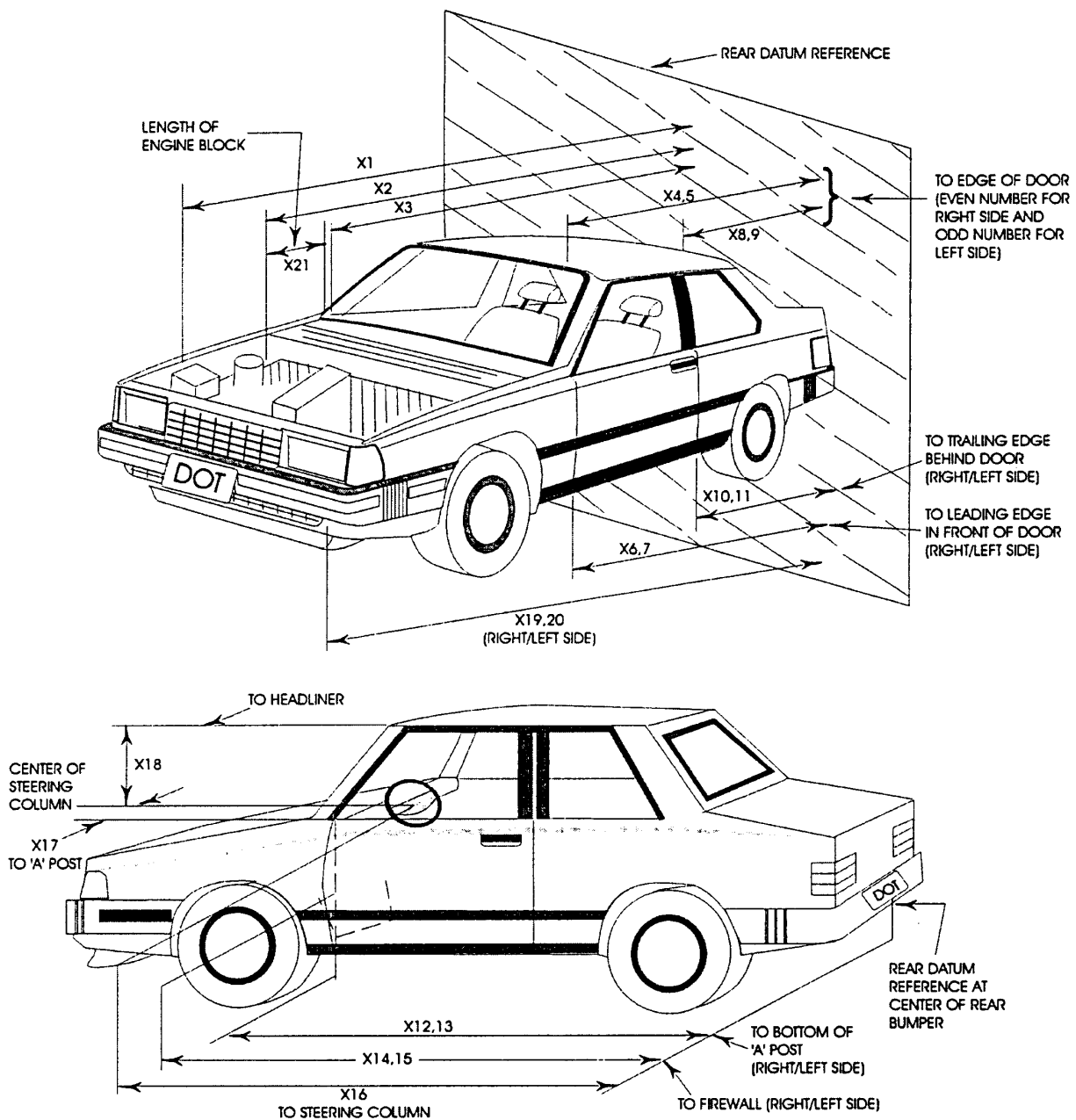
Test Vehicle: 2001 Mazda Protege 4 Door Sedan

NHTSA No.: M15400

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 02/14/01

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total length of vehicle at centerline	mm	4457	4003	-454
2	RSOV to front of engine	mm	3908	3722	-186
3	RSOV to firewall centerline	mm	3386	3282	-104
4	RSOV to leading edge of right door	mm	2993	3004	11
5	RSOV to leading edge of left door	mm	3013	3005	-8
6	RSOV to lower leading edge of right door	mm	3004	2990	-14
7	RSOV to lower leading edge of left door	mm	3008	2997	-11
8	RSOV to upper trailing edge of right door	mm	1977	1988	11
9	RSOV to upper trailing edge of left door	mm	1991	1991	0
10	RSOV to lower trailing edge of right door	mm	1989	1975	-14
11	RSOV to lower trailing edge of left door	mm	1993	1980	-13
12	RSOV to bottom of right 'A' pillar	mm	2977	2981	4
13	RSOV to bottom of left 'A' pillar	mm	2985	2976	-9
14	RSOV to firewall on right side	mm	3292	3252	-40
15	RSOV to firewall of left side	mm	3283	3232	-51
16	RSOV to steering column	mm	2613	2590	-23
17	Center of steering column to left 'A' pillar	mm	414	374	-40
18	Center of steering column to headlining	mm	465	525	60
19	RSOV to right side of front bumper	mm	4111	3774	-337
20	RSOV to left side of front bumper	mm	4111	3754	-357
21	Length of engine block	mm	471	471	0
RD	RSOV to right side of dash panel	mm	2782	2745	-37
CD	RSOV to center of dash panel	mm	2752	2755	3
LD	RSOV to left side of dash panel	mm	2801	2750	-51



DATA SHEET NO. 15
CAMERA LOCATIONS

Test Vehicle: 2001 Mazda Protege 4 Door Sedan

NHTSA No.: M15400

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 02/14/01

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	7960	13	1030
3	Left Side, No. 2	1455	-8250	1460	-4	7990	35	1020
4	Left Side, No. 3	6495	-10580	4640	-16	11610	70	1000
5	Left Side, No. 4	Did Not Run						
6	Left Side, No. 5	1455	-8250	2700	-13	8120	19	980
7	Right Side, No. 1	1955	8150	730	-1	8480	19	1010
8	Right Side, No. 2	1655	8150	1450	-4	8490	35	1010
9	Right Side, No. 3	7855	8900	2800	-9	N/A	80	920
10	Right Side, No. 4	Did Not Run						
11	Overhead Overall	251	0	4460	-86	N/A	13	1020
12	Front View, Driver	-525	-380	2590	-43	N/A	12	990
13	Front View, Passenger	-525	380	2590	-44	N/A	13	1100
14	Pit Camera, Engine	580	0	-1360	90	N/A	13	980
15	Pit Camera, Fuel Tank	4700	0	-1680	55	N/A	19	990
16	Driver Belt	Omitted						
17	Passenger Belt	Omitted						
18	Left Side Extra	470	-6810	1440	-2	N/A	24	1080

X - Barrier Face Y - Monorail Centerline Z - Ground

* Cameras 16 and 17 were omitted to meet weight requirements

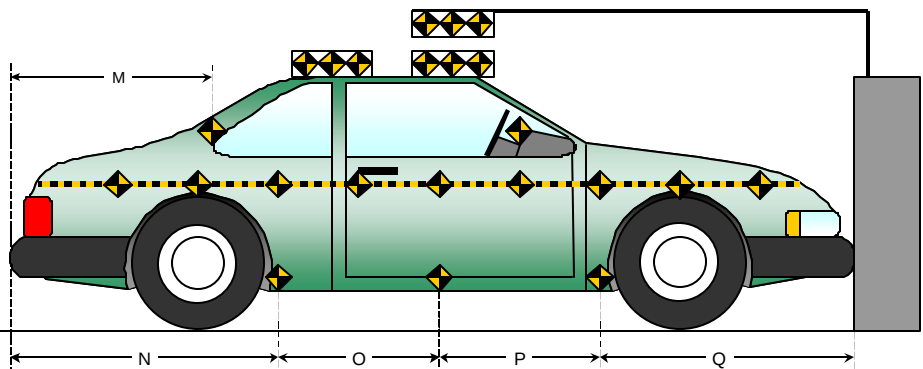
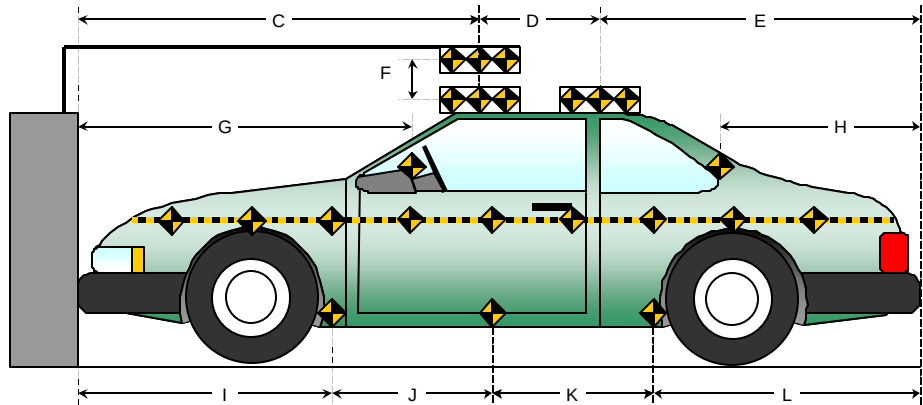
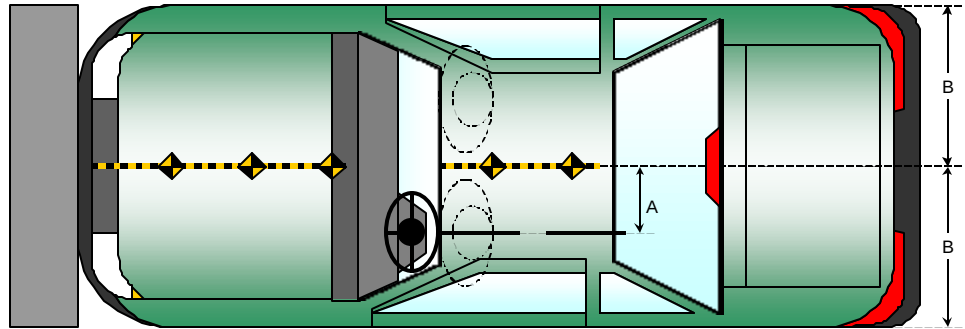
DATA SHEET NO. 16
PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2001 Mazda Protege 4 Door Sedan
 Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M15400
 Test Date: 02/14/01

All Dimensions
in mm

Item	Value
A	385
B	852
C	2152
D	607
E	1690
F	155
G	1712
H	1109
I	1314
J	884.5
K	884.5
L	1376
M	1102
N	1373
O	884
P	884
Q	1331



DATA SHEET NO. 17
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2001 Mazda Protege 4 Door Sedan

NHTSA No.: M15400

Test Program: 2001 NHTSA 35 mph NCAP

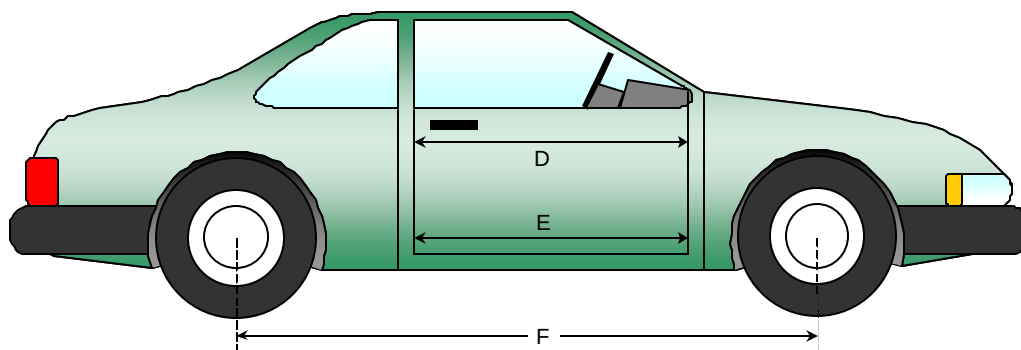
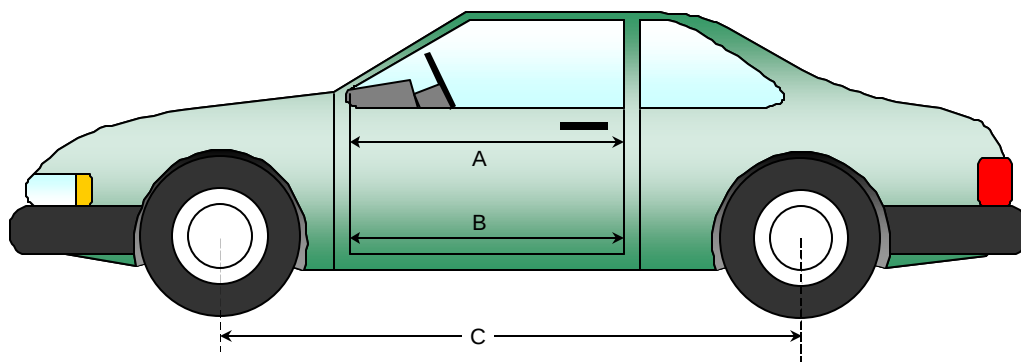
Test Date: 02/14/01

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	918	914	-4
B	Left Side Lower	mm	840	848	8
D	Right Side Upper	mm	923	915	-8
E	Right Side Lower	mm	854	856	2

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheel base	mm	2614	2563	-51
F	Right Side Wheel base	mm	2614	2548	-66



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

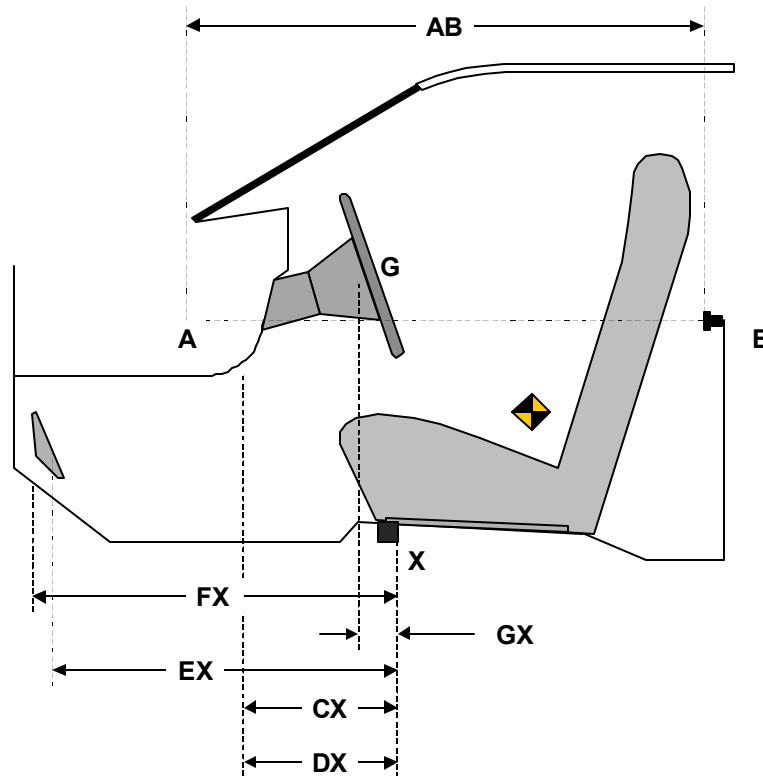
Test Vehicle: 2001 Mazda Protege 4 Door Sedan
 Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M15400
 Test Date: 02/14/01

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside window jam)	mm	918	914	-4
CX	Left Knee Bolster to X	mm	261	282	21
DX	Right Knee Bolster to X	mm	262	286	24
EX	Brake Pedal to X	mm	579	440	-139
FX	Foot Rest to X	mm	601	535	-66
GX	Center of Steering Wheel Hub to X	mm	53	63	10

X = Left Front Seat Outboard Anchor Bolt Head



DRIVER COMPARTMENT

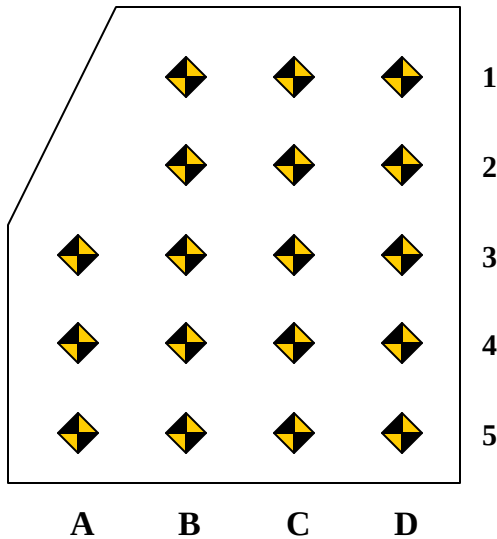
DATA SHEET NO. 17...(CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2001 Mazda Protege 4 Door Sedan

NHTSA No.: M15400

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 02/14/01



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		612	615	617		506	517	500		-106	-98	-117
2		522	518	522		498	487	505		-24	-31	-17
3	416	419	415	419	402	408	412	415	-14	-11	-3	-4
4	318	319	317	320	315	313	312	317	-3	-6	-5	-3
5	220	218	218	220	216	212	214	217	-4	-6	-4	-3

DRIVER FLOOR PAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1		-20	-22	-25		-30	-43	-21		-10	-21	4
2		-58	-52	-63		-80	-67	-60		-22	-15	3
3	-55	-55	-60	-60	-80	-105	-105	-90	-25	-50	-45	-30
4	-63	-60	-65	-60	-90	-98	-100	-78	-27	-38	-35	-18
5	-63	-50	-63	-55	-85	-87	-95	-80	-22	-37	-32	-25

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

Test Vehicle: 2001 Mazda Protege 4 Door Sedan
 Test Program: 2001 NHTSA 35 mph NCAP

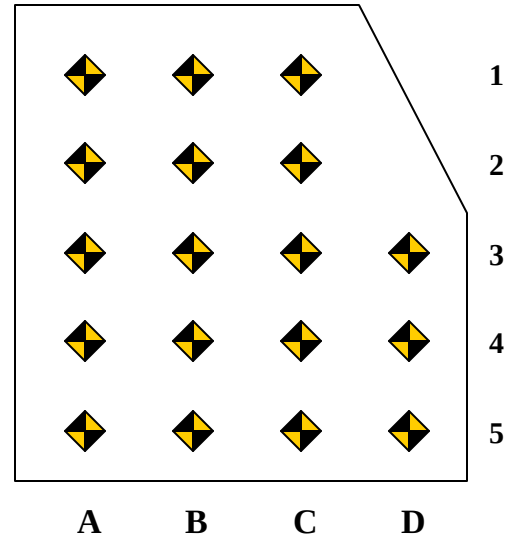
NHTSA No.: M15400
 Test Date: 02/14/01

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	565	551	561		495	512	537		-70	-39	-24	
2	481	468	467		459	459	462		-22	-9	-5	
3	382	368	374	374	359	364	369	371	-23	-4	-5	-3
4	282	270	273	273	267	266	268	269	-15	-4	-5	-4
5	185	173	173	170	170	170	168	166	-15	-3	-5	-4

PASSENGER FLOOR PAN Z-AXIS

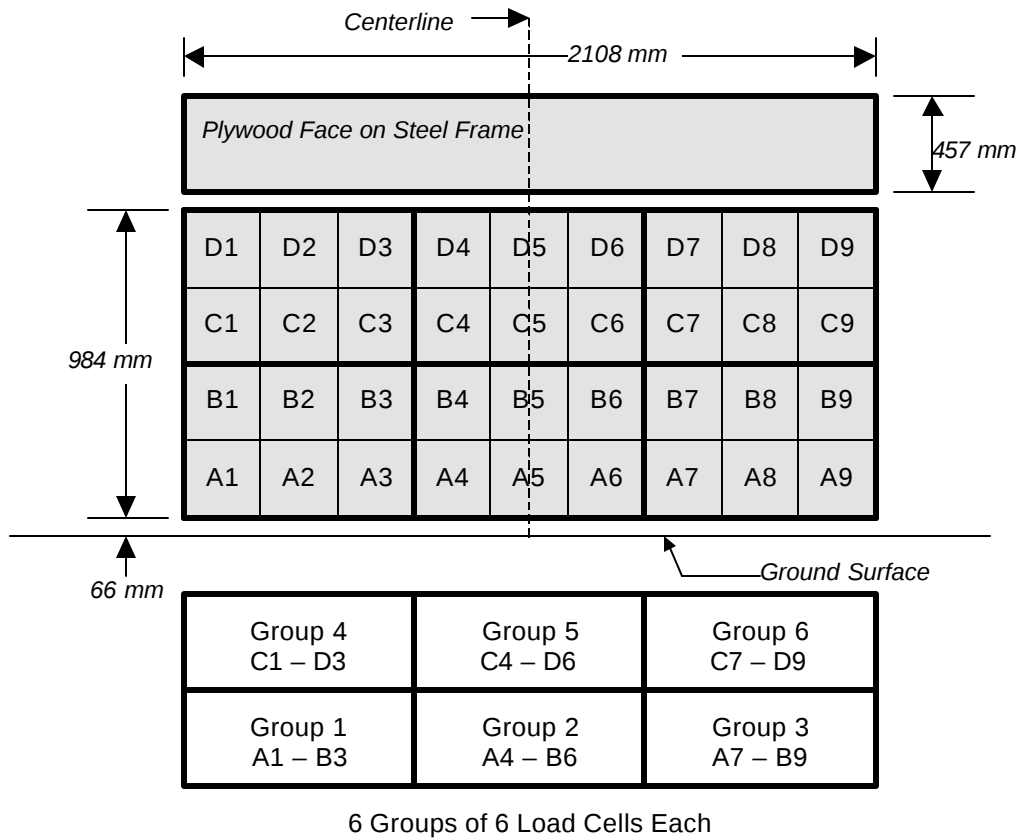
	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-5	-3	-15		-36	-34	-40		-31	-31	-25	
2	-60	-50	-63		-108	-97	-93		-48	-47	-30	
3	-70	-60	-65	-65	-95	-95	-95	-77	-25	-35	-30	-12
4	-73	-65	-66	-55	-90	-91	-85	-60	-17	-26	-19	-5
5	-65	-63	-62	-60	-85	-75	-75	-60	-20	-12	-13	0

DATA SHEET NO. 18
FIXED BARRIER TYPE

Test Vehicle: 2001 Mazda Protege 4 Door Sedan
 Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M15400
 Test Date: 02/14/01

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 Mazda Protégé 4 Door Sedan
Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M15400
Test Date: 02/14/01

VEHICLE INFORMATION

VIN: JM1BJ222210407867
Vehicle Size Category: 4 Door Sedan

Wheel base (mm): 2614
Test Weight (kg): 1316

ACCELEROMETER DATA

Accelerometer Location: Left rear floor pan
Cal. Procedure/Interval: 6 months / drop test
Integration Algorithm: NHTSA Standard
Impact Velocity (km/h): 55.78
Velocity Change (km/h): 63.24

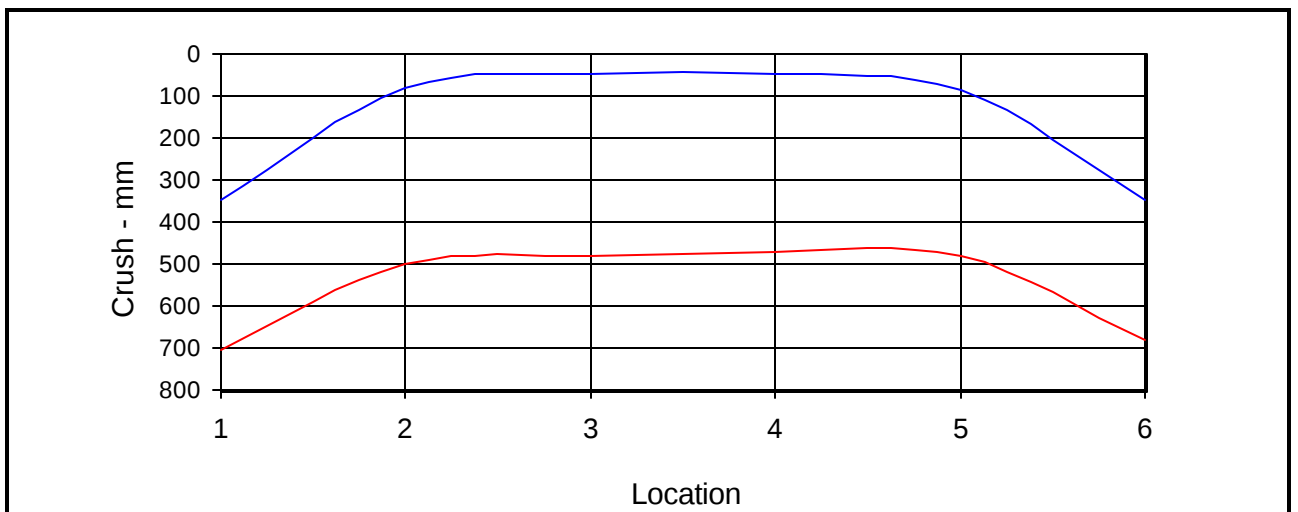
Linearity: Good

Time of Separation (msec): 79.3

CRUSH PROFILE

Collision Deformation Classification: 12FDEW6 ; Midpoint of Damage: Vehicle Centerline
Damage Region Length (mm): 1621 ; Impact Mode: Full Frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	346	703	-357
C2	Crush zone 2 on left side	mm	80	502	-422
C3	Crush zone 3 on left side	mm	48	480	-432
C4	Crush zone 4 on right side	mm	48	471	-423
C5	Crush zone 5 on right side	mm	88	481	-393
C6	Crush zone 6 at right side	mm	346	683	-337



DATA SHEET NO. 20

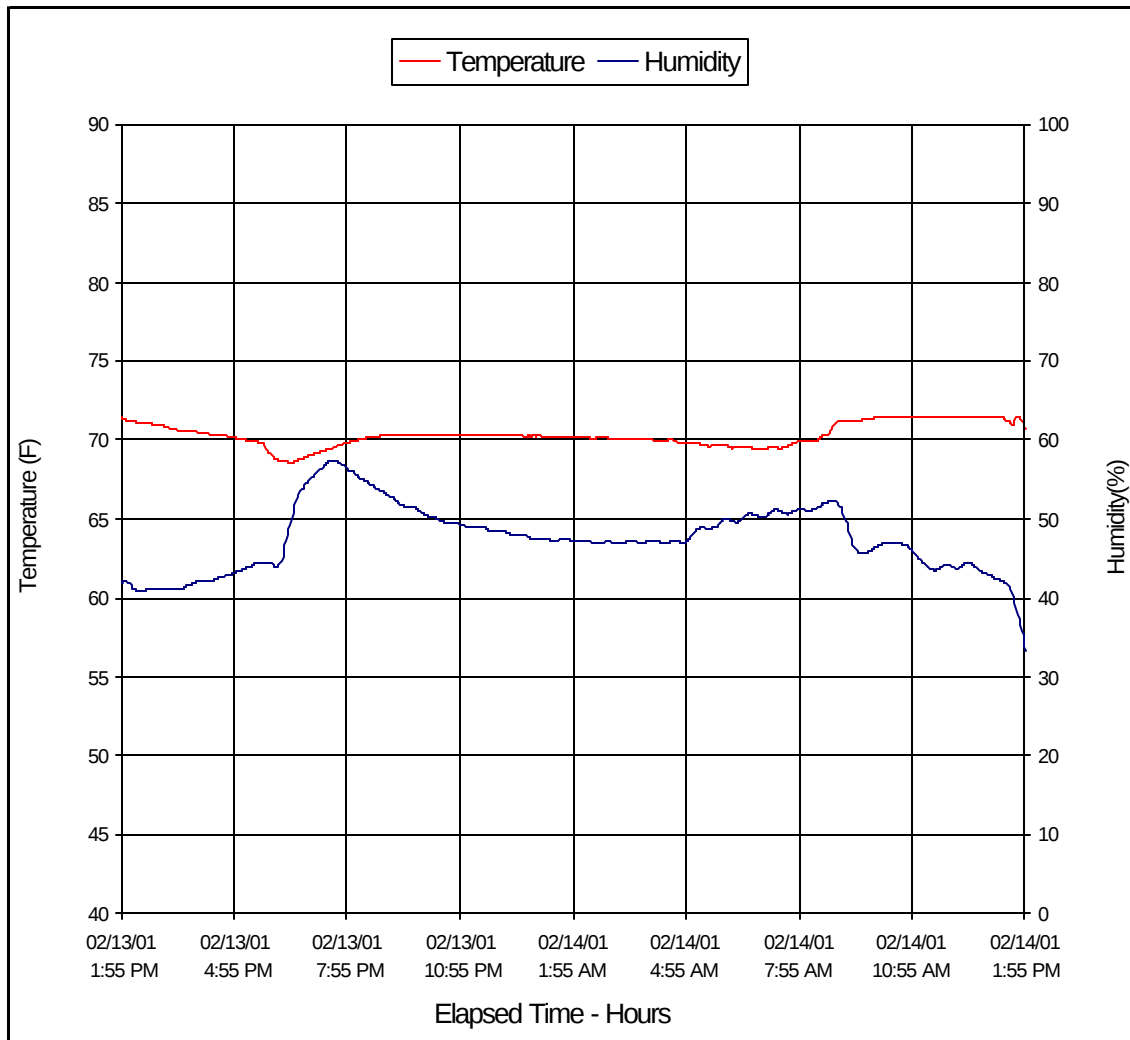
DUMMY/VEHICLE TEMPERATURE STABILIZATION CHART

Test Vehicle: 2001 Mazda Protege 4 Door Sedan

NHTSA No.: M15400

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 02/14/01



APPENDIX A
PHOTOGRAPHS

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Figure A-1: Right Front, as Received



Figure A-2: Left Rear, as Received

MFD. BY MAZDA MOTOR CORPORATION

DATE	GVWR/PNBV	GAWR/PNBE FRT	GAWR/PNBE RR
12/00	3527 LB	1874 LB	1675 LB
	1600 KG	850 KG	760 KG

THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY
/ BUMPER, AND THEFT PREVENTION
STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.

JM1BJ222210407867 TYPE: PASSENGER



BODY COLOR CODE: 22K MADE IN JAPAN

Figure A-3: Vehicle Certification Label

VEHICLE CAPACITY WEIGHT (BJOEA)
CAPACITÉ PORTEUSE DU VÉHICULE 385kg (850lbs)

SEATING CAPACITY FRONT SEAT 2
NOMBRE DE PLACES SIÈGE AVANT
REAR SEAT . . 3
SIÈGE ARRIÈRE
TOTAL 5

TIRE INFLATION PRESSURE	FRONT/AV.	REAR/AR.
PNEUS KPa (Kgf/cm ²) (p.s.i., lb/po ²)	220	220
	(2.2) (32)	(2.2) (32)

TIRE SIZE P185/65R14 85S
TAILLE DES PNEUS

Figure A-4: Vehicle Tire Label



Figure A-5: Front View, Pre-Test

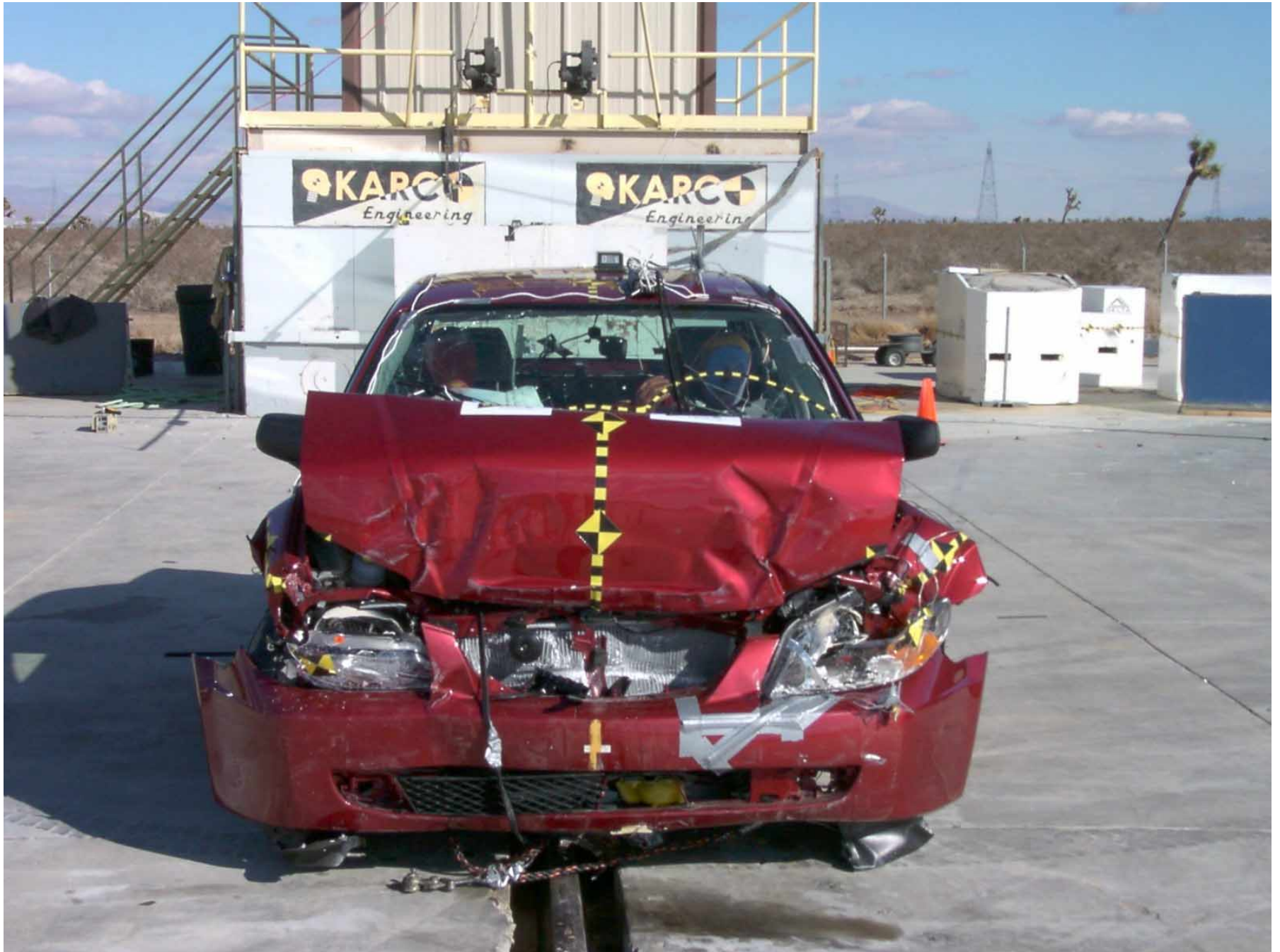


Figure A-6: Front View, Post-Test



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

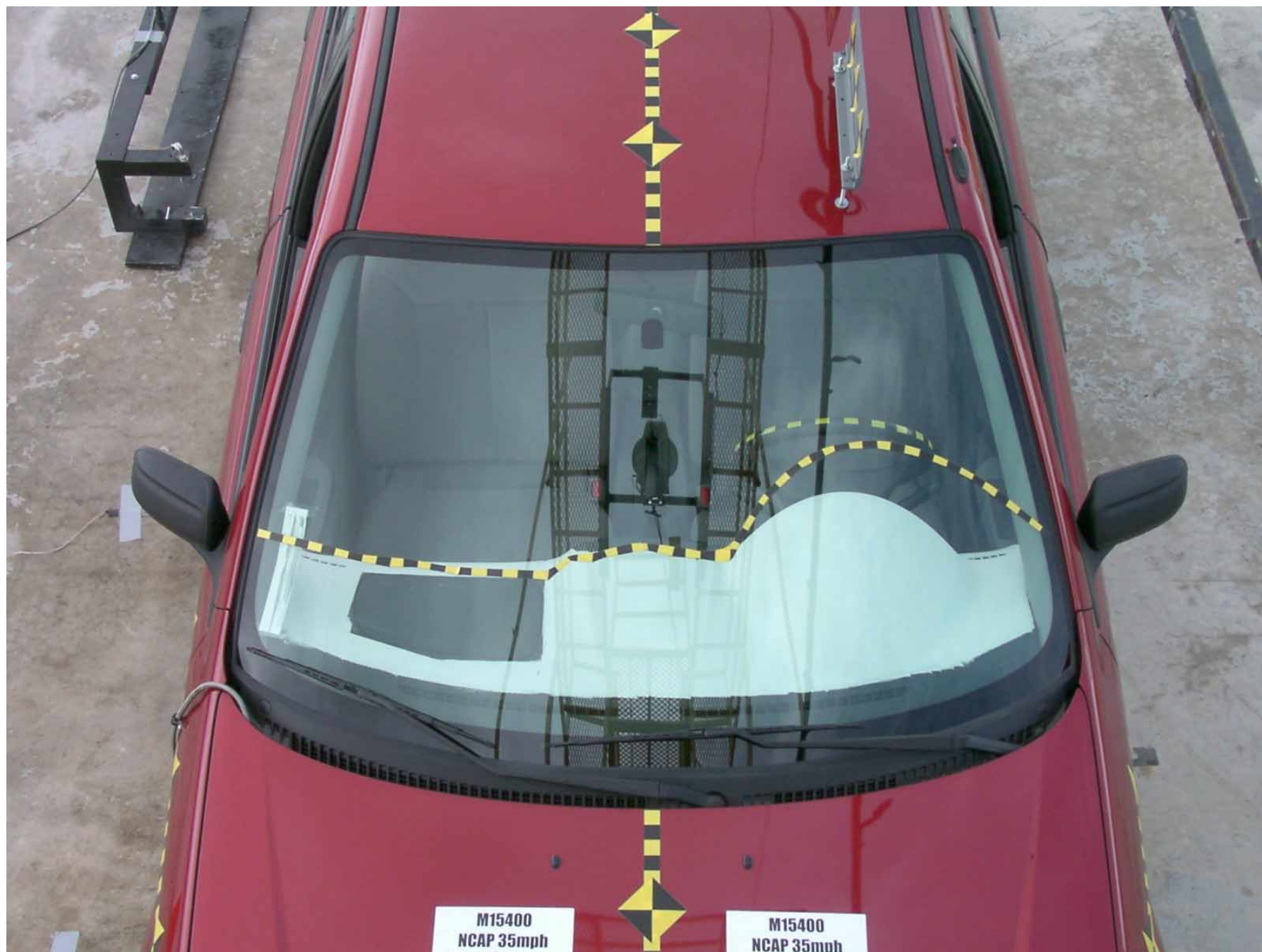


Figure A-15: Windshield, Pre-Test



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

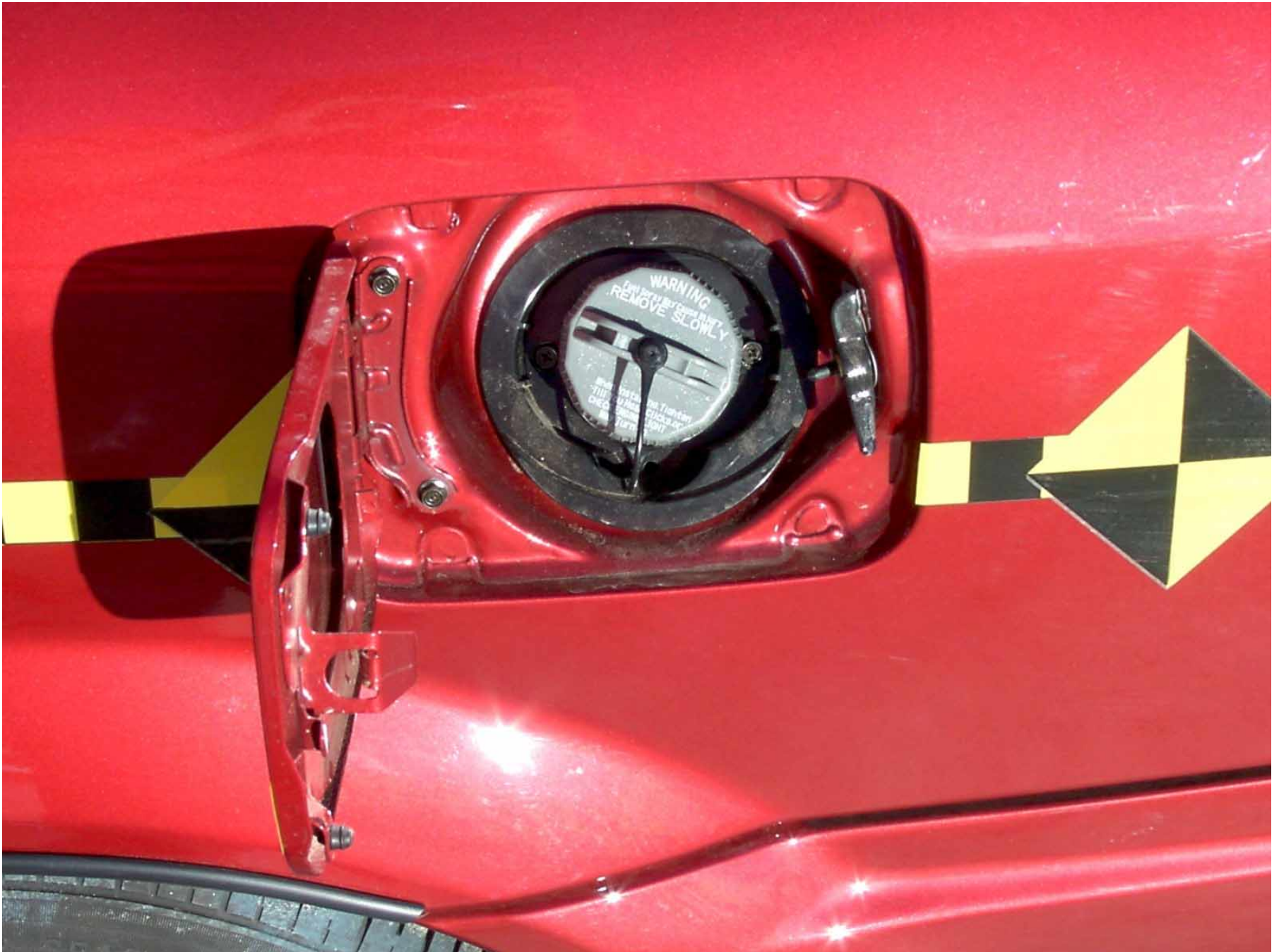


Figure A-20: Fuel Cap, Post-Test

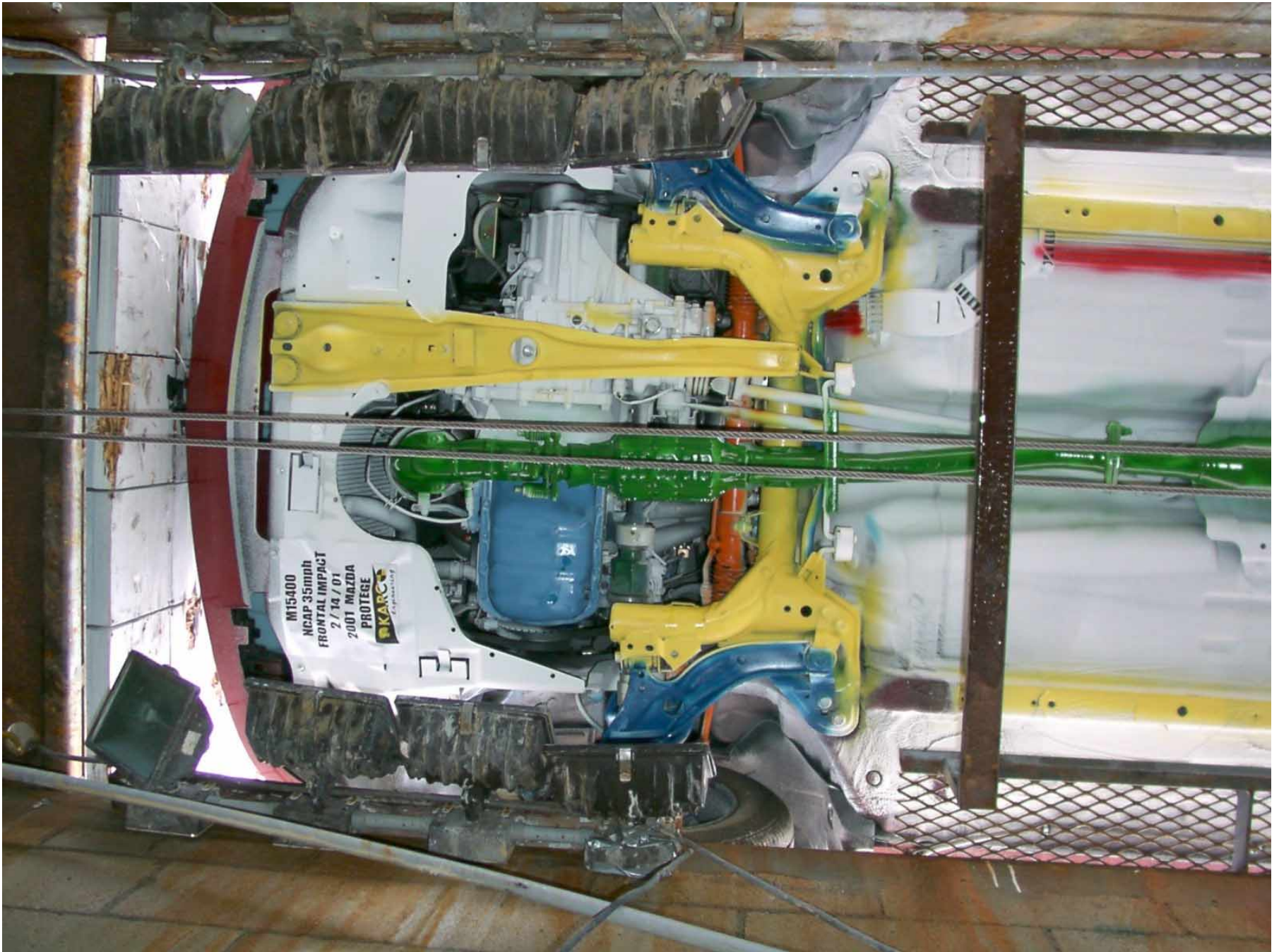


Figure A-21: Front Underside, Pre-Test

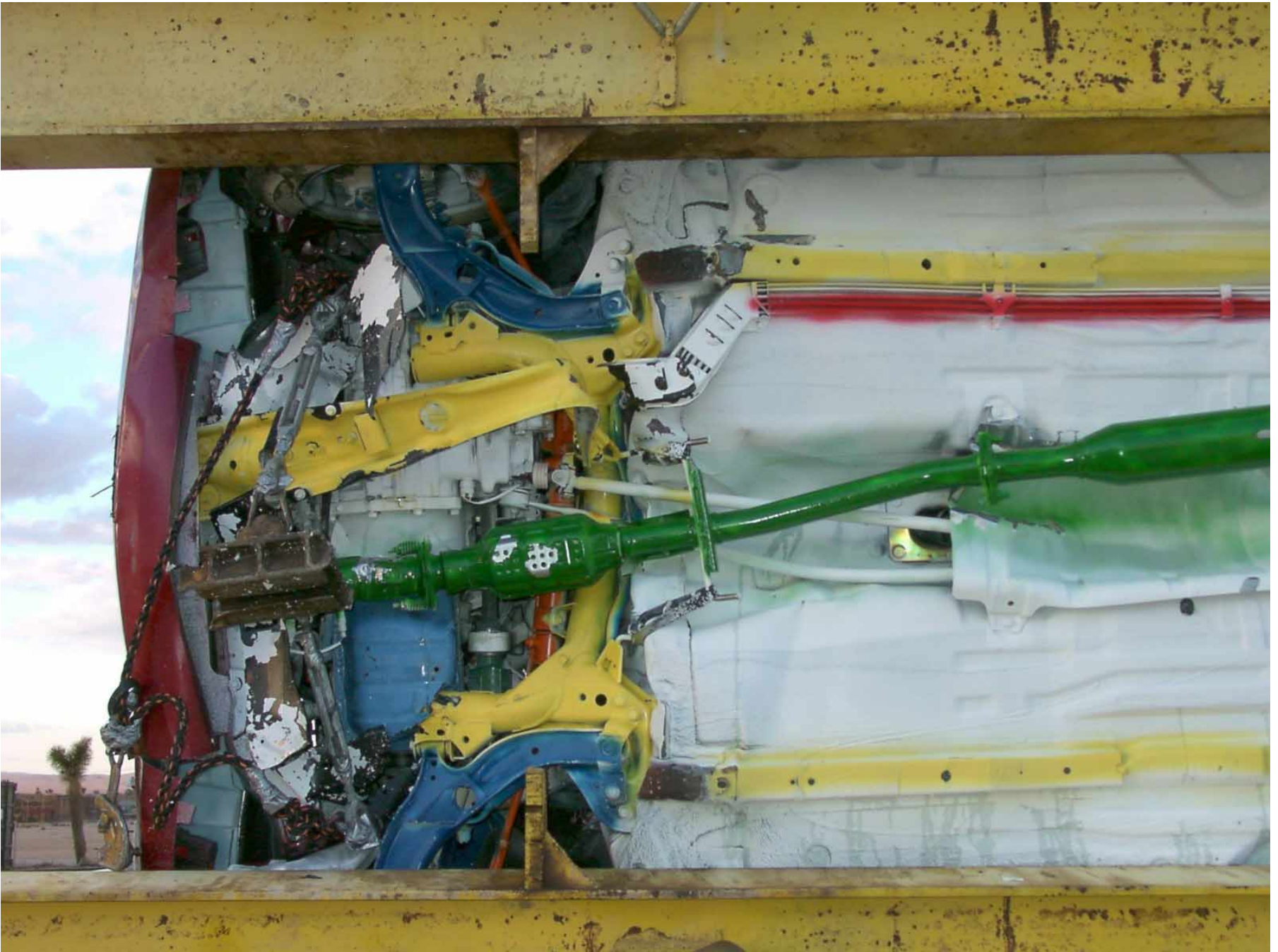


Figure A-22: Front Underside, Post-Test

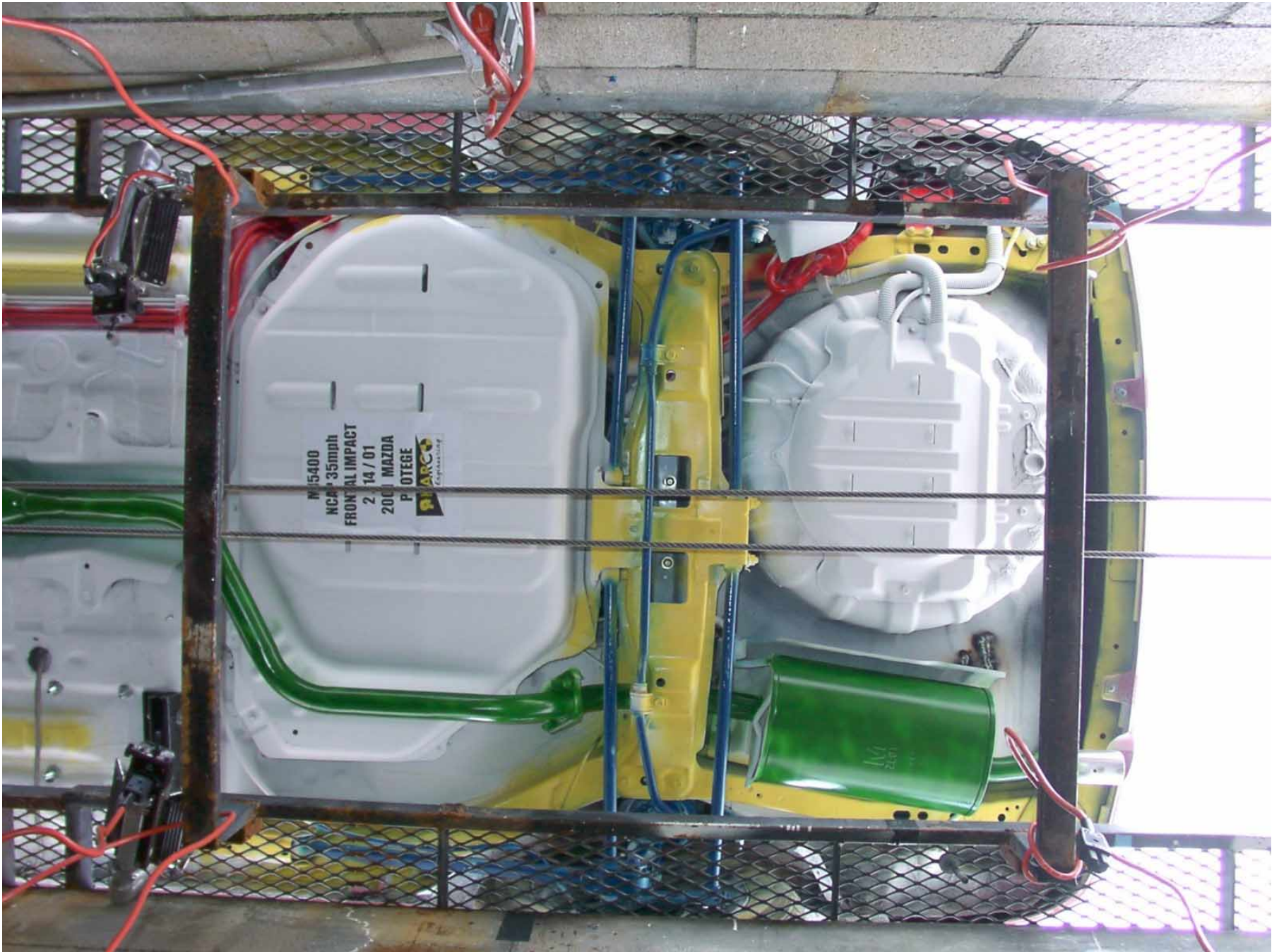


Figure A-23: Rear Underside, Pre-Test

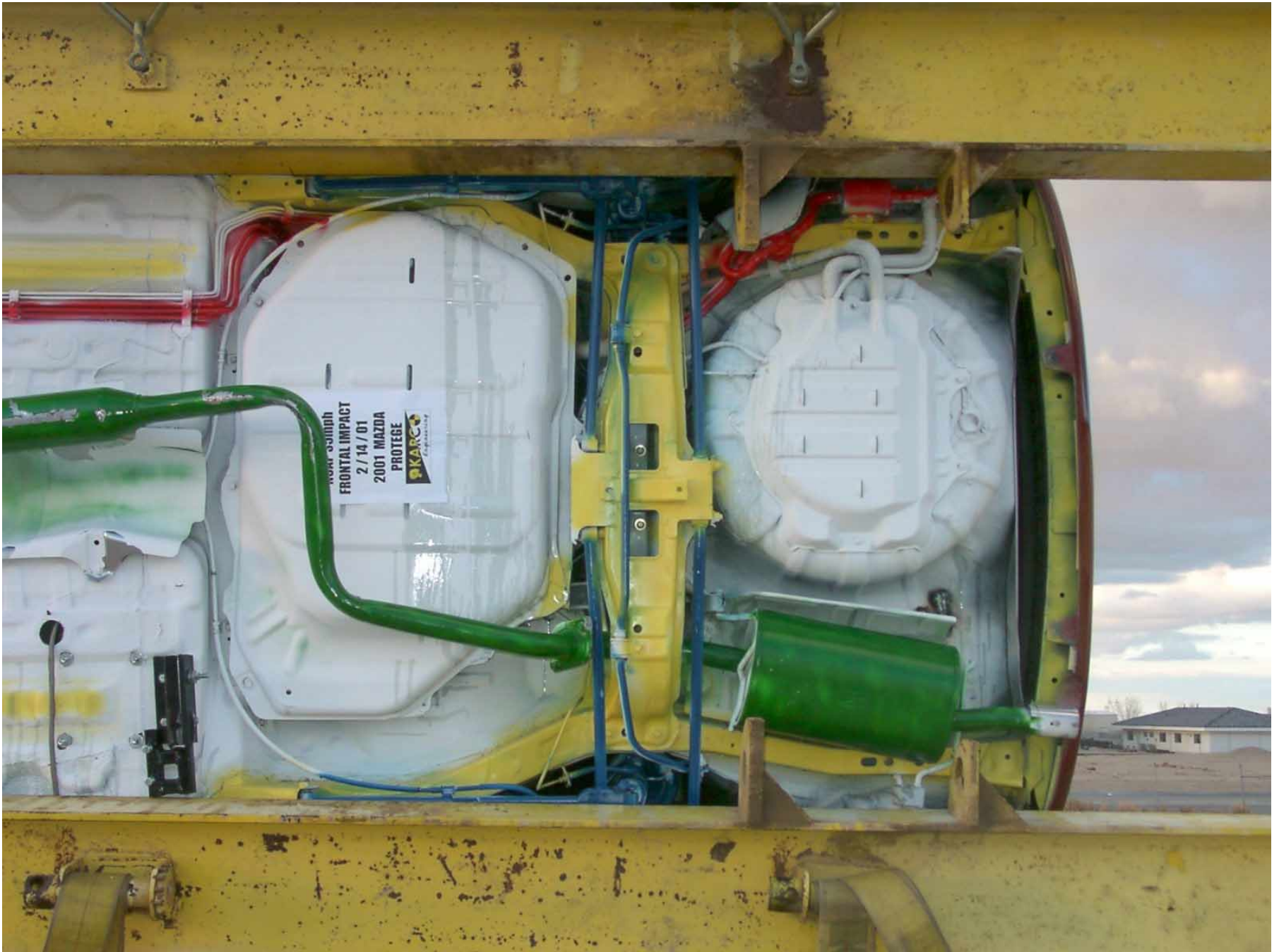


Figure A-24: Rear Underside, Post-Test

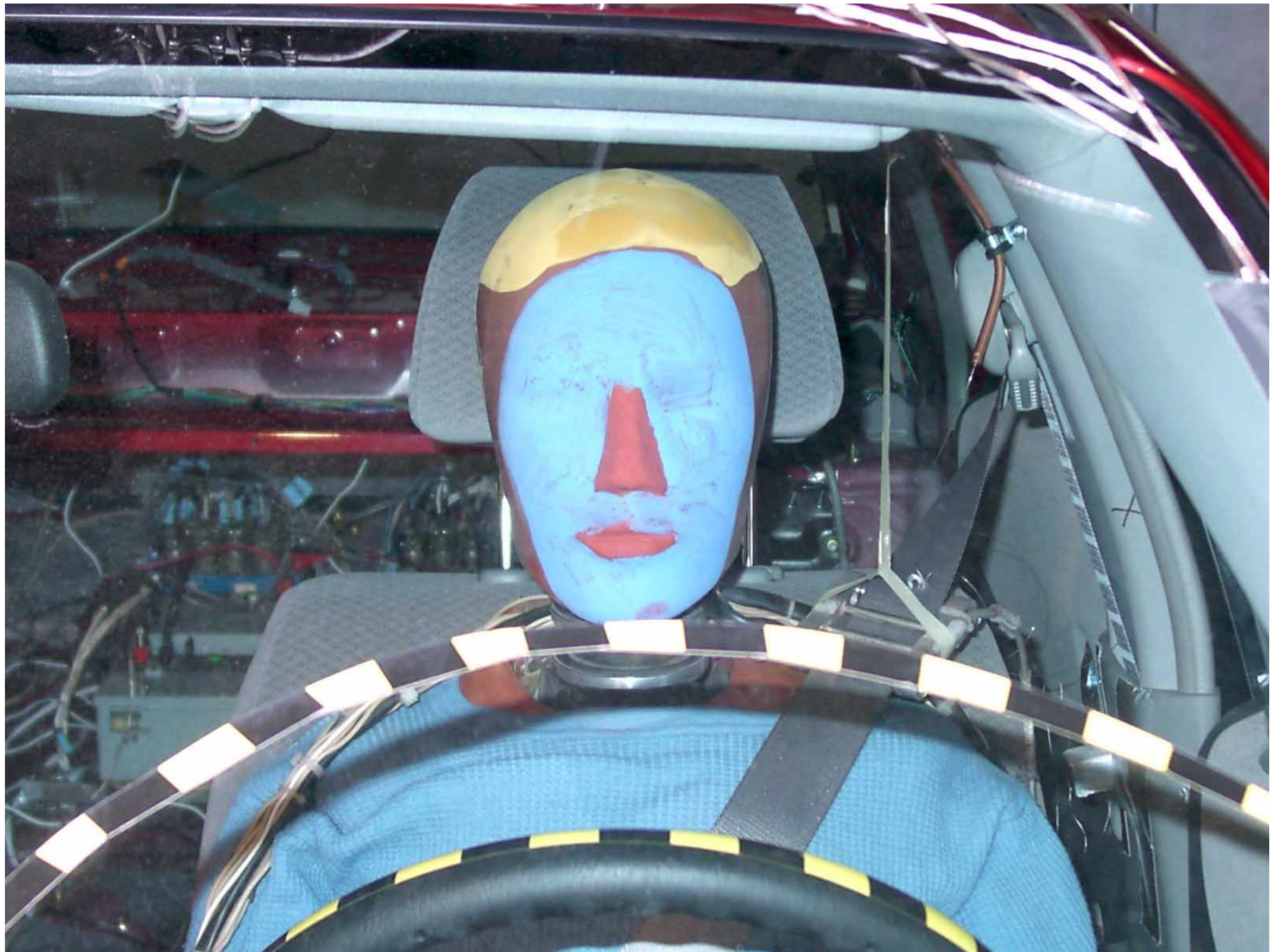


Figure A-25: Driver Dummy Front View, Pre-Test



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

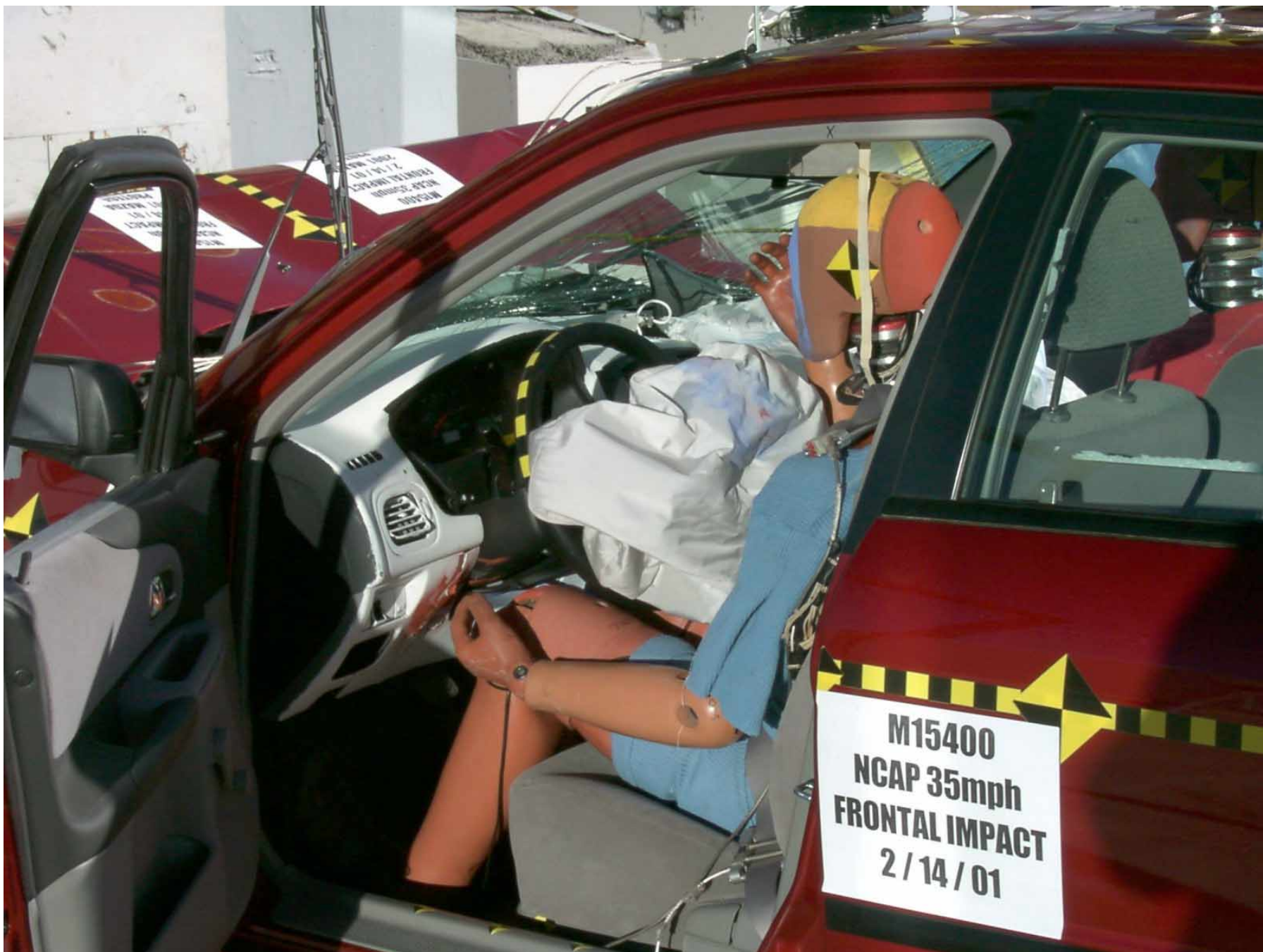


Figure A-30: Driver Dummy Door Open, Post-Test



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



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

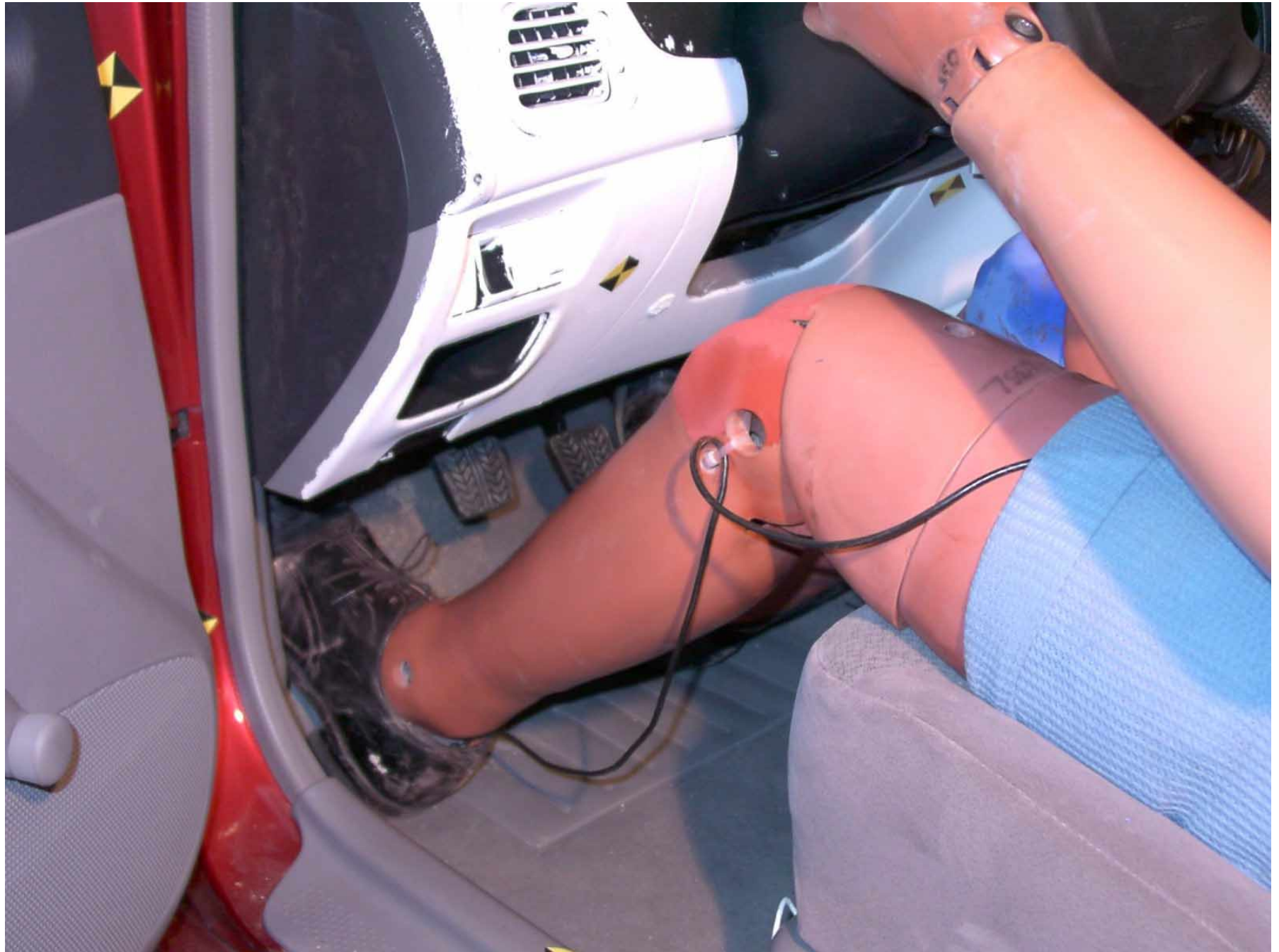


Figure A-33: Driver Dummy Feet, Pre-Test



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-37: Driver Side Floor Pan, Pre-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

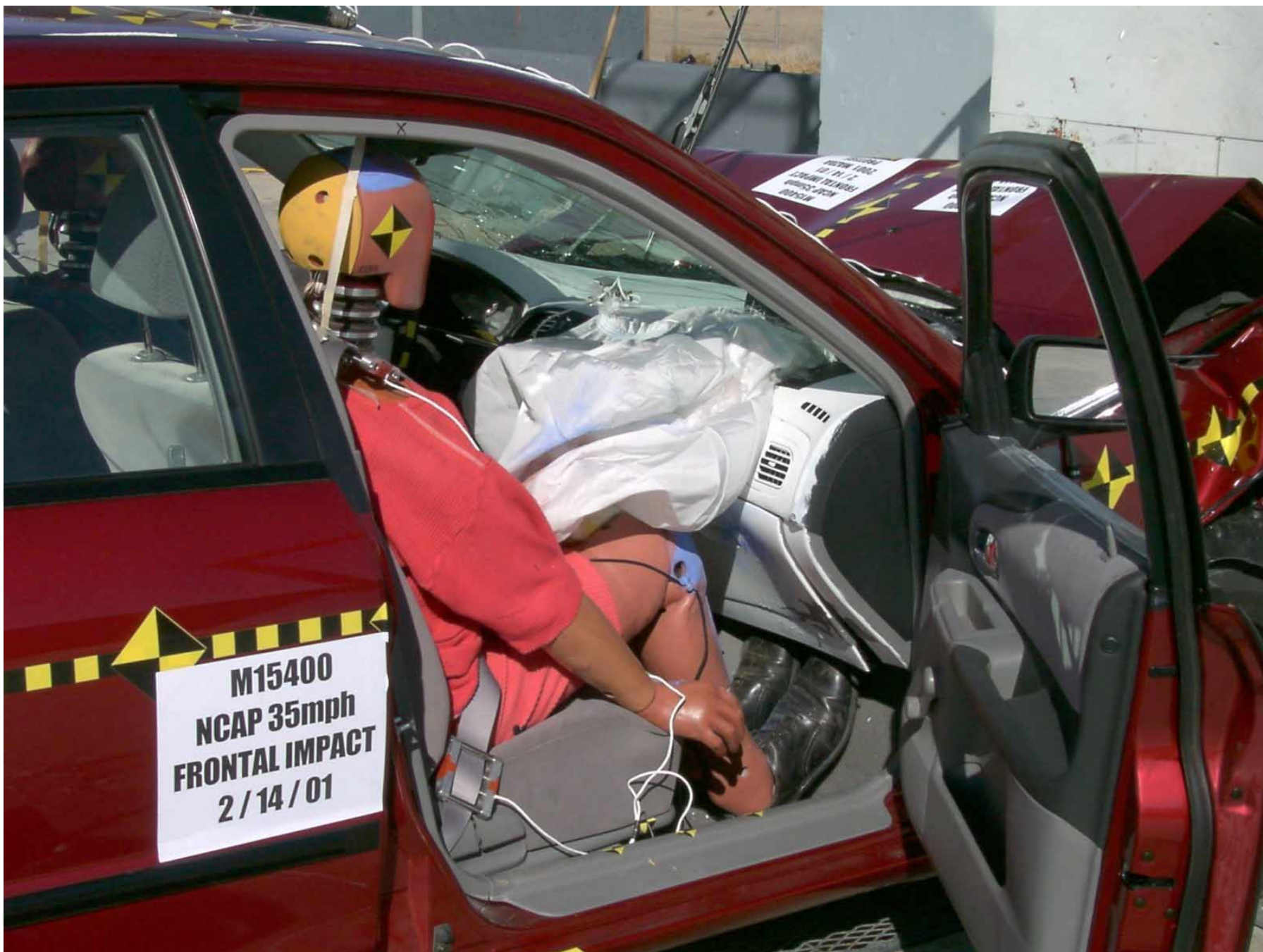


Figure A-46: Passenger Dummy Door Open, Post-Test

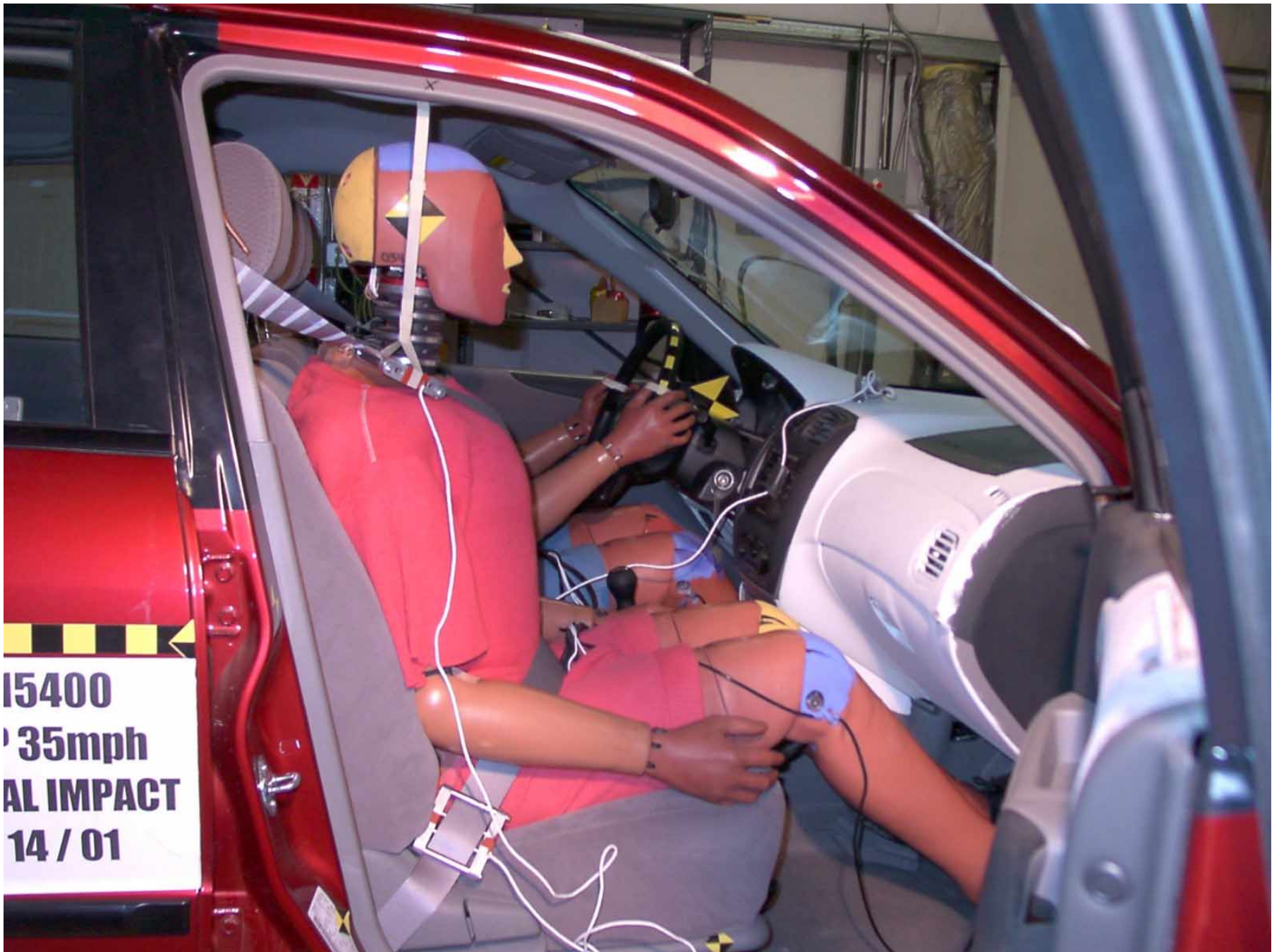


Figure A-47: Passenger Dummy 90° To Vehicle, Pre-Test



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

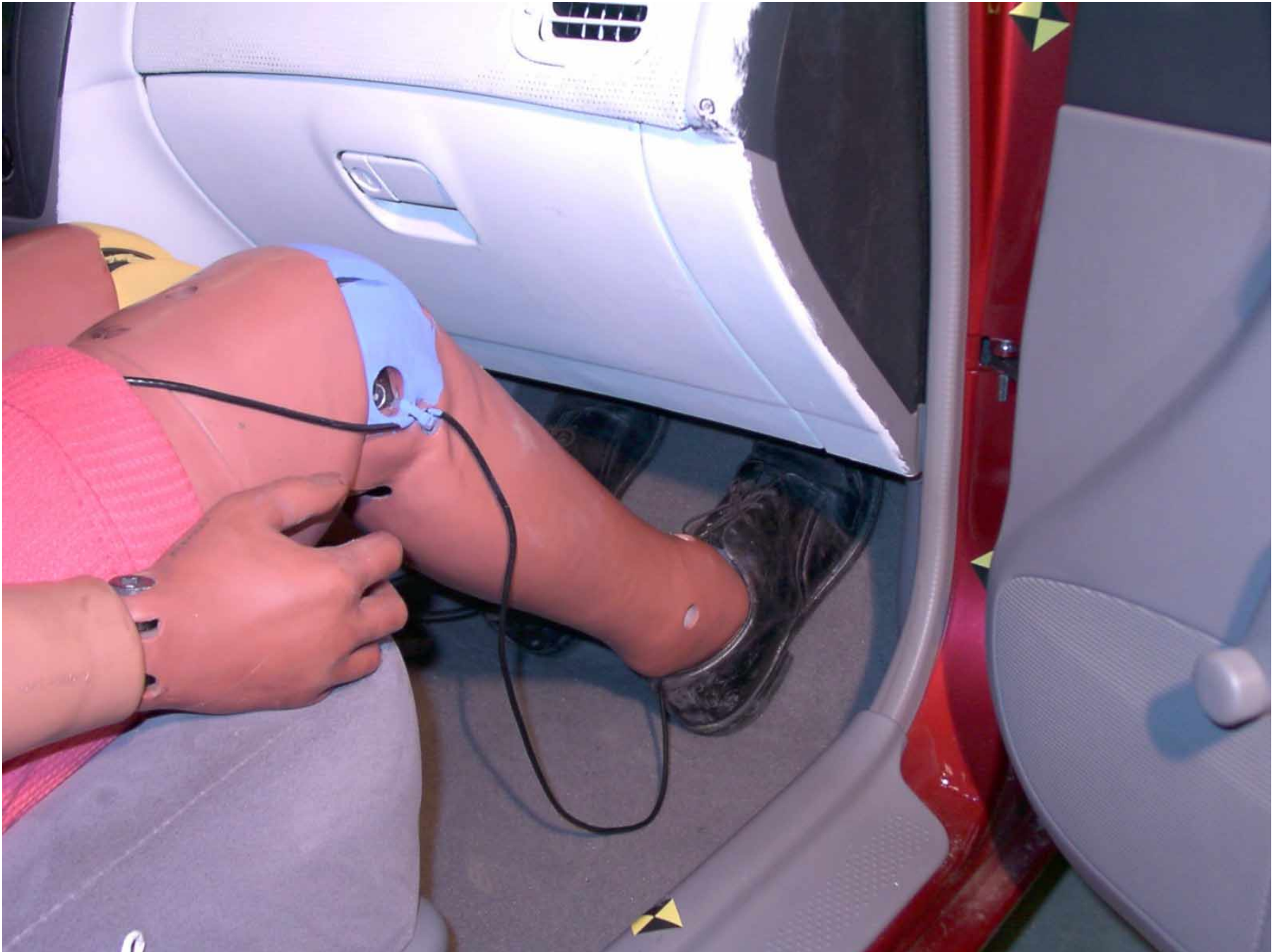


Figure A-49: Passenger Dummy Feet, Pre-Test

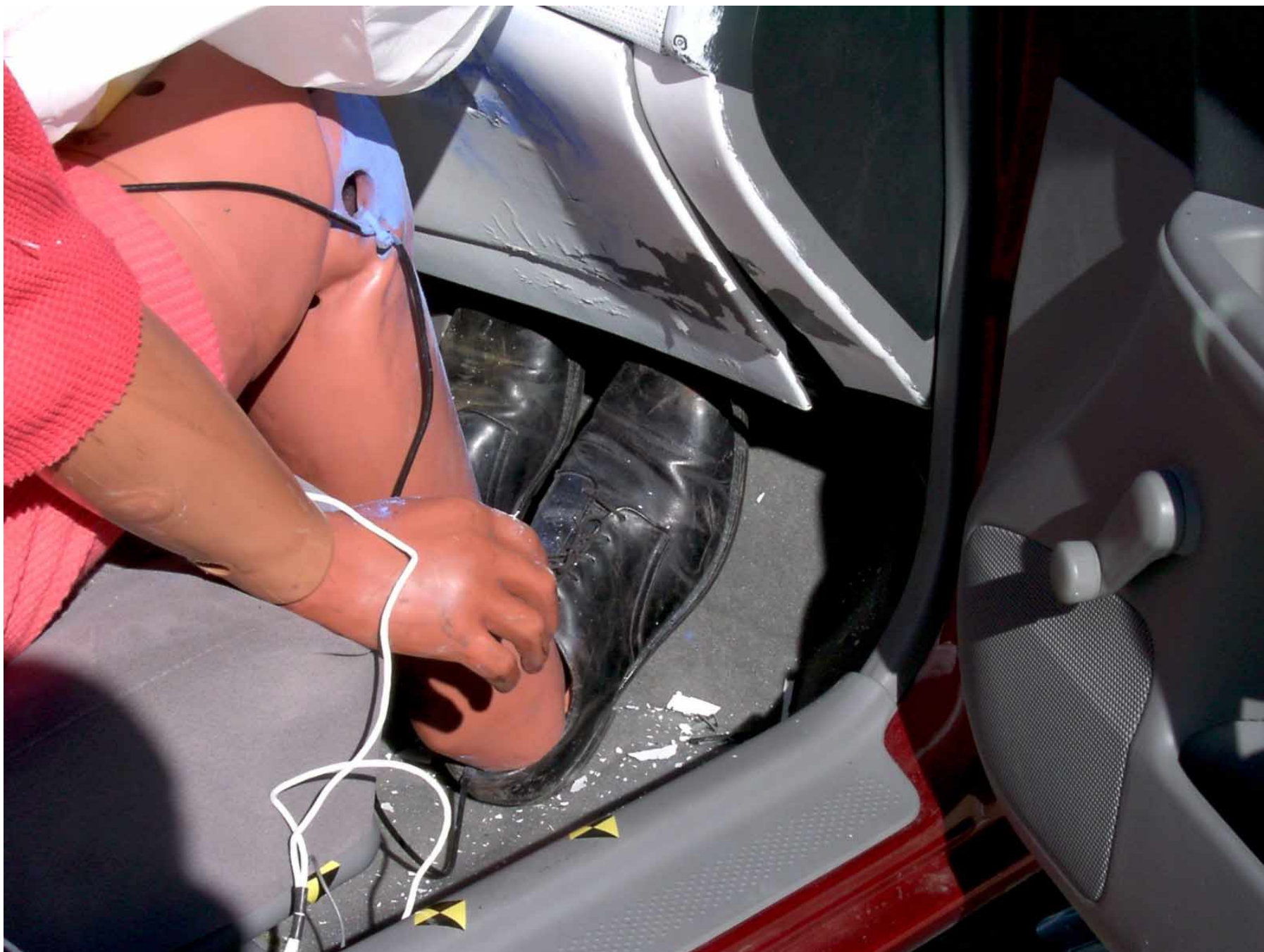


Figure A-50: Passenger Dummy Feet and Knee Contact, Post-Test



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

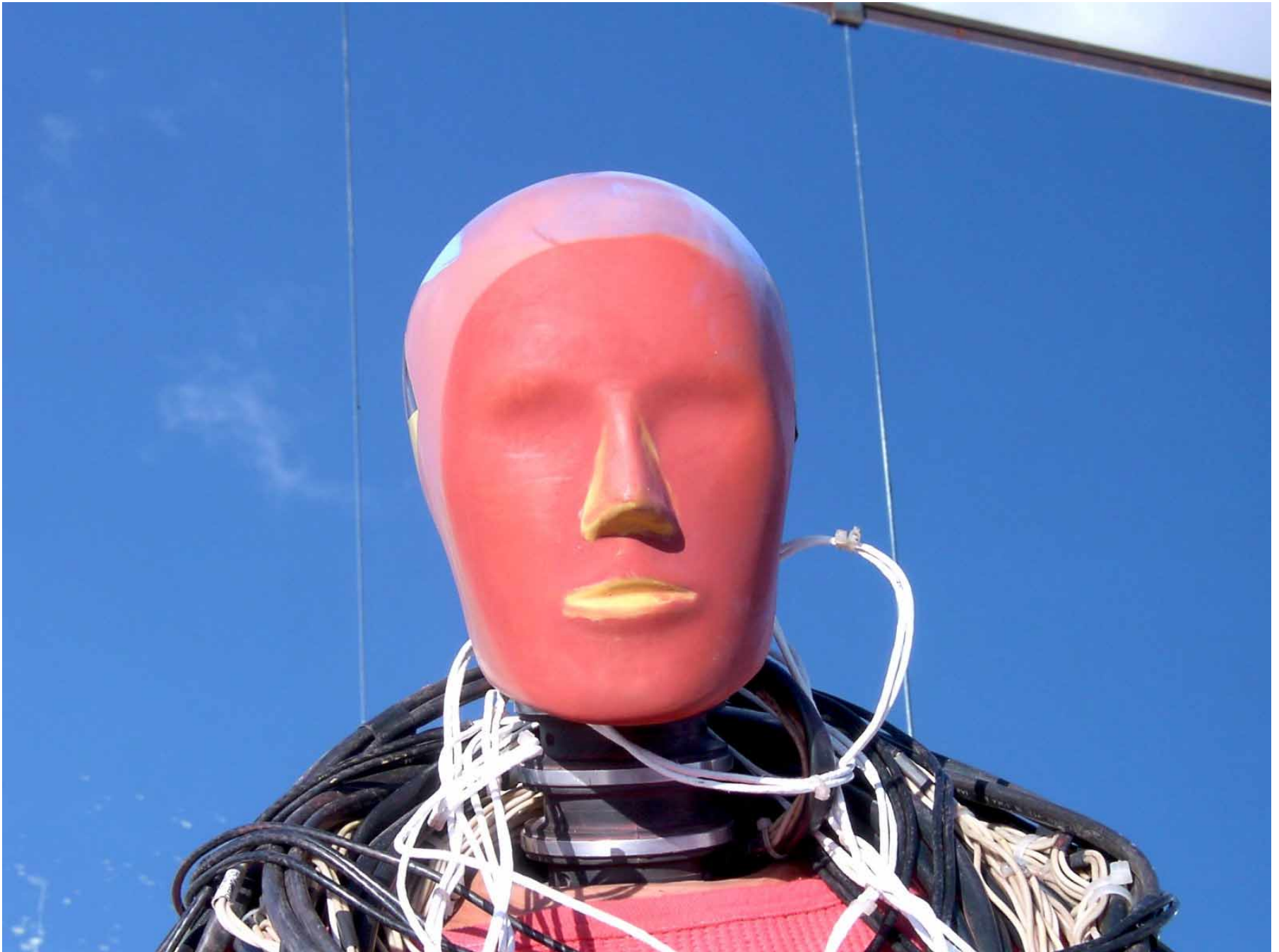


Figure A-55: Passenger Head, Post-Test



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-4	Driver Head Primary Y	B-4
B-5	Driver Head Primary Z	B-5
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B-7	Driver Head Redundant X	B-7
B-8	Driver Head Redundant X Velocity	B-8
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B-10	Driver Head Redundant Y	B-10
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B-13	Driver Neck Force X	B-13
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B-17	Driver Neck Moment X	B-17
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B-19	Driver Neck Moment Z	B-19
B-20	Driver Neck Moment Resultant	B-20
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B-23	Driver Chest Primary X Displacement	B-23
B-24	Driver Chest Primary Y	B-24
B-25	Driver Chest Primary Z	B-25
B-26	Driver Chest Primary Resultant	B-26
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B-28	Driver Chest Redundant X Velocity	B-28
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B-30	Driver Chest Redundant Y	B-30
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B-33	Driver Chest Displacement X	B-33

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B-36 Driver Pelvis X Displacement	B-36
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B-38 Driver Pelvis Z	B-38
B-39 Driver Pelvis Resultant	B-39
B-40 Driver Left Femur Force	B-40
B-41 Driver Right Femur Force	B-41
B-42 Driver Left Upper Tibia Moment X	B-42
B-43 Driver Left Upper Tibia Moment Y	B-43
B-44 Driver Right Upper Tibia Moment X	B-44
B-45 Driver Right Upper Tibia Moment Y	B-45
B-46 Driver Left Lower Tibia Moment X	B-46
B-47 Driver Left Lower Tibia Moment Y	B-47
B-48 Driver Left Lower Tibia Force Z	B-48
B-49 Driver Right Lower Tibia Moment X	B-49
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B-55 Driver Right Foot Aft X	B-55
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B-58 Driver Lap Belt Force	B-58
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B-92	Passenger Chest Redundant Z	B-92
B-93	Passenger Chest Redundant Resultant	B-93
B-94	Passenger Chest Displacement X	B-94

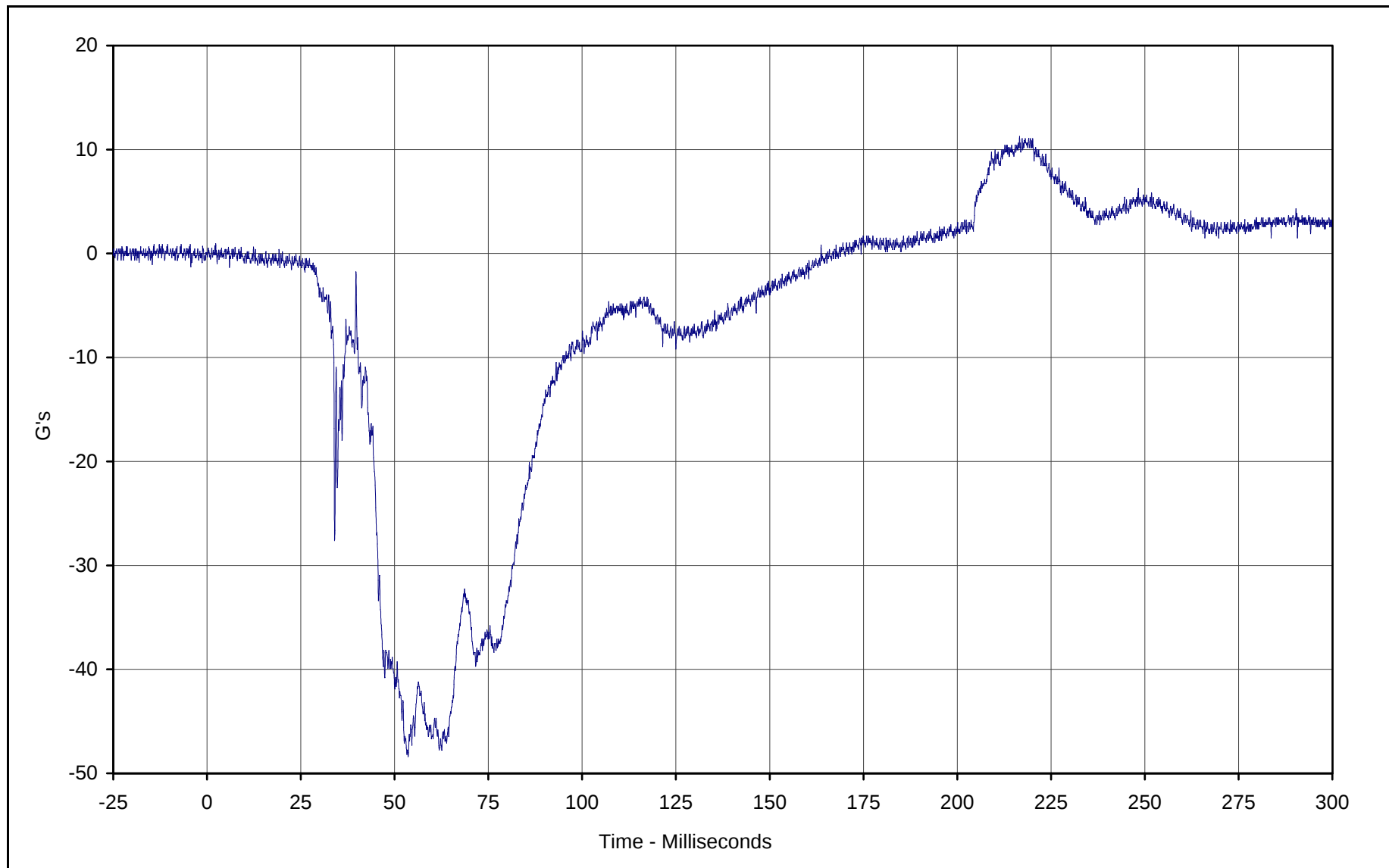
LIST OF DATA PLOTS...(Continued)

Data Plot	Page
B-95 Passenger Pelvis X	B-95
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B-97 Passenger Pelvis X Displacement	B-97
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B-100 Passenger Pelvis Resultant	B-100
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B-116 Passenger Right Foot Aft X	B-116
B-117 Passenger Right Foot Aft Z	B-117
B-118 Passenger Right Foot Fore Z	B-118
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B-128	Vehicle Right Rear Primary Displacement	B-128
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B-131	Vehicle Engine Top Displacement	B-131
B-132	Vehicle Engine Bottom	B-132
B-133	Vehicle Engine Bottom Velocity	B-133
B-134	Vehicle Engine Bottom Displacement	B-134
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B-136	Vehicle Left Brake Caliper Velocity	B-136
B-137	Vehicle Left Brake Caliper Displacement	B-137
B-138	Vehicle Right Brake Caliper	B-138
B-139	Vehicle Right Brake Caliper Velocity	B-139
B-140	Vehicle Right Brake Caliper Displacement	B-140
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B-142	Vehicle Instrument Panel Velocity	B-142
B-143	Vehicle Instrument Panel Displacement	B-143
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B-145	Vehicle Left Rear Redundant Velocity	B-145
B-146	Vehicle Left Rear Redundant Displacement	B-146

B-1



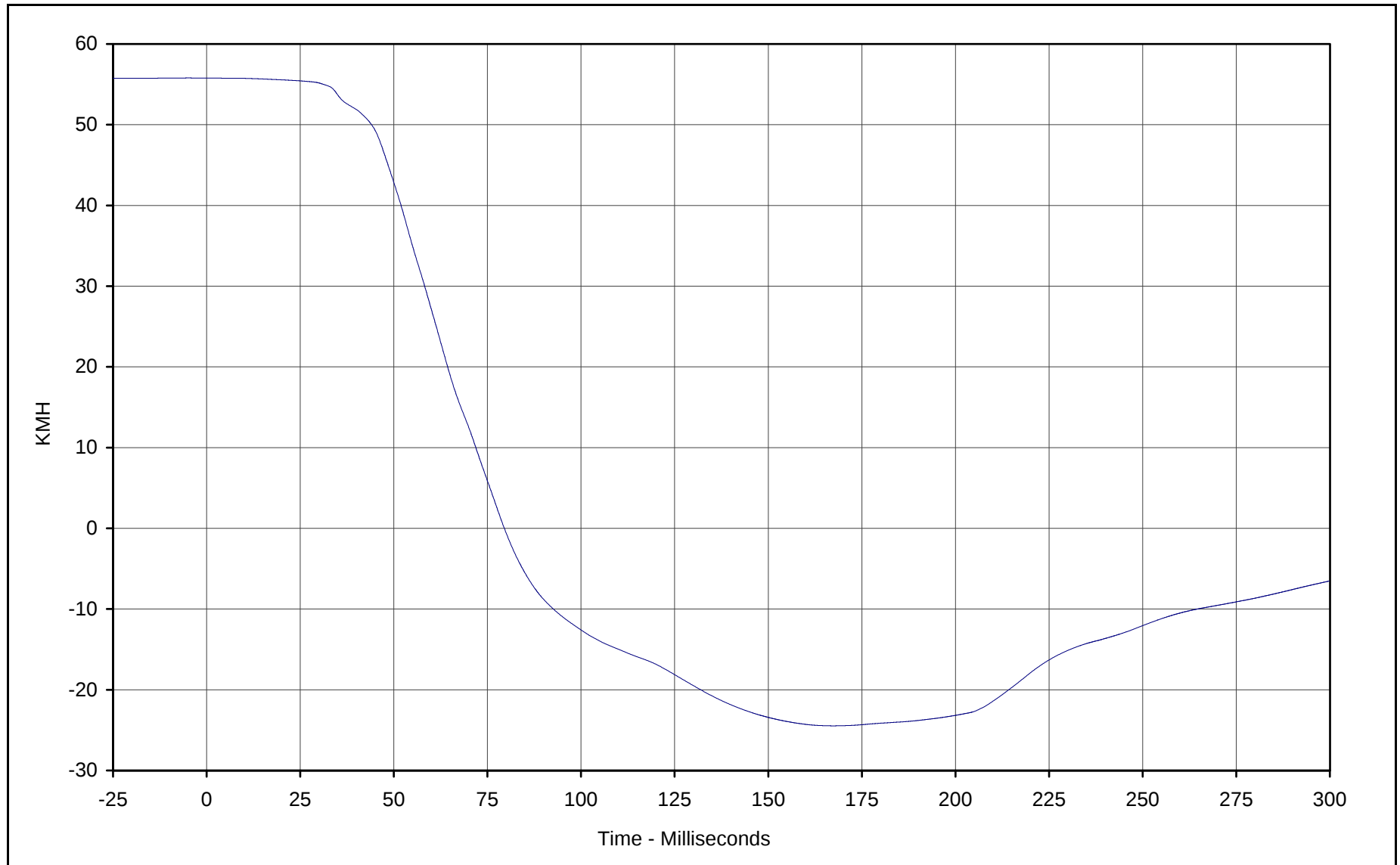
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Maximum Value: 11.3 at 216.6 Milliseconds
Minimum Value: -48.4 at 53.6 Milliseconds
SAE Filter Class: 1000
Date of Test: 02/14/01
Curve Number: FIL-001

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



KAR21001-11

B-2

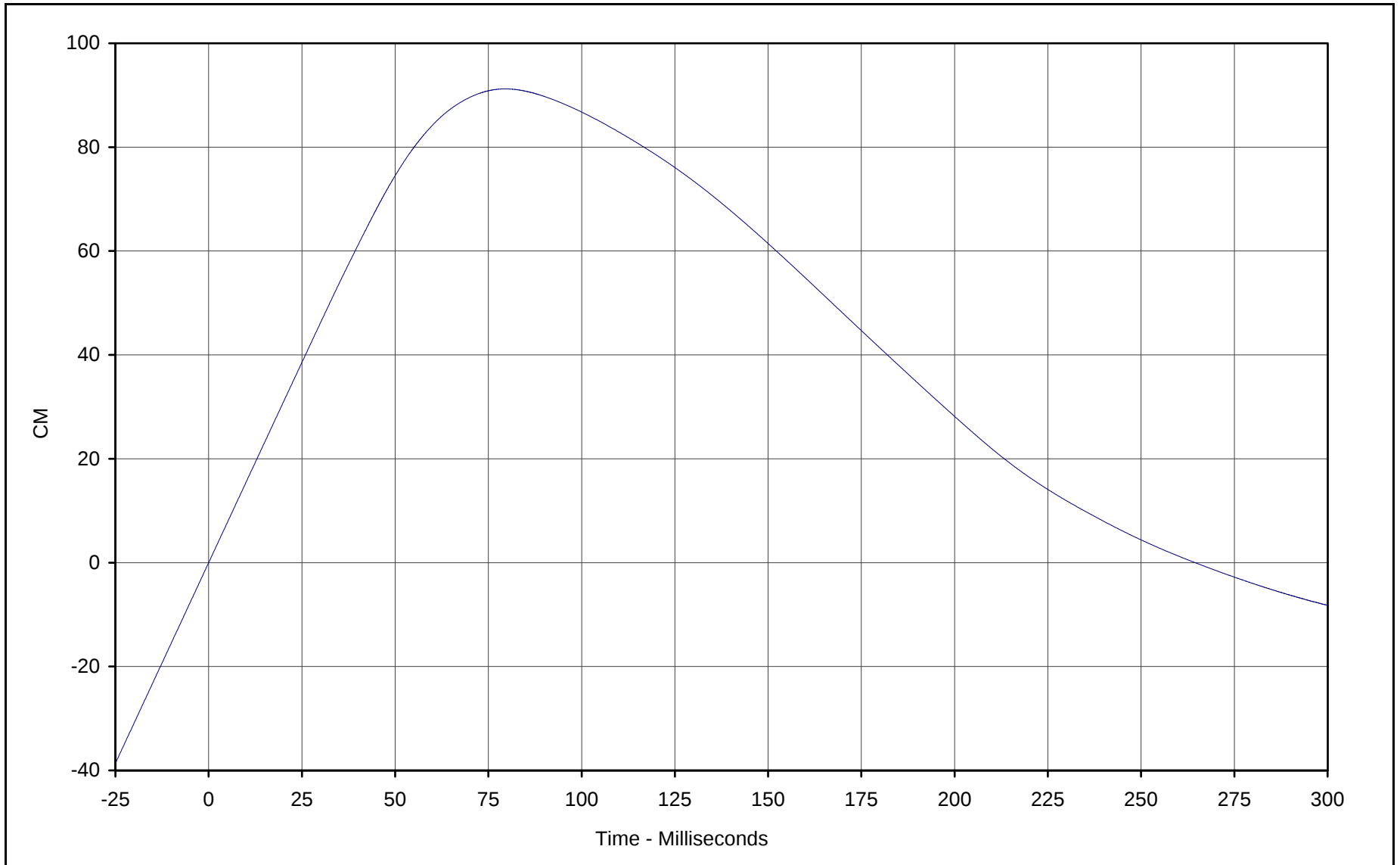


Curve Description: Driver Head Primary X Velocity
Maximum Value: 55.8 at 2.5 Milliseconds
Minimum Value: -24.5 at 167.2 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: IN1-001

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



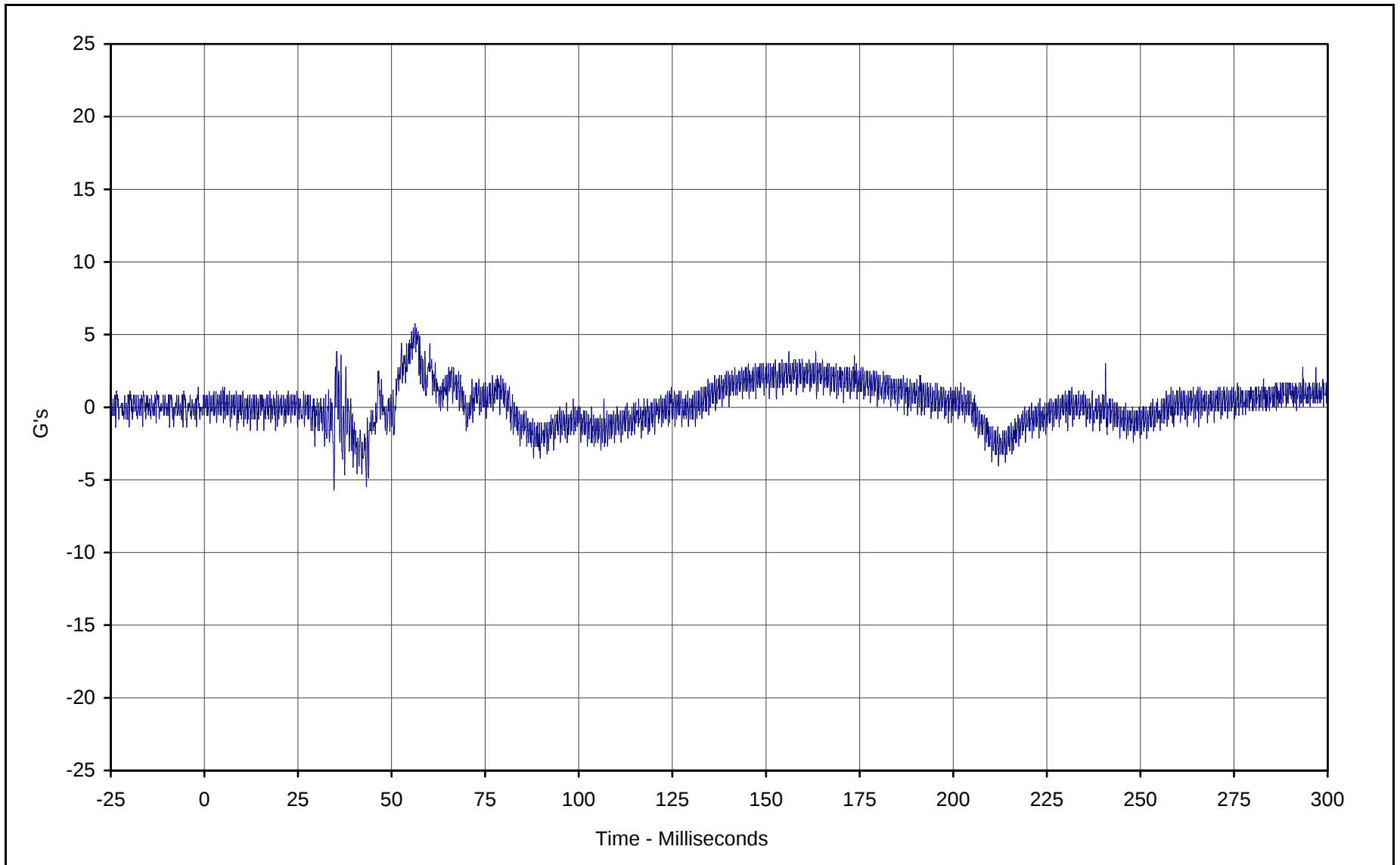
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Curve Description: Driver Head Primary X Displ.
Maximum Value: 91.2 at 79.5 Milliseconds
Minimum Value: -8.2 at 299.9 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: IN2-001

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan

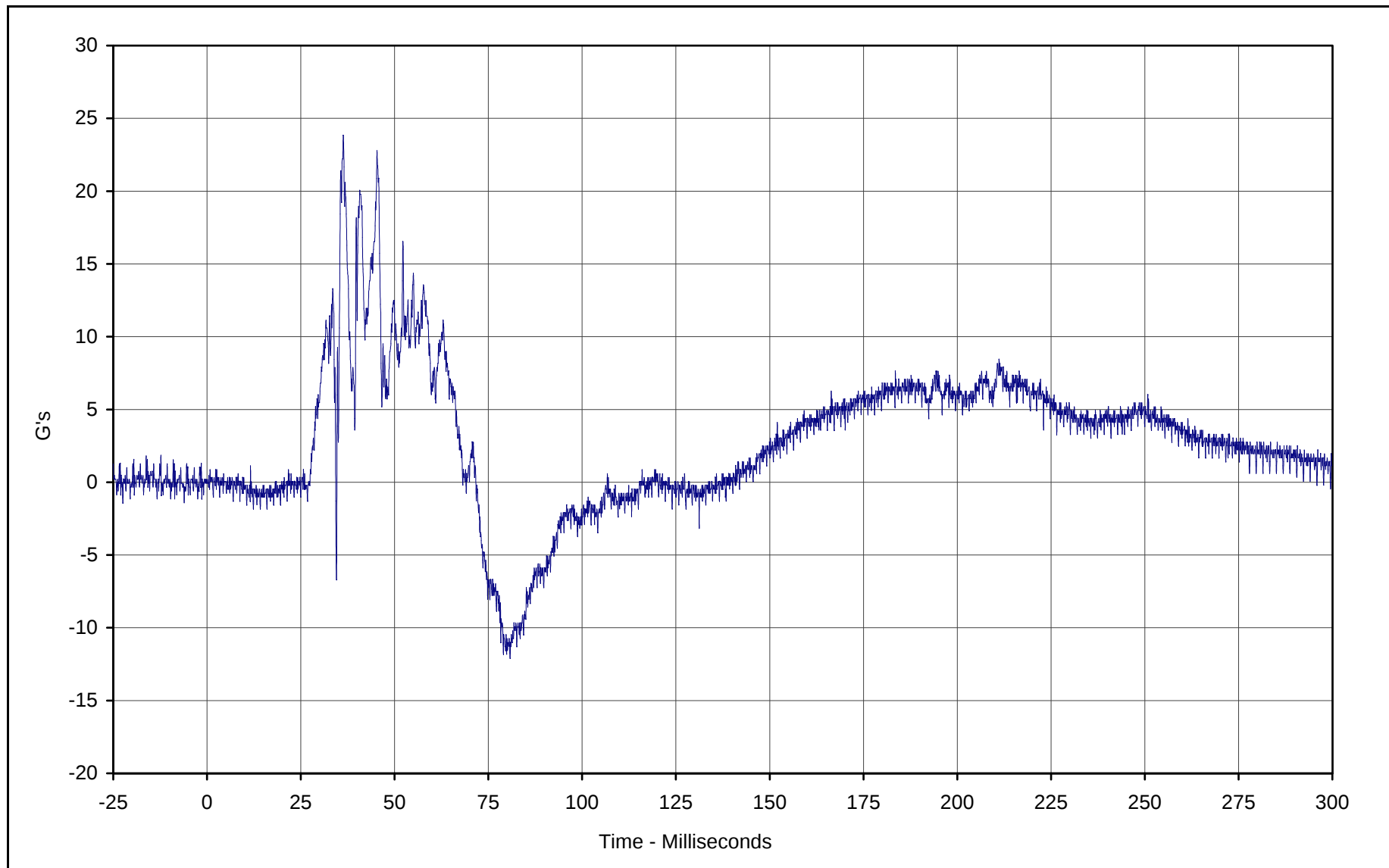




Curve Description: Driver Head Primary Y
Maximum Value: 5.7 at 56.3 Milliseconds
Minimum Value: -5.7 at 34.6 Milliseconds
SAE Filter Class: 1000
Date of Test: 02/14/01
Curve Number: FIL-002

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan





Curve Description: Driver Head Primary Z

Maximum Value: 23.8 at 36.3 Milliseconds

Minimum Value: -12.1 at 80.8 Milliseconds

SAE Filter Class: 1000

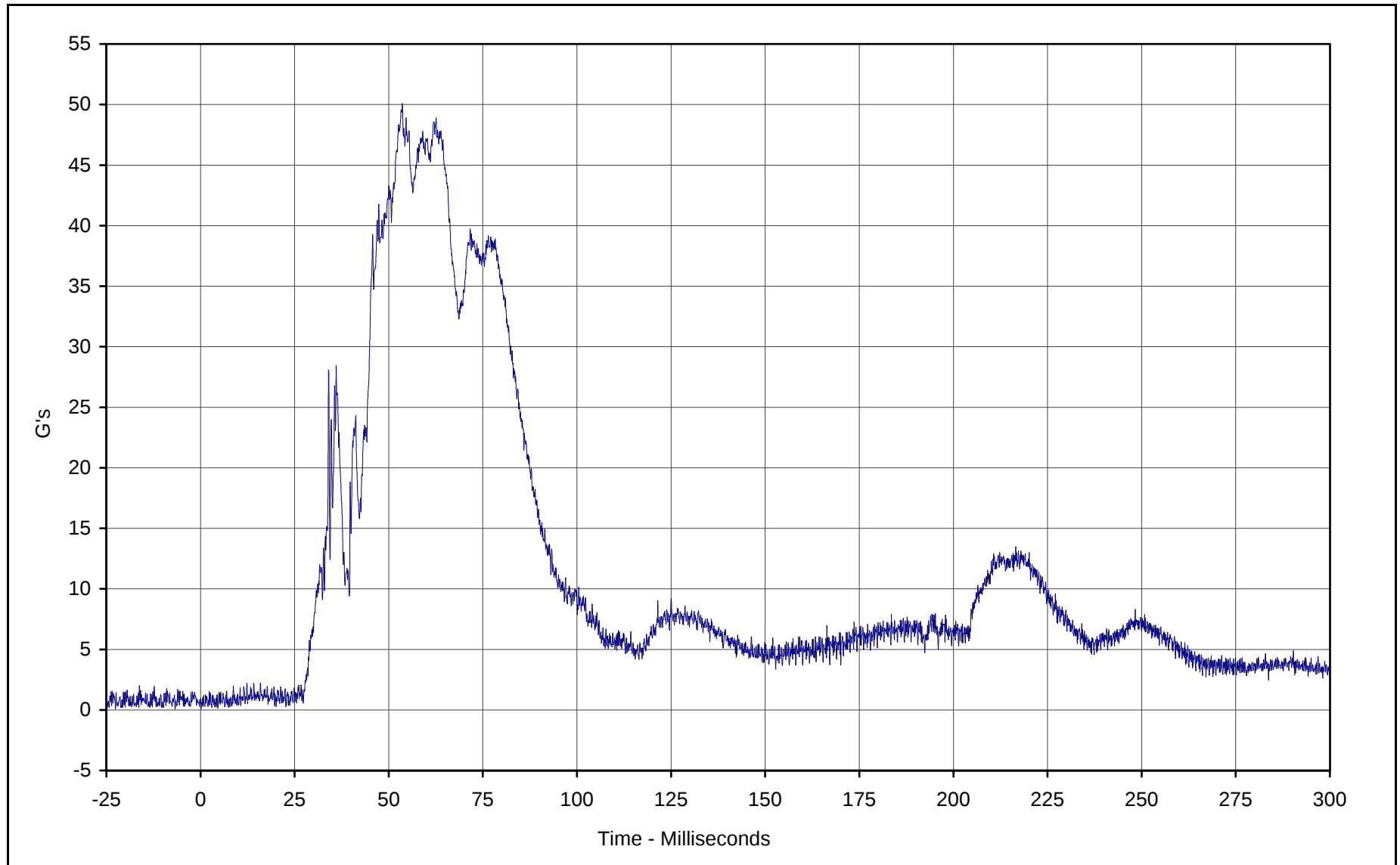
Date of Test: 02/14/01

Curve Number: FIL-003

Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan

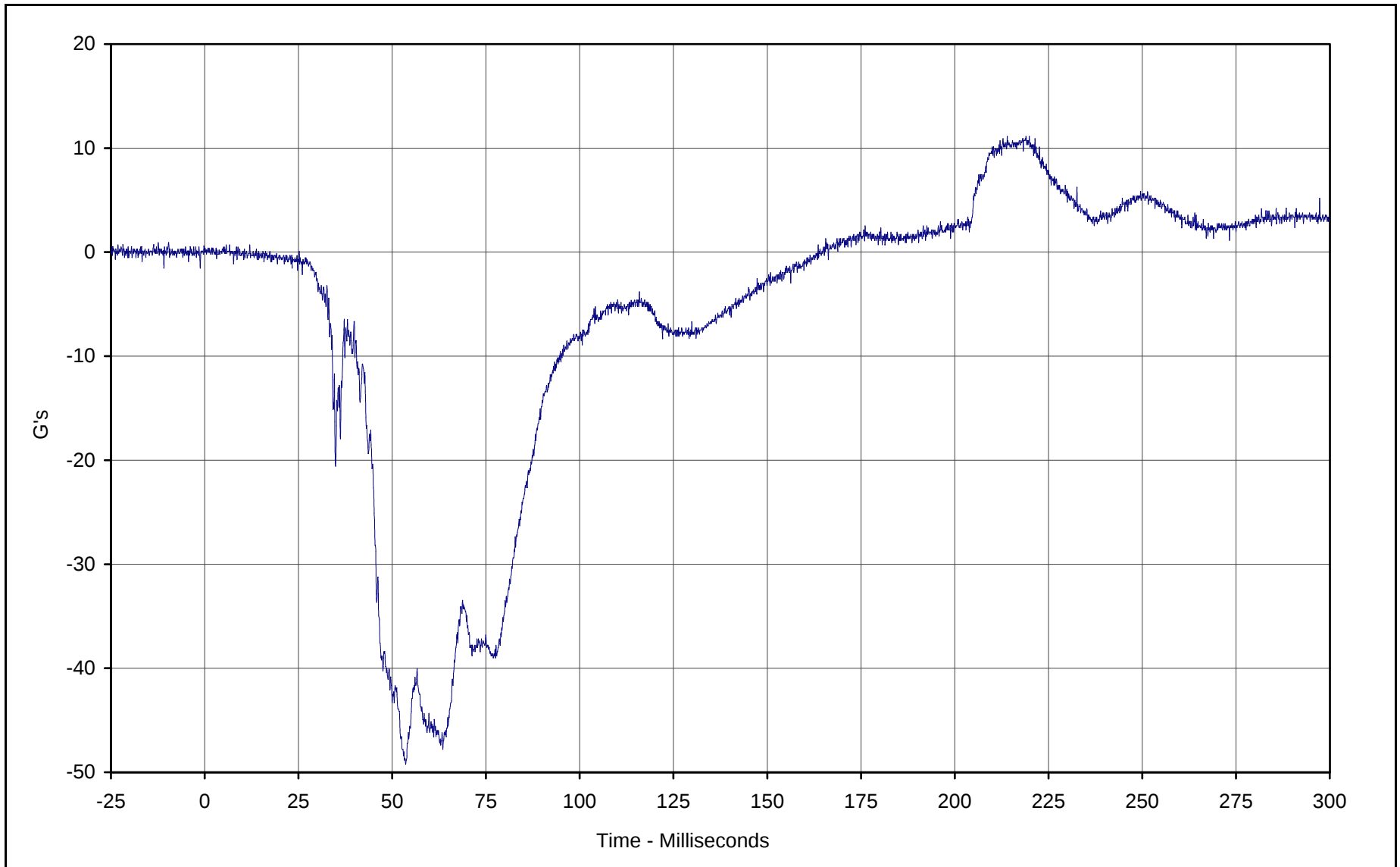




Curve Description: Driver Head Resultant Primary
Maximum Value: 50.1 at 53.6 Milliseconds
Minimum Value: 0.1 at 0.2 Milliseconds
SAE Filter Class: 1000
Date of Test: 02/14/01
Curve Number: RES-001

