REPORT NUMBER TR-P23001-20-NC

NEW CAR ASSESSMENT PROGRAM
FRONTAL BARRIER IMPACT TEST

MITSUBISHI MOTORS
2004 MITSUBISHI ENDEAVOR LS
SUV

NHTSA NUMBER: M45600

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

9/9/03

FINAL REPORT

PREPARED FOR:
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16. Abstract

A 35 mph (56.3 km/h) frontal barrier impact was conducted on a 2004 Mitsubishi Endeavor LS SUV at Karco Engineering, LLC on 9/9/03. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and footwell intrusion performance. The impact velocity is 56.02 km/h. The ambient temperature at the barrier face at the time of impact is 27.2 degrees Celcius. The vehicle's maximum post test static crush is 511mm to the right of the vehicle centerline. The test vehicle is equipped with a 3-point continuous belt system and second generation supplemental airbags in both front outboard seating positions. With respect to FMVSS 208 "Occupant Crash Protection", the occupant injury criteria summary is as follows:

Measurement Description	Units	Threshold	Driver ATD	Passenger ATD
Head Injury Criteria (HIC)	N/A	10000	458.0	599.3
Max. Chest Accel. (3 msec Clip)	G's	60	40.9	42.6
Left Femur Force	Newtons	10008	-2668.3	-3542.7
Right Femur Force	Newtons	10008	-2983.9	-2293.0

17. Key Words 56.3 km/h NCAP Frontal Barrier Impact Test New Car Assessment Program (NCAP) 2004 Mitsubishi Endeavor LS SUV NHTSA No. M45600		**18. Distribution of Statement** Copies of this report available from: NHTSA Technical Reference Division National Highway Traffic Safety Admin. 400 Seventh St., SW, Room 5108 Washington, D.C. 20590	
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SECTION 1

PURPOSE AND SUMMARY OF TEST M45600

1.1 PURPOSE

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

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

1.2 SUMMARY

A load cell barrier consisting of 36 load cells was impacted by a 2004 Mitsubishi Endeavor LS SUV at a velocity of 56.02 km/h. The test was performed at Karco Engineering, LLC on September 9, 2003.

Two real-time and 21 high-speed cameras were used to document the frontal barrier impact event. Camera locations and other pertinent camera information can be found in this report.

Two Part 572E, 50th percentile male anthropomorphic test devices (ATDs), were placed in the driver and right-front passenger seating positions according to dummy placement instructions specified in the Laboratory Indicant Test Procedure.

Both ATDs were fully instrumented head (primary and redundant), chest (primary and redundant) and pelvis triaxial accelerometers, chest displacement potentiometers, six-axis upper neck transducers, right/left femur load cells, and lower leg instrumentation. Seat belt load cells were also placed on the driver's and passenger's lap and shoulder belts to measure dummy torso and pelvic section loading. The driver (position 1) ATD (Serial No. 34) and the right-front passenger (position 2) ATD (Serial No. 35) were calibrated two tests prior to this test.

Ninety seven (97) channels of data were recorded using an on-board data acquisition system. Appendix A contains Pre and Post-Test Photographs, Appendix B contains the vehicle and dummy response data traces. Appendix C contains Load Cell Barrier information. Appendix D contains the Instrumentation Data Channel assignments. Appendix E contains the Dummy Calibration data and Appendix F contains the Child Restraint System (CRS).

There was 100 percent windshield retention and no intrusion into the protected zone of the windshield during the impact event. There was no Stoddard solvent leakage after the event or during any phase of the static rollover.

The maximum static crush of the vehicle was 511 mm and both the driver and the passenger side doors remained closed during the impact event and were operable after the impact.

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

The passenger's visible contact points were as follows: The passenger ATD head, chest and abdomen contacted the airbag. Both knees contacted the glove box.

Occupant injury data is contained in table below.

OCCUPANT DATA SUMMARY

ATD Position	HIC	Clip (g)	Chest Disp. (mm)	Left Femur (N)	Right Femur (N)	Belt Spool (mm)
Driver	458.0	40.9	-28.0	-2668.3	-2983.9	213.3
Passenger	599.3	42.6	-27.8	-3542.7	-2293.0	243.5

SECTION 2
OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600
Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

CONVERSION FACTORS USED IN THIS REPORT*

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

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

DATA SHEET NO. 1
CRASH TEST SUMMARY

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600
Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

PRIMARY IMPACT DATA

Measured Parameter	Units	Value
Velocity at Impact	km/h	56.02
Test Weight	kg	2103
Impact Angle	degrees	0
Average Rebound	mm	603
Maximum Static Crush	mm	511

DOOR OPENING AND SEAT TRACK INFORMATION

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

TEST DUMMY INFORMATION

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

16mm MOVIE COVERAGE

High Speed	21
Real Time	2
Total	23

DATA CHANNELS

Driver ATD Sensors	40
Passenger ATD Sensors	40
Belt Assessment Sensors	6
Vehicle Structure Accelerometers	9
Rigid Barrier Load Cells	36
Total	131

DATA SHEET NO. 2
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600
Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M45600	Anti-Lock Brakes	Yes
Make	Mitsubishi	All Wheel Drive	Yes
Model	Endeavor Ls	Power Steering	Yes
Body Style	4-Door	Driver Front Airbag	Yes
Vin No.	4A4MN21SX4E004430	Driver Side Airbag	Yes
Color	Silver/Gray	Driver Head Airbag	No
Delivery Date	8/18/2003	Driver Curtain Airbag	No
Odometer	101	Pass. Airbag	Yes
Dealer	Lancaster Mitsubishi	Pass. Side Airbag	No
Transmission	4 Speed Automatic	Pass. Head Airbag	No
Final Drive	AWD	Pass. Curtain Airbag	No
Type/No. Cyl.	V-6	Pre-Tensioners	Yes
Engine Disp. (L)	3.8	Load Limiters	Yes
Engine Placement	Longitudinal	Bucket Seats	Yes
Roof Rack	Yes	Air. Cond.	Yes
Sunroof/T-Top	No	AM/FM Cassette	Yes
Tinted Glass	Yes	Tilt Steering	Yes
Traction Control	No	Power Door Locks	Yes
Power Brakes	Yes	Power Windows	Yes
Front Disc	Yes	Power Seats	No
Rear Disc	Yes	Other	None

DATA FROM CERTIFICATION LABEL

Manufactured By	Mitsubishi Motors	GVWR (kg)	2380
		GAWR Front (kg)	1245
Date of Manufacture	Mar-03	GAWR Rear (kg)	1270

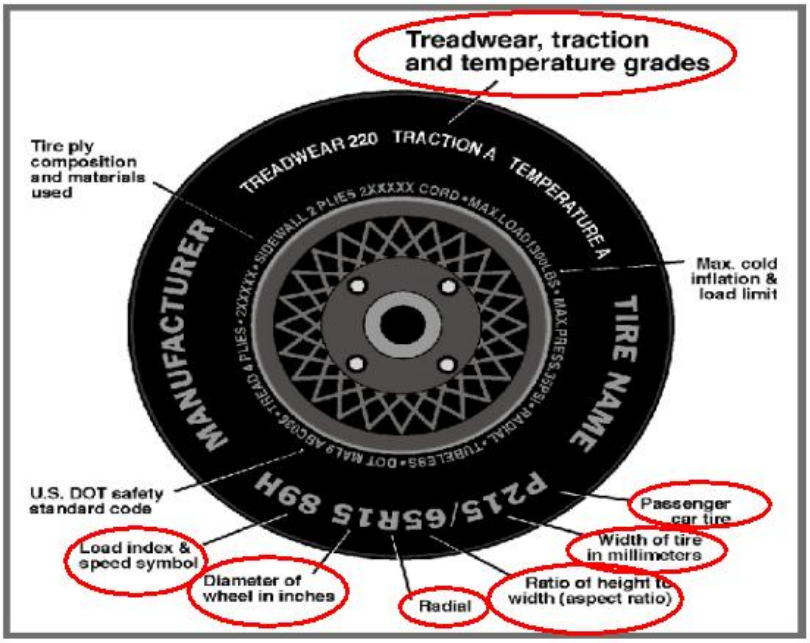
VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bucket	None	
Number of Occupants	2	3		5
Capacity Weight (VCW) (kg)				440
Cargo Weight (RCLW) (kg)				110

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

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600
Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

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



Measured Parameter	Front	Rear
Max. Tire Pressure (kpg)	308	308
Cold Pressure (kpg)	224	224
Recommened Tire Size	P235/65R17	P235/65R17
Tire Size on Vehicle	P235/65R17	P235/65R17
Tire Manufacturer	Bridgestone	Bridgestone
Treadwear	320	320
Traction	B	B
Temperature Grades	B	B
Tire Plies Sidewall	2	2
Tire Plies Body	2	2
Load Index/Speed Symbol	110	110
Tire Material	Polyester/Steel/Nylon	Polyester/Steel/Nylon
DOT Safety Code Right	DOT 7X87 PYC 0803	DOT 7X87 PYC 0603
DOT Safety Code Left	DOT 7X87 PYC 0803	DOT 7X87 PYC 0803

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

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600
Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	534	396		577	489	
Right	kg	517	404		563	474	
Ratio	%	56.8	43.2		54.2	45.8	
Totals	kg	1051	800	1851	1140	963	2103

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1851
Weight of 2 P572 ATD's	kg	152
Rated Cargo/Luggage Wt. (RCLW)	kg	110
Calculated Vehicle Target Wt. (TVTW)	kg	2113

TEST VEHICLE ATTITUDE AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	867	868	873	875	1187
As Tested	mm	867	865	860	864	1258

Vehicle Wheel Base (mm) 2747

Weight of Ballast Secured in cargo area (kg) 4.536

Vehicle Components Removed Rear hatch,rear bumper,rear dr. panels, rear side windows

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

FUEL SYSTEM DATA

Fuel System Capacity From Owners Manual (L) 81.01

Usable Capacity Furnished by COTR (L) 63.97

Actual Test Volume with entire fuel System Filled (L) 75.33

1/3 of Usable Capacity (L) 21.32

Test Fluid Type: Stoddard Solvent

Kinematic Viscosity: as per ASTM Standard D484-71 Purple

Is Vehicle Fuel Pump Electric or Mechanical? Electric

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

Fuel System Particulars:

DATA SHEET NO. 3
POST TEST IMPACT DATA

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600
Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

SPEED TRAP DATA

Measured Parameter	Units	Requirement	Value
Trap No.1 Velocity (Primary)	km/h	55.51 to 57.12	56.02
Trap No. 1 Entry Distance	mm	<1524	1524
Trap No.1 Exit Distance	mm	<1524	305
Trap No.2 Velocity (Redun.)	km/h	55.51 to 57.12	56.04
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	4580	4277	-303
Center	mm	4830	4323	-507
Right Side	mm	4580	4238	-342

VEHICLE REBOUND FROM BARRIER

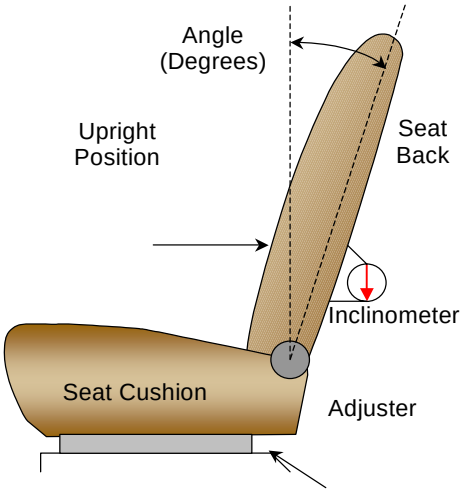
Measured Parameter	Units	Value
Left Side	mm	640
Center	mm	580
Right Side	mm	590
Average	mm	603

DATA SHEET NO. 4
TEST VEHICLE INFORMATION

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600
Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

NOMINAL DESIGN RIDING POSITION

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



FRONT SEAT ASSEMBLY

SEAT BACK ANGLES

	Deg.
Driver w/seated dummy	24.0
Passenger w/seated Dummy	24.0

SEAT FORE/AFT POSITIONS

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

SEAT FORE/AFT POSITIONING

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	23	12
Passenger Seat	23	12

SEAT BELT UPPER ANCHORAGE

Position number one (1) is the uppermost position.

SEAT BELT UPPER ANCHORAGE

	Total # of Positions	Placed in Position #
Driver Seat	5	2 from bottom
Passenger Seat	5	2 from bottom

TEST VEHICLE INFORMATION

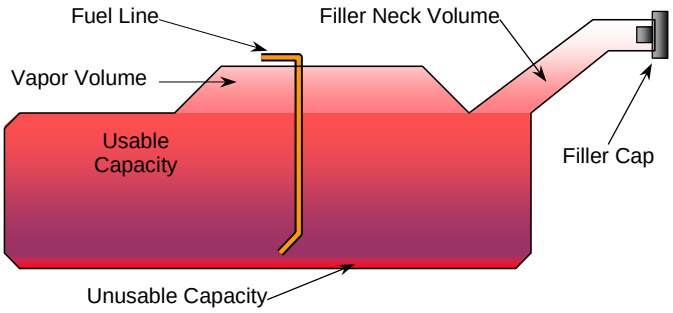
Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600

Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	64.0
Usable Capacity of "Optional" Tank	N/A
Usable Capacity used for FMVSS 301	74.50 to 76.12
Actual Amount of Solvent used	75.3
1/3 of Usable Capacity	21.3

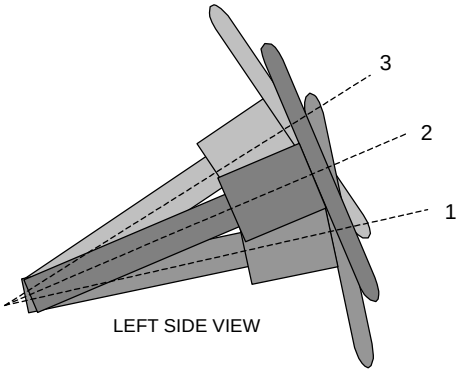
The test vehicle is equipped with an electric fuel pump. The fuel pump operates for approximately two seconds after the ignition is placed in the "ON" position, after which the fuel pump automatically shuts off. The fuel filler door is located on the left rear fender. The standard fuel tank occupies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



VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

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



STEERING COLUMN ASSEMBLY

STEERING COLUMN POSITIONS

	Degrees
Lowermost positon No. 1	68.0
Geometric center position No. 2	62.0
Uppermost position No. 3	55.0

DATA SHEET NO. 5

DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600

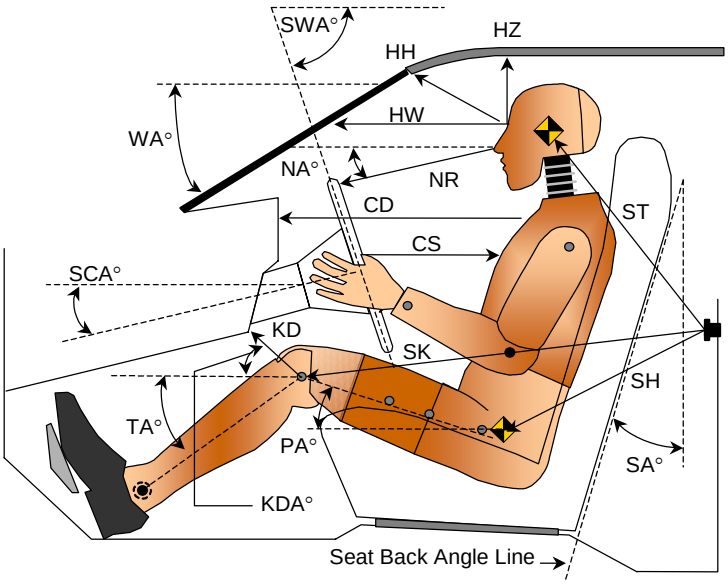
Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

TEST DUMMY POSITION MEASUREMENTS

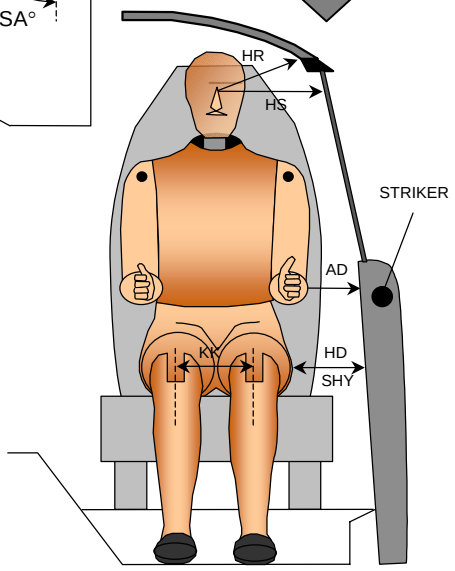
Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (deg)	Length (mm)	Angle (deg)
WA	Windshield Angle		30.7		
SWA	Steering Wheel Angle		28.0		
SCA	Steering Column Angle		62.0		
SA	Seat Back Angle		24.0		24.0
HZ	Head to Roof (Z)	230	90	220	90
HH	Head to Header	485		470	
HW	Head to Windshield	805		790	
HR	Head to Side Header (Y)	330		328	
NR	Nose to Rim	398	15		
CD	Chest to Dash	570		560	
CS	Chest to Steering Hub	300			
RA	Rim to Abdomen	165			
KDL	Left Knee to Dash	110	8	150	
KDR	Right Knee to Dash	120		147	14
PA	Pelvic Angle		23.5		23.8
TA	Tibia Angle		51		43.4
KK	Knee to Knee (Y0	335		280	
ST	Striker to Head	605	7	510	11
SK	Striker to Knee	490	76	628	78
SH	Striker to H-Point	275	38	255	41
SHY	Striker to H-Point (Y)	252		238	
HS	Head to Side Window	365		370	
HD	H-Point to Door (Y)	180		168	
AD	Arm to Door (Y)	105		28	

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

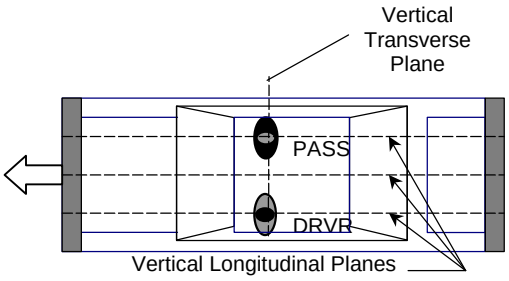
Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600
Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03



AD	Arm to Door
HD	H-Point to Door
HR	Head to Side Header
HS	Head to Side Window
KK	Knee to Knee
SHY	Striker to H-Point (Y Axis)



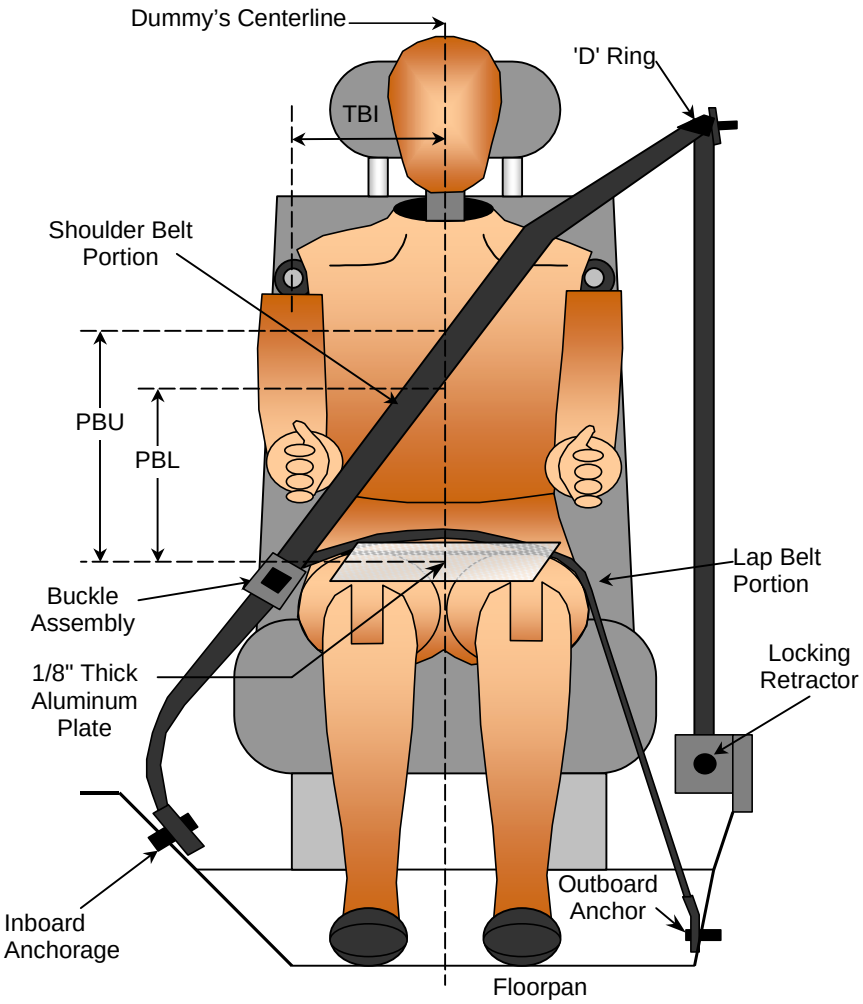
CD	Chest to Dash
CS	Chest to Steering Wheel Hub
HH	Head to Header
HW	Head to Windshield
HZ	Head to Roof
KDA	Knee to Dash Angle
KDL	Left Knee to Dash
KDR	Right Knee to Dash
NA	Nose to Rim Angle
NR	Nose to Rim
PA	Pelvic Angle
RA	Rim to Abdomen
SA	Seat Back Angle
SCA	Steering Column Angle
SH	Striker to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



DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS

DATA SHEET NO. 6
SEAT BELT POSITIONING DATA

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600
Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03



SEAT BELT POSITIONING MEASUREMENTS

Measured Parameter	Units	Driver	Passenger
TBI -Dummy C/L to Lap/Shoulder Belt Intersect	mm	245	250
PBU - Top Surface of reference to belt upper edge	mm	335	307
PBL - Top Surface of reference to belt lower edge	mm	265	240
Lap Belt Tension	Newton's	10	10
Shoulder Belt Tension	N/A	Retractor	Retractor

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

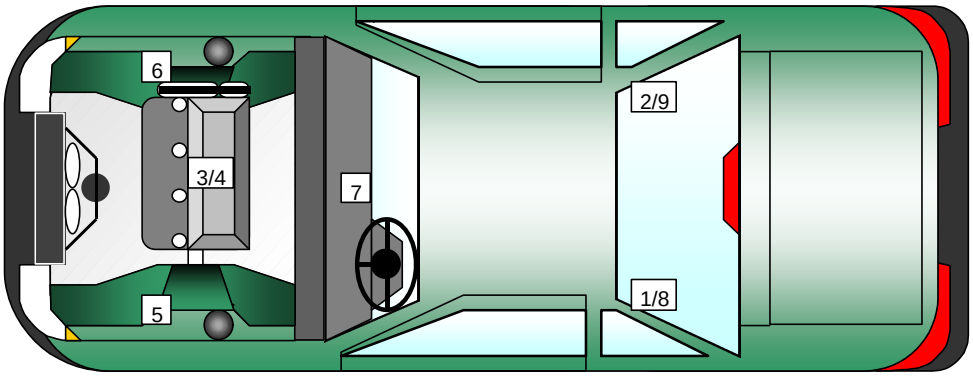
Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600

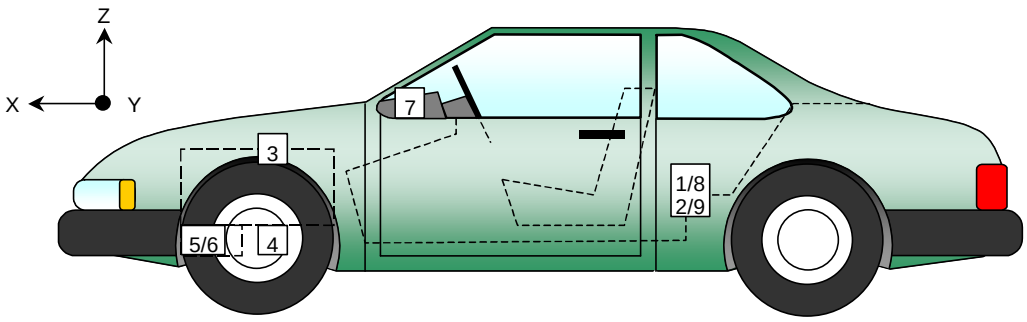
Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

VEHICLE ACCELEROMETER PEAK DATA AND PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)			Peak Values				
		X	Y	Z	Units	Max	Time	Min	Time
1	Left Rear X-Member	2060	-675	375	G's	1.3	114.2	-51.2	36.6
2	Right Rear X-Member	2060	675	375	G's	1.1	92.6	-50.5	36.2
3	Engine Top	4230	80	750	G's	38.3	41.1	-141.4	26.6
4	Engine Bottom	4070	220	200	G's	23.9	38.6	-134.2	27.1
5	Left Brake Caliper	3940	-780	250	G's	59.1	29.0	-131.6	34.8
6	Right Brake Caliper	3940	780	250	G's	54.8	29.8	-142.6	42.4
7	Instrument Panel	3140	0	1135	G's	45.4	61.0	-90.1	66.0
8	Left Rear X-Member (Z-Axis)	1980	-675	375	G's	7.9	29.8	-7.9	43.1
9	Right Rear X-Member (Z-Axis)	1980	675	375	G's	7.0	58.2	-10.8	35.8

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





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

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600

Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

HEAD PRIMARY PEAK ACCELERATIONS

			Driver				Passenger			
Location	Axis	Units	Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	11.8	225.7	-55.3	72.5	7.0	270.4	-62.8	78.0
Head CG	Y	G's	3.2	240.6	-5.4	76.5	7.5	69.5	-4.6	97.3
Head CG	Z	G's	13.2	45.7	-20.5	88.4	26.1	54.8	-13.5	103.1
Head CG Resultant	N/A	G's	55.6	72.5			64.4	81.0		

CHEST PRIMARY PEAK ACCELERATIONS

			Driver				Passenger			
Location	Axis	Units	Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	4.1	262.3	-39.3	80.2	1.5	161.7	-44.5	64.8
Chest CG	Y	G's	4.9	77.2	-5.9	46.8	4.7	50.2	-4.6	80.8
Chest CG	Z	G's	13.7	77.5	-5.5	101.8	16.6	78.6	-7.0	105.7
Chest CG Resultant	N/A	G's	41.3	78.3			44.7	64.8		

FEMUR PEAK FORCES

			Driver				Passenger			
Location	Axis	Units	Max	Time	Min	Time	Max	Time	Min	Time
Left Femur	Z	Newtons	137.8	231.0	-2668.3	37.5	305.9	34.3	-3542.7	50.6
Right Femur	Z	Newtons	293.2	271.3	-2983.9	42.3	370.8	65.3	-2293.0	50.6

SEAT BELT SENSOR PEAK VALUES

			Driver				Passenger			
Location	Axis	Units	Max	Time	Min	Time	Max	Time	Min	Time
Shoulder Belt Pullout	N/A	MM	213.3	92.1	0.0	0.0	243.5	88.7	0.0	11.1
Shoulder Belt Stretch	N/A	MM/CM	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0 [1]
Lap Belt Force	N/A	Newtons	8771.7	57.0	-11.1	226.4	4526.0	42.8	0.0	45.5 [2]
Shoulder Belt Force	N/A	Newtons	4194.1	58.7	1.5	0.0	4869.2	74.7	-30.3	267.8

1.) Not used with pre-tensioners

2.) Passenger channel failed at 45.5 msec.

	Driver				Passenger			
Location	HIC	T^1	T^2	Avg G	HIC	T^1	T^2	Avg G
Head CG Primary	458.0	57.2	93.1	43.9	599.3	62.4	98.3	48.8

PRIMARY CHEST CLIP (3MSEC)

	Driver			Passenger		
Location	CLIP	T^1	T^2	CLIP	T^1	T^2
Chest CG Primary	40.9	77.5	80.5	42.6	64.1	67.1

DATA SHEET NO. 8…(continued)

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600

Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

PELVIC PEAK ACCELERATIONS

			Driver				Passenger			
Location	Axis	Units	Max	Time	Min	Time	Max	Time	Min	Time
Pelvis	X	G's	7.1	100.7	-51.0	59.1	6.0	113.0	-70.0	50.8
Pelvis	Y	G's	10.2	97.0	-5.3	55.1	7.8	49.8	-5.0	86.0
Pelvis	Z	G's	3.1	262.3	-22.3	55.9	3.3	233.8	-26.3	57.8
Pelvis Resultant	N/A	G's	55.5	59.1			73.0	50.7		

UPPER NECK PEAK FORCES AND MOMENTS

			Driver				Passenger			
Location	Axis	Units	Max	Time	Min	Time	Max	Time	Min	Time
Neck Force	X	Newtons	182.5	227.3	-700.2	72.3	598.3	88.2	-366.7	72.8
Neck Force	Y	Newtons	127.6	261.9	-159.5	65.4	133.3	32.6	-237.4	140.5
Neck Force	Z	Newtons	2073.8	70.6	-235.7	139.2	1264.2	71.8	-441.3	101.5
Neck Force Resultant	N/A	Newtons	2176.2	72.4			1311.3	73.6		
Neck Moment	X	N•m	7.9	62.1	-9.1	49.8	11.4	103.9	-11.7	130.4
Neck Moment	Y	N•m	28.7	138.9	-73.4	72.9	30.1	88.2	-43.3	74.3
Neck Moment	Z	N•m	6.4	262.2	-4.2	79.2	5.7	103.4	-5.1	146.0
Neck Moment Resultant	N/A	N•m	73.5	72.9			43.9	74.2		

FOOT PEAK ACCELERATIONS

			Driver				Passenger			
Location	Axis	Units	Max	Time	Min	Time	Max	Time	Min	Time
Left Foot Aft	X	G's	9.5	90.1	-56.0	42.1	15.7	79.9	-151.8	45.3
Left Foot Aft	Z	G's	4.7	52.2	-49.3	30.2	13.4	59.9	-94.9	46.9
Left Foot Fore	Z	G's	0.0	0.0	0.0	0.0	37.2	85.6	-133.2	44.3 [1]
Right Foot Aft	X	G's	16.1	98.7	-114.6	42.3	13.2	70.3	-82.1	49.3
Right Foot Aft	Z	G's	11.0	66.1	-83.9	44.8	11.3	69.0	-44.6	51.3
Right Foot Fore	Z	G's	34.3	58.0	-116.4	40.4	19.4	104.7	-100.9	50.8

1.) Driver channel failed, no data

UPPER AND LOWER TIBIA PEAK FORCES AND MOMENTS

			Driver				Passenger			
Location	Axis	Units	Max	Time	Min	Time	Max	Time	Min	Time
Left Upper Moment	X	N•m	17.4	29.9	-17.7	84.2	35.8	53.1	-106.8	47.5
Left Upper Moment	Y	N•m	8.8	256.3	-86.6	41.7	24.6	120.9	-122.4	55.6
Right Upper Moment	X	N•m	38.3	61.0	-0.2	5.0	28.5	44.1	-28.6	47.6
Right Upper Moment	Y	N•m	27.3	100.8	-90.2	47.1	18.3	251.1	-97.1	48.3
Left Lower Moment	X	N•m	11.8	40.3	-21.5	76.6	119.9	50.7	-44.3	45.5
Left Lower Moment	Y	N•m	29.4	86.3	-38.7	41.8	40.0	78.5	-48.3	45.2
Left Lower Force	Z	Newtons	158.9	129.7	-1956.4	34.1	145.3	25.9	-3725.0	50.2
Right Lower Moment	X	N•m	11.8	47.2	-27.2	79.5	91.9	47.8	-10.0	106.6
Right Lower Moment	Y	N•m	38.4	68.4	-39.2	46.8	36.1	87.6	-21.0	46.8
Right Lower Force	Z	Newtons	188.8	230.9	-2554.8	41.9	68.1	181.4	-3465.3	49.0

DATA SHEET NO. 8…(continued)

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600

Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

CHEST PEAK DISPLACEMENTS

			Driver				Passenger			
Location	Axis	Units	Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	MM	0.2	4.3	-28.0	83.4	0.4	4.1	-27.8	82.1

HEAD REDUNDANT PEAK ACCELERATIONS

			Driver				Passenger			
Location	Axis	Units	Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	11.5	226.4	-54.8	72.9	7.5	268.4	-62.7	78.4
Head CG	Y	G's	3.8	241.9	-4.3	77.0	8.1	66.5	-4.9	158.0
Head CG	Z	G's	12.6	44.7	-20.4	88.1	26.0	55.2	-14.7	102.8
Head CG Resultant	N/A	G's	55.2	72.9			64.4	76.3		

CHEST REDUNDANT PEAK ACCELERATIONS

			Driver				Passenger			
Location	Axis	Units	Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	4.1	262.4	-38.8	67.3	1.7	161.9	-43.9	64.9
Chest CG	Y	G's	5.1	77.3	-5.7	46.6	4.8	49.8	-4.5	80.7
Chest CG	Z	G's	13.8	77.3	-5.6	101.7	16.8	80.2	-6.8	107.1
Chest CG Resultant	N/A	G's	40.9	78.2			44.1	64.9		

REDUNDANT HEAD INJURY CRITERA (HIC)

	Driver				Passenger			
Location	HIC	T^1	T^2	Avg G	HIC	T^1	T^2	Avg G
Head CG Redundant	460.5	57.1	93.0	44.0	598.8	62.4	98.3	48.8

REDUNDANT CHEST CLIP (3MSEC)

	Driver			Passenger		
Location	CLIP	T^1	T^2	CLIP	T^1	T^2
Chest CG Redundant	40.5	77.4	80.4	42.7	64.3	67.3

DATA SHEET NO. 9
SEATBELT ASSESSMENT TEST DATA

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600
Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
TBI -Dummy C/L to Lap/Shoulder Belt Intersect	mm	245	250
PBU - Top Surface of reference to belt upper edge	mm	335	307
PBL - Top Surface of reference to belt lower edge	mm	265	240
Lap Belt Tension	Newton's	10	10
Shoulder Belt Tension	N/A	Retractor	Retractor

SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
Retractor Reel to "D" ring	mm	690	690
Shoulder Belt length as measured on ATD	mm	865	870
Lap Belt length as measured on ATD	mm	950	920
Remainder of belt on reel	mm	970	1000
Total belt length for continuous webbing systems	mm	3475	3480

SHOULDER BELT SPOOL-OFF DATA

Measurement Description	Units	Driver	Passenger
As determined mechanically	N/A	0.0	0.0
As determined electronically	mm	213.3	243.5

BELT STRETCH DATA

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

* Not used with shoulder belt pre-tensioner systems

DATA SHEET NO. 10
SUMMARY OF FMVSS 212 DATA

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600
Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

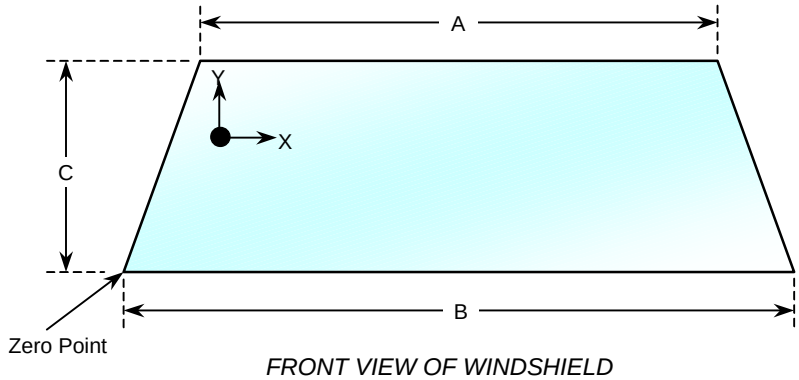
Windshield Mounting Details: Windshield glass is secured to the vehicle frame with a rubber type adhesive. No molding covers the windshield periphery at any point.

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

Temperature of windshield molding during test: 21.1 °C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test(mm)	Post-Test(mm)	% of Retention
Left Side	2296.0	2296.0	100.0
Right Side	2296.0	2296.0	100.0
Total	4592.0	4592.0	100.0



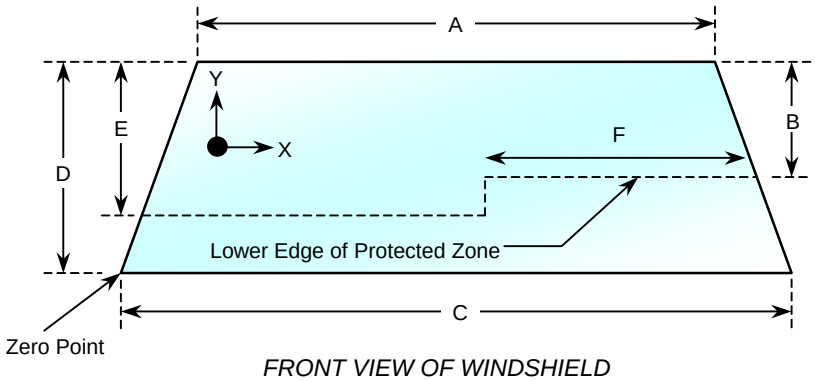
FRONT VIEW OF WINDSHIELD

WINDSHIELD DIMENSIONS

Item	Units	Segment Length	Molding Width
A	mm	1297.0	10.0
B	mm	1565.0	0.0
C-Left	mm	865.0	30.0
C-Right	mm	865.0	30.0

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

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600
Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03



FRONT VIEW OF WINDSHIELD

WINDSHIELD AND PROTECTED ZONE

Item	Units	Value
A	mm	1297
B	mm	555
C	mm	1565
D	mm	865
E	mm	560
F	mm	465

AREA OF PROTECTED ZONE FAILURES

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

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

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

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

DATA SHEET NO. 12

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600

Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

Test Time: 11:54 AM Temperature: 27.2 Deg. C.

STODDARD SOLVENT SPILLAGE MEASUREMENTS

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

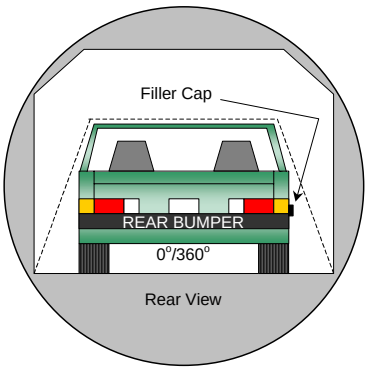
B. For the 5 minute period after motion ceases: 0.0 oz.
(Maximum Allowable = 5 ounces)

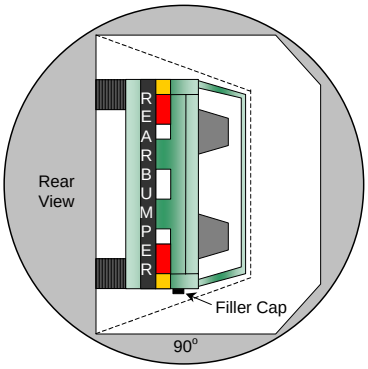
C. For the following 25 minutes: 0.0 oz.
(Maximum Allowable = 1 oz./minute)

D. Spillage Location Details: No leakage occurred

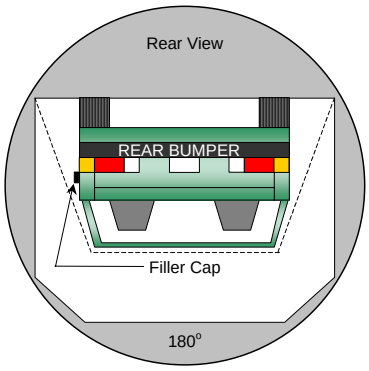
DATA SHEET NO. 13
FMVSS 301 STATIC ROLLOVER DATA

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600
Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

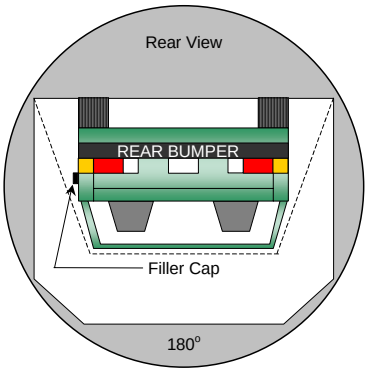




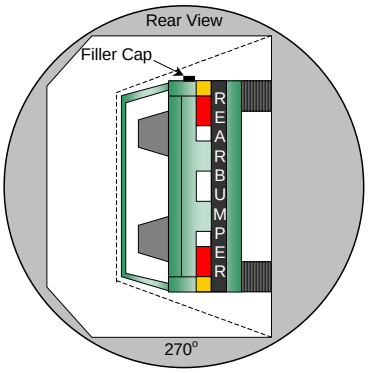
0° to 90°



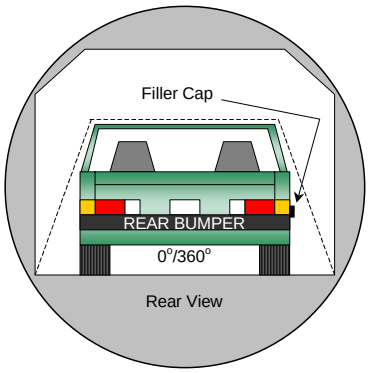
90° to 180°



180° to 270°



270° to 360°



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

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

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600
Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	79	300	379
90° to 180°	80	300	380
180° to 270°	85	300	385
270° to 360°	80	300	380

FMVSS 301 SPILLAGE TABLE REQUIREMENT (oz.)

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

ACTUAL TEST VEHICLE SOLVENT SPILLAGE TABLE (oz.)

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

SOLVENT SPILLAGE LOCATION TABLE

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

DATA SHEET NO. 14
VEHICLE MEASUREMENTS

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600
Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

VEHICLE MEASUREMENT TABLE

No.	Measurement Description	Units	Pre-Test	Post-Test	Diff.
1	Total length of vehicle at centerline	mm	4830	4323	-507
2	RSOV to front of engine	mm	4400	4170	-230
3	RSOV to firewall centerline	mm	3865	3840	-25
4	RSOV to leading edge of right door	mm	3313	3310	-3
5	RSOV to leading edge of left door	mm	3325	3315	-10
6	RSOV to lower leading edge of right door	mm	3278	3252	-26
7	RSOV to lower leading edge of left door	mm	3268	3256	-12
8	RSOV to upper trailing edge of right door	mm	2277	2277	0
9	RSOV to upper trailing edge of left door	mm	2278	2278	0
10	RSOV to lower trailing edge of right door	mm	2278	2258	-20
11	RSOV to lower trailing edge of left door	mm	2277	2263	-14
12	RSOV to bottom of right 'A' pillar	mm	3292	3296	4
13	RSOV to bottom of left 'A' pillar	mm	3307	3292	-15
14	RSOV to firewall on right side	mm	3922	3836	-86
15	RSOV to firewall on left side	mm	3928	3823	-105
16	RSOV to steering column	mm	2886	2940	54
17	Center of steering column to left 'A' pillar	mm	430	412	-18
18	Center of steering column to headlining	mm	460	460	0
19	RSOV to right side of front bumper	mm	4580	4238	-342
20	RSOV to left side of front bumper	mm	4580	4277	-303
21	Length of engine block	mm	400	400	0
RD	RSOV to right side of dash panel	mm	3142	3151	9
CD	RSOV to center of dash panel	mm	3010	3151	141
LD	RSOV to left side of dash panel	mm	3133	3151	18

All measurements in millimeters

DATA SHEE NO. 14.....(CONTINUED)
VEHICLE STRUCTURAL MEASUREMENTS

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600
Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

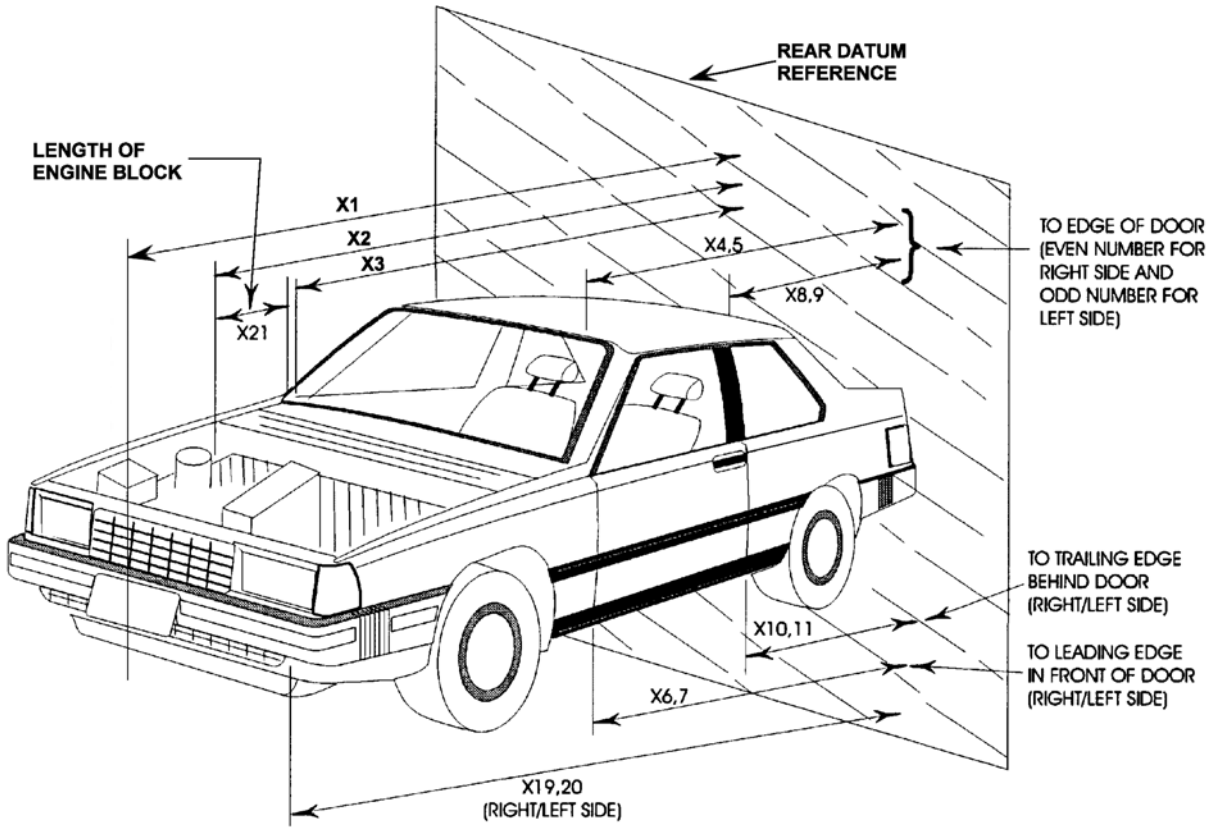
VEHICLE STRUCTURAL MEASUREMENT TABLE

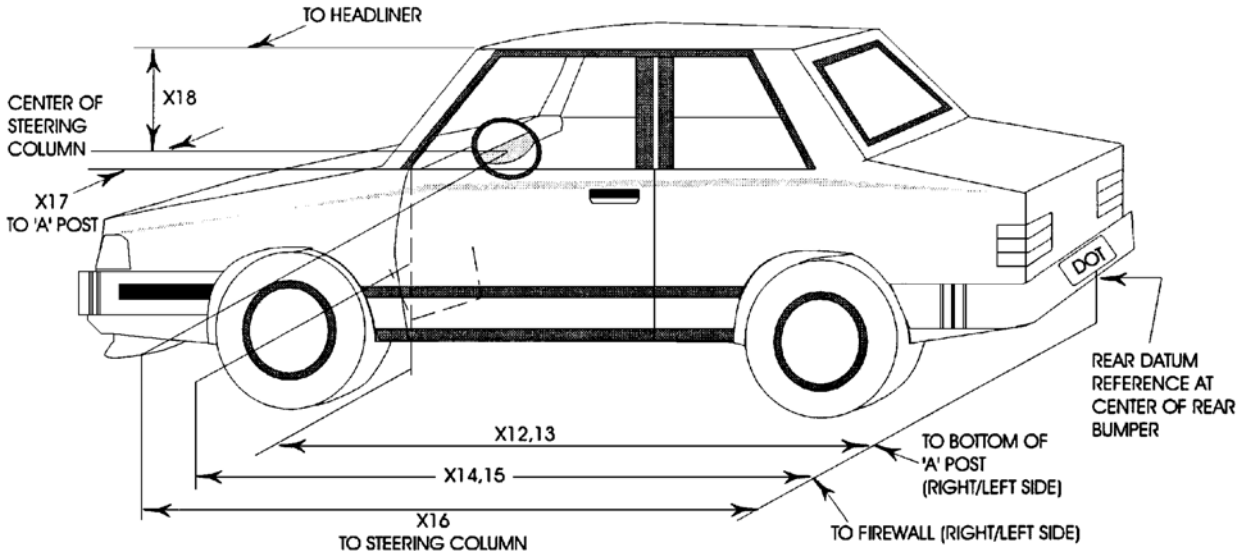
No.	Measurement Description	Units	Pre-Test	Post-Test	Diff.
1	Total length	mm	4830	4363	-467
2	Total width	mm	1880	1880	0
3	Bumper top height	mm	775	780	5
4	Bumper bottom height	mm	220	256	36
5	Longitudinal member top height	mm	710	767	57
6	Longitudinal member bottom height	mm	520	561	41
7	Distance between longitudinal members	mm	940	1050	110
8	Longitudunal member width	mm	100	95	-5
9	Engine top height	mm	780	835	55
10	Engine bottom height	mm	214	242	28
11	Engine and gear box width	mm	570	570	0
12	Front bumper to engine distance	mm	430	50	-380
13	Front shock absorber fixing width	mm	995	1035	40
14	Bonnet leading edge height	mm	905	917	12
15	Front shock absorber fixing width	mm	1170	995	-175
16	Front bumper to front axle distance	mm	975	415	-560
17	Front axle to 'A' pillar distance	mm	507	563	56
18	'A' pillar to 'B' pillar distance	mm	1063	1065	2
19	'B' pillar to rear axle distance	mm	1200	1190	-10
20	'B' pillar to 'C' pillar distance	mm	900	860	-40
21	Roof sill bottom height	mm	1536	1548	12
22	Roof sill top height	mm	1633	1640	7
23	Floor sill bottom height	mm	335	317	-18
24	Floor sill top height	mm	494	497	3

All measurements in millimeters

DATA SHEET N. 14…(CONTINUED)
VEHICLE MEASUREMENTS

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600
Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03





DATA SHEET NO. 15
CAMERA LOCATIONS

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600
Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

VEHICLE CAMERA MEASUREMENT TABLE

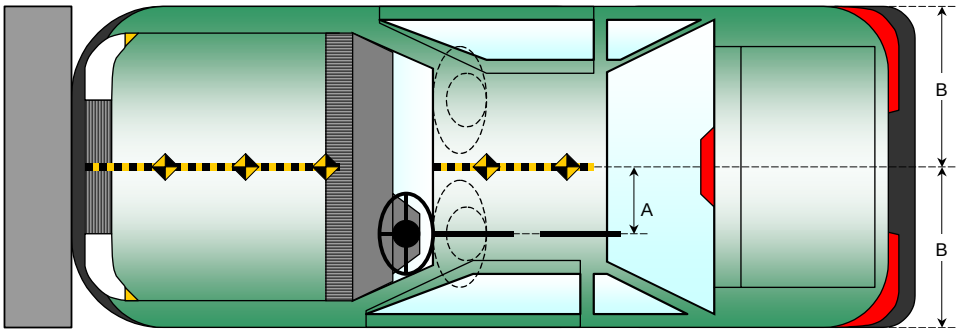
No.	Camera View	Location (mm)			Angle (deg.)	Film Plane to Head	Lens (mm)	Speed (fps)
		X	Y	Z				
1	Real Time	9144	-6096	1372	0	N/A	N/A	30
1B	Real Time	1930	8357	610	0	7885	N/A	30
2	Driver Overall	1930	8357	1321	4	7837	13	1020
2B	Driver Overall	1626	8230	1092	4	7740	17	DNR
2C	Driver Side Digital	1930	9271	1473	5	8748	5.7	500
3	Driver Close-up	1727	8230	1600	4	7722	35	990
3B	Driver Side Digital	1727	9271	1829	5	8765	13	500
4	3/4 Driver	6477	10185	4648	13	10964	105	990
5	Steering Column	1524	8230	3404	20	7971	19	970
6	Steering Column	1524	8230	2997	16	7883	19	1020
7	Driver Side Child	2743	-737	1524	20	1305	50	1220
7B	Driver Side Child	2489	8230	2388	20	7906	50	1000
7C	Driver Side Child	2489	8230	1346	10	7840	50	DNR
8	Passenger Ovrall	2286	-8230	1524	6	7697	13	No Time
8B	Passenger Side Digital	2057	-8611	1524	5	8083	6	500
9	Passenger Close-up	1219	-6096	1524	4	5674	35	1000
10	3/4 Passenger	8026	-8941	2997	9	10262	80	No Time
11	Passenger Door	1626	-8836	1702	4	8336	50	No Time
12	Passenger Side Child	2743	737	1524	20	1305	35-85	870
12B	Passenger Side Child	3048	-8839	2032	20	8437	35-85	1030
12C	Passenger Side Child	2845	-8230	1524	10	7813	50	No Time
13	Overhead	610	0	6172	90	N/A	13	DNR
14	Driver Front	-610	406	2743	40	N/A	13	1010
15	Passenger Front	-610	406	2743	40	N/A	13	1030
16	Pit Engine	762	0	-1499	90	N/A	9	No Time
17	Pit Fuel Tank	3658	0	-1499	90	N/A	6	No Time

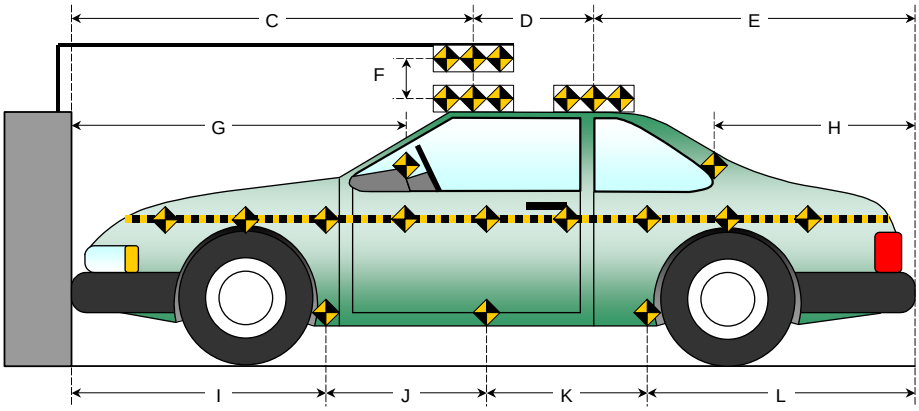
X = Barrier Face Y = Monorail Centerline Z = Ground DNR = Did Not Run

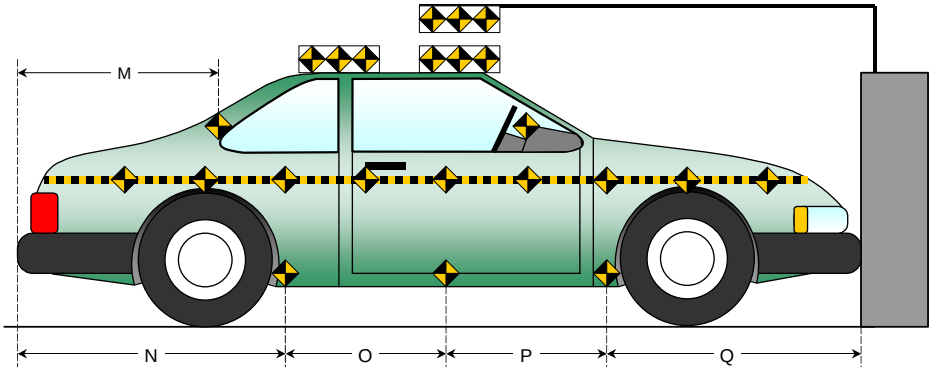
DATA SHEET NO. 16
PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600
Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

All Dimensions in (mm)	
Item	Value
A	460
B	930
C	2283
D	611
E	1947
F	155
G	1775
H	1374
I	1498
J	867
K	867
L	1595
M	1368
N	1588
O	870
P	870
Q	1502







DATA SHEET NO. 17
VEHICLE INTRUSION MEASUREMENTS

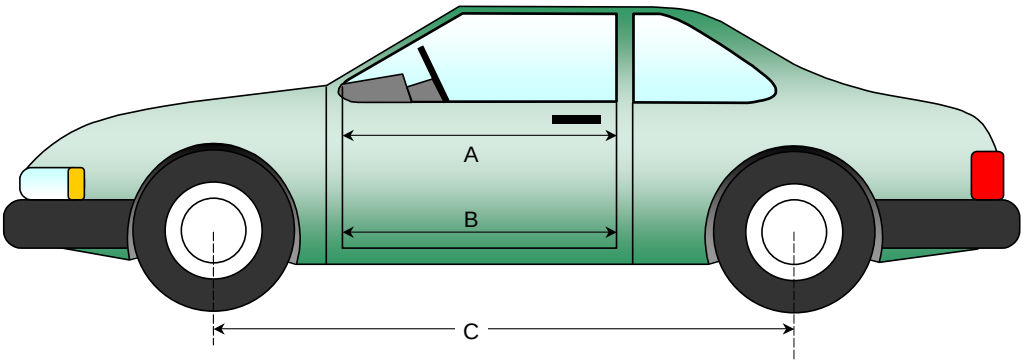
Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600
Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

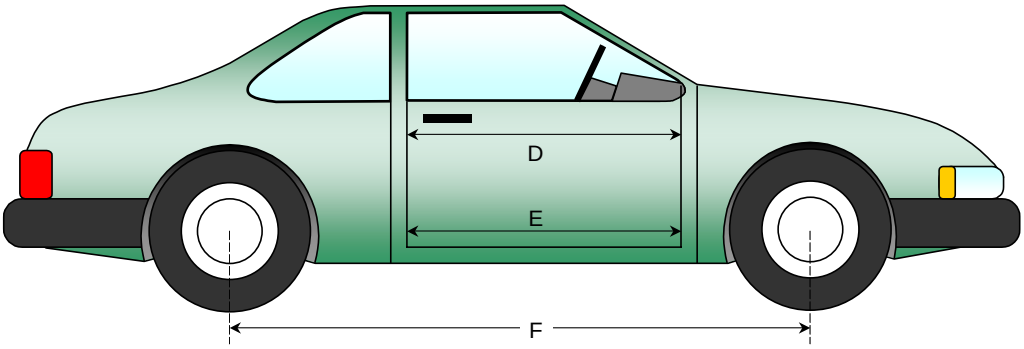
DOOR OPENING WIDTH TABLE

Item	Description	Units	Pre-Test	Post-Test	Diff.
A	Left Side Upper	mm	950	947	-3
B	Left Side Lower	mm	858	856	-2
D	Right Side Upper	mm	956	943	-13
E	Right Side Lower	mm	863	862	-1

WHEELBASE MEASUREMENT TABLE

Item	Description	Units	Pre-Test	Post-Test	Diff.
C	Left Side Wheel Base	mm	2747	2718	-29
F	Right Side Wheel Base	mm	2747	2733	-14





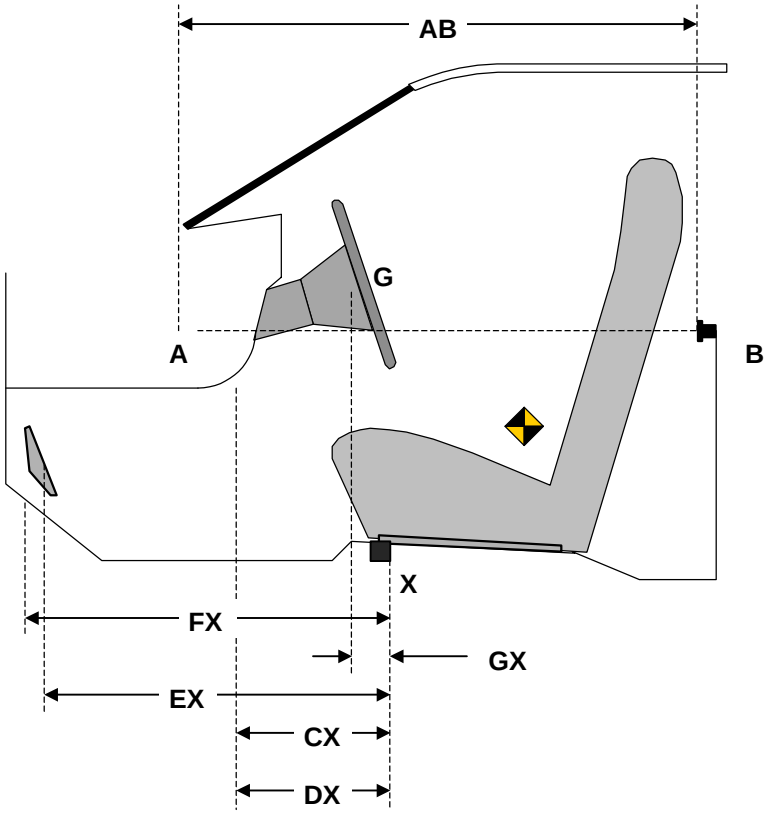
DATA SHEET NO. 17…(CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600
Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

DRIVER COMPARTMENT INTRUSION TABLE

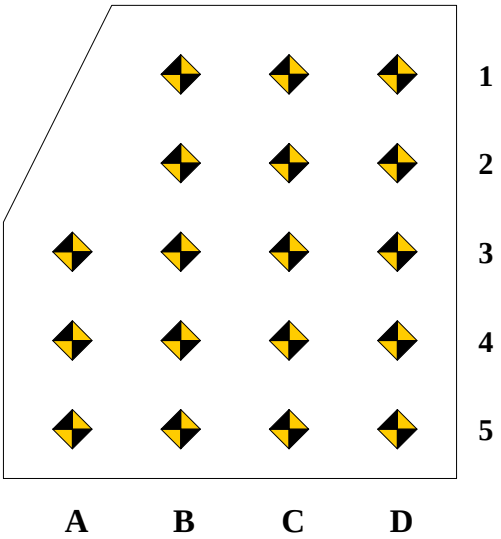
Item	Description	Units	Pre-Test	Post-Test	Diff.
AB	Door Opening (Inside window jam)	mm	950	947	-3
CX	Left Knee Bolster to X	mm	255	273	18
DX	Right Knee Bolster to X	mm	242	274	32
EX	Brake Pedal to X	mm	546	360	-186
FX	Foot Rest to X	mm	531	541	10
GX	Center of Steering Wheel Hub to X	mm	52	80	28

X = Left Front Seat Outboard Anchor Bolt Head



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

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600
Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03



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

Columns A through D are evenly spaced.

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

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

DRIVER FLOOR PAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1		627	624	632		564	557	549		-63	-67	-83
2		522	522	527		477	468	466		-45	-54	-61
3	423	421	421	425	404	401	393	386	-19	-20	-28	-39
4	322	321	320	324	304	301	298	295	-18	-20	-22	-29
5	222	220	220	222	204	200	199	193	-18	-20	-21	-29

DRIVER FLOOR PAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1		-54	-64	-52		-60	-65	-63		-6	-1	-11
2		-101	-101	-100		-115	-123	-125		-14	-22	-25
3	-100	-100	-104	-100	-110	-133	-128	-115	-10	-33	-24	-15
4	-112	-105	-103	-120	-121	-120	-130	-141	-9	-15	-27	-21
5	-120	-103	-100	-120	-120	-120	-120	-133	0	-17	-20	-13

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

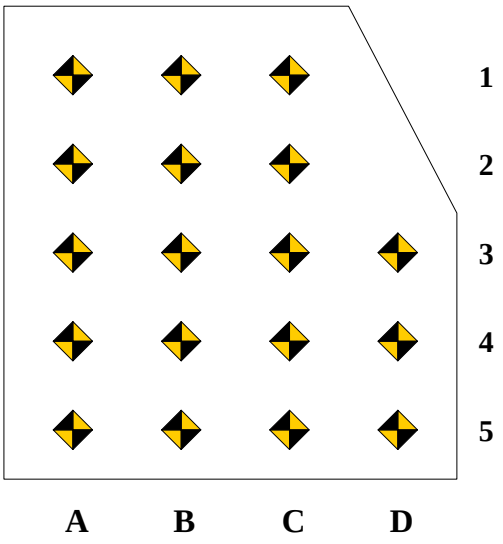
Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600
Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

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

Columns A through D are evenly spaced.

