

REPORT NUMBER KAR21001-14

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

**DAIMLER CHRYSLER CORPORATION
2001 DODGE CARAVAN SE
MINIVAN
NHTSA NUMBER: M10301**

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



APRIL 13, 2001

FINAL REPORT

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Prepared by: _____ Date: April 13, 2001
Mr. James E. Gorth, Project Engineer
KARCO Engineering

Reviewed by: _____ Date: April 13, 2001
Mr. Jerry L. Kratzke, Director of Operations
KARCO Engineering

Approved by: _____ Date: April 13, 2001
Mr. Frank D. Richardson, Program Manager
KARCO Engineering

FINAL REPORT ACCEPTED BY:

Manager, New Car Assessment Program

Date of Acceptance

COTR, NCAP Frontal Impact Program

Date of Acceptance

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16. Abstract A 35 mph (56.3 km/h) frontal barrier impact was conducted on a 2001 Dodge Caravan SE Minivan at KARCO Engineering on 2/22/01. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and footwell intrusion performance. The impact velocity is 55.61 km/h. The ambient temperature at the barrier face at the time of impact is 18.3 degrees Celcius. The vehicle's maximum post test static crush is 446 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:																												
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 35%;">Measurement Description</th> <th style="width: 15%;">Units</th> <th style="width: 15%;">Threshold</th> <th style="width: 20%;">Driver ATD</th> <th style="width: 15%;">Passenger ATD</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC)</td> <td>N/A</td> <td>1000</td> <td>575.1</td> <td>763.2</td> </tr> <tr> <td>Max. Thorax Accel. (3 msec Clip)</td> <td>G's</td> <td>60</td> <td>49.1</td> <td>50.0</td> </tr> <tr> <td>Left Femur force</td> <td>Newtons</td> <td>10009</td> <td>-1605.9</td> <td>-2826.3</td> </tr> <tr> <td>Right Femur Force</td> <td>Newtons</td> <td>10009</td> <td>-1873.1</td> <td>-309.9</td> </tr> </tbody> </table>				Measurement Description	Units	Threshold	Driver ATD	Passenger ATD	Head Injury Criteria (HIC)	N/A	1000	575.1	763.2	Max. Thorax Accel. (3 msec Clip)	G's	60	49.1	50.0	Left Femur force	Newtons	10009	-1605.9	-2826.3	Right Femur Force	Newtons	10009	-1873.1	-309.9
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SECTION 1

PURPOSE, TEST PROCEDURE AND SUMMARY OF TEST M10301

1.1 PURPOSE

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

1.2 TEST PROCEDURE

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

The test was conducted at KARCO Engineering on February 22, 2001 at a speed of 55.61 km/h. The test vehicle was instrumented with eight (8) accelerometers to measure longitudinal axis accelerations. The driver and passenger's restraint systems were instrumented with four (4) seat belt load cells to measure lap and shoulder belt tension. The specified impact velocity range was 55.5 to 57.1 km/h. The frontal barrier impact event was documented by one (1) real-time panning motion picture camera and seventeen (17) high-speed motion picture cameras. The pre- and post-test conditions were recorded by one (1) real-time motion picture camera. Camera locations and pertinent camera information is documented in the data sheets. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

The test vehicle contained two (2) part 572E 50th percentile adult male anthropomorphic test devices (ATDs). Both ATDs were instrumented with head, chest, and pelvic tri-axial accelerometers, left and right femur load cells, upper and lower tibia sensors, and foot accelerometers. In addition, chest displacement and upper neck six-axis force and moment sensors were utilized. The ATDs were positioned in the front outboard seating positions according to the dummy placement procedures specified in the Laboratory Indicant Test Procedure. Ninety-four (94) channels of data were recorded with a PC based (TDAS) on-board data acquisition system. The data was digitally sampled at 10,000 samples per second and processed per section IP11 of the Laboratory Indicant Test Procedure.

The Driver ATD (Serial No. 34) and the right-front passenger ATD (Serial No. 35) were calibrated 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 Dodge Caravan SE Minivan at a velocity of 55.61 km/h. The test vehicle weight is 1950 kilograms with two (2) part 572E 50th percentile adult male ATDs. Twenty-four (24) load cell barrier data channels were obtained in conducting the February 22, 2001 NCAP test. The test vehicle is a gasoline vehicle, equipped with a transverse mounted, 4-cylinder engine and a 3-speed automatic transmission.

The driver Head Injury Criteria (HIC) is 575.1. The maximum resultant chest deceleration over three (3) milliseconds is 49.1 g's. The left and right femur loads are -1605.9 and -1873.1 Newtons, respectively. Chest deflection for the driver ATD peaked at -35.4 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 steering column and dash.

The right front passenger's HIC is 763.2. The maximum resultant chest deceleration over three (3) milliseconds is 50.0 g's. The left and right femur loads are -2826.3 and -309.9 Newtons respectively. Chest deflection for the passenger ATD peaked at -22.4 mm. The passenger ATD head contacted the airbag and headrest, the chest and abdomen contacted the airbag/belt, the left knee contacted the glove box/dash and the right knee contacted the glove box.

Maximum shoulder belt spool out as measured by on-board potentiometers is 265.0 mm for the driver ATD and 319.9 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 446 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 Dodge Caravan SE Minivan 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 Dodge Caravan SE Minivan

NHTSA No.: M10301

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 02/22/01

CONVERSION FACTORS USED IN THIS REPORT*

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

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

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

Test Vehicle: 2001 Dodge Caravan SE Minivan
Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10301
Test Date: 02/22/01

PRIMARY IMPACT DATA

Measured Parameter	Units	Value
Velocity at Impact	km/h	55.61
Test Weight	kg	1950
Impact Angle	degrees	0
Average Rebound	mm	624
Maximum Static Crush	mm	446

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Passenger
Front Door Opening	Opened	Opened
Rear Door Opening	Opened	Opened
Seat Track Shift (mm)	None	None
Seat Back Failure	None	None

TEST DUMMY INFORMATION

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

16mm MOVIE COVERAGE

High Speed	17
Real Time	1
Total	18

DATA CHANNELS

Driver ATD Sensors	40
Passenger ATD Sensors	40
Belt Assessment Sensors	6
Vehicle Structure Accelerometers	8
Rigid Barrier Load Cells	24
Total	118

DATA SHEET NO. 2
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2001 Dodge Caravan SE Minivan

NHTSA No.: M10301

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 02/22/01

TEST VEHICLE INFORMATION

Make	Dodge
Model	Caravan SE
Body Style	Minivan
NHTSA No.	M10301
VIN	1B4GP25B01B134574
Color	Aquamarine
Delivery Date	2/3/01
Odometer Reading (mile)	67
Dealer	Glendora Dodge
Transmission	3-Speed Automatic
Final Drive	Front
Number of Cylinders	4
Engine Displacement (L)	2.4
Engine Placement	Transverse

TEST VEHICLE OPTIONS

Driver Airbag	Yes
Passenger Airbag	Yes
Power Windows	No
Power Steering	Yes
Power Door Locks	No
Tilt Wheel	No
Air Conditioning	Yes
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	Daimler Chrysler Corporation	GVWR (kg)	2450
Date of Manufacture	January-01	GAWR Front (kg)	1293
		GAWR Rear (kg)	1293

DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	248	248
Cold Pressure (kPa)	248	248
Recommend Tire Size	P215/70/R15	P215/70/R15
Tire Size on Vehicle	P215/70/R15	P215/70/R15
Tire Manufacturer	Goodyear	Goodyear

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench	Bench	
Number of Occupants	2	2	3	7
Capacity Wt. (VCW) (kg)				692
Cargo Weight (RCLW) (kg)				45

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

Test Vehicle: 2001 Dodge Caravan SE Minivan
 Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10301
 Test Date: 02/22/01

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	538	377		552	408	
Right	kg	475	367		582	408	
Ratio	%	57.7	42.3		58.2	41.8	
Totals	kg	1013	744	1757	1134	816	1950

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1757
Weight of 2 P572 ATD's	kg	152
Rated Cargo/Luggage Weight (RCLW)	kg	45
Calculated Vehicle Target Weight (TVTW)	kg	1954

TEST VEHICLE ATTITUDE AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	772	773	775	778	1140
As Tested	mm	753	748	762	762	1127

Vehicle Wheel base (mm): 2695

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

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

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

FUEL SYSTEM DATA

Fuel System Capacity From Owner's Manual (L): 75.7

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

Actual Test Volume with entire fuel System Filled (L): 70.4

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 Dodge Caravan SE Minivan
Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10301
Test Date: 02/22/01

SPEED TRAP DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	55.51 to 57.12	55.61
Trap No. 1 Entry Distance	mm	< 1524	1524
Trap No. 1 Exit Distance	mm	< 1524	305
Trap No. 2 Velocity (Redundant)	km/h	55.51 to 57.12	55.94
Trap No. 2 Entry Distance	mm	< 1524	1524
Trap No. 2 Exit Distance	mm	< 1524	305

VEHICLE STATIC CRUSH

Measured Parameter	Units	Pre-Test	Post-Test	Difference
Left Side	mm	4499	4184	-315
Center	mm	4800	4380	-420
Right Side	mm	4499	4131	-368

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	753
Center	mm	460
Right Side	mm	660
Average	mm	624

DATA SHEET NO. 4
TEST VEHICLE INFORMATION

Test Vehicle: 2001 Dodge Caravan SE Minivan

NHTSA No.: M10301

Test Program: 2001 NHTSA 35 mph NCAP

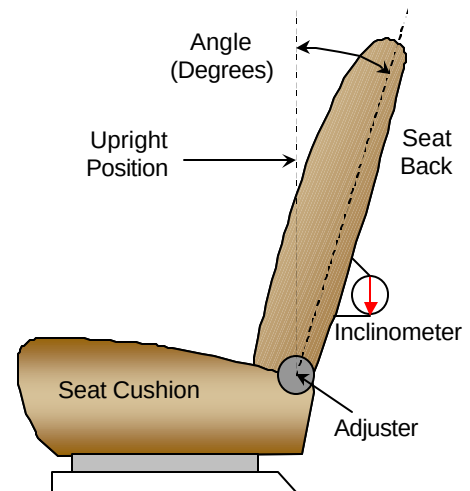
Test Date: 02/22/01

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: 26.0° with a seated dummy

Passenger seat back angle: 26.0° with a seated dummy



FRONT SEAT ASSEMBLY

SEAT FORE/AFT POSITIONS

Driver and the passenger seat has 23 detents. The first or forward most position is counted as number one (1). The fore/aft position is set aft of the middle position for both driver and passenger.

Driver seat fore/aft total travel: 23 seating positions or detents

Passenger seat fore/aft total travel: 23 seating positions or detents

Driver seat fore/aft position: 12th detent from forward most

Passenger seat fore/aft position: 12th detent from forward most

SEAT BELT UPPER ANCHORAGE

Both driver and passenger seating positions are equipped with adjustable anchorages. Of four (4) positions, each is set in the second (2nd) position from the top.

DATA SHEET NO. 4...(continued)

TEST VEHICLE INFORMATION

Test Vehicle: 2001 Dodge Caravan SE Minivan

NHTSA No.: M10301

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 02/22/01

FUEL TANK CAPACITY DATA

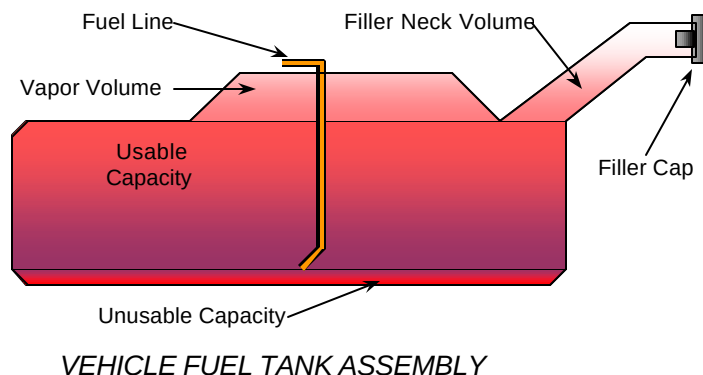
The "Usable Capacity" of the standard equipment fuel tank is: 75.7 liters

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

"Usable Capacity" used for certification tests FMVSS 301 requirements: 69.6 to 71.1 liters

Actual amount of Stoddard solvent added to vehicle for certification test: 70.4 liters

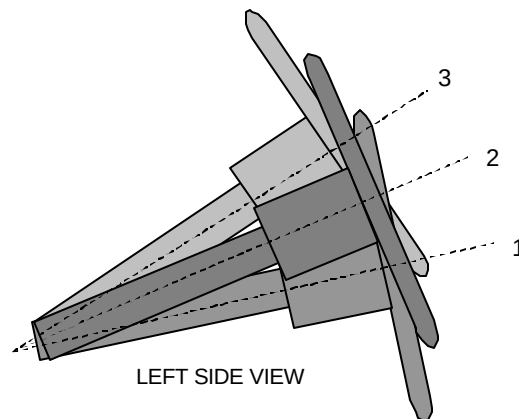
The test vehicle is equipped with an electric fuel pump. The fuel pump operates for approximately two seconds after the ignition is placed to the "ON" position, after which the fuel pump automatically shuts off. The fuel filler door is located on the left rear fender. The standard fuel tank occupies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



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's steering column is not adjustable; its geometric center is 28.0°.



STEERING COLUMN ASSEMBLY

Lowermost, position 1: N/A°

Geometric center, position 2: 28.0°

Uppermost, position 3: N/A°

DATA SHEET NO. 5

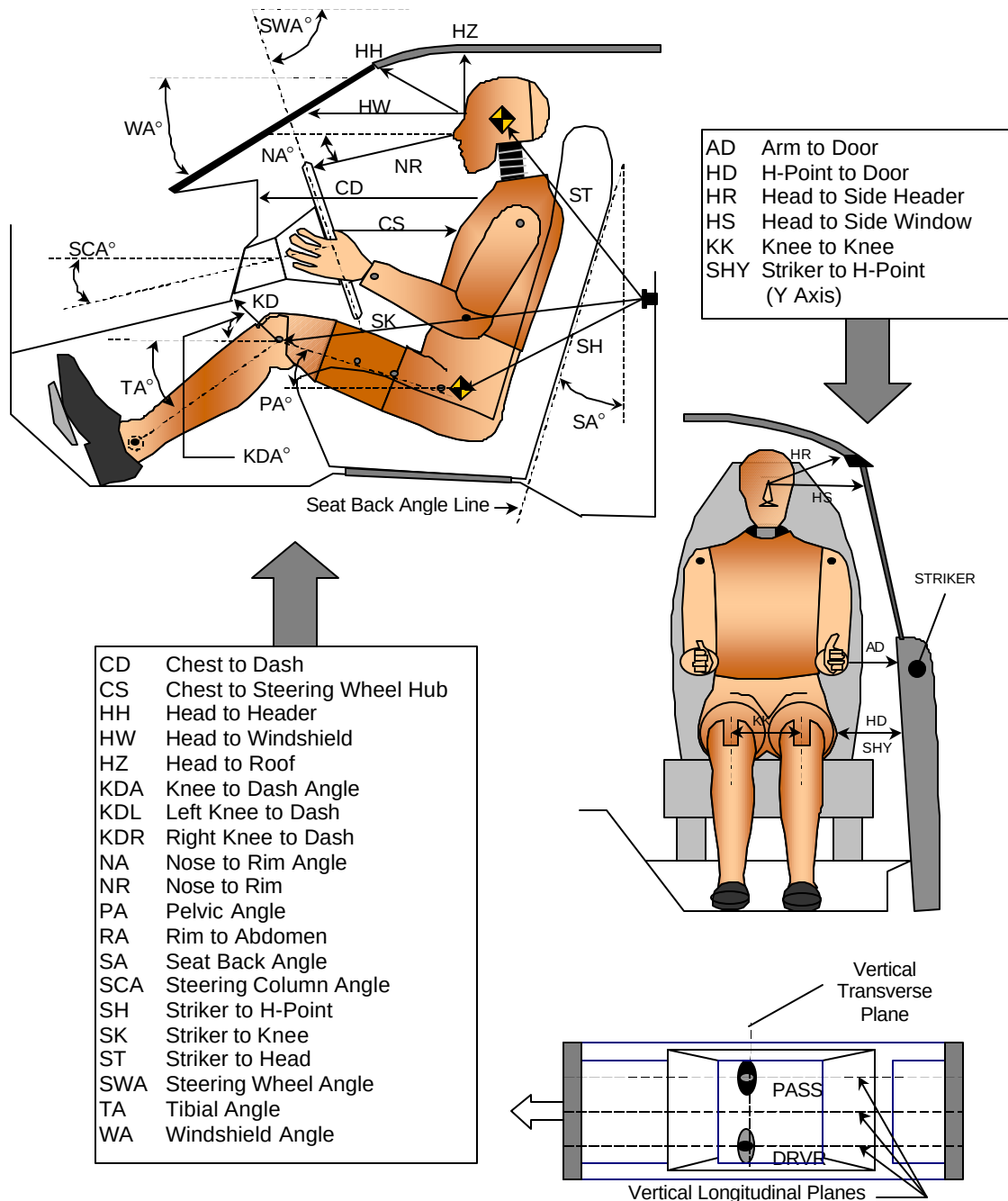
DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2001 Dodge Caravan SE Minivan

NHTSA No.: M10301

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 02/22/01



DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS

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

Test Vehicle: 2001 Dodge Caravan SE Minivan
 Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10301
 Test Date: 02/22/01

TEST DUMMY POSITION MEASUREMENTS

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA	Windshield Angle		28		
SWA	Steering Wheel Angle		62		
SCA	Steering Column Angle		28		
SA	Seat Back Angle		26		26
HZ	Head to Roof (Z)	218	90	192	90
HH	Head to Header	376	0	372	0
HW	Head to Windshield	645	0	625	0
HR	Head to Side Header (Y)	228		205	
NR	Nose to Rim	443	13		
CD	Chest to Dash	580		570	
CS	Chest to Steering Hub	321	0		
RA	Rim to Abdomen	185	0		
KDL	Left Knee to Dash	190	33	200	
KDR	Right Knee to Dash	208	32	210	33
PA	Pelvic Angle		24		23
TA	Tibia Angle		49		52
KK	Knee to Knee (Y)	225		215	
SK	Striker to Head	604	8	593	7
ST	Striker to Knee	705	3	680	4
SH	Striker to H-Point	182	2	172	3
SHY	Striker to H-Point (Y)	245		245	
HS	Head to Side Window	314		275	
HD	H-Point to Door (Y)	163		145	
AD	Arm to Door (Y)	144		28	

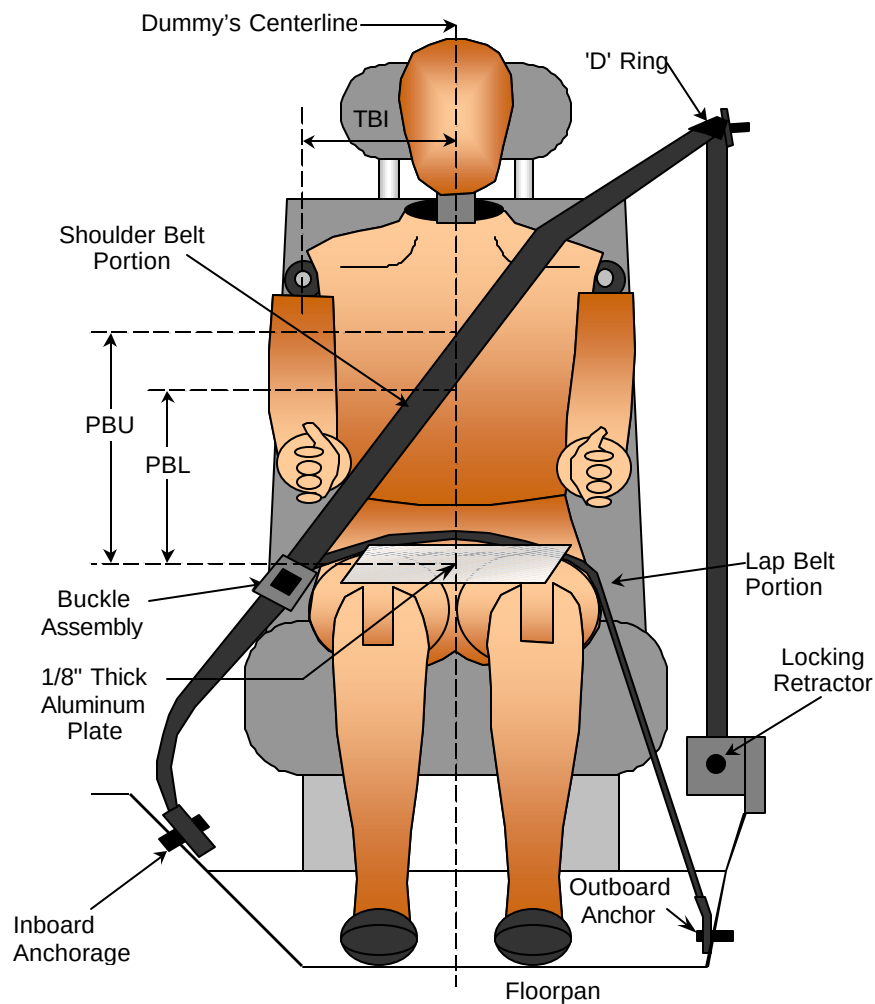
DATA SHEET NO. 6 **SEAT BELT POSITIONING DATA**

Test Vehicle: 2001 Dodge Caravan SE Minivan

NHTSA No.: M10301

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 02/22/01



SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
TBI - Dummy CL to Lap/Shoulder Belt Intersect	mm	235	230
PBU -Top surface of reference to belt upper edge	mm	335	290
PBL - Top surface of reference to belt lower edge	mm	260	190
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 Dodge Caravan SE Minivan

NHTSA No.: M10301

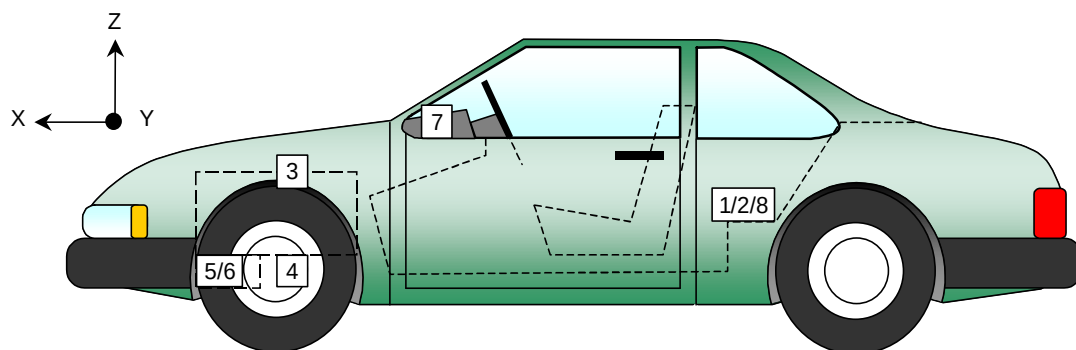
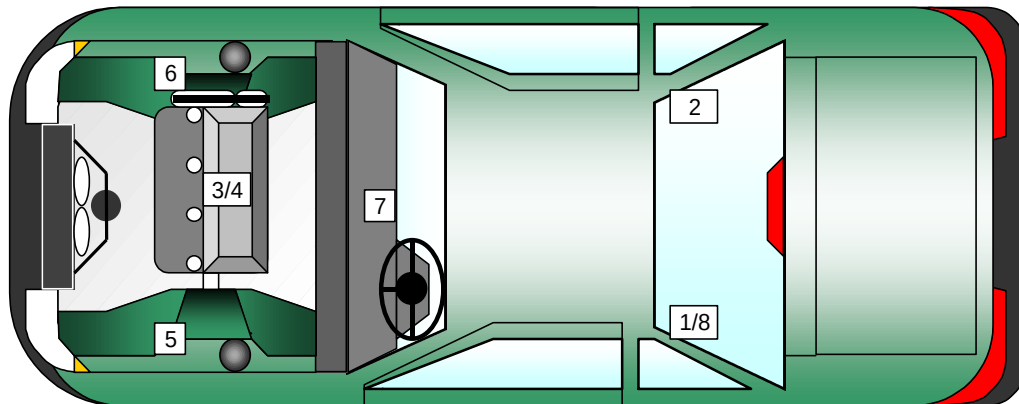
Test Program: 2001 NHTSA 35mph NCAP

Test Date: 2/22/01

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.)	1690	-700	460	G's	2.5	126.7	-45.2	36.9
2	Right Rear X-Member (Pri.)	1690	700	460	G's	2.5	127.2	-37.4	36.6
3	Engine Top	3890	125	970	G's	58.5	36.4	-180.3	28.0
4	Engine Bottom	4005	-150	190	G's	31.4	37.9	-173.4	31.2
5	Left Brake Caliper	3795	-755	230	G's	32.4	56.0	-124.2	35.2
6	Right Brake Caliper	3795	755	230	G's	22.5	45.9	-97.2	38.1
7	Instrument Panel	2230	0	1120	G's	75.3	34.3	-132.2	42.9
8	Left Rear X-Member (Rednt.)	1690	-660	460	G's	2.2	127.6	-44.6	36.8

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



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

Test Vehicle: 2001 Dodge Caravan SE Minivan

NHTSA No.: M10301

Test Program: 2001 NHTSA 35mph NCAP

Test Date: 2/22/01

HEAD PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	7.7	196.0	-61.0	74.3	34.6	182.5	-63.8	82.5
Head CG	Y	G's	2.8	192.7	-8.6	84.1	5.3	183.0	-25.8	85.8
Head CG	Z	G's	21.6	86.4	-2.6	134.1	26.7	81.5	-1.6	16.1
Head CG Resultant	N/A	G's	62.6	74.3			72.7	82.5		

CHEST PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	4.7	255.1	-49.7	81.9	8.9	185.1	-50.5	79.0
Chest CG	Y	G's	2.2	107.1	-3.7	60.8	3.5	41.9	-2.8	97.1
Chest CG	Z	G's	10.0	87.7	-9.4	61.2	10.1	89.8	-1.9	61.6
Chest CG Resultant	N/A	G's	49.9	82.0			50.6	79.0		

FEMUR PEAK FORCES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Femur	Z	Newtons	809.6	56.5	-1605.9	74.0	779.6	47.0	-2826.3	77.4
Right Femur	Z	Newtons	589.4	43.4	-1873.1	77.2	985.4	74.9	-309.9	62.0

SEAT BELT SENSOR PEAK VALUES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Lap Belt Force	N/A	Newtons	6427.4	74.4	-20.0	299.9	6161.7	76.9	-11.1	0.0
Shoulder Belt Force	N/A	Newtons	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shoulder Belt Pullout	N/A	MM	265.0	92.7	0.6	0.0	319.9	92.1	-0.1	2.7
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. ** Not installed per manufacturer request and COTR approval.

HEAD INJURY CRITERIA (HIC)

Location	Driver				Passenger			
	HIC	Avg G	T ¹	T ²	HIC	Avg G	T ¹	T ²
Head CG Primary	575.1	48.3	57.9	93.2	763.2	56.7	68.7	100.1

CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T ¹	T ²	CLIP	T ¹	T ²
Chest CG Primary	49.1	81.2	84.2	50.0	78.1	81.1

DATA SHEET NO. 8...(continued)

Test Vehicle: 2001 Dodge Caravan SE Minivan

NHTSA No.: M10301

Test Program: 2001 NHTSA 35mph NCAP

Test Date: 2/22/01

PELVIC PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Pelvis	X	G's	2.0	275.4	-52.3	76.9	4.5	112.6	-50.4	70.9
Pelvis	Y	G's	5.4	98.2	-9.5	58.1	4.3	42.5	-5.3	93.4
Pelvis	Z	G's	3.1	110.3	-24.8	77.8	4.5	243.9	-26.3	69.2

UPPER NECK PEAK FORCES AND MOMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Neck Force	X	Newtons	900.5	85.9	-258.8	47.7	988.9	85.2	-309.0	48.1
Neck Force	Y	Newtons	283.5	76.5	-105.0	121.4	297.2	95.0	-106.1	201.1
Neck Force	Z	Newtons	815.2	68.7	-174.7	142.2	1026.6	185.5	-458.7	91.7
Neck Moment	X	N•m	4.3	184.3	-13.6	65.3	14.1	81.2	-6.1	64.6
Neck Moment	Y	N•m	67.9	68.1	-17.0	227.8	91.9	68.8	-21.0	242.1
Neck Moment	Z	N•m	9.2	90.2	-7.4	145.2	24.9	105.0	-9.1	222.4

FOOT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Foot Aft	X	G's	5.3	210.8	-38.5	48.5	6.5	69.0	-76.5	45.2
Left Foot Aft	Z	G's	6.5	146.5	-57.1	44.6	8.1	64.2	-76.1	54.5
Left Foot Fore	Z	G's	19.7	49.5	-62.2	44.1	33.8	63.8	-138.0	44.6
Right Foot Aft	X	G's	19.2	65.7	-88.9	52.5	5.2	60.0	-58.4	46.9
Right Foot Aft	Z	G's	6.0	69.0	-69.4	41.7	3.6	284.2	-43.1	46.1
Right Foot Fore	Z	G's	44.0	68.7	-183.7	41.7	10.7	65.2	-83.6	49.9

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	29.4	60.1	-10.3	46.6	32.7	46.2	-69.6	56.6
Left Lower Moment	Y	N•m	22.5	46.9	-17.2	55.7	114.6	73.0	-76.8	46.0
Left Lower Force	Z	Newtons	177.4	231.1	-3260.5	47.5	134.3	141.0	-2168.1	45.7
Left Upper Moment	X	N•m	19.9	133.9	-34.9	52.1	38.4	46.9	-42.1	63.8
Left Upper Moment	Y	N•m	17.5	210.3	-87.0	50.1	19.6	125.3	-136.6	46.5
Right Lower Moment	X	N•m	8.4	35.3	-167.6	67.4	12.9	52.9	-34.2	61.7
Right Lower Moment	Y	N•m	158.8	69.0	-61.3	41.8	41.1	61.9	-30.1	48.2
Right Lower Force	Z	Newtons	186.4	139.5	-1713.9	57.8	161.4	196.5	-2178.2	88.0
Right Upper Moment	X	N•m	29.5	43.0	-42.1	57.6	37.0	47.2	-14.3	154.3
Right Upper Moment	Y	N•m	19.6	112.0	-107.7	43.1	18.1	129.3	-88.7	75.8

DATA SHEET NO. 8...(continued)Test Vehicle: 2001 Dodge Caravan SE MinivanNHTSA No.: M10301Test Program: 2001 NHTSA 35mph NCAPTest Date: 2/22/01**CHEST PEAK DISPLACEMENTS**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	MM	0.3	16.3	-35.4	88.2	0.7	16.1	-22.4	80.2

HEAD REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	8.5	196.8	-60.4	72.1	34.8	182.3	-64.1	80.1
Head CG	Y	G's	2.7	192.2	-7.4	84.3	4.6	183.0	-24.7	87.9
Head CG	Z	G's	20.8	85.3	-1.6	15.6	27.5	81.3	-1.1	11.9
Head CG Resultant	N/A	G's	62.9	72.1			72.5	81.2		

CHEST REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	4.7	255.1	-49.3	81.9	9.0	185.0	-50.6	78.8
Chest CG	Y	G's	2.3	118.5	-3.2	60.7	4.4	42.8	-2.3	96.6
Chest CG	Z	G's	11.0	87.9	-10.1	61.3	11.0	87.9	-2.3	61.3
Chest CG Resultant	N/A	G's	49.5	82.1			50.8	78.8		

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	573.0	49.1	58.6	92.5	769.0	57.1	68.3	99.4

REDUNDANT CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T ¹	T ²	CLIP	T ¹	T ²
Chest CG Redundant	48.6	81.1	84.1	50.1	78.1	81.1

DATA SHEET NO. 9**SEAT BELT PERFORMANCE ASSESSMENT TEST DATA**Test Vehicle: 2001 Dodge Caravan SE MinivanNHTSA No.: M10301Test Program: 2001 NHTSA 35 mph NCAPTest Date: 02/22/01**SEAT BELT PLACEMENT MEASUREMENTS**

Measurement Description	Units	Driver	Passenger
TCI - Dummy CL to Lap/Shoulder Belt Intersect	mm	235	230
PBU - Top surface of reference to belt upper edge	mm	335	290
PBL - Top surface of reference to belt lower edge	mm	260	190
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	746	746
Shoulder belt length as measured on ATD	mm	890	880
Lap belt length as measured on ATD	mm	1010	980
Remainder of belt on reel	mm	680	690
Total belt length for continuous webbing systems	mm	3326	3296

SHOULDER BELT SPOOL-OFF DATA

Measurement Description	Units	Driver	Passenger
As determined mechanically	mm	223.0	265.0
As determined electronically	mm	265.0	319.9

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 Dodge Caravan SE Minivan

NHTSA No.: M10301

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 02/22/01

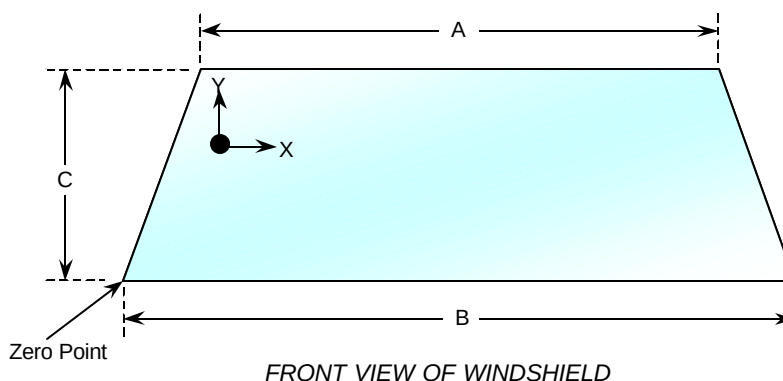
Windshield Mounting Details: Windshield glass is secured to the vehicle frame with a rubber type adhesive. There is no molding that covers the windshield periphery at any point.

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	2375.0	2375.0	100
Right Side	2375.0	2375.0	100
Total	4750.0	4750.0	100



WINDSHIELD DIMENSIONS

Item	Units	Segment Length	Molding Width
A	mm	1250	6
B	mm	1640	18
C	mm	930	6

DATA SHEET NO. 11

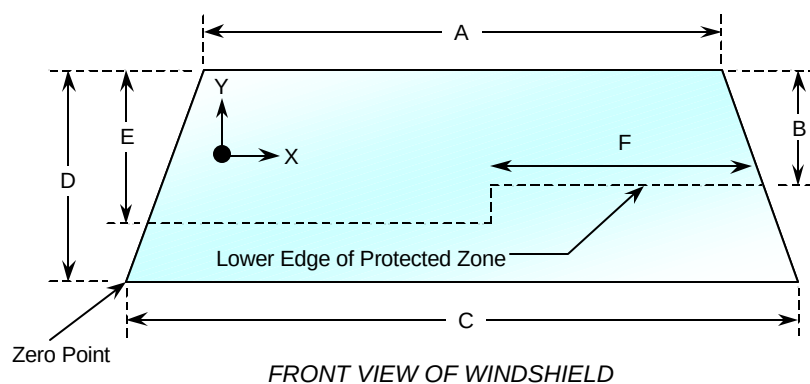
WINDSHIELD ZONE INTRUSION FMVSS 219 (PARTIAL) DATA

Test Vehicle: 2001 Dodge Caravan SE Minivan

NHTSA No.: M10301

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 02/22/01



WINDSHIELD AND PROTECTED ZONE

Item	Units	Value
A	mm	1250
B	mm	506
C	mm	1640
D	mm	930
E	mm	572
F	mm	633

AREA OF PROTECTED ZONE FAILURES

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

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

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

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

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

Test Vehicle: 2001 Dodge Caravan SE Minivan

NHTSA No.: M10301

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 02/22/01

Test Time: 1:21 PM

Temperature at Time of Impact: 18.3 °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

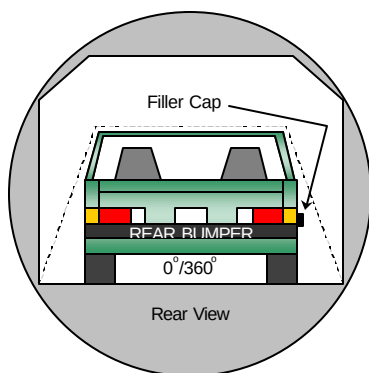
DATA SHEET NO. 13
FMVSS 301 STATIC ROLLOVER DATA SHEET

Test Vehicle: 2001 Dodge Caravan SE Minivan

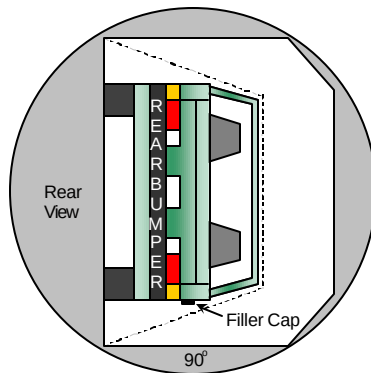
NHTSA No.: M10301

Test Program: 2001 NHTSA 35 mph NCAP

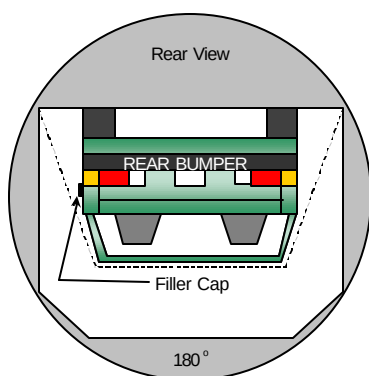
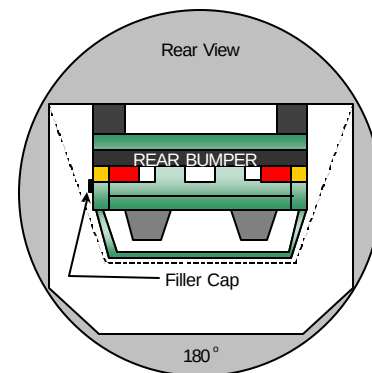
Test Date: 02/22/01



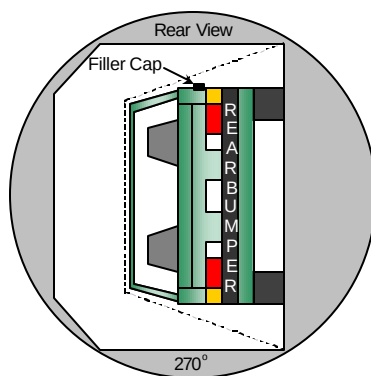
0° TO 90°



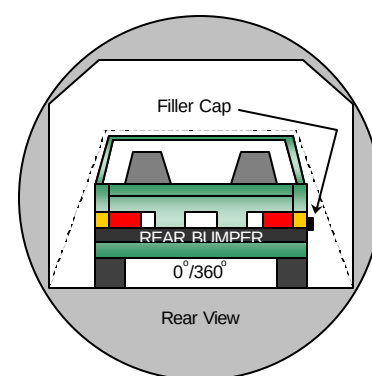
90° TO 180°



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°	82	300	0.0
90° TO 180°	81	300	0.0
180° TO 270°	78	300	0.0
270° TO 360°	82	300	0.0

DATA SHEET NO. 14
VEHICLE MEASUREMENTS

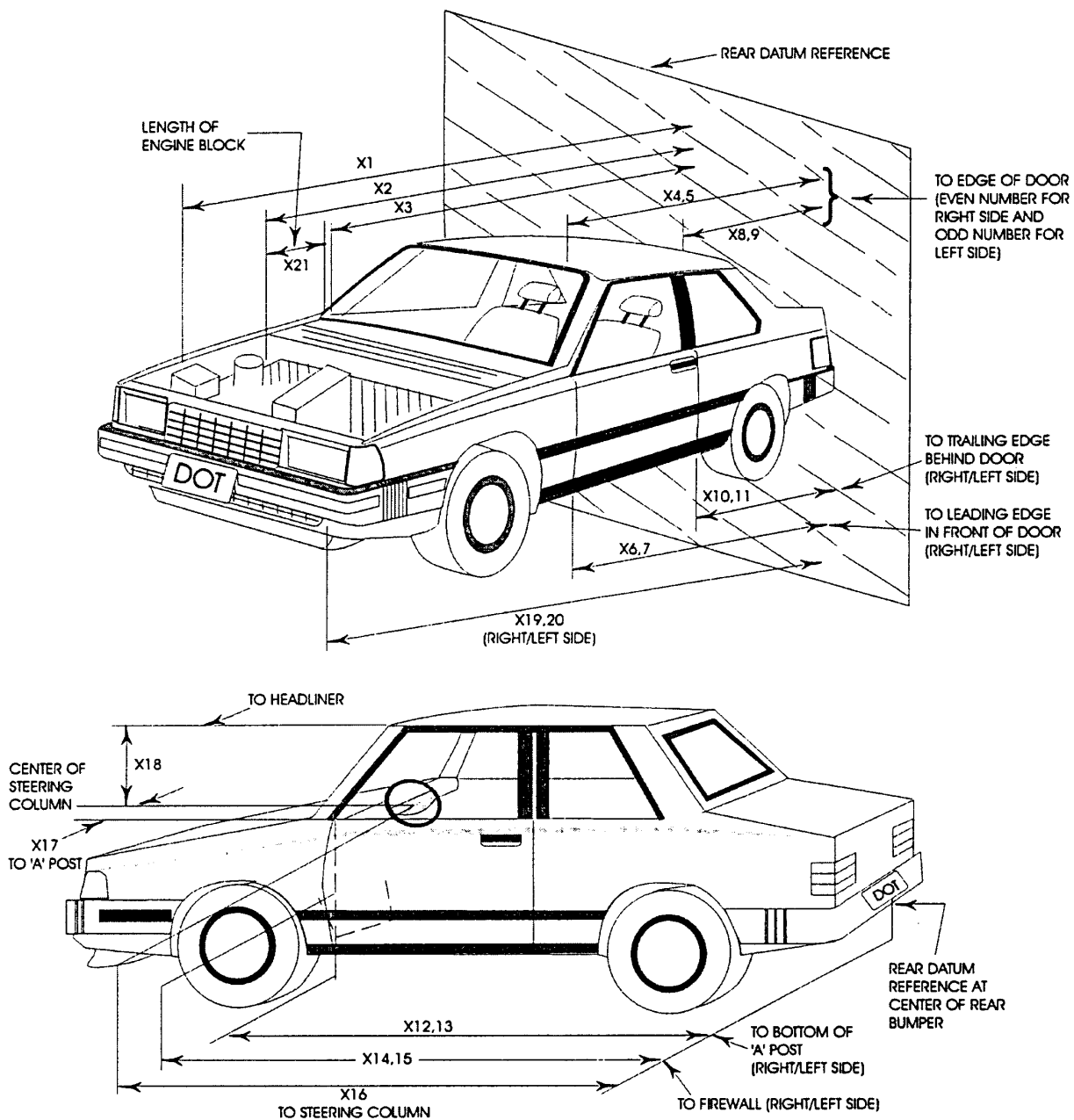
Test Vehicle: 2001 Dodge Caravan SE Minivan

NHTSA No.: M10301

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 02/22/01

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total length of vehicle at centerline	mm	4800	4380	-420
2	RSOV to front of engine	mm	4066	4088	22
3	RSOV to firewall centerline	mm	4035	4018	-17
4	RSOV to leading edge of right door	mm	3392	3392	0
5	RSOV to leading edge of left door	mm	3382	3383	1
6	RSOV to lower leading edge of right door	mm	3358	3358	0
7	RSOV to lower leading edge of left door	mm	3351	3351	0
8	RSOV to upper trailing edge of right door	mm	2358	2356	-2
9	RSOV to upper trailing edge of left door	mm	2348	2349	1
10	RSOV to lower trailing edge of right door	mm	2358	2357	-1
11	RSOV to lower trailing edge of left door	mm	2352	2351	-1
12	RSOV to bottom of right 'A' pillar	mm	3367	3369	2
13	RSOV to bottom of left 'A' pillar	mm	3355	3358	3
14	RSOV to firewall on right side	mm	3904	3948	44
15	RSOV to firewall of left side	mm	3898	3884	-14
16	RSOV to steering column	mm	2943	2983	40
17	Center of steering column to left 'A' pillar	mm	467	457	-10
18	Center of steering column to headlining	mm	452	460	8
19	RSOV to right side of front bumper	mm	4499	4131	-368
20	RSOV to left side of front bumper	mm	4499	4184	-315
21	Length of engine block	mm	478	478	0
RD	RSOV to right side of dash panel	mm	3205	3204	-1
CD	RSOV to center of dash panel	mm	3048	3035	-13
LD	RSOV to left side of dash panel	mm	3152	3152	0



DATA SHEET NO. 15
CAMERA LOCATIONS

Test Vehicle: 2001 Dodge Caravan SE Minivan

NHTSA No.: M10301

Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 02/22/01

No.	Camera View	Location (mm)			Angle (Deg.)	Film Plane to Head	Lens (mm)	Speed (fps)
		X	Y	Z				
1	Right Side, Real Time	3454	10973	1245	0	1651	Zoom	24
2	Left Side, No. 1	1955	-8250	880	-1	7900	13	1030
3	Left Side, No. 2	1455	-8250	1460	-4	7900	35	1010
4	Left Side, No. 3	6495	-10580	4640	-16	11460	70	1010
5	Left Side, No. 4	1455	-8250	3100	-16	8040	19	980
6	Left Side, No. 5	Did Not Run						
7	Right Side, No. 1	1955	8150	730	-1	8590	19	1020
8	Right Side, No. 2	1655	8150	1450	-4	8560	35	1010
9	Right Side, No. 3	7855	8900	2800	-9	N/A	80	960
10	Right Side, No. 4	Did Not Run						
11	Overhead Overall	251	0	4460	-86	N/A	13	1040
12	Front View, Driver	-525	-380	2590	-43	N/A	12	960
13	Front View, Passenger	-525	380	2590	-44	N/A	13	1120
14	Pit Camera, Engine	580	0	-1360	90	N/A	13	1020
15	Pit Camera, Fuel Tank	Did Not Run						
16	Driver Belt	3070	-300	1440	-16	880	13	270
17	Passenger Belt	3070	300	1440	-16	1120	13	276
18	Left Side Extra	Did Not Run						

X - Barrier Face Y - Monorail Centerline Z - Ground

DATA SHEET NO. 16 **PHOTOGRAPHIC REFERENCE TARGET LOCATIONS**

Test Vehicle: 2001 Dodge Caravan SE Minivan

NHTSA No.: M10301

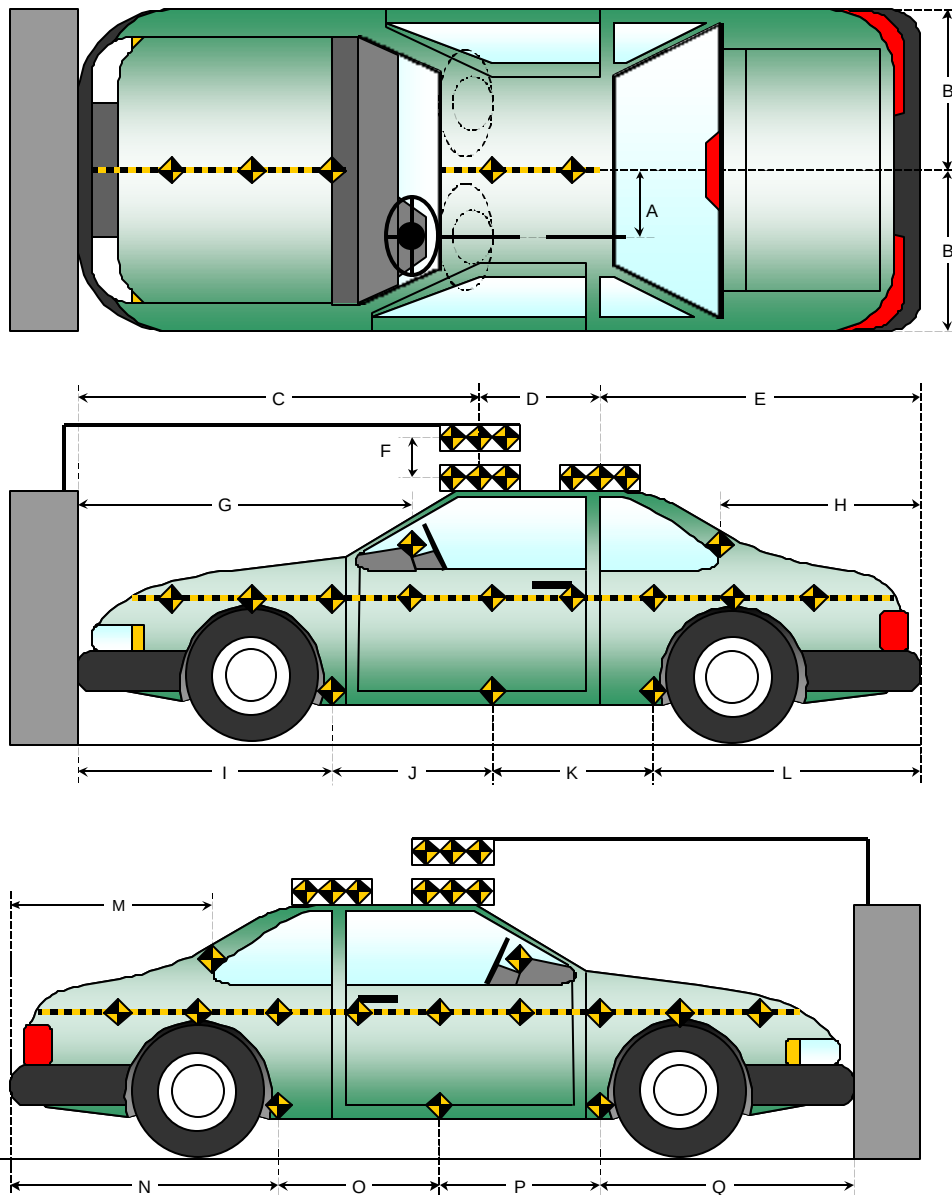
Test Program: 2001 NHTSA 35 mph NCAP

Test Date: 02/22/01

All Dimensions

in mm

Item	Value
A	439
B	969
C	2108
D	610
E	2098
F	155
G	1637
H	1325
I	1496
J	932
K	932
L	1449
M	1335
N	1416
O	948
P	948
Q	1490



DATA SHEET NO. 17
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2001 Dodge Caravan SE Minivan

NHTSA No.: M10301

Test Program: 2001 NHTSA 35 mph NCAP

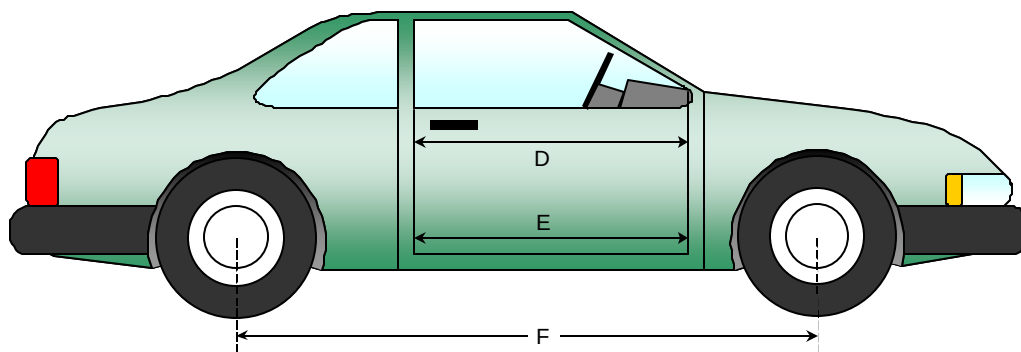
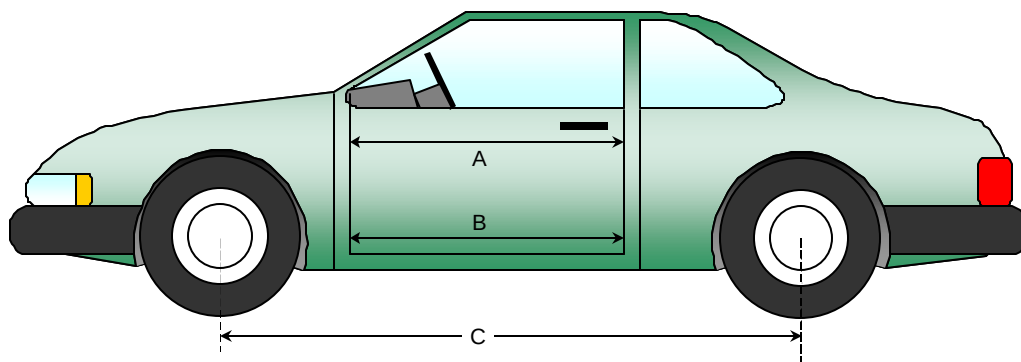
Test Date: 02/22/01

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	949	942	-7
B	Left Side Lower	mm	939	941	2
D	Right Side Upper	mm	958	959	1
E	Right Side Lower	mm	941	932	-9

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheel base	mm	2850	2801	-49
F	Right Side Wheel base	mm	2850	2716	-134



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

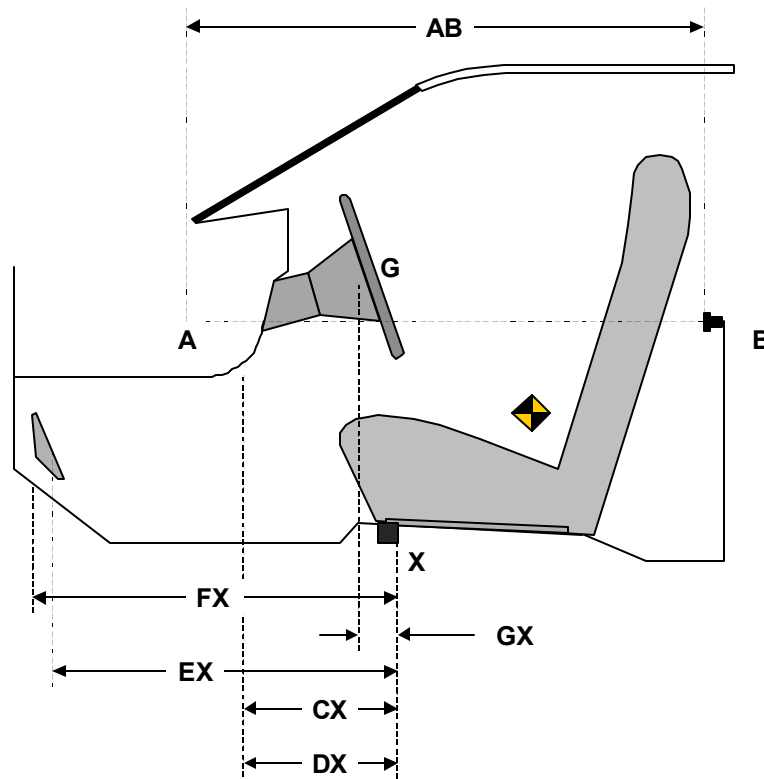
Test Vehicle: 2001 Dodge Caravan SE Minivan
 Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10301
 Test Date: 02/22/01

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside window jam)	mm	949	942	-7
CX	Left Knee Bolster to X	mm	323	367	44
DX	Right Knee Bolster to X	mm	376	384	8
EX	Brake Pedal to X	mm	546	527	-19
FX	Foot Rest to X	mm	626	607	-19
GX	Center of Steering Wheel Hub to X	mm	65	59	-6

X = Left Front Seat Outboard Anchor Bolt Head

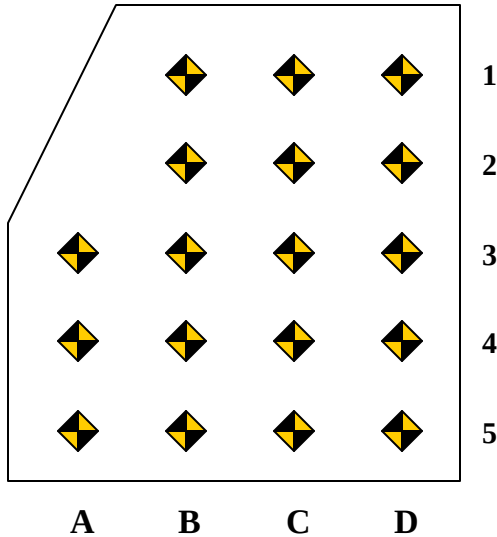


DRIVER COMPARTMENT

DATASHEET NO. 17...(CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2001 Dodge Caravan SE Minivan
 Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10301
 Test Date: 02/22/01



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		671	673	674		565	561	547		-106	-112	-127
2		571	574	574		525	520	488		-46	-54	-86
3	473	473	474	473	426	426	419	417	-47	-47	-55	-56
4	376	376	375	372	327	327	325	320	-49	-49	-50	-52
5	271	274	273	273	226	228	228	226	-45	-46	-45	-47

DRIVER FLOOR PAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1		41	42	53		5	11	29		-36	-31	-24
2		-14	-16	9		-60	-59	-43		-46	-43	-52
3	-20	-20	-19	-22	-60	-71	-81	-115	-40	-51	-62	-93
4	-13	-14	-11	-10	-56	-59	-79	-81	-43	-45	-68	-71
5	-14	-12	-11	-14	-56	-61	-75	-76	-42	-49	-64	-62

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

Test Vehicle: 2001 Dodge Caravan SE Minivan
 Test Program: 2001 NHTSA 35 mph NCAP

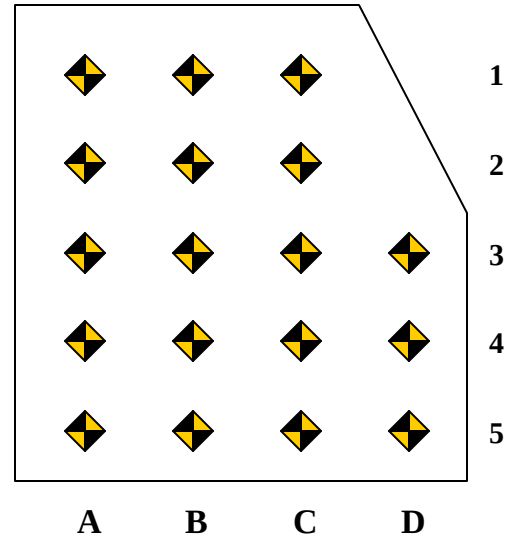
NHTSA No.: M10301
 Test Date: 02/22/01

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	664	654	651		562	536	539		-102	-118	-112	
2	580	572	567		517	527	509		-63	-45	-58	
3	482	472	468	473	414	428	426	427	-68	-44	-42	-46
4	376	371	368	370	326	326	326	326	-50	-45	-42	-44
5	275	271	268	270	227	226	226	226	-48	-45	-42	-44

PASSENGER FLOOR PAN Z-AXIS

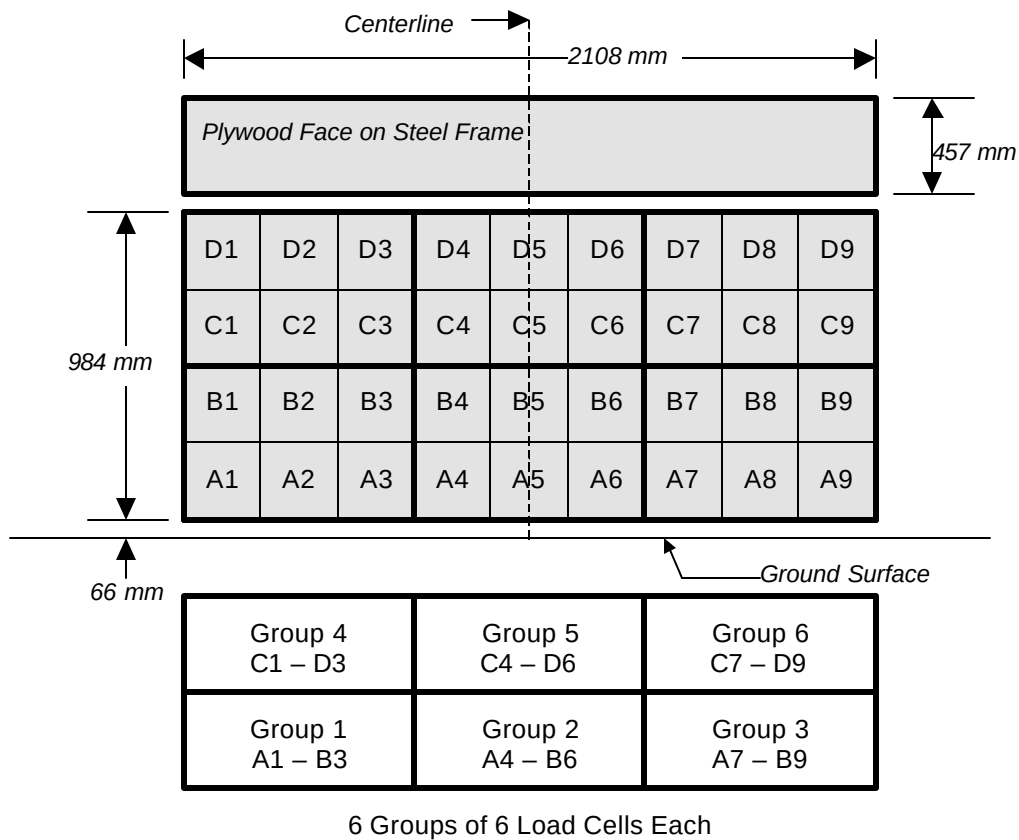
	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	44	29	39		-21	18	55		-65	-11	16	
2	-21	-16	-21		-94	-68	-23		-73	-52	-2	
3	-26	-24	-24	-26	-99	-75	-70	-72	-73	-51	-46	-46
4	-16	-16	-14	-16	-68	-60	-59	-63	-52	-44	-45	-47
5	-17	-19	-20	-17	-48	-58	-65	-64	-31	-39	-45	-47

DATA SHEET NO. 18
FIXED BARRIER TYPE

Test Vehicle: 2001 Dodge Caravan SE Minivan
 Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10301
 Test Date: 02/22/01

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 Dodge Caravan SE Minivan
Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: M10301
Test Date: 02/22/01

VEHICLE INFORMATION

VIN: 1B4GP25B01B134574
Vehicle Size Category: Minivan

Wheel base (mm): 2695
Test Weight (kg): 1950

ACCELEROMETER DATA

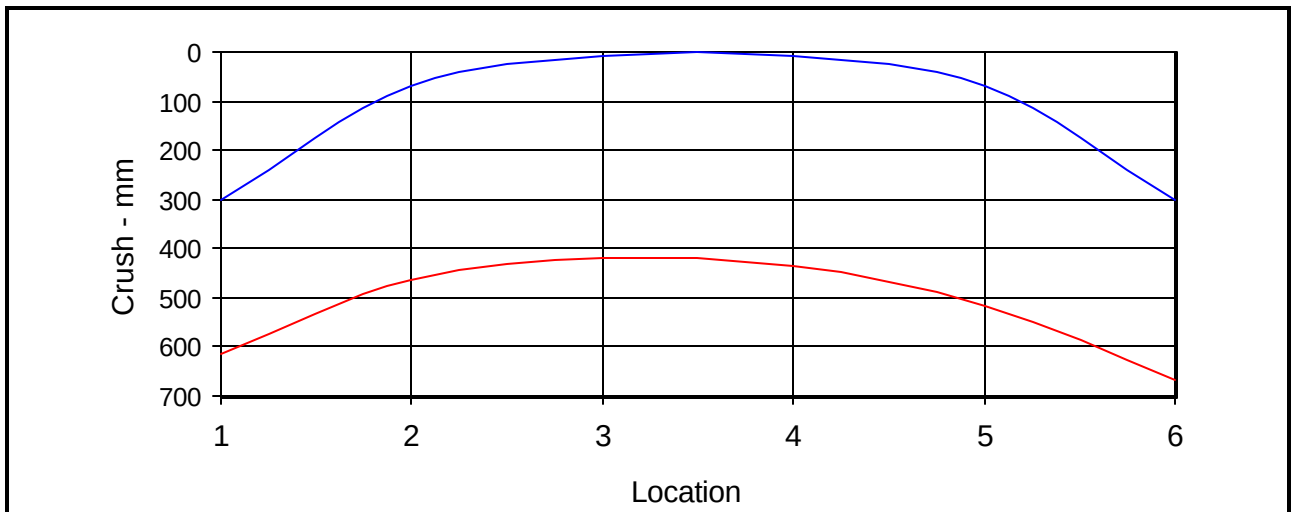
Accelerometer Location: Left rear floor pan
Cal. Procedure/Interval: 6 months / drop test
Integration Algorithm: NHTSA Standard
Impact Velocity (km/h): 55.61
Velocity Change (km/h): 63.25

Linearity: Good
Time of Separation (msec): 87.7

CRUSH PROFILE

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

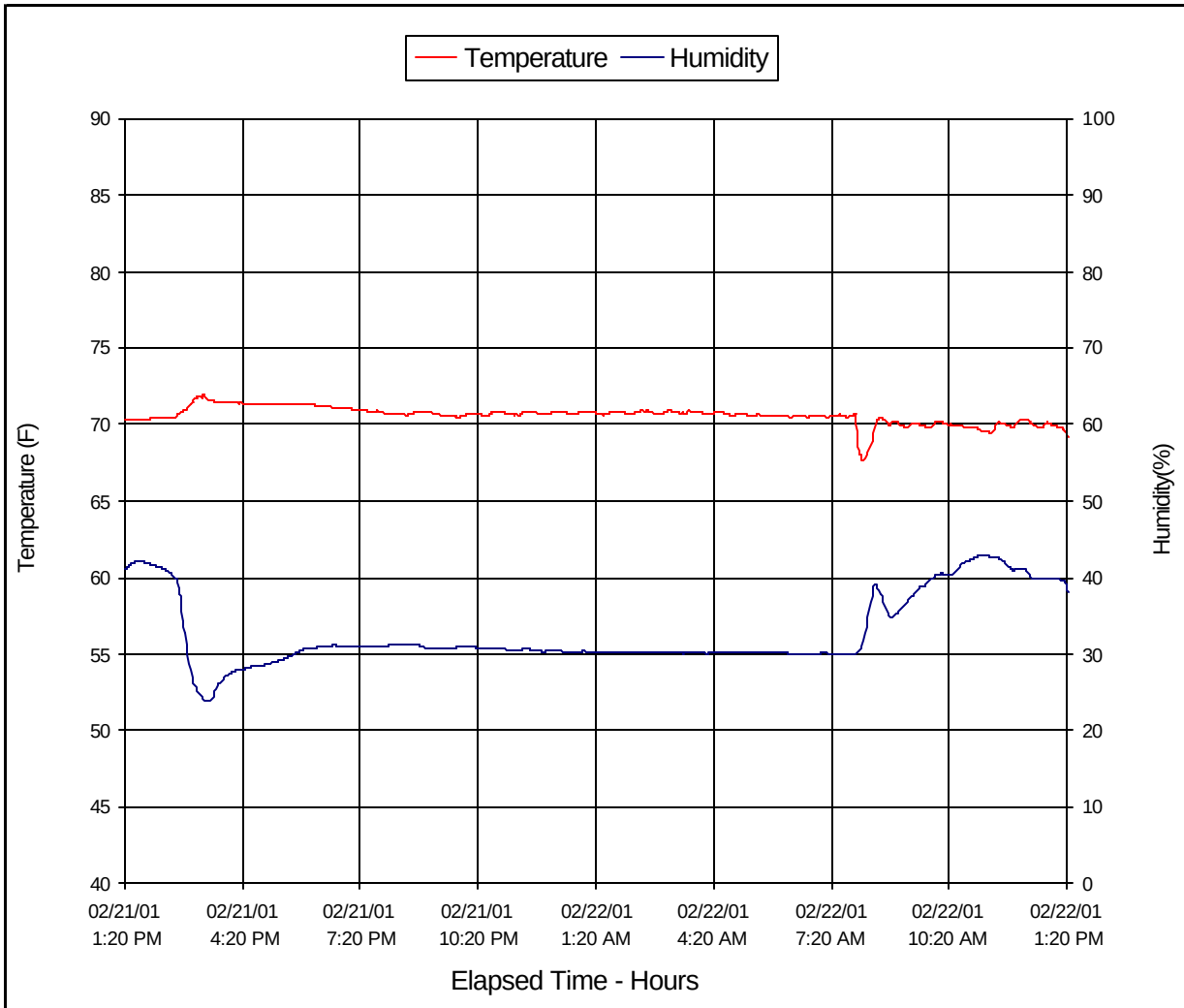
No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	301	616	-315
C2	Crush zone 2 on left side	mm	69	465	-396
C3	Crush zone 3 on left side	mm	8	421	-413
C4	Crush zone 4 on right side	mm	9	435	-426
C5	Crush zone 5 on right side	mm	69	515	-446
C6	Crush zone 6 at right side	mm	301	669	-368



DATA SHEET NO. 20
DUMMY/ VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2001 Chevrolet Tahoe LS SUV
Test Program: 2001 NHTSA 35 mph NCAP

NHTSA No.: GM0004
Test Date: 02/08/01



APPENDIX A
PHOTOGRAPHS

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Figure A-1: Right Front, as Received



Figure A-2: Left Rear, as Received

MFG BY DAIMLERCHRYSLER CORPORATION DATE OF MFR 1-01 GVWR 2450 KG(05400 LB)

GVWR FRONT	WITH TIRES	RIMS AT	COLD
1293 KG(2850 LB)	215/70R15 A/S	15X6.5	248 KPA(36 PSI)
GVWR REAR	WITH TIRES	RIMS AT	COLD
1293 KG(2850 LB)	215/70R15 A/S	15X6.5	248 KPA(36 PSI)

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

VIN: 1B4GP25B01B134574 TYPE: MPV SINGLE X DUAL



MDH: 010910 371AA PNT:PQW VEHICLE MADE IN U.S.A. TRM:K5L5 4648503

Figure A-3: Vehicle Certification Label

MFD BY DAIMLERCHRYSLER
CORPORATION

DATE OF MFR
1-01

GVWR
2450 KG(05400 LB)

GVWR FRONT

WITH TIRES

RIMS AT

COLD

1293 KG(2850 LB)

215/70R15 A/S

15X6.5

248 KPA(36 PSI)

GVWR REAR

WITH TIRES

RIMS AT

COLD

1293 KG(2850 LB)

215/70R15 A/S

15X6.5

248 KPA(36 PSI)

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

VIN: 1B4GP25B01B134574

TYPE:

MPV

SINGLE X DUAL



MDH:

010910 371AA PNT:PQW

VEHICLE MADE IN U.S.A.

TRM:K5L5

4648503

Figure A-4: Vehicle Tire Label



Figure A-5: Front View, Pre-Test



Figure A-6: Front View, Post-Test



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



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



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



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



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



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



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



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

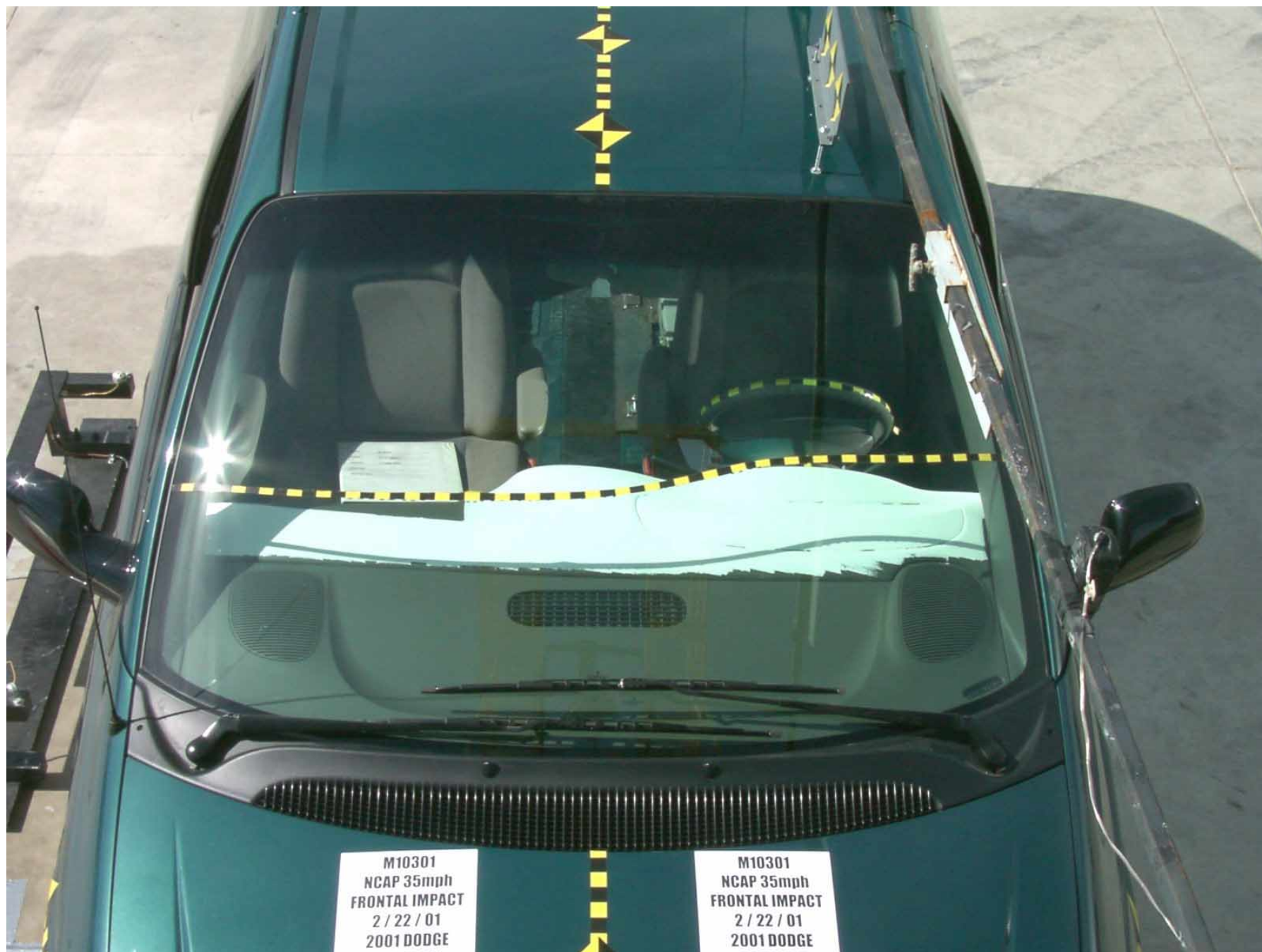


Figure A-15: Windshield, Pre-Test



Figure A-16: Windshield, Post-Test

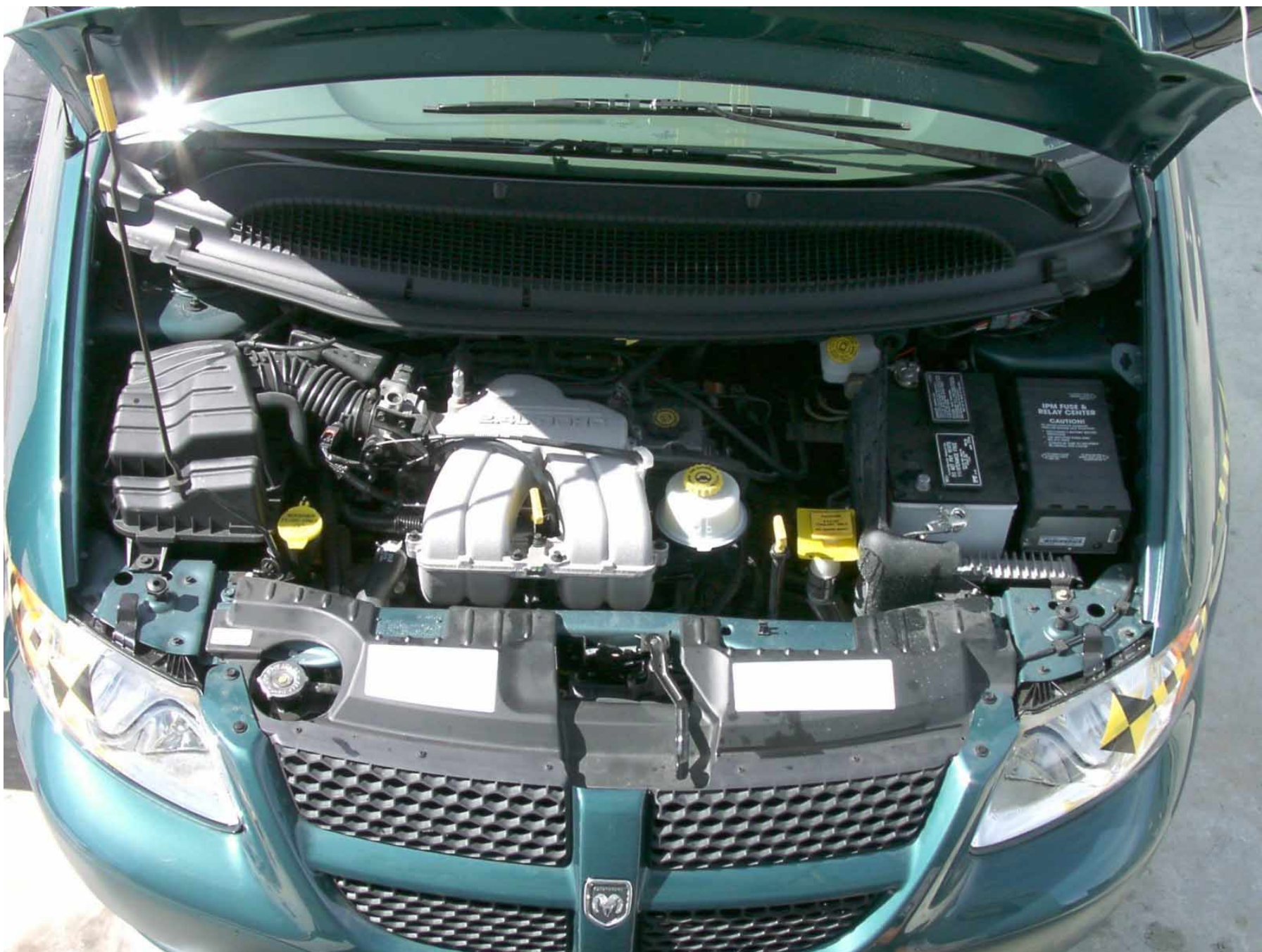


Figure A-17: Engine Compartment, Pre-Test



Figure A-18: Engine Compartment, Post-Test



Figure A-19: Fuel Cap, Pre-test



Figure A-20: Fuel Cap, Post-Test

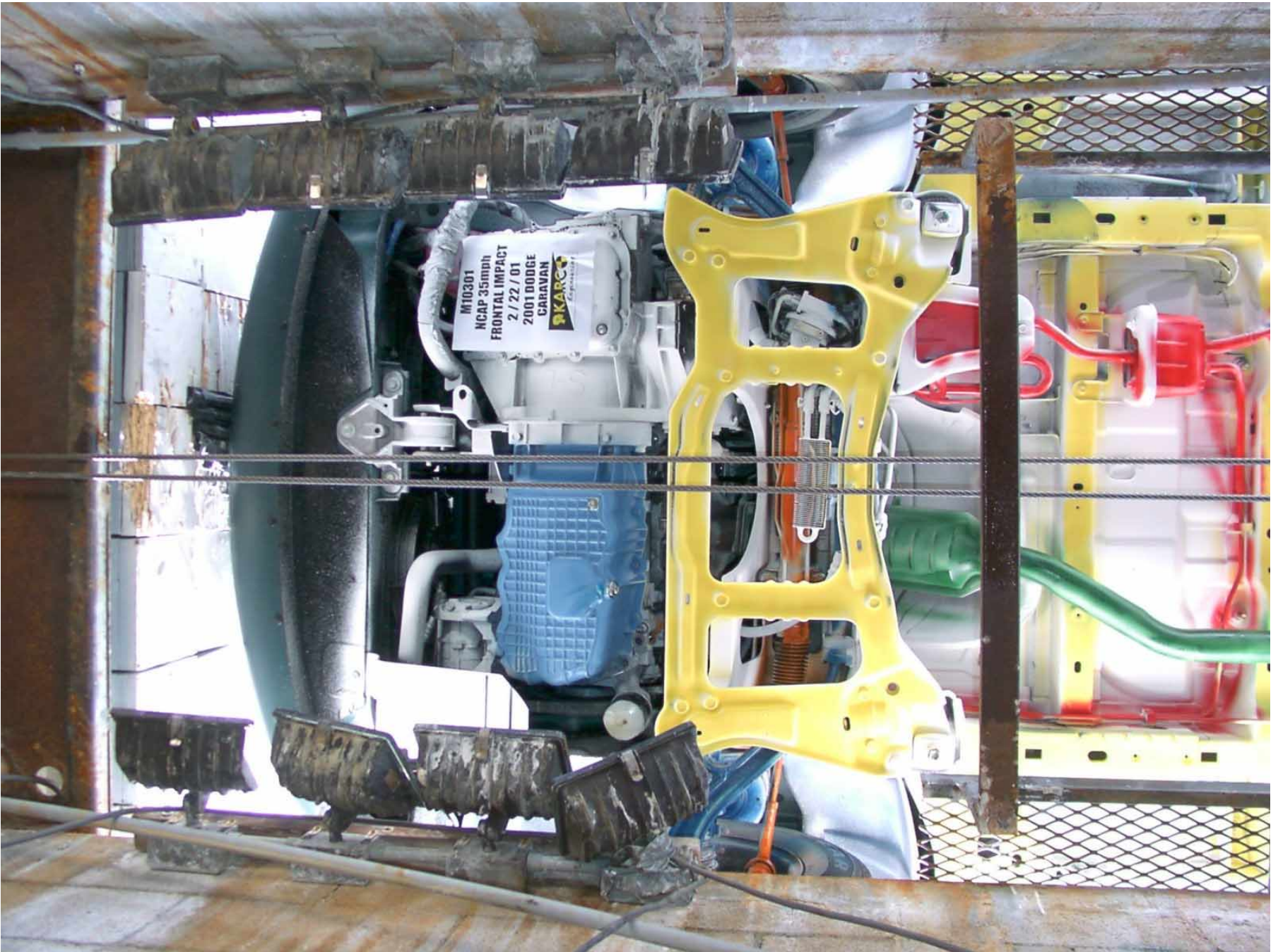


Figure A-21: Front Underside, Pre-Test

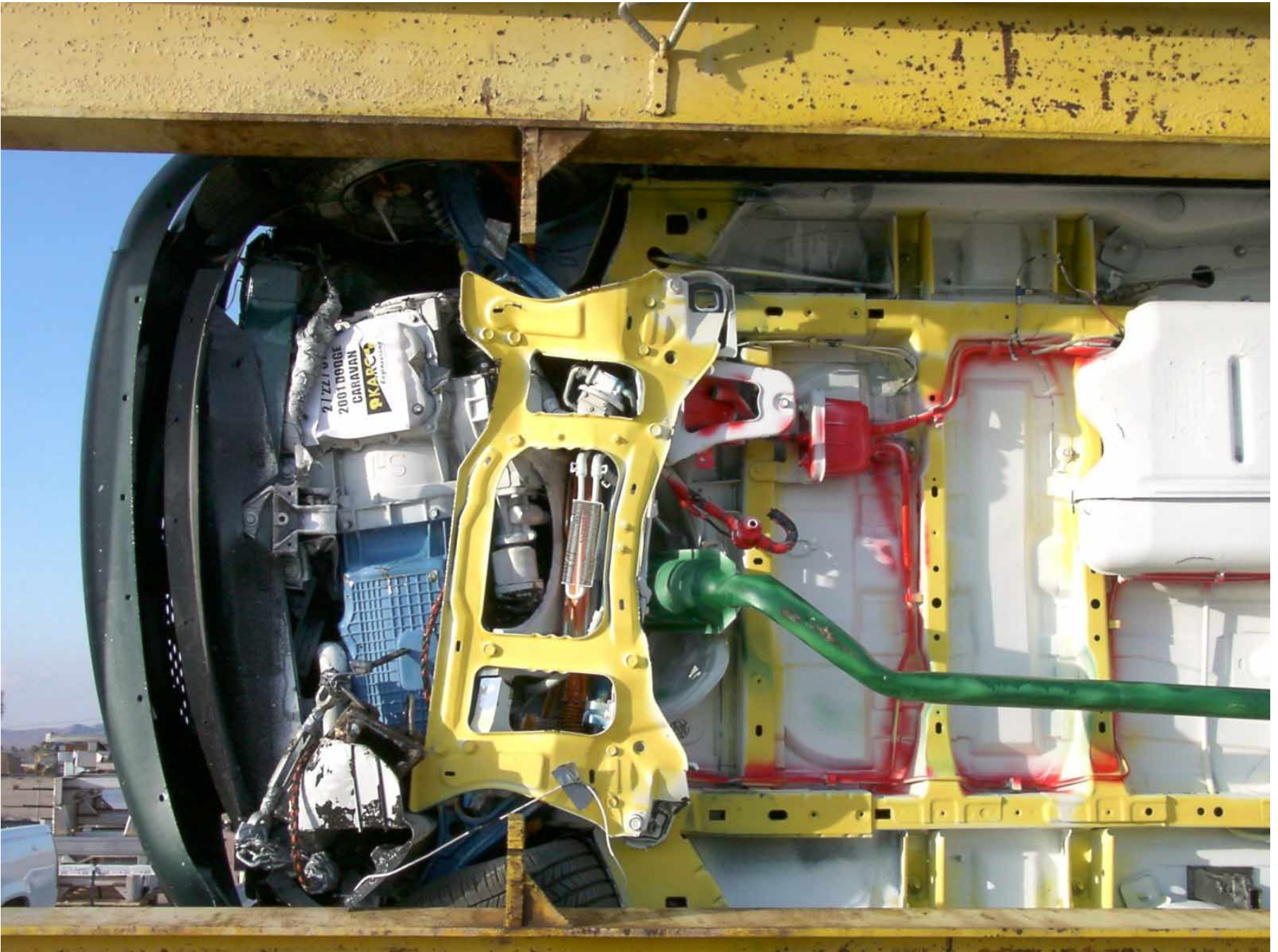


Figure A-22: Front Underside, Post-Test

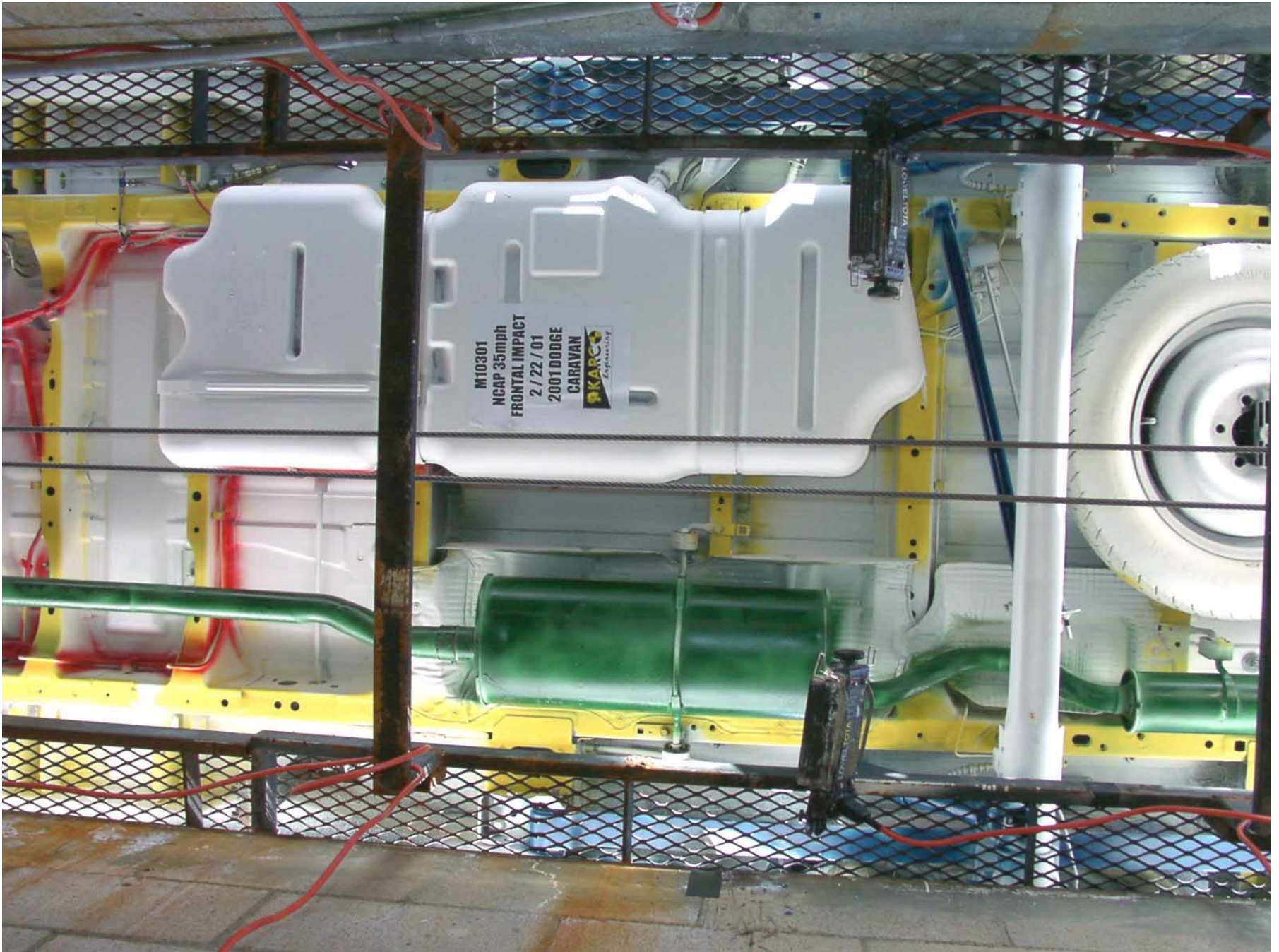


Figure A-23: Rear Underside, Pre-Test

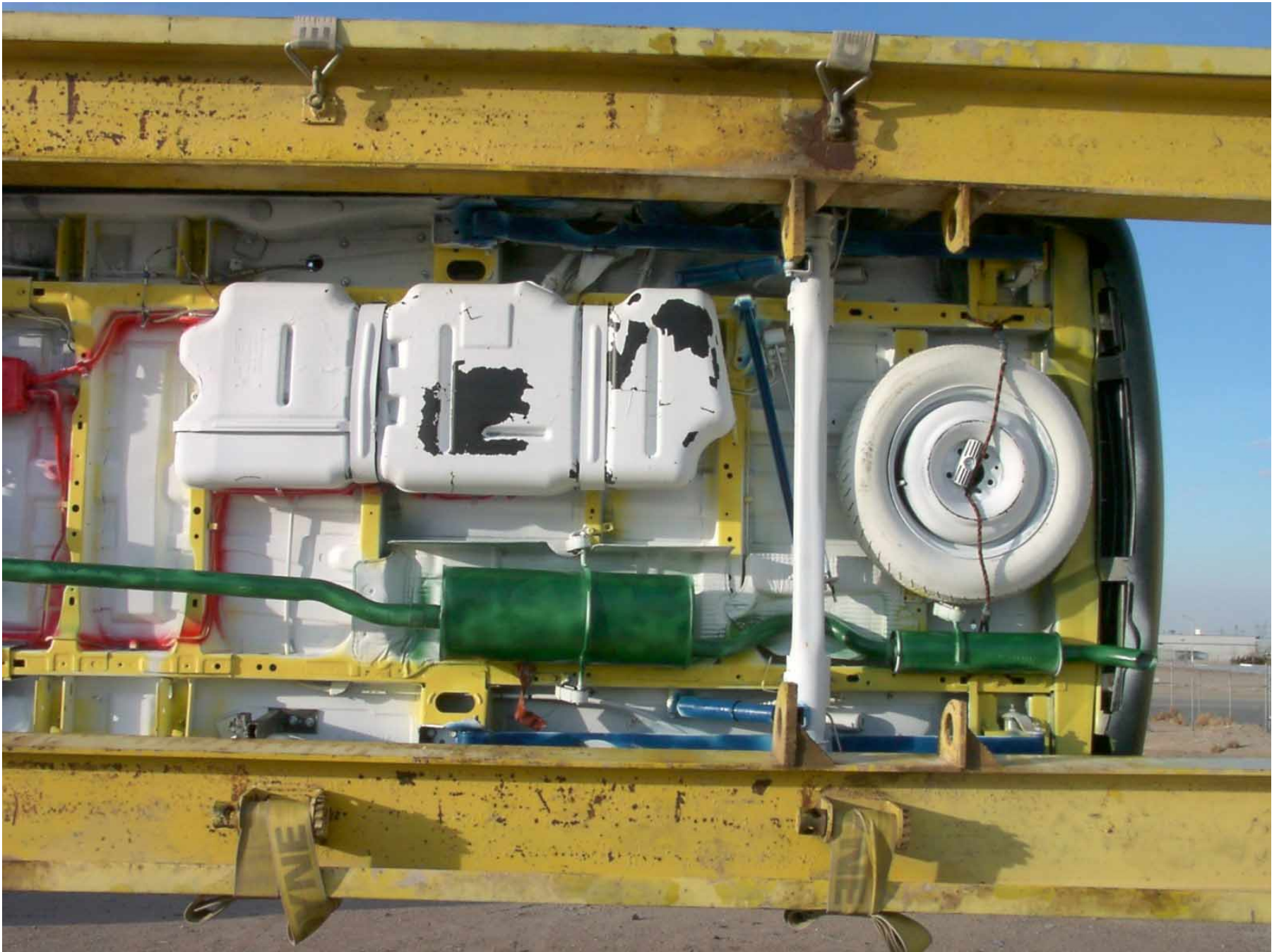


Figure A-24: Rear Underside, Post-Test



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



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



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



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



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



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



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



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

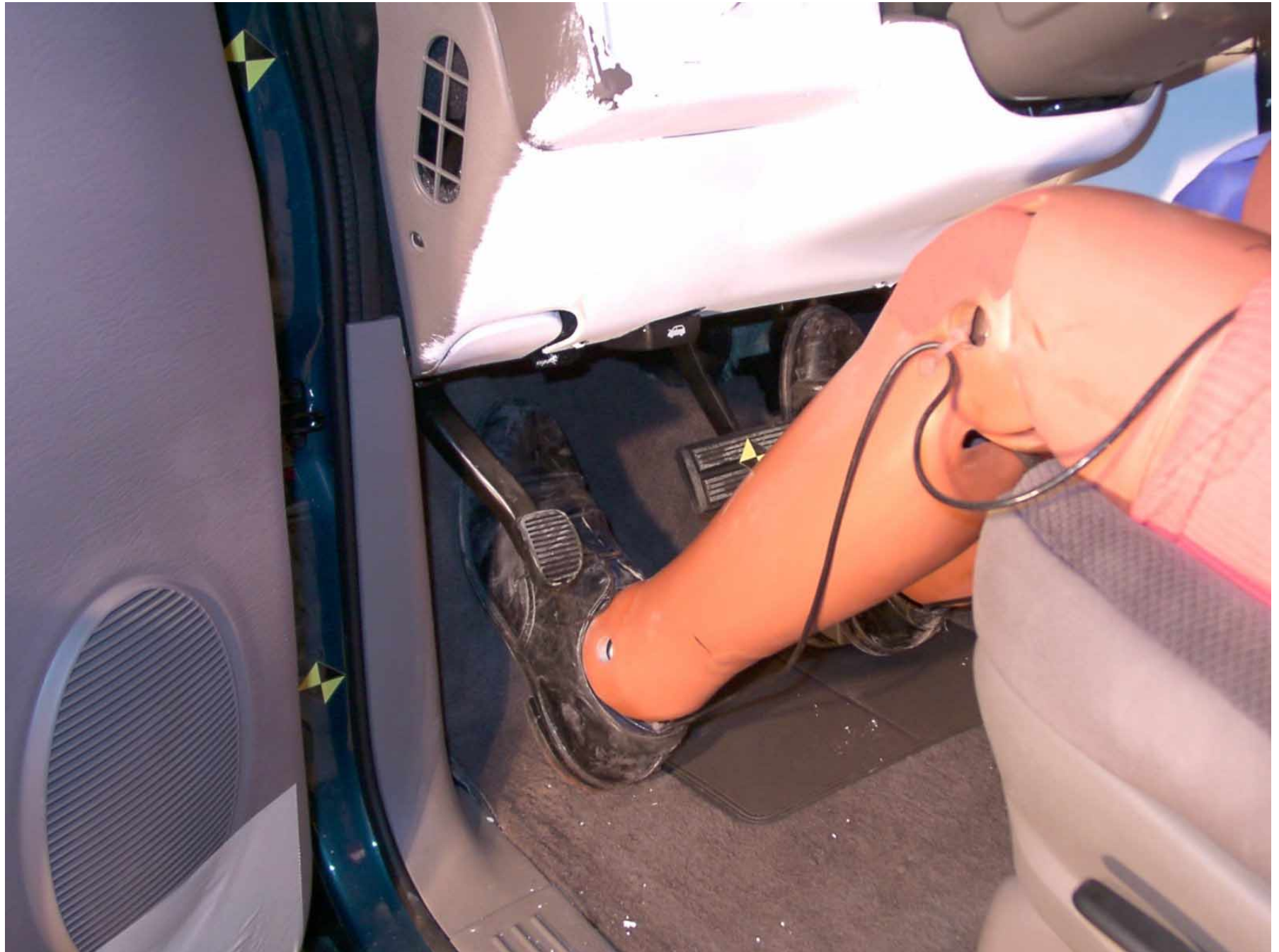


Figure A-33: Driver Dummy Feet, Pre-Test



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



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



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



Figure A-37: Driver Side Floor Pan, Pre-Test



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



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



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

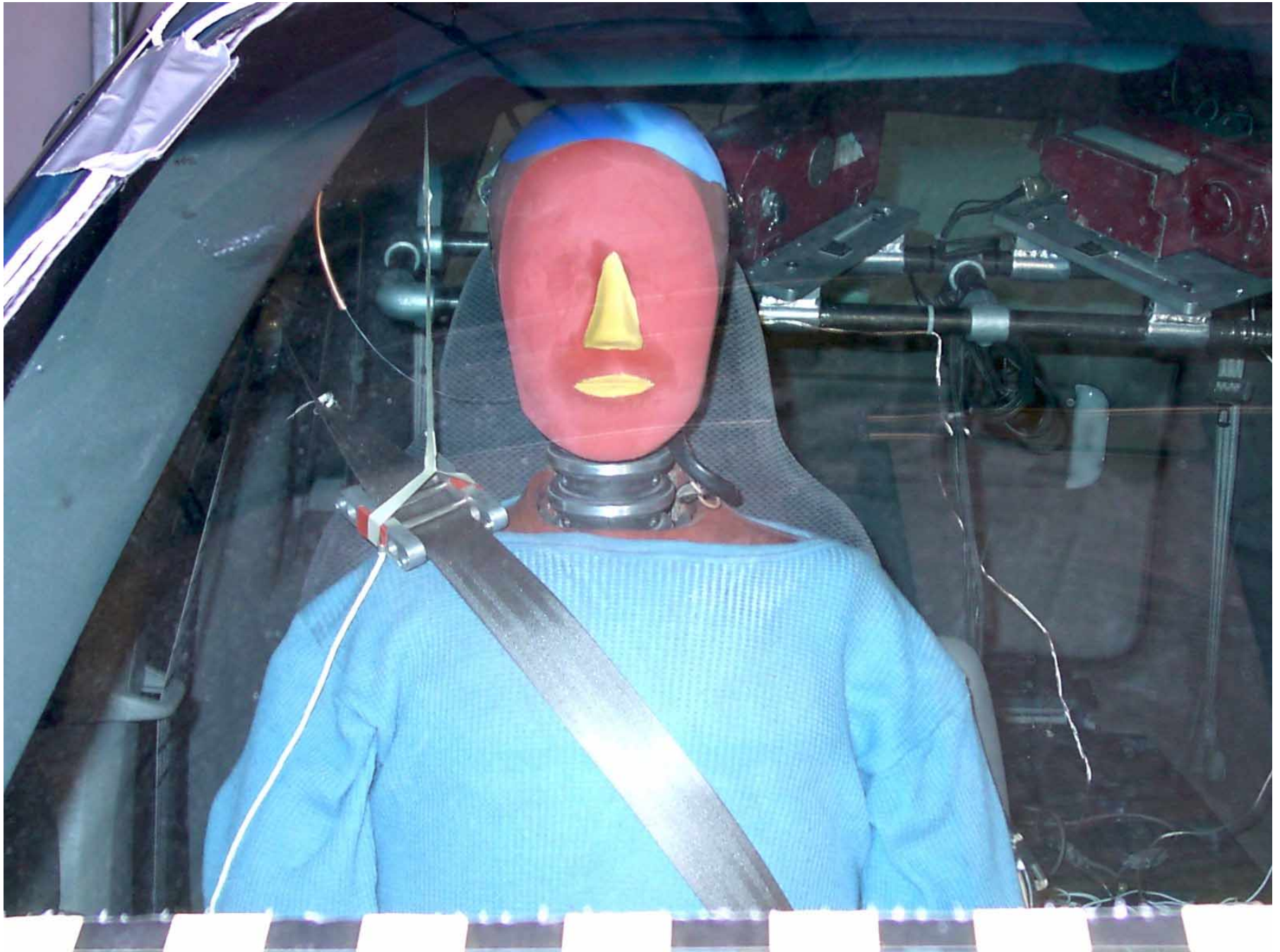


Figure A-41: Passenger Dummy Front View, Pre-Test



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



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



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



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



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



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



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



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



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



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



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



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



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



Figure A-55: Passenger Head, Post-Test

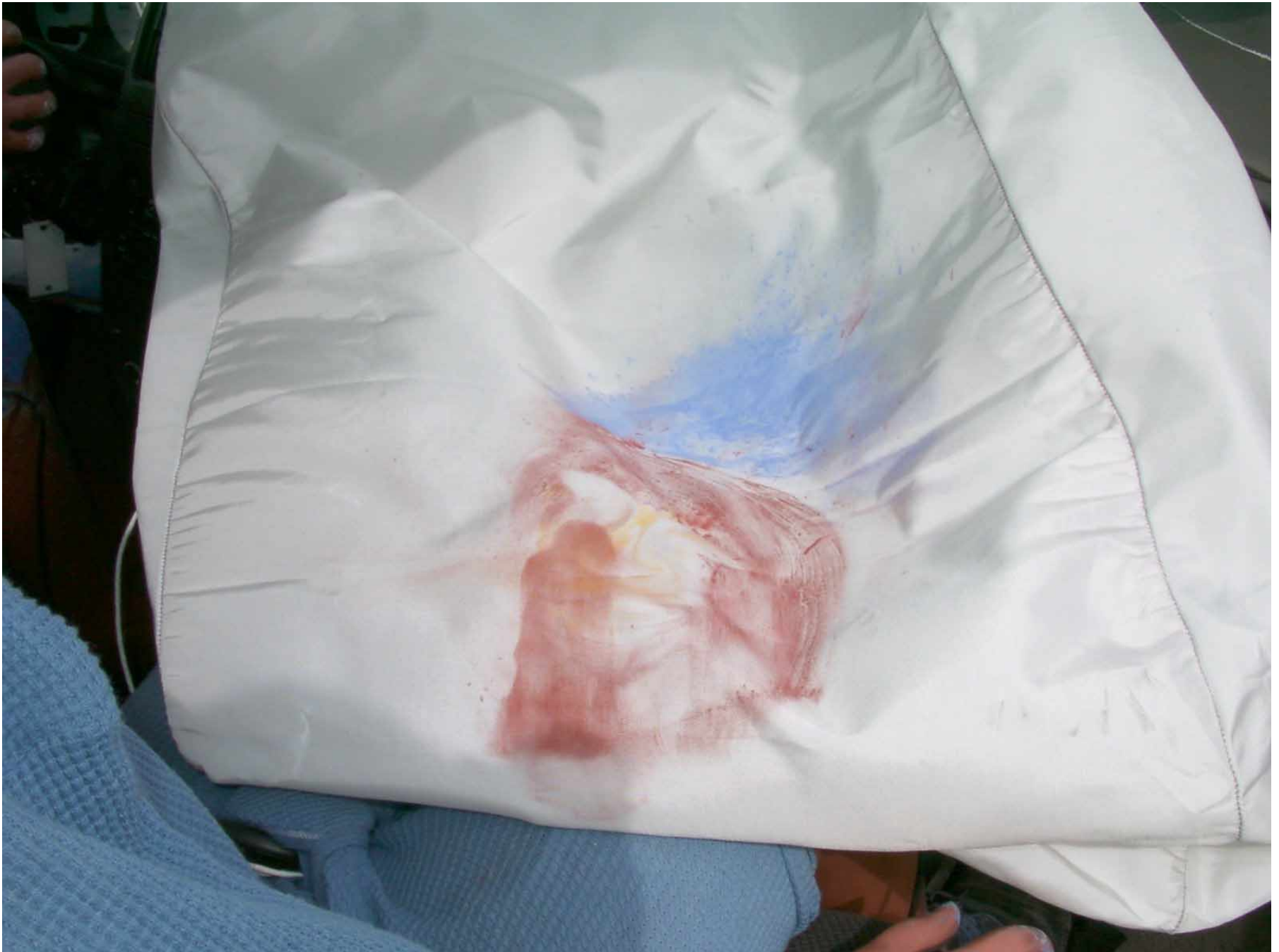


Figure A-56: Passenger Dummy Contact, Post-Test



Figure A-57: Vehicle on Rollover Device



Figure A-58: Vehicle During Impact

APPENDIX B

DUMMY AND VEHICLE RESPONSE DATA TRACES

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B-46 Driver Left Lower Tibia Moment X	B-46
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B-48 Driver Left Lower Tibia Force Z	B-48
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B-52 Driver Left Foot Aft X	B-52
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B-61 Driver Shoulder Belt Elongation	B-61

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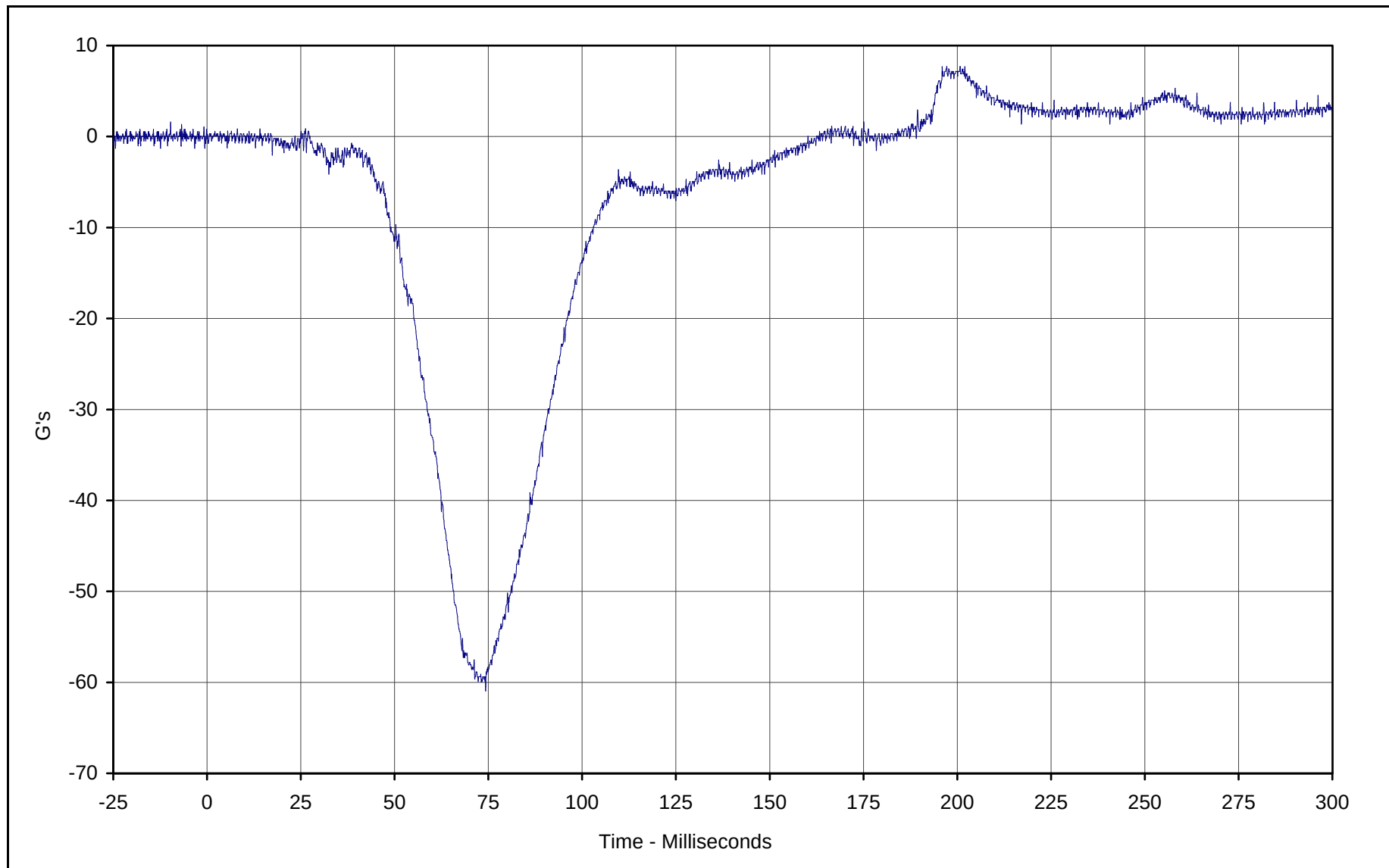
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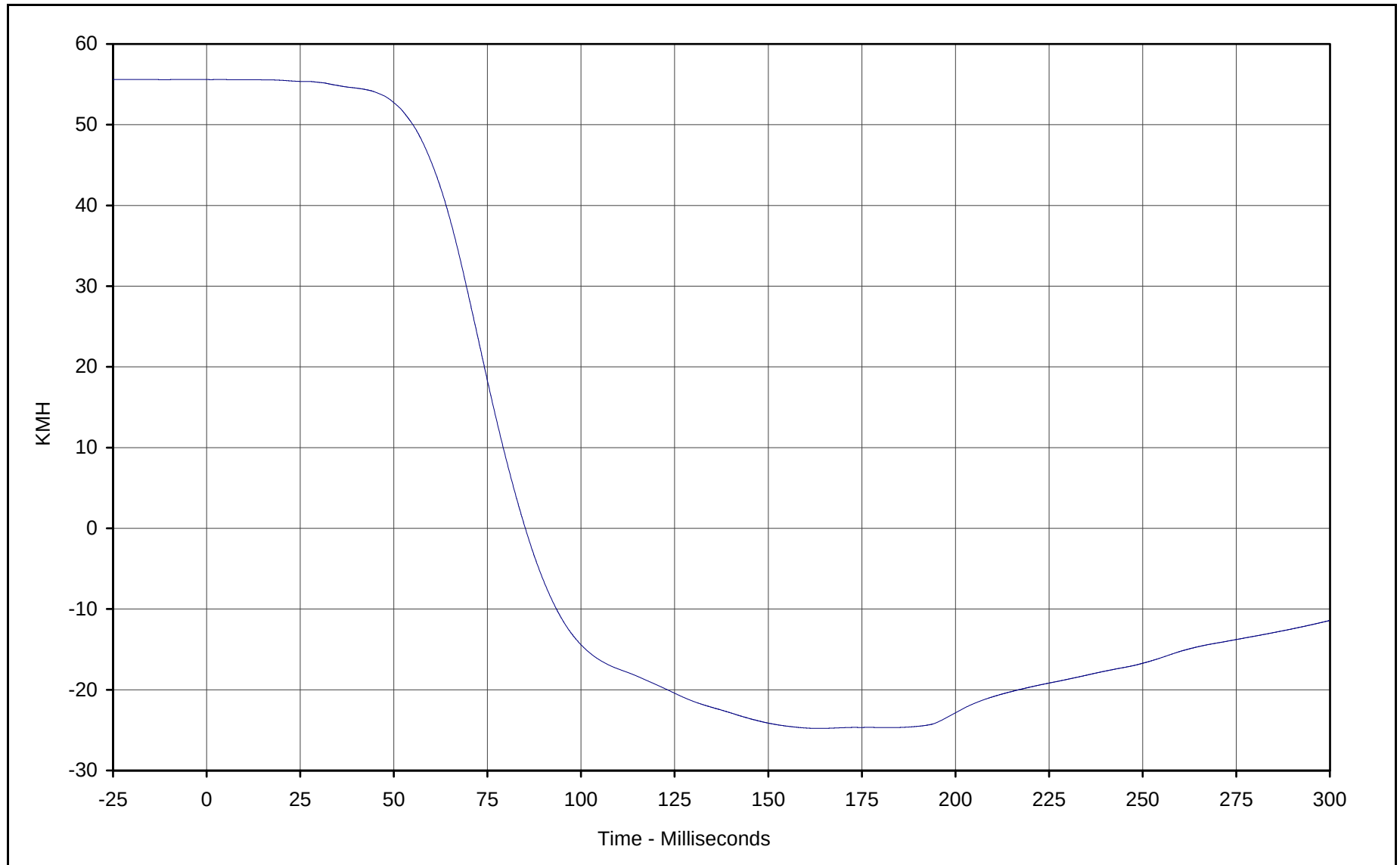
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Curve Description: Driver Head Primary X
Maximum Value: 7.7 at 196.0 Milliseconds
Minimum Value: -61.0 at 74.3 Milliseconds
SAE Filter Class: 1000
Date of Test: 2/22/01
Curve Number: FIL-001

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan

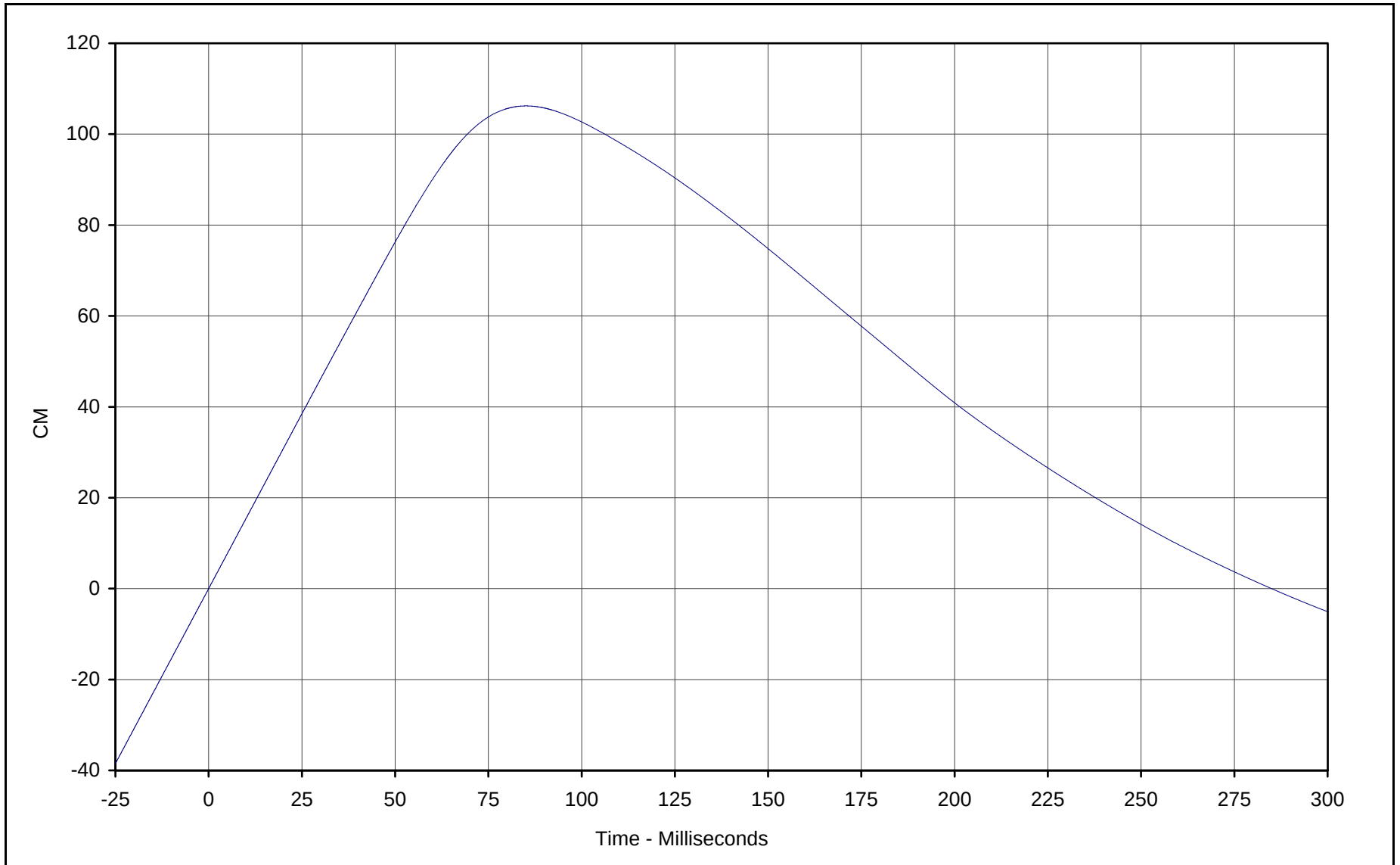




Curve Description: Driver Head Primary X Velocity
Maximum Value: 55.6 at 3.7 Milliseconds
Minimum Value: -24.8 at 163.3 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: IN1-001