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



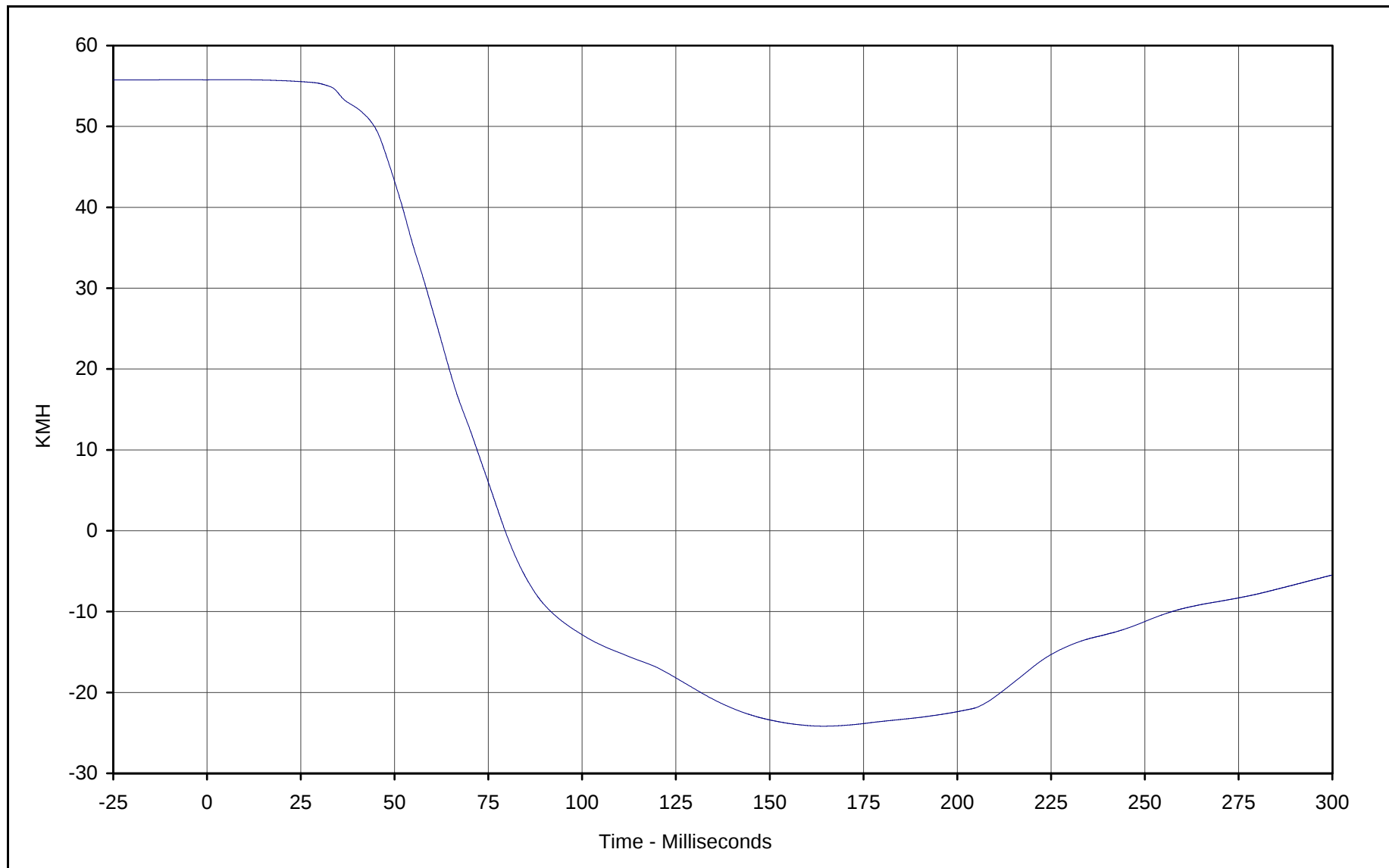


Curve Description: Driver Head Redundant X
Maximum Value: 11.1 at 214.0 Milliseconds
Minimum Value: -49.2 at 53.6 Milliseconds
SAE Filter Class: 1000
Date of Test: 02/14/01
Curve Number: FIL-004

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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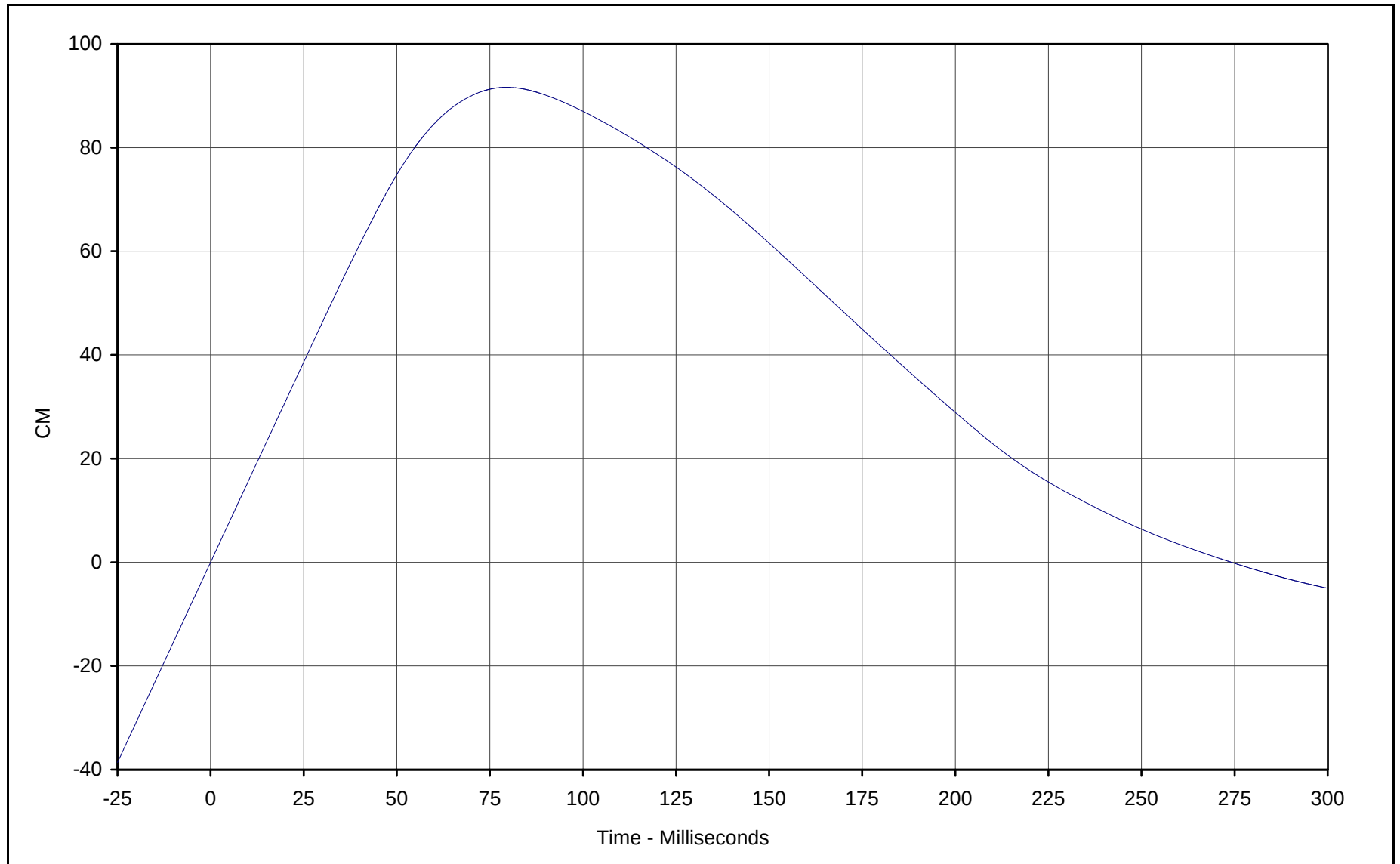


Curve Description: Driver Head Redundant X Velocity
Maximum Value: 55.8 at 7.0 Milliseconds
Minimum Value: -24.2 at 164.4 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: IN1-004

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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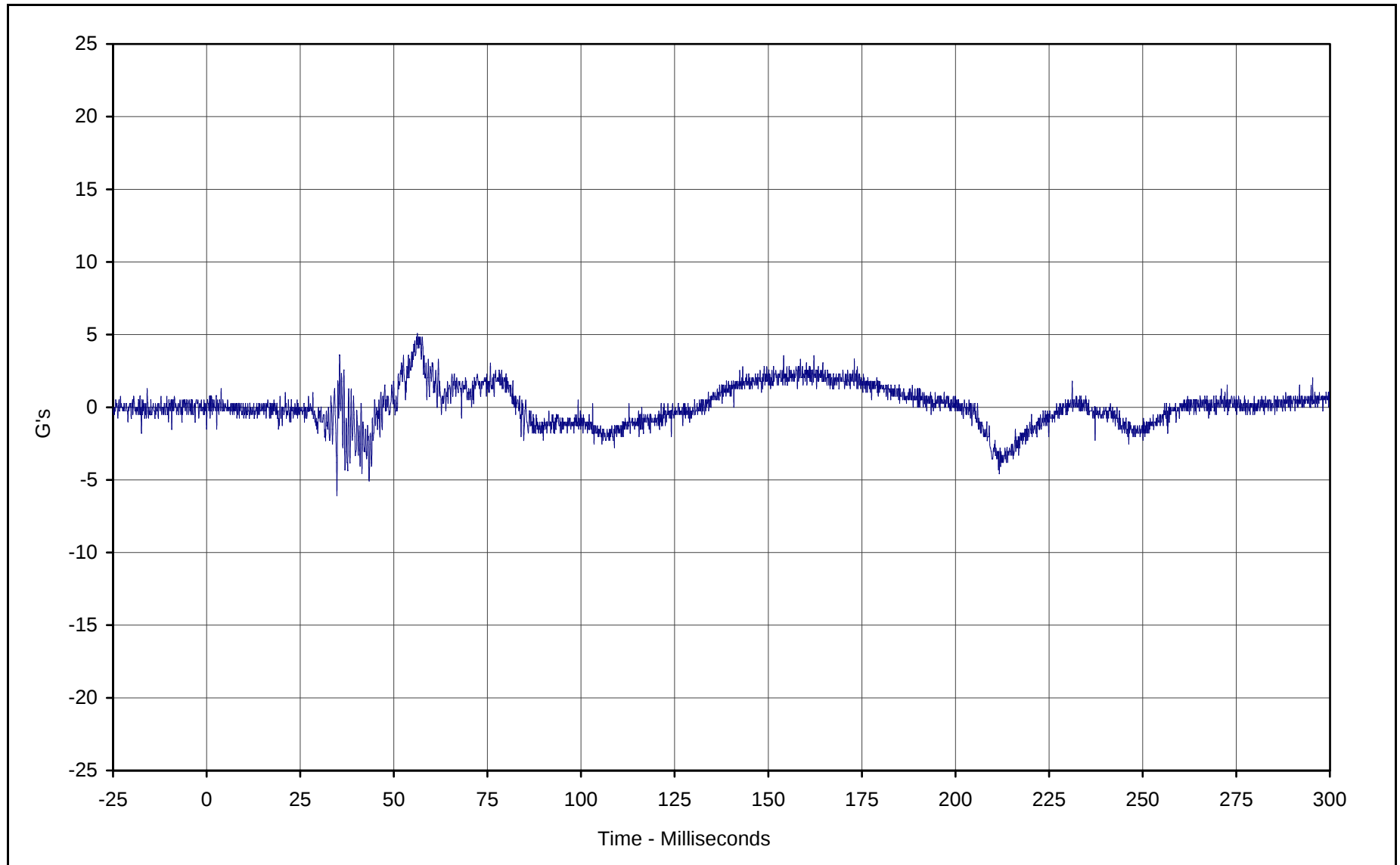


Curve Description: Driver Head Redundant X Displ.
Maximum Value: 91.6 at 79.5 Milliseconds
Minimum Value: -5.0 at 299.9 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: IN2-004

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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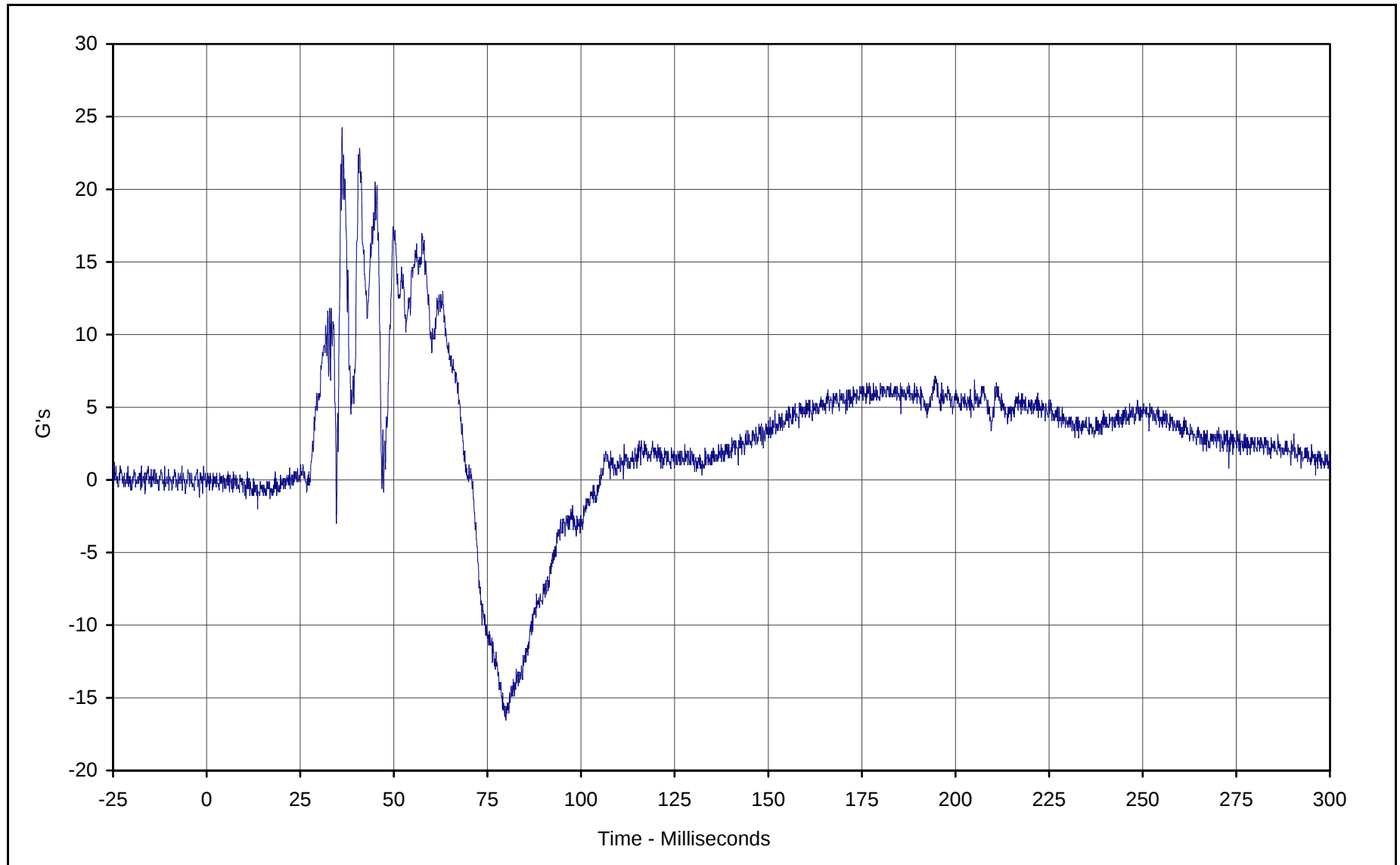


Curve Description: Driver Head Redundant Y
Maximum Value: 5.1 at 56.3 Milliseconds
Minimum Value: -6.1 at 34.8 Milliseconds
SAE Filter Class: 1000
Date of Test: 02/14/01
Curve Number: FIL-005

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



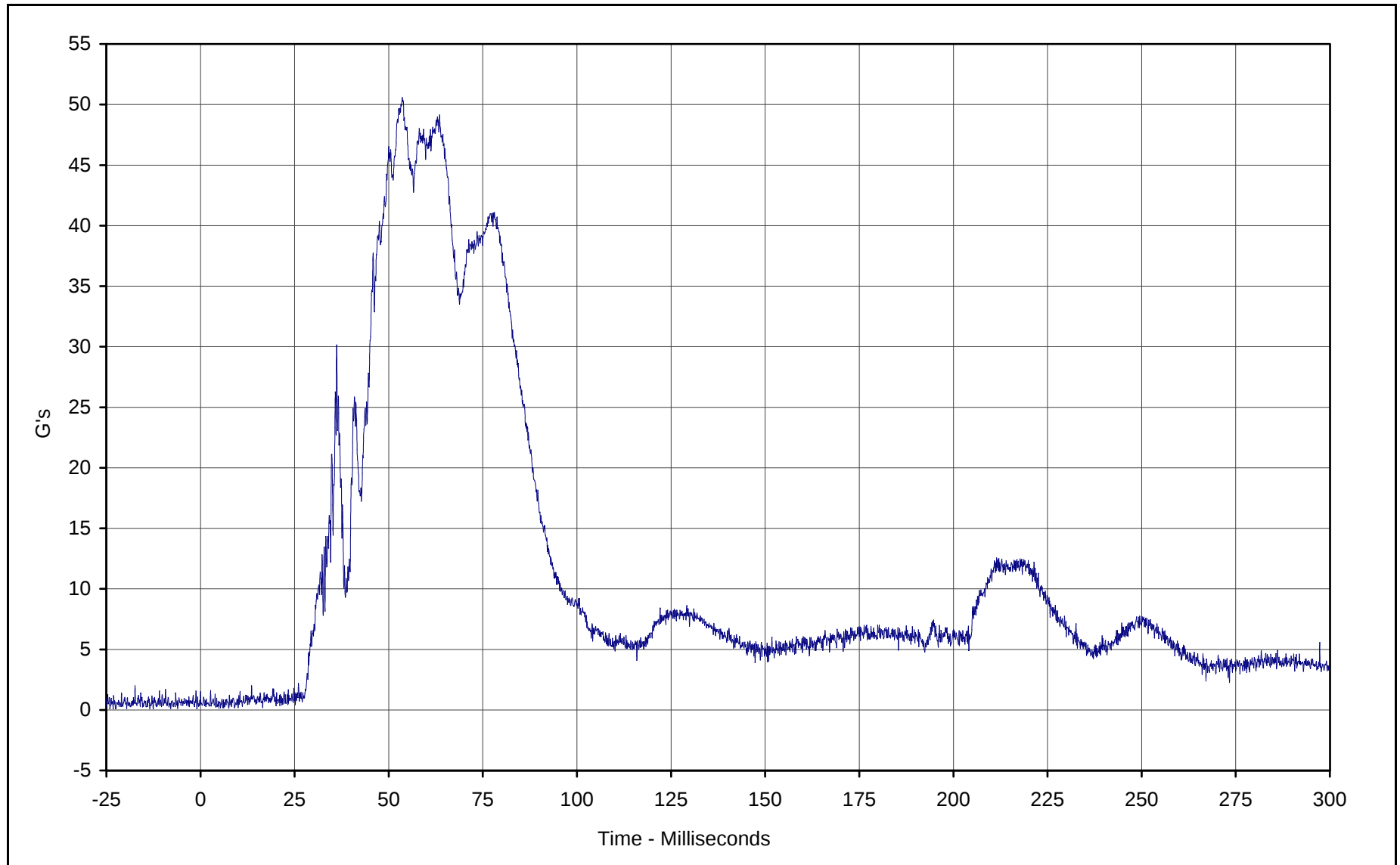
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Curve Description: Driver Head Redundant Z
Maximum Value: 24.2 at 36.2 Milliseconds
Minimum Value: -16.5 at 79.9 Milliseconds
SAE Filter Class: 1000
Date of Test: 02/14/01
Curve Number: FIL-006

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



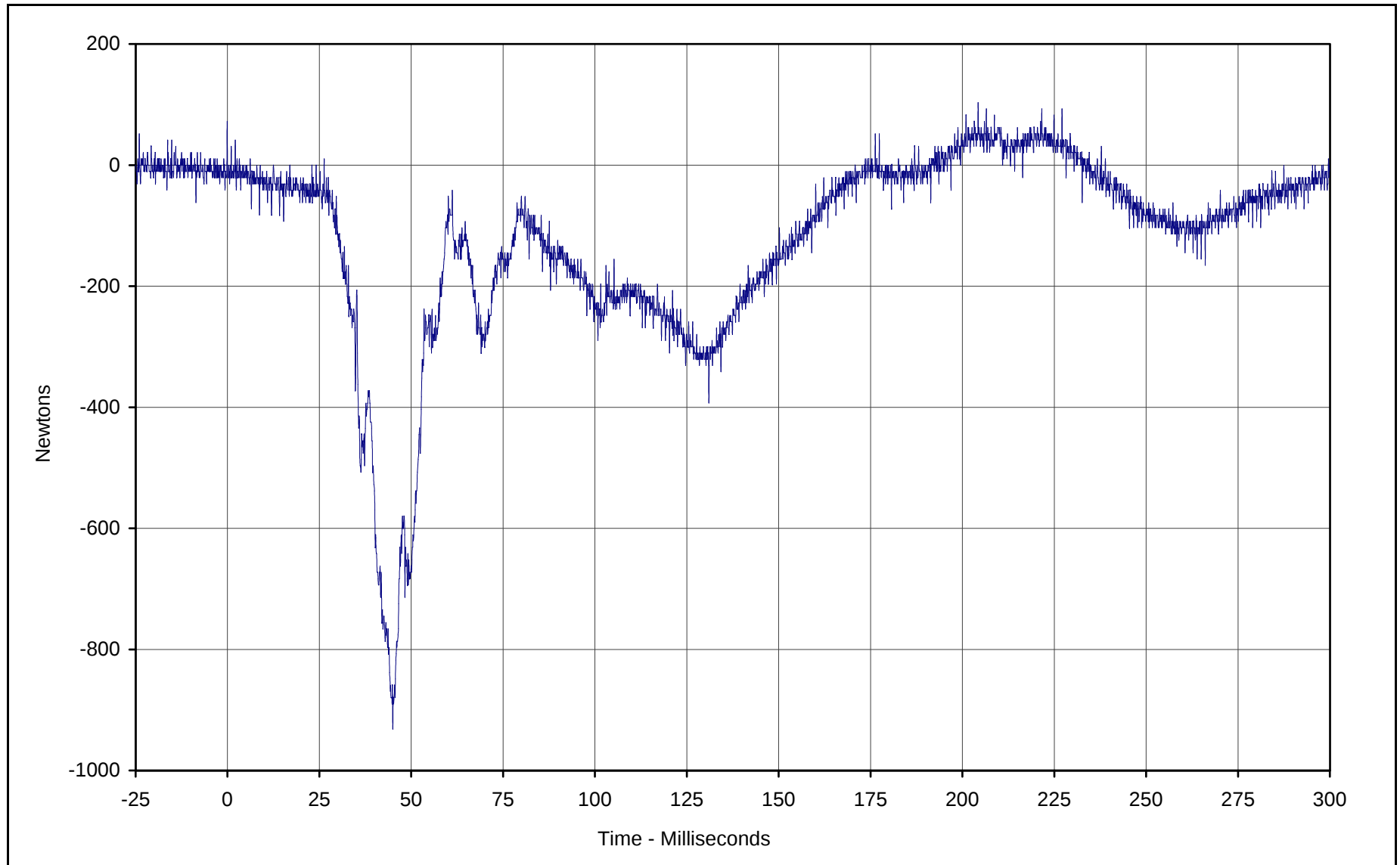


Curve Description: Driver Head Resultant Redundant
Maximum Value: 50.6 at 53.6 Milliseconds
Minimum Value: 0.1 at 4.9 Milliseconds
SAE Filter Class: 1000
Date of Test: 02/14/01
Curve Number: RES-004

Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan

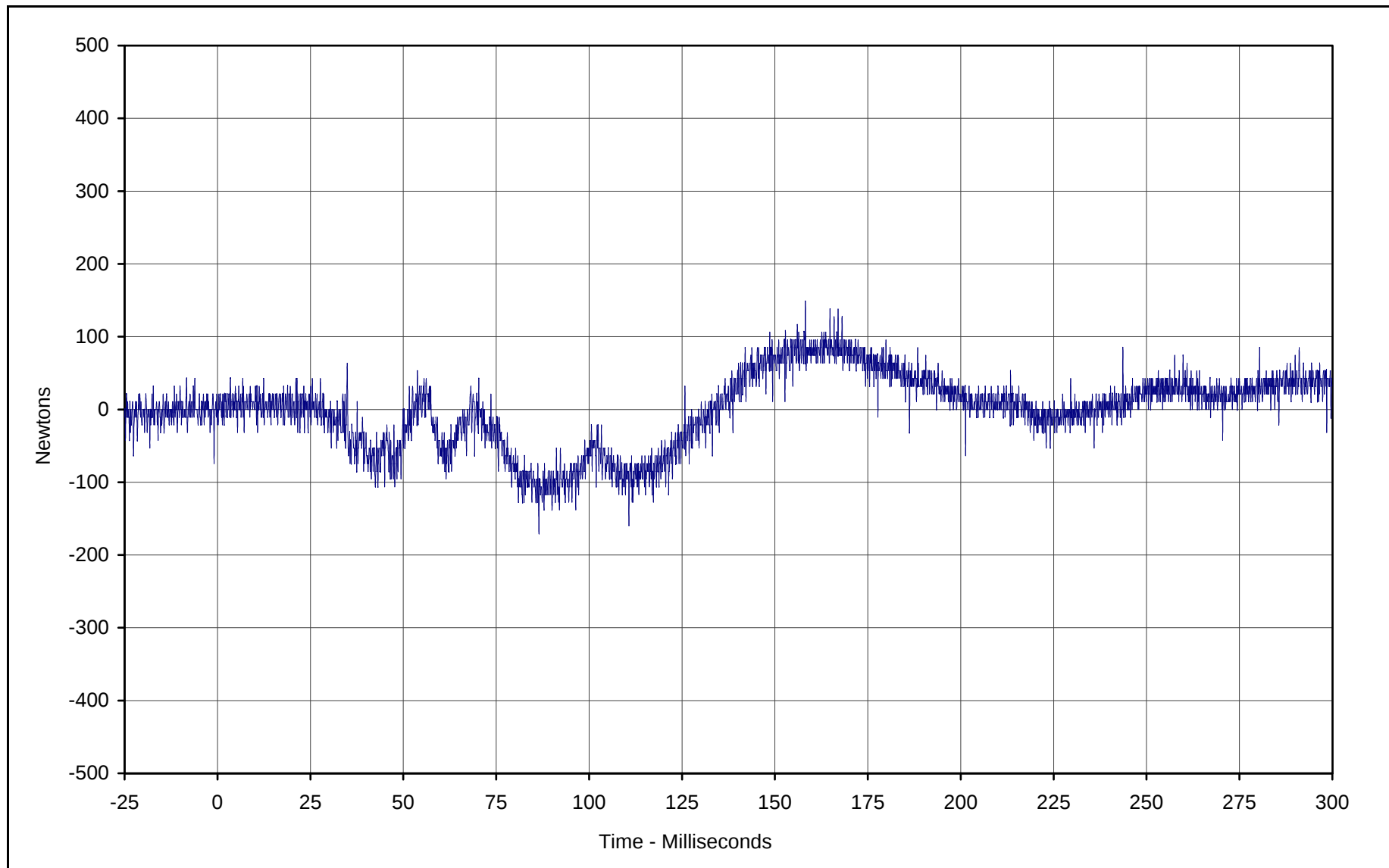




Curve Description: Driver Neck Force X
Maximum Value: 103.5 at 204.3 Milliseconds
Minimum Value: -931.5 at 45.0 Milliseconds
SAE Filter Class: 1000
Date of Test: 02/14/01
Curve Number: FIL-007

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan

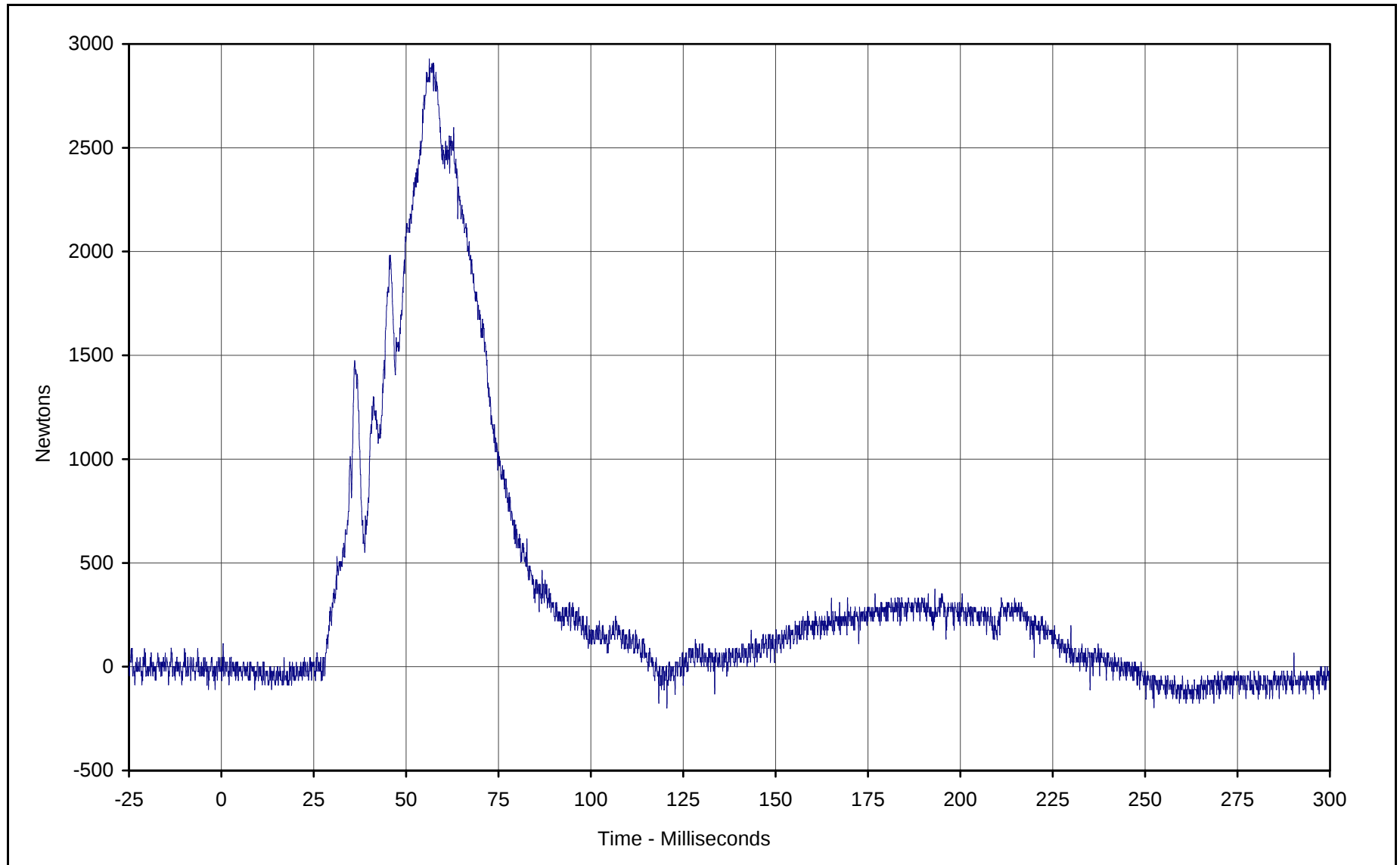




Curve Description: Driver Neck Force Y
Maximum Value: 148.8 at 158.2 Milliseconds
Minimum Value: -170.1 at 86.5 Milliseconds
SAE Filter Class: 1000
Date of Test: 02/14/01
Curve Number: FIL-008

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



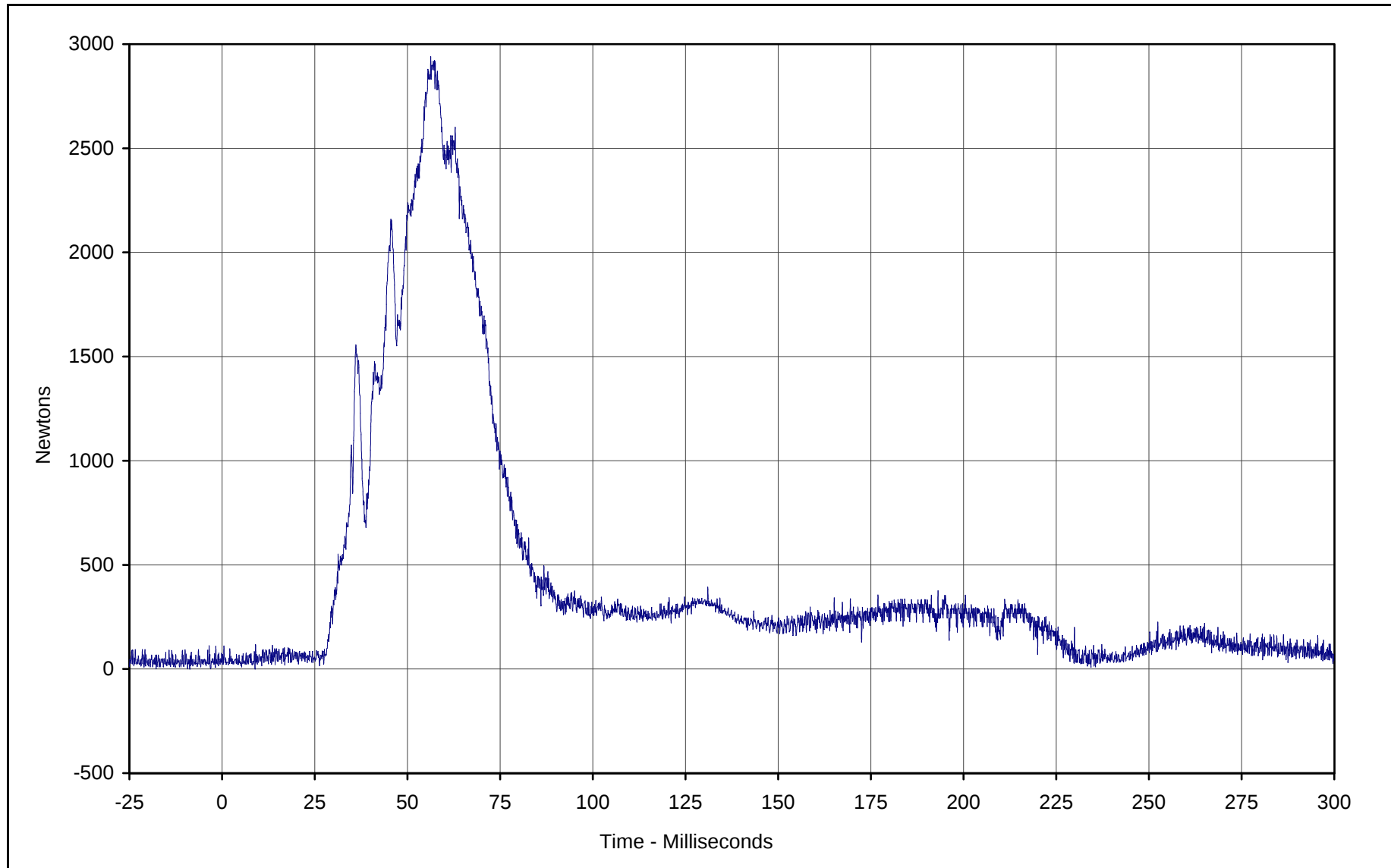


Curve Description: Driver Neck Force Z
Maximum Value: 2928.1 at 56.3 Milliseconds
Minimum Value: -198.1 at 120.6 Milliseconds
SAE Filter Class: 1000
Date of Test: 02/14/01
Curve Number: FIL-009

Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



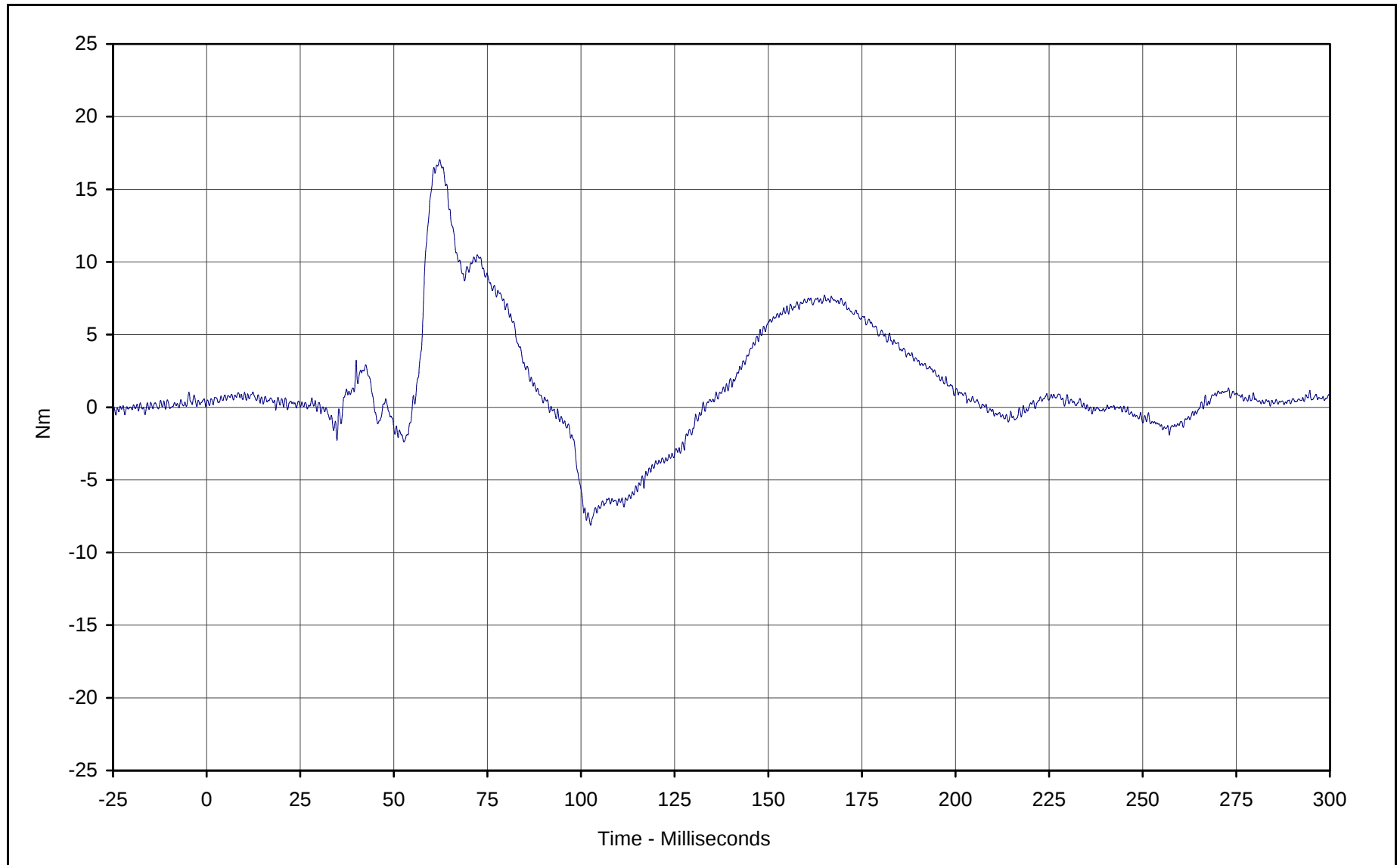


Curve Description: Driver Neck Force Resultant
Maximum Value: 2940.6 at 56.3 Milliseconds
Minimum Value: 0.0 at 8.9 Milliseconds
SAE Filter Class: 1000
Date of Test: 02/14/01
Curve Number: RES-007

Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan

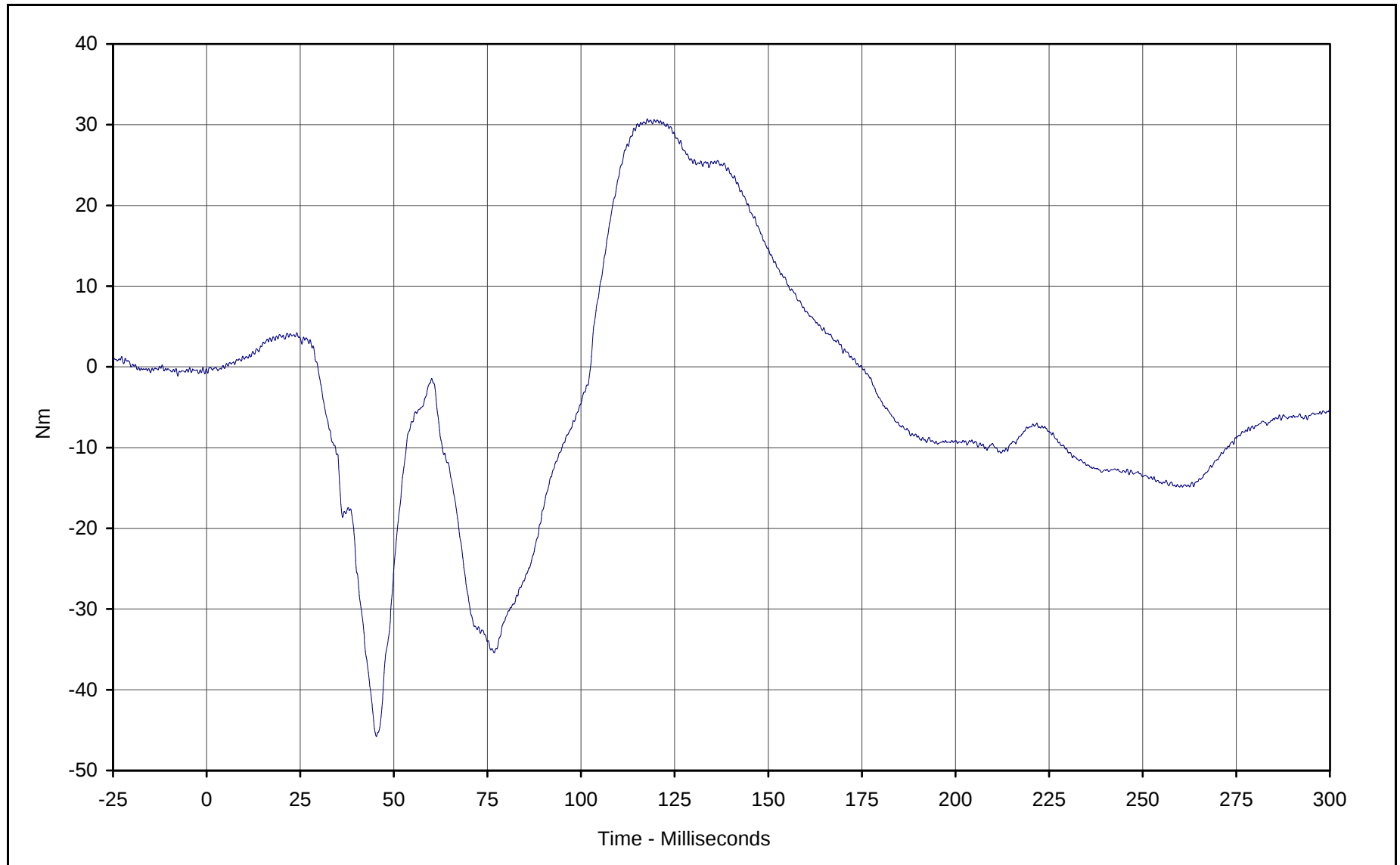




Curve Description: Driver Neck Moment X
Maximum Value: 17.0 at 62.2 Milliseconds
Minimum Value: -8.1 at 102.6 Milliseconds
SAE Filter Class: 600
Date of Test: 02/14/01
Curve Number: FIL-010

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan

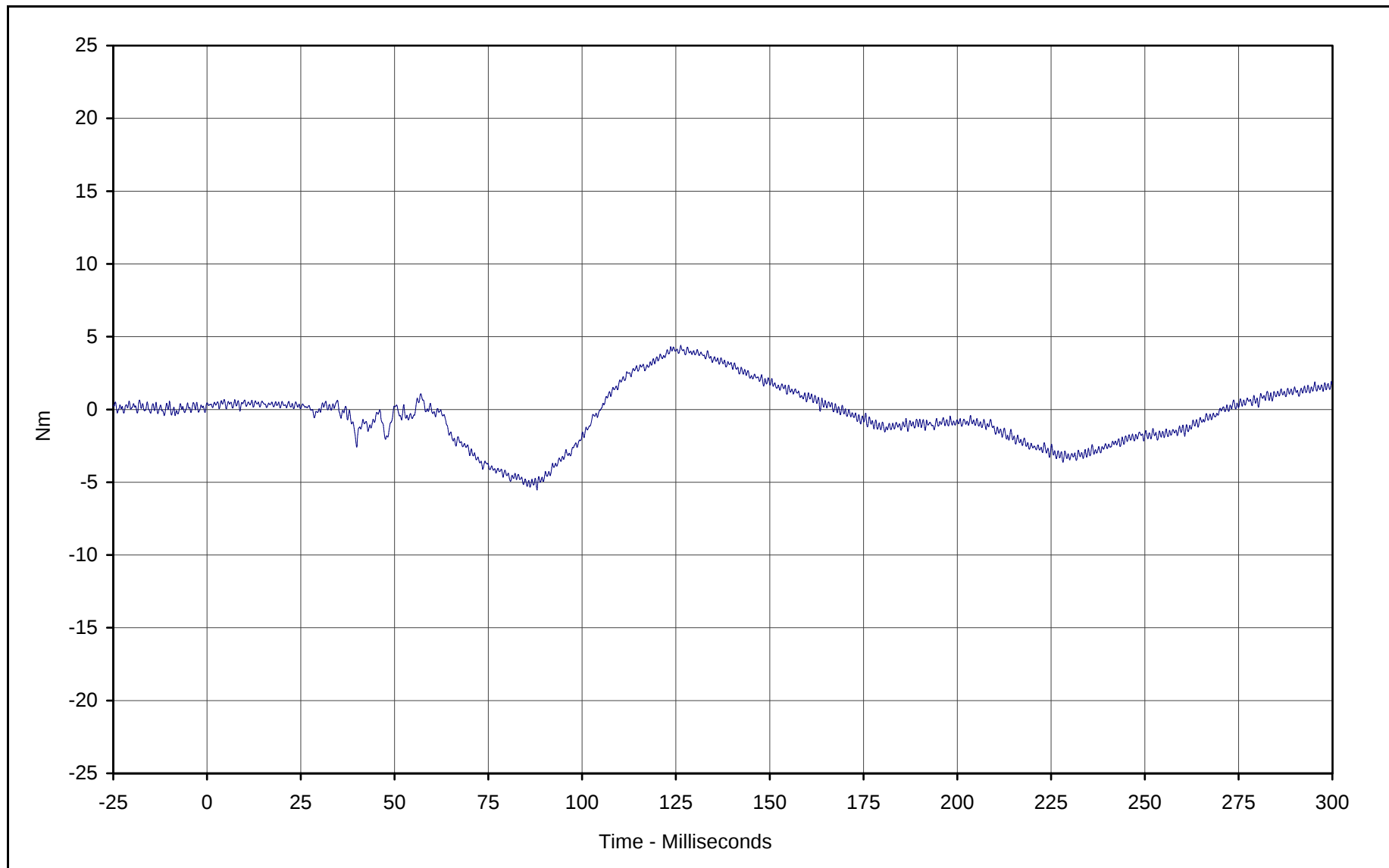




Curve Description: Driver Neck Moment Y
Maximum Value: 30.7 at 117.7 Milliseconds
Minimum Value: -45.8 at 45.3 Milliseconds
SAE Filter Class: 600
Date of Test: 02/14/01
Curve Number: FIL-011

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan

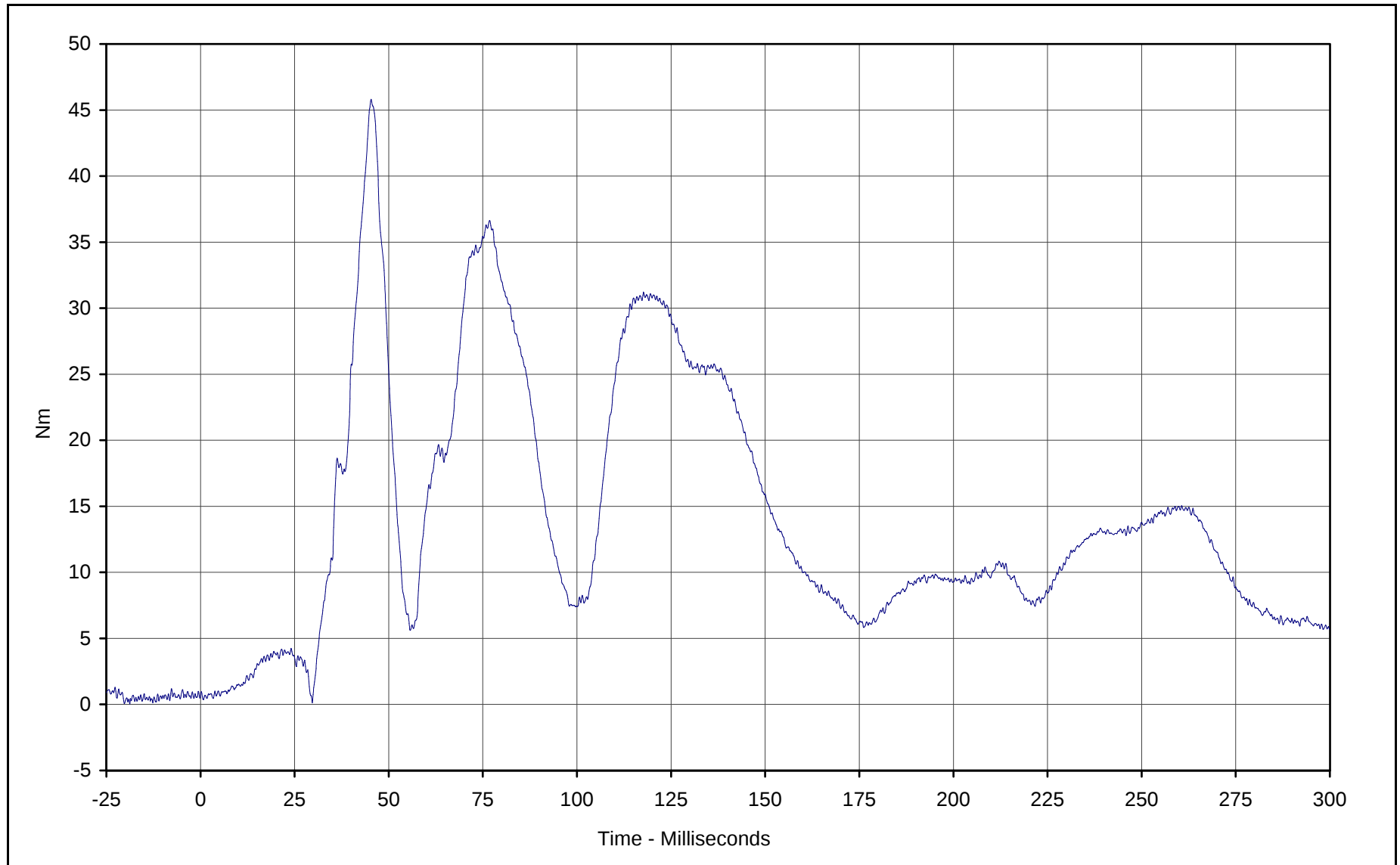




Curve Description: Driver Neck Moment Z
Maximum Value: 4.4 at 126.3 Milliseconds
Minimum Value: -5.5 at 88.0 Milliseconds
SAE Filter Class: 600
Date of Test: 02/14/01
Curve Number: FIL-012

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



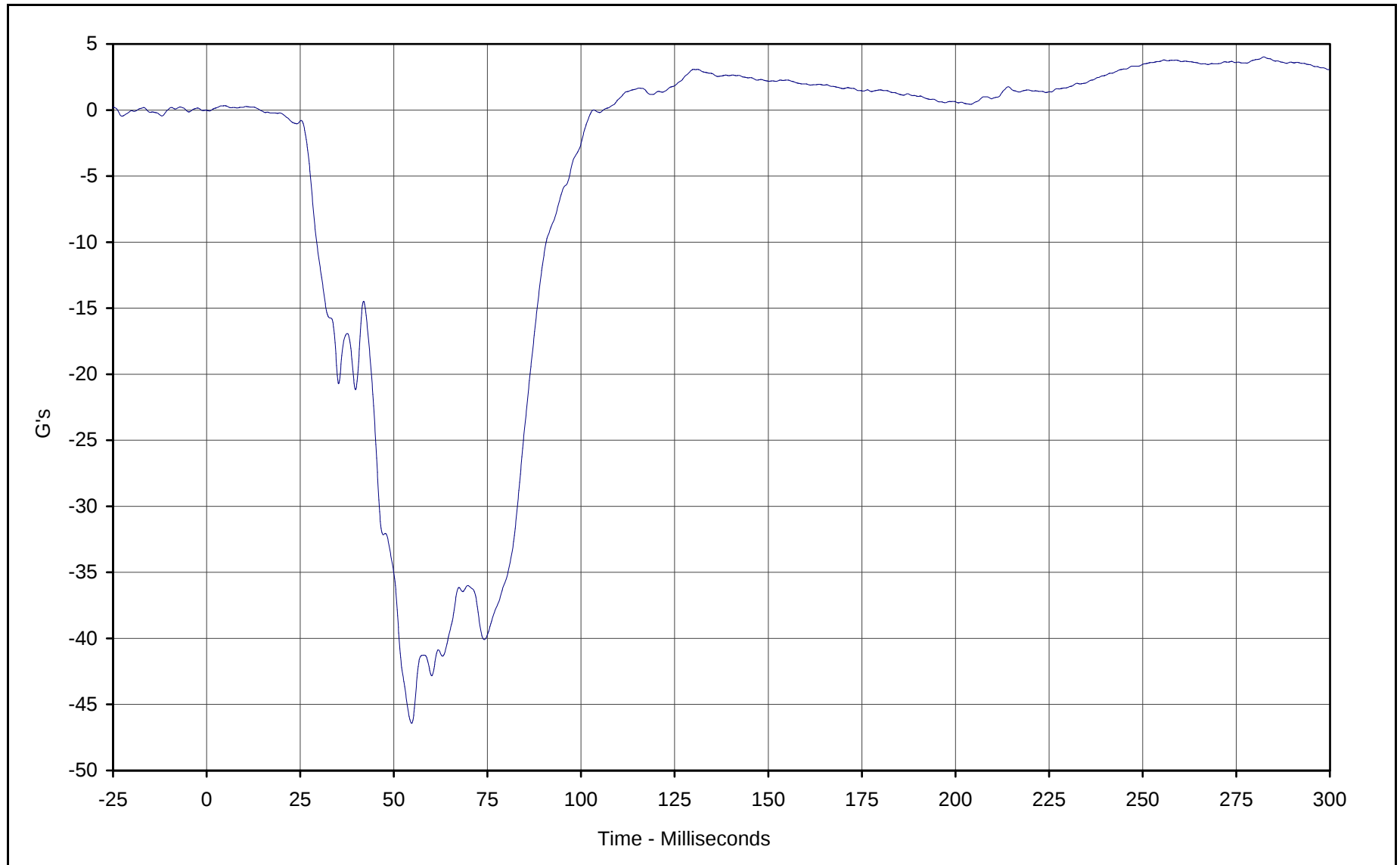


Curve Description: Driver Neck Moment Resultant
Maximum Value: 45.8 at 45.3 Milliseconds
Minimum Value: 0.1 at 29.7 Milliseconds
SAE Filter Class: 600
Date of Test: 02/14/01
Curve Number: RES-010

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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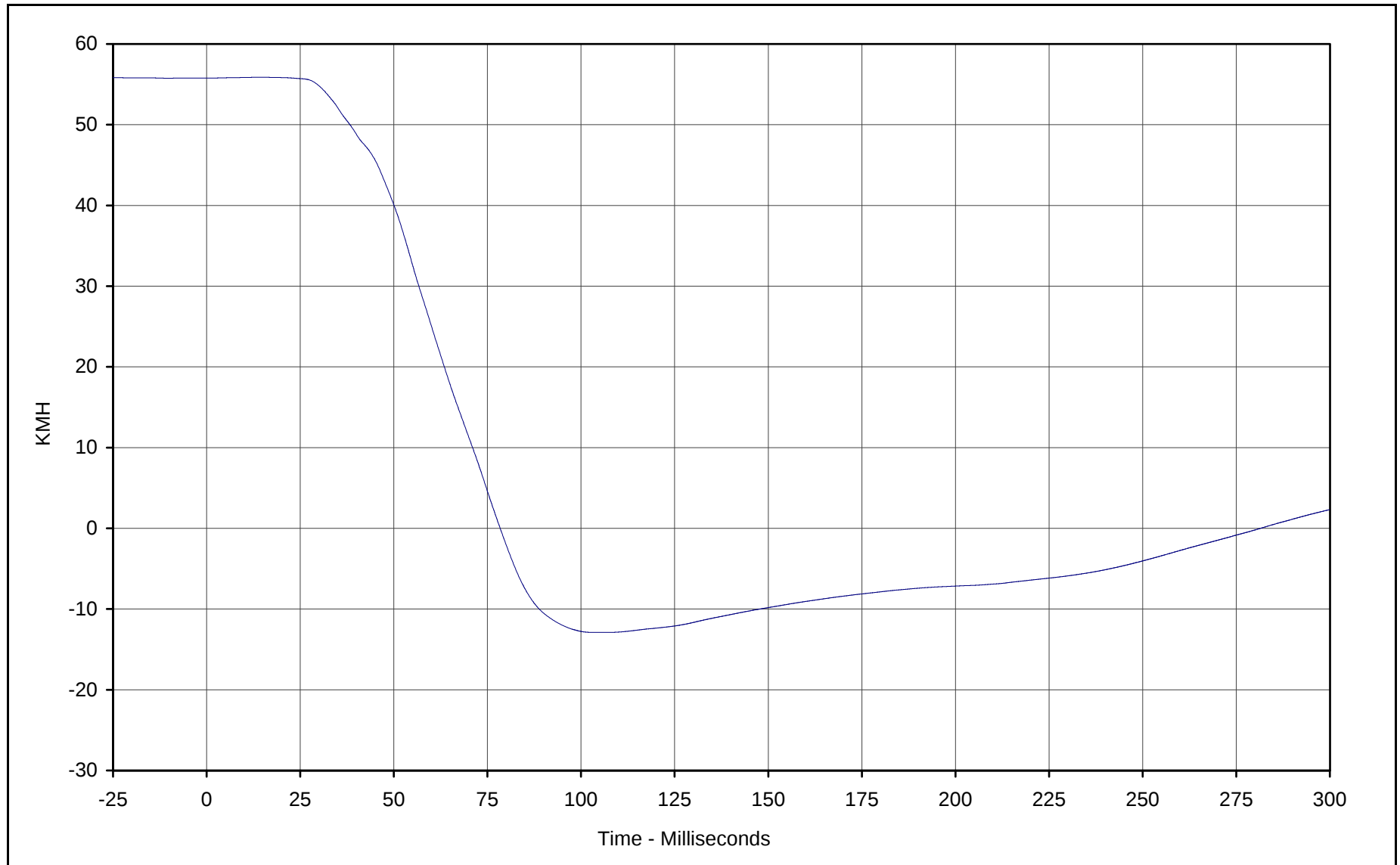
Curve Description: Driver Chest Primary X
Maximum Value: 4.0 at 282.4 Milliseconds
Minimum Value: -46.4 at 54.7 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: FIL-013

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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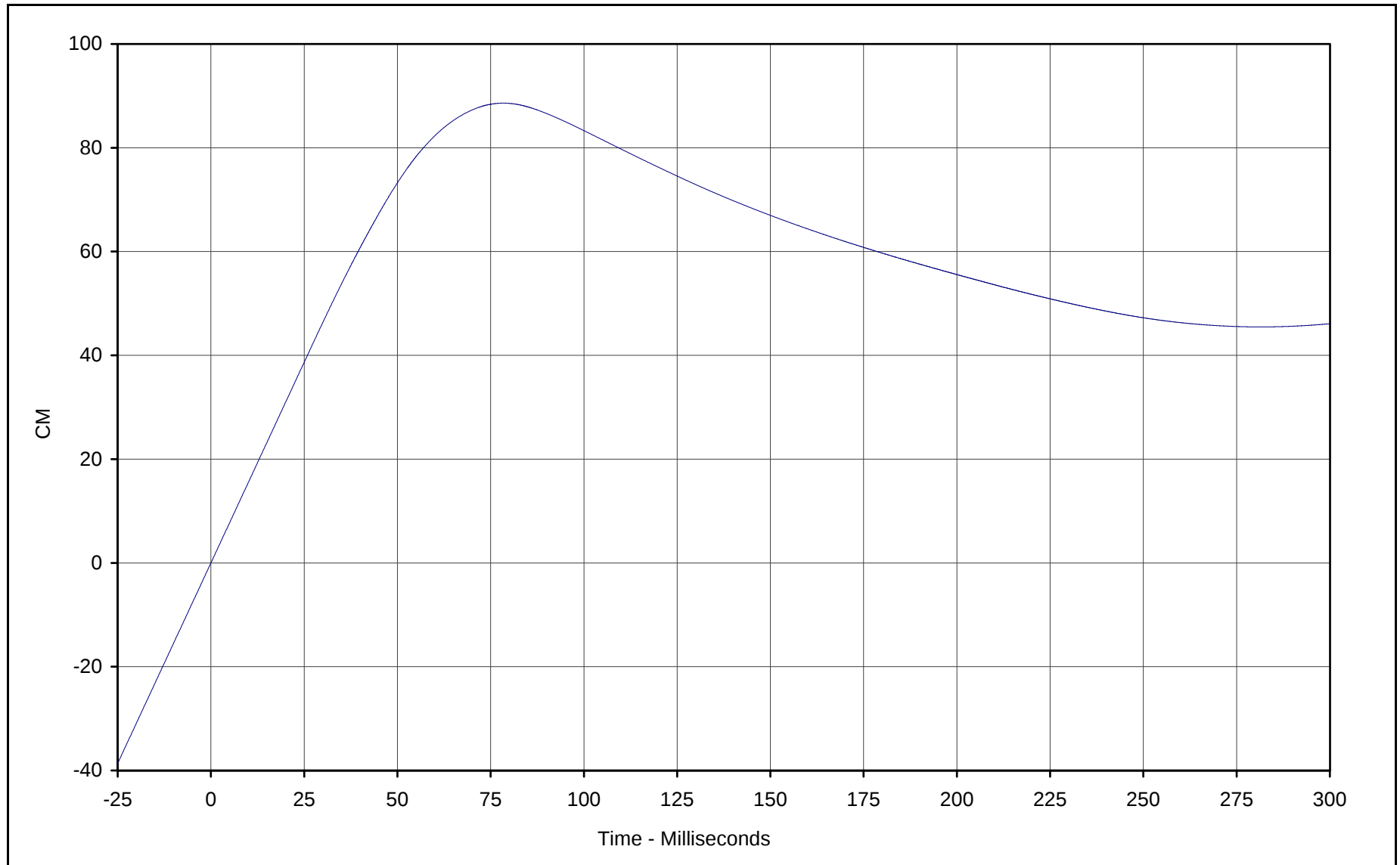
Curve Description: Driver Chest Primary X Velocity
Maximum Value: 55.9 at 14.2 Milliseconds
Minimum Value: -12.9 at 105.9 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: IN1-013

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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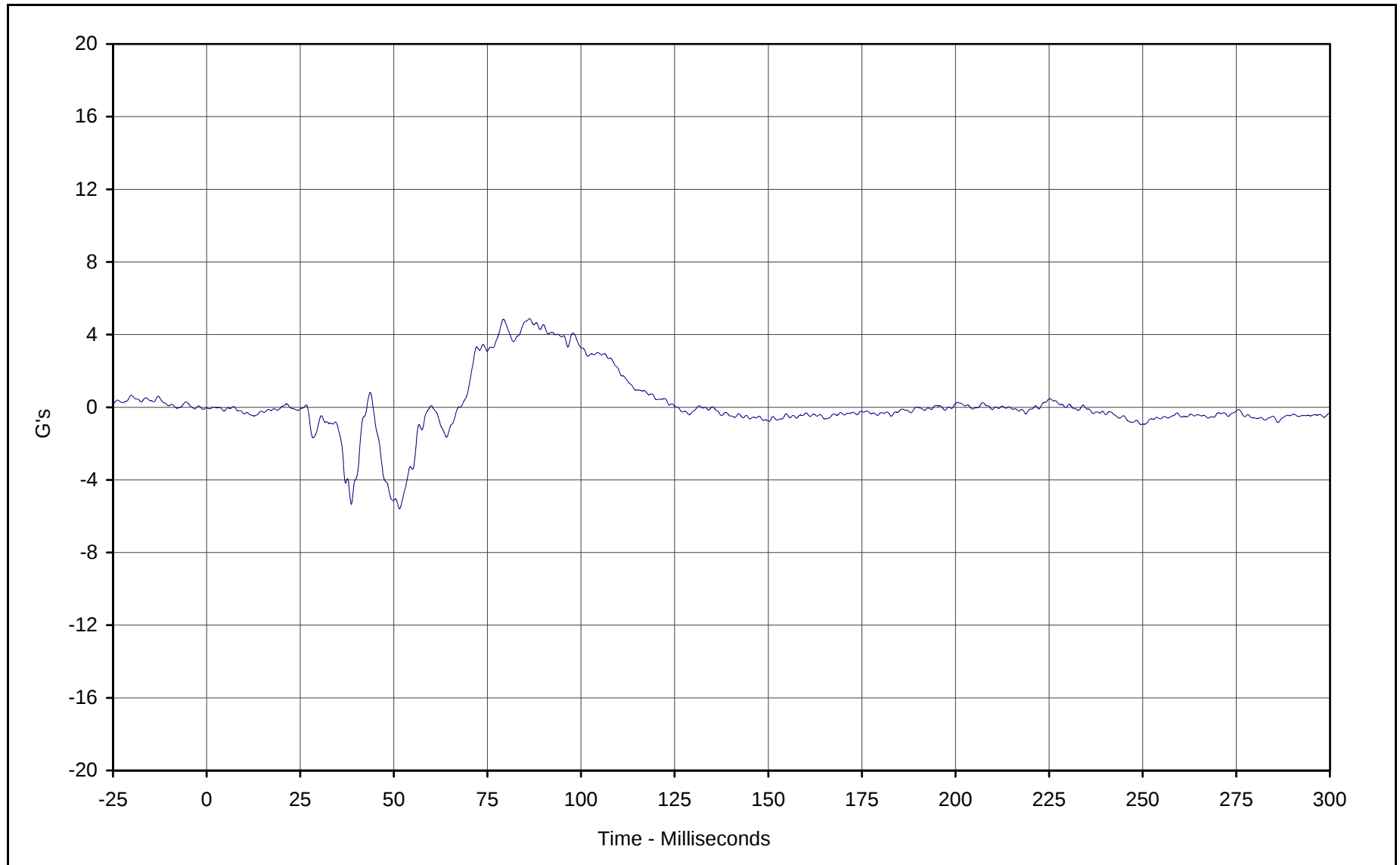


Curve Description: Driver Chest Primary X Displ.
Maximum Value: 88.6 at 78.4 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: IN2-013

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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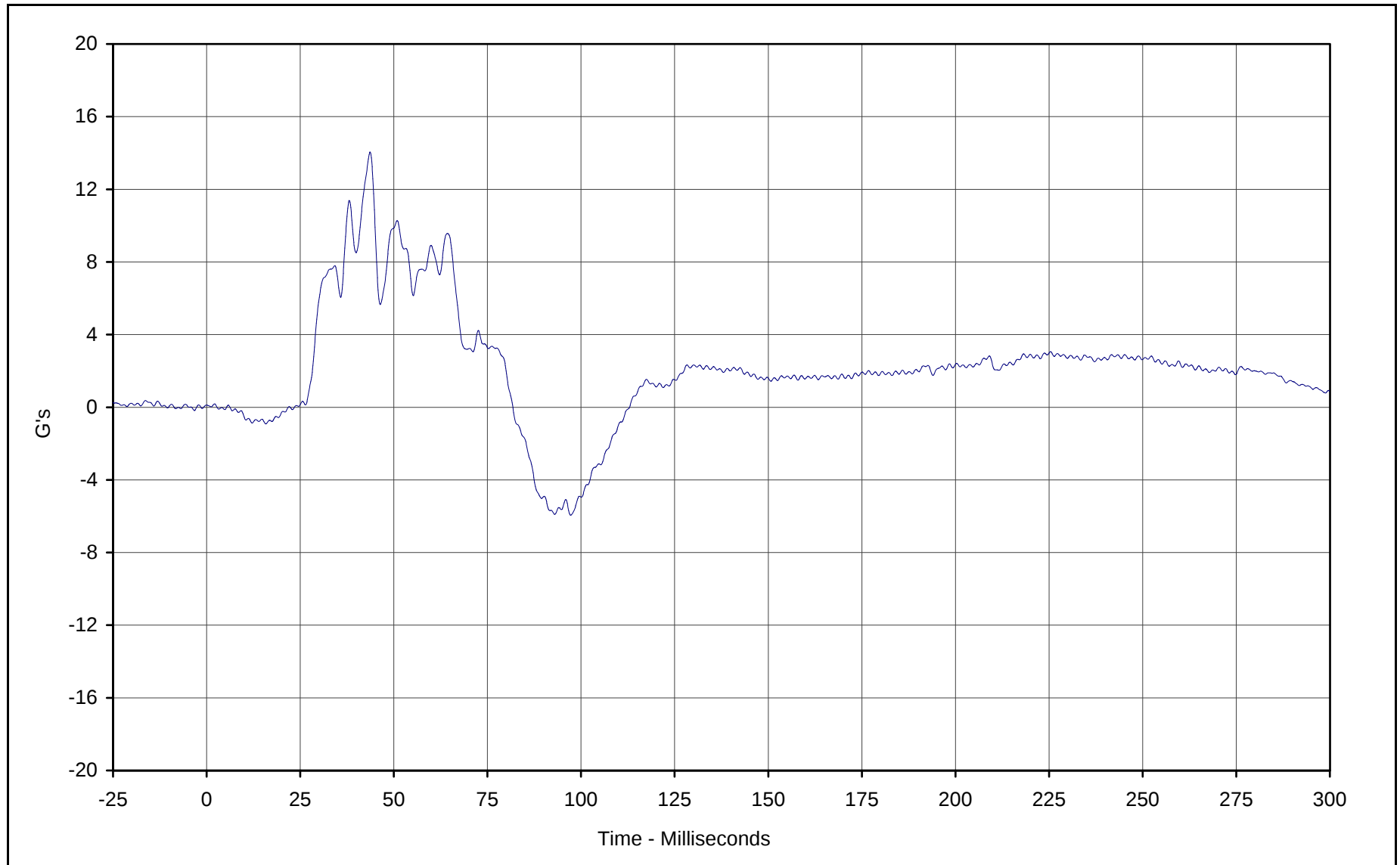


Curve Description: Driver Chest Primary Y
Maximum Value: 4.9 at 86.3 Milliseconds
Minimum Value: -5.6 at 51.5 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: FIL-014

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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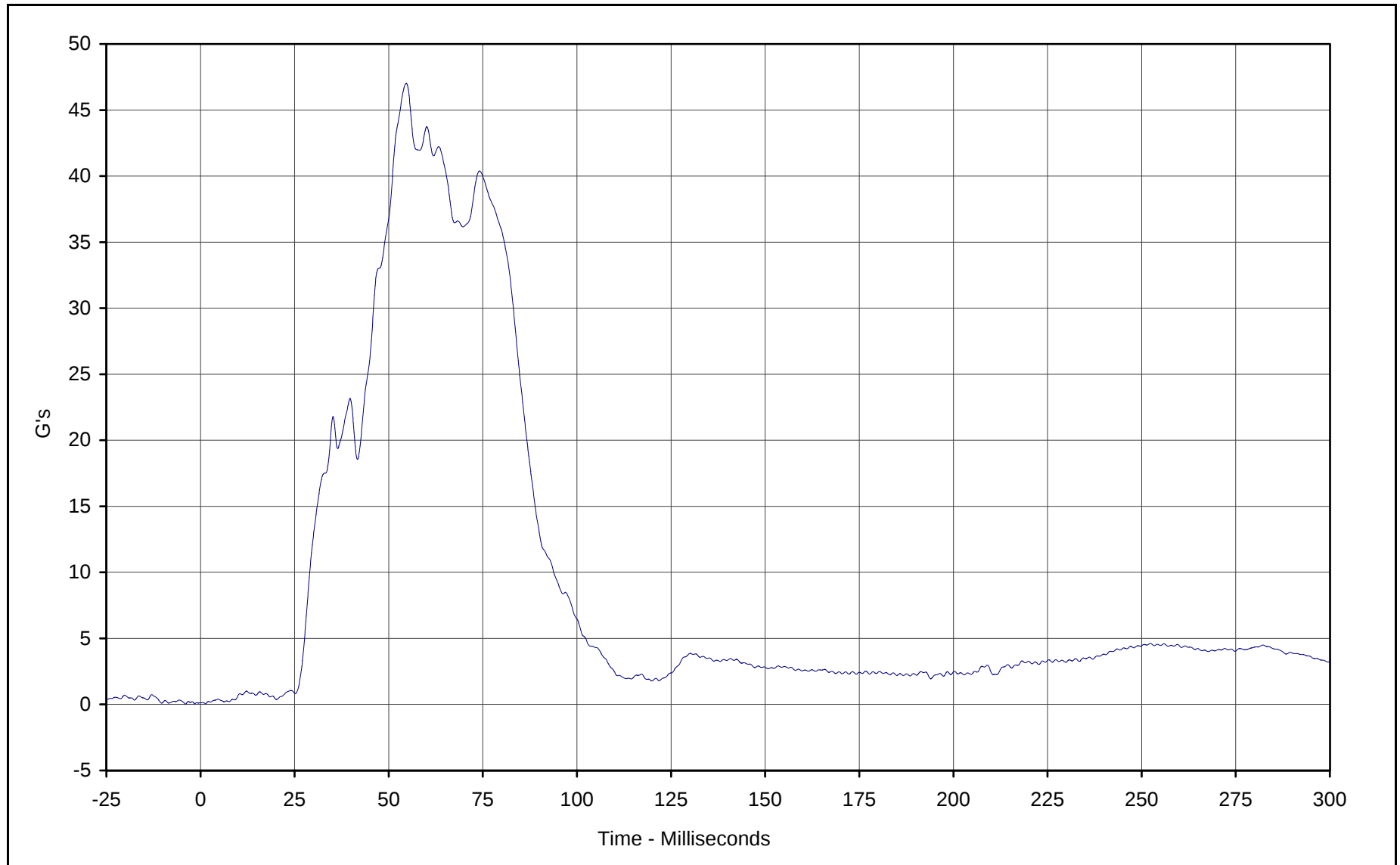


Curve Description: Driver Chest Primary Z
Maximum Value: 14.0 at 43.6 Milliseconds
Minimum Value: -5.9 at 97.2 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: FIL-015

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



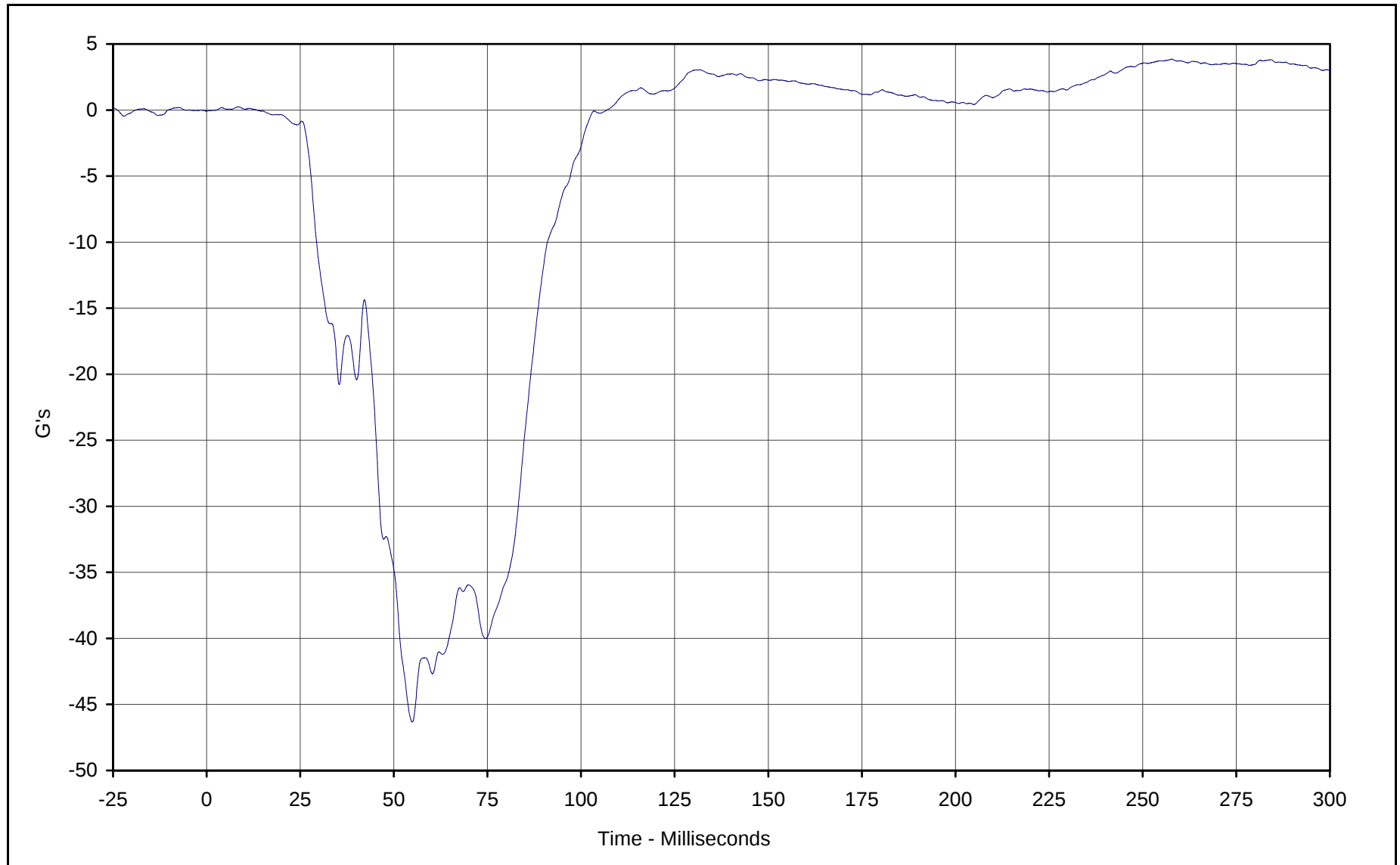
KAR21001-11



Curve Description: Driver Chest Resultant Primary
Maximum Value: 47.0 at 54.7 Milliseconds
Minimum Value: 0.1 at 1.4 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: RES-013

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



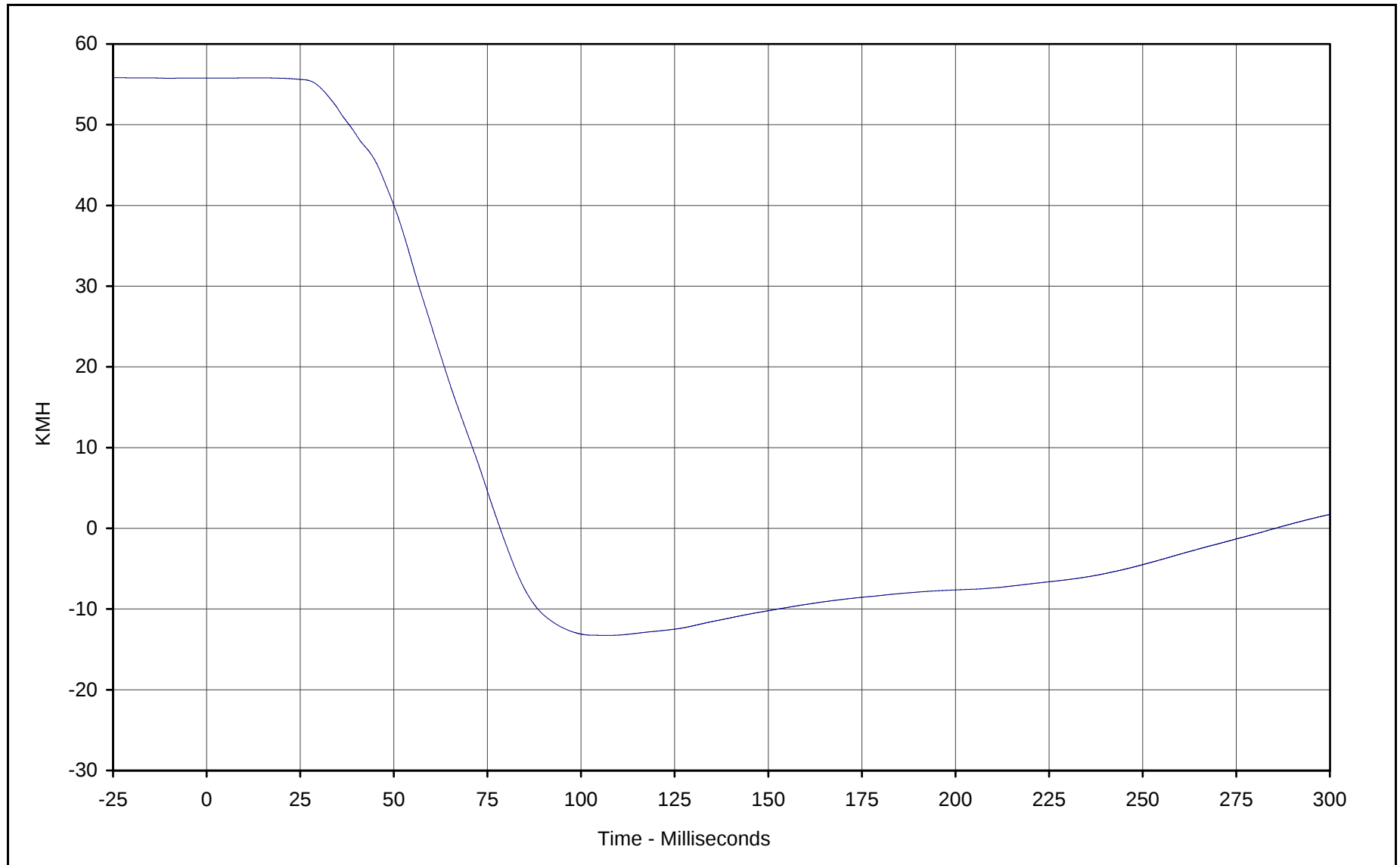


Curve Description: Driver Chest Redundant X
Maximum Value: 3.9 at 257.8 Milliseconds
Minimum Value: -46.3 at 54.9 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: FIL-016

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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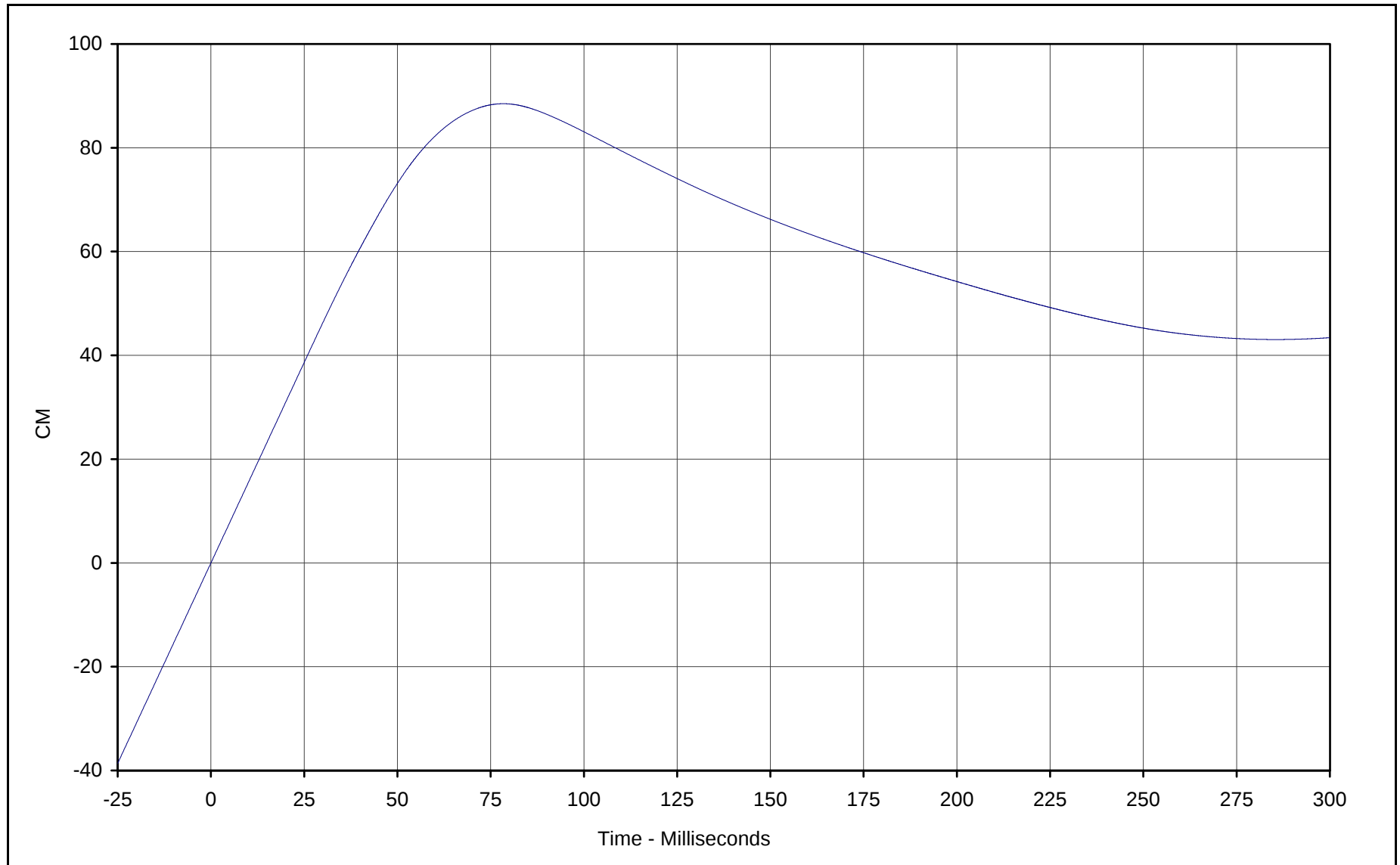


Curve Description: Driver Chest Redundant X Velocity
Maximum Value: 55.8 at 13.4 Milliseconds
Minimum Value: -13.3 at 106.9 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: IN1-016

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



KAR21001-11

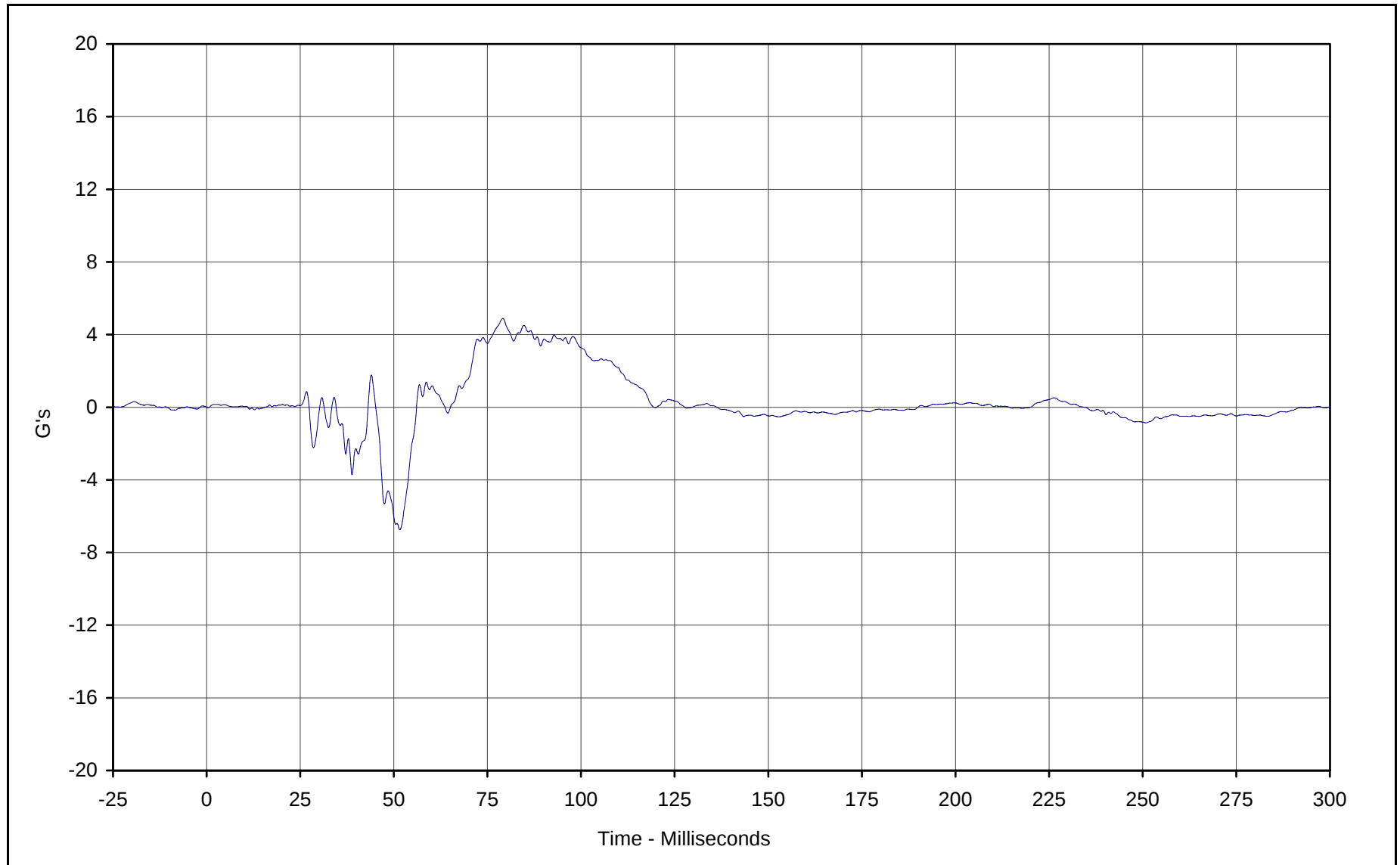


Curve Description: Driver Chest Redundant X Displ.
Maximum Value: 88.5 at 78.4 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: IN2-016

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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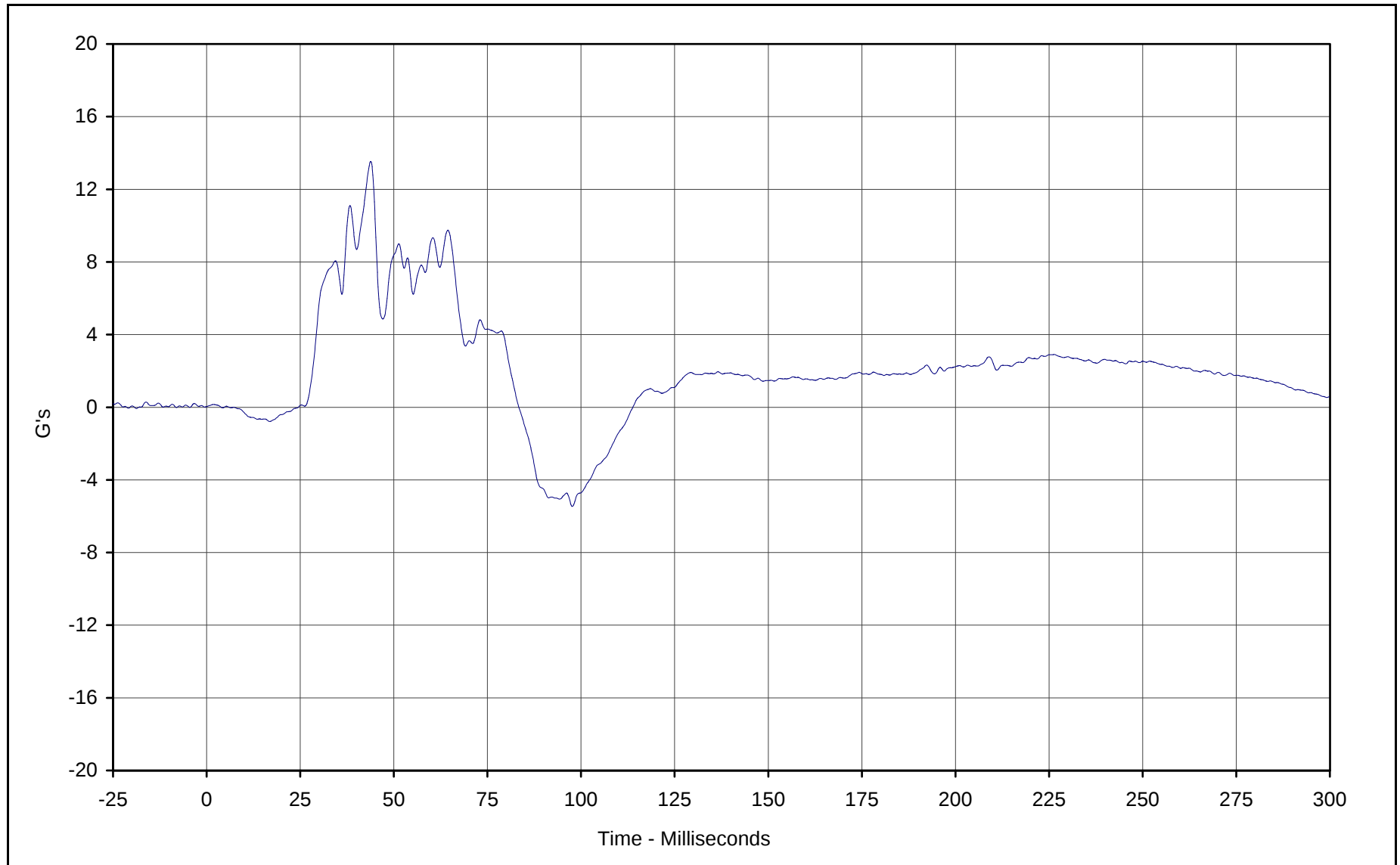
Curve Description: Driver Chest Redundant Y
Maximum Value: 4.9 at 79.1 Milliseconds
Minimum Value: -6.7 at 51.6 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: FIL-017

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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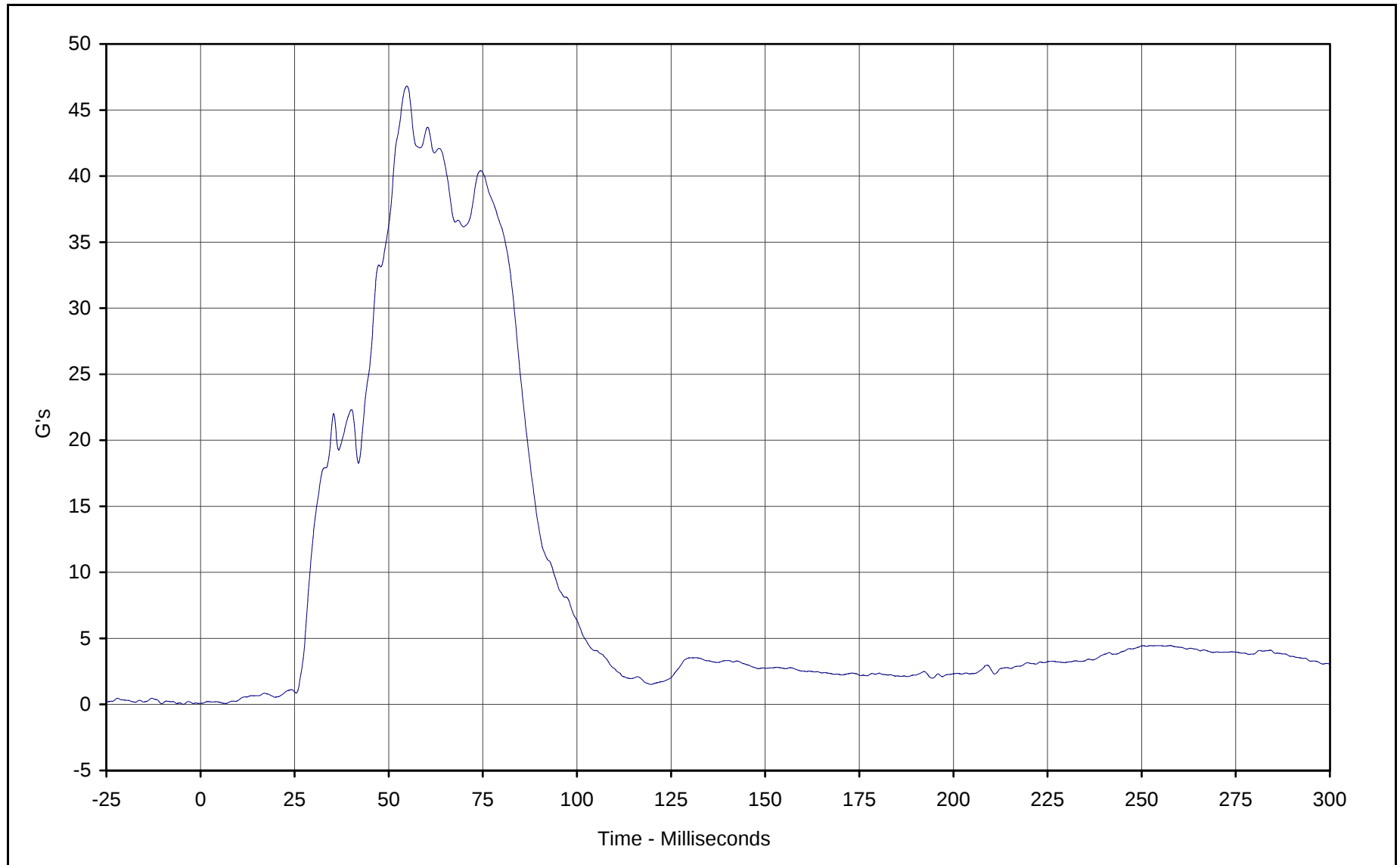


Curve Description: Driver Chest Redundant Z
Maximum Value: 13.5 at 43.8 Milliseconds
Minimum Value: -5.5 at 97.7 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: FIL-018

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



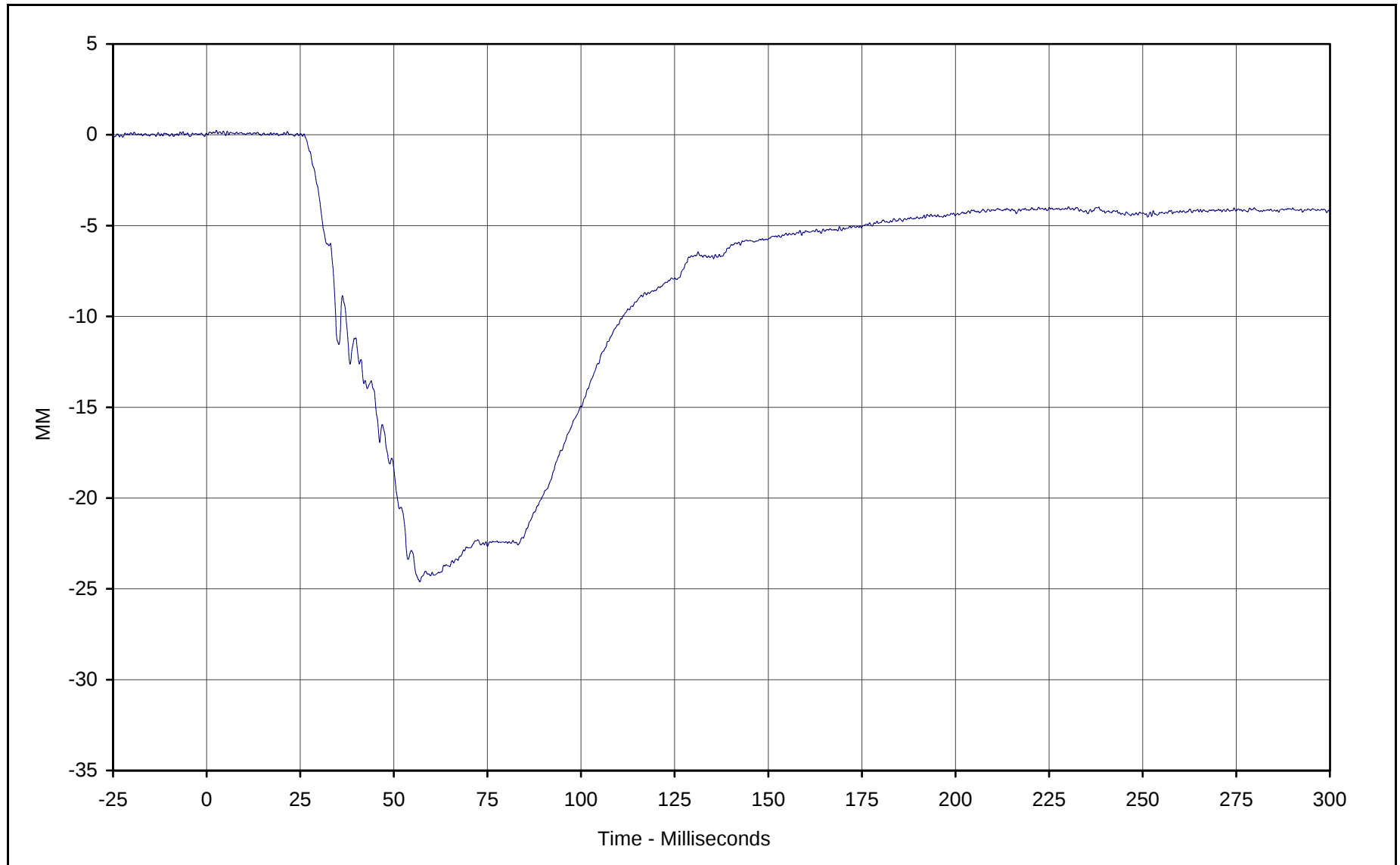
KAR21001-11



Curve Description: Driver Chest Resultant Redundant
Maximum Value: 46.8 at 54.8 Milliseconds
Minimum Value: 0.1 at 6.7 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: RES-016

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan

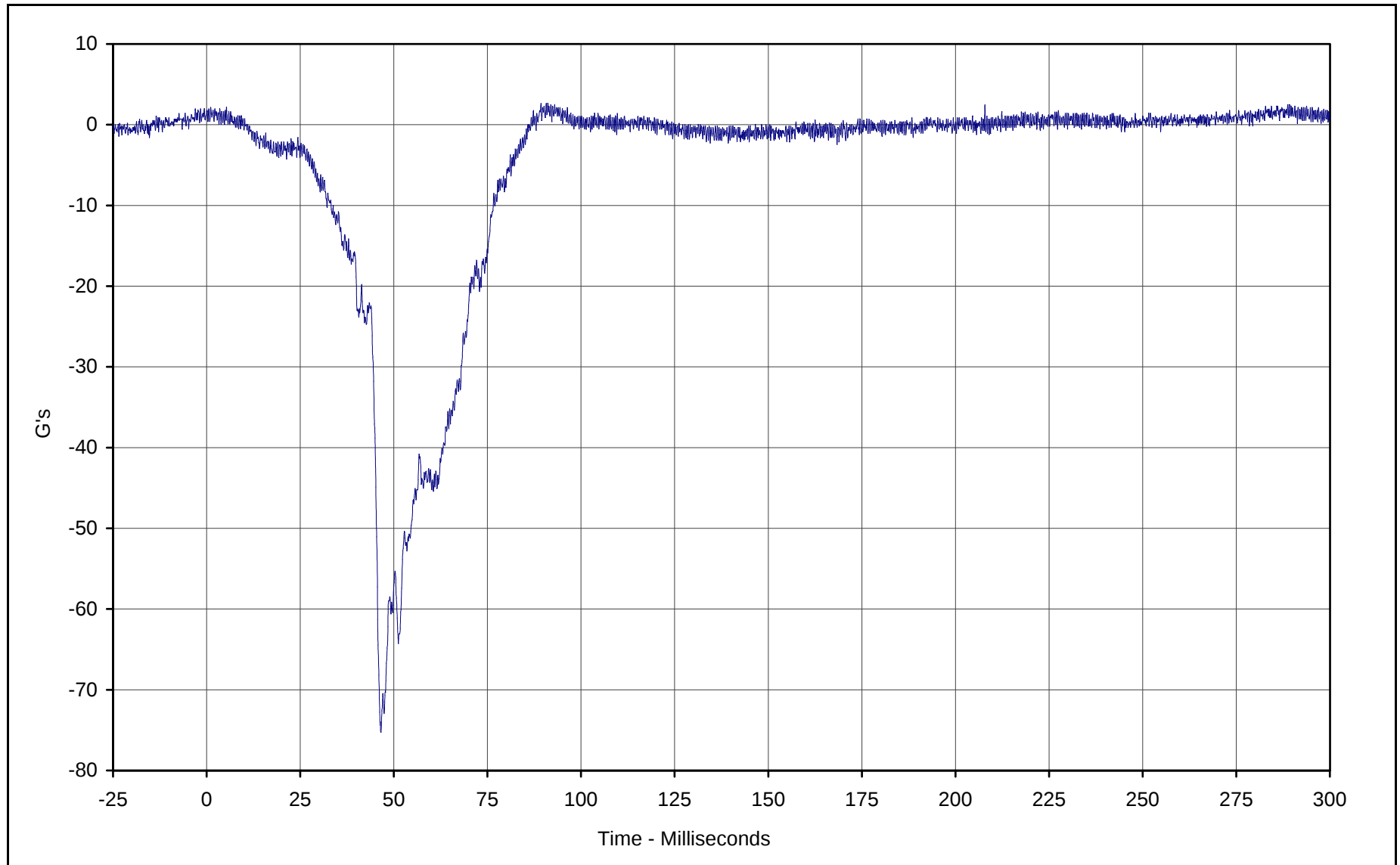




Curve Description: Driver Chest Displacement X
Maximum Value: 0.2 at 2.6 Milliseconds
Minimum Value: -24.6 at 57.0 Milliseconds
SAE Filter Class: 600
Date of Test: 02/14/01
Curve Number: FIL-019

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan





Curve Description: Driver Pelvis X

Maximum Value: 2.6 at 89.3 Milliseconds

Minimum Value: -75.3 at 46.5 Milliseconds

SAE Filter Class: 1000

Date of Test: 02/14/01

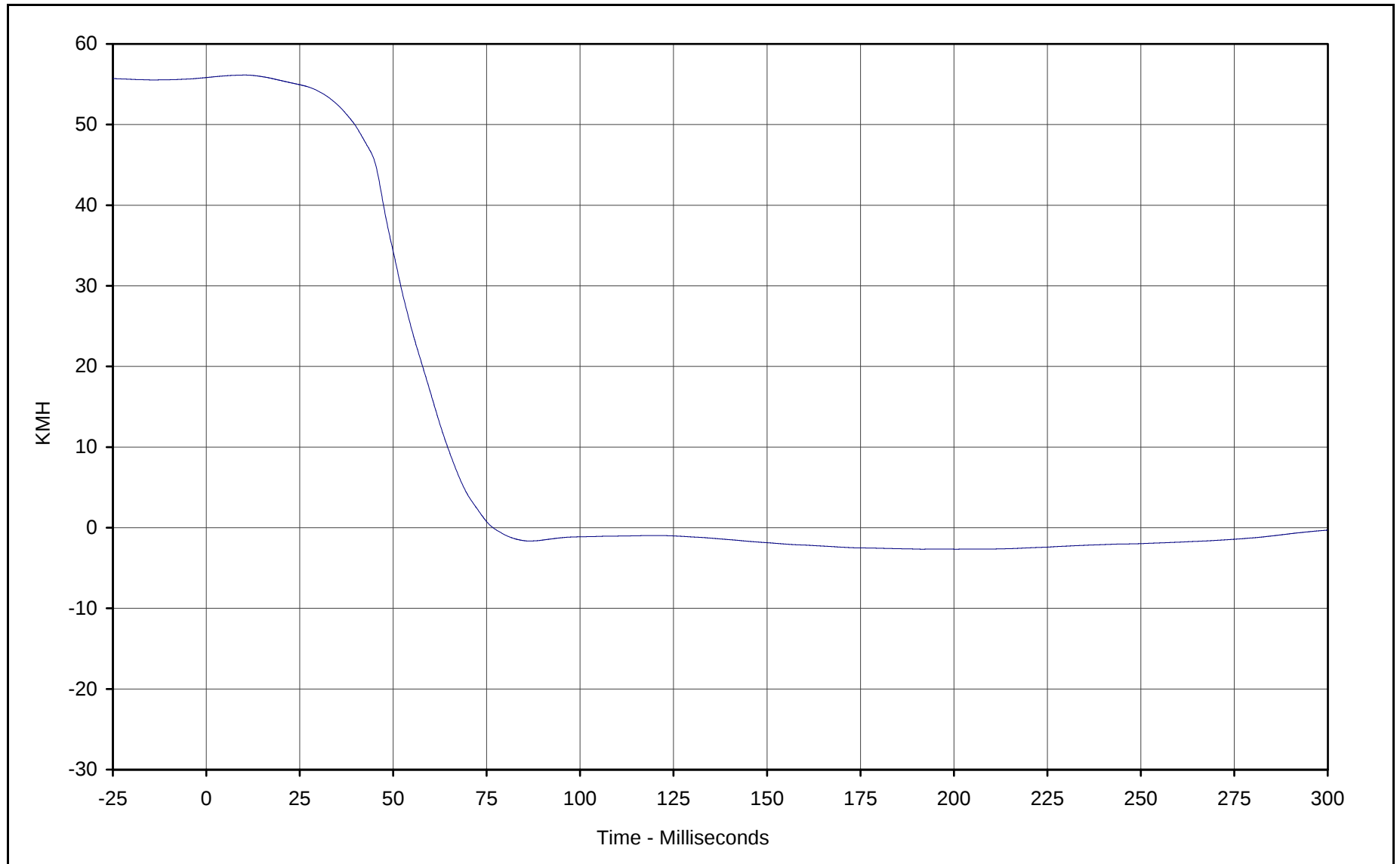
Curve Number: FIL-020

Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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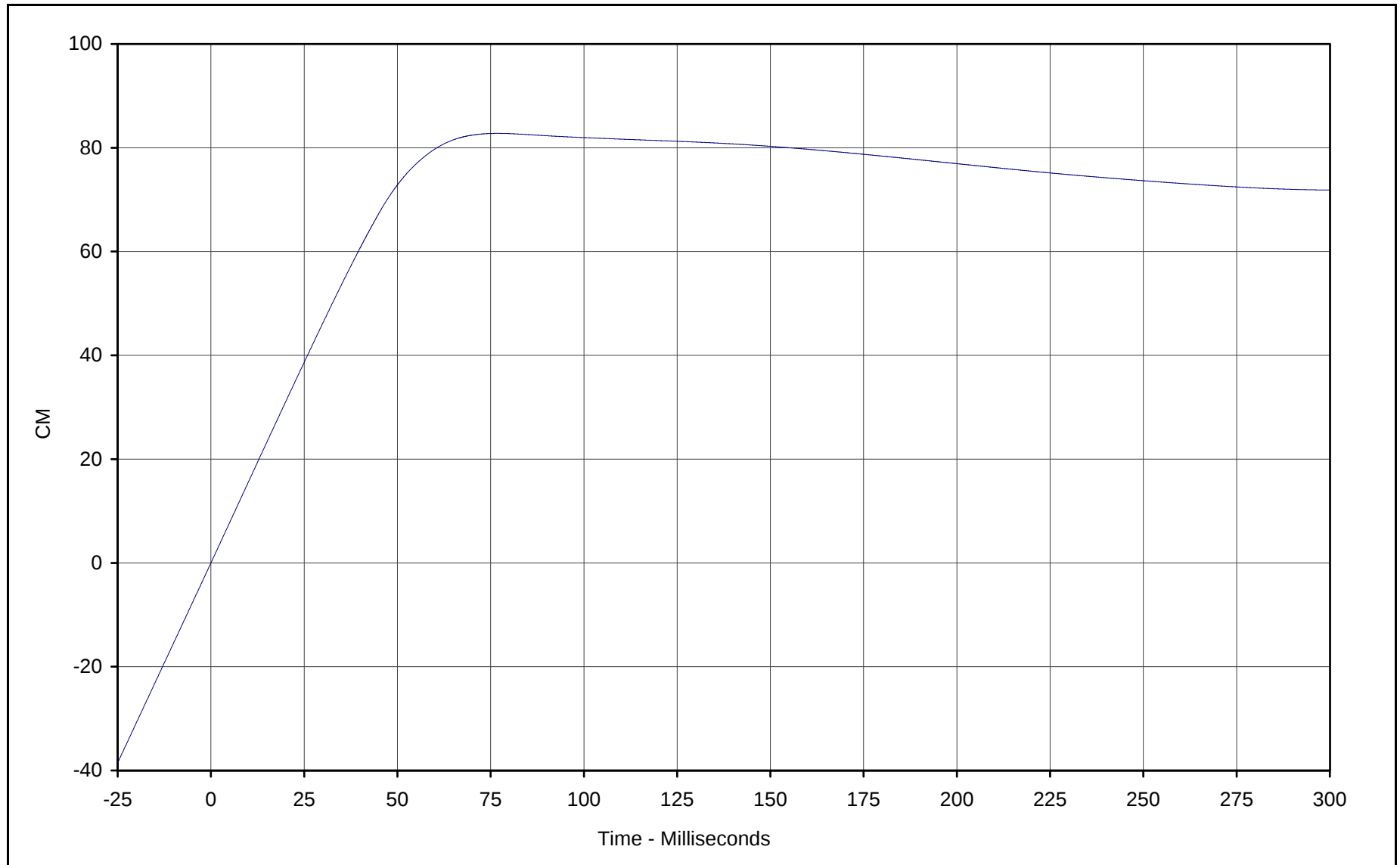


Curve Description: Driver Pelvis X Velocity
Maximum Value: 56.1 at 10.3 Milliseconds
Minimum Value: -2.7 at 200.6 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: IN1-020