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

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



PASSENGER FLOOR PAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	664	662	656		621	603	606		-43	-59	-50	
2	587	584	575		548	533	540		-39	-51	-35	
3	487	486	486	489	453	443	460	456	-34	-43	-26	-33
4	387	386	386	388	374	376	371	371	-13	-10	-15	-17
5	287	285	286	287	273	270	275	275	-14	-15	-11	-12

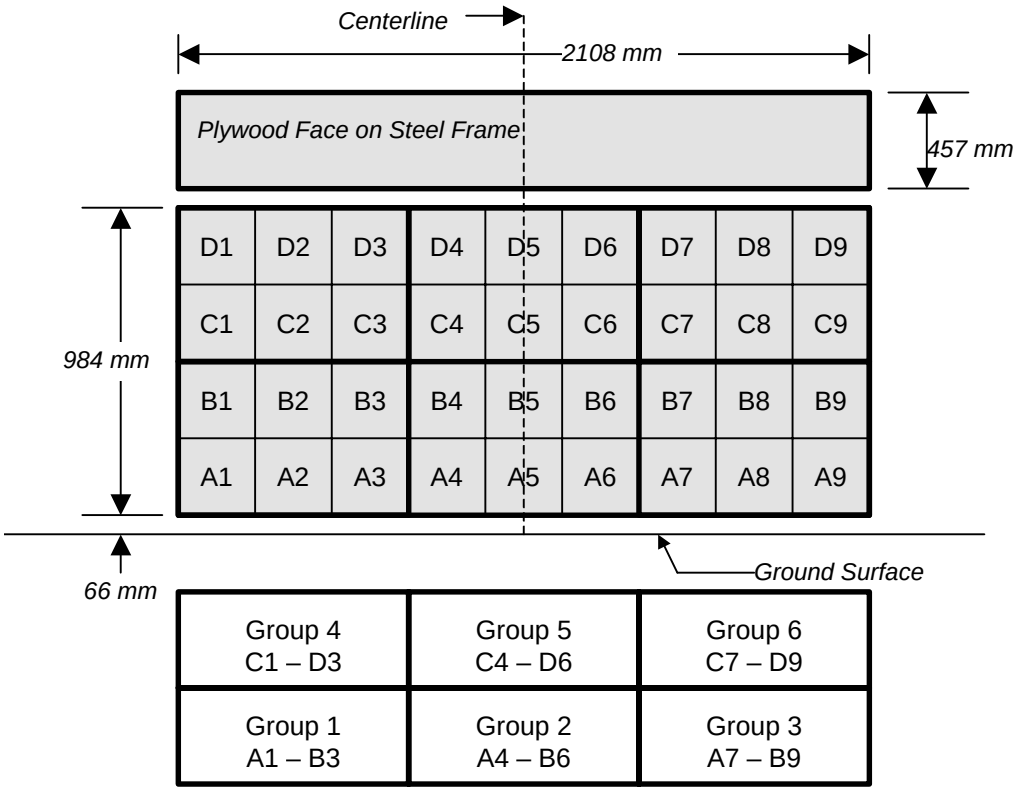
PASSENGER FLOOR PAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-26	-29	-10		-30	-30	-24		-4	-1	-14	
2	-86	-90	-72		-96	-95	-93		-10	-5	-21	
3	-100	-100	-100	-96	-122	-115	-120	-122	-22	-15	-20	-26
4	-118	-99	-100	-102	-145	-126	-118	-119	-27	-27	-18	-17
5	-120	-99	-99	-116	-146	-120	-115	-130	-26	-21	-16	-14

DATA SHEET NO. 18
FIXED BARRIER LOAD CELL LOCATIONS

Test Vehicle:	2004 Mitsubishi Endeavor LS SUV	NHTSA No.:	M45600
Test Program:	2003 NHTSA 35mph NCAP	Test Date:	9/9/03

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



6 Groups of 6 Load Cells Each

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

1.) Data from 36 individual load cells

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

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

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

DATA SHEET NO. 19
ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600
Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

VEHICLE INFORMATION

VIN: 4A4MN21SX4E004430 Wheel base (mm): 2747
Vehicle Size Category: 4-Door Test Weight (kg): 2103

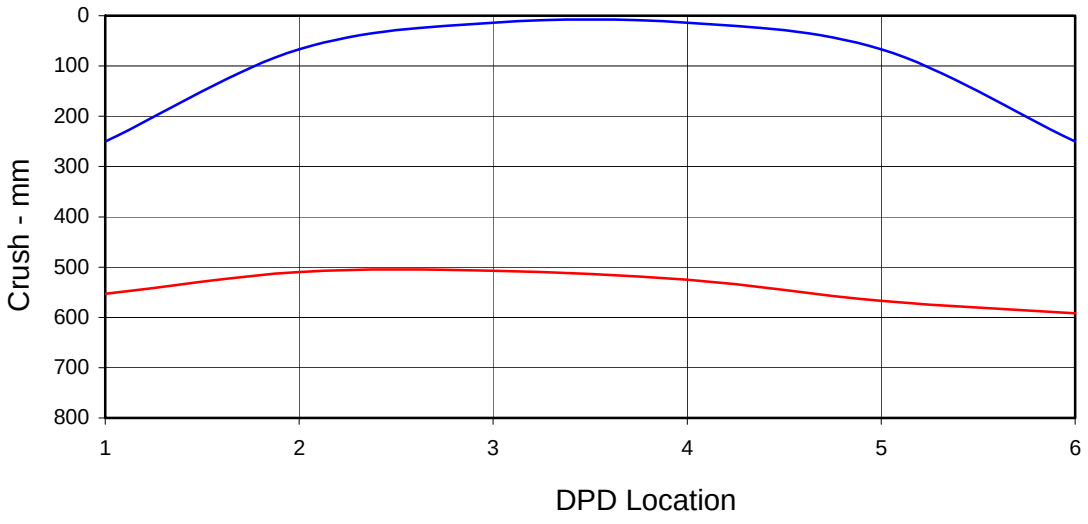
ACCELEROMETER DATA

Accelerometer Location: Left rear floor pan
Cal. Procedure/Interval: 6 months / drop test
Integration Algorithm: NHTSA Standard Linearity: Good
Impact Velocity (km/h): 56.02
Velocity Change (km/h): 62.75 Time of Separation (msec): 68.6

CRUSH PROFILE

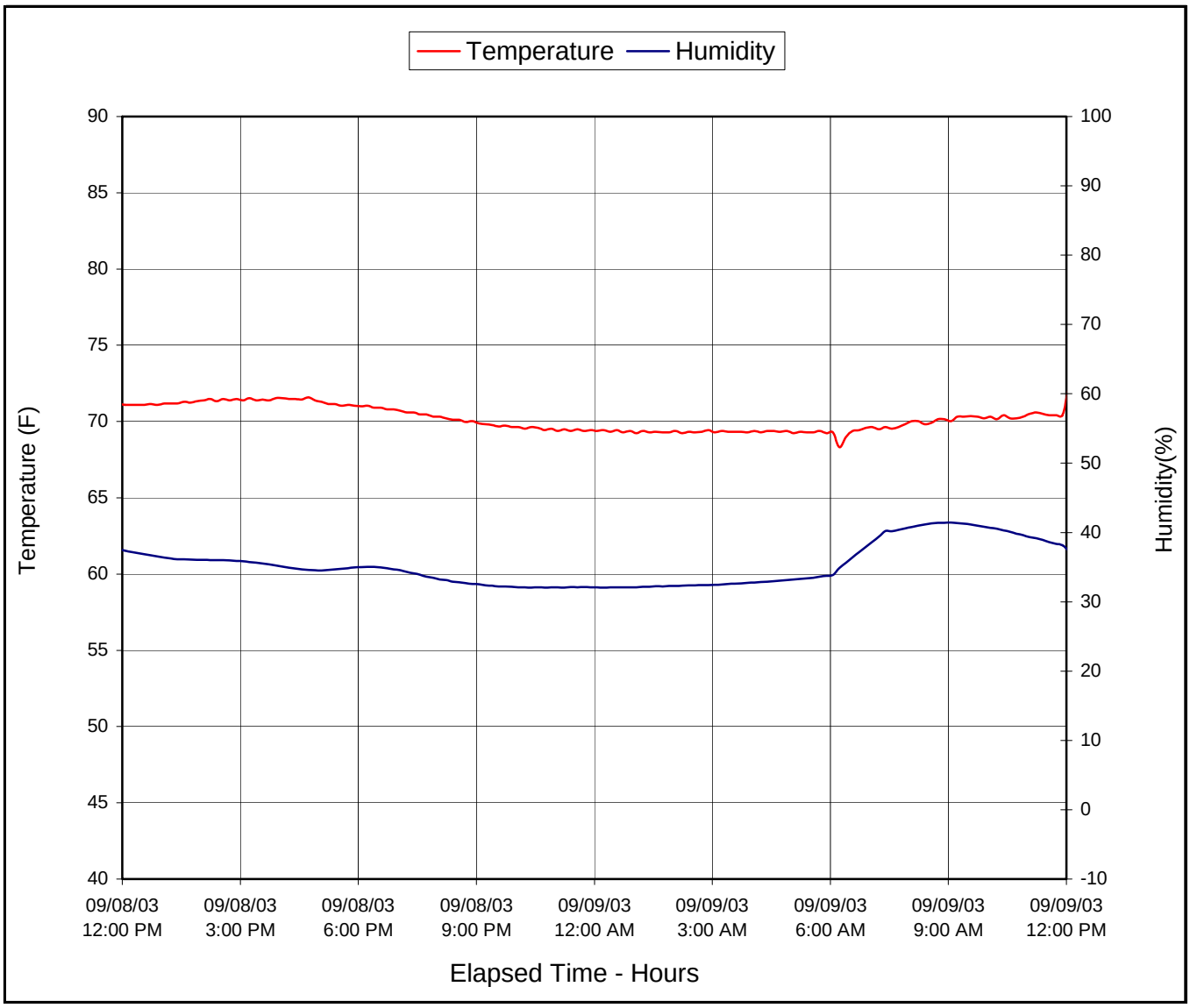
Collision Deformation Classification: 12FDEW6 Midpoint of Damage: Vehicle Centerline
Damage Region Length (mm): 1577 Impact Mode: Full Frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	250	553	-303
C2	Crush zone 2 on left side	mm	67	510	-443
C3	Crush zone 3 on left side	mm	14	507	-493
C4	Crush zone 4 on right side	mm	14	525	-511
C5	Crush zone 5 on right side	mm	67	567	-500
C6	Crush zone 6 at right side	mm	250	592	-342



DATA SHEET NO. 20
DUMMY/VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600
Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03



APPENDIX A

PHOTOGRAPHS

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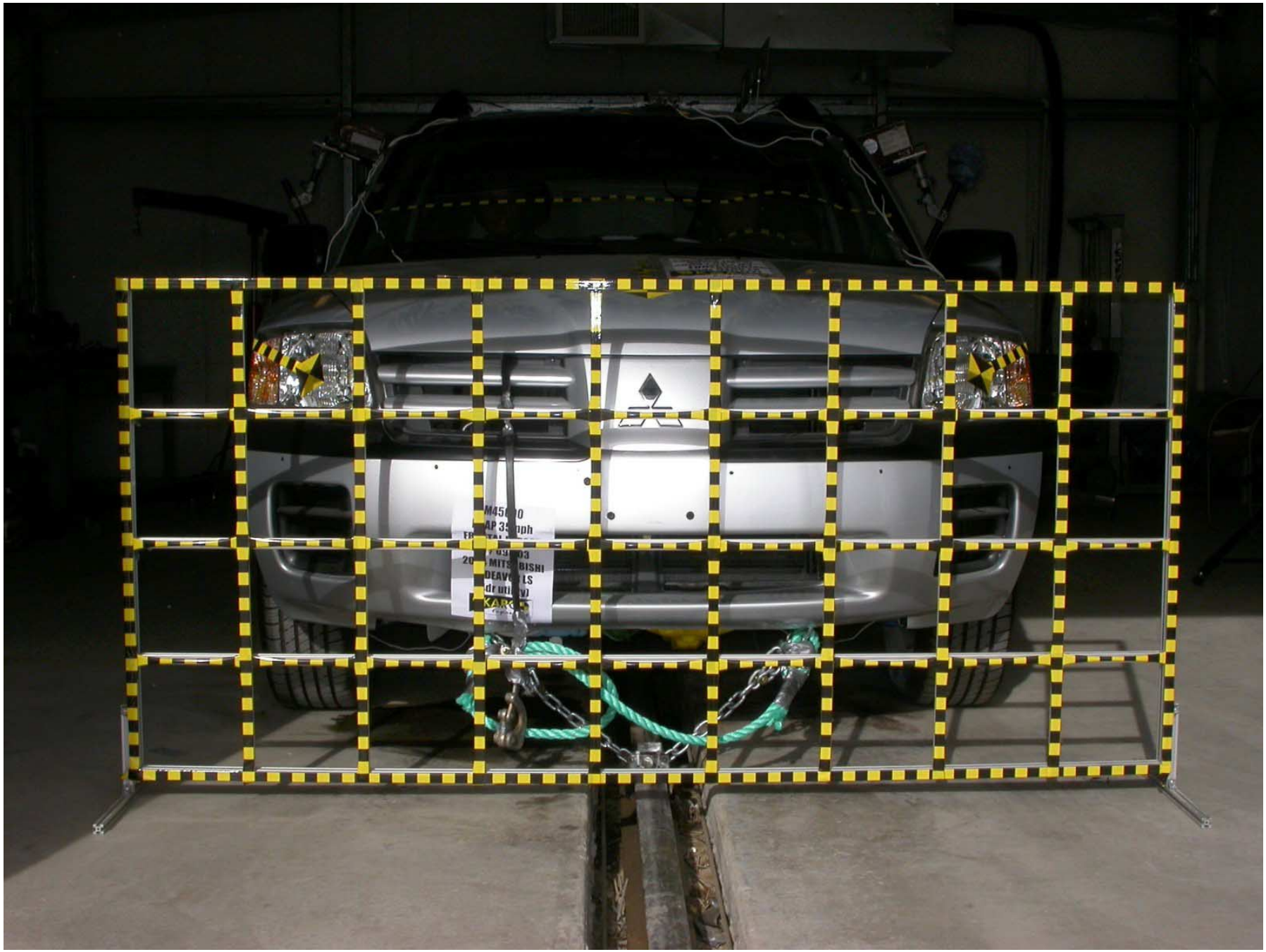

Figure A-1: Load Cell Location

Figure A-2: Vehicle Certification Label

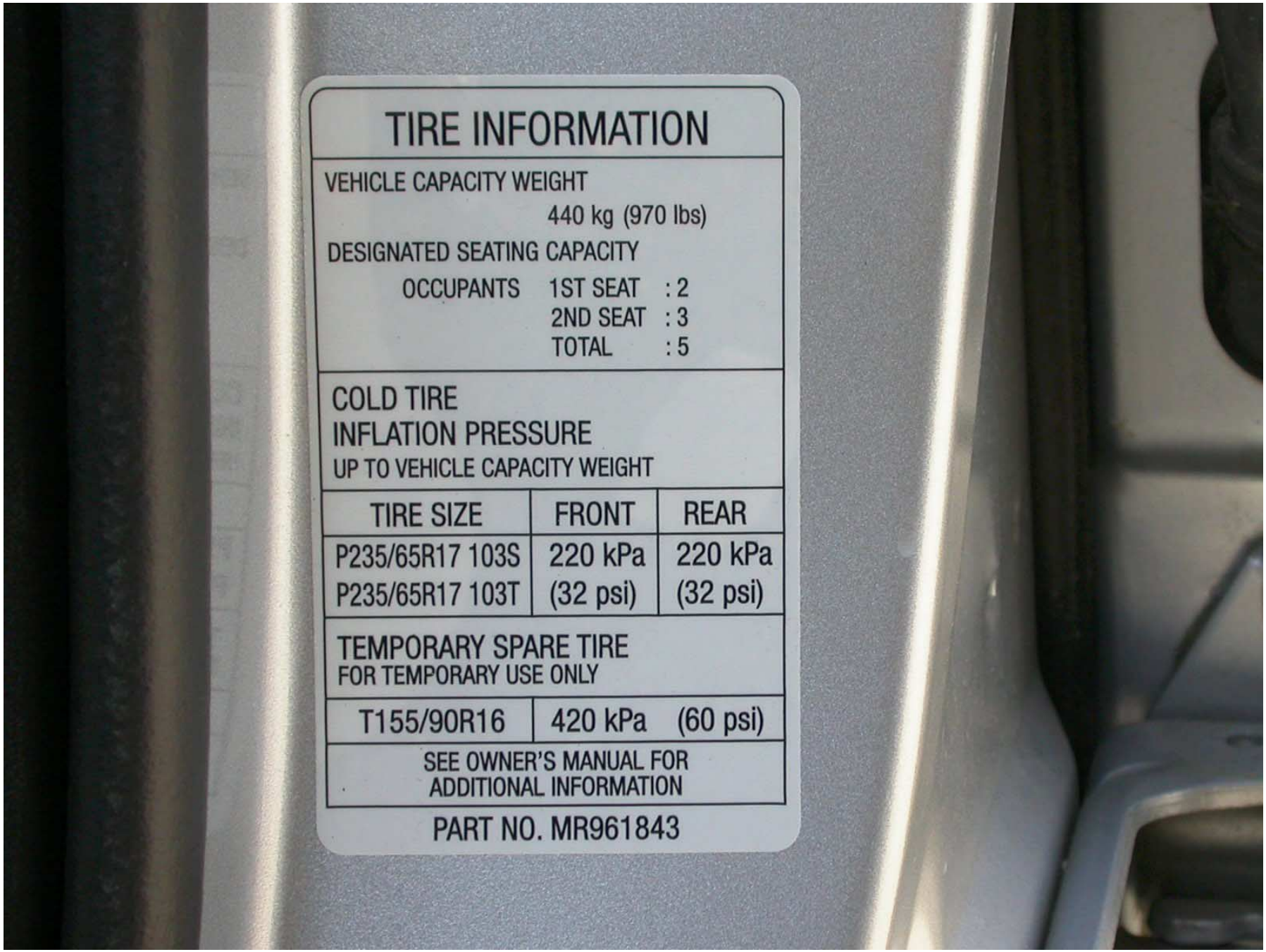

Figure A-3: Vehicle Tire Label

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

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

Figure A-6: Pre-Test Front View

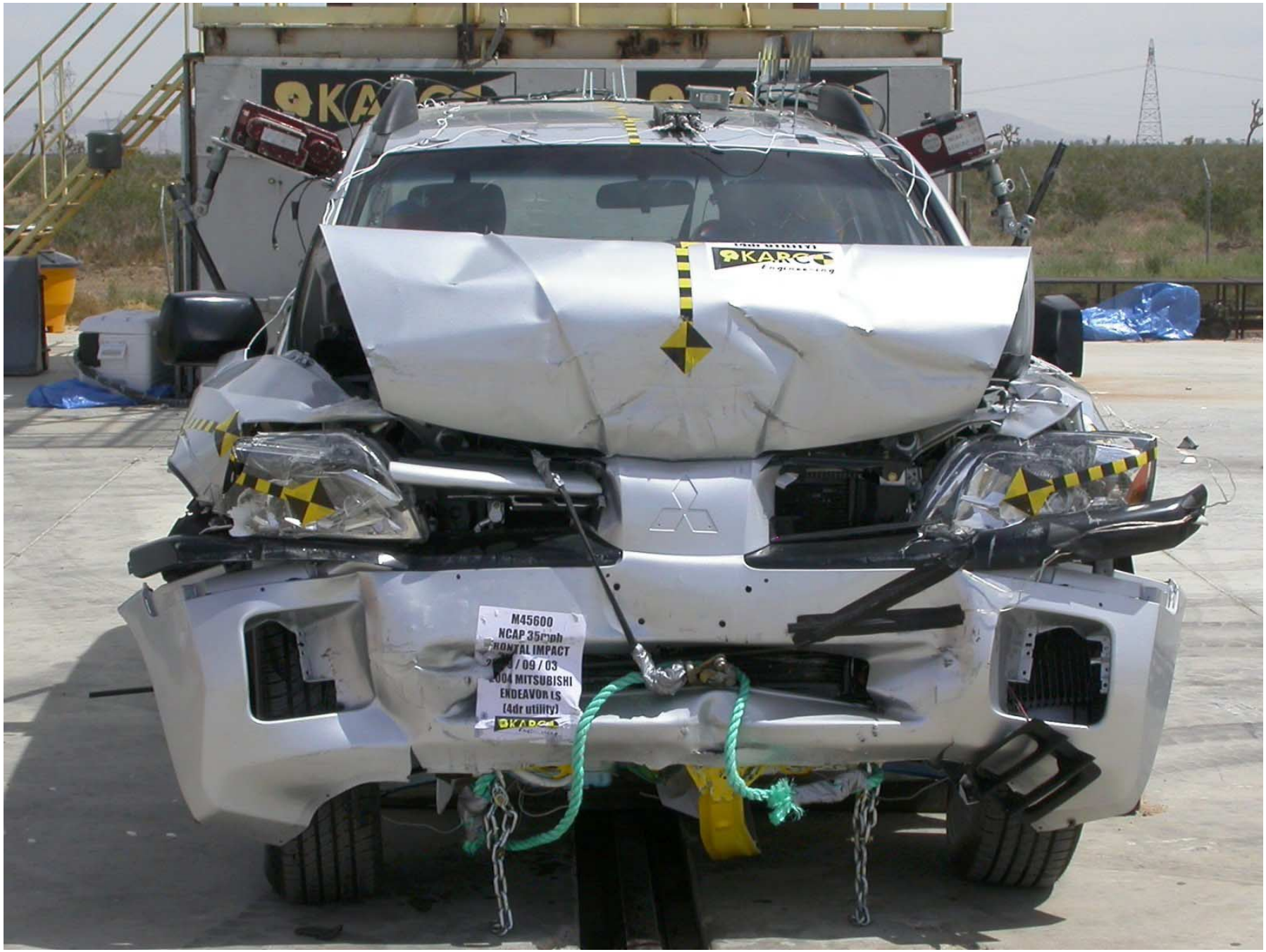

Figure A-7: Post-Test Front View (Vehicle Moved)

Figure A-8: Pre-Test Left Side View

Figure A-9: Post-Test Left Side View

Figure A-10: Pre-Test Right Side View

Figure A-11: Post-Test Right Side View

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

Figure A-13: Post-Test Right Front ¾ View (Vehicle Moved)

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

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

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

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

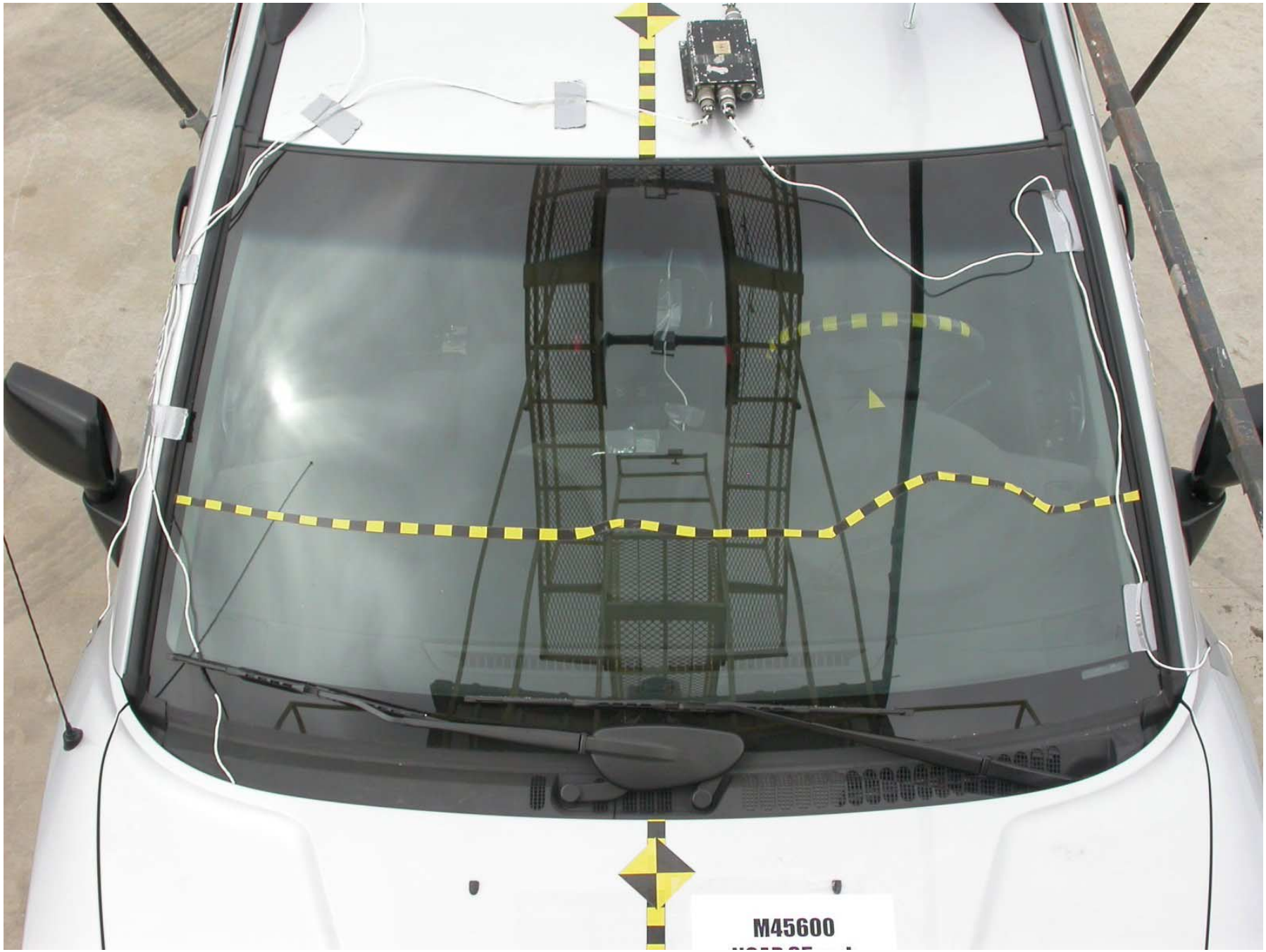

Figure A-18: Pre-Test Windshield View

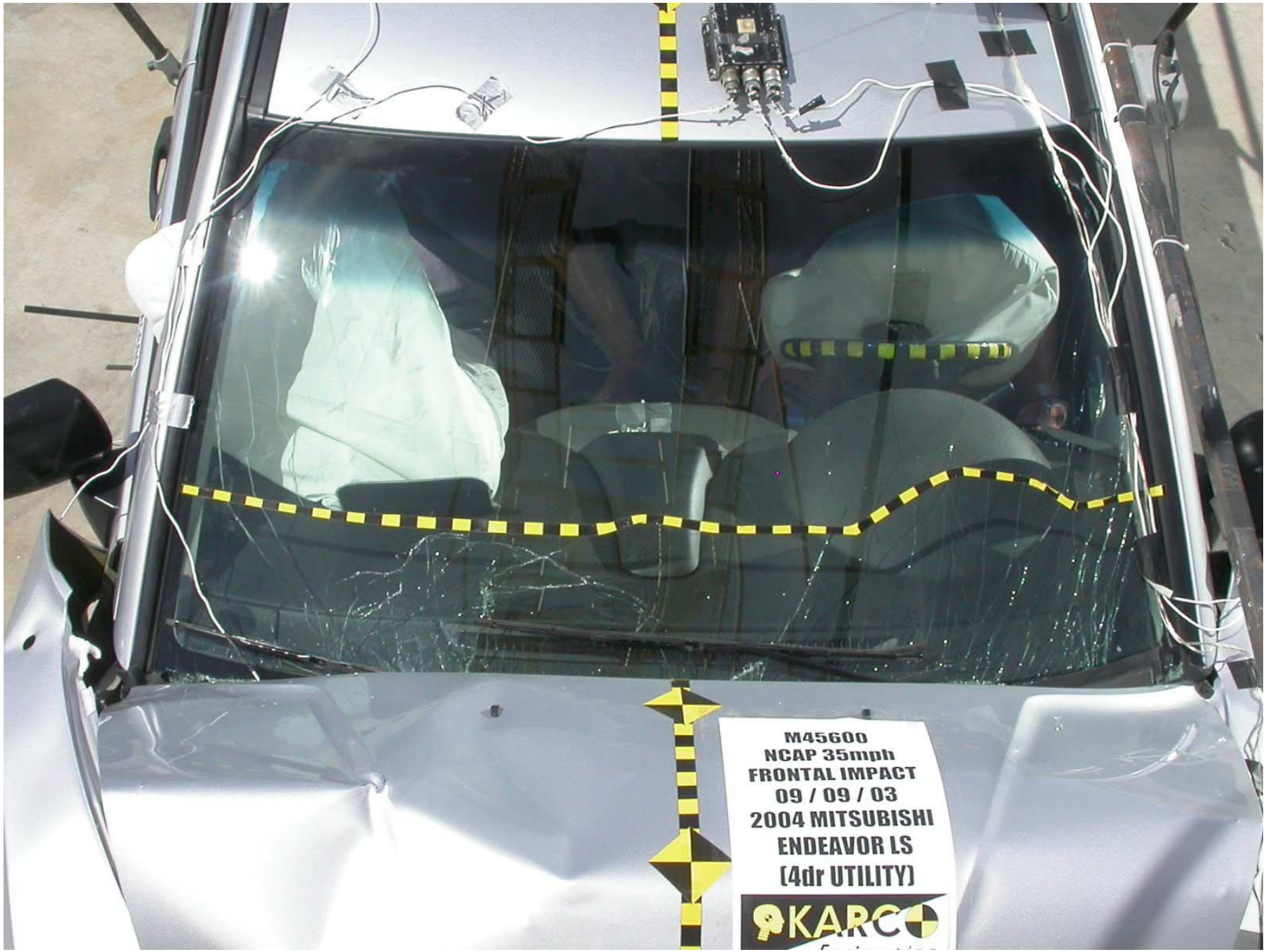

Figure A-19: Post-Test Windshield View

Figure A-20: Pre-Test Engine Compartment

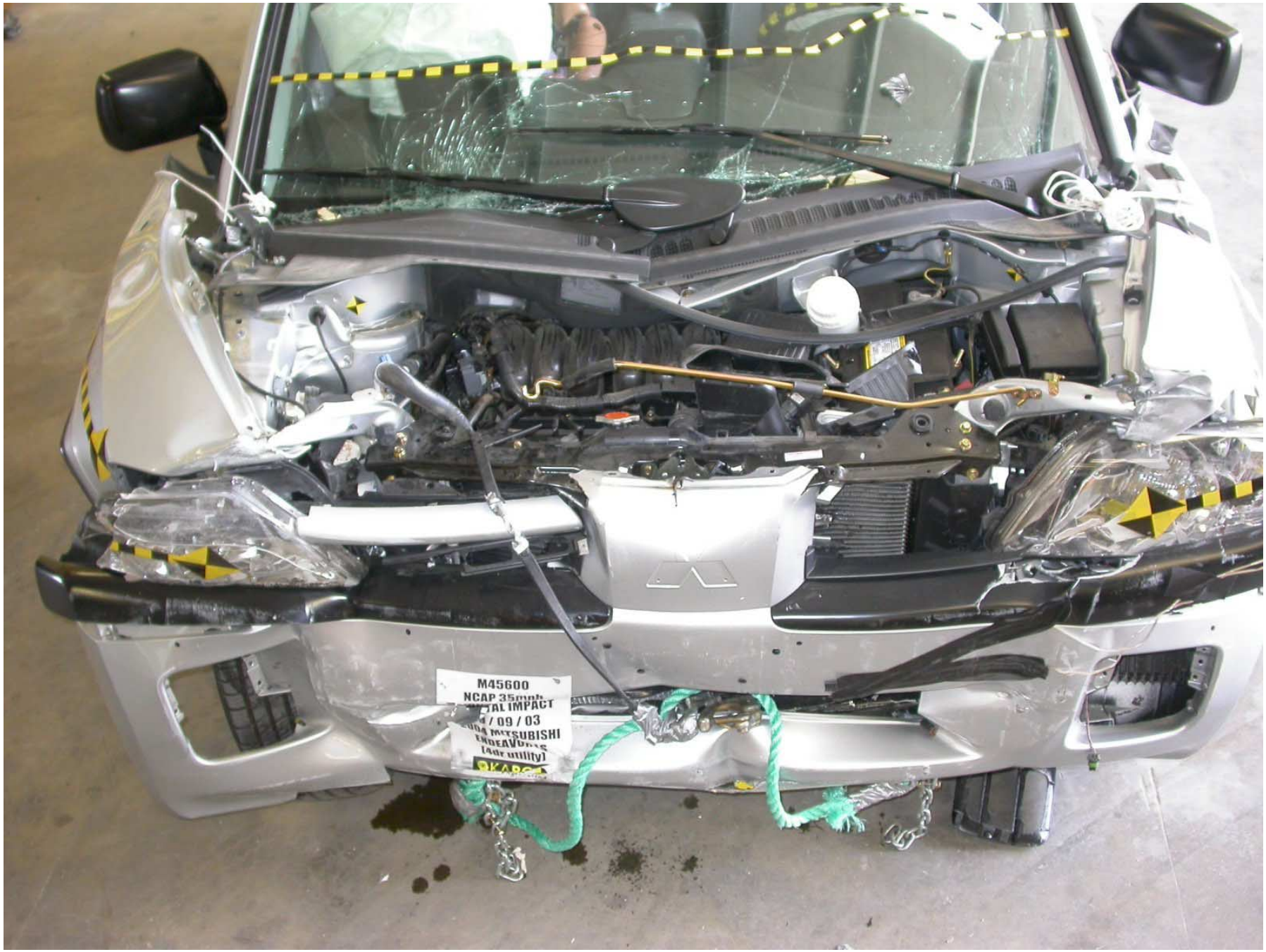

Figure A-21: Post-Test Engine Compartment (Vehicle Moved)

Figure A-22: Pre-Test Fuel Cap

Figure A-23: Post-Test Fuel Cap

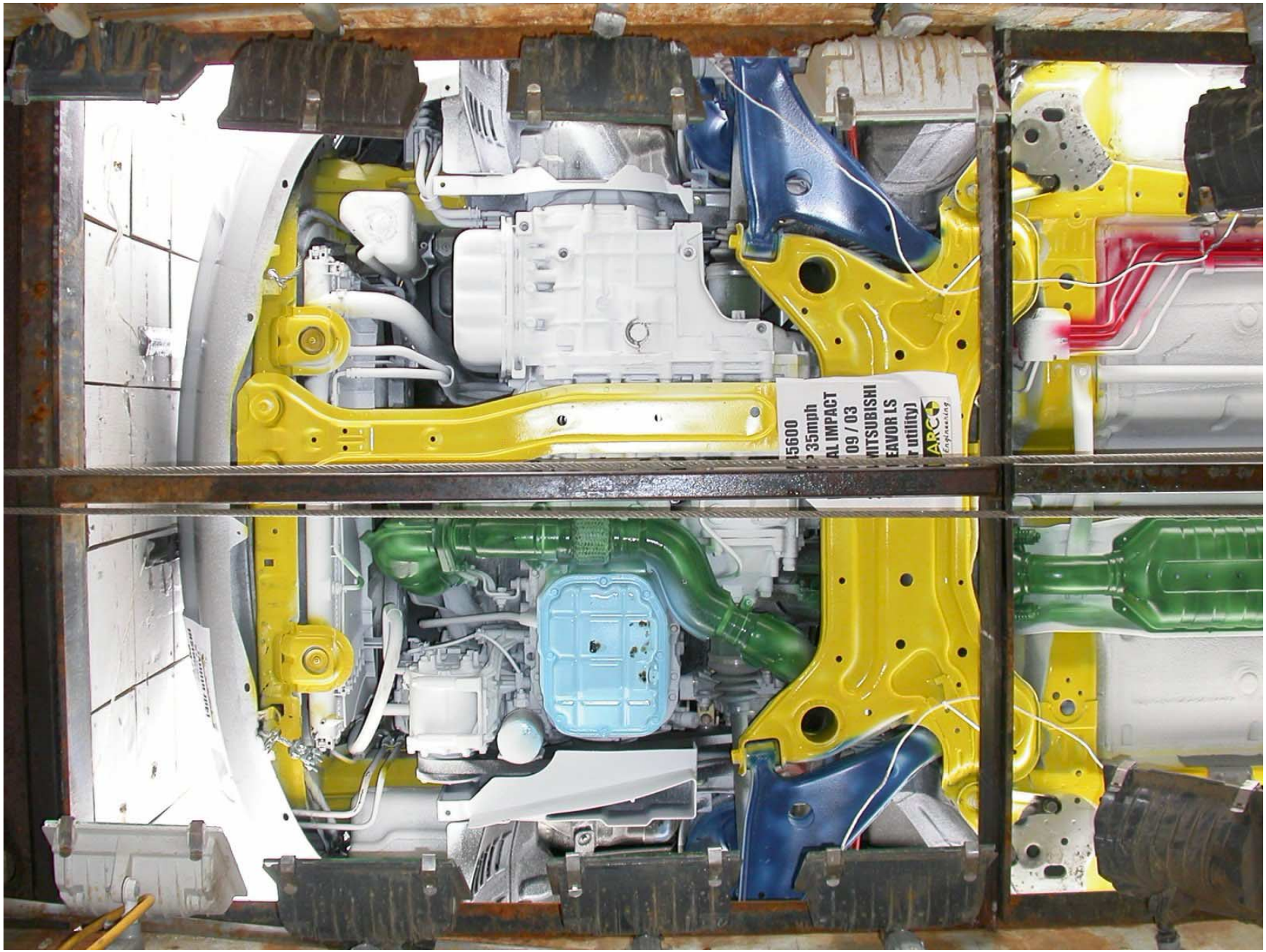

Figure A-24: Pre-Test Front Underbody View

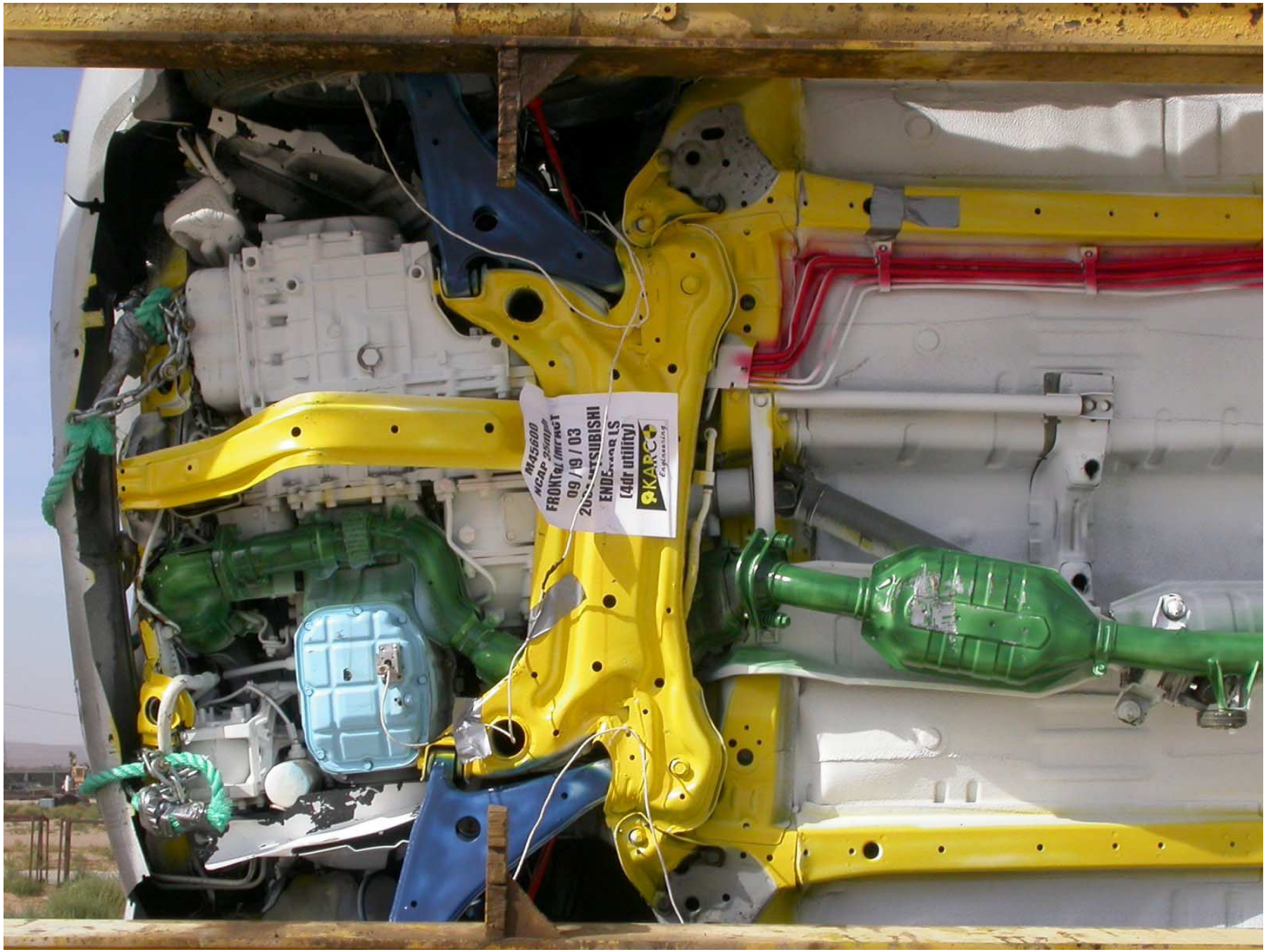

Figure A-25: Post-Test Front Underbody View

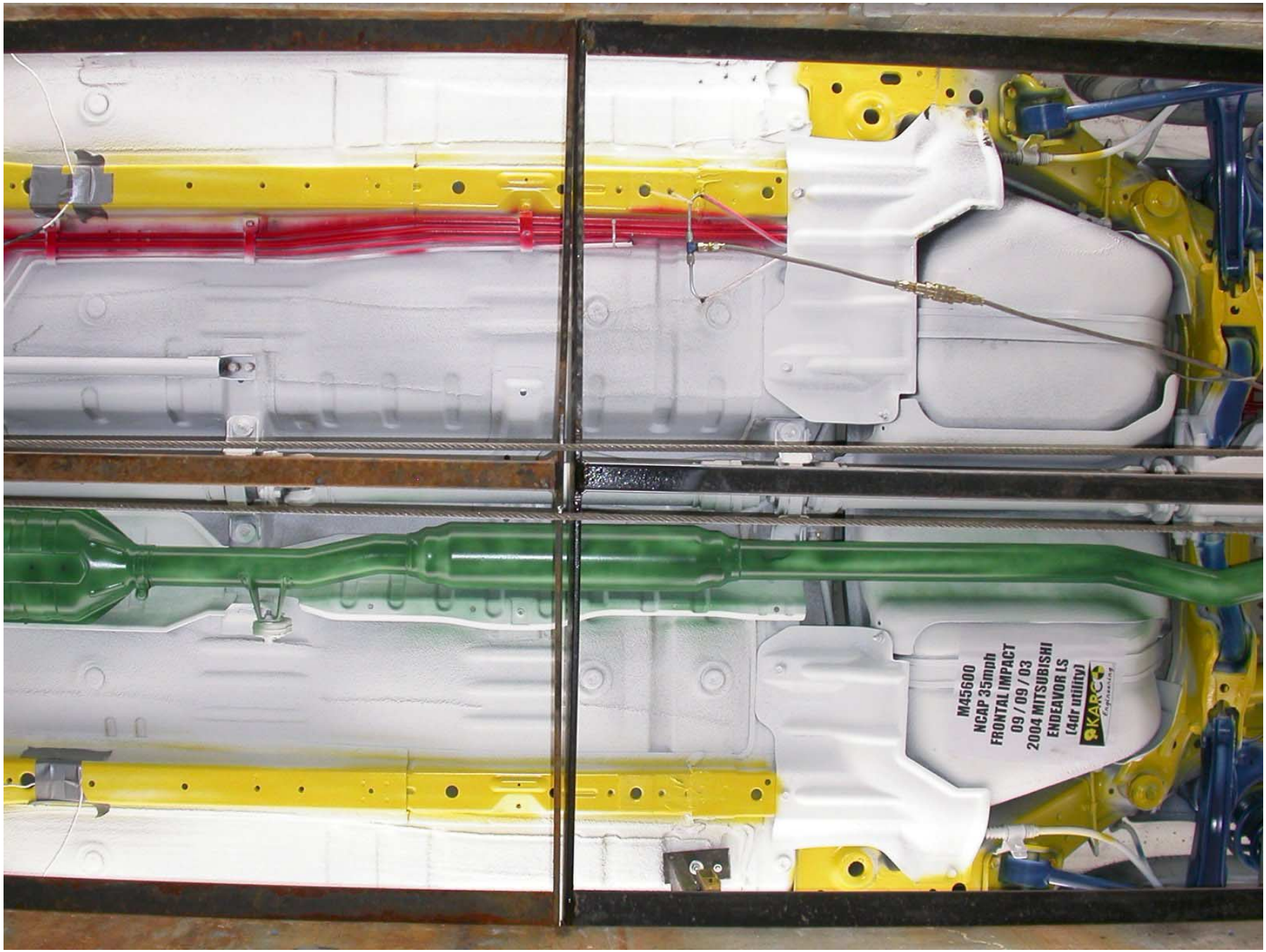

Figure A-26: Pre-Test Mid Underbody View

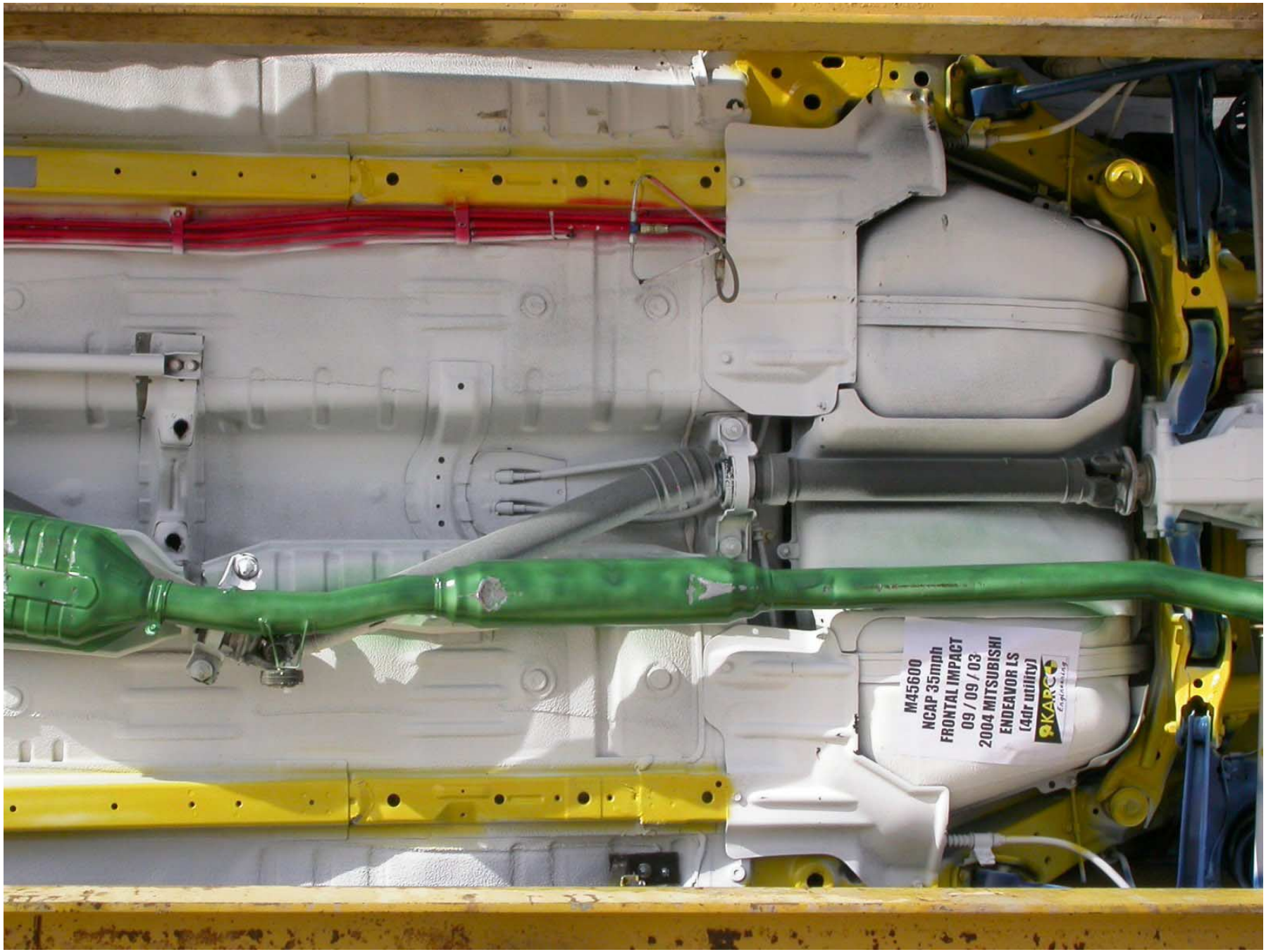

Figure A-27: Post-Test Mid Underbody View

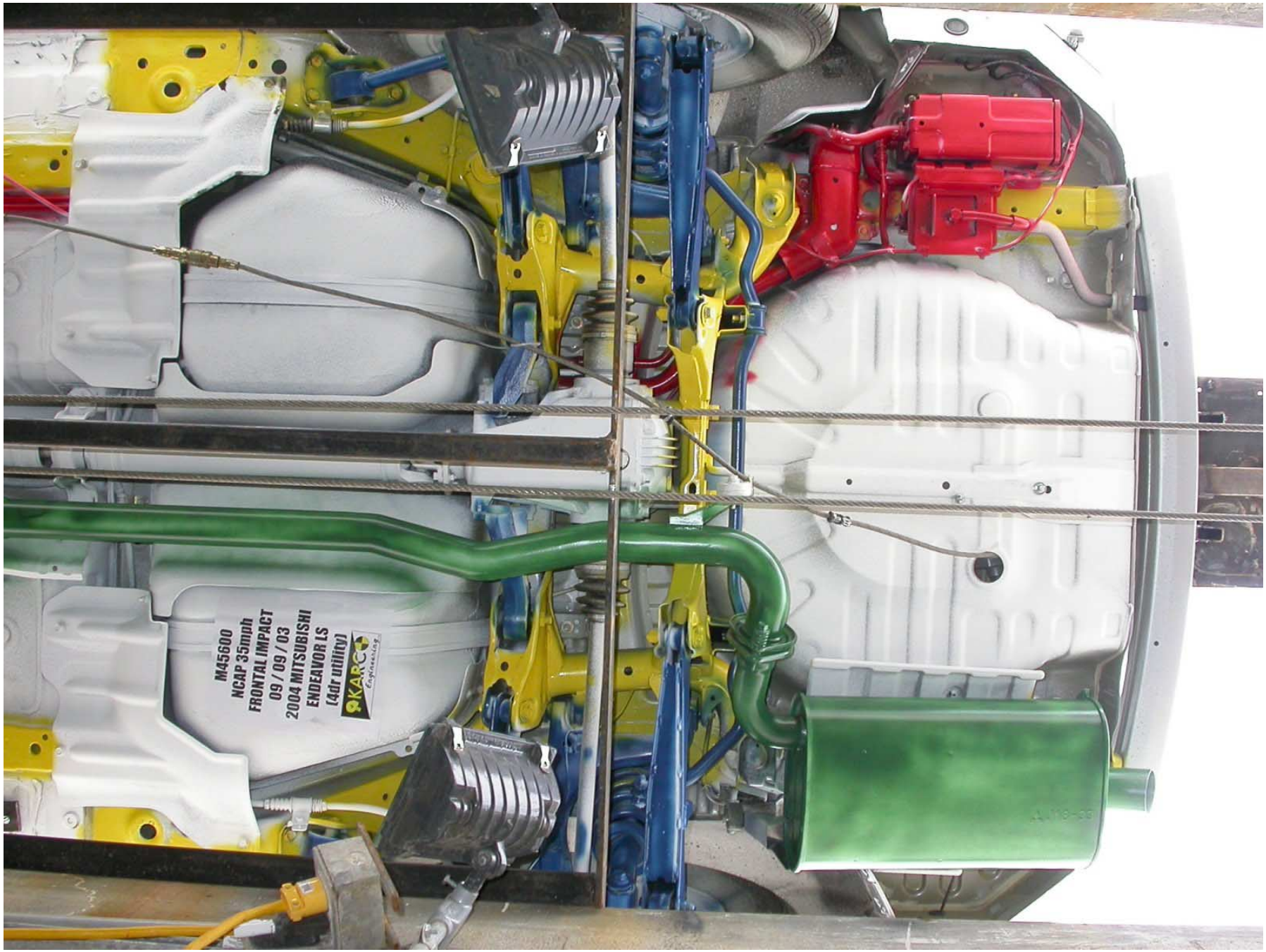

Figure A-28: Pre-Test Rear Underbody View

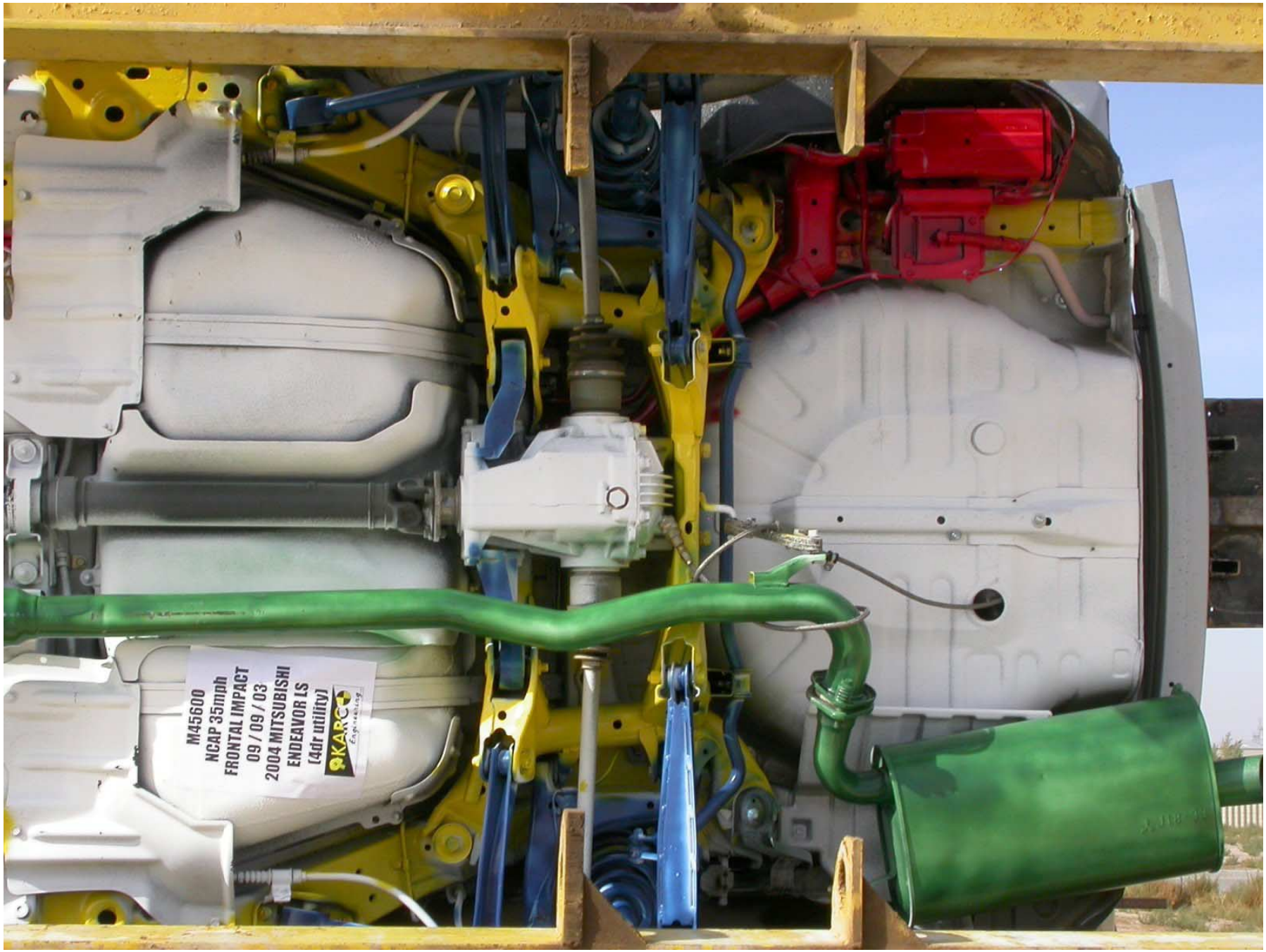

Figure A-29: Post-Test Rear Underbody View

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

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

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

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

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

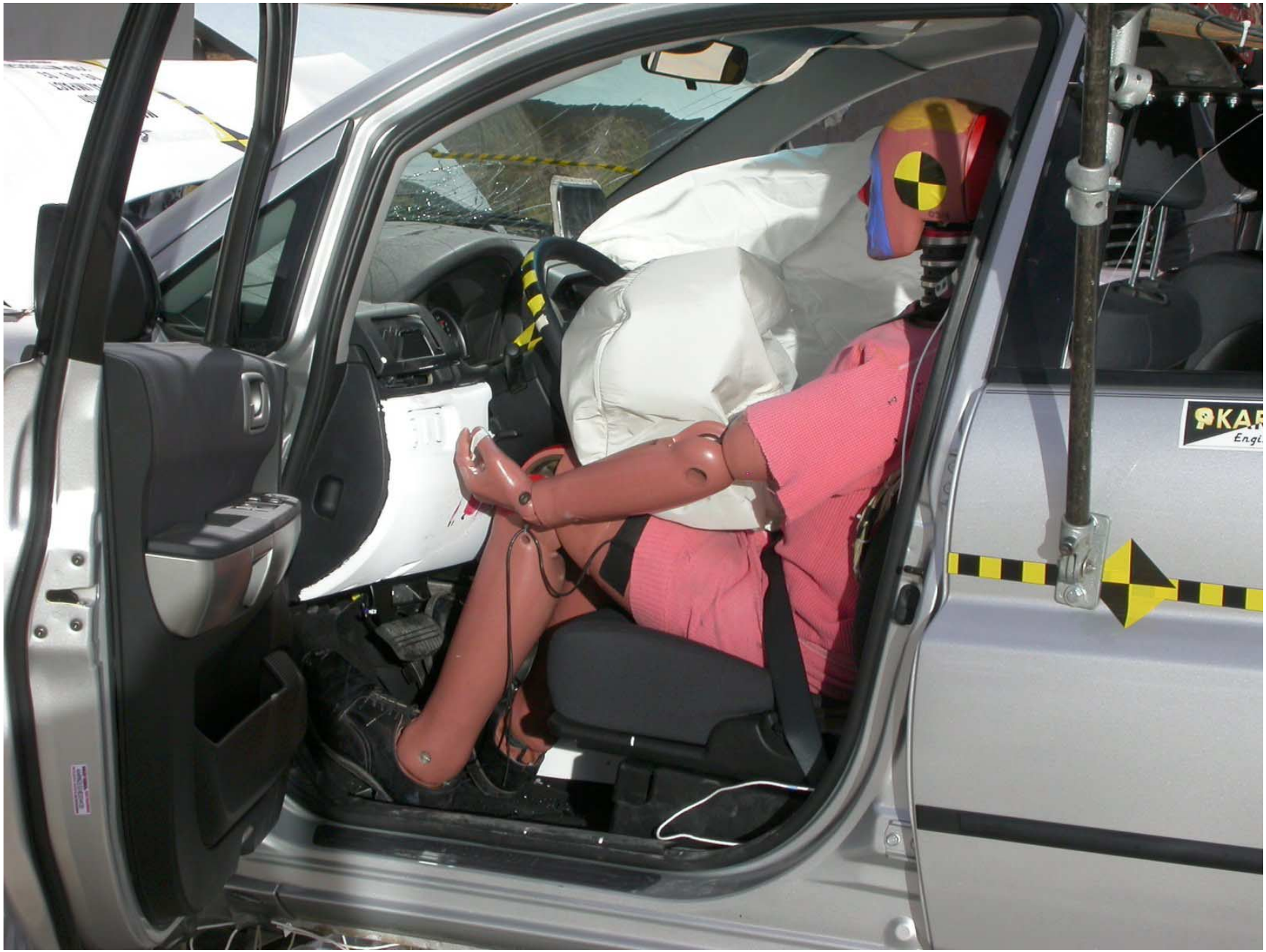

Figure A-35: Post-Test Driver Dummy Door Open

Figure A-36: Pre-Test Driver Dummy Feet

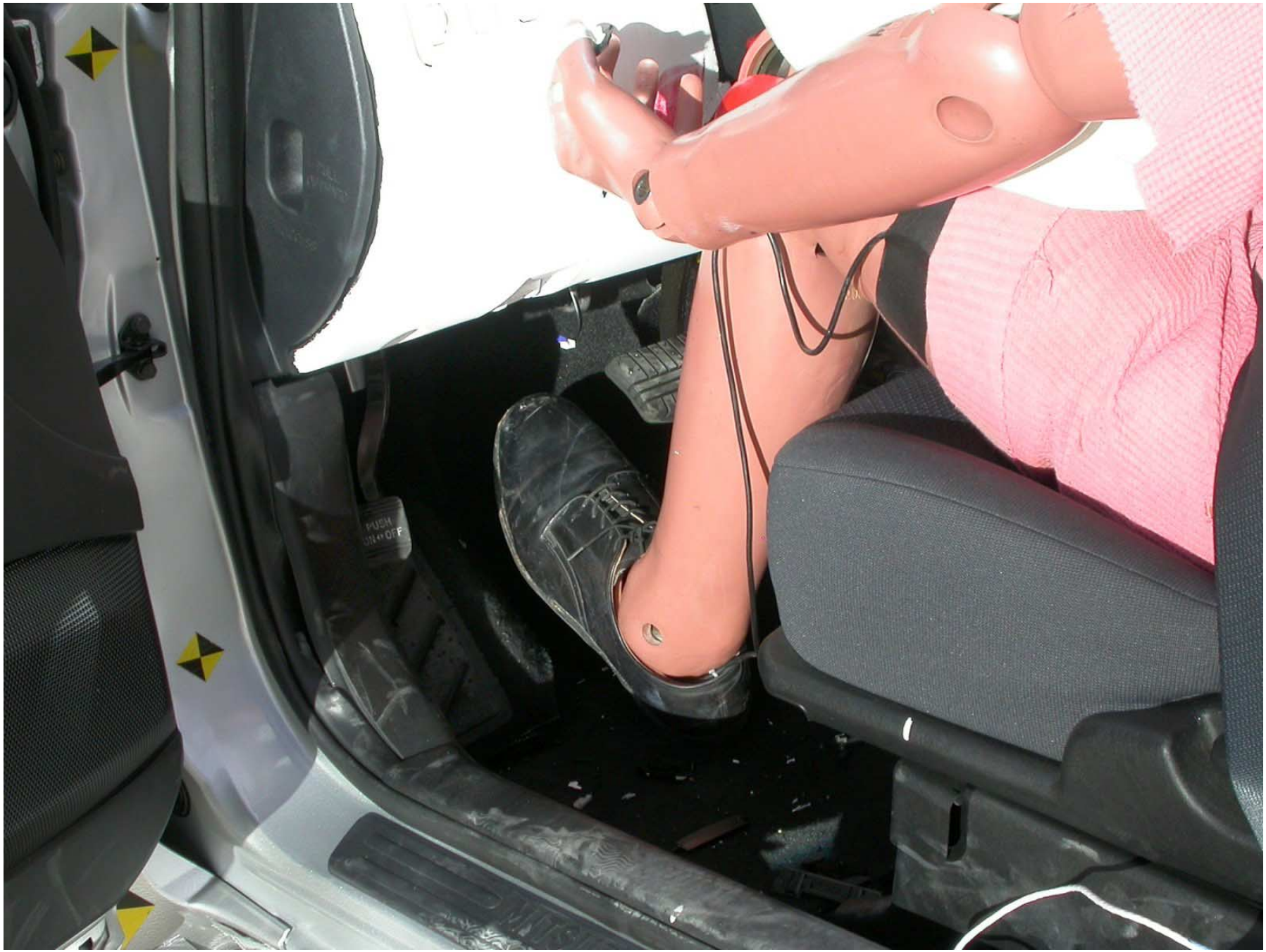

Figure A-37: Post-Test Driver Dummy Feet

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

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

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

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

Figure A-42: Post-Test Driver Dummy Head

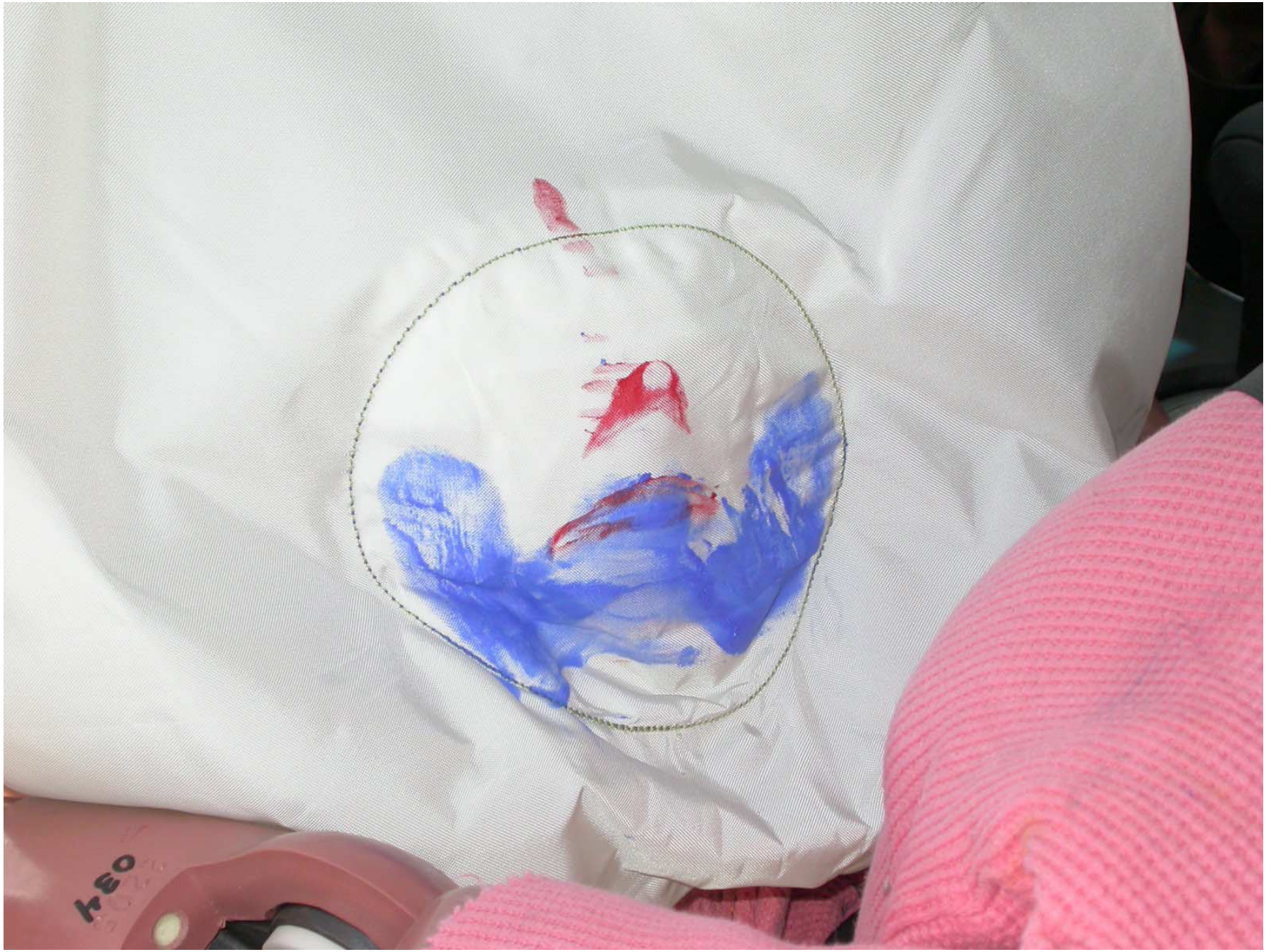

Figure A-43: Post-Test Driver Dummy Contact to Air Bag

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

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

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

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

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

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

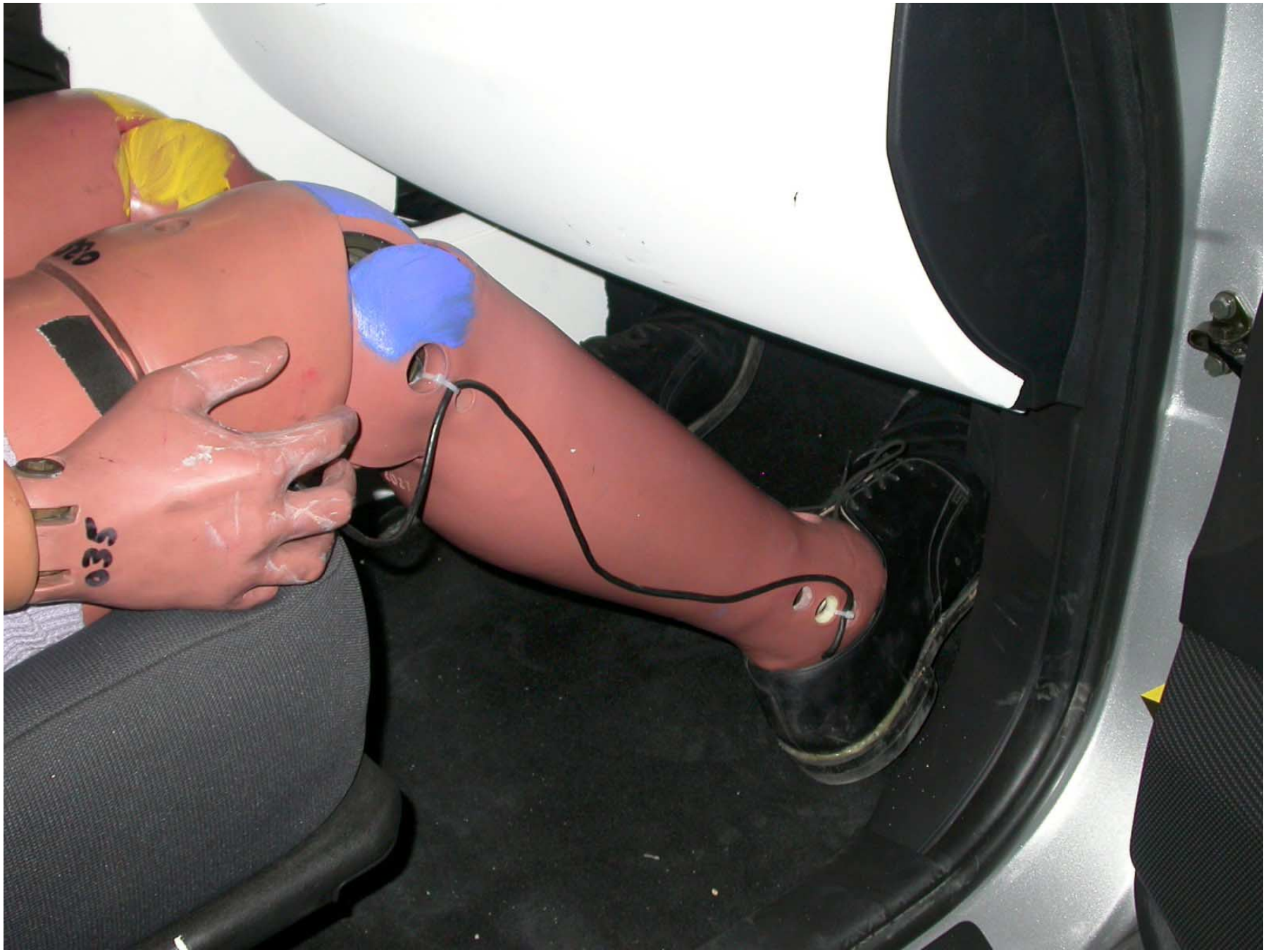

Figure A-50: Pre-Test Passenger Dummy Feet

Figure A-51: Post-Test Passenger Dummy Feet

Figure A-52: Pre-Test Passenger Side Floor Pan

Figure A-53: Post-Test Passenger Side Floor Pan

Figure A-54: Pre-Test Passenger Side Knee Bolster

Figure A-55: Post-Test Passenger Side Knee Bolster

Figure A-56: Post-Test Passenger Dummy Head

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APPENDIX B

DATA PLOTS

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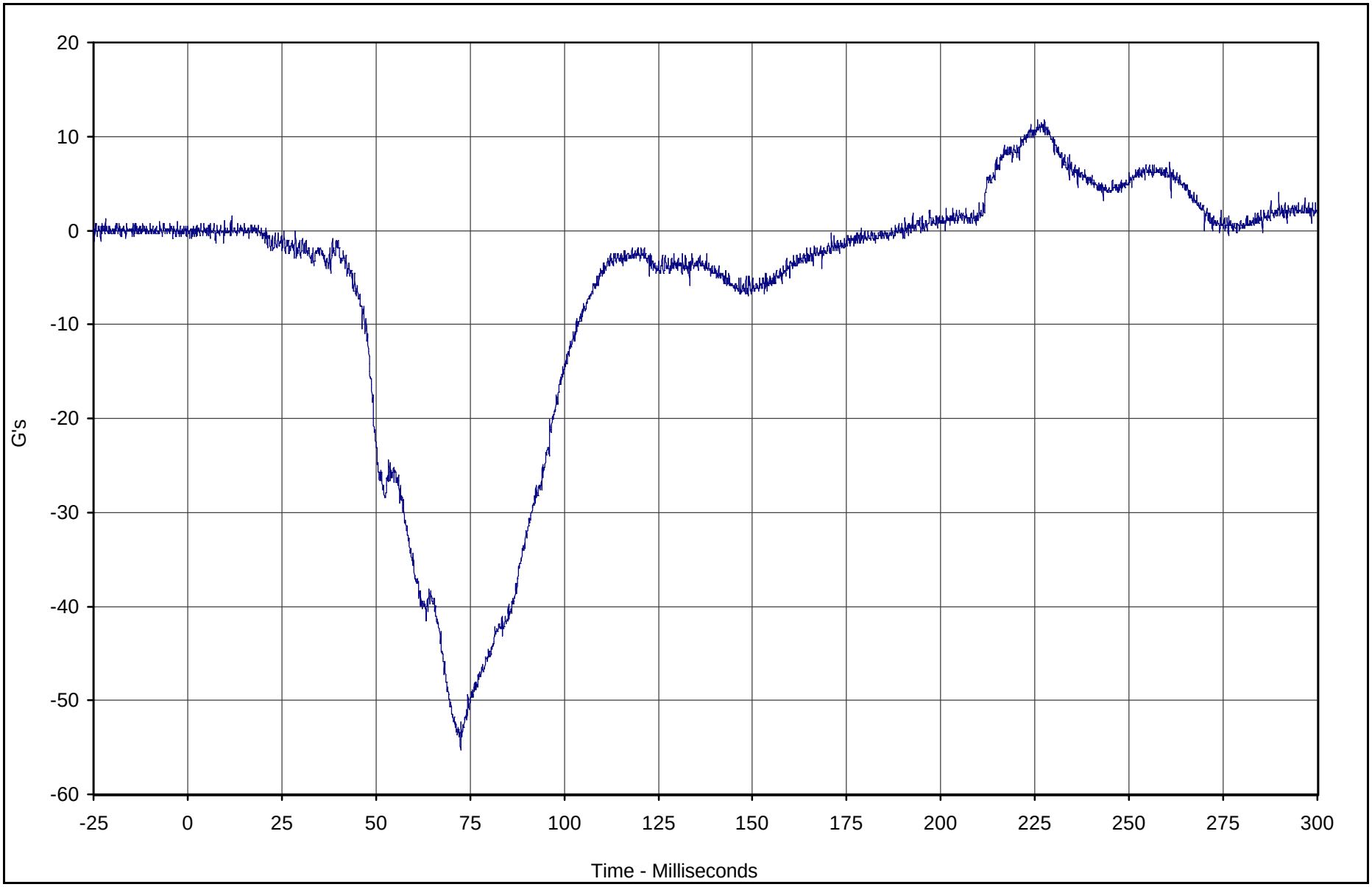