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan

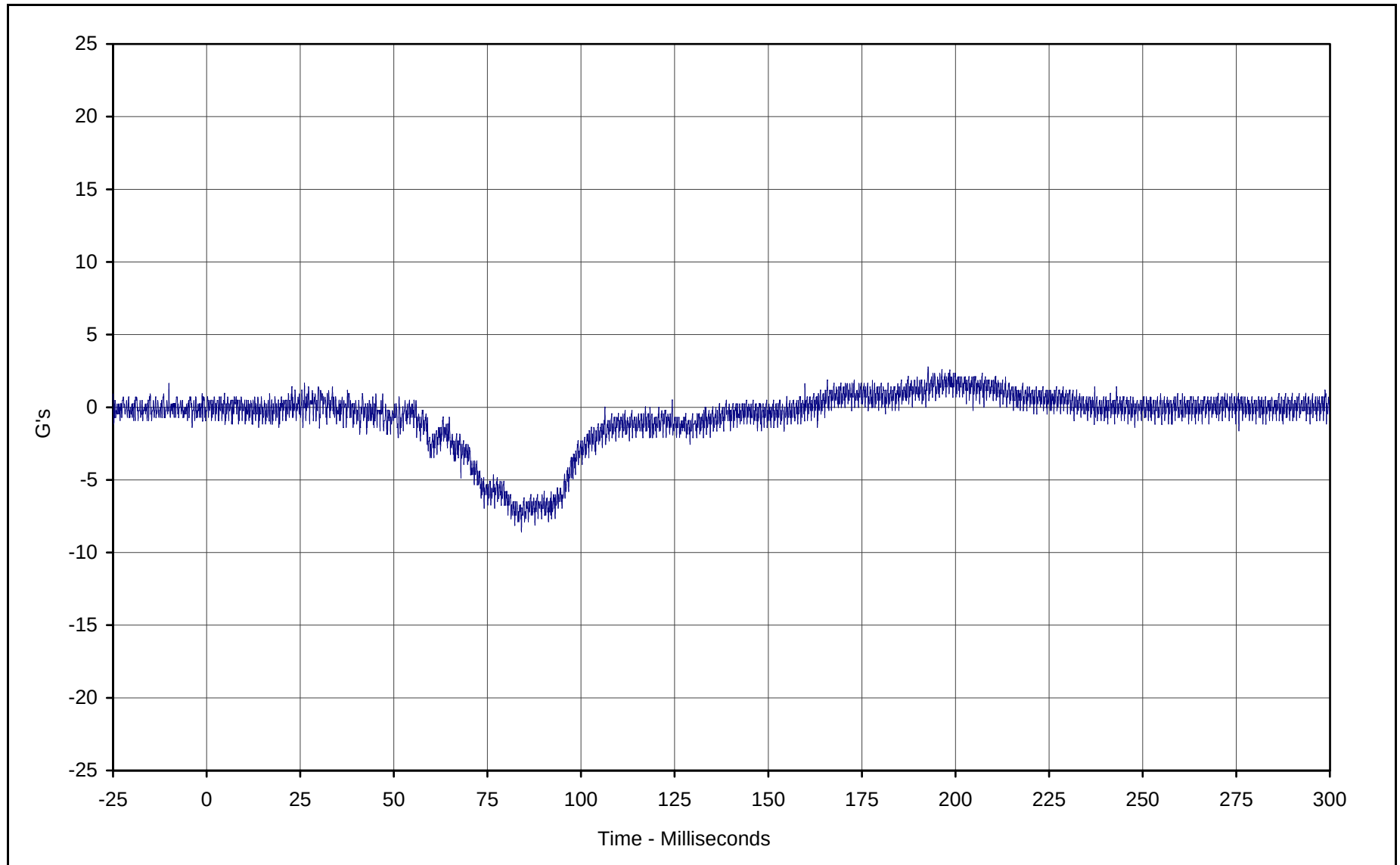




Curve Description: Driver Head Primary X Displ.
Maximum Value: 106.2 at 85.1 Milliseconds
Minimum Value: -5.0 at 299.9 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: IN2-001

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan

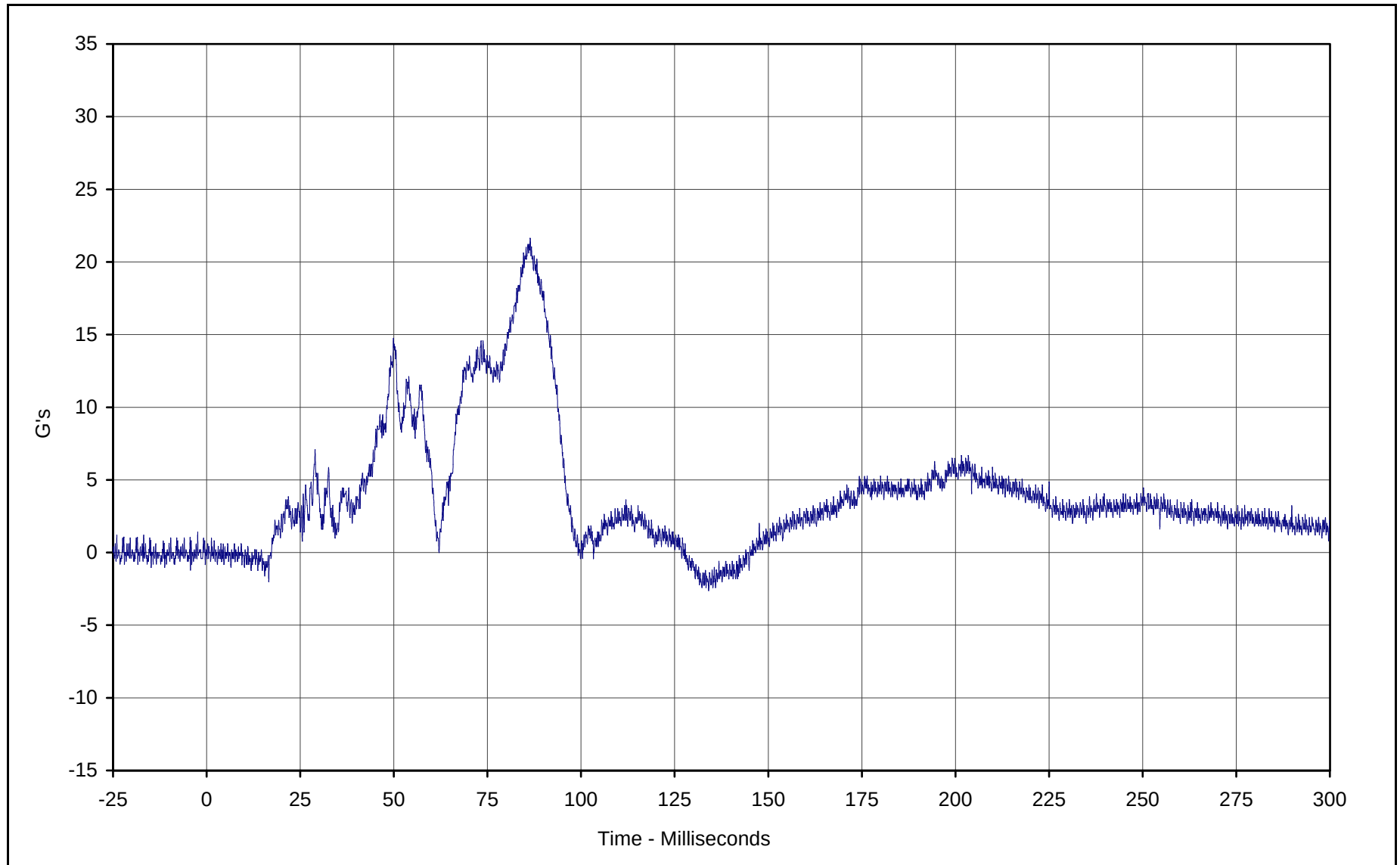




Curve Description: Driver Head Primary Y
Maximum Value: 2.8 at 192.7 Milliseconds
Minimum Value: -8.6 at 84.1 Milliseconds
SAE Filter Class: 1000
Date of Test: 2/22/01
Curve Number: FIL-002

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan

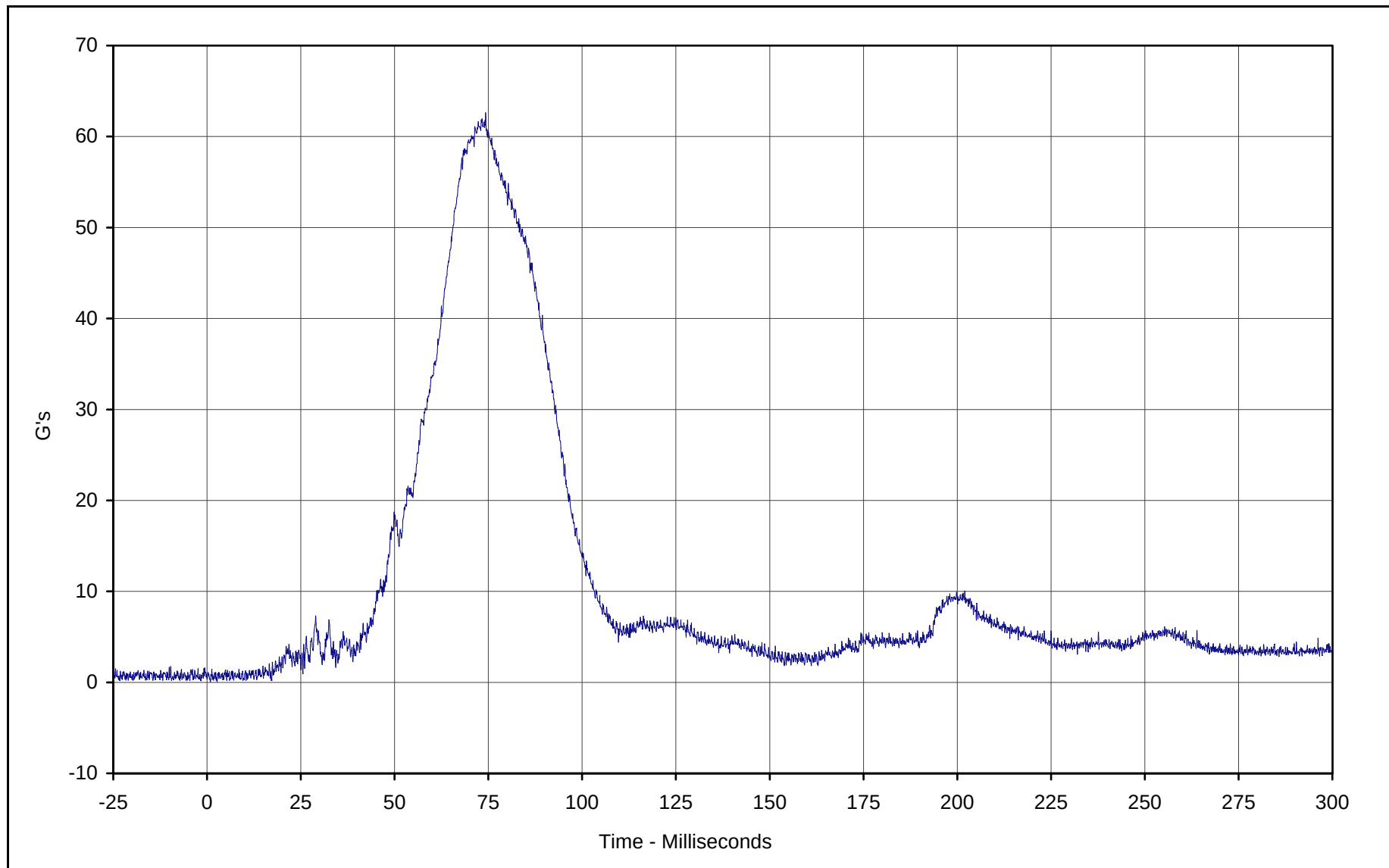




Curve Description: Driver Head Primary Z
Maximum Value: 21.6 at 86.4 Milliseconds
Minimum Value: -2.6 at 134.1 Milliseconds
SAE Filter Class: 1000
Date of Test: 2/22/01
Curve Number: FIL-003

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



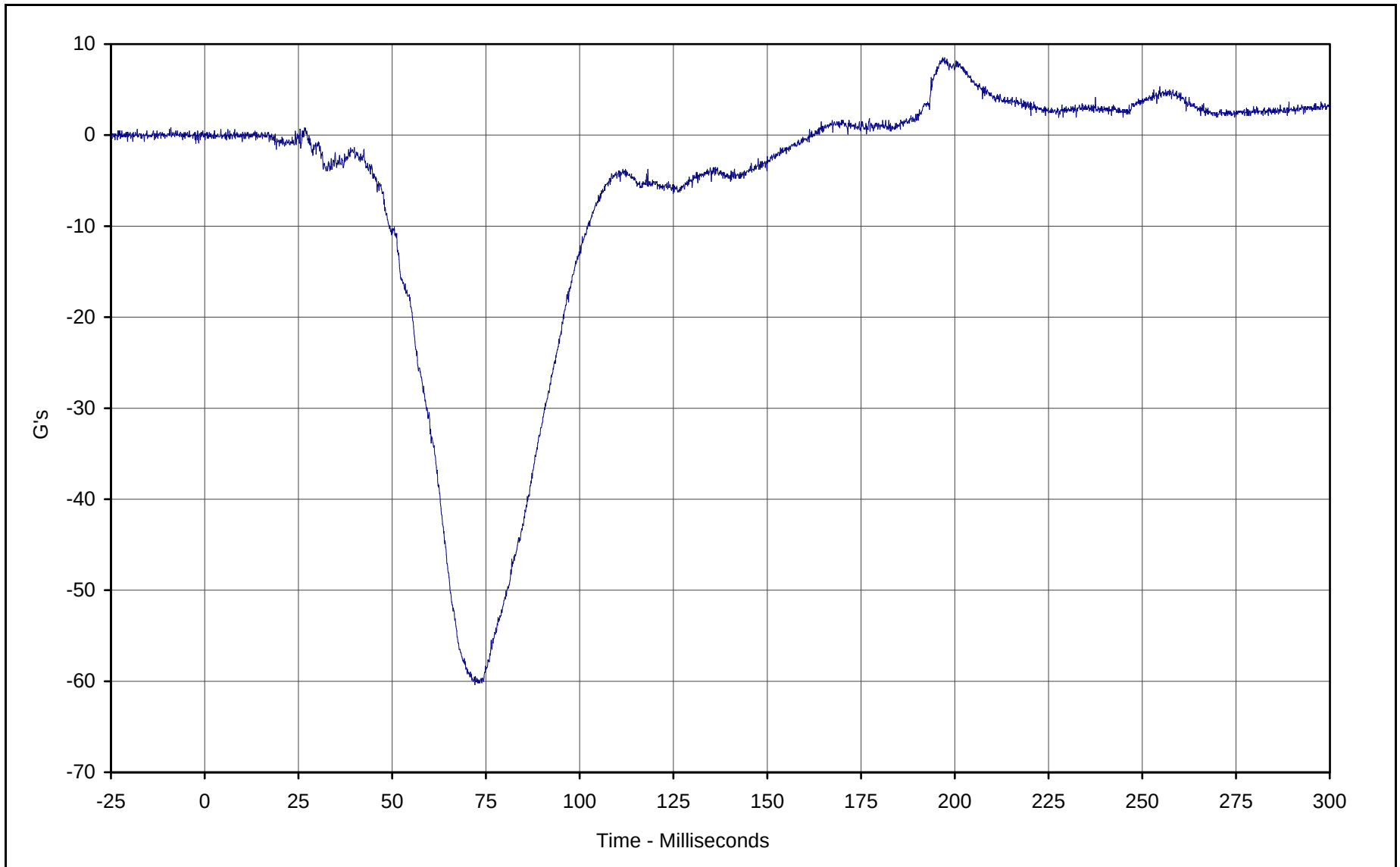


Curve Description: Driver Head Resultant Primary
Maximum Value: 62.6 at 74.3 Milliseconds
Minimum Value: 0.1 at 0.9 Milliseconds
SAE Filter Class: 1000
Date of Test: 2/22/01
Curve Number: RES-001

Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan



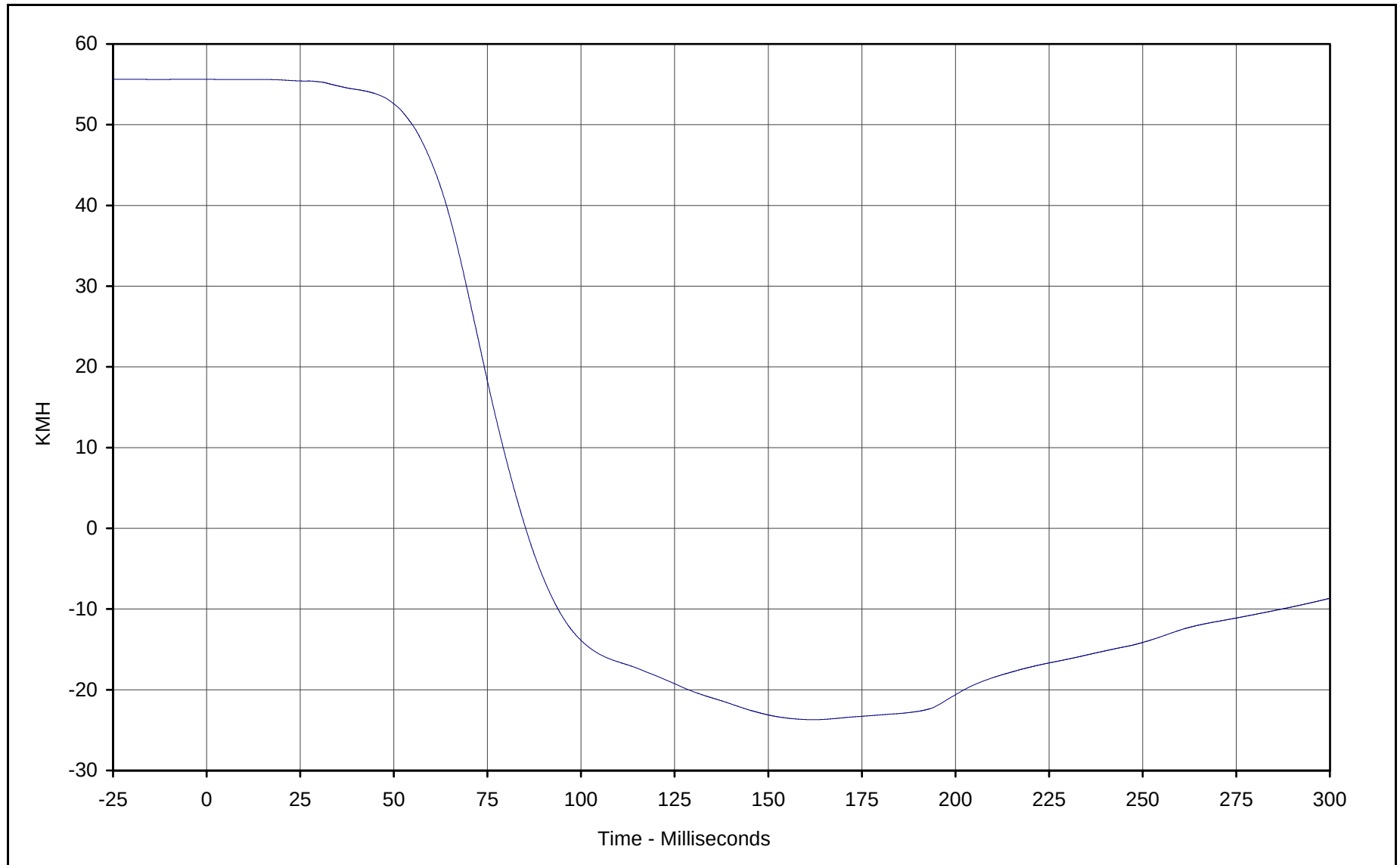


Curve Description: Driver Head Redundant X
Maximum Value: 8.5 at 196.8 Milliseconds
Minimum Value: -60.4 at 72.1 Milliseconds
SAE Filter Class: 1000
Date of Test: 2/22/01
Curve Number: FIL-004

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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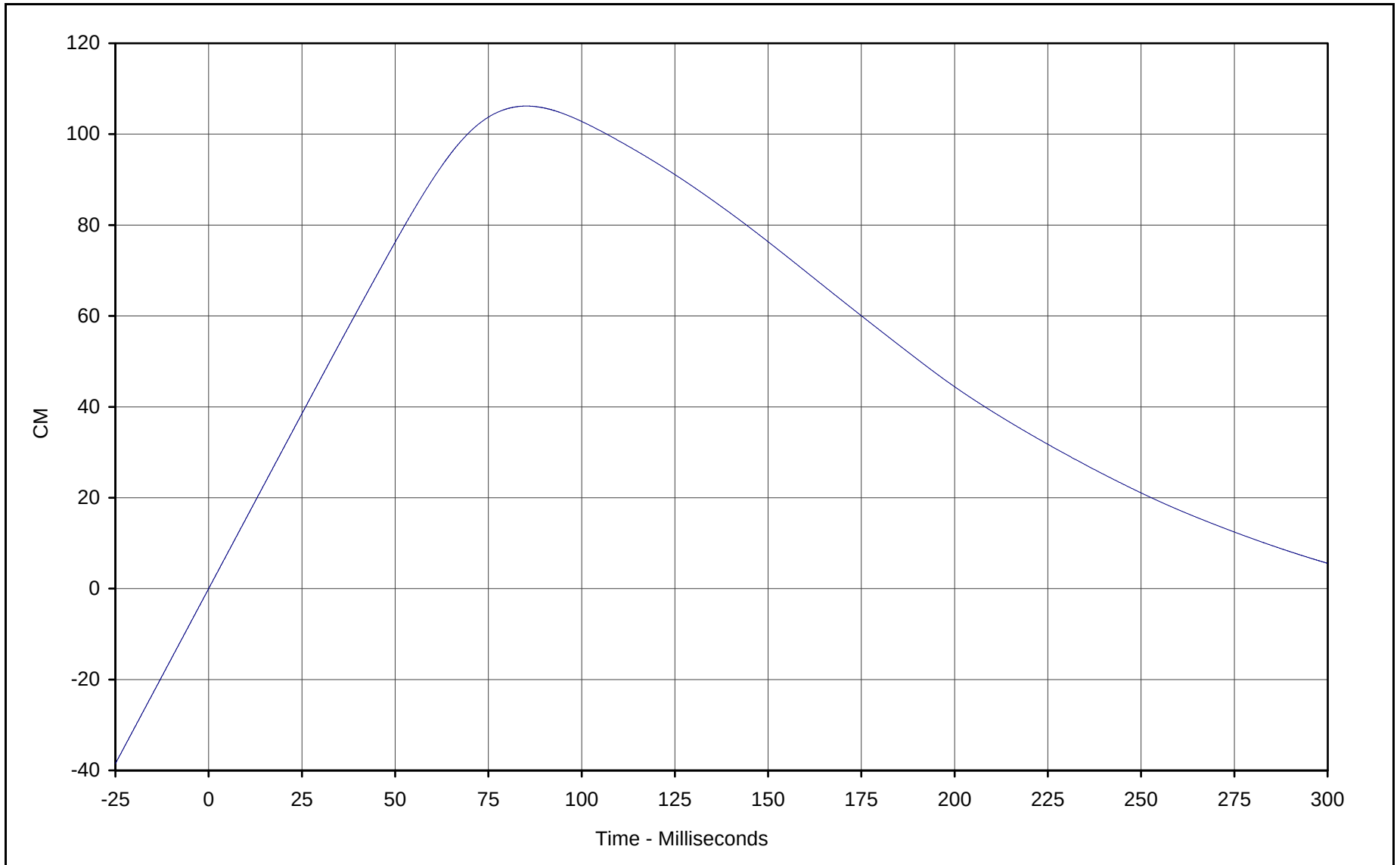


Curve Description: Driver Head Redundant X Velocity
Maximum Value: 55.6 at 0.2 Milliseconds
Minimum Value: -23.7 at 161.9 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: IN1-004

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



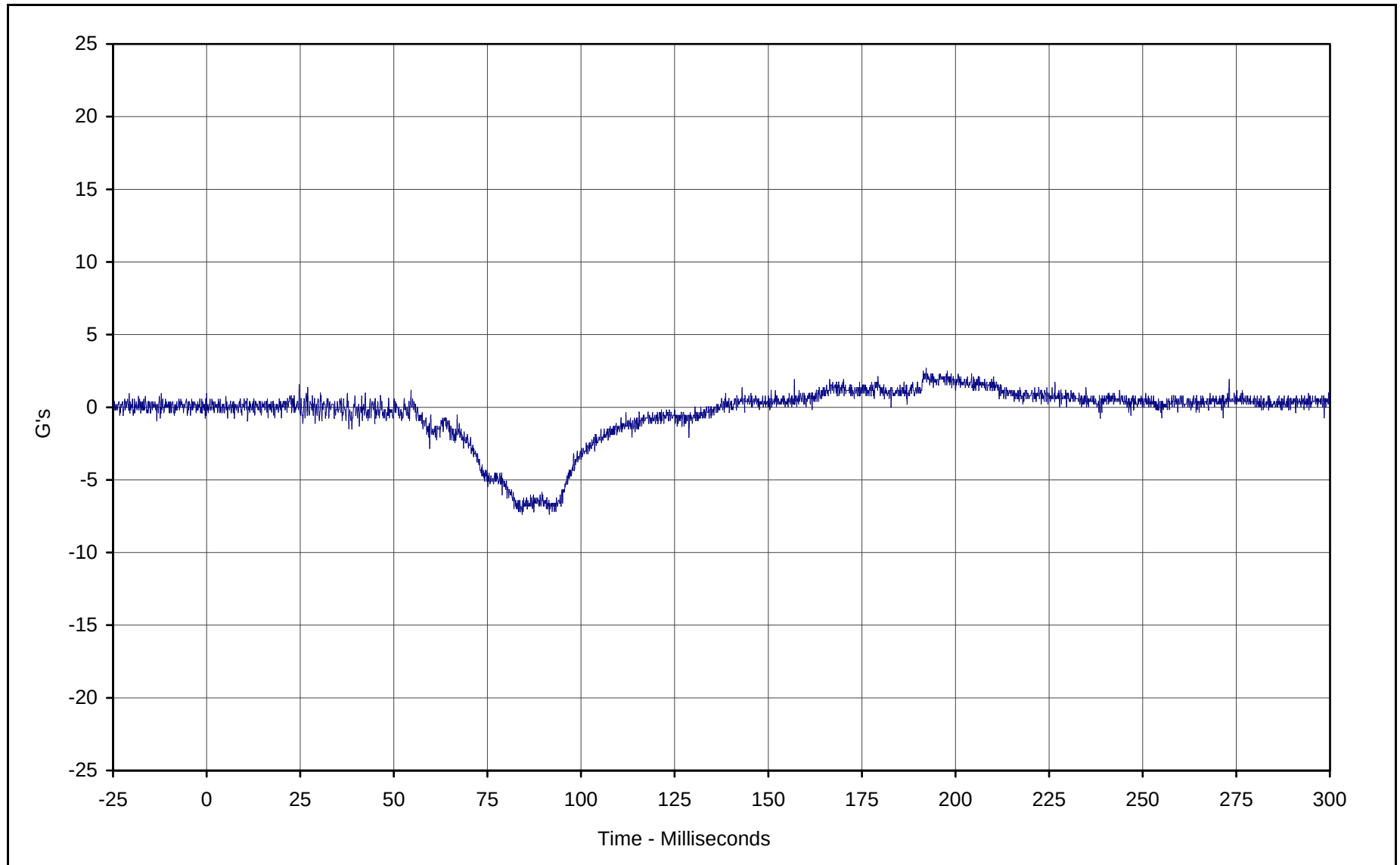
KAR21001-14



Curve Description: Driver Head Redundant X Displ.
Maximum Value: 106.2 at 85.2 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: IN2-004

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan

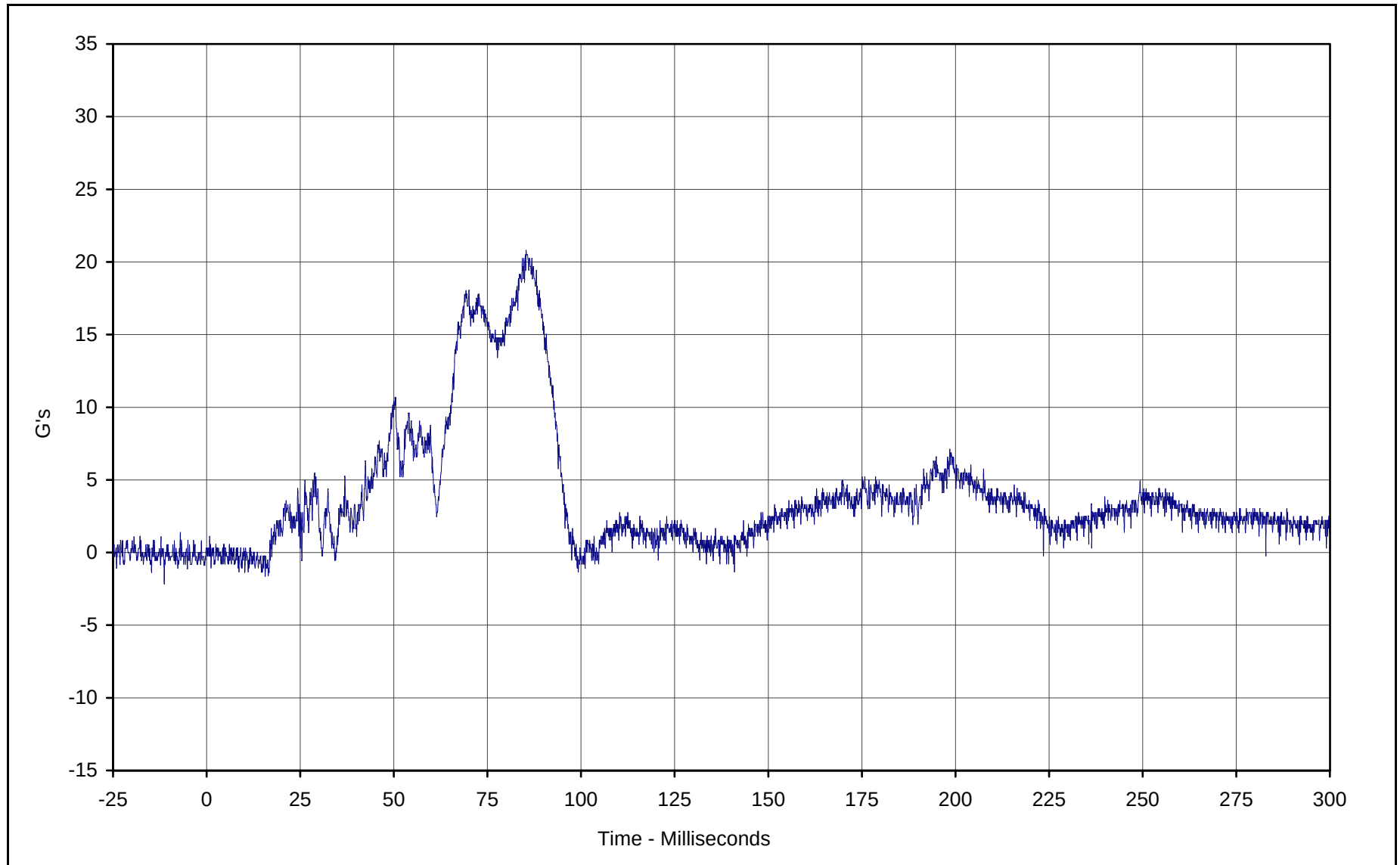




Curve Description: Driver Head Redundant Y
Maximum Value: 2.7 at 192.2 Milliseconds
Minimum Value: -7.4 at 84.3 Milliseconds
SAE Filter Class: 1000
Date of Test: 2/22/01
Curve Number: FIL-005

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



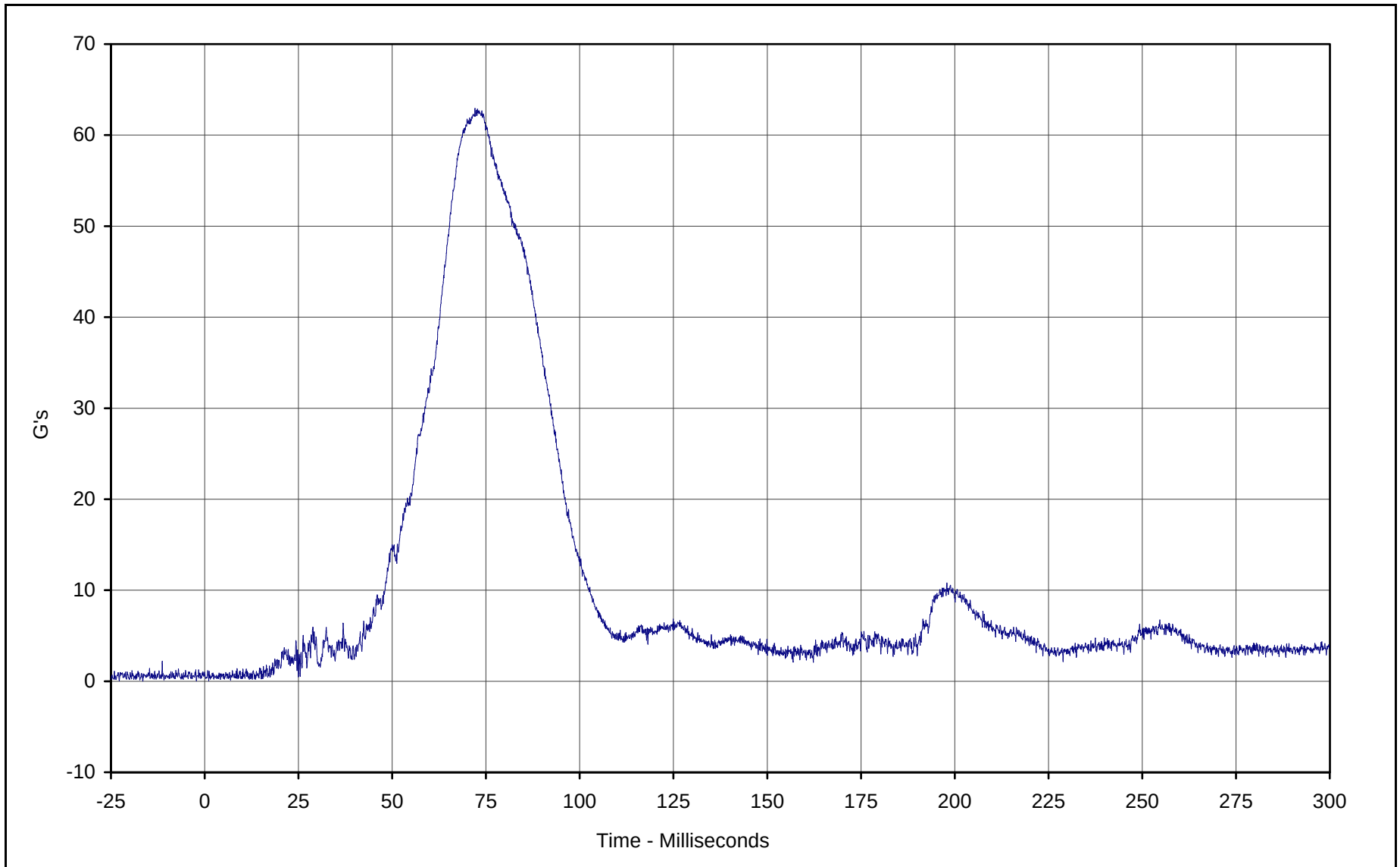


Curve Description: Driver Head Redundant Z
Maximum Value: 20.8 at 85.3 Milliseconds
Minimum Value: -1.6 at 15.6 Milliseconds
SAE Filter Class: 1000
Date of Test: 2/22/01
Curve Number: FIL-006

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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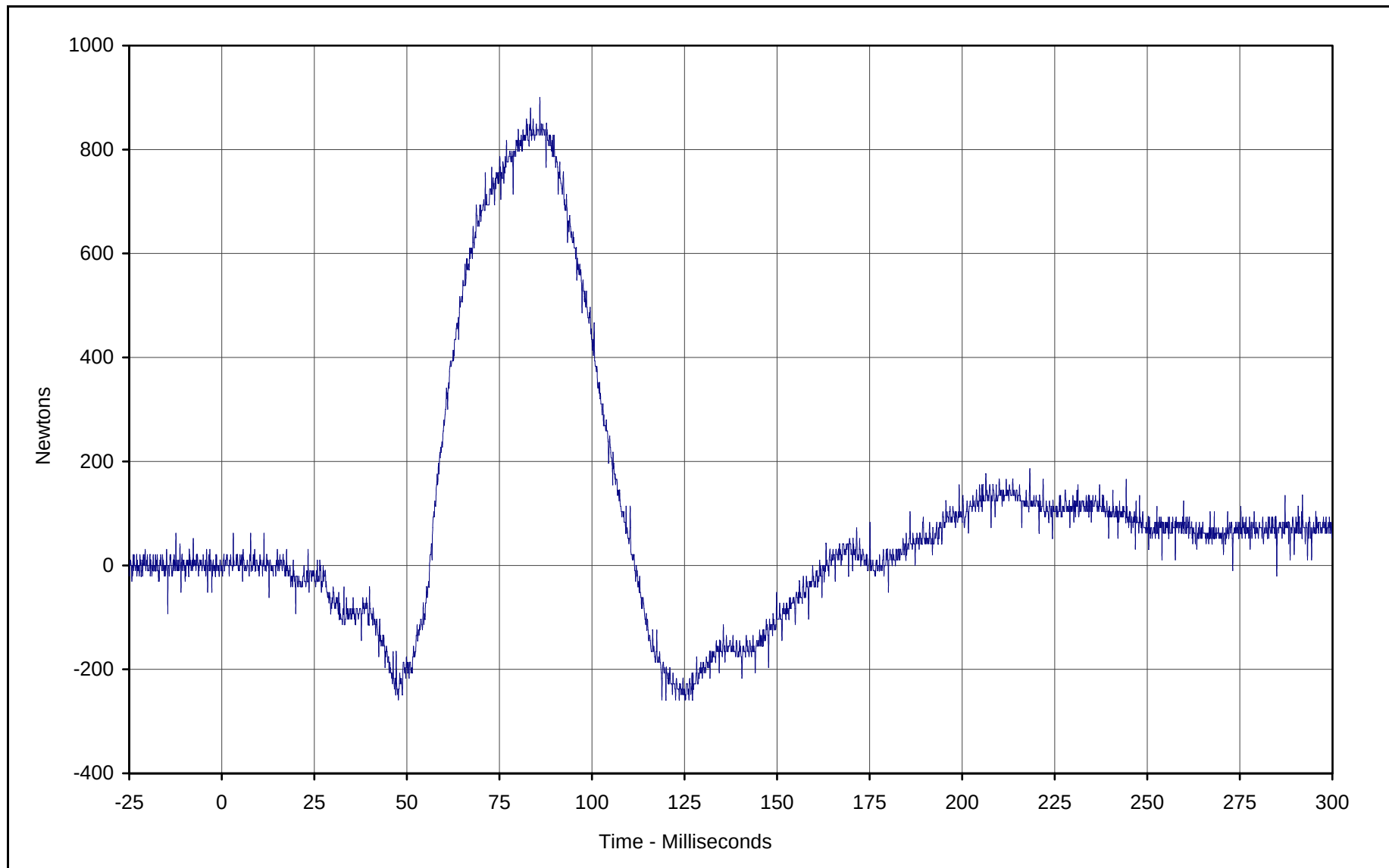


Curve Description: Driver Head Resultant Redundant
Maximum Value: 62.9 at 72.1 Milliseconds
Minimum Value: 0.0 at 1.1 Milliseconds
SAE Filter Class: 1000
Date of Test: 2/22/01
Curve Number: RES-004

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



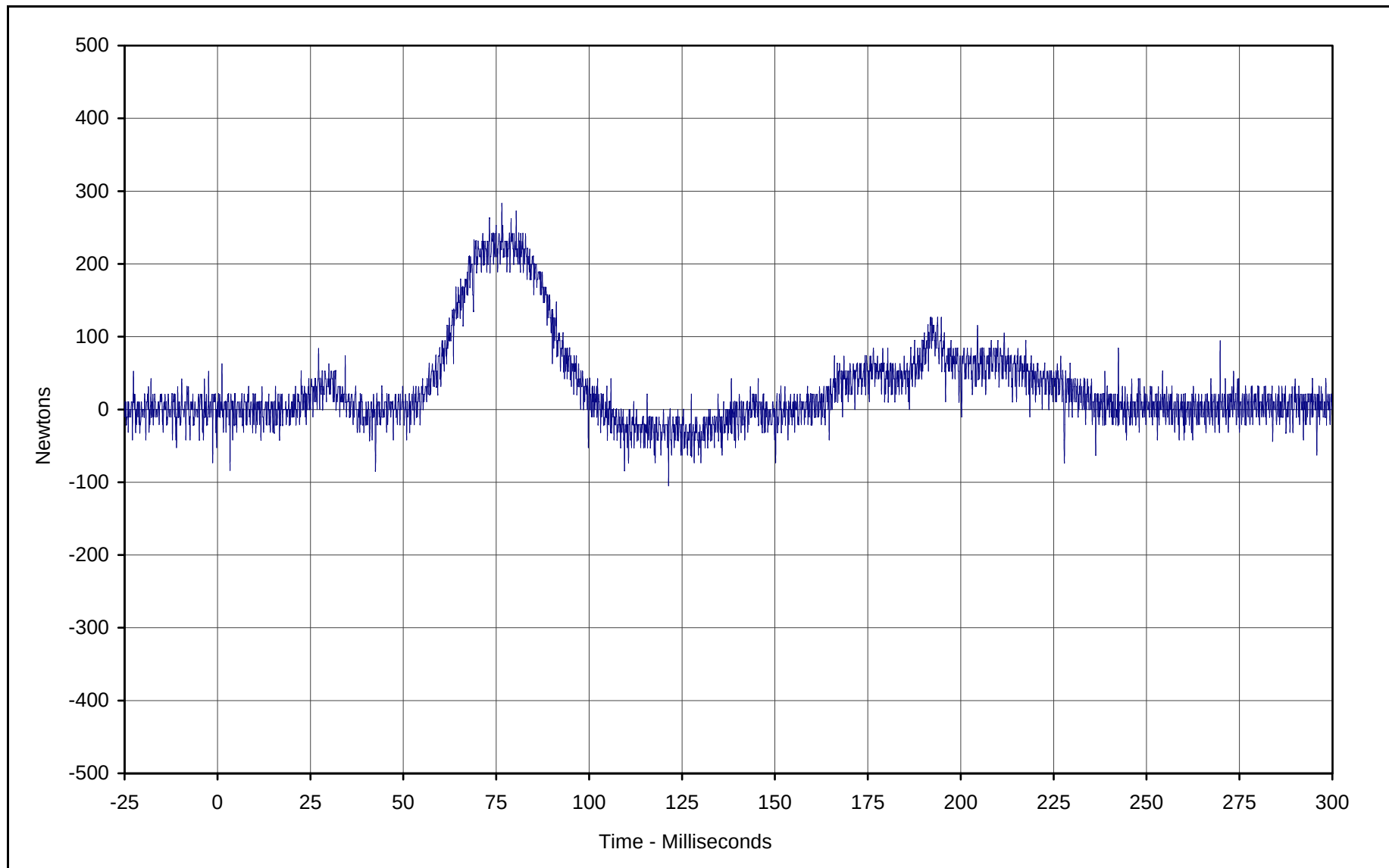
KAR21001-14



Curve Description: Driver Neck Force X
Maximum Value: 900.5 at 85.9 Milliseconds
Minimum Value: -258.8 at 47.7 Milliseconds
SAE Filter Class: 1000
Date of Test: 2/22/01
Curve Number: FIL-007

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan

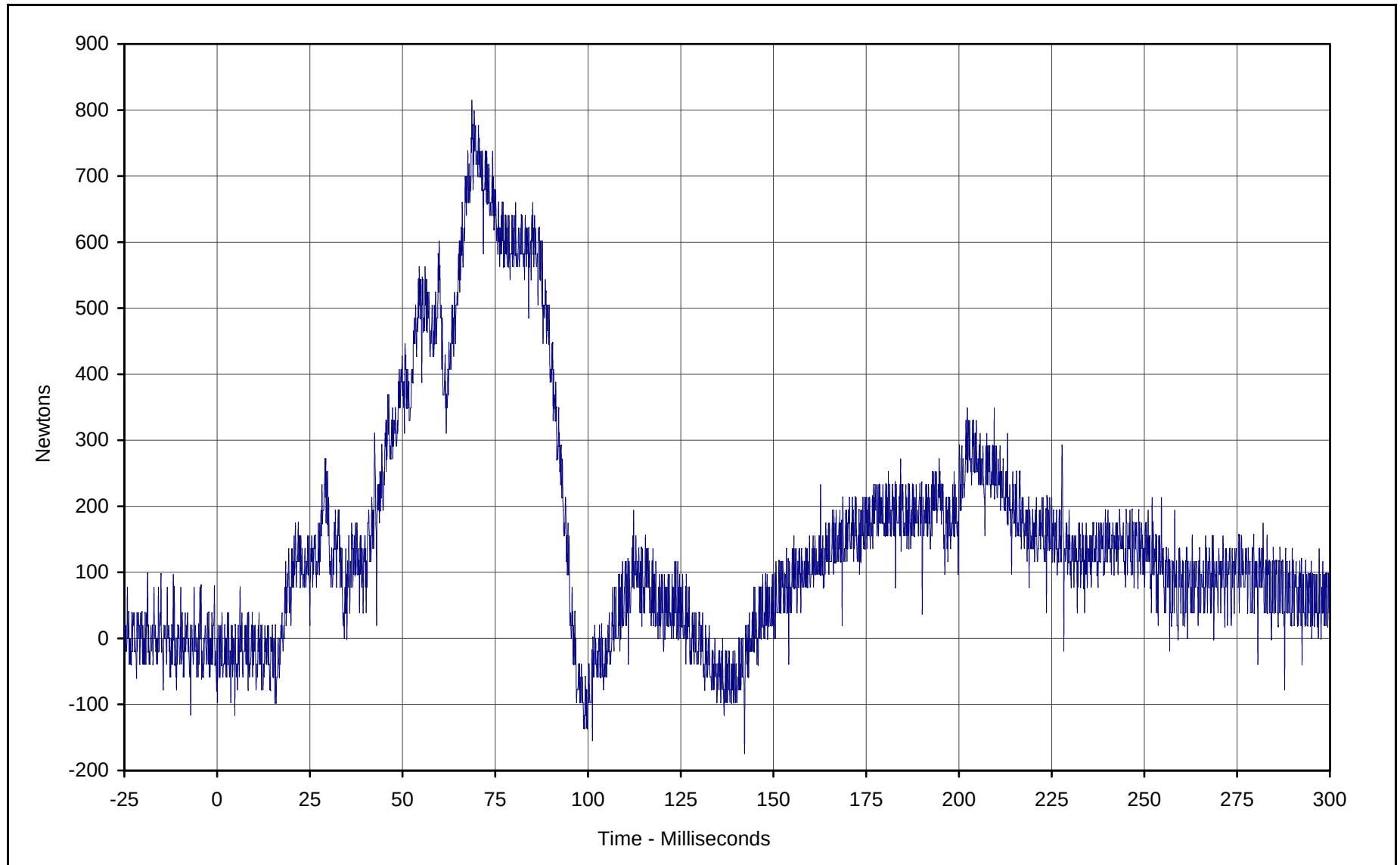




Curve Description: Driver Neck Force Y
Maximum Value: 283.5 at 76.5 Milliseconds
Minimum Value: -105.0 at 121.4 Milliseconds
SAE Filter Class: 1000
Date of Test: 2/22/01
Curve Number: FIL-008

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan

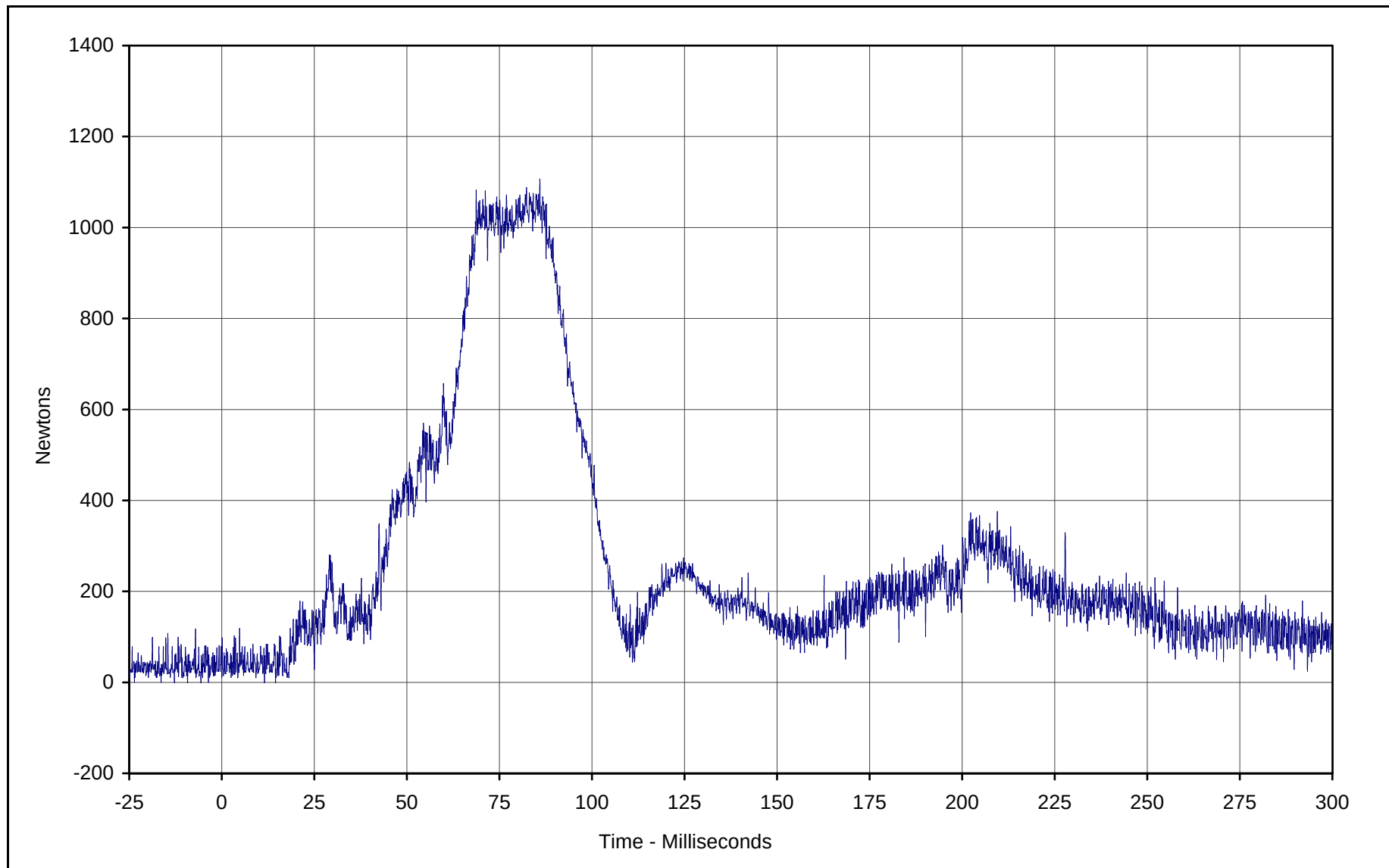




Curve Description: Driver Neck Force Z
Maximum Value: 815.2 at 68.7 Milliseconds
Minimum Value: -174.7 at 142.2 Milliseconds
SAE Filter Class: 1000
Date of Test: 2/22/01
Curve Number: FIL-009

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan

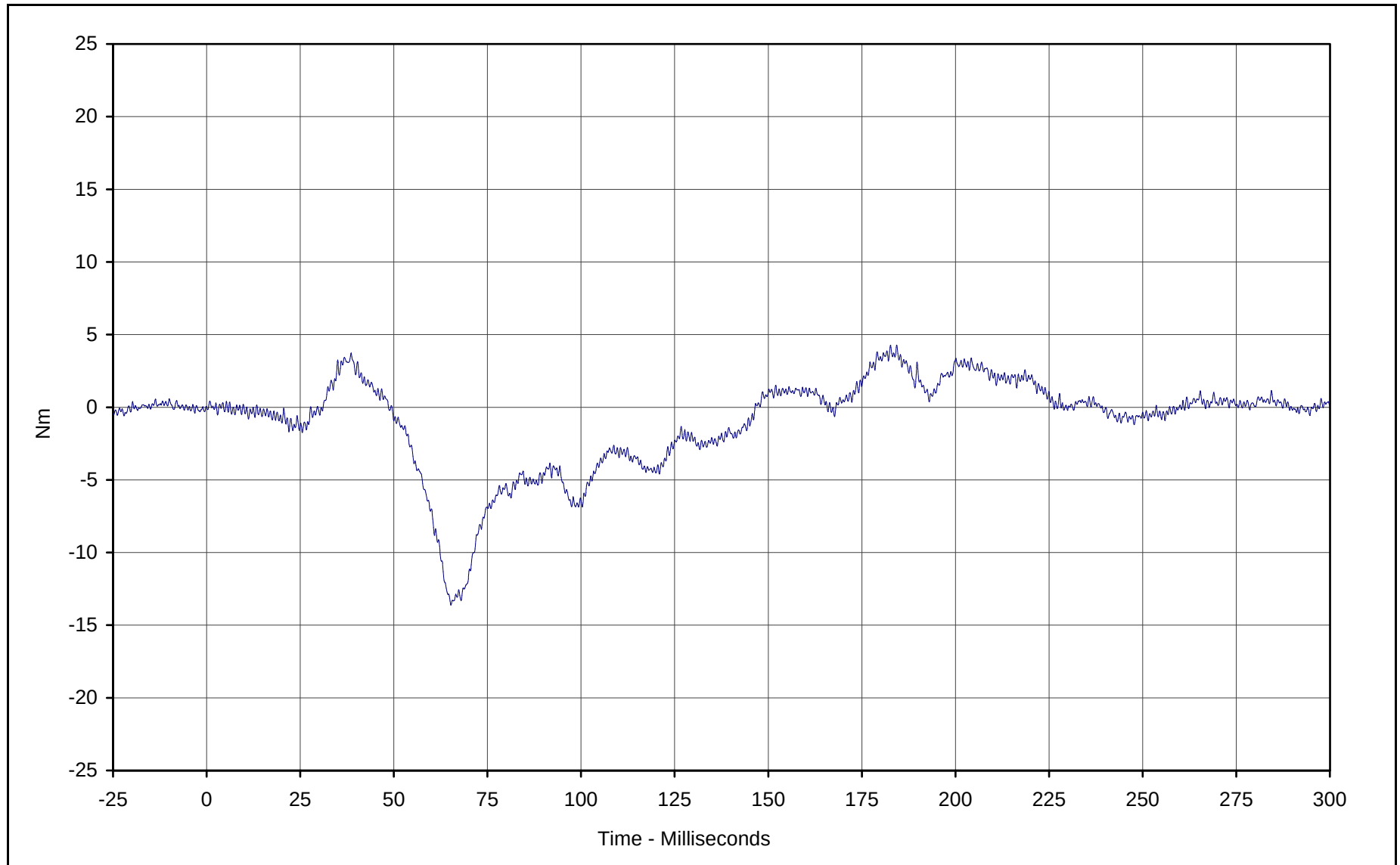




Curve Description: Driver Neck Force Resultant
Maximum Value: 1106.7 at 85.9 Milliseconds
Minimum Value: 0.0 at 11.5 Milliseconds
SAE Filter Class: 1000
Date of Test: 2/22/01
Curve Number: RES-007

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan

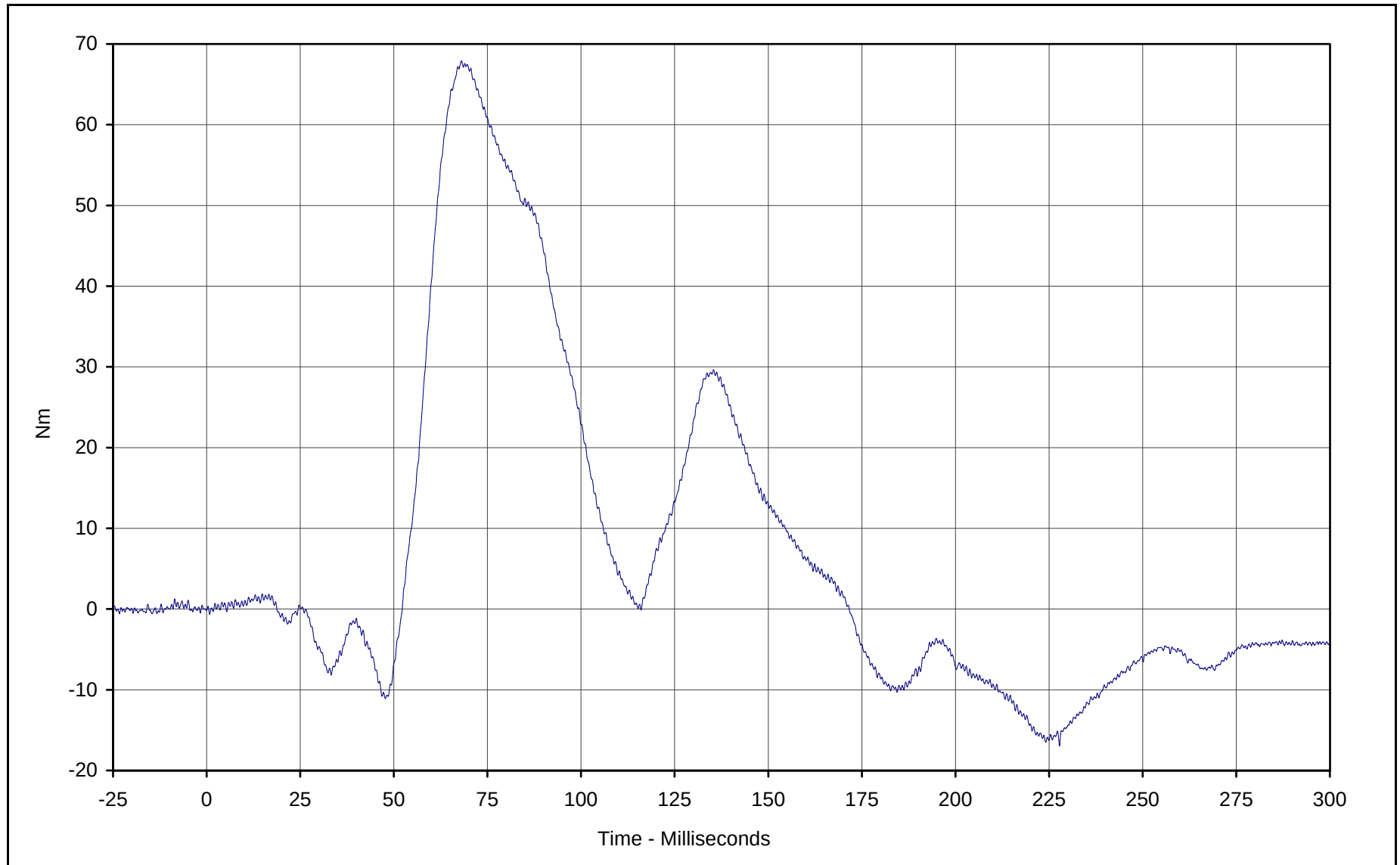




Curve Description: Driver Neck Moment X
Maximum Value: 4.3 at 184.3 Milliseconds
Minimum Value: -13.6 at 65.3 Milliseconds
SAE Filter Class: 600
Date of Test: 2/22/01
Curve Number: FIL-010

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan

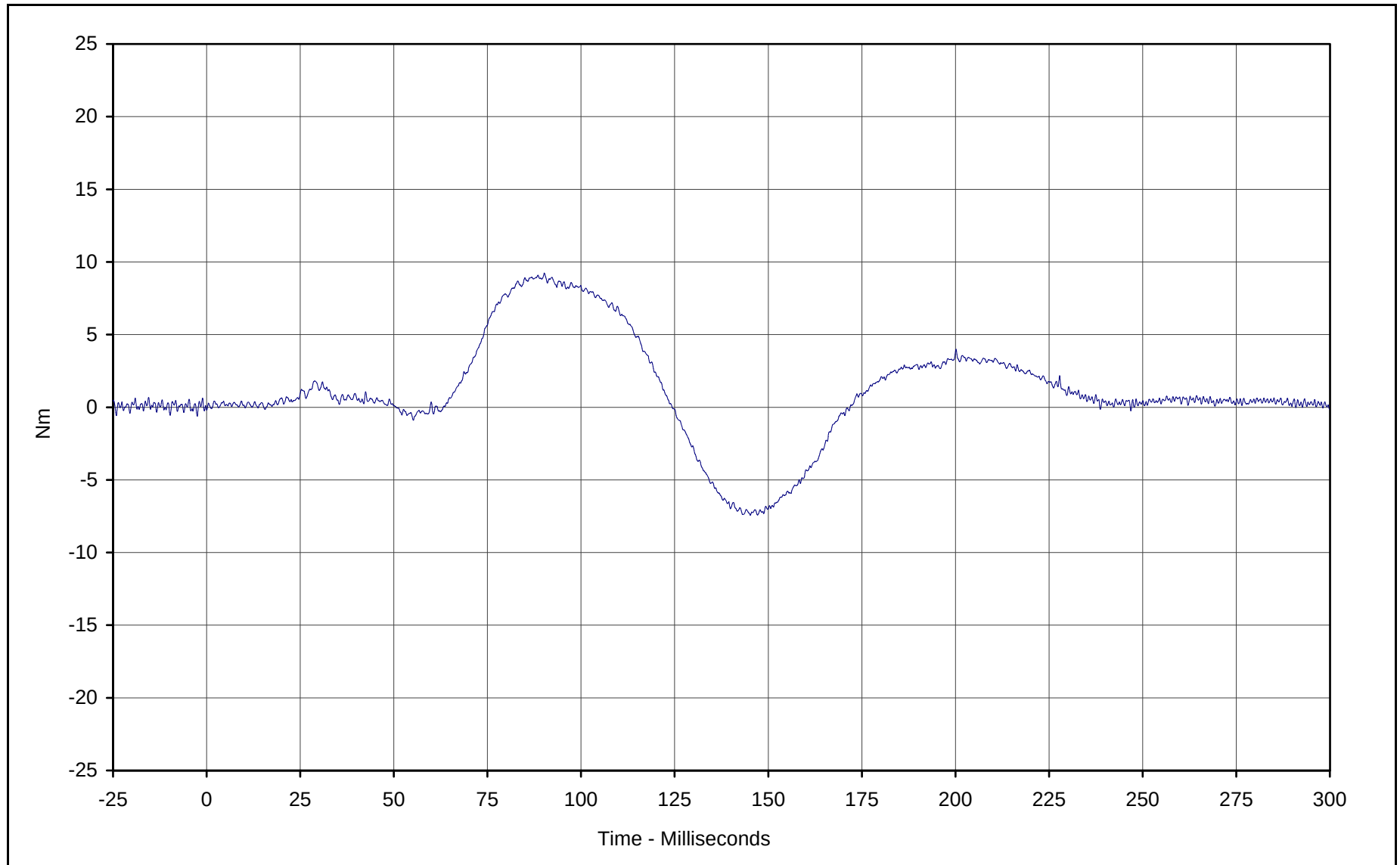




Curve Description: Driver Neck Moment Y
Maximum Value: 67.9 at 68.1 Milliseconds
Minimum Value: -17.0 at 227.8 Milliseconds
SAE Filter Class: 600
Date of Test: 2/22/01
Curve Number: FIL-011

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



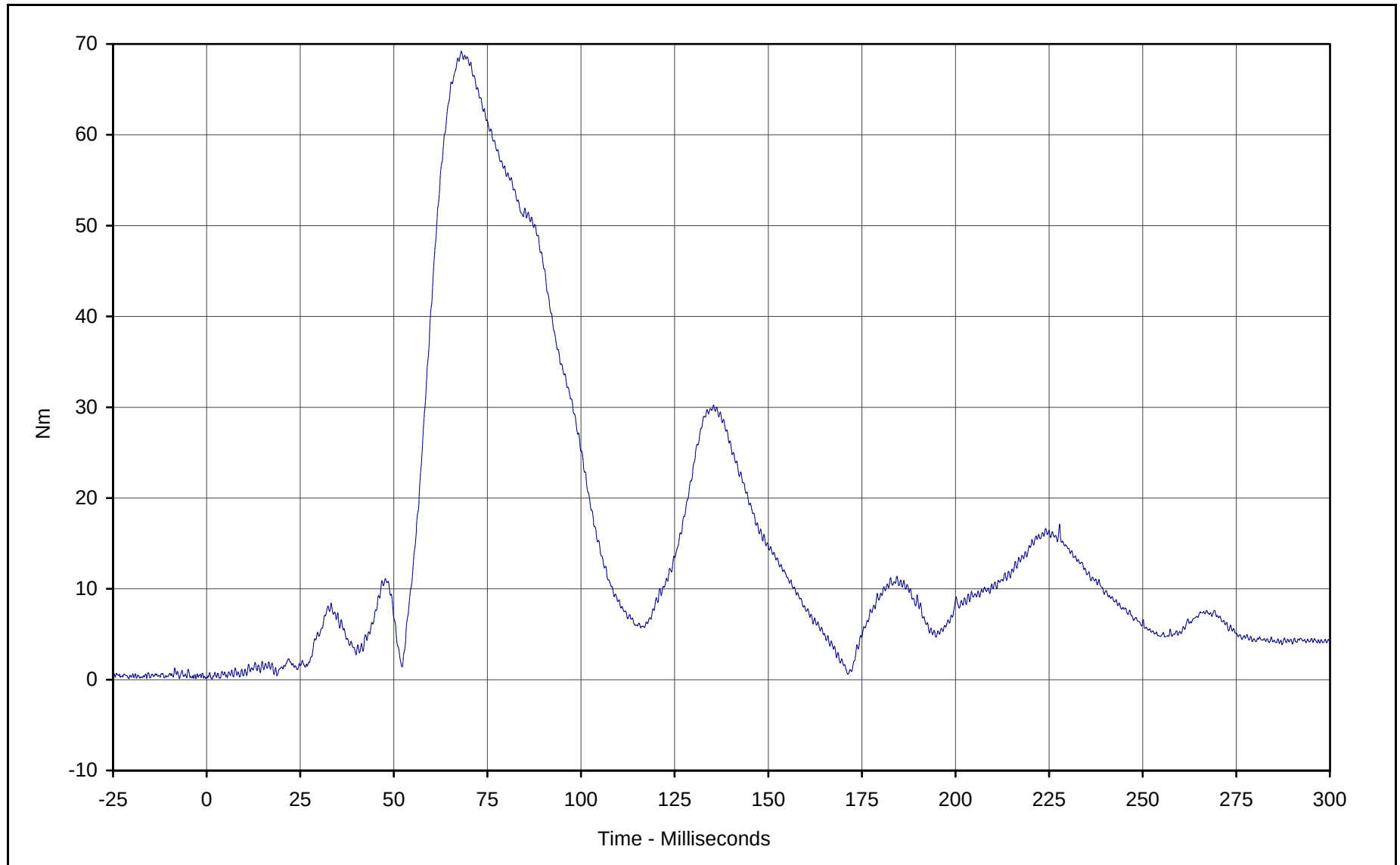


Curve Description: Driver Neck Moment Z
Maximum Value: 9.2 at 90.2 Milliseconds
Minimum Value: -7.4 at 145.2 Milliseconds
SAE Filter Class: 600
Date of Test: 2/22/01
Curve Number: FIL-012

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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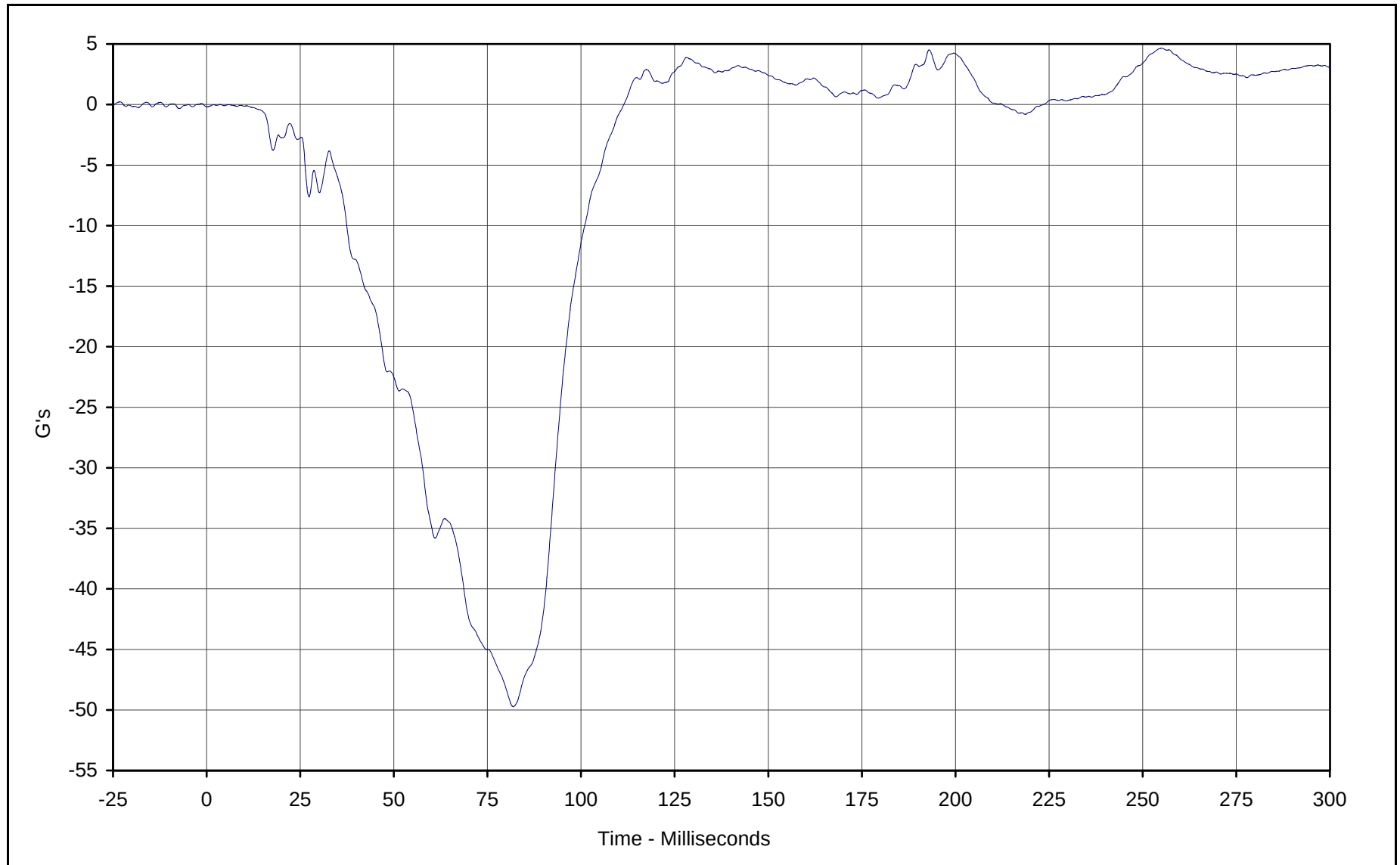


Curve Description: Driver Neck Moment Resultant
Maximum Value: 69.2 at 68.0 Milliseconds
Minimum Value: 0.1 at 1.5 Milliseconds
SAE Filter Class: 600
Date of Test: 2/22/01
Curve Number: RES-010

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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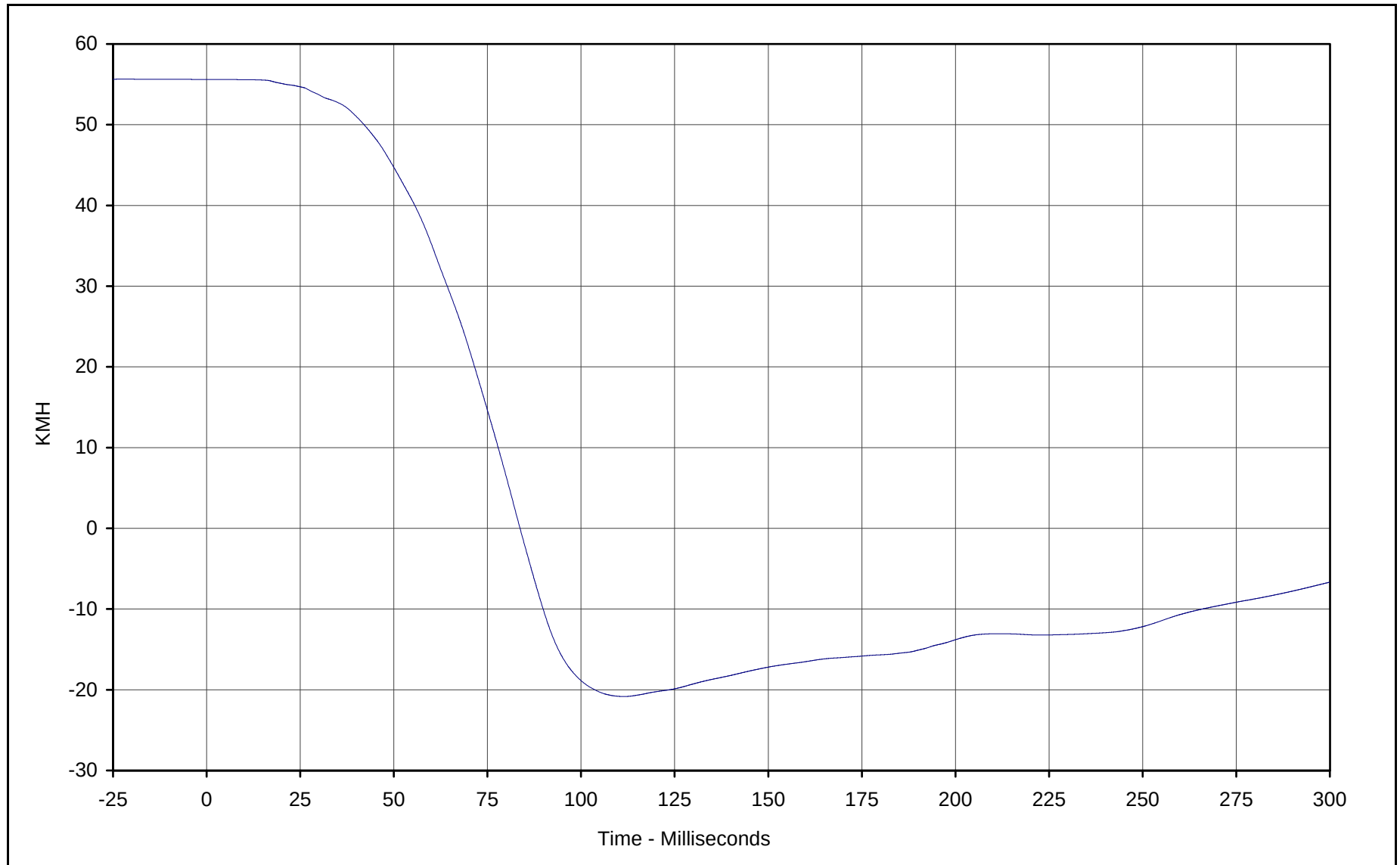


Curve Description: Driver Chest Primary X
Maximum Value: 4.7 at 255.1 Milliseconds
Minimum Value: -49.7 at 81.9 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: FIL-013

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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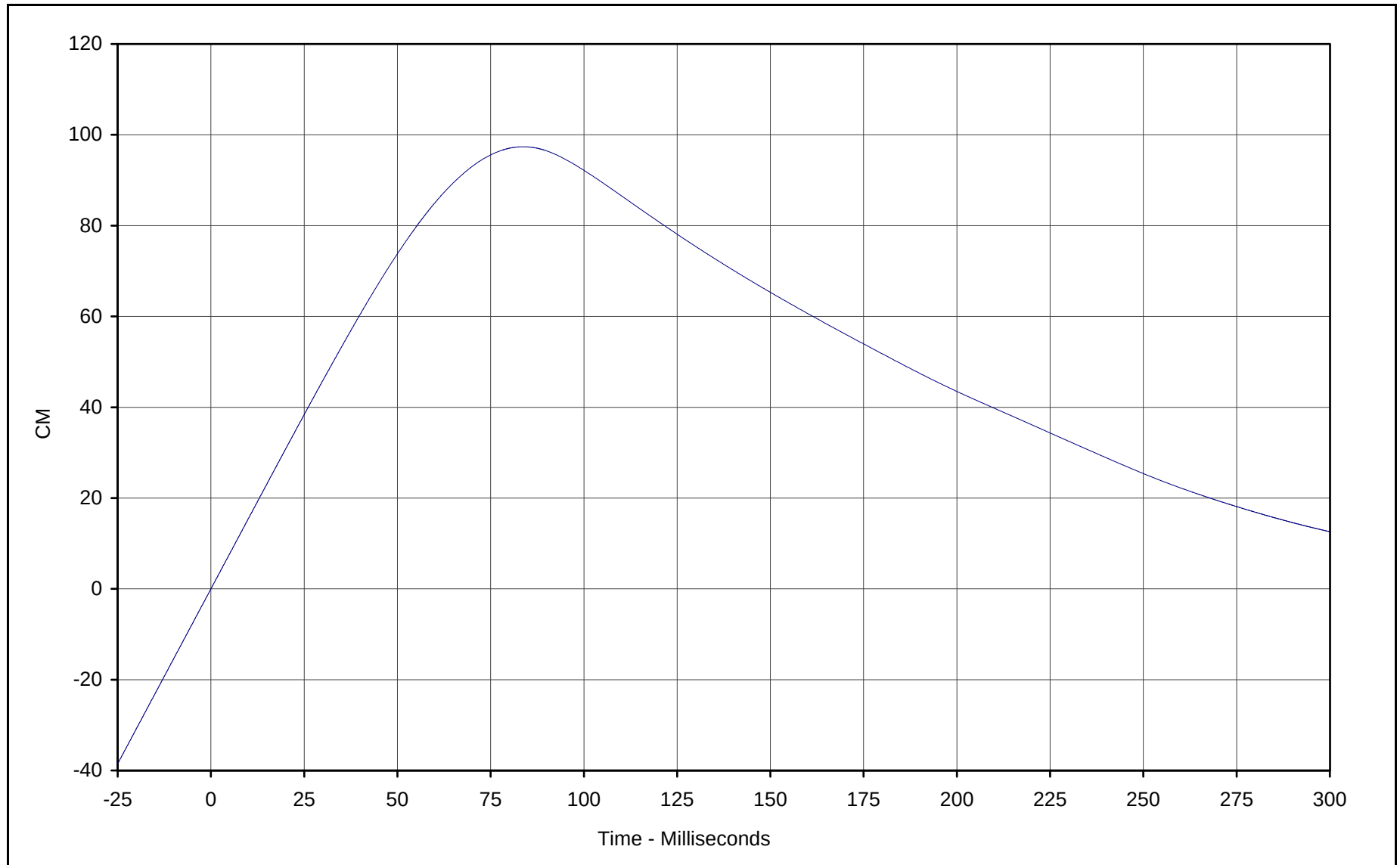
Curve Description: Driver Chest Primary X Velocity
Maximum Value: 55.6 at 0.0 Milliseconds
Minimum Value: -20.8 at 111.4 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: IN1-013

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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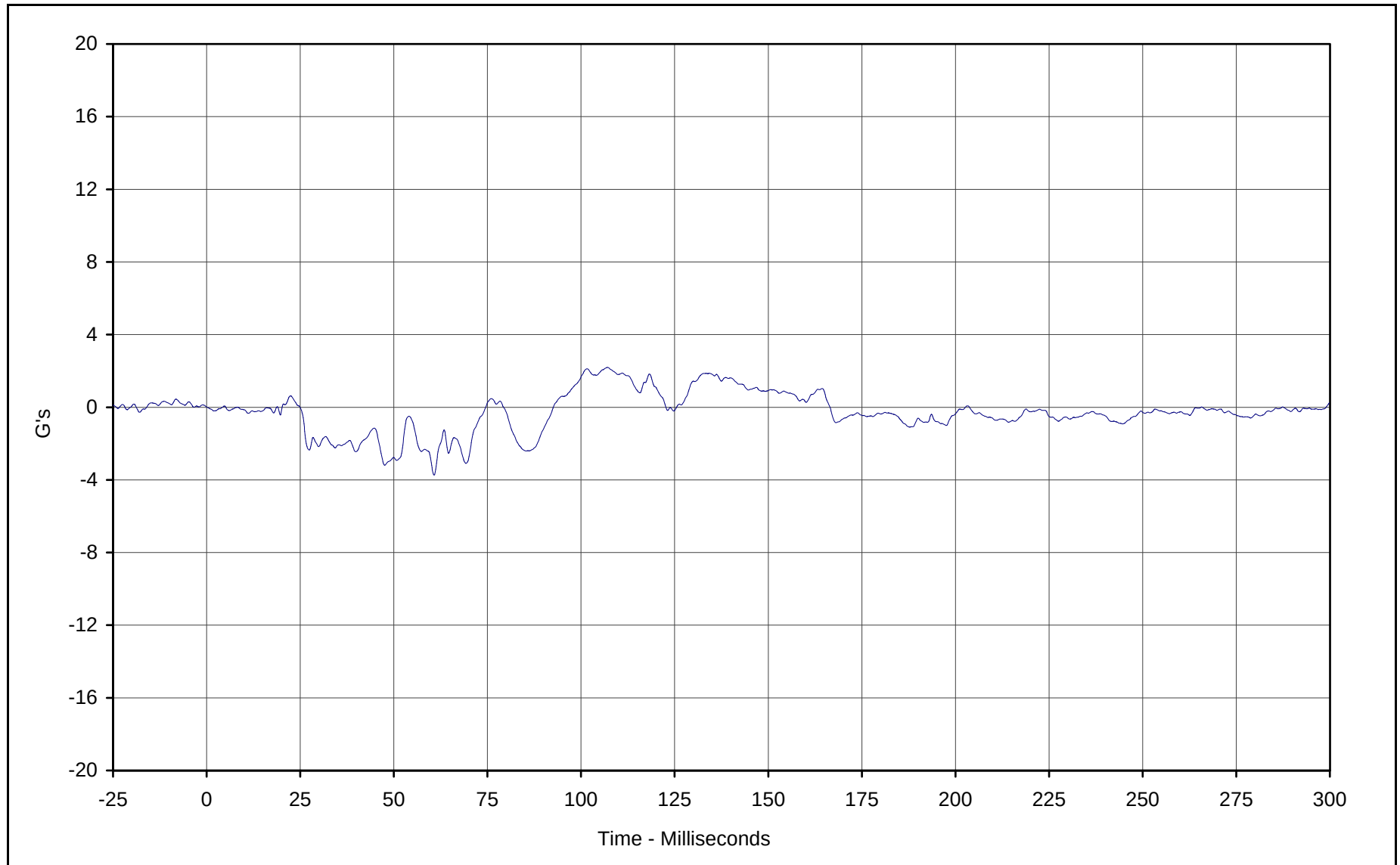
Curve Description: Driver Chest Primary X Displ.
Maximum Value: 97.4 at 83.7 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: IN2-013

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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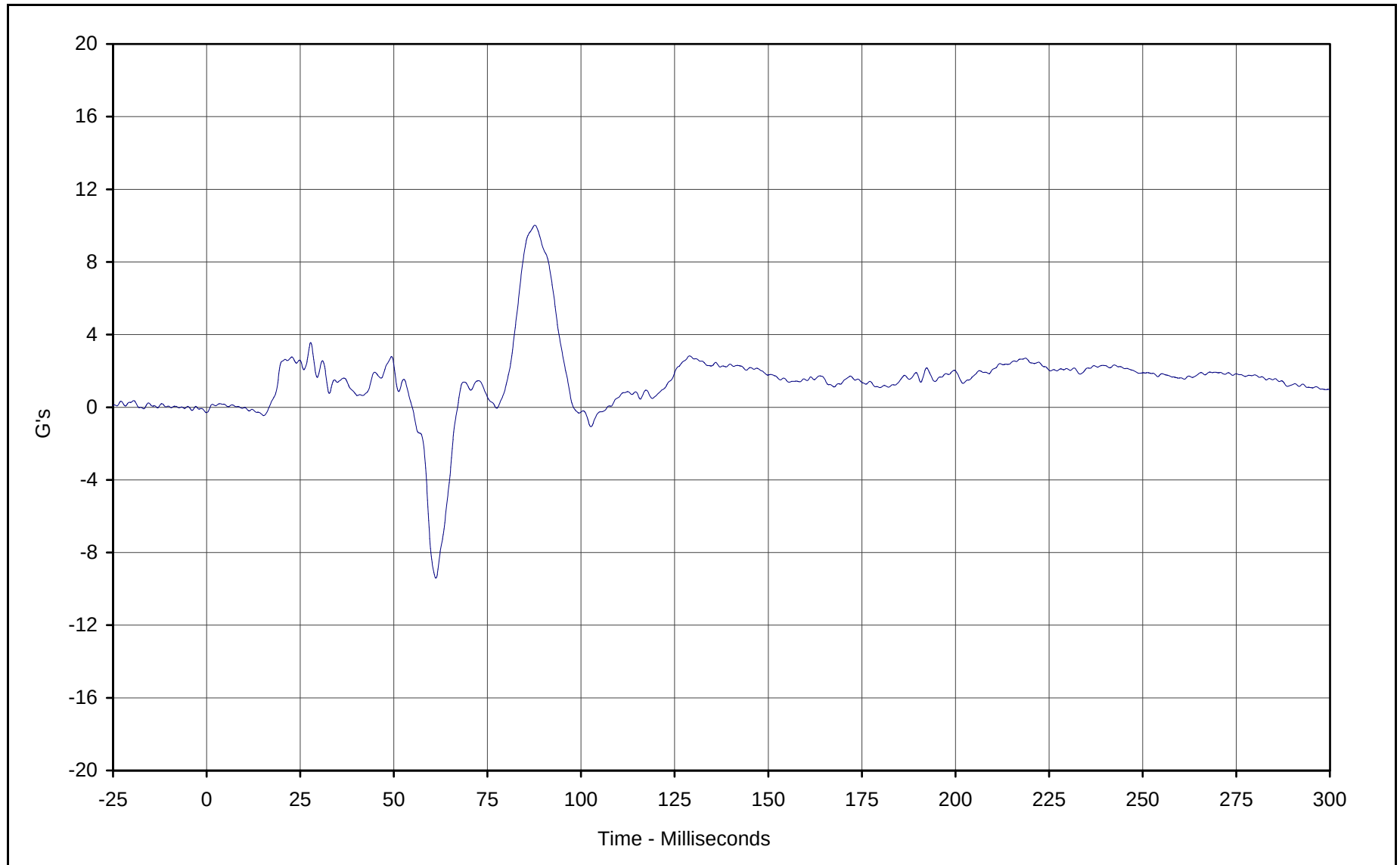
Curve Description: Driver Chest Primary Y
Maximum Value: 2.2 at 107.1 Milliseconds
Minimum Value: -3.7 at 60.8 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: FIL-014

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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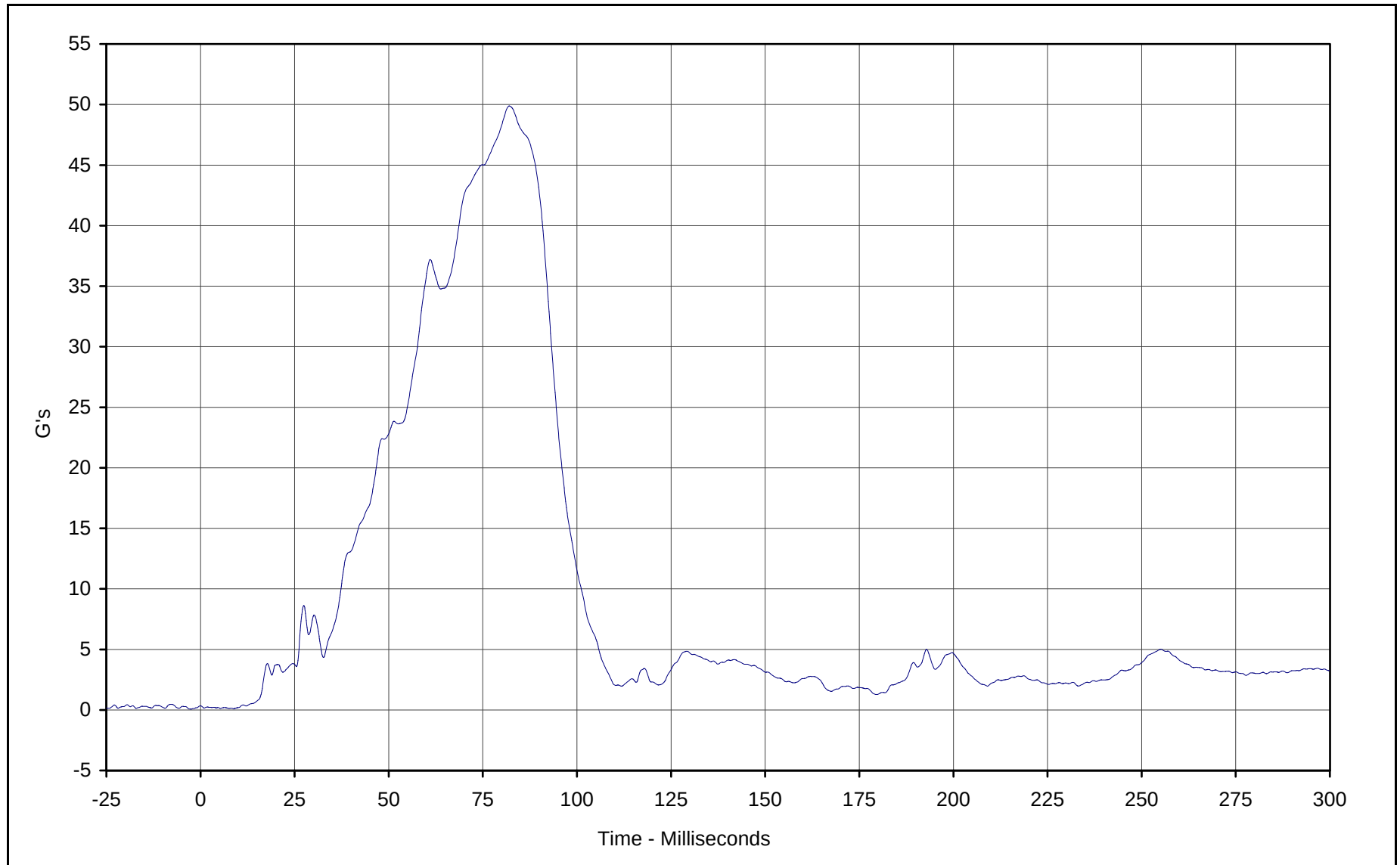


Curve Description: Driver Chest Primary Z
Maximum Value: 10.0 at 87.7 Milliseconds
Minimum Value: -9.4 at 61.2 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: FIL-015

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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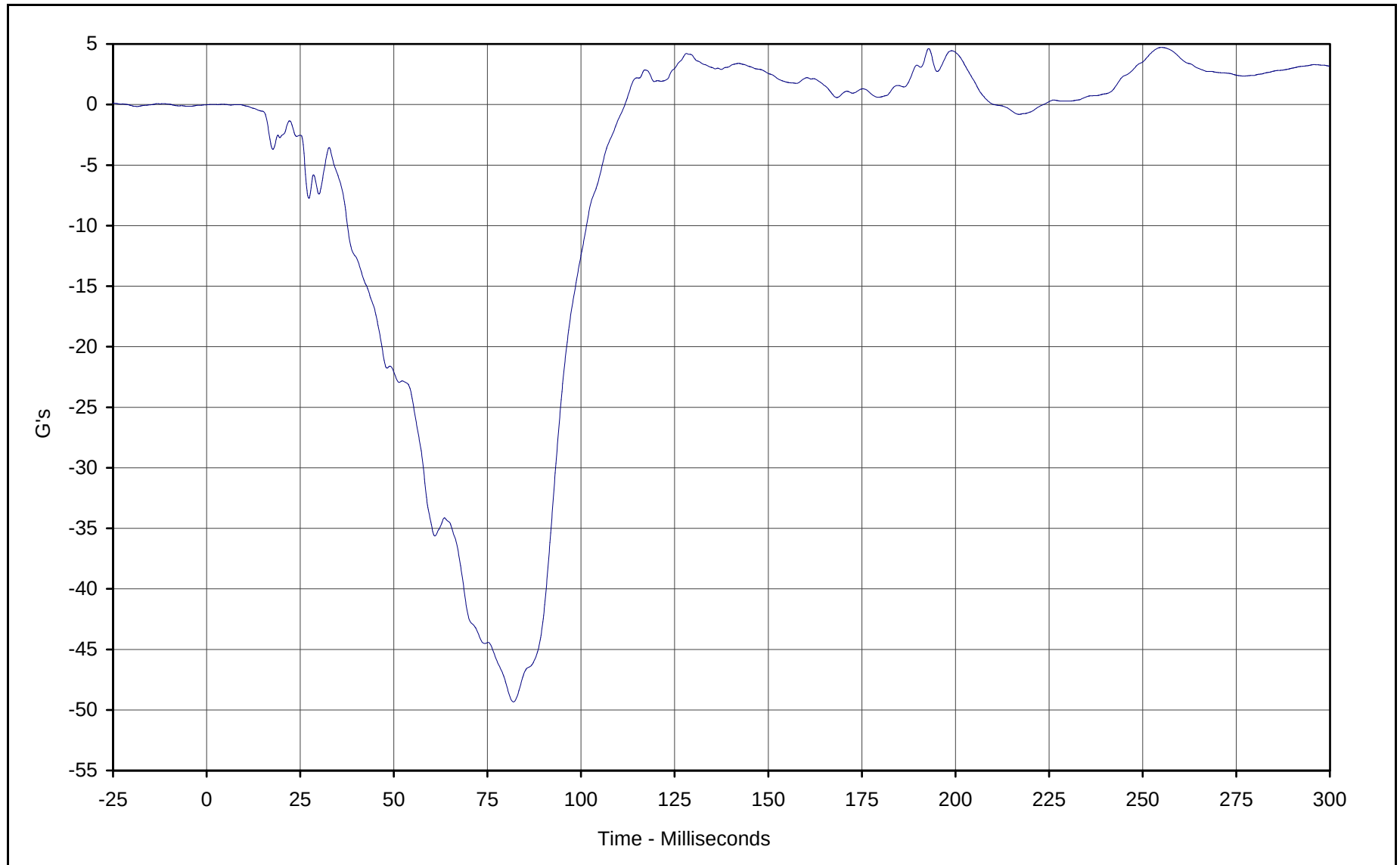


Curve Description: Driver Chest Resultant Primary
Maximum Value: 49.9 at 82.0 Milliseconds
Minimum Value: 0.1 at 8.8 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: RES-013

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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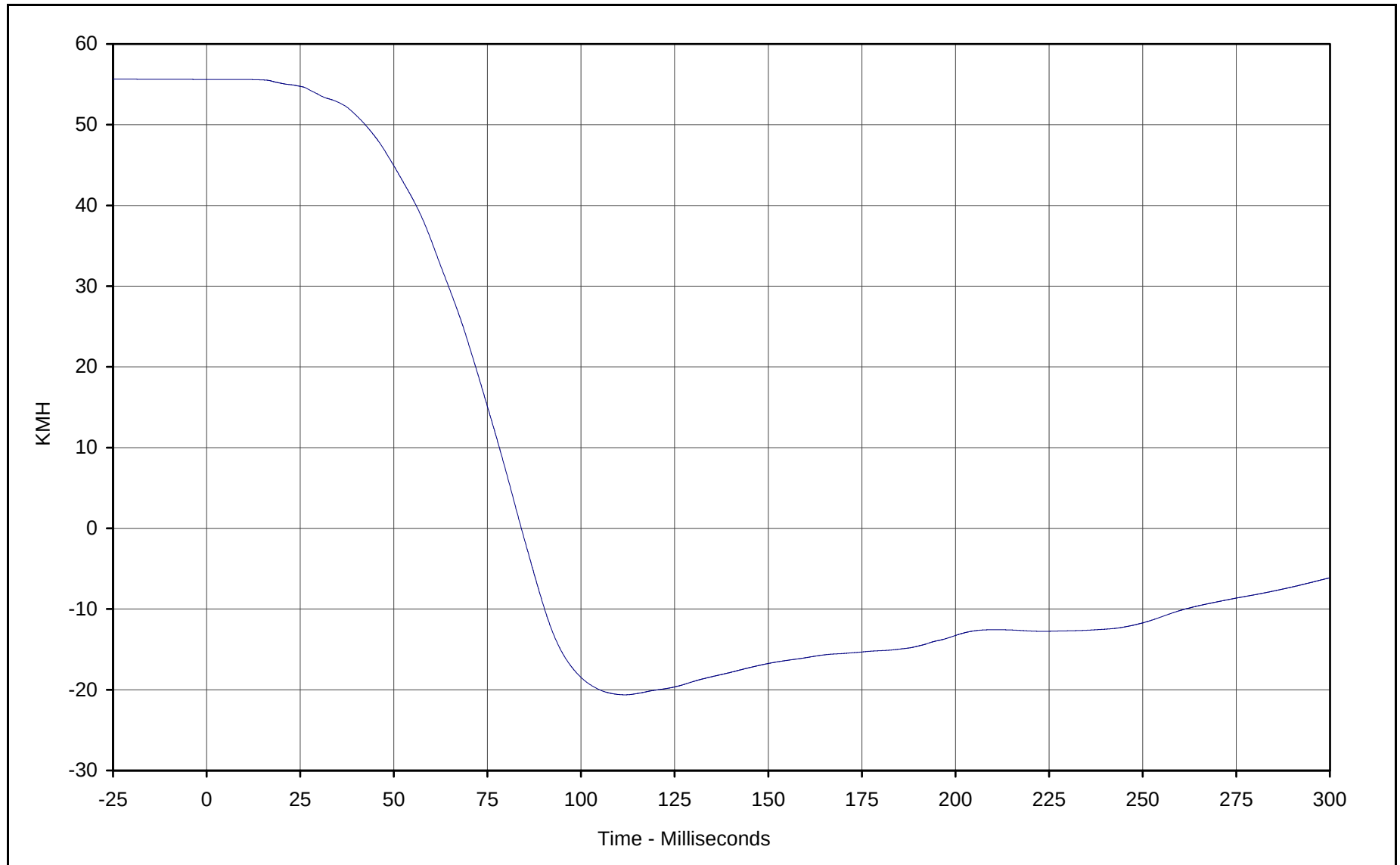


Curve Description: Driver Chest Redundant X
Maximum Value: 4.7 at 255.1 Milliseconds
Minimum Value: -49.3 at 81.9 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: FIL-016

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



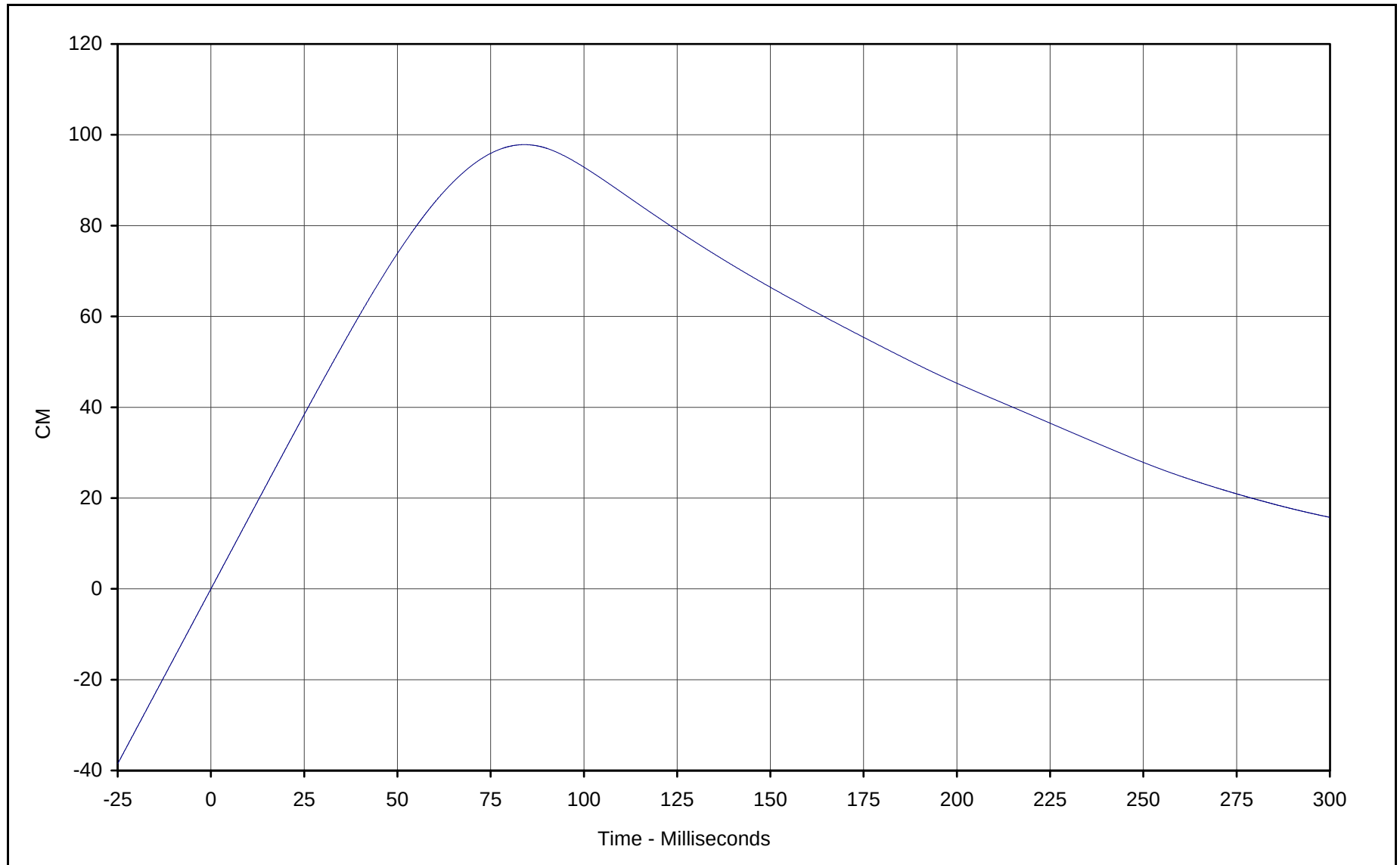
KAR21001-14



Curve Description: Driver Chest Redundant X Velocity
Maximum Value: 55.6 at 5.3 Milliseconds
Minimum Value: -20.6 at 111.7 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: IN1-016

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



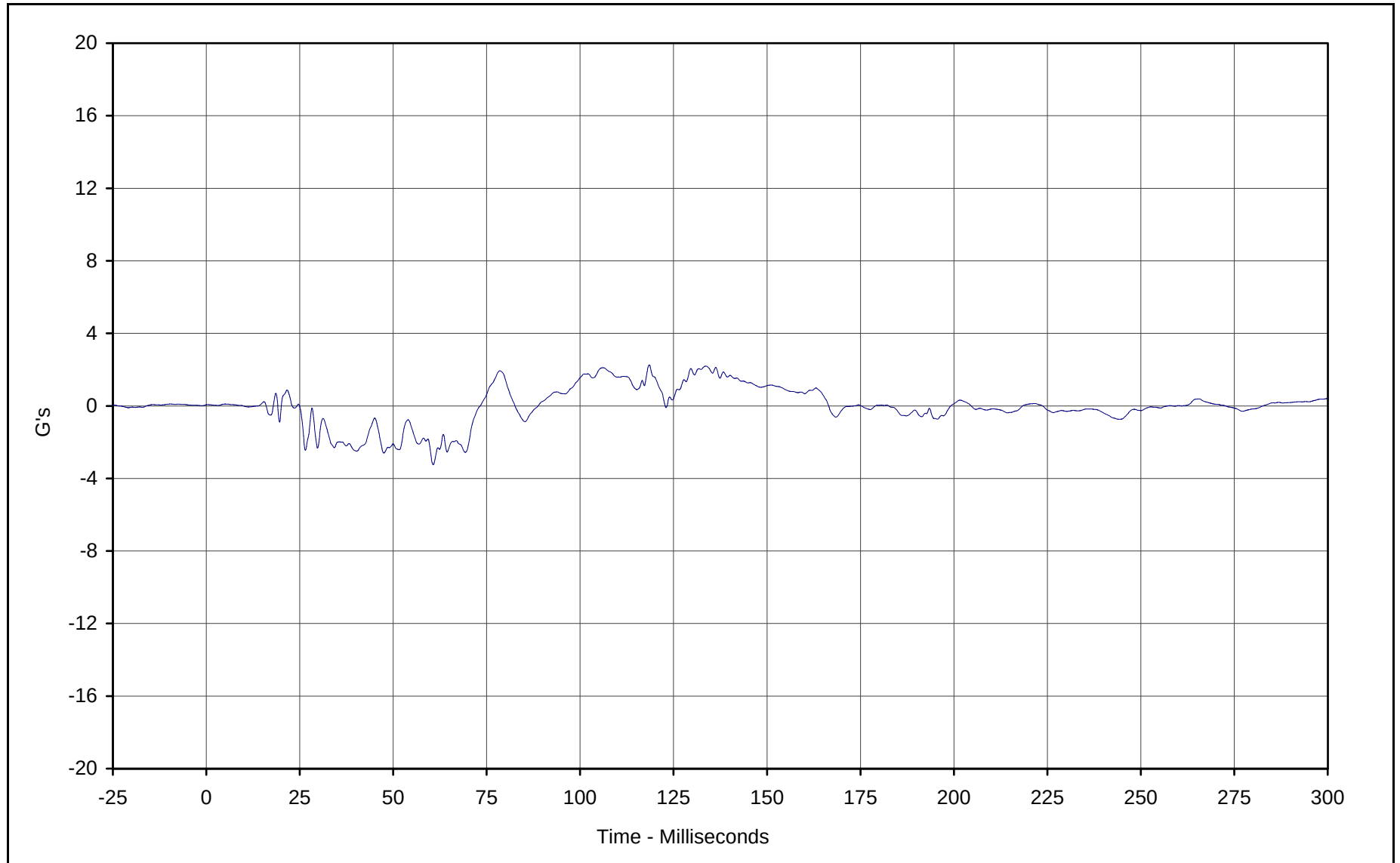


Curve Description: Driver Chest Redundant X Displ.
Maximum Value: 97.8 at 84.0 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: IN2-016

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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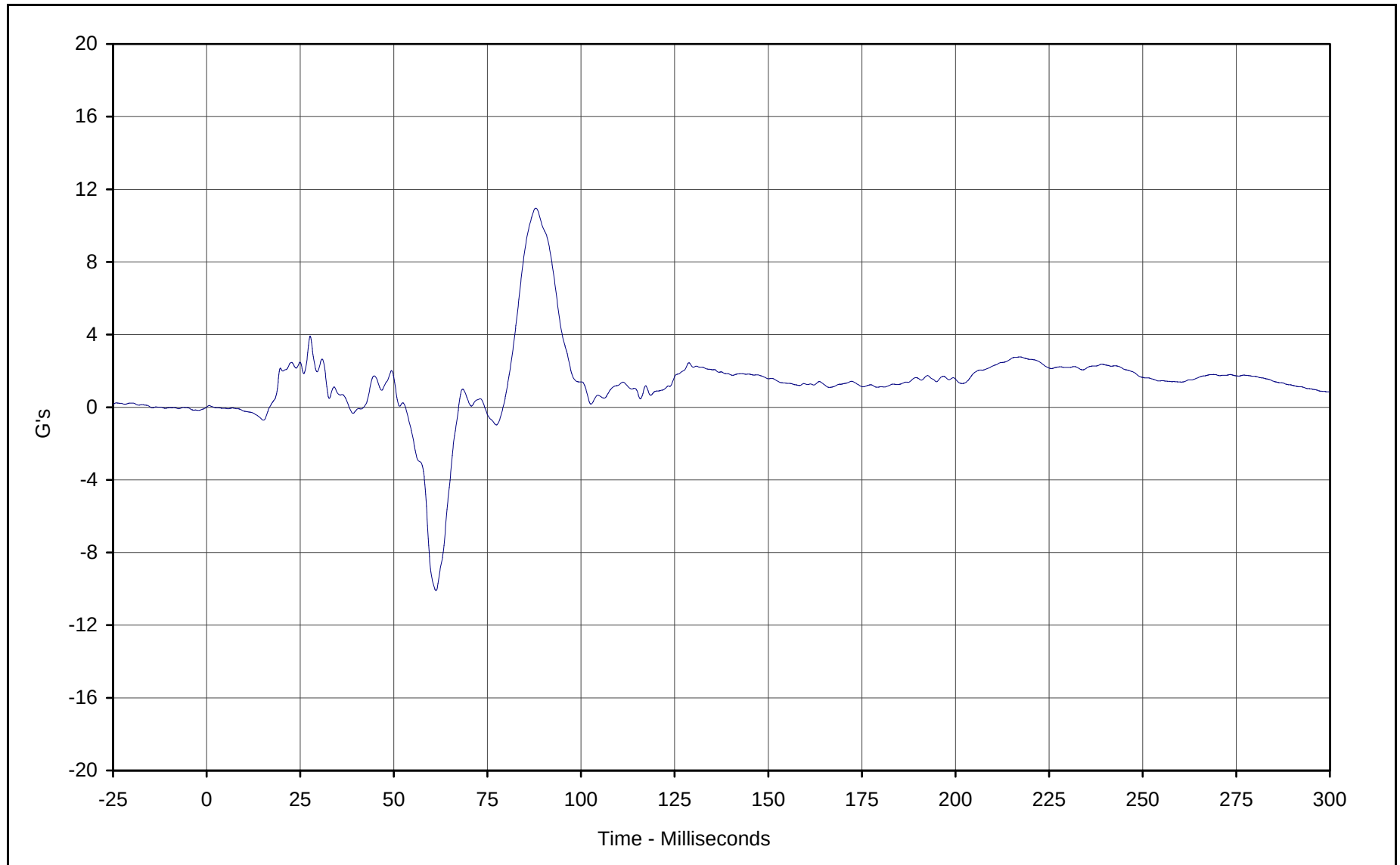
Curve Description: Driver Chest Redundant Y
Maximum Value: 2.3 at 118.5 Milliseconds
Minimum Value: -3.2 at 60.7 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: FIL-017

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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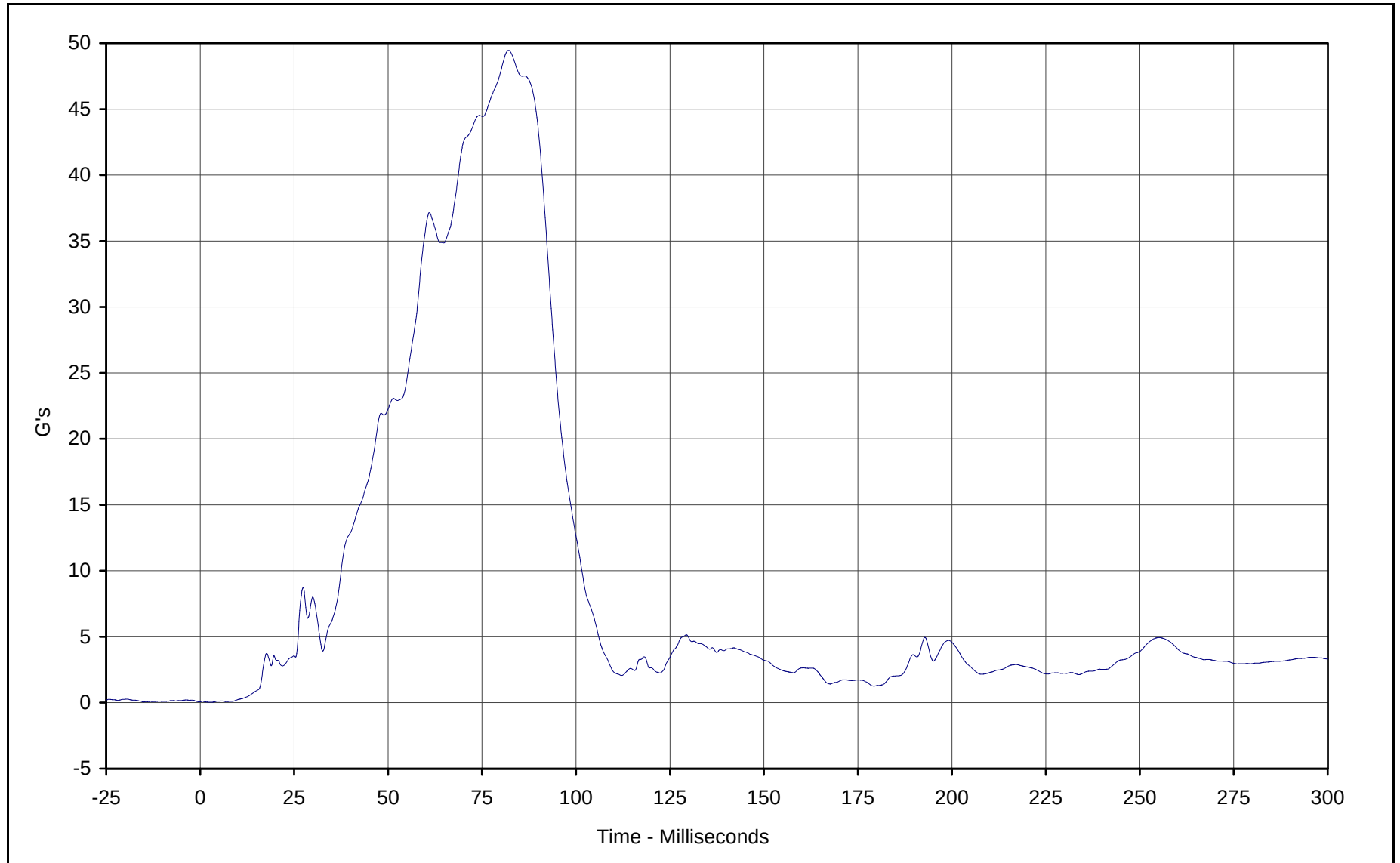
Curve Description: Driver Chest Redundant Z
Maximum Value: 11.0 at 87.9 Milliseconds
Minimum Value: -10.1 at 61.3 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: FIL-018

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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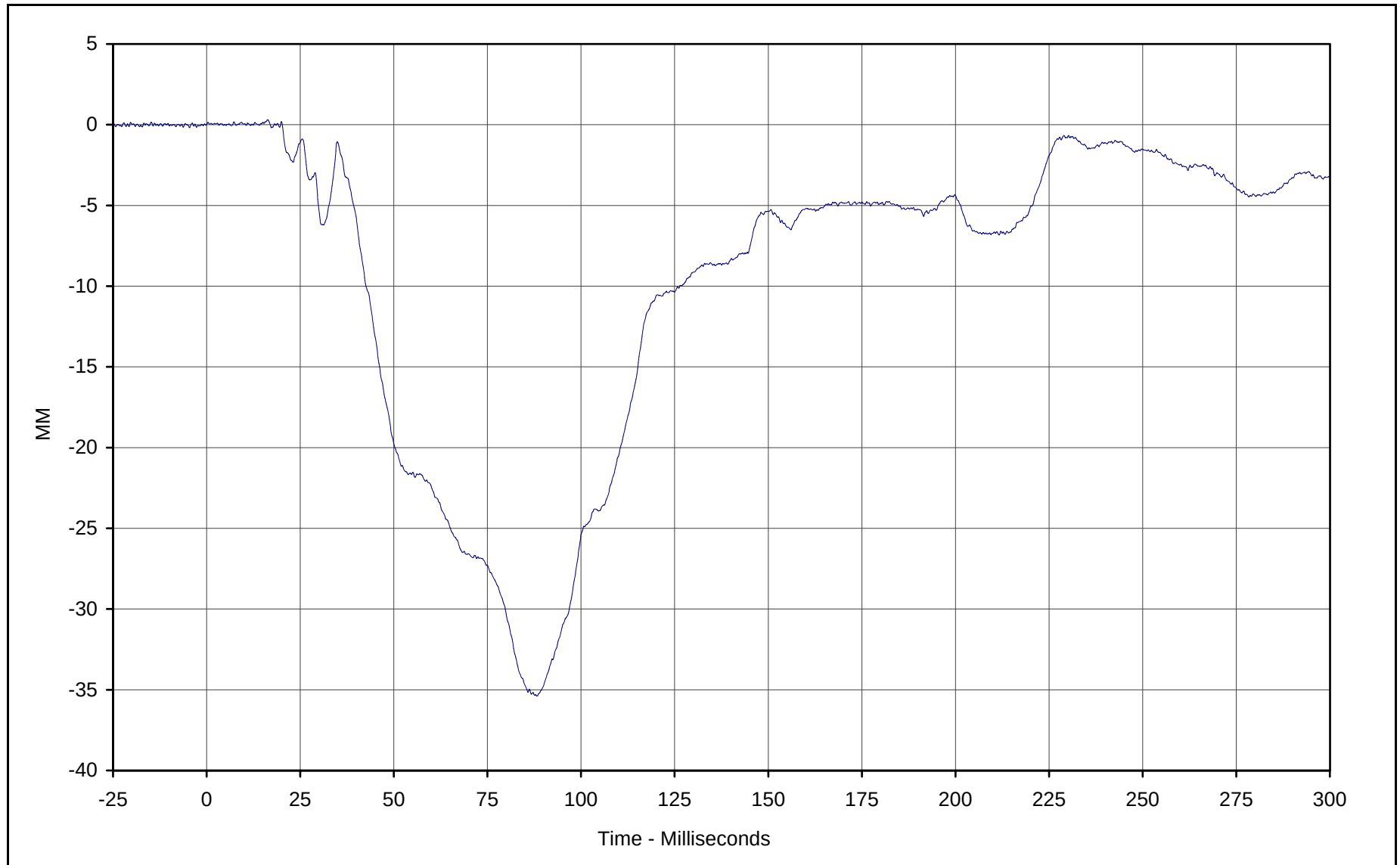
Curve Description: Driver Chest Resultant Redundant
Maximum Value: 49.5 at 82.1 Milliseconds
Minimum Value: 0.0 at 3.0 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: RES-016

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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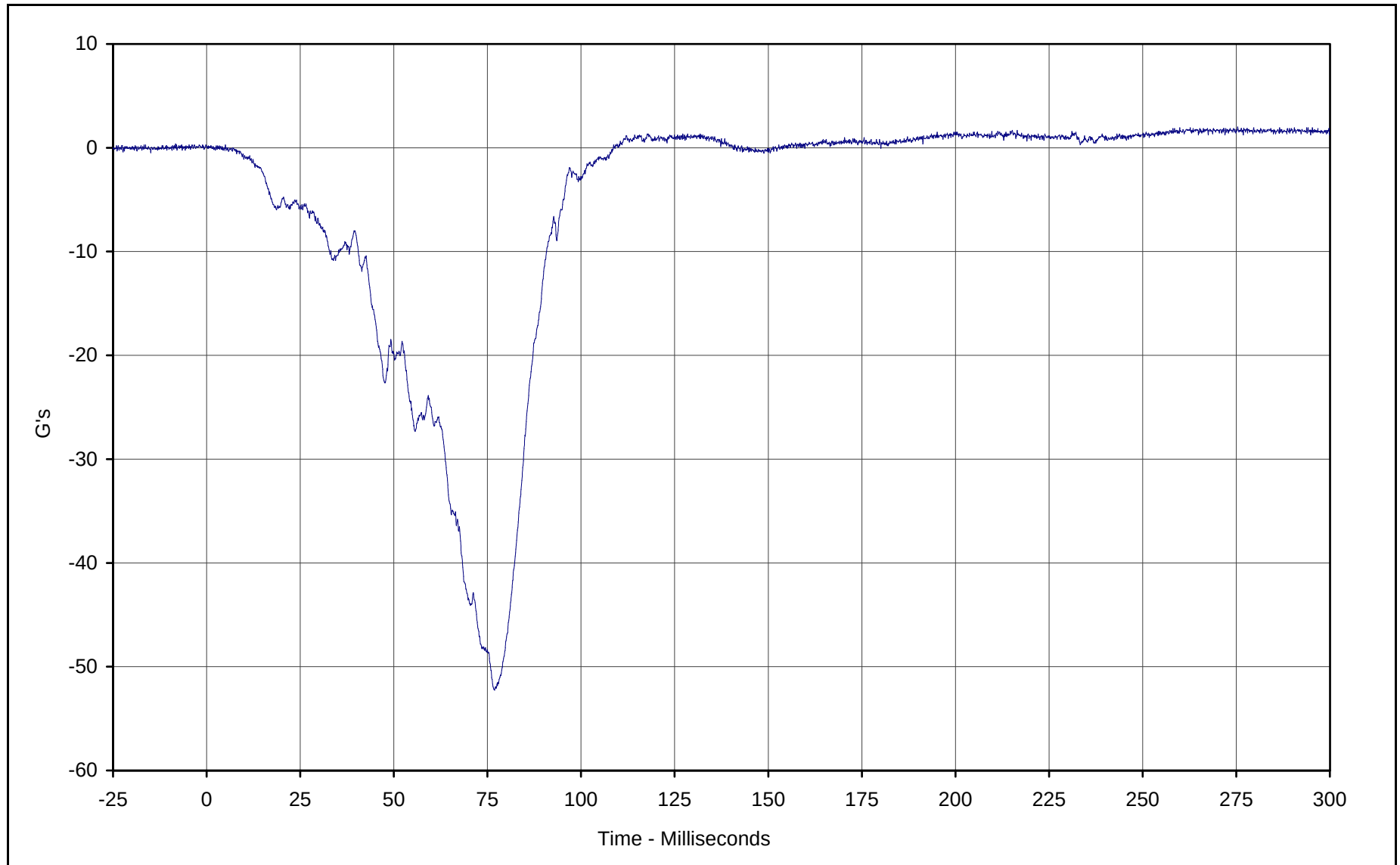