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



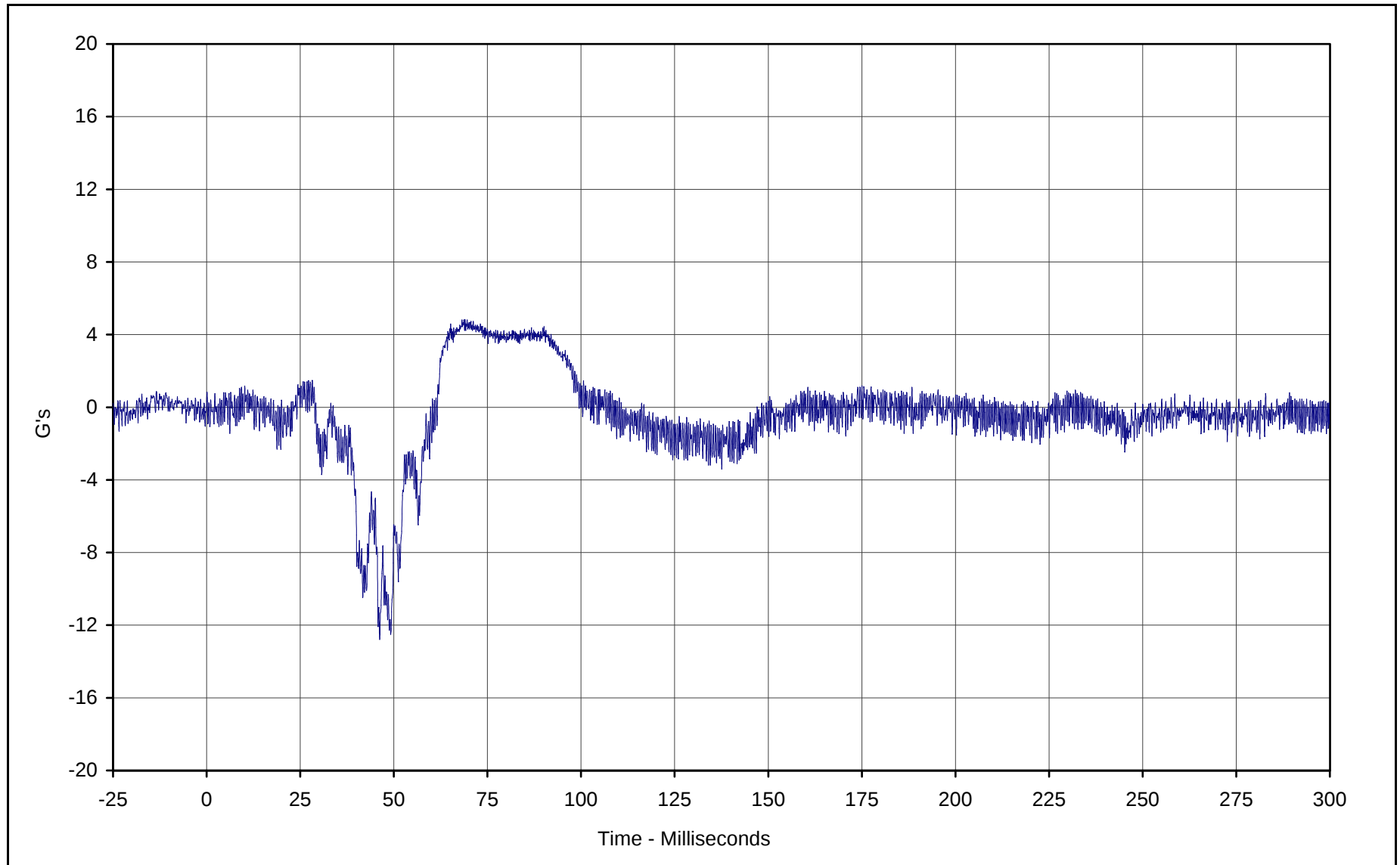
KAR21001-11



Curve Description: Driver Pelvis X Displ.
Maximum Value: 82.8 at 76.7 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: IN2-020

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan

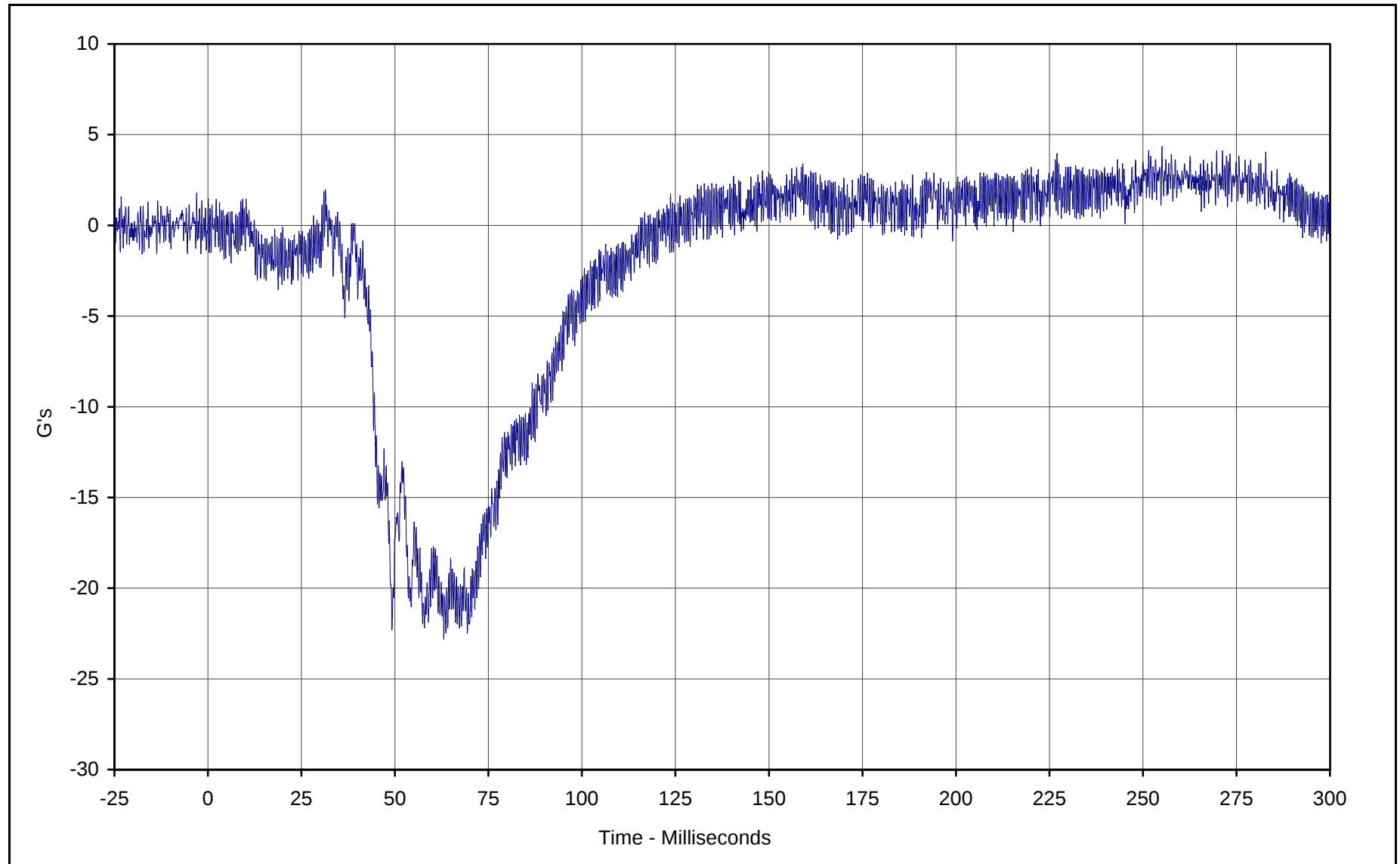




Curve Description: Driver Pelvis Y
Maximum Value: 4.8 at 68.2 Milliseconds
Minimum Value: -12.8 at 46.2 Milliseconds
SAE Filter Class: 1000
Date of Test: 02/14/01
Curve Number: FIL-021

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan

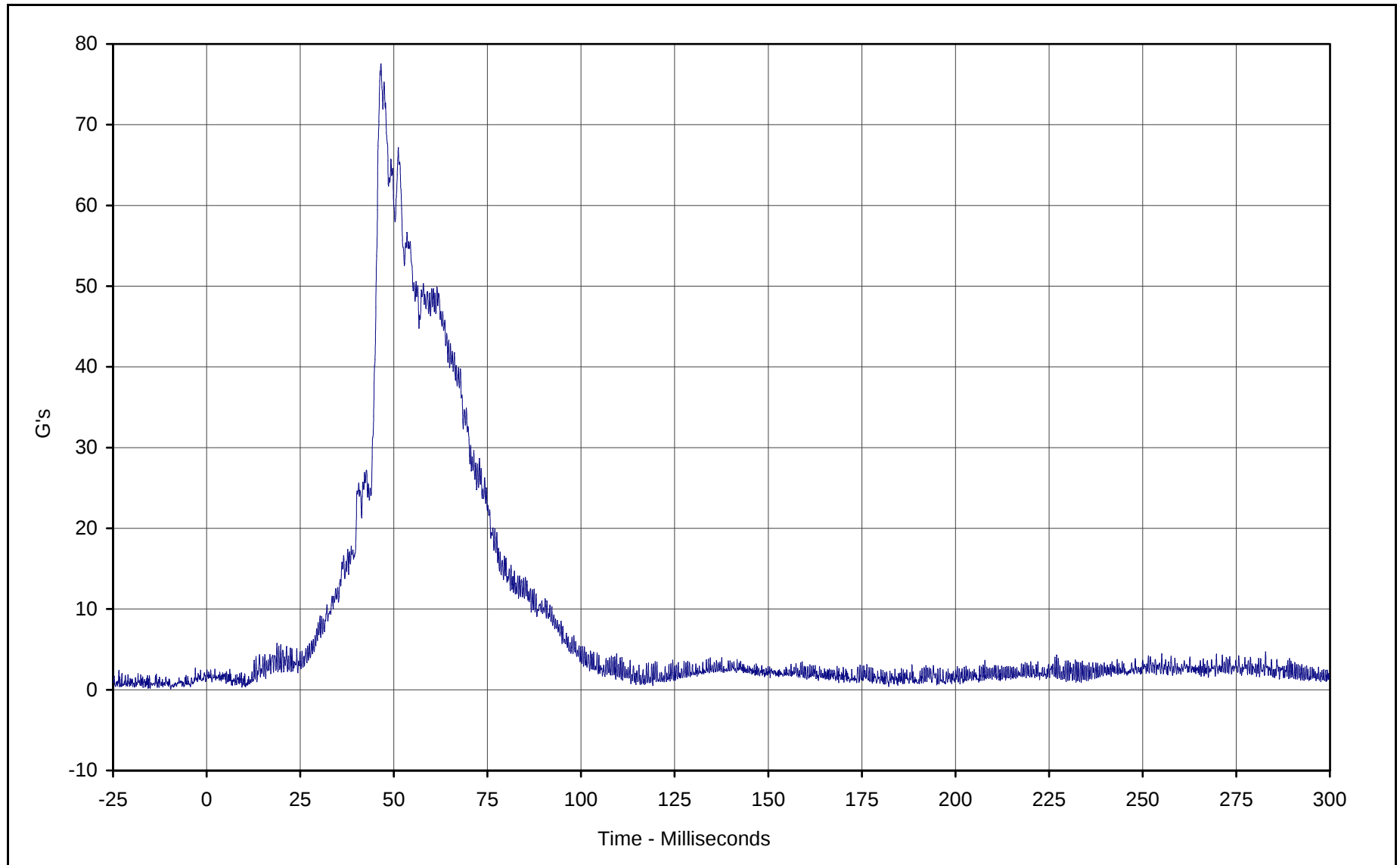




Curve Description: Driver Pelvis Z
Maximum Value: 4.3 at 255.1 Milliseconds
Minimum Value: -22.8 at 63.1 Milliseconds
SAE Filter Class: 1000
Date of Test: 02/14/01
Curve Number: FIL-022

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



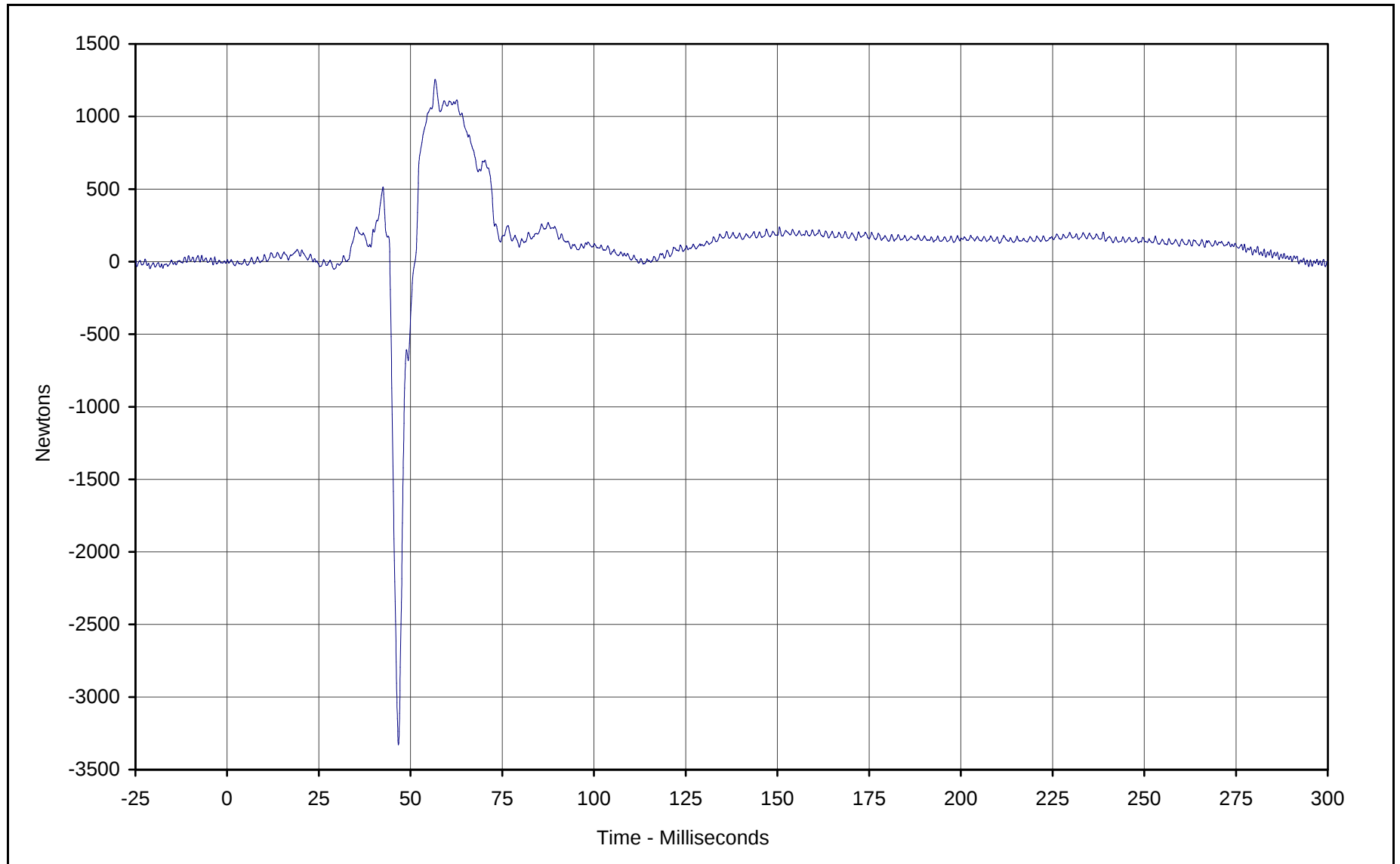


Curve Description: Driver Pelvis Resultant
Maximum Value: 77.5 at 46.6 Milliseconds
Minimum Value: 0.3 at 10.4 Milliseconds
SAE Filter Class: 1000
Date of Test: 02/14/01
Curve Number: RES-020

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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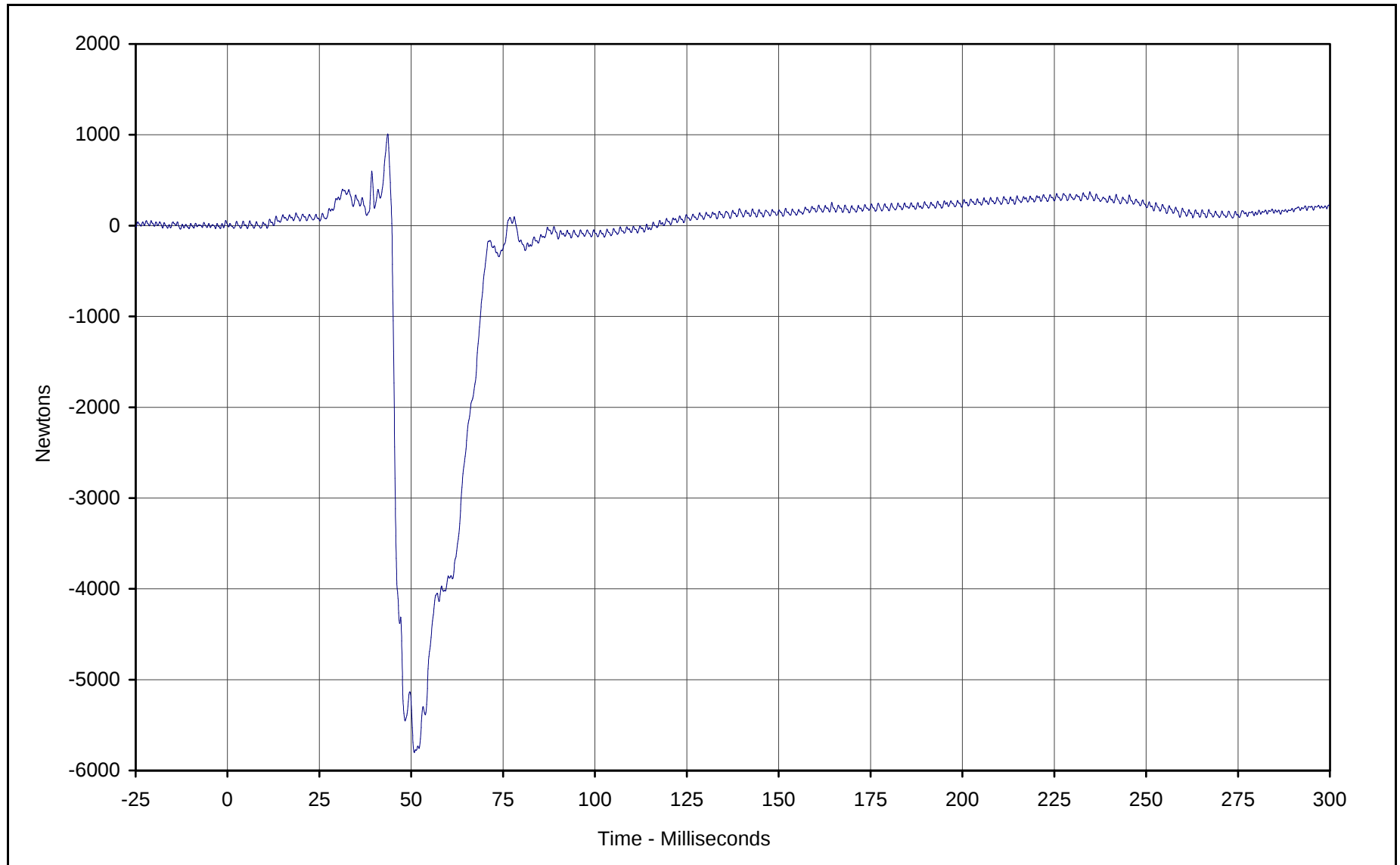
Curve Description: Driver Left Femur Force
Maximum Value: 1255.6 at 56.7 Milliseconds
Minimum Value: -3328.9 at 46.7 Milliseconds
SAE Filter Class: 600
Date of Test: 02/14/01
Curve Number: FIL-023

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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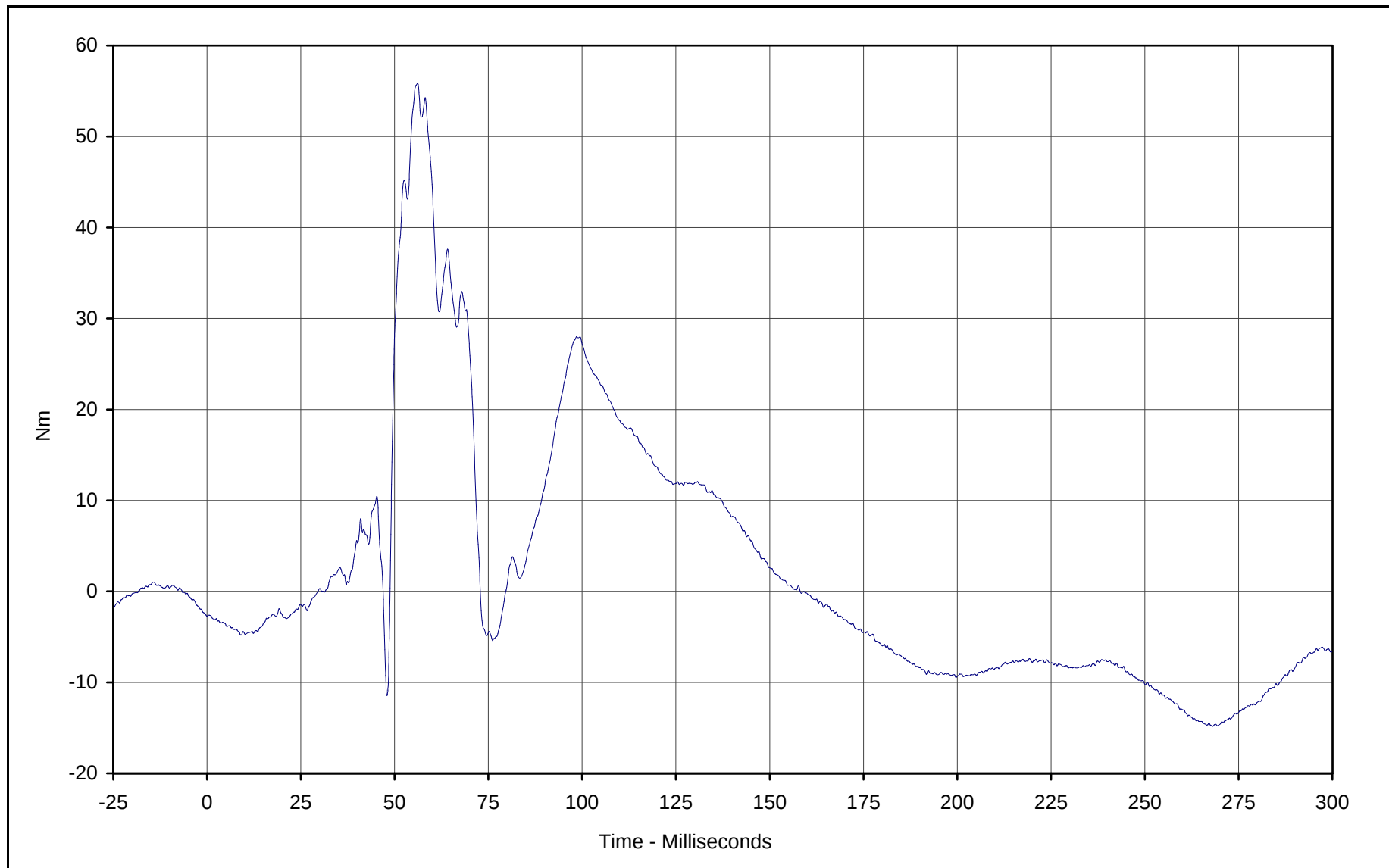
Curve Description: Driver Right Femur Force
Maximum Value: 1010.5 at 43.6 Milliseconds
Minimum Value: -5801.4 at 50.8 Milliseconds
SAE Filter Class: 600
Date of Test: 02/14/01
Curve Number: FIL-024

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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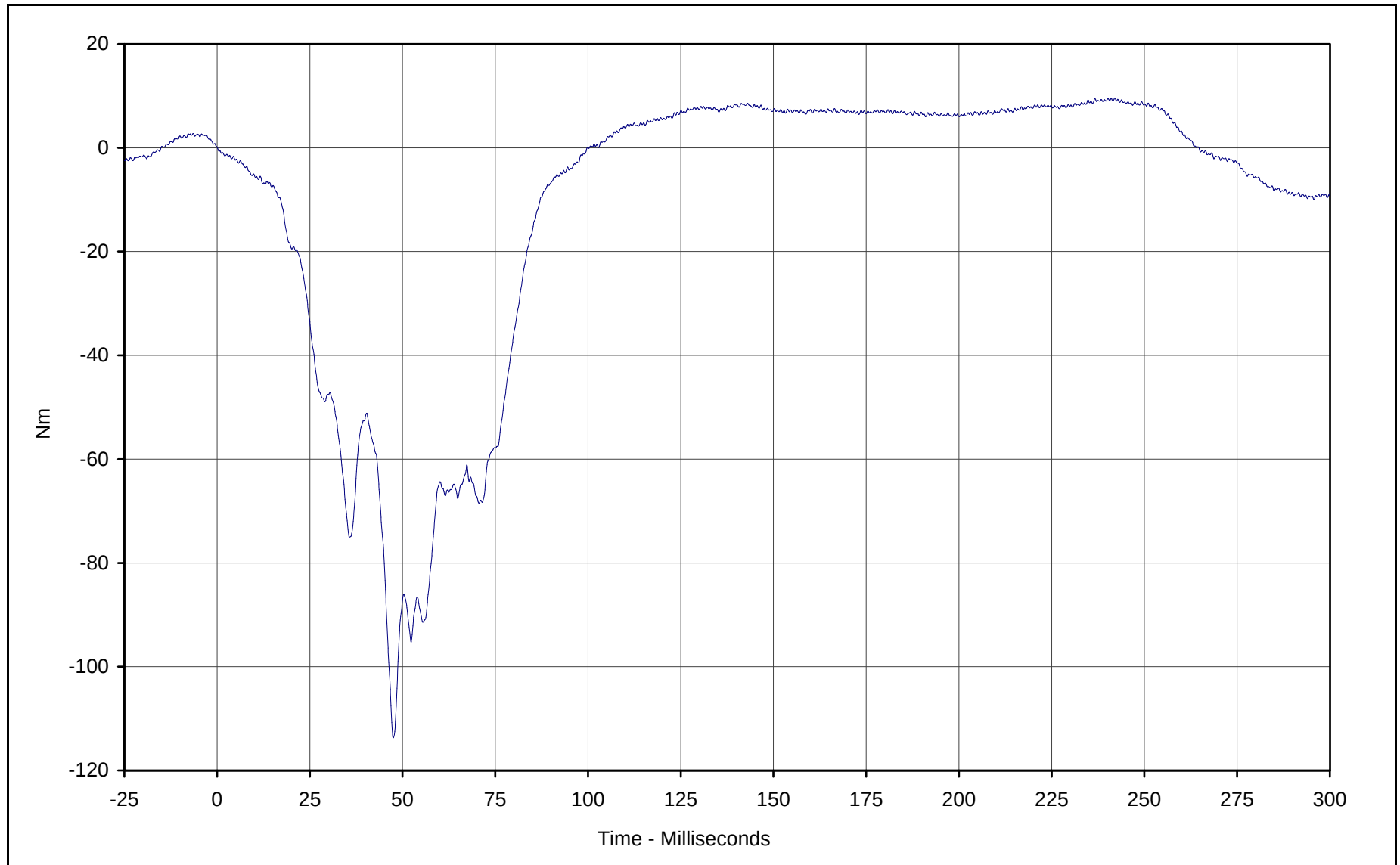
Curve Description: Driver Left Upper Tibia Moment X
Maximum Value: 55.9 at 56.1 Milliseconds
Minimum Value: -14.8 at 268.1 Milliseconds
SAE Filter Class: 600
Date of Test: 02/14/01
Curve Number: FIL-025

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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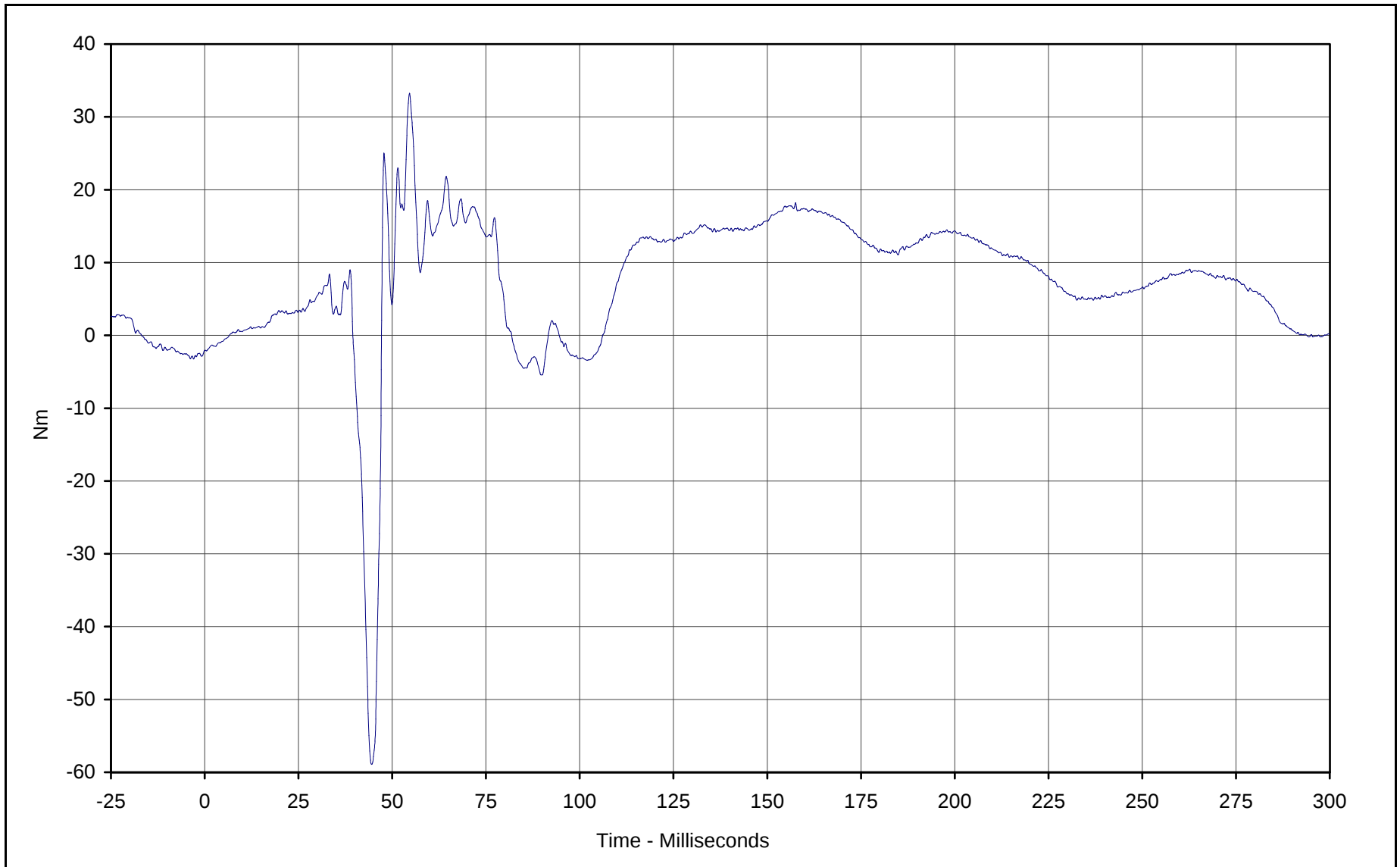


Curve Description: Driver Left Upper Tibia Moment Y
Maximum Value: 9.6 at 242.0 Milliseconds
Minimum Value: -113.7 at 47.5 Milliseconds
SAE Filter Class: 600
Date of Test: 02/14/01
Curve Number: FIL-026

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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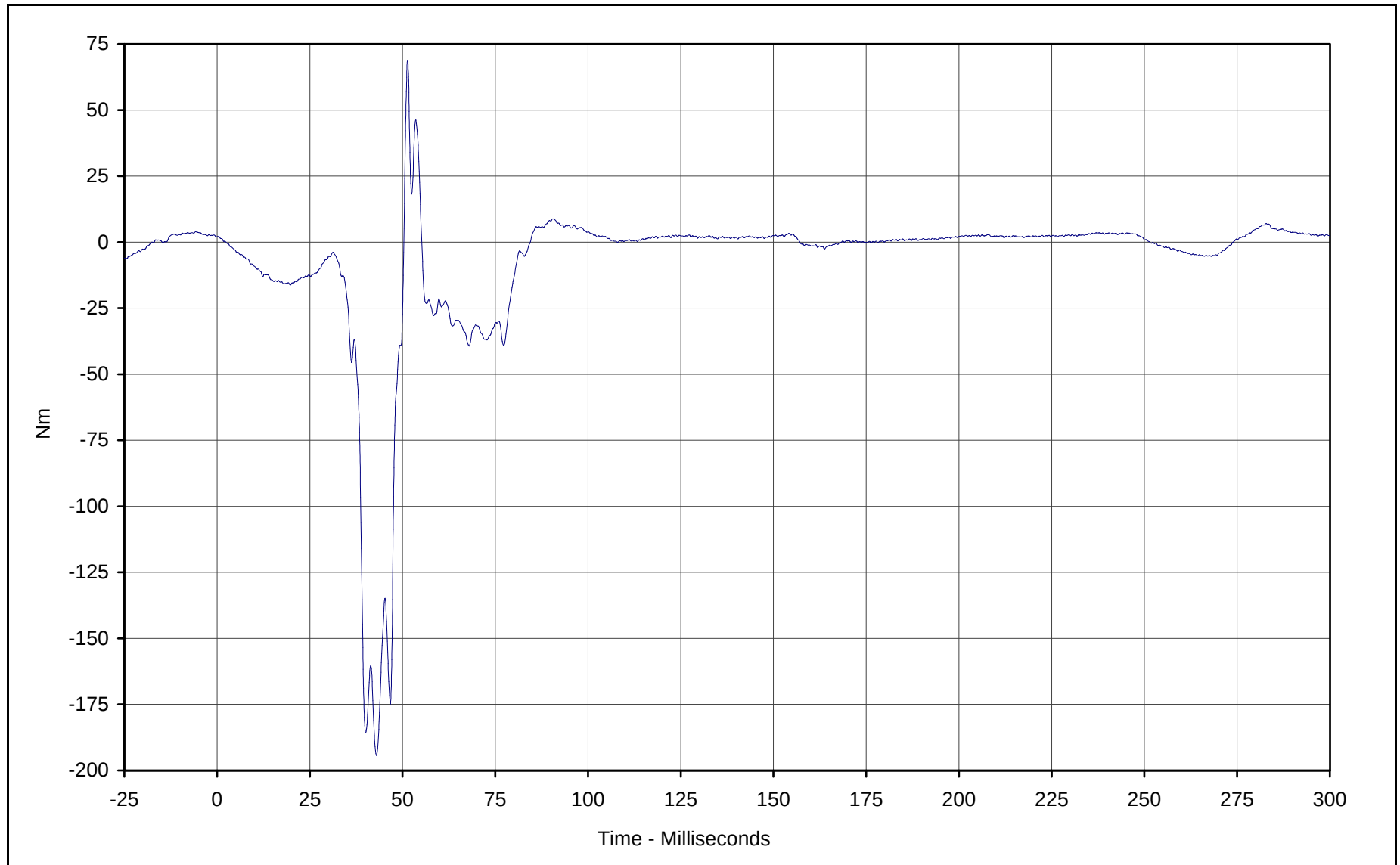
Curve Description: Driver Right Upper Tibia Moment X
Maximum Value: 33.3 at 54.6 Milliseconds
Minimum Value: -58.9 at 44.5 Milliseconds
SAE Filter Class: 600
Date of Test: 02/14/01
Curve Number: FIL-027

Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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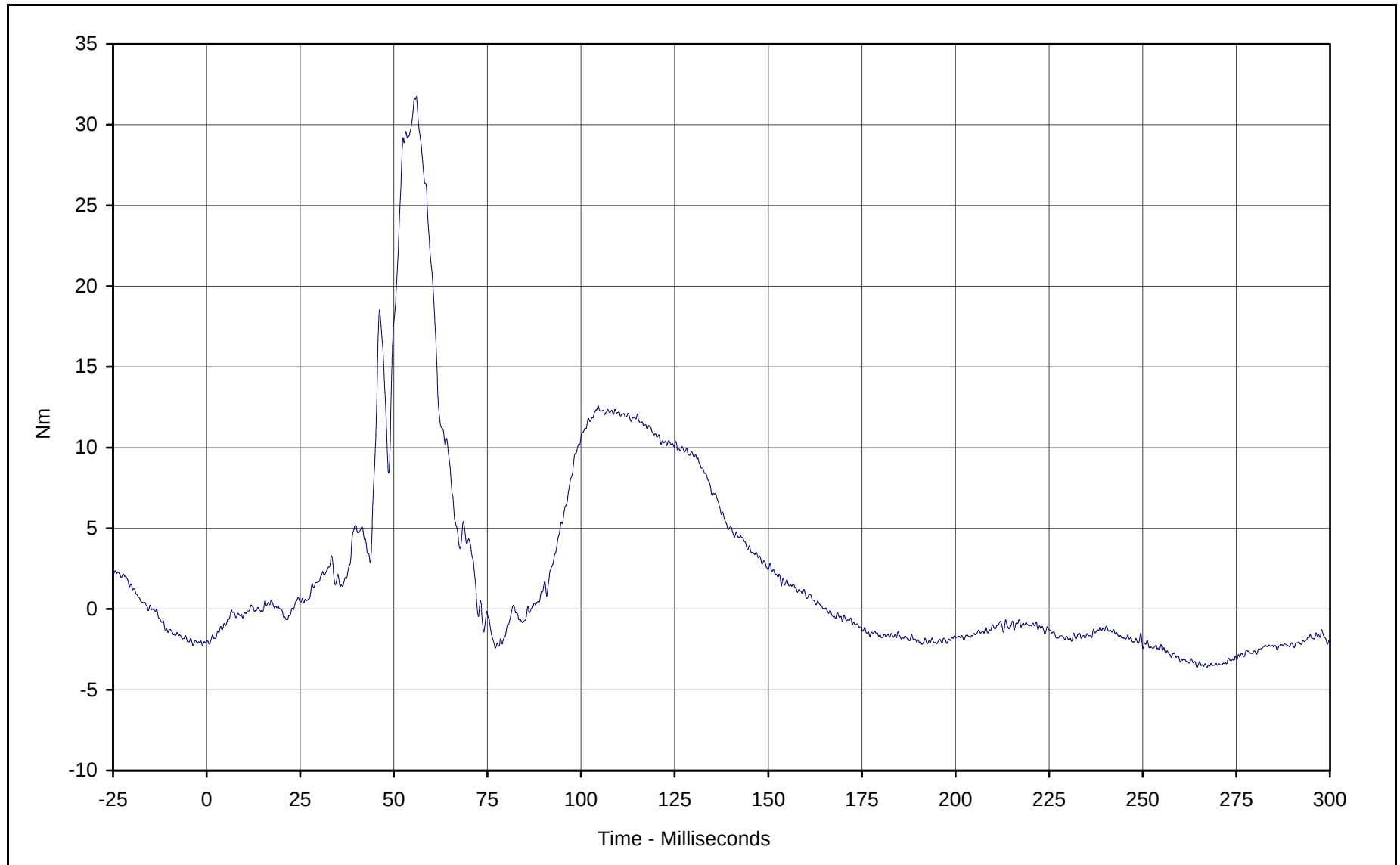


Curve Description: Driver Right Upper Tibia Moment Y
Maximum Value: 68.6 at 51.4 Milliseconds
Minimum Value: -194.3 at 43.0 Milliseconds
SAE Filter Class: 600
Date of Test: 02/14/01
Curve Number: FIL-028

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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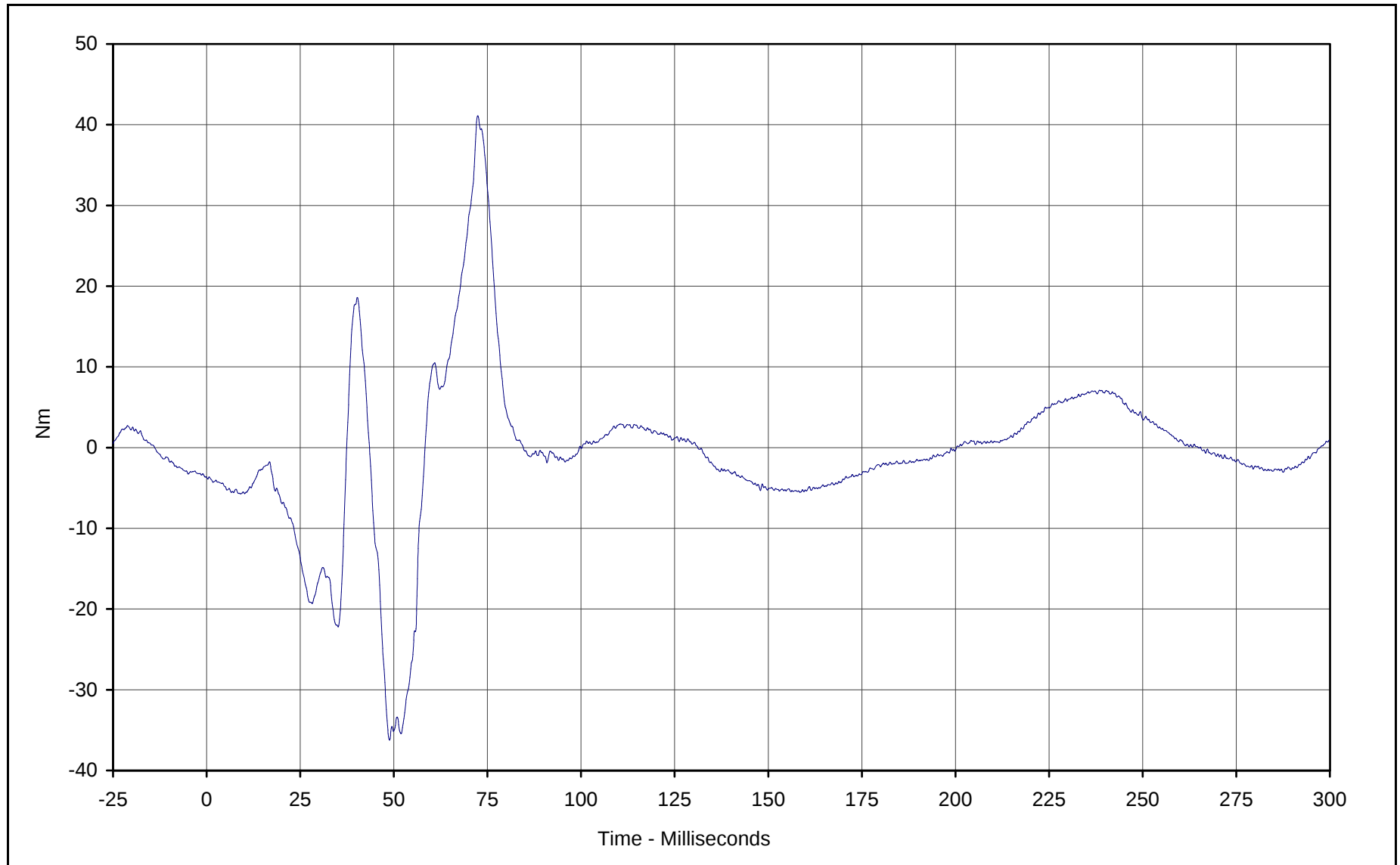
Curve Description: Driver Left Lower Tibia Moment X
Maximum Value: 31.7 at 56.0 Milliseconds
Minimum Value: -3.6 at 264.5 Milliseconds
SAE Filter Class: 600
Date of Test: 02/14/01
Curve Number: FIL-029

Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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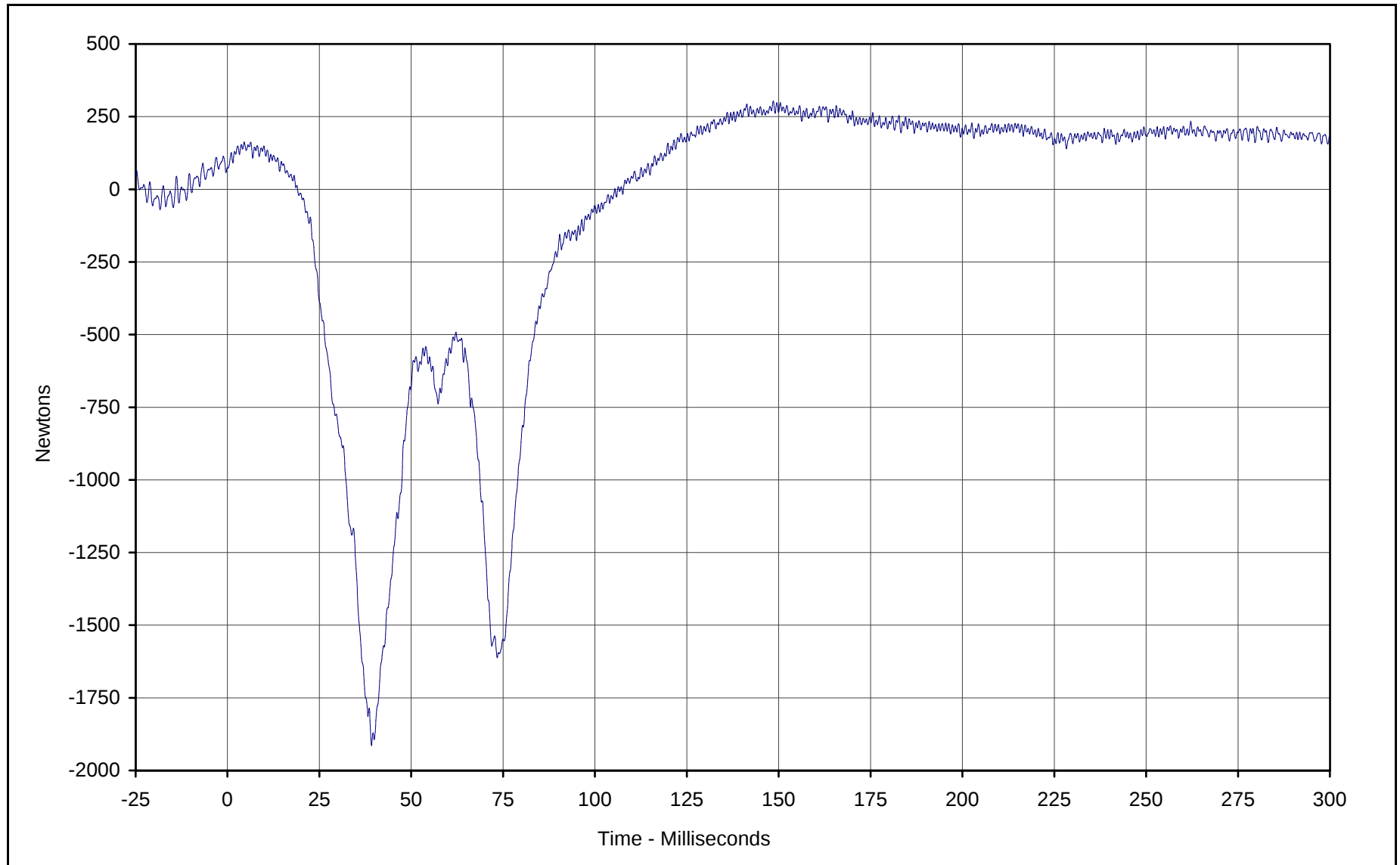


Curve Description: Driver Left Lower Tibia Moment Y
Maximum Value: 41.1 at 72.4 Milliseconds
Minimum Value: -36.2 at 48.8 Milliseconds
SAE Filter Class: 600
Date of Test: 02/14/01
Curve Number: FIL-030

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



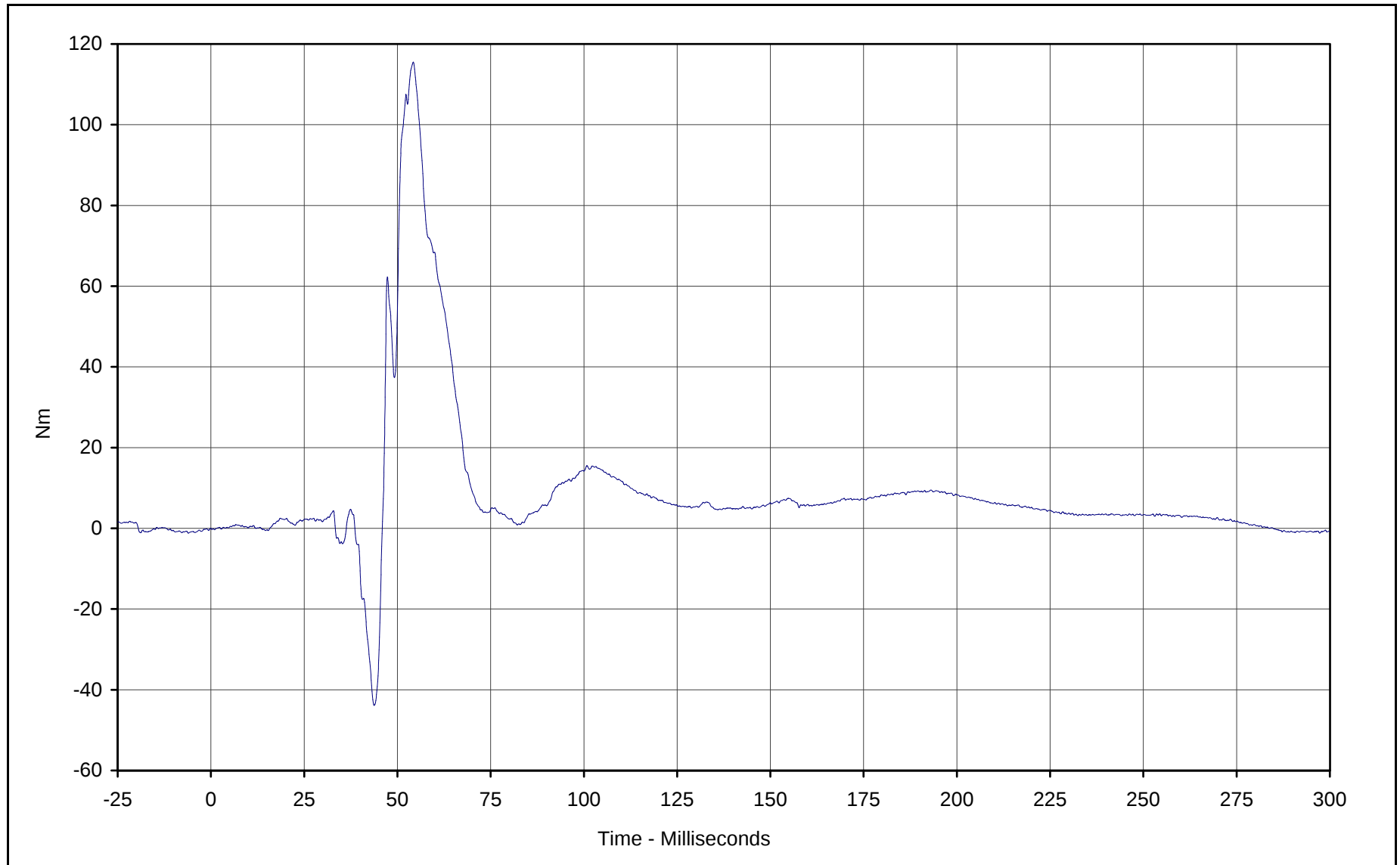
KAR21001-11



Curve Description: Driver Left Lower Tibia Force Z
Maximum Value: 303.9 at 148.5 Milliseconds
Minimum Value: -1914.5 at 39.2 Milliseconds
SAE Filter Class: 600
Date of Test: 02/14/01
Curve Number: FIL-031

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan





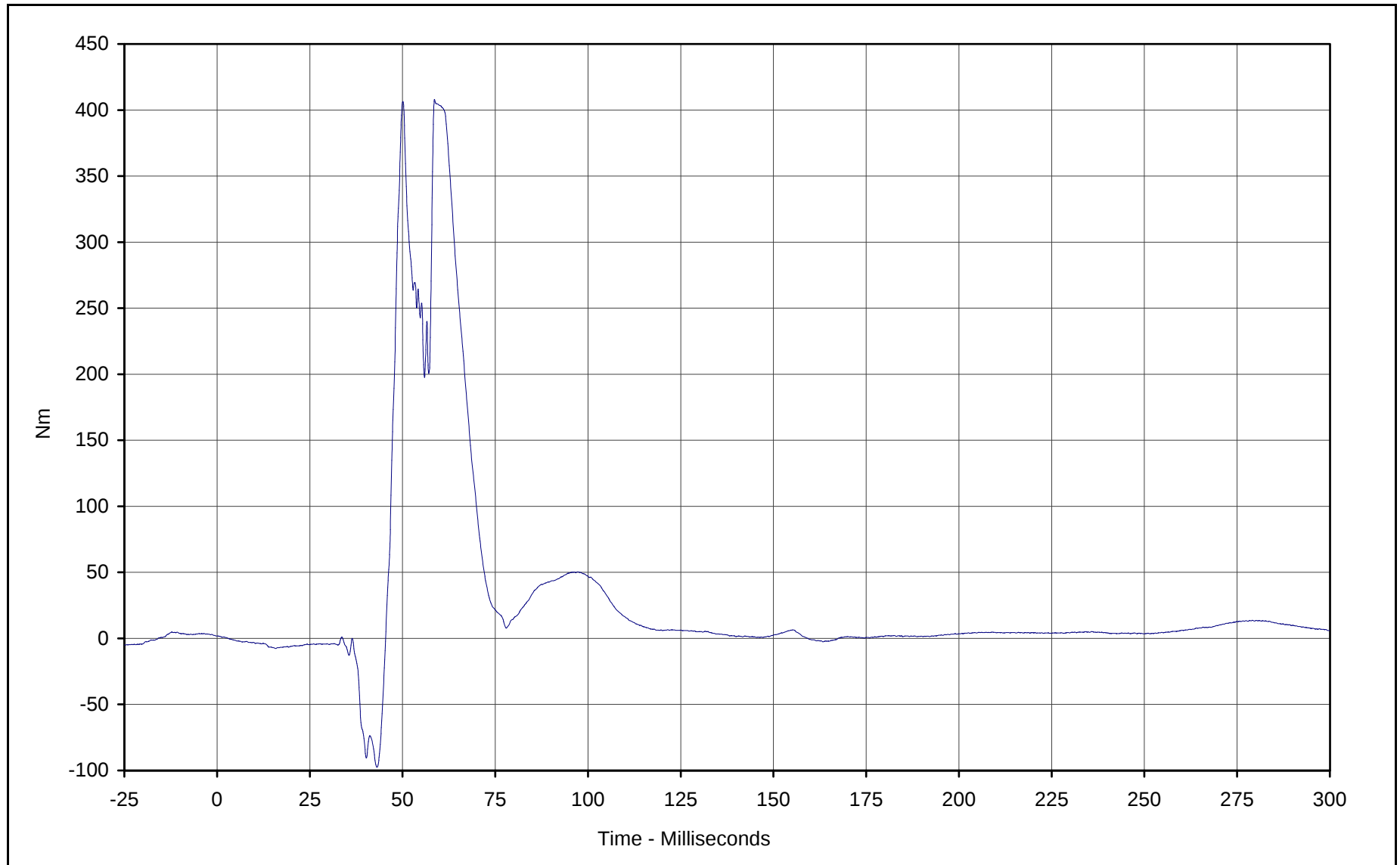
Curve Description: Driver Right Lower Tibia Moment X
Maximum Value: 115.5 at 54.2 Milliseconds
Minimum Value: -43.8 at 43.8 Milliseconds
SAE Filter Class: 600
Date of Test: 02/14/01
Curve Number: FIL-032

Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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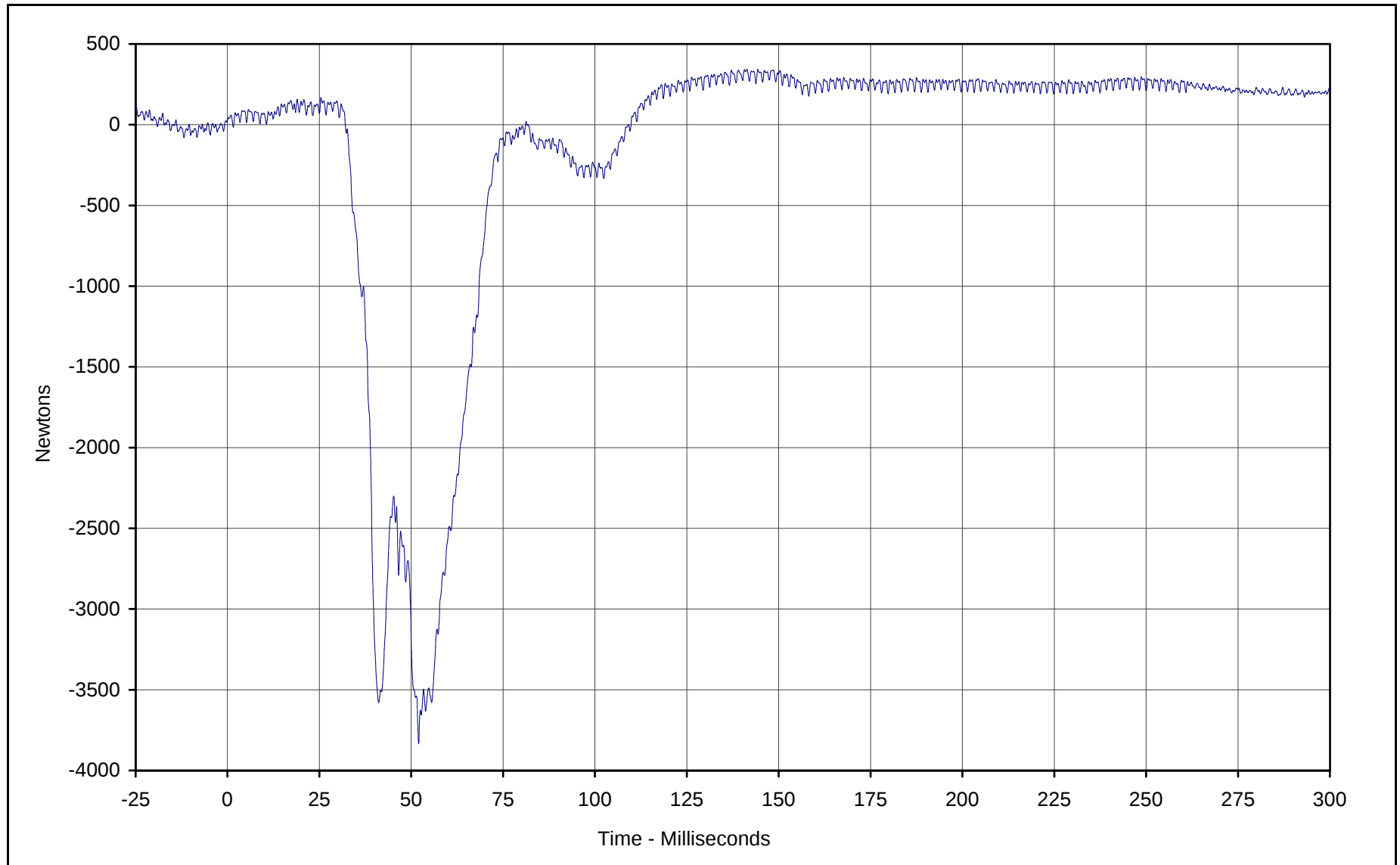


Curve Description: Driver Right Lower Tibia Moment Y
Maximum Value: 408.0 at 58.6 Milliseconds
Minimum Value: -97.6 at 43.1 Milliseconds
SAE Filter Class: 600
Date of Test: 02/14/01
Curve Number: FIL-033

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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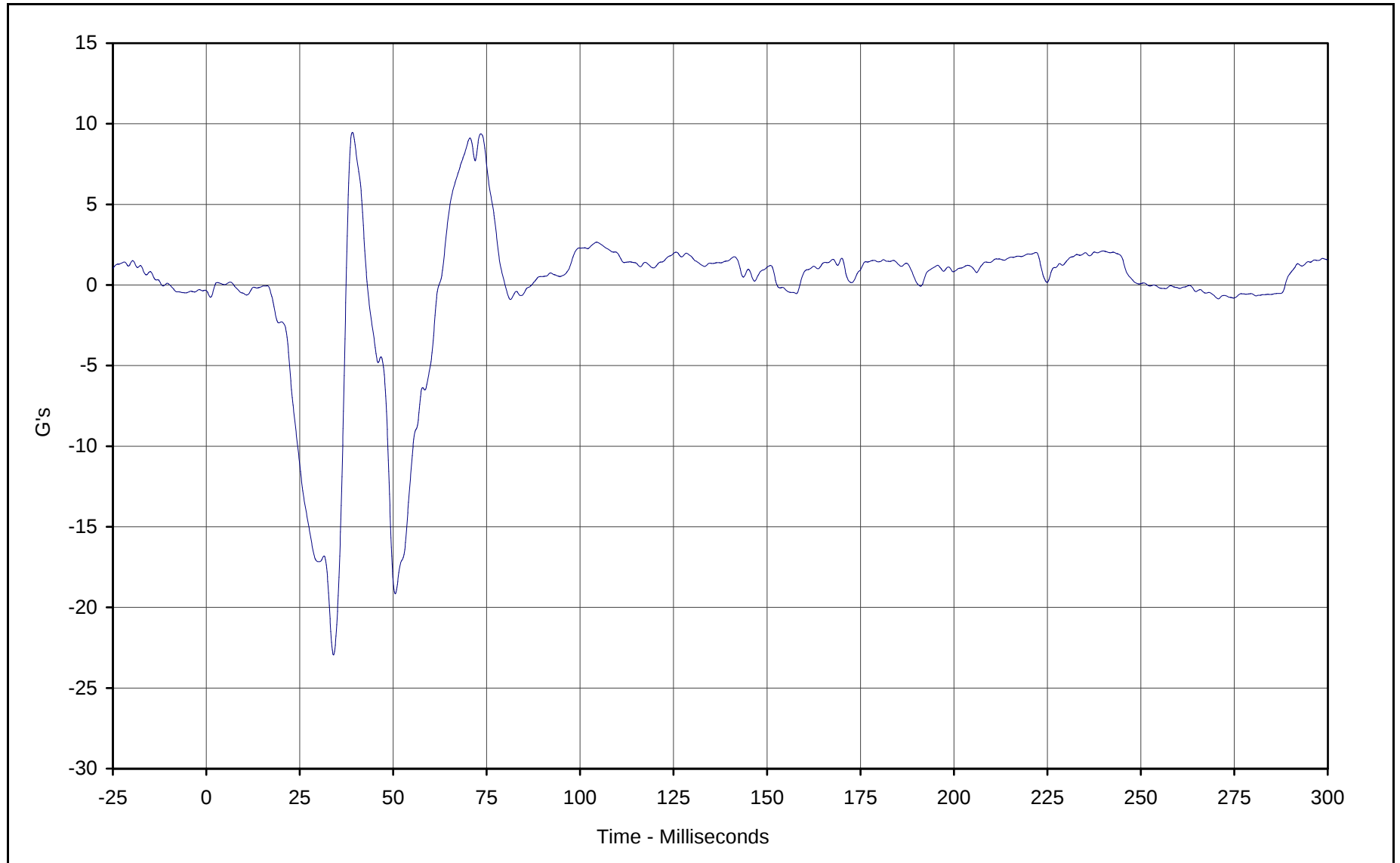


Curve Description: Driver Right Lower Tibia Force Z
Maximum Value: 342.6 at 141.4 Milliseconds
Minimum Value: -3835.0 at 52.0 Milliseconds
SAE Filter Class: 600
Date of Test: 02/14/01
Curve Number: FIL-034

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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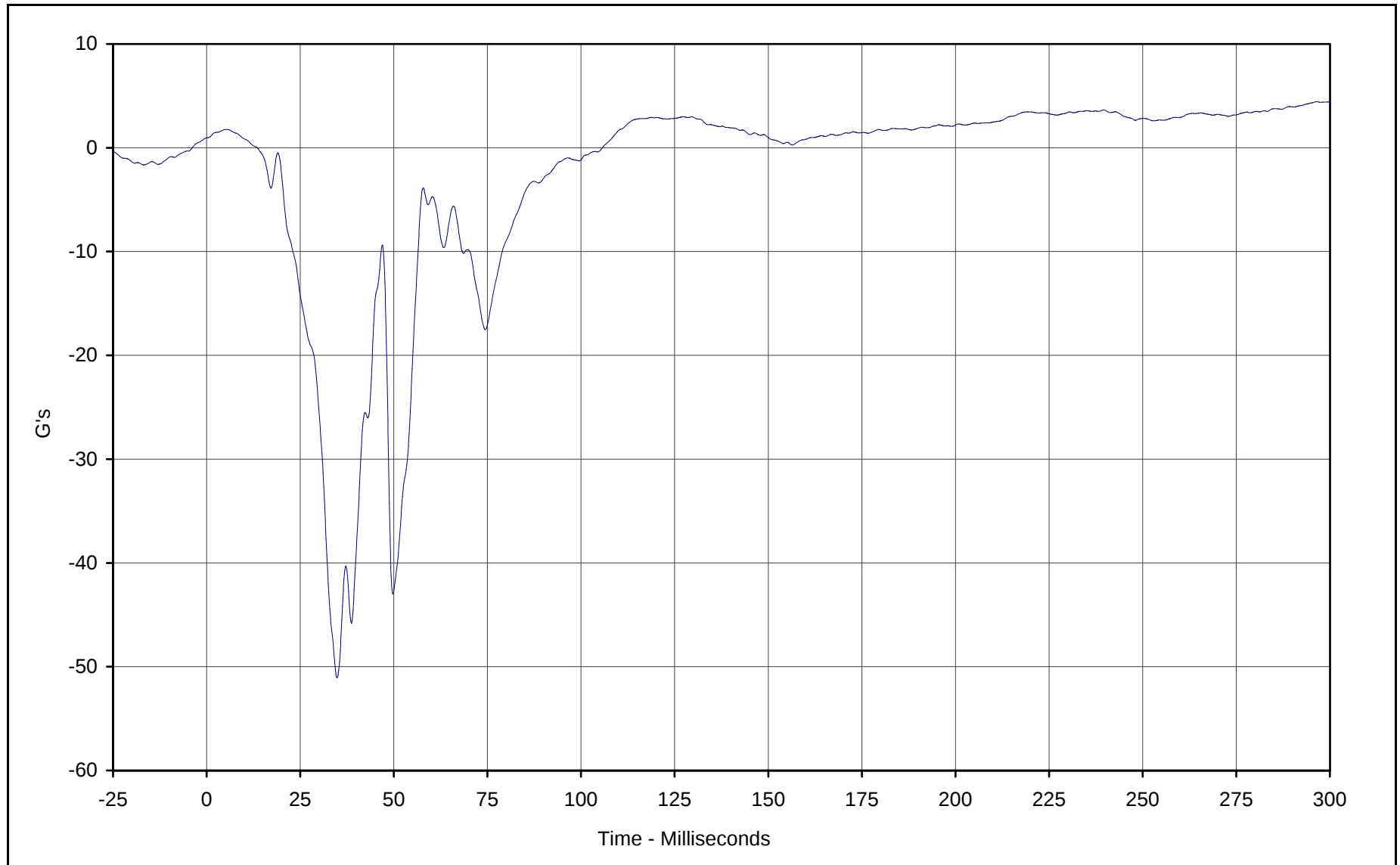


Curve Description: Driver Left Foot Aft X
Maximum Value: 9.5 at 39.1 Milliseconds
Minimum Value: -22.9 at 34.0 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: FIL-035

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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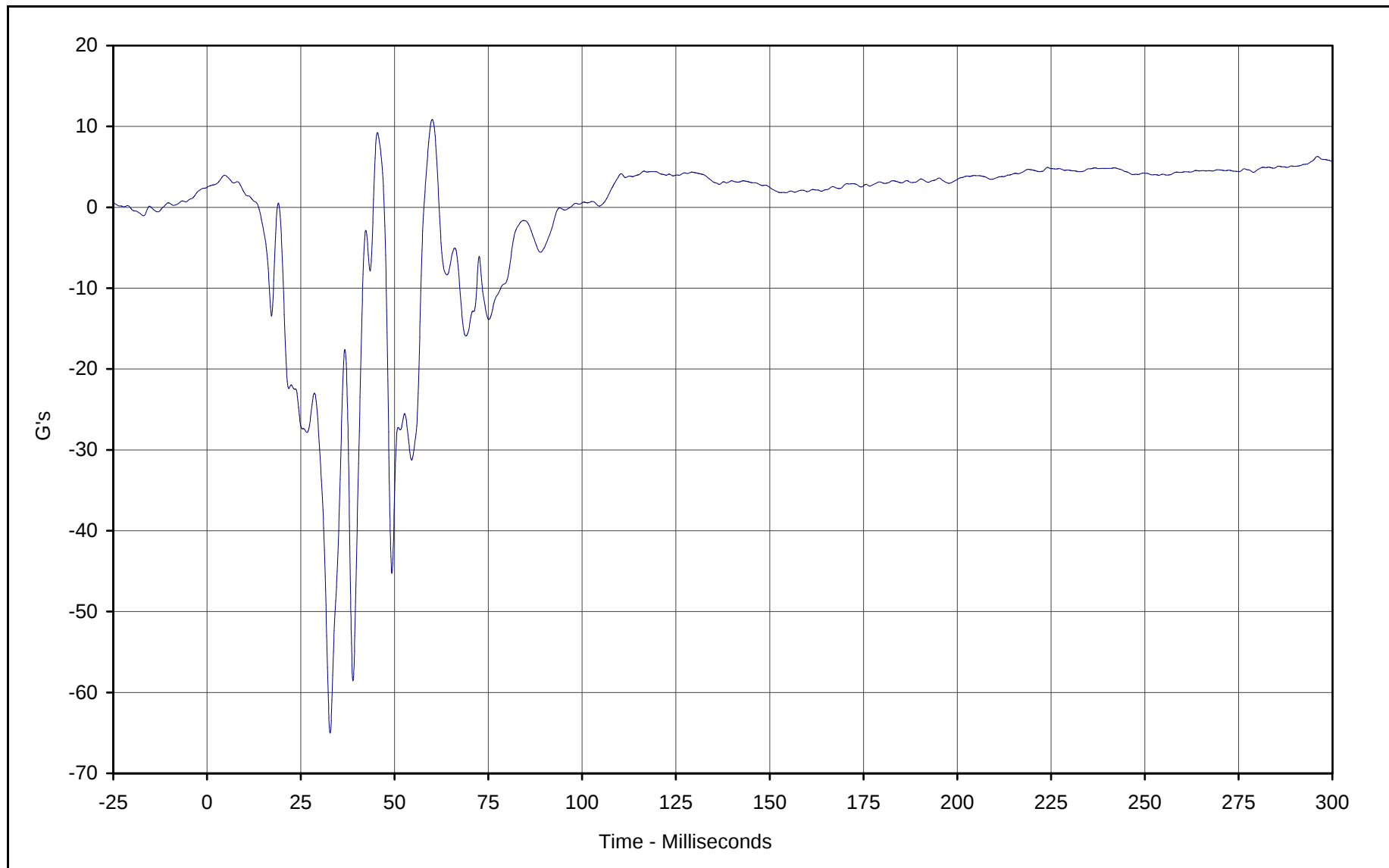


Curve Description: Driver Left Foot Aft Z
Maximum Value: 4.5 at 296.5 Milliseconds
Minimum Value: -51.1 at 34.8 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: FIL-036

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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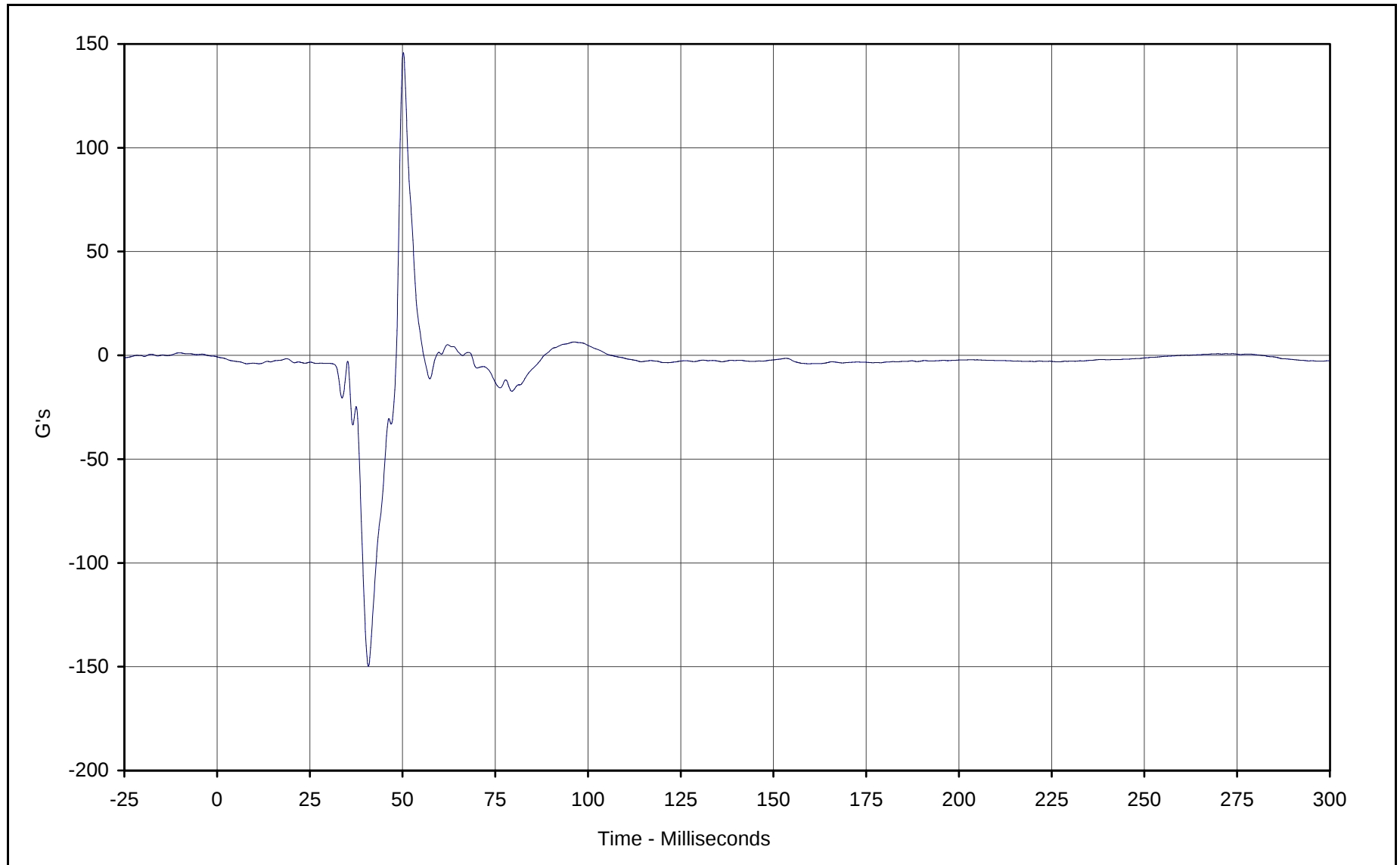
Curve Description: Driver Left Foot Fore Z
Maximum Value: 10.9 at 60.0 Milliseconds
Minimum Value: -65.0 at 32.8 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: FIL-037

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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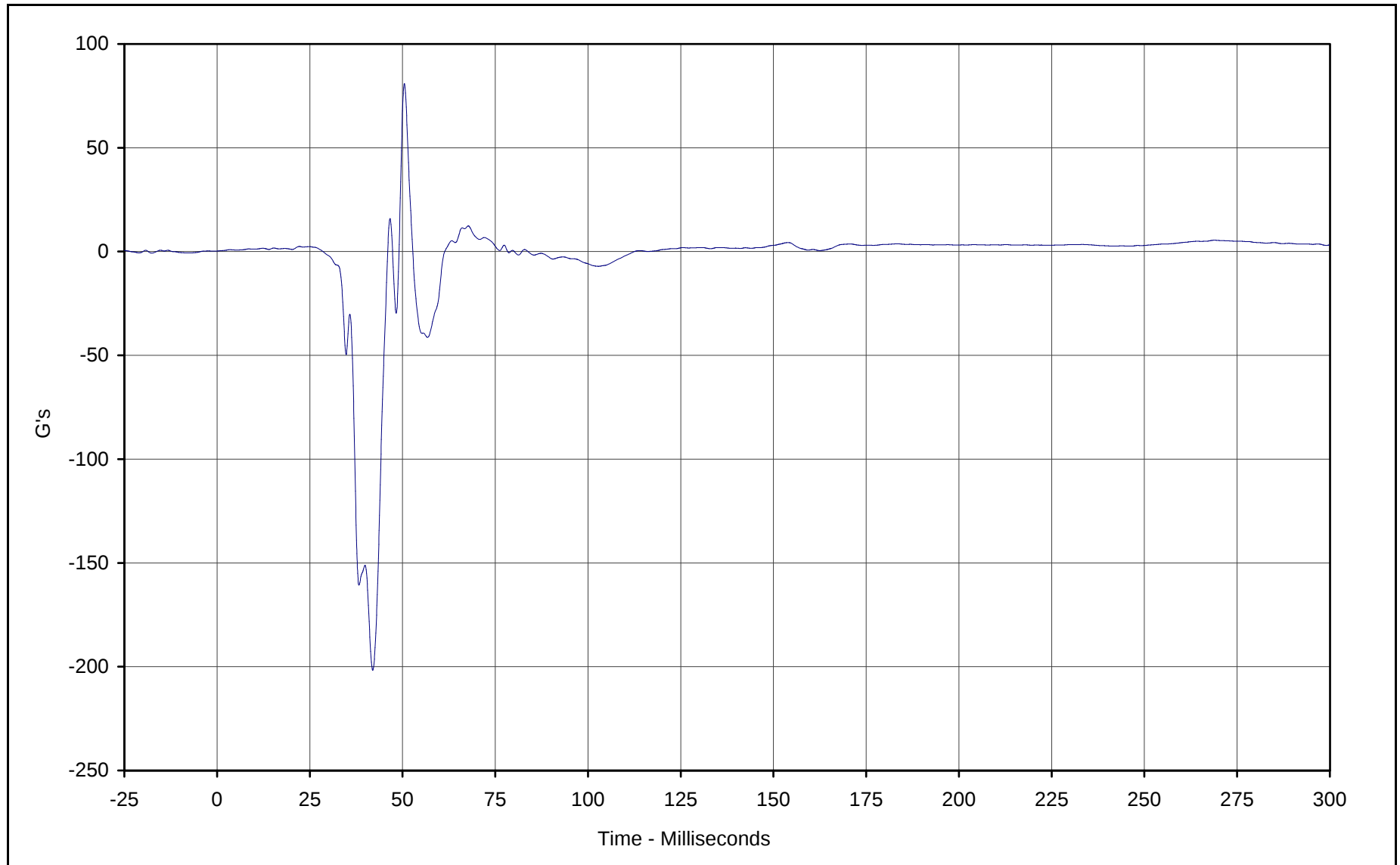
Curve Description: Driver Right Foot Aft X
Maximum Value: 145.8 at 50.2 Milliseconds
Minimum Value: -149.7 at 40.8 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: FIL-038

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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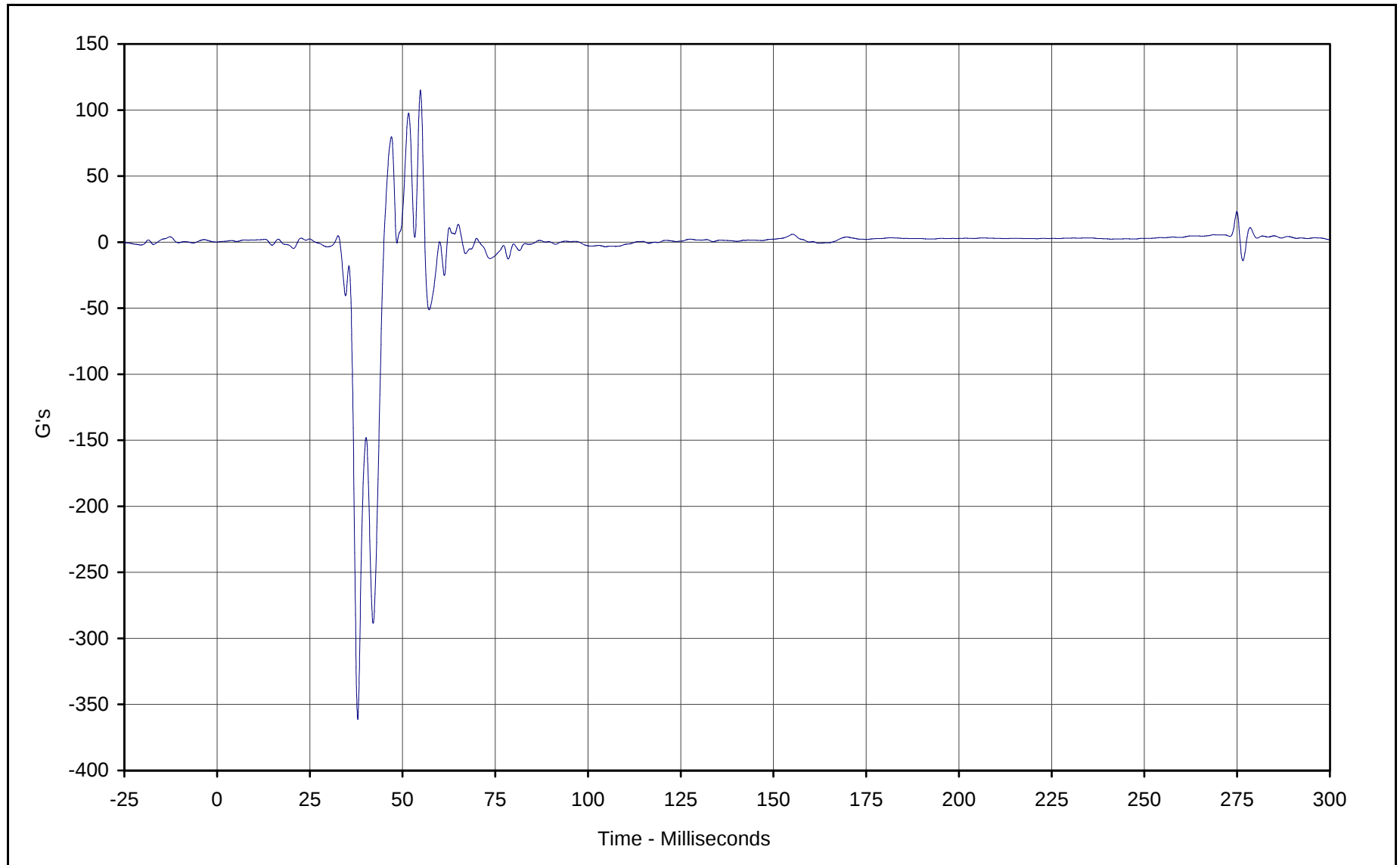


Curve Description: Driver Right Foot Aft Z
Maximum Value: 80.9 at 50.5 Milliseconds
Minimum Value: -201.7 at 42.0 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: FIL-039

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



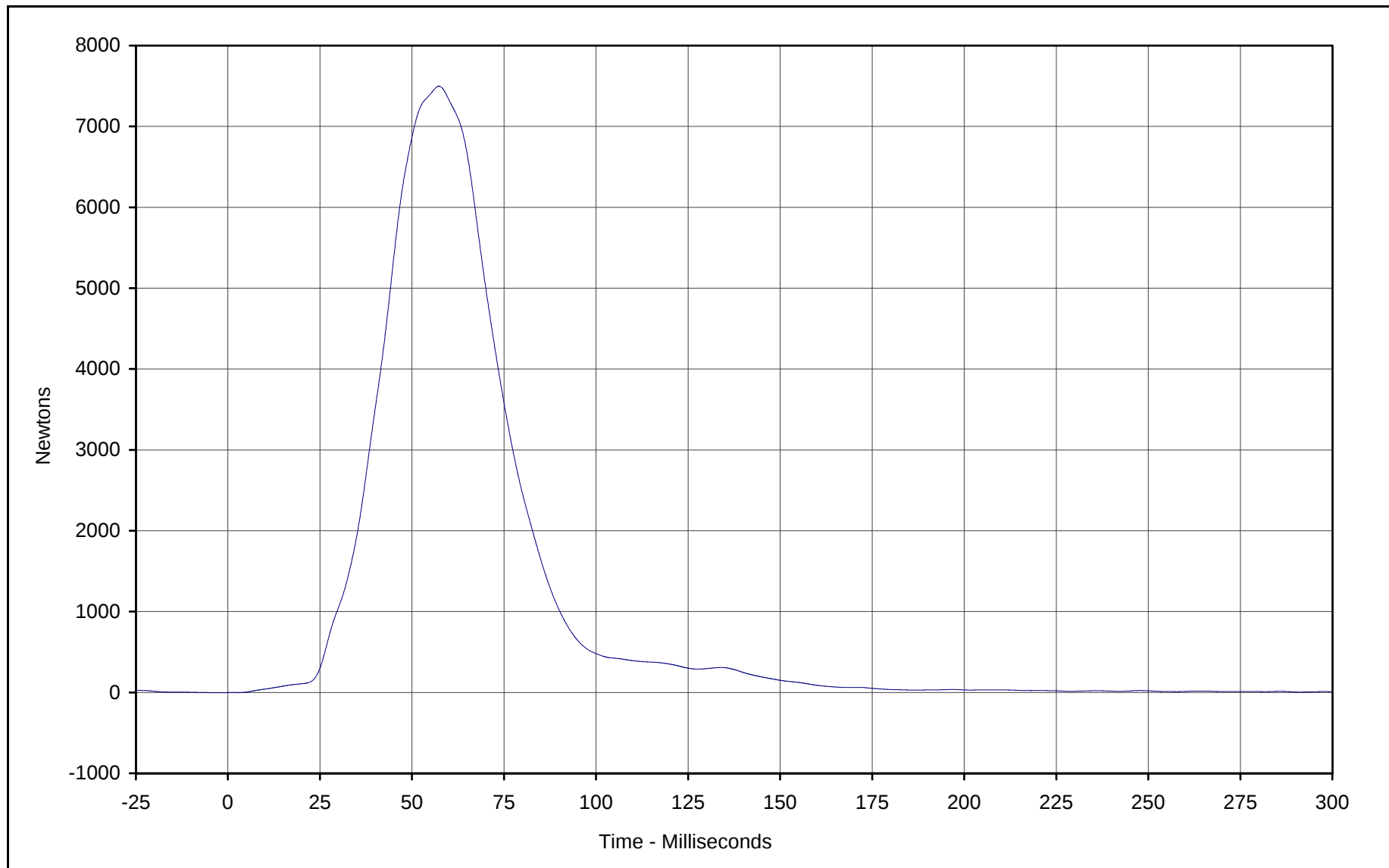
KAR21001-11



Curve Description: Driver Right Foot Fore Z
Maximum Value: 115.1 at 54.8 Milliseconds
Minimum Value: -361.5 at 37.9 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: FIL-040

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan

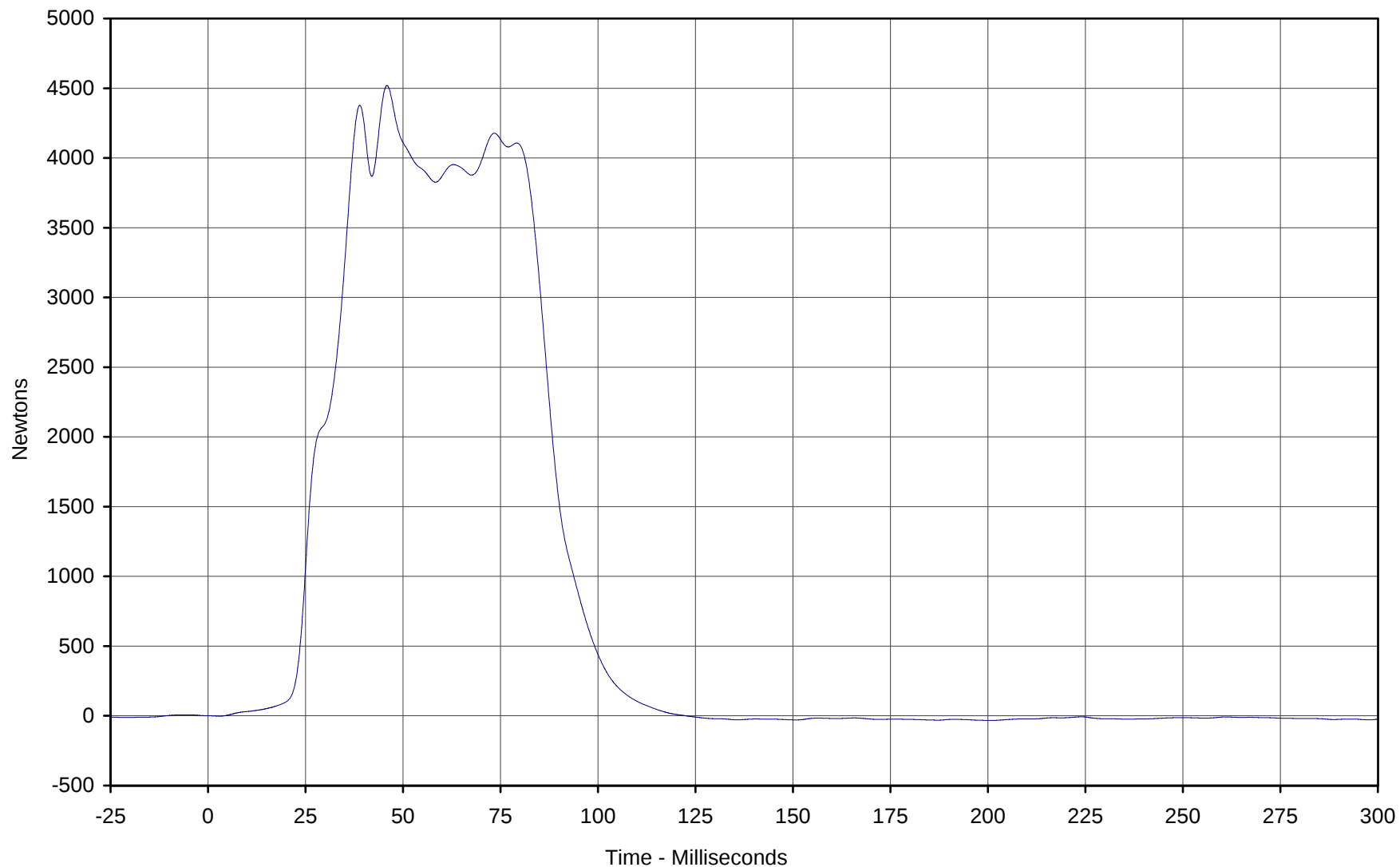




Curve Description: Driver Lap Belt Force
Maximum Value: 7496.8 at 57.3 Milliseconds
Minimum Value: -2.2 at 2.8 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-041

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



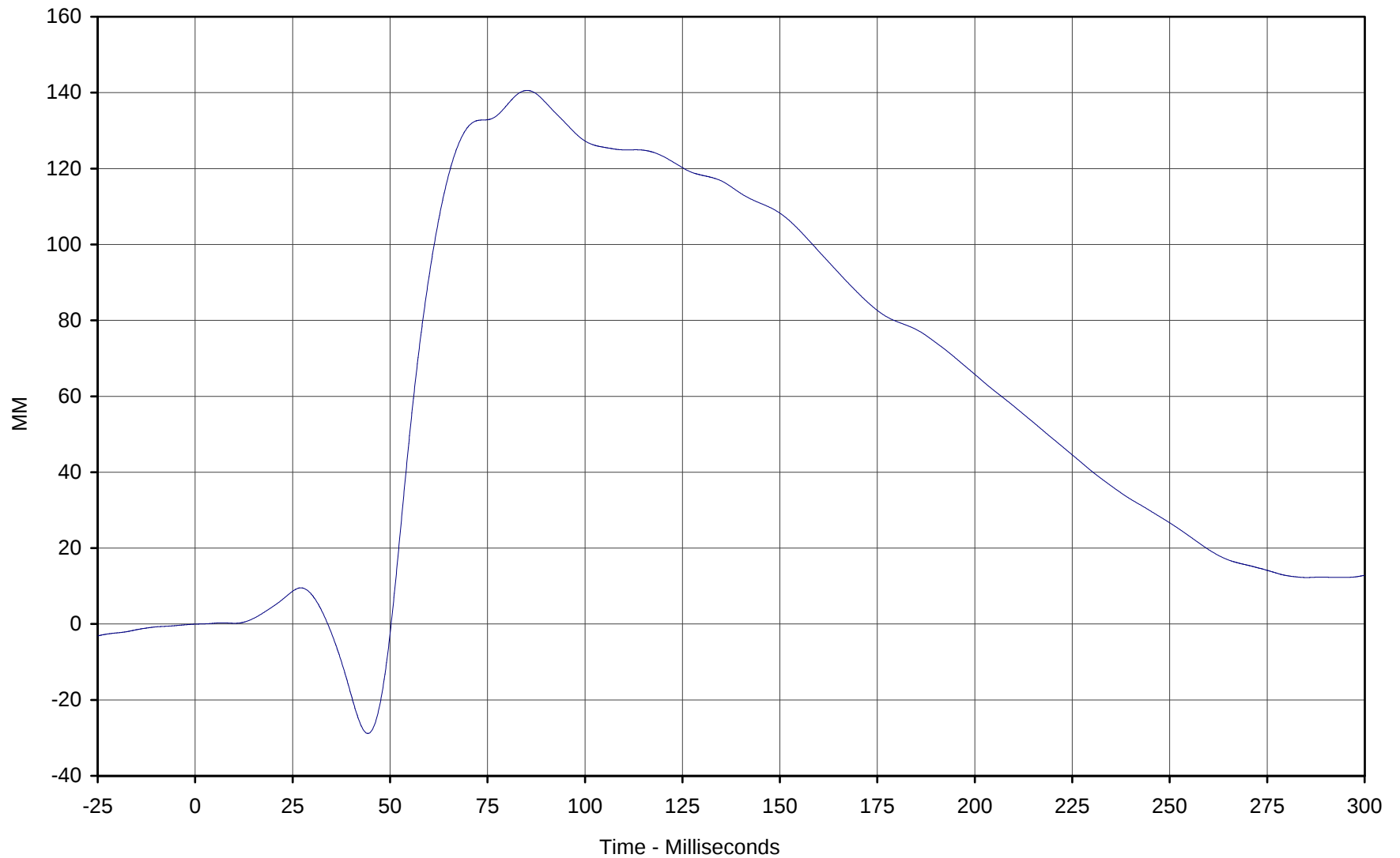


Curve Description: Driver Shoulder Belt Force
Maximum Value: 4519.8 at 45.9 Milliseconds
Minimum Value: -32.8 at 200.8 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-042

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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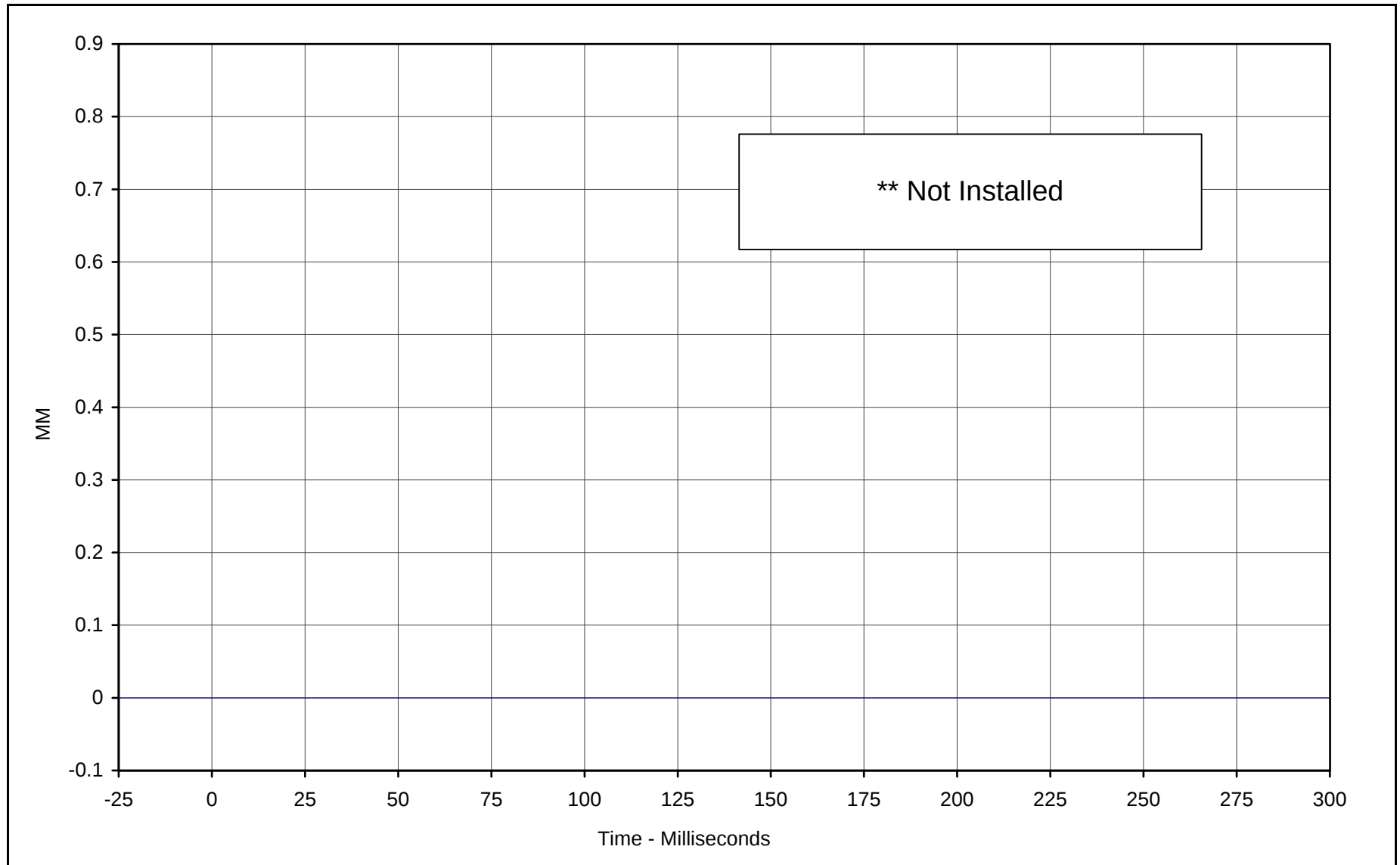


Curve Description: Driver Shoulder Belt Pullout
Maximum Value: 140.6 at 85.2 Milliseconds
Minimum Value: -28.8 at 44.3 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-043

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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Curve Description: Driver Shoulder Belt Elongation **

Maximum Value: 0.0 at 0.0 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 60

Date of Test: 02/14/01

Curve Number: FIL-044

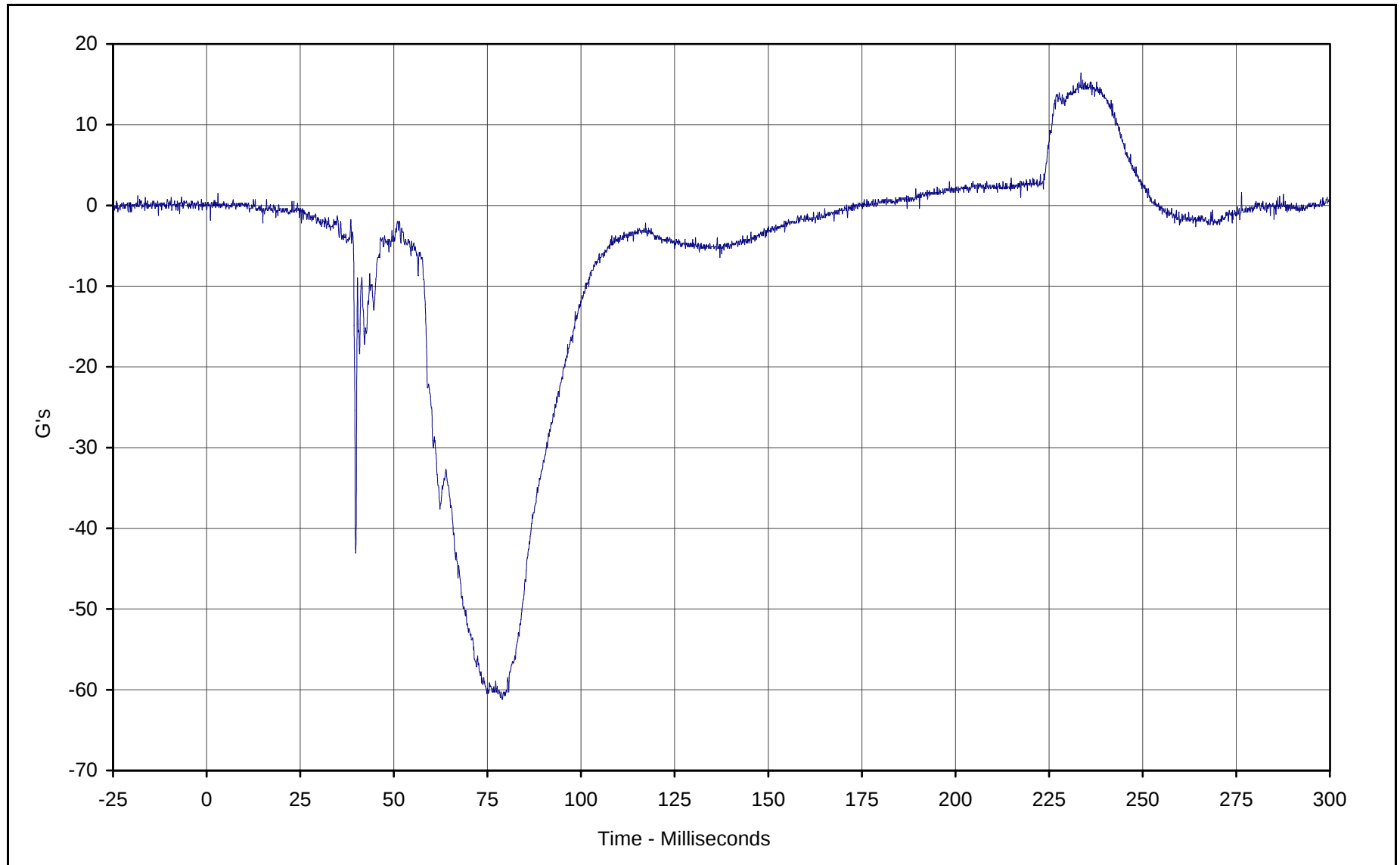
Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan

** Not installed



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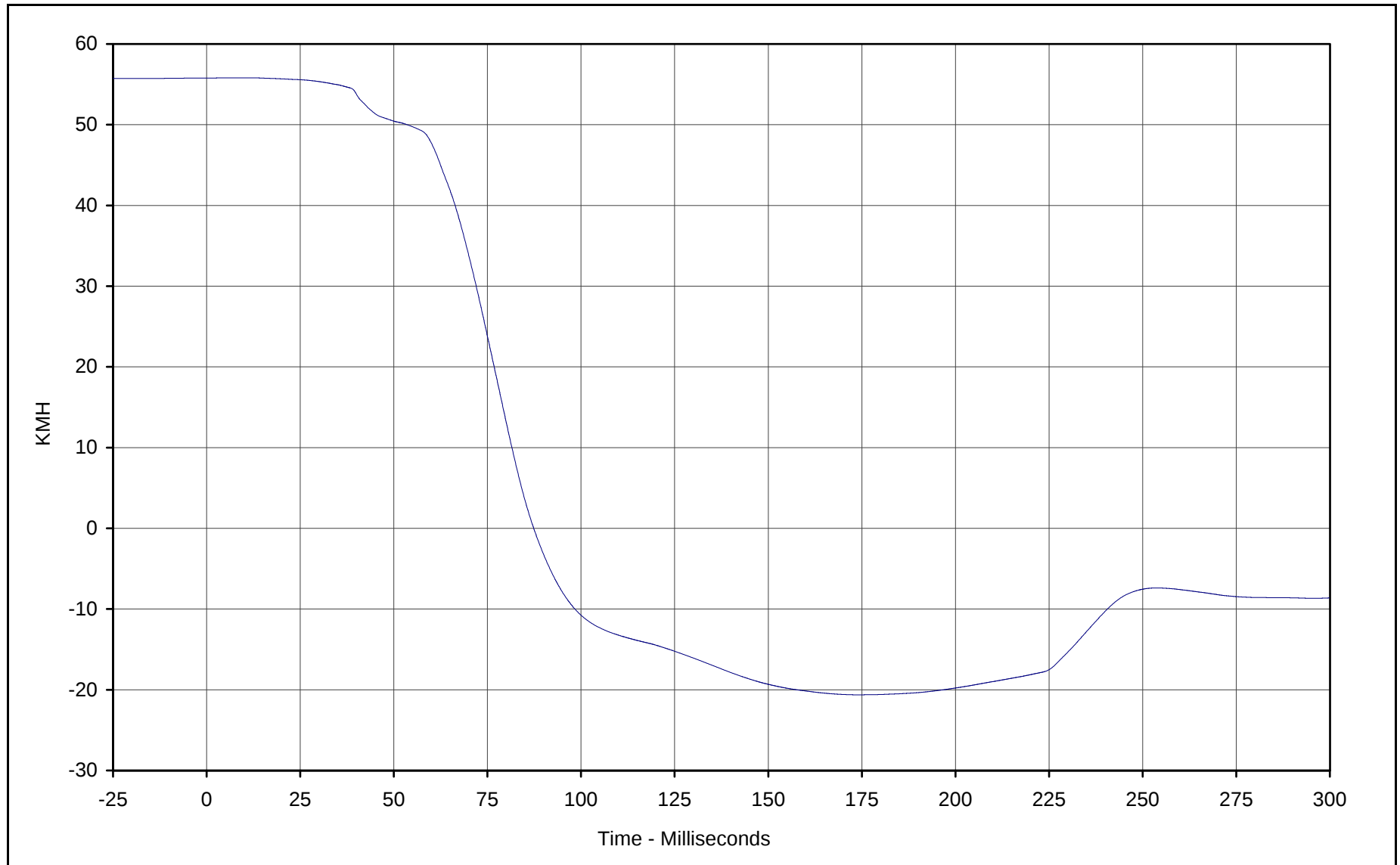


Curve Description: Passenger Head Primary X
Maximum Value: 16.4 at 233.5 Milliseconds
Minimum Value: -61.2 at 78.9 Milliseconds
SAE Filter Class: 1000
Date of Test: 02/14/01
Curve Number: FIL-045

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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Curve Description: Passenger Head Primary X Velocity

Maximum Value: 55.8 at 10.5 Milliseconds

Minimum Value: -20.6 at 173.9 Milliseconds

SAE Filter Class: 180

Date of Test: 02/14/01

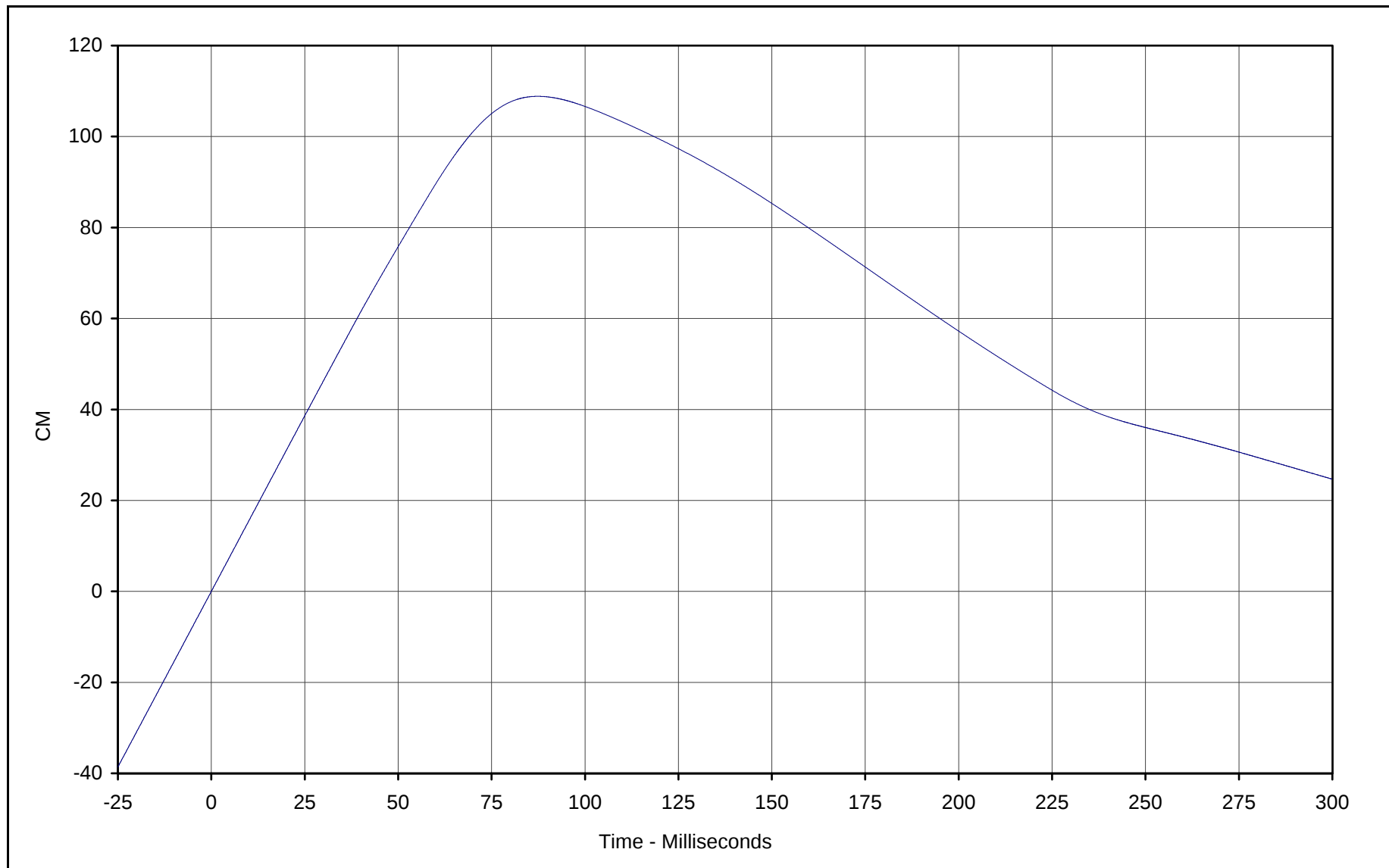
Curve Number: IN1-045

Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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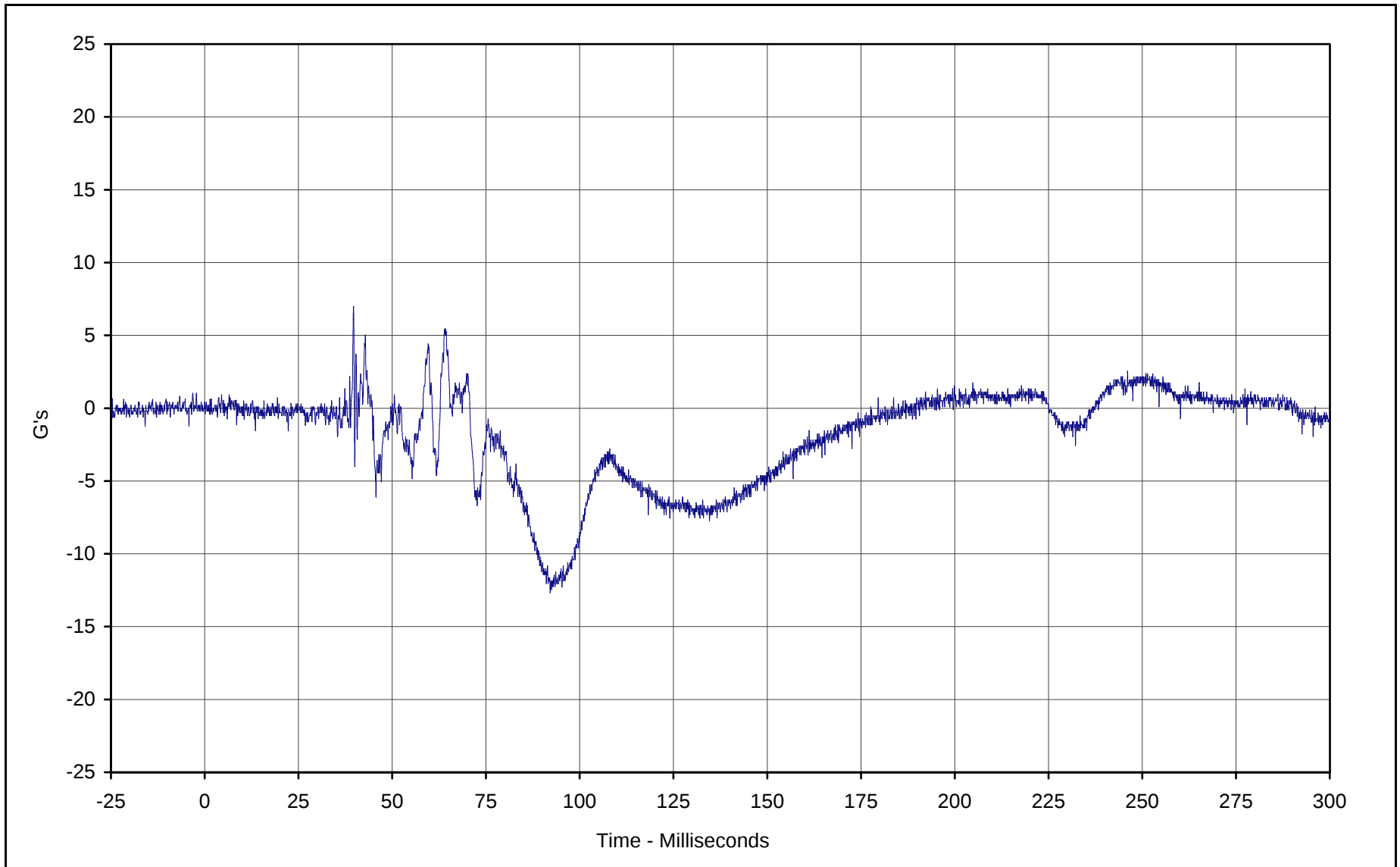
Curve Description: Passenger Head Primary X Displ.
Maximum Value: 108.8 at 87.4 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: IN2-045

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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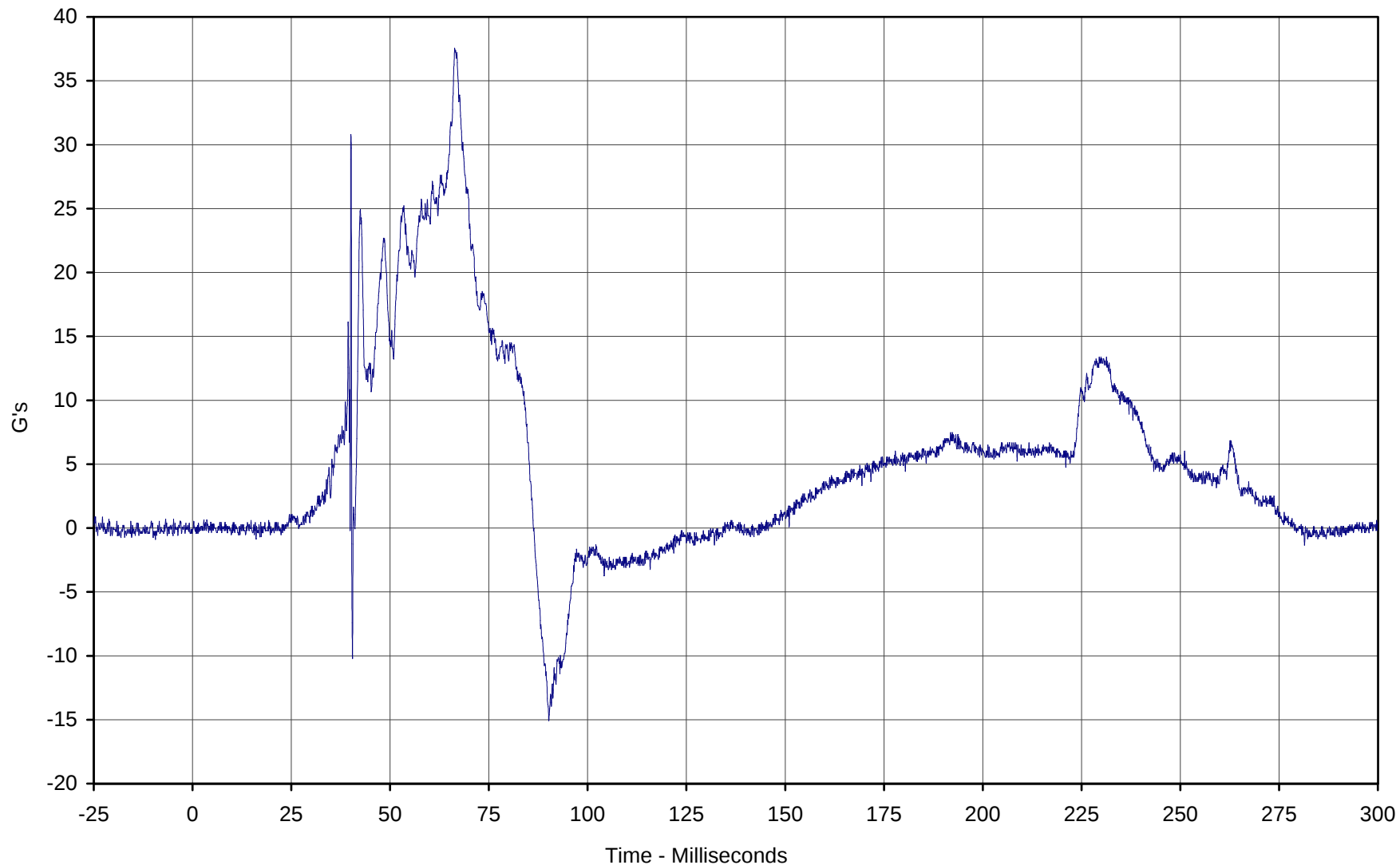
Curve Description: Passenger Head Primary Y
Maximum Value: 7.0 at 39.7 Milliseconds
Minimum Value: -12.7 at 92.1 Milliseconds
SAE Filter Class: 1000
Date of Test: 02/14/01
Curve Number: FIL-046

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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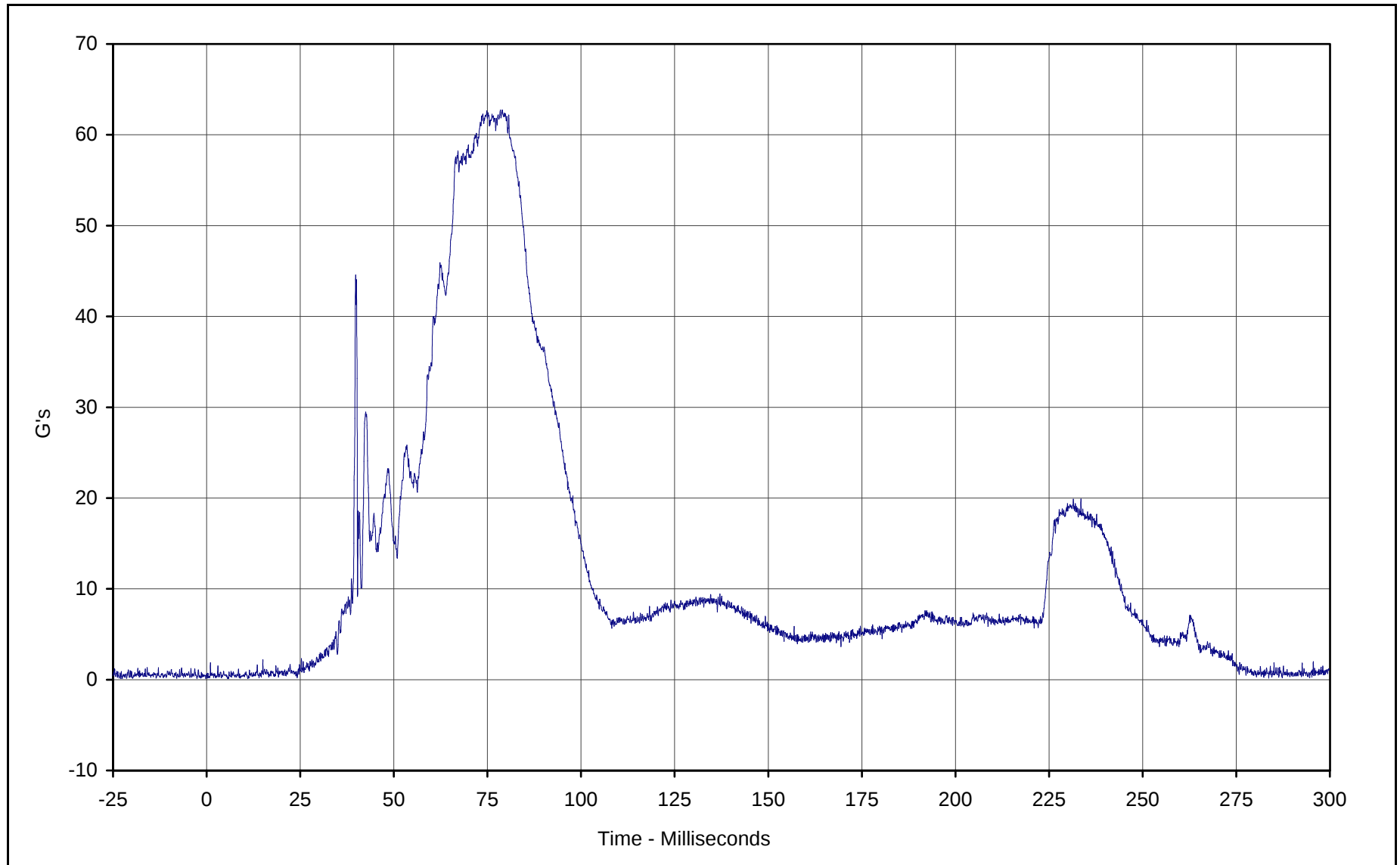
Curve Description: Passenger Head Primary Z
Maximum Value: 37.5 at 66.3 Milliseconds
Minimum Value: -15.1 at 90.2 Milliseconds
SAE Filter Class: 1000
Date of Test: 02/14/01
Curve Number: FIL-047

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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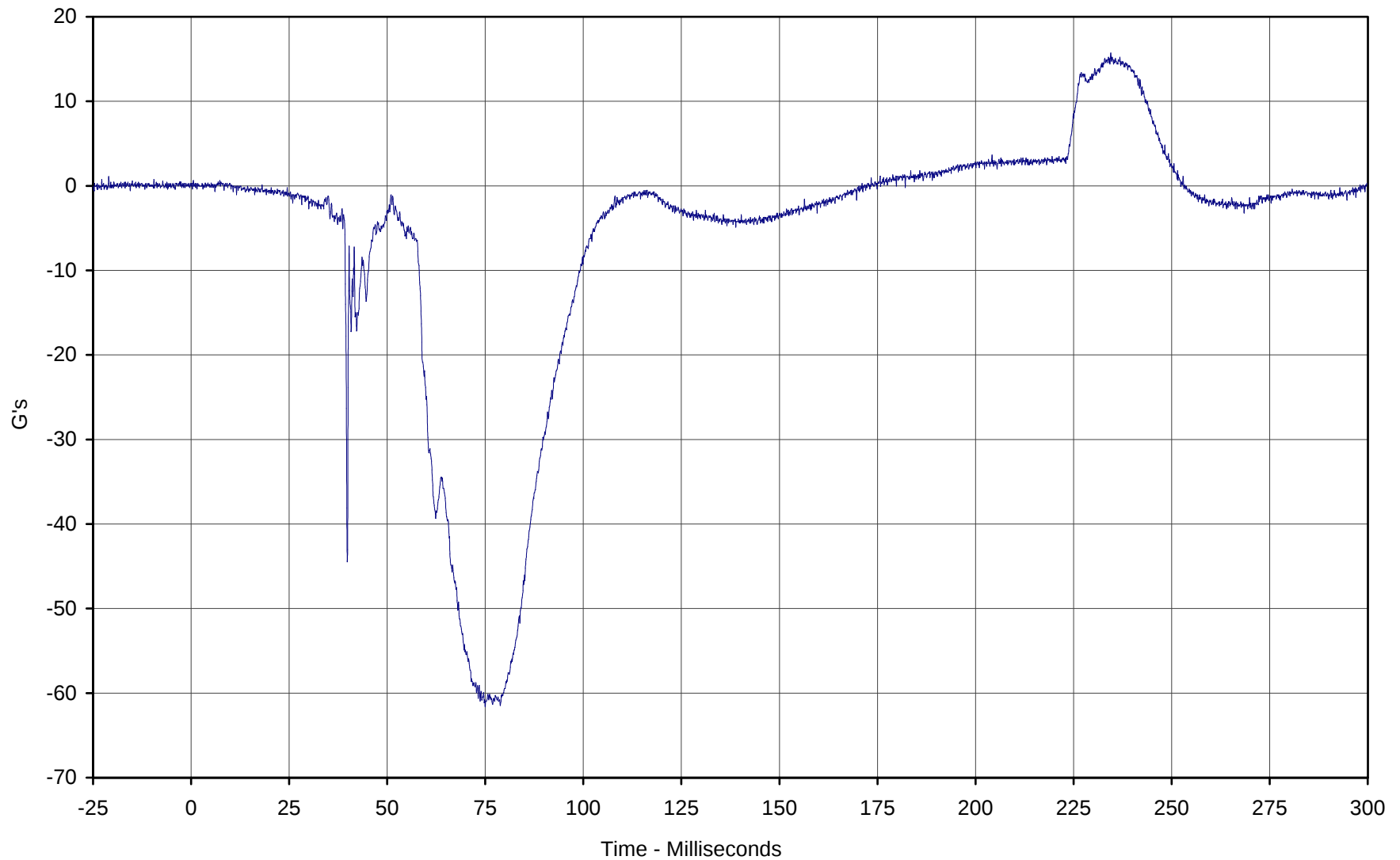
Curve Description: Passenger Head Resultant Primary
Maximum Value: 62.7 at 78.5 Milliseconds
Minimum Value: 0.1 at 5.6 Milliseconds
SAE Filter Class: 1000
Date of Test: 02/14/01
Curve Number: RES-045

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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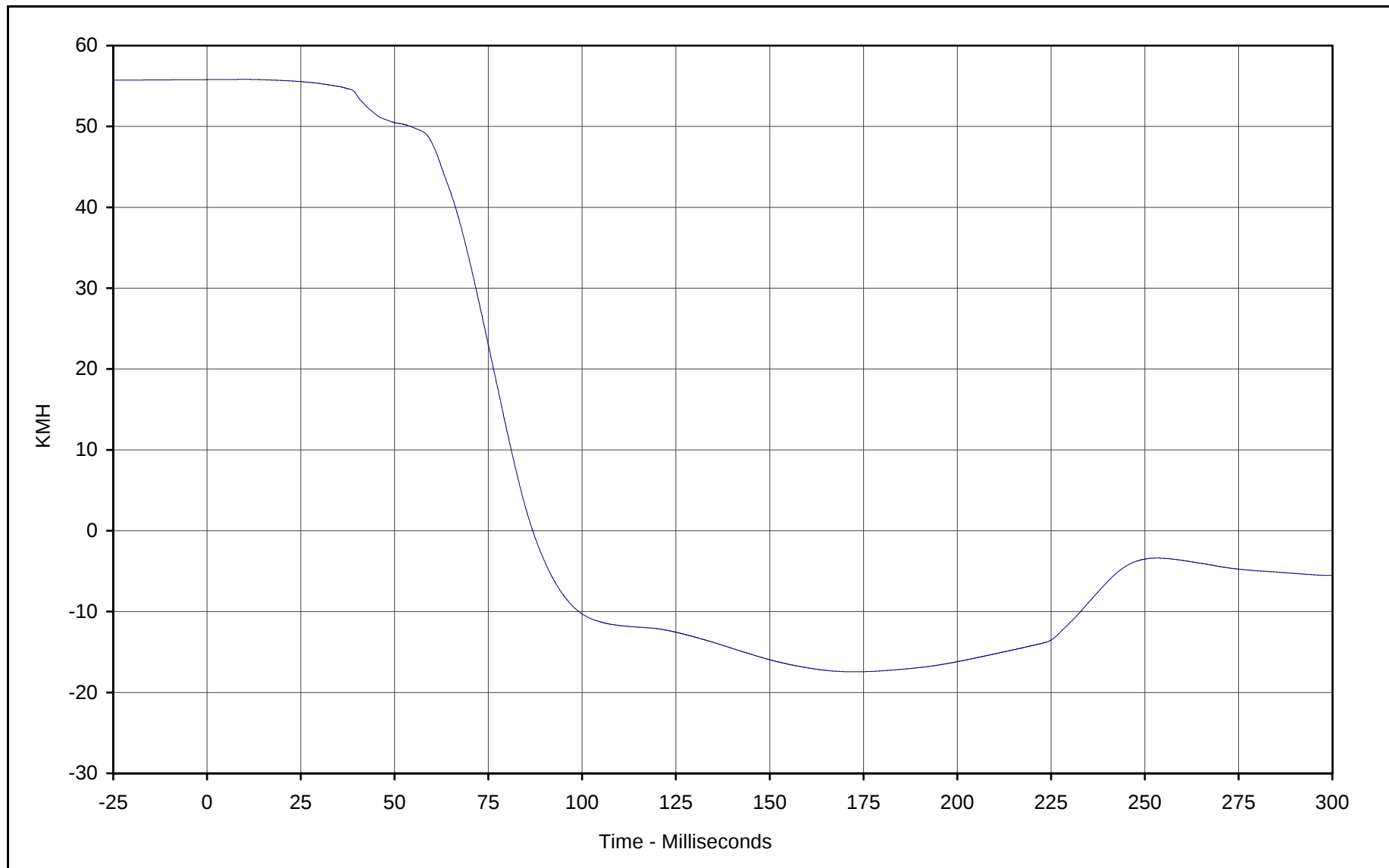


Curve Description: Passenger Head Redundant X
Maximum Value: 15.7 at 234.5 Milliseconds
Minimum Value: -61.6 at 75.0 Milliseconds
SAE Filter Class: 1000
Date of Test: 02/14/01
Curve Number: FIL-048

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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Curve Description: Passenger Head Redundant X Velocity

Maximum Value: 55.8 at 10.2 Milliseconds

Minimum Value: -17.4 at 172.4 Milliseconds

SAE Filter Class: 180

Date of Test: 02/14/01

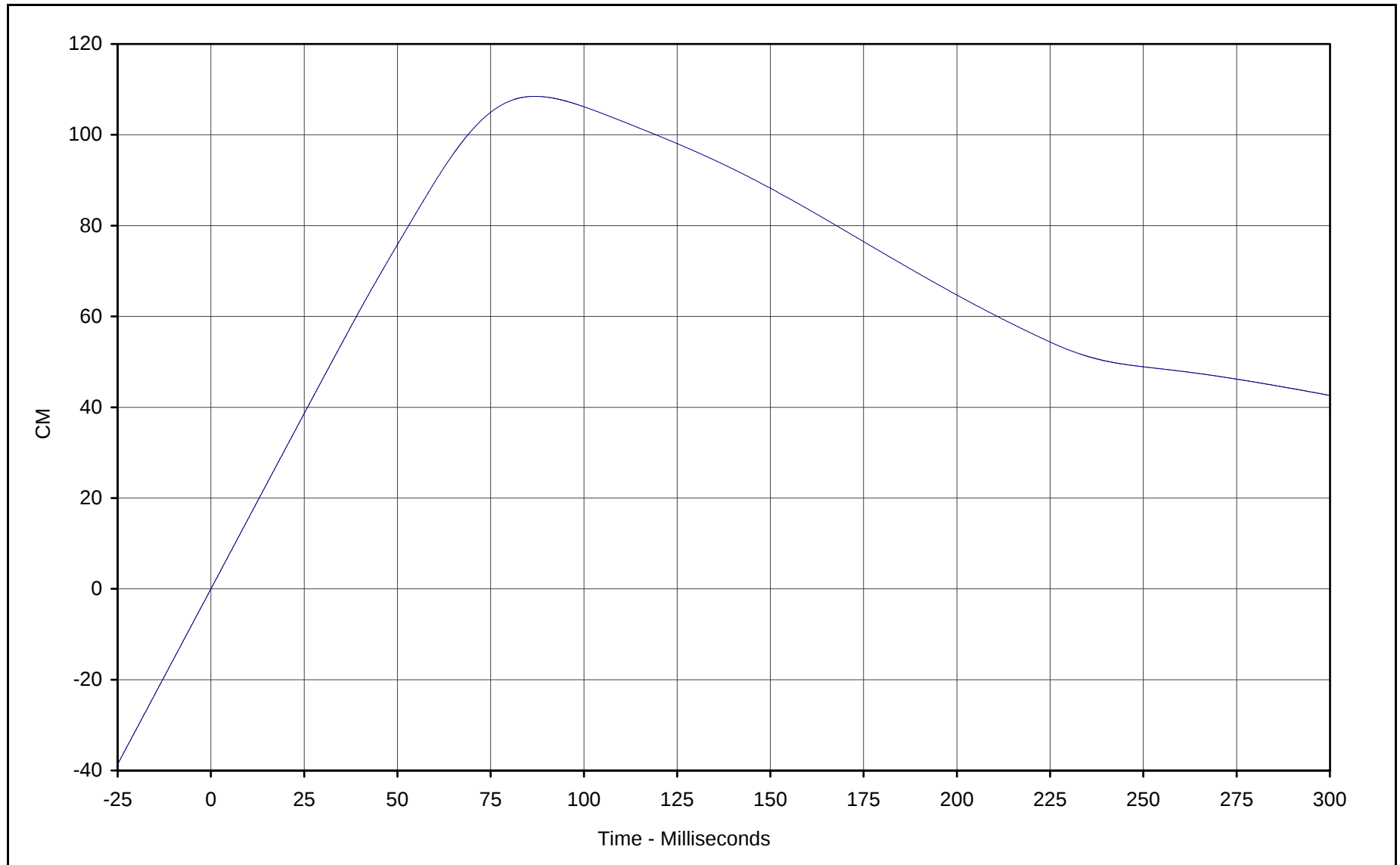
Curve Number: IN1-048

Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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Curve Description: Passenger Head Redundant X Displ.

