

REPORT NUMBER KAR21001-17

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

**KIA MOTORS CORPORATION
2001 KIA SEPHIA
4 DOOR SEDAN
NHTSA NUMBER: M10502**

**PREPARED BY:
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9270 HOLLY ROAD
ADELANTO, CALIFORNIA 92301**



MAY 14, 2001

FINAL REPORT

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Technical Report Documentation Page

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16. Abstract A 35 mph (56.3 km/h) frontal barrier impact was conducted on a 2001 Kia Sephia 4 Door Sedan at KARCO Engineering on 3/6/01. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and footwell intrusion performance. The impact velocity is 55.74 km/h. The ambient temperature at the barrier face at the time of impact is 14.4 degrees Celcius. The vehicle's maximum post test static crush is 473 mm located to the right of 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	398.3	397.7
Max. Thorax Accel. (3 msec Clip)		G's	60	46.3	40.4
Left Femur force		Newtons	10009	-405.4	-2535.1
Right Femur Force		Newtons	10009	-2270.4	-2488.6
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SECTION 1

PURPOSE, TEST PROCEDURE AND SUMMARY OF TEST M10502

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 March 6, 2001 at a speed of 55.74 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 fourteen (14) high-speed motion picture cameras. The pre- and post-test conditions were recorded by one (1) real-time motion picture camera. Camera locations and pertinent camera information is documented in the data sheets. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

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

The Driver ATD (Serial No. 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 Kia Sephia 4 Door Sedan at a velocity of 55.74 km/h. The test vehicle weight is 1365 kilograms with two (2) part 572E 50th percentile adult male ATD's. Twenty-four (24) load cell barrier data channels were obtained in conducting the March 6, 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 398.3. The maximum resultant chest deceleration over three (3) milliseconds is 46.3 g's. The left and right femur loads are 405.4 and -2270.4 Newton's, respectively. Chest deflection for the driver ATD peaked at -26.8 mm. The driver ATD head contacted the airbag/headrest, its chest contacted the airbag/belt, the abdomen contacted the belt, with both knees contacting the dash.

The right front passenger's HIC is 397.7. The maximum resultant chest deceleration over three (3) milliseconds is 40.4 g's. The left and right femur loads are 2535.1 and -2488.6 Newton's respectively. Chest deflection for the passenger ATD peaked at -28.8 mm. The passenger ATD head contacted the airbag and headrest, the chest and abdomen contacted the airbag/belt, the left knee and the right knee contacted the glove box.

Maximum shoulder belt spool out as measured by on-board potentiometers is 142.3 mm for the driver ATD and 163.2 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 473 mm located to the right of the vehicle centerline. Both the driver and passenger side doors opened without the aid of tools.

1.4 GENERAL COMMENTS

The 2001 Kia Sephia 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 Kia Sephia 4 Door Sedan

NHTSA No.: M10502

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 3/6/01

CONVERSION FACTORS USED IN THIS REPORT*

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

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

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

Test Vehicle: 2001 Kia Sephia 4 Door Sedan
Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10502
Test Date: 3/6/01

PRIMARY IMPACT DATA

Measured Parameter	Units	Value
Velocity at Impact	km/h	55.74
Test Weight	kg	1365
Impact Angle	degrees	0
Average Rebound	mm	1334
Maximum Static Crush	mm	473

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	14
Real Time	1
Total	15

DATA CHANNELS

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

DATA SHEET NO. 2
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2001 Kia Sephia 4 Door Sedan
 Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10502
 Test Date: 3/6/01

TEST VEHICLE INFORMATION

Manufacturer	Kia
Model	Sephia
Body Style	Sedan
Project NO.	KAR21001-17
VIN	KNAFB121715027066
Color	Slate Blue
Delivery Date	2/15/01
Odometer Reading (mile)	76
Dealer	Ontario Kia
Transmission	5-Speed Manual
Final Drive	Front
Number of Cylinders	4
Engine Displacement (L)	1.8
Engine Placement	Transverse

TEST VEHICLE OPTIONS

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

DATA FROM CERTIFICATION LABEL

Manufactured By	Kia Motors Corp.	GVWR (kg)	1610
Date of Manufacture	September-00	GAWR Front (kg)	854
		GAWR Rear (kg)	760

DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	180	180
Cold Pressure (kPa)	180	180
Recommend Tire Size	P185/65/R14	P185/65/R14
Tire Size on Vehicle	P185/65/R14	P185/65/R14
Tire Manufacturer	Kumho	Kumho

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)				434
Cargo Weight (RCLW) (kg)				45

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

Test Vehicle: 2001 Kia Sephia 4 Door Sedan
 Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10502
 Test Date: 3/6/01

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	364	230		399	284	
Right	kg	360	222		401	281	
Ratio	%	61.6%	38.4%		58.6%	41.4%	
Totals	kg	724	452	1176	800	565	1365

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1176
Weight of 2 P572 ATD's	kg	152
Rated Cargo/Luggage Weight (RCLW)	kg	45
Calculated Vehicle Target Weight (TVTW)	kg	1373

TEST VEHICLE ATTITUDE AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	647	652	636	638	983
As Tested	mm	630	629	605	609	1059

Vehicle Wheel base (mm): 2558

Weight of Ballast secured in cargo area (kg): 13

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 Kia Sephia 4 Door Sedan

NHTSA No.: M10502

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 3/6/01

SPEED TRAP DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	55.51 to 57.12	55.74
Trap No. 1 Entry Distance	mm	< 1524	1524
Trap No. 1 Exit Distance	mm	< 1524	305
Trap No. 2 Velocity (Redundant)	km/h	55.51 to 57.12	56.01
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	4092	3804	-288
Center	mm	4425	3958	-467
Right Side	mm	4092	3789	-303

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	1422
Center	mm	1231
Right Side	mm	1350
Average	mm	1334

DATA SHEET NO. 4
TEST VEHICLE INFORMATION

Test Vehicle: 2001 Kia Sephia 4 Door Sedan

NHTSA No.: M10502

Test Program: 2001 NHTSA 35 mph NCAP

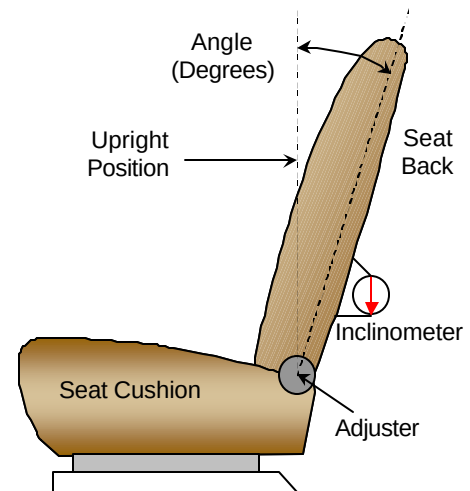
Test Date: 3/6/01

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: 22.0° with a seated dummy

Passenger seat back angle: 24.0° with a seated dummy



FRONT SEAT ASSEMBLY

SEAT FORE/AFT POSITIONS

Driver and passenger seats have 20 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 seats.

Driver seat fore/aft total travel: 20 seating positions or detents

Passenger seat fore/aft total travel: 20 seating positions or detents

Driver seat fore/aft position: 11th detent from forward most

Passenger seat fore/aft position: 11th detent from forward most

SEAT BELT UPPER ANCHORAGE

Both driver and passenger seat positions are equipped with adjustable anchorages. Of five (5) positions, both are set in the third (3rd).

DATA SHEET NO. 4...(continued)

TEST VEHICLE INFORMATION

Test Vehicle: 2001 Kia Sephia 4 Door Sedan

NHTSA No.: M10502

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 3/6/01

FUEL TANK CAPACITY DATA

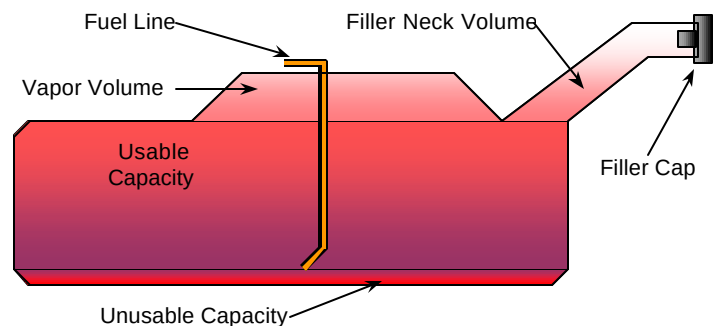
The "Usable Capacity" of the standard equipment fuel tank is: 49.9 liters

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

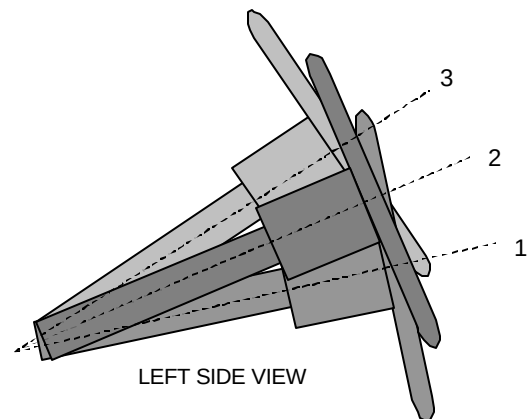
The test vehicle is equipped with an electric fuel pump. The fuel pump operates for approximately two seconds after the ignition is placed to the "ON" position, after which the fuel pump automatically shuts off. The fuel filler door is located on the left rear fender. The standard fuel tank occupies the area under the rear seat. Fuel lines run along the right 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. This vehicle is not equipped with an adjustable steering column; its geometric center (position 2) is at 25.0°.



STEERING COLUMN ASSEMBLY

Lowermost, position 1: N/A°

Geometric center, position 2: 25.0°

Uppermost, position 3: N/A°

DATA SHEET NO. 5

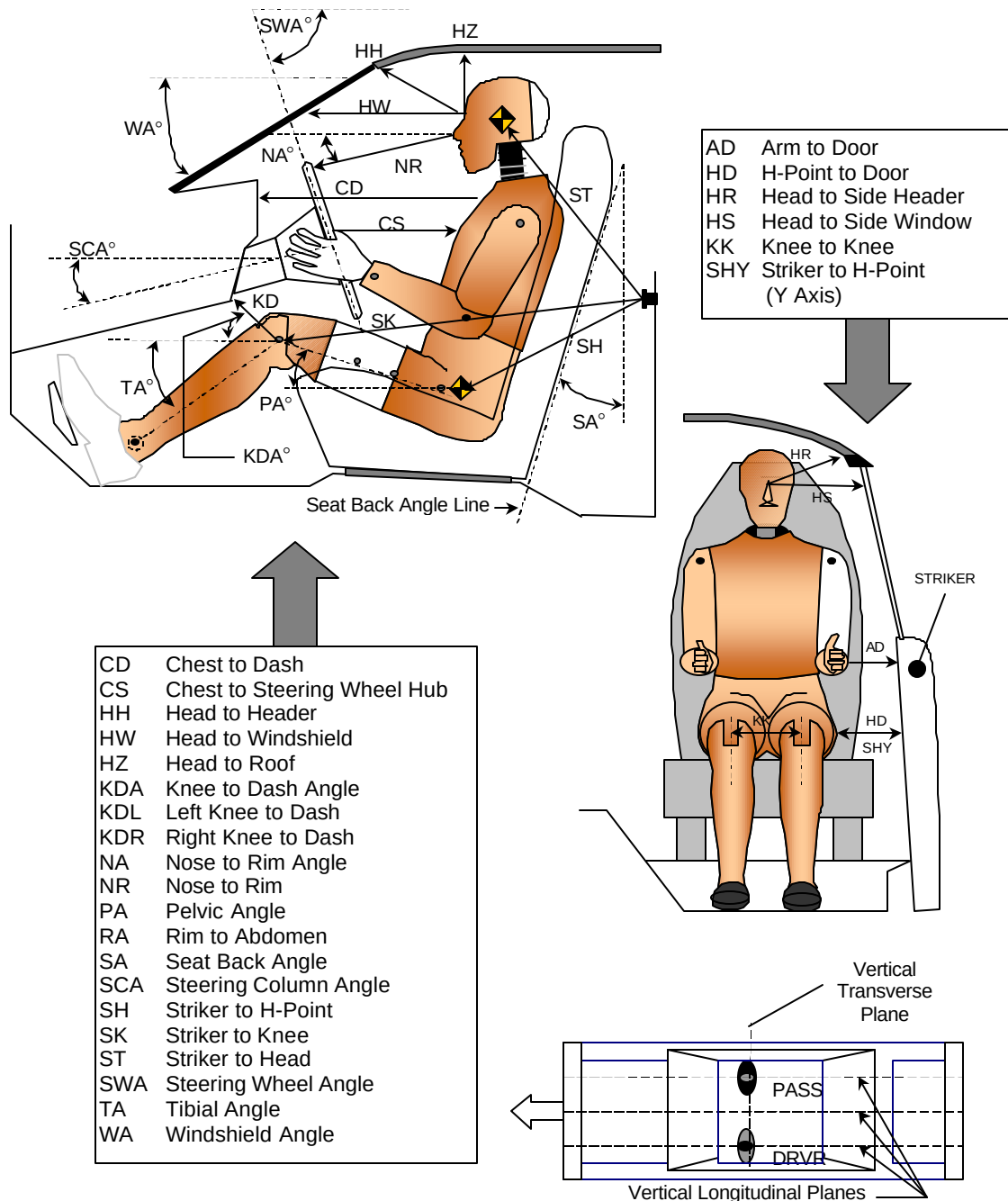
DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2001 Kia Sephia 4 Door Sedan

NHTSA No.: M10502

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 3/6/01



DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS

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

Test Vehicle: 2001 Kia Sephia 4 Door Sedan
 Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10502
 Test Date: 3/6/01

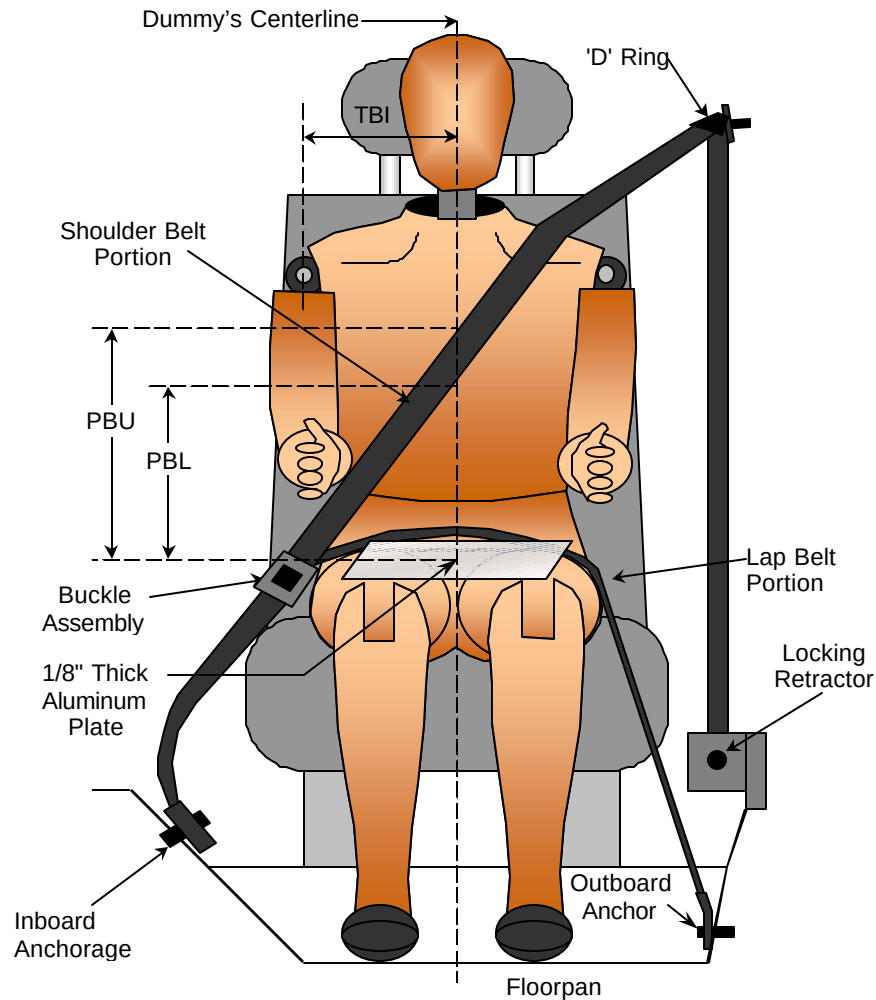
TEST DUMMY POSITION MEASUREMENTS

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA	Windshield Angle		29		
SWA	Steering Wheel Angle		65		
SCA	Steering Column Angle		25		
SA	Seat Back Angle		22		24
HZ	Head to Roof (Z)	210	90	185	90
HH	Head to Header	347	0	335	0
HW	Head to Windshield	585	0	595	0
HR	Head to Side Header (Y)	222		200	
NR	Nose to Rim	448	9		
CD	Chest to Dash	558		595	
CS	Chest to Steering Hub	355	0		
RA	Rim to Abdomen	230	0		
KDL	Left Knee to Dash	197	24	174	
KDR	Right Knee to Dash	180		205	31
PA	Pelvic Angle		23.0		23.0
TA	Tibia Angle		34		48
KK	Knee to Knee (Y)	235		220	
SK	Striker to Head	572	6	579	8
ST	Striker to Knee	541	3	540	5
SH	Striker to H-Point	218	36	207	36
SHY	Striker to H-Point (Y)	275		258	
HS	Head to Side Window	289		295	
HD	H-Point to Door (Y)	156		149	
AD	Arm to Door (Y)	100		48	

DATA SHEET NO. 6
SEAT BELT POSITIONING DATA

Test Vehicle: 2001 Kia Sephia 4 Door Sedan
 Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10502
 Test Date: 3/6/01



SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
TBI - Dummy CL to Lap/Shoulder Belt Intersect	mm	230	240
PBU - Top surface of reference to belt upper edge	mm	355	360
PBL - Top surface of reference to belt lower edge	mm	280	275
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 Kia Sephia 4 Door Sedan

NHTSA No.: M10502

Test Program: 2001 NHTSA 35mph NCAP

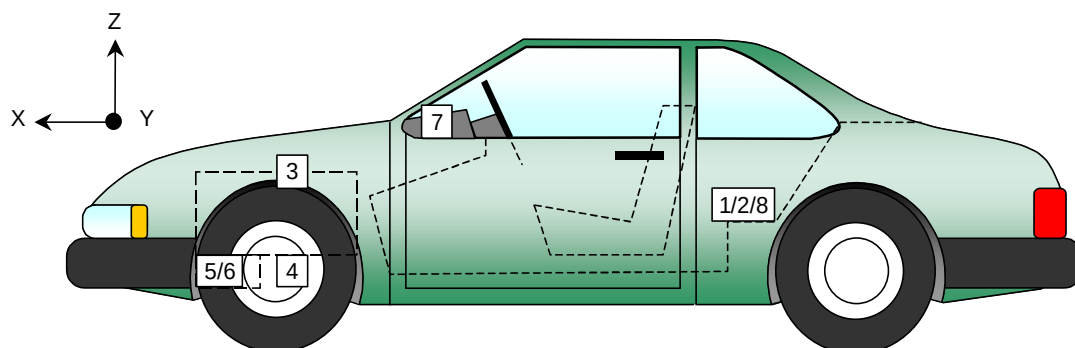
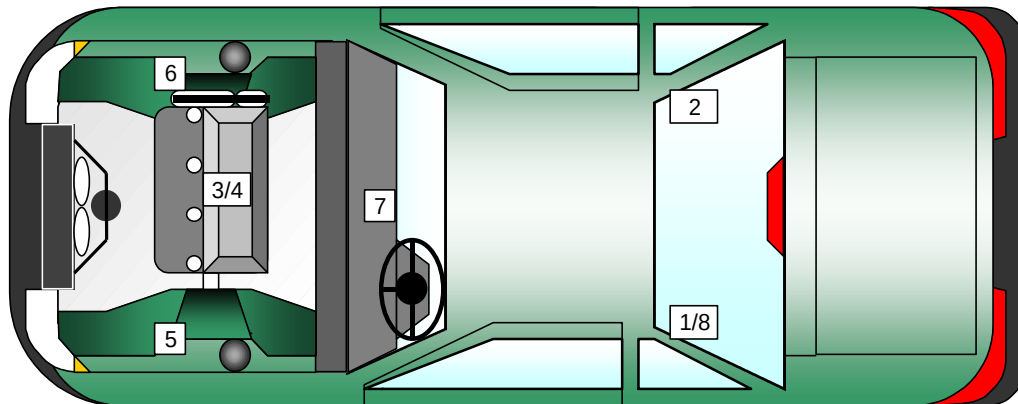
Test Date: 3/6/01

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.)	1720	-680	340	G's	1.3	120.2	-44.9	36.7
2	Right Rear X-Member (Pri.)	1605	680	340	G's	2.1	126.9	-41.0	38.8
3	Engine Top	3755	450	785	G's	65.5	40.1	-177.9	29.4
4	Engine Bottom	3745	340	130	G's	0.0	0.0	0.0	0.0 *
5	Left Brake Caliper	3695	-720	225	G's	40.5	35.9	-99.6	40.4
6	Right Brake Caliper	3695	720	225	G's	12.9	26.6	-72.1	42.8
7	Instrument Panel	3045	0	860	G's	25.1	61.9	-71.1	55.5
8	Left Rear X-Member (Rednt.)	1720	-640	340	G's	1.4	119.9	-44.4	36.9

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

* Channel failed, no data.



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

Test Vehicle: 2001 Kia Sephia 4 Door Sedan

NHTSA No.: M10502

Test Program: 2001 NHTSA 35mph NCAP

Test Date: 3/6/01

HEAD PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	15.0	234.3	-50.0	76.4	7.5	267.0	-44.5	79.0
Head CG	Y	G's	13.3	83.0	-5.2	234.9	2.5	43.9	-8.9	79.1
Head CG	Z	G's	24.0	77.3	-6.5	109.3	31.9	77.9	-2.4	129.4
Head CG Resultant	N/A	G's	56.0	76.4			54.9	79.7		

CHEST PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	3.8	271.6	-47.8	58.5	1.9	142.3	-41.7	58.5
Chest CG	Y	G's	4.8	92.4	-4.5	43.6	3.6	39.6	-6.8	75.9
Chest CG	Z	G's	13.1	81.4	-7.6	53.4	13.4	83.1	-6.7	57.8
Chest CG Resultant	N/A	G's	48.3	58.5			42.1	58.3		

FEMUR PEAK FORCES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Femur	Z	Newtons	1515.7	49.4	-405.4	30.7	833.6	45.9	-2535.1	56.5
Right Femur	Z	Newtons	1192.1	50.5	-2270.4	57.6	795.5	43.2	-2488.6	51.3

SEAT BELT SENSOR PEAK VALUES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Lap Belt Force	N/A	Newtons	8558.2	57.9	-3.2	2.6	6068.0	57.5	-3.3	0.0
Shoulder Belt Force	N/A	Newtons	5009.6	77.3	-24.7	10.0	5126.5	76.3	-11.8	9.8
Shoulder Belt Pullout	N/A	MM	142.3	86.2	-49.1	35.8	163.2	87.8	-44.8	34.1
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	398.3	41.5	55.0	90.9	397.7	41.4	61.7	97.6

CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T ¹	T ²	CLIP	T ¹	T ²
Chest CG Primary	46.3	57.3	60.3	40.4	72.4	75.4

DATA SHEET NO. 8...(continued)Test Vehicle: 2001 Kia Sephia 4 Door SedanNHTSA No.: M10502Test Program: 2001 NHTSA 35mph NCAPTest Date: 3/6/01**PELVIC PEAK ACCELERATIONS**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Pelvis	X	G's	6.0	112.3	-71.7	57.7	3.6	113.2	-71.6	57.3
Pelvis	Y	G's	5.1	84.1	-20.0	45.8	6.0	43.3	-8.3	61.8
Pelvis	Z	G's	3.6	275.7	-41.9	59.0	2.8	19.4	-30.4	57.1

UPPER NECK PEAK FORCES AND MOMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Neck Force	X	Newtons	476.1	69.9	-455.4	131.5	247.2	66.3	-700.5	130.9
Neck Force	Y	Newtons	148.3	101.0	-116.6	34.7	188.7	72.2	-94.3	120.7
Neck Force	Z	Newtons	1431.0	72.9	-418.3	279.6	1039.8	74.3	-154.1	132.3
Neck Moment	X	N•m	10.1	63.8	-11.9	81.3	10.7	79.3	-8.8	59.9
Neck Moment	Y	N•m	29.4	64.6	-29.1	279.2	44.5	127.9	-17.7	48.1
Neck Moment	Z	N•m	7.8	142.9	-21.7	91.9	12.0	85.4	-4.8	137.1

FOOT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Foot Aft	X	G's	4.8	82.4	-33.4	46.2	30.7	54.6	-138.8	39.1
Left Foot Aft	Z	G's	1.6	282.1	-41.2	36.5	14.0	54.0	-65.3	38.1
Left Foot Fore	Z	G's	8.0	24.7	-58.0	43.0	40.7	34.5	-139.8	37.8
Right Foot Aft	X	G's	32.5	59.6	-139.7	42.7	23.5	55.8	-94.7	38.9
Right Foot Aft	Z	G's	74.8	56.8	-209.1	43.1	9.8	47.1	-58.8	33.0
Right Foot Fore	Z	G's	140.1	56.3	-319.3	41.4	40.9	47.2	-94.0	32.7

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	82.6	39.9	-15.2	36.5	40.9	62.5	-25.4	40.1
Left Lower Moment	Y	N•m	22.7	79.3	-24.7	47.3	62.2	69.3	-51.8	40.0
Left Lower Force	Z	Newtons	91.9	161.3	-2061.5	33.1	120.7	117.6	-2788.1	38.8
Left Upper Moment	X	N•m	55.3	63.5	-41.9	38.7	5.7	138.4	-59.8	39.6
Left Upper Moment	Y	N•m	17.6	122.1	-83.7	48.7	31.4	47.4	-134.5	39.5
Right Lower Moment	X	N•m	48.6	57.0	-214.6	46.1	18.1	34.3	-54.7	67.3
Right Lower Moment	Y	N•m	249.6	59.2	-96.0	43.2	35.0	58.6	-28.9	39.6
Right Lower Force	Z	Newtons	193.3	38.3	-7549.2	45.3	162.8	132.9	-2961.3	34.5
Right Upper Moment	X	N•m	73.9	44.6	-118.0	46.6	41.8	35.7	-34.9	56.8
Right Upper Moment	Y	N•m	11.9	114.0	-241.1	47.6	64.0	49.2	-96.9	66.9

DATA SHEET NO. 8...(continued)Test Vehicle: 2001 Kia Sephia 4 Door SedanNHTSA No.: M10502Test Program: 2001 NHTSA 35mph NCAPTest Date: 3/6/01**CHEST PEAK DISPLACEMENTS**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	MM	0.1	9.0	-26.8	79.6	0.7	17.0	-28.8	63.0

HEAD REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	16.0	235.0	-49.4	77.1	7.9	263.3	-44.9	78.2
Head CG	Y	G's	14.0	82.4	-5.8	234.7	3.3	61.3	-8.8	80.5
Head CG	Z	G's	22.7	78.0	-10.9	109.4	29.4	82.3	-1.1	7.8
Head CG Resultant	N/A	G's	55.2	77.1			53.4	78.2		

CHEST REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	4.0	271.7	-47.7	58.6	1.9	140.4	-41.3	73.7
Chest CG	Y	G's	4.7	90.8	-4.3	43.7	5.2	39.5	-5.9	75.3
Chest CG	Z	G's	13.6	80.3	-7.8	53.5	14.6	82.0	-8.4	57.8
Chest CG Resultant	N/A	G's	48.1	58.5			42.5	73.7		

REDUNDANT HEAD INJURY CRITERIA (HIC)

Location	Driver				Passenger			
	HIC	Avg G	T ¹	T ²	HIC	Avg G	T ¹	T ²
Head CG Redundant	401.0	41.6	56.3	92.2	381.5	40.8	61.2	97.1

REDUNDANT CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T ¹	T ²	CLIP	T ¹	T ²
Chest CG Redundant	46.2	57.3	60.3	41.0	72.8	75.8

DATA SHEET NO. 9
SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

Test Vehicle: 2001 Kia Sephia 4 Door Sedan
 Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10502
 Test Date: 3/6/01

SEAT BELT PLACEMENT MEASUREMENTS

Measurement Description	Units	Driver	Passenger
TCI - Dummy CL to Lap/Shoulder Belt Intersect	mm	230	240
PBU -Top surface of reference to belt upper edge	mm	355	360
PBL - Top surface of reference to belt lower edge	mm	280	275
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	635	635
Shoulder belt length as measured on ATD	mm	795	840
Lap belt length as measured on ATD	mm	780	800
Remainder of belt on reel	mm	850	720
Total belt length for continuous webbing systems	mm	3060	2995

SHOULDER BELT SPOOL-OFF DATA

Measurement Description	Units	Driver	Passenger
As determined mechanically	mm	0.0	20.0
As determined electronically	mm	142.3	163.2

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 Kia Sephia 4 Door Sedan

NHTSA No.: M10502

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 3/6/01

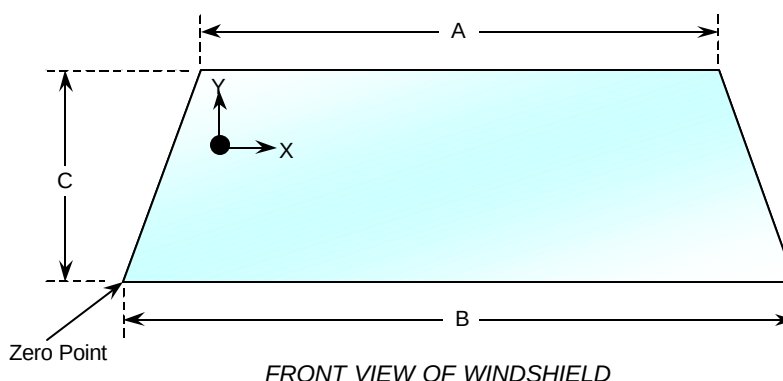
Windshield Mounting Details: Windshield glass is secured to the vehicle frame with a rubber type adhesive. There is no molding that covers the windshield periphery at any point.

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	2070.0	2070.0	100
Right Side	2070.0	2070.0	100
Total	4140.0	4140.0	100



WINDSHIELD DIMENSIONS

Item	Units	Segment Length	Molding Width
A	mm	1094	13
B	mm	1460	N/A
C	mm	793	13

DATA SHEET NO. 11

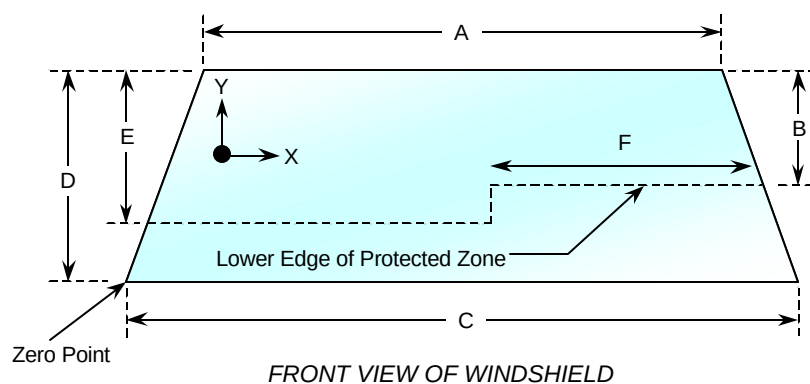
WINDSHIELD ZONE INTRUSION FMVSS 219 (PARTIAL) DATA

Test Vehicle: 2001 Kia Sephia 4 Door Sedan

NHTSA No.: M10502

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 3/6/01



WINDSHIELD AND PROTECTED ZONE

Item	Units	Value
A	mm	1094
B	mm	426
C	mm	1460
D	mm	793
E	mm	510
F	mm	655

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

DATASHEET NO. 12

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Test Vehicle: 2001 Kia Sephia 4 Door Sedan

NHTSA No.: M10502

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 3/6/01

Test Time: 12:22 PM

Temperature at Time of Impact: 14.4 °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

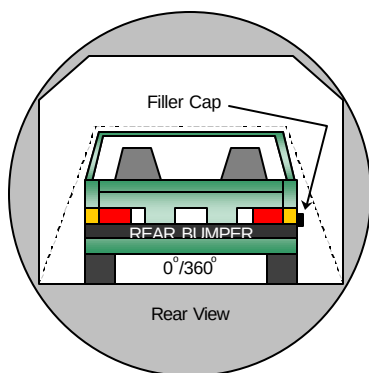
DATA SHEET NO. 13
FMVSS 301 STATIC ROLLOVER DATA SHEET

Test Vehicle: 2001 Kia Sephia 4 Door Sedan

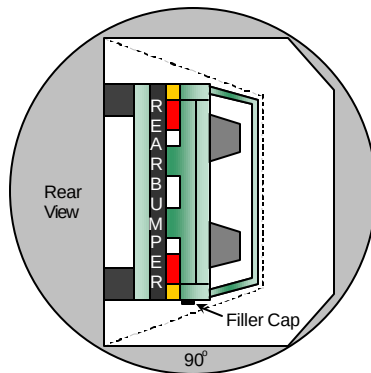
NHTSA No.: M10502

Test Program: 2001 NHTSA 35 mph NCAP

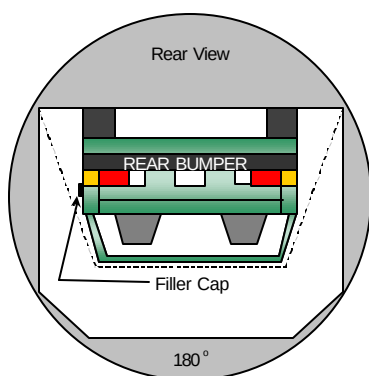
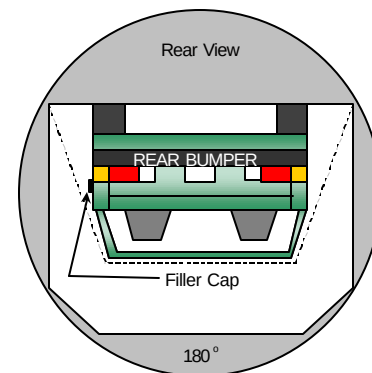
Test Date: 3/6/01



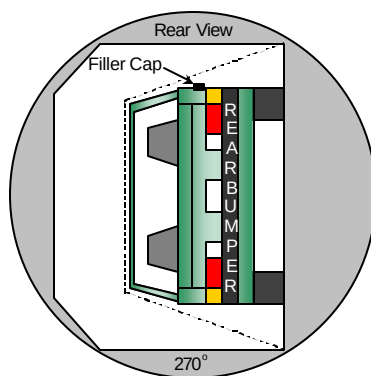
0° TO 90°



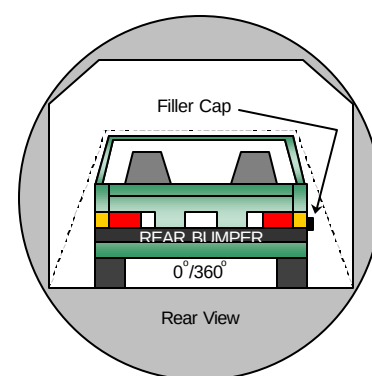
90° TO 180°



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°	78	300	0.0
90° TO 180°	80	300	0.0
180° TO 270°	77	300	0.0
270° TO 360°	80	300	0.0

DATA SHEET NO. 14
VEHICLE MEASUREMENTS

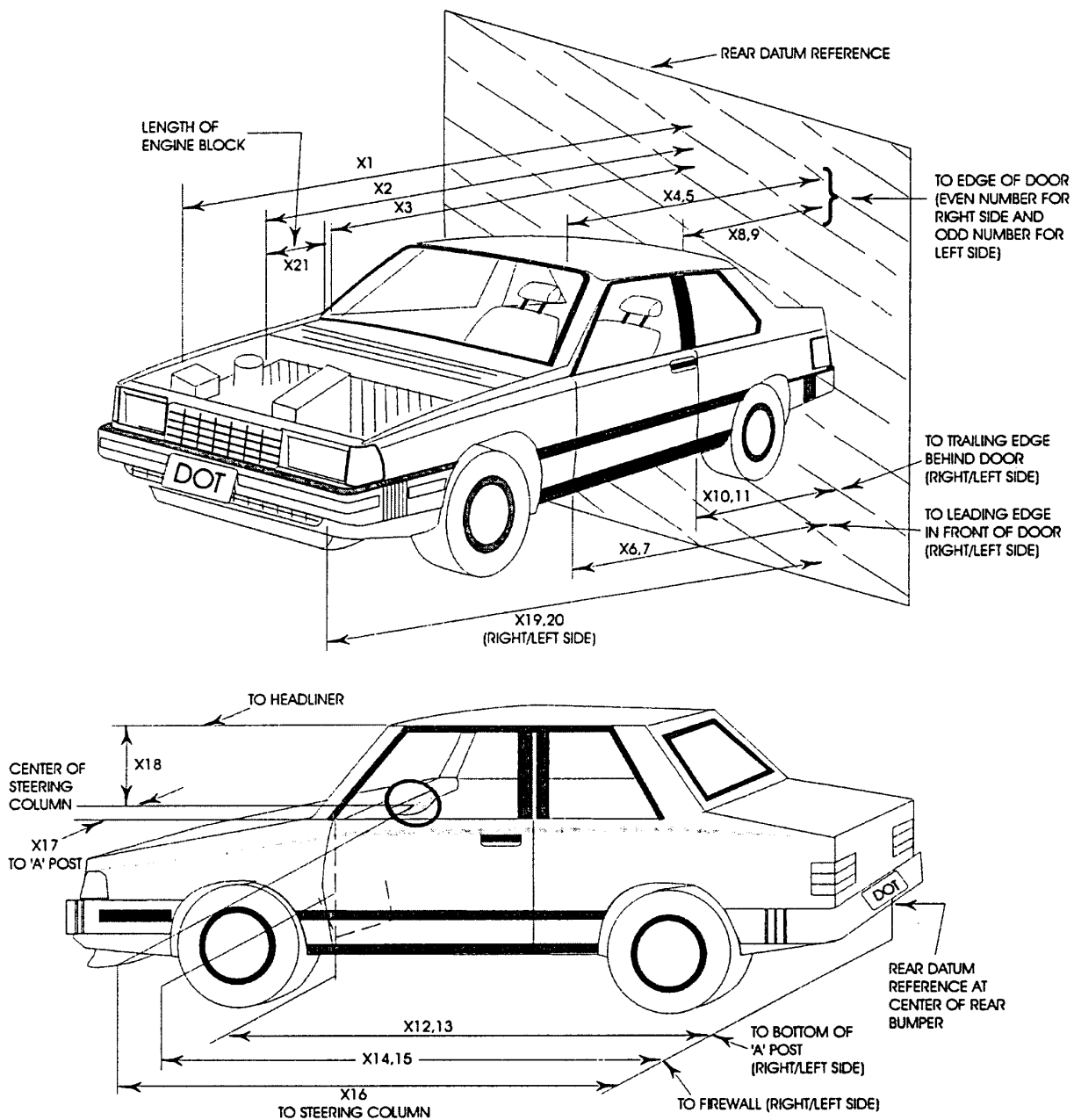
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

NHTSA No.: M10502

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 3/6/01

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total length of vehicle at centerline	mm	4425	3958	-467
2	RSOV to front of engine	mm	3903	3729	-174
3	RSOV to firewall centerline	mm	3397	3274	-123
4	RSOV to leading edge of right door	mm	3071	3079	8
5	RSOV to leading edge of left door	mm	3059	3064	5
6	RSOV to lower leading edge of right door	mm	3026	3024	-2
7	RSOV to lower leading edge of left door	mm	3029	3024	-5
8	RSOV to upper trailing edge of right door	mm	2016	2033	17
9	RSOV to upper trailing edge of left door	mm	2014	2019	5
10	RSOV to lower trailing edge of right door	mm	2014	2012	-2
11	RSOV to lower trailing edge of left door	mm	2007	1999	-8
12	RSOV to bottom of right 'A' pillar	mm	3059	3074	15
13	RSOV to bottom of left 'A' pillar	mm	3048	3065	17
14	RSOV to firewall on right side	mm	3344	3286	-58
15	RSOV to firewall of left side	mm	3330	3247	-83
16	RSOV to steering column	mm	2624	2614	-10
17	Center of steering column to left 'A' pillar	mm	386	372	-14
18	Center of steering column to headlining	mm	458	433	-25
19	RSOV to right side of front bumper	mm	4092	3789	-303
20	RSOV to left side of front bumper	mm	4092	3804	-288
21	Length of engine block	mm	422	422	0
RD	RSOV to right side of dash panel	mm	2841	2846	5
CD	RSOV to center of dash panel	mm	2756	2760	4
LD	RSOV to left side of dash panel	mm	2834	2852	18



DATA SHEET NO. 15
CAMERA LOCATIONS

Test Vehicle: 2001 Kia Sephia 4 Door Sedan

NHTSA No.: M10502

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 3/6/01

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	1960	-8250	880	-1	8050	13	1030
3	Left Side, No. 2	1460	-8250	1460	-4	8000	35	1020
4	Left Side, No. 3	6500	-10580	4640	-16	11350	70	1010
5	Left Side, No. 4	1460	-8250	3100	-16	8000	19	N/A
6	Left Side, No. 5	1460	-8250	2700	-13	7970	19	980
7	Right Side, No. 1	1960	8150	730	-1	7980	19	N/A
8	Right Side, No. 2	1660	8150	1450	-4	7890	50	1010
9	Right Side, No. 3	7860	8900	2800	-9	10260	80	N/A
10	Right Side, No. 4	2750	9600	1500	-3	9320	24	1110
11	Overhead Overall	250	0	4460	-86	N/A	13	N/A
12	Front View, Driver	-530	-380	2590	-43	N/A	12	1000
13	Front View, Passenger	-530	380	2590	-44	N/A	13	1040
14	Pit Camera, Engine	580	0	-1360	90	N/A	13	780
15	Pit Camera, Fuel Tank	4700	0	-1680	55	N/A	19	N/A
16	Driver Belt	Position Not Used						
17	Passenger Belt	Position Not Used						
18	Left Side Extra	Position Not Used						

X - Barrier Face Y - Monorail Centerline Z - Ground

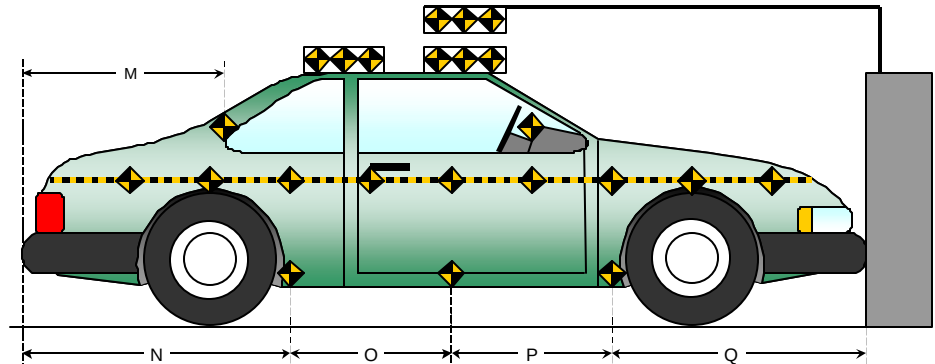
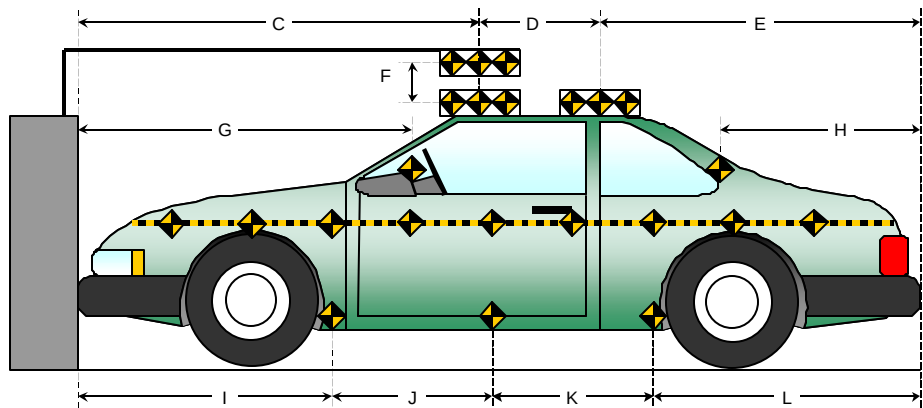
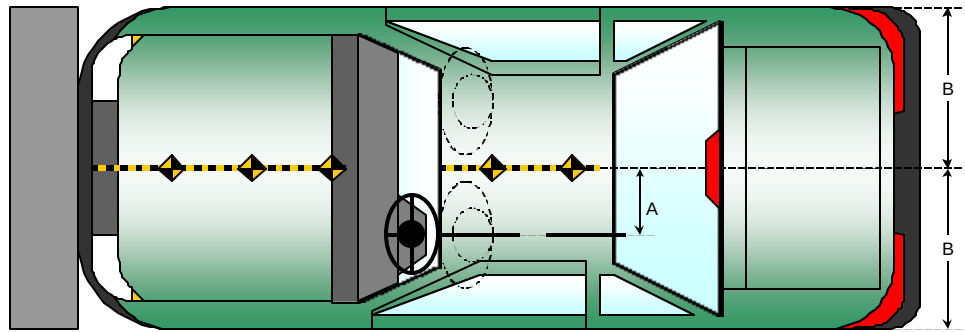
DATA SHEET NO. 16
PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2001 Kia Sephia 4 Door Sedan
 Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10502
 Test Date: 3/6/01

All Dimensions
in mm

Item	Value
A	357
B	853.5
C	2118
D	610
E	1713
F	155
G	1647
H	1052
I	1322
J	865
K	865
L	1380
M	1074
N	1367
O	866
P	866
Q	1334



DATA SHEET NO. 17
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2001 Kia Sephia 4 Door Sedan

NHTSA No.: M10502

Test Program: 2001 NHTSA 35 mph NCAP

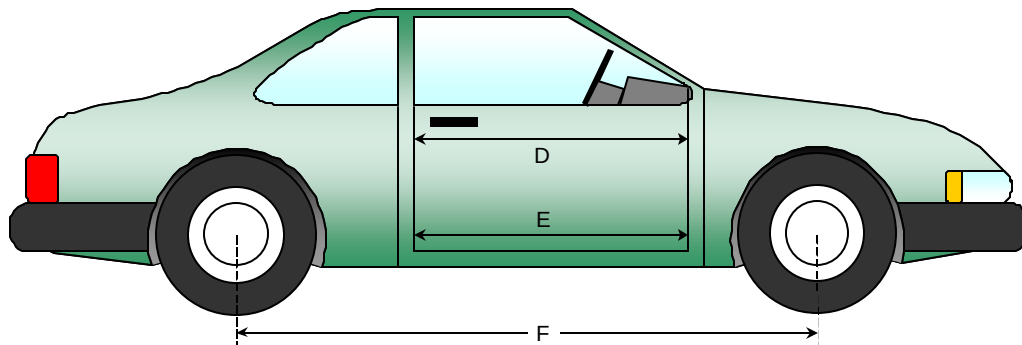
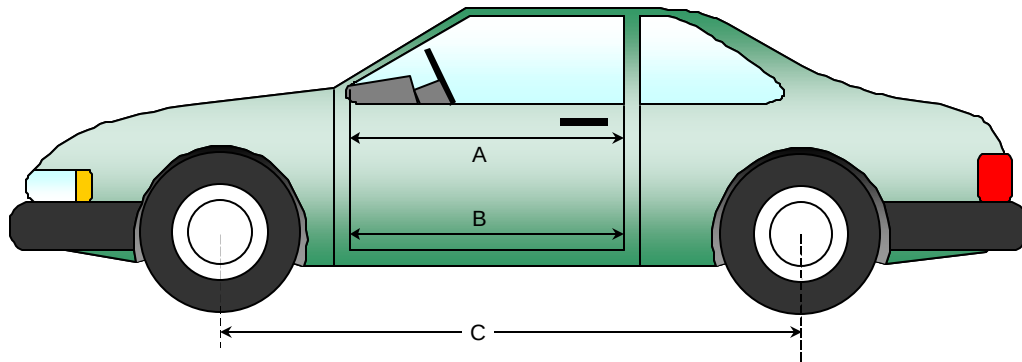
Test Date: 3/6/01

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	970	959	-11
B	Left Side Lower	mm	928	925	-3
D	Right Side Upper	mm	965	957	-8
E	Right Side Lower	mm	881	884	3

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheel base	mm	2558	2524	-34
F	Right Side Wheel base	mm	2558	2531	-27



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

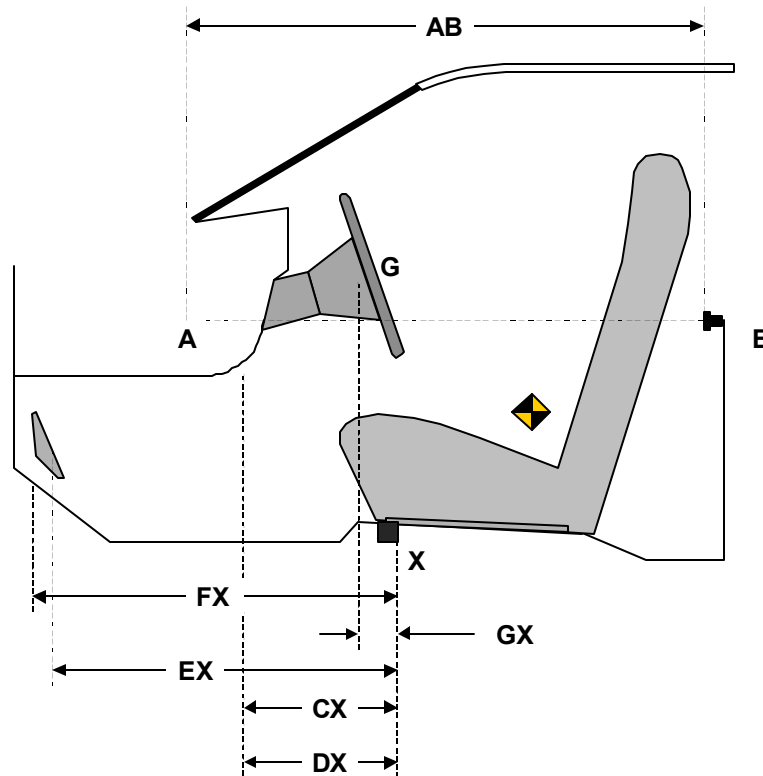
Test Vehicle: 2001 Kia Sephia 4 Door Sedan
 Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10502
 Test Date: 3/6/01

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside window jam)	mm	928	959	31
CX	Left Knee Bolster to X	mm	327	355	28
DX	Right Knee Bolster to X	mm	307	340	33
EX	Brake Pedal to X	mm	607	487	-120
FX	Foot Rest to X	mm	605	578	-27
GX	Center of Steering Wheel Hub to X	mm	76	125	49

X = Left Front Seat Outboard Anchor Bolt Head

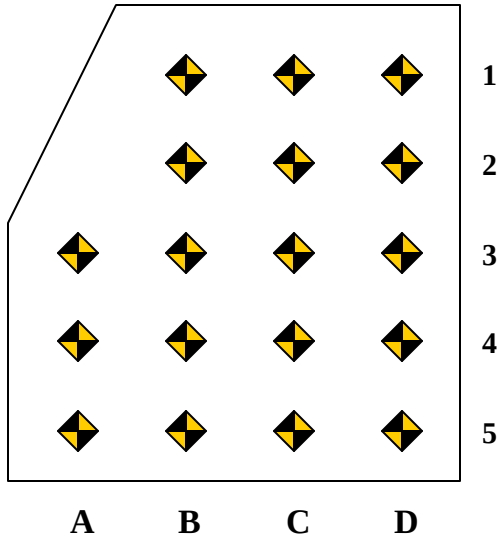


DRIVER COMPARTMENT

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

Test Vehicle: 2001 Kia Sephia 4 Door Sedan
 Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10502
 Test Date: 3/6/01



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		679	686	681		636	621	591		-43	-65	-90
2		605	602	500		576	561	546		-29	-41	46
3	515	505	502	498	498	488	476	459	-17	-17	-26	-39
4	414	406	400	395	415	395	391	383	1	-11	-9	-12
5	315	307	300	298	312	293	289	283	-3	-14	-11	-15

DRIVER FLOOR PAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1		-41	-35	-38		-33	-33	-50		8	2	-12
2		-90	-89	-88		-102	-109	-118		-12	-20	-30
3	-90	-95	-94	-93	-120	-140	-141	-145	-30	-45	-47	-52
4	-89	-89	-93	-90	-98	-116	-134	-145	-9	-27	-41	-55
5	-101	-100	-95	-95	-102	-107	-119	-132	-1	-7	-24	-37

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

Test Vehicle: 2001 Kia Sephia 4 Door Sedan
 Test Program: 2001 NHTSA 35 mph NCAP

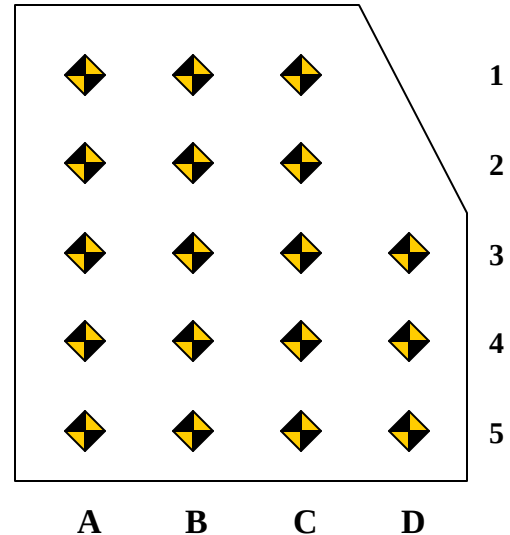
NHTSA No.: M10502
 Test Date: 3/6/01

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	697	695	699		645	655	638		-52	-40	-61	
2	614	620	626		602	606	610		-12	-14	-16	
3	514	520	525	528	507	506	515	519	-7	-14	-10	-9
4	414	421	424	429	407	411	420	420	-7	-10	-4	-9
5	311	318	322	329	304	309	318	320	-7	-9	-4	-9

PASSENGER FLOOR PAN Z-AXIS

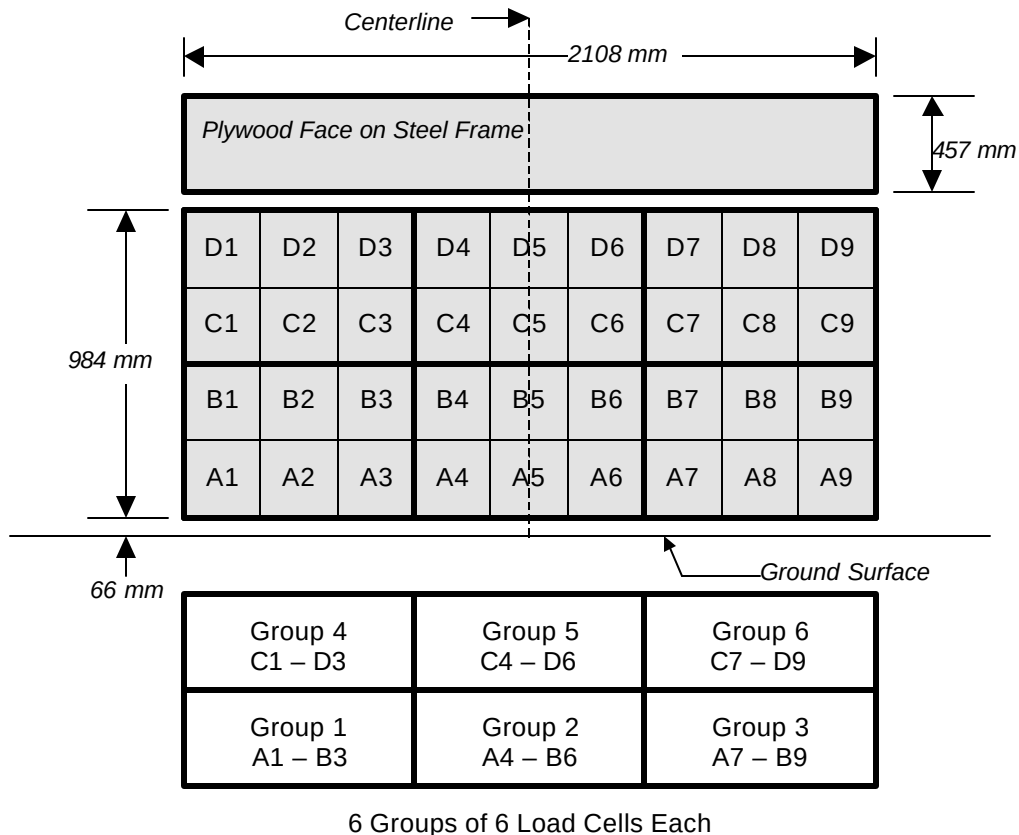
	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-49	-30	-26		-27	-32	-16		22	-2	10	
2	-101	-86	-85		-95	-107	-96		6	-21	-11	
3	-95	-95	-96	-97	-123	-118	-115	-112	-28	-23	-19	-15
4	-96	-95	-92	-95	-112	-110	-111	-110	-16	-15	-19	-15
5	-92	-100	-100	-102	-115	-118	-119	-119	-23	-18	-19	-17

DATA SHEET NO. 18
FIXED BARRIER TYPE

Test Vehicle: 2001 Kia Sephia 4 Door Sedan
 Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10502
 Test Date: 3/6/01

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 Kia Sephia 4 Door Sedan
Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10502
Test Date: 3/6/01

VEHICLE INFORMATION

VIN: KNAFB121715027066
Vehicle Size Category: Sedan

Wheel base (mm): 2558
Test Weight (kg): 1365

ACCELEROMETER DATA

Accelerometer Location: Left rear floor pan
Cal. Procedure/Interval: 6 months / drop test
Integration Algorithm: NHTSA Standard
Impact Velocity (km/h): 55.74
Velocity Change (km/h): 64.21

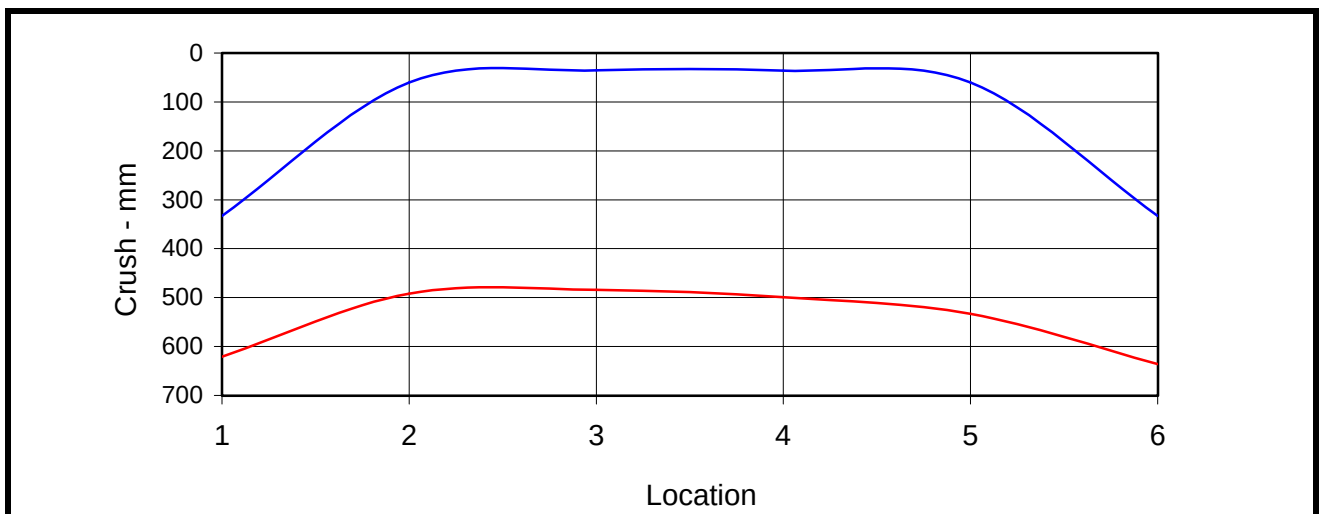
Linearity: Good

Time of Separation (msec): 69.6

CRUSH PROFILE

Collision Deformation Classification: 12FDEW6 ; Midpoint of Damage: Vehicle Centerline
Damage Region Length (mm): 1526 ; Impact Mode: Full Frontal

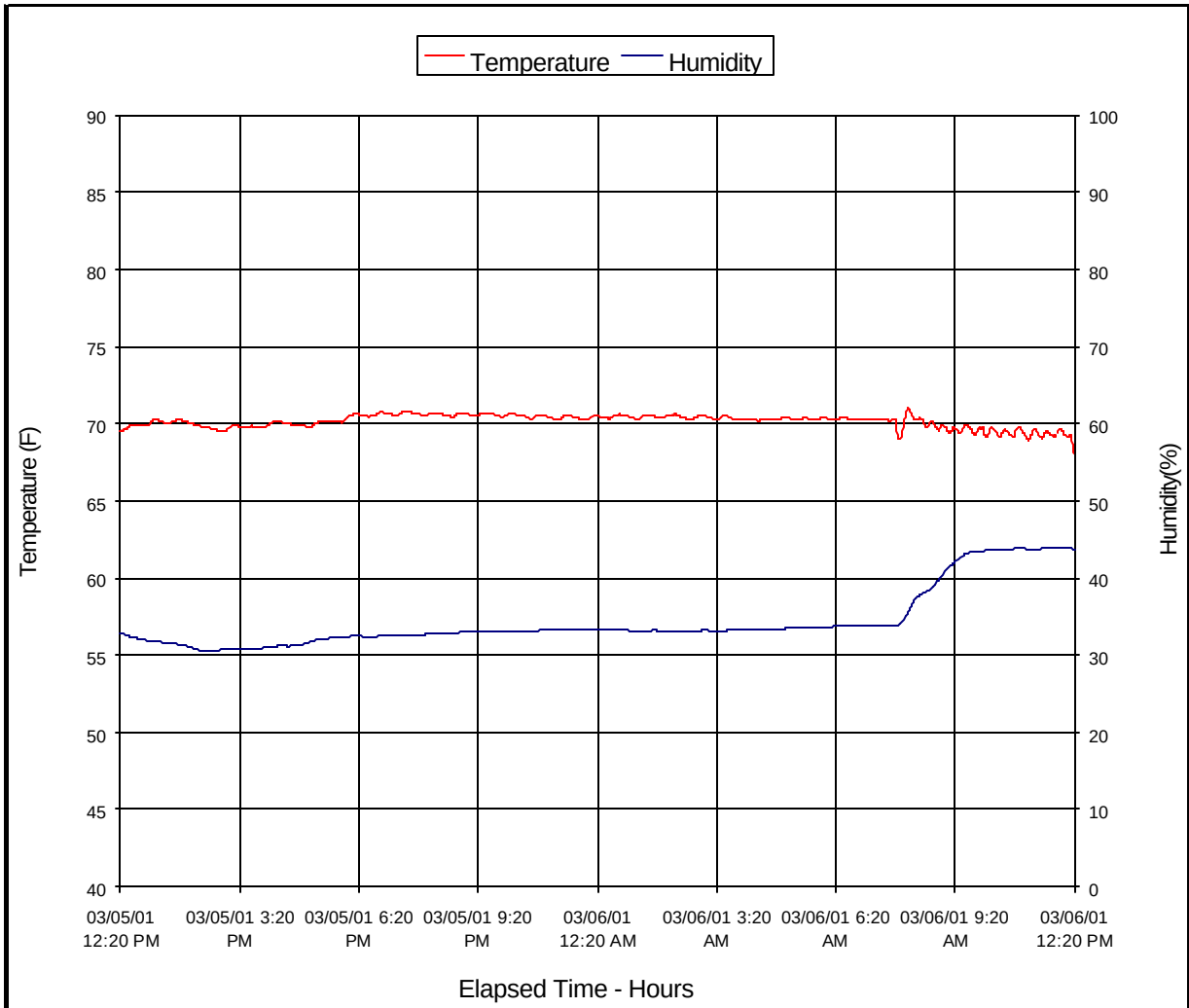
No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	333	621	-288
C2	Crush zone 2 on left side	mm	60	492	-432
C3	Crush zone 3 on left side	mm	35	484	-449
C4	Crush zone 4 on right side	mm	36	499	-463
C5	Crush zone 5 on right side	mm	60	533	-473
C6	Crush zone 6 at right side	mm	333	636	-303



DATA SHEET NO. 20
DUMMY/ VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2001 Kia Sephia 4 Door Sedan
Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10502
Test Date: 3/6/01



APPENDIX A
PHOTOGRAPHS

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Figure A-1: Right Front, as Received



Figure A-2: Left Rear, as Received

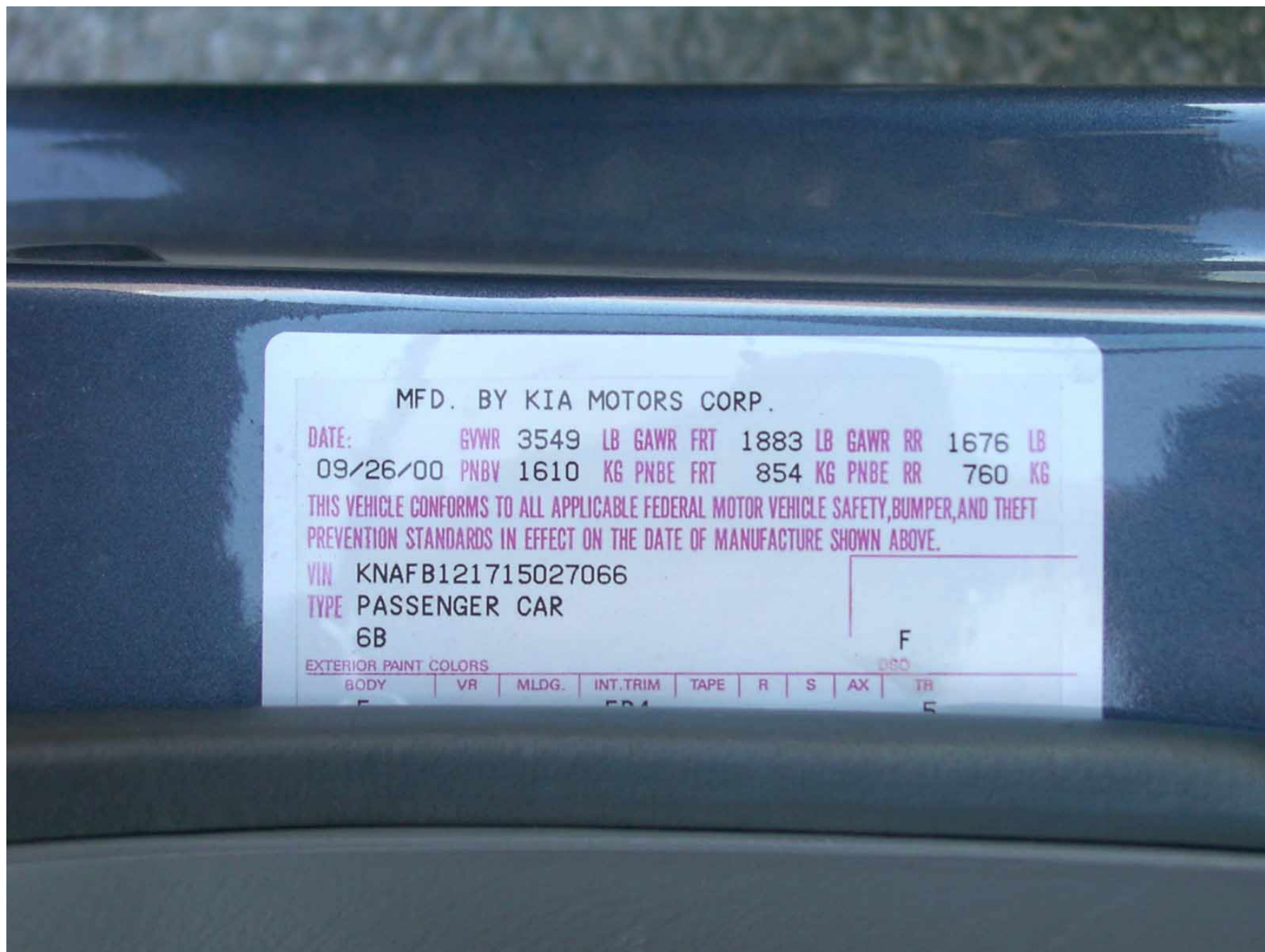


Figure A-3: Vehicle Certification Label



Figure A-4: Vehicle Tire Label



Figure A-5: Front View, Pre-Test



Figure A-6: Front View, Post-Test



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



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



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



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



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



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



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



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

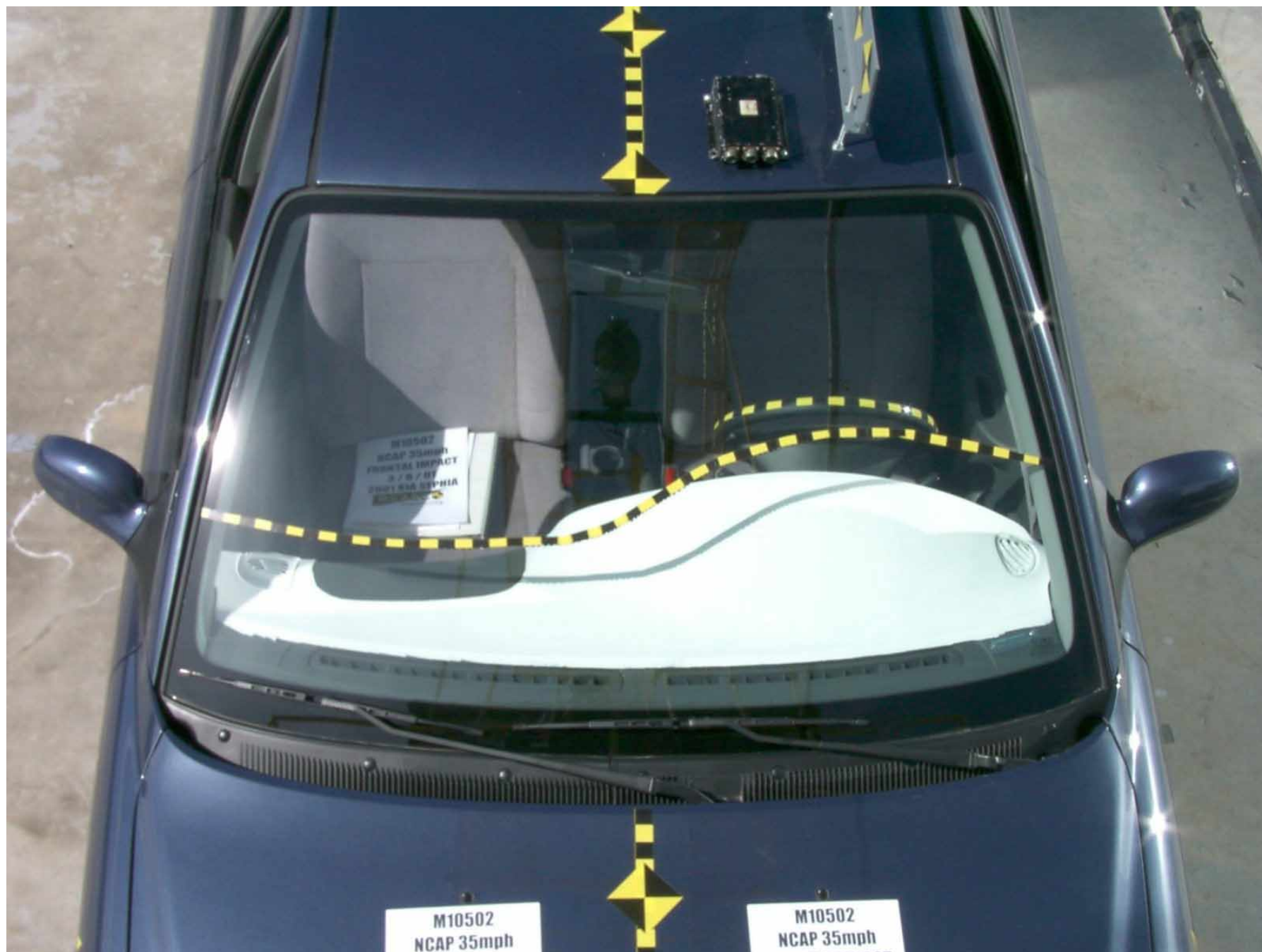


Figure A-15: Windshield, Pre-Test



Figure A-16: Windshield, Post-Test



Figure A-17: Engine Compartment, Pre-Test



Figure A-18: Engine Compartment, Post-Test



Figure A-19: Fuel Cap, Pre-test



Figure A-20: Fuel Cap, Post-Test

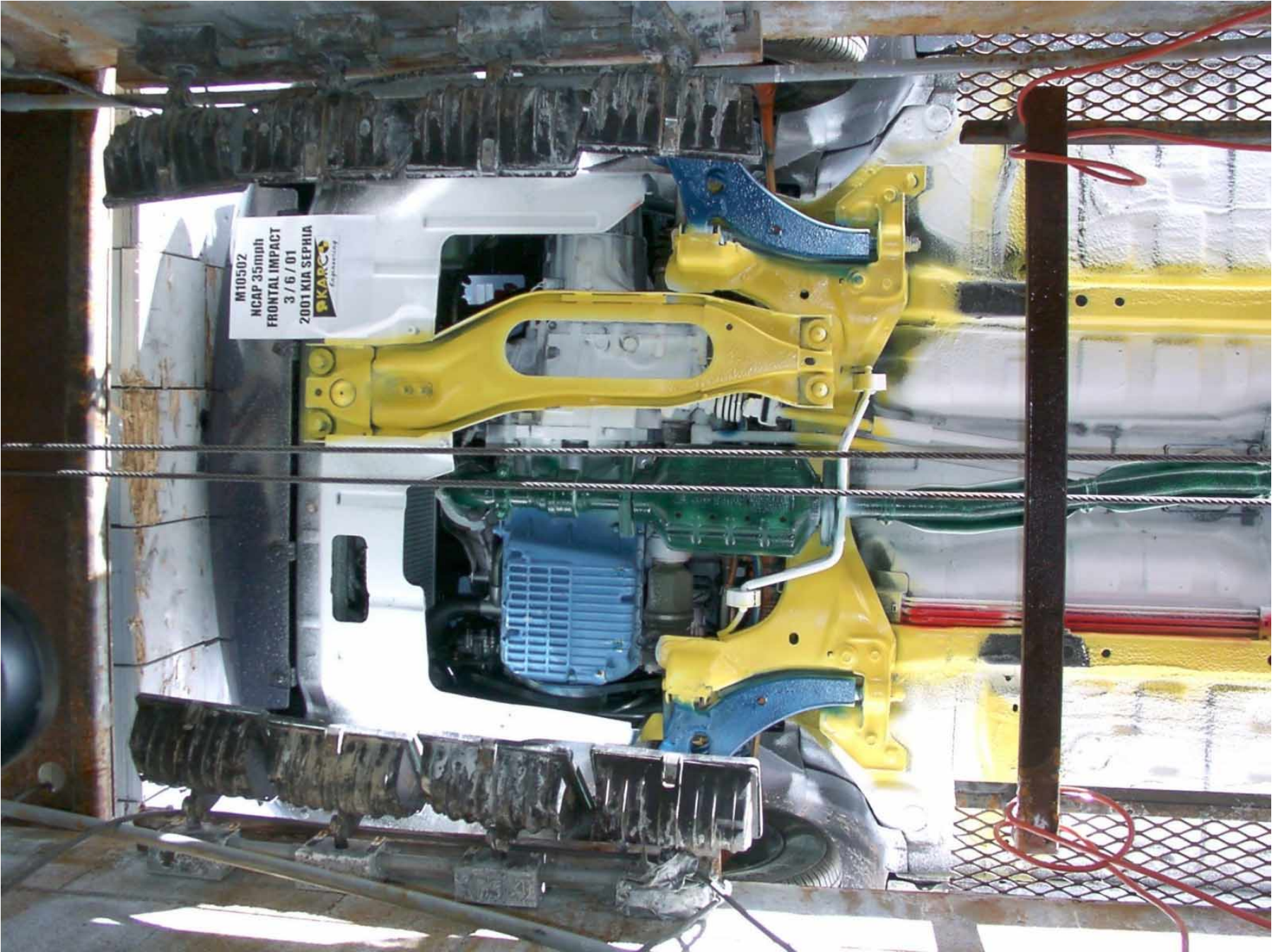


Figure A-21: Front Underside, Pre-Test

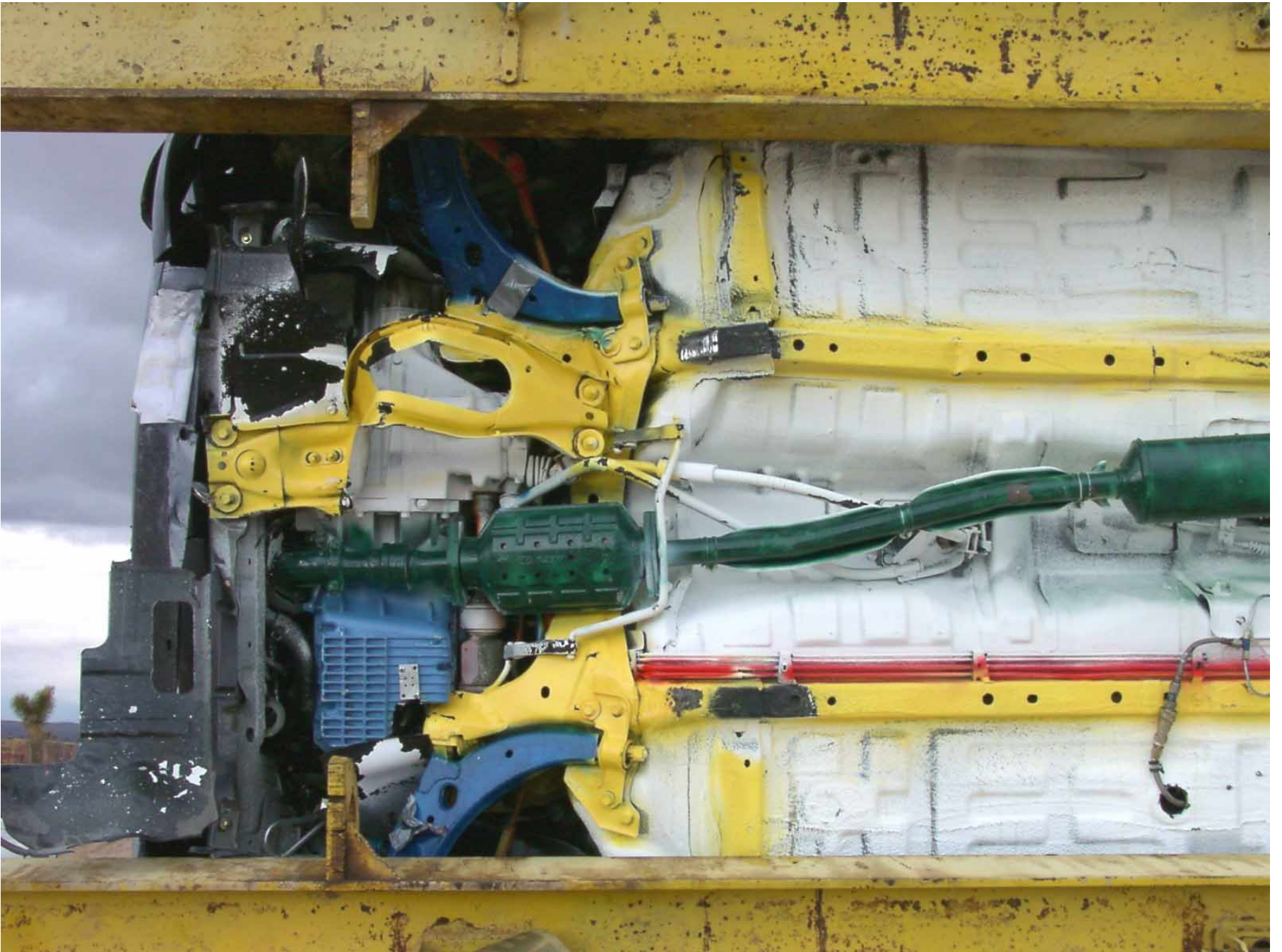


Figure A-22: Front Underside, Post-Test

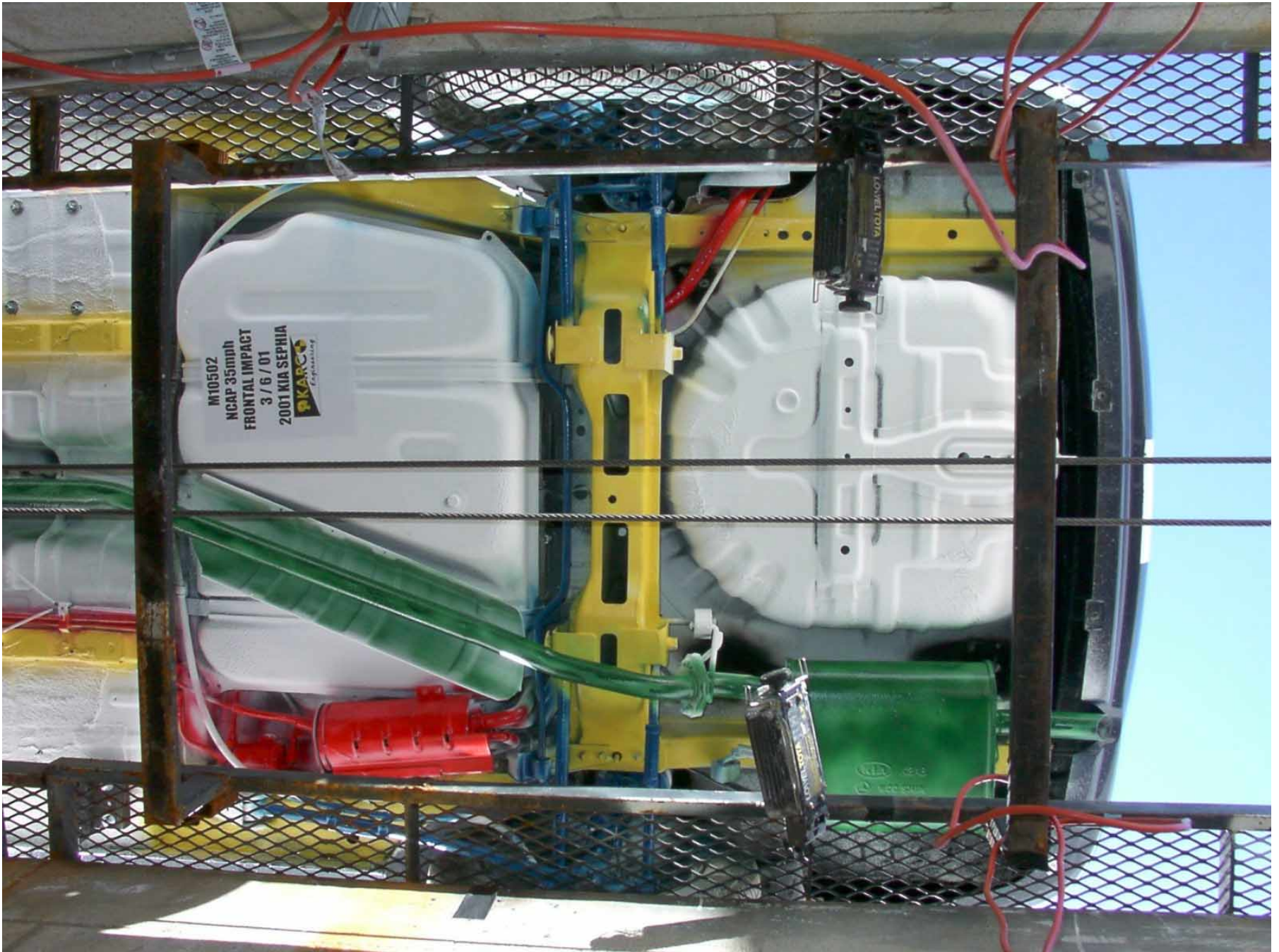


Figure A-23: Rear Underside, Pre-Test



Figure A-24: Rear Underside, Post-Test

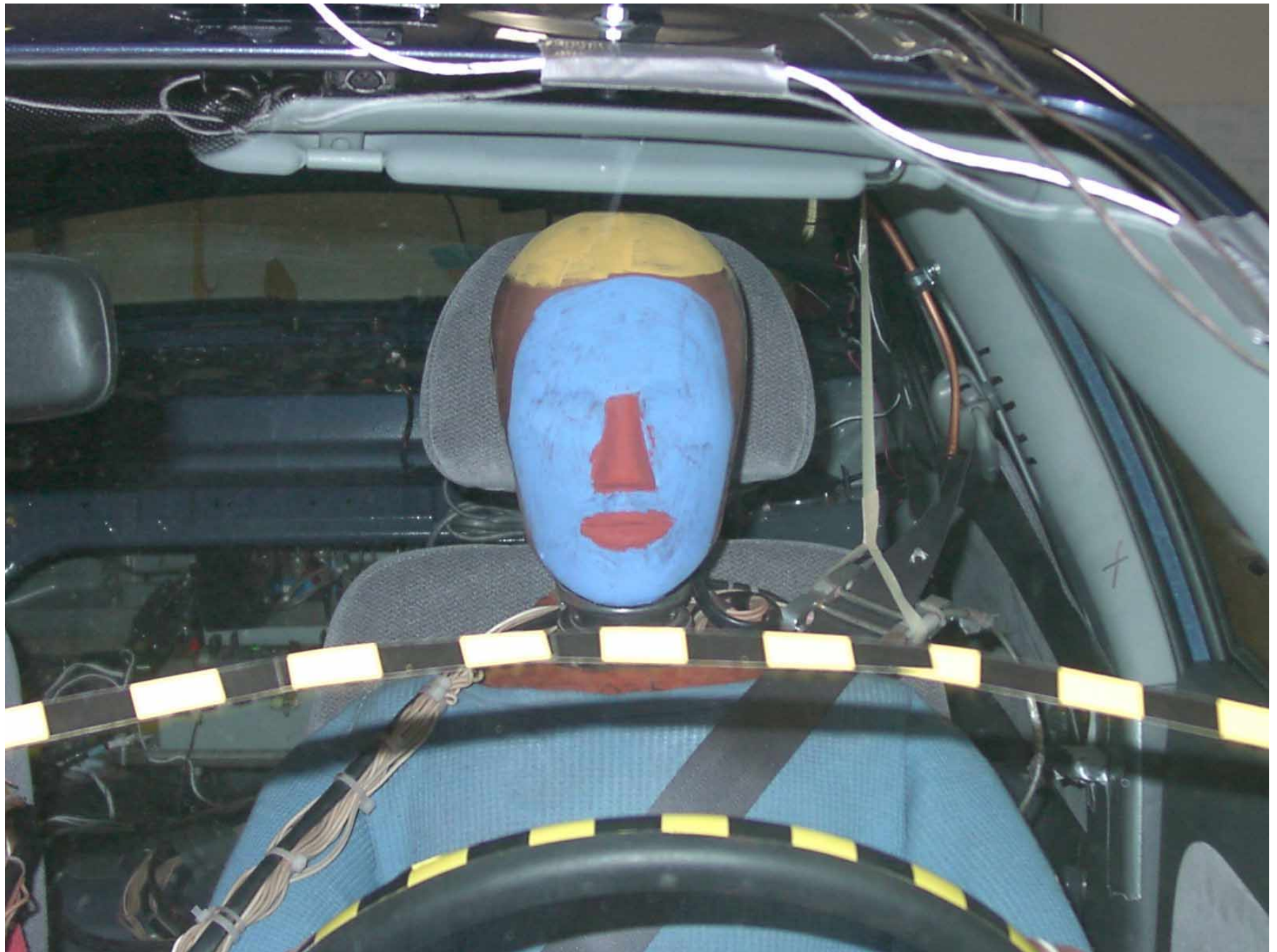


Figure A-25: Driver Dummy Front View, Pre-Test



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



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



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



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



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



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



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

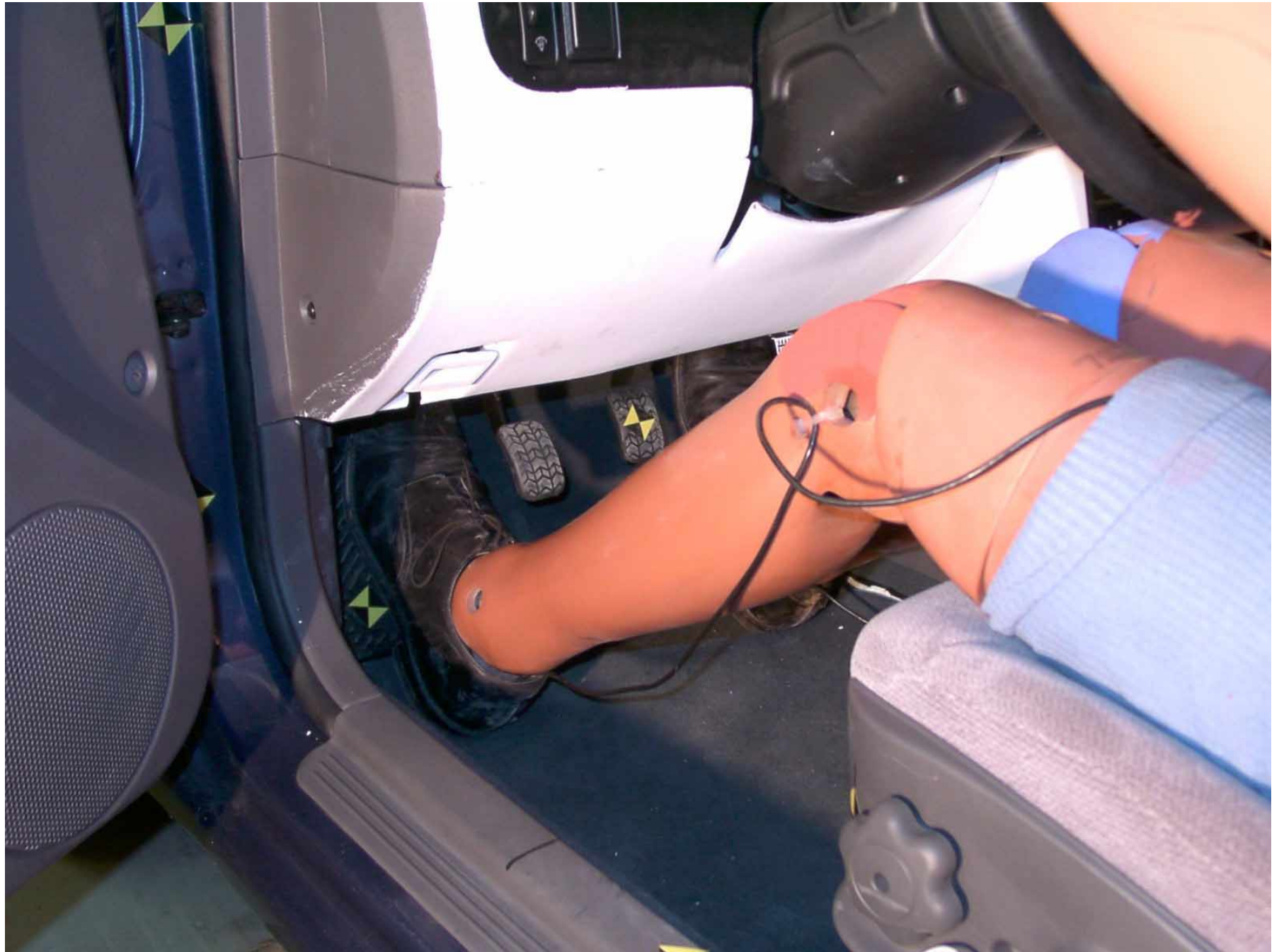


Figure A-33: Driver Dummy Feet, Pre-Test



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



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



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



Figure A-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

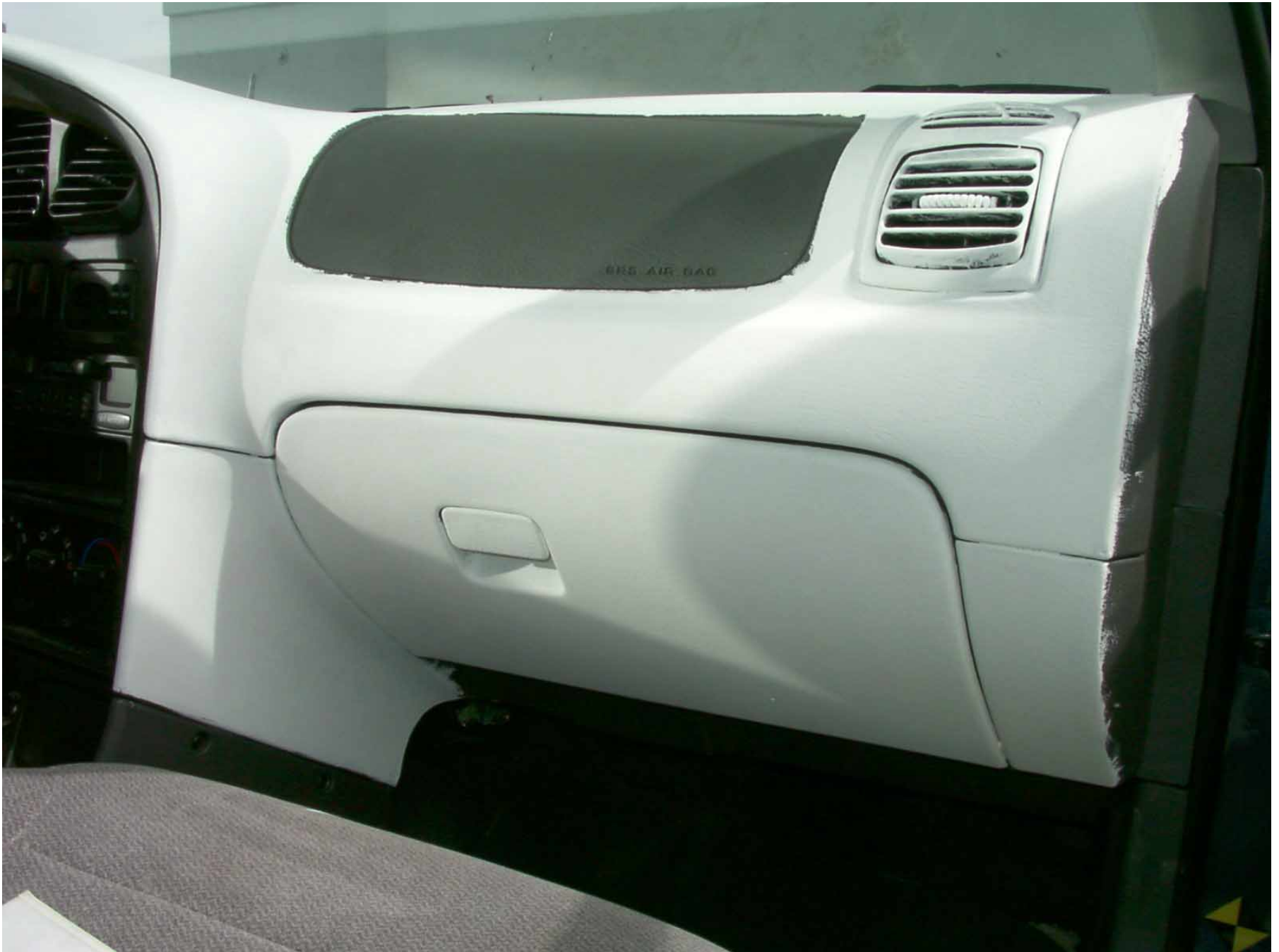


Figure A-53: Passenger Side Knee Bolster, Pre-Test



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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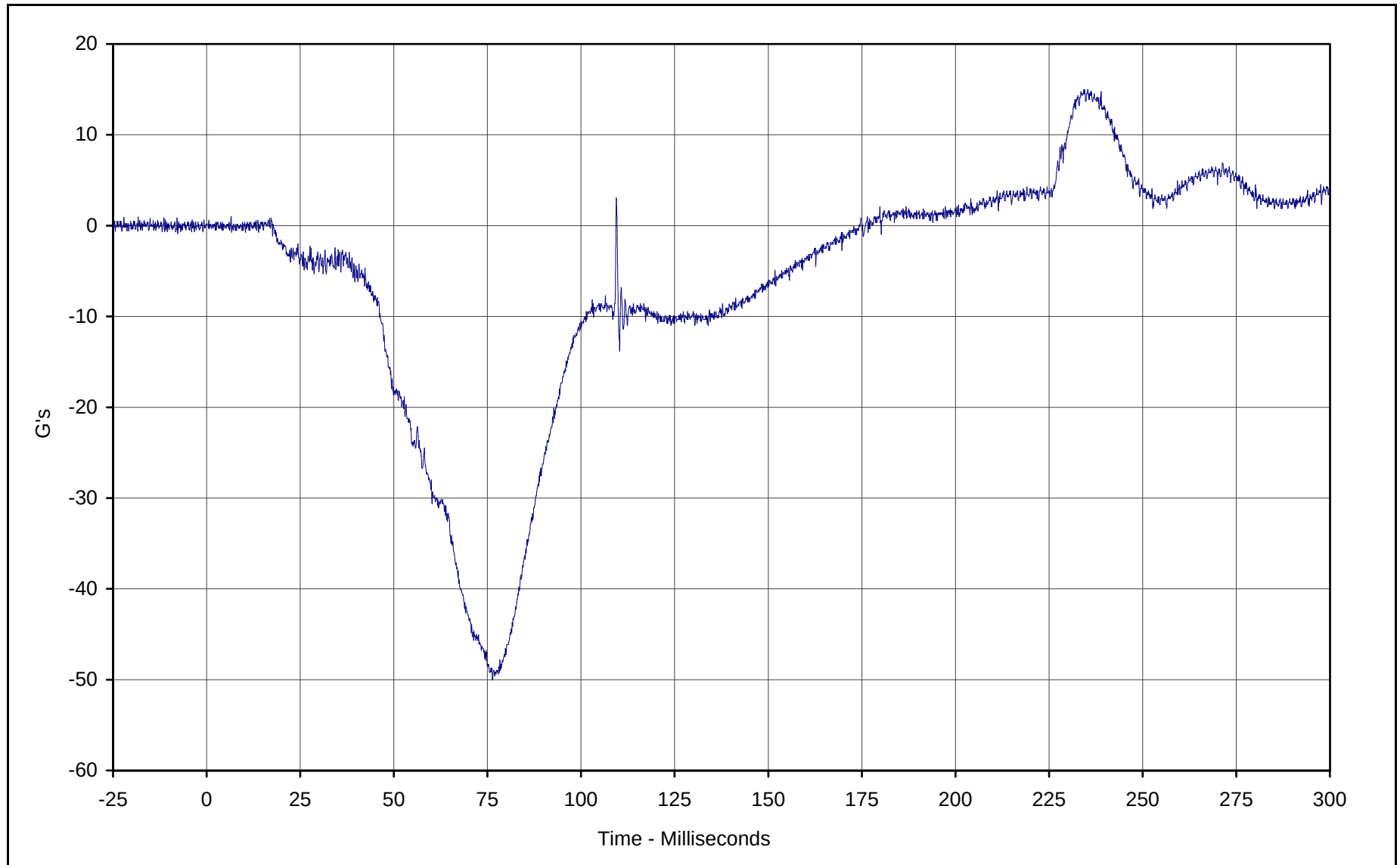
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B-105	Passenger Right Upper Tibia Moment X	B-105
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B-111	Passenger Right Lower Tibia Moment Y	B-111
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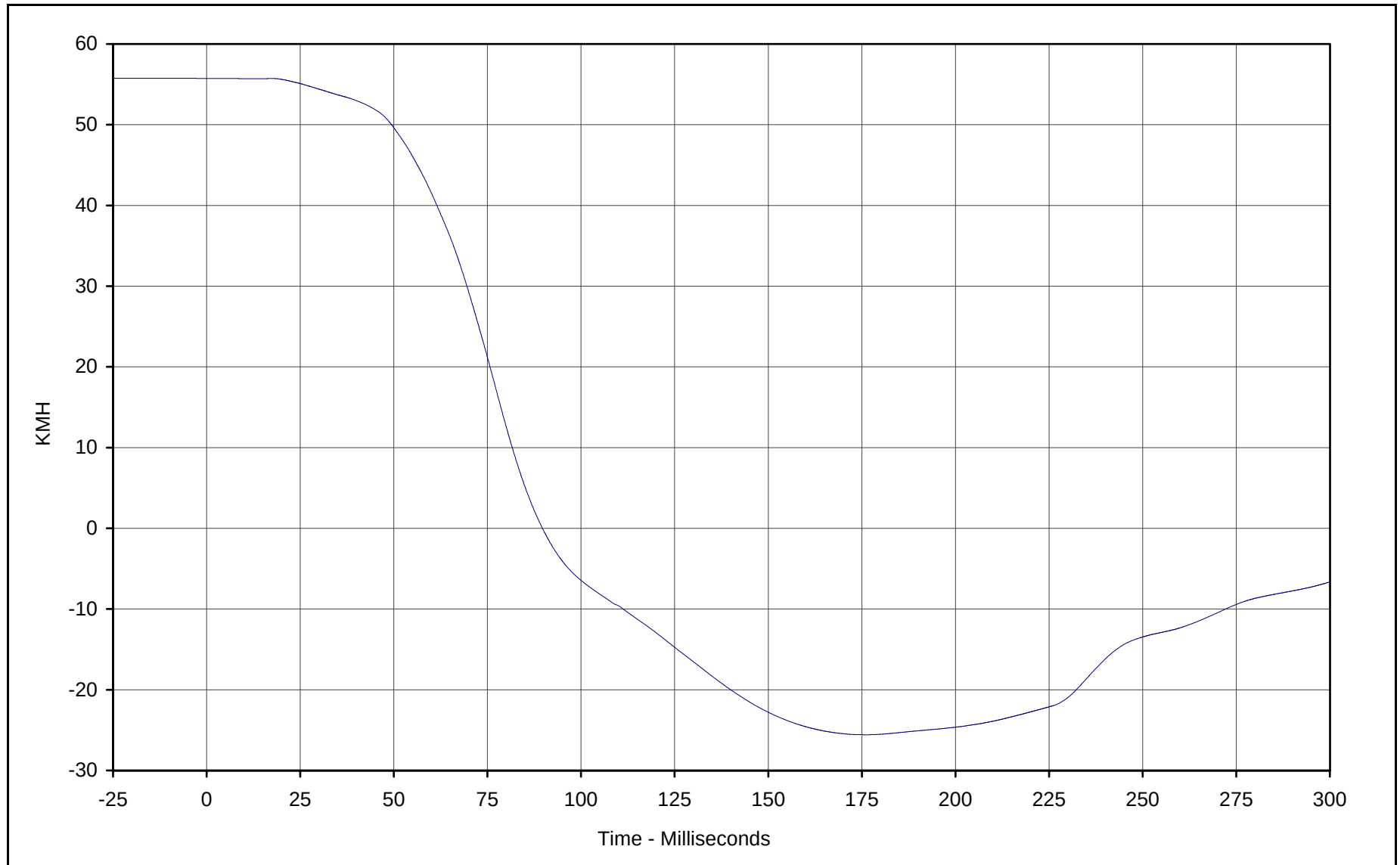
Data Plot		Page
B-123	Vehicle Left Rear Primary	B-123
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Curve Description: Driver Head Primary X
Maximum Value: 15.0 at 234.3 Milliseconds
Minimum Value: -50.0 at 76.4 Milliseconds
SAE Filter Class: 1000
Date of Test: 3/6/01
Curve Number: FIL-001

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

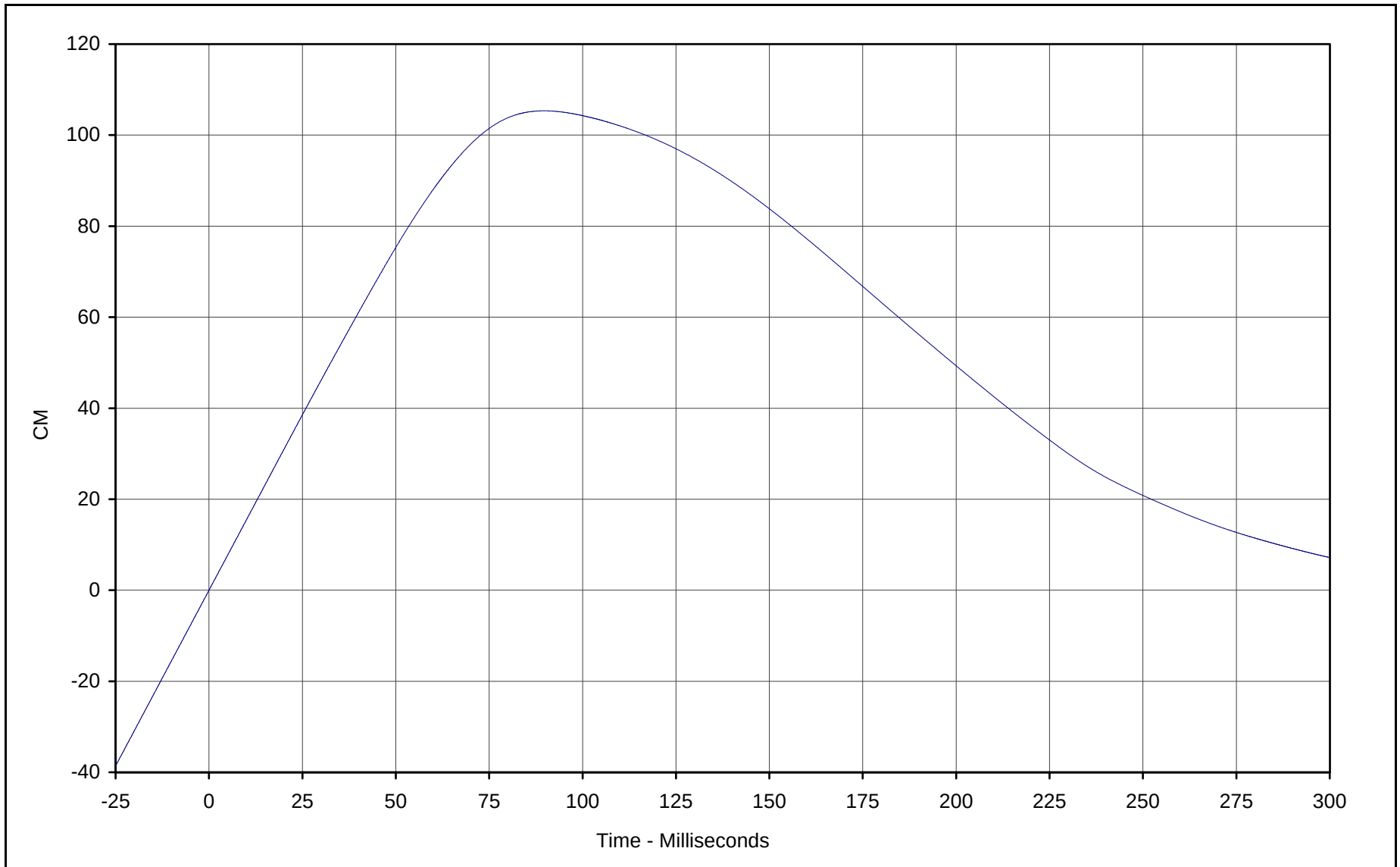




Curve Description: Driver Head Primary X Velocity
Maximum Value: 55.7 at 1.0 Milliseconds
Minimum Value: -25.6 at 176.1 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: IN1-001

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

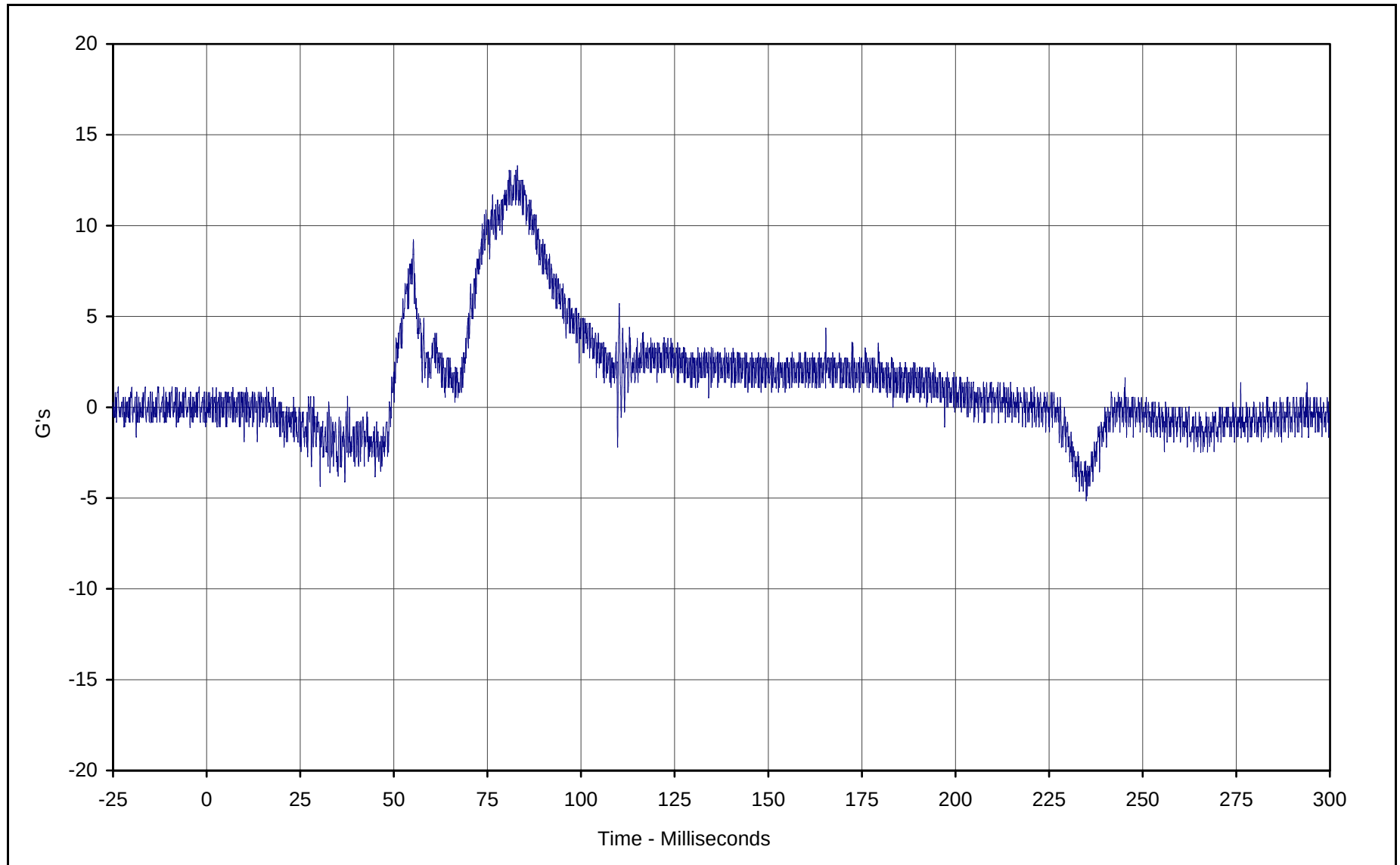




Curve Description: Driver Head Primary X Displ.
Maximum Value: 105.3 at 89.7 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: IN2-001

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

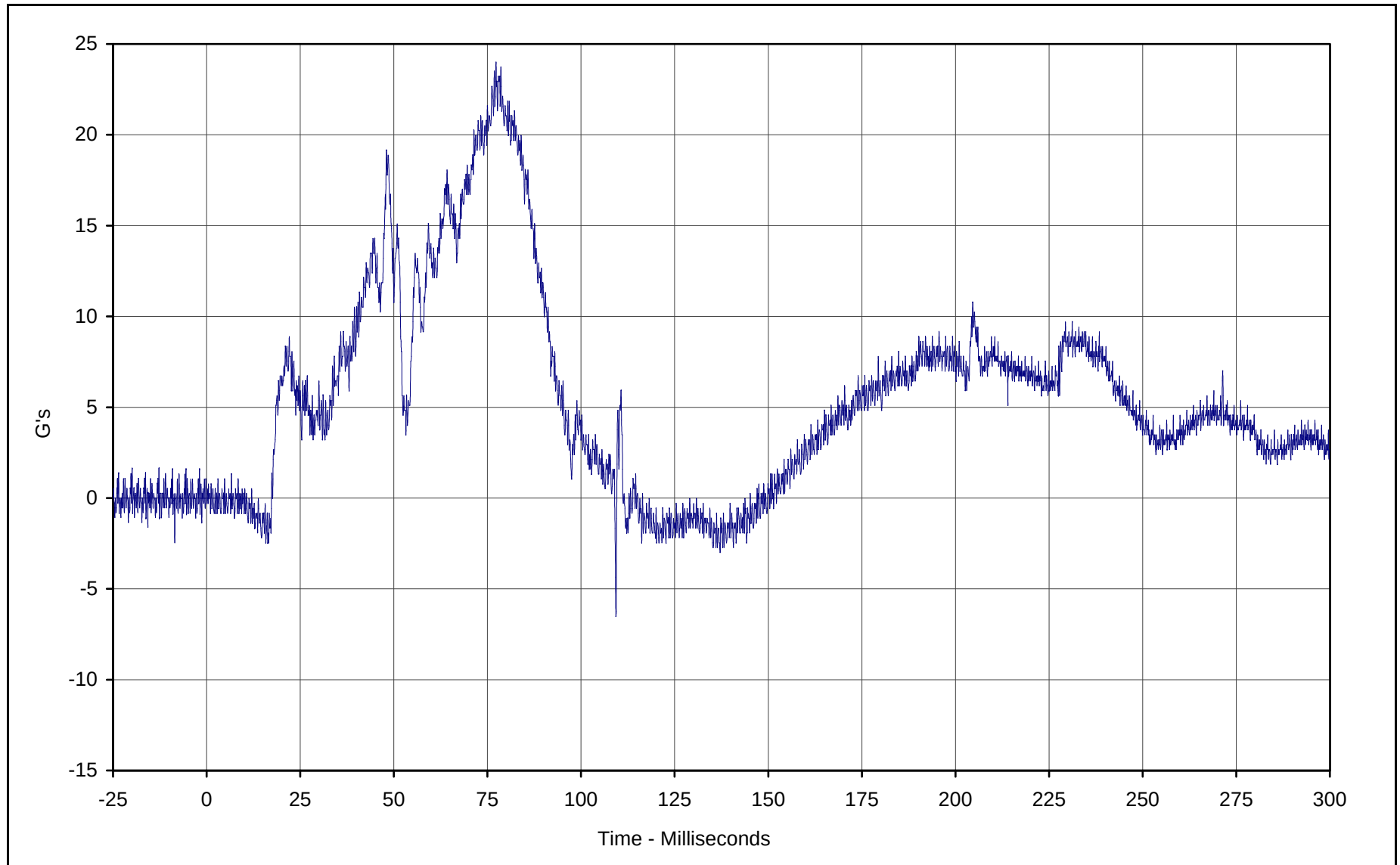




Curve Description: Driver Head Primary Y
Maximum Value: 13.3 at 83.0 Milliseconds
Minimum Value: -5.2 at 234.9 Milliseconds
SAE Filter Class: 1000
Date of Test: 3/6/01
Curve Number: FIL-002

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

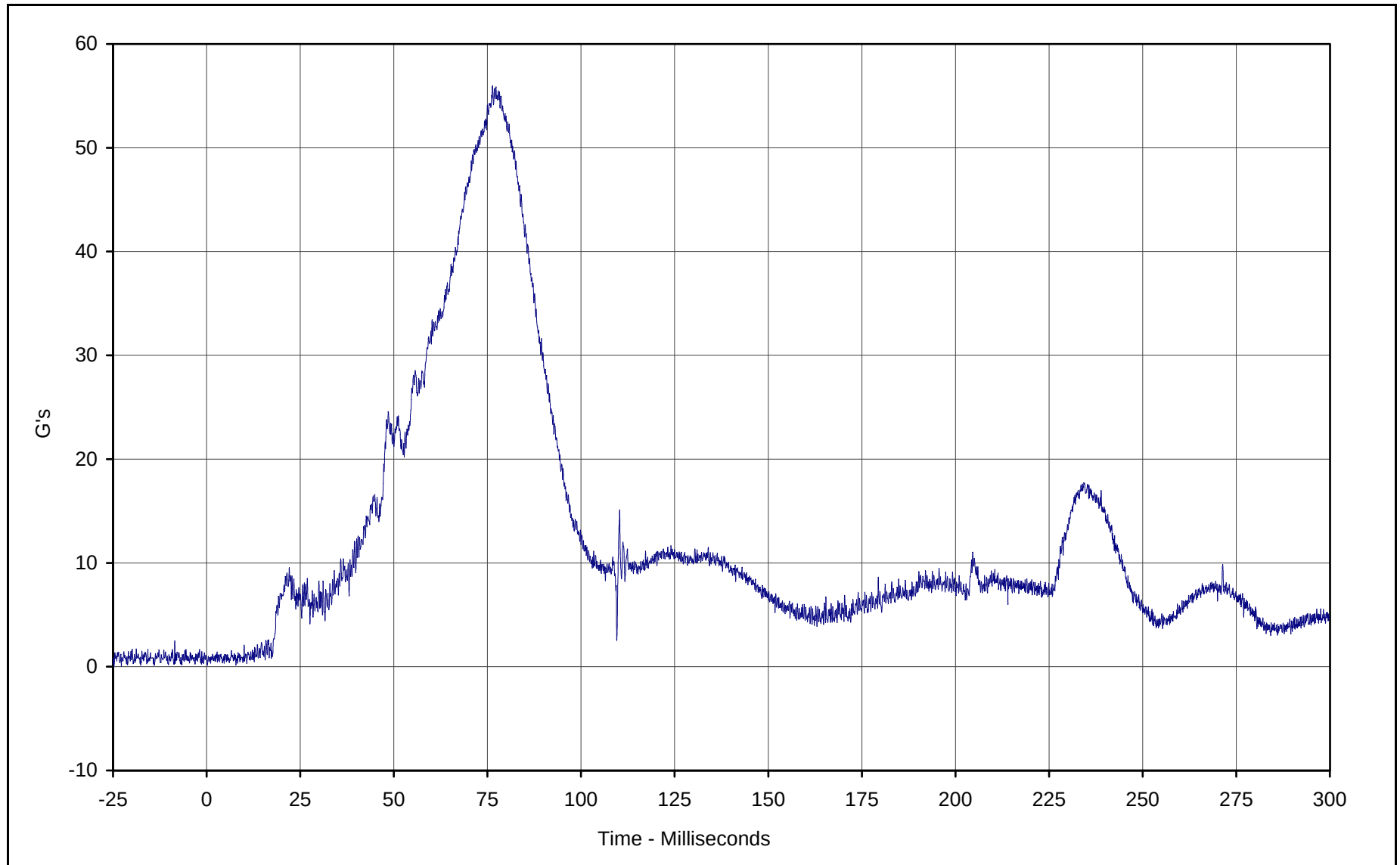




Curve Description: Driver Head Primary Z
Maximum Value: 24.0 at 77.3 Milliseconds
Minimum Value: -6.5 at 109.3 Milliseconds
SAE Filter Class: 1000
Date of Test: 3/6/01
Curve Number: FIL-003