Curve Description: Driver Chest Displacement X
Maximum Value: 0.3 at 16.3 Milliseconds
Minimum Value: -35.4 at 88.2 Milliseconds
SAE Filter Class: 600
Date of Test: 2/22/01
Curve Number: FIL-019

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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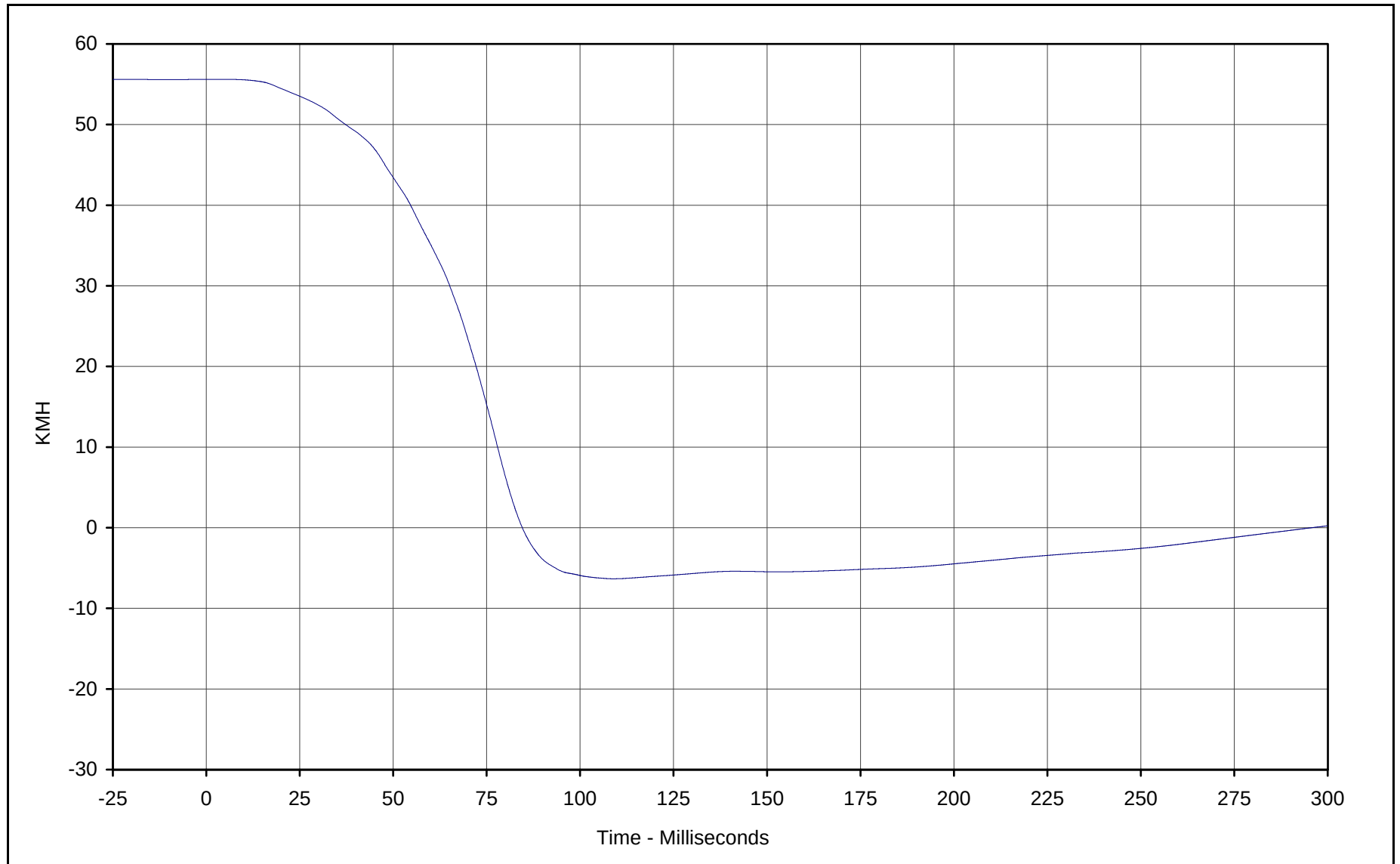


Curve Description: Driver Pelvis X
Maximum Value: 2.0 at 275.4 Milliseconds
Minimum Value: -52.3 at 76.9 Milliseconds
SAE Filter Class: 1000
Date of Test: 2/22/01
Curve Number: FIL-020

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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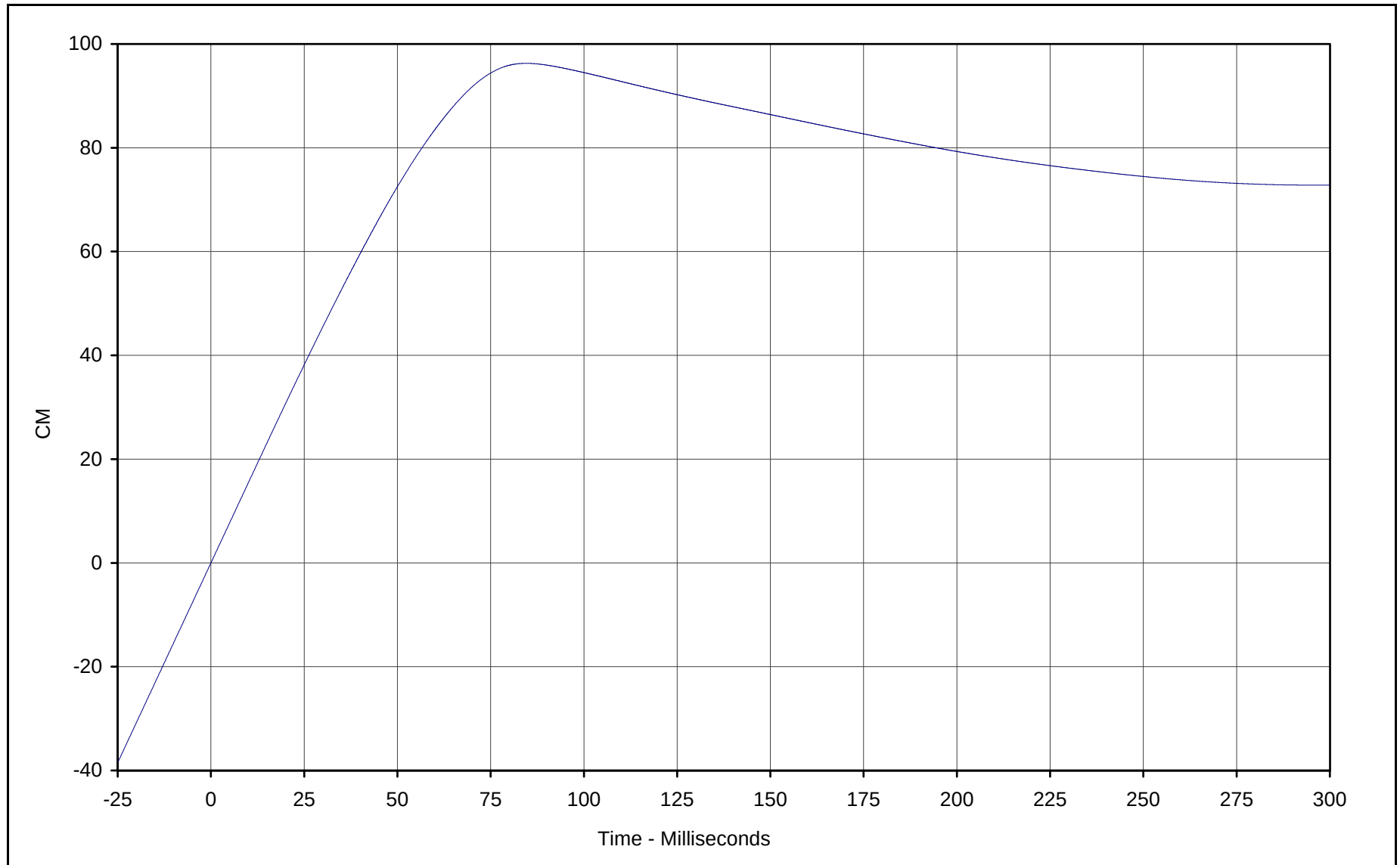


Curve Description: Driver Pelvis X Velocity
Maximum Value: 55.6 at 1.7 Milliseconds
Minimum Value: -6.3 at 108.8 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: IN1-020

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



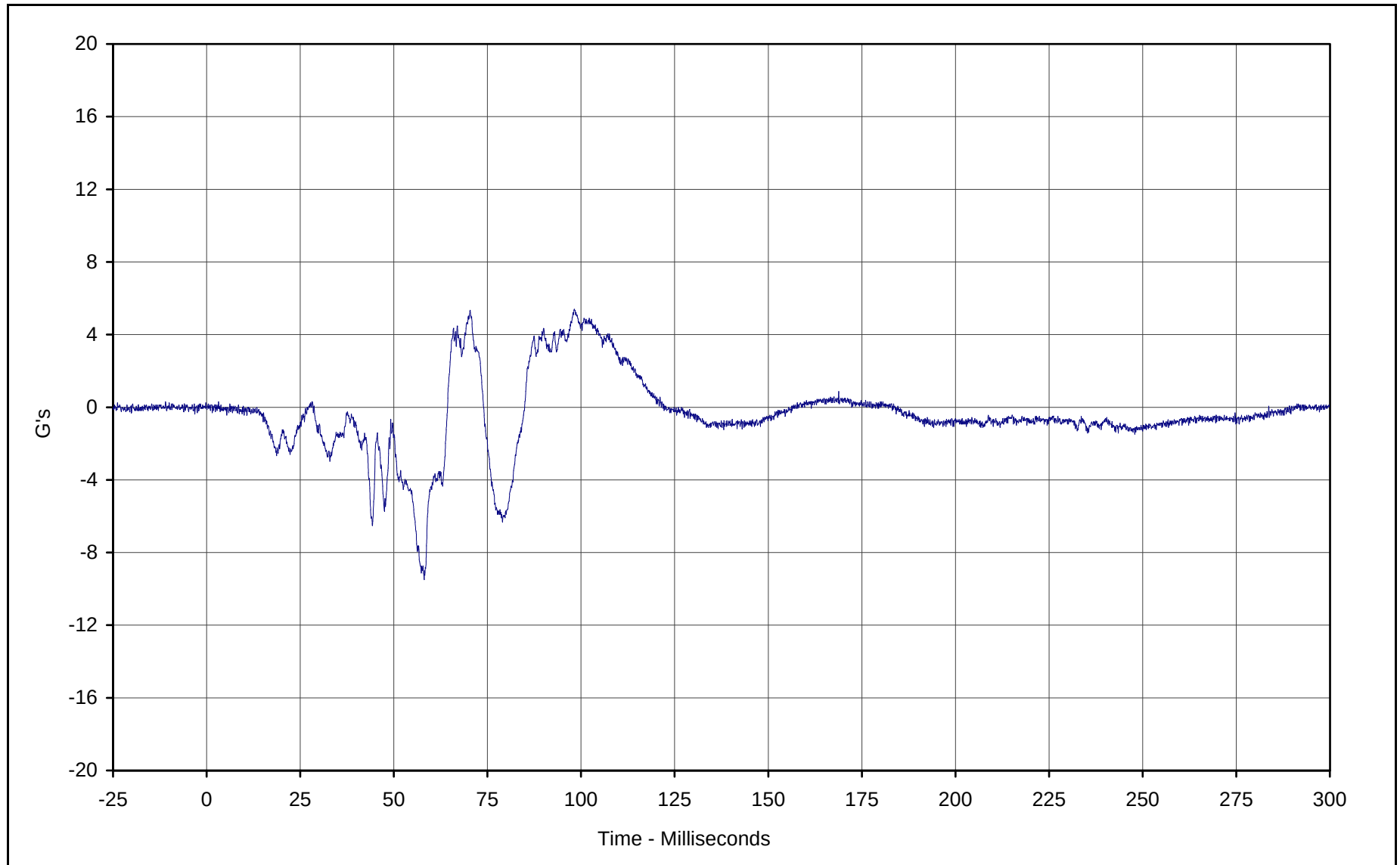
KAR21001-14



Curve Description: Driver Pelvis X Displ.
Maximum Value: 96.3 at 84.5 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: IN2-020

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan

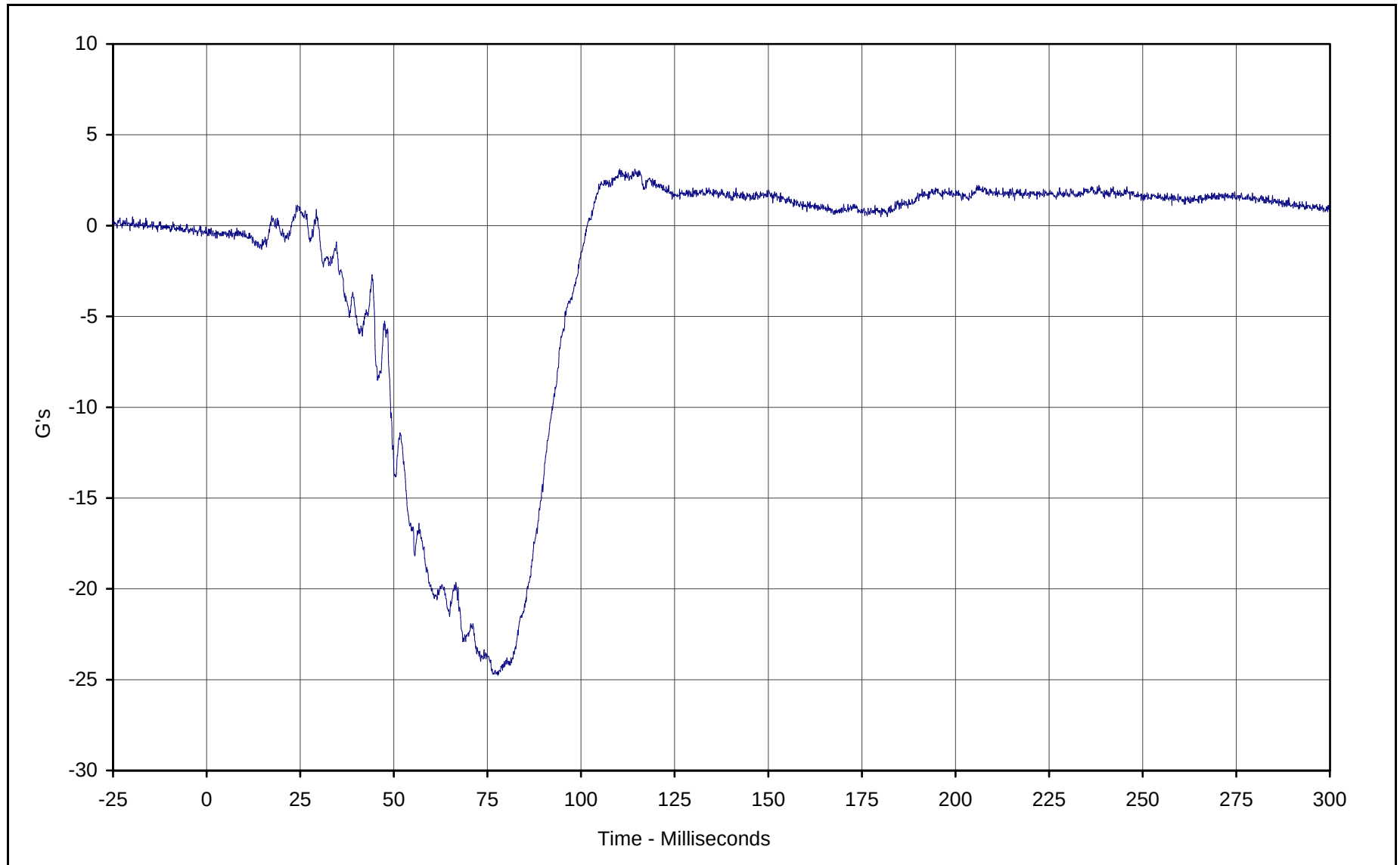




Curve Description: Driver Pelvis Y
Maximum Value: 5.4 at 98.2 Milliseconds
Minimum Value: -9.5 at 58.1 Milliseconds
SAE Filter Class: 1000
Date of Test: 2/22/01
Curve Number: FIL-021

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan

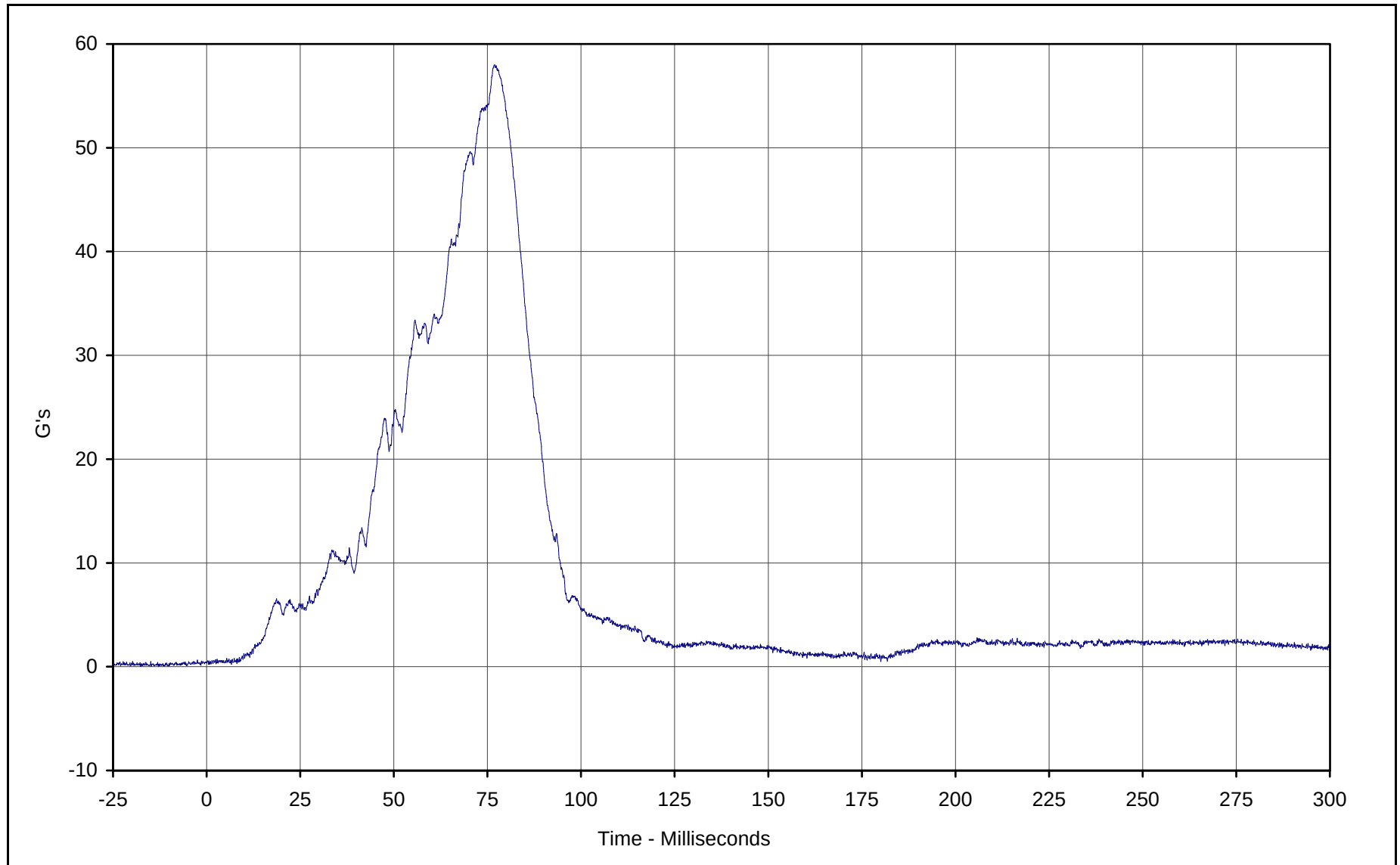




Curve Description: Driver Pelvis Z
Maximum Value: 3.1 at 110.3 Milliseconds
Minimum Value: -24.8 at 77.8 Milliseconds
SAE Filter Class: 1000
Date of Test: 2/22/01
Curve Number: FIL-022

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



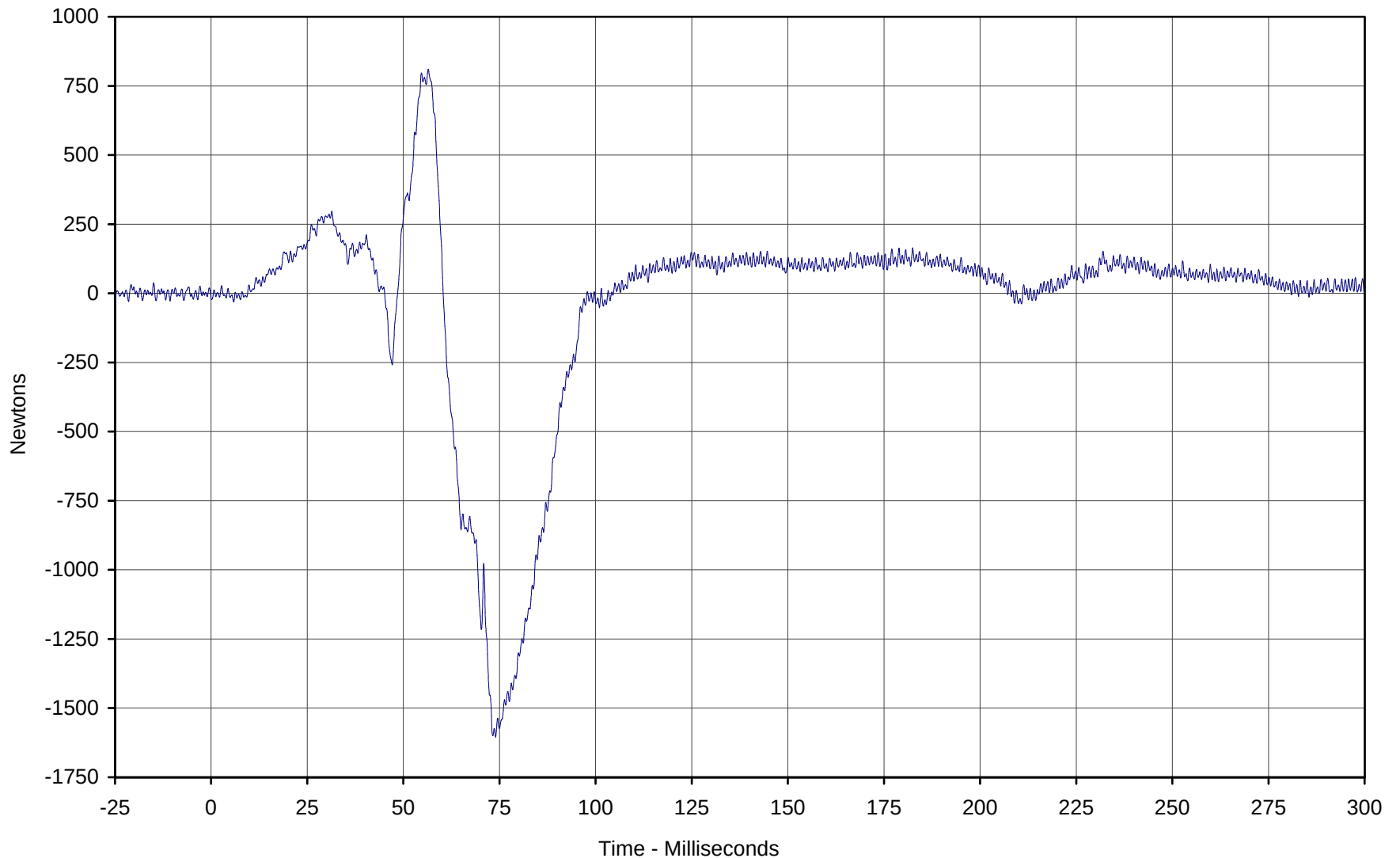


Curve Description: Driver Pelvis Resultant
Maximum Value: 58.0 at 76.9 Milliseconds
Minimum Value: 0.2 at 0.5 Milliseconds
SAE Filter Class: 1000
Date of Test: 2/22/01
Curve Number: RES-020

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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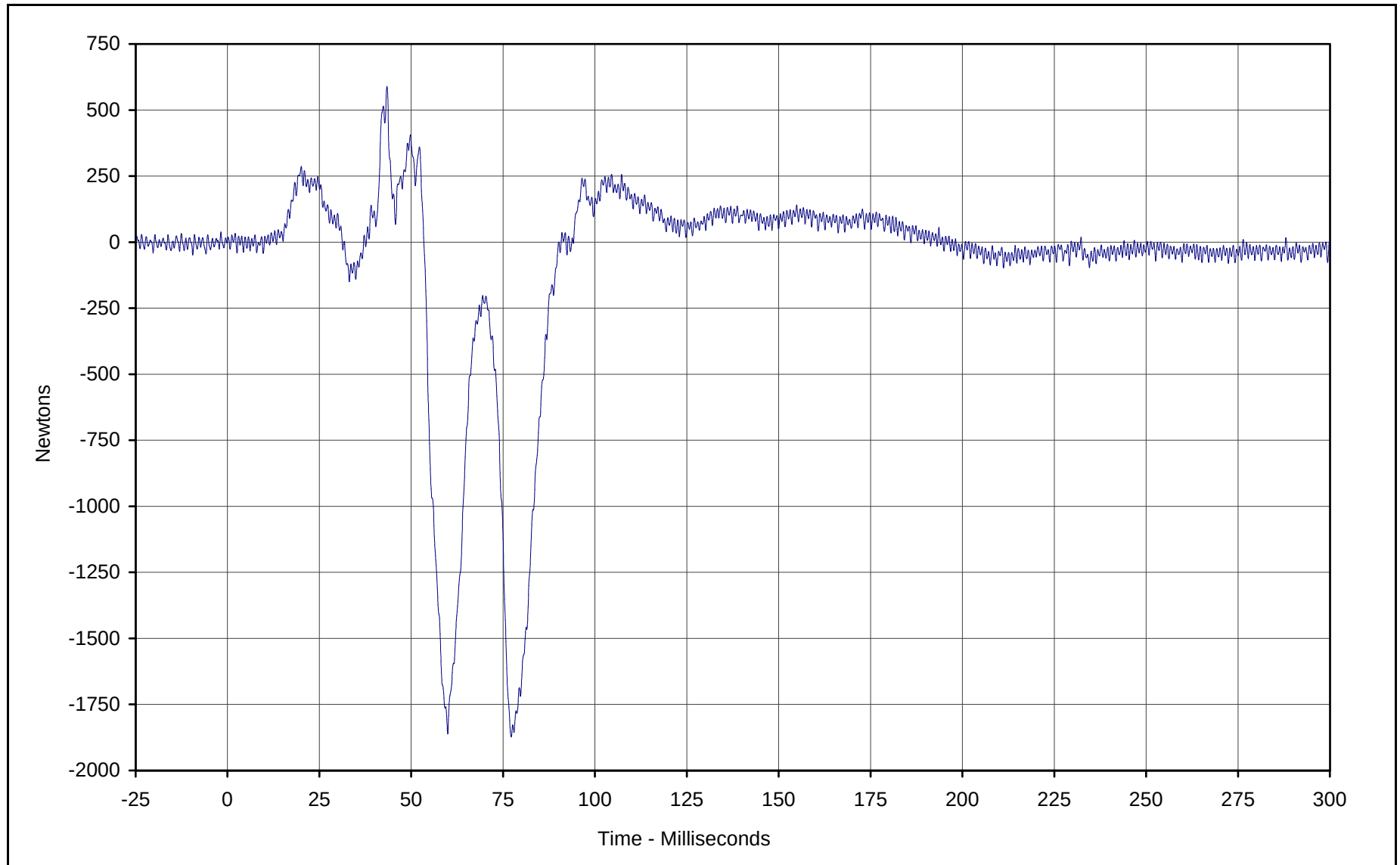
Curve Description: Driver Left Femur Force
Maximum Value: 809.6 at 56.5 Milliseconds
Minimum Value: -1605.9 at 74.0 Milliseconds
SAE Filter Class: 600
Date of Test: 2/22/01
Curve Number: FIL-023

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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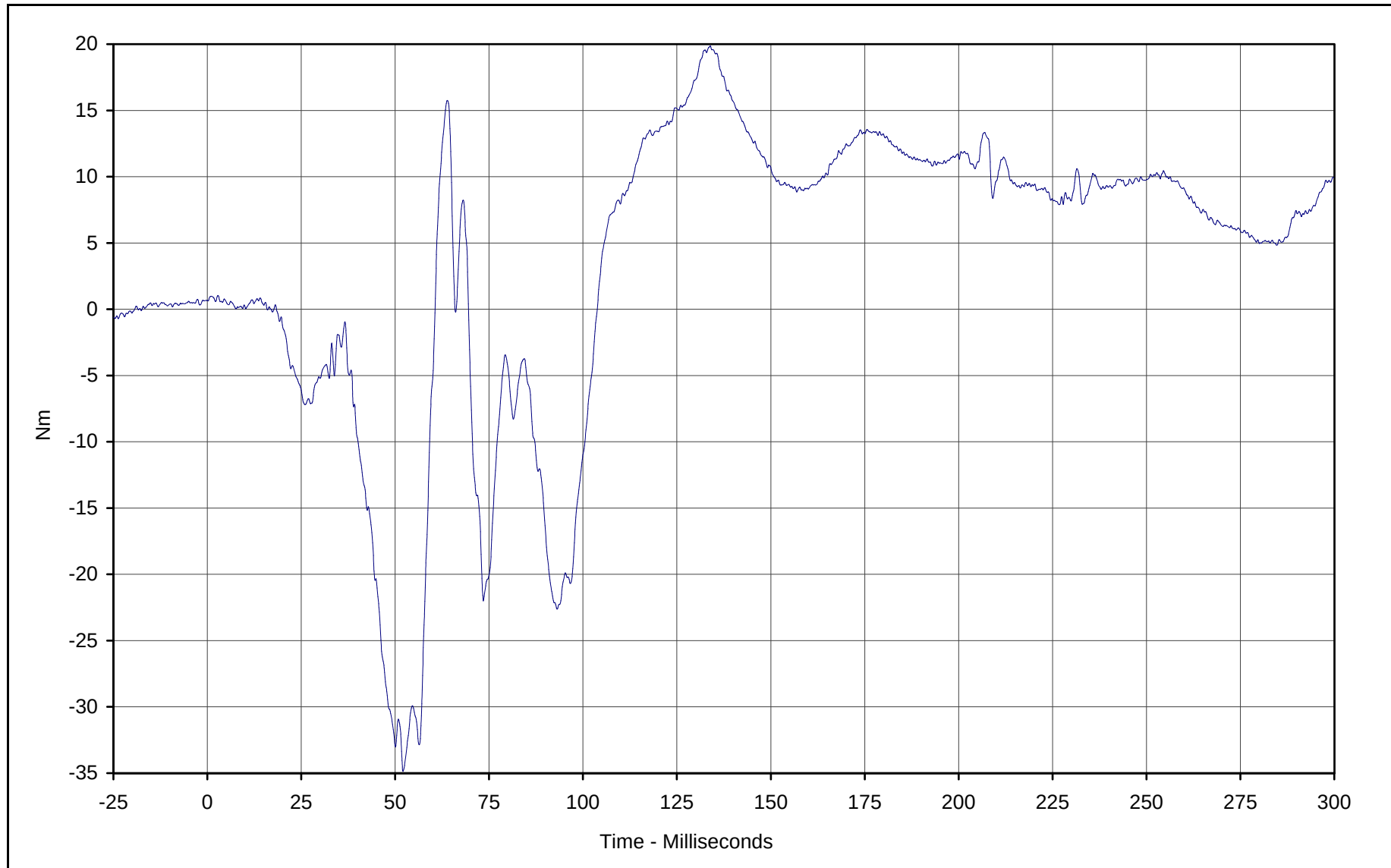
Curve Description: Driver Right Femur Force
Maximum Value: 589.4 at 43.4 Milliseconds
Minimum Value: -1873.1 at 77.2 Milliseconds
SAE Filter Class: 600
Date of Test: 2/22/01
Curve Number: FIL-024

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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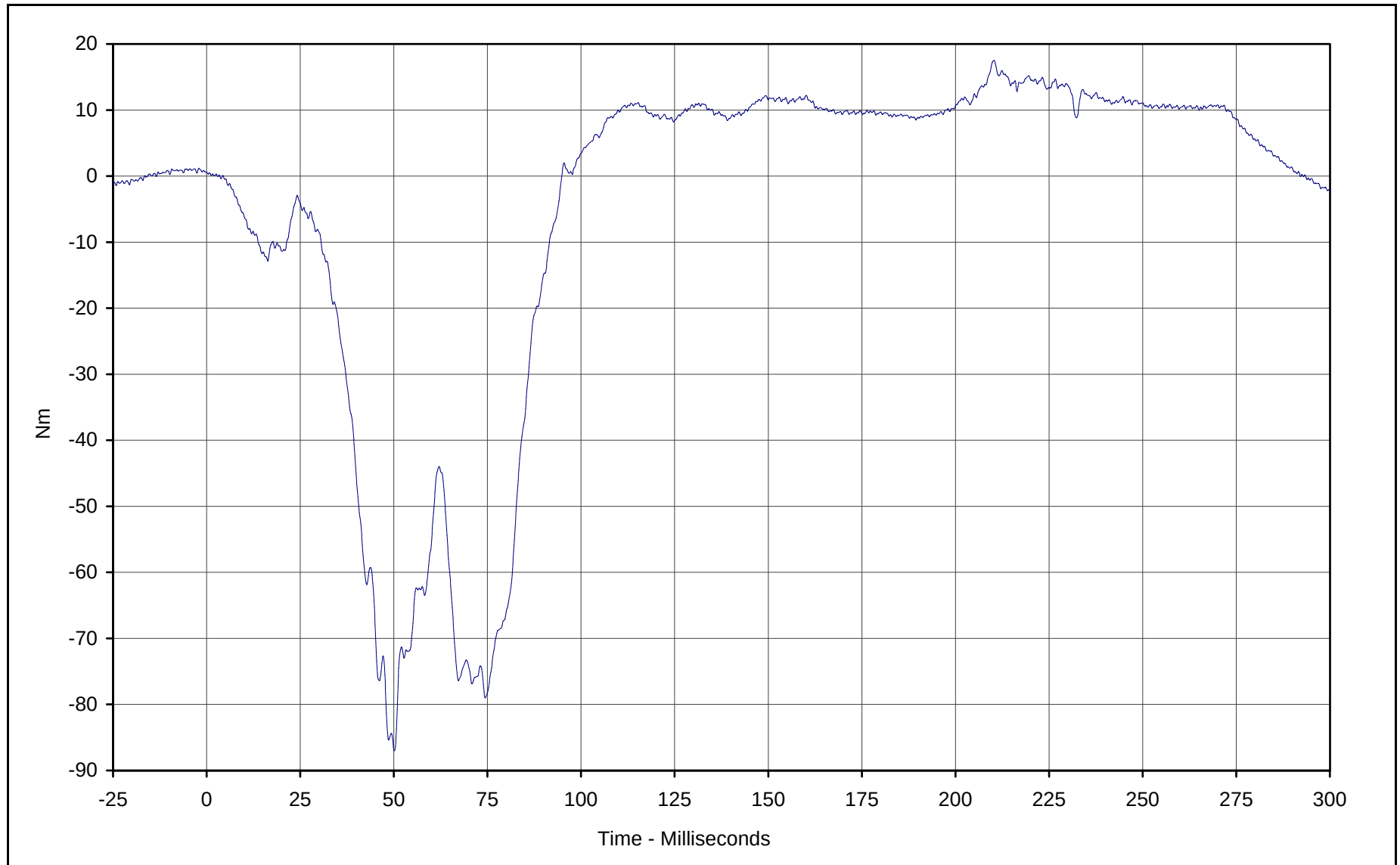
Curve Description: Driver Left Upper Tibia Moment X
Maximum Value: 19.9 at 133.9 Milliseconds
Minimum Value: -34.9 at 52.1 Milliseconds
SAE Filter Class: 600
Date of Test: 2/22/01
Curve Number: FIL-025

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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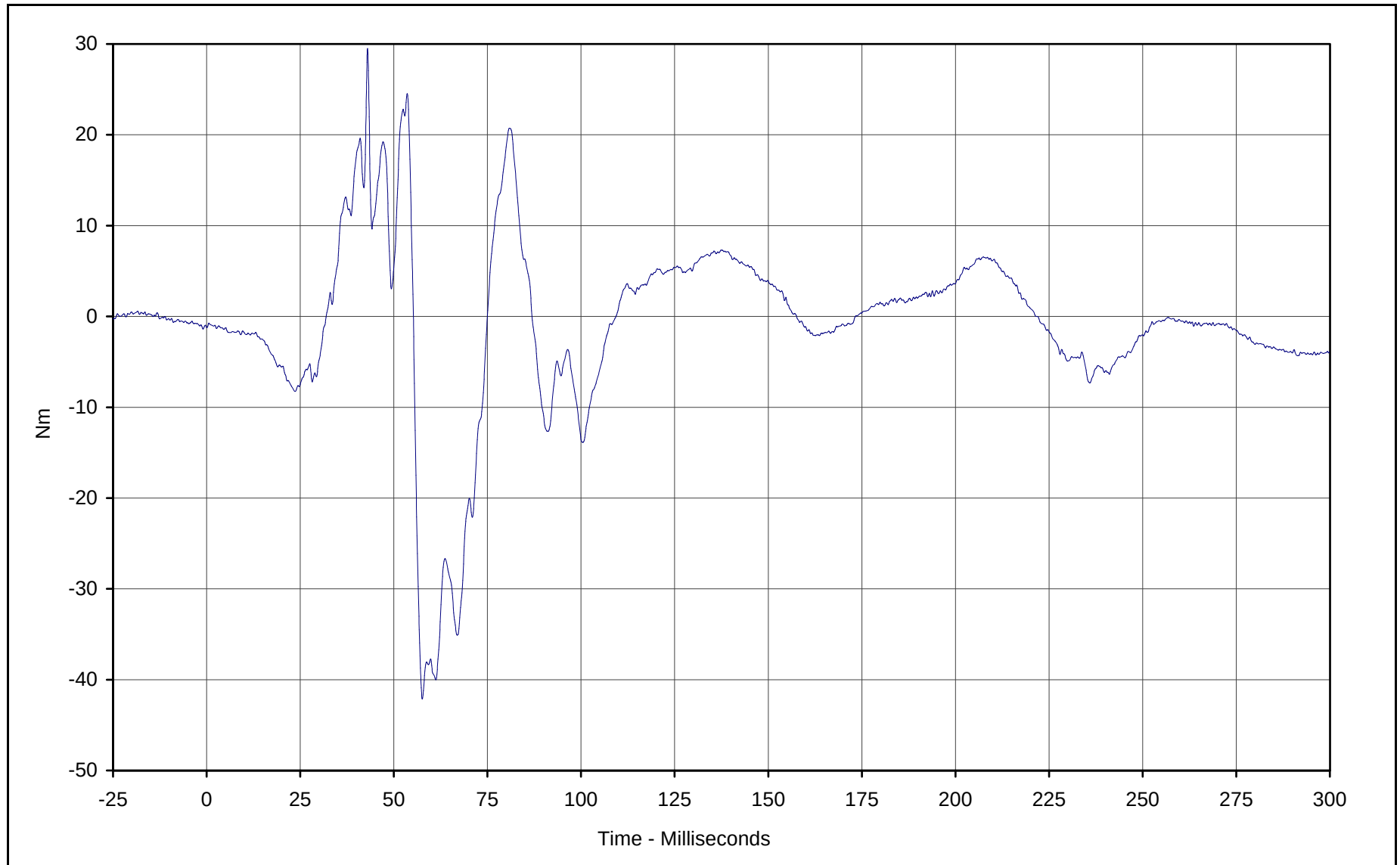


Curve Description: Driver Left Upper Tibia Moment Y
Maximum Value: 17.5 at 210.3 Milliseconds
Minimum Value: -87.0 at 50.1 Milliseconds
SAE Filter Class: 600
Date of Test: 2/22/01
Curve Number: FIL-026

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



KAR21001-14

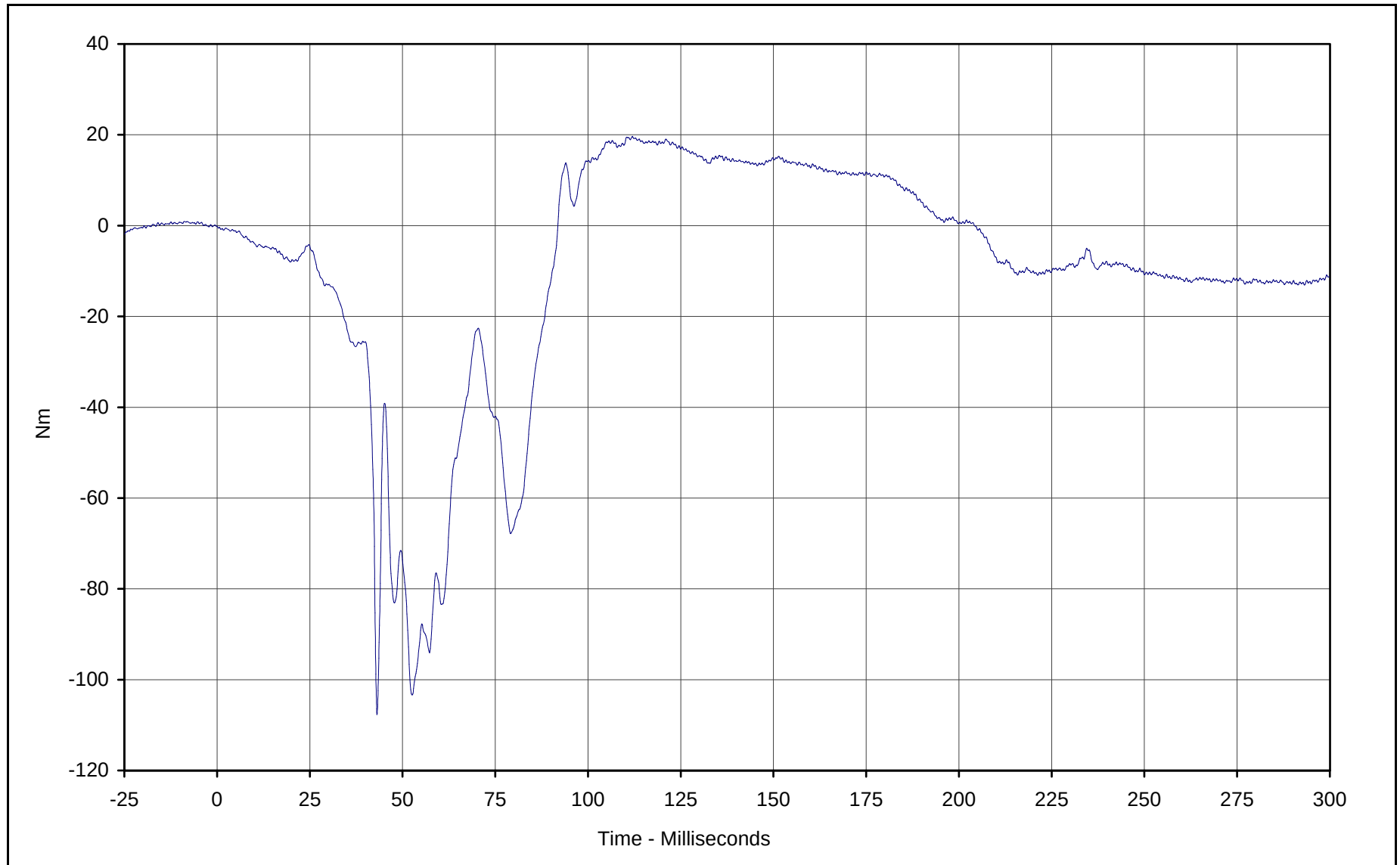


Curve Description: Driver Right Upper Tibia Moment X
Maximum Value: 29.5 at 43.0 Milliseconds
Minimum Value: -42.1 at 57.6 Milliseconds
SAE Filter Class: 600
Date of Test: 2/22/01
Curve Number: FIL-027

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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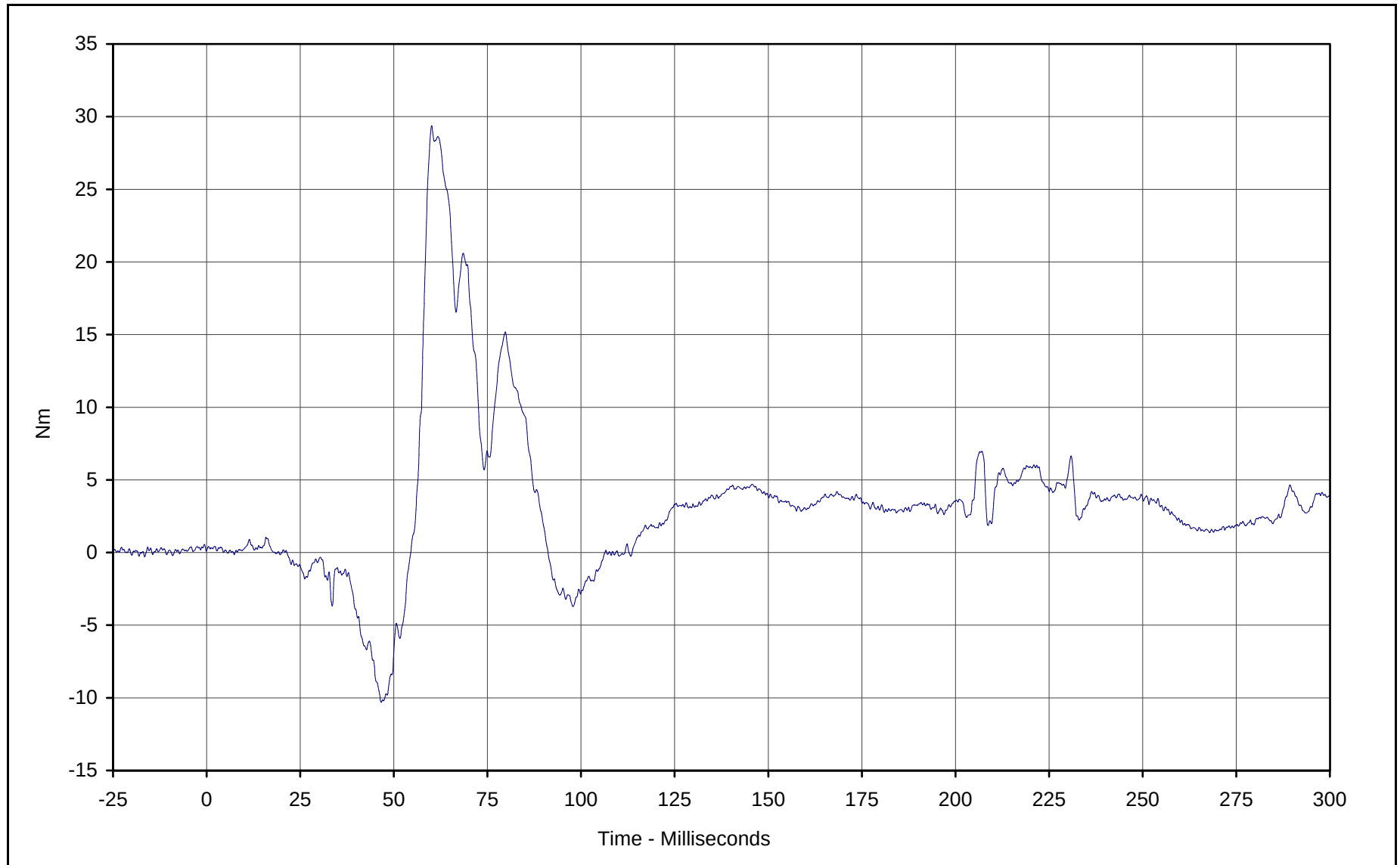


Curve Description: Driver Right Upper Tibia Moment Y
Maximum Value: 19.6 at 112.0 Milliseconds
Minimum Value: -107.7 at 43.1 Milliseconds
SAE Filter Class: 600
Date of Test: 2/22/01
Curve Number: FIL-028

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



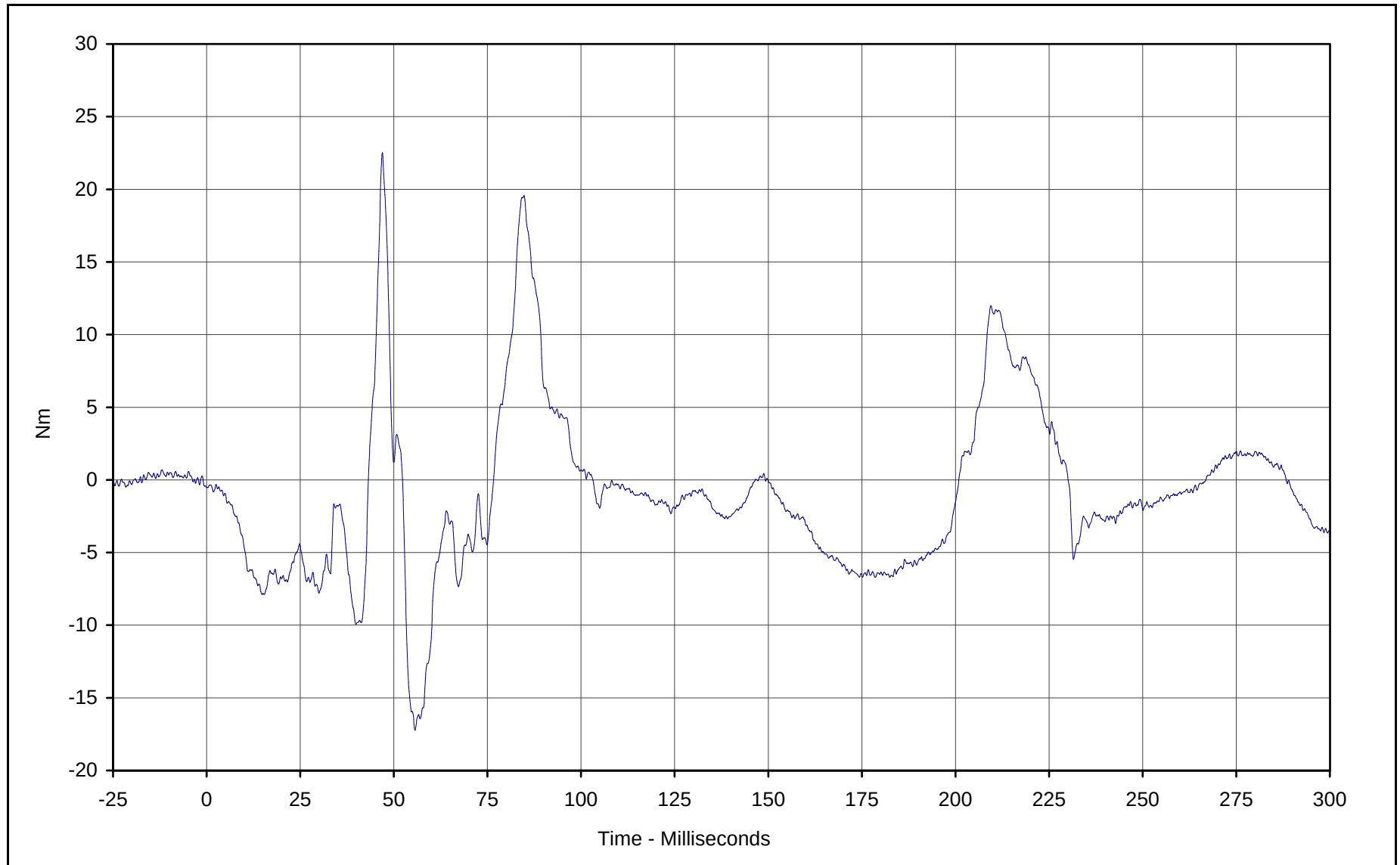
KAR21001-14



Curve Description: Driver Left Lower Tibia Moment X
Maximum Value: 29.4 at 60.1 Milliseconds
Minimum Value: -10.3 at 46.6 Milliseconds
SAE Filter Class: 600
Date of Test: 2/22/01
Curve Number: FIL-029

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



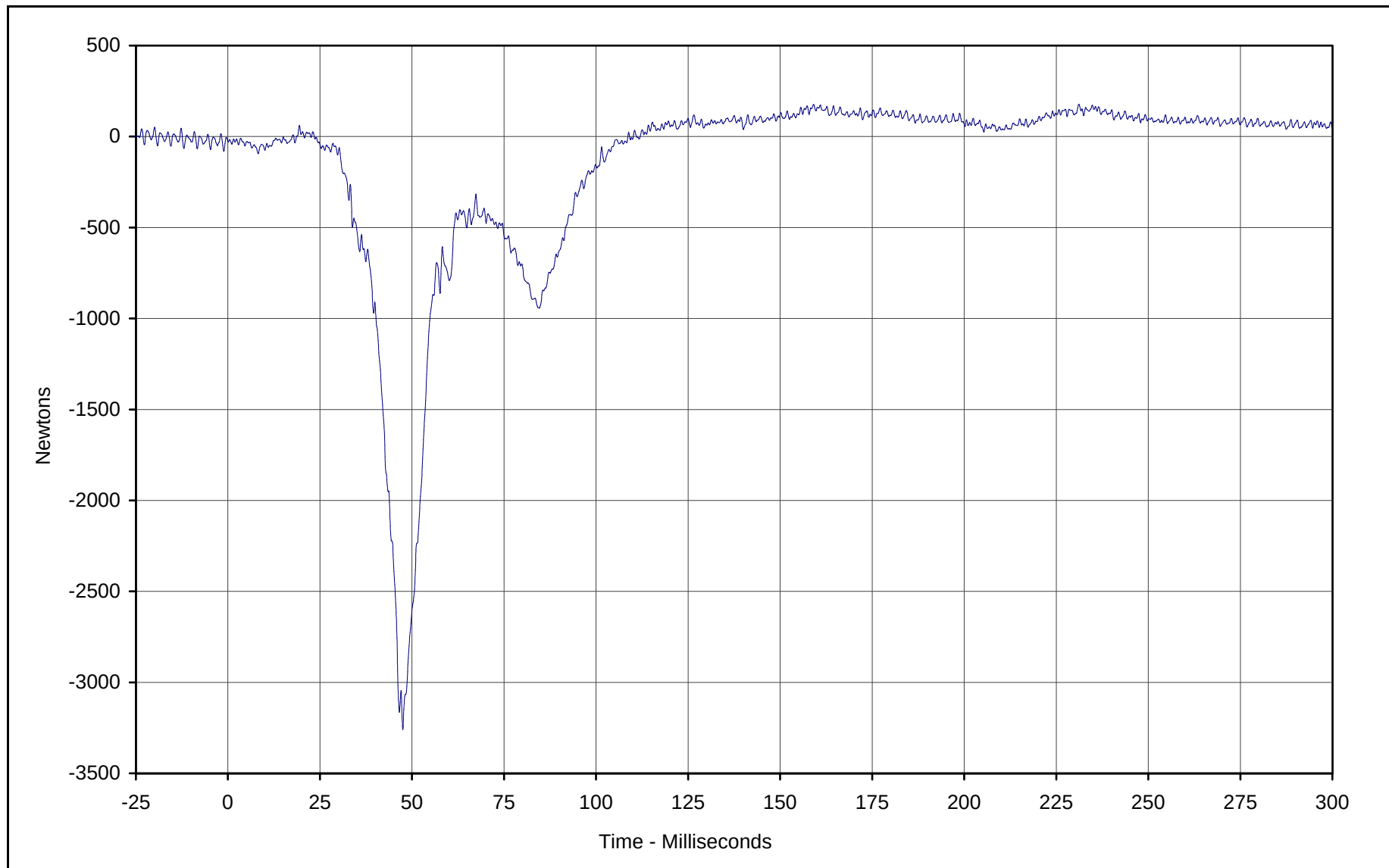


Curve Description: Driver Left Lower Tibia Moment Y
Maximum Value: 22.5 at 46.9 Milliseconds
Minimum Value: -17.2 at 55.7 Milliseconds
SAE Filter Class: 600
Date of Test: 2/22/01
Curve Number: FIL-030

Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan

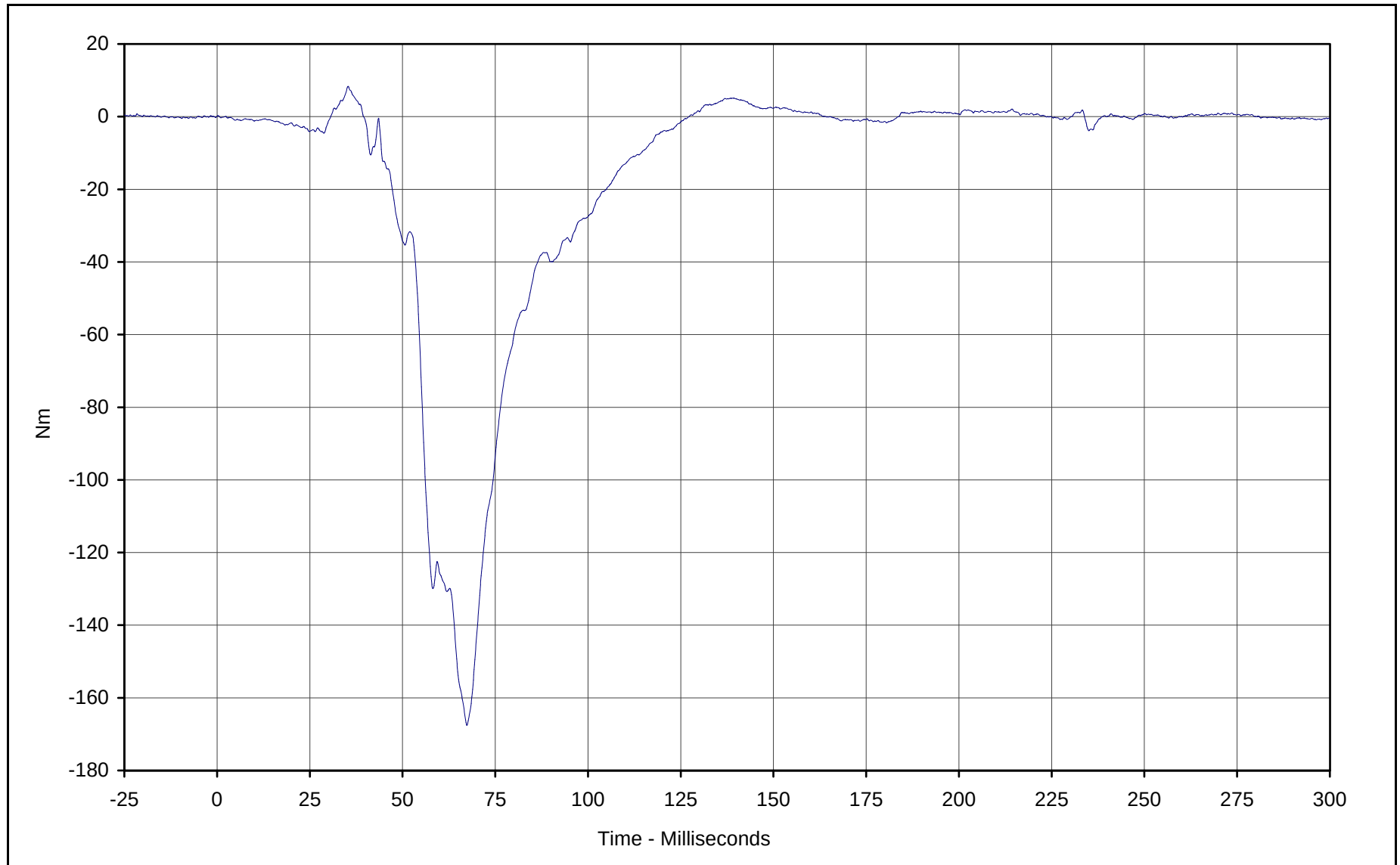




Curve Description: Driver Left Lower Tibia Force Z
Maximum Value: 177.4 at 231.1 Milliseconds
Minimum Value: -3260.5 at 47.5 Milliseconds
SAE Filter Class: 600
Date of Test: 2/22/01
Curve Number: FIL-031

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



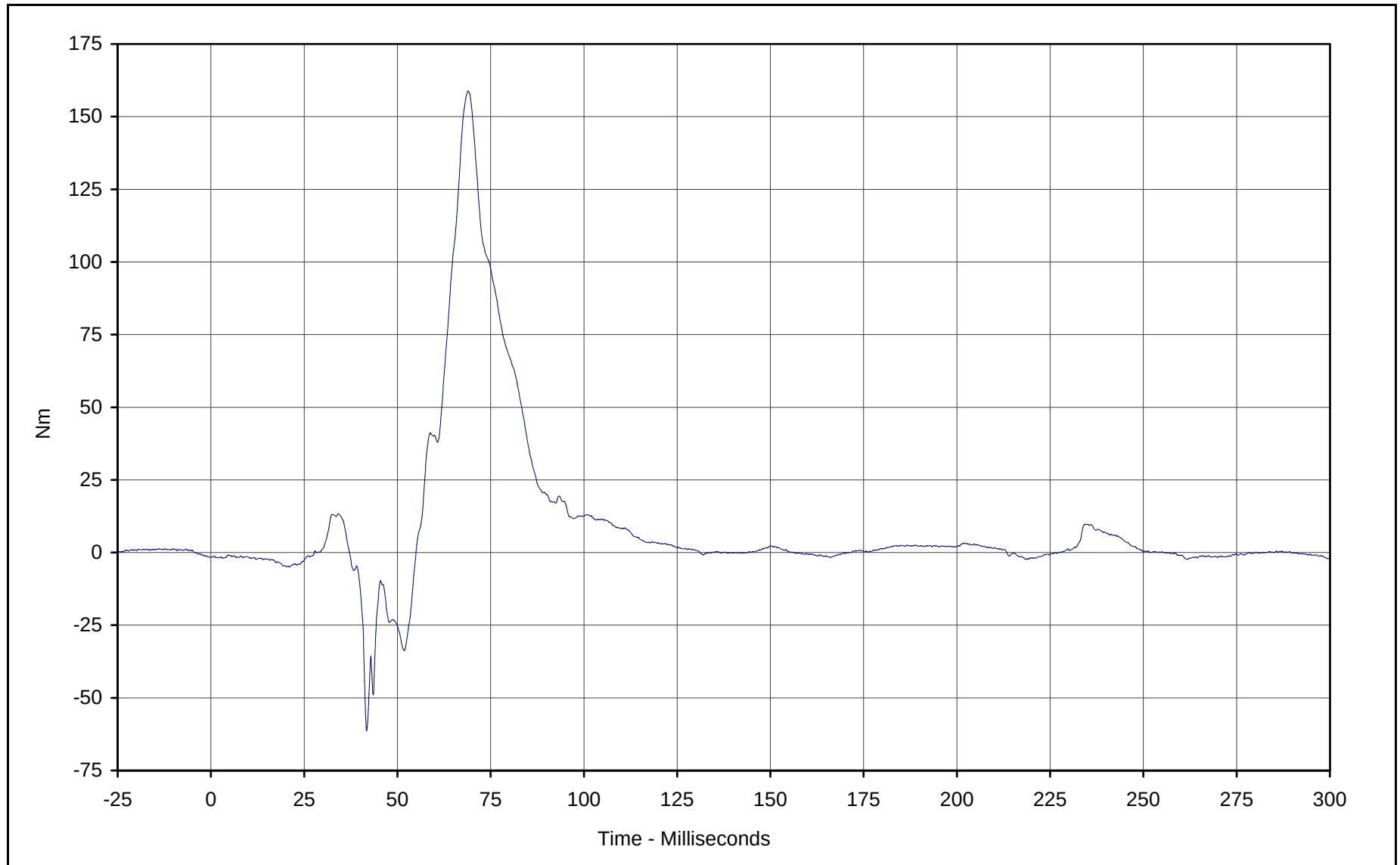


Curve Description: Driver Right Lower Tibia Moment X
Maximum Value: 8.4 at 35.3 Milliseconds
Minimum Value: -167.6 at 67.4 Milliseconds
SAE Filter Class: 600
Date of Test: 2/22/01
Curve Number: FIL-032

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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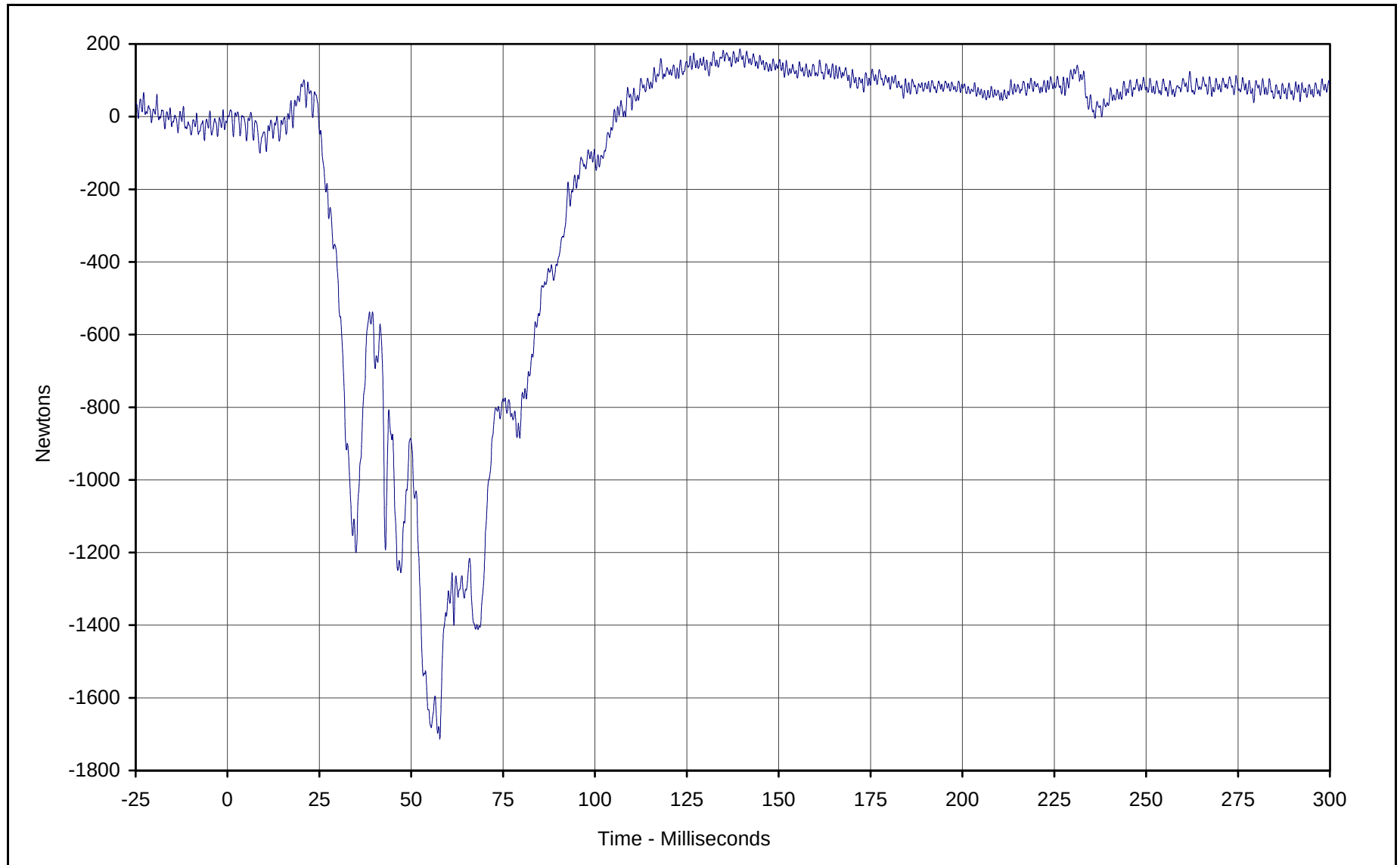


Curve Description: Driver Right Lower Tibia Moment Y
Maximum Value: 158.8 at 69.0 Milliseconds
Minimum Value: -61.3 at 41.8 Milliseconds
SAE Filter Class: 600
Date of Test: 2/22/01
Curve Number: FIL-033

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



KAR21001-14

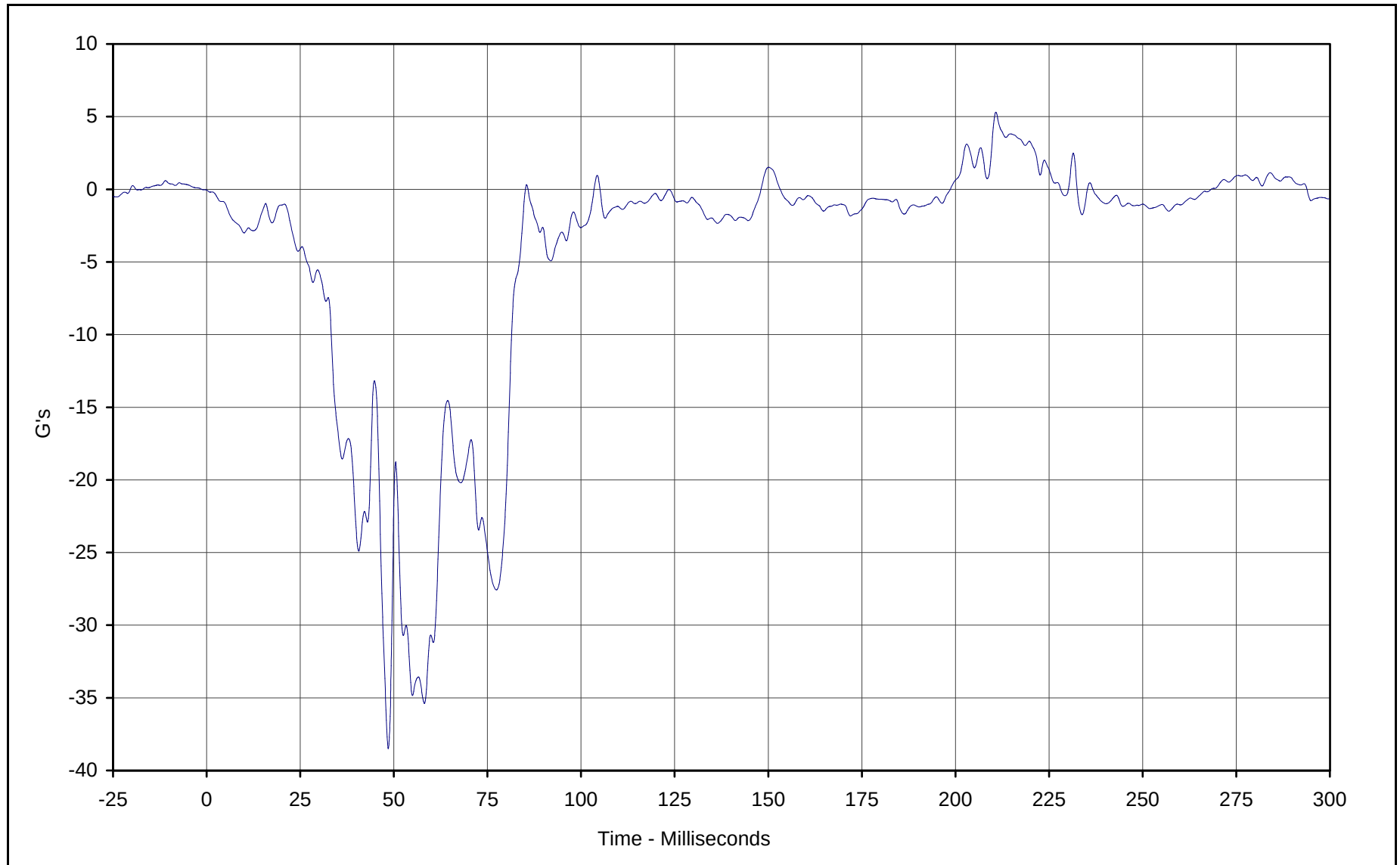


Curve Description: Driver Right Lower Tibia Force Z
Maximum Value: 186.4 at 139.5 Milliseconds
Minimum Value: -1713.9 at 57.8 Milliseconds
SAE Filter Class: 600
Date of Test: 2/22/01
Curve Number: FIL-034

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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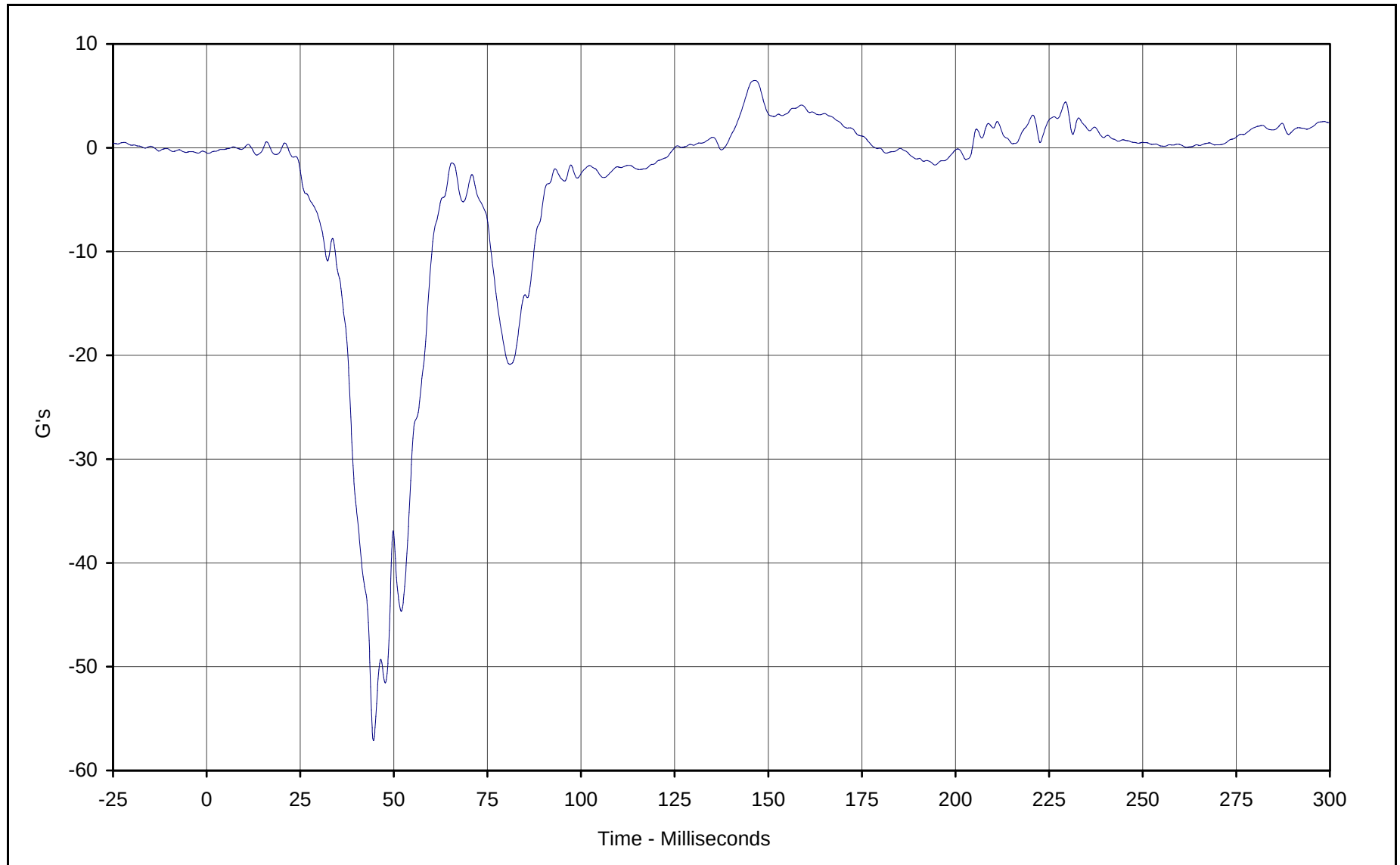


Curve Description: Driver Left Foot Aft X
Maximum Value: 5.3 at 210.8 Milliseconds
Minimum Value: -38.5 at 48.5 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: FIL-035

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



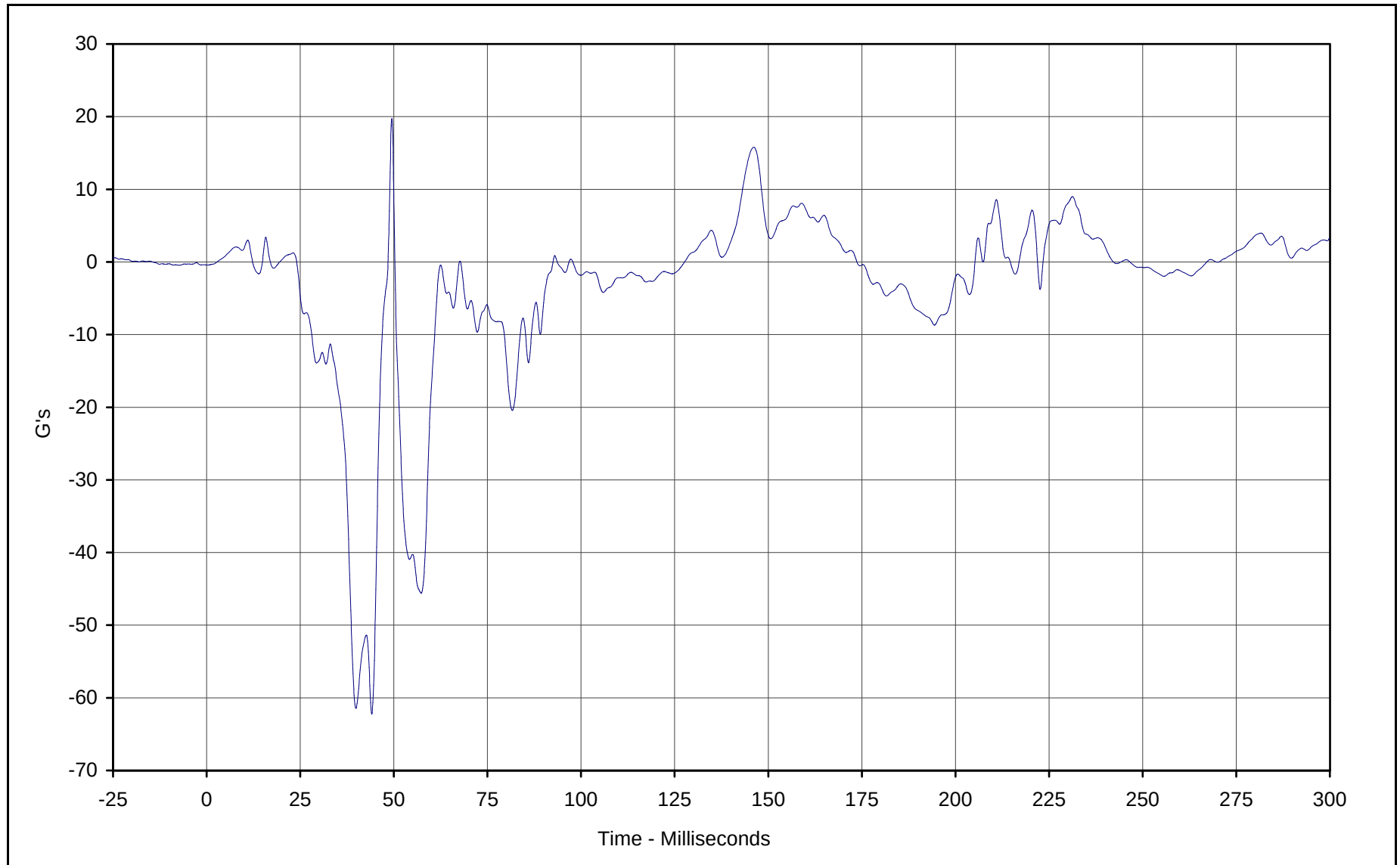
KAR21001-14



Curve Description: Driver Left Foot Aft Z
Maximum Value: 6.5 at 146.5 Milliseconds
Minimum Value: -57.1 at 44.6 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: FIL-036

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



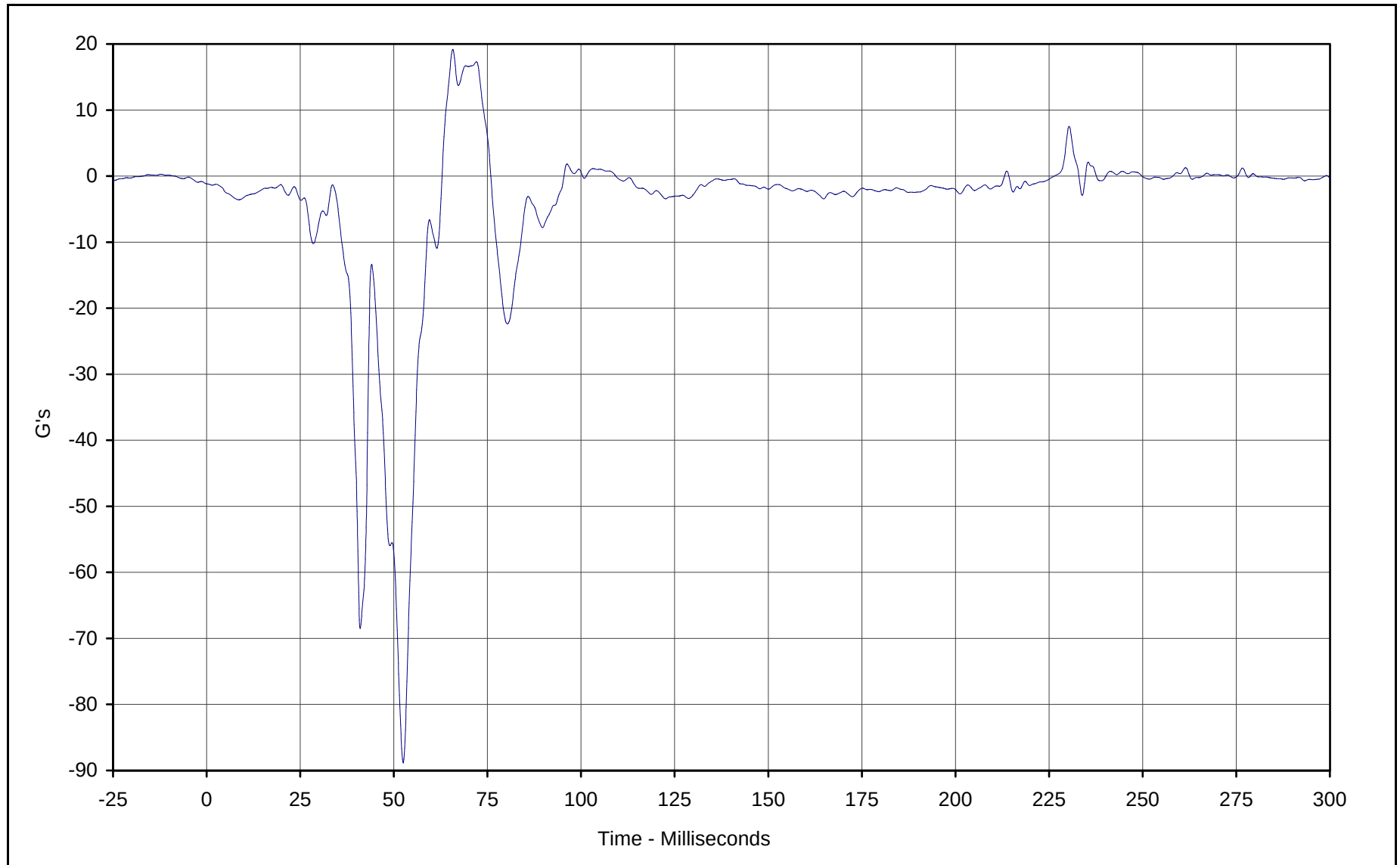


Curve Description: Driver Left Foot Fore Z
Maximum Value: 19.7 at 49.5 Milliseconds
Minimum Value: -62.2 at 44.1 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: FIL-037

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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Curve Description: Driver Right Foot Aft X

Maximum Value: 19.2 at 65.7 Milliseconds

Minimum Value: -88.9 at 52.5 Milliseconds

SAE Filter Class: 180

Date of Test: 2/22/01

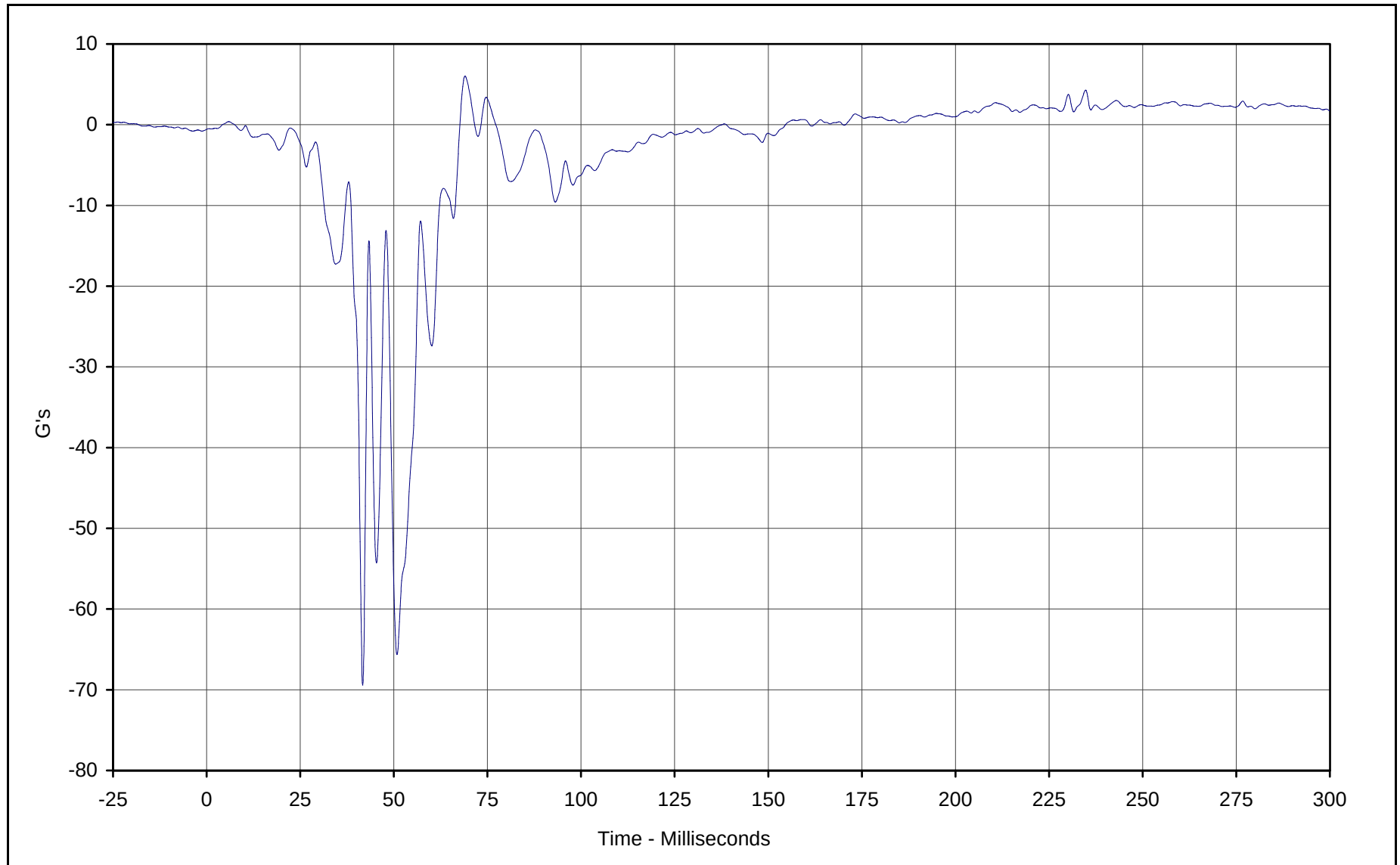
Curve Number: FIL-038

Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan



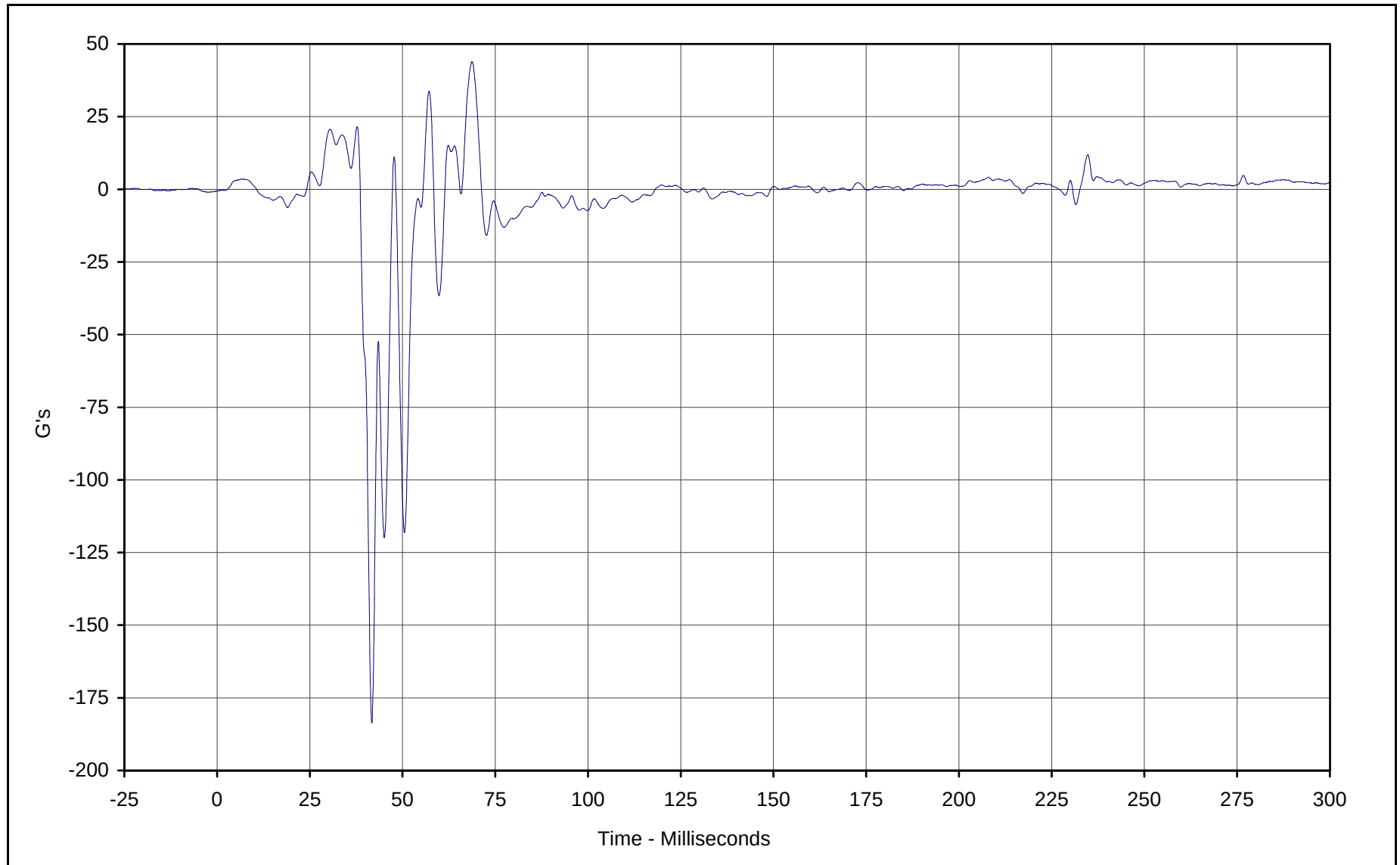
KAR21001-14



Curve Description: Driver Right Foot Aft Z
Maximum Value: 6.0 at 69.0 Milliseconds
Minimum Value: -69.4 at 41.7 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: FIL-039

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan

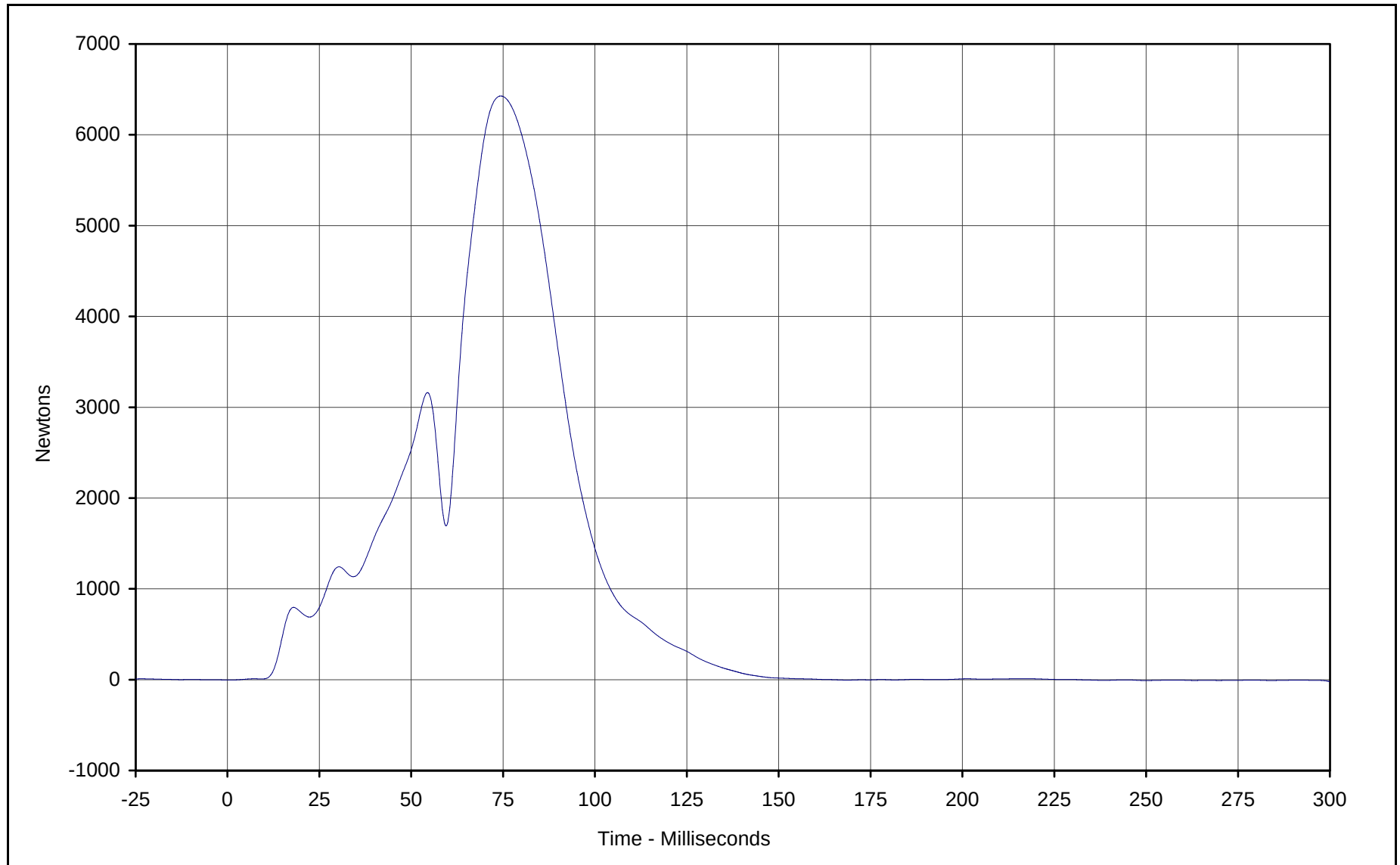




Curve Description: Driver Right Foot Fore Z
Maximum Value: 44.0 at 68.7 Milliseconds
Minimum Value: -183.7 at 41.7 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: FIL-040

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan

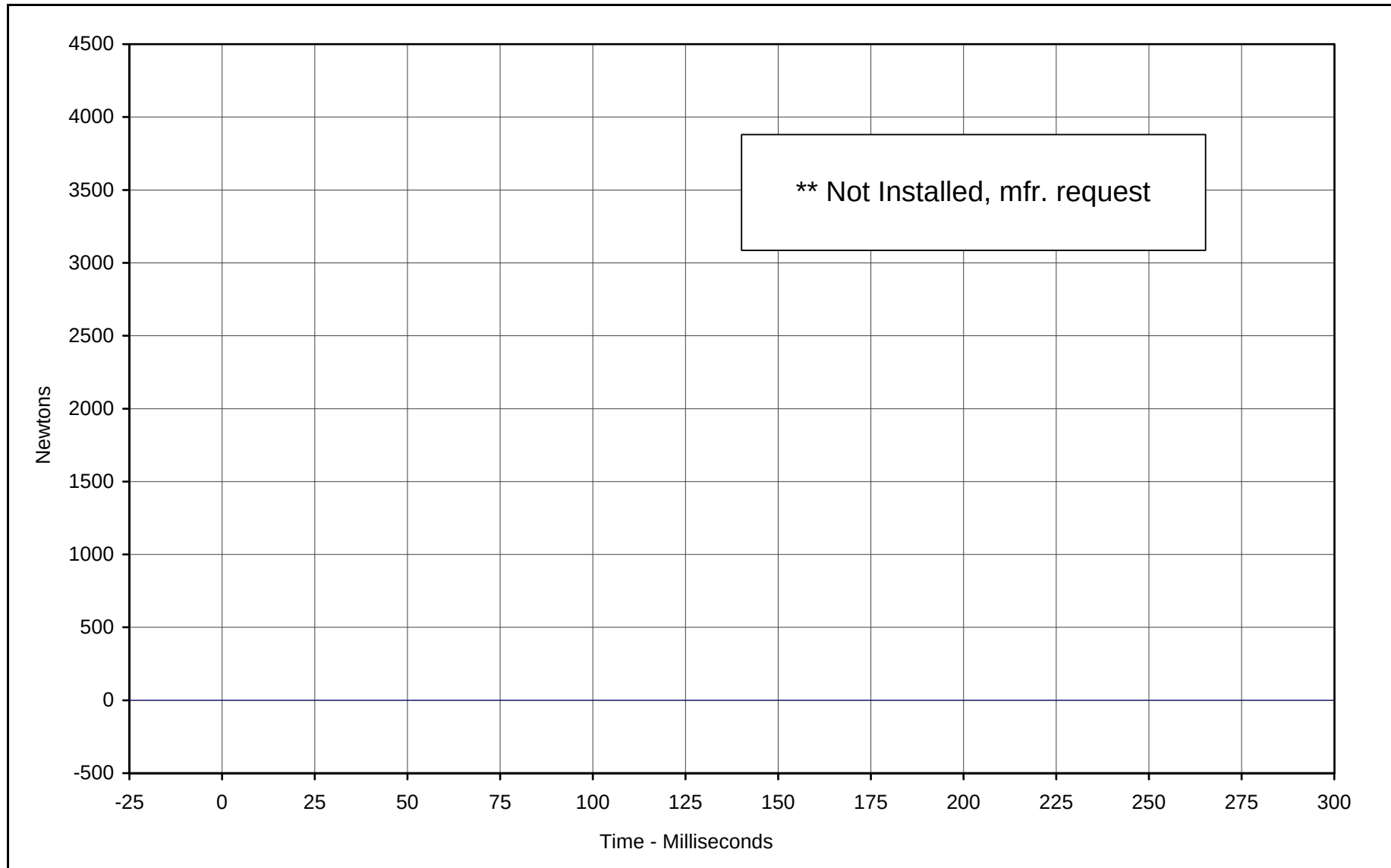




Curve Description: Driver Lap Belt Force
Maximum Value: 6427.4 at 74.4 Milliseconds
Minimum Value: -20.0 at 299.9 Milliseconds
SAE Filter Class: 60
Date of Test: 2/22/01
Curve Number: FIL-041

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan





Curve Description: Driver Shoulder Belt Force **

Maximum Value: 0.0 at 0.0 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 60

Date of Test: 2/22/01

Curve Number: FIL-042

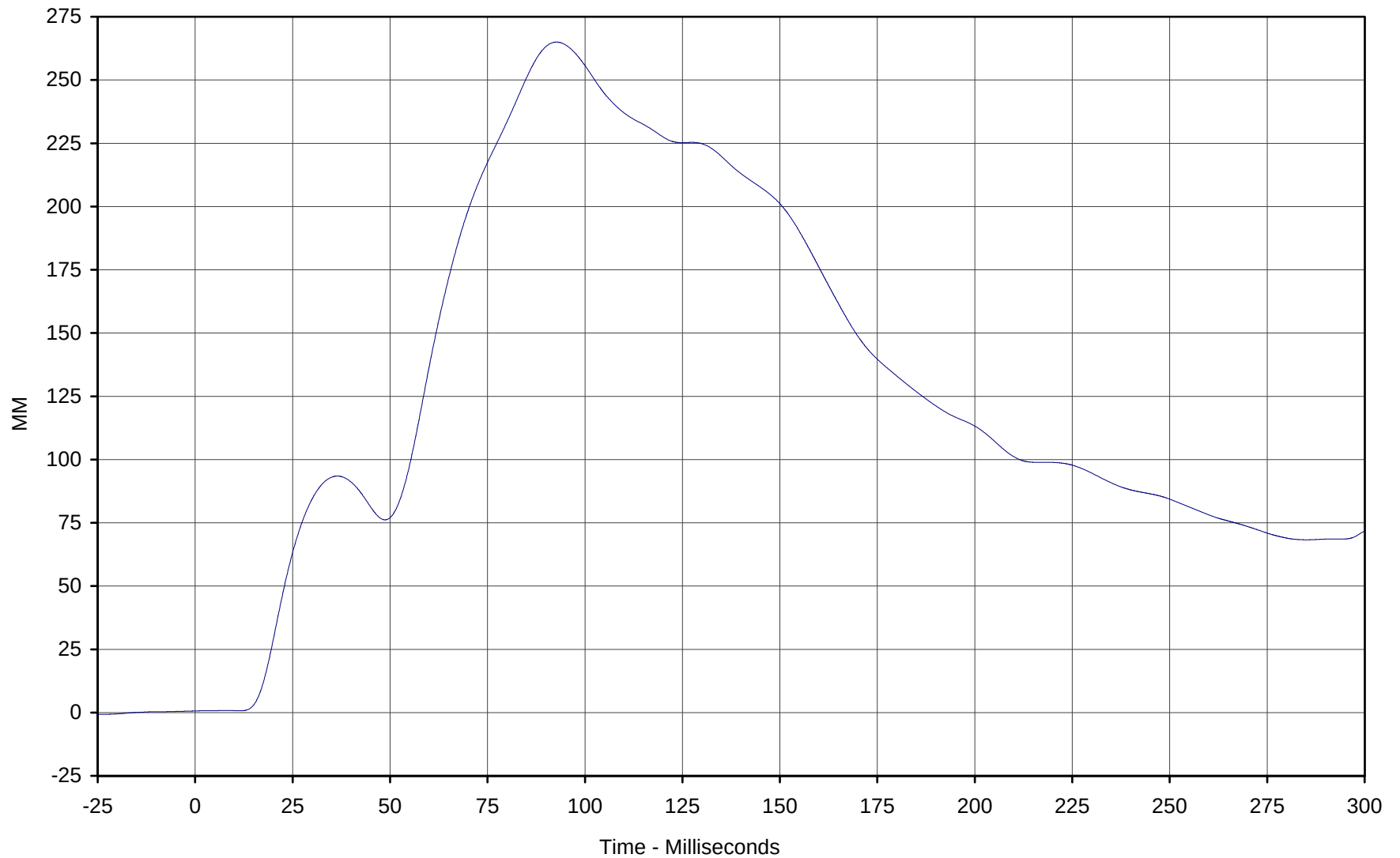
Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan

** Not installed, mfr. request



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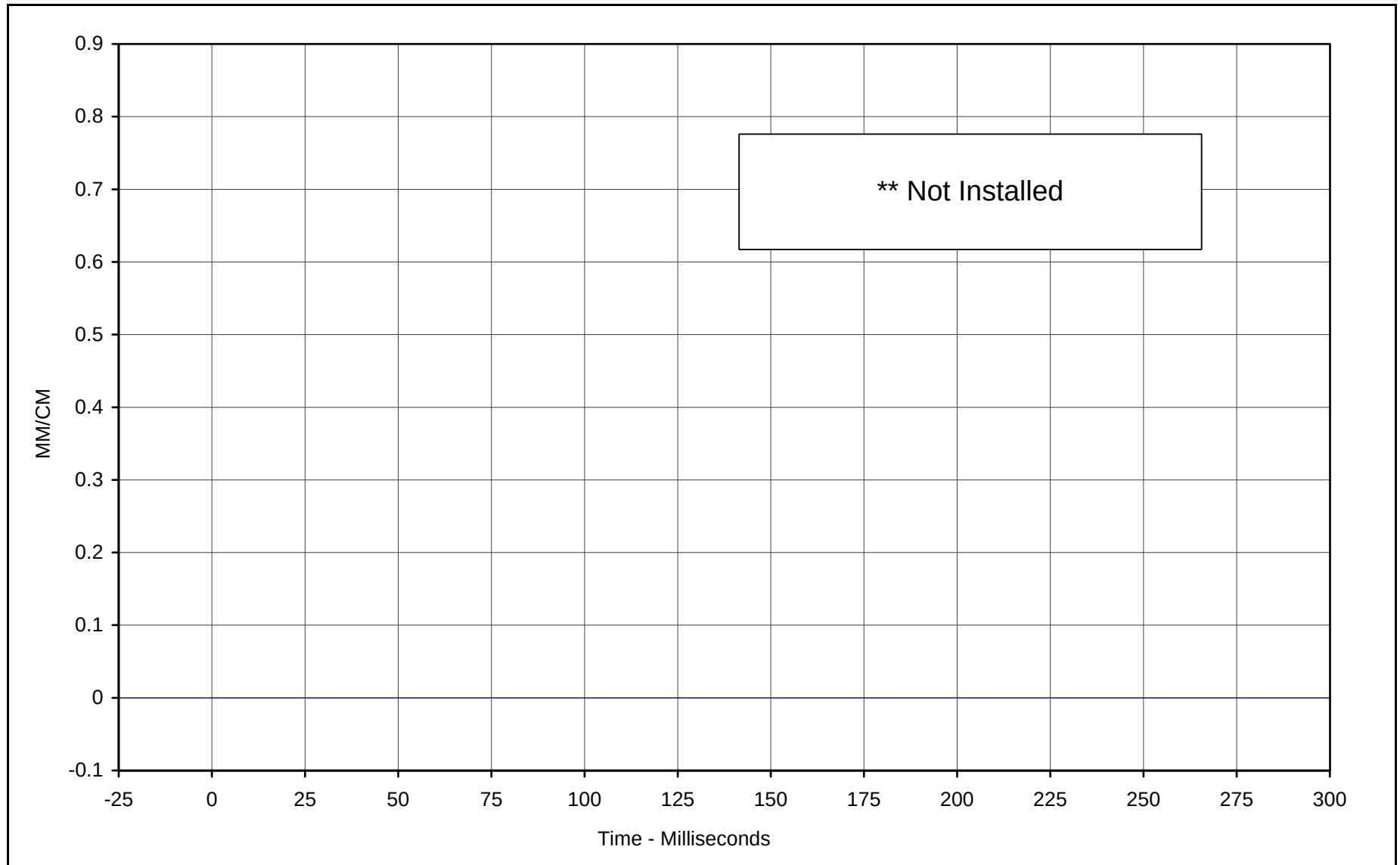


Curve Description: Driver Shoulder Belt Pullout
Maximum Value: 265.0 at 92.7 Milliseconds
Minimum Value: 0.6 at 0.0 Milliseconds
SAE Filter Class: 60
Date of Test: 2/22/01
Curve Number: FIL-043

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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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: 2/22/01

Curve Number: FIL-044

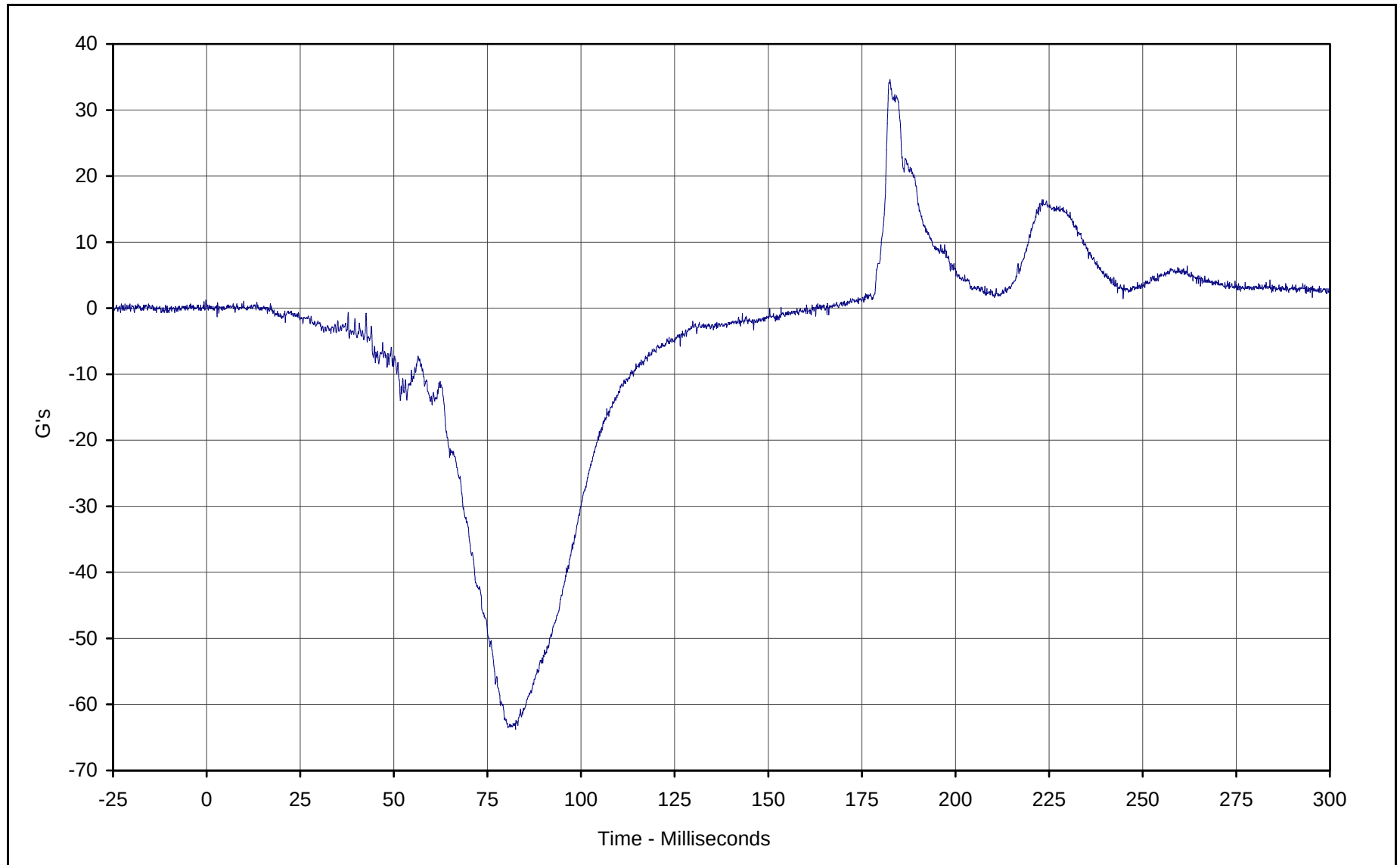
Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan

** Not installed



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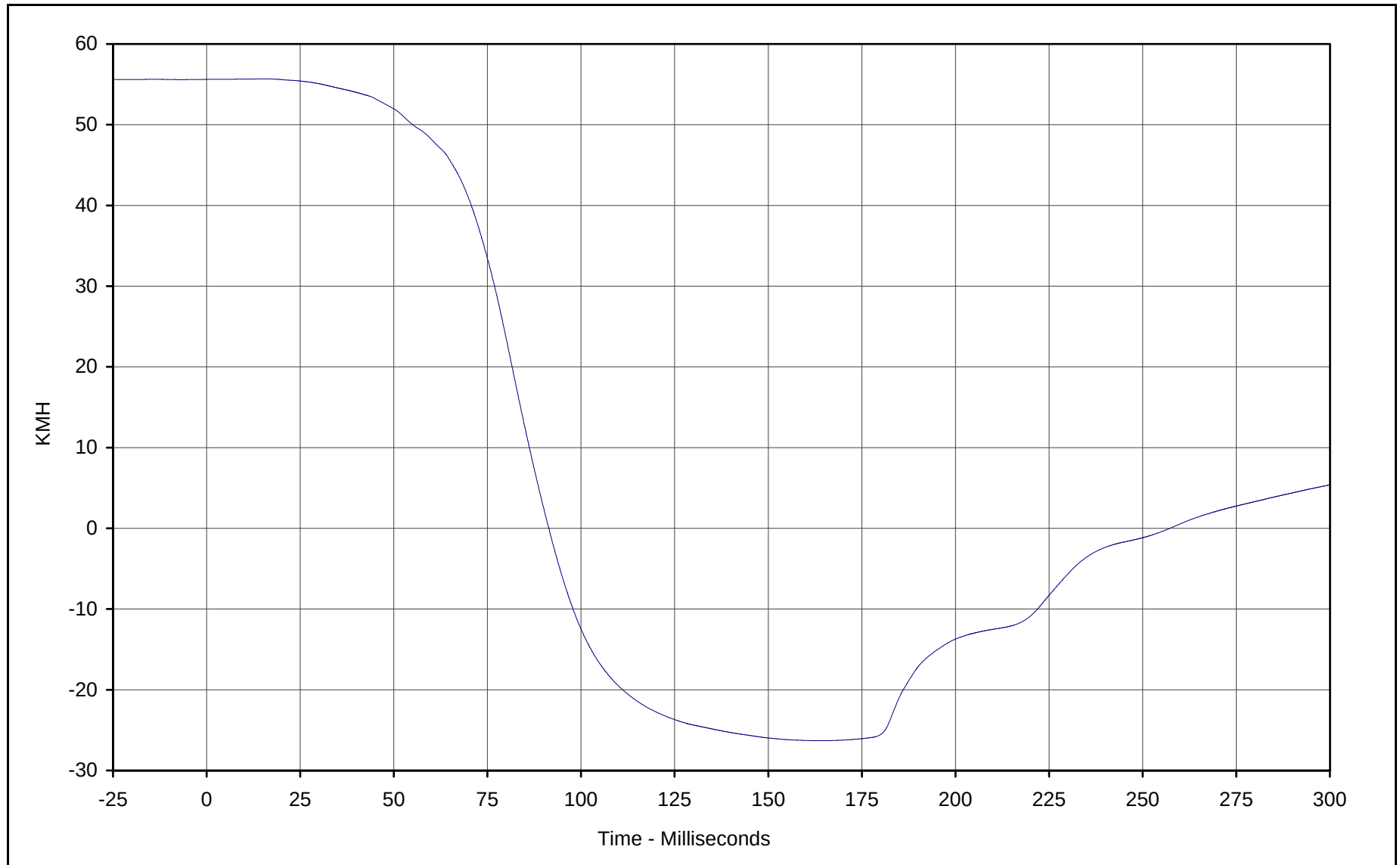
Curve Description: Passenger Head Primary X
Maximum Value: 34.6 at 182.5 Milliseconds
Minimum Value: -63.8 at 82.5 Milliseconds
SAE Filter Class: 1000
Date of Test: 2/22/01
Curve Number: FIL-045

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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Curve Description: Passenger Head Primary X Velocity