Maximum Value: 108.5 at 86.8 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 02/14/01

Curve Number: IN2-048

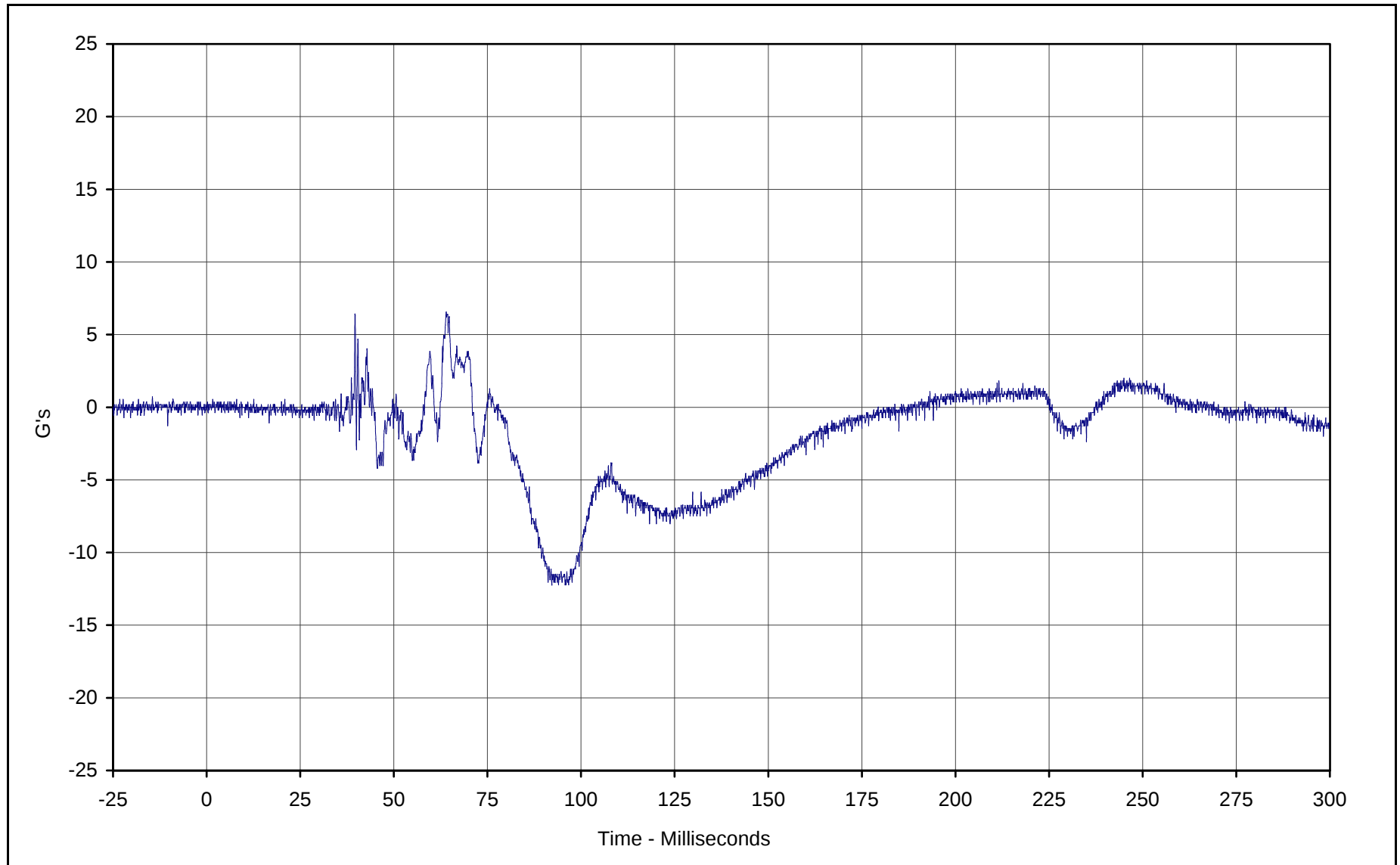
Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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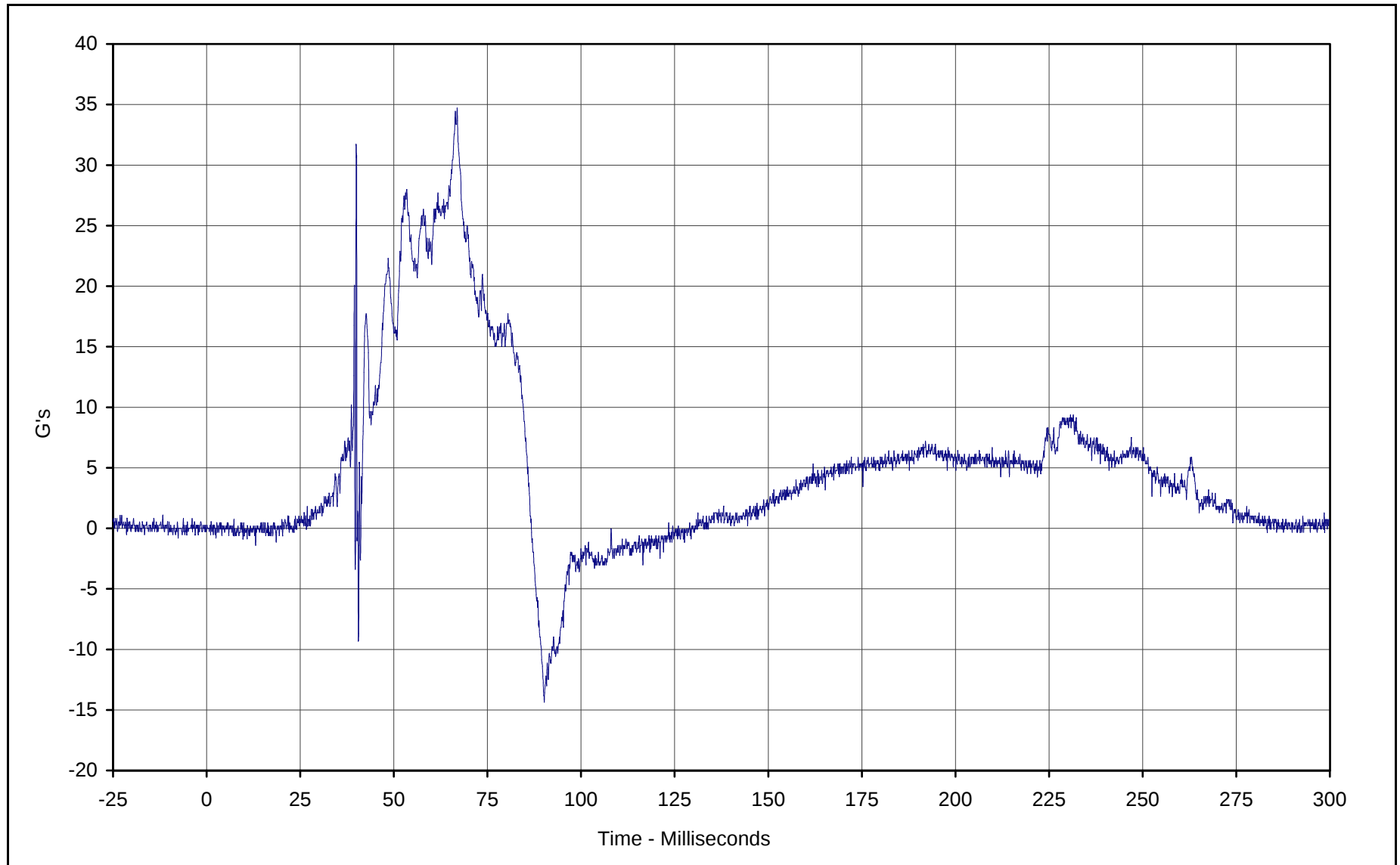


Curve Description: Passenger Head Redundant Y
Maximum Value: 6.6 at 64.0 Milliseconds
Minimum Value: -12.2 at 92.2 Milliseconds
SAE Filter Class: 1000
Date of Test: 02/14/01
Curve Number: FIL-049

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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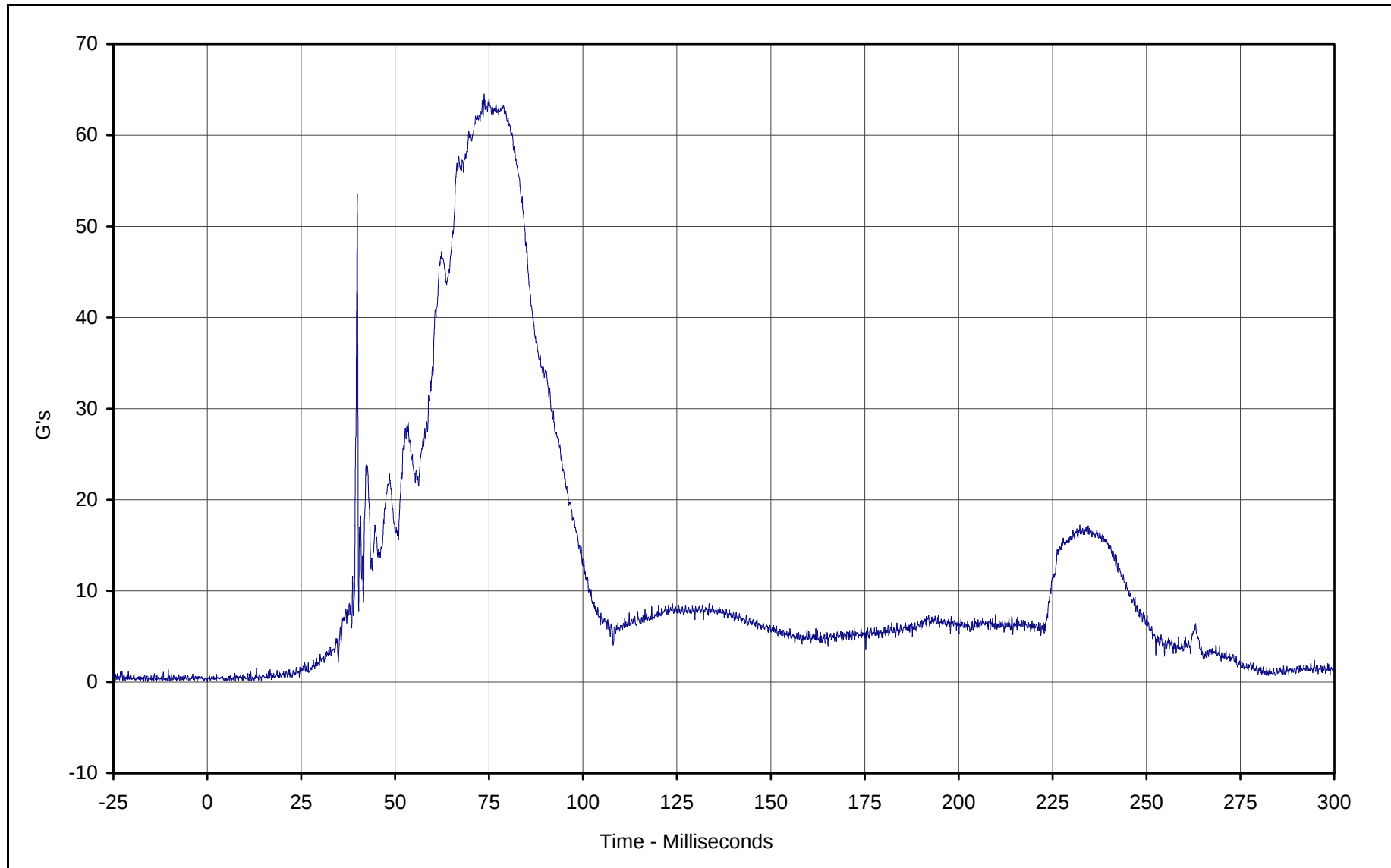


Curve Description: Passenger Head Redundant Z
Maximum Value: 34.7 at 66.9 Milliseconds
Minimum Value: -14.4 at 90.2 Milliseconds
SAE Filter Class: 1000
Date of Test: 02/14/01
Curve Number: FIL-050

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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Curve Description: Passenger Head Resultant Redundant

Maximum Value: 64.5 at 73.7 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 1000

Date of Test: 02/14/01

Curve Number: RES-048

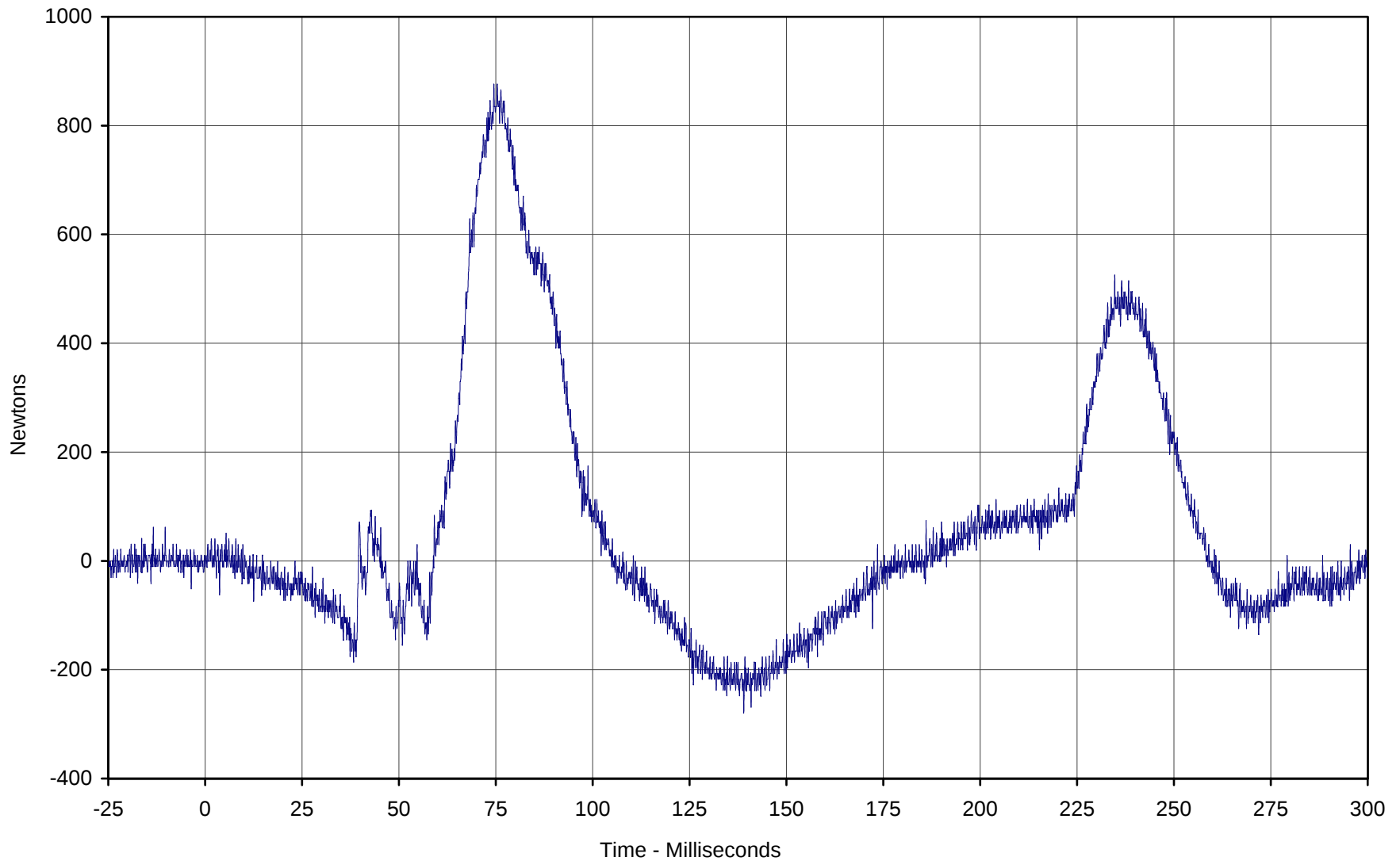
Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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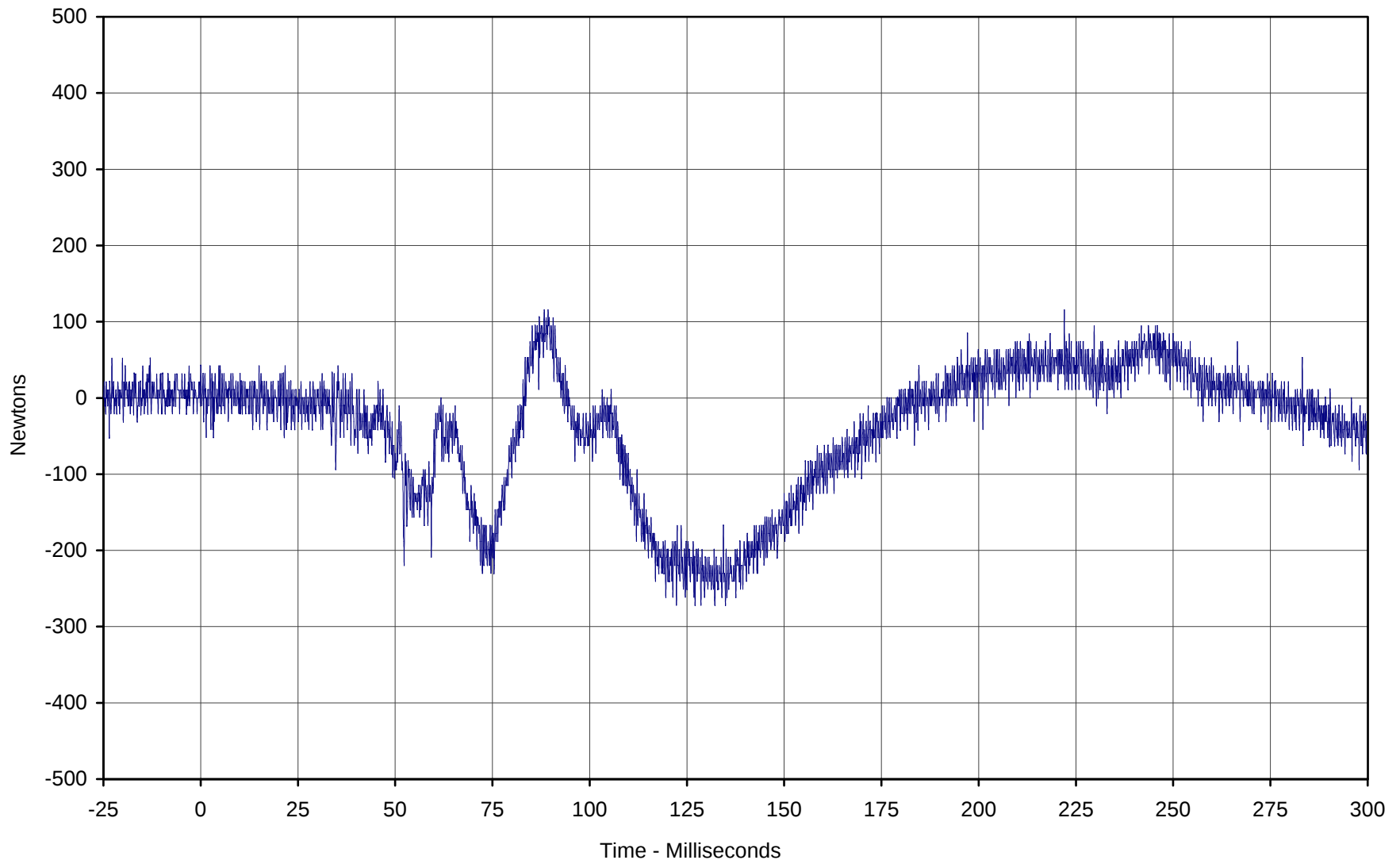
Curve Description: Passenger Neck Force X
Maximum Value: 876.3 at 74.5 Milliseconds
Minimum Value: -279.2 at 139.0 Milliseconds
SAE Filter Class: 1000
Date of Test: 02/14/01
Curve Number: FIL-051

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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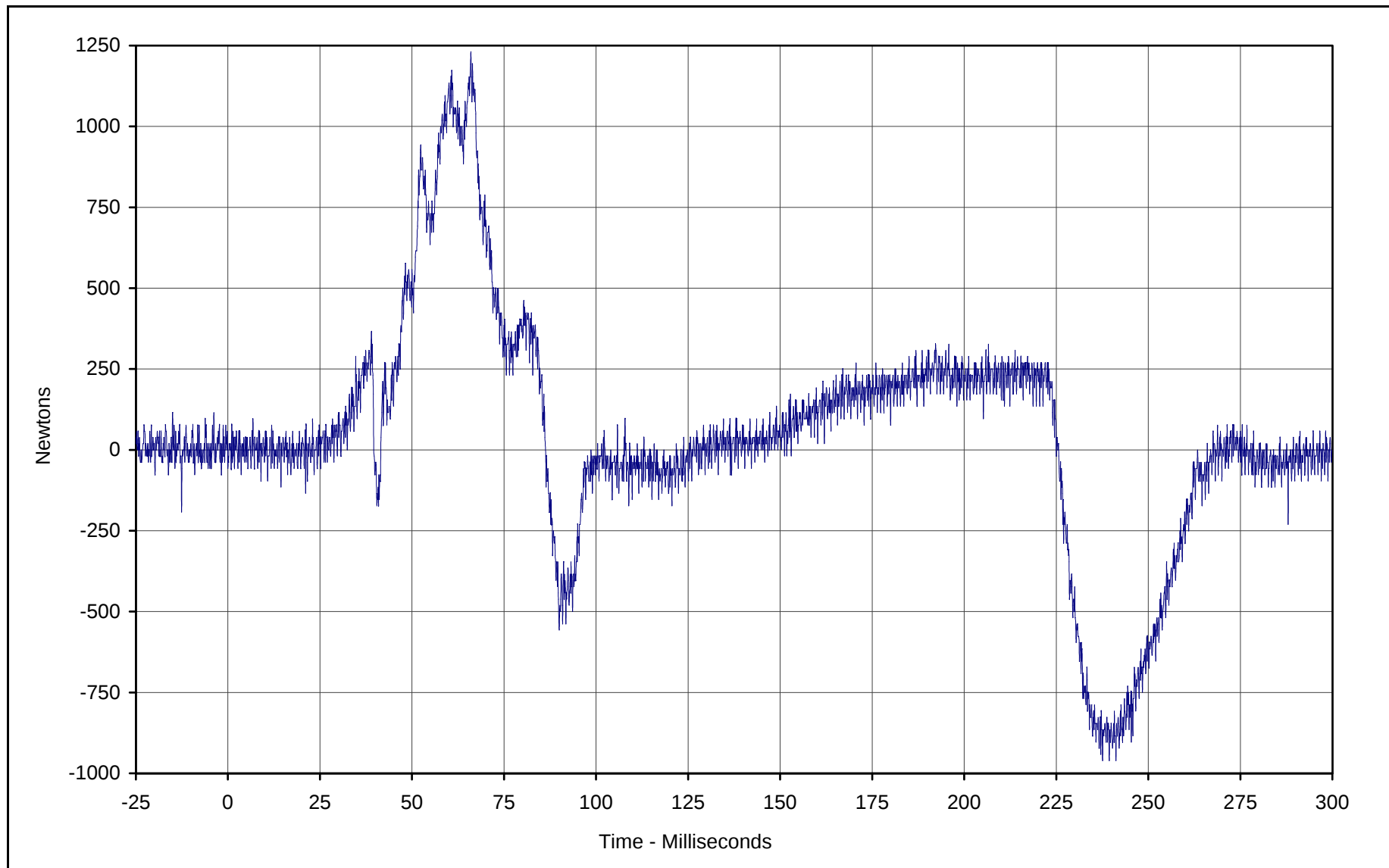


Curve Description: Passenger Neck Force Y
Maximum Value: 115.8 at 88.3 Milliseconds
Minimum Value: -272.1 at 122.3 Milliseconds
SAE Filter Class: 1000
Date of Test: 02/14/01
Curve Number: FIL-052

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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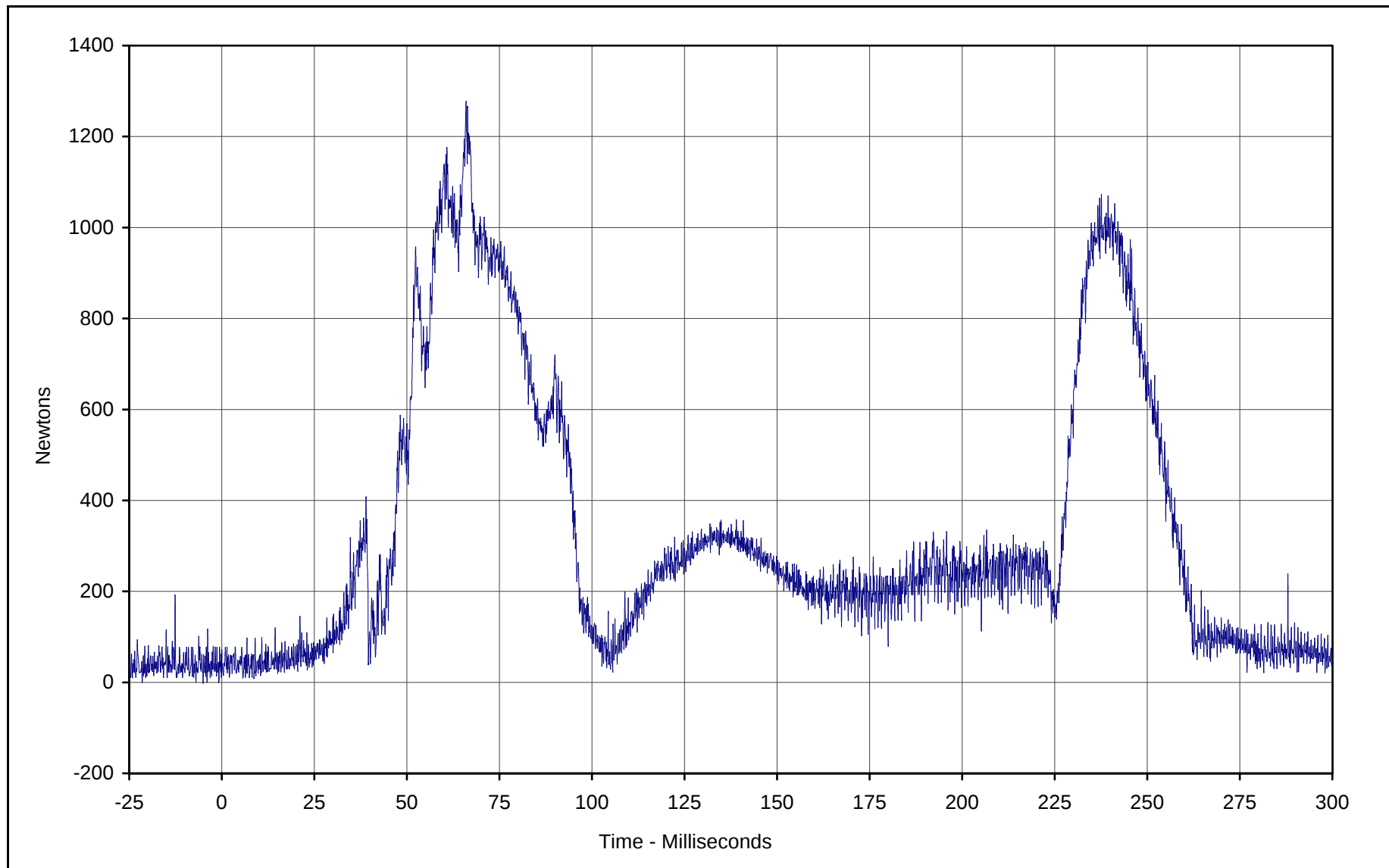


Curve Description: Passenger Neck Force Z
Maximum Value: 1230.5 at 66.0 Milliseconds
Minimum Value: -961.3 at 237.6 Milliseconds
SAE Filter Class: 1000
Date of Test: 02/14/01
Curve Number: FIL-053

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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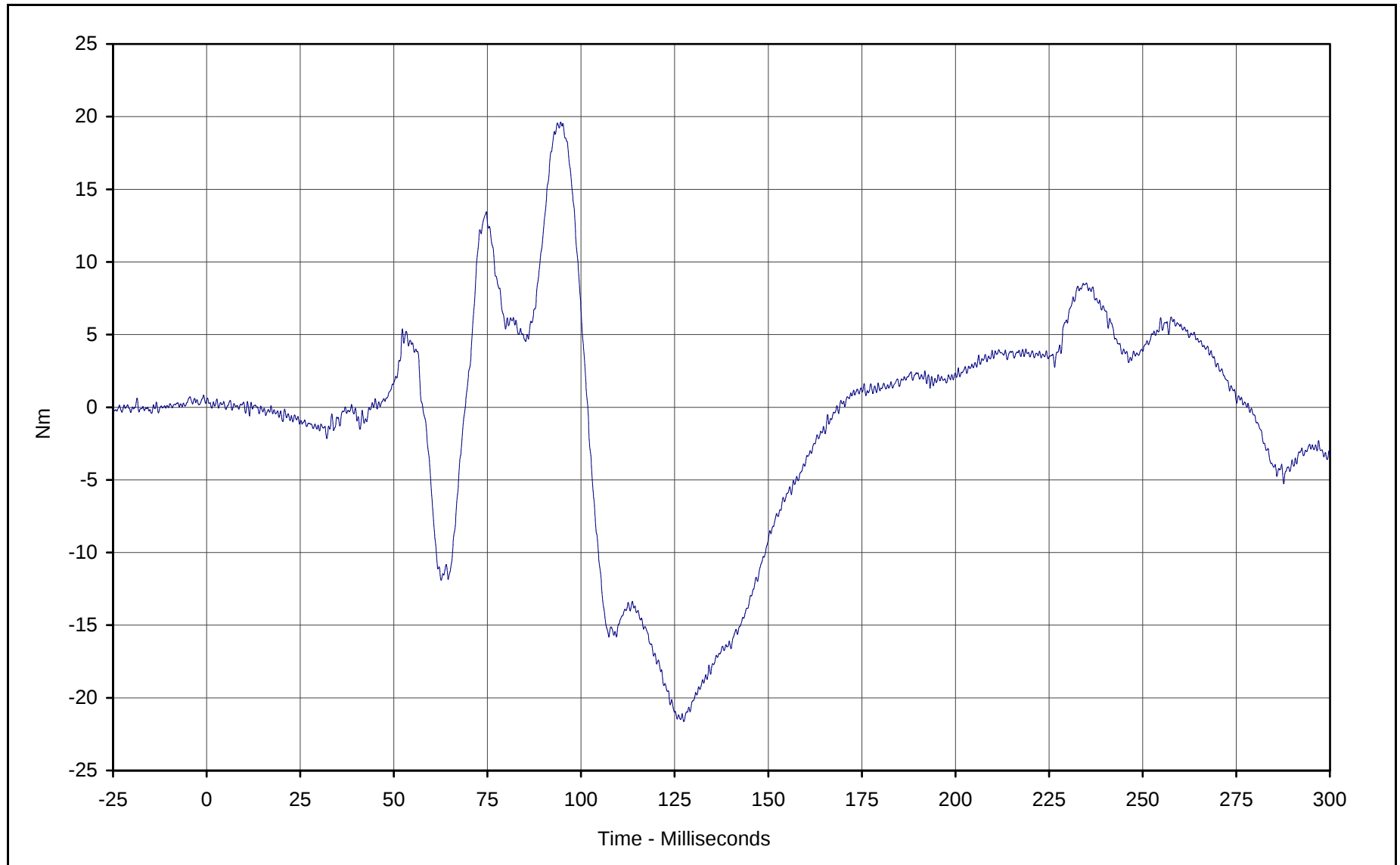


Curve Description: Passenger Neck Force Resultant
Maximum Value: 1277.2 at 66.0 Milliseconds
Minimum Value: 9.7 at 8.7 Milliseconds
SAE Filter Class: 1000
Date of Test: 02/14/01
Curve Number: RES-051

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



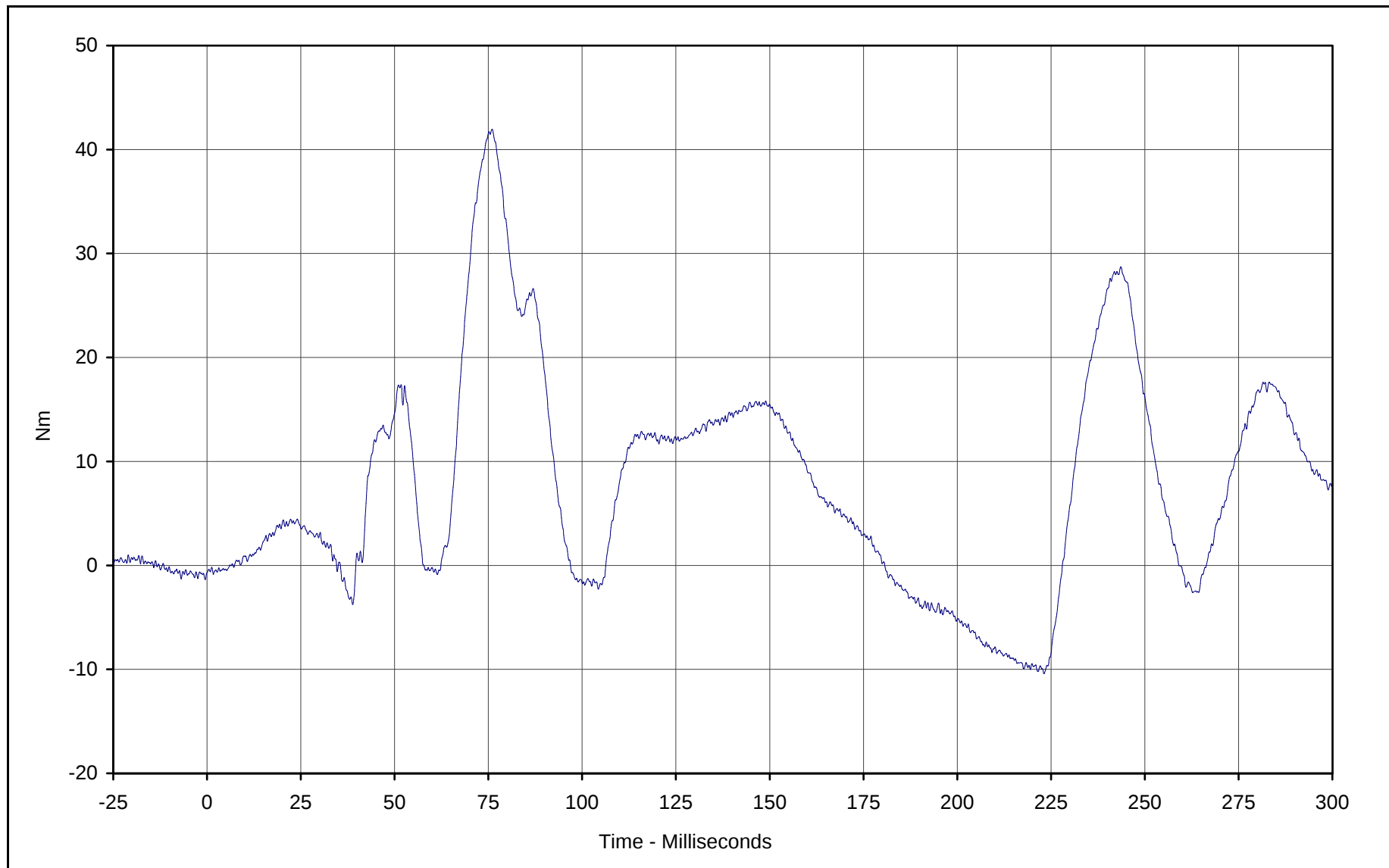
KAR21001-11



Curve Description: Passenger Neck Moment X
Maximum Value: 19.6 at 94.6 Milliseconds
Minimum Value: -21.6 at 127.4 Milliseconds
SAE Filter Class: 600
Date of Test: 02/14/01
Curve Number: FIL-054

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



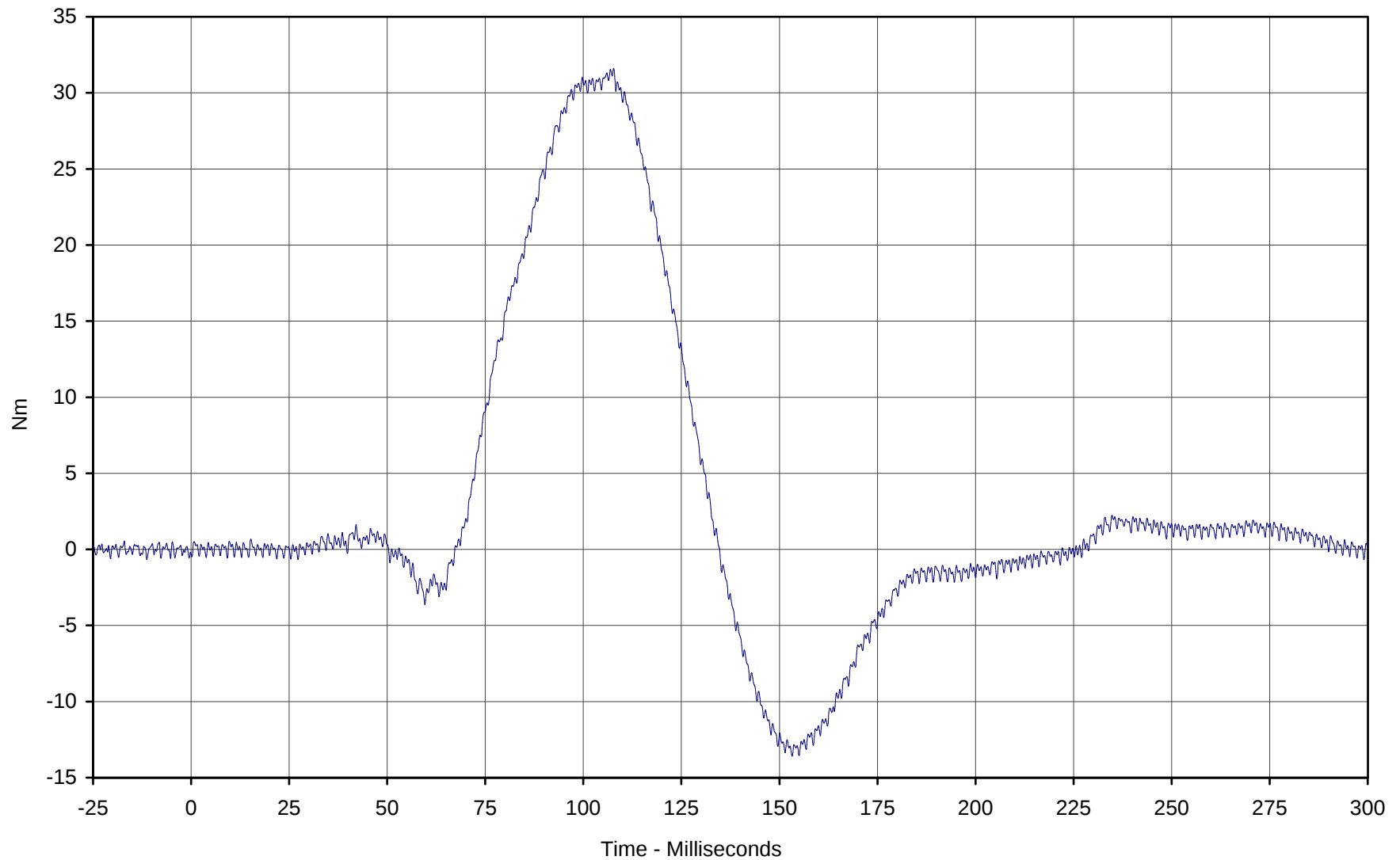


Curve Description: Passenger Neck Moment Y
Maximum Value: 42.0 at 76.0 Milliseconds
Minimum Value: -10.4 at 223.1 Milliseconds
SAE Filter Class: 600
Date of Test: 02/14/01
Curve Number: FIL-055

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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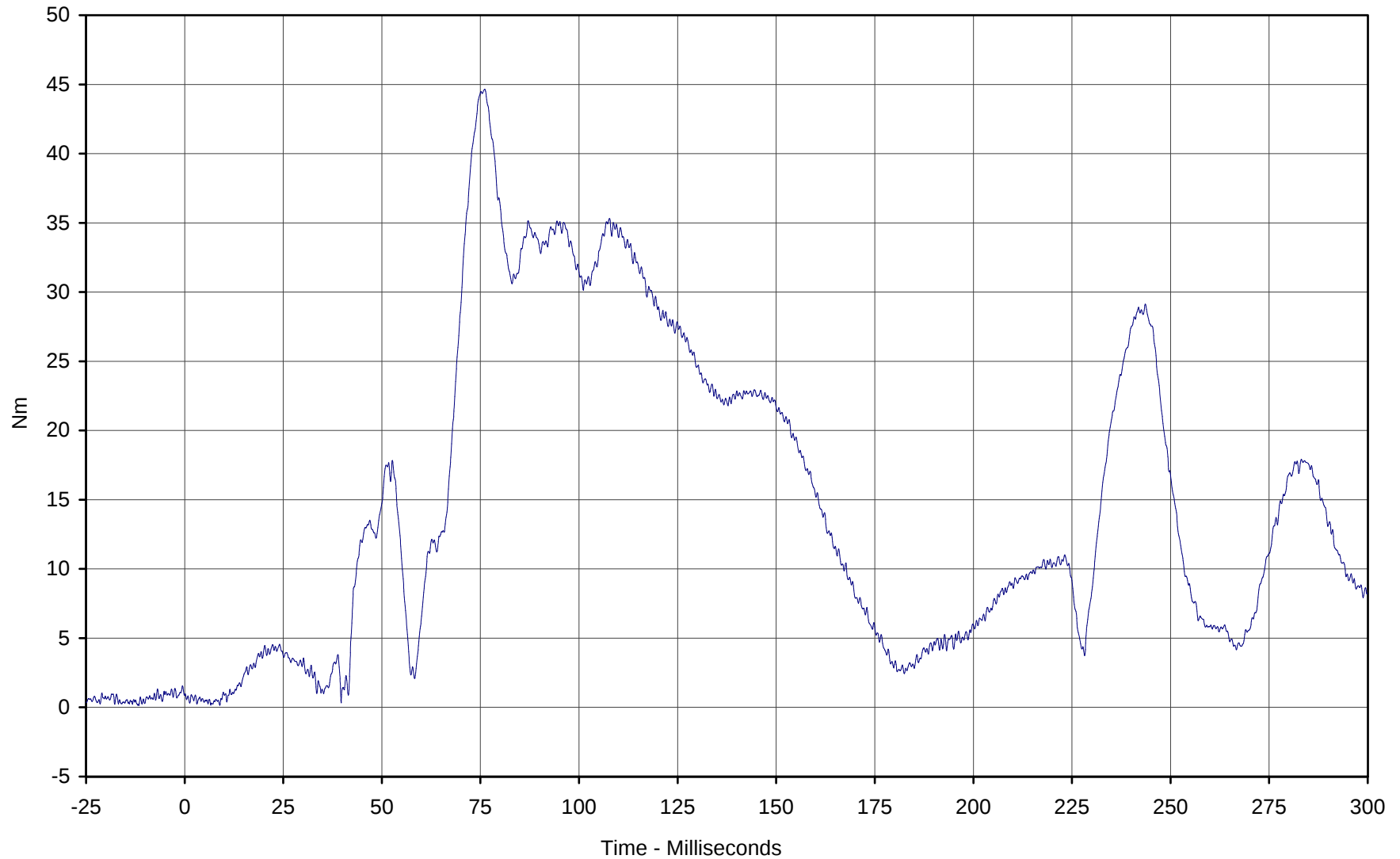


Curve Description: Passenger Neck Moment Z
Maximum Value: 31.6 at 107.8 Milliseconds
Minimum Value: -13.6 at 153.2 Milliseconds
SAE Filter Class: 600
Date of Test: 02/14/01
Curve Number: FIL-056

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



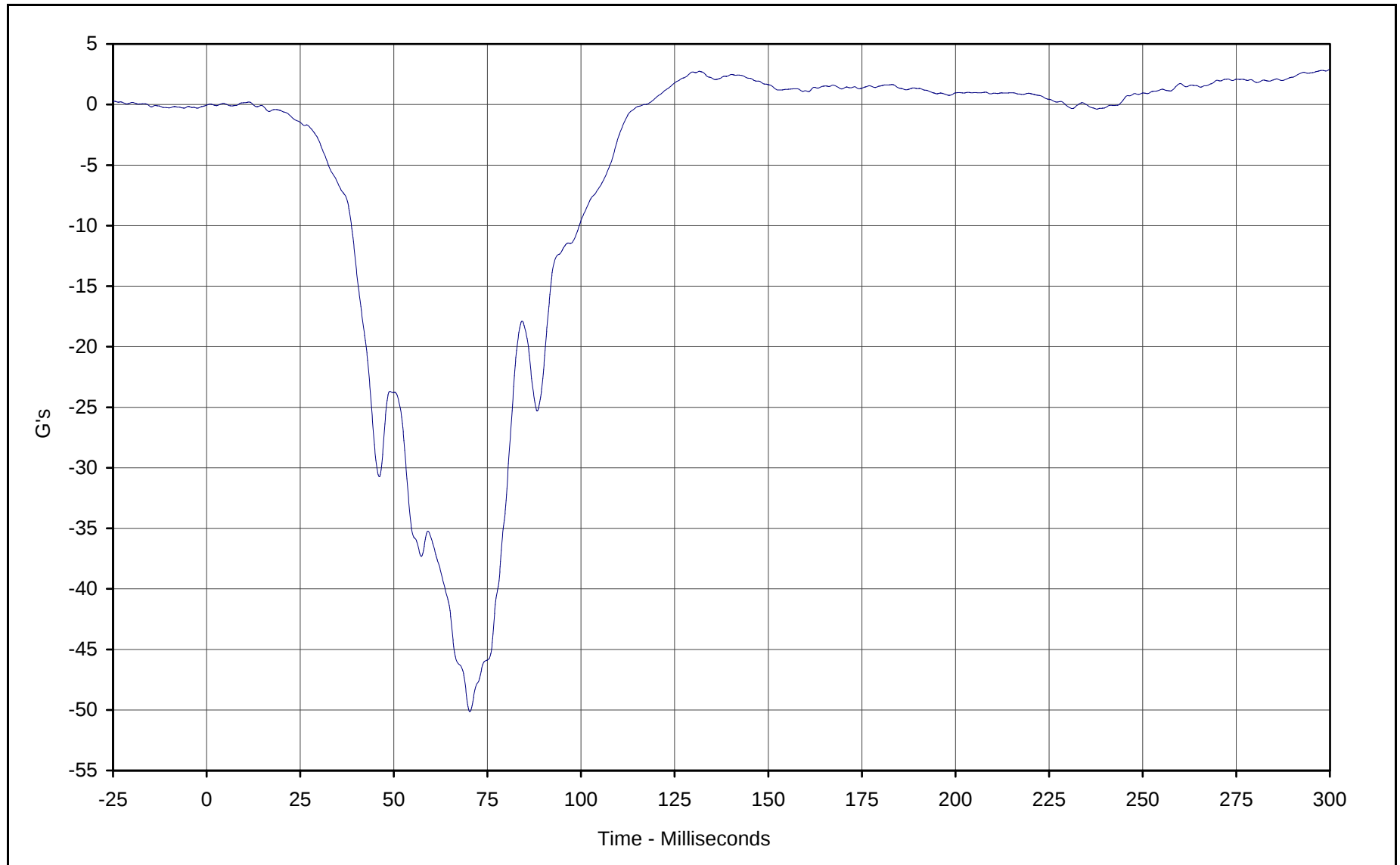
KAR21001-11



Curve Description: Passenger Neck Moment Resultant
Maximum Value: 44.7 at 76.1 Milliseconds
Minimum Value: 0.1 at 8.9 Milliseconds
SAE Filter Class: 600
Date of Test: 02/14/01
Curve Number: RES-054

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



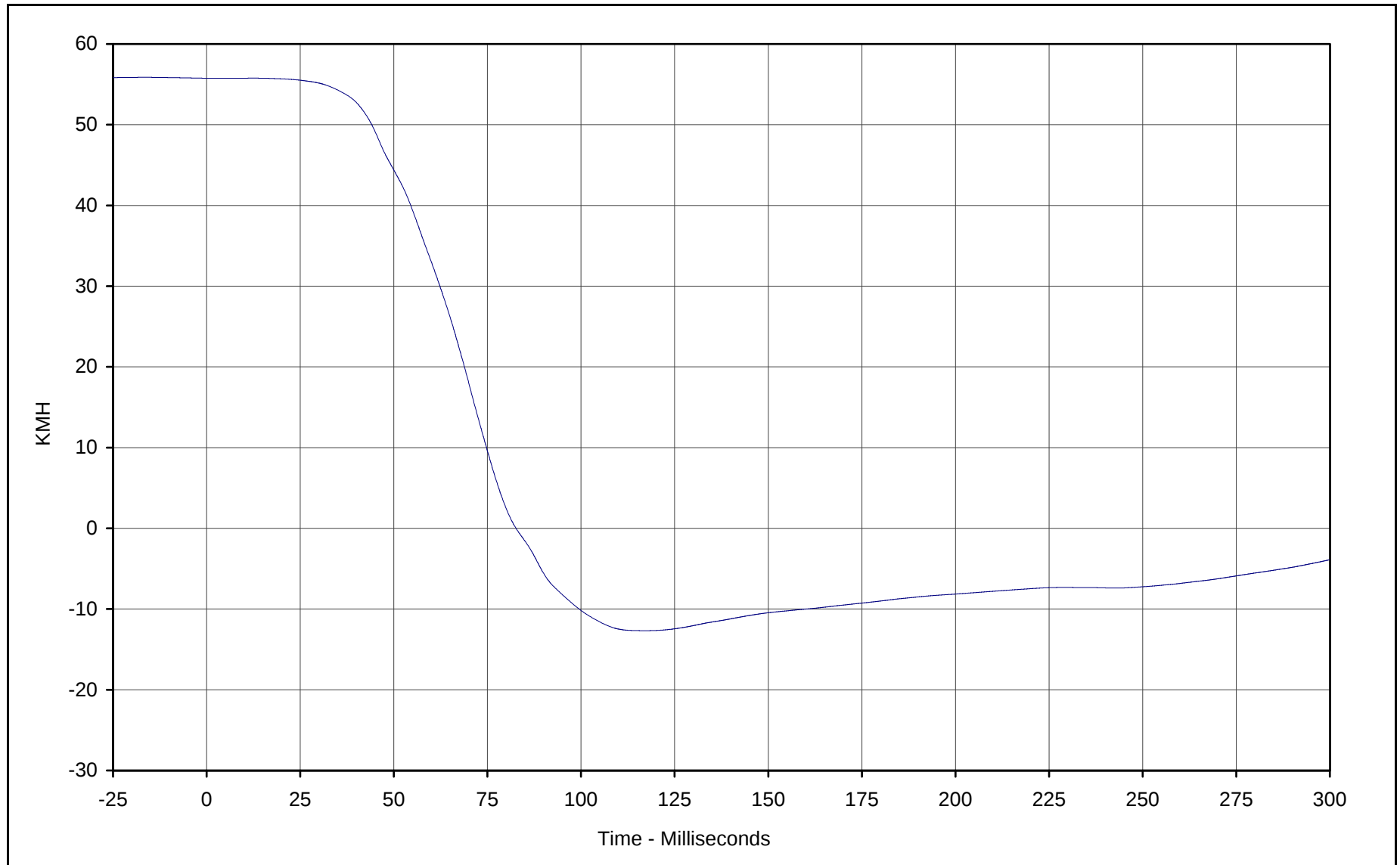


Curve Description: Passenger Chest Primary X
Maximum Value: 2.9 at 299.9 Milliseconds
Minimum Value: -50.1 at 70.3 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: FIL-057

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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Curve Description: Passenger Chest Primary X Velocity

Maximum Value: 55.8 at 12.4 Milliseconds

Minimum Value: -12.7 at 116.9 Milliseconds

SAE Filter Class: 180

Date of Test: 02/14/01

Curve Number: IN1-057

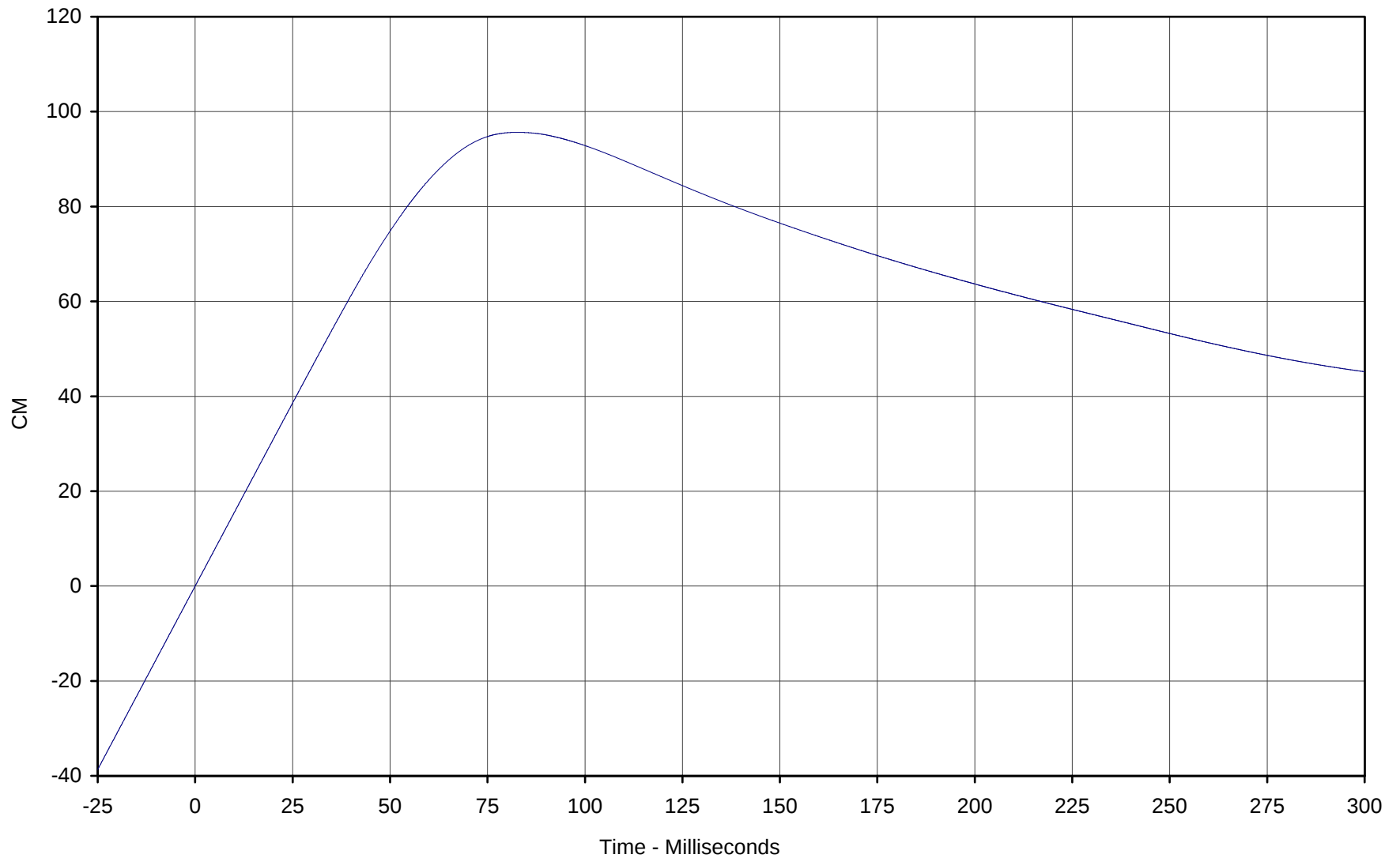
Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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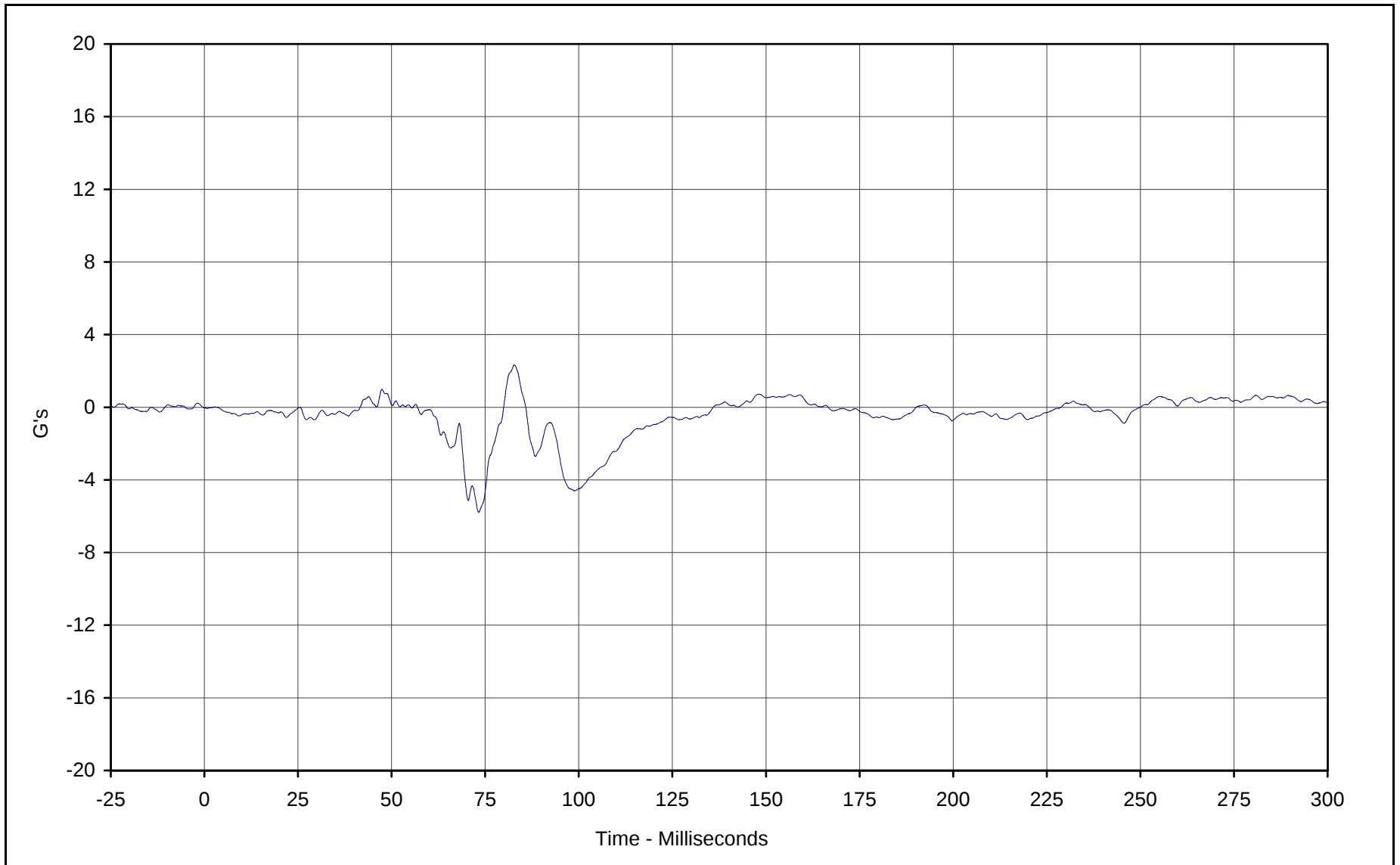
Curve Description: Passenger Chest Primary X Displ.
Maximum Value: 95.6 at 82.6 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: IN2-057

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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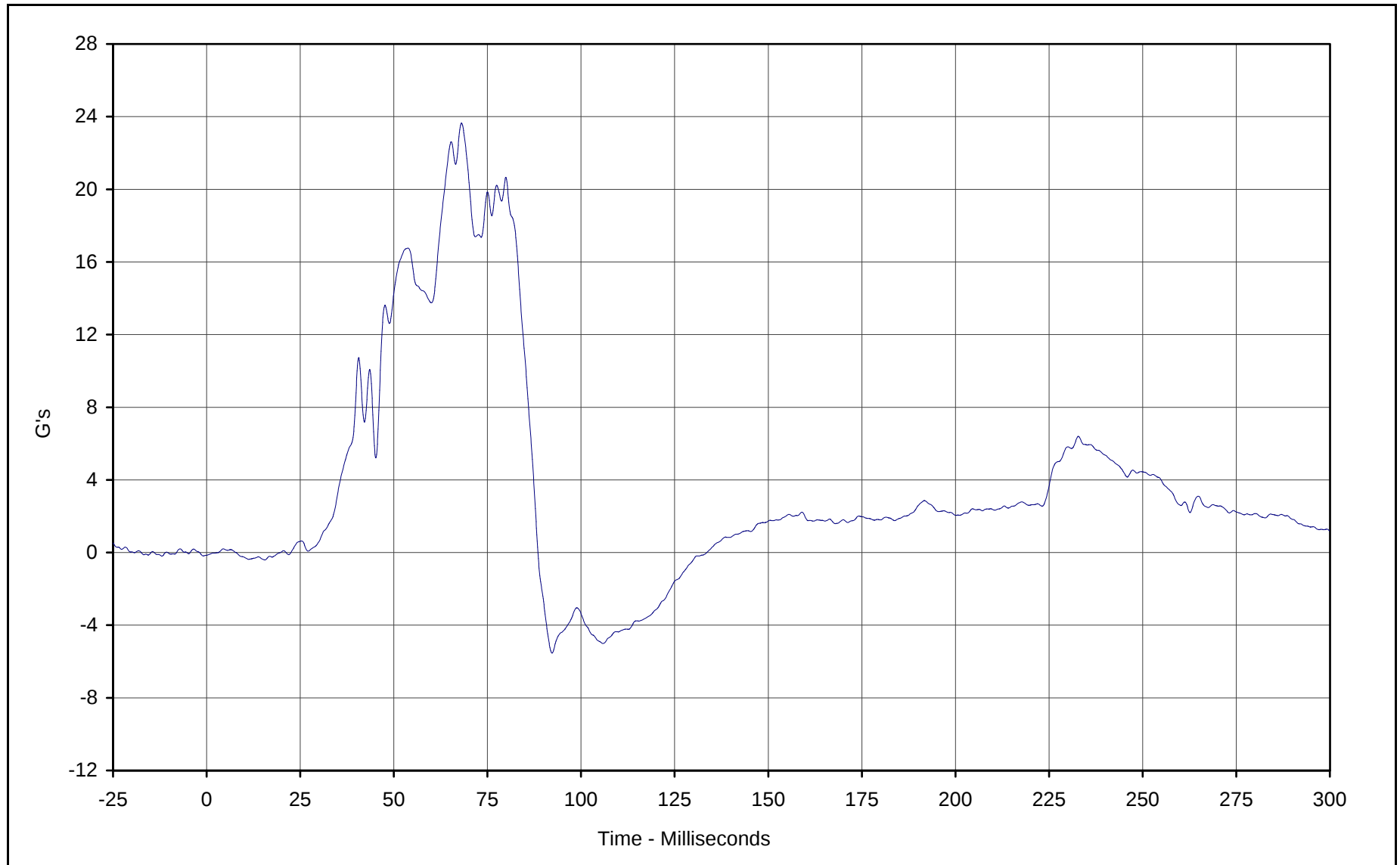


Curve Description: Passenger Chest Primary Y
Maximum Value: 2.3 at 82.8 Milliseconds
Minimum Value: -5.8 at 73.3 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: FIL-058

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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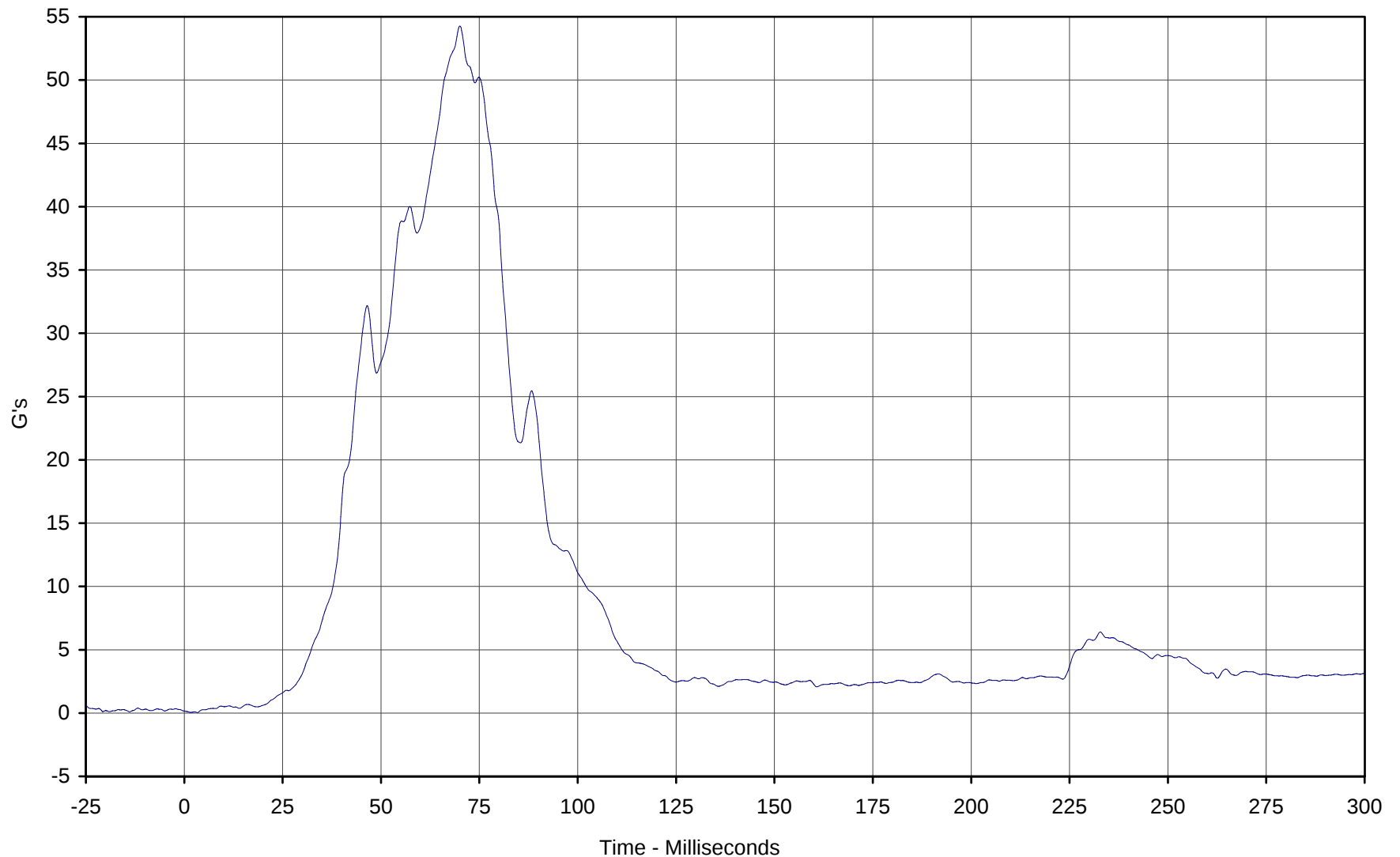


Curve Description: Passenger Chest Primary Z
Maximum Value: 23.6 at 68.1 Milliseconds
Minimum Value: -5.5 at 92.3 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: FIL-059

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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Curve Description: Passenger Chest Resultant Primary
Maximum Value: 54.3 at 70.1 Milliseconds
Minimum Value: 0.0 at 3.3 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: RES-057

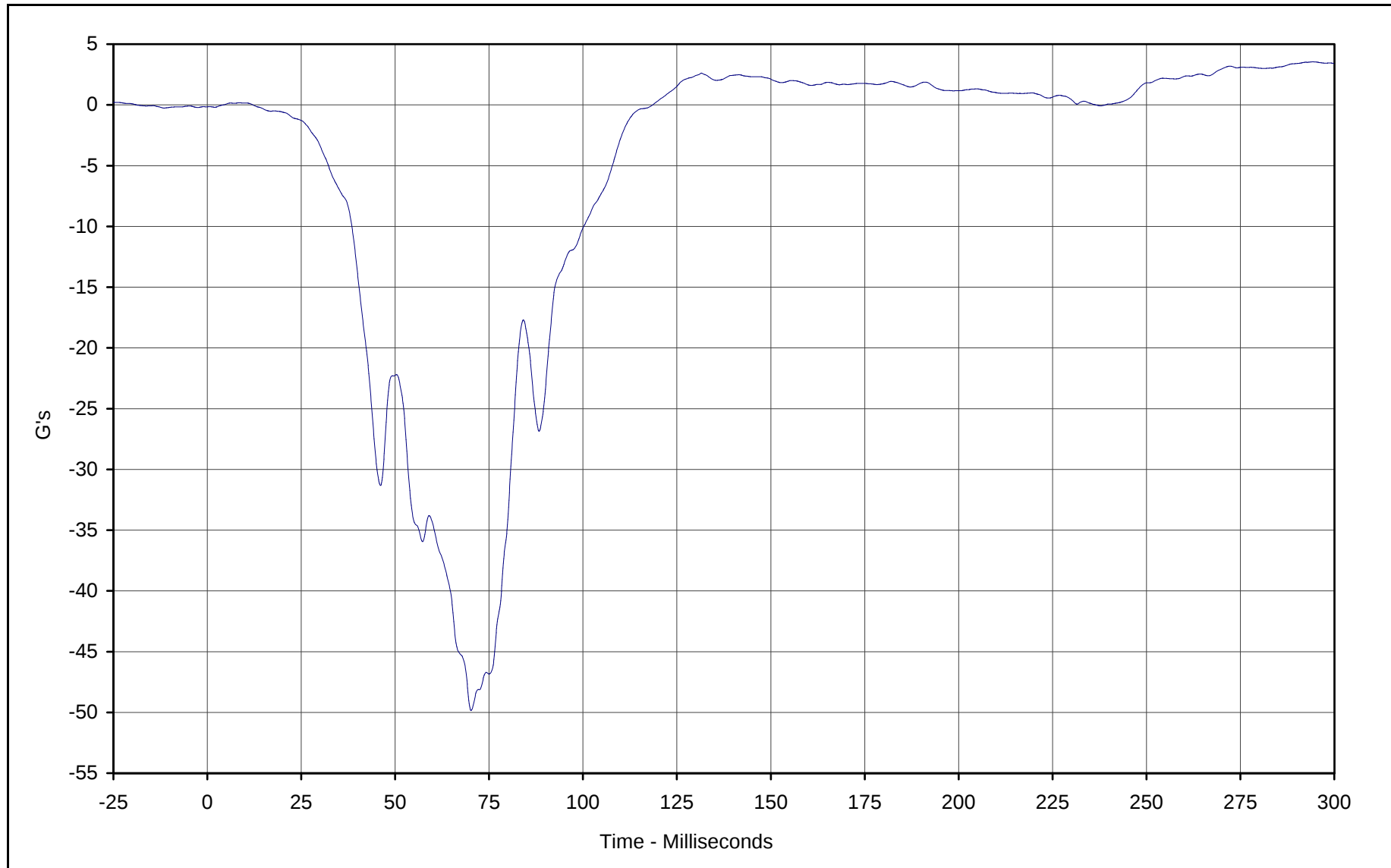
Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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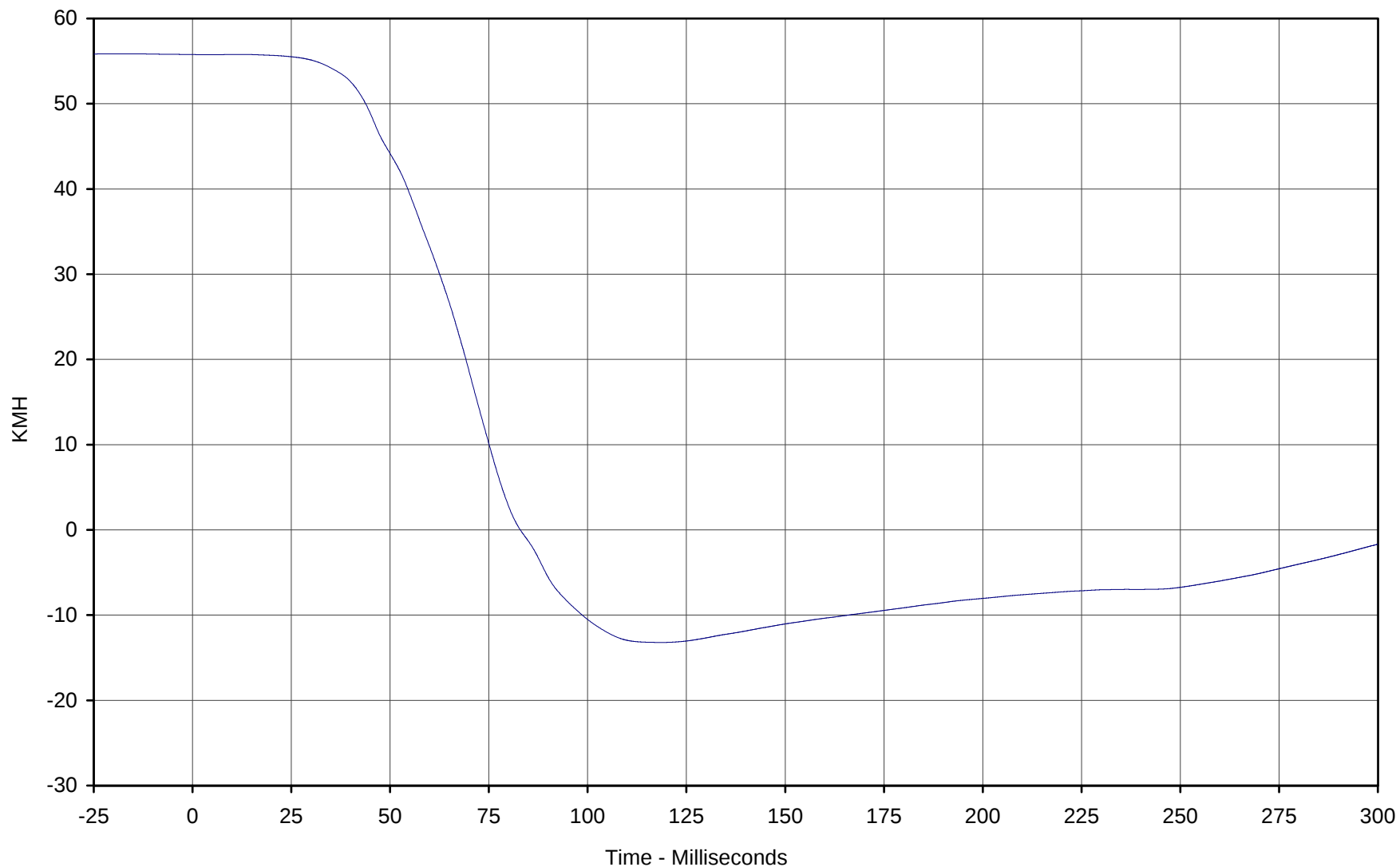
Curve Description: Passenger Chest Redundant X
Maximum Value: 3.5 at 294.3 Milliseconds
Minimum Value: -49.8 at 70.2 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: FIL-060

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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B-89



Curve Description: Passenger Chest Redundant X Velocity

Maximum Value: 55.8 at 12.1 Milliseconds

Minimum Value: -13.2 at 118.6 Milliseconds

SAE Filter Class: 180

Date of Test: 02/14/01

Curve Number: IN1-060

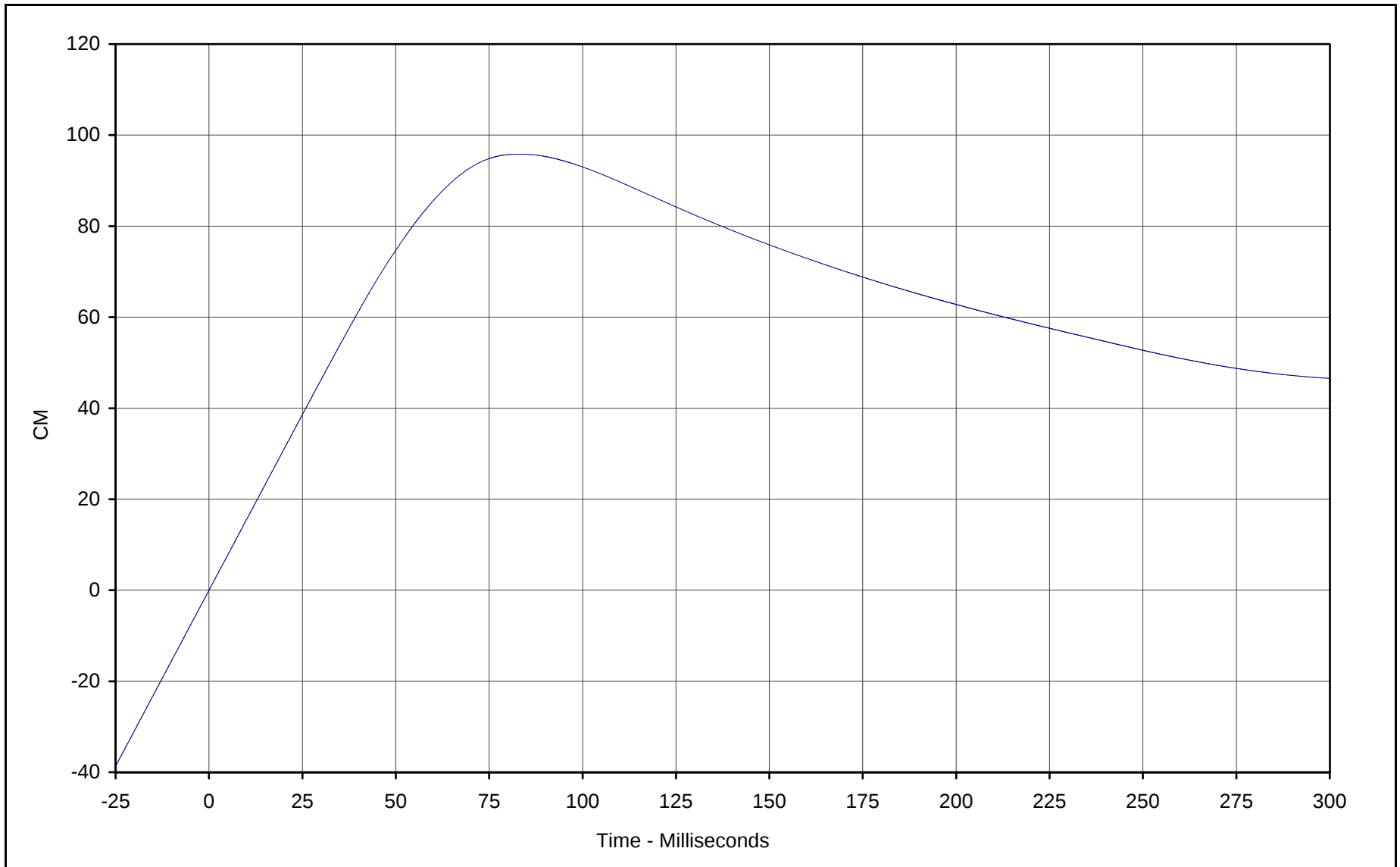
Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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Curve Description: Passenger Chest Redundant X Displ.

Maximum Value: 95.8 at 82.9 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 02/14/01

Curve Number: IN2-060

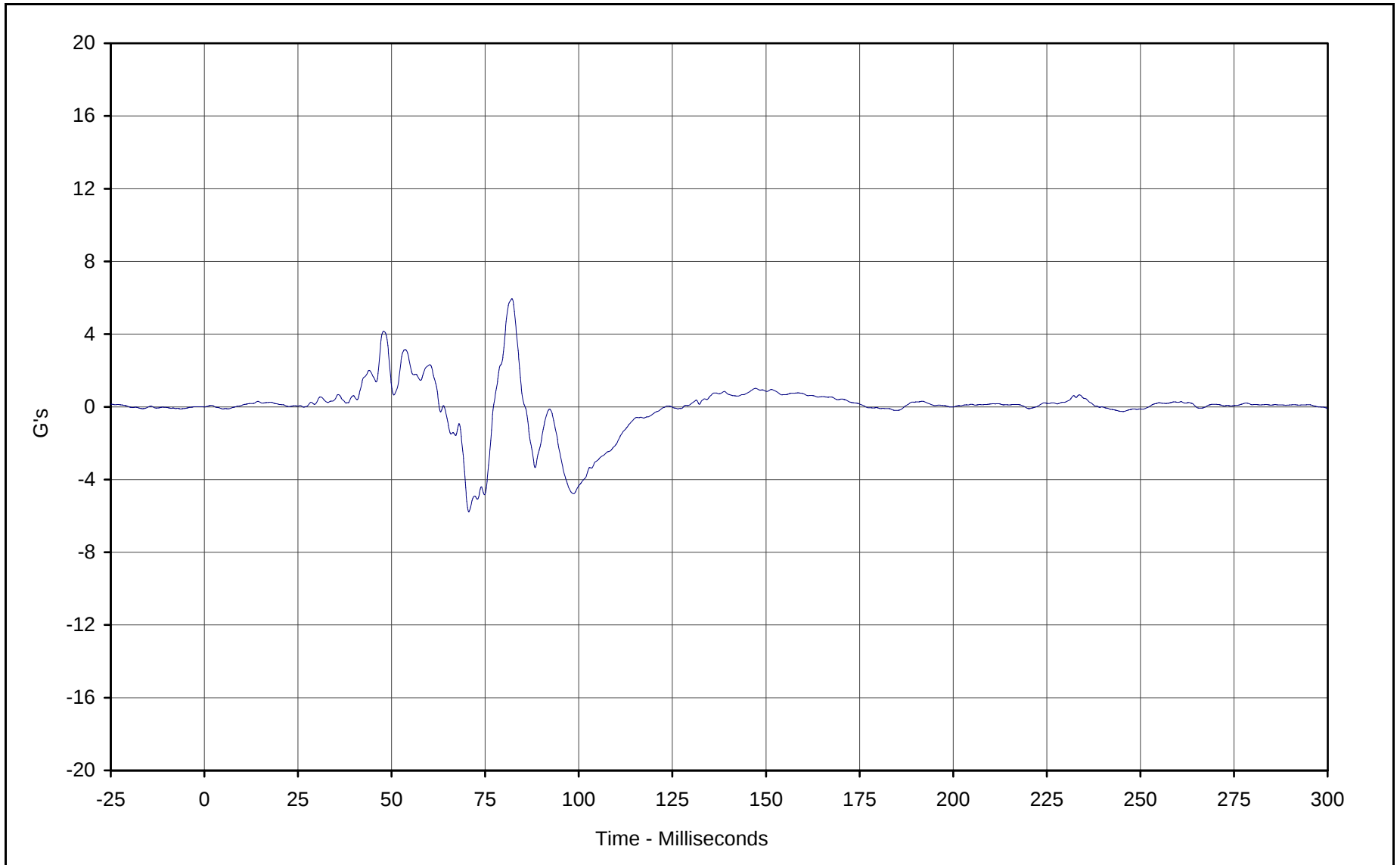
Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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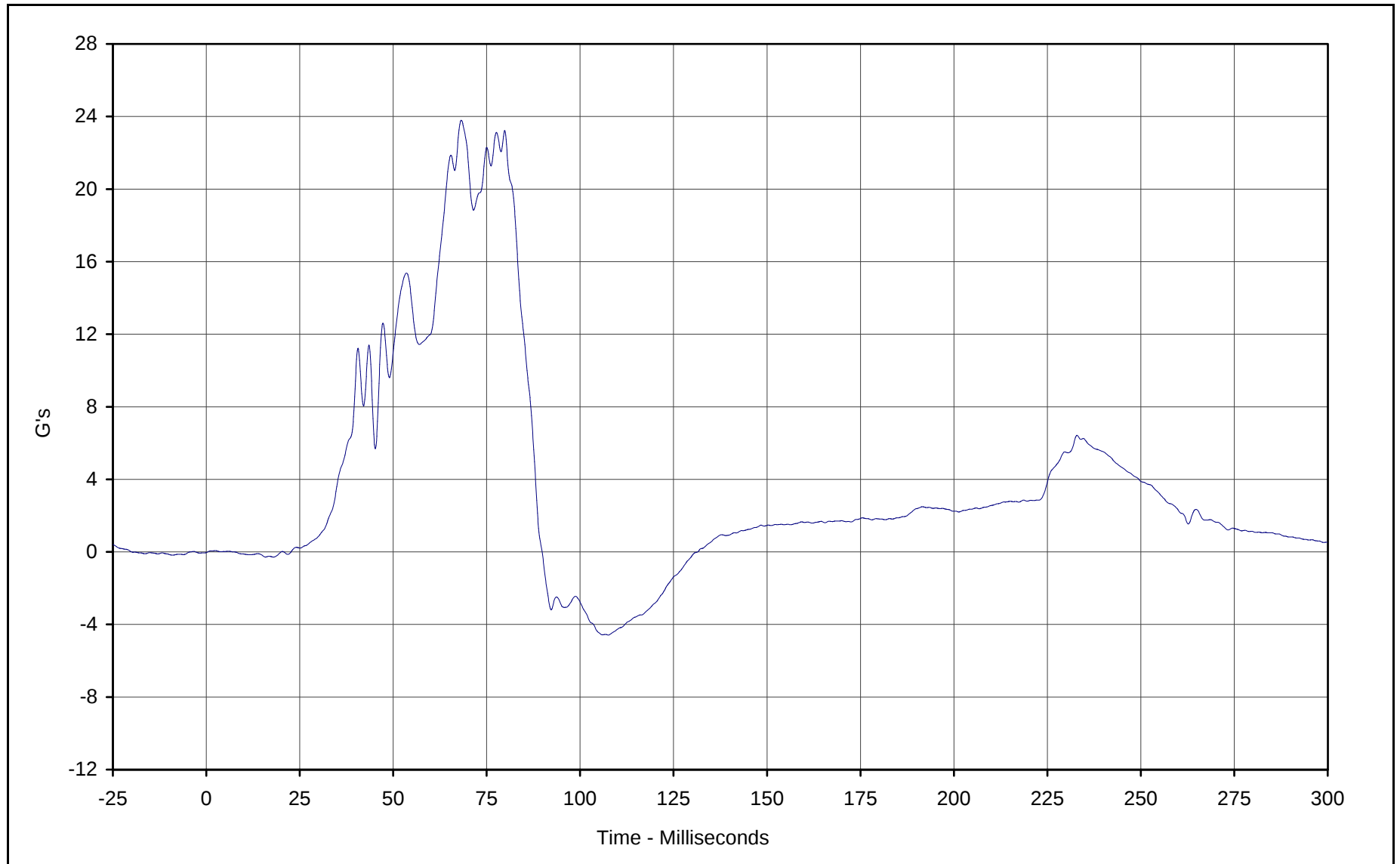
Curve Description: Passenger Chest Redundant Y
Maximum Value: 5.9 at 82.1 Milliseconds
Minimum Value: -5.8 at 70.6 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: FIL-061

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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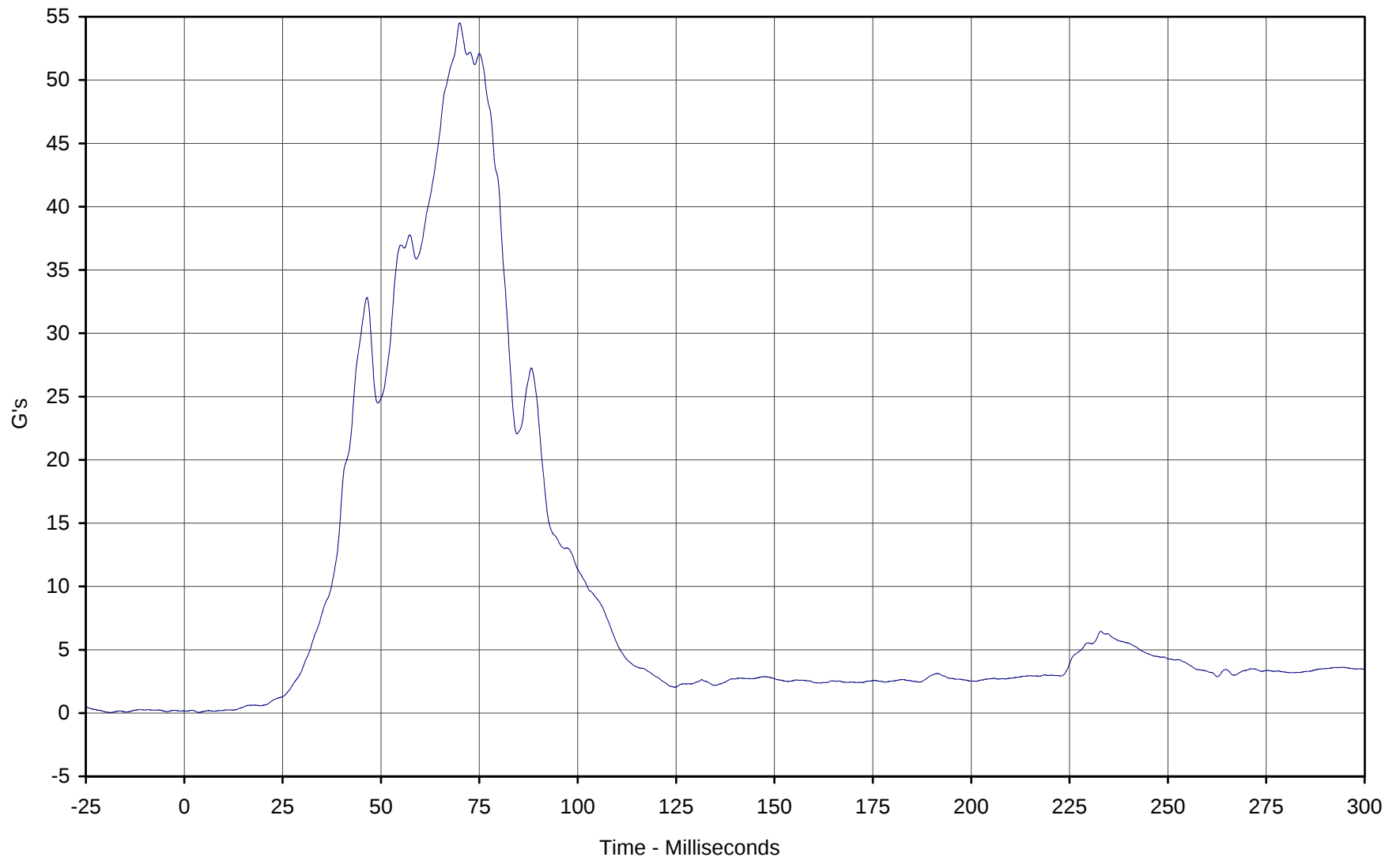
Curve Description: Passenger Chest Redundant Z
Maximum Value: 23.8 at 68.2 Milliseconds
Minimum Value: -4.6 at 107.5 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: FIL-062

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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Curve Description: Passenger Chest Resultant Redundant

Maximum Value: 54.5 at 70.0 Milliseconds

Minimum Value: 0.0 at 3.8 Milliseconds

SAE Filter Class: 180

Date of Test: 02/14/01

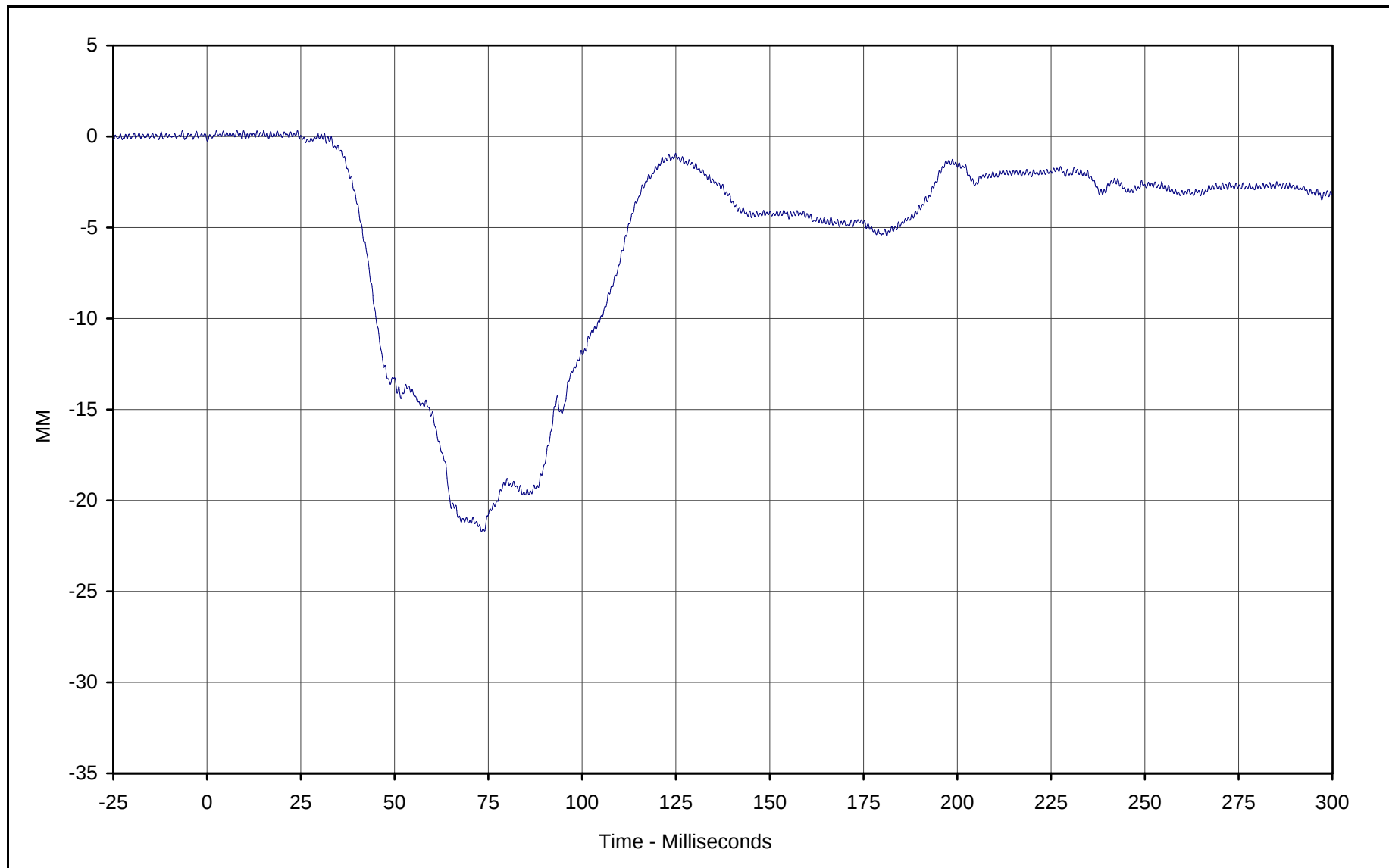
Curve Number: RES-060

Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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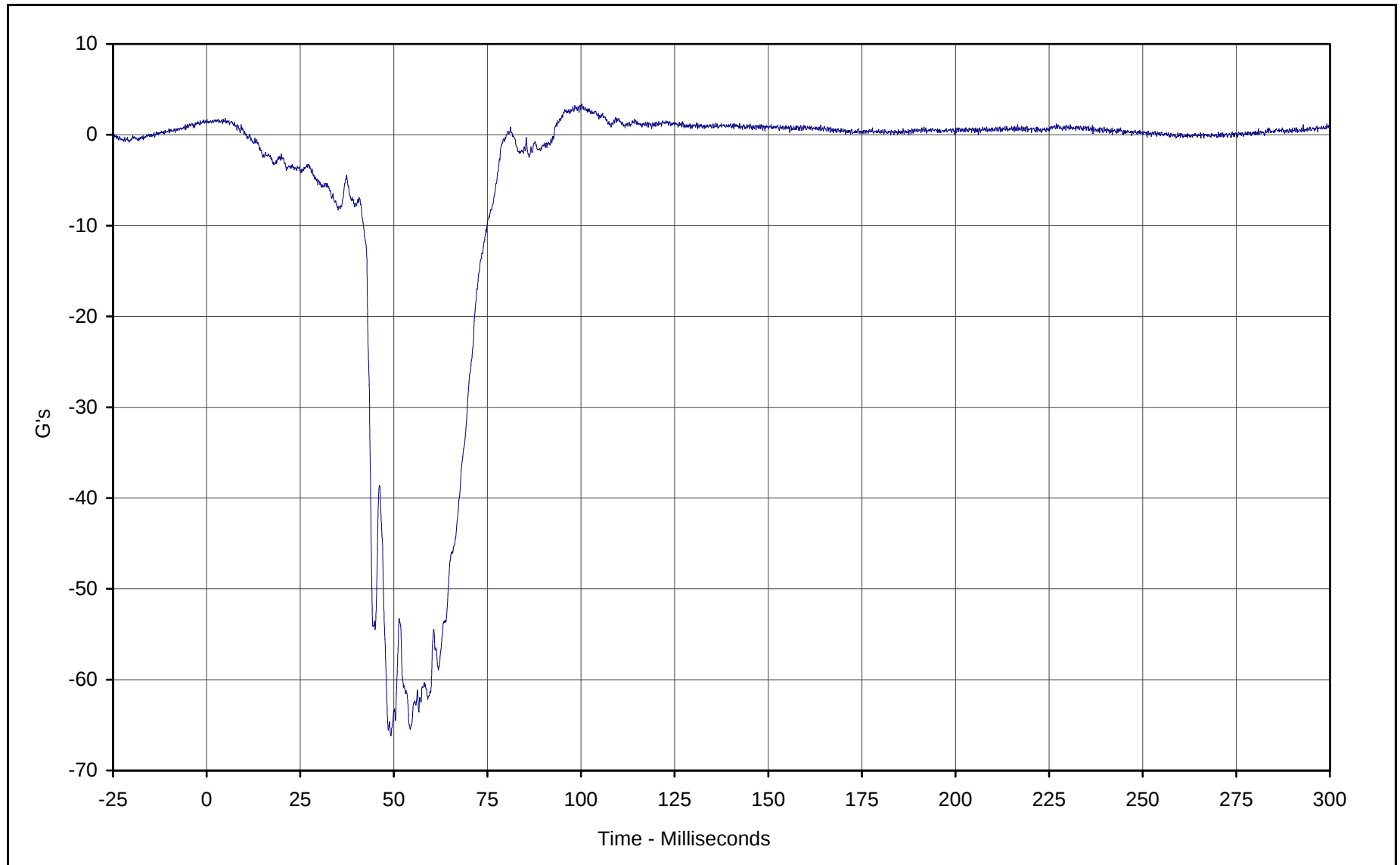


Curve Description: Passenger Chest Displacement X
Maximum Value: 0.4 at 8.0 Milliseconds
Minimum Value: -21.7 at 73.2 Milliseconds
SAE Filter Class: 600
Date of Test: 02/14/01
Curve Number: FIL-063