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

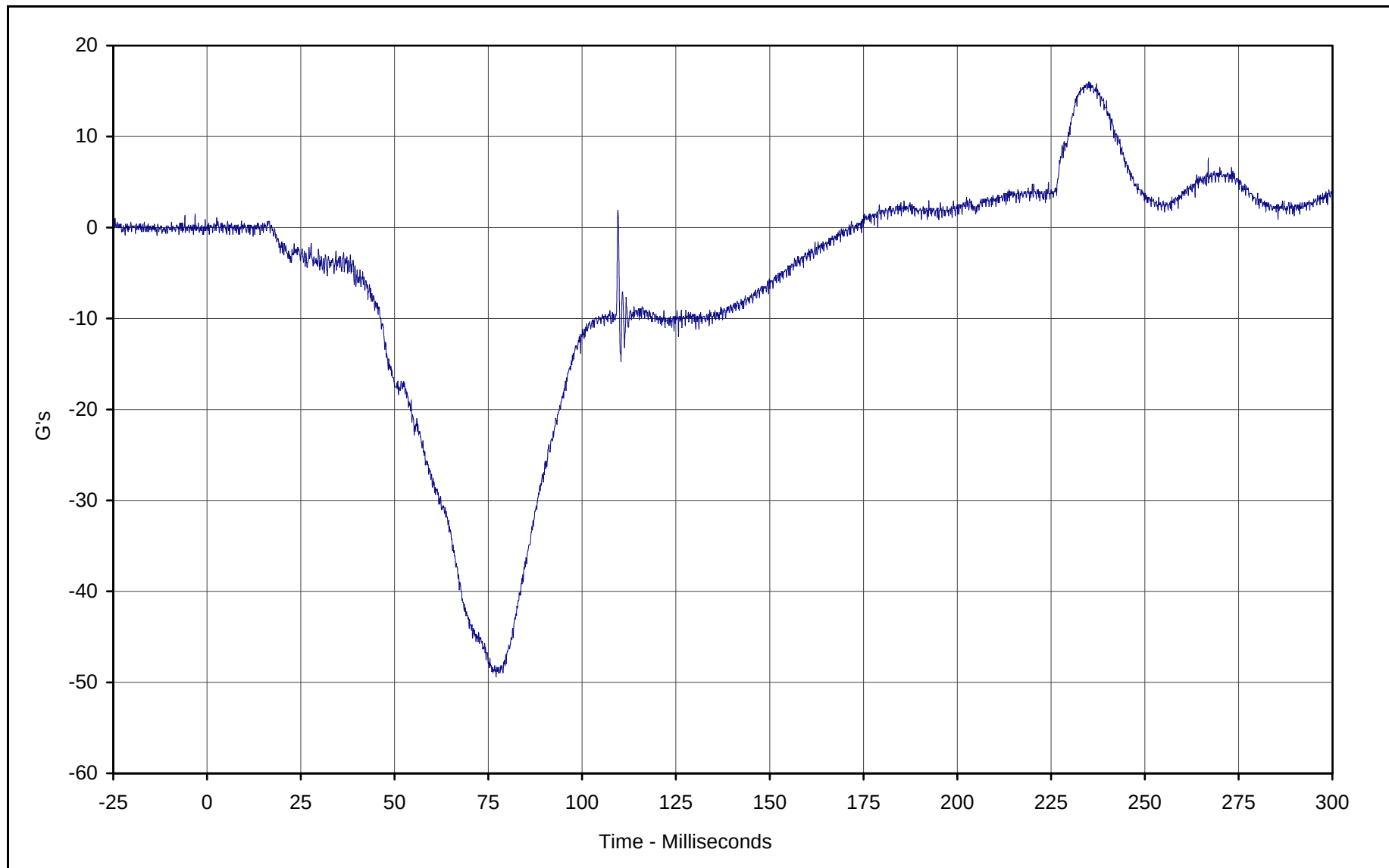




Curve Description: Driver Head Resultant Primary
Maximum Value: 56.0 at 76.4 Milliseconds
Minimum Value: 0.1 at 0.2 Milliseconds
SAE Filter Class: 1000
Date of Test: 3/6/01
Curve Number: RES-001

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

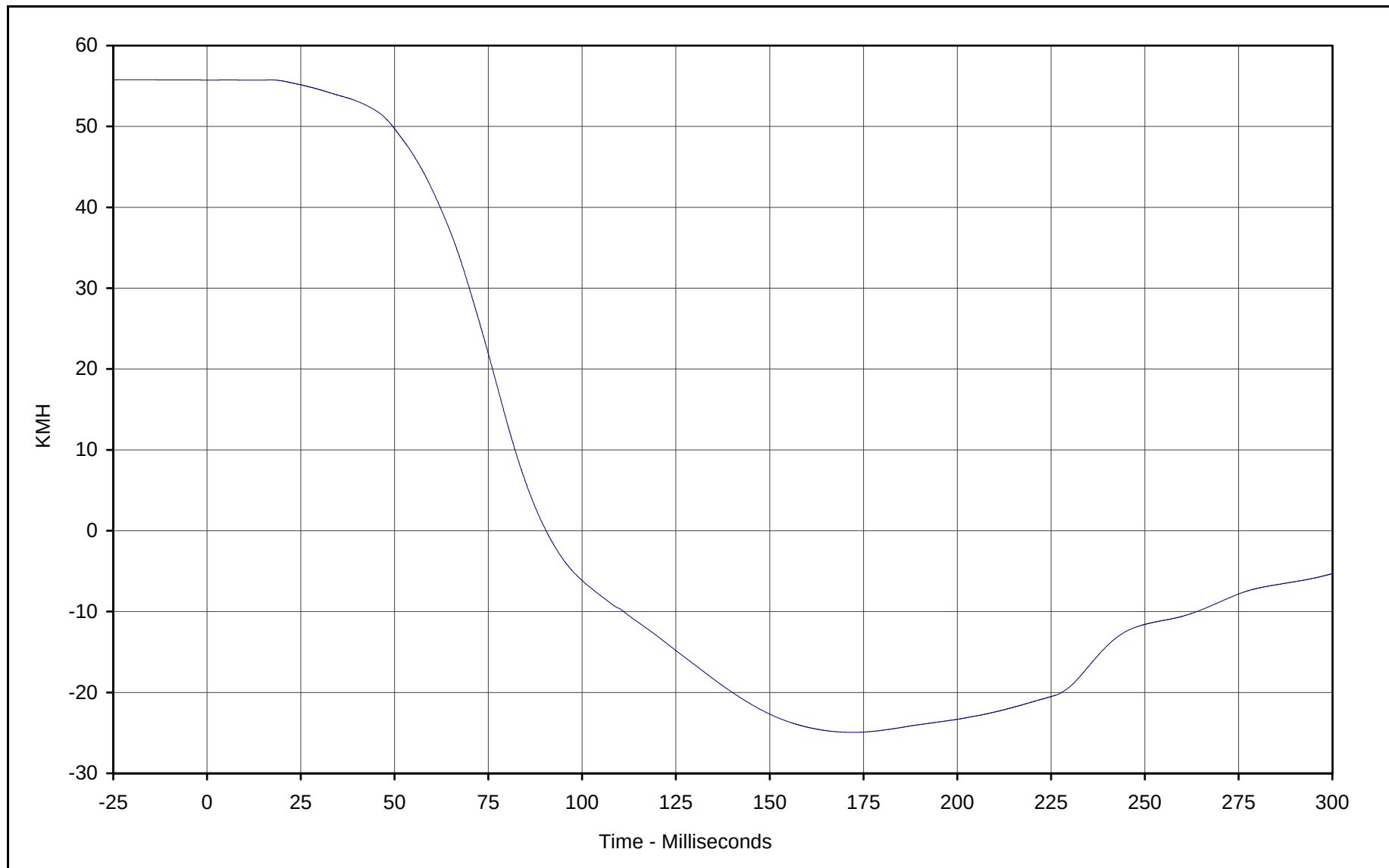




Curve Description: Driver Head Redundant X
Maximum Value: 16.0 at 235.0 Milliseconds
Minimum Value: -49.4 at 77.1 Milliseconds
SAE Filter Class: 1000
Date of Test: 3/6/01
Curve Number: FIL-004

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



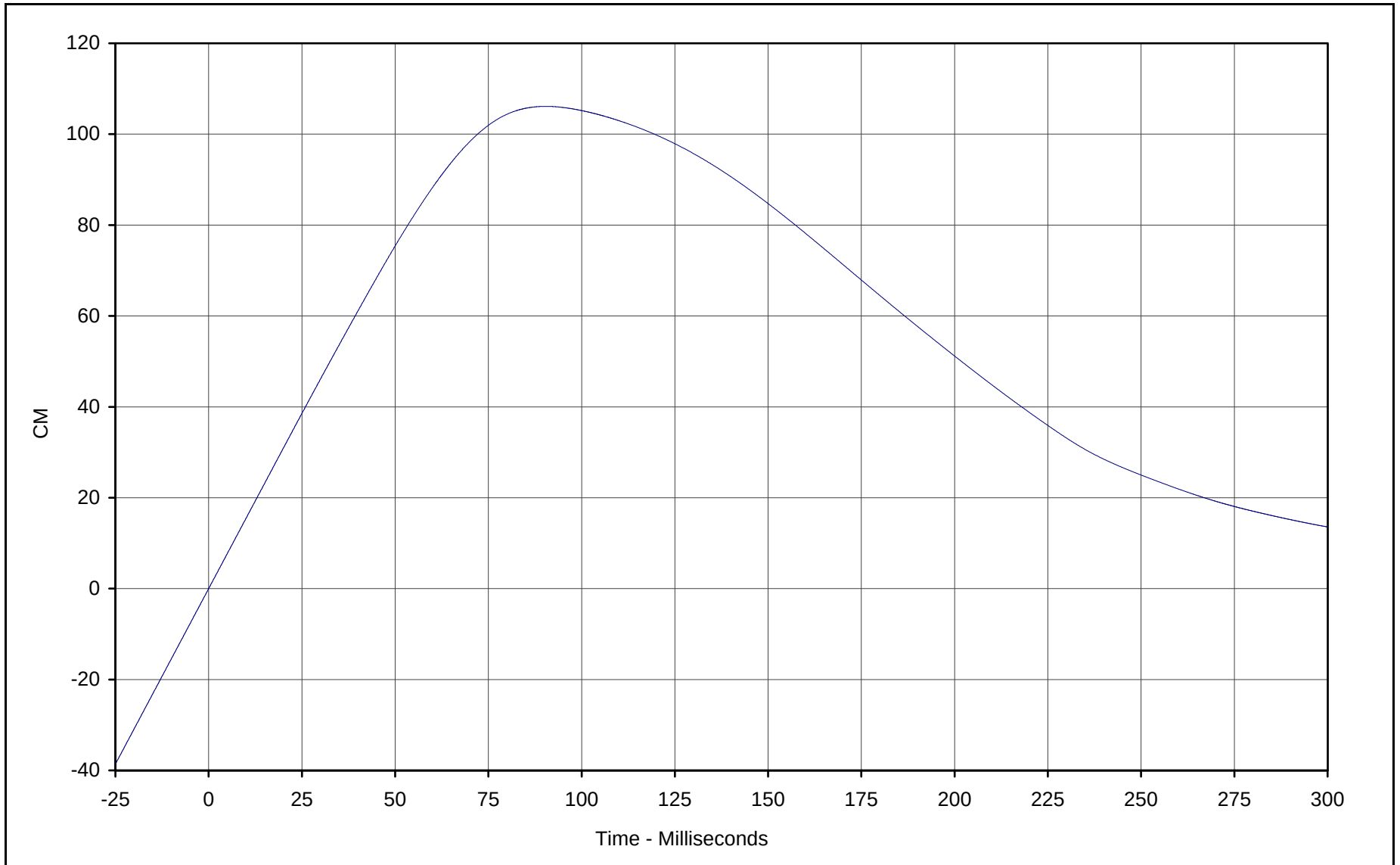


Curve Description: Driver Head Redundant X Velocity
Maximum Value: 55.8 at 17.1 Milliseconds
Minimum Value: -24.9 at 171.8 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: IN1-004

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan

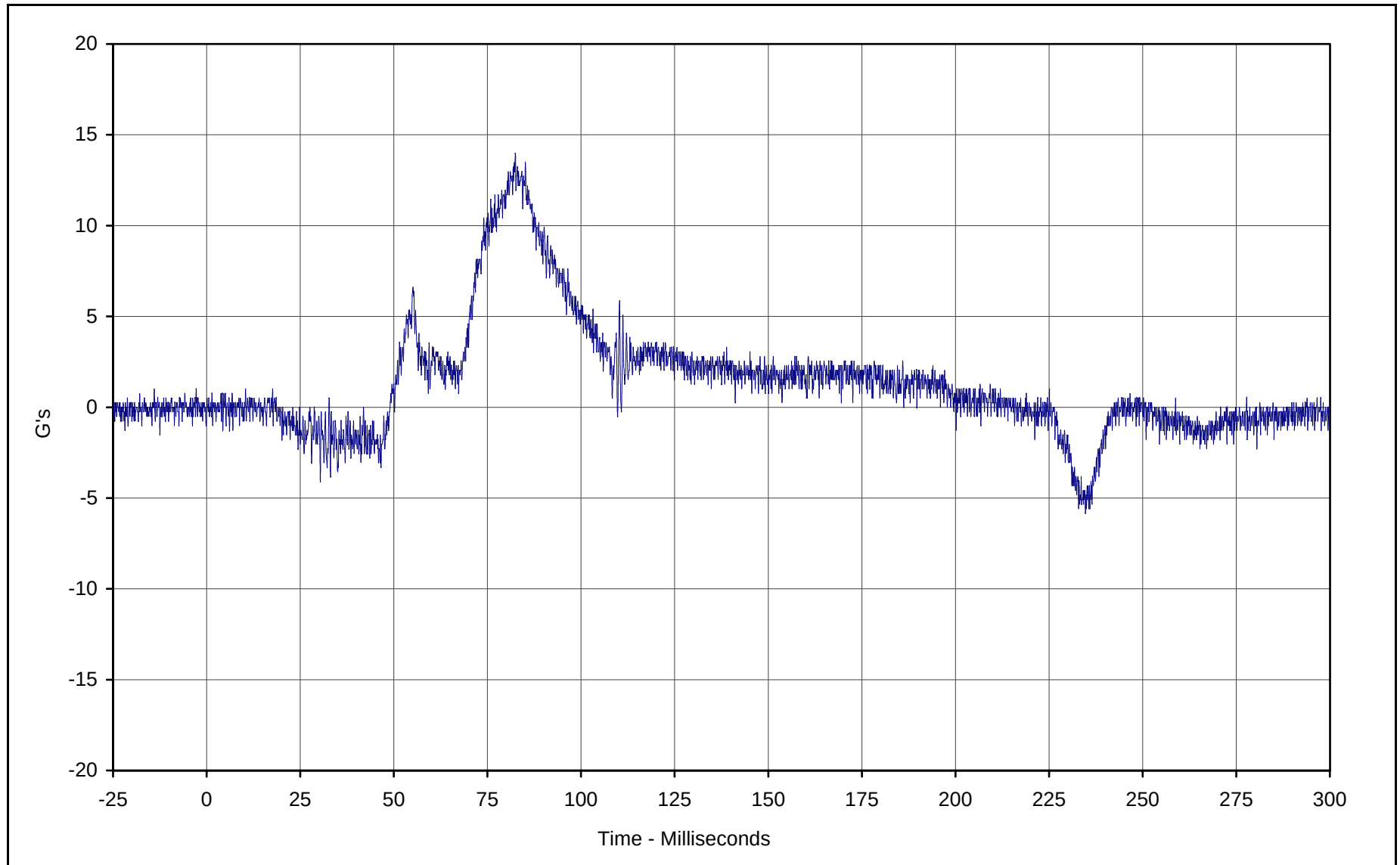




Curve Description: Driver Head Redundant X Displ.
Maximum Value: 106.1 at 90.4 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: IN2-004

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

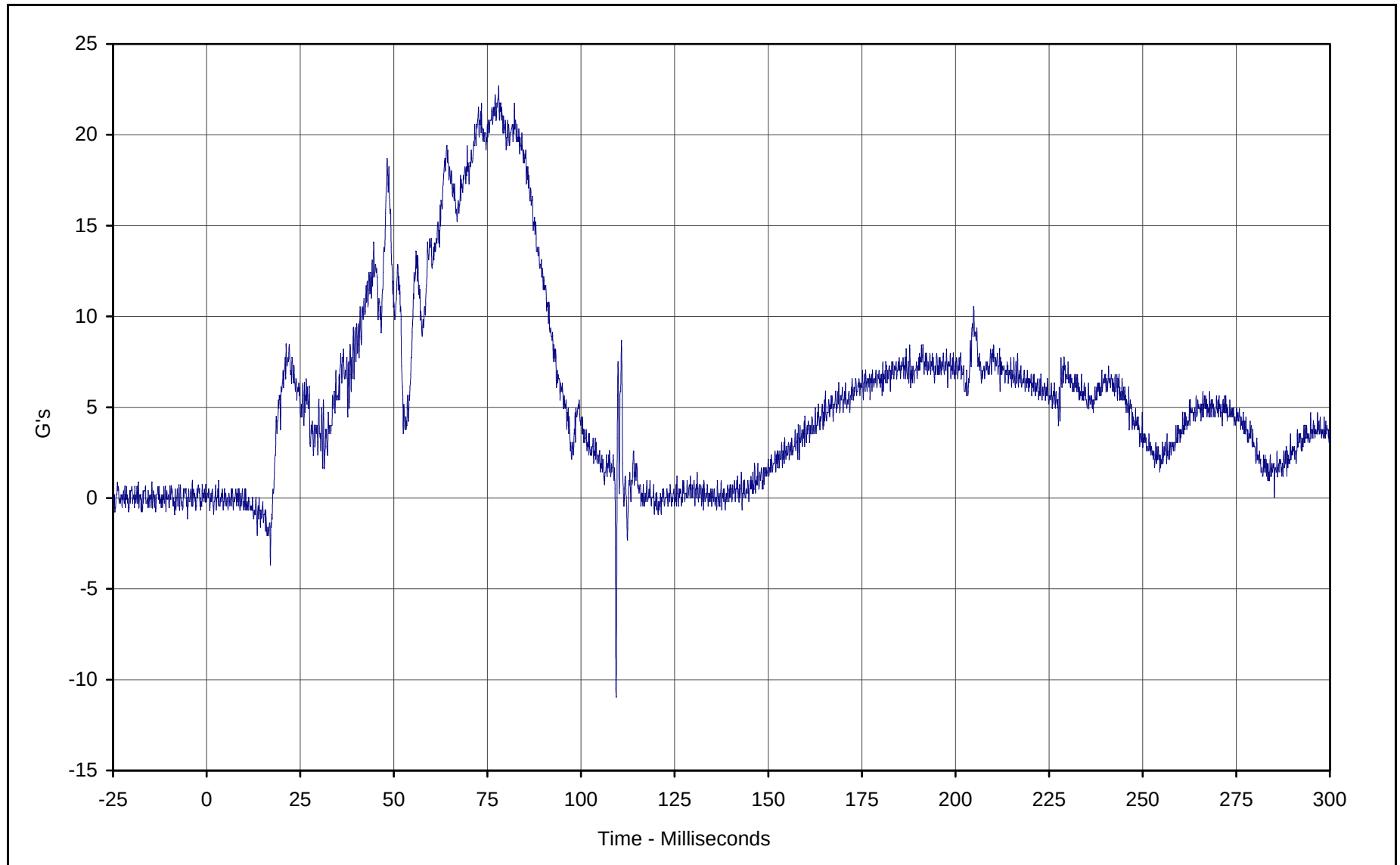




Curve Description: Driver Head Redundant Y
Maximum Value: 14.0 at 82.4 Milliseconds
Minimum Value: -5.8 at 234.7 Milliseconds
SAE Filter Class: 1000
Date of Test: 3/6/01
Curve Number: FIL-005

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

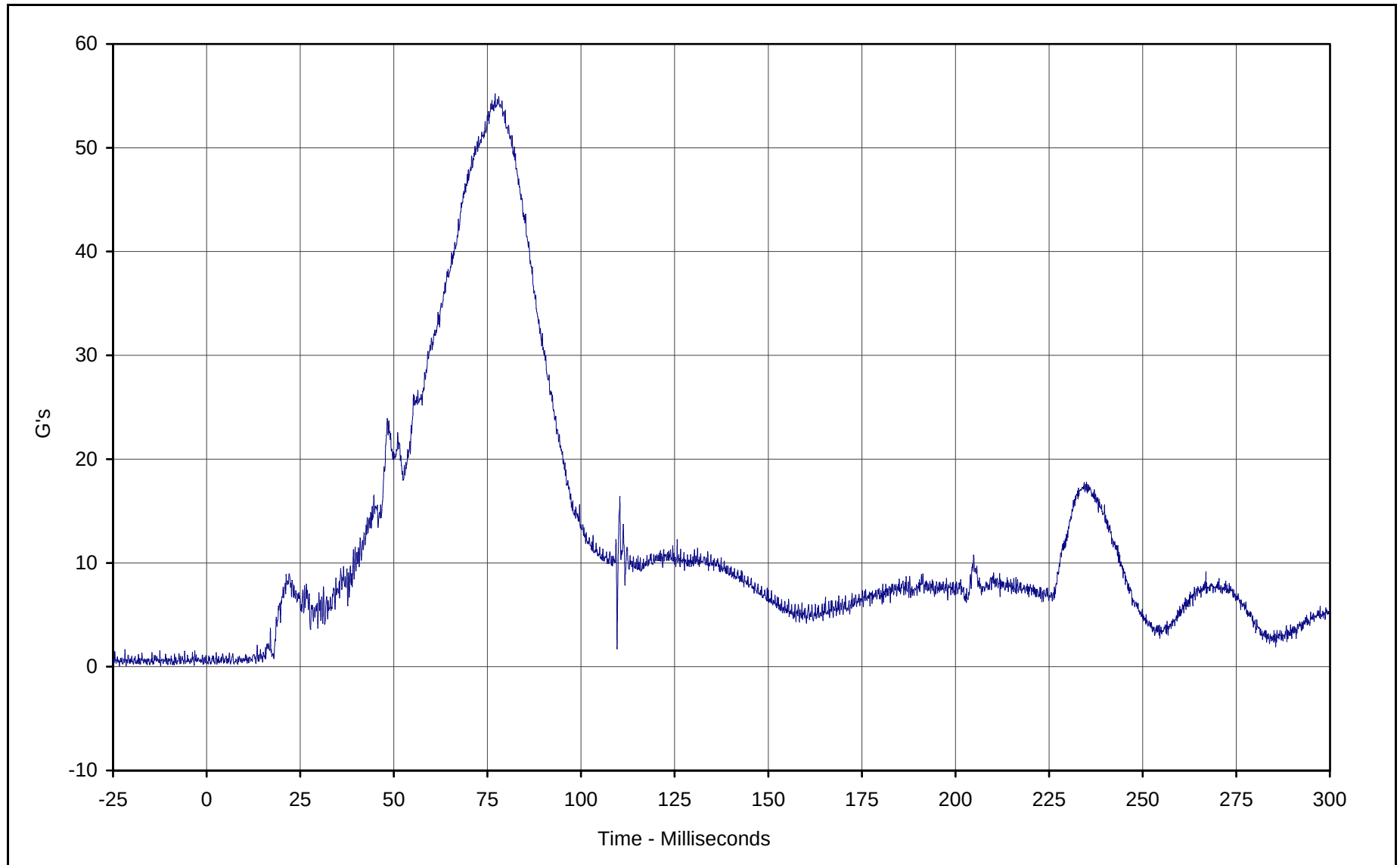




Curve Description: Driver Head Redundant Z
Maximum Value: 22.7 at 78.0 Milliseconds
Minimum Value: -10.9 at 109.4 Milliseconds
SAE Filter Class: 1000
Date of Test: 3/6/01
Curve Number: FIL-006

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

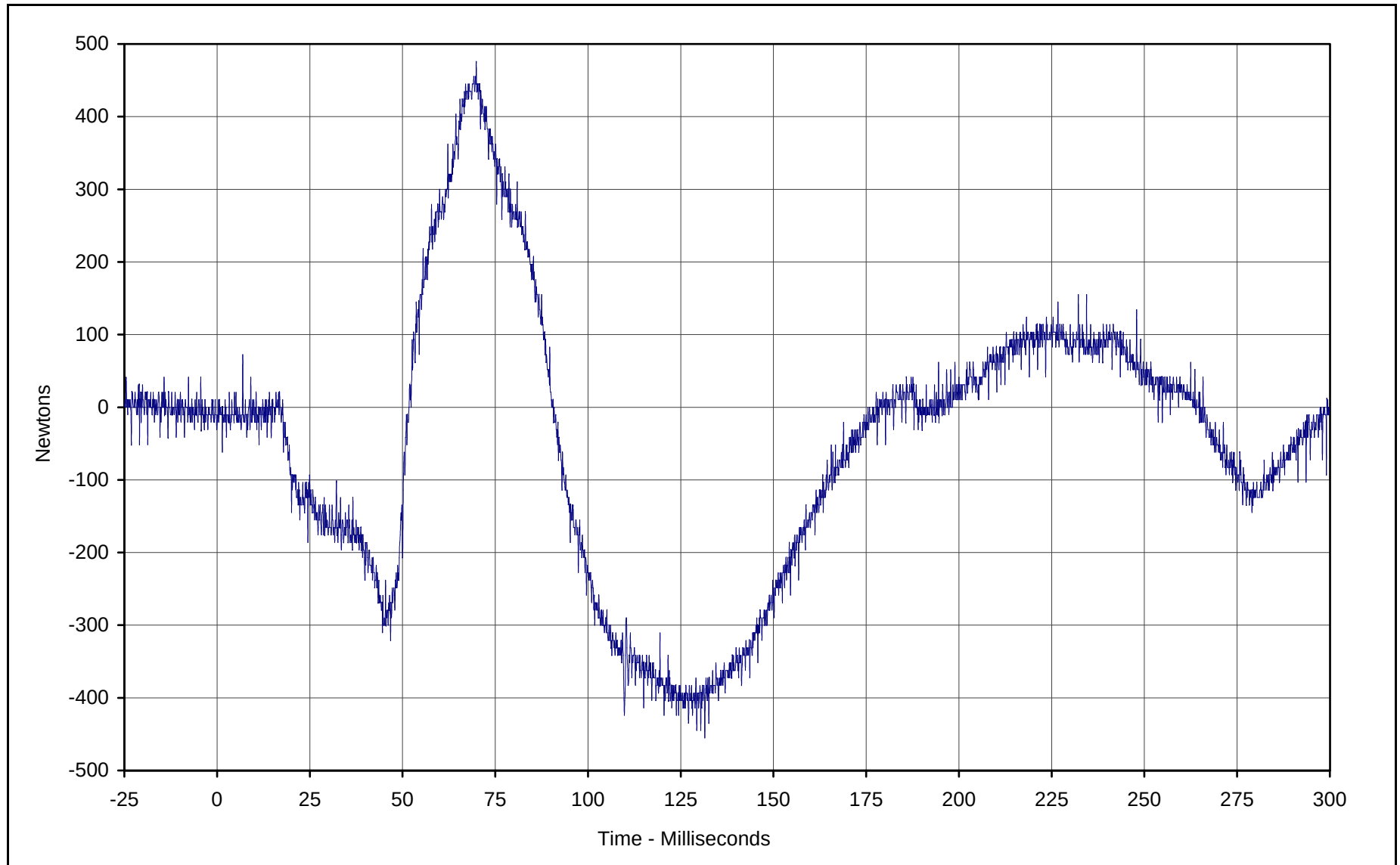




Curve Description: Driver Head Resultant Redundant
Maximum Value: 55.2 at 77.1 Milliseconds
Minimum Value: 0.3 at 1.0 Milliseconds
SAE Filter Class: 1000
Date of Test: 3/6/01
Curve Number: RES-004

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

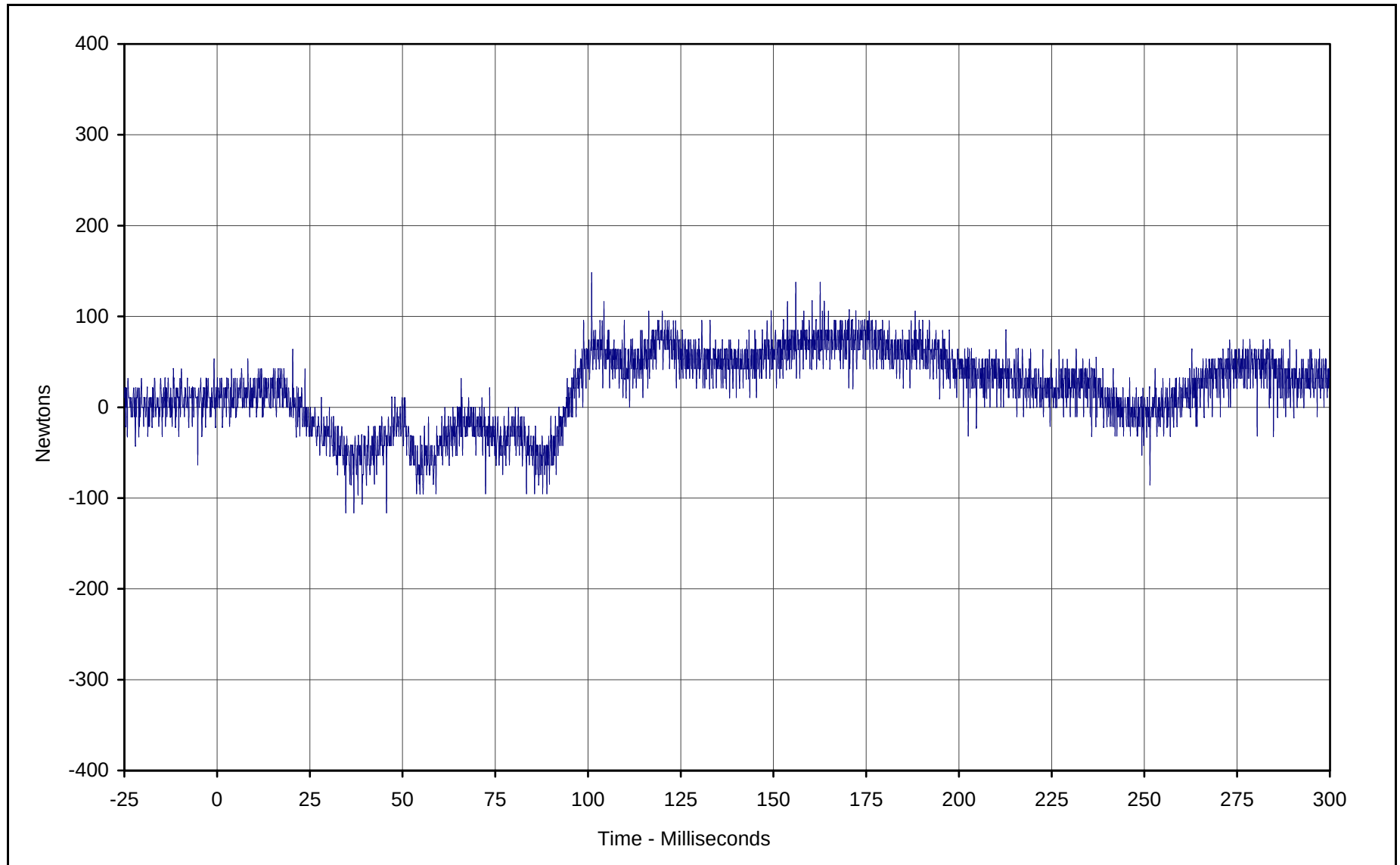




Curve Description: Driver Neck Force X
Maximum Value: 476.1 at 69.9 Milliseconds
Minimum Value: -455.4 at 131.5 Milliseconds
SAE Filter Class: 1000
Date of Test: 3/6/01
Curve Number: FIL-007

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

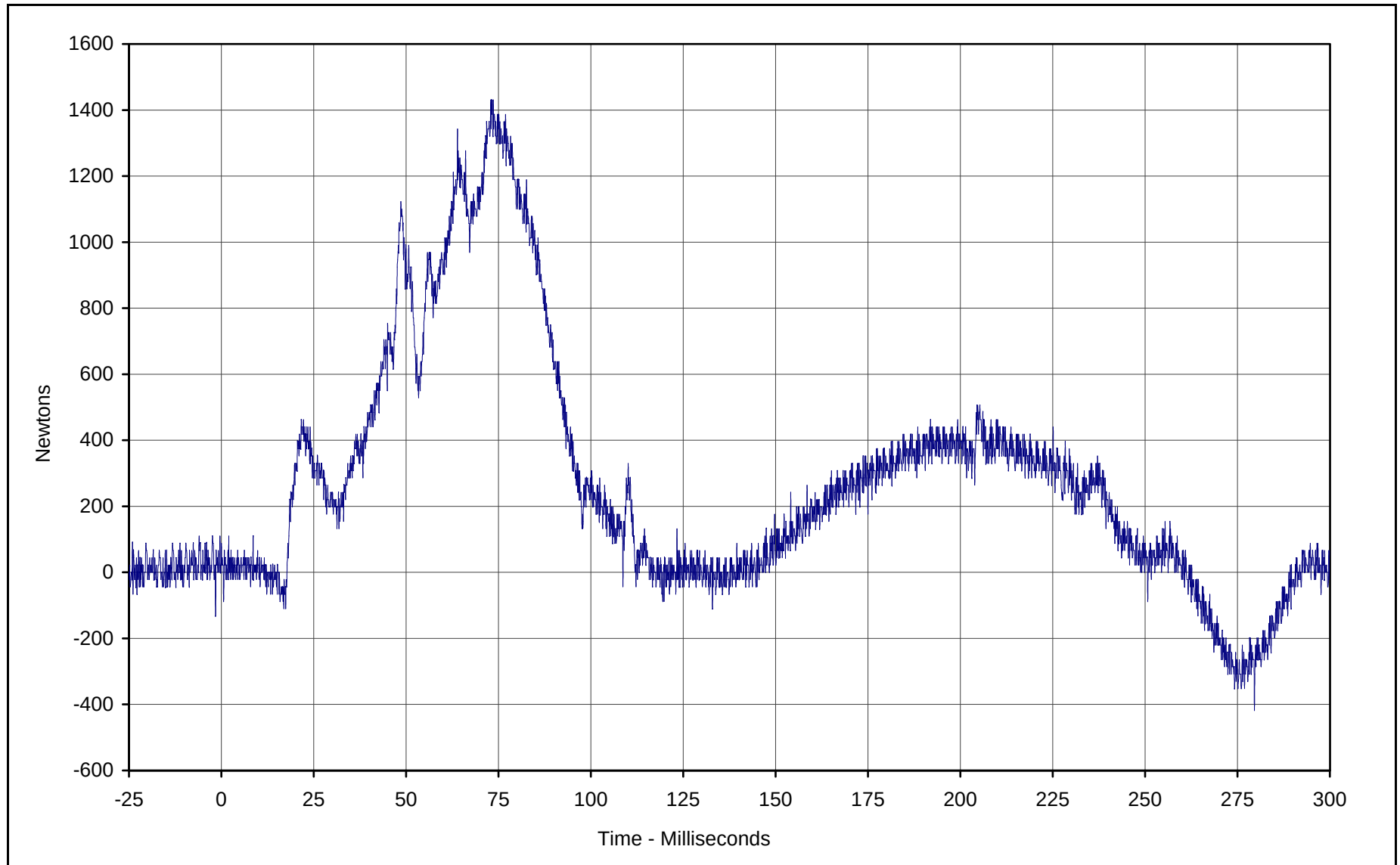




Curve Description: Driver Neck Force Y
Maximum Value: 148.3 at 101.0 Milliseconds
Minimum Value: -116.6 at 34.7 Milliseconds
SAE Filter Class: 1000
Date of Test: 3/6/01
Curve Number: FIL-008

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

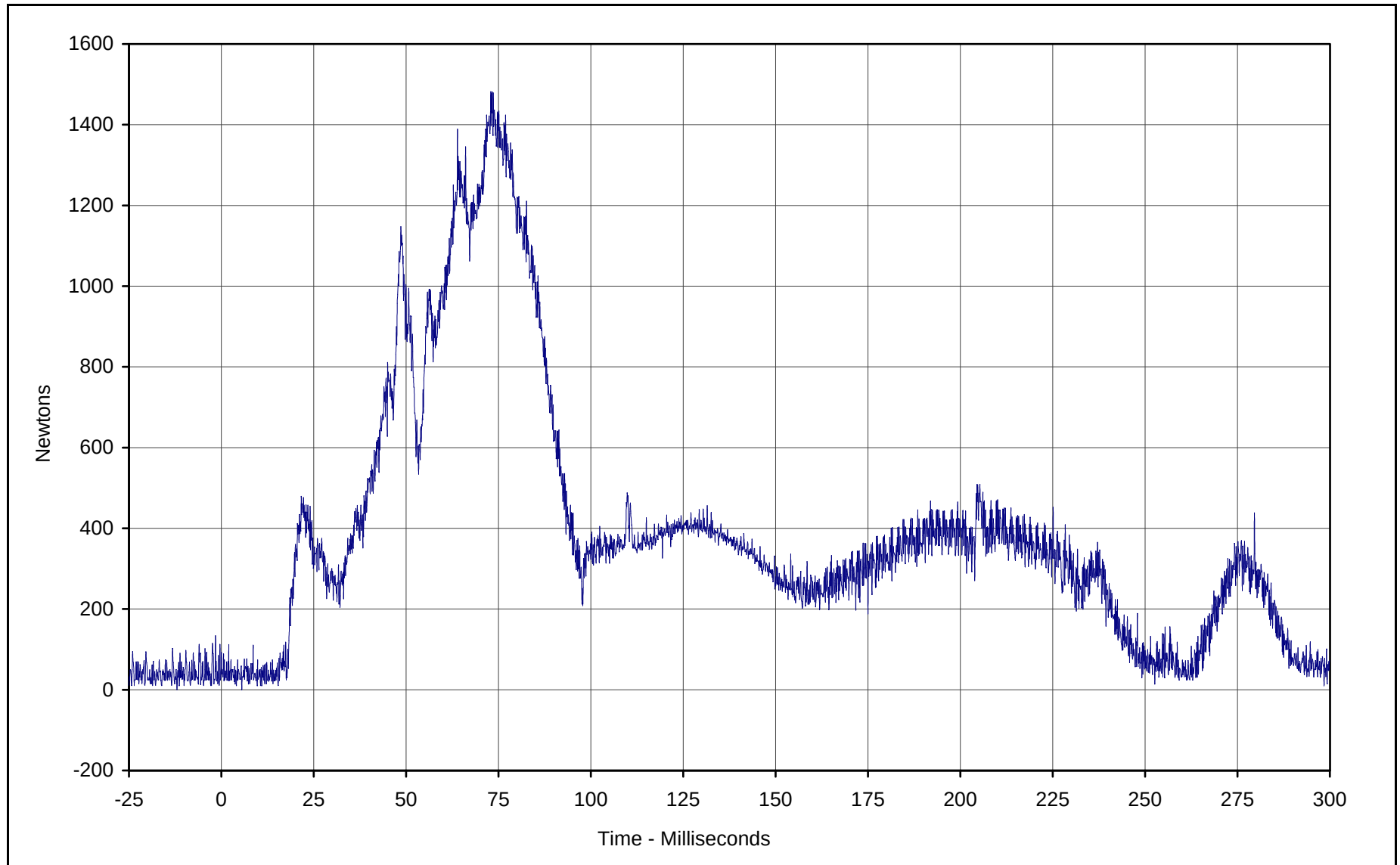




Curve Description: Driver Neck Force Z
Maximum Value: 1431.0 at 72.9 Milliseconds
Minimum Value: -418.3 at 279.6 Milliseconds
SAE Filter Class: 1000
Date of Test: 3/6/01
Curve Number: FIL-009

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

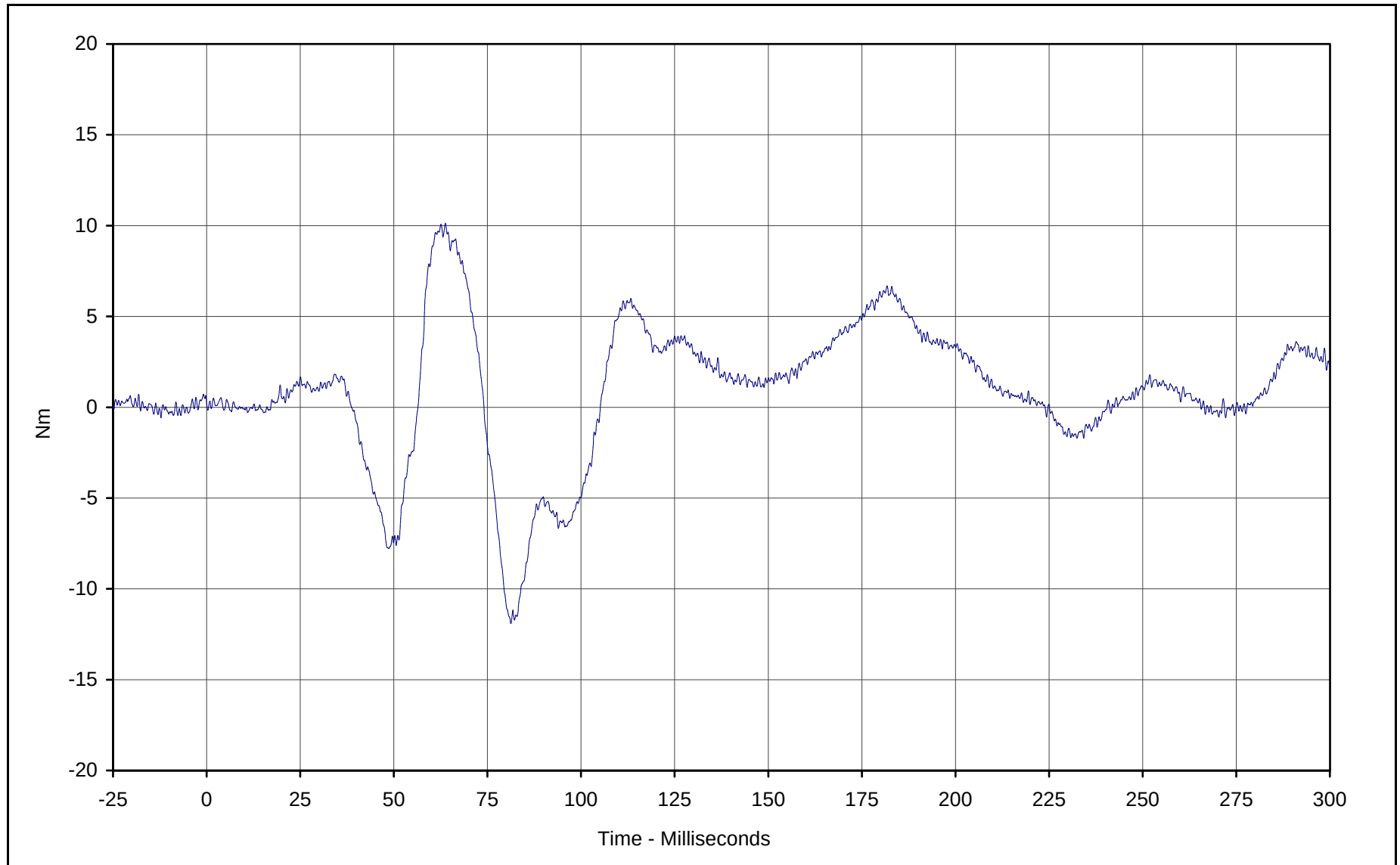




Curve Description: Driver Neck Force Resultant
Maximum Value: 1482.0 at 72.9 Milliseconds
Minimum Value: 0.0 at 5.5 Milliseconds
SAE Filter Class: 1000
Date of Test: 3/6/01
Curve Number: RES-007

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

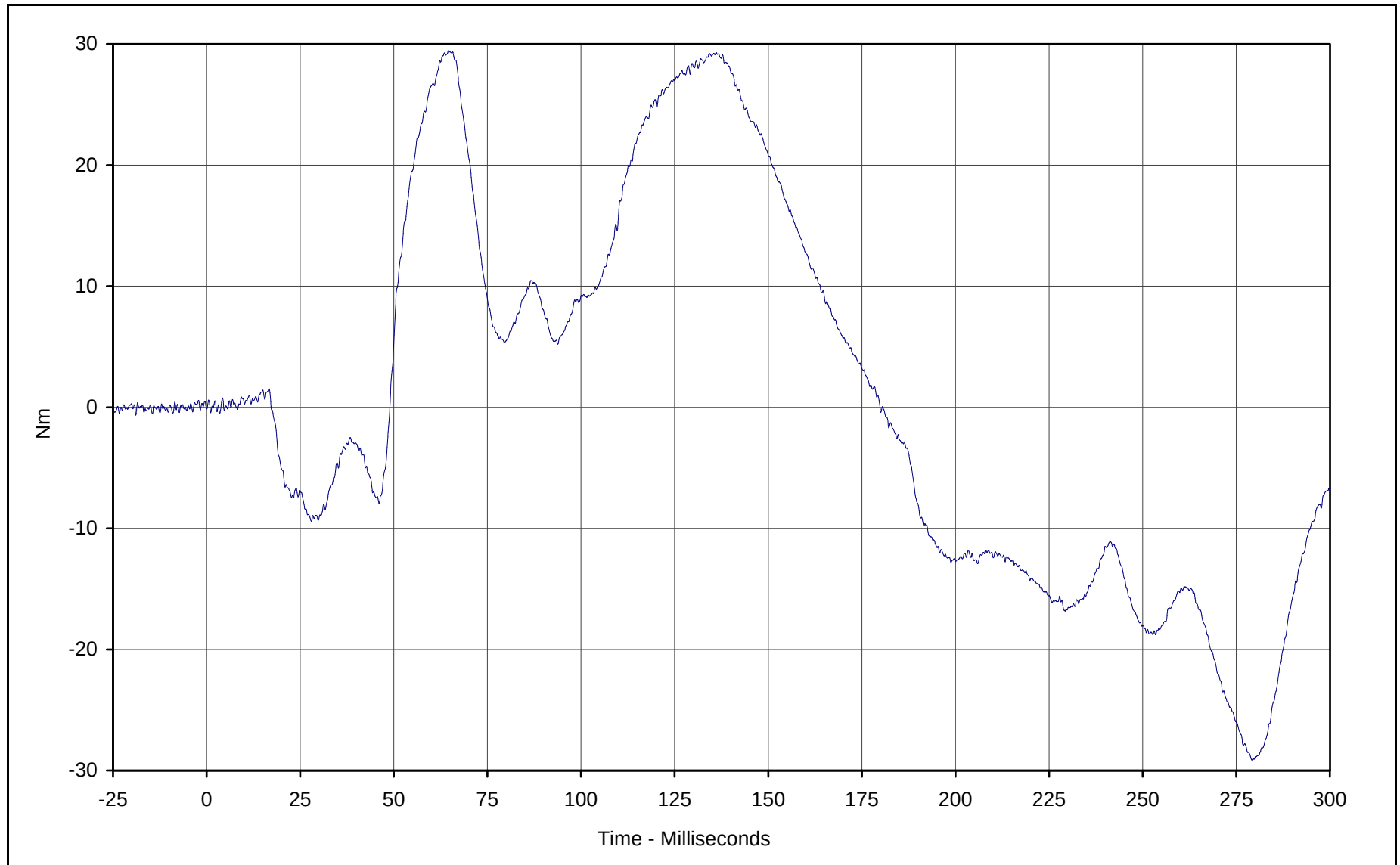




Curve Description: Driver Neck Moment X
Maximum Value: 10.1 at 63.8 Milliseconds
Minimum Value: -11.9 at 81.3 Milliseconds
SAE Filter Class: 600
Date of Test: 3/6/01
Curve Number: FIL-010

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

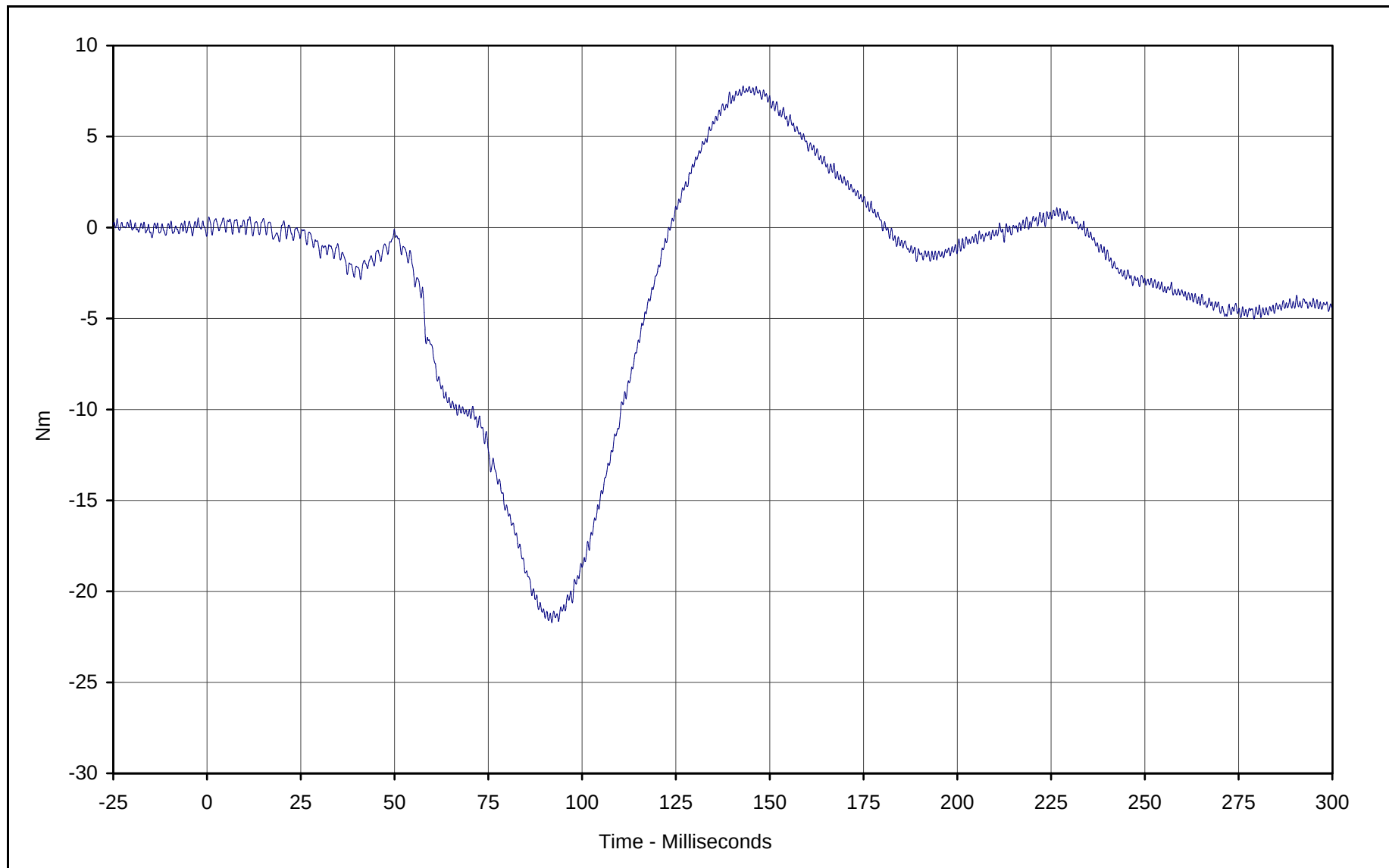




Curve Description: Driver Neck Moment Y
Maximum Value: 29.4 at 64.6 Milliseconds
Minimum Value: -29.1 at 279.2 Milliseconds
SAE Filter Class: 600
Date of Test: 3/6/01
Curve Number: FIL-011

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

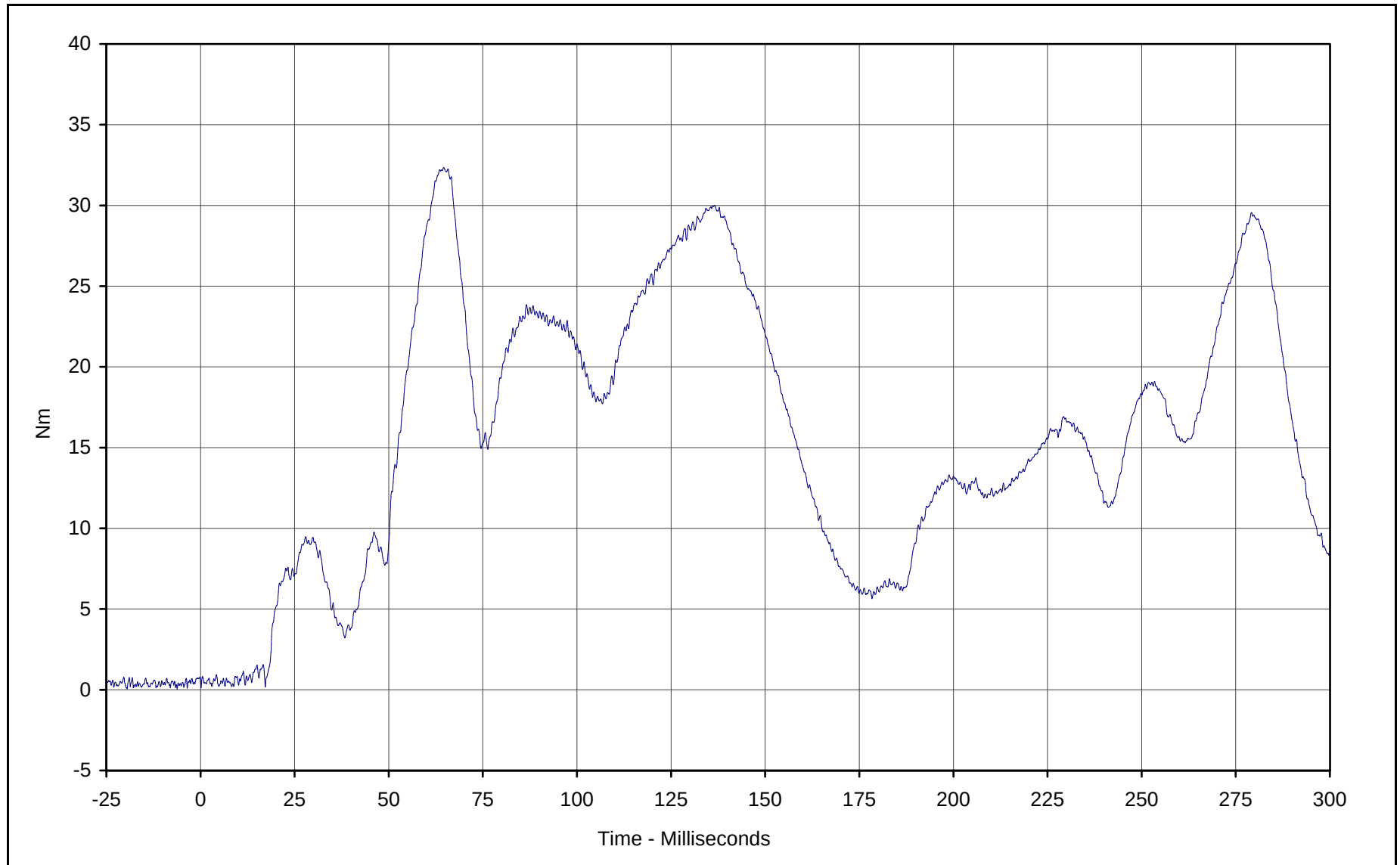




Curve Description: Driver Neck Moment Z
Maximum Value: 7.8 at 142.9 Milliseconds
Minimum Value: -21.7 at 91.9 Milliseconds
SAE Filter Class: 600
Date of Test: 3/6/01
Curve Number: FIL-012

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

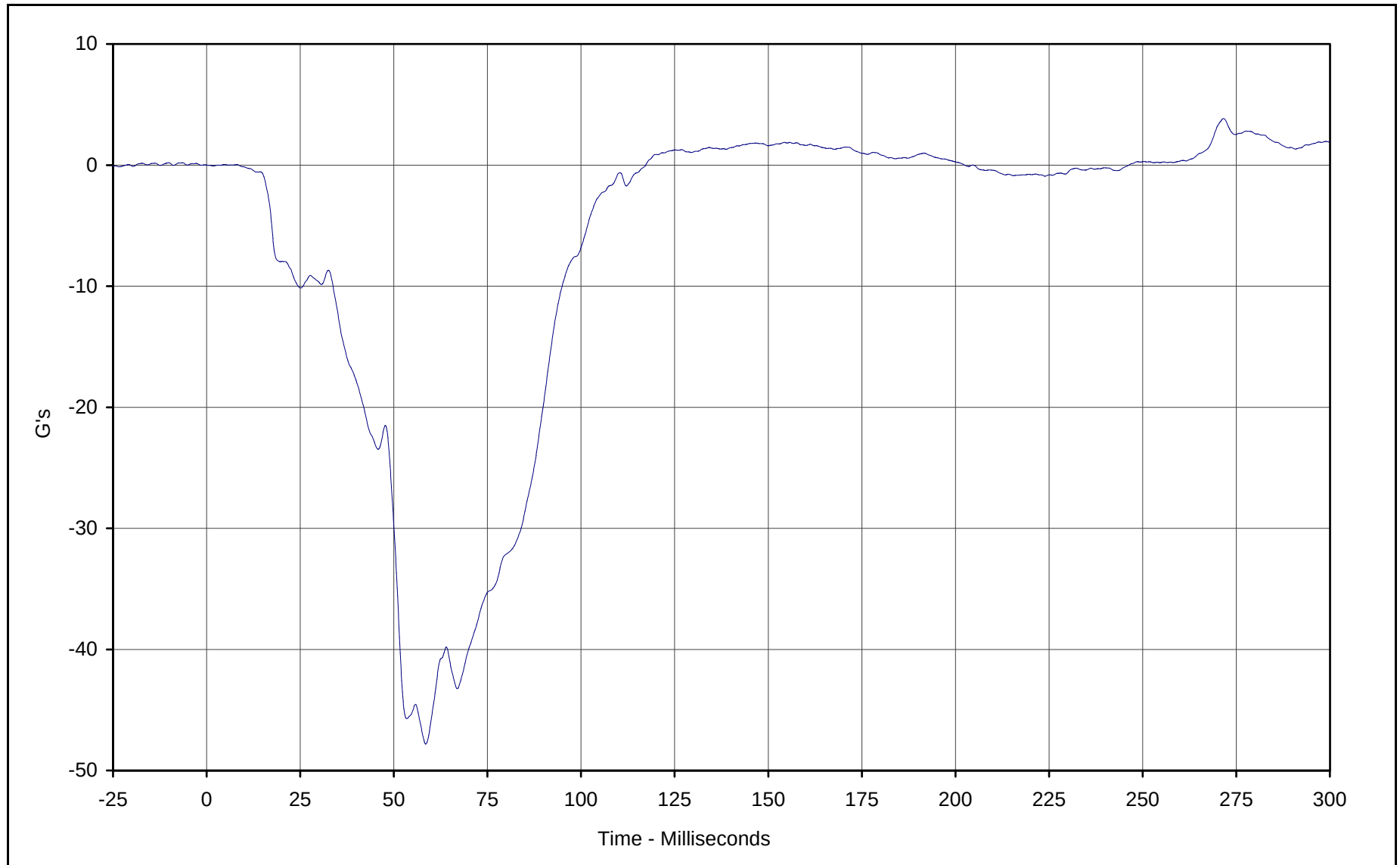




Curve Description: Driver Neck Moment Resultant
Maximum Value: 32.3 at 64.6 Milliseconds
Minimum Value: 0.1 at 0.2 Milliseconds
SAE Filter Class: 600
Date of Test: 3/6/01
Curve Number: RES-010

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



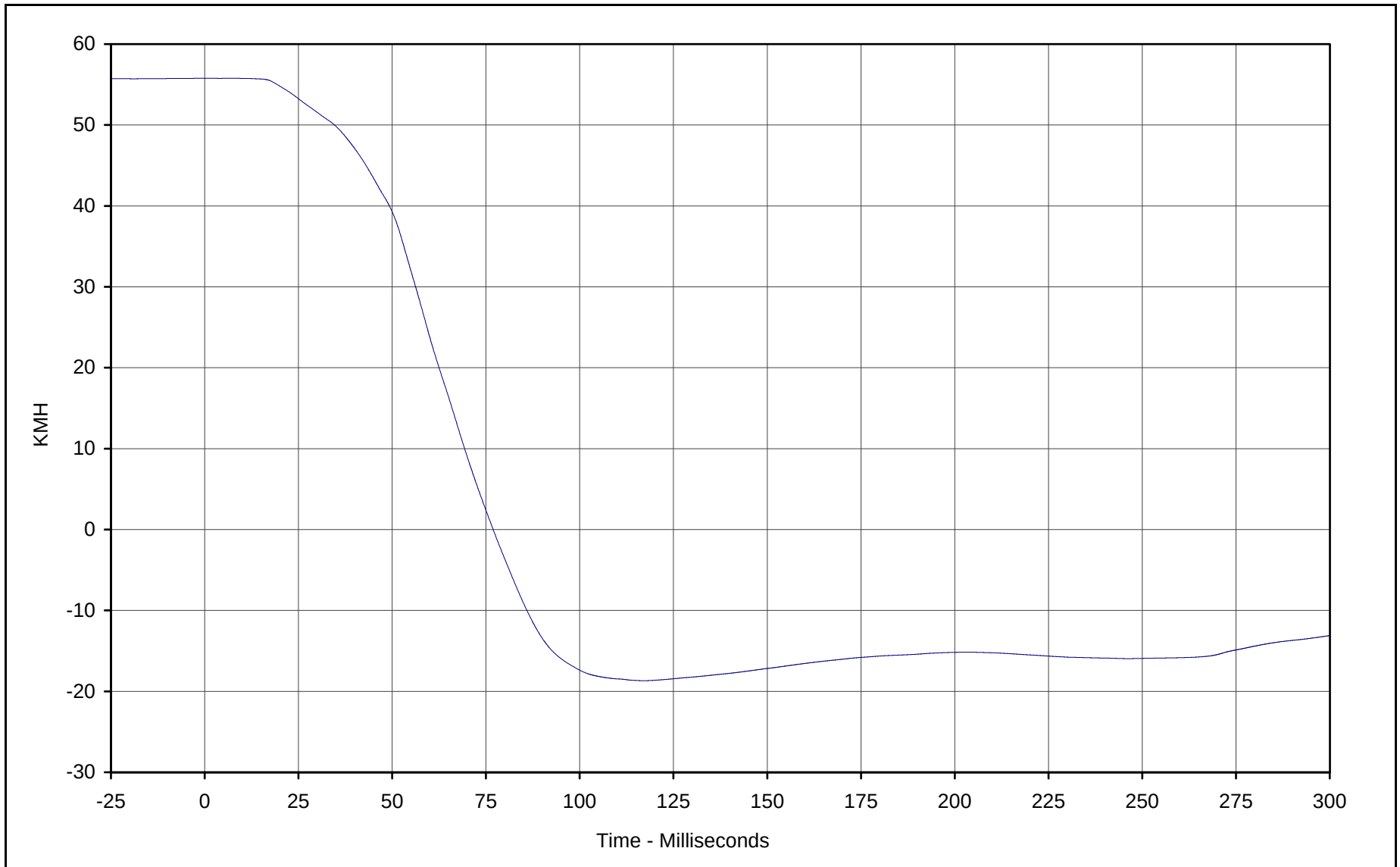


Curve Description: Driver Chest Primary X
Maximum Value: 3.8 at 271.6 Milliseconds
Minimum Value: -47.8 at 58.5 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: FIL-013

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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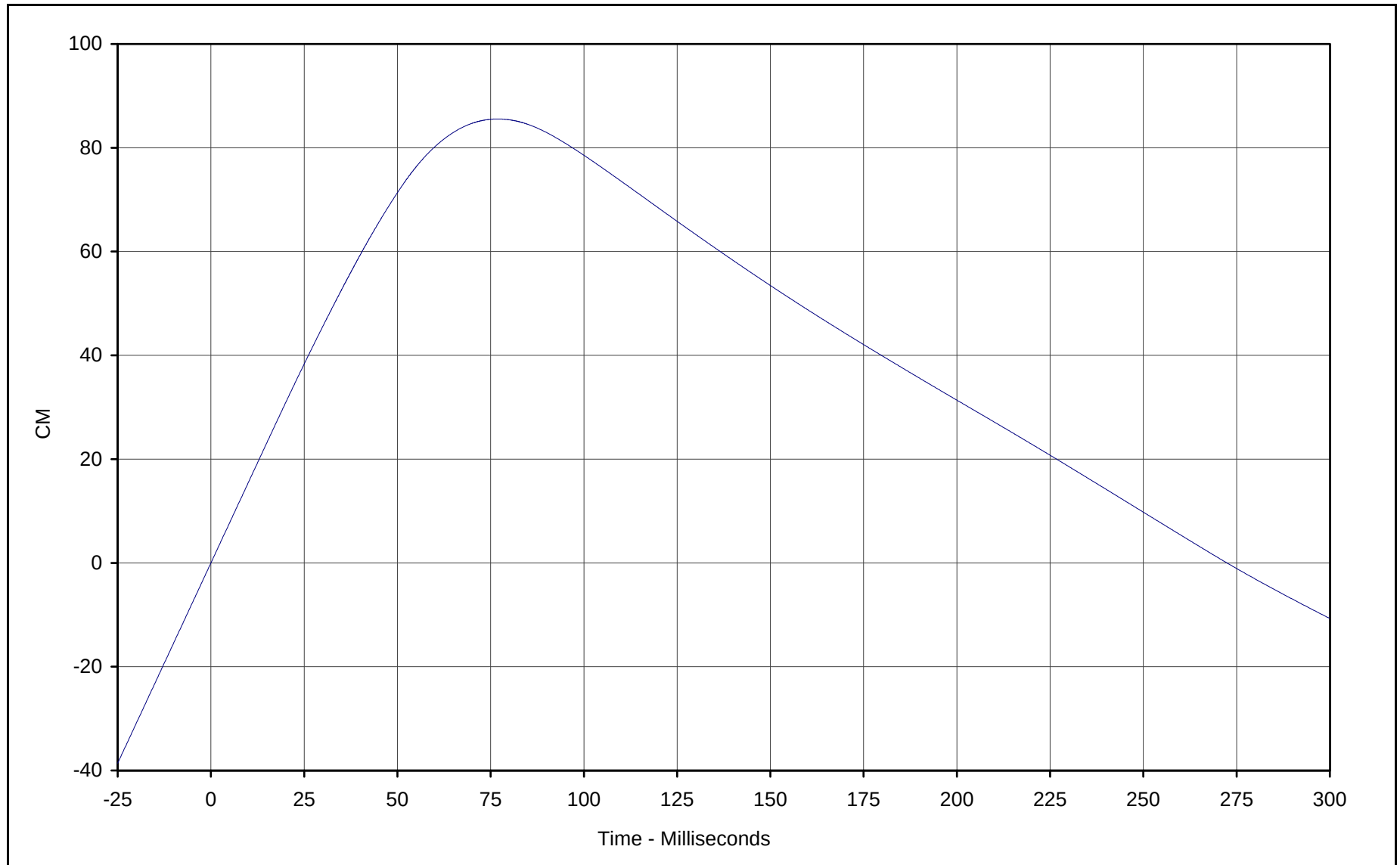


Curve Description: Driver Chest Primary X Velocity
Maximum Value: 55.8 at 0.0 Milliseconds
Minimum Value: -18.7 at 117.3 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: IN1-013

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



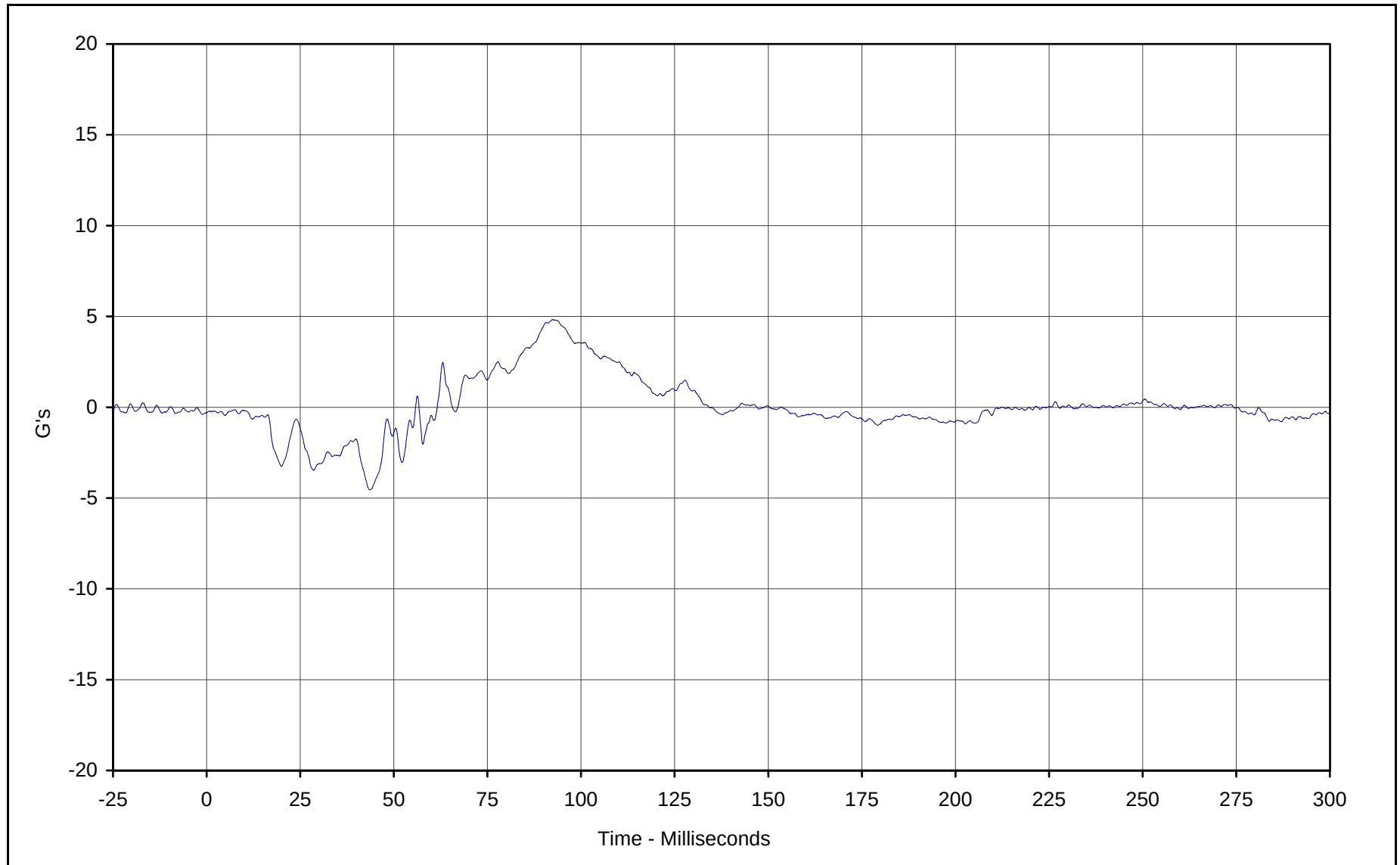
KAR21001-17



Curve Description: Driver Chest Primary X Displ.
Maximum Value: 85.6 at 76.9 Milliseconds
Minimum Value: -10.7 at 299.9 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: IN2-013

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



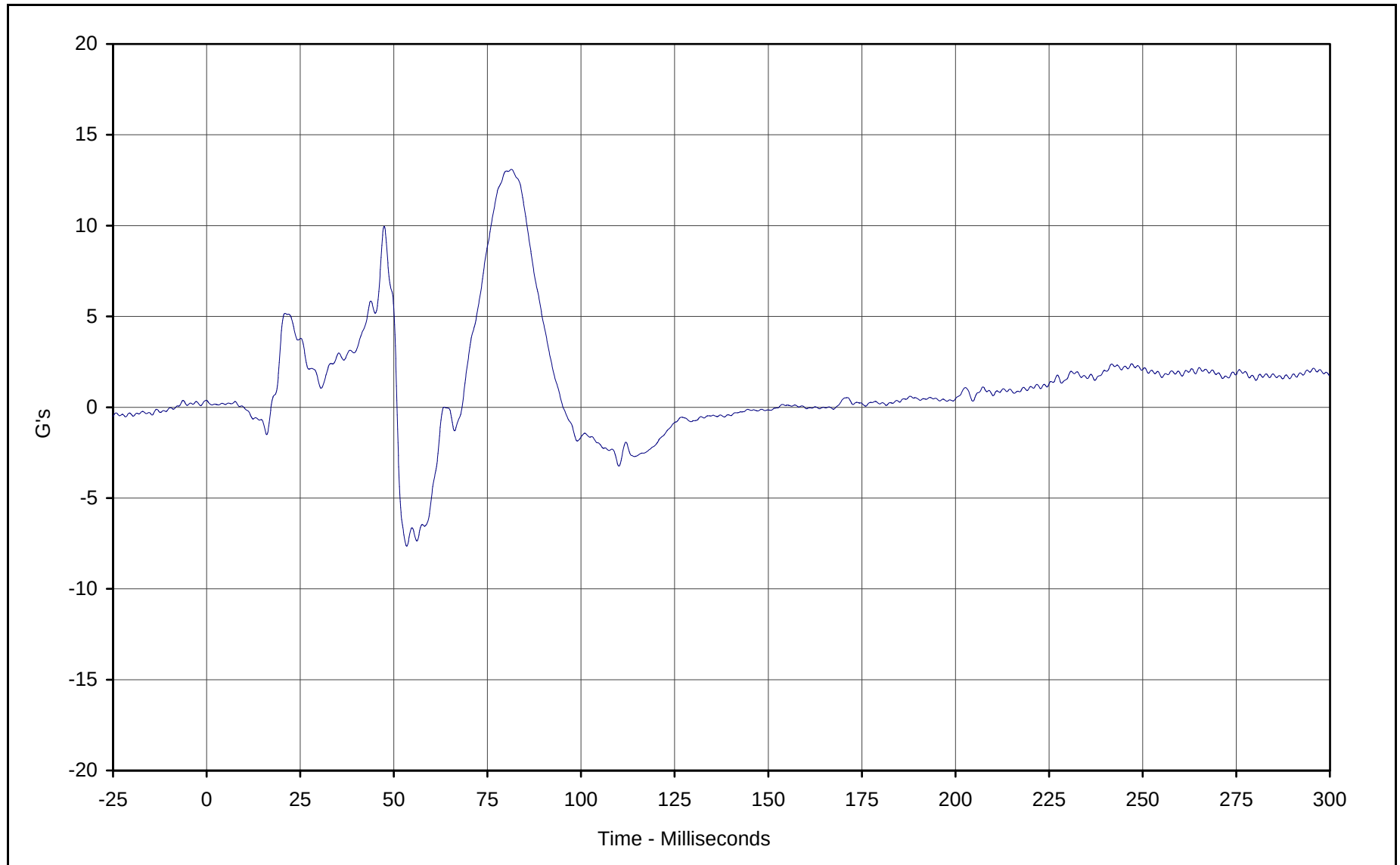


Curve Description: Driver Chest Primary Y
Maximum Value: 4.8 at 92.4 Milliseconds
Minimum Value: -4.5 at 43.6 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: FIL-014

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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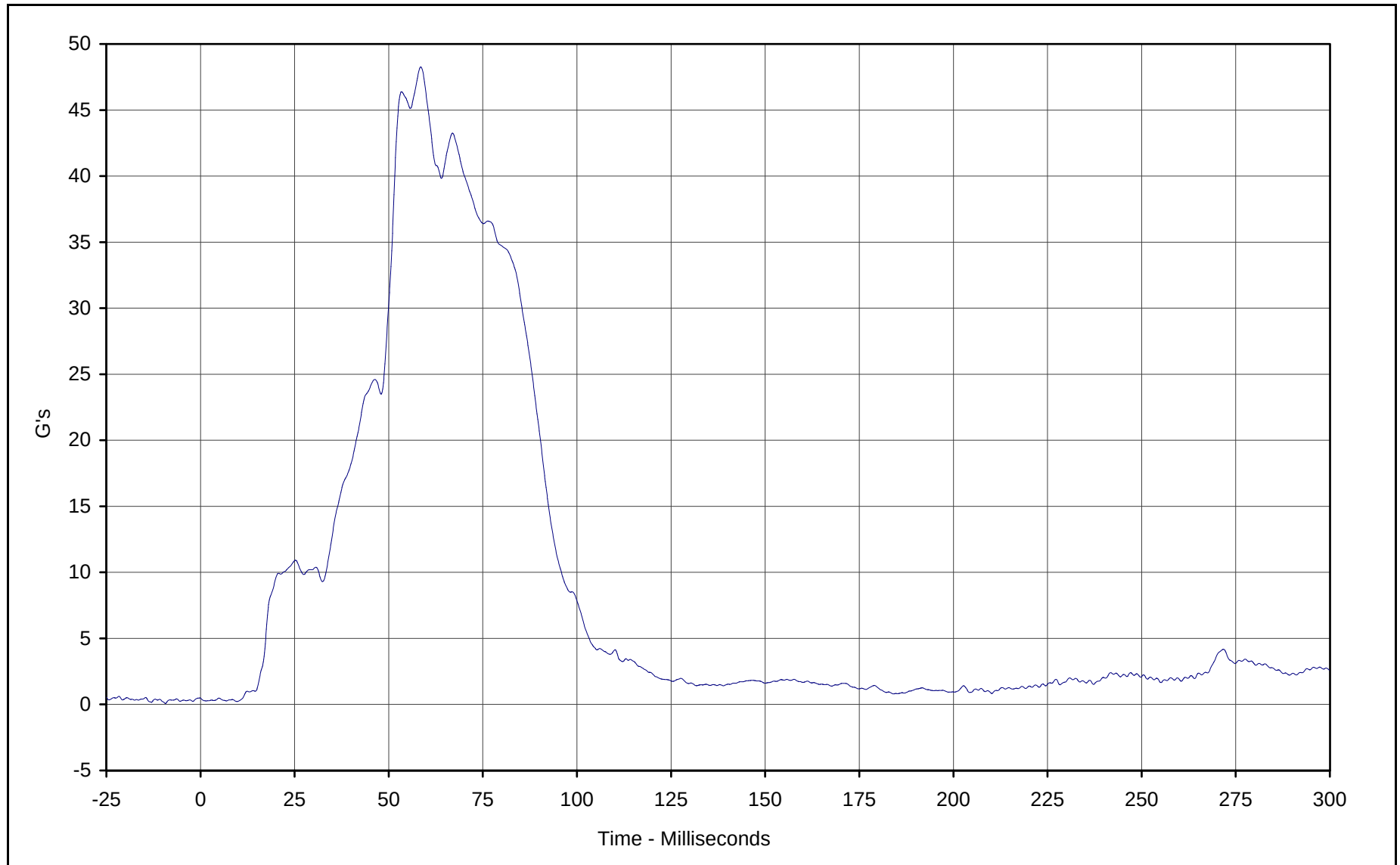


Curve Description: Driver Chest Primary Z
Maximum Value: 13.1 at 81.4 Milliseconds
Minimum Value: -7.6 at 53.4 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: FIL-015

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



KAR21001-17

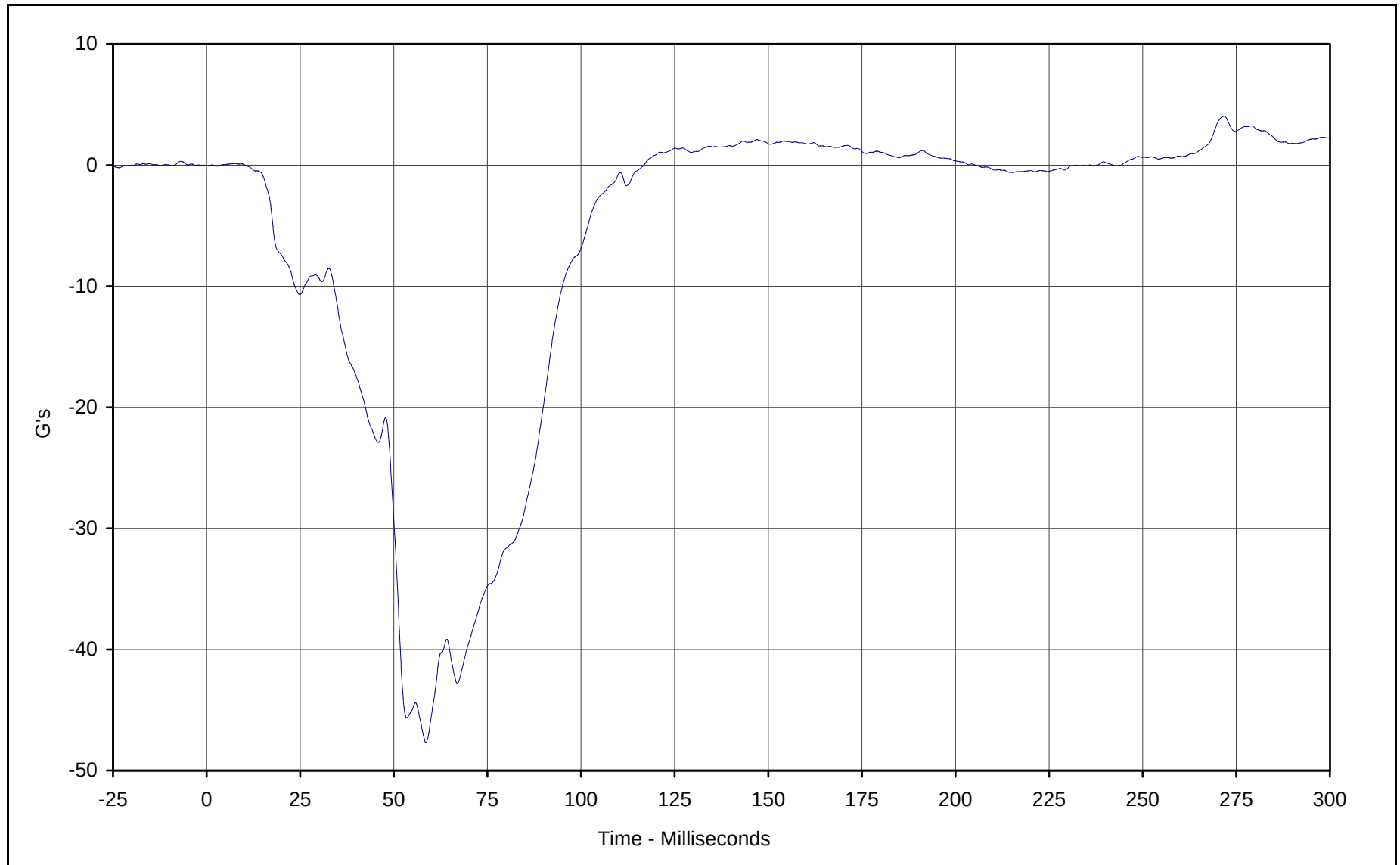


Curve Description: Driver Chest Resultant Primary
Maximum Value: 48.3 at 58.5 Milliseconds
Minimum Value: 0.2 at 9.7 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: RES-013

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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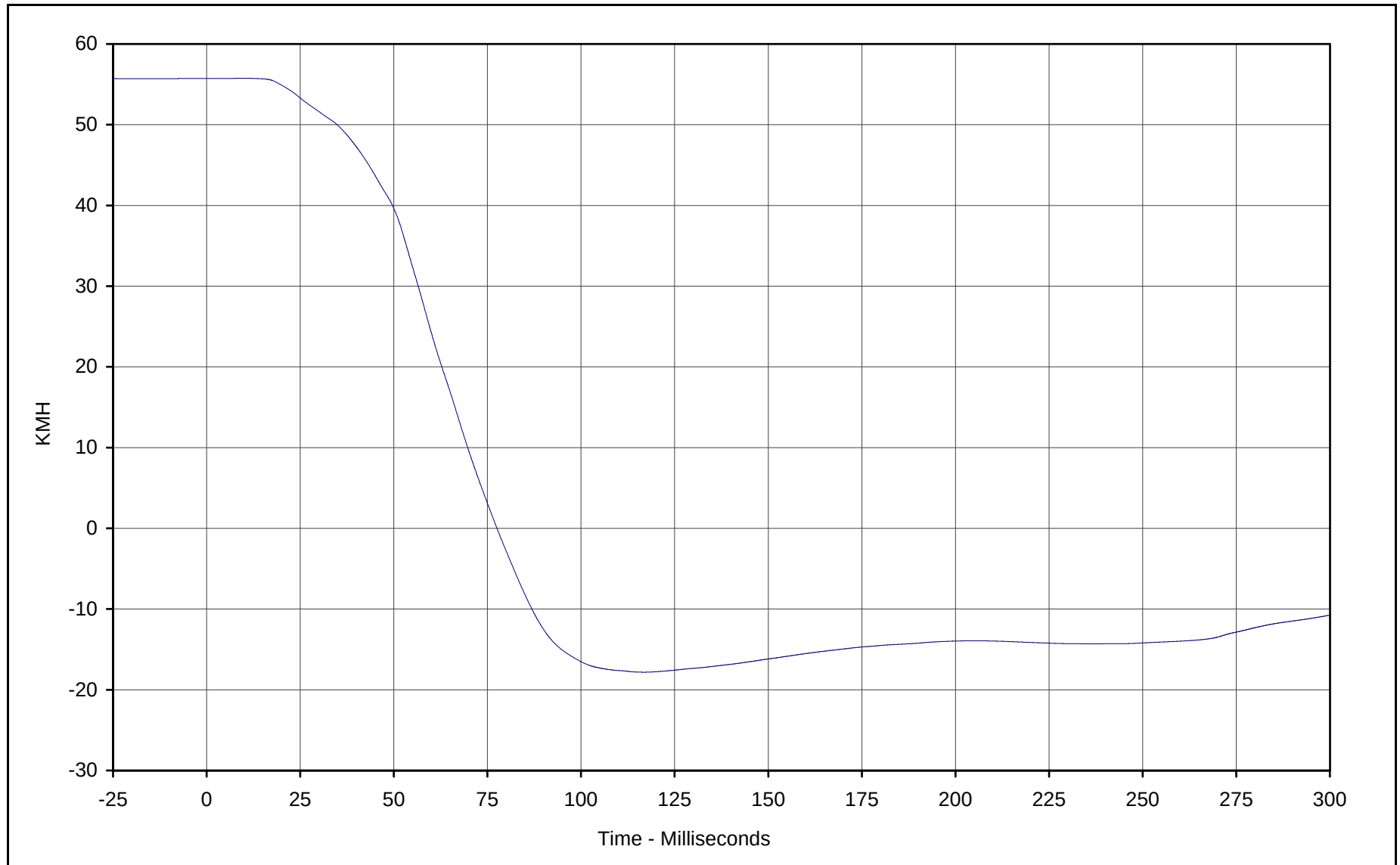


Curve Description: Driver Chest Redundant X
Maximum Value: 4.0 at 271.7 Milliseconds
Minimum Value: -47.7 at 58.6 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: FIL-016

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



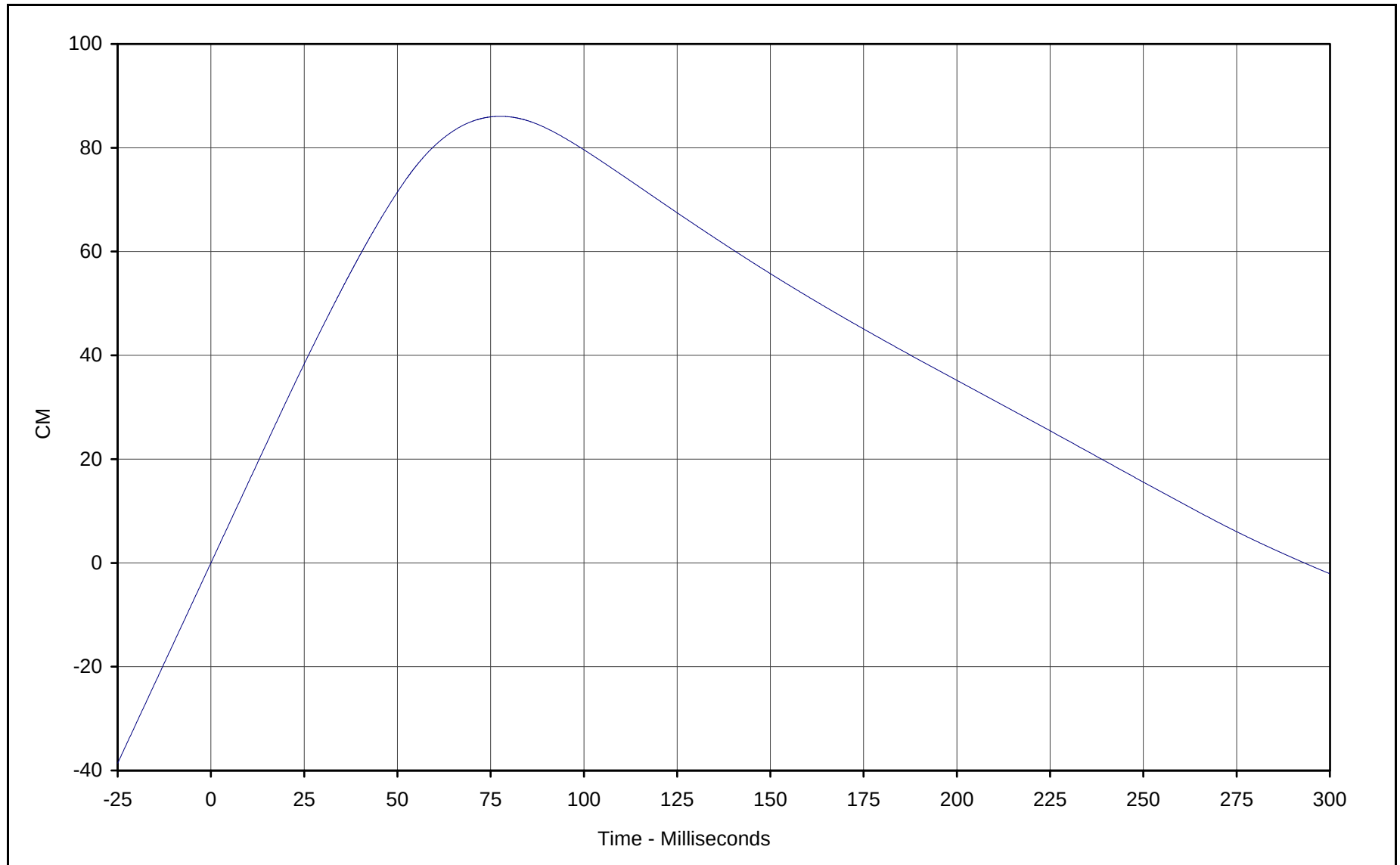
KAR21001-17



Curve Description: Driver Chest Redundant X Velocity
Maximum Value: 55.8 at 10.2 Milliseconds
Minimum Value: -17.8 at 116.8 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: IN1-016

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



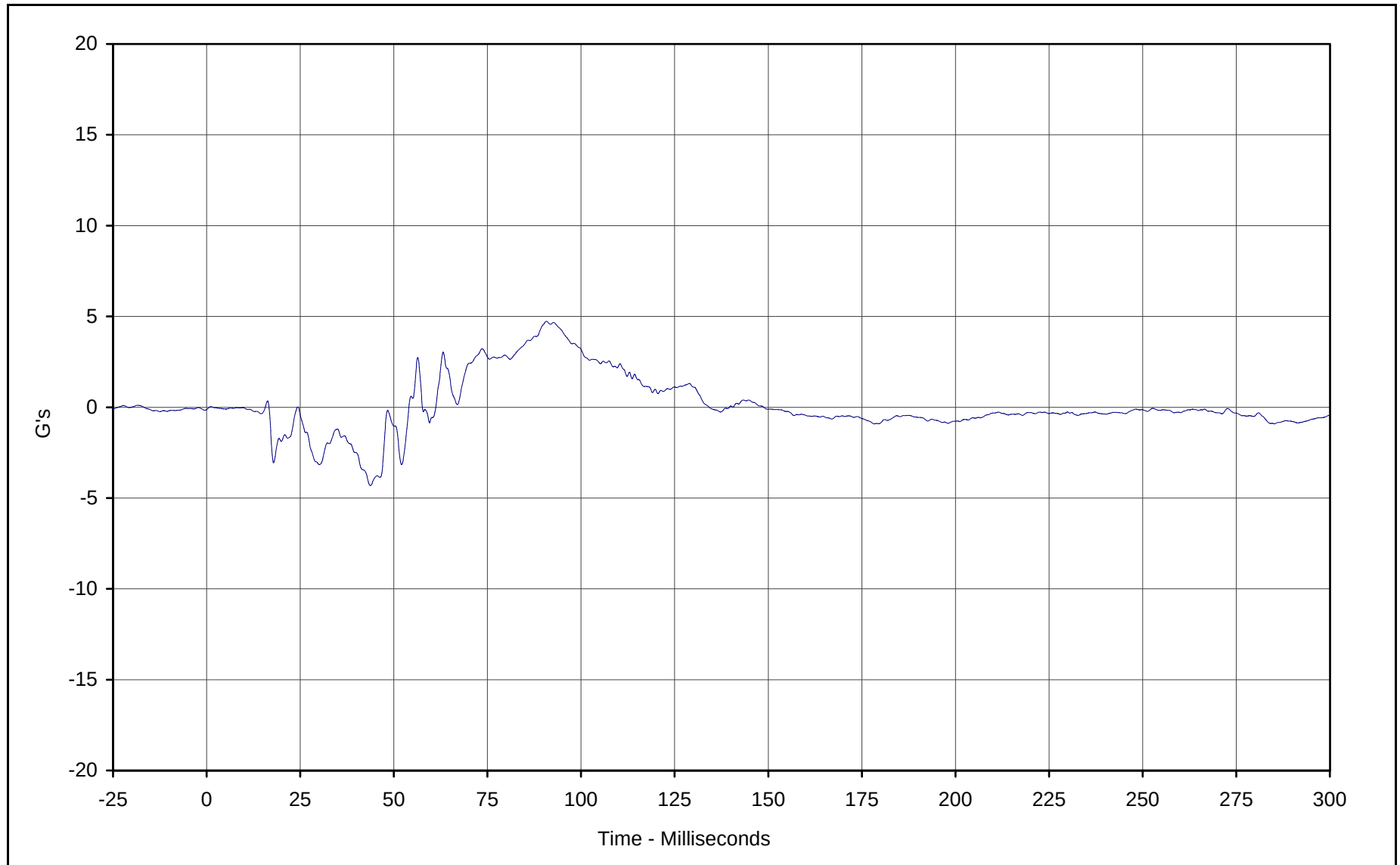


Curve Description: Driver Chest Redundant X Displ.
Maximum Value: 86.1 at 77.5 Milliseconds
Minimum Value: -2.1 at 299.9 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: IN2-016

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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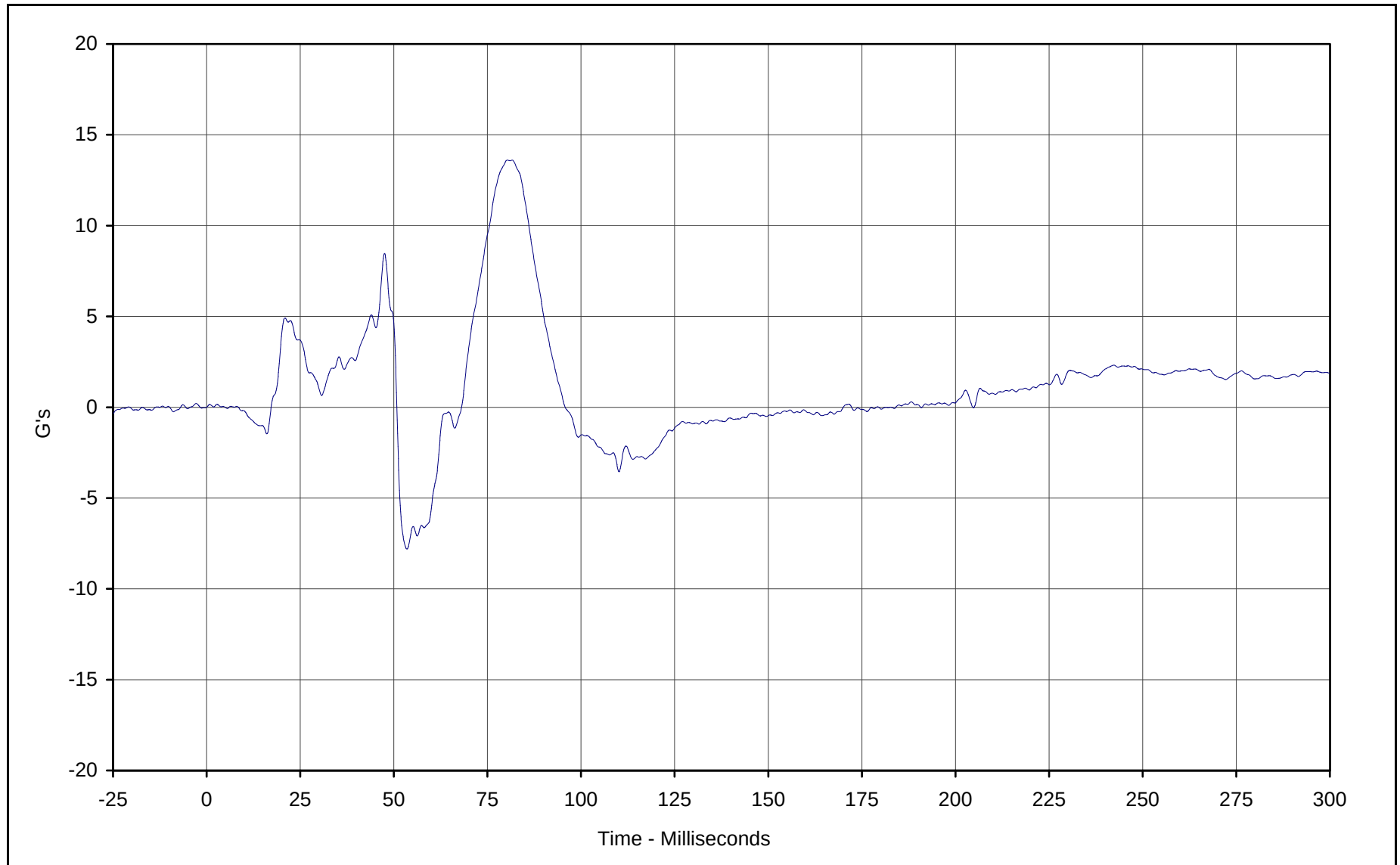


Curve Description: Driver Chest Redundant Y
Maximum Value: 4.7 at 90.8 Milliseconds
Minimum Value: -4.3 at 43.7 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: FIL-017

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



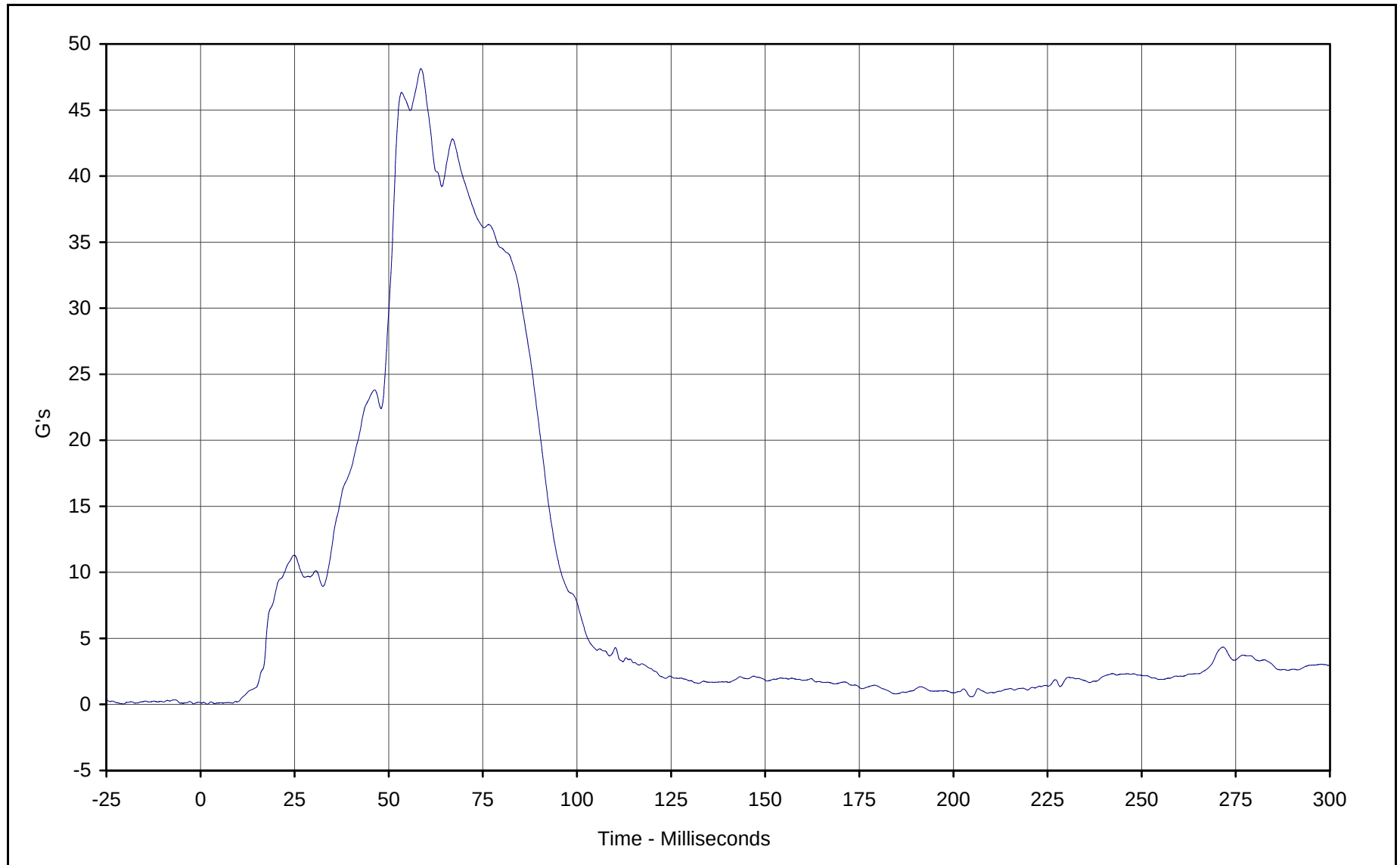
KAR21001-17



Curve Description: Driver Chest Redundant Z
Maximum Value: 13.6 at 80.3 Milliseconds
Minimum Value: -7.8 at 53.5 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: FIL-018

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

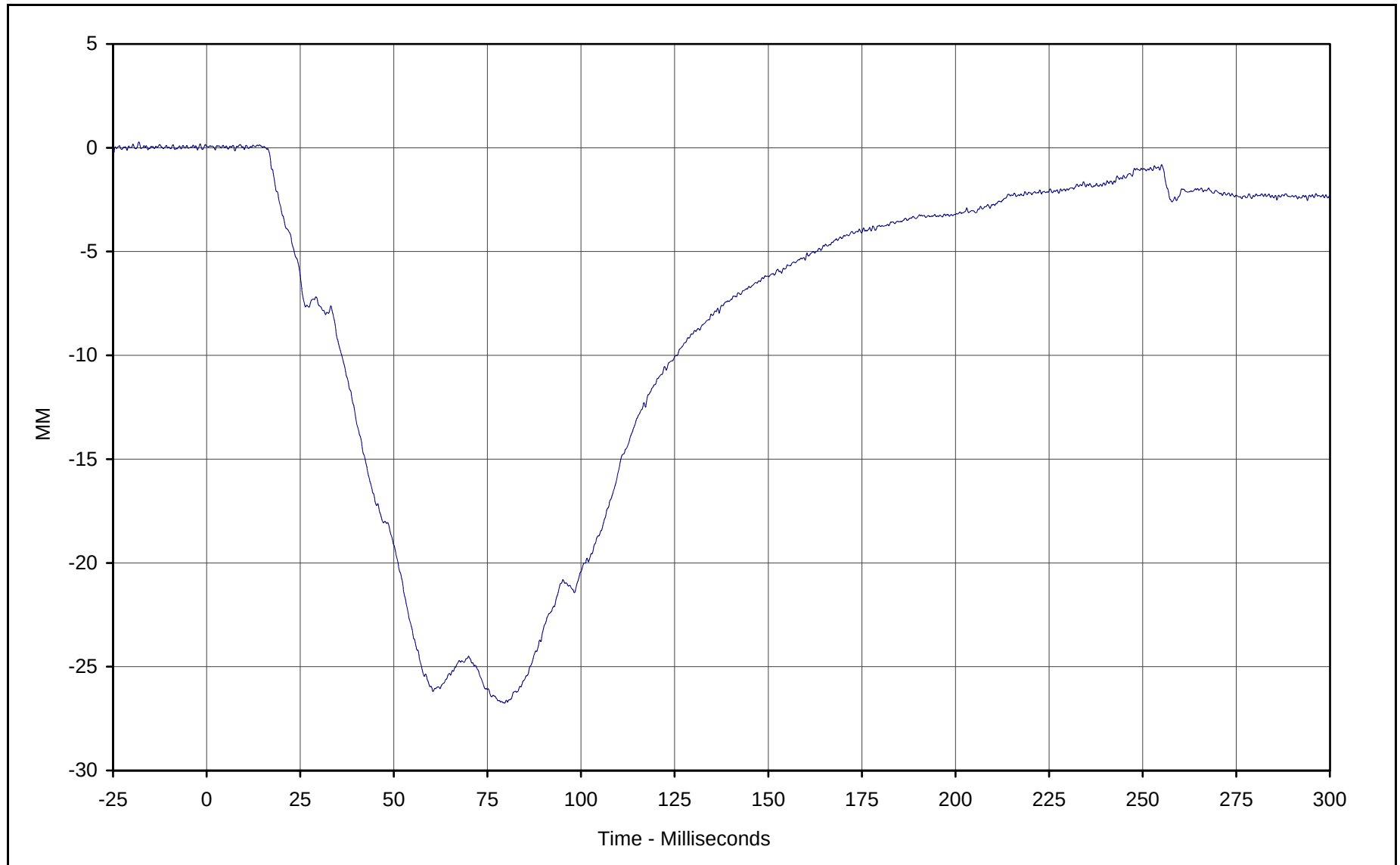




Curve Description: Driver Chest Resultant Redundant
Maximum Value: 48.1 at 58.5 Milliseconds
Minimum Value: 0.0 at 1.8 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: RES-016

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

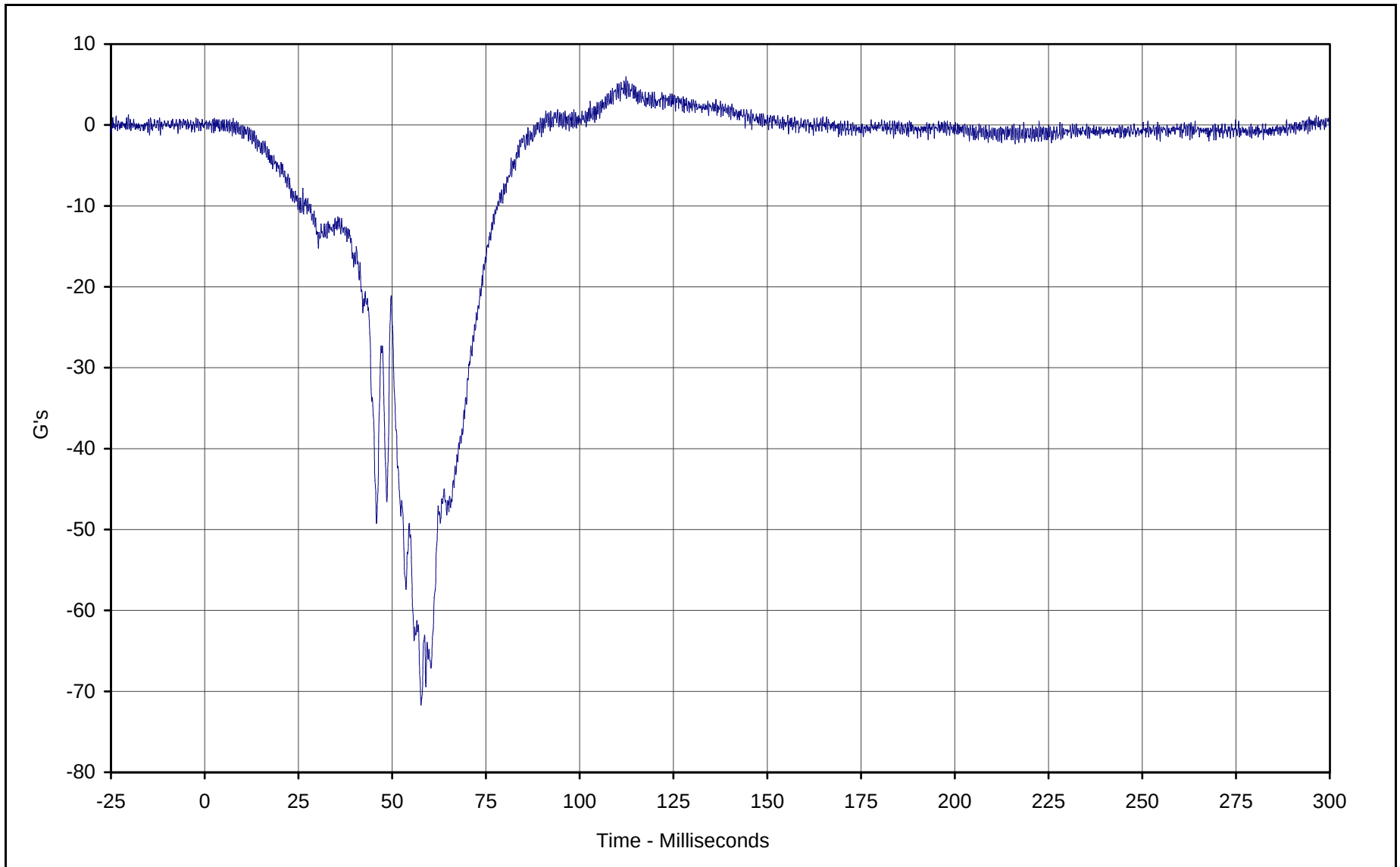




Curve Description: Driver Chest Displacement X
Maximum Value: 0.1 at 9.0 Milliseconds
Minimum Value: -26.8 at 79.6 Milliseconds
SAE Filter Class: 600
Date of Test: 3/6/01
Curve Number: FIL-019

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan





Curve Description: Driver Pelvis X

Maximum Value: 6.0 at 112.3 Milliseconds

Minimum Value: -71.7 at 57.7 Milliseconds

SAE Filter Class: 1000

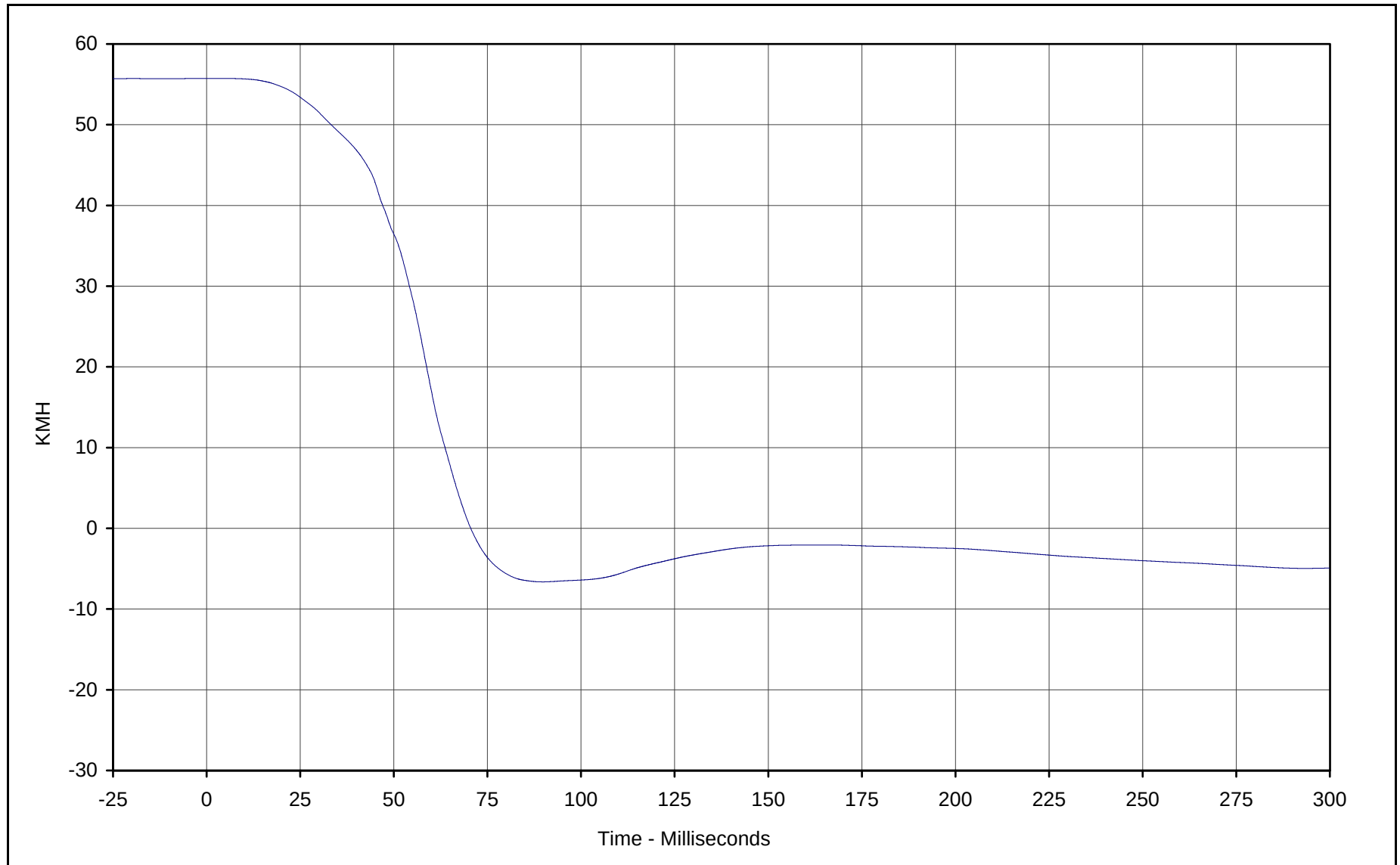
Date of Test: 3/6/01

Curve Number: FIL-020

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan

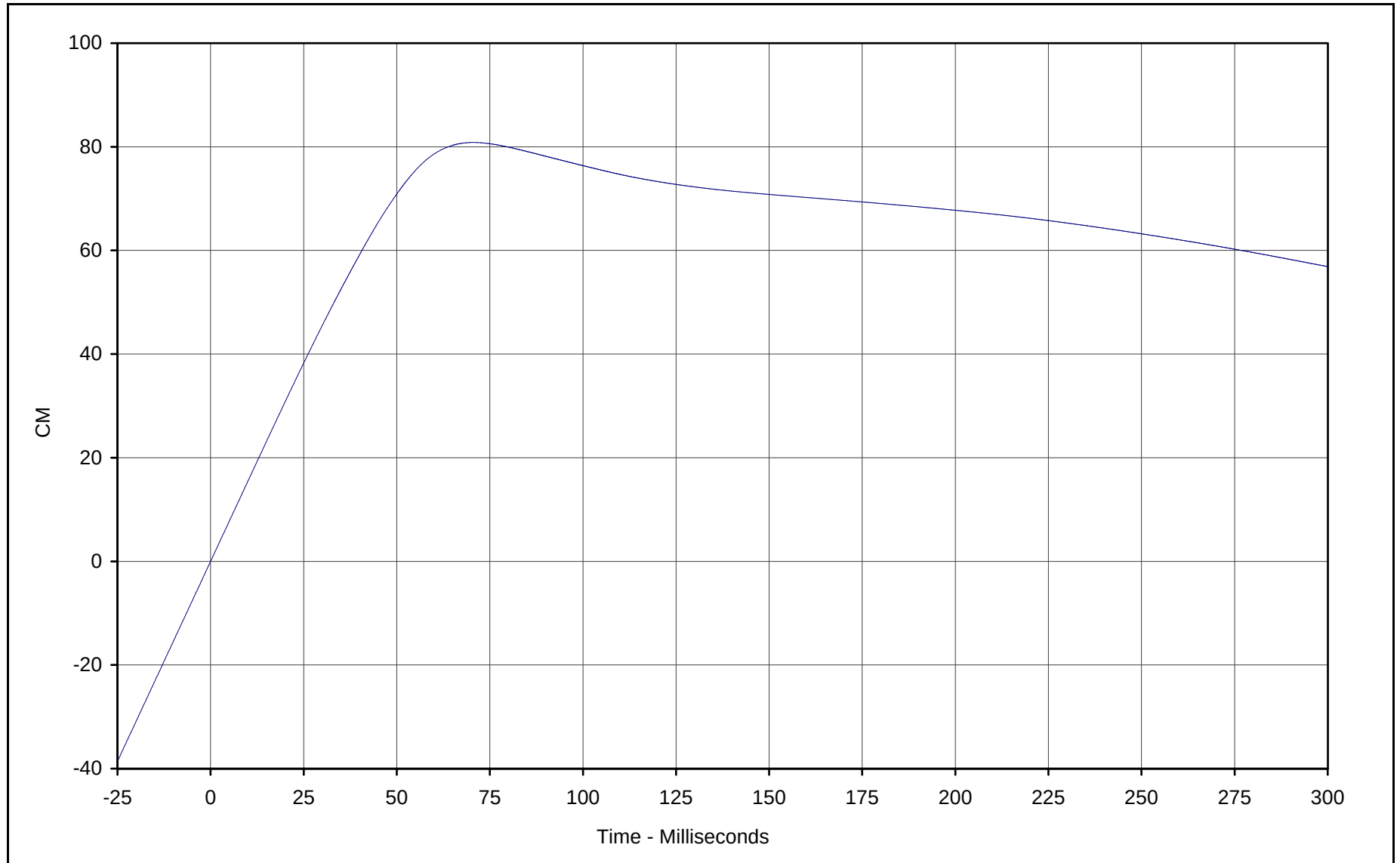




Curve Description: Driver Pelvis X Velocity
Maximum Value: 55.7 at 3.4 Milliseconds
Minimum Value: -6.6 at 89.9 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: IN1-020

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

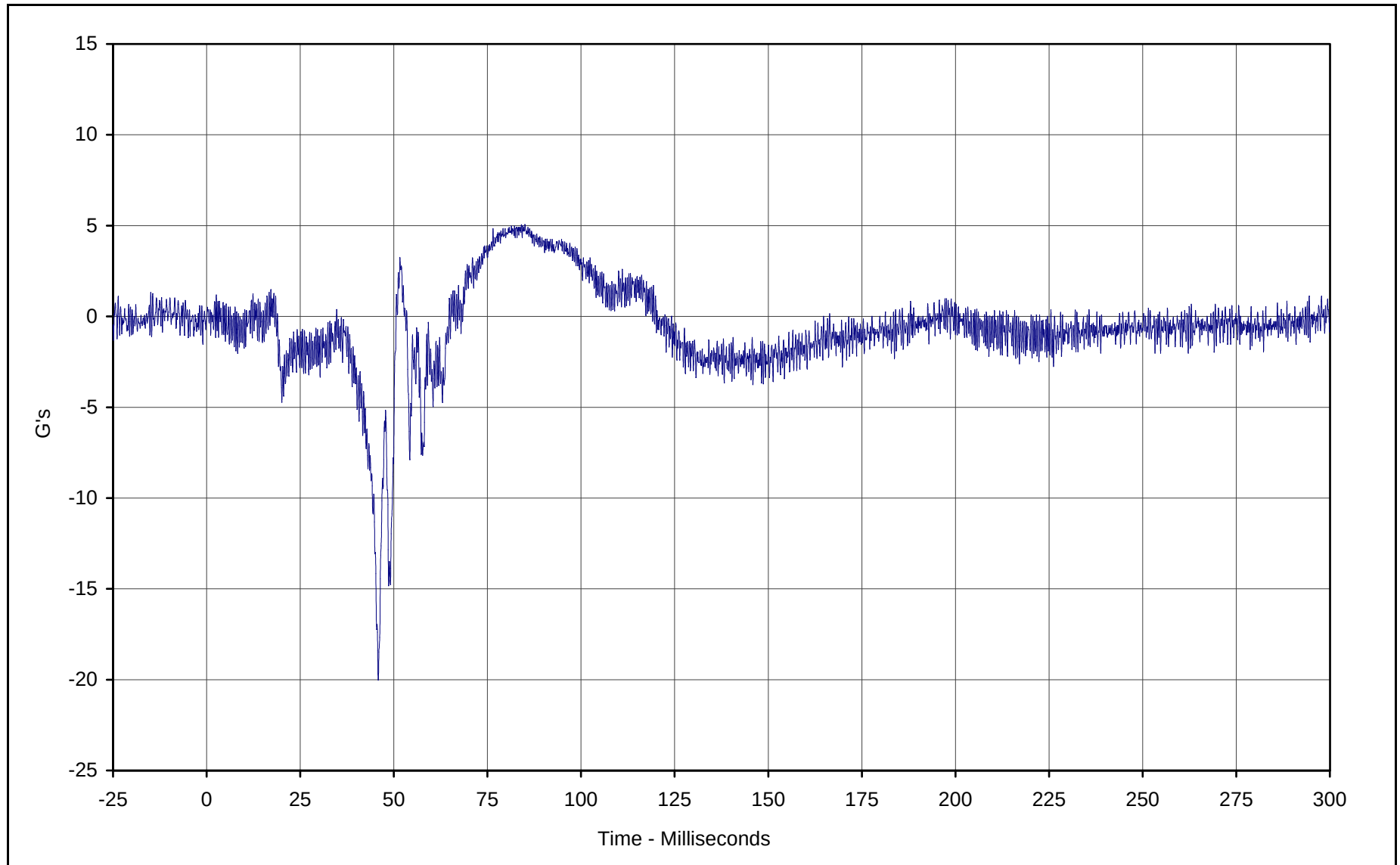




Curve Description: Driver Pelvis X Displ.
Maximum Value: 80.8 at 70.5 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: IN2-020