Maximum Value: 55.7 at 14.2 Milliseconds

Minimum Value: -26.3 at 162.7 Milliseconds

SAE Filter Class: 180

Date of Test: 2/22/01

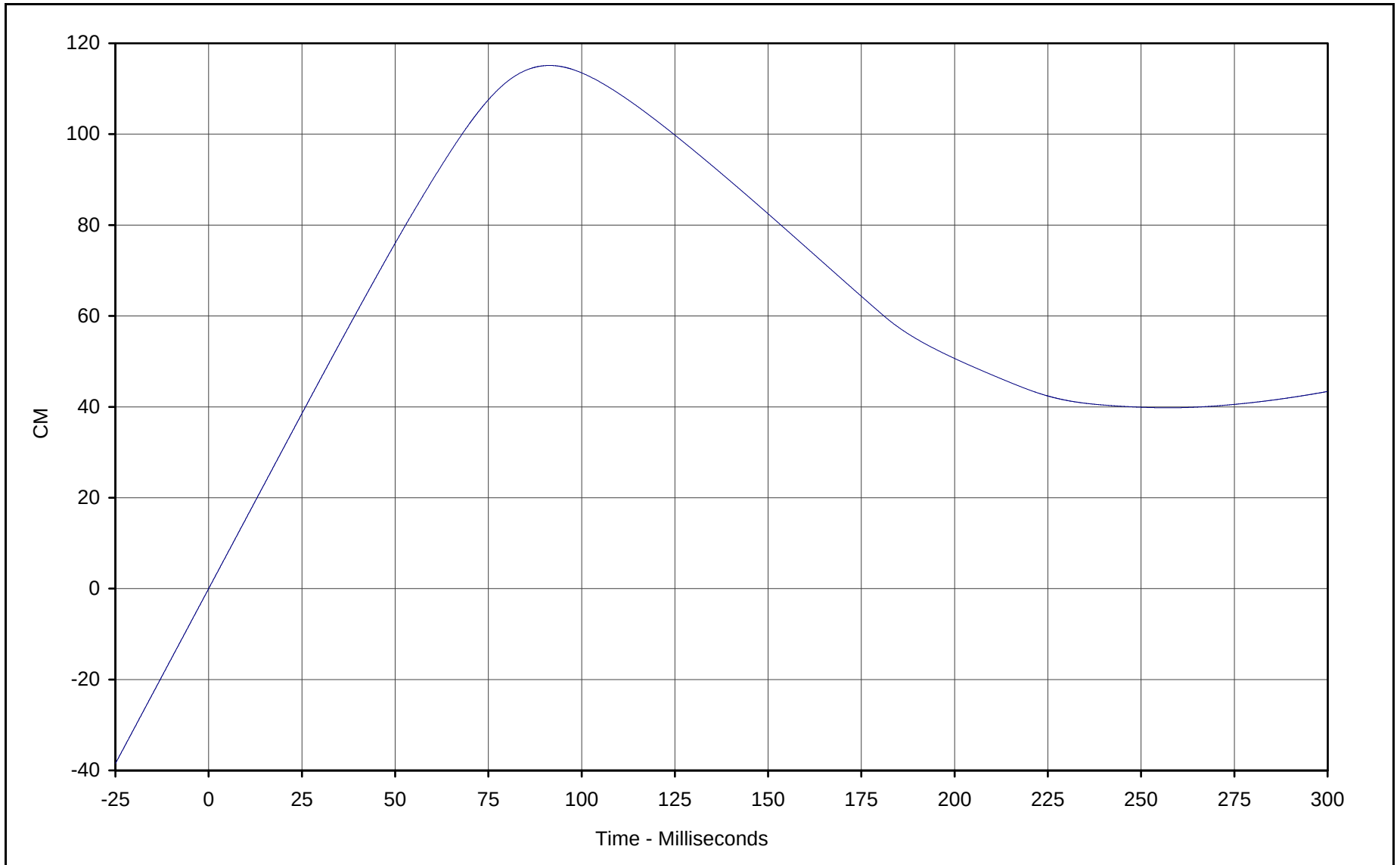
Curve Number: IN1-045

Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan



KAR21001-14

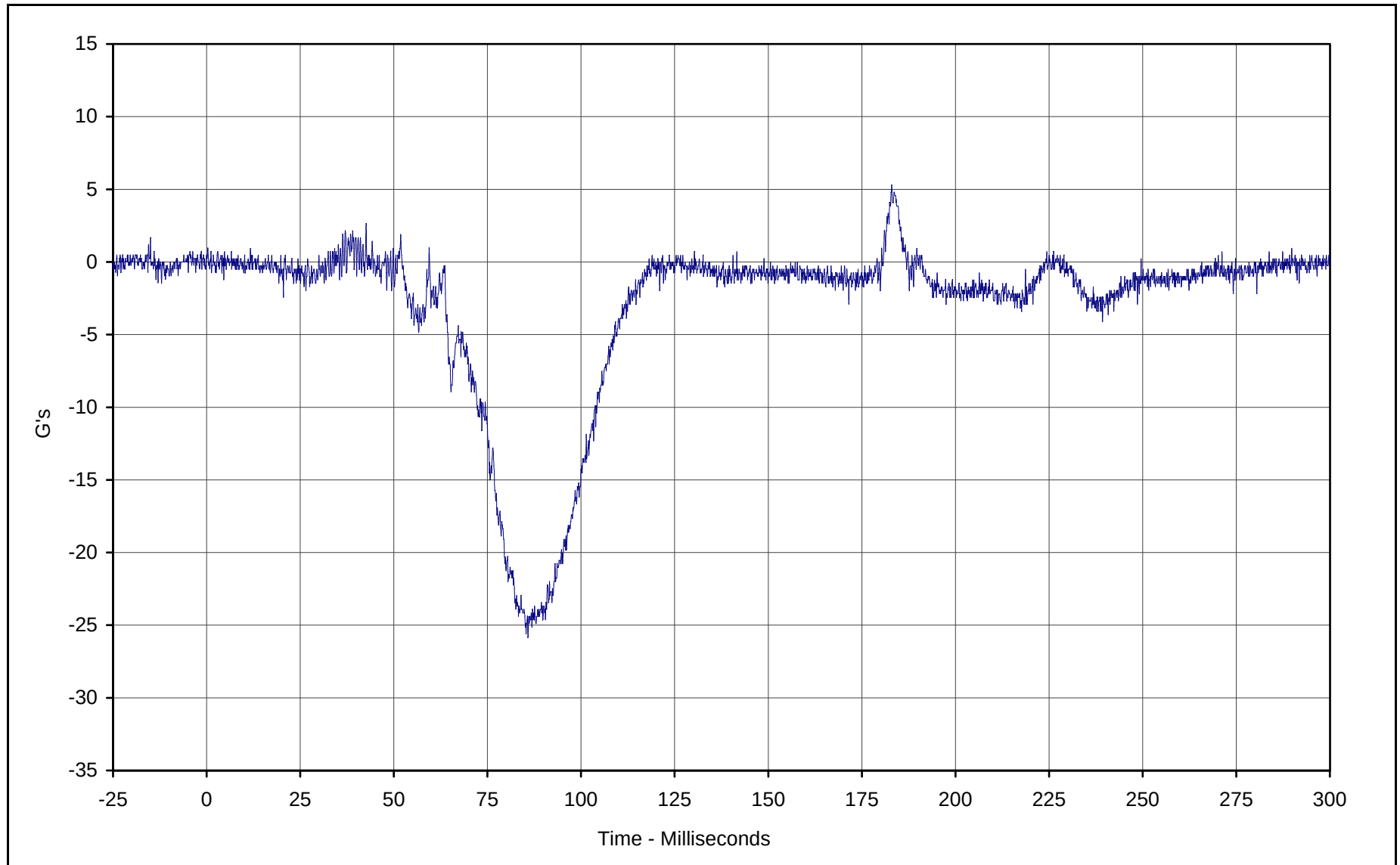


Curve Description: Passenger Head Primary X Displ.
Maximum Value: 115.1 at 91.4 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: IN2-045

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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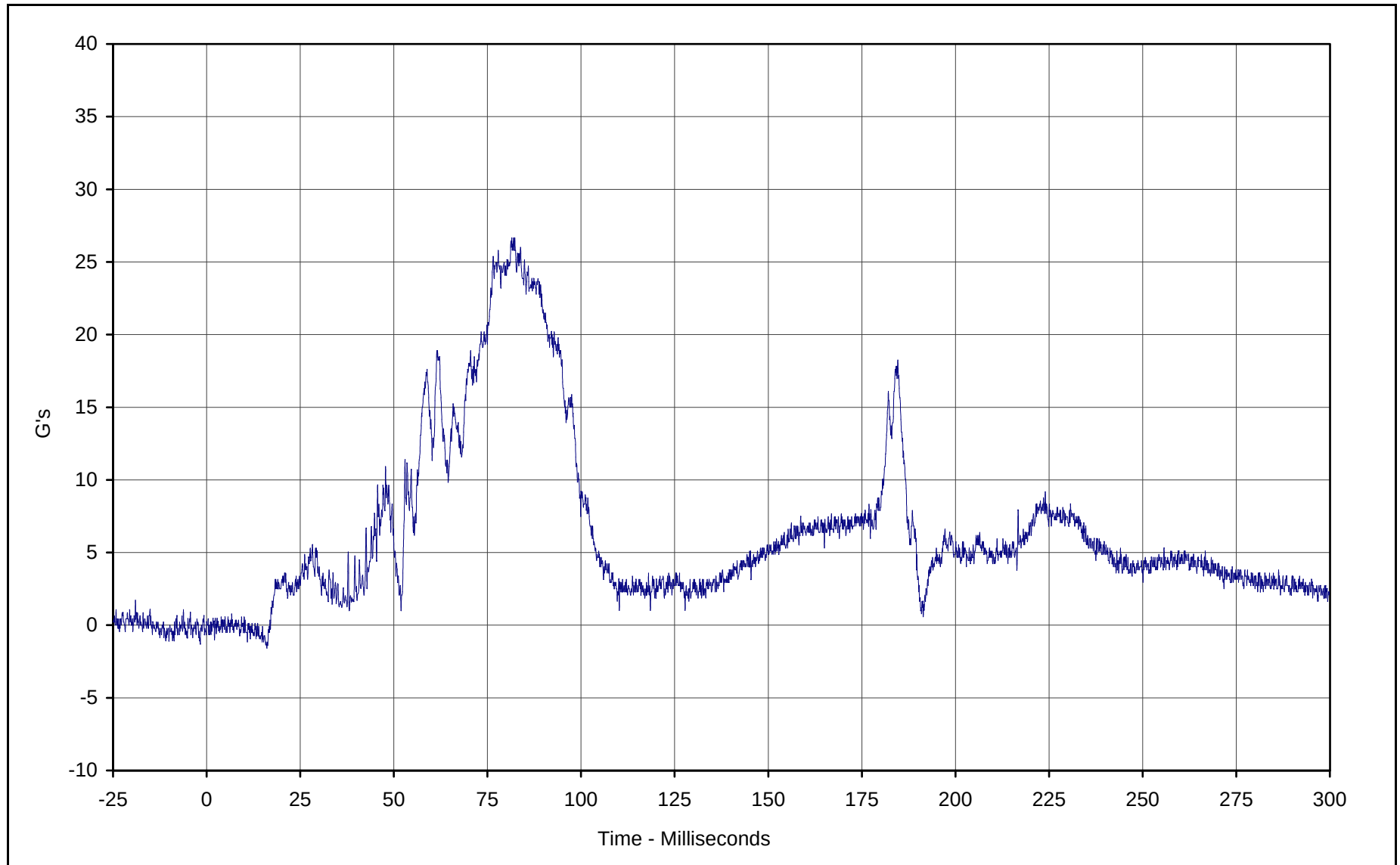
Curve Description: Passenger Head Primary Y
Maximum Value: 5.3 at 183.0 Milliseconds
Minimum Value: -25.8 at 85.8 Milliseconds
SAE Filter Class: 1000
Date of Test: 2/22/01
Curve Number: FIL-046

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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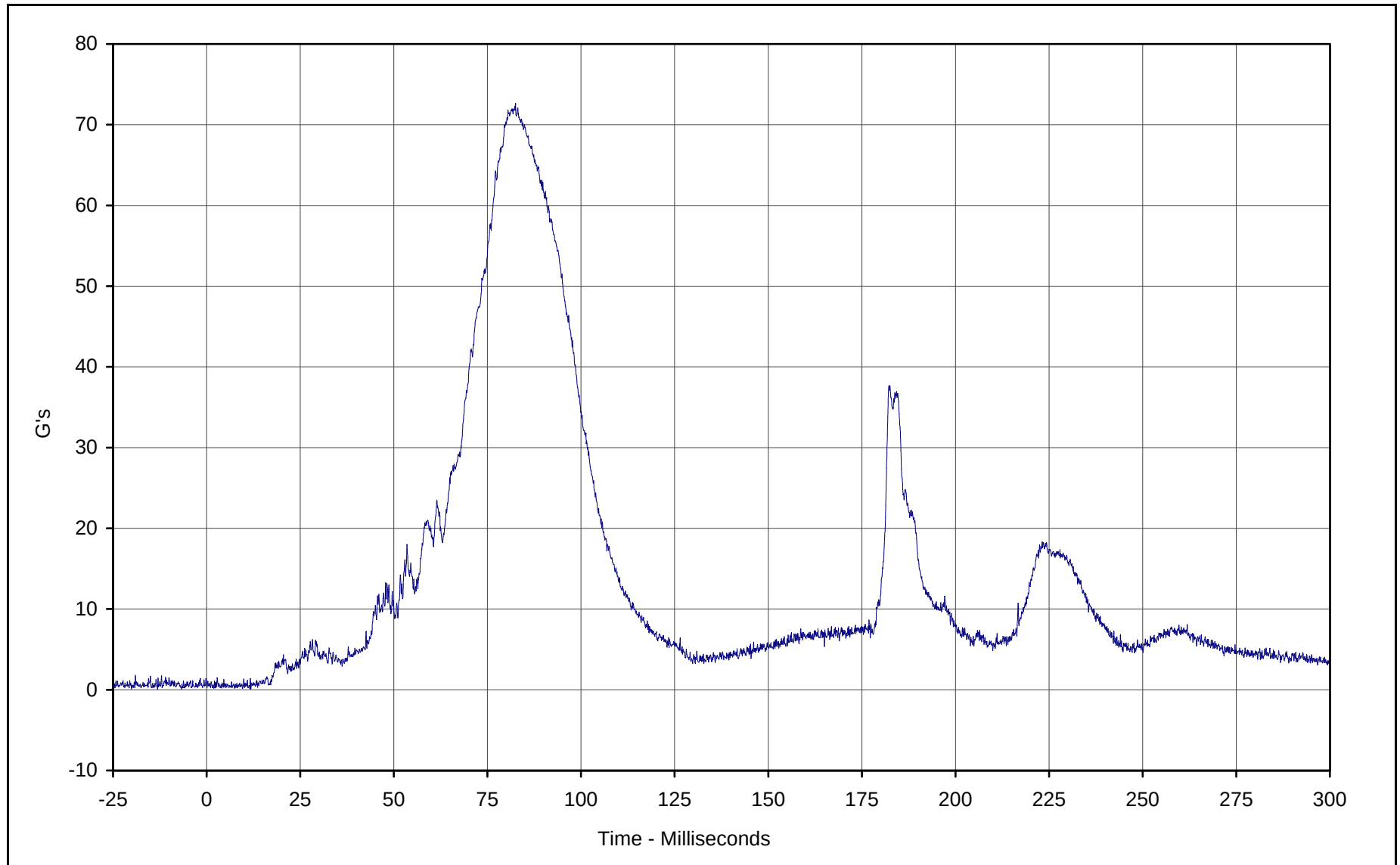
Curve Description: Passenger Head Primary Z
Maximum Value: 26.7 at 81.5 Milliseconds
Minimum Value: -1.6 at 16.1 Milliseconds
SAE Filter Class: 1000
Date of Test: 2/22/01
Curve Number: FIL-047

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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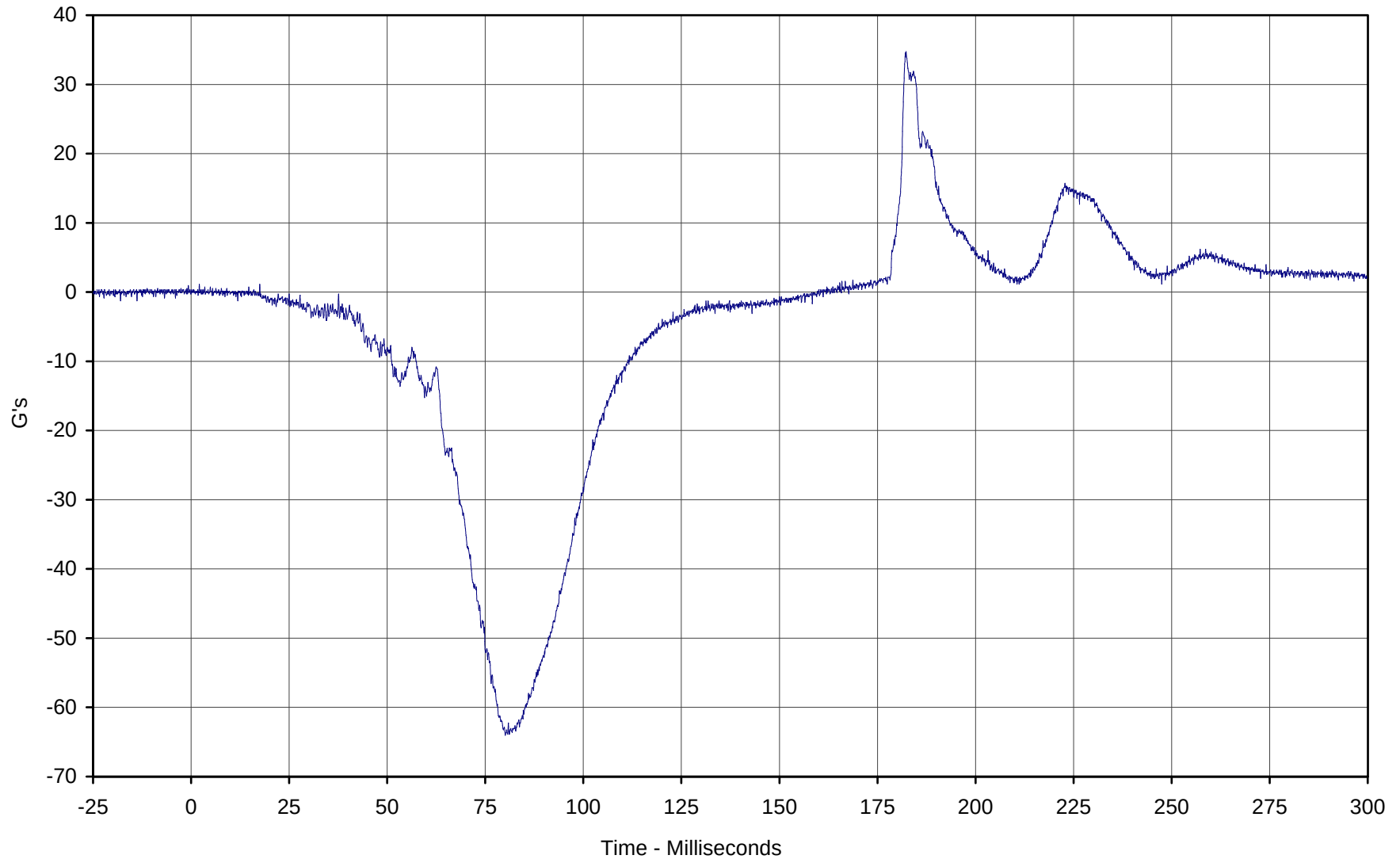
Curve Description: Passenger Head Resultant Primary
Maximum Value: 72.7 at 82.5 Milliseconds
Minimum Value: 0.1 at 11.8 Milliseconds
SAE Filter Class: 1000
Date of Test: 2/22/01
Curve Number: RES-045

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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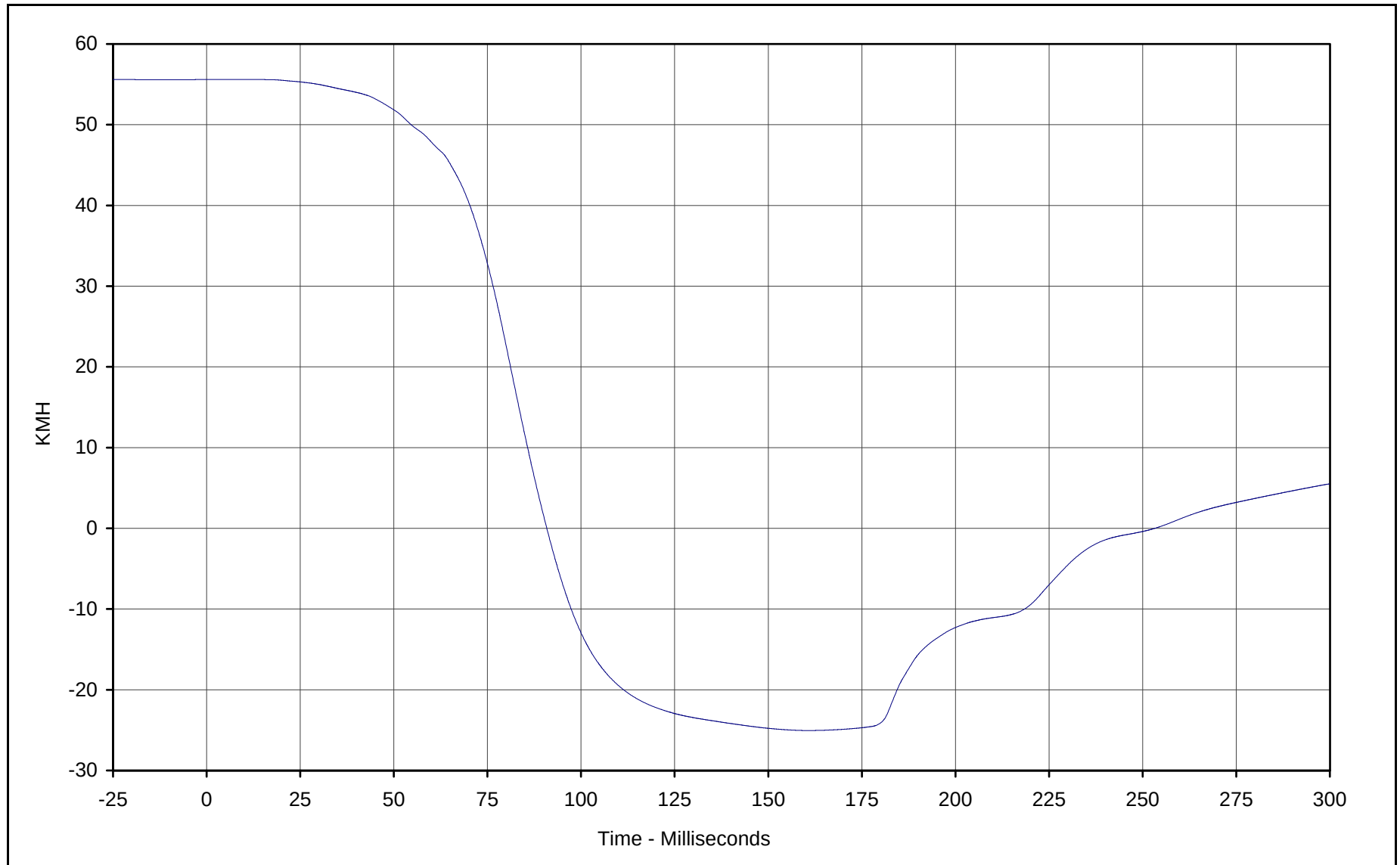


Curve Description: Passenger Head Redundant X
Maximum Value: 34.8 at 182.3 Milliseconds
Minimum Value: -64.1 at 80.1 Milliseconds
SAE Filter Class: 1000
Date of Test: 2/22/01
Curve Number: FIL-048

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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Curve Description: Passenger Head Redundant X Velocity

Maximum Value: 55.6 at 7.2 Milliseconds

Minimum Value: -25.1 at 160.8 Milliseconds

SAE Filter Class: 180

Date of Test: 2/22/01

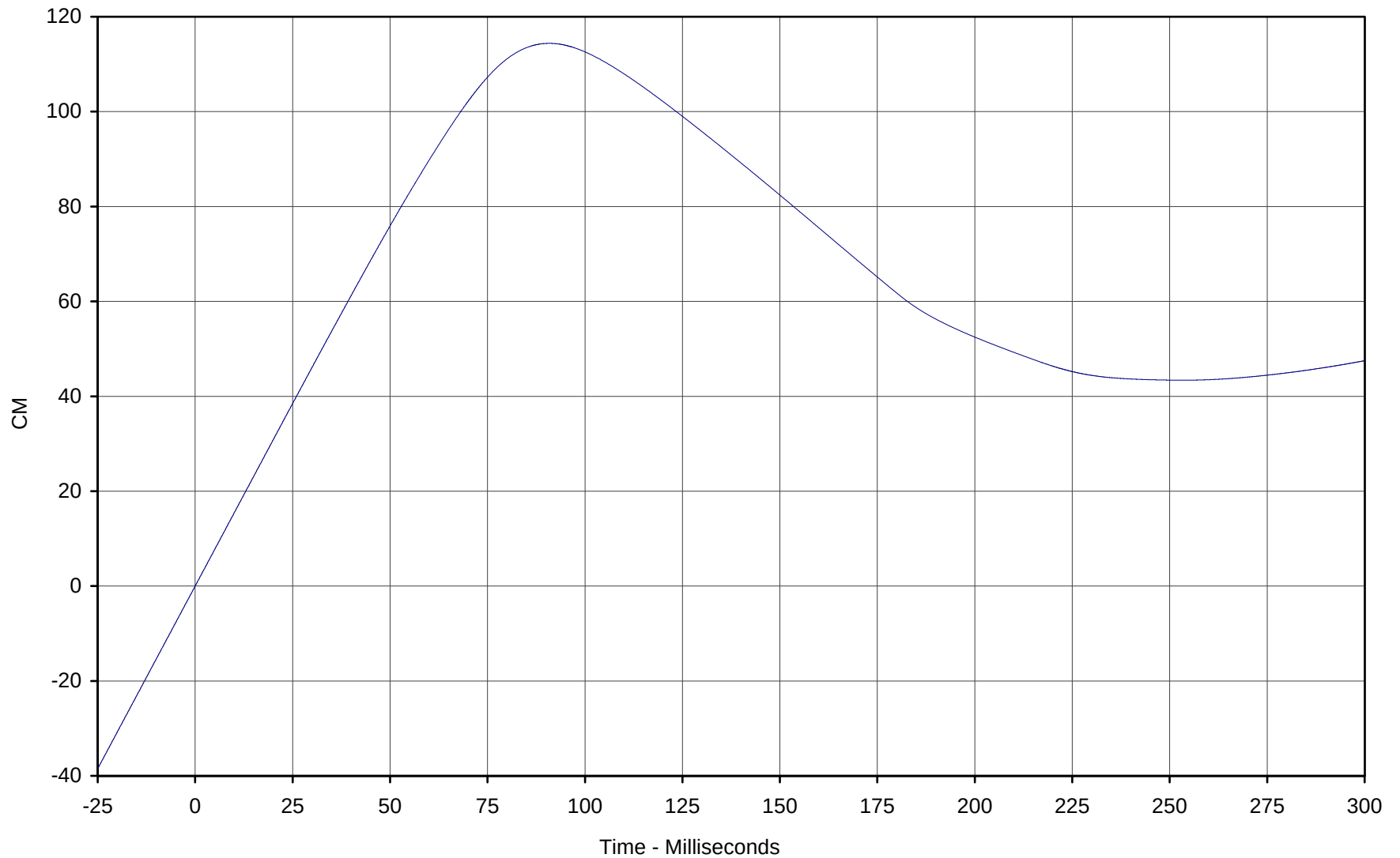
Curve Number: IN1-048

Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan



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Curve Description: Passenger Head Redundant X Displ.

Maximum Value: 114.4 at 90.9 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 2/22/01

Curve Number: IN2-048

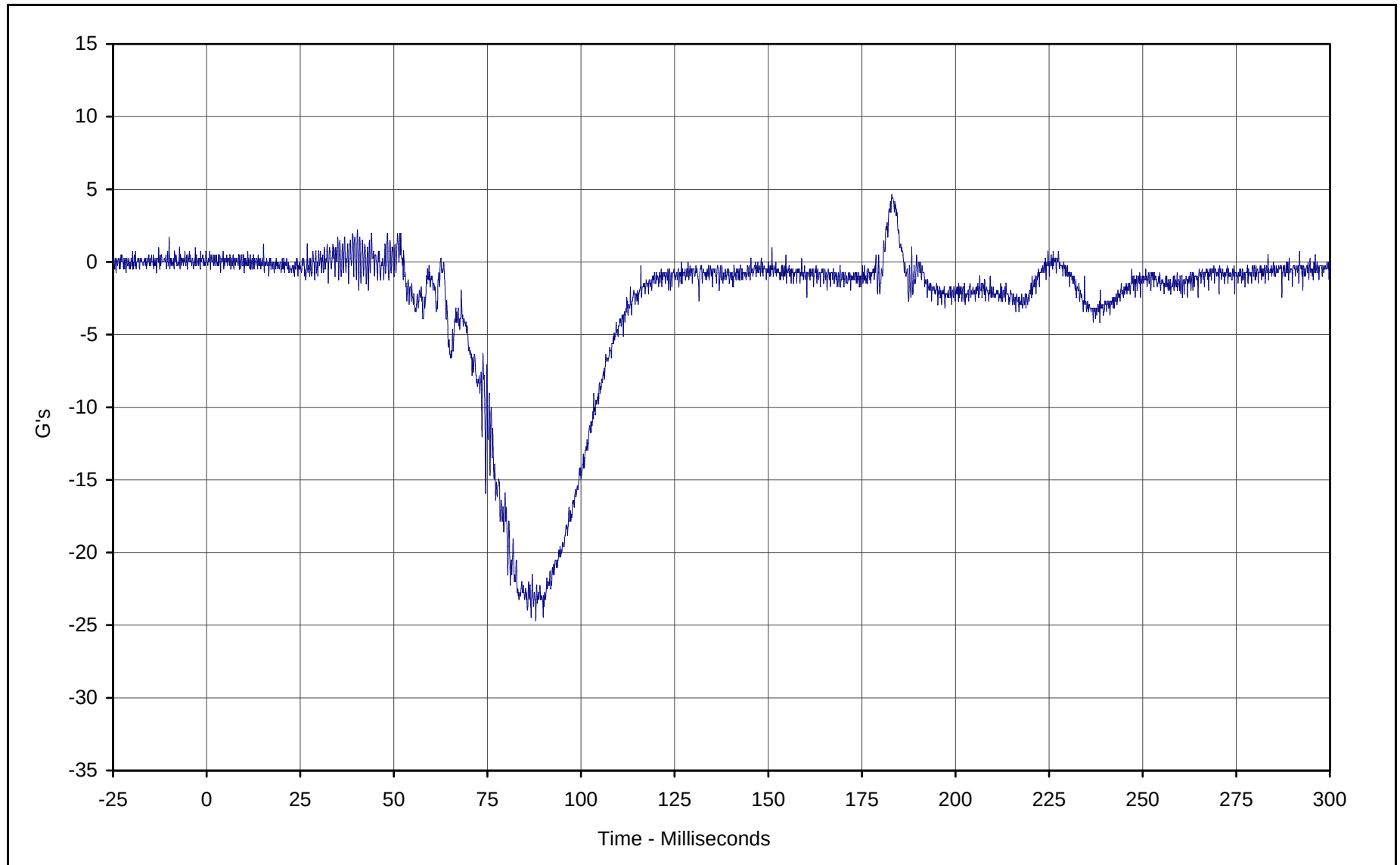
Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan



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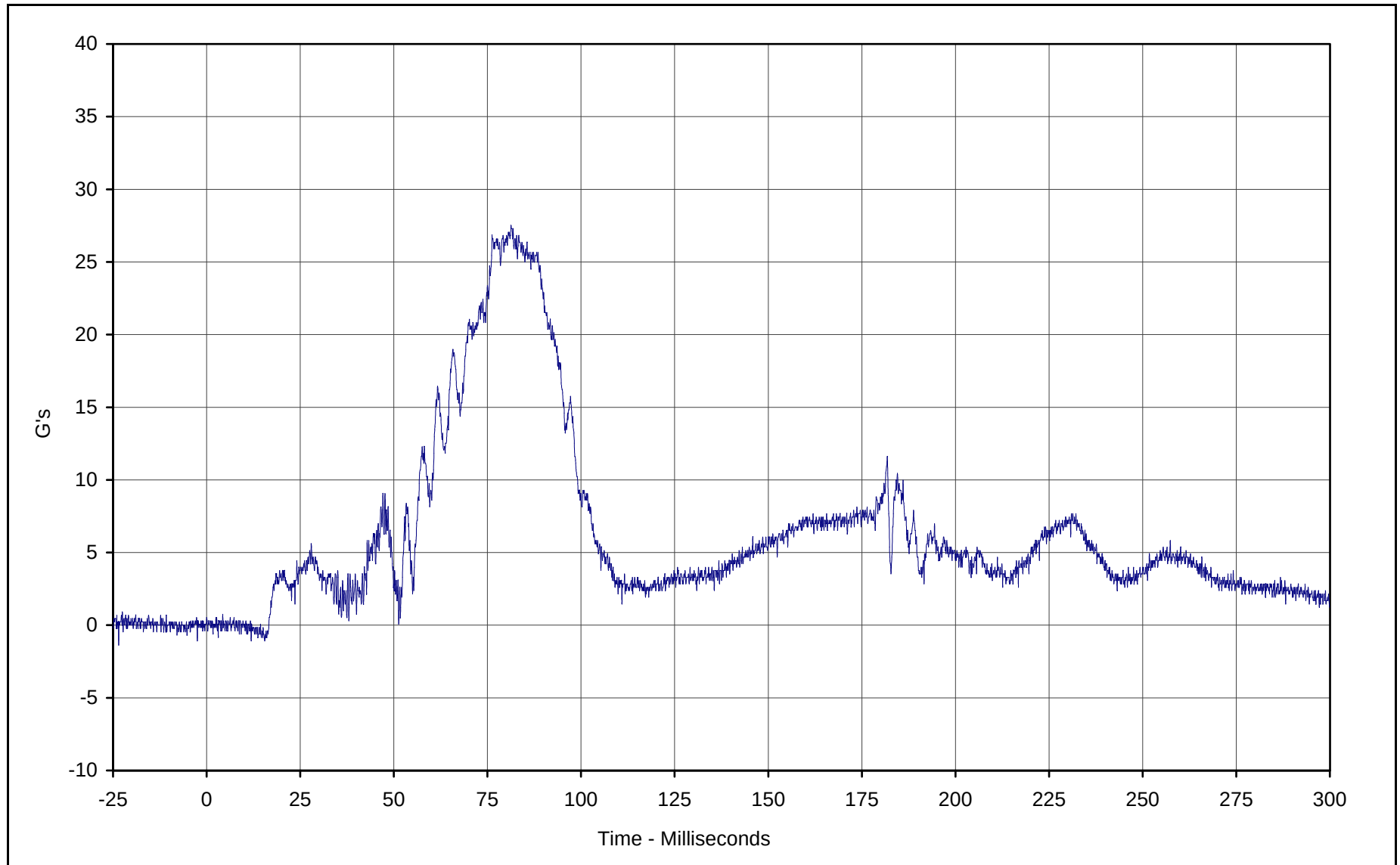
Curve Description: Passenger Head Redundant Y
Maximum Value: 4.6 at 183.0 Milliseconds
Minimum Value: -24.7 at 87.9 Milliseconds
SAE Filter Class: 1000
Date of Test: 2/22/01
Curve Number: FIL-049

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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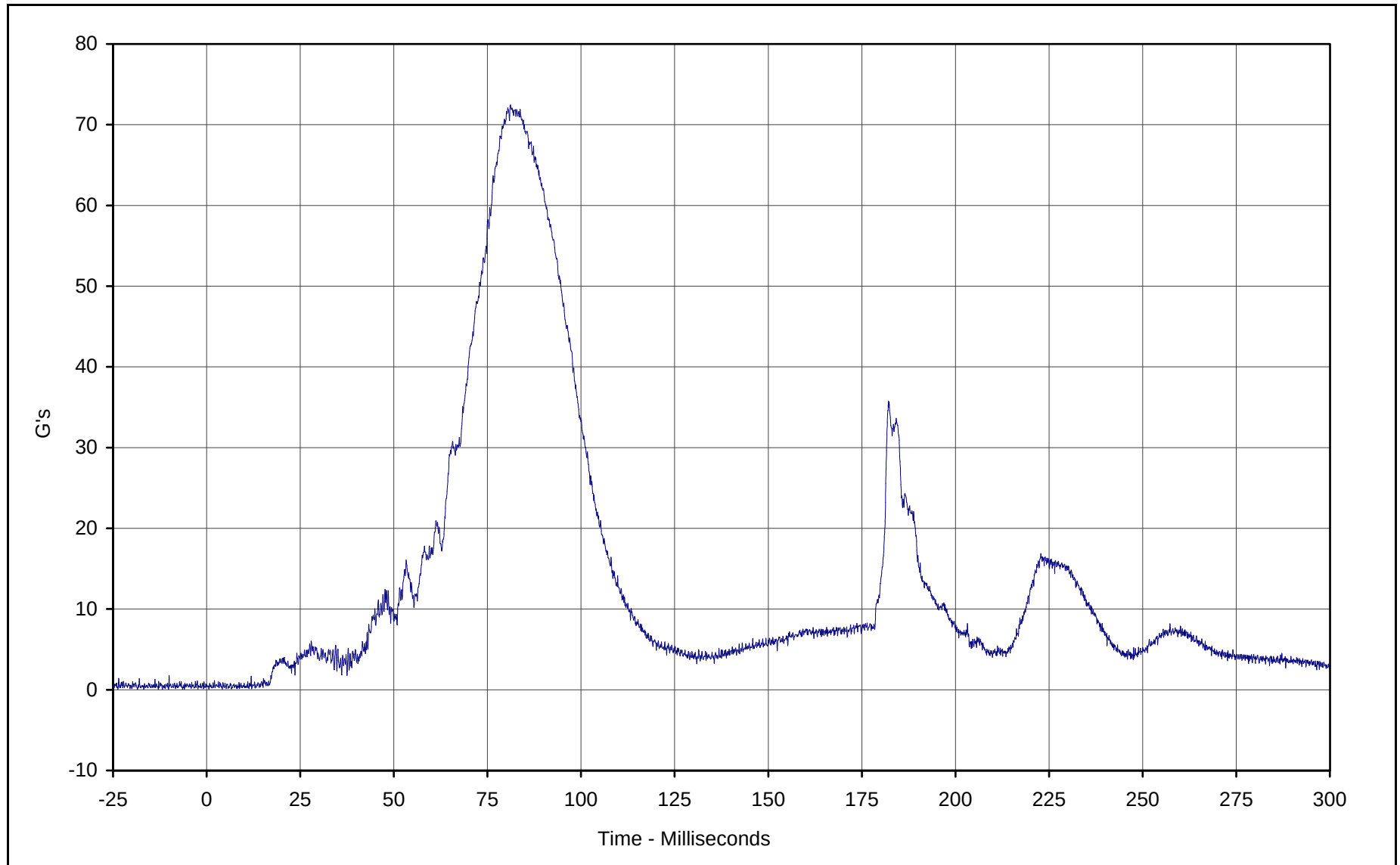


Curve Description: Passenger Head Redundant Z
Maximum Value: 27.5 at 81.3 Milliseconds
Minimum Value: -1.1 at 11.9 Milliseconds
SAE Filter Class: 1000
Date of Test: 2/22/01
Curve Number: FIL-050

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



KAR21001-14



Curve Description: Passenger Head Resultant Redundant

Maximum Value: 72.5 at 81.2 Milliseconds

Minimum Value: 0.1 at 0.6 Milliseconds

SAE Filter Class: 1000

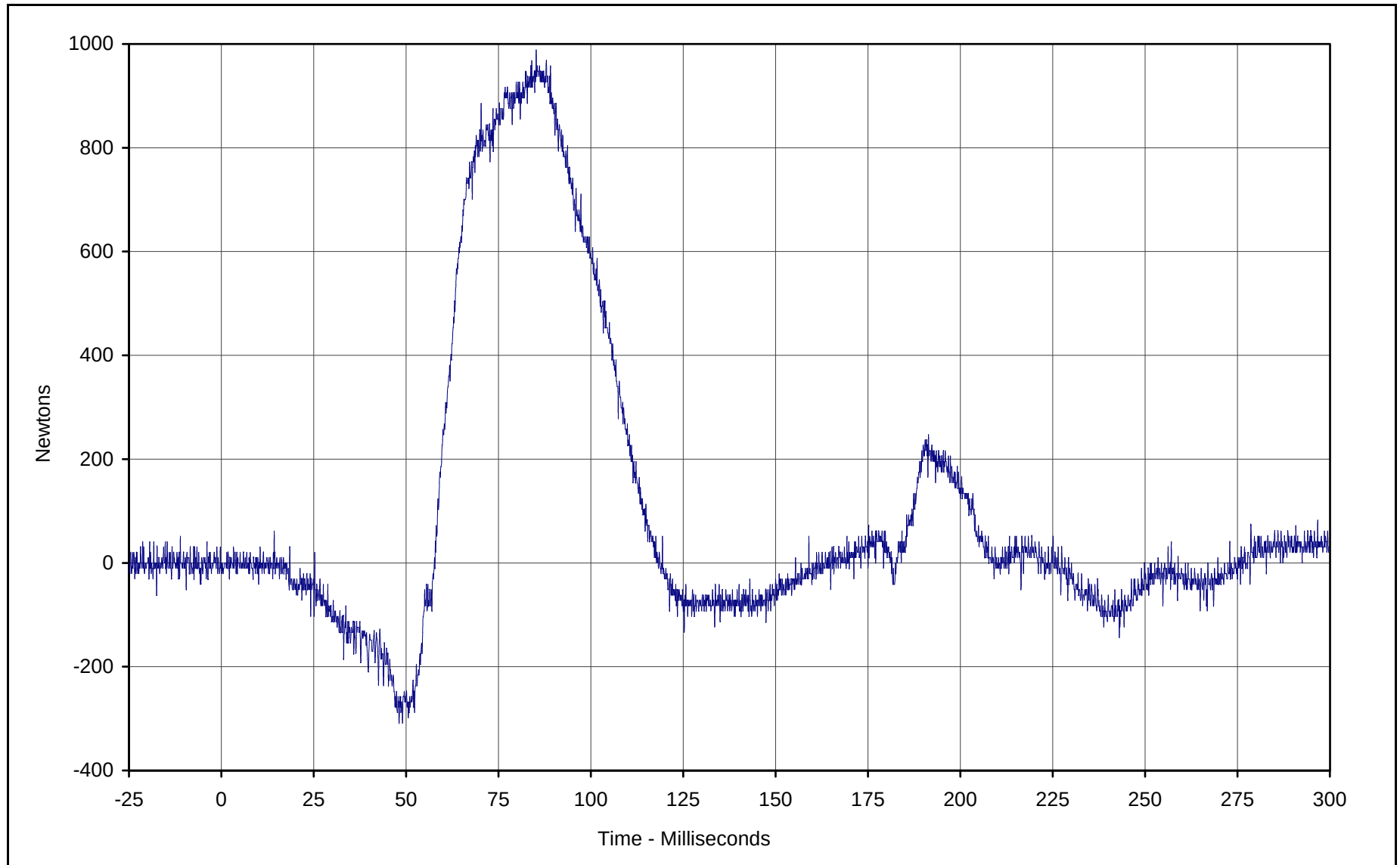
Date of Test: 2/22/01

Curve Number: RES-048

Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan



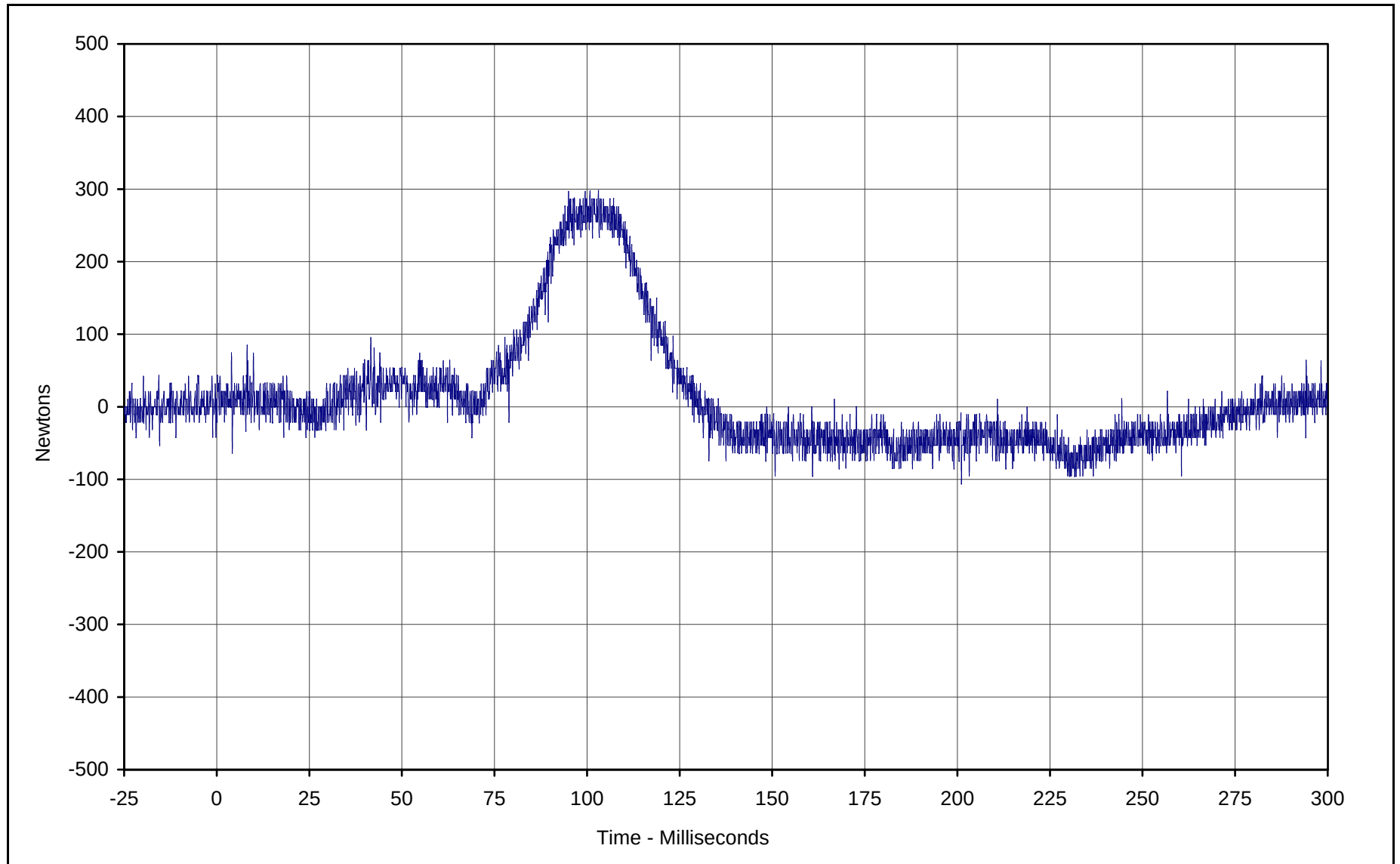


Curve Description: Passenger Neck Force X
Maximum Value: 988.9 at 85.2 Milliseconds
Minimum Value: -309.0 at 48.1 Milliseconds
SAE Filter Class: 1000
Date of Test: 2/22/01
Curve Number: FIL-051

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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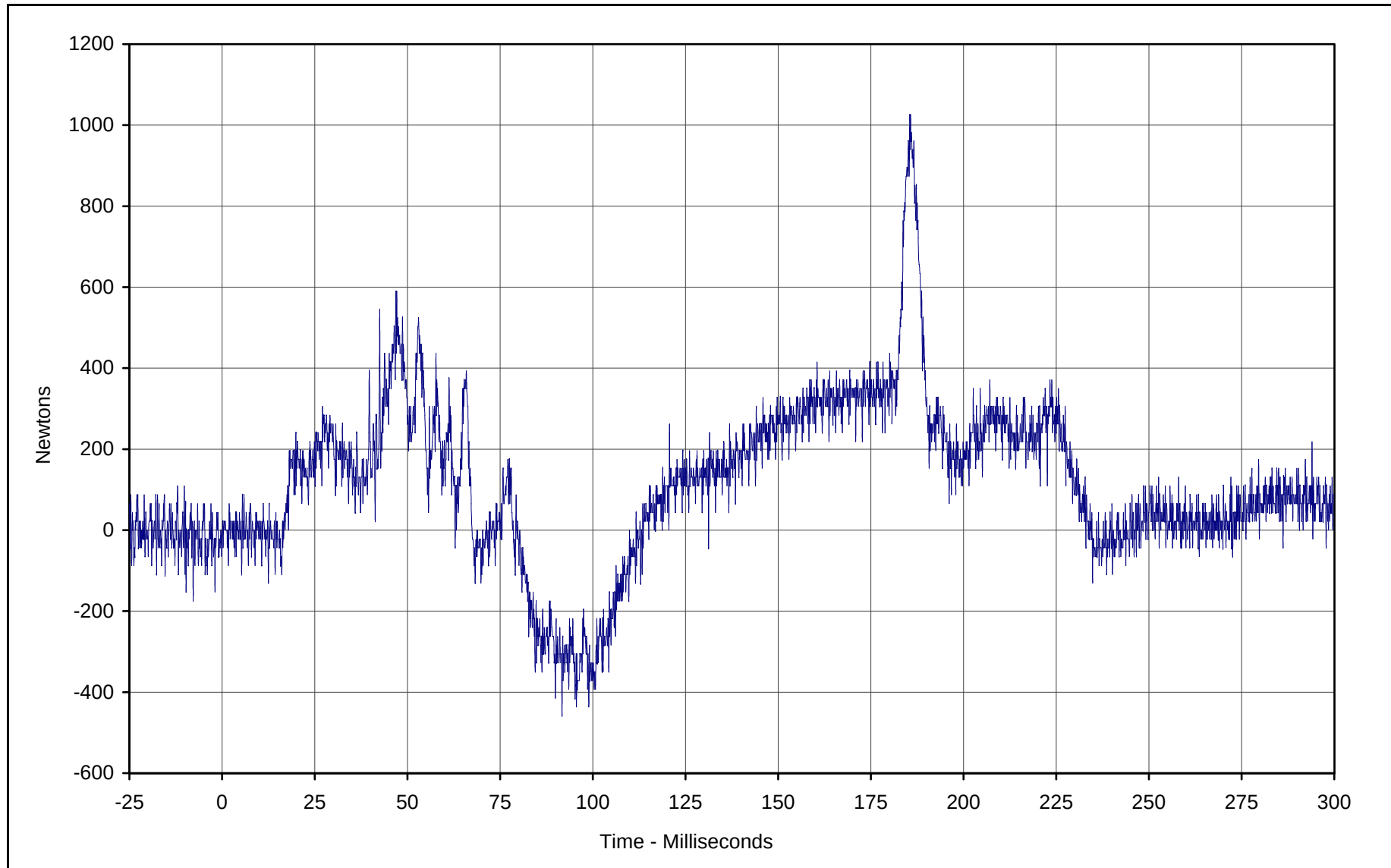


Curve Description: Passenger Neck Force Y
Maximum Value: 297.2 at 95.0 Milliseconds
Minimum Value: -106.1 at 201.1 Milliseconds
SAE Filter Class: 1000
Date of Test: 2/22/01
Curve Number: FIL-052

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



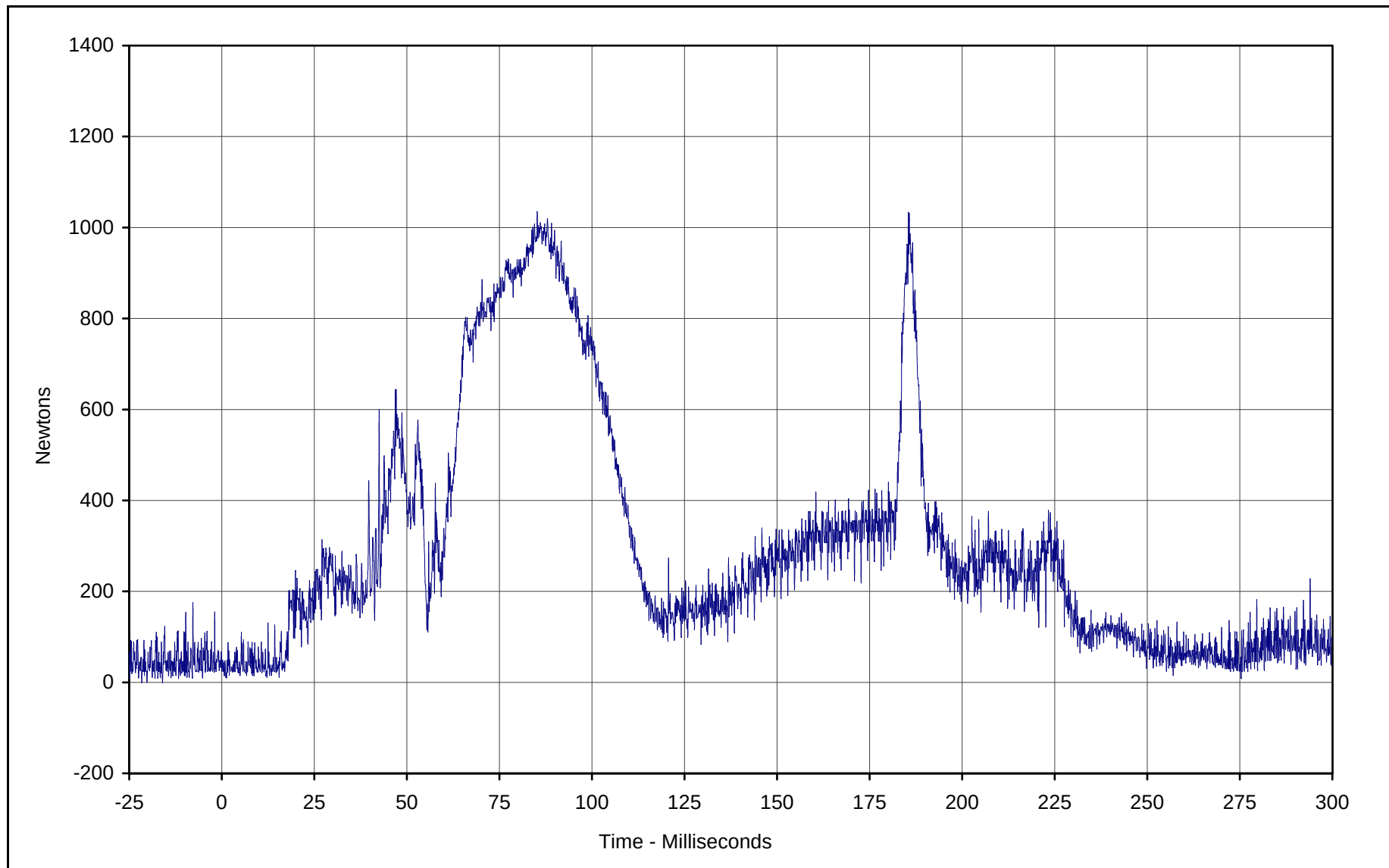
KAR21001-14



Curve Description: Passenger Neck Force Z
Maximum Value: 1026.6 at 185.5 Milliseconds
Minimum Value: -458.7 at 91.7 Milliseconds
SAE Filter Class: 1000
Date of Test: 2/22/01
Curve Number: FIL-053

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



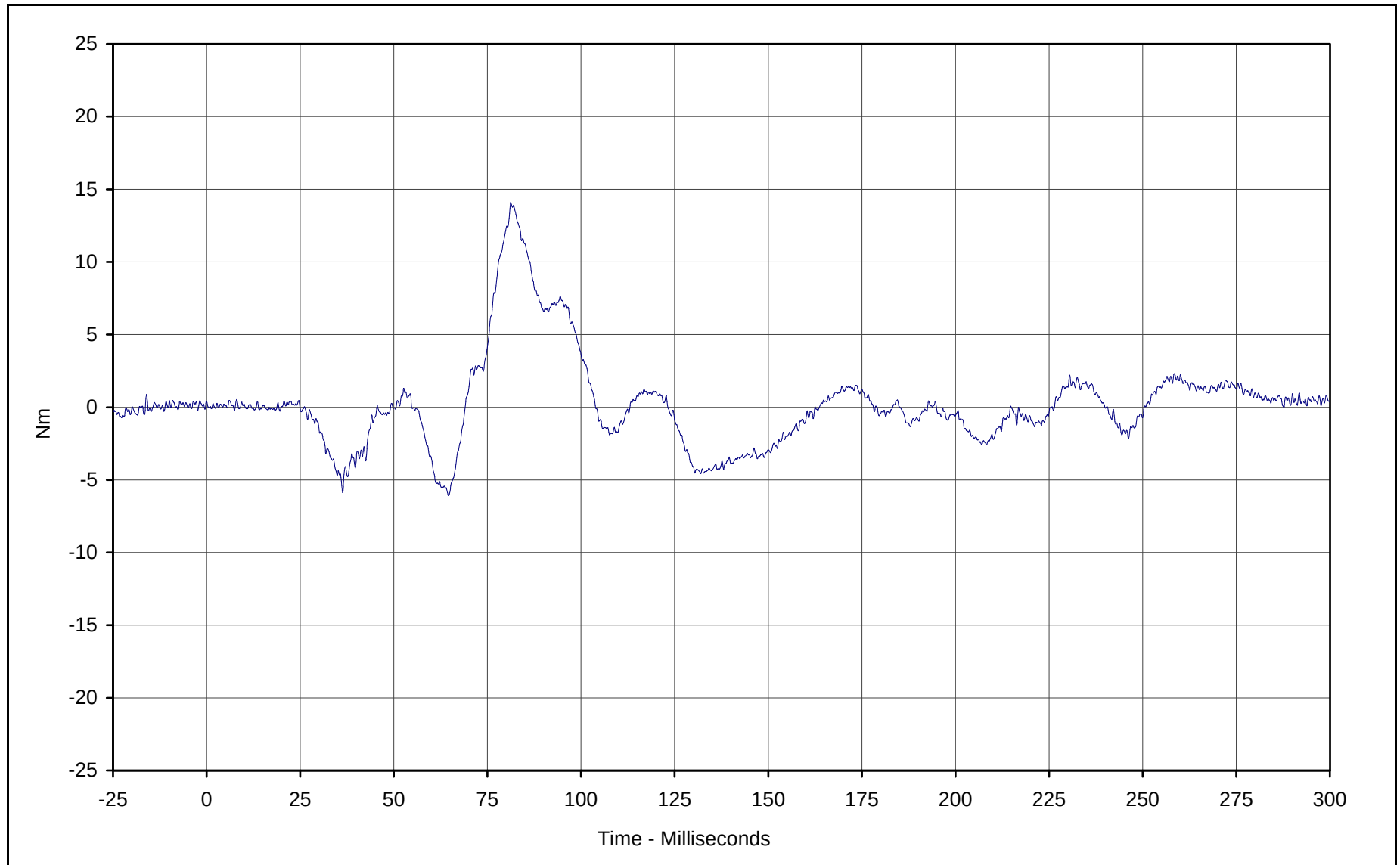


Curve Description: Passenger Neck Force Resultant
Maximum Value: 1035.5 at 85.2 Milliseconds
Minimum Value: 10.3 at 1.3 Milliseconds
SAE Filter Class: 1000
Date of Test: 2/22/01
Curve Number: RES-051

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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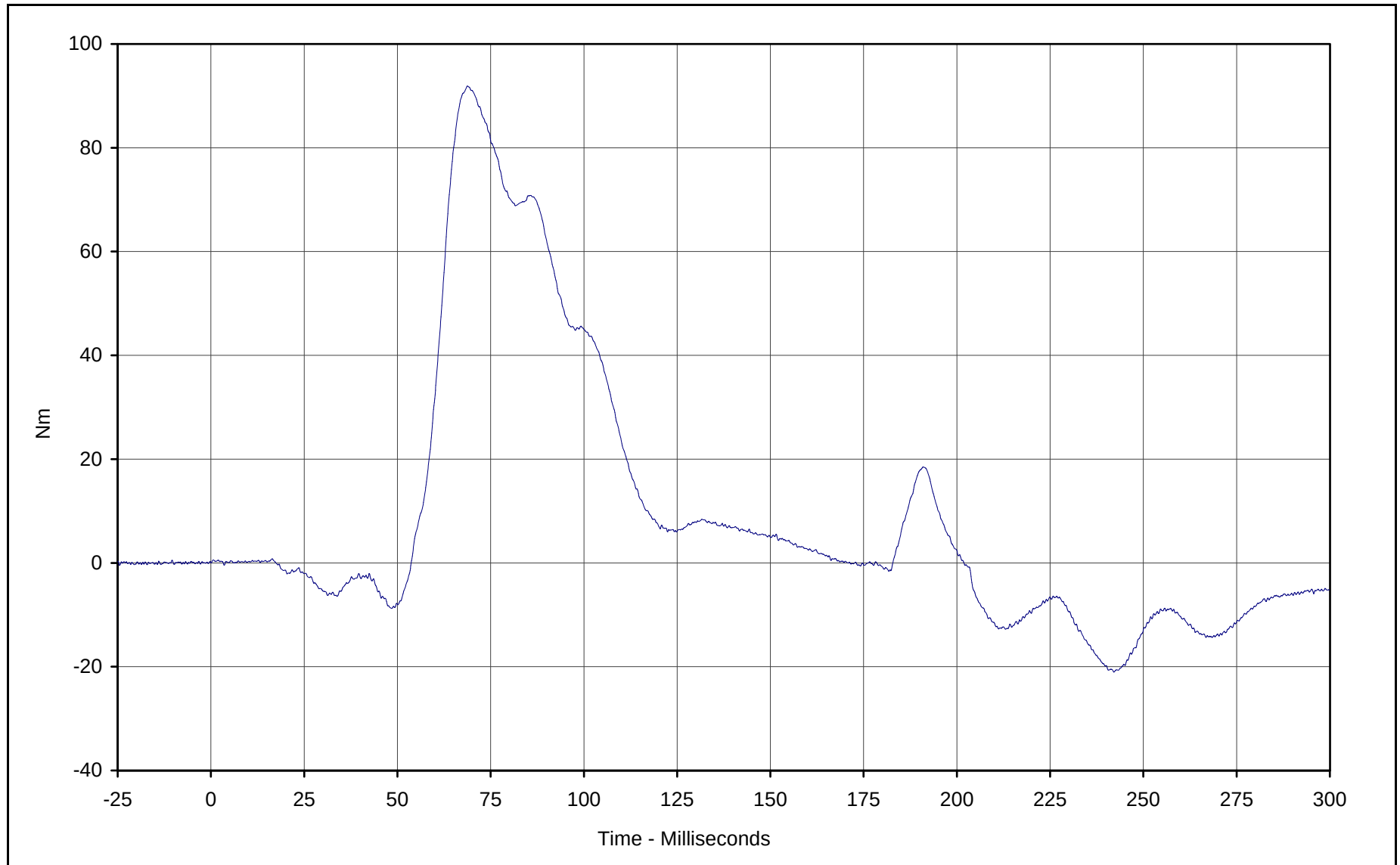
Curve Description: Passenger Neck Moment X
Maximum Value: 14.1 at 81.2 Milliseconds
Minimum Value: -6.1 at 64.6 Milliseconds
SAE Filter Class: 600
Date of Test: 2/22/01
Curve Number: FIL-054

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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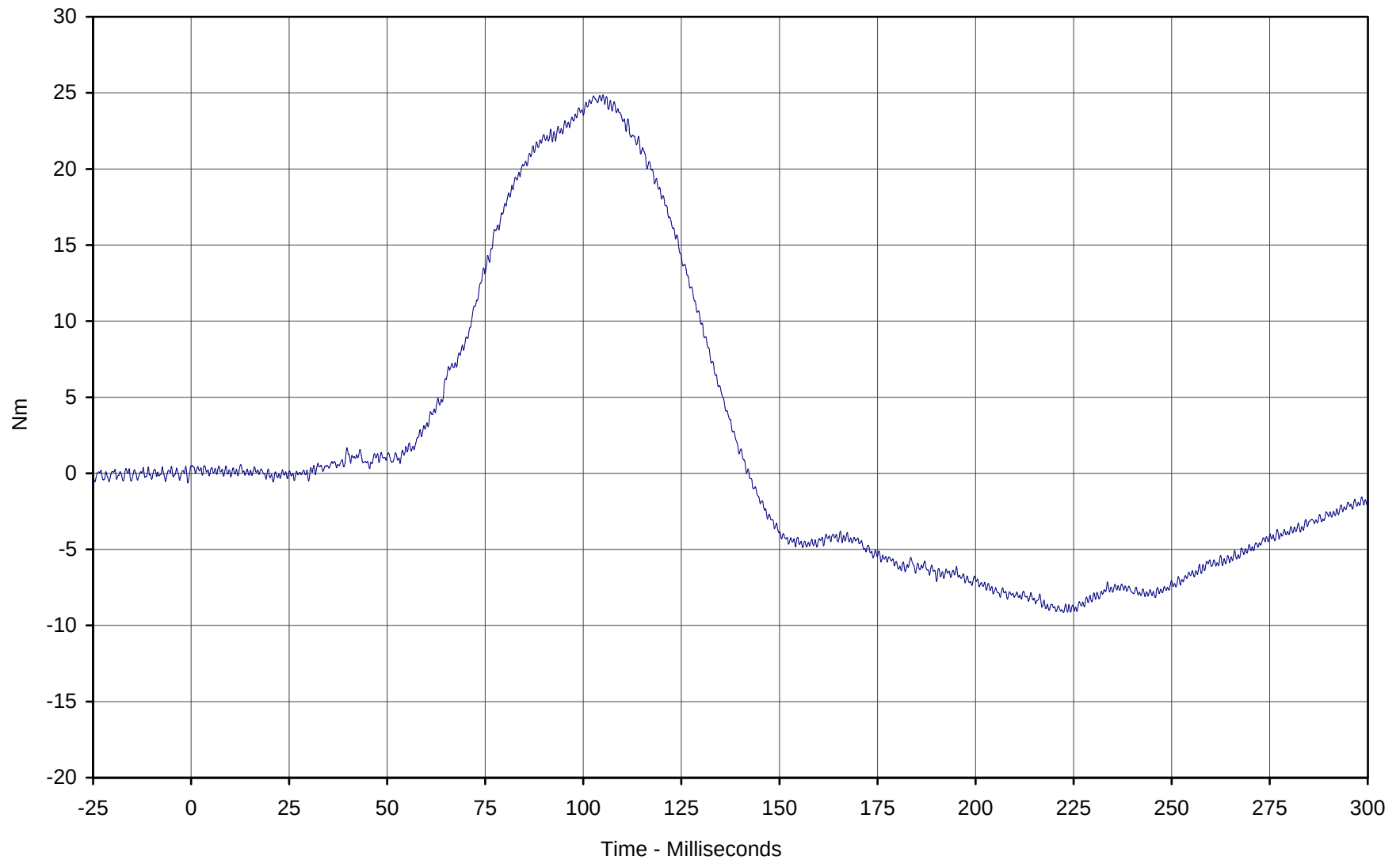
Curve Description: Passenger Neck Moment Y
Maximum Value: 91.9 at 68.8 Milliseconds
Minimum Value: -21.0 at 242.1 Milliseconds
SAE Filter Class: 600
Date of Test: 2/22/01
Curve Number: FIL-055

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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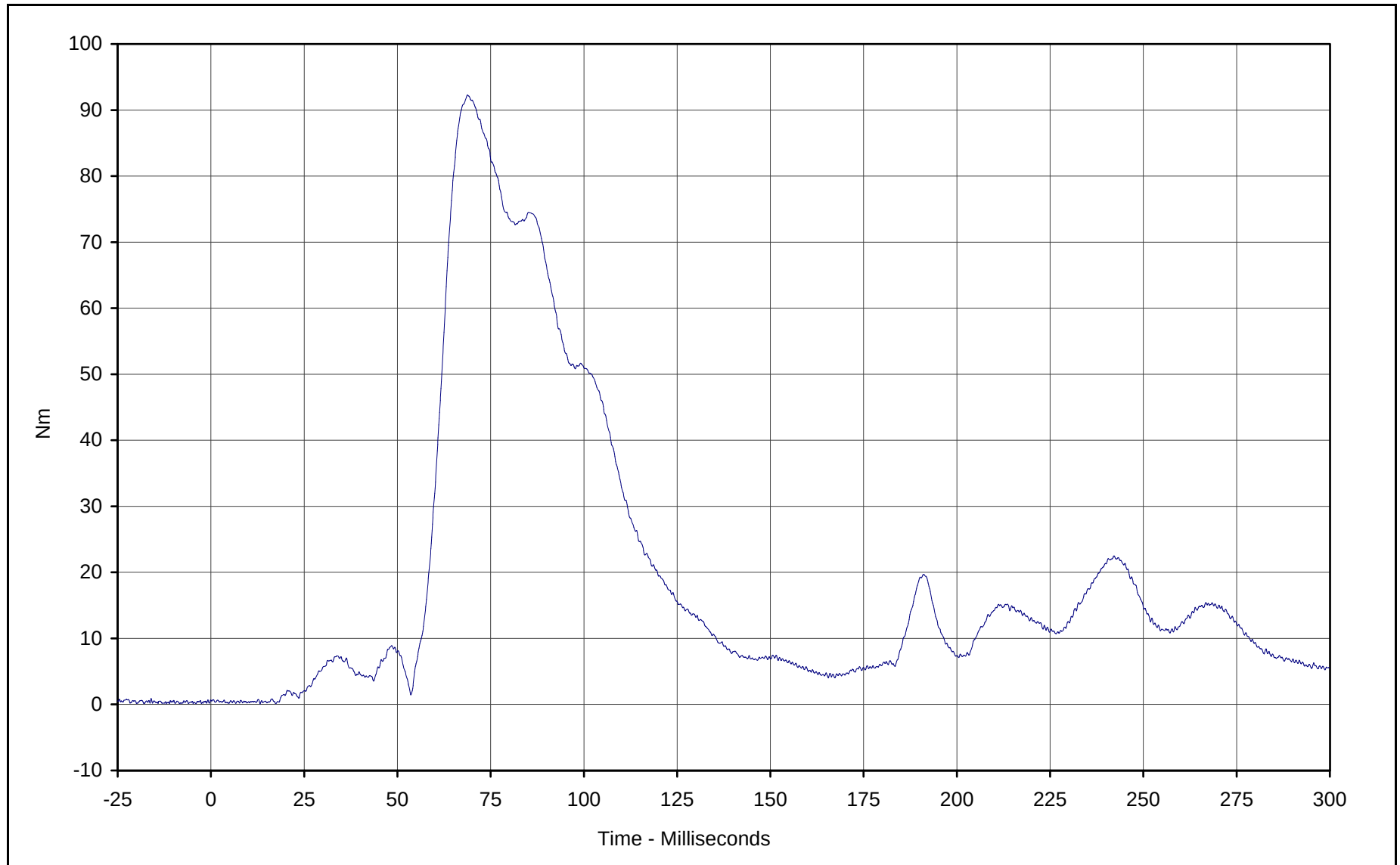


Curve Description: Passenger Neck Moment Z
Maximum Value: 24.9 at 105.0 Milliseconds
Minimum Value: -9.1 at 222.4 Milliseconds
SAE Filter Class: 600
Date of Test: 2/22/01
Curve Number: FIL-056

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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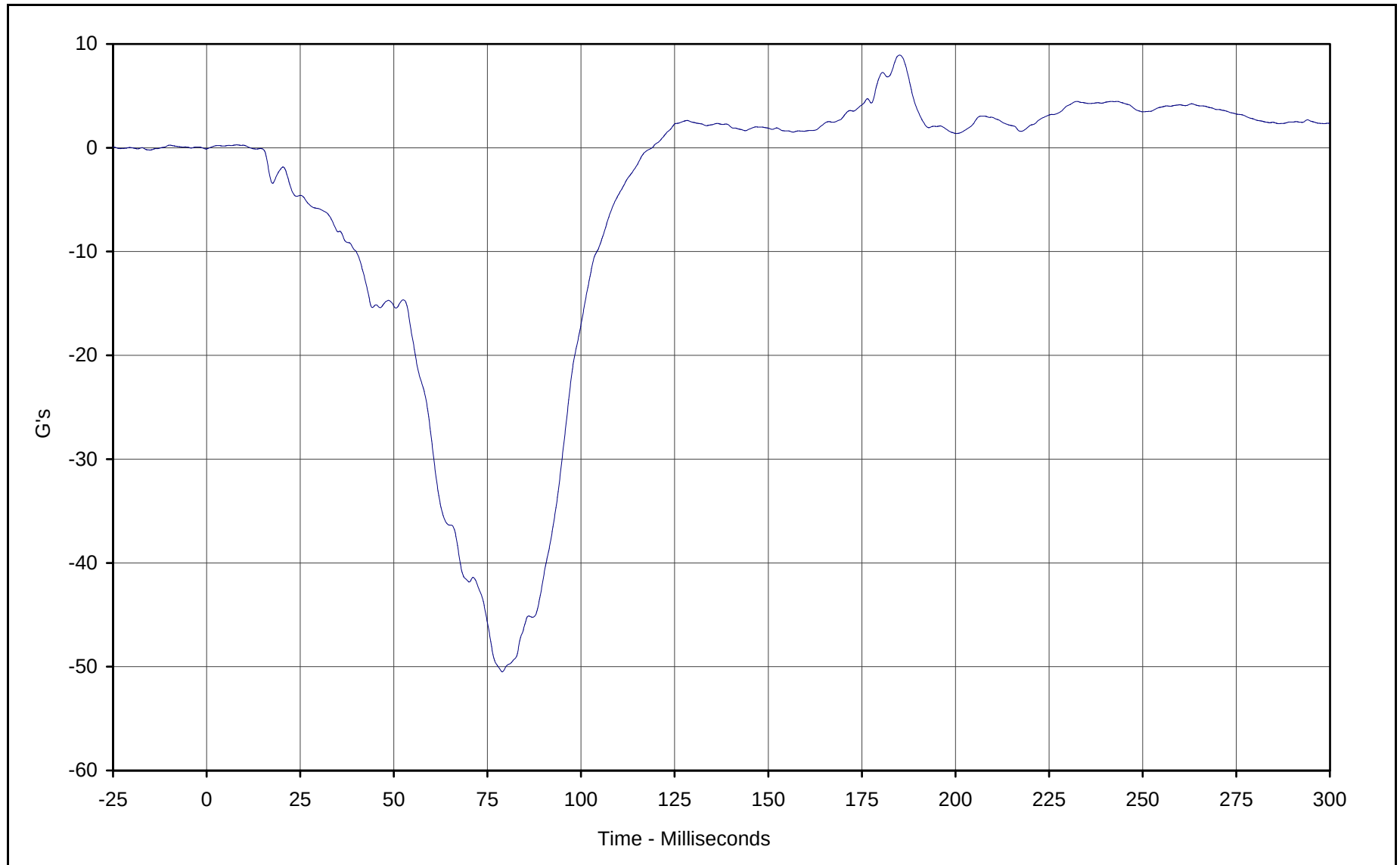


Curve Description: Passenger Neck Moment Resultant
Maximum Value: 92.3 at 68.8 Milliseconds
Minimum Value: 0.1 at 13.2 Milliseconds
SAE Filter Class: 600
Date of Test: 2/22/01
Curve Number: RES-054

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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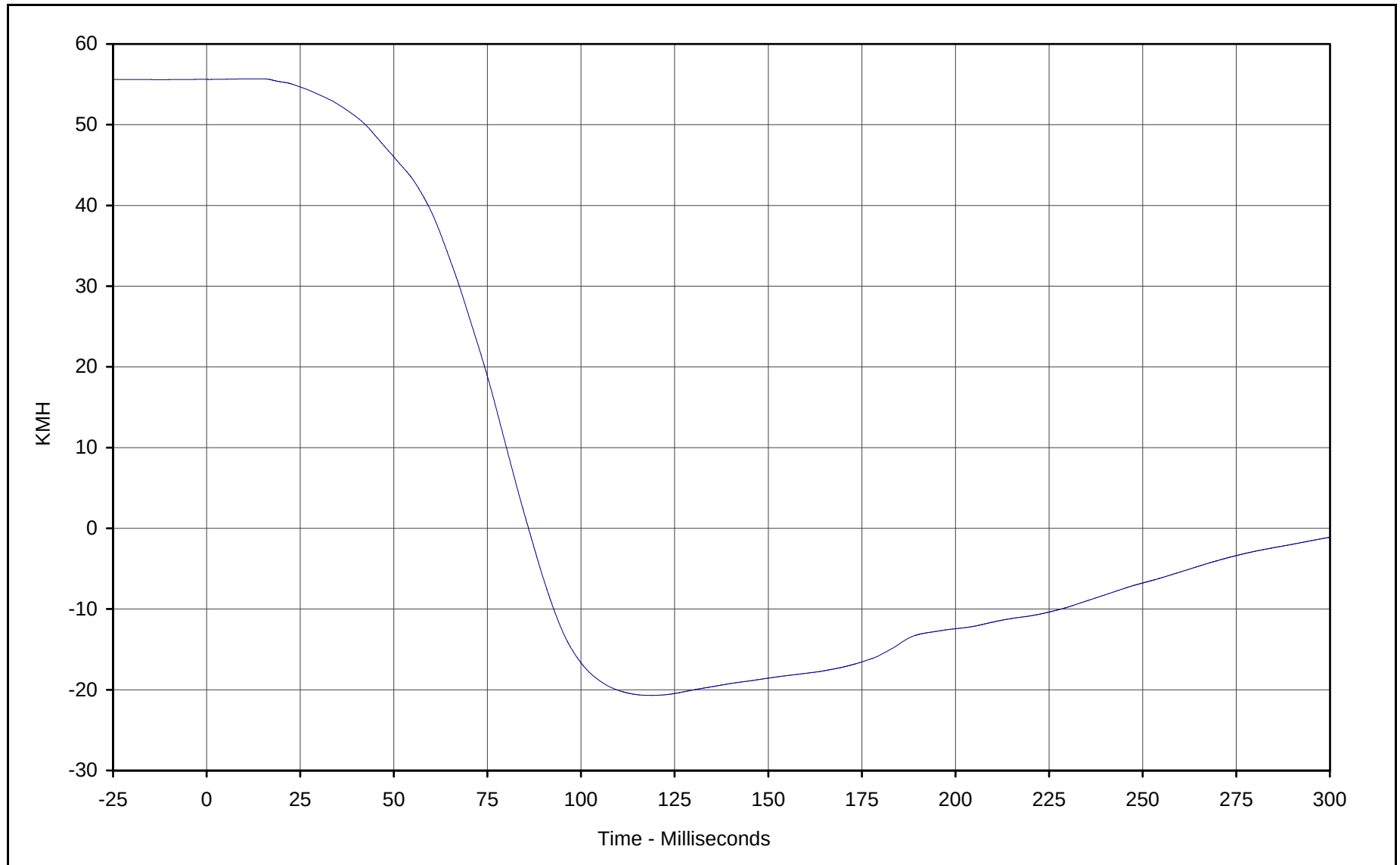


Curve Description: Passenger Chest Primary X
Maximum Value: 8.9 at 185.1 Milliseconds
Minimum Value: -50.5 at 79.0 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: FIL-057

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



KAR21001-14



Curve Description: Passenger Chest Primary X Velocity

Maximum Value: 55.7 at 11.6 Milliseconds

Minimum Value: -20.7 at 119.0 Milliseconds

SAE Filter Class: 180

Date of Test: 2/22/01

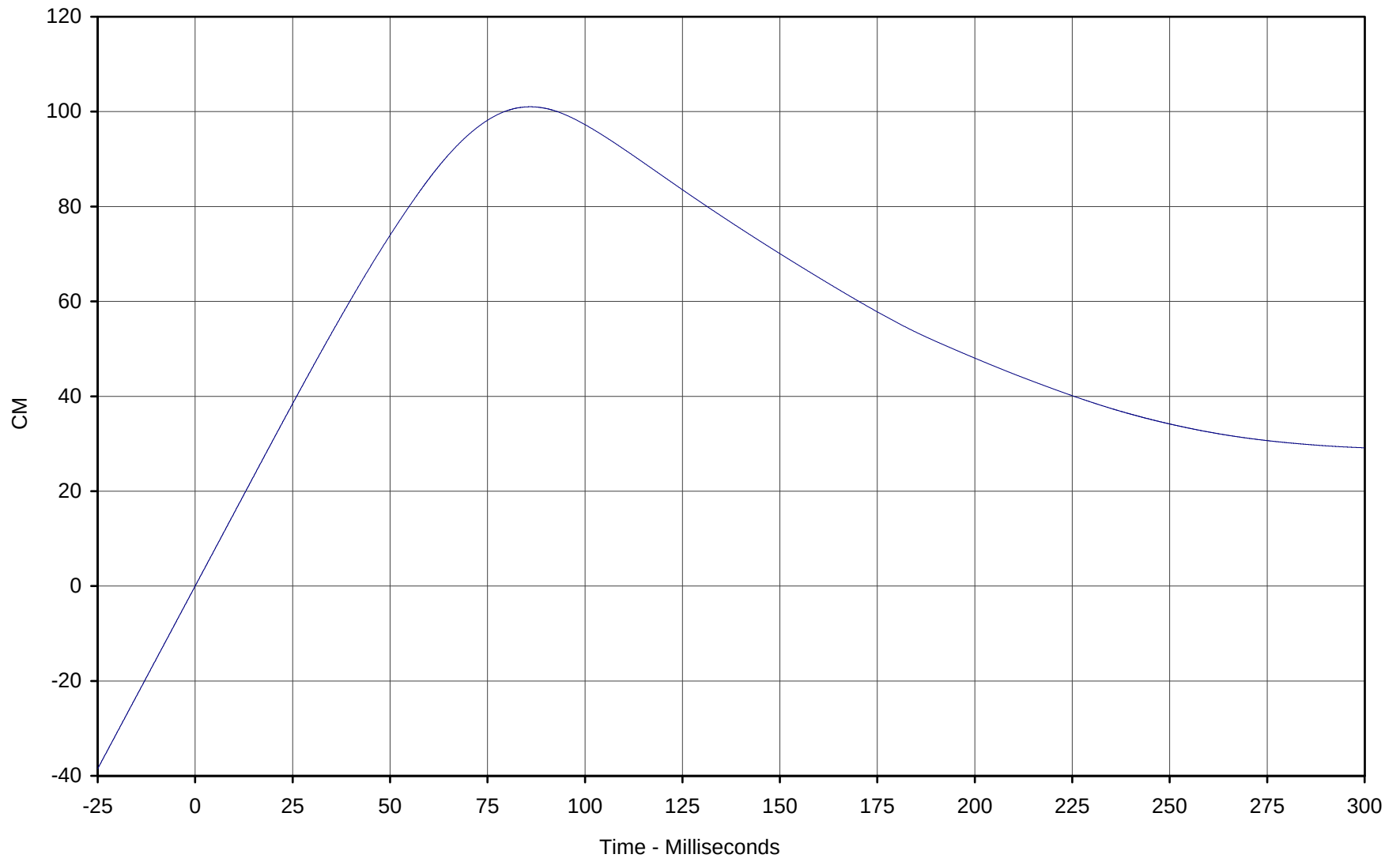
Curve Number: IN1-057

Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan



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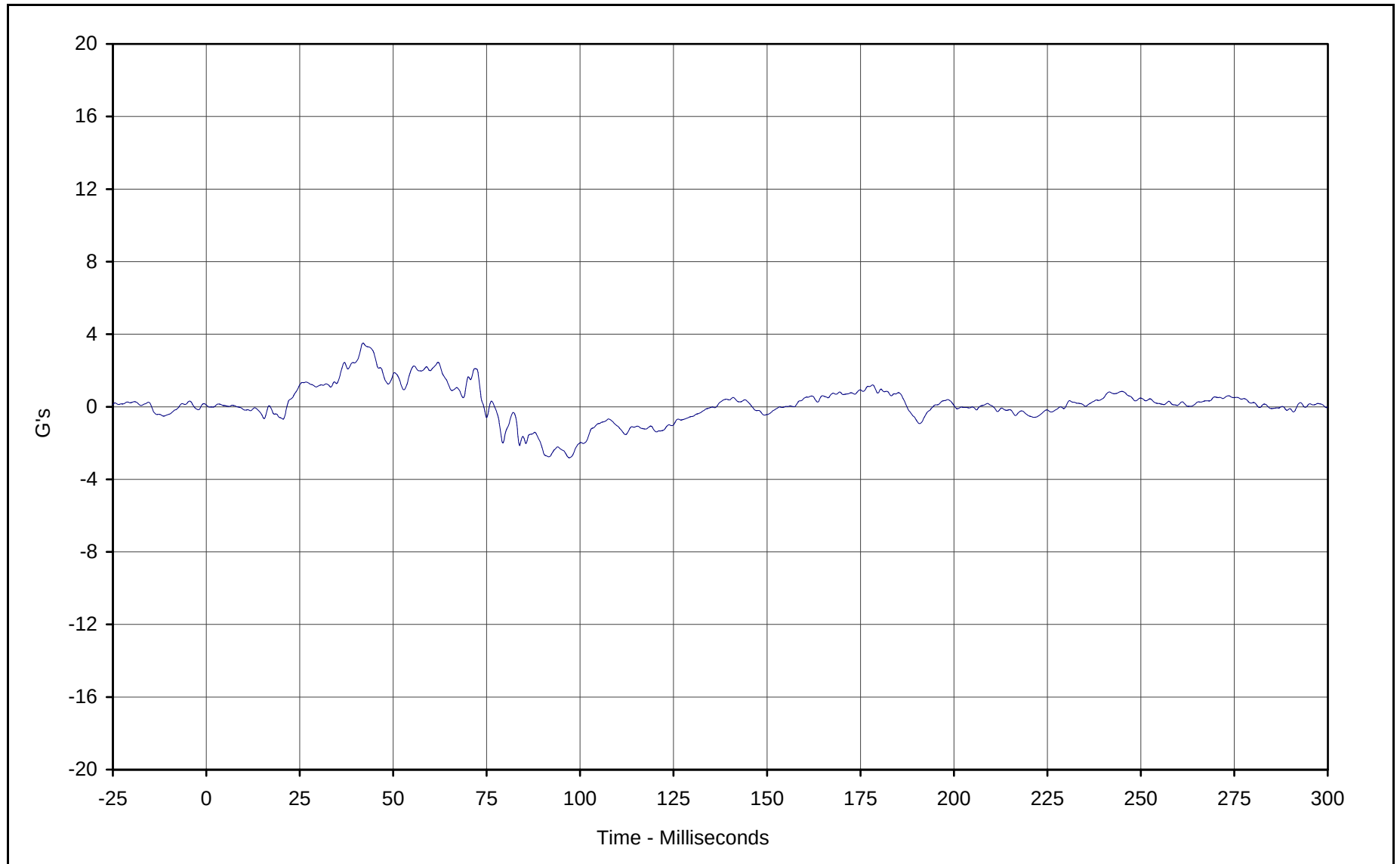
Curve Description: Passenger Chest Primary X Displ.
Maximum Value: 101.0 at 86.0 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: IN2-057

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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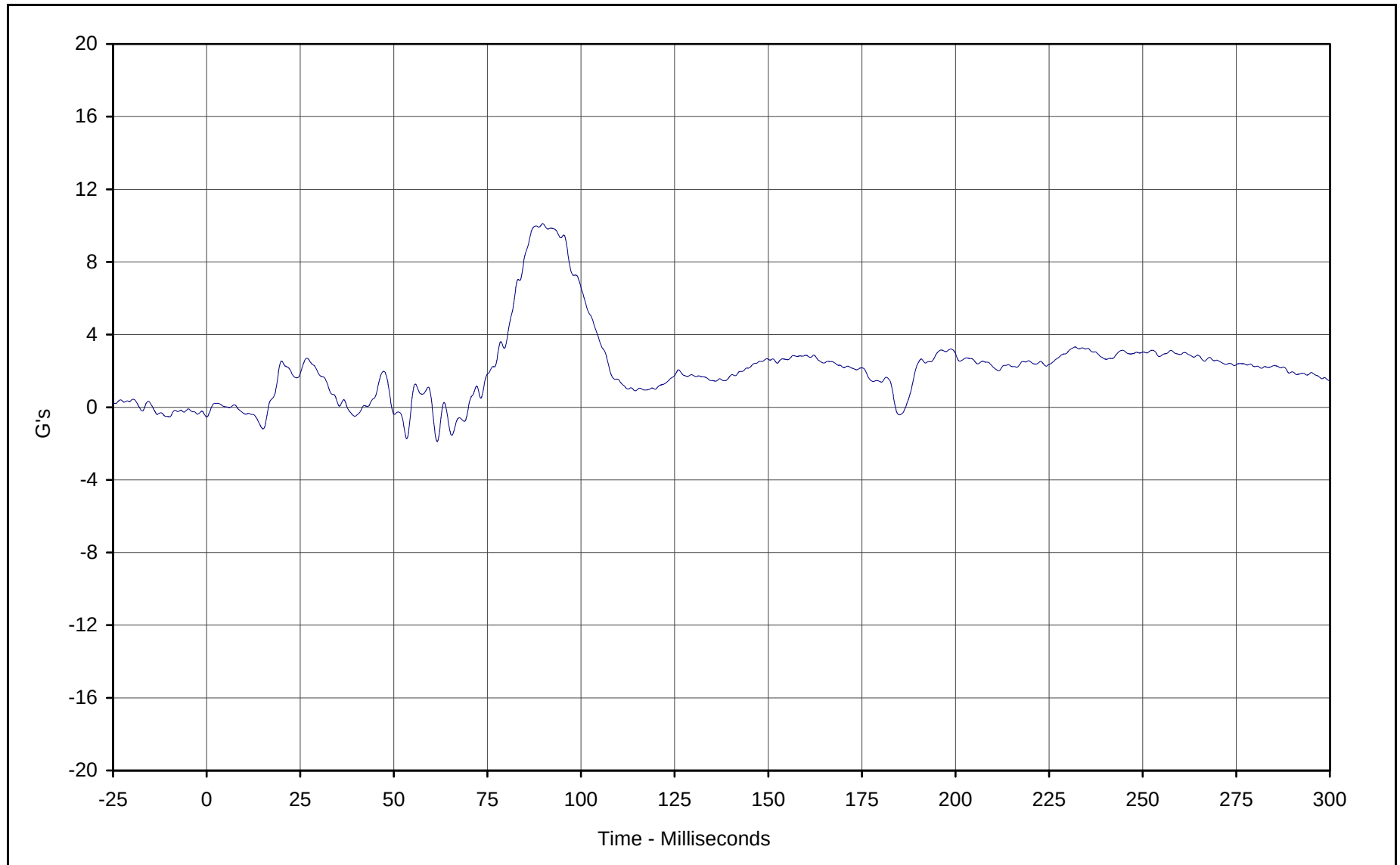


Curve Description: Passenger Chest Primary Y
Maximum Value: 3.5 at 41.9 Milliseconds
Minimum Value: -2.8 at 97.1 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: FIL-058

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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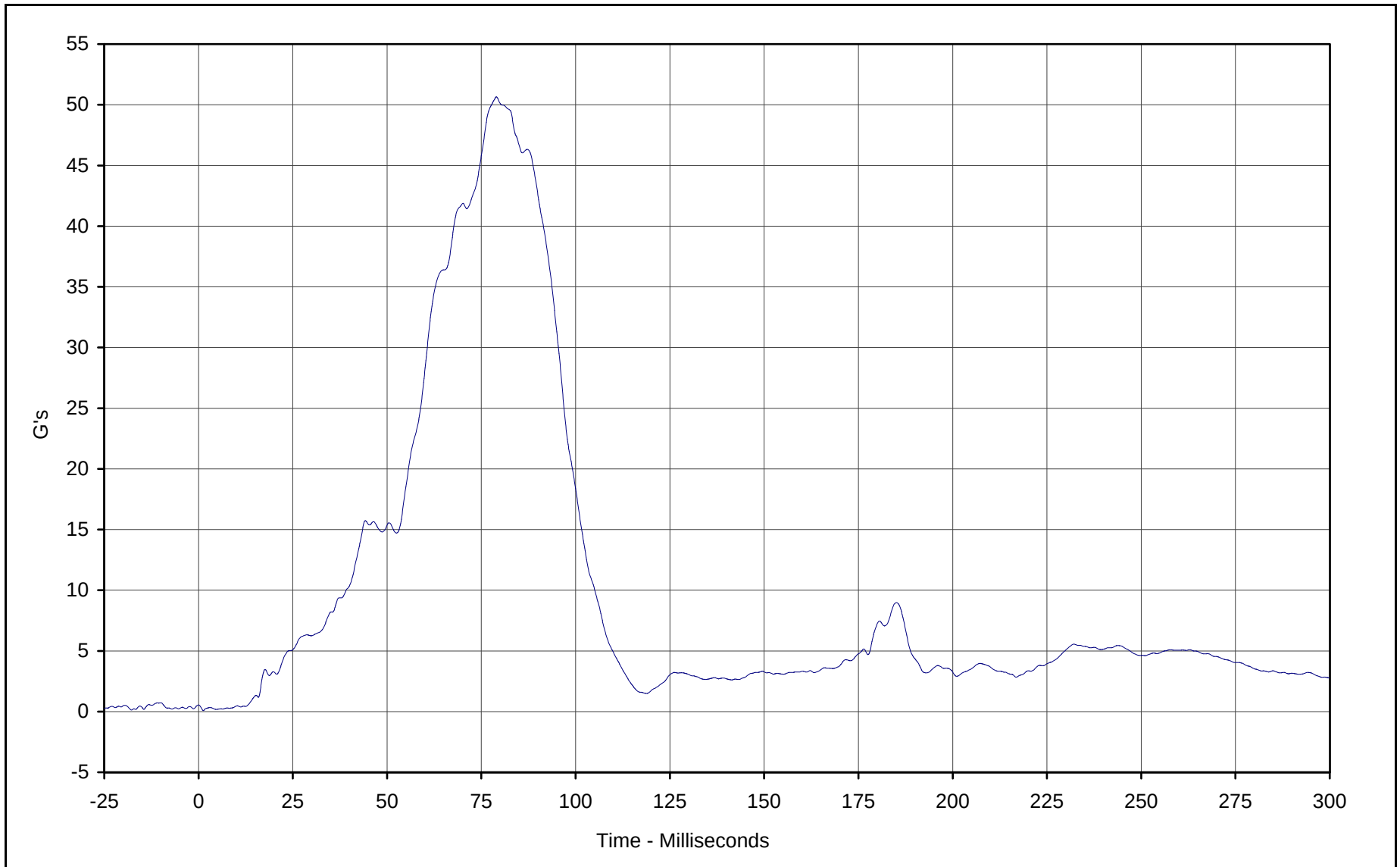


Curve Description: Passenger Chest Primary Z
Maximum Value: 10.1 at 89.8 Milliseconds
Minimum Value: -1.9 at 61.6 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: FIL-059

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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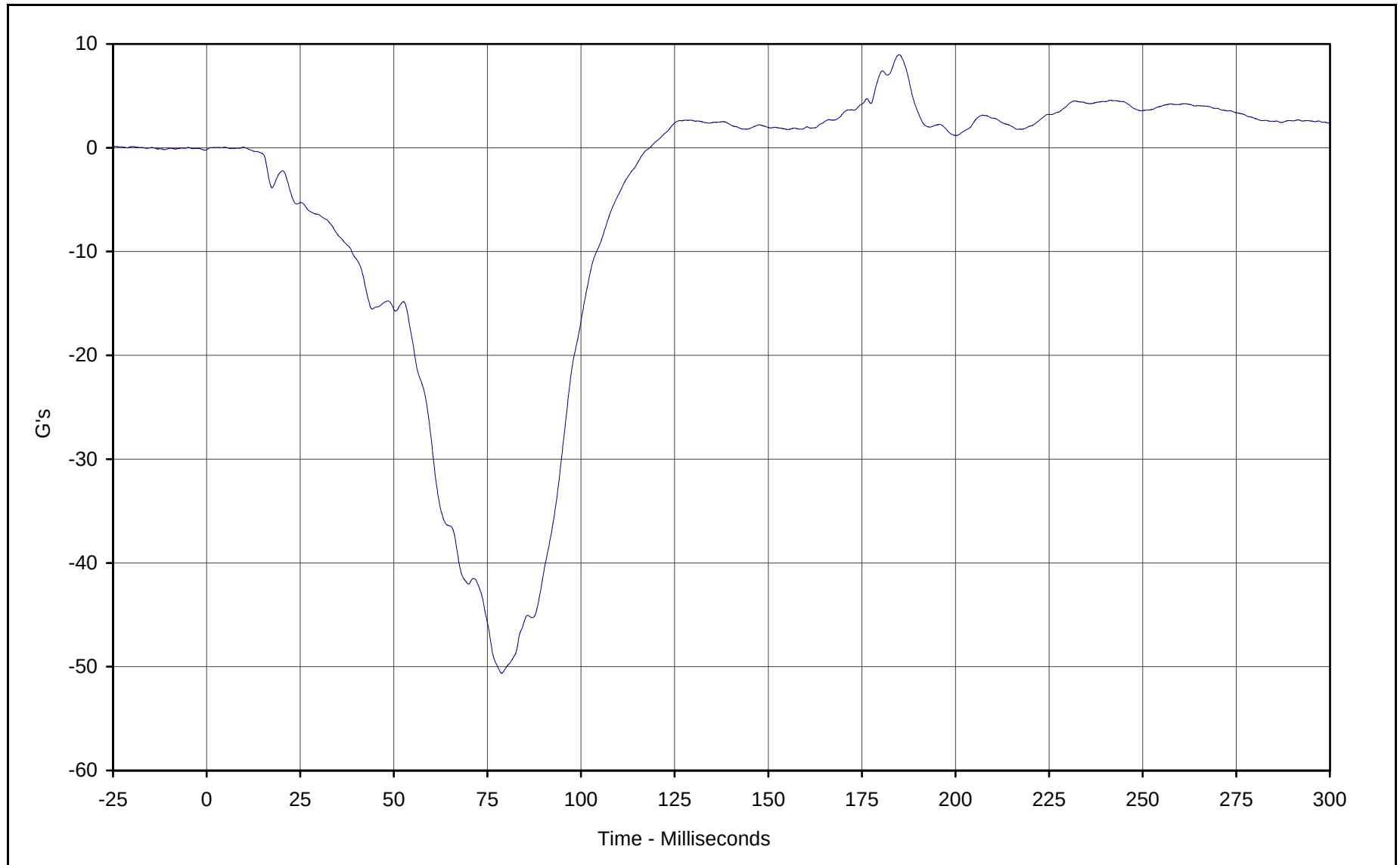


Curve Description: Passenger Chest Resultant Primary
Maximum Value: 50.6 at 79.0 Milliseconds
Minimum Value: 0.1 at 1.3 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: RES-057

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



KAR21001-14

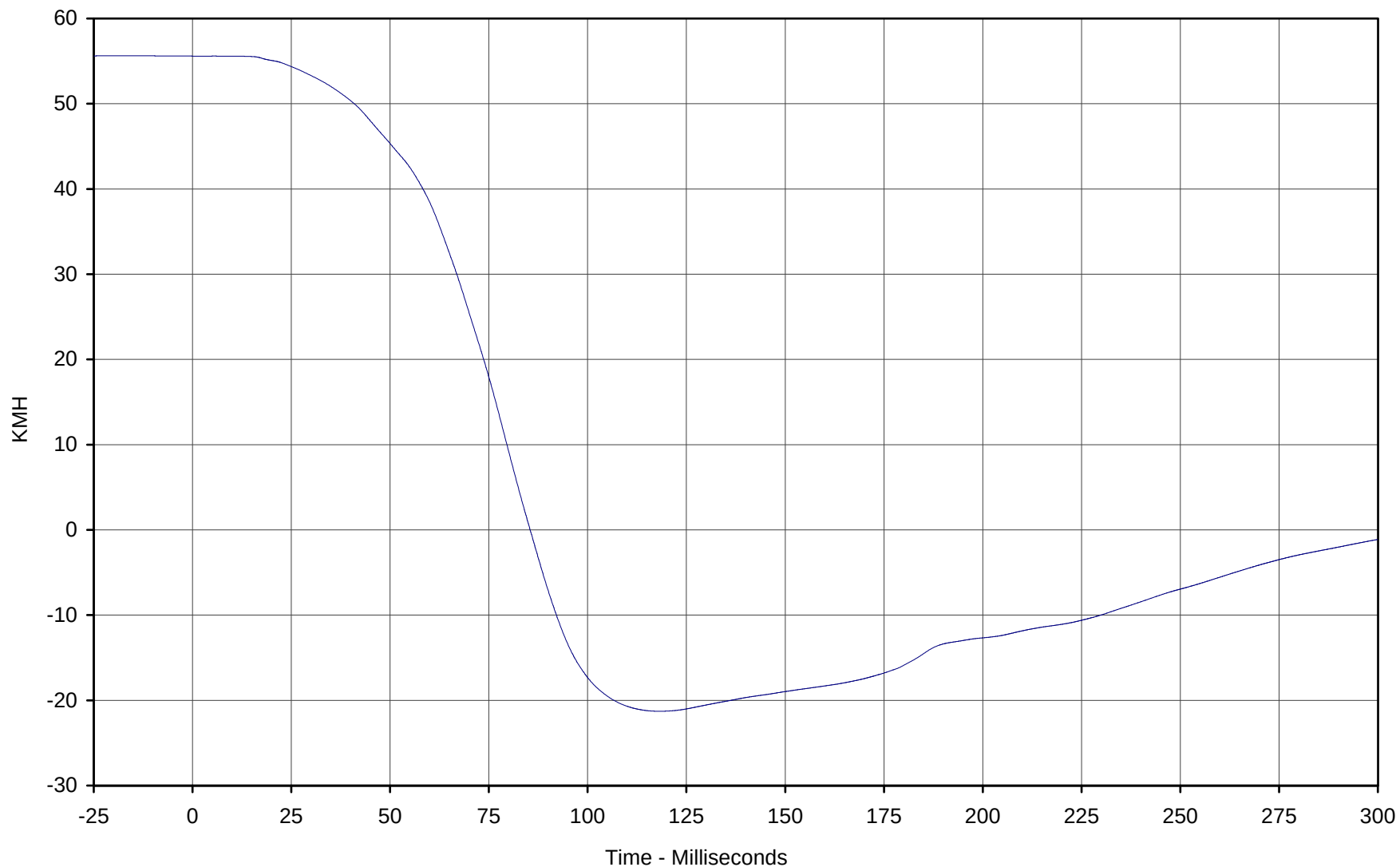


Curve Description: Passenger Chest Redundant X
Maximum Value: 9.0 at 185.0 Milliseconds
Minimum Value: -50.6 at 78.8 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: FIL-060

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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Curve Description: Passenger Chest Redundant X Velocity

Maximum Value: 55.6 at 5.5 Milliseconds

Minimum Value: -21.3 at 118.4 Milliseconds

SAE Filter Class: 180

Date of Test: 2/22/01

Curve Number: IN1-060

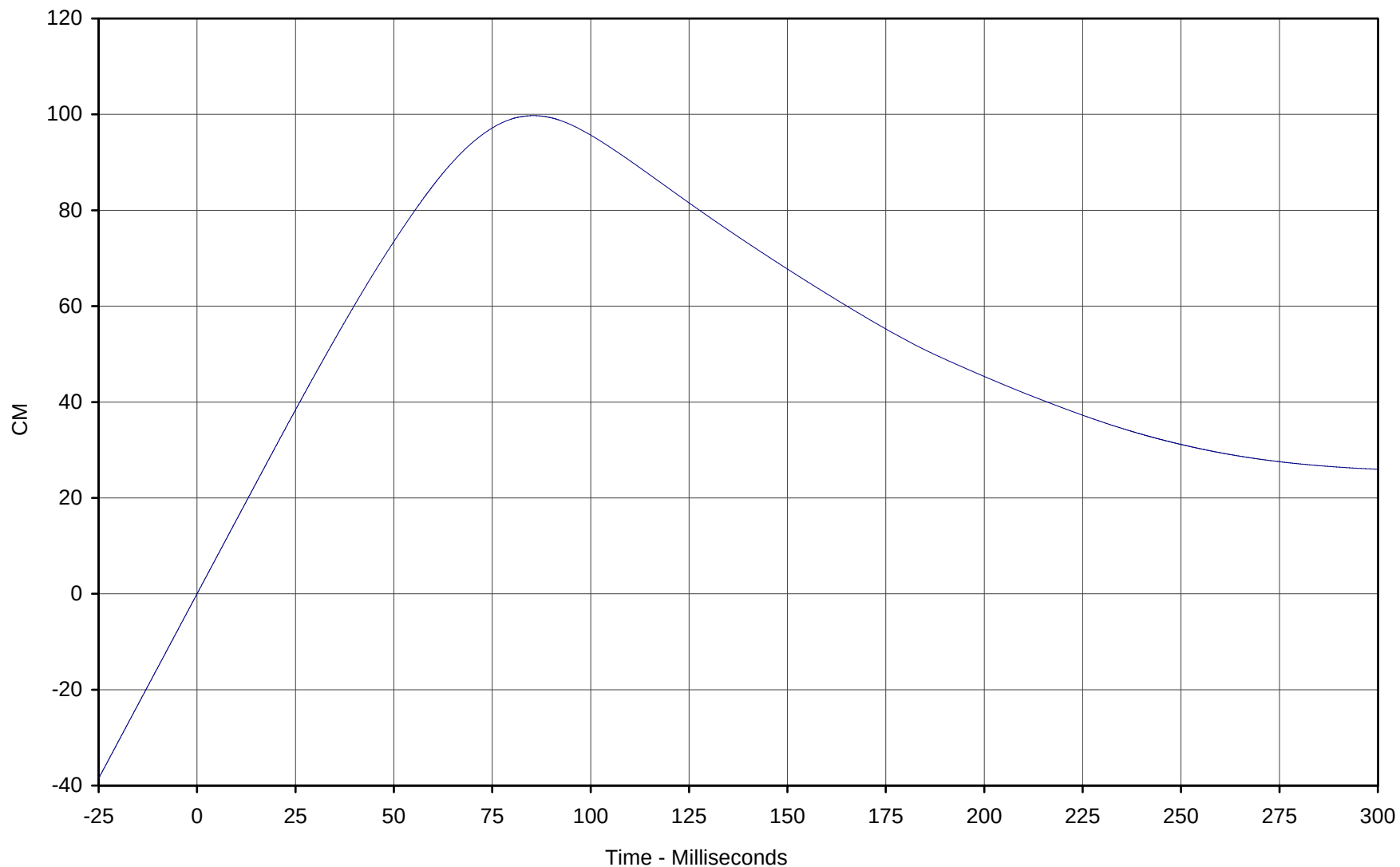
Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan



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Curve Description: Passenger Chest Redundant X Displ.