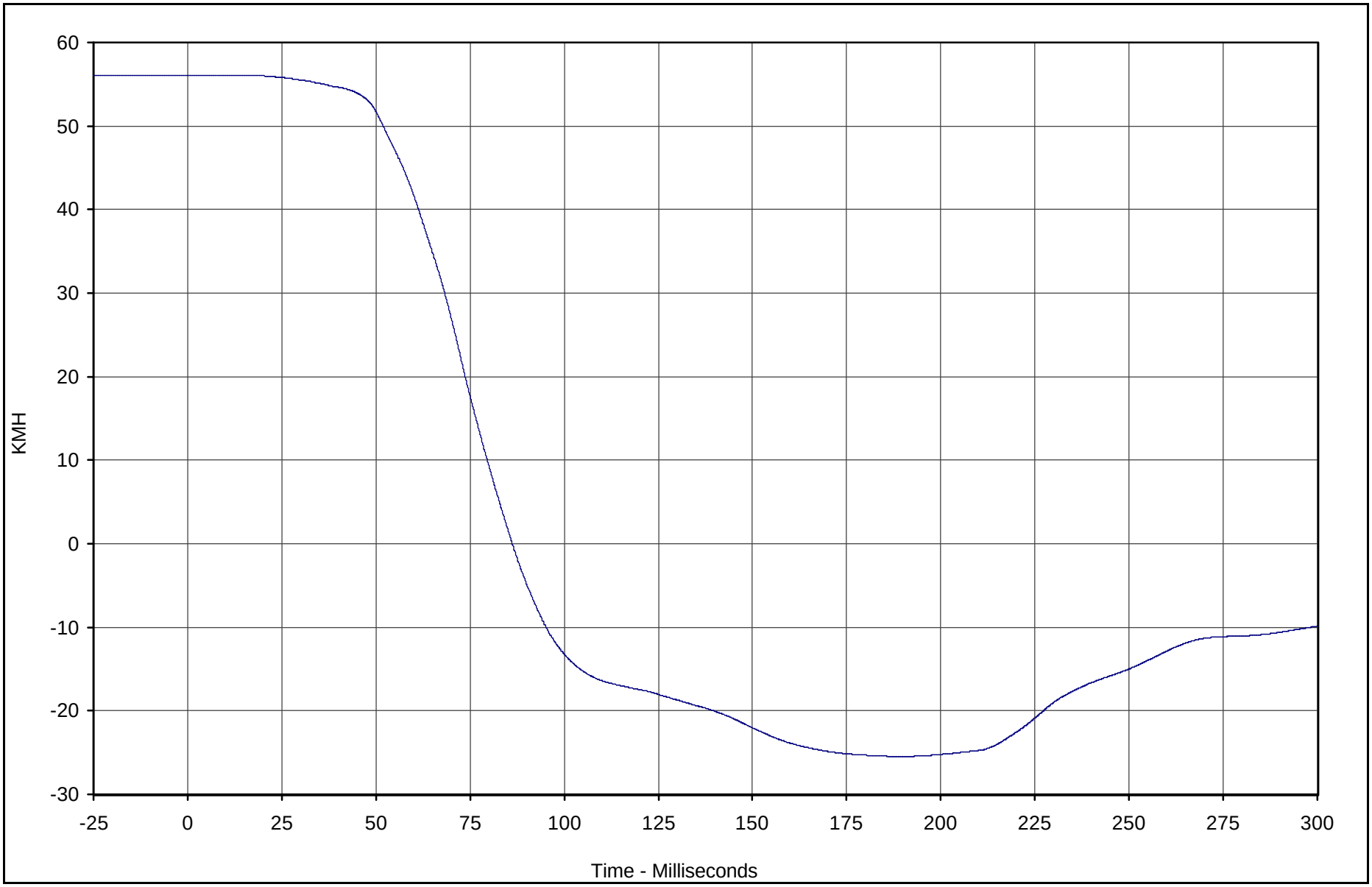
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Primary X	001	FIL	G's	11.8	225.7	-55.3	72.5	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



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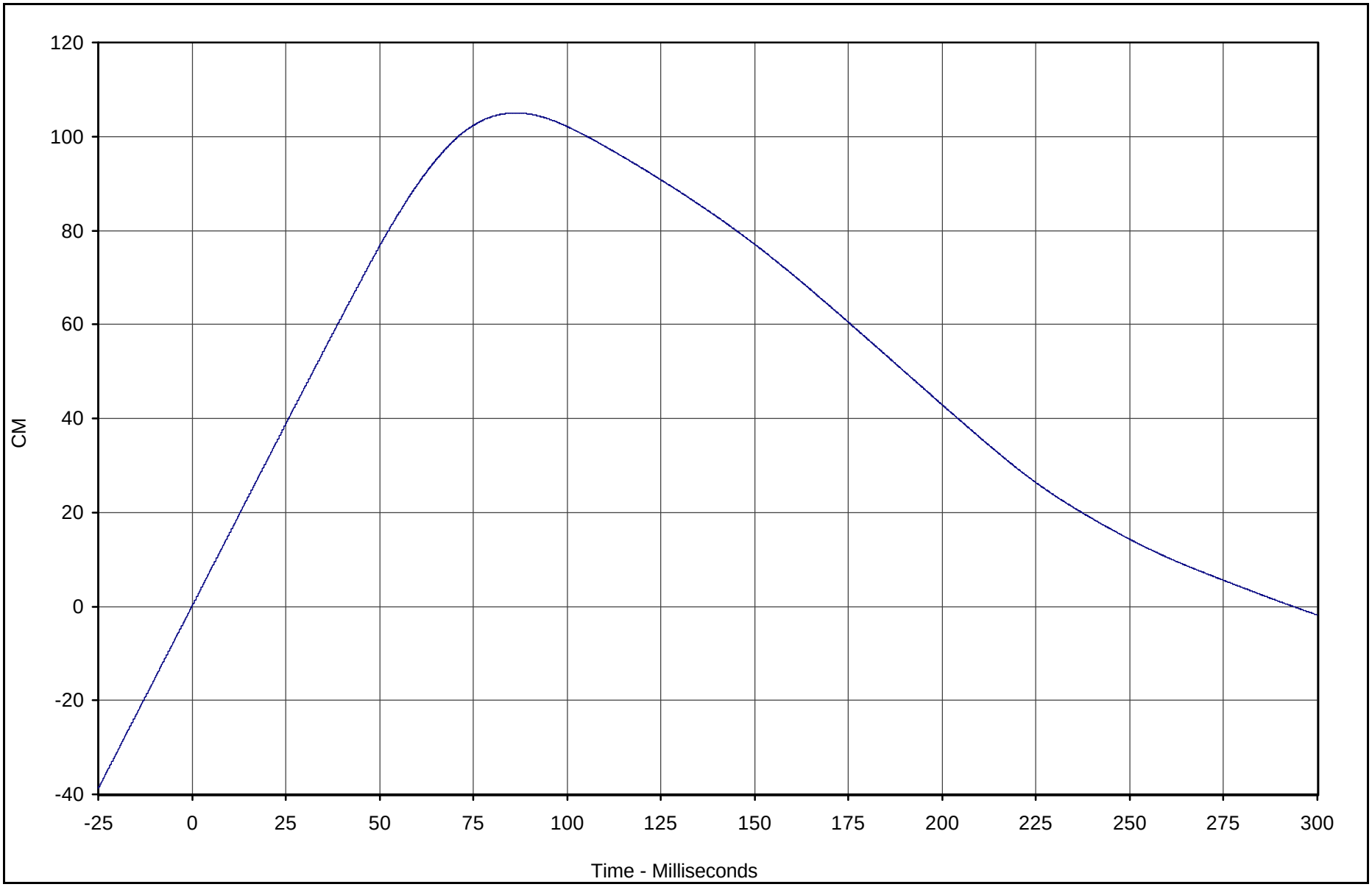
Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



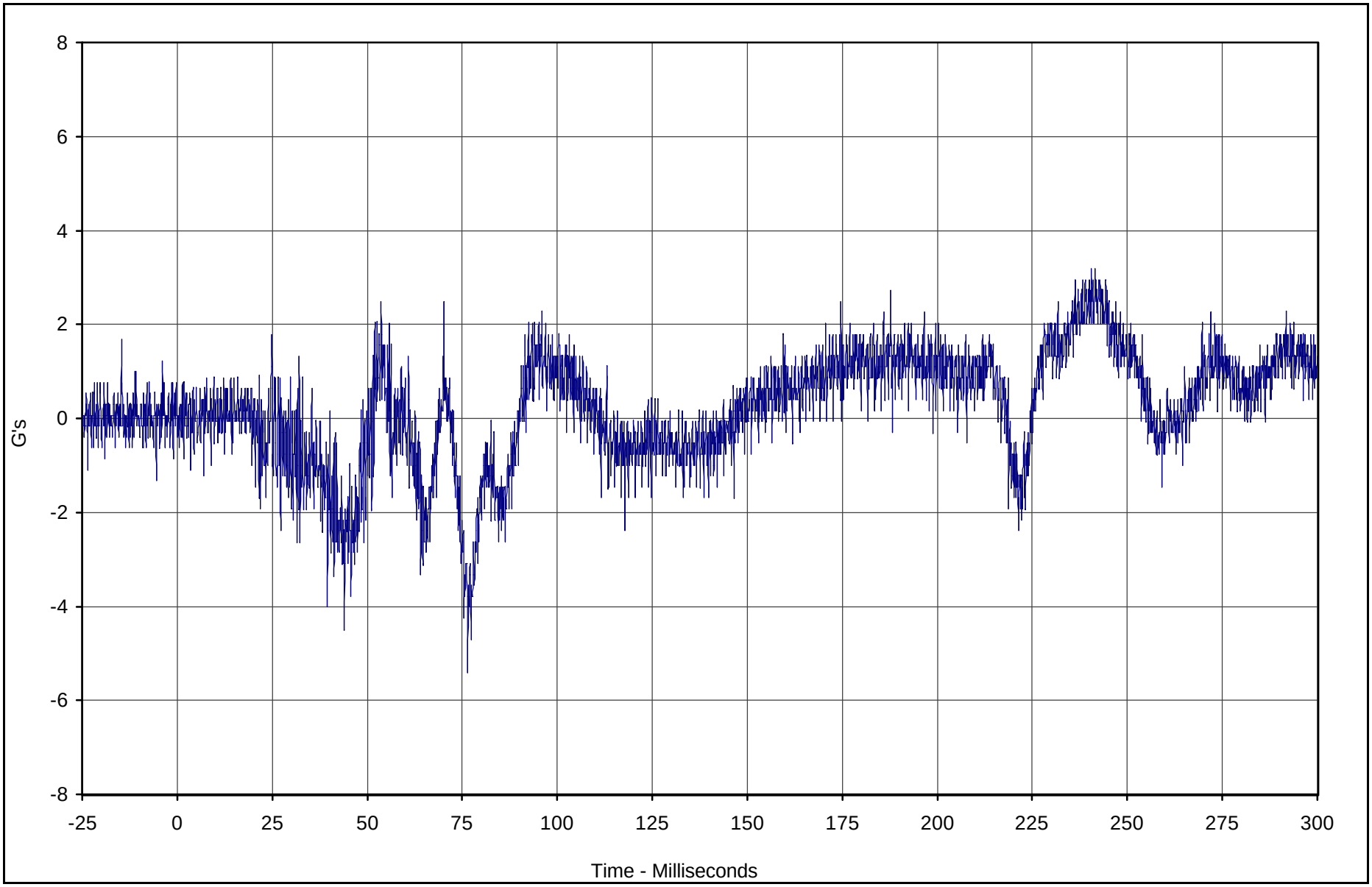
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Primary X Displ.	001	IN2	CM	105.0	86.2	-1.8	299.9	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



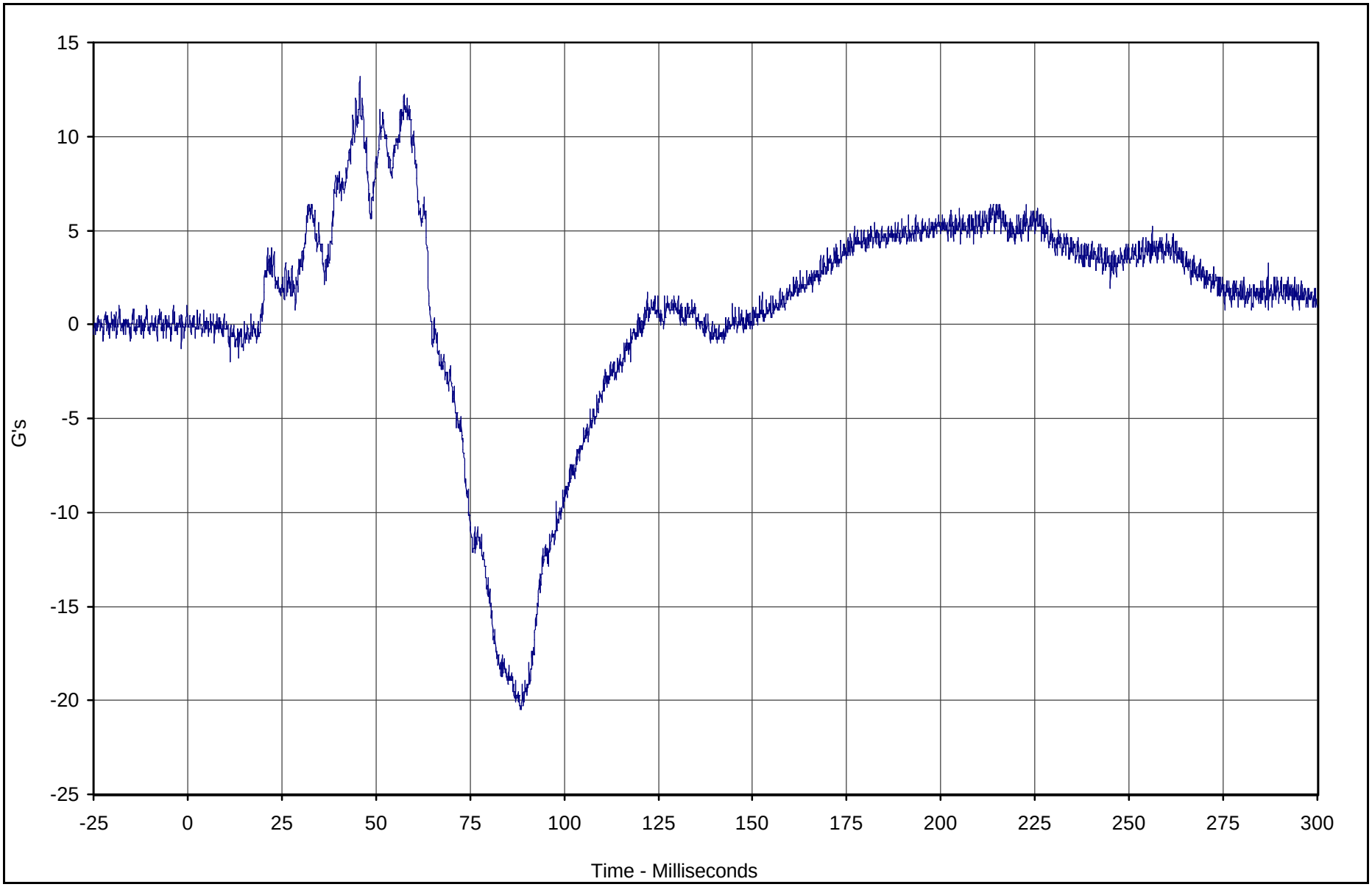
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Primary Y	002	FIL	G's	3.2	240.6	-5.4	76.5	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



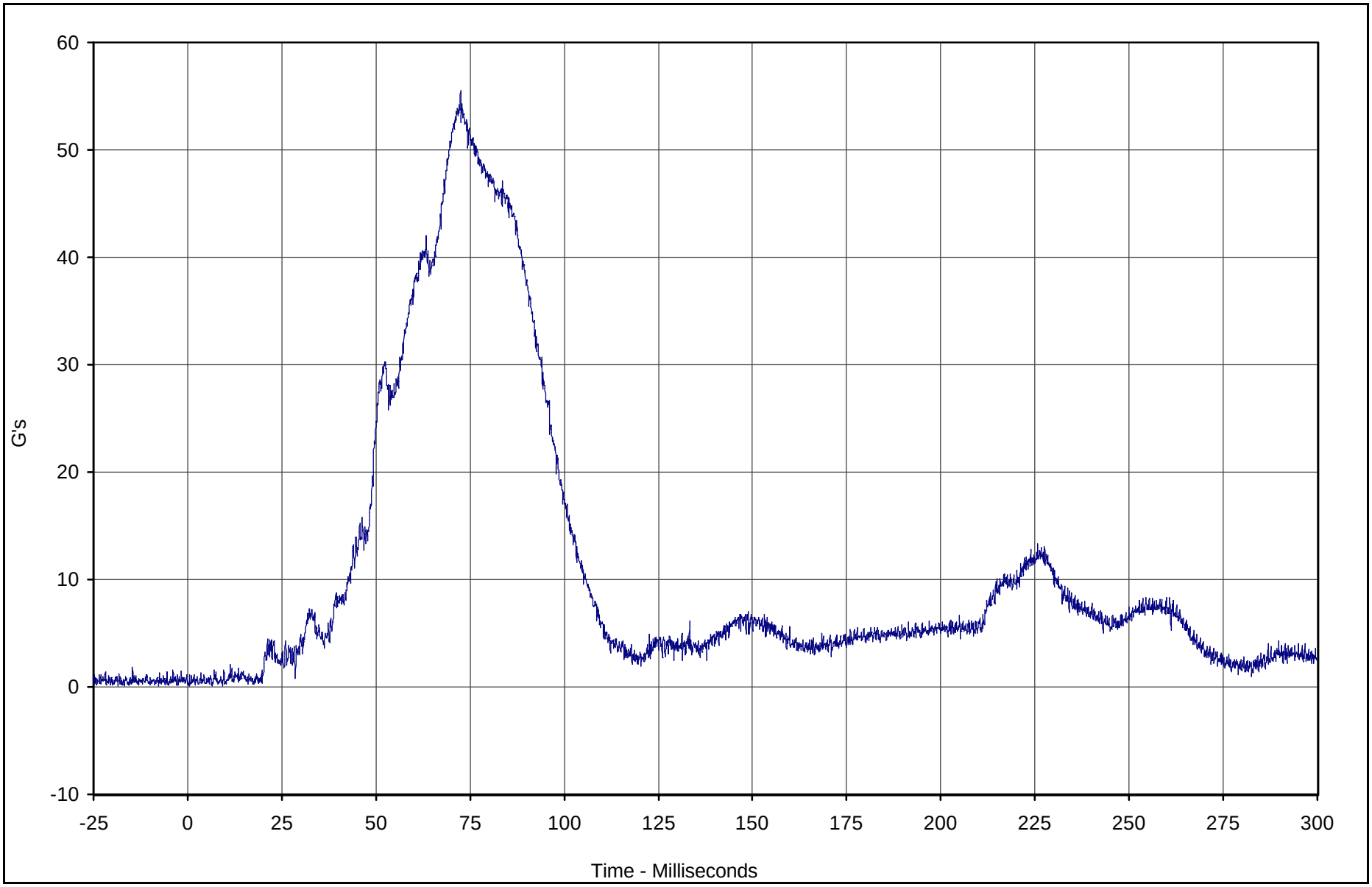
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Primary Z	003	FIL	G's	13.2	45.7	-20.5	88.4	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



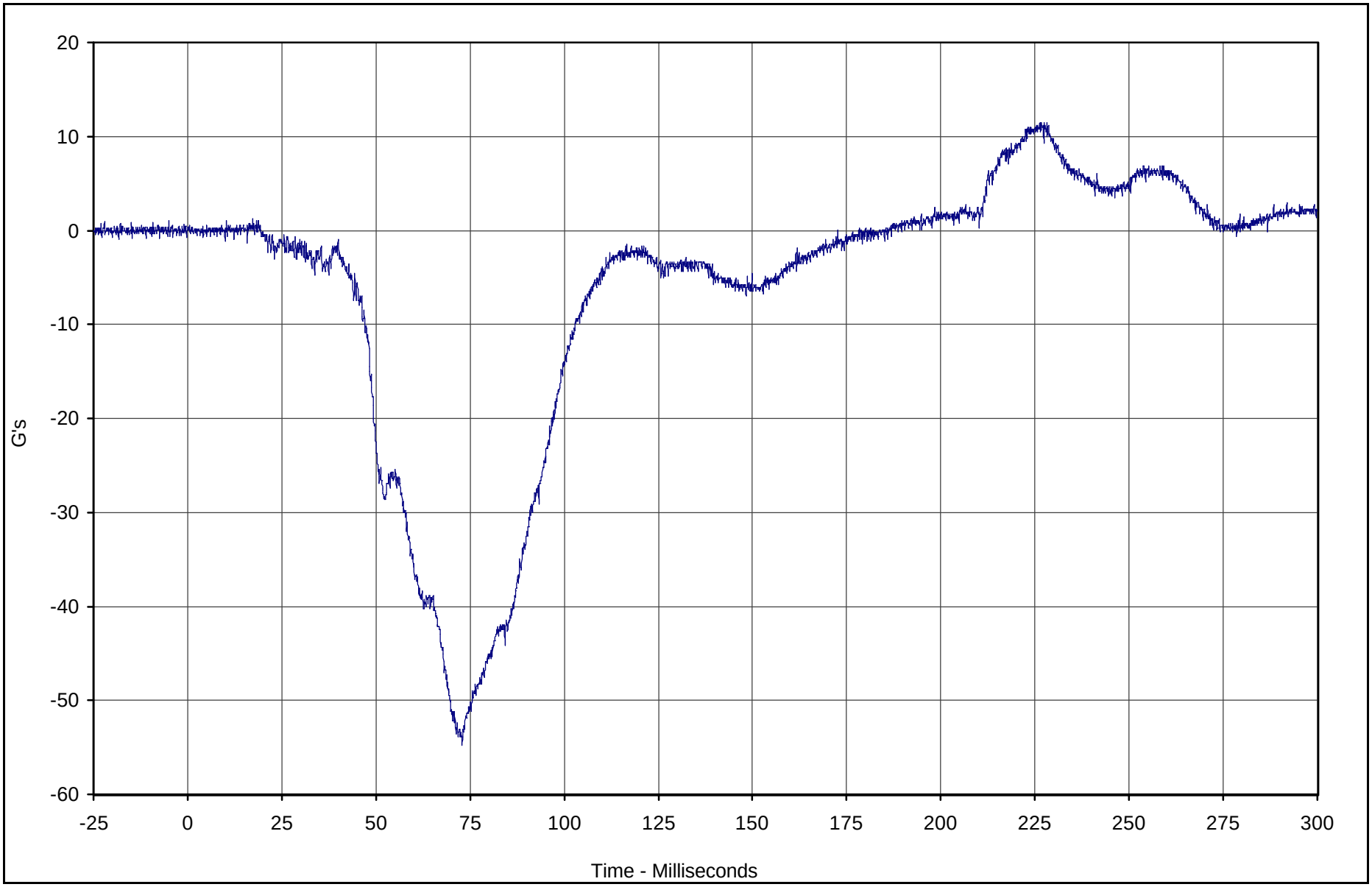
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Resultant Primary	001	RES	G's	55.6	72.5	0.1	6.6	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



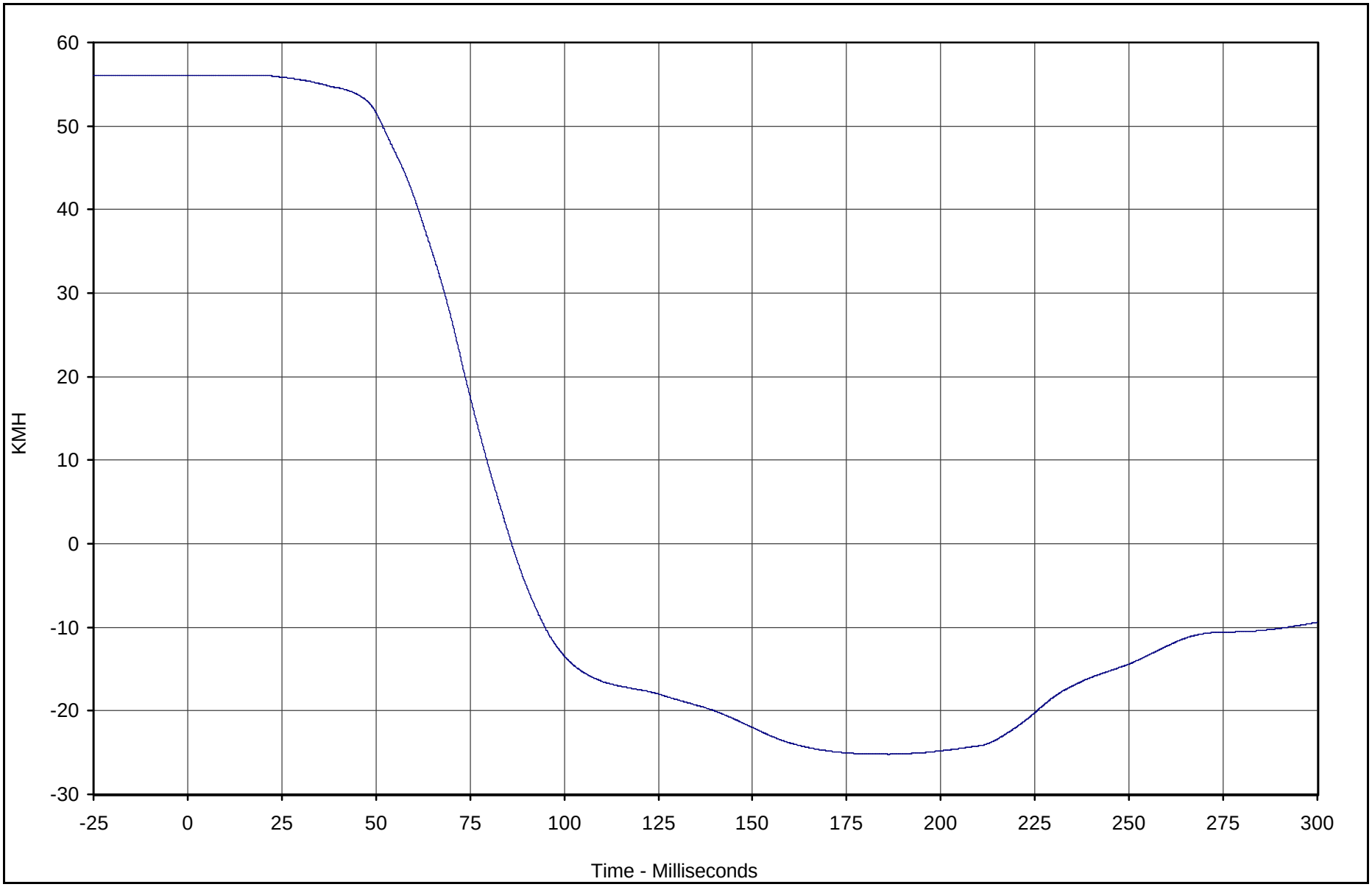
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Redundant X	004	FIL	G's	11.5	226.4	-54.8	72.9	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



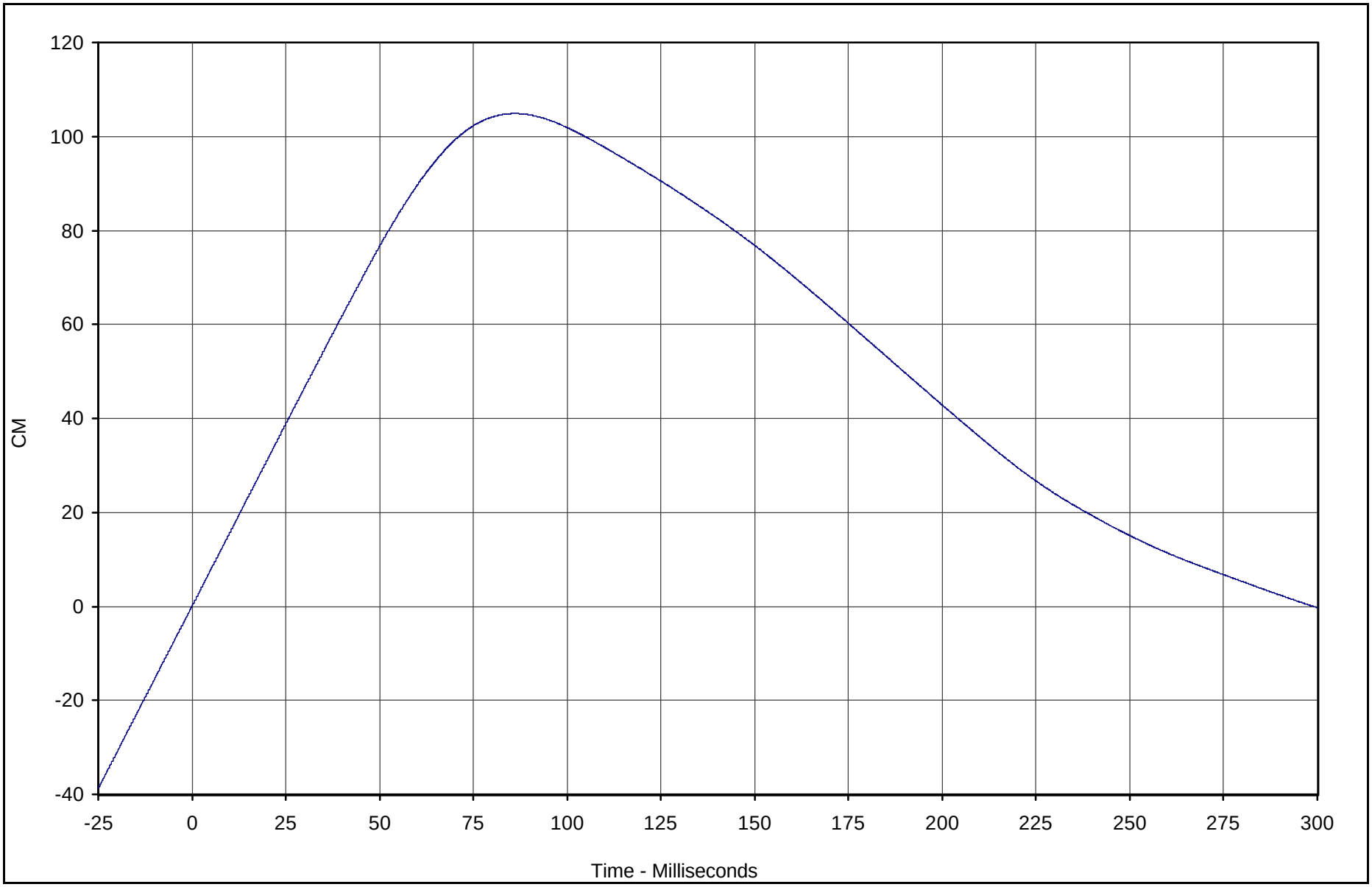
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Redundant X Velocity	004	IN1	KMH	56.1	19.3	-25.2	186.2	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



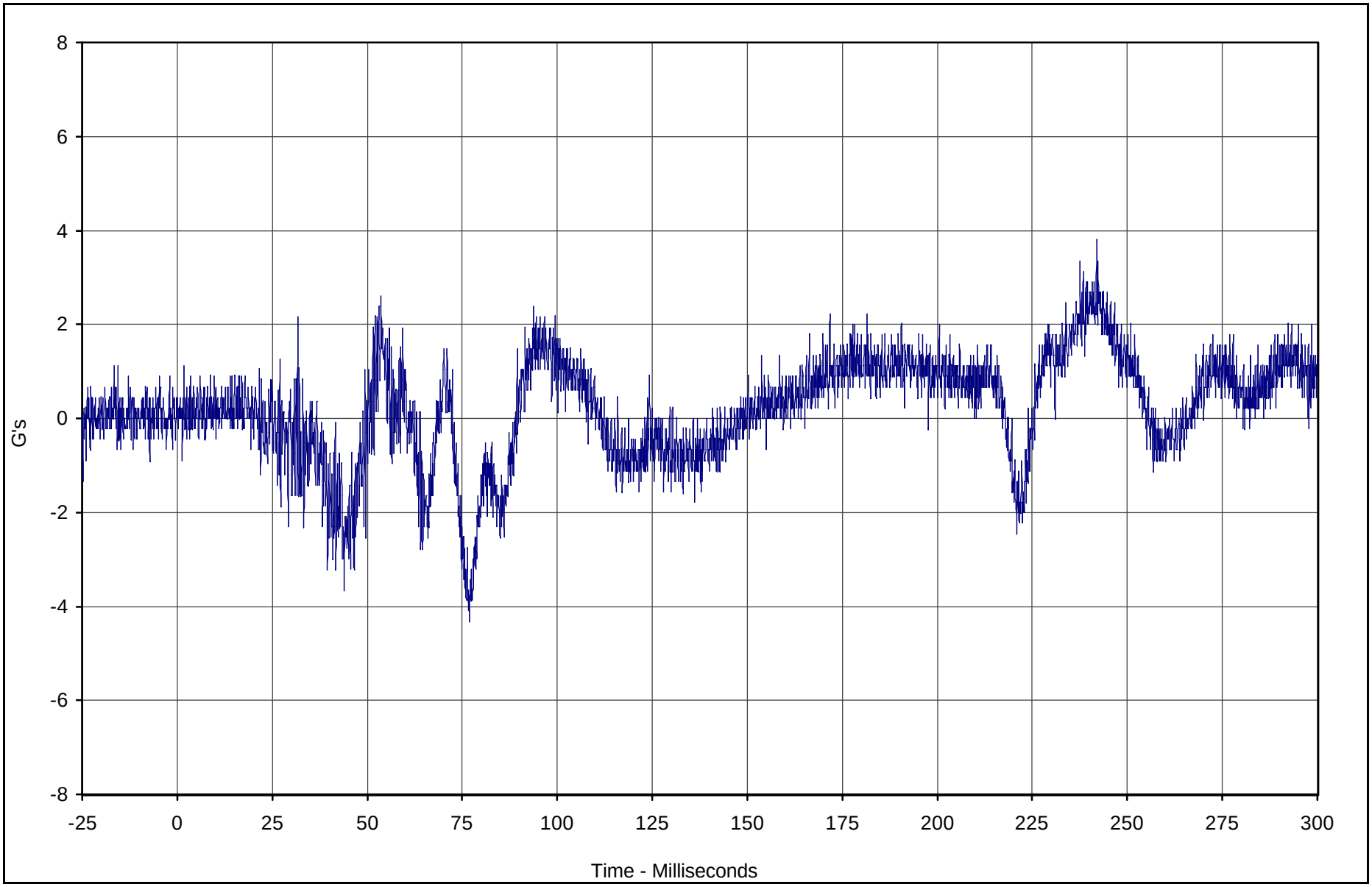
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Redundant X Displ.	004	IN2	CM	104.9	86.1	-0.3	299.9	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



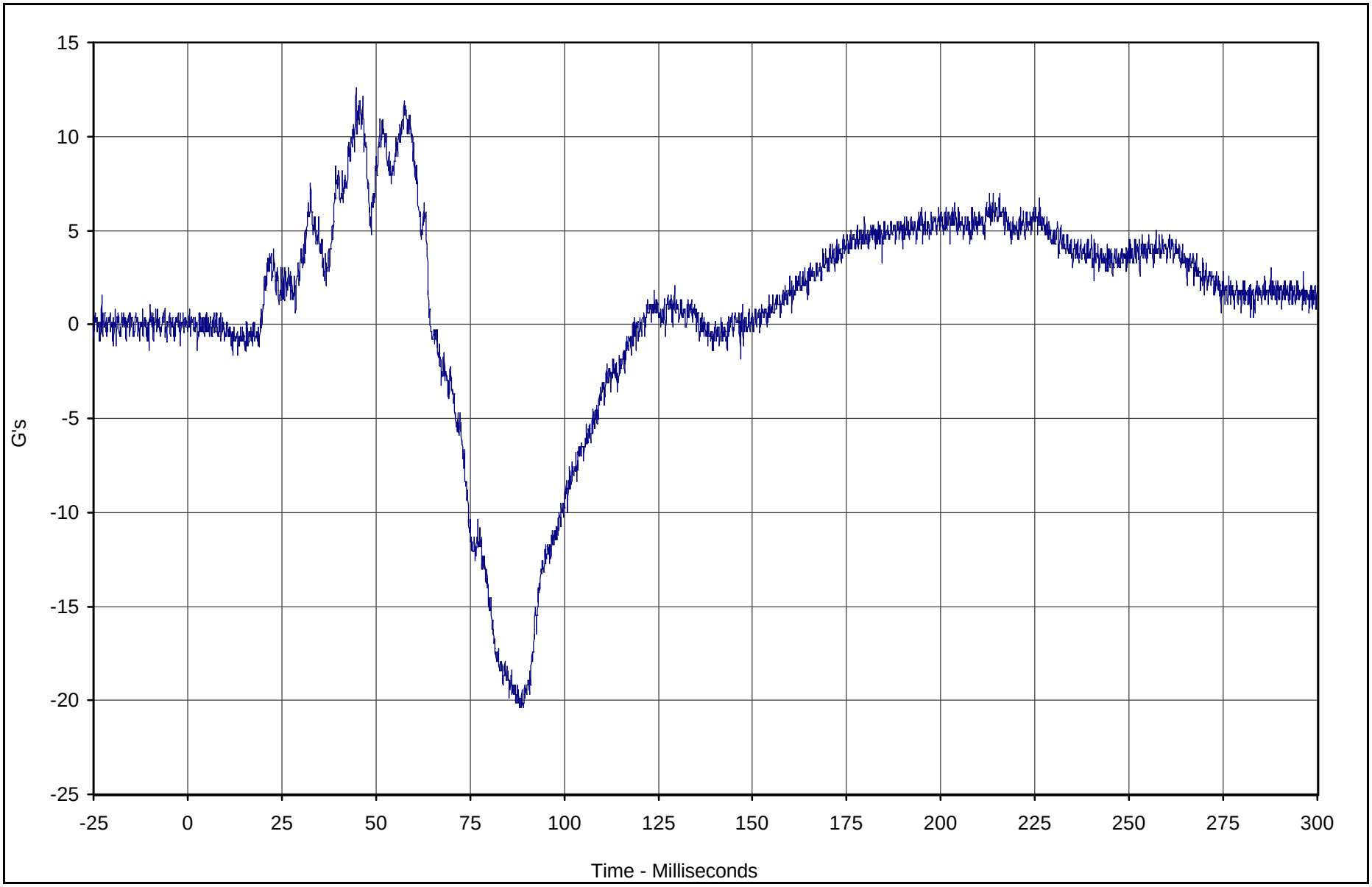
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Redundant Y	005	FIL	G's	3.8	241.9	-4.3	77.0	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



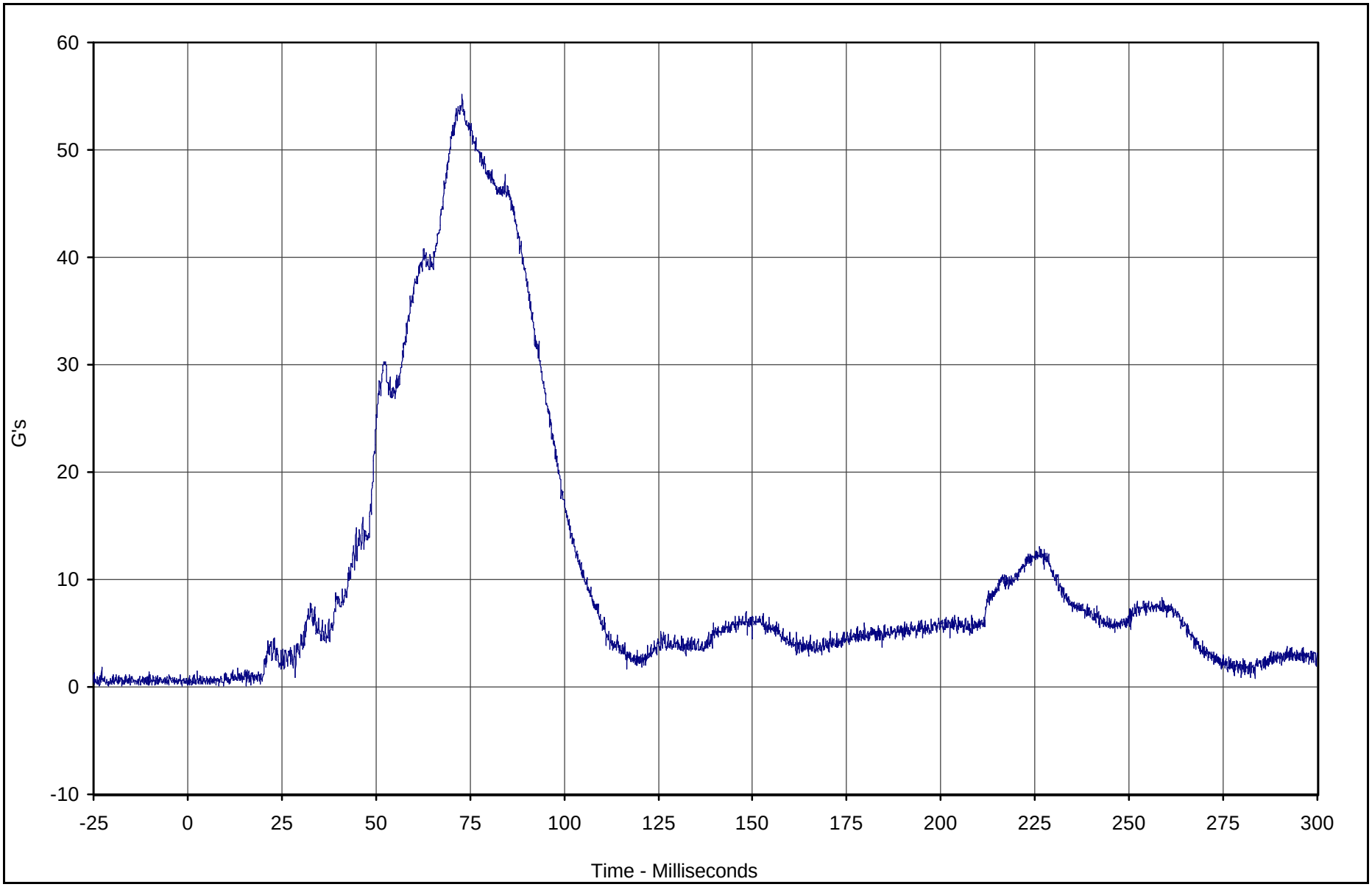
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Redundant Z	006	FIL	G's	12.6	44.7	-20.4	88.1	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



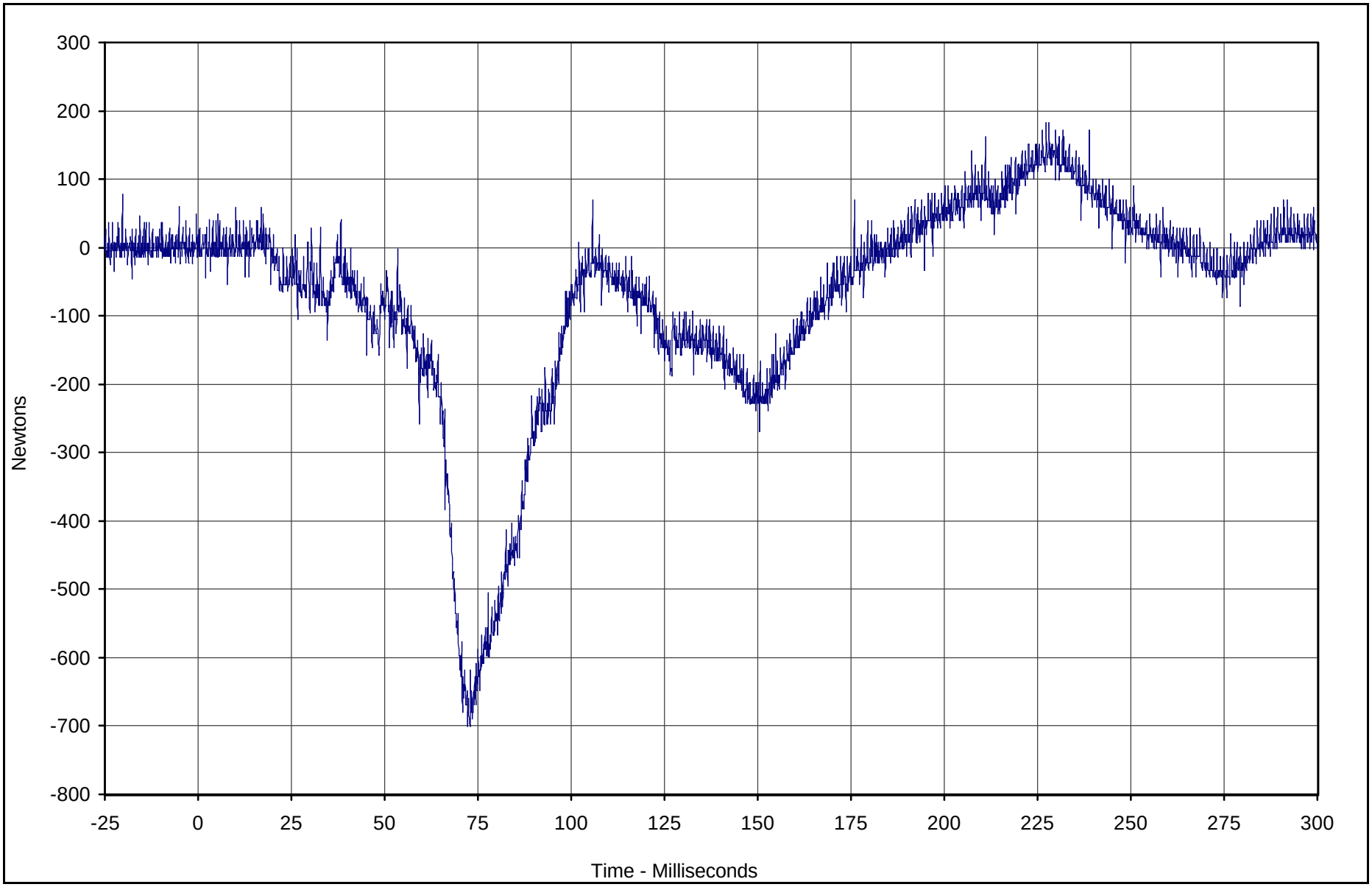
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Resultant Redundant	004	RES	G's	55.2	72.9	0.1	8.4	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



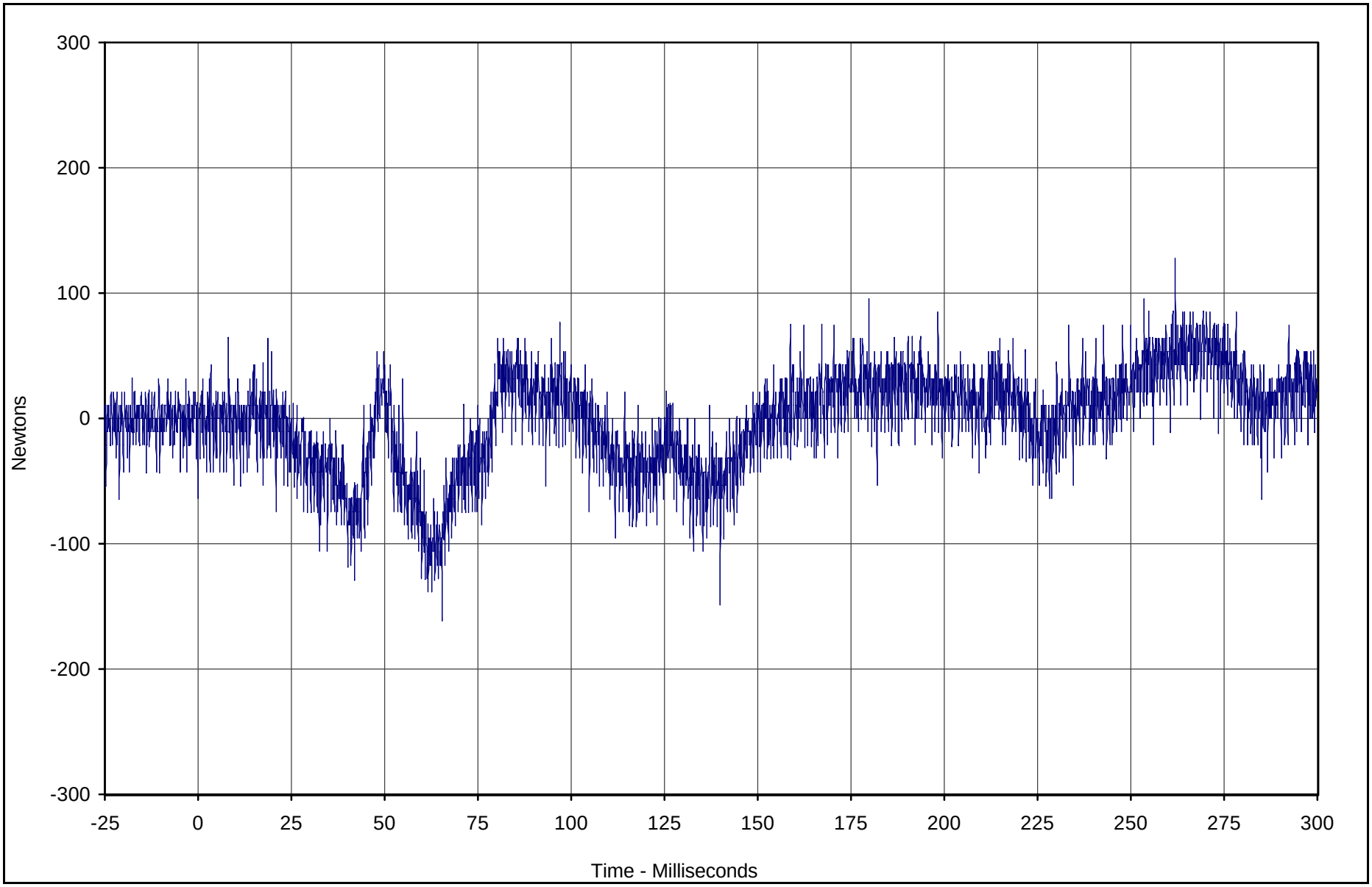
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Neck Force X	007	FIL	Newtons	182.5	227.3	-700.2	72.3	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



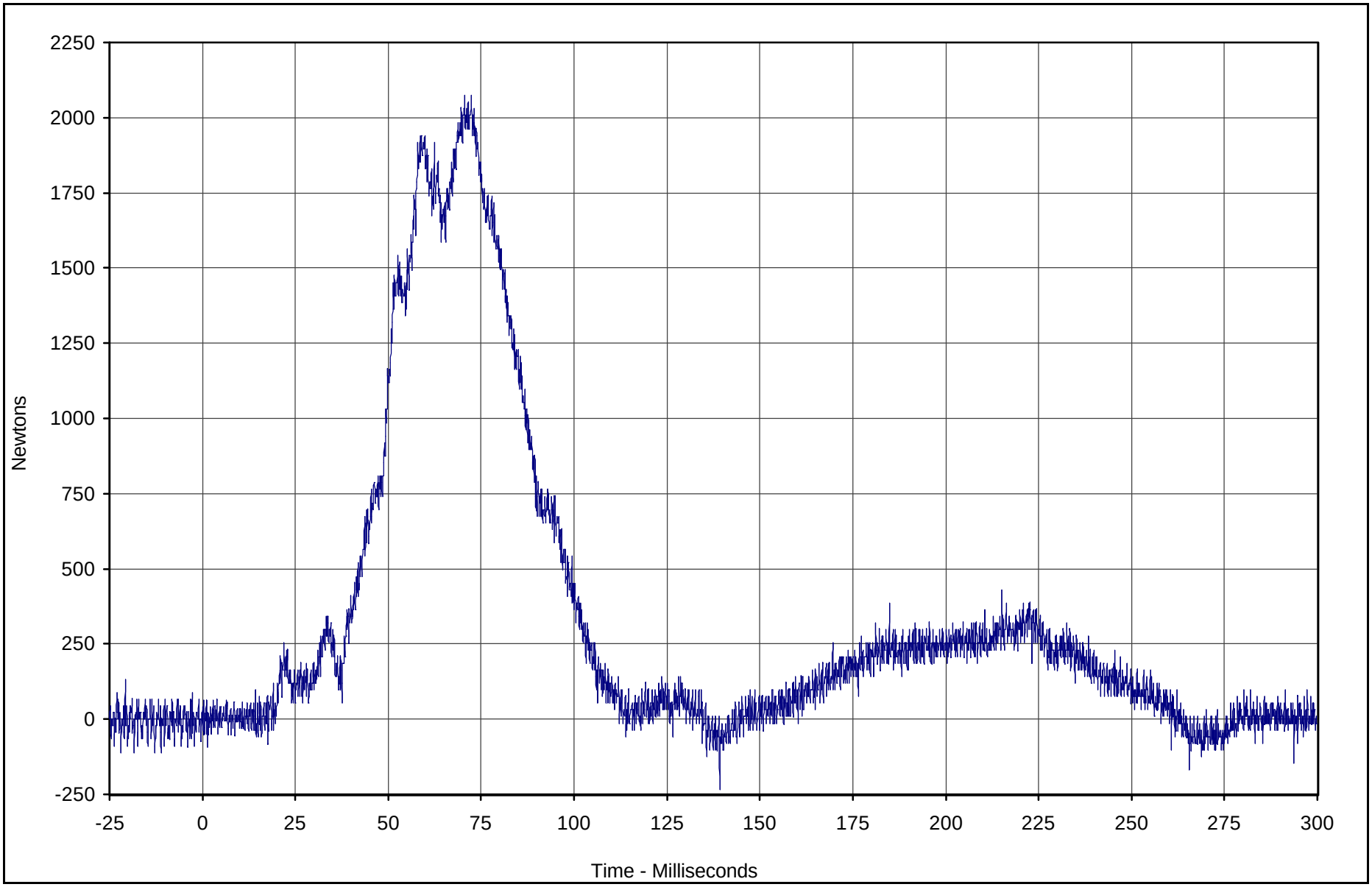
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Neck Force Y	008	FIL	Newtons	127.6	261.9	-159.5	65.4	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



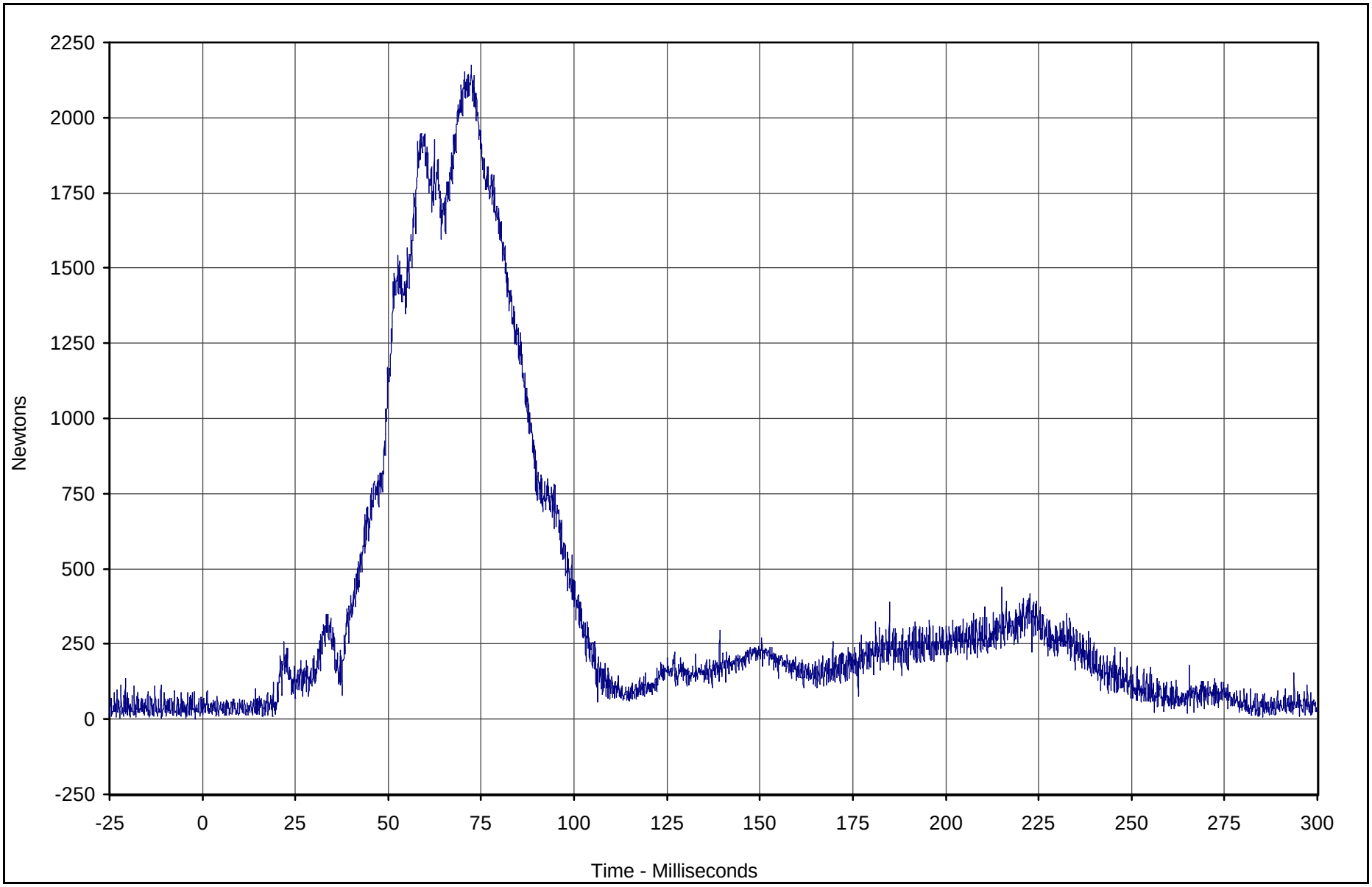
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Neck Force Z	009	FIL	Newtons	2073.8	70.6	-235.7	139.2	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



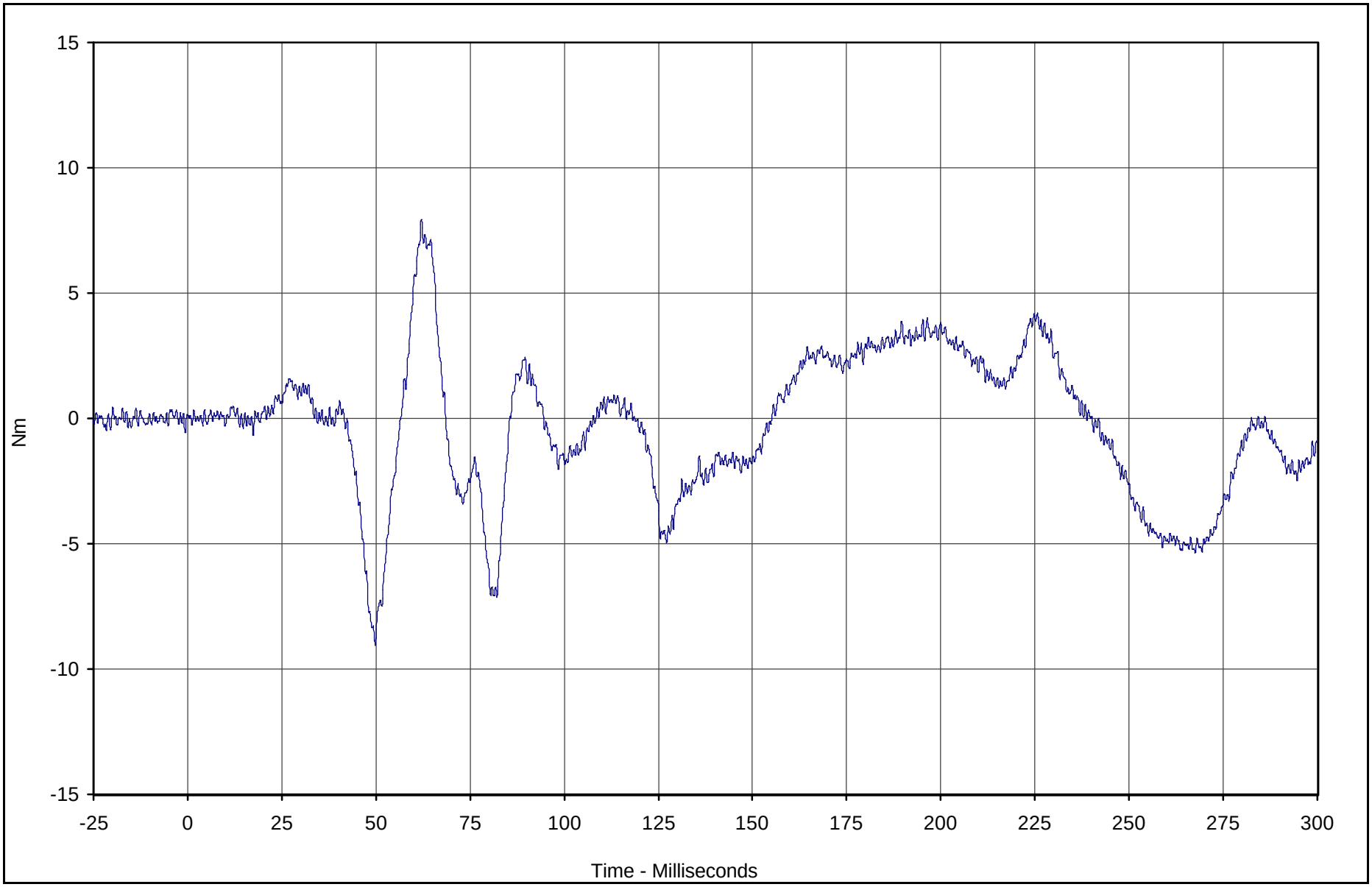
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Neck Force Resultant	007	RES	Newtons	2176.2	72.4	8.9	16.1	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



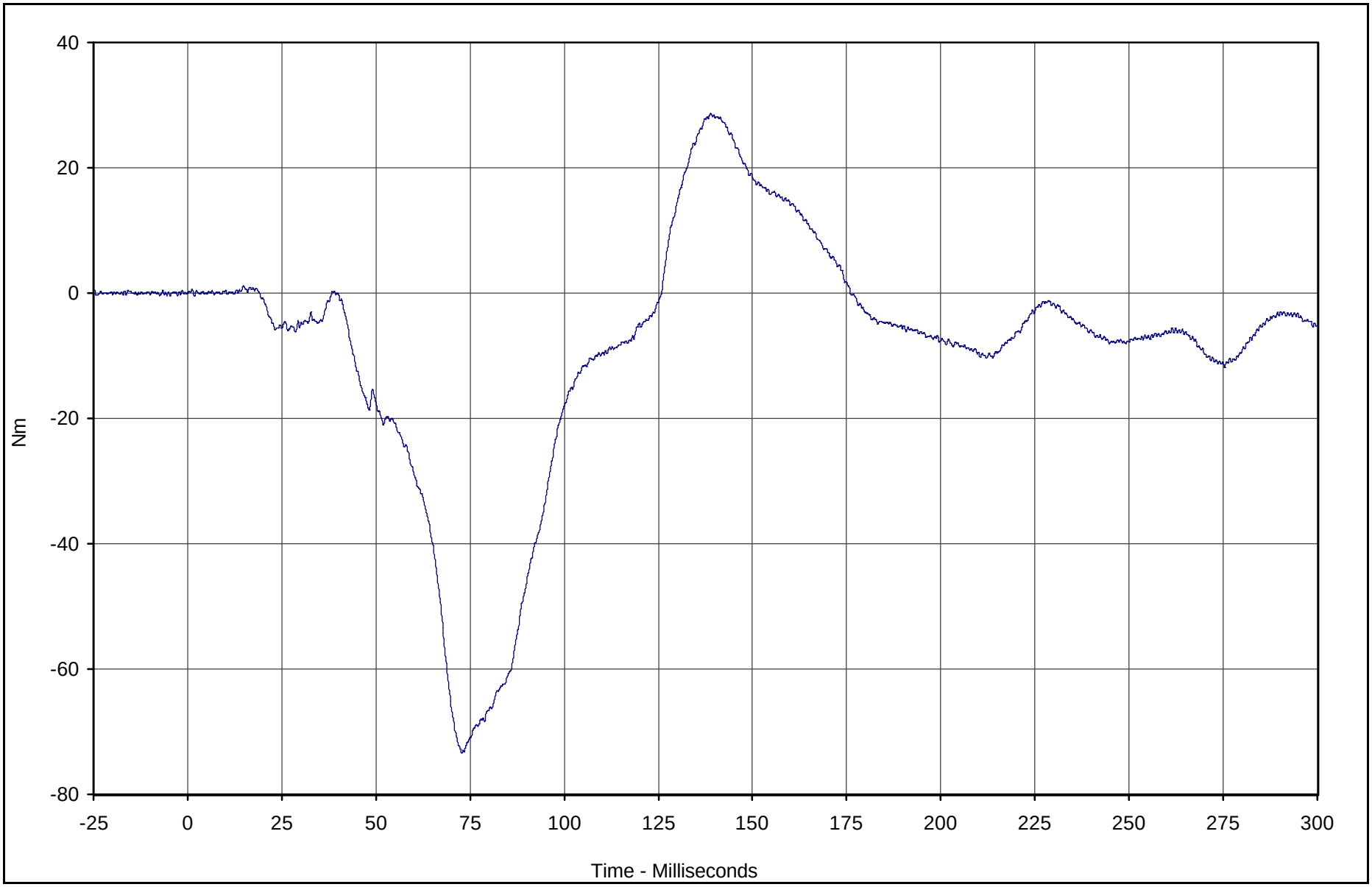
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Neck Moment X	010	FIL	Nm	7.9	62.1	-9.1	49.8	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



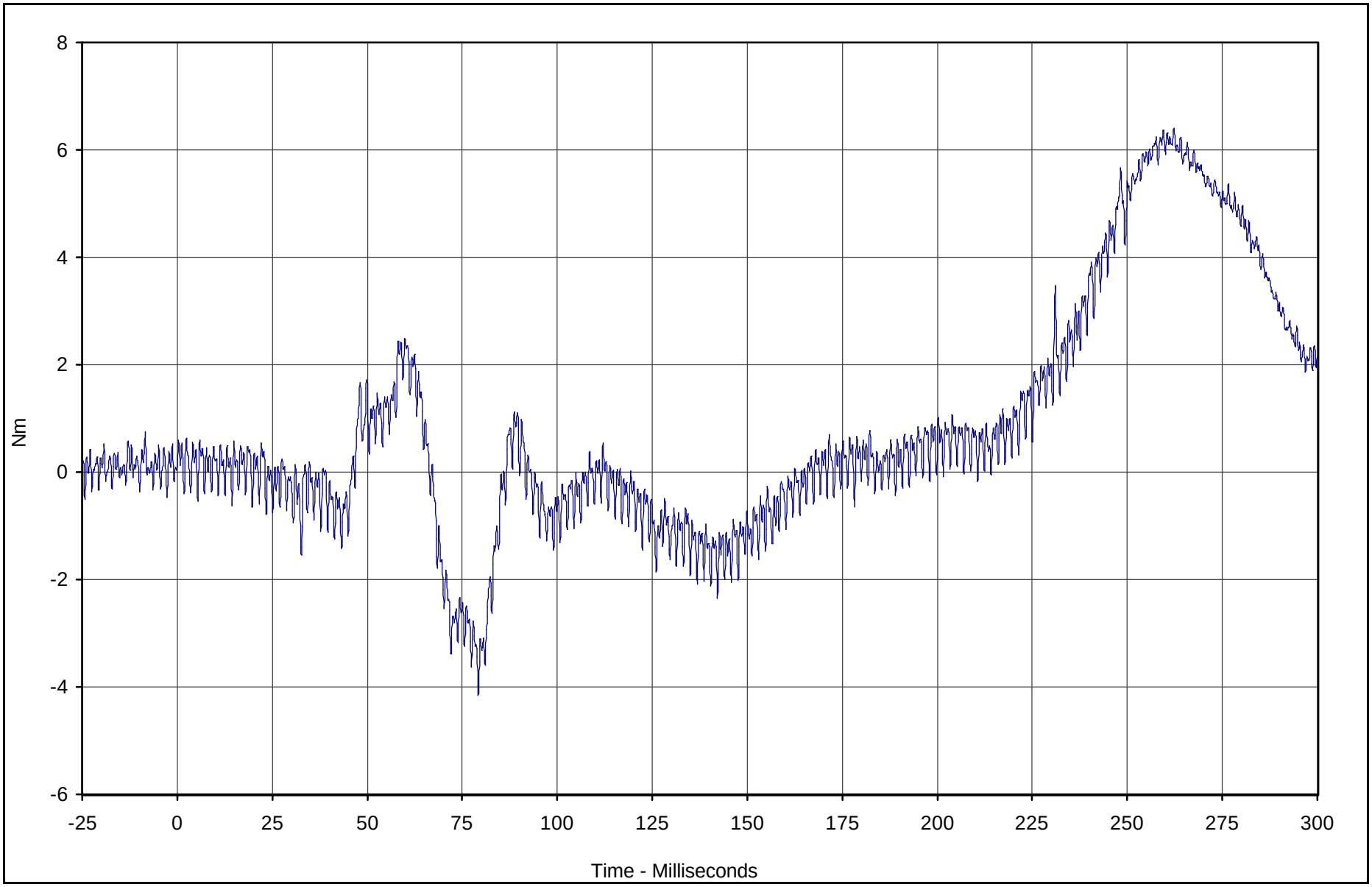
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Neck Moment Y	011	FIL	Nm	28.7	138.9	-73.4	72.9	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



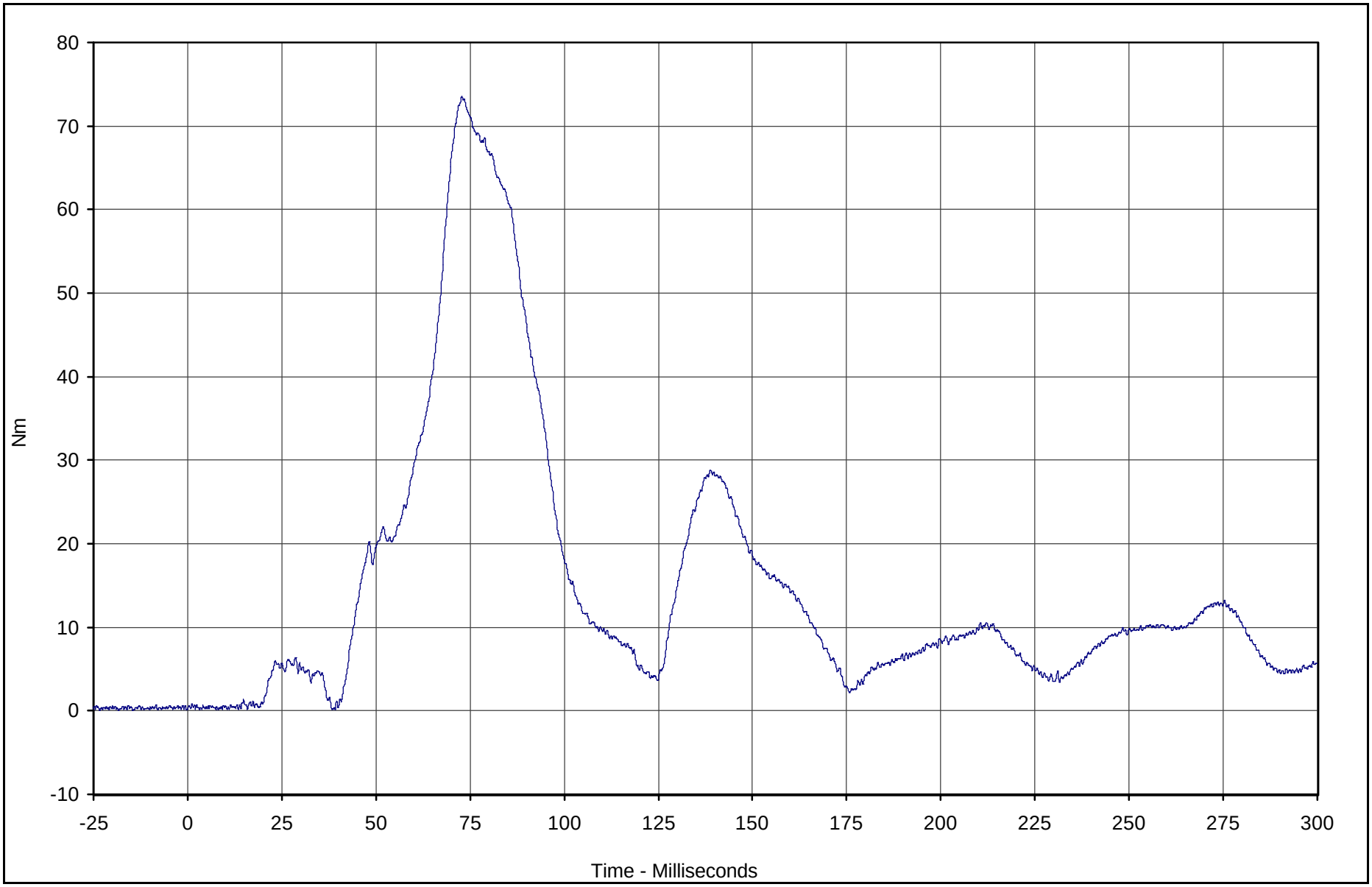
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Neck Moment Z	012	FIL	Nm	6.4	262.2	-4.2	79.2	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