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan





Curve Description: Driver Pelvis Y

Maximum Value: 5.1 at 84.1 Milliseconds

Minimum Value: -20.0 at 45.8 Milliseconds

SAE Filter Class: 1000

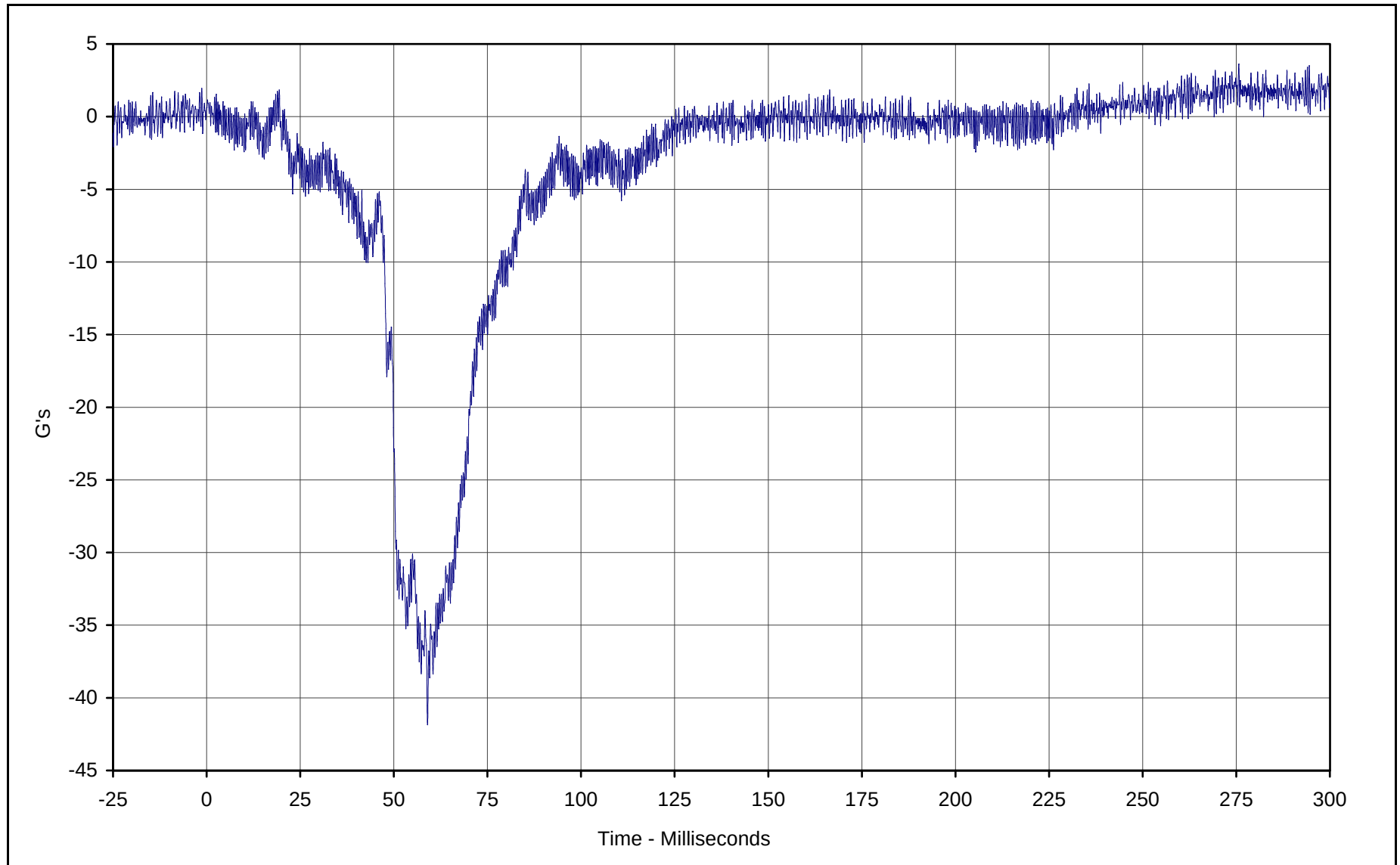
Date of Test: 3/6/01

Curve Number: FIL-021

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan

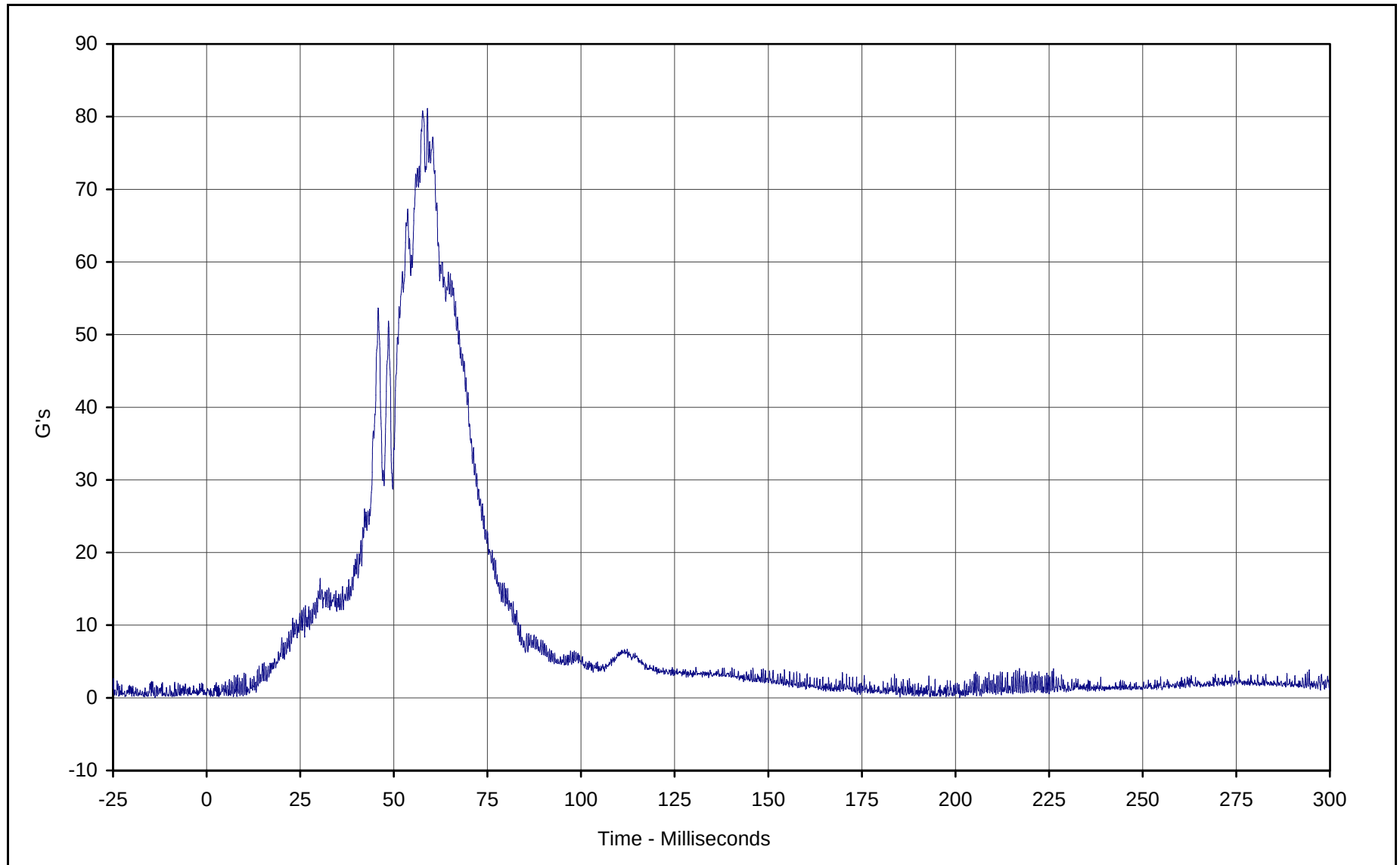




Curve Description: Driver Pelvis Z
Maximum Value: 3.6 at 275.7 Milliseconds
Minimum Value: -41.9 at 59.0 Milliseconds
SAE Filter Class: 1000
Date of Test: 3/6/01
Curve Number: FIL-022

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



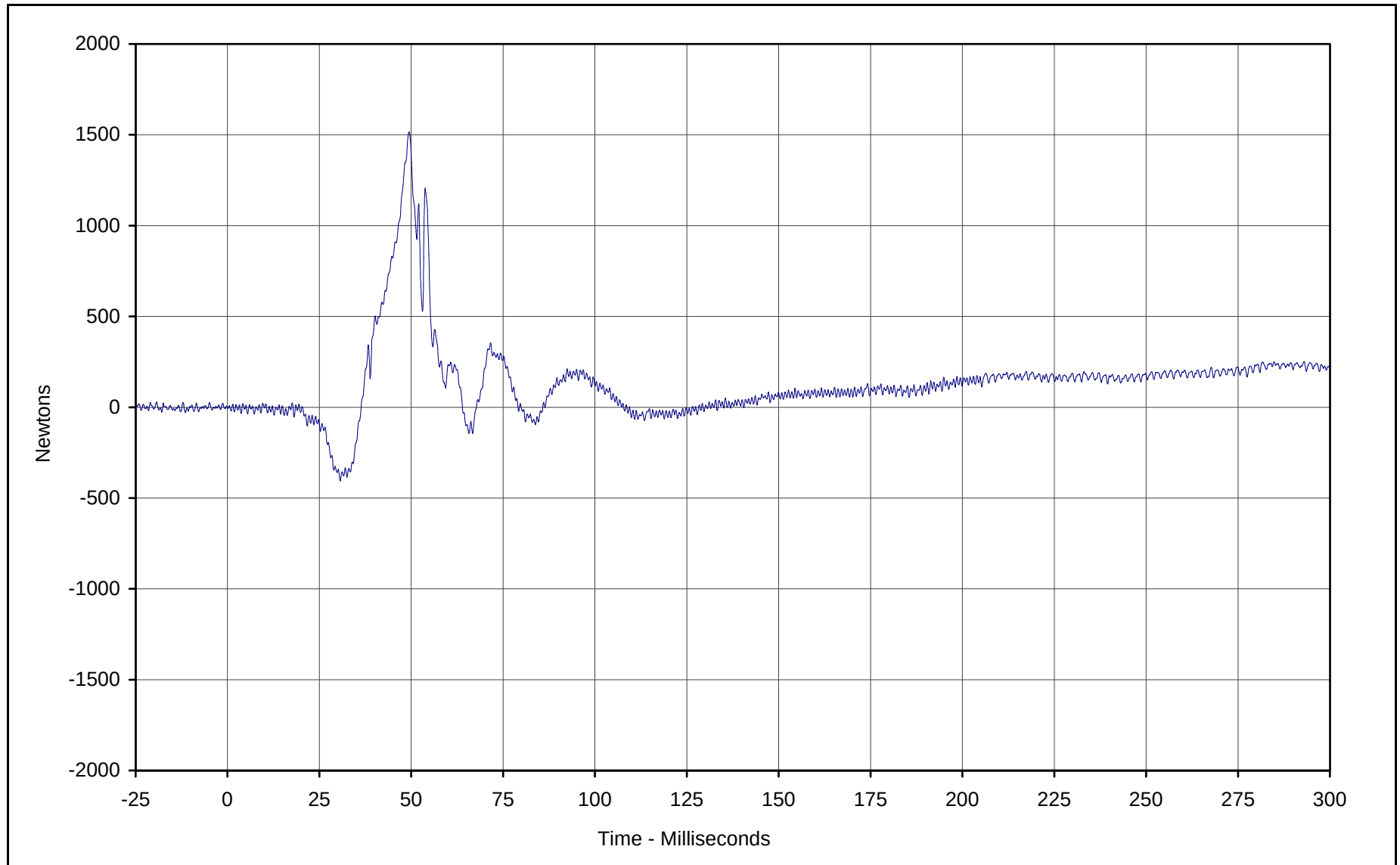


Curve Description: Driver Pelvis Resultant
Maximum Value: 81.1 at 59.0 Milliseconds
Minimum Value: 0.0 at 201.1 Milliseconds
SAE Filter Class: 1000
Date of Test: 3/6/01
Curve Number: RES-020

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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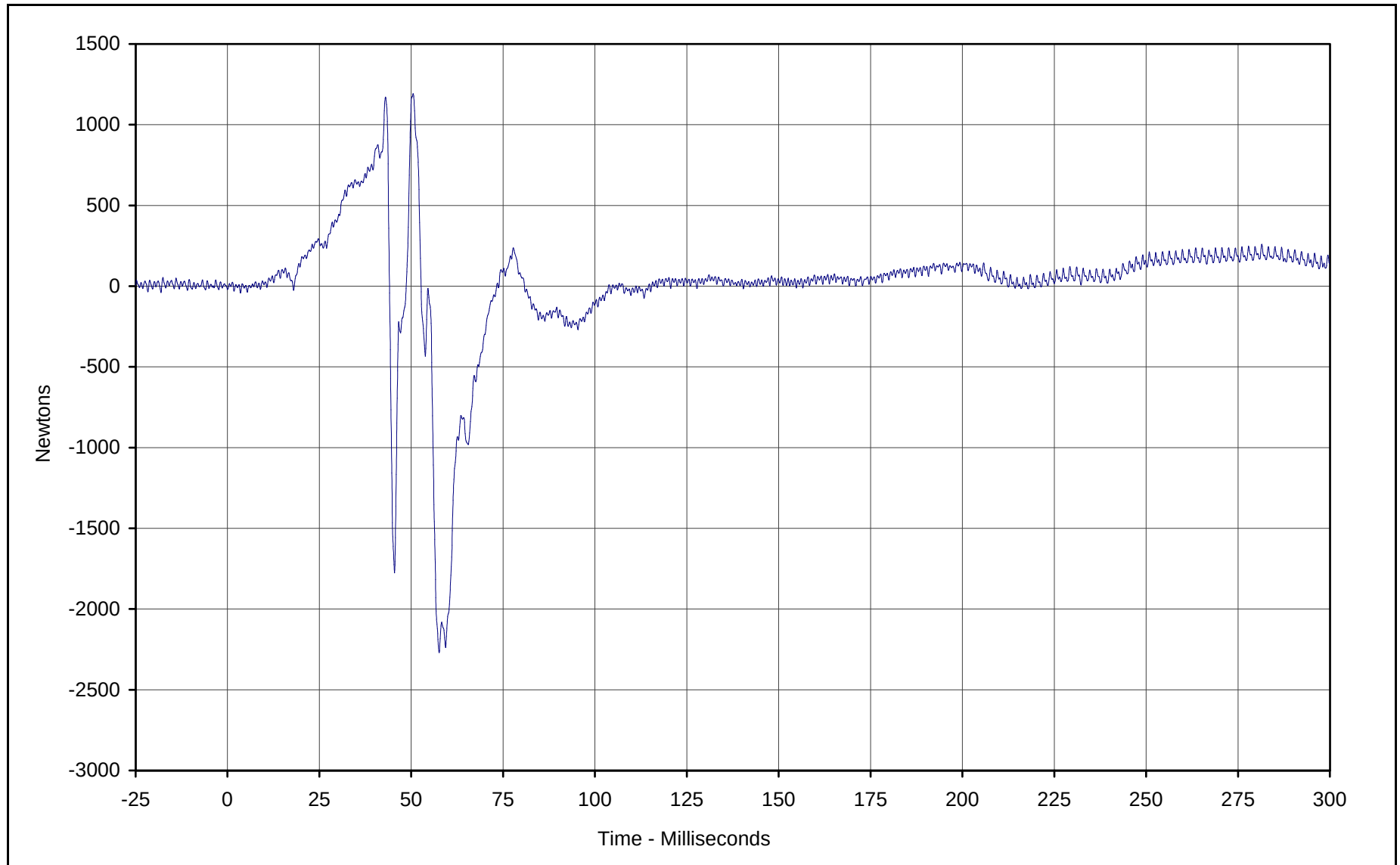


Curve Description: Driver Left Femur Force
Maximum Value: 1515.7 at 49.4 Milliseconds
Minimum Value: -405.4 at 30.7 Milliseconds
SAE Filter Class: 600
Date of Test: 3/6/01
Curve Number: FIL-023

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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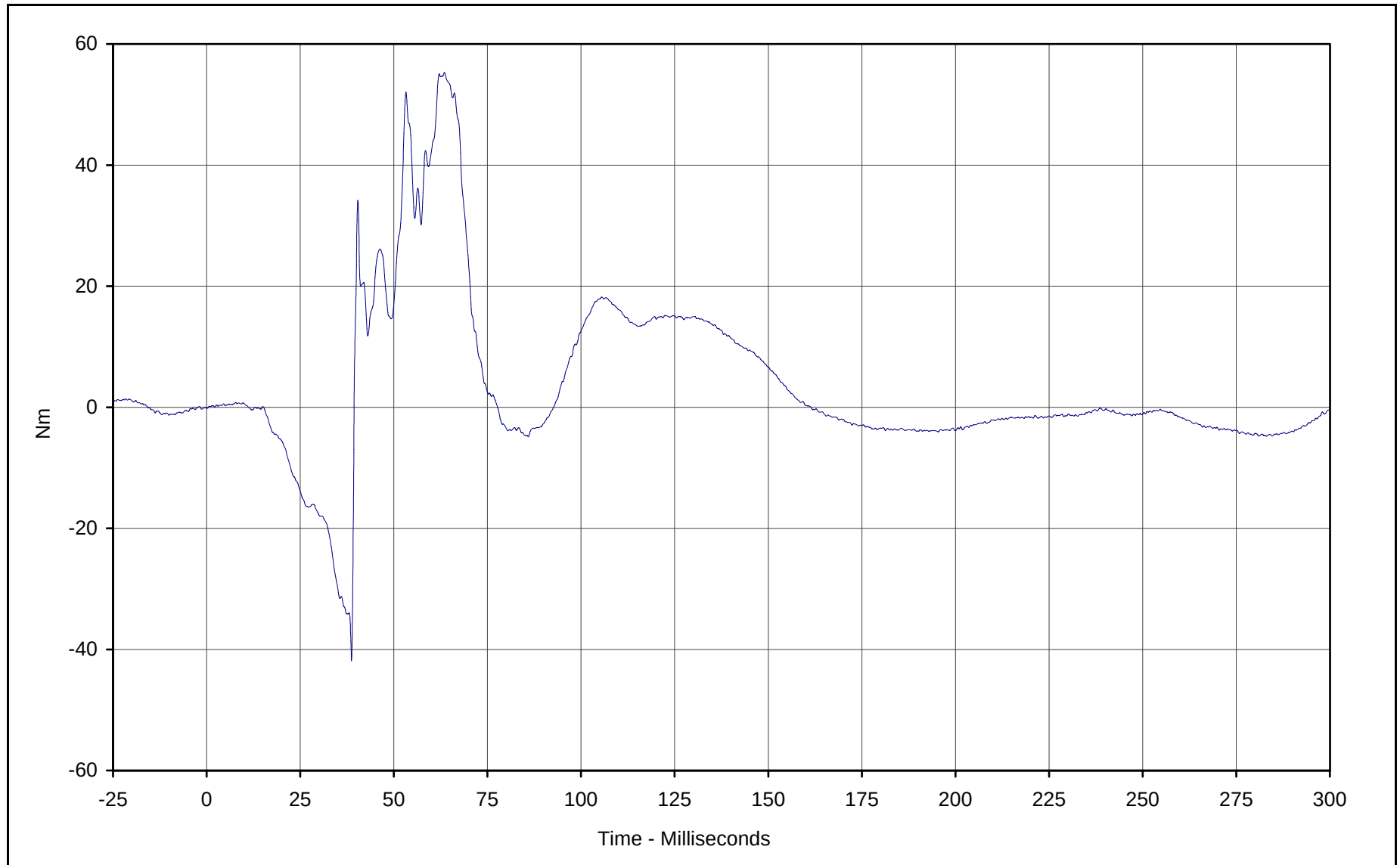


Curve Description: Driver Right Femur Force
Maximum Value: 1192.1 at 50.5 Milliseconds
Minimum Value: -2270.4 at 57.6 Milliseconds
SAE Filter Class: 600
Date of Test: 3/6/01
Curve Number: FIL-024

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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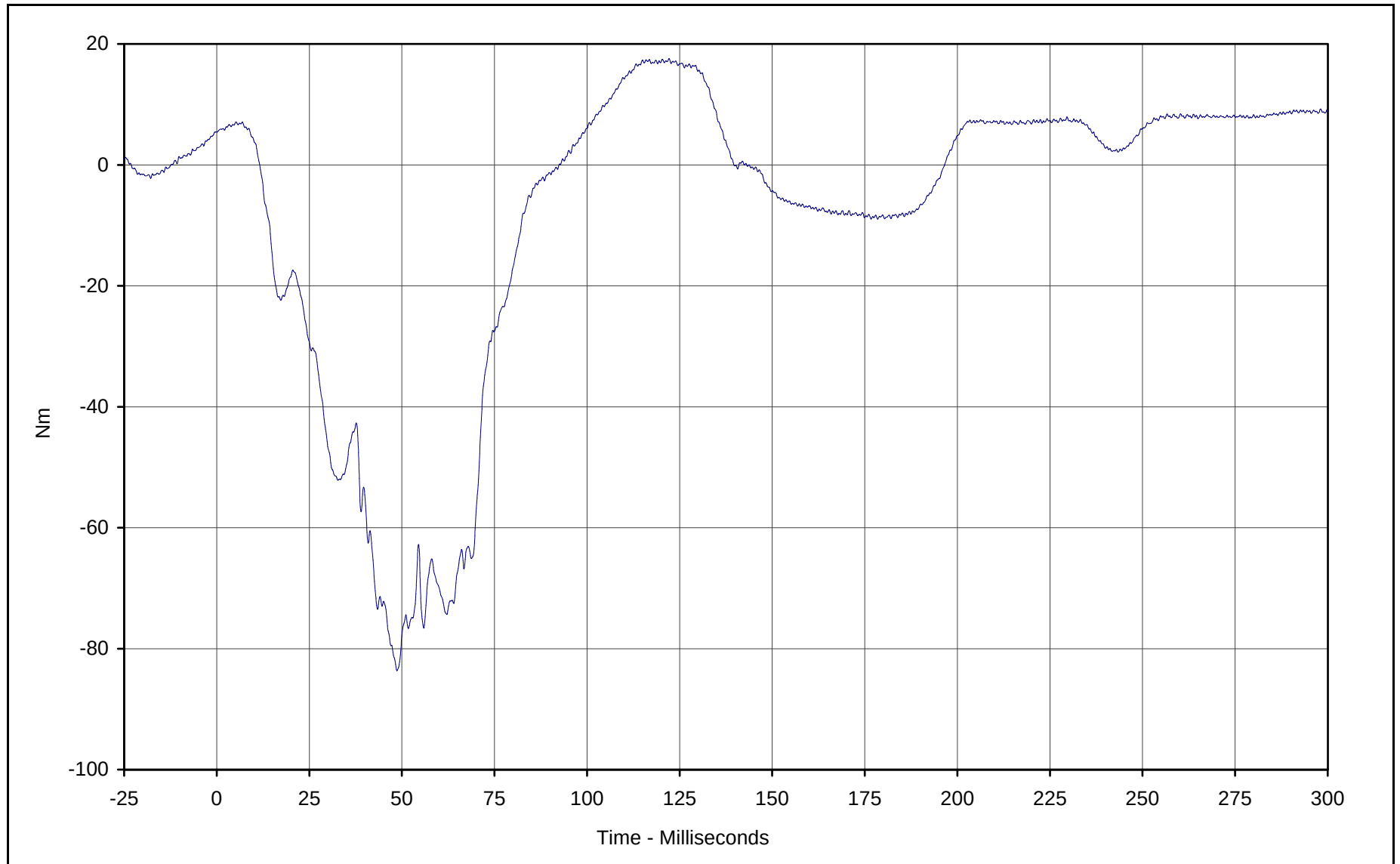
Curve Description: Driver Left Upper Tibia Moment X
Maximum Value: 55.3 at 63.5 Milliseconds
Minimum Value: -41.9 at 38.7 Milliseconds
SAE Filter Class: 600
Date of Test: 3/6/01
Curve Number: FIL-025

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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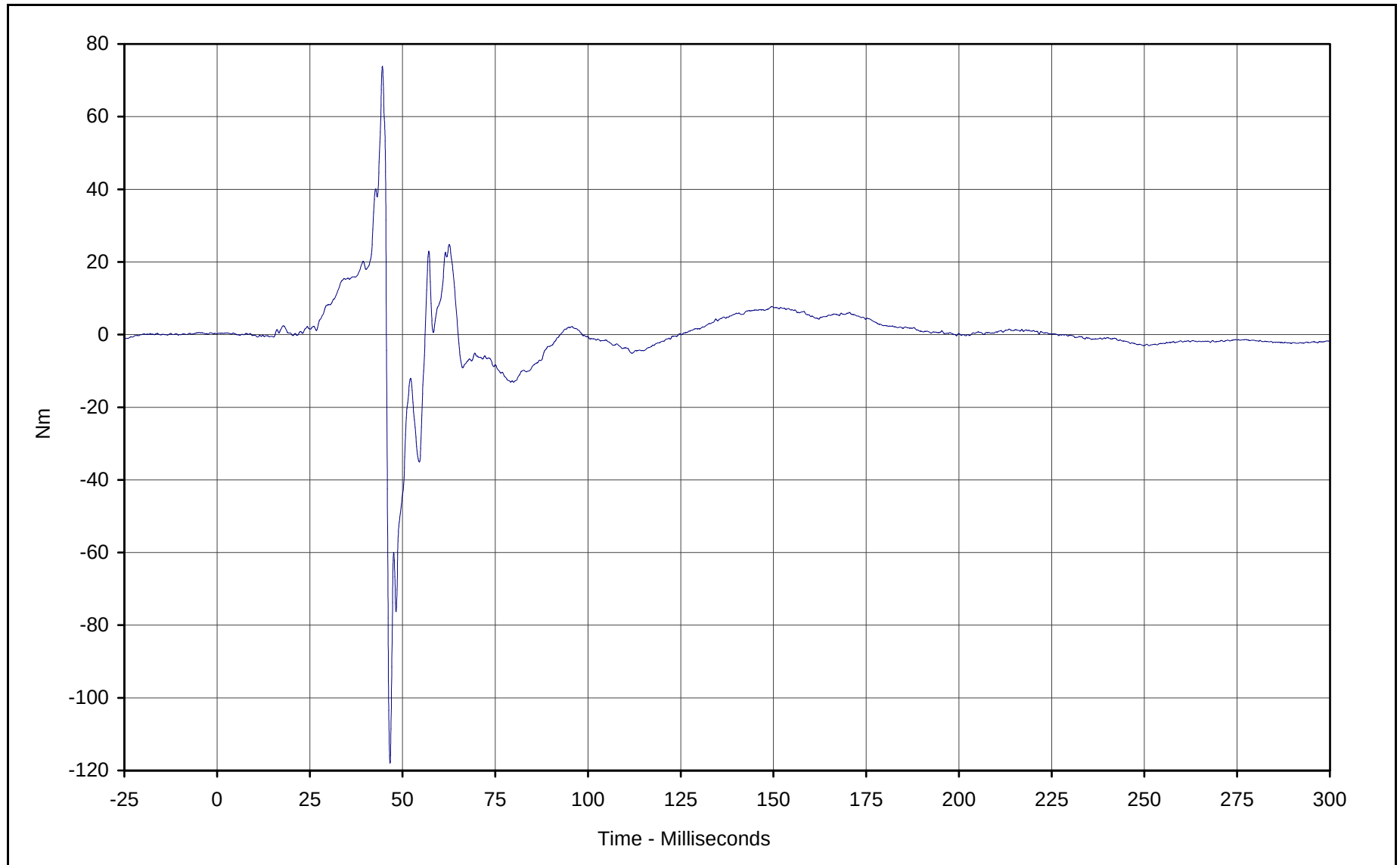


Curve Description: Driver Left Upper Tibia Moment Y
Maximum Value: 17.6 at 122.1 Milliseconds
Minimum Value: -83.7 at 48.7 Milliseconds
SAE Filter Class: 600
Date of Test: 3/6/01
Curve Number: FIL-026

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



KAR21001-17

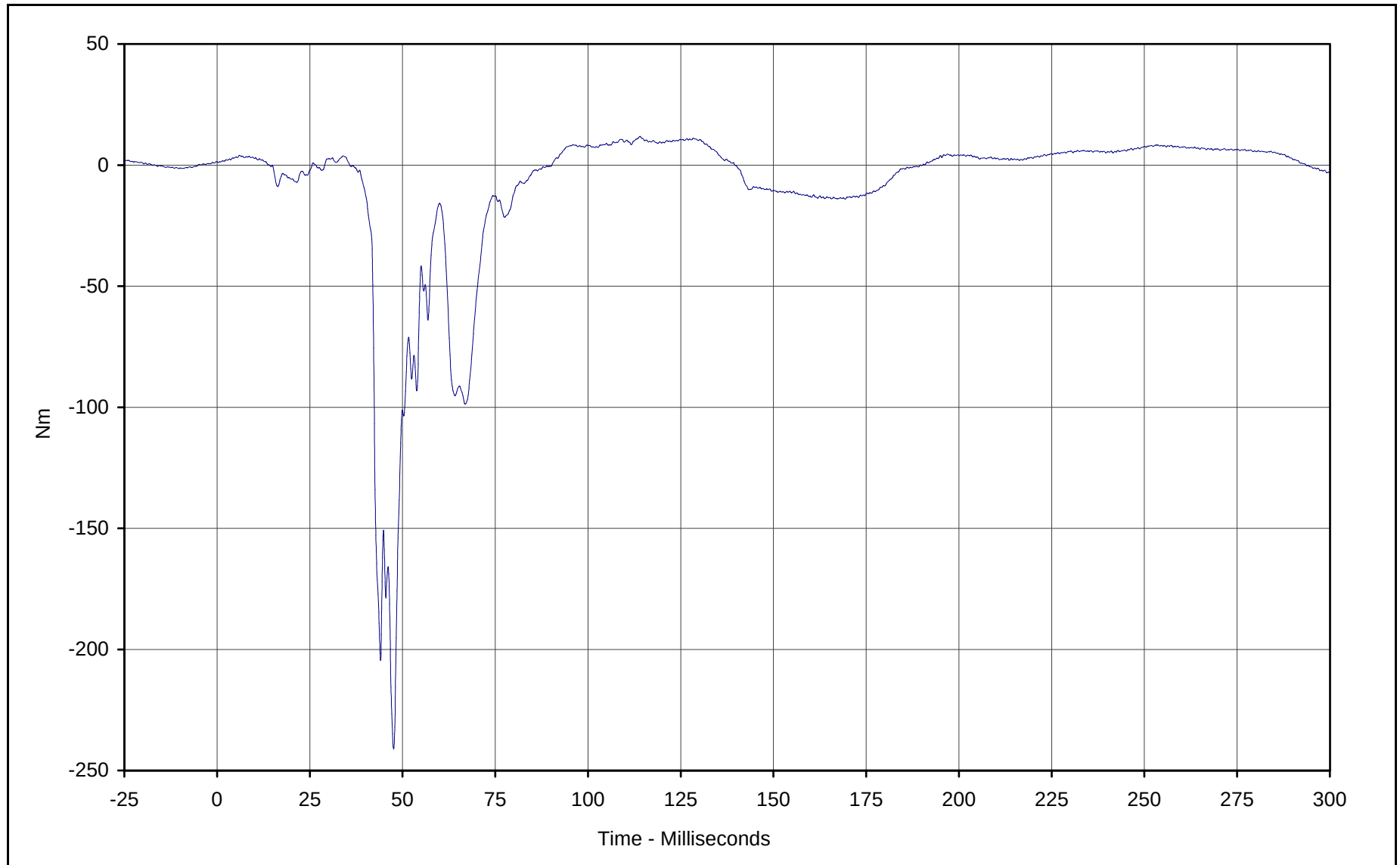


Curve Description: Driver Right Upper Tibia Moment X
Maximum Value: 73.9 at 44.6 Milliseconds
Minimum Value: -118.0 at 46.6 Milliseconds
SAE Filter Class: 600
Date of Test: 3/6/01
Curve Number: FIL-027

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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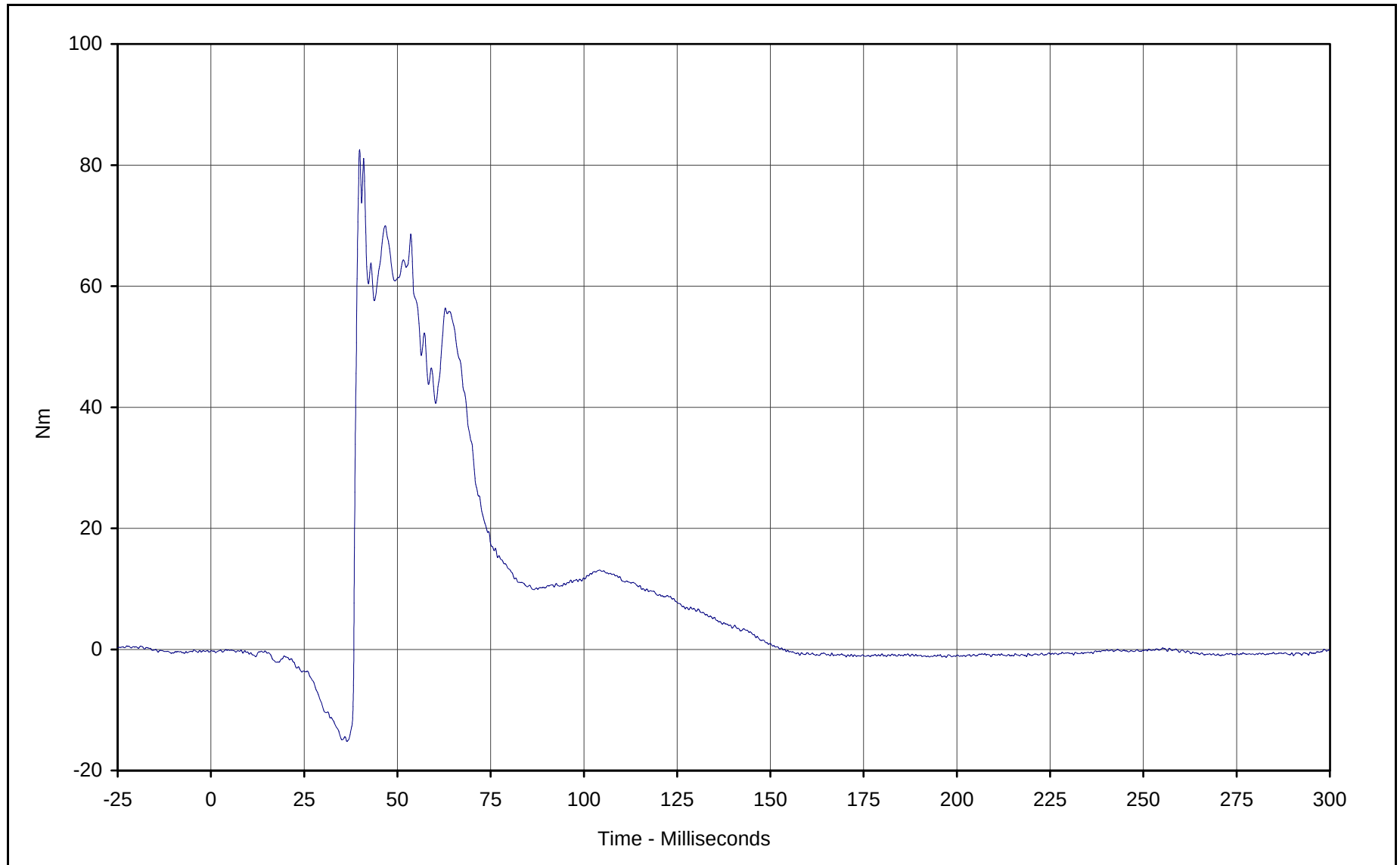


Curve Description: Driver Right Upper Tibia Moment Y
Maximum Value: 11.9 at 114.0 Milliseconds
Minimum Value: -241.1 at 47.6 Milliseconds
SAE Filter Class: 600
Date of Test: 3/6/01
Curve Number: FIL-028

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



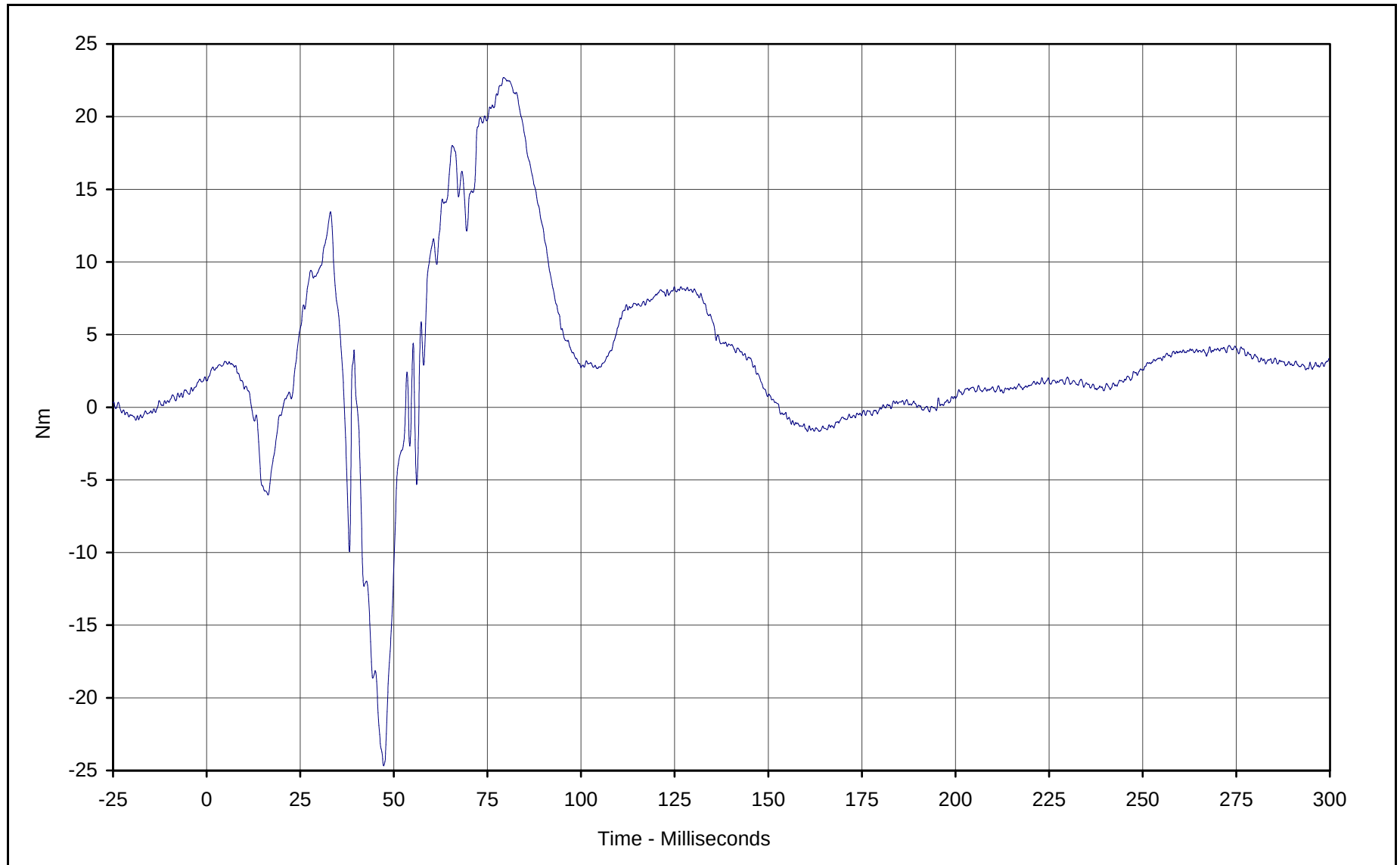
KAR21001-17



Curve Description: Driver Left Lower Tibia Moment X
Maximum Value: 82.6 at 39.9 Milliseconds
Minimum Value: -15.2 at 36.5 Milliseconds
SAE Filter Class: 600
Date of Test: 3/6/01
Curve Number: FIL-029

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

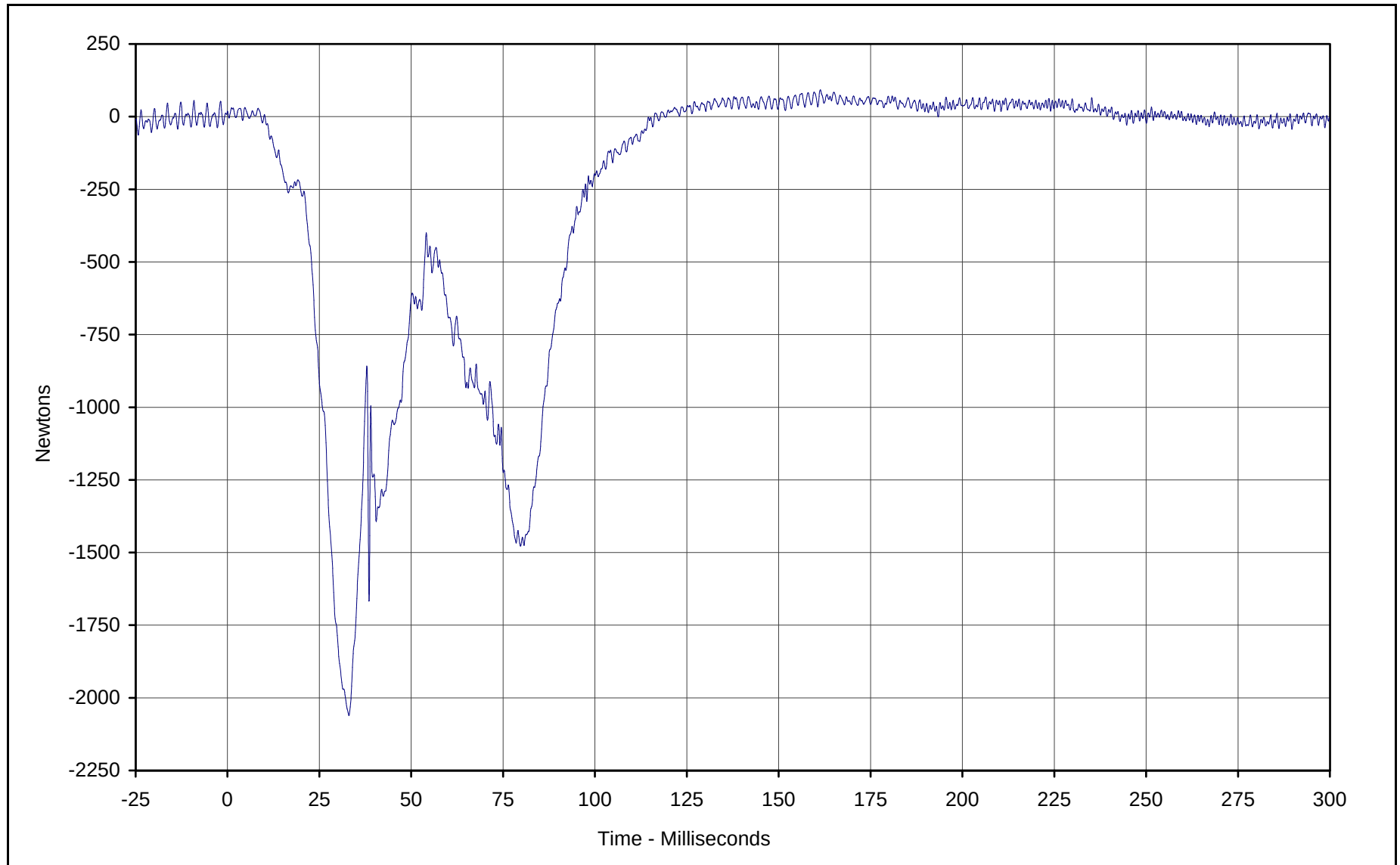




Curve Description: Driver Left Lower Tibia Moment Y
Maximum Value: 22.7 at 79.3 Milliseconds
Minimum Value: -24.7 at 47.3 Milliseconds
SAE Filter Class: 600
Date of Test: 3/6/01
Curve Number: FIL-030

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

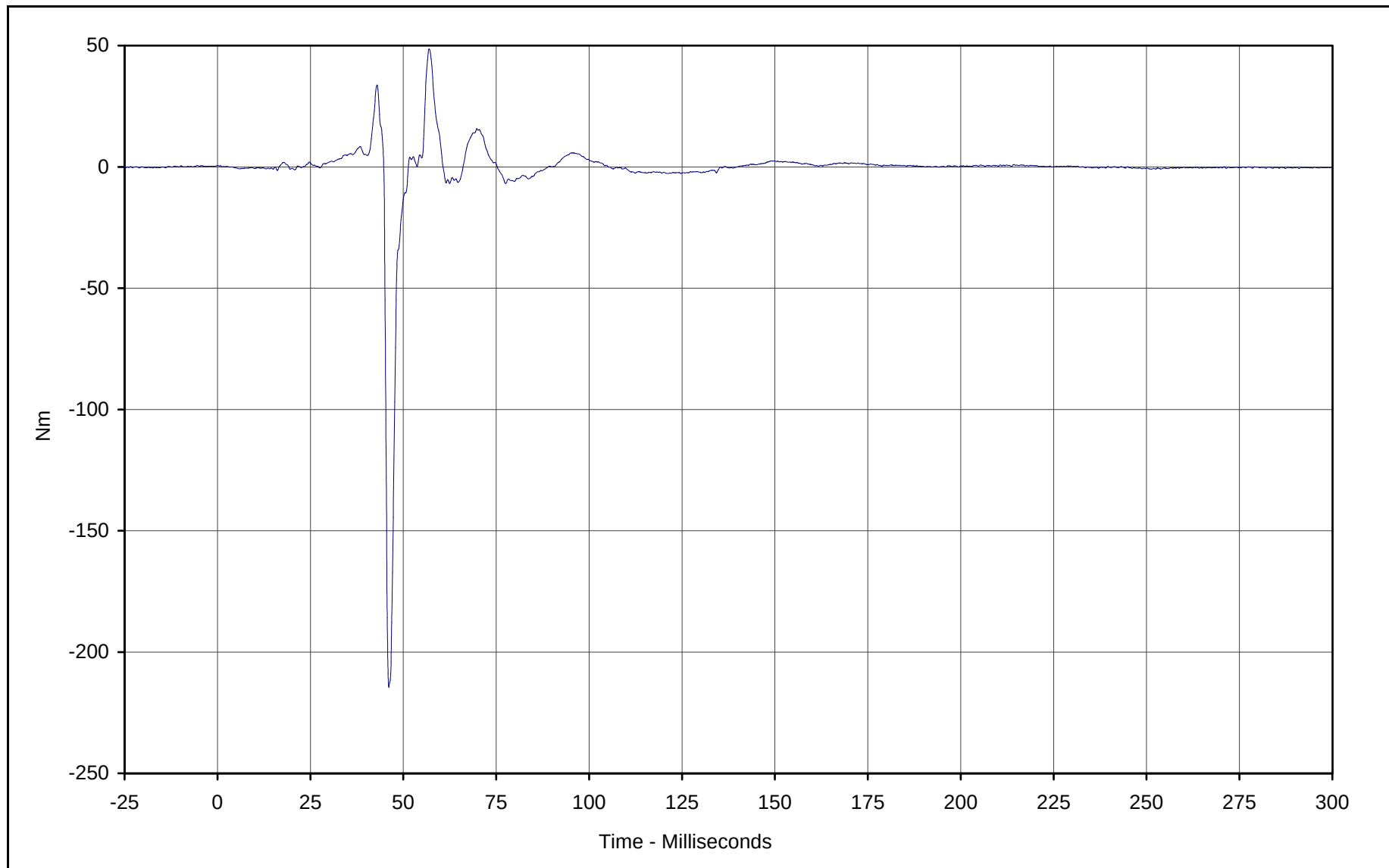




Curve Description: Driver Left Lower Tibia Force Z
Maximum Value: 91.9 at 161.3 Milliseconds
Minimum Value: -2061.5 at 33.1 Milliseconds
SAE Filter Class: 600
Date of Test: 3/6/01
Curve Number: FIL-031

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



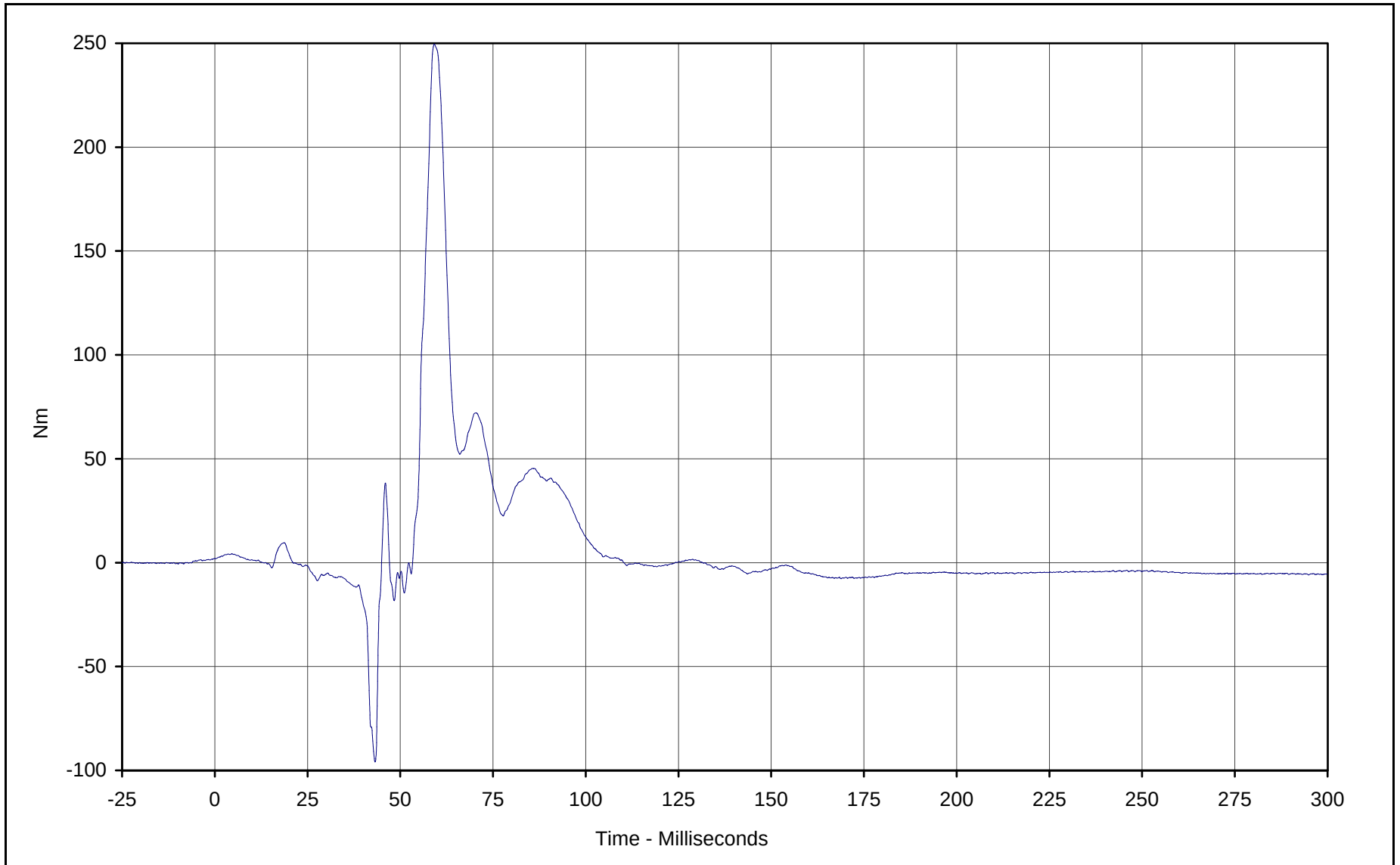


Curve Description: Driver Right Lower Tibia Moment X
Maximum Value: 48.6 at 57.0 Milliseconds
Minimum Value: -214.6 at 46.1 Milliseconds
SAE Filter Class: 600
Date of Test: 3/6/01
Curve Number: FIL-032

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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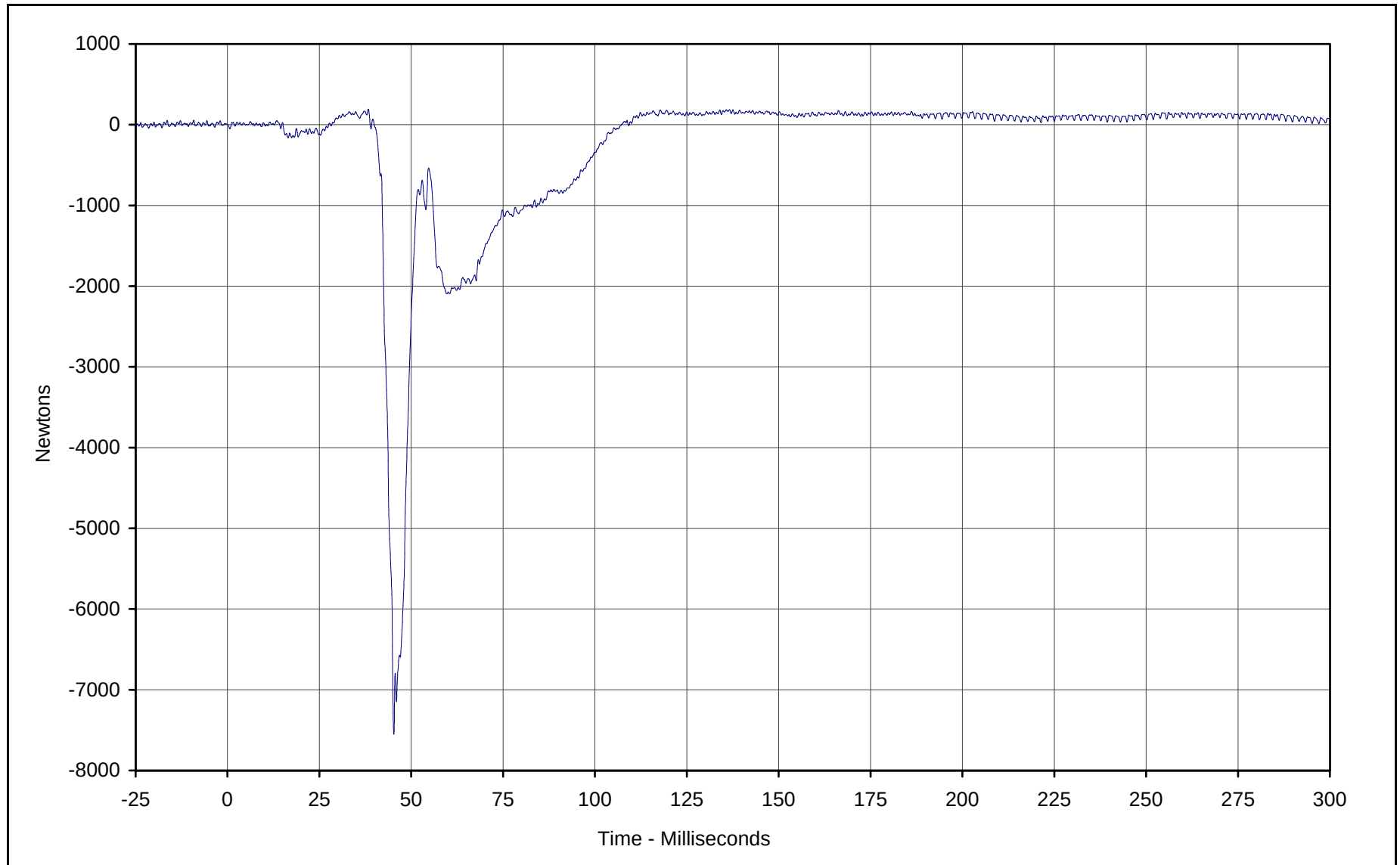


Curve Description: Driver Right Lower Tibia Moment Y
Maximum Value: 249.6 at 59.2 Milliseconds
Minimum Value: -96.0 at 43.2 Milliseconds
SAE Filter Class: 600
Date of Test: 3/6/01
Curve Number: FIL-033

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



KAR21001-17

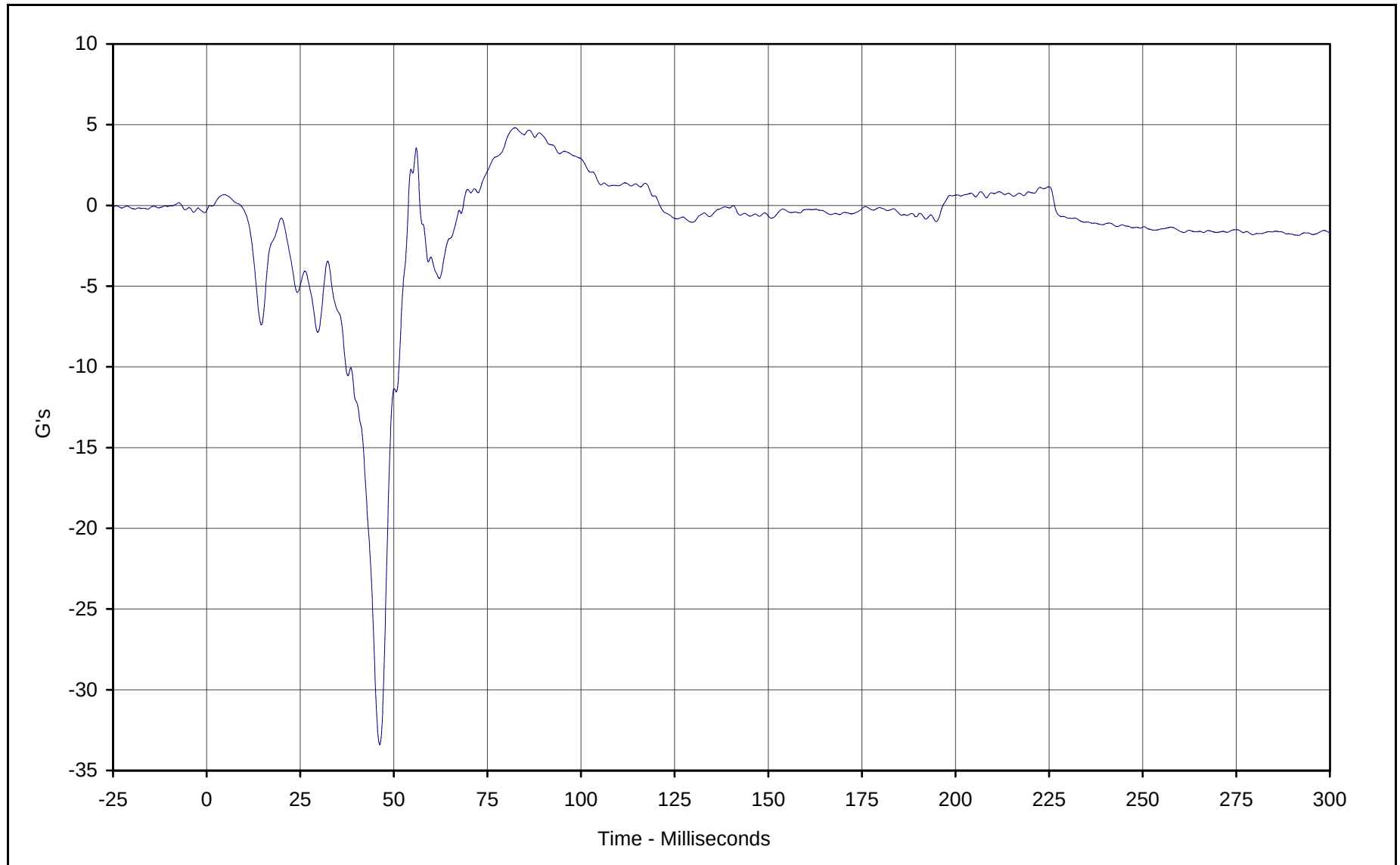


Curve Description: Driver Right Lower Tibia Force Z
Maximum Value: 193.3 at 38.3 Milliseconds
Minimum Value: -7549.2 at 45.3 Milliseconds
SAE Filter Class: 600
Date of Test: 3/6/01
Curve Number: FIL-034

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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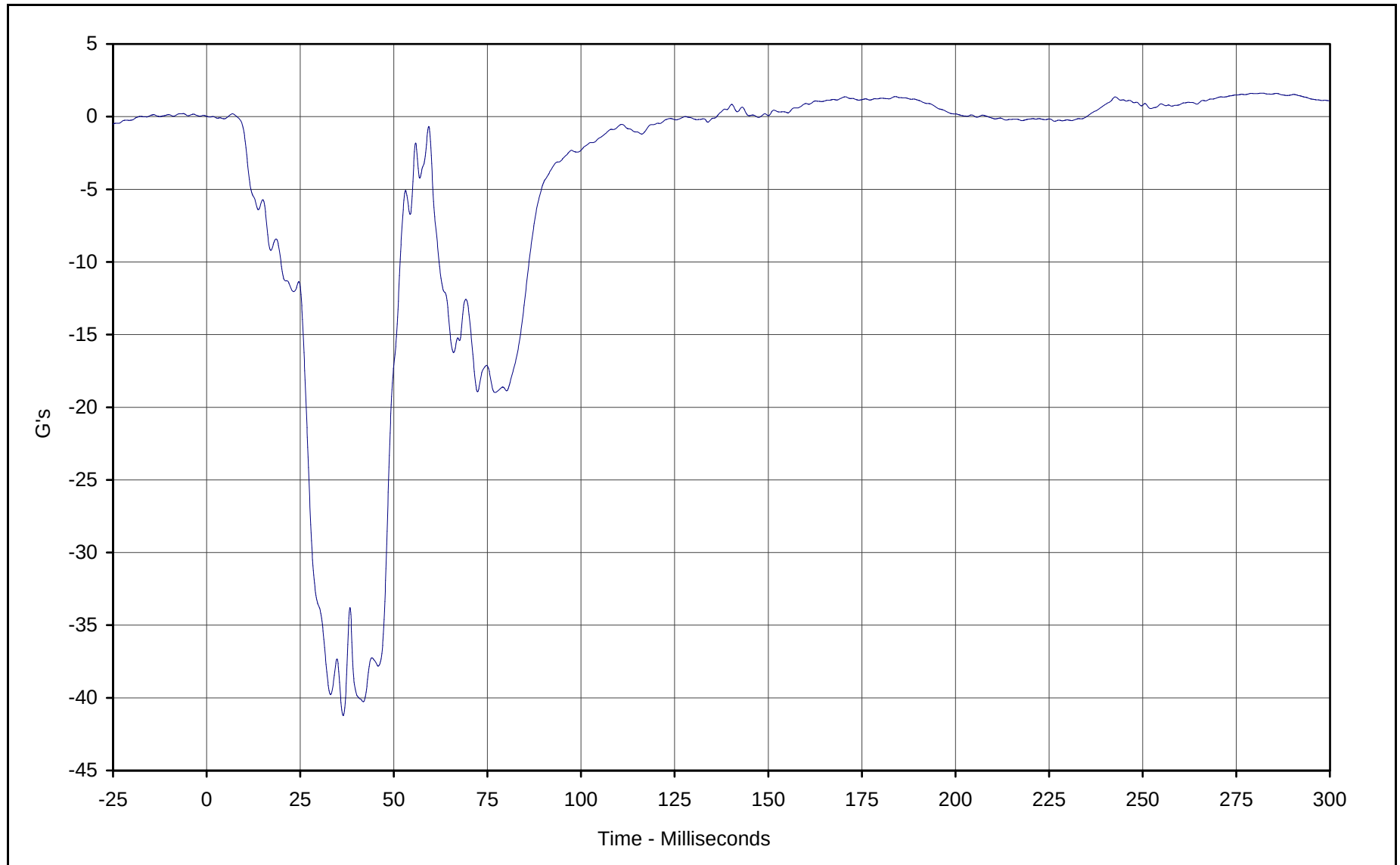
Curve Description: Driver Left Foot Aft X
Maximum Value: 4.8 at 82.4 Milliseconds
Minimum Value: -33.4 at 46.2 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: FIL-035

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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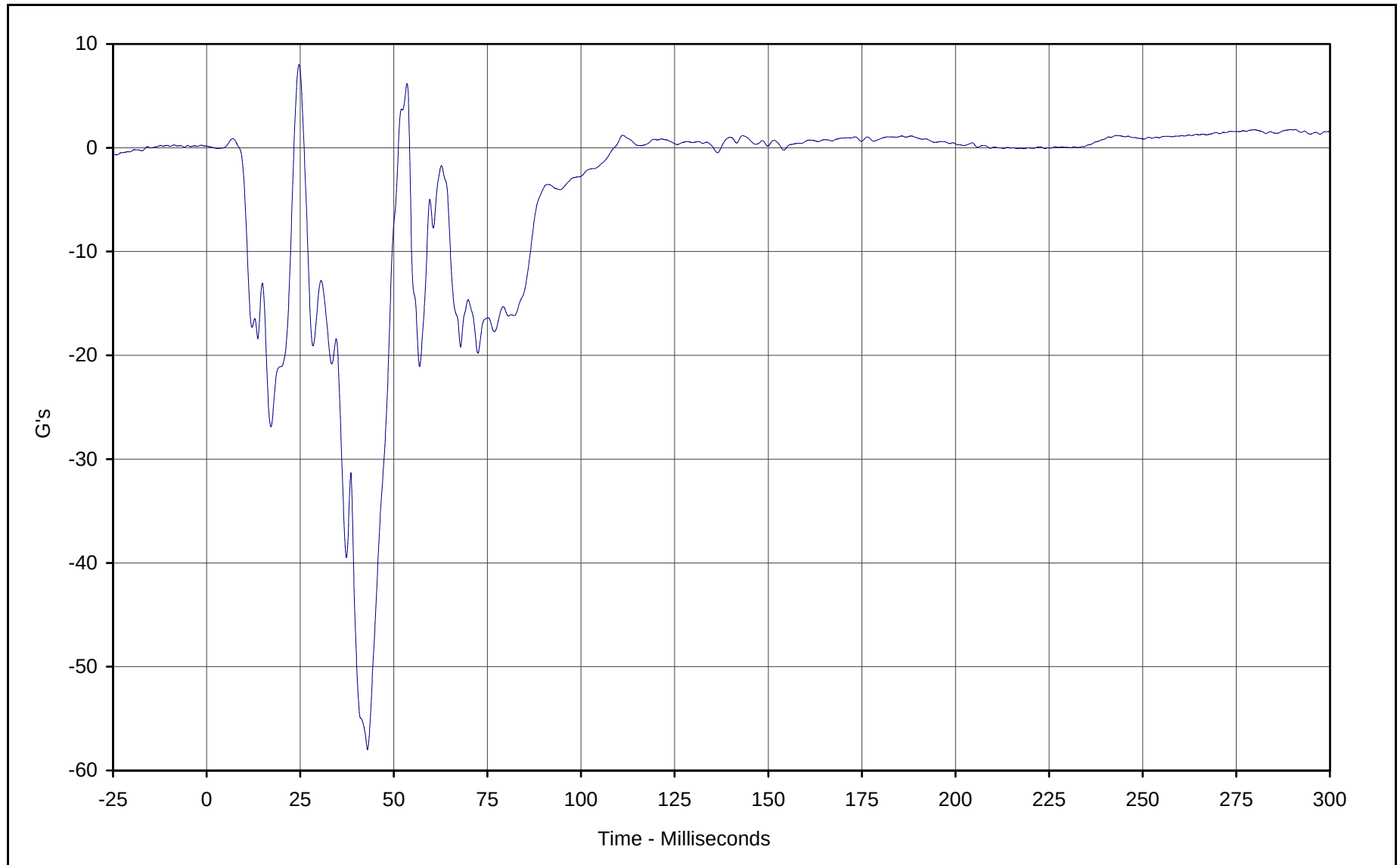


Curve Description: Driver Left Foot Aft Z
Maximum Value: 1.6 at 282.1 Milliseconds
Minimum Value: -41.2 at 36.5 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: FIL-036

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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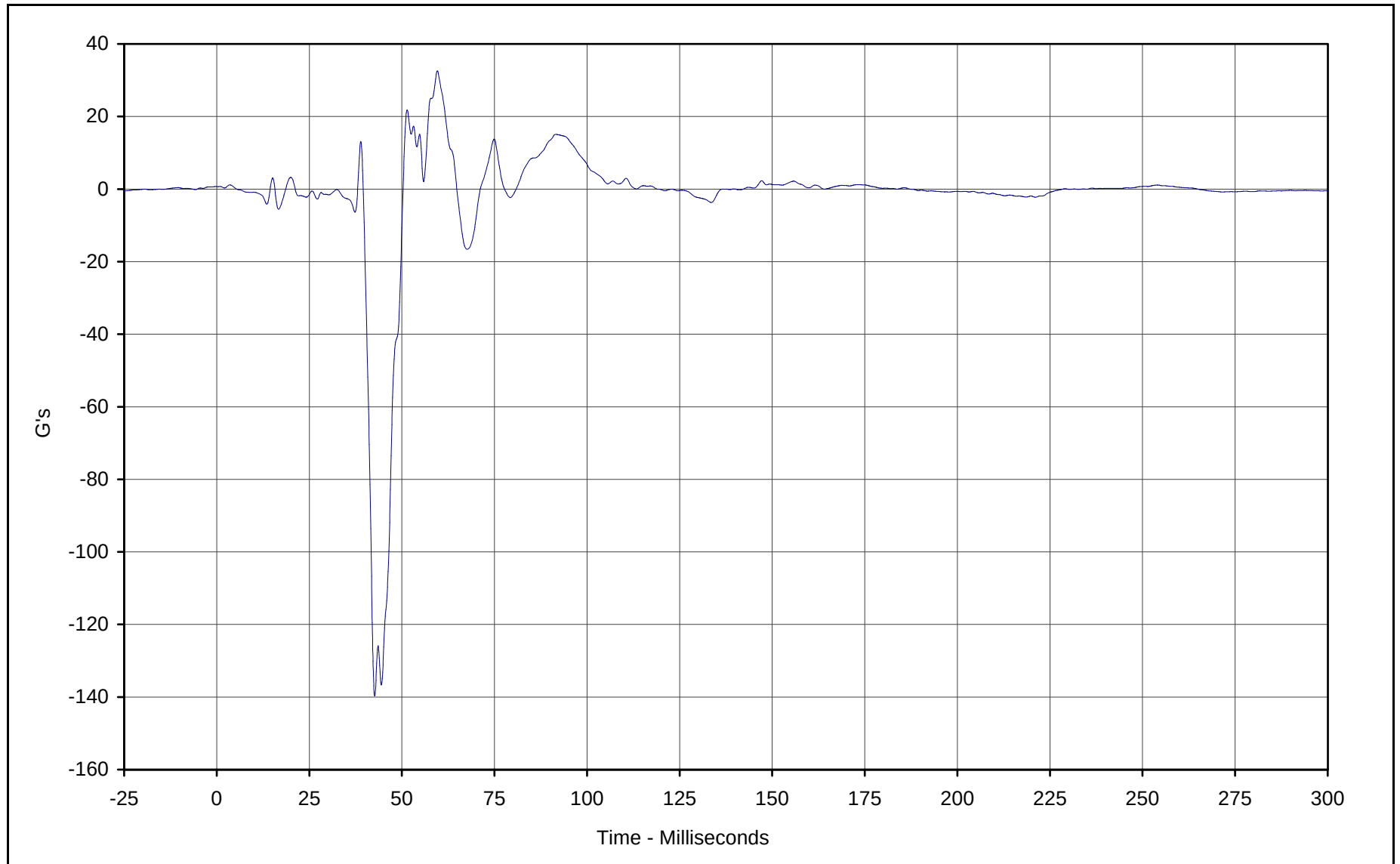


Curve Description: Driver Left Foot Fore Z
Maximum Value: 8.0 at 24.7 Milliseconds
Minimum Value: -58.0 at 43.0 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: FIL-037

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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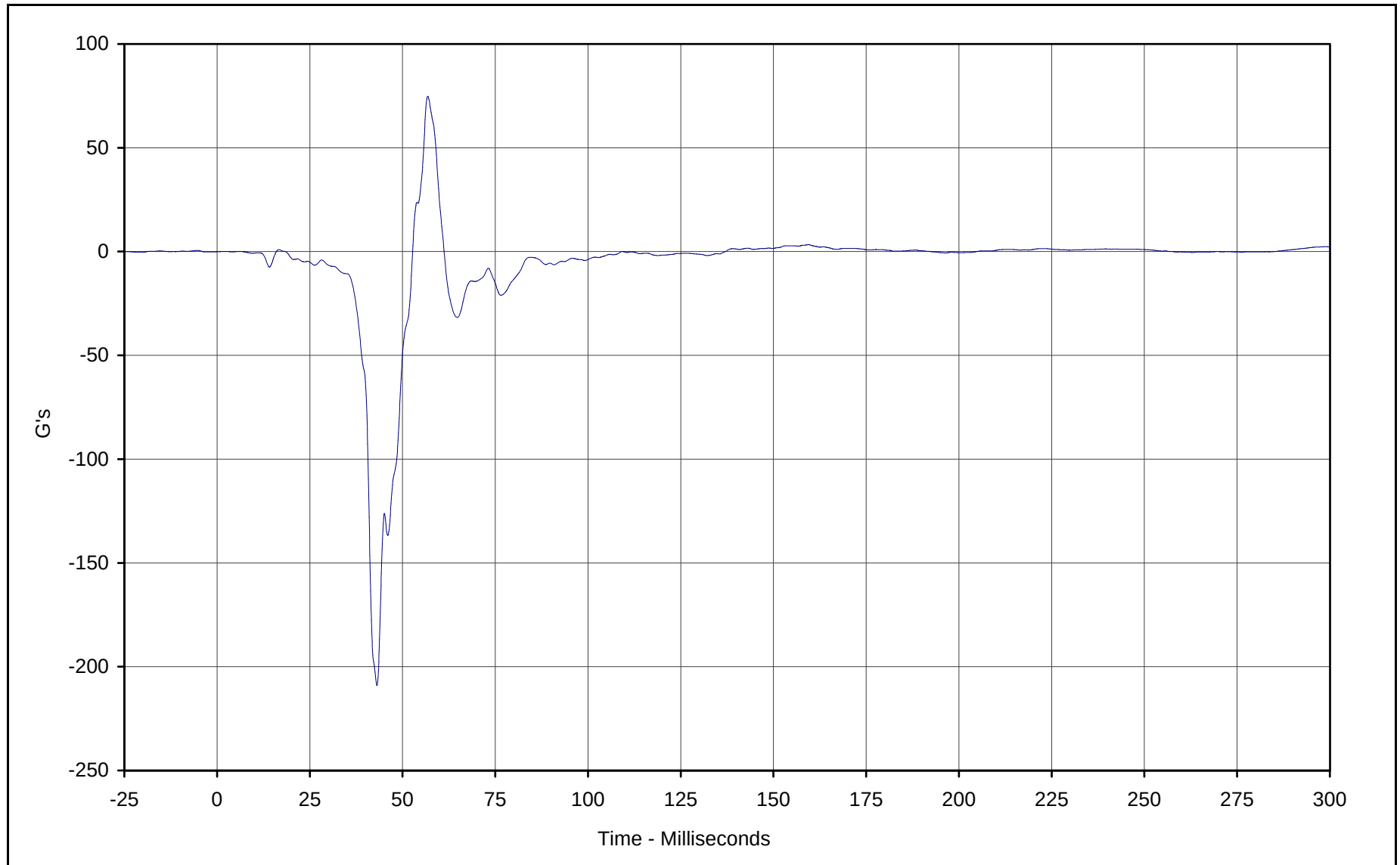


Curve Description: Driver Right Foot Aft X
Maximum Value: 32.5 at 59.6 Milliseconds
Minimum Value: -139.7 at 42.7 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: FIL-038

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



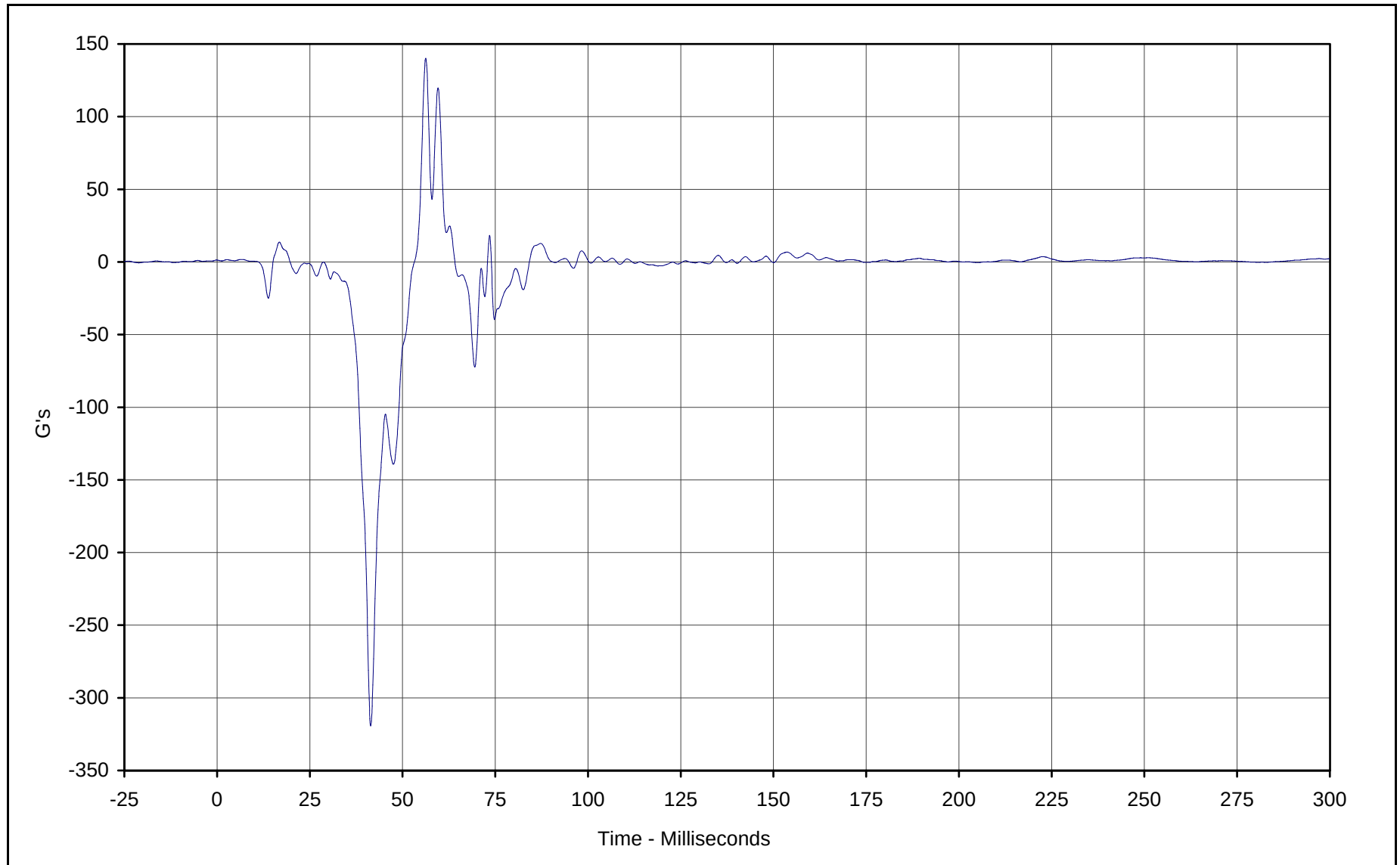
KAR21001-17



Curve Description: Driver Right Foot Aft Z
Maximum Value: 74.8 at 56.8 Milliseconds
Minimum Value: -209.1 at 43.1 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: FIL-039

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

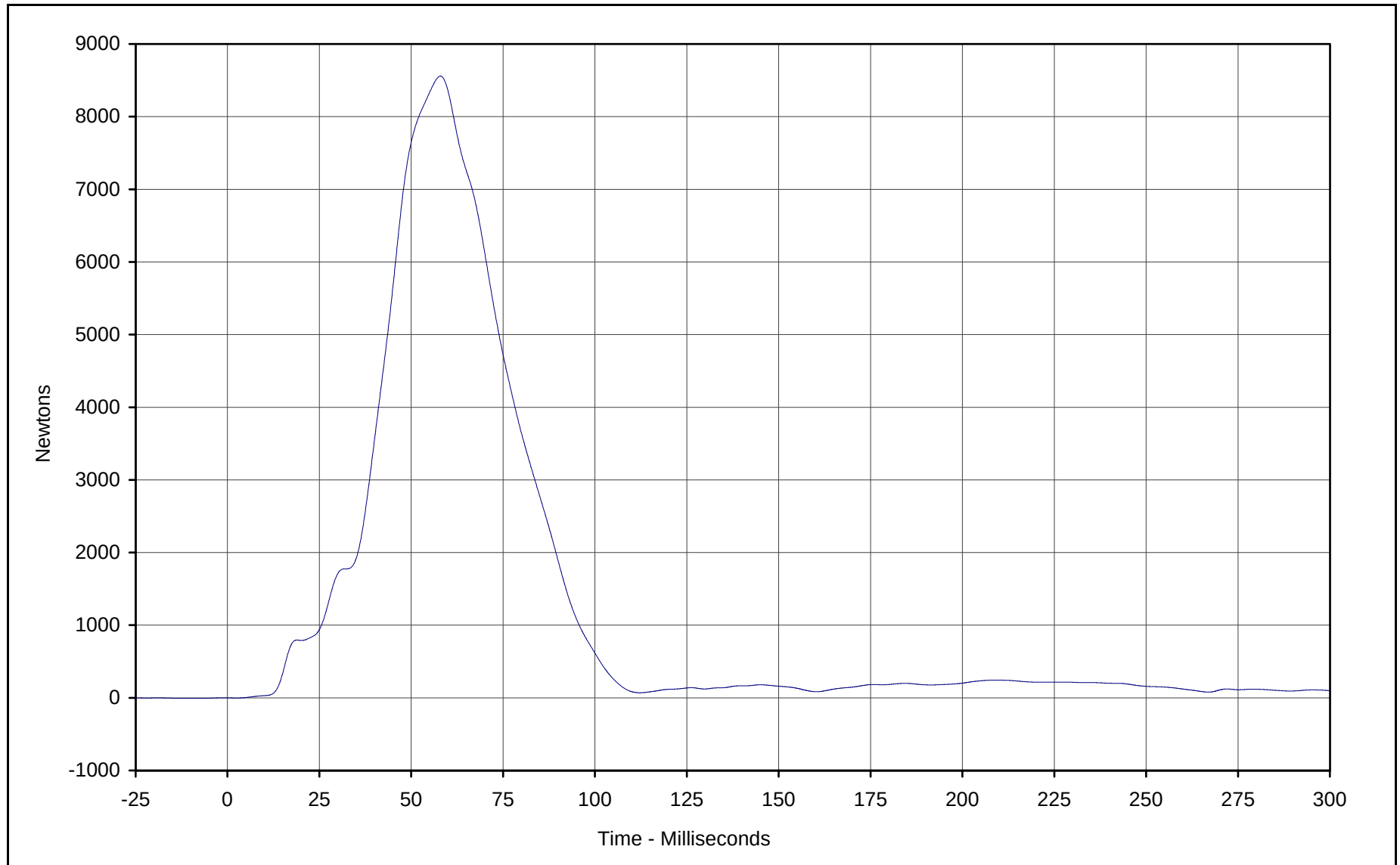




Curve Description: Driver Right Foot Fore Z
Maximum Value: 140.1 at 56.3 Milliseconds
Minimum Value: -319.3 at 41.4 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: FIL-040

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

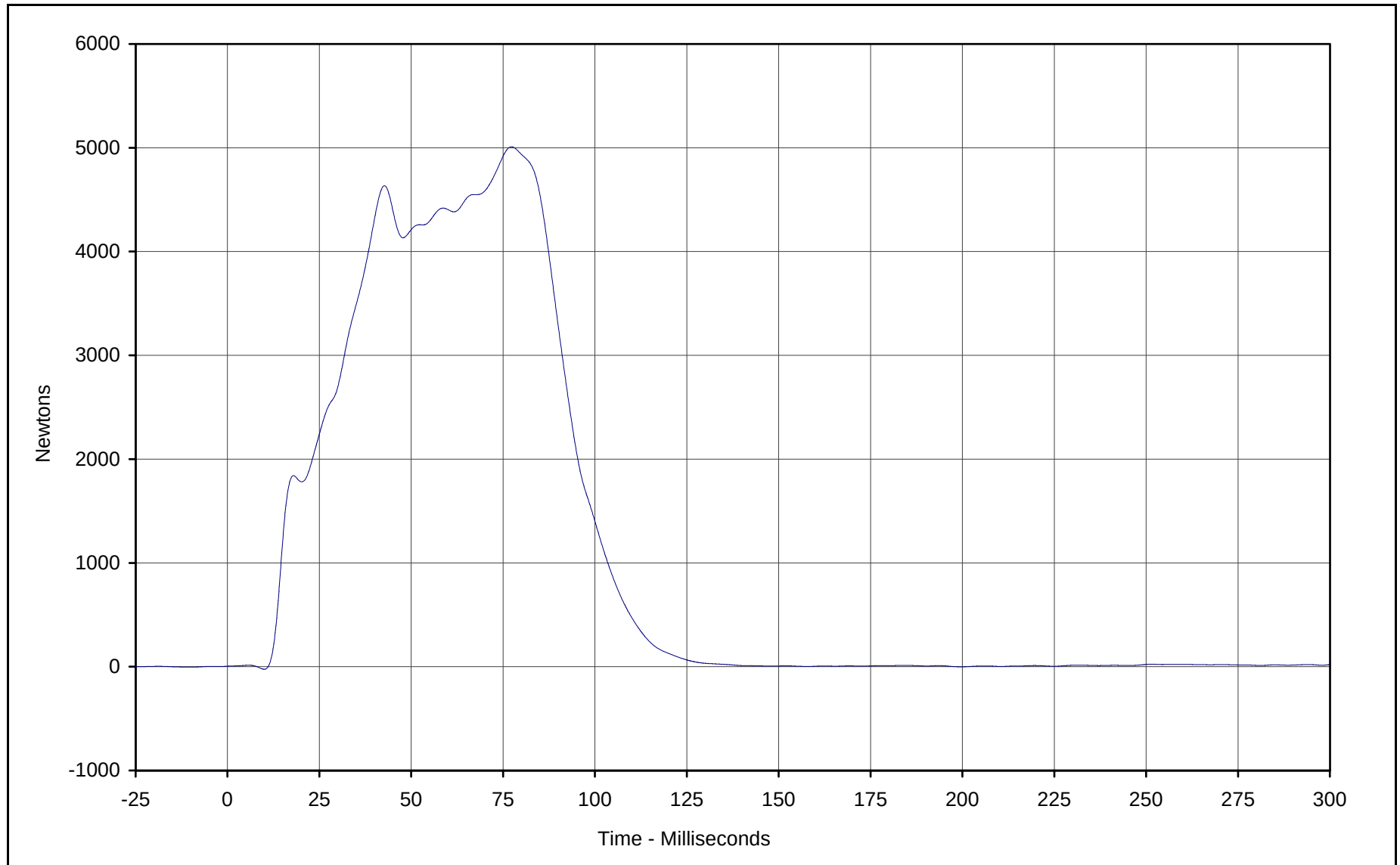




Curve Description: Driver Lap Belt Force
Maximum Value: 8558.2 at 57.9 Milliseconds
Minimum Value: -3.2 at 2.6 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: FIL-041

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



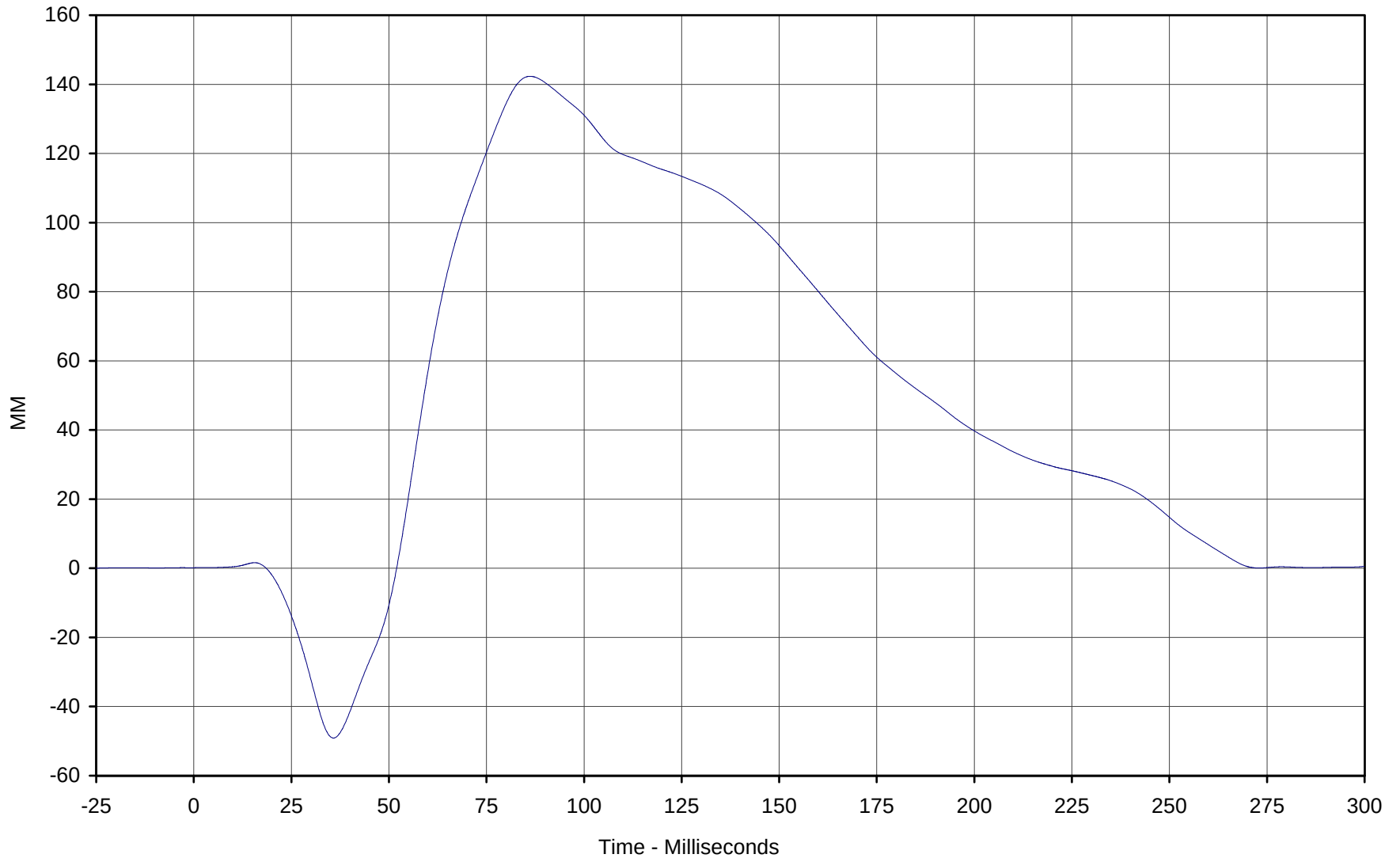


Curve Description: Driver Shoulder Belt Force
Maximum Value: 5009.6 at 77.3 Milliseconds
Minimum Value: -24.7 at 10.0 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: FIL-042

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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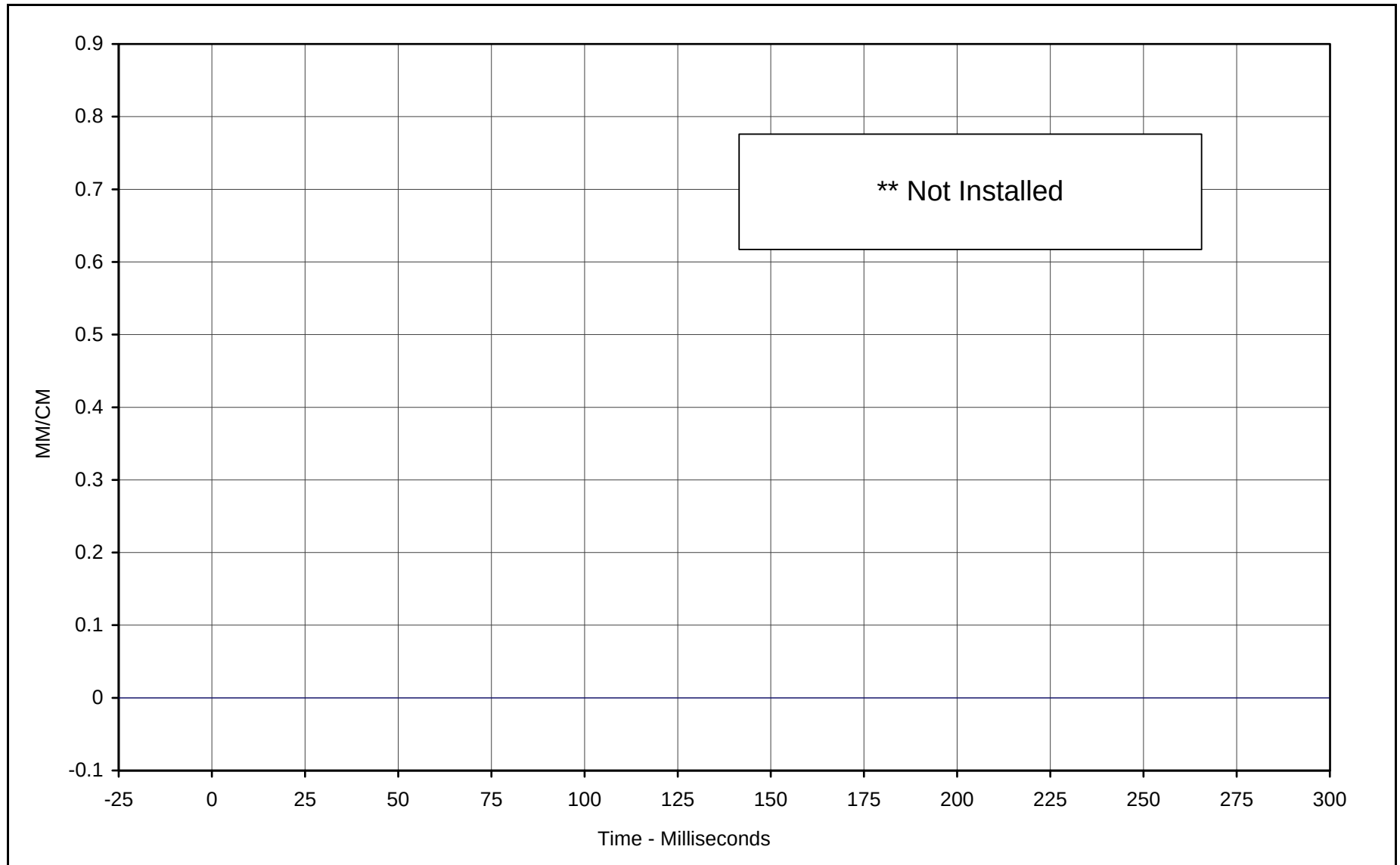


Curve Description: Driver Shoulder Belt Pullout
Maximum Value: 142.3 at 86.2 Milliseconds
Minimum Value: -49.1 at 35.8 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: FIL-043

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 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: 3/6/01

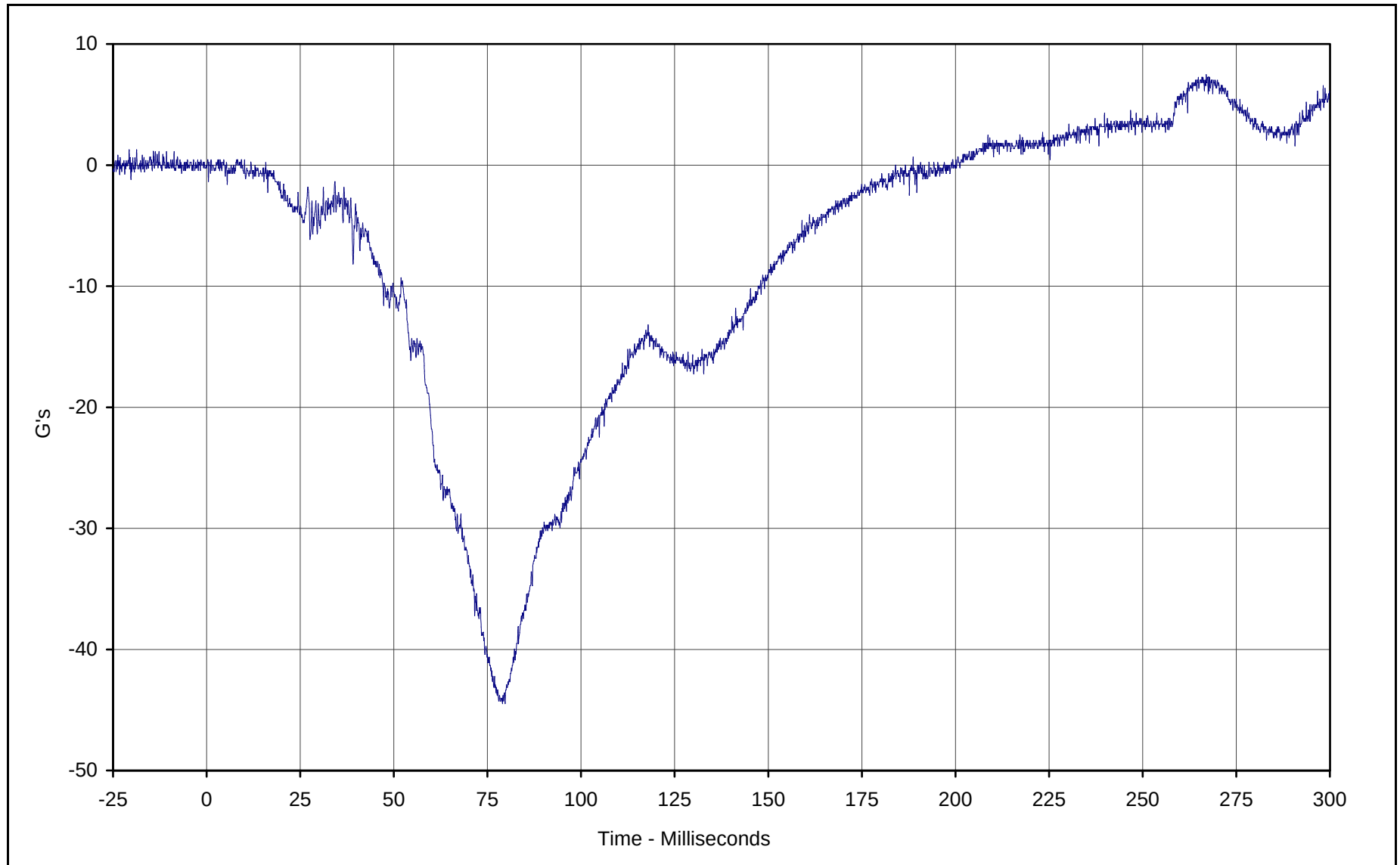
Curve Number: FIL-044

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan

** Not installed

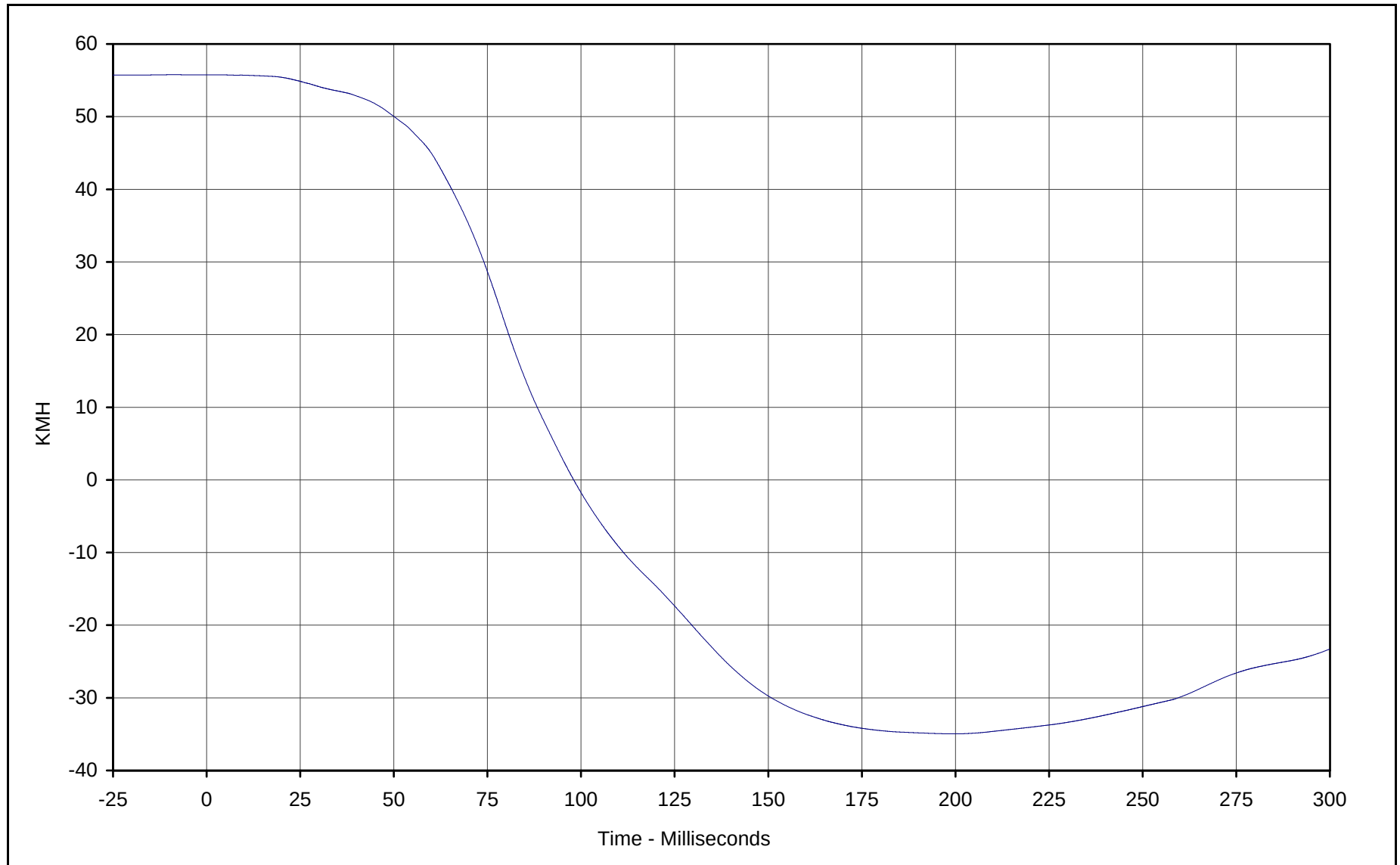




Curve Description: Passenger Head Primary X
Maximum Value: 7.5 at 267.0 Milliseconds
Minimum Value: -44.5 at 79.0 Milliseconds
SAE Filter Class: 1000
Date of Test: 3/6/01
Curve Number: FIL-045

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan





Curve Description: Passenger Head Primary X Velocity

Maximum Value: 55.8 at 0.0 Milliseconds

Minimum Value: -35.0 at 199.4 Milliseconds

SAE Filter Class: 180

Date of Test: 3/6/01

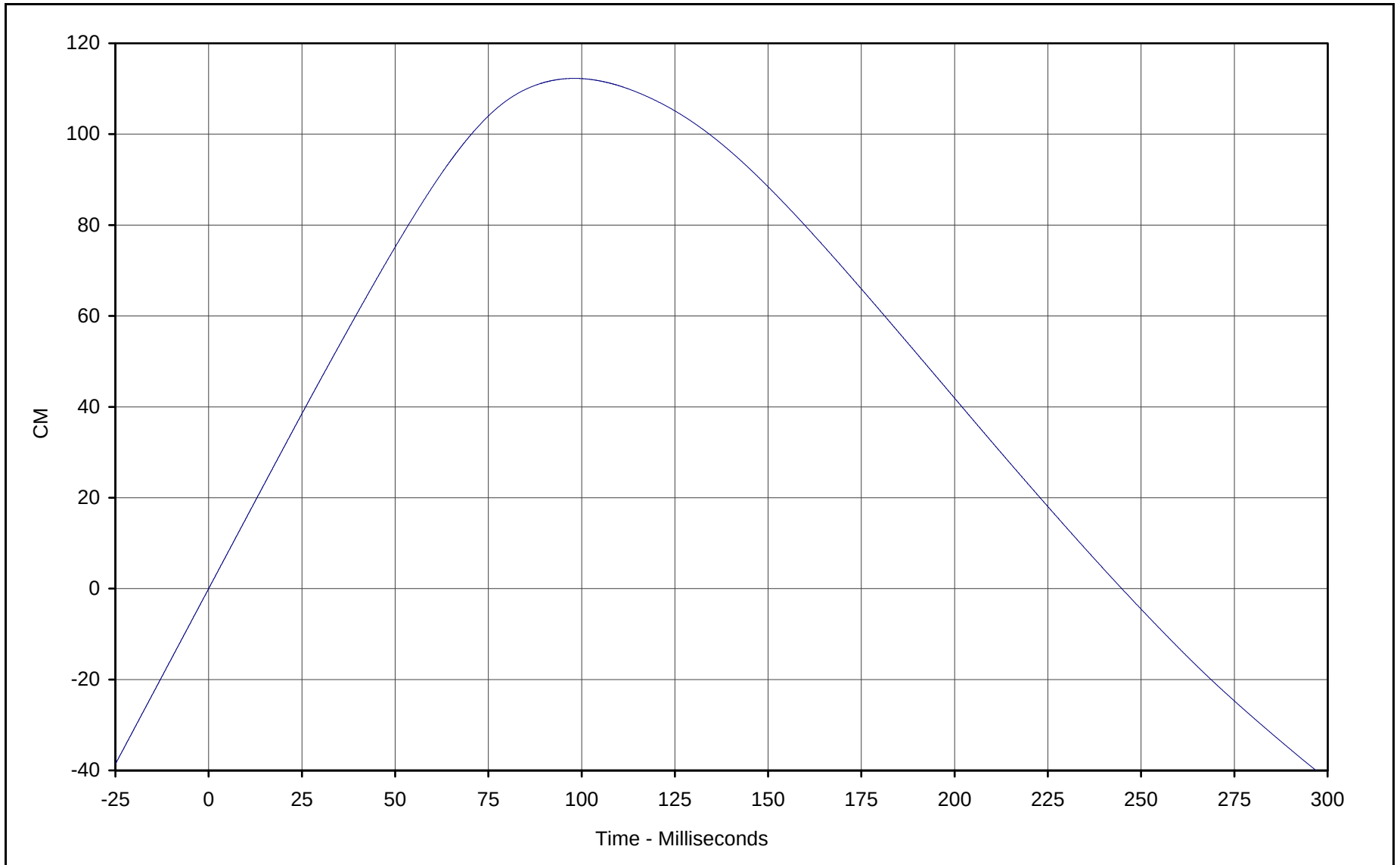
Curve Number: IN1-045

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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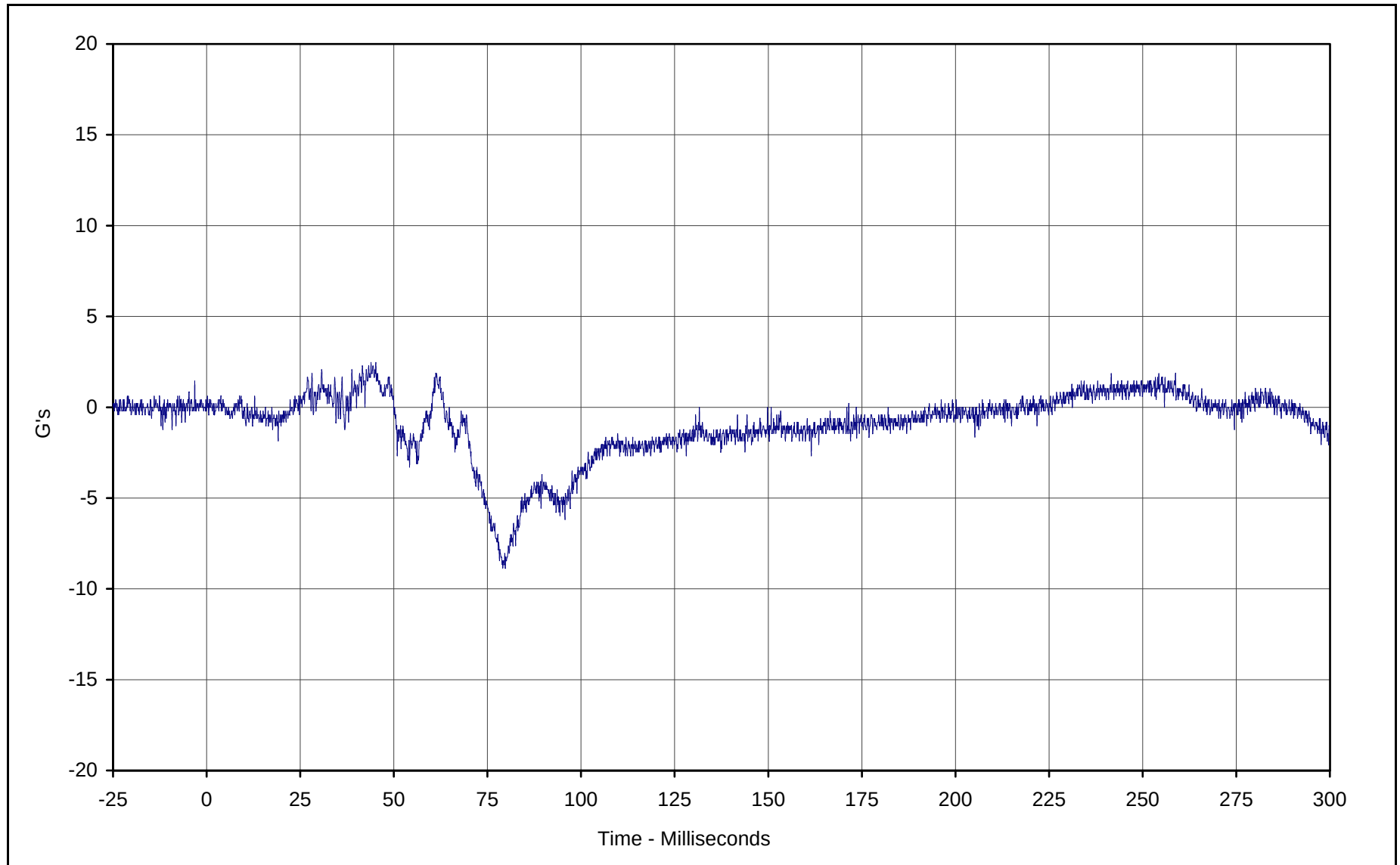
Curve Description: Passenger Head Primary X Displ.
Maximum Value: 112.3 at 98.0 Milliseconds
Minimum Value: -42.0 at 299.9 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: IN2-045

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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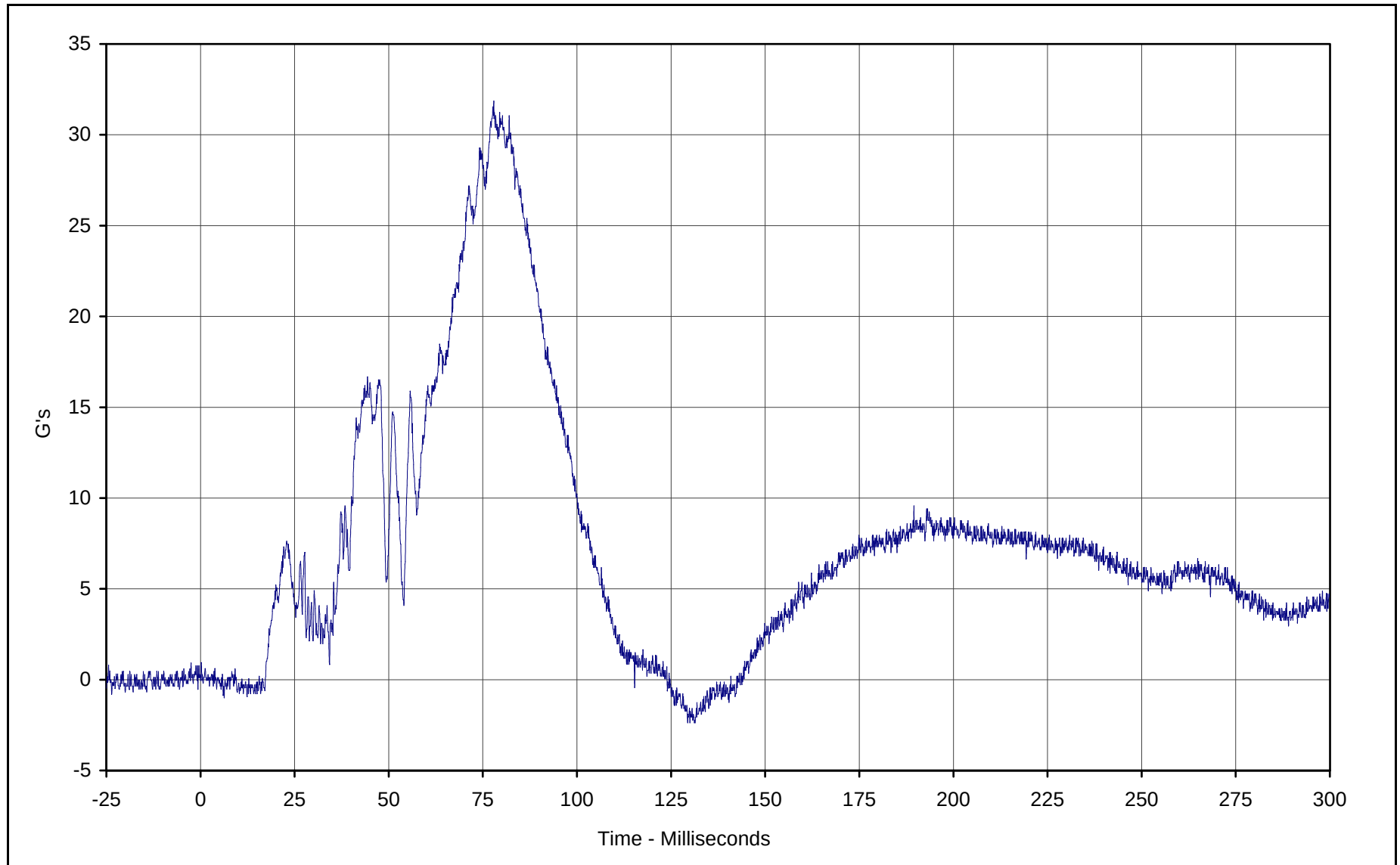


Curve Description: Passenger Head Primary Y
Maximum Value: 2.5 at 43.9 Milliseconds
Minimum Value: -8.9 at 79.1 Milliseconds
SAE Filter Class: 1000
Date of Test: 3/6/01
Curve Number: FIL-046

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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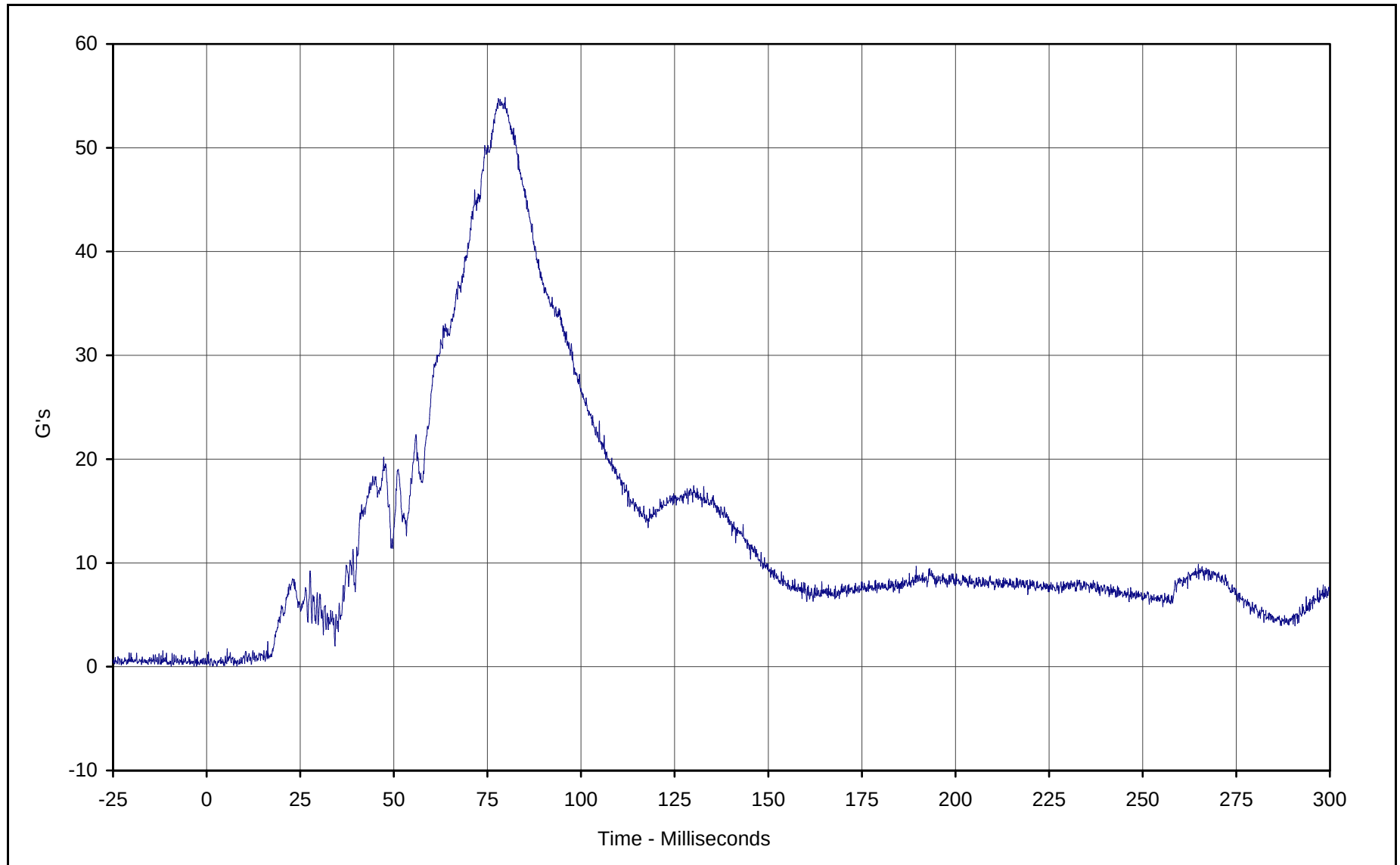


Curve Description: Passenger Head Primary Z
Maximum Value: 31.9 at 77.9 Milliseconds
Minimum Value: -2.4 at 129.4 Milliseconds
SAE Filter Class: 1000
Date of Test: 3/6/01
Curve Number: FIL-047

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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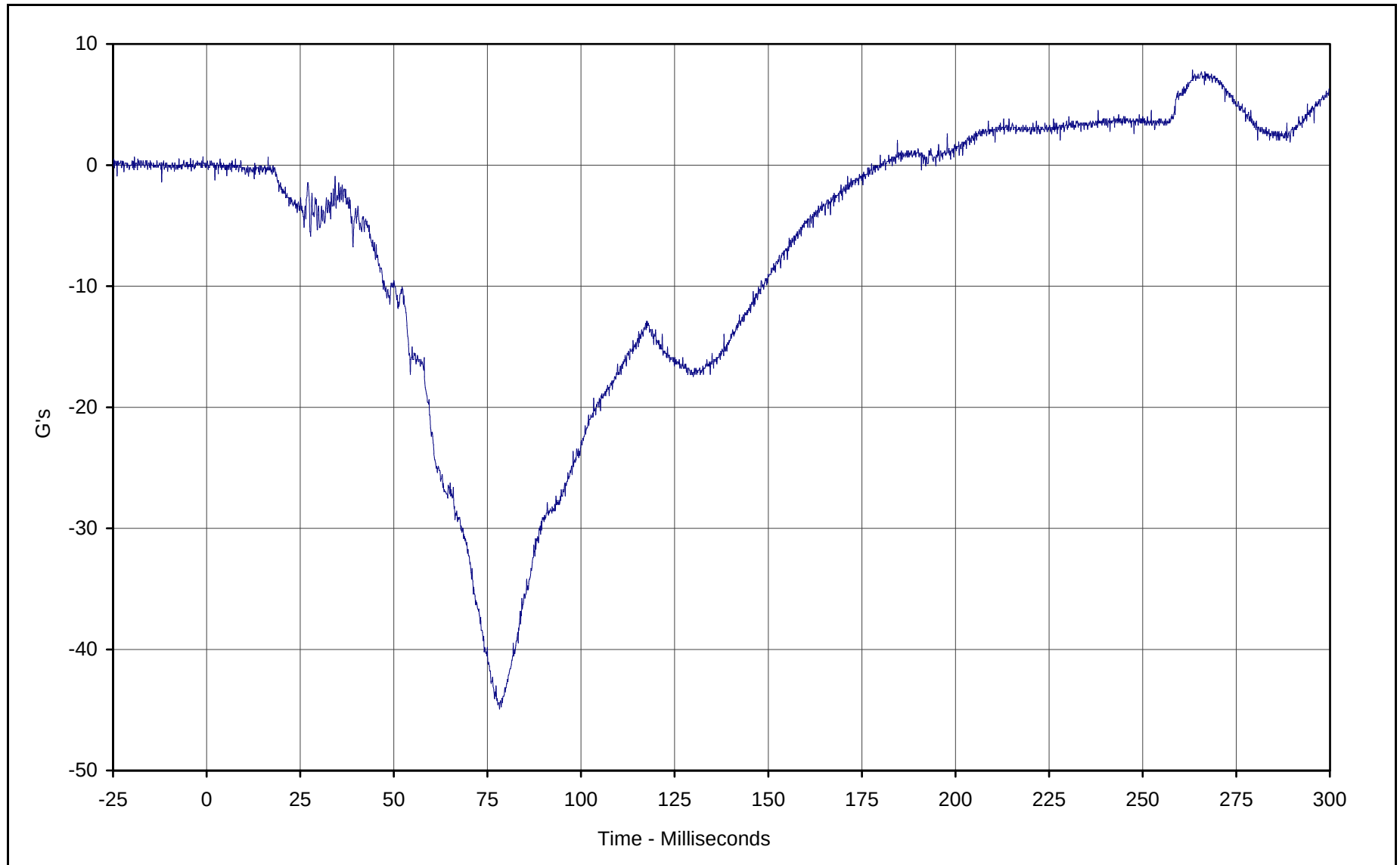
Curve Description: Passenger Head Resultant Primary
Maximum Value: 54.9 at 79.7 Milliseconds
Minimum Value: 0.0 at 1.6 Milliseconds
SAE Filter Class: 1000
Date of Test: 3/6/01
Curve Number: RES-045

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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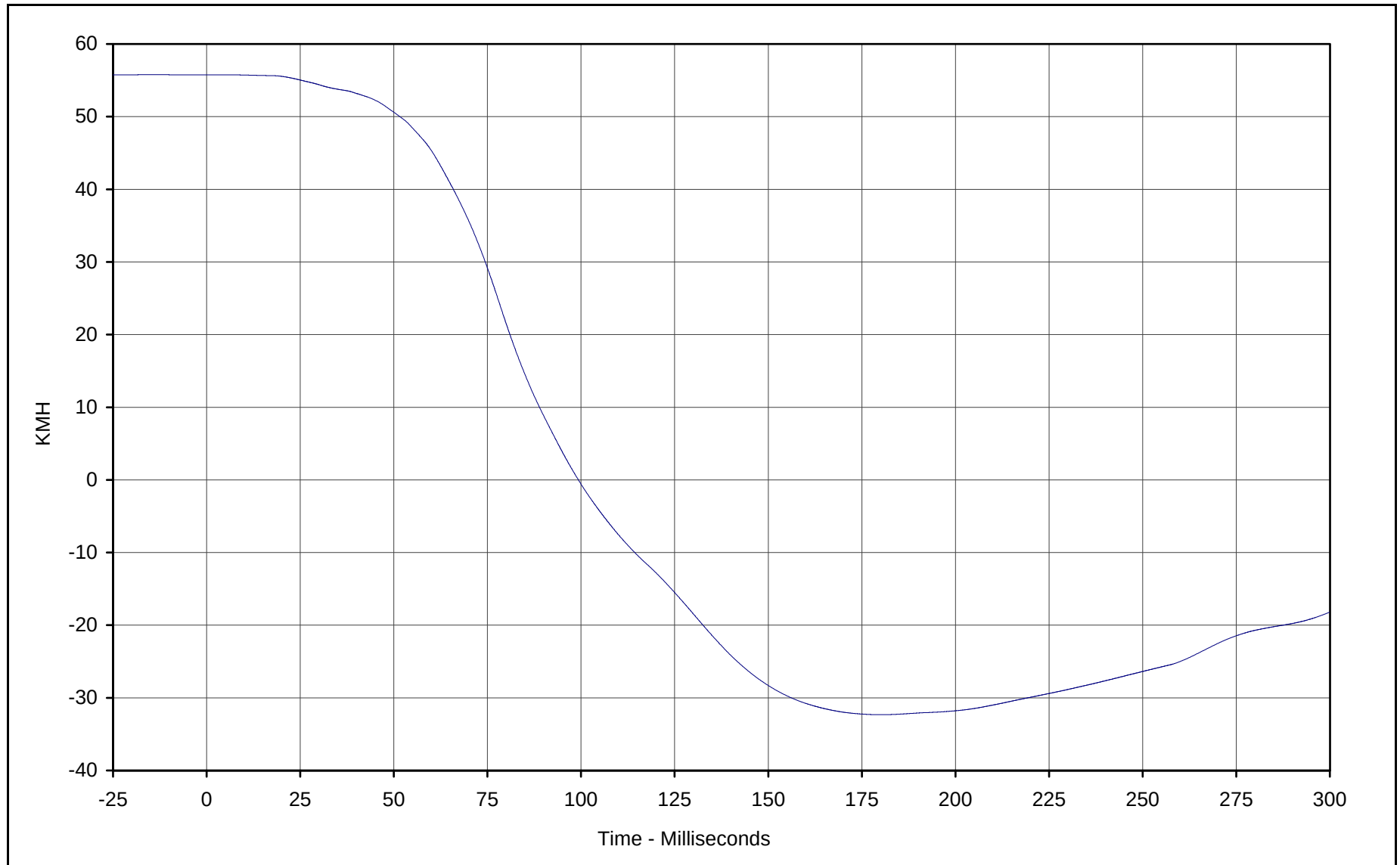


Curve Description: Passenger Head Redundant X
Maximum Value: 7.9 at 263.3 Milliseconds
Minimum Value: -44.9 at 78.2 Milliseconds
SAE Filter Class: 1000
Date of Test: 3/6/01
Curve Number: FIL-048

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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Curve Description: Passenger Head Redundant X Velocity

Maximum Value: 55.8 at 0.1 Milliseconds

Minimum Value: -32.3 at 179.9 Milliseconds

SAE Filter Class: 180

Date of Test: 3/6/01

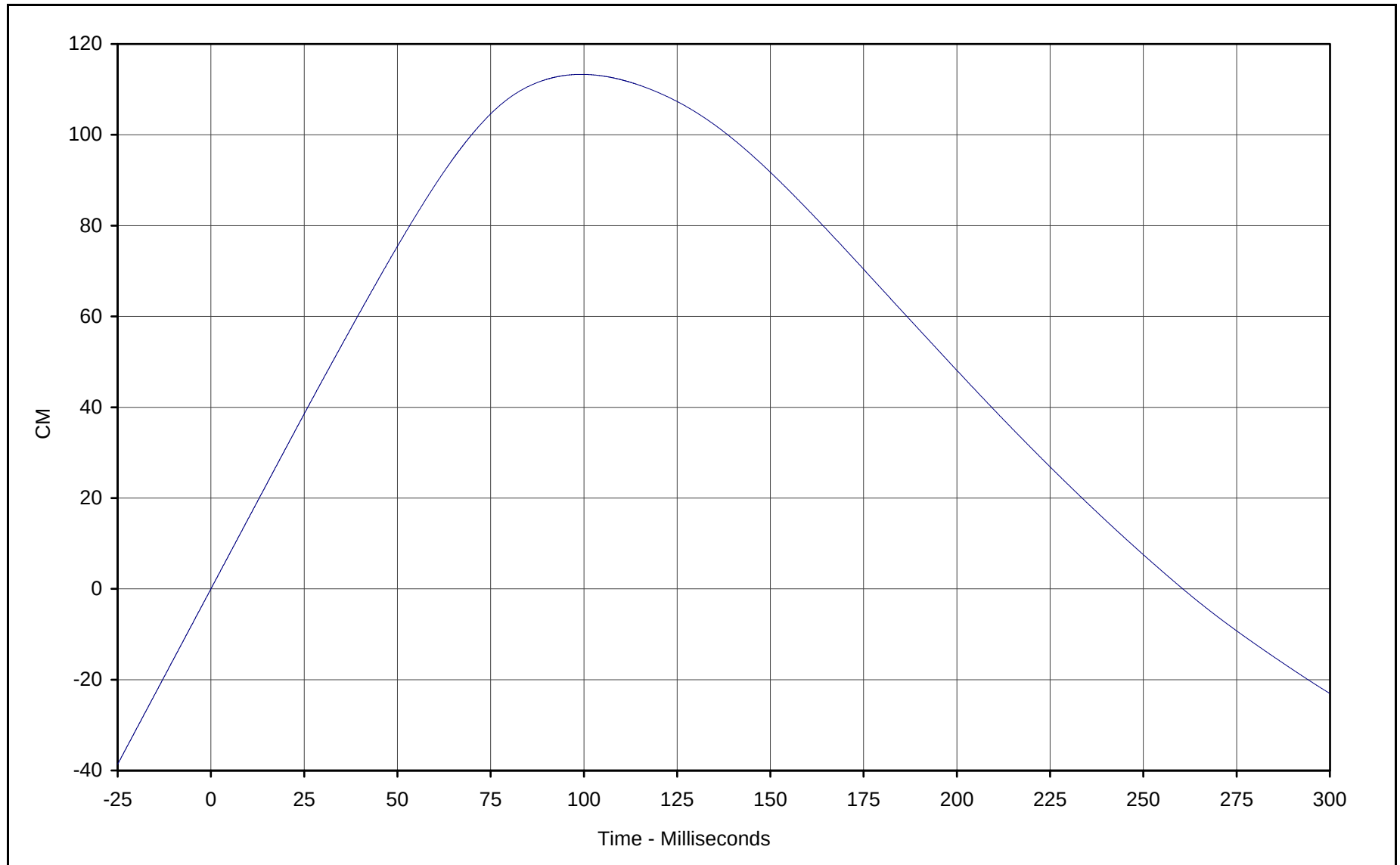
Curve Number: IN1-048

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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Curve Description: Passenger Head Redundant X Displ.