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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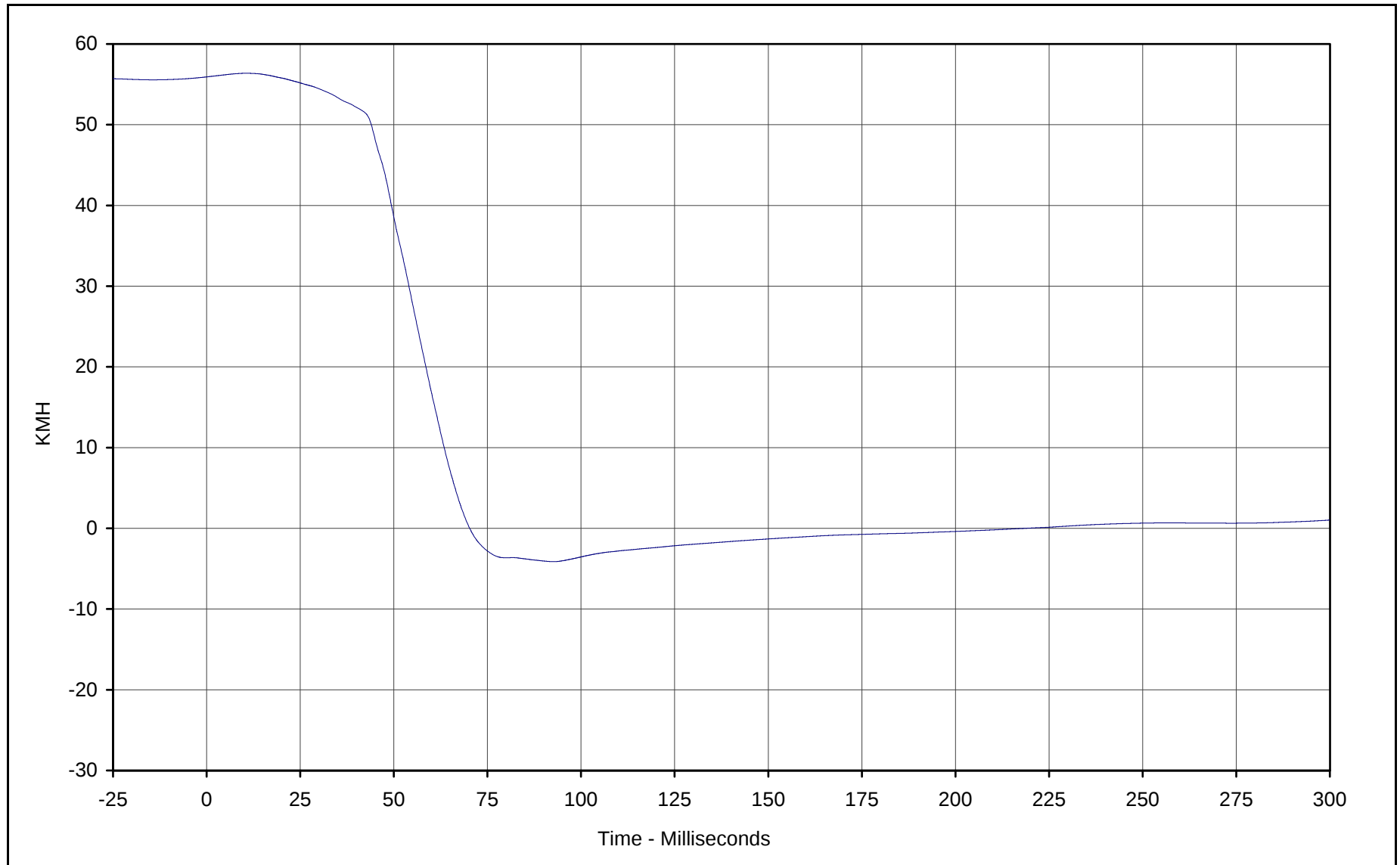


Curve Description: Passenger Pelvis X
Maximum Value: 3.4 at 100.2 Milliseconds
Minimum Value: -66.2 at 49.2 Milliseconds
SAE Filter Class: 1000
Date of Test: 02/14/01
Curve Number: FIL-064

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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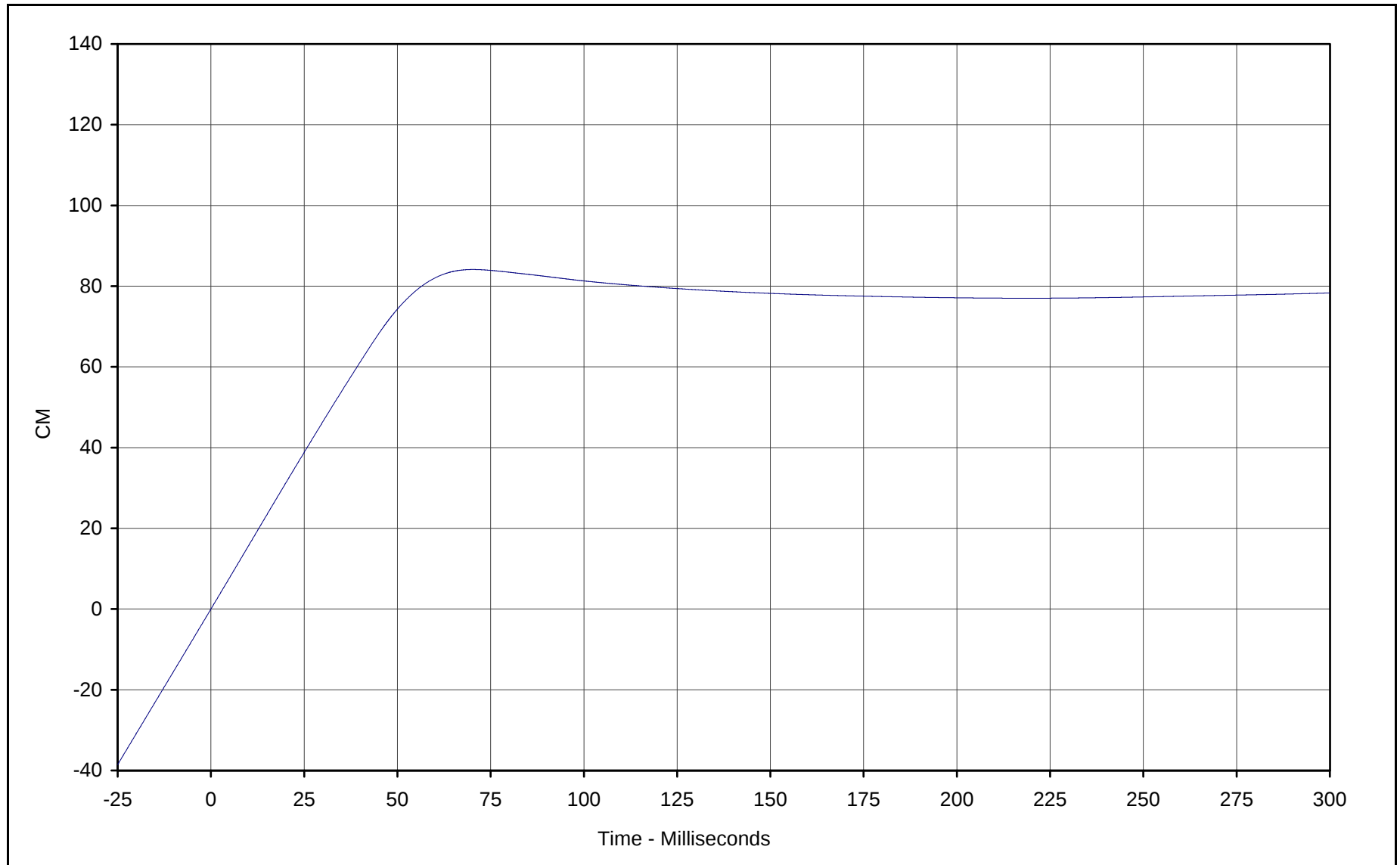


Curve Description: Passenger Pelvis X Velocity
Maximum Value: 56.4 at 10.5 Milliseconds
Minimum Value: -4.1 at 92.7 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: IN1-064

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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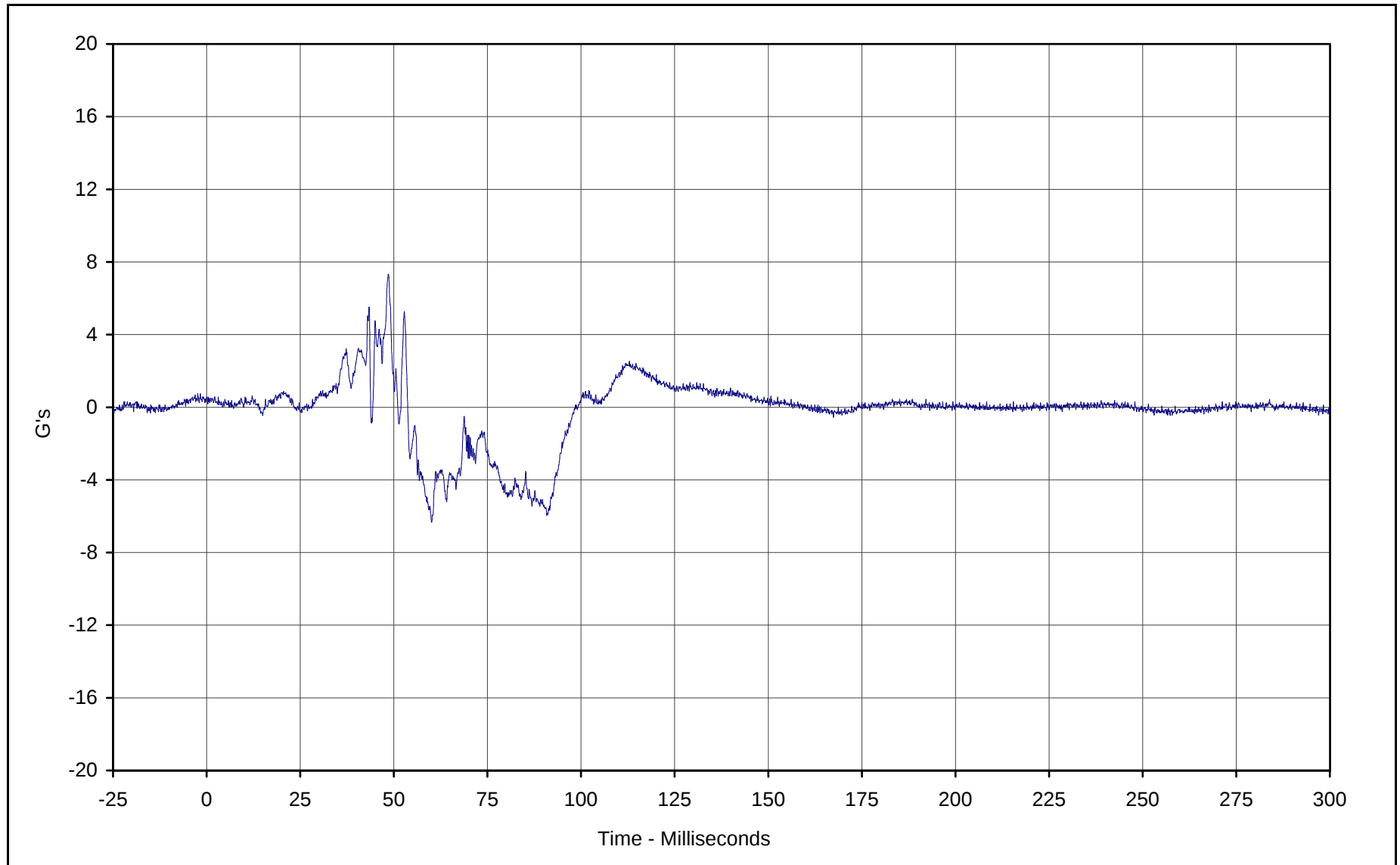
Curve Description: Passenger Pelvis X Displ.
Maximum Value: 84.1 at 70.3 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: IN2-064

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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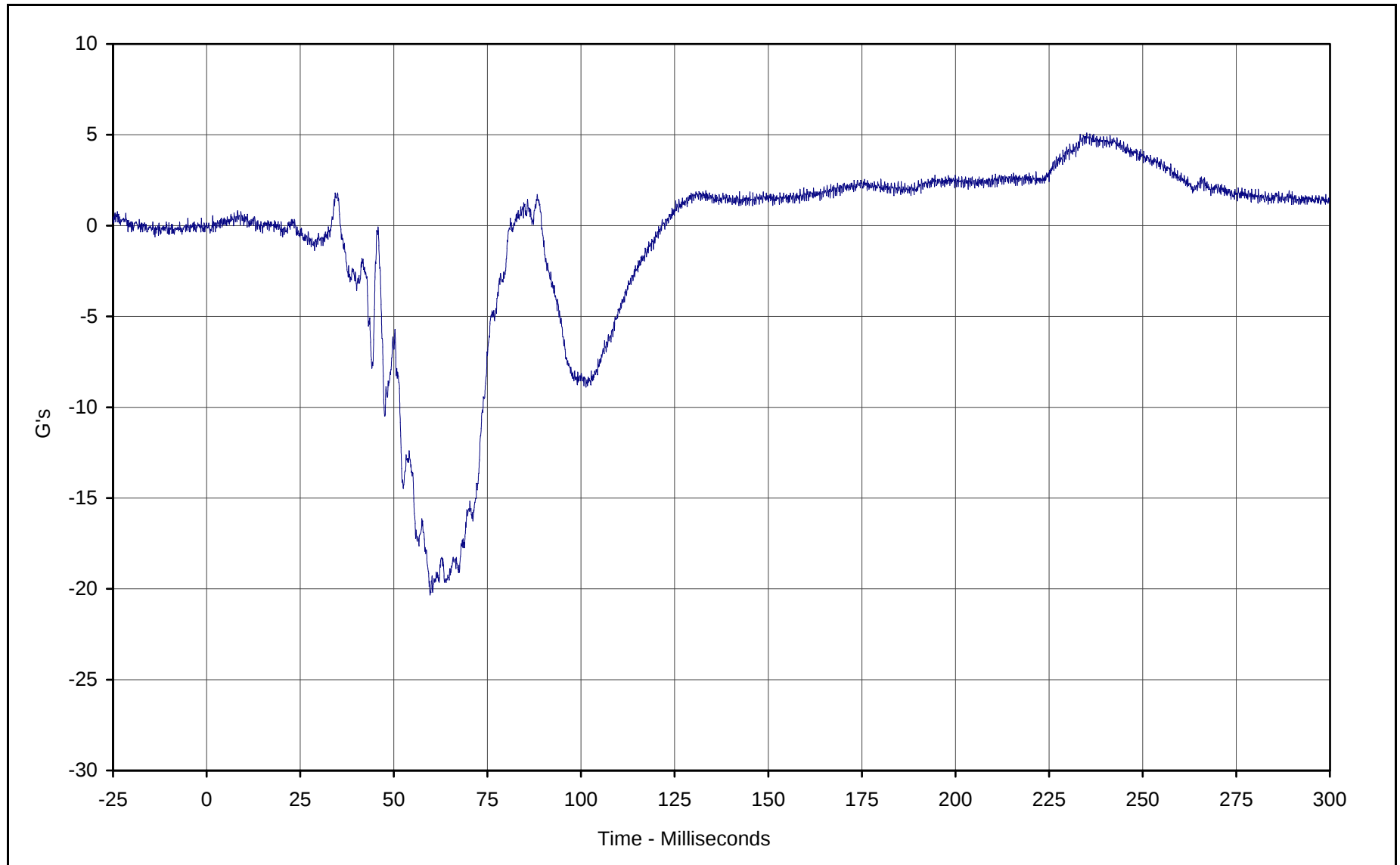
Curve Description: Passenger Pelvis Y
Maximum Value: 7.3 at 48.5 Milliseconds
Minimum Value: -6.3 at 60.0 Milliseconds
SAE Filter Class: 1000
Date of Test: 02/14/01
Curve Number: FIL-065

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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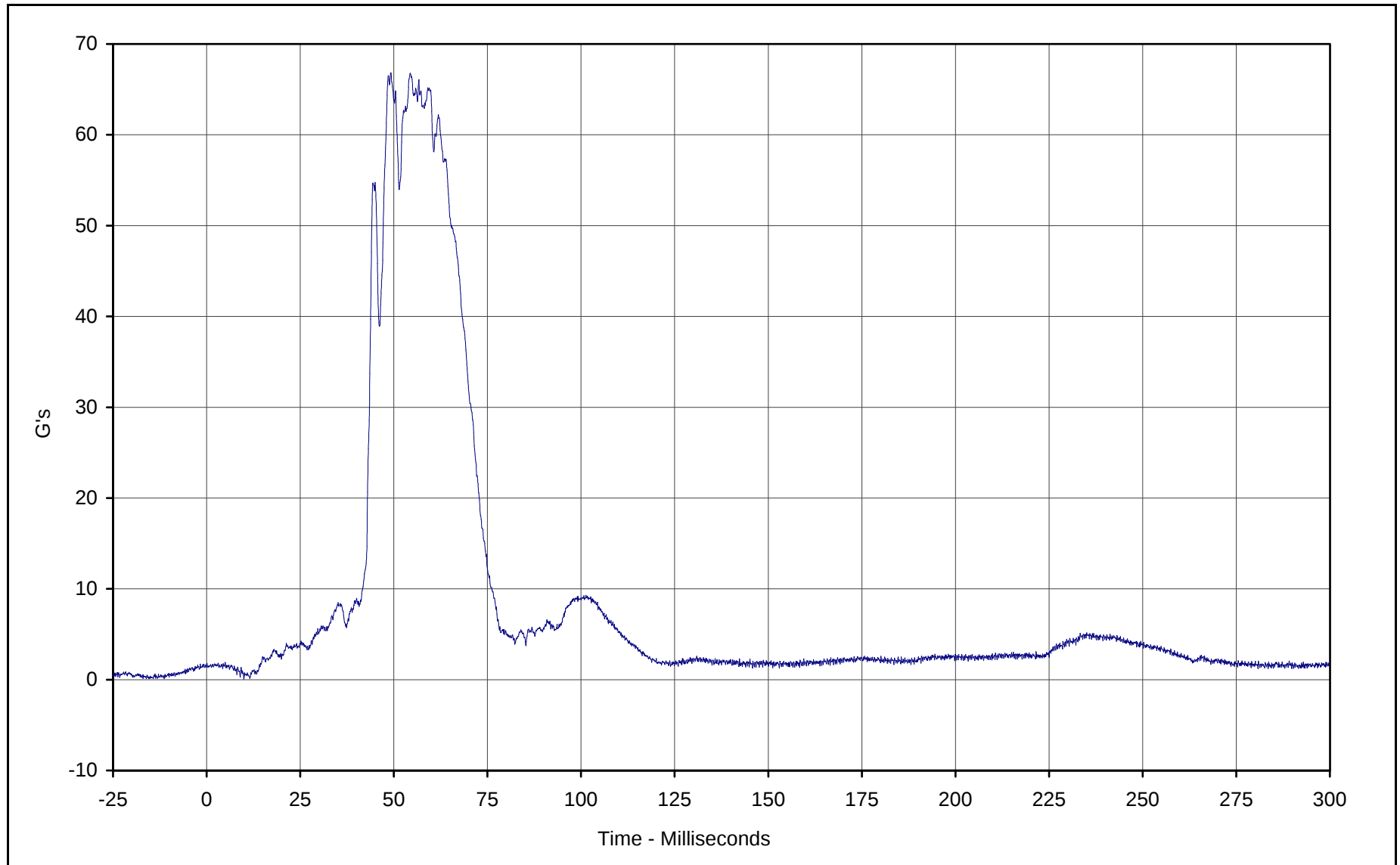
Curve Description: Passenger Pelvis Z
Maximum Value: 5.1 at 235.1 Milliseconds
Minimum Value: -20.3 at 59.7 Milliseconds
SAE Filter Class: 1000
Date of Test: 02/14/01
Curve Number: FIL-066

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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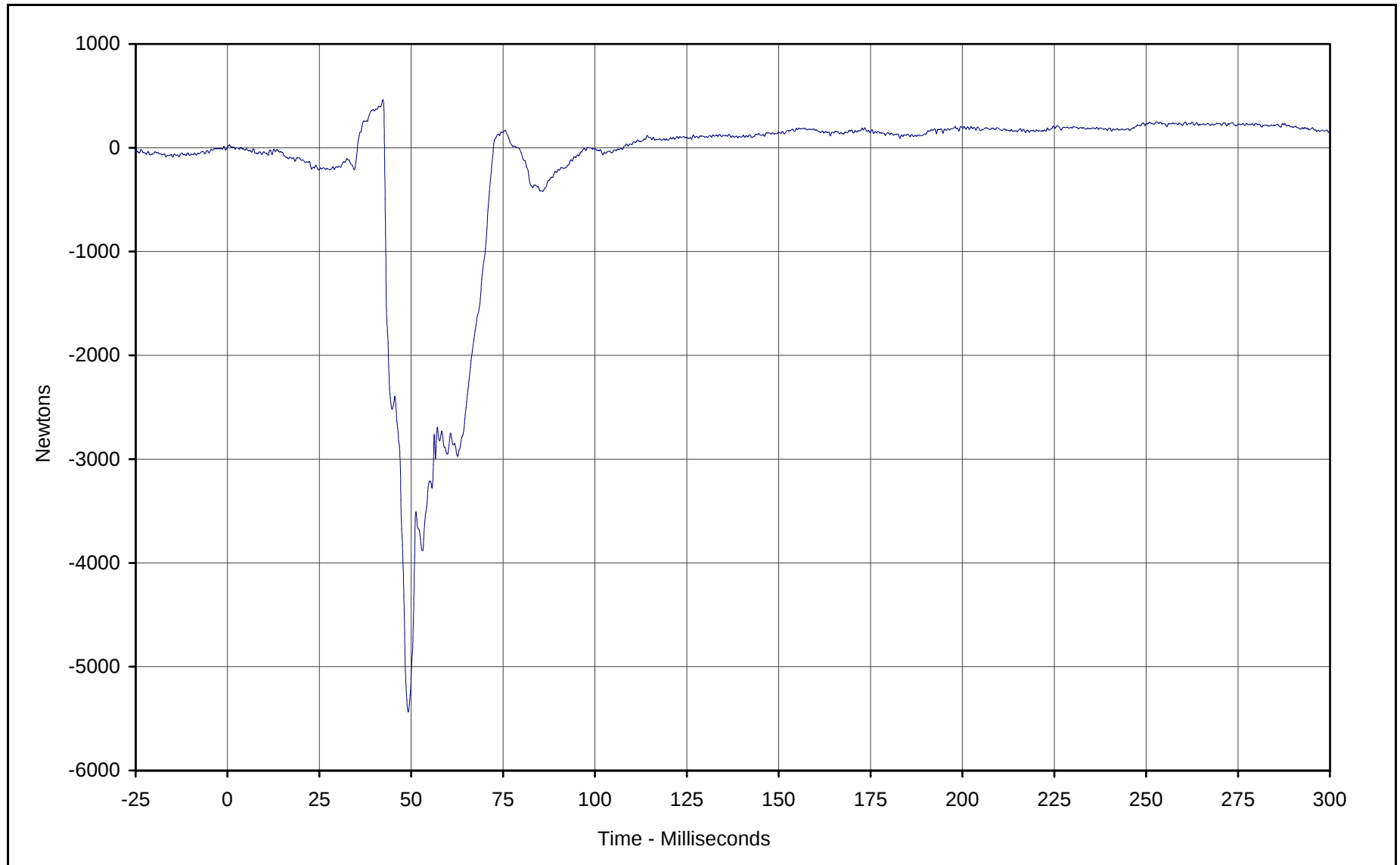
Curve Description: Passenger Pelvis Resultant
Maximum Value: 66.8 at 49.2 Milliseconds
Minimum Value: 0.1 at 9.9 Milliseconds
SAE Filter Class: 1000
Date of Test: 02/14/01
Curve Number: RES-064

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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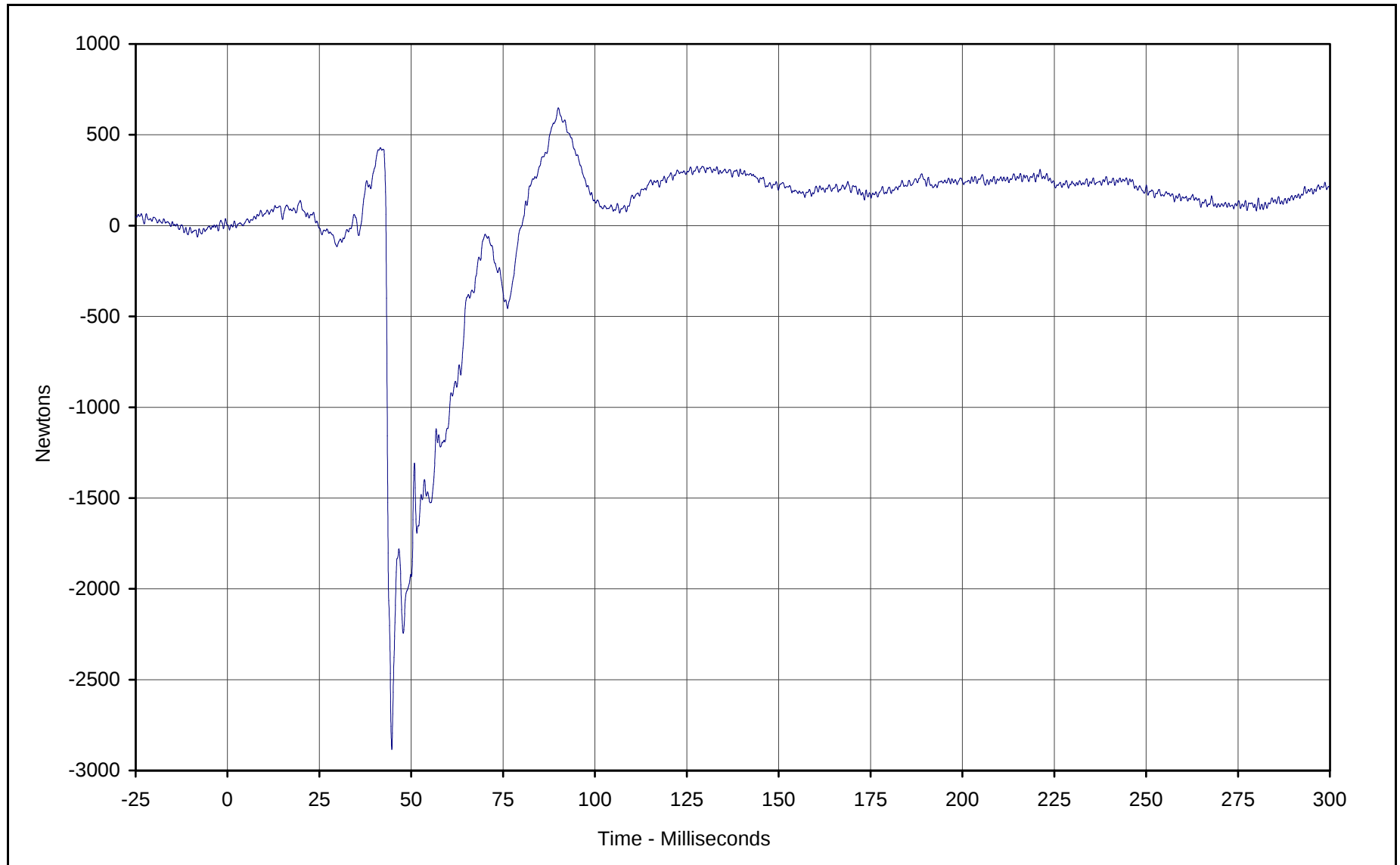


Curve Description: Passenger Left Femur Force
Maximum Value: 464.5 at 42.3 Milliseconds
Minimum Value: -5437.3 at 49.2 Milliseconds
SAE Filter Class: 600
Date of Test: 02/14/01
Curve Number: FIL-067

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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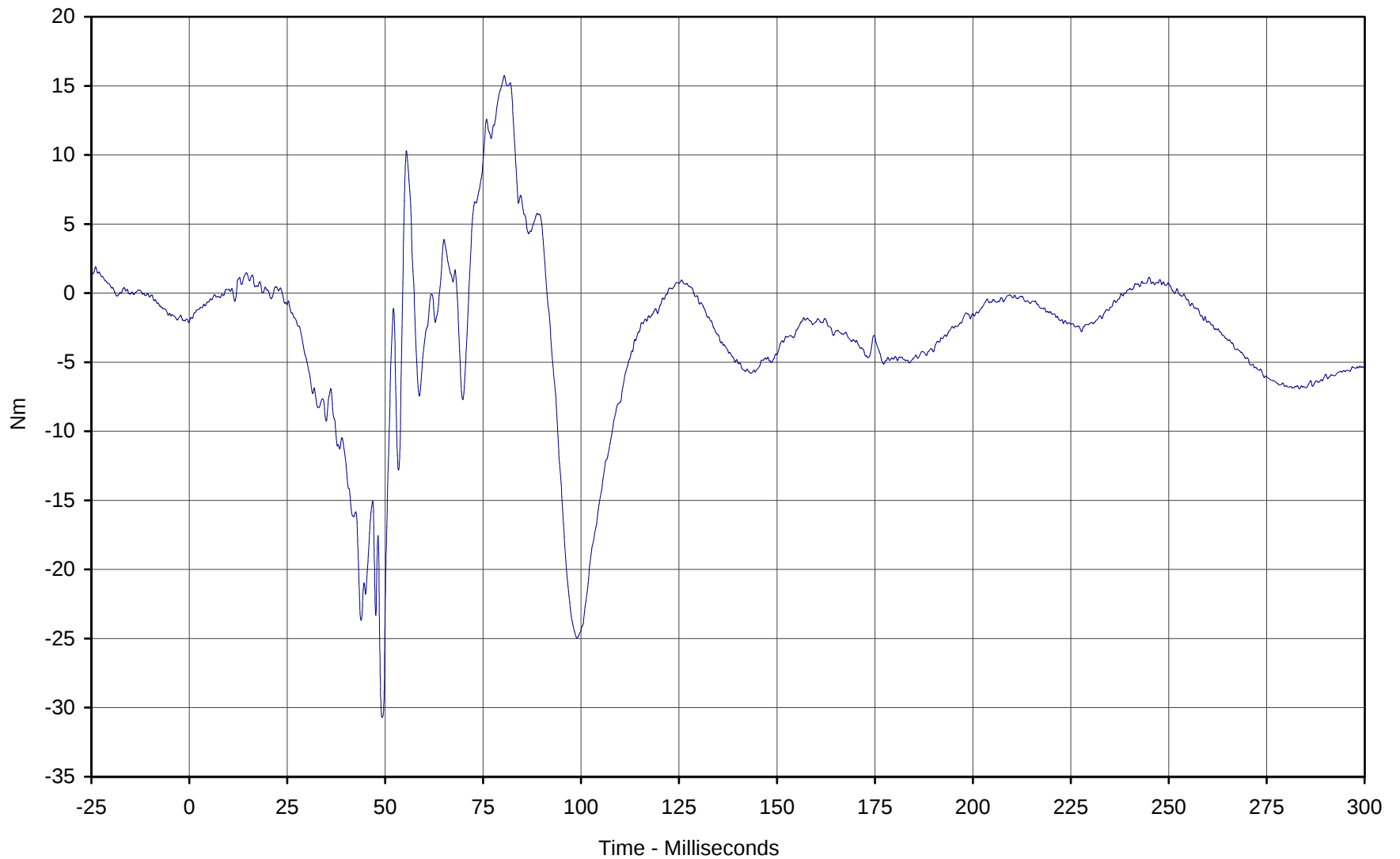


Curve Description: Passenger Right Femur Force
Maximum Value: 648.1 at 90.0 Milliseconds
Minimum Value: -2884.3 at 44.7 Milliseconds
SAE Filter Class: 600
Date of Test: 02/14/01
Curve Number: FIL-068

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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Curve Description: Passenger Left Upper Tibia Moment X

Maximum Value: 15.8 at 80.4 Milliseconds

Minimum Value: -30.7 at 49.2 Milliseconds

SAE Filter Class: 600

Date of Test: 02/14/01

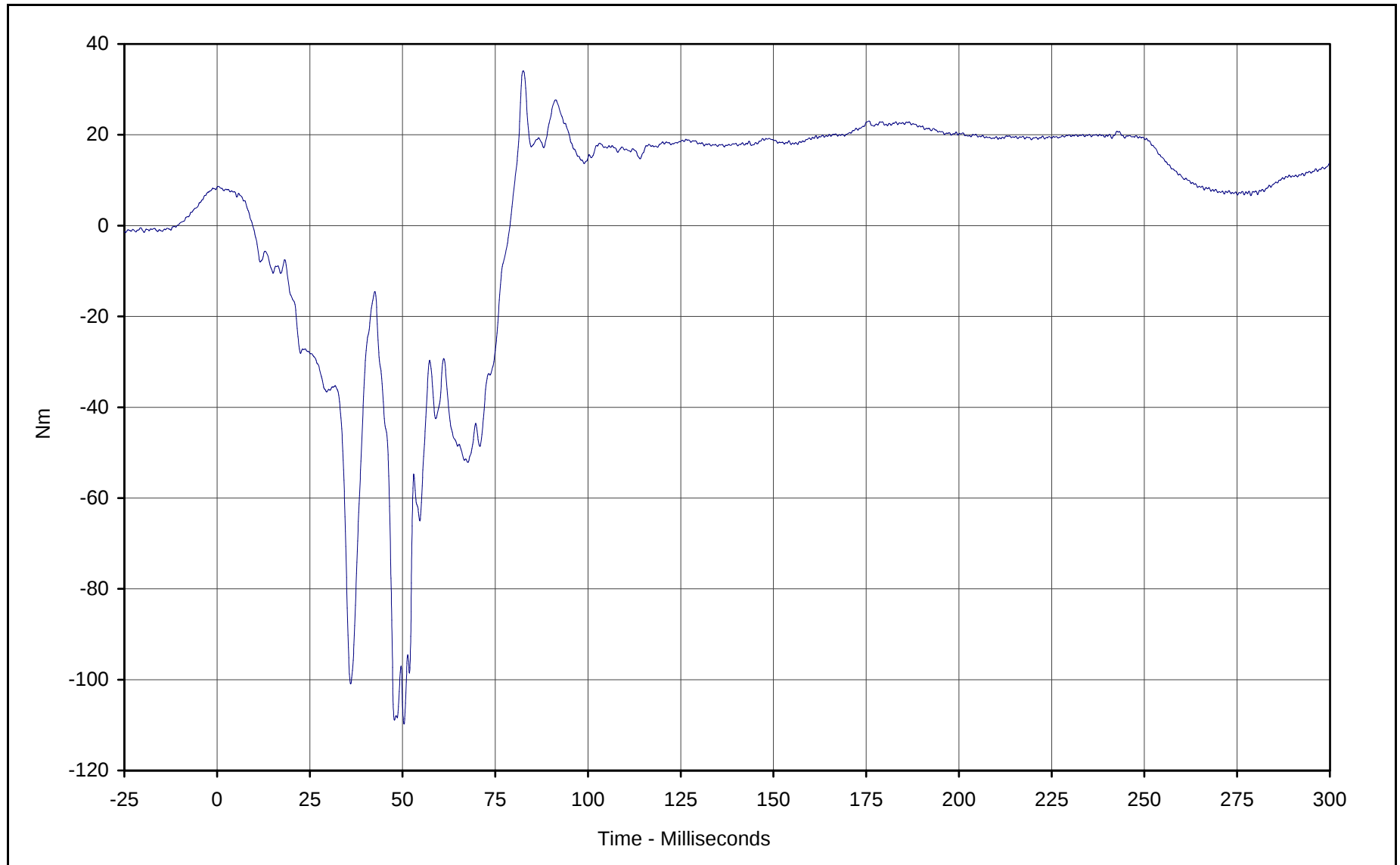
Curve Number: FIL-069

Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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Curve Description: Passenger Left Upper Tibia Moment Y

Maximum Value: 34.1 at 82.5 Milliseconds

Minimum Value: -109.8 at 50.4 Milliseconds

SAE Filter Class: 600

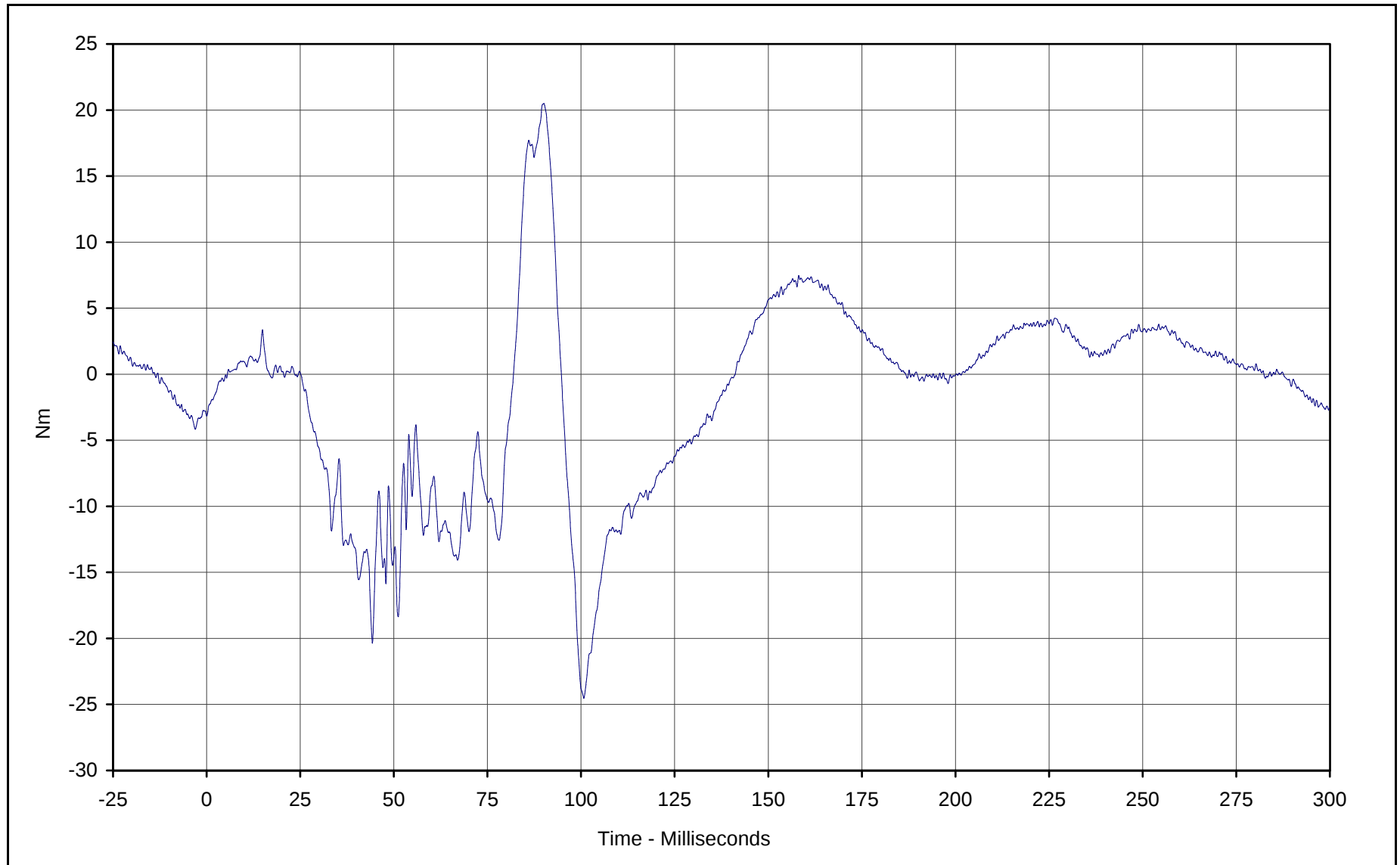
Date of Test: 02/14/01

Curve Number: FIL-070

Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan





Curve Description: Passenger Right Upper Tibia Moment X

Maximum Value: 20.5 at 90.1 Milliseconds

Minimum Value: -24.5 at 100.7 Milliseconds

SAE Filter Class: 600

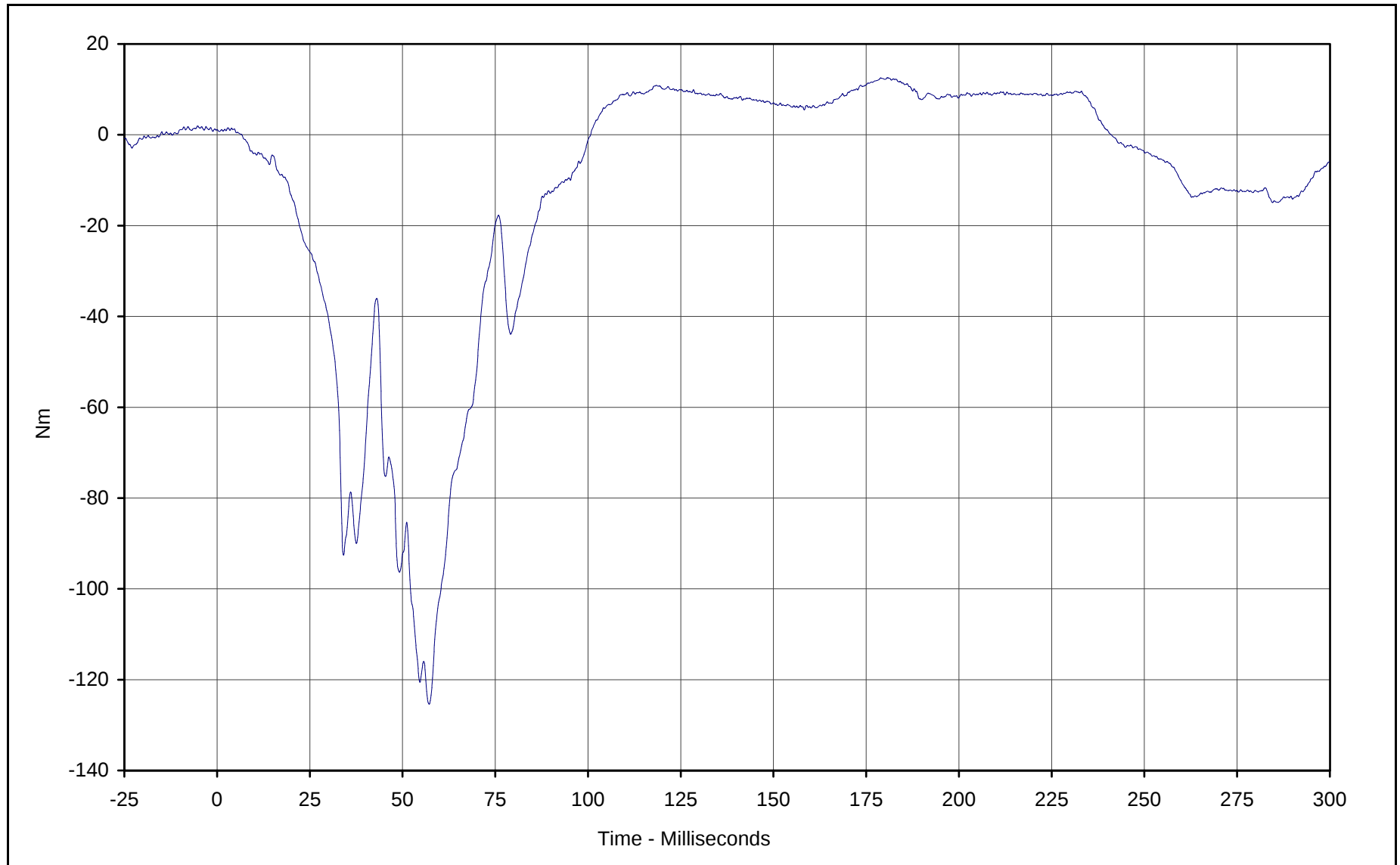
Date of Test: 02/14/01

Curve Number: FIL-071

Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan





Curve Description: Passenger Right Upper Tibia Moment Y

Maximum Value: 12.6 at 180.7 Milliseconds

Minimum Value: -125.4 at 57.2 Milliseconds

SAE Filter Class: 600

Date of Test: 02/14/01

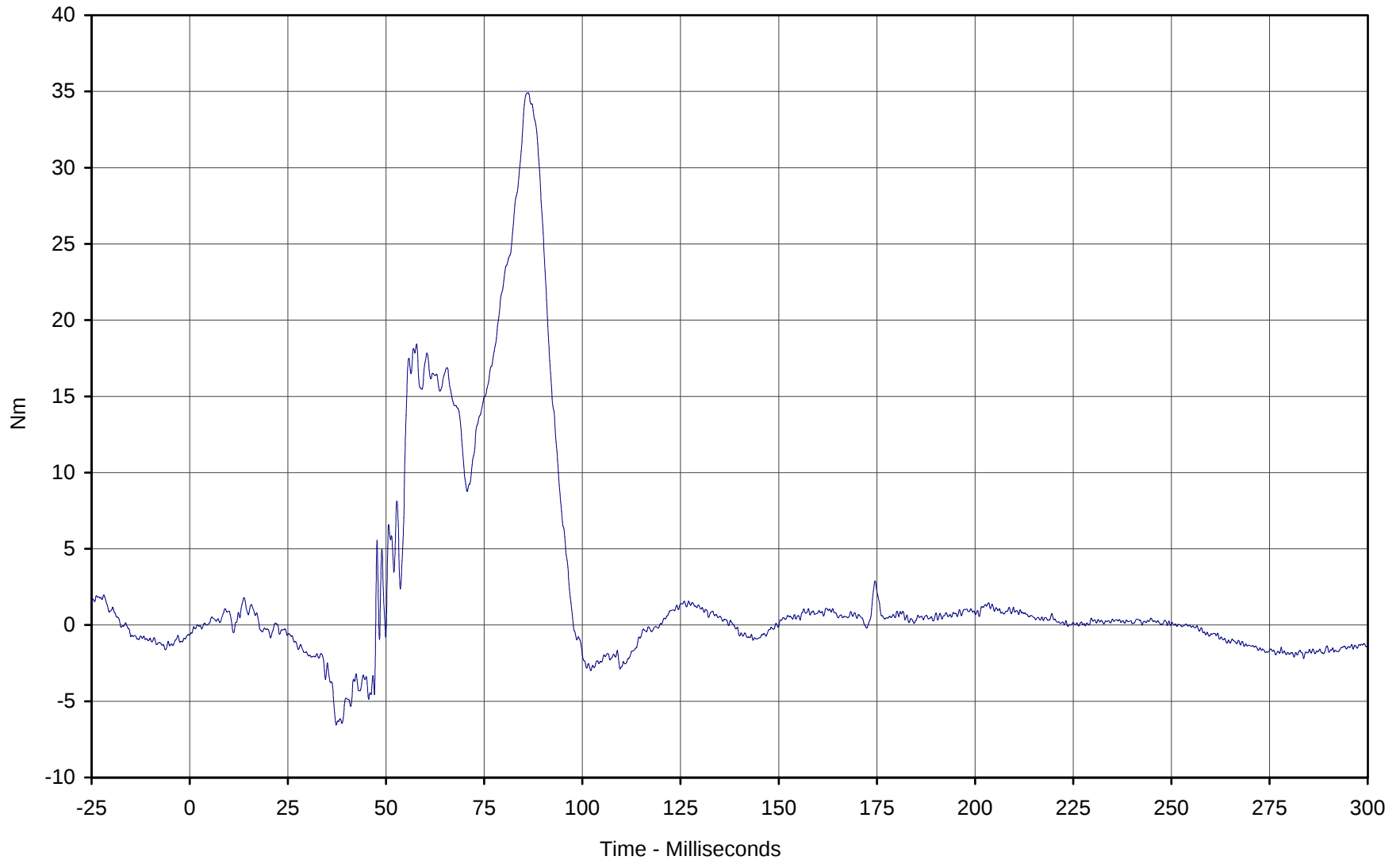
Curve Number: FIL-072

Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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Curve Description: Passenger Left Lower Tibia Moment X

Maximum Value: 34.9 at 86.2 Milliseconds

Minimum Value: -6.6 at 37.3 Milliseconds

SAE Filter Class: 600

Date of Test: 02/14/01

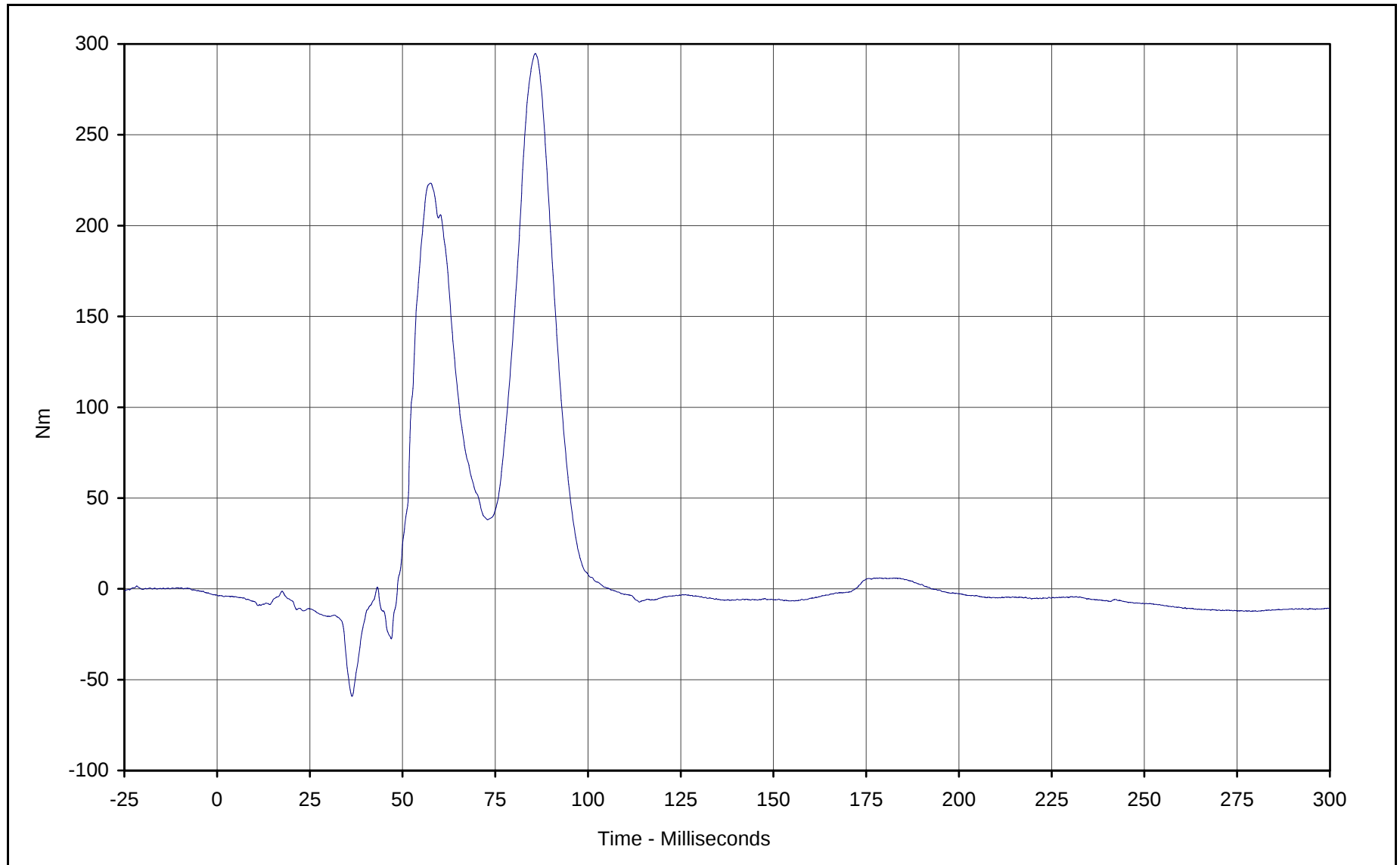
Curve Number: FIL-073

Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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Curve Description: Passenger Left Lower Tibia Moment Y

Maximum Value: 294.8 at 85.8 Milliseconds

Minimum Value: -59.1 at 36.4 Milliseconds

SAE Filter Class: 600

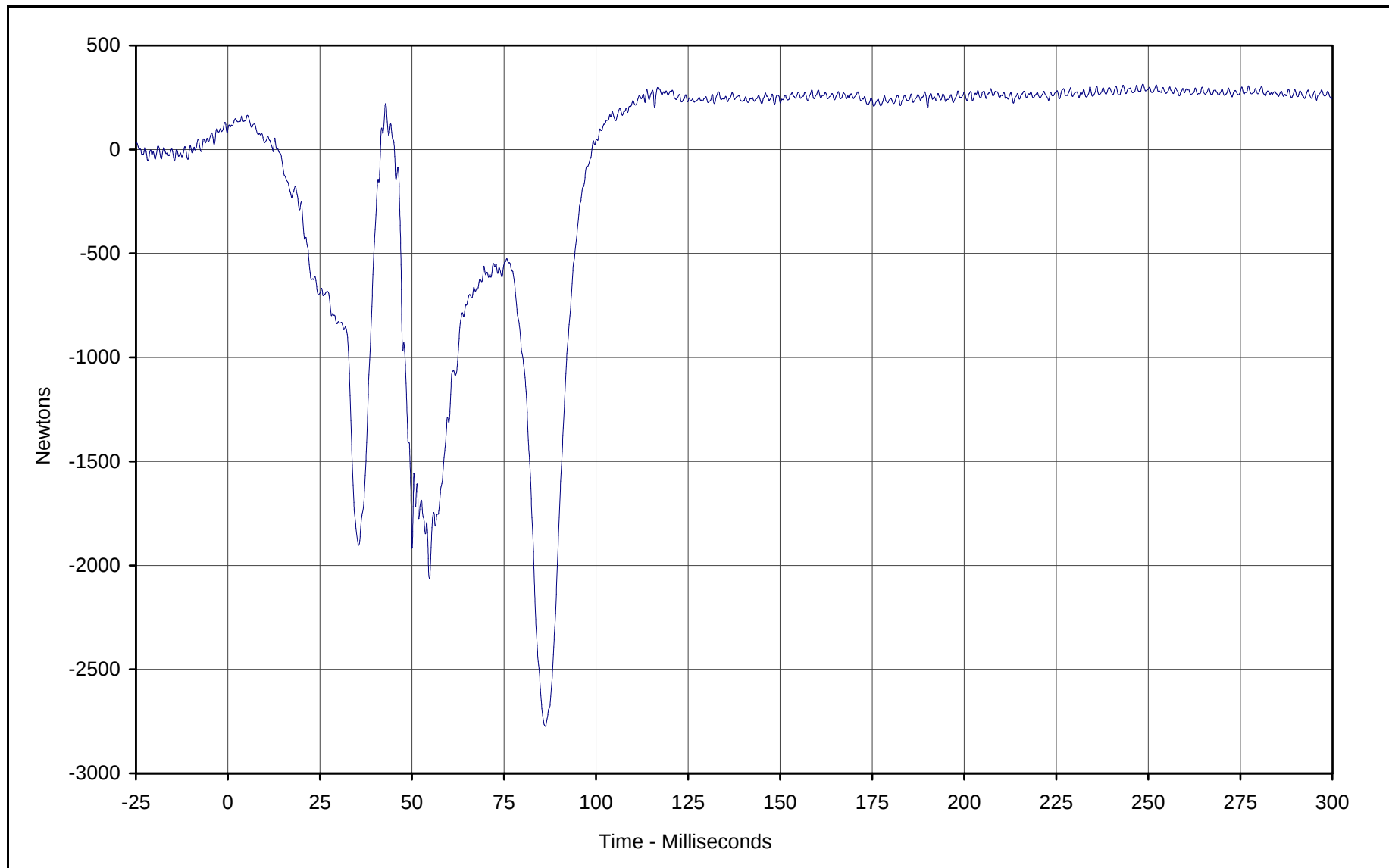
Date of Test: 02/14/01

Curve Number: FIL-074

Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan





Curve Description: Passenger Left Lower Tibia Force Z

Maximum Value: 314.2 at 248.6 Milliseconds

Minimum Value: -2773.3 at 86.2 Milliseconds

SAE Filter Class: 600

Date of Test: 02/14/01

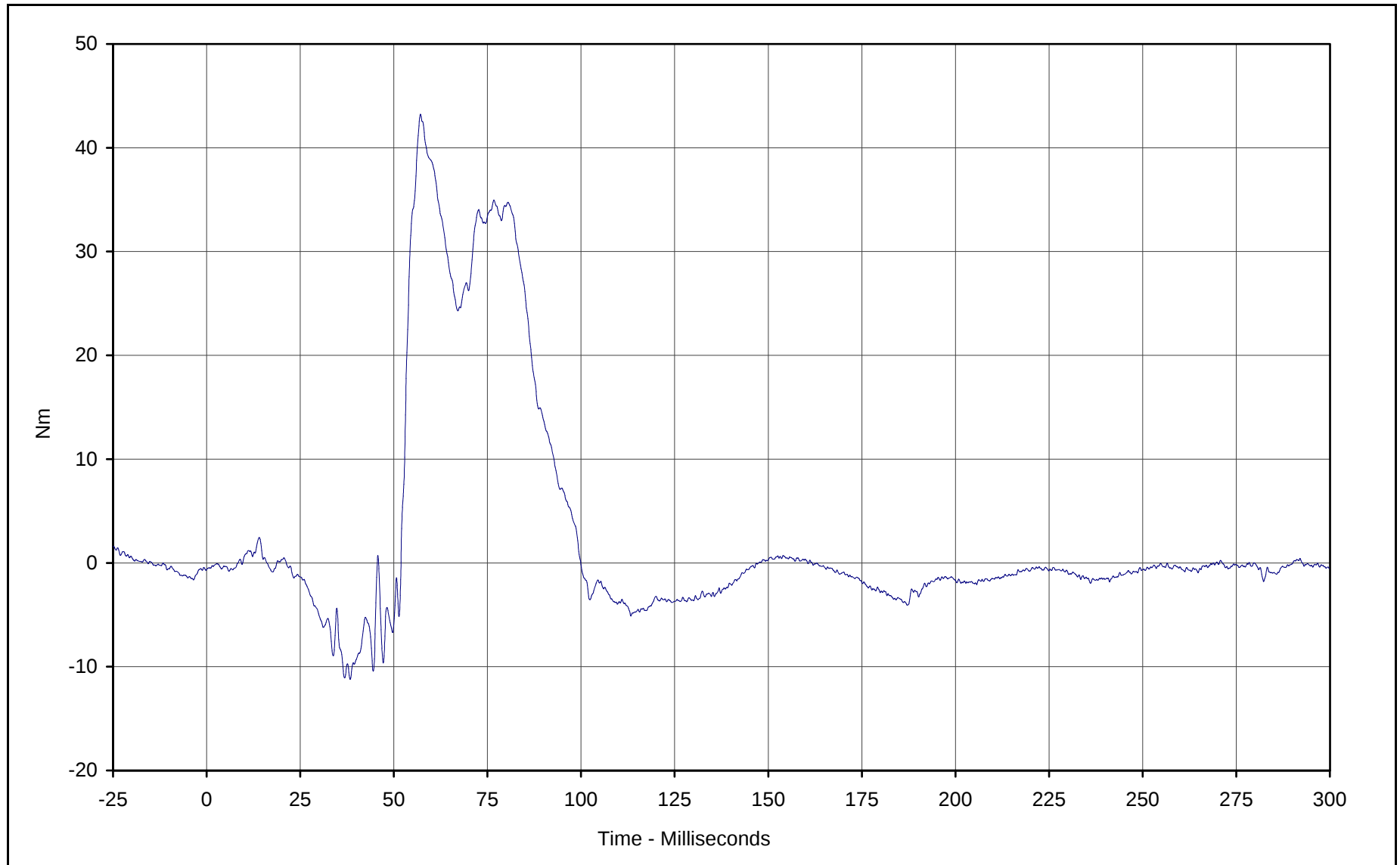
Curve Number: FIL-075

Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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Curve Description: Passenger Right Lower Tibia Moment X

Maximum Value: 43.2 at 57.1 Milliseconds

Minimum Value: -11.2 at 38.3 Milliseconds

SAE Filter Class: 600

Date of Test: 02/14/01

Curve Number: FIL-076

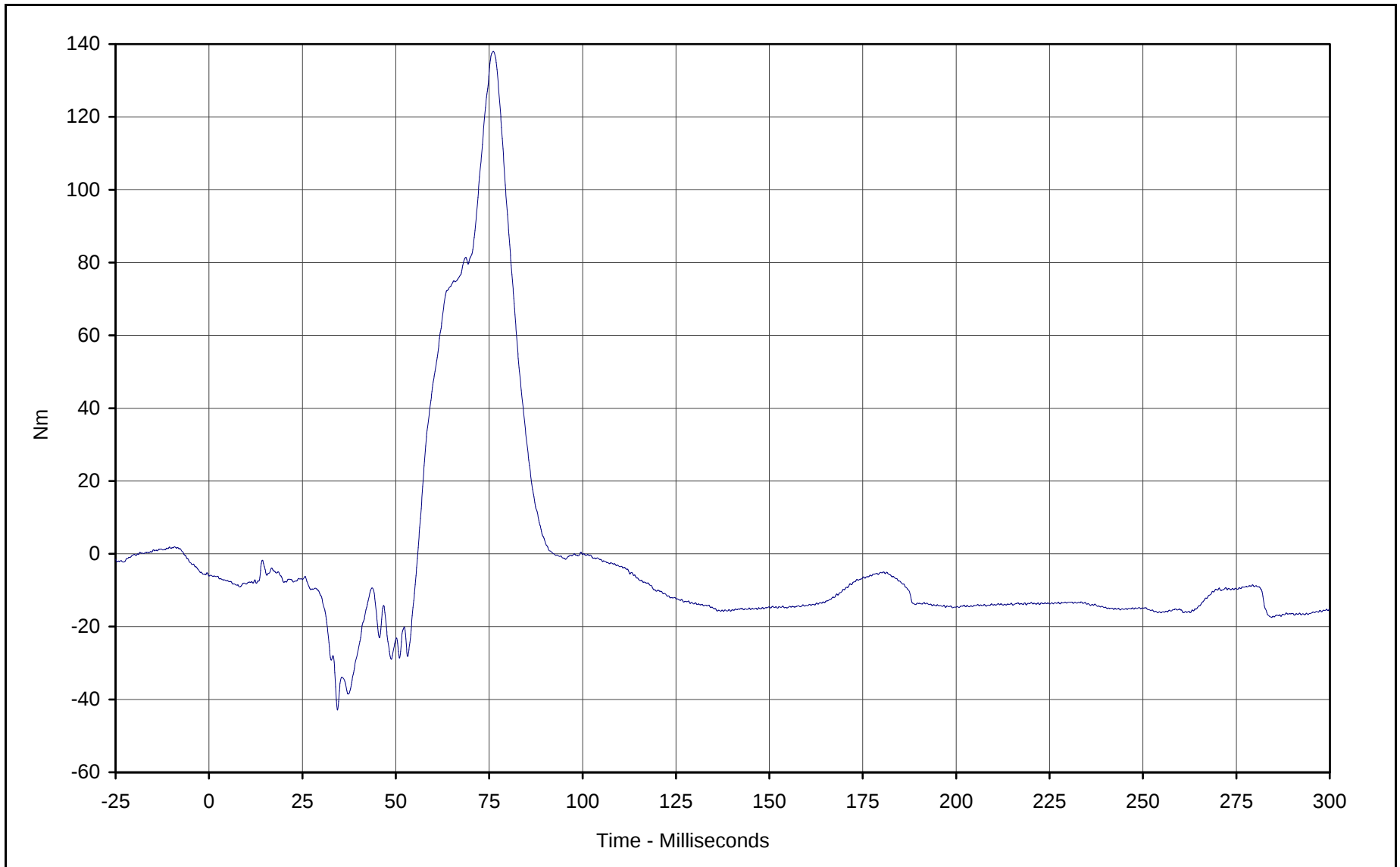
Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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Curve Description: Passenger Right Lower Tibia Moment Y

Maximum Value: 138.0 at 76.1 Milliseconds

Minimum Value: -42.9 at 34.4 Milliseconds

SAE Filter Class: 600

Date of Test: 02/14/01

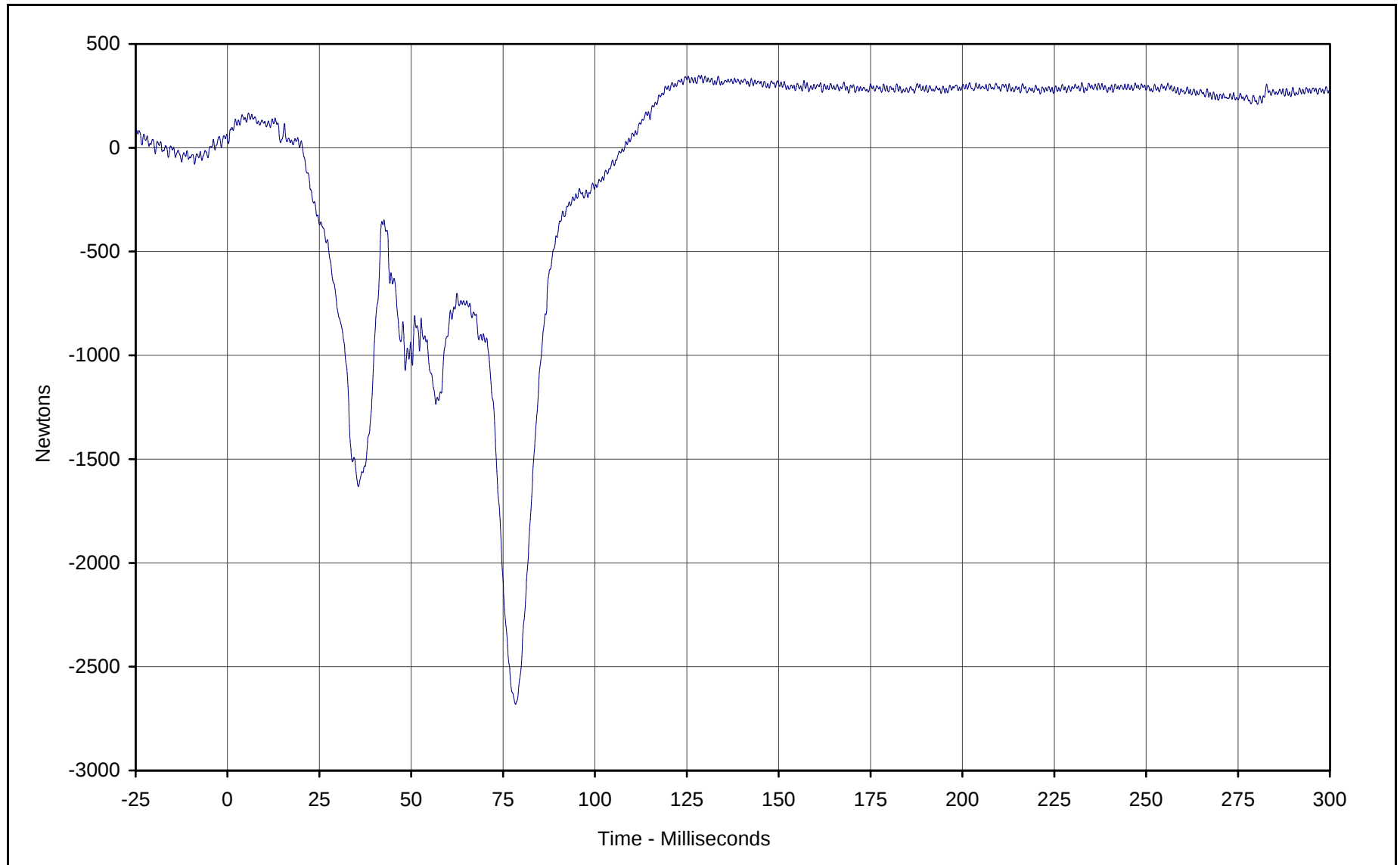
Curve Number: FIL-077

Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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Curve Description: Passenger Right lower Tibia Force Z

Maximum Value: 349.4 at 129.0 Milliseconds

Minimum Value: -2681.3 at 78.4 Milliseconds

SAE Filter Class: 600

Date of Test: 02/14/01

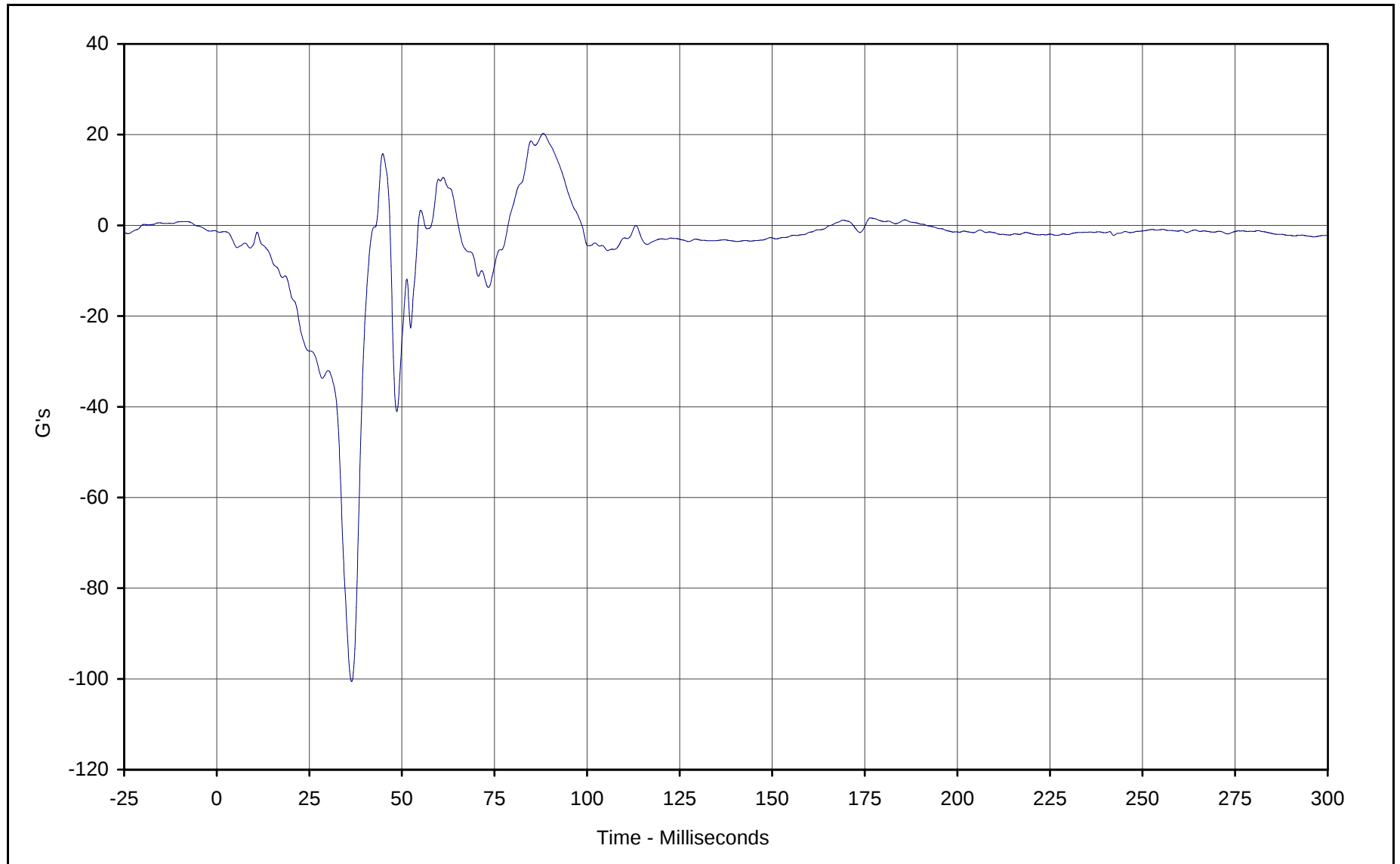
Curve Number: FIL-078

Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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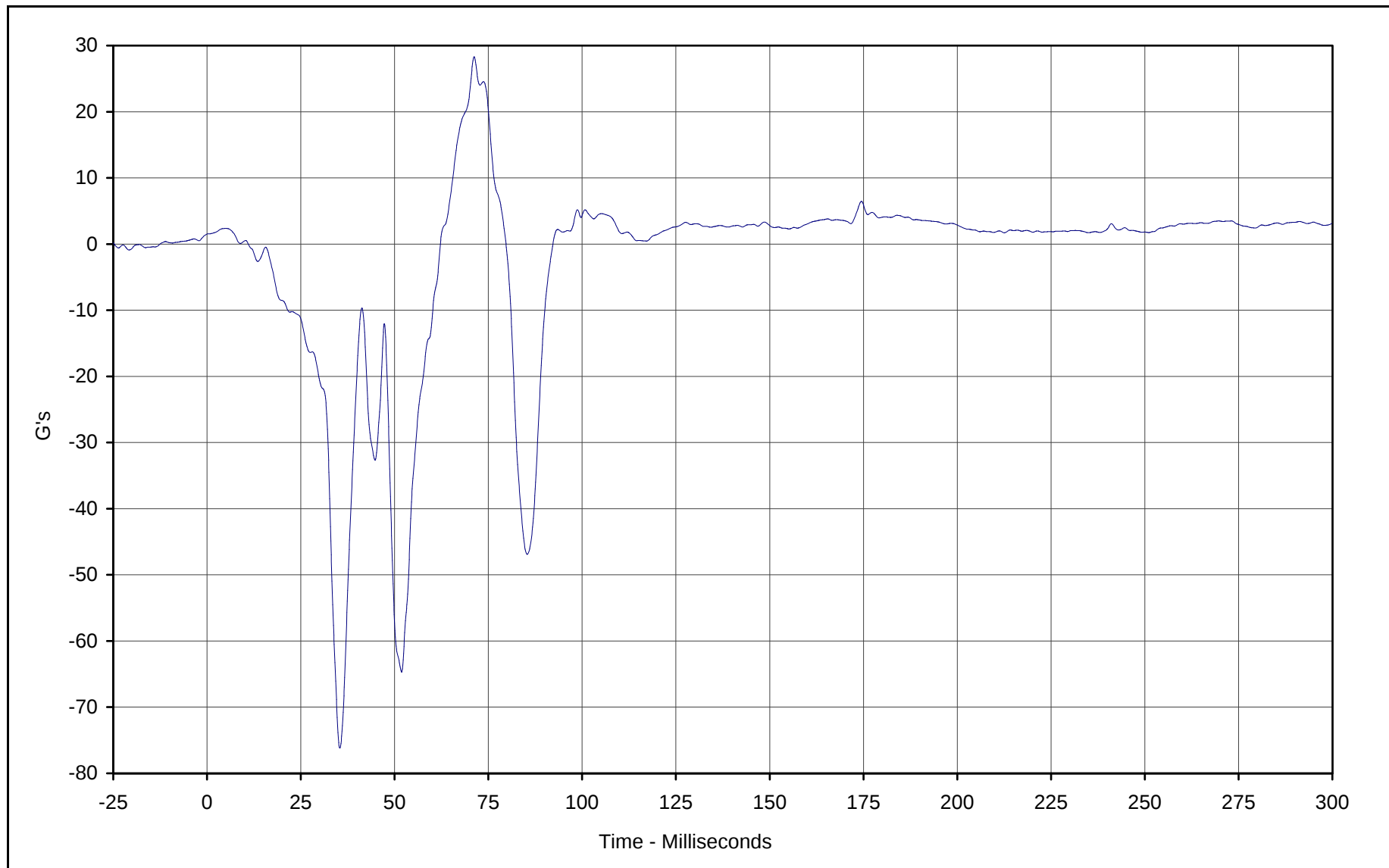
Curve Description: Passenger Left Foot Aft X
Maximum Value: 20.3 at 88.2 Milliseconds
Minimum Value: -100.6 at 36.4 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: FIL-079

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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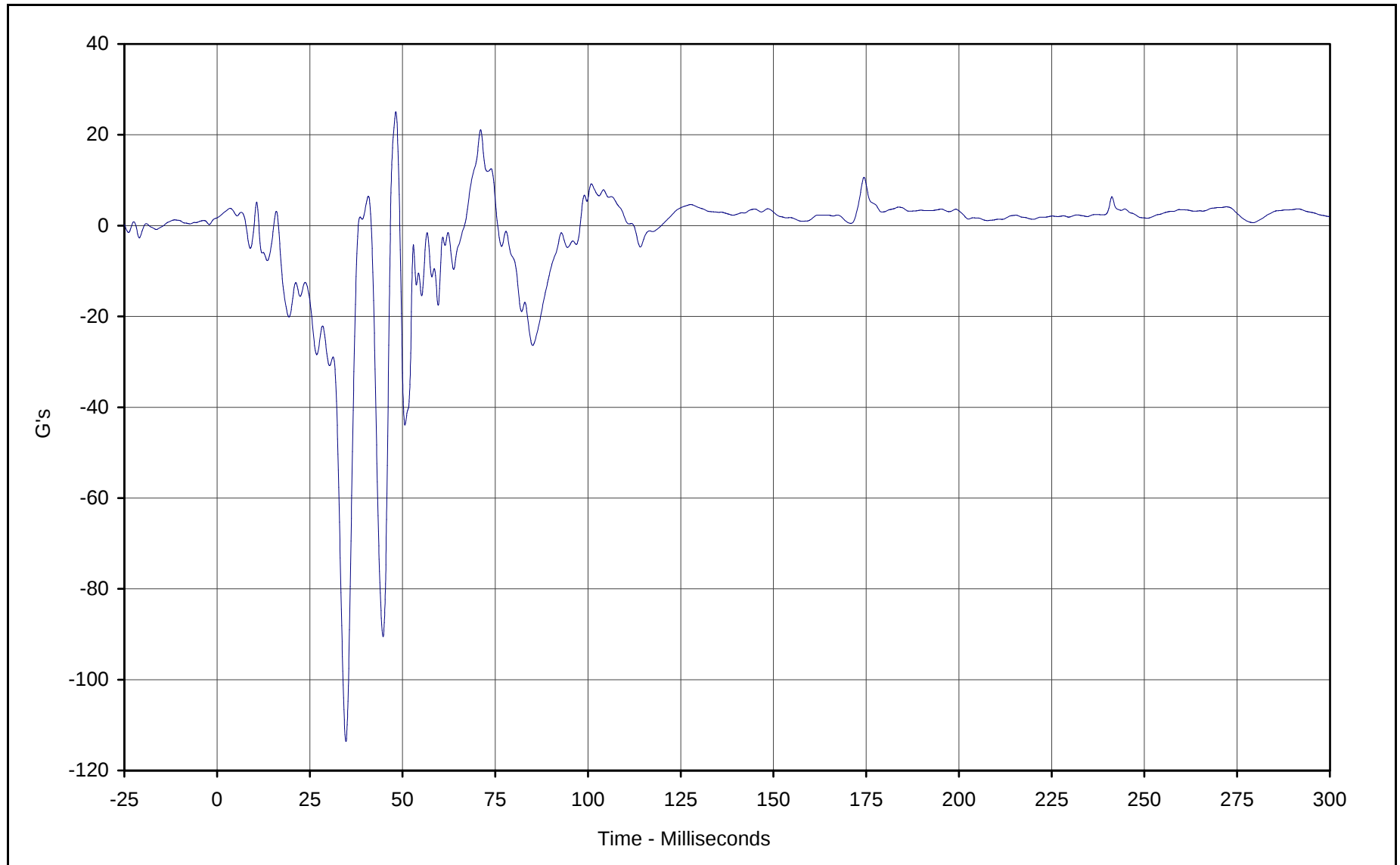
Curve Description: Passenger Left Foot Aft Z
Maximum Value: 28.3 at 71.2 Milliseconds
Minimum Value: -76.2 at 35.4 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: FIL-080

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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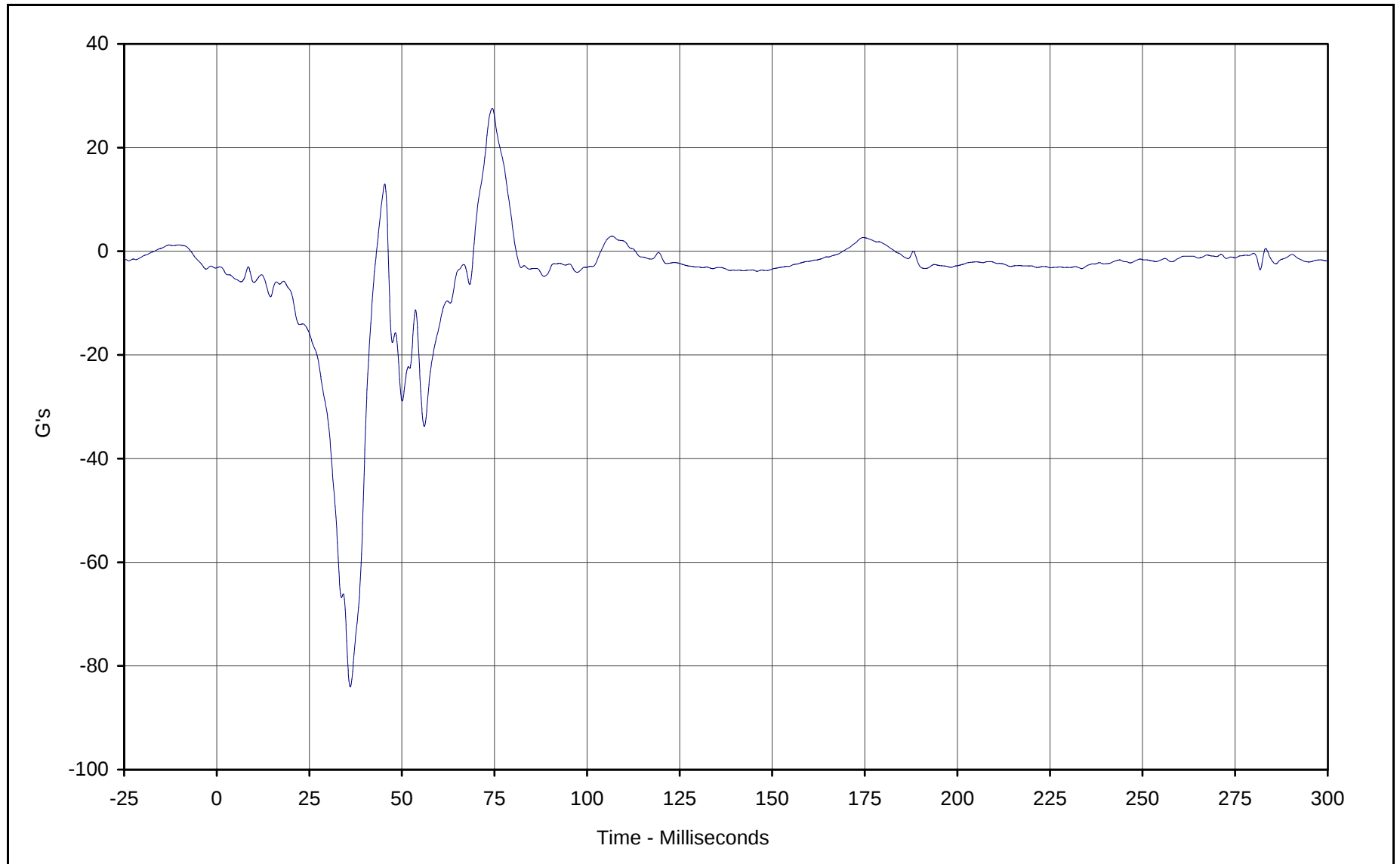
Curve Description: Passenger Left Foot Fore Z
Maximum Value: 25.1 at 48.2 Milliseconds
Minimum Value: -113.6 at 34.7 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: FIL-081

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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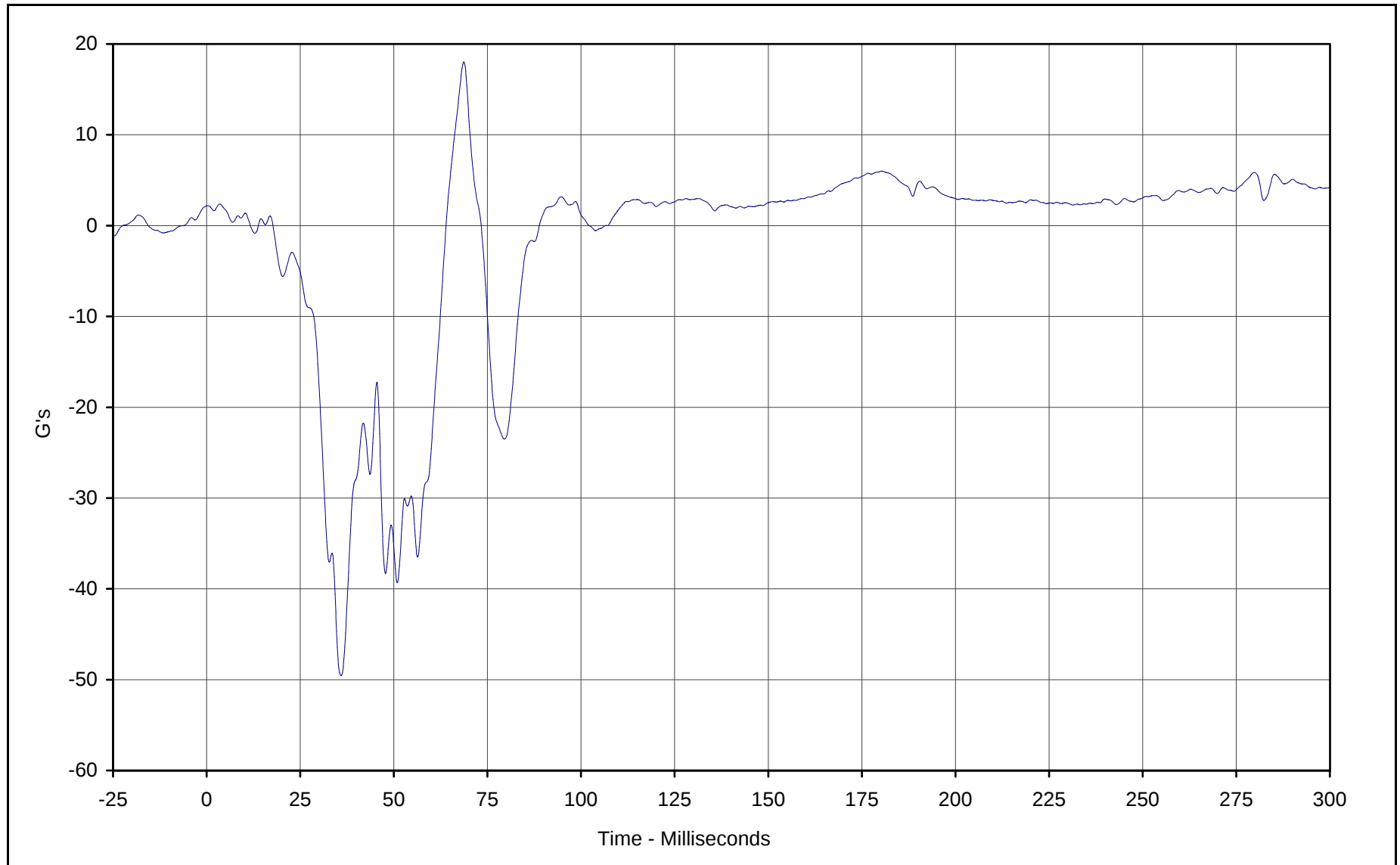
Curve Description: Passenger Right Foot Aft X
Maximum Value: 27.6 at 74.4 Milliseconds
Minimum Value: -84.0 at 36.1 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: FIL-082

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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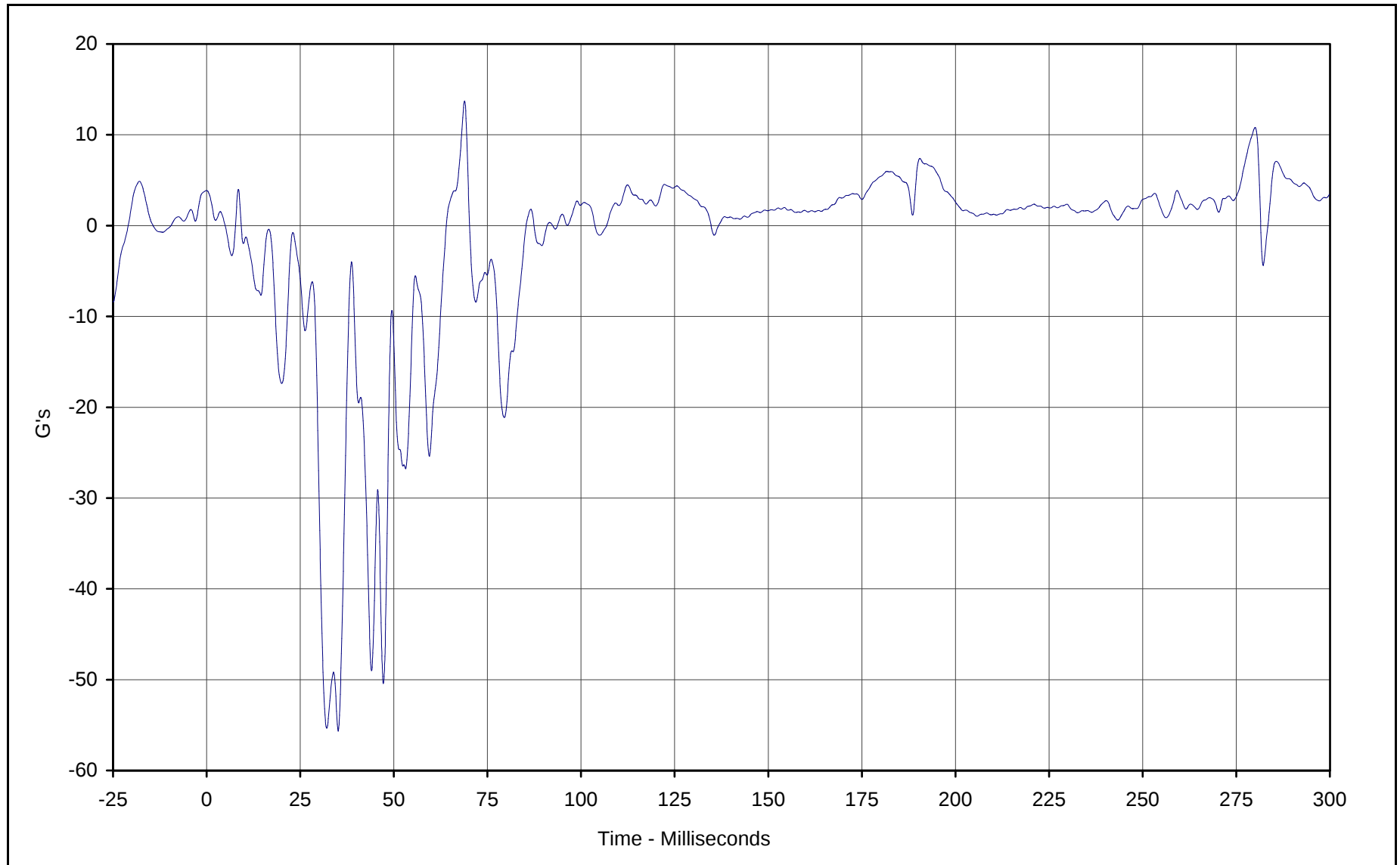
Curve Description: Passenger Right Foot Aft Z
Maximum Value: 18.0 at 68.7 Milliseconds
Minimum Value: -49.6 at 35.9 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: FIL-083

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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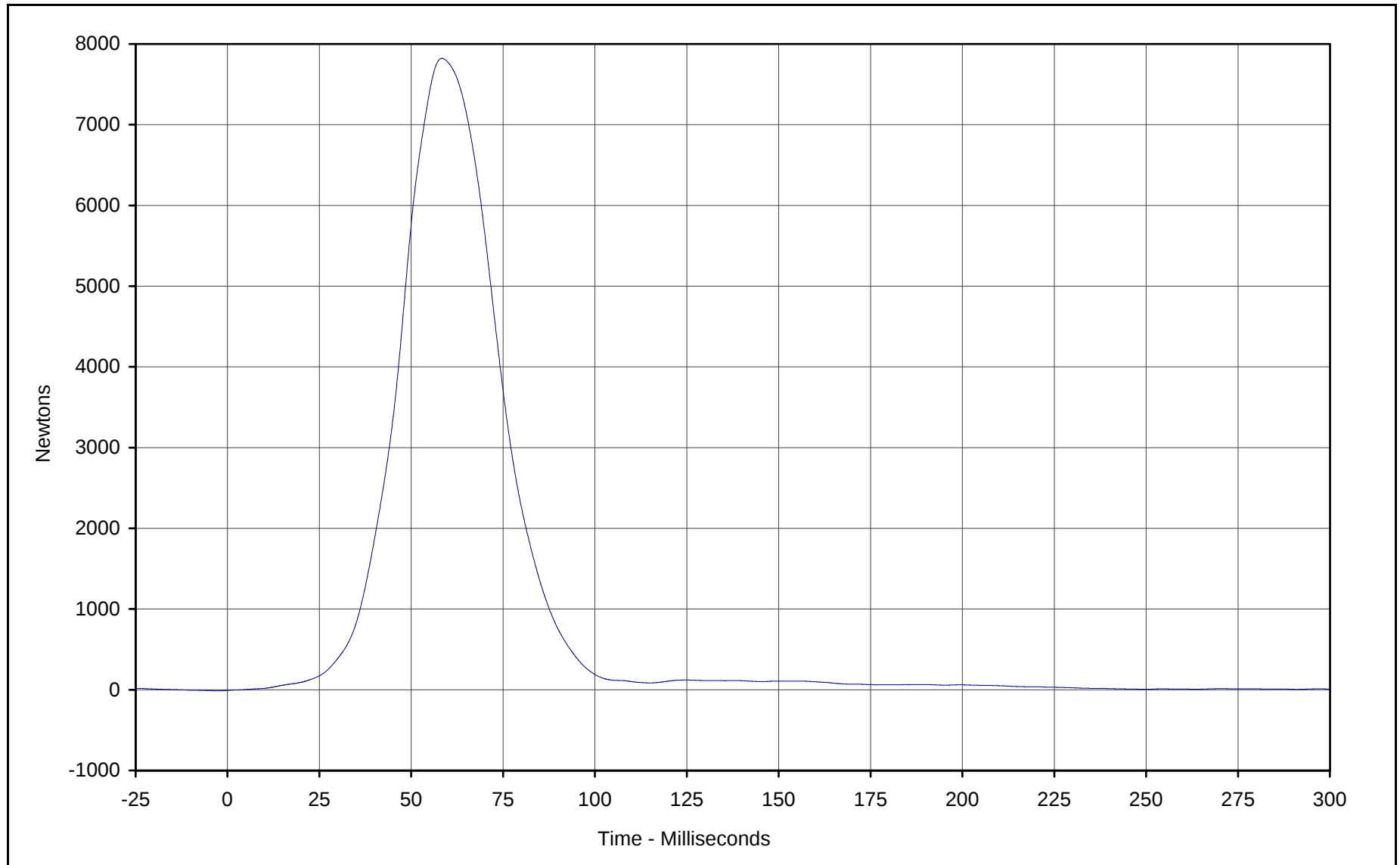
Curve Description: Passenger Right Foot Fore Z
Maximum Value: 13.7 at 68.9 Milliseconds
Minimum Value: -55.7 at 35.1 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: FIL-084

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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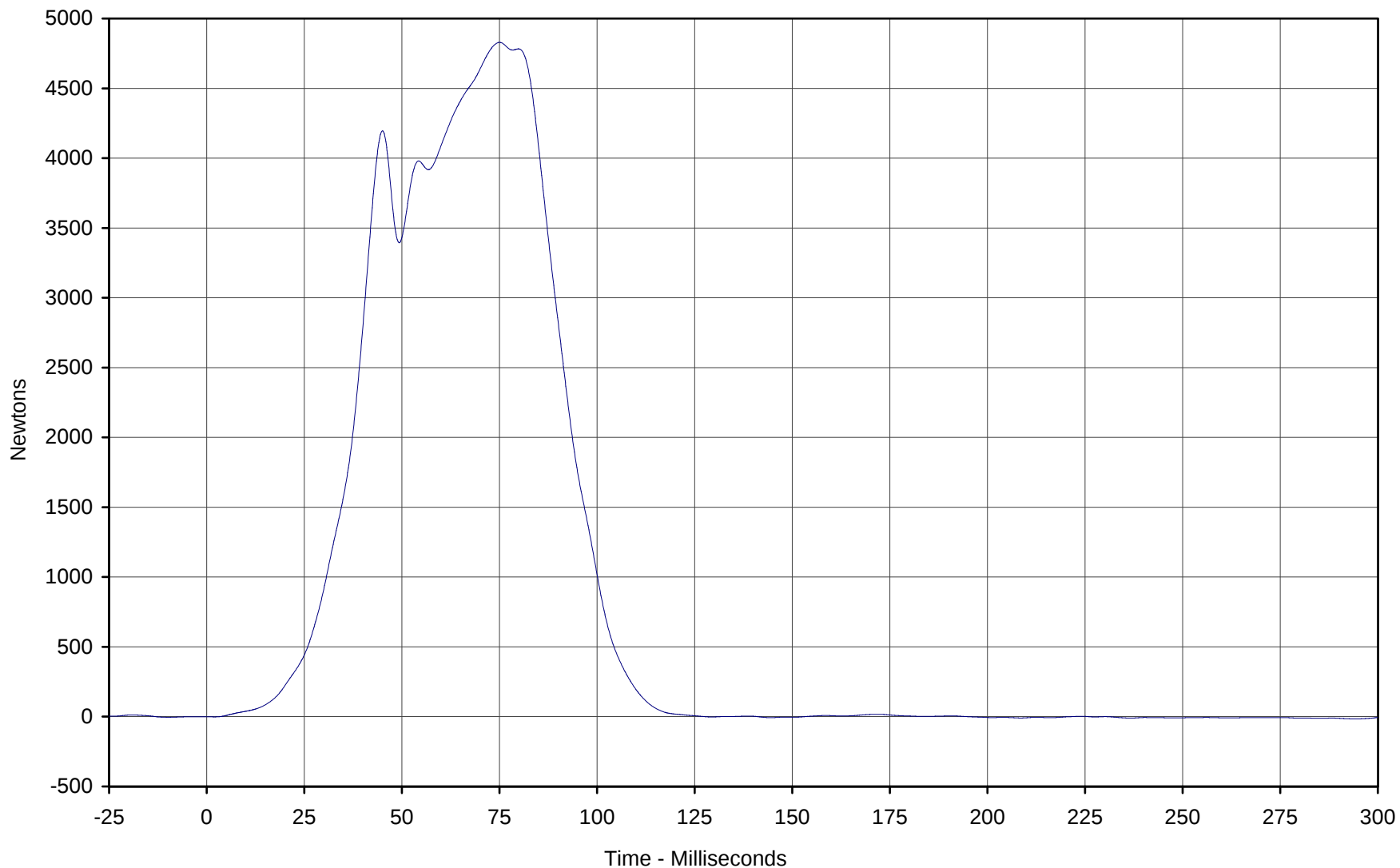
Curve Description: Passenger Lap Belt Force
Maximum Value: 7821.9 at 58.4 Milliseconds
Minimum Value: -8.1 at 0.0 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-085

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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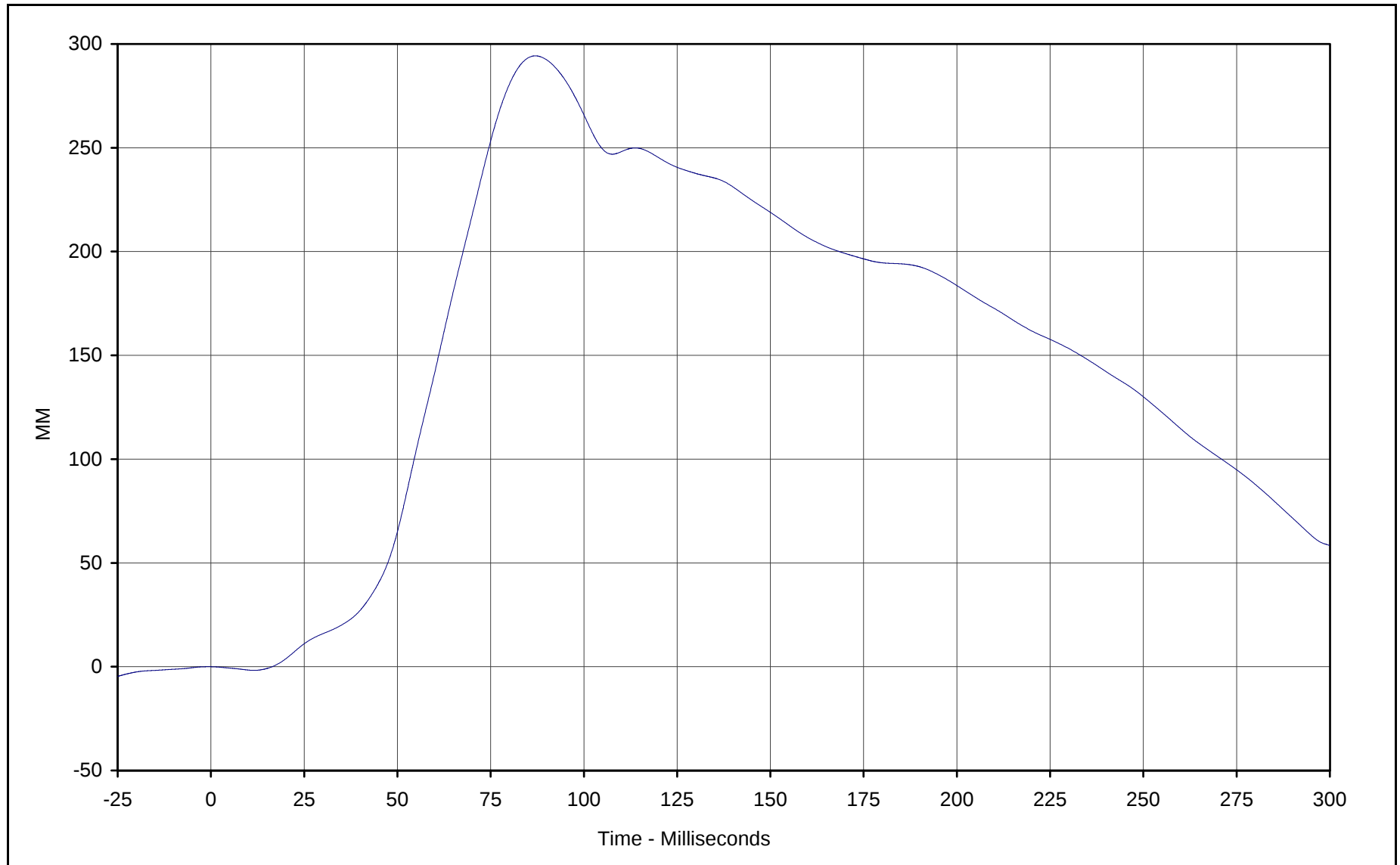
Curve Description: Passenger Shoulder Belt Force
Maximum Value: 4829.0 at 75.0 Milliseconds
Minimum Value: -16.1 at 294.5 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-086

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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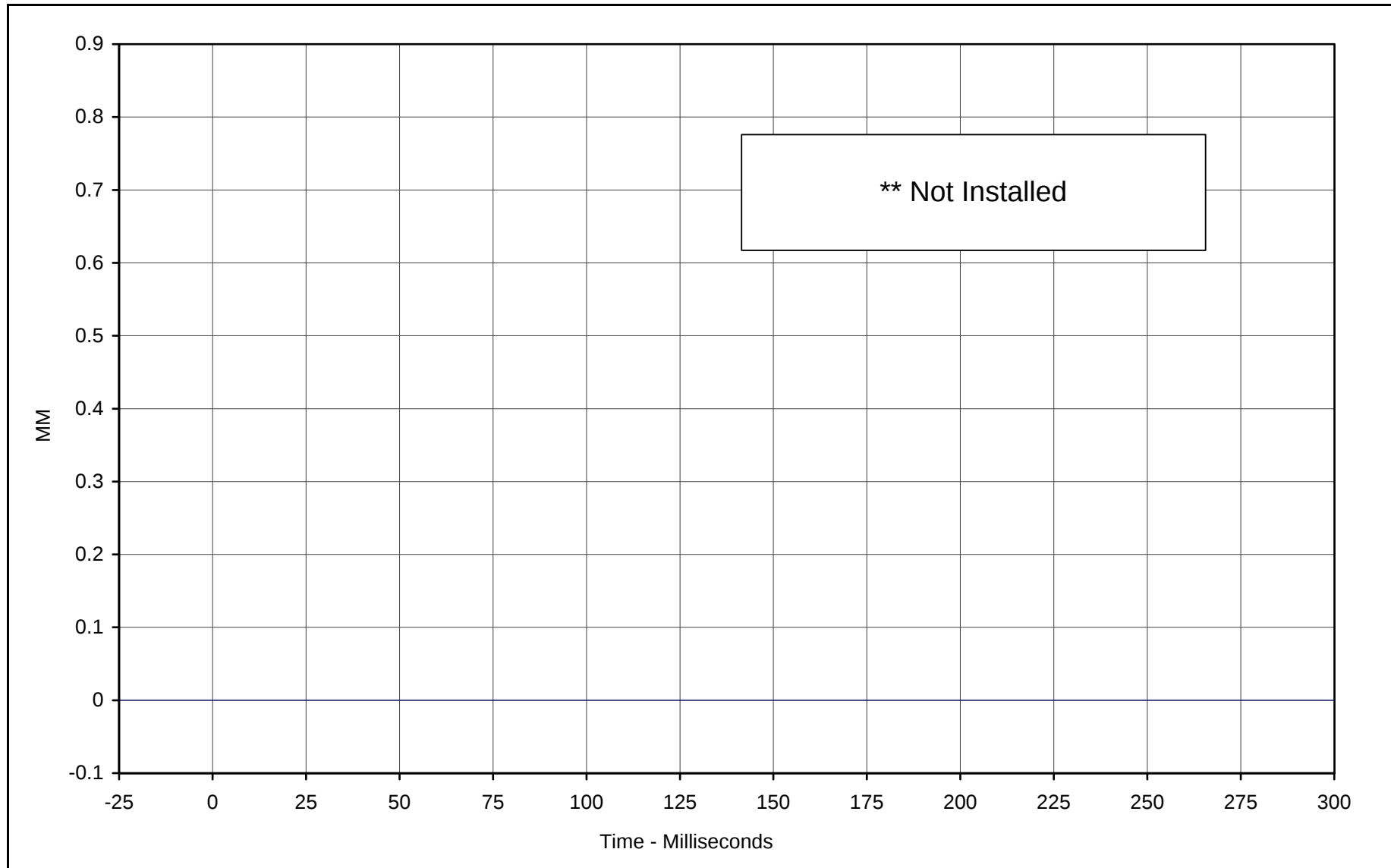
Curve Description: Passenger Shoulder Belt Pullout
Maximum Value: 294.3 at 87.0 Milliseconds
Minimum Value: -1.8 at 11.5 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-087

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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Curve Description: Passenger Shoulder Belt Elongation **

Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Maximum Value: 0.0 at 0.0 Milliseconds

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 60

Date of Test: 02/14/01

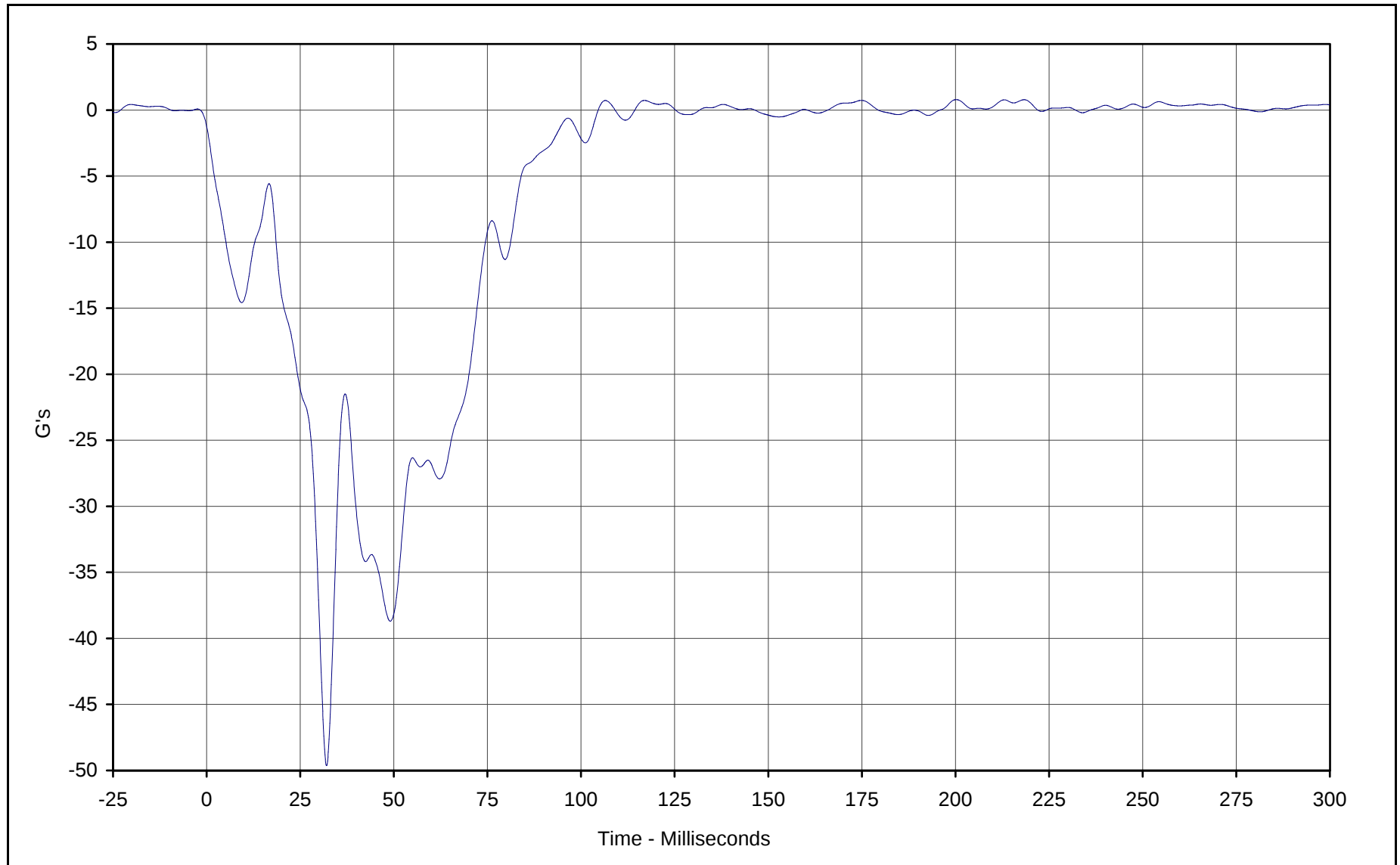
Curve Number: FIL-088

** Not installed



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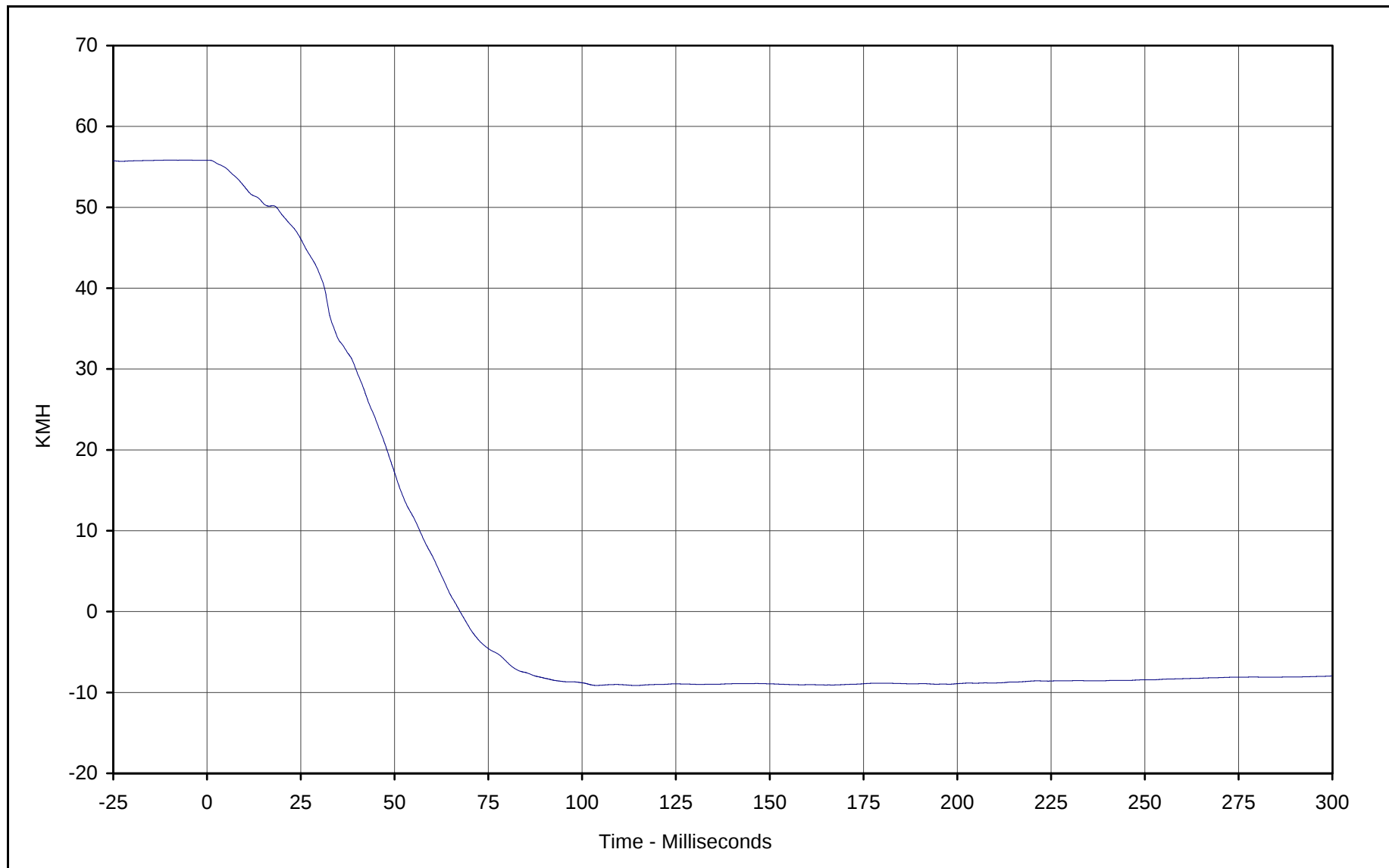
Curve Description: Vehicle Left Rear Primary
Maximum Value: 0.8 at 200.2 Milliseconds
Minimum Value: -49.6 at 32.0 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-089

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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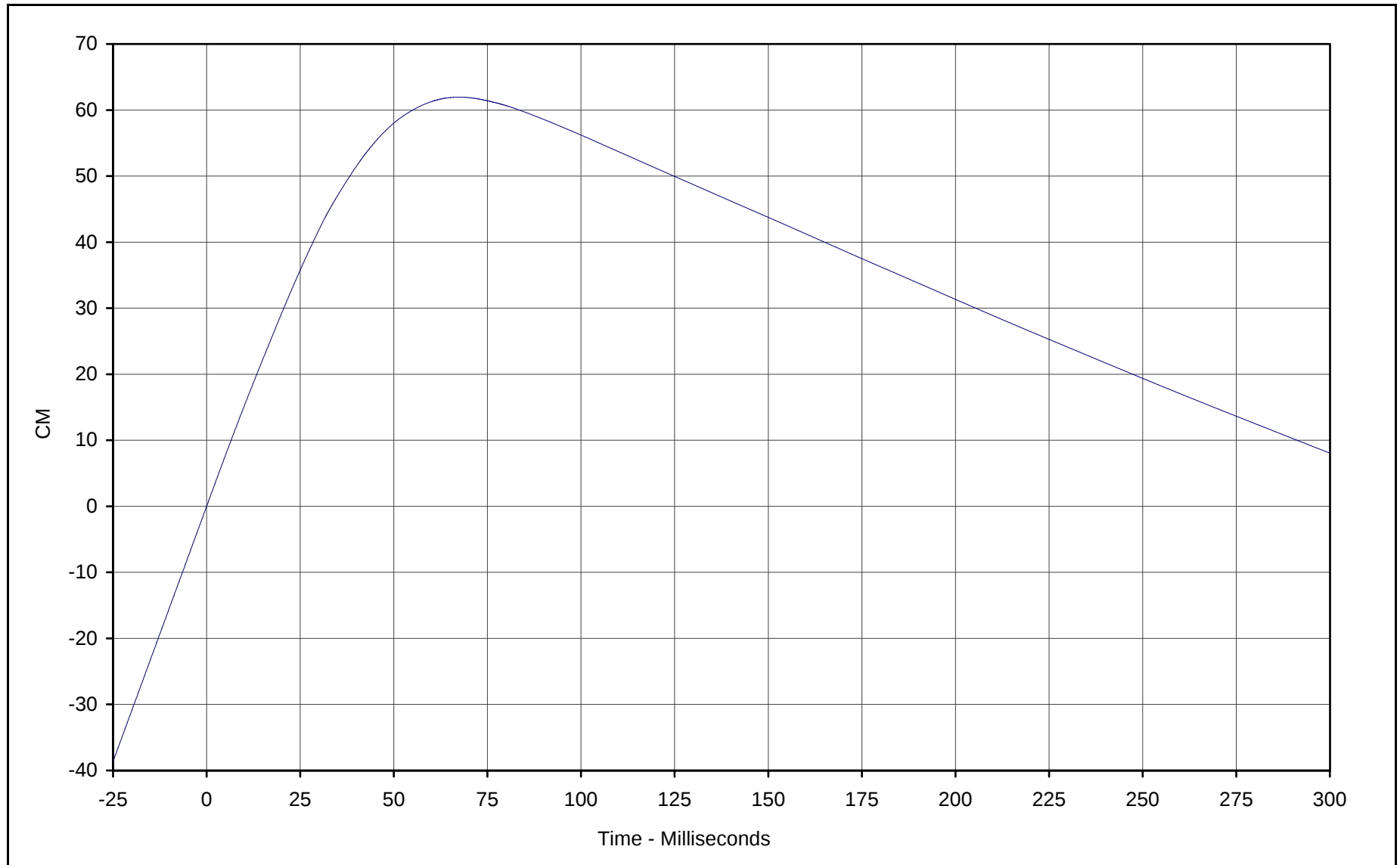
Curve Description: Vehicle Left Rear Primary Velocity
Maximum Value: 55.8 at 0.5 Milliseconds
Minimum Value: -9.1 at 114.3 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: IN1-089