Maximum Value: 99.7 at 85.4 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 2/22/01

Curve Number: IN2-060

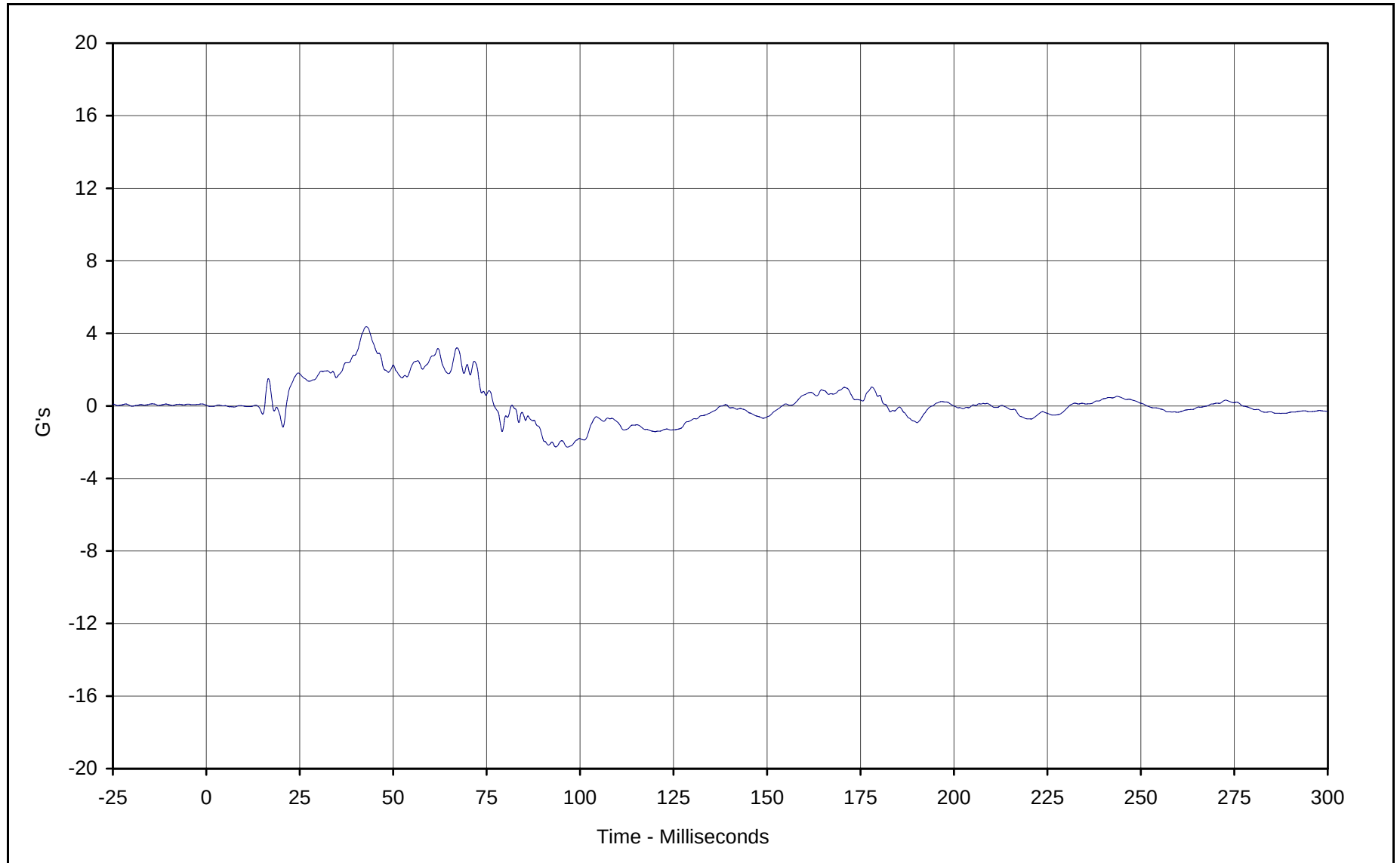
Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan



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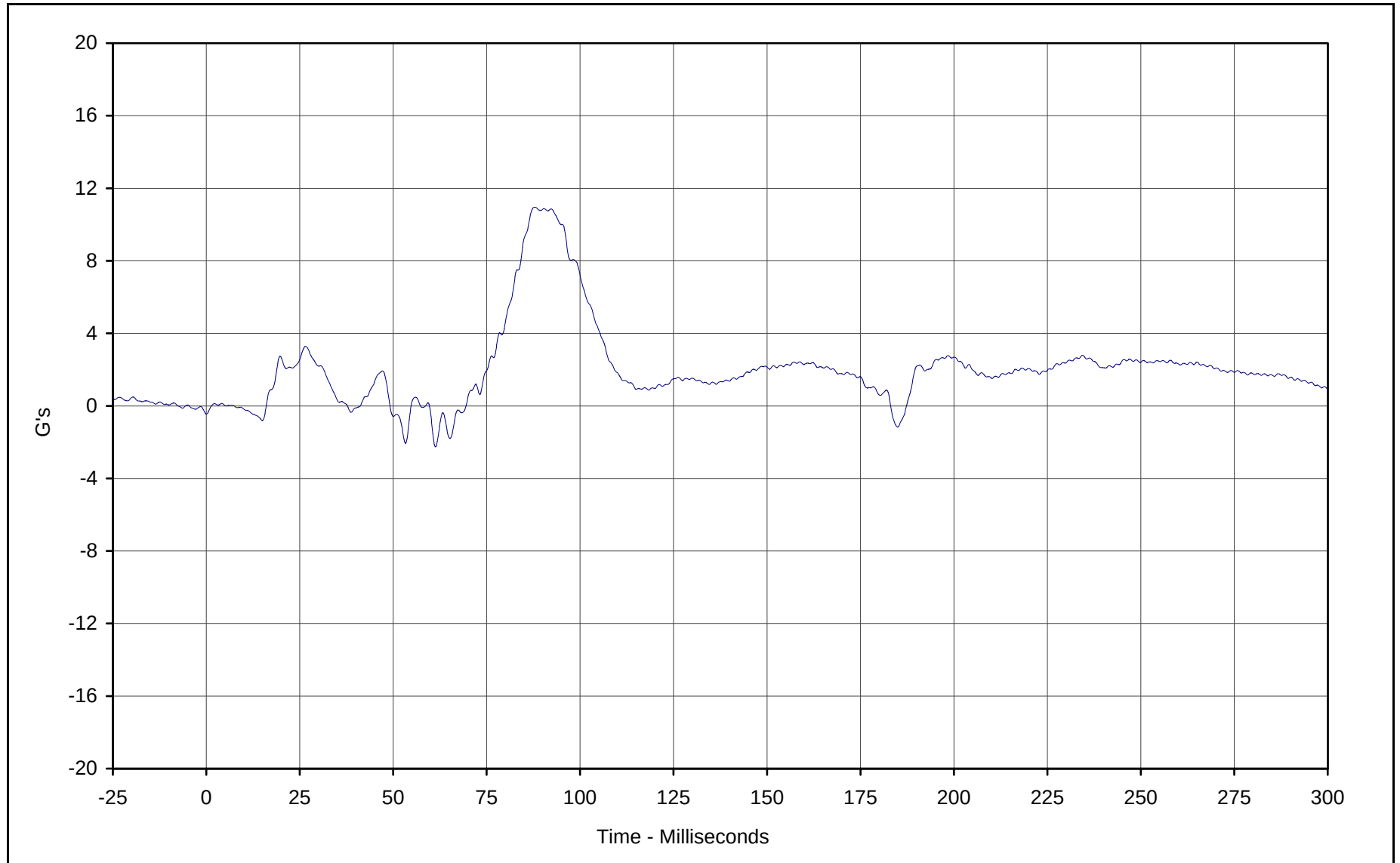
Curve Description: Passenger Chest Redundant Y
Maximum Value: 4.4 at 42.8 Milliseconds
Minimum Value: -2.3 at 96.6 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: FIL-061

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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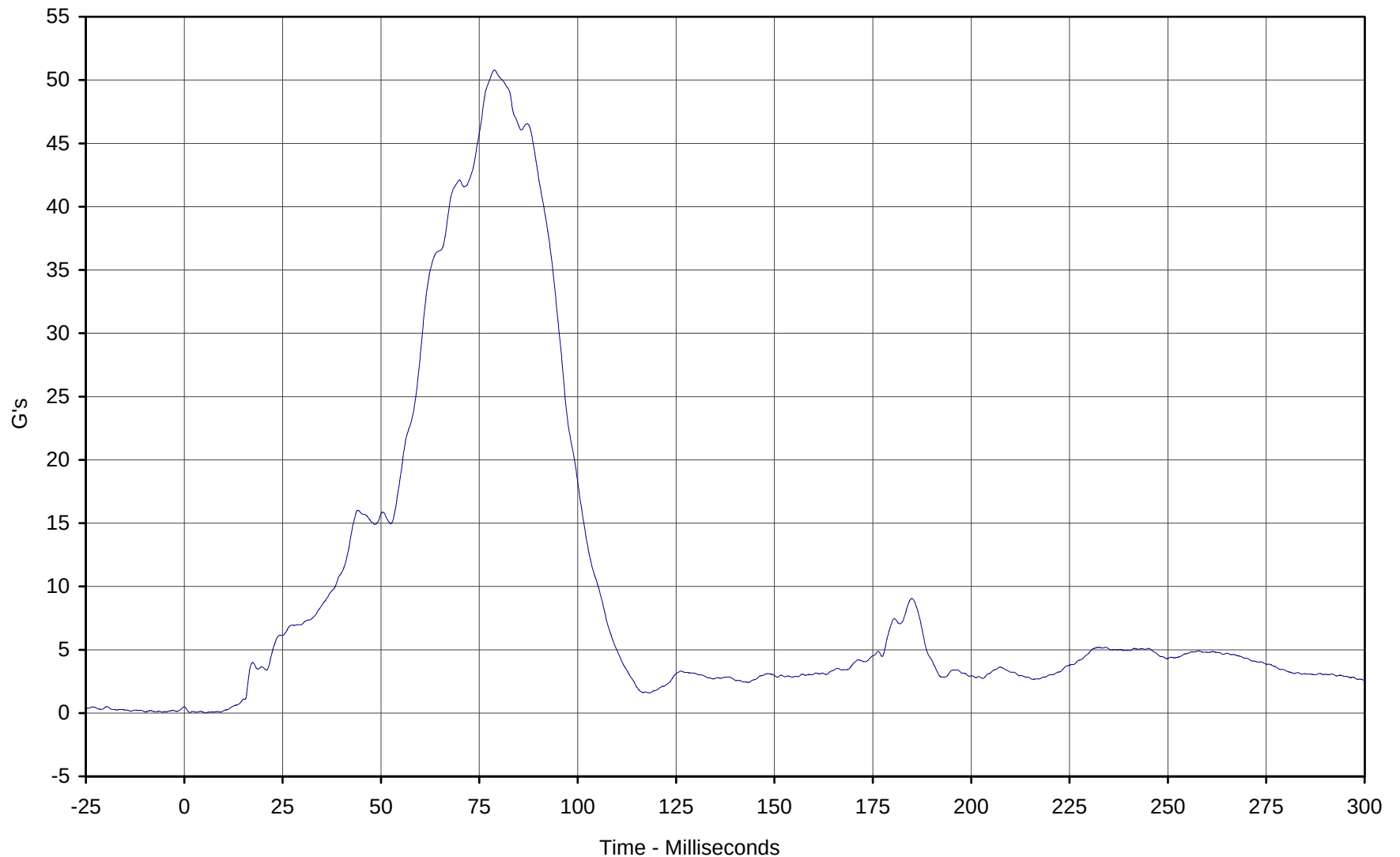
Curve Description: Passenger Chest Redundant Z
Maximum Value: 11.0 at 87.9 Milliseconds
Minimum Value: -2.3 at 61.3 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: FIL-062

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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Curve Description: Passenger Chest Resultant Redundant

Maximum Value: 50.8 at 78.8 Milliseconds

Minimum Value: 0.0 at 5.5 Milliseconds

SAE Filter Class: 180

Date of Test: 2/22/01

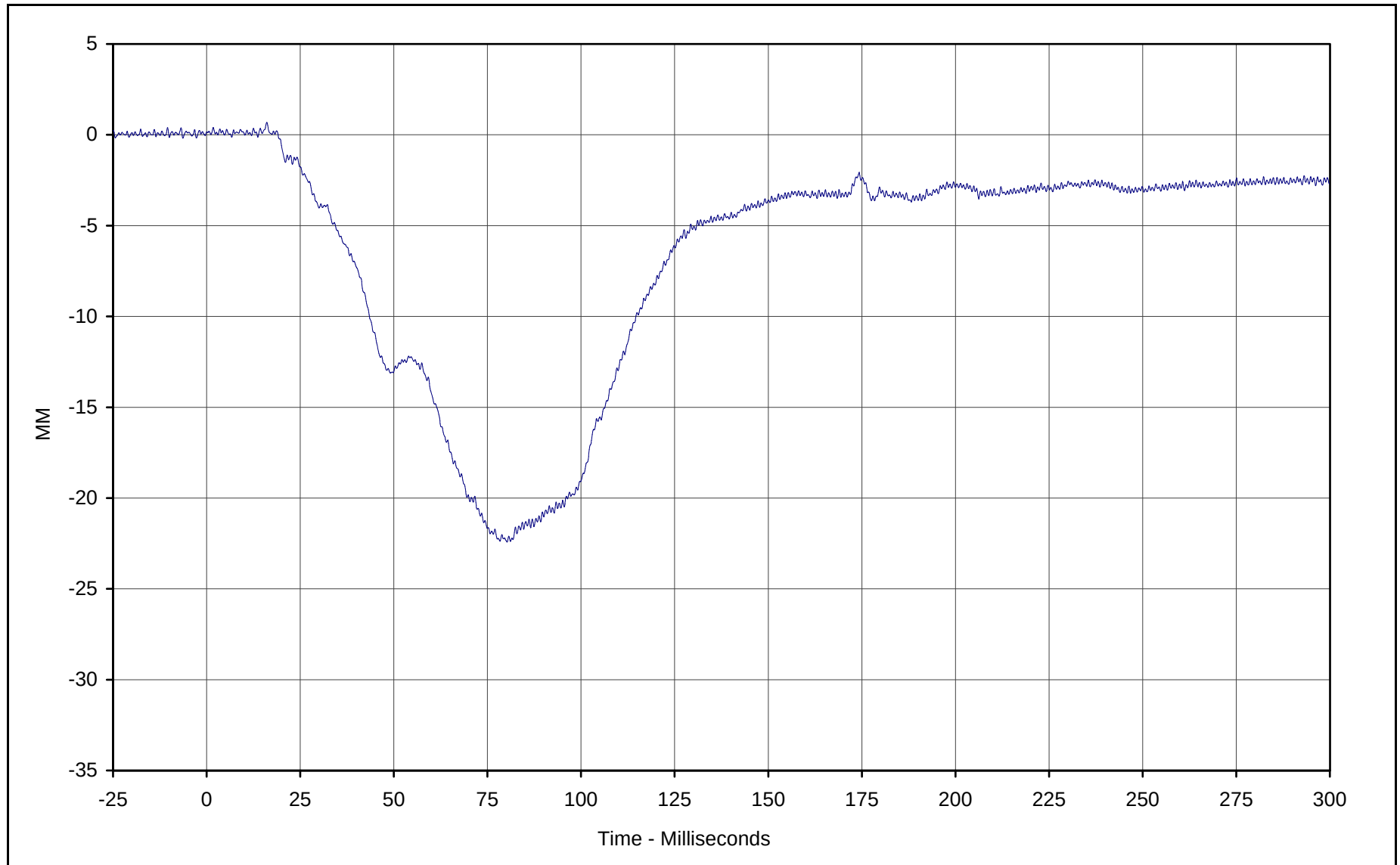
Curve Number: RES-060

Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan



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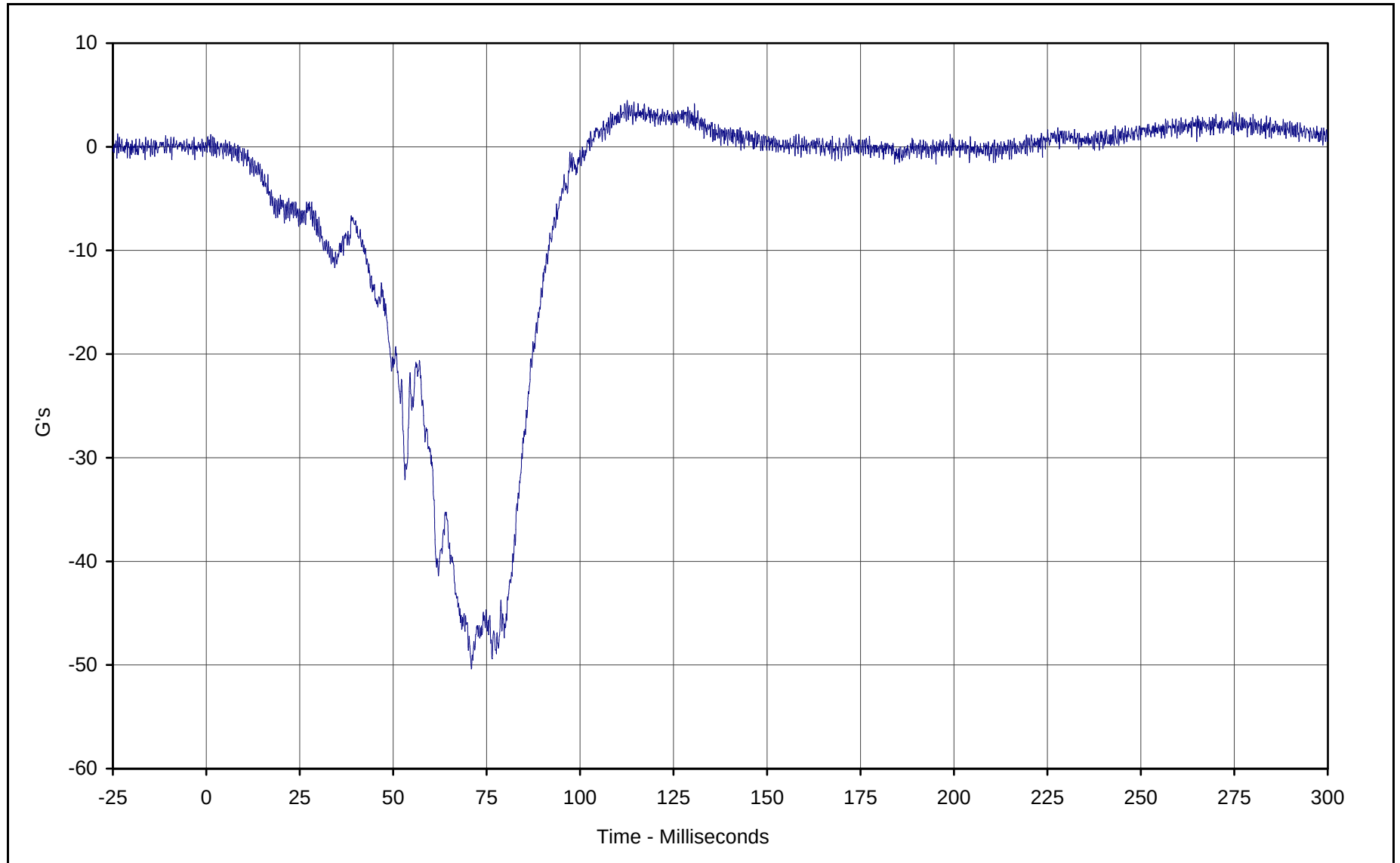


Curve Description: Passenger Chest Displacement X
Maximum Value: 0.7 at 16.1 Milliseconds
Minimum Value: -22.4 at 80.2 Milliseconds
SAE Filter Class: 600
Date of Test: 2/22/01
Curve Number: FIL-063

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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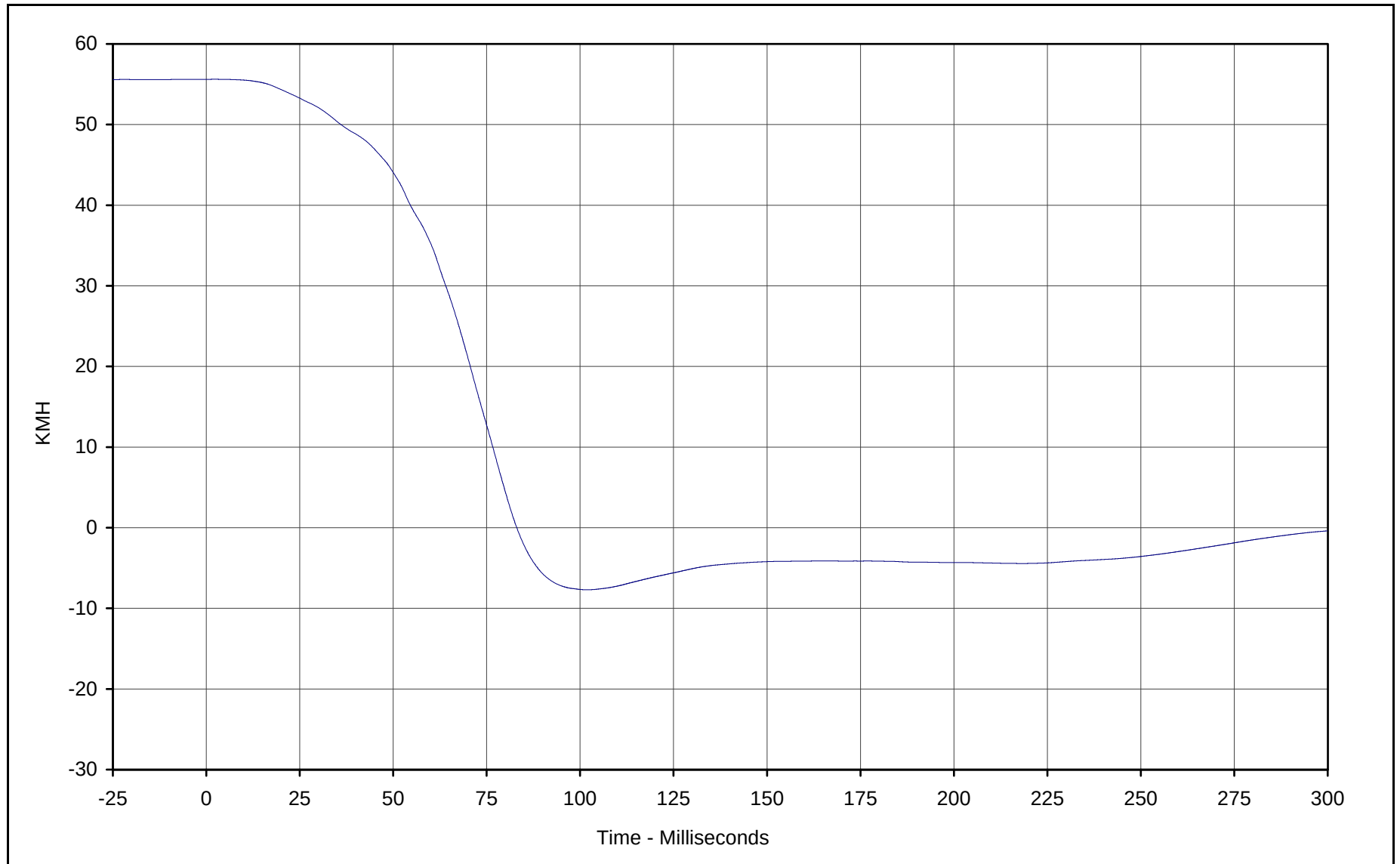


Curve Description: Passenger Pelvis X
Maximum Value: 4.5 at 112.6 Milliseconds
Minimum Value: -50.4 at 70.9 Milliseconds
SAE Filter Class: 1000
Date of Test: 2/22/01
Curve Number: FIL-064

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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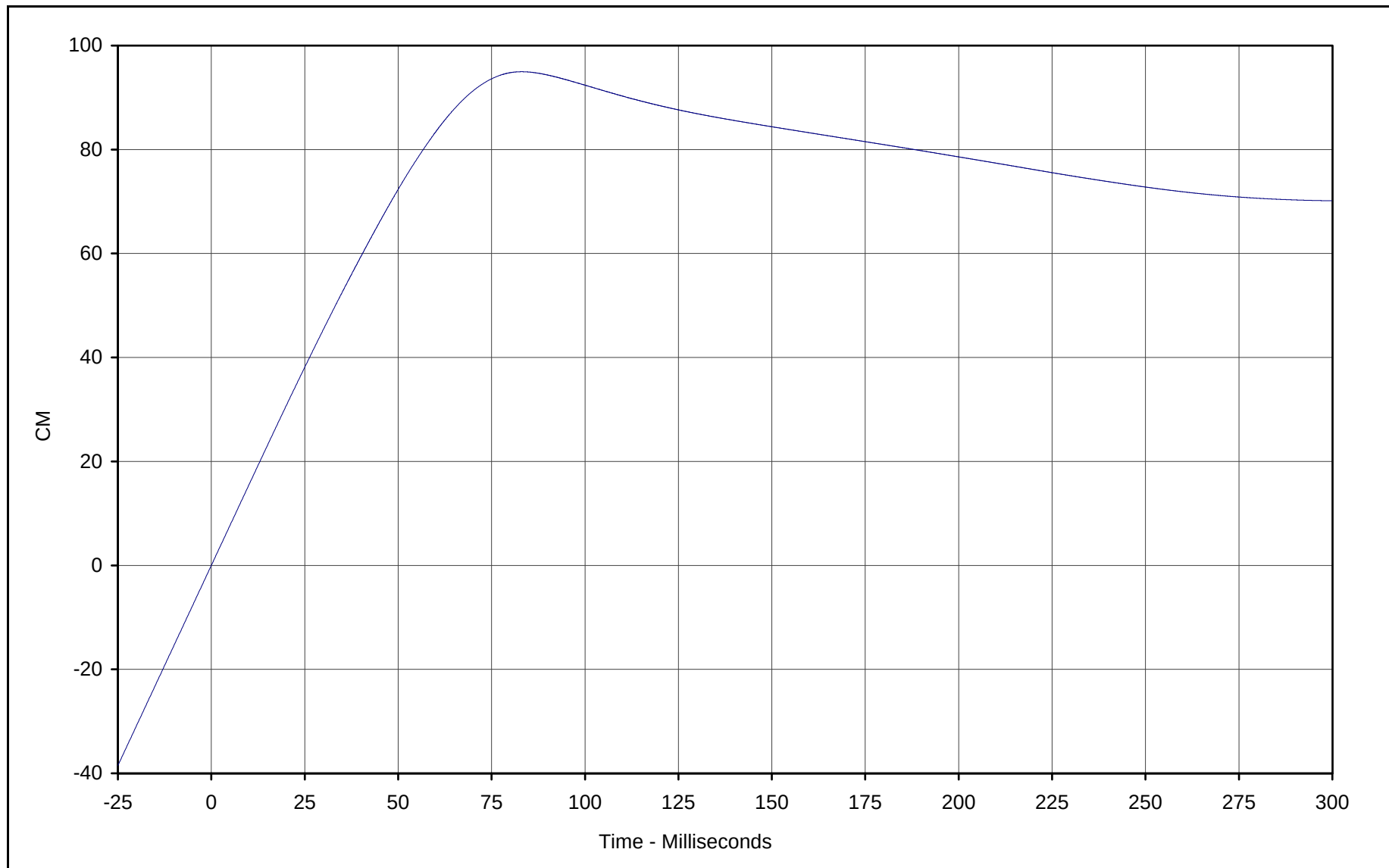


Curve Description: Passenger Pelvis X Velocity
Maximum Value: 55.6 at 2.2 Milliseconds
Minimum Value: -7.7 at 101.8 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: IN1-064

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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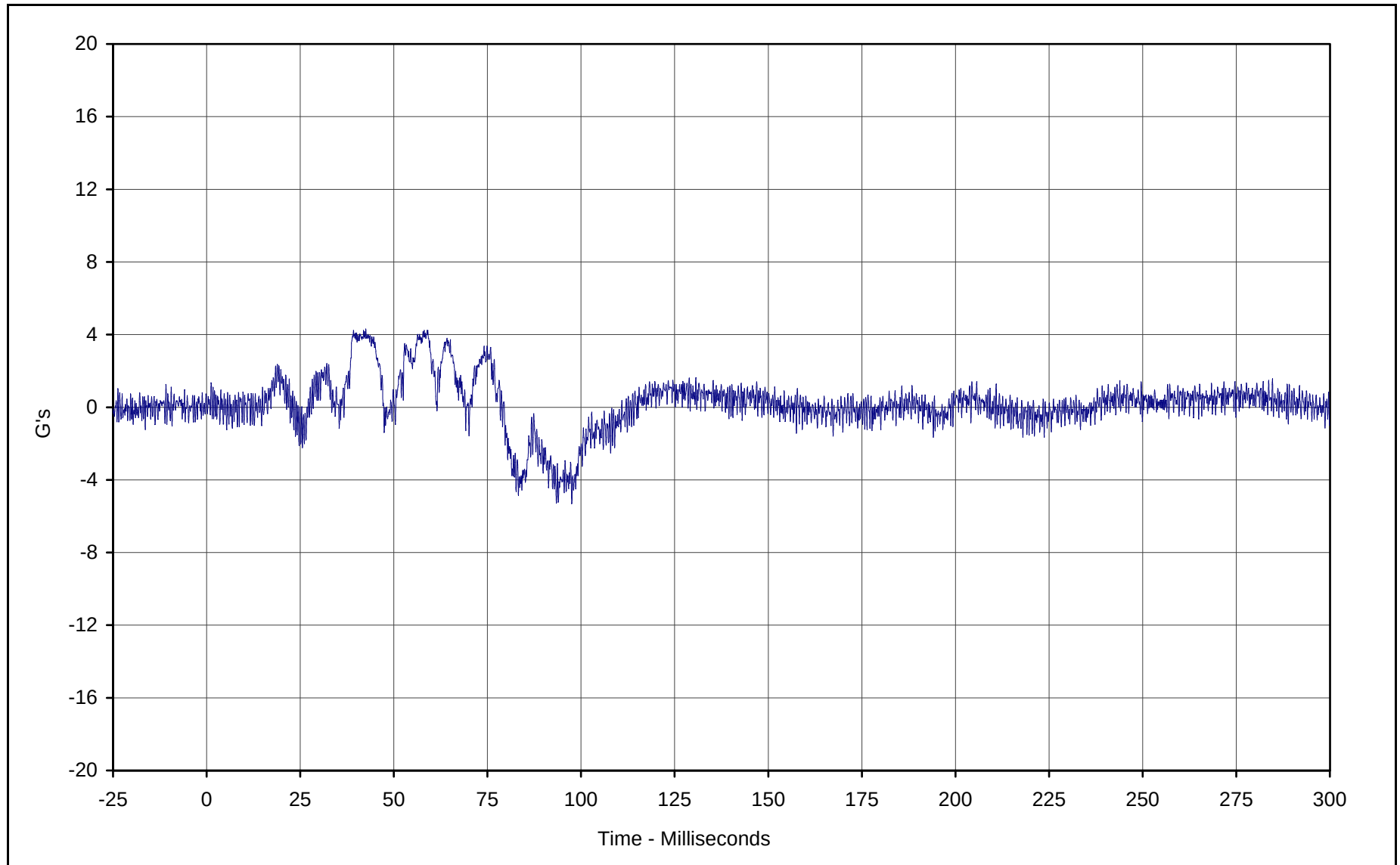
Curve Description: Passenger Pelvis X Displ.
Maximum Value: 95.0 at 83.1 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: IN2-064

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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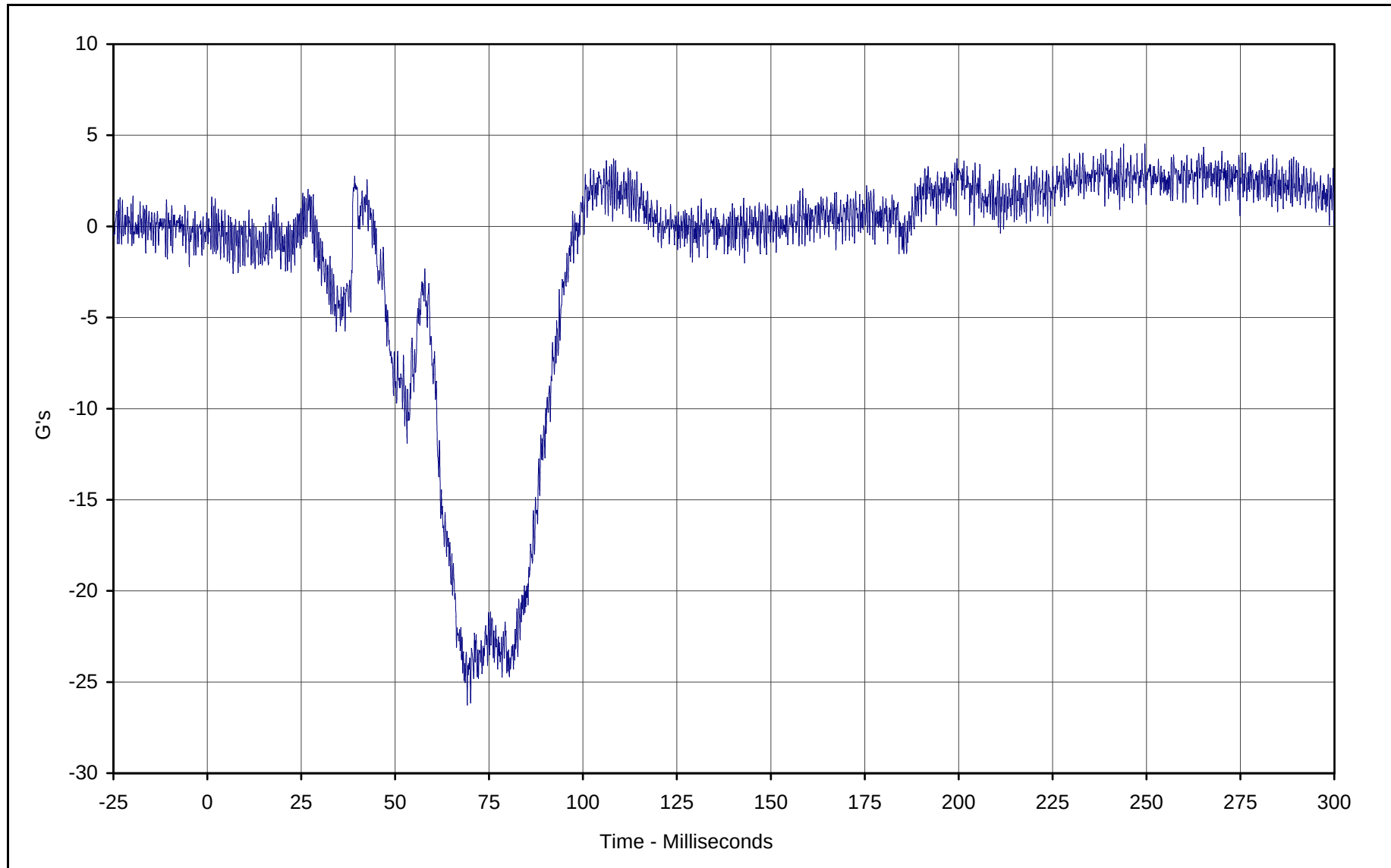
Curve Description: Passenger Pelvis Y
Maximum Value: 4.3 at 42.5 Milliseconds
Minimum Value: -5.3 at 93.4 Milliseconds
SAE Filter Class: 1000
Date of Test: 2/22/01
Curve Number: FIL-065

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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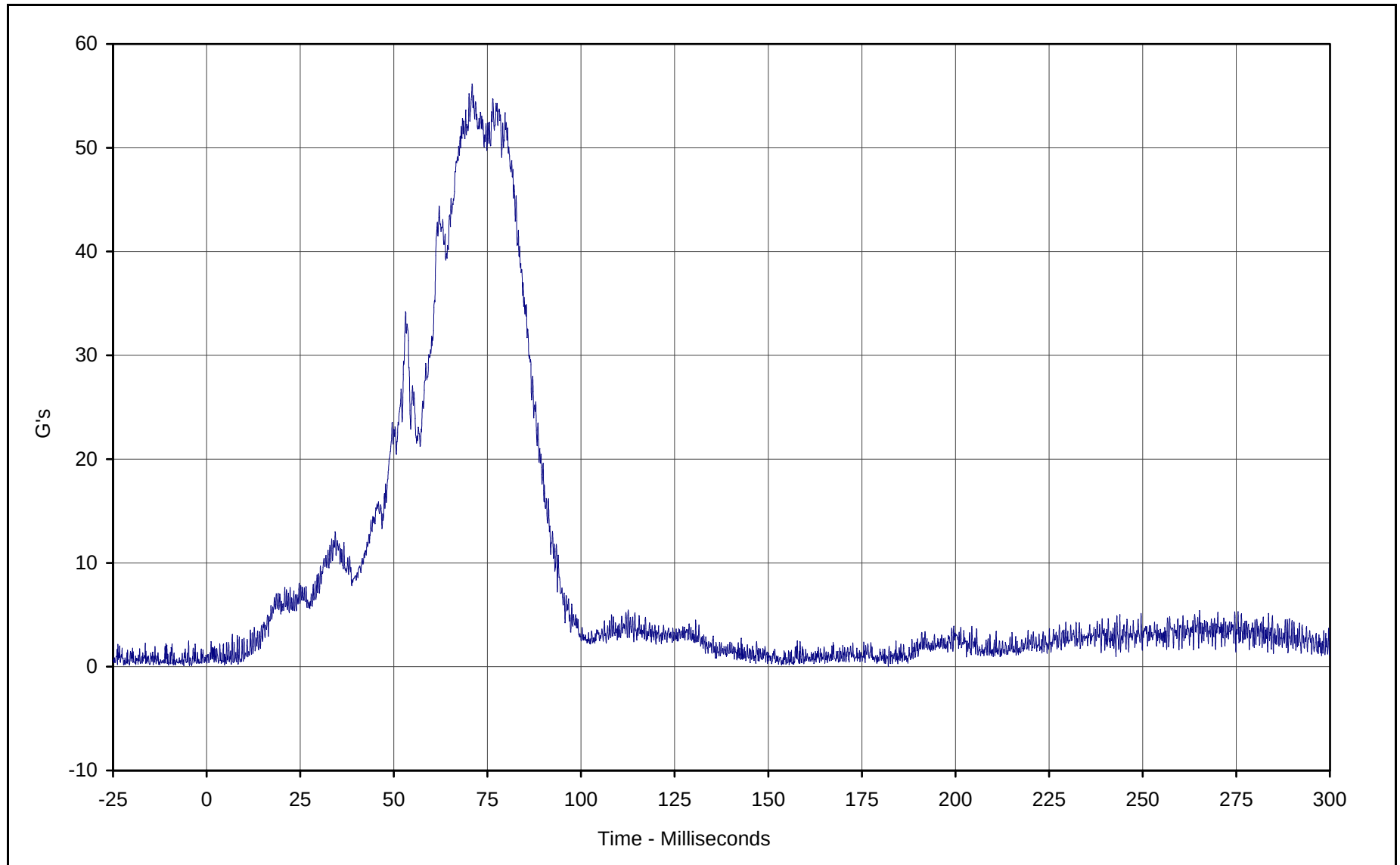
Curve Description: Passenger Pelvis Z
Maximum Value: 4.5 at 243.9 Milliseconds
Minimum Value: -26.3 at 69.2 Milliseconds
SAE Filter Class: 1000
Date of Test: 2/22/01
Curve Number: FIL-066

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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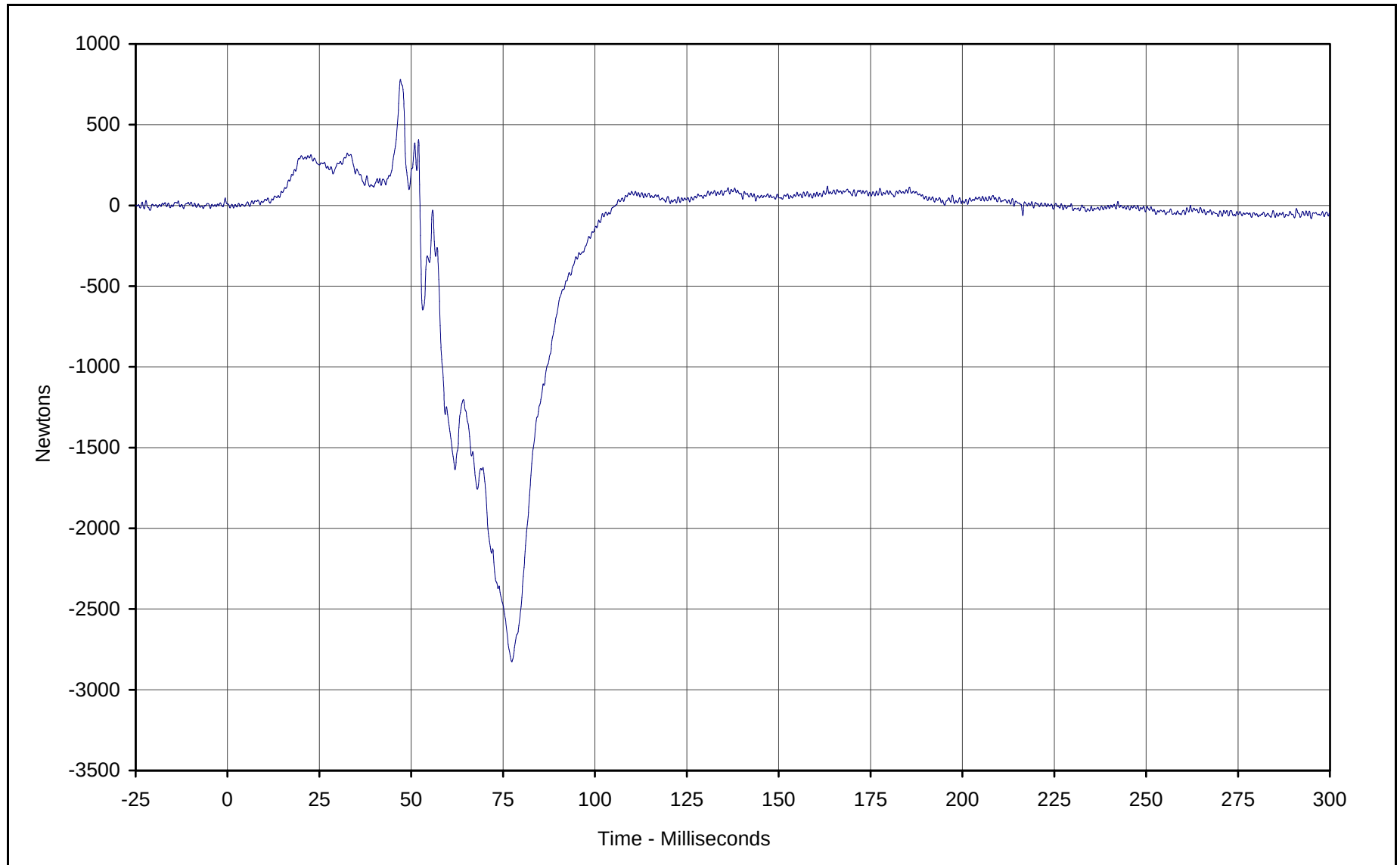
Curve Description: Passenger Pelvis Resultant
Maximum Value: 56.2 at 70.9 Milliseconds
Minimum Value: 0.1 at 182.1 Milliseconds
SAE Filter Class: 1000
Date of Test: 2/22/01
Curve Number: RES-064

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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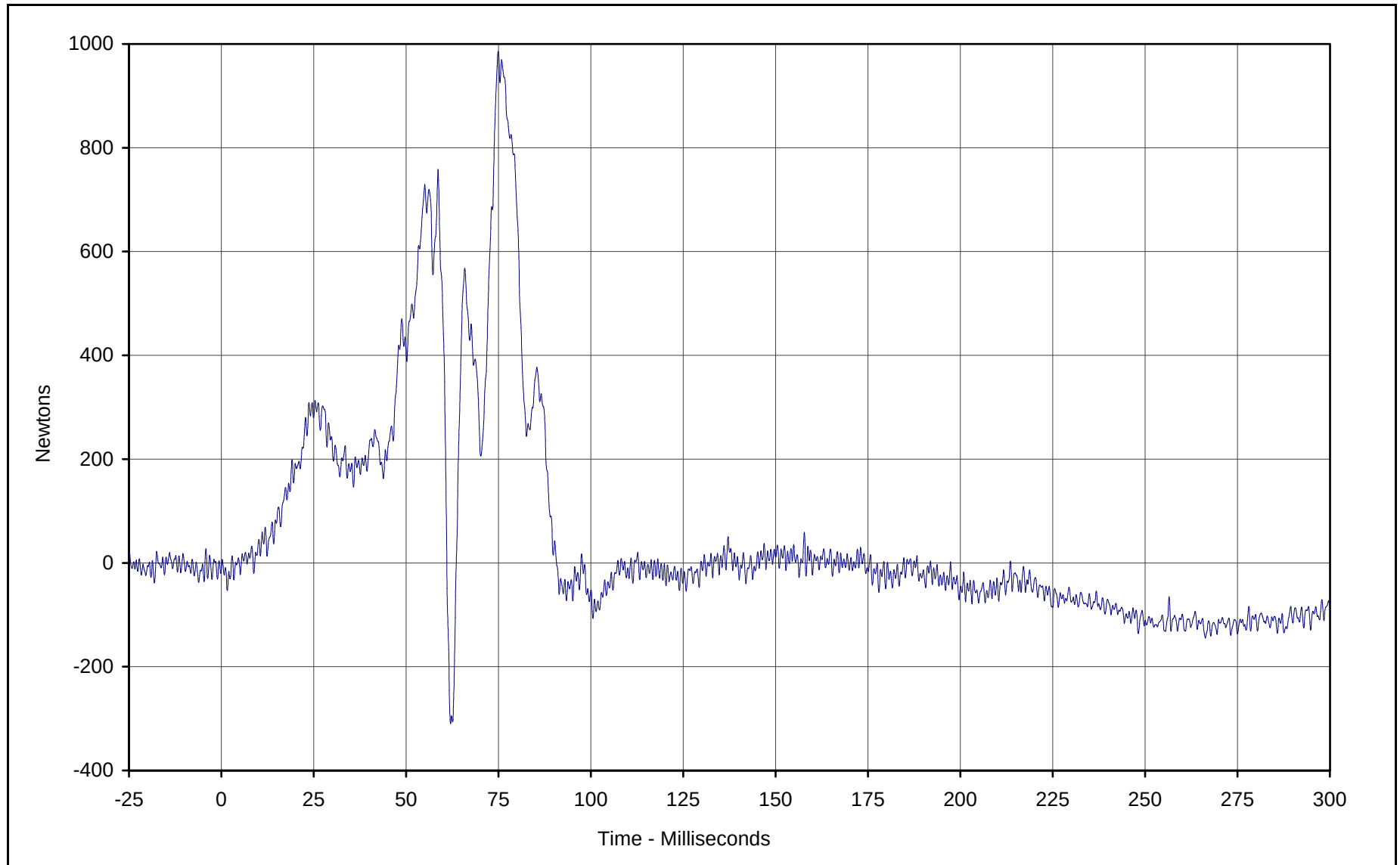


Curve Description: Passenger Left Femur Force
Maximum Value: 779.6 at 47.0 Milliseconds
Minimum Value: -2826.3 at 77.4 Milliseconds
SAE Filter Class: 600
Date of Test: 2/22/01
Curve Number: FIL-067

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



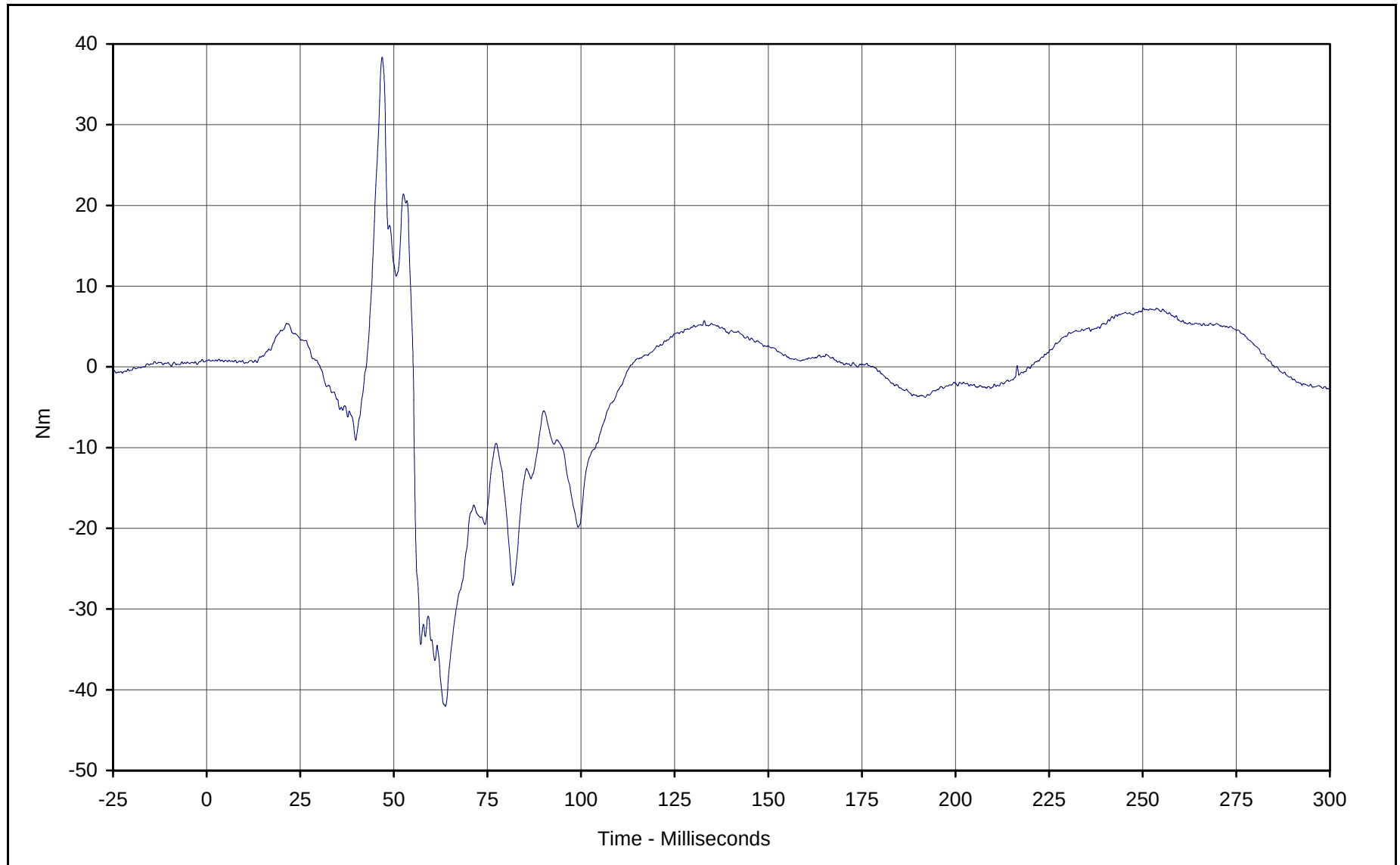
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Curve Description: Passenger Right Femur Force
Maximum Value: 985.4 at 74.9 Milliseconds
Minimum Value: -309.9 at 62.0 Milliseconds
SAE Filter Class: 600
Date of Test: 2/22/01
Curve Number: FIL-068

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan





Curve Description: Passenger Left Upper Tibia Moment X

Maximum Value: 38.4 at 46.9 Milliseconds

Minimum Value: -42.1 at 63.8 Milliseconds

SAE Filter Class: 600

Date of Test: 2/22/01

Curve Number: FIL-069

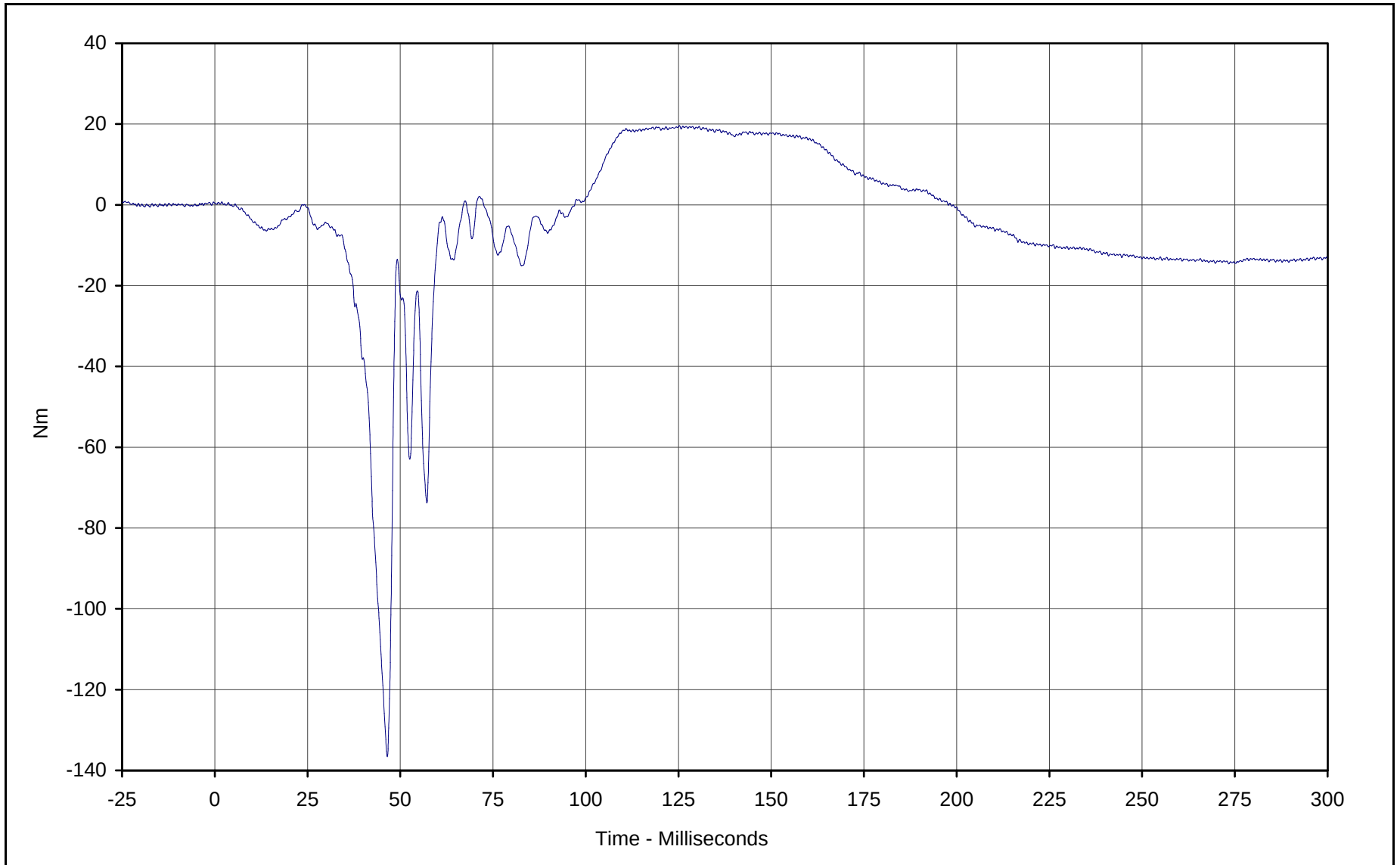
Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan



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Curve Description: Passenger Left Upper Tibia Moment Y

Maximum Value: 19.6 at 125.3 Milliseconds

Minimum Value: -136.6 at 46.5 Milliseconds

SAE Filter Class: 600

Date of Test: 2/22/01

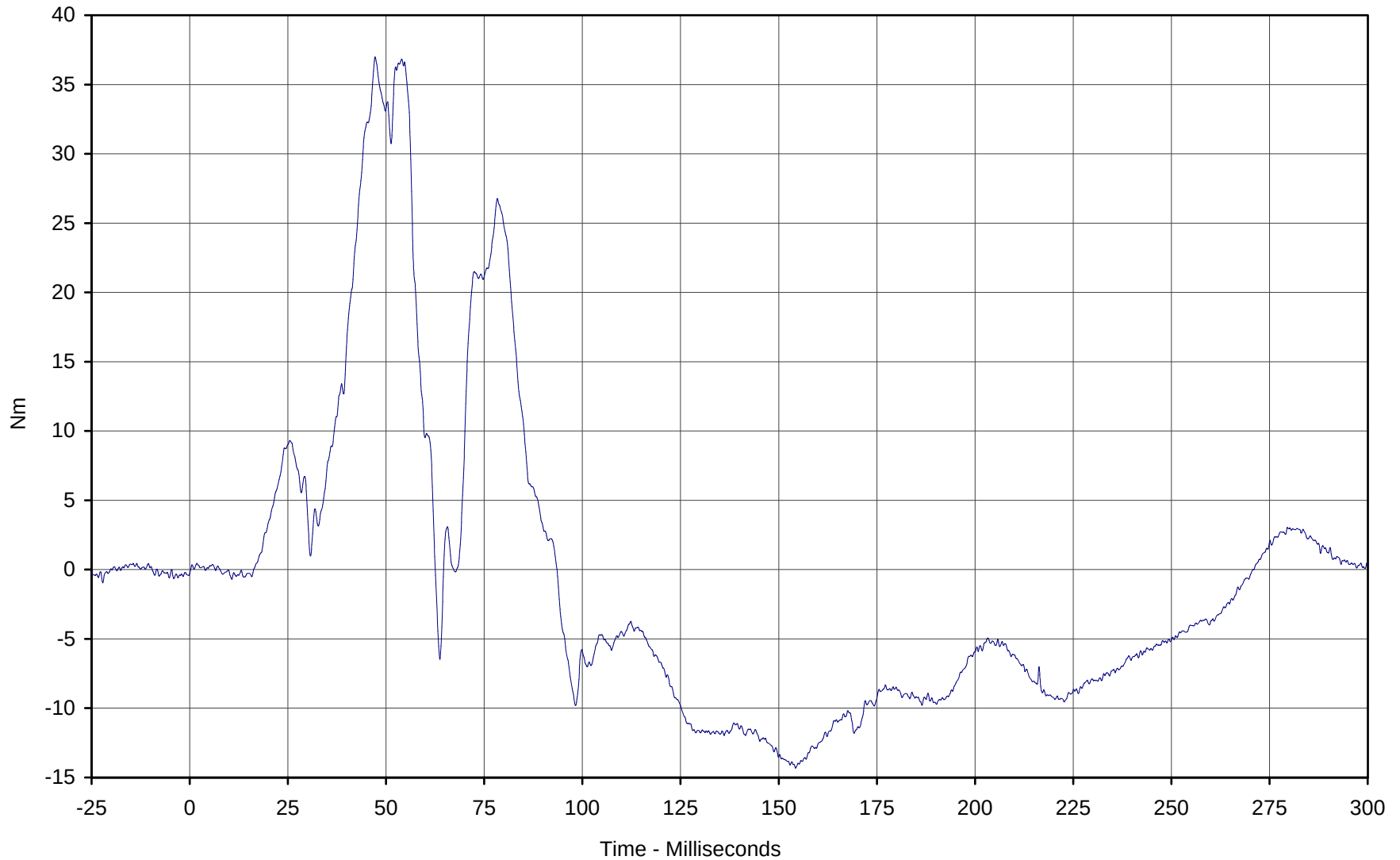
Curve Number: FIL-070

Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan



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Curve Description: Passenger Right Upper Tibia Moment X

Maximum Value: 37.0 at 47.2 Milliseconds

Minimum Value: -14.3 at 154.3 Milliseconds

SAE Filter Class: 600

Date of Test: 2/22/01

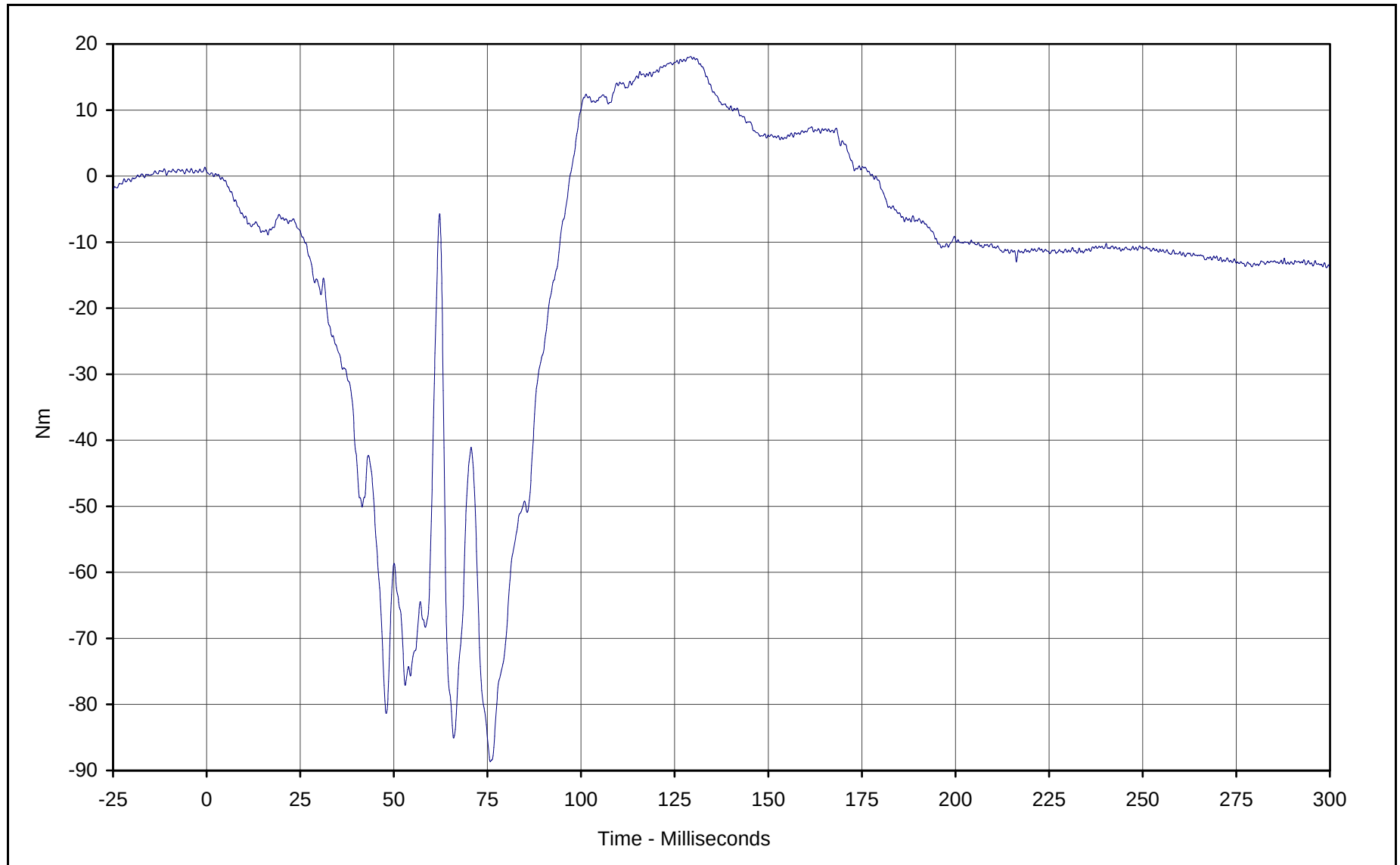
Curve Number: FIL-071

Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan



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Curve Description: Passenger Right Upper Tibia Moment Y

Maximum Value: 18.1 at 129.3 Milliseconds

Minimum Value: -88.7 at 75.8 Milliseconds

SAE Filter Class: 600

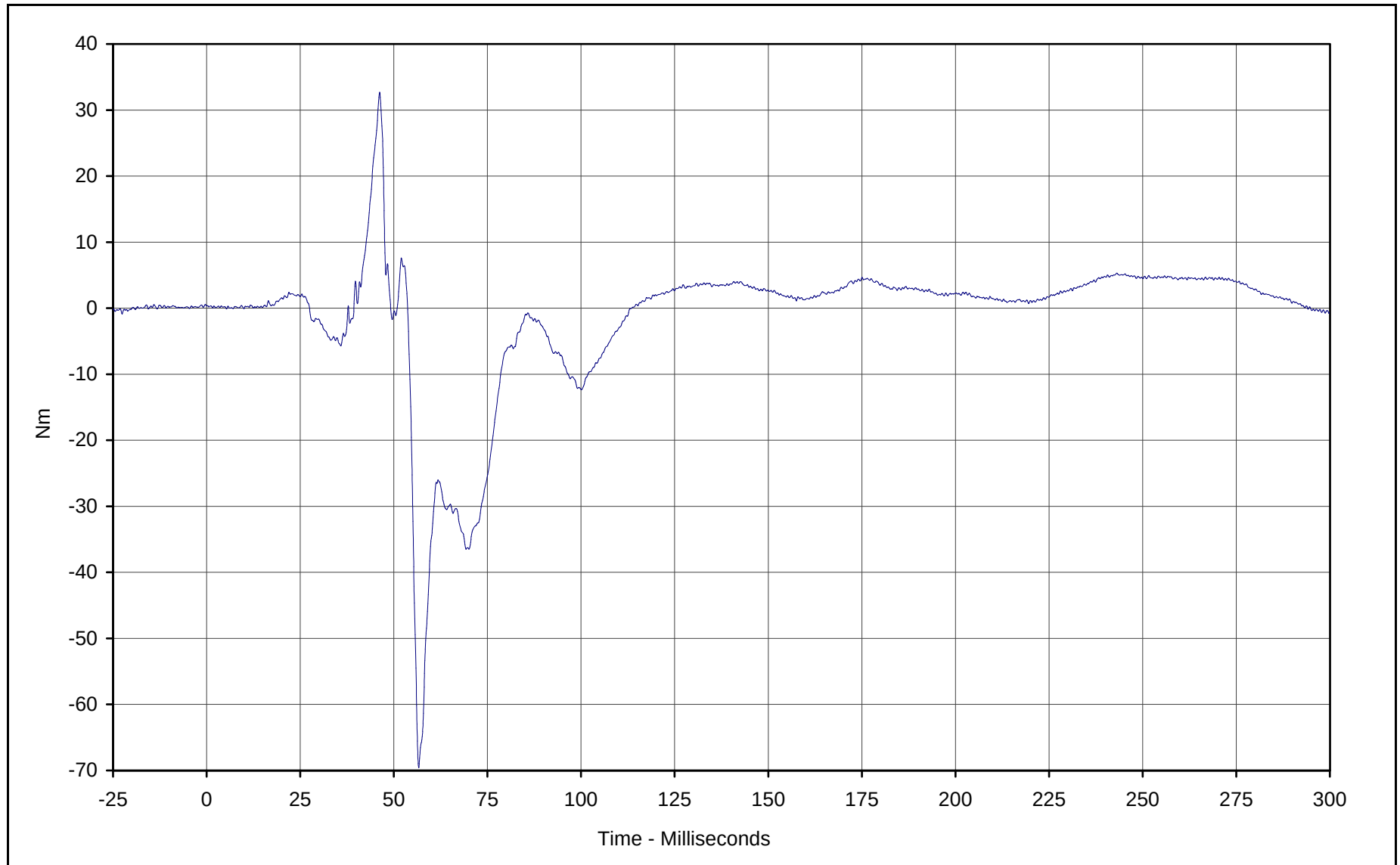
Date of Test: 2/22/01

Curve Number: FIL-072

Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan





Curve Description: Passenger Left Lower Tibia Moment X

Maximum Value: 32.7 at 46.2 Milliseconds

Minimum Value: -69.6 at 56.6 Milliseconds

SAE Filter Class: 600

Date of Test: 2/22/01

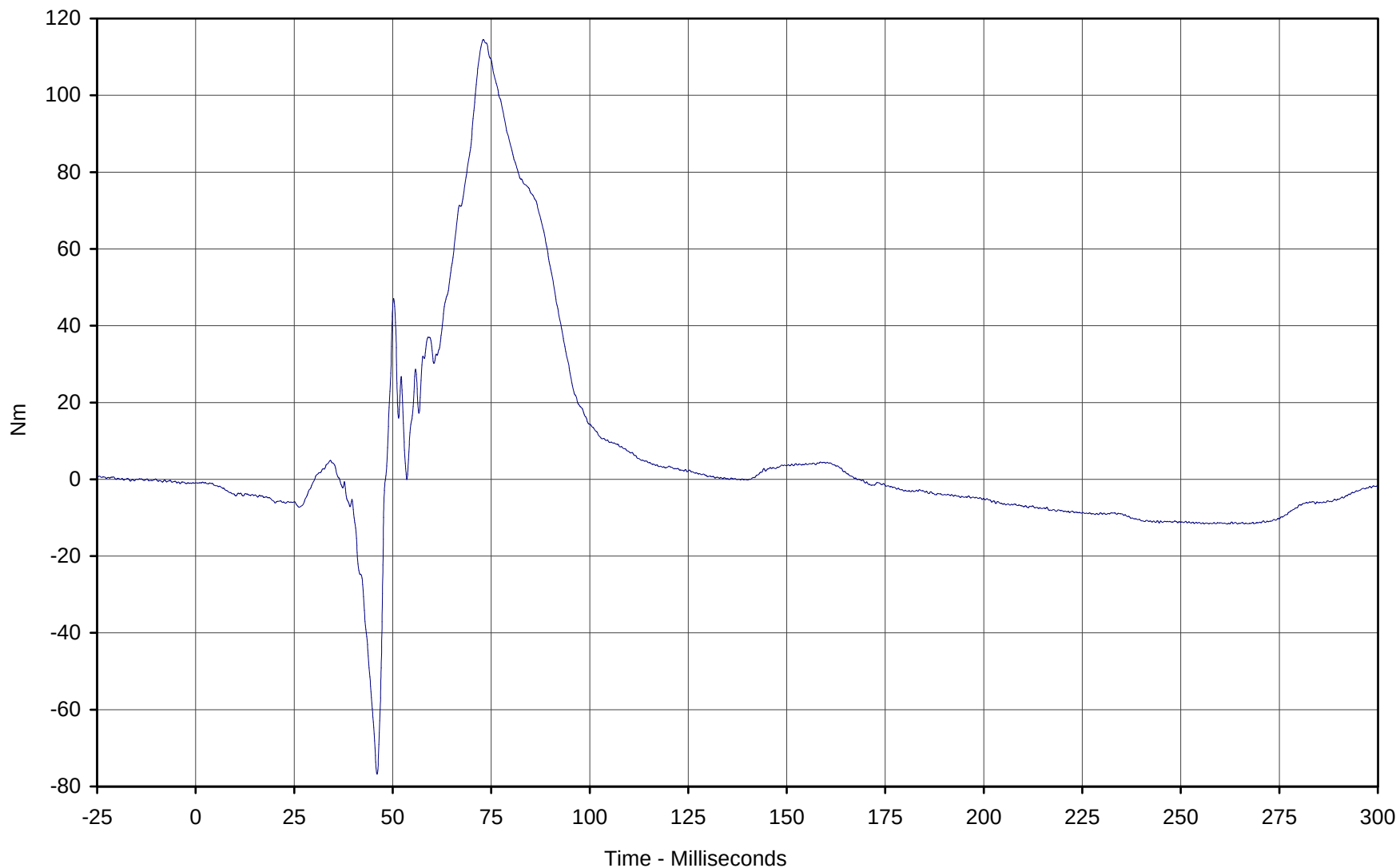
Curve Number: FIL-073

Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan



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Curve Description: Passenger Left Lower Tibia Moment Y

Maximum Value: 114.6 at 73.0 Milliseconds

Minimum Value: -76.8 at 46.0 Milliseconds

SAE Filter Class: 600

Date of Test: 2/22/01

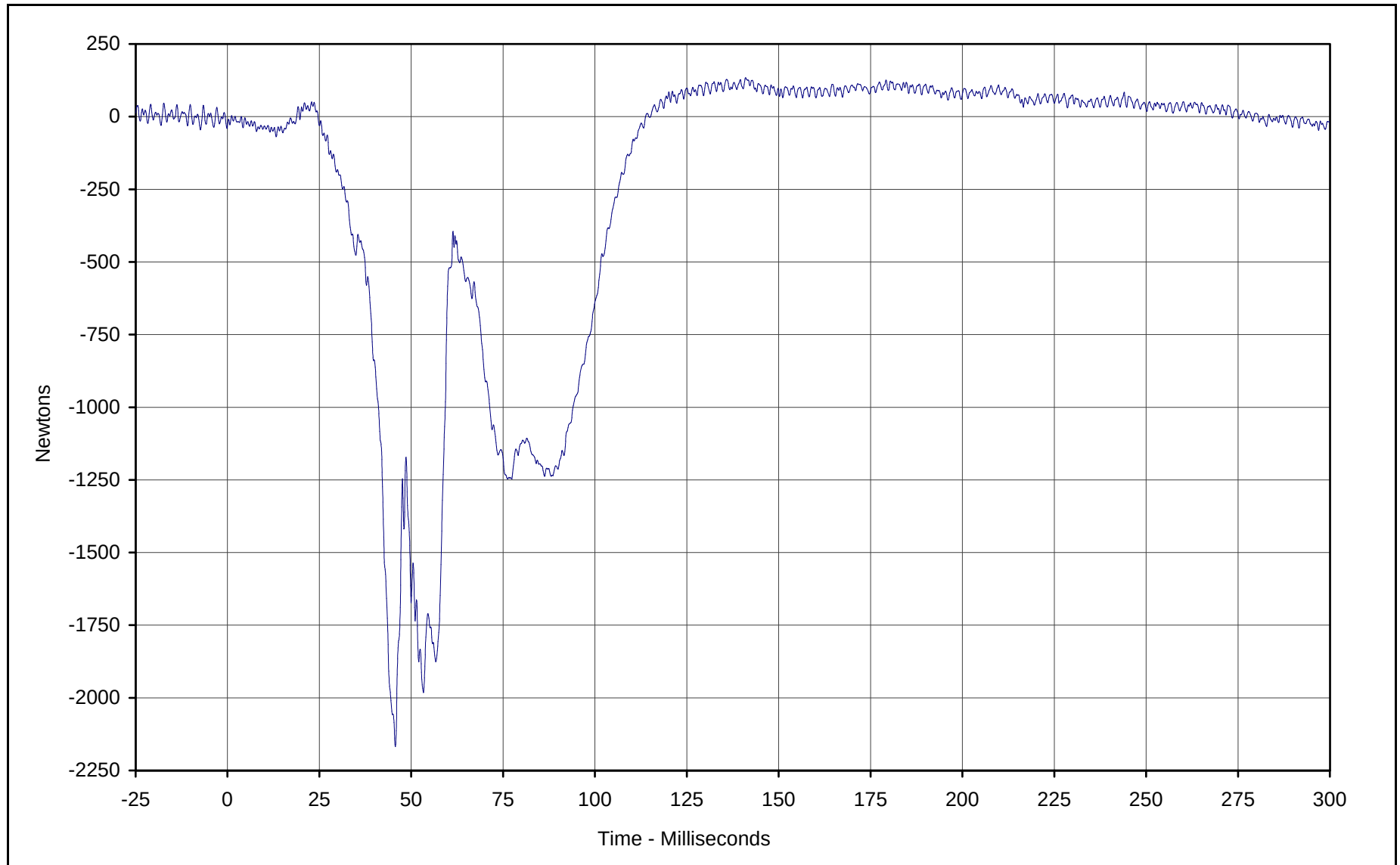
Curve Number: FIL-074

Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan



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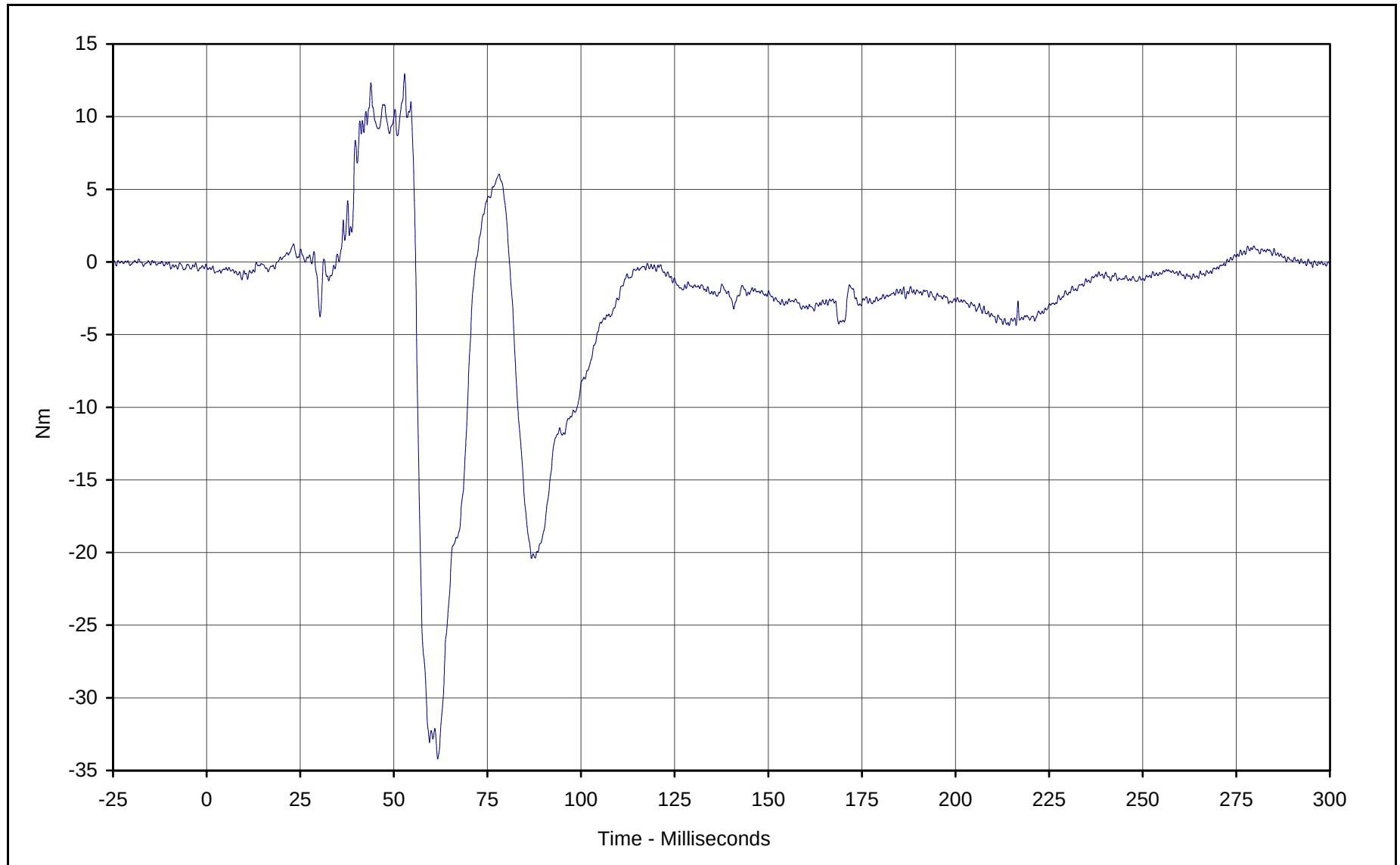
Curve Description: Passenger Left Lower Tibia Force Z
Maximum Value: 134.3 at 141.0 Milliseconds
Minimum Value: -2168.1 at 45.7 Milliseconds
SAE Filter Class: 600
Date of Test: 2/22/01
Curve Number: FIL-075

Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan



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Curve Description: Passenger Right Lower Tibia Moment X

Maximum Value: 12.9 at 52.9 Milliseconds

Minimum Value: -34.2 at 61.7 Milliseconds

SAE Filter Class: 600

Date of Test: 2/22/01

Curve Number: FIL-076

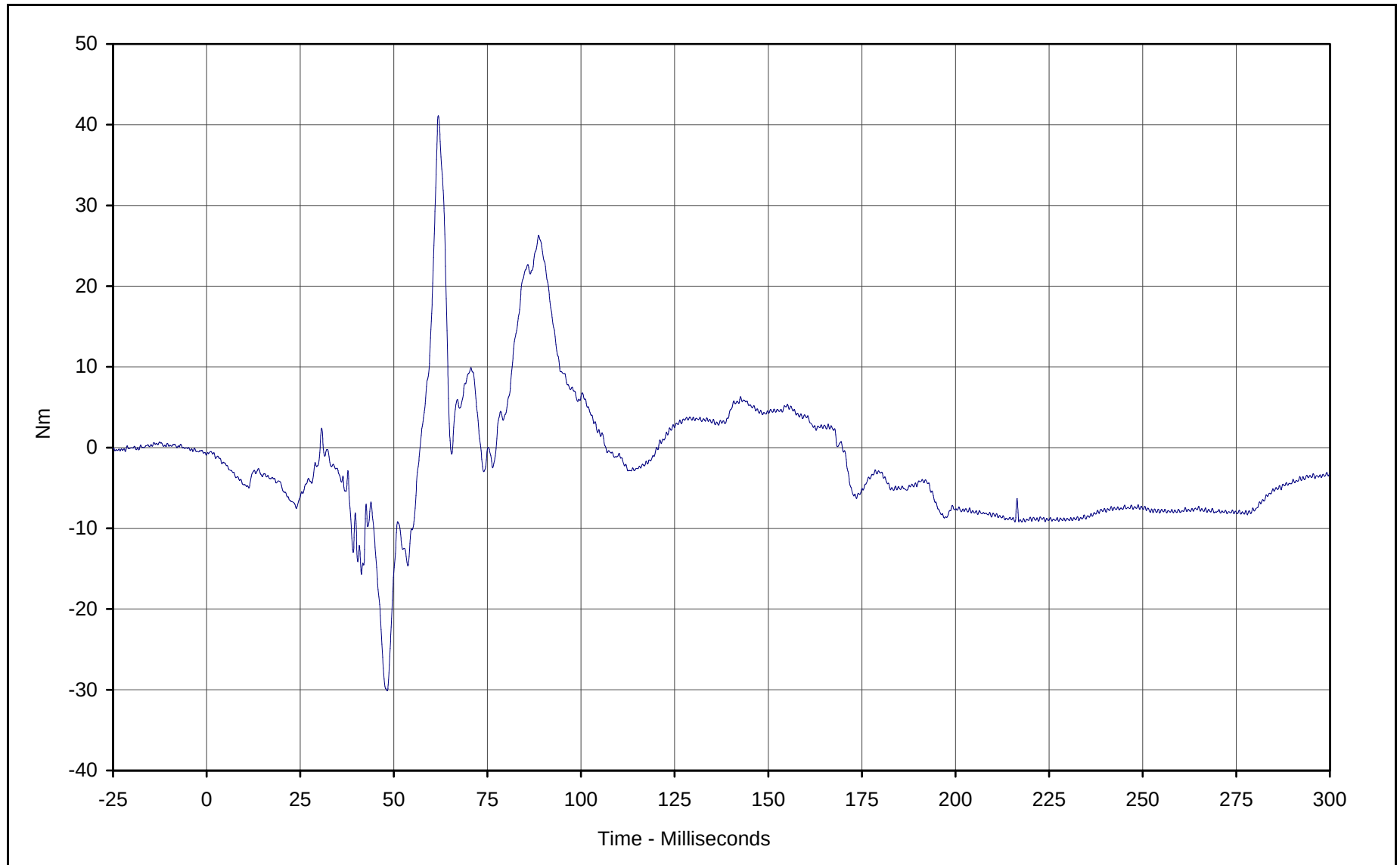
Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan



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Curve Description: Passenger Right Lower Tibia Moment Y

Maximum Value: 41.1 at 61.9 Milliseconds

Minimum Value: -30.1 at 48.2 Milliseconds

SAE Filter Class: 600

Date of Test: 2/22/01

Curve Number: FIL-077

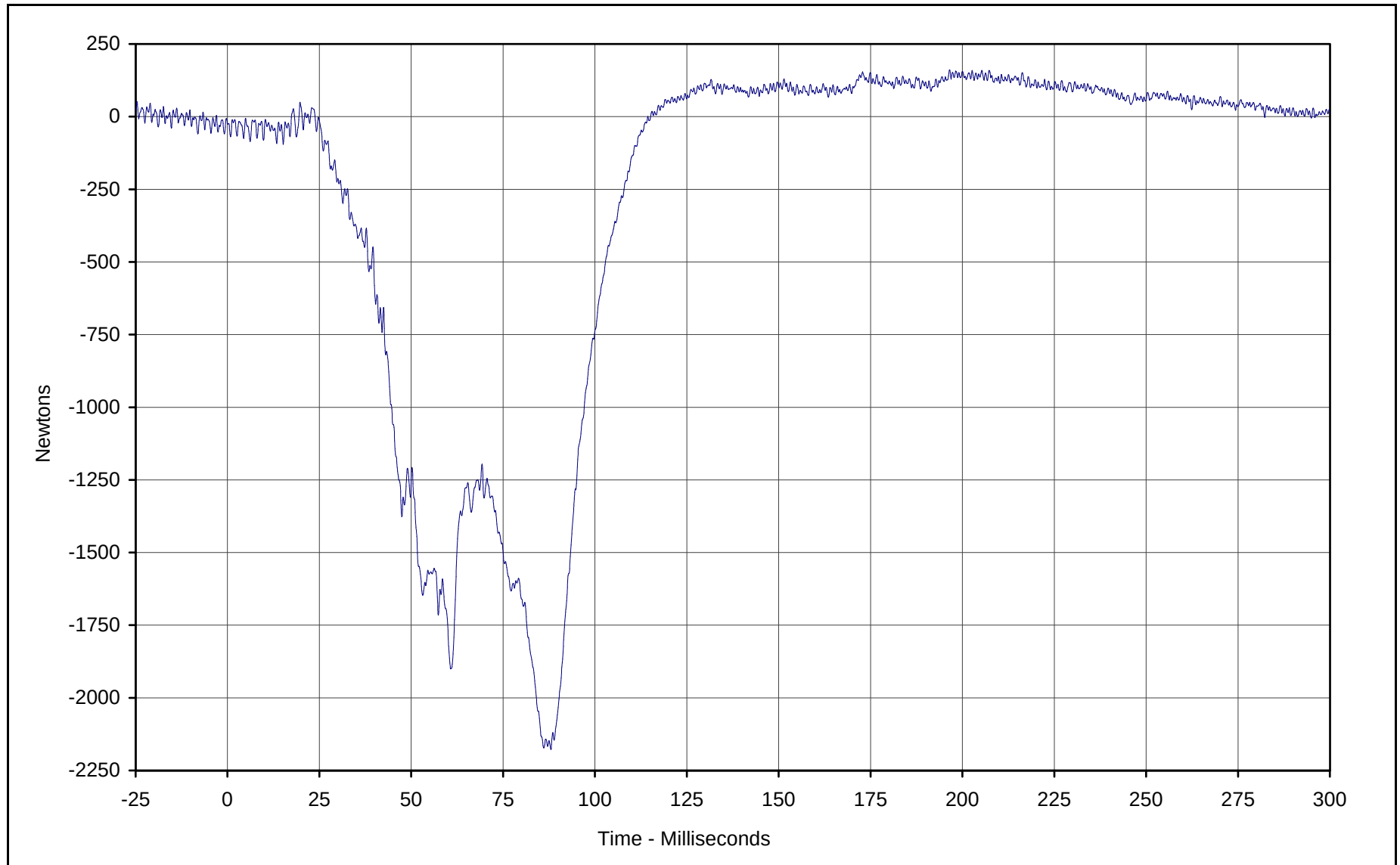
Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan



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Curve Description: Passenger Right lower Tibia Force Z

Maximum Value: 161.4 at 196.5 Milliseconds

Minimum Value: -2178.2 at 88.0 Milliseconds

SAE Filter Class: 600

Date of Test: 2/22/01

Curve Number: FIL-078

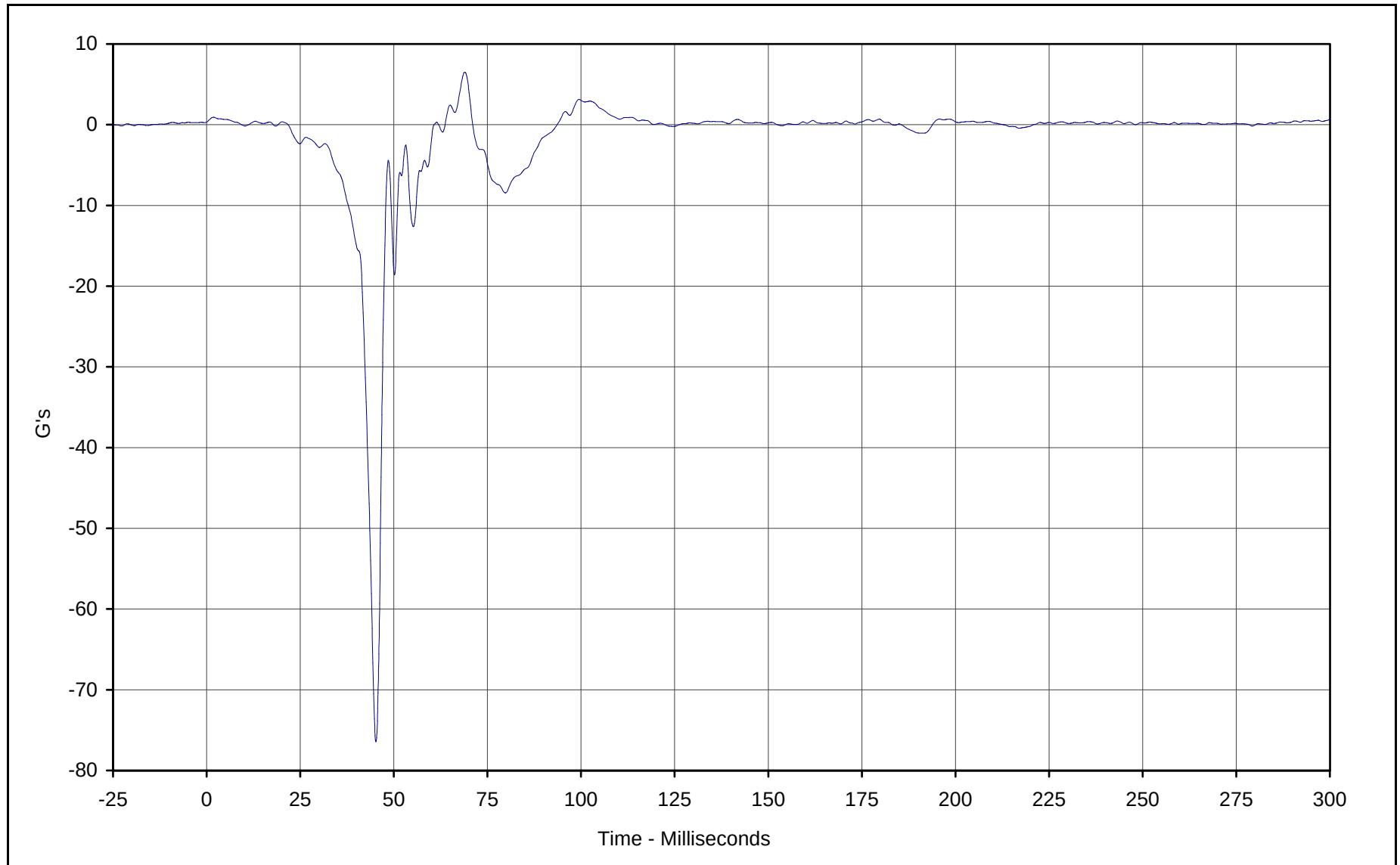
Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan



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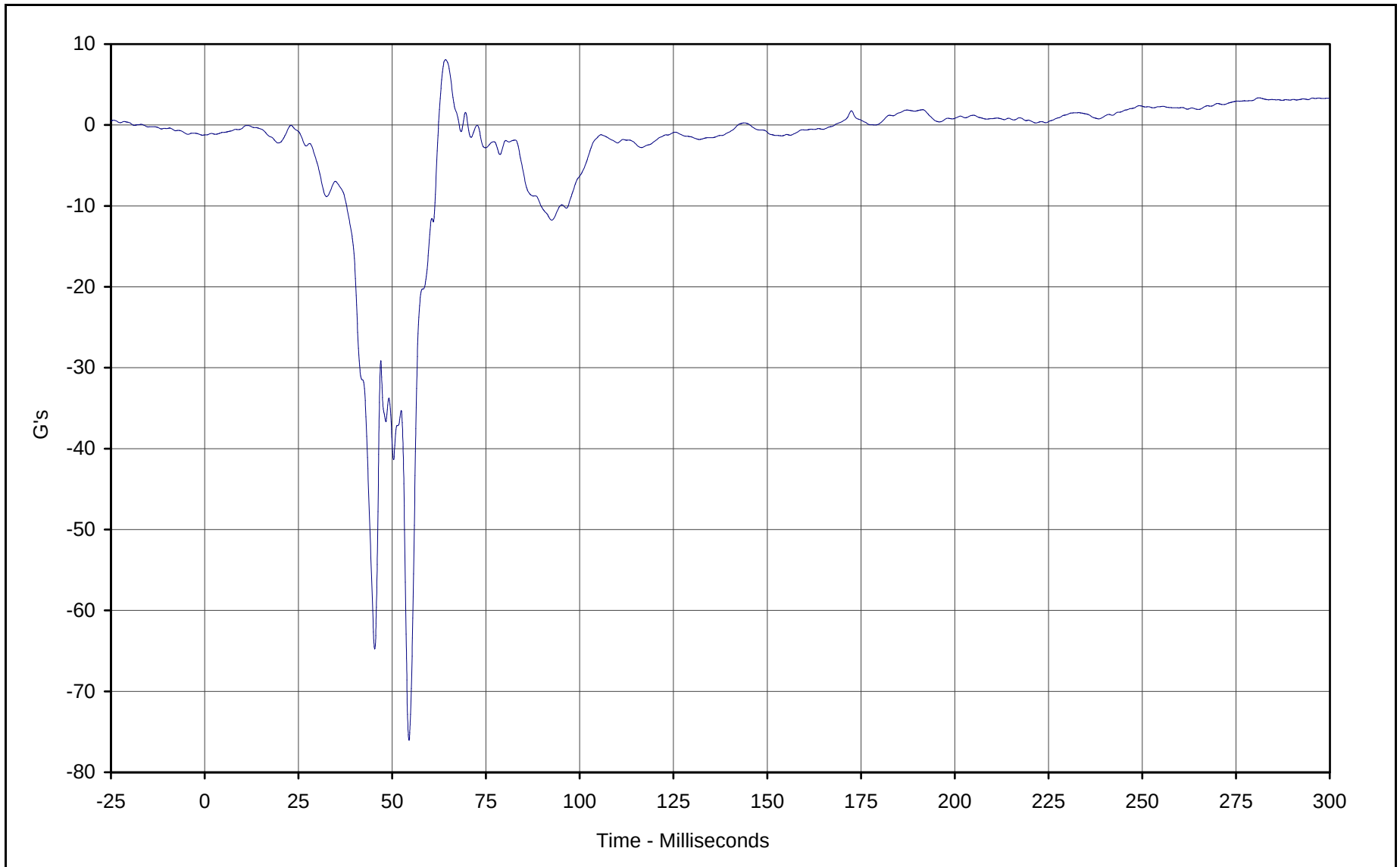
Curve Description: Passenger Left Foot Aft X
Maximum Value: 6.5 at 69.0 Milliseconds
Minimum Value: -76.5 at 45.2 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: FIL-079

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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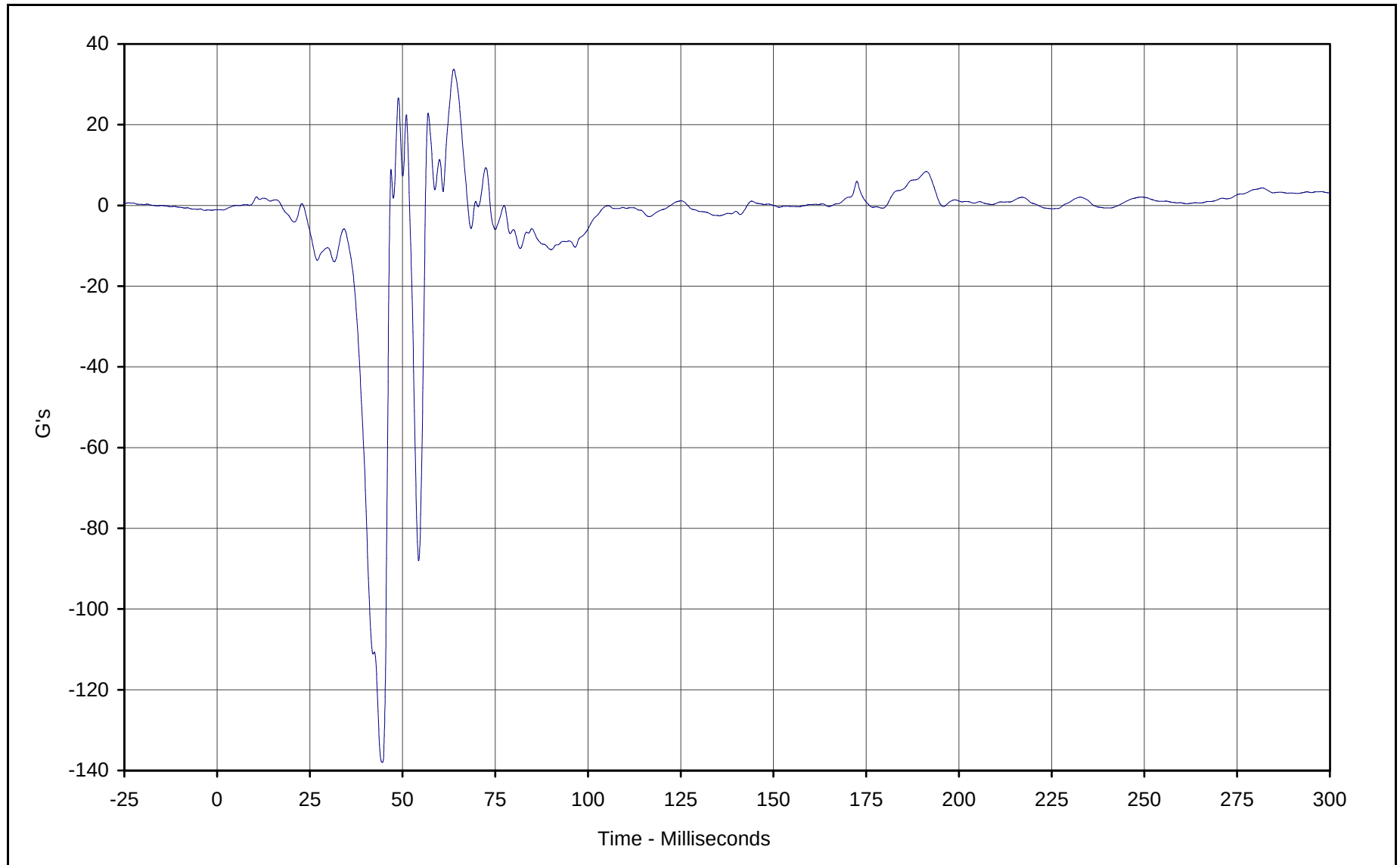
Curve Description: Passenger Left Foot Aft Z
Maximum Value: 8.1 at 64.2 Milliseconds
Minimum Value: -76.1 at 54.5 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: FIL-080

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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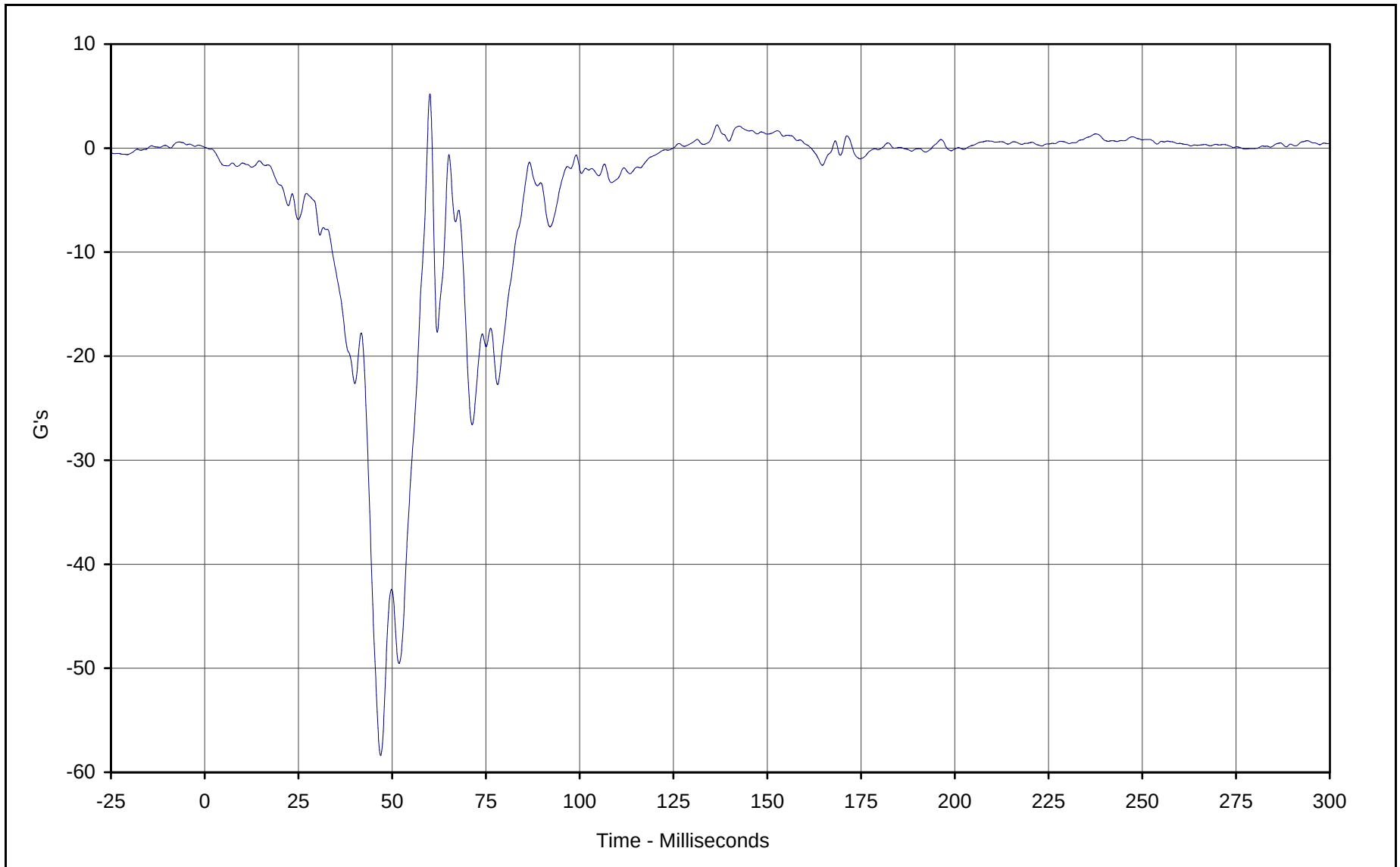
Curve Description: Passenger Left Foot Fore Z
Maximum Value: 33.8 at 63.8 Milliseconds
Minimum Value: -138.0 at 44.6 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: FIL-081

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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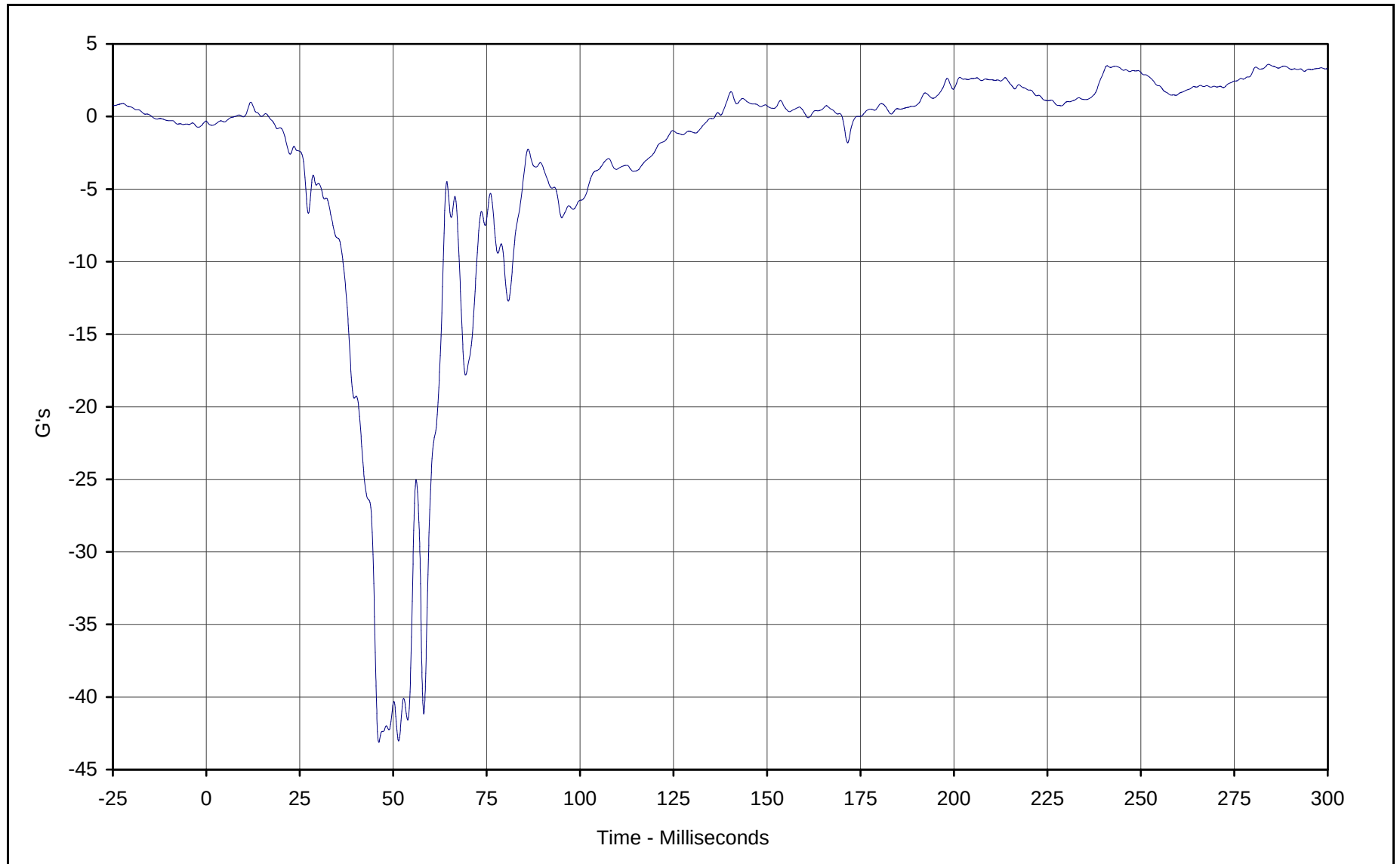
Curve Description: Passenger Right Foot Aft X
Maximum Value: 5.2 at 60.0 Milliseconds
Minimum Value: -58.4 at 46.9 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: FIL-082

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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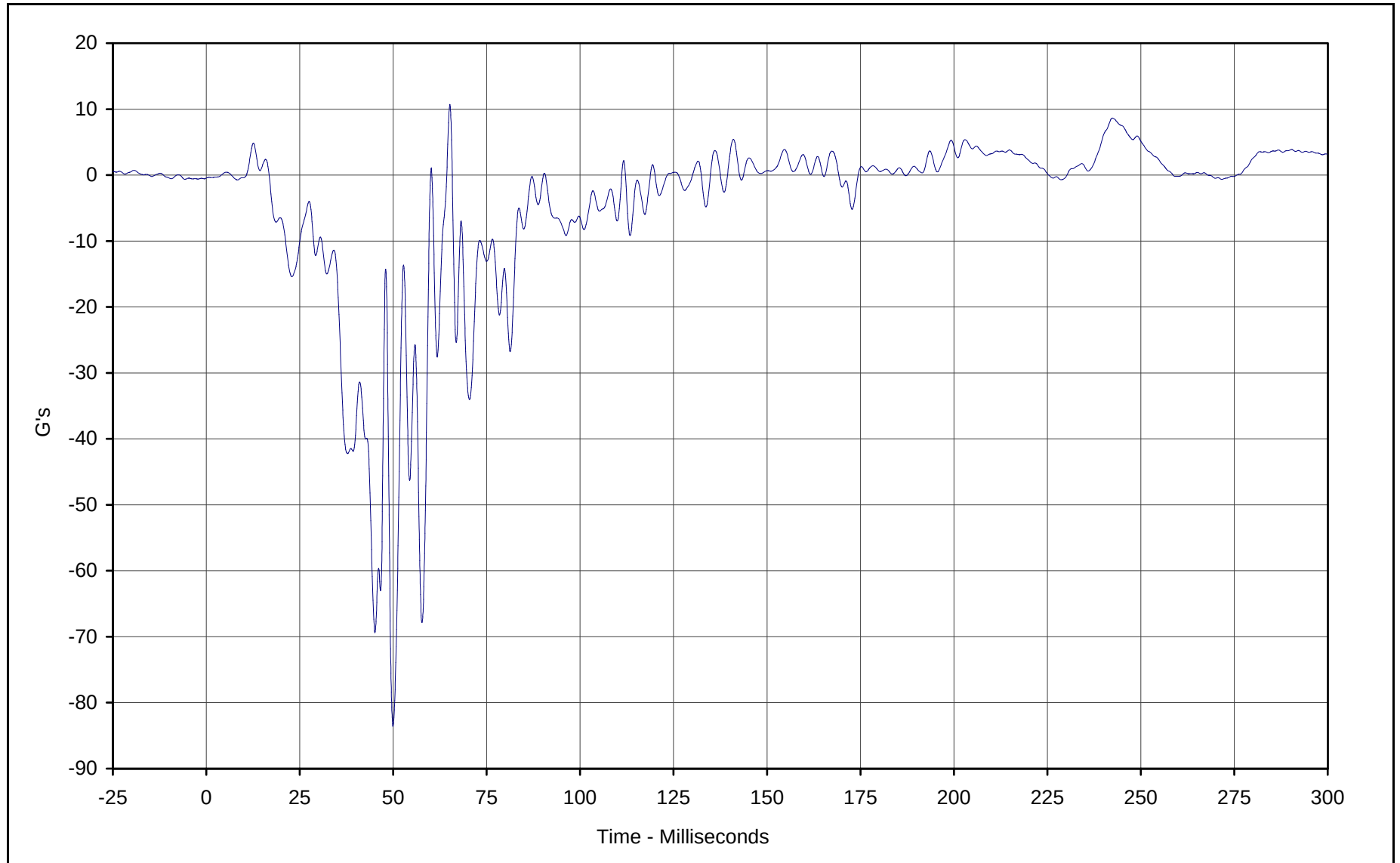
Curve Description: Passenger Right Foot Aft Z
Maximum Value: 3.6 at 284.2 Milliseconds
Minimum Value: -43.1 at 46.1 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: FIL-083

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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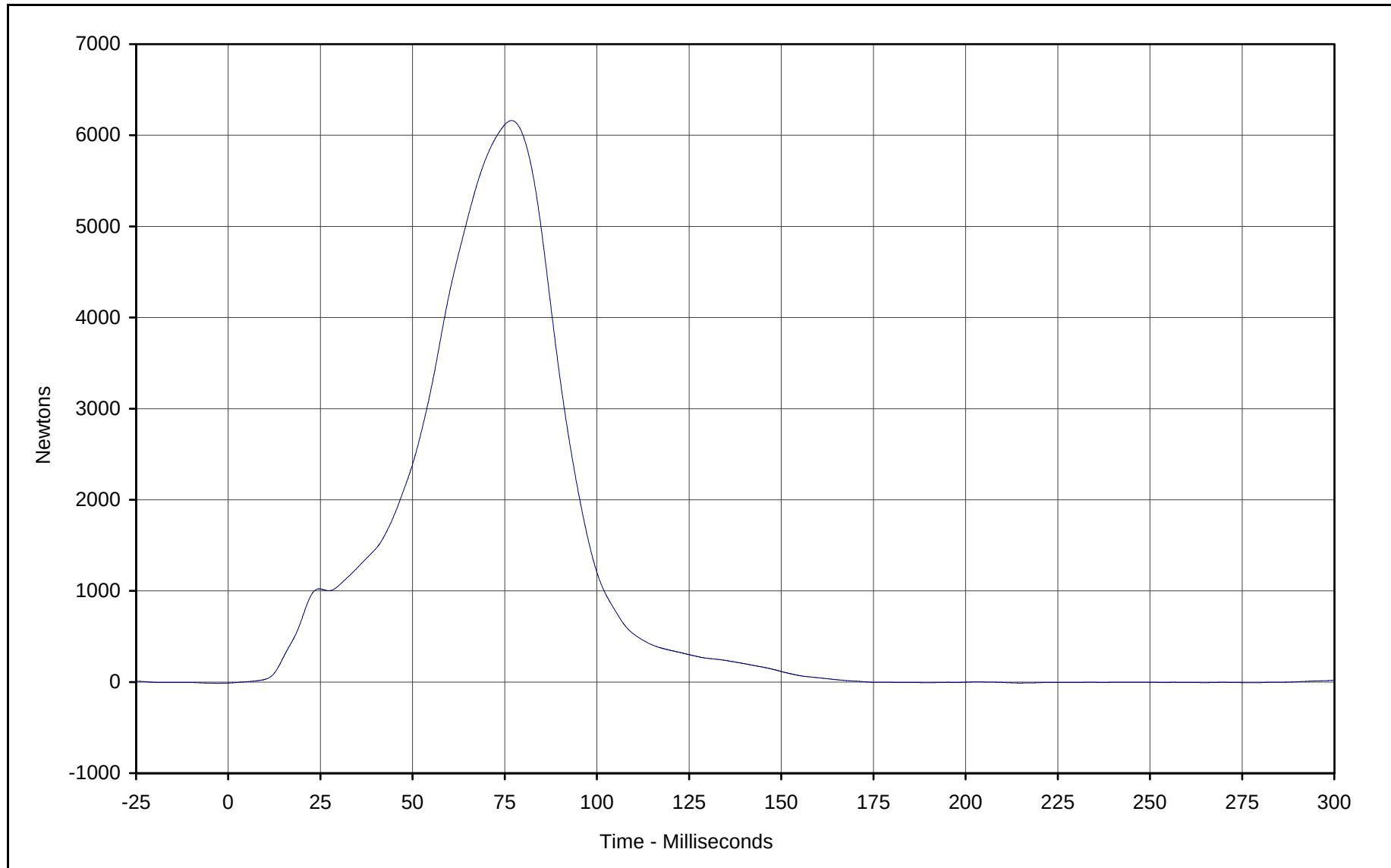
Curve Description: Passenger Right Foot Fore Z
Maximum Value: 10.7 at 65.2 Milliseconds
Minimum Value: -83.6 at 49.9 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: FIL-084

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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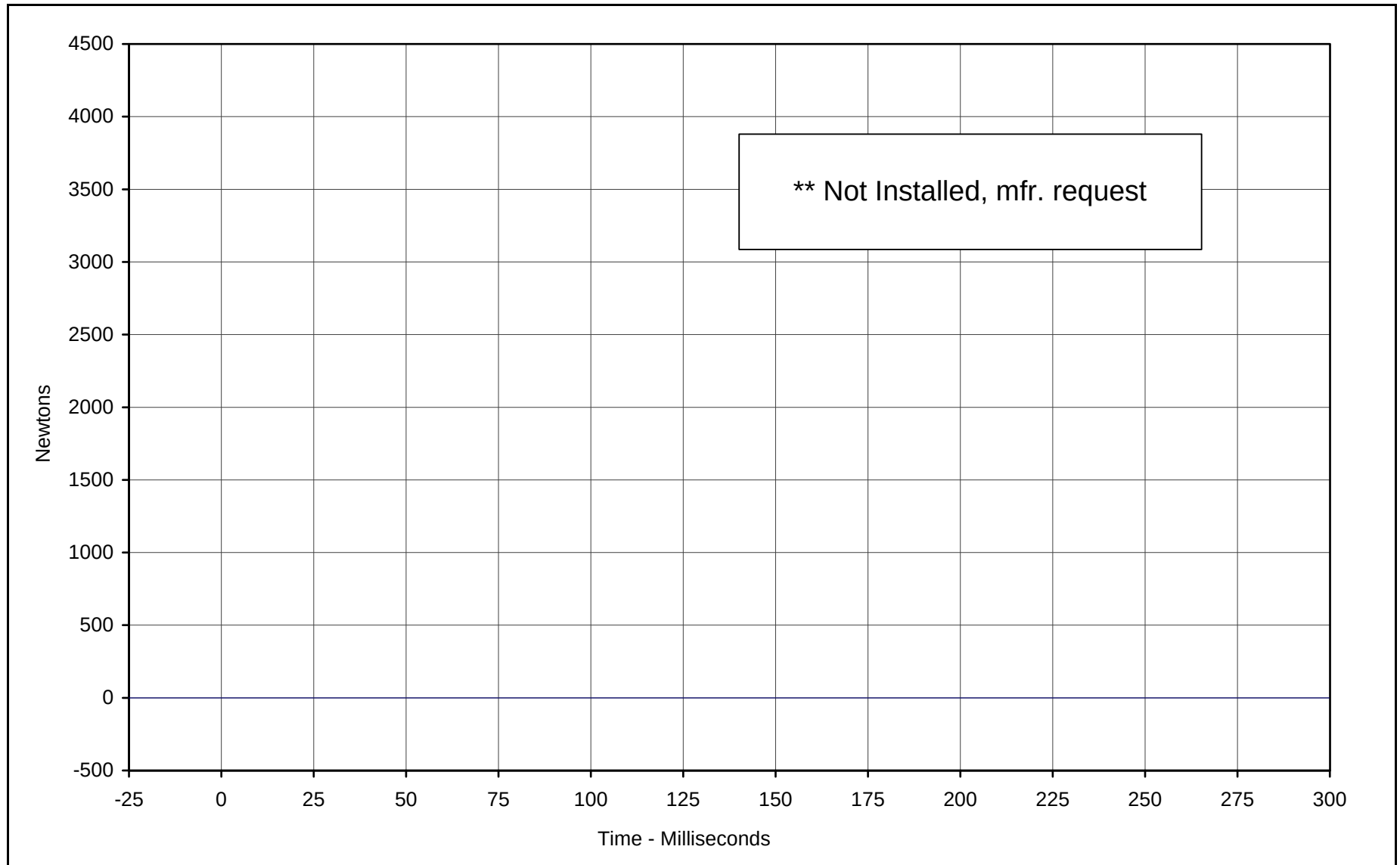
Curve Description: Passenger Lap Belt Force
Maximum Value: 6161.7 at 76.9 Milliseconds
Minimum Value: -11.1 at 0.0 Milliseconds
SAE Filter Class: 60
Date of Test: 2/22/01
Curve Number: FIL-085

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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Curve Description: Passenger Shoulder Belt Force **

Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Maximum Value: 0.0 at 0.0 Milliseconds

Test Vehicle: 2001 Dodge Caravan SE Minivan

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 60

Date of Test: 2/22/01

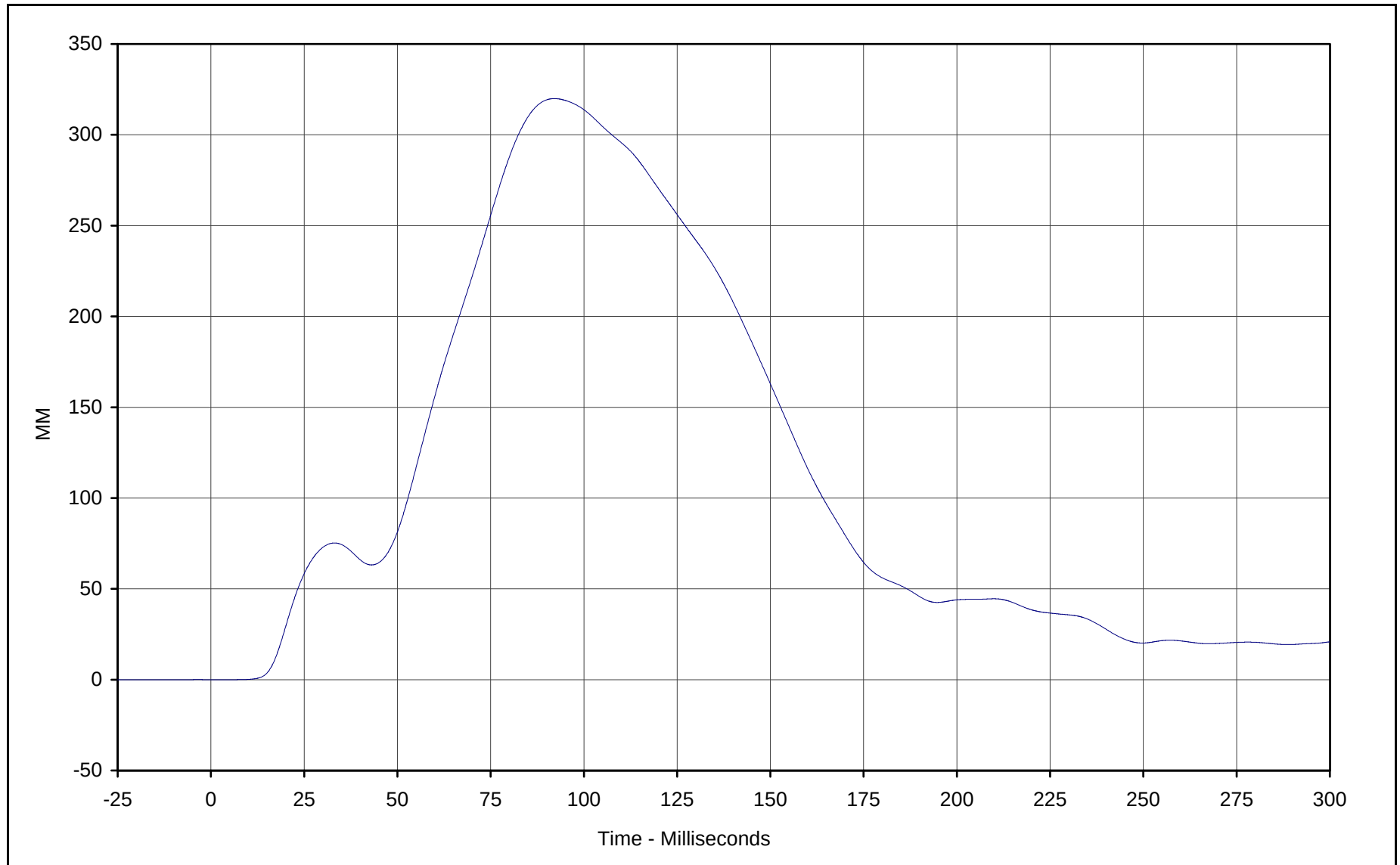
Curve Number: FIL-086

** Not installed, mfr. request



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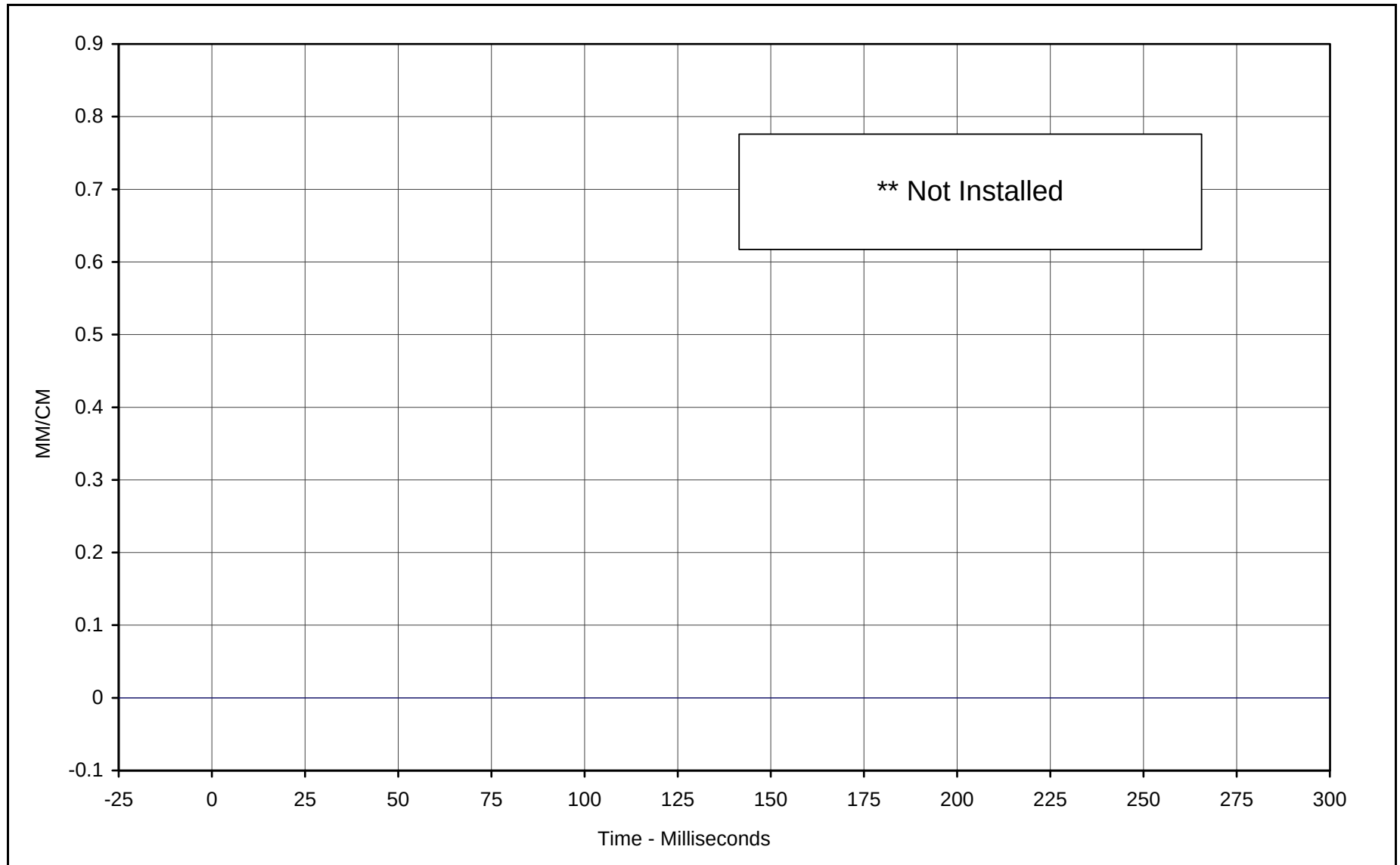
Curve Description: Passenger Shoulder Belt Pullout
Maximum Value: 319.9 at 92.1 Milliseconds
Minimum Value: -0.1 at 2.7 Milliseconds
SAE Filter Class: 60
Date of Test: 2/22/01
Curve Number: FIL-087

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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Curve Description: Passenger Shoulder Belt Elongation **

Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Maximum Value: 0.0 at 0.0 Milliseconds

Test Vehicle: 2001 Dodge Caravan SE Minivan

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 60

Date of Test: 2/22/01

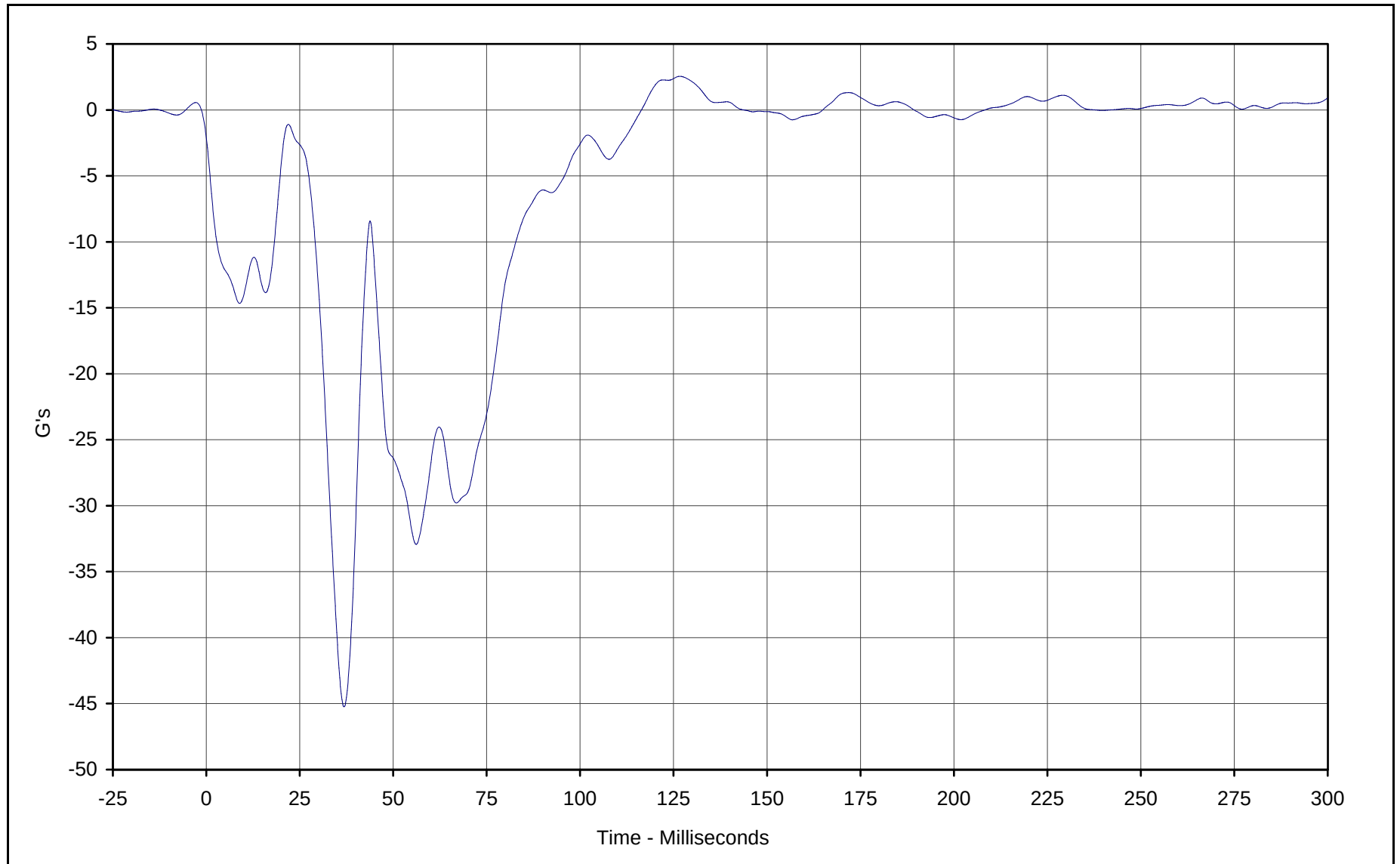
Curve Number: FIL-088

** Not installed



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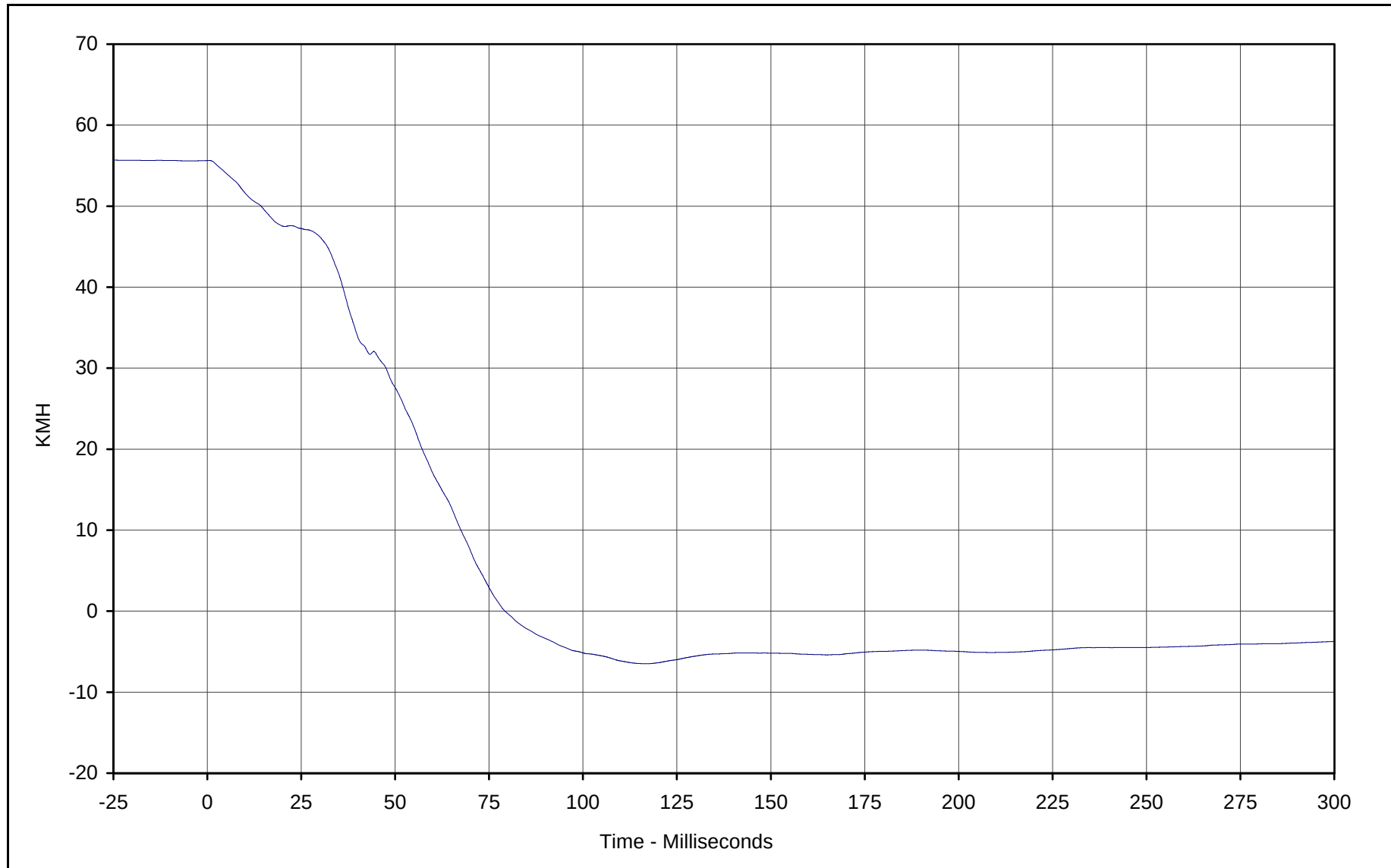
Curve Description: Vehicle Left Rear Primary
Maximum Value: 2.5 at 126.7 Milliseconds
Minimum Value: -45.2 at 36.9 Milliseconds
SAE Filter Class: 60
Date of Test: 2/22/01
Curve Number: FIL-089