Maximum Value: 113.3 at 99.3 Milliseconds

Minimum Value: -23.0 at 299.9 Milliseconds

SAE Filter Class: 180

Date of Test: 3/6/01

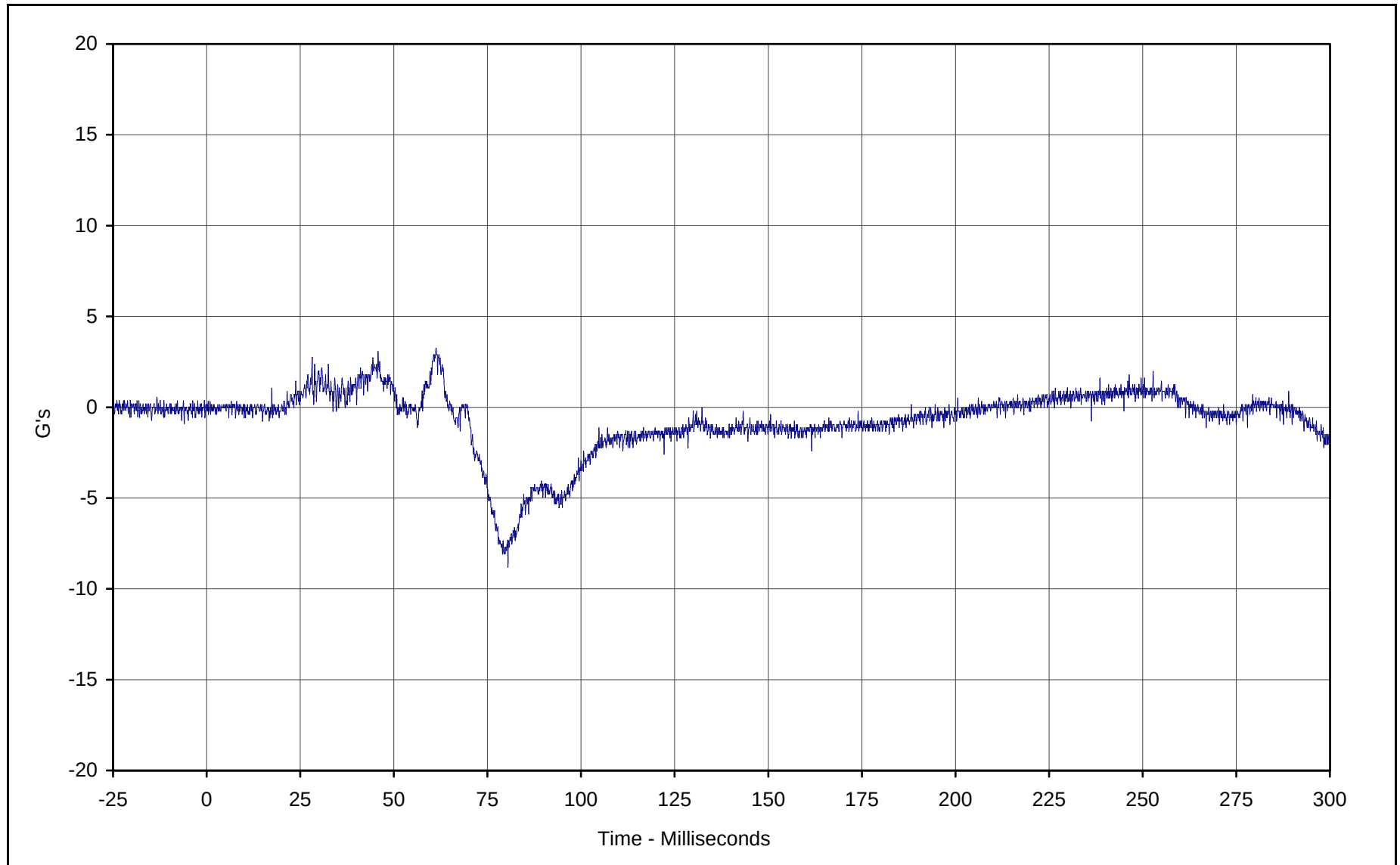
Curve Number: IN2-048

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan



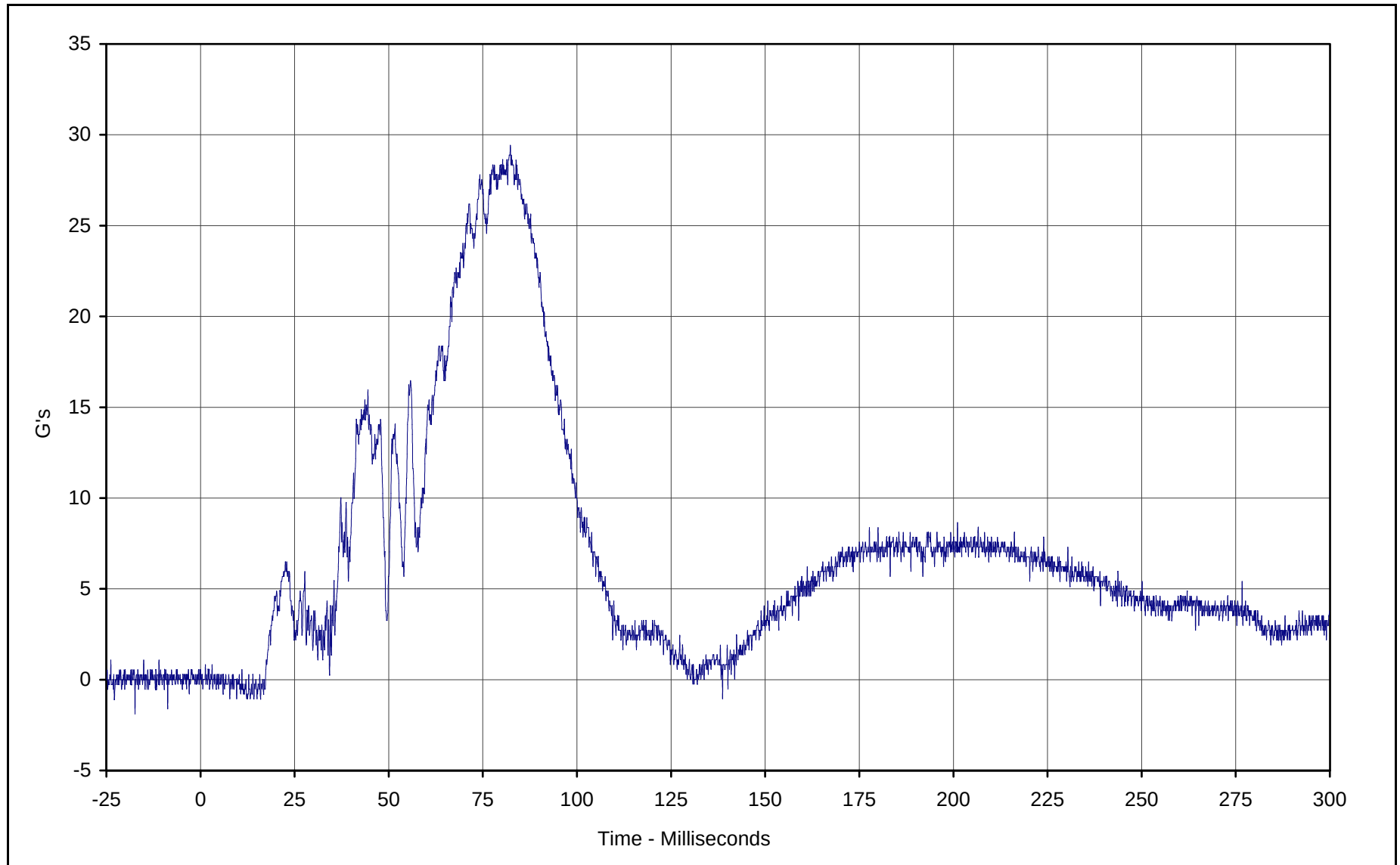
KAR21001-17



Curve Description: Passenger Head Redundant Y
Maximum Value: 3.3 at 61.3 Milliseconds
Minimum Value: -8.8 at 80.5 Milliseconds
SAE Filter Class: 1000
Date of Test: 3/6/01
Curve Number: FIL-049

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

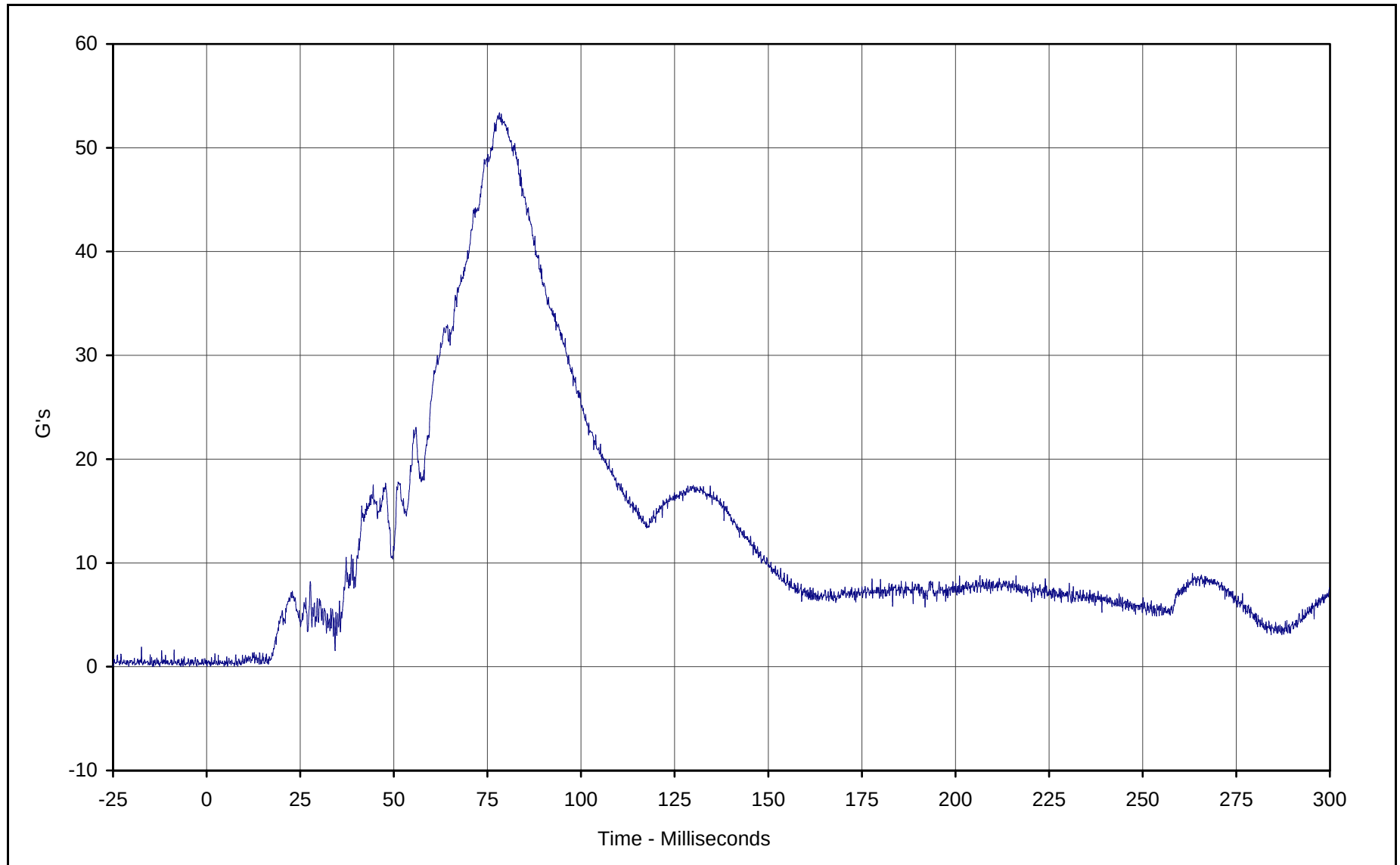




Curve Description: Passenger Head Redundant Z
Maximum Value: 29.4 at 82.3 Milliseconds
Minimum Value: -1.1 at 7.8 Milliseconds
SAE Filter Class: 1000
Date of Test: 3/6/01
Curve Number: FIL-050

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan





Curve Description: Passenger Head Resultant Redundant

Maximum Value: 53.4 at 78.2 Milliseconds

Minimum Value: 0.0 at 0.1 Milliseconds

SAE Filter Class: 1000

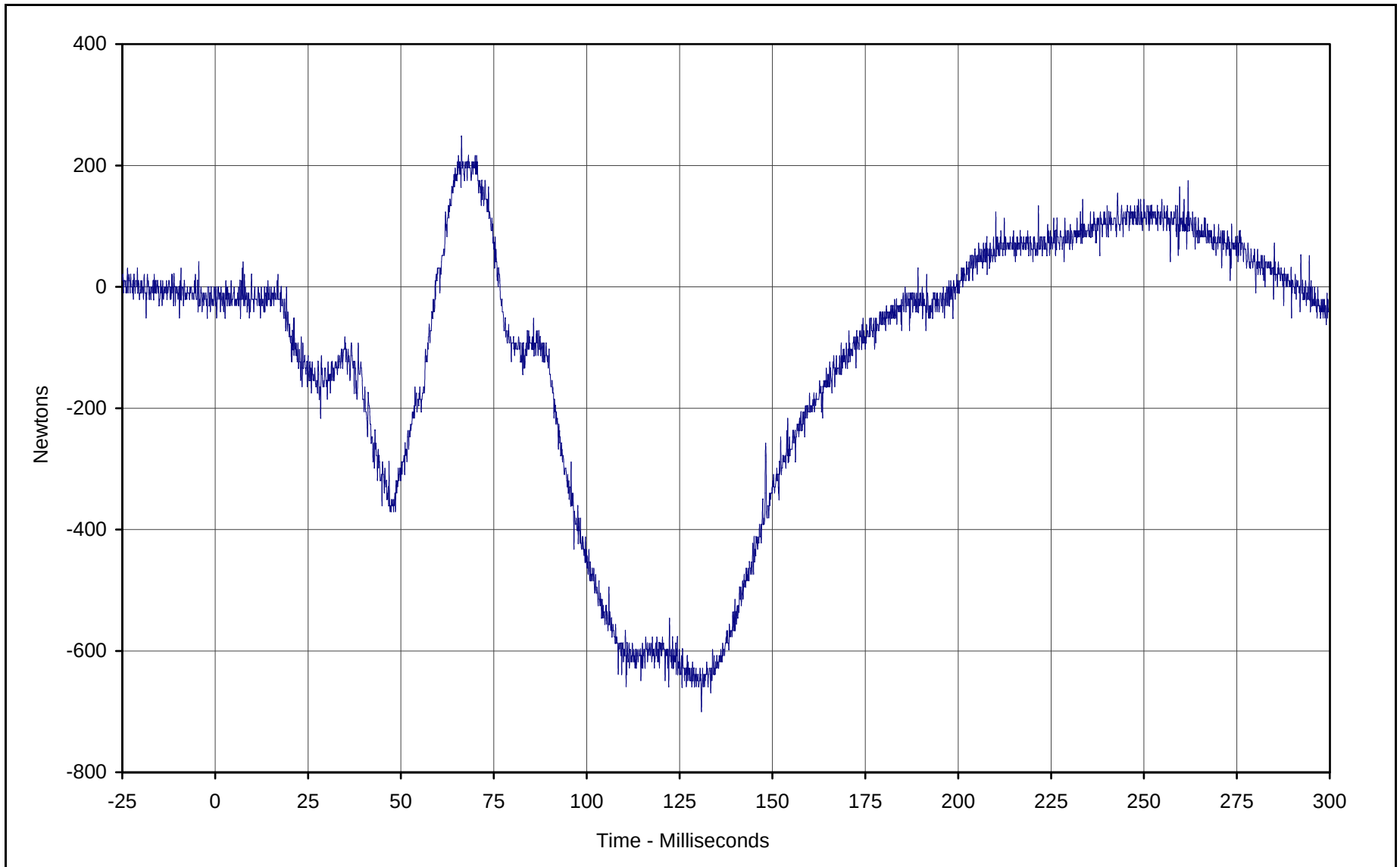
Date of Test: 3/6/01

Curve Number: RES-048

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan



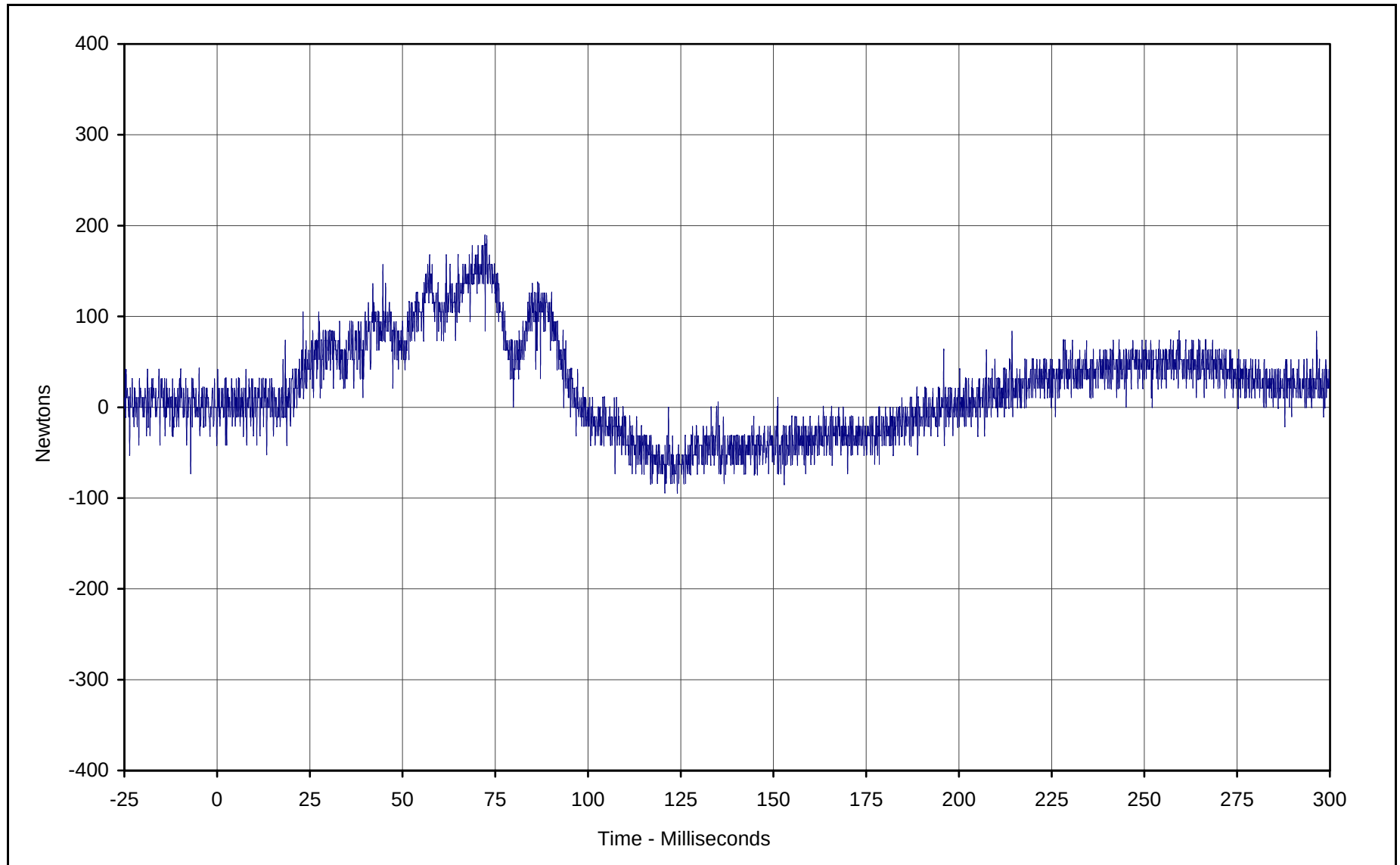


Curve Description: Passenger Neck Force X
Maximum Value: 247.2 at 66.3 Milliseconds
Minimum Value: -700.5 at 130.9 Milliseconds
SAE Filter Class: 1000
Date of Test: 3/6/01
Curve Number: FIL-051

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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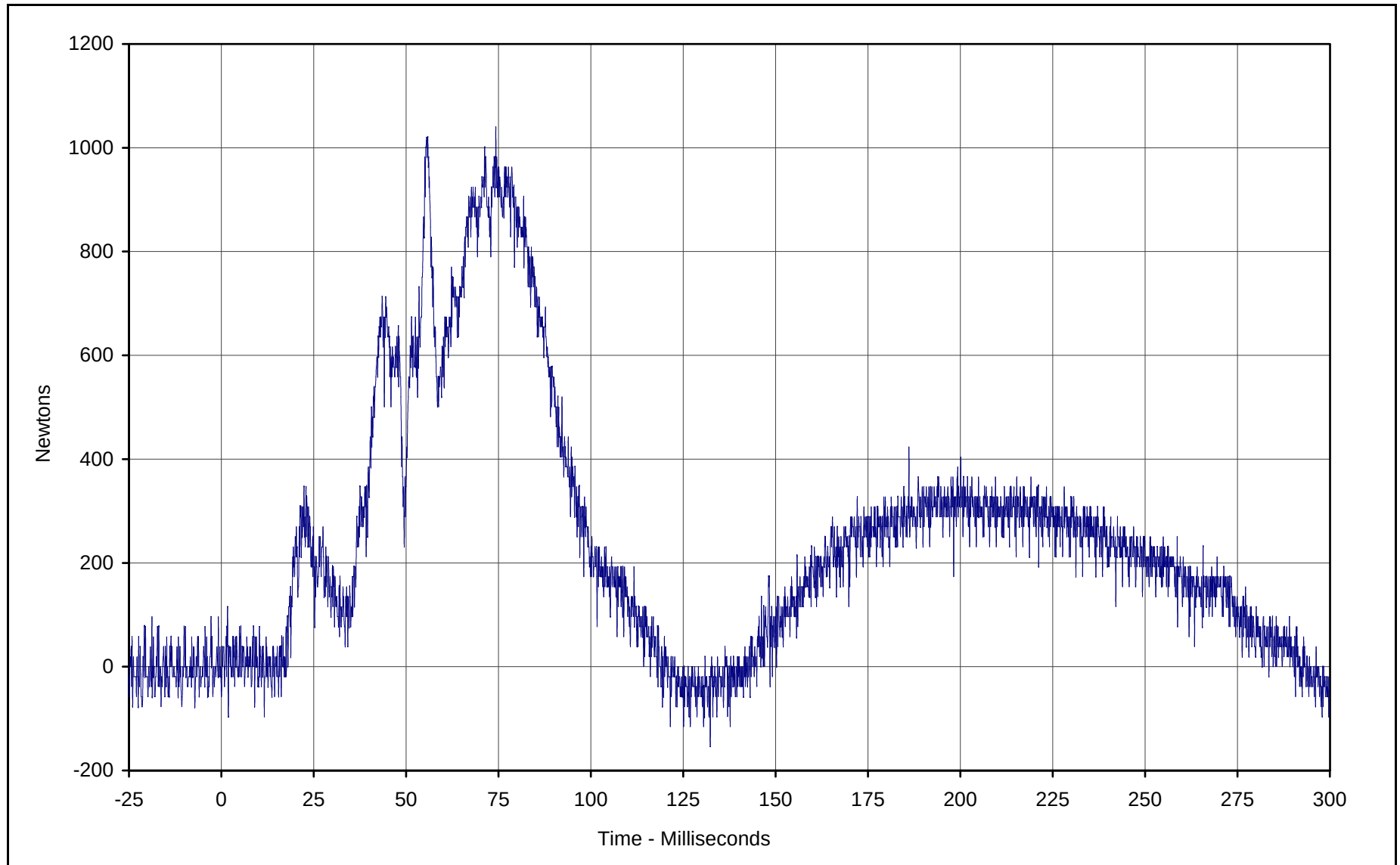


Curve Description: Passenger Neck Force Y
Maximum Value: 188.7 at 72.2 Milliseconds
Minimum Value: -94.3 at 120.7 Milliseconds
SAE Filter Class: 1000
Date of Test: 3/6/01
Curve Number: FIL-052

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



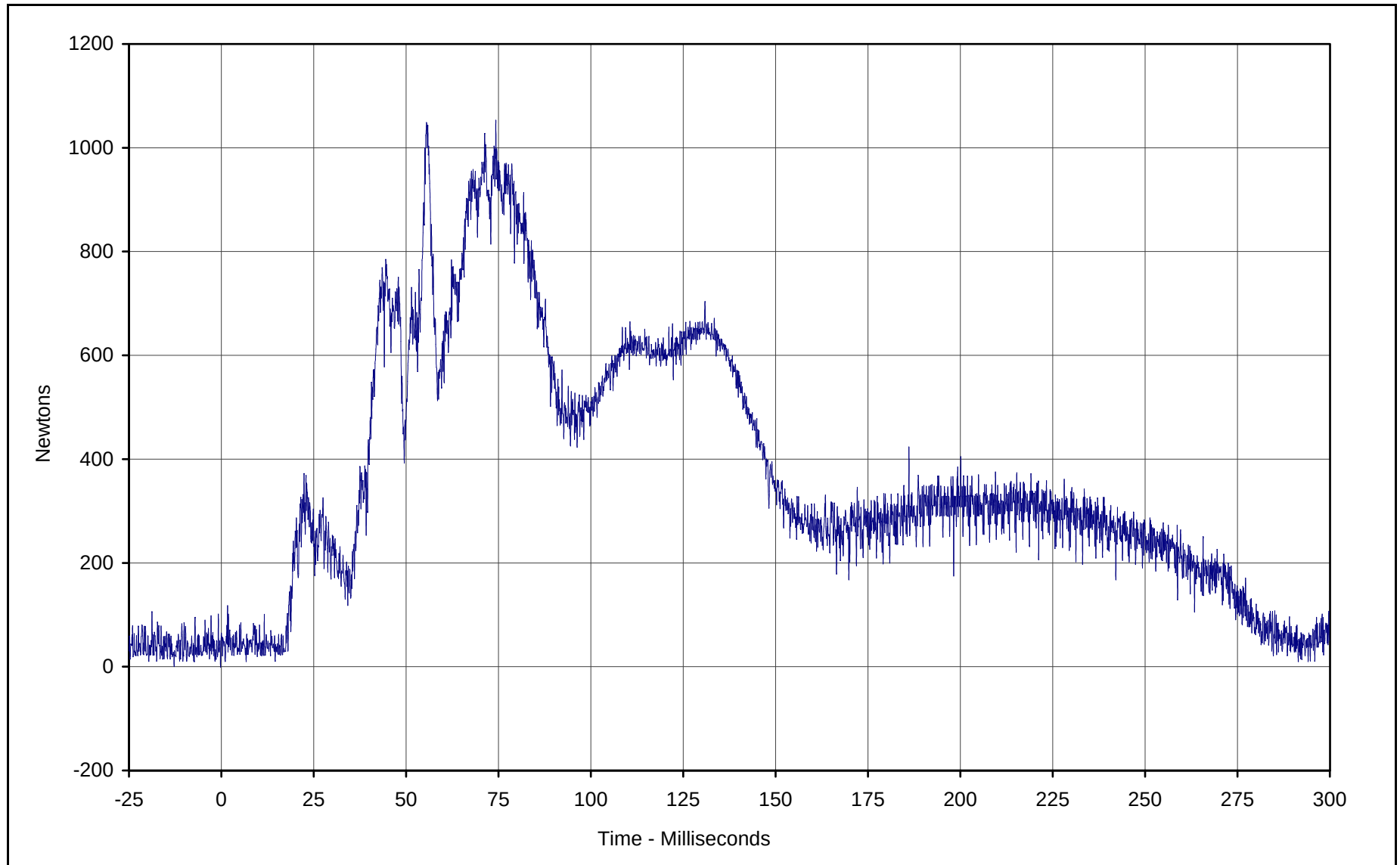
KAR21001-17



Curve Description: Passenger Neck Force Z
Maximum Value: 1039.8 at 74.3 Milliseconds
Minimum Value: -154.1 at 132.3 Milliseconds
SAE Filter Class: 1000
Date of Test: 3/6/01
Curve Number: FIL-053

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

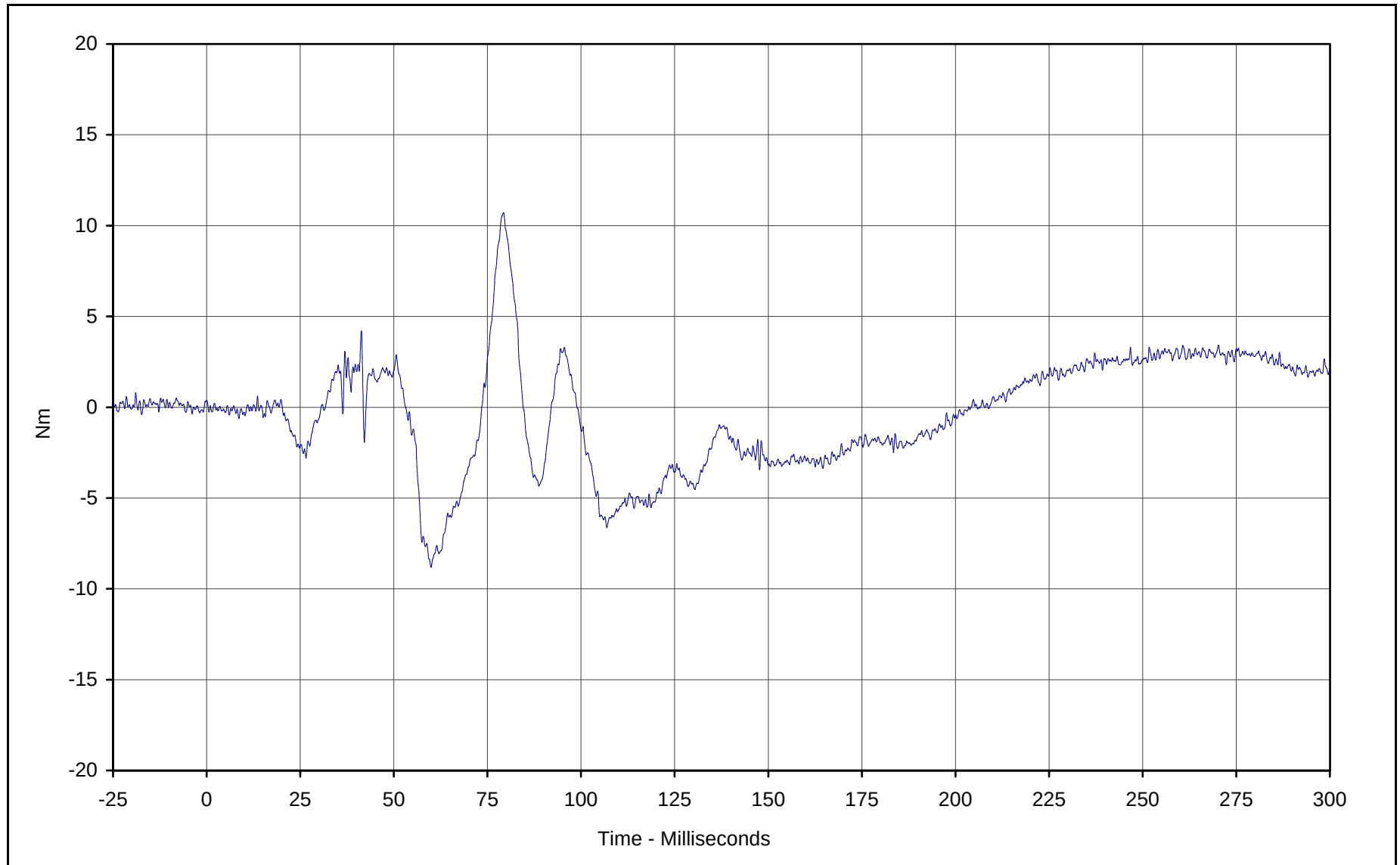




Curve Description: Passenger Neck Force Resultant
Maximum Value: 1052.8 at 74.3 Milliseconds
Minimum Value: 10.3 at 1.0 Milliseconds
SAE Filter Class: 1000
Date of Test: 3/6/01
Curve Number: RES-051

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

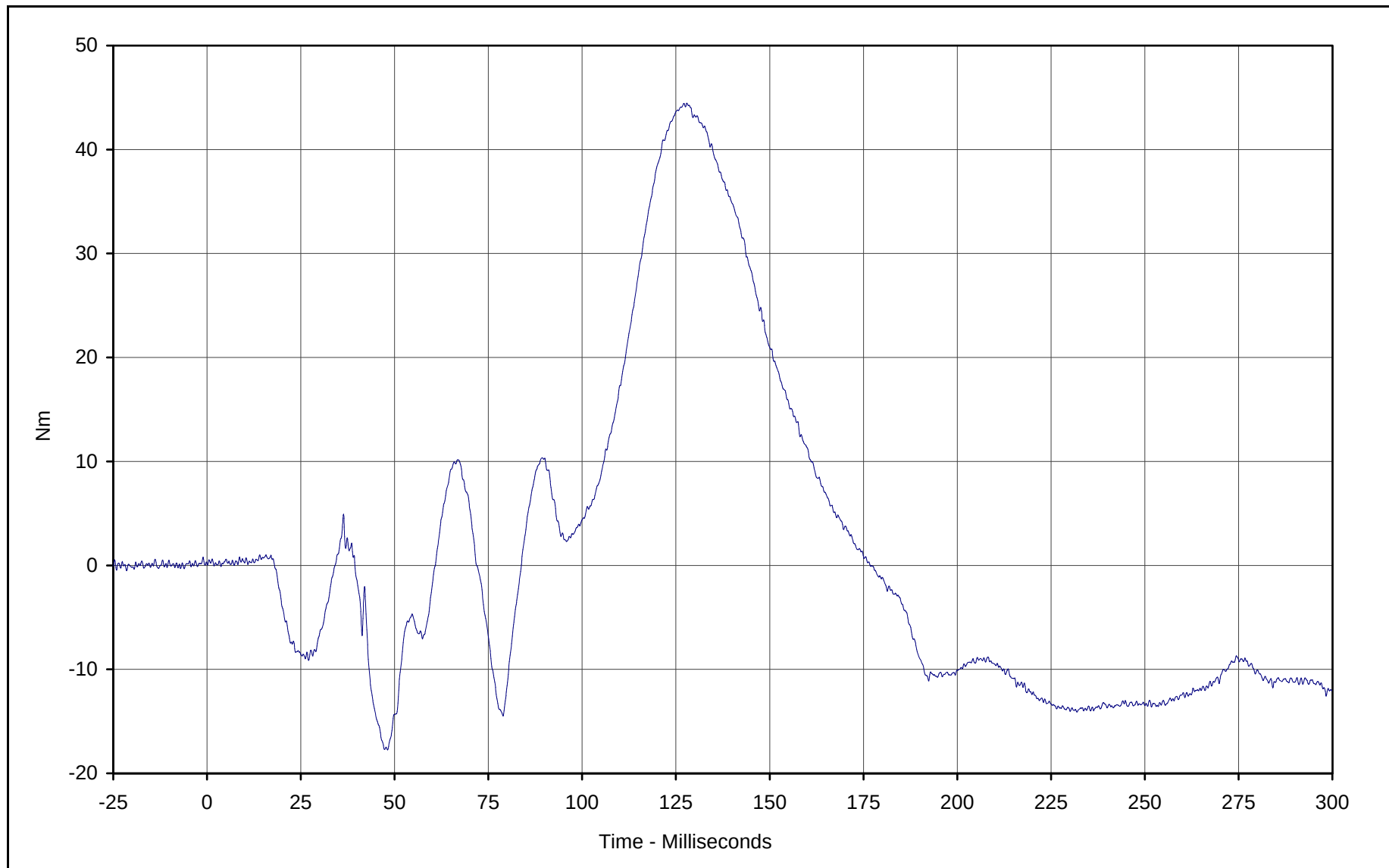




Curve Description: Passenger Neck Moment X
Maximum Value: 10.7 at 79.3 Milliseconds
Minimum Value: -8.8 at 59.9 Milliseconds
SAE Filter Class: 600
Date of Test: 3/6/01
Curve Number: FIL-054

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

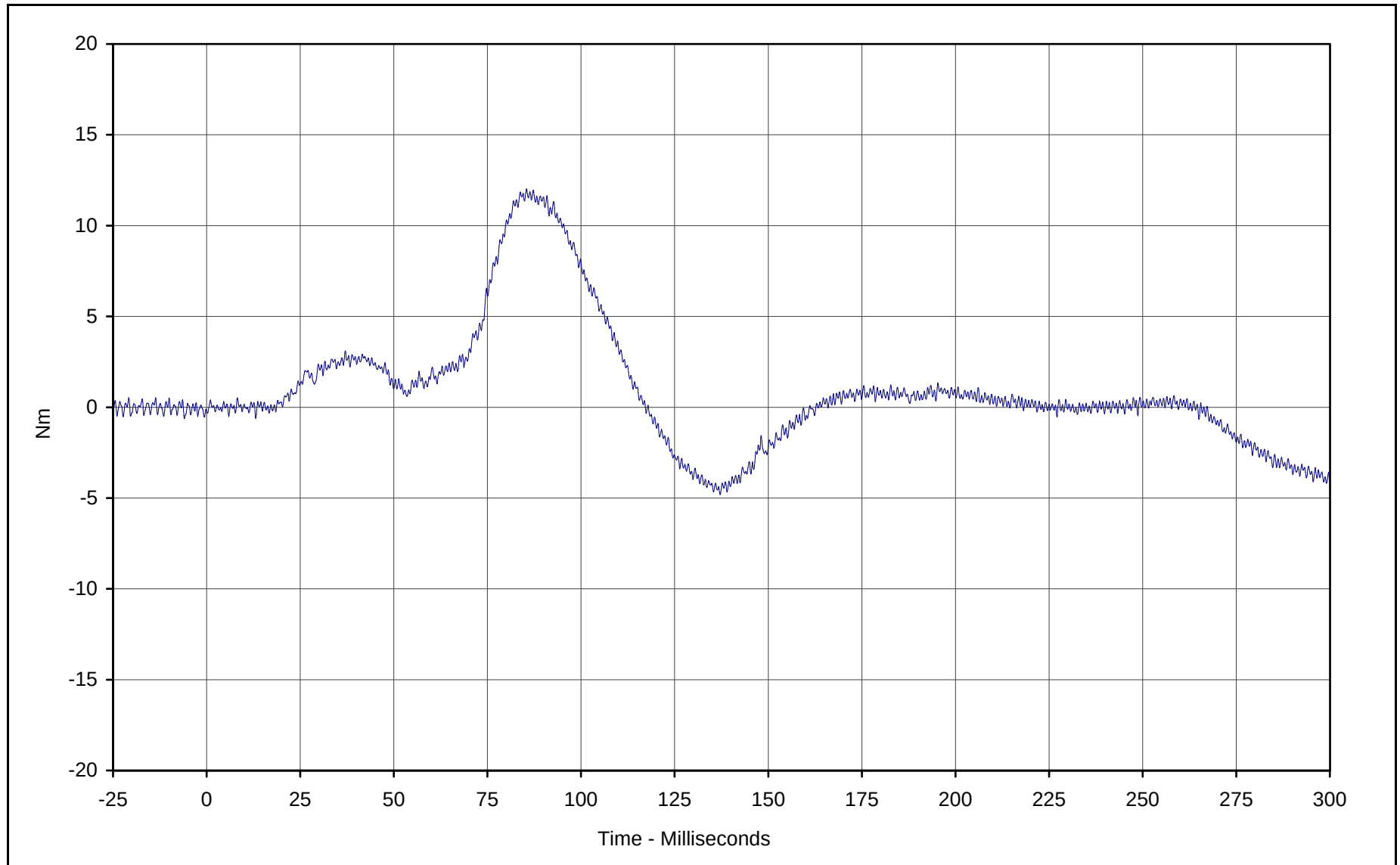




Curve Description: Passenger Neck Moment Y
Maximum Value: 44.5 at 127.9 Milliseconds
Minimum Value: -17.7 at 48.1 Milliseconds
SAE Filter Class: 600
Date of Test: 3/6/01
Curve Number: FIL-055

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

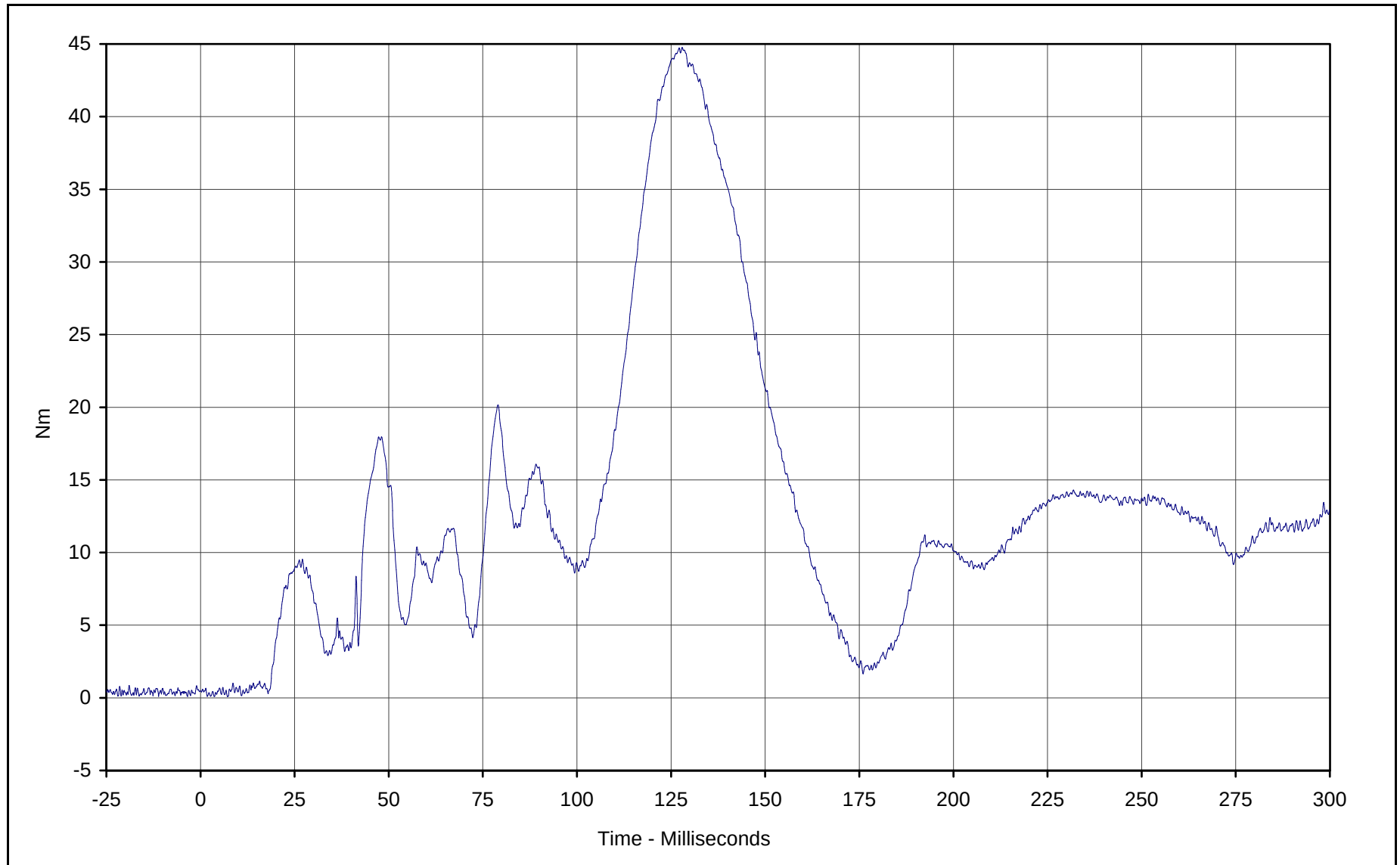




Curve Description: Passenger Neck Moment Z
Maximum Value: 12.0 at 85.4 Milliseconds
Minimum Value: -4.8 at 137.1 Milliseconds
SAE Filter Class: 600
Date of Test: 3/6/01
Curve Number: FIL-056

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

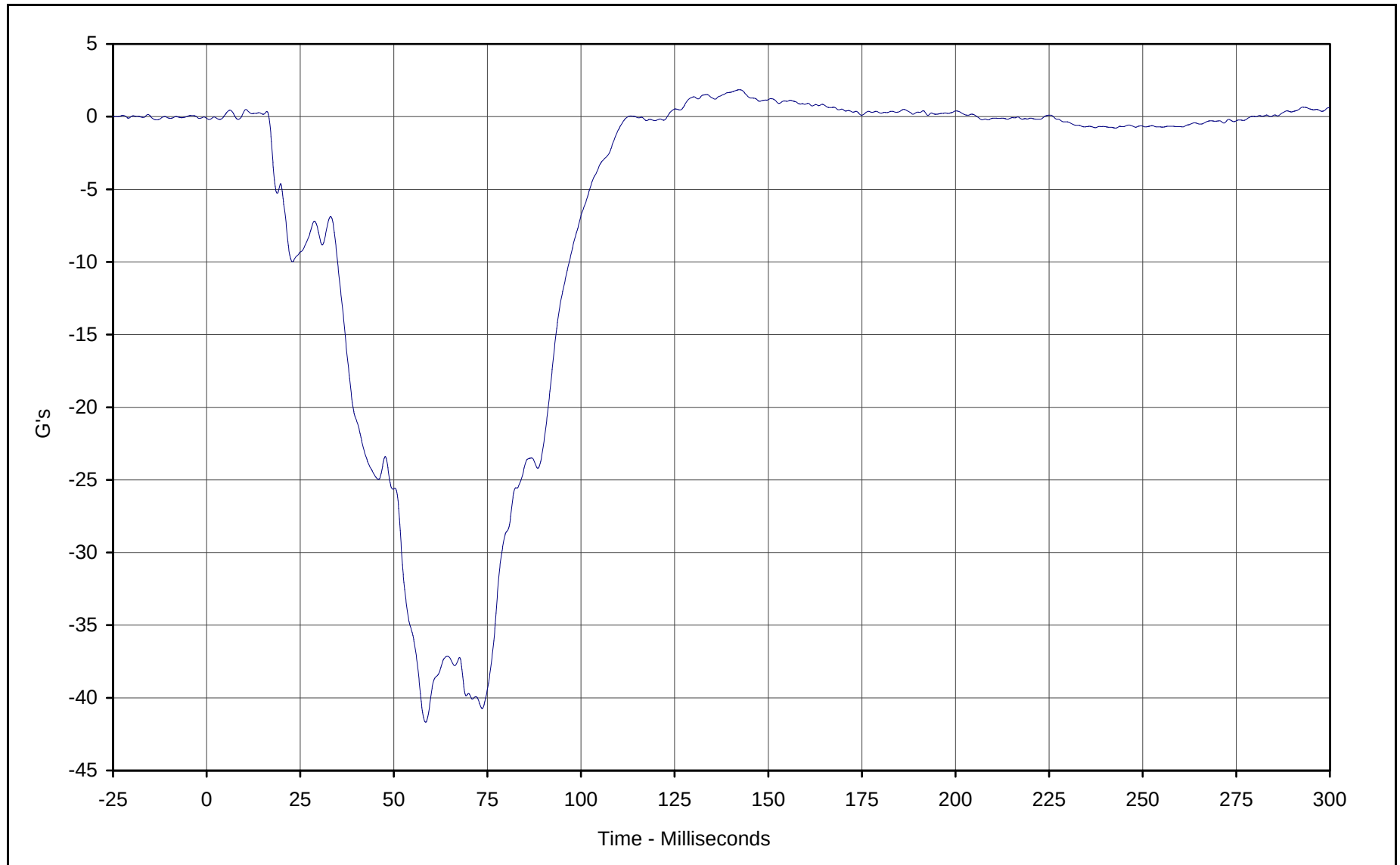




Curve Description: Passenger Neck Moment Resultant
Maximum Value: 44.8 at 127.9 Milliseconds
Minimum Value: 0.1 at 7.2 Milliseconds
SAE Filter Class: 600
Date of Test: 3/6/01
Curve Number: RES-054

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

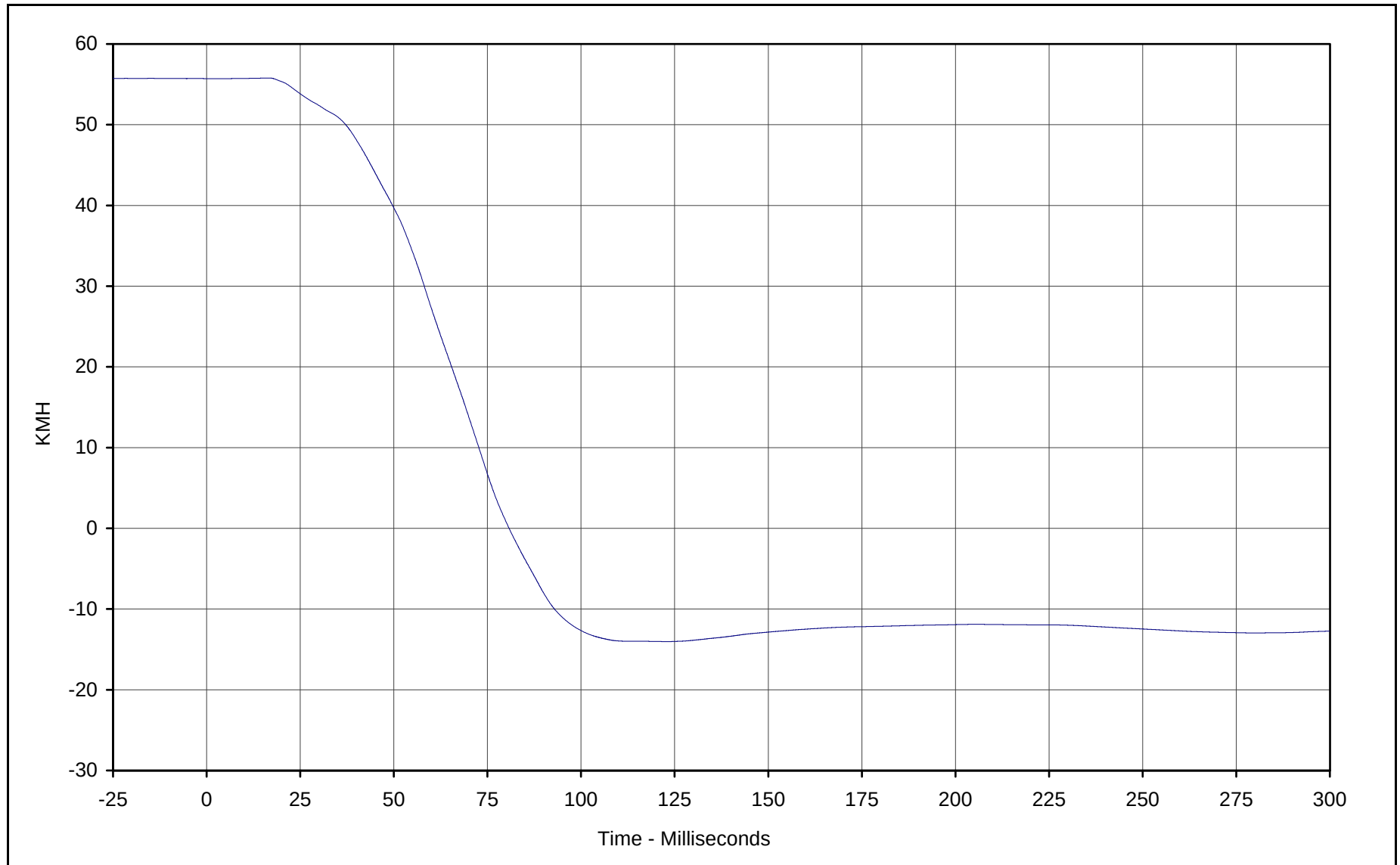




Curve Description: Passenger Chest Primary X
Maximum Value: 1.9 at 142.3 Milliseconds
Minimum Value: -41.7 at 58.5 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: FIL-057

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan





Curve Description: Passenger Chest Primary X Velocity

Maximum Value: 55.8 at 16.6 Milliseconds

Minimum Value: -14.0 at 123.0 Milliseconds

SAE Filter Class: 180

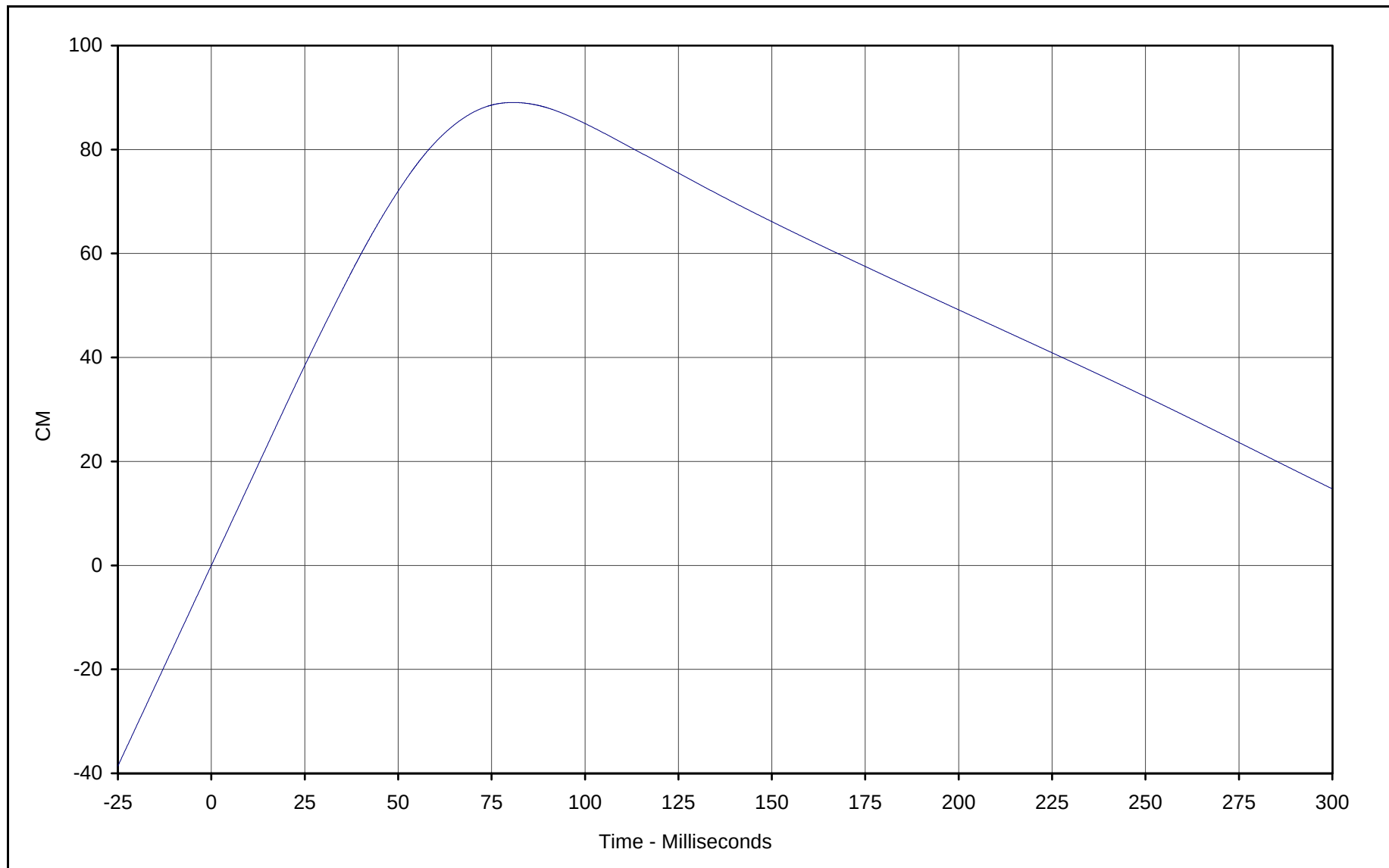
Date of Test: 3/6/01

Curve Number: IN1-057

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan



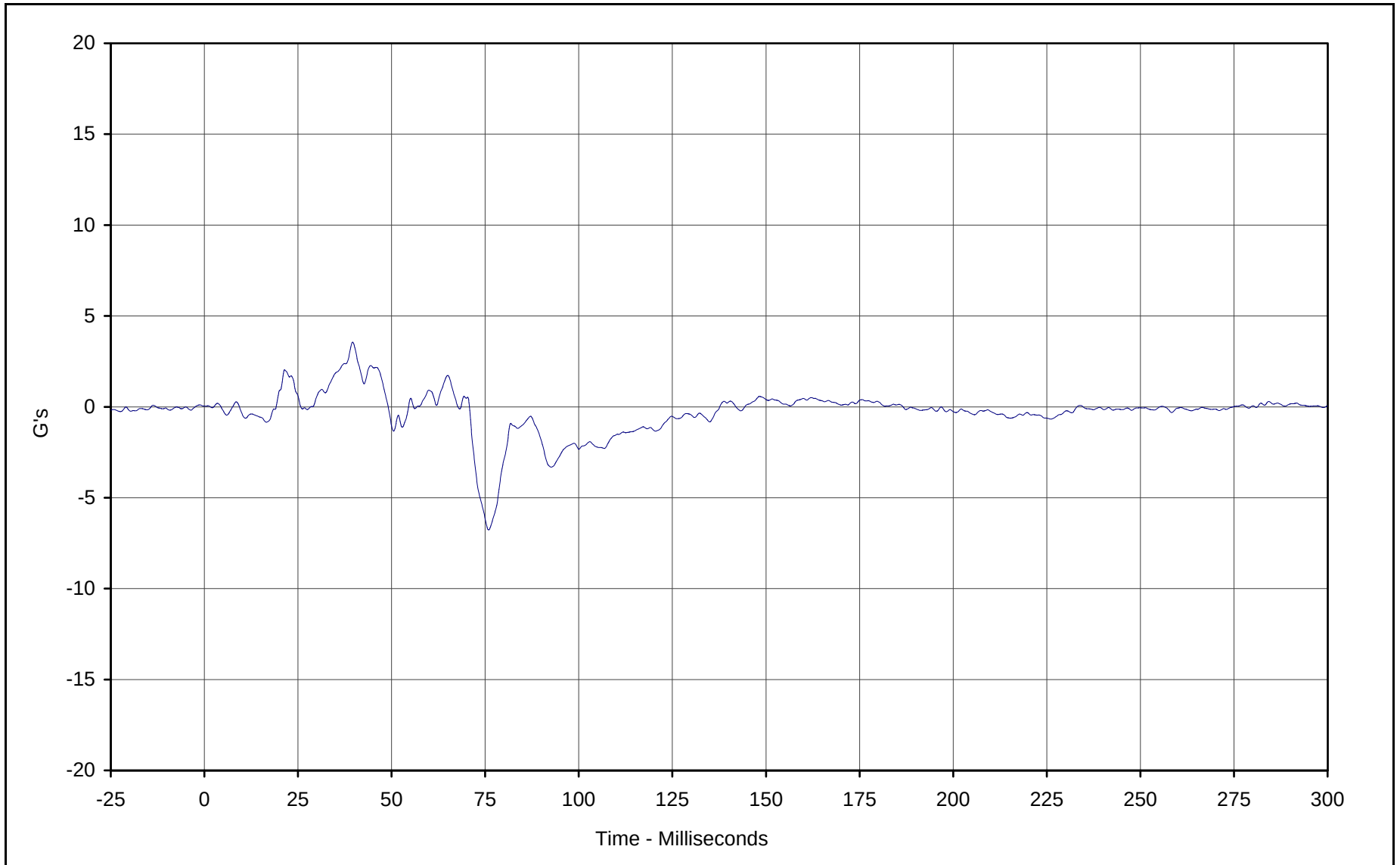


Curve Description: Passenger Chest Primary X Displ.
Maximum Value: 89.1 at 80.8 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: IN2-057

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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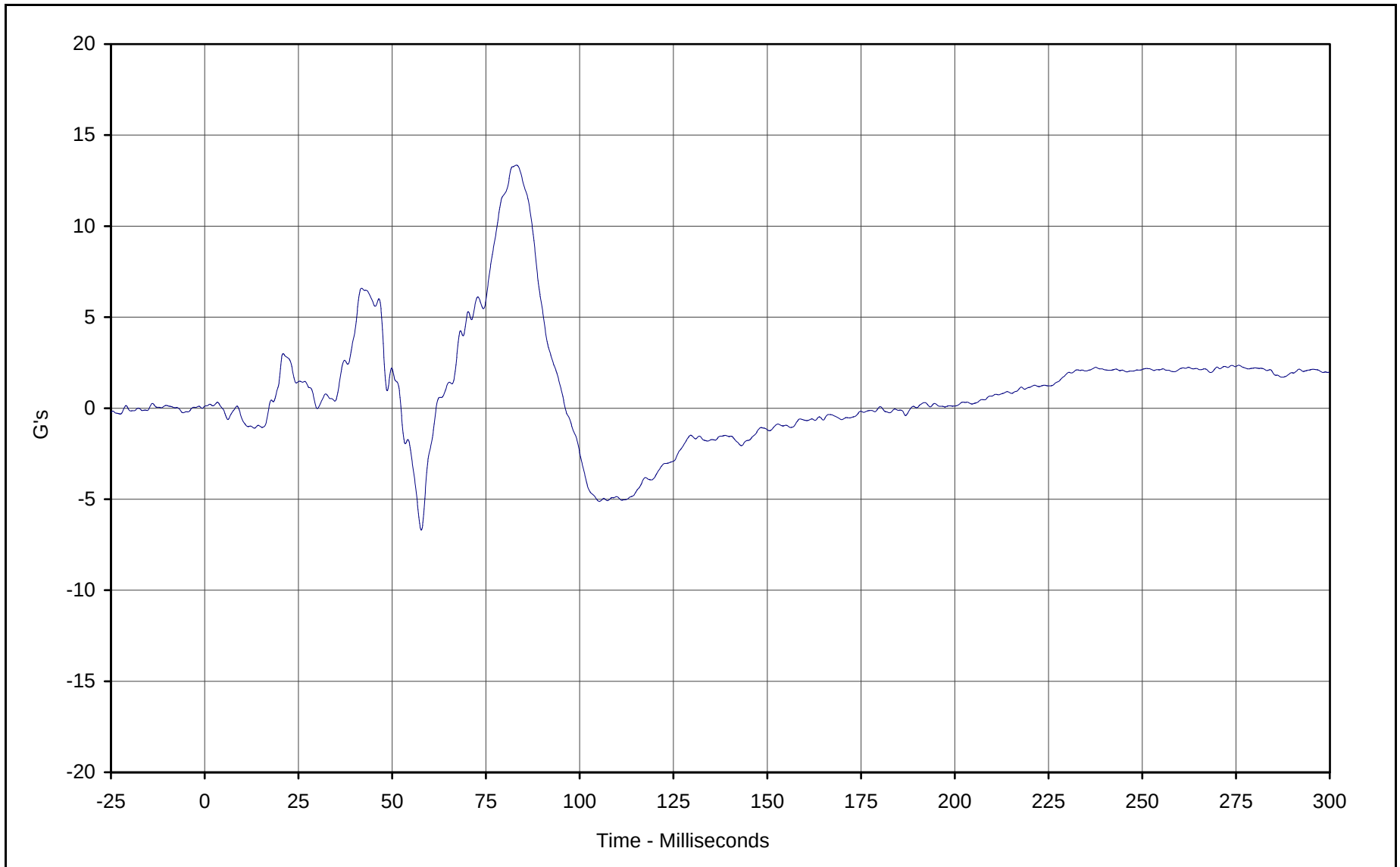


Curve Description: Passenger Chest Primary Y
Maximum Value: 3.6 at 39.6 Milliseconds
Minimum Value: -6.8 at 75.9 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: FIL-058

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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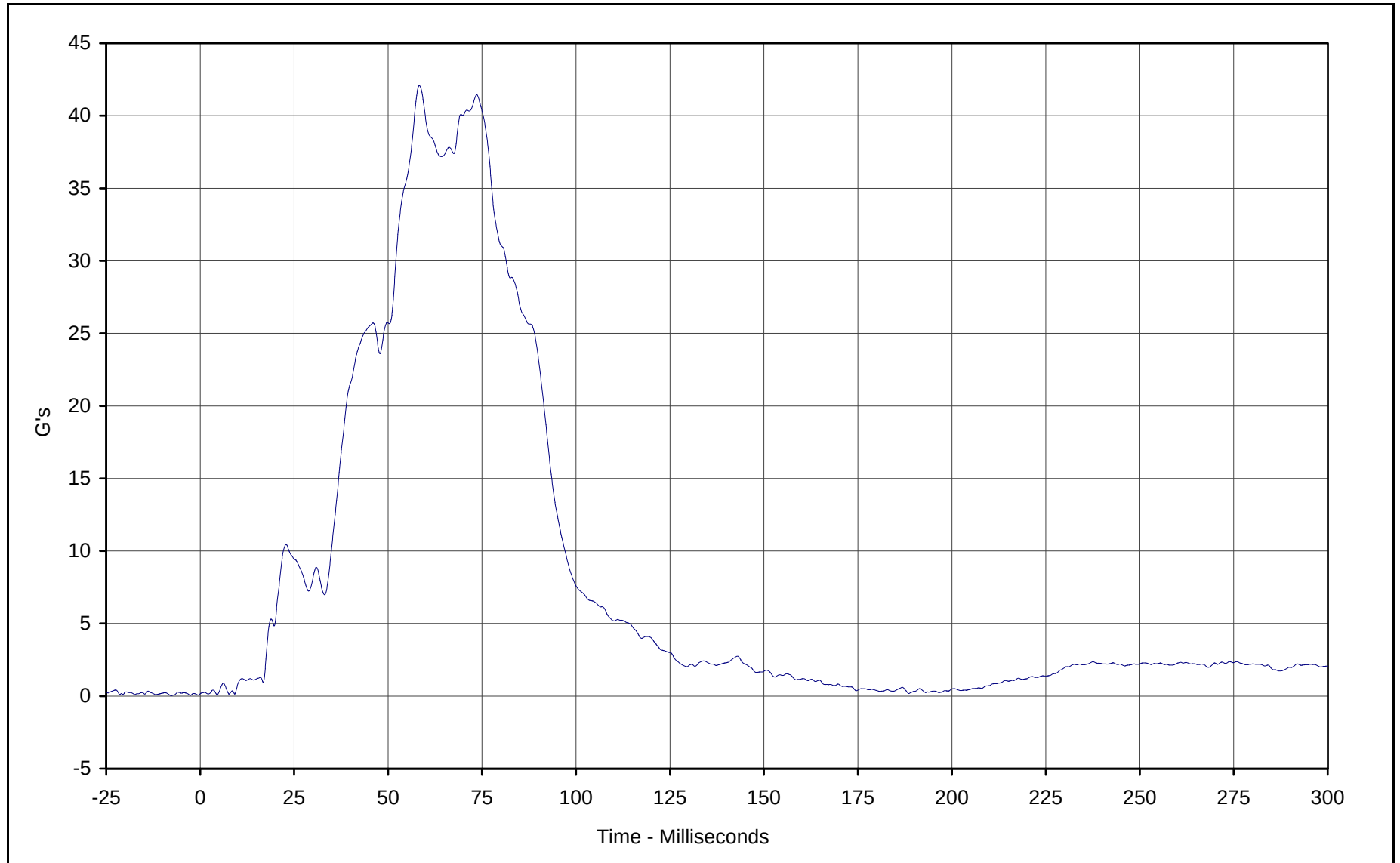


Curve Description: Passenger Chest Primary Z
Maximum Value: 13.4 at 83.1 Milliseconds
Minimum Value: -6.7 at 57.8 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: FIL-059

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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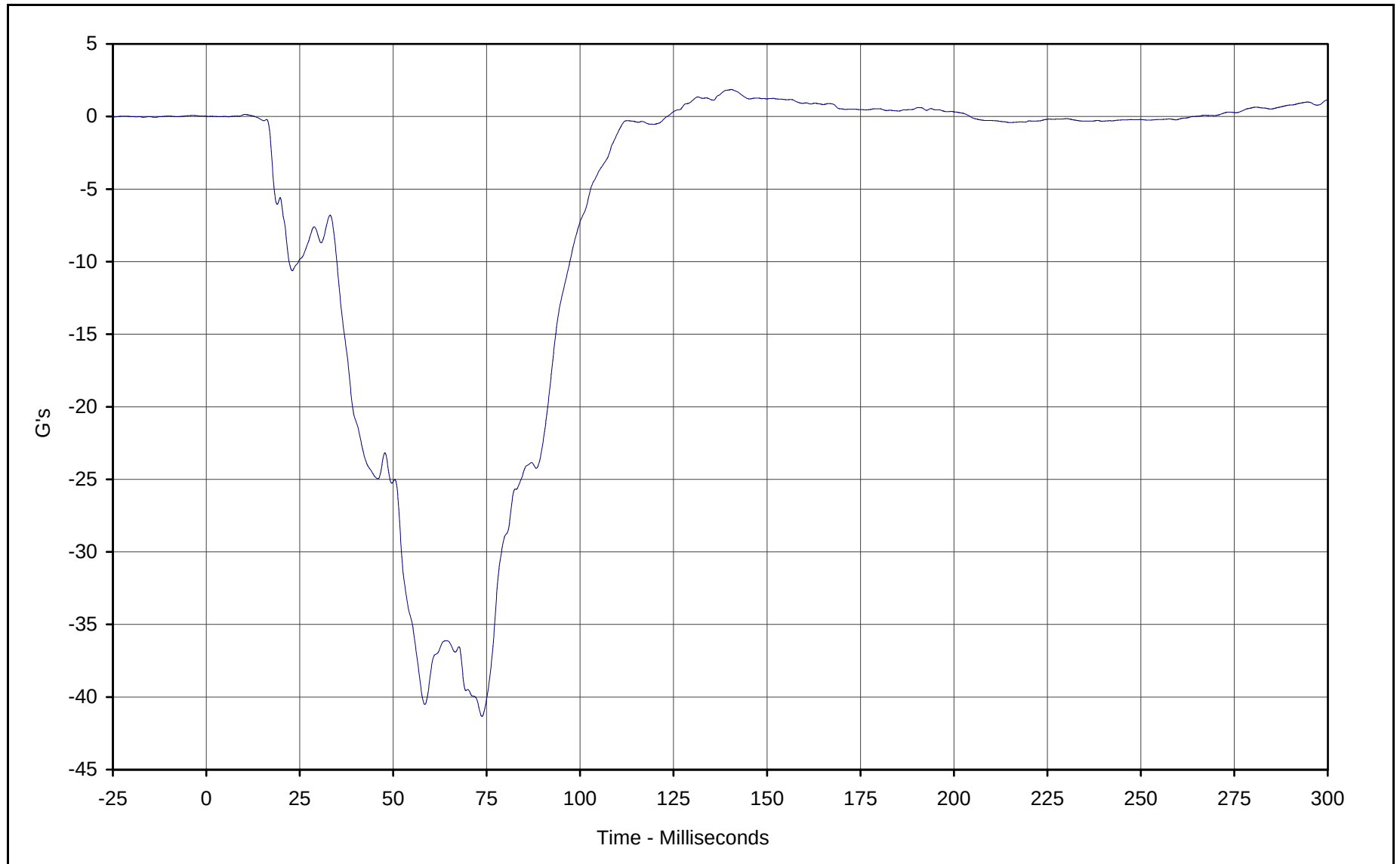
Curve Description: Passenger Chest Resultant Primary
Maximum Value: 42.1 at 58.3 Milliseconds
Minimum Value: 0.0 at 4.5 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: RES-057

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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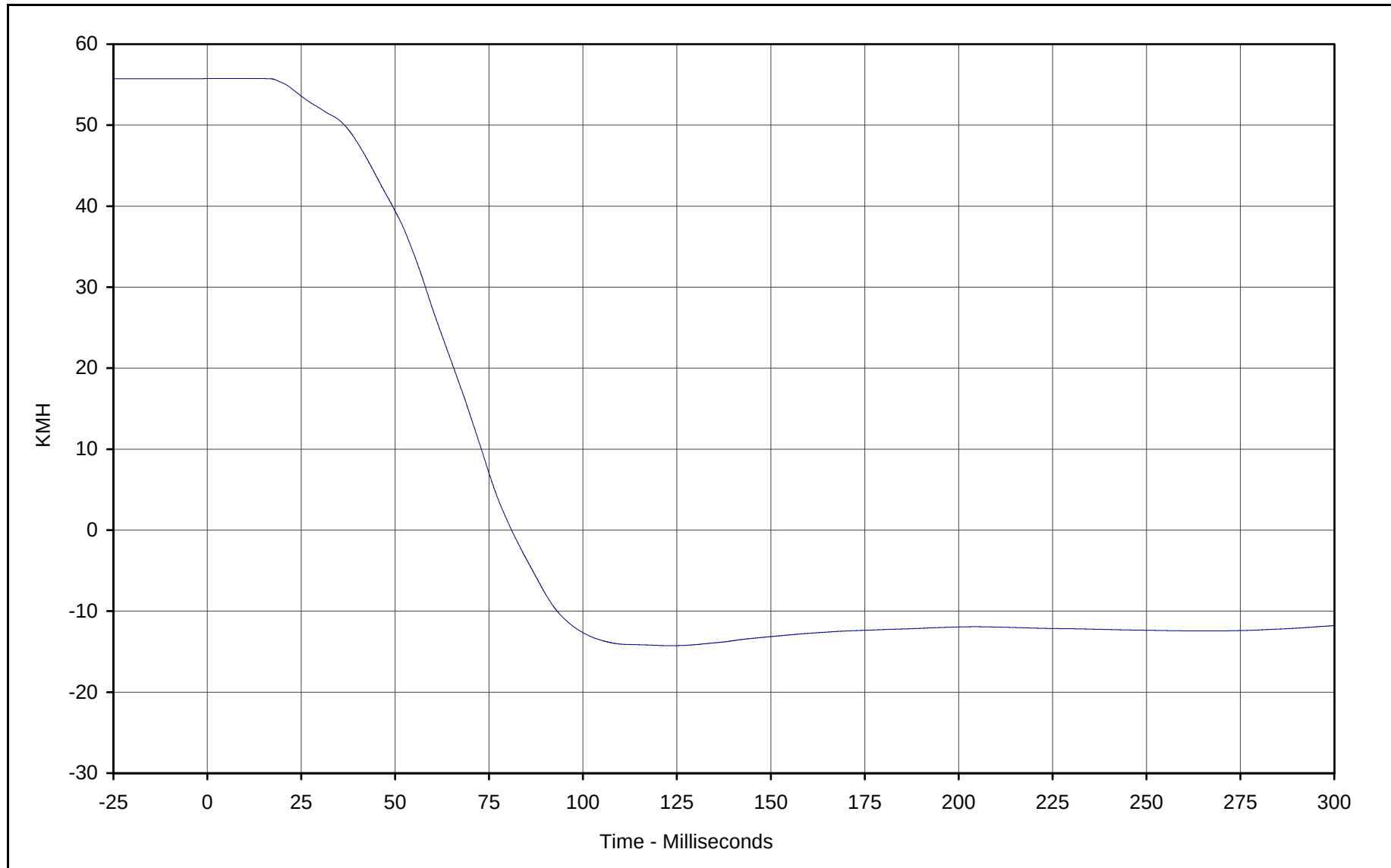


Curve Description: Passenger Chest Redundant X
Maximum Value: 1.9 at 140.4 Milliseconds
Minimum Value: -41.3 at 73.7 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: FIL-060

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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Curve Description: Passenger Chest Redundant X Velocity

Maximum Value: 55.8 at 12.9 Milliseconds

Minimum Value: -14.3 at 123.2 Milliseconds

SAE Filter Class: 180

Date of Test: 3/6/01

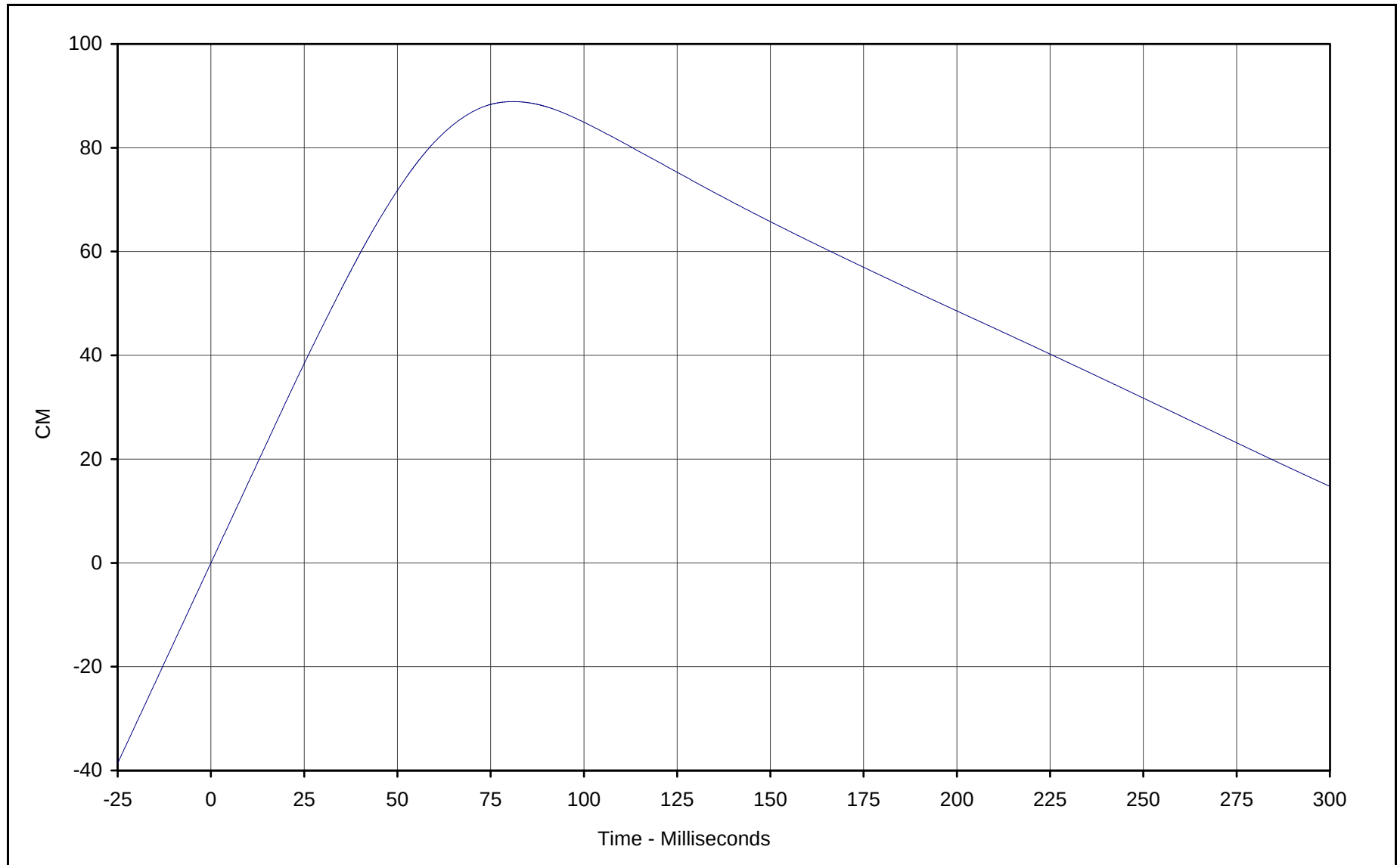
Curve Number: IN1-060

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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Curve Description: Passenger Chest Redundant X Displ.

Maximum Value: 88.9 at 81.0 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 3/6/01

Curve Number: IN2-060

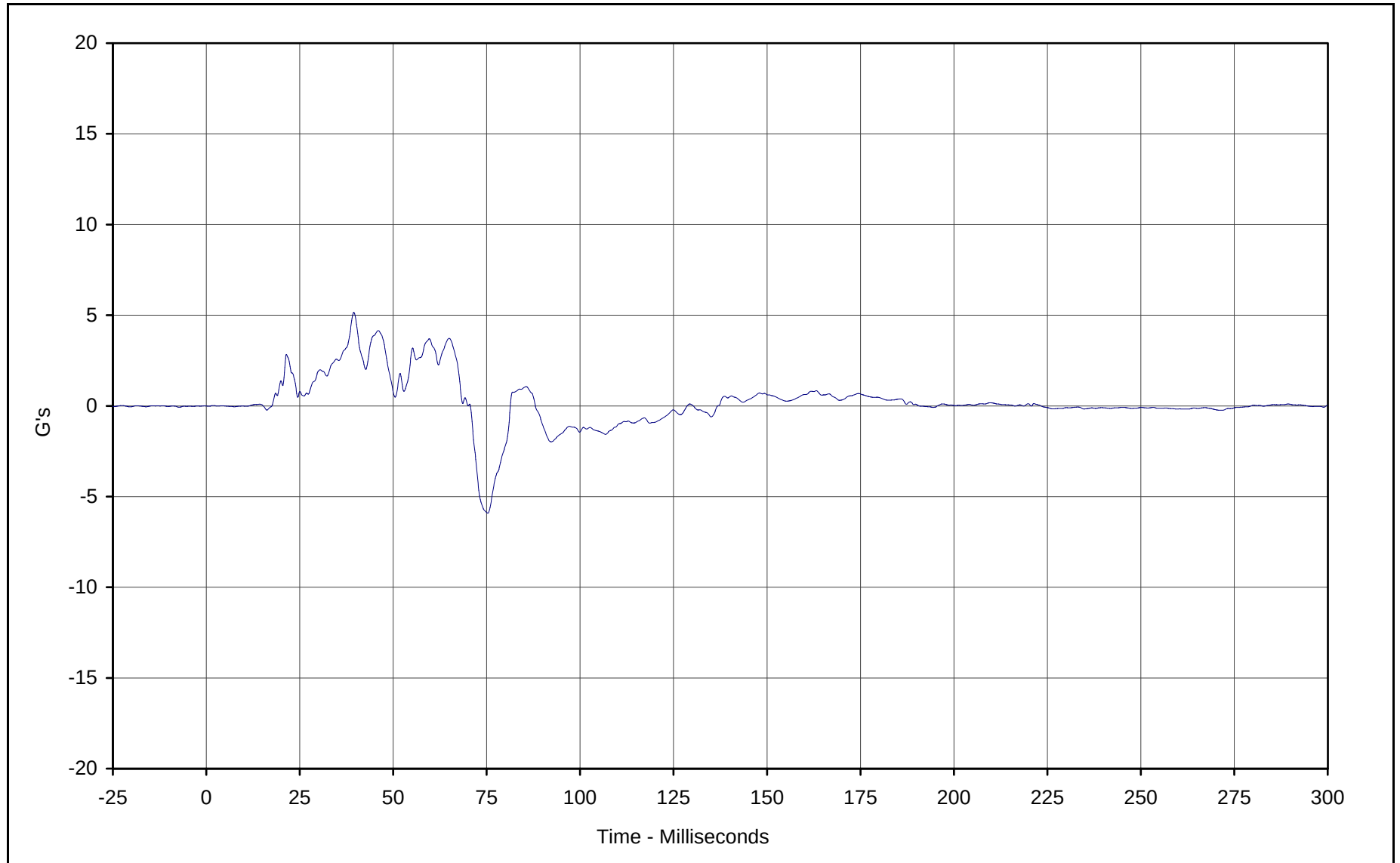
Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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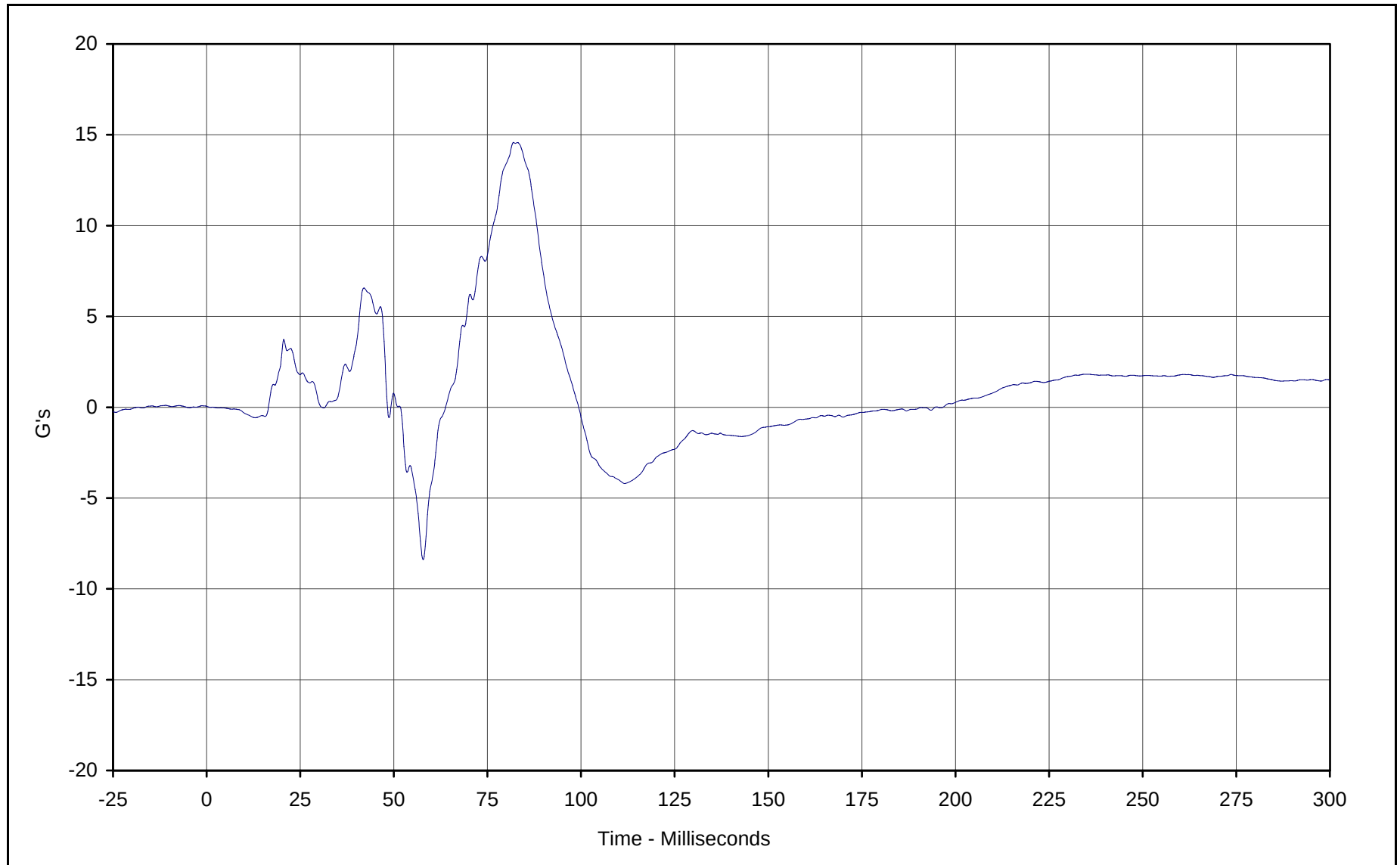
Curve Description: Passenger Chest Redundant Y
Maximum Value: 5.2 at 39.5 Milliseconds
Minimum Value: -5.9 at 75.3 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: FIL-061

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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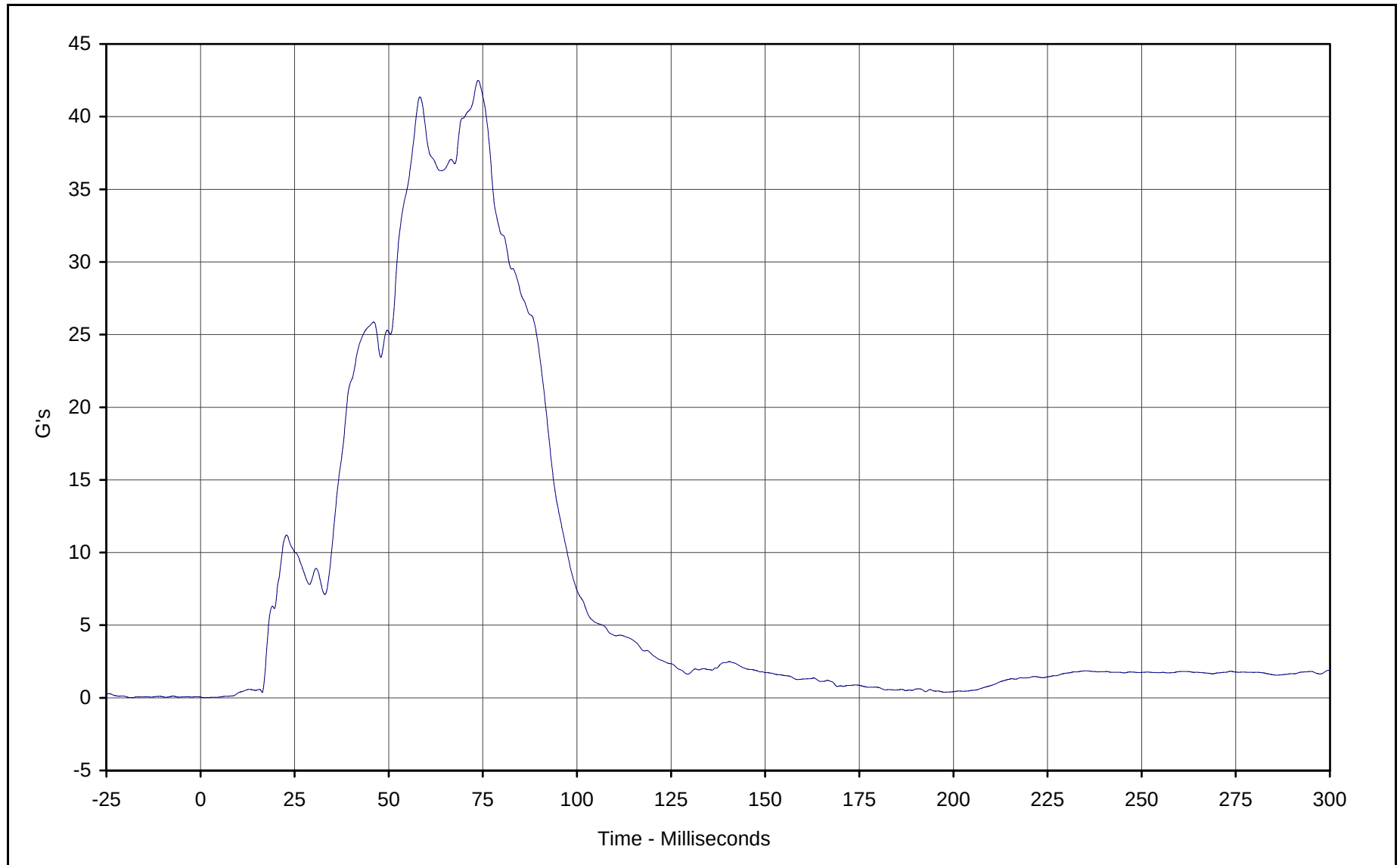


Curve Description: Passenger Chest Redundant Z
Maximum Value: 14.6 at 82.0 Milliseconds
Minimum Value: -8.4 at 57.8 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: FIL-062

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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Curve Description: Passenger Chest Resultant Redundant

Maximum Value: 42.5 at 73.7 Milliseconds

Minimum Value: 0.0 at 1.2 Milliseconds

SAE Filter Class: 180

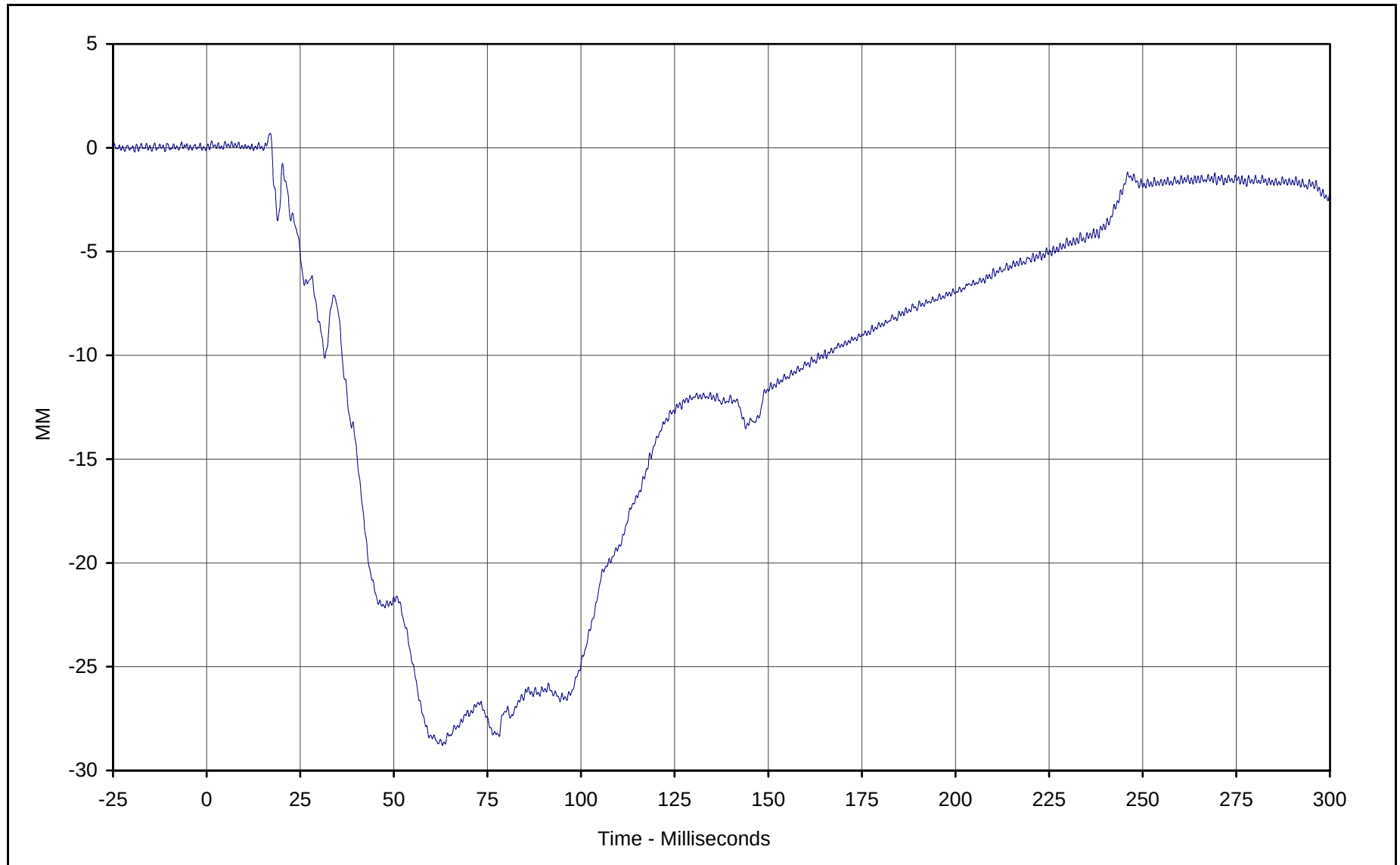
Date of Test: 3/6/01

Curve Number: RES-060

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan



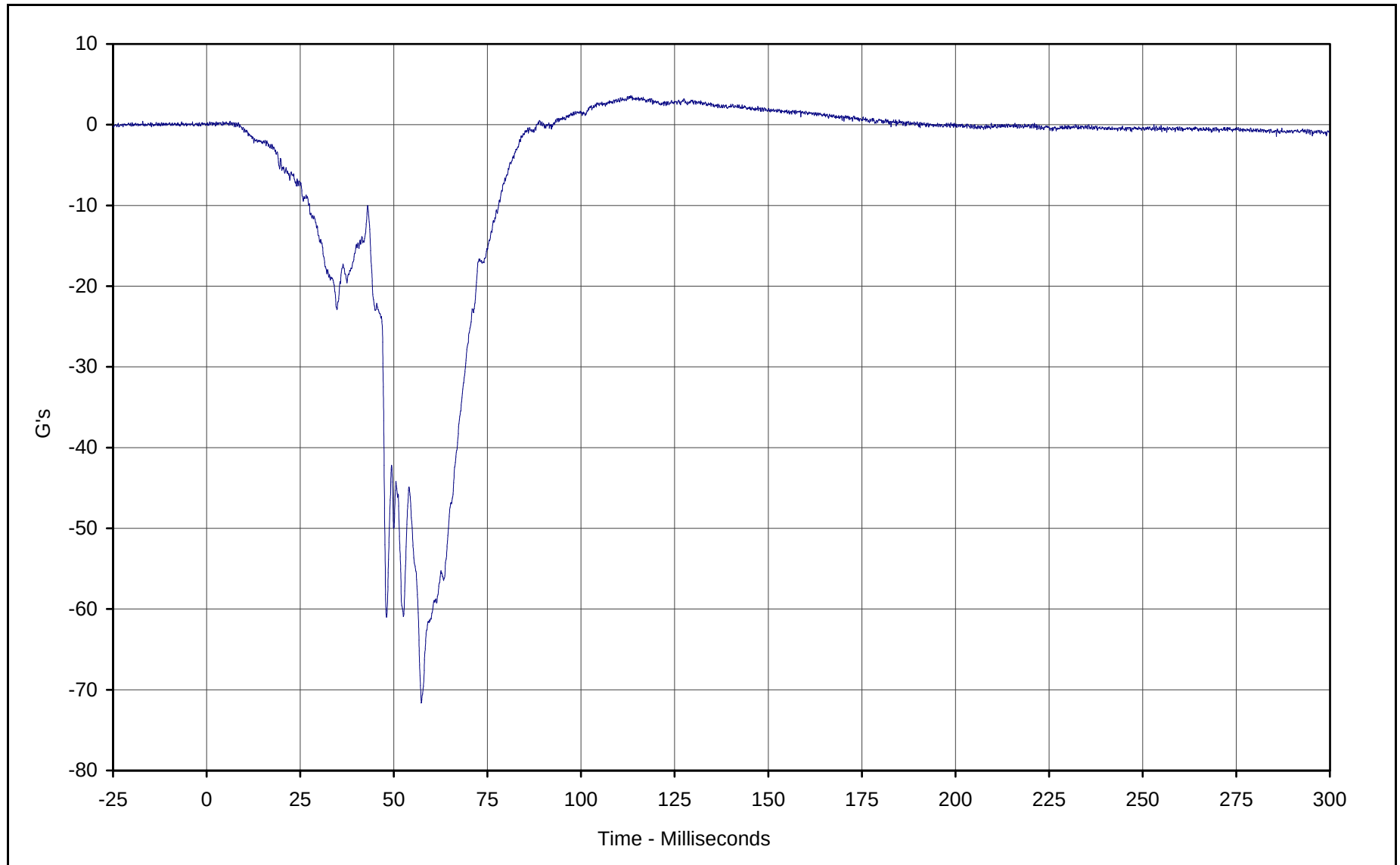


Curve Description: Passenger Chest Displacement X
Maximum Value: 0.7 at 17.0 Milliseconds
Minimum Value: -28.8 at 63.0 Milliseconds
SAE Filter Class: 600
Date of Test: 3/6/01
Curve Number: FIL-063

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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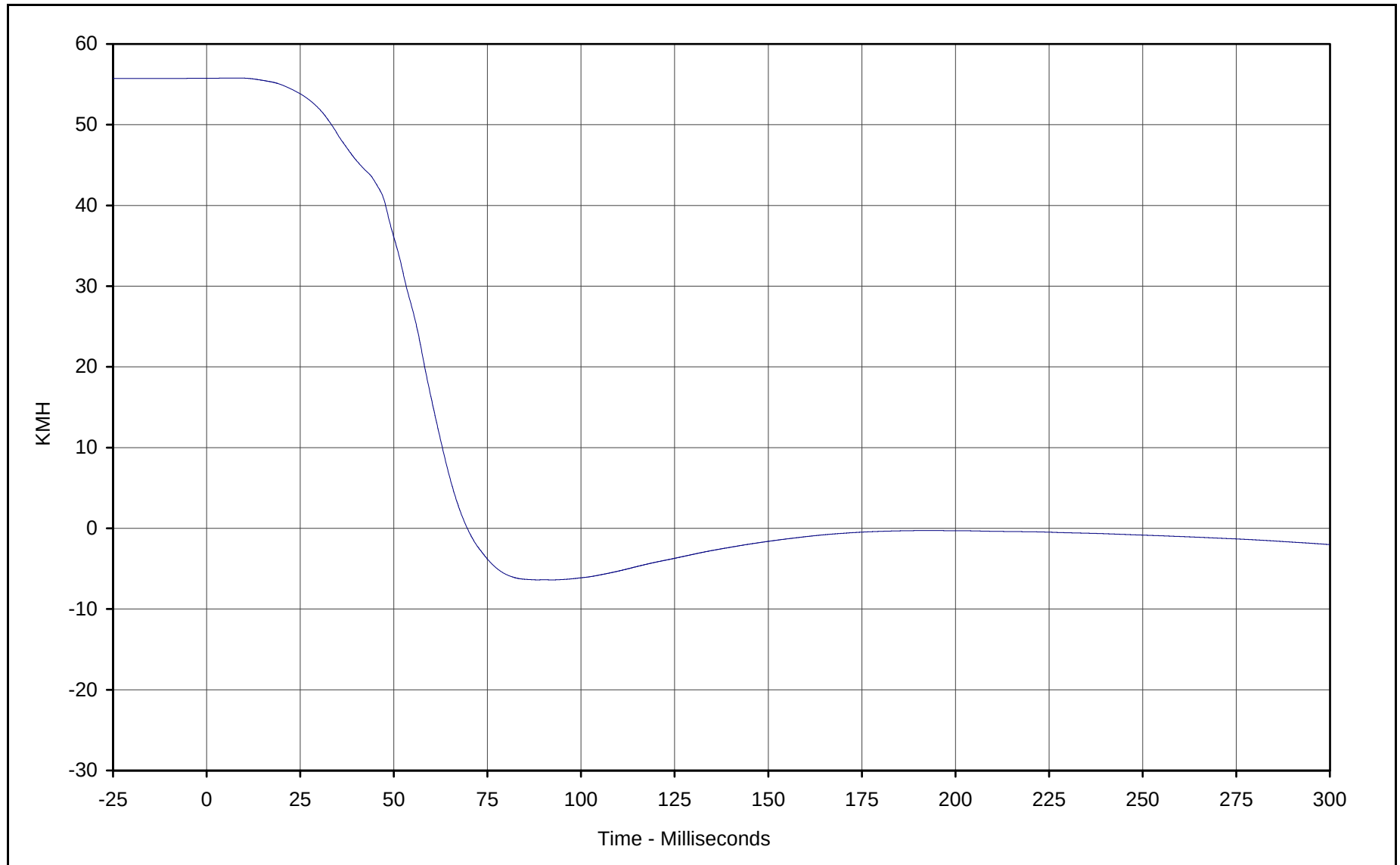


Curve Description: Passenger Pelvis X
Maximum Value: 3.6 at 113.2 Milliseconds
Minimum Value: -71.6 at 57.3 Milliseconds
SAE Filter Class: 1000
Date of Test: 3/6/01
Curve Number: FIL-064

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



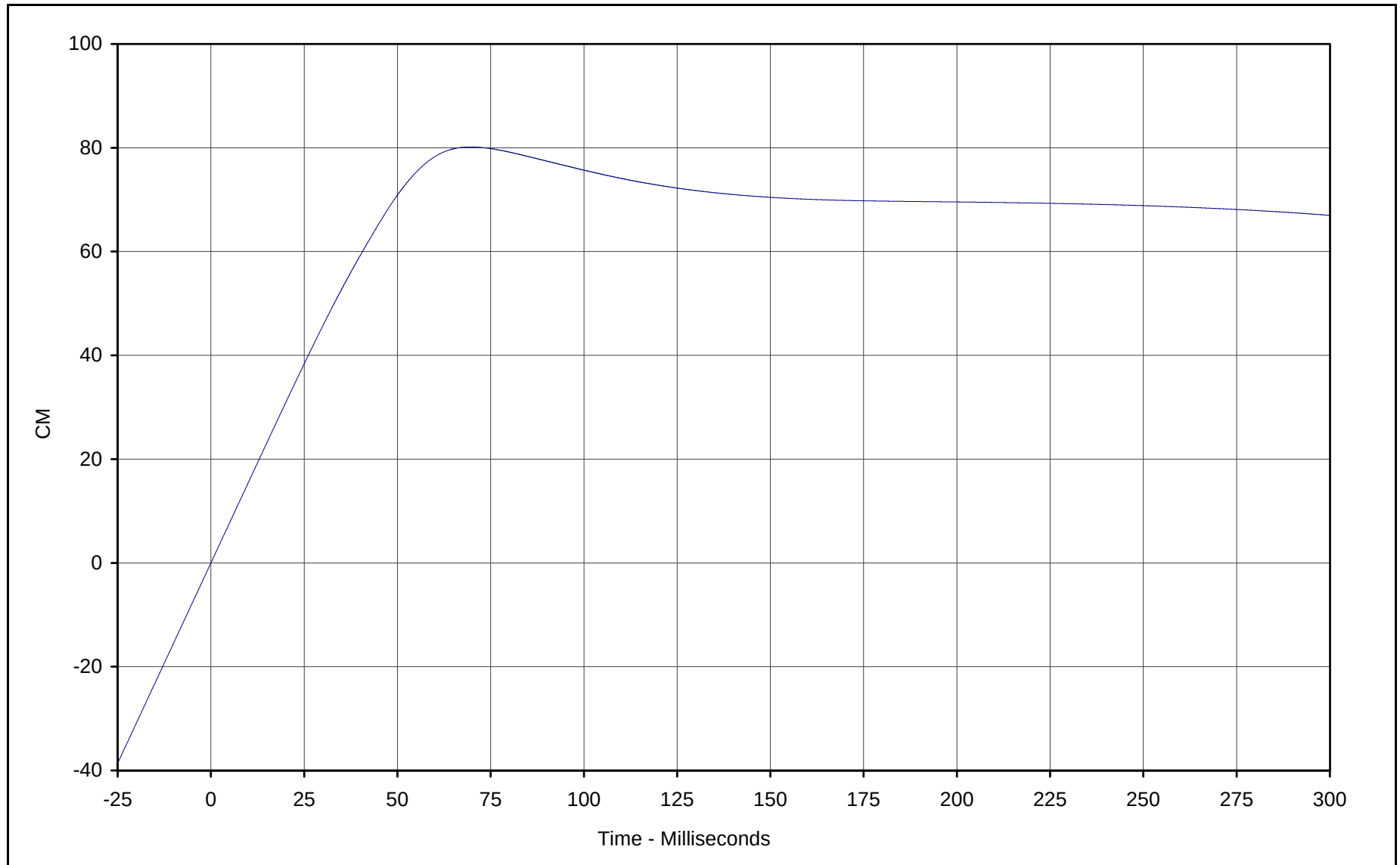
KAR21001-17



Curve Description: Passenger Pelvis X Velocity
Maximum Value: 55.8 at 8.2 Milliseconds
Minimum Value: -6.4 at 92.5 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: IN1-064

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



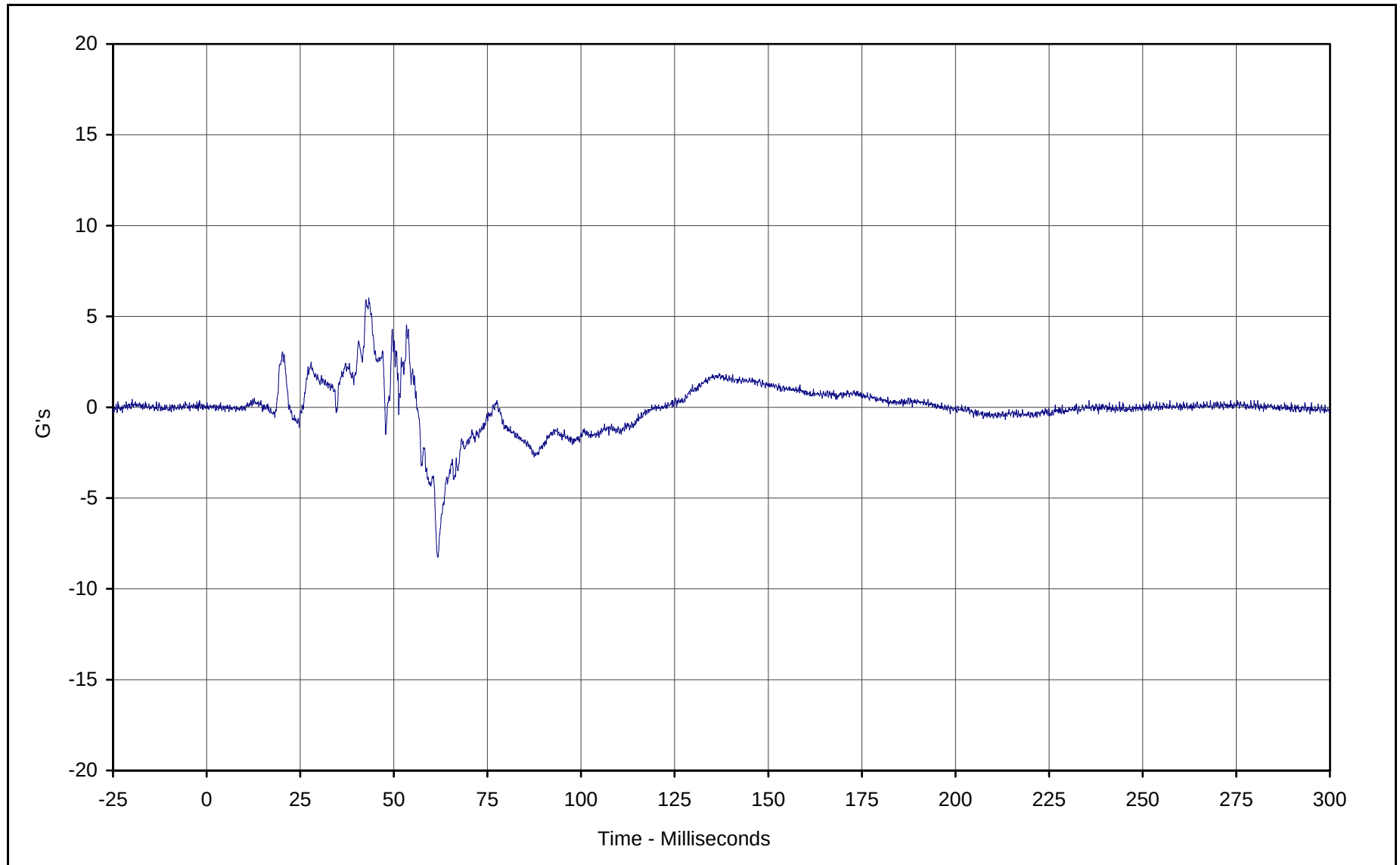


Curve Description: Passenger Pelvis X Displ.
Maximum Value: 80.2 at 69.6 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: IN2-064