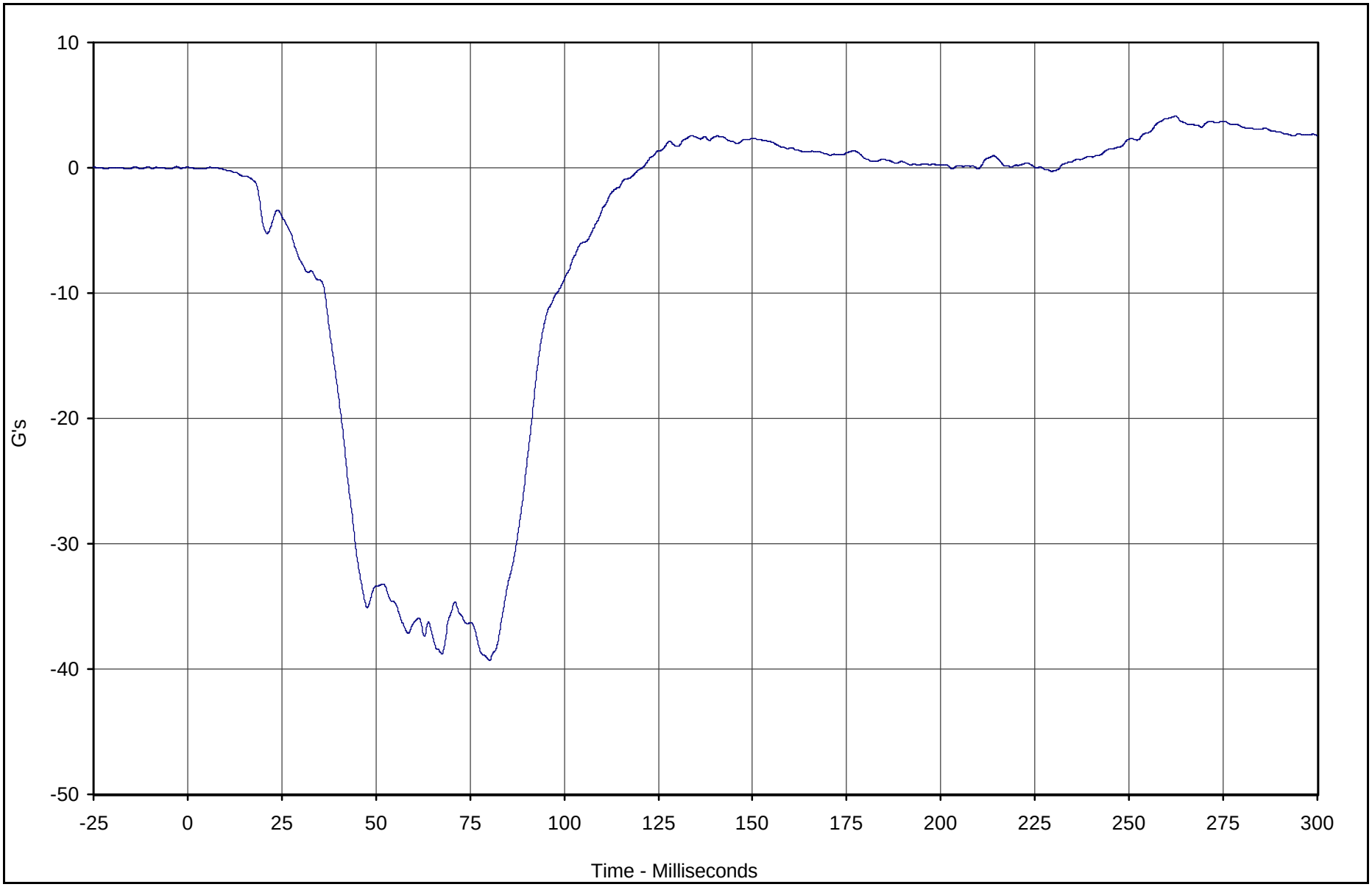
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Neck Moment Resultant	010	RES	Nm	73.5	72.9	0.1	13.5	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



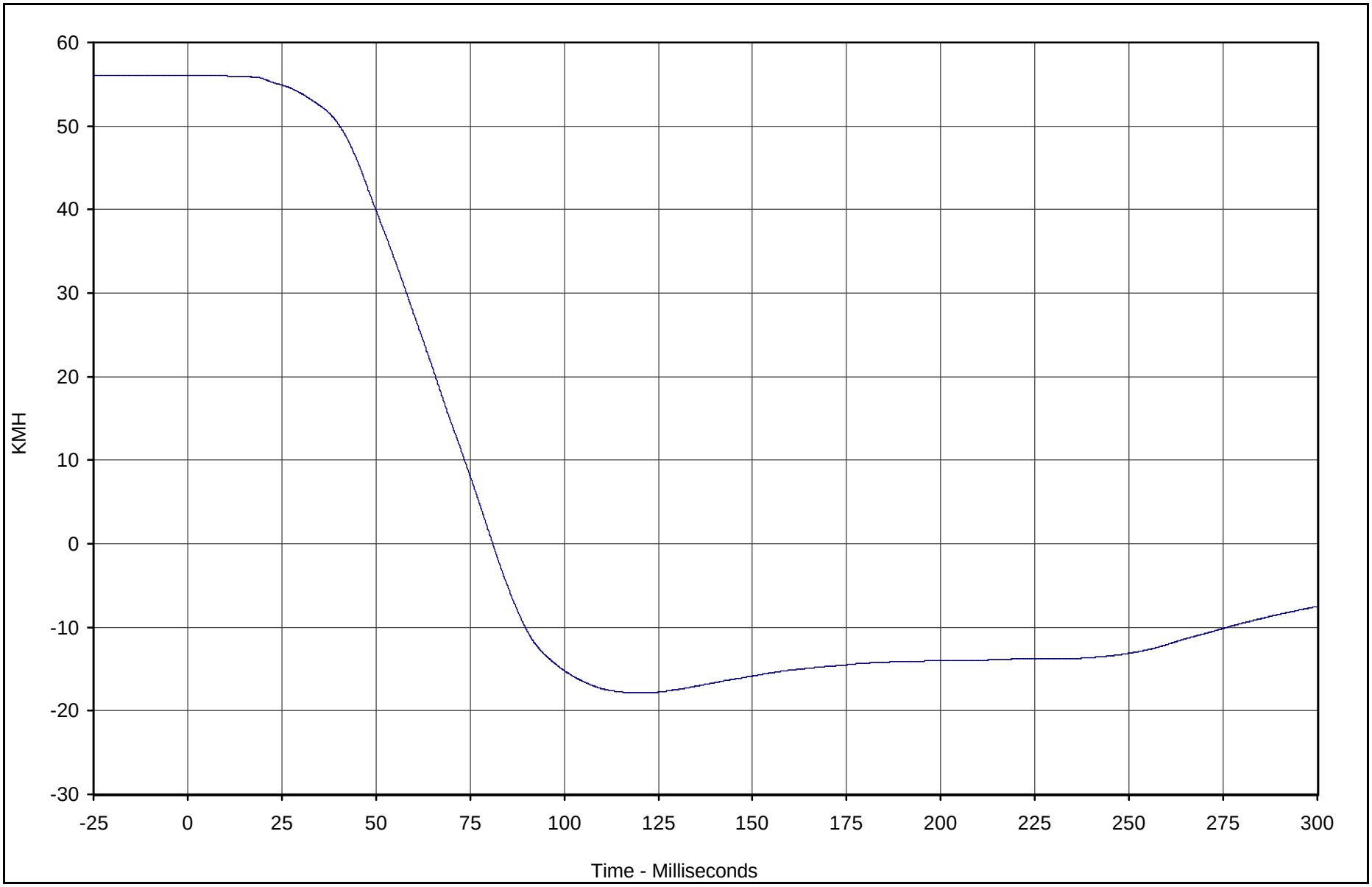
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Primary X	013	FIL	G's	4.1	262.3	-39.3	80.2	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



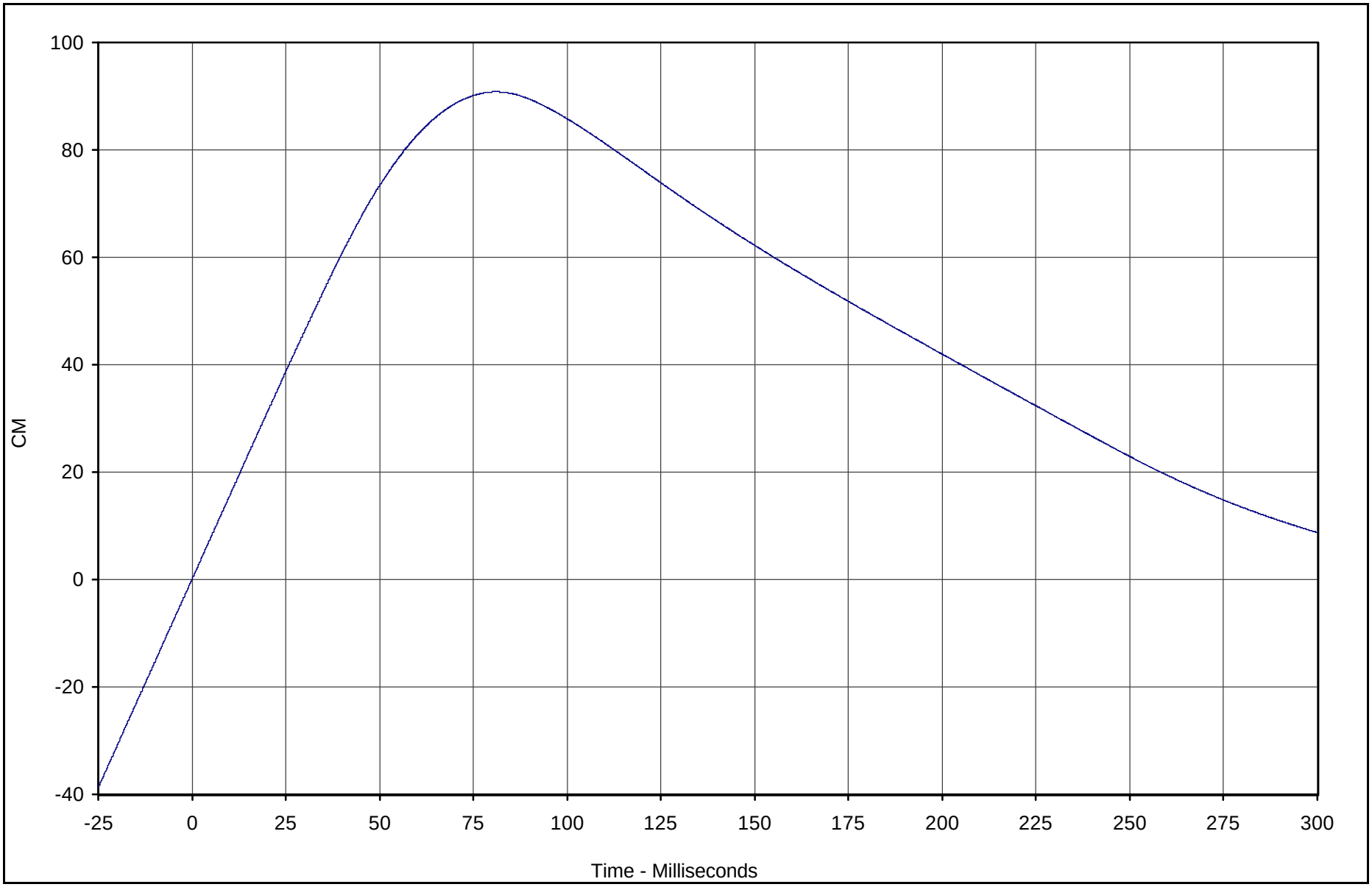
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Primary X Velocity	013	IN1	KMH	56.0	0.8	-17.9	120.7	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



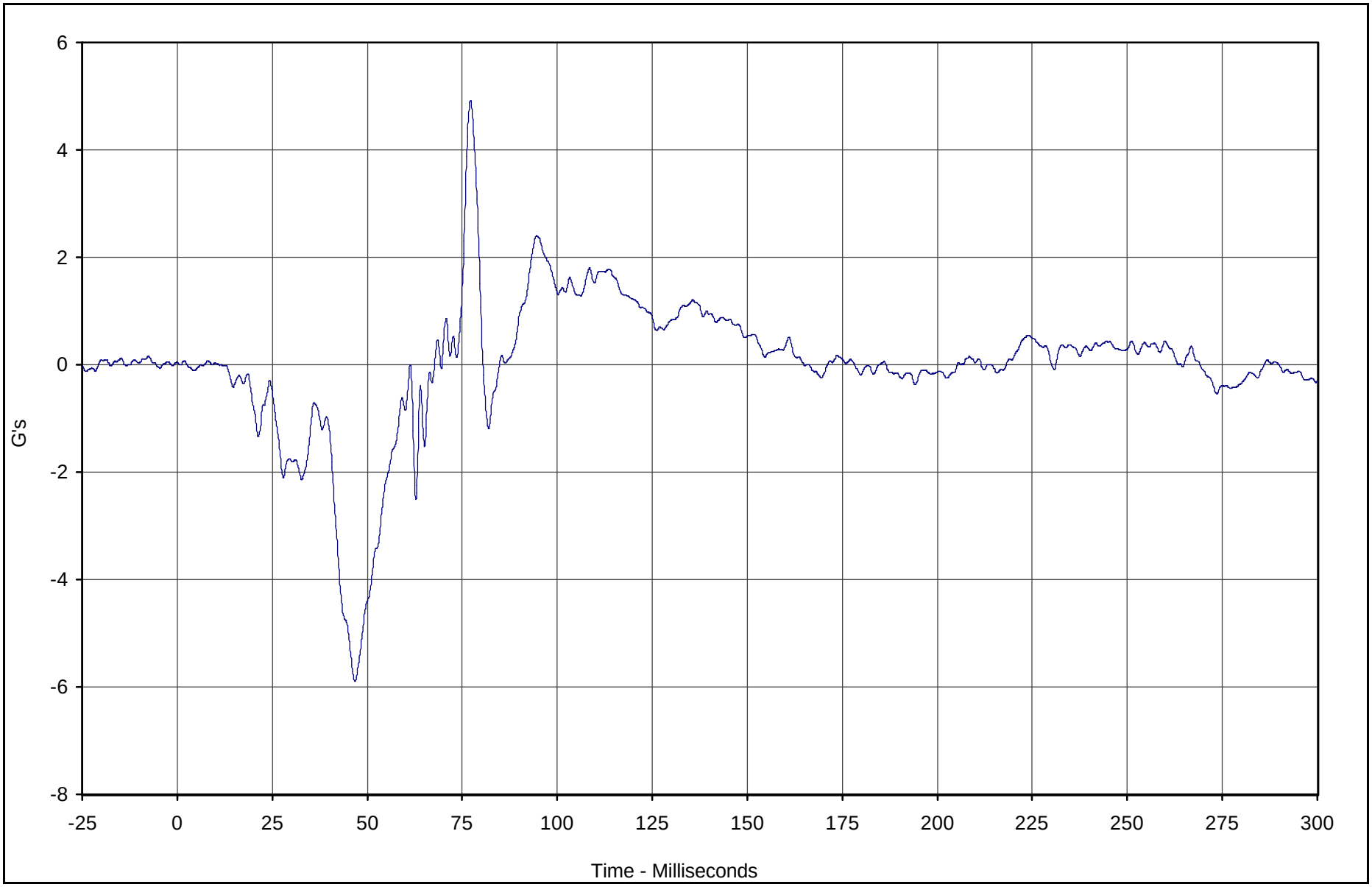
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Primary X Displ.	013	IN2	CM	90.8	81.0	0.0	0.0	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



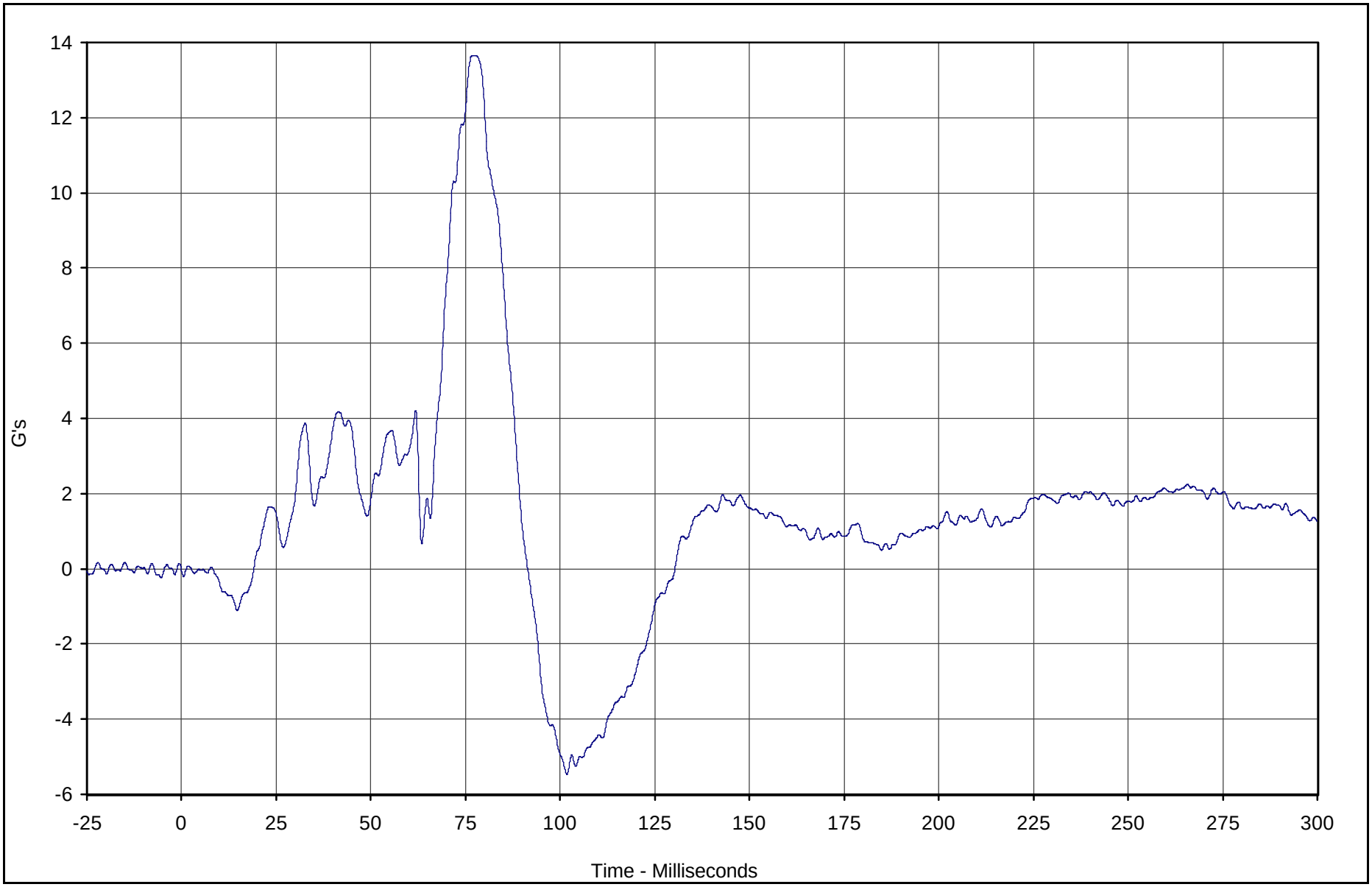
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Primary Y	014	FIL	G's	4.9	77.2	-5.9	46.8	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



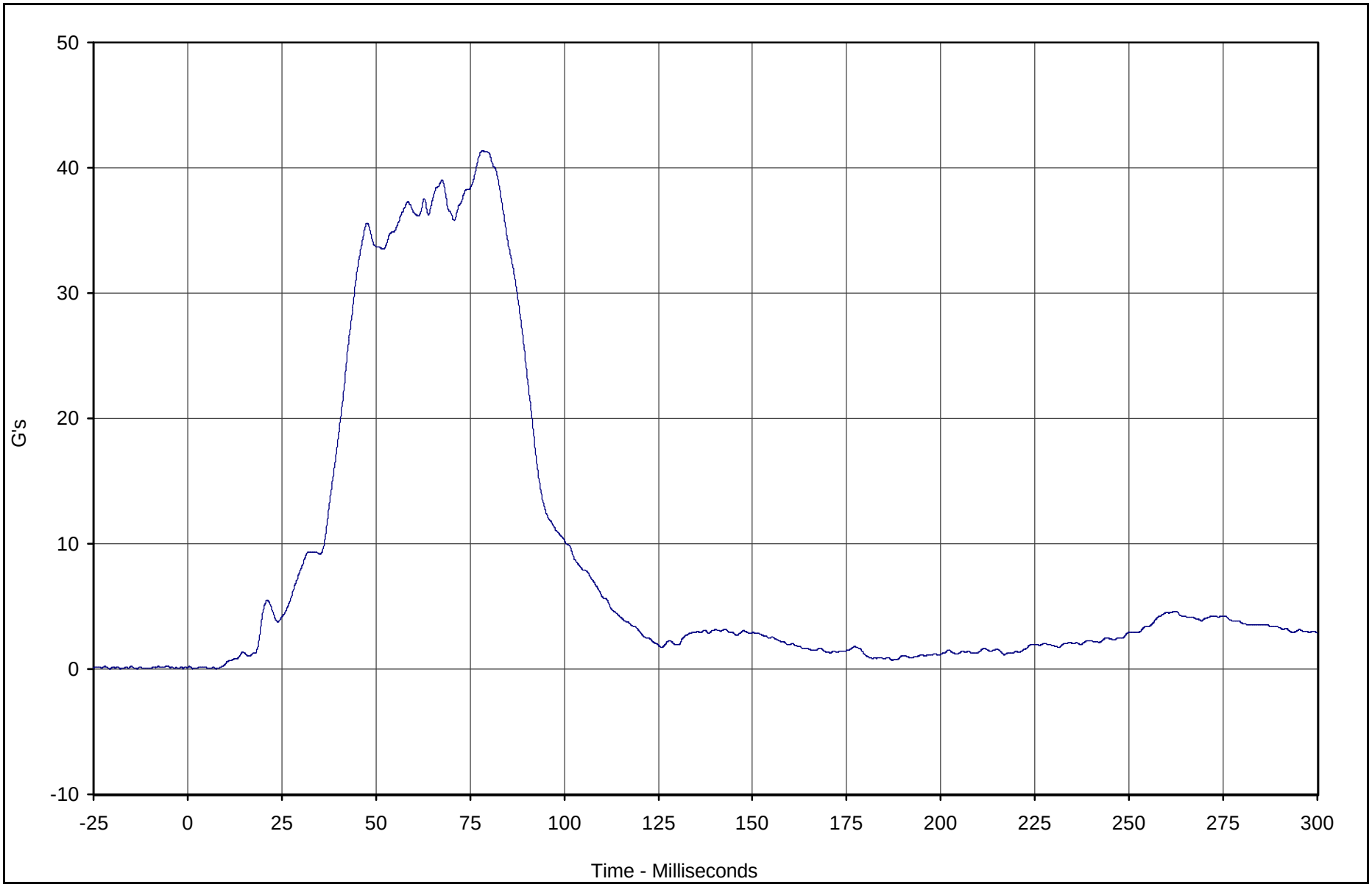
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Primary Z	015	FIL	G's	13.7	77.5	-5.5	101.8	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



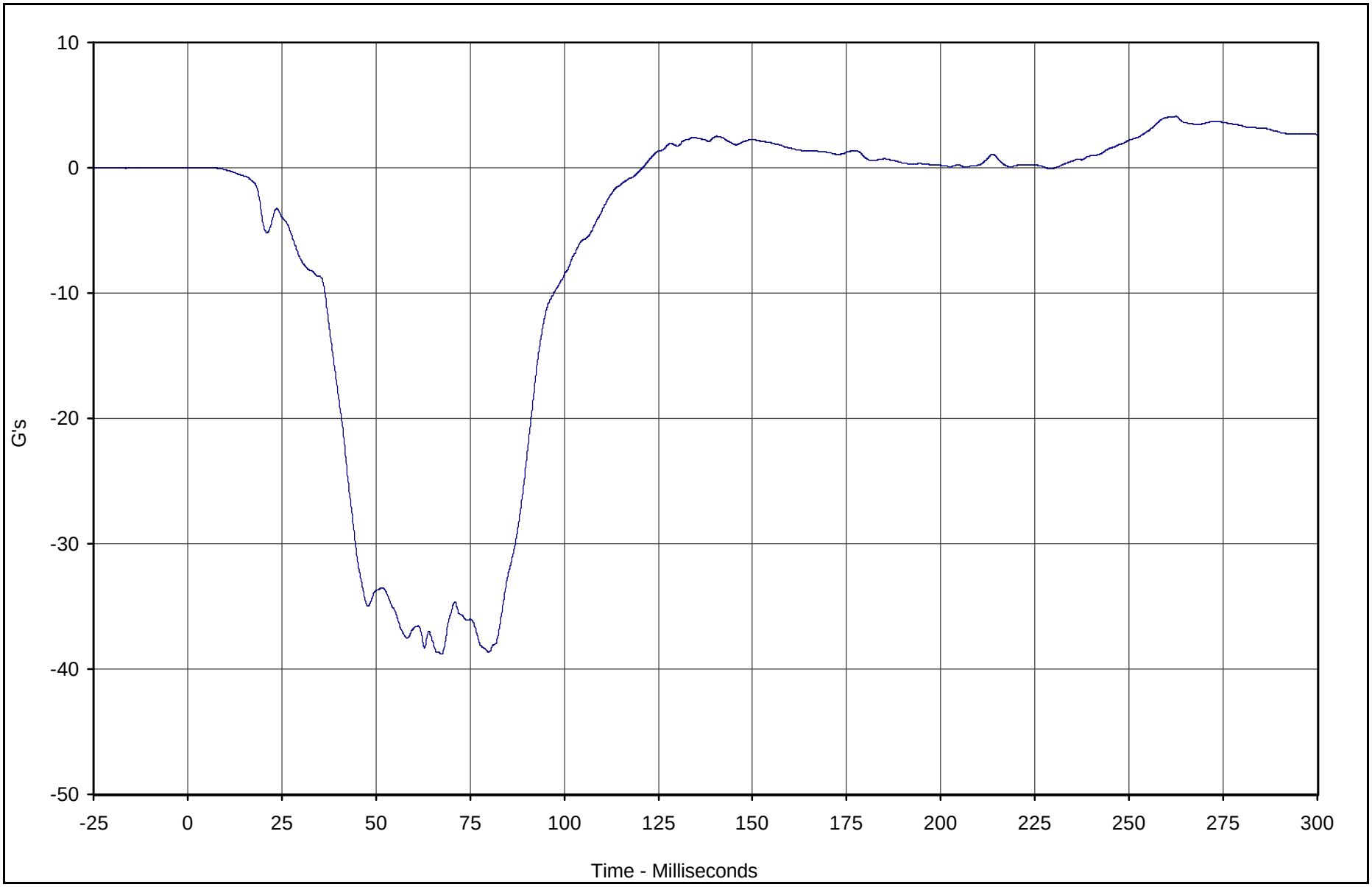
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Resultant Primary	013	RES	G's	41.3	78.3	0.0	7.4	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



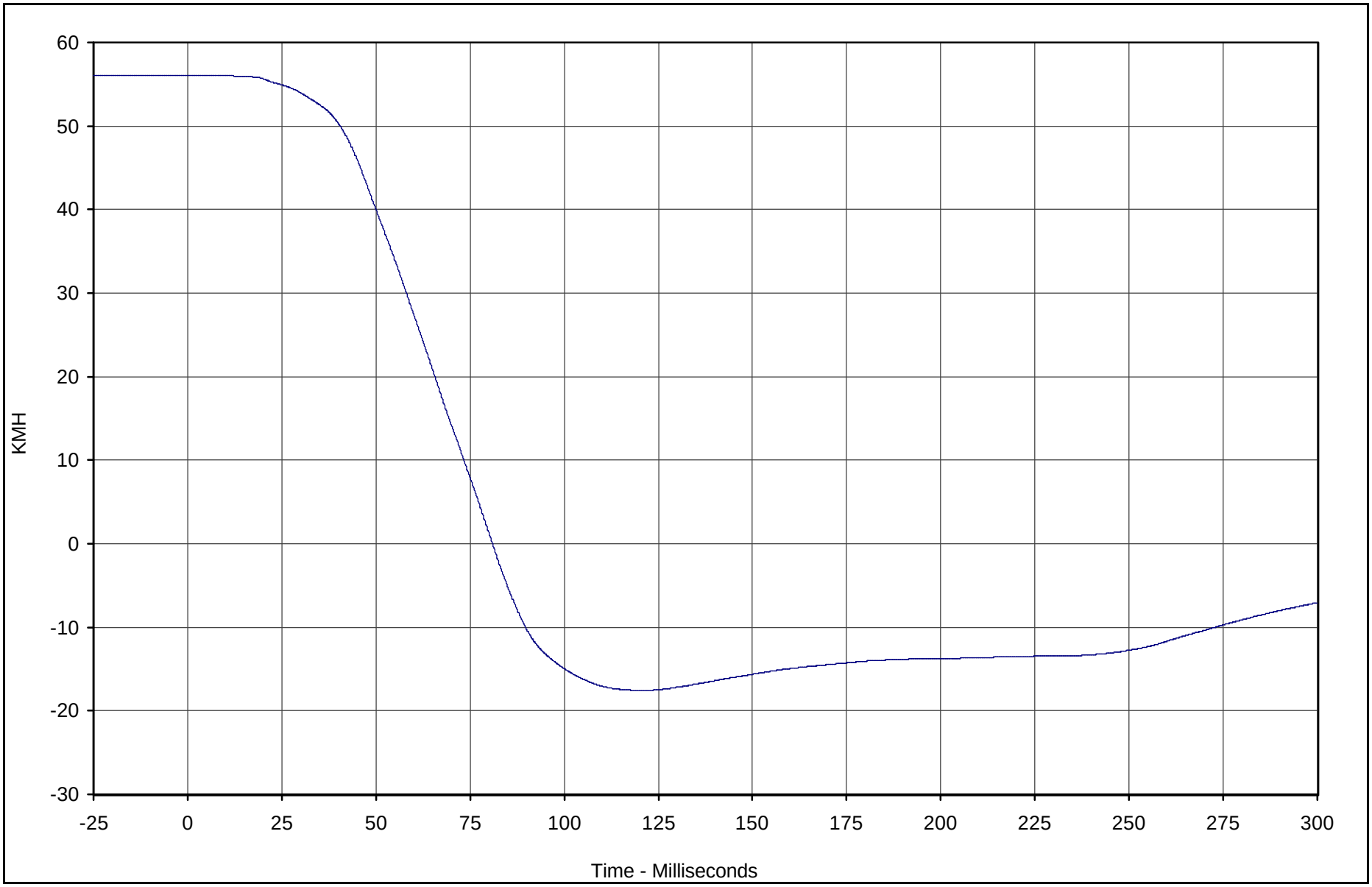
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Redundant X	016	FIL	G's	4.1	262.4	-38.8	67.3	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



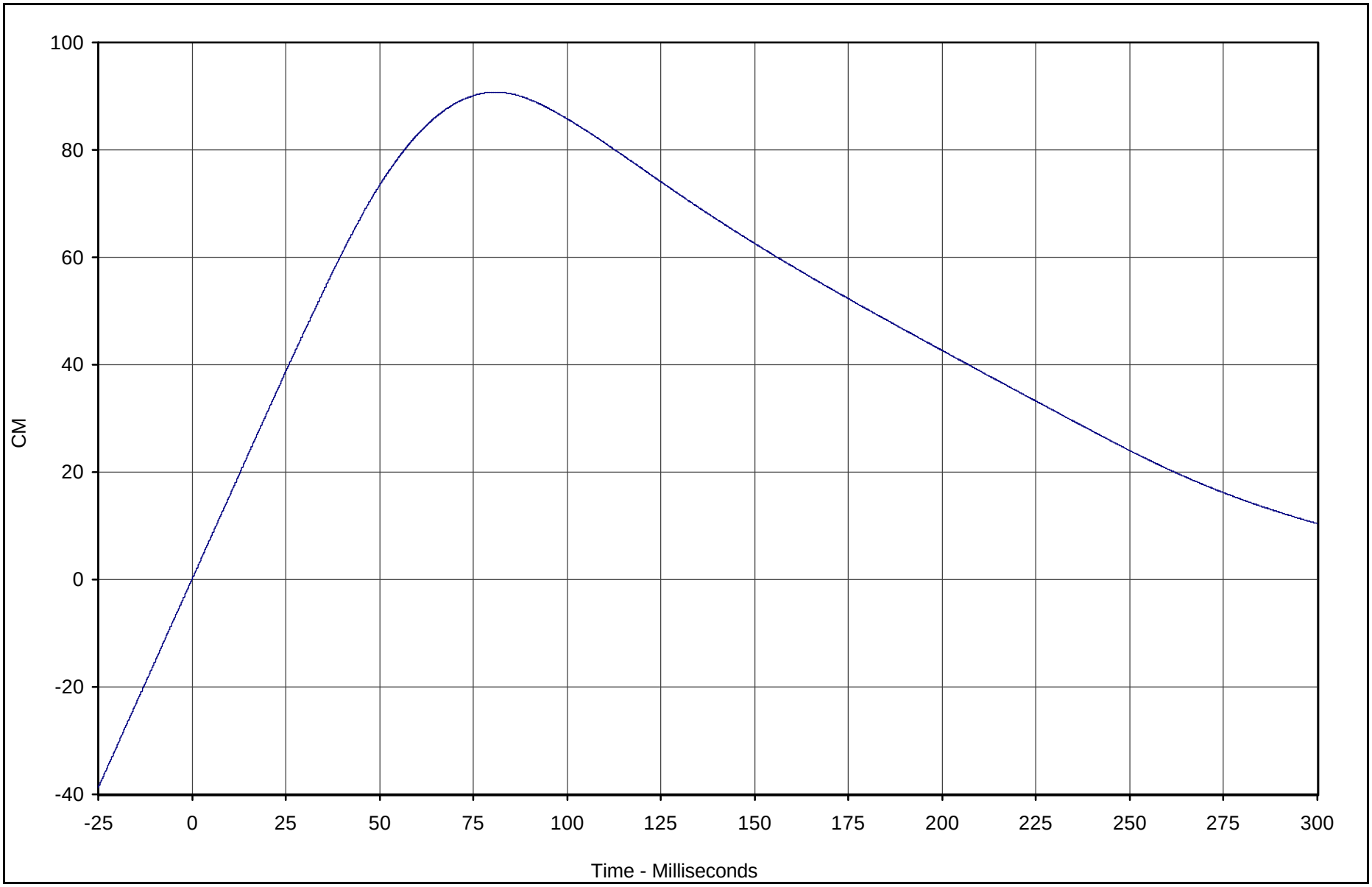
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Redundant X Velocity	016	IN1	KMH	56.0	0.0	-17.6	120.8	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



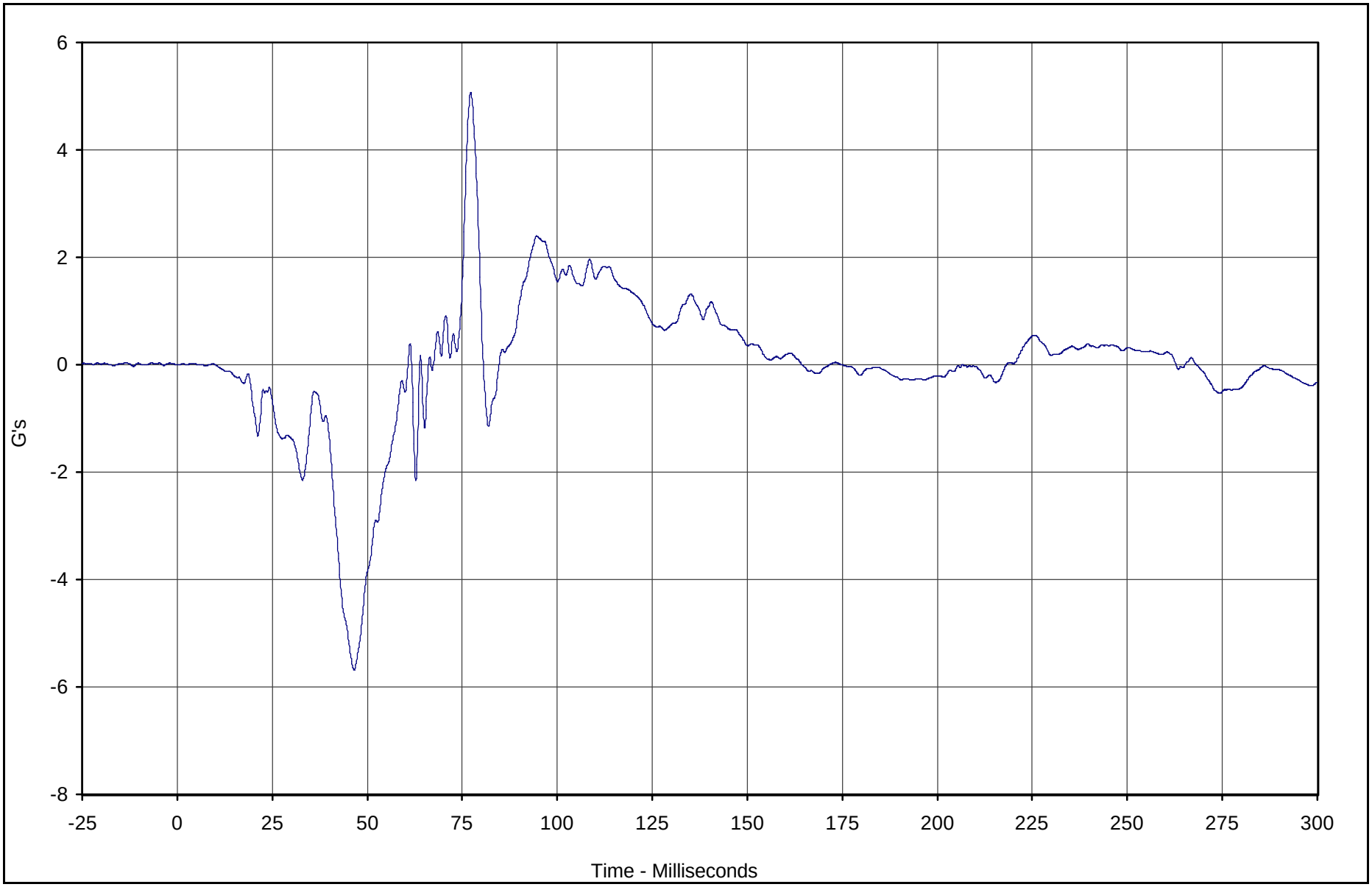
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Redundant X Displ.	016	IN2	CM	90.8	81.0	0.0	0.0	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



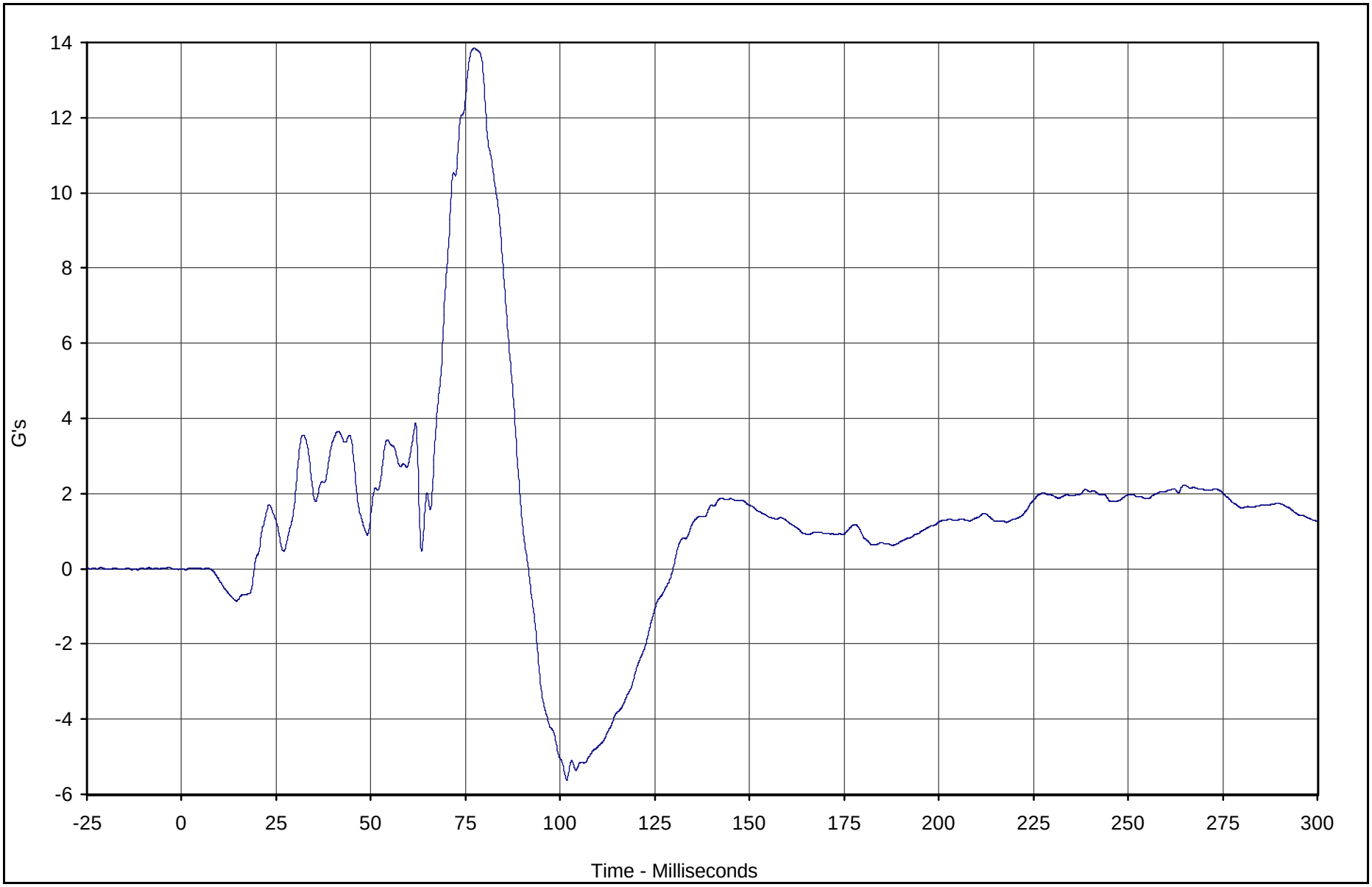
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Redundant Y	017	FIL	G's	5.1	77.3	-5.7	46.6	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



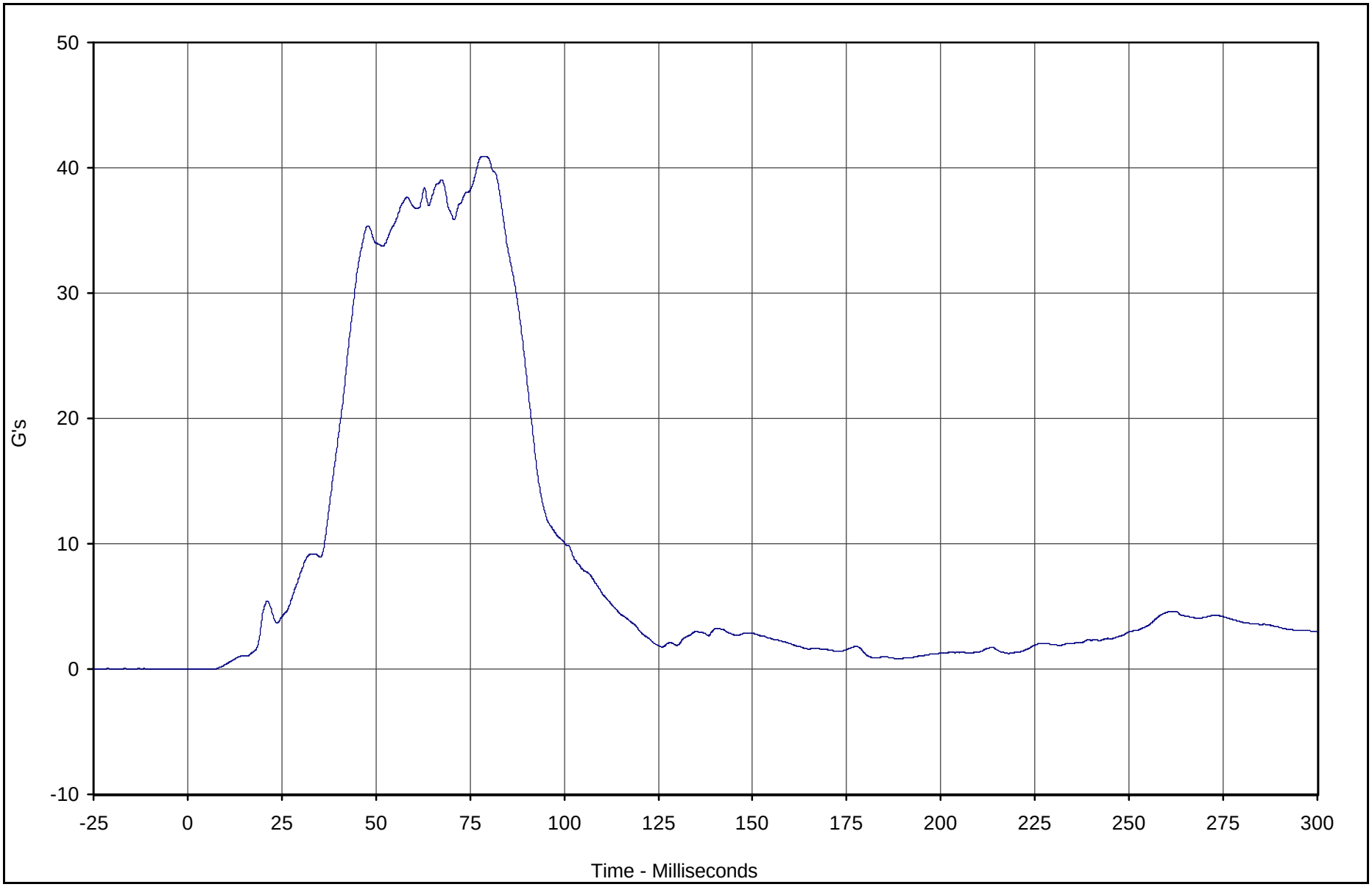
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Redundant Z	018	FIL	G's	13.8	77.3	-5.6	101.7	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



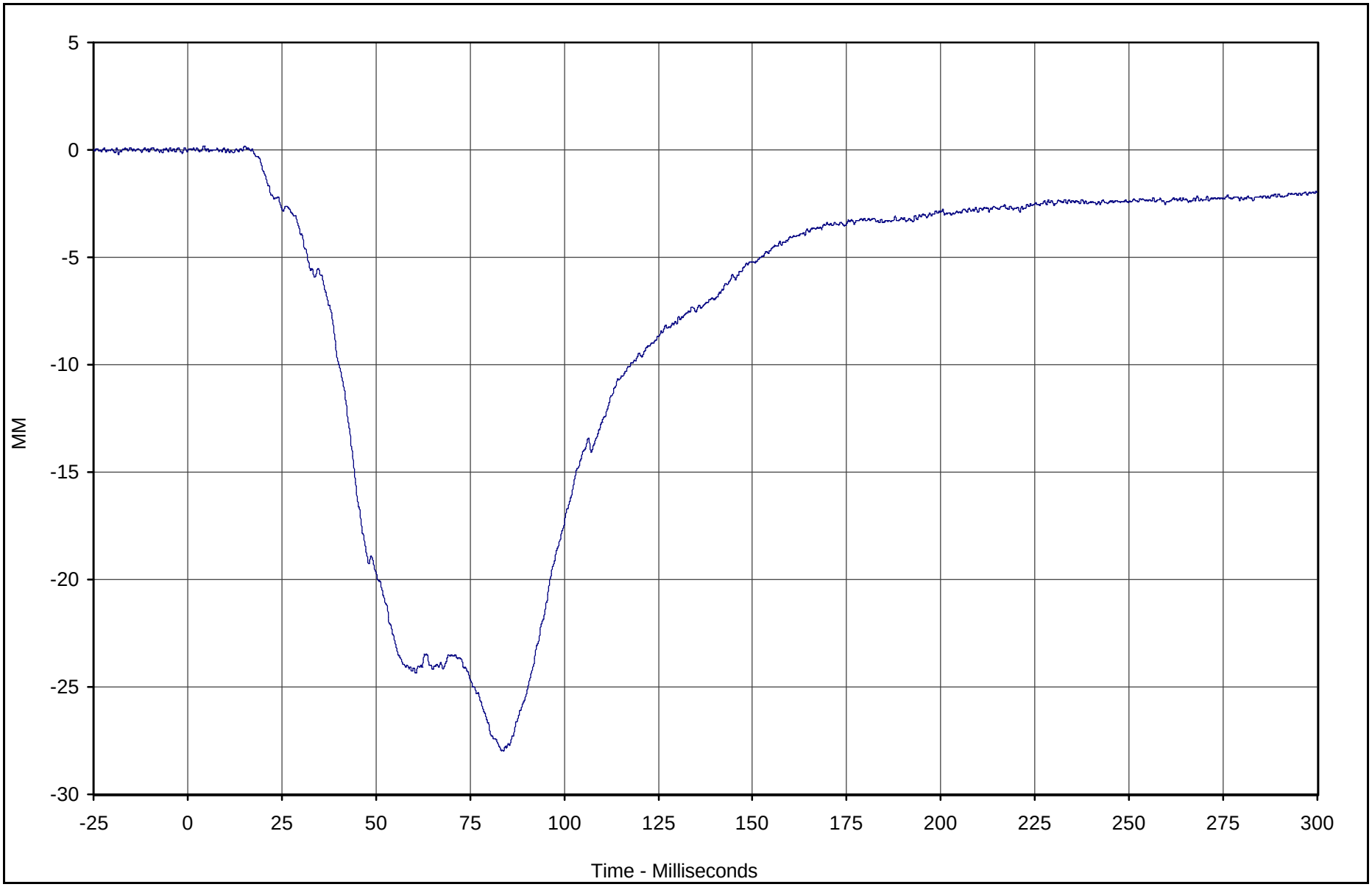
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Resultant Redundant	016	RES	G's	40.9	78.2	0.0	6.0	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



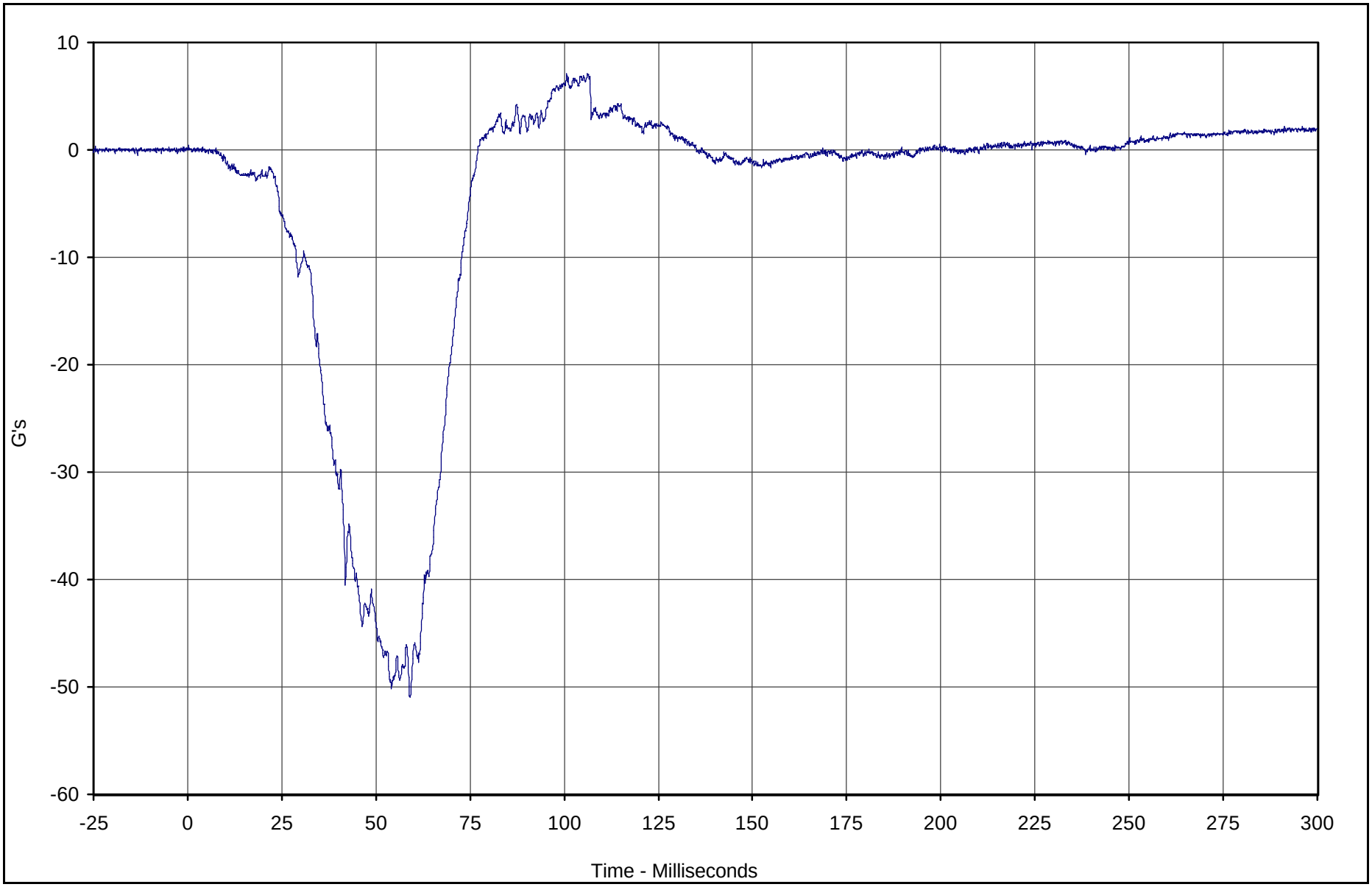
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Displacement X	019	FIL	MM	0.2	4.3	-28.0	83.4	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



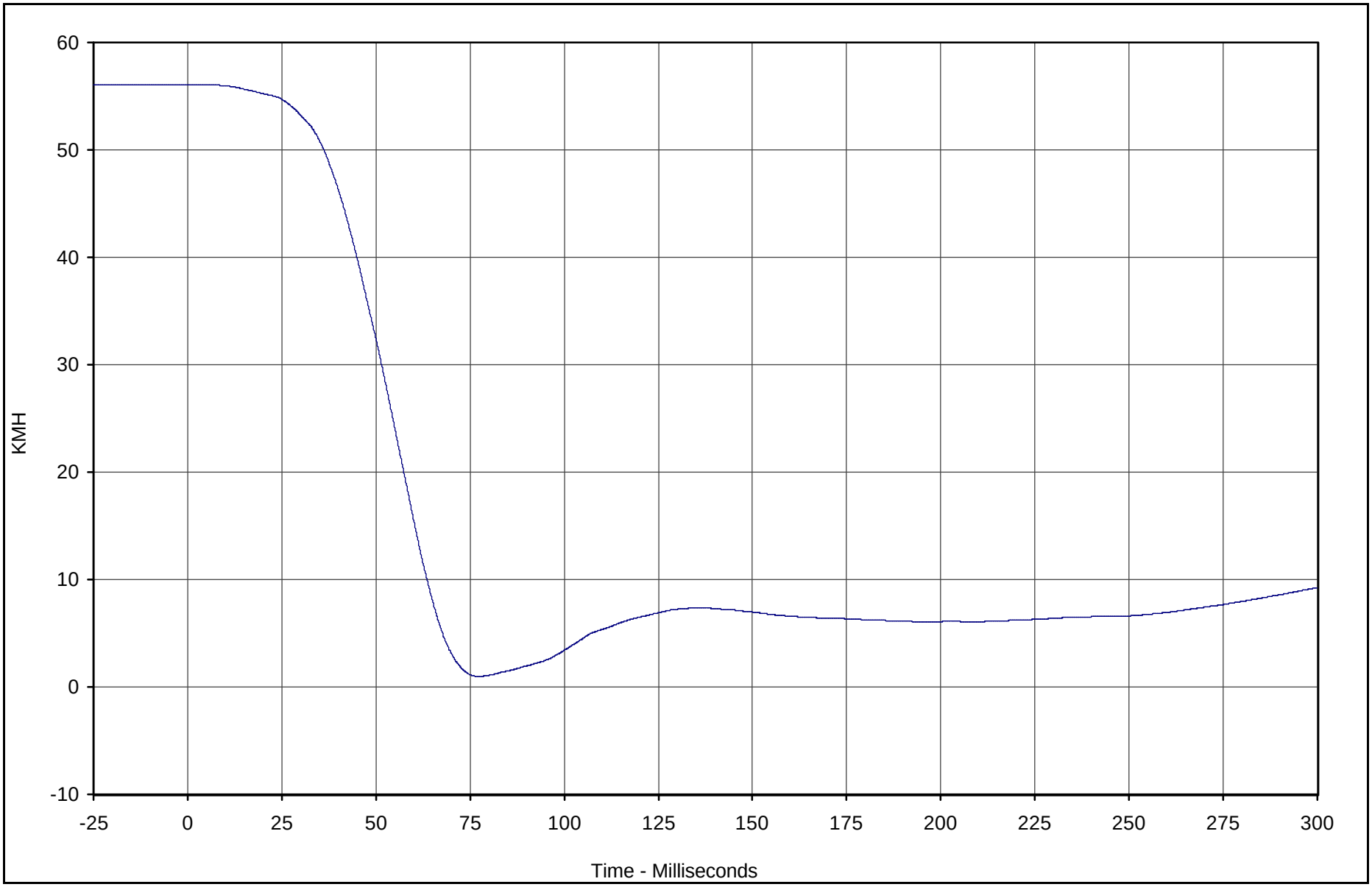
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Pelvis X	020	FIL	G's	7.1	100.7	-51.0	59.1	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



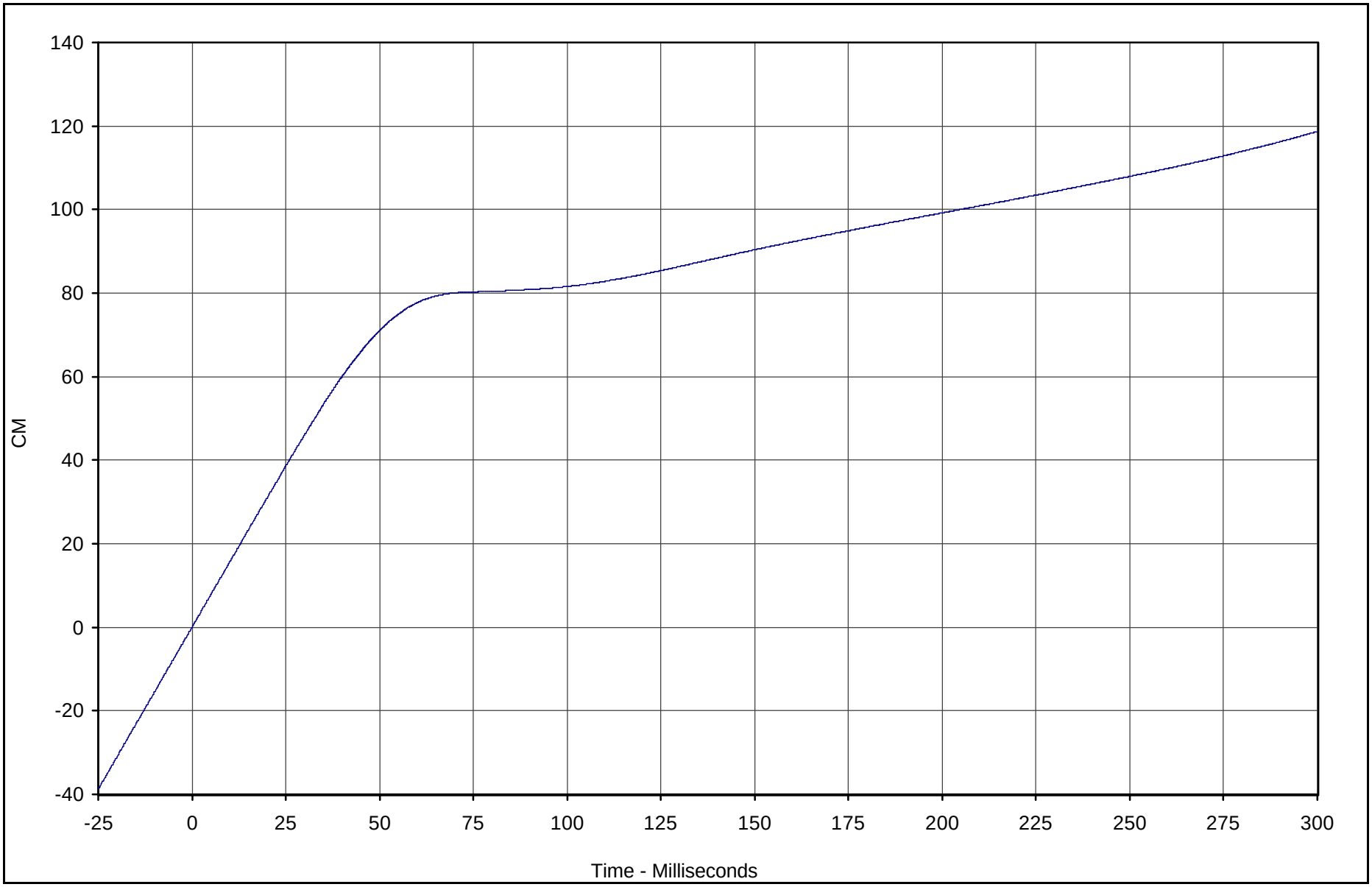
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Pelvis X Velocity	020	IN1	KMH	56.0	4.2	1.0	77.2	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



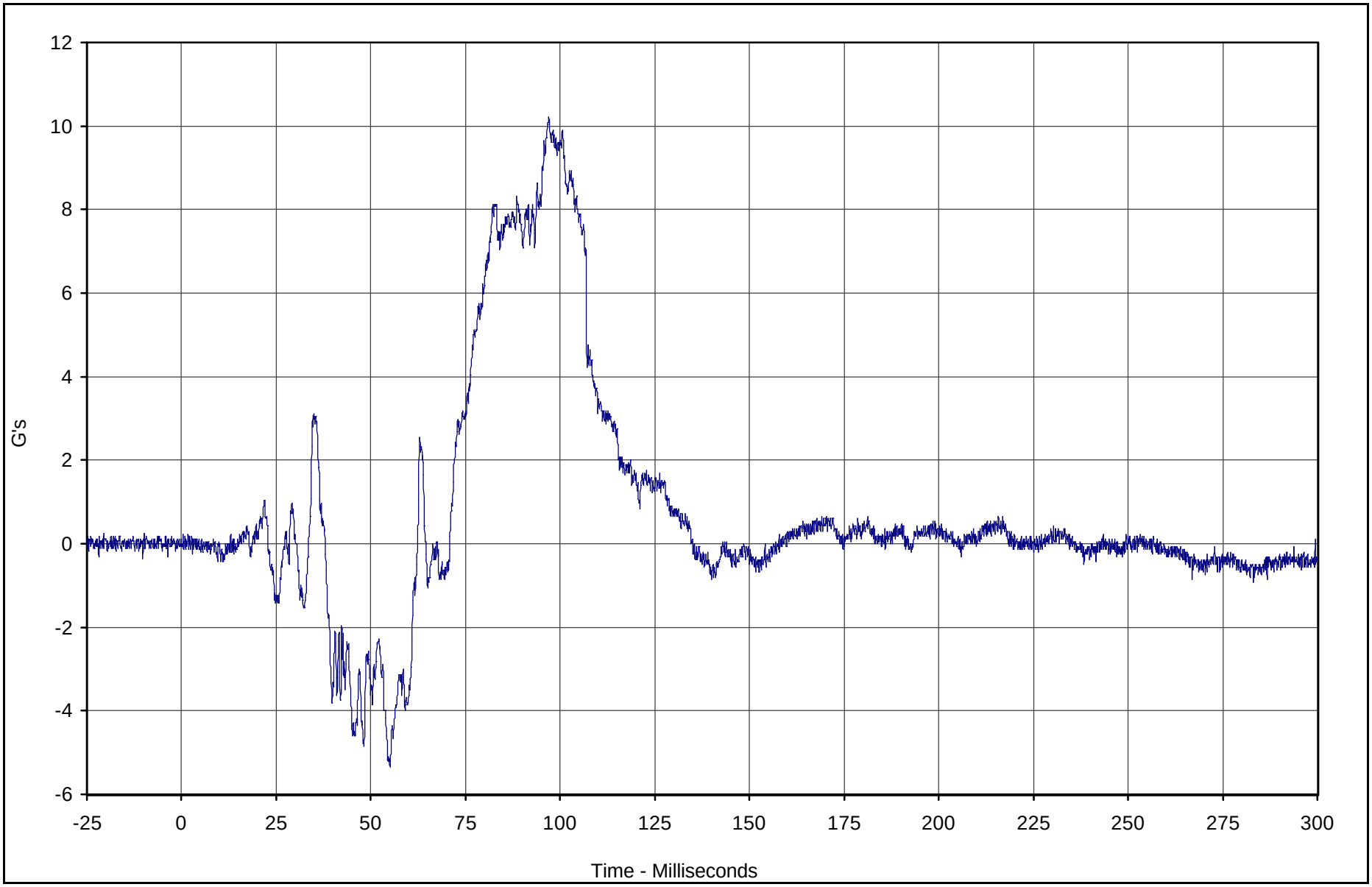
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Pelvis X Displ.	020	IN2	CM	118.7	299.9	0.0	0.0	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



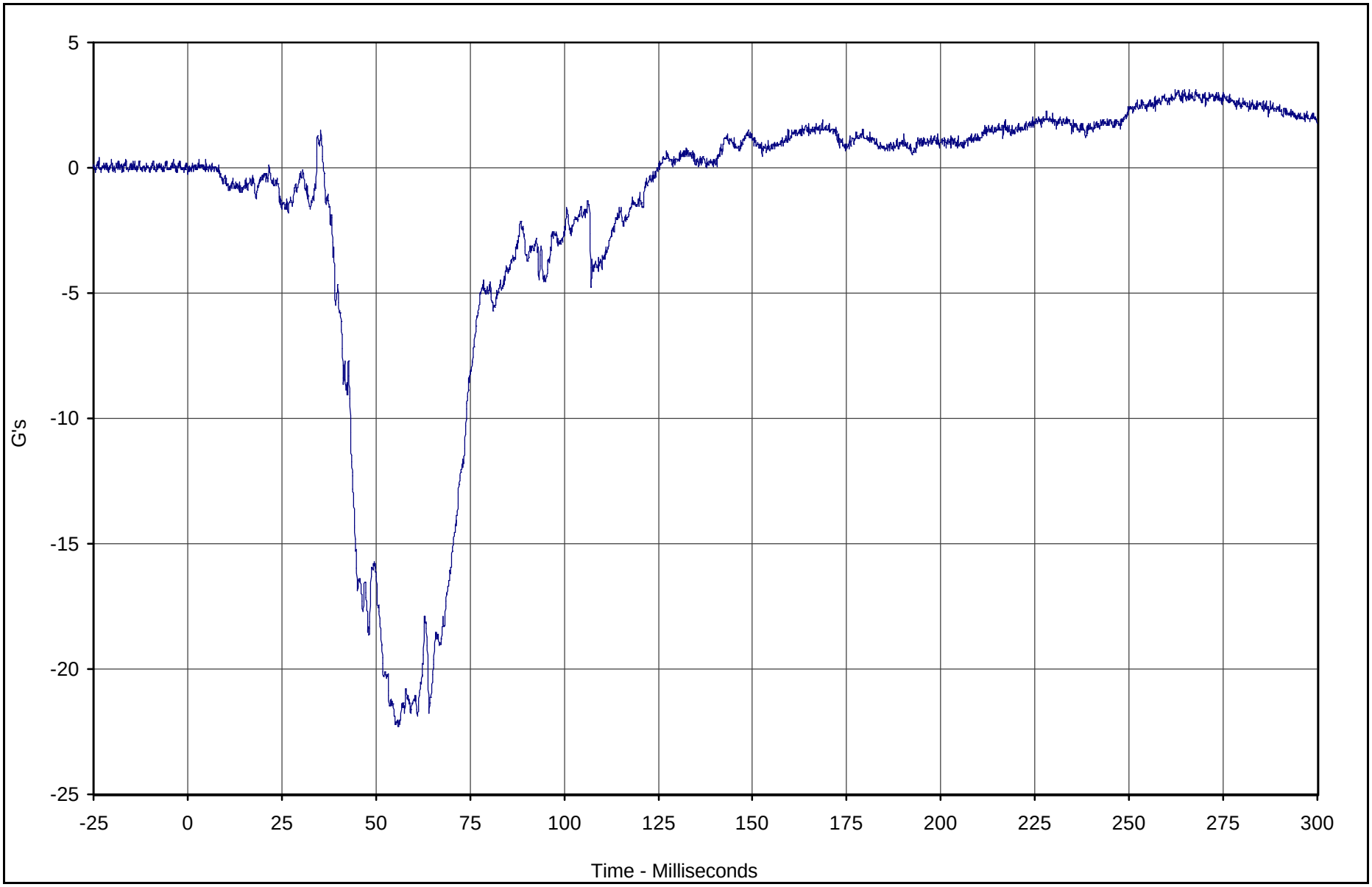
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Pelvis Y	021	FIL	G's	10.2	97.0	-5.3	55.1	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