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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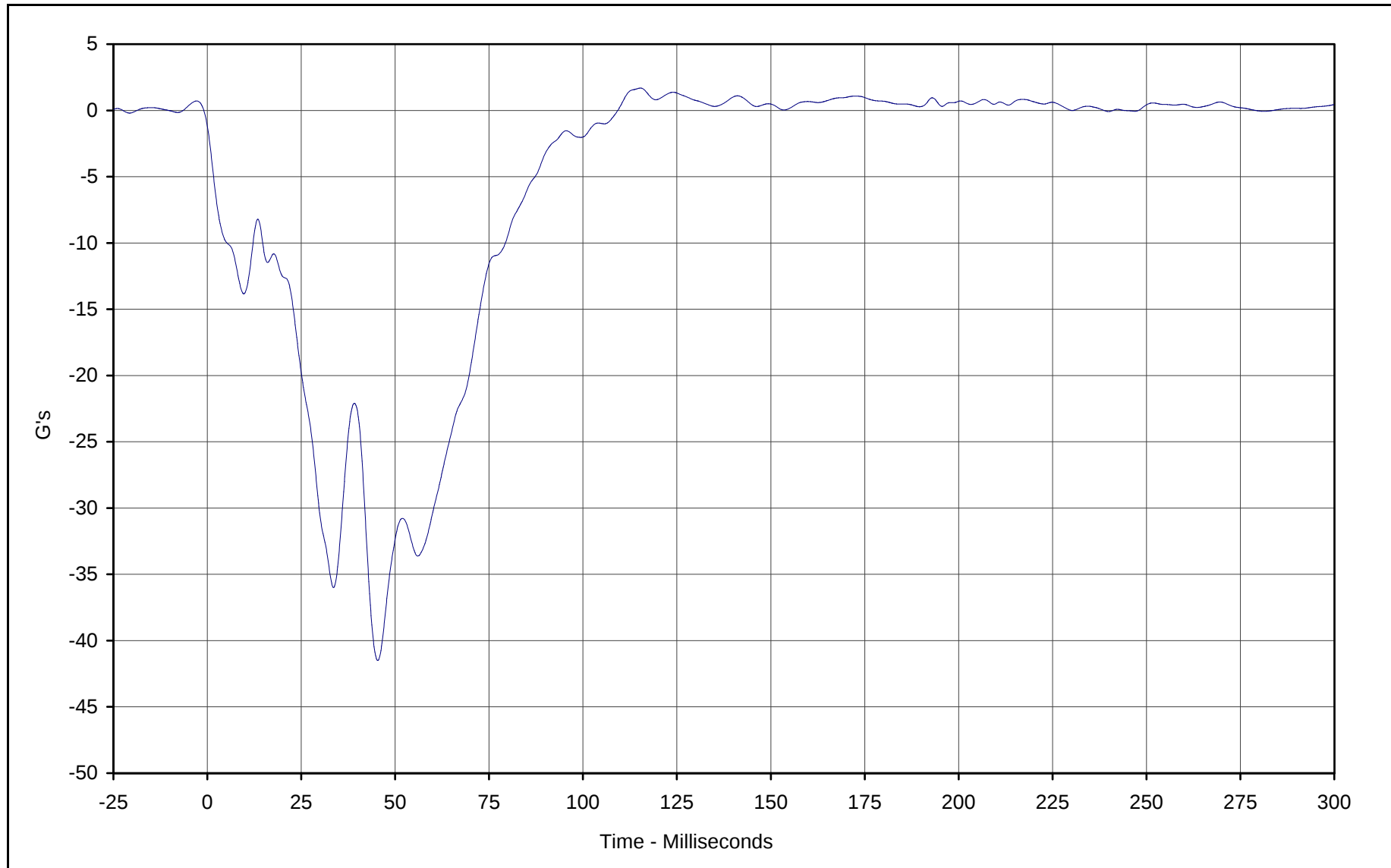


Curve Description: Vehicle Left Rear Primary Displ.
Maximum Value: 62.0 at 67.4 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: IN2-089

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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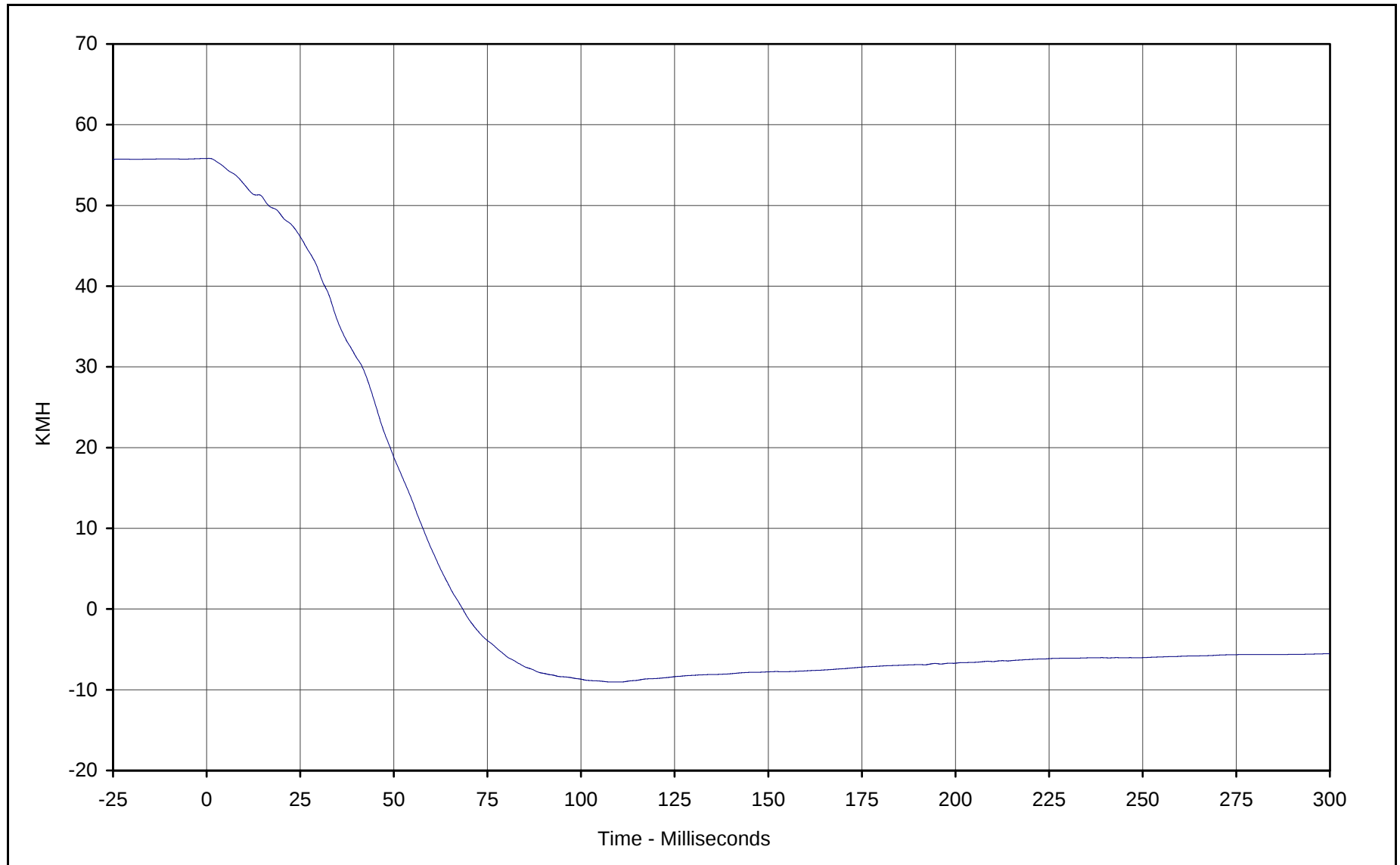


Curve Description: Vehicle Right Rear Primary
Maximum Value: 1.7 at 115.3 Milliseconds
Minimum Value: -41.5 at 45.4 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-090

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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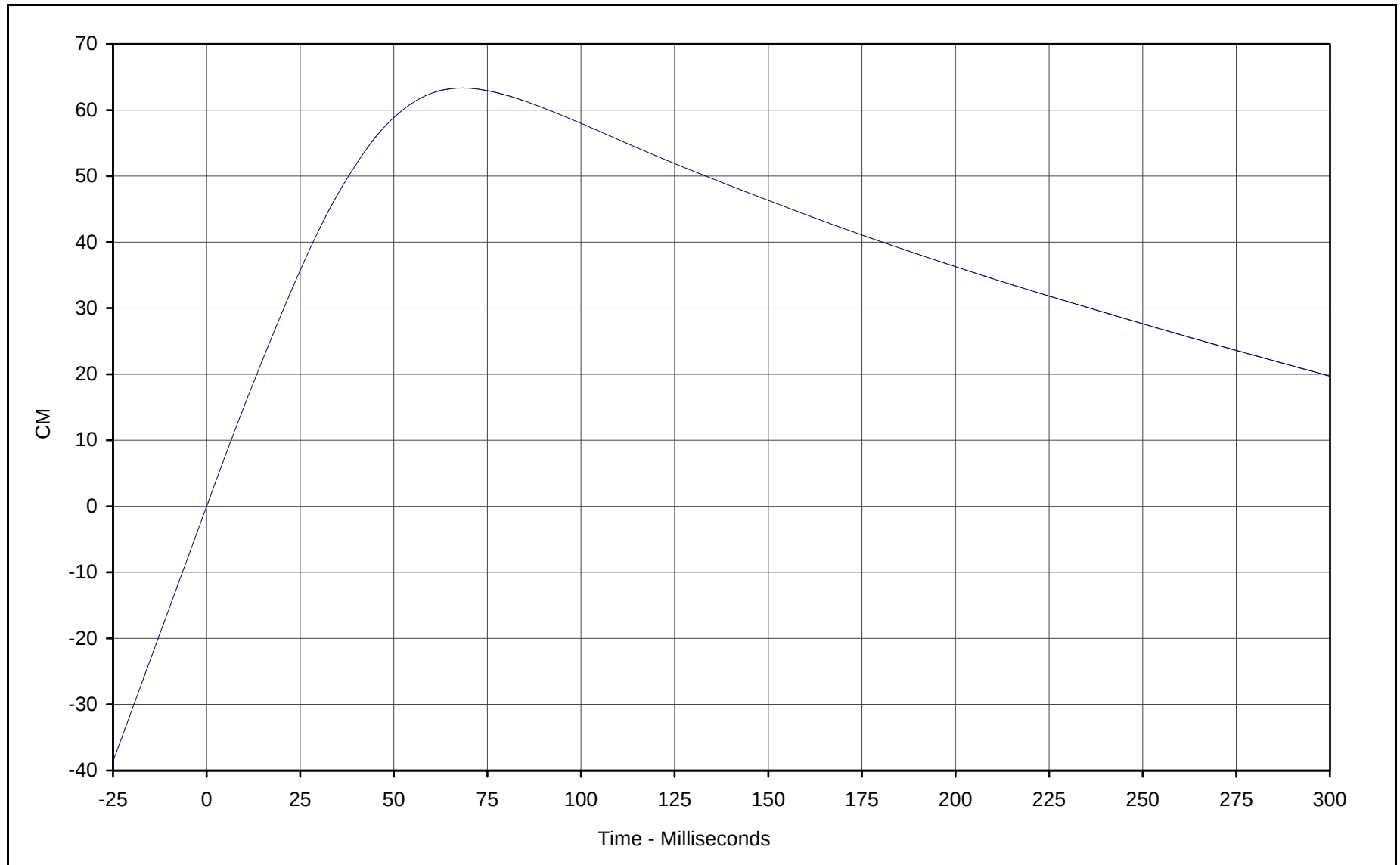
Curve Description: Vehicle Right Rear Primary Velocity
Maximum Value: 55.8 at 0.6 Milliseconds
Minimum Value: -9.0 at 110.4 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: IN1-090

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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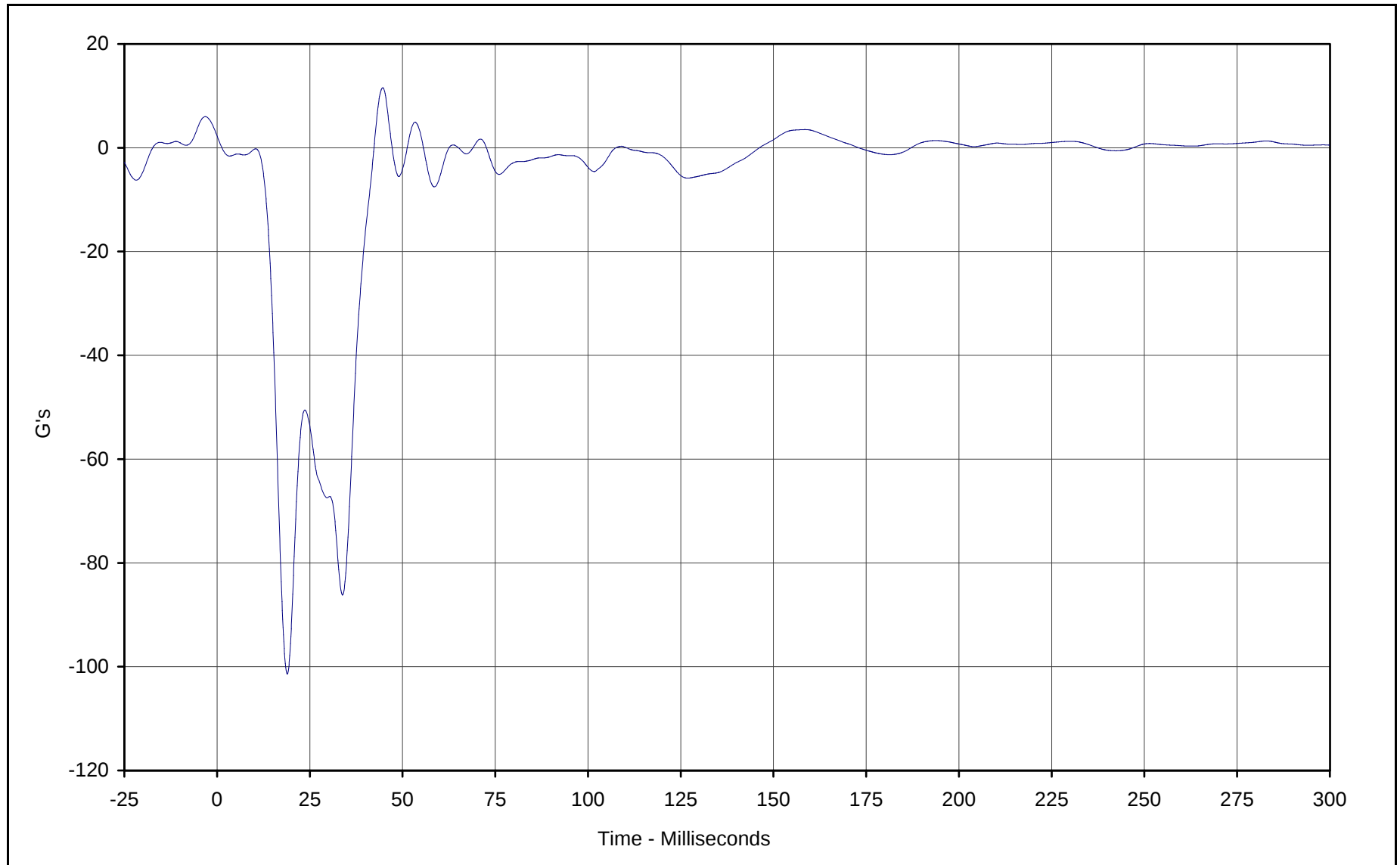
Curve Description: Vehicle Right Rear Primary Displ.
Maximum Value: 63.3 at 68.4 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: IN2-090

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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Curve Description: Vehicle Engine Top

Maximum Value: 11.6 at 44.7 Milliseconds

Minimum Value: -101.4 at 18.9 Milliseconds

SAE Filter Class: 60

Date of Test: 02/14/01

Curve Number: FIL-091

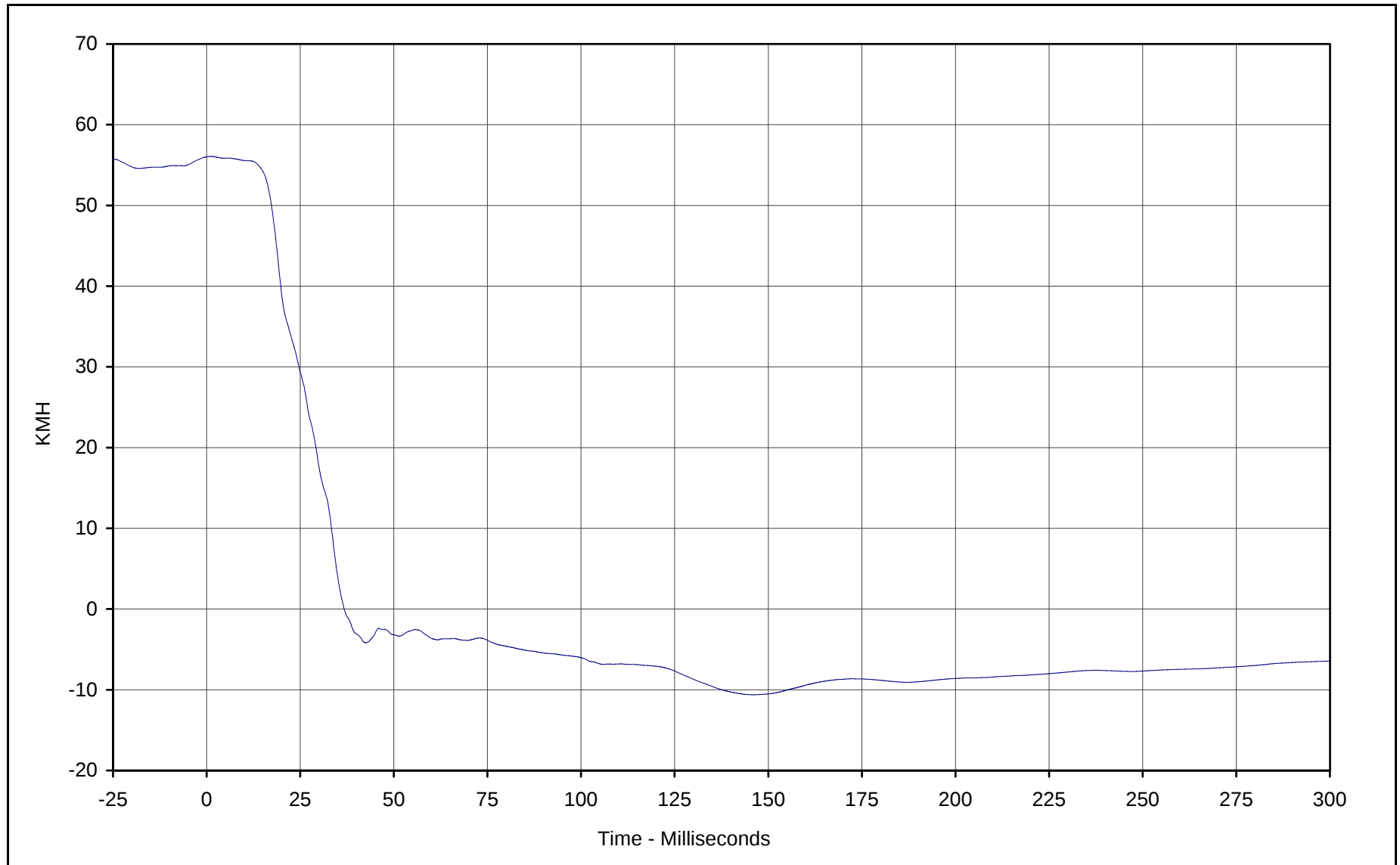
Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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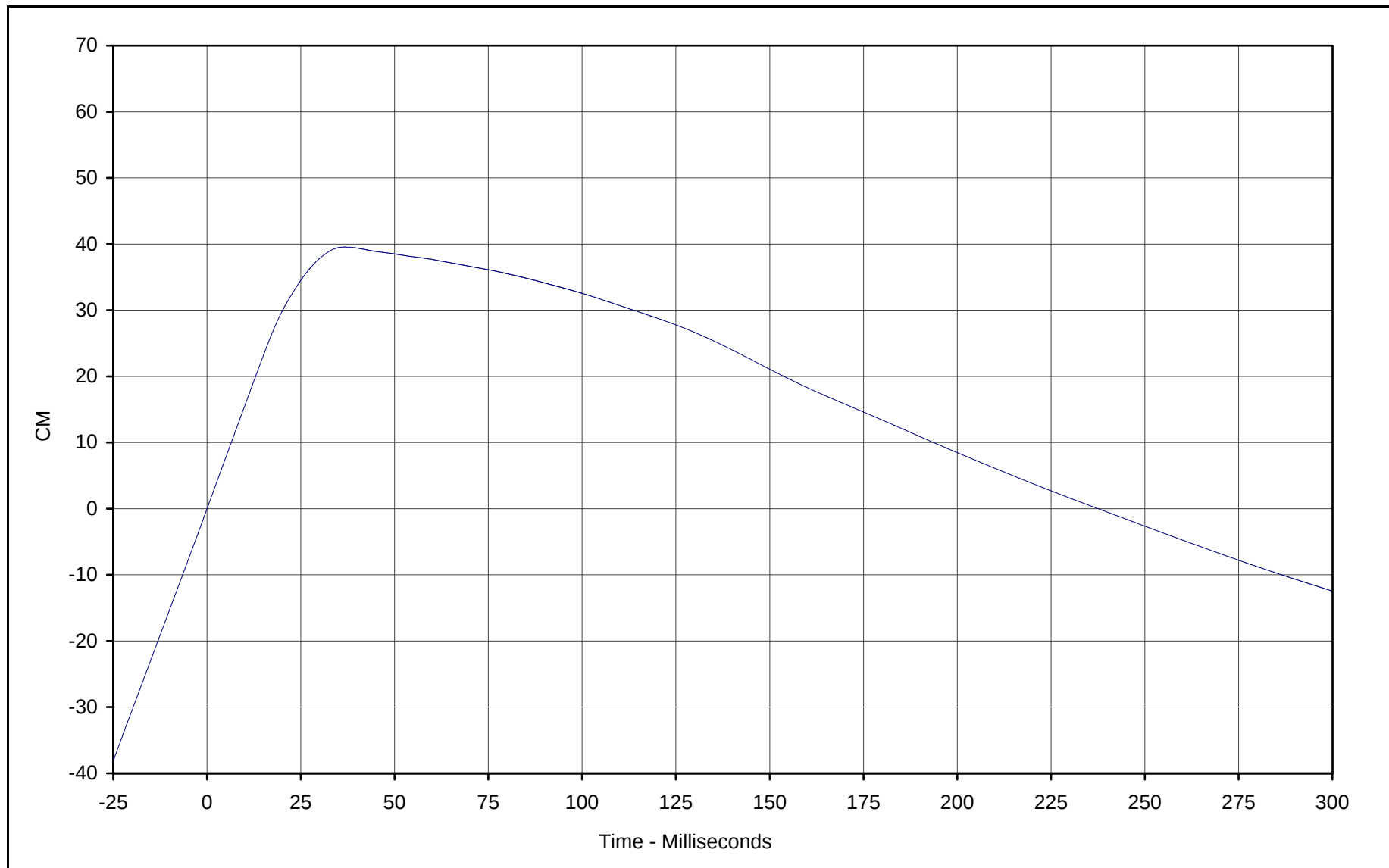
Curve Description: Vehicle Engine Top Velocity
Maximum Value: 56.1 at 1.3 Milliseconds
Minimum Value: -10.6 at 146.1 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: IN1-091

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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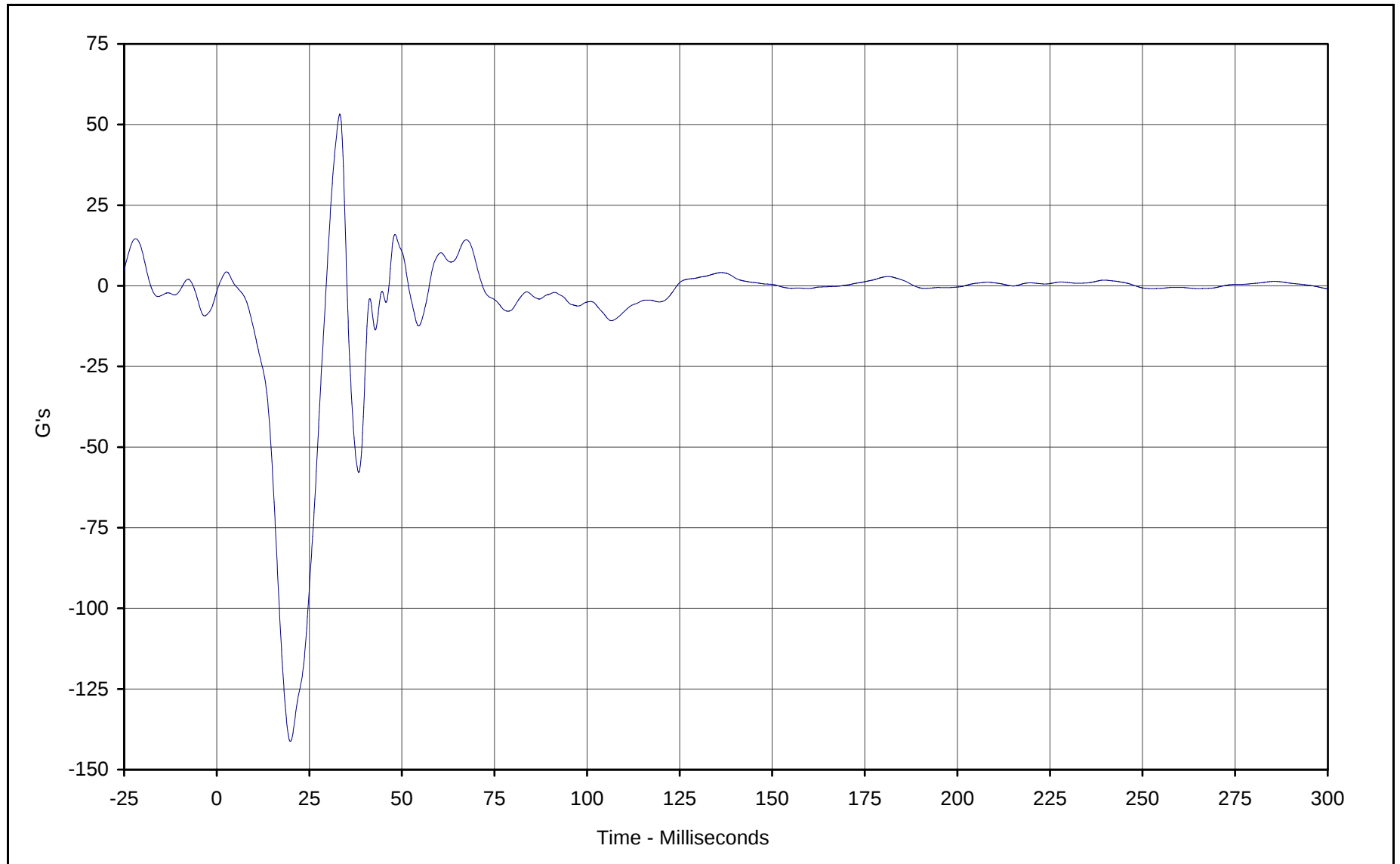
Curve Description: Vehicle Engine Top Displ.
Maximum Value: 39.5 at 36.8 Milliseconds
Minimum Value: -12.4 at 299.9 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: IN2-091

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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B-132



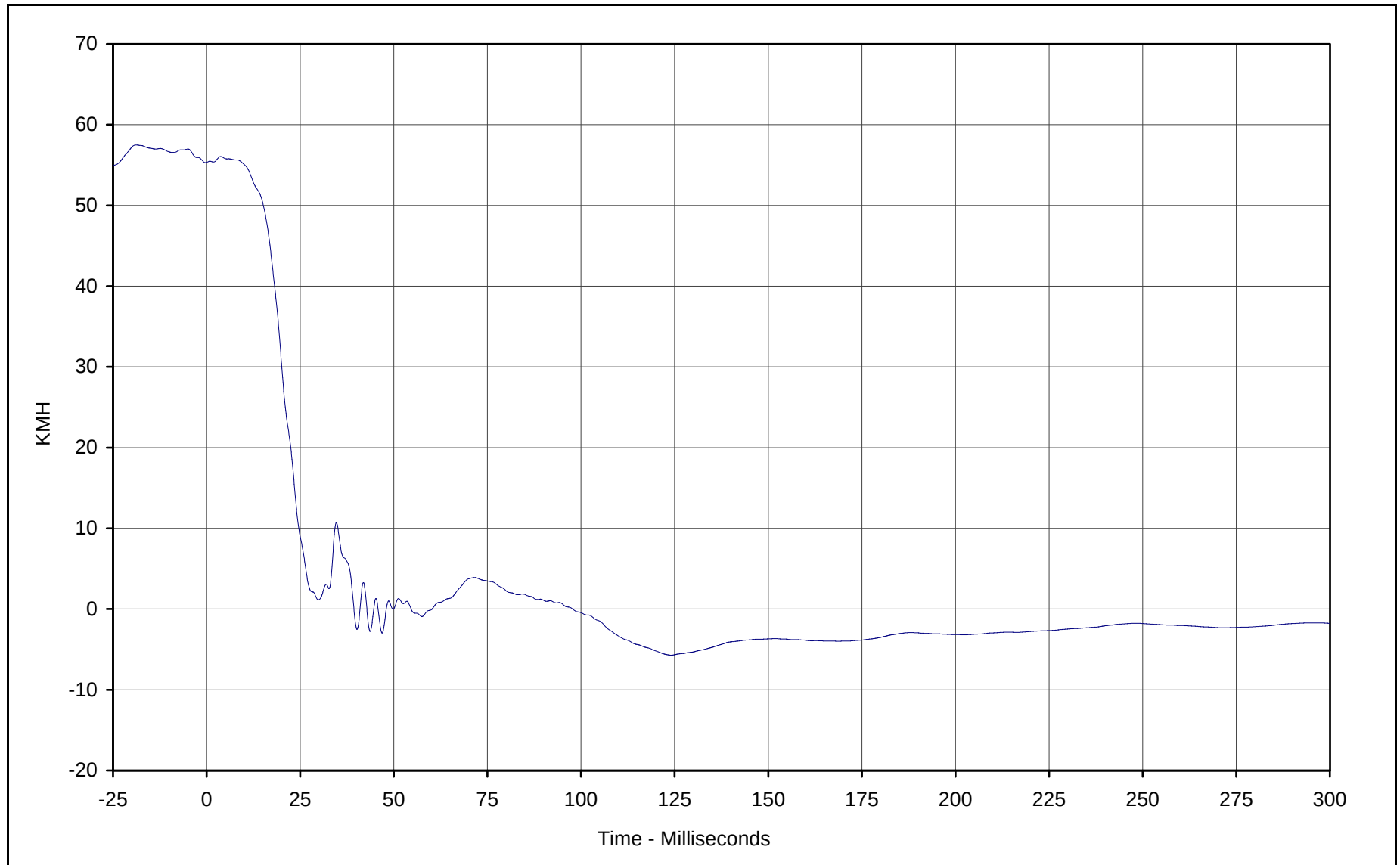
Curve Description: Vehicle Engine Bottom
Maximum Value: 53.2 at 33.2 Milliseconds
Minimum Value: -141.3 at 19.9 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-092

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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B-133



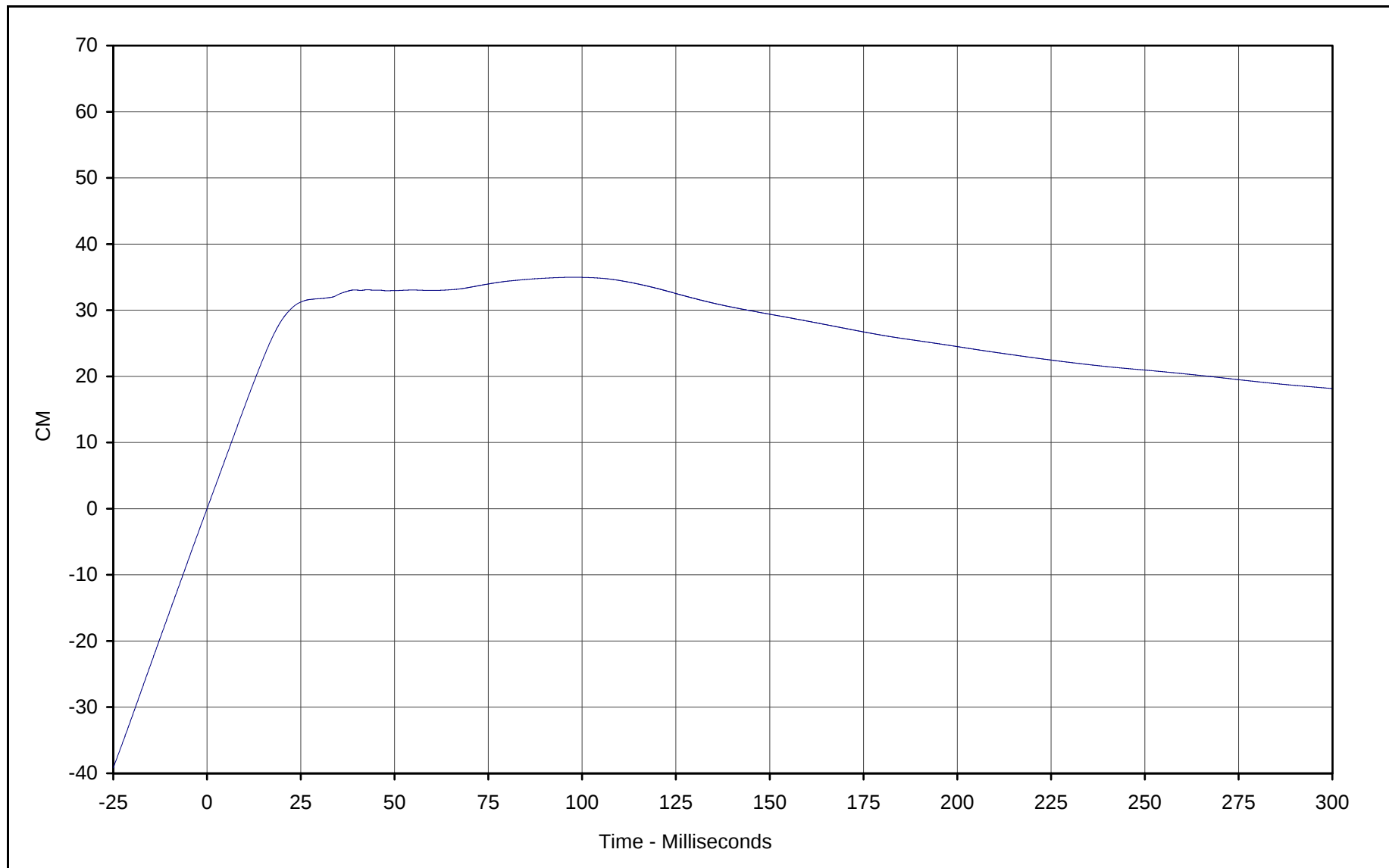
Curve Description: Vehicle Engine Bottom Velocity
Maximum Value: 56.1 at 3.7 Milliseconds
Minimum Value: -5.7 at 124.1 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: IN1-092

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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B-134



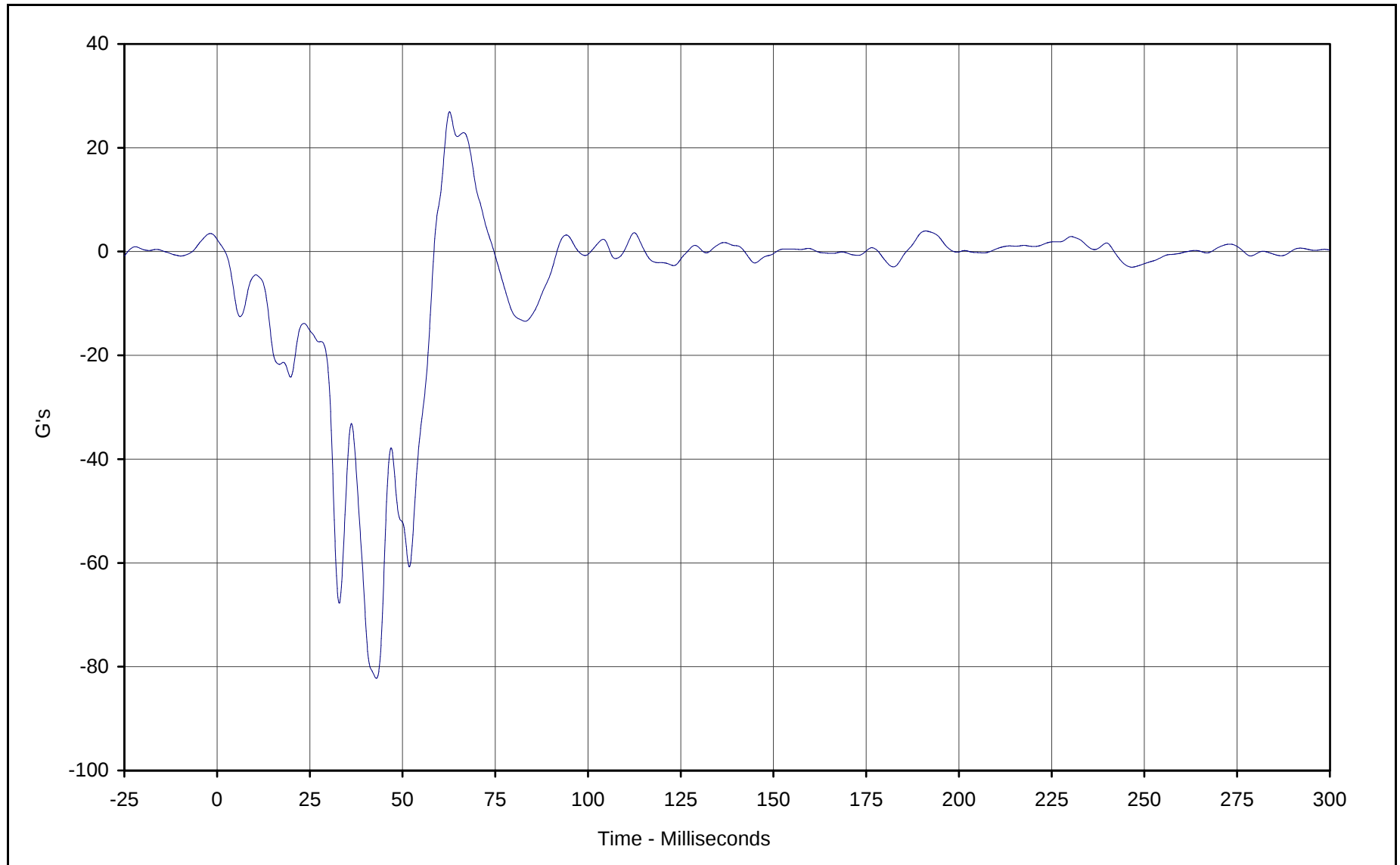
Curve Description: Vehicle Engine Bottom Displ.
Maximum Value: 35.0 at 97.8 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: IN2-092

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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B-135

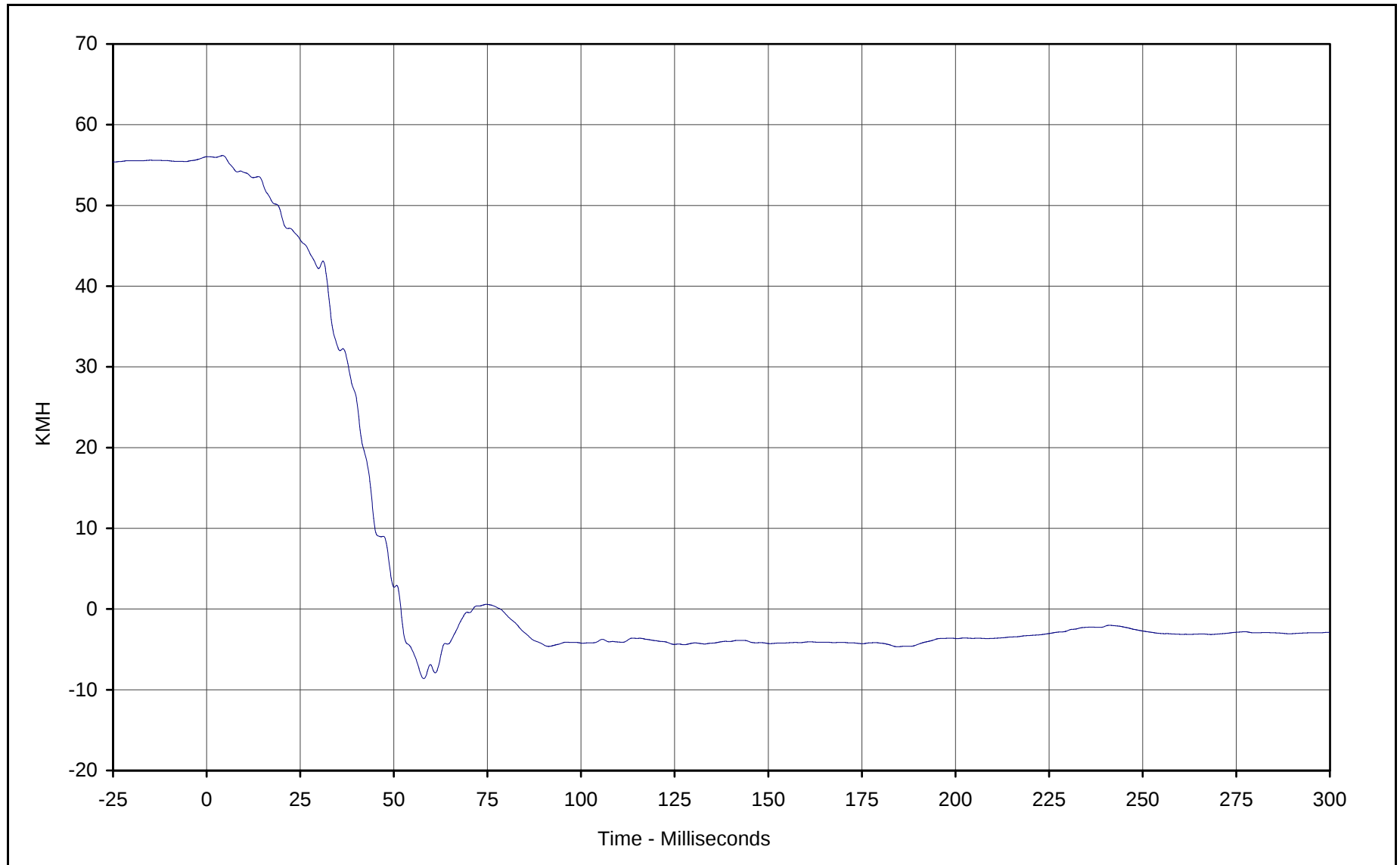


Curve Description: Vehicle Left Brake Caliper
Maximum Value: 26.9 at 62.7 Milliseconds
Minimum Value: -82.2 at 42.9 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-093

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



KAR21001-11



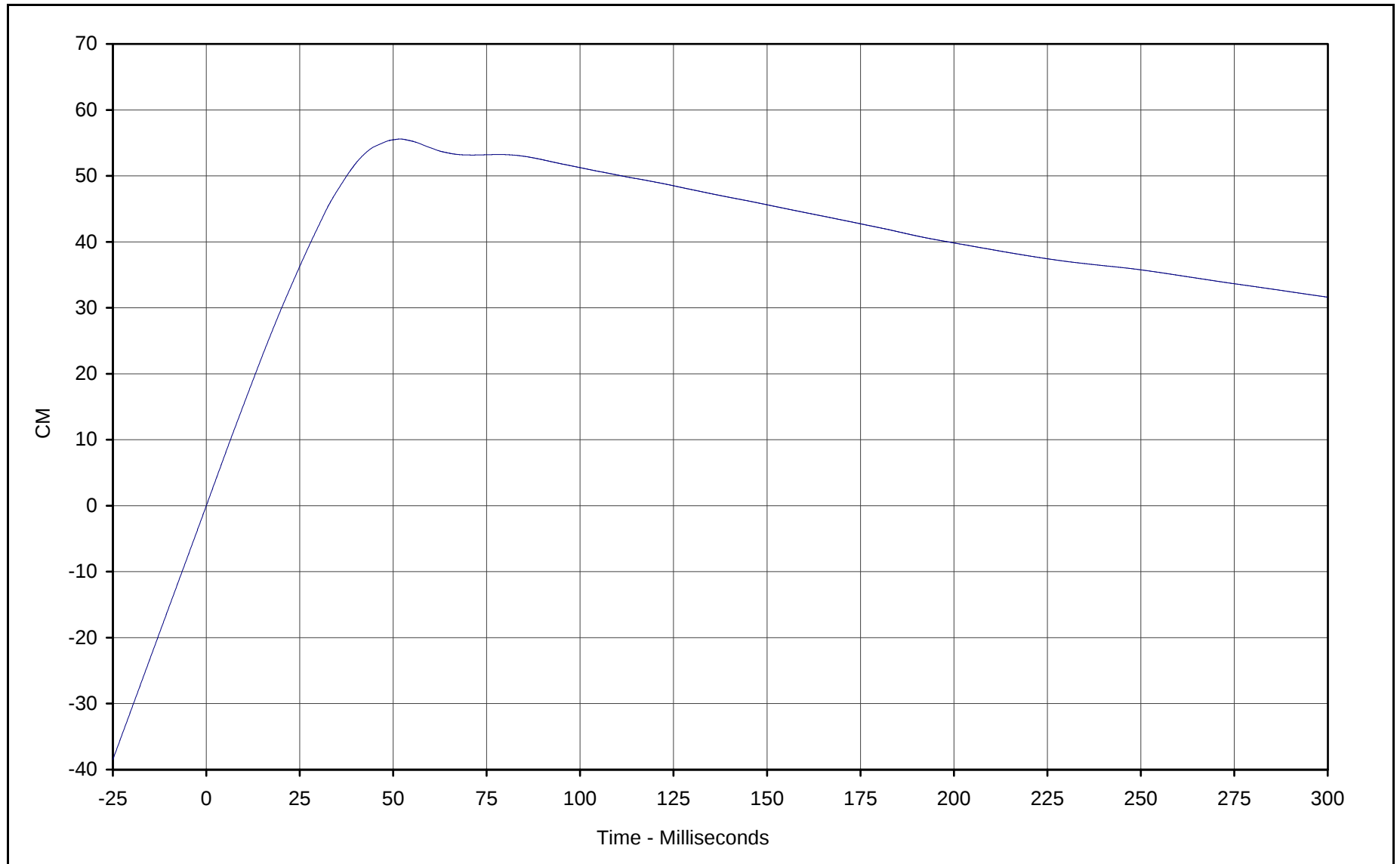
Curve Description: Vehicle Left Brake Caliper Velocity
Maximum Value: 56.2 at 4.3 Milliseconds
Minimum Value: -8.6 at 58.0 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: IN1-093

Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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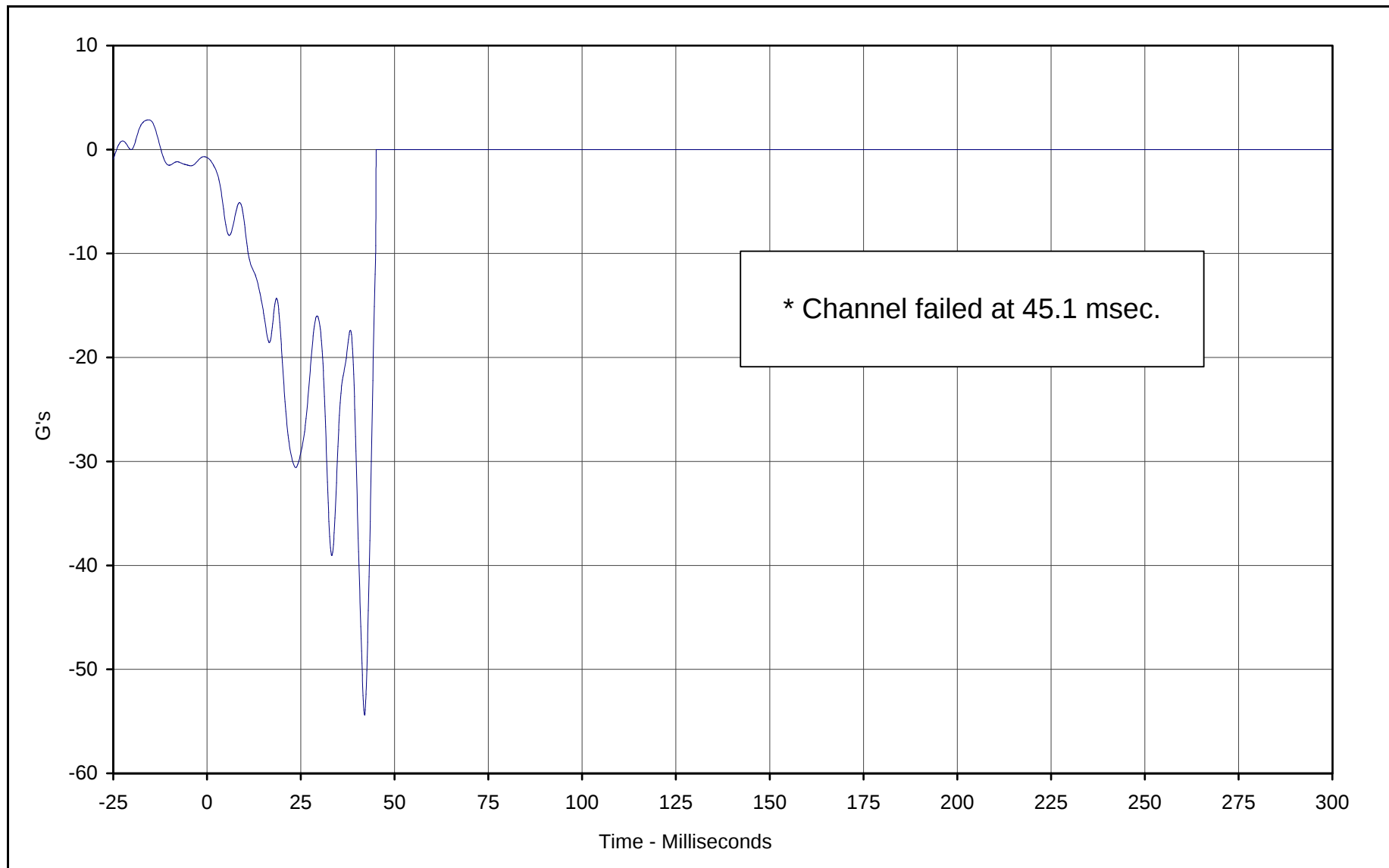


Curve Description: Vehicle Left Brake Caliper Displ.
Maximum Value: 55.6 at 51.9 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: IN2-093

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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Curve Description: Vehicle Right Brake Caliper *

Maximum Value: 0.0 at 45.1 Milliseconds

Minimum Value: -54.4 at 42.0 Milliseconds

SAE Filter Class: 60

Date of Test: 02/14/01

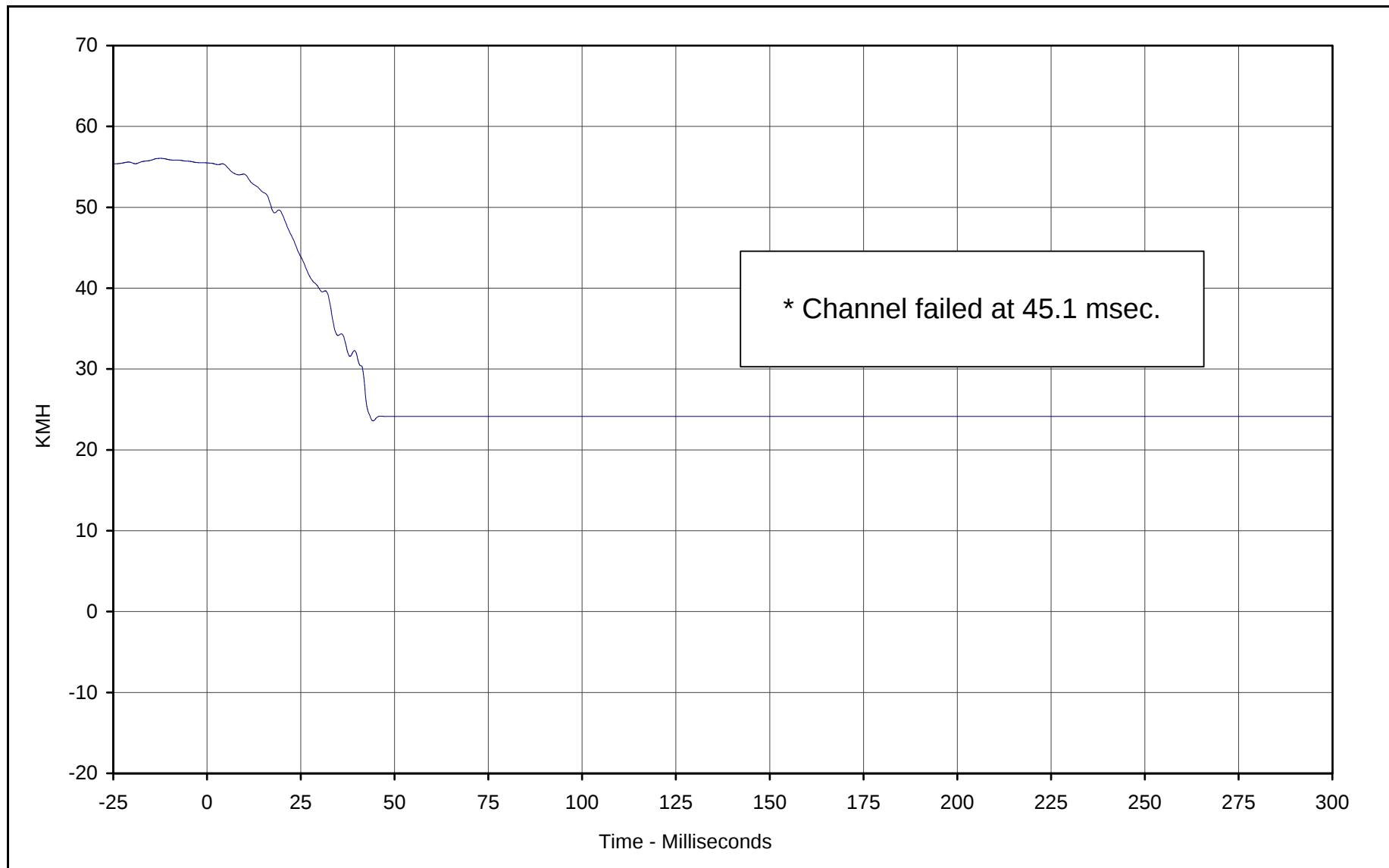
Curve Number: FIL-094

Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan

* Channel failed at 45.1 msec.





Curve Description: Vehicle Right Brake Caliper Velocity *

Maximum Value: 55.5 at 0.0 Milliseconds

Minimum Value: 23.6 at 44.3 Milliseconds

SAE Filter Class: 180

Date of Test: 02/14/01

Curve Number: IN1-094

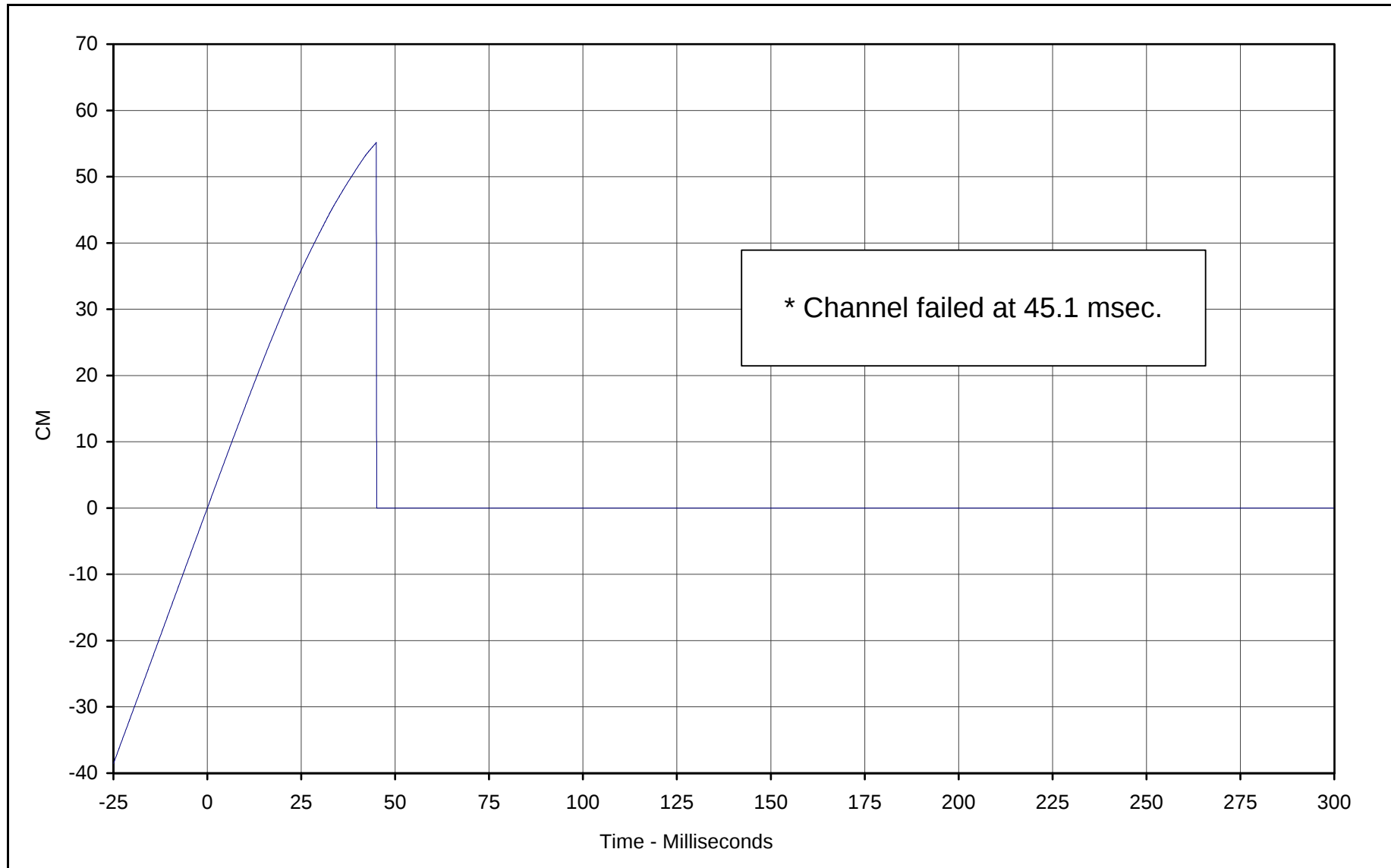
Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan

* Channel failed at 45.1 msec.



B-140



Curve Description: Vehicle Right Brake Caliper Displ. *

Maximum Value: 55.2 at 45.0 Milliseconds

Minimum Value: 0.0 at 45.1 Milliseconds

SAE Filter Class: 180

Date of Test: 02/14/01

Curve Number: IN2-094

Test Program: 2001 NHTSA 35mph NCAP No.: M15400

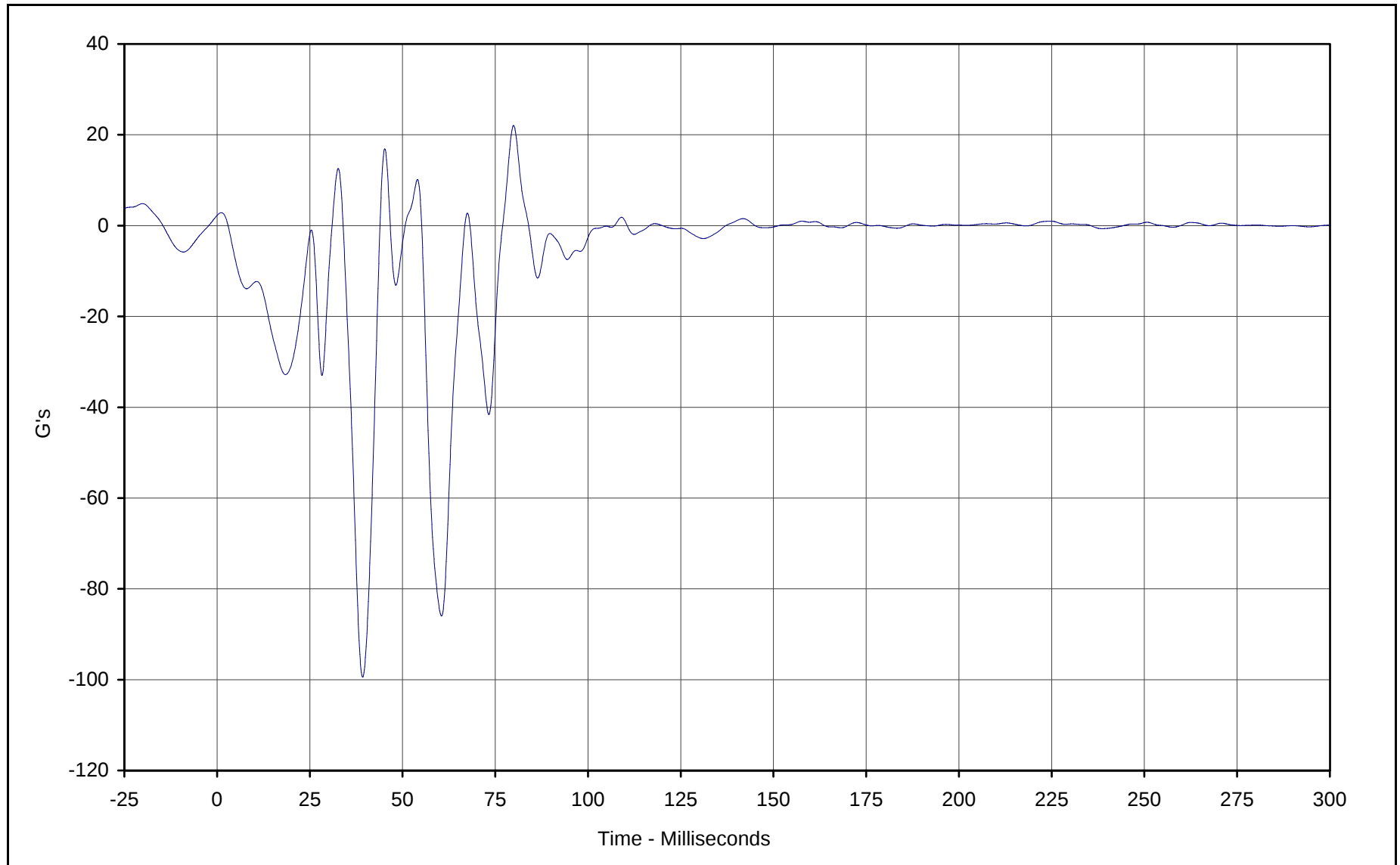
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan

* Channel failed at 45.1 msec.



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B-141



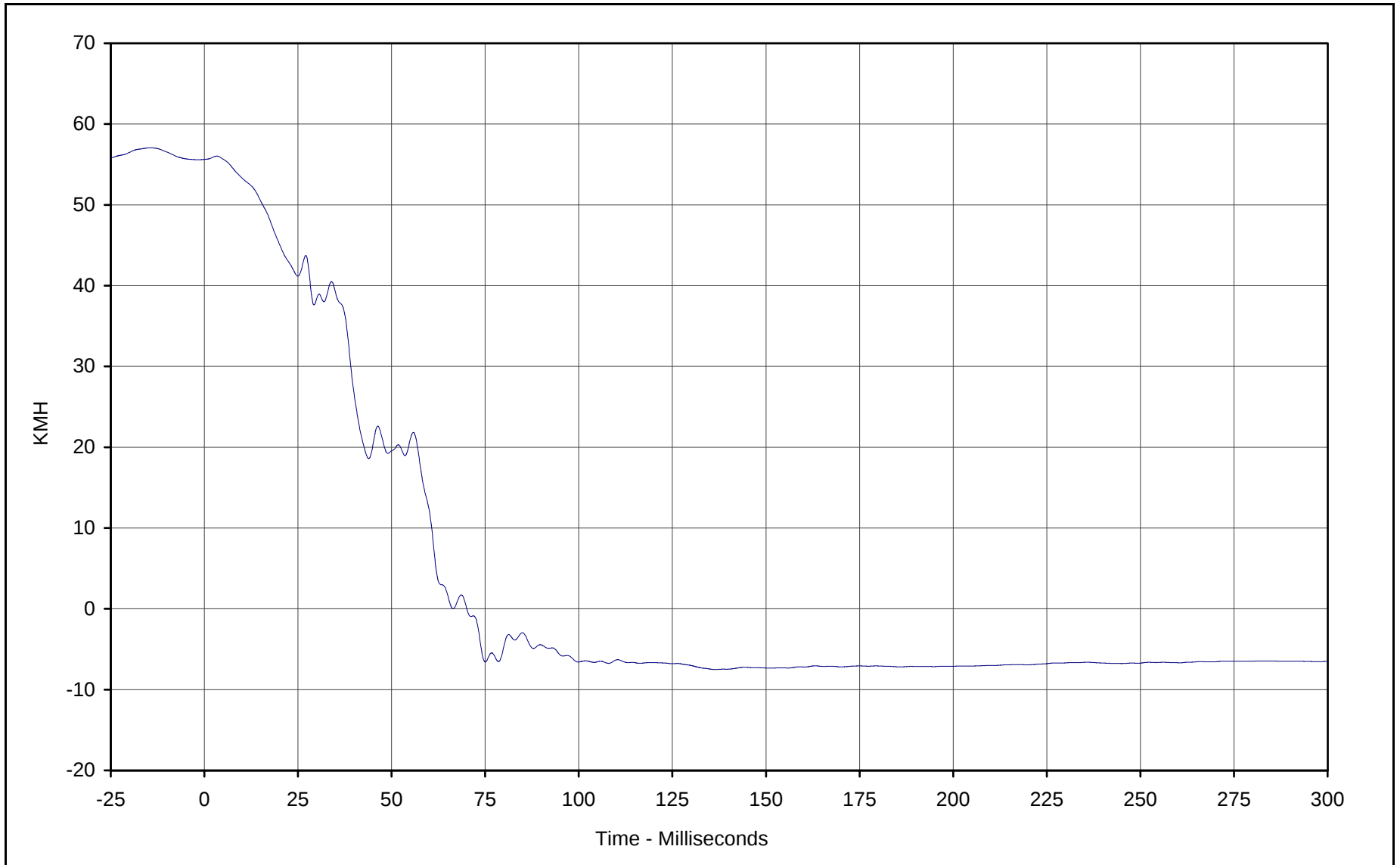
Curve Description: Vehicle Instrument Panel
Maximum Value: 22.0 at 79.9 Milliseconds
Minimum Value: -99.5 at 39.3 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-095

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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B-142



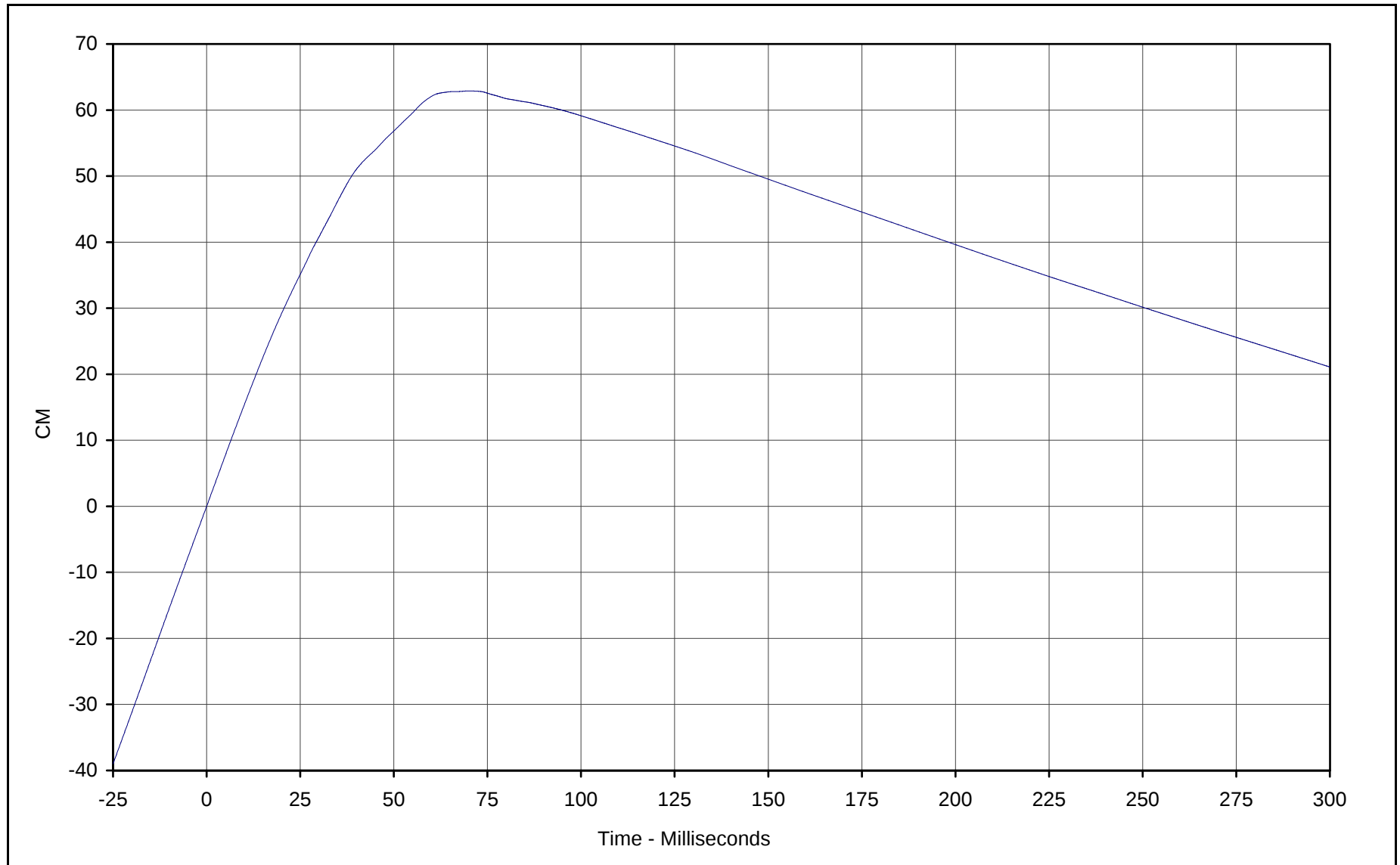
Curve Description: Vehicle Instrument Panel Velocity
Maximum Value: 56.0 at 3.3 Milliseconds
Minimum Value: -7.5 at 136.4 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: IN1-095

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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B-143



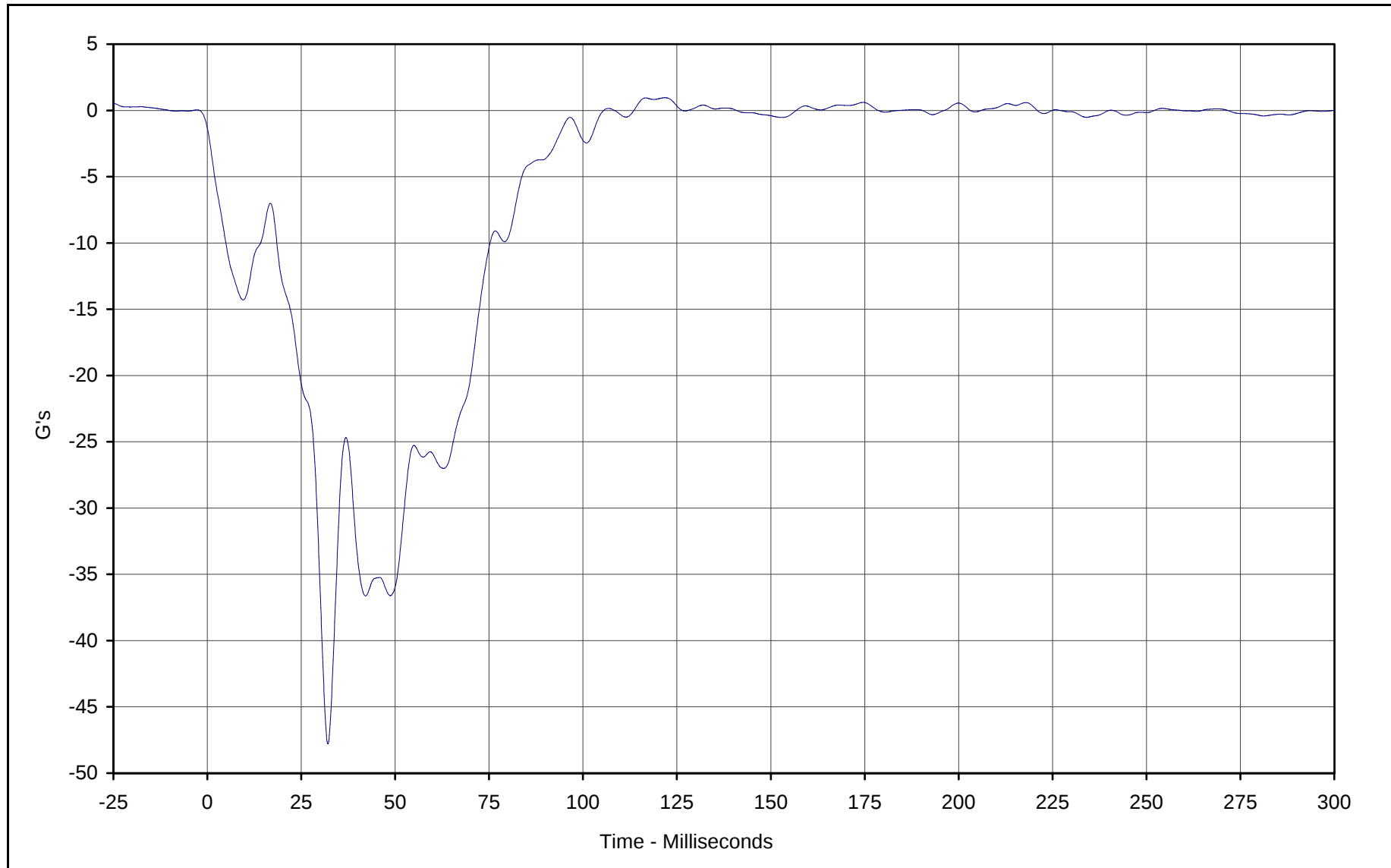
Curve Description: Vehicle Instrument Panel Displ.
Maximum Value: 62.9 at 70.1 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 02/14/01
Curve Number: IN2-095

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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B-144



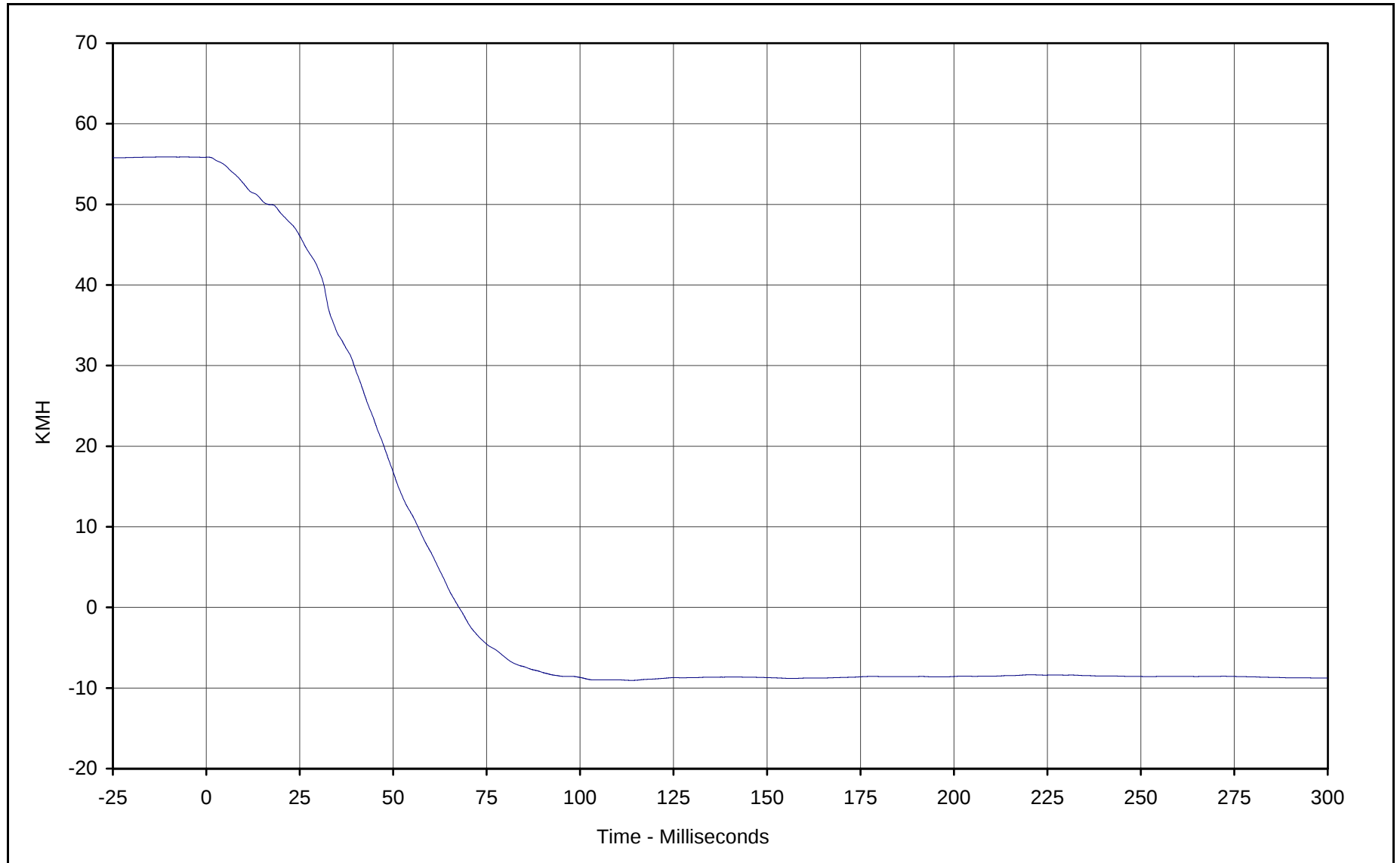
Curve Description: Vehicle Left Rear Redundant
Maximum Value: 1.0 at 121.8 Milliseconds
Minimum Value: -47.8 at 32.1 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-096

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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Curve Description: Vehicle Left Rear Redundant Velocity

Maximum Value: 55.9 at 0.5 Milliseconds

Minimum Value: -9.1 at 113.8 Milliseconds

SAE Filter Class: 180

Date of Test: 02/14/01

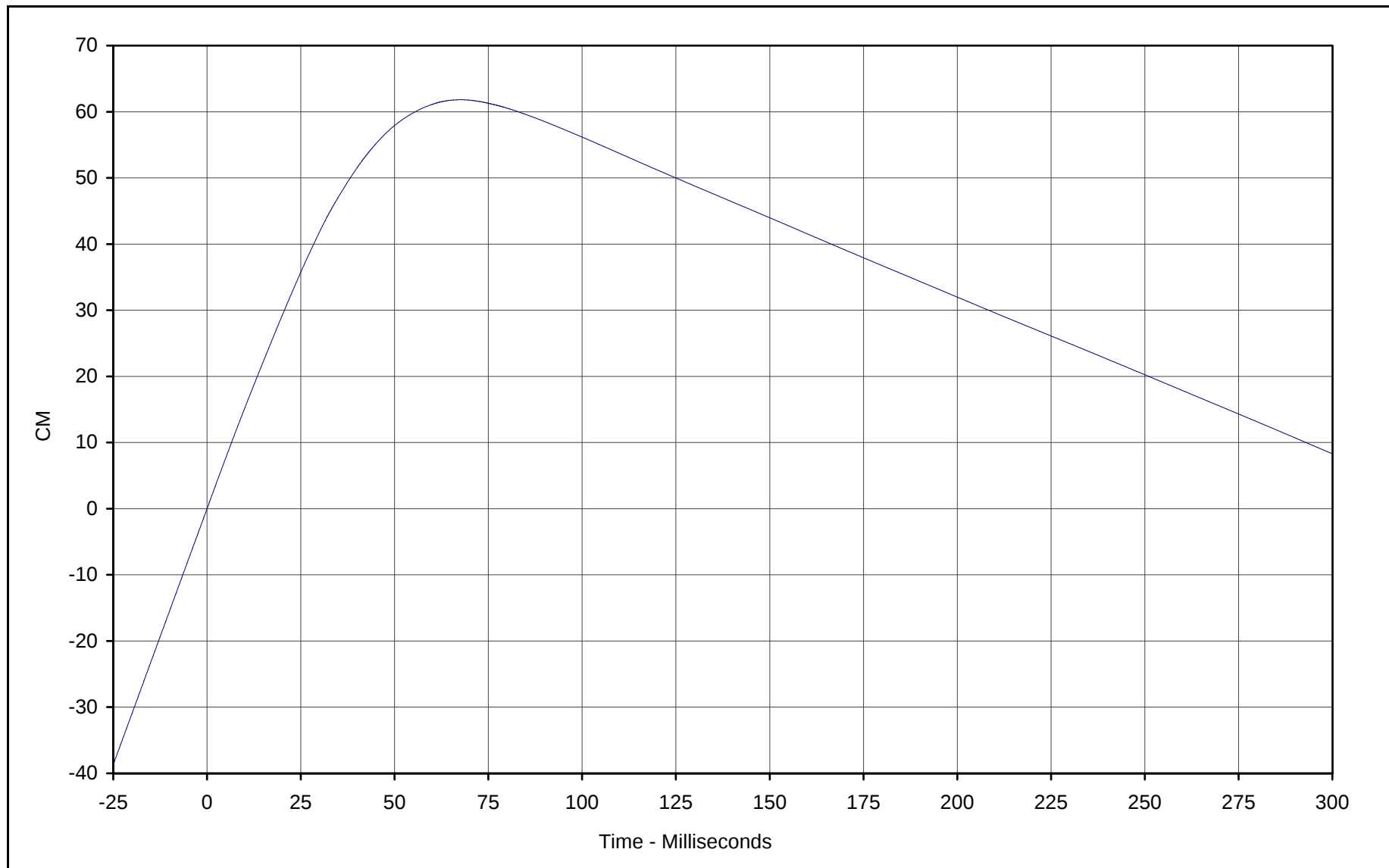
Curve Number: IN1-096

Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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Curve Description: Vehicle Left Rear Redundant Displ.

Maximum Value: 61.8 at 67.6 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 02/14/01

Curve Number: IN2-096

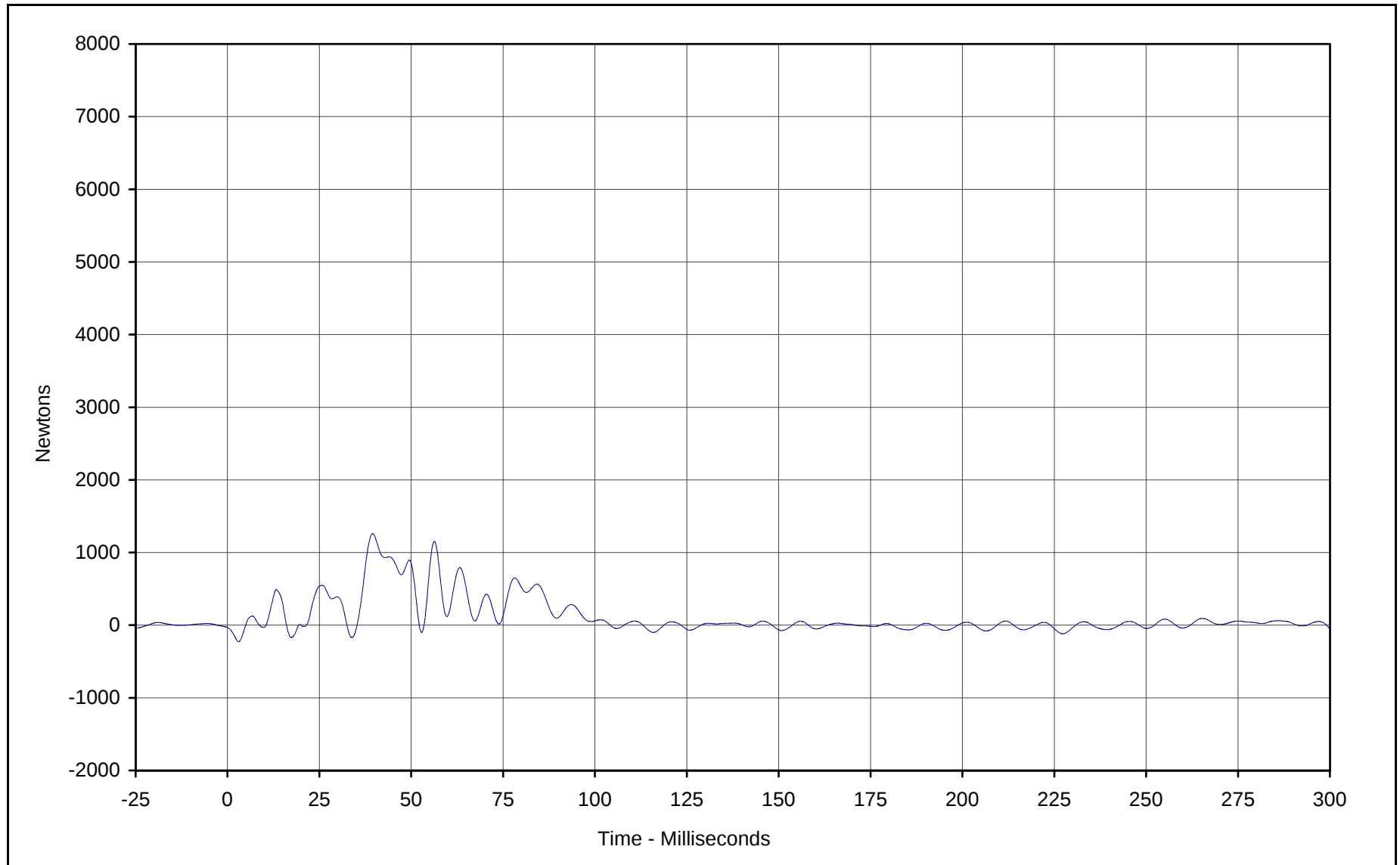
Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



APPENDIX C
LOAD CELL BARRIER INFORMATION

C-1



Curve Description: Barrier Force A2

Maximum Value: 1259.7 at 39.5 Milliseconds

Minimum Value: -227.6 at 3.0 Milliseconds

SAE Filter Class: 60

Date of Test: 02/14/01

Curve Number: FIL-099

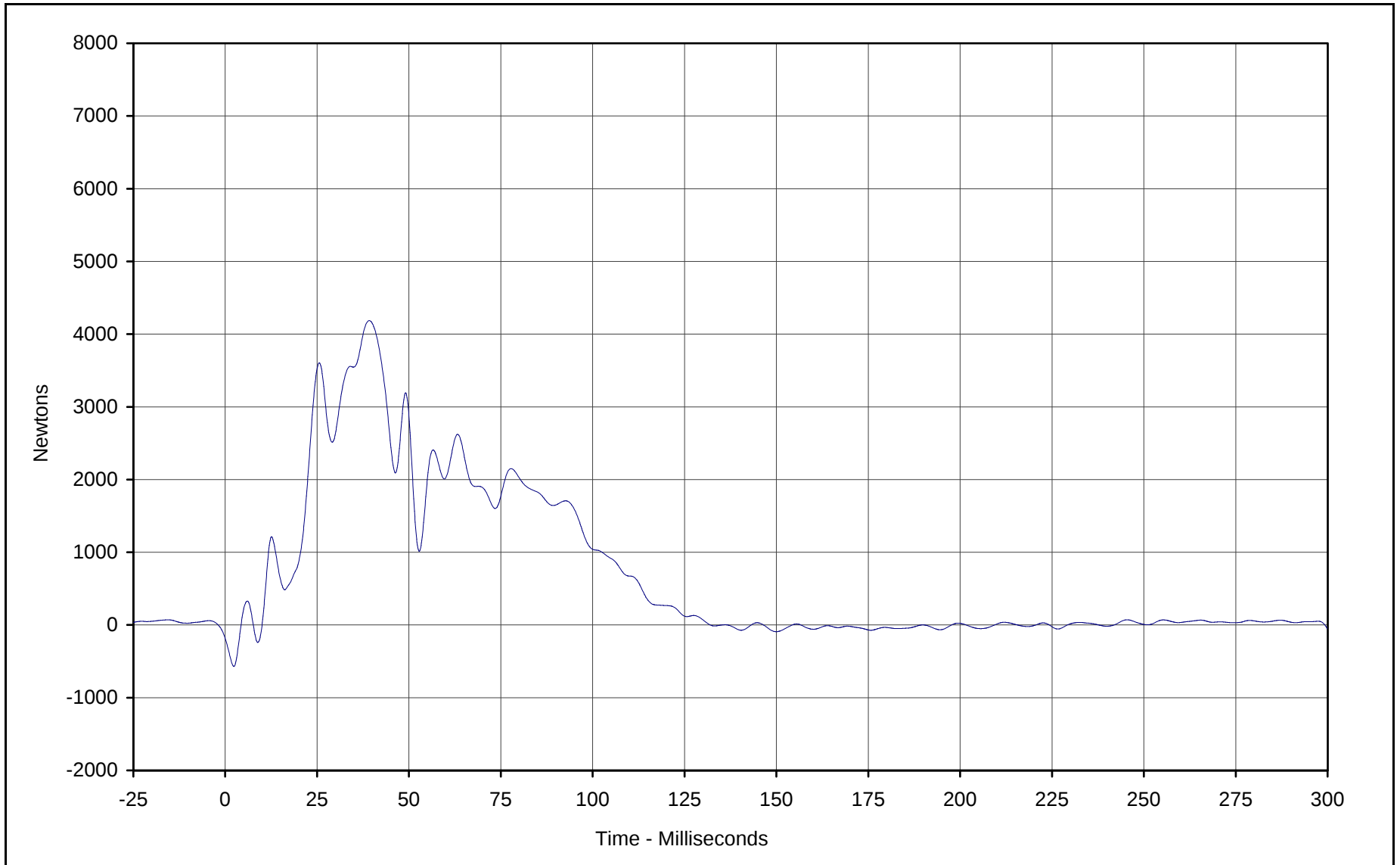
Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



KAR21001-11

C-2



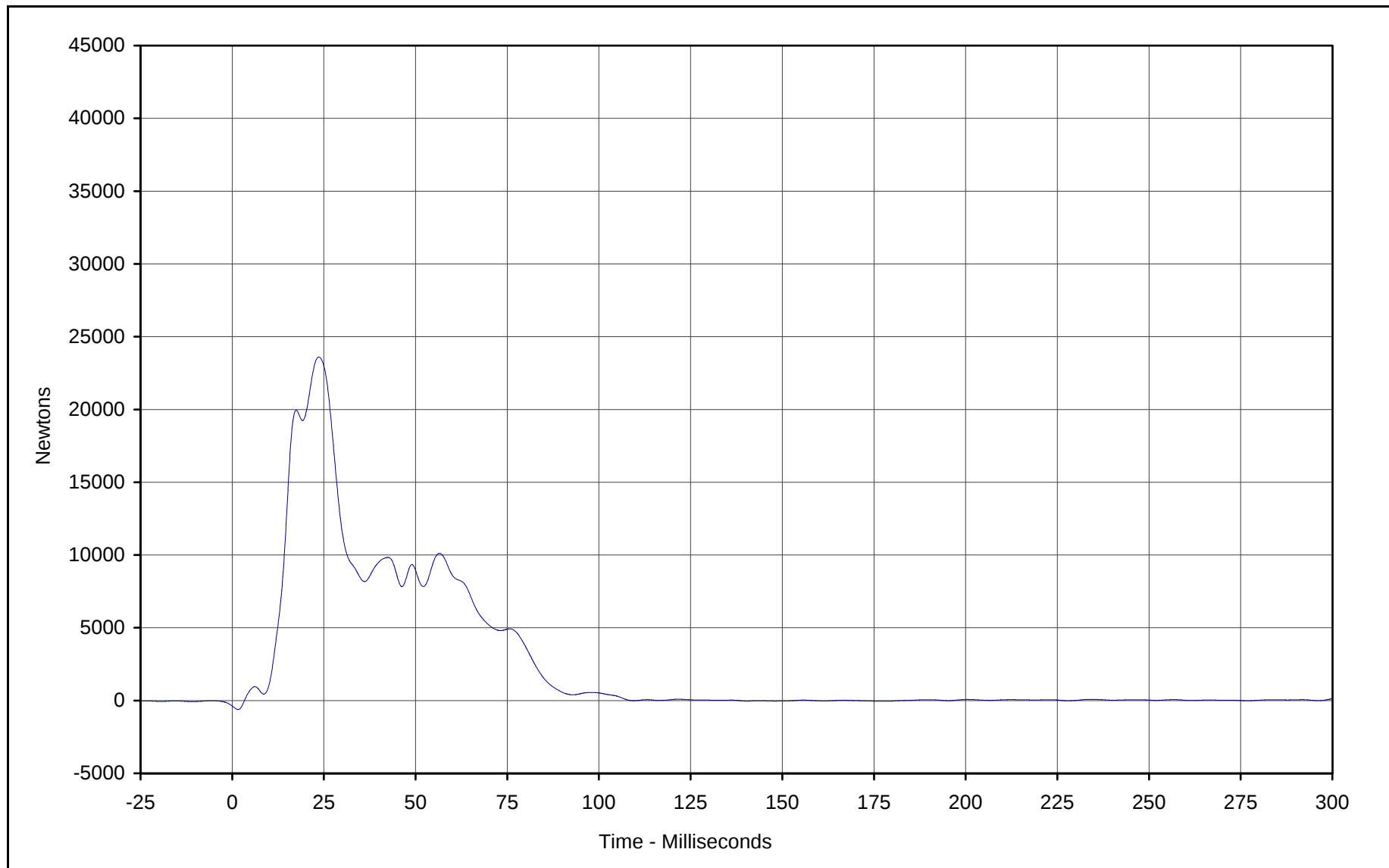
Curve Description: Barrier Force A3
Maximum Value: 4185.9 at 39.2 Milliseconds
Minimum Value: -570.5 at 2.4 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-100

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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C-3



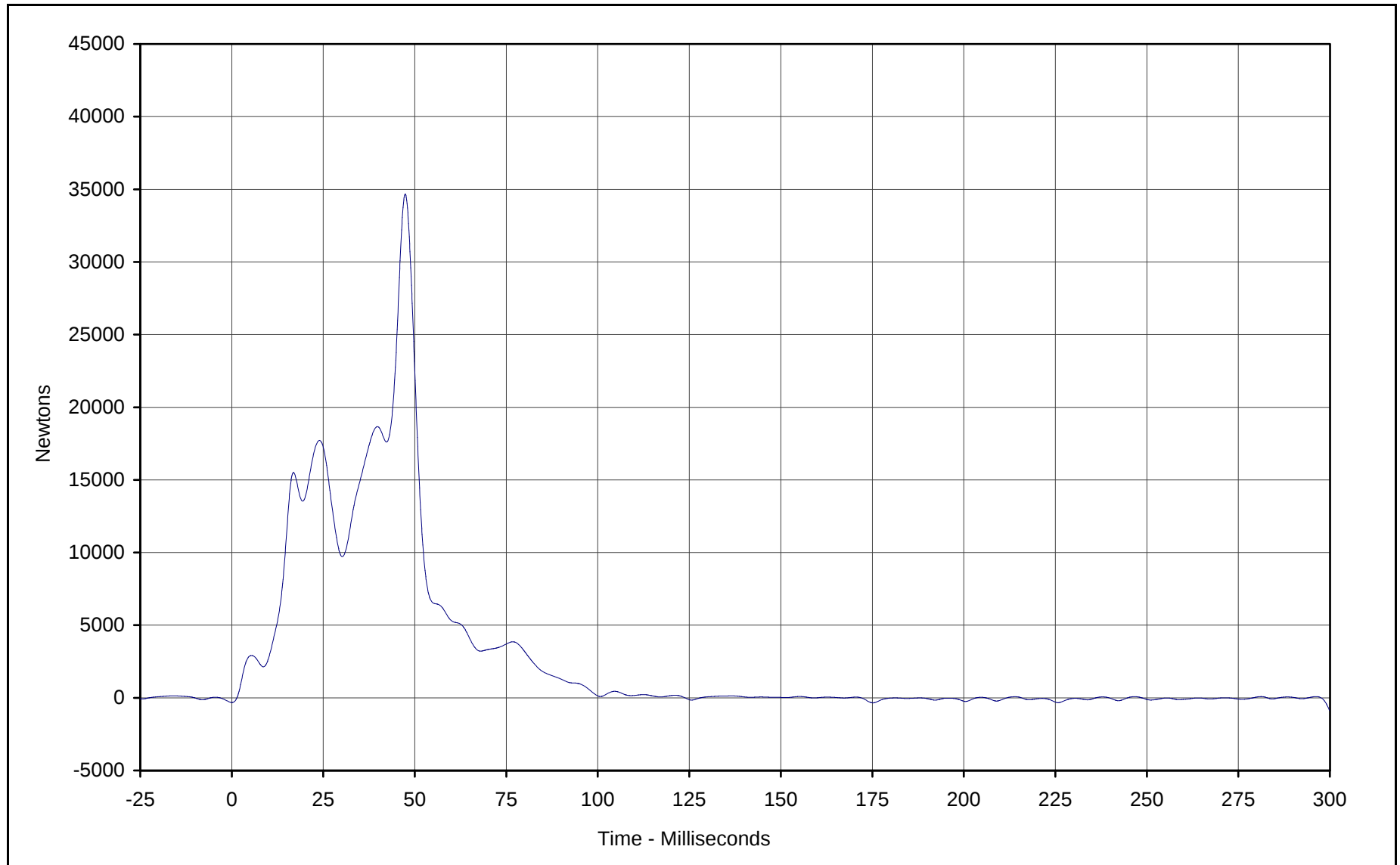
Curve Description: Barrier Force A4
Maximum Value: 23604.7 at 23.6 Milliseconds
Minimum Value: -612.7 at 1.6 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-101

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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C-4



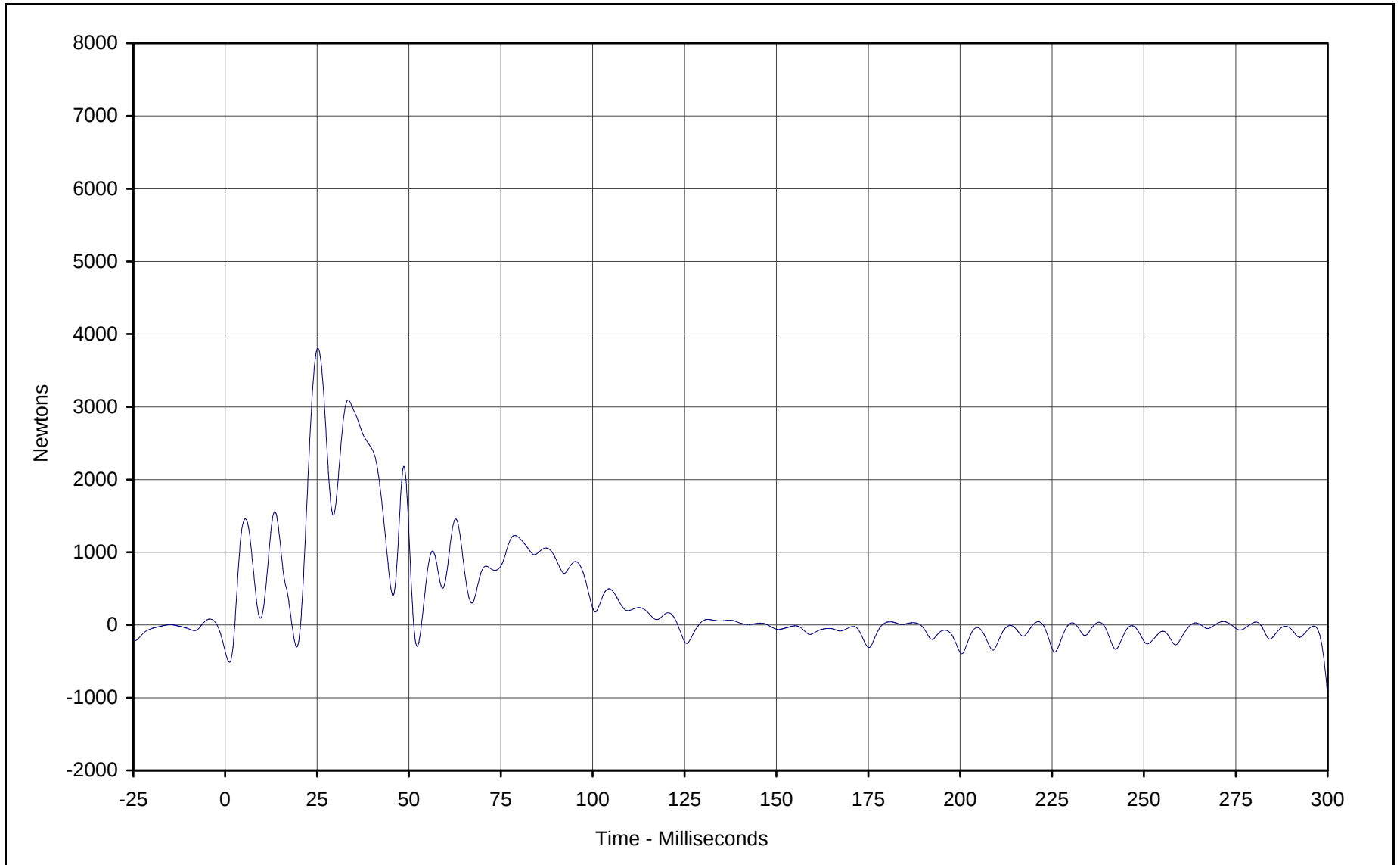
Curve Description: Barrier Force A5
Maximum Value: 34669.4 at 47.4 Milliseconds
Minimum Value: -863.1 at 299.9 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-102

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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C-5



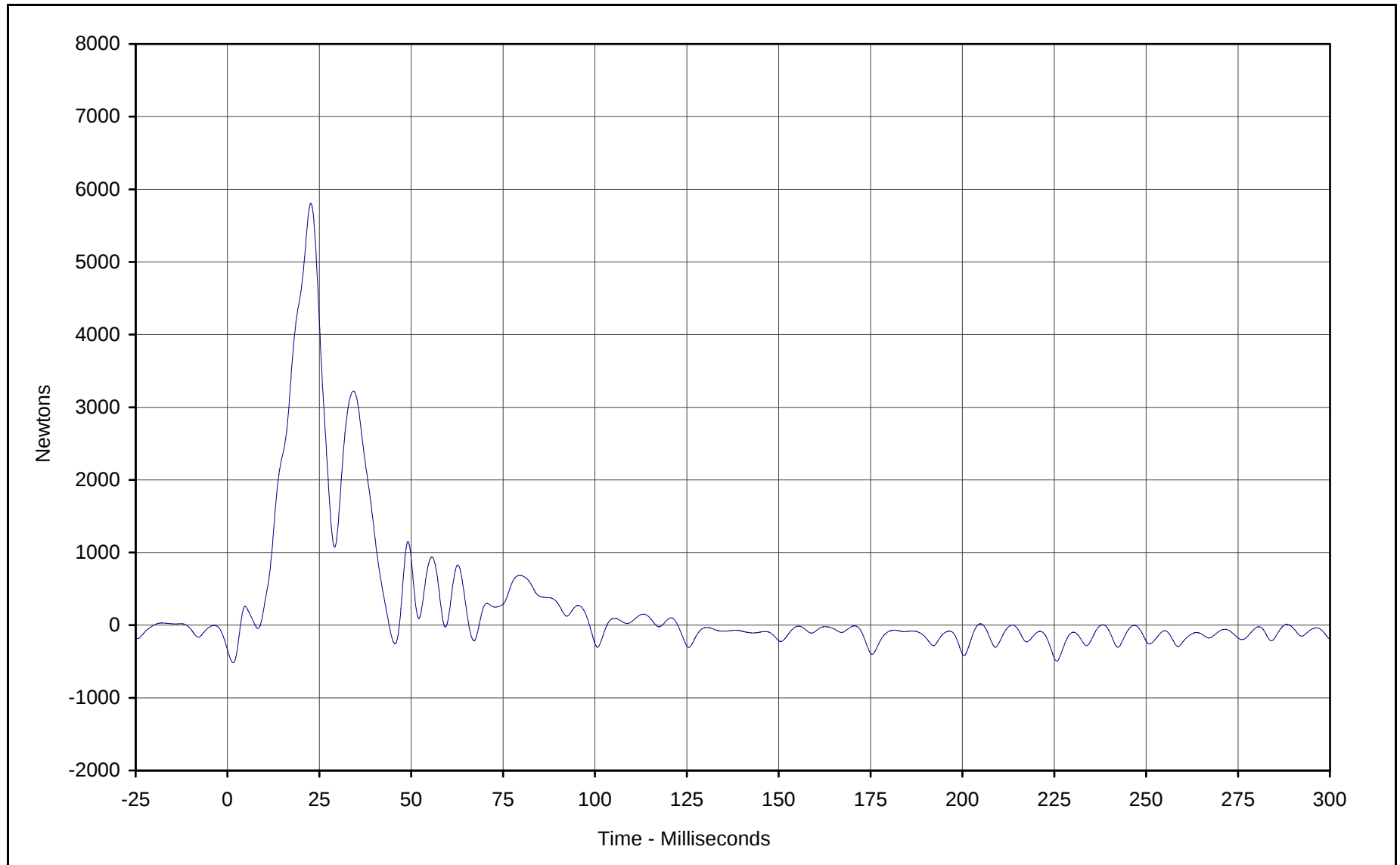
Curve Description: Barrier Force A6
Maximum Value: 3807.0 at 25.2 Milliseconds
Minimum Value: -906.7 at 299.9 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-103

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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C-6



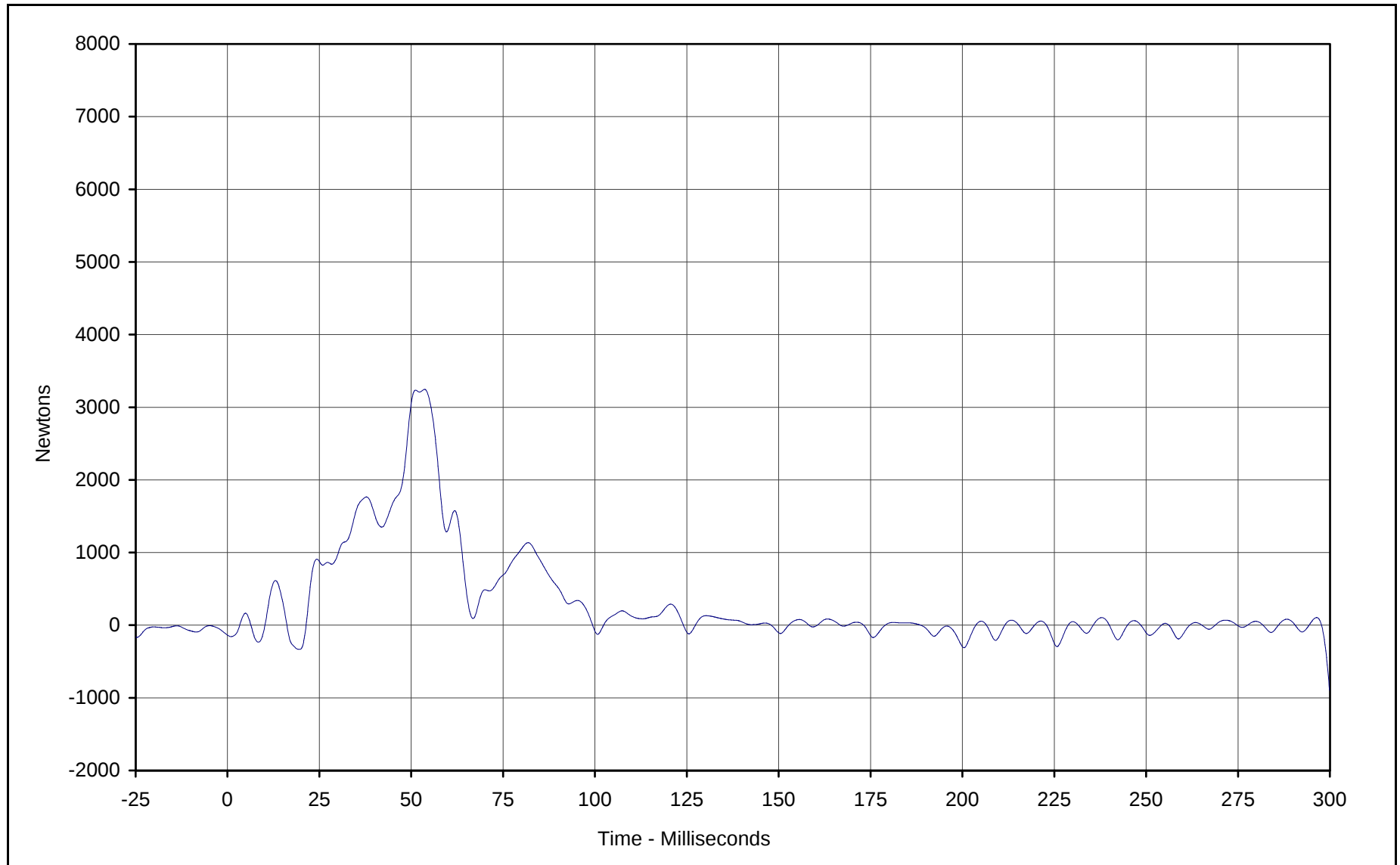
Curve Description: Barrier Force A7
Maximum Value: 5806.3 at 22.7 Milliseconds
Minimum Value: -516.8 at 1.6 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-104

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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C-7



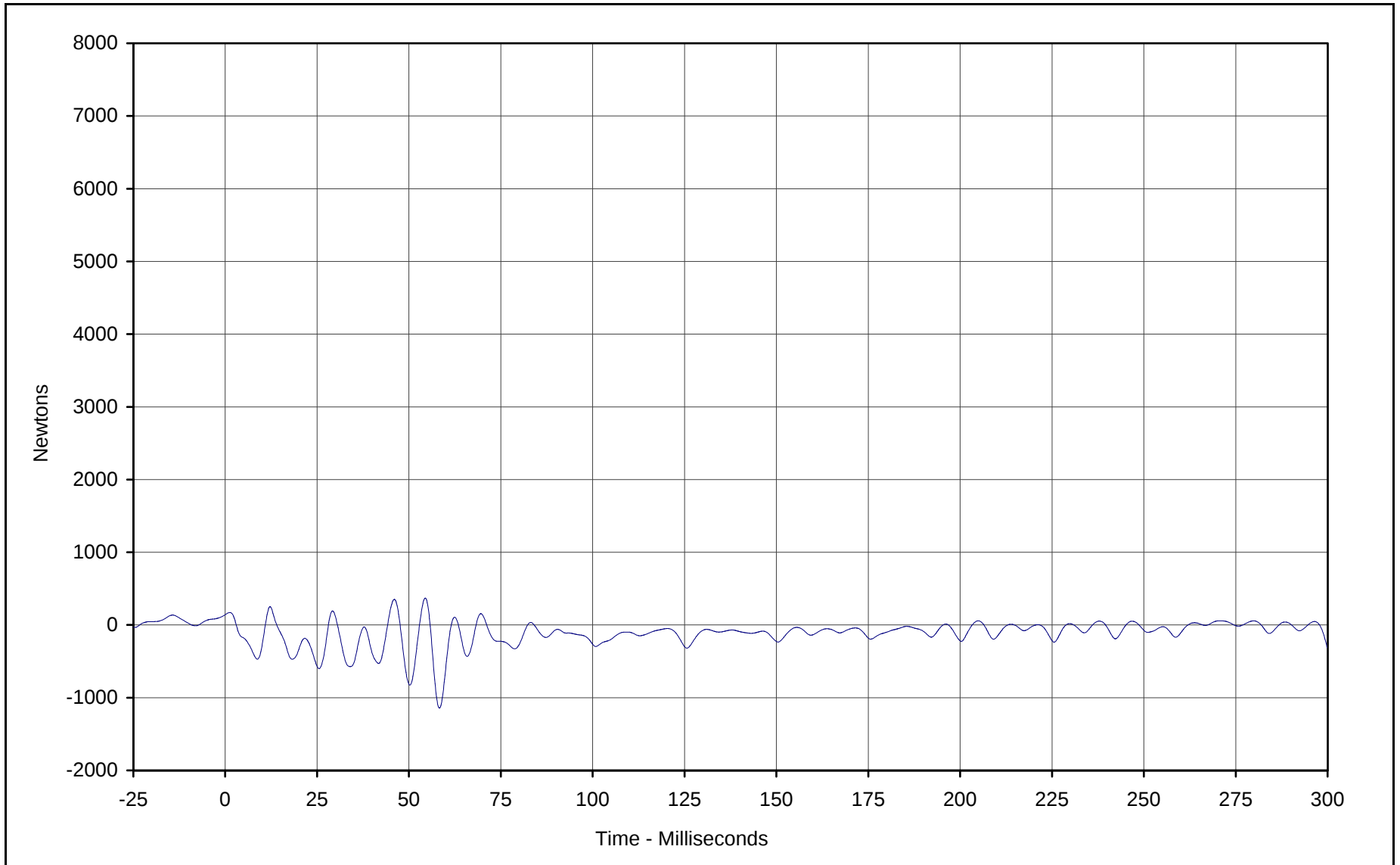
Curve Description: Barrier Force A8
Maximum Value: 3246.5 at 53.6 Milliseconds
Minimum Value: -894.2 at 299.9 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-105

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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C-8



Curve Description: Barrier Force A9

Maximum Value: 370.1 at 54.4 Milliseconds

Minimum Value: -1144.2 at 58.3 Milliseconds

SAE Filter Class: 60

Date of Test: 02/14/01

Curve Number: FIL-106

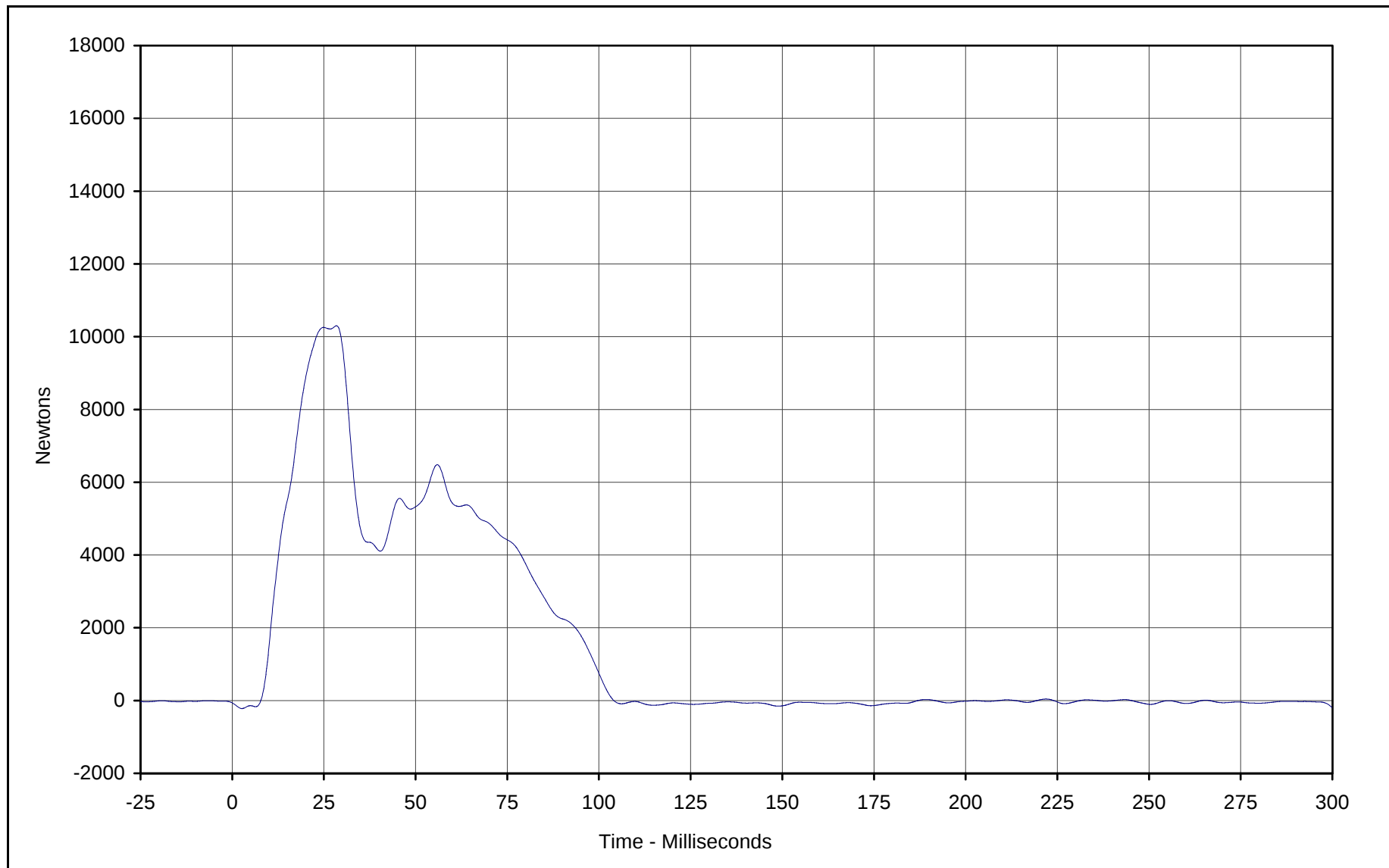
Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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C-9