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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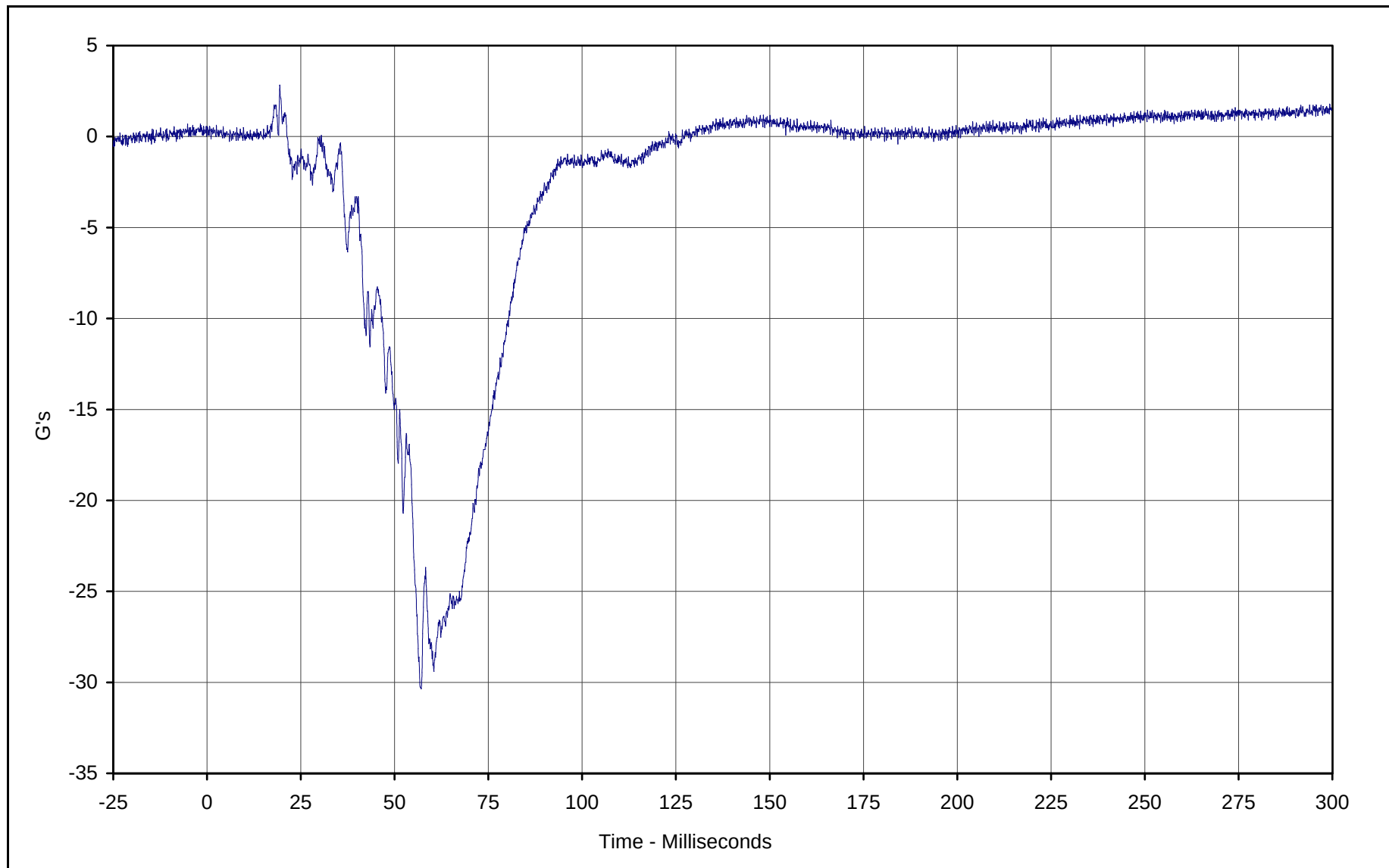


Curve Description: Passenger Pelvis Y
Maximum Value: 6.0 at 43.3 Milliseconds
Minimum Value: -8.3 at 61.8 Milliseconds
SAE Filter Class: 1000
Date of Test: 3/6/01
Curve Number: FIL-065

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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Curve Description: Passenger Pelvis Z

Maximum Value: 2.8 at 19.4 Milliseconds

Minimum Value: -30.4 at 57.1 Milliseconds

SAE Filter Class: 1000

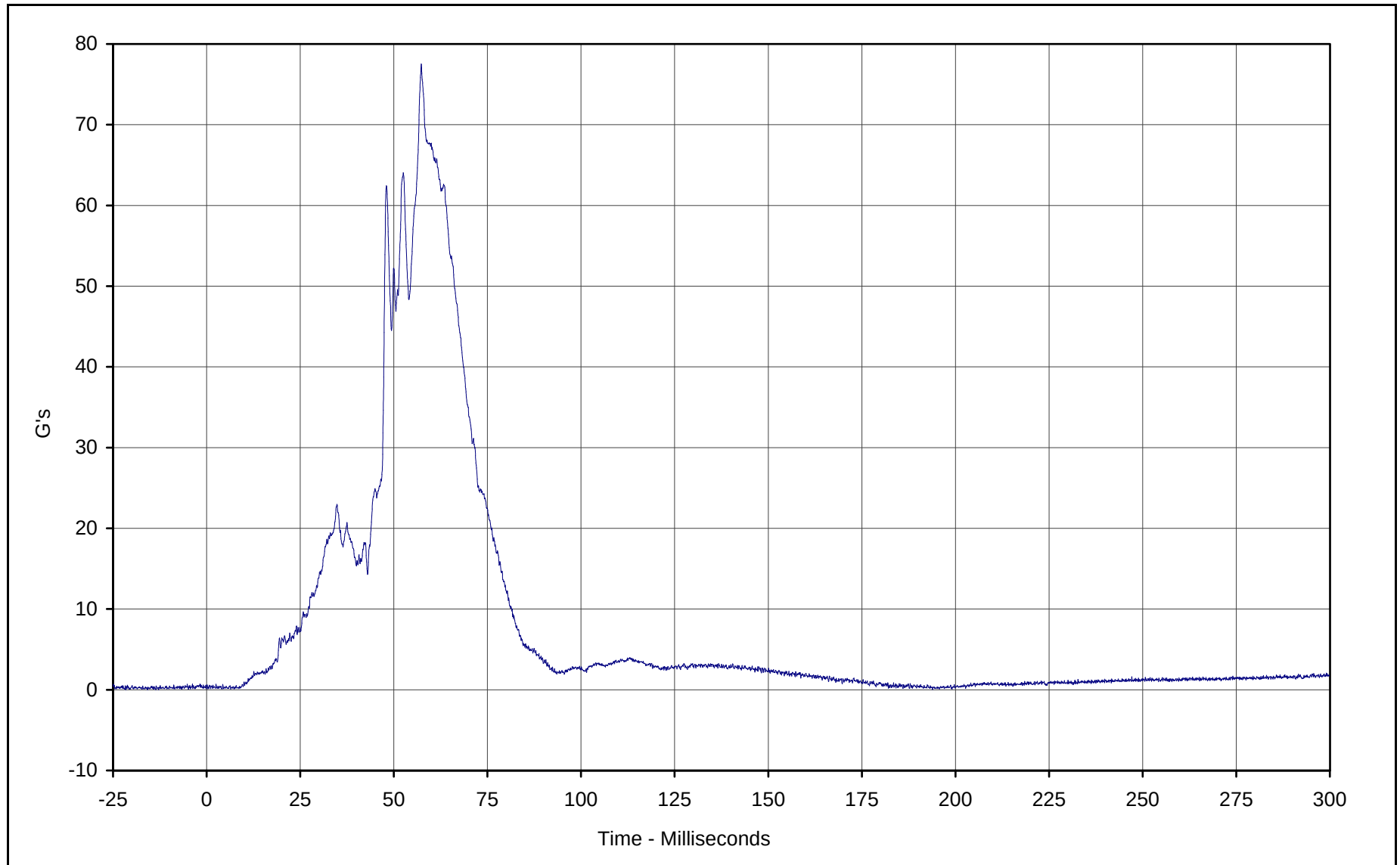
Date of Test: 3/6/01

Curve Number: FIL-066

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan



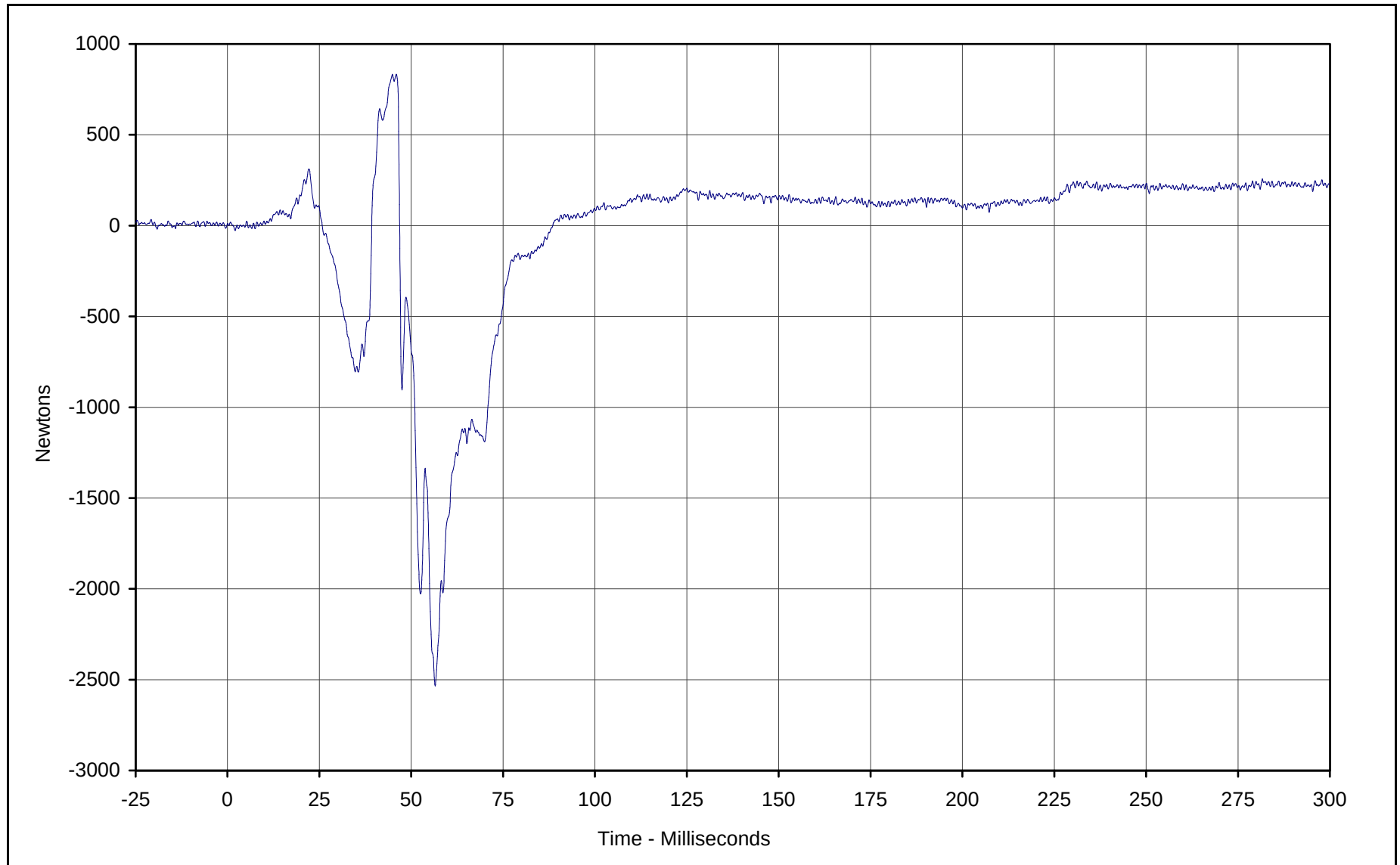


Curve Description: Passenger Pelvis Resultant
Maximum Value: 77.5 at 57.3 Milliseconds
Minimum Value: 0.0 at 193.9 Milliseconds
SAE Filter Class: 1000
Date of Test: 3/6/01
Curve Number: RES-064

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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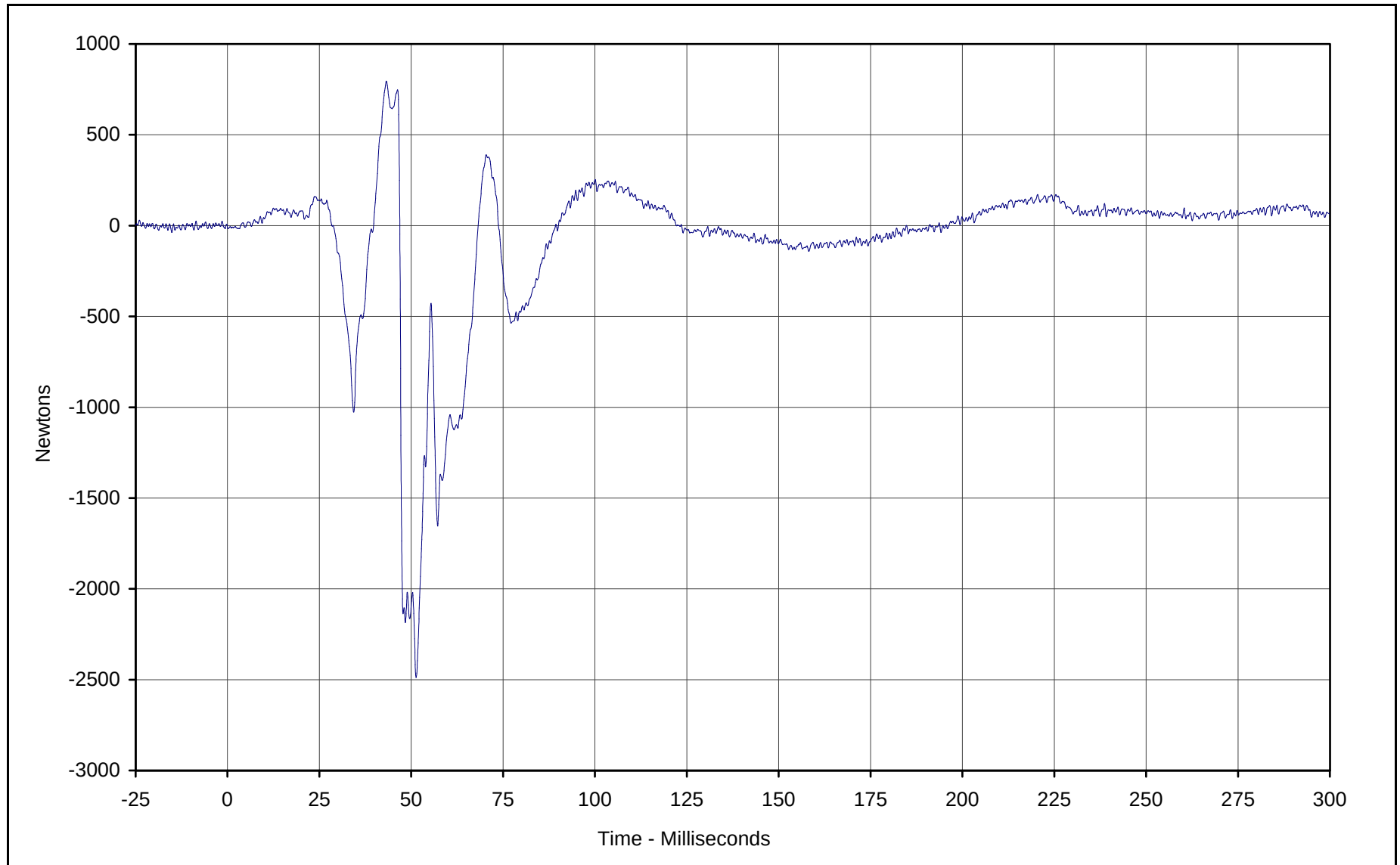


Curve Description: Passenger Left Femur Force
Maximum Value: 833.6 at 45.9 Milliseconds
Minimum Value: -2535.1 at 56.5 Milliseconds
SAE Filter Class: 600
Date of Test: 3/6/01
Curve Number: FIL-067

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



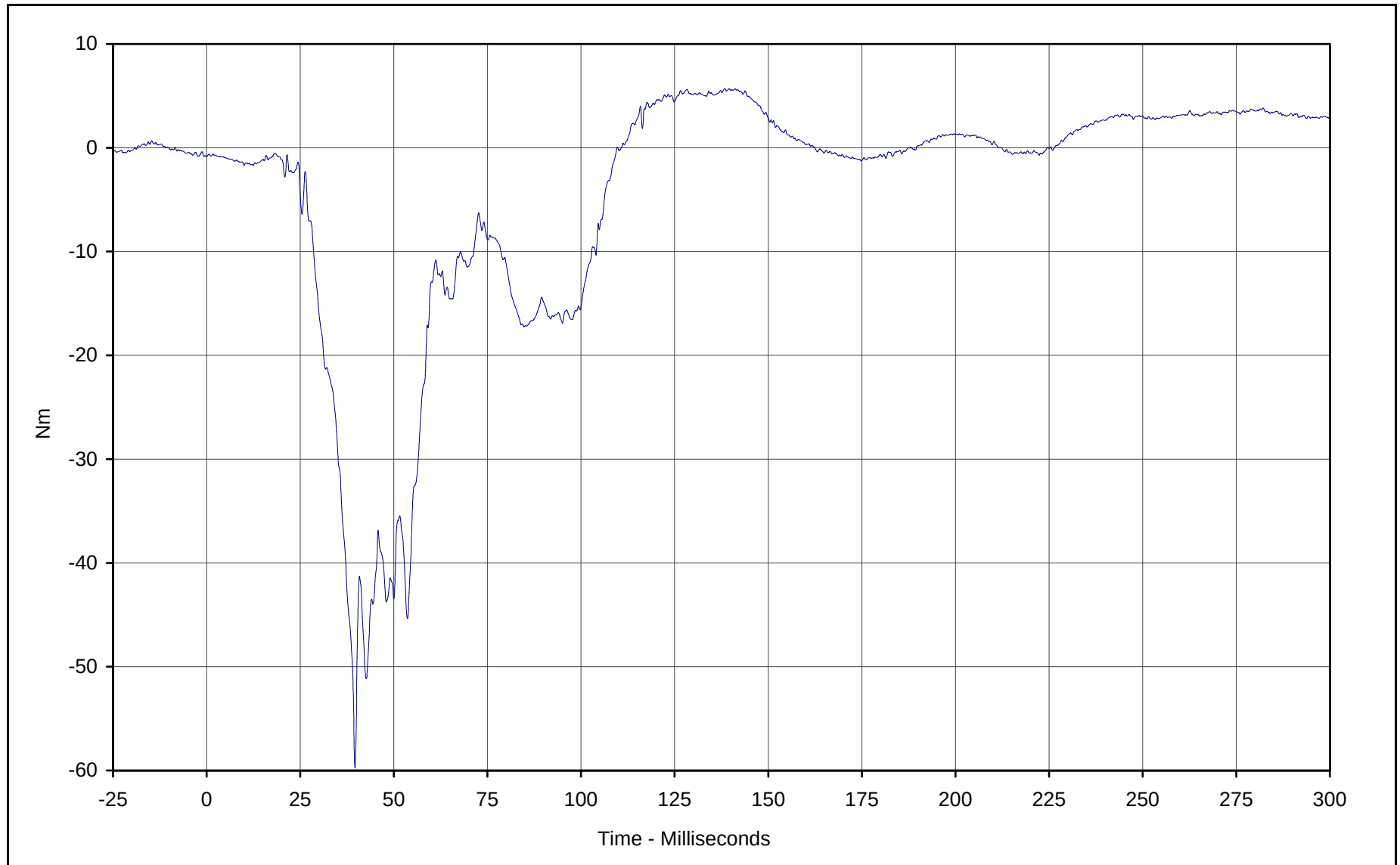
KAR21001-17



Curve Description: Passenger Right Femur Force
Maximum Value: 795.5 at 43.2 Milliseconds
Minimum Value: -2488.6 at 51.3 Milliseconds
SAE Filter Class: 600
Date of Test: 3/6/01
Curve Number: FIL-068

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan





Curve Description: Passenger Left Upper Tibia Moment X

Maximum Value: 5.7 at 138.4 Milliseconds

Minimum Value: -59.8 at 39.6 Milliseconds

SAE Filter Class: 600

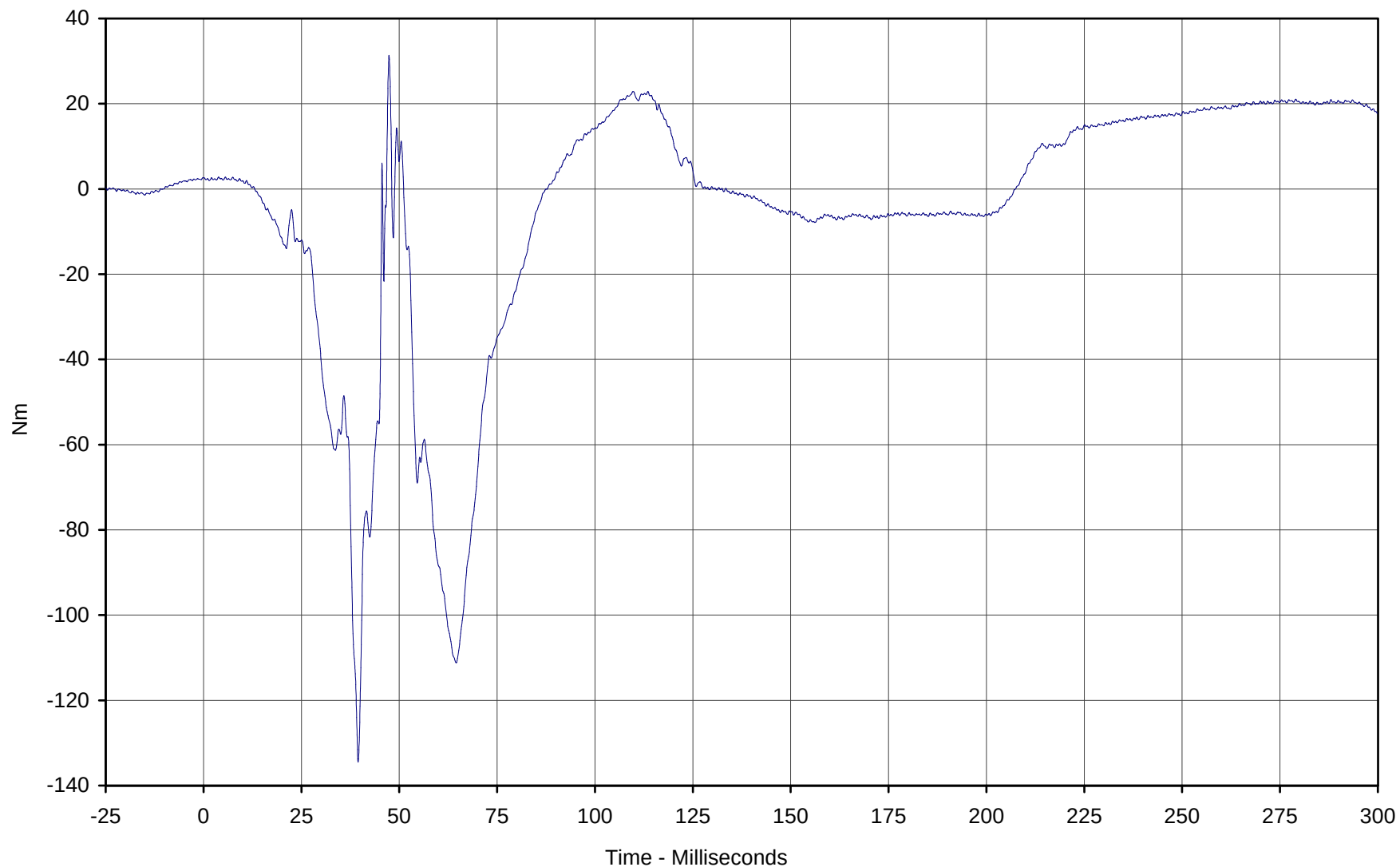
Date of Test: 3/6/01

Curve Number: FIL-069

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan





Curve Description: Passenger Left Upper Tibia Moment Y

Maximum Value: 31.4 at 47.4 Milliseconds

Minimum Value: -134.5 at 39.5 Milliseconds

SAE Filter Class: 600

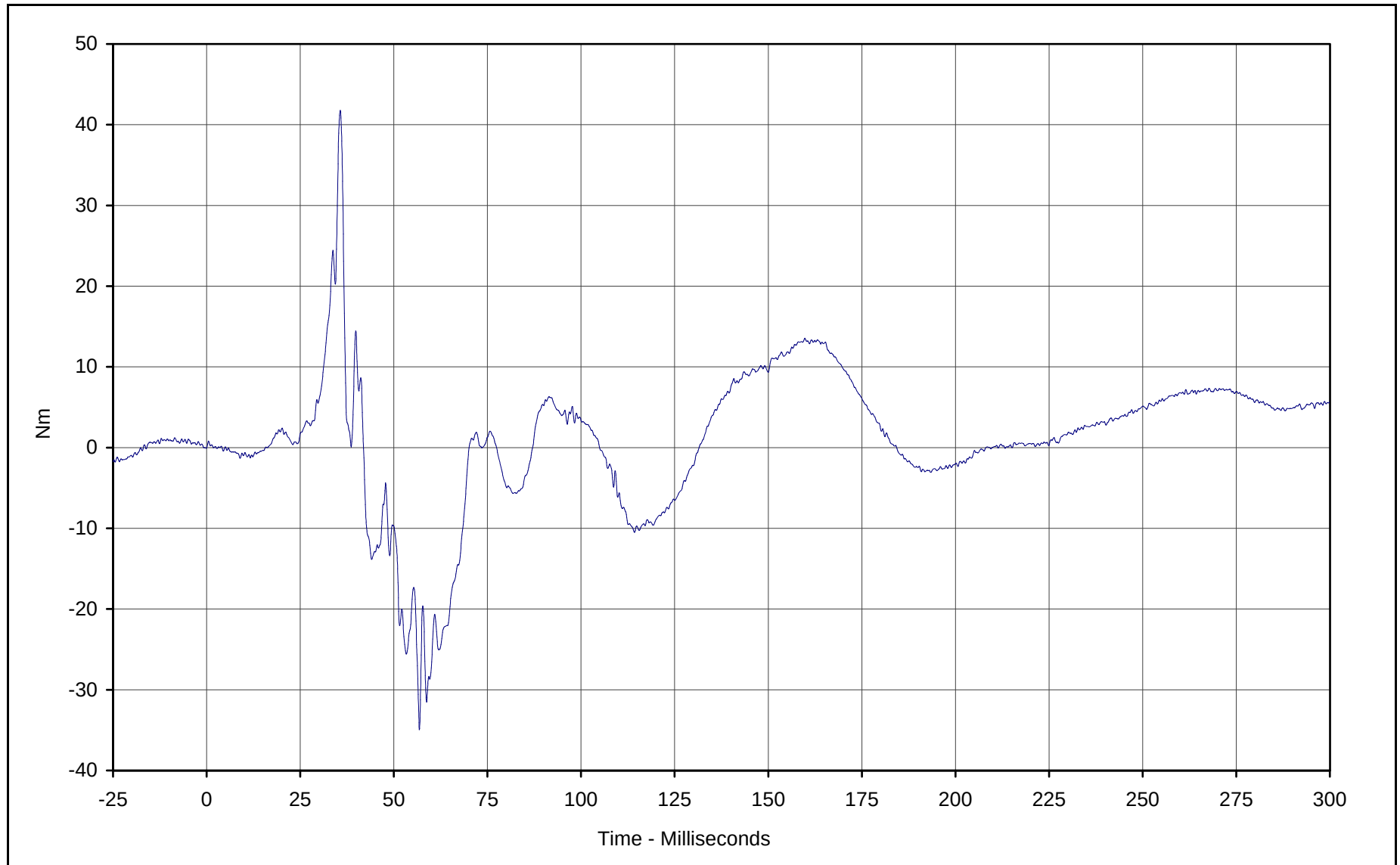
Date of Test: 3/6/01

Curve Number: FIL-070

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan





Curve Description: Passenger Right Upper Tibia Moment X

Maximum Value: 41.8 at 35.7 Milliseconds

Minimum Value: -34.9 at 56.8 Milliseconds

SAE Filter Class: 600

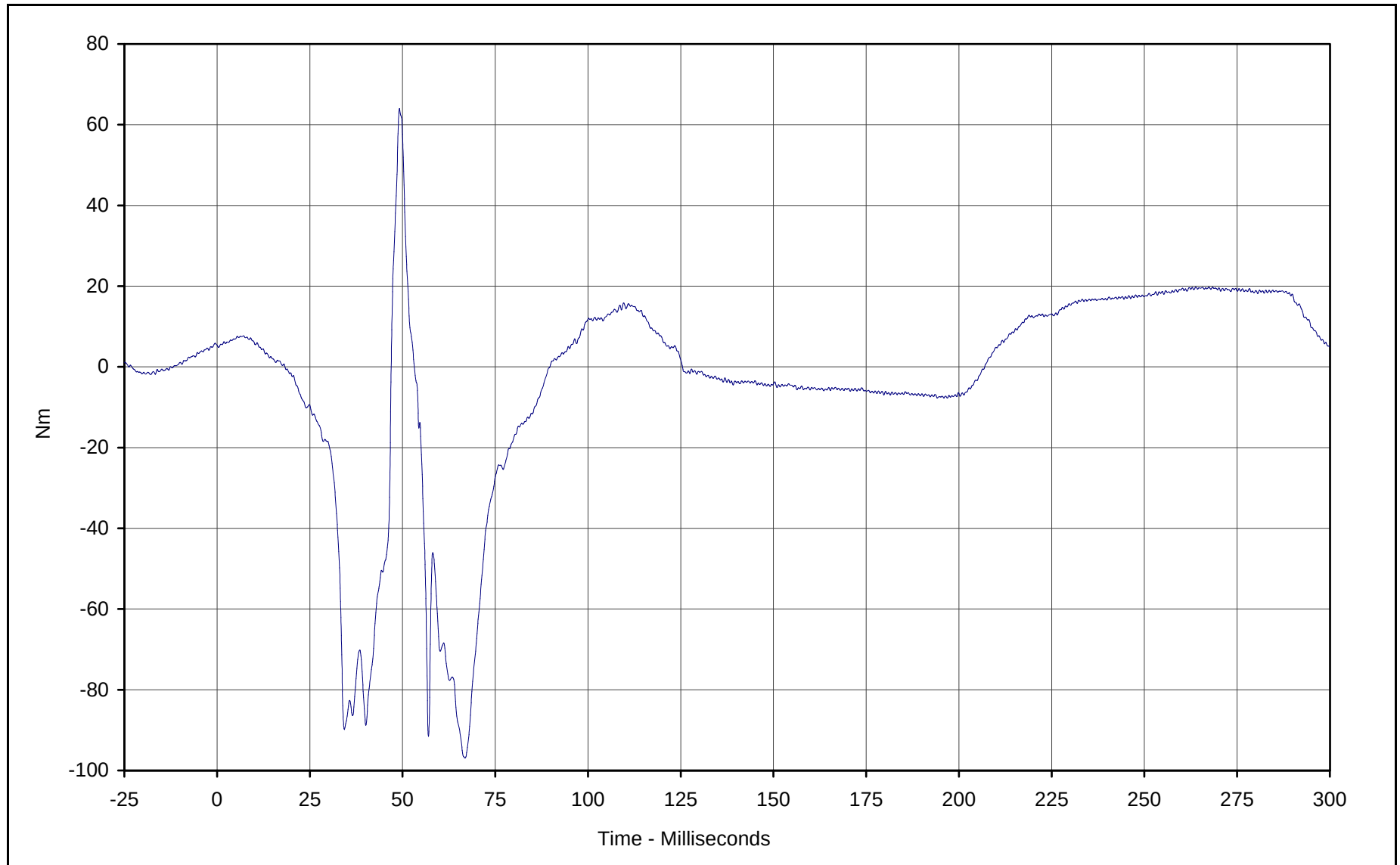
Date of Test: 3/6/01

Curve Number: FIL-071

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan





Curve Description: Passenger Right Upper Tibia Moment Y

Maximum Value: 64.0 at 49.2 Milliseconds

Minimum Value: -96.9 at 66.9 Milliseconds

SAE Filter Class: 600

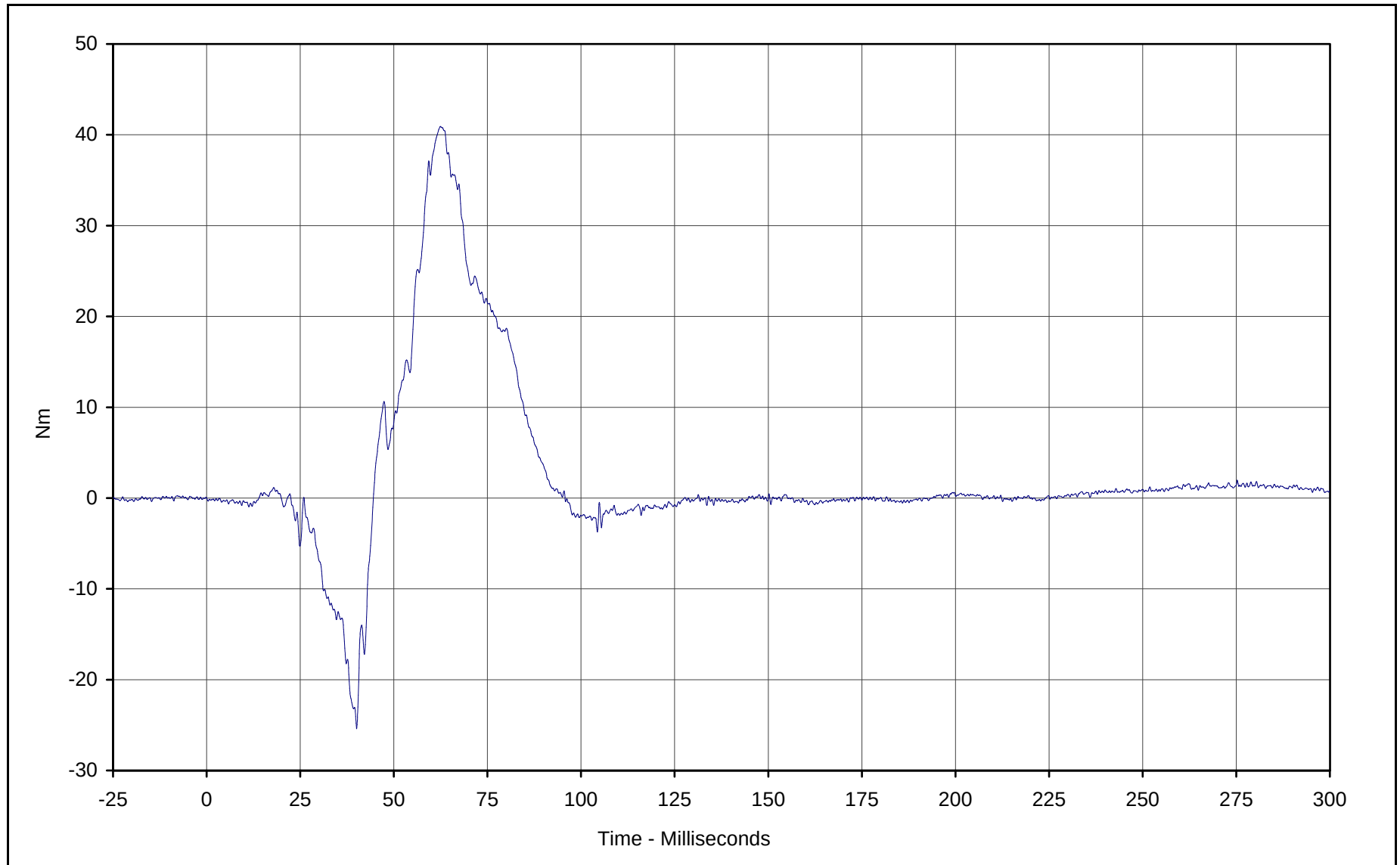
Date of Test: 3/6/01

Curve Number: FIL-072

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan





Curve Description: Passenger Left Lower Tibia Moment X

Maximum Value: 40.9 at 62.5 Milliseconds

Minimum Value: -25.4 at 40.1 Milliseconds

SAE Filter Class: 600

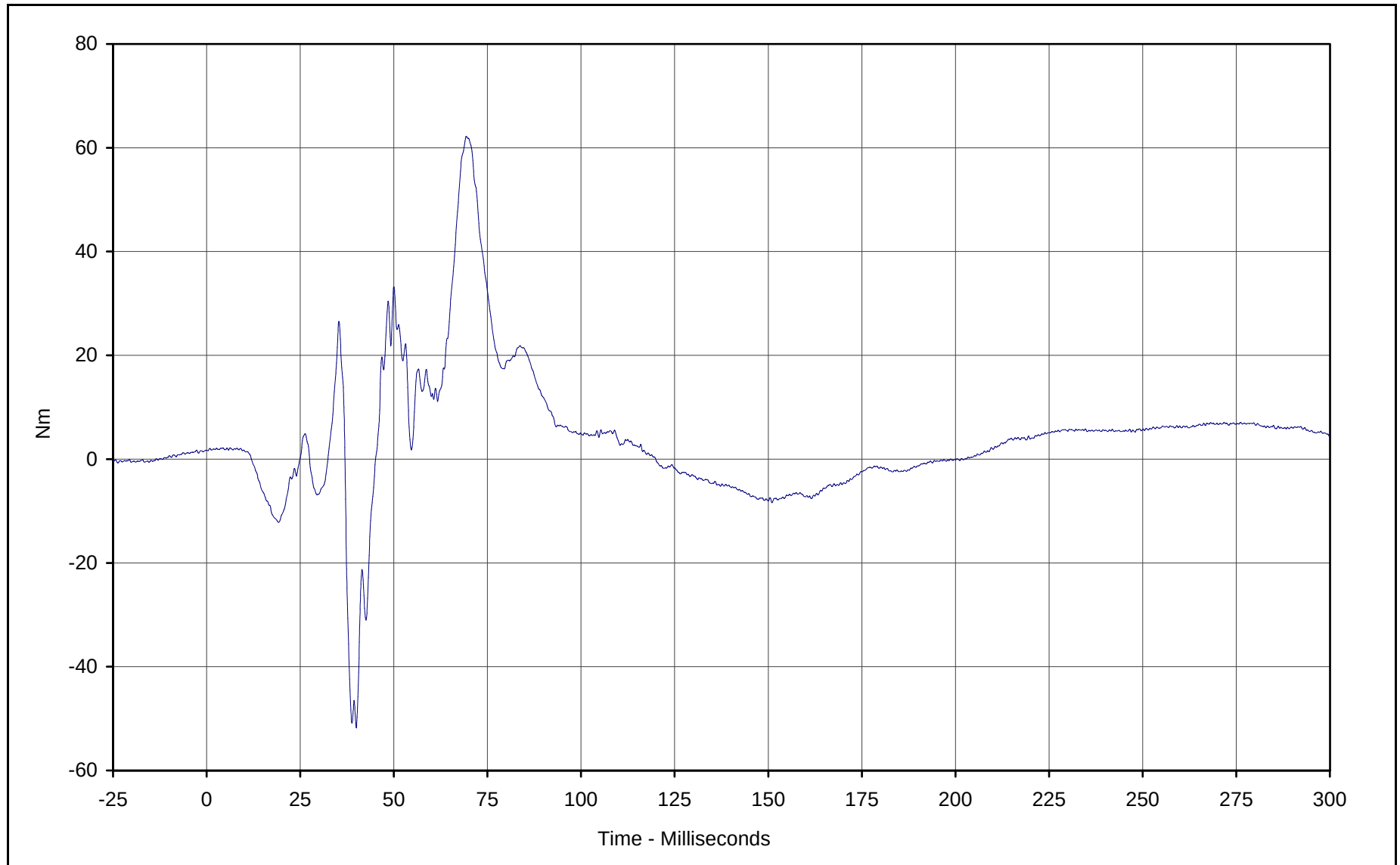
Date of Test: 3/6/01

Curve Number: FIL-073

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan





Curve Description: Passenger Left Lower Tibia Moment Y

Maximum Value: 62.2 at 69.3 Milliseconds

Minimum Value: -51.8 at 40.0 Milliseconds

SAE Filter Class: 600

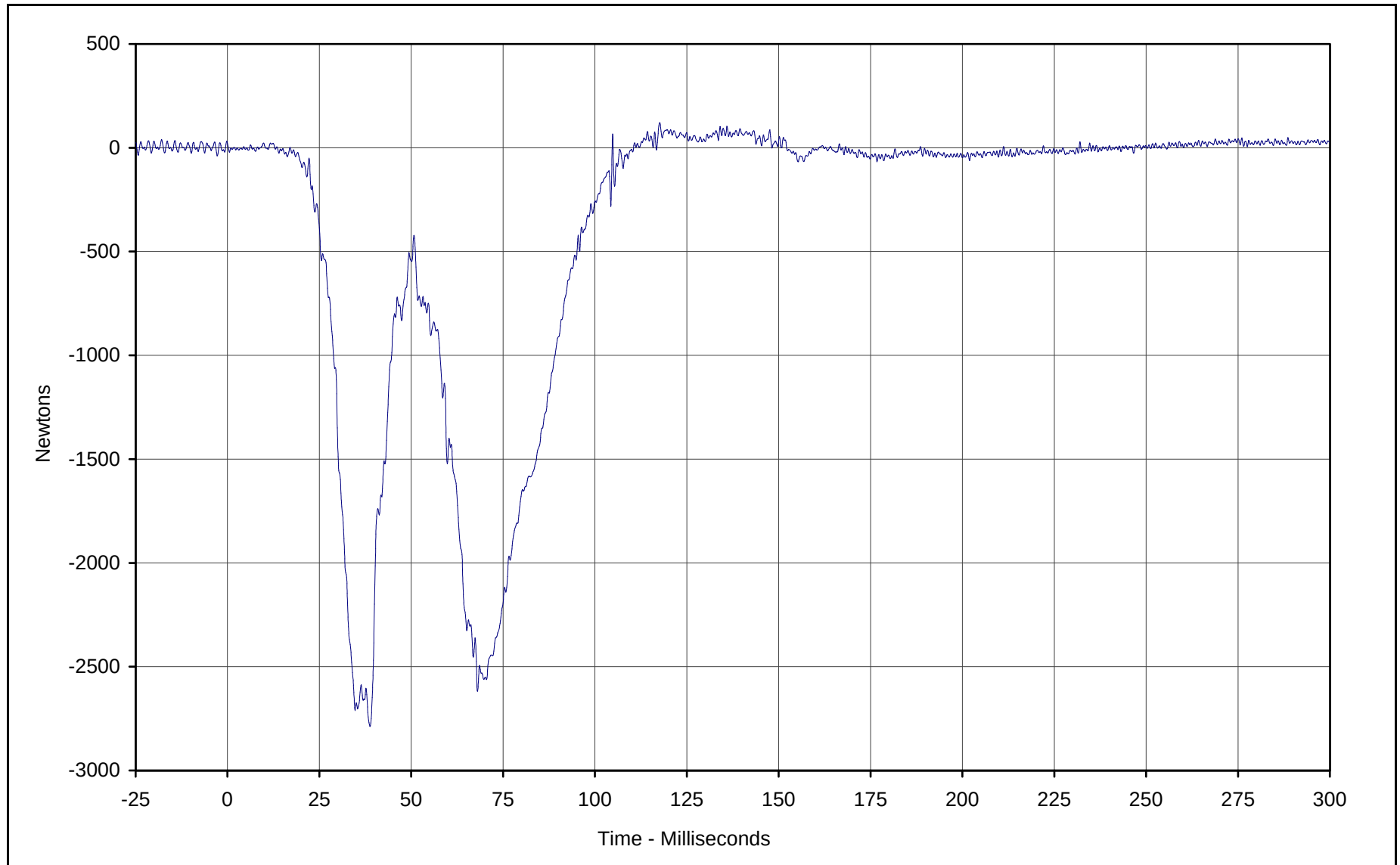
Date of Test: 3/6/01

Curve Number: FIL-074

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan





Curve Description: Passenger Left Lower Tibia Force Z

Maximum Value: 120.7 at 117.6 Milliseconds

Minimum Value: -2788.1 at 38.8 Milliseconds

SAE Filter Class: 600

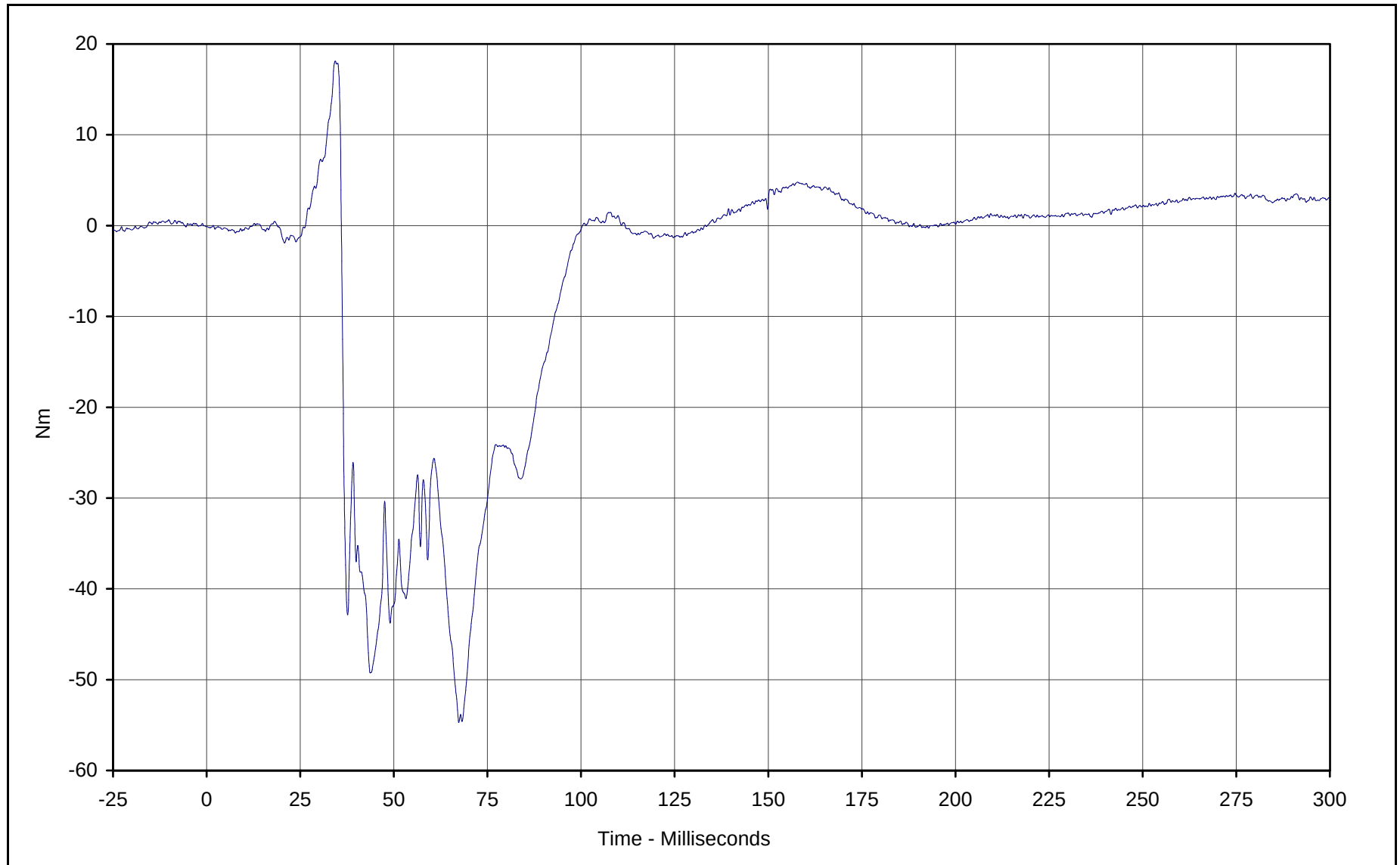
Date of Test: 3/6/01

Curve Number: FIL-075

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan





Curve Description: Passenger Right Lower Tibia Moment X

Maximum Value: 18.1 at 34.3 Milliseconds

Minimum Value: -54.7 at 67.3 Milliseconds

SAE Filter Class: 600

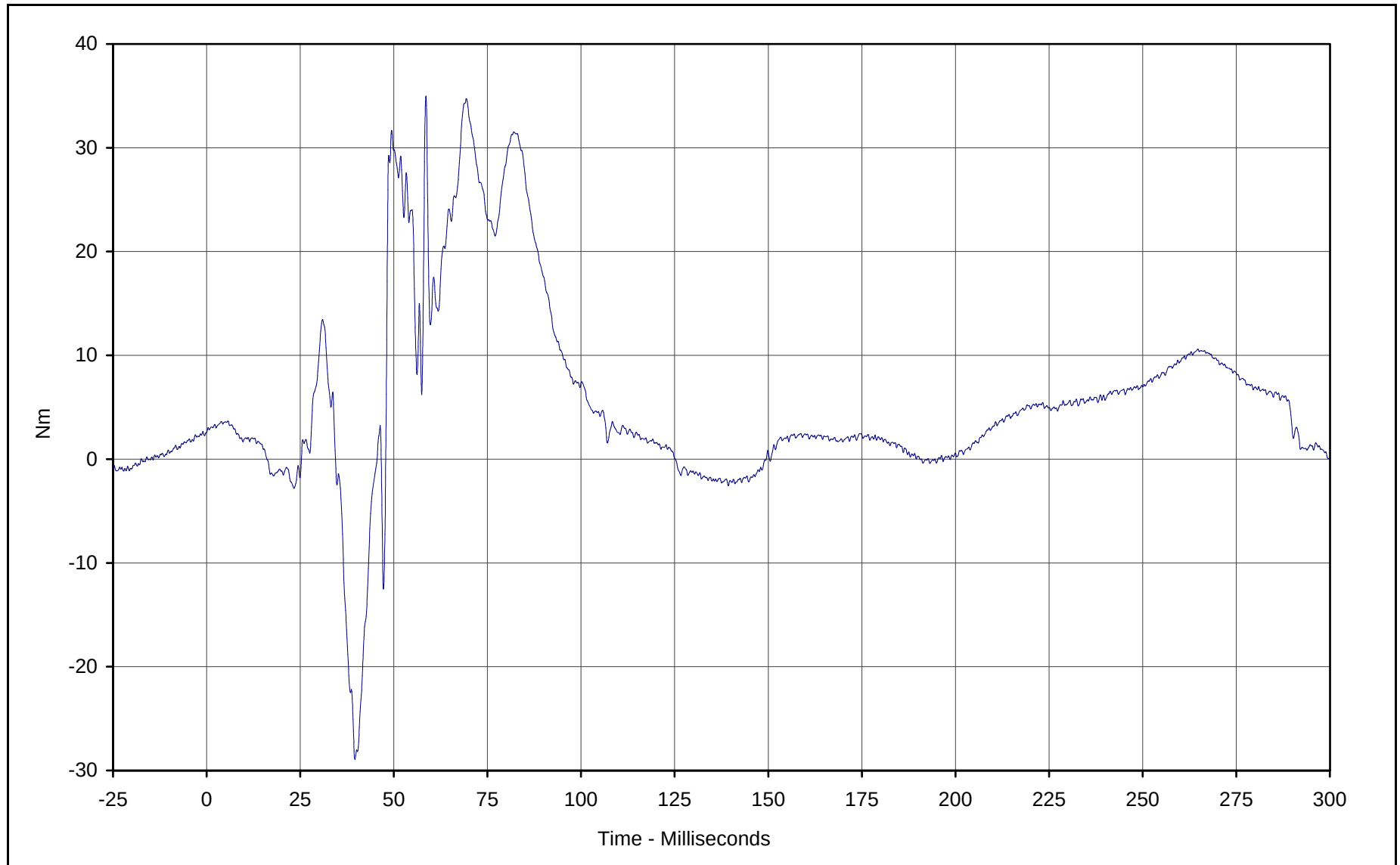
Date of Test: 3/6/01

Curve Number: FIL-076

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan





Curve Description: Passenger Right Lower Tibia Moment Y

Maximum Value: 35.0 at 58.6 Milliseconds

Minimum Value: -28.9 at 39.6 Milliseconds

SAE Filter Class: 600

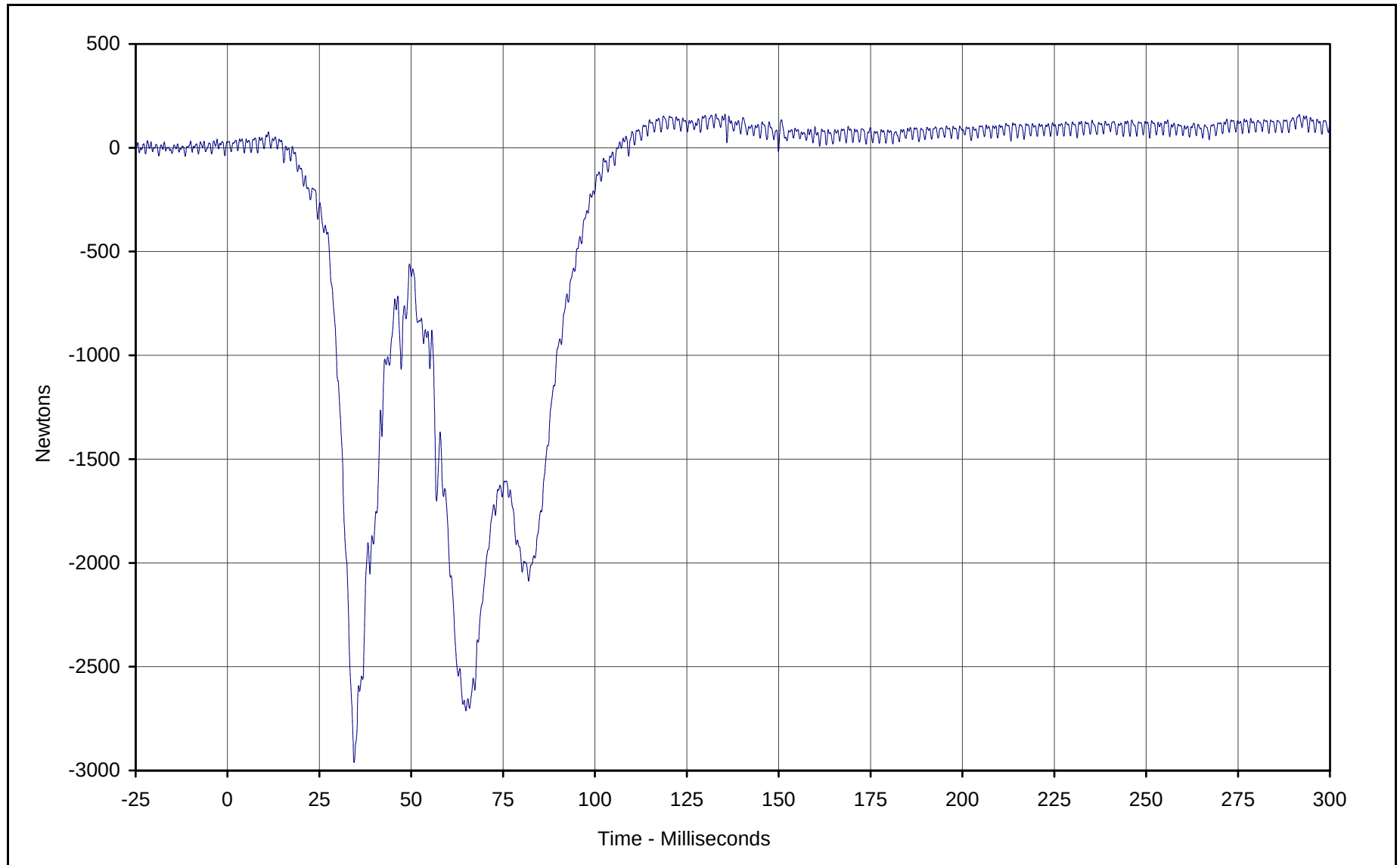
Date of Test: 3/6/01

Curve Number: FIL-077

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan





Curve Description: Passenger Right lower Tibia Force Z

Maximum Value: 162.8 at 132.9 Milliseconds

Minimum Value: -2961.3 at 34.5 Milliseconds

SAE Filter Class: 600

Date of Test: 3/6/01

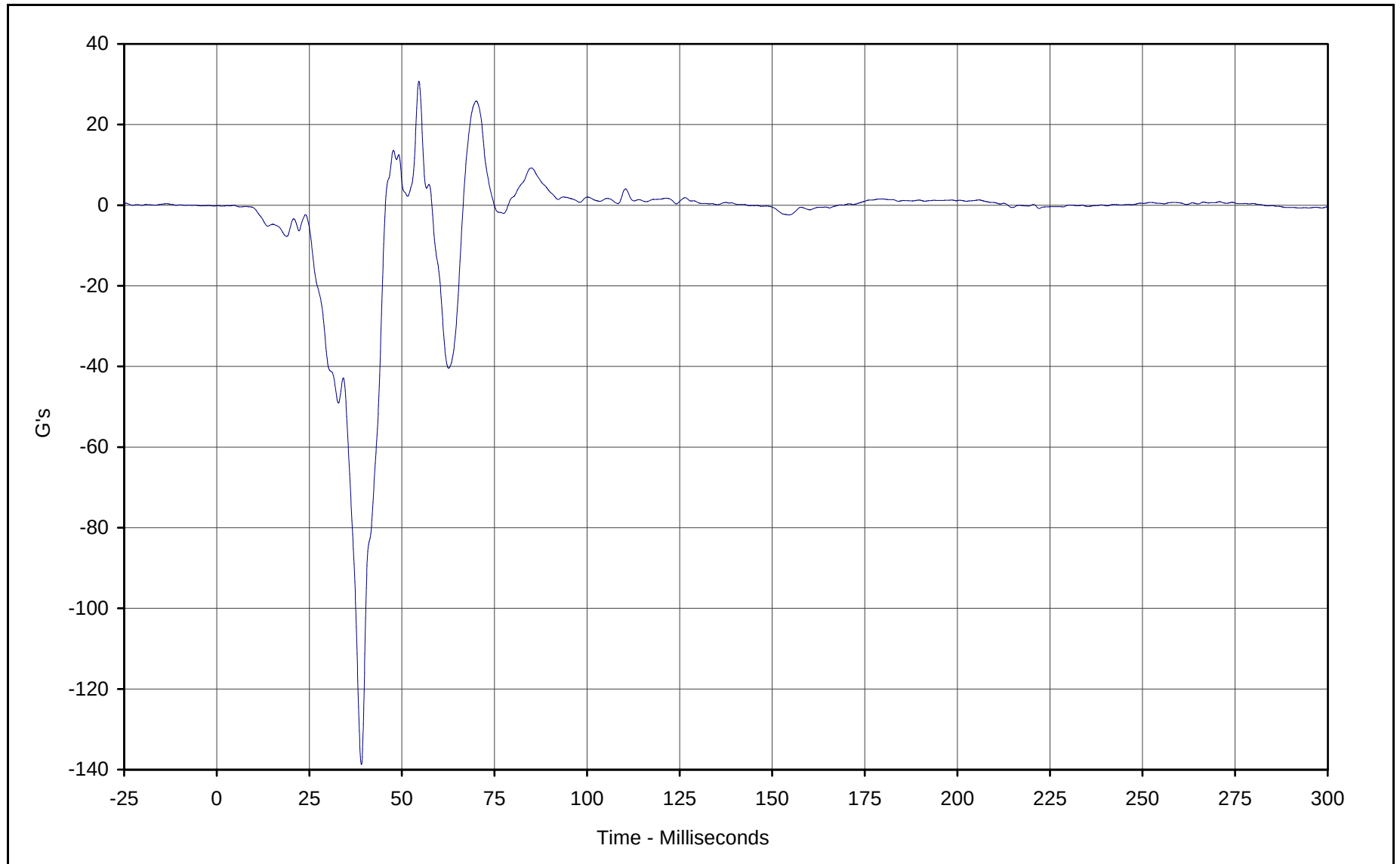
Curve Number: FIL-078

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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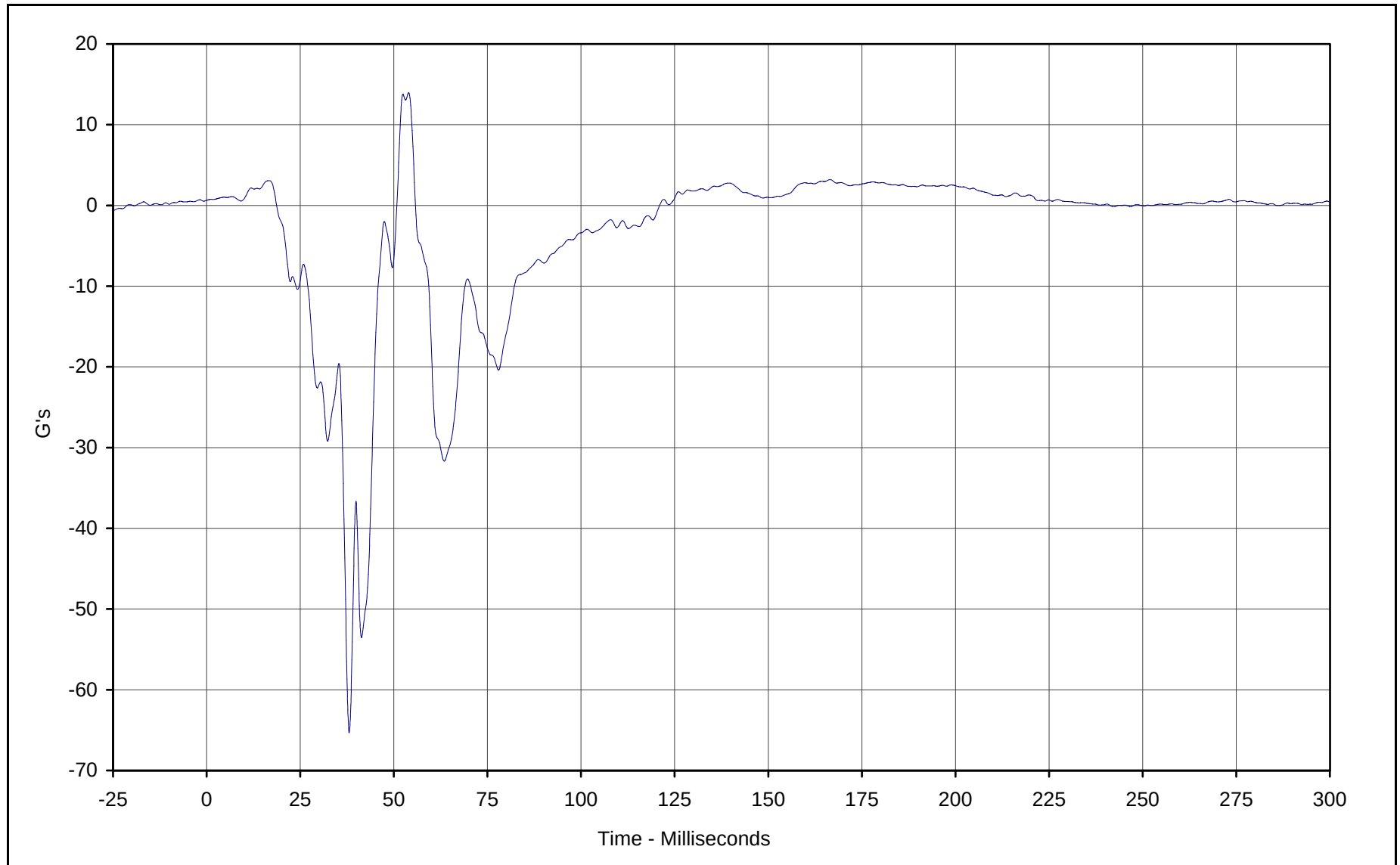
Curve Description: Passenger Left Foot Aft X
Maximum Value: 30.7 at 54.6 Milliseconds
Minimum Value: -138.8 at 39.1 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: FIL-079

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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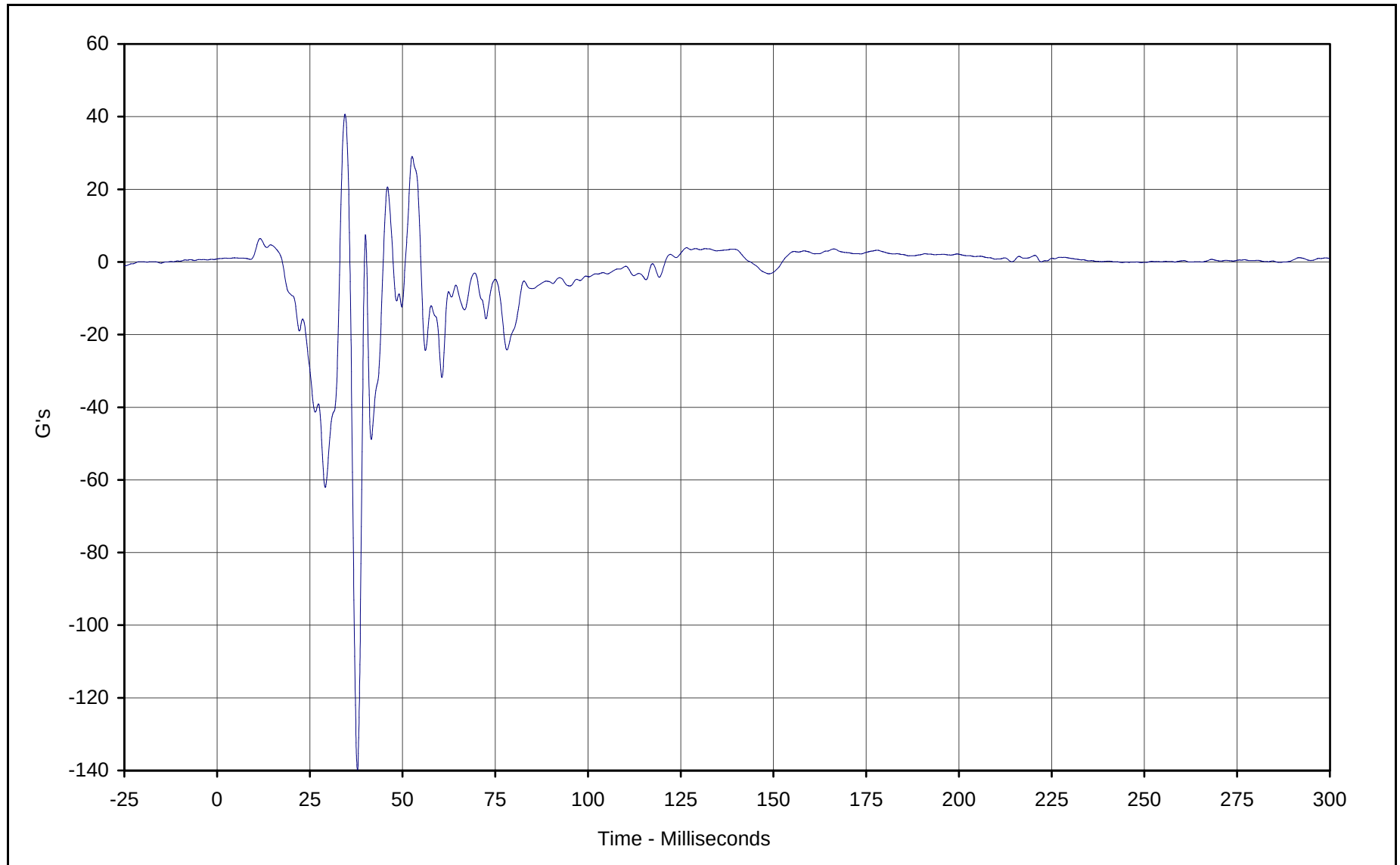


Curve Description: Passenger Left Foot Aft Z
Maximum Value: 14.0 at 54.0 Milliseconds
Minimum Value: -65.3 at 38.1 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: FIL-080

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



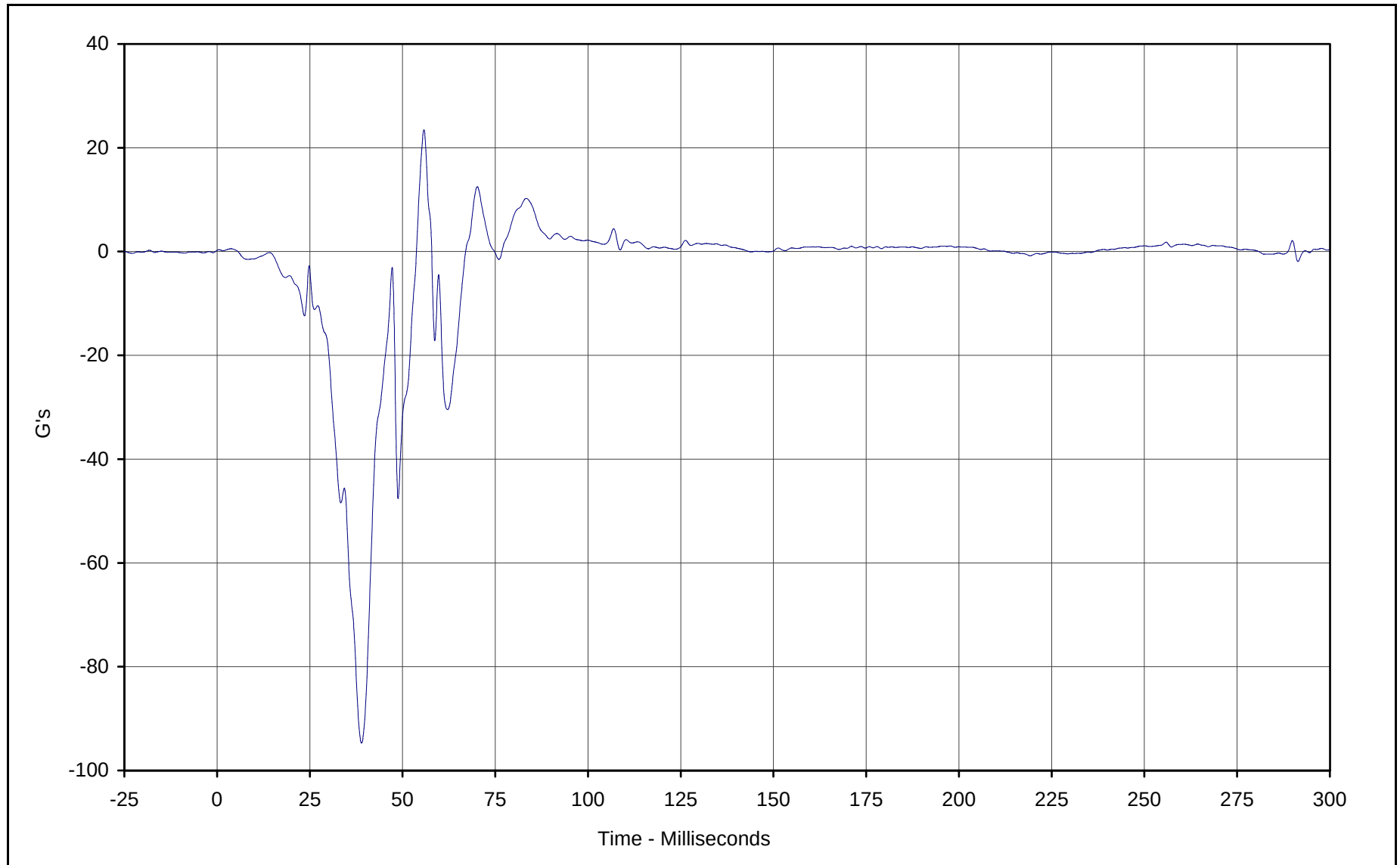
KAR21001-17



Curve Description: Passenger Left Foot Fore Z
Maximum Value: 40.7 at 34.5 Milliseconds
Minimum Value: -139.8 at 37.8 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: FIL-081

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



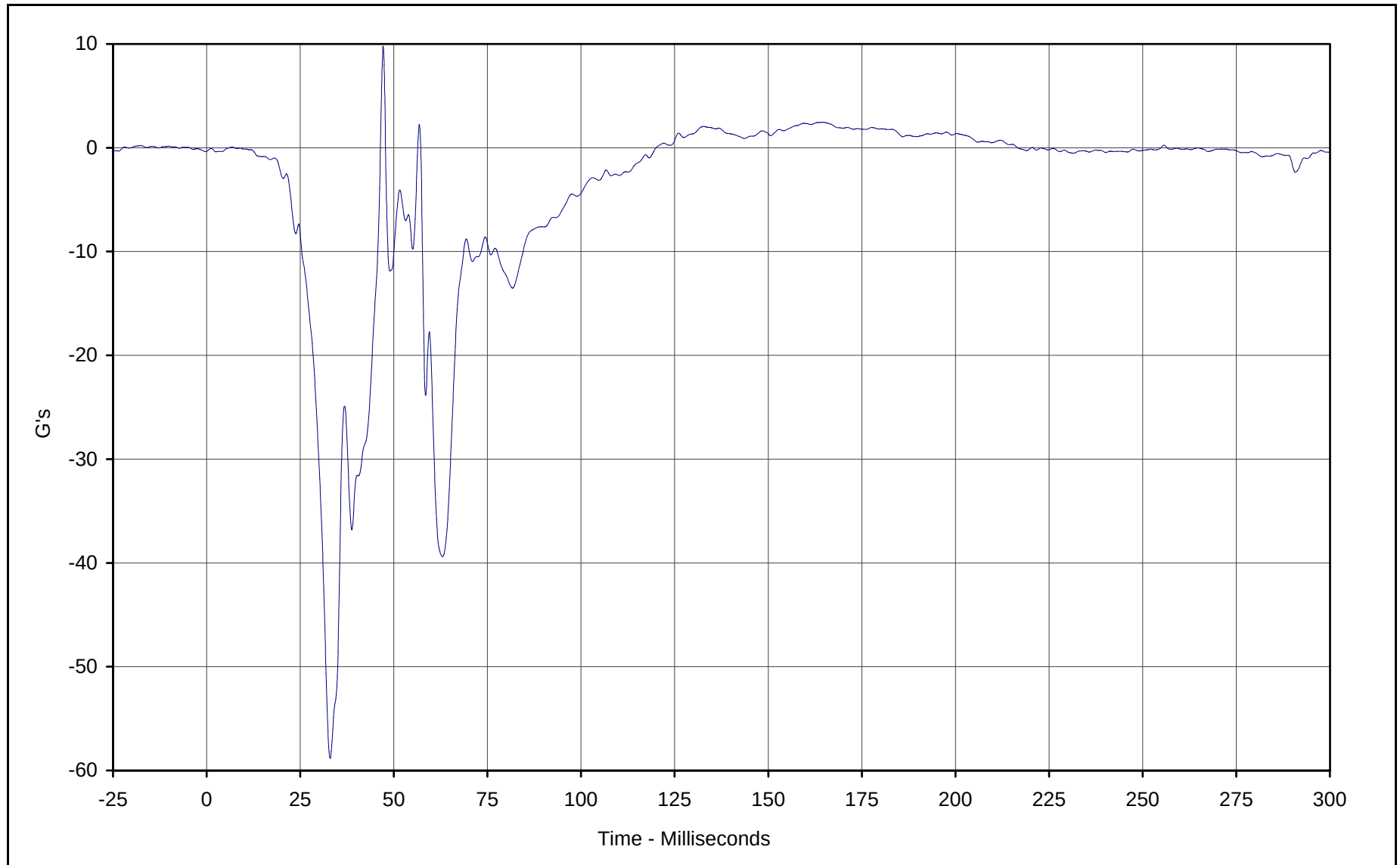


Curve Description: Passenger Right Foot Aft X
Maximum Value: 23.5 at 55.8 Milliseconds
Minimum Value: -94.7 at 38.9 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: FIL-082

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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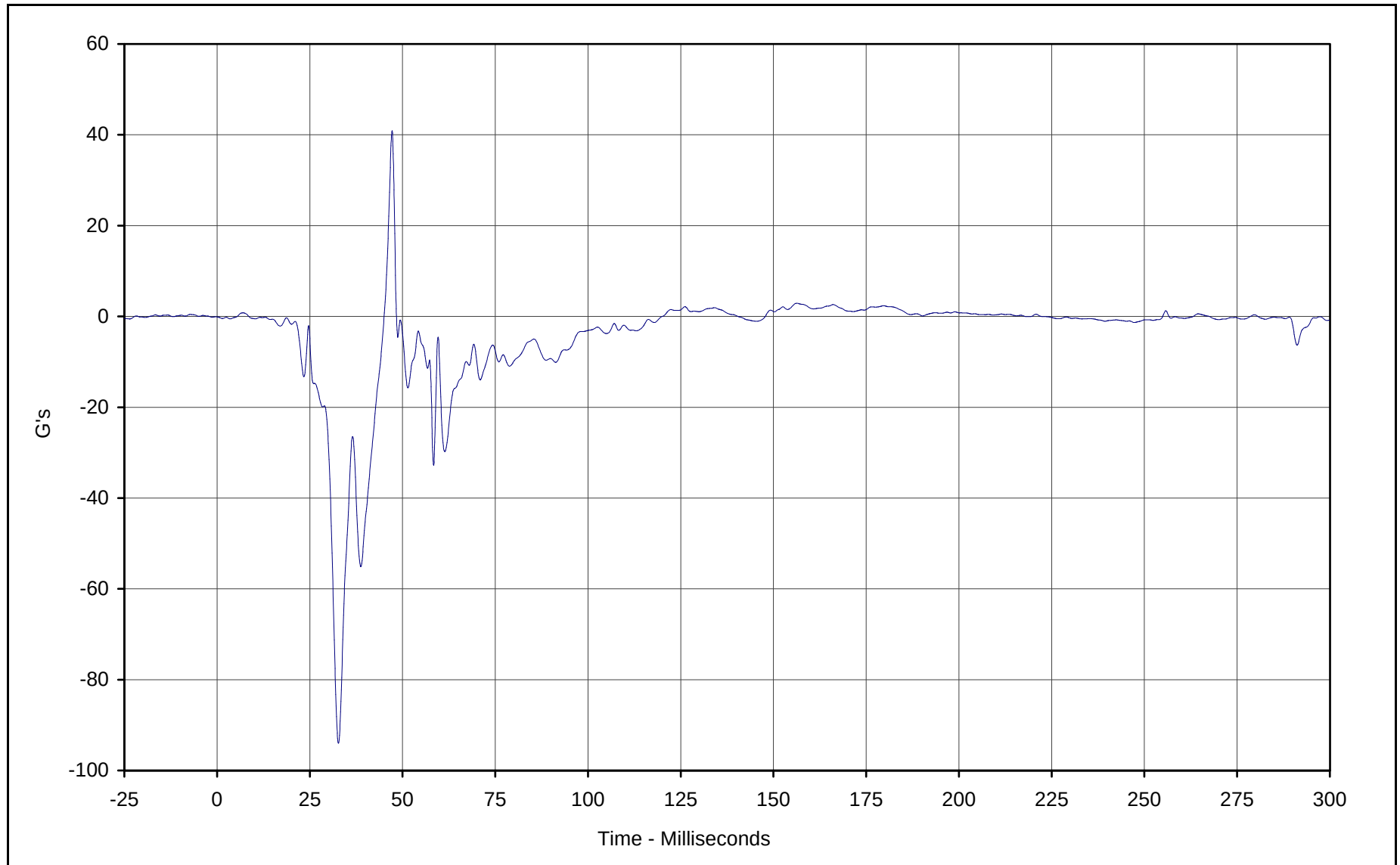


Curve Description: Passenger Right Foot Aft Z
Maximum Value: 9.8 at 47.1 Milliseconds
Minimum Value: -58.8 at 33.0 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: FIL-083

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



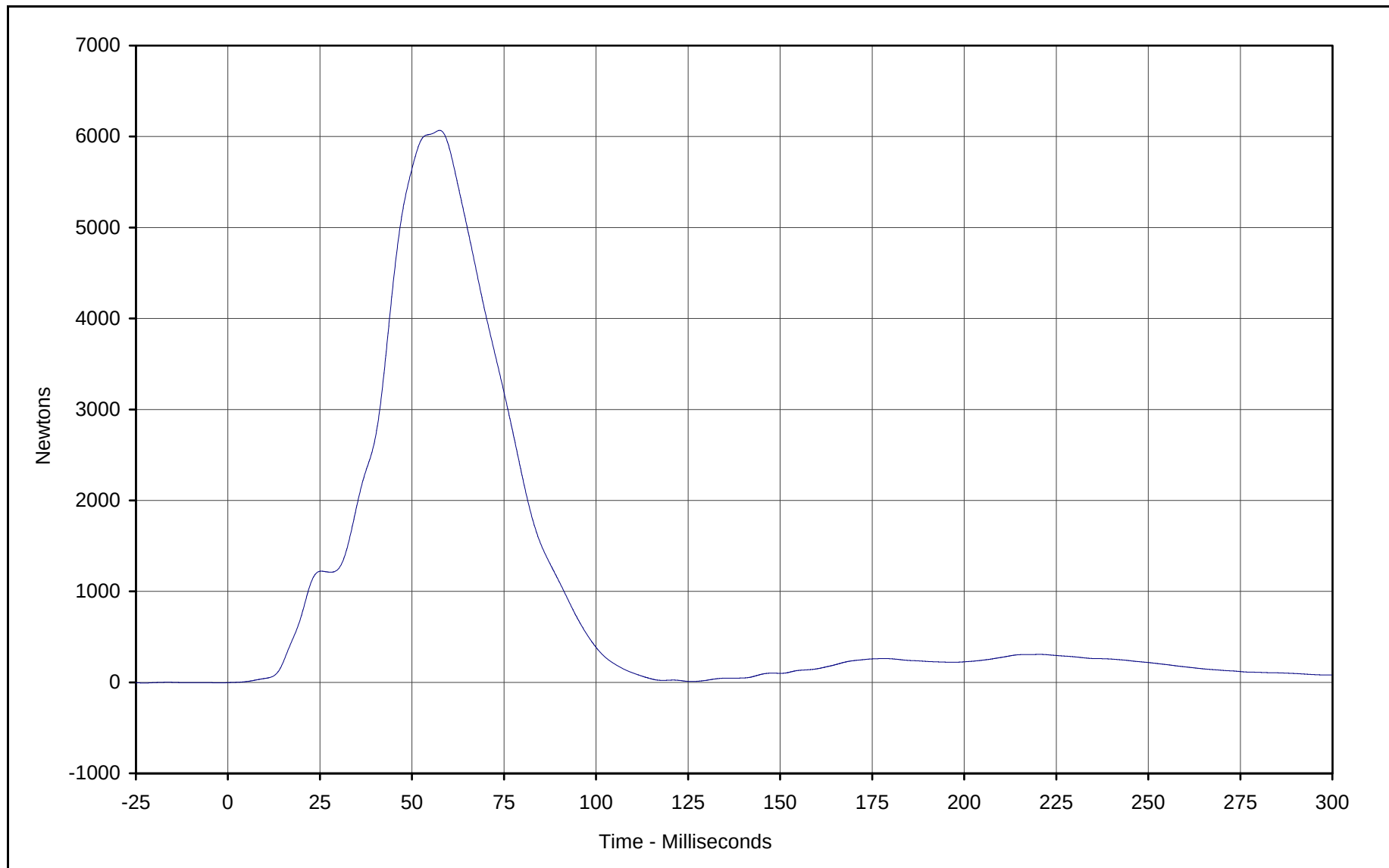
KAR21001-17



Curve Description: Passenger Right Foot Fore Z
Maximum Value: 40.9 at 47.2 Milliseconds
Minimum Value: -94.0 at 32.7 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: FIL-084

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



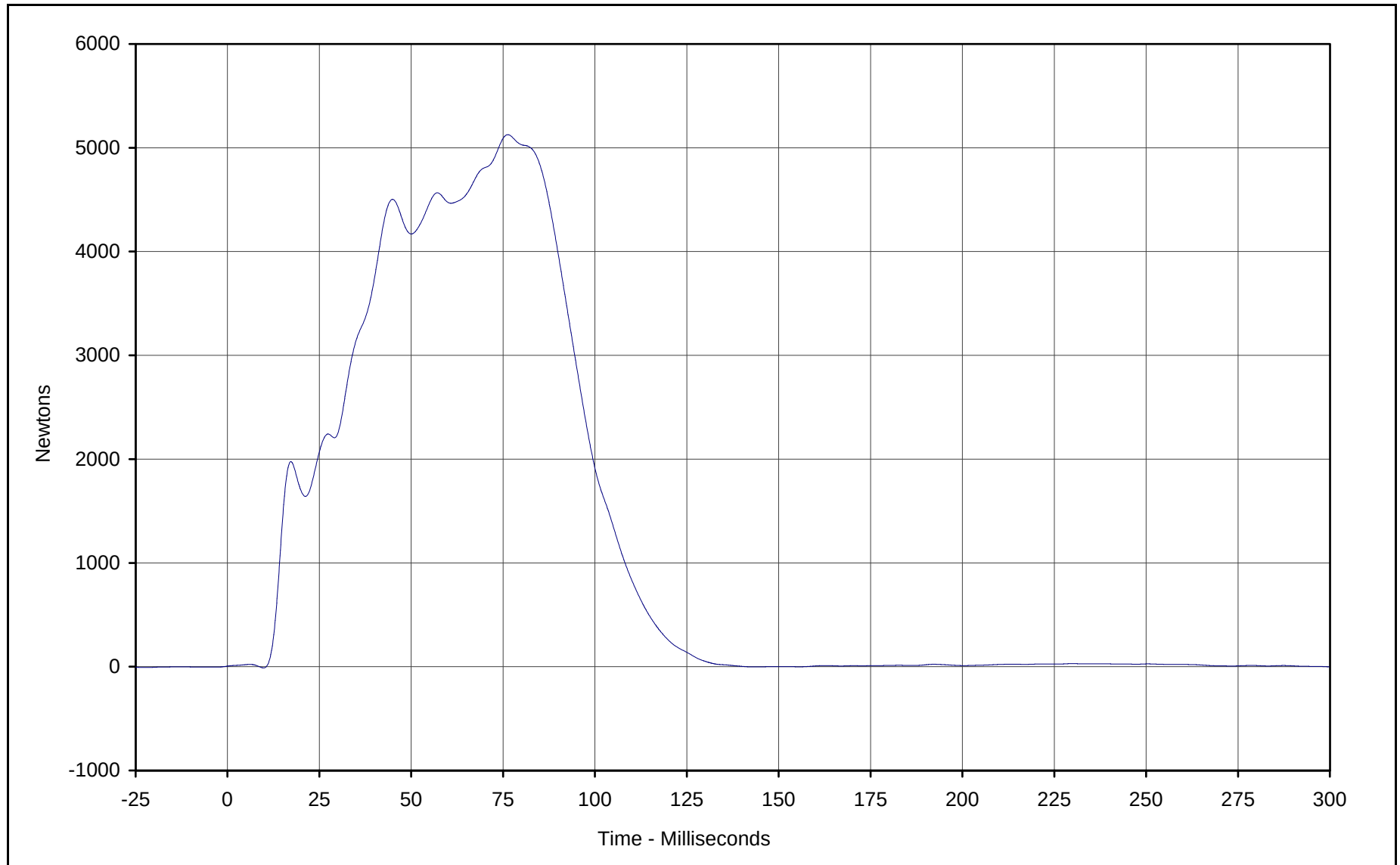


Curve Description: Passenger Lap Belt Force
Maximum Value: 6068.0 at 57.5 Milliseconds
Minimum Value: -3.3 at 0.0 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: FIL-085

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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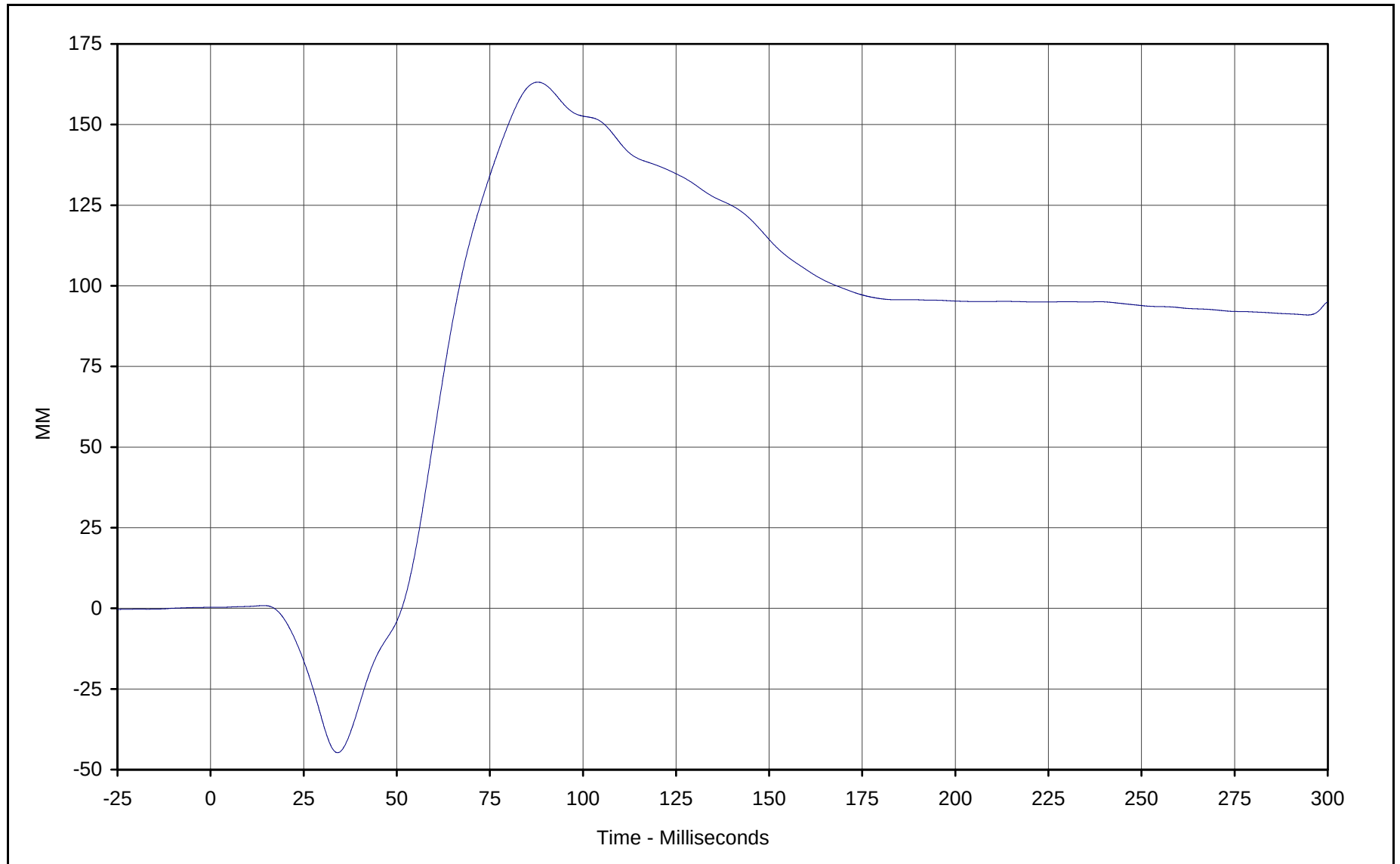
Curve Description: Passenger Shoulder Belt Force
Maximum Value: 5126.5 at 76.3 Milliseconds
Minimum Value: -11.8 at 9.8 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: FIL-086

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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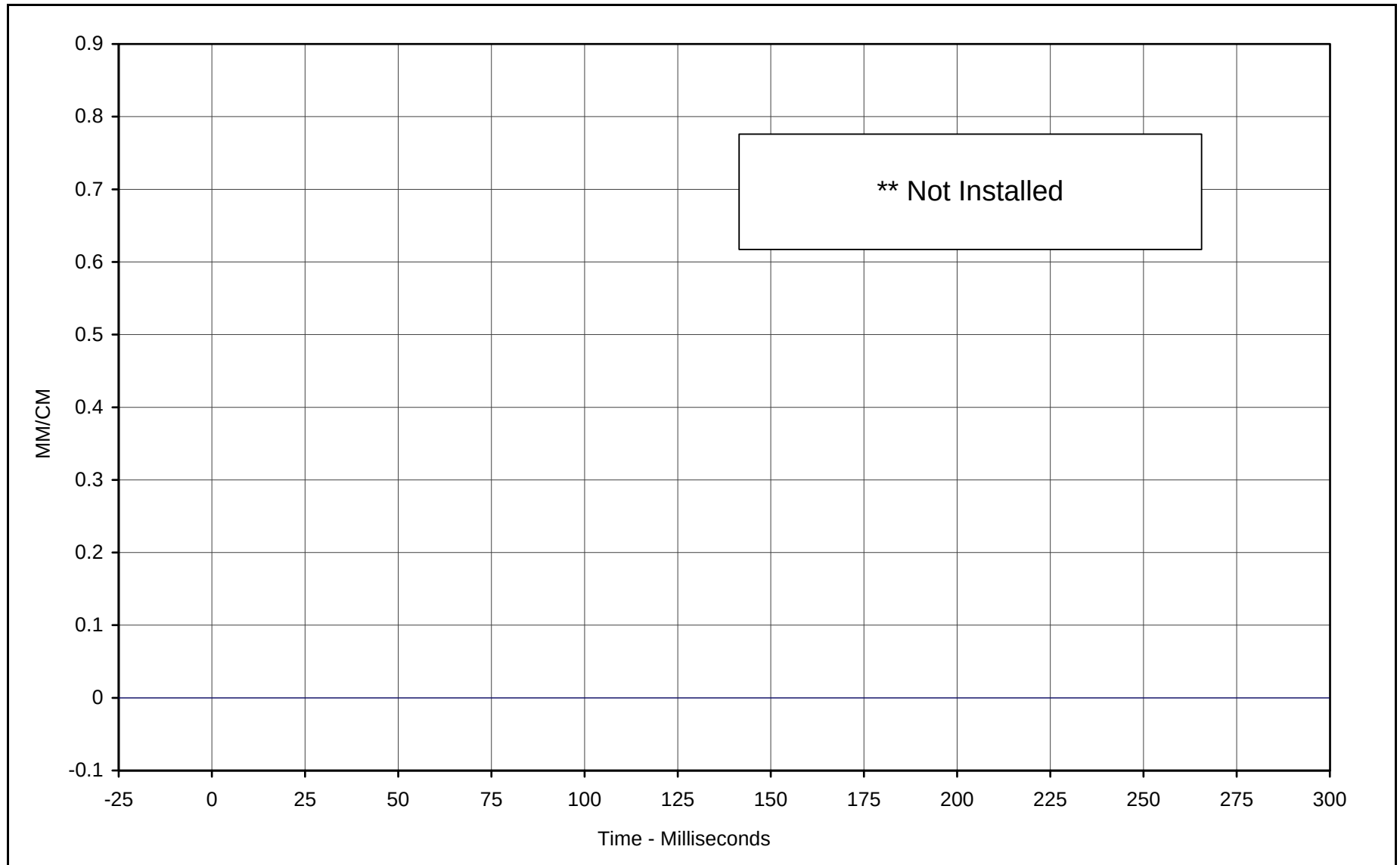
Curve Description: Passenger Shoulder Belt Pullout
Maximum Value: 163.2 at 87.8 Milliseconds
Minimum Value: -44.8 at 34.1 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: FIL-087

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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Curve Description: Passenger Shoulder Belt Elongation **

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Maximum Value: 0.0 at 0.0 Milliseconds

Test Vehicle: 2001 Kia Sephia 4 Door Sedan

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 60

Date of Test: 3/6/01

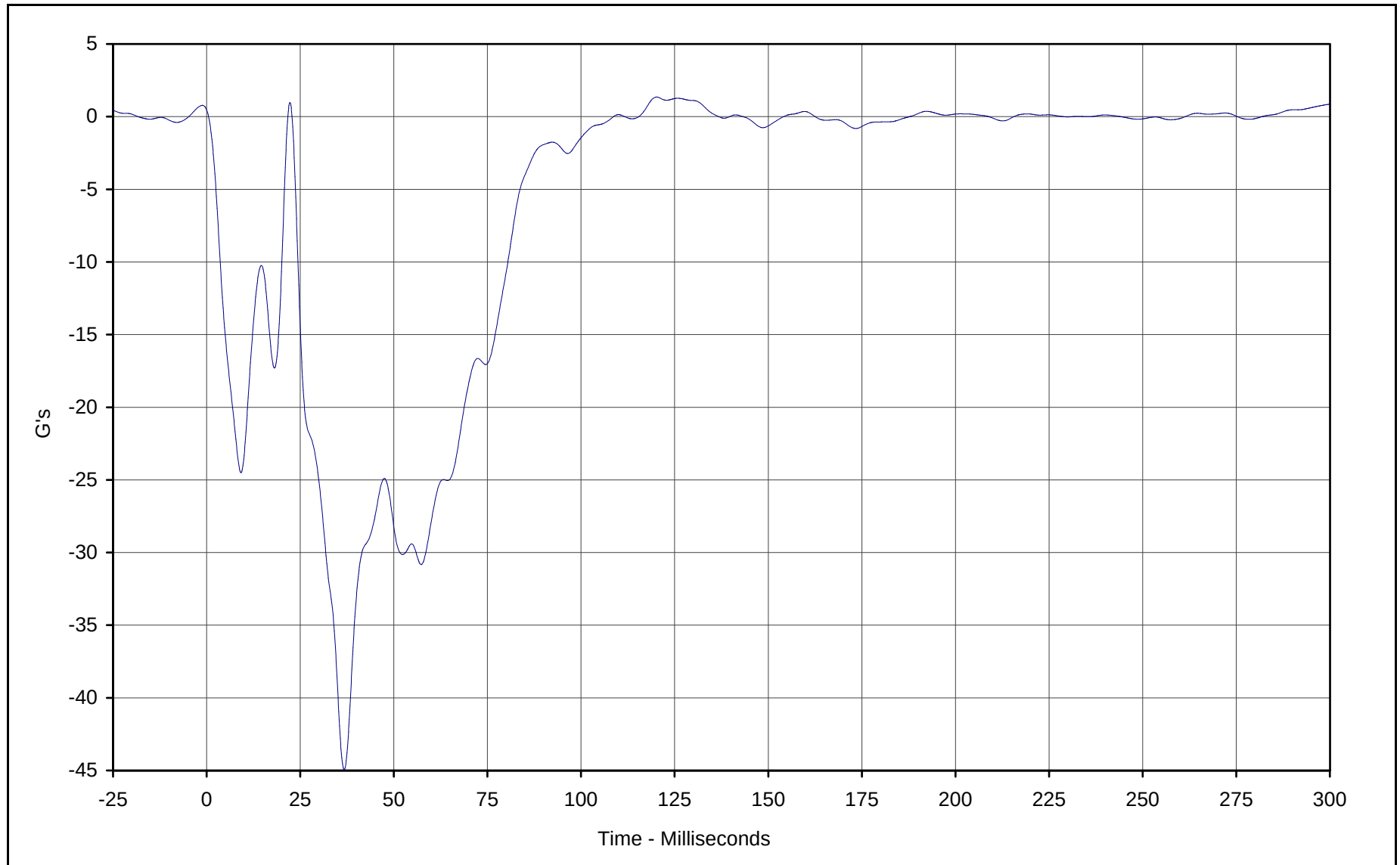
Curve Number: FIL-088

** Not installed



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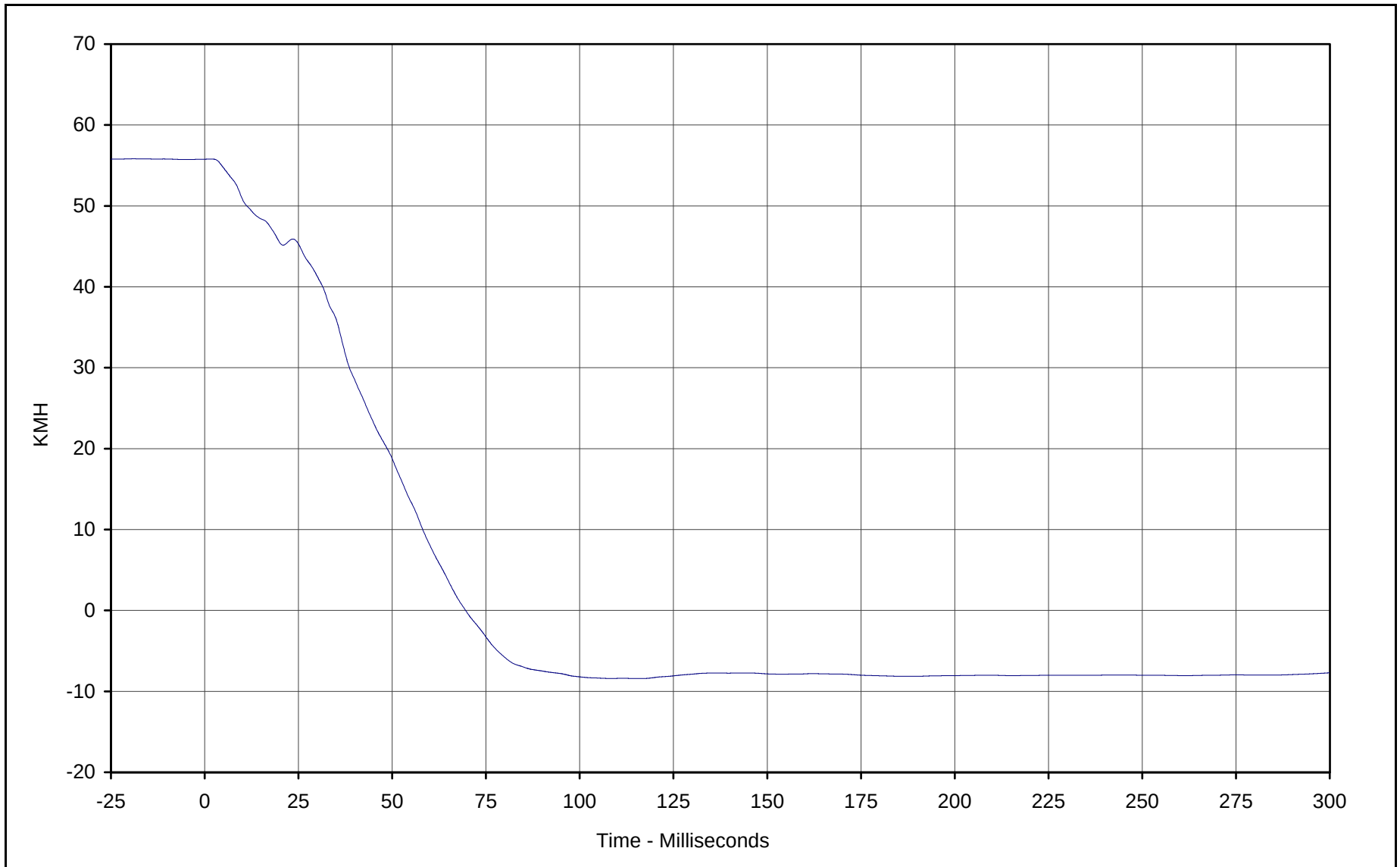


Curve Description: Vehicle Left Rear Primary
Maximum Value: 1.3 at 120.2 Milliseconds
Minimum Value: -44.9 at 36.7 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: FIL-089

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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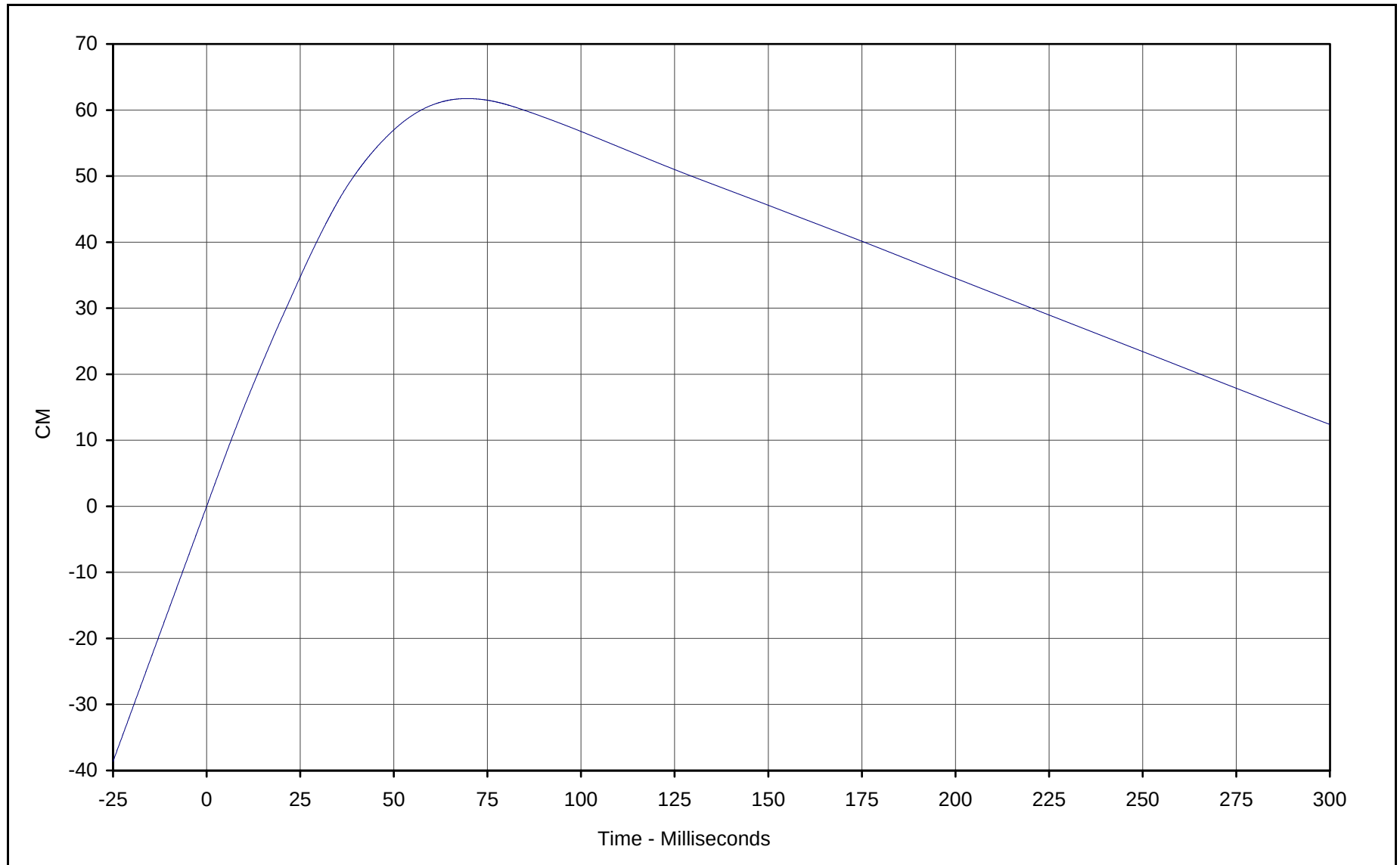


Curve Description: Vehicle Left Rear Primary Velocity
Maximum Value: 55.8 at 2.0 Milliseconds
Minimum Value: -8.4 at 108.5 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: IN1-089

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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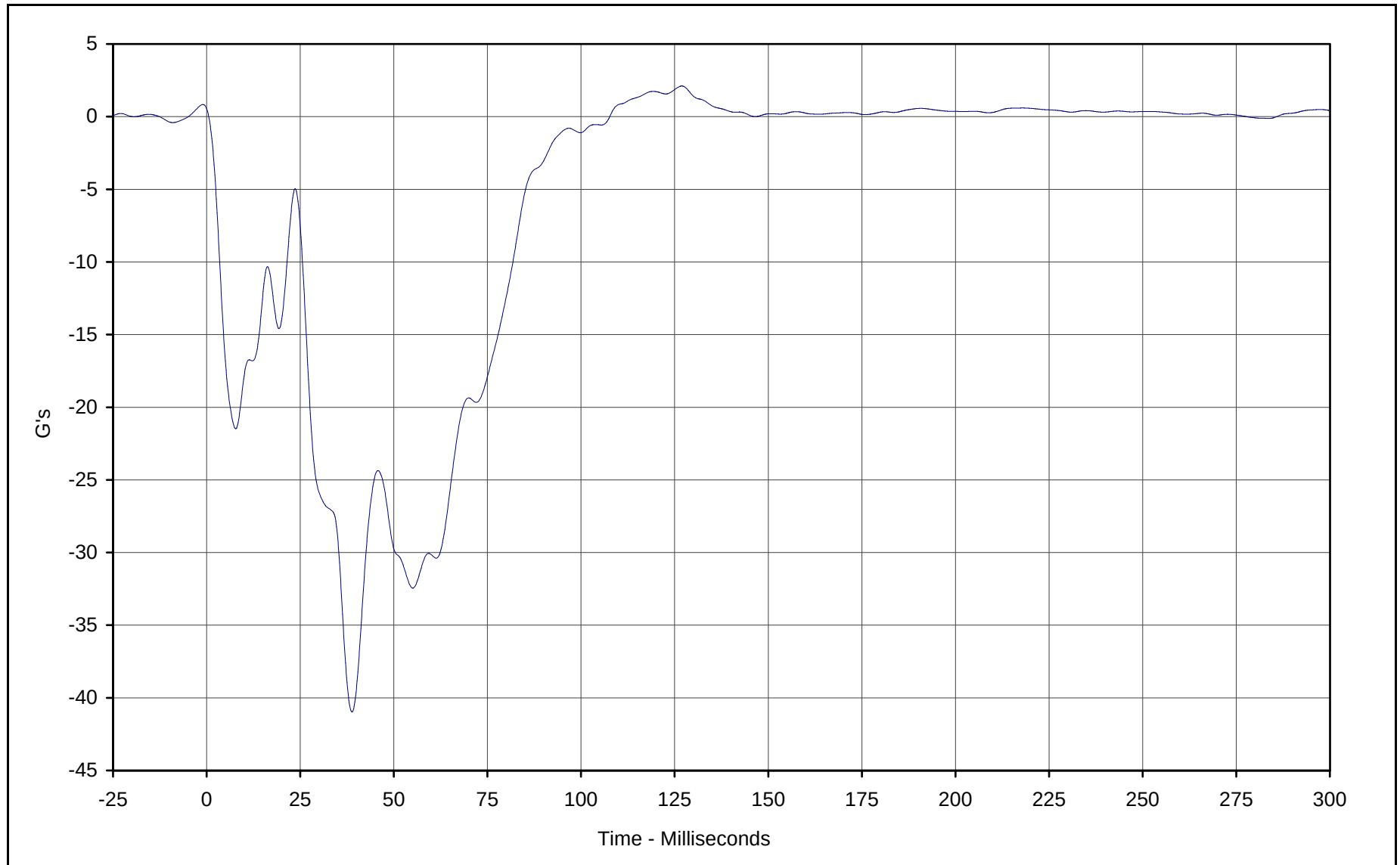


Curve Description: Vehicle Left Rear Primary Displ.
Maximum Value: 61.7 at 69.6 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: IN2-089

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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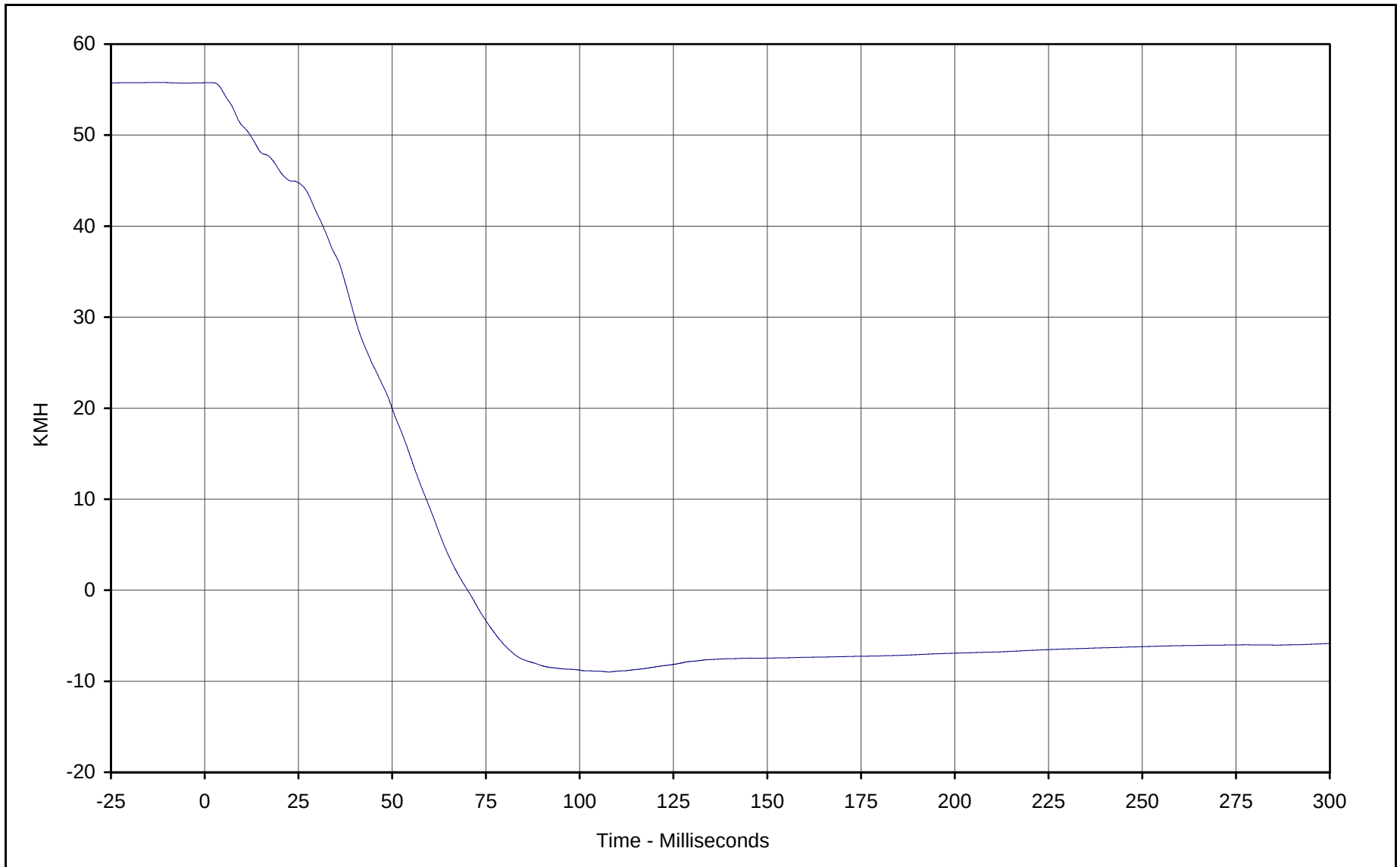


Curve Description: Vehicle Right Rear Primary
Maximum Value: 2.1 at 126.9 Milliseconds
Minimum Value: -41.0 at 38.8 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: FIL-090

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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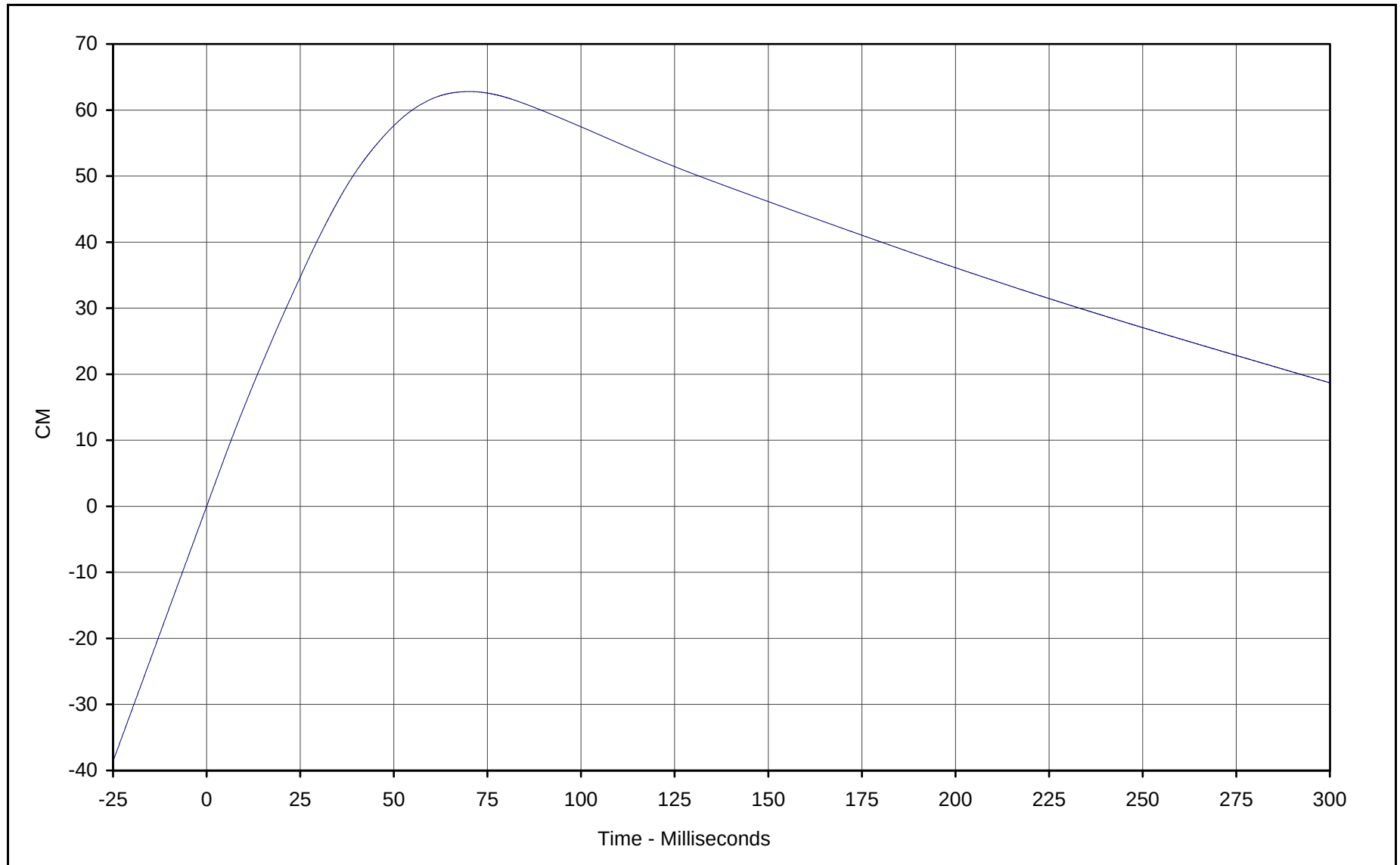
Curve Description: Vehicle Right Rear Primary Velocity
Maximum Value: 55.8 at 1.9 Milliseconds
Minimum Value: -9.0 at 107.8 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: IN1-090