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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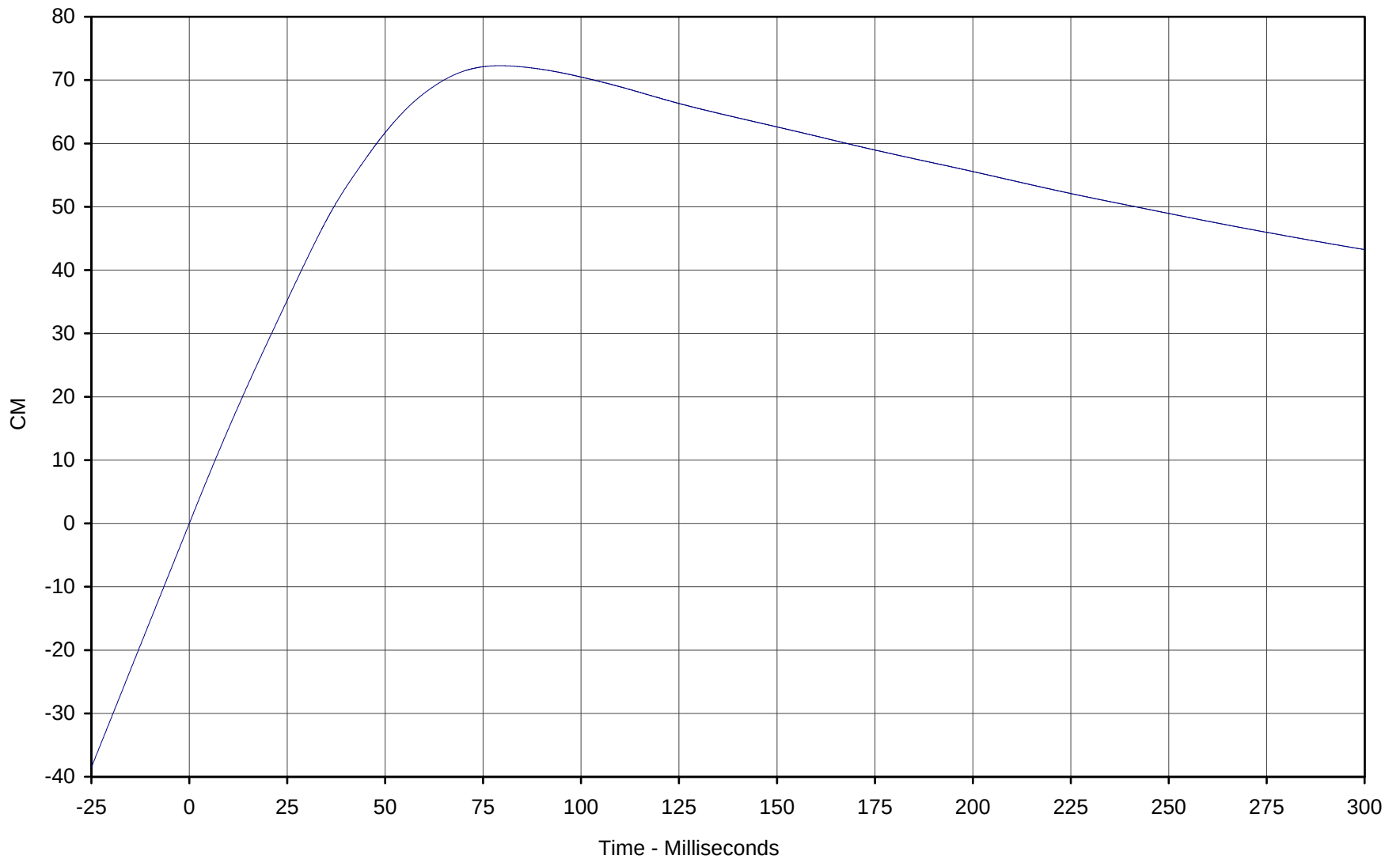
Curve Description: Vehicle Left Rear Primary Velocity
Maximum Value: 55.6 at 0.5 Milliseconds
Minimum Value: -6.5 at 117.3 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: IN1-089

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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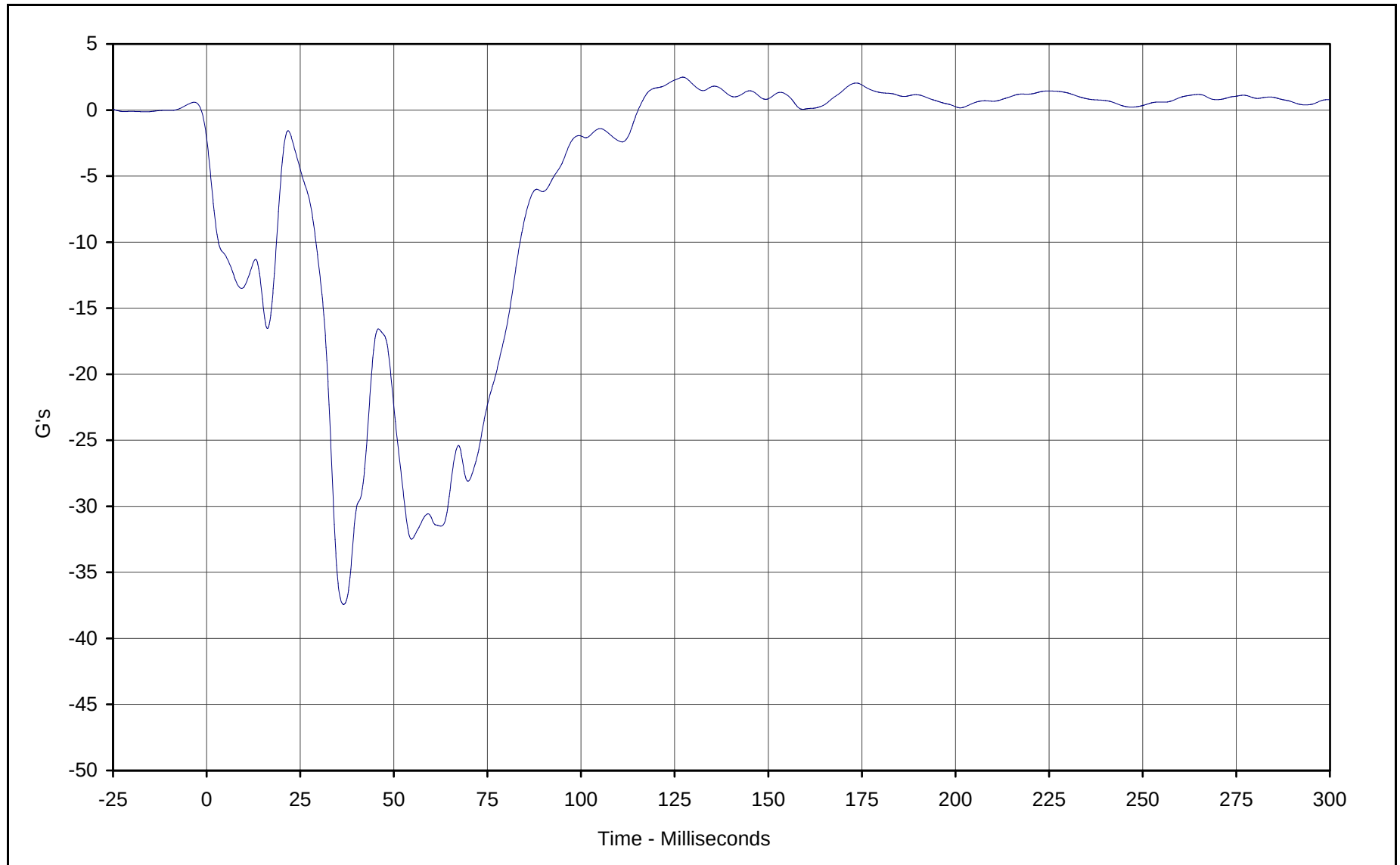
Curve Description: Vehicle Left Rear Primary Displ.
Maximum Value: 72.3 at 79.2 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: IN2-089

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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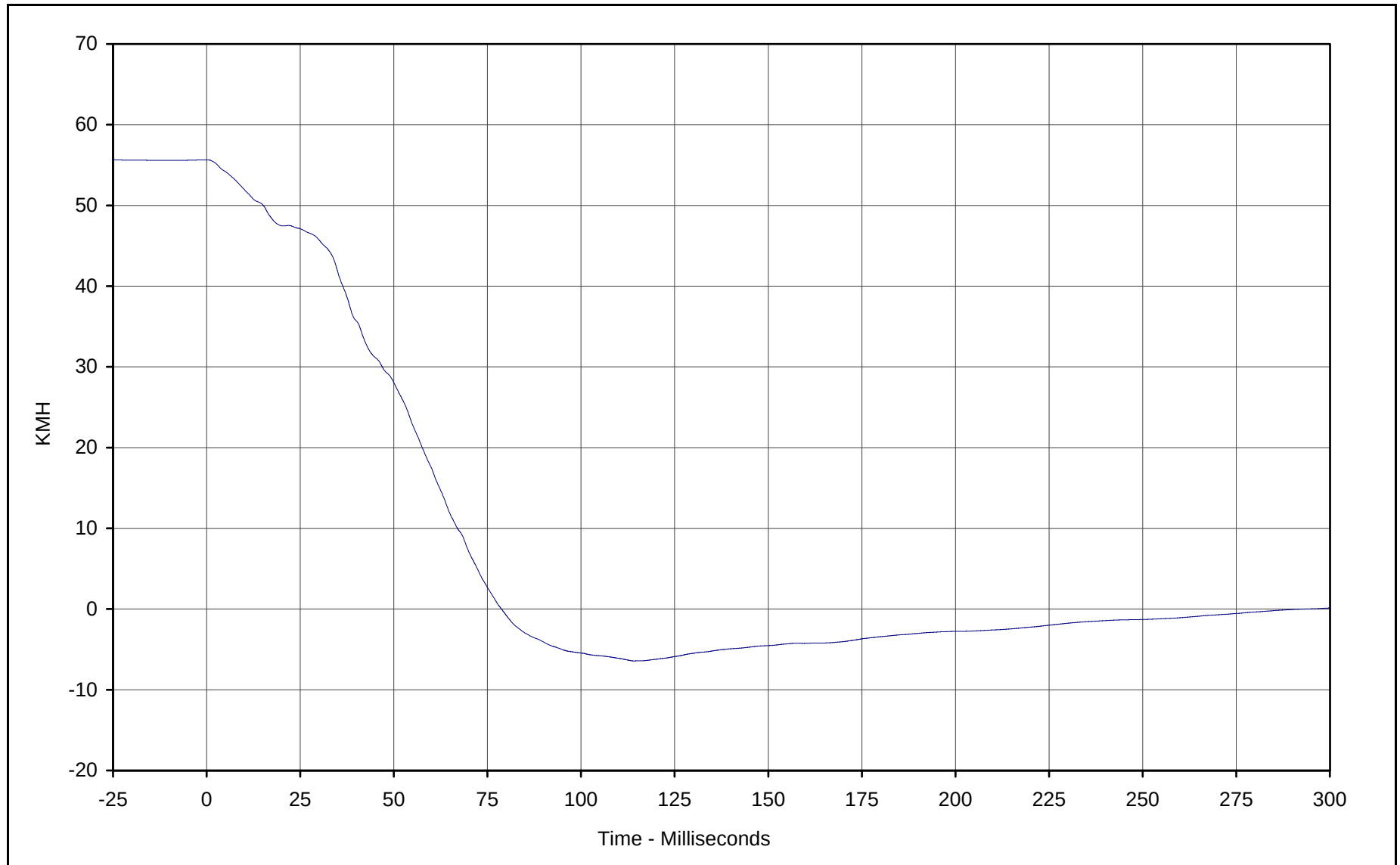
Curve Description: Vehicle Right Rear Primary
Maximum Value: 2.5 at 127.2 Milliseconds
Minimum Value: -37.4 at 36.6 Milliseconds
SAE Filter Class: 60
Date of Test: 2/22/01
Curve Number: FIL-090

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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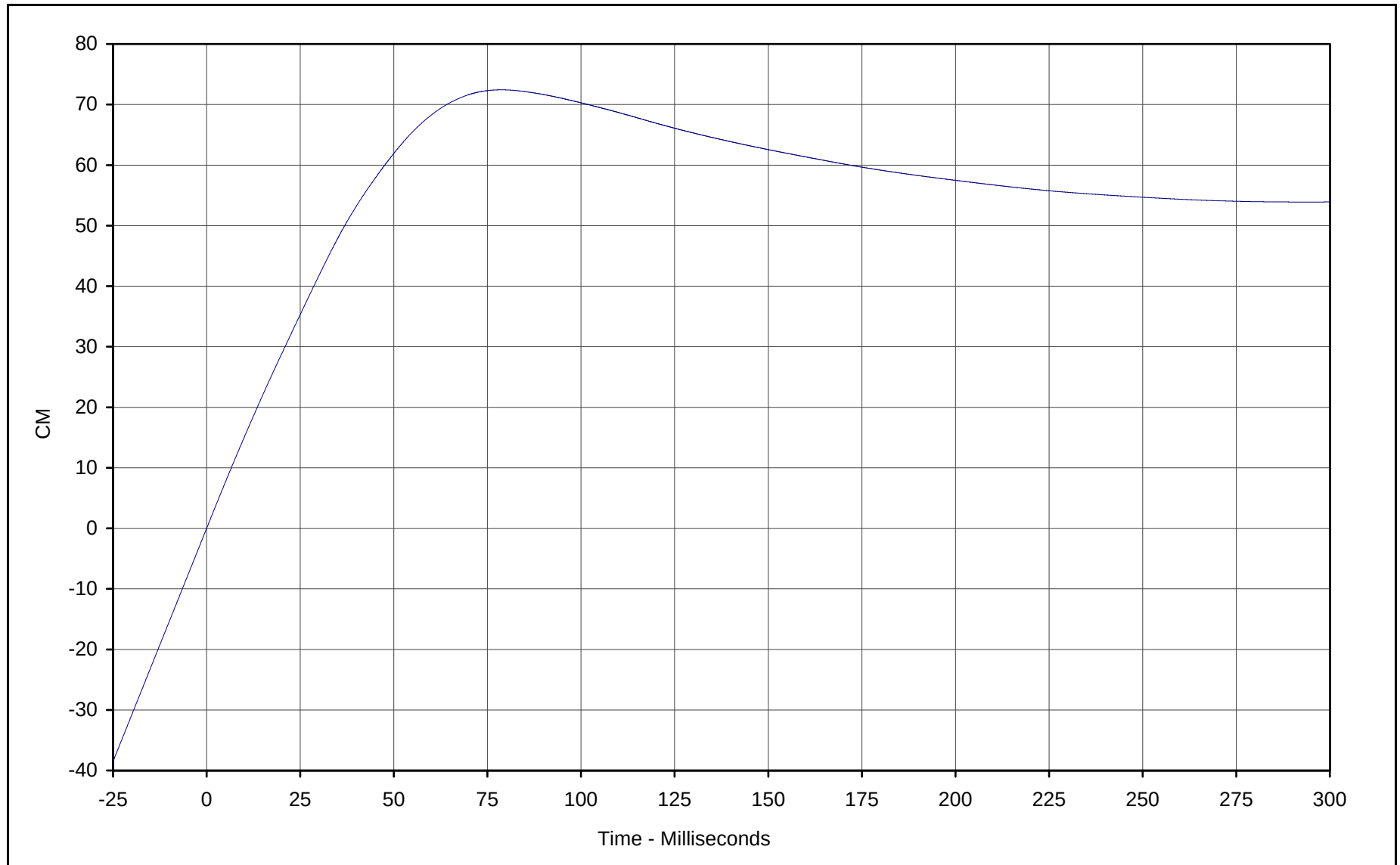
Curve Description: Vehicle Right Rear Primary Velocity
Maximum Value: 55.6 at 0.1 Milliseconds
Minimum Value: -6.4 at 114.2 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: IN1-090

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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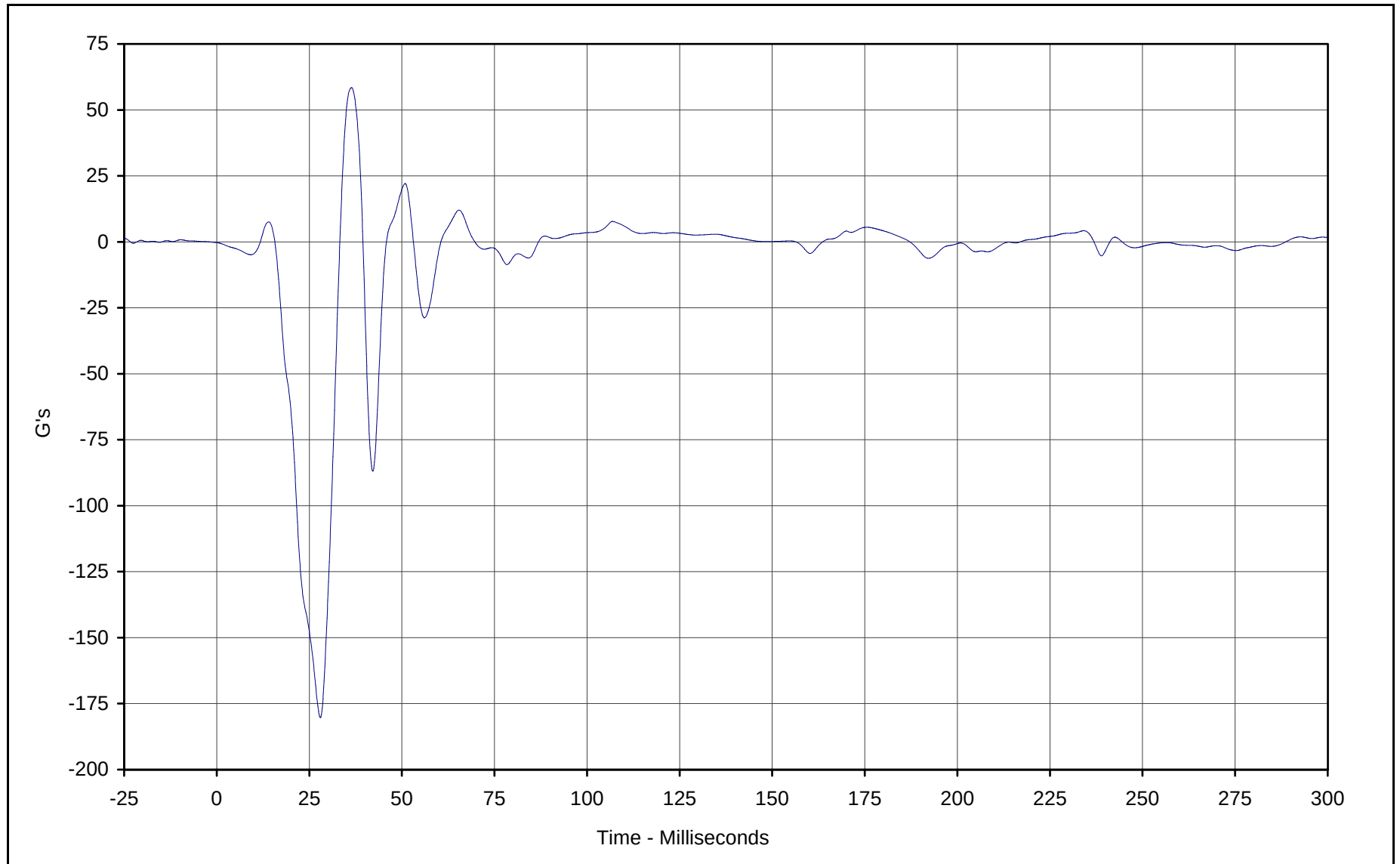
Curve Description: Vehicle Right Rear Primary Displ.
Maximum Value: 72.4 at 78.7 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: IN2-090

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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Curve Description: Vehicle Engine Top

Maximum Value:	<u>58.5</u>	at	<u>36.4</u>	Milliseconds
Minimum Value:	<u>-180.3</u>	at	<u>28.0</u>	Milliseconds
SAE Filter Class:	<u>60</u>			
Date of Test:	<u>2/22/01</u>			
Curve Number:	<u>FIL-091</u>			

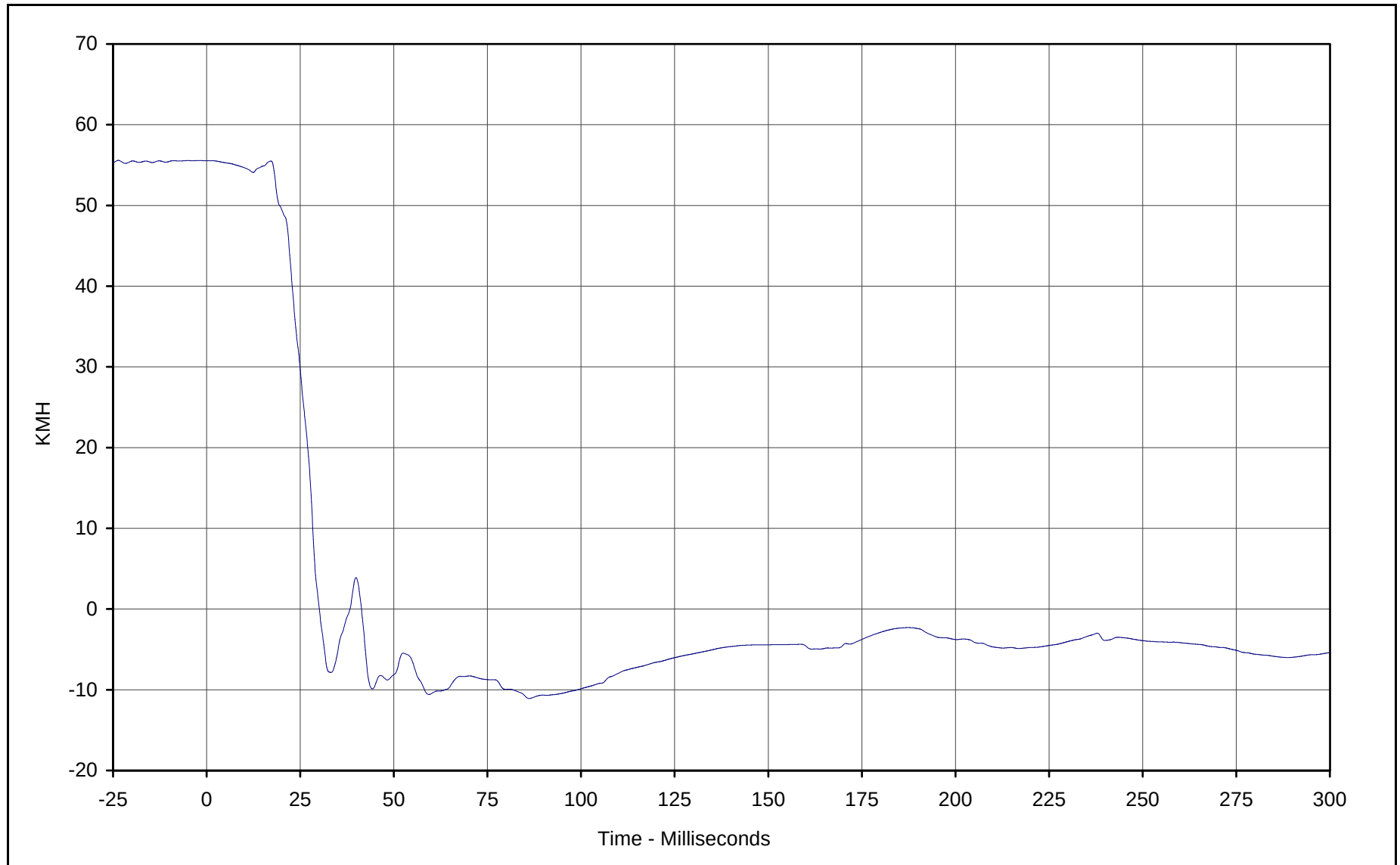
Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan



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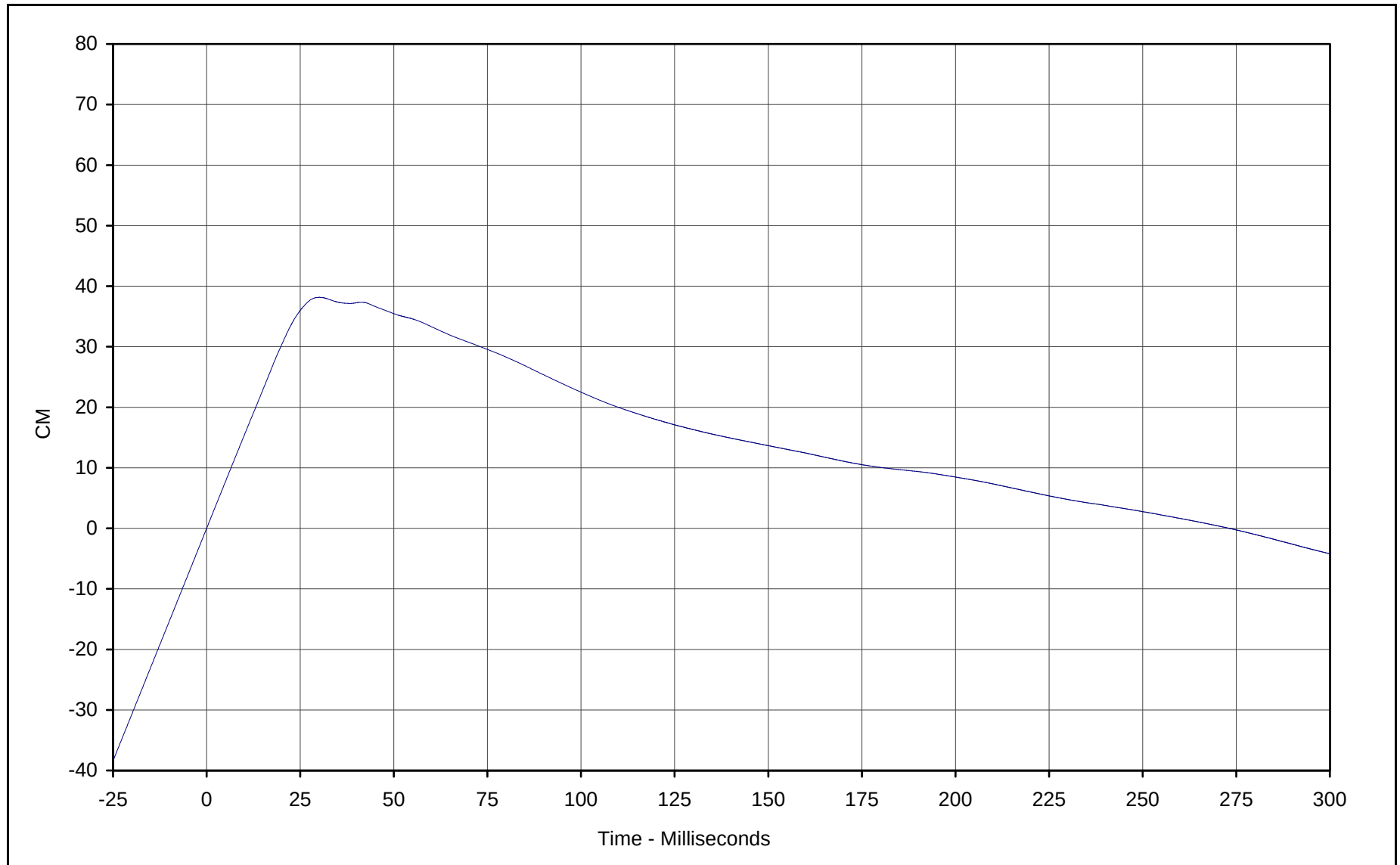
Curve Description: Vehicle Engine Top Velocity
Maximum Value: 55.5 at 1.0 Milliseconds
Minimum Value: -11.1 at 86.1 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: IN1-091

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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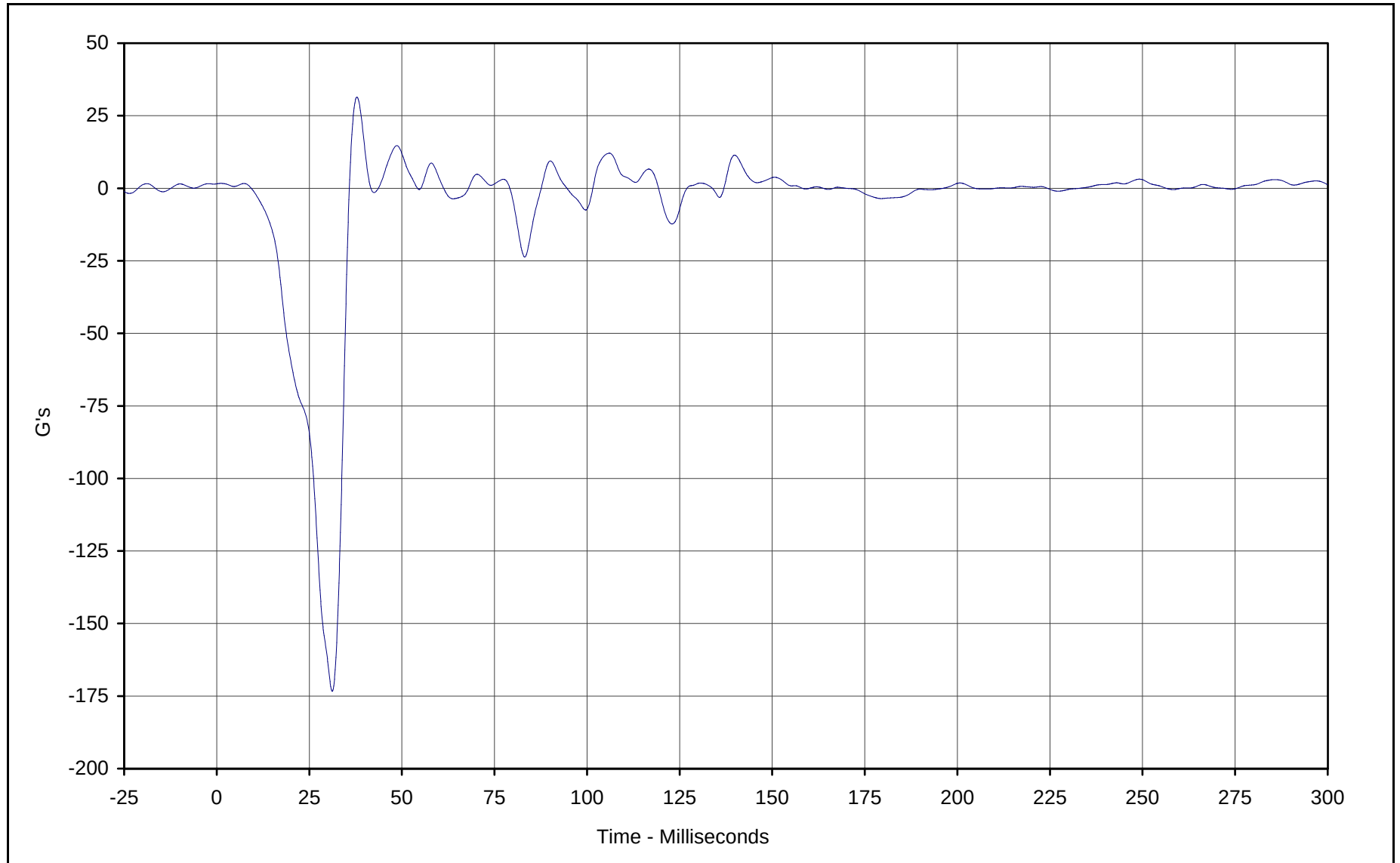
Curve Description: Vehicle Engine Top Displacement
Maximum Value: 38.2 at 30.1 Milliseconds
Minimum Value: -4.2 at 299.9 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: IN2-091

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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Curve Description: Vehicle Engine Bottom

Maximum Value: 31.4 at 37.9 Milliseconds

Minimum Value: -173.4 at 31.2 Milliseconds

SAE Filter Class: 60

Date of Test: 2/22/01

Curve Number: FIL-092

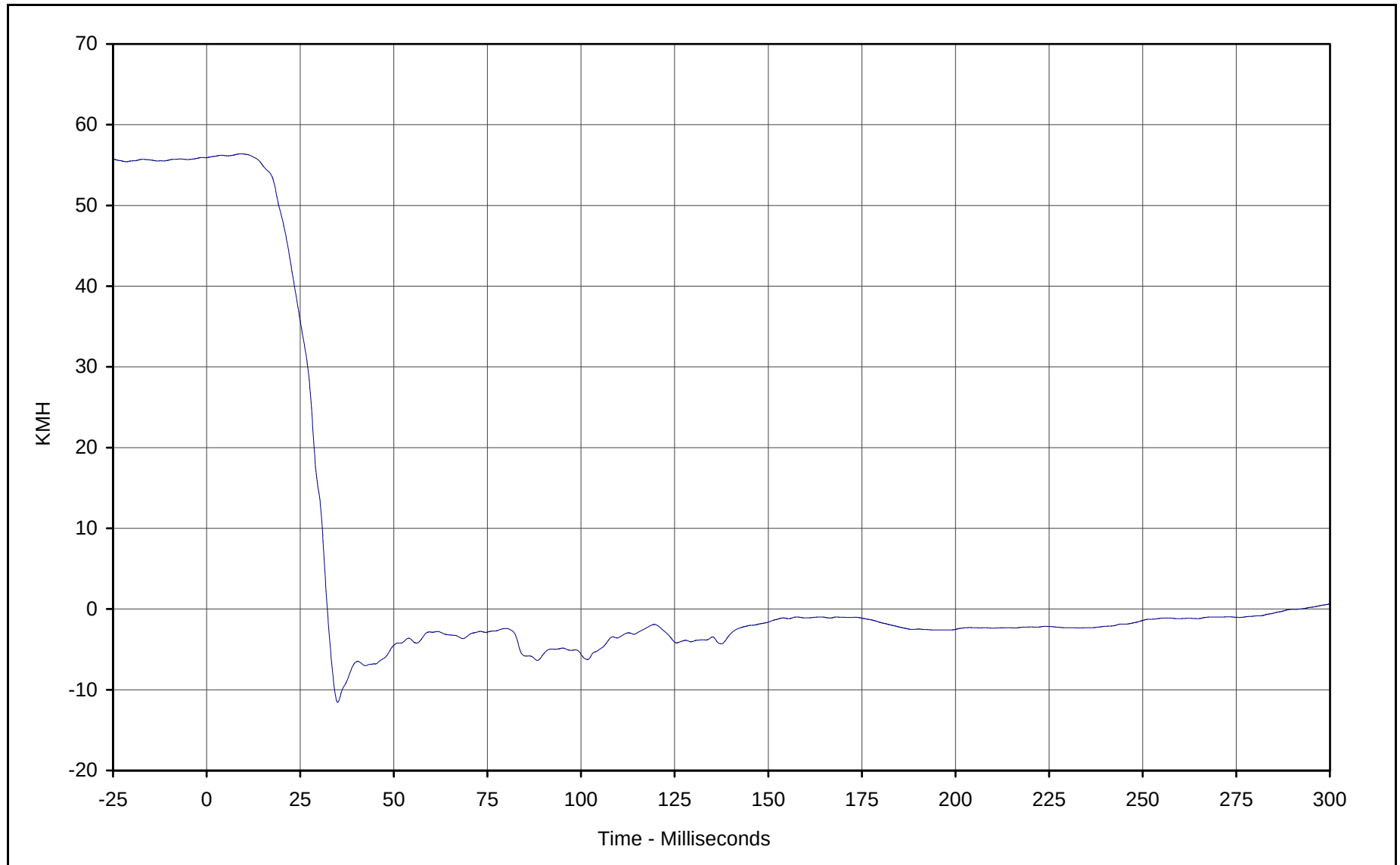
Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan



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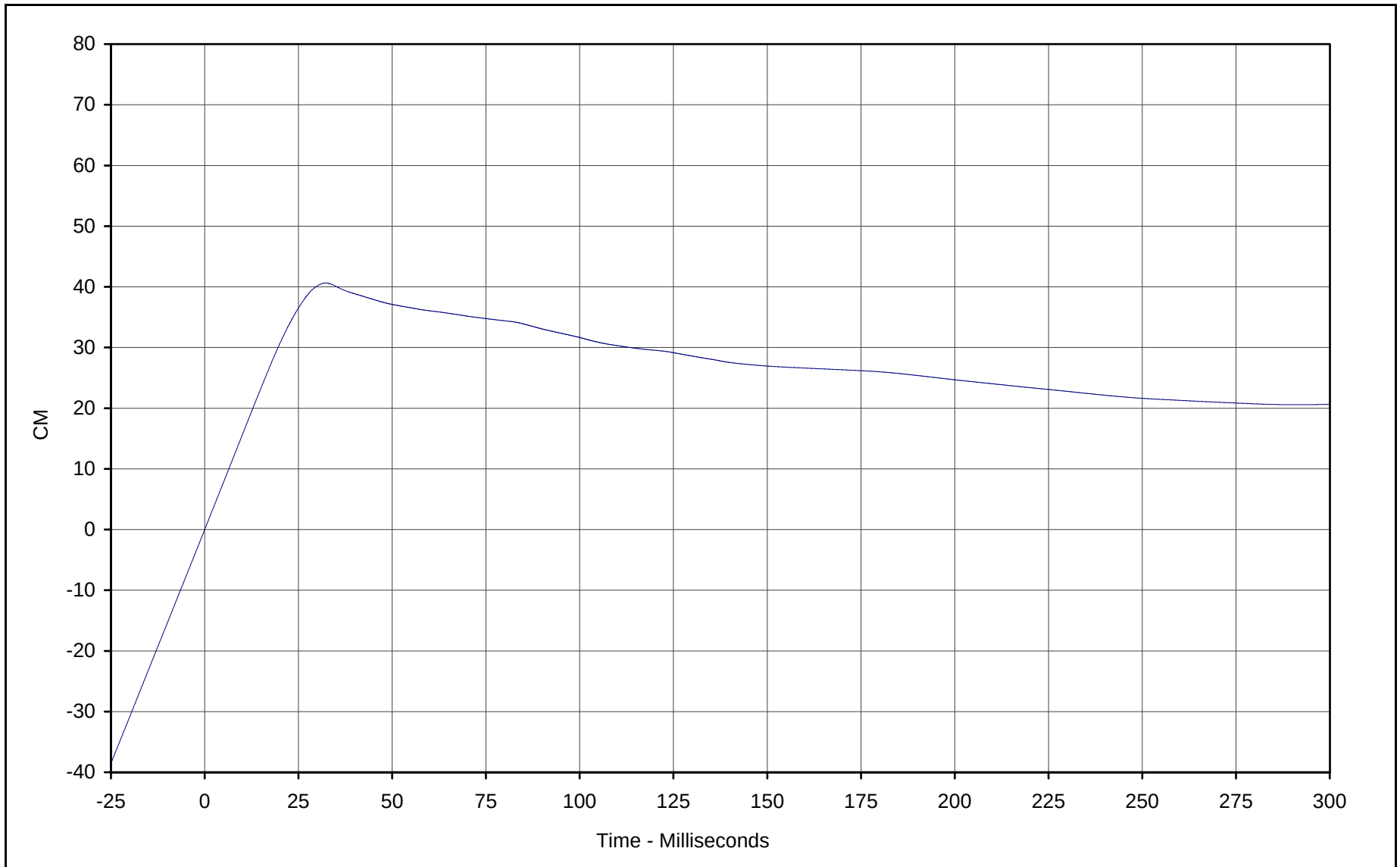
Curve Description: Vehicle Engine Bottom Velocity
Maximum Value: 56.4 at 9.1 Milliseconds
Minimum Value: -11.6 at 35.0 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: IN1-092

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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Curve Description: Vehicle Engine Bottom Displacement

Maximum Value: 40.6 at 32.2 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 2/22/01

Curve Number: IN2-092

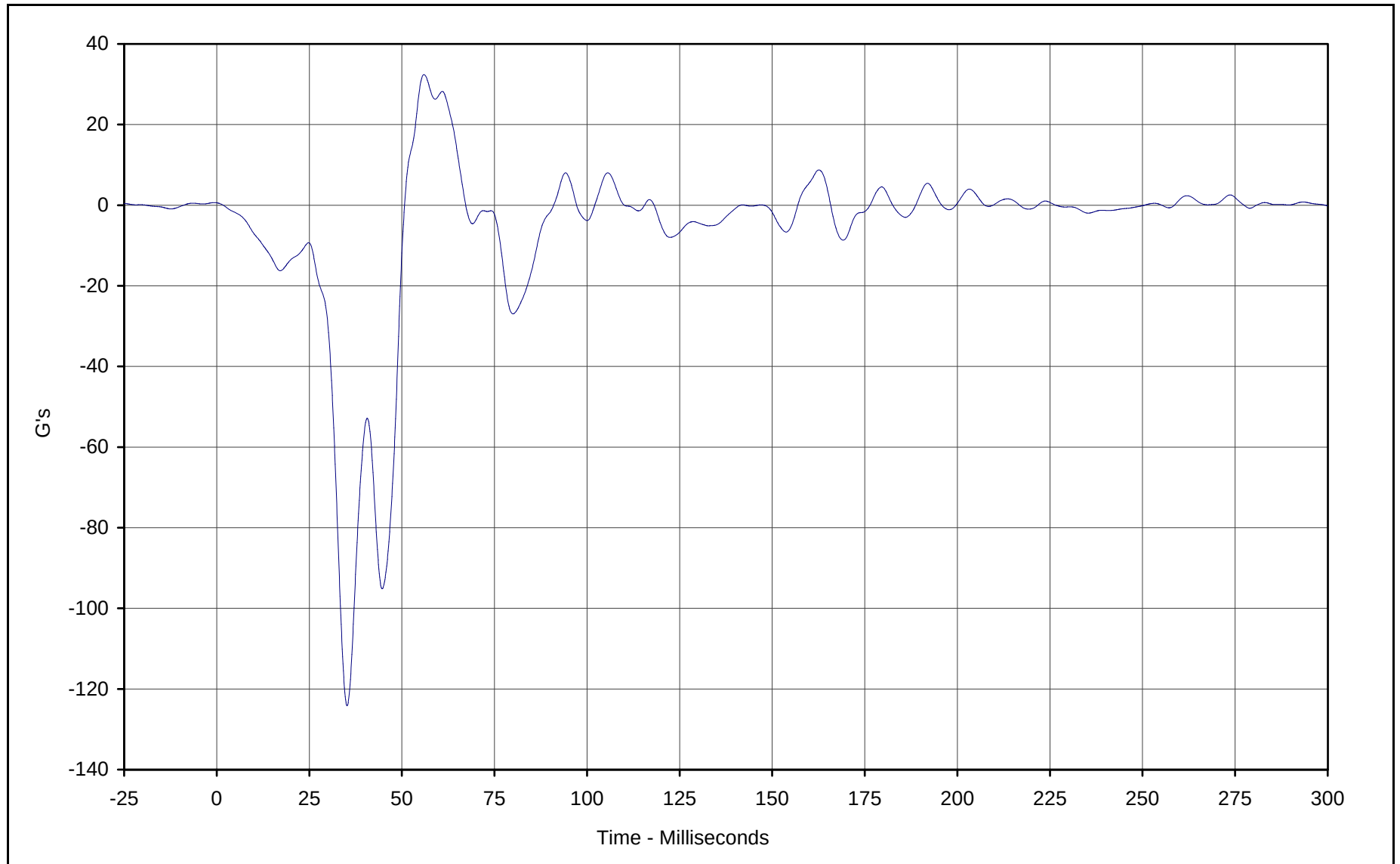
Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan



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B-135

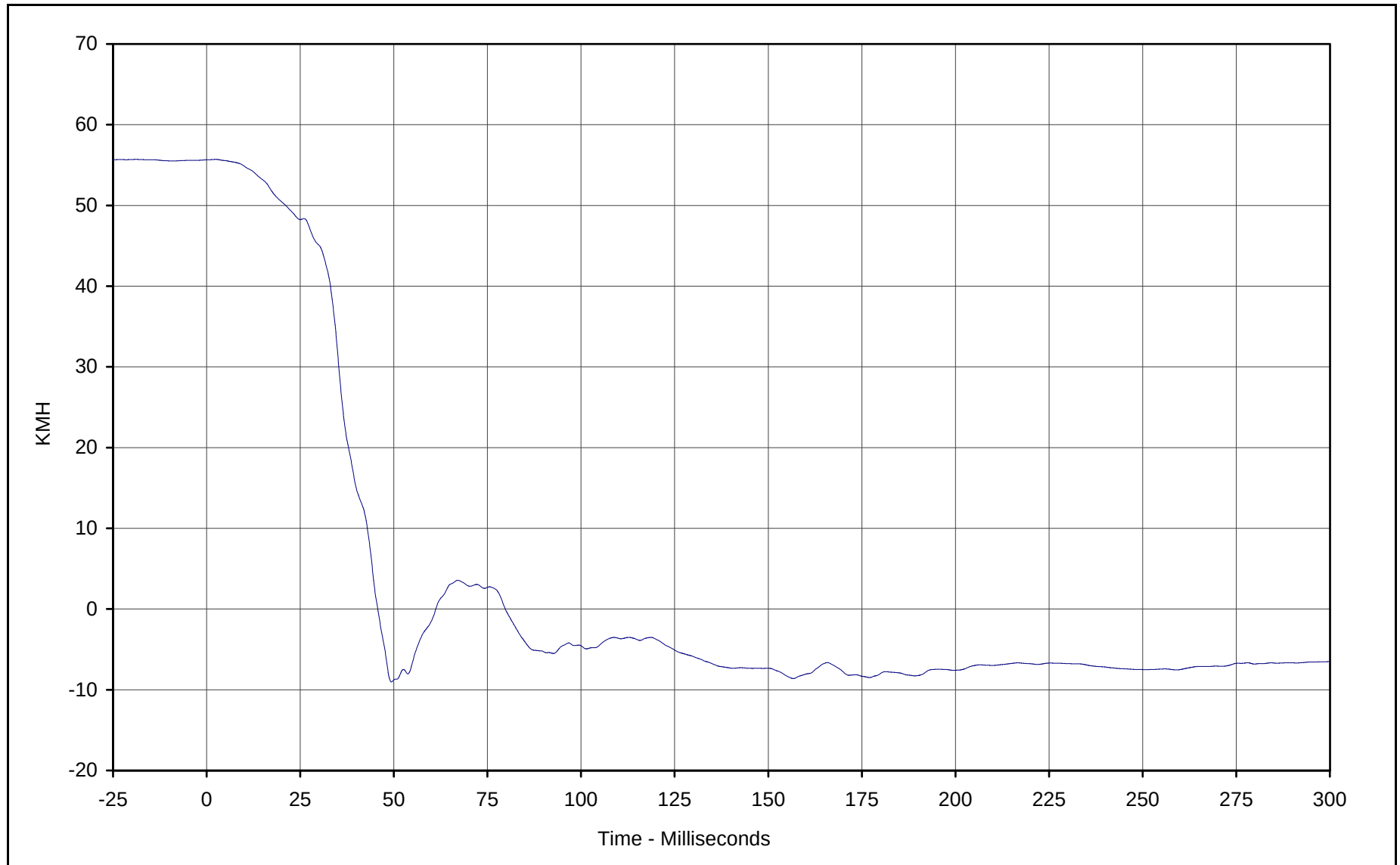


Curve Description: Vehicle Left Brake Caliper
Maximum Value: 32.4 at 56.0 Milliseconds
Minimum Value: -124.2 at 35.2 Milliseconds
SAE Filter Class: 60
Date of Test: 2/22/01
Curve Number: FIL-093

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



KAR21001-14

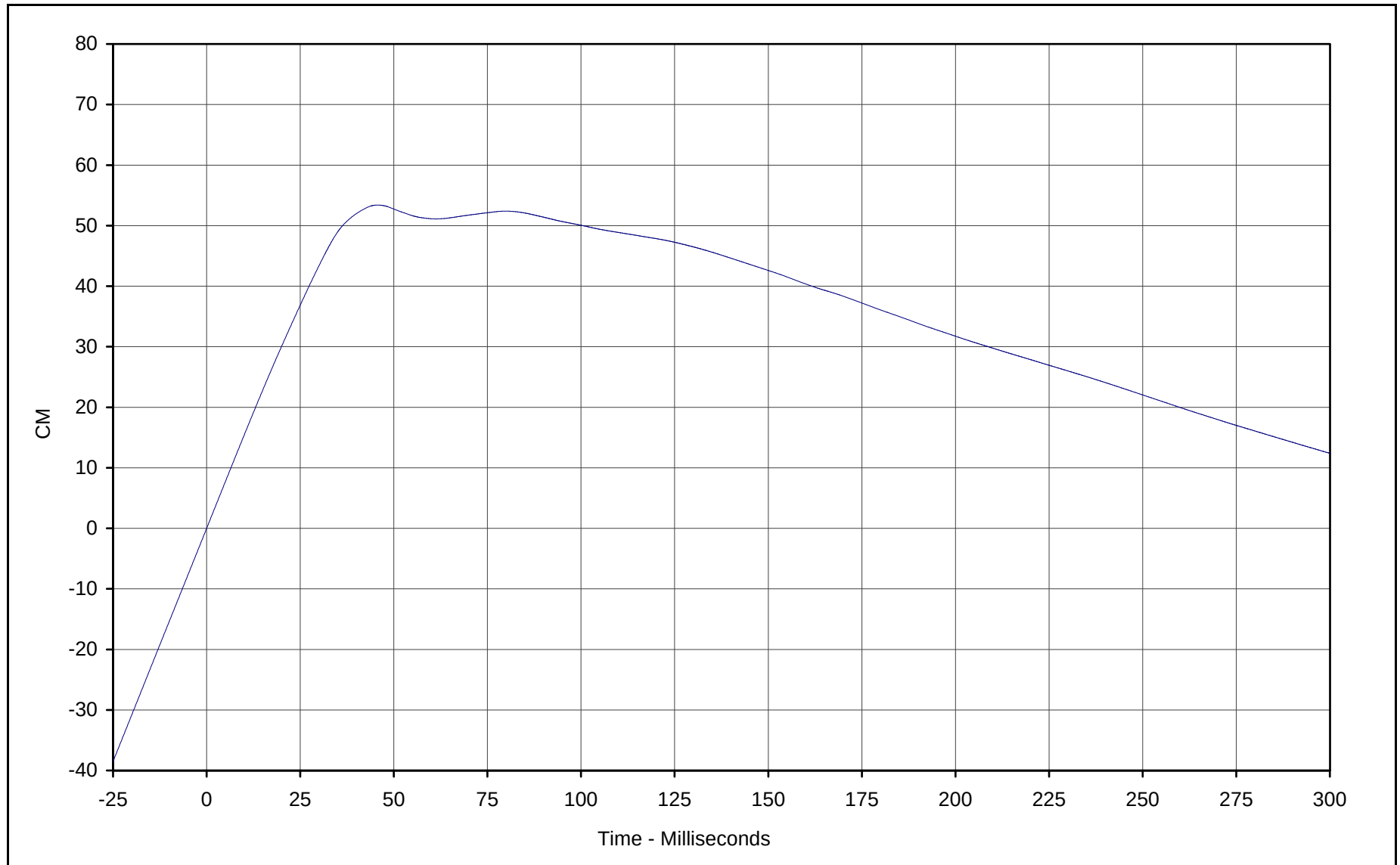


Curve Description: Vehicle Left Brake Caliper Velocity
Maximum Value: 55.7 at 2.5 Milliseconds
Minimum Value: -9.0 at 49.3 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: IN1-093

Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan



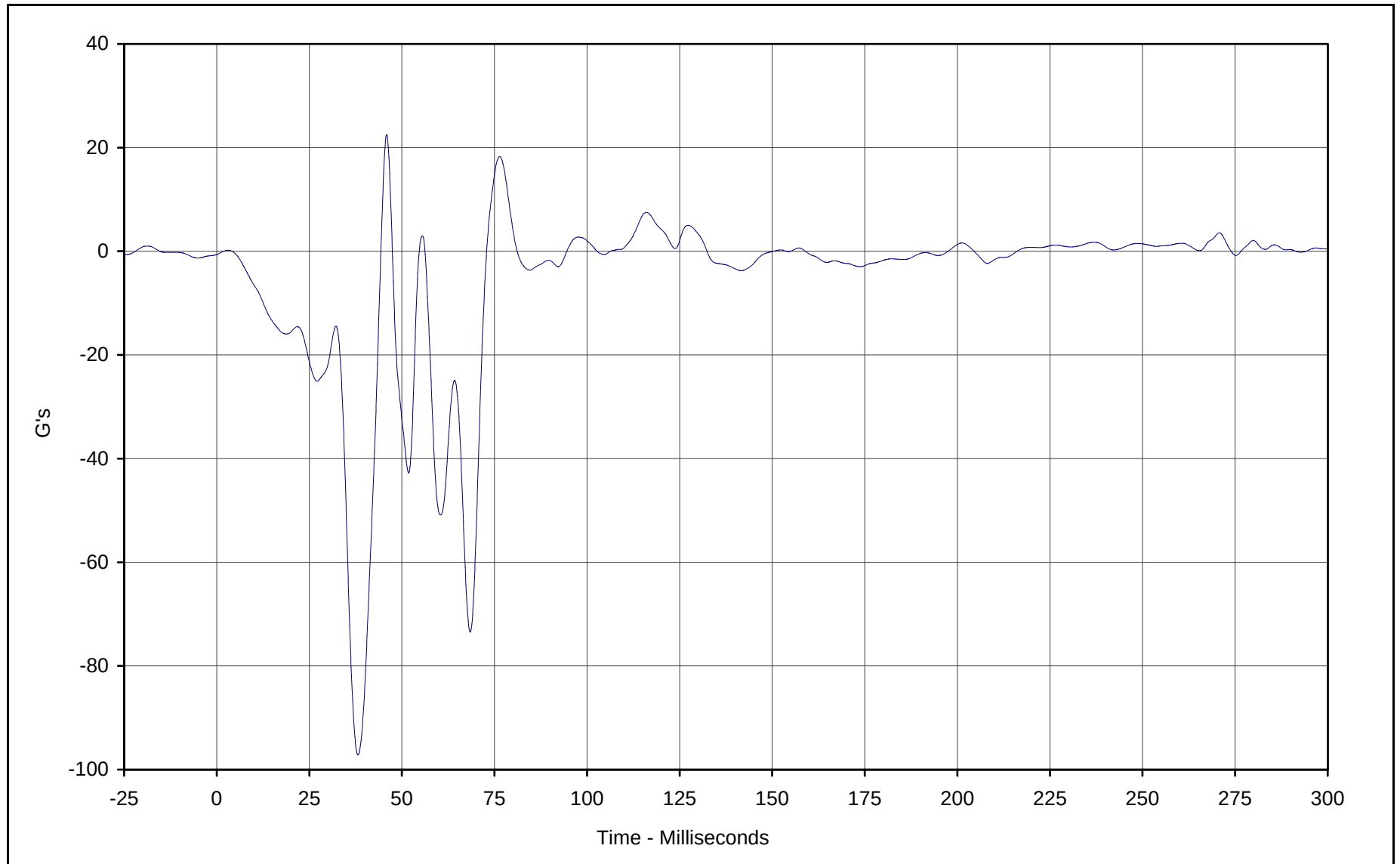


Curve Description: Vehicle Left Brake Caliper Displ.
Maximum Value: 53.4 at 45.7 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: IN2-093

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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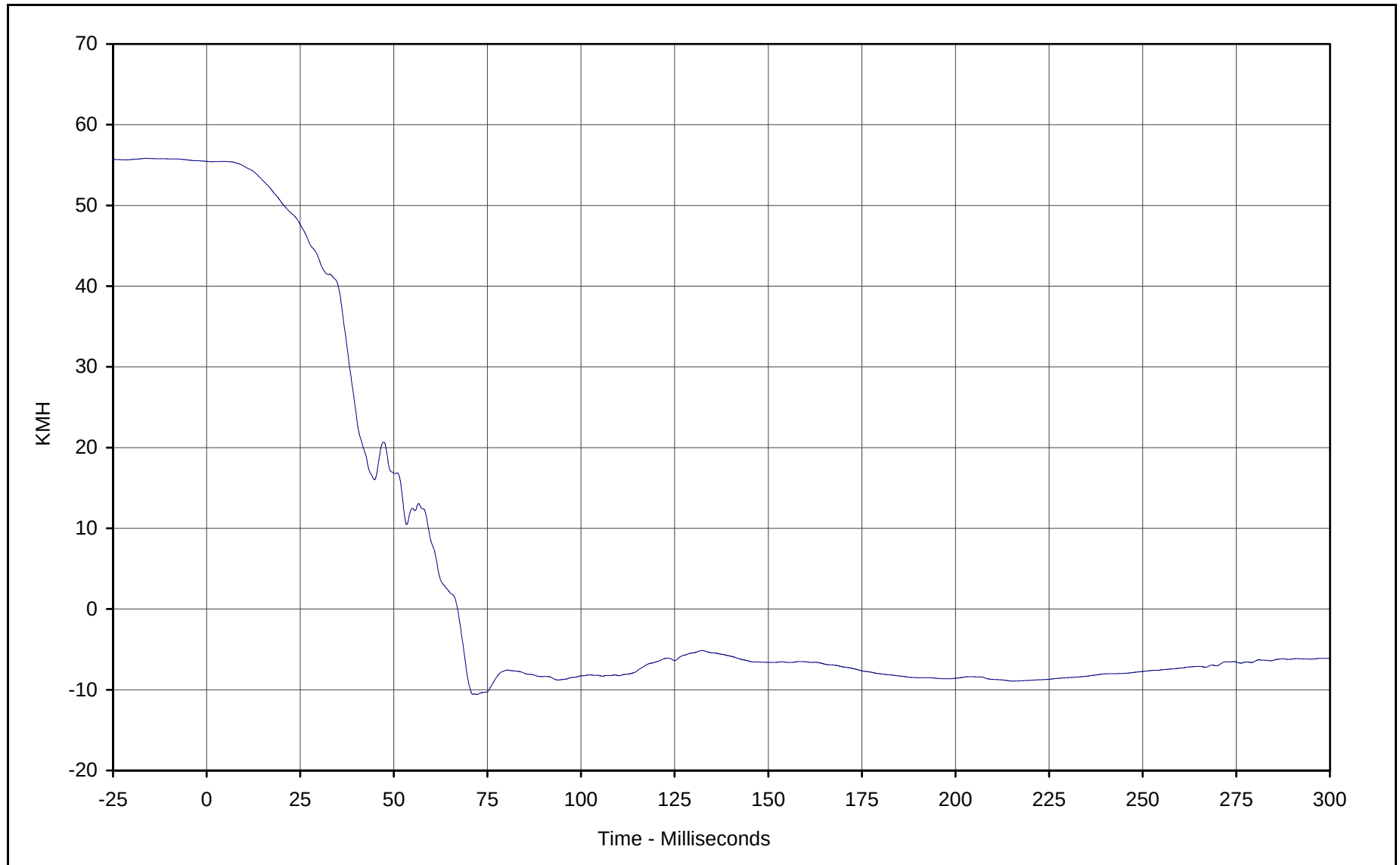
Curve Description: Vehicle Right Brake Caliper
Maximum Value: 22.5 at 45.9 Milliseconds
Minimum Value: -97.2 at 38.1 Milliseconds
SAE Filter Class: 60
Date of Test: 2/22/01
Curve Number: FIL-094

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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B-139



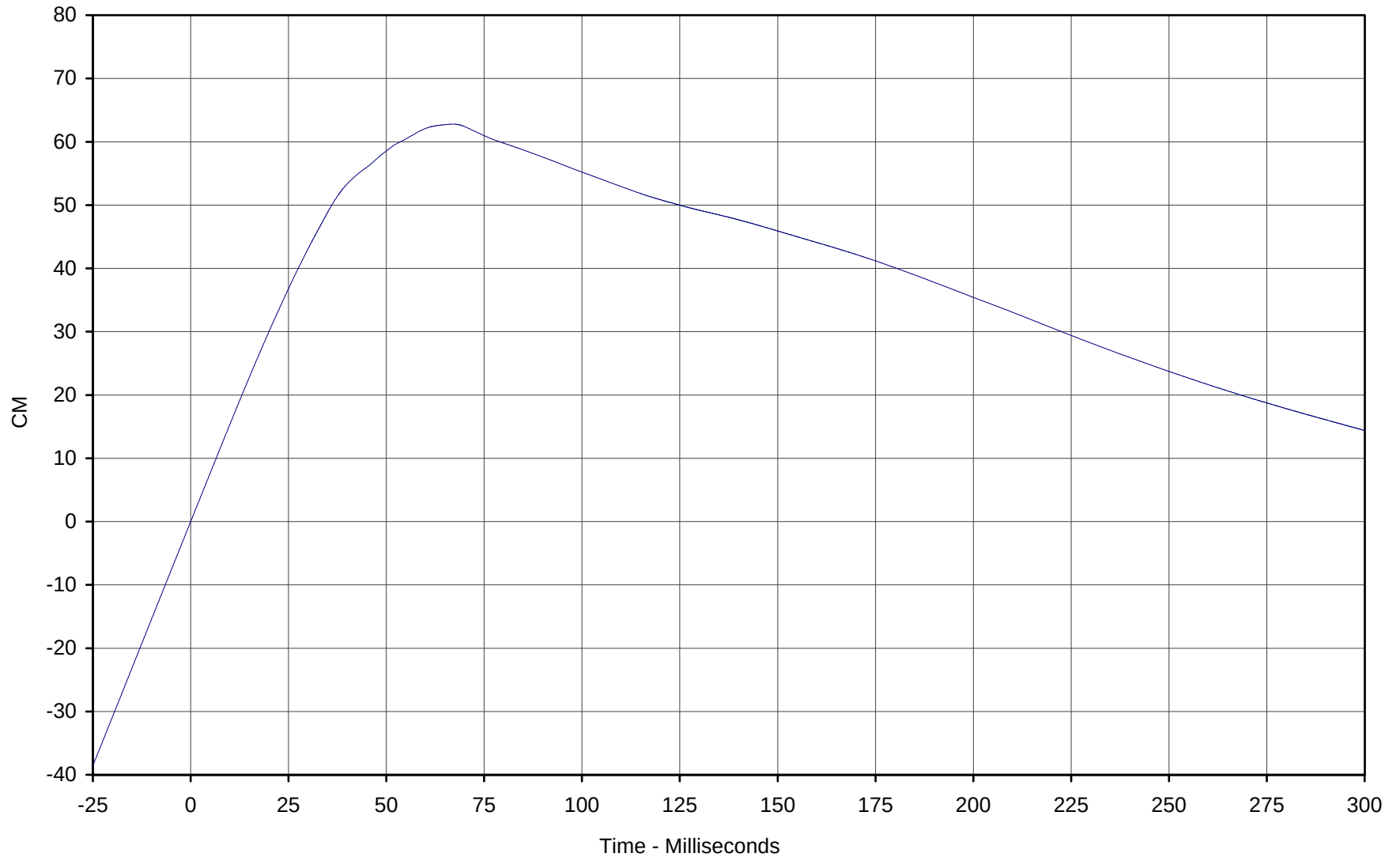
Curve Description: Vehicle Right Brake Caliper Velocity
Maximum Value: 55.5 at 0.0 Milliseconds
Minimum Value: -10.6 at 72.2 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: IN1-094

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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B-140



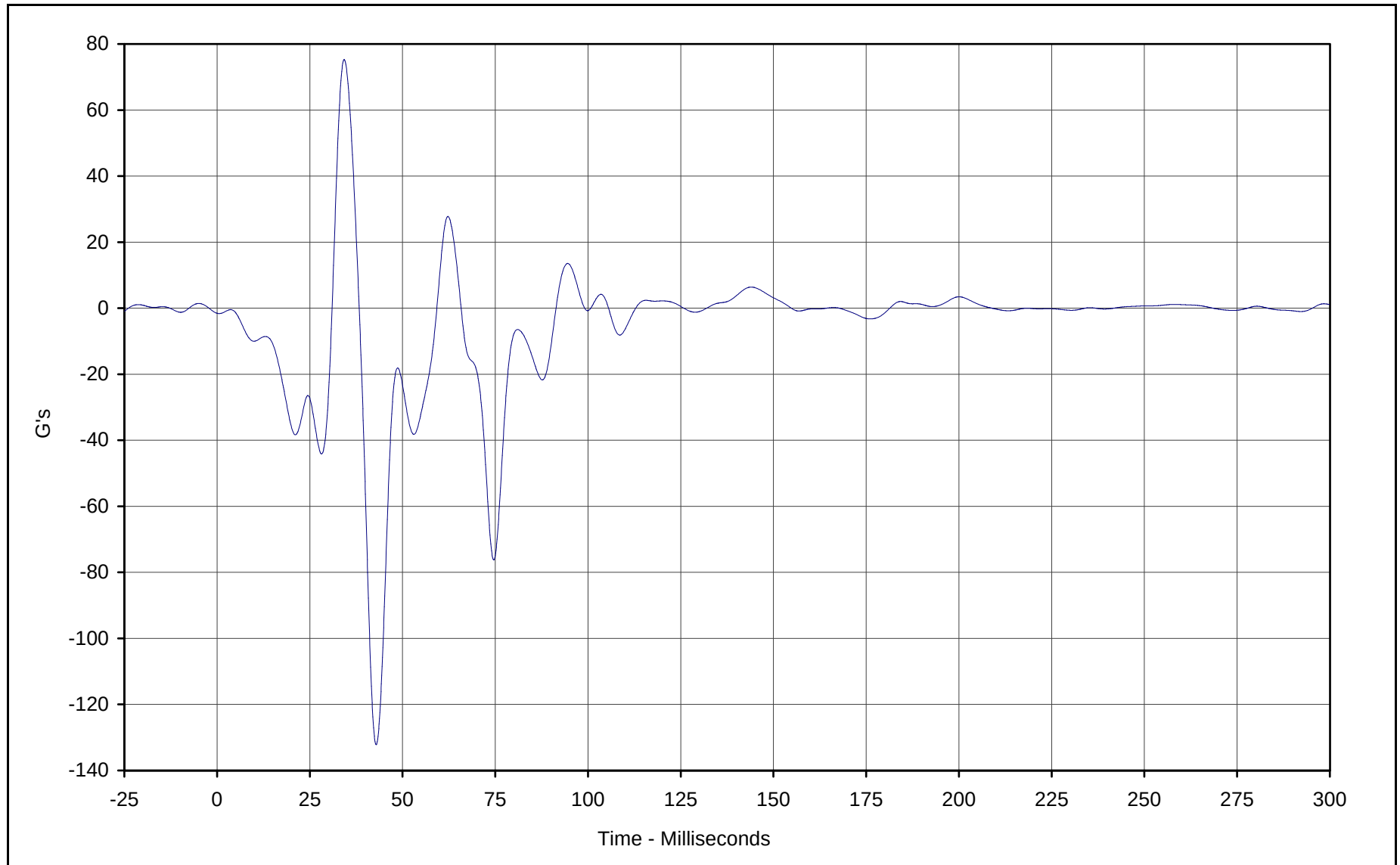
Curve Description: Vehicle Right Brake Caliper Displ.
Maximum Value: 62.8 at 67.0 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: IN2-094

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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B-141



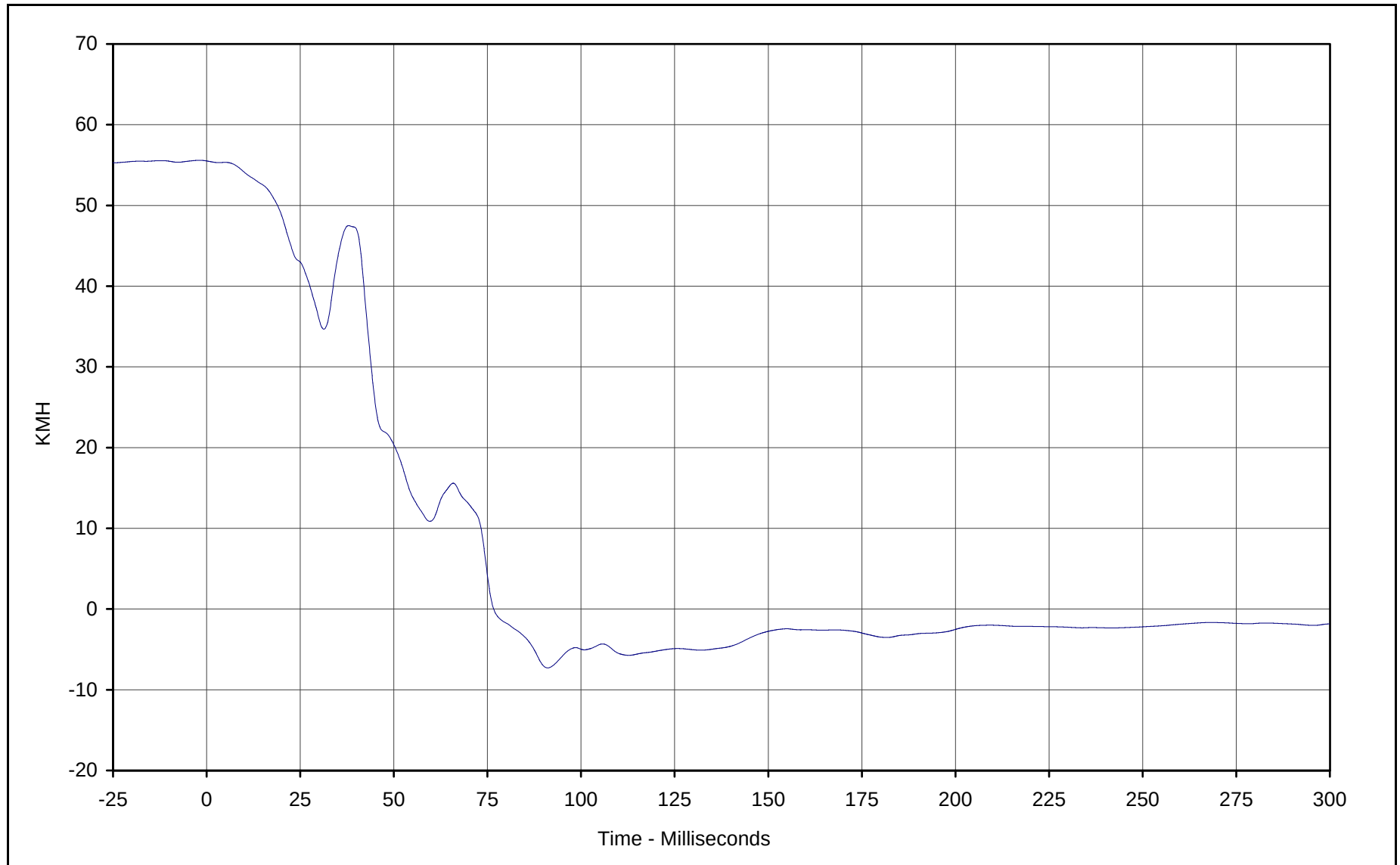
Curve Description: Vehicle Instrument Panel
Maximum Value: 75.3 at 34.3 Milliseconds
Minimum Value: -132.2 at 42.9 Milliseconds
SAE Filter Class: 60
Date of Test: 2/22/01
Curve Number: FIL-095

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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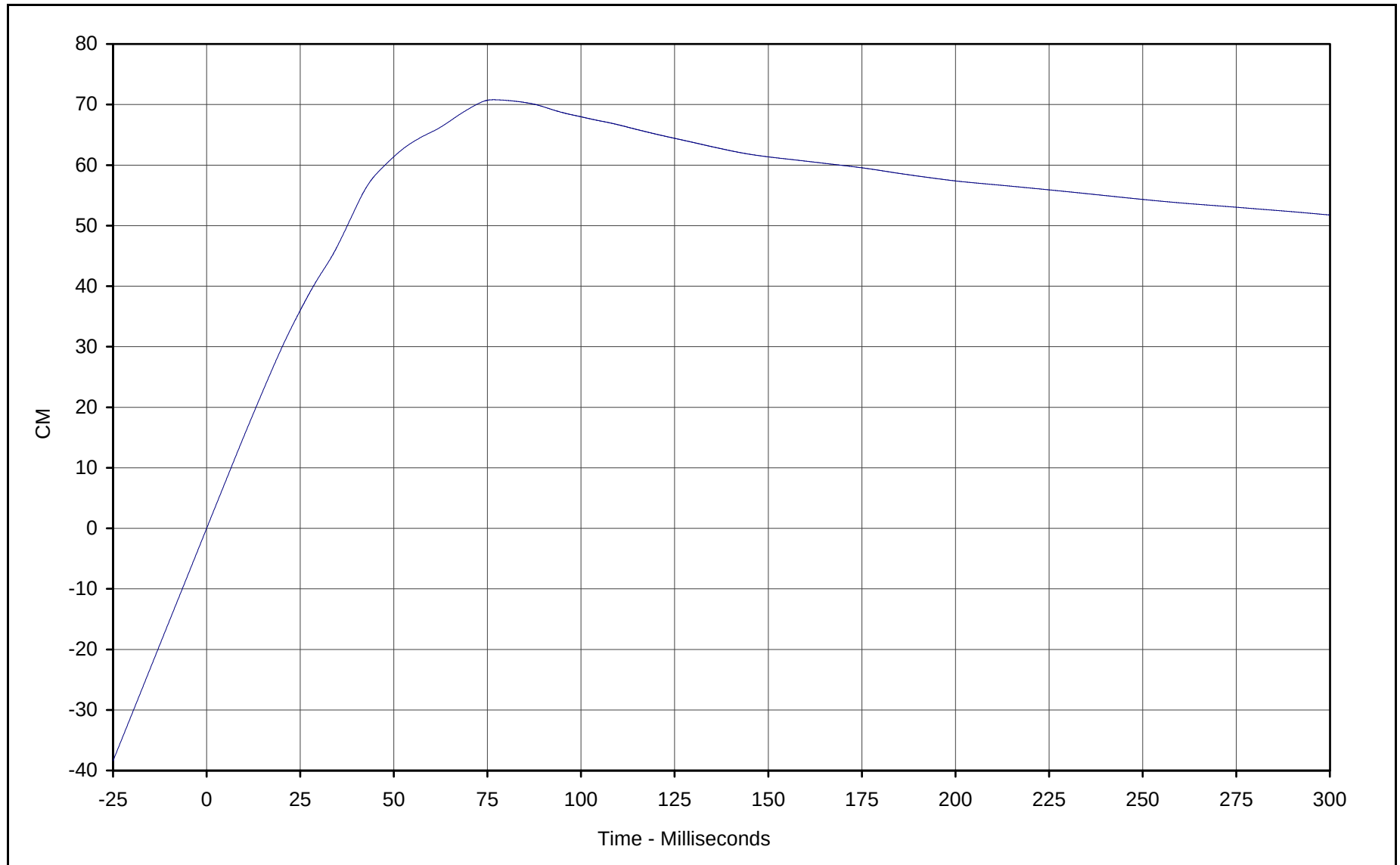
Curve Description: Vehicle Instrument Panel Velocity
Maximum Value: 55.5 at 0.0 Milliseconds
Minimum Value: -7.3 at 91.1 Milliseconds
SAE Filter Class: 180
Date of Test: 2/22/01
Curve Number: IN1-095

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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Curve Description: Vehicle Instrument Panel Displacement

Maximum Value: 70.8 at 76.7 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 2/22/01

Curve Number: IN2-095

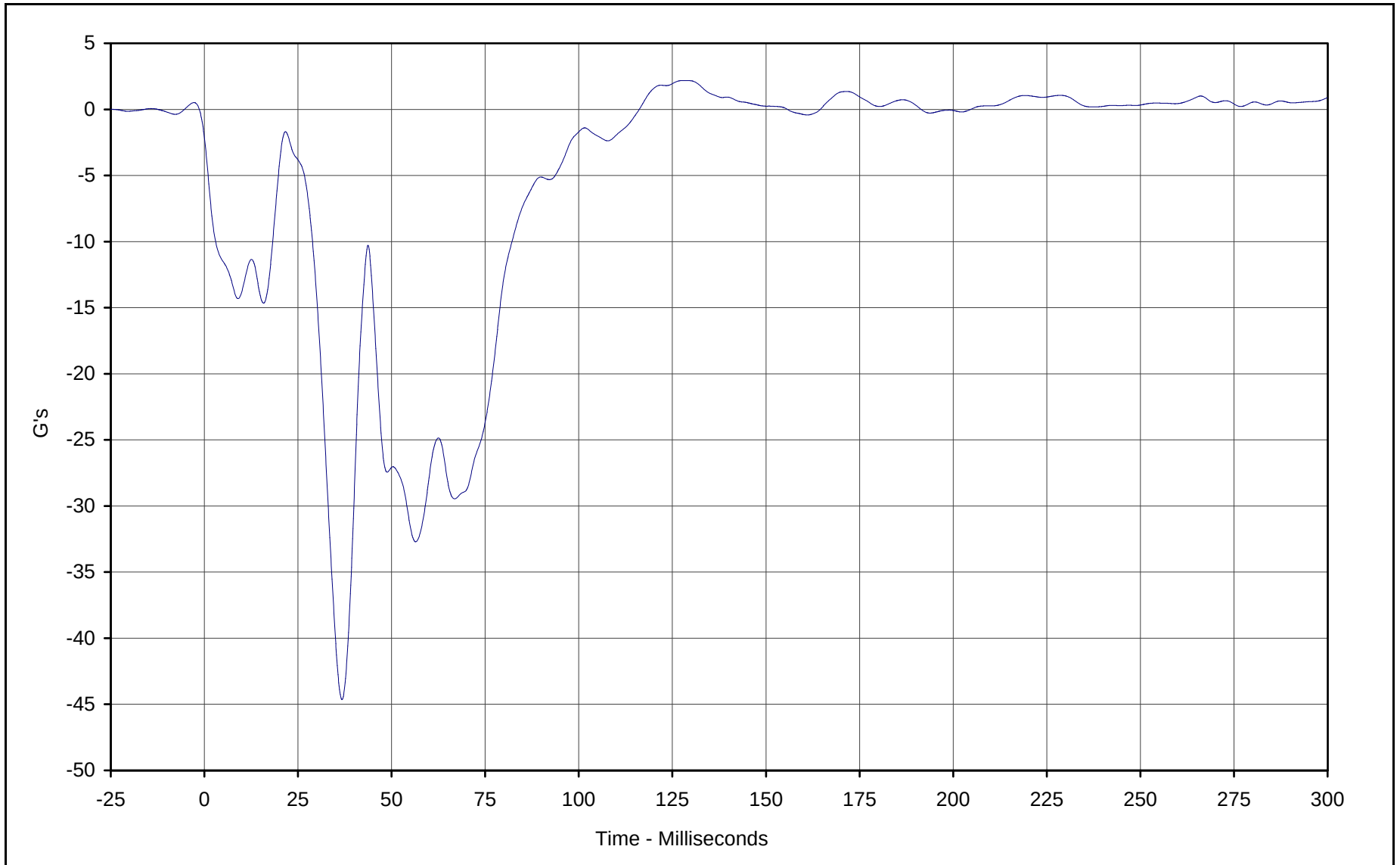
Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan



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B-144



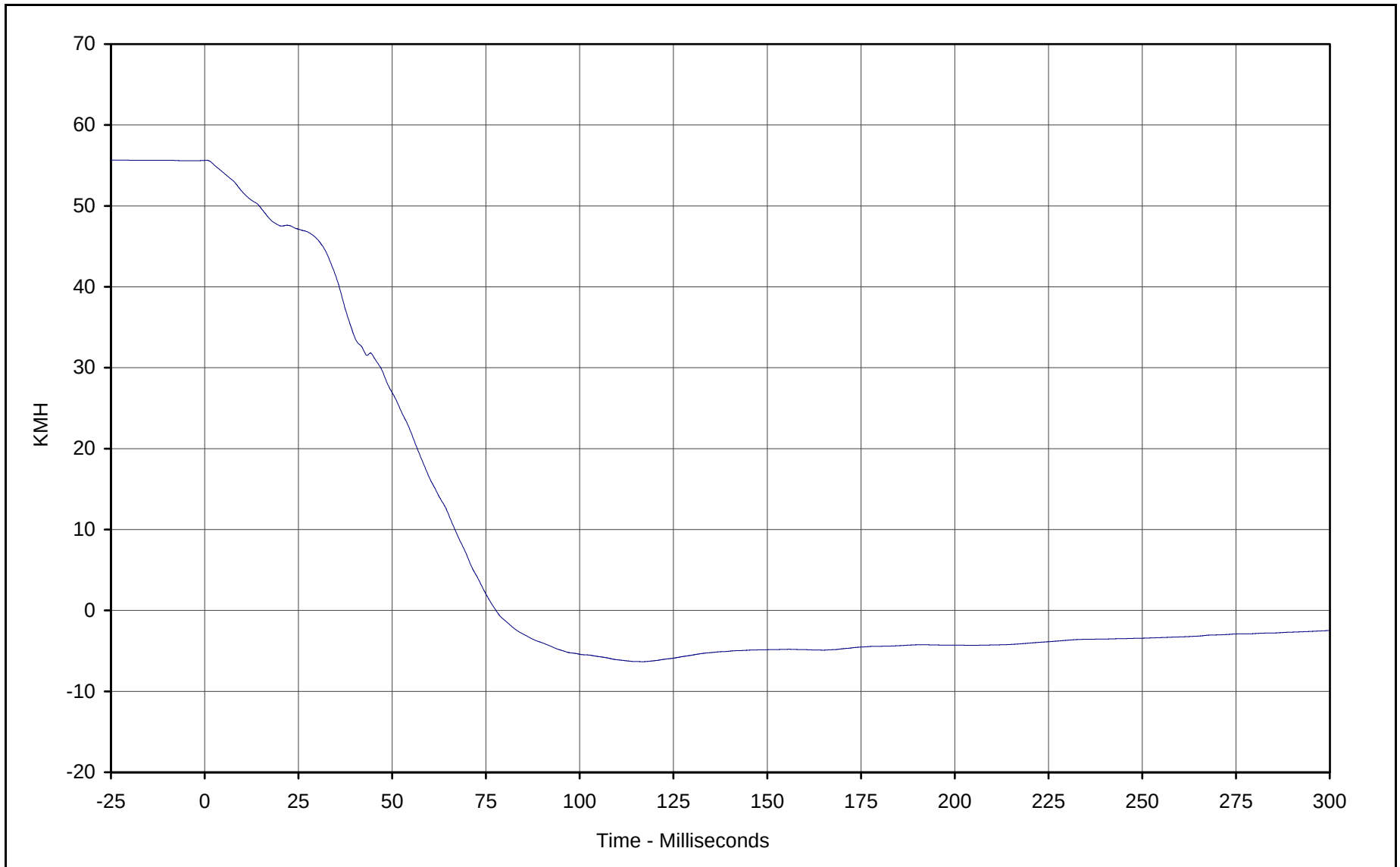
Curve Description: Vehicle Left Rear Redundant
Maximum Value: 2.2 at 127.6 Milliseconds
Minimum Value: -44.6 at 36.8 Milliseconds
SAE Filter Class: 60
Date of Test: 2/22/01
Curve Number: FIL-096

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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Curve Description: Vehicle Left Rear Redundant Velocity

Maximum Value: 55.6 at 0.5 Milliseconds

Minimum Value: -6.3 at 116.8 Milliseconds

SAE Filter Class: 180

Date of Test: 2/22/01

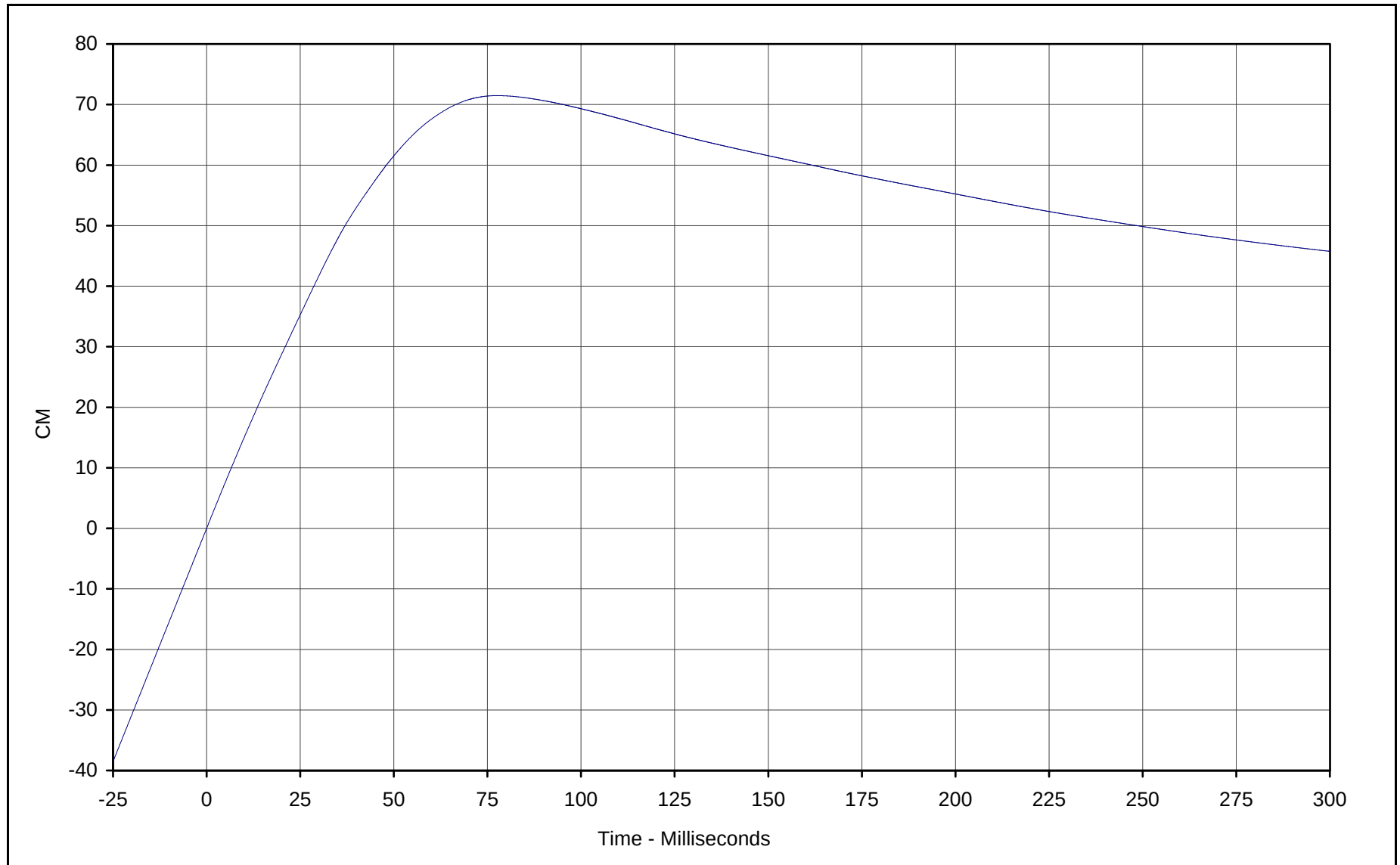
Curve Number: IN1-096

Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan



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Curve Description: Vehicle Left Rear Redundant Displ.

Maximum Value: 71.5 at 77.7 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 2/22/01

Curve Number: IN2-096

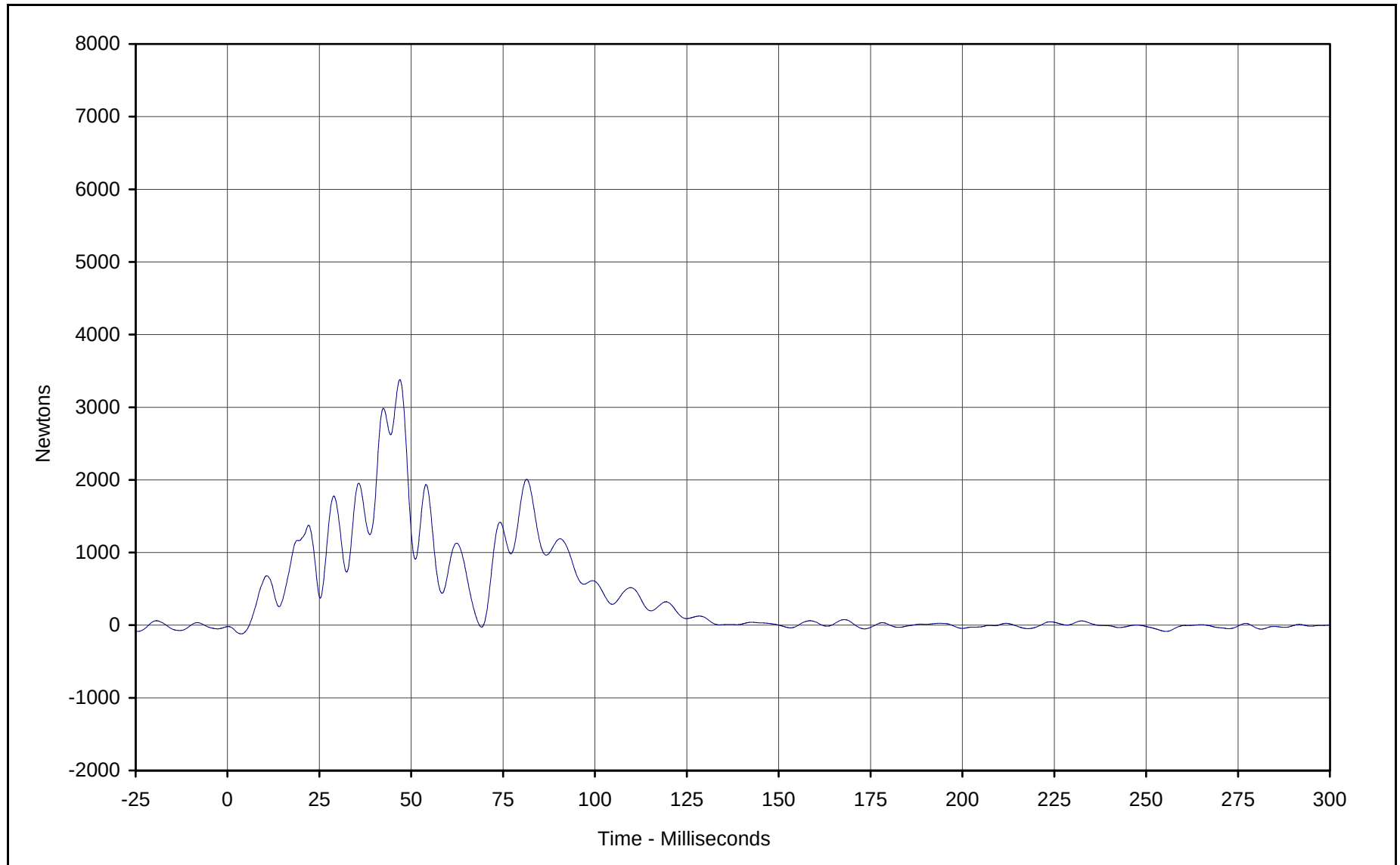
Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan



APPENDIX C
LOAD CELL BARRIER INFORMATION

C-1

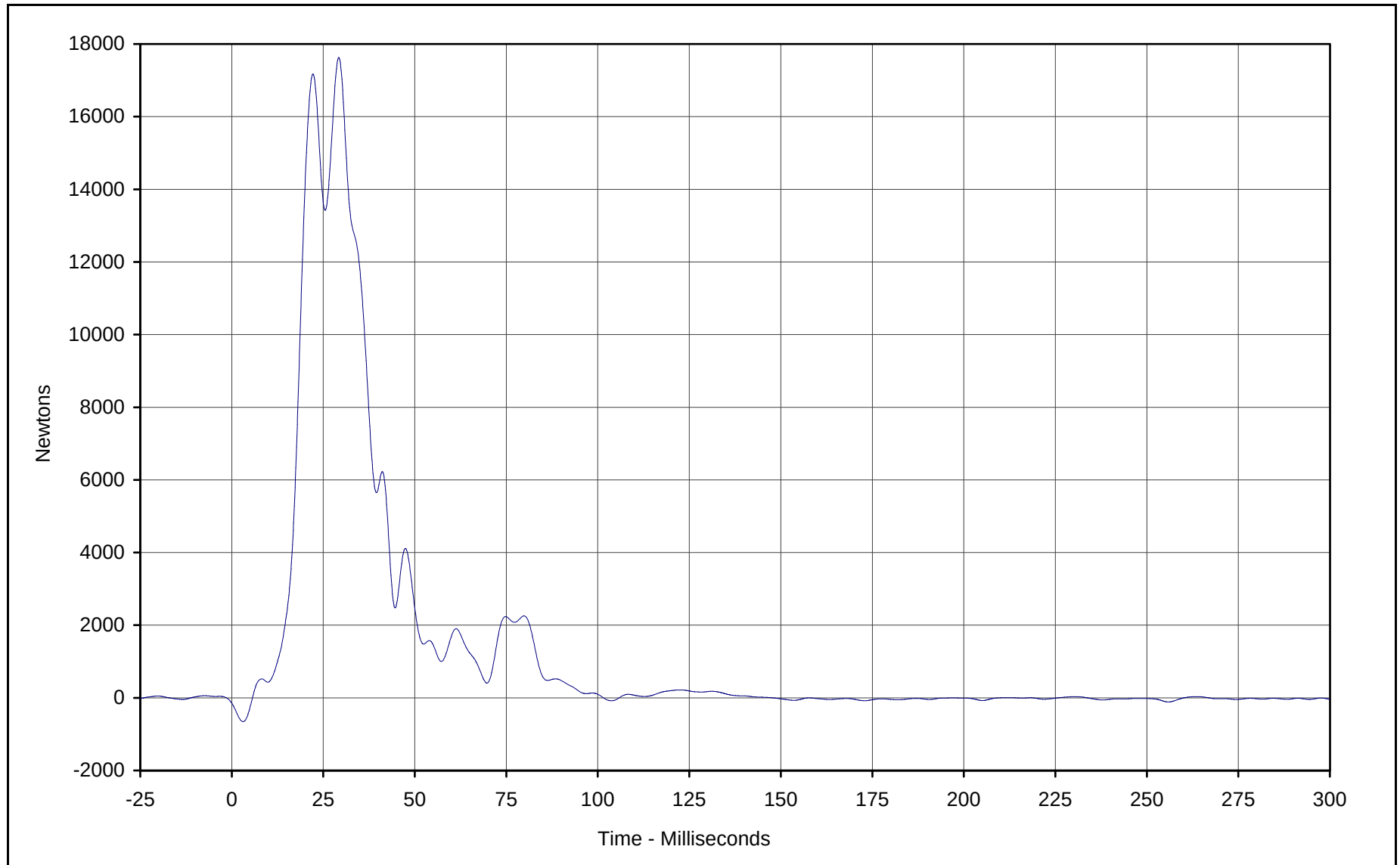


Curve Description: Barrier Force A2
Maximum Value: 3379.6 at 46.9 Milliseconds
Minimum Value: -119.2 at 3.8 Milliseconds
SAE Filter Class: 60
Date of Test: 02/22/01
Curve Number: FIL-099

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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Curve Description: Barrier Force A3

Maximum Value: 17628.0 at 29.2 Milliseconds

Minimum Value: -656.0 at 3.1 Milliseconds

SAE Filter Class: 60

Date of Test: 02/22/01

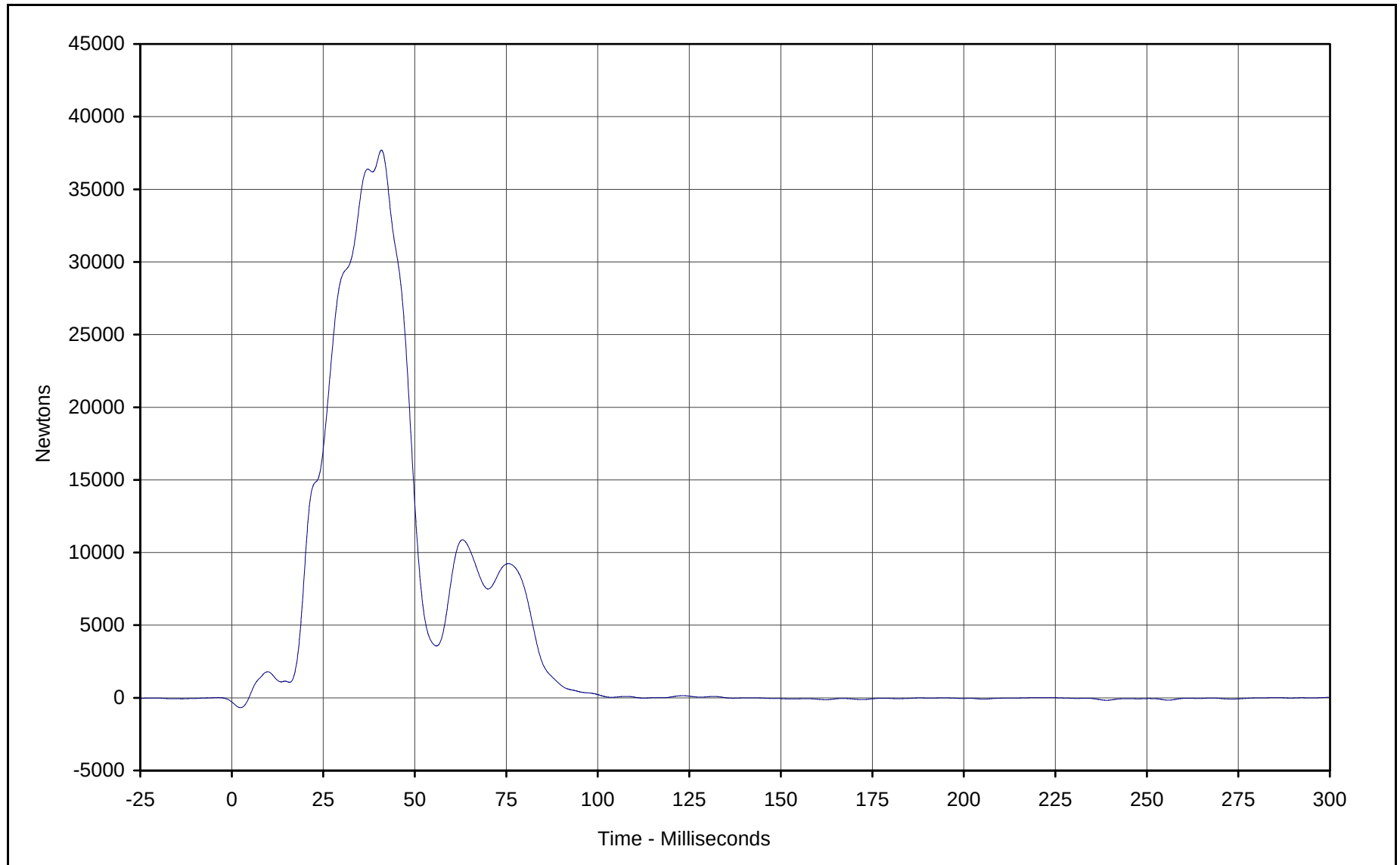
Curve Number: FIL-100

Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan



C-3



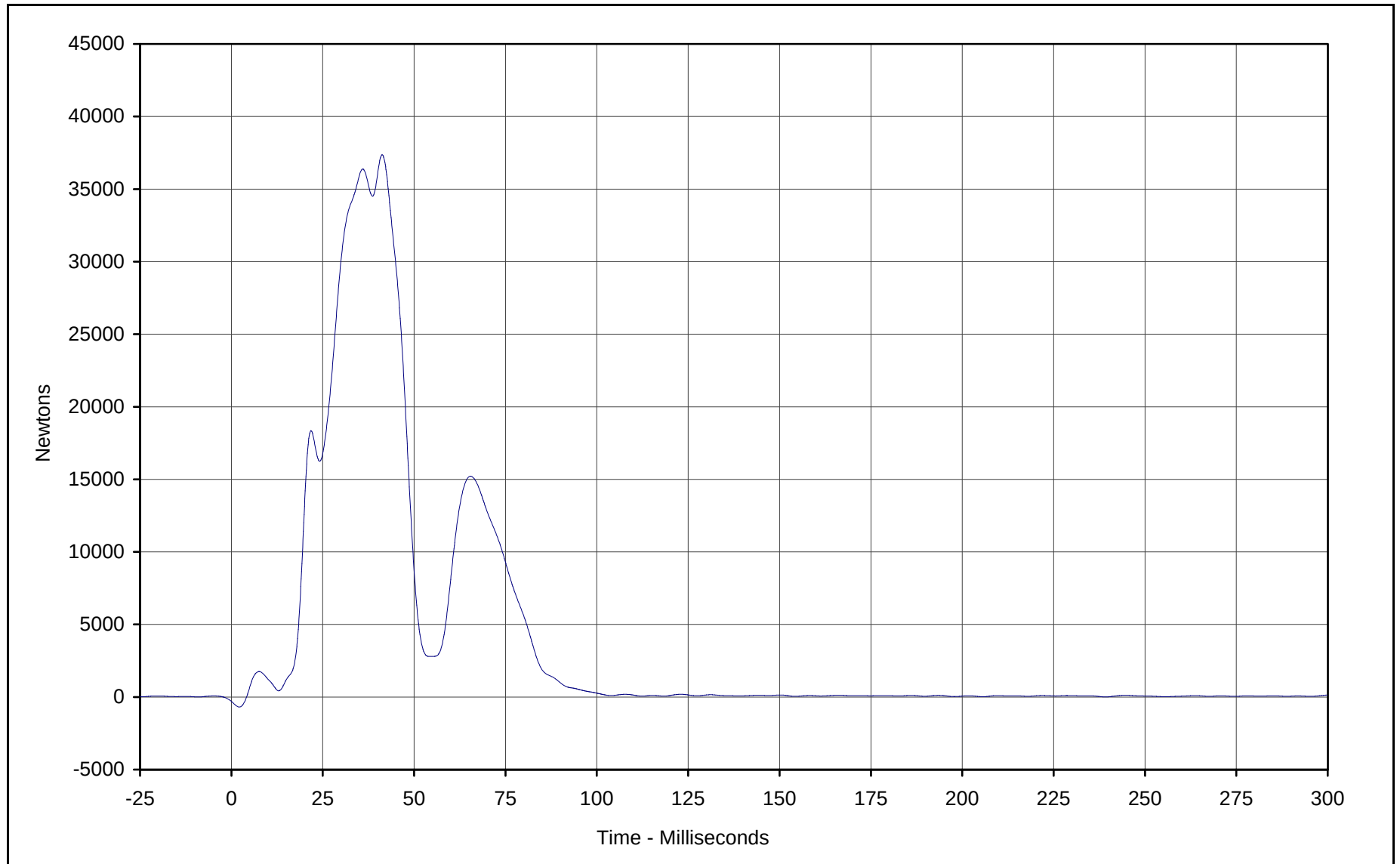
Curve Description: Barrier Force A4
Maximum Value: 37693.3 at 40.9 Milliseconds
Minimum Value: -674.6 at 2.4 Milliseconds
SAE Filter Class: 60
Date of Test: 02/22/01
Curve Number: FIL-101

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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C-4



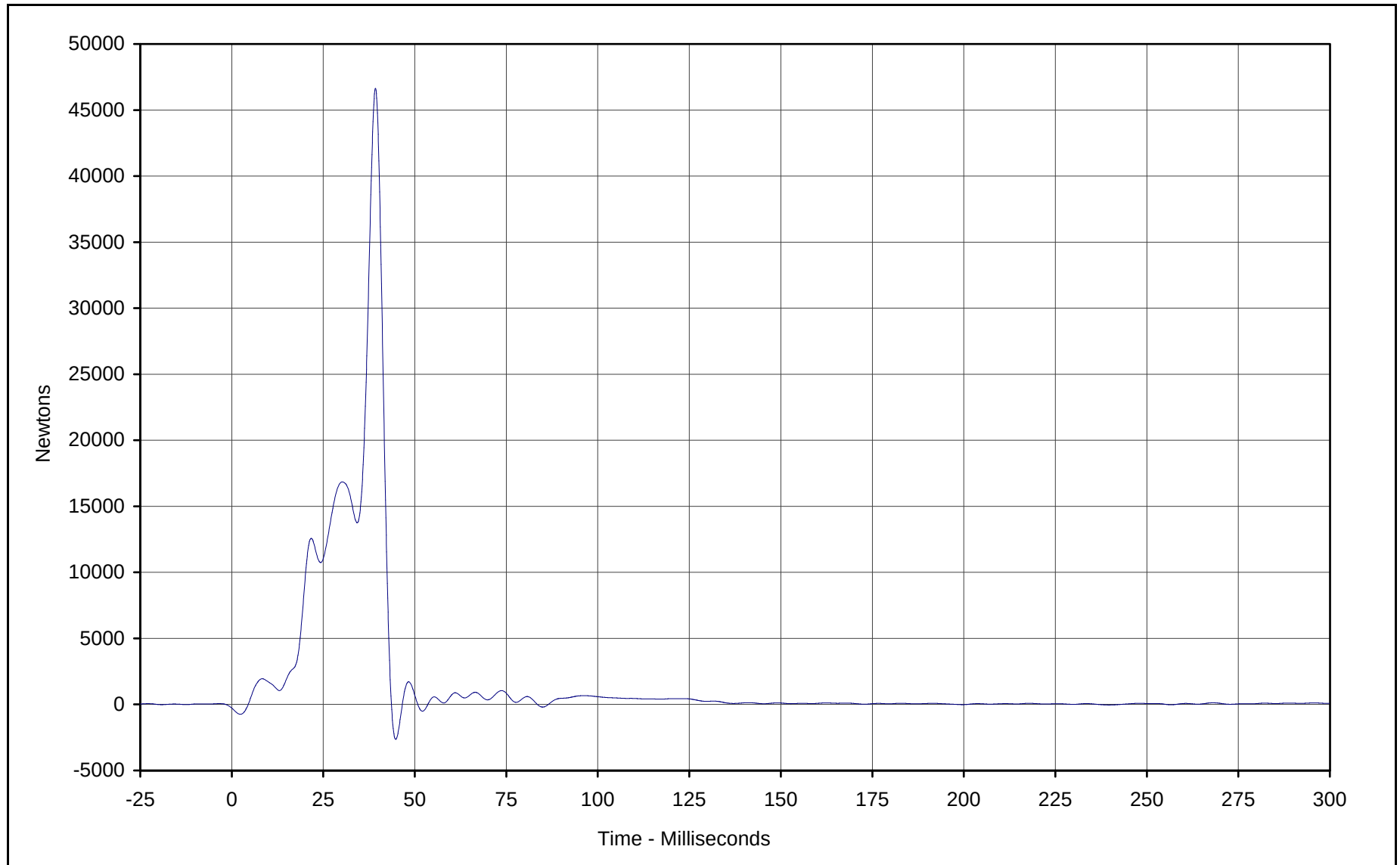
Curve Description: Barrier Force A5
Maximum Value: 37363.9 at 41.3 Milliseconds
Minimum Value: -688.0 at 2.2 Milliseconds
SAE Filter Class: 60
Date of Test: 02/22/01
Curve Number: FIL-102

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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C-5



Curve Description: Barrier Force A6

Maximum Value: 46630.6 at 39.3 Milliseconds

Minimum Value: -2644.3 at 44.8 Milliseconds

SAE Filter Class: 60

Date of Test: 02/22/01

Curve Number: FIL-103

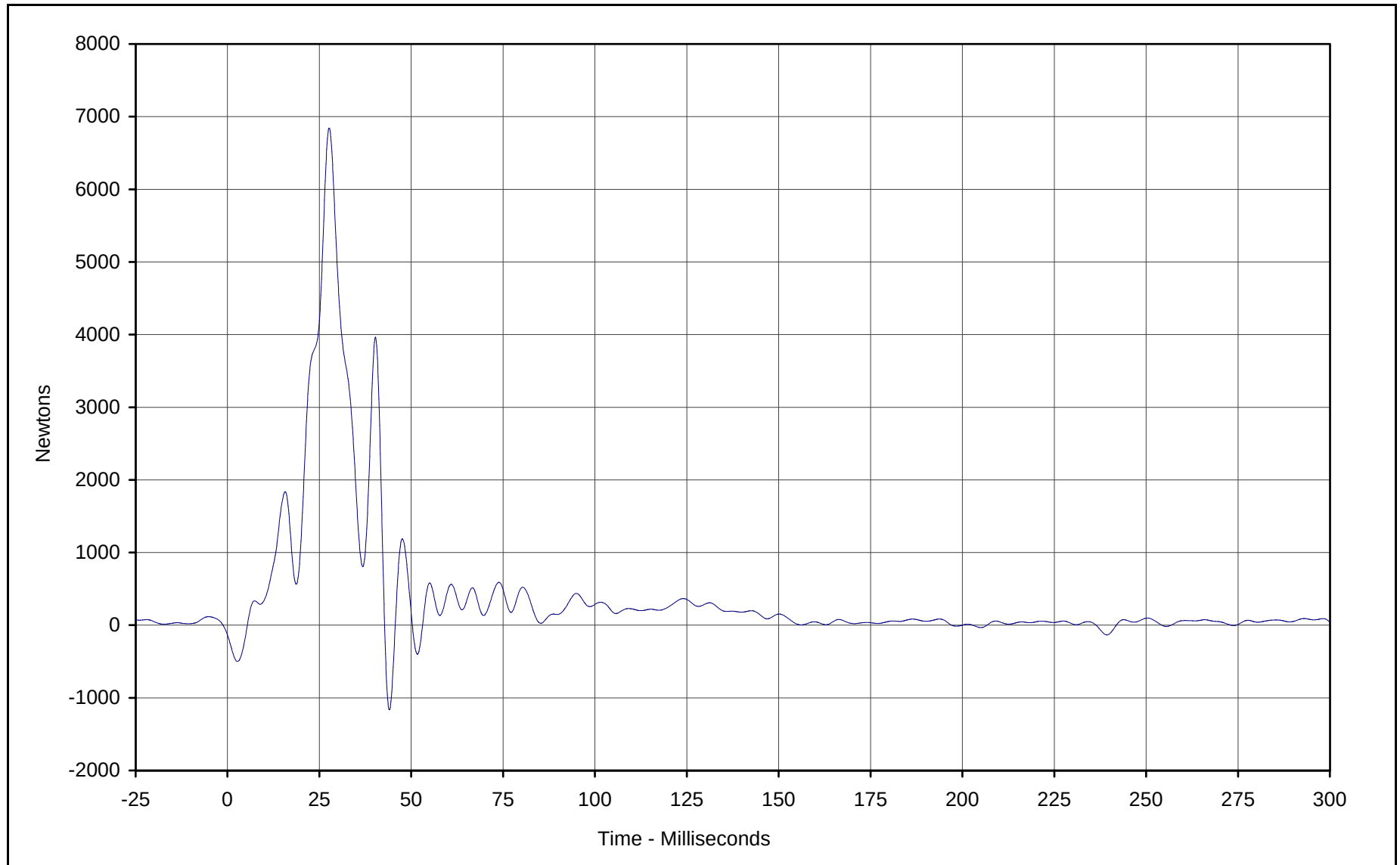
Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan



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C-6



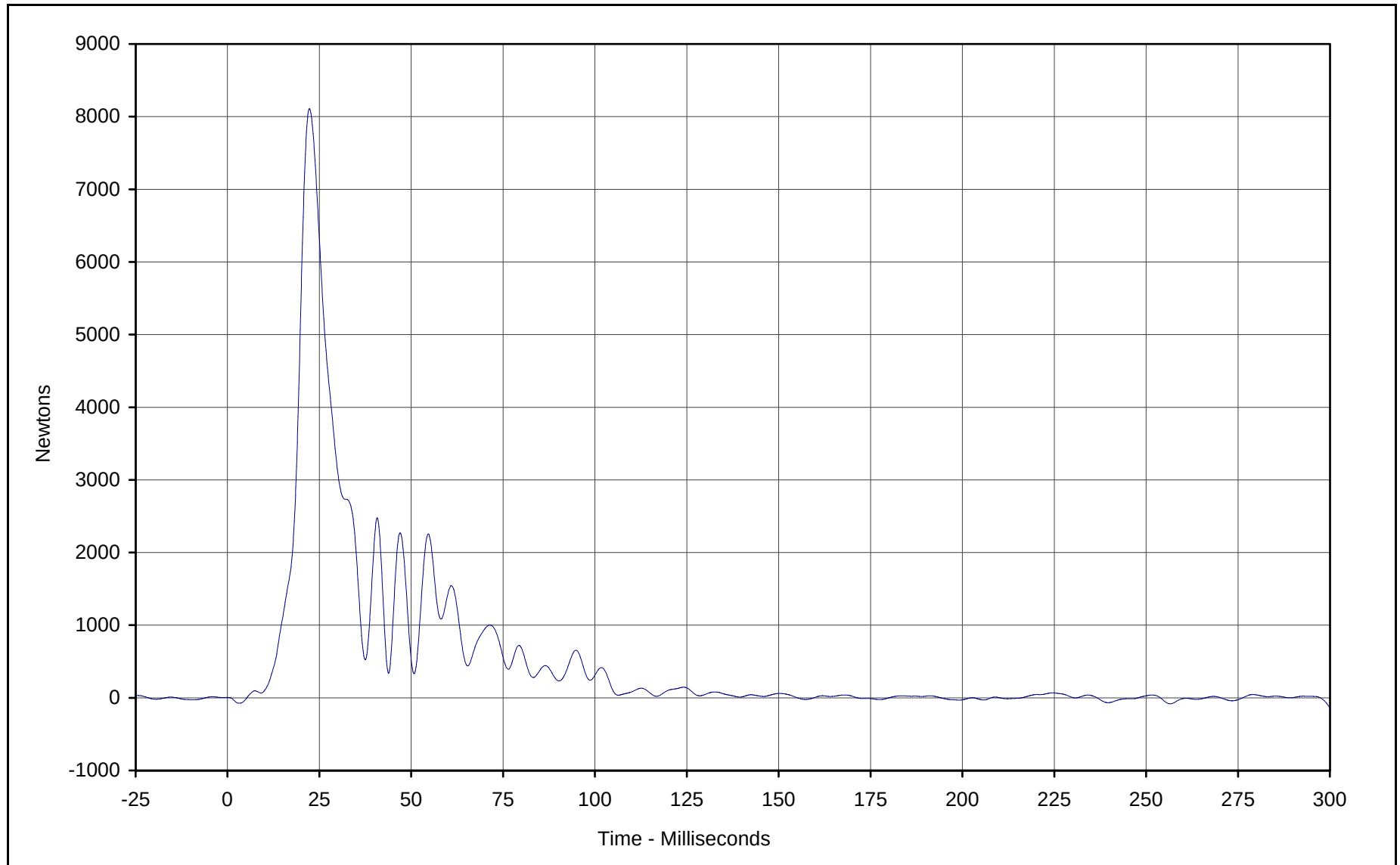
Curve Description: Barrier Force A7
Maximum Value: 6843.4 at 27.7 Milliseconds
Minimum Value: -1165.2 at 44.1 Milliseconds
SAE Filter Class: 60
Date of Test: 02/22/01
Curve Number: FIL-104

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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C-7



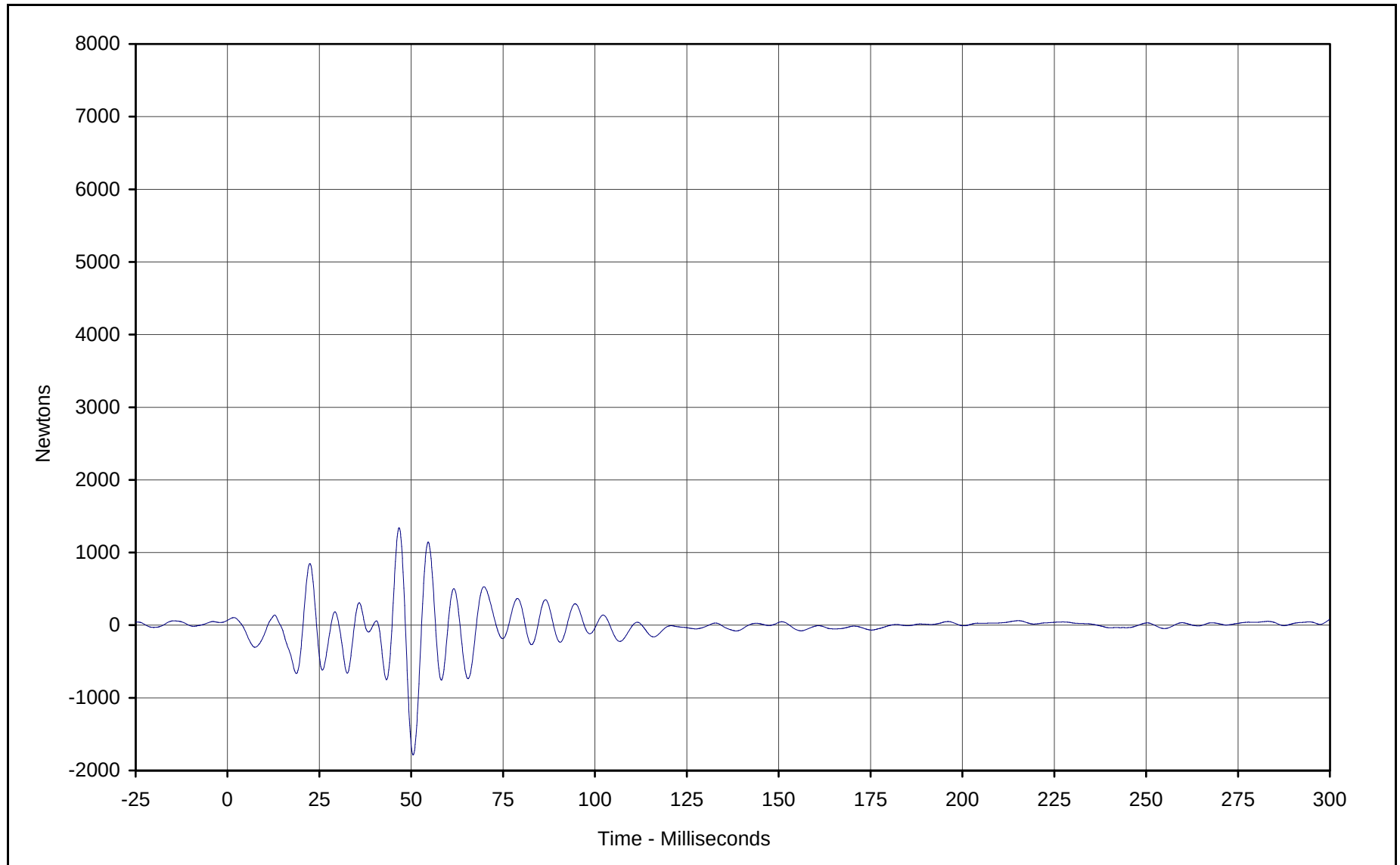
Curve Description: Barrier Force A8
Maximum Value: 8109.4 at 22.3 Milliseconds
Minimum Value: -134.8 at 299.9 Milliseconds
SAE Filter Class: 60
Date of Test: 02/22/01
Curve Number: FIL-105