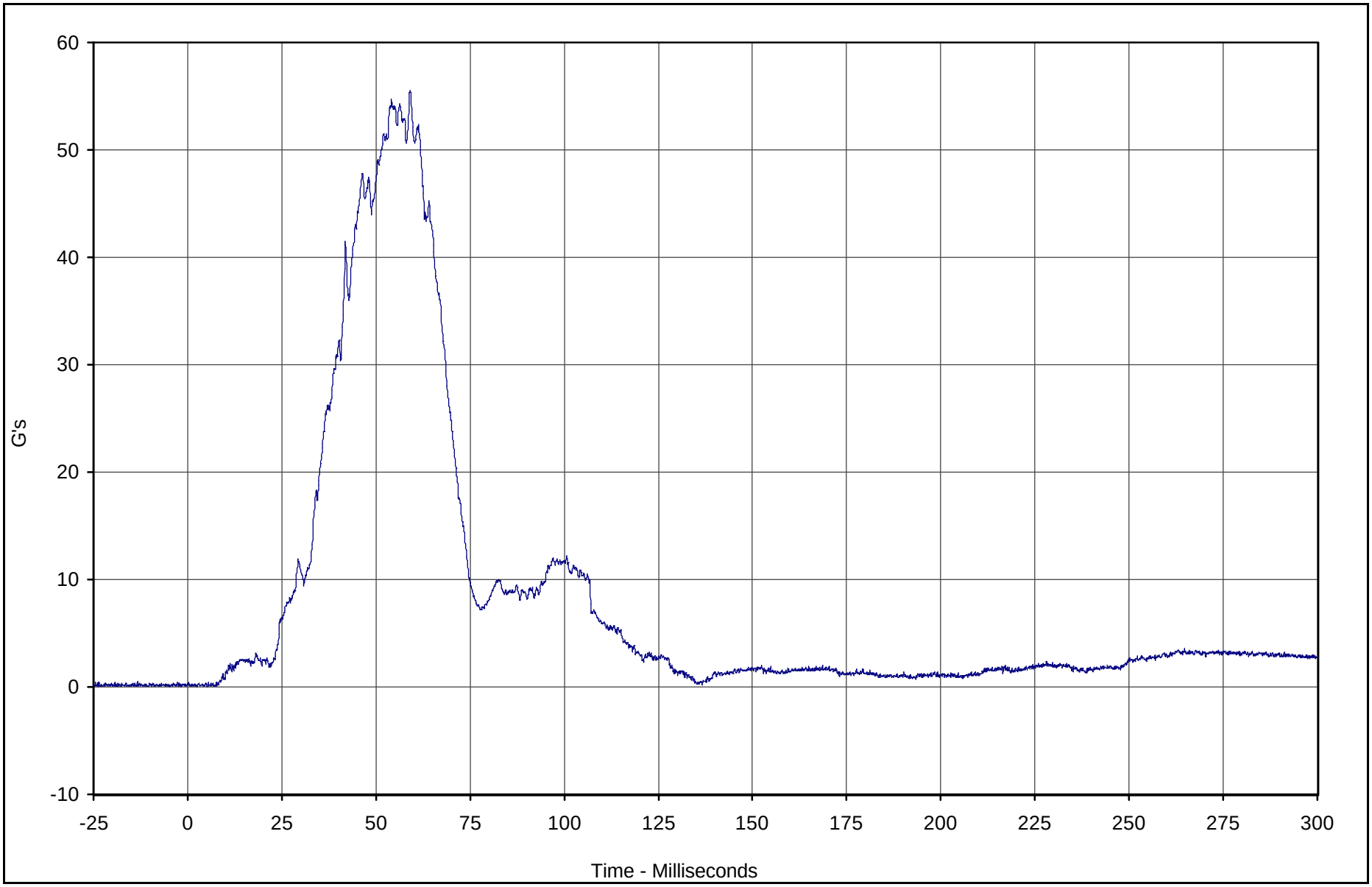
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Pelvis Z	022	FIL	G's	3.1	262.3	-22.3	55.9	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



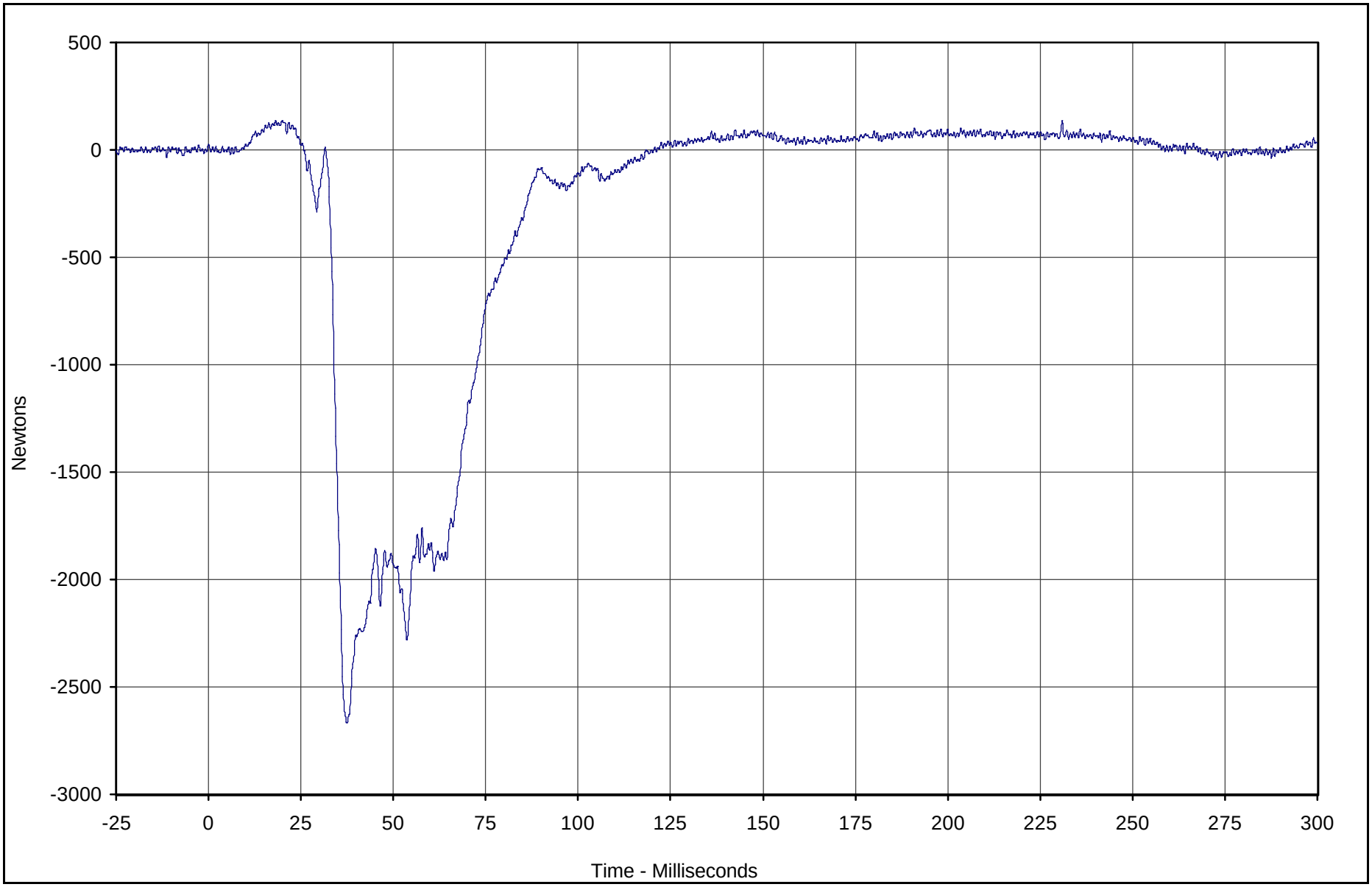
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Pelvis Resultant	023	RES	G's	55.5	59.1	0.0	2.5	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



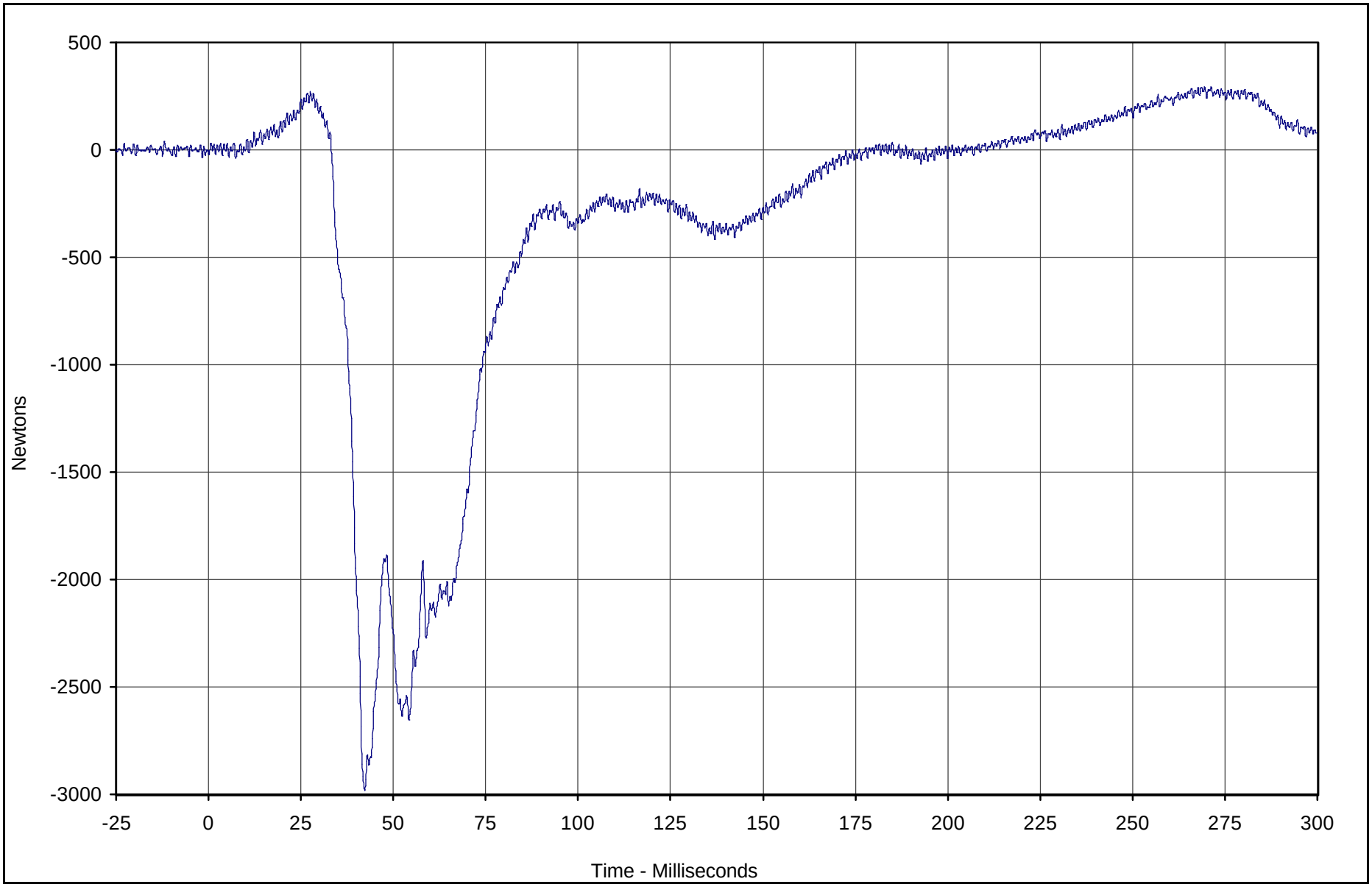
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Left Femur Force	023	FIL	Newtons	137.8	231.0	-2668.3	37.5	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



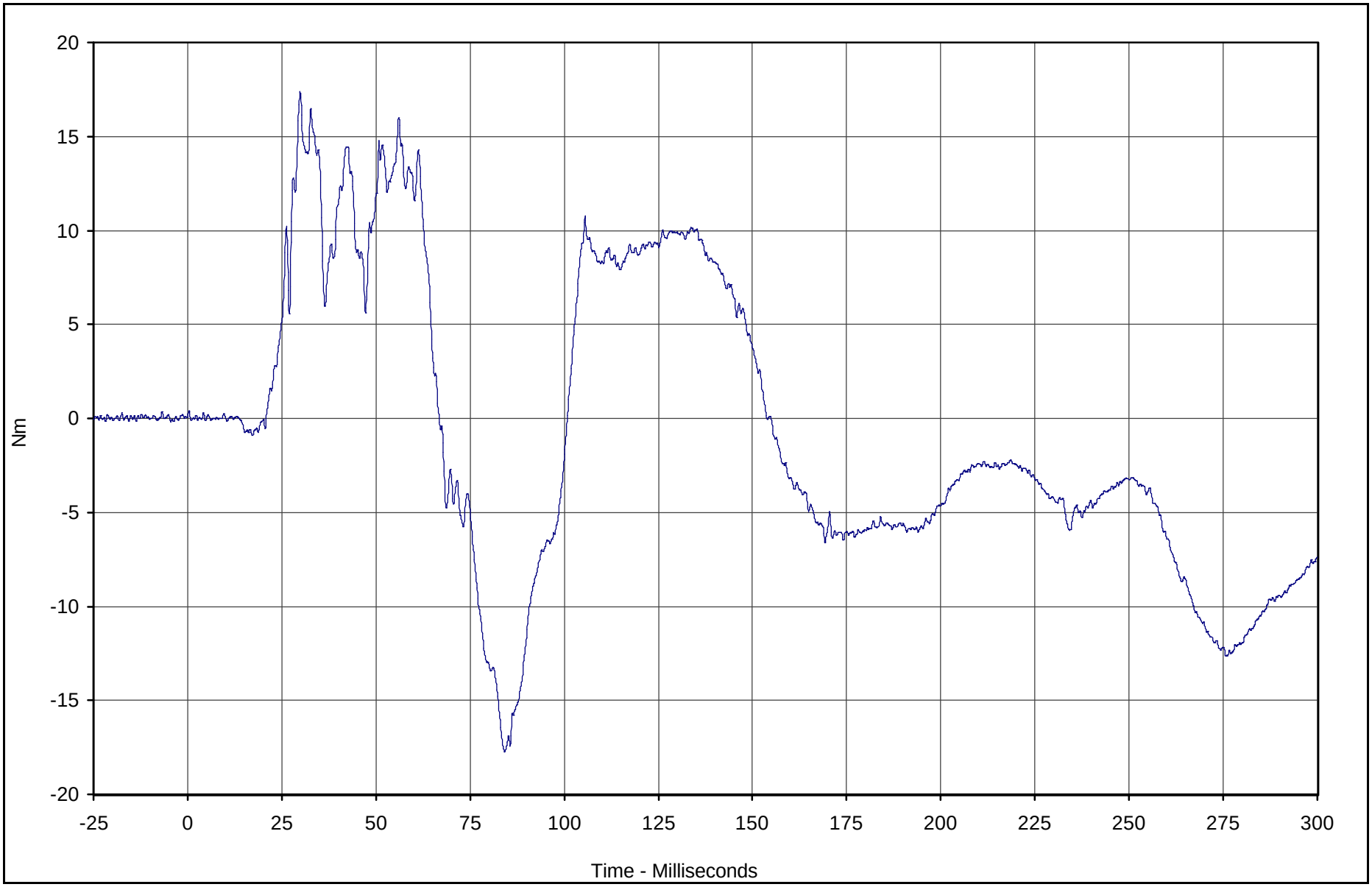
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Right Femur Force	024	FIL	Newtons	293.2	271.3	-2983.9	42.3	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



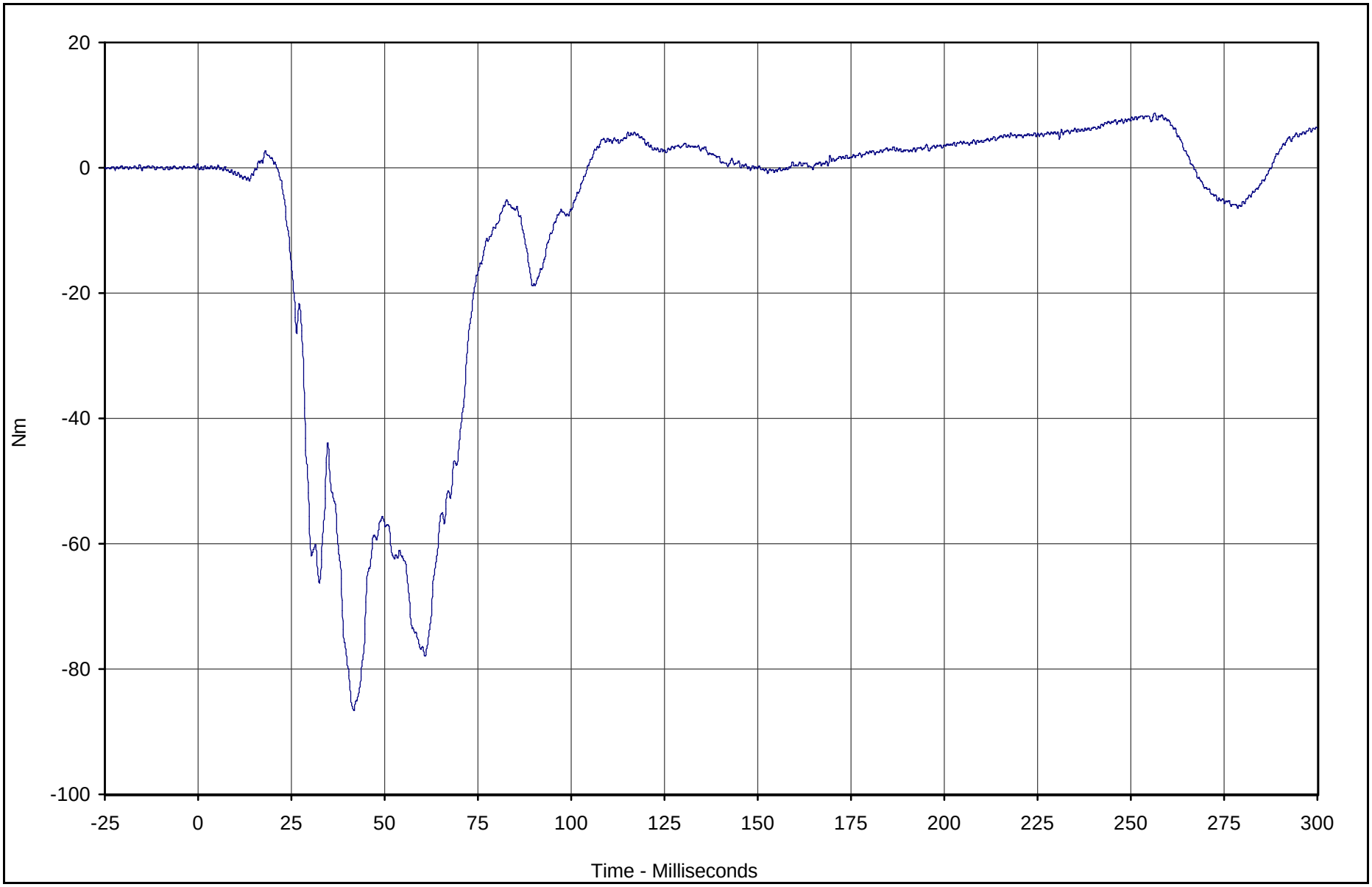
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Left Upper Tibia Moment X	025	FIL	Nm	17.4	29.9	-17.7	84.2	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



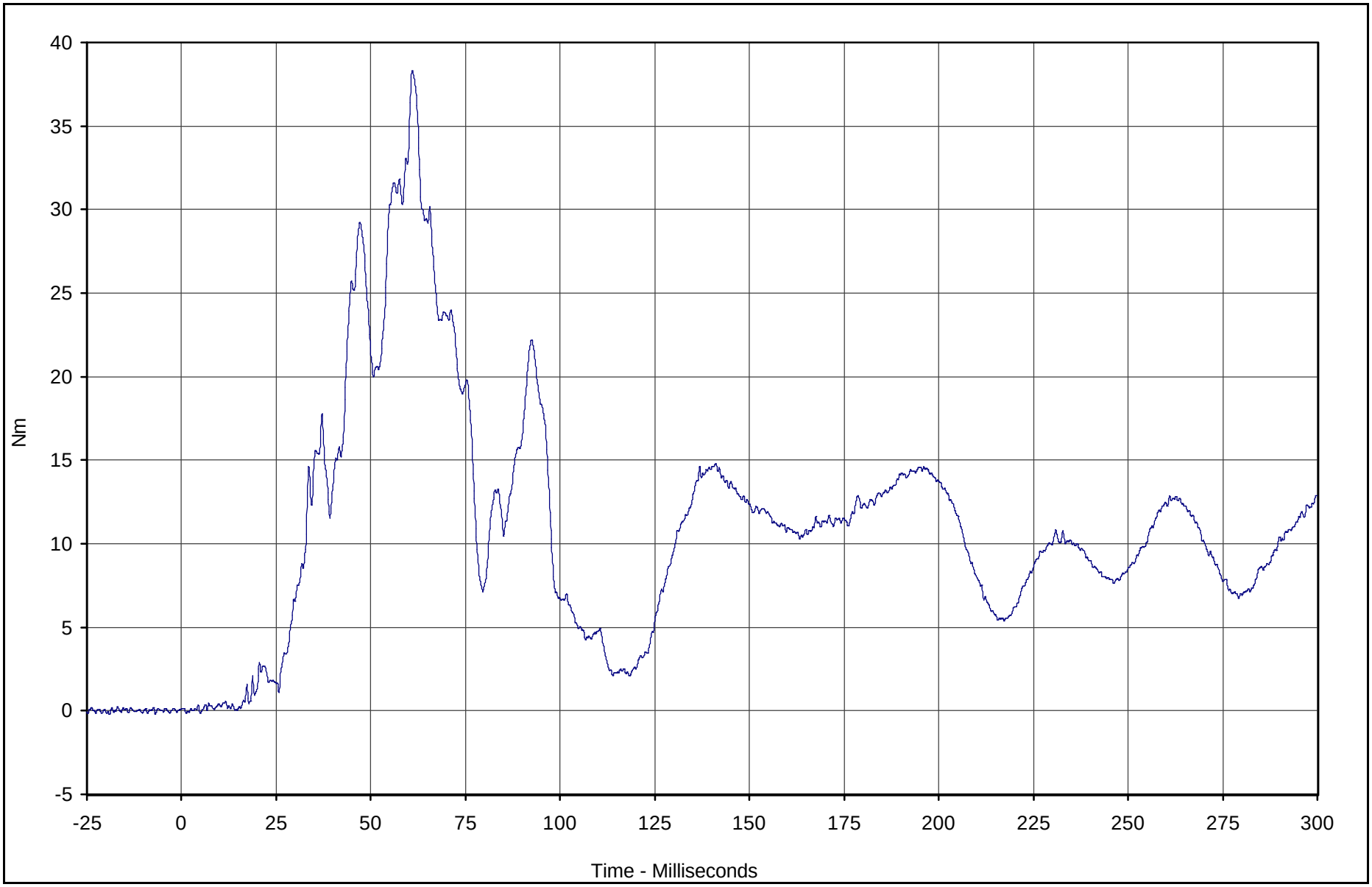
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Left Upper Tibia Moment Y	026	FIL	Nm	8.8	256.3	-86.6	41.7	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



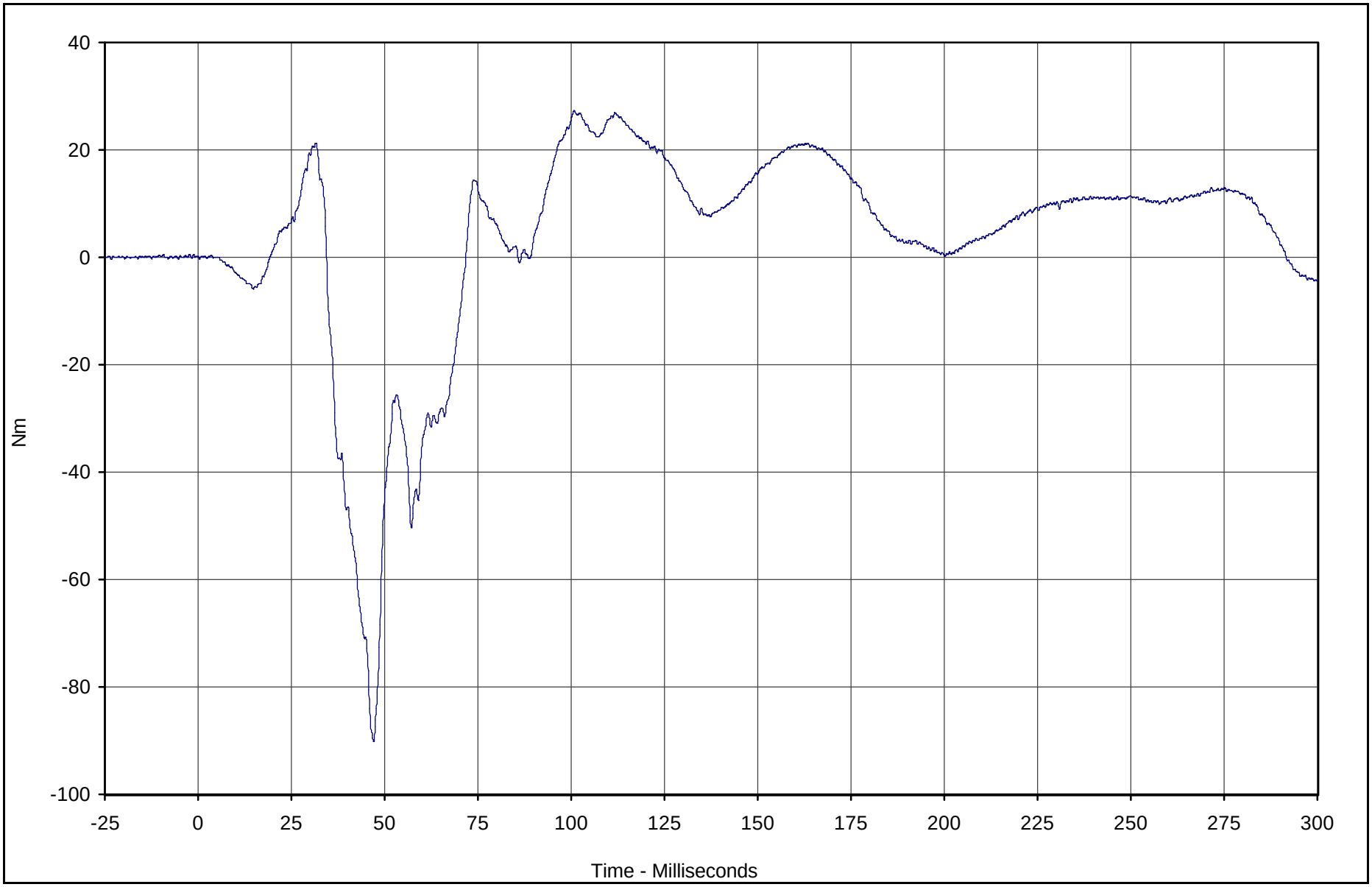
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Right Upper Tibia Moment X	027	FIL	Nm	38.3	61.0	-0.2	5.0	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



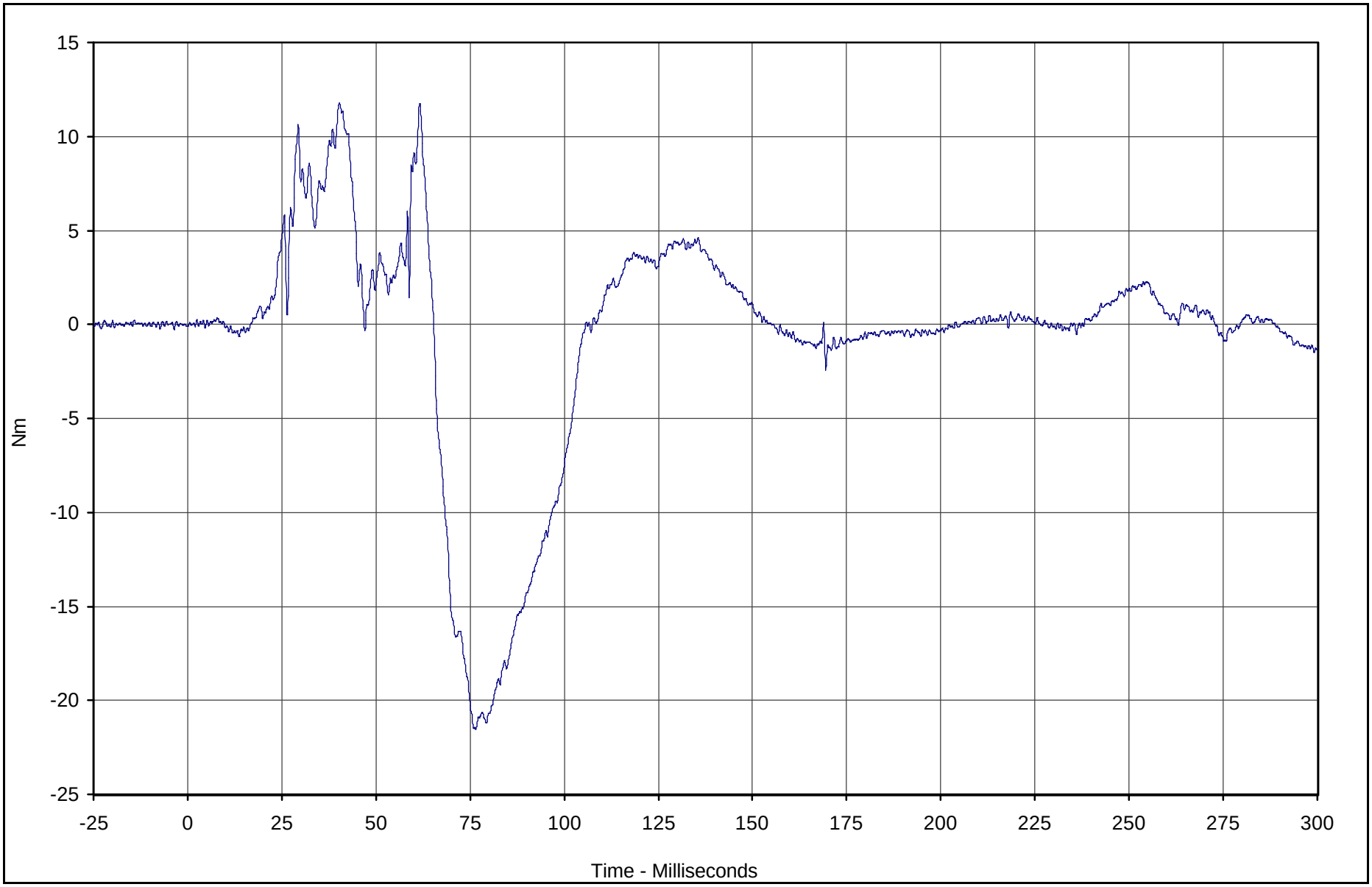
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Right Upper Tibia Moment Y	028	FIL	Nm	27.3	100.8	-90.2	47.1	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



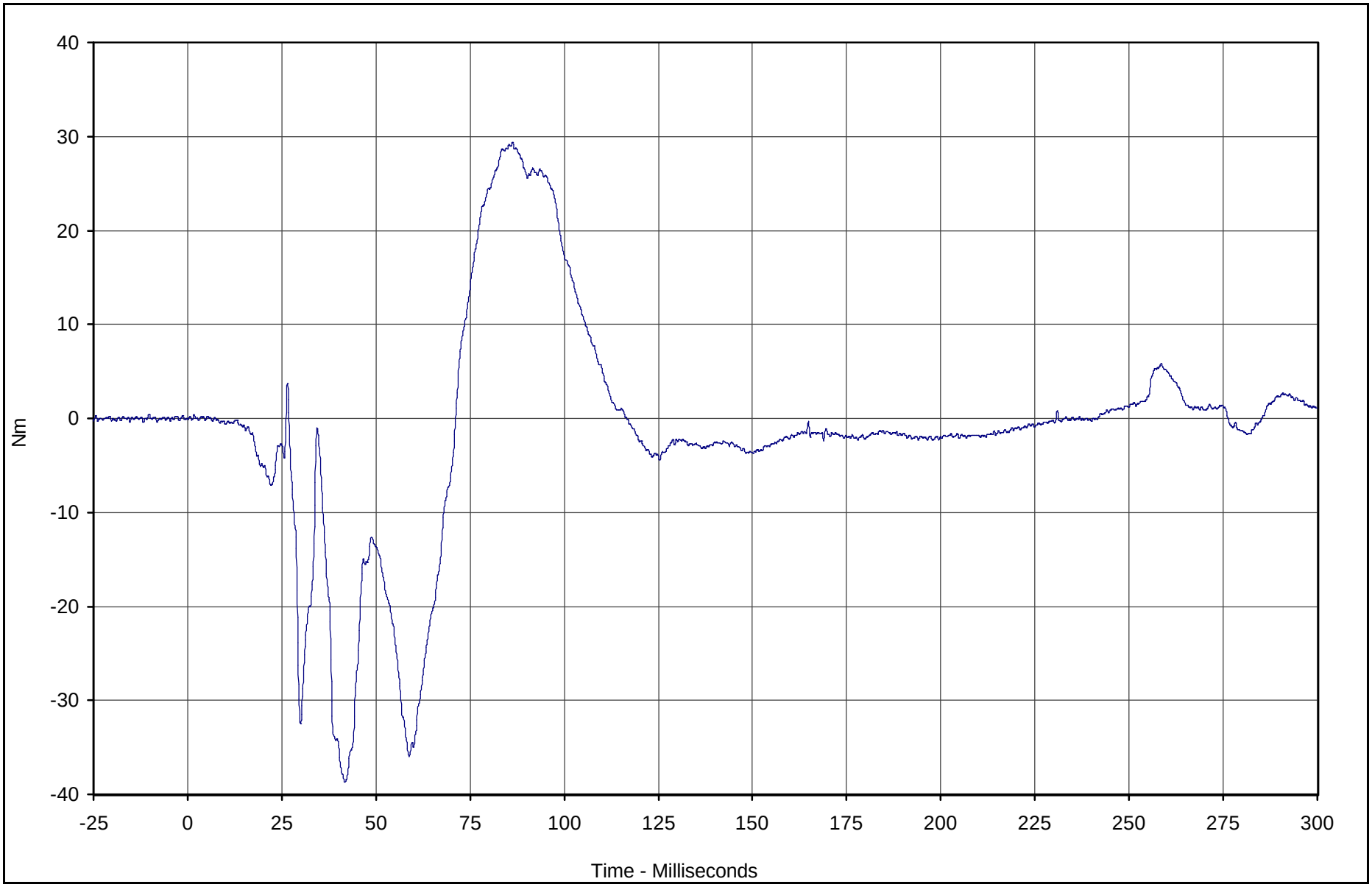
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Left Lower Tibia Moment X	029	FIL	Nm	11.8	40.3	-21.5	76.6	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



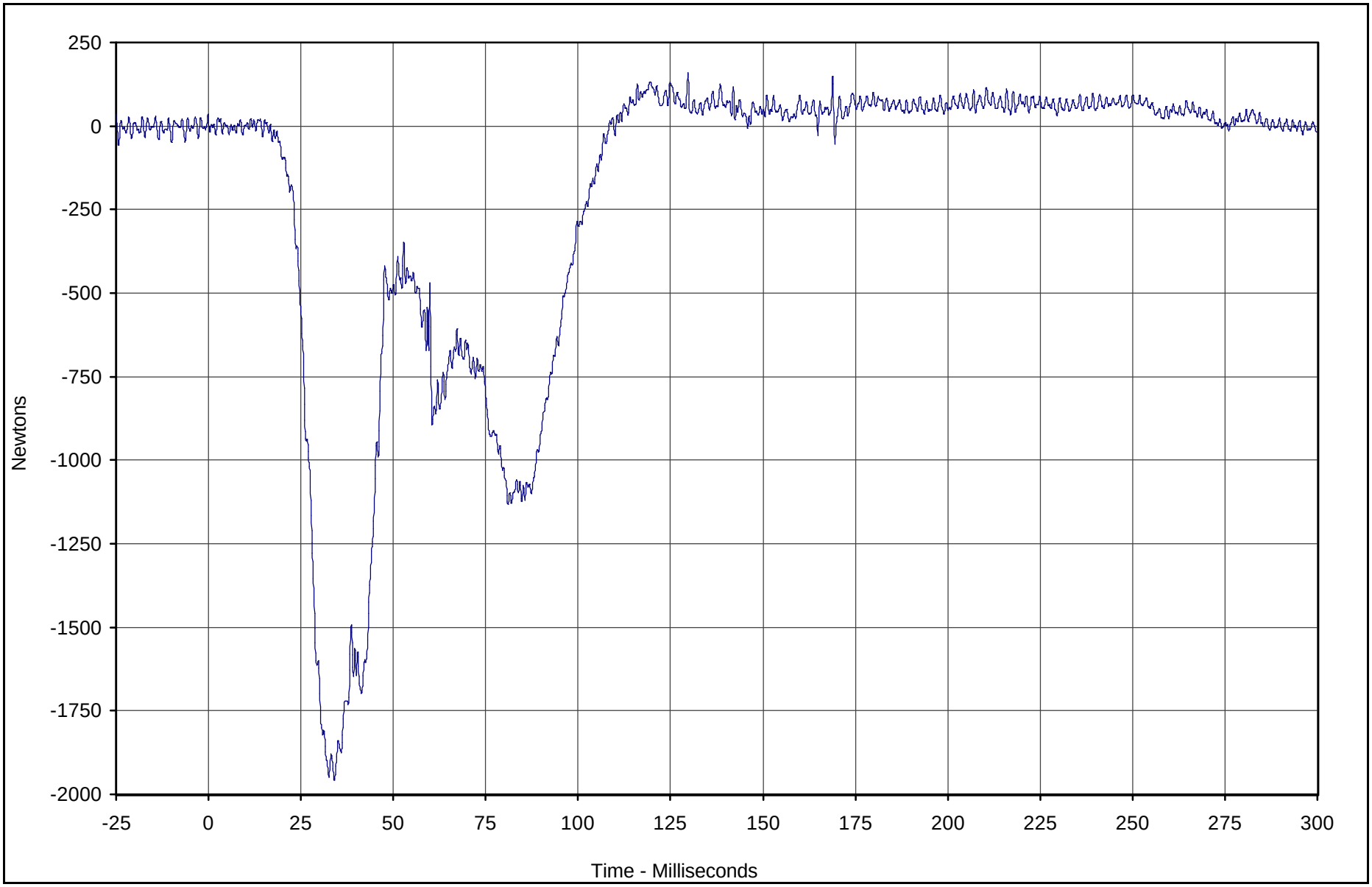
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Left Lower Tibia Moment Y	030	FIL	Nm	29.4	86.3	-38.7	41.8	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



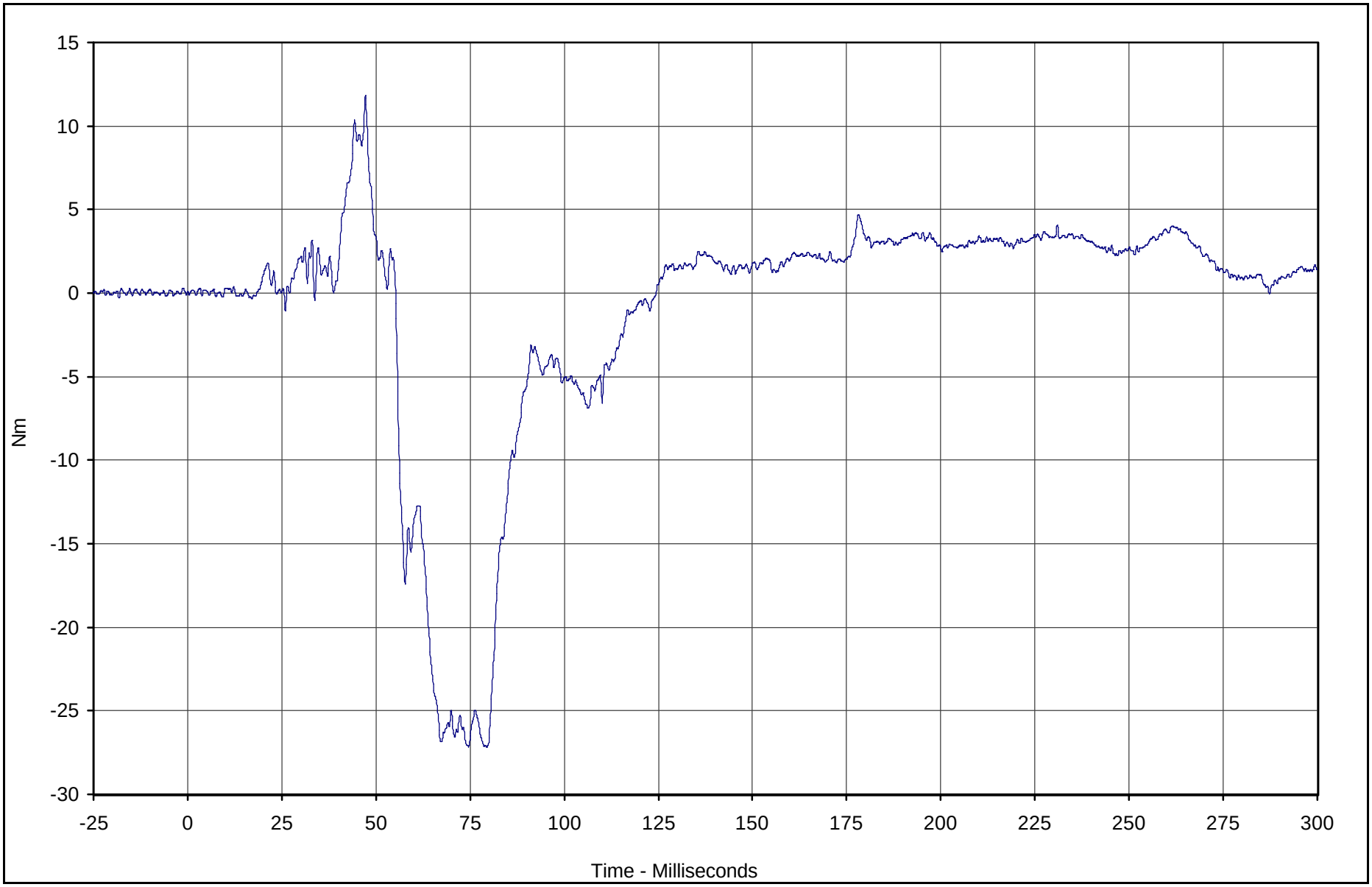
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Left Lower Tibia Force Z	031	FIL	Newtons	158.9	129.7	-1956.4	34.1	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



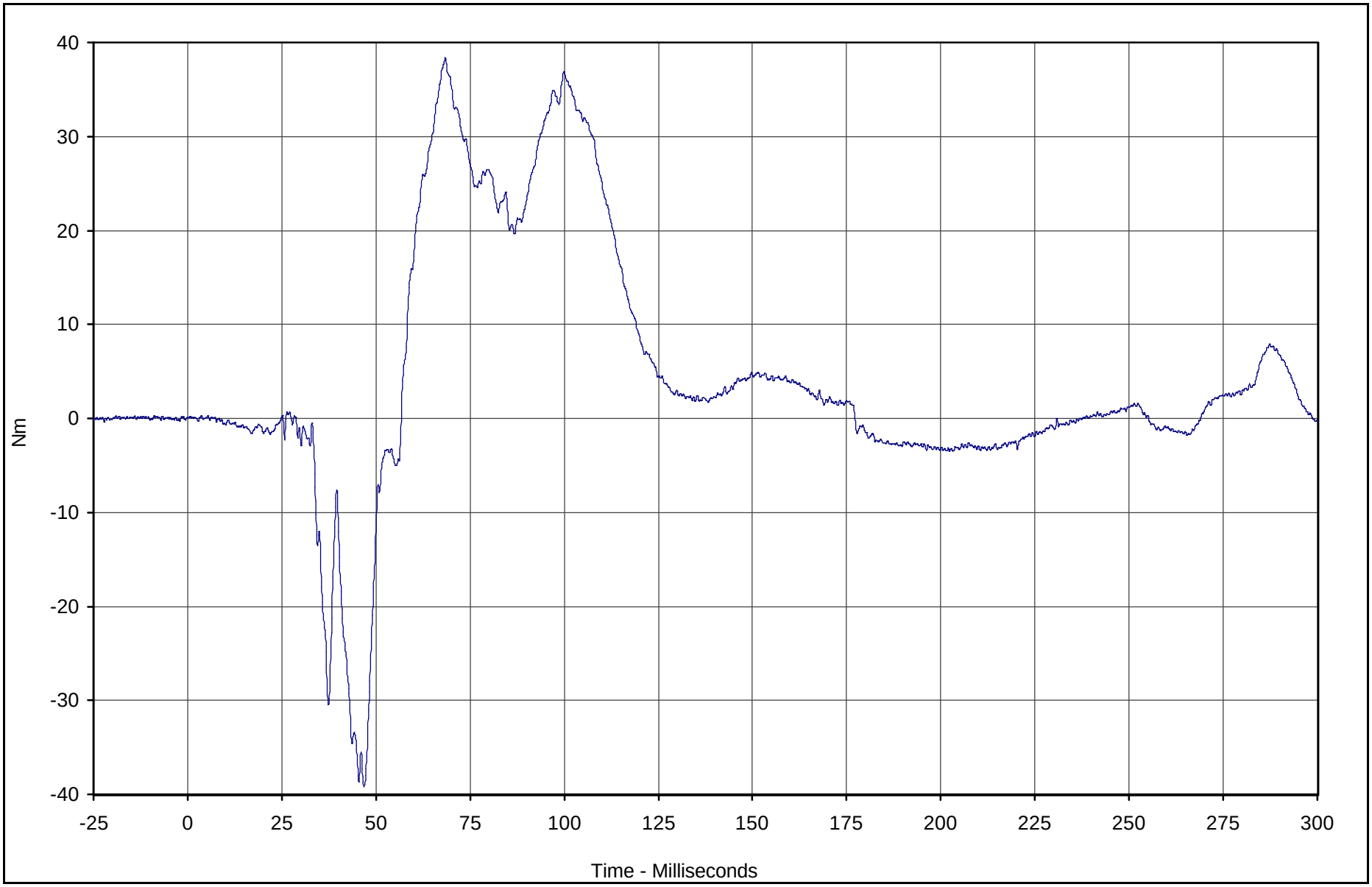
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Right Lower Tibia Moment X	032	FIL	Nm	11.8	47.2	-27.2	79.5	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



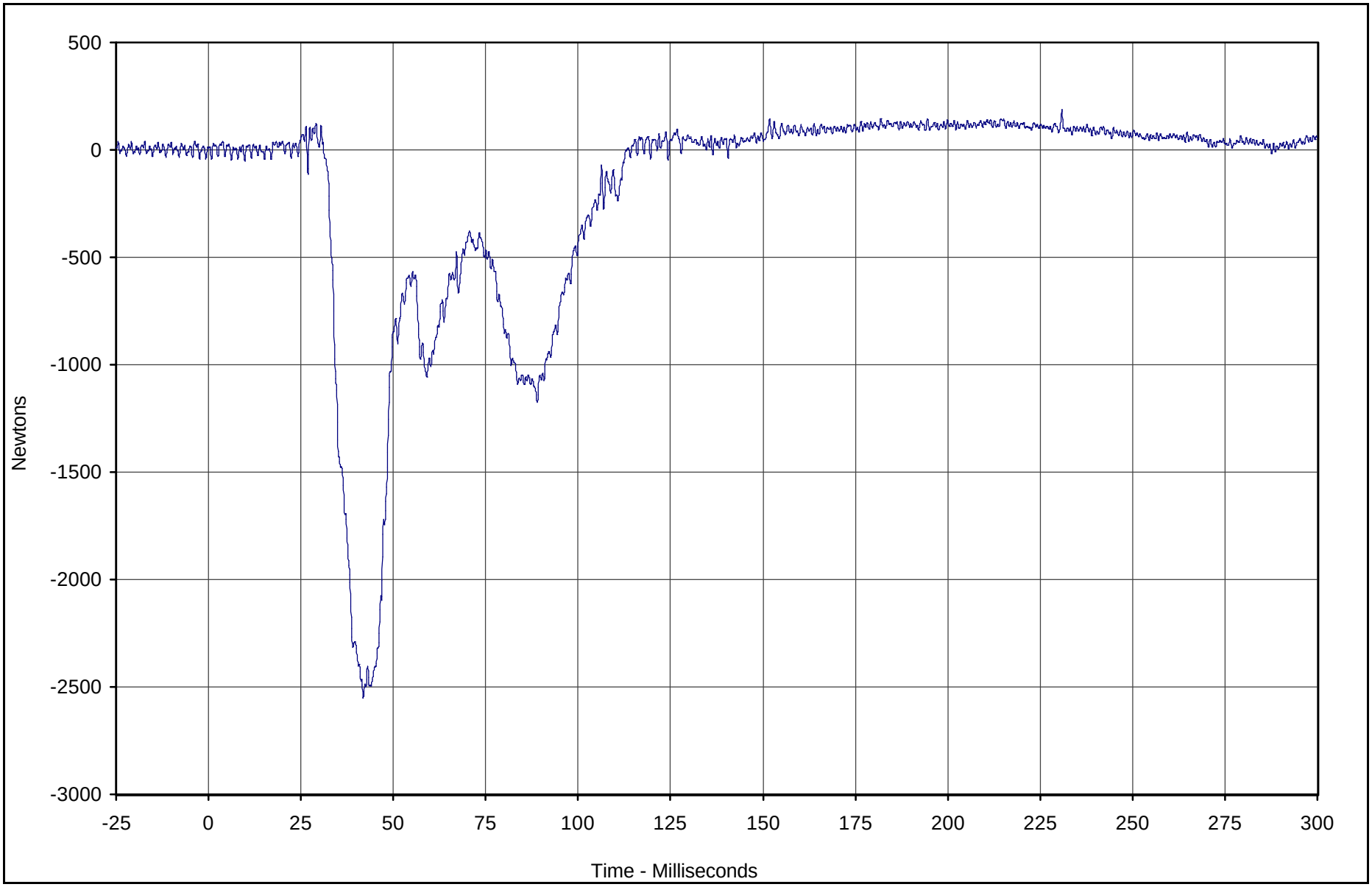
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Right Lower Tibia Moment Y	033	FIL	Nm	38.4	68.4	-39.2	46.8	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



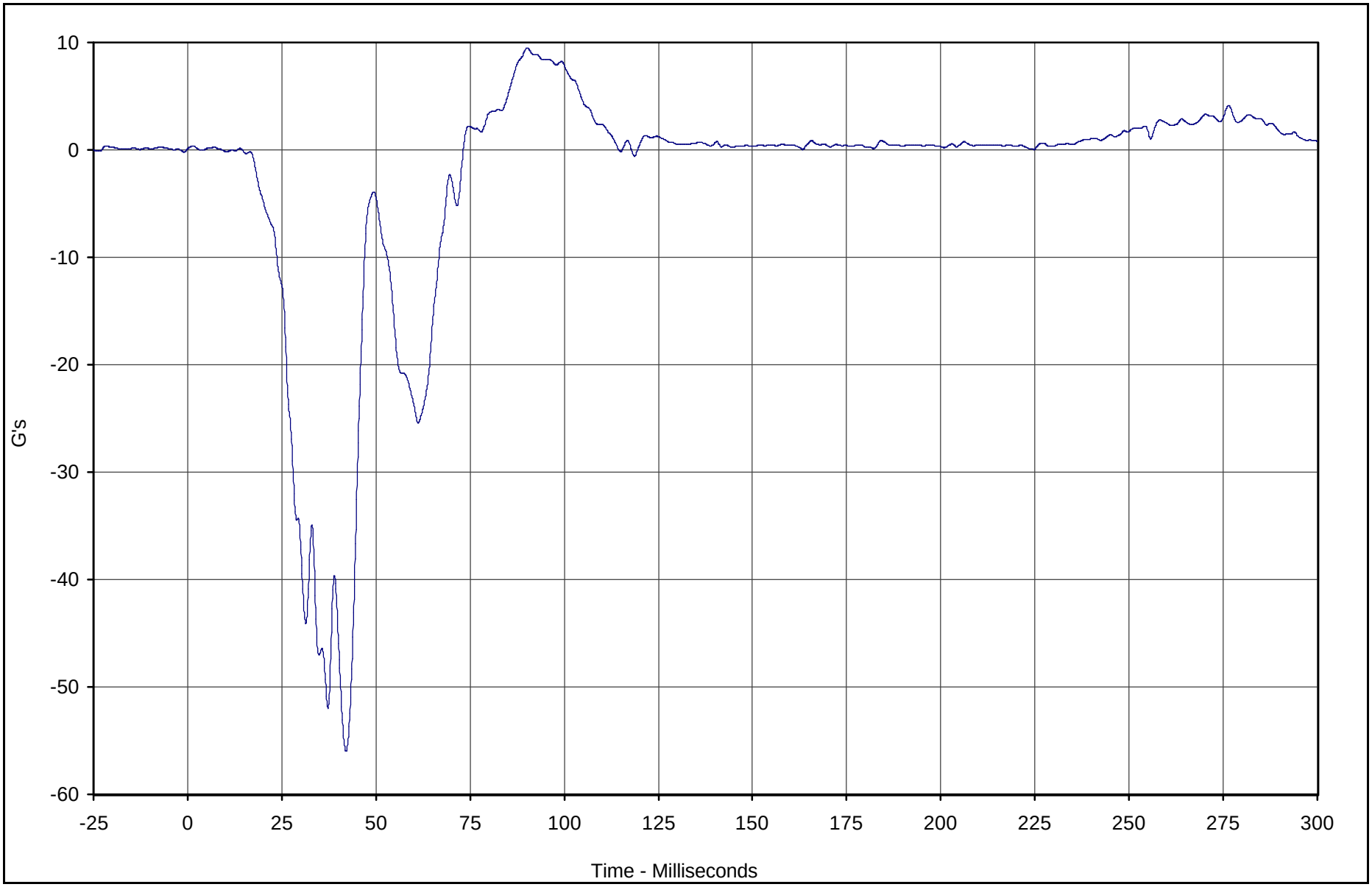
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Right Lower Tibia Force Z	034	FIL	Newtons	188.8	230.9	-2554.8	41.9	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



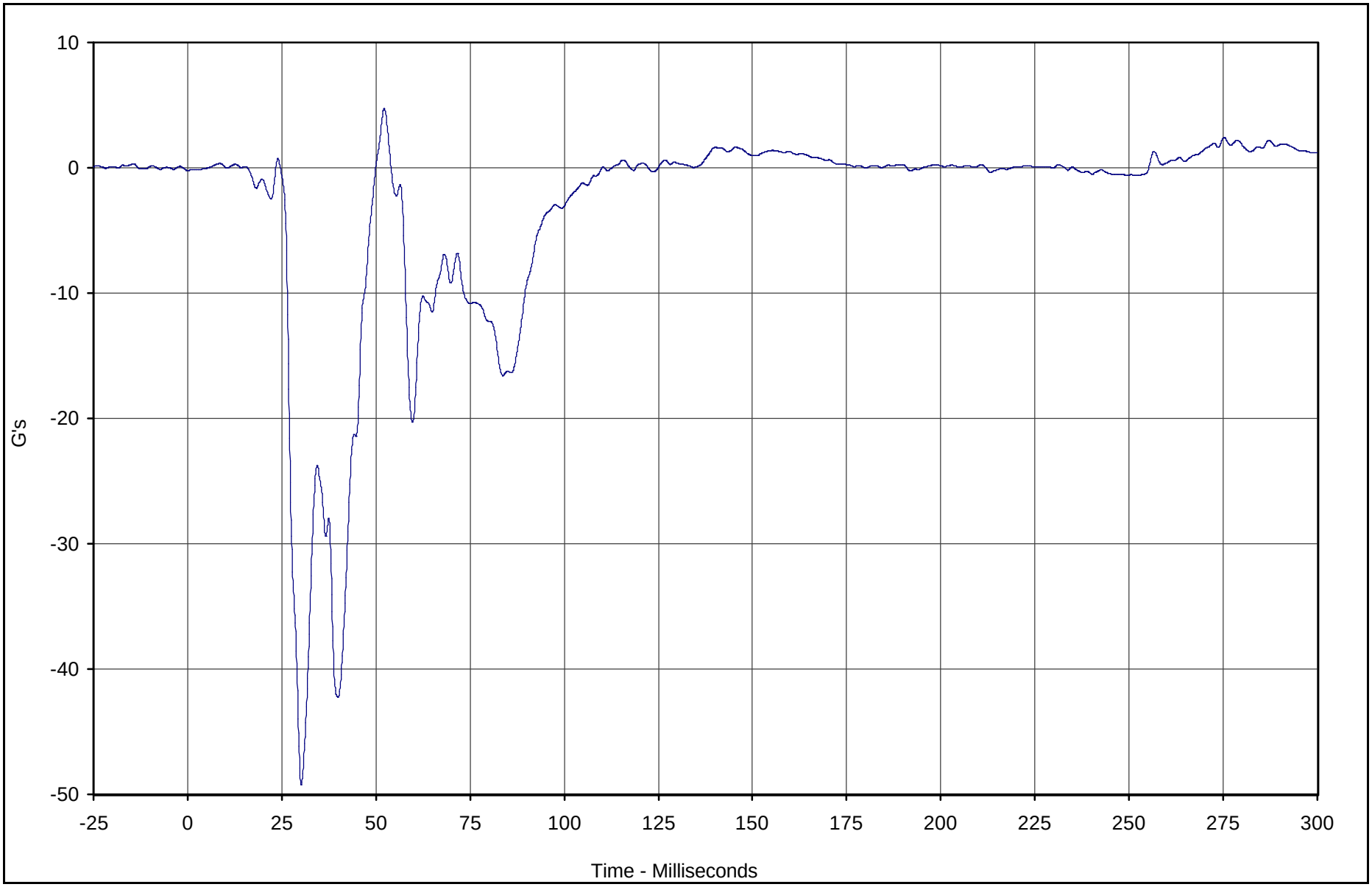
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Left Foot Aft X	035	FIL	G's	9.5	90.1	-56.0	42.1	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



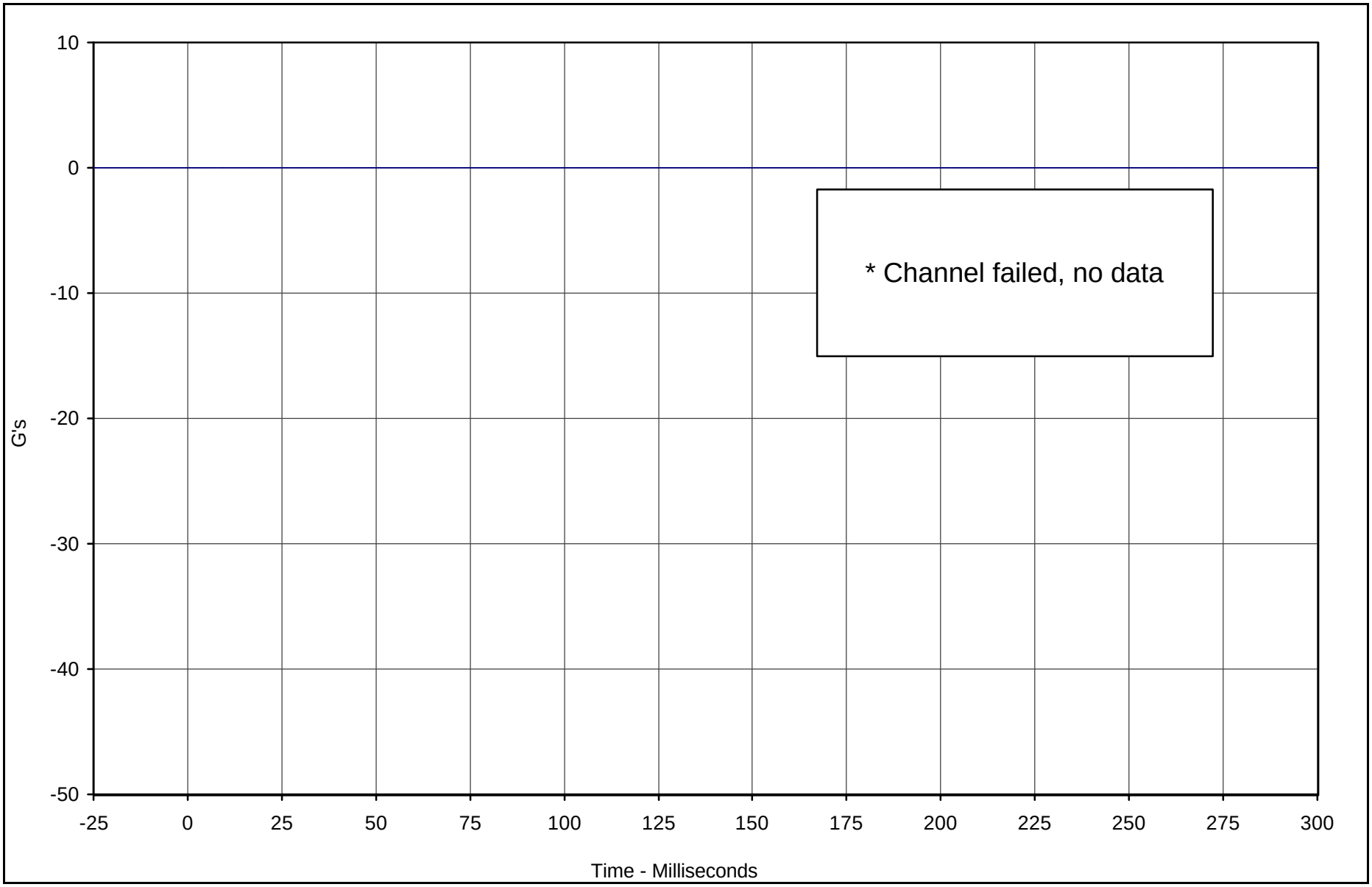
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Left Foot Aft Z	036	FIL	G's	4.7	52.2	-49.3	30.2	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



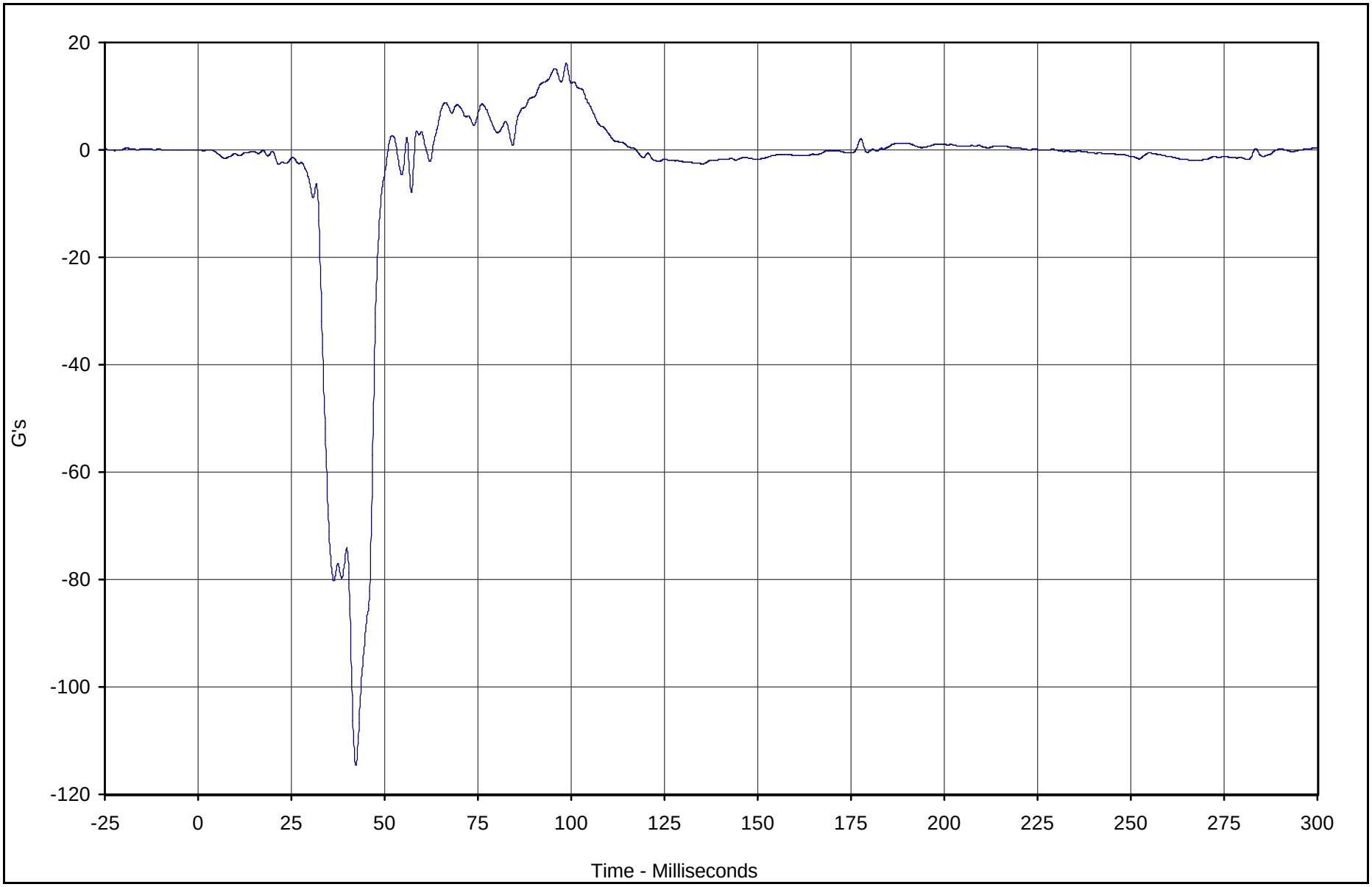
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Left Foot Fore Z	037	FIL	G's	0.0	0.0	0.0	0.0	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



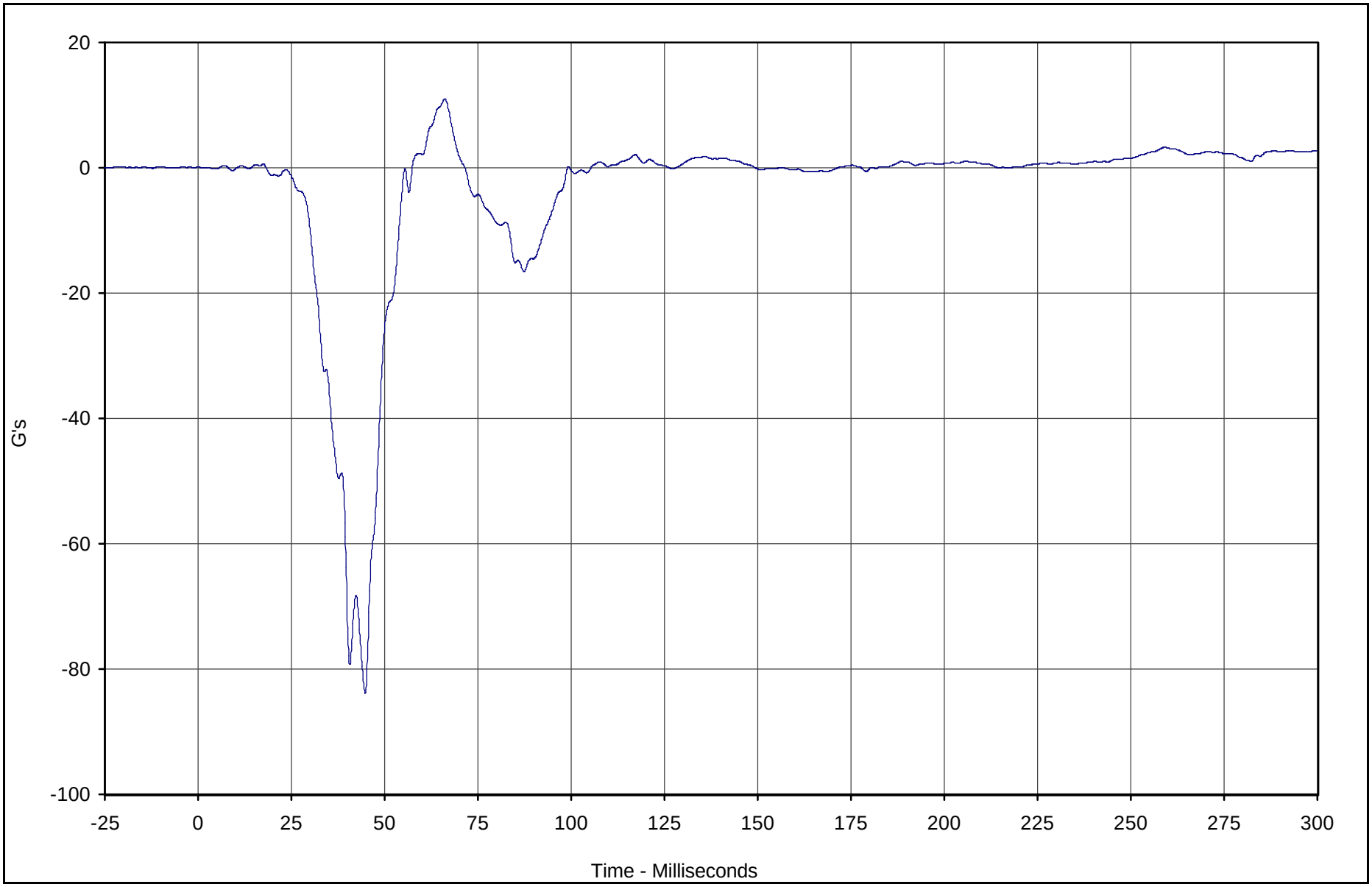
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Right Foot Aft X	038	FIL	G's	16.1	98.7	-114.6	42.3	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