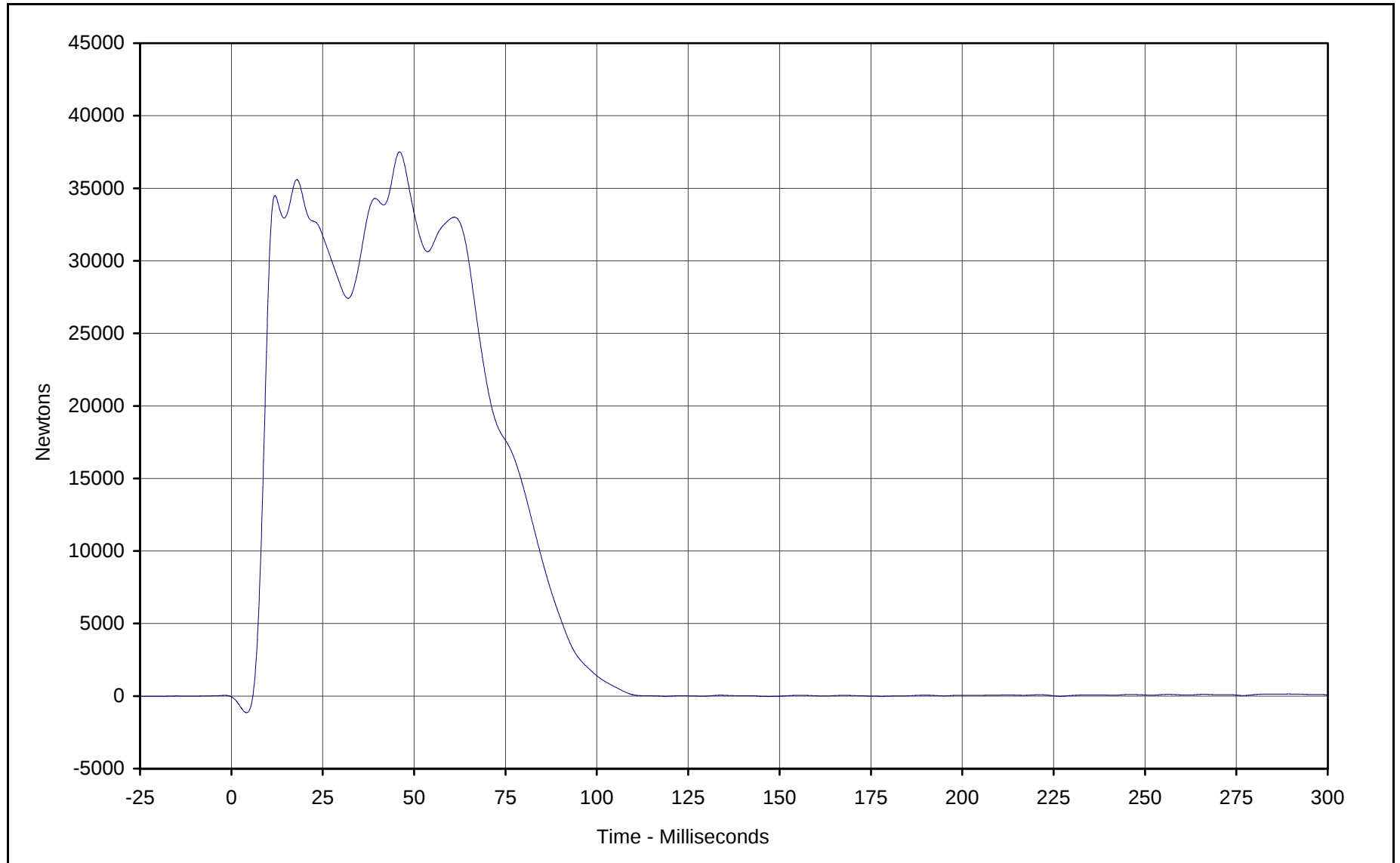
Curve Description: Barrier Force B2
Maximum Value: 10299.8 at 28.4 Milliseconds
Minimum Value: -221.5 at 2.6 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-108

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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C-10



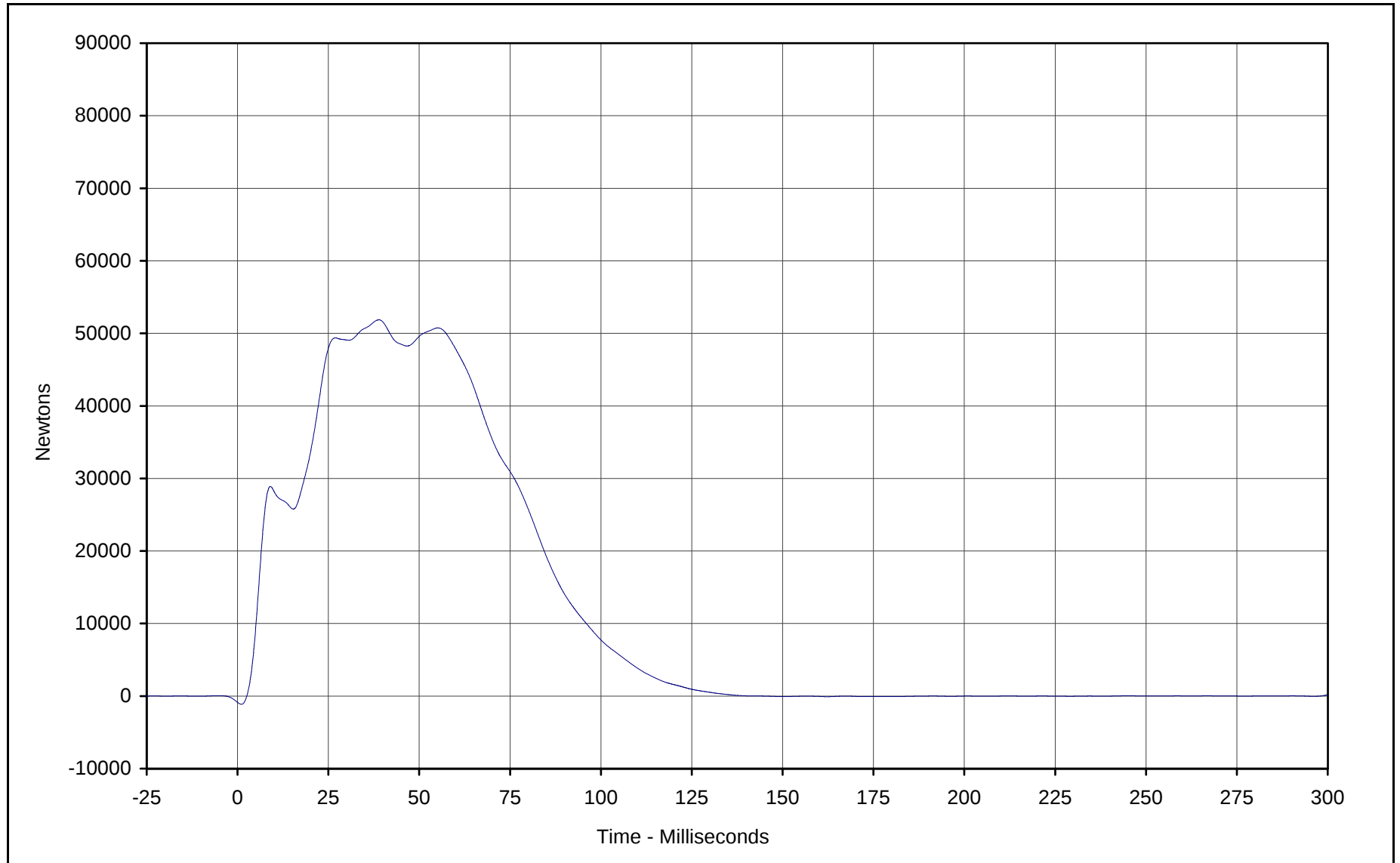
Curve Description: Barrier Force B3
Maximum Value: 37509.8 at 46.0 Milliseconds
Minimum Value: -1146.4 at 4.2 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-109

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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C-11



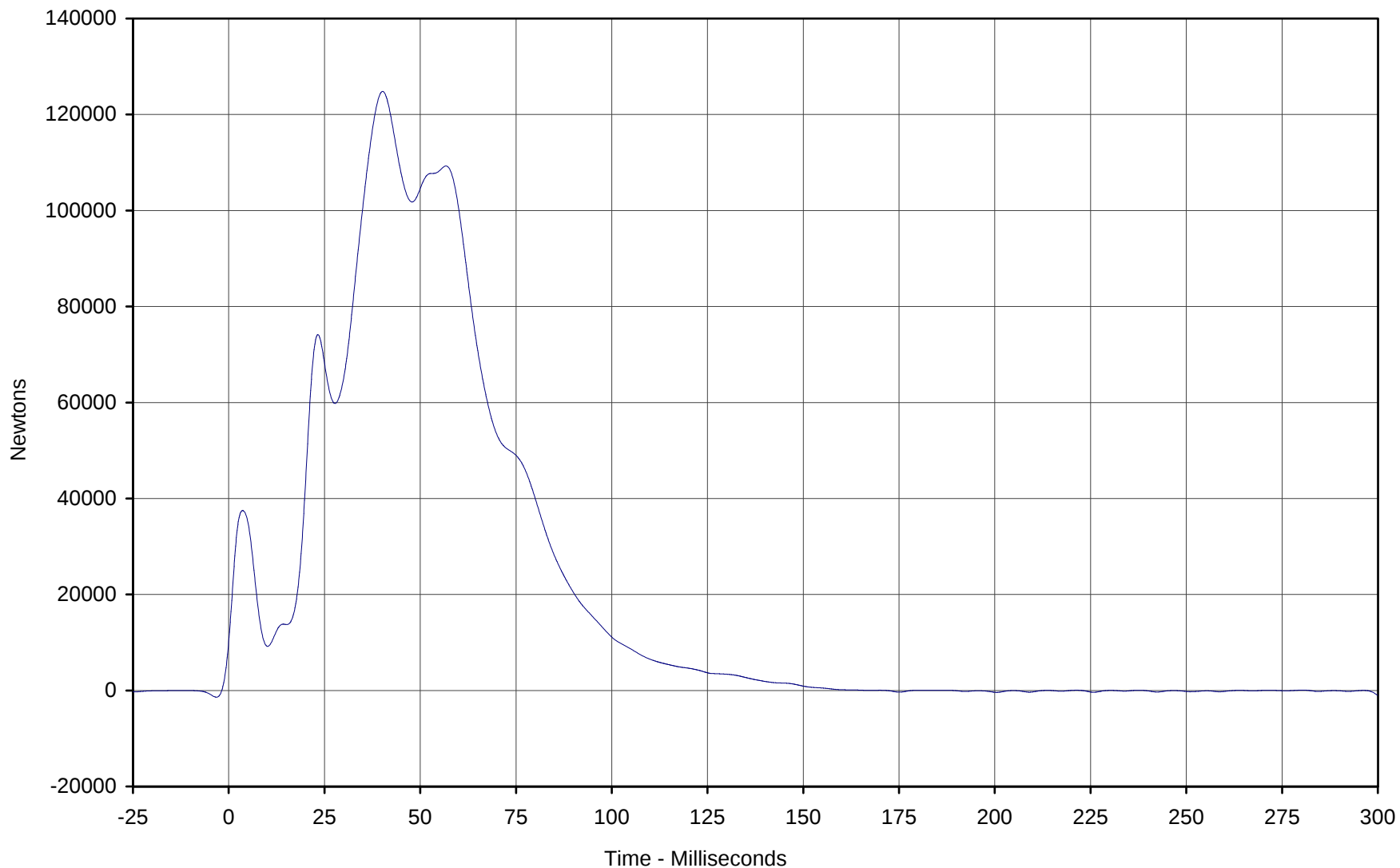
Curve Description: Barrier Force B4
Maximum Value: 51862.8 at 38.9 Milliseconds
Minimum Value: -1127.7 at 1.1 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-110

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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C-12



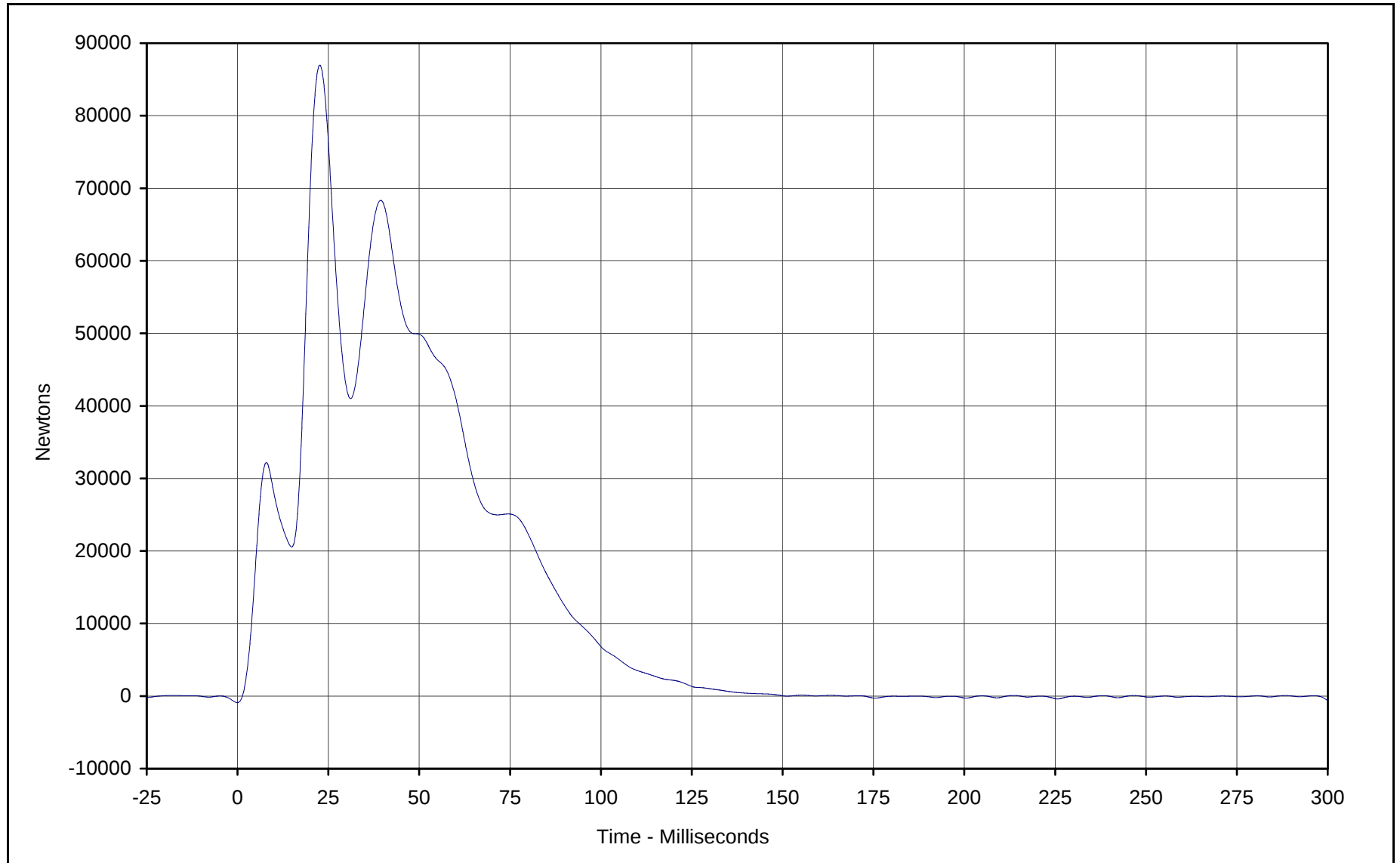
Curve Description: Barrier Force B5
Maximum Value: 124818.1 at 40.2 Milliseconds
Minimum Value: -1019.9 at 299.9 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-111

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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C-13



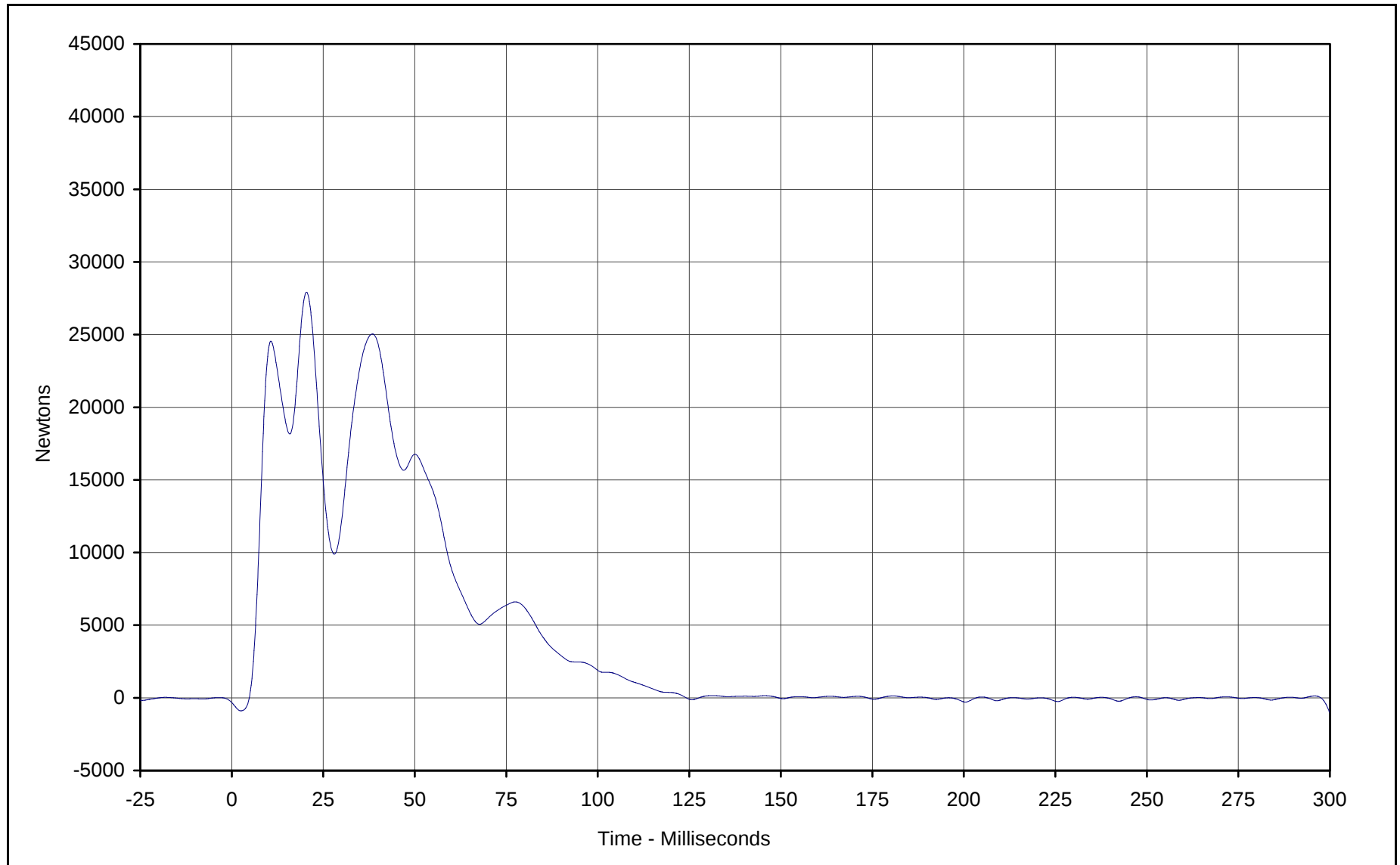
Curve Description: Barrier Force B6
Maximum Value: 86976.9 at 22.6 Milliseconds
Minimum Value: -898.9 at 0.0 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-112

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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C-14



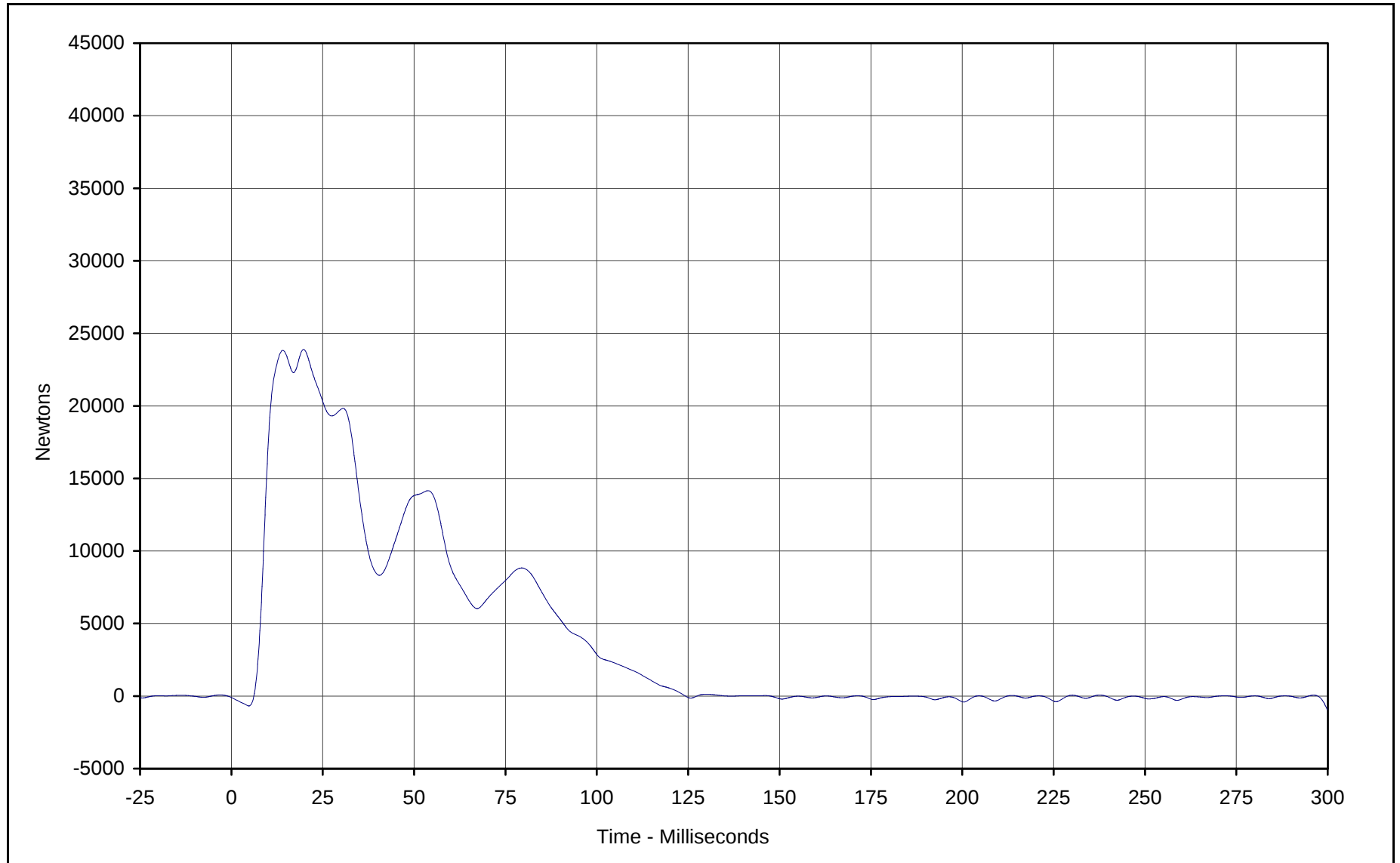
Curve Description: Barrier Force B7
Maximum Value: 27922.0 at 20.4 Milliseconds
Minimum Value: -996.6 at 299.9 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-113

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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C-15



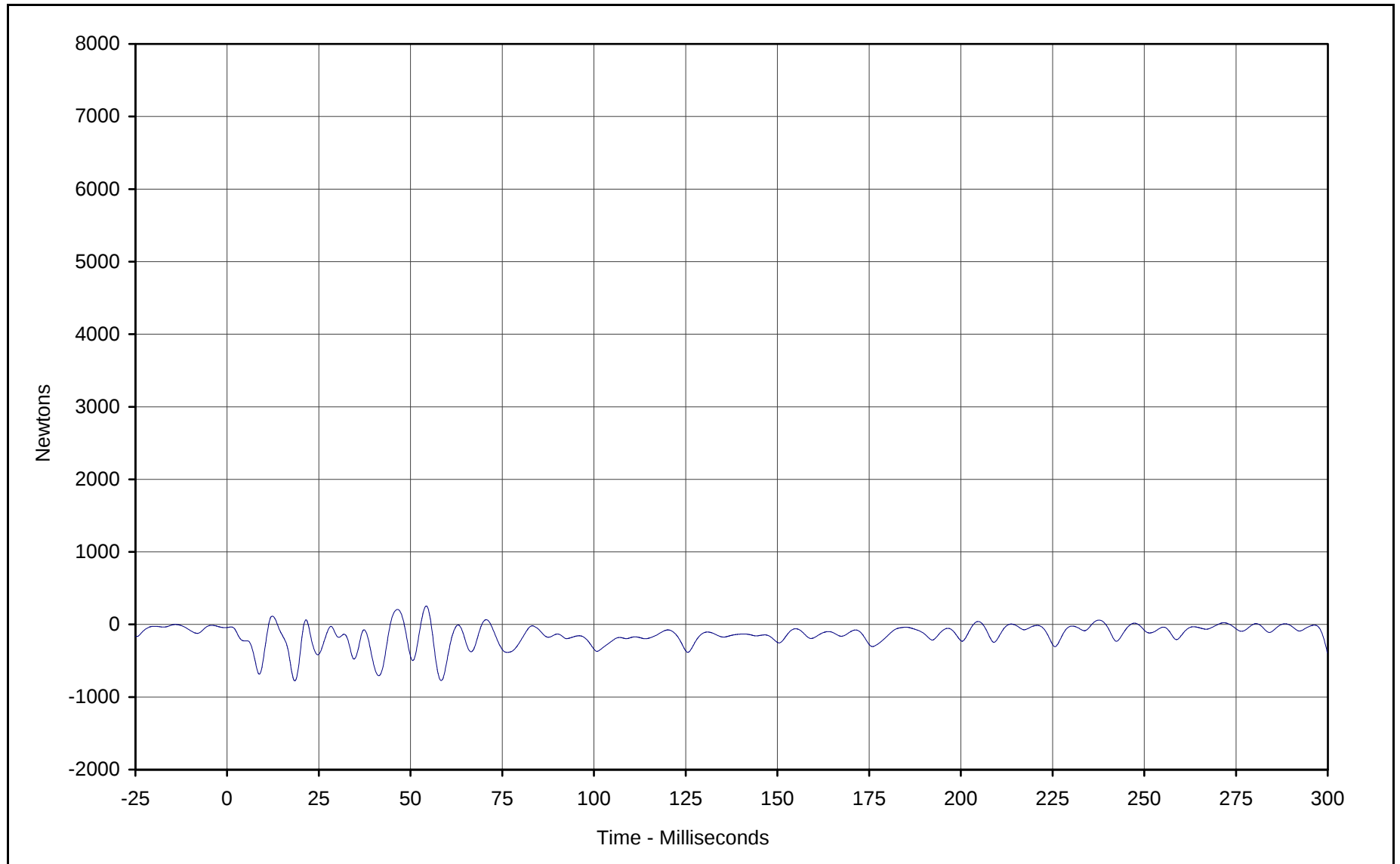
Curve Description: Barrier Force B8
Maximum Value: 23893.2 at 19.8 Milliseconds
Minimum Value: -950.2 at 299.9 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-114

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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C-16



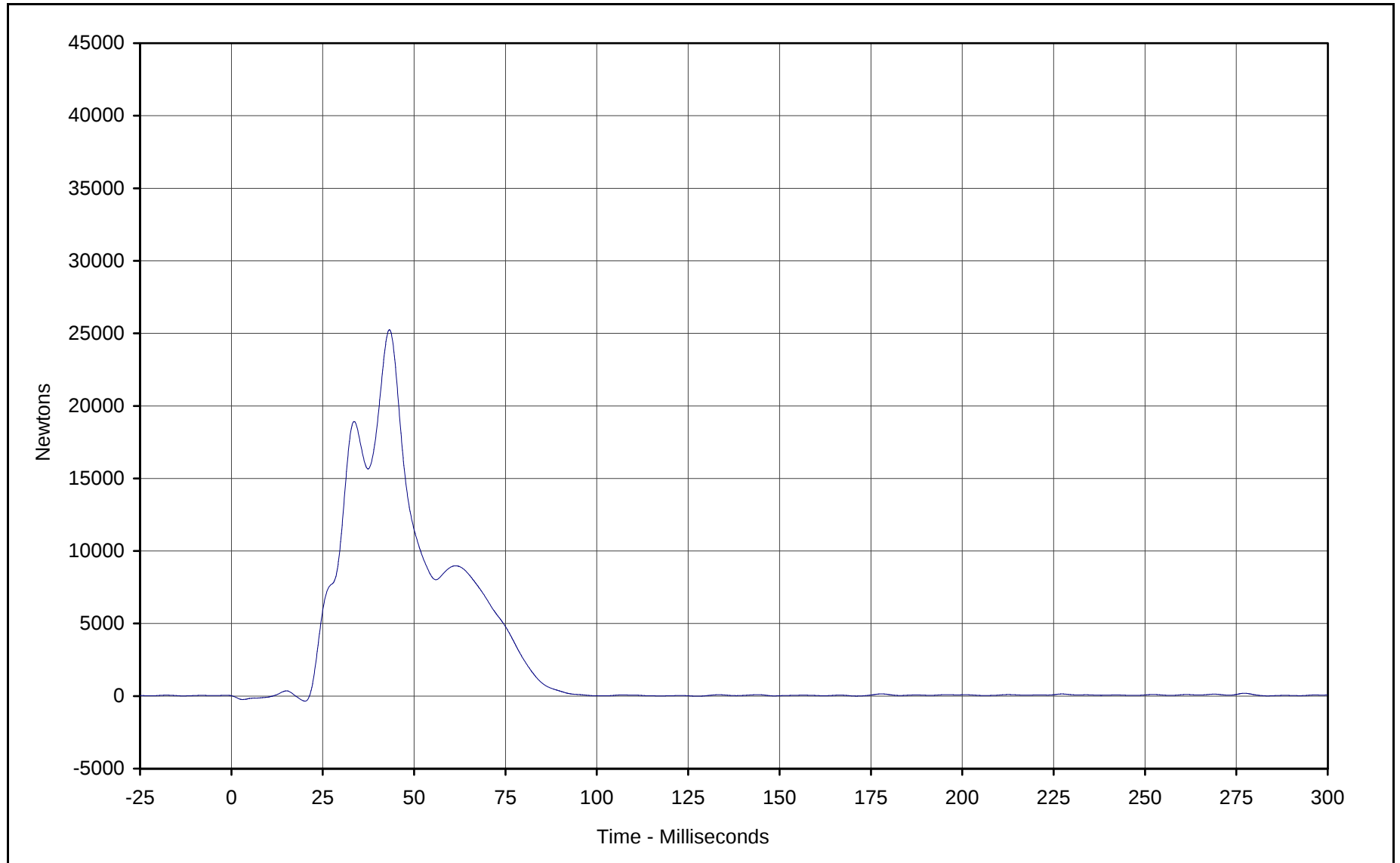
Curve Description: Barrier Force B9
Maximum Value: 254.3 at 54.3 Milliseconds
Minimum Value: -775.8 at 18.5 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-115

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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C-17



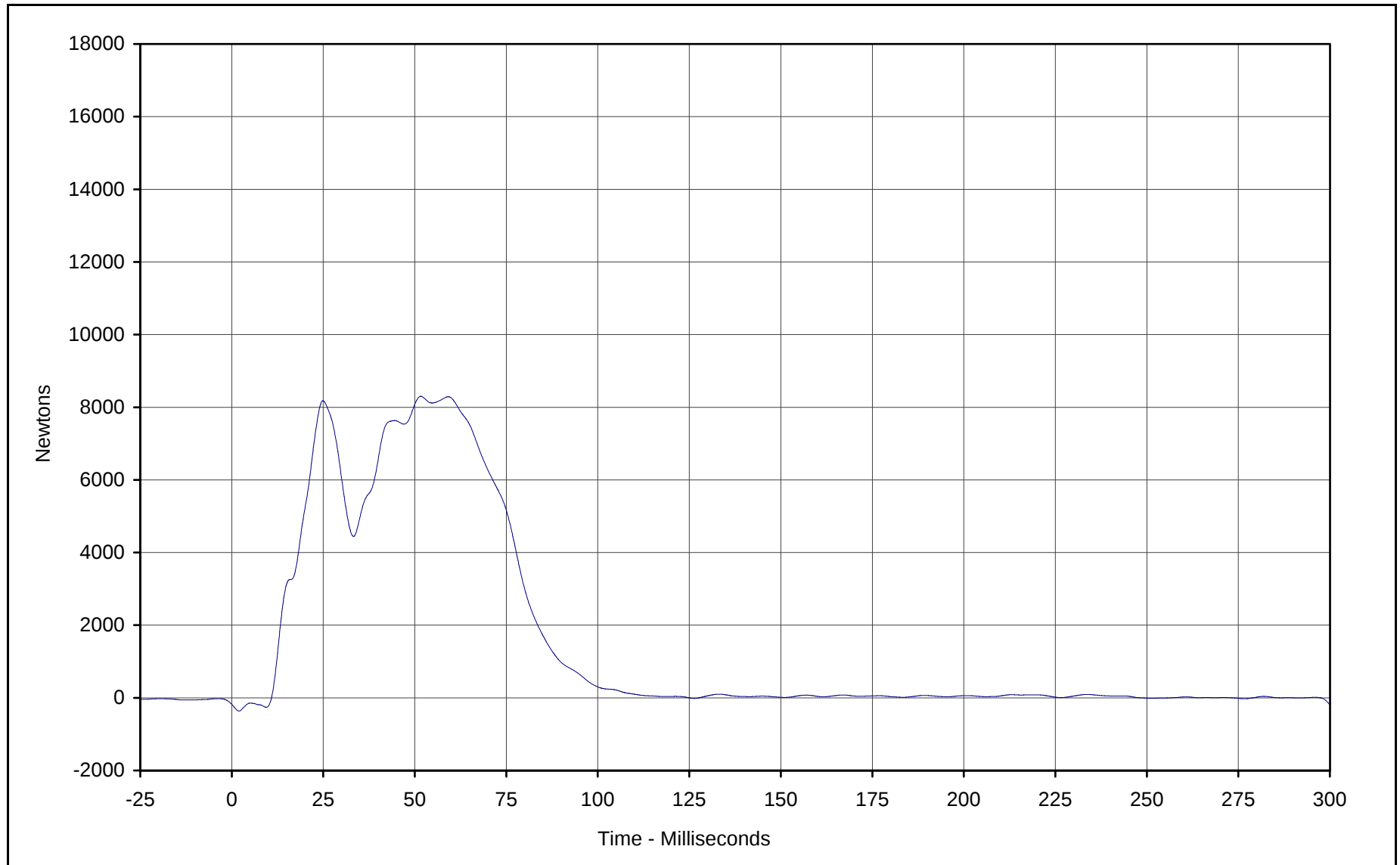
Curve Description: Barrier Force C2
Maximum Value: 25248.2 at 43.2 Milliseconds
Minimum Value: -350.2 at 20.1 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-117

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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C-18



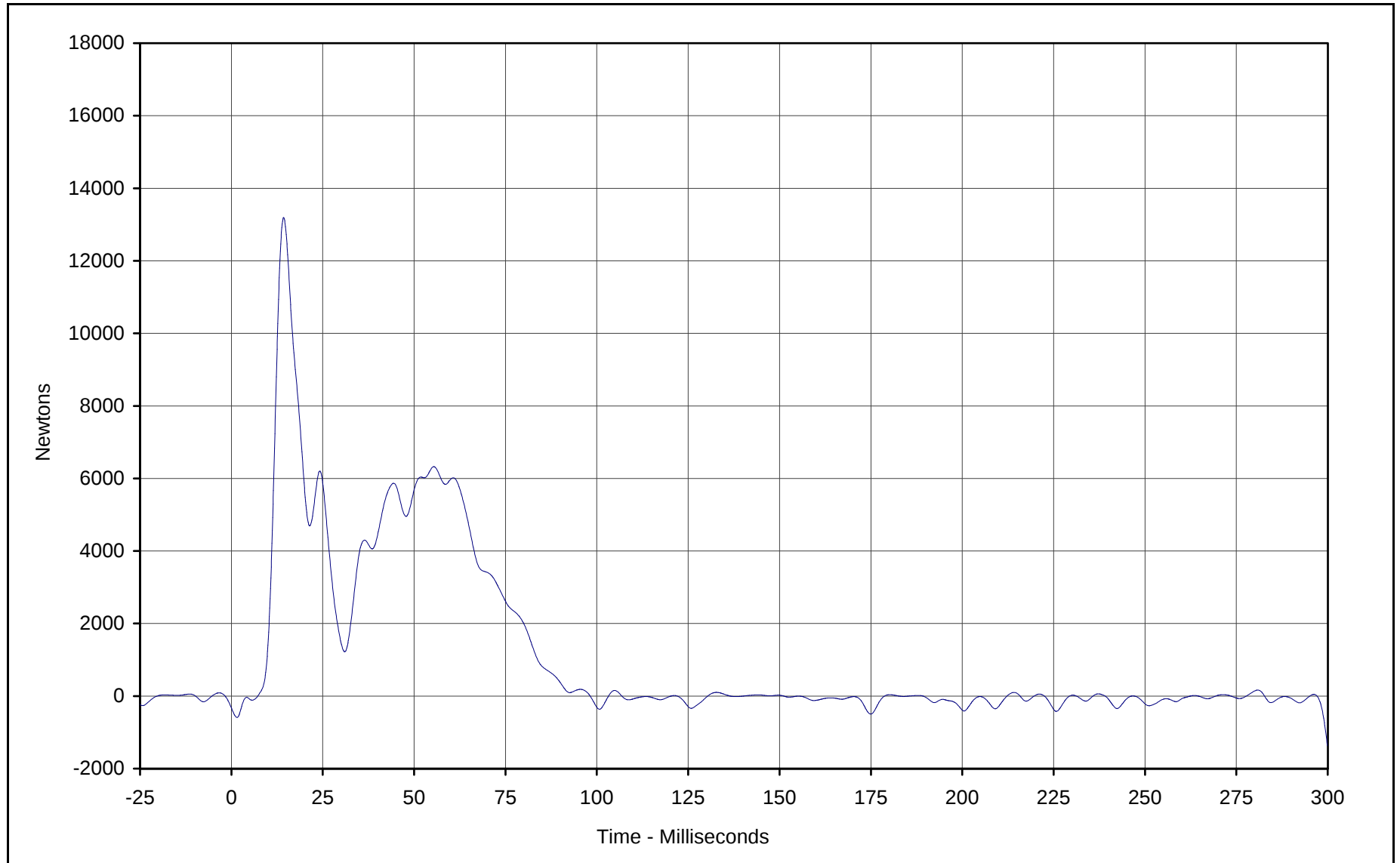
Curve Description: Barrier Force C3
Maximum Value: 8300.3 at 51.6 Milliseconds
Minimum Value: -365.1 at 2.0 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-118

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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C-19



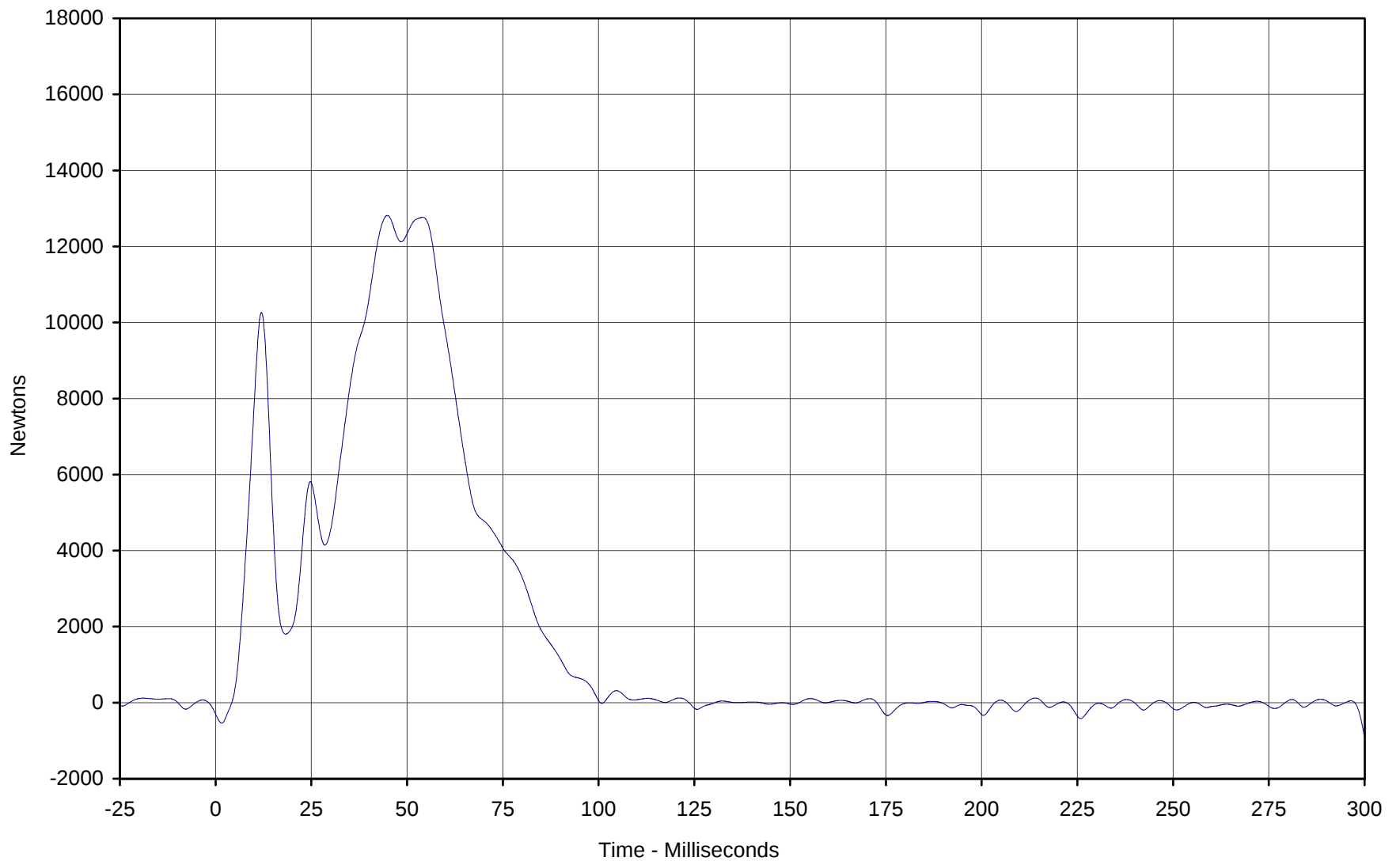
Curve Description: Barrier Force C4
Maximum Value: 13190.2 at 14.3 Milliseconds
Minimum Value: -1364.7 at 299.9 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-119

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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C-20



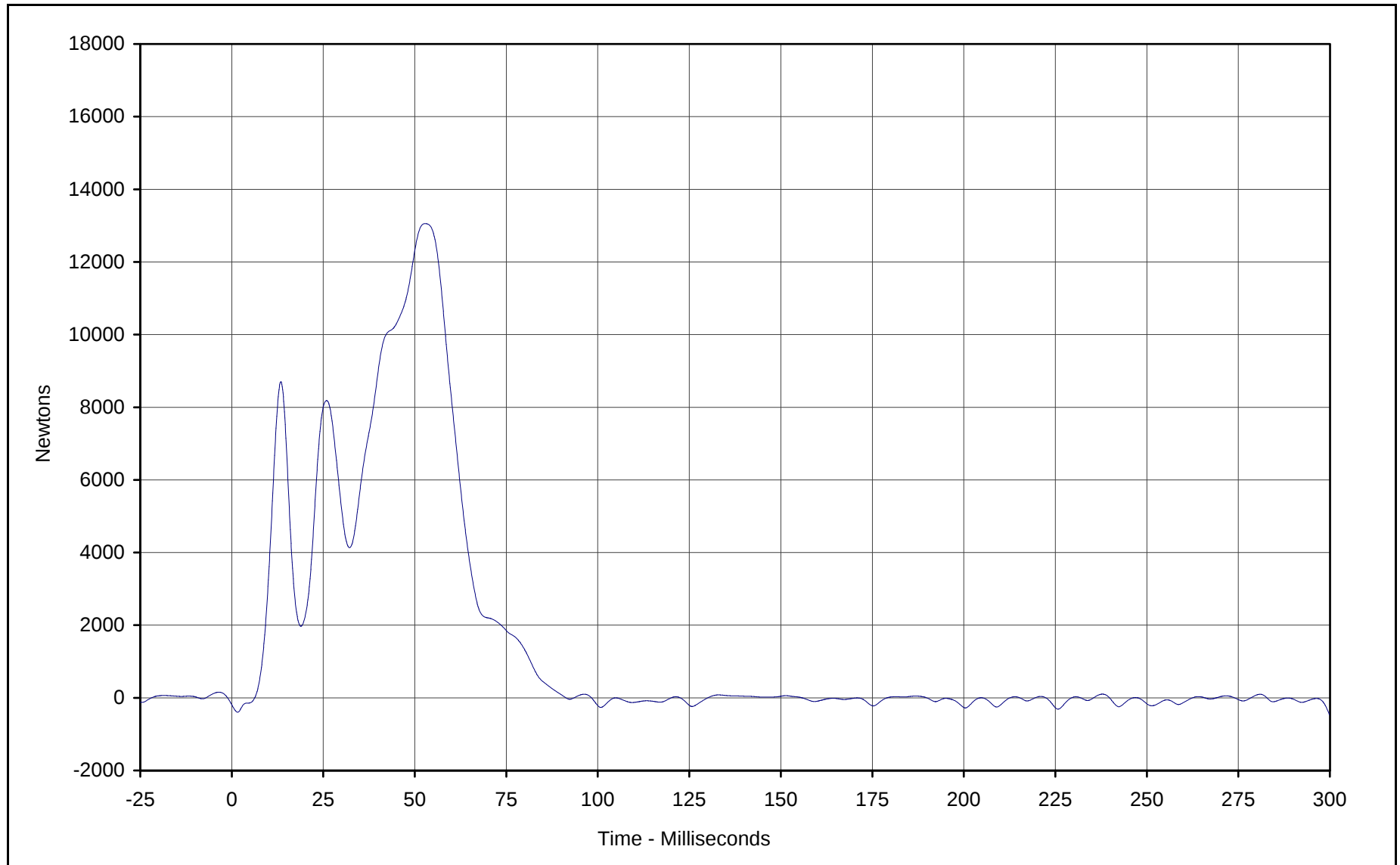
Curve Description: Barrier Force C5
Maximum Value: 12814.9 at 44.9 Milliseconds
Minimum Value: -873.9 at 299.9 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-120

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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C-21



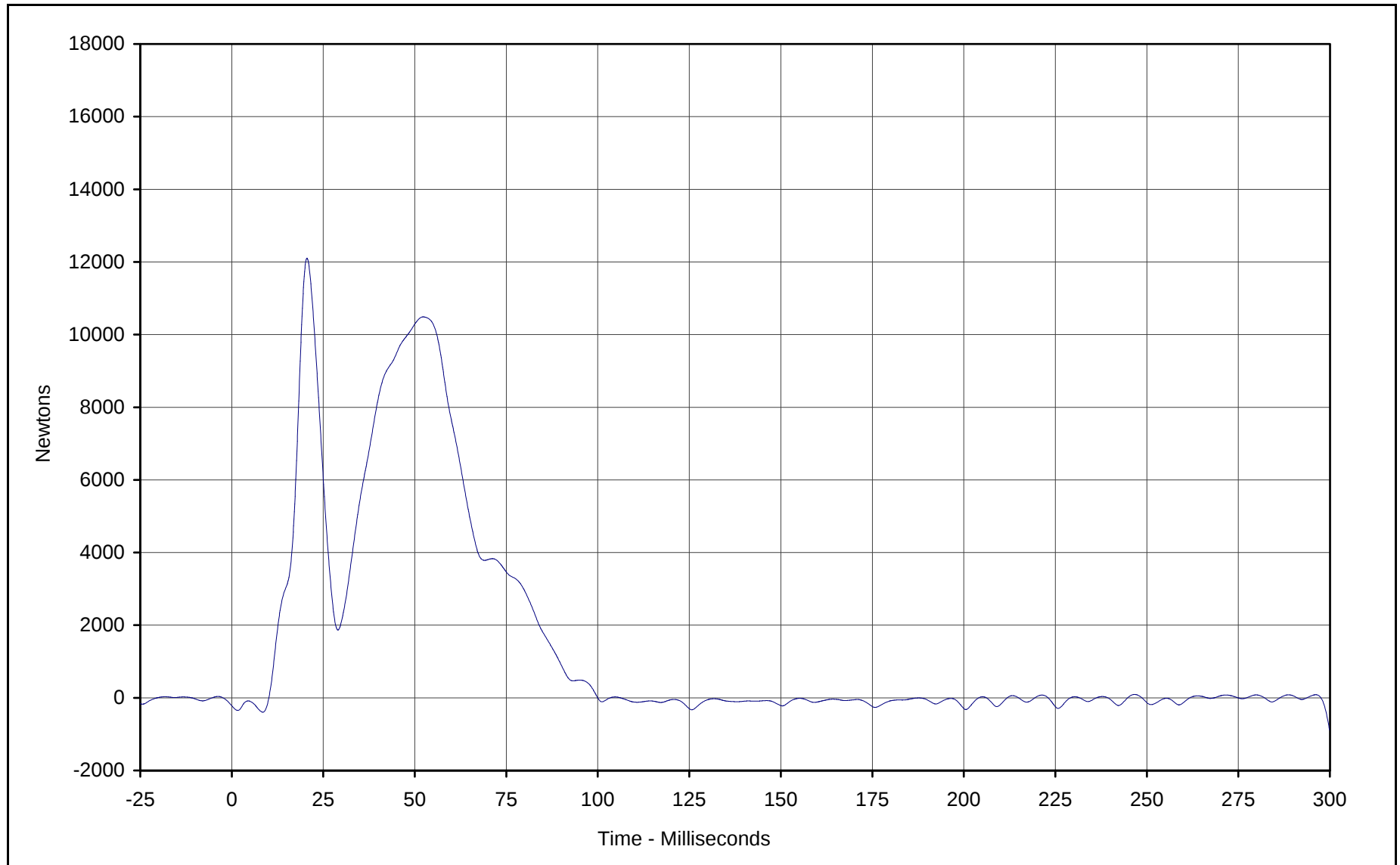
Curve Description: Barrier Force C6
Maximum Value: 13055.5 at 52.8 Milliseconds
Minimum Value: -469.1 at 299.9 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-121

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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C-22



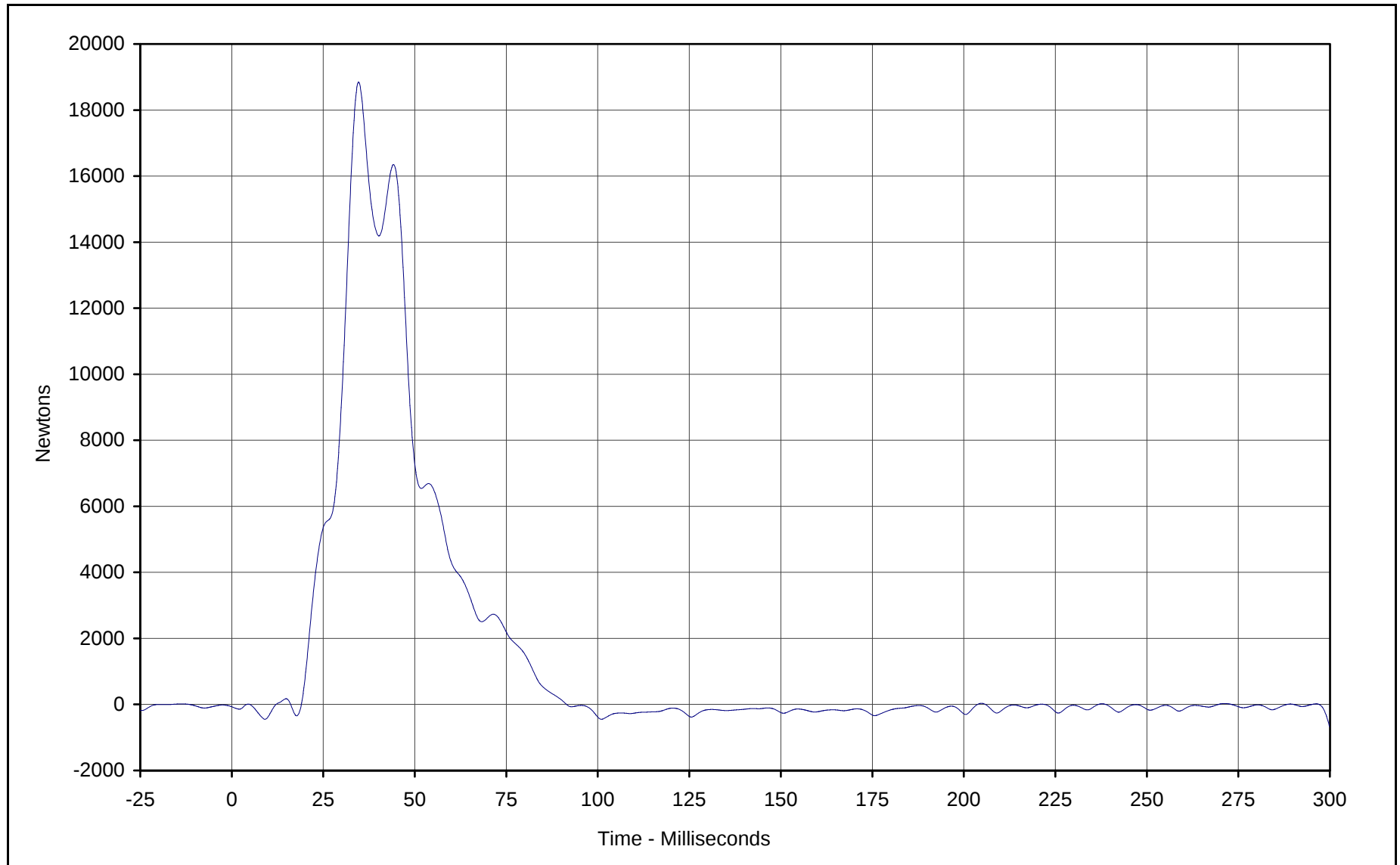
Curve Description: Barrier Force C7
Maximum Value: 12103.4 at 20.5 Milliseconds
Minimum Value: -882.8 at 299.9 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-122

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



KAR21001-11

C-23



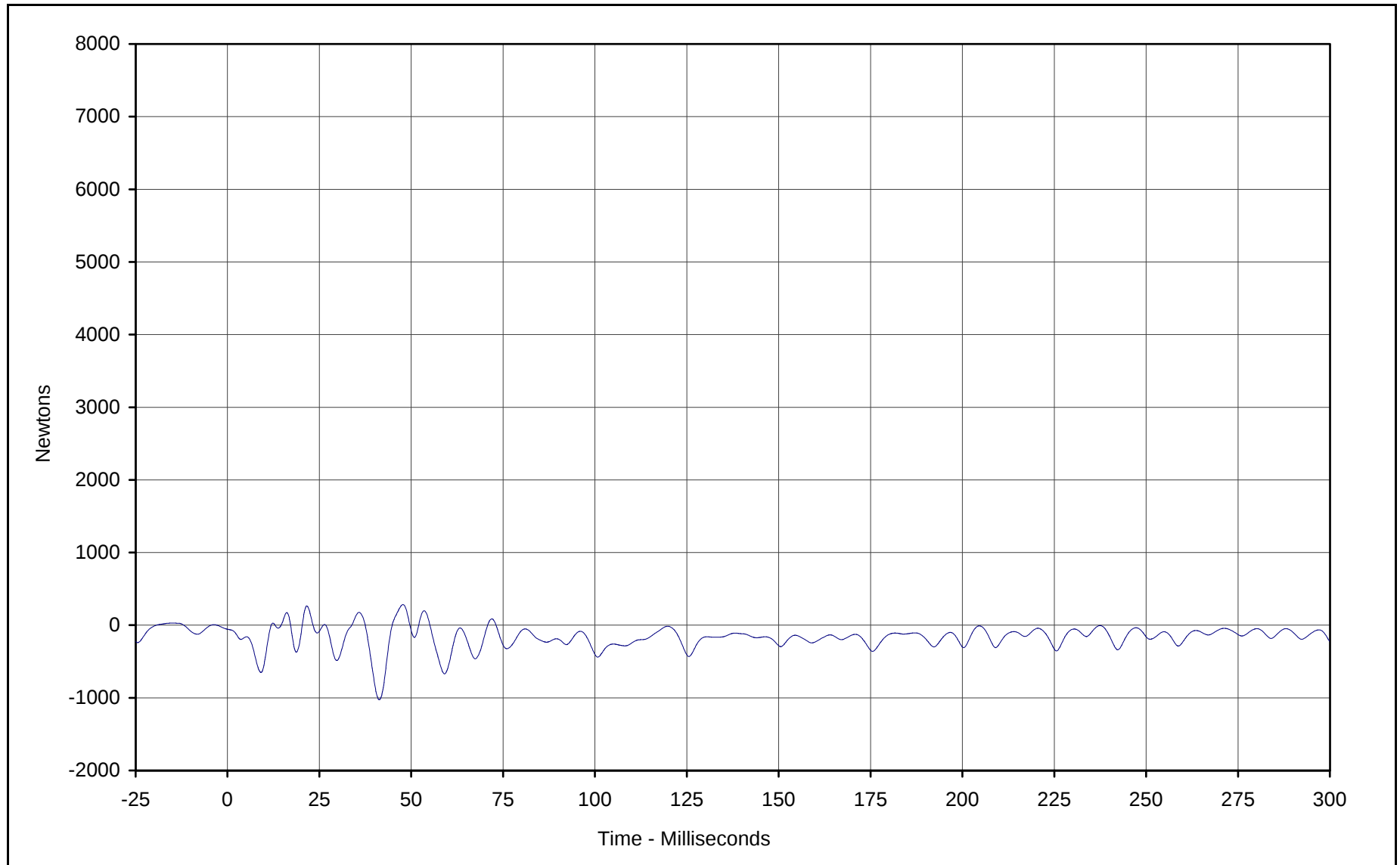
Curve Description: Barrier Force C8
Maximum Value: 18849.2 at 34.6 Milliseconds
Minimum Value: -669.6 at 299.9 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-123

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



KAR21001-11

C-24



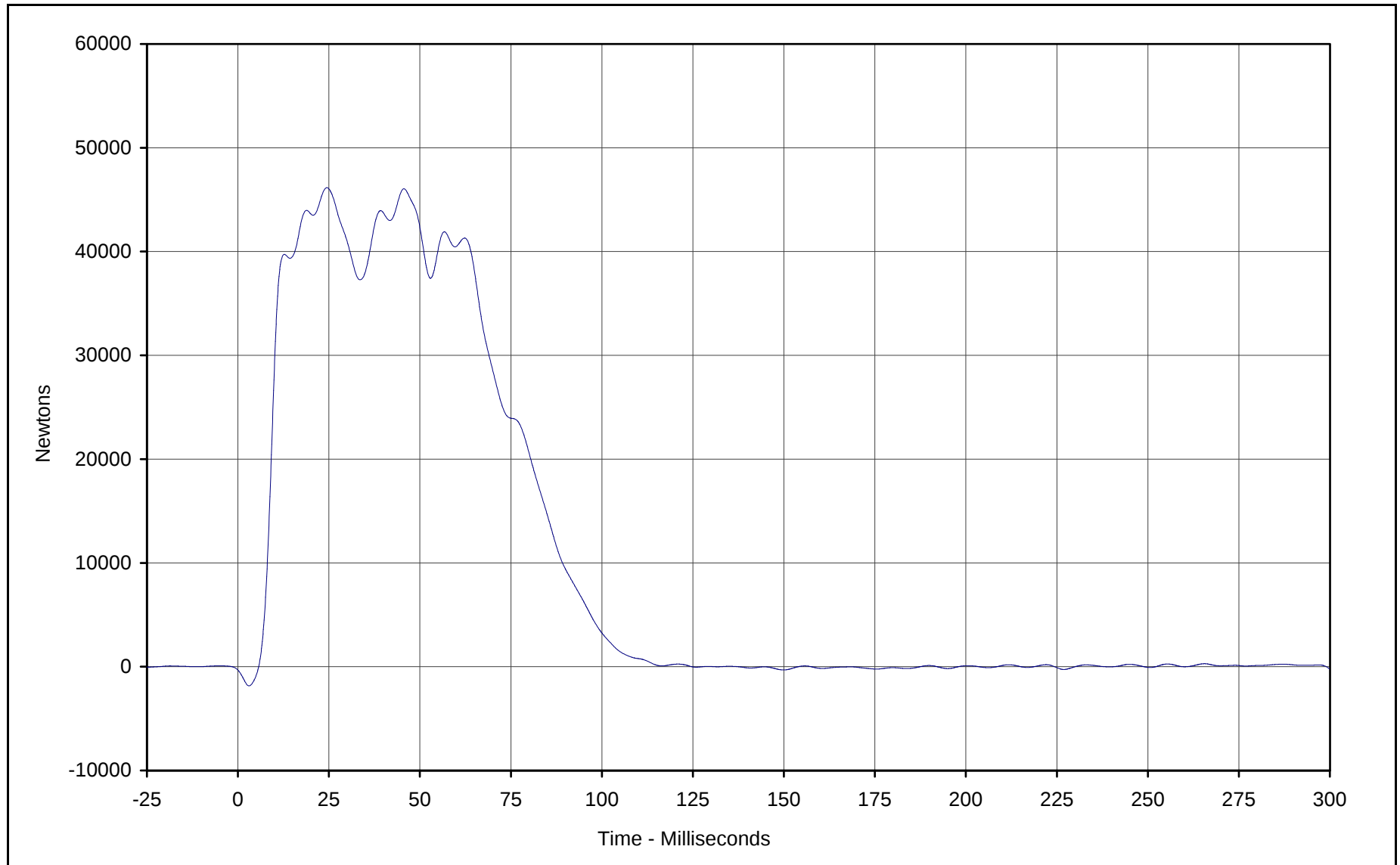
Curve Description: Barrier Force C9
Maximum Value: 284.2 at 47.8 Milliseconds
Minimum Value: -1025.2 at 41.3 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: FIL-124

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



KAR21001-11

C-25

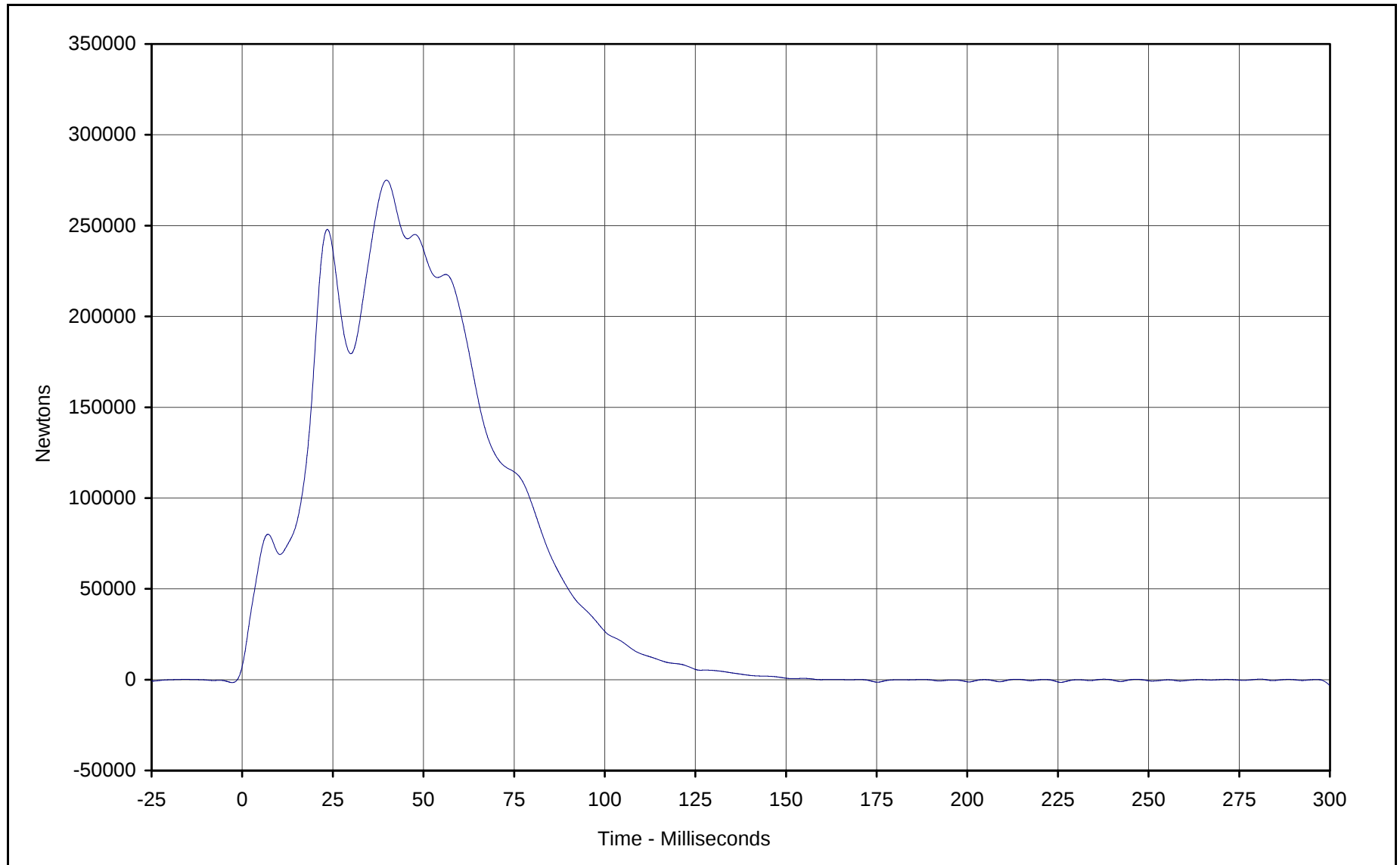


Curve Description: Barrier Force Sum Group 1
Maximum Value: 46160.5 at 24.4 Milliseconds
Minimum Value: -1848.1 at 3.0 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: SUM-001

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



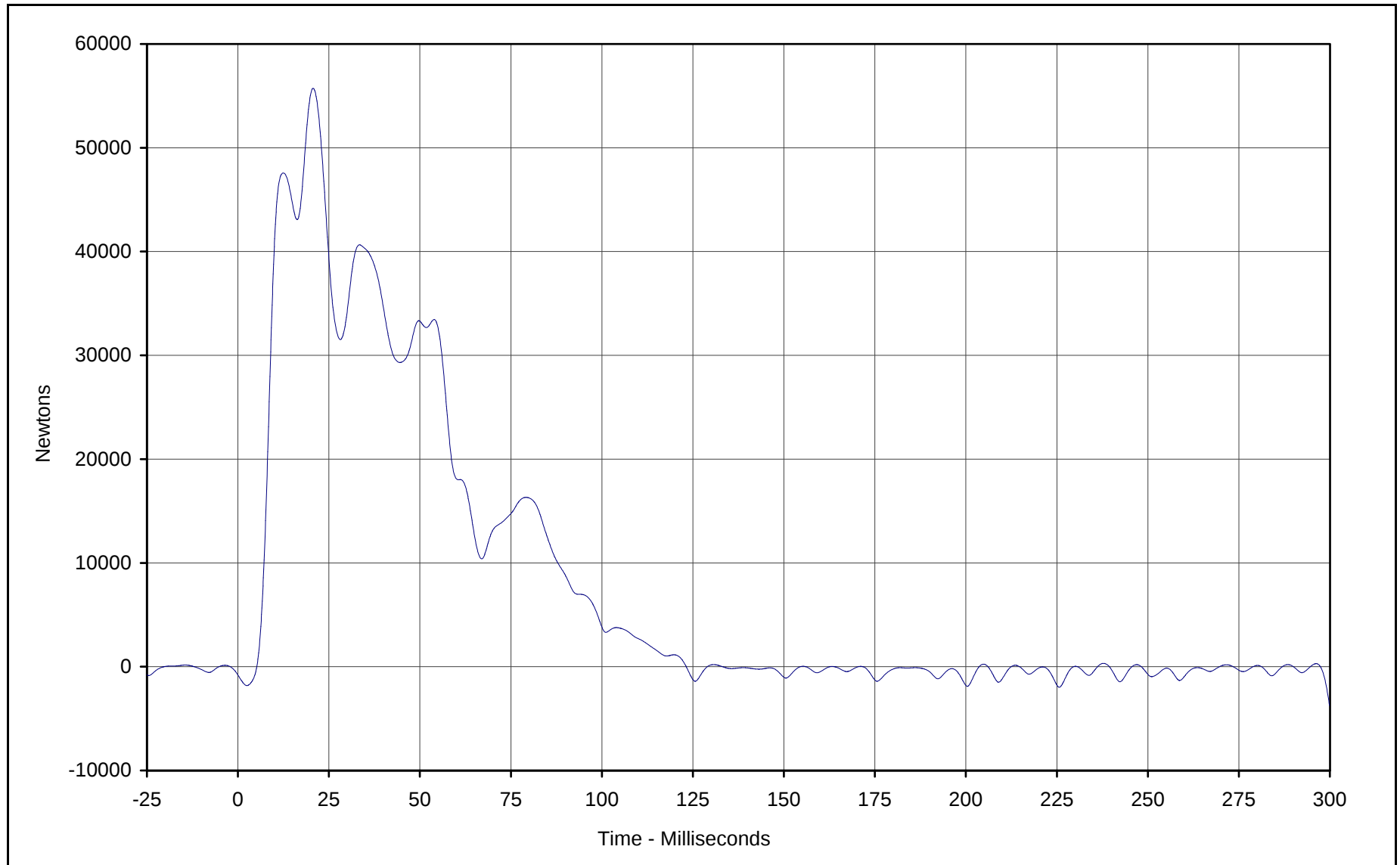
KAR21001-11



Curve Description: Barrier Force Sum Group 2
Maximum Value: 275085.4 at 39.8 Milliseconds
Minimum Value: -3095.0 at 299.9 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: SUM-002

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan

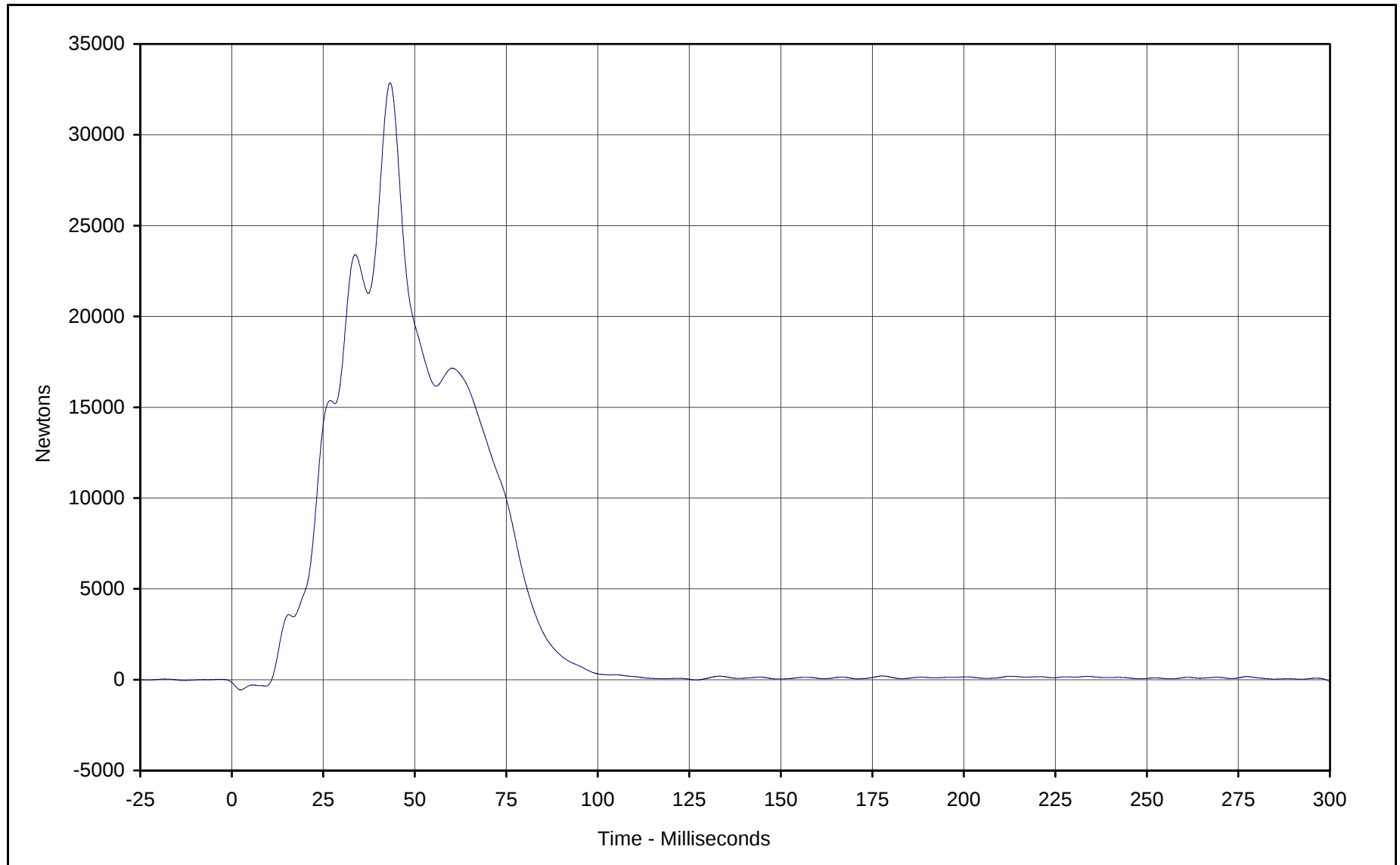




Curve Description: Barrier Force Sum Group 3
Maximum Value: 55728.0 at 20.7 Milliseconds
Minimum Value: -3736.5 at 299.9 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: SUM-003

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



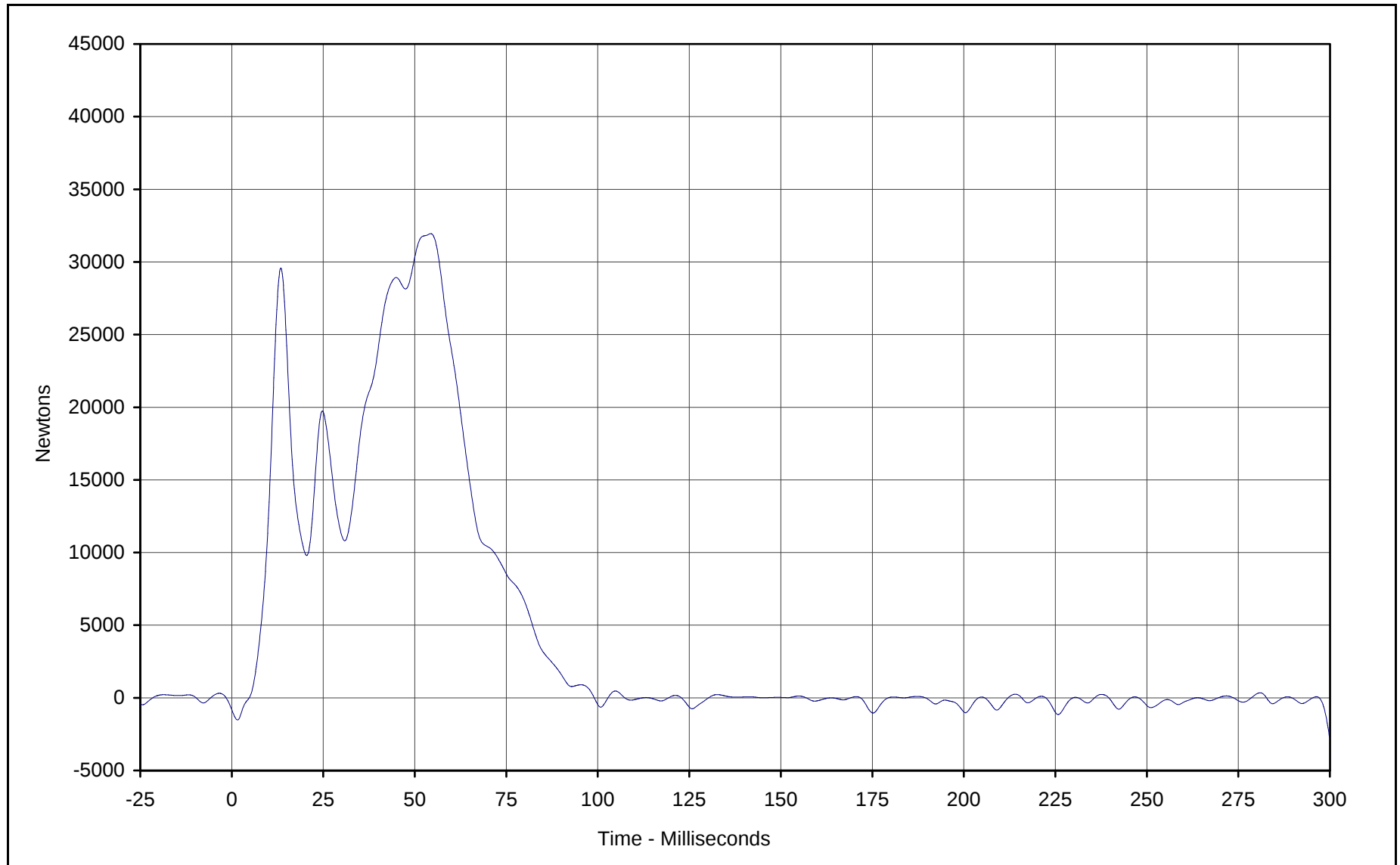


Curve Description: Barrier Force Sum Group 4
Maximum Value: 32858.4 at 43.3 Milliseconds
Minimum Value: -565.1 at 2.4 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: SUM-004

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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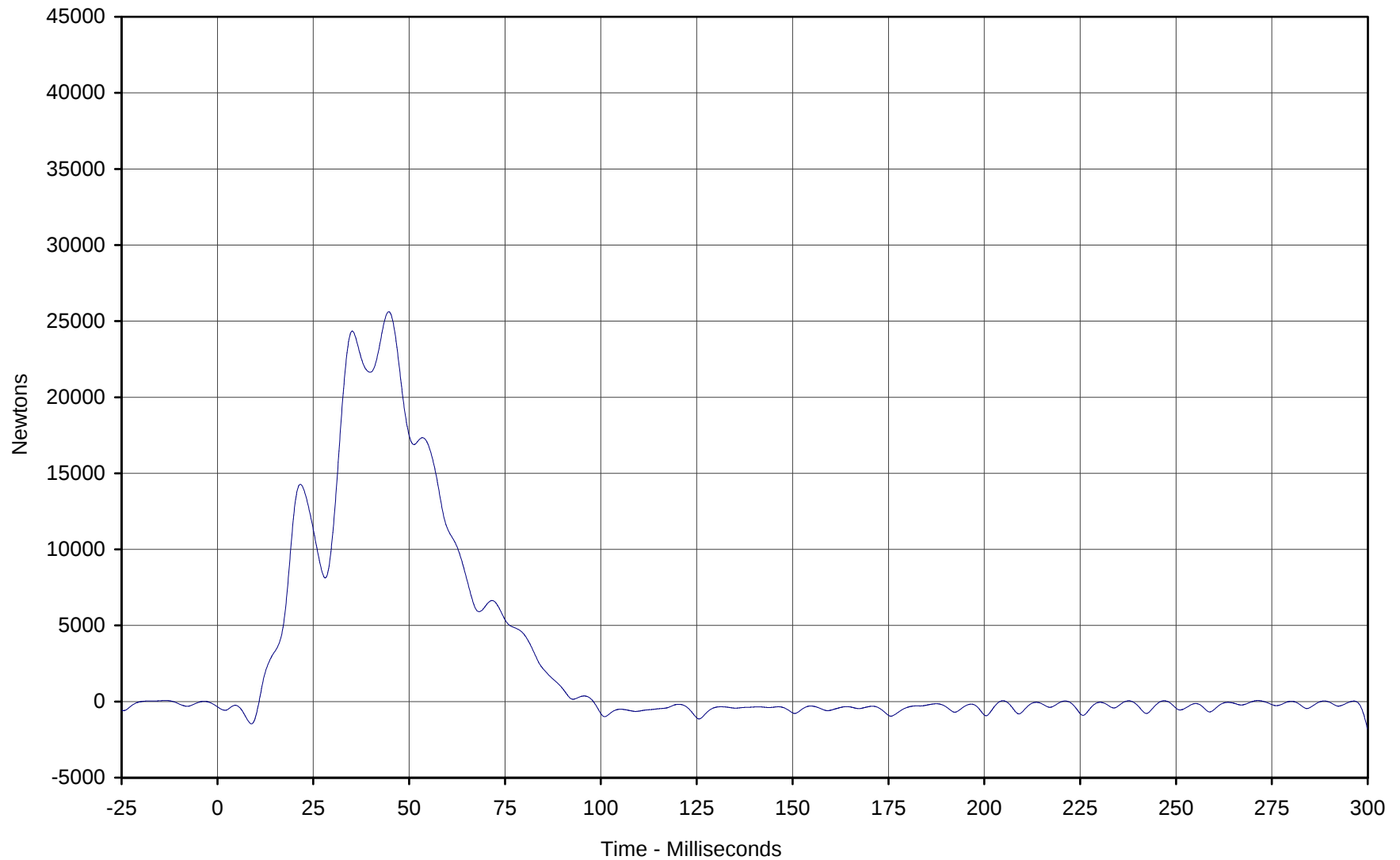
Curve Description: Barrier Force Sum Group 5
Maximum Value: 31948.0 at 54.4 Milliseconds
Minimum Value: -2707.8 at 299.9 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: SUM-005

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



KAR21001-11

C-30



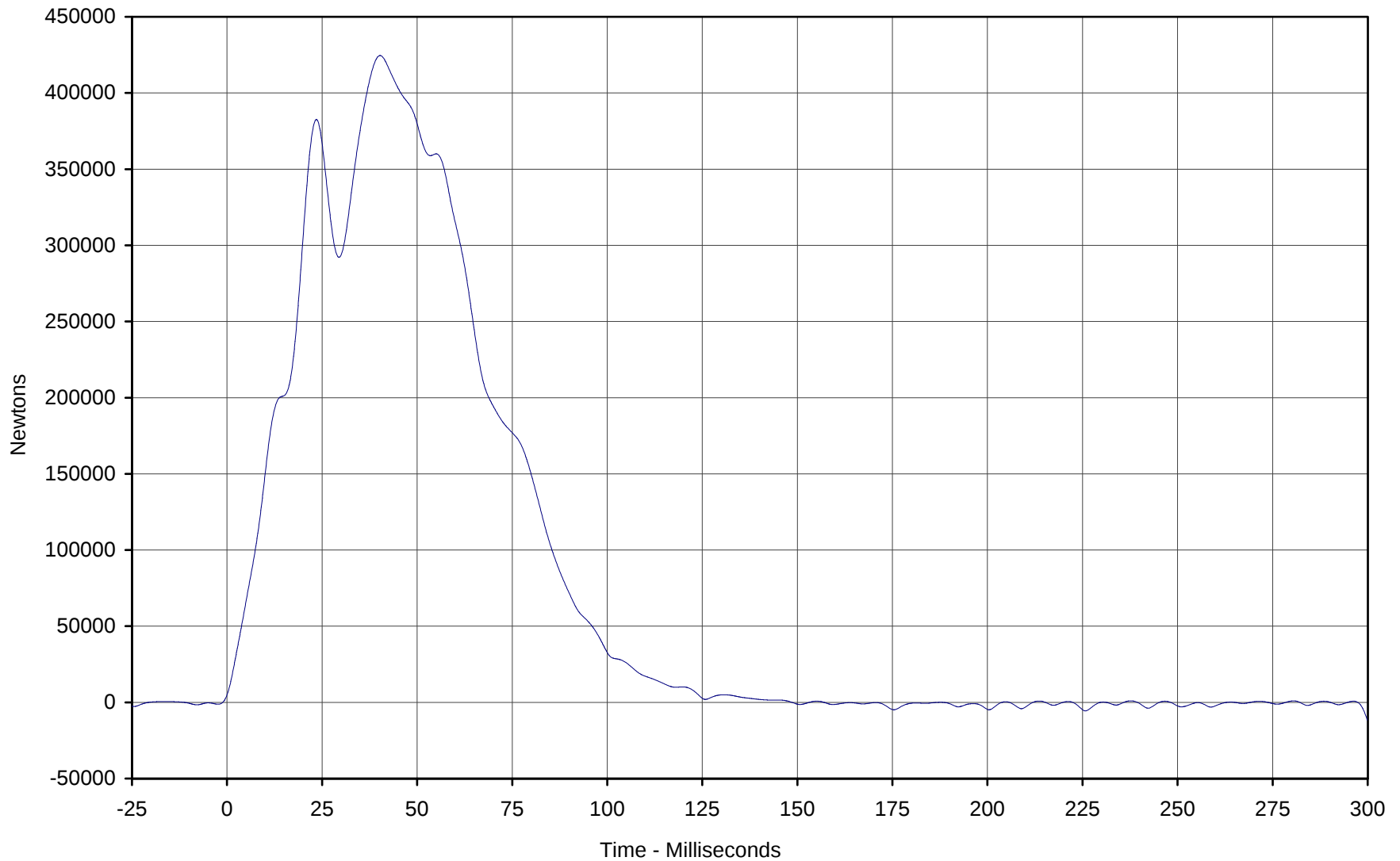
Curve Description: Barrier Force Sum Group 6
Maximum Value: 25620.2 at 44.7 Milliseconds
Minimum Value: -1774.2 at 299.9 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: SUM-006

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



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C-31



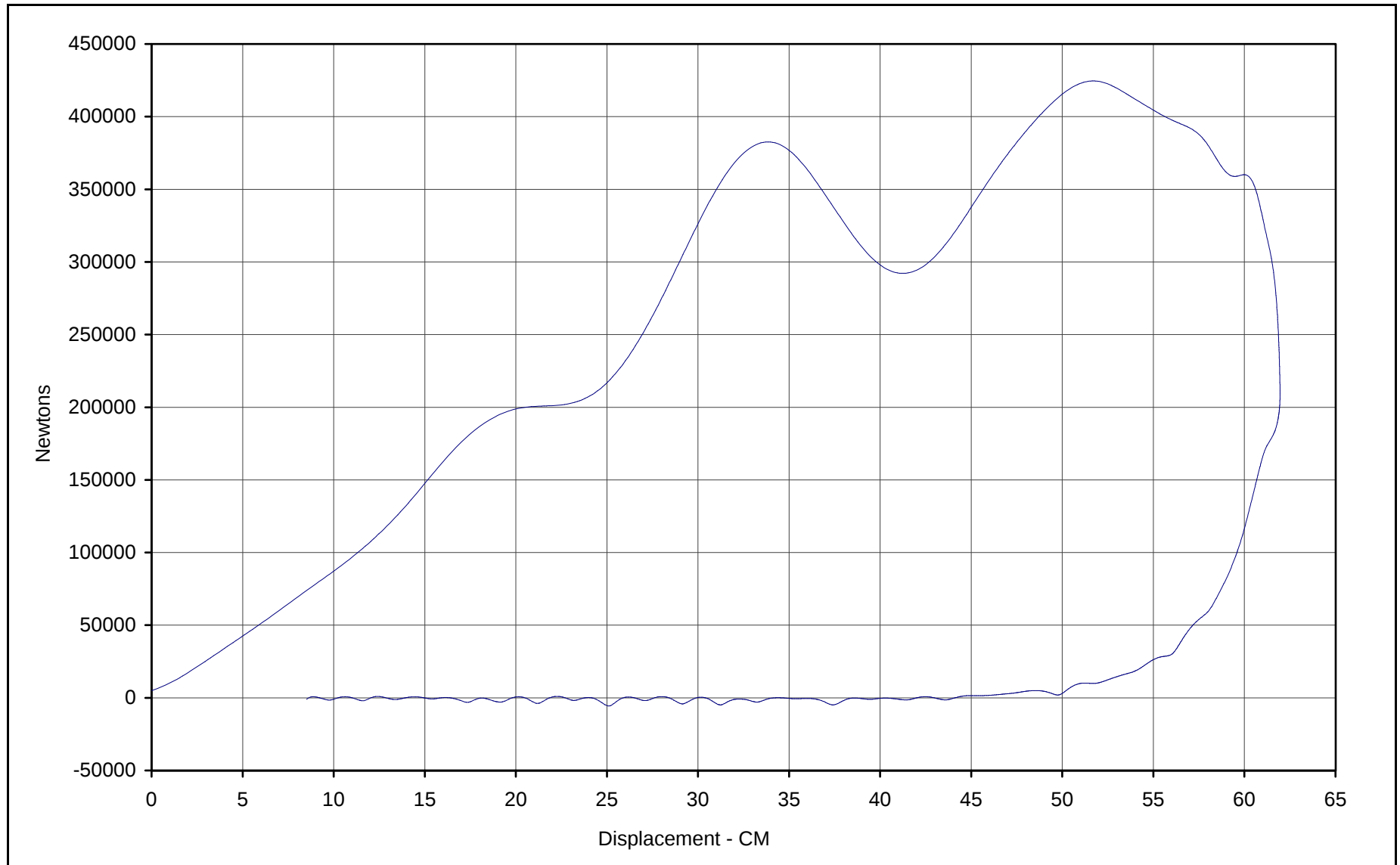
Curve Description: Barrier Force Sum Total
Maximum Value: 424558.5 at 40.3 Milliseconds
Minimum Value: -11639.6 at 299.9 Milliseconds
SAE Filter Class: 60
Date of Test: 02/14/01
Curve Number: SUM-007

Test Program: 2001 NHTSA 35mph NCAP No.: M15400
Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



KAR21001-11

C-32



Curve Description: Sum Force Total vs. Dynamic Crush

Maximum Displ.: 62.0 at 67.4 Milliseconds

Maximum Force: 424,558 at 40.3 Milliseconds

Measured Energy: 151,590 joules

Date of Test: 02/14/01

Curve Number: XVY-001

Test Program: 2001 NHTSA 35mph NCAP No.: M15400

Test Vehicle: 2001 Mazda Protégé 4 Door Sedan



KAR21001-11

BARRIER LOAD CELL SUMMARY DATATest Vehicle: 2001 Mazda Protégé 4 Door SedanNHTSA No.: M15400Test Program: 2001 NHTSA 35mph NCAPTest Date: 02/14/01**BARRIER LOAD CELL PEAK FORCES**

Location	Units	Max	Time	Min	Time
Barrier Force A2	Newtons	1259.7	39.5	-227.6	3.0
Barrier Force A3	Newtons	4185.9	39.2	-570.5	2.4
Barrier Force A4	Newtons	23604.7	23.6	-612.7	1.6
Barrier Force A5	Newtons	34669.4	47.4	-863.1	299.9
Barrier Force A6	Newtons	3807.0	25.2	-906.7	299.9
Barrier Force A7	Newtons	5806.3	22.7	-516.8	1.6
Barrier Force A8	Newtons	3246.5	53.6	-894.2	299.9
Barrier Force A9	Newtons	370.1	54.4	-1144.2	58.3
Barrier Force B2	Newtons	10299.8	28.4	-221.5	2.6
Barrier Force B3	Newtons	37509.8	46.0	-1146.4	4.2
Barrier Force B4	Newtons	51862.8	38.9	-1127.7	1.1
Barrier Force B5	Newtons	124818.1	40.2	-1019.9	299.9
Barrier Force B6	Newtons	86976.9	22.6	-898.9	0.0
Barrier Force B7	Newtons	27922.0	20.4	-996.6	299.9
Barrier Force B8	Newtons	23893.2	19.8	-950.2	299.9
Barrier Force B9	Newtons	254.3	54.3	-775.8	18.5
Barrier Force C2	Newtons	25248.2	43.2	-350.2	20.1
Barrier Force C3	Newtons	8300.3	51.6	-365.1	2.0
Barrier Force C4	Newtons	13190.2	14.3	-1364.7	299.9
Barrier Force C5	Newtons	12814.9	44.9	-873.9	299.9
Barrier Force C6	Newtons	13055.5	52.8	-469.1	299.9
Barrier Force C7	Newtons	12103.4	20.5	-882.8	299.9
Barrier Force C8	Newtons	18849.2	34.6	-669.6	299.9
Barrier Force C9	Newtons	284.2	47.8	-1025.2	41.3
Barrier Force Sum Group 1	Newtons	46160.5	24.4	-1848.1	3.0
Barrier Force Sum Group 2	Newtons	275085.4	39.8	-3095.0	299.9
Barrier Force Sum Group 3	Newtons	55728.0	20.7	-3736.5	299.9
Barrier Force Sum Group 4	Newtons	32858.4	43.3	-565.1	2.4
Barrier Force Sum Group 5	Newtons	31948.0	54.4	-2707.8	299.9
Barrier Force Sum Group 6	Newtons	25620.2	44.7	-1774.2	299.9
Barrier Force Sum Total	Newtons	424558.5	40.3	-11639.6	299.9

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 35
02/14/01
2001 Mazda Protégé 4 Door Sedan

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

2001 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Driver A.T.D. Serial Number 35
02/14/01
2001 Mazda Protégé 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
25	UP. TIBIA LEFT MOM.	X	GPOT09MX	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
26	UP. TIBIA LEFT MOM.	Y	GPOT09MY	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
27	UP. TIBIA RIGHT MOM.	X	GPOT09MX	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
28	UP. TIBIA RIGHT MOM.	Y	GPOT09MY	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	KEIC003X	Accel., Foot Triax	I.C. Sensor	3031-500	G
36	FOOT LEFT	Y	KEIC003Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
37	FOOT LEFT	Z	KEIC003Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
38	FOOT RIGHT	X	KEIC004X	Accel., Foot Triax	I.C. Sensor	3031-500	G
39	FOOT RIGHT	Y	KEIC004Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
40	FOOT RIGHT	Z	KEIC004Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
41	LAP BELT FORCE	X	KELC001	Load cell, Seat belt	Lebow	3371	N
42	SHOULDER BELT FORCE	X	KELC002	Load cell, Seat belt	Lebow	3371	N
43	SHOULDER BELT SPOOL	X	KEPP001	Pullout pot	Celesco	PTX101-0030	CM
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 34
02/14/01
2001 Mazda Protégé 4 Door Sedan

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

2001 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Passenger A.T.D. Serial Number 34
02/14/01
2001 Mazda Protégé 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
69	UP. TIBIA LEFT MOM.	X	GPOT09MX	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
70	UP. TIBIA LEFT MOM.	Y	GPOT09MY	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
71	UP. TIBIA RIGHT MOM.	X	GPOT09MX	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
72	UP. TIBIA RIGHT MOM.	Y	GPOT09MY	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	KEIC002X	Accel., Foot Triax	I.C. Sensor	3031-500	G
80	FOOT LEFT	Y	KEIC002Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
81	FOOT LEFT	Z	KEIC002Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
82	FOOT RIGHT	X	KEIC001X	Accel., Foot Triax	I.C. Sensor	3031-500	G
83	FOOT RIGHT	Y	KEIC001Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
84	FOOT RIGHT	Z	KEIC001Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
85	LAP BELT FORCE	X	KELC003	Load cell, Seat belt	Lebow	3371	N
86	SHOULDER BELT FORCE	X	KELC004	Load cell, Seat belt	Lebow	3371	N
87	SHOULDER BELT SPOOL	X	KEPP001	Pullout pot	Celesco	PTX101-0030	MM
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
02/14/01
2001 Mazda Protégé 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
02/14/01
2001 Mazda Protégé 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
02/14/01
2001 Mazda Protégé 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.: LK02C

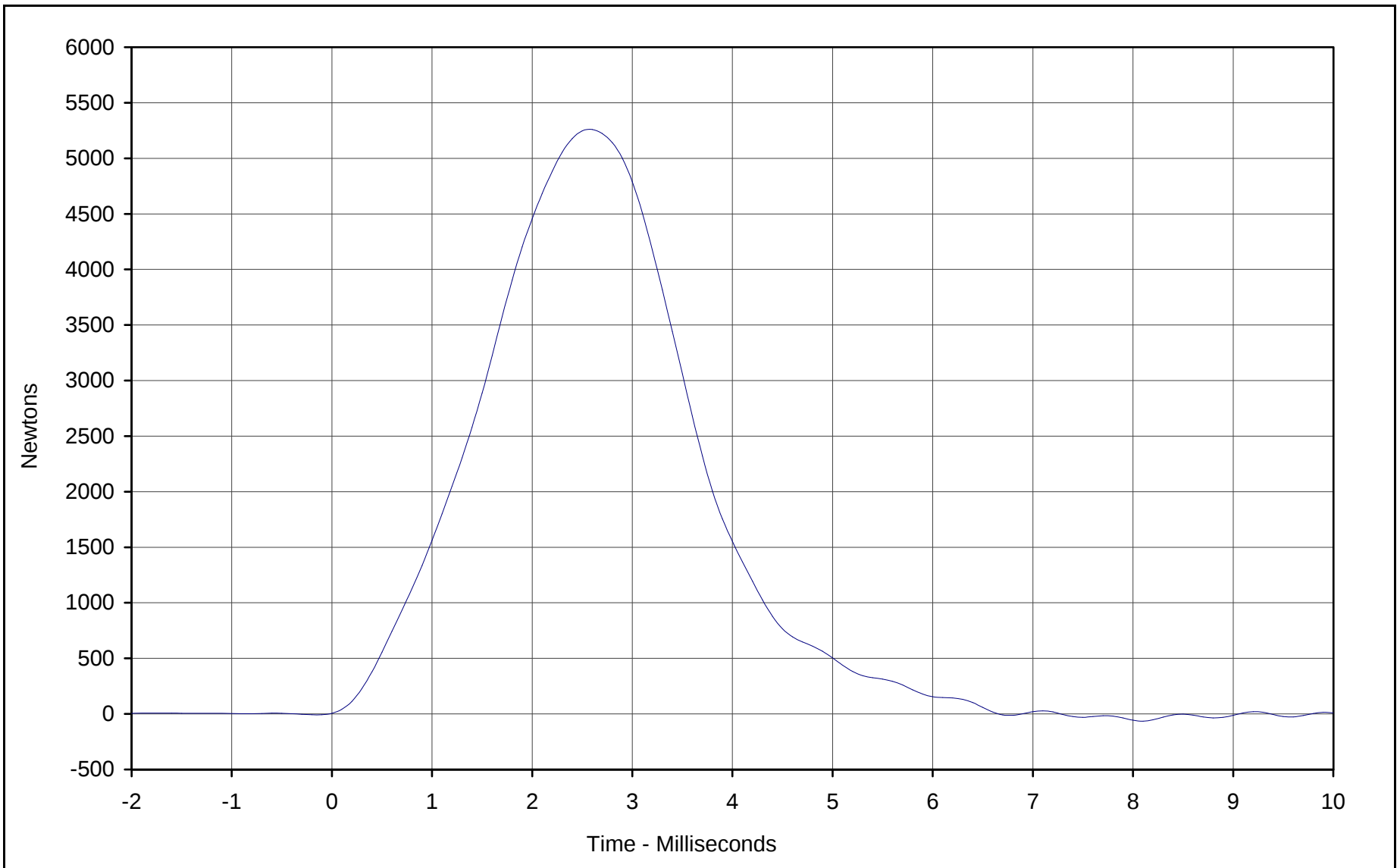
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	2.073 to 2.134	2.113	Pass
Peak Probe Force	Newtons	4715 to 5782	5258.7	Pass
Overall Test Results				Pass

Laboratory Technician

February 12, 2001
Test Date

Approved By

Date



Curve Description: Probe Force

Maximum Value:	<u>5258.7</u>	at	<u>2.6</u>	Milliseconds
Minimum Value:	<u>-56.4</u>	at	<u>8.0</u>	Milliseconds
SAE Filter Class:	<u>600</u>			
Date of Test:	<u>2/12/01</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.: LK02C





Hybrid III Calibration Data Sheet

50TH Percentile Male

Right Knee Impact Test

ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: RK02C

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	2.113	Pass
Peak Probe Force	Newtons	4715 to 5782	5297.0	Pass
Overall Test Results				Pass

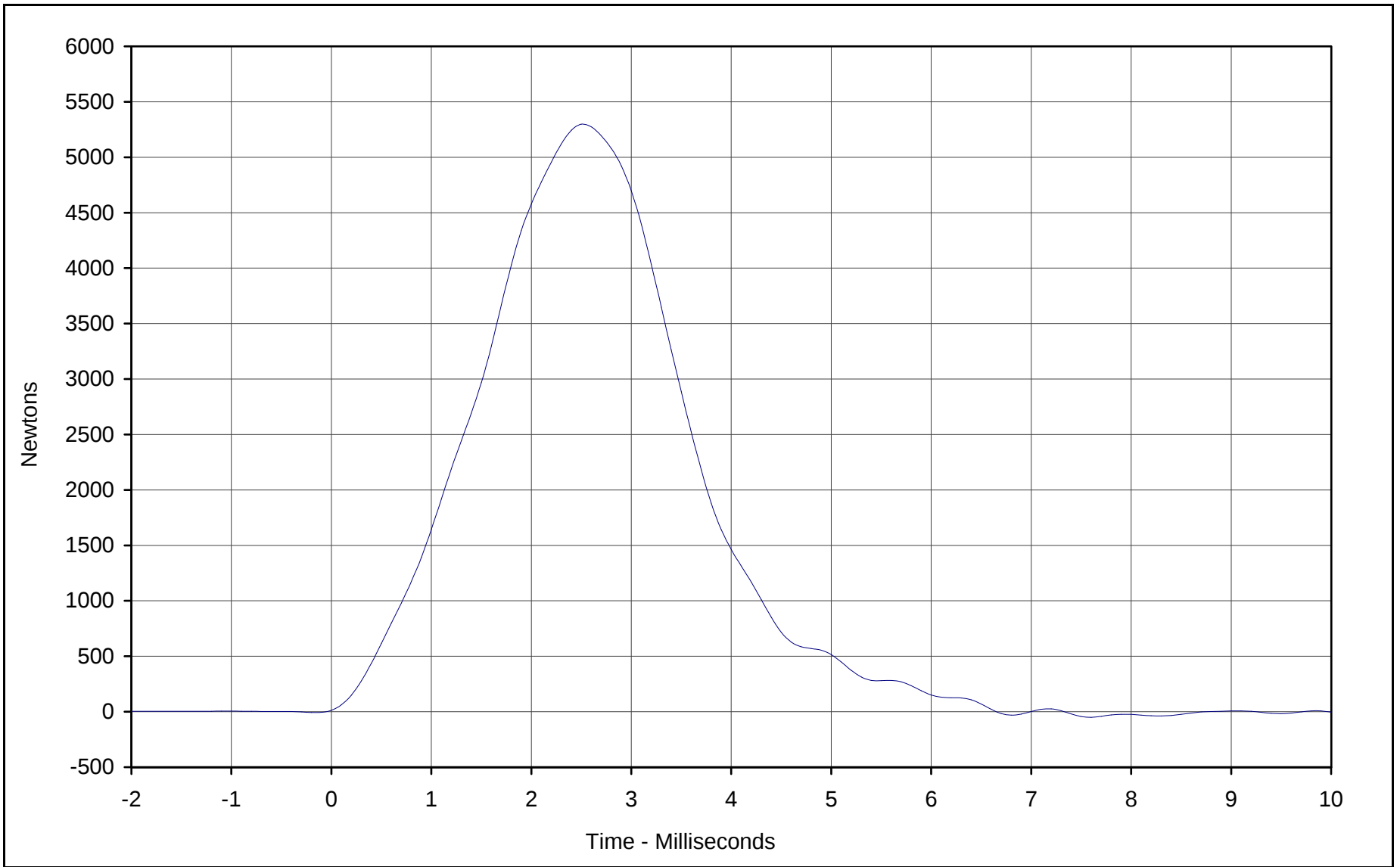
Laboratory Technician

February 12, 2001
Test Date

Approved By

Date

E-4



Curve Description: Probe Force

Maximum Value:	<u>5297.0</u>	at	<u>2.5</u>	Milliseconds
Minimum Value:	<u>-50.2</u>	at	<u>7.6</u>	Milliseconds
SAE Filter Class:	<u>600</u>			
Date of Test:	<u>2/12/01</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.: RK02C



KAR21001-11



Hybrid III Calibration Data Sheet

50TH Percentile Male

Head Drop Calibration

ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: HD01D-A

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	234.6	Pass
Peak Lateral Acceleration	G's	≤15.0	9.3	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

Laboratory Technician

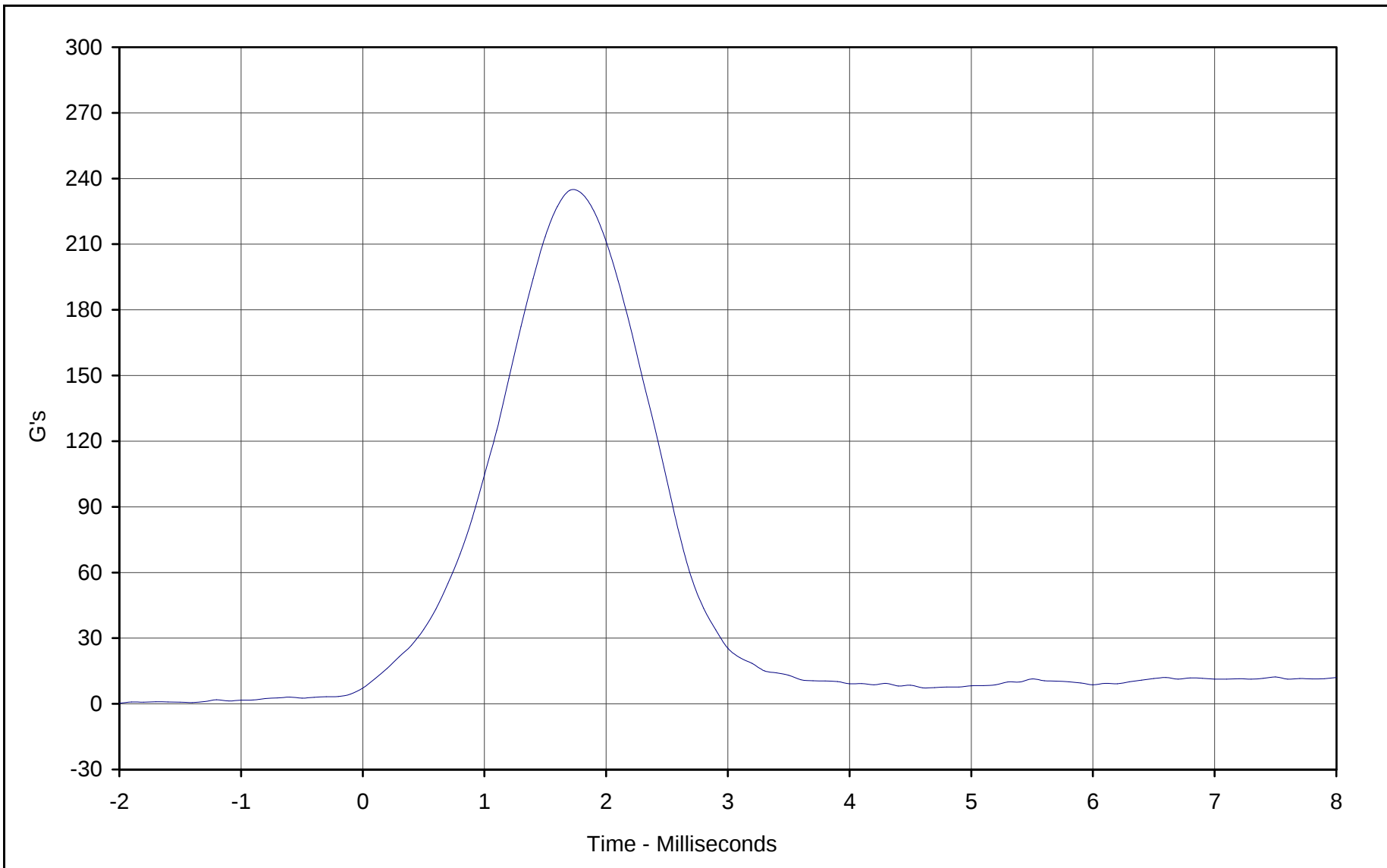
February 9, 2001

Test Date

Approved By

Date

E-6



Curve Description: Head Resultant Acceleration

Maximum Value:	<u>234.6</u>	at	<u>1.7</u>	Milliseconds
Minimum Value:	<u>0.3</u>	at	<u>-2.0</u>	Milliseconds
SAE Filter Class:	<u>1000</u>			
Date of Test:	<u>2/9/01</u>			
ATD Serial No.:	<u>034</u>			

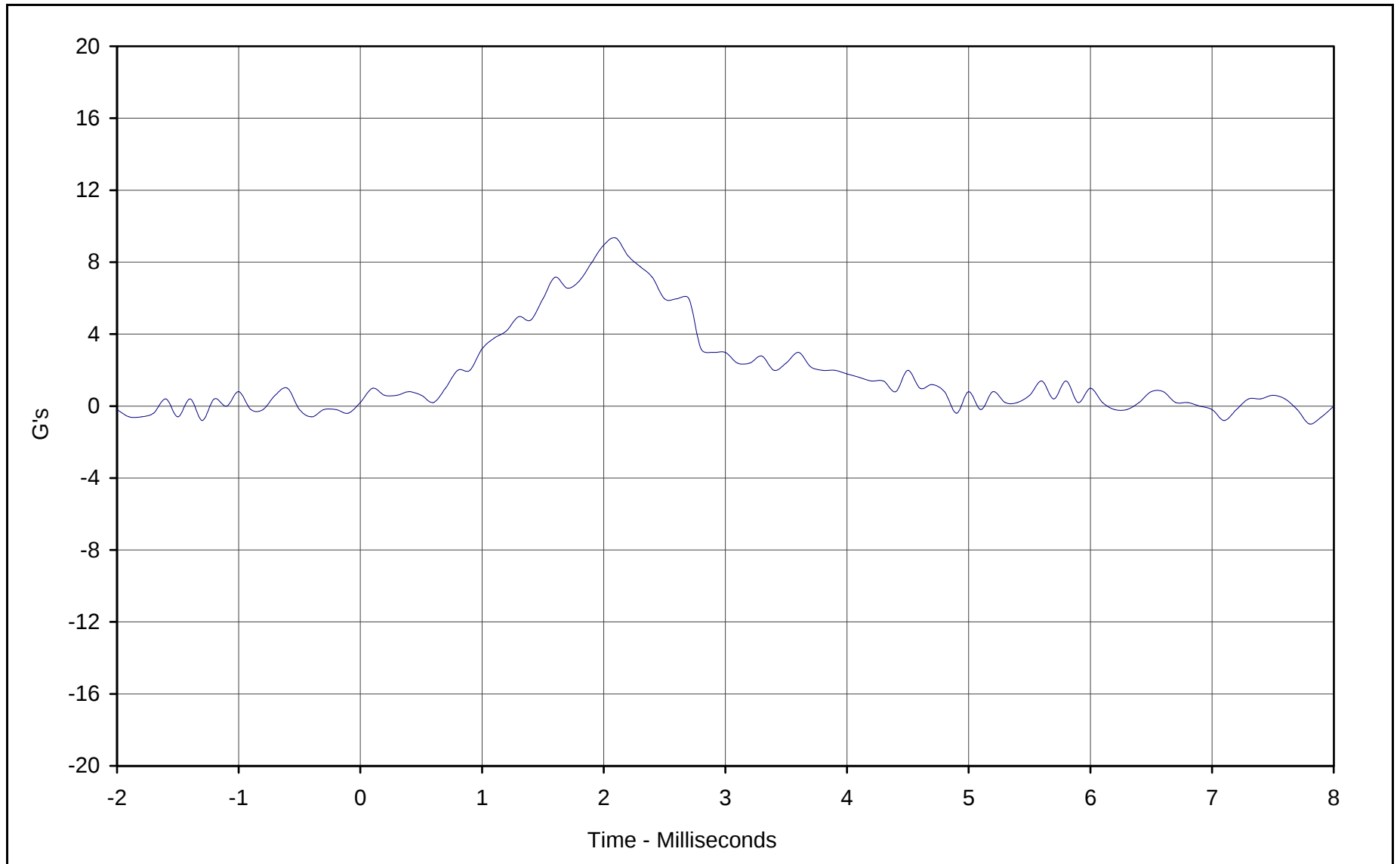
Testing Program: Hybrid III Head Drop Calibration (Male)

Test Information: S/N of Part: N/A Test I.D.: HD01D-A



KAR21001-11

E-7



Curve Description:	Head Acceleration Y Axis		
Maximum Value:	9.3	at	2.1 Milliseconds
Minimum Value:	-1.0	at	7.8 Milliseconds
SAE Filter Class:	1000		
Date of Test:	2/9/01		
ATD Serial No.:	034		

Testing Program:	Hybrid III Head Drop Calibration (Male)
Test Information:	S/N of Part: N/A Test I.D.: HD01D-A



KAR21001-11



Hybrid III Calibration Data Sheet

50TH Percentile Male

Thorax Impact Test

ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: CH02X

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	5496	Pass
Peak Sternum Displacement	CM	6.35 to 7.26	6.69	Pass
Internal Hysteresis	%	69 to 85	76.8	Pass
Overall Test Results				Pass