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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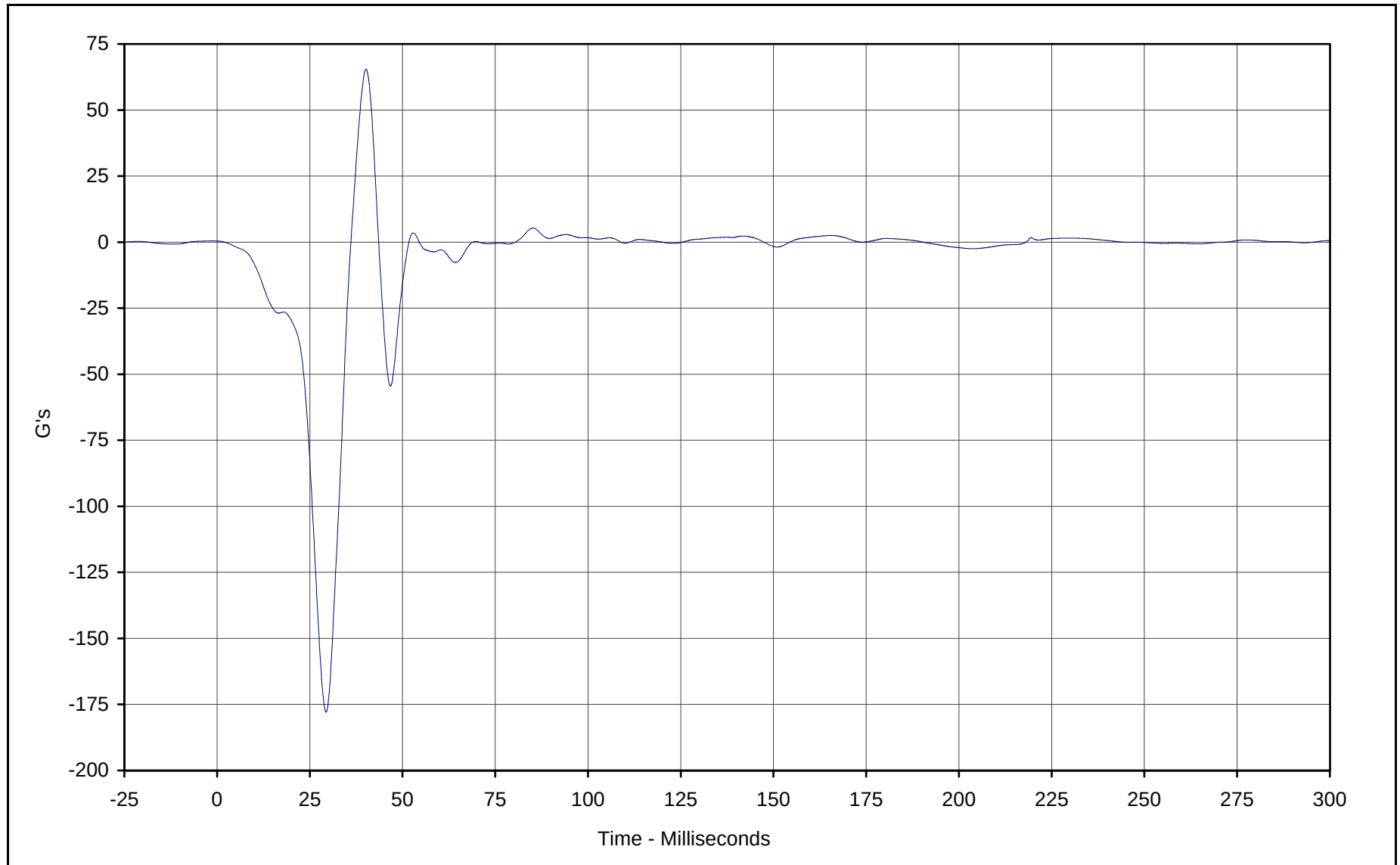
Curve Description: Vehicle Right Rear Primary Displ.
Maximum Value: 62.8 at 70.1 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: IN2-090

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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Curve Description: Vehicle Engine Top

Maximum Value: 65.5 at 40.1 Milliseconds

Minimum Value: -177.9 at 29.4 Milliseconds

SAE Filter Class: 60

Date of Test: 3/6/01

Curve Number: FIL-091

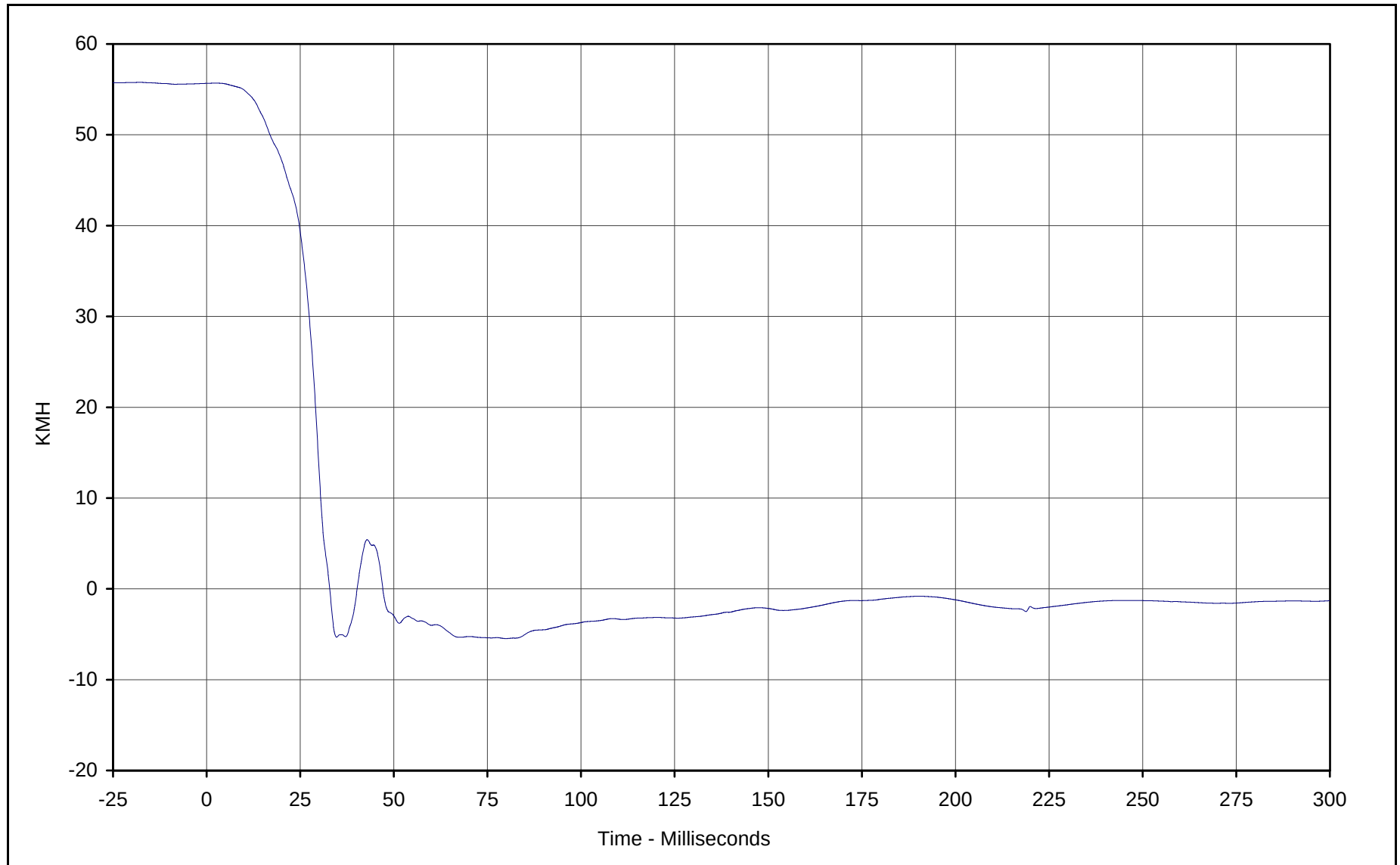
Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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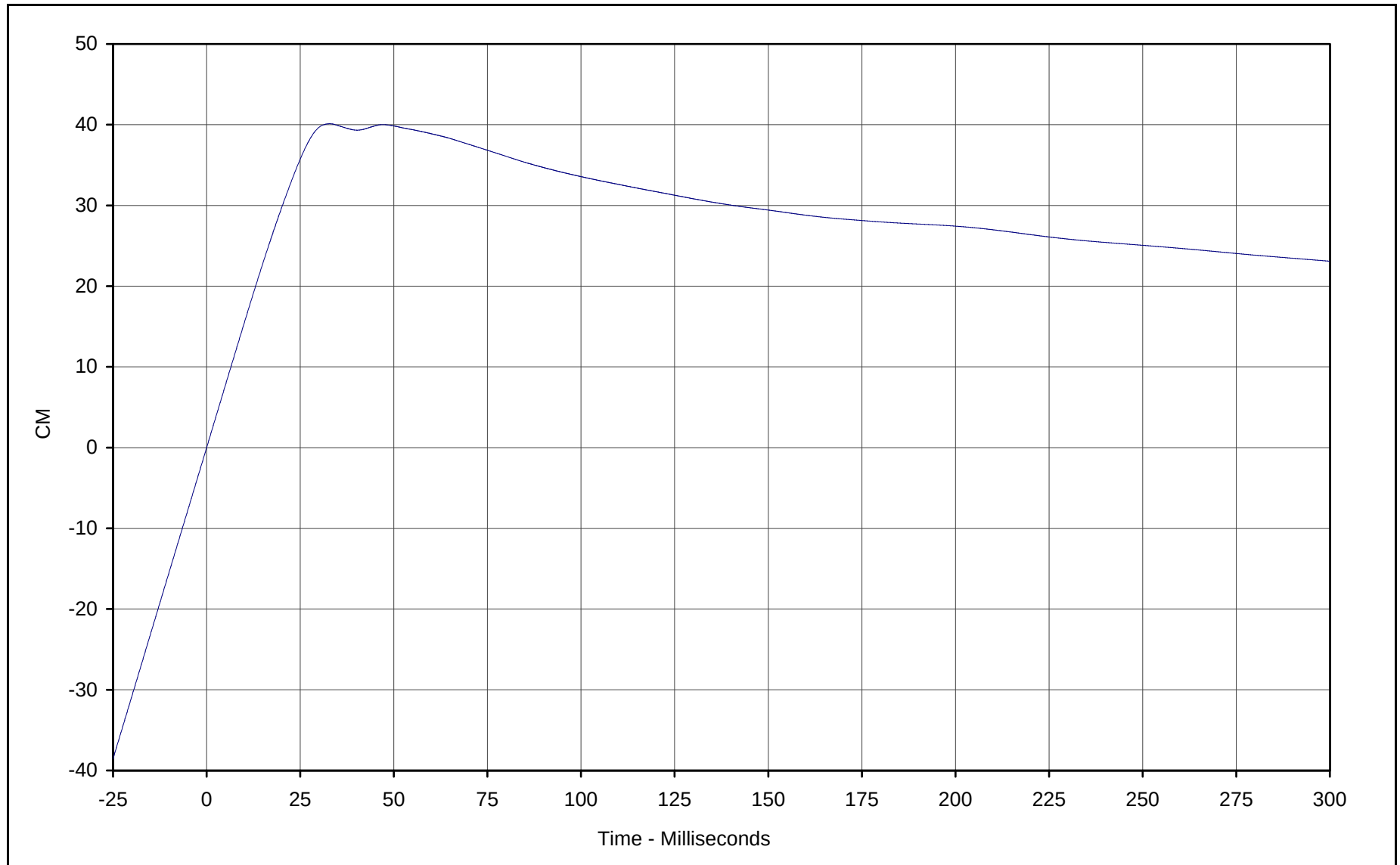


Curve Description: Vehicle Engine Top Velocity
Maximum Value: 55.7 at 1.8 Milliseconds
Minimum Value: -5.5 at 79.9 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: IN1-091

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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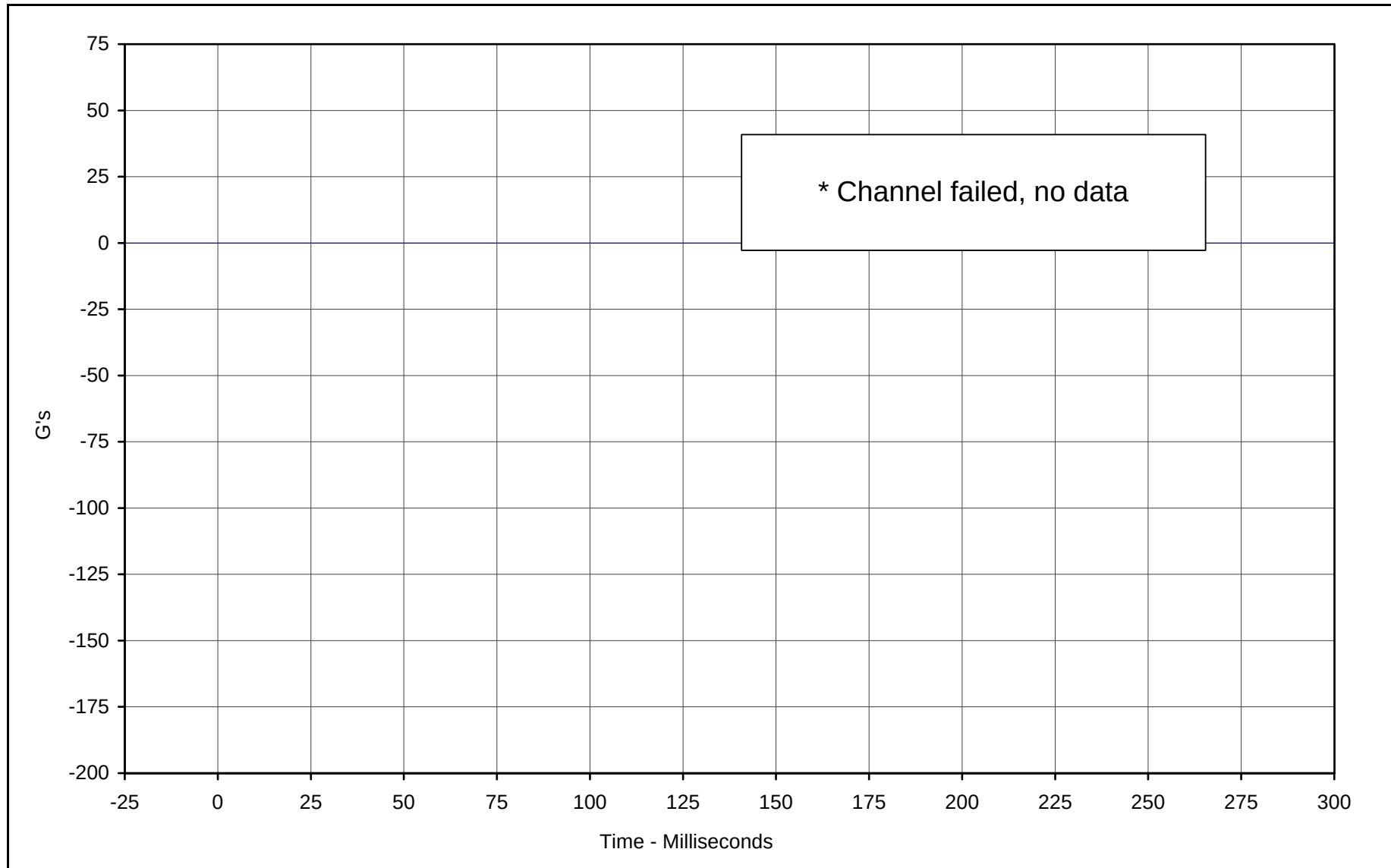


Curve Description: Vehicle Engine Top Displ.
Maximum Value: 40.1 at 32.9 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: IN2-091

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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Curve Description: Vehicle Engine Bottom *

Maximum Value: 0.0 at 0.0 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 60

Date of Test: 3/6/01

Curve Number: FIL-092

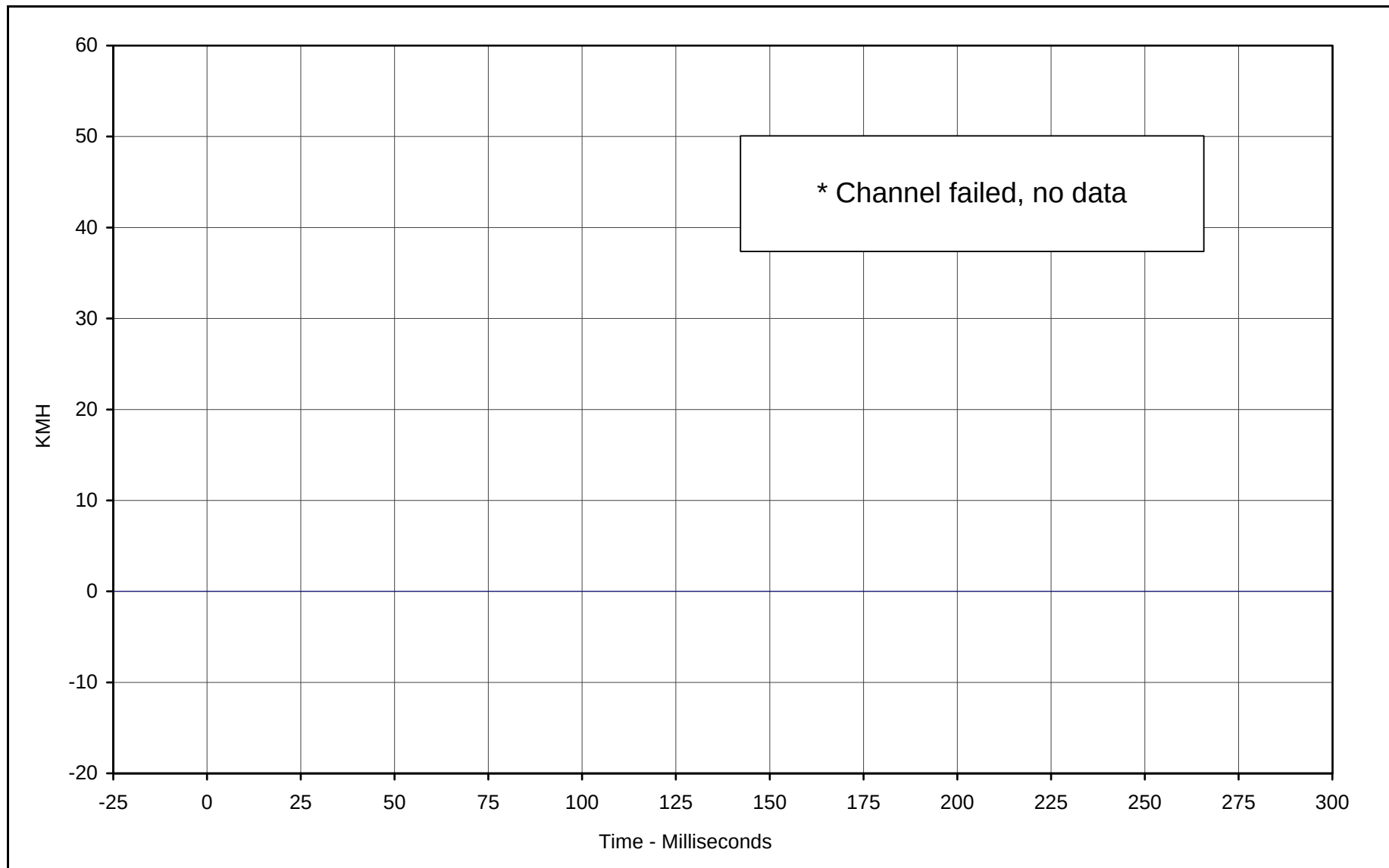
Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan

* Channel failed, no data



KAR21001-17



Curve Description: Vehicle Engine Bottom Velocity *

Maximum Value: 0.0 at 0.0 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 3/6/01

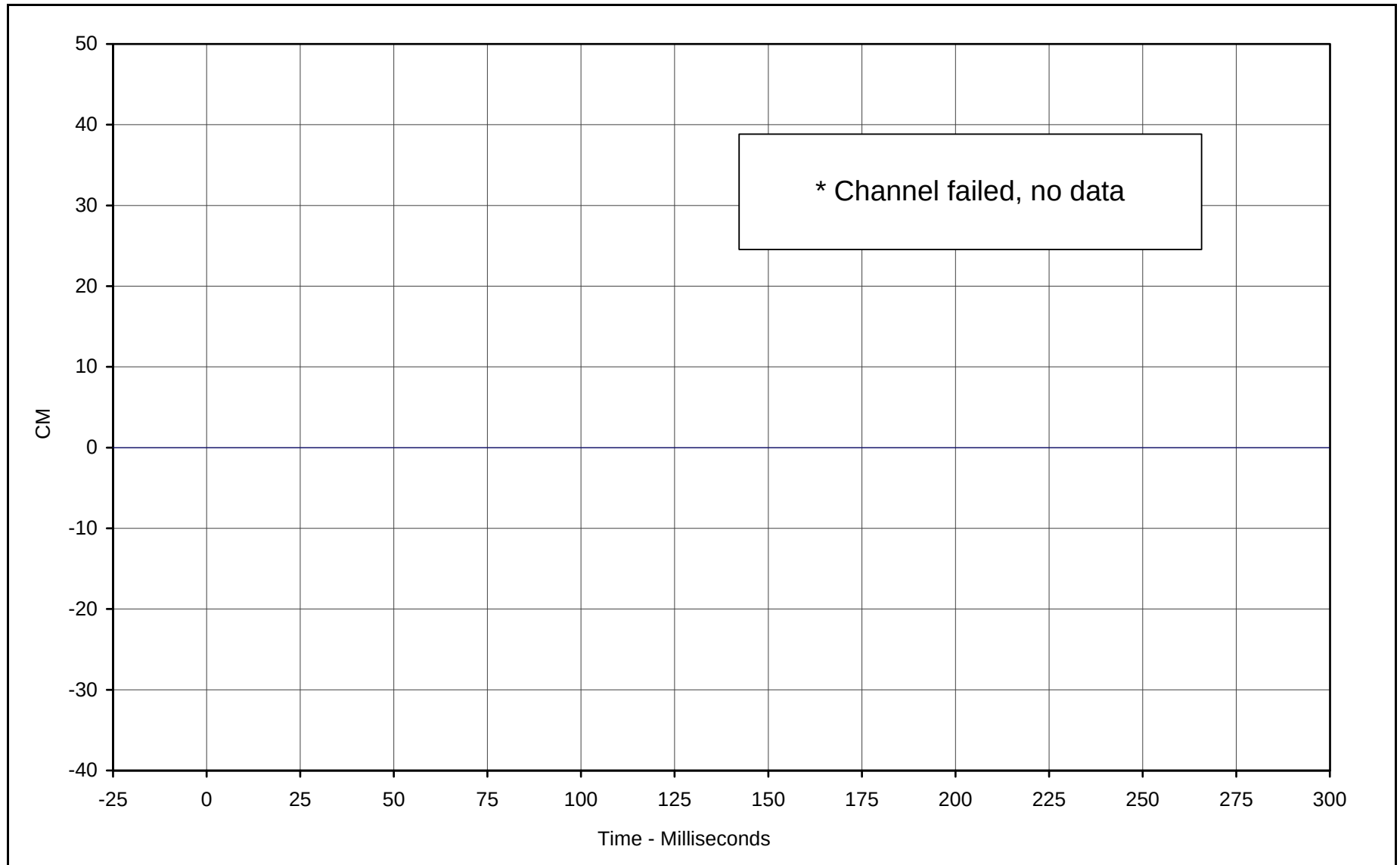
Curve Number: IN1-092

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan

* Channel failed, no data





Curve Description: Vehicle Engine Bottom Displ. *

Maximum Value: 0.0 at 0.0 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 3/6/01

Curve Number: IN2-092

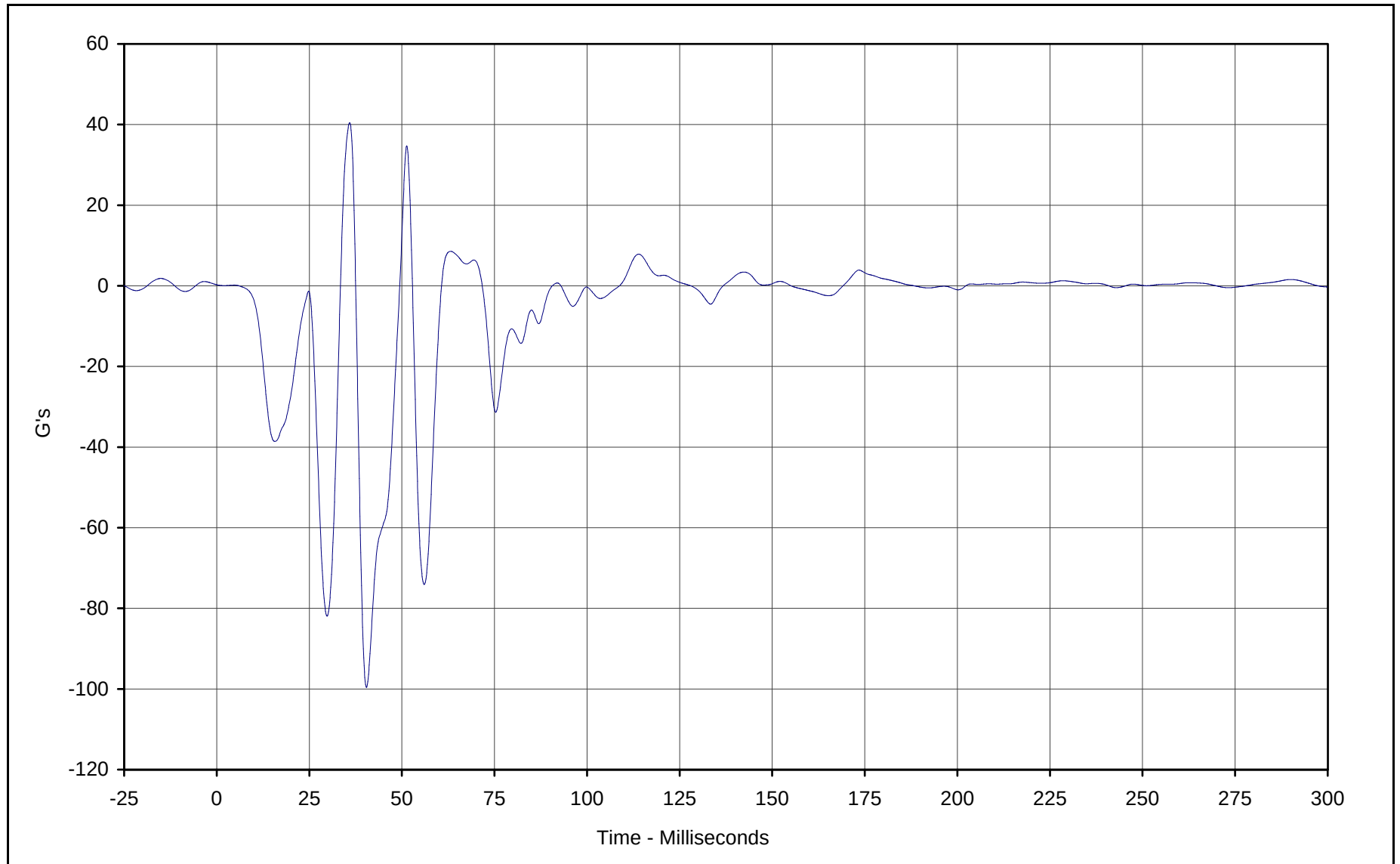
Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan

* Channel failed, no data



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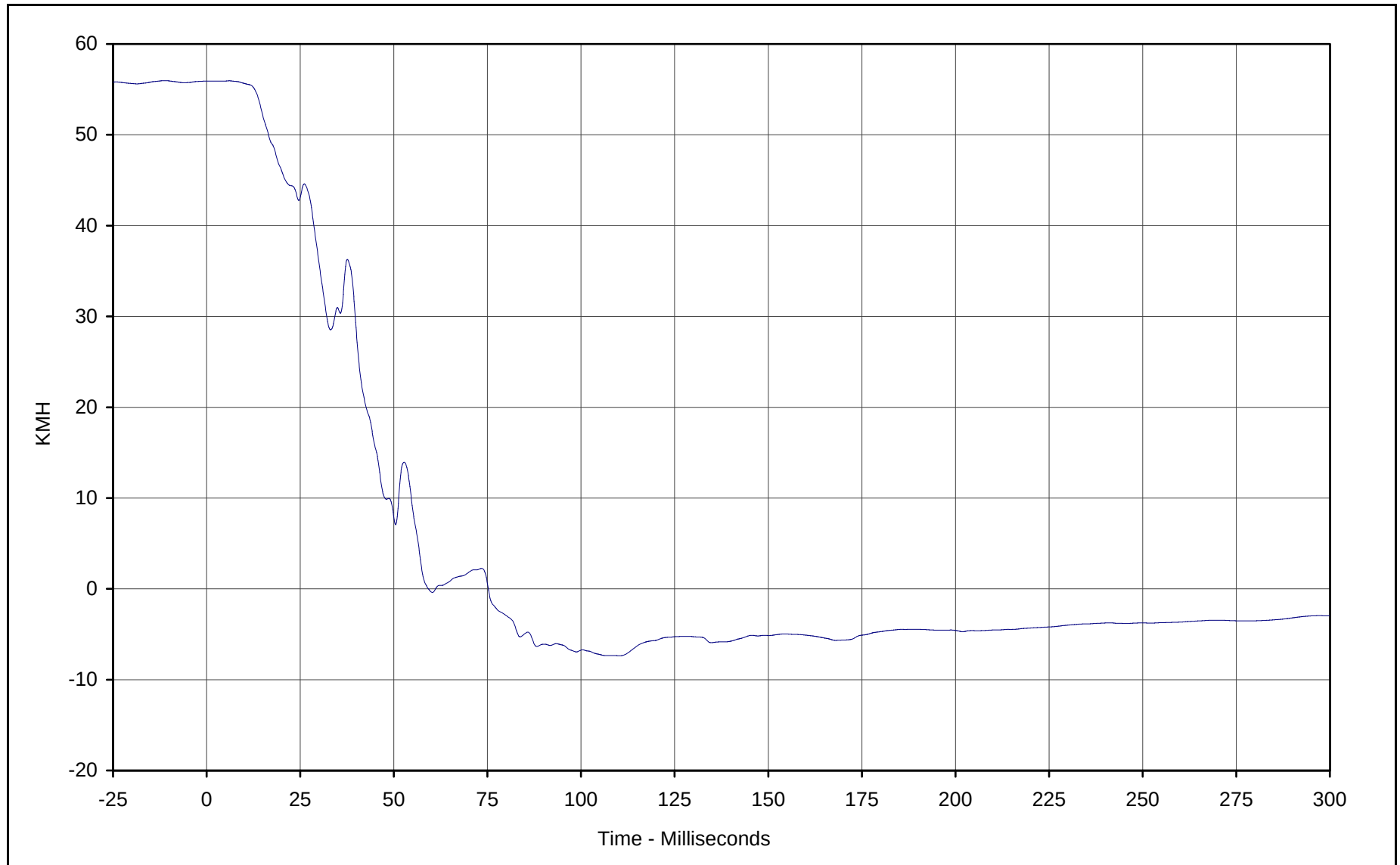


Curve Description: Vehicle Left Brake Caliper
Maximum Value: 40.5 at 35.9 Milliseconds
Minimum Value: -99.6 at 40.4 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: FIL-093

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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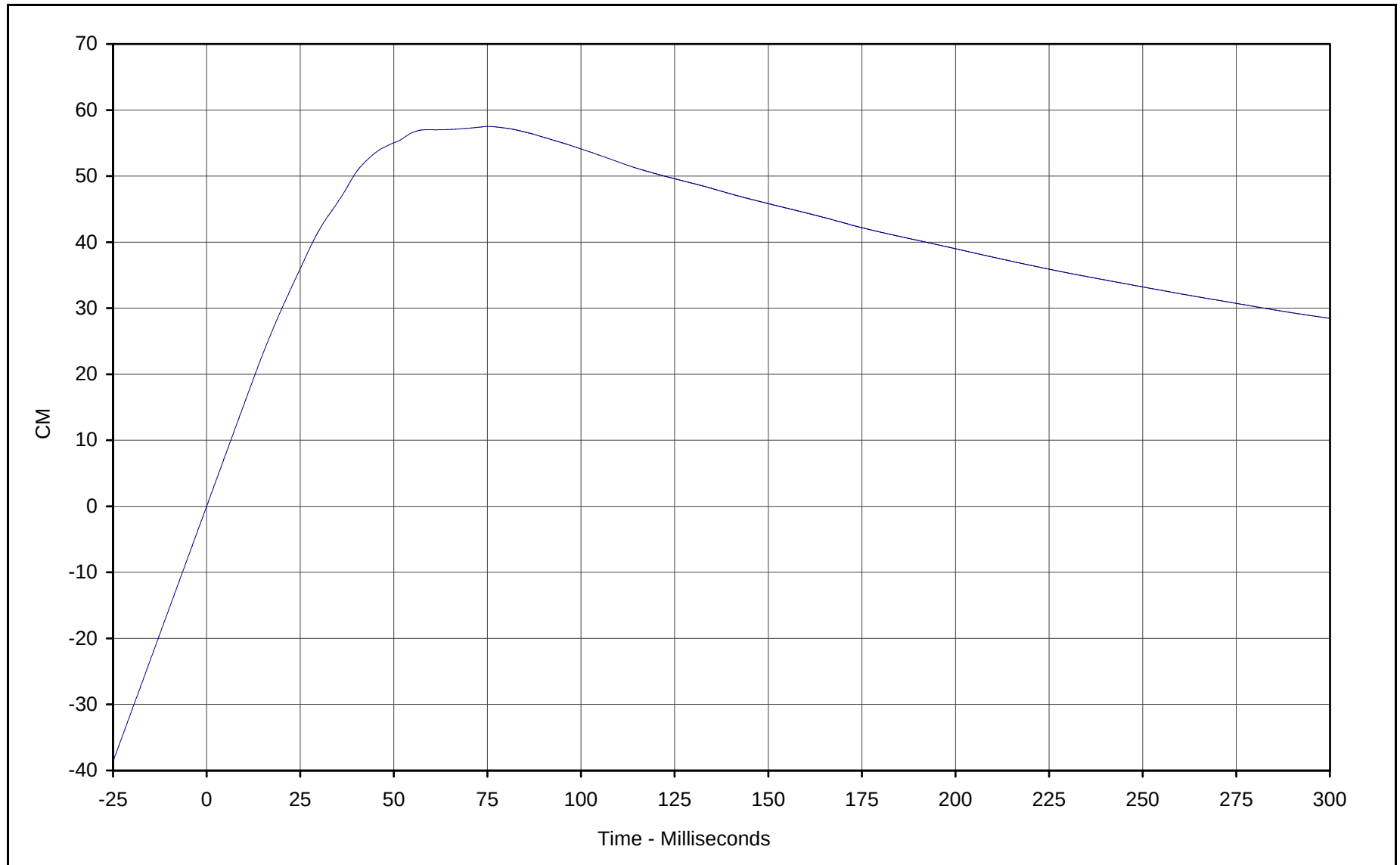


Curve Description: Vehicle Left Brake Caliper Velocity
Maximum Value: 56.0 at 6.1 Milliseconds
Minimum Value: -7.4 at 110.4 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: IN1-093

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



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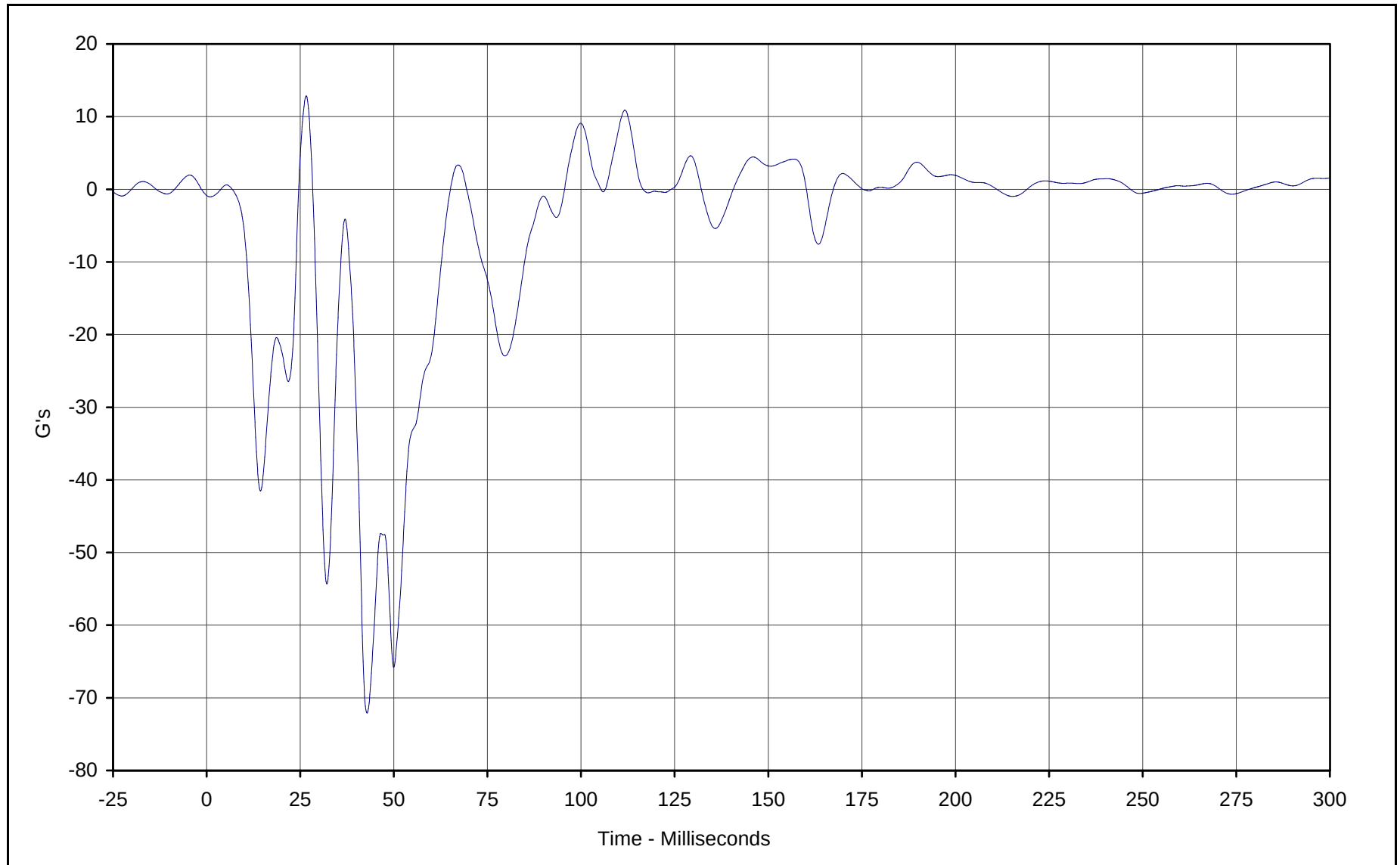


Curve Description: Vehicle Left Brake Caliper Displ.
Maximum Value: 57.5 at 75.2 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: IN2-093

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



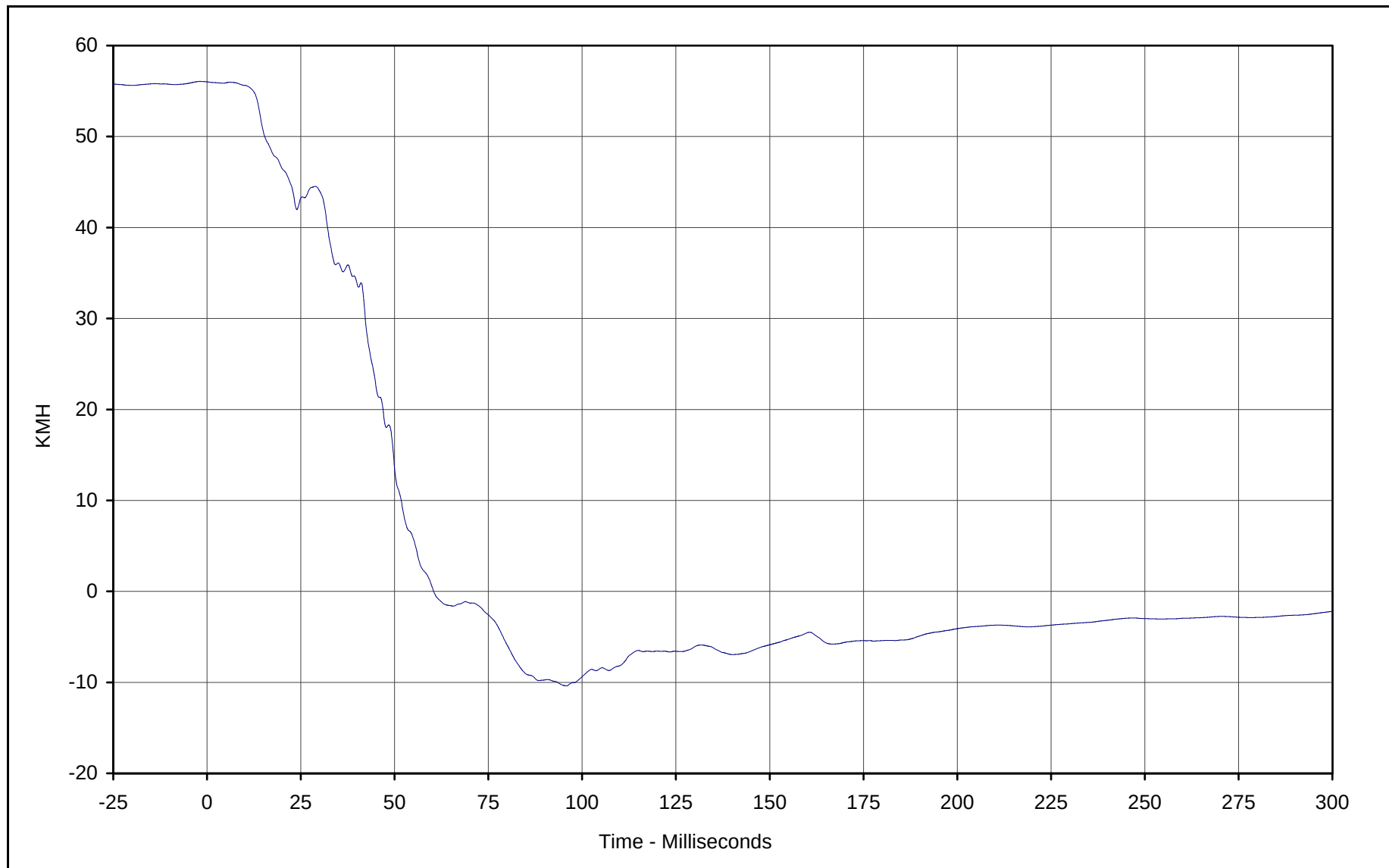
KAR21001-17



Curve Description: Vehicle Right Brake Caliper
Maximum Value: 12.9 at 26.6 Milliseconds
Minimum Value: -72.1 at 42.8 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: FIL-094

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan





Curve Description: Vehicle Right Brake Caliper Velocity

Maximum Value: 56.0 at 0.0 Milliseconds

Minimum Value: -10.4 at 95.7 Milliseconds

SAE Filter Class: 180

Date of Test: 3/6/01

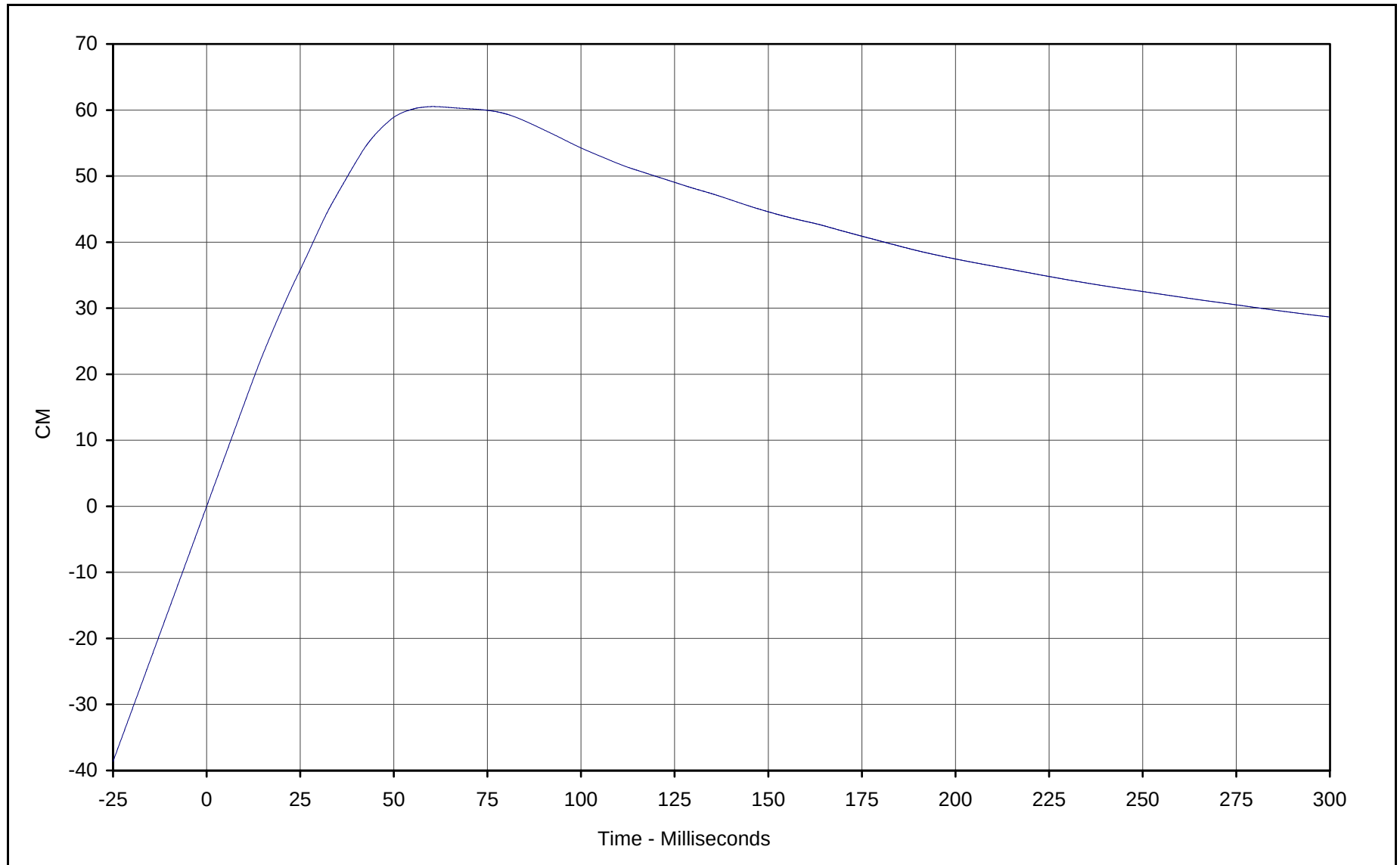
Curve Number: IN1-094

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan



B-140



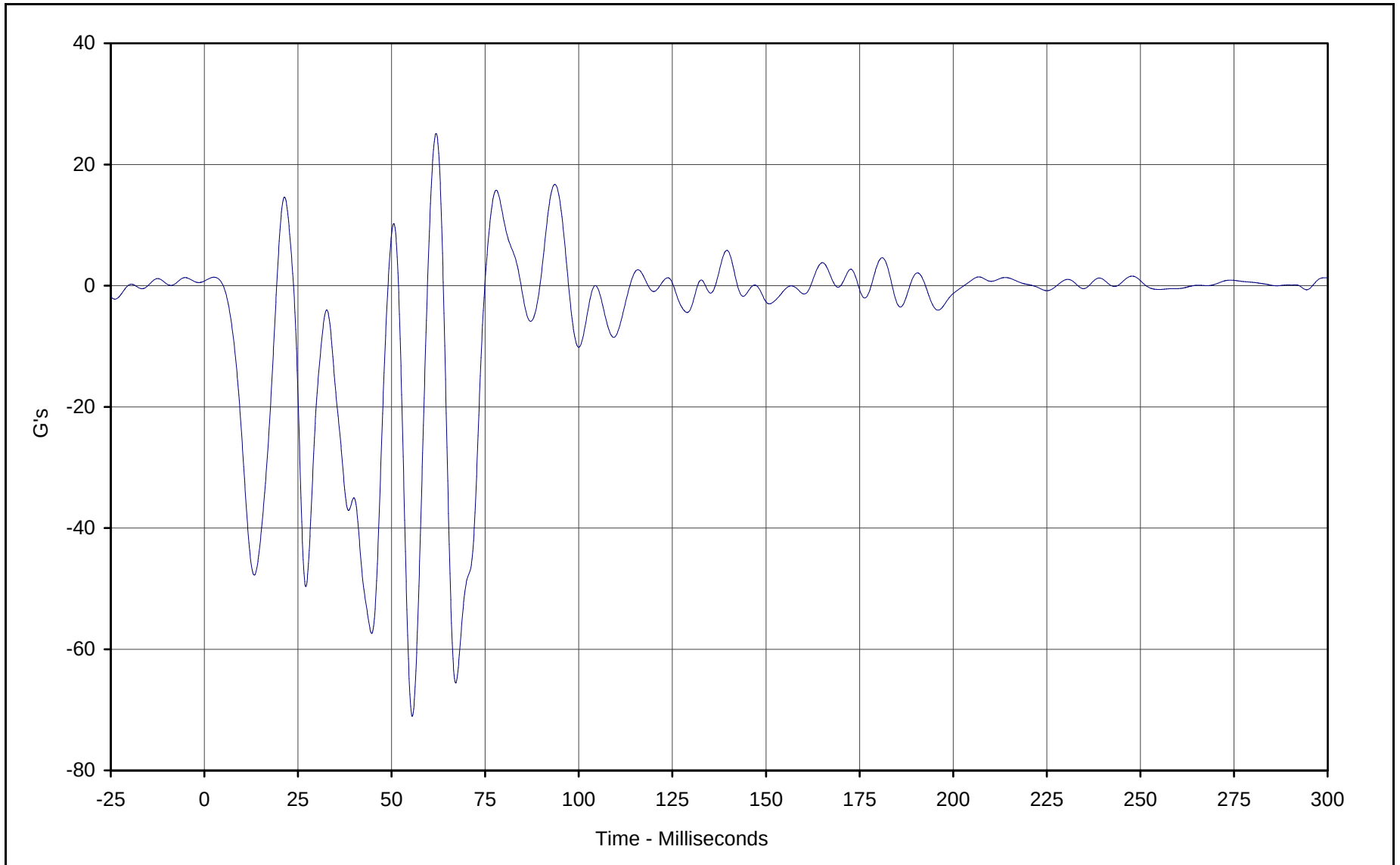
Curve Description: Vehicle Right Brake Caliper Displ.
Maximum Value: 60.5 at 60.4 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: IN2-094

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



KAR21001-17

B-141



Curve Description: Vehicle Instrument Panel

Maximum Value: 25.1 at 61.9 Milliseconds

Minimum Value: -71.1 at 55.5 Milliseconds

SAE Filter Class: 60

Date of Test: 3/6/01

Curve Number: FIL-095

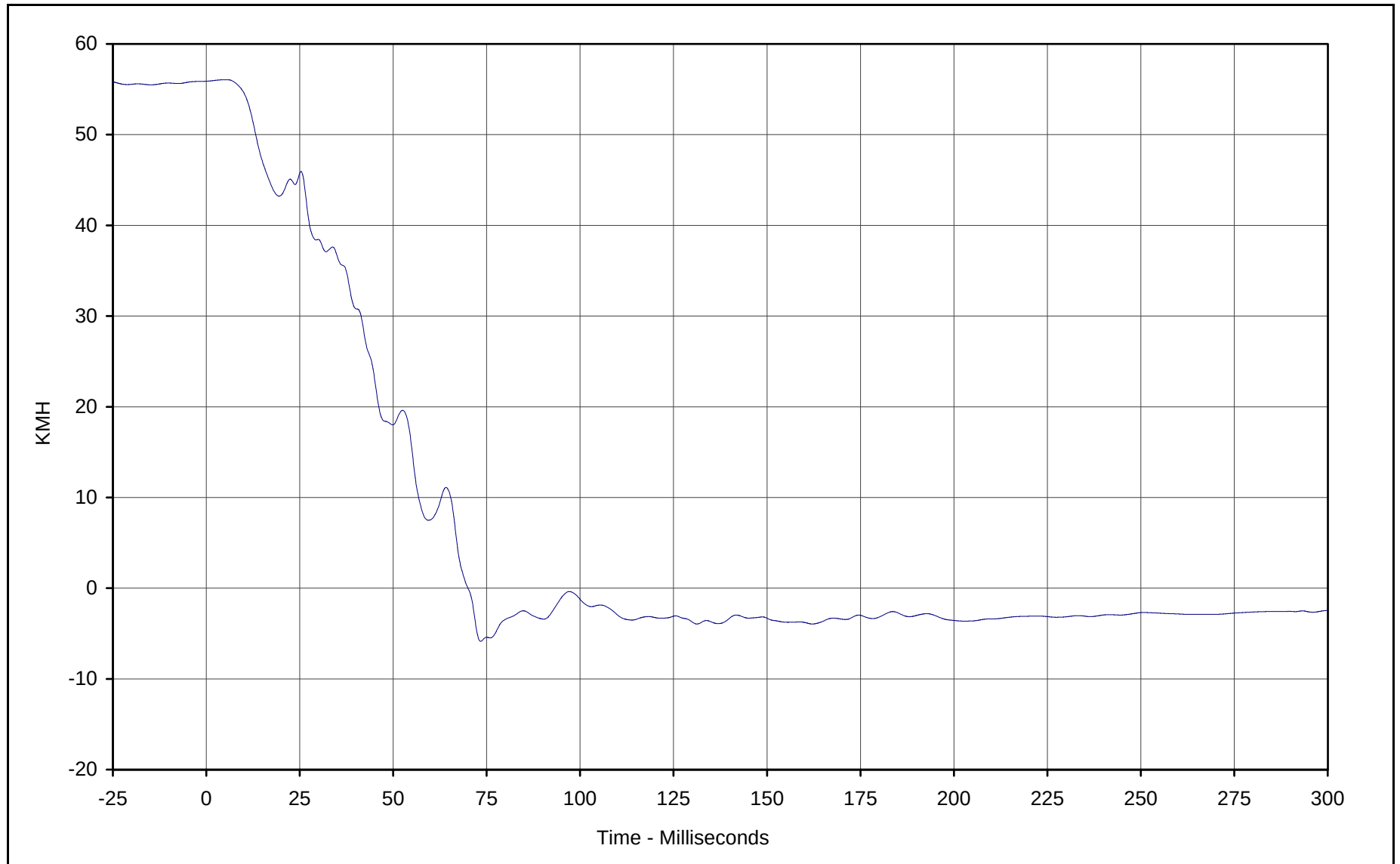
Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan



KAR21001-17

B-142



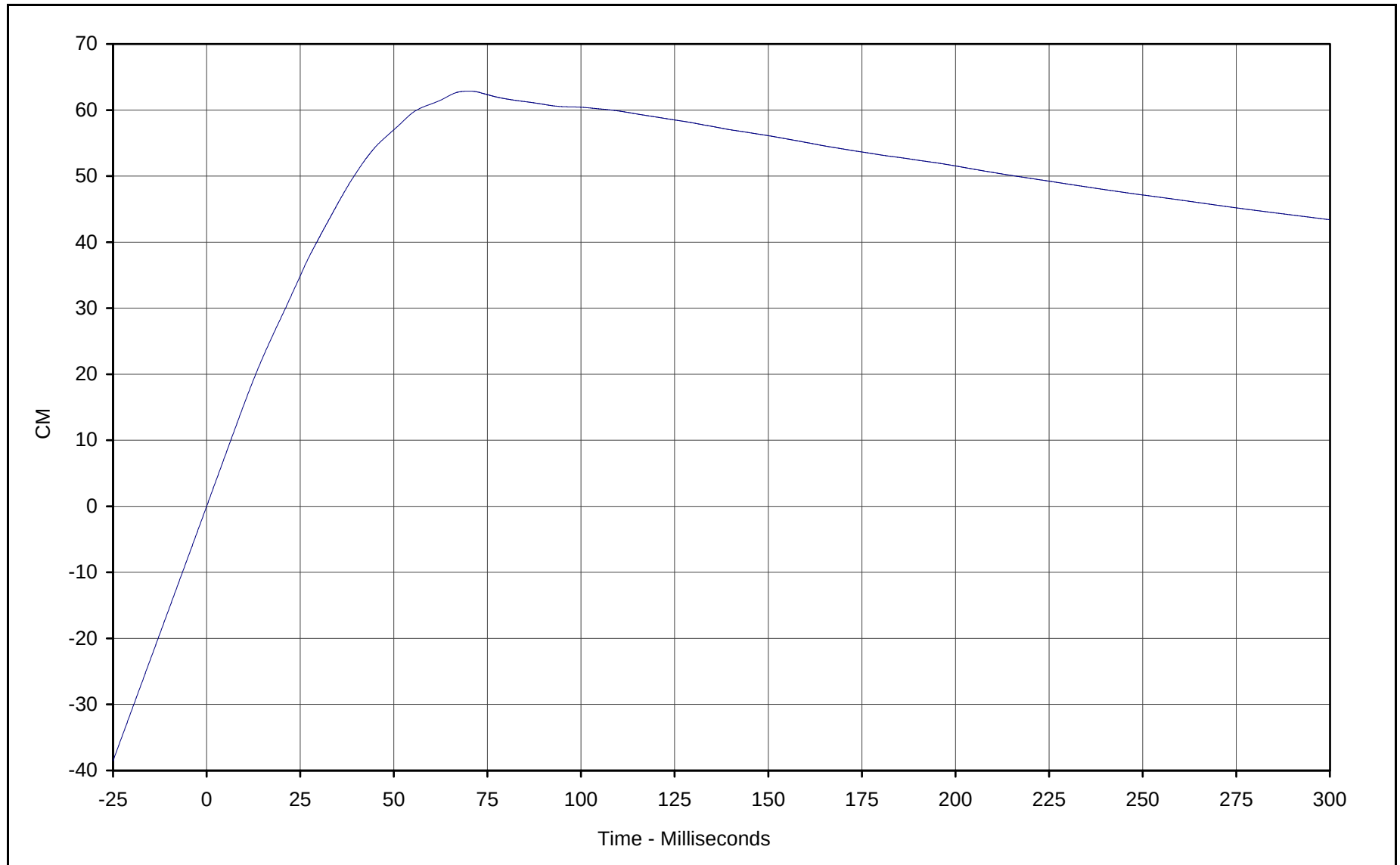
Curve Description: Vehicle Instrument Panel Velocity
Maximum Value: 56.1 at 5.4 Milliseconds
Minimum Value: -5.9 at 73.4 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: IN1-095

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



KAR21001-17

B-143



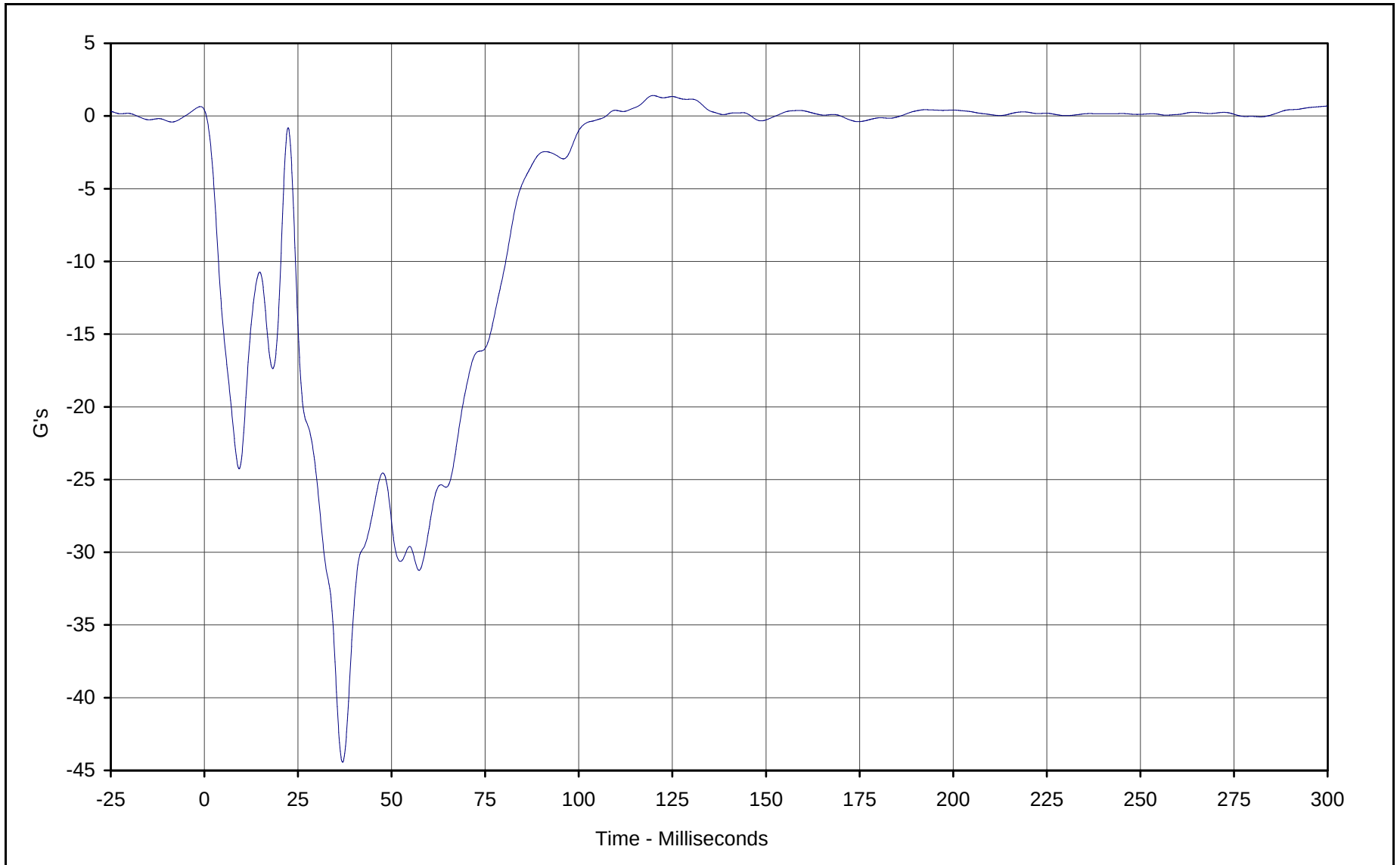
Curve Description: Vehicle Instrument Panel Displ.
Maximum Value: 62.9 at 70.0 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: IN2-095

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



KAR21001-17

B-144



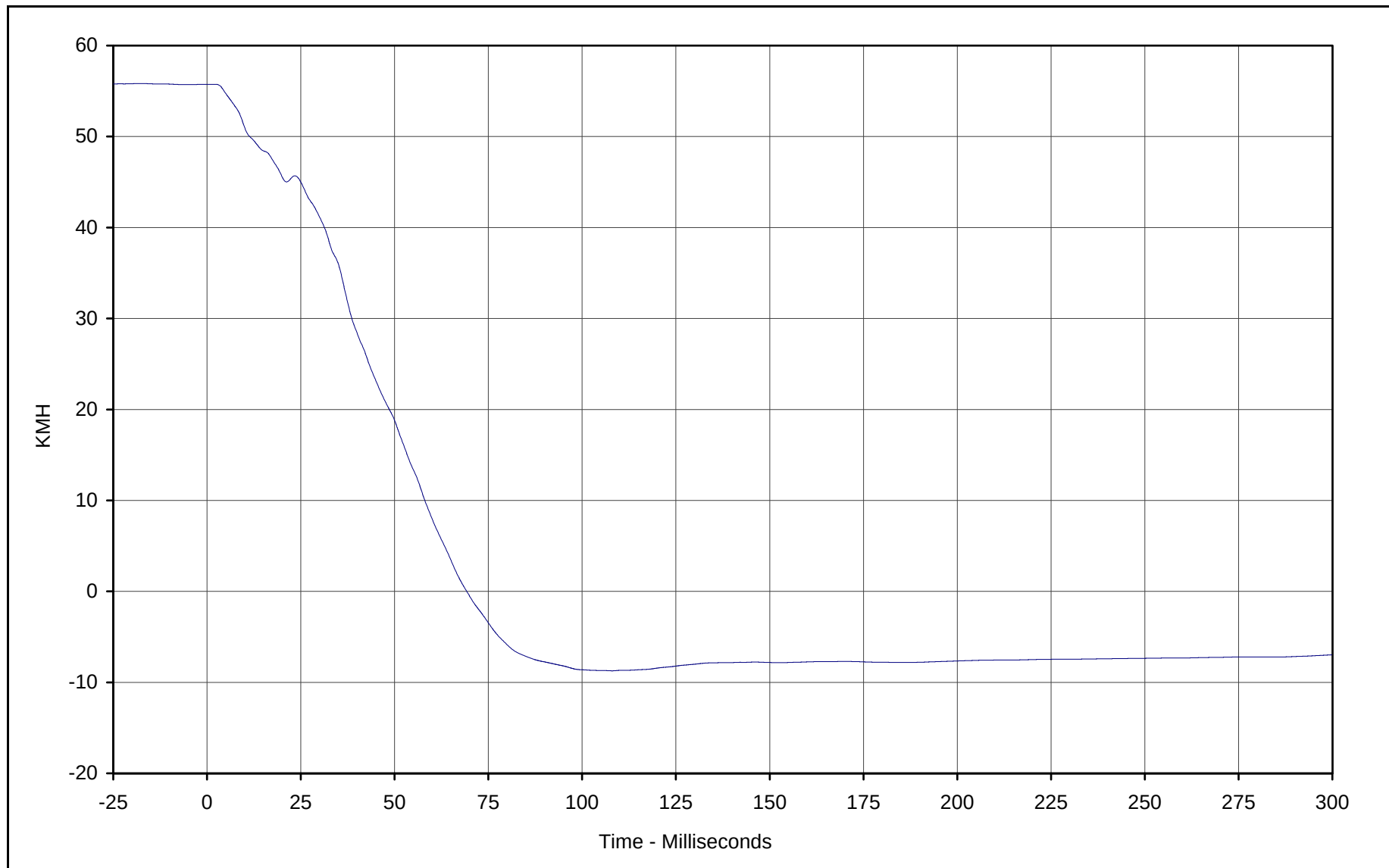
Curve Description: Vehicle Left Rear Redundant
Maximum Value: 1.4 at 119.9 Milliseconds
Minimum Value: -44.4 at 36.9 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: FIL-096

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



KAR21001-17

B-145



Curve Description: Vehicle Left Rear Redundant Velocity

Maximum Value: 55.7 at 1.9 Milliseconds

Minimum Value: -8.7 at 108.0 Milliseconds

SAE Filter Class: 180

Date of Test: 3/6/01

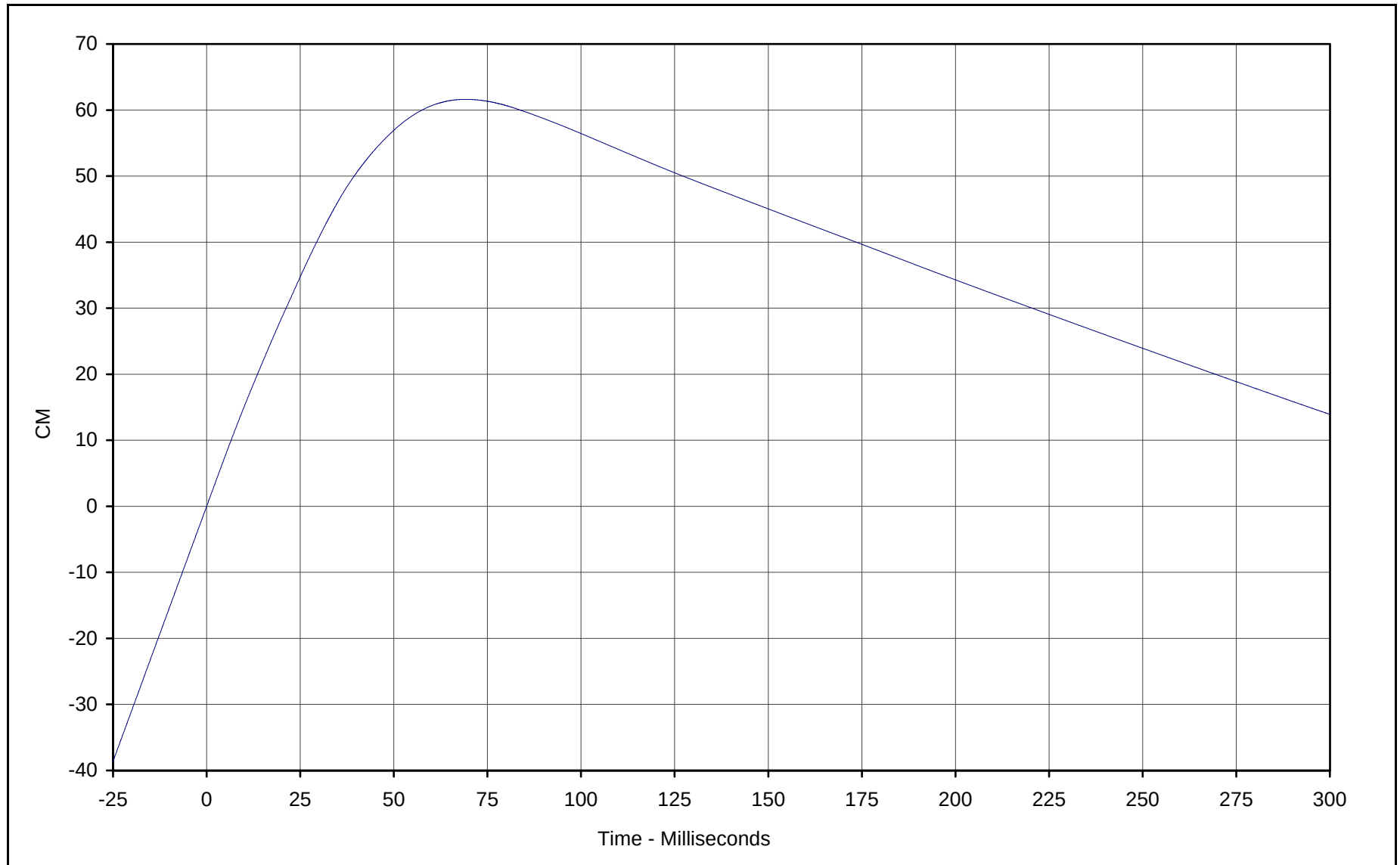
Curve Number: IN1-096

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan



KAR21001-17



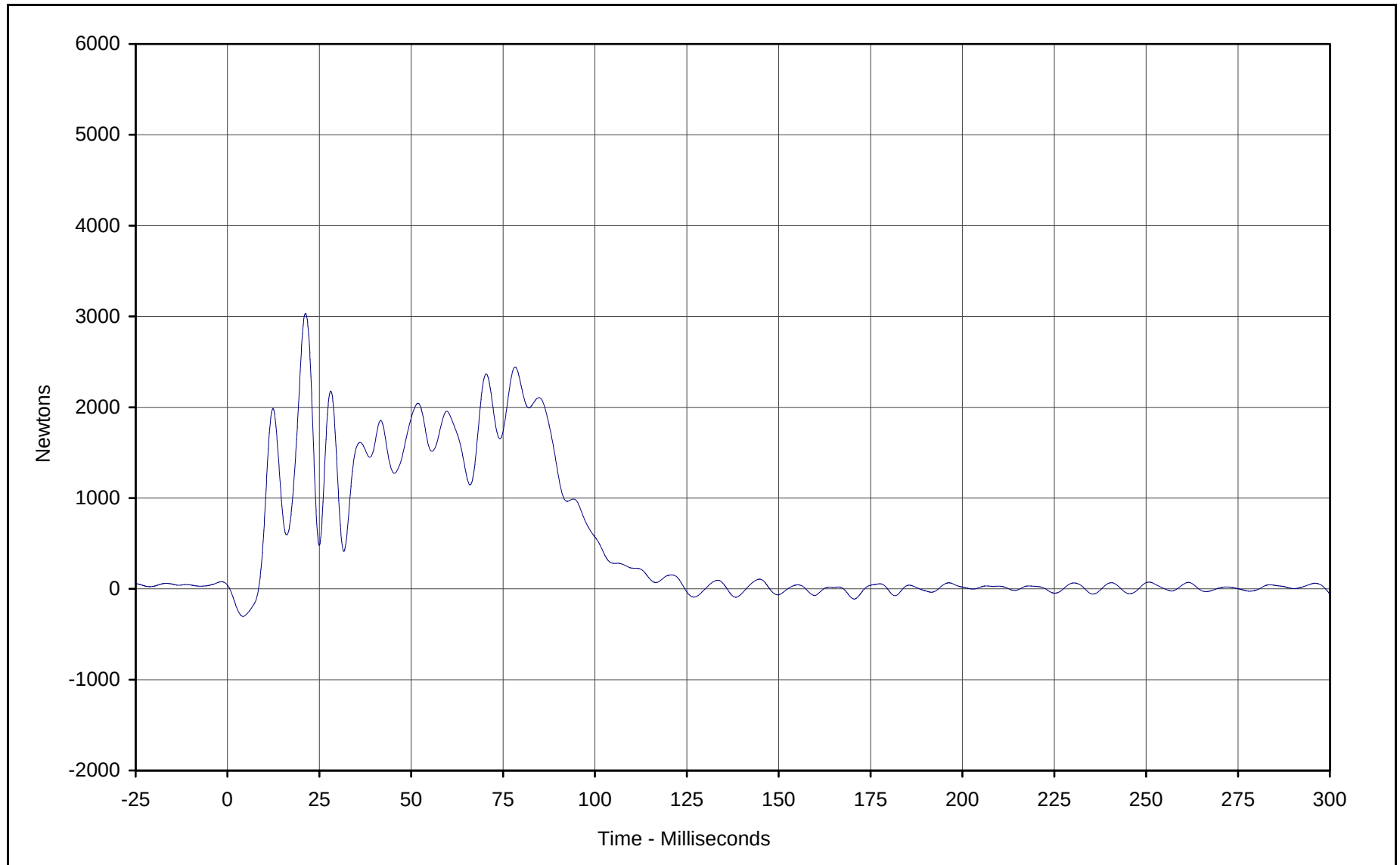
Curve Description: Vehicle Left Rear Redundant Displ.
Maximum Value: 61.6 at 69.2 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 3/6/01
Curve Number: IN2-096

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



APPENDIX C
LOAD CELL BARRIER INFORMATION

C-1

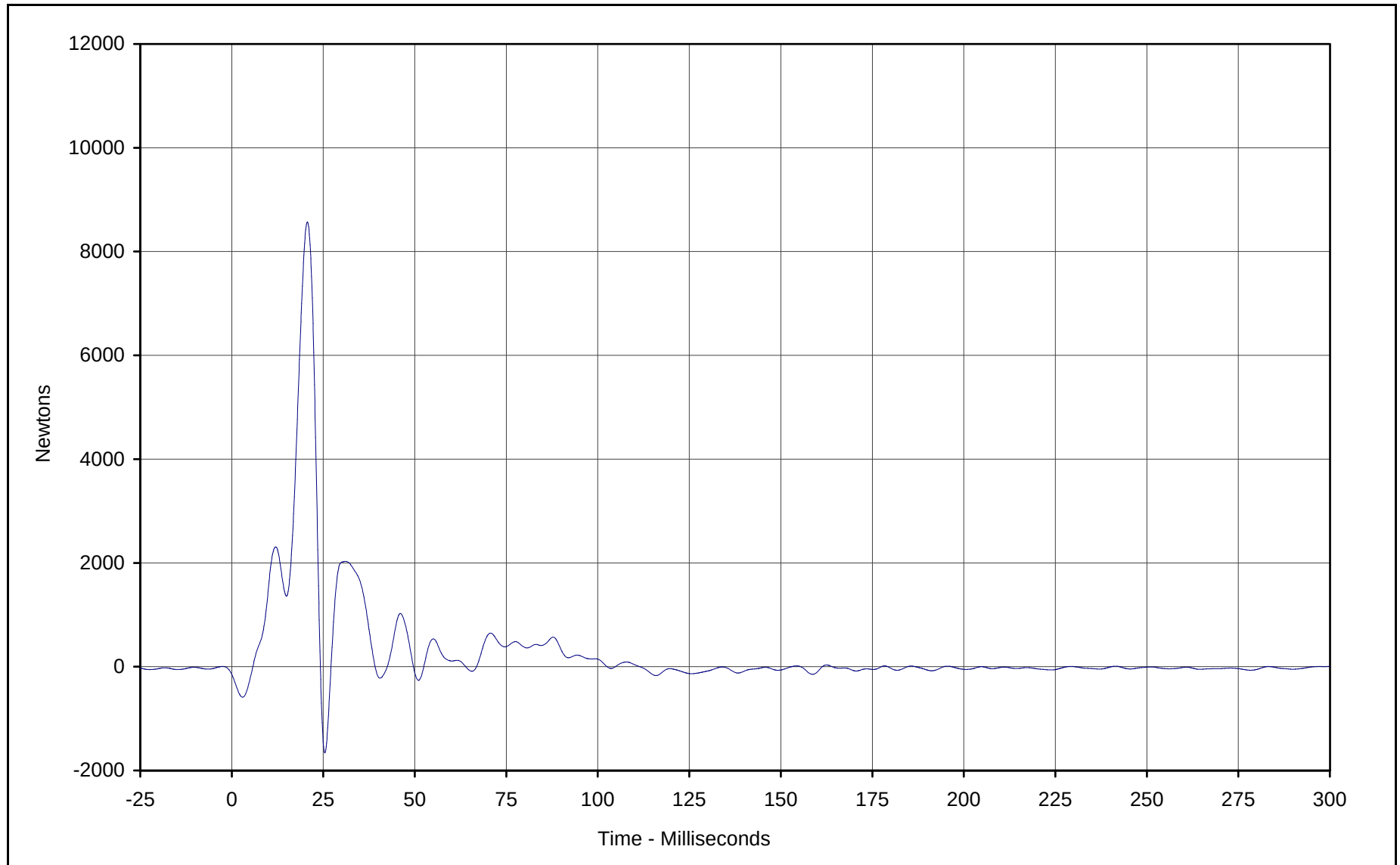


Curve Description: Barrier Force A2
Maximum Value: 3034.2 at 21.2 Milliseconds
Minimum Value: -304.2 at 4.2 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: FIL-099

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



KAR21001-17



Curve Description: Barrier Force A3

Maximum Value: 8568.8 at 20.6 Milliseconds

Minimum Value: -1662.2 at 25.4 Milliseconds

SAE Filter Class: 60

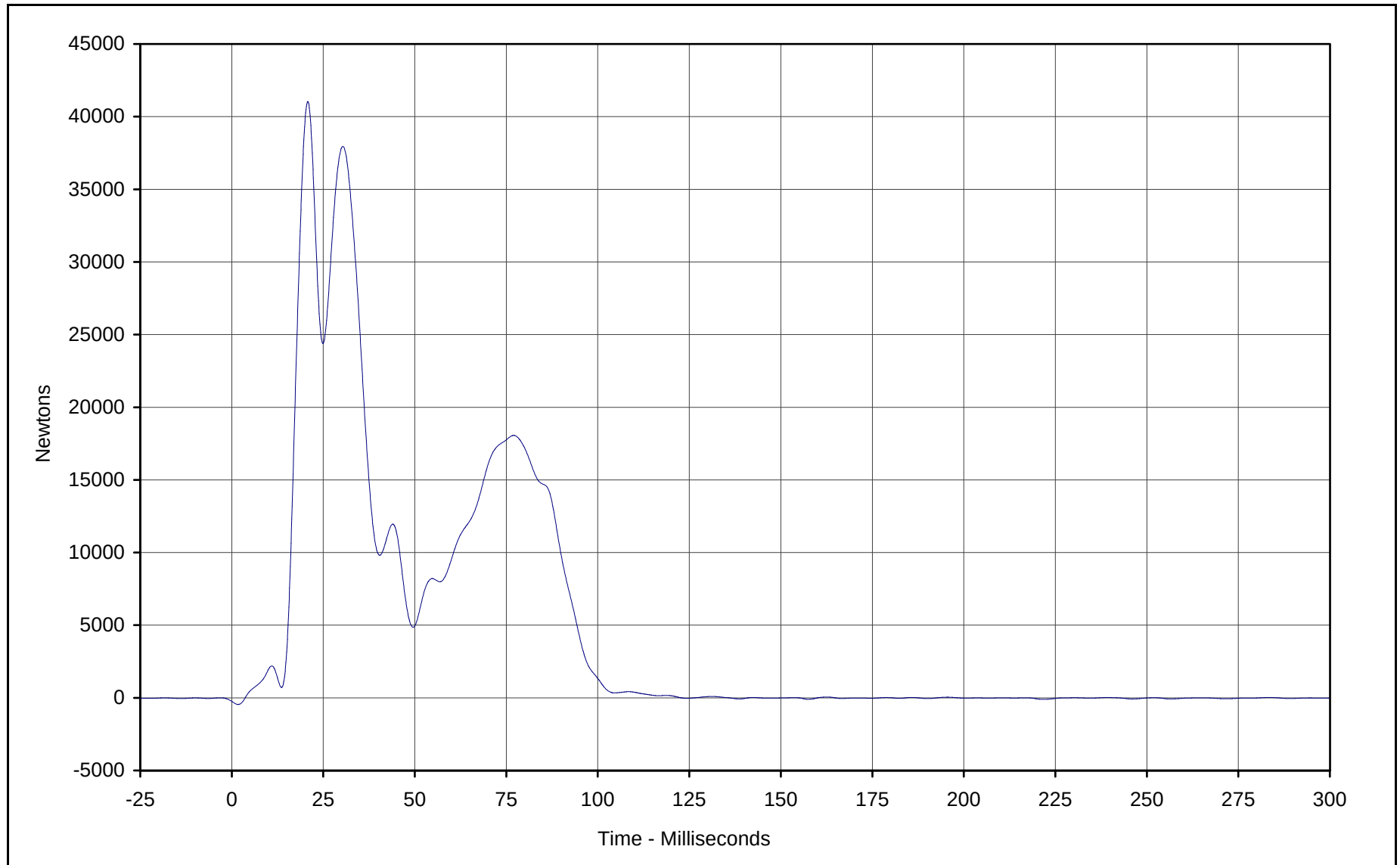
Date of Test: 3/6/01

Curve Number: FIL-100

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan



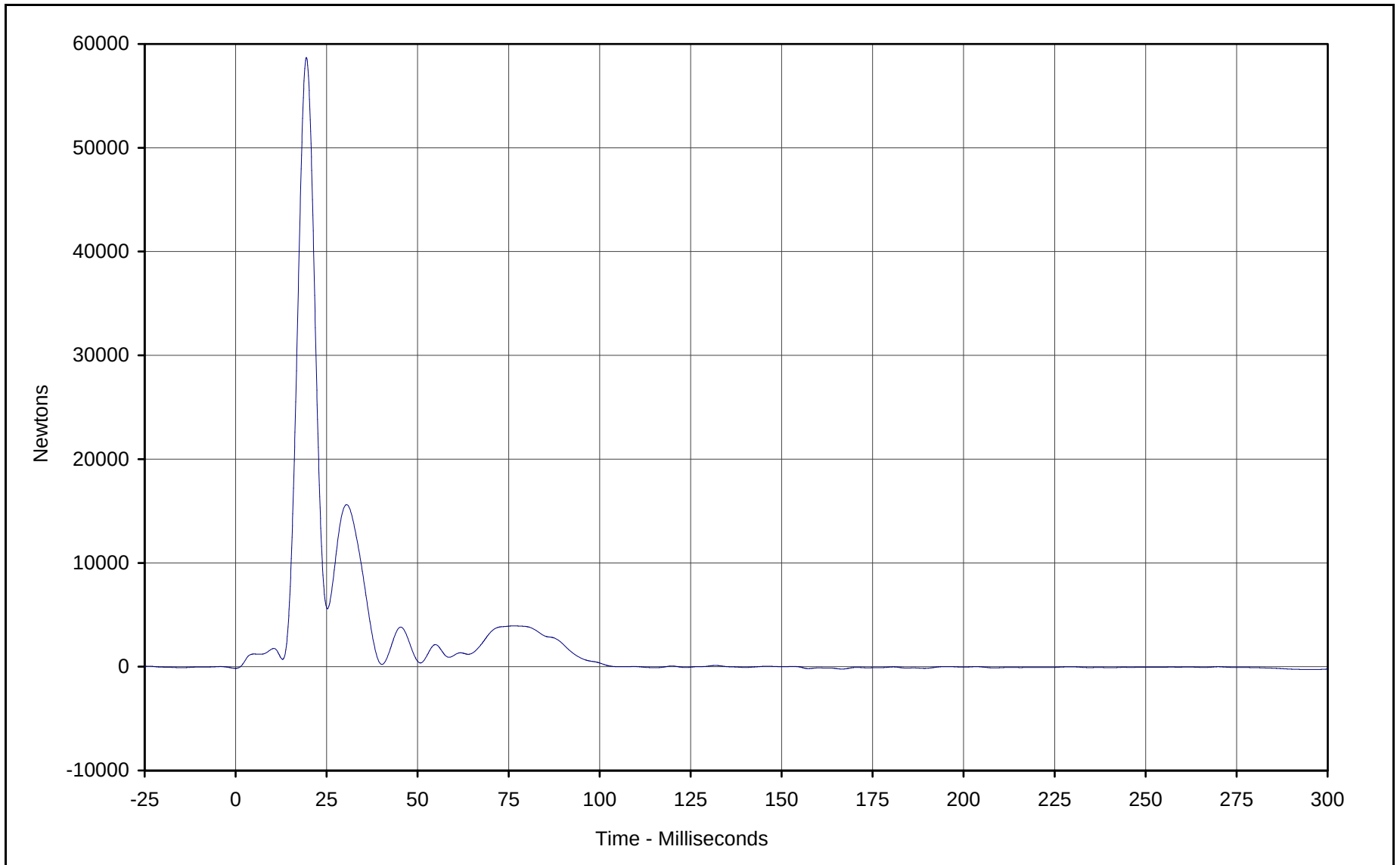


Curve Description: Barrier Force A4
Maximum Value: 41039.9 at 20.8 Milliseconds
Minimum Value: -456.9 at 1.7 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: FIL-101

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



C-4

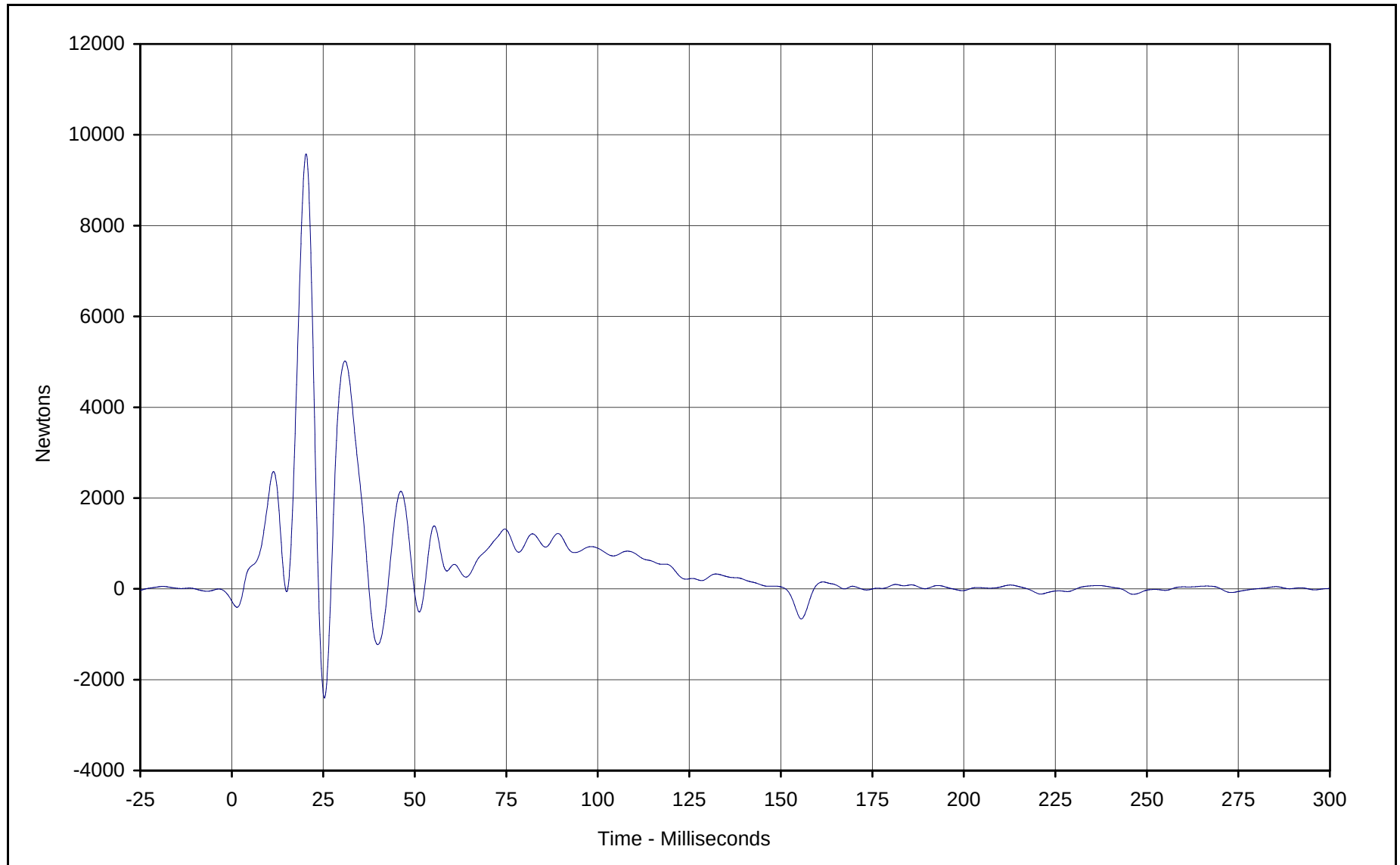


Curve Description: Barrier Force A5
Maximum Value: 58691.4 at 19.4 Milliseconds
Minimum Value: -273.8 at 29.1 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: FIL-102

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



KAR21001-17



Curve Description: Barrier Force A6

Maximum Value: 9579.5 at 20.3 Milliseconds

Minimum Value: -2403.2 at 25.3 Milliseconds

SAE Filter Class: 60

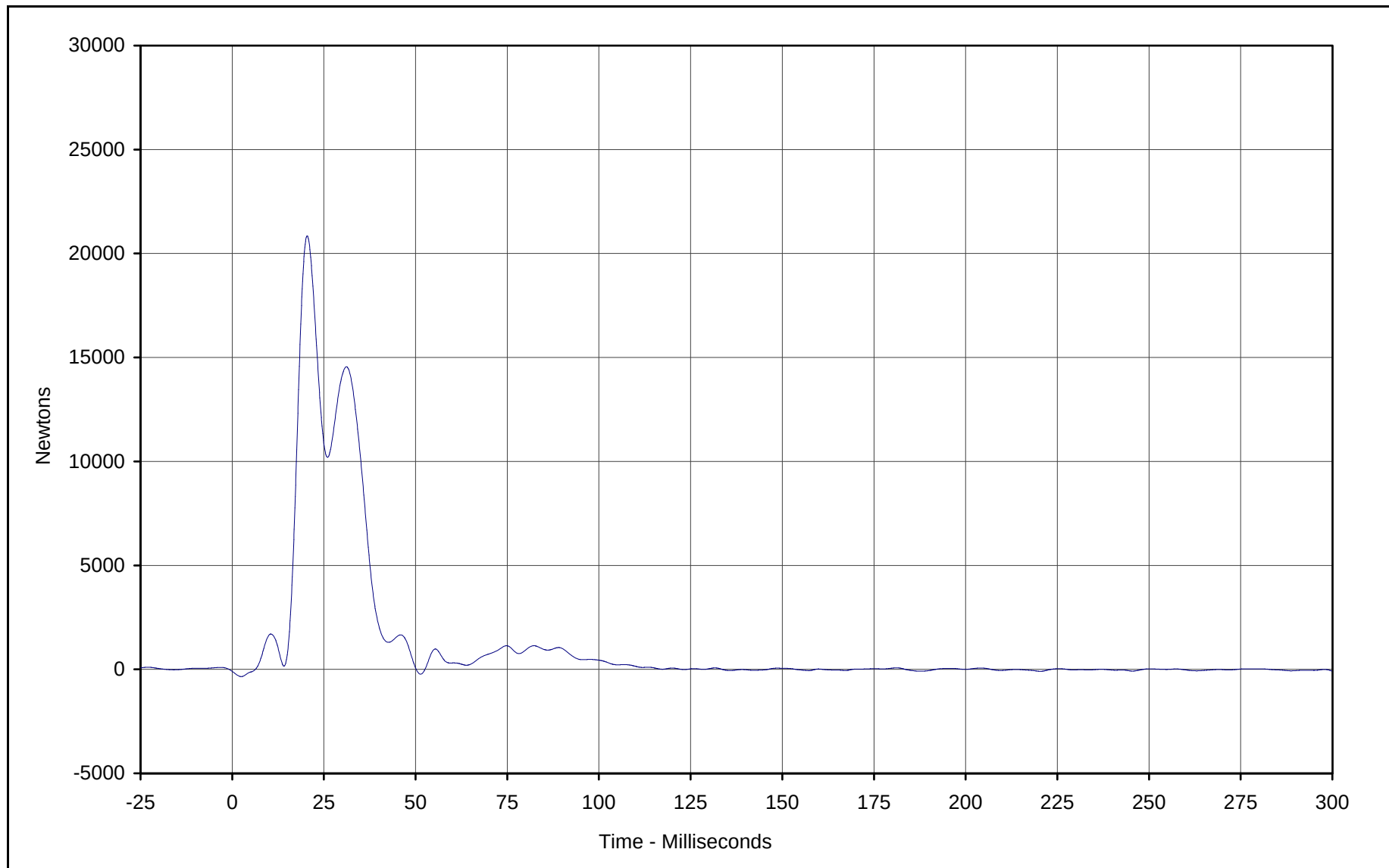
Date of Test: 3/6/01

Curve Number: FIL-103

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan





Curve Description: Barrier Force A7

Maximum Value: 20845.2 at 20.4 Milliseconds

Minimum Value: -348.8 at 2.5 Milliseconds

SAE Filter Class: 60

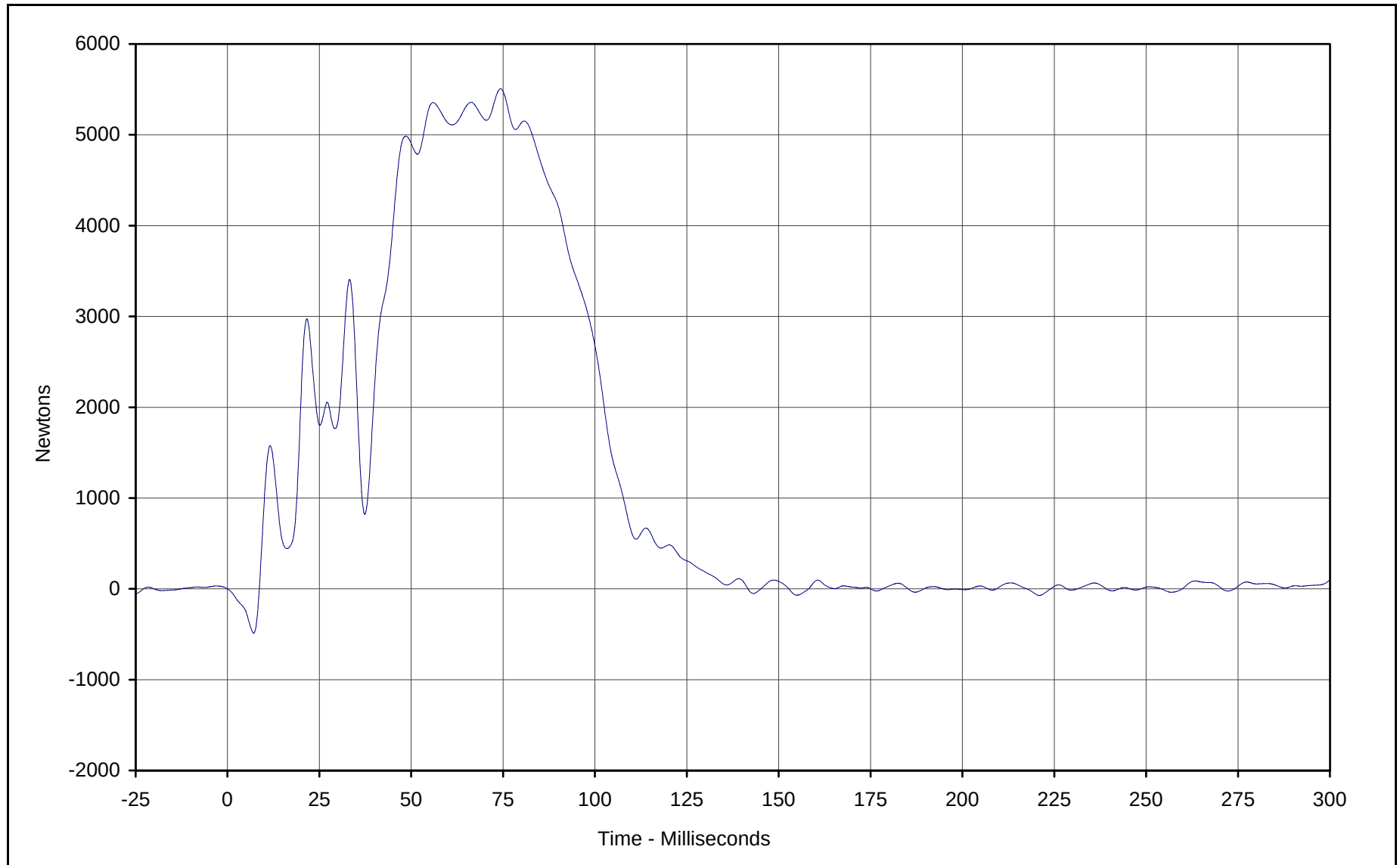
Date of Test: 3/6/01

Curve Number: FIL-104

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan



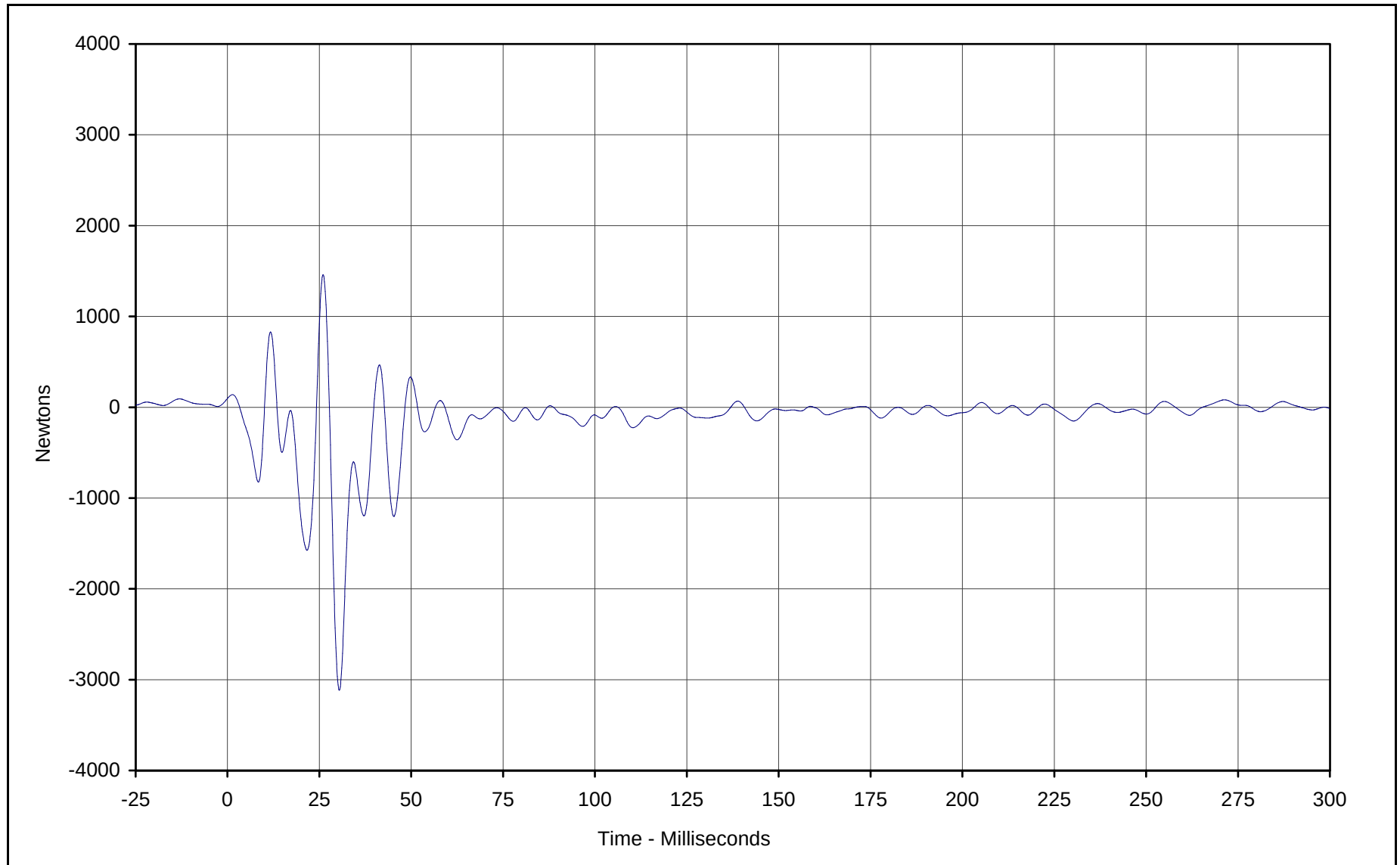


Curve Description: Barrier Force A8
Maximum Value: 5506.8 at 74.3 Milliseconds
Minimum Value: -487.4 at 7.1 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: FIL-105

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



C-8



Curve Description: Barrier Force A9

Maximum Value: 1459.6 at 26.0 Milliseconds

Minimum Value: -3116.9 at 30.4 Milliseconds

SAE Filter Class: 60

Date of Test: 3/6/01

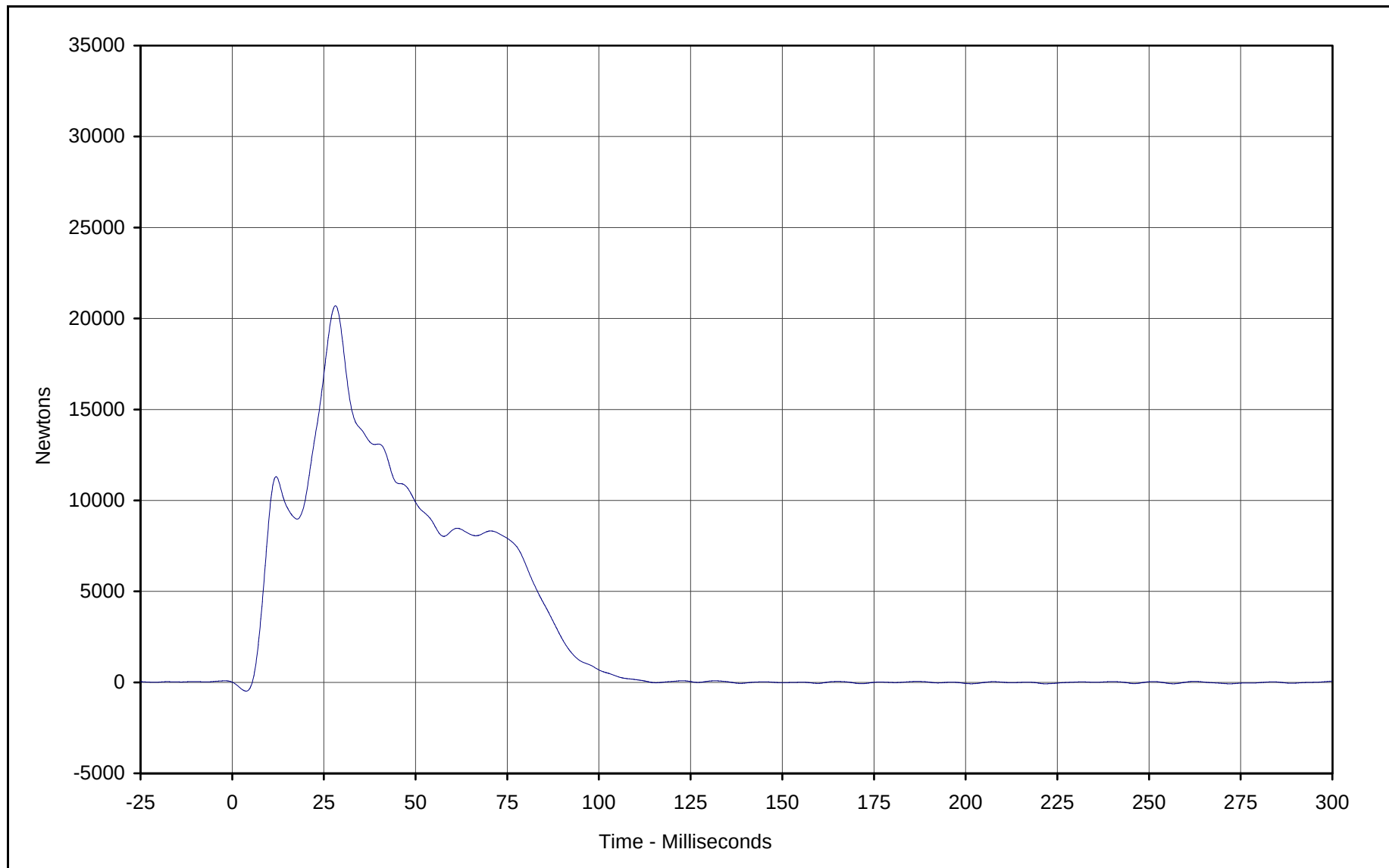
Curve Number: FIL-106

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan



KAR21001-17

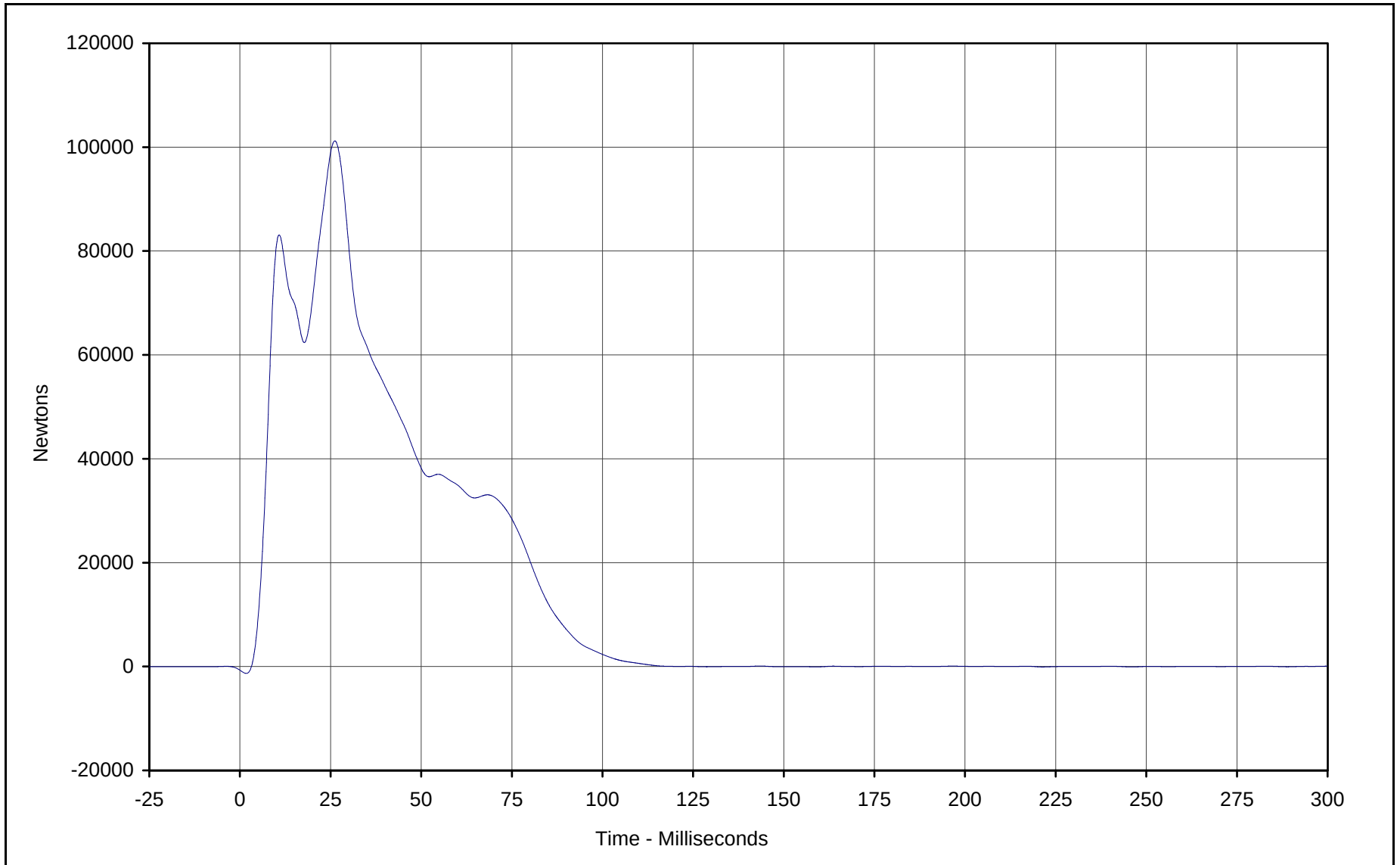


Curve Description: Barrier Force B2
Maximum Value: 20705.2 at 28.1 Milliseconds
Minimum Value: -483.7 at 3.8 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: FIL-108

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



C-10



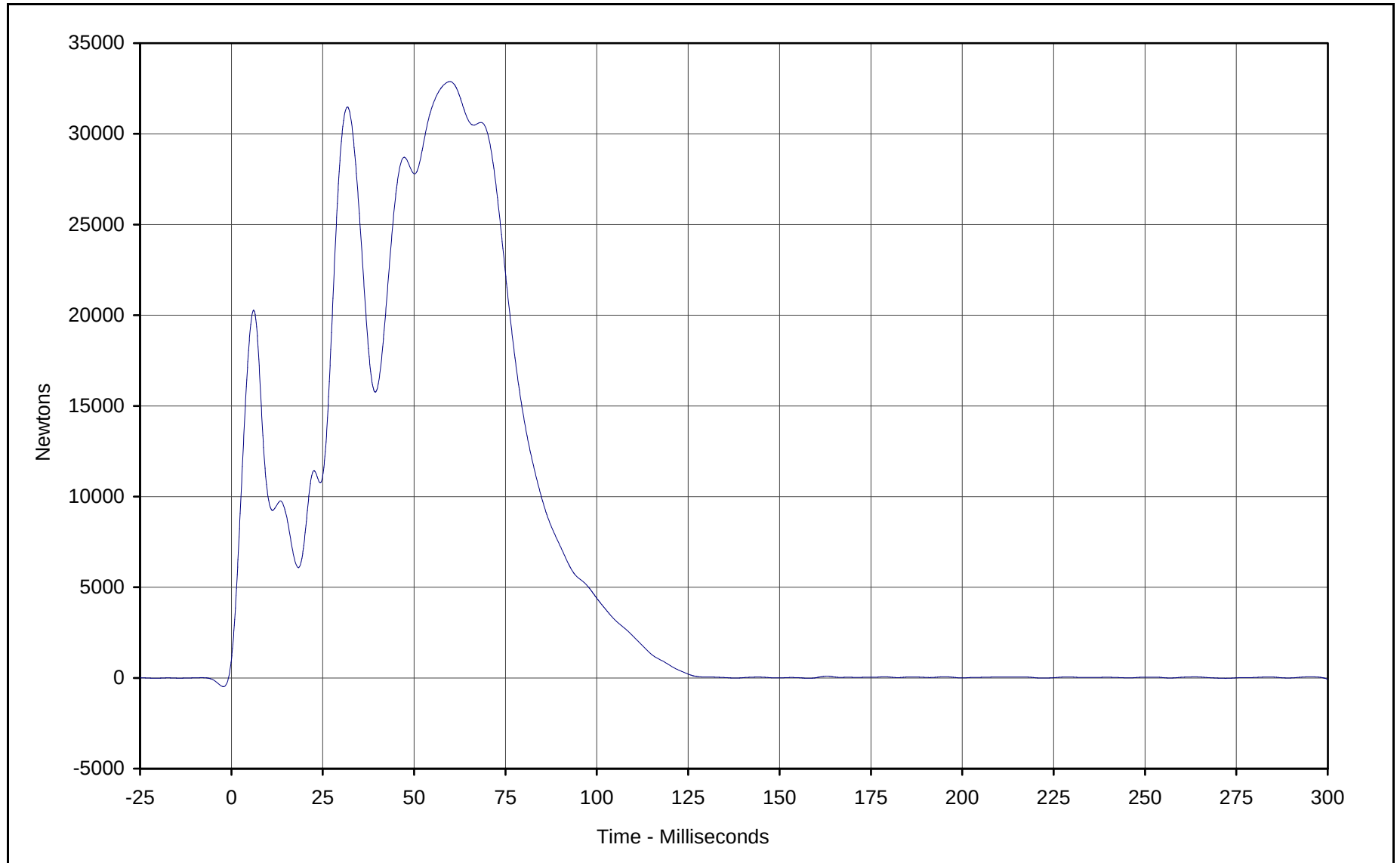
Curve Description: Barrier Force B3
Maximum Value: 101207.7 at 26.2 Milliseconds
Minimum Value: -1328.1 at 1.7 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: FIL-109

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



KAR21001-17

C-11



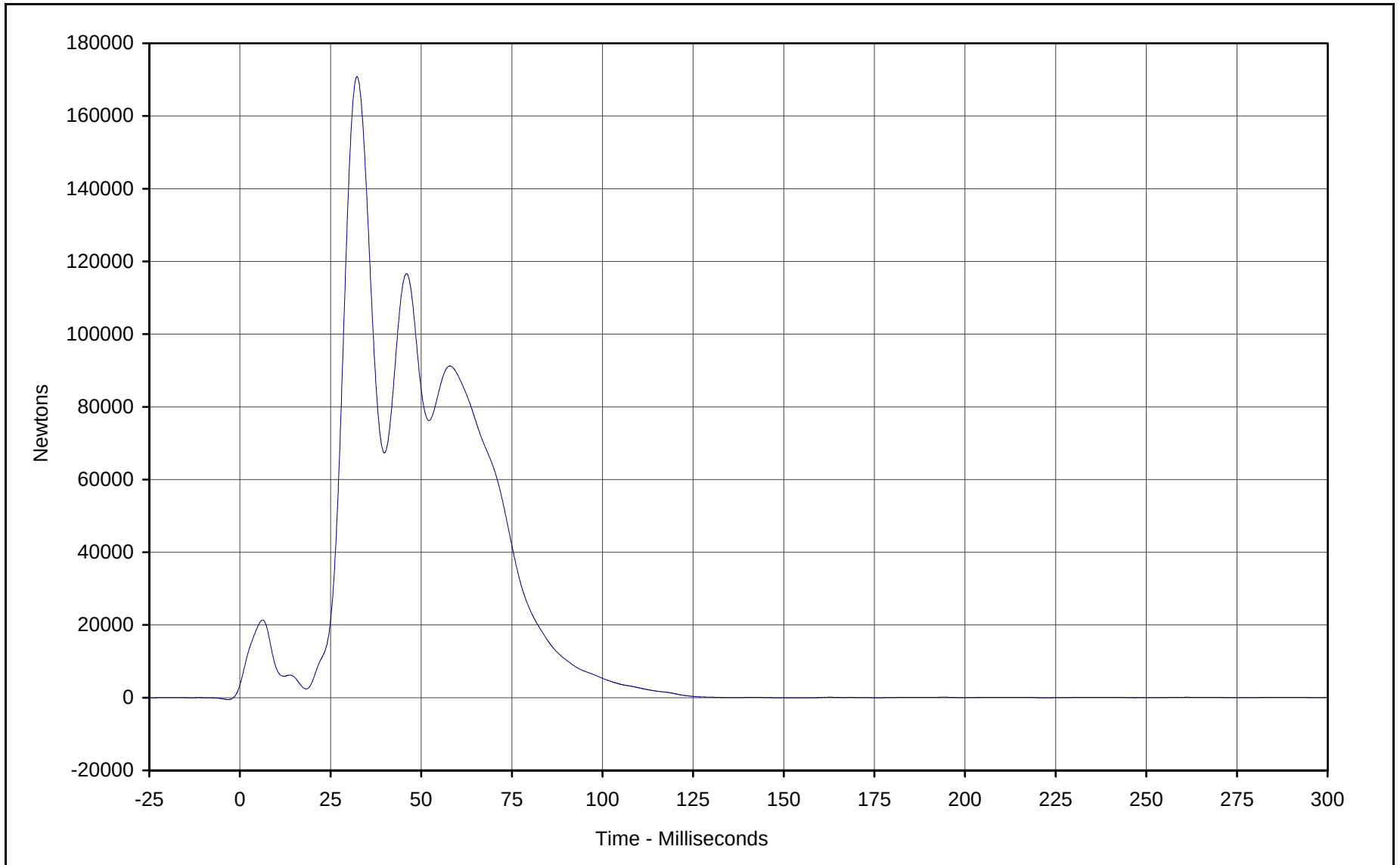
Curve Description: Barrier Force B4
Maximum Value: 32879.0 at 59.8 Milliseconds
Minimum Value: -64.3 at 299.9 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: FIL-110

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



KAR21001-17

C-12

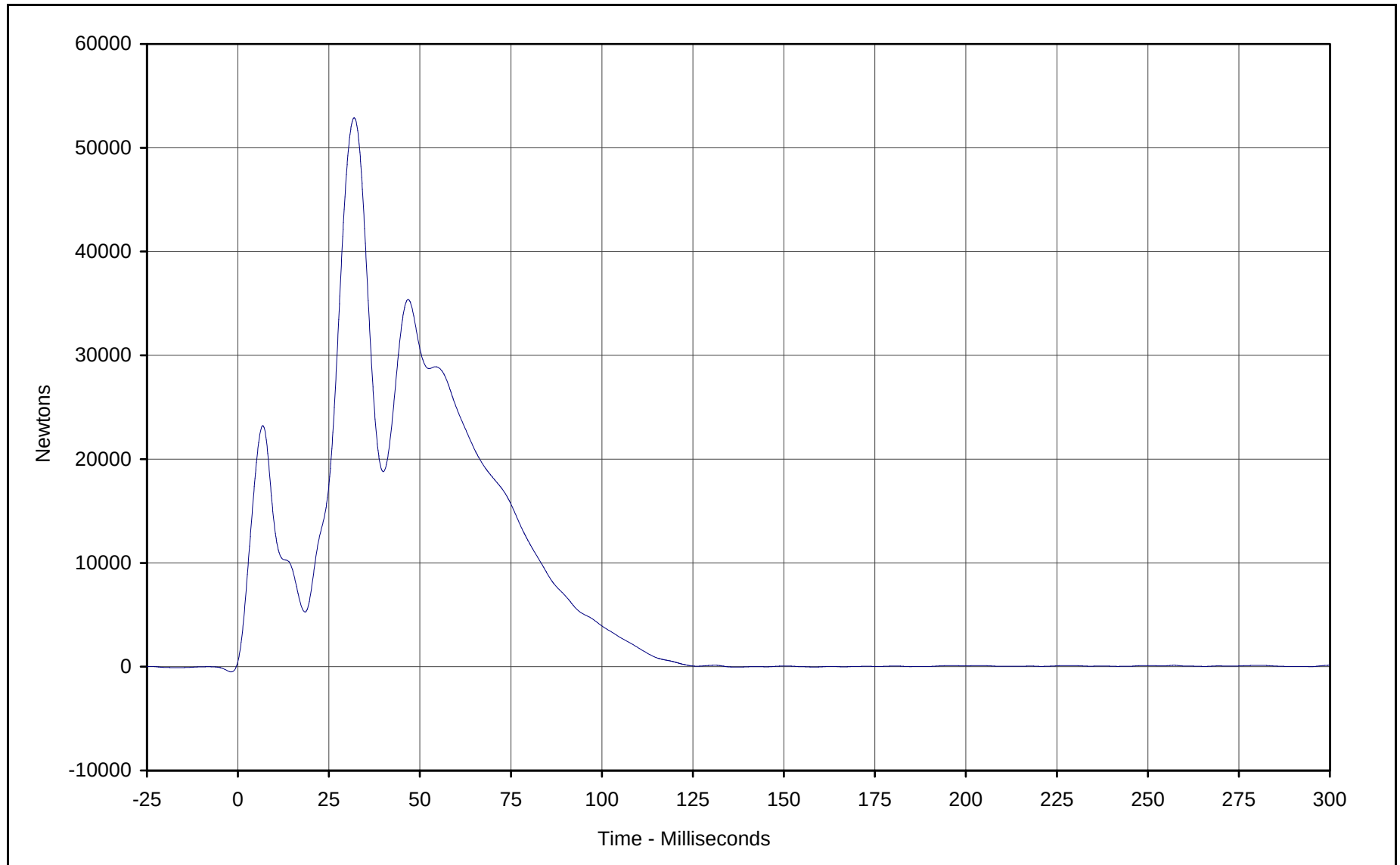


Curve Description: Barrier Force B5
Maximum Value: 170818.6 at 32.3 Milliseconds
Minimum Value: -42.1 at 157.1 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: FIL-111