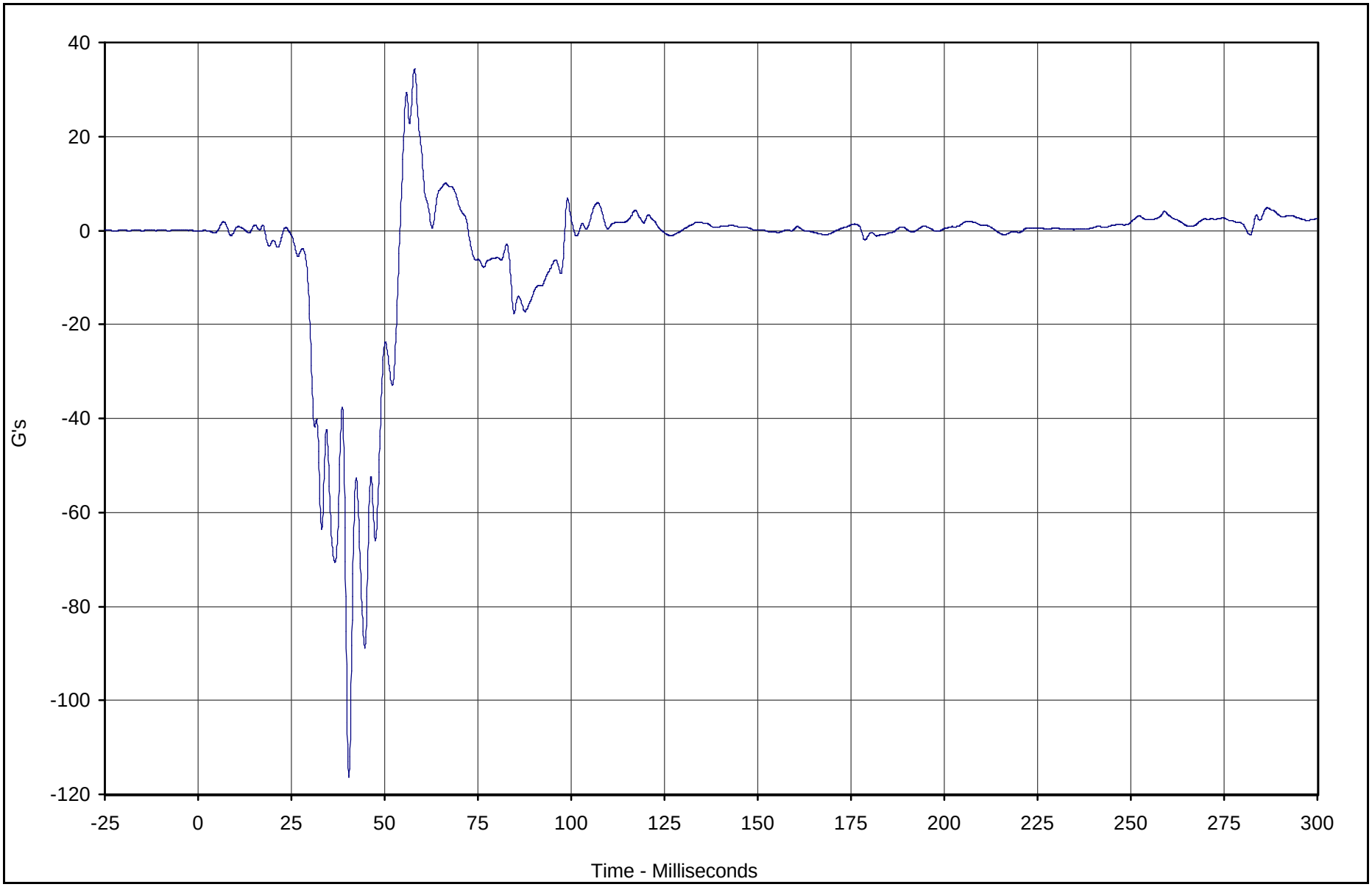
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Right Foot Aft Z	039	FIL	G's	11.0	66.1	-83.9	44.8	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



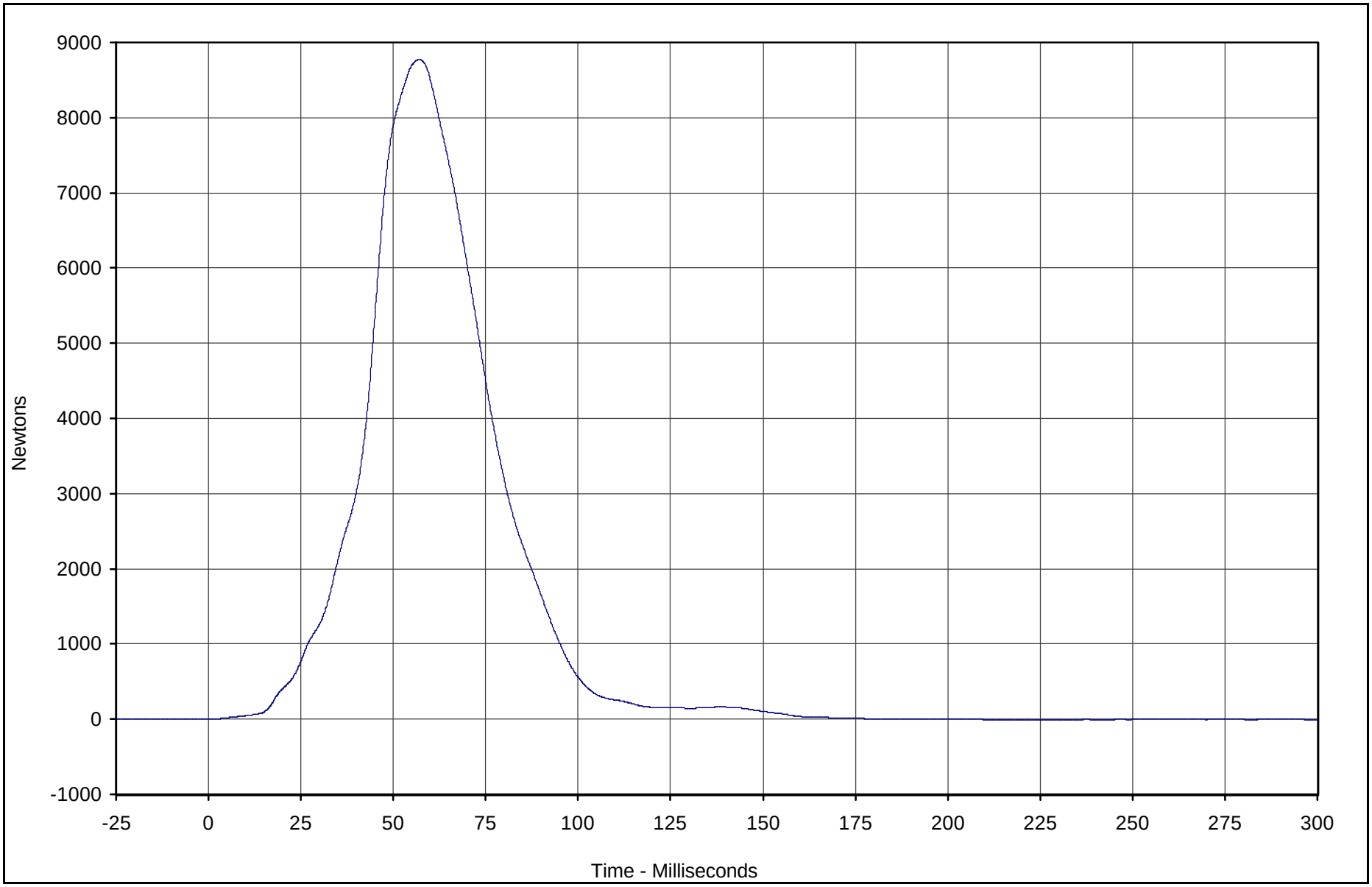
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Right Foot Fore Z	040	FIL	G's	34.3	58.0	-116.4	40.4	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



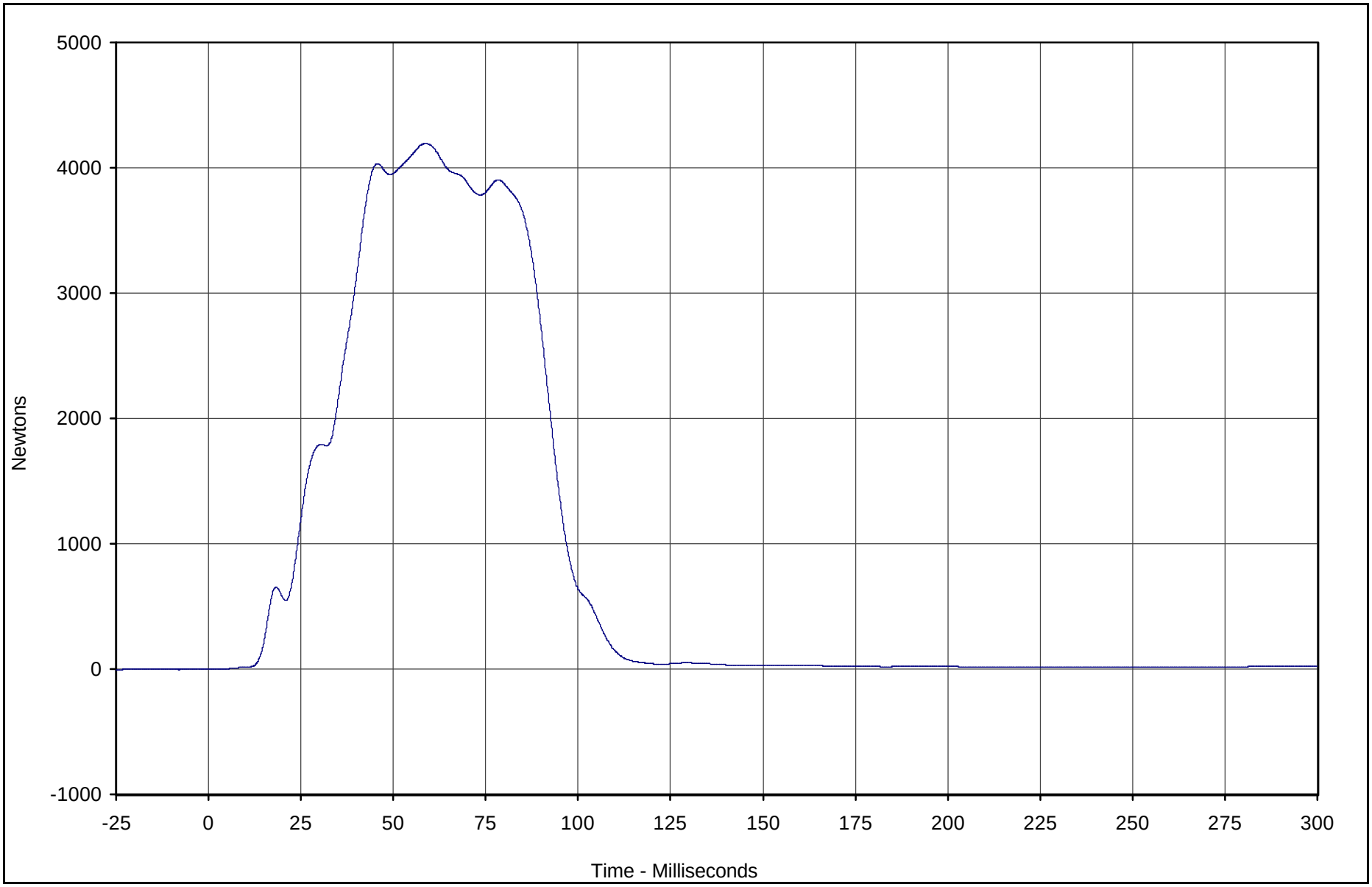
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Lap Belt Force	041	FIL	Newtons	8771.7	57.0	-11.1	226.4	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



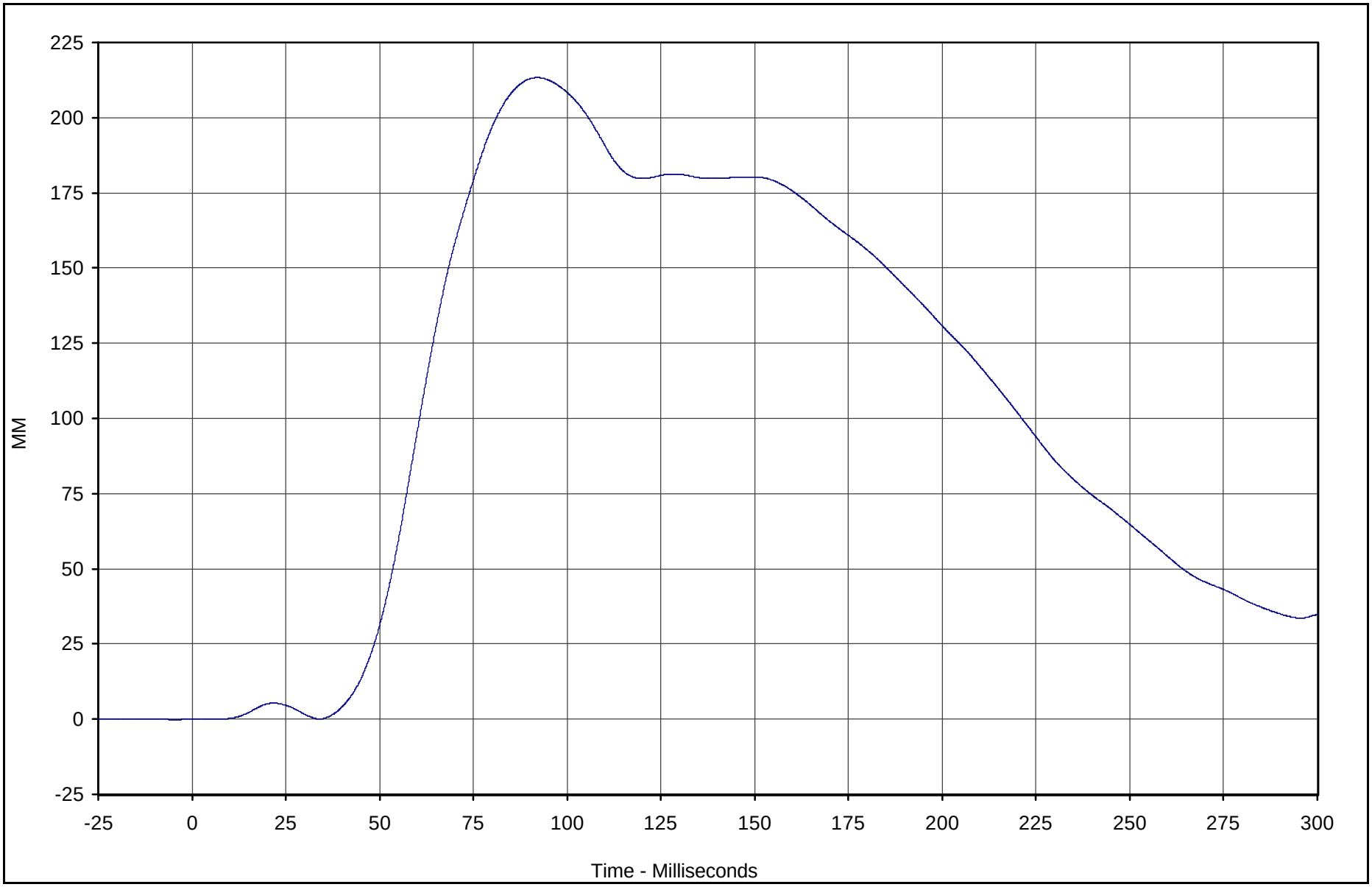
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Shoulder Belt Force	042	FIL	Newtons	4194.1	58.7	1.5	0.0	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



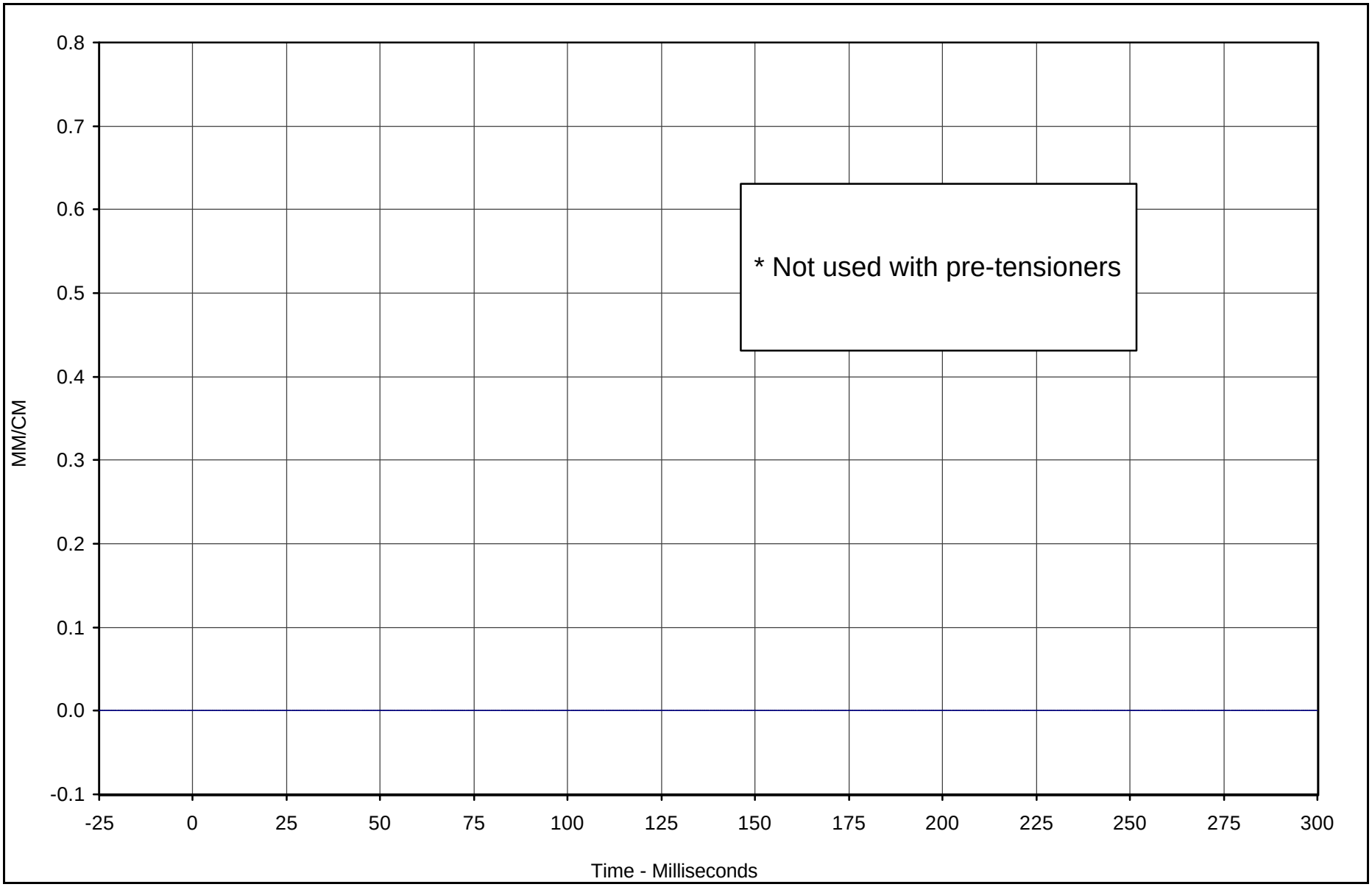
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Shoulder Belt Pullout	043	FIL	MM	213.3	92.1	0.0	0.0	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



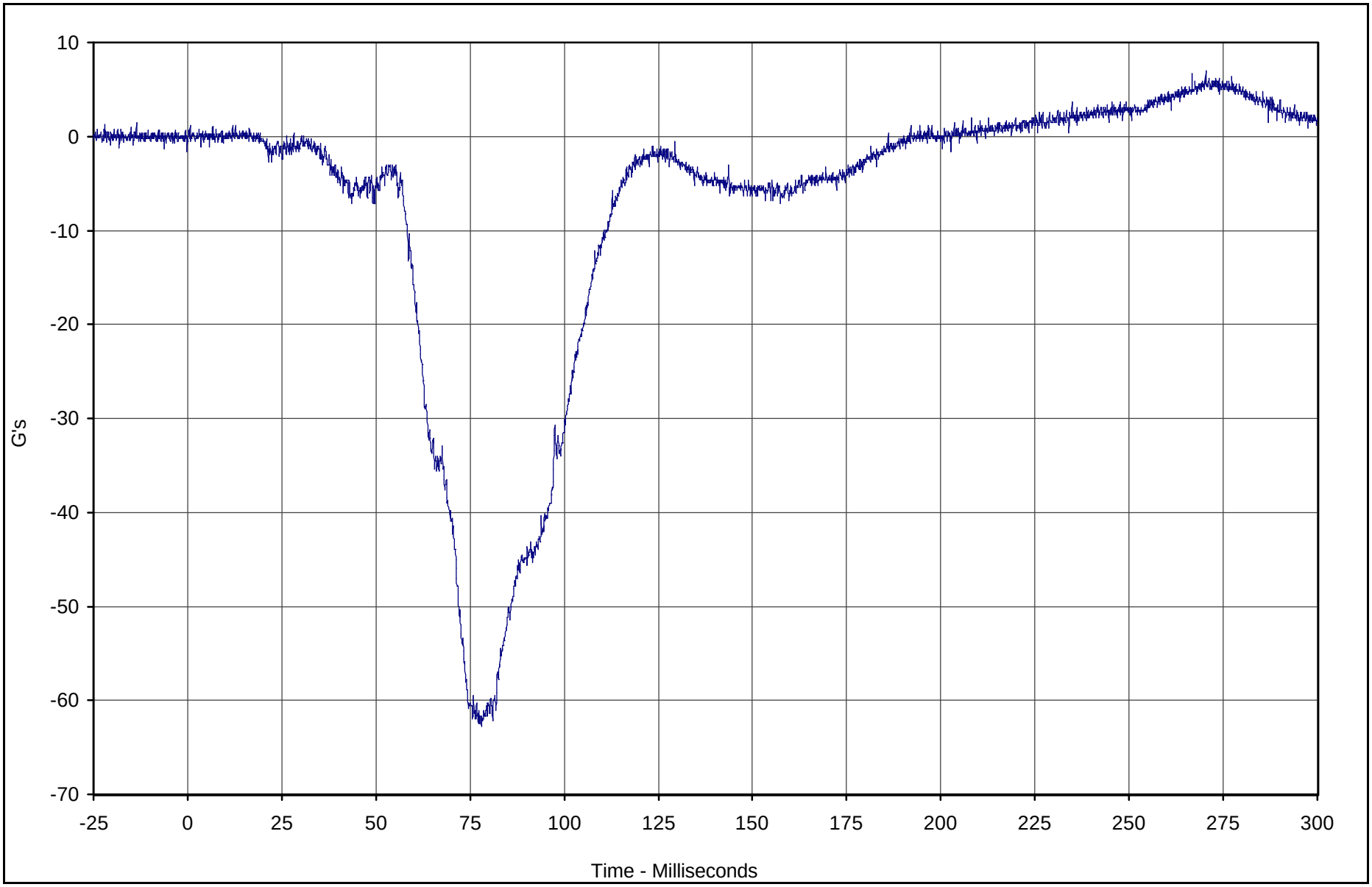
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Shoulder Belt Elongation	044	FIL	MM/CM	0.00	0.0	0.00	0.0	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



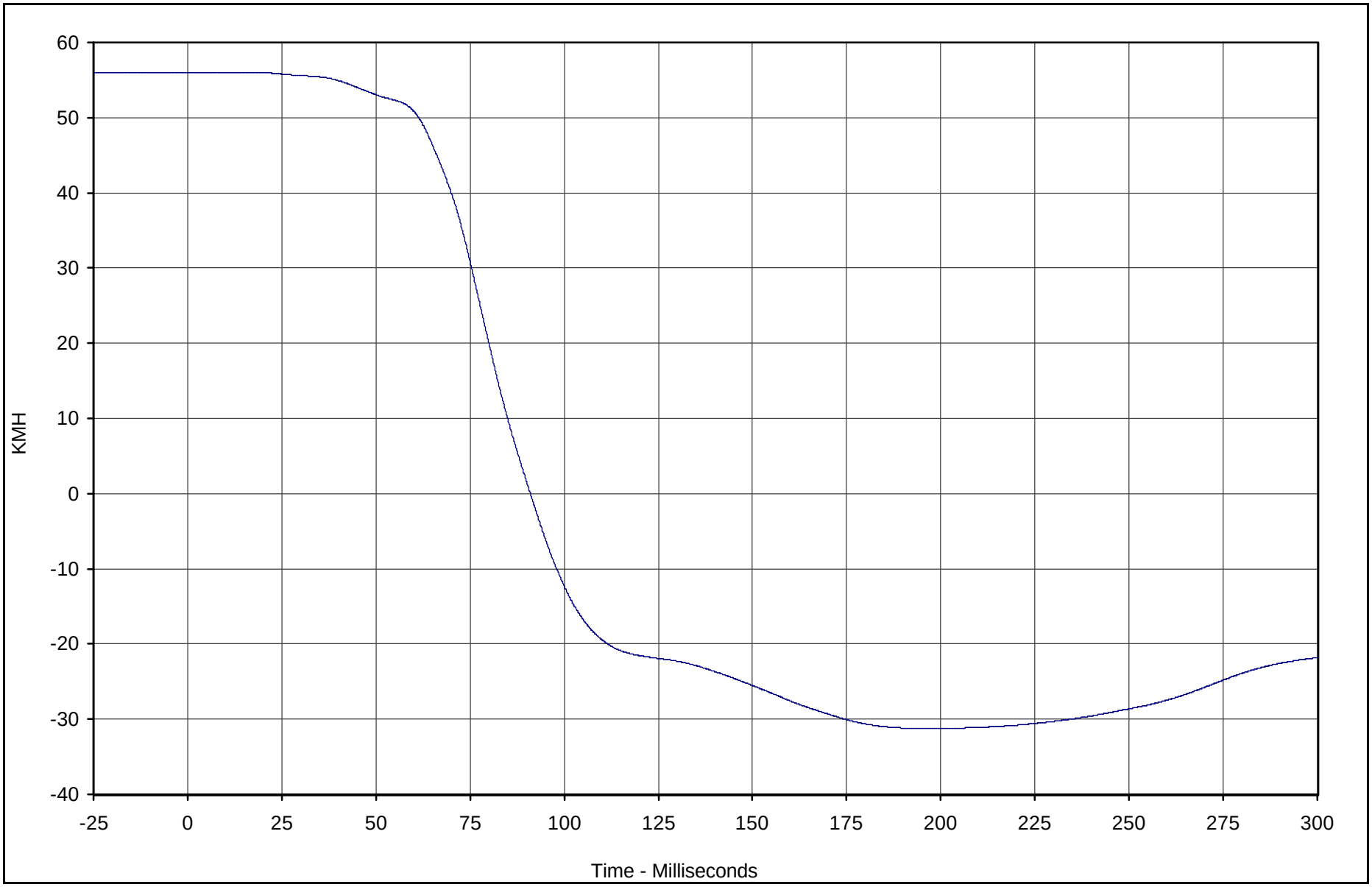
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Primary X	045	FIL	G's	7.0	270.4	-62.8	78.0	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



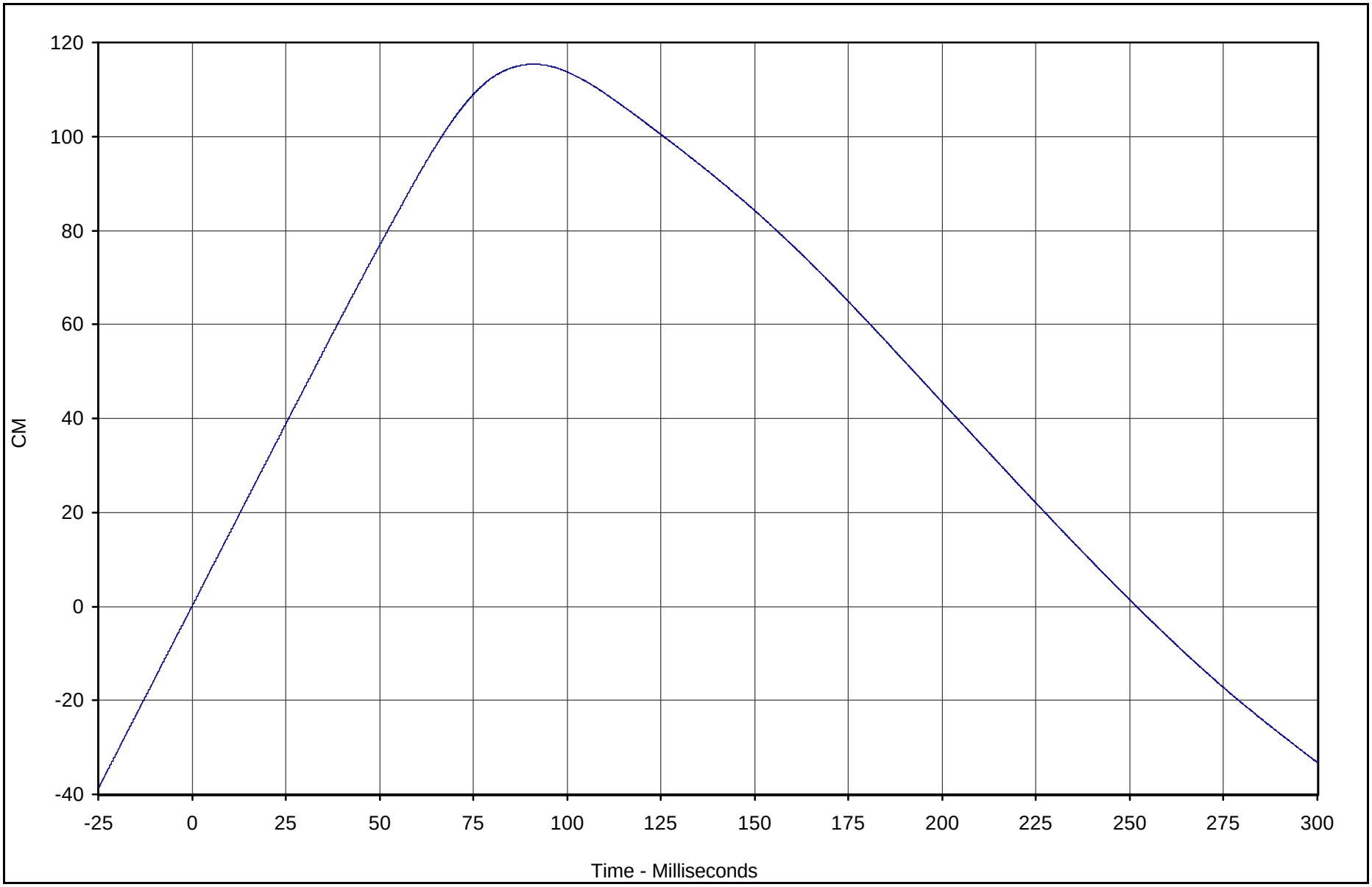
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Primary X Velocity	045	IN1	KMH	56.0	16.9	-31.2	193.7	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



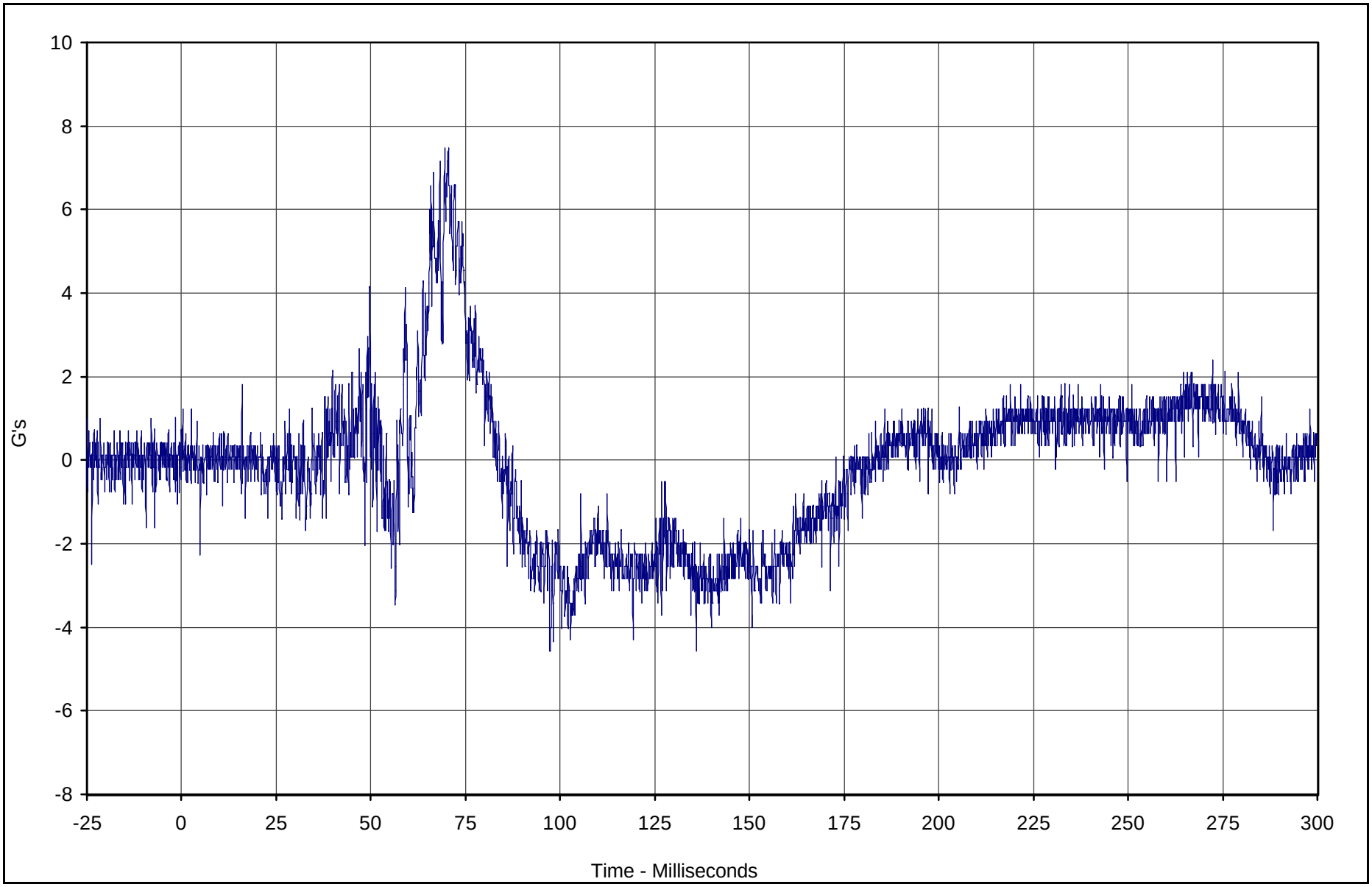
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Primary X Displ.	045	IN2	CM	115.4	91.0	-33.2	299.9	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



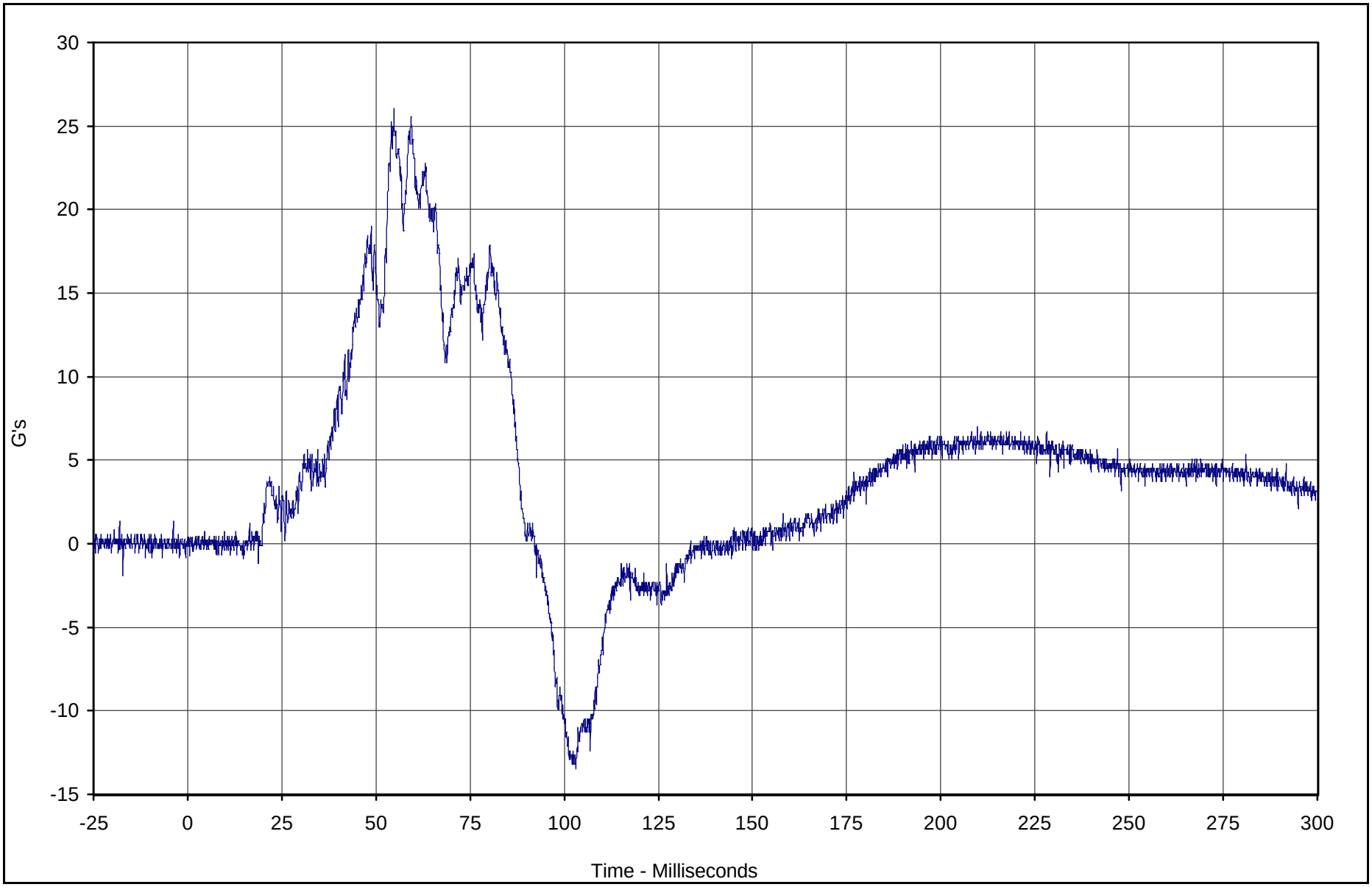
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Primary Y	046	FIL	G's	7.5	69.5	-4.6	97.3	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



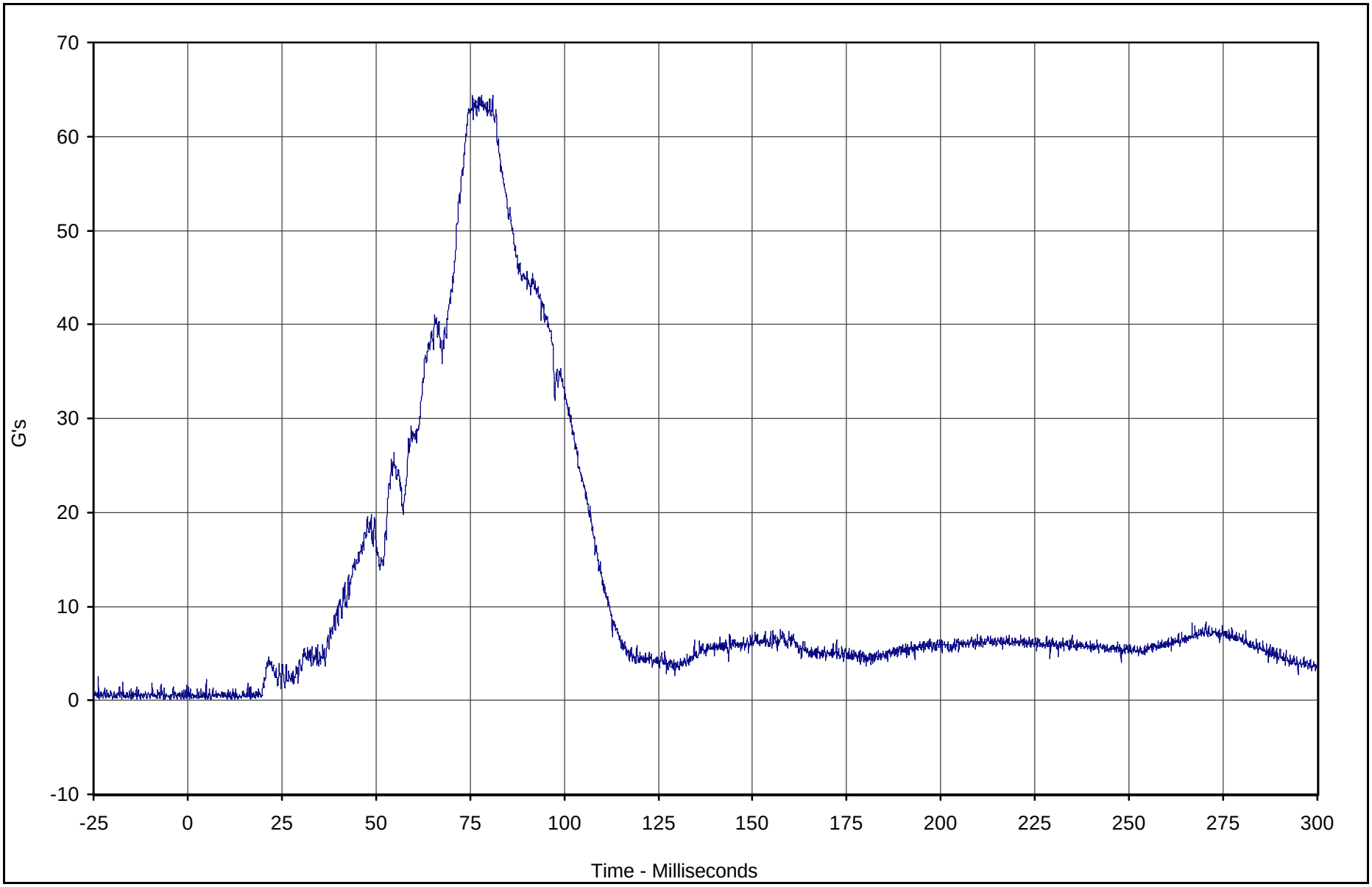
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Primary Z	047	FIL	G's	26.1	54.8	-13.5	103.1	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



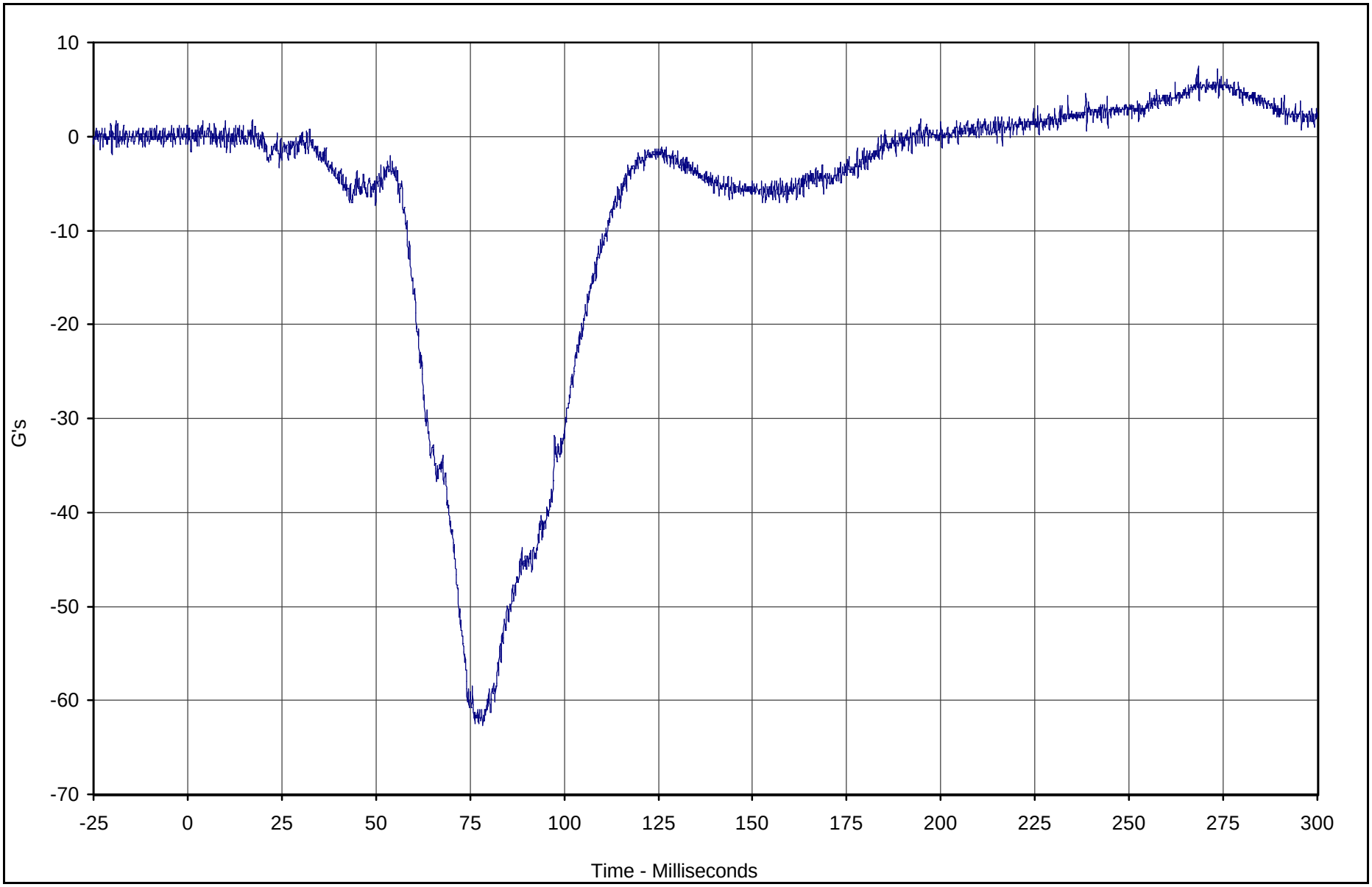
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Resultant Primary	045	RES	G's	64.4	81.0	0.1	4.7	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



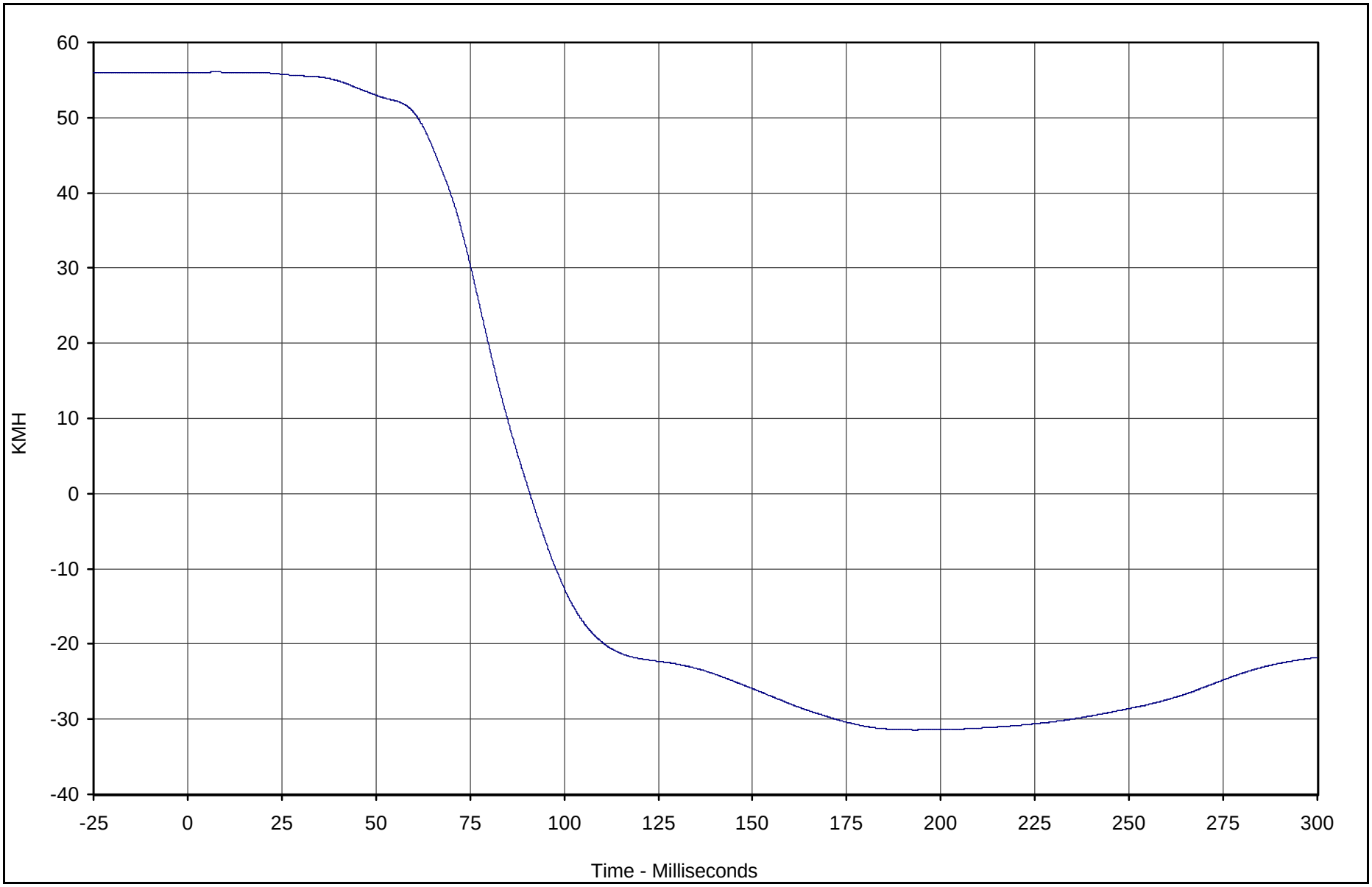
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Redundant X	048	FIL	G's	7.5	268.4	-62.7	78.4	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



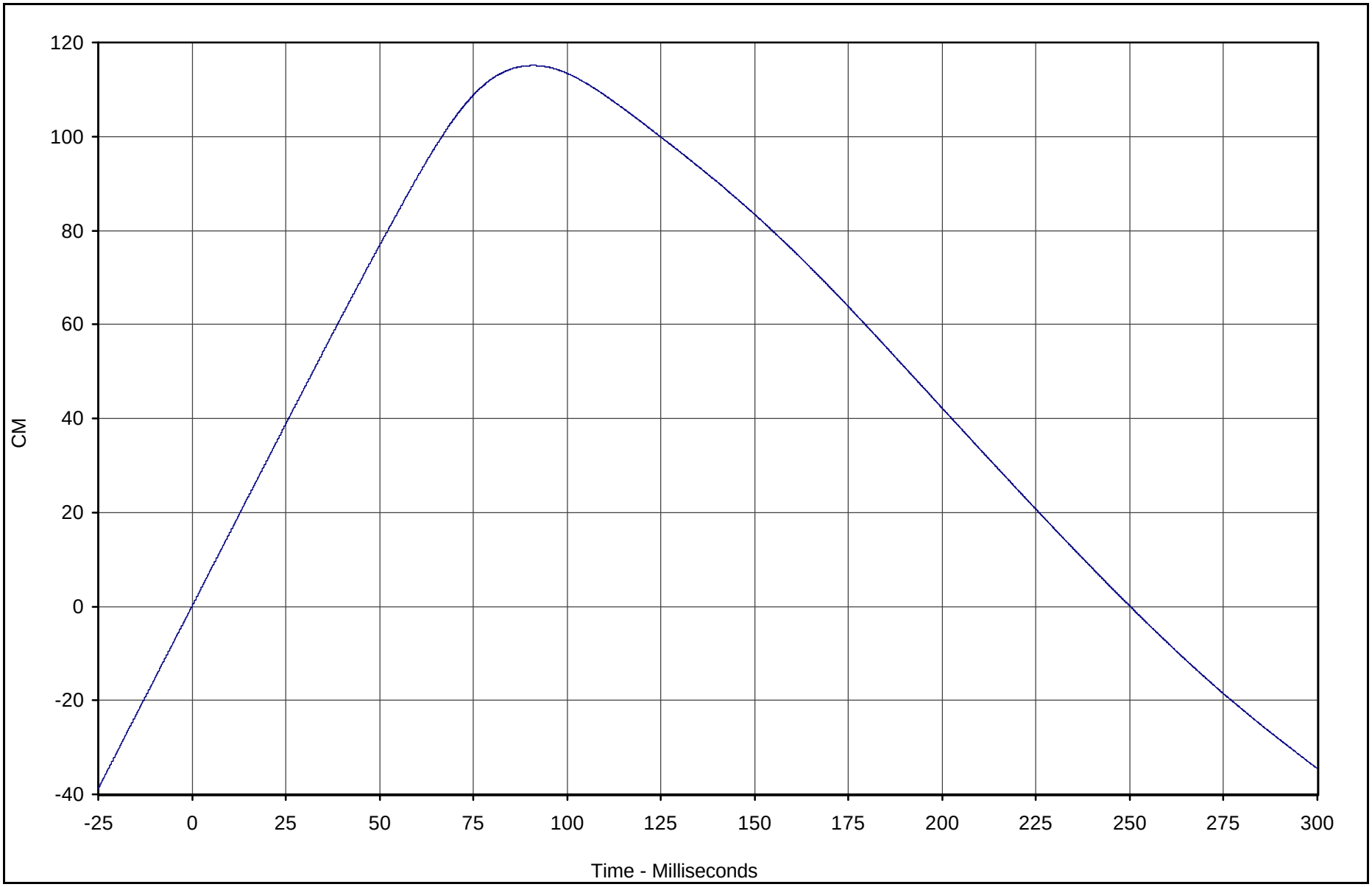
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Redundant X Velocity	048	IN1	KMH	56.1	7.7	-31.4	193.0	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



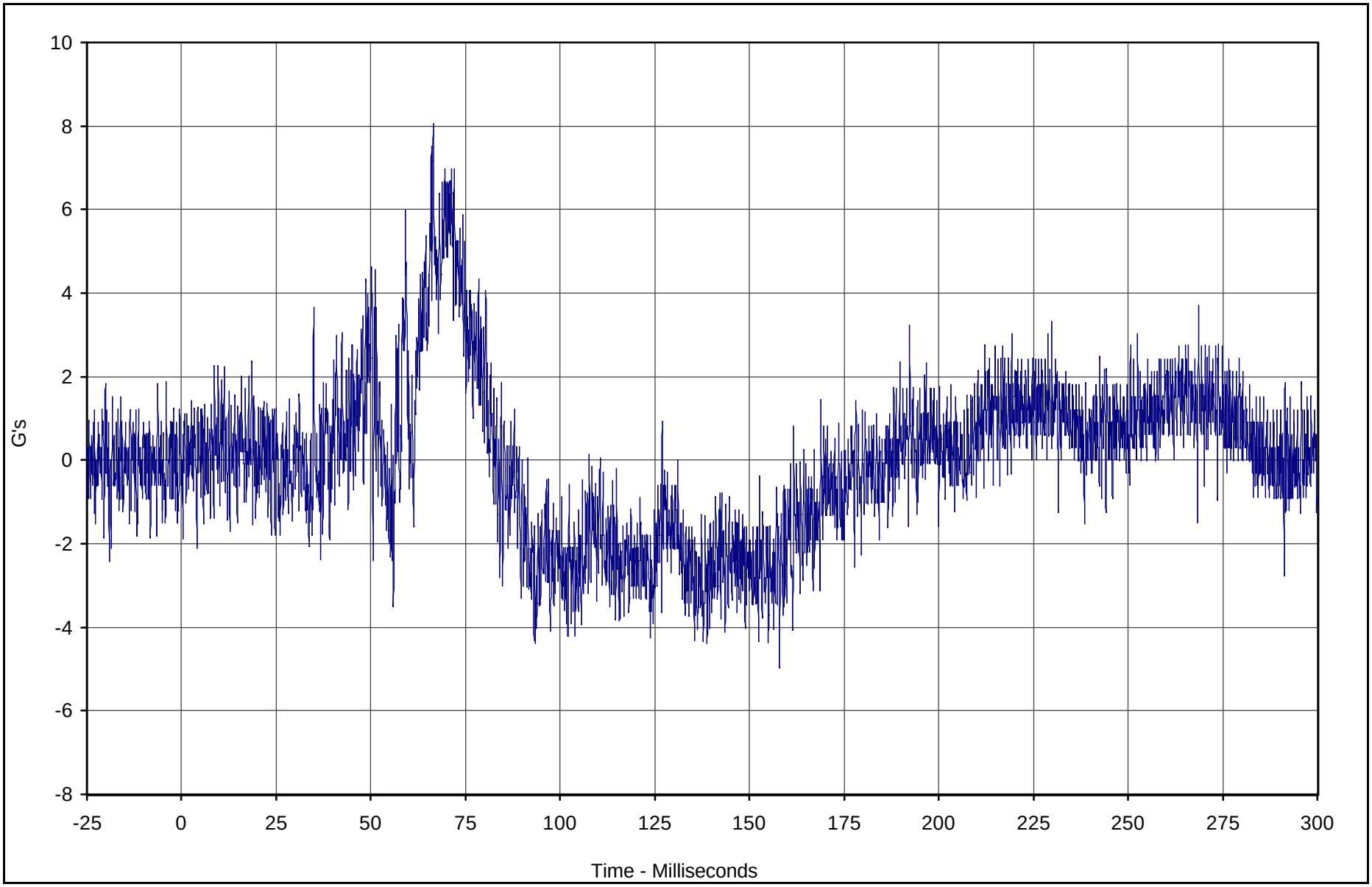
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Redundant X Displ.	048	IN2	CM	115.1	90.9	-34.5	299.9	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



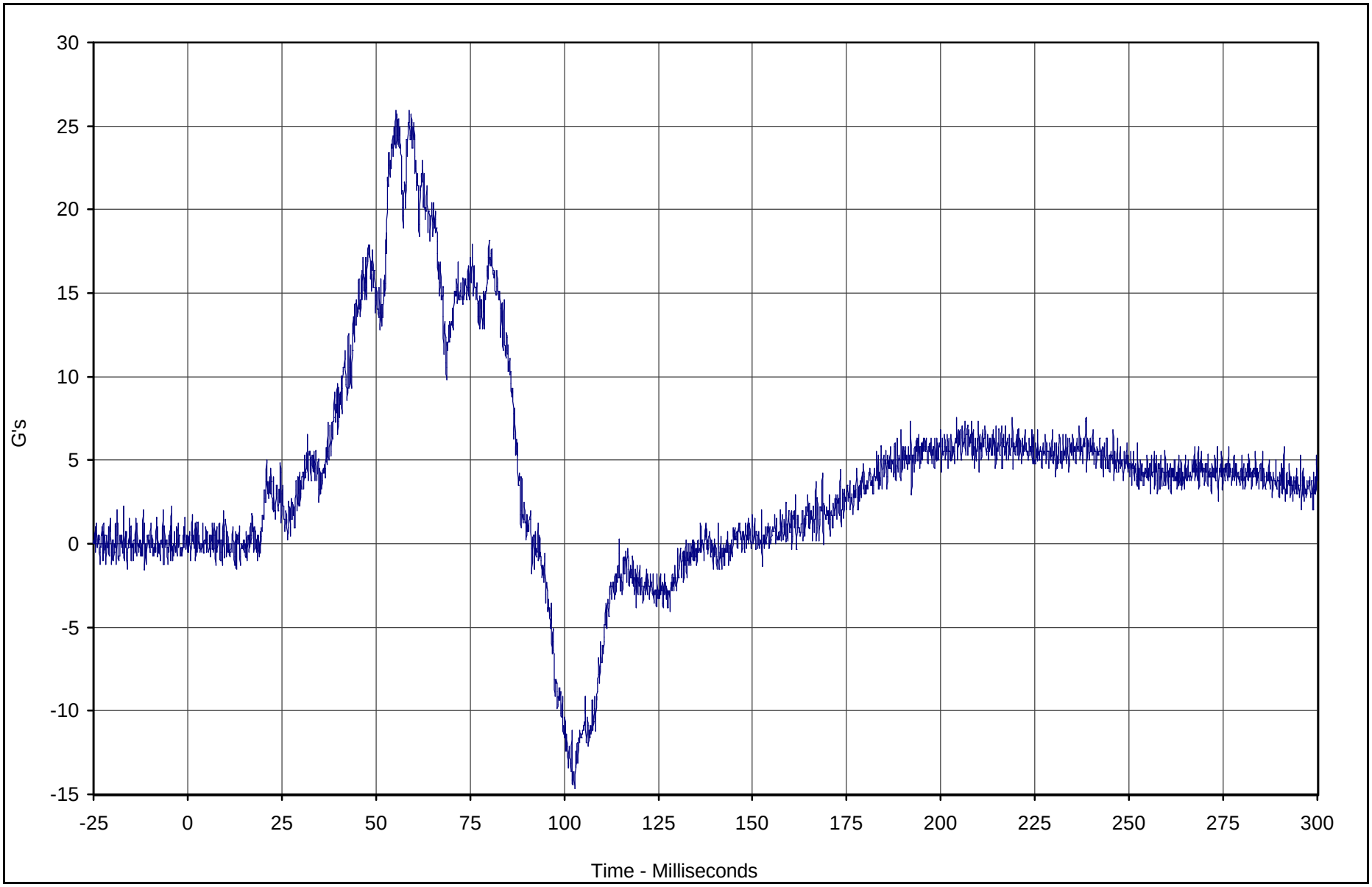
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Redundant Y	049	FIL	G's	8.1	66.5	-4.9	158.0	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



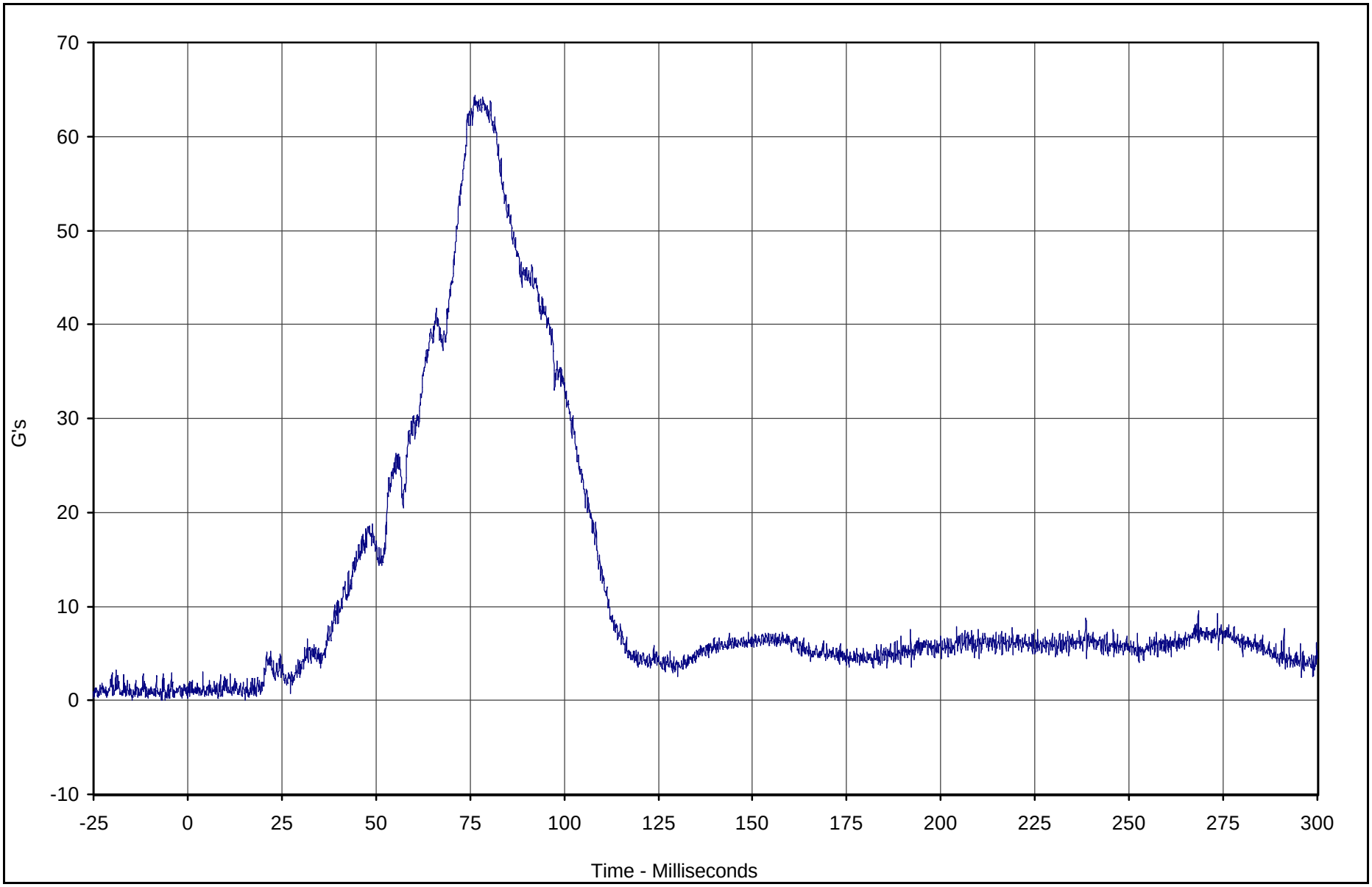
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Redundant Z	050	FIL	G's	26.0	55.2	-14.7	102.8	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



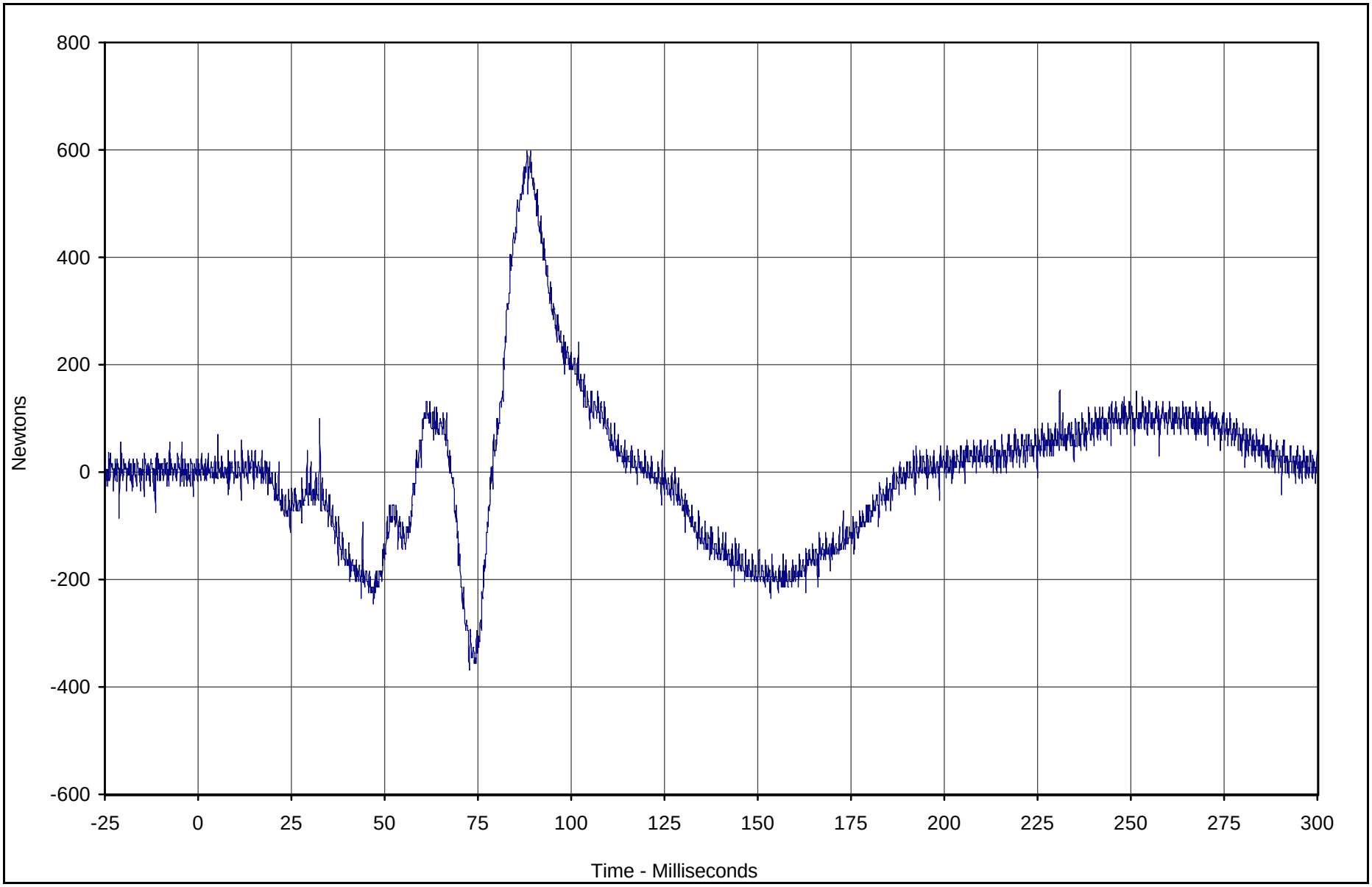
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Resultant Redundant	048	RES	G's	64.4	76.3	0.1	15.3	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