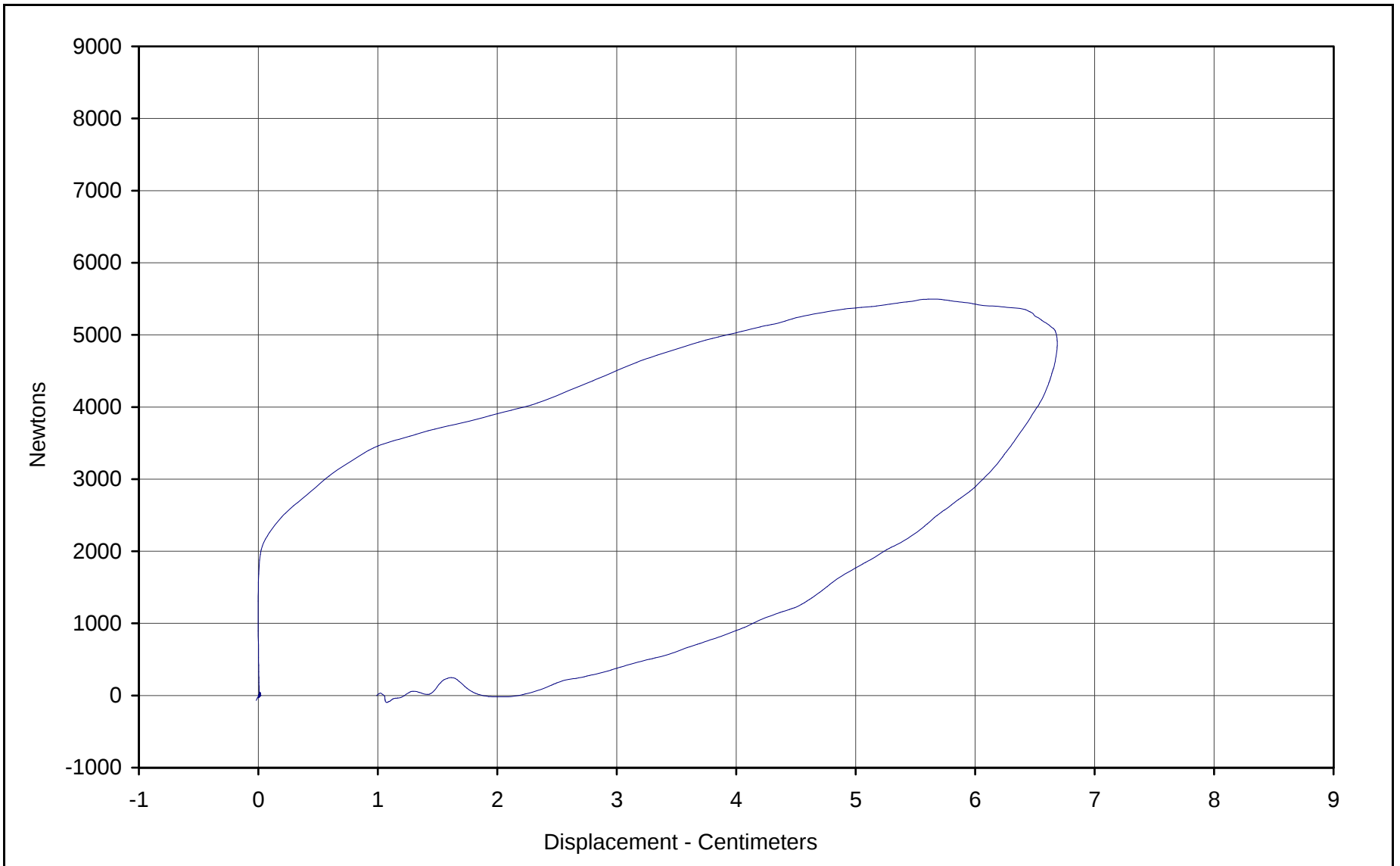
Laboratory Technician

February 10, 2001

Test Date

Approved By

Date



Curve Description: Probe Force vs. Chest Displacement

Probe Force: 5496.3 Newtons

Chest Displ.: 6.69 Centimeters

SAE Filter Class: 180

Date of Test: 2/10/01

ATD Serial No.: 034

Testing Program: Hybrid III Thorax Impact Test

Test Information: S/N of Part: N/A Test I.D.: CH02X





Hybrid III Calibration Data Sheet

50TH Percentile Male

Neck Flexion Test

ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: NF02E

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	22.6	Pass
	20 Msec.	G's	17.6 to 22.6	20.7	Pass
	30 Msec.	G's	12.5 to 18.5	18.3	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	18.3	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	36.6	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	74.0	Pass
	Time	Msec.	57.0 to 64.0	60.1	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	120.1	Pass
Moment About Occipital Condyle	Maximum	N•m	84.1 to 108.5	91.1	Pass
	Time	Msec.	47.0 to 58.0	48.4	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	101.1	Pass
Overall Test Results					Pass

Laboratory Technician

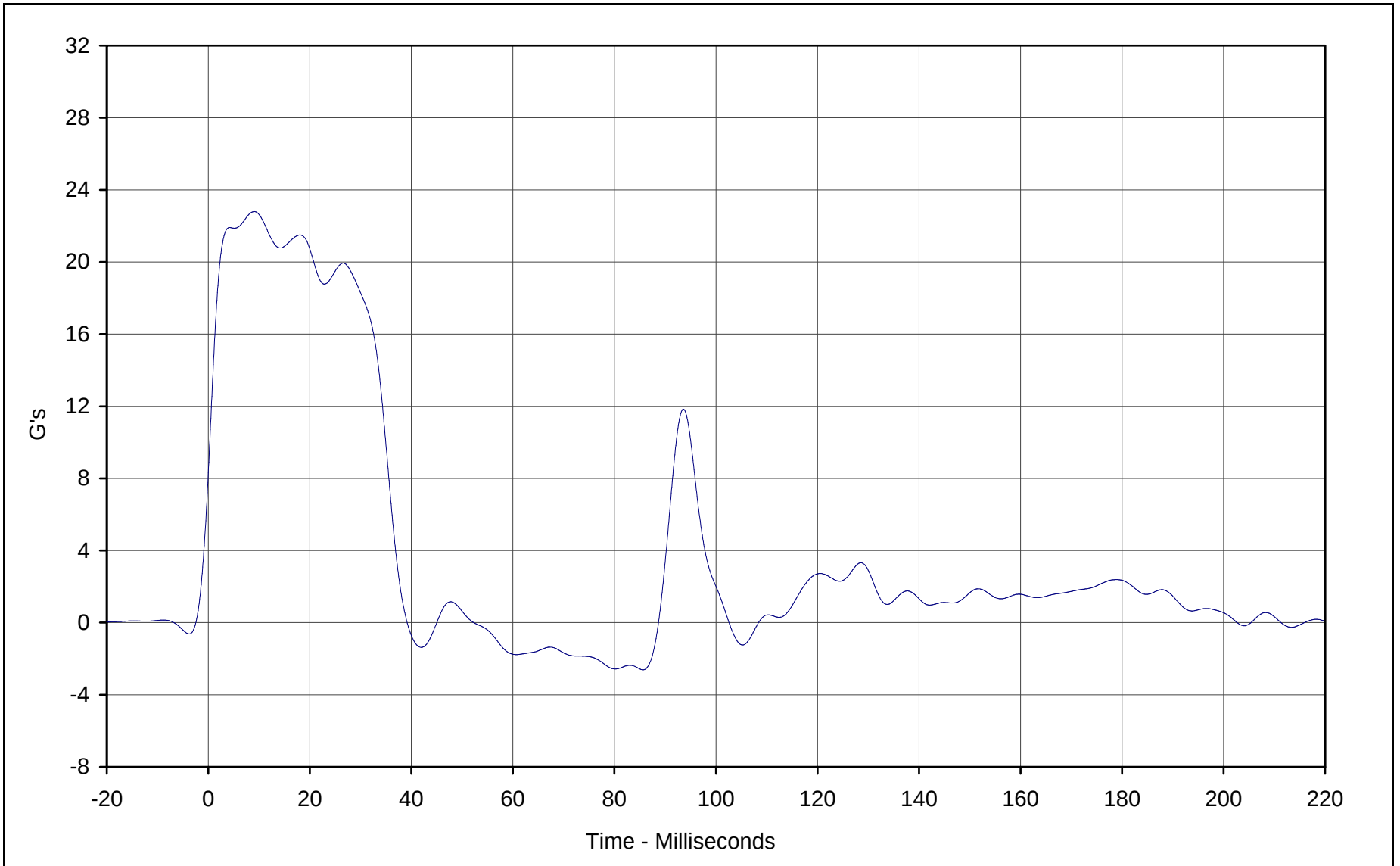
February 12, 2001

Test Date

Approved By

Date

E-11



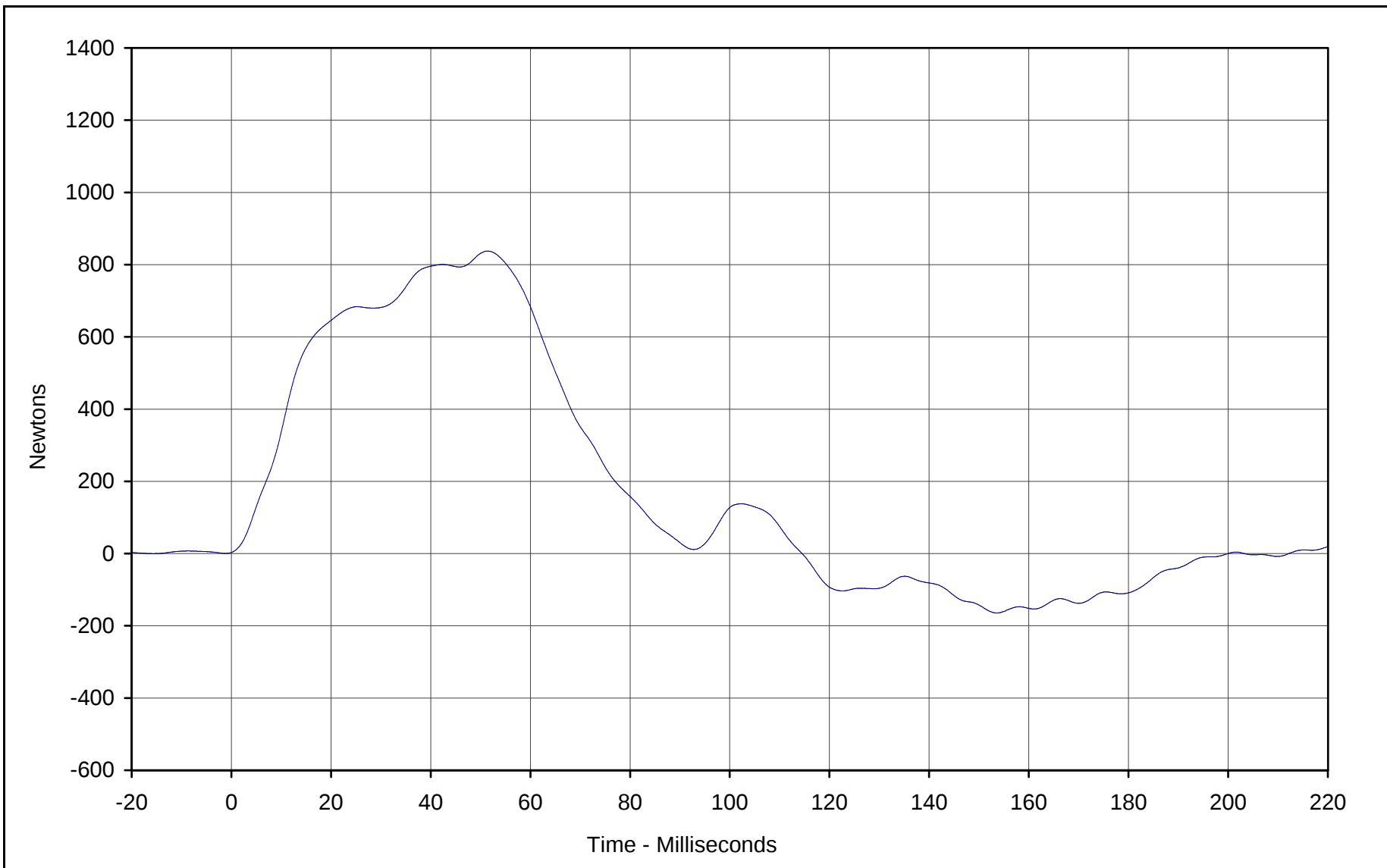
Curve Description:	Pendulum Deceleration		
Maximum Value:	22.8	at	9.1 Milliseconds
Minimum Value:	-2.6	at	85.6 Milliseconds
SAE Filter Class:	60		
Date of Test:	2/12/01		
ATD Serial No.:	034		

Testing Program:	Hybrid III Neck Flexion Test (Male)
Test Information:	S/N of Part: N/A Test I.D.: NF02E



KAR21001-11

E-12



Curve Description: Neck Force X

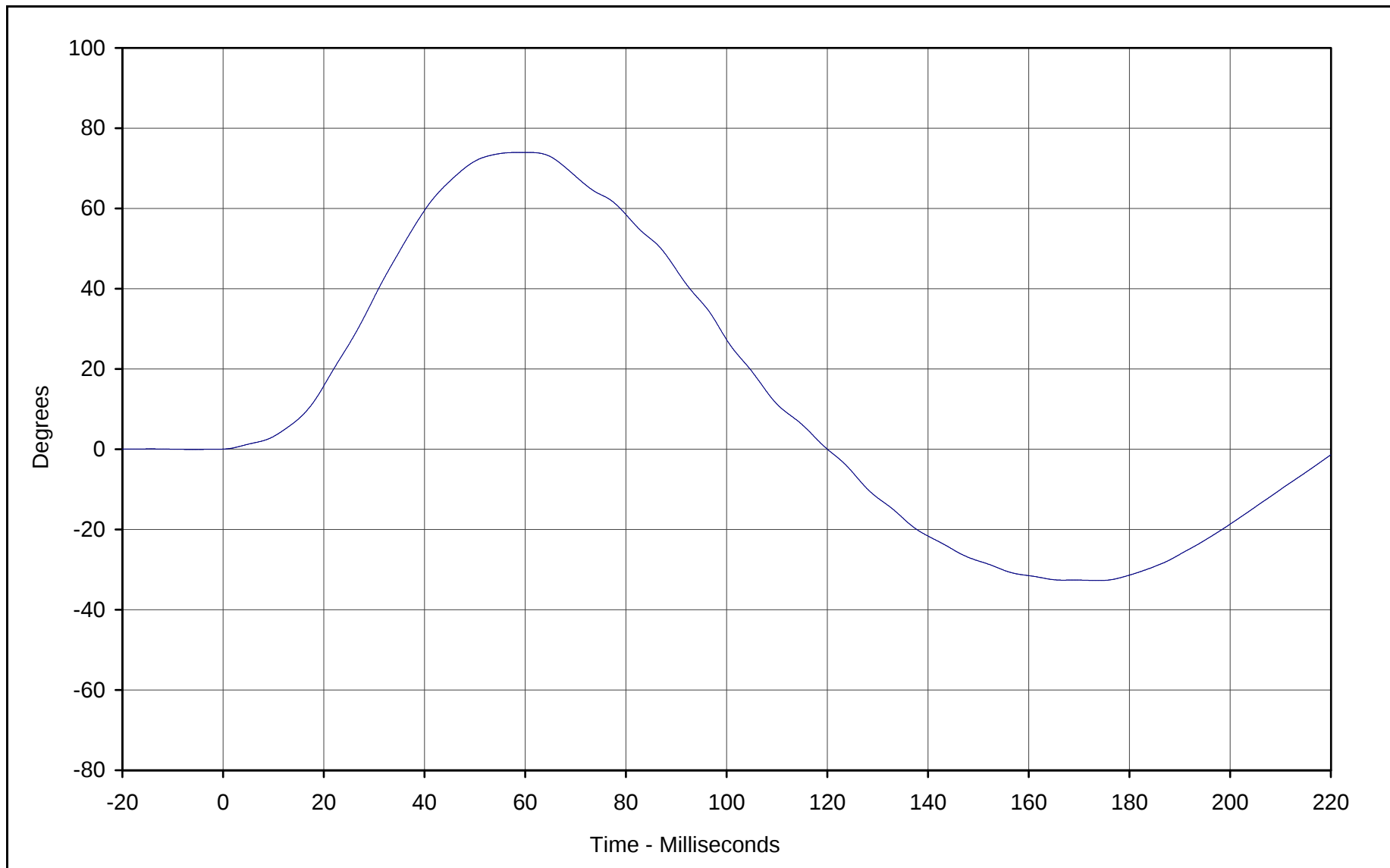
Maximum Value:	837.5	at	51.4	Milliseconds
Minimum Value:	-164.5	at	153.6	Milliseconds
SAE Filter Class:	60			
Date of Test:	2/12/01			
ATD Serial No.:	034			

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF02E



KAR21001-11



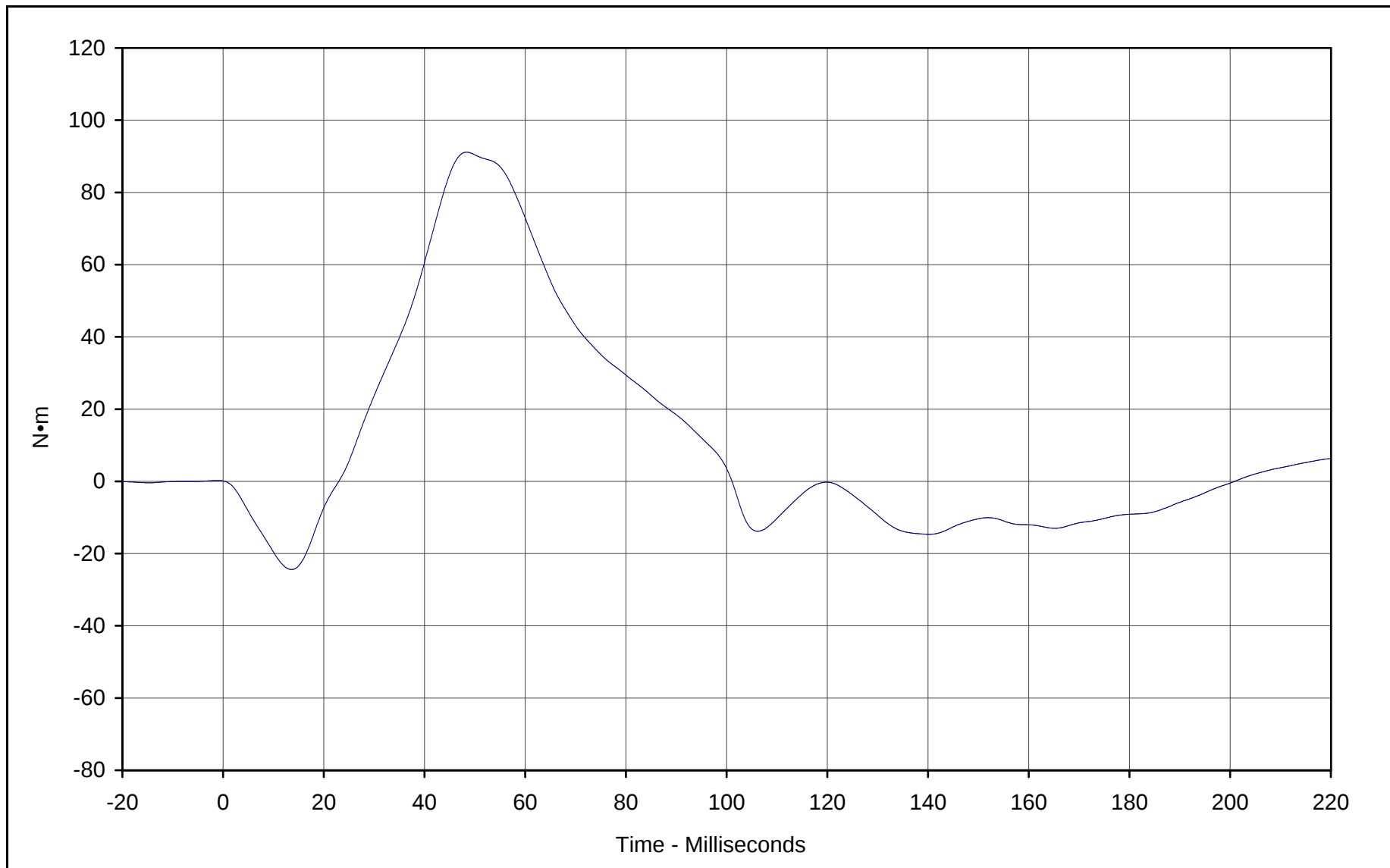
Curve Description: "D" Plane Rotation

Maximum Value:	74.0	at	60.1	Milliseconds
Minimum Value:	-32.7	at	173.8	Milliseconds
SAE Filter Class:	60			
Date of Test:	2/12/01			
ATD Serial No.:	034			

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF02E





Curve Description: Moment About Occipital Condyles

Maximum Value: 91.1 at 48.4 Milliseconds

Minimum Value: -24.4 at 13.6 Milliseconds

SAE Filter Class: 60

Date of Test: 2/12/01

ATD Serial No.: 034

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF02E





Hybrid III Calibration Data Sheet

50TH Percentile Male

Neck Extension Test

ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: NE02E

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	5.97	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	18.6	Pass
	20 Msec.	G's	14.0 to 19.0	17.7	Pass
	30 Msec.	G's	11.0 to 16.0	15.7	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	15.7	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	99.3	Pass
	Time	Msec.	72.0 to 82.0	81.6	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	161.6	Pass
Moment About Occipital Condyle	Maximum	N•m	-52.9 to- 79.9	-62.5	Pass
	Time	Msec.	65.0 to 79.0	73.9	Pass
Negative Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	143.2	Pass
Overall Test Results					Pass

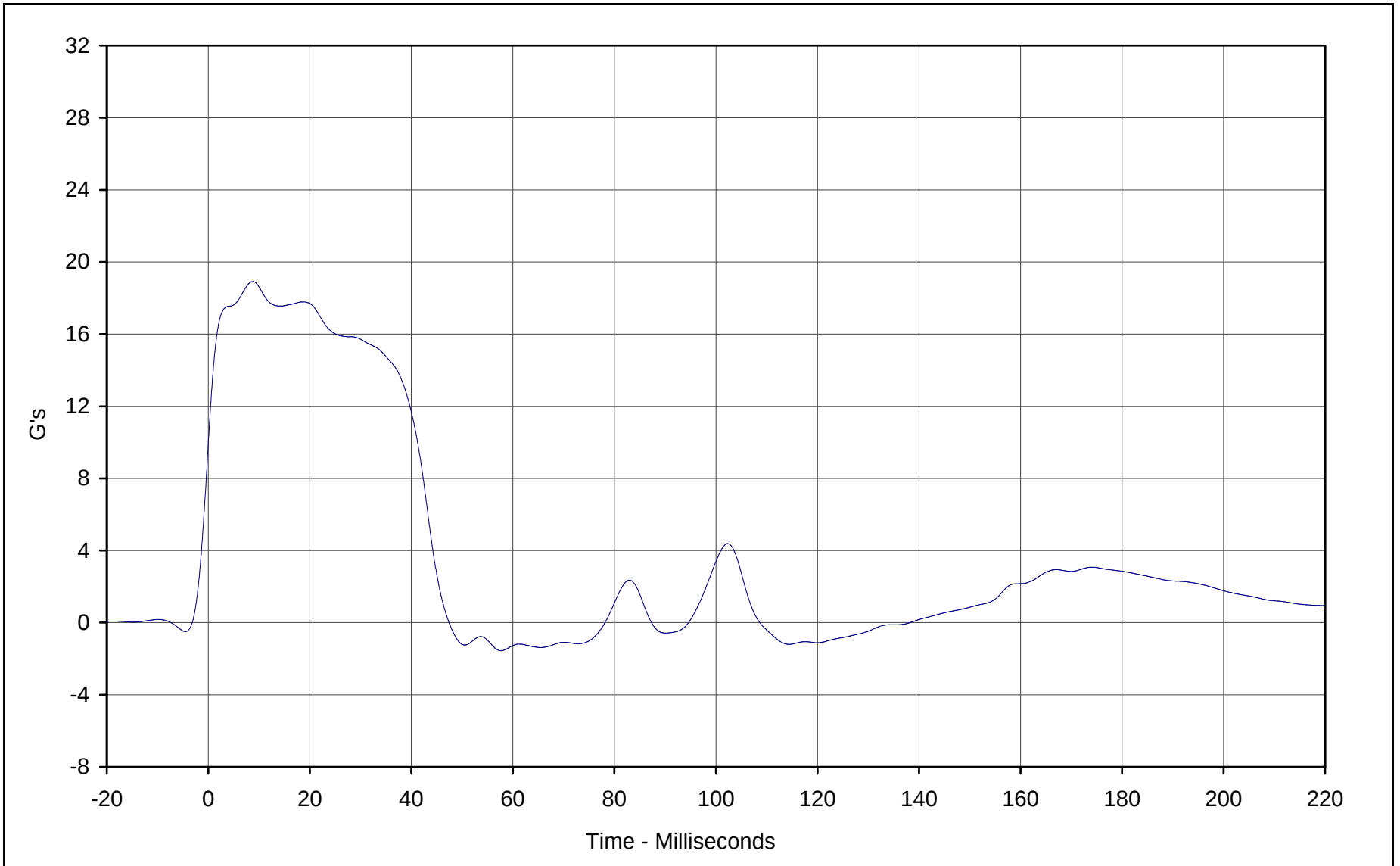
Laboratory Technician

February 12, 2001

Test Date

Approved By

Date



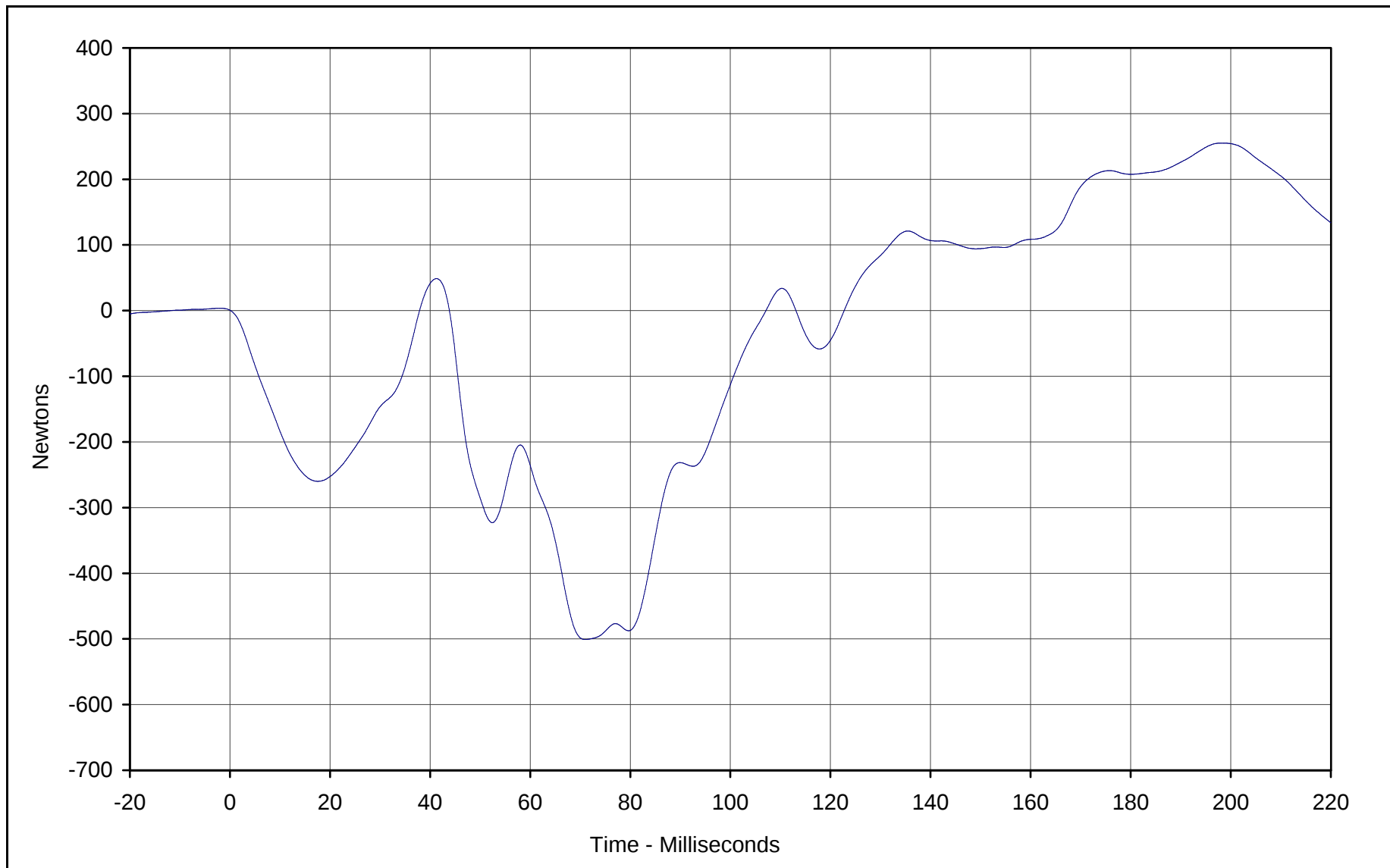
Curve Description: Pendulum Deceleration

Maximum Value:	<u>18.9</u>	at	<u>8.8</u>	Milliseconds
Minimum Value:	<u>-1.6</u>	at	<u>57.7</u>	Milliseconds
SAE Filter Class:	<u>60</u>			
Date of Test:	<u>2/12/01</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.: NE02E





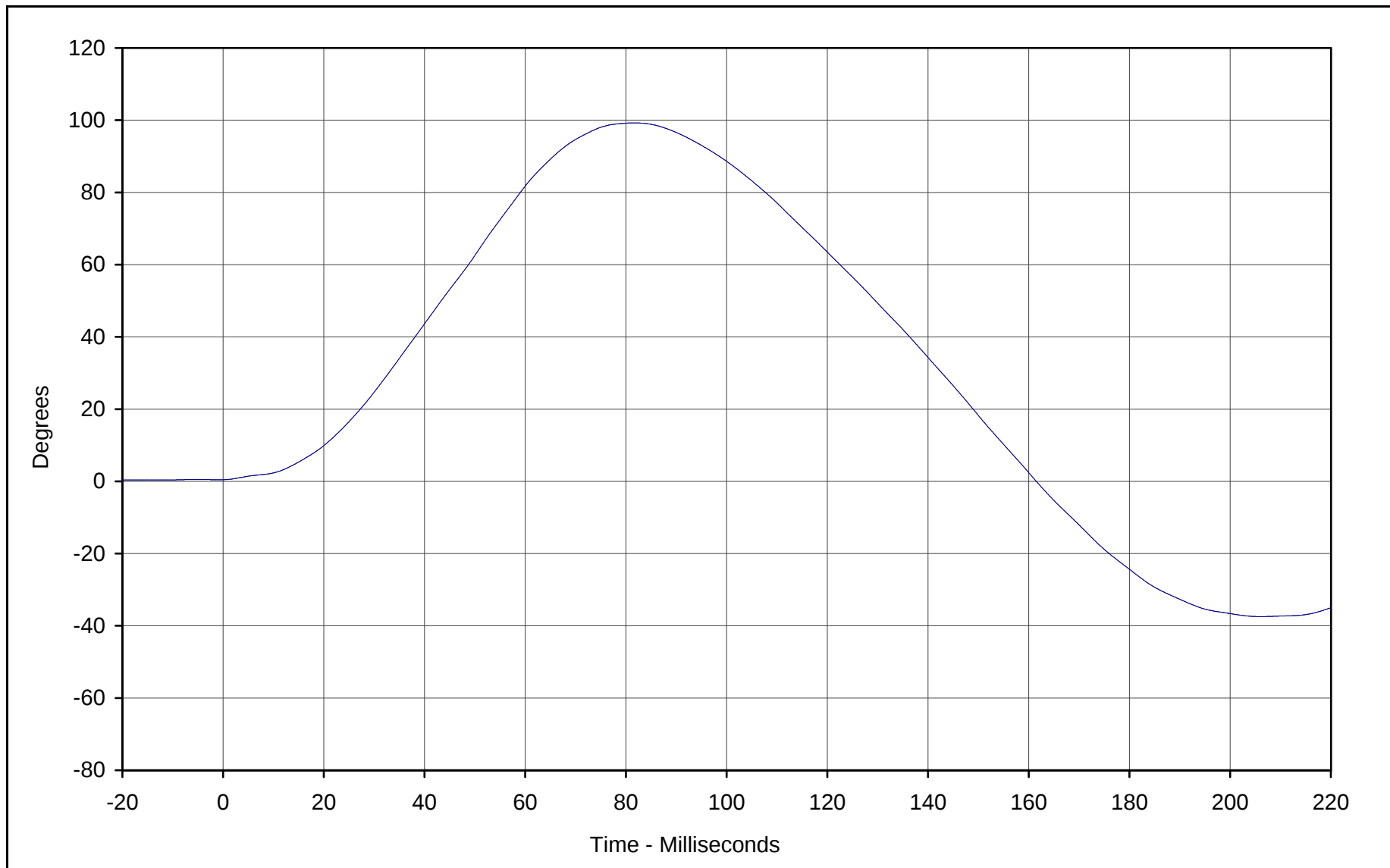
Curve Description: Neck Force X

Maximum Value:	255.1	at	198.3	Milliseconds
Minimum Value:	-500.9	at	71.0	Milliseconds
SAE Filter Class:	60			
Date of Test:	2/12/01			
ATD Serial No.:	034			

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE02E





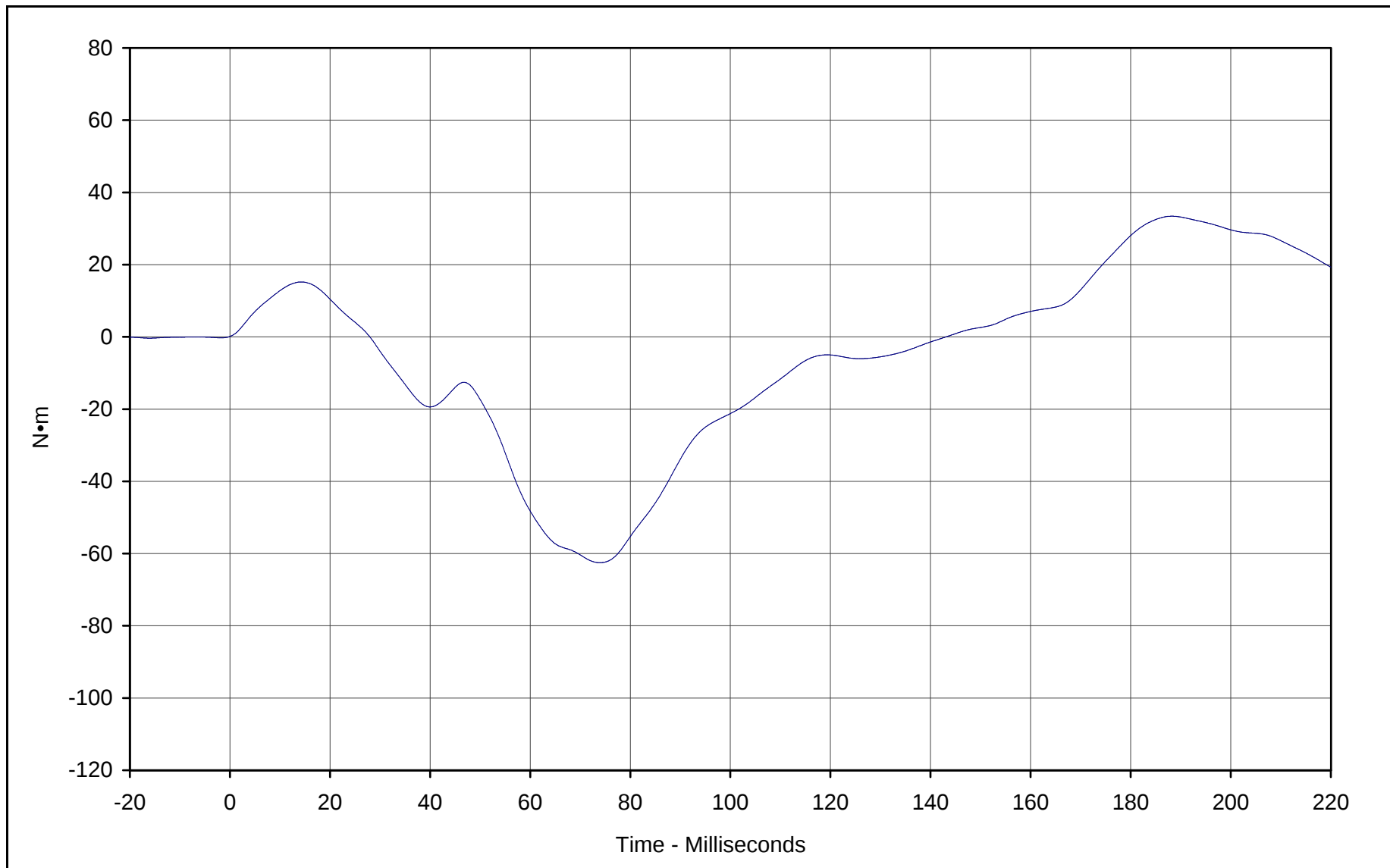
Curve Description: "D" Plane Rotation

Maximum Value:	99.3	at	81.6	Milliseconds
Minimum Value:	-37.4	at	206.1	Milliseconds
SAE Filter Class:	60			
Date of Test:	2/12/01			
ATD Serial No.:	034			

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE02E





Curve Description: Moment About Occipital Condyles

Maximum Value: 33.4 at 188.2 Milliseconds

Minimum Value: -62.5 at 73.9 Milliseconds

SAE Filter Class: 60

Date of Test: 2/12/01

ATD Serial No.: 034

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE02E





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	502	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

February 12, 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.: LK02D

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	2.113	Pass
Peak Probe Force	Newtons	4715 to 5782	5267.2	Pass
Overall Test Results				Pass

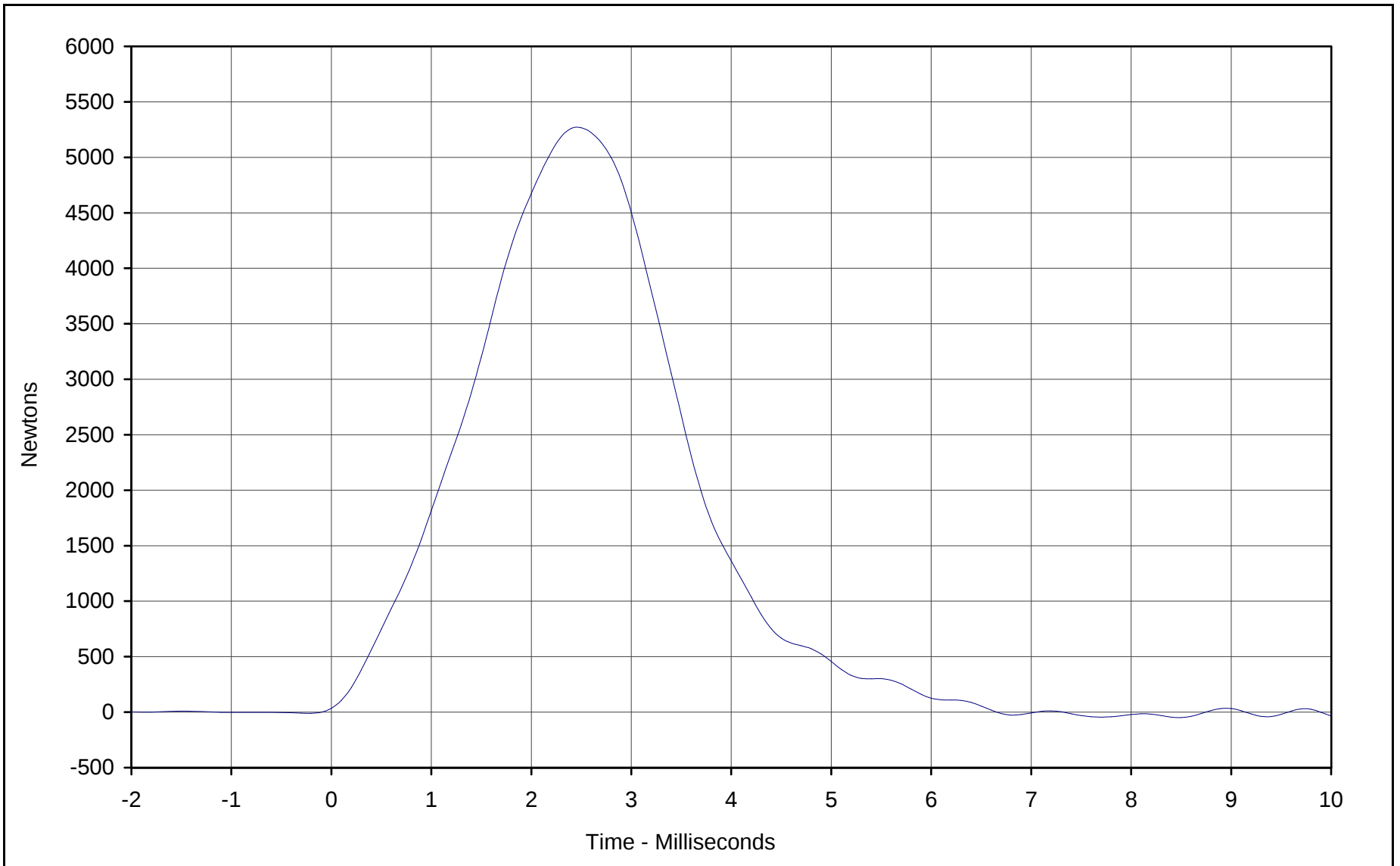
Laboratory Technician

February 12, 2001
Test Date

Approved By

Date

E-22



Curve Description:	Probe Force		
Maximum Value:	5267.2	at	2.5 Milliseconds
Minimum Value:	-45.8	at	7.7 Milliseconds
SAE Filter Class:	600		
Date of Test:	2/12/01		
ATD Serial No.:	035		

Testing Program:	Hybrid III Left Knee Impact Test
Test Information:	Part S/N: N/A Test I.D.: LK02D



KAR21001-11



Hybrid III Calibration Data Sheet

50TH Percentile Male

Right Knee Impact Test

ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: RK02D

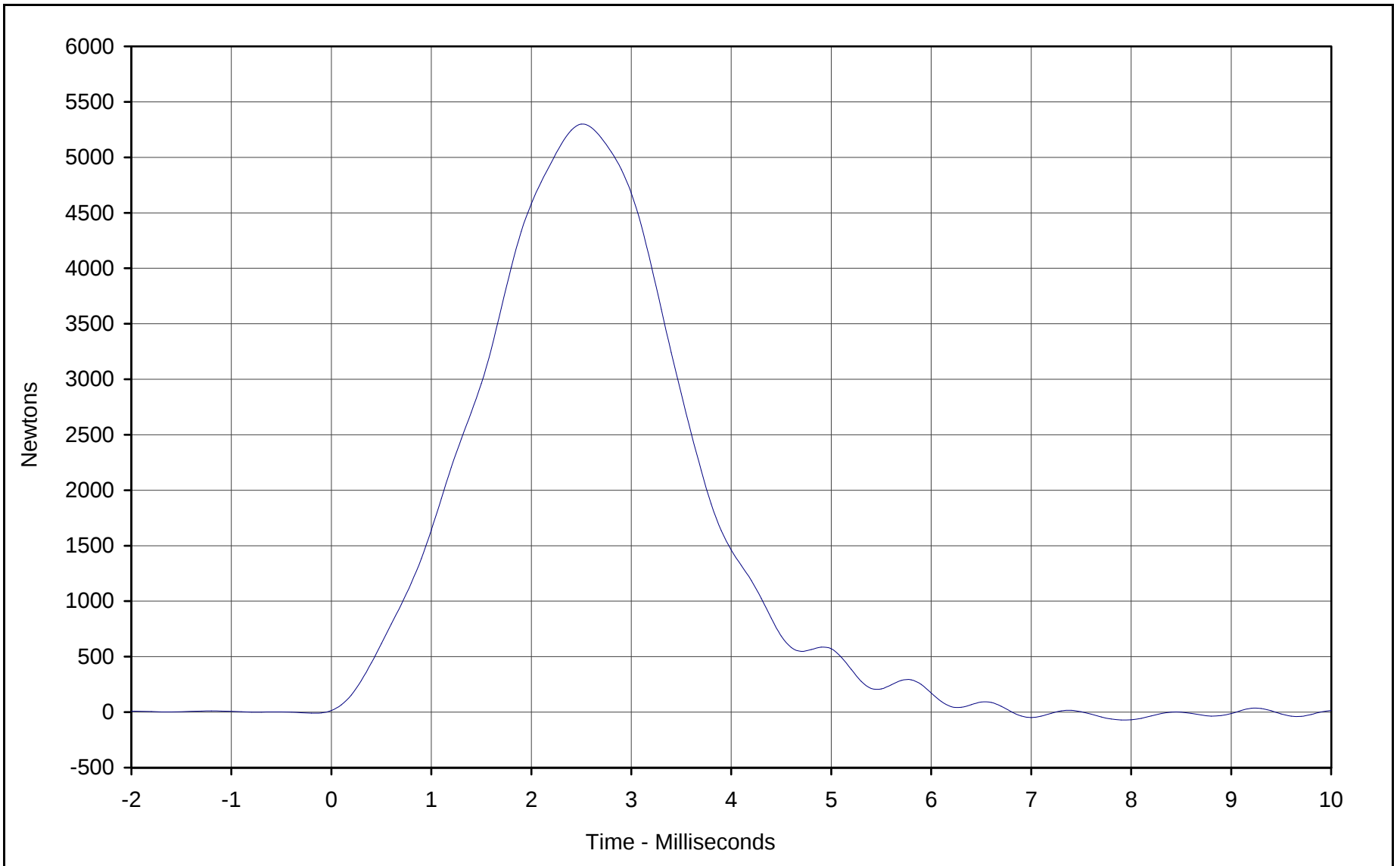
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	2.073 to 2.134	2.134	Pass
Peak Probe Force	Newtons	4715 to 5782	5299.2	Pass
Overall Test Results				Pass

Laboratory Technician

February 12, 2001
Test Date

Approved By

Date



Curve Description: Probe Force

Maximum Value: 5299.2 at 2.5 Milliseconds

Minimum Value: -71.0 at 7.9 Milliseconds

SAE Filter Class: 600

Date of Test: 2/12/01

ATD Serial No.: 035

Testing Program: Hybrid III Right Knee Impact Test

Test Information: Part S/N: N/A Test I.D.: RK02D





Hybrid III Calibration Data Sheet

50TH Percentile Male

Head Drop Calibration

ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: HD01E-A

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	229.4	Pass
Peak Lateral Acceleration	G's	≤15.0	11.1	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

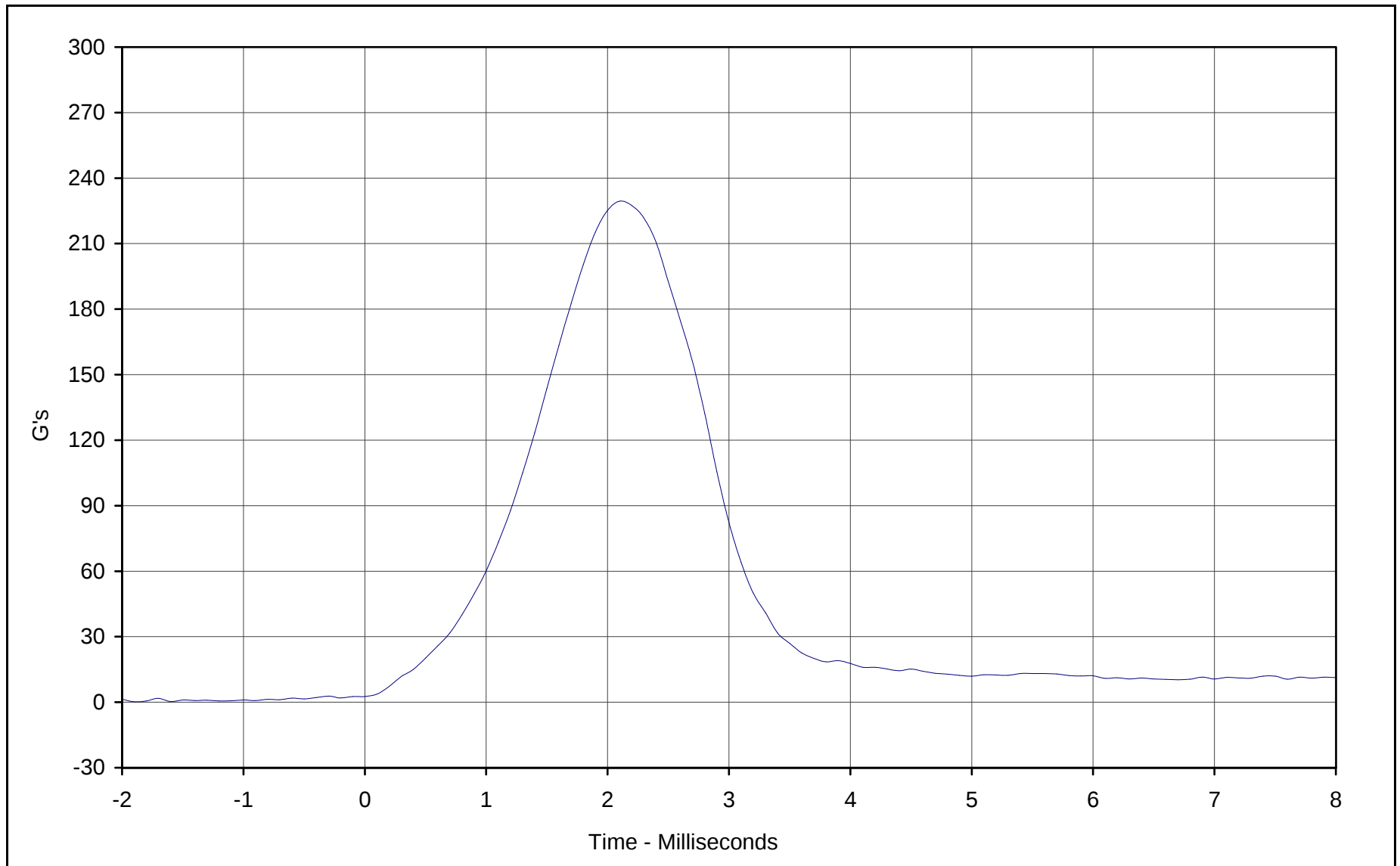
Laboratory Technician

February 9, 2001

Test Date

Approved By

Date



Curve Description: Head Resultant Acceleration

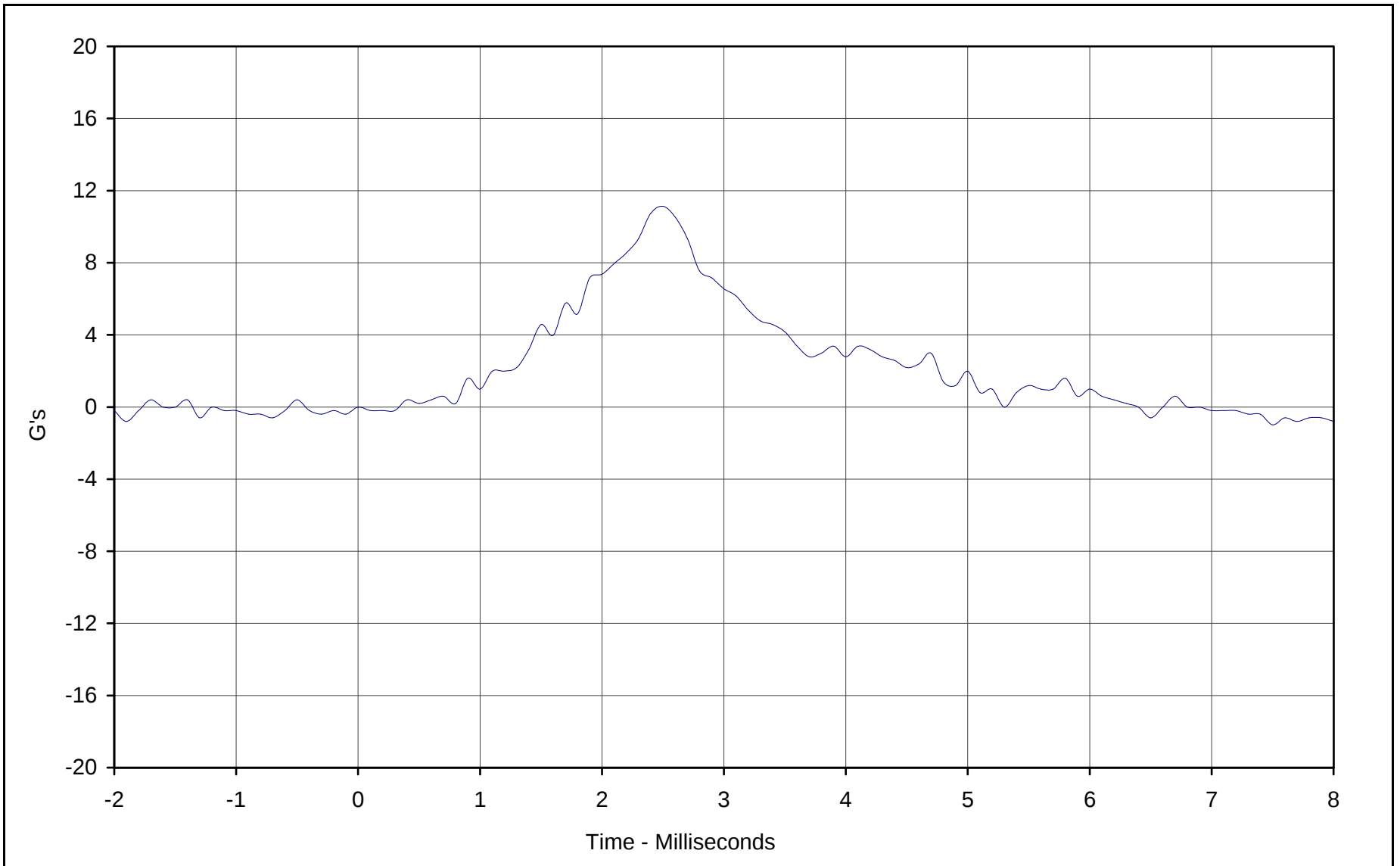
Maximum Value:	<u>229.4</u>	at	<u>2.1</u>	Milliseconds
Minimum Value:	<u>0.2</u>	at	<u>-1.9</u>	Milliseconds
SAE Filter Class:	<u>1000</u>			
Date of Test:	<u>2/9/01</u>			
ATD Serial No.:	<u>035</u>			

Testing Program: Hybrid III Head Drop Calibration (Male)

Test Information: S/N of Part: N/A Test I.D.: HD01E-A



E-27



Curve Description: Head Acceleration Y Axis

Maximum Value:	11.1	at	2.5	Milliseconds
Minimum Value:	-1.0	at	7.5	Milliseconds
SAE Filter Class:	1000			
Date of Test:	2/9/01			
ATD Serial No.:	035			

Testing Program: Hybrid III Head Drop Calibration (Male)

Test Information: S/N of Part: N/A Test I.D.: HD01E-A



KAR21001-11



Hybrid III Calibration Data Sheet

50TH Percentile Male

Thorax Impact Test

ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: CH02Y

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	5669	Pass
Peak Sternum Displacement	CM	6.35 to 7.26	6.99	Pass
Internal Hysteresis	%	69 to 85	73.6	Pass
Overall Test Results				Pass

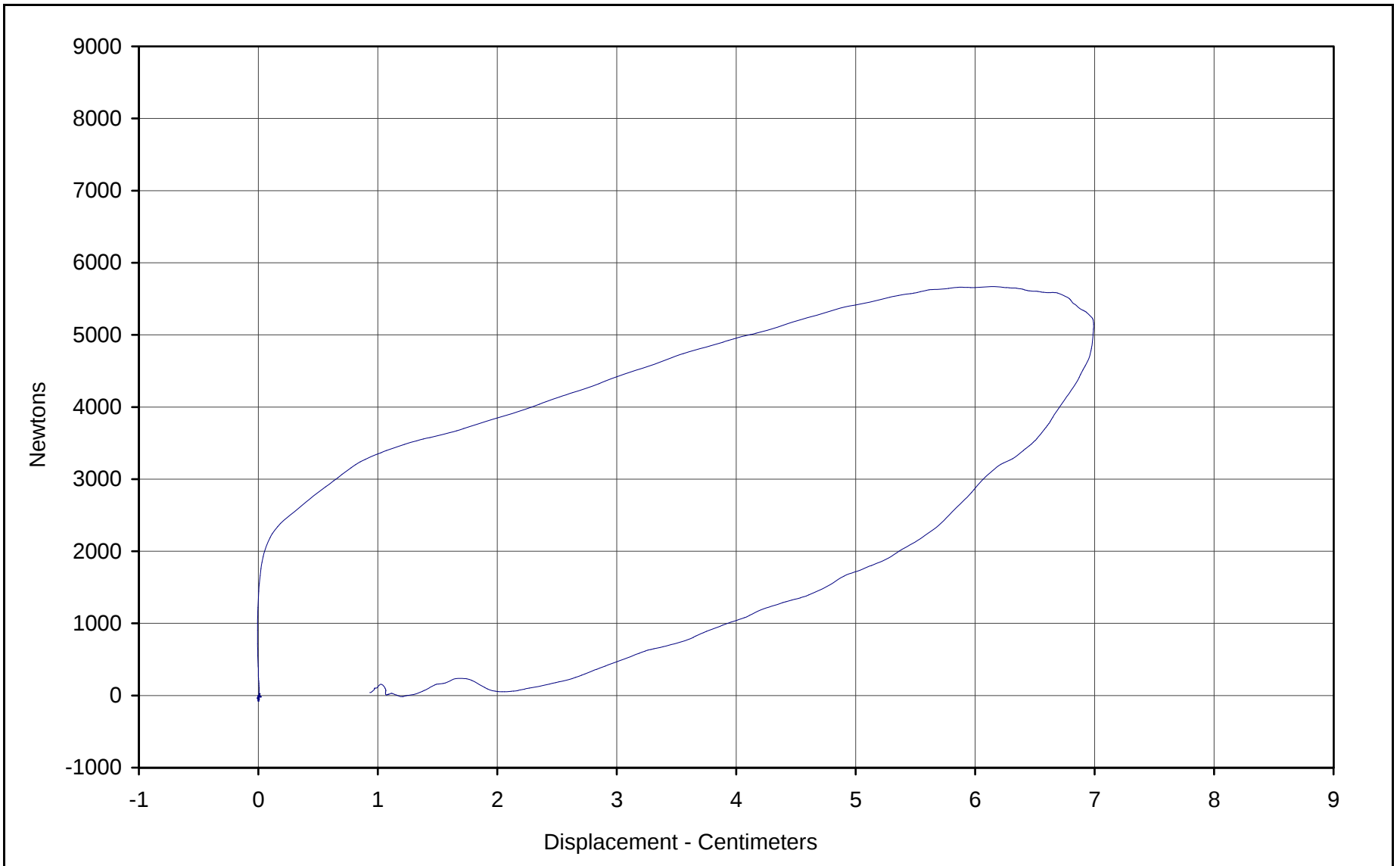
Laboratory Technician

February 10, 2001

Test Date

Approved By

Date



Curve Description: Probe Force vs. Chest Displacement

Probe Force: 5668.5 Newtons

Chest Displ.: 6.99 Centimeters

SAE Filter Class: 180

Date of Test: 2/10/01

ATD Serial No.: 035

Testing Program: Hybrid III Thorax Impact Test

Test Information: S/N of Part: N/A Test I.D.: CH02Y





Hybrid III Calibration Data Sheet

50TH Percentile Male

Neck Flexion Test

ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: NF02F

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	6.91	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	23.5	Pass
	20 Msec.	G's	17.6 to 22.6	19.9	Pass
	30 Msec.	G's	12.5 to 18.5	17.5	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	17.5	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	39.9	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	66.1	Pass
	Time	Msec.	57.0 to 64.0	58.6	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	115.5	Pass
Moment About Occipital Condyle	Maximum	N·m	84.1 to 108.5	89.1	Pass
	Time	Msec.	47.0 to 58.0	52.4	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	97.6	Pass
Overall Test Results					Pass

Laboratory Technician

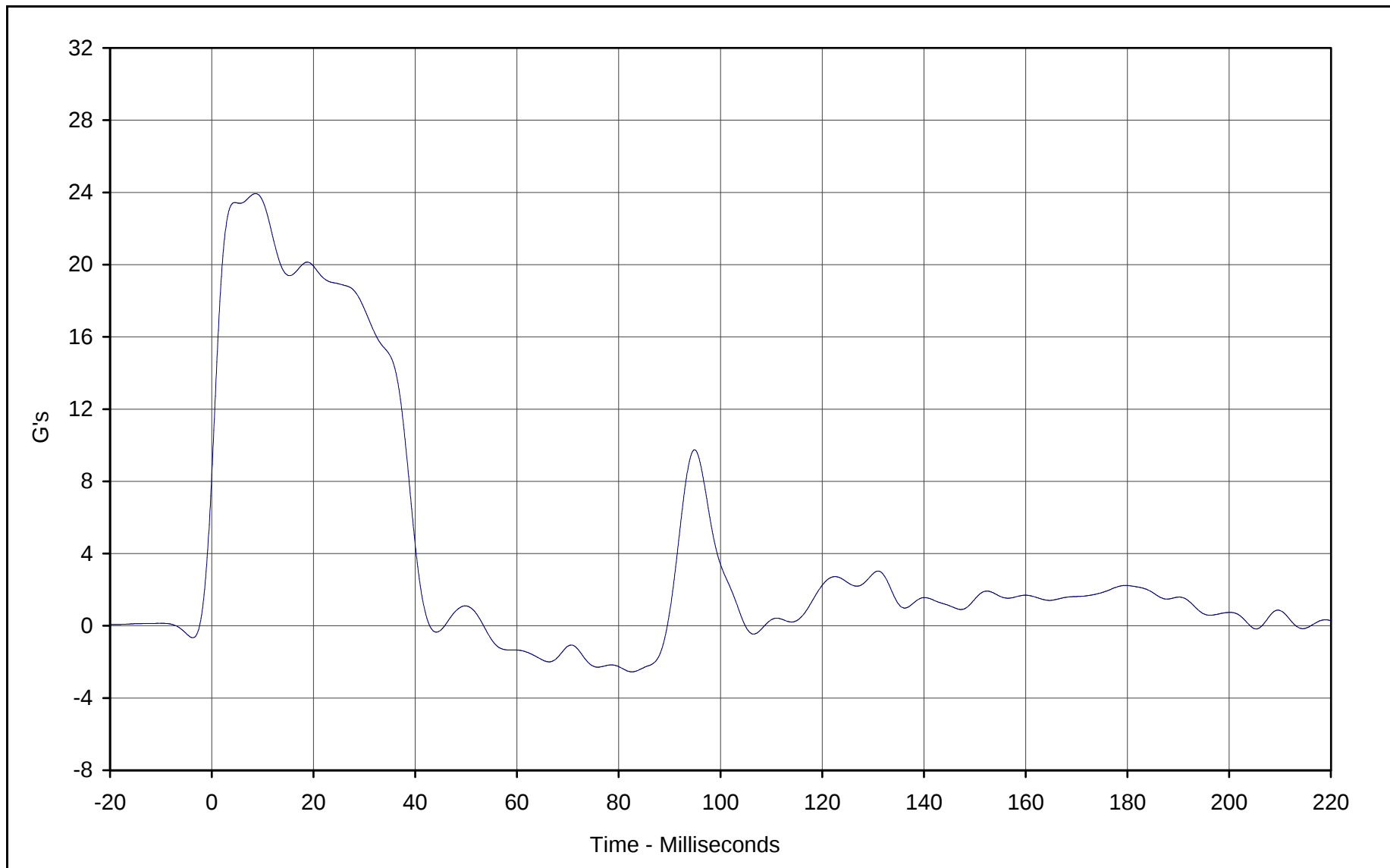
February 12, 2001

Test Date

Approved By

Date

E-31



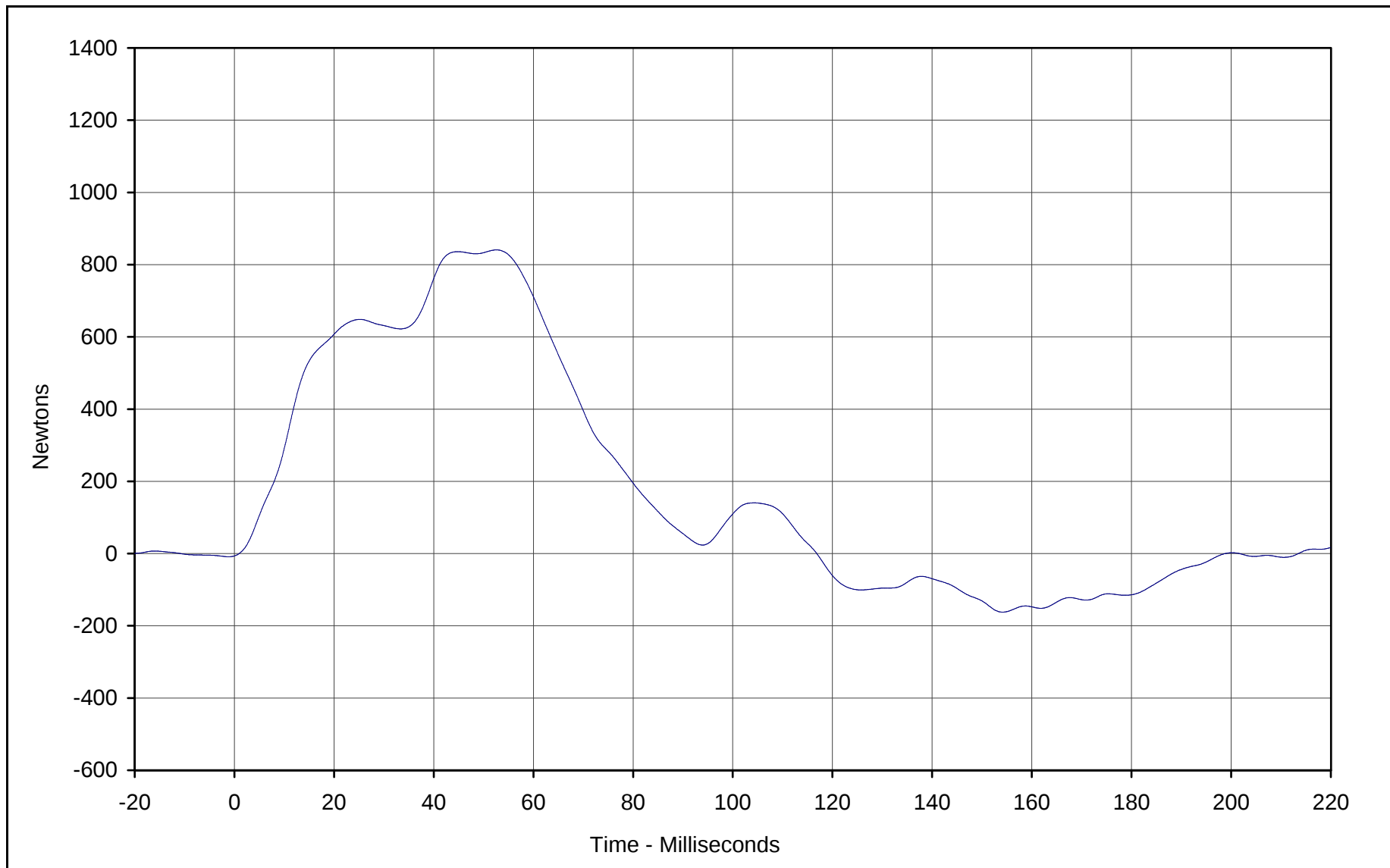
Curve Description:	Pendulum Deceleration		
Maximum Value:	23.9	at	8.6 Milliseconds
Minimum Value:	-2.6	at	82.6 Milliseconds
SAE Filter Class:	60		
Date of Test:	2/12/01		
ATD Serial No.:	035		

Testing Program:	Hybrid III Neck Flexion Test (Male)
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Test Information:	S/N of Part: N/A Test I.D.: NF02F
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KAR21001-11



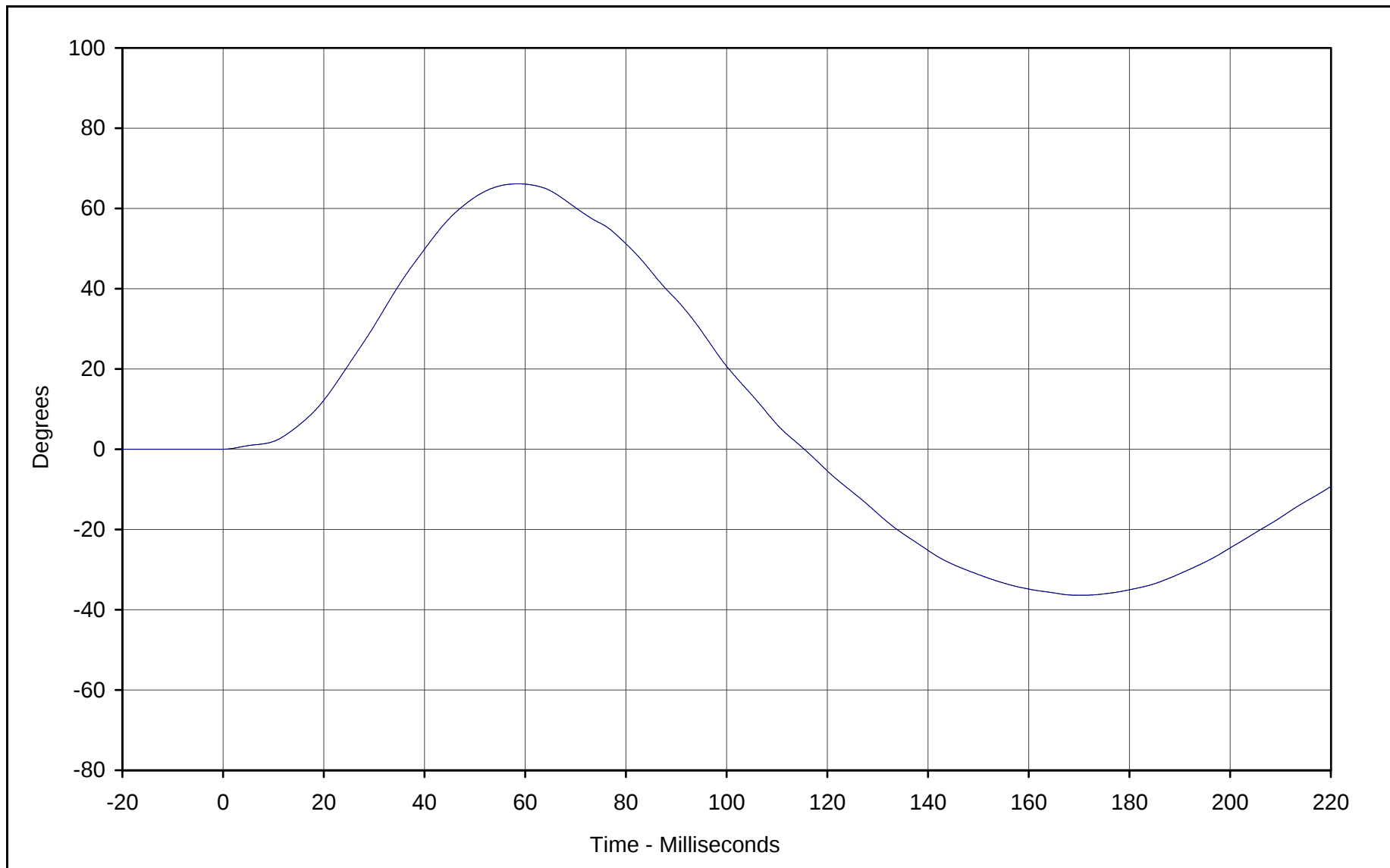
Curve Description: Neck Force X

Maximum Value:	840.8	at	52.6	Milliseconds
Minimum Value:	-162.2	at	154.1	Milliseconds
SAE Filter Class:	60			
Date of Test:	2/12/01			
ATD Serial No.:	035			

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF02F





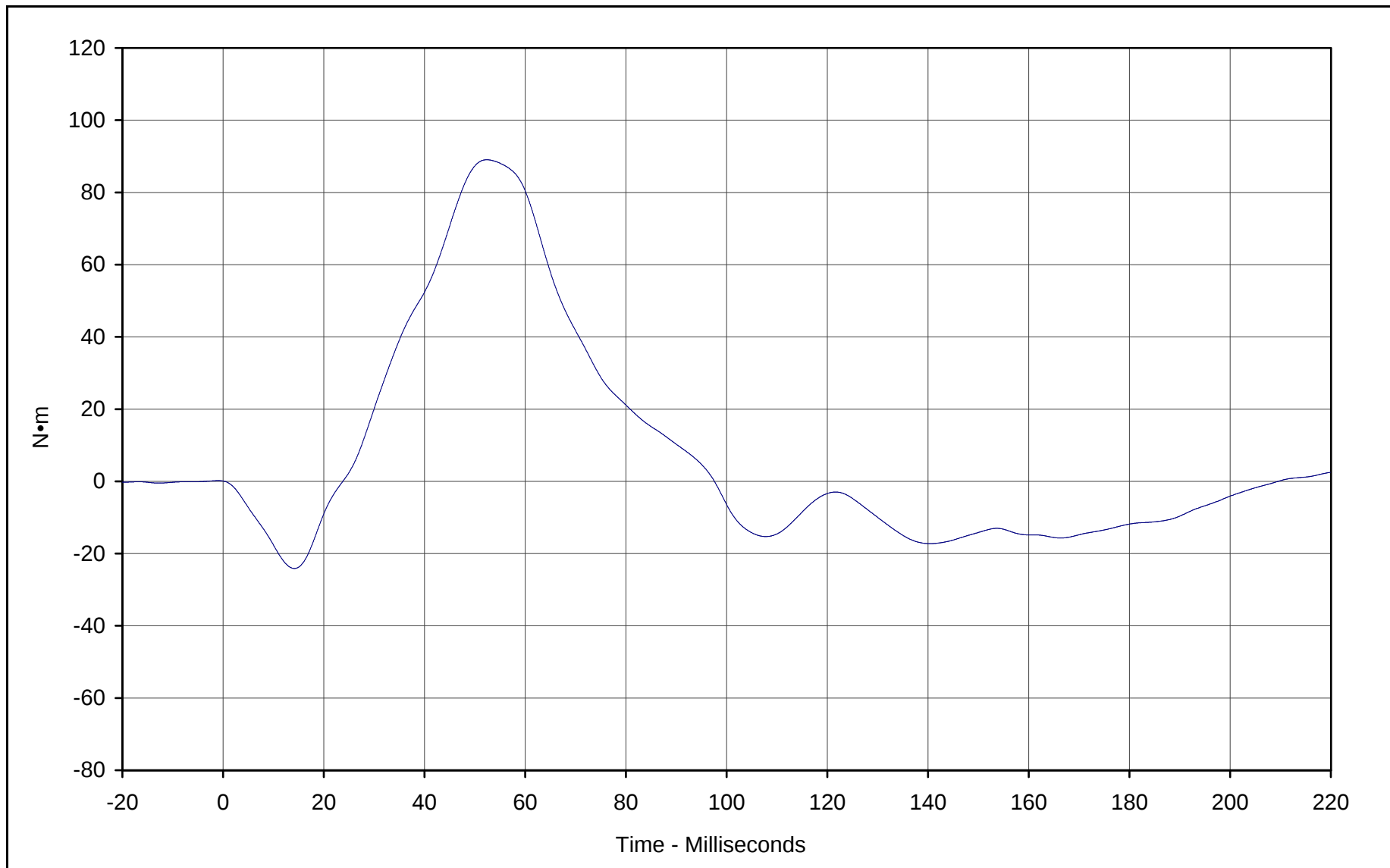
Curve Description: "D" Plane Rotation

Maximum Value:	66.1	at	58.6	Milliseconds
Minimum Value:	-36.4	at	170.1	Milliseconds
SAE Filter Class:	60			
Date of Test:	2/12/01			
ATD Serial No.:	035			

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF02F





Curve Description: Moment About Occipital Condyles

Maximum Value: 89.1 at 52.4 Milliseconds

Minimum Value: -24.1 at 14.2 Milliseconds

SAE Filter Class: 60

Date of Test: 2/12/01

ATD Serial No.: 035

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF02F





Hybrid III Calibration Data Sheet

50TH Percentile Male

Neck Extension Test

ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: NE02E-A

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	5.97	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	18.2	Pass
	20 Msec.	G's	14.0 to 19.0	18.1	Pass
	30 Msec.	G's	11.0 to 16.0	15.9	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	15.9	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	39.3	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	100.6	Pass
	Time	Msec.	72.0 to 82.0	77.9	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	154.5	Pass
Moment About Occipital Condyle	Maximum	N•m	-52.9 to- 79.9	-76.9	Pass
	Time	Msec.	65.0 to 79.0	69.1	Pass
Negative Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	141.0	Pass
Overall Test Results					Pass

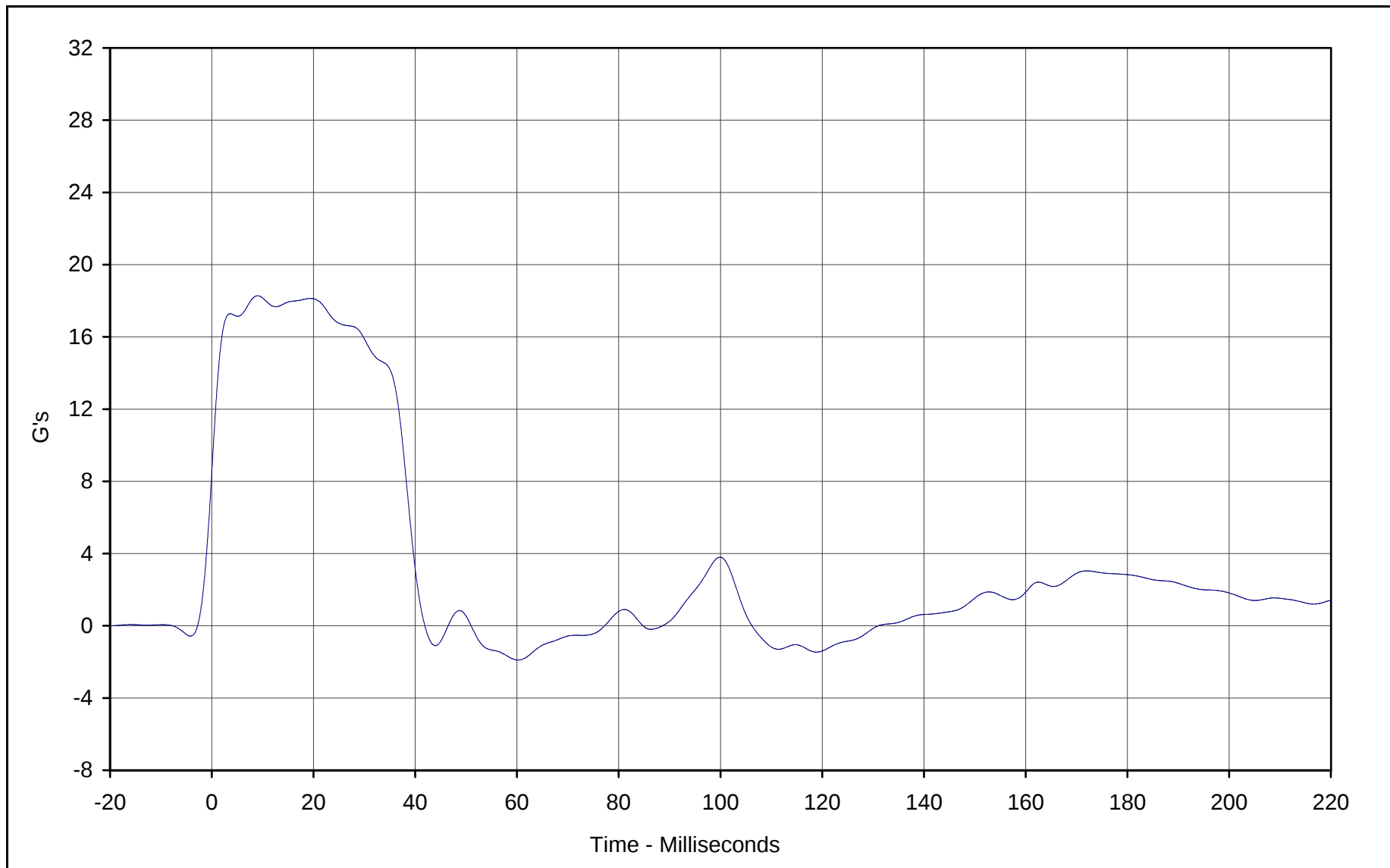
Laboratory Technician

February 12, 2001

Test Date

Approved By

Date

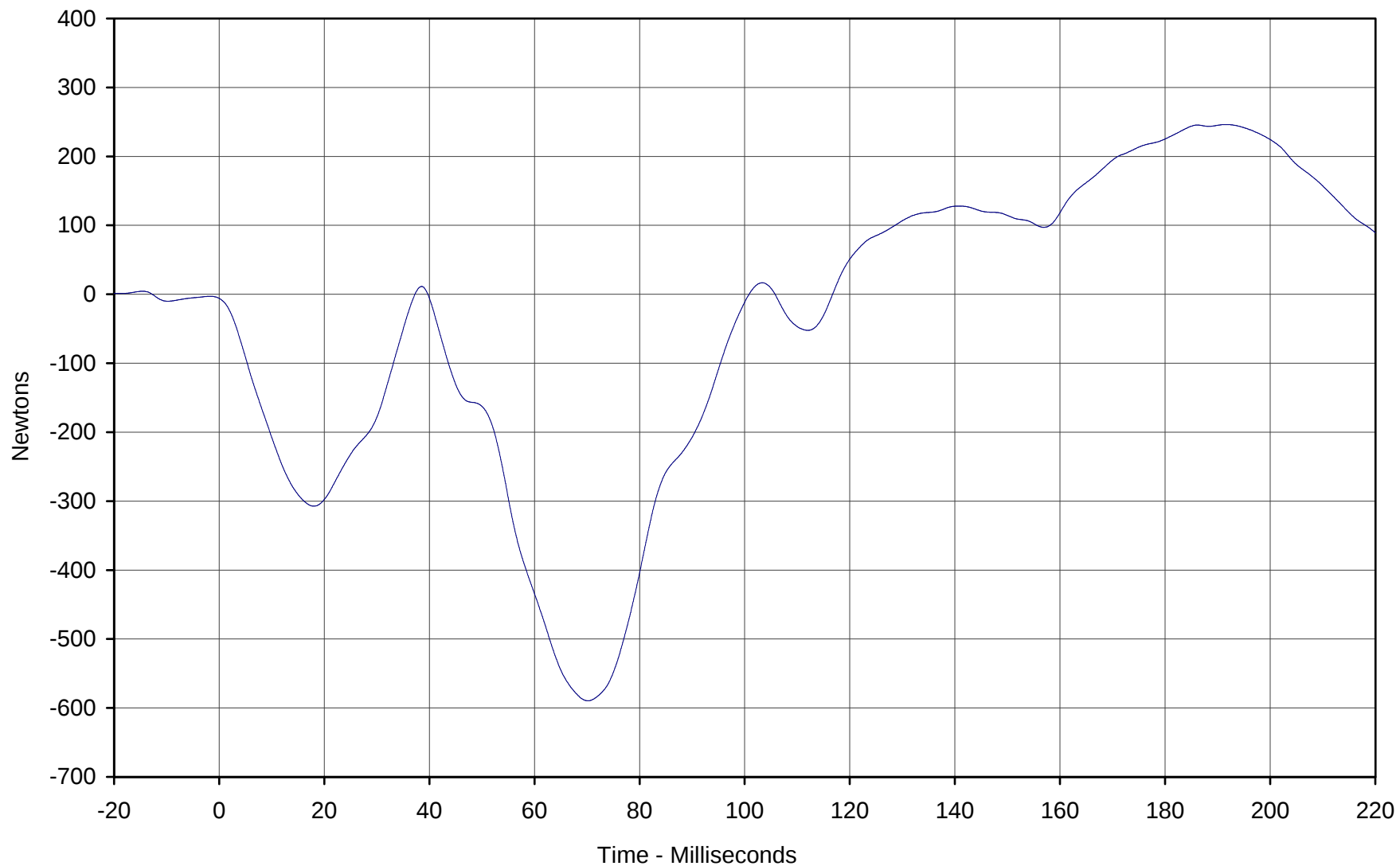


Curve Description:	Pendulum Deceleration		
Maximum Value:	18.3	at	9.0 Milliseconds
Minimum Value:	-1.9	at	60.2 Milliseconds
SAE Filter Class:	60		
Date of Test:	2/12/01		
ATD Serial No.:	035		

Testing Program:	Hybrid III Neck Extension Test (Male)
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Test Information:	S/N of Part: N/A Test I.D.: NE02E-A
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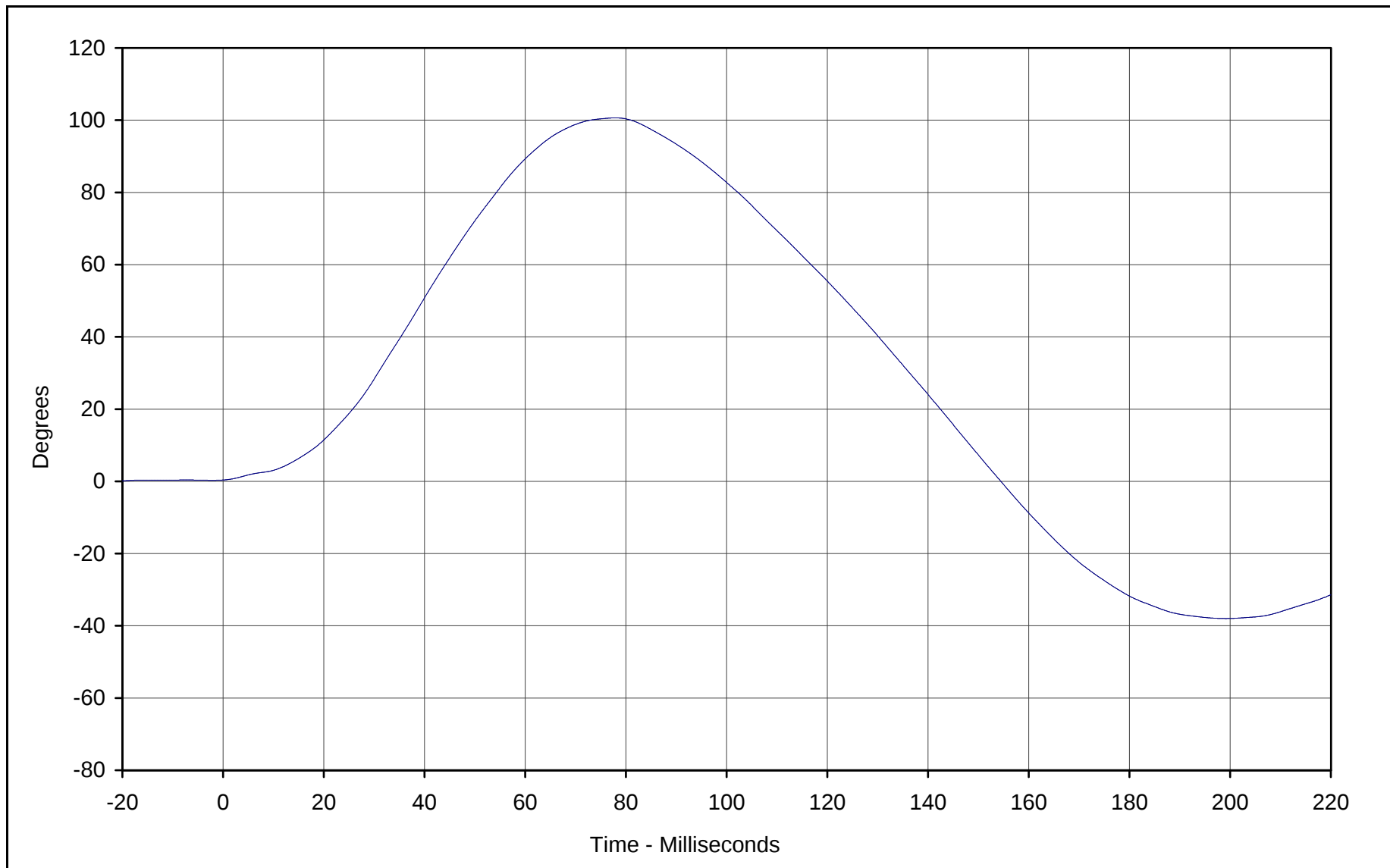
Curve Description: Neck Force X

Maximum Value:	246.2	at	191.6	Milliseconds
Minimum Value:	-589.6	at	70.2	Milliseconds
SAE Filter Class:	60			
Date of Test:	2/12/01			
ATD Serial No.:	035			

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE02E-A





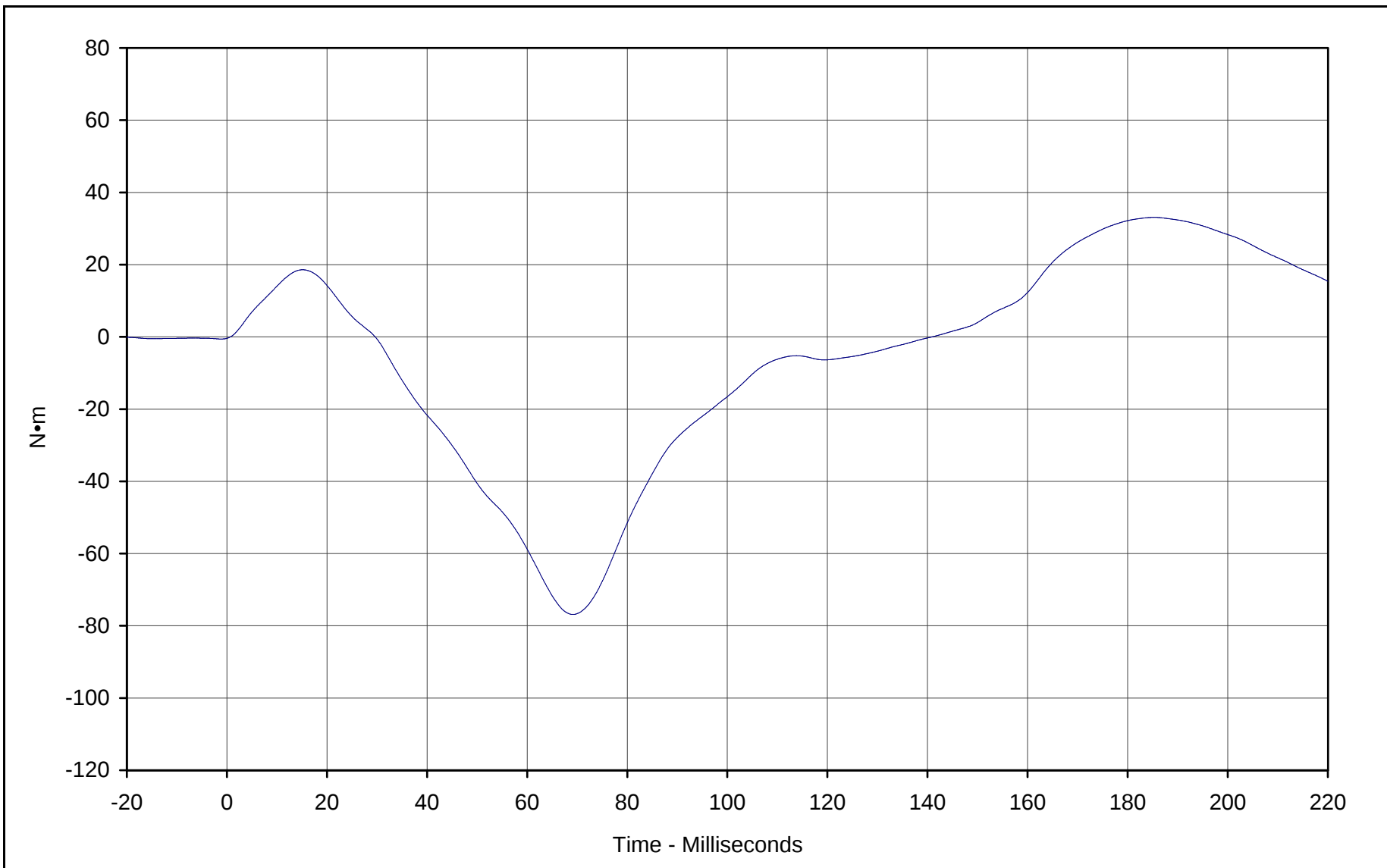
Curve Description: "D" Plane Rotation

Maximum Value:	100.6	at	77.9	Milliseconds
Minimum Value:	-38.0	at	199.1	Milliseconds
SAE Filter Class:	60			
Date of Test:	2/12/01			
ATD Serial No.:	035			

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE02E-A





Curve Description: Moment About Occipital Condyles

Maximum Value: 33.1 at 185.3 Milliseconds

Minimum Value: -76.9 at 69.1 Milliseconds

SAE Filter Class: 60

Date of Test: 2/12/01

ATD Serial No.: 035

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE02E-A





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	880	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	90	Pass
F - Thigh clearance	mm	140 to 155	150	Pass
G - Elbow back to wrist pivot	mm	290 to 305	300	Pass
H - Skull cap to back line	mm	41 to 46	45	Pass
I - Shoulder to elbow length	mm	330 to 345	335	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	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	425	Pass
W - Foot breadth	mm	91 to 107	105	Pass
Y - Chest circumference	mm	970 to 1001	975	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

February 12, 2001

Test Date

Approved By

Date

APPENDIX F
VEHICLE OWNER'S MANUAL
OCCUPANT RESTRAINT INSTRUCTIONS

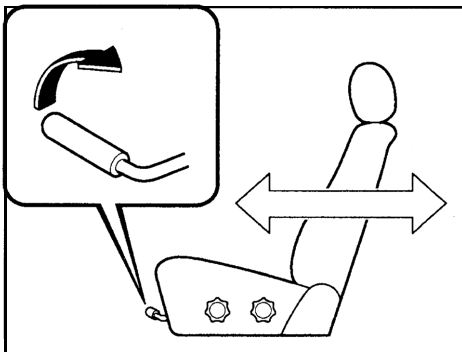
Front Seats



WARNING

Securing Seats:

Adjustable seats and seatbacks that are not securely latched are dangerous. In a sudden stop or collision, the seat or seatback could move, causing injury. Make sure the adjustable components of the seat are locked in place by attempting to slide the seat forward and backward and rocking the seatback.



■ Seat Slide

To move a seat forward or backward, raise the lever and slide the seat to the desired position.

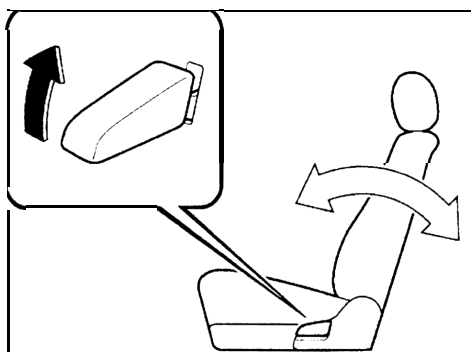


WARNING

Driver's Seat Adjustment:

Adjusting the driver's seat while the vehicle is moving is dangerous. The driver could lose control of the vehicle and have an accident. Adjust the driver's seat only when the vehicle is stopped.

2-2



■ Seat Recline

To change the seatback angle, lean forward slightly while raising the lever. Then lean back to the desired position and release the lever.

Make sure the lever returns to its original position and the seatback is locked in place by attempting to push it forward and backward.



WARNING

Reclining:

Sitting in a reclined position while the vehicle is moving is dangerous because you don't get the full protection from seat belts. During sudden braking or a collision, you can slide under the lap belt and suffer serious internal injuries. For maximum protection, sit well back and upright.



CAUTION

When returning a rear-reclined seatback to its upright position, make sure you support the seatback while operating the seatback lever. If the seatback is not supported, it will flip forward suddenly and could cause injury.

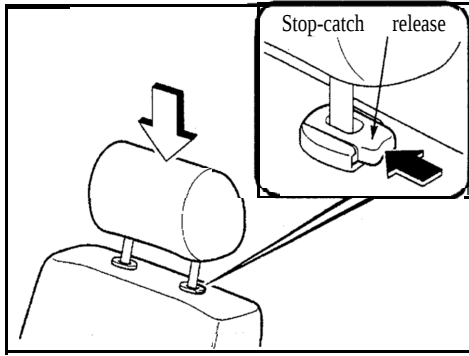
■ Head Restraint



WARNING

Head Restraints Adjustment:

Driving with the head restraints adjusted too low or removed is dangerous. With no support behind your head, your neck could be seriously injured in a collision. Always drive with the head restraints inserted when seats are being used and make sure they are properly adjusted.

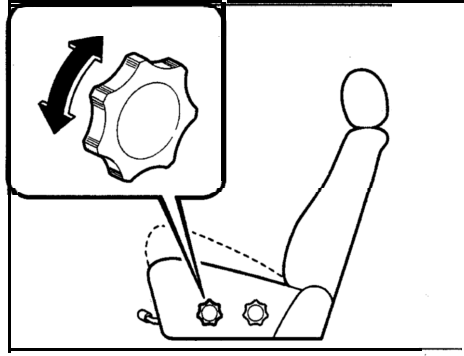


▼ Height adjustment

To raise a head restraint, pull it up to the desired position.

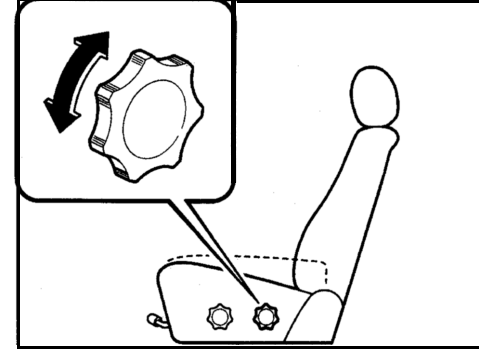
To lower the head restraint, press the stop-catch release, then push the head restraint down.

Adjust the head restraint so that the top parallels the top of the passenger's ears, never the passenger's neck.



■ Seat Tilt* (Driver's Seat)

The seat-bottom angle can be adjusted by rotating the dial. The front dial tilts the front of the seat bottom upward.



The seat-bottom angle can be adjusted by rotating the dial. The rear dial tilts the rear of the seat bottom upward.

2-4

*Some models.

⚠ WARNING

Unlocked Seatback:

A seatback plays an important role in your protection in a vehicle. Leaving the seatback unlocked is dangerous as it can allow passengers to be ejected or thrown around and baggage to strike occupants in a sudden stop or collision, resulting in severe injury. After returning the seat at any time, even when there are no other passengers, rock the seatback to make sure it is locked in place.

⚠ WARNING

Passenger on the Folded Seatback:

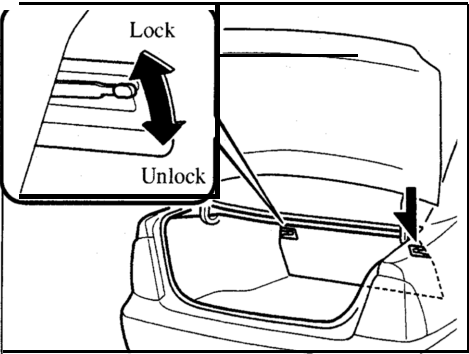
Driving with a passenger on the folded seatback is dangerous. Allowing a child to sit up on the folded seatback while the vehicle is moving is particularly dangerous. In a sudden stop or even a minor collision, a child not in a proper seat or child-restraint system and seat belt could be thrown forward, back or even out of the car resulting in serious injuries or death. The child or other objects in the baggage area could be thrown into other occupants and cause serious injury. Never allow a passenger to sit or stand on the folded seatback while the vehicle is moving.

⚠ WARNING

Children and the Folding Rear Seats:

Playing with the folding rear seats is dangerous. The folding rear seatbacks cannot be folded down from inside the luggage compartment. Do not give the car keys to children and do not allow them to play in the vehicle.

Seat Belt System



❑ Rear Seatback Lock

To lock or unlock a seatback, move the lever.

NOTE

The seatback locks are part of the trunk security system (page 3-14).

Seat belts help to decrease the possibility of severe injury during accidents and sudden stops. Mazda recommends that the driver and all passengers always wear seat belts.

All of the seat belt retractors are designed to keep the lap/shoulder belts out of the way when not in use.

The driver's seat belt has no provisions for child-restraint systems and has only an emergency locking mode. The driver may wear it comfortably, and it will lock during a collision.

However, the front passenger's seat and rear lap/shoulder belt retractors operate in two modes, emergency locking mode and for child-restraint systems, automatic locking mode.

Emergency locking mode

If the belt has fully retracted, it will always be in the emergency locking mode until you move it into automatic locking mode by pulling the belt all the way out to its full length. In the emergency locking mode, the belt remains comfortable on the occupant and the retractor will lock in position during a collision.

If the belt feels tight and hinders comfortable movement while the vehicle is stopped or in motion, you may be in the automatic locking mode because you have pulled the belt too far out. To return to the more comfortable emergency locking mode, wait until you can stop the vehicle in a safe area, retract the belt fully to convert it back to emergency locking mode and then again extend it around you.

Automatic locking mode

Always use the automatic locking mode to keep the child-restraint system from shifting to an unsafe position in the event of an accident. To get the seat belt into the automatic locking mode, pull it all the way out and connect it as instructed on the child-restraint system. It will retract down to the child-restraint system and stay locked on it. See the section on child restraint (page 2-20).

⚠ WARNING

Not Wearing Seat Belts:

Not wearing a seat belt is extremely dangerous. During a collision, occupants not wearing seat belts could hit someone or things inside the vehicle or even be thrown out of the vehicle. They could be seriously injured or even killed. In the same collision, occupants wearing seat belts would be much safer. Always wear your seat belt and make sure all occupants are properly restrained.

⚠ WARNING

Seat Belt Damaged During an Accident:

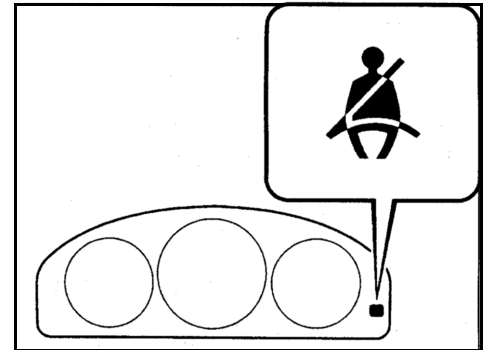
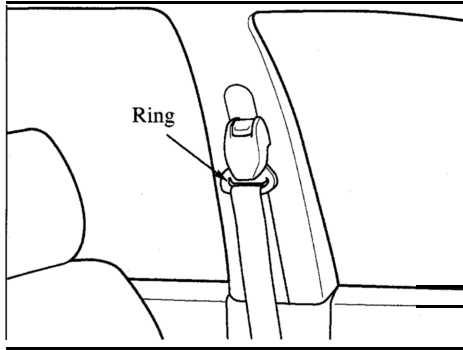
Using a damaged seat belt is dangerous. An accident could damage the belt webbing in use. A damaged seat belt cannot provide adequate protection in a collision. Have an Authorized Mazda Dealer inspect all seat belt systems in use during an accident before they are used again.



WARNING

Twisted Seat Belts:

Twisted seat belts are dangerous. In a collision, the full width of the belt isn't available to absorb the impact. This puts more force on the bones beneath the belt, which could break them or cause other serious injury or death. Don't wear twisted seat belts.



WARNING

One Belt. One Passenger:

Using one seat belt for more than one person at a time is dangerous. A seat belt used in this way can't spread the impact forces properly and the two passengers could be crushed together and seriously injured or even killed. Never use one belt for more than one person at a time.



CAUTION

Belt retraction may become difficult if the belts and rings are soiled, so try to keep them clean.

■ Seat Belt Warning Light/Beep

If the driver's seat belt is not fastened when the ignition switch is turned to the ON position, a beep will sound for about 6 seconds and the seat belt warning light will remain on until the belt is fastened.

If the system does not operate correctly, consult an Authorized Mazda Dealer.

2-10

■ Front Seat Belt Pretensioner and Load Limiting Systems

For optimum protection, the driver and front passenger seat belts are equipped with pretensioner and load limiting systems.

In moderate or greater frontal or near-frontal accidents, the front air bag and pretensioner systems deploy simultaneously. The pretensioners take up slack in the front seat belts as the air bags are expanding. The load limiting system releases belt webbing in a controlled manner to reduce belt force on the occupant's chest.



WARNING

Incorrect Positioning of the Driver and Front Passenger Seat Belts:

Incorrect positioning of the driver and front passenger seat belts is dangerous. Without proper positioning, the front pretensioner and load limiting systems cannot provide adequate protection in an accident and this could result in serious injury. Wear seat belts only as recommended in this owner's manual.



WARNING

Modification or Testing of the Pretensioner System:

Modifying the components or wiring of the pretensioner system, including the use of electronic testing devices is dangerous. You could accidentally activate it or make it inoperable which would prevent it from activating in an accident. Front occupants could be seriously injured. Never modify the components or wiring, or use electronic testing devices on the pretensioner system.

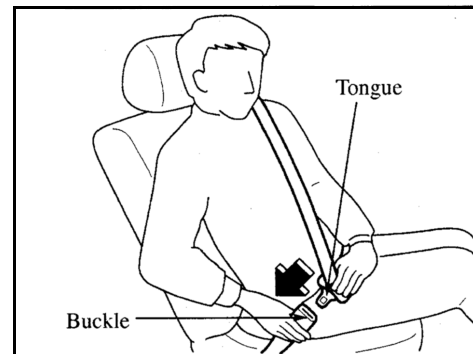
⚠ WARNING

Pretensioner System Disposal:

Improper disposal of the pretensioner system or a vehicle with non-deactivated pretensioners is dangerous. Unless all safety procedures are followed, injury could result. Ask an Authorized Mazda Dealer how to safely dispose of the pretensioner system or how to scrap a front pretensioner-equipped vehicle.

NOTE

- The pretensioner system will only activate in a moderate or greater frontal or near-frontal collision. It will not activate in side or rear impacts.
- Some smoke (non-toxic gas) will be released when the air bags and pretensioners deploy. This does not indicate a fire. This gas normally has no effect on occupants, however, those with sensitive skin may experience light skin irritation. If residue from the deployment of the air bags or the front pretensioner system gets on the skin or in the eyes, wash it off as soon as possible.
- The seat belt pretensioners will only function once. After they are expended, they will not work again and must be replaced immediately, even if there was no front seat occupant seated at the time.



■ Front Seat Belts

To fasten:

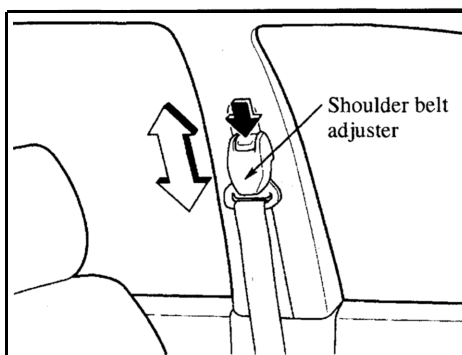
1. Grasp the buckle and tongue.
2. Slowly pull out the lap/shoulder belt.
3. Insert the tongue into the buckle until you hear a click.
4. Make sure the shoulder belt is snugly fitted against your body.

2-12

⚠ WARNING

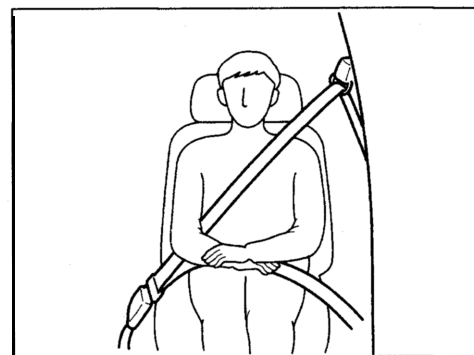
Positioning the Shoulder Portion of the Seat Belt:

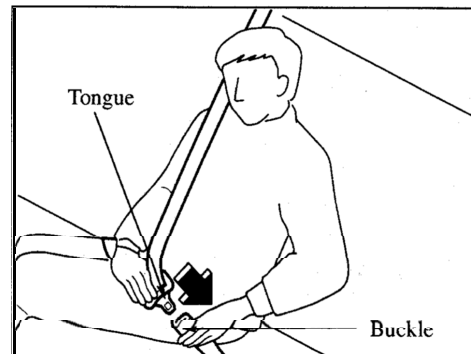
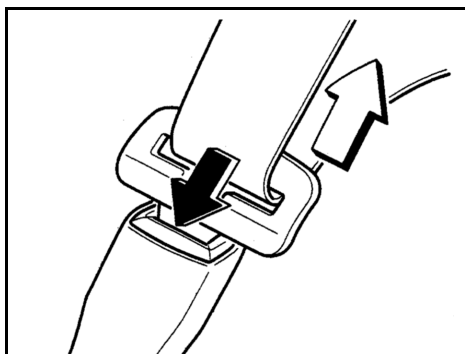
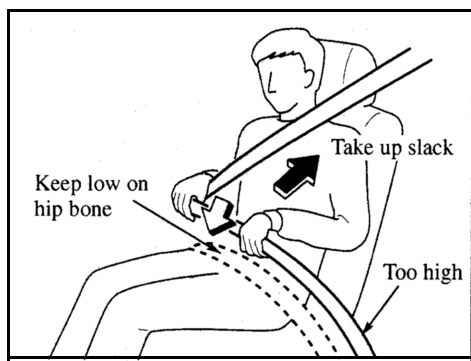
Improper positioning of the shoulder portion of the seat belt is dangerous. An improperly positioned belt will provide little or no protection in a collision. Always make sure the shoulder portion of the seat belt is positioned across your shoulder and near your neck, but never under your arm, on your neck, or on your upper arm.



Adjust the height of the shoulder belt if the seat belt touches your neck, if it crosses your arm instead of your shoulder. To raise the shoulder belt adjuster, push the adjuster up. To lower the shoulder belt adjuster, push the button slide it down. Make sure the adjuster is locked.

Slide it down. Make sure the adjuster is locked.





WARNING

Positioning the Lap Portion of the Seat Belt:

The lap portion of the seat belt worn too high is dangerous. In a collision, this would concentrate the impact force directly on the abdominal area, causing serious injury. Wear the lap portion of the belt snugly and as low as possible.

To unfasten:

Depress the button on the buckle.

NOTE

If a belt does not fully retract, inspect it for kinks and twists.

■ Rear Seat Belts

▼ Outboard positions lap/shoulder belt

To fasten:

1. Grasp the tongue and pull it to the desired length.
2. Insert this tongue into the buckle until you hear a click.
3. Make sure the shoulder belt is snugly fitted against your body.

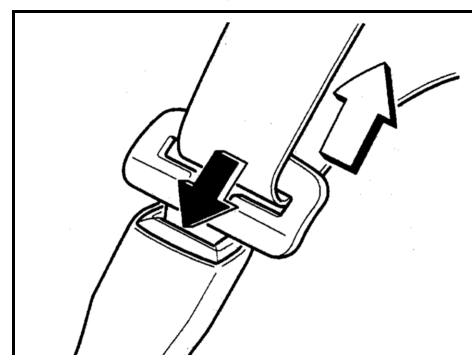
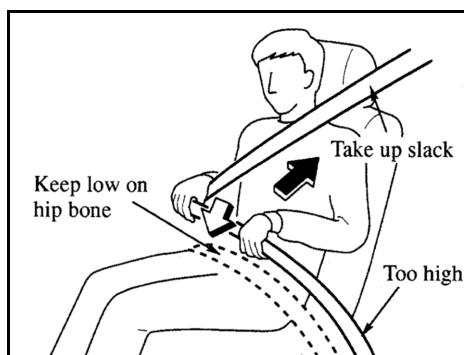
The retractor will take up excess belt and maintain tension.



WARNING

Positioning the Shoulder Portion of the Seat Belt:

Improper positioning of the shoulder portion of the seat belt is dangerous. An improperly positioned belt will provide little or no protection in a collision. Always make sure the shoulder portion of the seat belt is positioned across your shoulder and near your neck, but never under your arm, on your neck, or on your upper arm.



WARNING

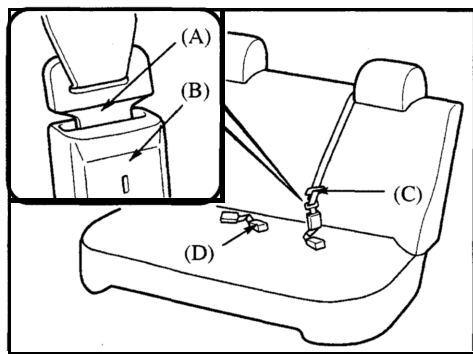
Positioning the Lap Portion of the Seat Belt:

The lap portion of the seat belt worn too high is dangerous. In a collision, this would concentrate the impact force directly on the abdominal area, causing serious injury. Wear the lap portion of the belt snugly and as low as possible.

To unfasten:

Depress the button on the buckle.

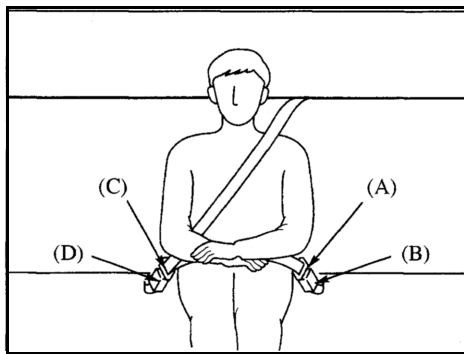
If a belt does not fully retract, inspect



▼ Rear-center position lap/shoulder belt

To use the rear-center belt:

Before using the rear-center lap/shoulder belt make sure tongue (A) and anchor buckle (B) are fastened.



To fasten:

1. Grasp the buckle (D) and tongue (C).
2. Slowly pull out the lap/shoulder belt.
3. Insert the tongue (C) into the buckle (D) until you hear a click.

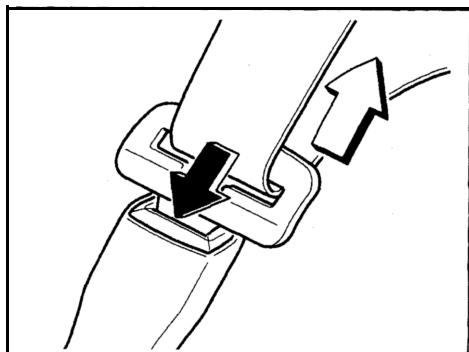
⚠ WARNING

Fastening the Rear-Center Seat Belt

Only with one Buckle:

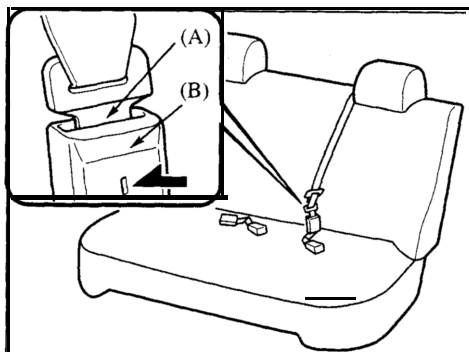
Fastening the rear-center seat belt only with one buckle is dangerous. If only one pair of seat belt tongue and buckle, either tongue (A) and anchor buckle (B) or tongue (C) and anchor buckle (D), is fastened, the seat belt cannot provide full protection. In a sudden stop or collision, the user could slide under the belt and suffer serious injuries. Always make sure that both pairs of seat belt tongues and buckles as fastened properly.

2-16



To unfasten:

Depress the button on the buckle.



To unfasten the lap portion:

Insert a small object in the anchor buckle (B) slot, such as a key.

To fasten the lap belt portion:

Grasp tongue (A) and insert it into the anchor buckle (B) until you hear a click. It is now secure for passenger use.

NOTE

After returning the rear-left seatback to its upright position, fasten the lap portion of the belt.

NOTE

Always unfasten the lap portion of the belt before folding the rear-left seatback. Leaving the lap portion of the belt fastened could cause damage to the seatback.

■ Seat Belt Extender

If your seat belt is not long enough, even when fully extended, a seat belt extender may be available to you at no charge from your Authorized Mazda Dealer. This extender will be only for you and for the particular vehicle and seat. Even if it plugs into other seat belts, it may not hold in the critical moment of a crash. When ordering an extender, only order one that provides the necessary additional length to fasten the seat belt properly. Please contact your Authorized Mazda Dealer for more information.



WARNING

Unnecessary Use of an Extender:

Using a seat belt extender when not necessary is dangerous. The seat belt will be too long and not fit properly. In an accident, the seat belt will not provide adequate protection and you could be seriously injured. Only use the extender when it is required to fasten the seat belt properly.



WARNING

Using an Improper Extender:

Using a seat belt extender that is for another person or a different vehicle or seat is dangerous. The seat belt will not provide adequate protection and the user could be seriously injured in an accident. Only use the extender provided for you and for the particular vehicle and seat. NEVER use the extender in a different vehicle or seat.

2-18



WARNING

Using an Extender That is Too Long:

Using an extender that is too long is dangerous. The seat belt will not fit properly. In an accident, the seat belt will not provide adequate protection and you could be seriously injured. Don't use the extender or choose one shorter in length if the distance between the extender's buckle and the center of the user's body is less than 6 inches.

■ Pregnant Women and Persons with Serious Medical Conditions

Pregnant women should wear seat belts. Ask your doctor for specific recommendations. The lap belt should be worn **SNUGLY AND AS LOW AS POSSIBLE OVER THE HIPS.**

Persons with serious medical conditions also should wear seat belts. Check with your doctor for any special instructions regarding specific medical conditions.

Child Restraint

NOTE

Your Mazda is equipped with LATCH lower anchors for attachment of specially designed LATCH child-restraint systems in the outboard rear seats. Attachment of LATCH child-restraint systems should all fit the outboard positions. A child-restraint system with LATCH attachments cannot be installed in the rear center position unless the seat belts are used instead. When using these anchors to secure a child-restraint system, refer to “LATCH Child-Restraint Systems” (page 2-27).

■ Child Restraint Precautions

Statistics confirm that the rear seat is the best place for all children up to 12 years of age-the more so with a supplemental restraint system (air bags).

 **WARNING**

Holding a Child While the Vehicle is Moving:
Holding a child in your arms while the vehicle is moving is extremely dangerous. No matter how strong the person may be, he or she cannot hold onto a child in a sudden stop or collision and it could result in serious injury or death to the child or other occupants. Even in a moderate accident, the child may be exposed to air bag forces that could result in serious injury or death to the child, or the child may be slammed into the adult, injuring the adult. Always secure a child in a proper child-restraint system.

 **WARNING**

One Belt. One Passenger:
Using one seat belt for more than one person at a time is dangerous. A seat belt used in this way can't spread the impact forces properly and the two passengers could be crushed together and seriously injured or even killed. Never use one belt for more than one person at a time.