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



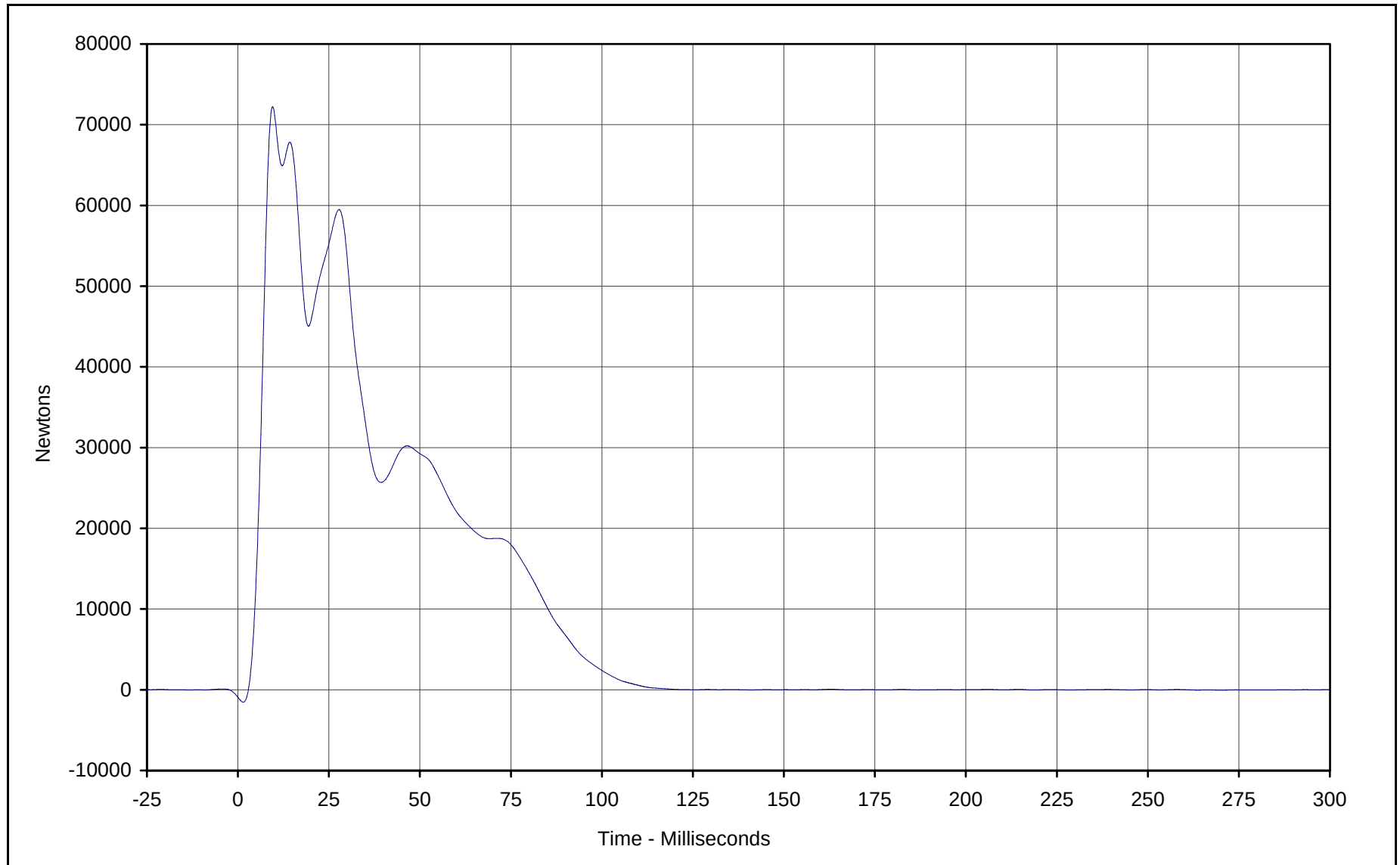
KAR21001-17



Curve Description: Barrier Force B6
Maximum Value: 52887.7 at 31.9 Milliseconds
Minimum Value: -38.3 at 158.3 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: FIL-112

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



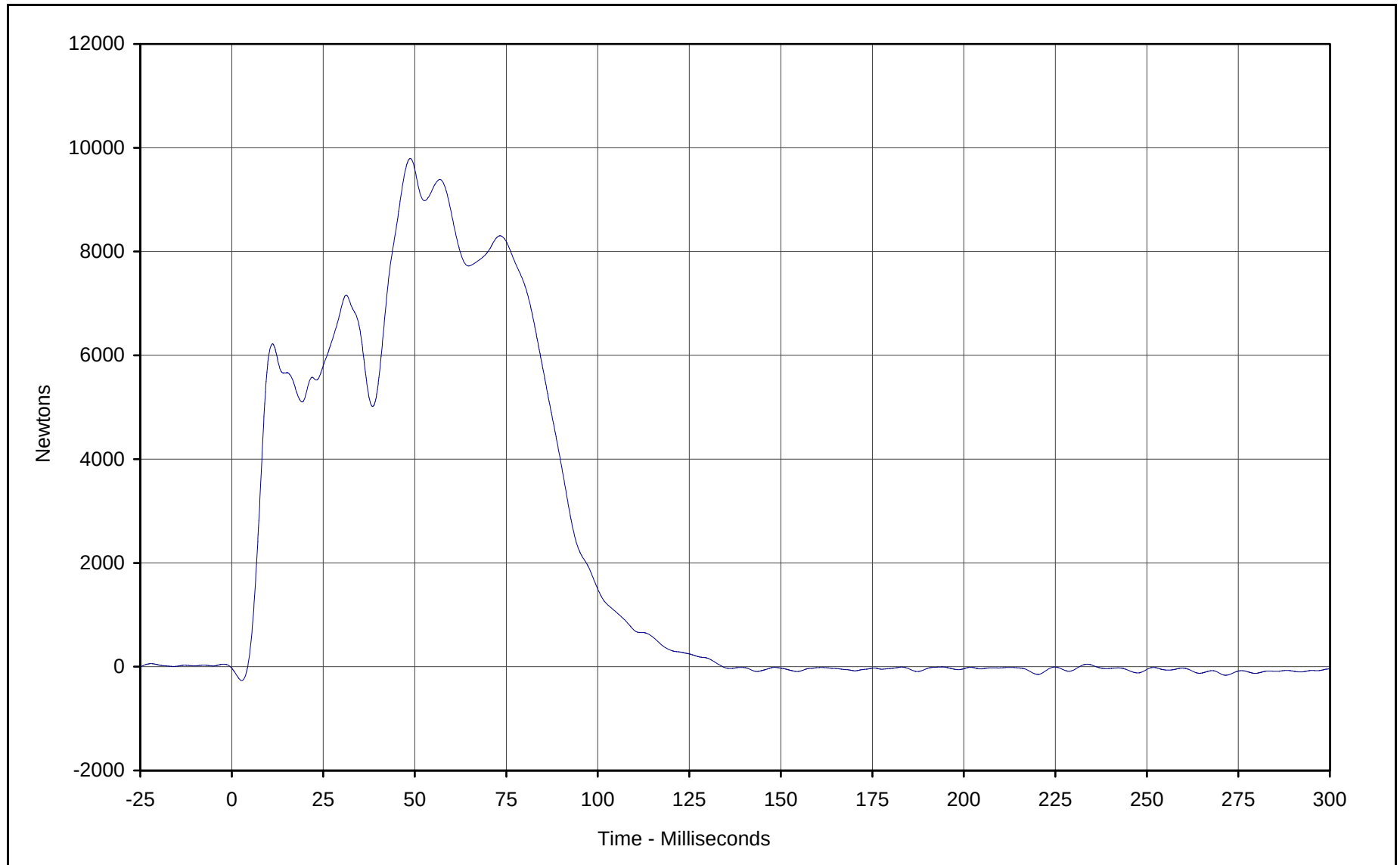


Curve Description: Barrier Force B7
Maximum Value: 72240.7 at 9.5 Milliseconds
Minimum Value: -1535.0 at 1.5 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: FIL-113

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



C-15



Curve Description: Barrier Force B8

Maximum Value: 9794.5 at 48.8 Milliseconds

Minimum Value: -266.3 at 2.7 Milliseconds

SAE Filter Class: 60

Date of Test: 3/6/01

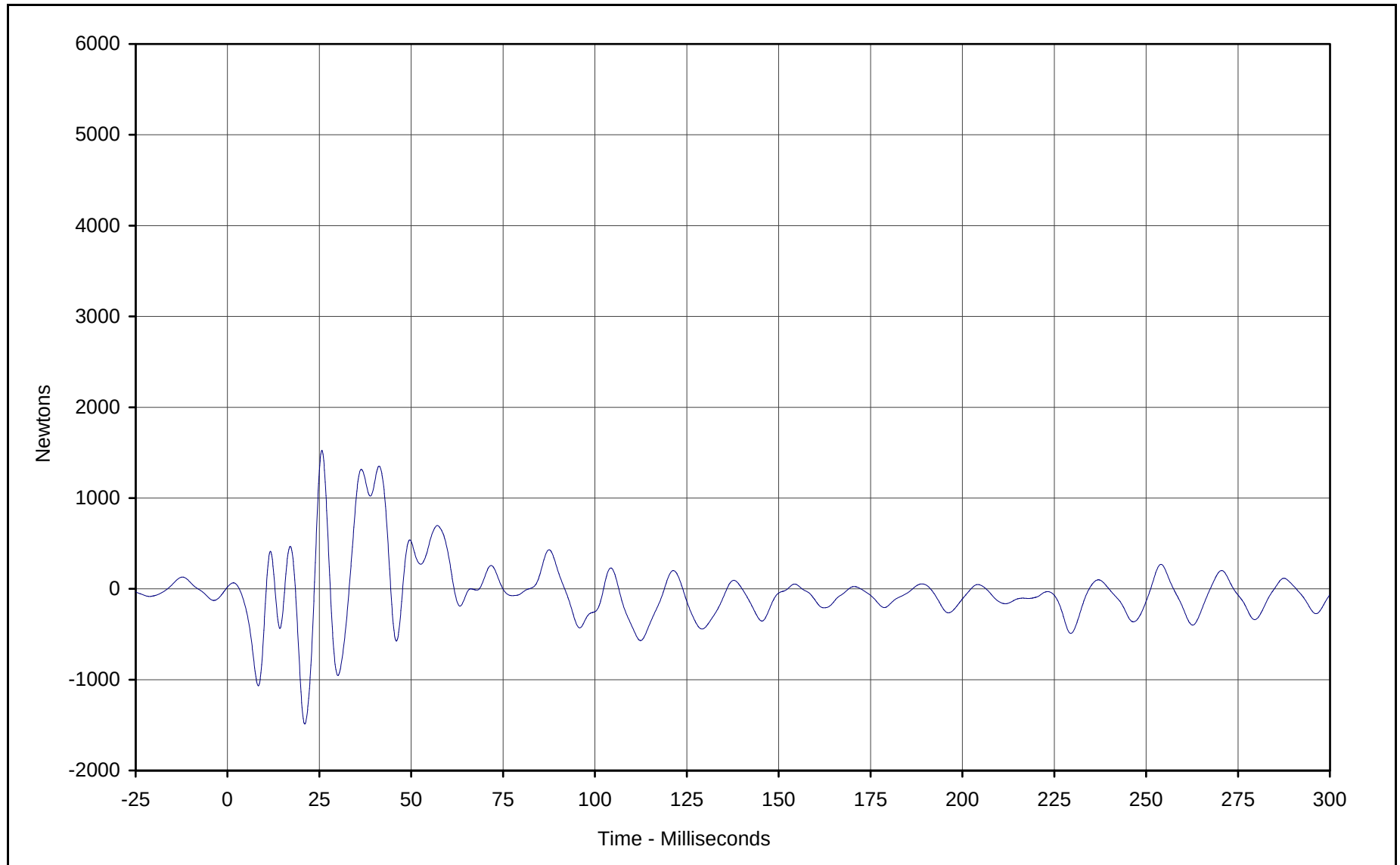
Curve Number: FIL-114

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan



KAR21001-17



Curve Description: Barrier Force B9

Maximum Value: 1525.4 at 25.7 Milliseconds

Minimum Value: -1488.1 at 21.0 Milliseconds

SAE Filter Class: 60

Date of Test: 3/6/01

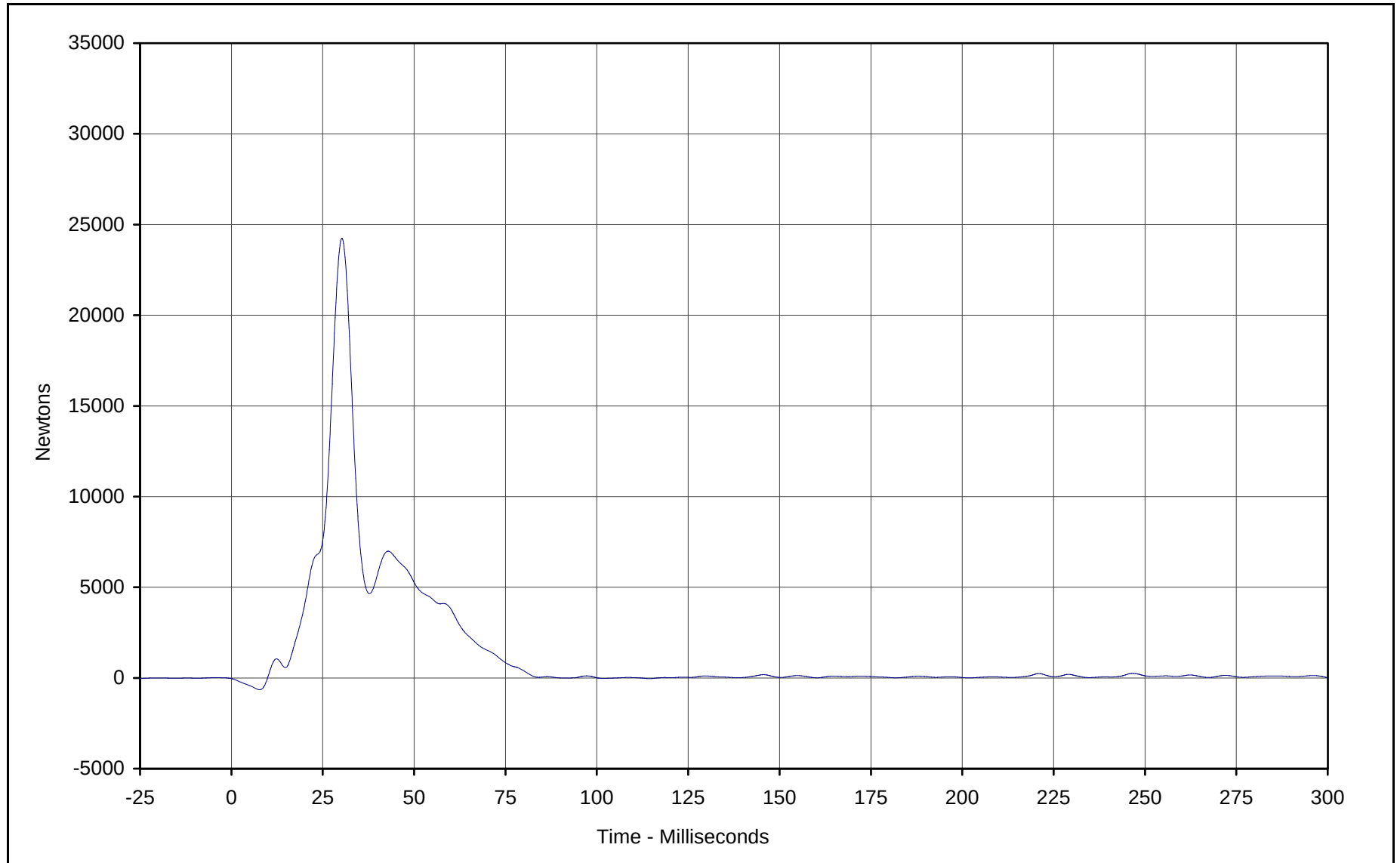
Curve Number: FIL-115

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan



C-17

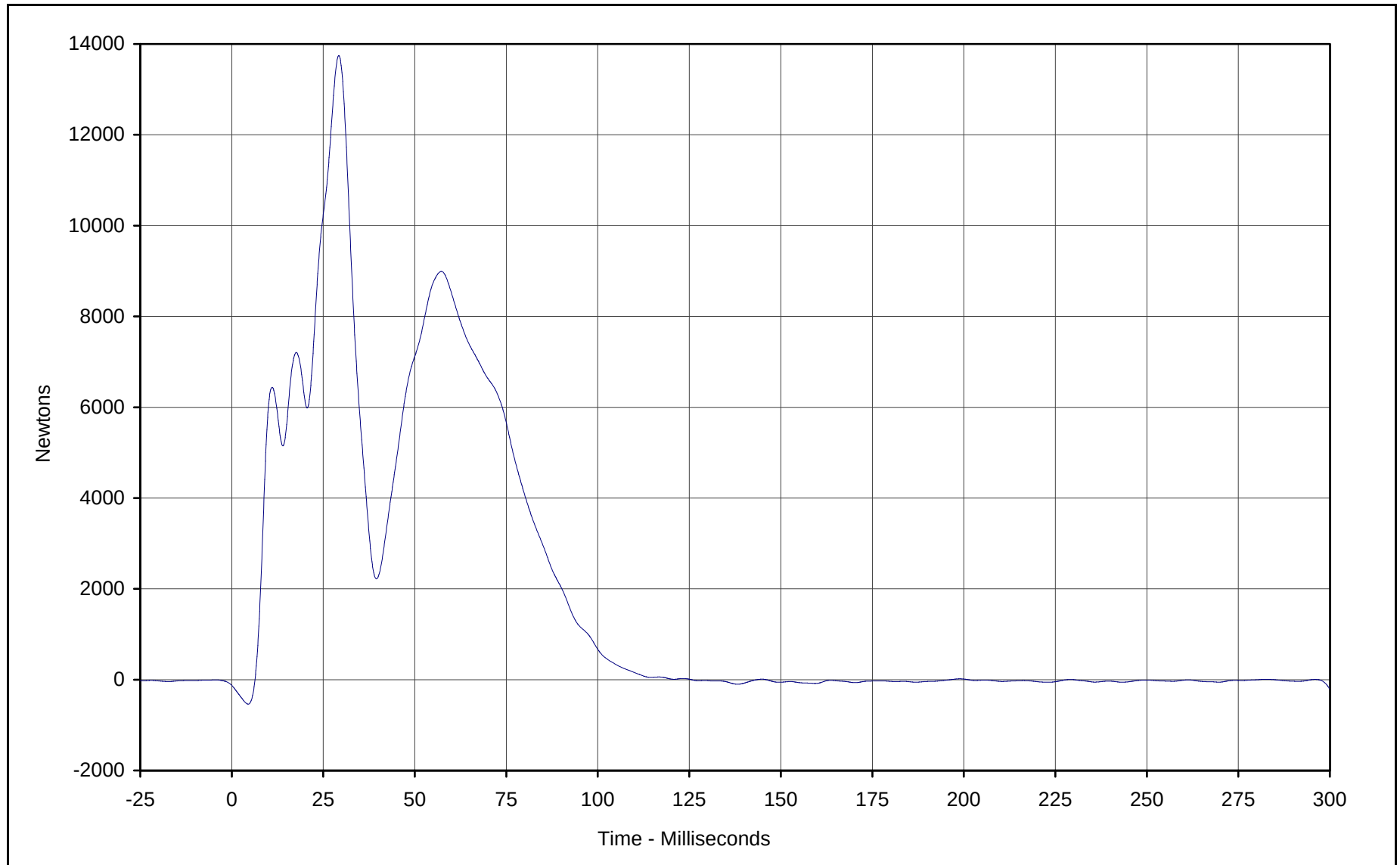


Curve Description: Barrier Force C2
Maximum Value: 24244.2 at 30.2 Milliseconds
Minimum Value: -650.4 at 7.7 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: FIL-117

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



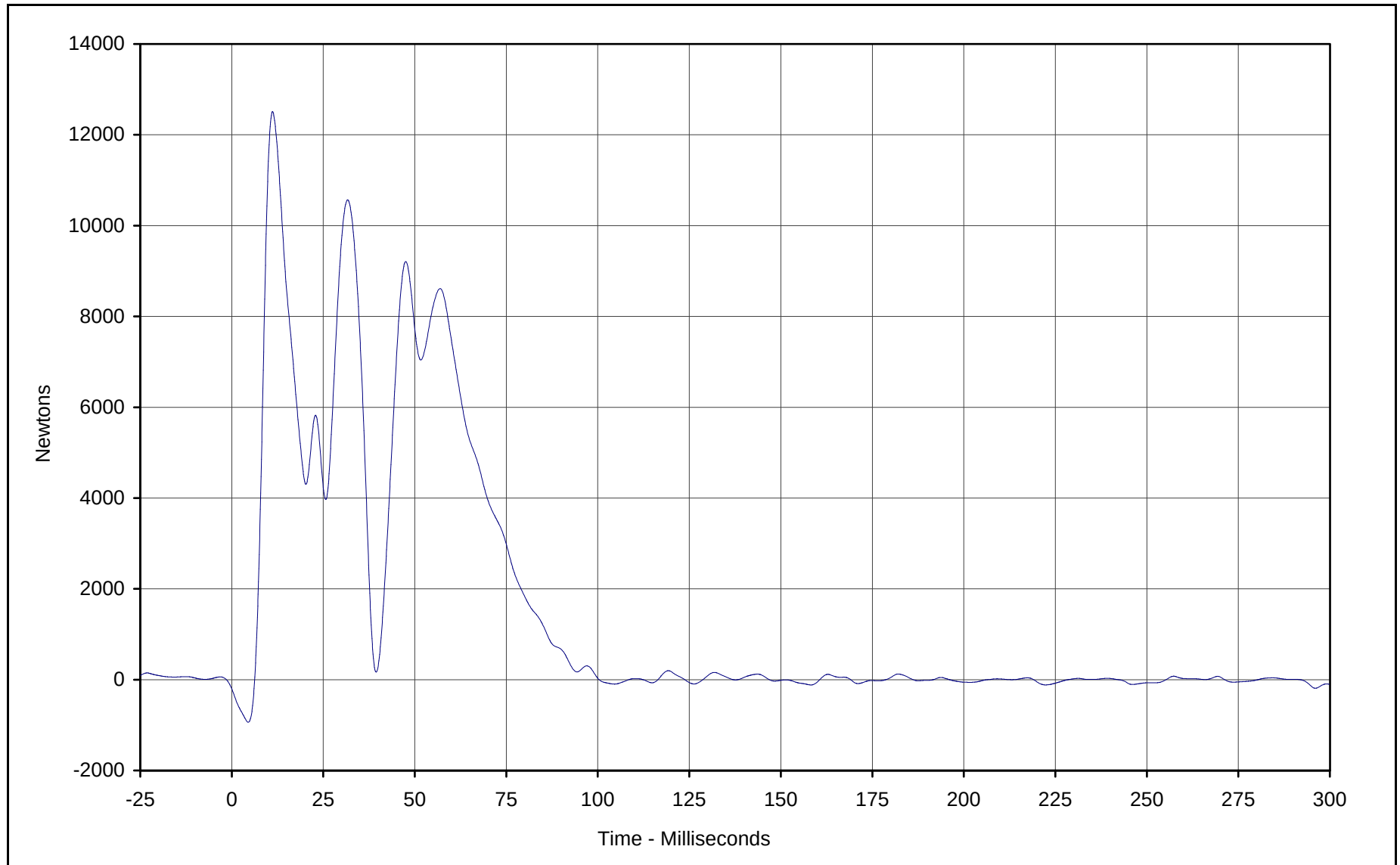
KAR21001-17



Curve Description: Barrier Force C3
Maximum Value: 13746.6 at 29.2 Milliseconds
Minimum Value: -539.2 at 4.5 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: FIL-118

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



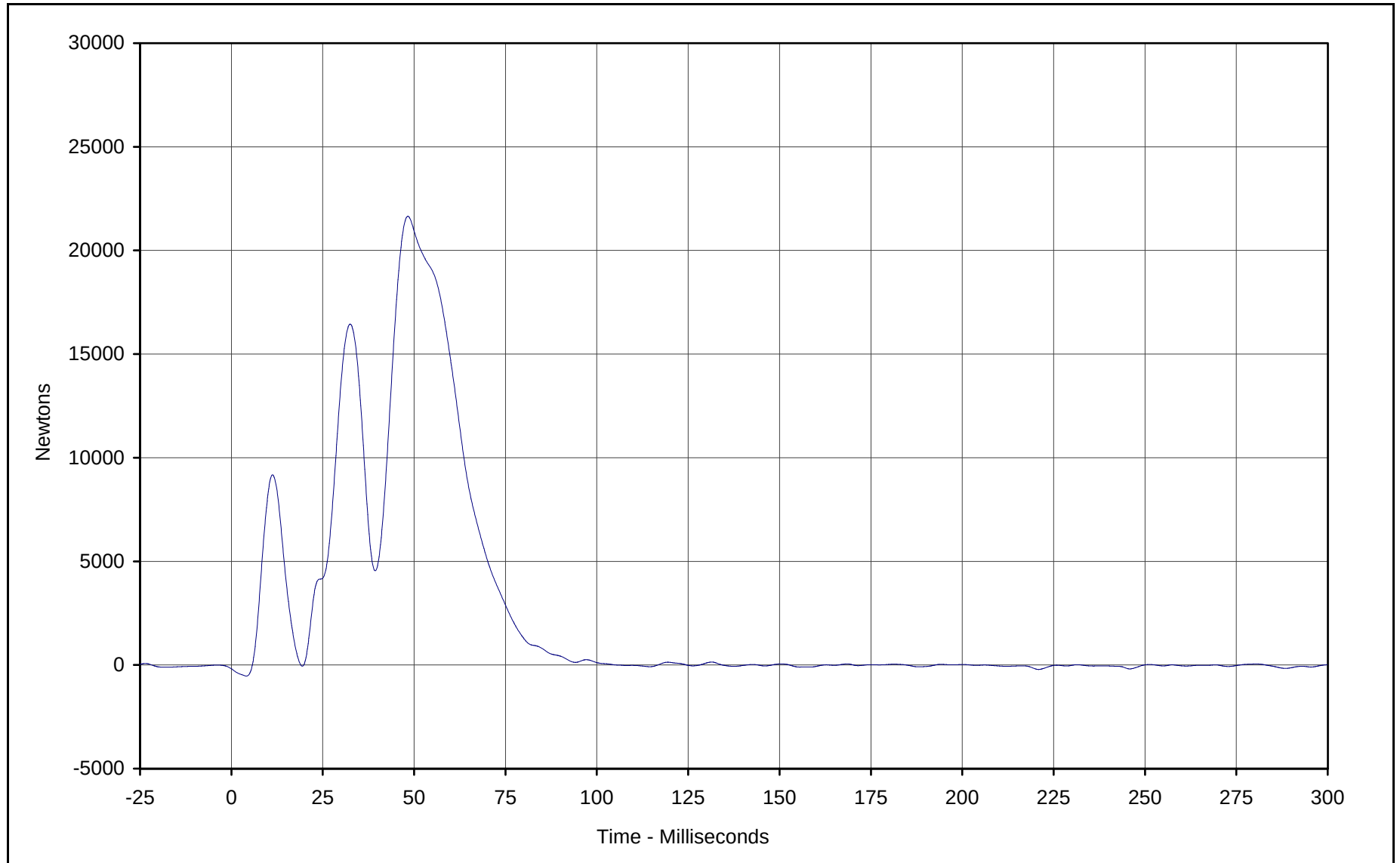


Curve Description: Barrier Force C4
Maximum Value: 12511.8 at 11.1 Milliseconds
Minimum Value: -938.0 at 4.5 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: FIL-119

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



C-20



Curve Description: Barrier Force C5

Maximum Value: 21651.8 at 48.3 Milliseconds

Minimum Value: -535.5 at 4.1 Milliseconds

SAE Filter Class: 60

Date of Test: 3/6/01

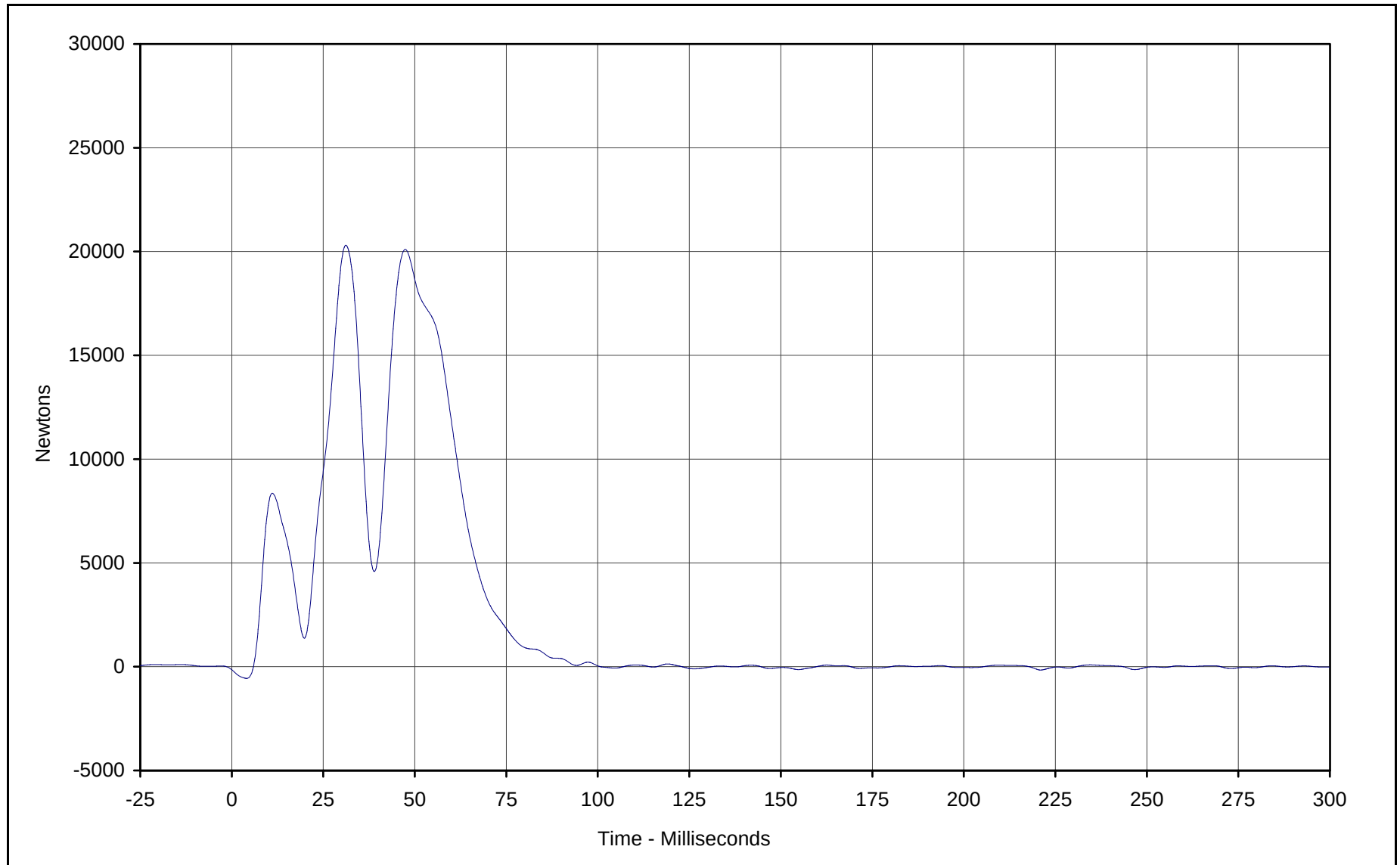
Curve Number: FIL-120

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan



KAR21001-17

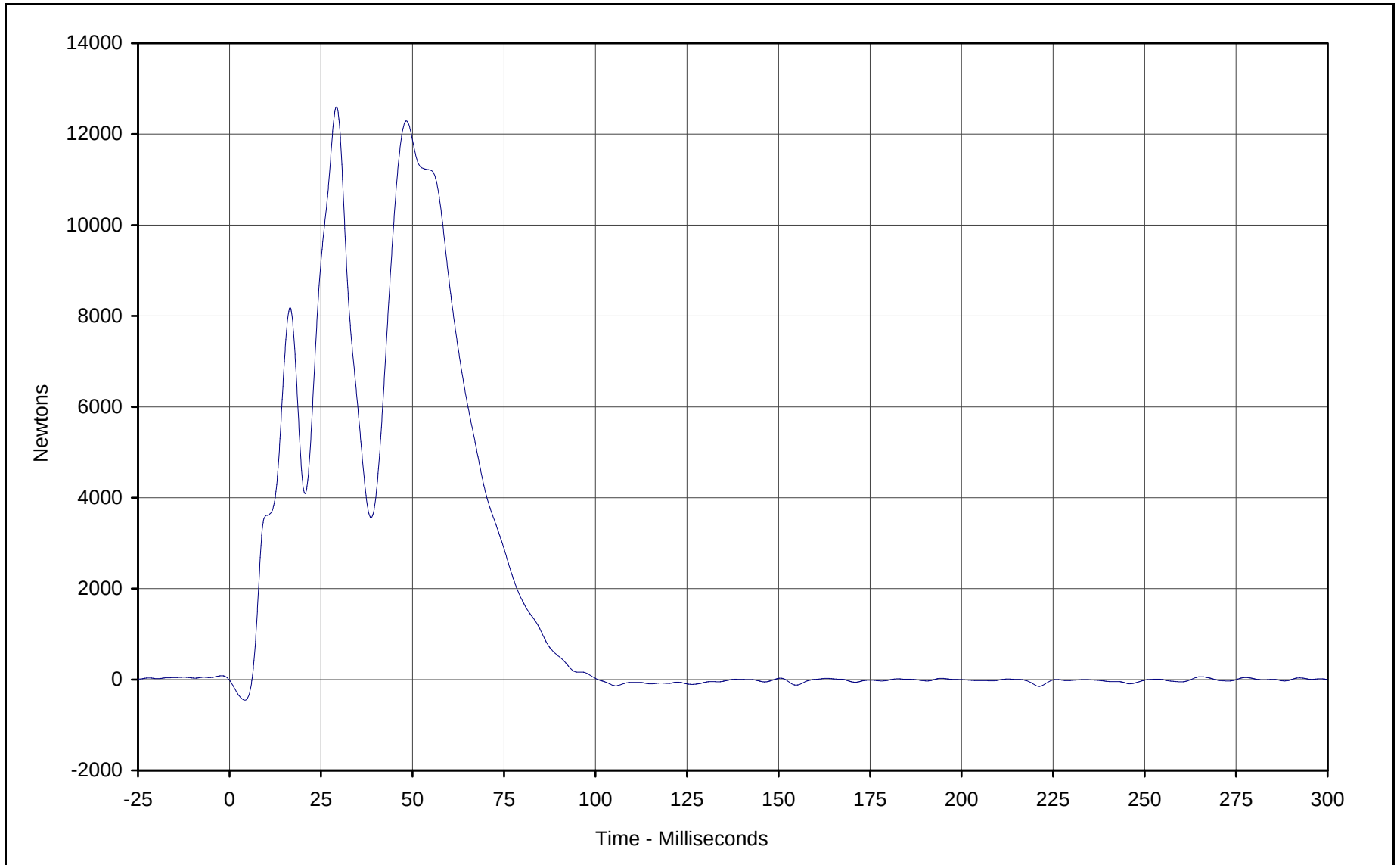


Curve Description: Barrier Force C6
Maximum Value: 20303.8 at 31.2 Milliseconds
Minimum Value: -566.4 at 4.0 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: FIL-121

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



C-22



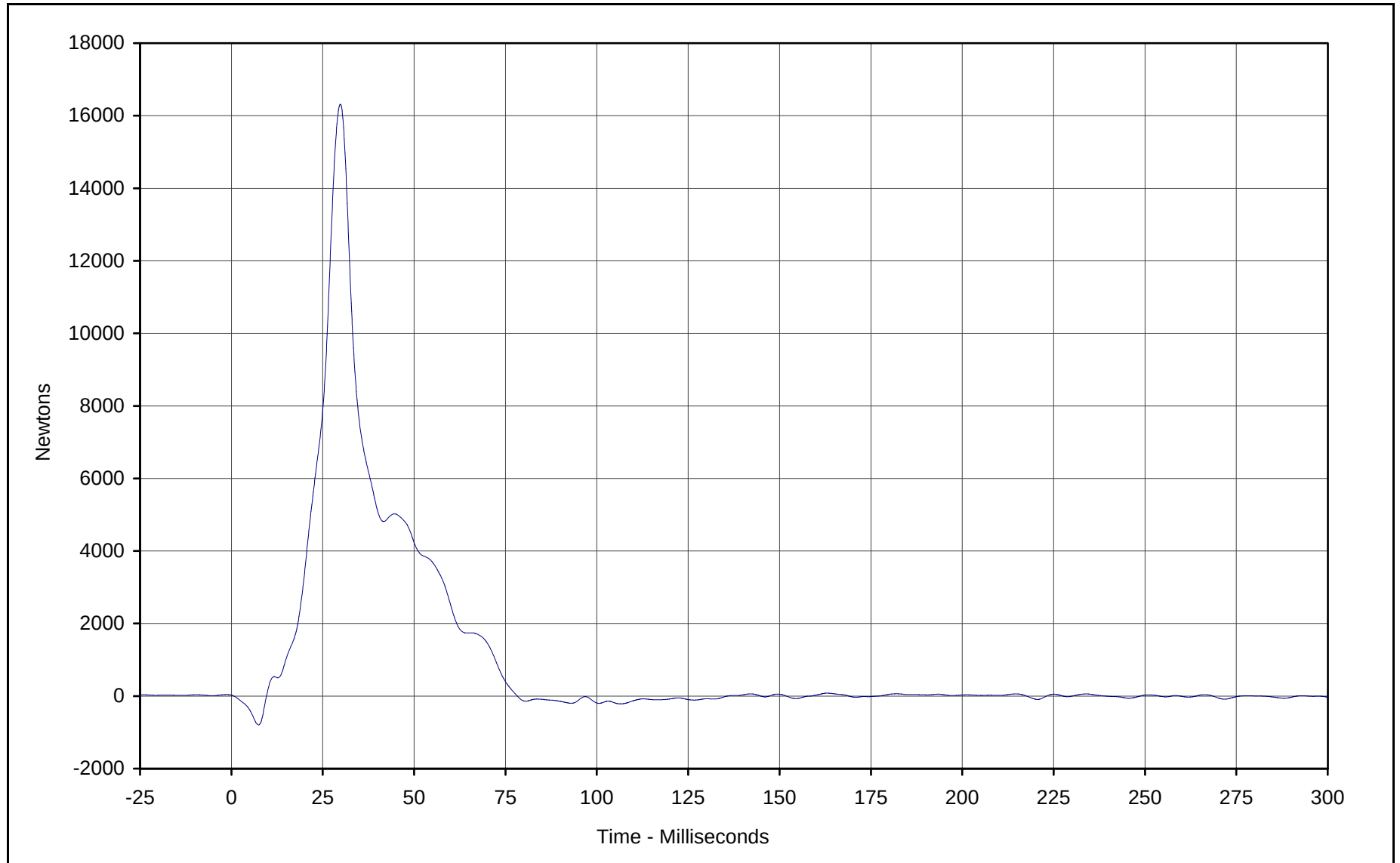
Curve Description: Barrier Force C7
Maximum Value: 12603.1 at 29.2 Milliseconds
Minimum Value: -456.7 at 4.2 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: FIL-122

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



KAR21001-17

C-23



Curve Description: Barrier Force C8

Maximum Value: 16320.8 at 29.8 Milliseconds

Minimum Value: -793.7 at 7.4 Milliseconds

SAE Filter Class: 60

Date of Test: 3/6/01

Curve Number: FIL-123

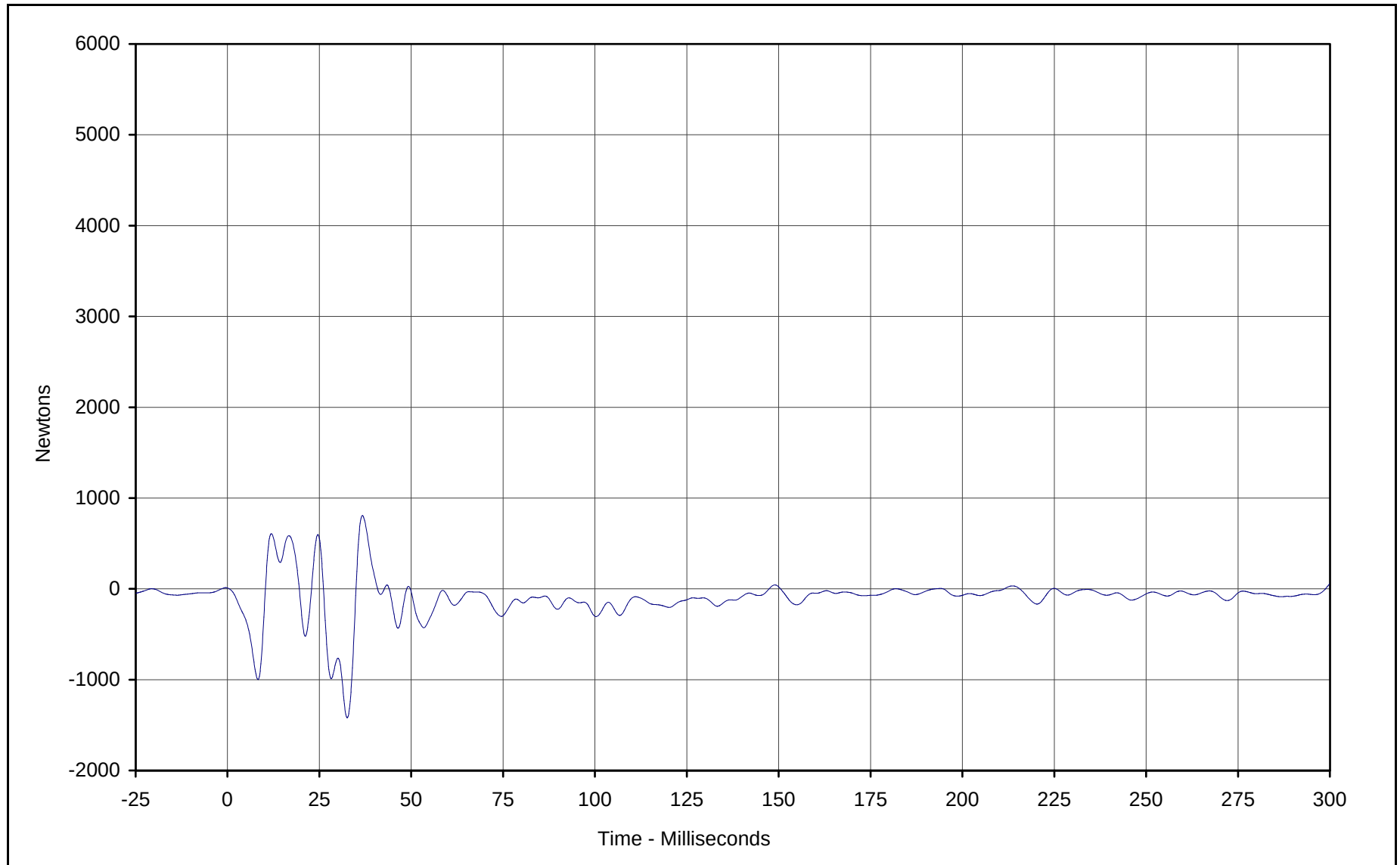
Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan



KAR21001-17

C-24



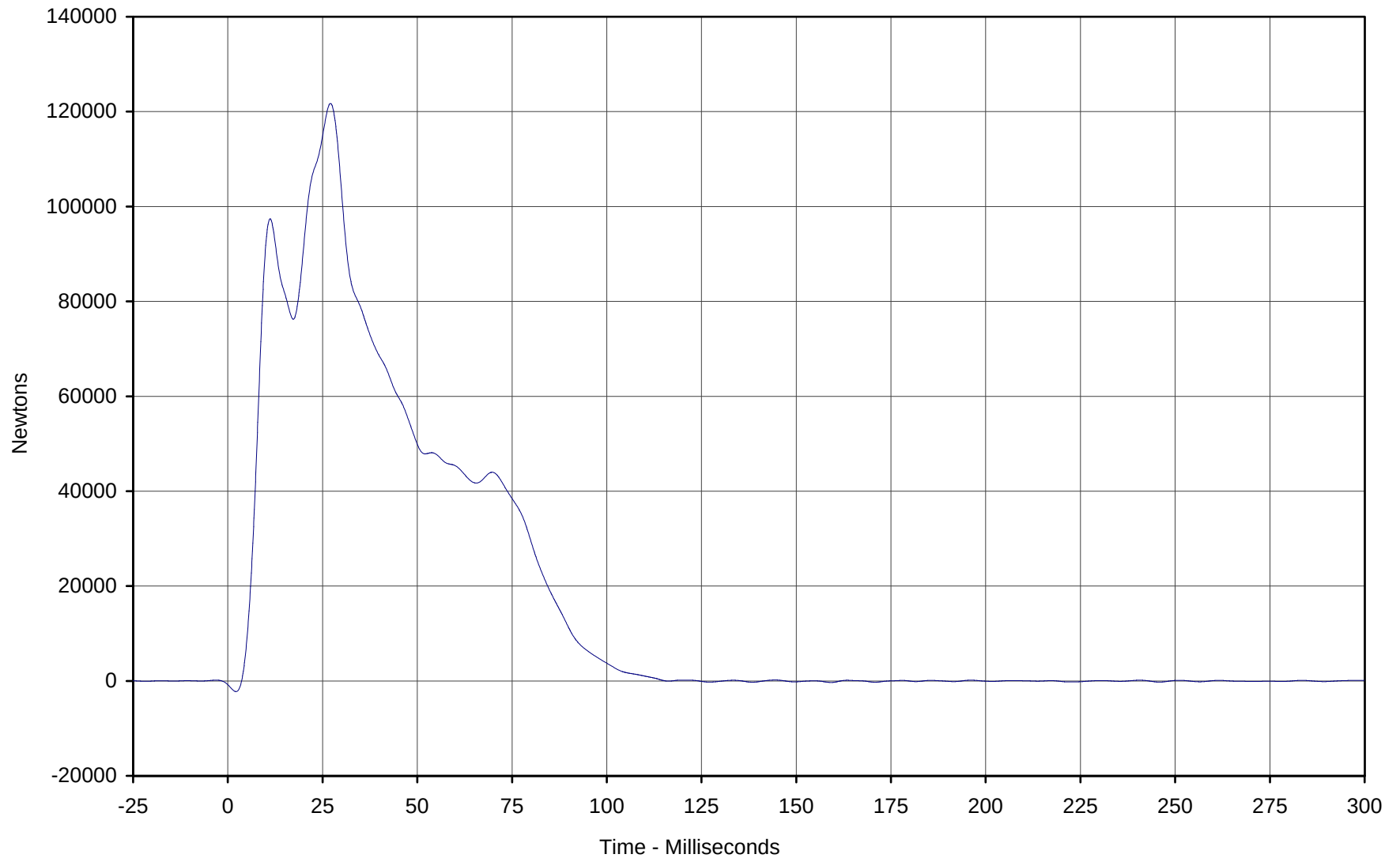
Curve Description: Barrier Force C9
Maximum Value: 807.1 at 36.7 Milliseconds
Minimum Value: -1420.2 at 32.6 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: FIL-124

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



KAR21001-17

C-25

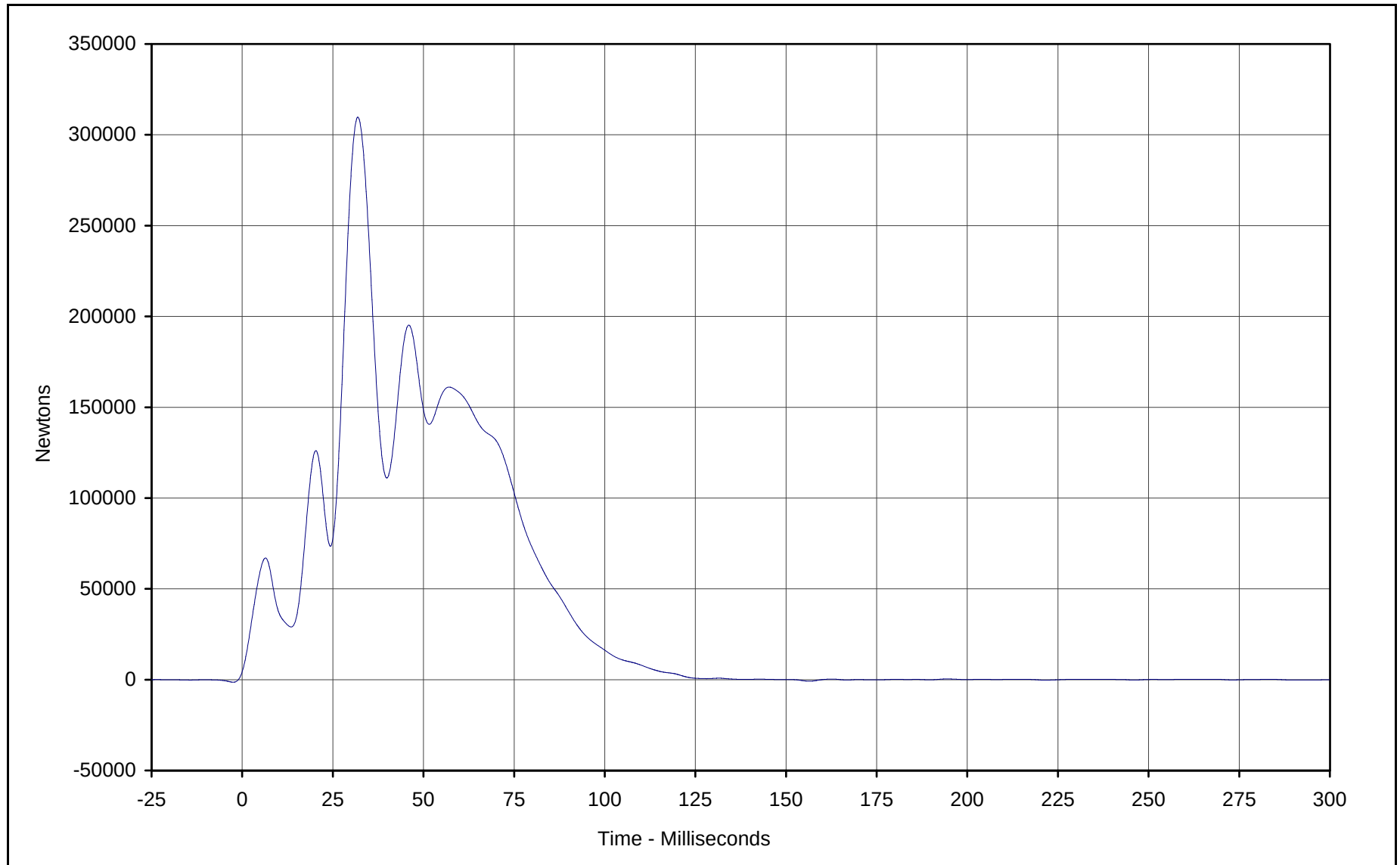


Curve Description: Barrier Force Sum Group 1
Maximum Value: 121718.4 at 27.1 Milliseconds
Minimum Value: -2251.8 at 2.1 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: SUM-001

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



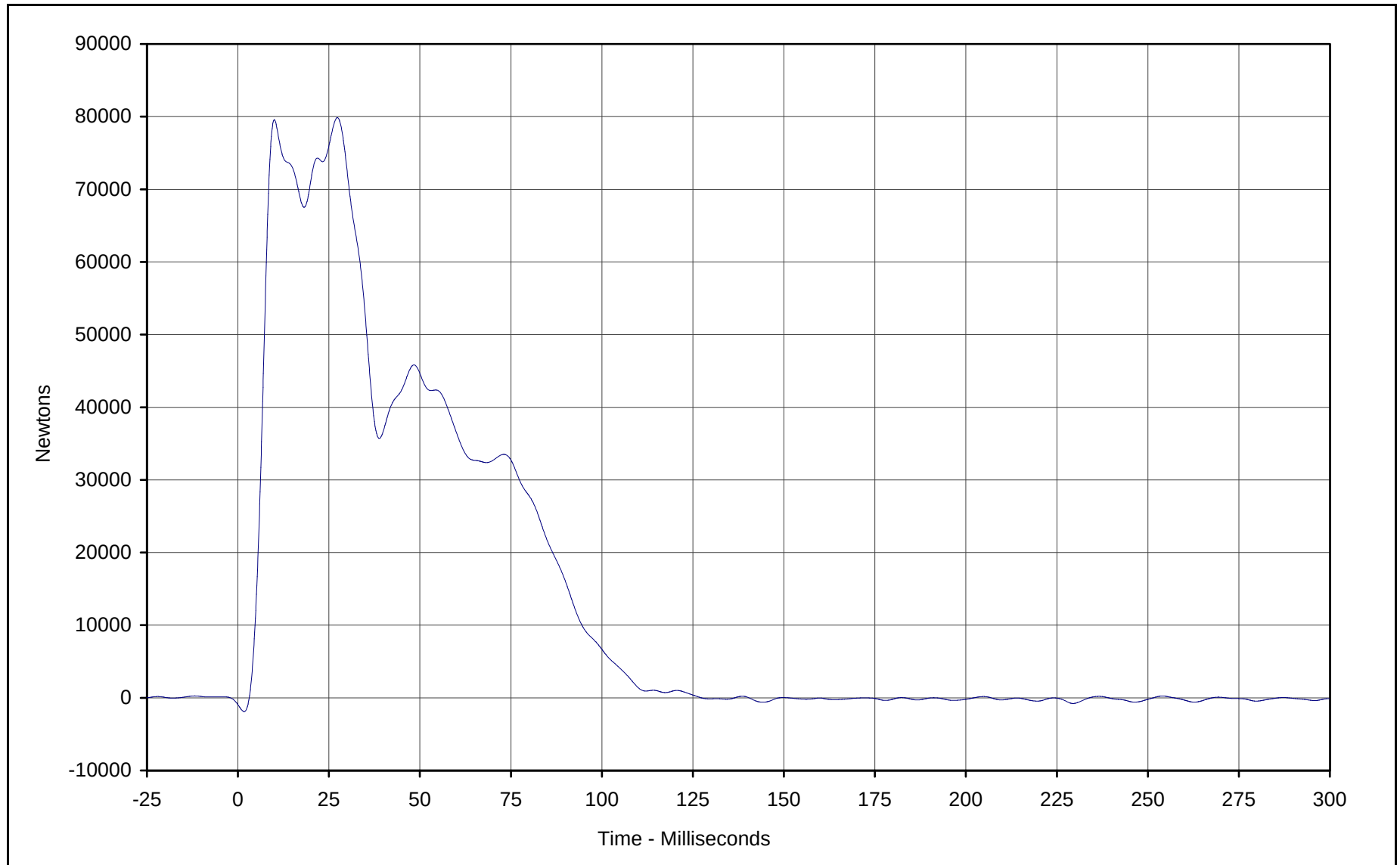
KAR21001-17



Curve Description: Barrier Force Sum Group 2
Maximum Value: 309733.1 at 31.9 Milliseconds
Minimum Value: -856.2 at 156.4 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: SUM-002

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

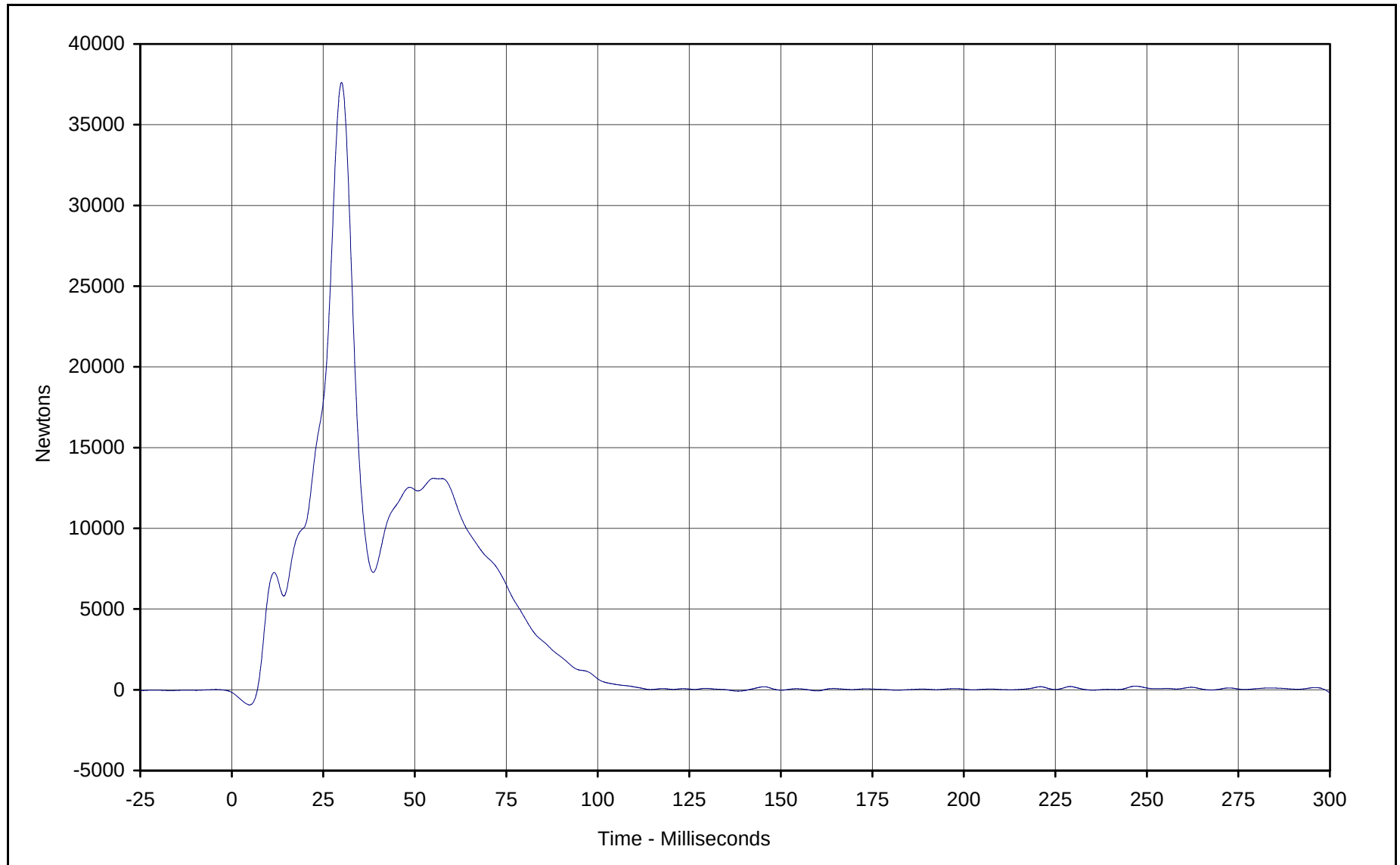




Curve Description: Barrier Force Sum Group 3
Maximum Value: 79872.1 at 27.3 Milliseconds
Minimum Value: -1888.0 at 1.7 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: SUM-003

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan

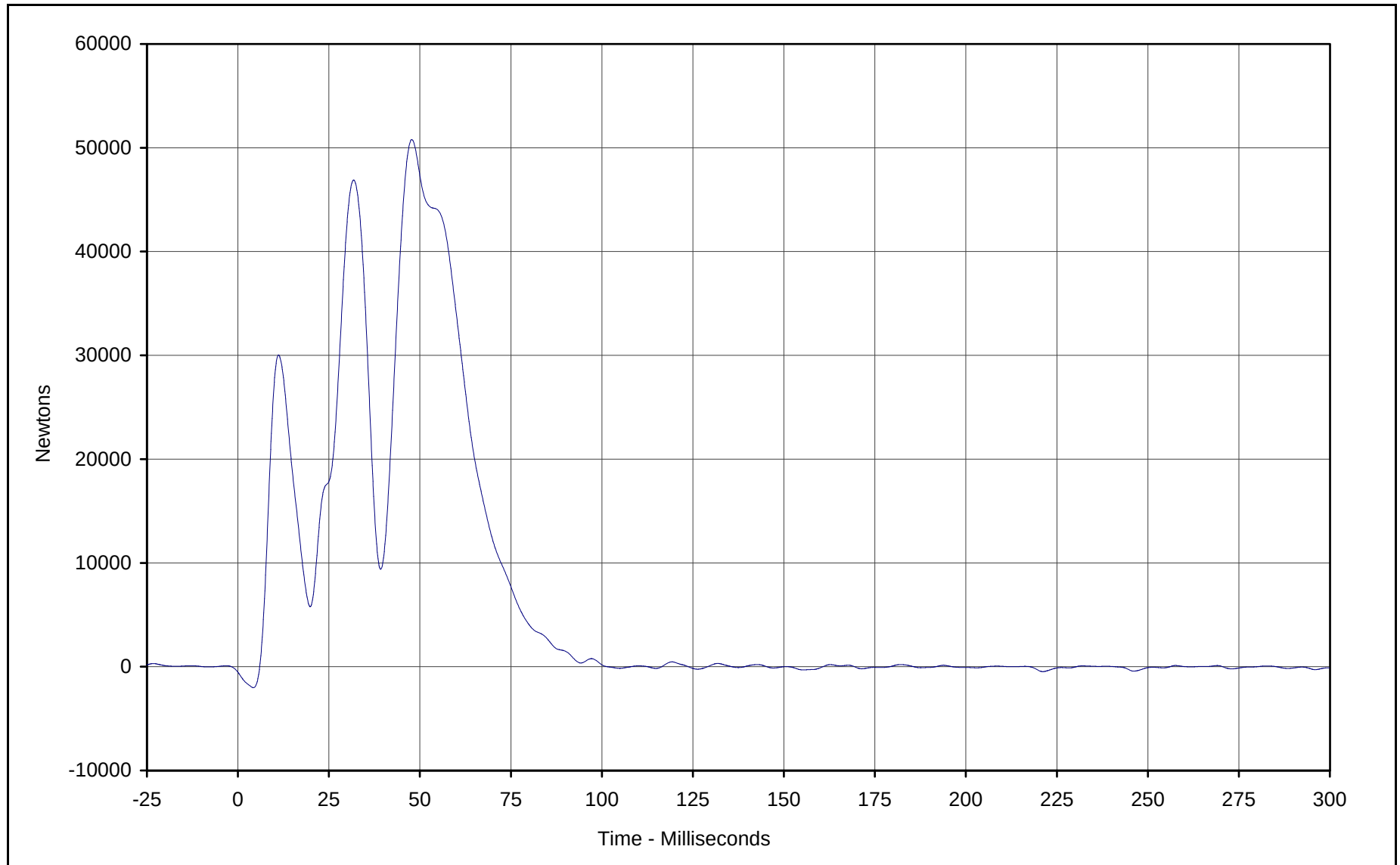




Curve Description: Barrier Force Sum Group 4
Maximum Value: 37612.1 at 30.0 Milliseconds
Minimum Value: -937.6 at 4.8 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: SUM-004

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



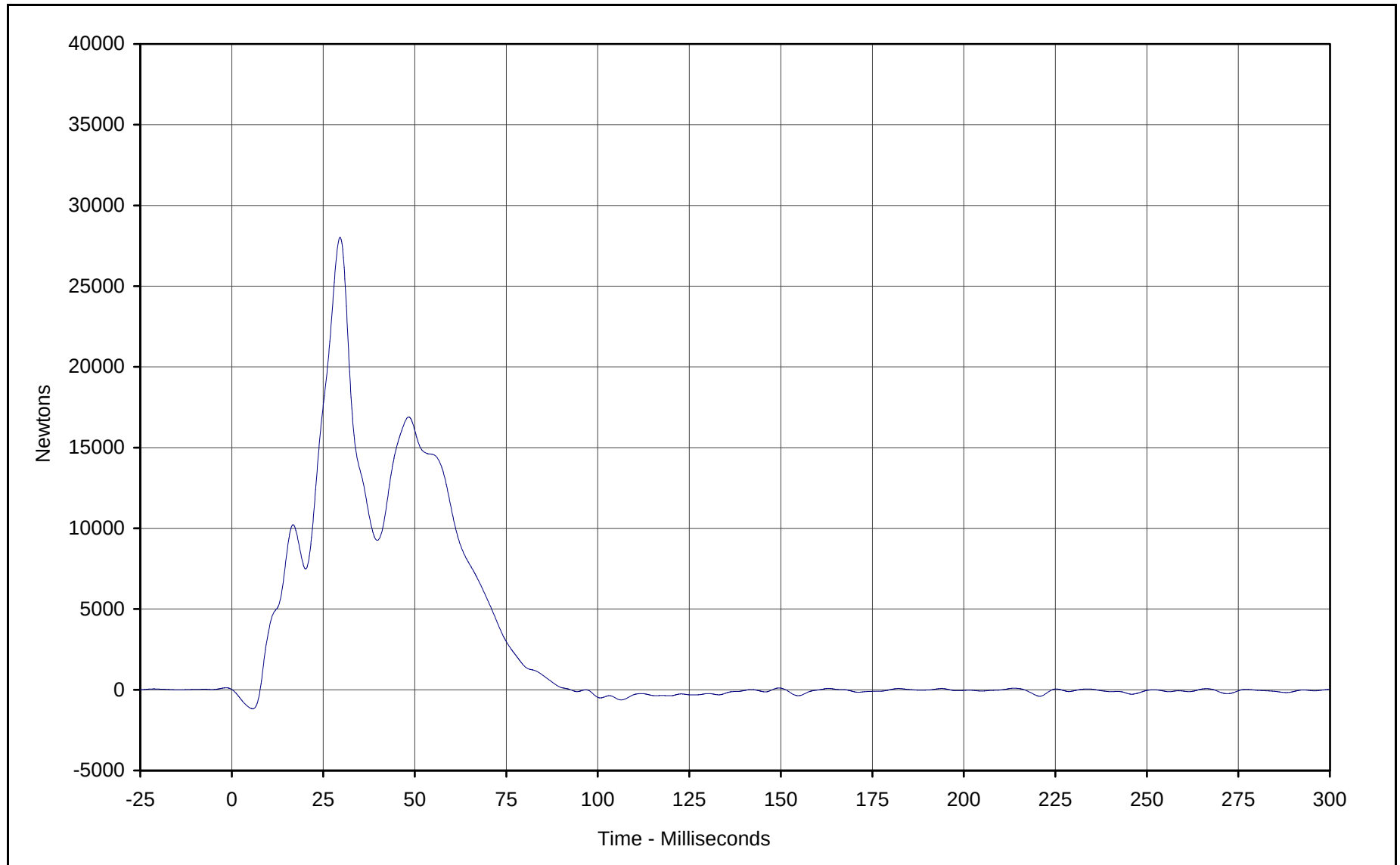


Curve Description: Barrier Force Sum Group 5
Maximum Value: 50793.4 at 47.8 Milliseconds
Minimum Value: -2023.3 at 4.2 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: SUM-005

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



C-30



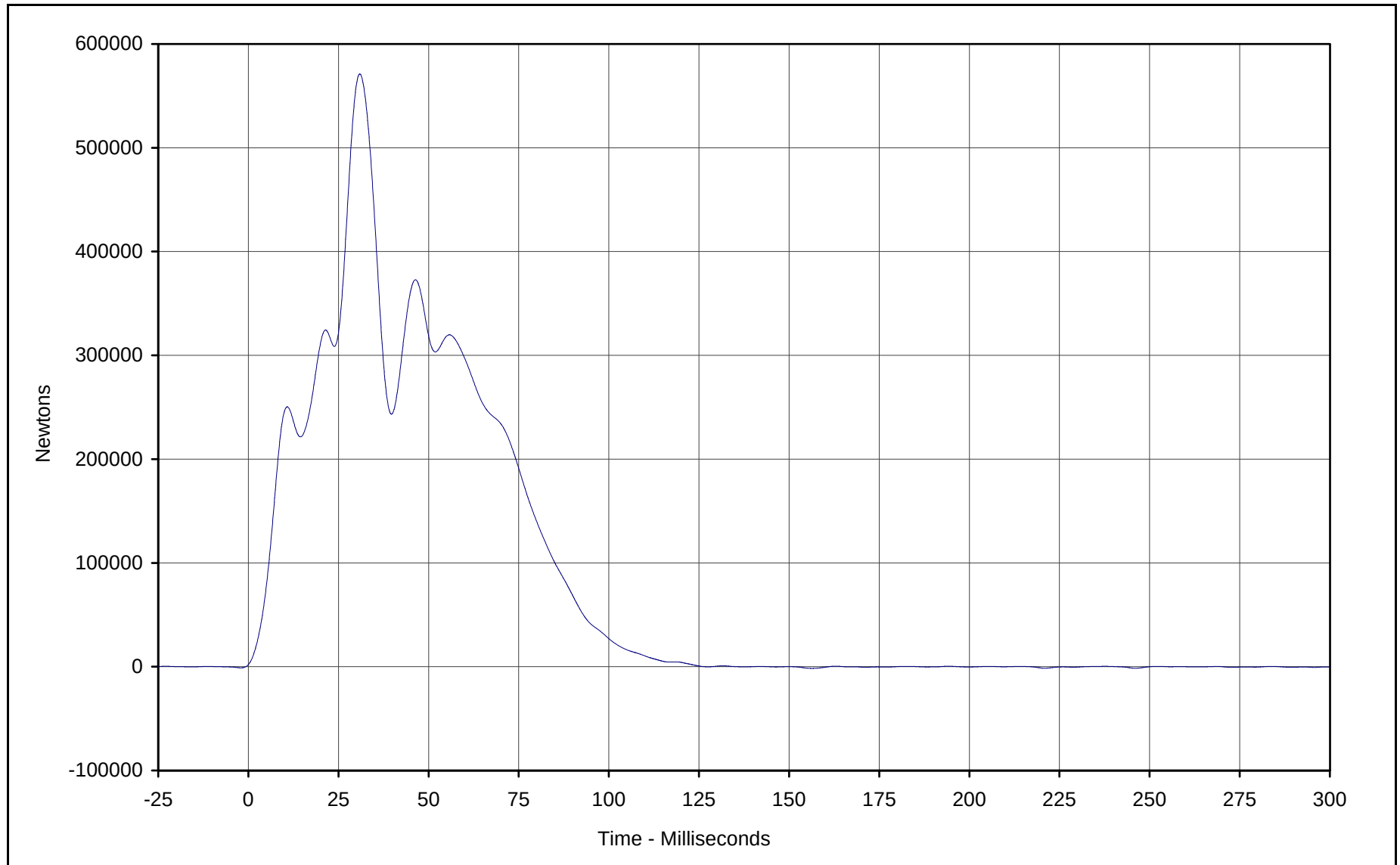
Curve Description: Barrier Force Sum Group 6
Maximum Value: 28017.4 at 29.6 Milliseconds
Minimum Value: -1173.4 at 5.7 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: SUM-006

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



KAR21001-17

C-31

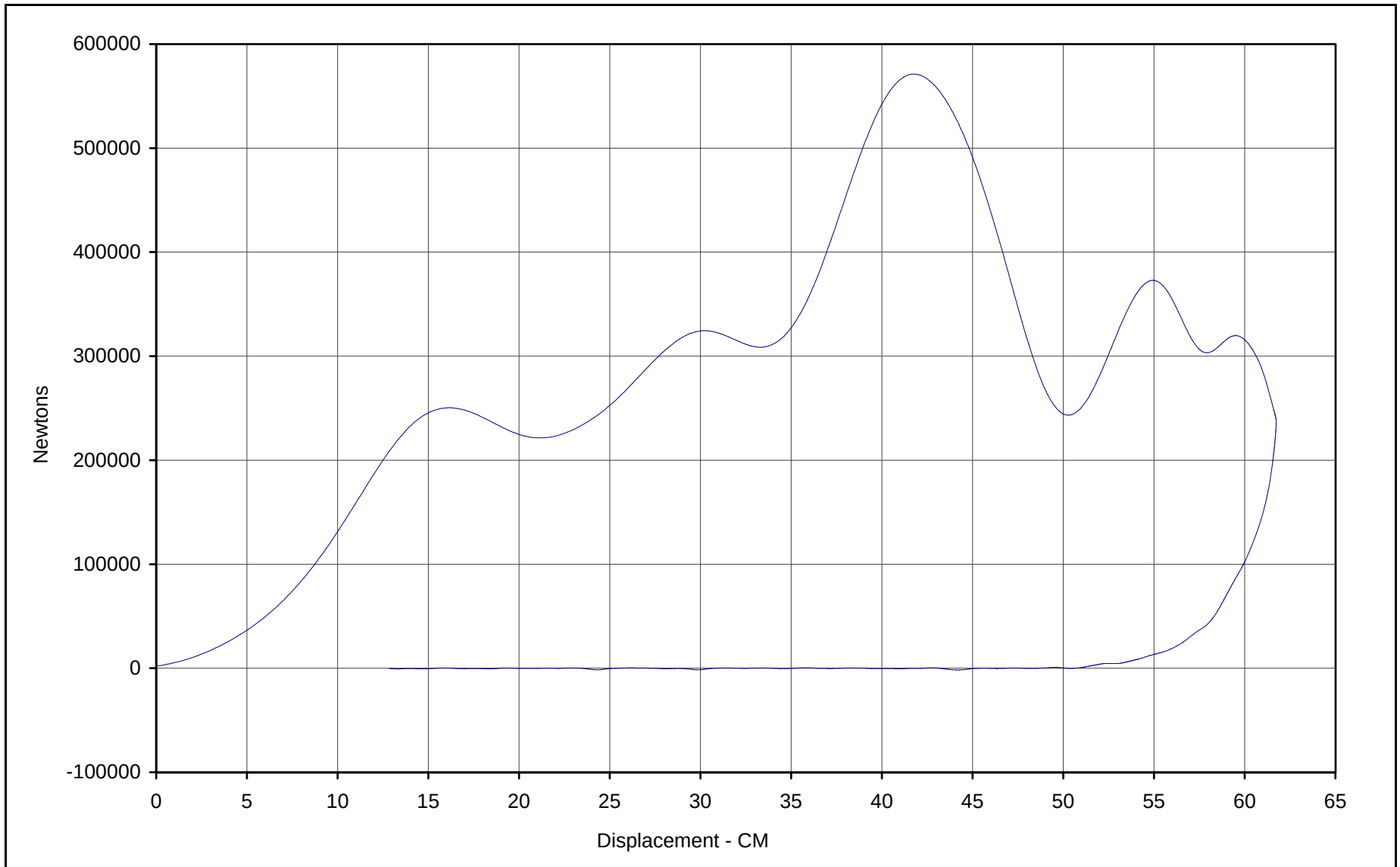


Curve Description: Barrier Force Sum Total
Maximum Value: 571133.9 at 30.9 Milliseconds
Minimum Value: -1613.9 at 156.3 Milliseconds
SAE Filter Class: 60
Date of Test: 3/6/01
Curve Number: SUM-007

Test Program: 2001 NHTSA 35mph NCAP No.: M10502
Test Vehicle: 2001 Kia Sephia 4 Door Sedan



KAR21001-17



Curve Description: Sum Force Total vs. Dynamic Crush

Maximum Displ.: 61.7 at 69.6 Milliseconds

Maximum Force: 571,134 at 30.9 Milliseconds

Measured Energy: 166,787 joules

Date of Test: 3/6/01

Curve Number: XVY-001

Test Program: 2001 NHTSA 35mph NCAP No.: M10502

Test Vehicle: 2001 Kia Sephia 4 Door Sedan



BARRIER LOAD CELL SUMMARY DATATest Vehicle: 2001 Kia Sephia 4 Door SedanNHTSA No.: M10502Test Program: 2001 NHTSA 35mph NCAPTest Date: 3/6/01**BARRIER LOAD CELL PEAK FORCES**

Location	Units	Max	Time	Min	Time
Barrier Force A2	Newtons	3034.2	21.2	-304.2	4.2
Barrier Force A3	Newtons	8568.8	20.6	-1662.2	25.4
Barrier Force A4	Newtons	41039.9	20.8	-456.9	1.7
Barrier Force A5	Newtons	58691.4	19.4	-273.8	295.1
Barrier Force A6	Newtons	9579.5	20.3	-2403.2	25.3
Barrier Force A7	Newtons	20845.2	20.4	-348.8	2.5
Barrier Force A8	Newtons	5506.8	74.3	-487.4	7.1
Barrier Force A9	Newtons	1459.6	26.0	-3116.9	30.4
Barrier Force B2	Newtons	20705.2	28.1	-483.7	3.8
Barrier Force B3	Newtons	101207.7	26.2	-1328.1	1.7
Barrier Force B4	Newtons	32879.0	59.8	-64.3	299.9
Barrier Force B5	Newtons	170818.6	32.3	-42.1	157.1
Barrier Force B6	Newtons	52887.7	31.9	-38.3	158.3
Barrier Force B7	Newtons	72240.7	9.5	-1535.0	1.5
Barrier Force B8	Newtons	9794.5	48.8	-266.3	2.7
Barrier Force B9	Newtons	1525.4	25.7	-1488.1	21.0
Barrier Force C2	Newtons	24244.2	30.2	-650.4	7.7
Barrier Force C3	Newtons	13746.6	29.2	-539.2	4.5
Barrier Force C4	Newtons	12511.8	11.1	-938.0	4.5
Barrier Force C5	Newtons	21651.8	48.3	-535.5	4.1
Barrier Force C6	Newtons	20303.8	31.2	-566.4	4.0
Barrier Force C7	Newtons	12603.1	29.2	-456.7	4.2
Barrier Force C8	Newtons	16320.8	29.8	-793.7	7.4
Barrier Force C9	Newtons	807.1	36.7	-1420.2	32.6
Barrier Force Sum Group 1	Newtons	121718.4	27.1	-2251.8	2.1
Barrier Force Sum Group 2	Newtons	309733.1	31.9	-856.2	156.4
Barrier Force Sum Group 3	Newtons	79872.1	27.3	-1888.0	1.7
Barrier Force Sum Group 4	Newtons	37612.1	30.0	-937.6	4.8
Barrier Force Sum Group 5	Newtons	50793.4	47.8	-2023.3	4.2
Barrier Force Sum Group 6	Newtons	28017.4	29.6	-1173.4	5.7
Barrier Force Sum Total	Newtons	571133.9	30.9	-1613.9	156.3

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
3/6/01
2001 Kia Sephia 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
3/6/01
2001 Kia Sephia 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
3/6/01
2001 Kia Sephia 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
3/6/01
2001 Kia Sephia 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
3/6/01
2001 Kia Sephia 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
3/6/01
2001 Kia Sephia 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
3/6/01
2001 Kia Sephia 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.: RK03C

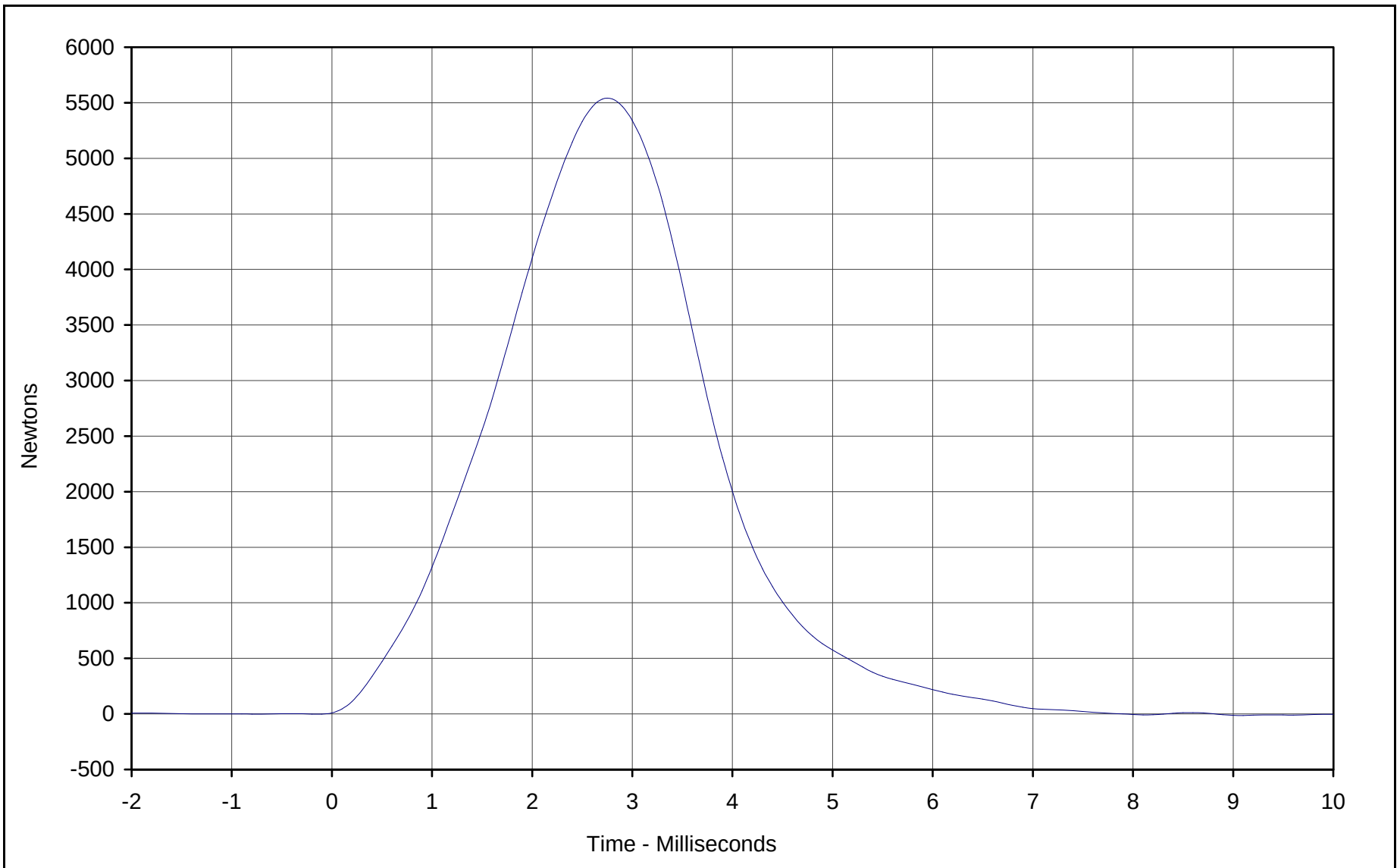
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	2.073 to 2.134	2.113	Pass
Peak Probe Force	Newtons	4715 to 5782	5533.7	Pass
Overall Test Results			Pass	

Laboratory Technician

March 1, 2001
Test Date

Approved By

Date



Curve Description: Probe Force
Maximum Value: 5533.7 at 2.8 Milliseconds
Minimum Value: -4.9 at 8.0 Milliseconds
SAE Filter Class: 600
Date of Test: 3/1/01
ATD Serial No.: 034

Testing Program: Hybrid III Left Knee Impact Test
Test Information: Part S/N: N/A Test I.D.: RK03C





Hybrid III Calibration Data Sheet

50TH Percentile Male

Right Knee Impact Test

ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: RK03D

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	5647.5	Pass
Overall Test Results				Pass

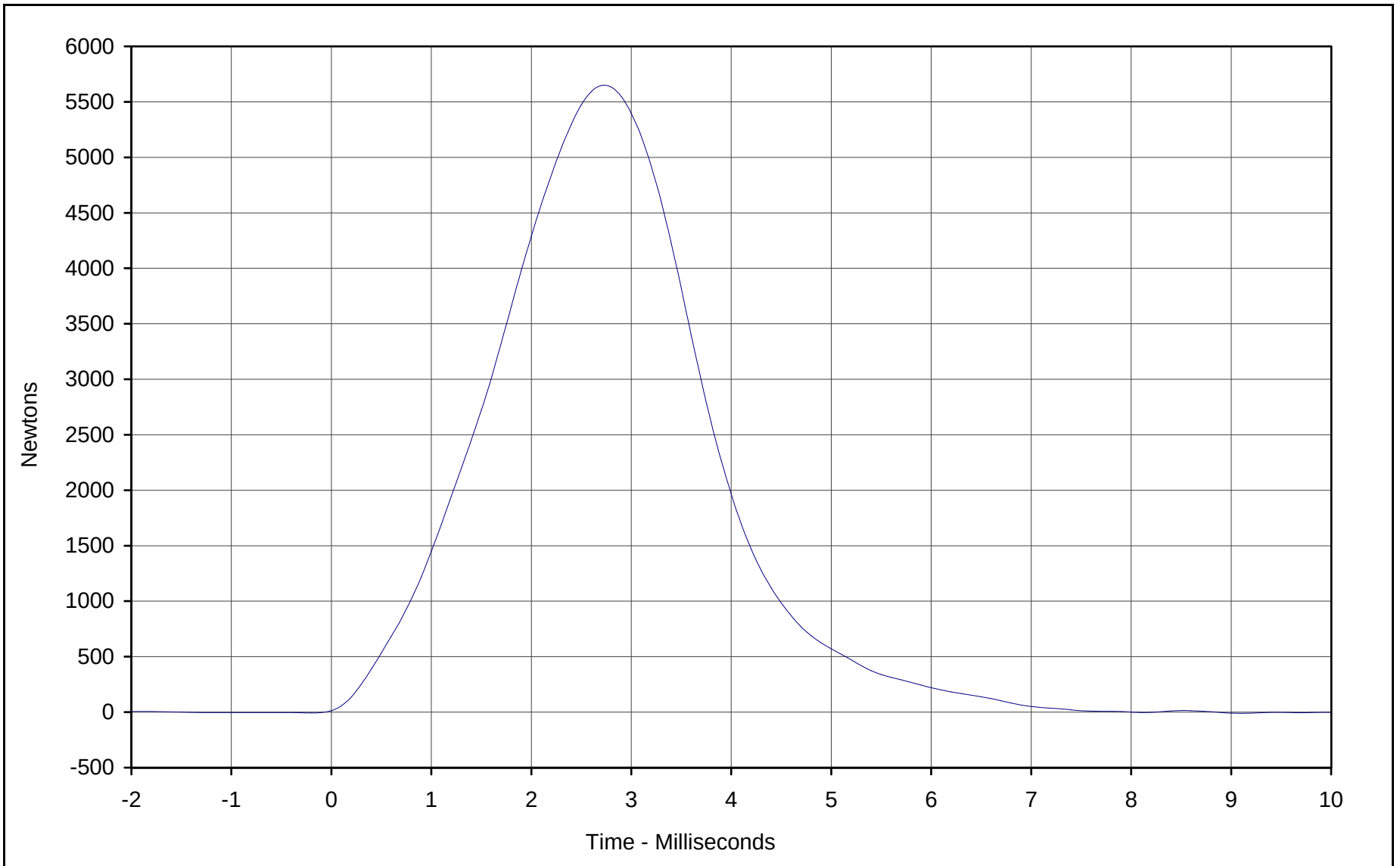
Laboratory Technician

March 1, 2001
Test Date

Approved By

Date

E-4



Curve Description: Probe Force

Maximum Value:	<u>5647.5</u>	at	<u>2.7</u>	Milliseconds
Minimum Value:	<u>-6.2</u>	at	<u>-0.2</u>	Milliseconds
SAE Filter Class:	<u>600</u>			
Date of Test:	<u>3/1/01</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.: RK03D



KAR21001-17



Hybrid III Calibration Data Sheet

50TH Percentile Male

Head Drop Calibration

ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: HD02D

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	225.7	Pass
Peak Lateral Acceleration	G's	≤15.0	7.2	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

Laboratory Technician

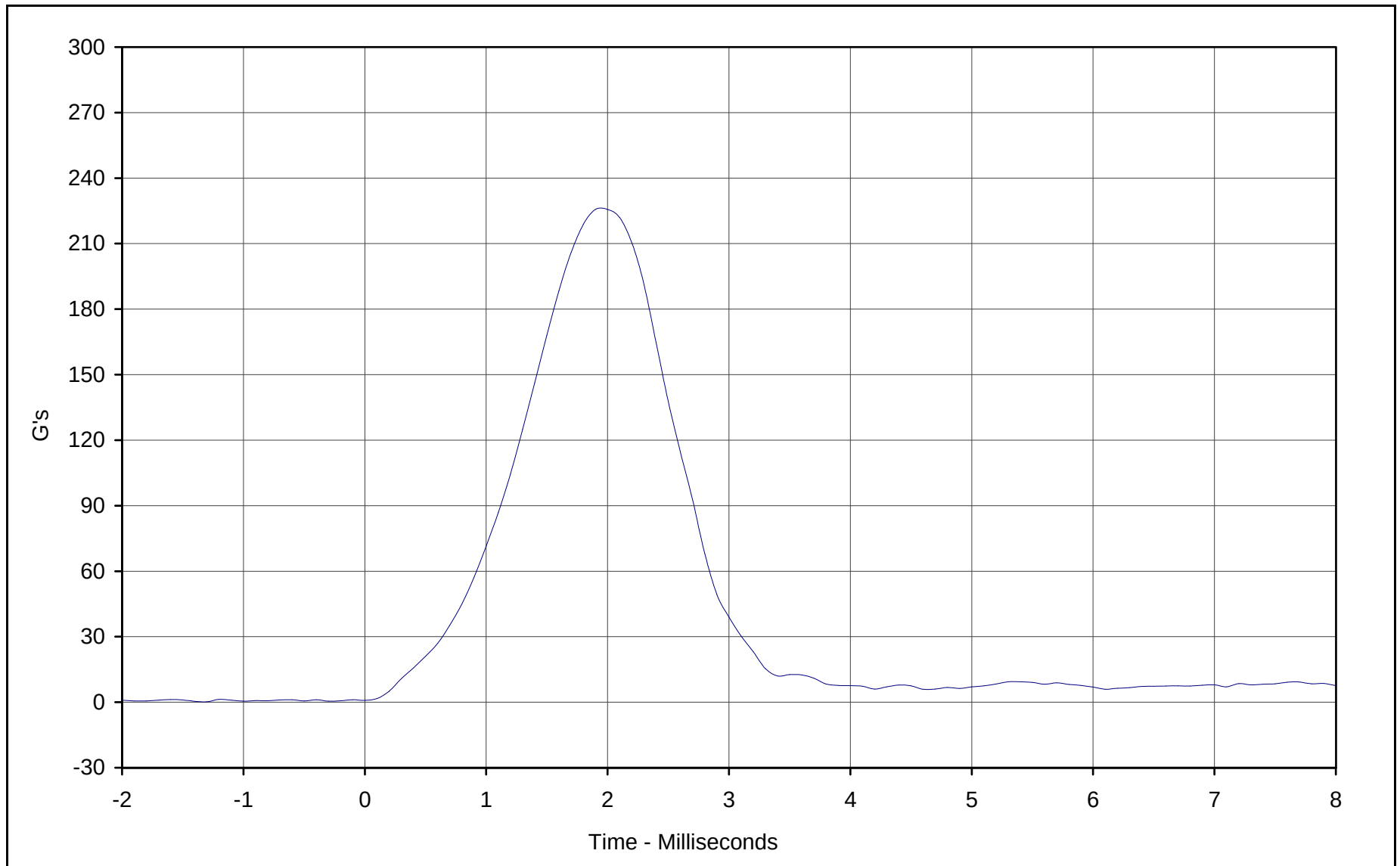
March 1, 2001

Test Date

Approved By

Date

E-6



Curve Description: Head Resultant Acceleration

Maximum Value: 225.7 at 2.0 Milliseconds

Minimum Value: 0.2 at -1.3 Milliseconds

SAE Filter Class: 1000

Date of Test: 3/1/01

ATD Serial No.: 034

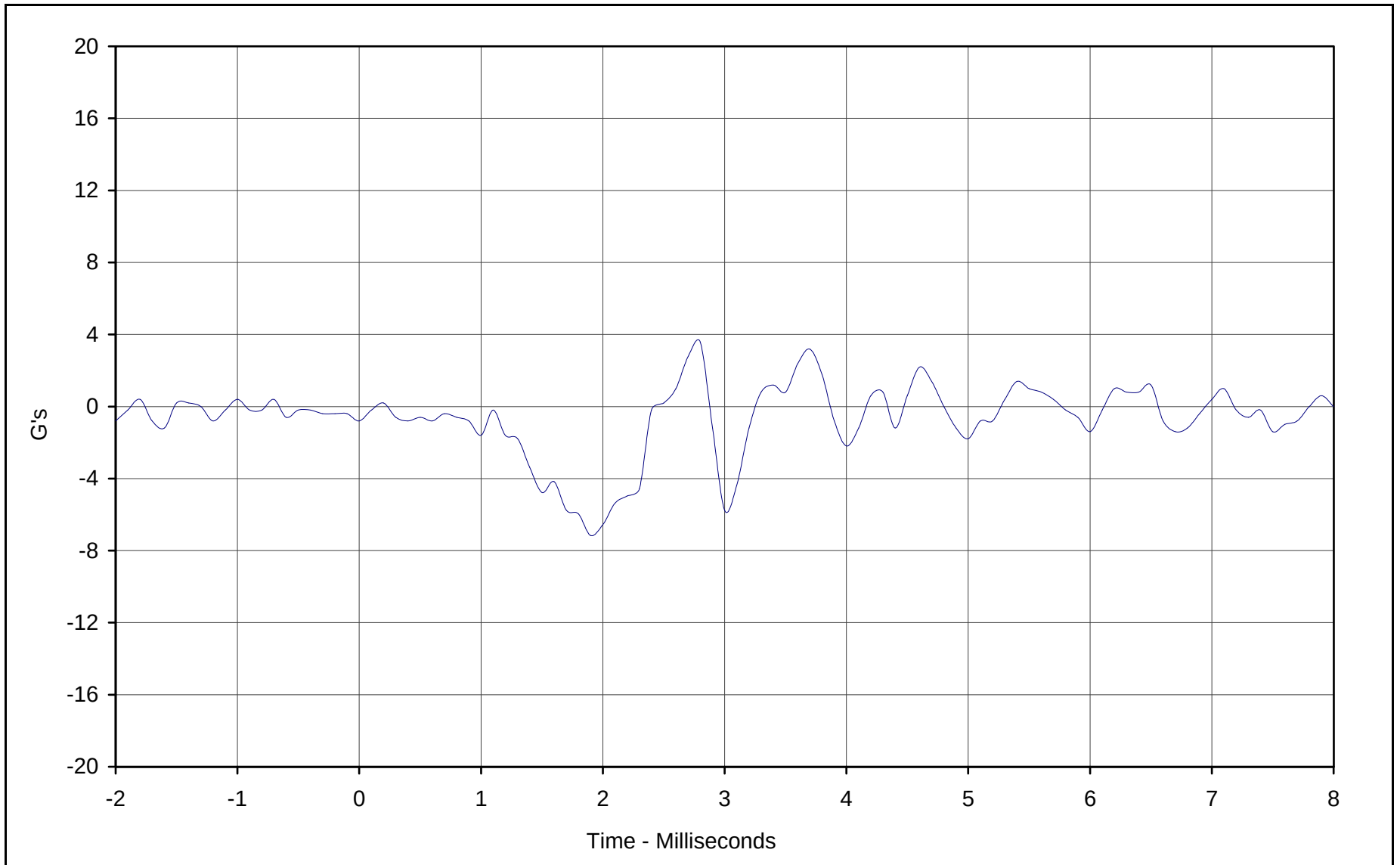
Testing Program: Hybrid III Head Drop Calibration (Male)

Test Information: S/N of Part: N/A Test I.D.: HD02D



KAR21001-17

E-7



Curve Description: Head Acceleration Y Axis

Maximum Value:	3.6	at	2.8	Milliseconds
Minimum Value:	-7.2	at	1.9	Milliseconds
SAE Filter Class:	1000			
Date of Test:	3/1/01			
ATD Serial No.:	034			

Testing Program: Hybrid III Head Drop Calibration (Male)

Test Information: S/N of Part: N/A Test I.D.: HD02D



KAR21001-17



Hybrid III Calibration Data Sheet

50TH Percentile Male

Thorax Impact Test

ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: CH03F

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	5448	Pass
Peak Sternum Displacement	CM	6.35 to 7.26	6.58	Pass
Internal Hysteresis	%	69 to 85	74.8	Pass
Overall Test Results				Pass

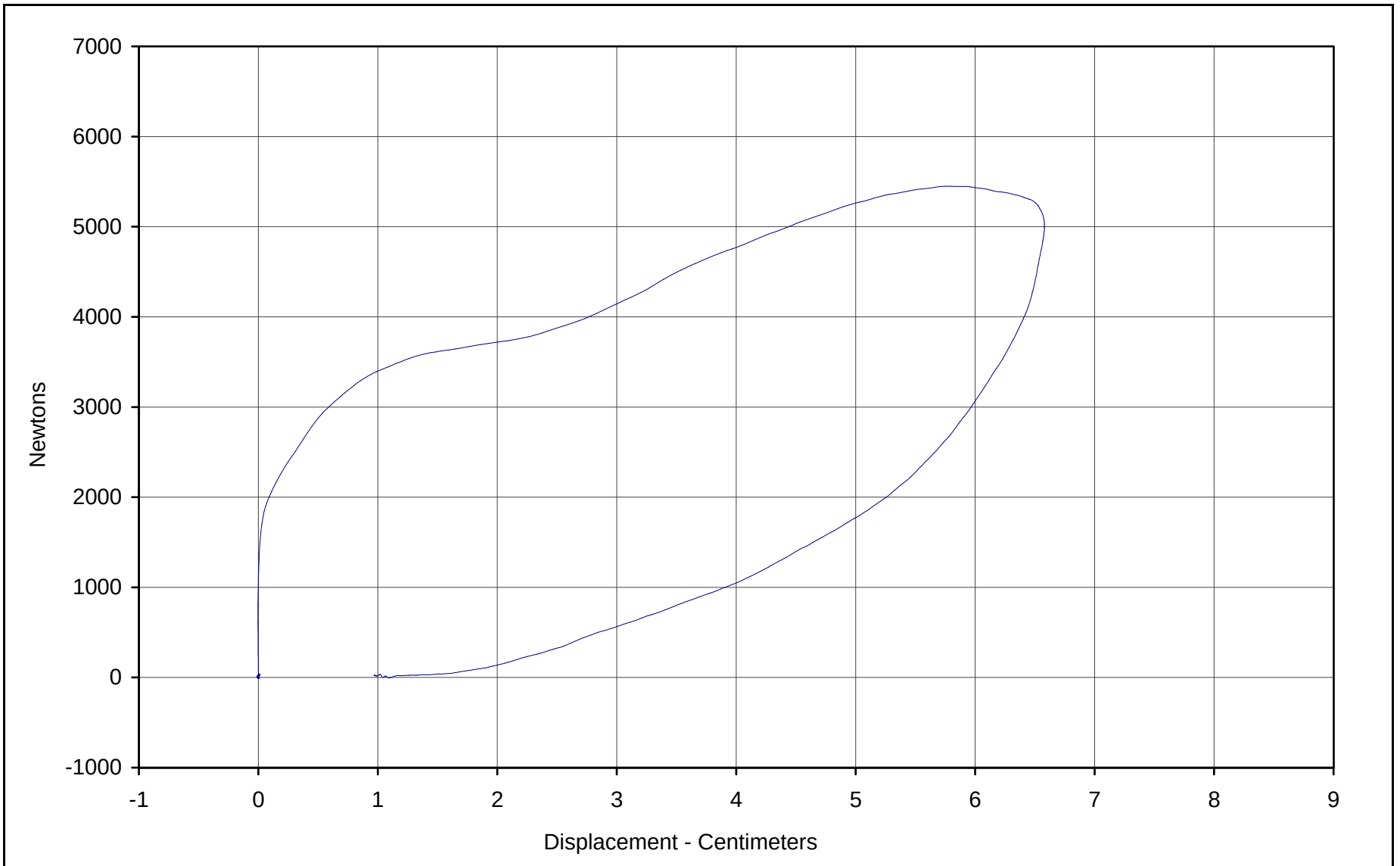
Laboratory Technician

March 1, 2001

Test Date

Approved By

Date



Curve Description: Probe Force vs. Chest Displacement

Probe Force: 5448.4 Newtons

Chest Displ.: 6.58 Centimeters

SAE Filter Class: 180

Date of Test: 3/1/01

ATD Serial No.: 034

Testing Program: Hybrid III Thorax Impact Test

Test Information: S/N of Part: N/A Test I.D.: CH03F





Hybrid III Calibration Data Sheet

50TH Percentile Male

Neck Flexion Test

ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: NF03C

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	25.5	Pass
	20 Msec.	G's	17.6 to 22.6	22.4	Pass
	30 Msec.	G's	12.5 to 18.5	18.4	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	18.4	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	34.2	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	71.3	Pass
	Time	Msec.	57.0 to 64.0	60.0	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	114.5	Pass
Moment About Occipital Condyle	Maximum	N·m	84.1 to 108.5	96.8	Pass
	Time	Msec.	47.0 to 58.0	51.8	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	100.7	Pass
Overall Test Results					Pass

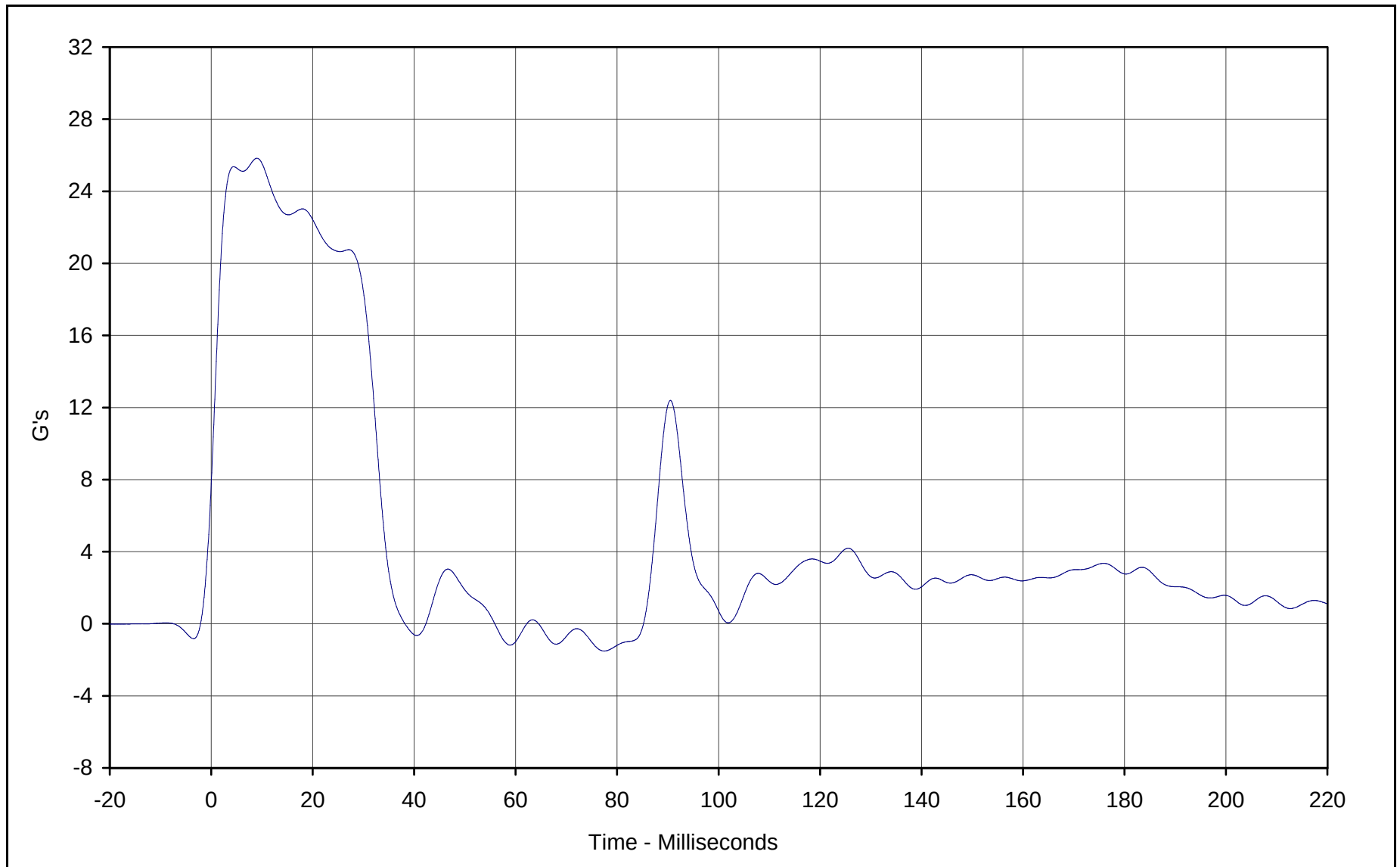
Laboratory Technician

March 1, 2001
Test Date

Approved By

Date

E-11



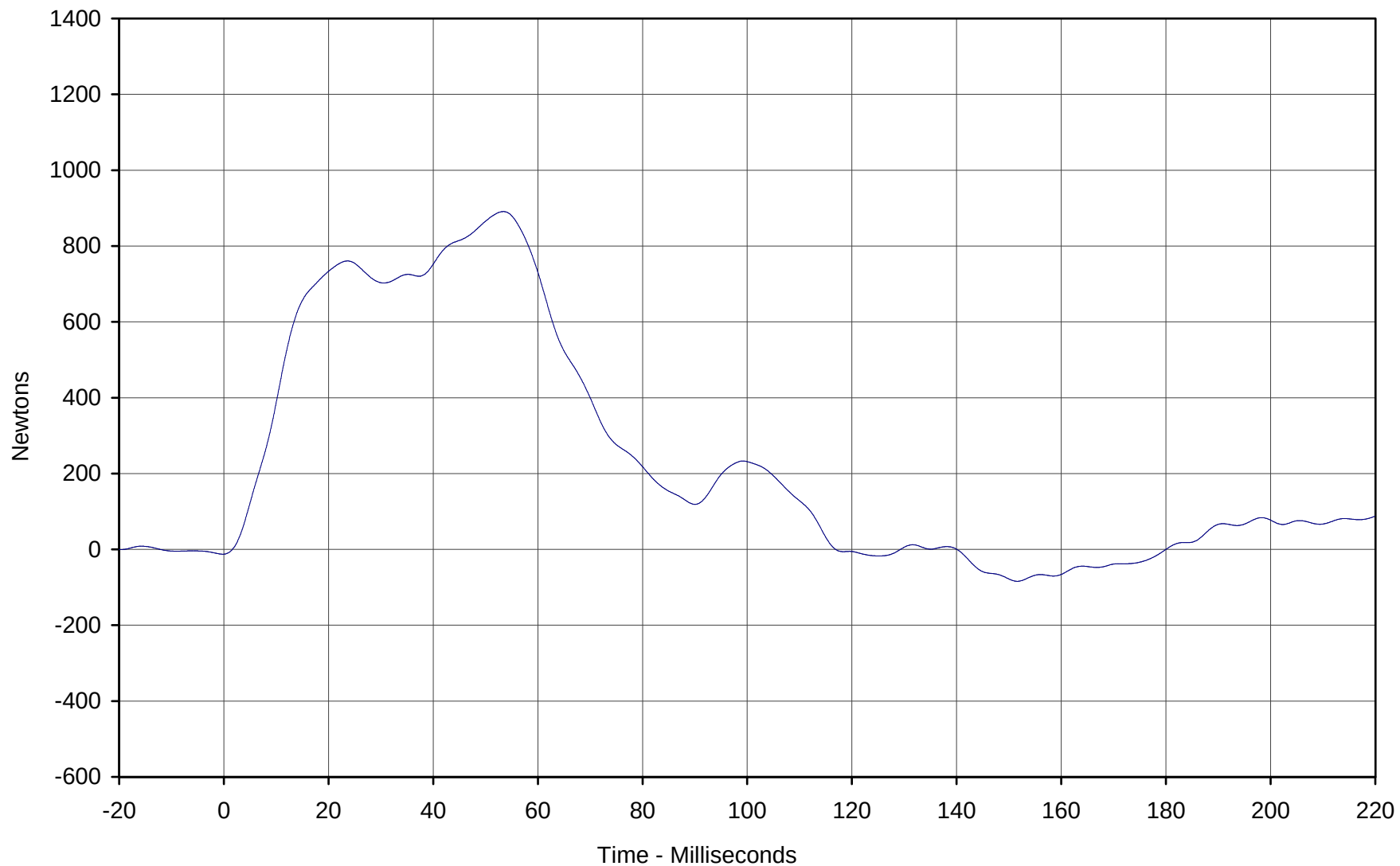
Curve Description:	Pendulum Deceleration		
Maximum Value:	25.8	at	9.0 Milliseconds
Minimum Value:	-1.5	at	77.5 Milliseconds
SAE Filter Class:	60		
Date of Test:	3/1/01		
ATD Serial No.:	034		

Testing Program:	Hybrid III Neck Flexion Test (Male)
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Test Information:	S/N of Part: N/A Test I.D.: NF03C
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KAR21001-17



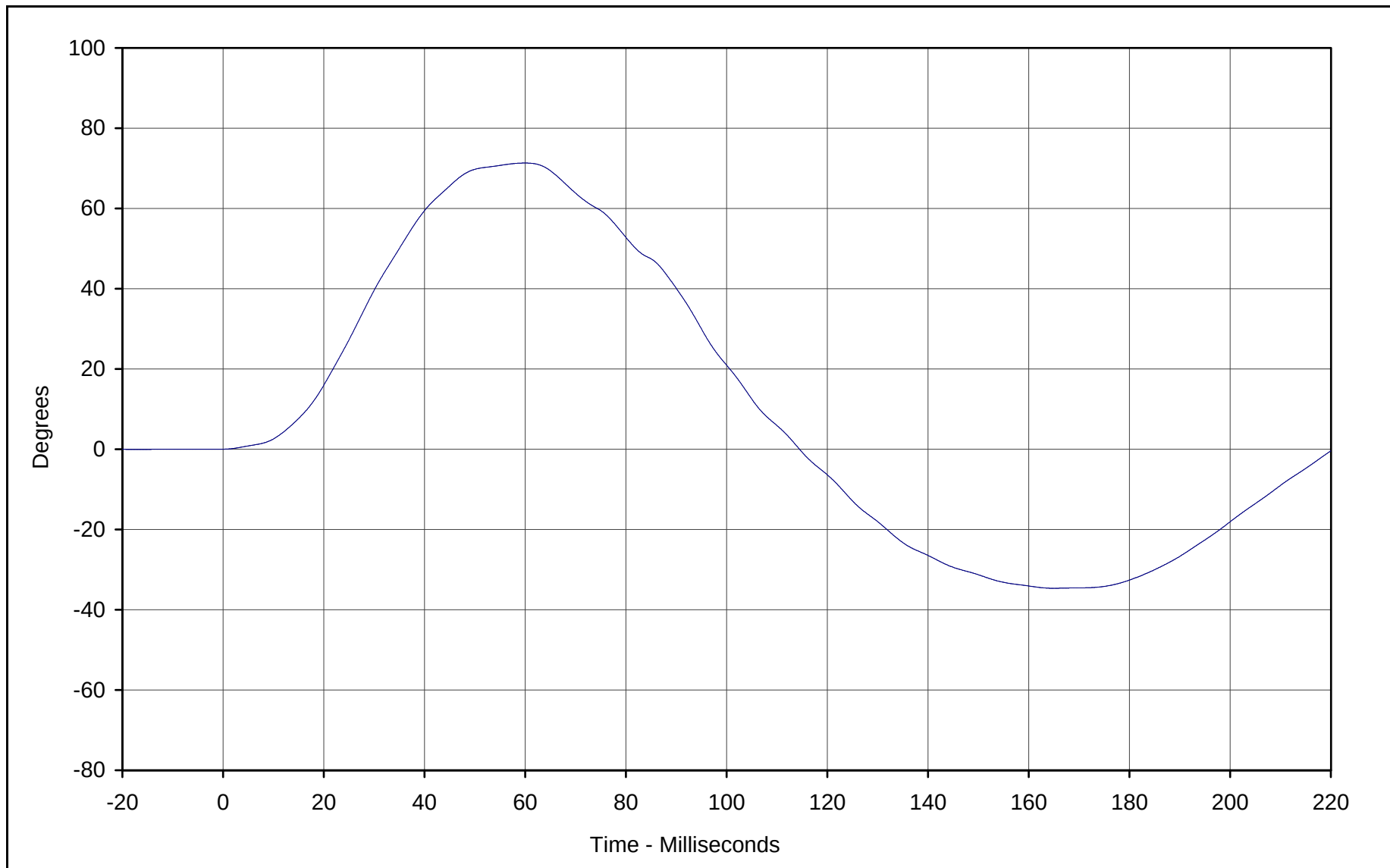
Curve Description: Neck Force X

Maximum Value:	890.9	at	53.4	Milliseconds
Minimum Value:	-84.2	at	151.6	Milliseconds
SAE Filter Class:	60			
Date of Test:	3/1/01			
ATD Serial No.:	034			

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF03C





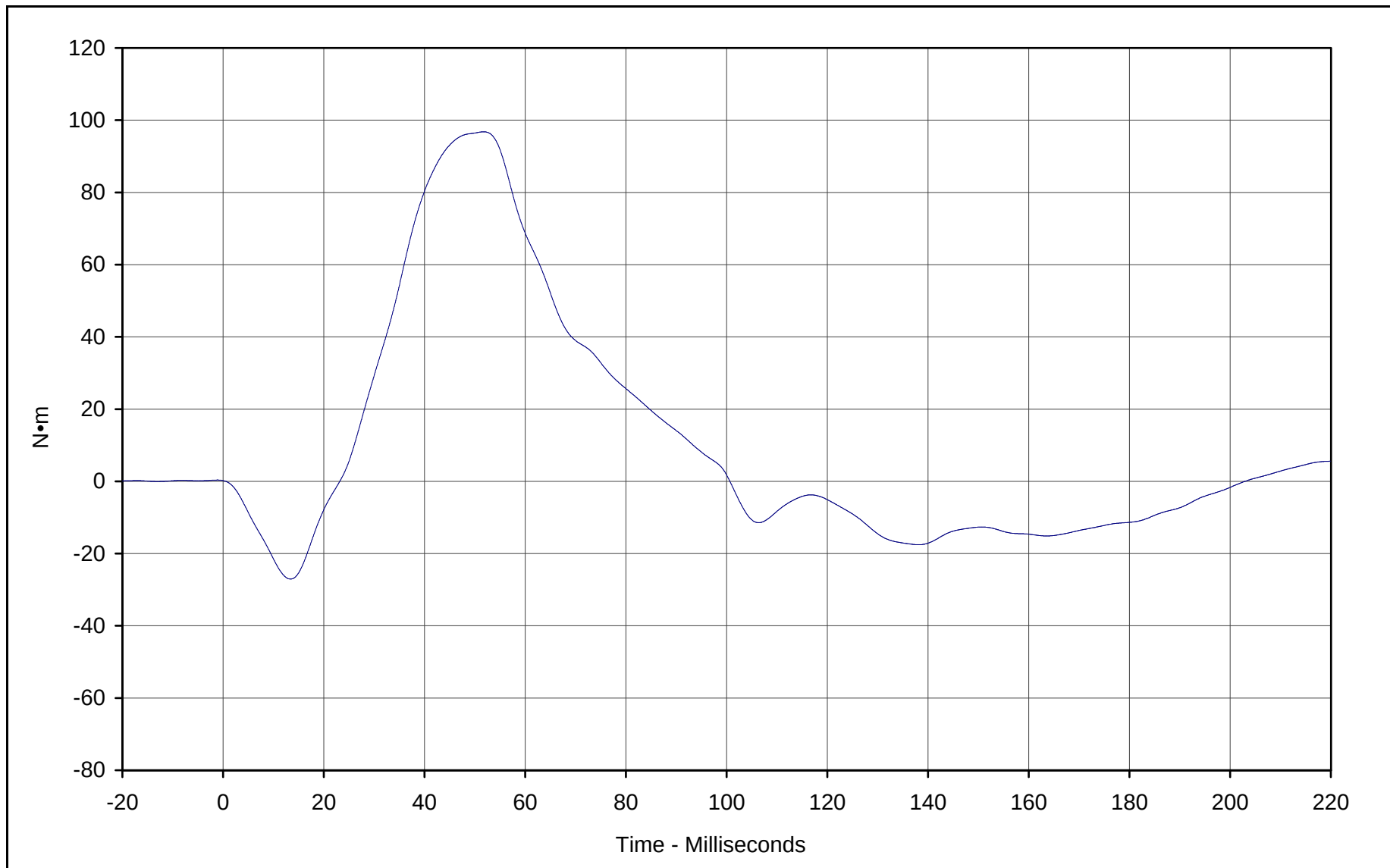
Curve Description: "D" Plane Rotation

Maximum Value:	71.3	at	60.0	Milliseconds
Minimum Value:	-34.7	at	165.0	Milliseconds
SAE Filter Class:	60			
Date of Test:	3/1/01			
ATD Serial No.:	034			

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF03C





Curve Description: Moment About Occipital Condyles

Maximum Value: 96.8 at 51.8 Milliseconds

Minimum Value: -27.1 at 13.4 Milliseconds

SAE Filter Class: 60

Date of Test: 3/1/01

ATD Serial No.: 034

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF03C





Hybrid III Calibration Data Sheet

50TH Percentile Male

Neck Extension Test

ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: NE03C

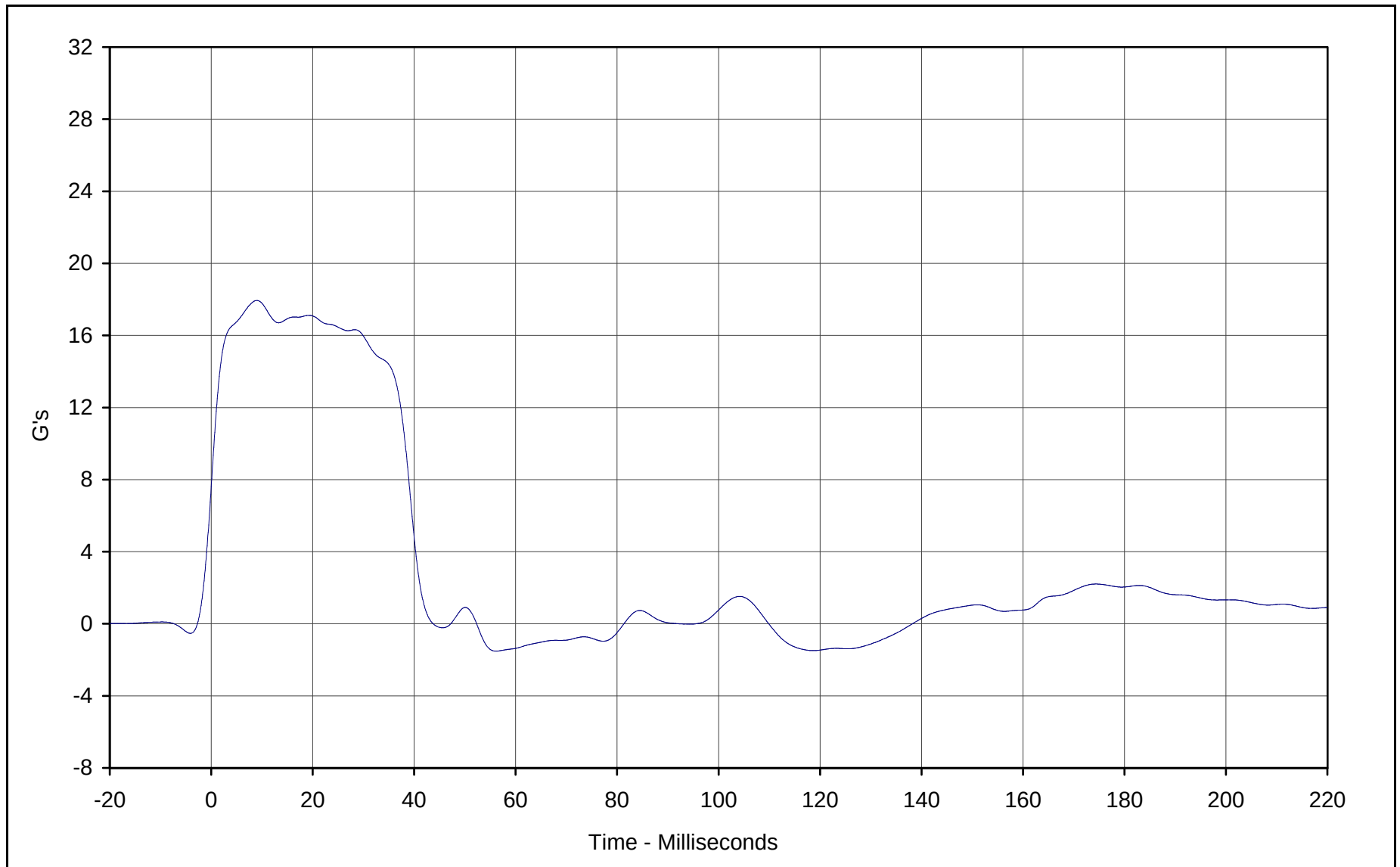
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.02	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	17.8	Pass
	20 Msec.	G's	14.0 to 19.0	17.1	Pass
	30 Msec.	G's	11.0 to 16.0	16.0	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	16.0	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	40.0	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	99.9	Pass
	Time	Msec.	72.0 to 82.0	80.9	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	157.2	Pass
Moment About Occipital Condyle	Maximum	N•m	-52.9 to- 79.9	-70.4	Pass
	Time	Msec.	65.0 to 79.0	68.2	Pass
Negative Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	143.4	Pass
Overall Test Results					Pass