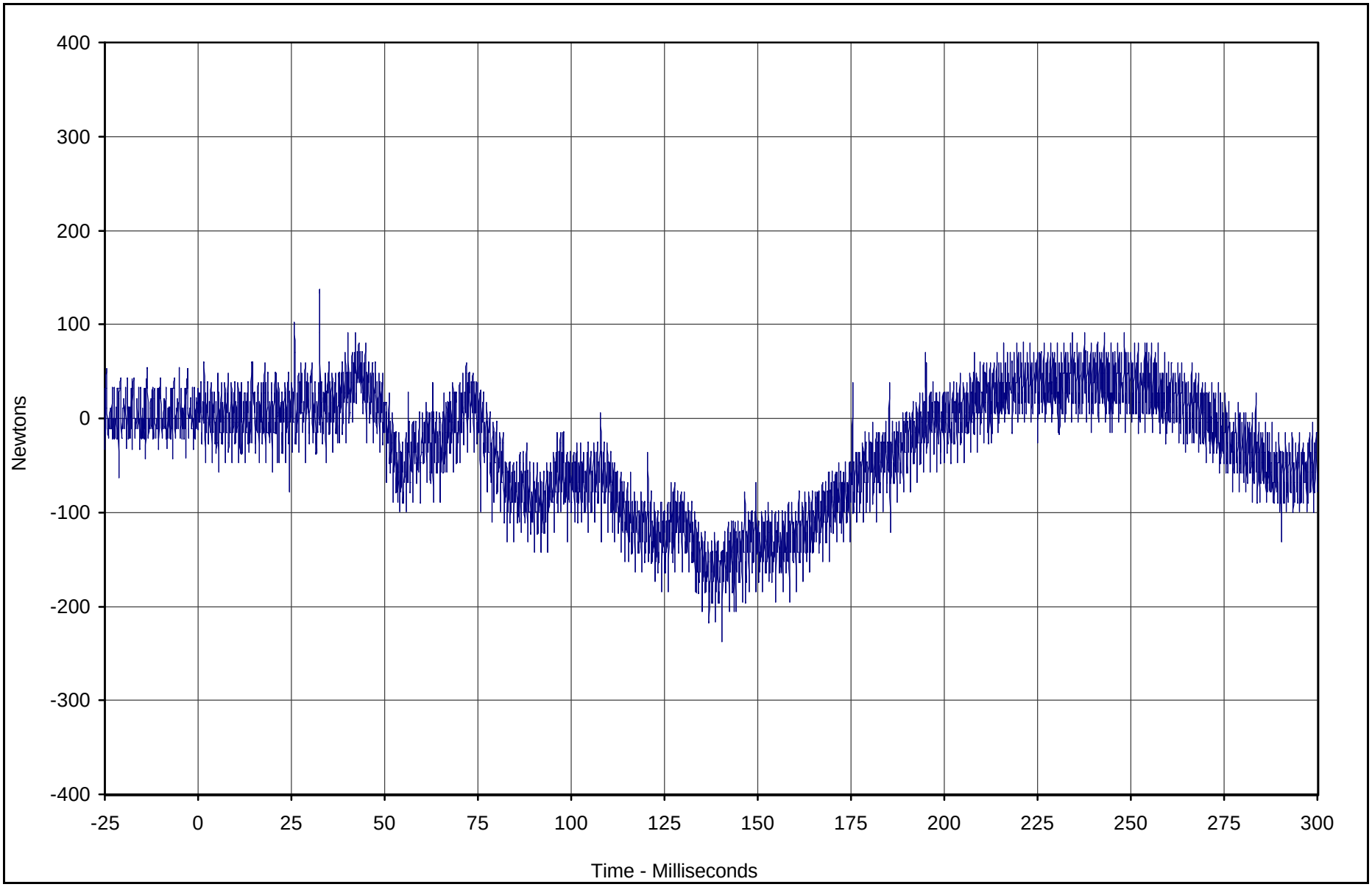
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Neck Force X	051	FIL	Newtons	598.3	88.2	-366.7	72.8	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



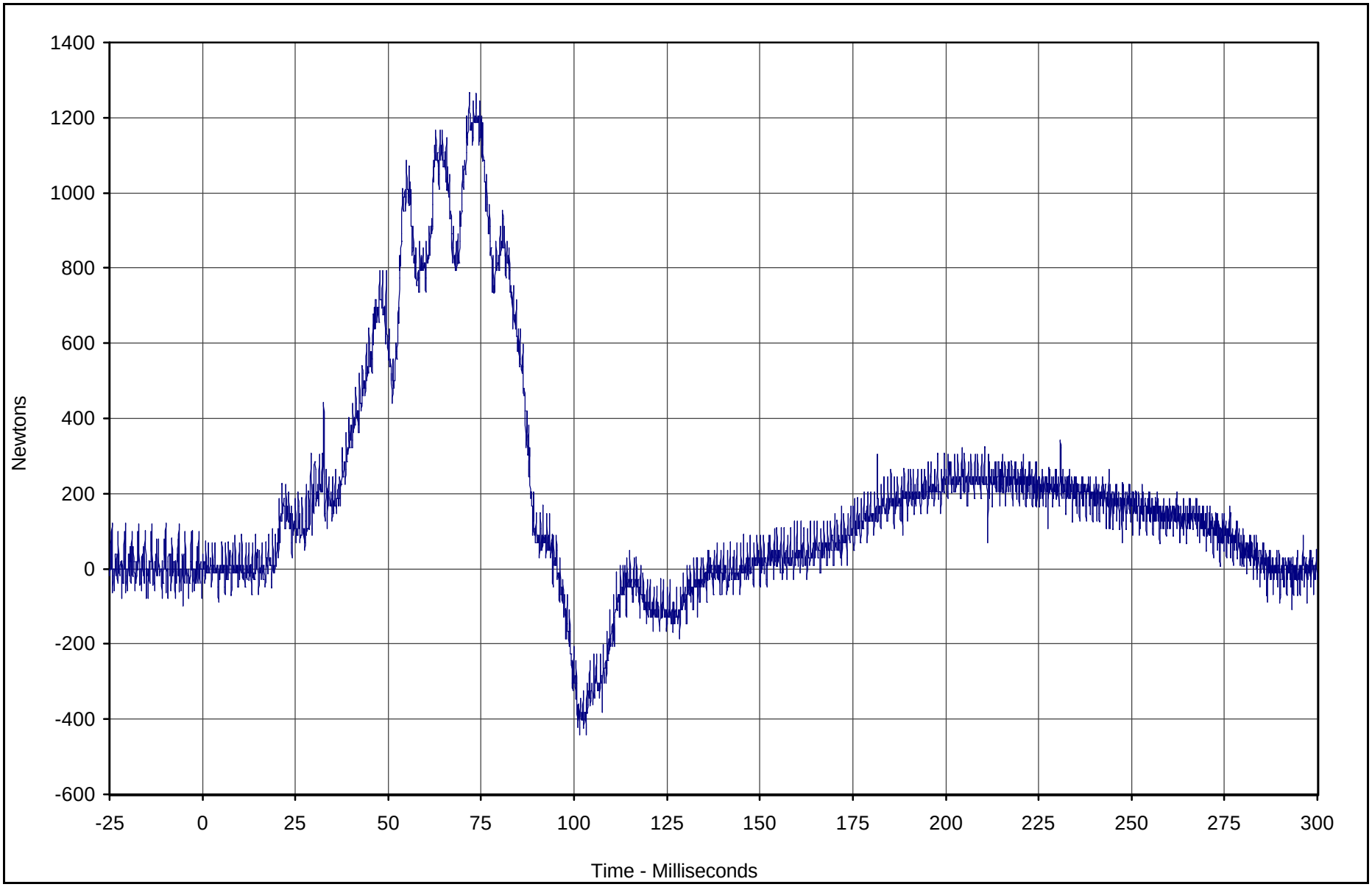
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Neck Force Y	052	FIL	Newtons	133.3	32.6	-237.4	140.5	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



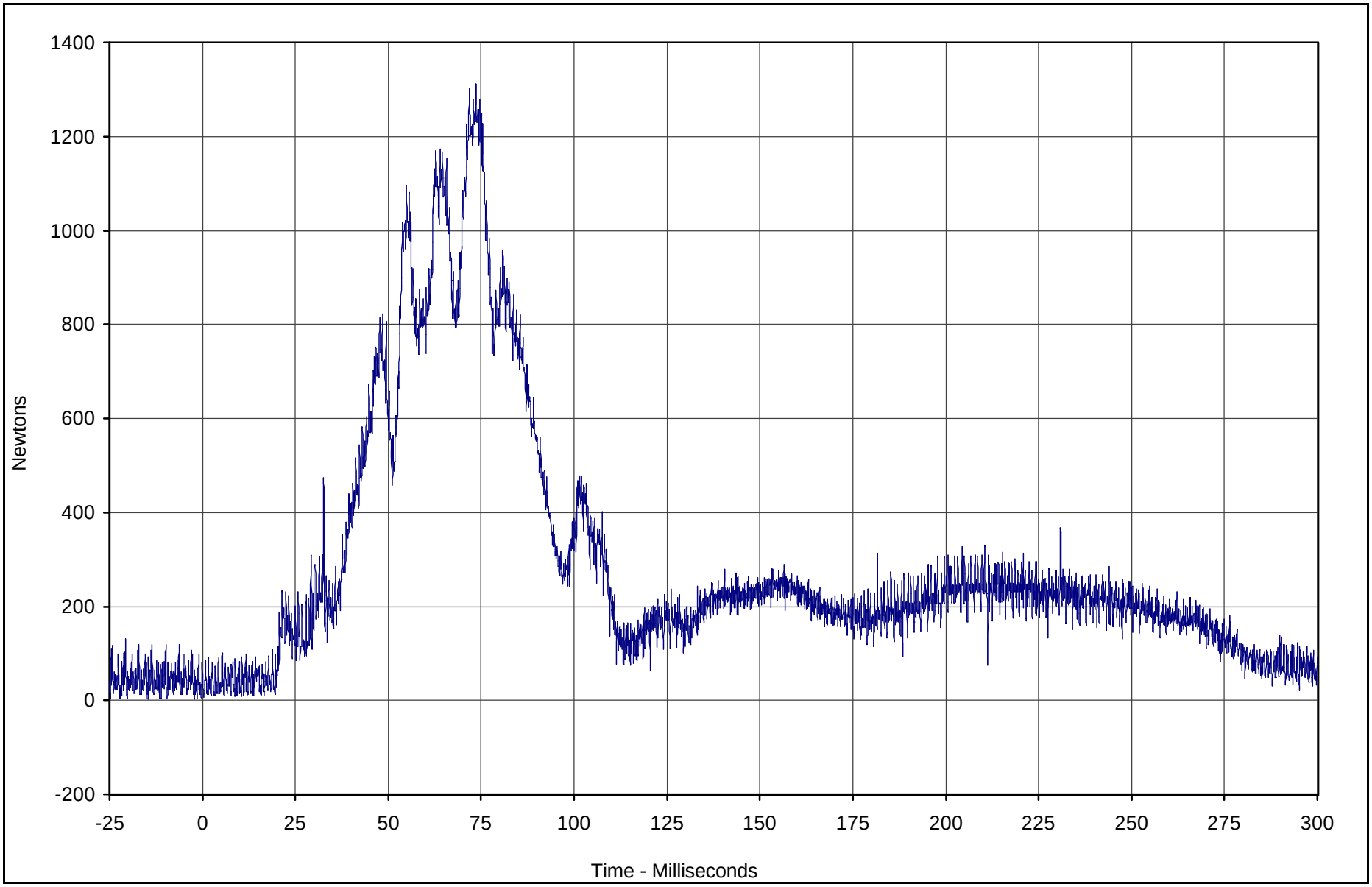
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Neck Force Z	053	FIL	Newtons	1264.2	71.8	-441.3	101.5	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



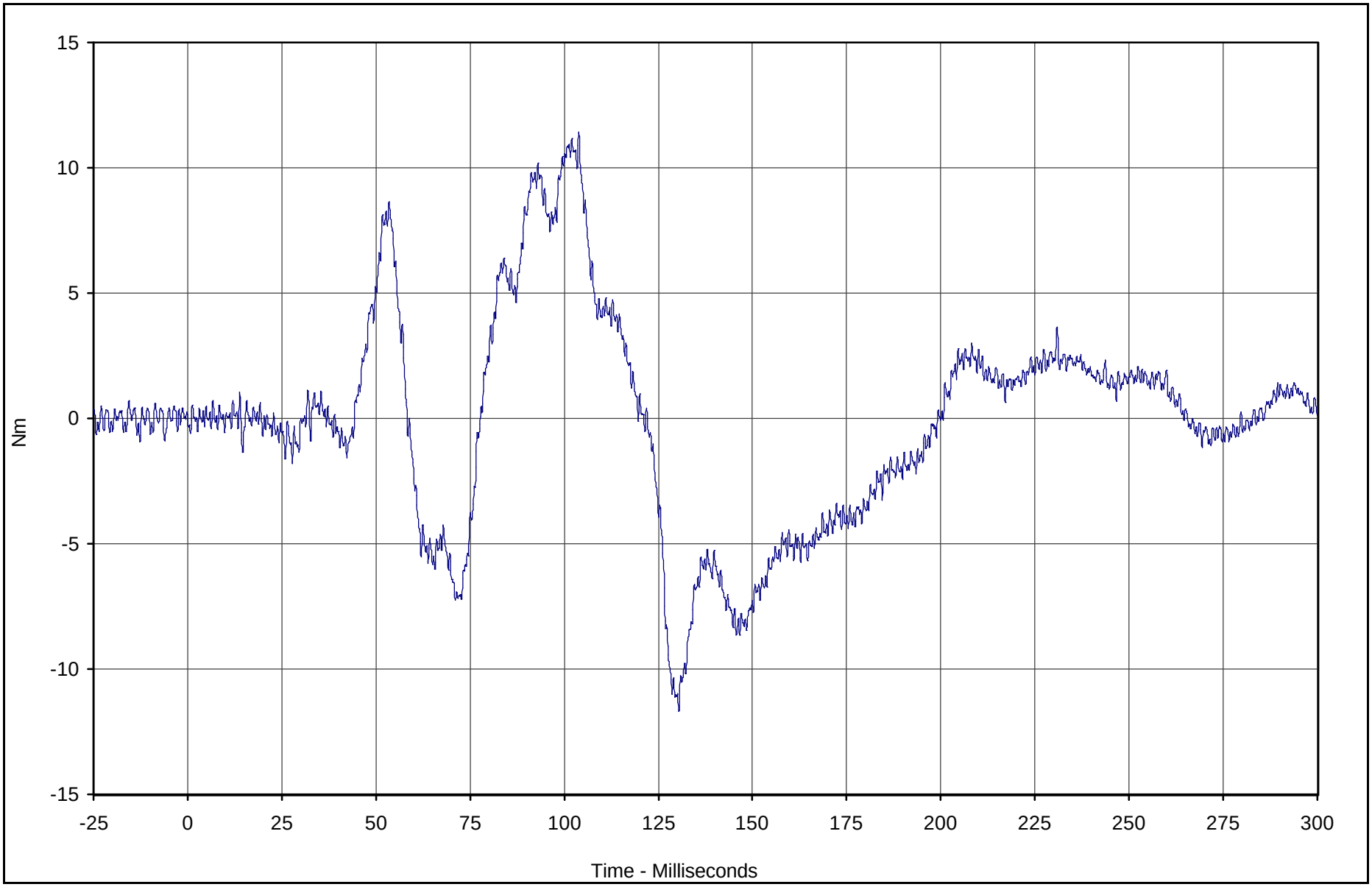
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Neck Force Resultant	051	RES	Newtons	1311.3	73.6	6.8	0.4	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



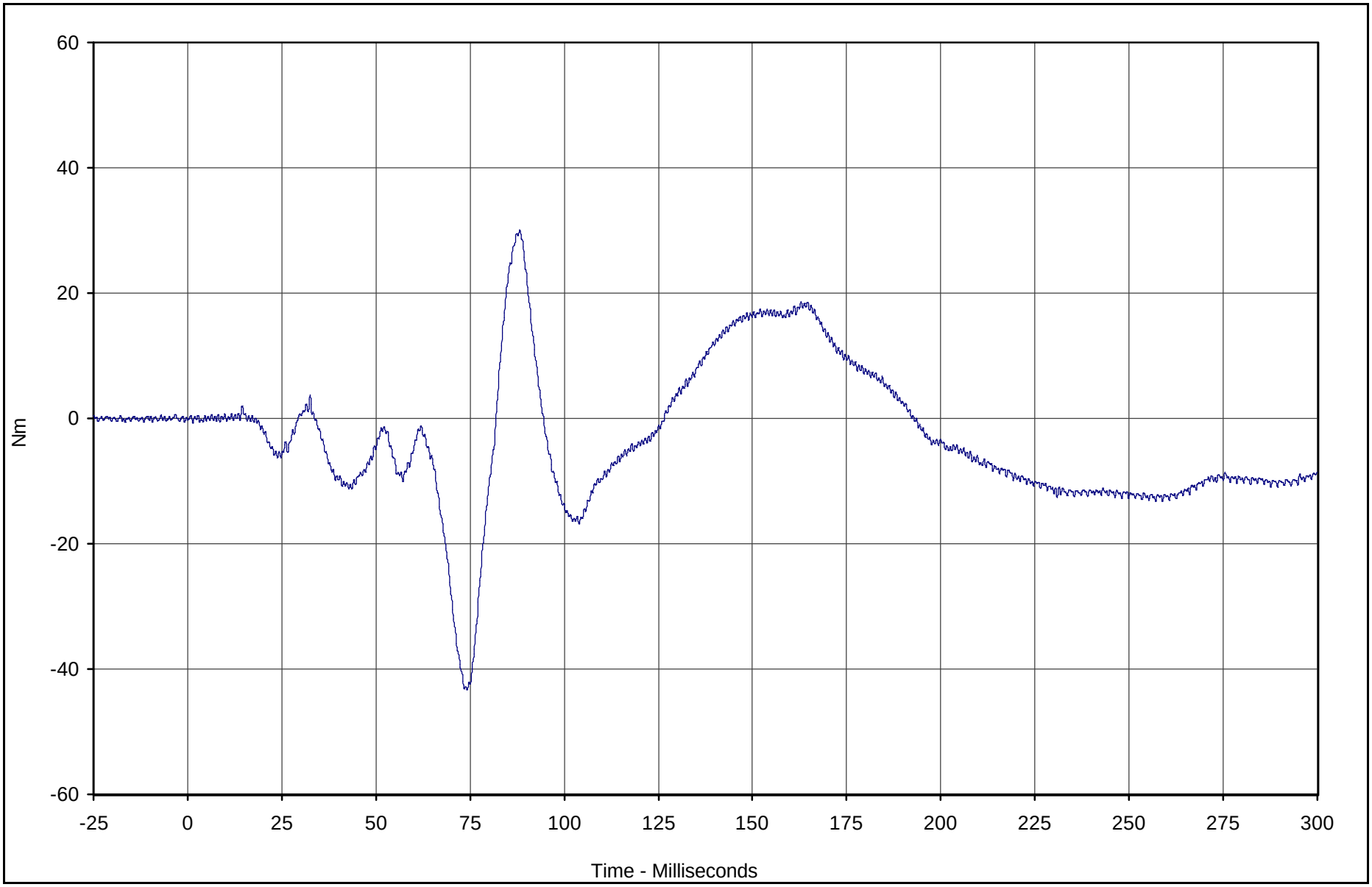
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Neck Moment X	054	FIL	Nm	11.4	103.9	-11.7	130.4	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



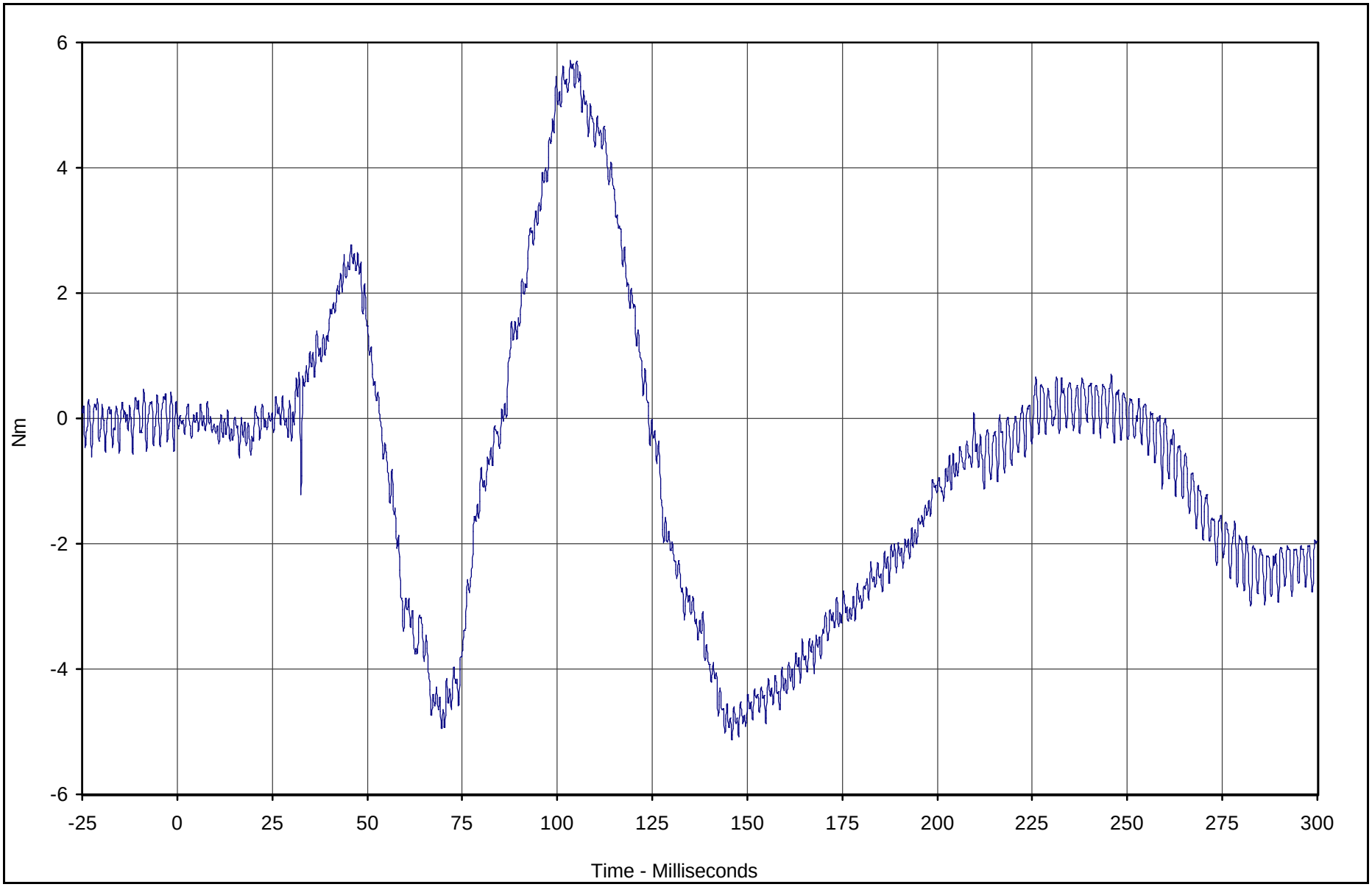
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Neck Moment Y	055	FIL	Nm	30.1	88.2	-43.3	74.3	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



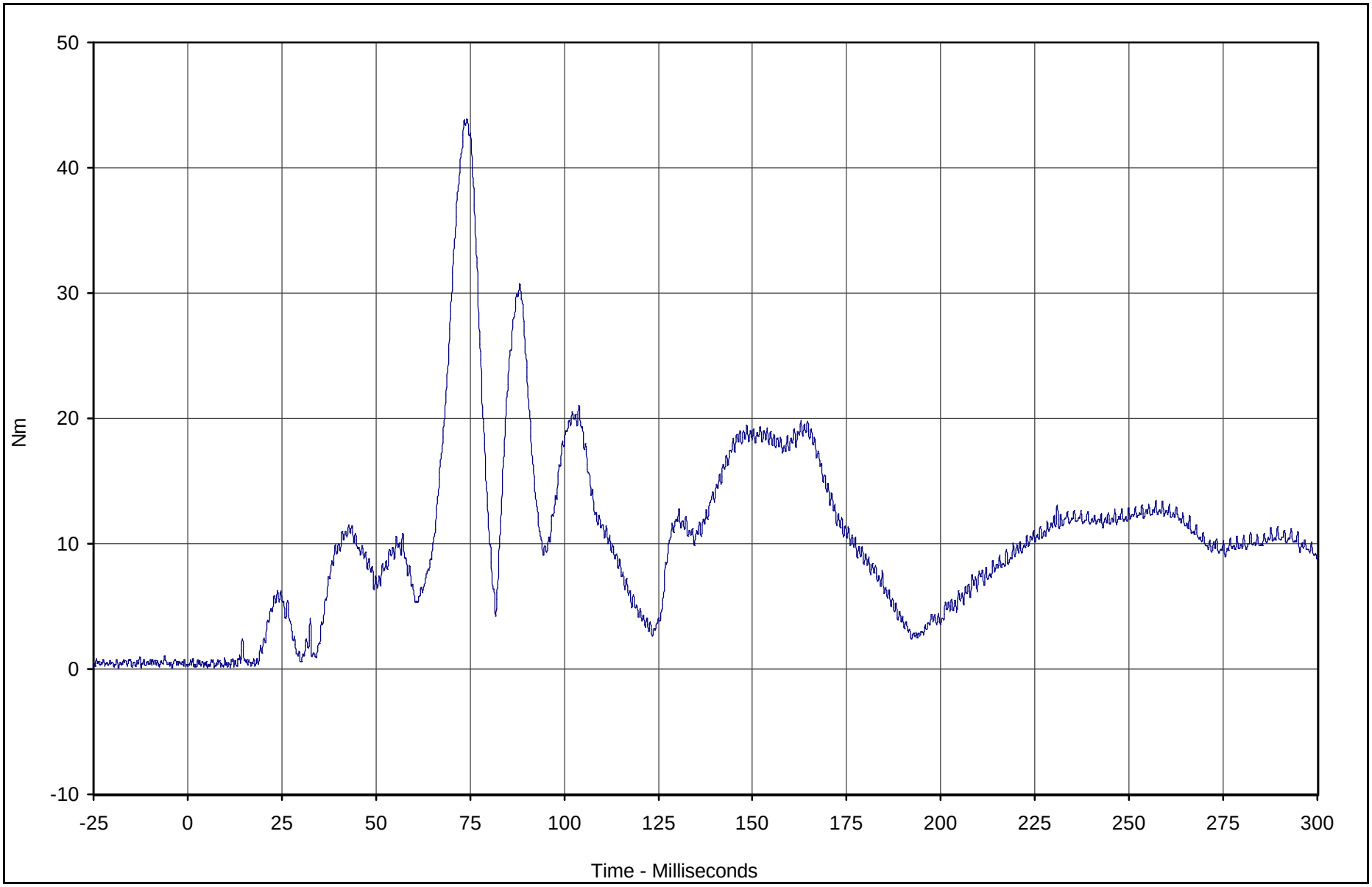
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Neck Moment Z	056	FIL	Nm	5.7	103.4	-5.1	146.0	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



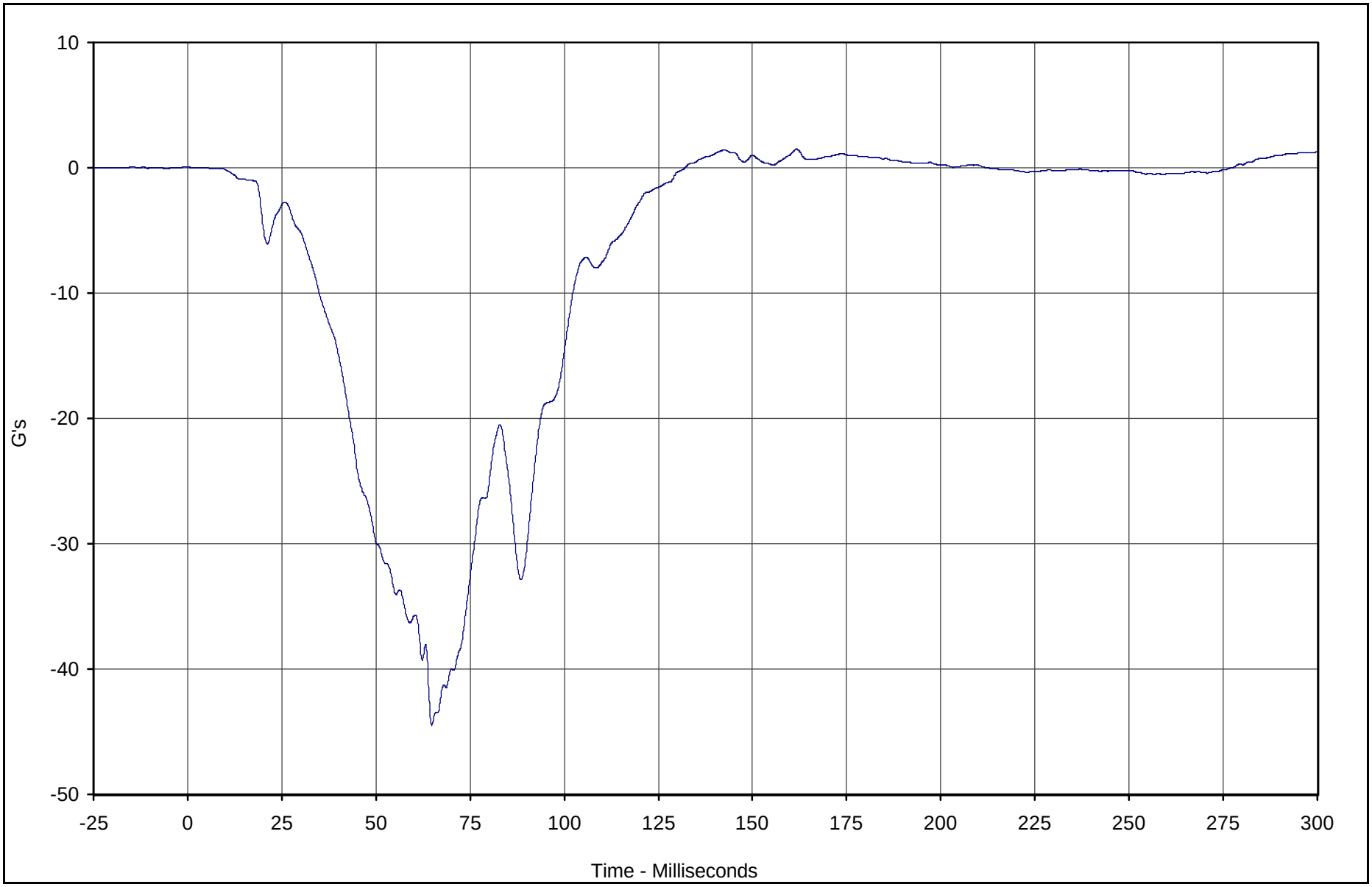
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Neck Moment Resultant	054	RES	Nm	43.9	74.2	0.1	11.4	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



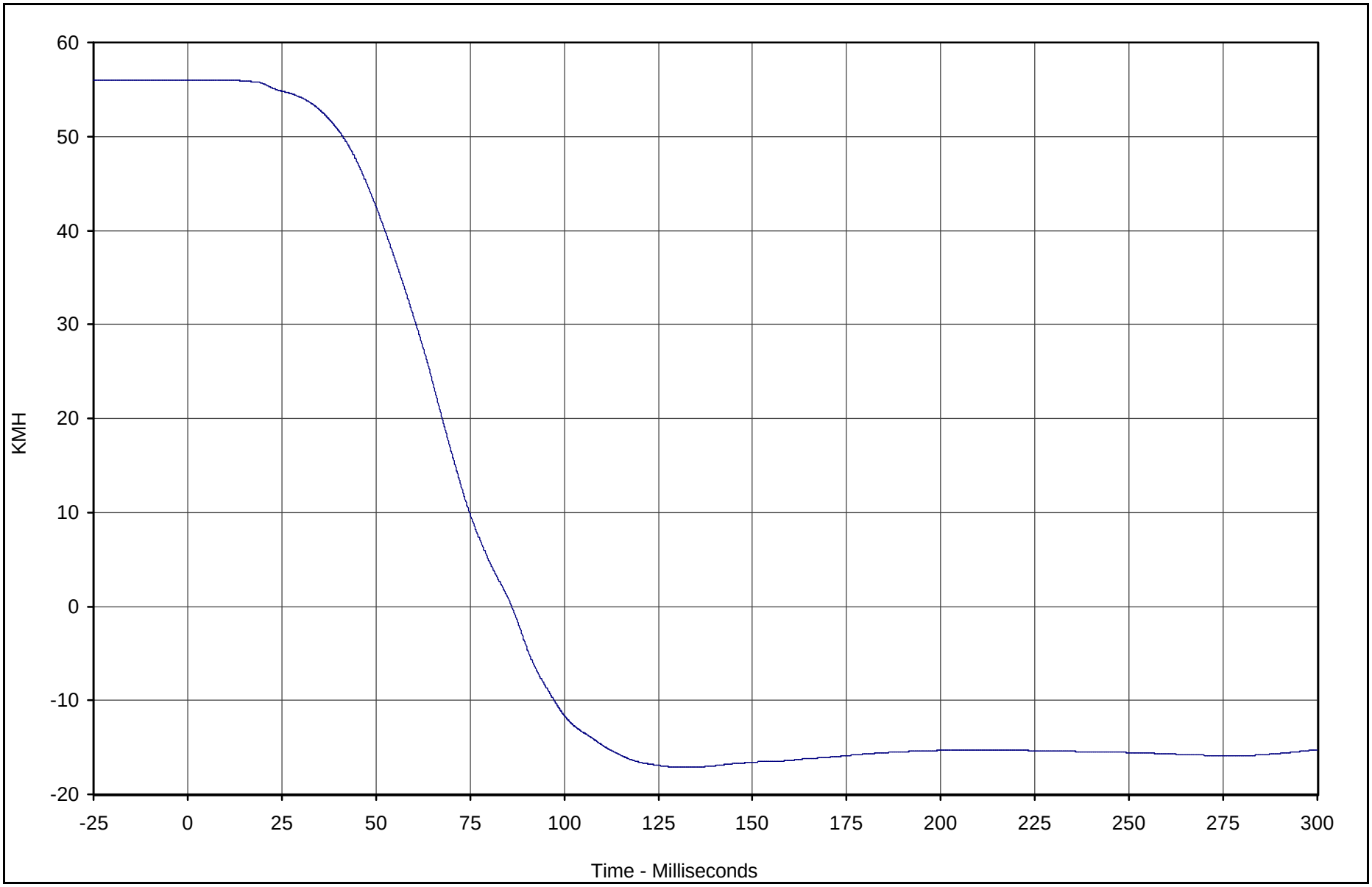
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Primary X	057	FIL	G's	1.5	161.7	-44.5	64.8	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



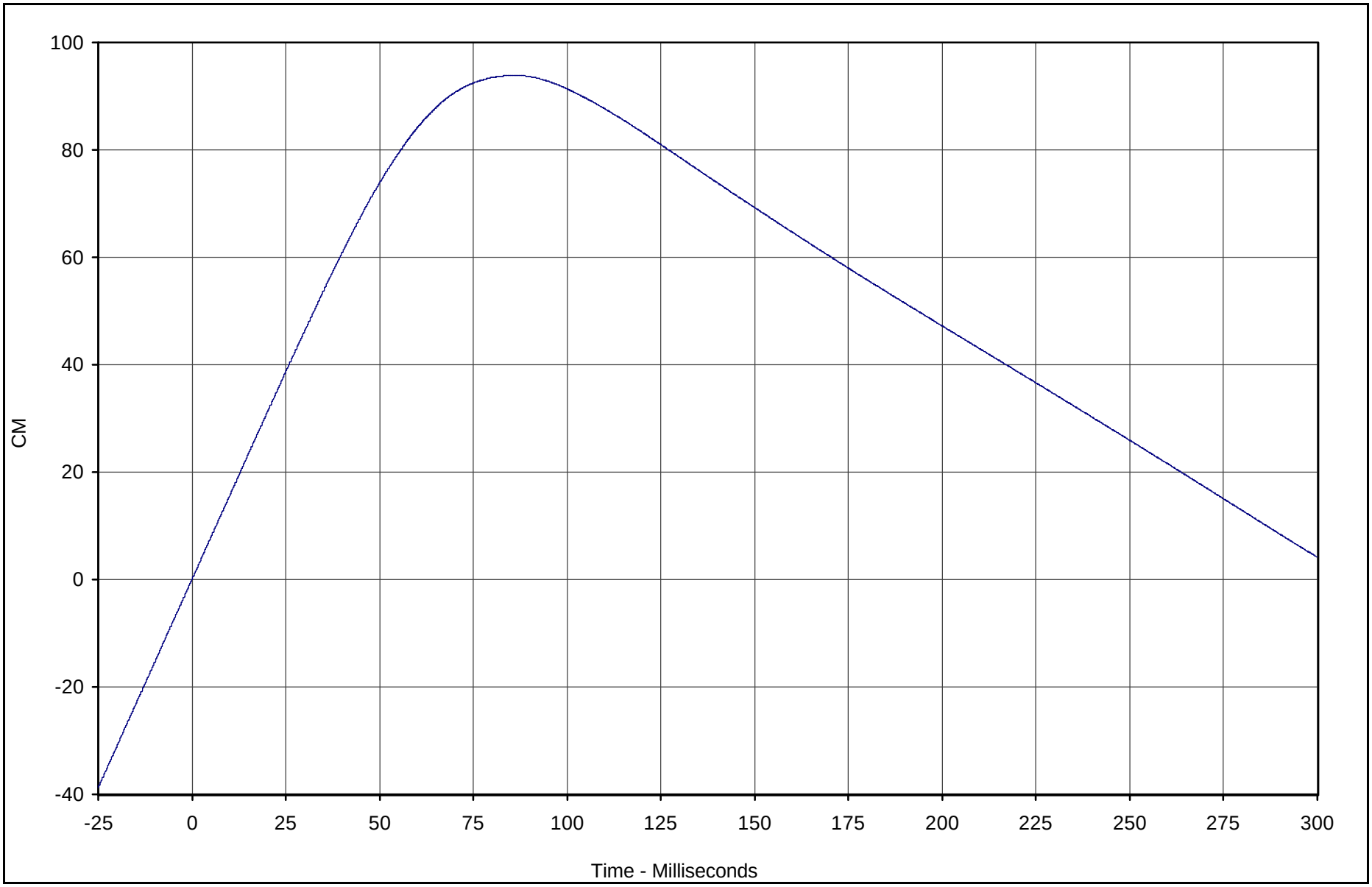
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Primary X Velocity	057	IN1	KMH	56.0	4.6	-17.1	132.1	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



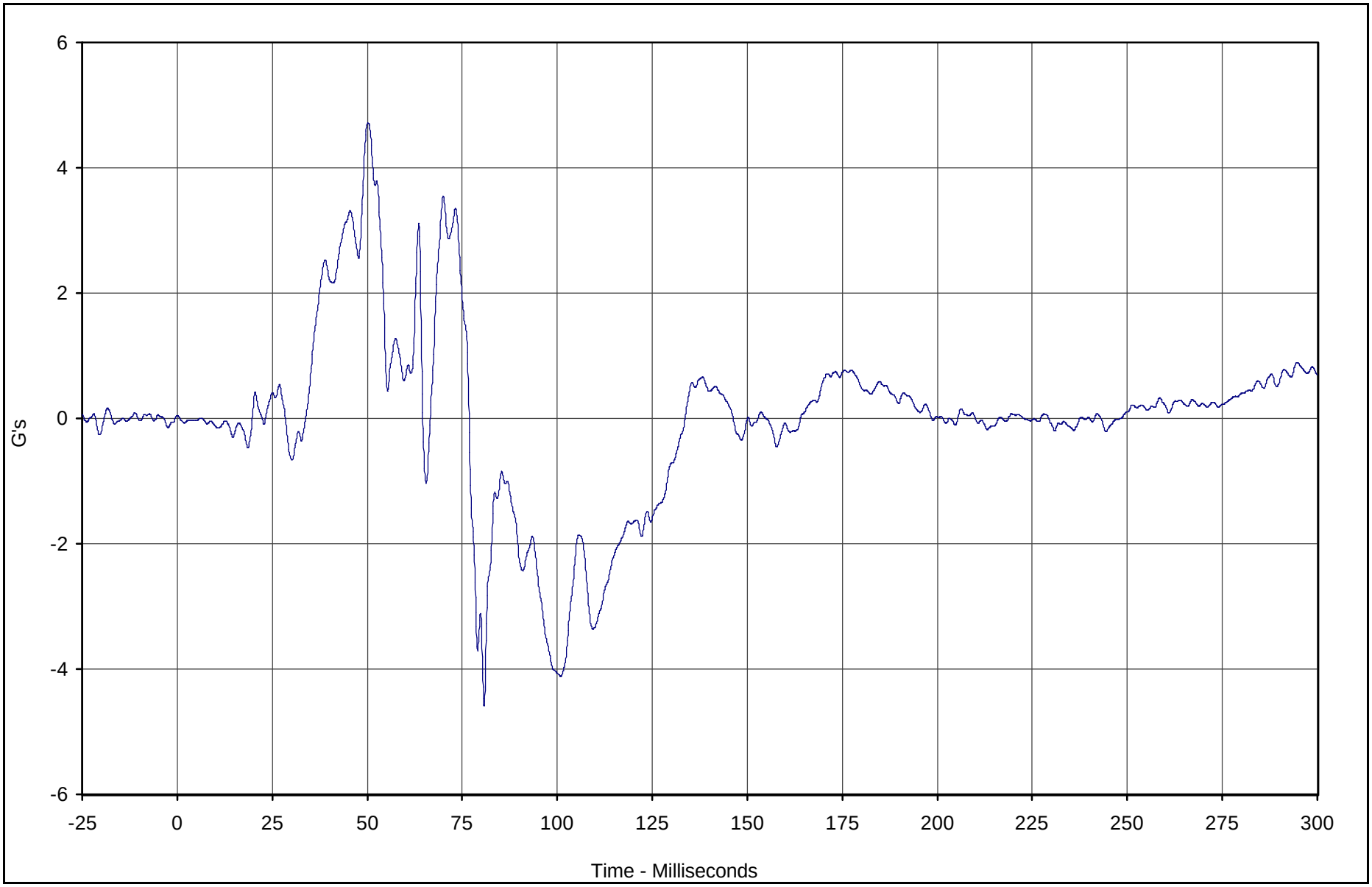
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Primary X Displ.	057	IN2	CM	93.9	86.1	0.0	0.0	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



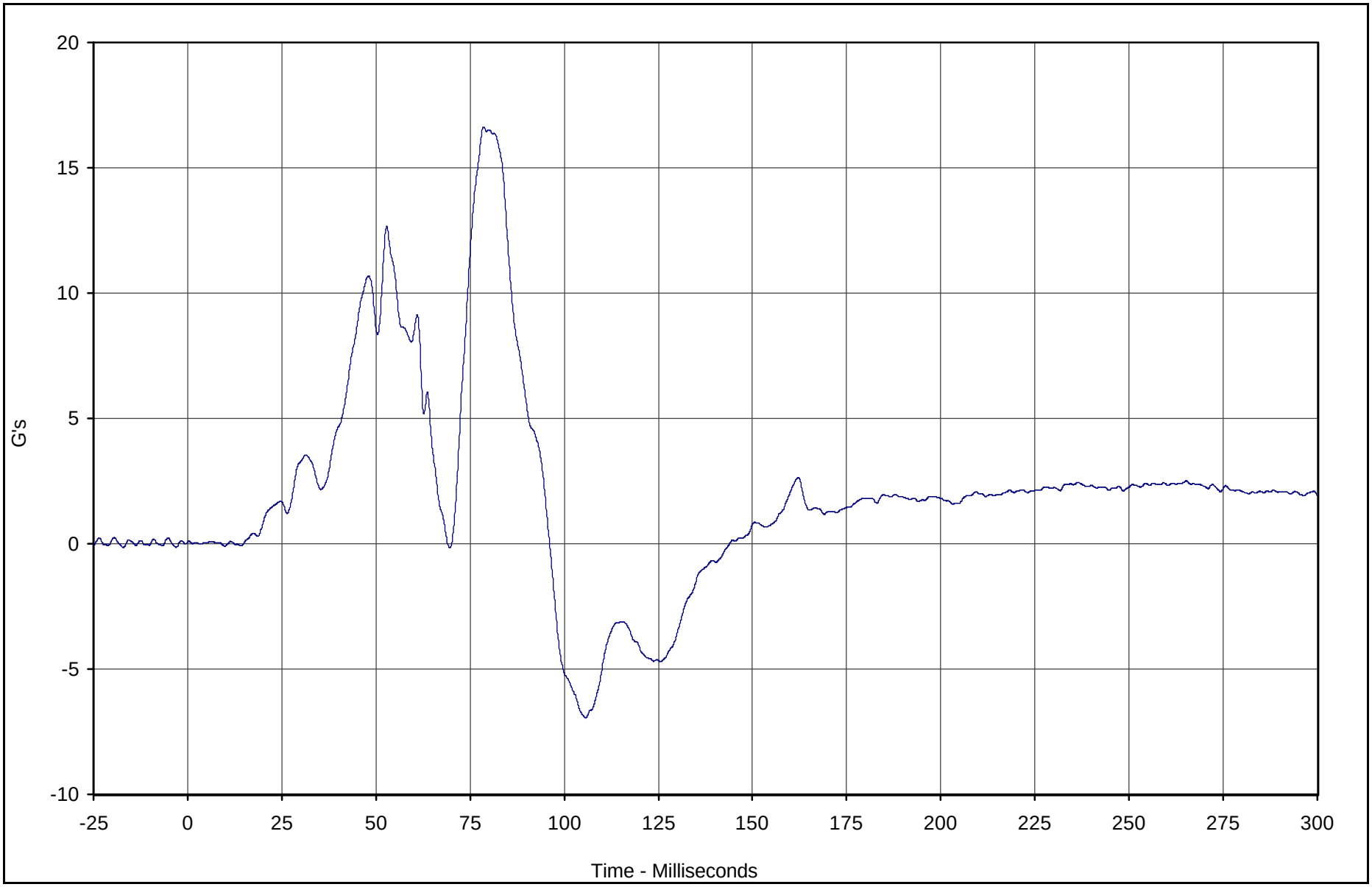
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Primary Y	058	FIL	G's	4.7	50.2	-4.6	80.8	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



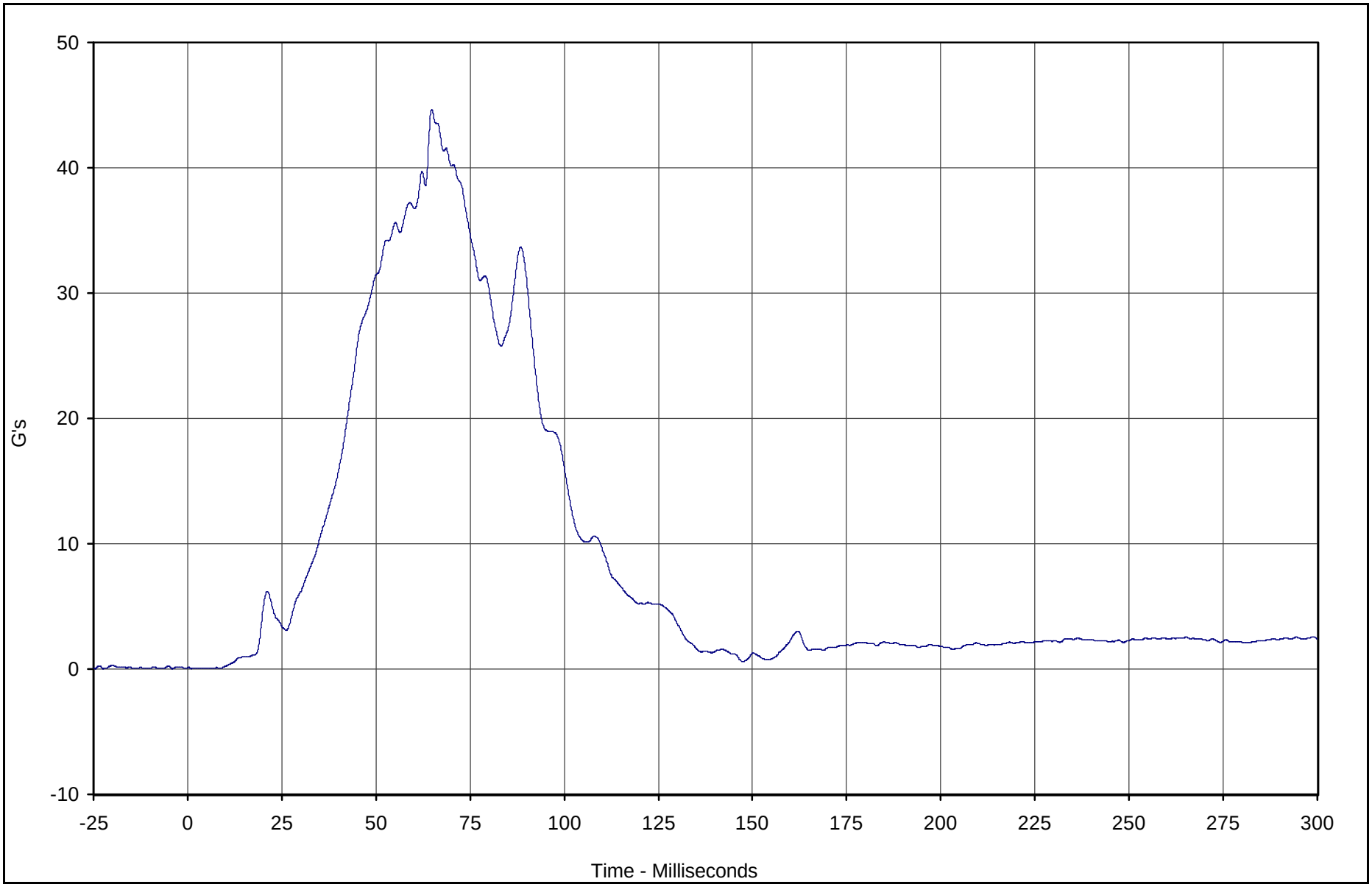
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Primary Z	059	FIL	G's	16.6	78.6	-7.0	105.7	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



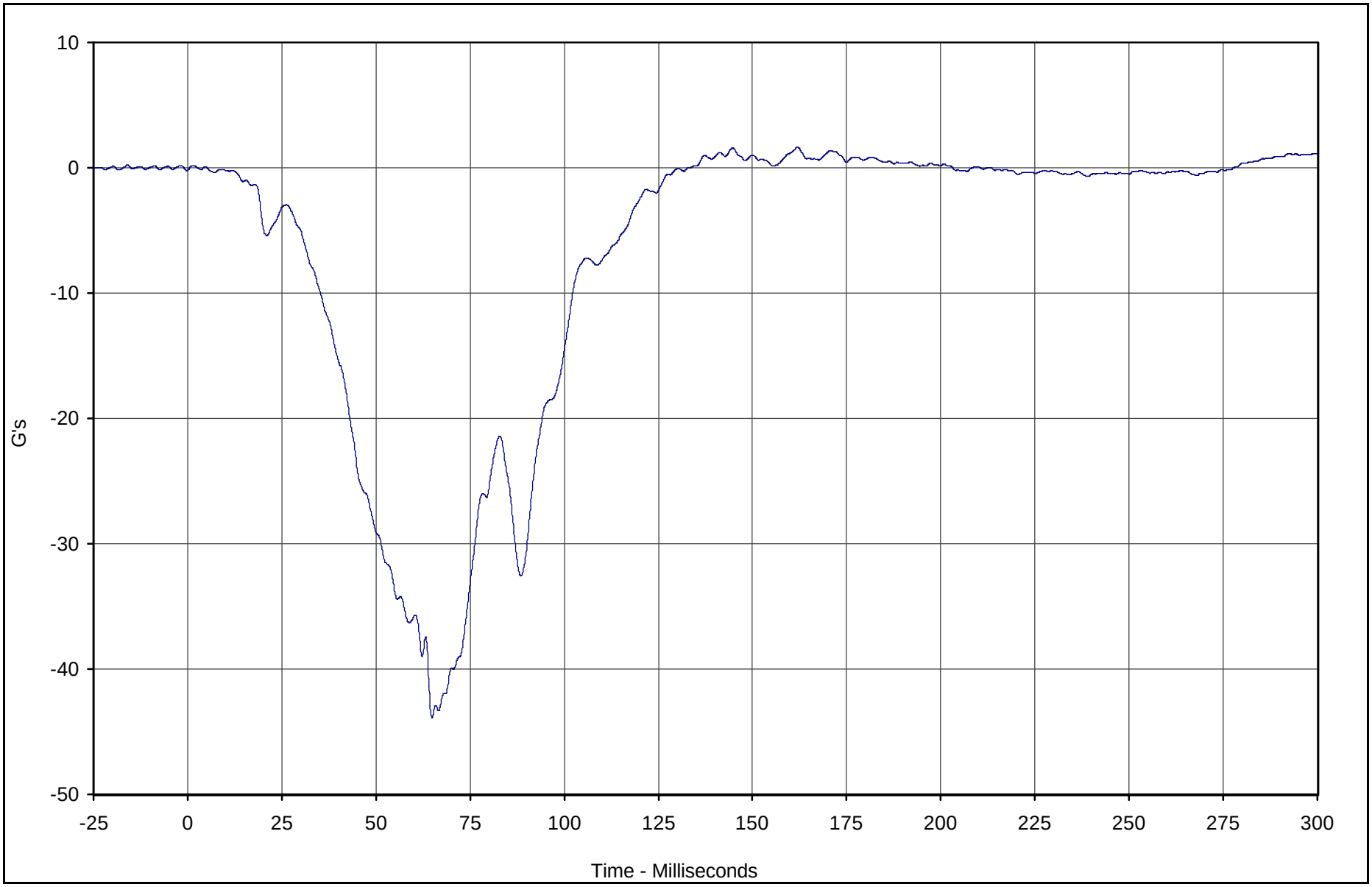
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Resultant Primary	057	RES	G's	44.7	64.8	0.0	1.0	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



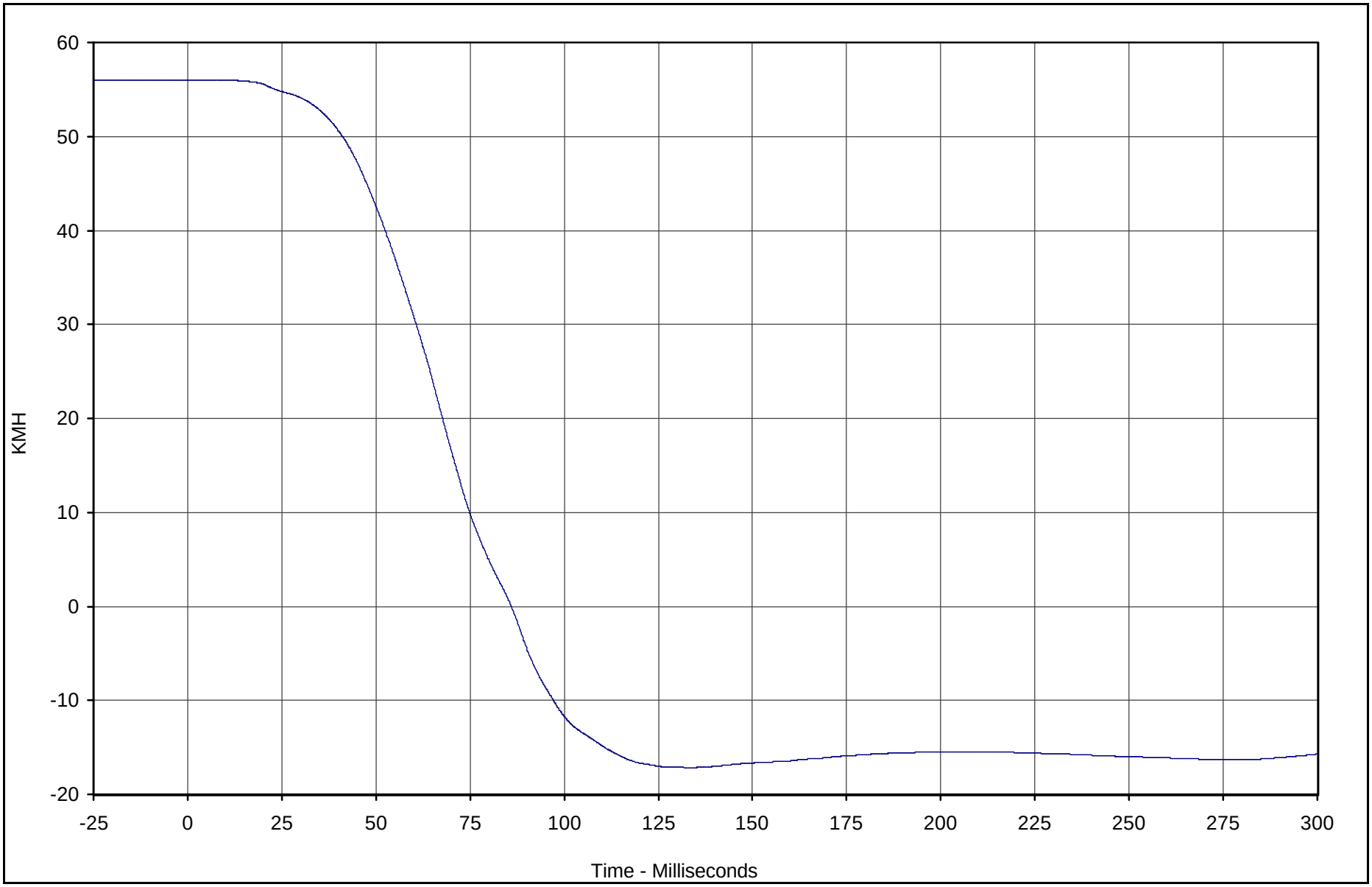
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Redundant X	060	FIL	G's	1.7	161.9	-43.9	64.9	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



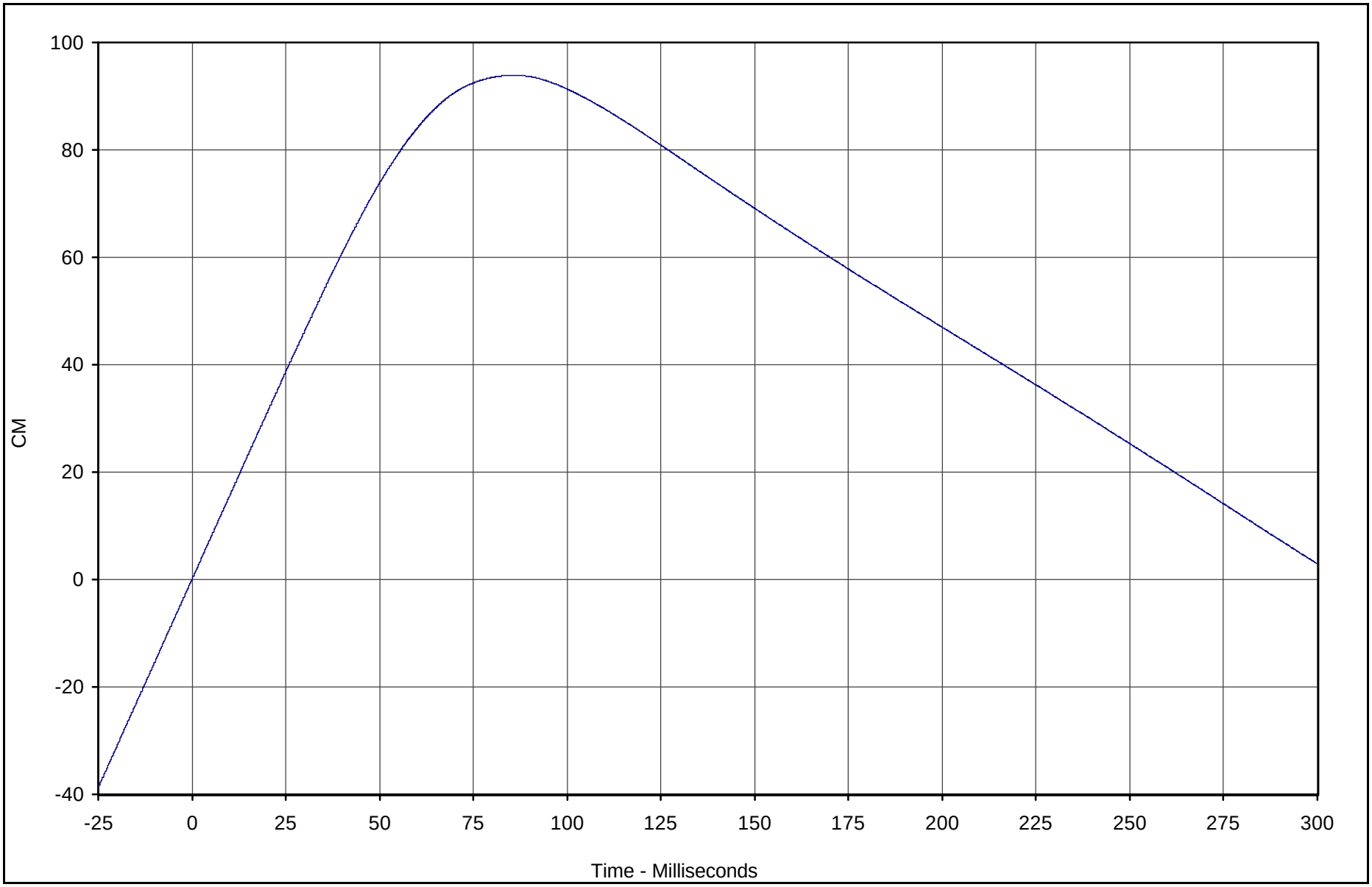
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Redundant X Velocity	060	IN1	KMH	56.0	2.6	-17.1	133.1	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



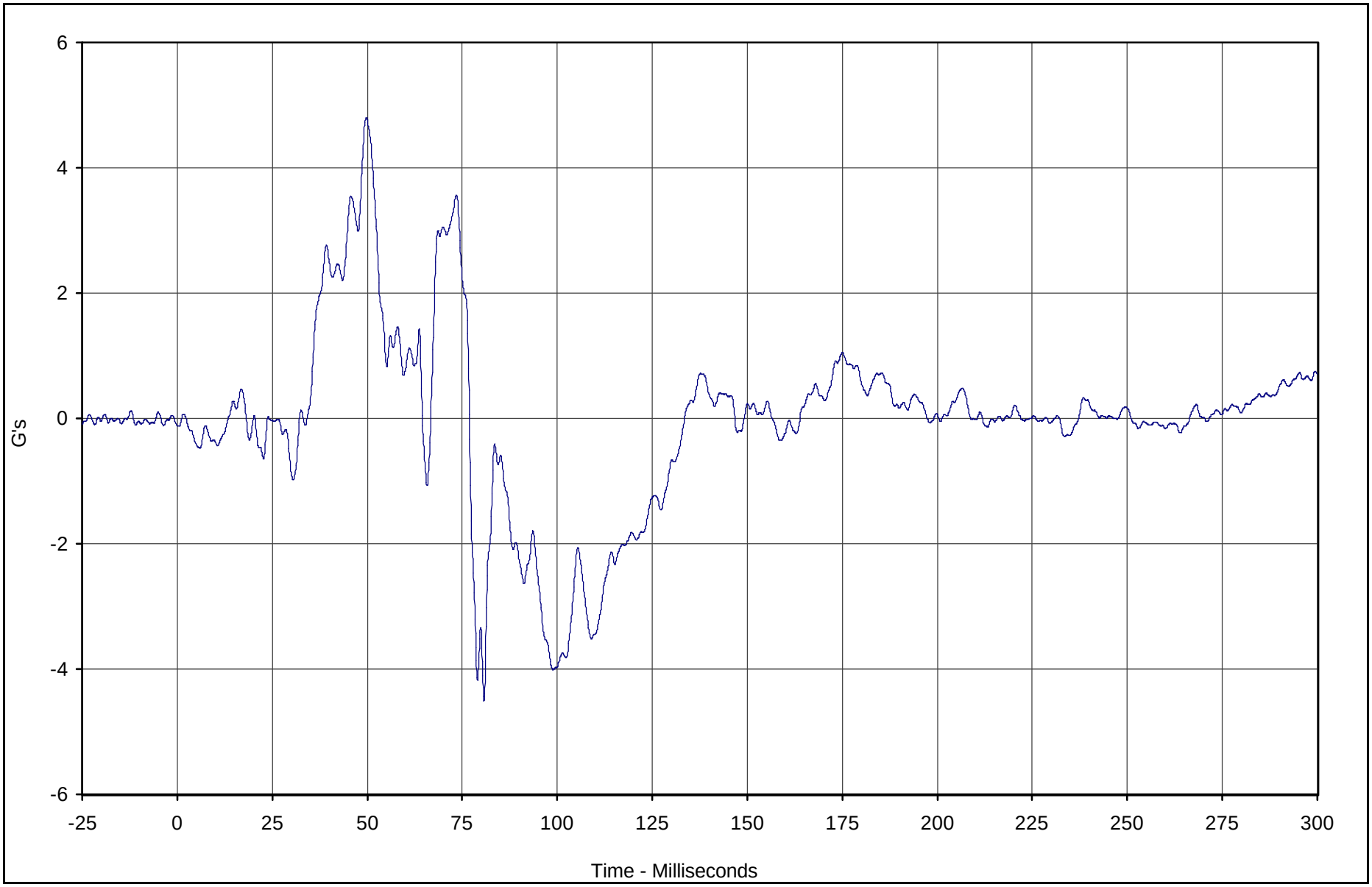
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Redundant X Displ.	060	IN2	CM	93.9	86.0	0.0	0.0	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



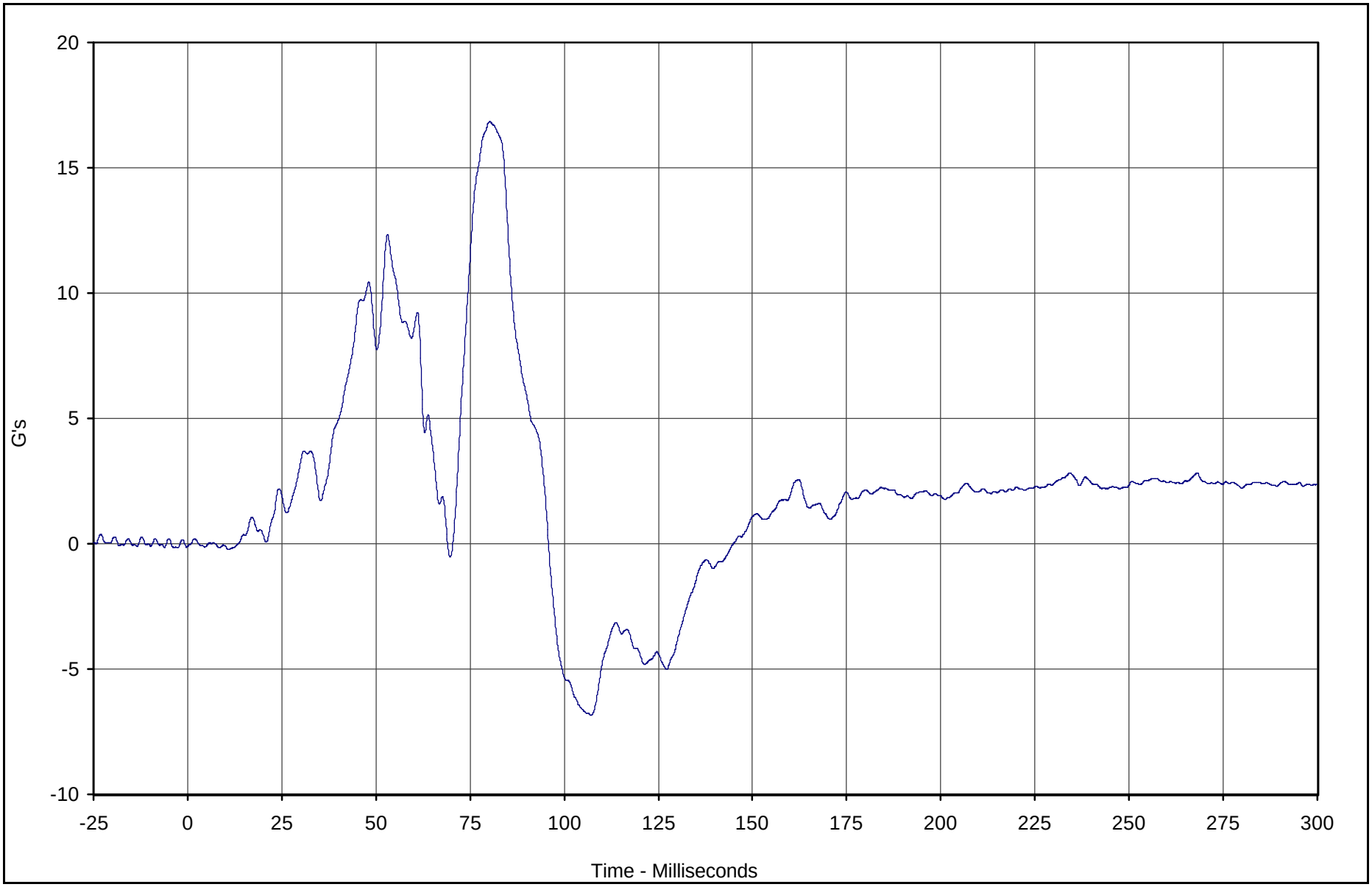
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Redundant Y	061	FIL	G's	4.8	49.8	-4.5	80.7	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



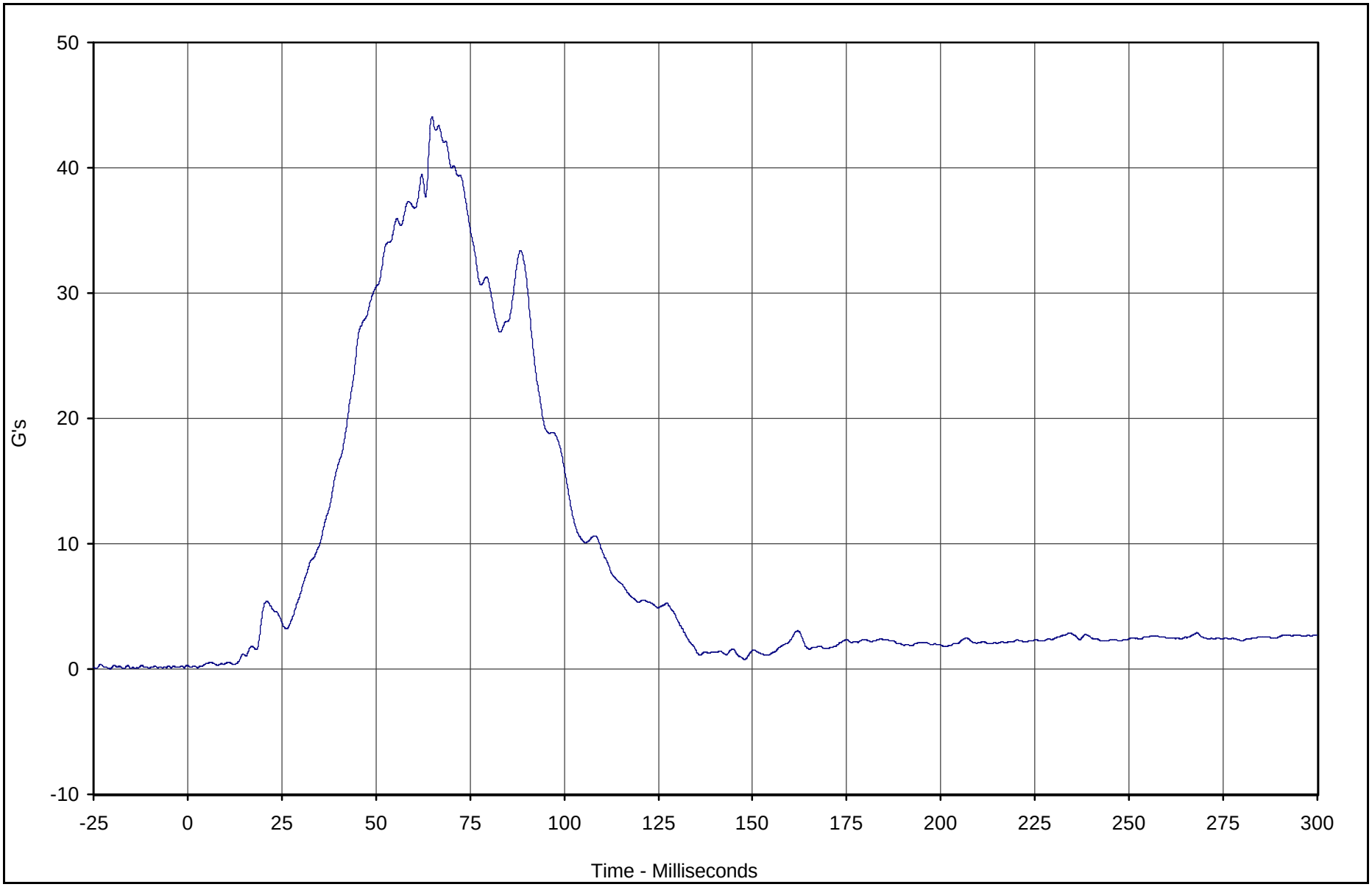
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Redundant Z	062	FIL	G's	16.8	80.2	-6.8	107.1	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