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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C-8



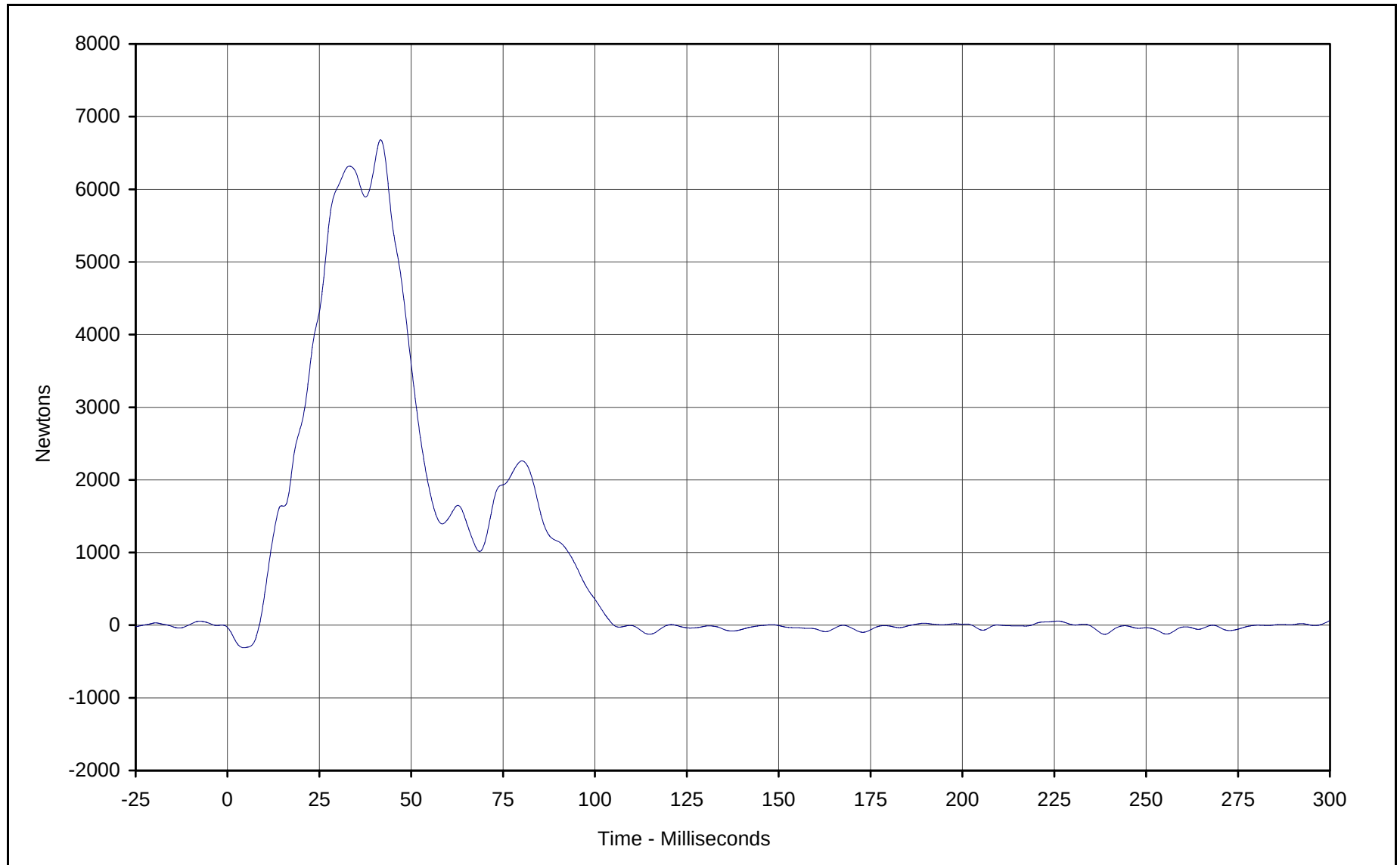
Curve Description: Barrier Force A9
Maximum Value: 1341.7 at 46.7 Milliseconds
Minimum Value: -1786.8 at 50.5 Milliseconds
SAE Filter Class: 60
Date of Test: 02/22/01
Curve Number: FIL-106

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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C-9



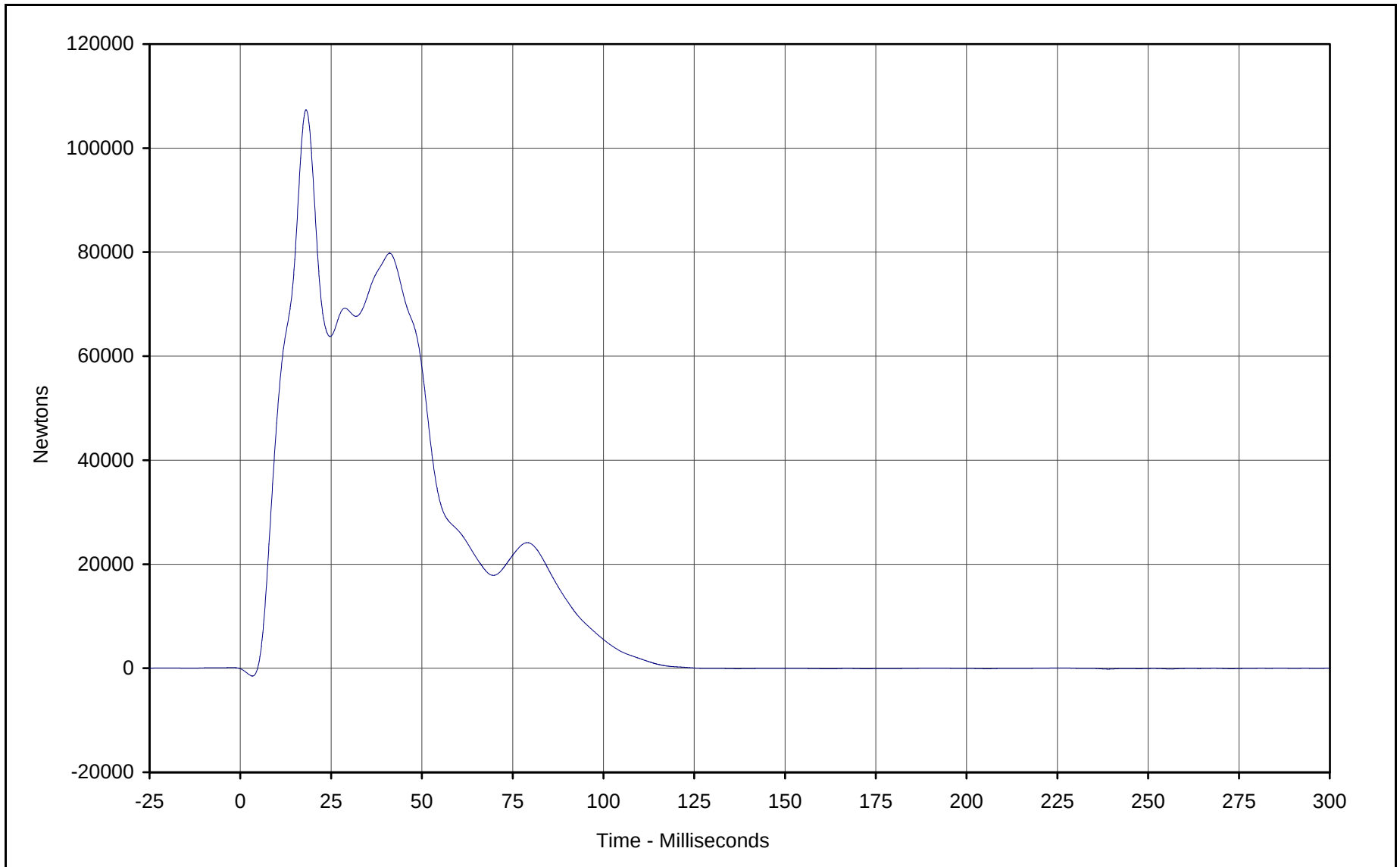
Curve Description: Barrier Force B2
Maximum Value: 6682.6 at 41.7 Milliseconds
Minimum Value: -310.8 at 4.3 Milliseconds
SAE Filter Class: 60
Date of Test: 02/22/01
Curve Number: FIL-108

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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C-10



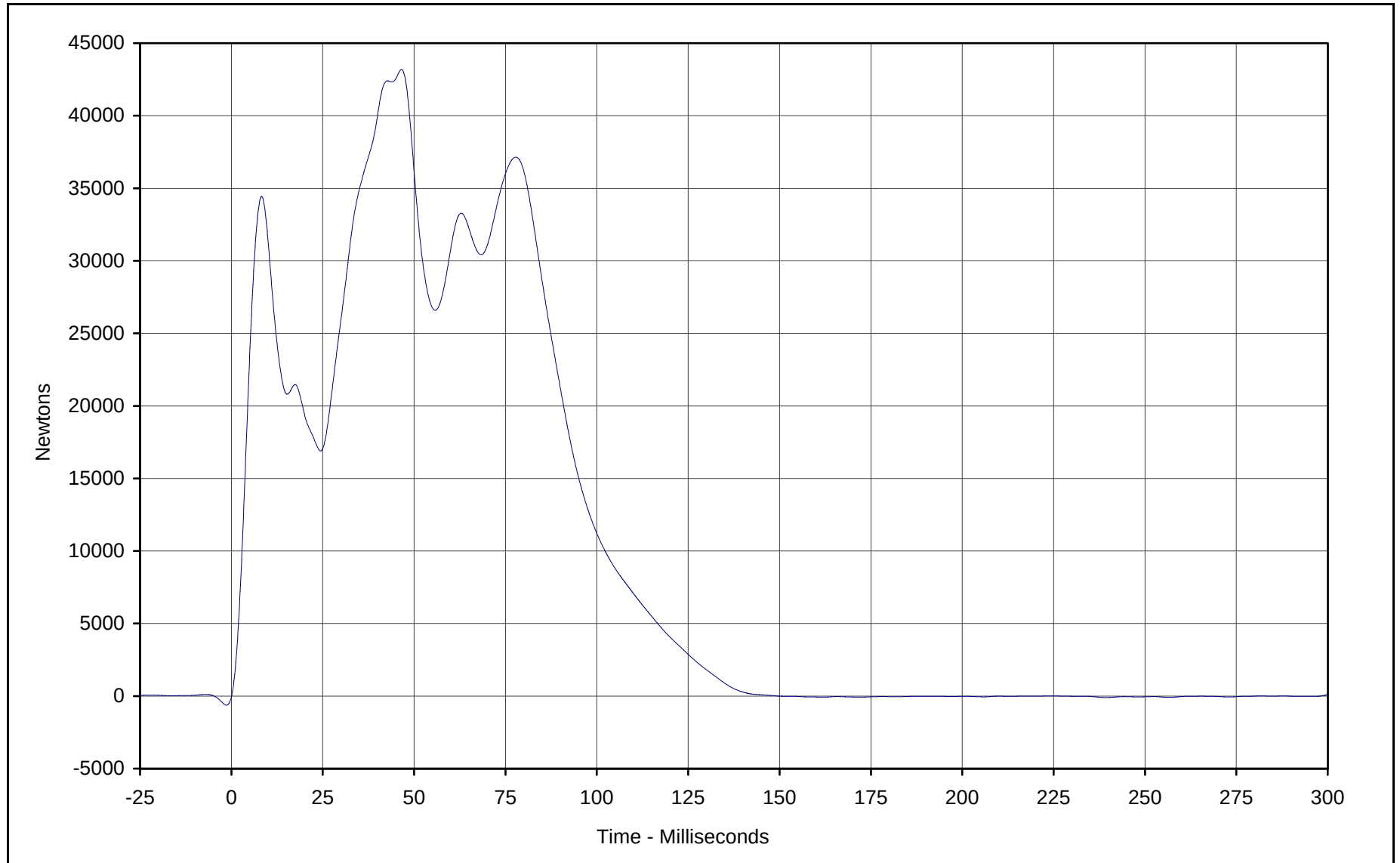
Curve Description: Barrier Force B3
Maximum Value: 107370.0 at 18.1 Milliseconds
Minimum Value: -1496.2 at 3.3 Milliseconds
SAE Filter Class: 60
Date of Test: 02/22/01
Curve Number: FIL-109

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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C-11



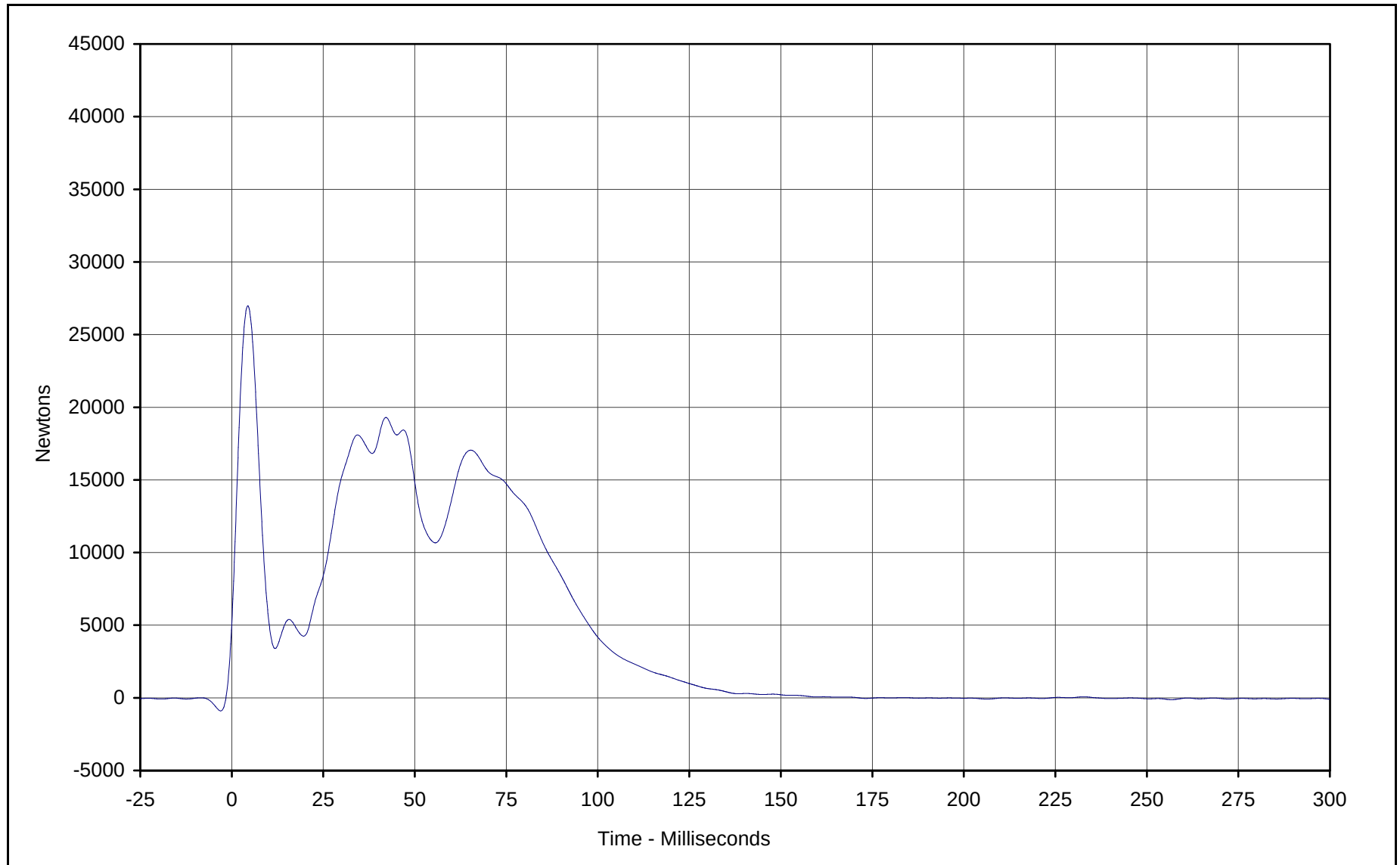
Curve Description: Barrier Force B4
Maximum Value: 43180.2 at 46.5 Milliseconds
Minimum Value: -101.0 at 239.3 Milliseconds
SAE Filter Class: 60
Date of Test: 02/22/01
Curve Number: FIL-110

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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C-12



Curve Description: Barrier Force B5

Maximum Value: 26981.0 at 4.4 Milliseconds

Minimum Value: -126.9 at 256.8 Milliseconds

SAE Filter Class: 60

Date of Test: 02/22/01

Curve Number: FIL-111

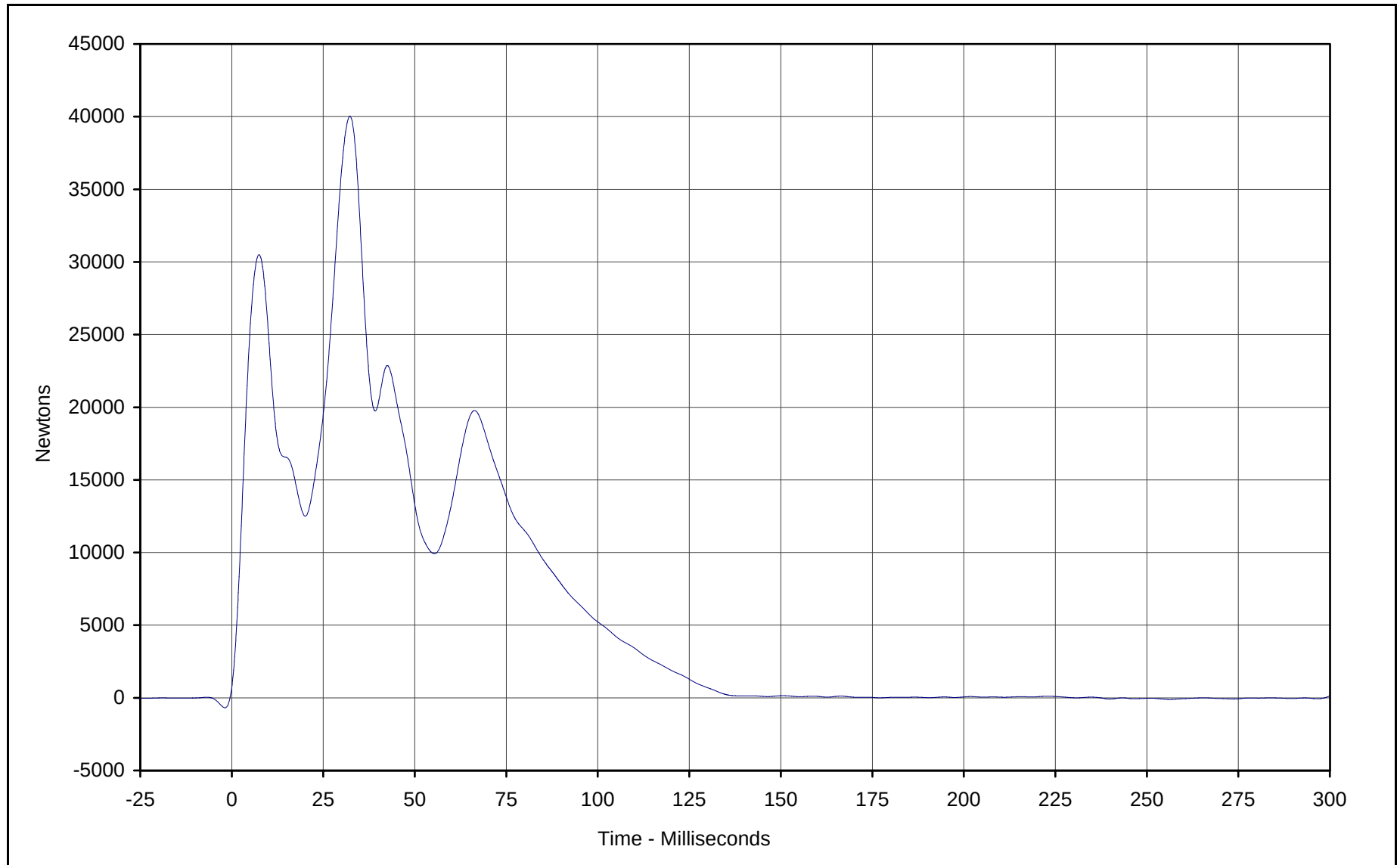
Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan



KAR21001-14

C-13



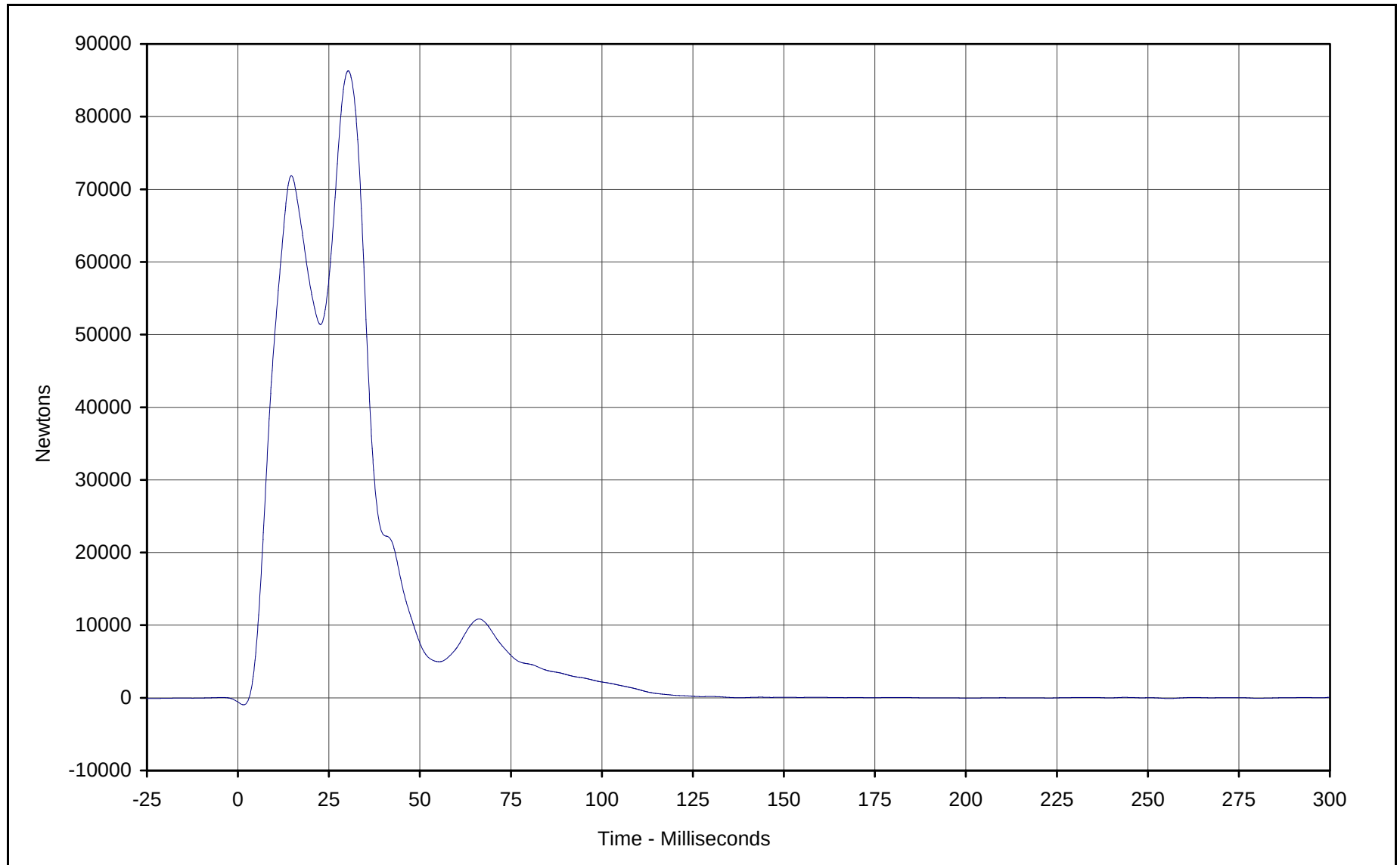
Curve Description: Barrier Force B6
Maximum Value: 40030.8 at 32.3 Milliseconds
Minimum Value: -110.9 at 256.3 Milliseconds
SAE Filter Class: 60
Date of Test: 02/22/01
Curve Number: FIL-112

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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C-14



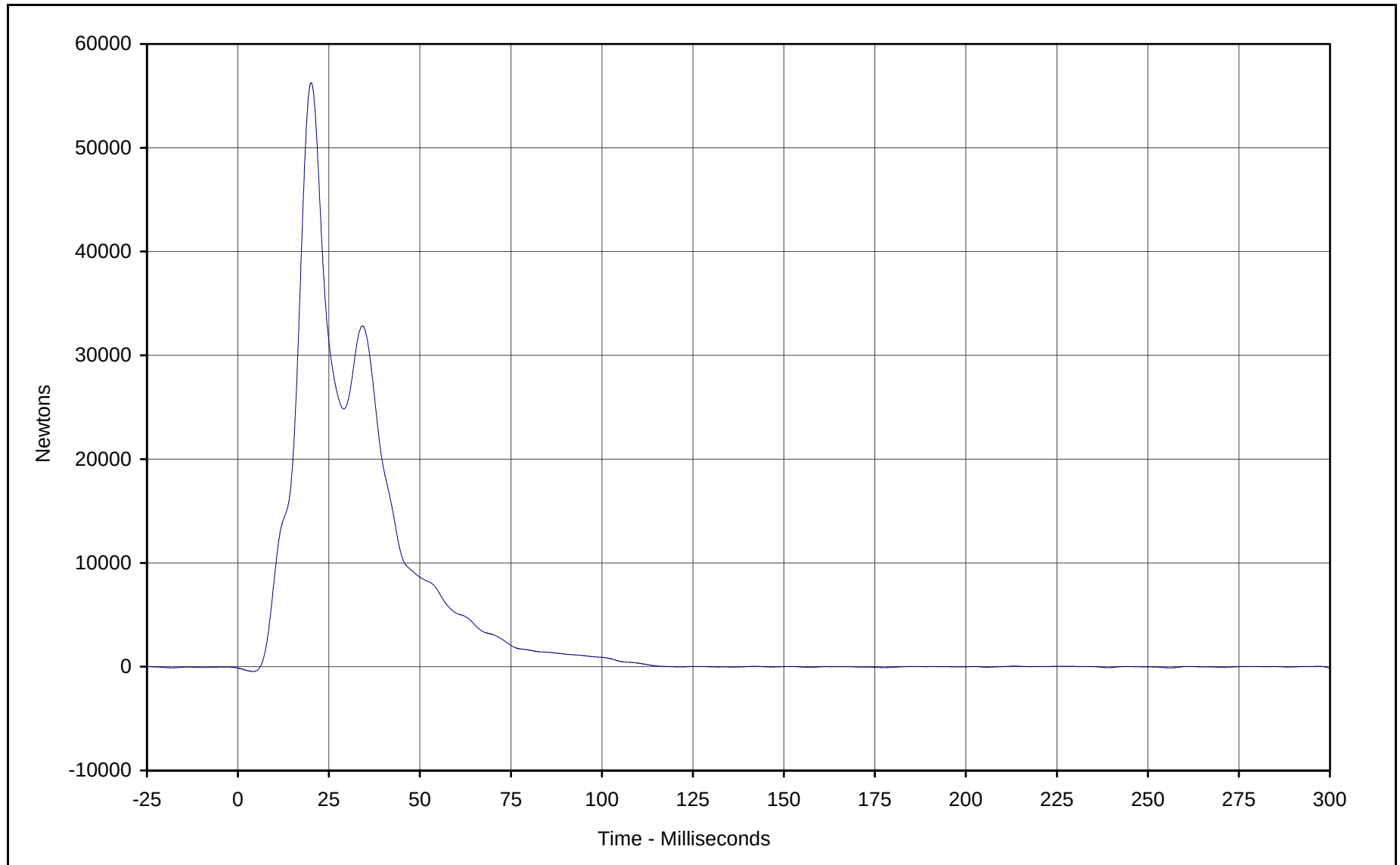
Curve Description: Barrier Force B7
Maximum Value: 86306.5 at 30.3 Milliseconds
Minimum Value: -954.2 at 1.6 Milliseconds
SAE Filter Class: 60
Date of Test: 02/22/01
Curve Number: FIL-113

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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C-15

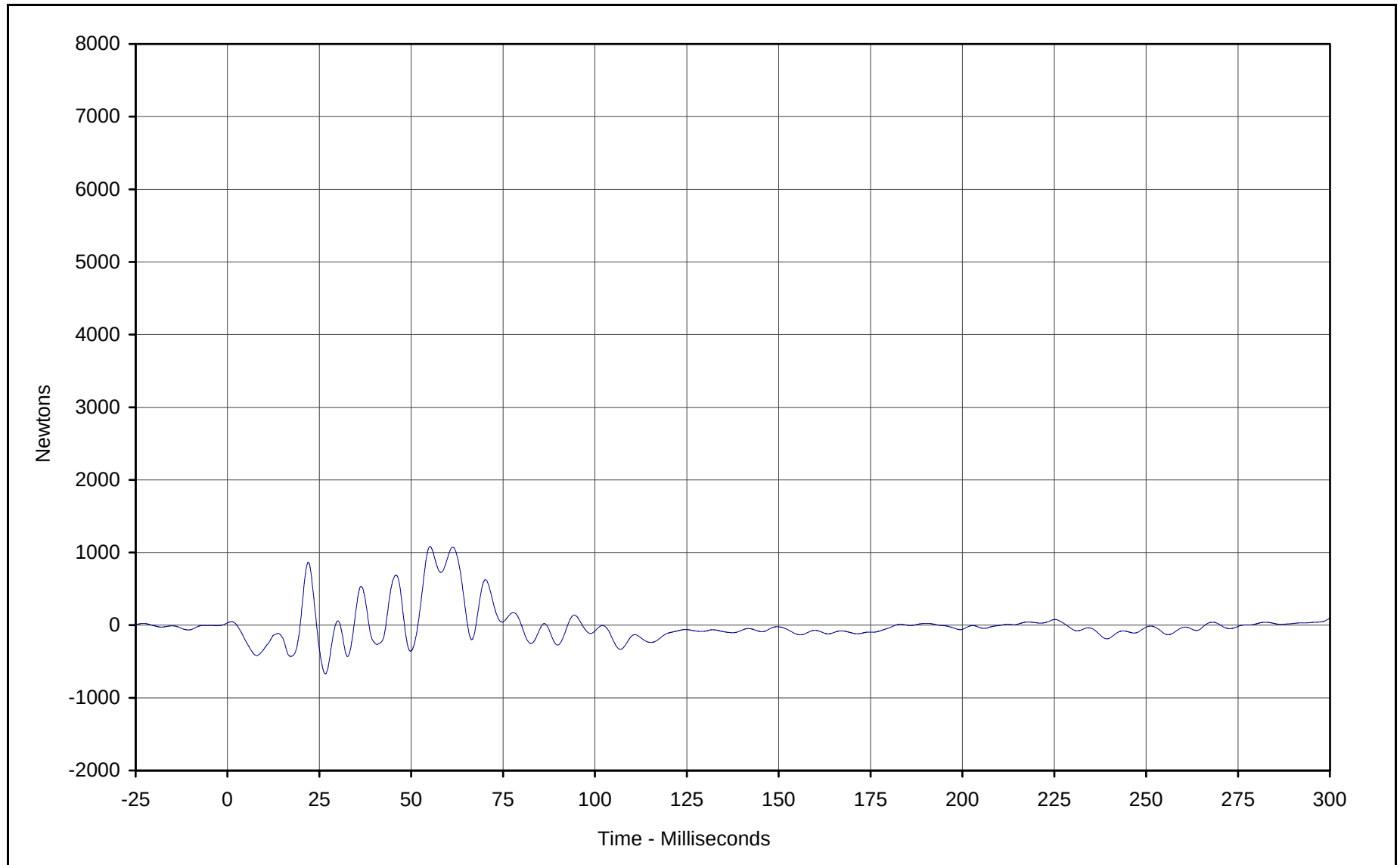


Curve Description: Barrier Force B8
Maximum Value: 56275.4 at 20.1 Milliseconds
Minimum Value: -469.3 at 4.2 Milliseconds
SAE Filter Class: 60
Date of Test: 02/22/01
Curve Number: FIL-114

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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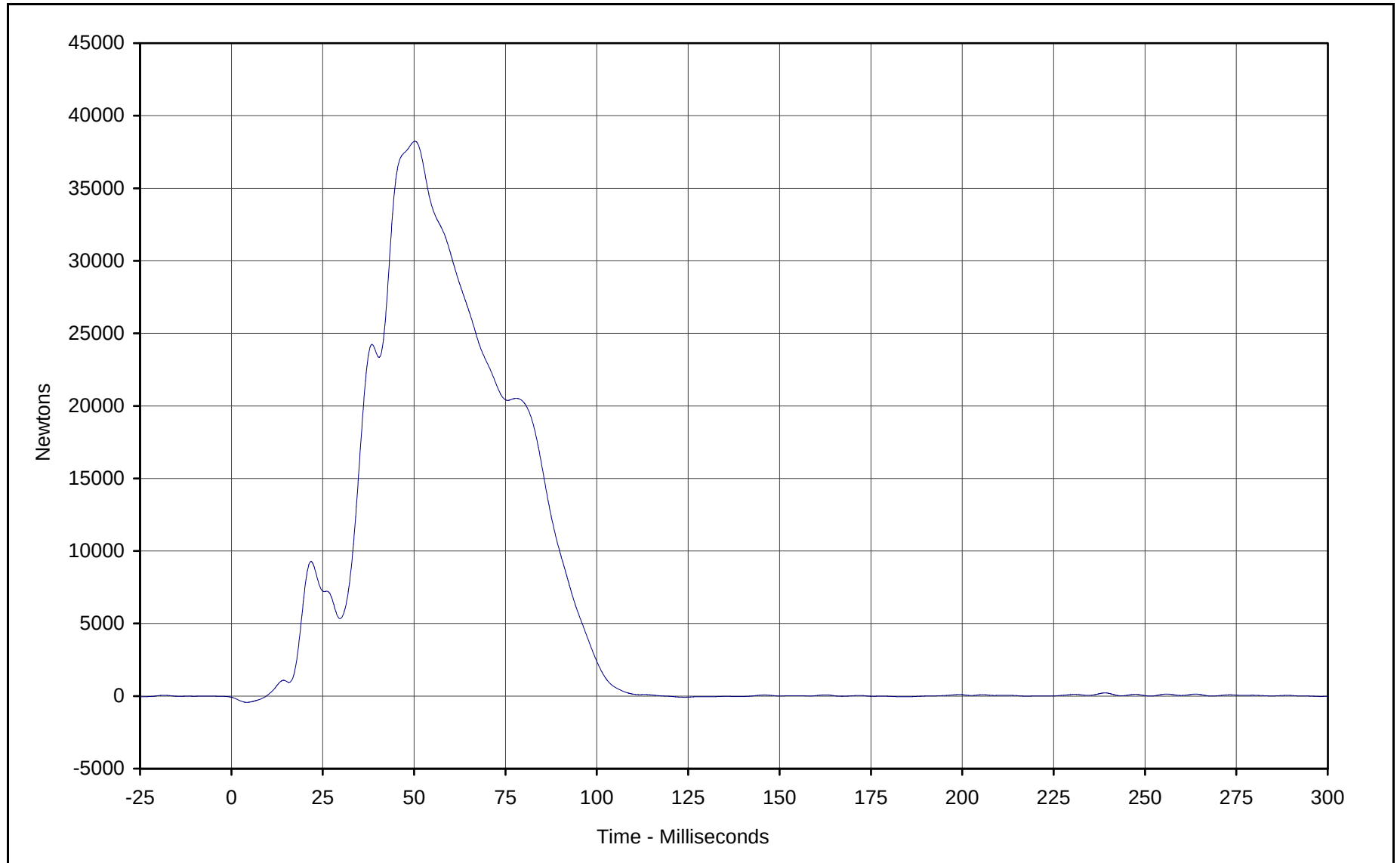


Curve Description: Barrier Force B9
Maximum Value: 1083.3 at 55.1 Milliseconds
Minimum Value: -669.7 at 26.6 Milliseconds
SAE Filter Class: 60
Date of Test: 02/22/01
Curve Number: FIL-115

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



C-17



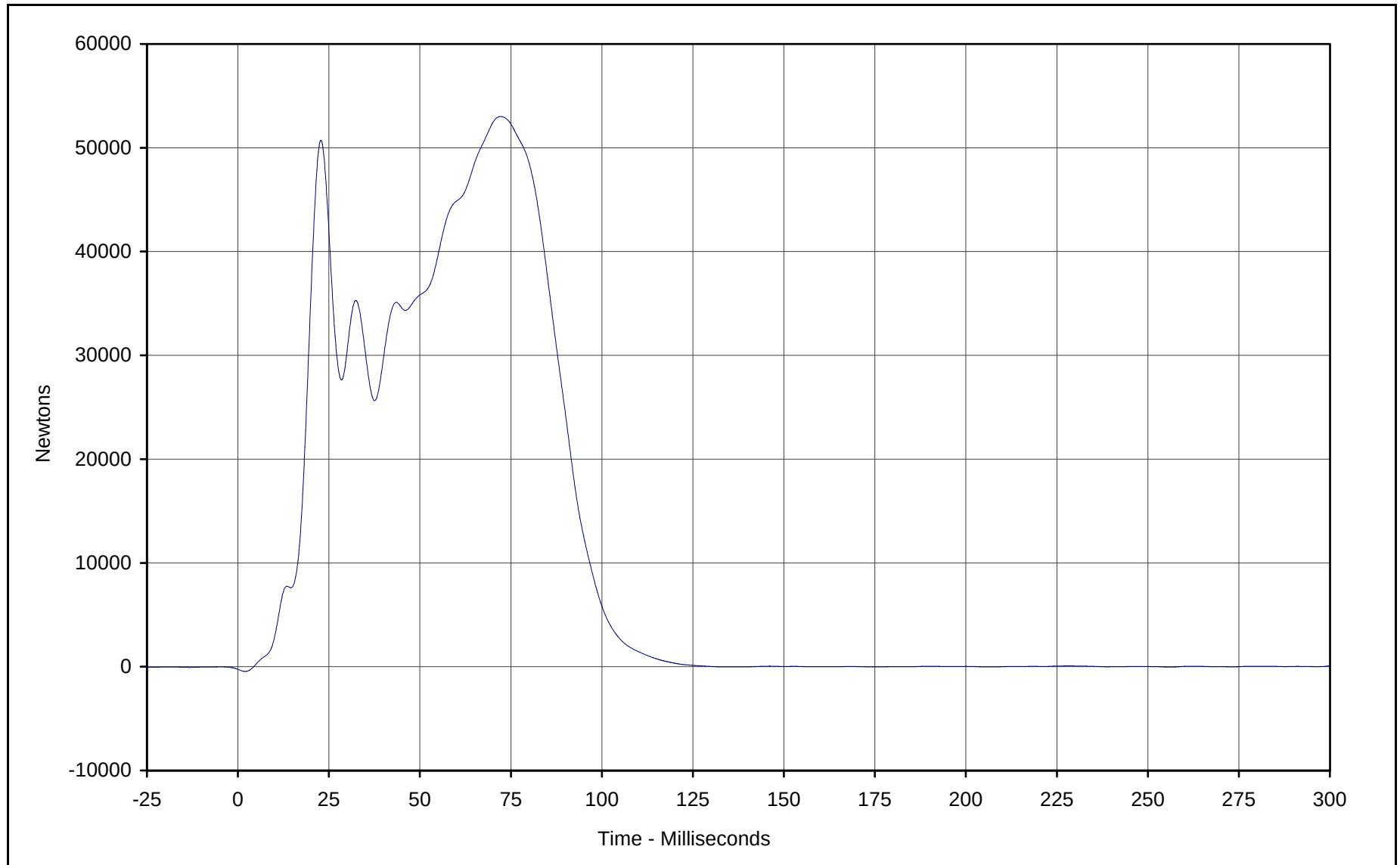
Curve Description: Barrier Force C2
Maximum Value: 38244.0 at 50.2 Milliseconds
Minimum Value: -433.1 at 4.2 Milliseconds
SAE Filter Class: 60
Date of Test: 02/22/01
Curve Number: FIL-117

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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C-18



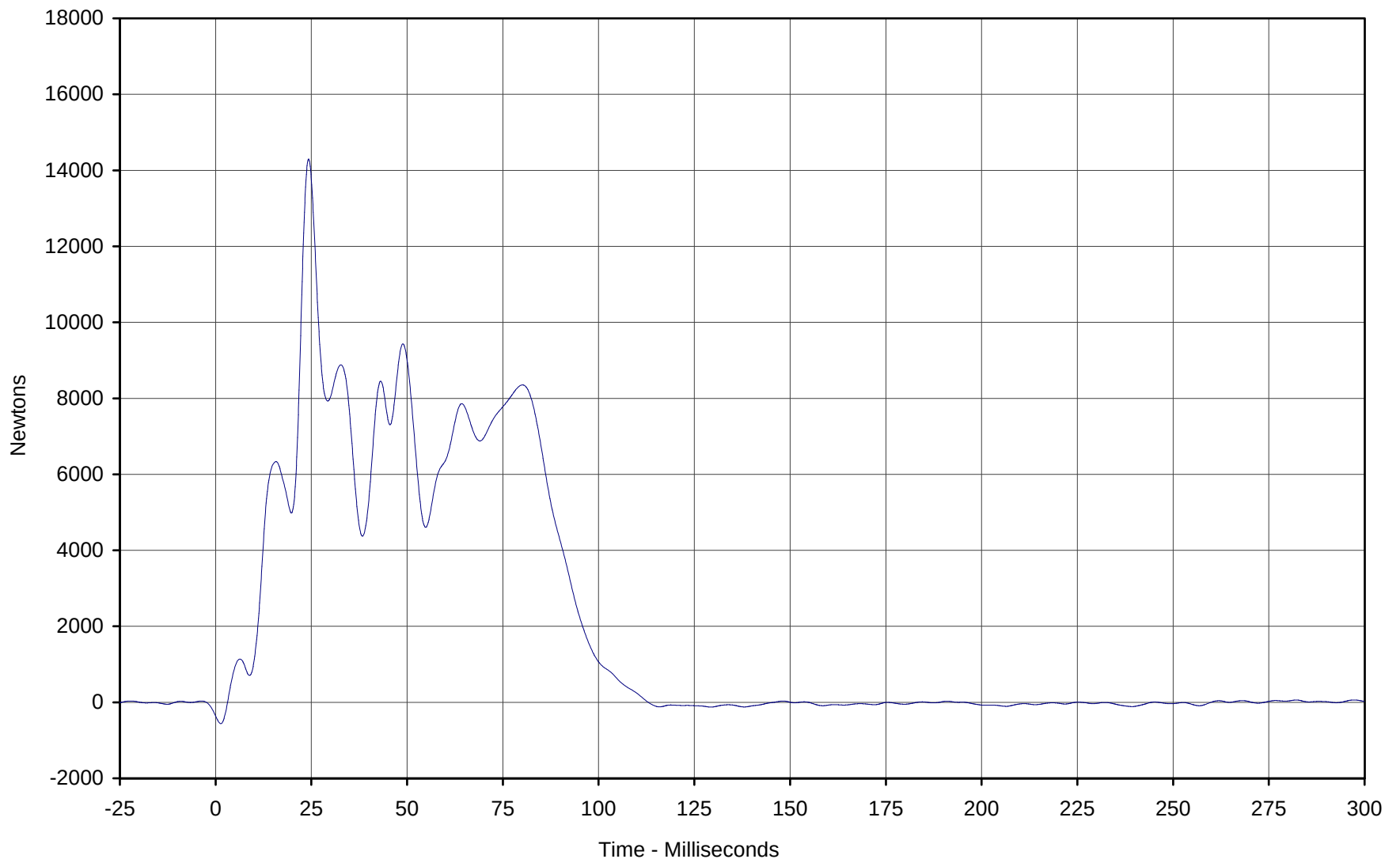
Curve Description: Barrier Force C3
Maximum Value: 53010.9 at 72.2 Milliseconds
Minimum Value: -457.5 at 1.9 Milliseconds
SAE Filter Class: 60
Date of Test: 02/22/01
Curve Number: FIL-118

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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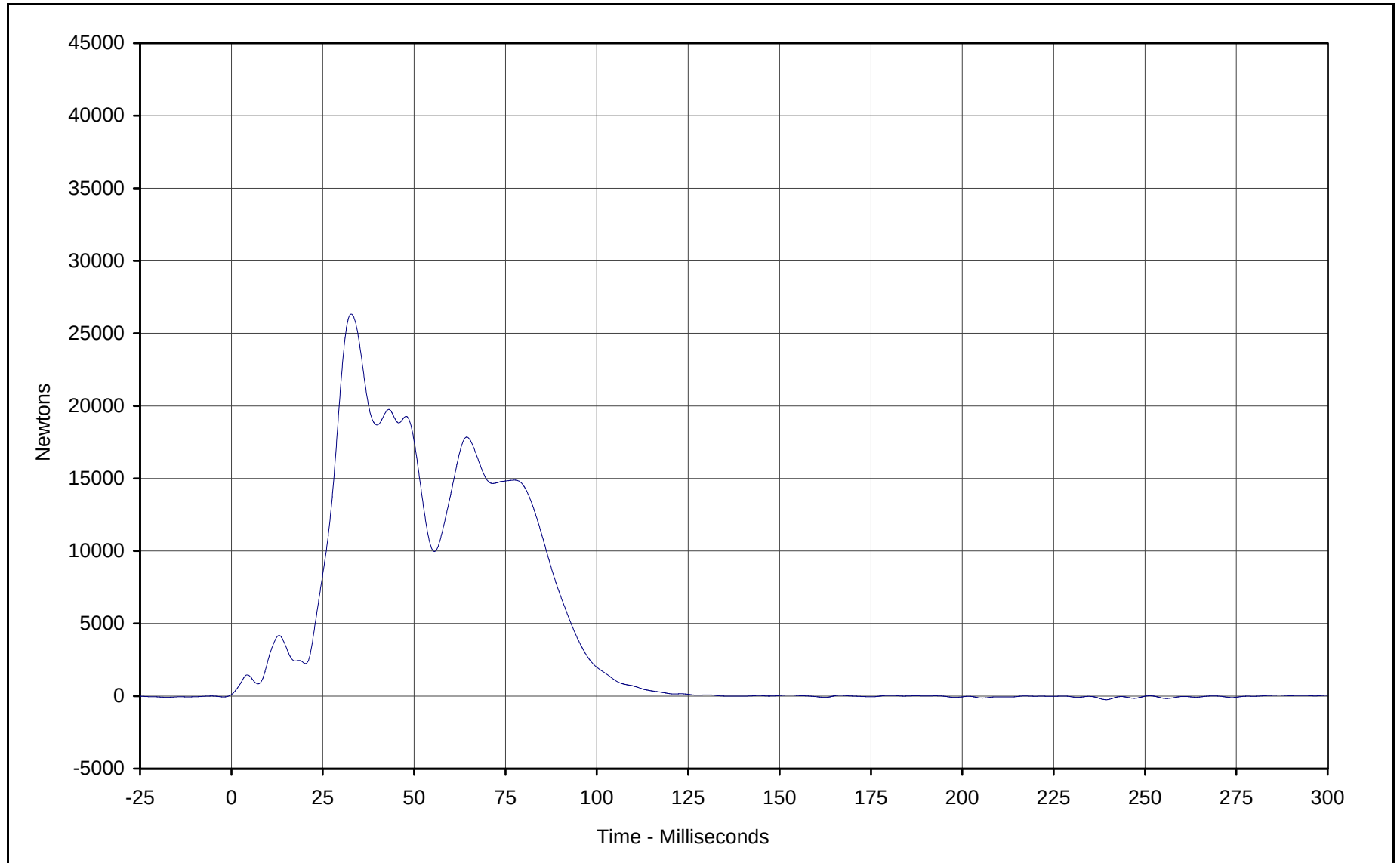
Curve Description: Barrier Force C4
Maximum Value: 14298.7 at 24.3 Milliseconds
Minimum Value: -562.3 at 1.4 Milliseconds
SAE Filter Class: 60
Date of Test: 02/22/01
Curve Number: FIL-119

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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C-20



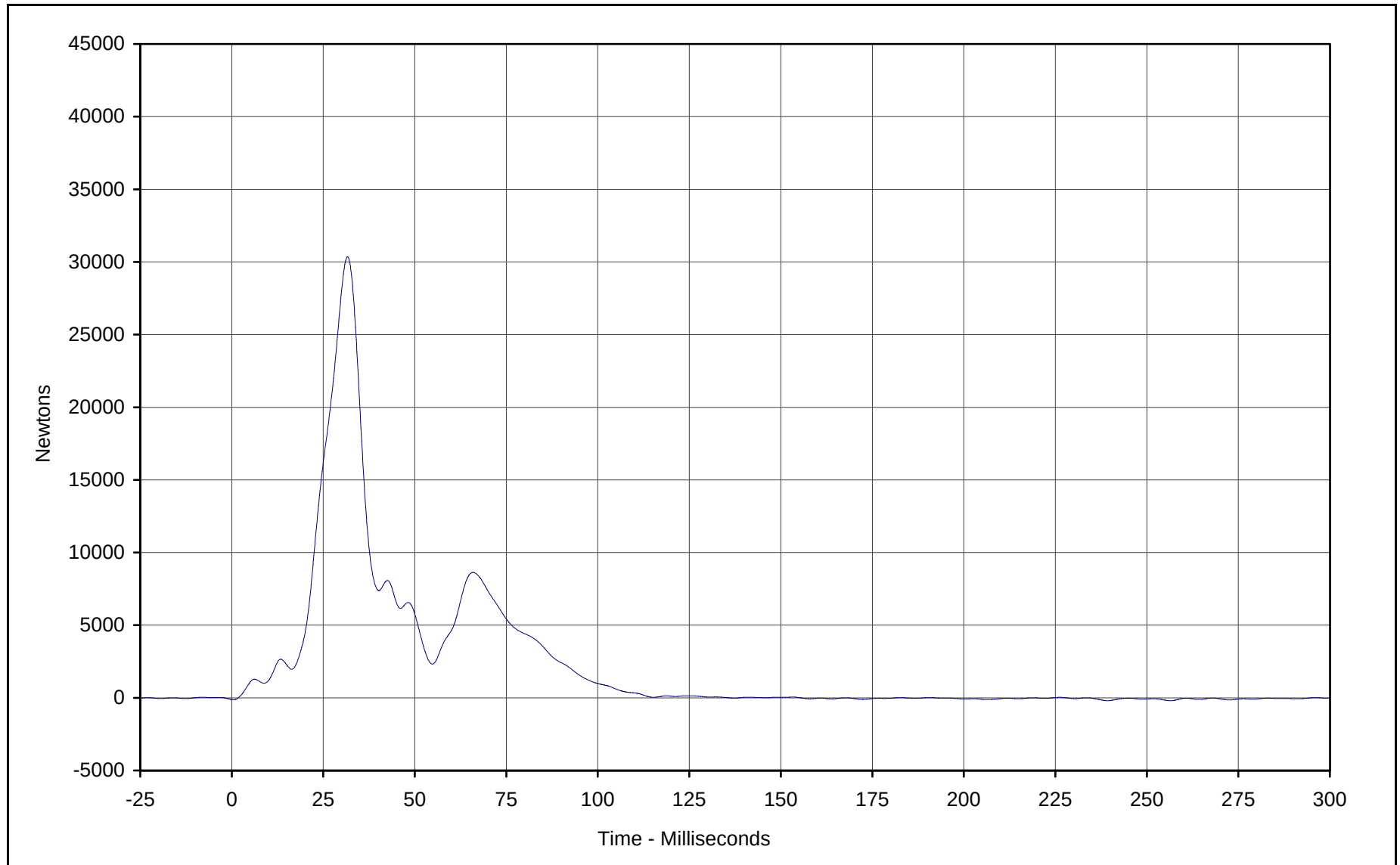
Curve Description: Barrier Force C5
Maximum Value: 26327.6 at 32.8 Milliseconds
Minimum Value: -250.2 at 239.3 Milliseconds
SAE Filter Class: 60
Date of Test: 02/22/01
Curve Number: FIL-120

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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C-21



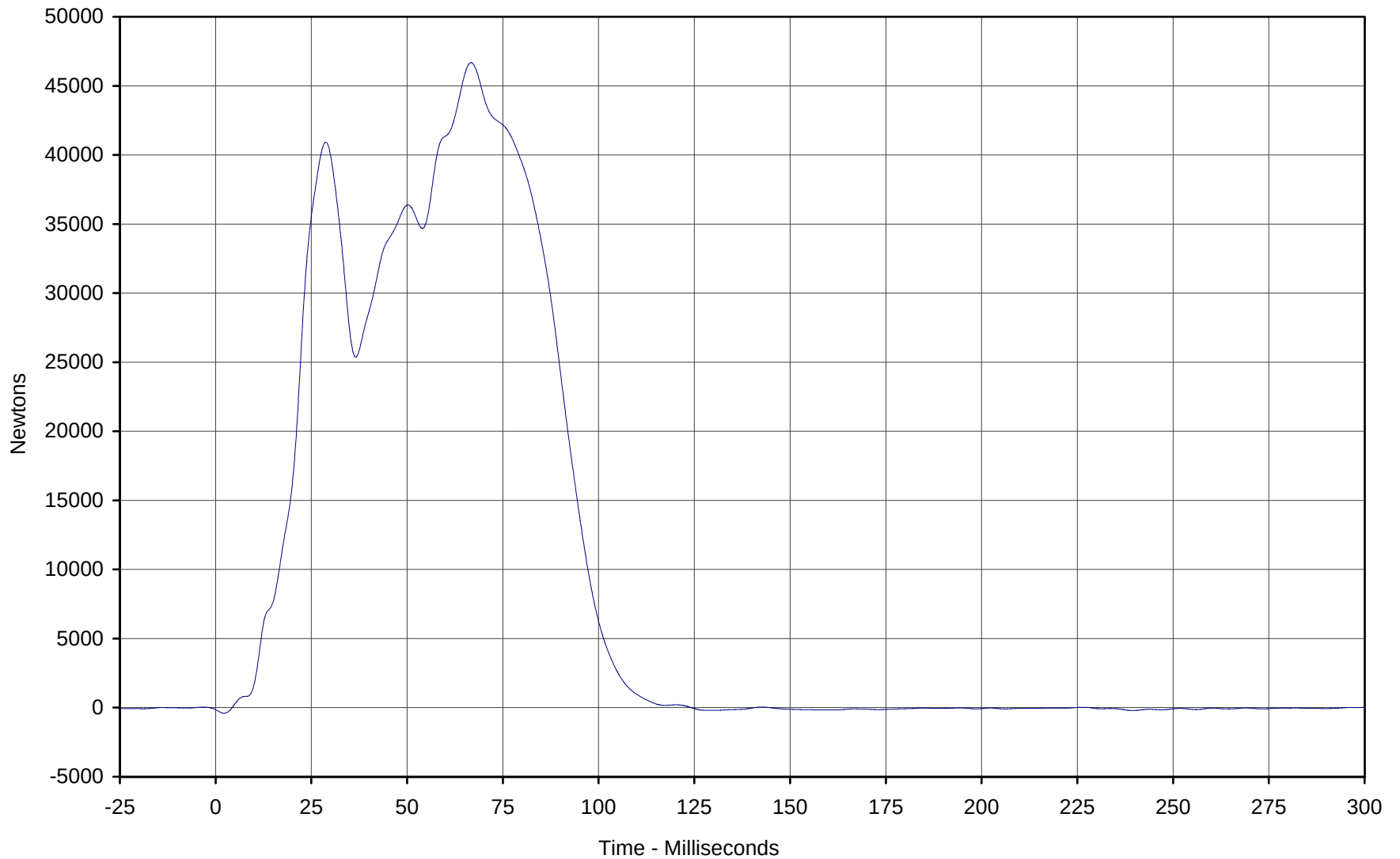
Curve Description: Barrier Force C6
Maximum Value: 30358.5 at 31.6 Milliseconds
Minimum Value: -199.1 at 239.3 Milliseconds
SAE Filter Class: 60
Date of Test: 02/22/01
Curve Number: FIL-121

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



KAR21001-14

C-22



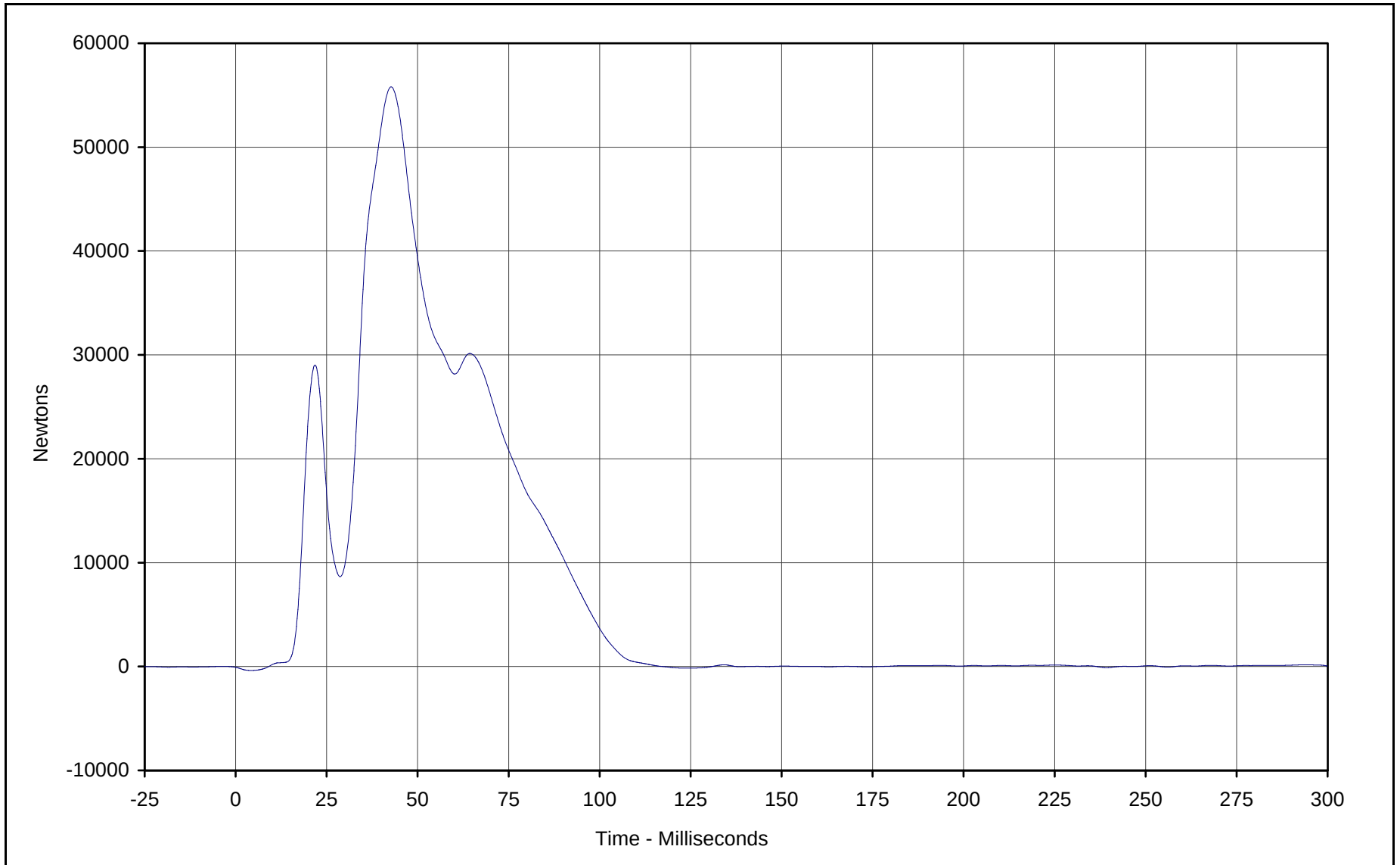
Curve Description: Barrier Force C7
Maximum Value: 46681.6 at 66.7 Milliseconds
Minimum Value: -404.6 at 2.1 Milliseconds
SAE Filter Class: 60
Date of Test: 02/22/01
Curve Number: FIL-122

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



KAR21001-14

C-23



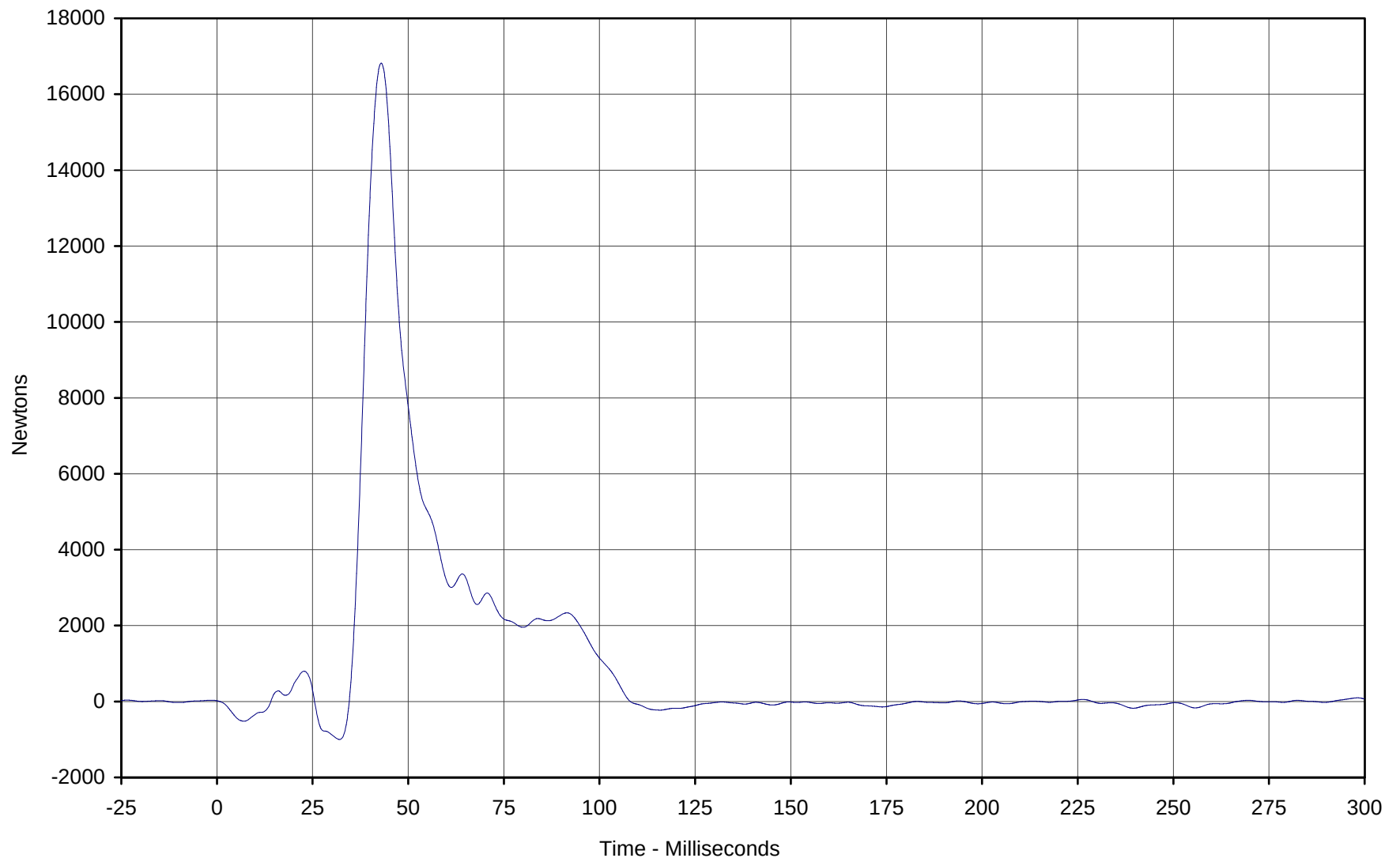
Curve Description: Barrier Force C8
Maximum Value: 55808.4 at 42.7 Milliseconds
Minimum Value: -384.4 at 4.2 Milliseconds
SAE Filter Class: 60
Date of Test: 02/22/01
Curve Number: FIL-123

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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Curve Description: Barrier Force C9

Maximum Value: 16820.1 at 42.9 Milliseconds

Minimum Value: -999.6 at 32.1 Milliseconds

SAE Filter Class: 60

Date of Test: 02/22/01

Curve Number: FIL-124

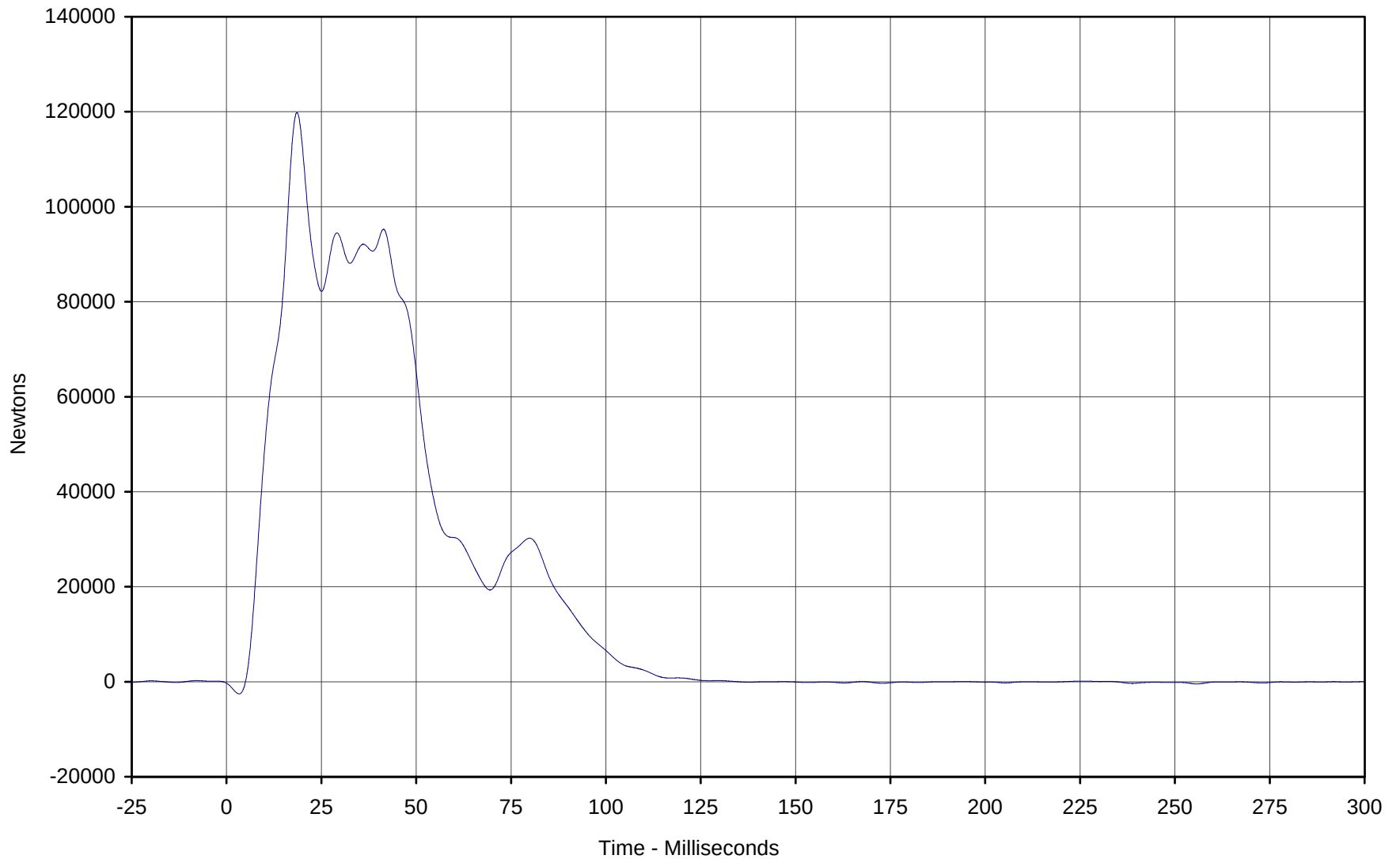
Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan



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C-25

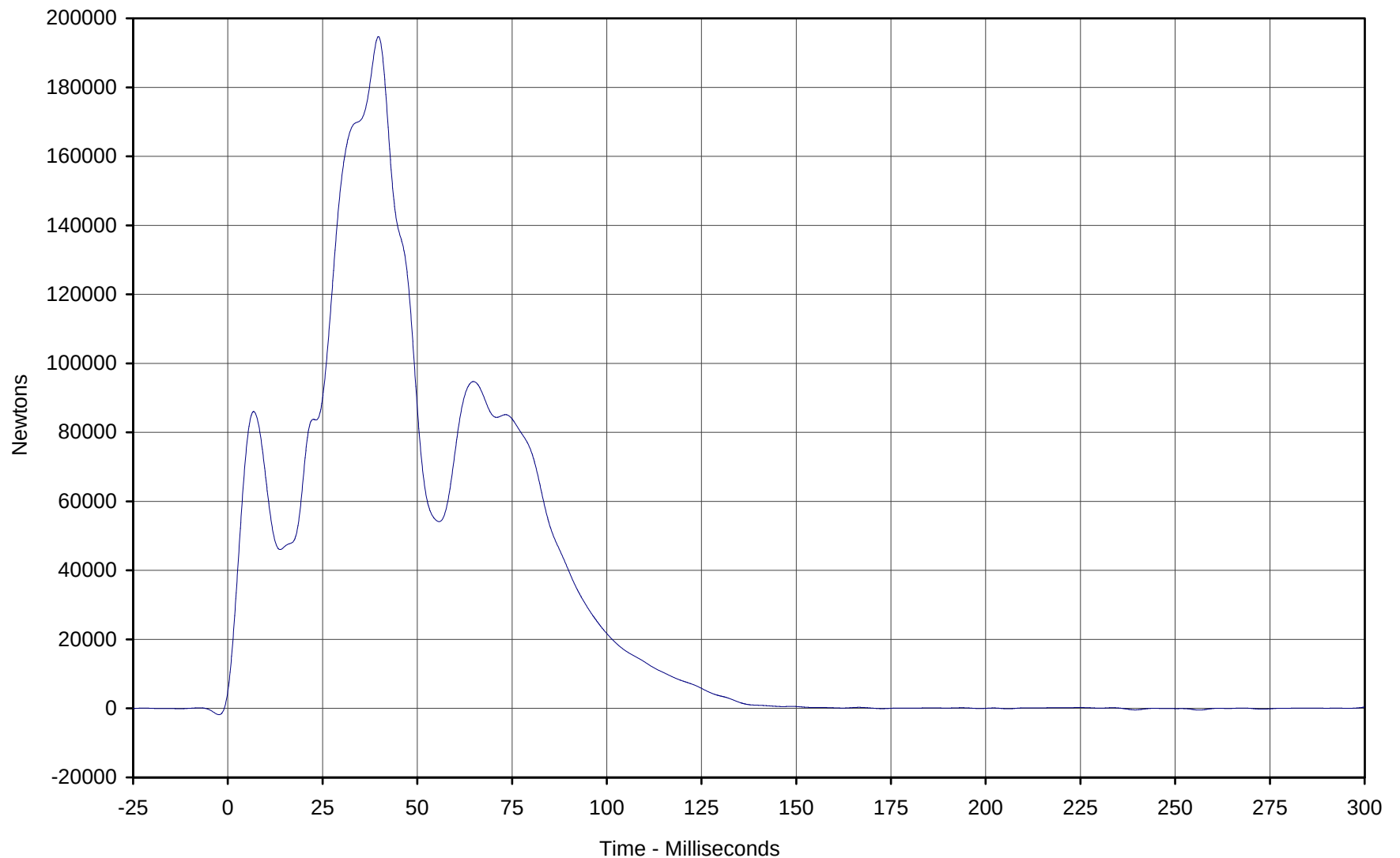


Curve Description: Barrier Force Sum Group 1
Maximum Value: 119823.6 at 18.6 Milliseconds
Minimum Value: -2552.8 at 3.3 Milliseconds
SAE Filter Class: 60
Date of Test: 02/22/01
Curve Number: SUM-001

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



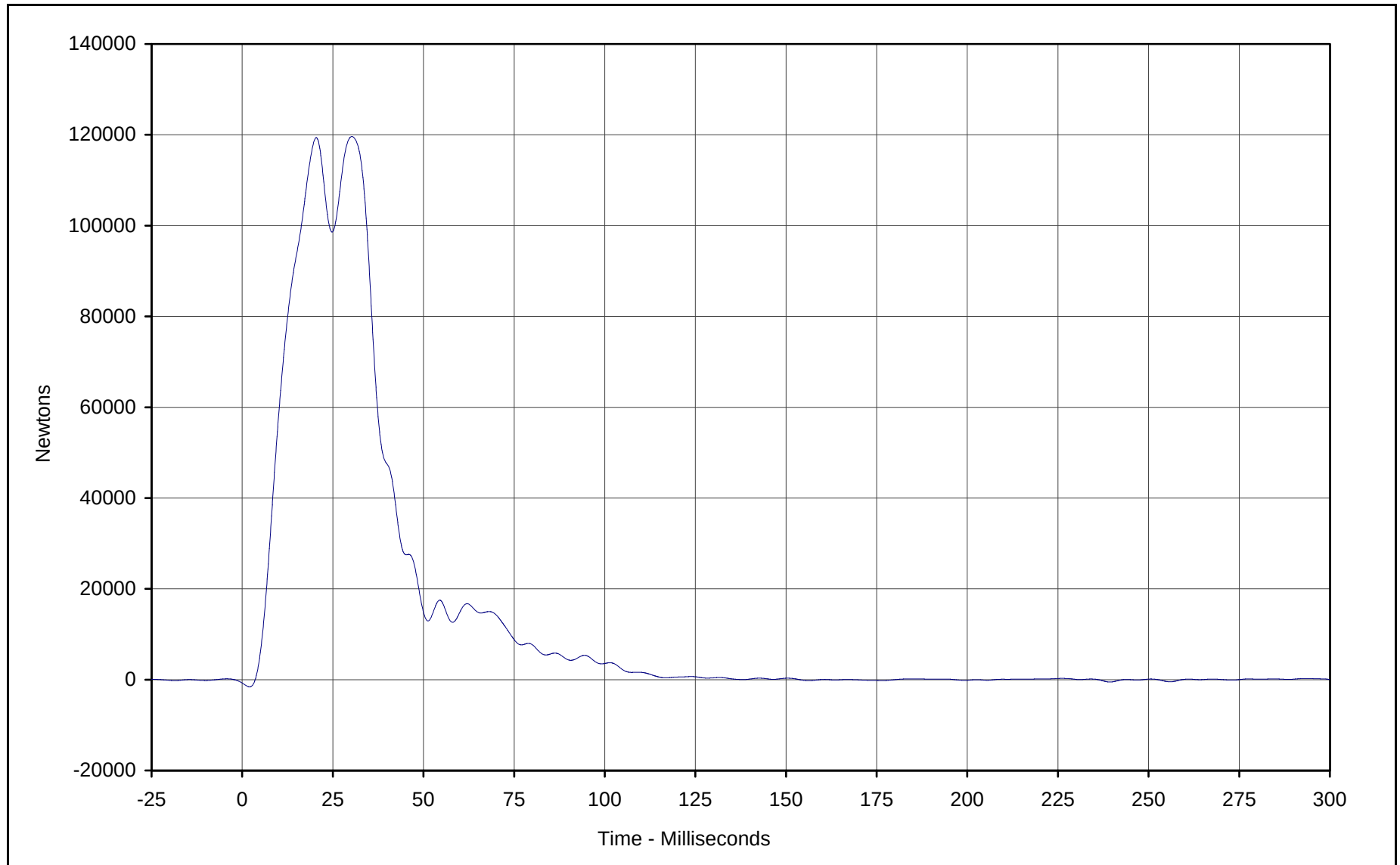
KAR21001-14



Curve Description: Barrier Force Sum Group 2
Maximum Value: 194708.3 at 39.7 Milliseconds
Minimum Value: -481.2 at 256.4 Milliseconds
SAE Filter Class: 60
Date of Test: 02/22/01
Curve Number: SUM-002

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan

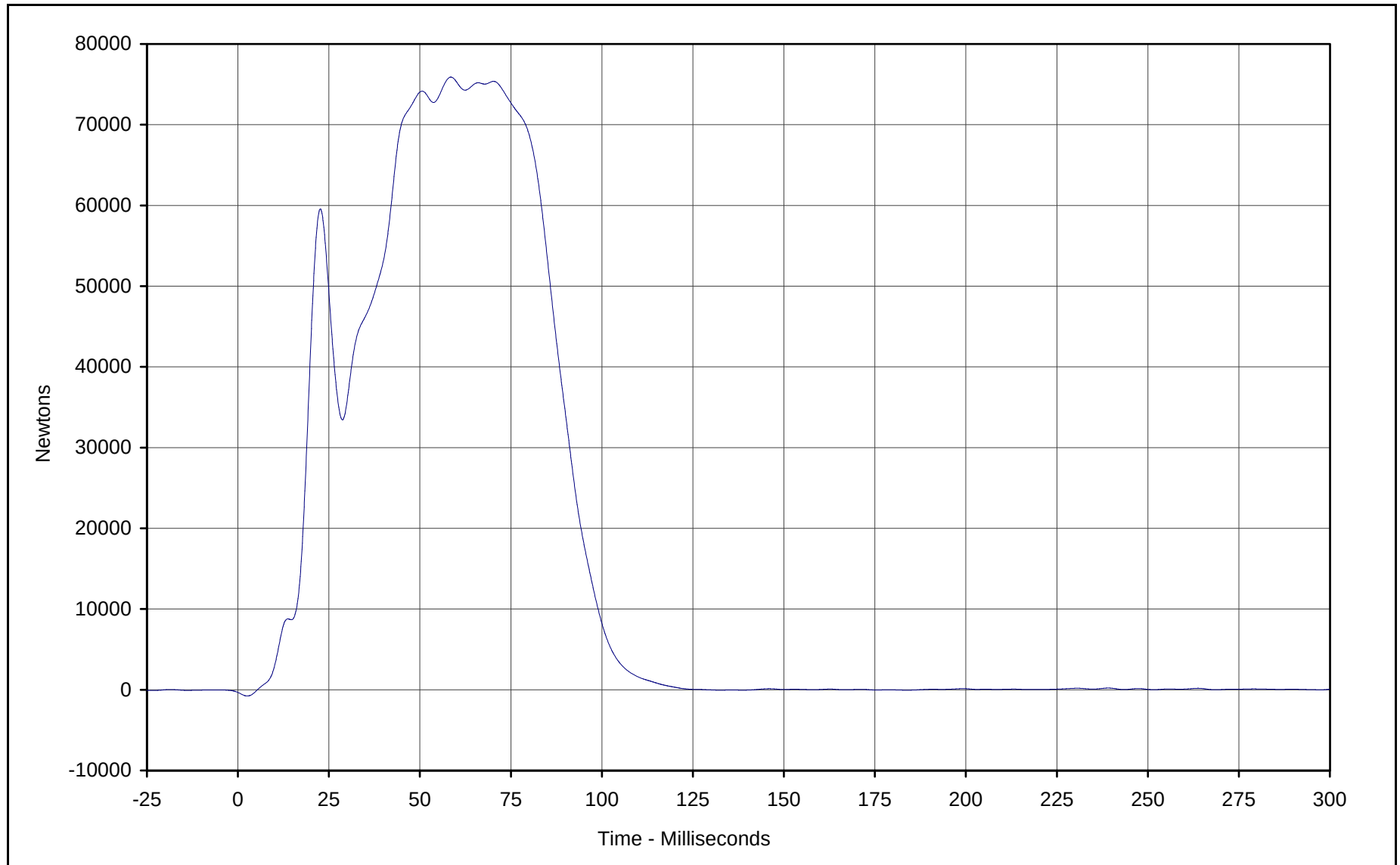




Curve Description: Barrier Force Sum Group 3
Maximum Value: 119618.6 at 30.2 Milliseconds
Minimum Value: -1582.6 at 2.0 Milliseconds
SAE Filter Class: 60
Date of Test: 02/22/01
Curve Number: SUM-003

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan

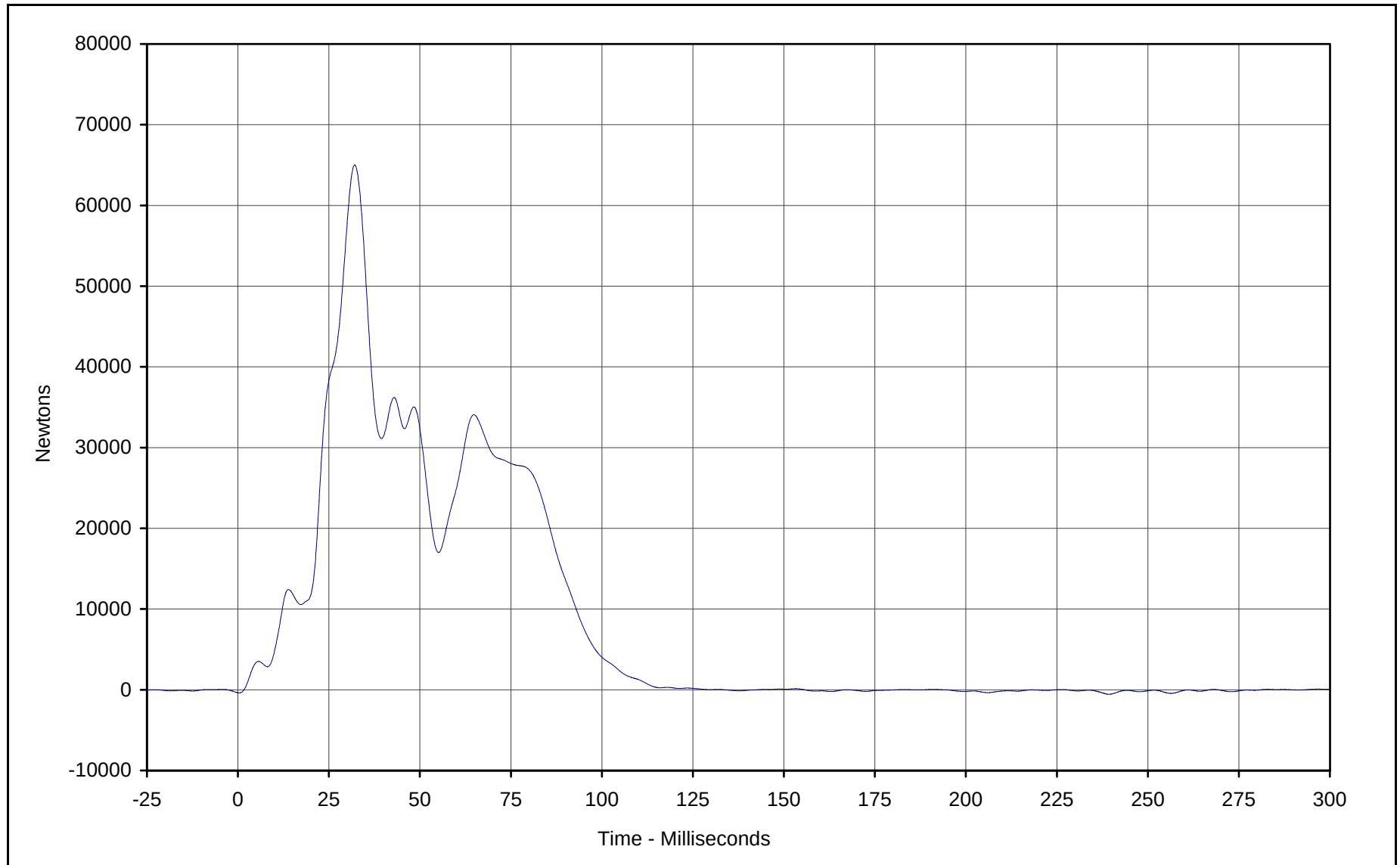




Curve Description: Barrier Force Sum Group 4
Maximum Value: 75897.8 at 58.5 Milliseconds
Minimum Value: -766.7 at 2.6 Milliseconds
SAE Filter Class: 60
Date of Test: 02/22/01
Curve Number: SUM-004

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



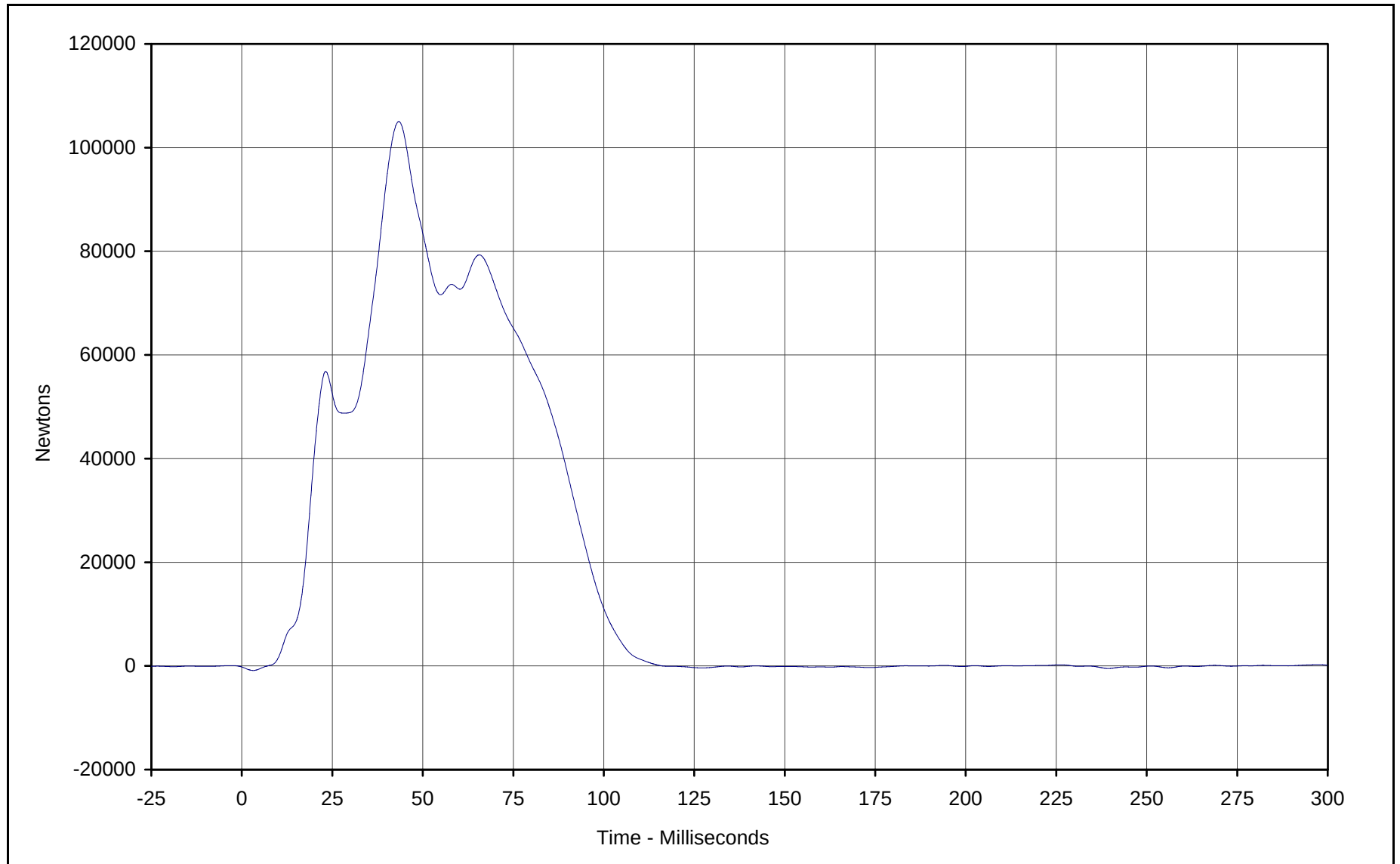


Curve Description: Barrier Force Sum Group 5
Maximum Value: 65028.1 at 32.1 Milliseconds
Minimum Value: -561.2 at 239.3 Milliseconds
SAE Filter Class: 60
Date of Test: 02/22/01
Curve Number: SUM-005

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



C-30



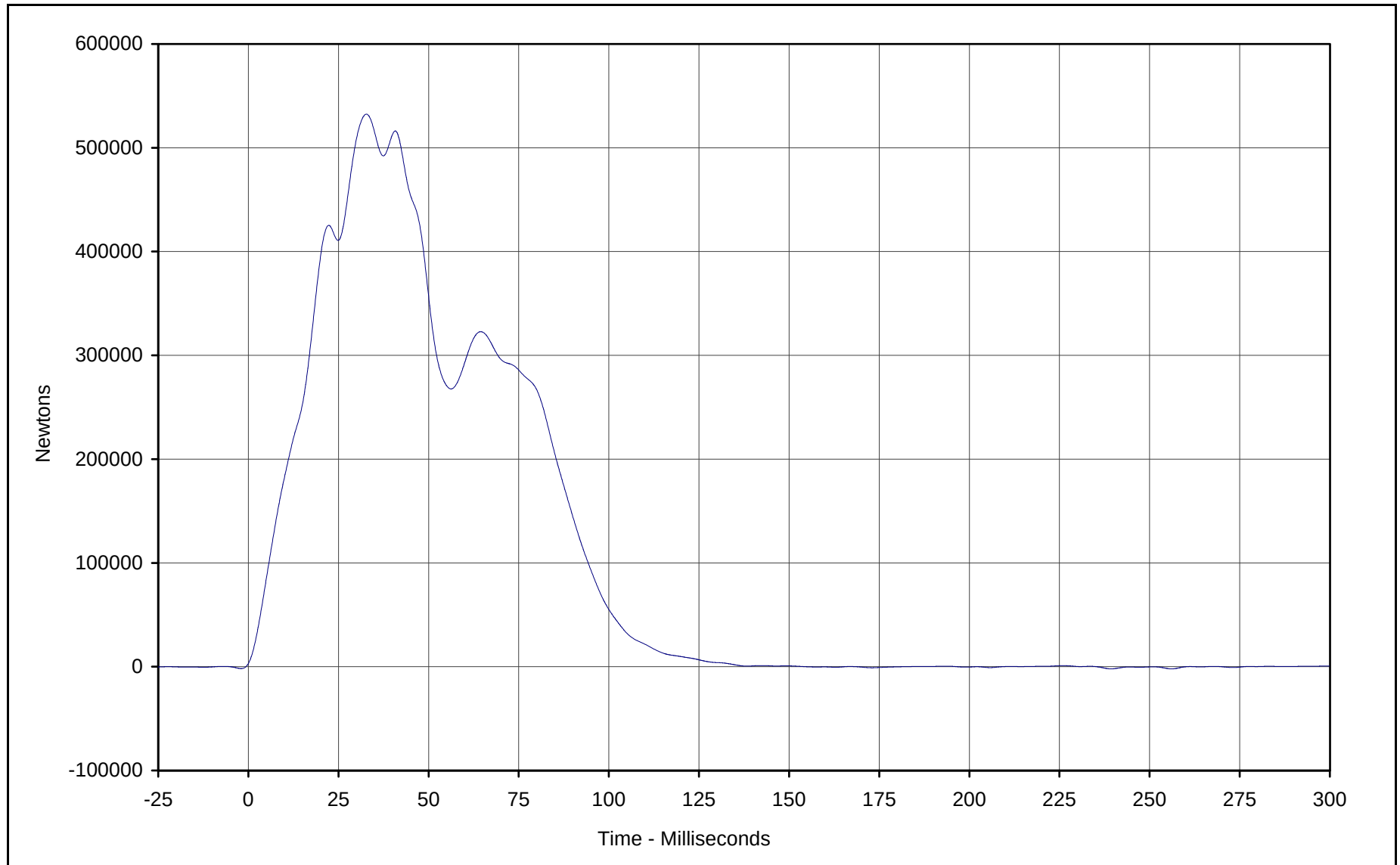
Curve Description: Barrier Force Sum Group 6
Maximum Value: 105023.3 at 43.4 Milliseconds
Minimum Value: -869.2 at 3.2 Milliseconds
SAE Filter Class: 60
Date of Test: 02/22/01
Curve Number: SUM-006

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



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C-31

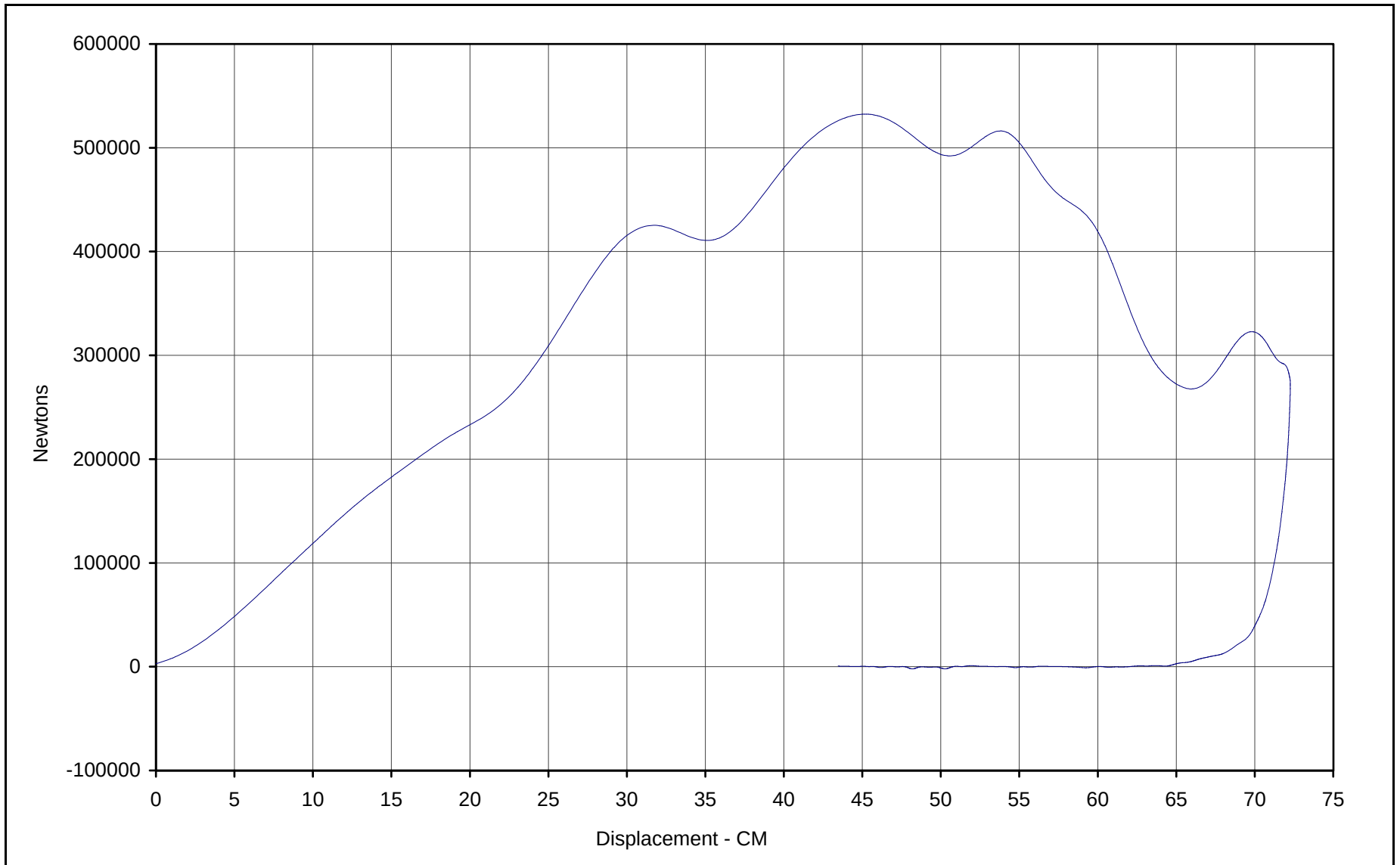


Curve Description: Barrier Force Sum Total
Maximum Value: 532400.7 at 32.7 Milliseconds
Minimum Value: -2148.8 at 239.3 Milliseconds
SAE Filter Class: 60
Date of Test: 02/22/01
Curve Number: SUM-007

Test Program: 2001 NHTSA 35mph NCAP No.: M10301
Test Vehicle: 2001 Dodge Caravan SE Minivan



KAR21001-14



Curve Description: Sum Force Total vs. Dynamic Crush

Maximum Displ.: 72.3 at 79.2 Milliseconds

Maximum Force: 532,401 at 32.7 Milliseconds

Measured Energy: 232,455 joules

Date of Test: 02/22/01

Curve Number: XVY-001

Test Program: 2001 NHTSA 35mph NCAP No.: M10301

Test Vehicle: 2001 Dodge Caravan SE Minivan



BARRIER LOAD CELL SUMMARY DATATest Vehicle: 2001 Dodge Caravan SE MinivanNHTSA No.: M10301Test Program: 2001 NHTSA 35mph NCAPTest Date: 02/22/01**BARRIER LOAD CELL PEAK FORCES**

Location	Units	Max	Time	Min	Time
Barrier Force A2	Newtons	3379.6	46.9	-119.2	3.8
Barrier Force A3	Newtons	17628.0	29.2	-656.0	3.1
Barrier Force A4	Newtons	37693.3	40.9	-674.6	2.4
Barrier Force A5	Newtons	37363.9	41.3	-688.0	2.2
Barrier Force A6	Newtons	46630.6	39.3	-2644.3	44.8
Barrier Force A7	Newtons	6843.4	27.7	-1165.2	44.1
Barrier Force A8	Newtons	8109.4	22.3	-134.8	299.9
Barrier Force A9	Newtons	1341.7	46.7	-1786.8	50.5
Barrier Force B2	Newtons	6682.6	41.7	-310.8	4.3
Barrier Force B3	Newtons	107370.0	18.1	-1496.2	3.3
Barrier Force B4	Newtons	43180.2	46.5	-101.0	239.3
Barrier Force B5	Newtons	26981.0	4.4	-126.9	256.8
Barrier Force B6	Newtons	40030.8	32.3	-110.9	256.3
Barrier Force B7	Newtons	86306.5	30.3	-954.2	1.6
Barrier Force B8	Newtons	56275.4	20.1	-469.3	4.2
Barrier Force B9	Newtons	1083.3	55.1	-669.7	26.6
Barrier Force C2	Newtons	38244.0	50.2	-433.1	4.2
Barrier Force C3	Newtons	53010.9	72.2	-457.5	1.9
Barrier Force C4	Newtons	14298.7	24.3	-562.3	1.4
Barrier Force C5	Newtons	26327.6	32.8	-250.2	239.3
Barrier Force C6	Newtons	30358.5	31.6	-199.1	239.3
Barrier Force C7	Newtons	46681.6	66.7	-404.6	2.1
Barrier Force C8	Newtons	55808.4	42.7	-384.4	4.2
Barrier Force C9	Newtons	16820.1	42.9	-999.6	32.1
Barrier Force Sum Group 1	Newtons	119823.6	18.6	-2552.8	3.3
Barrier Force Sum Group 2	Newtons	194708.3	39.7	-481.2	256.4
Barrier Force Sum Group 3	Newtons	119618.6	30.2	-1582.6	2.0
Barrier Force Sum Group 4	Newtons	75897.8	58.5	-766.7	2.6
Barrier Force Sum Group 5	Newtons	65028.1	32.1	-561.2	239.3
Barrier Force Sum Group 6	Newtons	105023.3	43.4	-869.2	3.2
Barrier Force Sum Total	Newtons	532400.7	32.7	-2148.8	239.3

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 34
02/22/01
2001 Dodge Caravan SE Minivan

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

2001 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Driver A.T.D. Serial Number 34
02/22/01
2001 Dodge Caravan SE Minivan

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

2001 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Passenger A.T.D. Serial Number 35
02/22/01
2001 Dodge Caravan SE Minivan

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

2001 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Passenger A.T.D. Serial Number 35
02/22/01
2001 Dodge Caravan SE Minivan

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

2001 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Vehicle Accelerometers and Reference Channel
02/22/01
2001 Dodge Caravan SE Minivan

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

2001 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Rigid Load Cell Barrier
02/22/01
2001 Dodge Caravan SE Minivan

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

2001 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Rigid Load Cell Barrier
02/22/01
2001 Dodge Caravan SE Minivan

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.: LK03A

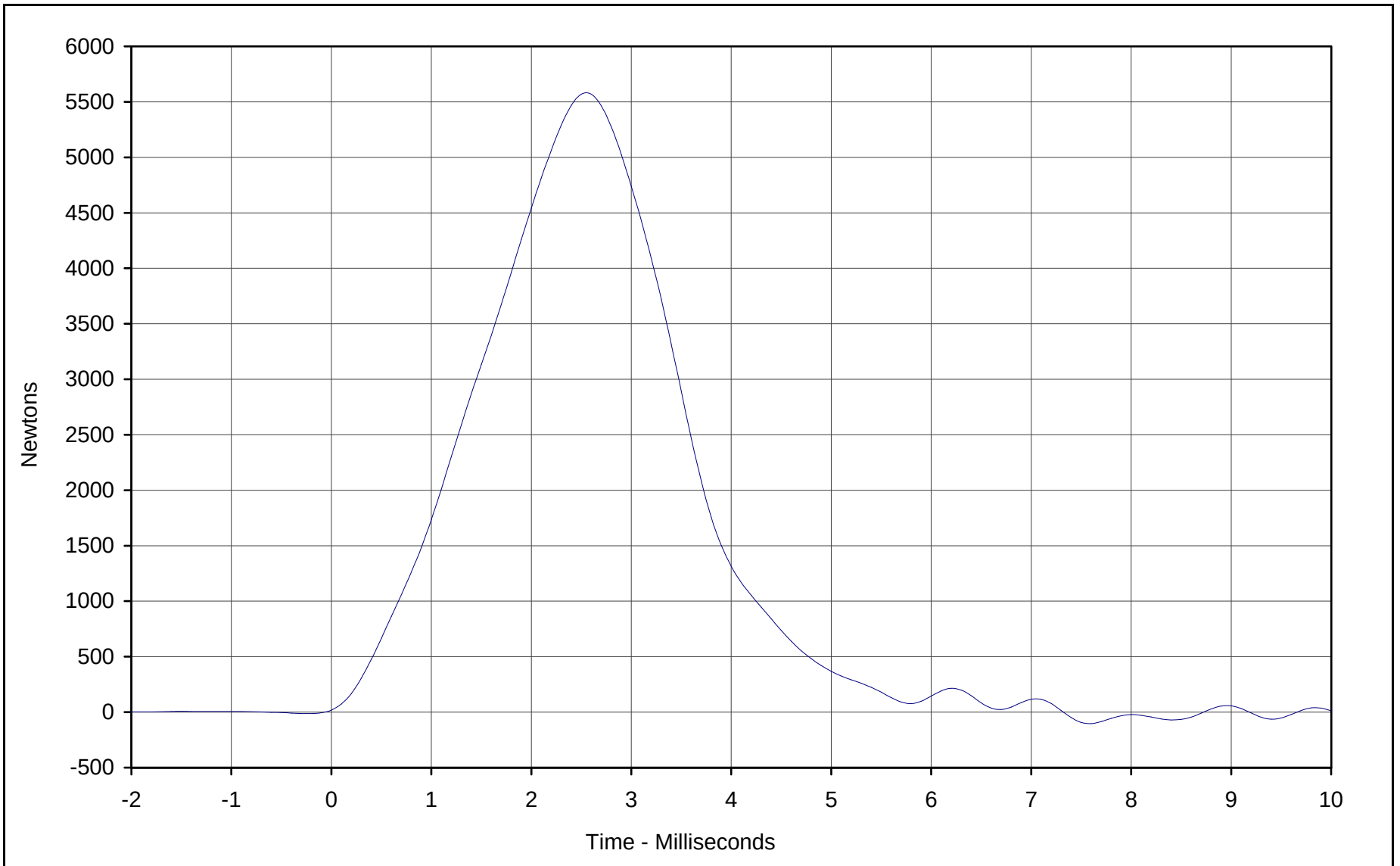
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	2.073 to 2.134	2.113	Pass
Peak Probe Force	Newtons	4715 to 5782	5569.3	Pass
Overall Test Results			Pass	

Laboratory Technician

February 20, 2001
Test Date

Approved By

Date



Curve Description: Probe Force
Maximum Value: 5569.3 at 2.6 Milliseconds
Minimum Value: -103.1 at 7.6 Milliseconds
SAE Filter Class: 600
Date of Test: 2/20/01
ATD Serial No.: 034

Testing Program: Hybrid III Left Knee Impact Test
Test Information: Part S/N: N/A Test I.D.: LK03A





Hybrid III Calibration Data Sheet

50TH Percentile Male

Right Knee Impact Test

ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: RK03A

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	5619.2	Pass
Overall Test Results				Pass

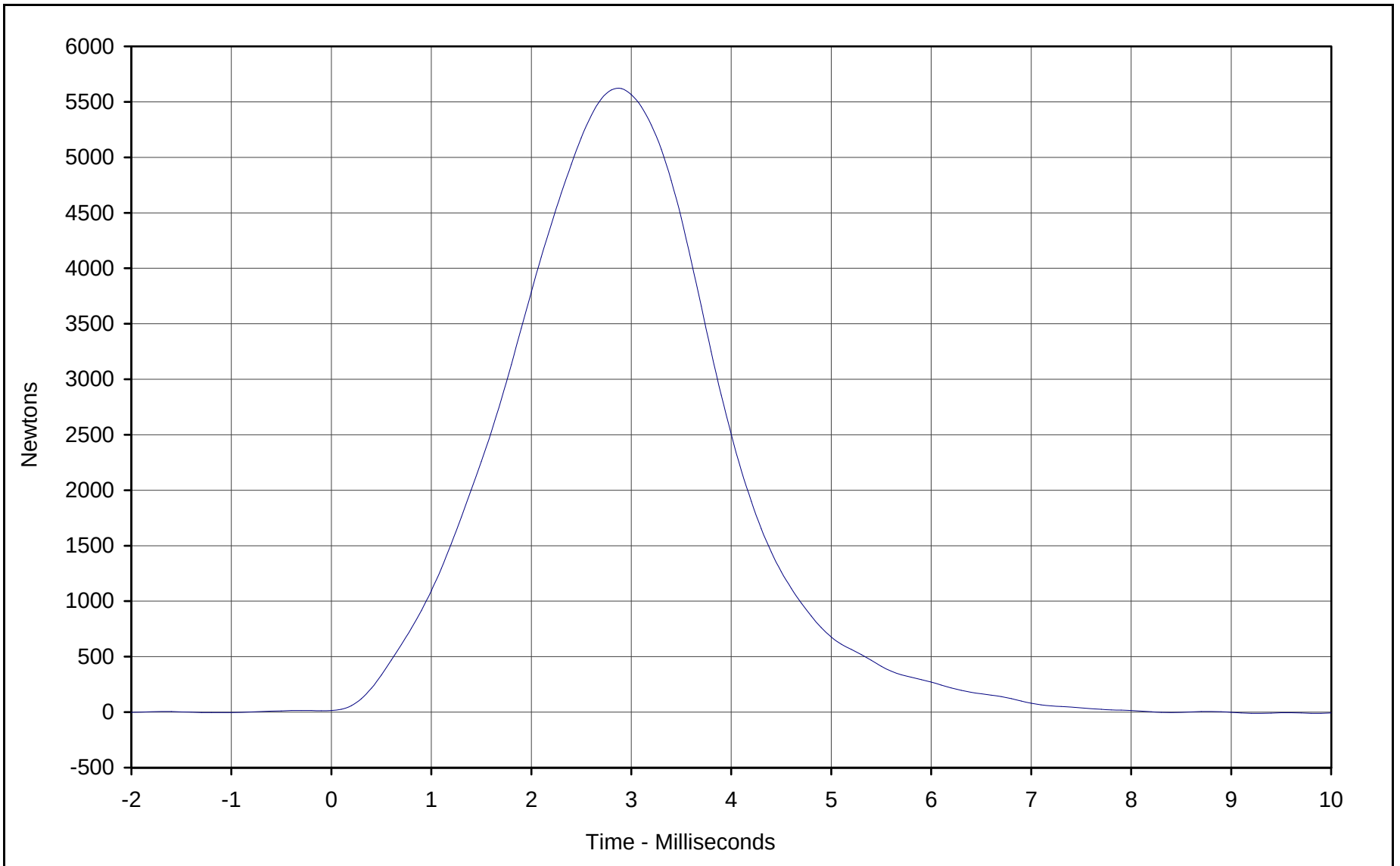
Laboratory Technician

February 20, 2001
Test Date

Approved By

Date

E-4



Curve Description:	Probe Force
Maximum Value:	5619.2 at 2.9 Milliseconds
Minimum Value:	-4.2 at -1.1 Milliseconds
SAE Filter Class:	600
Date of Test:	2/20/01
ATD Serial No.:	034

Testing Program:	Hybrid III Right Knee Impact Test
Test Information:	Part S/N: N/A Test I.D.: RK03A



KAR21001-14



Hybrid III Calibration Data Sheet

50TH Percentile Male

Head Drop Calibration

ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: HD01F

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	235.6	Pass
Peak Lateral Acceleration	G's	≤15.0	8.0	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

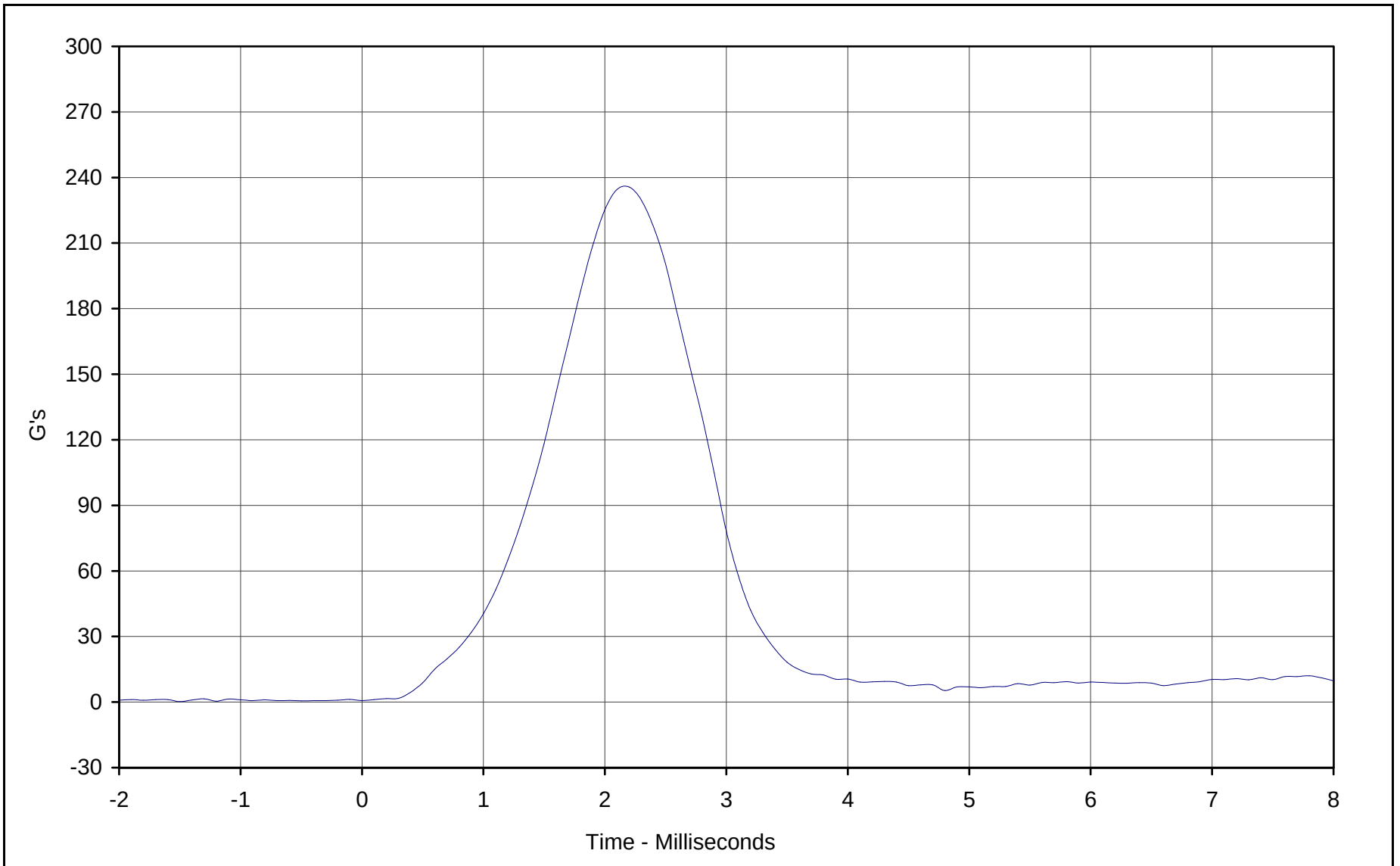
Laboratory Technician

February 20, 2001
Test Date

Approved By

Date

E-6



Curve Description: Head Resultant Acceleration

Maximum Value:	<u>235.6</u>	at	<u>2.2</u>	Milliseconds
Minimum Value:	<u>0.2</u>	at	<u>-1.5</u>	Milliseconds
SAE Filter Class:	<u>1000</u>			
Date of Test:	<u>2/20/01</u>			
ATD Serial No.:	<u>034</u>			

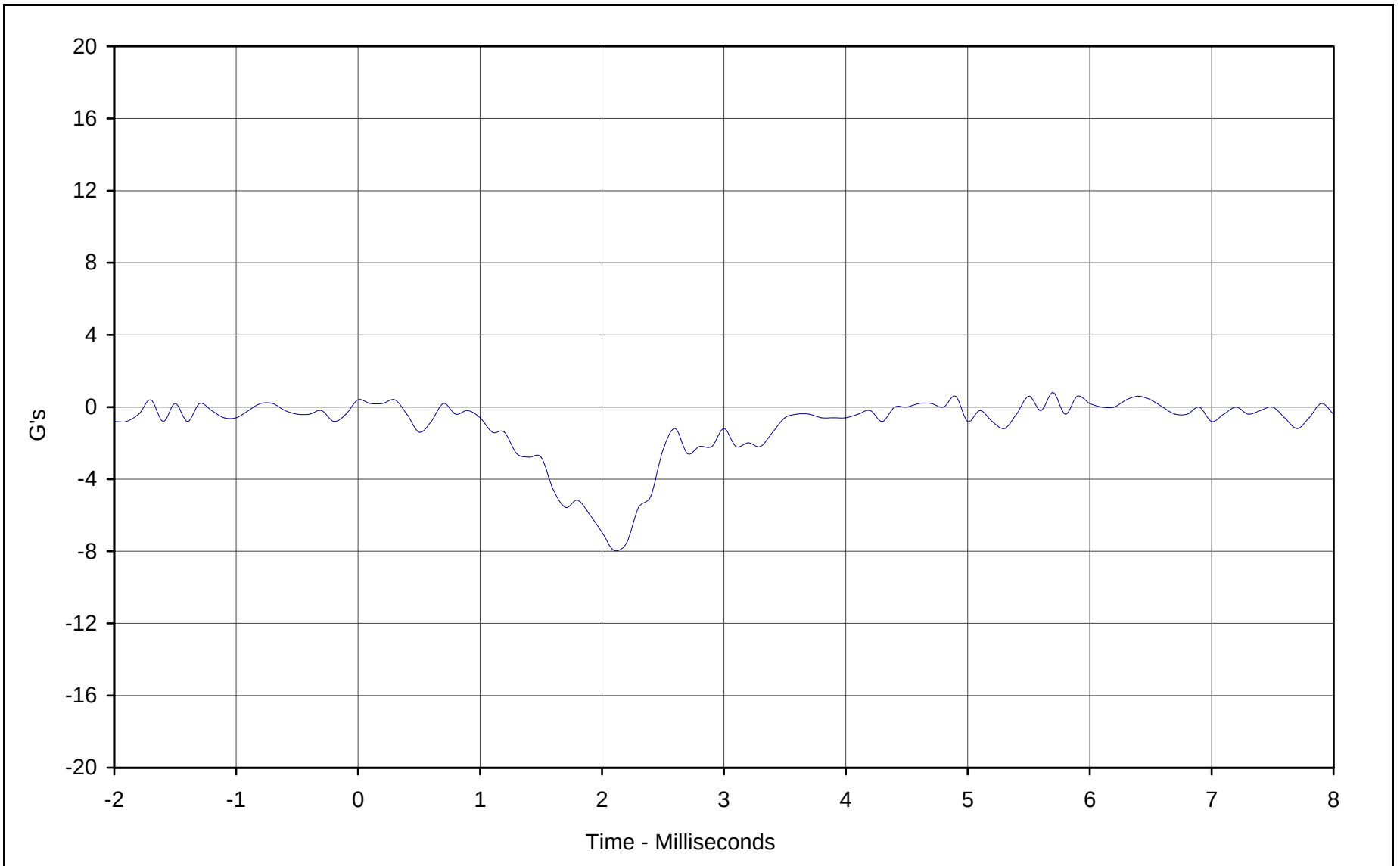
Testing Program: Hybrid III Head Drop Calibration (Male)

Test Information: S/N of Part: N/A Test I.D.: HD01F



KAR21001-14

E-7



Curve Description:	Head Acceleration Y Axis		
Maximum Value:	0.8	at	5.7 Milliseconds
Minimum Value:	-8.0	at	2.1 Milliseconds
SAE Filter Class:	1000		
Date of Test:	2/20/01		
ATD Serial No.:	034		

Testing Program:	Hybrid III Head Drop Calibration (Male)
Test Information:	S/N of Part: N/A Test I.D.: HD01F



KAR21001-14



Hybrid III Calibration Data Sheet

50TH Percentile Male

Thorax Impact Test

ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: CH03A

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	5743	Pass
Peak Sternum Displacement	CM	6.35 to 7.26	6.44	Pass
Internal Hysteresis	%	69 to 85	78.8	Pass
Overall Test Results				Pass