Laboratory Technician

3/1/101
Test Date

Approved By

Date

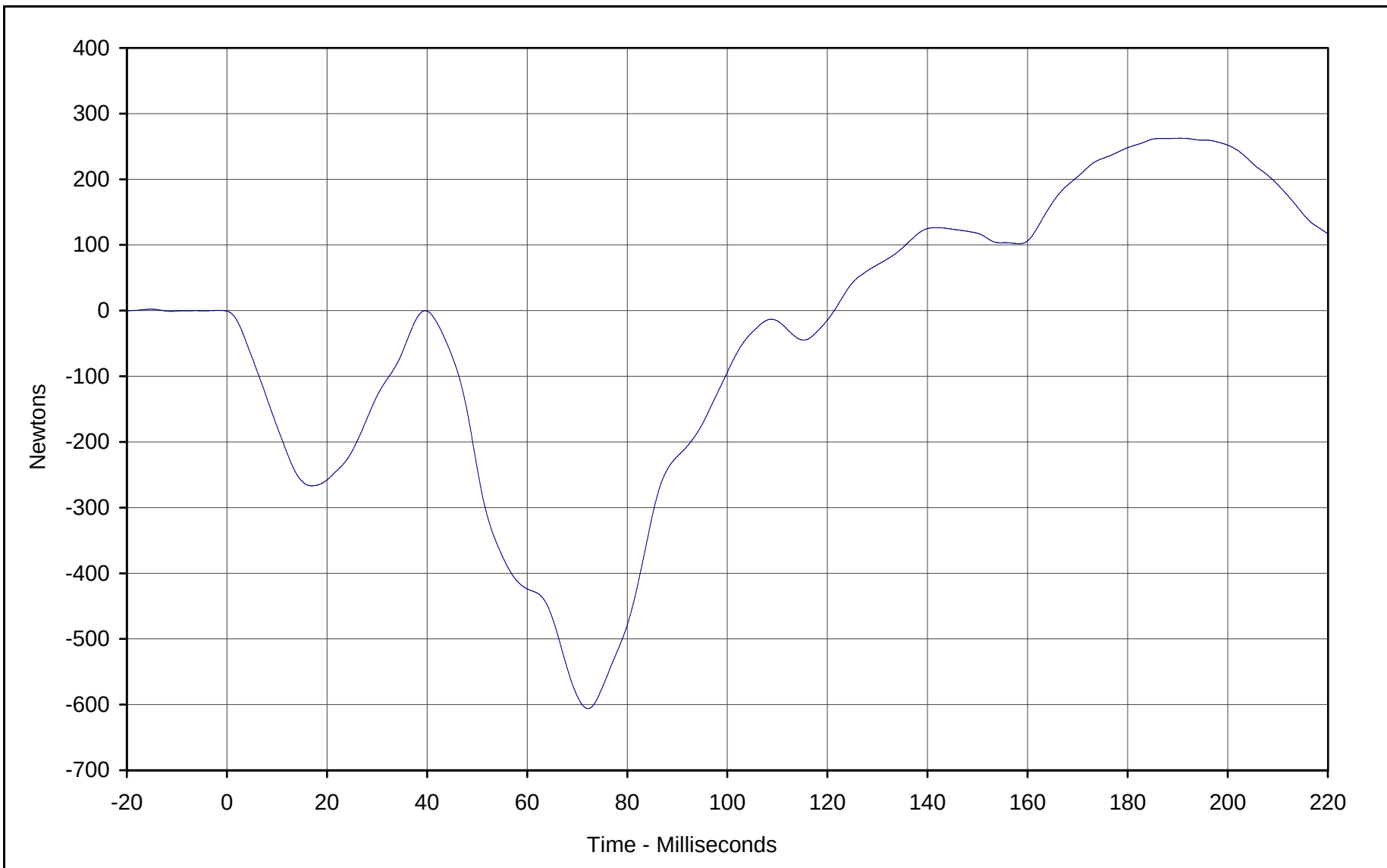


Curve Description:	Pendulum Deceleration		
Maximum Value:	17.9	at	9.0 Milliseconds
Minimum Value:	-1.5	at	56.2 Milliseconds
SAE Filter Class:	60		
Date of Test:	3/1/101		
ATD Serial No.:	034		

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE03C





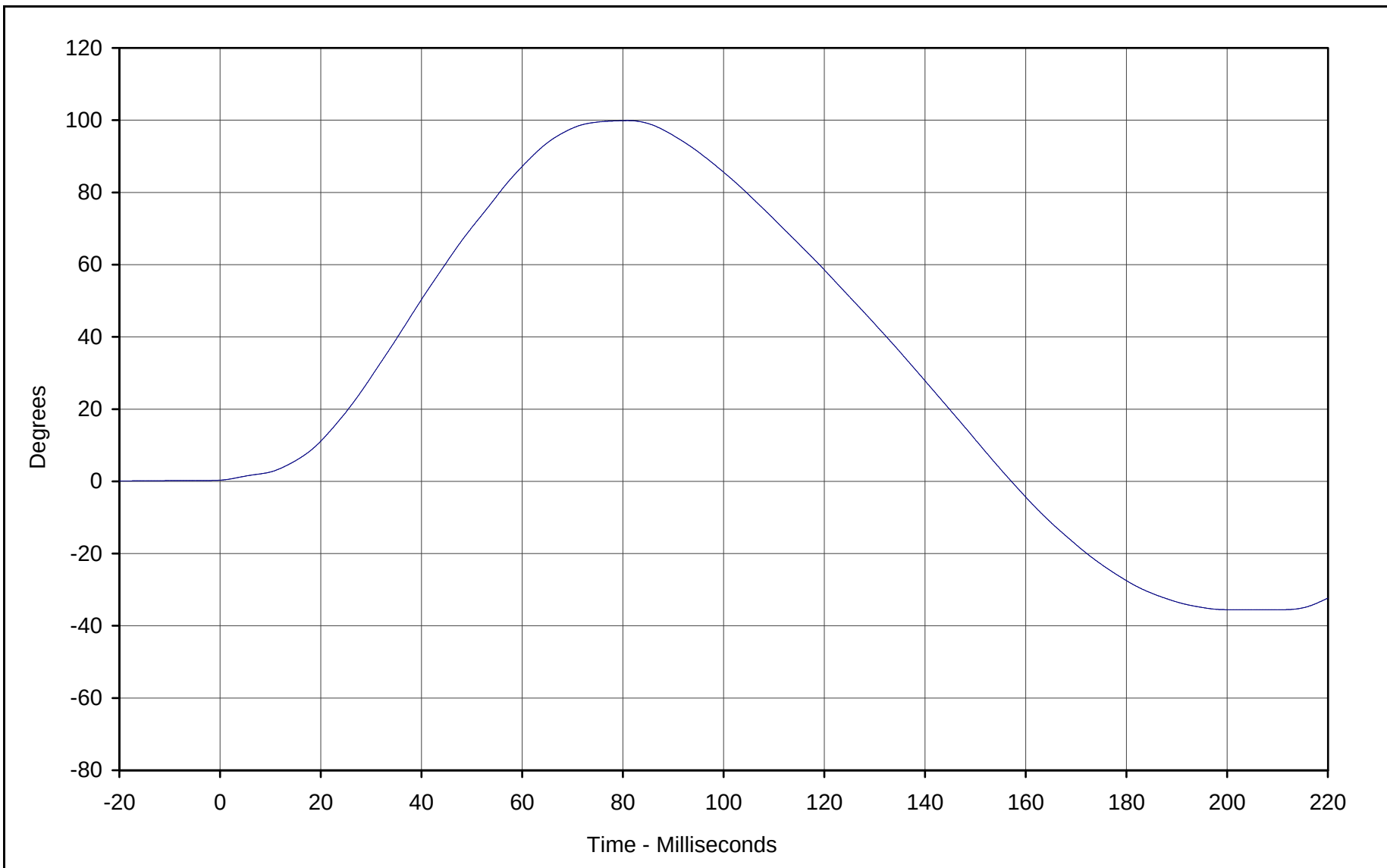
Curve Description: Neck Force X

Maximum Value:	262.6	at	190.5	Milliseconds
Minimum Value:	-606.1	at	72.2	Milliseconds
SAE Filter Class:	60			
Date of Test:	3/1/101			
ATD Serial No.:	034			

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE03C





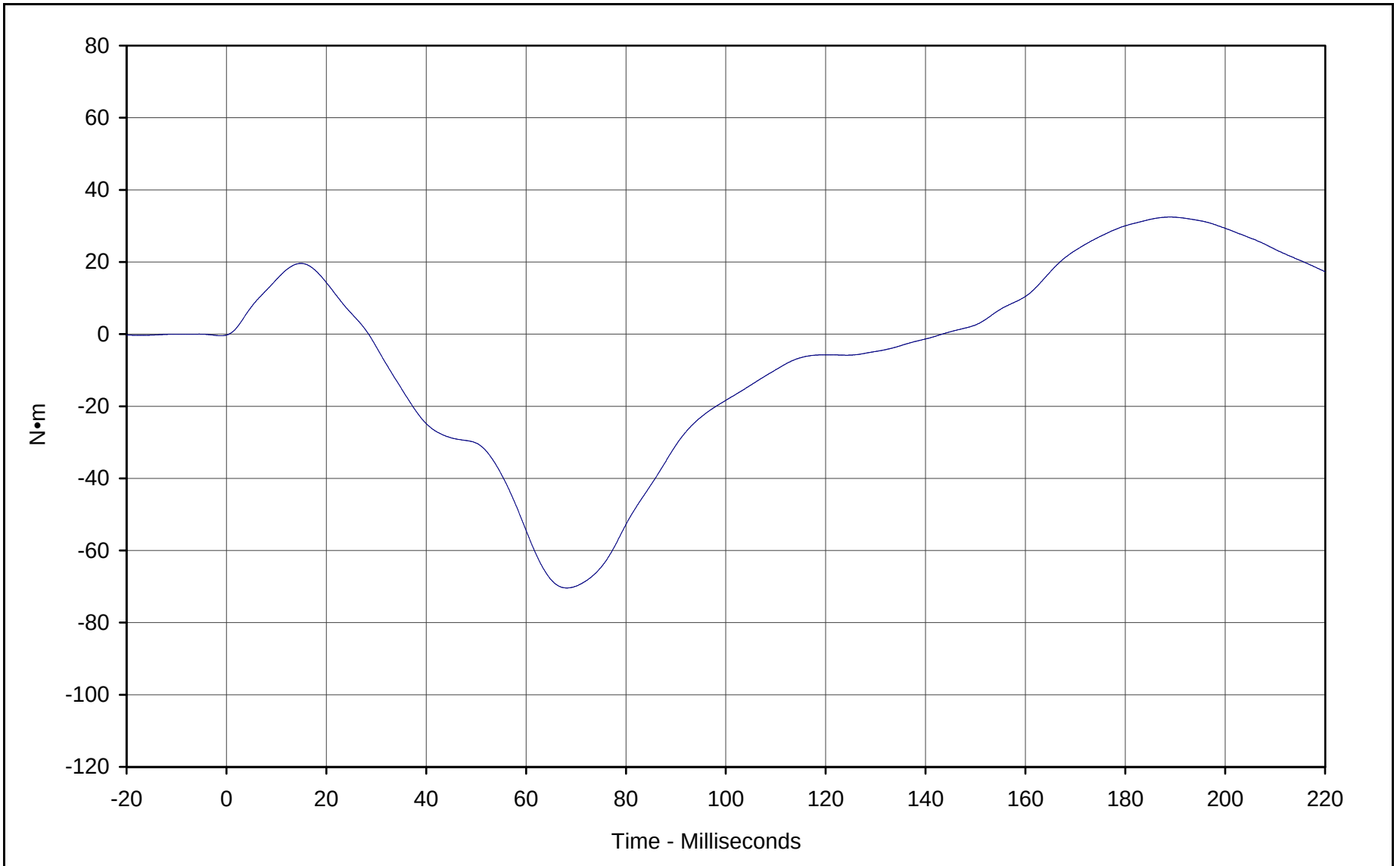
Curve Description: "D" Plane Rotation

Maximum Value:	99.9	at	80.9	Milliseconds
Minimum Value:	-35.6	at	205.4	Milliseconds
SAE Filter Class:	60			
Date of Test:	3/1/101			
ATD Serial No.:	034			

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE03C





Curve Description: Moment About Occipital Condyles

Maximum Value: 32.5 at 189.0 Milliseconds

Minimum Value: -70.4 at 68.2 Milliseconds

SAE Filter Class: 60

Date of Test: 3/1/101

ATD Serial No.: 034

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE03C





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	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	340	Pass
J - Elbow rest height	mm	190 to 211	210	Pass
K - Buttock to knee length	mm	579 to 604	585	Pass
L - Popliteal length	mm	429 to 455	440	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	220	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	980	Pass
Z - Waist circumference	mm	836 to 866	845	Pass
AA - Location for chest circumference	mm	429 to 434	430	Pass
BB - Location for waist circumference	mm	226 to 231	230	Pass
Overall Test Results				Pass

Laboratory Technician

March 1, 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.: RK03F

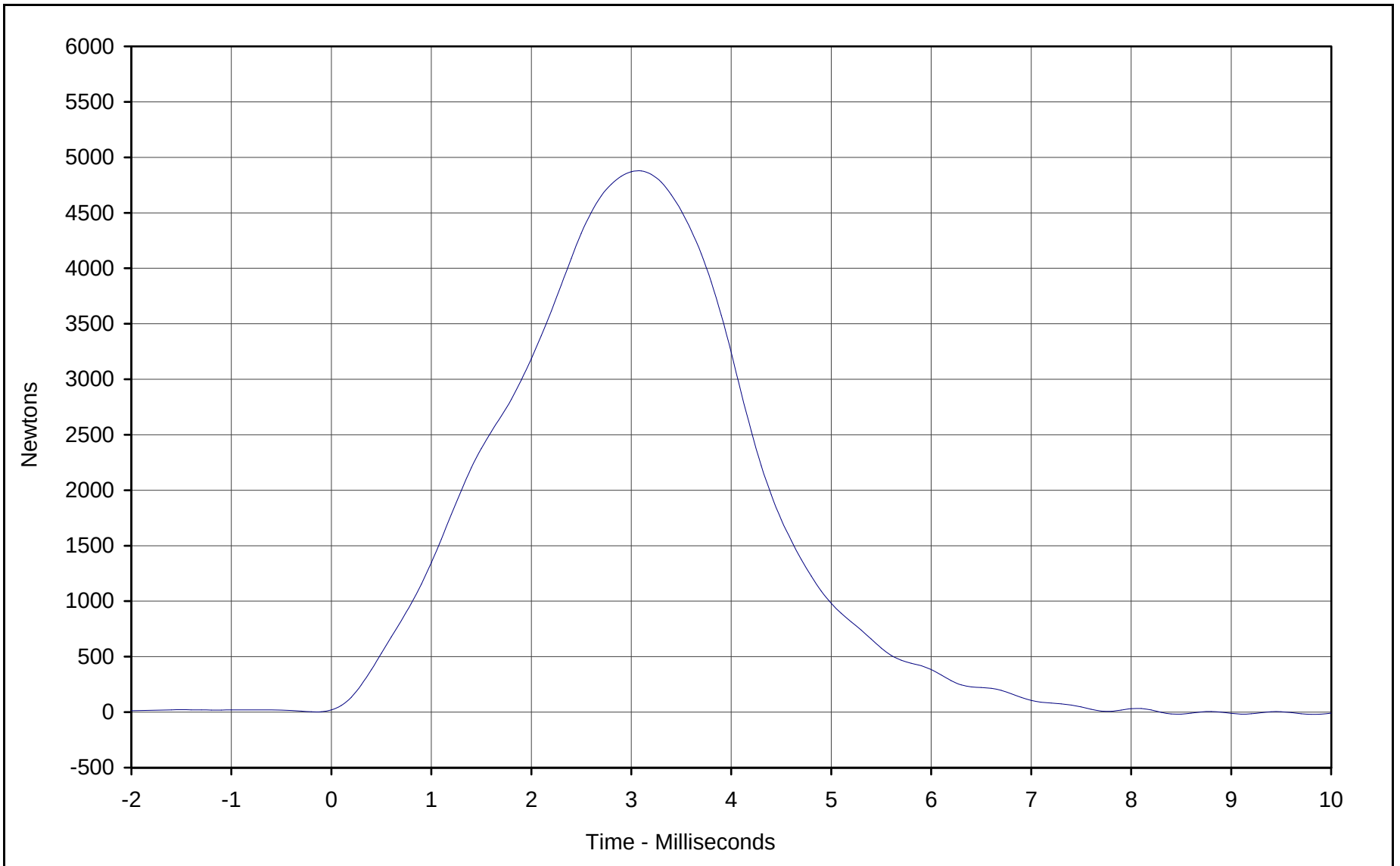
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	2.073 to 2.134	2.113	Pass
Peak Probe Force	Newtons	4715 to 5782	4878.3	Pass
Overall Test Results			Pass	

Laboratory Technician

March 1, 2001
Test Date

Approved By

Date



Curve Description: Probe Force

Maximum Value:	<u>4878.3</u>	at	<u>3.1</u>	Milliseconds
Minimum Value:	<u>3.9</u>	at	<u>-0.2</u>	Milliseconds
SAE Filter Class:	<u>600</u>			
Date of Test:	<u>3/1/01</u>			
ATD Serial No.:	<u>035</u>			

Testing Program: Hybrid III Left Knee Impact Test

Test Information: Part S/N: N/A Test I.D.: RK03F





Hybrid III Calibration Data Sheet

50TH Percentile Male

Right Knee Impact Test

ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: RK03E

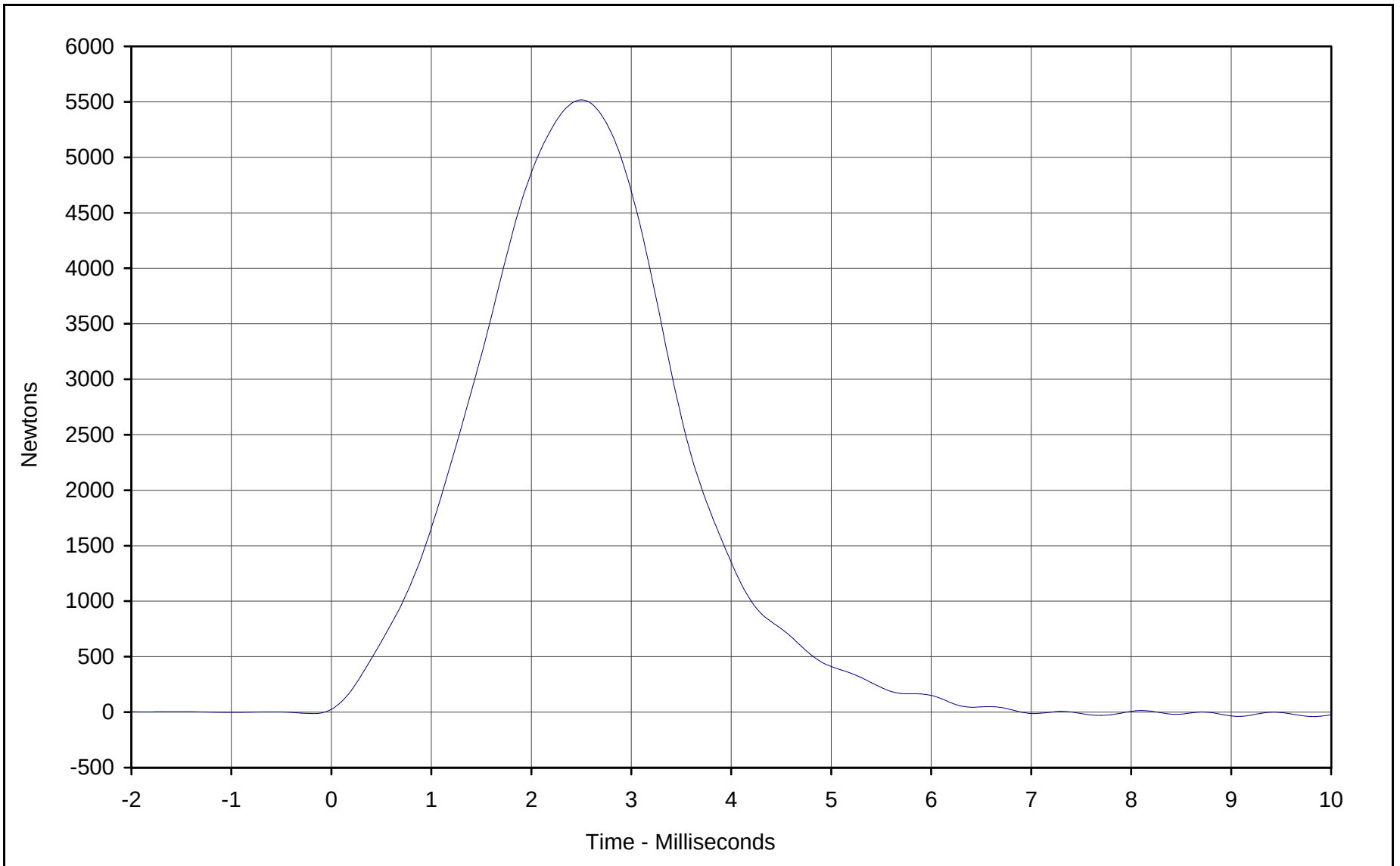
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	2.073 to 2.134	2.113	Pass
Peak Probe Force	Newtons	4715 to 5782	5518.0	Pass
Overall Test Results				Pass

Laboratory Technician

March 1, 2001
Test Date

Approved By

Date



Curve Description: Probe Force

Maximum Value:	<u>5518.0</u>	at	<u>2.5</u>	Milliseconds
Minimum Value:	<u>-29.3</u>	at	<u>7.7</u>	Milliseconds
SAE Filter Class:	<u>600</u>			
Date of Test:	<u>3/1/01</u>			
ATD Serial No.:	<u>035</u>			

Testing Program: Hybrid III Right Knee Impact Test

Test Information: Part S/N: N/A Test I.D.: RK03E





Hybrid III Calibration Data Sheet

50TH Percentile Male

Head Drop Calibration

ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: HD02C

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	233.9	Pass
Peak Lateral Acceleration	G's	≤15.0	8.5	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

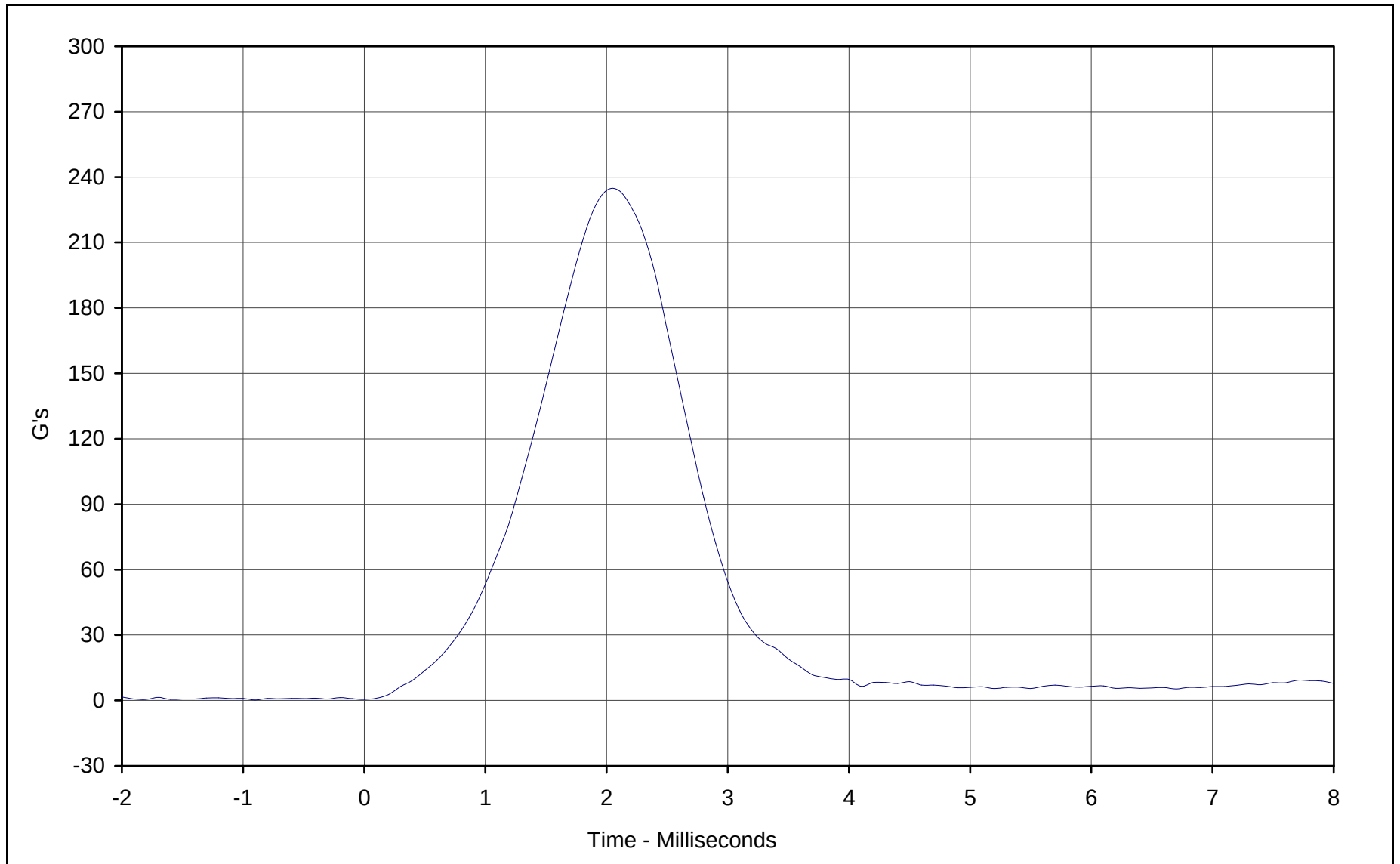
Laboratory Technician

March 1, 2001

Test Date

Approved By

Date



Curve Description: Head Resultant Acceleration

Maximum Value: 233.9 at 2.1 Milliseconds

Minimum Value: 0.2 at -0.9 Milliseconds

SAE Filter Class: 1000

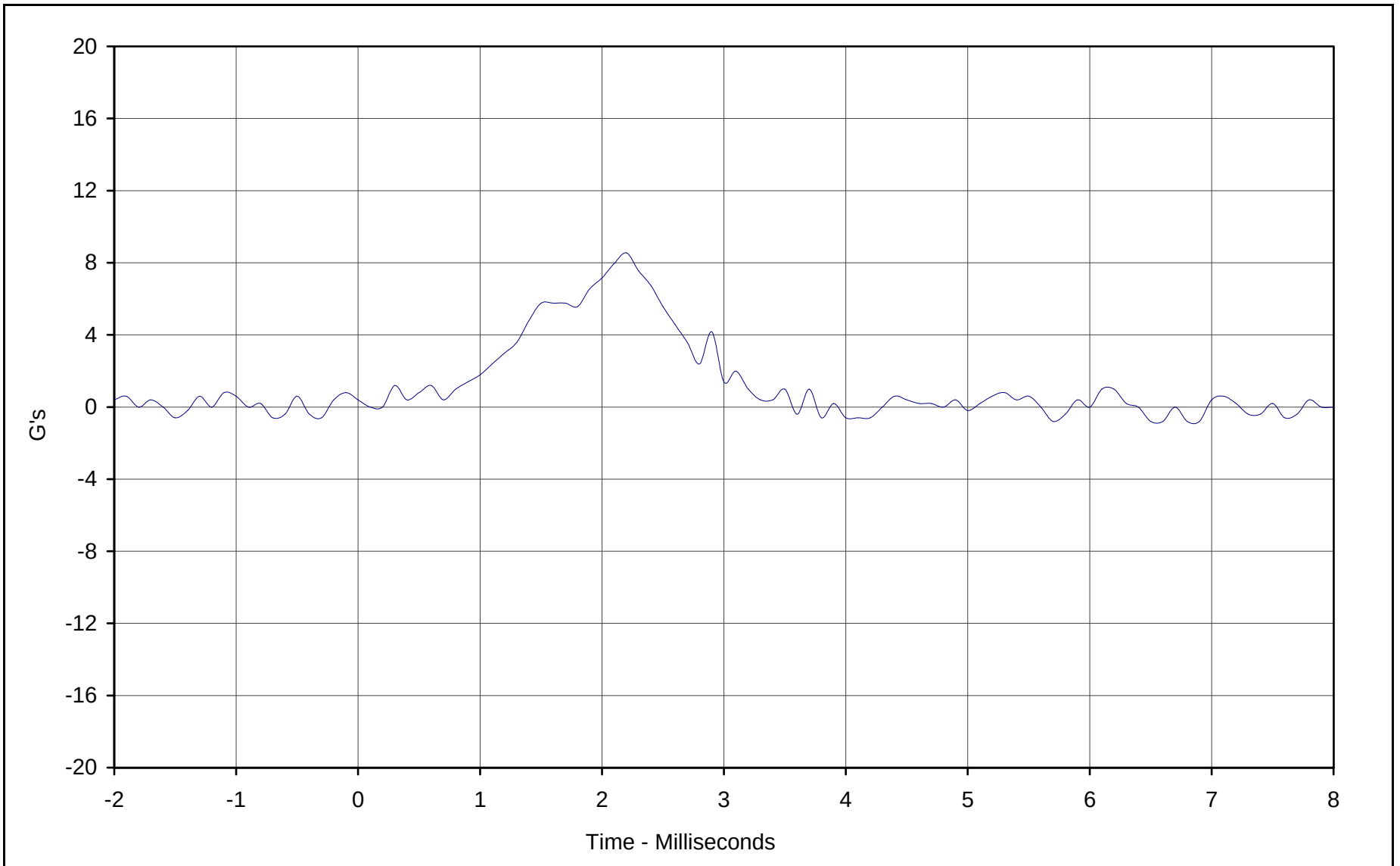
Date of Test: 3/1/01

ATD Serial No.: 035

Testing Program: Hybrid III Head Drop Calibration (Male)

Test Information: S/N of Part: N/A Test I.D.: HD02C





Curve Description: Head Acceleration Y Axis

Maximum Value: 8.5 at 2.2 Milliseconds

Minimum Value: -0.8 at 5.7 Milliseconds

SAE Filter Class: 1000

Date of Test: 3/1/01

ATD Serial No.: 035

Testing Program: Hybrid III Head Drop Calibration (Male)

Test Information: S/N of Part: N/A Test I.D.: HD02C





Hybrid III Calibration Data Sheet

50TH Percentile Male

Thorax Impact Test

ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: CH03E

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	5542	Pass
Peak Sternum Displacement	CM	6.35 to 7.26	6.69	Pass
Internal Hysteresis	%	69 to 85	76.5	Pass
Overall Test Results				Pass

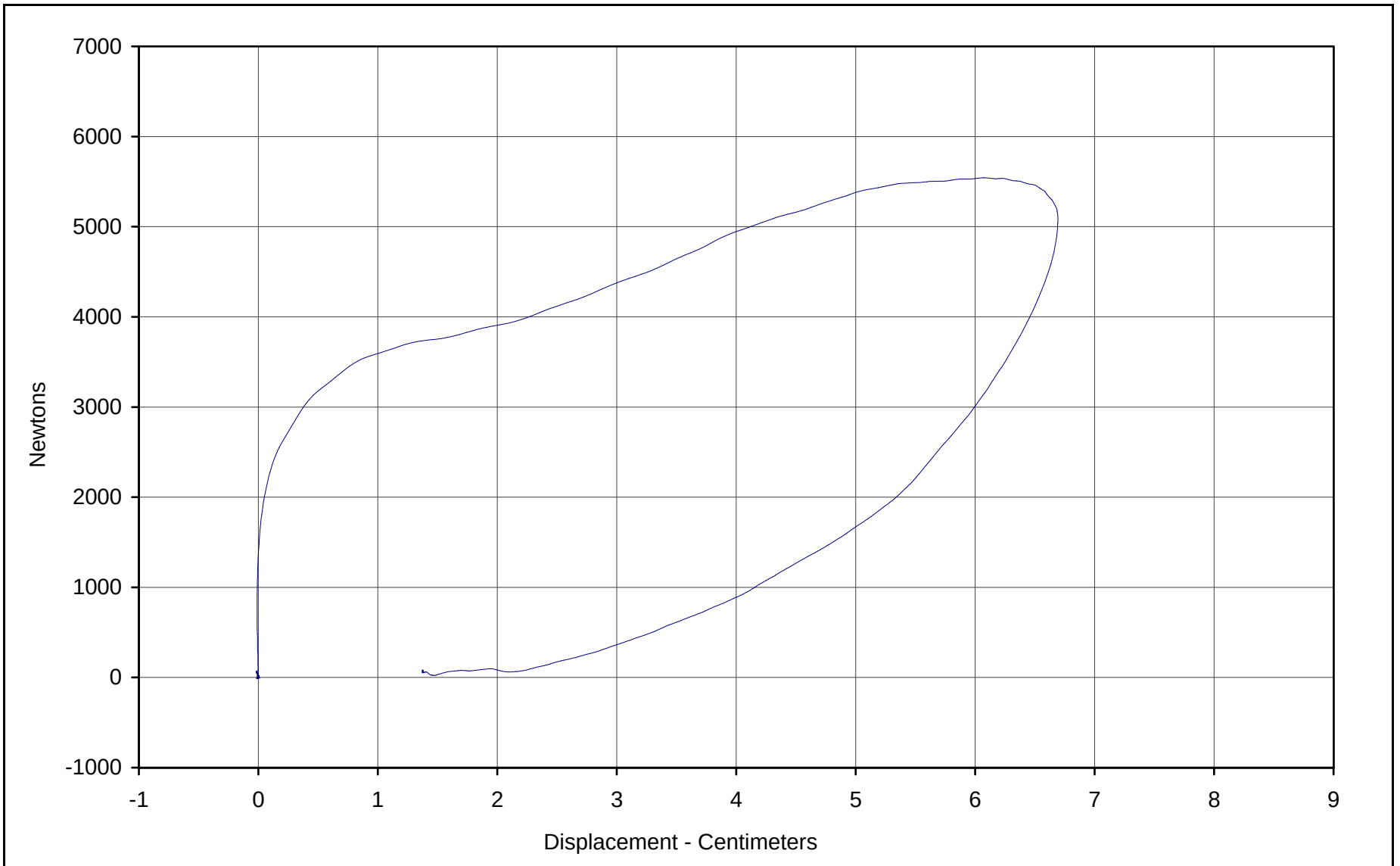
Laboratory Technician

March 1, 2001

Test Date

Approved By

Date



Curve Description: Probe Force vs. Chest Displacement

Probe Force: 5542.3 Newtons

Chest Displ.: 6.69 Centimeters

SAE Filter Class: 180

Date of Test: 3/1/01

ATD Serial No.: 035

Testing Program: Hybrid III Thorax Impact Test

Test Information: S/N of Part: N/A Test I.D.: CH03E





Hybrid III Calibration Data Sheet

50TH Percentile Male

Neck Flexion Test

ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: NF03D

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	26.0	Pass
	20 Msec.	G's	17.6 to 22.6	21.7	Pass
	30 Msec.	G's	12.5 to 18.5	17.8	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	17.8	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	34.0	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	72.8	Pass
	Time	Msec.	57.0 to 64.0	58.3	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	114.6	Pass
Moment About Occipital Condyle	Maximum	N•m	84.1 to 108.5	93.6	Pass
	Time	Msec.	47.0 to 58.0	52.5	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	99.7	Pass
Overall Test Results					Pass

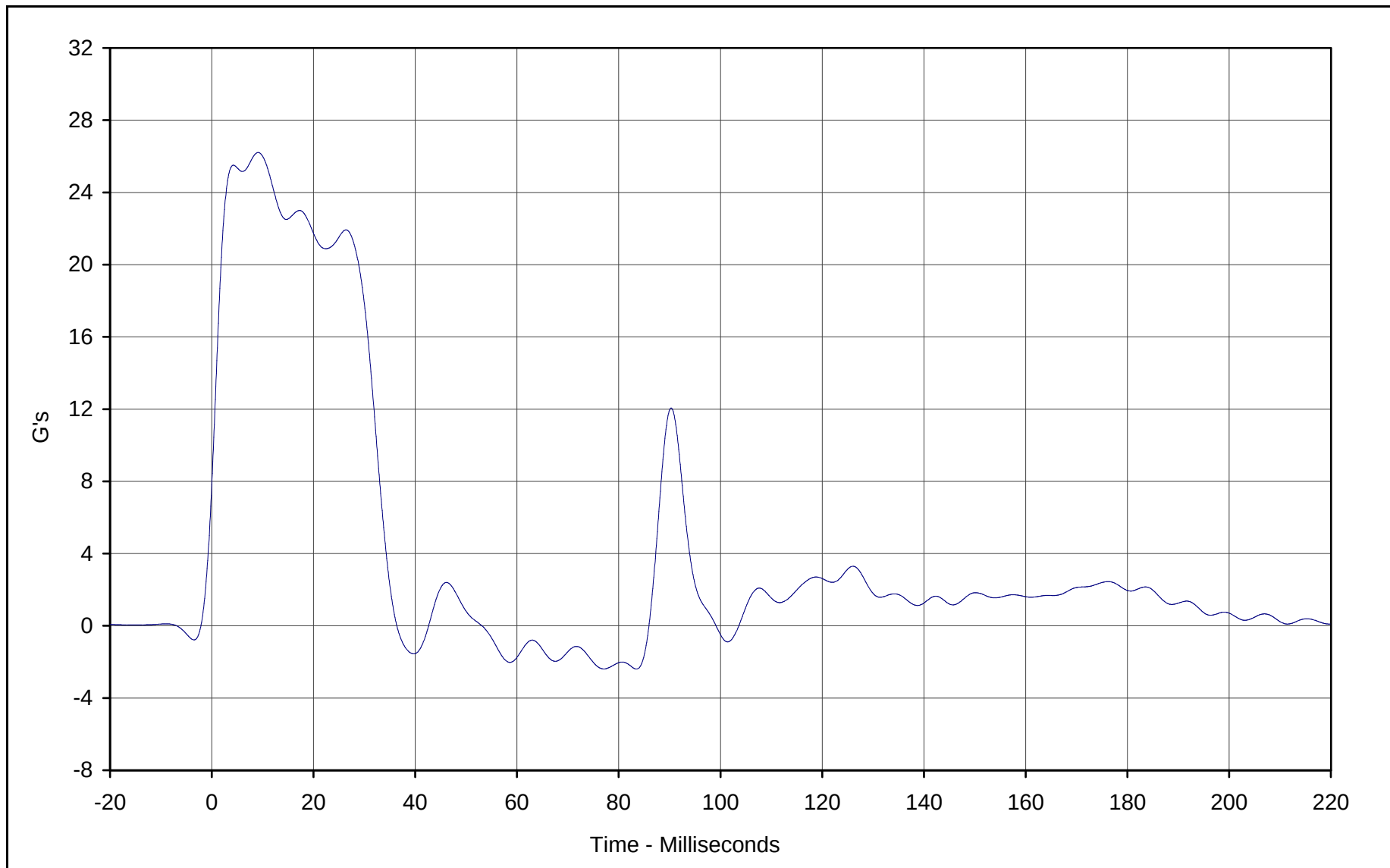
Laboratory Technician

March 1, 2001

Test Date

Approved By

Date



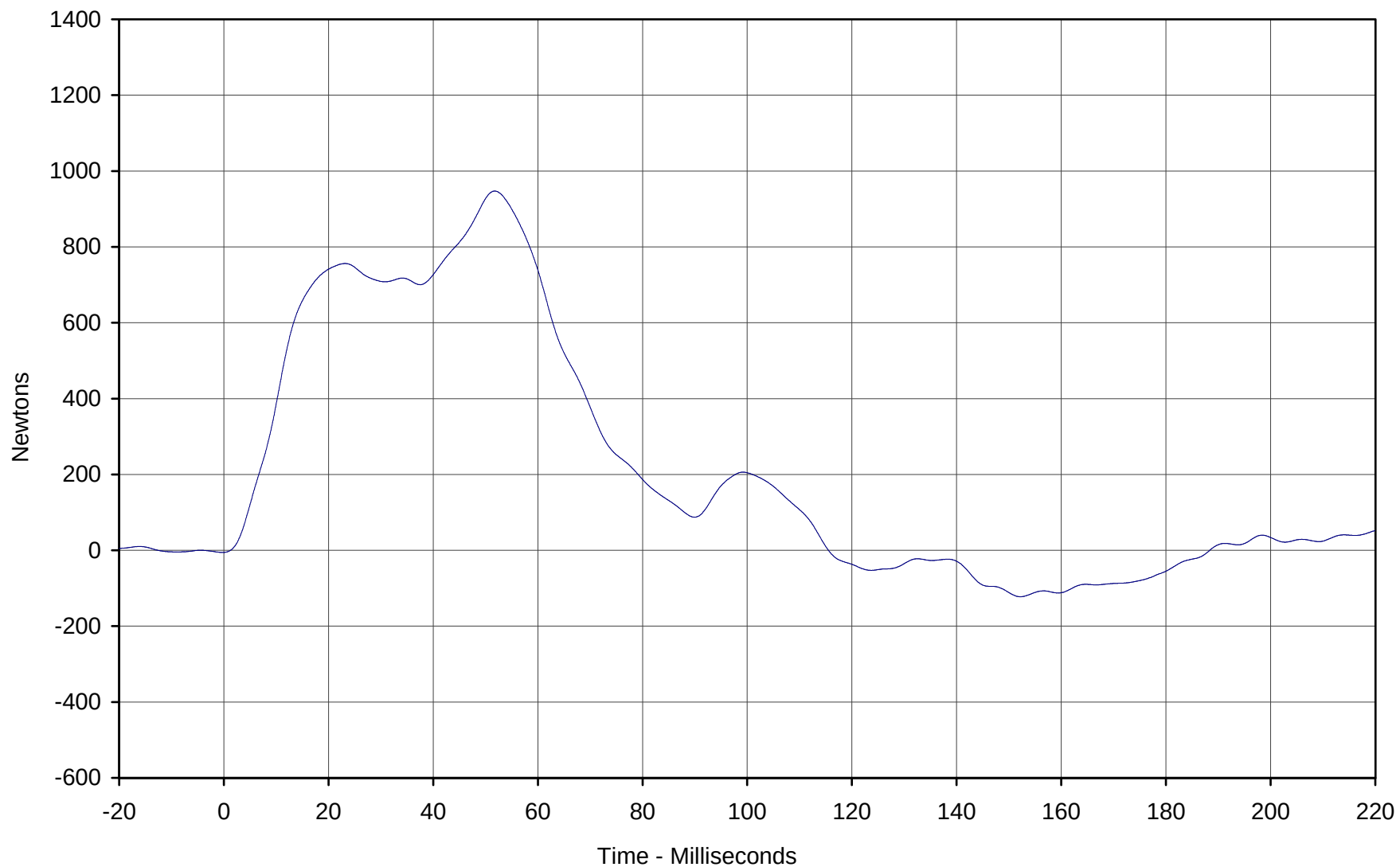
Curve Description: Pendulum Deceleration

Maximum Value:	<u>26.2</u>	at	<u>9.1</u>	Milliseconds
Minimum Value:	<u>-2.4</u>	at	<u>83.5</u>	Milliseconds
SAE Filter Class:	<u>60</u>			
Date of Test:	<u>3/1/01</u>			
ATD Serial No.:	<u>035</u>			

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF03D





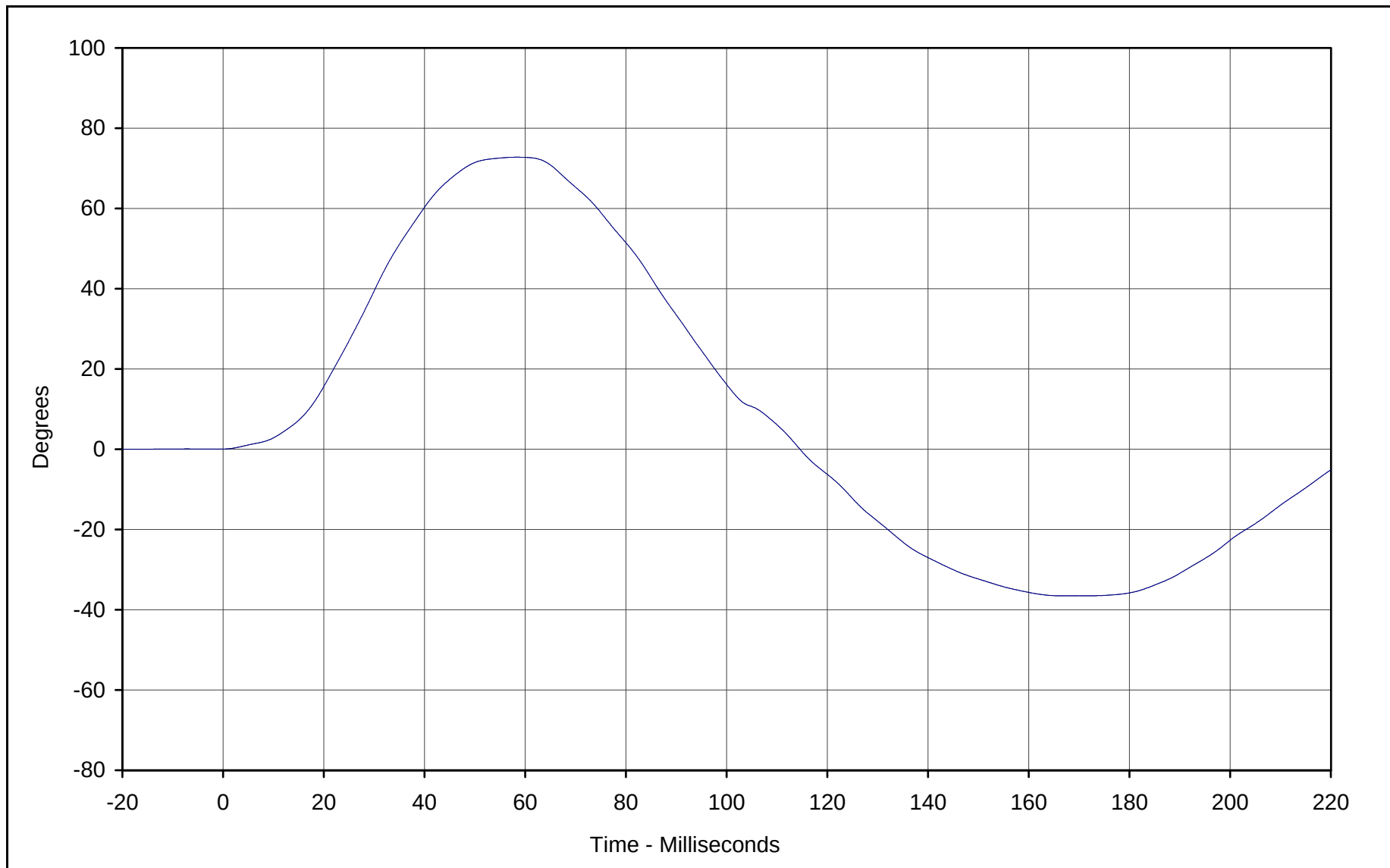
Curve Description: Neck Force X

Maximum Value:	947.2	at	51.8	Milliseconds
Minimum Value:	-122.4	at	152.2	Milliseconds
SAE Filter Class:	60			
Date of Test:	3/1/01			
ATD Serial No.:	035			

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF03D





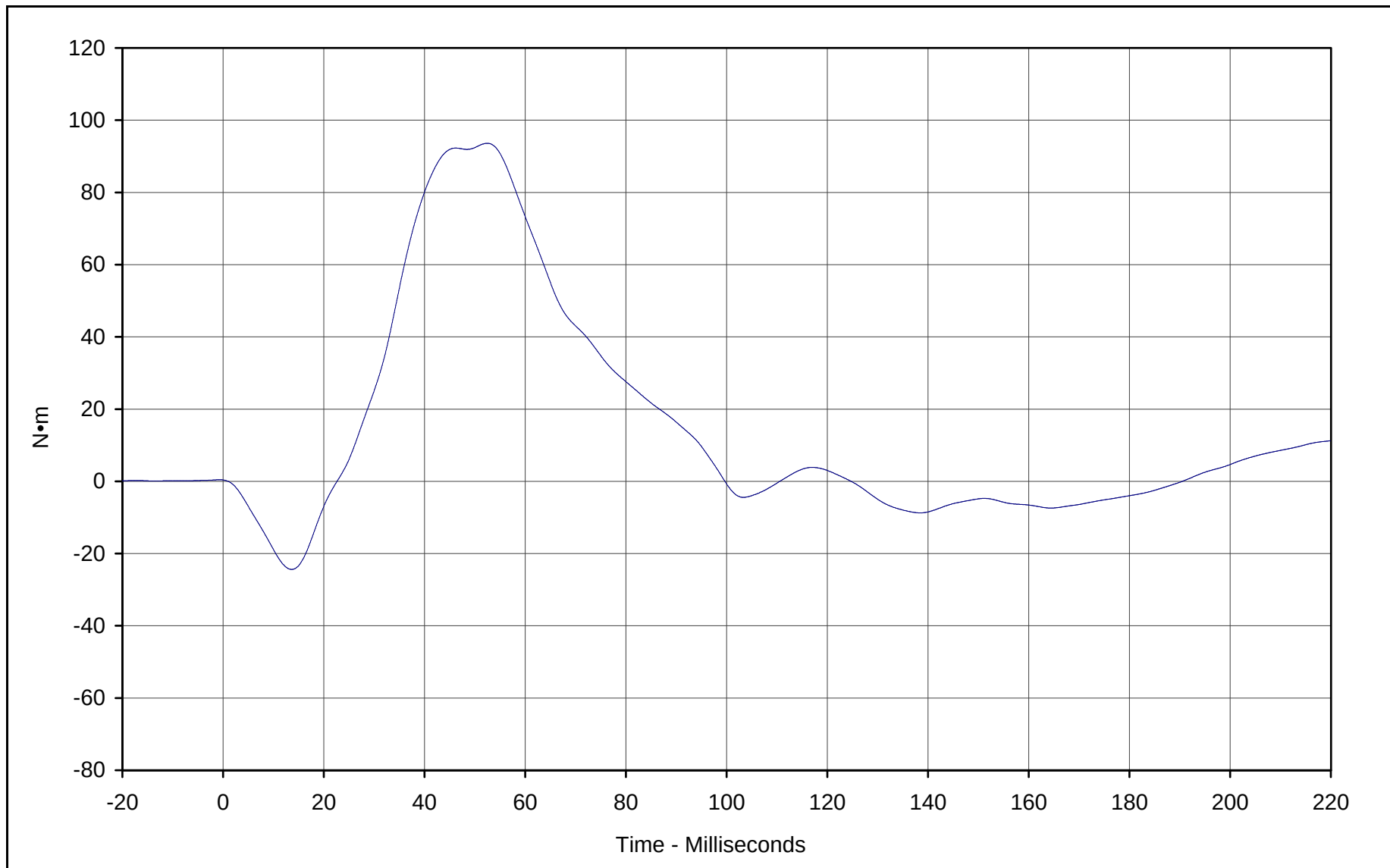
Curve Description: "D" Plane Rotation

Maximum Value:	72.8	at	58.3	Milliseconds
Minimum Value:	-36.5	at	170.5	Milliseconds
SAE Filter Class:	60			
Date of Test:	3/1/01			
ATD Serial No.:	035			

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF03D





Curve Description: Moment About Occipital Condyles

Maximum Value: 93.6 at 52.5 Milliseconds

Minimum Value: -24.4 at 13.6 Milliseconds

SAE Filter Class: 60

Date of Test: 3/1/01

ATD Serial No.: 035

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF03D





Hybrid III Calibration Data Sheet

50TH Percentile Male

Neck Extension Test

ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: NE03D

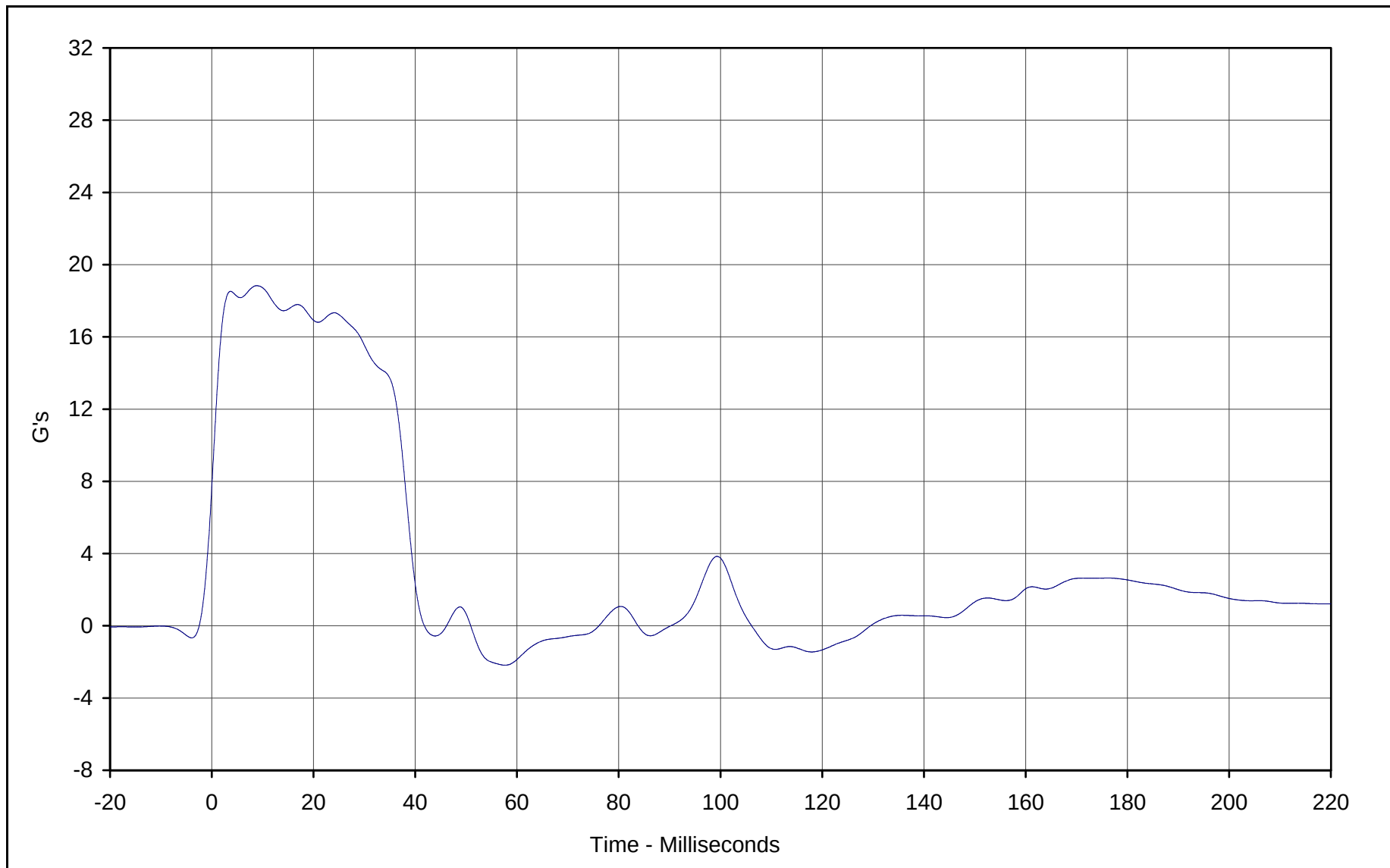
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.02	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	18.7	Pass
	20 Msec.	G's	14.0 to 19.0	16.9	Pass
	30 Msec.	G's	11.0 to 16.0	15.5	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	15.5	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	39.0	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	102.4	Pass
	Time	Msec.	72.0 to 82.0	79.0	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	153.7	Pass
Moment About Occipital Condyle	Maximum	N•m	-52.9 to- 79.9	-78.6	Pass
	Time	Msec.	65.0 to 79.0	68.3	Pass
Negative Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	141.5	Pass
Overall Test Results					Pass

Laboratory Technician

3/1/101
Test Date

Approved By

Date

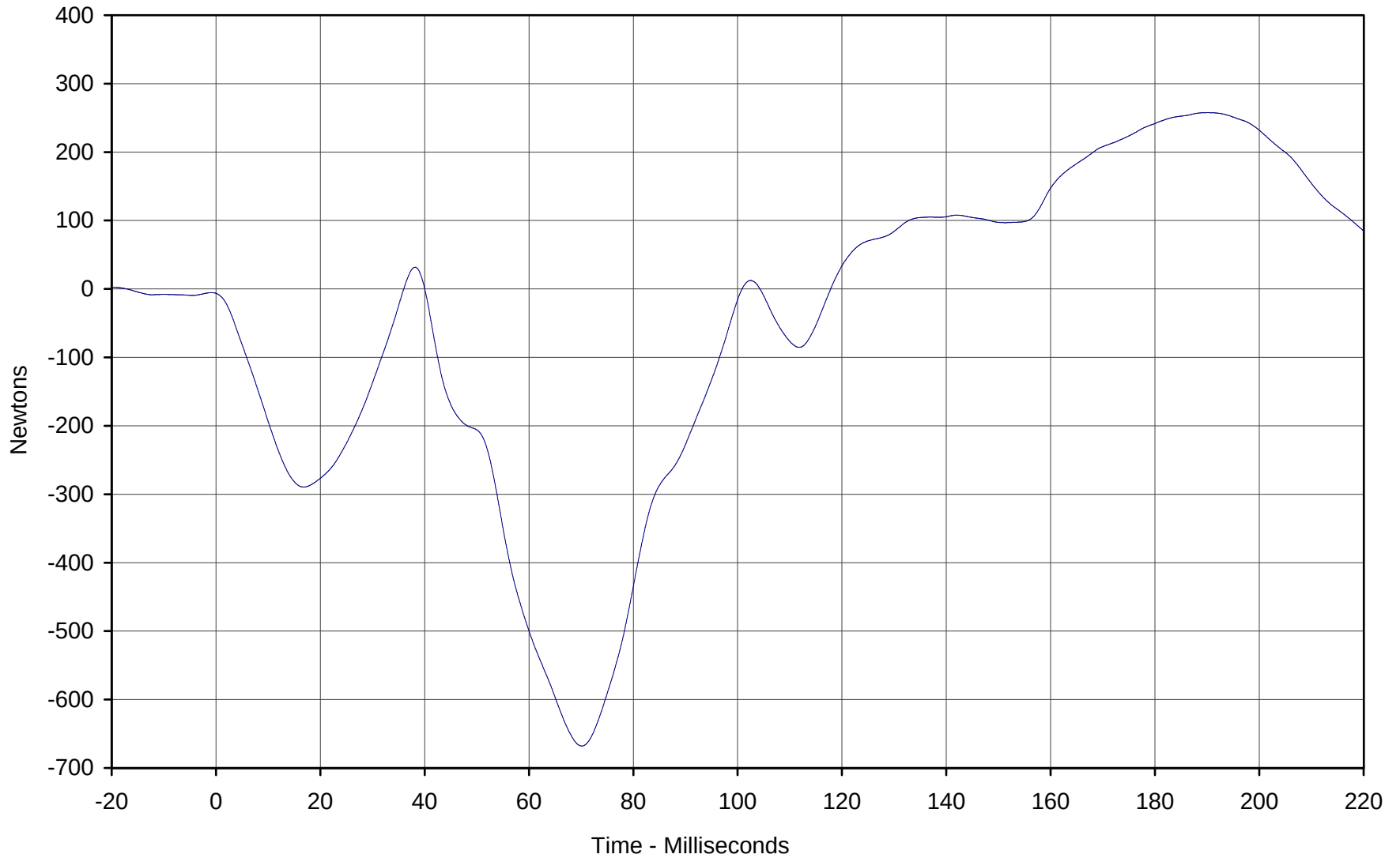


Curve Description:	Pendulum Deceleration		
Maximum Value:	18.8	at	8.9 Milliseconds
Minimum Value:	-2.2	at	57.6 Milliseconds
SAE Filter Class:	60		
Date of Test:	3/1/101		
ATD Serial No.:	035		

Testing Program:	Hybrid III Neck Extension Test (Male)
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Test Information:	S/N of Part: N/A Test I.D.: NE03D
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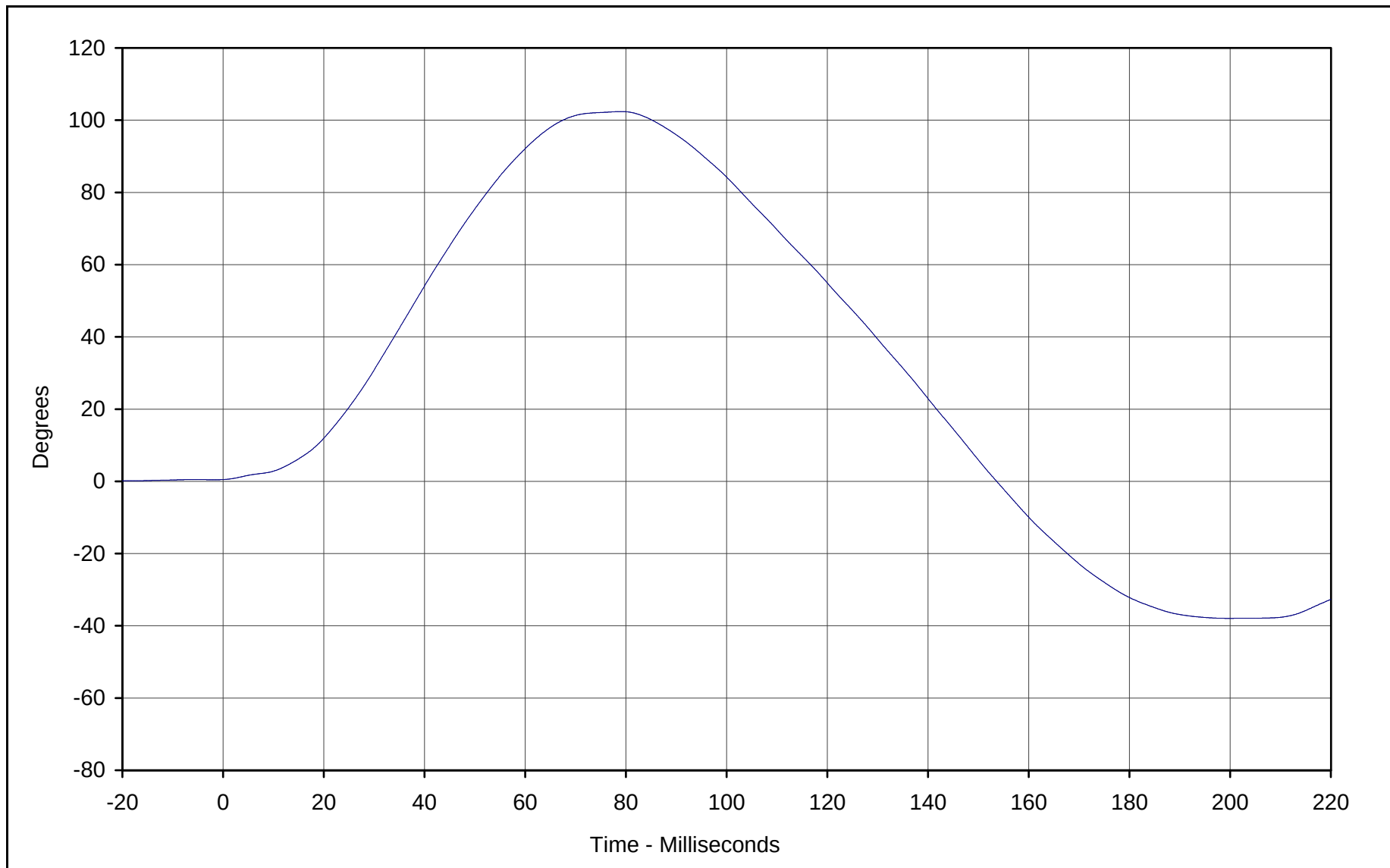
Curve Description: Neck Force X

Maximum Value:	257.6	at	190.1	Milliseconds
Minimum Value:	-667.9	at	70.1	Milliseconds
SAE Filter Class:	60			
Date of Test:	3/1/101			
ATD Serial No.:	035			

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE03D





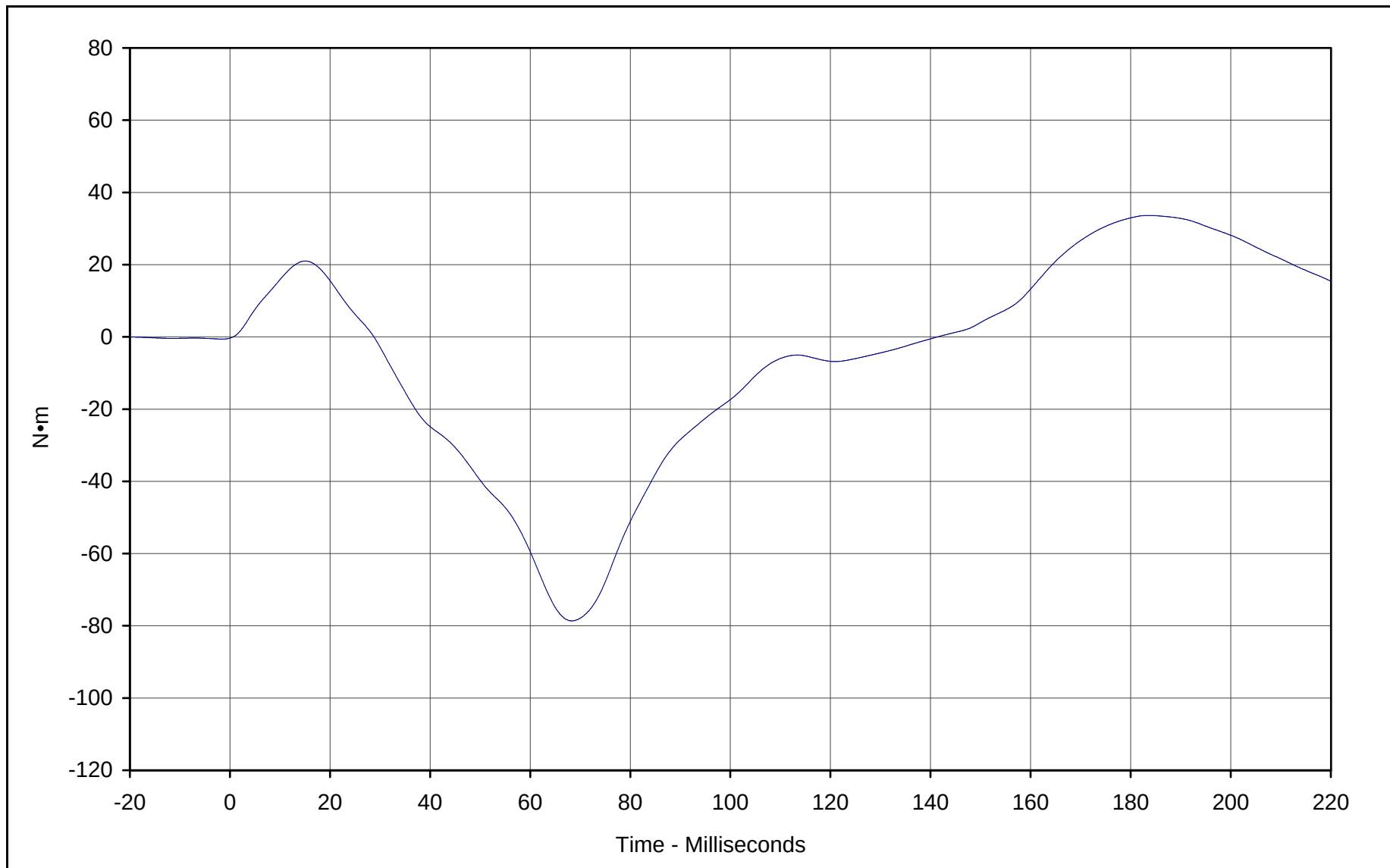
Curve Description: "D" Plane Rotation

Maximum Value:	102.4	at	79.0	Milliseconds
Minimum Value:	-37.9	at	199.6	Milliseconds
SAE Filter Class:	60			
Date of Test:	3/1/101			
ATD Serial No.:	035			

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE03D





Curve Description: Moment About Occipital Condyles

Maximum Value: 33.6 at 183.6 Milliseconds

Minimum Value: -78.6 at 68.3 Milliseconds

SAE Filter Class: 60

Date of Test: 3/1/101

ATD Serial No.: 035

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE03D





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	515	Pass
C - "H" point height	mm	84 to 89	85	Pass
D - "H" point from seat back	mm	135 to 140	135	Pass
E - Shoulder pivot from back	mm	84 to 94	85	Pass
F - Thigh clearance	mm	140 to 155	150	Pass
G - Elbow back to wrist pivot	mm	290 to 305	295	Pass
H - Skull cap to back line	mm	41 to 46	45	Pass
I - Shoulder to elbow length	mm	330 to 345	335	Pass
J - Elbow rest height	mm	190 to 211	205	Pass
K - Buttock to knee length	mm	579 to 604	590	Pass
L - Popliteal length	mm	429 to 455	445	Pass
M - Knee pivot height	mm	485 to 500	495	Pass
N - Buttock popliteal length	mm	452 to 477	465	Pass
O - Chest depth	mm	213 to 229	225	Pass
P - Foot length	mm	251 to 267	255	Pass
V - Shoulder breadth	mm	422 to 437	435	Pass
W - Foot breadth	mm	91 to 107	95	Pass
Y - Chest circumference	mm	970 to 1001	985	Pass
Z - Waist circumference	mm	836 to 866	855	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

March 1, 2001

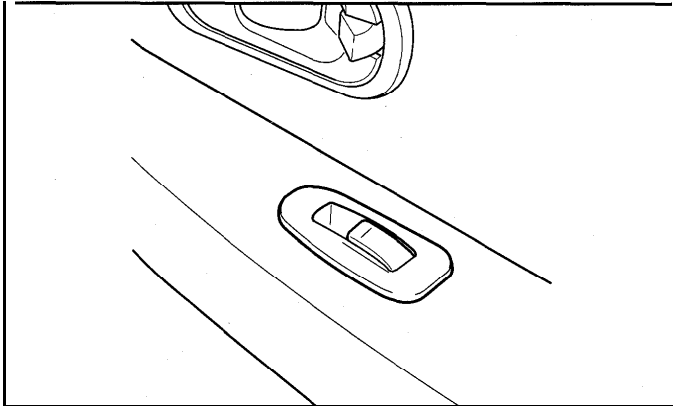
Test Date

Approved By

Date

APPENDIX F
VEHICLE OWNER'S MANUAL
OCCUPANT RESTRAINT INSTRUCTIONS

Passenger Door Power Window Controls



AS2B03010

To open a window, press the front portion of the switch down. To close a window, pull the front portion of the switch up.

A WARNING **Passengers**

Do not allow children to play with the power windows. They may seriously injure themselves or others.

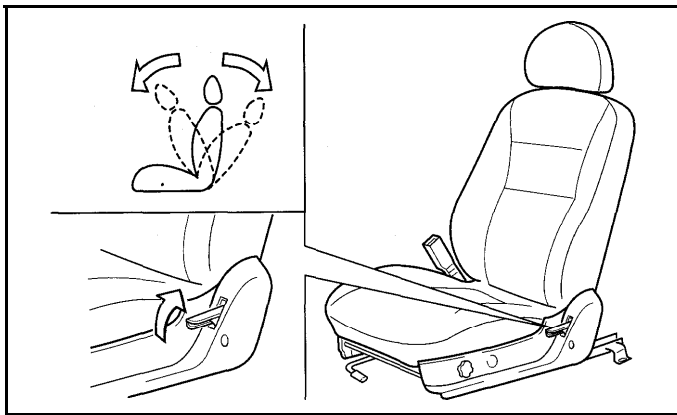
Seats

A WARNING **Drivers**

- Never adjust the driver's seat or seatback when the vehicle is moving. Doing so could cause loss of control, and serious personal injury or death.
- Do not allow packages or other objects to interfere with the normal position of a seatback. These objects may prevent the seatback from locking, which could result in serious injury or death in the event of a sudden stop or collision.
- Always drive and ride with your seatback upright and the lap portion of the safety belt snug and low across the hips.
- If a child is riding in the front passenger seat, they should always ride with the seatback in the fully upright position.

3-9

Adjusting the Front Seatback Recliner (Both Seats)



AS2B03010

To recline the seatback;

1. Lean forward slightly and lift up on the seatback recline lever located on the outside of the seat, toward the rear.
2. Lean back on the seat and adjust the back of the seat to the position you desire.
3. Release the lever and make sure the seatback is located in place. (The lever **MUST** return to its original position for the seatback to lock.)

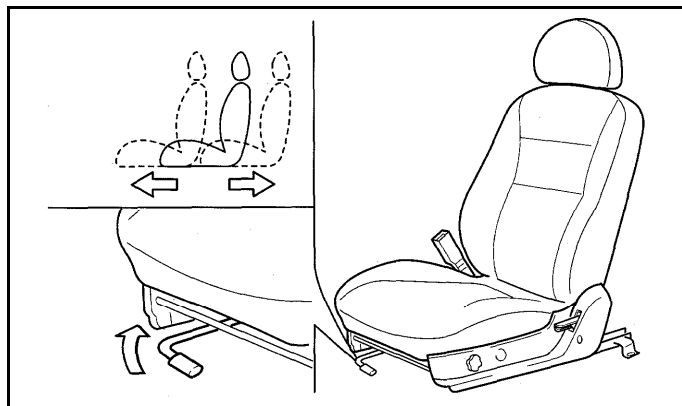
A WARNING **Passengers**

To reduce the risk of sliding under the lap portion of the lap/shoulder belt, and potentially suffering serious personal injury or death in the event of a collision, do not use the front seatback in a reclined position while the vehicle is in motion. If a seat is reclined, the occupant's hip could slide under or out of the lap portion of the lap/shoulder belt during a collision. If that occurs, the occupant may no longer be properly restrained, and the safety belt could apply restraint forces to the unprotected abdomen resulting in serious personal injury or death. Therefore, keep the seatbacks in a comfortably upright position whenever the vehicle is in motion.

Knowing Your Vehicle

Front Seat Adjustment

Moving the Front Seat Forward and Backward (Both Seats)



AS2B0301

To move the seat forward or backward;

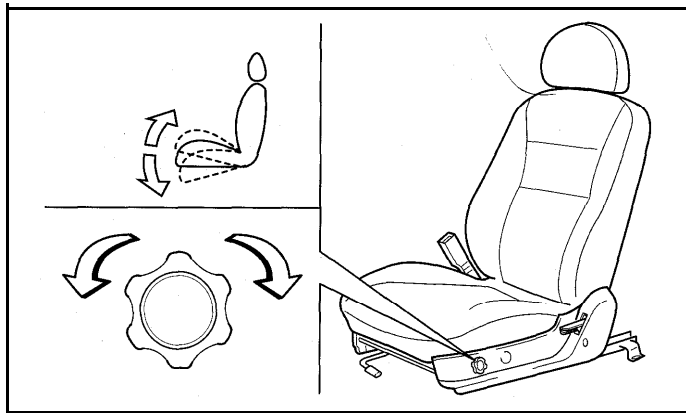
1. Pull the seat slide adjustment lever under the front edge of the seat cushion up and hold it.
2. Slide the seat to the position you desire.
3. Release the lever and make sure the seat is locked in place.

CAUTION

Do not place anything under the front seats. Loose objects might interfere with the seat slide mechanism or possibly roll out from under the seat and interfere with the operation of the brake, clutch or accelerator foot pedals.

3-10

Adjusting the Height of Driver's Seat Cushion (Driver's Side-If Equipped)



AS2B03013

To change the height (front portion) of the seat cushion, rotate the knob located on the outside of the seat cushion.

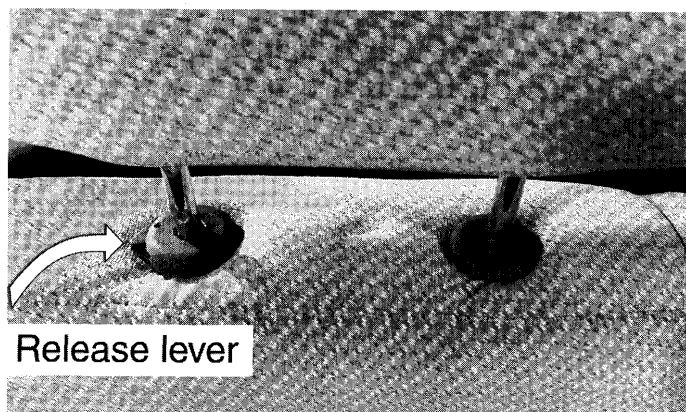
- To lower the seat cushion, rotate the knob toward the front of the vehicle.
- To raise the seat cushion, rotate the knob toward the rear of the vehicle.

A WARNING

Before starting the vehicle, adjust the driver's seat and headrest to the proper position. After doing so, you should adjust the day/night rearview mirror and the outside rearview mirror.

3-12

Adjustable Headrest



AS2B03014

To raise the headrest, simply pull it up to the desired position. To lower the headrest, press the release lever on the left side grommet, while pushing the headrest down to the desired position. To remove the headrest, raise it as far as it can go then press the release lever while pulling upward.

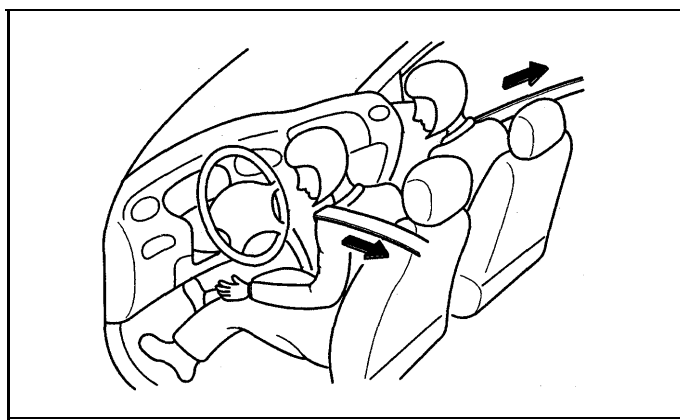
A WARNING - Headrests

- To reduce the risk of head and neck injuries, do not operate the vehicle with the headrest removed or improperly positioned.
- Do not attempt to adjust the driver's headrest while driving.
- Adjust the top of the headrest so that it is even with the top of your ears in order to reduce the chance of injury in the event of a collision.

3-13

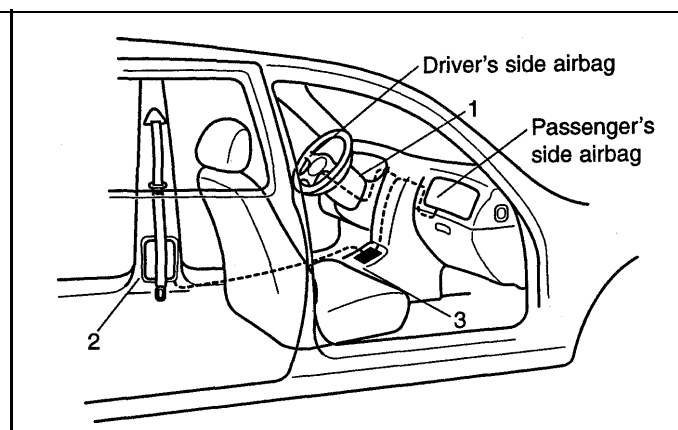
Safety Belts

Pre-tensioner Seat Belt (If equipped)



AS2B03105

Your vehicle is equipped with driver's and front passenger's pre-tensioner seat belts. The purpose of the pre-tensioner is to make sure that the seat belts fit tightly against the occupant's body in certain frontal collisions. The pre-tensioner seat belts can be activated where the frontal collision is severe enough, together with the airbags.



AS2B030015B

The pre-tensioner seat belt operates in the same way as an Emergency Locking Retractor (ELR) type of seat belt. When the vehicle stops suddenly, or if the occupant tries to lean forward too quickly, the seat belt retractor will lock into position. However, in certain frontal collisions, the pre-tensioner will activate and pull the seat belt into tighter contact against the occupant's body.

The seat belt pre-tensioner system consists mainly of the following components.

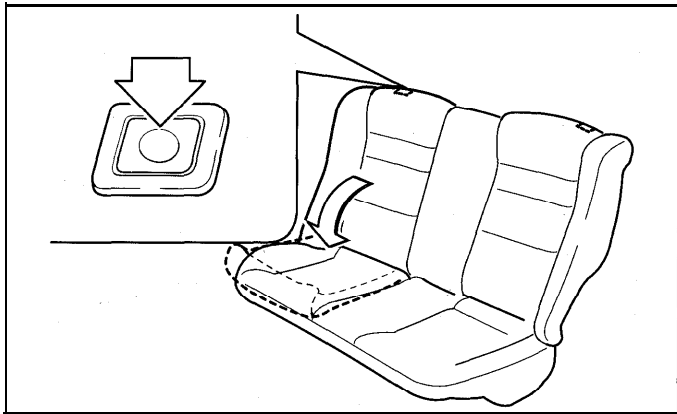
Their locations are shown in the illustration.

1. SRS airbag warning light
2. Seat belt pre-tensioner assembly
3. SRS control module

3-15

Knowing Your Vehicle

Split Folding Rear Seat (If equipped)



The rear seatbacks fold forward to provide additional cargo space and to provide an access to the trunk area.

- To fold the rear seatback(s) down, press the unlock button located in the top of the seatbacks, then fold the seatback forward and down.
- To raise the seatback, lift and push it firmly until it clicks into place.
- When you return the seatback to its upright position, reposition the rear safety belts so that they can be used by rear seat passengers.

A WARNING -Cargo

Cargo should always be secured to prevent it from shifting and causing injury to the vehicle occupants.

CAUTION

Do not remove the floor carpet in your vehicle, emission control system components cause high exhaust temperatures under the floor.

*** NOTICE**

When returning the rear seatbacks to the upright position, remember to return the rear shoulder belts to their proper position. Routing the safety belt webbing through the rear safety belt guides will help keep the belts from being trapped behind or under the seats.

3-14

Knowing Your Vehicle

A WARNING

To obtain maximum benefit from a pre-tensioner seat belt:

1. The seat belt must be worn correctly.
2. The seat belt must be adjusted to the correct position.

*** NOTICE**

Both the driver's and front passenger's pre-tensioner seat belt will be activated in certain frontal collisions. When the frontal collision is severe enough, the pre-tensioners will be activated together with the airbags. The pre-tensioners will be activated under these conditions even if the seat belts are not being worn at the time of the collision.

- When the pre-tensioner seat belts are activated, a loud noise may be heard and fine dust that may appear to be smoke, may be visible in the passenger compartment. These are normal operating conditions and are not hazardous.
- Although it is harmless, the fine dust may cause skin irritation and should not be breathed for prolonged periods. Wash your hands and face thoroughly after an accident in which the pre-tensioner seat belts were activated.

CAUTION

- Because the sensor that activates the SRS airbag is connected with pre-tensioner seat belt, the SRS airbag warning light **AIR BAG** on the instrument panel will blink for approximately 6 seconds after the ignition key has been turned to the "ON" positions, and then it should turn off.
- If the pre-tensioner seat belt is not working properly, this warning light will illuminate even if there is no malfunction of SRS airbag system. If the SRS airbag warning light does not illuminate when the ignition key is turned to "ON" or if it remains illuminated after blinking for approximately @seconds, or if it illuminates while the vehicle is being driven, please have an authorized Kia dealer inspect the pre-tensioner seat belt or SRS airbag system as soon as possible.

A WARNING

- Pre-tensioners are designed to operate only one time. After activation, pre-tensioner seat belts must be replaced. All seat belts, of any type, should always be replaced after they have been worn during a collision.
- The pre-tensioner seat belt assembly mechanisms become hot during activation. Do not touch the pre-tensioner seat belt assemblies for several minutes after they have been activated.
- Do not attempt to inspect or replace the pre-tensioner seat belts yourself. This must be done by an authorized Kia dealer.
- Do not strike the pre-tensioner seat belt assemblies.
- Do not attempt to service or repair the pre-tensioner seat belt system in any manner.
- Improper handling of the pre-tensioner seat belt assemblies, and failure to heed the warnings to not strike, modify, inspect, replace, service or repair the pre-tensioner seat belt assemblies may lead to improper operation or inadvertent activation and , serious injury.
- Always wear the seat belts when driving or riding in a motor vehicle.

Safety Belt Restraint System

A WARNING

The driver and all passengers should always use the safety belts provided in order to minimize the risk of severe bodily injury.

We strongly recommend that the driver and all passengers be properly restrained at all times by using the safety belts provided with the vehicle. Proper use of the safety belts decreases the risk of severe injury or death in accidents or sudden stops. In most states and in Canada, the law requires their use.

Safety belts provide the best restraint when:

- the seatback is upright
- the occupant is sitting upright (not slouched)
- the lap belt portion of the safety belt is snug and low on the hips
- the shoulder belt portion of the safety belt is snug against the chest
- the knees are straight forward

3-17

A WARNING -Safety Belt Usage

Each seating position in your vehicle has a specific safety belt assembly which includes a buckle and tongue that are designed to be used together. 1) Use the shoulder belt on the outside shoulder only. Never wear the shoulder belt under the arm. 2) Never swing the safety belt around your neck to fit over the inside shoulder. 3) Never use a single belt for more than one person.

A WARNING - After a Collision

- Lap/shoulder belt assemblies may be stretched or damaged when subjected to the stress and forces of a collision.

The entire restraint system should be inspected following any collision. All belts, retractors, anchors and hardware damaged by a collision should be replaced before the vehicle is operated again.

Knowing Your Vehicle

To help you remember to fasten your safety belt, a warning light may come on and a chime may sound. See Safety Belt Warning on page 4-30.

All seats, except the center rear seat, have lap/shoulder belts. The center rear seat has a lap belt.

Inertial locks in the safety belt retractors allow all of the lap/shoulder safety belts to remain unlocked during normal vehicle operation. This allows the occupants some freedom of movement and increased comfort while using the safety belts. If a force is applied to the vehicle, such as a strong stop, a sharp turn, or a collision, the safety belt retractors will automatically lock the safety belts.

Since the inertial locks do not require a collision in order to lock-up, you may become aware of the safety belts locking while braking or going around sharp corners.

The center rear seat safety belt does not have an inertial lock so it is always in a locked condition. Whenever possible, use the center rear seat position to install your child restraint. The center rear seat is the best position to install your child restraint. However, if the center seat is unavailable, a child restraint may be installed in the front passenger seat or in the rear outboard seats using the special auto lock mode feature provided with those safety belt.

3-18

The front passenger safety belt and rear outboard safety belts have been designed to allow a child restraint to be used in these positions without an added locking clip. These safety belts normally lock only under extreme or emergency conditions (this is the emergency lock mode which uses the locking retractor). However, they can be adjusted so that they remain fixed and locked when a child restraint is placed in those positions (this auto lock mode should only be used to secure a child restraint). See page 3-24 for instructions on how to place the safety belt in the auto lock mode.

The driver's safety belt can only operate in the emergency lock mode.

A WARNING - Twisted Safety Belts

Never drive or ride with a twisted or jammed safety belt. If you cannot untwist or unjam the safety belt, see your Kia dealer or the nearest qualified technician immediately.

Knowing Your Vehicle

⚠ WARNING - Safety Belt Care

- Safety belts should be inspected periodically for excessive wear or damage. Pull out each belt fully and look for excessive fraying, cuts, burns or other damage. Make sure that the lap/shoulder belts return smoothly and easily into the retractor. Check the latches to make sure they latch and release without interference or delay. Any belt not in good condition or in good working order should be promptly replaced.

⚠ CAUTION - Damage to Safety Belts

Never close the doors on any part of the lap or shoulder belt. It can damage the safety belt or buckle which could increase the risk of injury in case of an accident.

Restraint of Pregnant Women

Pregnant women should wear lap/shoulder belt assemblies whenever possible according to specific recommendations by their doctors. The lap portion of the belt should be worn AS SNUGLY AND AS LOW AS POSSIBLE.

⚠ WARNING - Pregnant Women

Pregnant women must never place the lap portion of the safety belt over the area of the abdomen where the fetus is located or above the abdomen.

Restraint of Infants and Small Children

Small children and infants should be restrained by an approved child restraint system to help protect them while riding in a vehicle.

Never allow a child to stand or kneel on the seat of a moving vehicle. Never allow a safety belt to be placed around both a child and an adult or around two children at the same time.

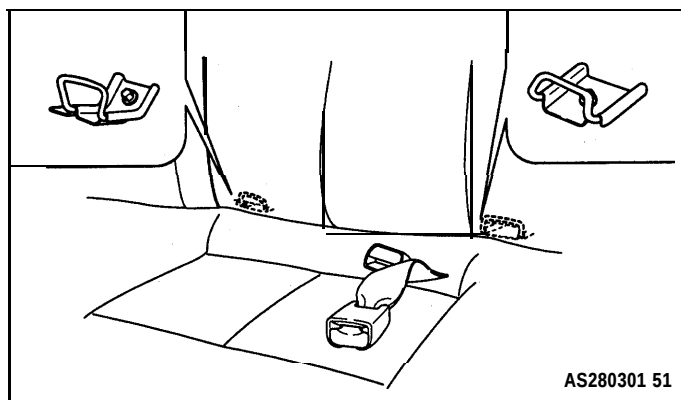
A WARNING - Children on Laps

Never hold a child on your lap or in your arms in a moving vehicle. Even a very strong person cannot hold onto a child in the event of even a minor collision.

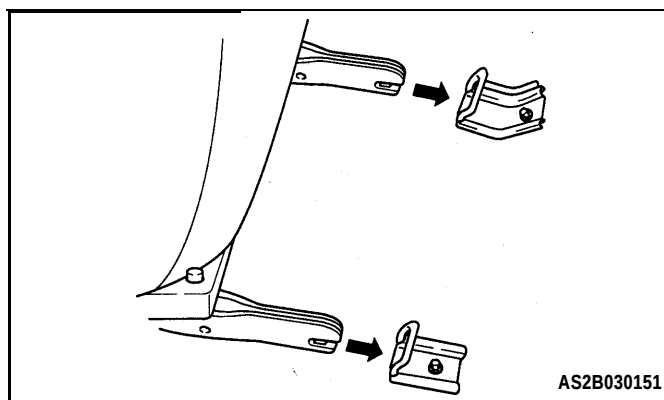
3-21

Child Restraint Lower Anchor Striker Position

The child lower anchor striker is located between rear seat and seatback.



To install the child restraint to the child lower anchor striker, insert the child restraint latch into the child lower anchor striker. Listen for the audible “Click” sound.



Knowing Your Vehicle

Many companies manufacture child restraint systems (often called child seats) for infants and small children. An acceptable child restraint system must always satisfy U.S. Federal Motor Vehicle Safety Standards. Make sure that any child restraint system you use in your vehicle is labeled as complying with those safety standards.

The child restraint system should be chosen to fit both the size of the child and the size of the vehicle seat. Be sure to follow any instructions provided by the child restraint system manufacturer when installing the child restraint system.

CAUTION - Hot Metal Parts

Safety belts and seats can become hot in a vehicle that has been closed during warm/hot weather; they could burn a child. Check seat covers and buckles before you place a child anywhere near them.

Restraint of Large Children

As children grow, they may need to use new child restraint systems, including larger child seats or booster seats, which are appropriate for their increased size.

A child who has outgrown available child restraint systems should use the belts provided in the vehicle. When seated in the rear outboard seats, the child should be restrained by the lap/shoulder belt.

If the shoulder belt portion slightly touches the child's neck or face, try placing the child closer to the center of the vehicle. If the shoulder belt still touches their face or neck they may need to be returned to a child restraint system. In addition, after-market devices are available from independent manufacturers which help pull the shoulder belt down and away from the child's face or neck.

A WARNING - Shoulder Belts on Small Children

- Never allow a shoulder belt to be in contact with a child's neck or face while the vehicle is in motion.
- (Continued)

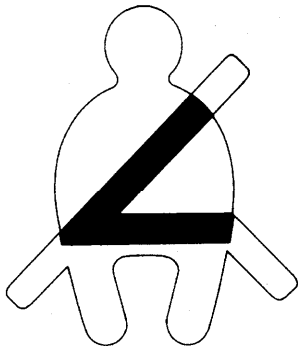
3-22

Knowing Your Vehicle

Safety Belt Warning Light and Chime

If the driver's lap/shoulder belt is not fastened when the key is turned ON, the safety belt warning chime sounds for approximately six seconds and the safety belt warning light illuminates for approximately six seconds.

Safety belt warning light

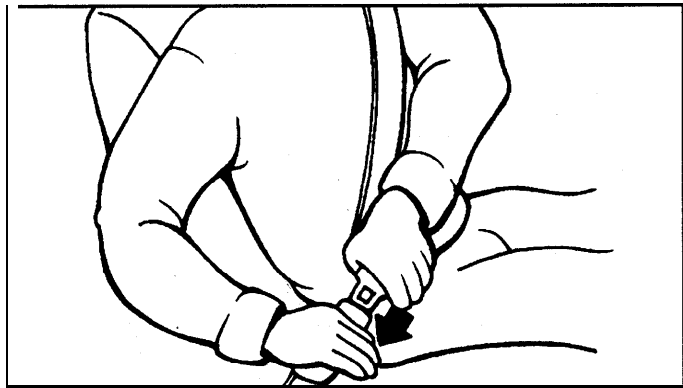


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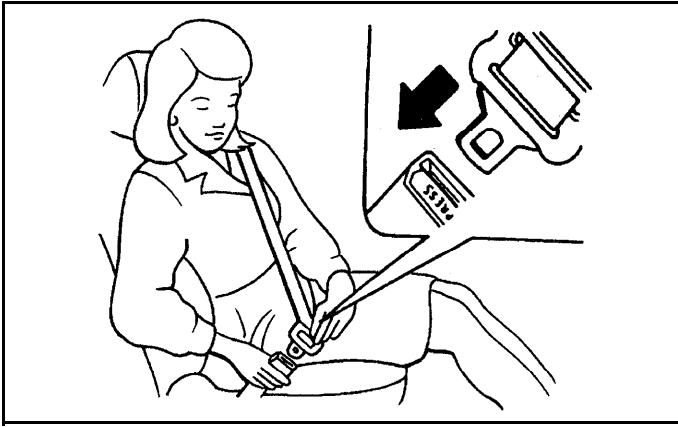
Front Lap/Shoulder Belt

To fasten the front lap/shoulder belt:

1. Grasp the buckle and tongue plate.
2. Slowly pull the lap/shoulder belt out from the retractor.

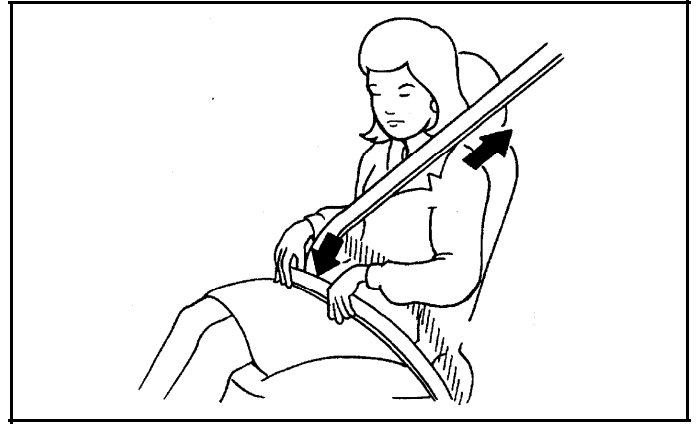


AS2B03023



AS2B03024

3. Insert the tongue plate into the open end of the buckle until an audible “click” is heard, indicating the belt is locked in the buckle.

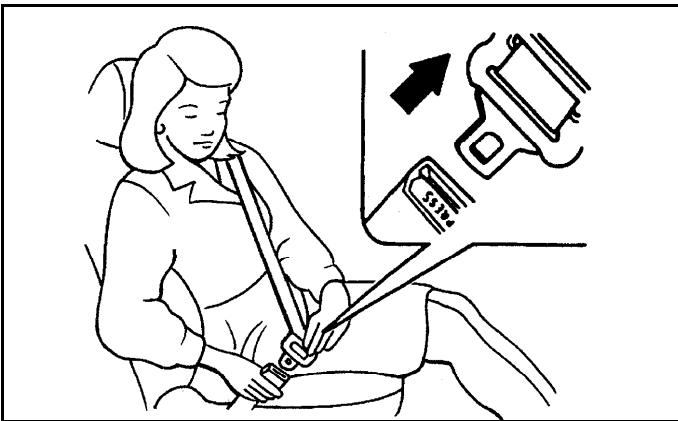


AS2B03025

4. Position the lap portion of the belt across your lap as **LOW ON THE HIPS** as possible to reduce the risk of sliding under it during an accident. Adjust the belt to a **SNUG FIT** by pulling up on the shoulder portion of the safety belt. The belt retractor applies tension to the belt in order to take up excess webbing automatically and to maintain tension on the belt. For maximum safety, do not put any excess slack into the safety belt.

To Unfasten the Front Lap/Shoulder Belt:

Press the release button on the buckle.



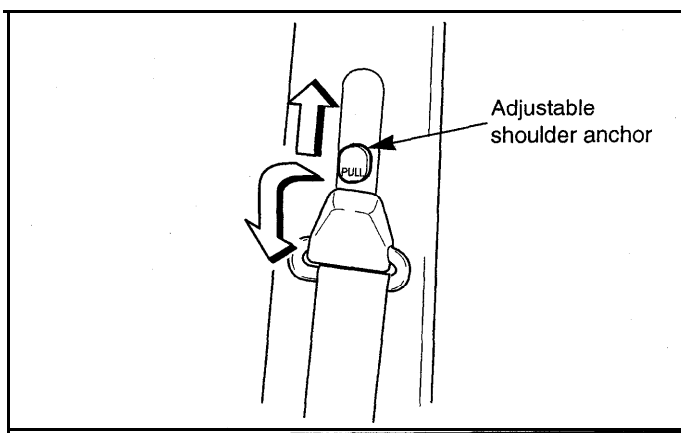
AS2B03027

Rear Safety Belts

Two kinds of safety belts are provided:

- Lap/shoulder belts for people who sit on the outboard sides of the vehicle.
- A lap belt for people who sit in the center of the rear seat.

Knowing Your Vehicle



5. Adjust the shoulder anchor position to your size. To raise the anchor position, pull the knob and push the anchor up. To lower the anchor position, pull the knob and slide the anchor down. After adjustment, make sure the anchor is locked in position.

A WARNING - Front Safety Belts

- The front seatbacks should always remain in a comfortable, upright position while the vehicle is in motion. The safety belt system will provide the most protection with the seatbacks in an upright position.
- Never wear the shoulder portion of the safety belt under the outside arm or behind the back.
- Never wear the shoulder portion of the safety belt across the neck or face.
- Wear the lap portion of the safety belt as low on the hips as possible. Be sure the lap belt fits snugly around the hips. Never wear the lap belt over your waist.
- Never drive or ride with a twisted or jammed safety belt. If you cannot untwist or unjam the safety belt, see the nearest Kia dealer or qualified technician immediately.
- Never use a single belt to restrain more than one person at a time.

Failure to follow these warnings will increase the risk and severity of injury in an accident.

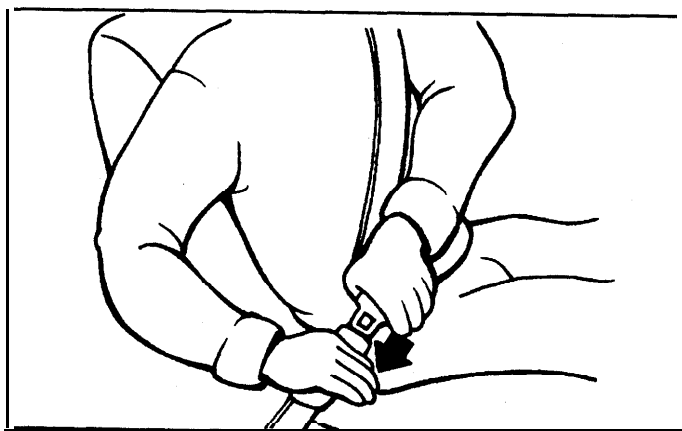
3-34

Knowing Your Vehicle

Rear Lap/Shoulder Belt

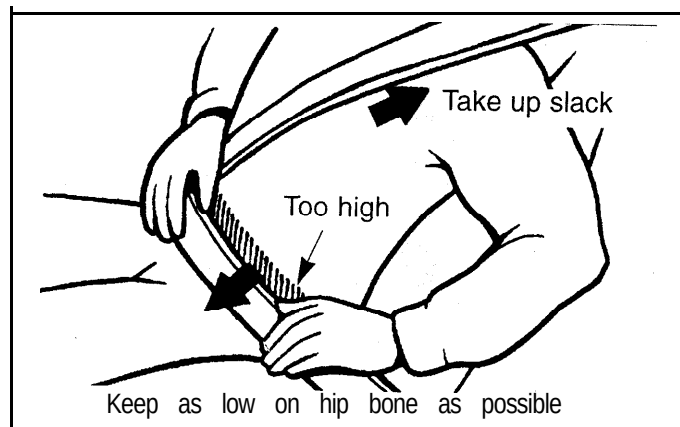
To Fasten:

1. Grasp the buckle with one hand and the tongue plate with the other.
2. Slowly pull the lap/shoulder belt out.



3. Insert the tongue plate into the open end of the buckle until an audible "click" is heard, indicating the belt is locked.
4. Position the lap portion of the belt across your lap as LOW ON THE HIPS as possible to reduce the risk of sliding under it during an accident.

Adjust the belt to a SNUG FIT by pulling up on the shoulder portion of the safety belt. The belt retractor is designed to take up excess webbing automatically and to maintain tension on the belt. This is for your safety. Do not put excess slack into the safety belt.



To Unfasten:

Press the release button on the buckle.

3-36

A WARNING - Rear Lap/Shoulder Safety Belts

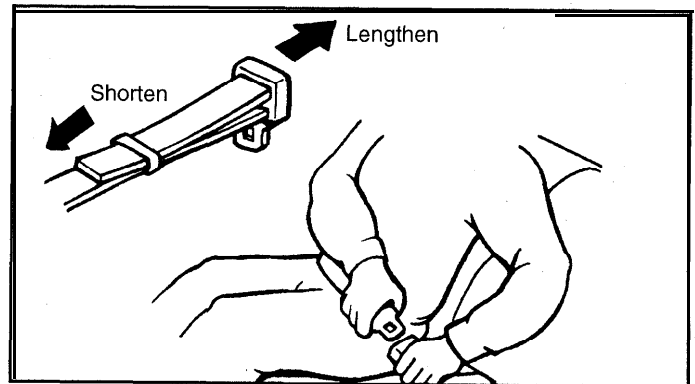
- Never wear the shoulder portion of the safety belt under the outside arm or behind the back.
- Never wear the shoulder portion of the safety belt across the neck or face.
- Wear the lap belt or the lap portion of the belt as low as possible. Be sure the lap belt fits snugly around the hips. Never wear the lap belt over your waist.
- Never ride or drive with a twisted or jammed safety belt. If you cannot untwist or unjam the safety belt, see the nearest Kia dealer or qualified technician immediately.
- Never use a single belt to restrain more than one person at a time.

Failure to follow these warnings could increase the chance and severity of injury in an accident.

Lap Belt Only (Rear Center Seat)

To Fasten the Rear Lap Belt:

1. Grasp the buckle end and pull it low over the abdomen.
2. Insert the tongue plate into the open end of the buckle until an audible “click” is heard, indicating the latch is locked. Make sure the belt is not twisted.
3. To lengthen the belt, hold the latch plate tongue at a right angle to the safety belt webbing and pull.
4. To shorten the belt, hold the latch plate tongue at a right angle to the safety belt webbing and pull on the loose end of the belt until the desired belt length is reached.



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3-37

A WARNING - Center Rear Lap Belt

Be sure the center rear lap belt is positioned snugly around the hips, and not on the waist. Failure to position the center rear lap belt snugly around the hips and not on the waist will increase the chance and severity of injury in the event of a collision.

Proper Use and Care of the Safety Belt System

To ensure that the safety belts provide the maximum protection, please follow these instructions:

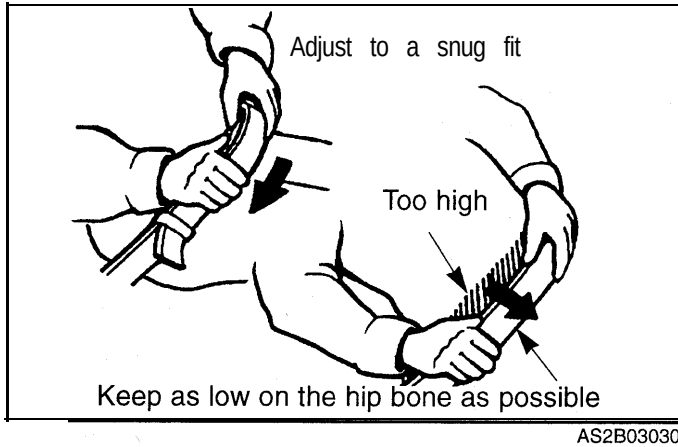
- Use the belts at all times - even on short trips.
- If the safety belt is twisted, straighten it prior to use.
- Keep sharp edges and damaging objects away from the belts.
- Periodically inspect belt webbing, anchors, buckles, and all other parts for signs of wear and damage.

Replace damaged, excessively worn or questionable parts immediately.

- To clean the belt webbing, use any mild soap solution recommended for cleaning upholstery or carpets. Follow the instructions provided with the soap. Do not bleach or dye the webbing because this may weaken the webbing fibers and allow them to fail when loaded in a collision.
- Do not make modifications or additions to the safety belt.
- After wearing a safety belt, make sure it fully retracts to the stowed position. Do not allow the belt to get caught in the door when you close it.

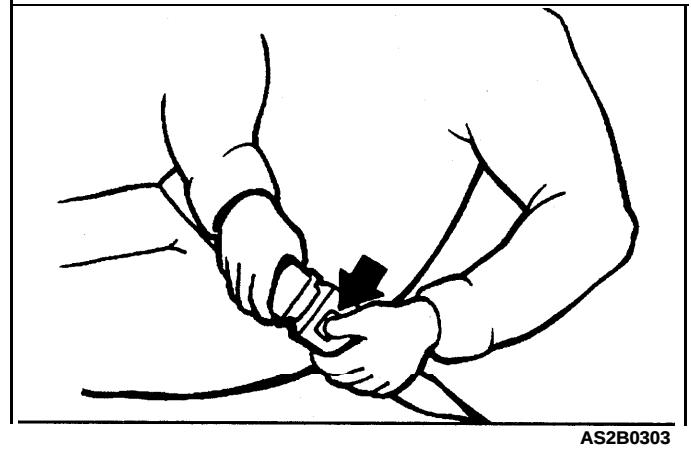
Knowing Your Vehicle

5. Grasp the free portion of the belt webbing and pull until the belt is snug over the hips and as low on the abdomen as possible.



6. Make sure that the belt is placed as LOW ON THE HIPS as possible.

To Unfasten the Rear Lap Belt:



Press the release button on buckle.

3-38

Air Bag - Supplemental Restraint System

What Your Air Bag System Does

Your vehicle is equipped with a dual Supplemental Restraint System (SRS), which includes an air bag for the driver and another air bag for the front passenger.

What Your Air Bag System Does Not Do

The air bag system is designed to supplement or add to the protection provided to properly belted occupants in moderate to severe frontal collisions. It is not a substitute for the driver's or front passenger's safety belt and it does not provide restraint to the lower body.

Why Didn't My Air Bag Go Off in a Collision?

There are many types of accidents in which the air bag would not be expected to provide additional protection. These include side or rear impacts, rollovers, and second or third impacts in multiple-impact accidents as well as low speed impacts.

Remember: air bags are only designed to inflate when the impact would throw the occupant into the air bags - generally from a little to the left to a little to the right of straight ahead.

In other words, just because your vehicle is damaged and even if it is totally unusable, don't be surprised that the air bag(s) did not inflate.

The Importance of Using Safety Belts

There are four very important reasons to use safety belts even with an air bag system, they:

- help keep you in the proper position (away from the air bag) when it inflates.
- reduce the risk of harm in rollover, side or rear impact collisions, because an air bag is not designed to inflate in such situations.
- reduce the risk of harm in frontal collisions that are not severe enough to activate the supplemental restraint system.
- reduce the risk of being thrown from your vehicle.

⚠ WARNING - Air Bags & Safety Belts

Even in vehicles with air bags, you and your passengers must always wear the safety belts provided in order to minimize the risk and severity of injury in the event of a collision or rollover.

(Continued)

3-40

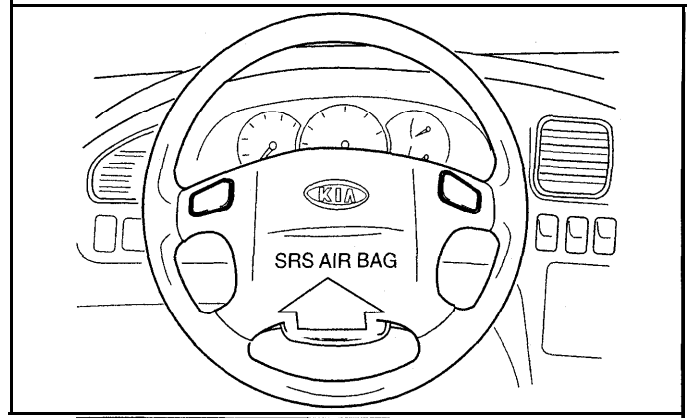
(Continued)

- Always wear your safety belt. It can help keep you away from the air bags during heavy braking just before a collision.
- Air bags are designed to inflate only in severe frontal collisions and will generally not provide protection in side or rear impacts, rollovers or less severe frontal collisions. They will also not provide protection from later impacts in a multi-impact collision.
- If your vehicle has been subjected to flood conditions (e.g. soaked carpeting/standing water on the floor of the vehicle, etc.) or if your vehicle has become flood damaged in any way, do not attempt to start the vehicle or put the key in the ignition before disconnecting the battery. This may cause air bag deployment, which could result in serious personal injury or death. Have the vehicle towed to an authorized Kia dealer for inspection and necessary repairs.

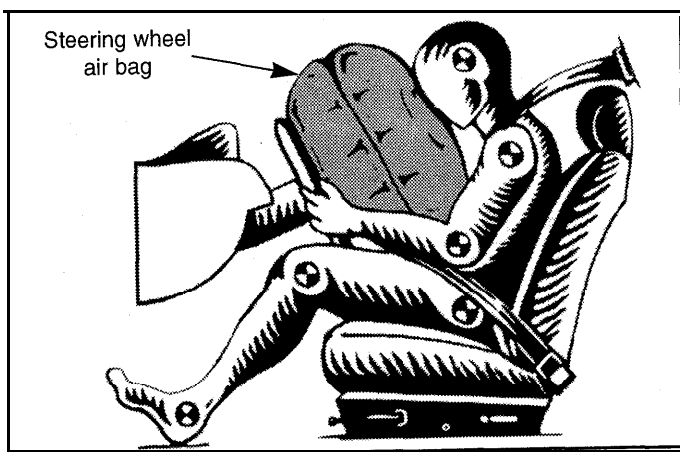
Air Bag System Components

The main components of your vehicle's SRS are:

- One air bag 'in the steering wheel for the driver, and another in the dashboard for the front passenger.
- A diagnostic system that continually monitors system operation.
- An indicator light to warn you of a possible problem with the system.
- Emergency power backup in case your car's electrical system is disconnected in a crash.



3-41



Thus, air bag inflation could also cause injuries which normally can include facial abrasions, bruises and broken bones. However, there are even circumstances under which contact with the steering wheel air bag can cause fatal injuries, especially if the occupant is positioned excessively close to the steering wheel.

YOU MUST ALWAYS SIT AS FAR BACK FROM THE STEERING WHEEL AIR BAG AS POSSIBLE, WHILE STILL MAINTAINING A COMFORTABLE SEATING POSITION FOR GOOD VEHICLE CONTROL, IN ORDER TO REDUCE THE RISK OF INJURY OR DEATH IN A COLLISION.

A WARNING - Air Bag Injuries

- Sit as far back from the steering wheel as possible without interfering with your control of the vehicle. Positioning yourself too close to the steering wheel can result in serious or even fatal injuries if the air bag deploys.
- Never place objects over the air bag storage compartments or between the air bags and yourself. Due to the speed and force of the air bag inflation, such objects could hit your body at high speed and cause severe bodily injury and even death.

3-43

Knowing Your Vehicle

To indicate that your vehicle is equipped with air bags, the air bag covers on the steering wheel and on the dashboard are marked with “SRS AIR BAG.”

How the Air Bag System Works

The driver’s air bag is stored in the center of the steering wheel. The passenger side air bag is stored in the front instrument panel above the glove box.

If you ever have a severe frontal collision, your air bags will instantly inflate to help protect you from serious physical injury.

There is no single vehicle speed at which the air bags will inflate. Generally, air bags are designed to inflate in severe frontal collisions. The air bag Supplemental Restraint System (SRS) reacts to the severity of a collision and its direction. These two factors determine whether the sensors send out an electronic deployment or inflation signal. Whether the air bags will inflate depends on a number of factors including vehicle speed, angle of impact and the density and stiffness of the vehicles or objects that your vehicle hits in the collision.

The air bags will completely inflate and deflate in less than 1/10 of one second. The speed of inflation and deflation protects the driver’s ability to operate the vehicle. This is important in crashes where a vehicle continues to move after an impact and the driver still has some control of the vehicle’s steering, braking, throttle and/or transmission systems.

It is virtually impossible for you to see the air bags inflate during an accident. It is much more likely that you will simply see the deflated air bags hanging out of their storage compartments after the collision.

In order to help provide protection in a severe collision, the air bags must inflate rapidly. However, that speed also causes the air bags to expand with a great deal of force. The speed of this inflation has been determined by the U.S. National Highway Traffic Safety Administration (NHTSA) to reduce the likelihood of serious or life-threatening injuries and is thus a mandatory part of air bag design.

3-42

Noise and Smoke

When the air bags inflate, they make a loud noise and they leave smoke and powder in the air inside of the vehicle. This is normal and is a result of the ignition of the air bag inflator.

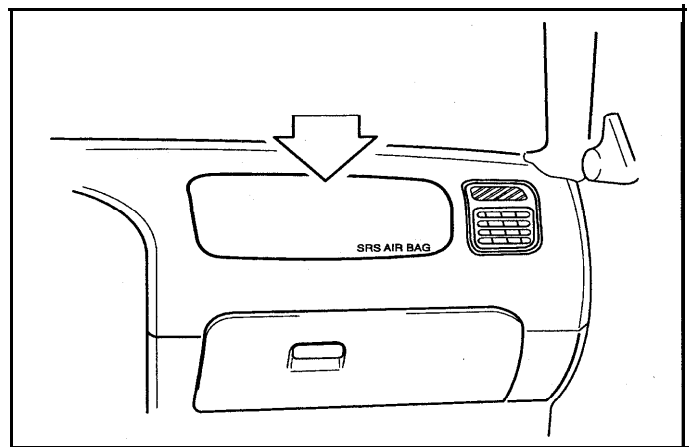
After the air bags inflate, you may feel substantial discomfort in breathing due both to the contact by your chest with both the safety belt and the air bag, as well as from breathing the smoke and powder.

We strongly urge you to open your doors and/or windows as promptly as possible after impact in order to reduce discomfort and prevent prolonged exposure to the smoke and powder.

⚠ WARNING - Hot Metal Parts

- When the air bags deploy, the air bag inflators in the steering wheel and/or in the dashboard are very hot. To prevent injury, do not touch the air bag storage area’s internal components immediately after an air bag has inflated.

The Importance of The Passenger Being Properly Seated



AS2B03034

The front seat passenger’s air bag is much larger than the driver’s air bag and inflates with considerably more force. It can seriously hurt or kill a passenger who is not in the proper position and wearing the safety belt properly. The front passenger should always move their seat as far back as practical and sit well back in the seat. It is essential that the front passenger always wear their safety belt, even when mounting in a parking lot or up a drive way into a garage.

The reason for this is that in most frontal impacts there is substantial pre-impact braking which tends to throw the occupants forward. If the right front passenger is not using their safety belt, they will be directly in front of or even touching the air bag storage compartment when inflation occurs. In that situation, death or severe injury is possible.

⚠ WARNING -Right Front Seat

Pre-impact braking could throw an unbelted passenger toward or onto the air bag storage compartment. Upon impact in a collision, the air bag would rapidly inflate and possibly severely injure or kill that occupant who failed to wear their safety belt.

Because of the air bag, you must NEVER INSTALL A REAR-FACING CHILD RESTRAINT SYSTEM IN THE FRONT PASSENGER SEAT. There is a very significant risk of serious or fatal injuries to a child in a rear-facing child restraint if the right front passenger air bag inflates. We also strongly recommend that you do not put a front-facing child restraint system in the front passenger seat. If a front-facing child restraint system must be used in the front passenger seat, the

vehicle seat should be moved as far back as possible. If the passenger's air bag inflates, it could seriously or fatally hurt a child who is not in the proper position or properly restrained.

A WARNING - Front Passengers

- NEVER use a rear-facing child restraint in the front seat. In the front seat, a rear-facing child restraint would be positioned too close to where the air bags are stored and in the event an air bag deploys, the air bag would impact the rear-facing child restraint and cause serious injuries or death.
- Failure to observe the instructions provided with the child restraint system could increase the risk and/or severity of injury in an accident.

Air Bag Warning Light

The purpose of the air bag warning light in your instrument panel is to alert you of a potential problem with your Air Bag - Supplemental Restraint System (SRS).

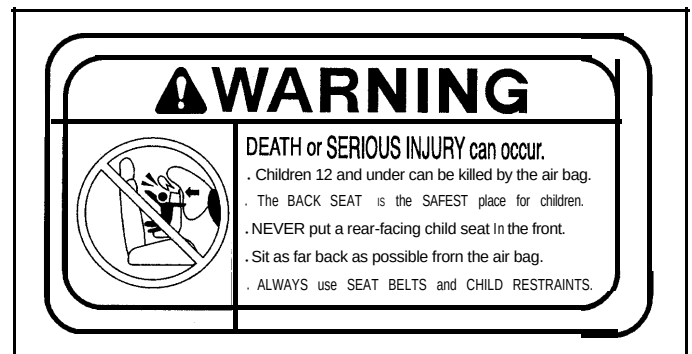
3-45

A WARNING -SRS Modifications

- Do not modify your steering wheel or any other part of the Supplemental Restraint System. Modification could make the system ineffective.
- Do not work on the system's components or wiring. This could cause the air bags to inflate inadvertently, possibly seriously injuring someone. Working on the system could also disable the system so that the air bags did not deploy in a collision.

Air Bag Warning Label (sunvisor - front side)

To remind you of the dangers of the air bag, air bag warning labels which are now required by the U.S. National Highway Traffic Safety Administration (NHTSA) are adhered to the driver's and passenger's sunvisors and attached to the glove box.



AS2B03037

Note that these government warnings focus on the risk to children, Kia also wants you to be aware of the risks which adults are exposed to. Those have been described in previous pages.

Knowing Your Vehicle

Have the system checked if:

- The light does not illuminate when you turn the ignition ON.
- The light stays ON after the engine starts.
- The light comes ON or flashes while you are driving.



AS2B03035

Supplemental Restraint System Service

Your Supplemental Restraint System is virtually maintenance-free. There are no parts which you can service.

You must have the system serviced under the following circumstances:

- If an air bag ever inflates, the air bag must be replaced. Do not try to remove or discard the air bag by yourself. This must be done by an authorized Kia dealer or qualified service technician.
- If the air bag warning indicator light alerts you of a problem, have the air bag system checked as soon as possible. Otherwise, your air bag might not inflate when you need it.