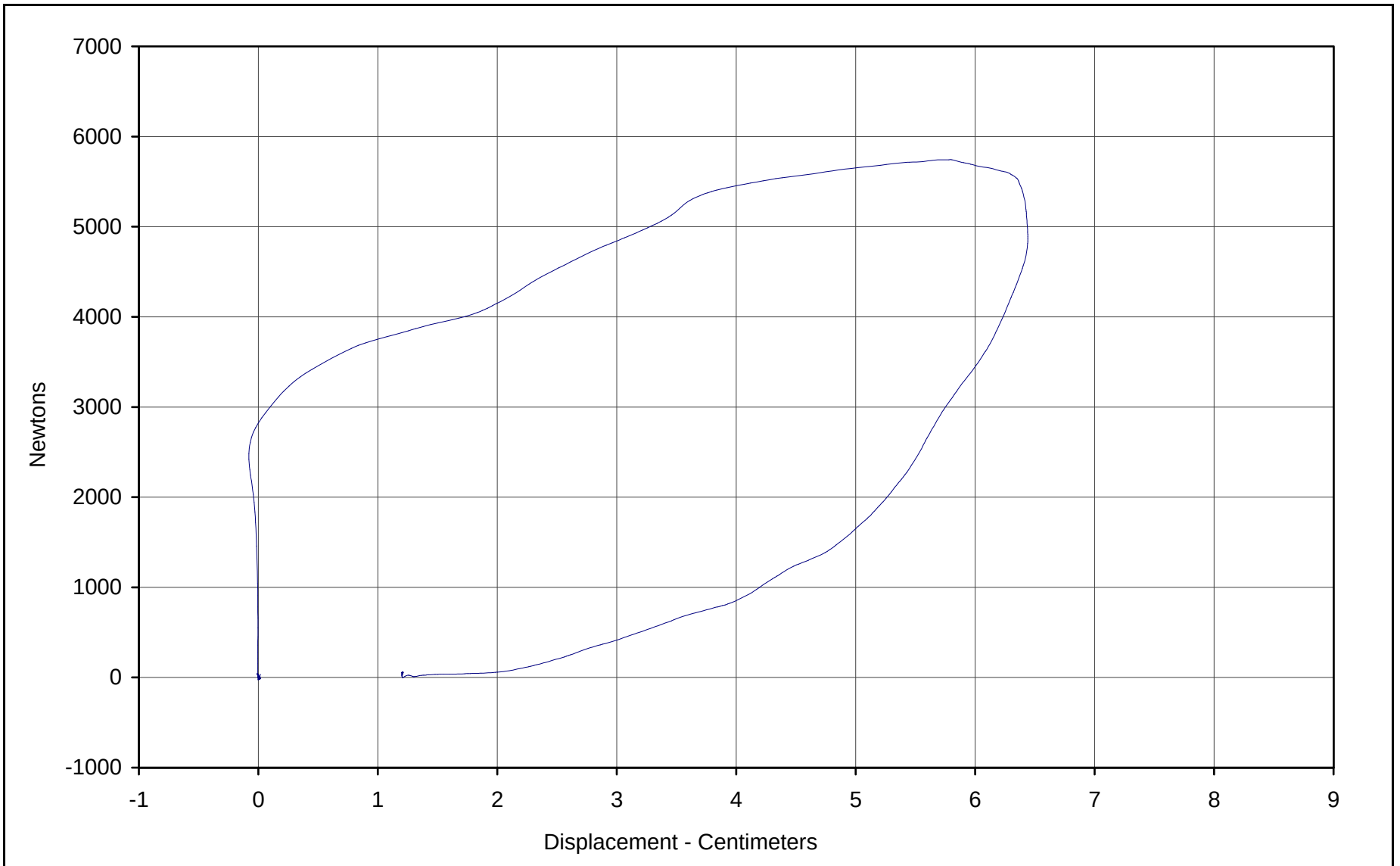
Laboratory Technician

February 20, 2001

Test Date

Approved By

Date



Curve Description: Probe Force vs. Chest Displacement

Probe Force: 5743.0 Newtons

Chest Displ.: 6.44 Centimeters

SAE Filter Class: 180

Date of Test: 2/20/01

ATD Serial No.: 034

Testing Program: Hybrid III Thorax Impact Test

Test Information: S/N of Part: N/A Test I.D.: CH03A





Hybrid III Calibration Data Sheet

50TH Percentile Male

Neck Flexion Test

ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: NF03A

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	24.1	Pass
	20 Msec.	G's	17.6 to 22.6	21.1	Pass
	30 Msec.	G's	12.5 to 18.5	16.9	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	16.9	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	34.1	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	71.9	Pass
	Time	Msec.	57.0 to 64.0	60.4	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	117.5	Pass
Moment About Occipital Condyle	Maximum	N·m	84.1 to 108.5	86.9	Pass
	Time	Msec.	47.0 to 58.0	47.1	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	100.0	Pass
Overall Test Results					Pass

Laboratory Technician

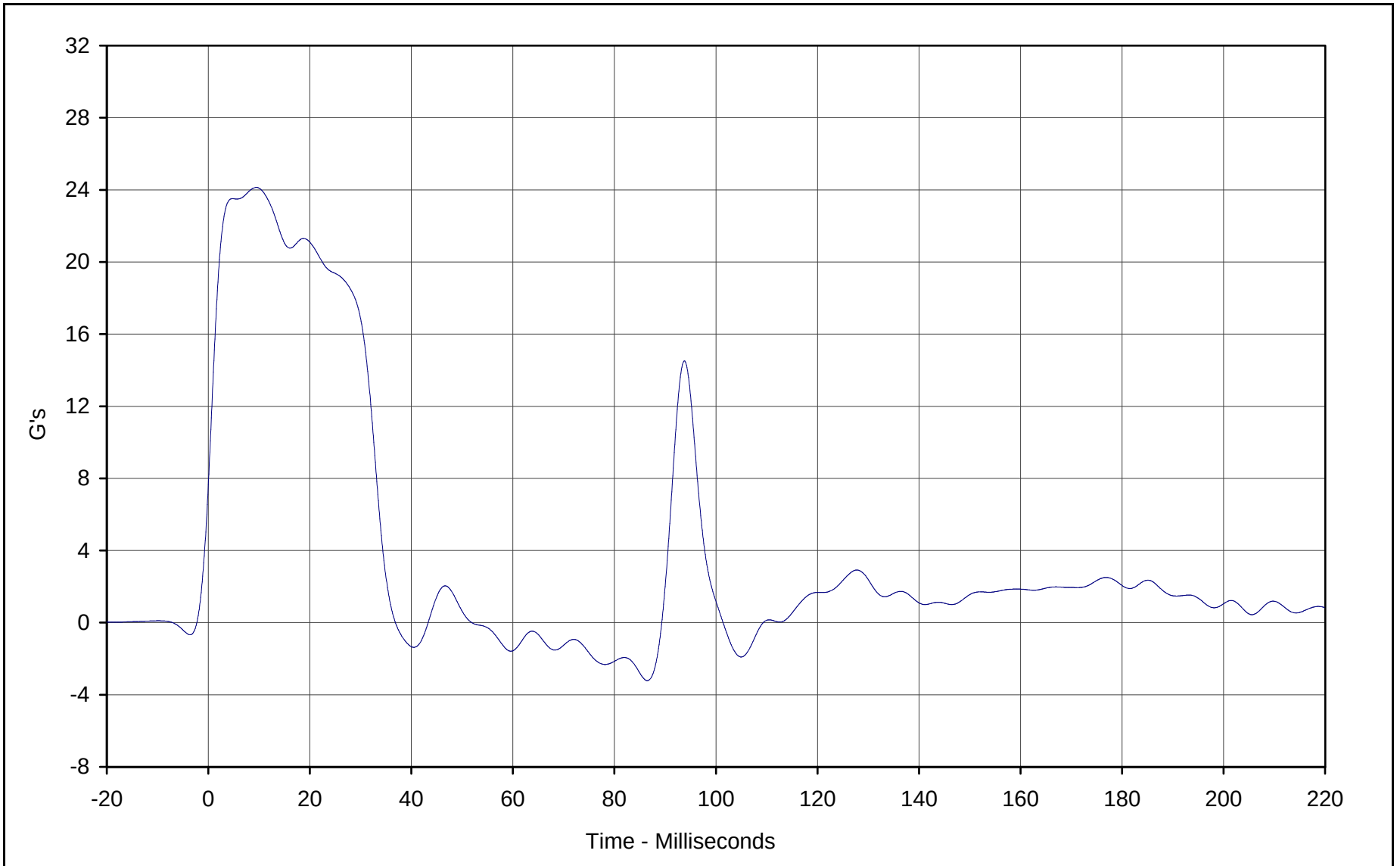
February 20, 2001

Test Date

Approved By

Date

E-11



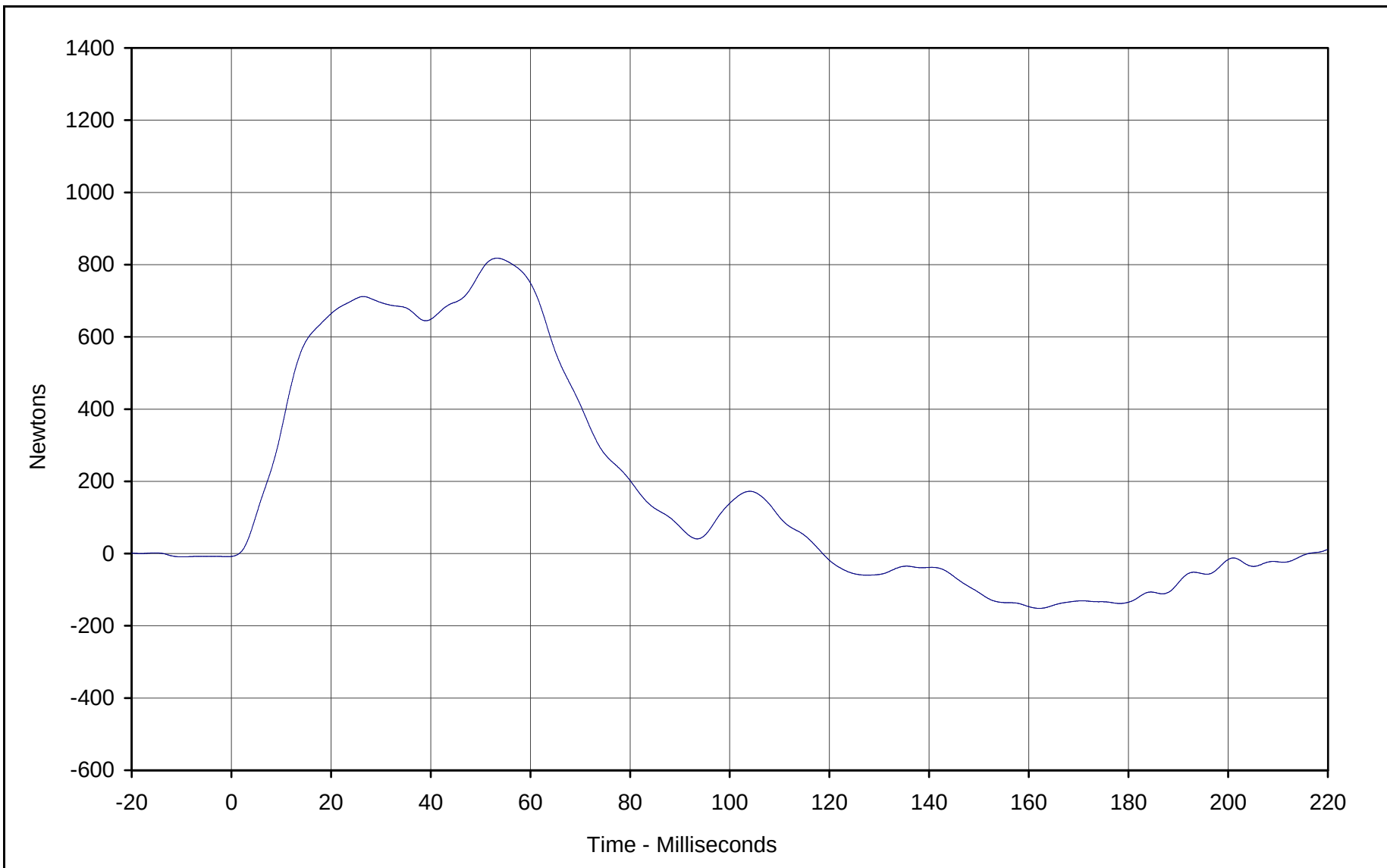
Curve Description:	Pendulum Deceleration		
Maximum Value:	24.1	at	9.5 Milliseconds
Minimum Value:	-3.2	at	86.5 Milliseconds
SAE Filter Class:	60		
Date of Test:	2/20/01		
ATD Serial No.:	034		

Testing Program:	Hybrid III Neck Flexion Test (Male)
Test Information:	S/N of Part: N/A Test I.D.: NF03A



KAR21001-14

E-12



Curve Description: Neck Force X

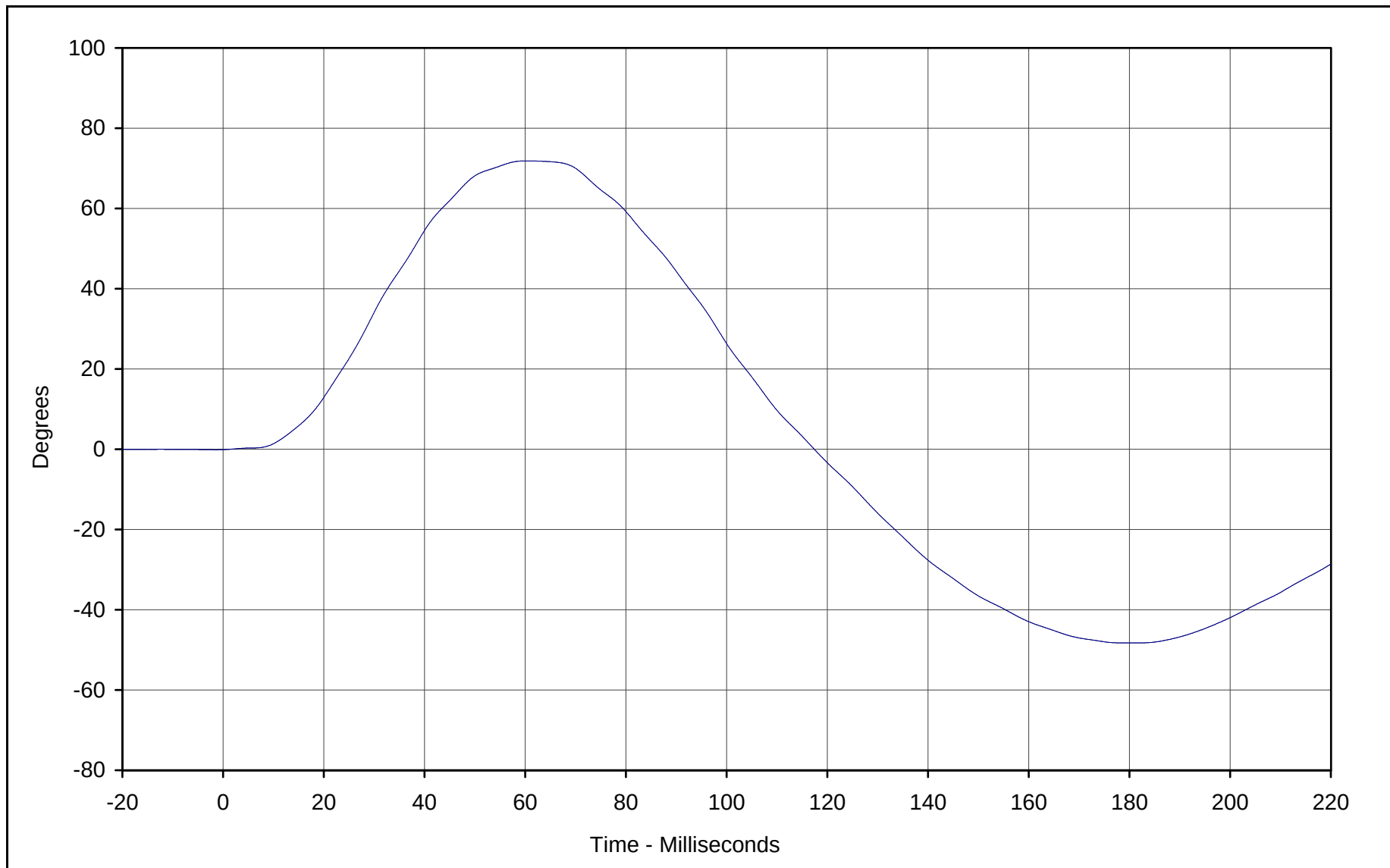
Maximum Value:	817.9	at	53.3	Milliseconds
Minimum Value:	-151.8	at	162.1	Milliseconds
SAE Filter Class:	60			
Date of Test:	2/20/01			
ATD Serial No.:	034			

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF03A



KAR21001-14



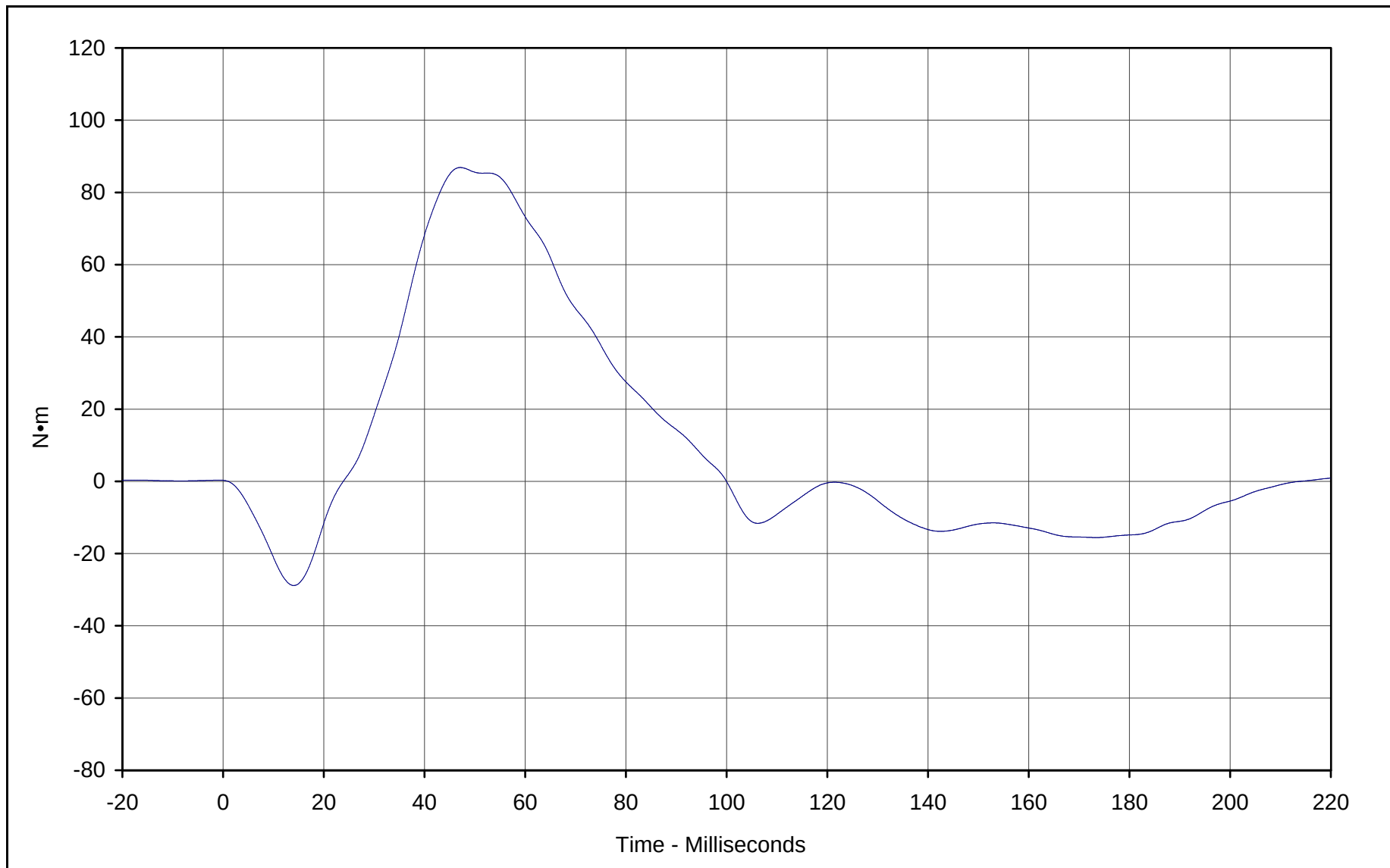
Curve Description: "D" Plane Rotation

Maximum Value:	71.9	at	60.4	Milliseconds
Minimum Value:	-48.3	at	179.9	Milliseconds
SAE Filter Class:	60			
Date of Test:	2/20/01			
ATD Serial No.:	034			

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF03A





Curve Description: Moment About Occipital Condyles

Maximum Value: 86.9 at 47.1 Milliseconds

Minimum Value: -28.8 at 14.0 Milliseconds

SAE Filter Class: 60

Date of Test: 2/20/01

ATD Serial No.: 034

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF03A





Hybrid III Calibration Data Sheet

50TH Percentile Male

Neck Extension Test

ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: NE03A

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	6.17	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	17.5	Pass
	20 Msec.	G's	14.0 to 19.0	15.5	Pass
	30 Msec.	G's	11.0 to 16.0	13.1	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	13.1	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	44.0	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	90.2	Pass
	Time	Msec.	72.0 to 82.0	80.3	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	151.7	Pass
Moment About Occipital Condyle	Maximum	N•m	-52.9 to- 79.9	-68.7	Pass
	Time	Msec.	65.0 to 79.0	66.5	Pass
Negative Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	139.5	Pass
Overall Test Results					Pass

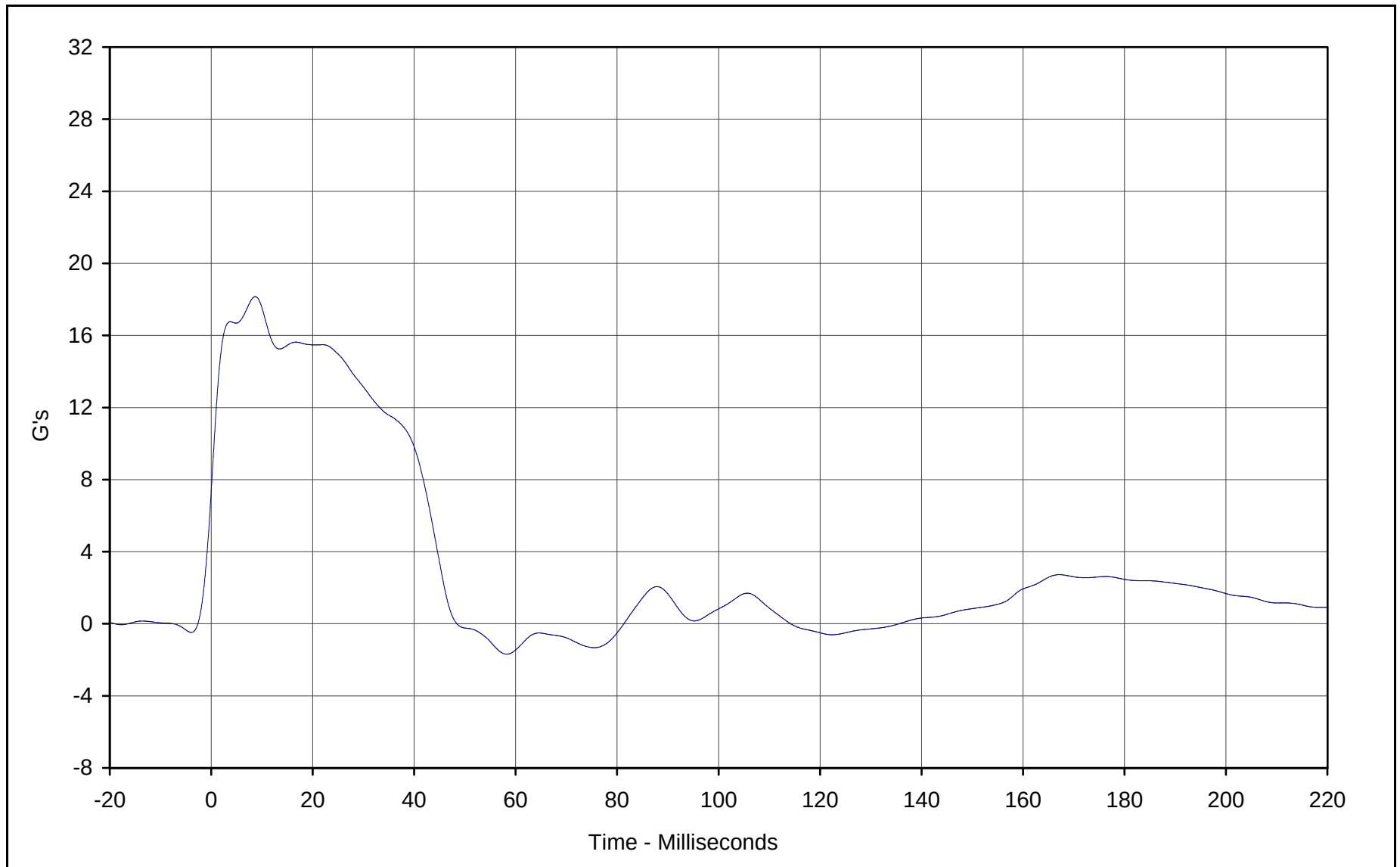
Laboratory Technician

February 20, 2001

Test Date

Approved By

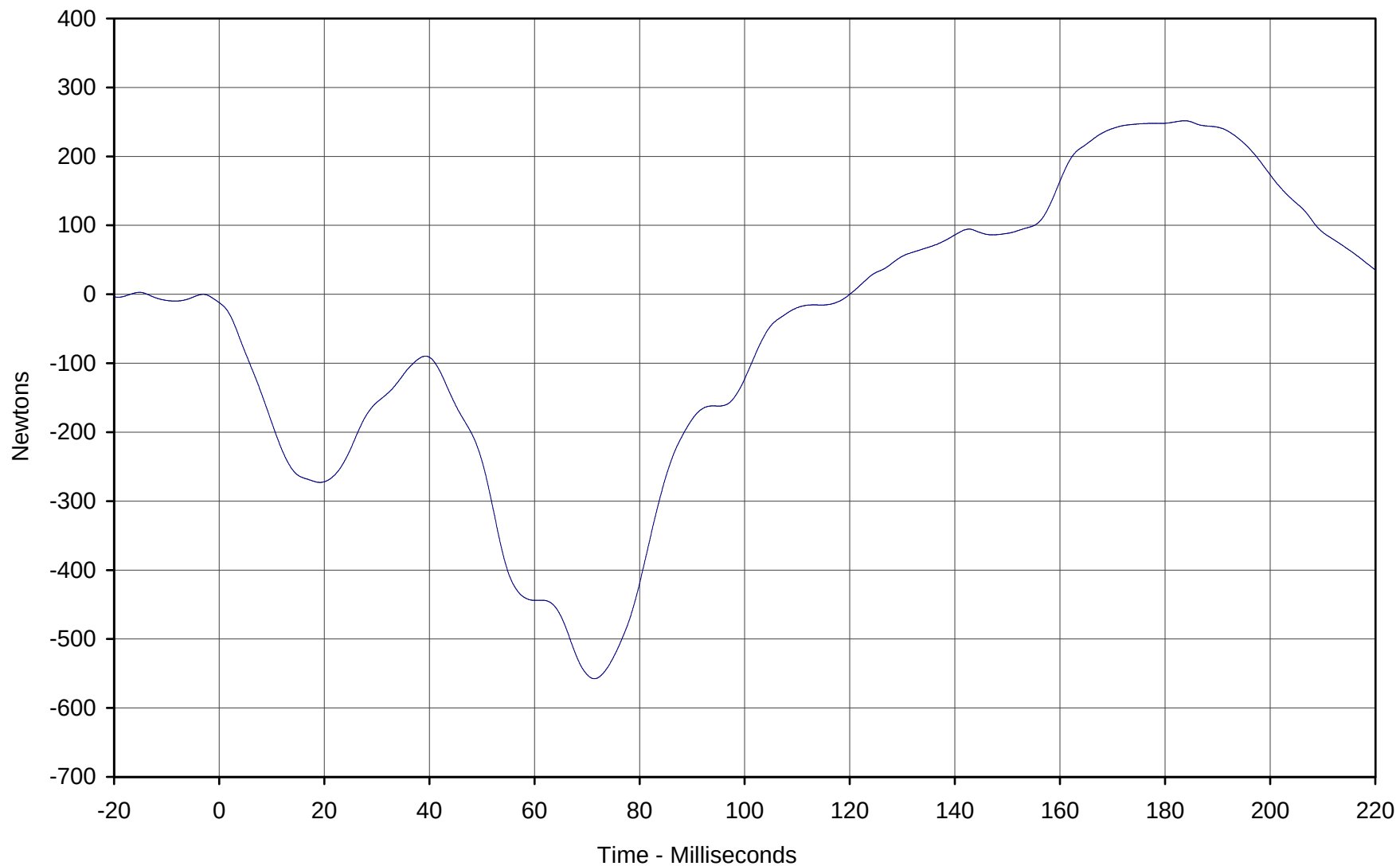
Date



Curve Description:	Pendulum Deceleration		
Maximum Value:	18.2	at	8.7 Milliseconds
Minimum Value:	-1.7	at	58.2 Milliseconds
SAE Filter Class:	60		
Date of Test:	2/20/01		
ATD Serial No.:	034		

Testing Program:	Hybrid III Neck Extension Test (Male)
Test Information:	S/N of Part: N/A Test I.D.: NE03A





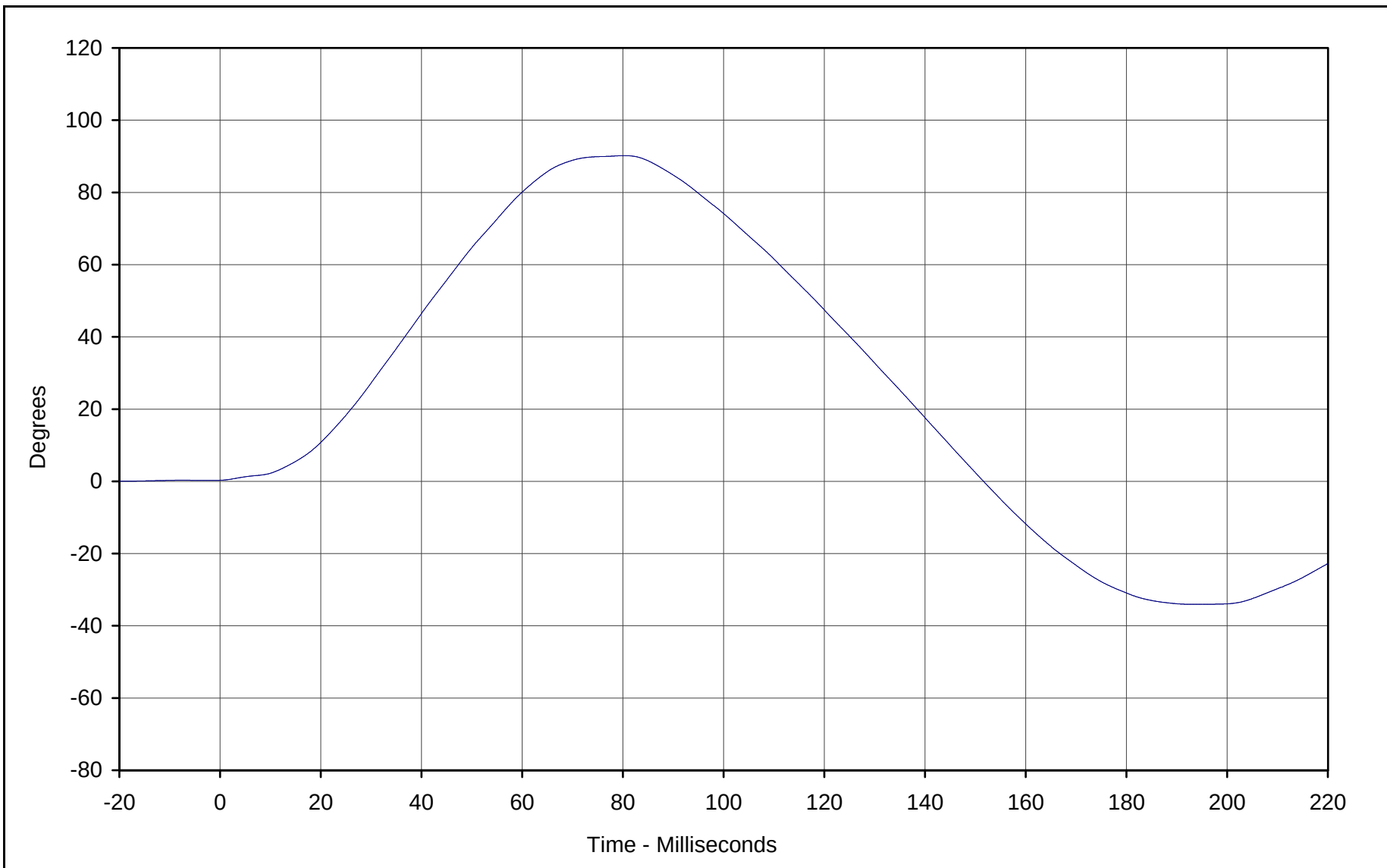
Curve Description: Neck Force X

Maximum Value:	251.7	at	183.7	Milliseconds
Minimum Value:	-557.6	at	71.4	Milliseconds
SAE Filter Class:	60			
Date of Test:	2/20/01			
ATD Serial No.:	034			

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE03A





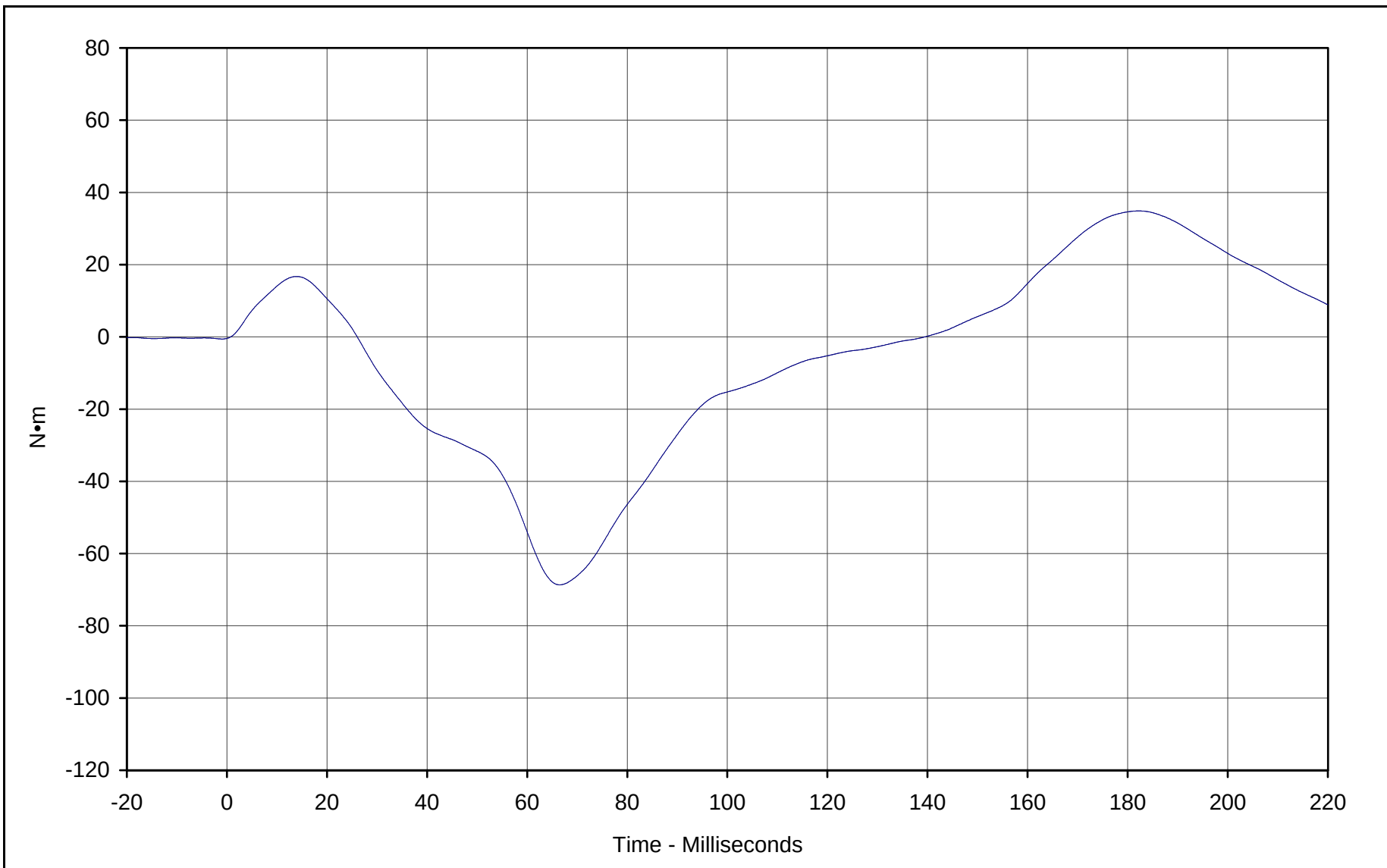
Curve Description: "D" Plane Rotation

Maximum Value:	90.2	at	80.3	Milliseconds
Minimum Value:	-34.1	at	193.3	Milliseconds
SAE Filter Class:	60			
Date of Test:	2/20/01			
ATD Serial No.:	034			

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE03A





Curve Description: Moment About Occipital Condyles

Maximum Value: 34.9 at 182.2 Milliseconds

Minimum Value: -68.7 at 66.5 Milliseconds

SAE Filter Class: 60

Date of Test: 2/20/01

ATD Serial No.: 034

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE03A





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

February 20, 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.: LK03B

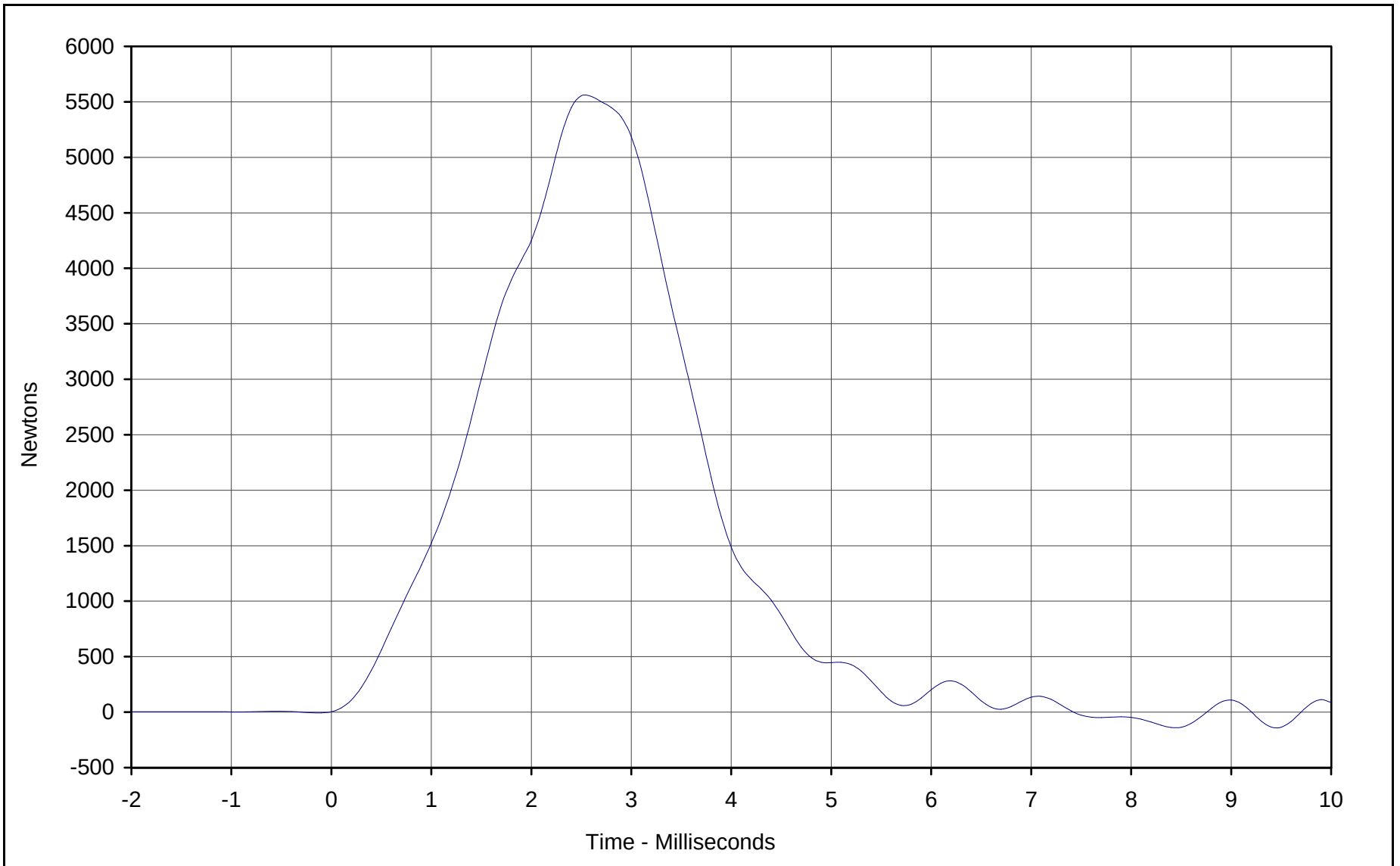
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	2.073 to 2.134	2.113	Pass
Peak Probe Force	Newtons	4715 to 5782	5554.8	Pass
Overall Test Results			Pass	

Laboratory Technician

February 20, 2001
Test Date

Approved By

Date



Curve Description: Probe Force

Maximum Value:	<u>5554.8</u>	at	<u>2.5</u>	Milliseconds
Minimum Value:	<u>-49.1</u>	at	<u>7.7</u>	Milliseconds
SAE Filter Class:	<u>600</u>			
Date of Test:	<u>2/20/01</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.: LK03B





Hybrid III Calibration Data Sheet

50TH Percentile Male

Right Knee Impact Test

ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: RK03B

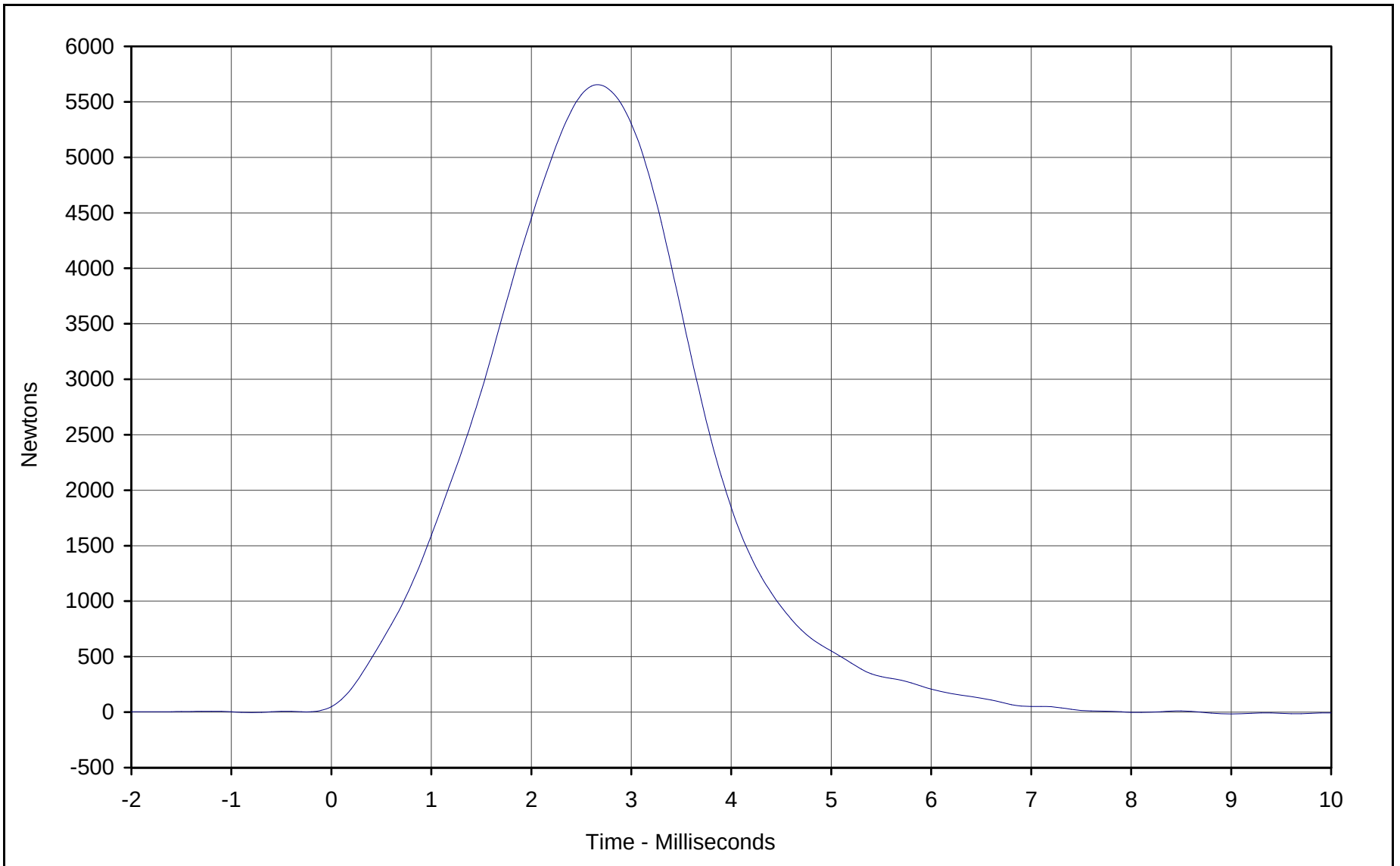
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	2.073 to 2.134	2.113	Pass
Peak Probe Force	Newtons	4715 to 5782	5650.4	Pass
Overall Test Results				Pass

Laboratory Technician

February 20, 2001
Test Date

Approved By

Date



Curve Description: Probe Force

Maximum Value:	<u>5650.4</u>	at	<u>2.7</u>	Milliseconds
Minimum Value:	<u>-3.1</u>	at	<u>-0.8</u>	Milliseconds
SAE Filter Class:	<u>600</u>			
Date of Test:	<u>2/20/01</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.: RK03B





Hybrid III Calibration Data Sheet

50TH Percentile Male

Head Drop Calibration

ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: HDO1G

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	233.0	Pass
Peak Lateral Acceleration	G's	≤15.0	3.6	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

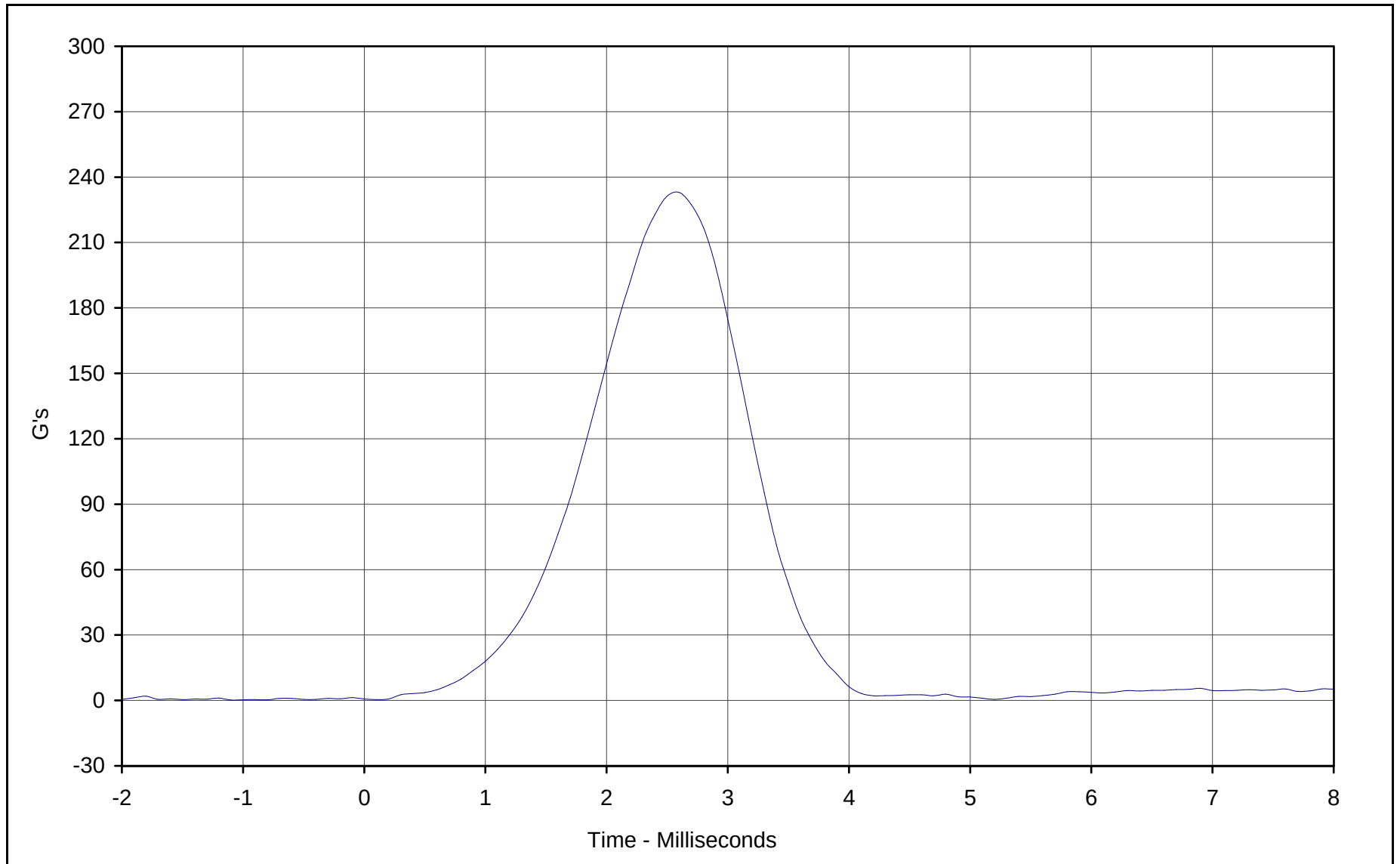
Laboratory Technician

February 20, 2001

Test Date

Approved By

Date



Curve Description: Head Resultant Acceleration

Maximum Value: 233.0 at 2.6 Milliseconds

Minimum Value: 0.2 at -1.1 Milliseconds

SAE Filter Class: 1000

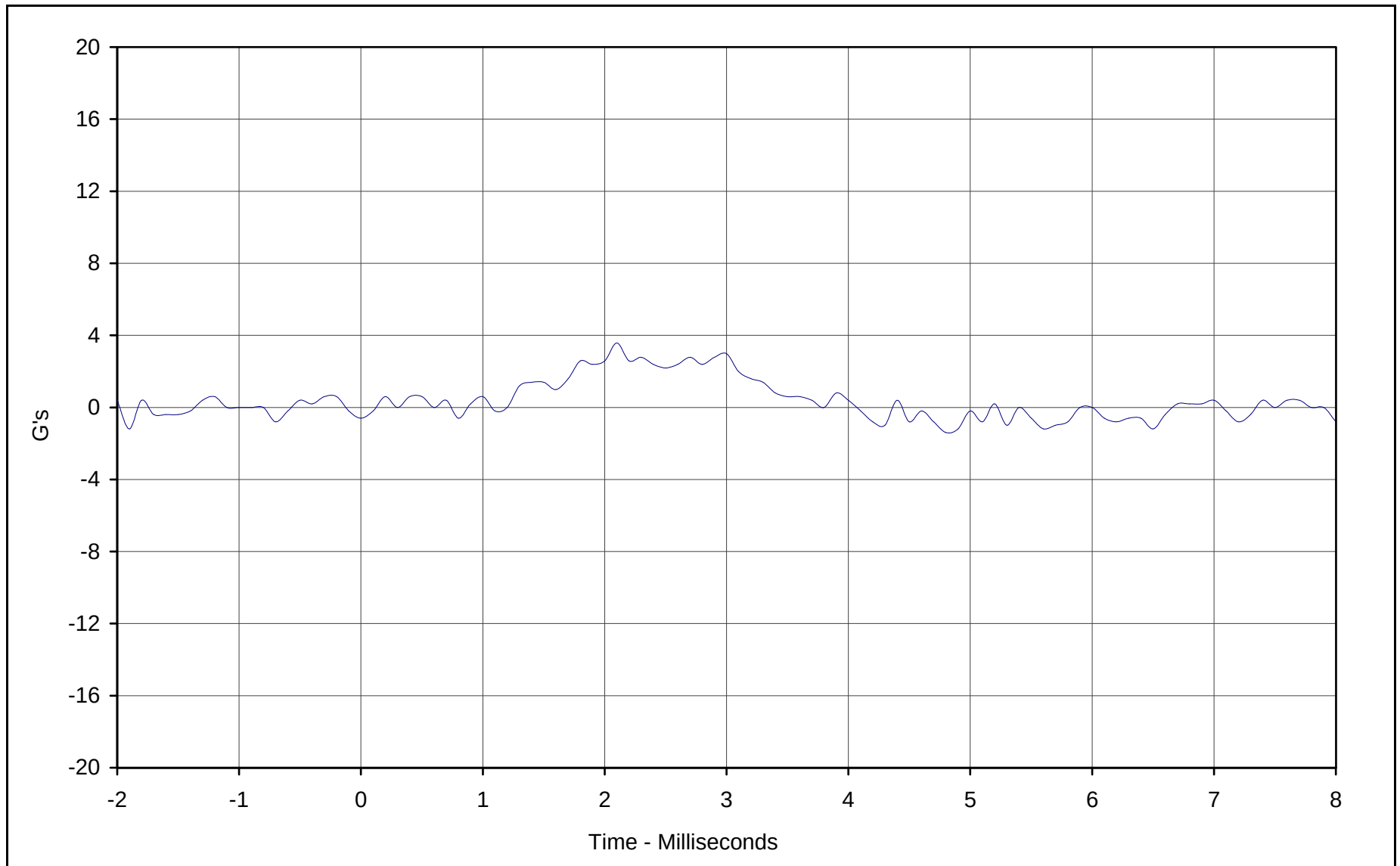
Date of Test: 2/20/01

ATD Serial No.: 035

Testing Program: Hybrid III Head Drop Calibration (Male)

Test Information: S/N of Part: N/A Test I.D.: HDO1G





Curve Description: Head Acceleration Y Axis

Maximum Value:	3.6	at	2.1	Milliseconds
Minimum Value:	-1.4	at	4.8	Milliseconds
SAE Filter Class:	1000			
Date of Test:	2/20/01			
ATD Serial No.:	035			

Testing Program: Hybrid III Head Drop Calibration (Male)

Test Information: S/N of Part: N/A Test I.D.: HDO1G





Hybrid III Calibration Data Sheet

50TH Percentile Male

Thorax Impact Test

ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: CH03B

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	5572	Pass
Peak Sternum Displacement	CM	6.35 to 7.26	6.65	Pass
Internal Hysteresis	%	69 to 85	74.3	Pass
Overall Test Results				Pass

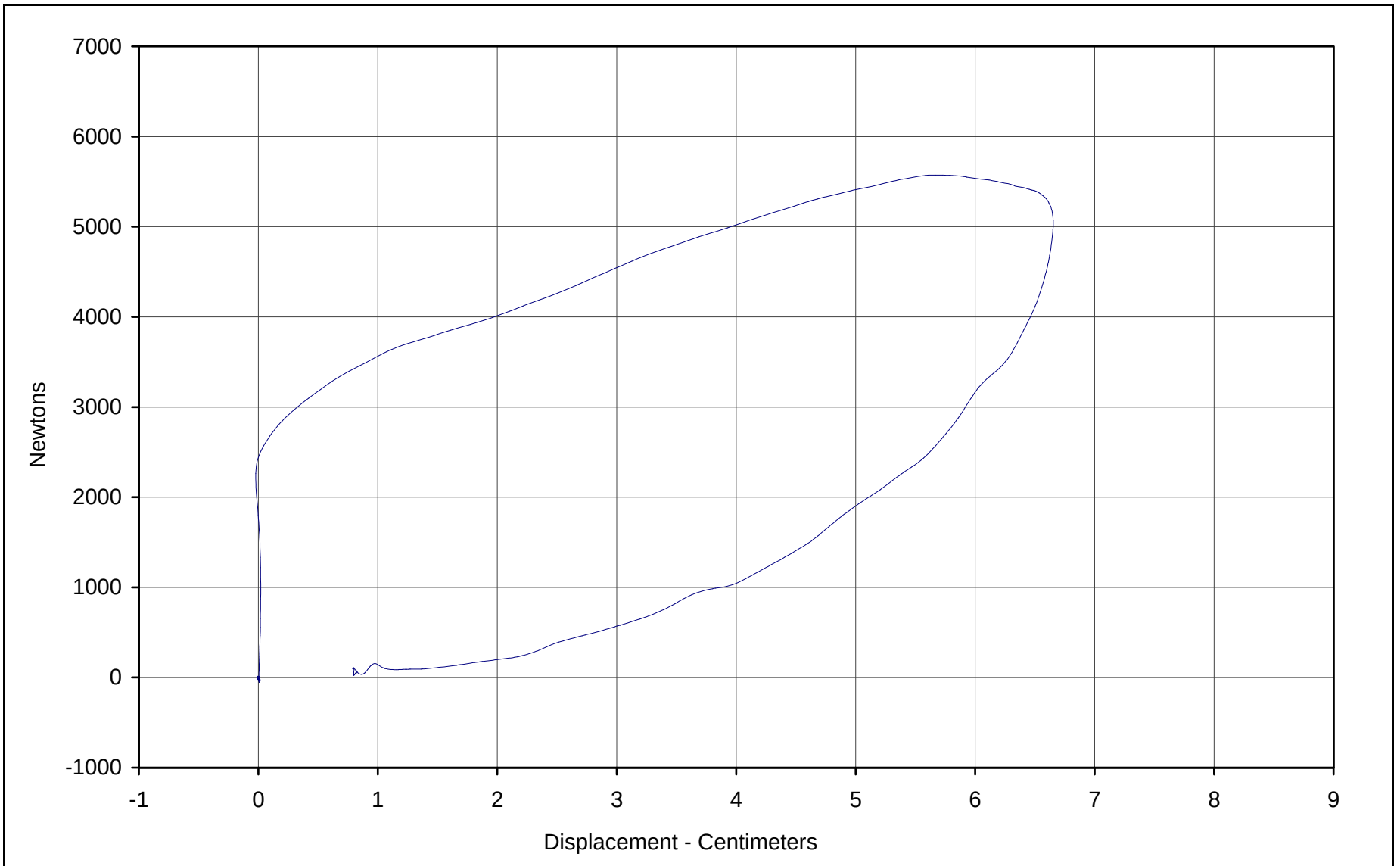
Laboratory Technician

February 20, 2001

Test Date

Approved By

Date



Curve Description: Probe Force vs. Chest Displacement

Probe Force: 5572.4 Newtons

Chest Displ.: 6.65 Centimeters

SAE Filter Class: 180

Date of Test: 2/20/01

ATD Serial No.: 035

Testing Program: Hybrid III Thorax Impact Test

Test Information: S/N of Part: N/A Test I.D.: CH03B





Hybrid III Calibration Data Sheet

50TH Percentile Male

Neck Flexion Test

ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: NF03B

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	24.9	Pass
	20 Msec.	G's	17.6 to 22.6	22.5	Pass
	30 Msec.	G's	12.5 to 18.5	17.5	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	17.5	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	34.1	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	75.6	Pass
	Time	Msec.	57.0 to 64.0	61.2	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	118.0	Pass
Moment About Occipital Condyle	Maximum	N•m	84.1 to 108.5	92.7	Pass
	Time	Msec.	47.0 to 58.0	48.0	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	100.3	Pass
Overall Test Results					Pass

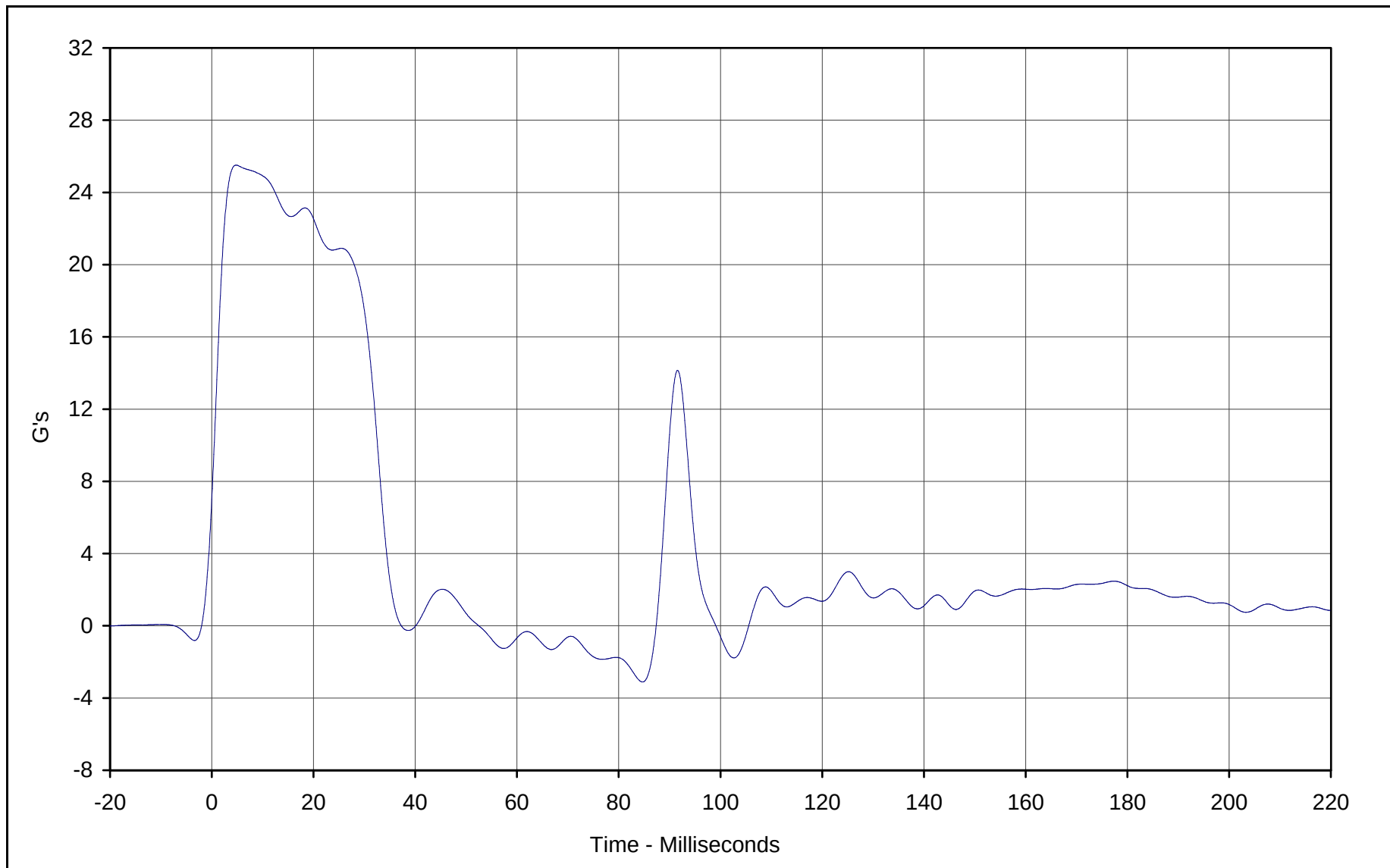
Laboratory Technician

February 20, 2001

Test Date

Approved By

Date



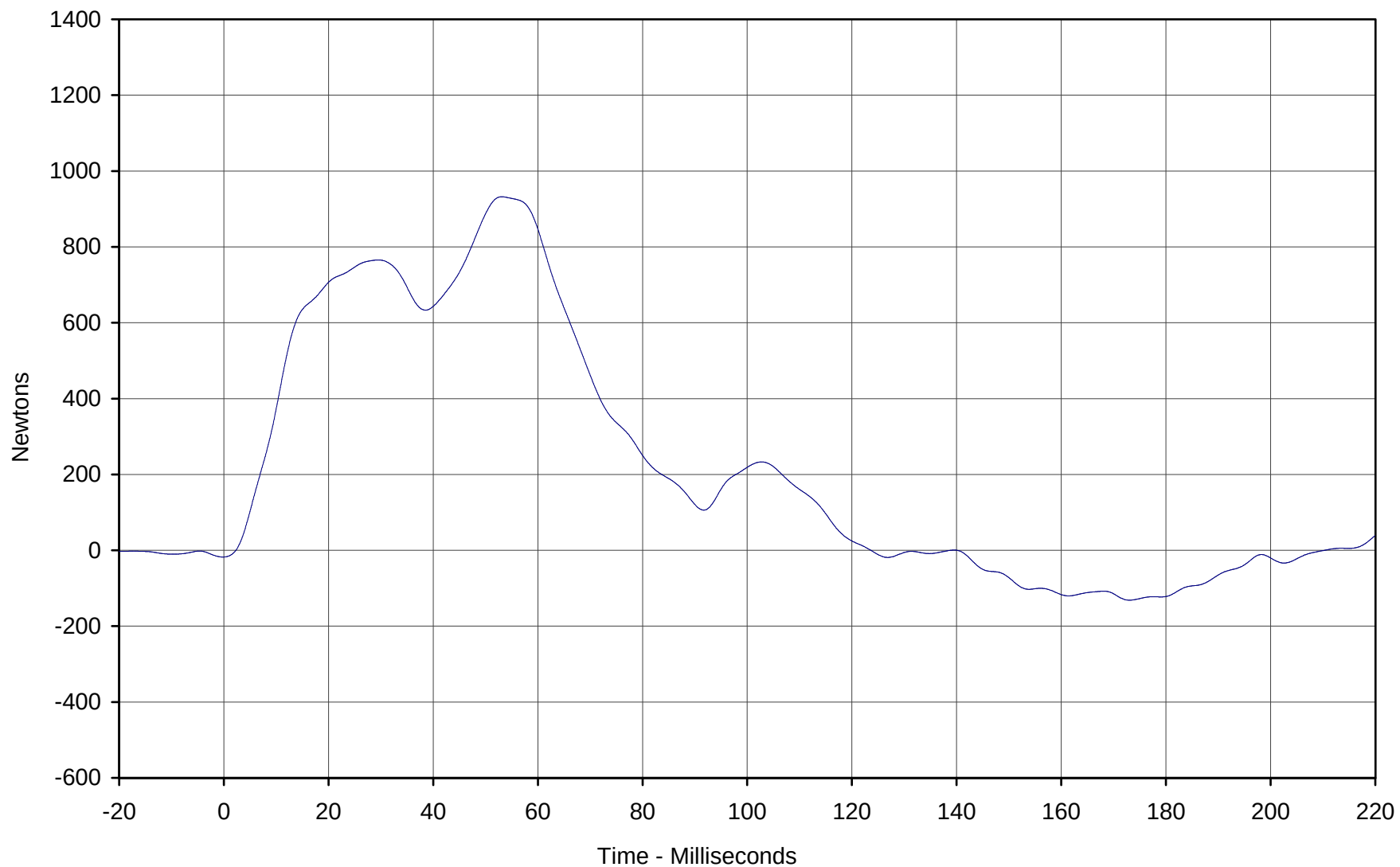
Curve Description: Pendulum Deceleration

Maximum Value:	<u>25.5</u>	at	<u>4.8</u>	Milliseconds
Minimum Value:	<u>-3.1</u>	at	<u>84.7</u>	Milliseconds
SAE Filter Class:	<u>60</u>			
Date of Test:	<u>2/20/01</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.: NF03B





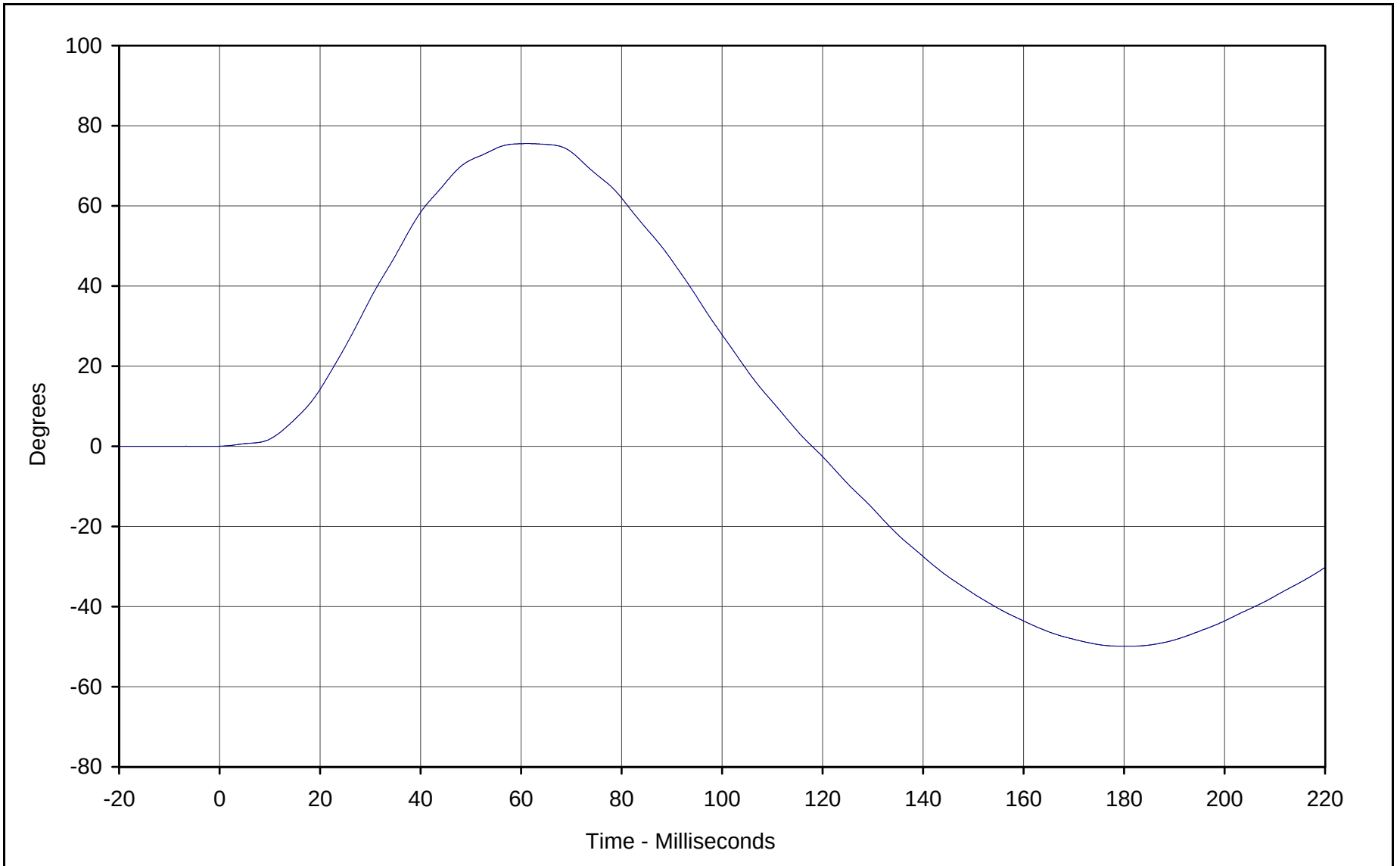
Curve Description: Neck Force X

Maximum Value:	932.2	at	53.1	Milliseconds
Minimum Value:	-131.4	at	173.1	Milliseconds
SAE Filter Class:	60			
Date of Test:	2/20/01			
ATD Serial No.:	035			

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF03B





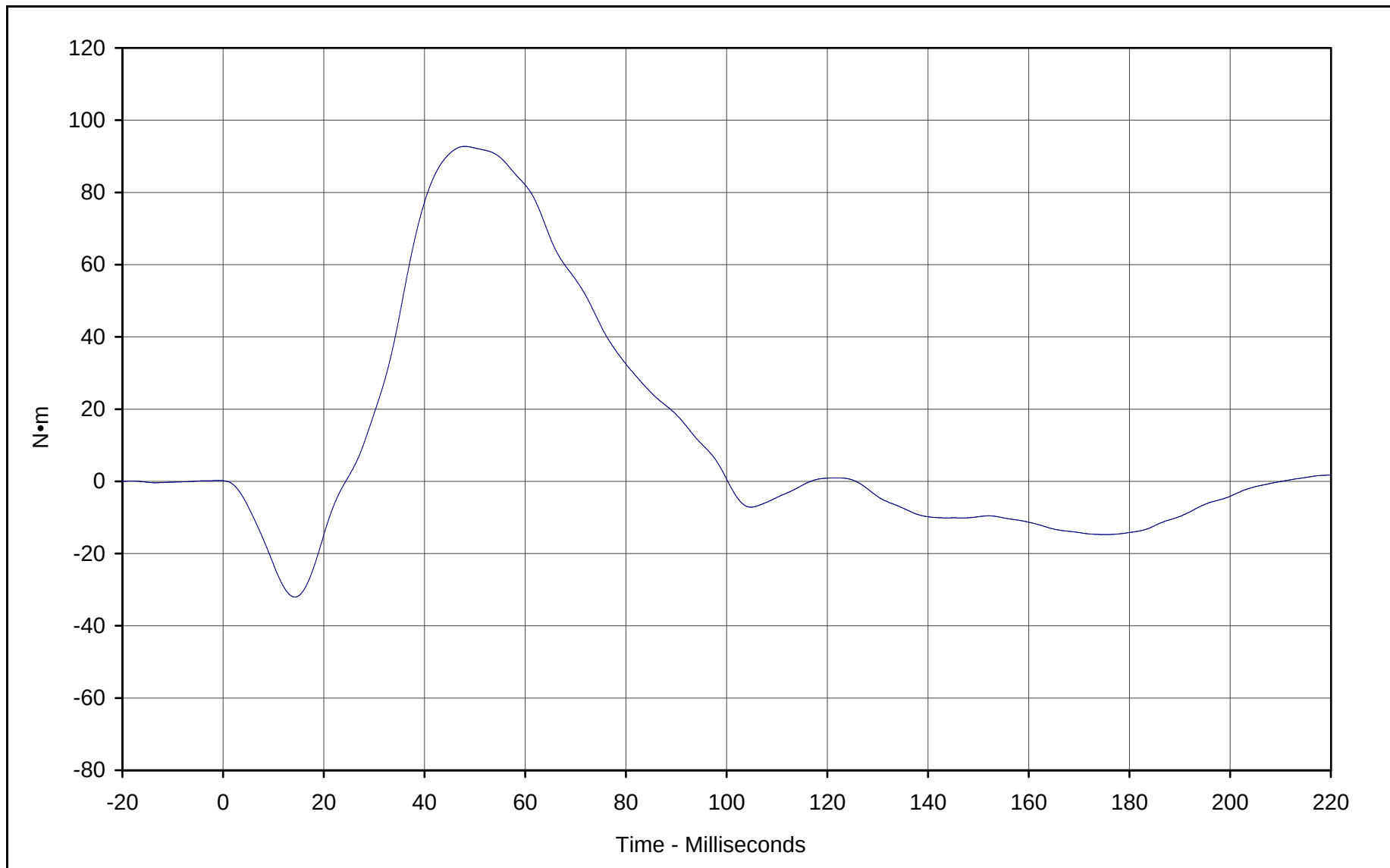
Curve Description: "D" Plane Rotation

Maximum Value:	75.6	at	61.2	Milliseconds
Minimum Value:	-49.9	at	180.6	Milliseconds
SAE Filter Class:	60			
Date of Test:	2/20/01			
ATD Serial No.:	035			

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF03B





Curve Description: Moment About Occipital Condyles

Maximum Value: 92.7 at 48.0 Milliseconds

Minimum Value: -32.0 at 14.3 Milliseconds

SAE Filter Class: 60

Date of Test: 2/20/01

ATD Serial No.: 035

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF03B





Hybrid III Calibration Data Sheet

50TH Percentile Male

Neck Extension Test

ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: NE03B

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	6.17	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	17.4	Pass
	20 Msec.	G's	14.0 to 19.0	16.9	Pass
	30 Msec.	G's	11.0 to 16.0	15.9	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	15.9	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	40.3	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	93.0	Pass
	Time	Msec.	72.0 to 82.0	77.1	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	147.2	Pass
Moment About Occipital Condyle	Maximum	N•m	-52.9 to- 79.9	-73.2	Pass
	Time	Msec.	65.0 to 79.0	66.8	Pass
Negative Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	135.5	Pass
Overall Test Results					Pass

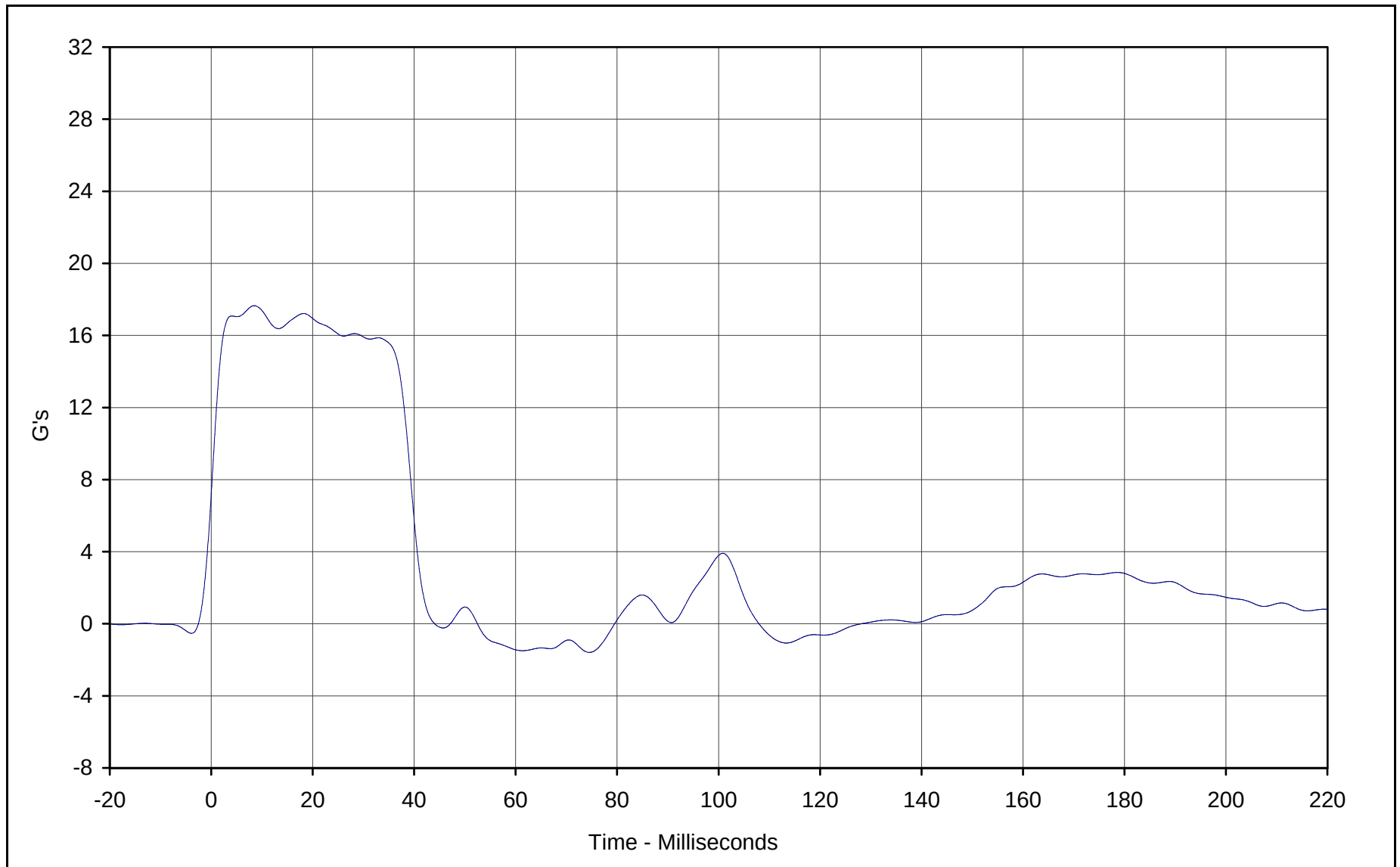
Laboratory Technician

February 20, 2001

Test Date

Approved By

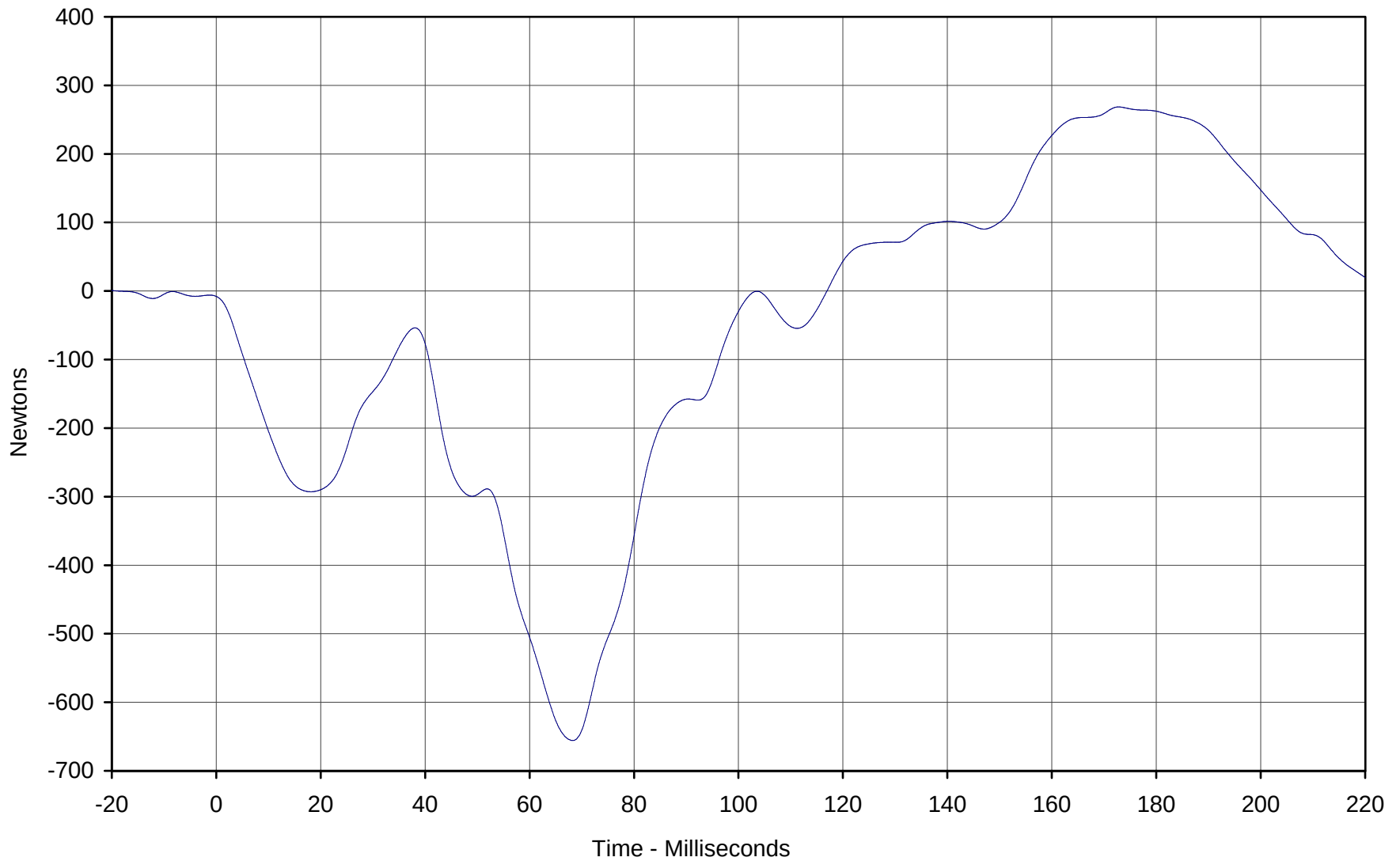
Date



Curve Description:	Pendulum Deceleration		
Maximum Value:	17.6	at	8.5 Milliseconds
Minimum Value:	-1.6	at	74.5 Milliseconds
SAE Filter Class:	60		
Date of Test:	2/20/01		
ATD Serial No.:	035		

Testing Program:	Hybrid III Neck Extension Test (Male)
Test Information:	S/N of Part: N/A Test I.D.: NE03B





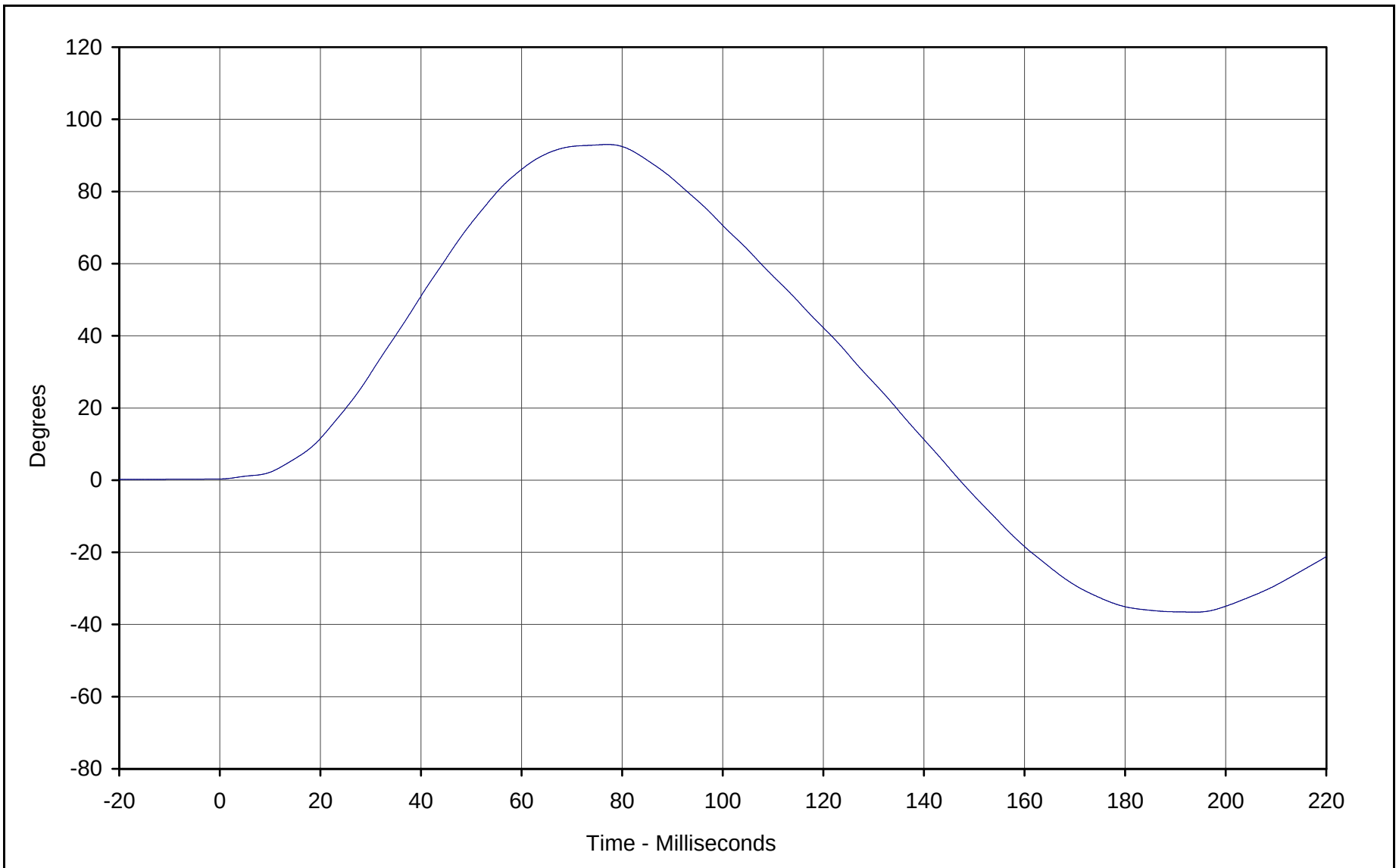
Curve Description: Neck Force X

Maximum Value:	268.5	at	172.8	Milliseconds
Minimum Value:	-655.8	at	68.2	Milliseconds
SAE Filter Class:	60			
Date of Test:	2/20/01			
ATD Serial No.:	035			

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE03B





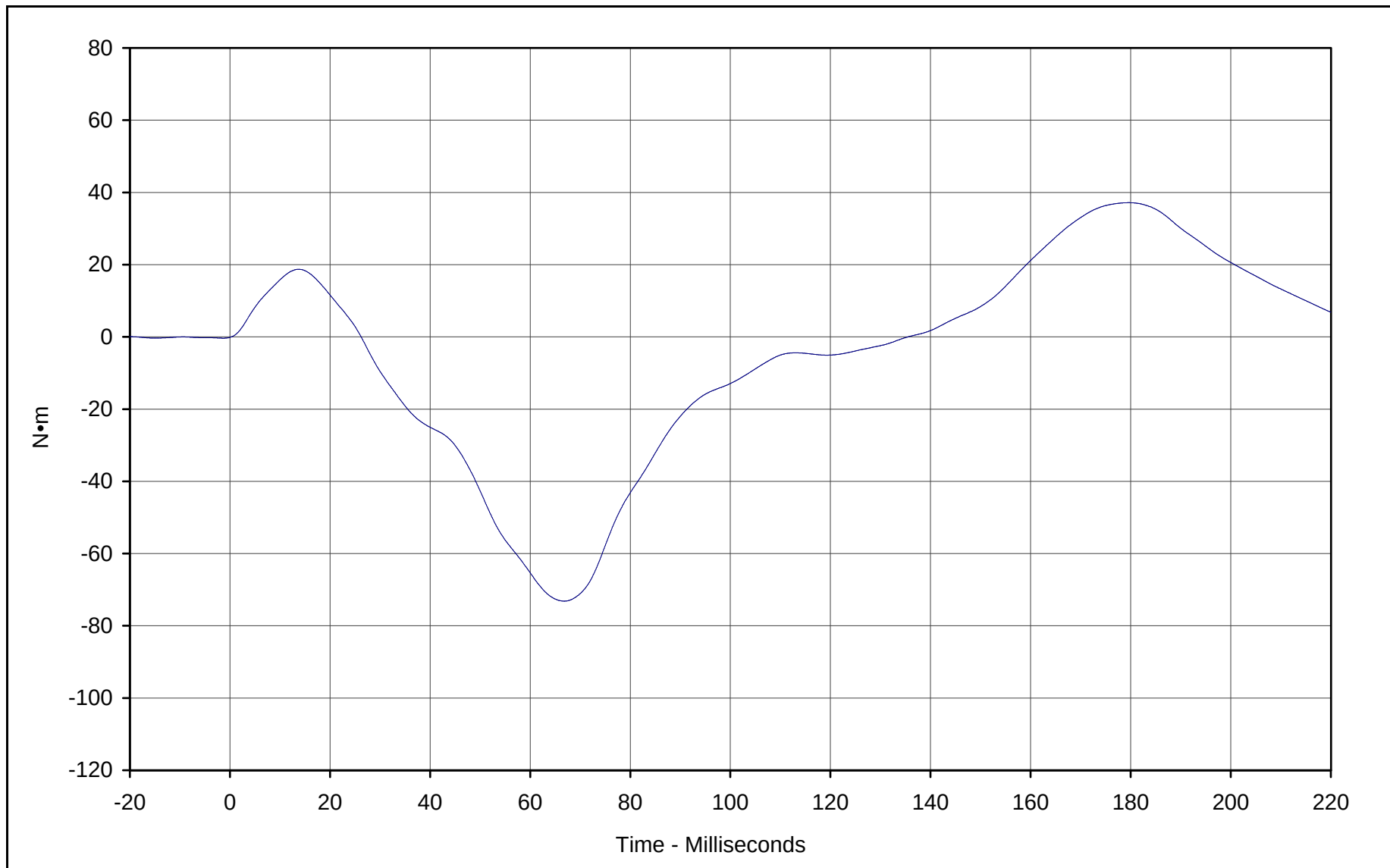
Curve Description: "D" Plane Rotation

Maximum Value:	93.0	at	77.1	Milliseconds
Minimum Value:	-36.6	at	193.9	Milliseconds
SAE Filter Class:	60			
Date of Test:	2/20/01			
ATD Serial No.:	035			

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE03B





Curve Description: Moment About Occipital Condyles

Maximum Value: 37.2 at 179.6 Milliseconds

Minimum Value: -73.2 at 66.8 Milliseconds

SAE Filter Class: 60

Date of Test: 2/20/01

ATD Serial No.: 035

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE03B





Hybrid III Calibration Data Sheet

50TH Percentile Male

External Measurements

ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: N/A

External Measurement Data				
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory temperature	°C	20.4 to 22.1	20.9	Pass
Laboratory relative humidity	%	10 to 70	43	Pass
A - Total sitting height	mm	879 to 889	880	Pass
B - Shoulder pivot height	mm	505 to 521	510	Pass
C - "H" point height	mm	84 to 89	85	Pass
D - "H" point from seat back	mm	135 to 140	135	Pass
E - Shoulder pivot from back	mm	84 to 94	90	Pass
F - Thigh clearance	mm	140 to 155	150	Pass
G - Elbow back to wrist pivot	mm	290 to 305	300	Pass
H - Skull cap to back line	mm	41 to 46	45	Pass
I - Shoulder to elbow length	mm	330 to 345	335	Pass
J - Elbow rest height	mm	190 to 211	205	Pass
K - Buttock to knee length	mm	579 to 604	585	Pass
L - Popliteal length	mm	429 to 455	435	Pass
M - Knee pivot height	mm	485 to 500	490	Pass
N - Buttock popliteal length	mm	452 to 477	470	Pass
O - Chest depth	mm	213 to 229	215	Pass
P - Foot length	mm	251 to 267	260	Pass
V - Shoulder breadth	mm	422 to 437	425	Pass
W - Foot breadth	mm	91 to 107	105	Pass
Y - Chest circumference	mm	970 to 1001	975	Pass
Z - Waist circumference	mm	836 to 866	850	Pass
AA - Location for chest circumference	mm	429 to 434	430	Pass
BB - Location for waist circumference	mm	226 to 231	230	Pass
Overall Test Results				Pass

Laboratory Technician

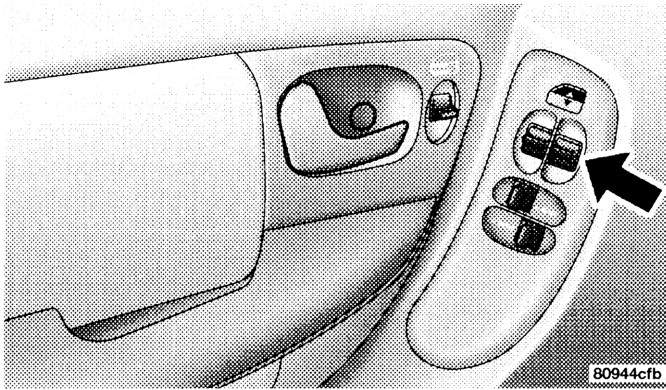
February 20, 2001

Test Date

Approved By

Date

APPENDIX F
VEHICLE OWNER'S MANUAL
OCCUPANT RESTRAINT INSTRUCTIONS



Auto Down Feature

The driver's window switch has an auto down feature. Press the window switch past the detent, release, and the window will go down automatically.

To open the window part way, press the window switch part way and release it when you want the window to stop.

The power window switches remain active for up to 45 seconds after the ignition switch has been turned off. Opening a vehicle front door will cancel this feature.

OCCUPANT RESTRAINTS

Some of the most important safety features in your vehicle are the restraint systems. These include the front and rear seat belts for the driver and all passengers, front airbags for both the driver and front passenger and if equipped, window bags for both the driver and front passenger. If you will be carrying children too small for adult-size seat belts, your seat belts or the LATCH feature also, can be used to hold infant and child restraint systems.

Please pay close attention to the information in this section. It tells you how to use your restraint system properly to keep you and your passengers as safe as possible.

2

WARNING!

- It is extremely dangerous to ride in a cargo area, inside or outside of a vehicle. In a collision, people riding in these areas are more likely to be seriously injured or killed.
- Do not allow people to ride in any area of your vehicle that is not equipped with seats and seat belts.
- Be sure everyone in your vehicle is in a seat and using a seat belt properly.

WARNING!

- Wearing a seat belt incorrectly is dangerous. Seat belts are designed to go around the large bones of your body. These are the strongest parts of your body and can take the forces of a collision the best.
- Wearing your belt in the wrong place could make your injuries in a collision much worse. You might suffer internal injuries, or you could even slide out of part of the belt. Follow these instructions to wear your seat belt safely and to keep your passengers safe, too.
- Two people should never be belted into a single seat belt. People belted together can crash into one another in a collision, hurting one another badly. Never use a lap/shoulder belt or lap belt for more than one person, no matter what their size.

2

WARNING!

In a collision, you and your passengers can suffer much greater injuries if you are not properly buckled up. You can strike the interior of your vehicle or other passengers, or you can be thrown out of the vehicle. Always be sure you and others in your vehicle are buckled up properly.

Buckle up even though you are an excellent driver, even on short trips. Someone on the road may be a poor driver and cause a collision that includes you. This can happen far away from home or on your own street.

Research has shown that seat belts save lives, and they can reduce the seriousness of injuries in a collision. Some of the worst injuries happen when people are thrown from the vehicle. Seat belts reduce the possibility of

ejection and the risk of injury caused by striking the inside of the vehicle. **Everyone** in a motor vehicle should be belted at all times.

Lap/Shoulder Belts

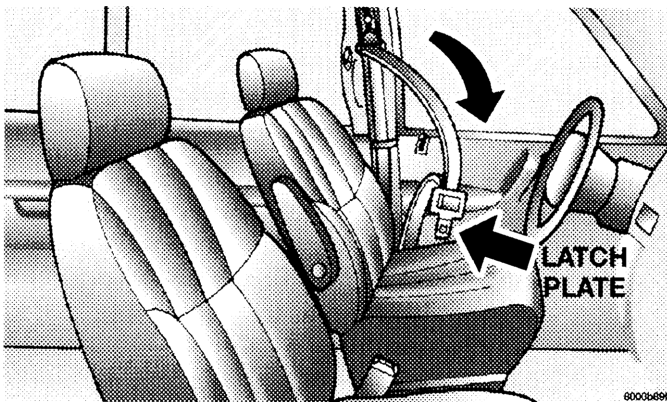
All the outboard seats in your vehicle are equipped with Lap/Shoulder Belts.

The belt webbing retractor is designed to lock during very sudden stops or collisions. This feature allows the shoulder part of the belt to move freely with you under normal conditions. But in a collision, the belt will lock and reduce the risk of your striking the inside of the vehicle or being thrown out.

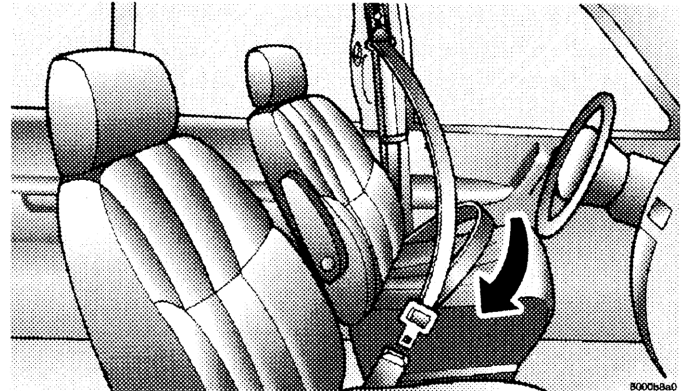
38 THINGS TO KNOW BEFORE STARTING YOUR VEHICLE

Lap/Shoulder Belt Operating Instructions

1. Enter the vehicle and close the door. Sit back and adjust the seat.
2. The seat belt latch plate is near the seatback of the front seats and next to your arm in the rear seats. Grasp the latch plate and pull out the belt. Slide the latch plate up the webbing as far as necessary to allow the belt to go around your lap.



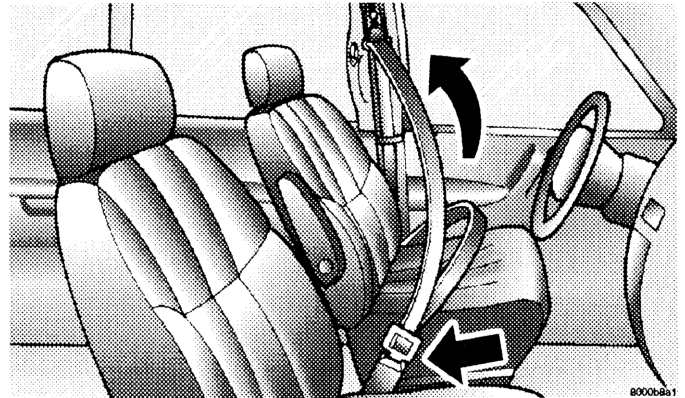
3. When the belt is long enough to fit, insert the latch plate into the buckle until you hear a "click".



WARNING!

- A belt that is buckled into the wrong buckle will not protect you properly. The lap portion could ride too high on your body, possibly causing internal injuries. Always buckle your belt into the buckle nearest you.
- A belt that is too loose will not protect you as well. In a sudden stop you could move too far forward, increasing the possibility of injury. Wear your seat belt snugly.
- A belt that is worn under your arm is very dangerous. Your body could strike the inside surfaces of the vehicle in a collision, increasing head and neck injury. A belt worn under the arm can cause internal injuries. Ribs aren't as strong as shoulder bones. Wear the belt over your shoulder so that your strongest bones will take the force in a collision.
- A shoulder belt placed behind will not protect you from injury during a collision. You are more likely to hit your head in a collision if you do not wear your shoulder belt. The lap and shoulder belt are meant to be used together.

4. Position the lap belt across your thighs, below your abdomen. To remove slack in the lap belt portion, pull up on the shoulder belt. To loosen the lap belt if it is too tight, tilt the latch plate and pull on the lap belt. A snug belt reduces the risk of sliding under the belt in a collision.

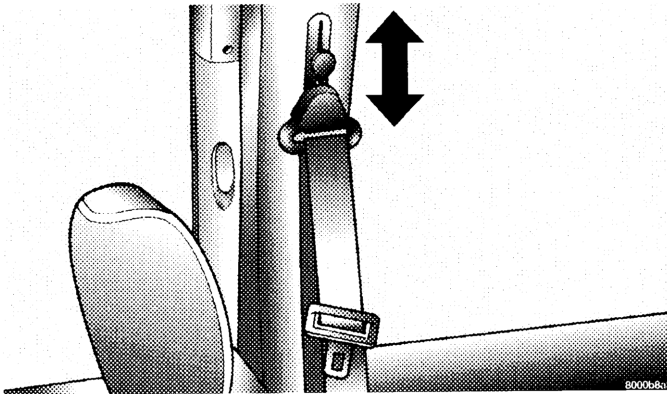


The instrument cluster turns on the seat belt light in the instrument cluster for 6 to 8 seconds when the ignition

2

THINGS TO KNOW BEFORE STARTING YOUR VEHICLE 41

downward to help position the belt away from your neck. Push up or down on the release lever to release the anchorage, and then move it up or down to the position that serves you best.

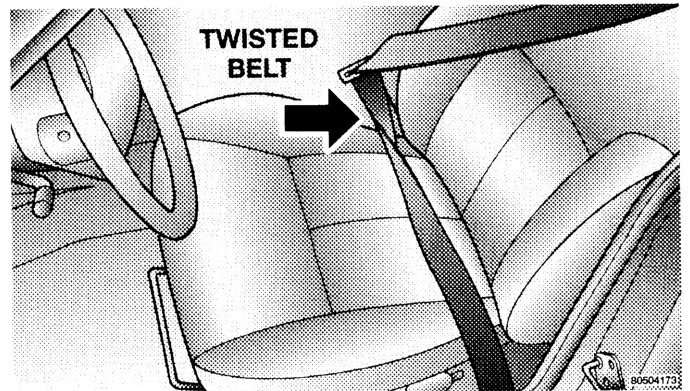


As a guide, if you are shorter than average, you will prefer a lower position, and if you are taller than average,

you'll prefer a higher position. When you release the anchorage, try to move it up or down to make sure that it is locked in position.

Lap/Shoulder Belt Untwisting Procedure

Use the following procedure to untwist a twisted lap/shoulder belt.



2

40 THINGS TO KNOW BEFORE STARTING YOUR VEHICLE

switch is first turned on. If it detects that the driver's seat belt is not buckled the light will remain on until the driver's seat belt is buckled.

WARNING!

- A lap belt worn too high can increase the risk of internal injury in a collision. The belt forces won't be at the strong hip and pelvic bones, but across your abdomen. Always wear the lap belt as low as possible and keep it snug.
- A twisted belt can't do its job as well. In a collision it could even cut into you. Be sure the belt is straight. If you can't straighten a belt in your vehicle, take it to your dealer and have it fixed.

5. Position the shoulder belt on your chest so that it is comfortable and not resting on your neck. The retractor will withdraw any slack in the belt.

6. To release the belt, push the red button on the buckle. The belt will automatically retract to its stowed position. If necessary slide the latch plate down the webbing to allow the belt to retract fully.

WARNING!

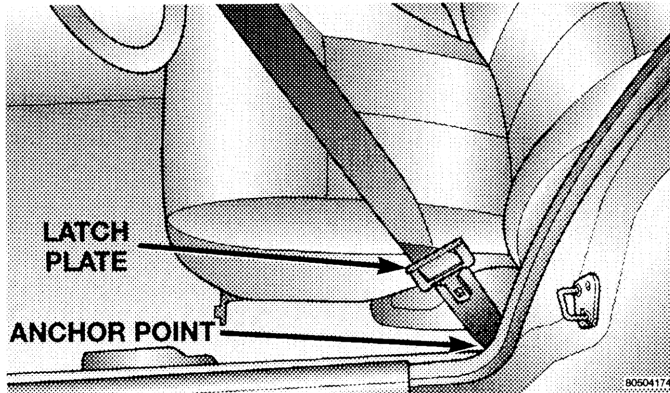
A frayed or torn belt could rip apart in a collision and leave you with no protection. Inspect the belt system periodically, checking for cuts, frays, or loose parts. Damaged parts must be replaced immediately. Do not disassemble or modify the system. Seat belt assemblies must be replaced after a collision if they have been damaged (bent retractor, torn webbing, etc.).

Adjustable Upper Shoulder Belt Anchorage

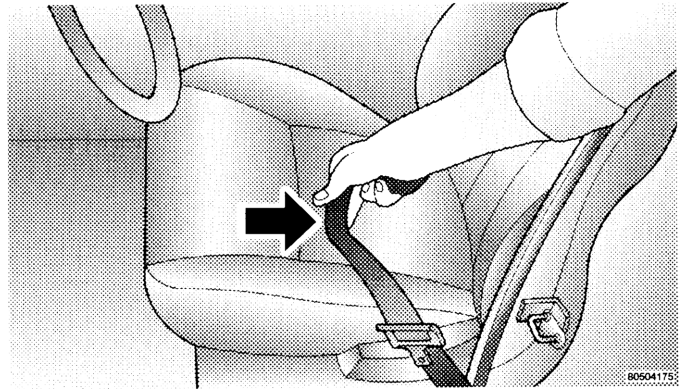
In the front seats and the second row outboard seats, the shoulder belt anchorage can be adjusted upward or

42 THINGS TO KNOW BEFORE STARTING YOUR VEHICLE

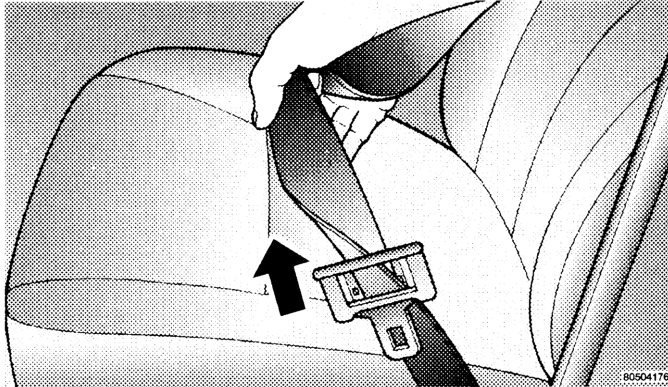
1. Position the latch plate as close as possible to the anchor point.



2. At about 6 to 12 inches (15 to 30 cm) above the latch plate, grasp and twist the belt webbing 180° to create a fold that begins immediately above the latch plate.



3. Slide the latch plate upward over the folded webbing. The folded webbing must enter the slot at the top of the latch plate.



4. Continue to slide the latch plate up until it clears the folded webbing.

Center Lap Belts

The center seating positions have a lap belt only. To fasten the lap belt, slide the latch plate into the buckle until you hear a “click”. To lengthen the lap belt, tilt the latch plate and pull. To remove slack, pull the loose end of the webbing.

Wear the lap belt snug against the hips. Sit back and erect in the seat, then adjust the belt as tightly as is comfortable.

2

Seat Belts and Pregnant Women

We recommend that pregnant women use the seat belts throughout their pregnancies. Keeping the mother safe is the best way to keep the baby safe.

Pregnant women should wear the lap part of the belt across the thighs and as snug across the hips as possible. Keep the belt low so that it does not come across the abdomen. That way the strong bones of the hips will take the force if there is a collision.

Seat Belt Extender

If a seat belt is too short, even when fully extended and when the adjustable upper shoulder belt anchorage (if equipped) is in its lowest position, your dealer can provide you with a seat belt extender. This extender should be used only if the existing belt is not long enough. When it is not required, remove the extender and stow it.

WARNING!

Using a seat belt extender when not needed can increase the risk of injury in a collision. Only use when the lap belt is not long enough when it is worn low and snug, and in the recommended seating positions. Remove and store the extender when not needed.

2

WARNING!

- A lap belt worn too loose or too high is dangerous.
- A belt worn too loose can allow you to slip down and under the belt in a collision.
- A belt that is too high will apply crash forces to the abdomen, not to the stronger hip bones. In either case, the risk of internal injuries is greater. Wear a lap belt low and snug.

Seat Belt Pretensioners

The seat belts for both front seating positions are equipped with pretensioning devices that are designed to remove slack from the seat belt in the event of a collision. These devices improve the performance of the seat belt by assuring that the belt is tight about the occupant early in a collision. Pretensioners work for all size occupants, including those in child restraint and will only deploy if the seat belt is buckled.

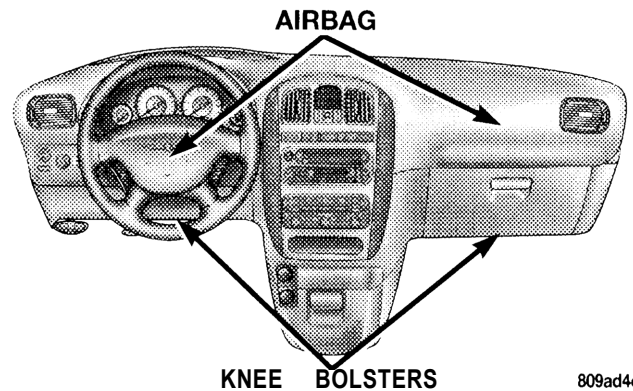
NOTE: These devices are not a substitute for proper seat belt placement by the occupant. The seat belt still must be worn snugly and positioned properly.

The pretensioners are triggered by the front airbag control module (see Airbag Section). Like the front airbags, the pretensioners are single use items. After a collision that is severe enough to deploy the airbags and pretensioners, both must be replaced.

46 THINGS TO KNOW BEFORE STARTING YOUR VEHICLE

Driver and Front Passenger Supplemental Restraint System Airbag

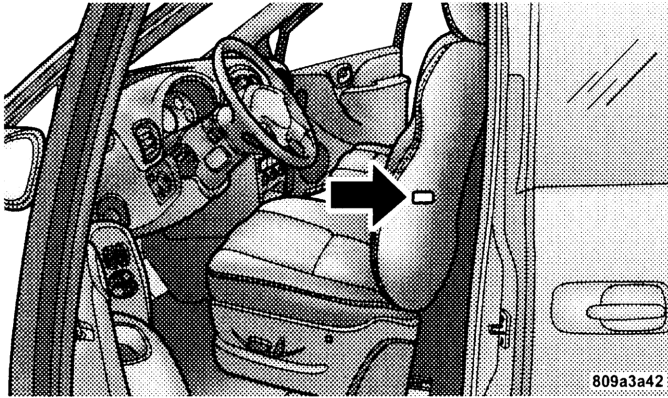
This vehicle has airbags for both the driver and front passenger as a supplement to the seat belt restraint systems. The driver's front airbag is mounted in the center of the steering wheel. The passenger's front airbag is mounted in the instrument panel, above the glove compartment. The words SRS AIRBAG are embossed on the airbag covers.



NOTE: The front airbags are certified to the Federal regulations that allow less forceful deployment in low speed collisions.

The front airbags have a multi stage inflator design. This allows the airbag to have different rates of inflation that are based on collision severity.

If the vehicle is equipped with window bags, they are located inside the driver and front passenger seatbacks, and their covers are labeled SRS AIRBAG.



WARNING!

- Do not put anything on or around the airbag covers or attempt to manually open them. You may damage the airbags and you could be injured because the airbags are not there to protect you. These protective covers for the airbag cushions are designed to open only when the airbags are inflating.
- If your vehicle is equipped with window bags, do not use accessory seat covers or place objects between you and the window bags; the performance could be adversely affected and/or objects could be pushed into you, causing serious injury.
- If your vehicle is equipped with window bags, do not attach cup holders or any other objects on or around the door. The inflating window bag could drive the object into occupants, causing serious injury.

2

THINGS TO KNOW BEFORE STARTING YOUR VEHICLE 49

You should read the instructions provided with your child restraint belt-positioning booster seat to make sure that you are using it properly.

2. All occupants should wear their lap and shoulder belts properly.
3. The driver and front passenger seats should be moved back as far as practical to allow the front airbags room to inflate.
4. If your vehicle has window bags, do not lean against the door, airbags will inflate forcefully into the space between you and the door.

WARNING!

- Relying on the airbags alone could lead to more severe injuries in a collision. The airbags work with your seat belt to restrain you properly. In some collisions the airbags won't deploy **at all**. **Always wear your seat belts even though you have airbags.**
- Being too close to the steering wheel or instrument panel during front airbag deployment could cause serious injury. Airbags need room to inflate. Sit back, comfortably extending your arms to reach the steering wheel or instrument panel.
- If the vehicle has window bags, they also need room to inflate. Do not lean against the door. Sit upright in the center of the seat.

2

Airbags inflate in moderate to high speed impacts. Along with seat belts and pretensioners, front airbags work with the instrument panel knee bolsters to provide improved protection for the driver and front passenger. Window bags also work with seat belts to improve occupant protection.

The seat belts are designed to protect you in many types of collisions. The front airbags deploy in moderate to severe frontal collisions. If your vehicle is equipped, the window bag on the crash side of the vehicle is triggered in moderate to severe side collisions. In certain types of collisions, both the front and window bags may be triggered. But even in collisions where the airbags deploy, you need the seat belts to keep you in the right position for the airbags to protect you properly.

Here are some simple steps you can take to minimize the risk of harm from a deploying airbag.

1. Children 12 years old and under should always ride buckled up in a rear seat.

Infants in rear facing child restraints designed for children up to 9 kg (20 lbs) and less than one year old should **NEVER** ride in the front seat of a vehicle with a passenger front airbag. An airbag deployment can cause severe injury or death to infants in that position.

Children more than 18 kg (40 lbs) should be secured in the rear seat in child restraints or belt-positioning booster seats. Older children who do not use child restraints or belt-positioning booster seats should ride properly buckled up in the rear seat, and in the outboard seat if possible. Never allow children to slide the shoulder belt behind them or under their arm.

If a child from 1 to 12 years old must ride in the front passenger seat because the vehicle is crowded, move the seat as far back as possible, and use the proper child restraint. See the section on Child Restraint.

50 THINGS TO KNOW BEFORE STARTING YOUR VEHICLE

The front airbag system consists of the following:

- Front Airbag Control Module (with integrated impact sensor)
- AIRBAG Readiness Light
- Driver Airbag
- Passenger Airbag
- Steering Wheel and Column
- Instrument Panel
- Seat Belt Readiness Light
- Interconnecting Wiring
- Knee Impact Bolster

The window bag system, on vehicles equipped, consists of the following:

- AIRBAG Readiness Light (shared with the front airbag system)
- Window Bag in the driver's seat
- Window Bag in the passenger's seat
- Window Bag Control Module (with integrated impact sensor)
- Interconnecting Wiring

How The Front Airbag System Works

- The **front** airbag control module determines if a frontal impact is severe enough to require the airbags to inflate. Based on the level of collision severity, the front control module determines the proper rate of inflation. The front airbag inflators are designed to provide different

rates of airbag inflation. The front airbag control module will not detect side, roll over, or rear collisions.

The airbag control module also monitors the readiness of the electronic parts of the system whenever the ignition switch is in the START or ON positions. These include all of the items listed above except the knee bolster, instrument panel and the steering wheel and column. If the key is in the OFF position, in the ACC position, or not in the ignition switch, the front airbags are not on and will not inflate.



The front airbag control module sends a message to the instrument cluster to turn on the AIRBAG light in the instrument panel for 6 to 8 seconds when the ignition switch is first turned ON, then turns the light off. If the front or window bag control modules detect a malfunction in any part of the system, the airbag light will turn on either momentarily or continuously.

WARNING!

Ignoring the AIRBAG light in your instrument panel could mean you won't have the airbags to protect you in a collision. If the light does not come on, stays on after you start the vehicle, or if it comes on as you drive, have the airbag system checked right away.

- When the front airbag control module detects a collision requiring the front airbags, it signals the inflator units. A large quantity of nontoxic gas is generated to inflate the front airbags. Different airbag inflation rates are possible based on collision severity. These rates are determined by the front airbag control module based on collision severity. The front airbag covers separate and fold out of the way as the airbags inflate to their full size. The front airbags fully inflate in about 50 milliseconds. This is only about half of the time it takes you to blink your eyes. The airbags then quickly,

throat irritation, move to fresh air. If the irritation continues, see your doctor. If these particles settle on your clothing, follow the garment manufacturer's instructions for cleaning.

- It is not advisable to drive your vehicle after the front airbags have deployed. If you are involved in another collision, the front airbags and seat belt pretensioners will not be in place to protect you.

WARNING!

Deployed airbags and seat belt pretensioners cannot protect you in another collision. Have the airbags and seat belt pretensioners replaced by an authorized dealer as soon as possible.

Window Bags Supplemental Restraint System (SRS) — If Equipped

The window bag control modules determines if a side collision is severe enough to require the window bags to inflate. The window bag control module will not detect roll over, front or rear collisions.

The window bag control modules monitor the readiness of the electronic parts of the system whenever the ignition switch is in the START or ON positions. These include all of the items listed under "The window bag system, on vehicles so equipped.

In moderate to severe side collisions, the window bag inflator on the crash side of the vehicle is triggered, releasing a quantity of nontoxic gas. The inflating window bag exits through the seat seam into the space between the occupant and the door. The window bag moves at a very high speed and with such a high force that it could injure you if you are not seated properly, or