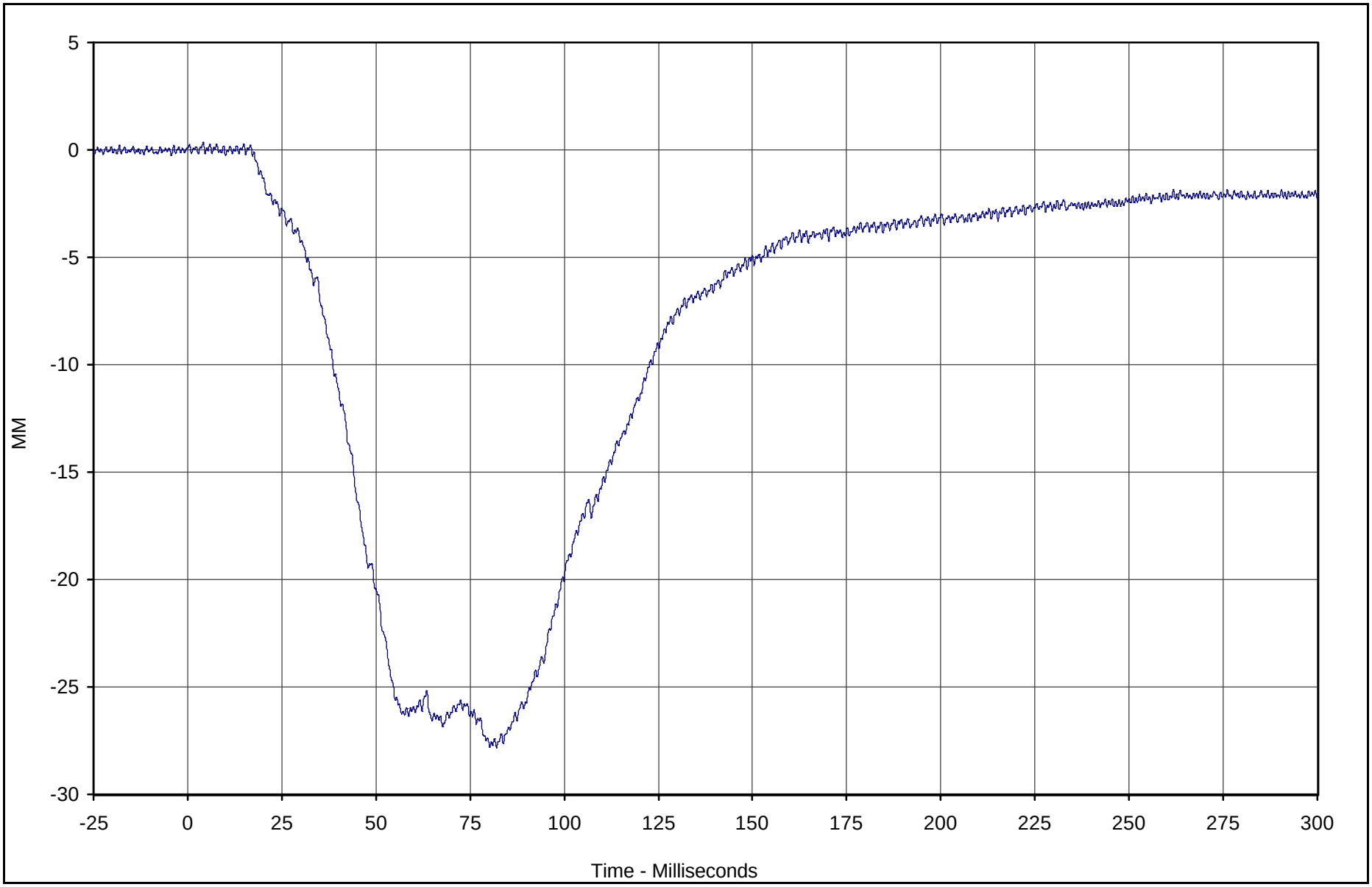
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Resultant Redundant	060	RES	G's	44.1	64.9	0.1	2.6	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



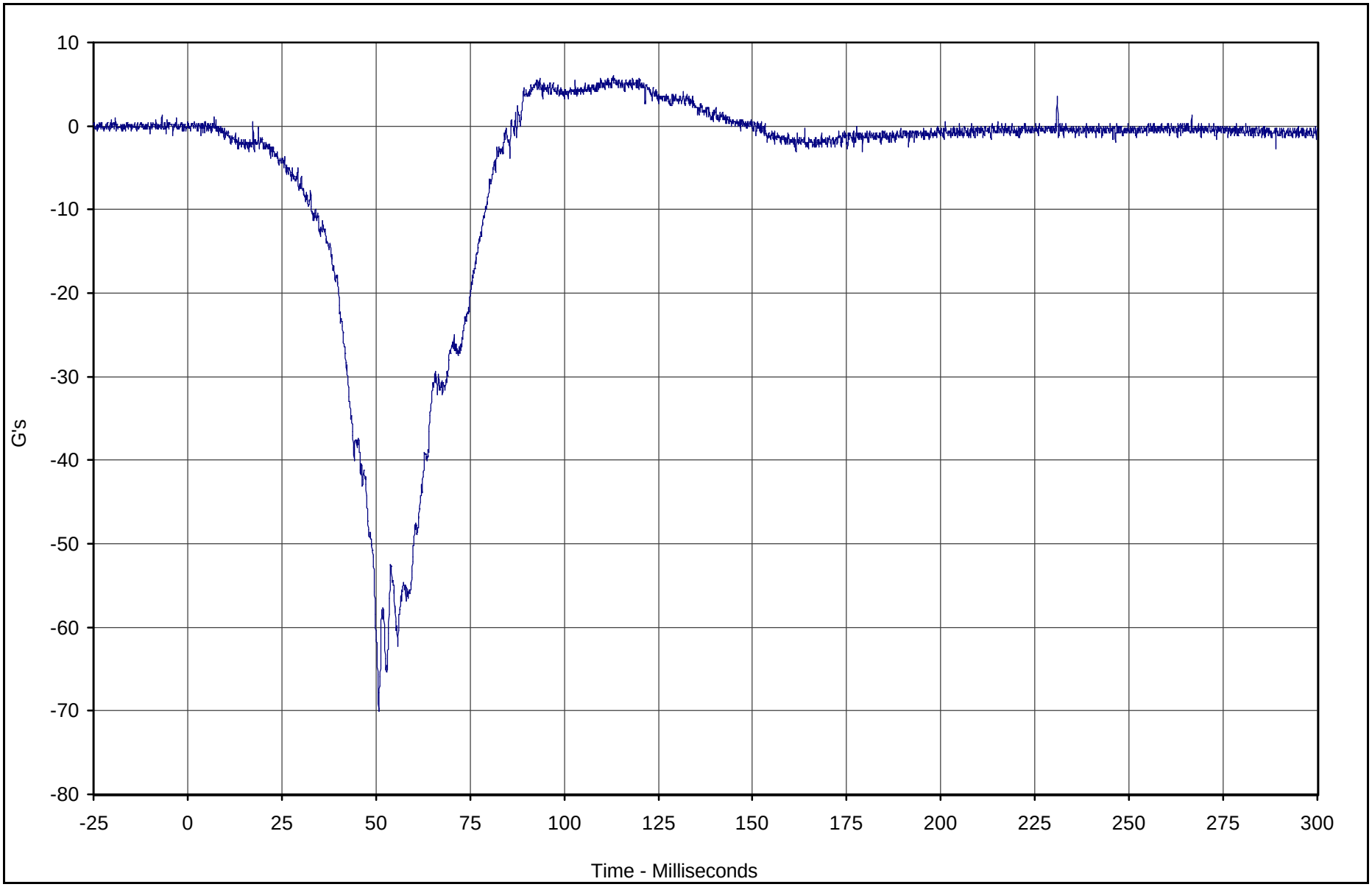
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Displacement X	063	FIL	MM	0.4	4.1	-27.8	82.1	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



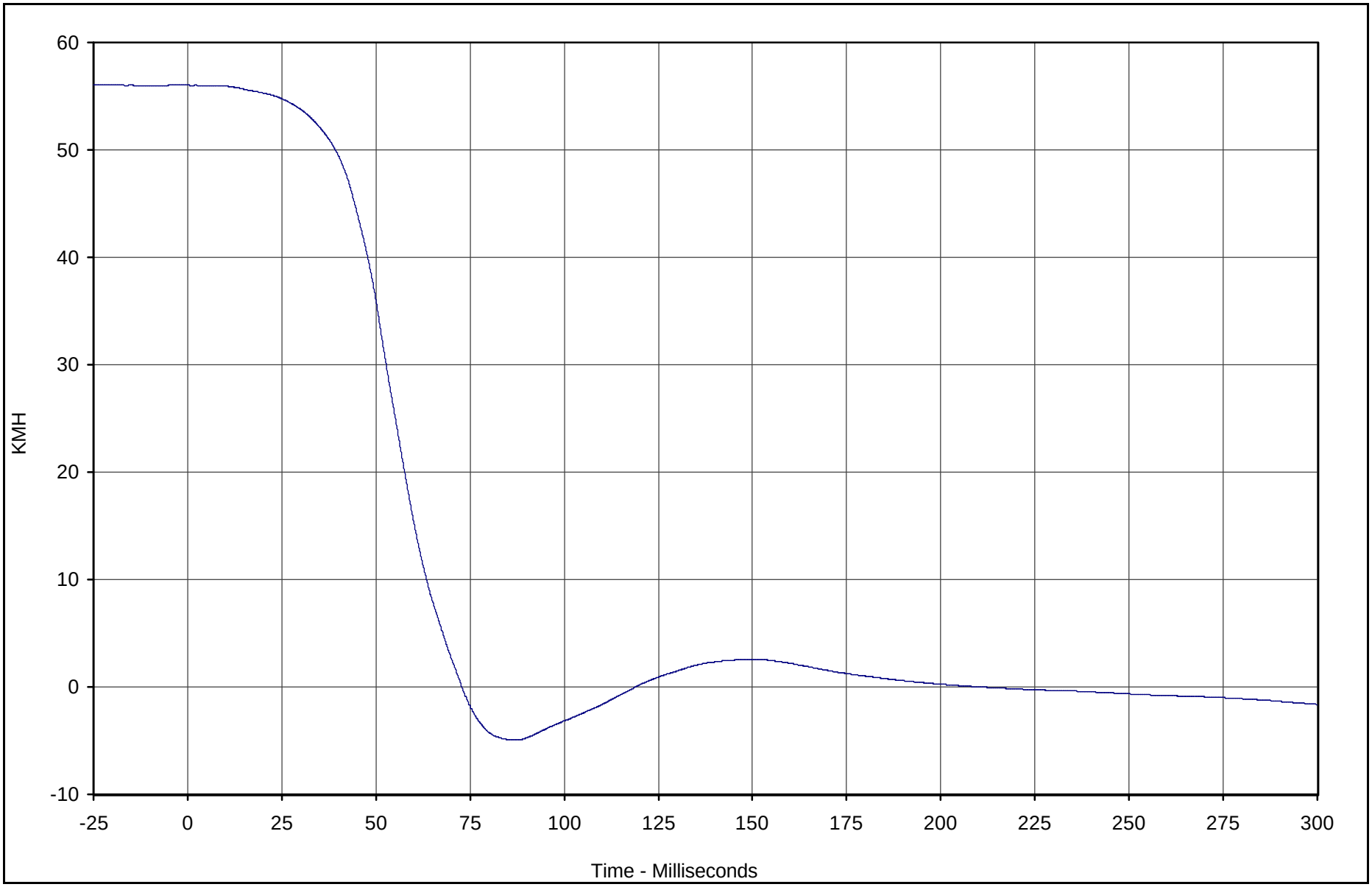
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Pelvis X	064	FIL	G's	6.0	113.0	-70.0	50.8	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



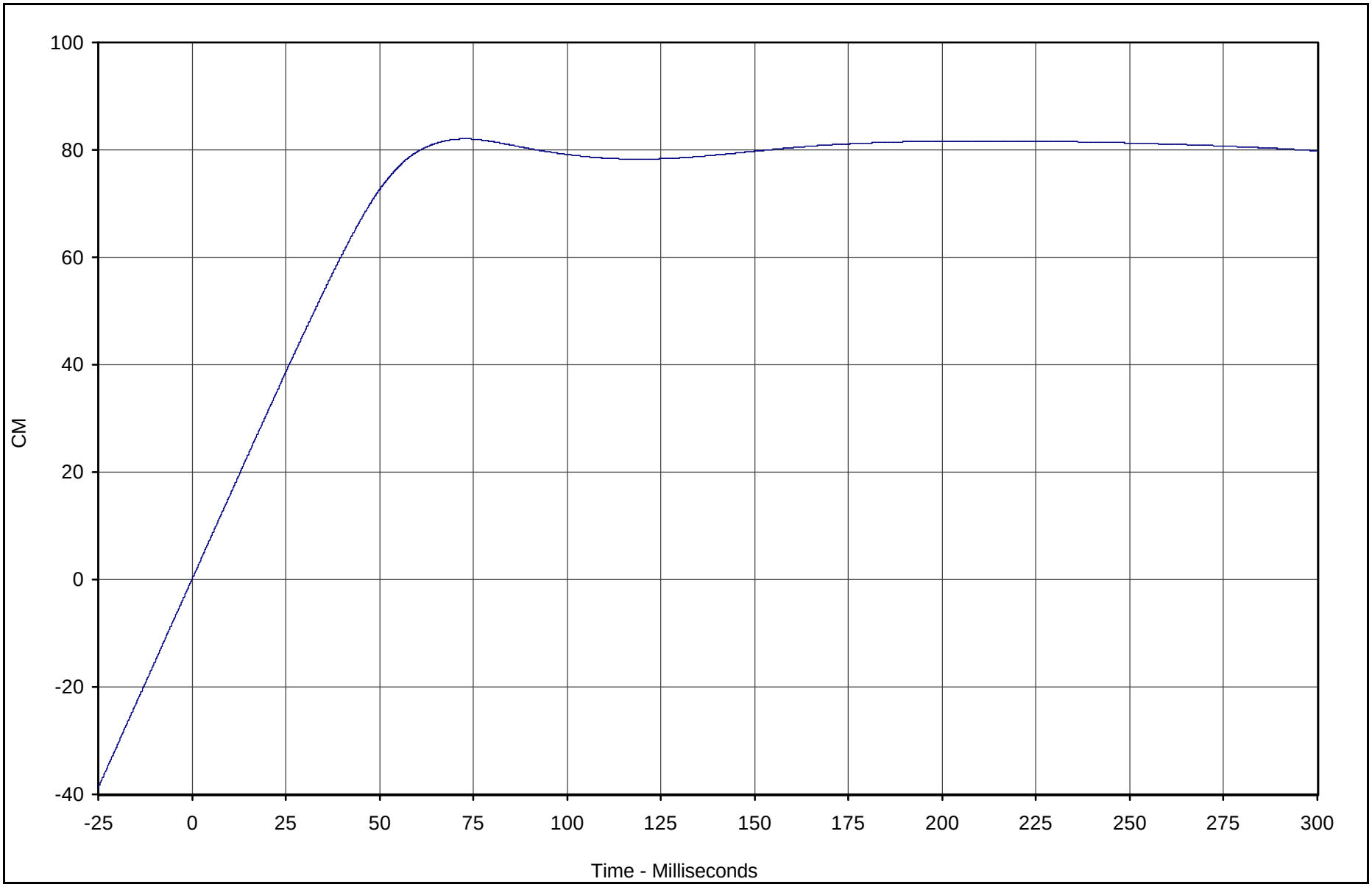
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Pelvis X Velocity	064	IN1	KMH	56.0	0.0	-4.9	86.7	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



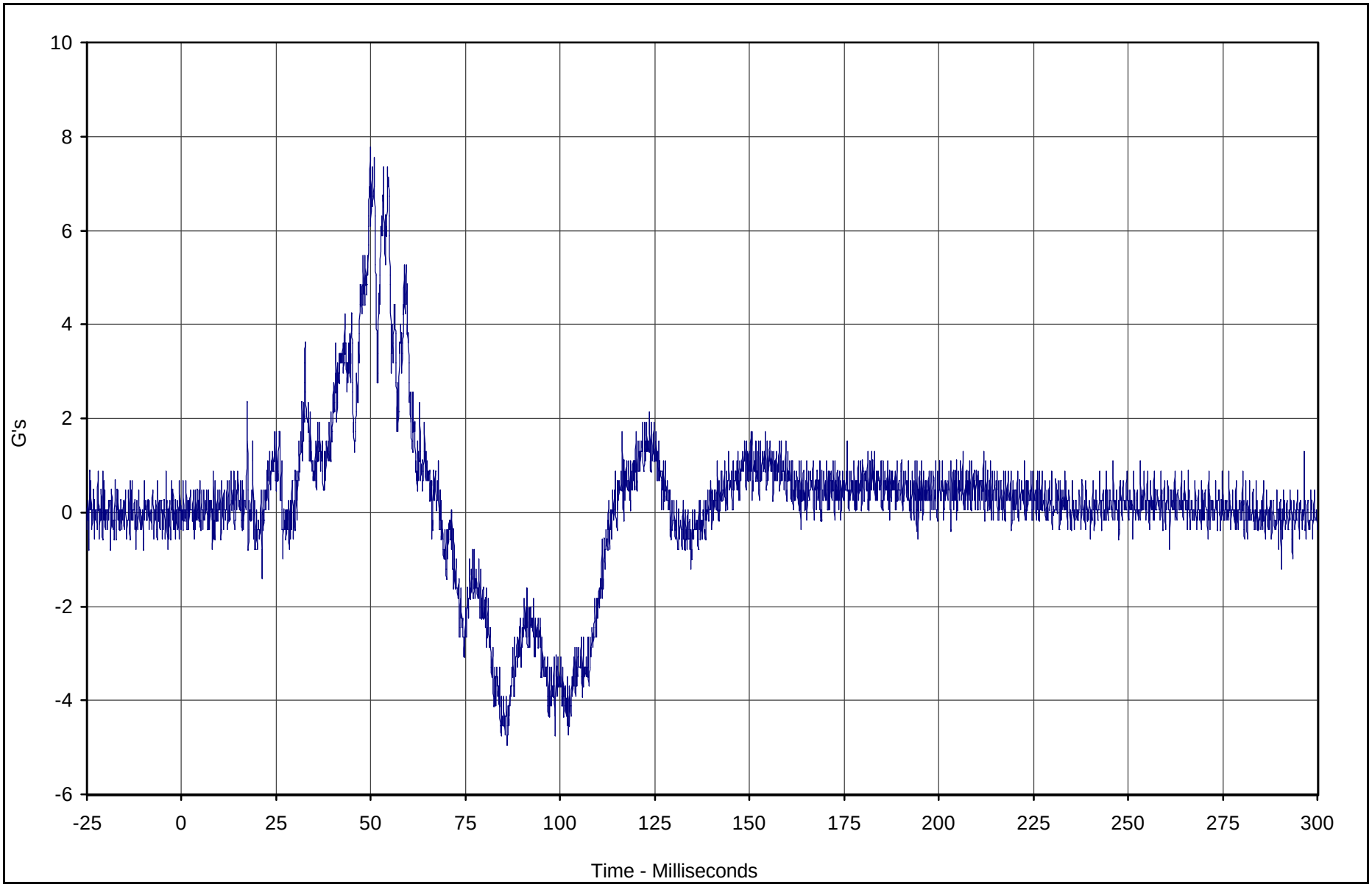
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Pelvis X Displ.	064	IN2	CM	82.0	72.8	0.0	0.0	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



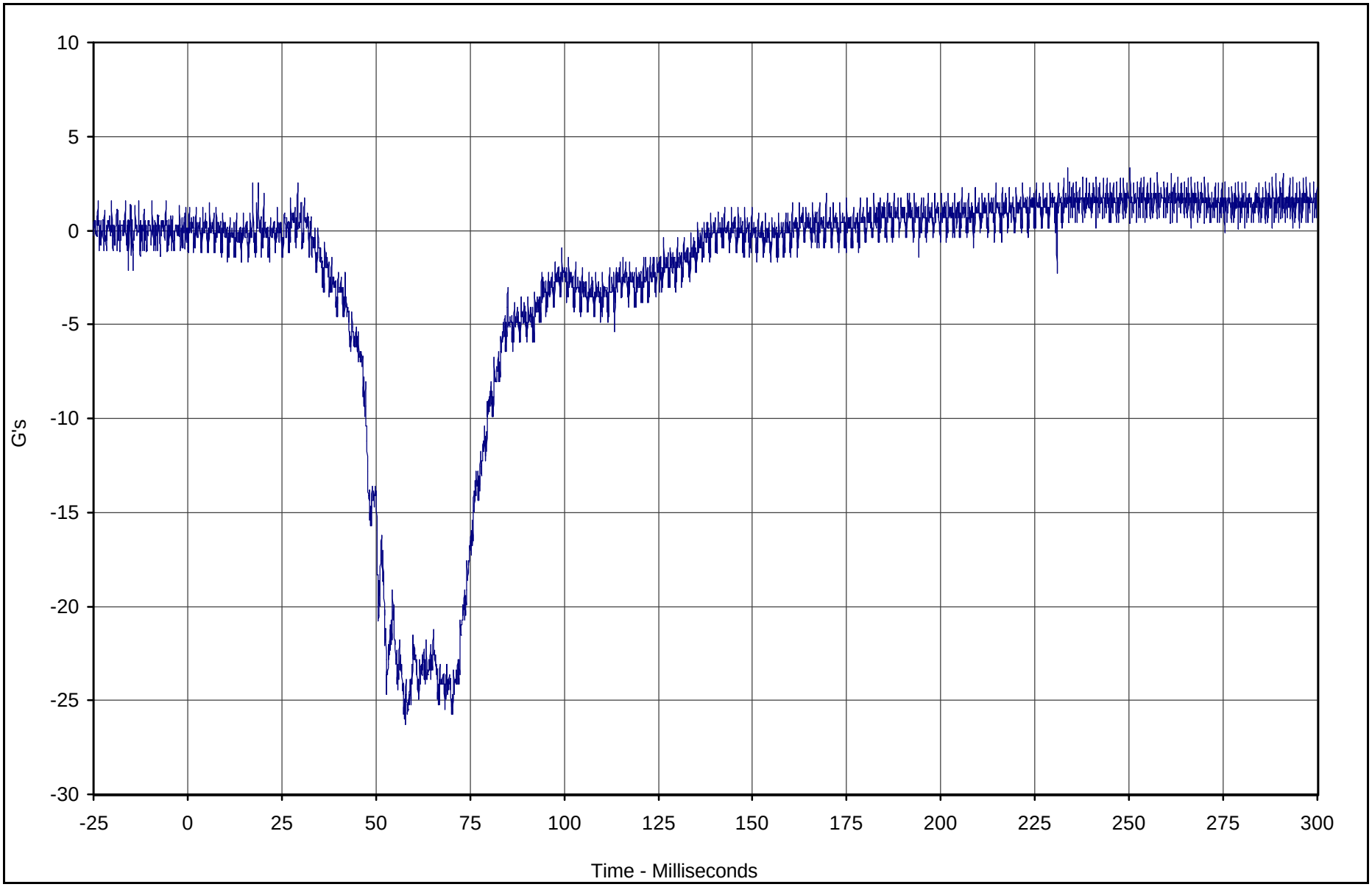
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Pelvis Y	065	FIL	G's	7.8	49.8	-5.0	86.0	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



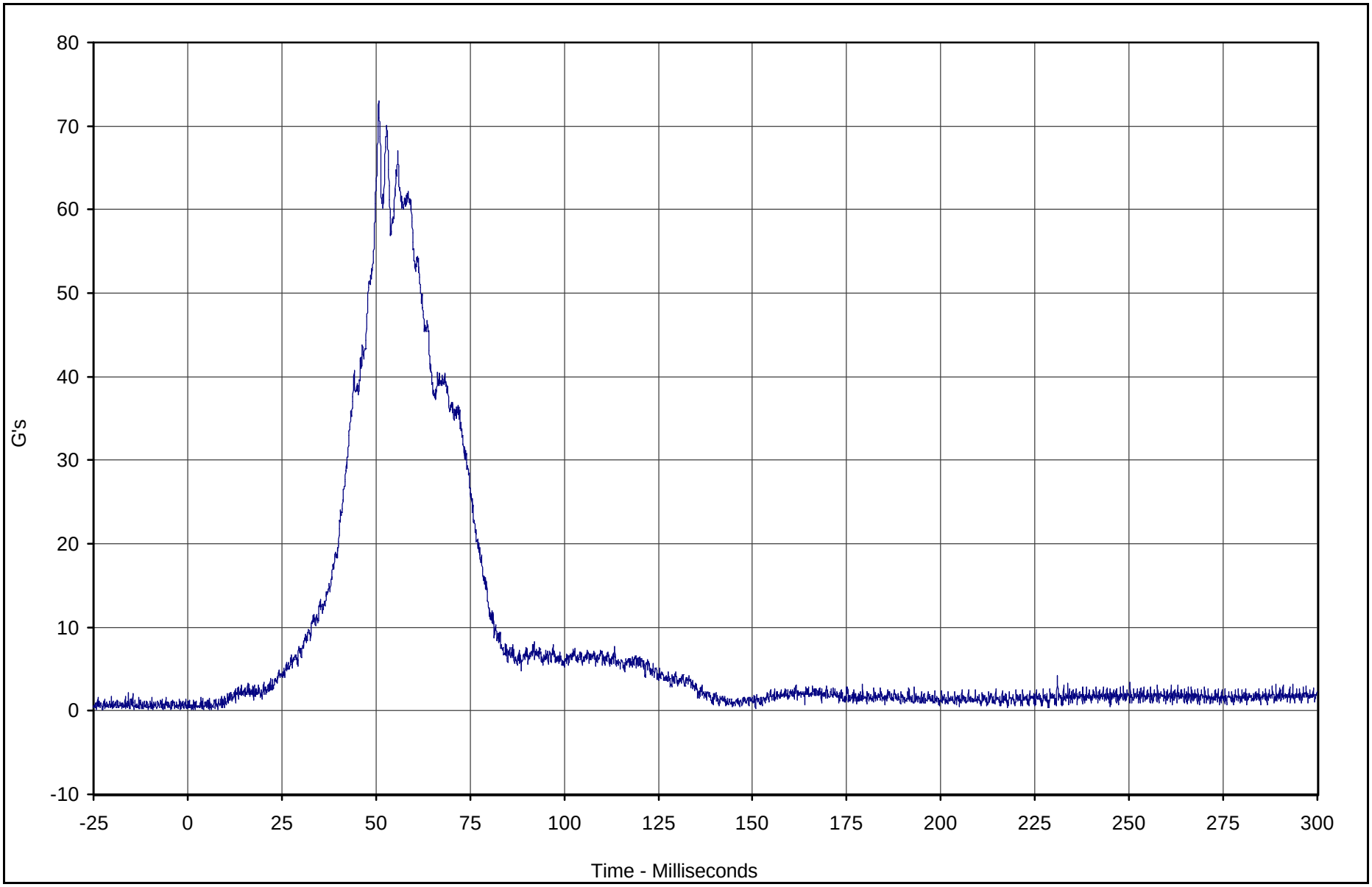
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Pelvis Z	066	FIL	G's	3.3	233.8	-26.3	57.8	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



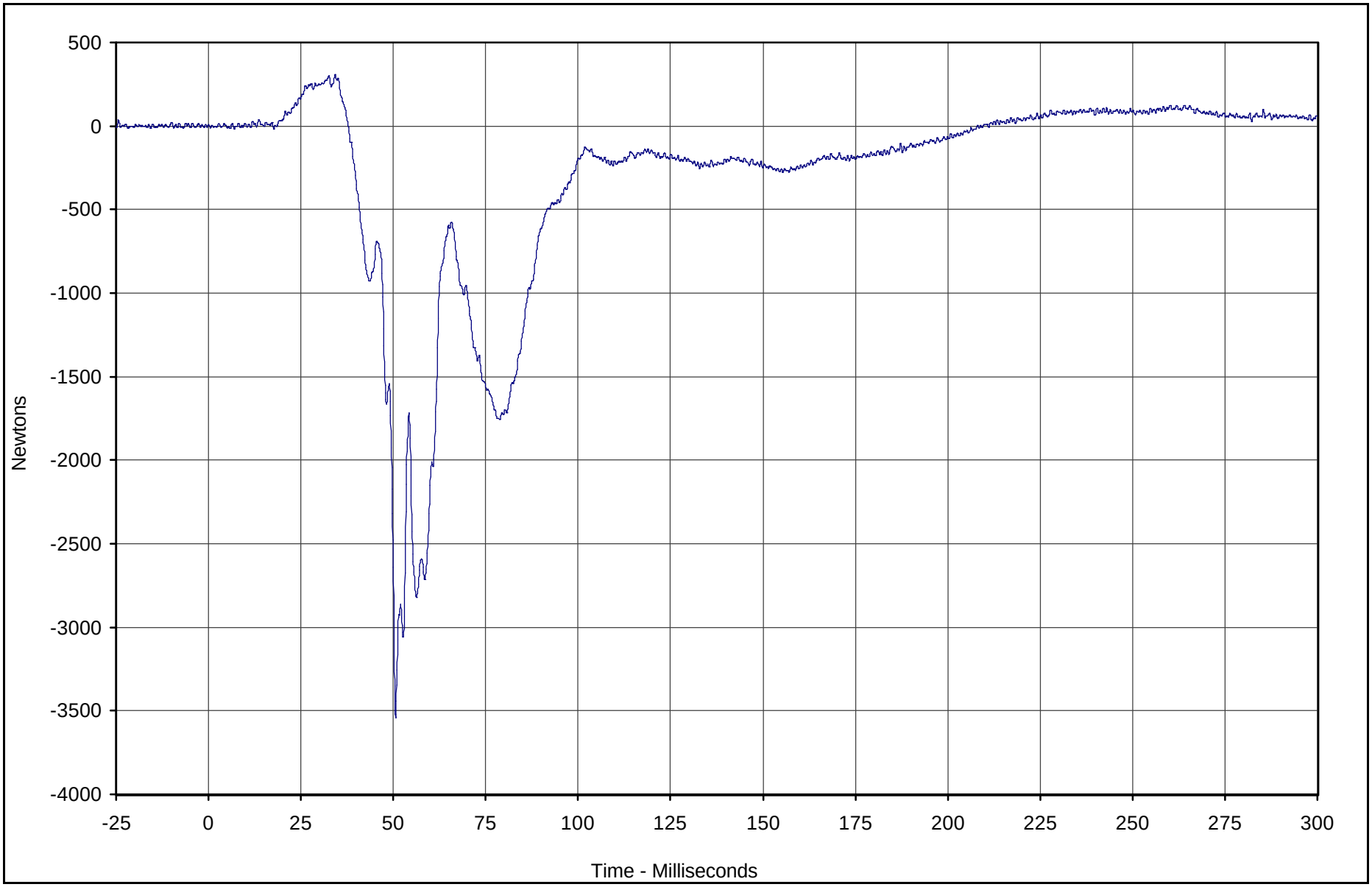
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Pelvis Resultant	066	RES	G's	73.0	50.7	0.1	1.0	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



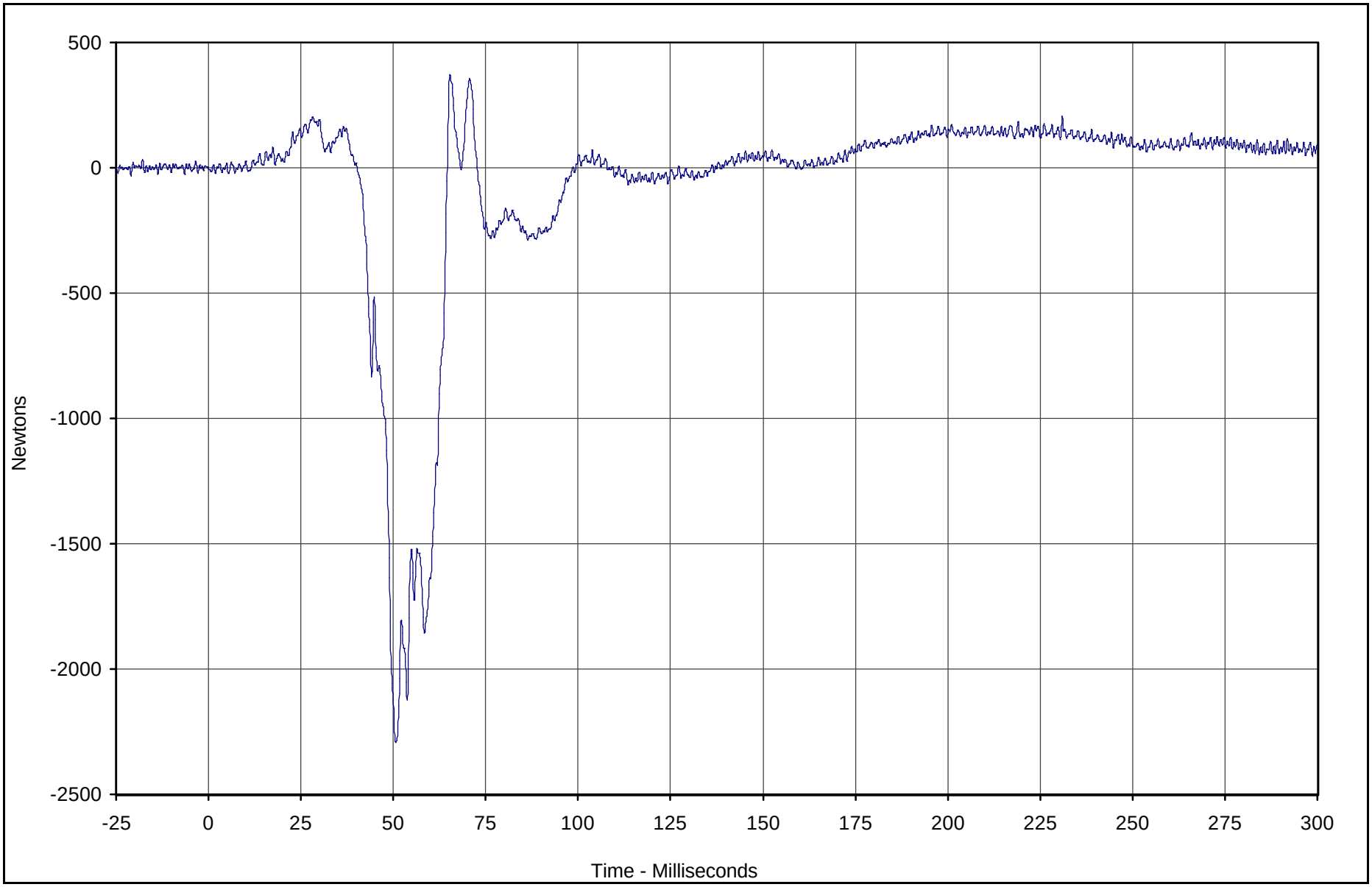
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Left Femur Force	067	FIL	Newtons	305.9	34.3	-3542.7	50.6	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



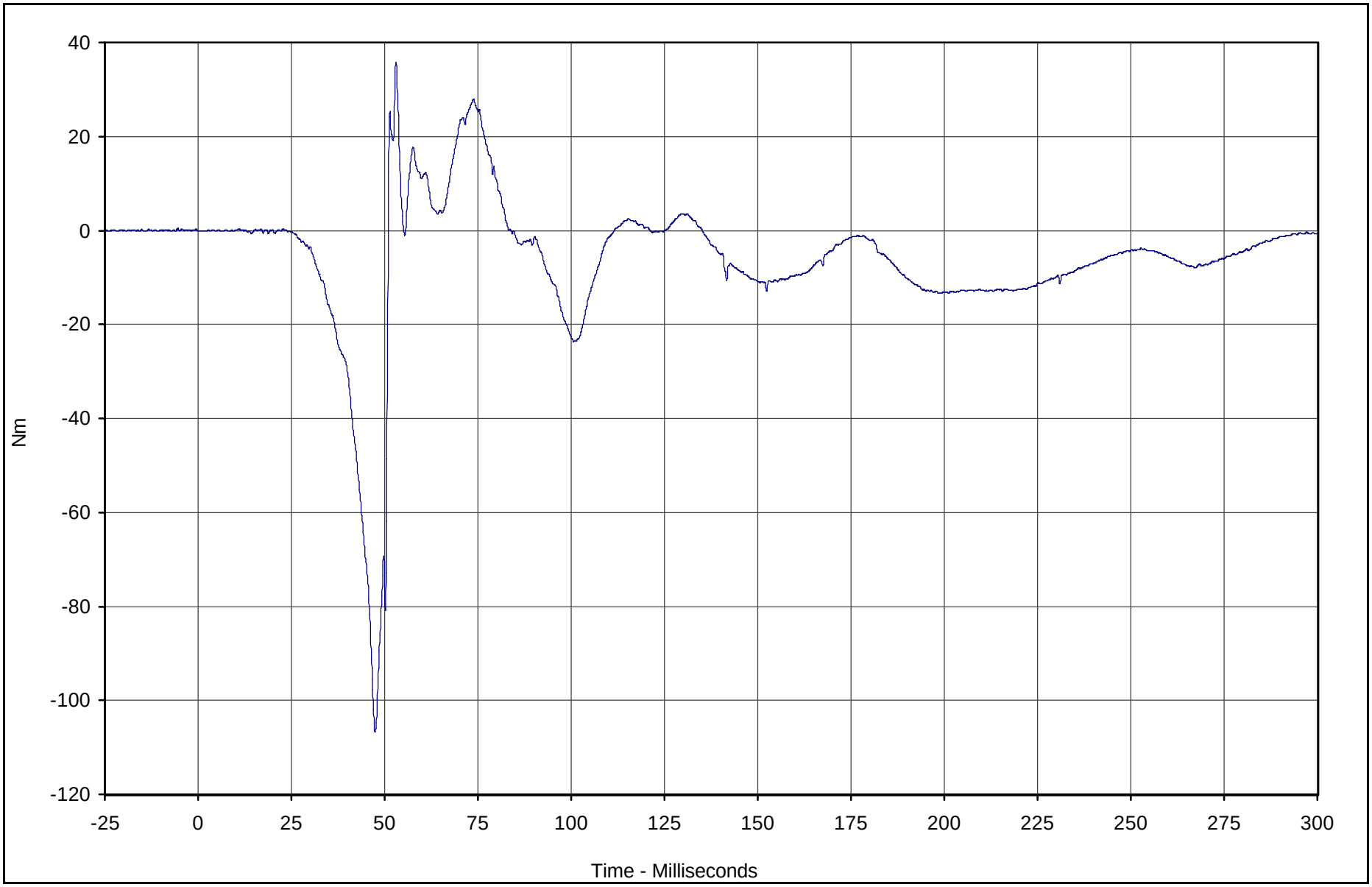
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Right Femur Force	068	FIL	Newtons	370.8	65.3	-2293.0	50.6	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



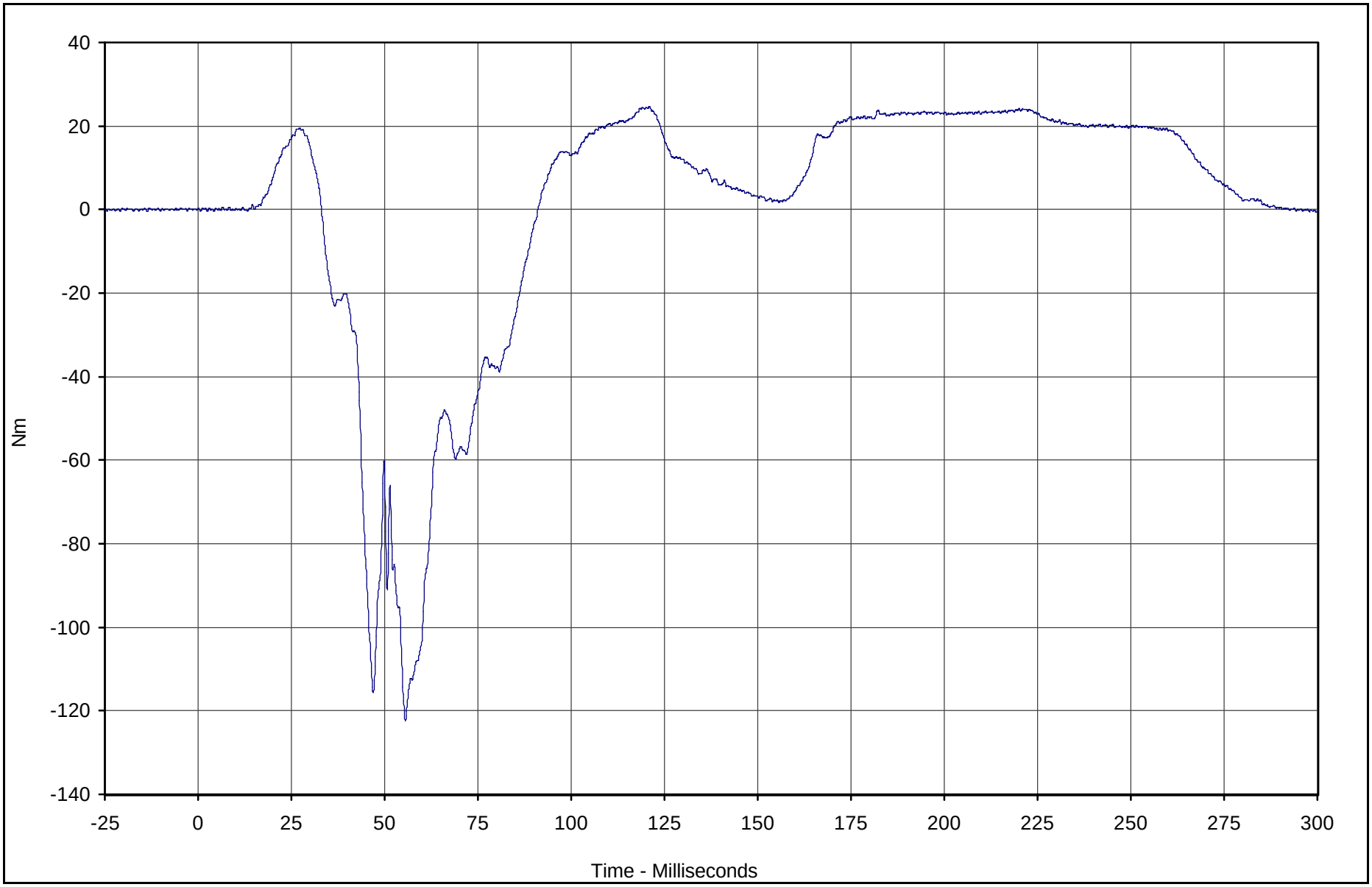
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Left Upper Tibia Moment X	069	FIL	Nm	35.8	53.1	-106.8	47.5	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



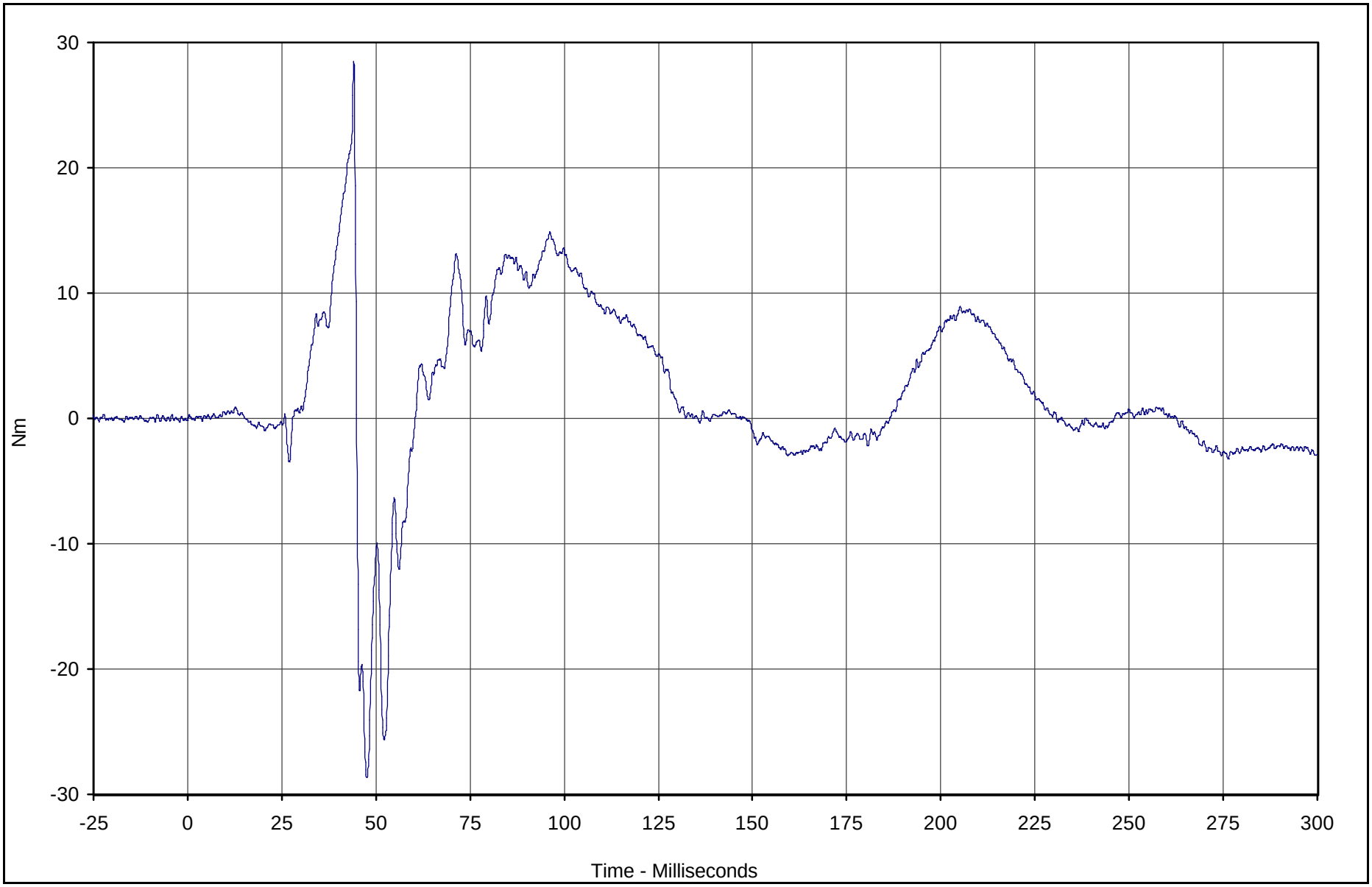
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Left Upper Tibia Moment Y	070	FIL	Nm	24.6	120.9	-122.4	55.6	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



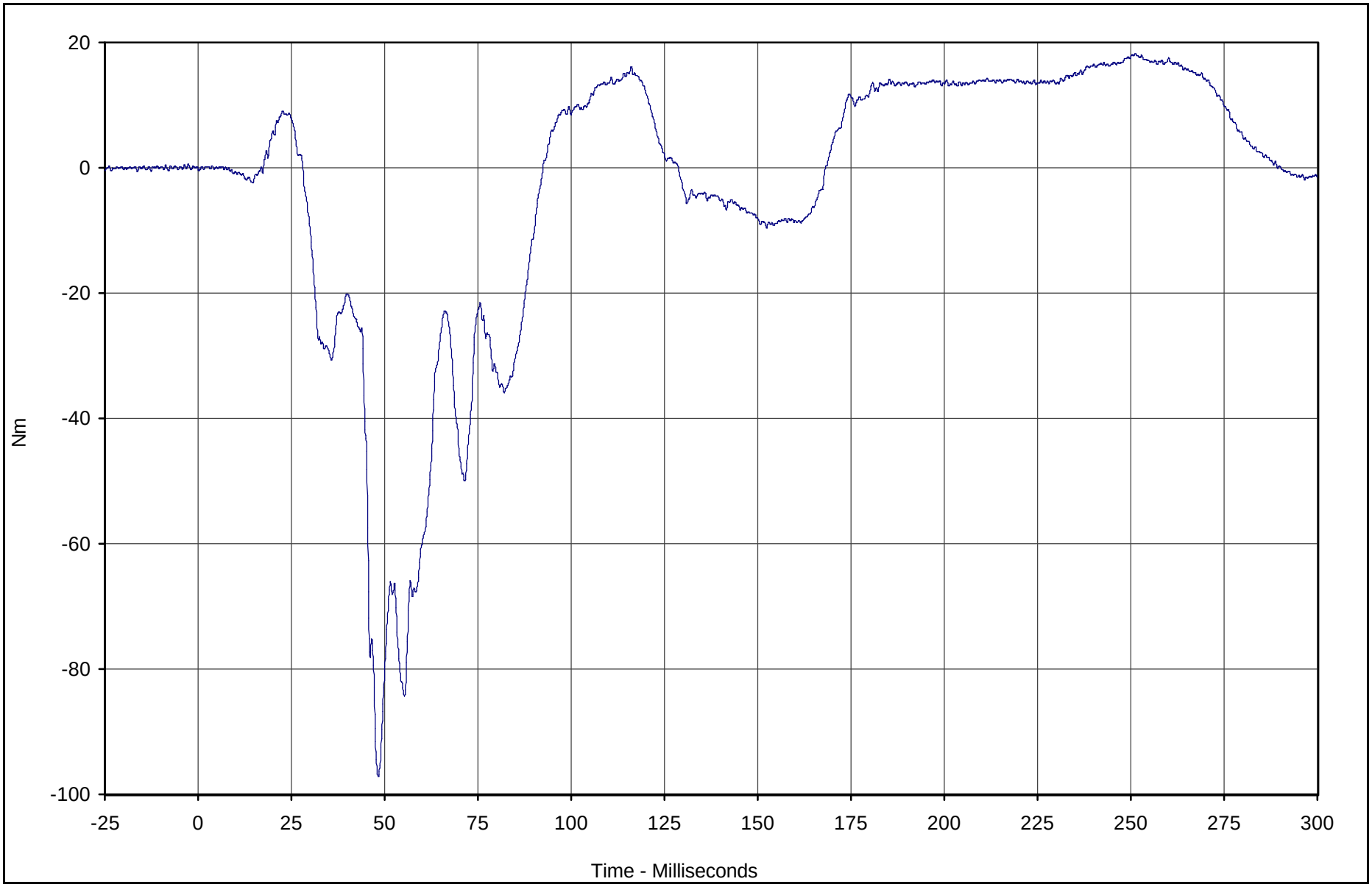
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Right Upper Tibia Moment X	071	FIL	Nm	28.5	44.1	-28.6	47.6	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



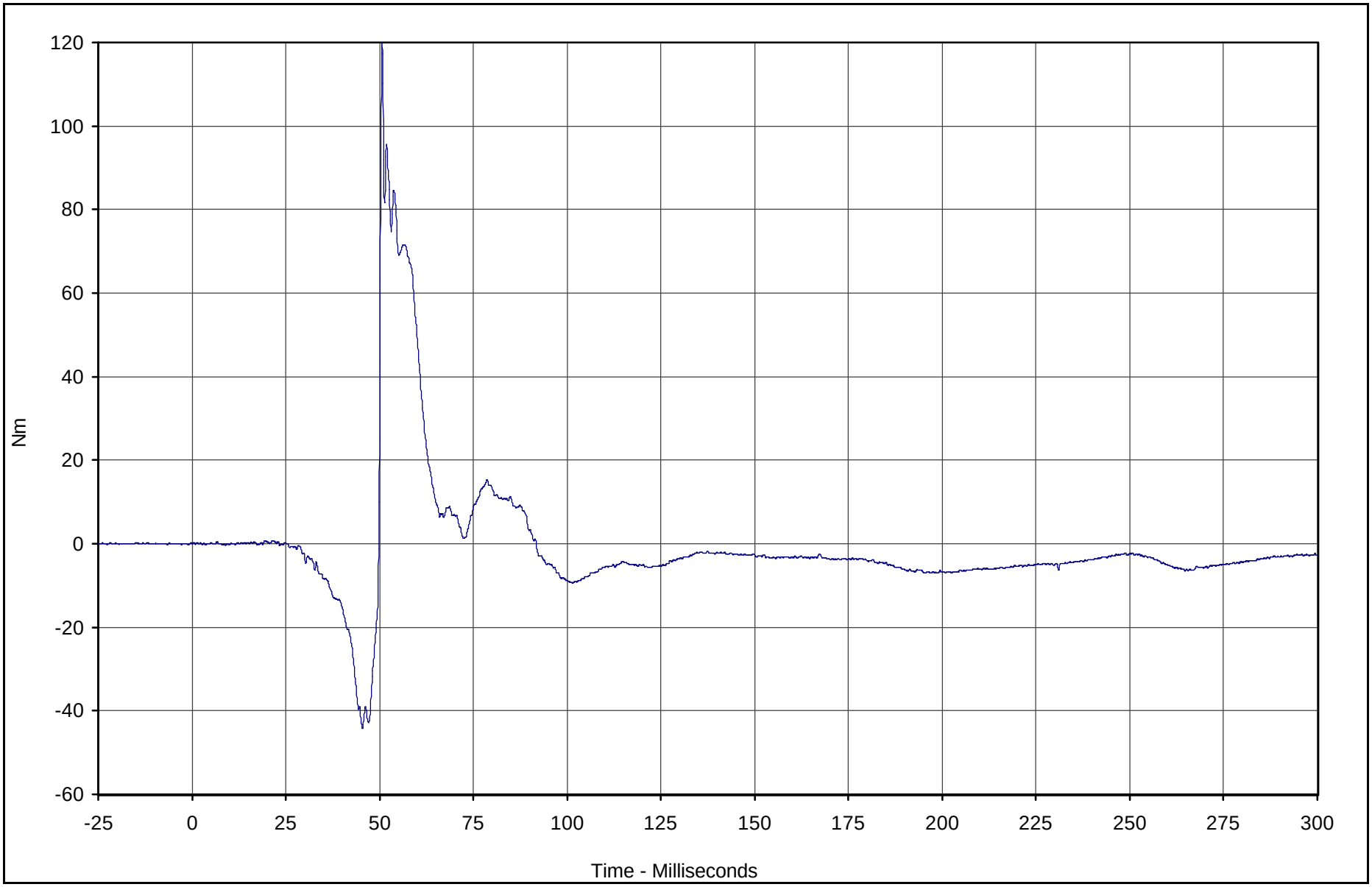
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Right Upper Tibia Moment Y	072	FIL	Nm	18.3	251.1	-97.1	48.3	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



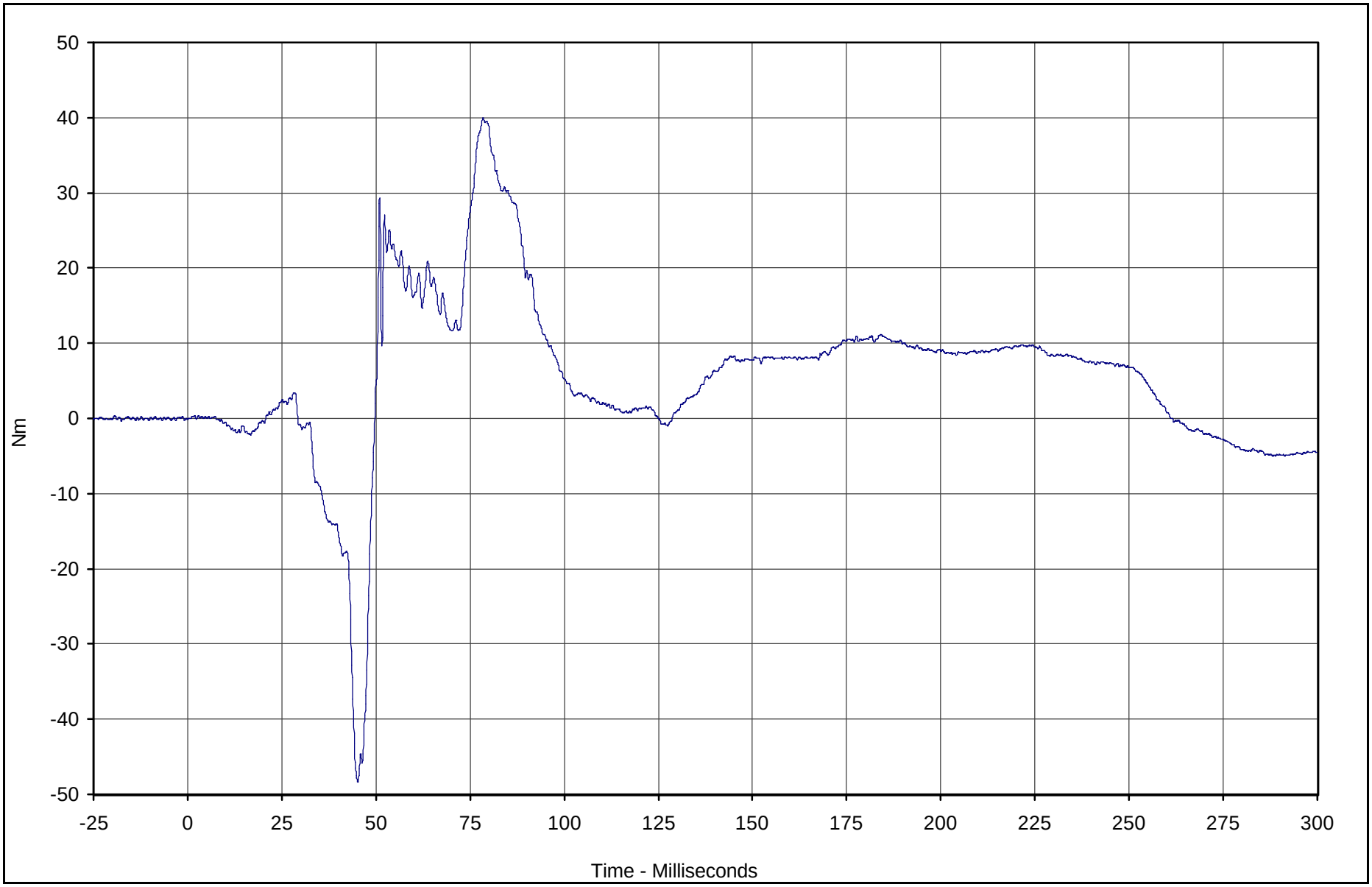
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Left Lower Tibia Moment X	073	FIL	Nm	119.9	50.7	-44.3	45.5	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



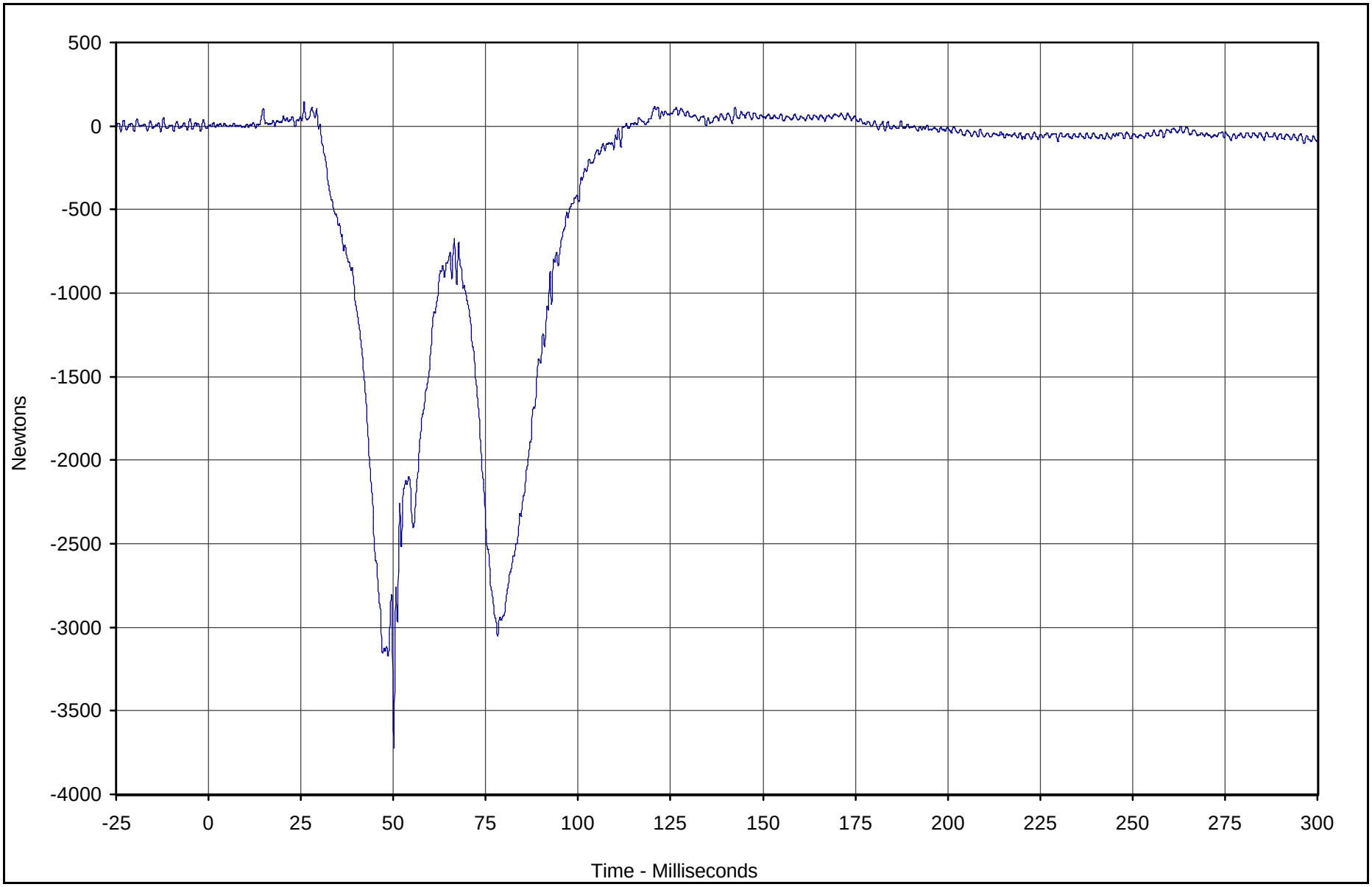
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Left Lower Tibia Moment Y	074	FIL	Nm	40.0	78.5	-48.3	45.2	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



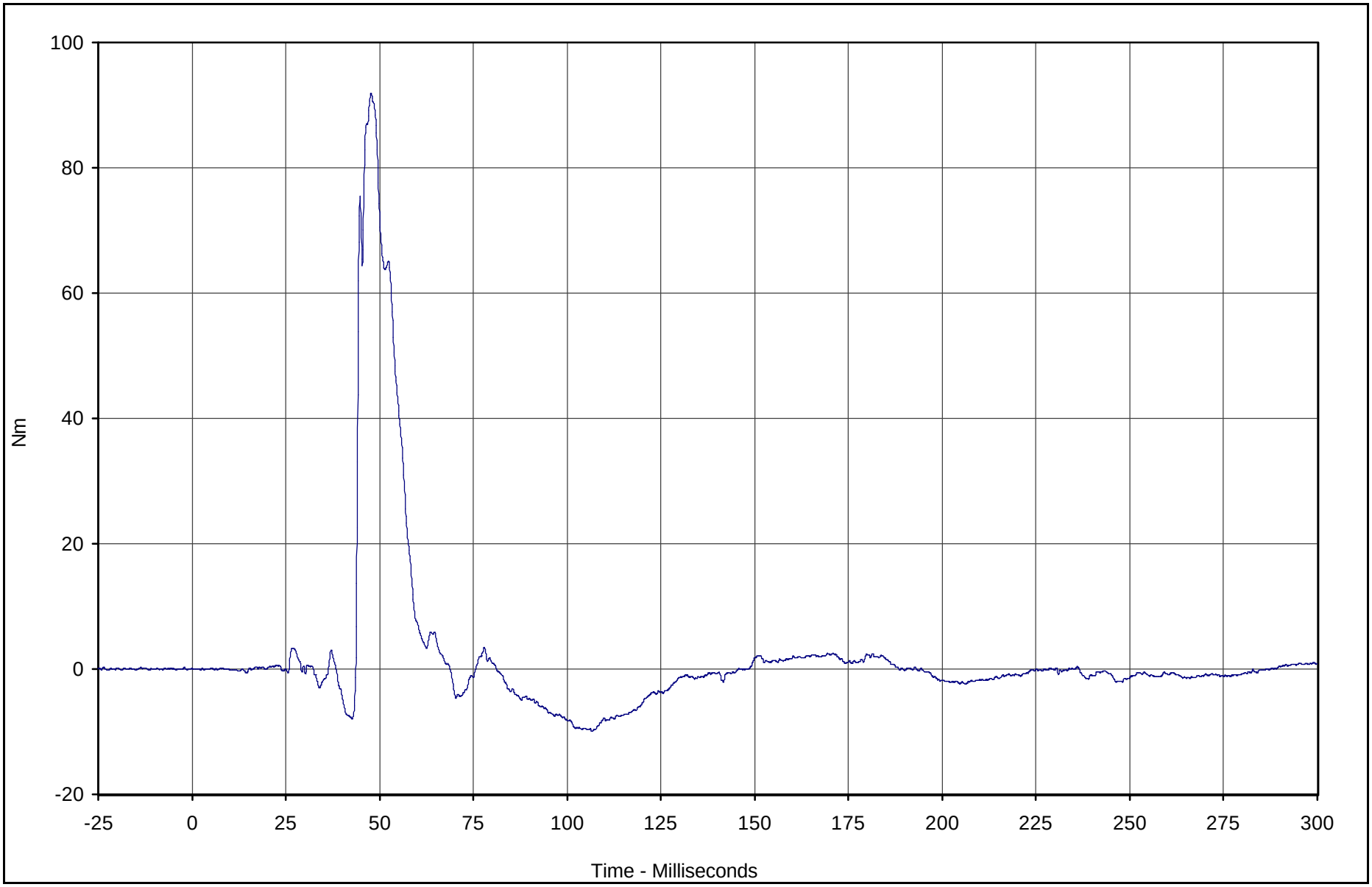
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Left Lower Tibia Force Z	075	FIL	Newtons	145.3	25.9	-3725.0	50.2	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



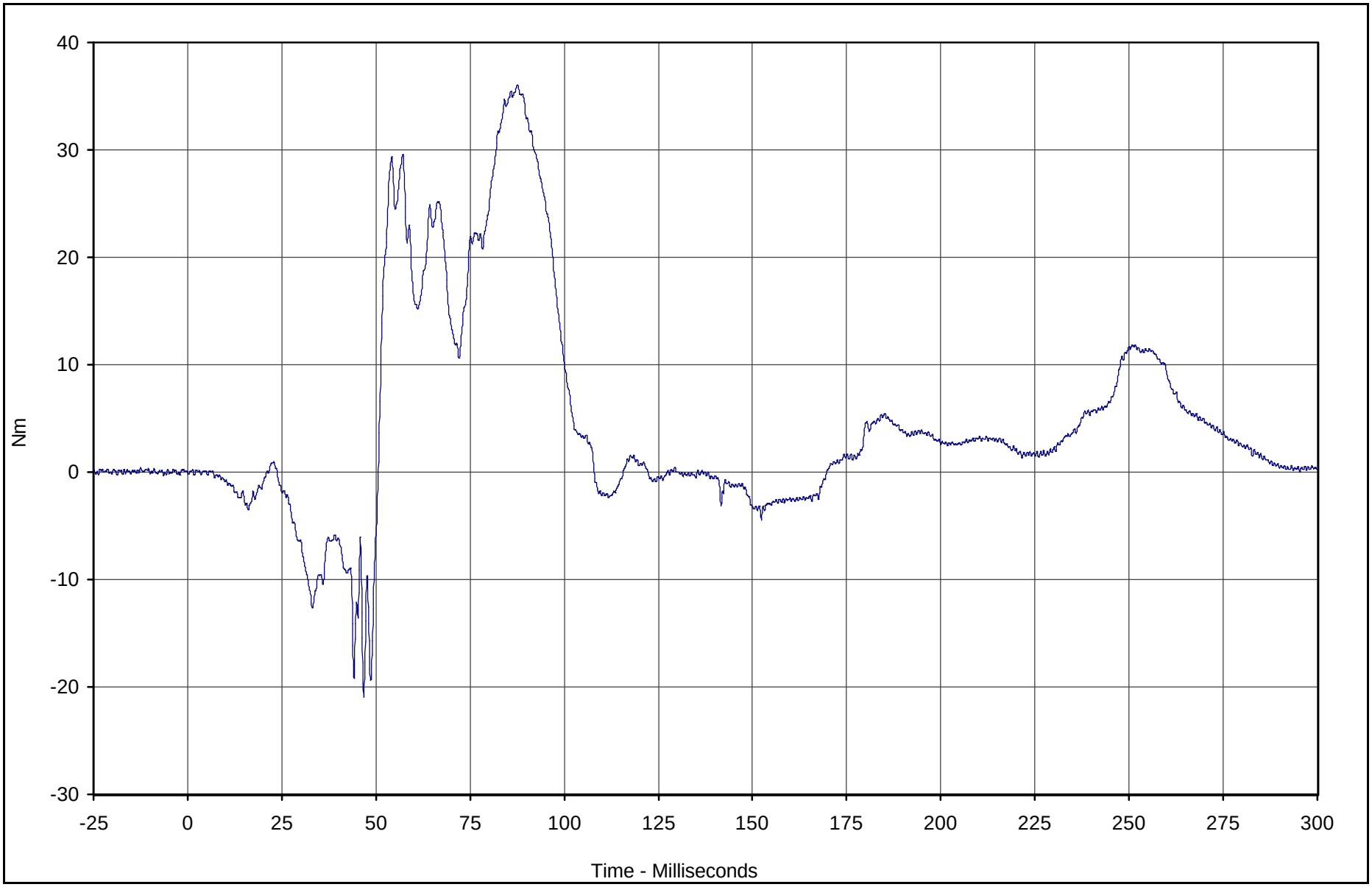
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Right Lower Tibia Moment X	076	FIL	Nm	91.9	47.8	-10.0	106.6	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



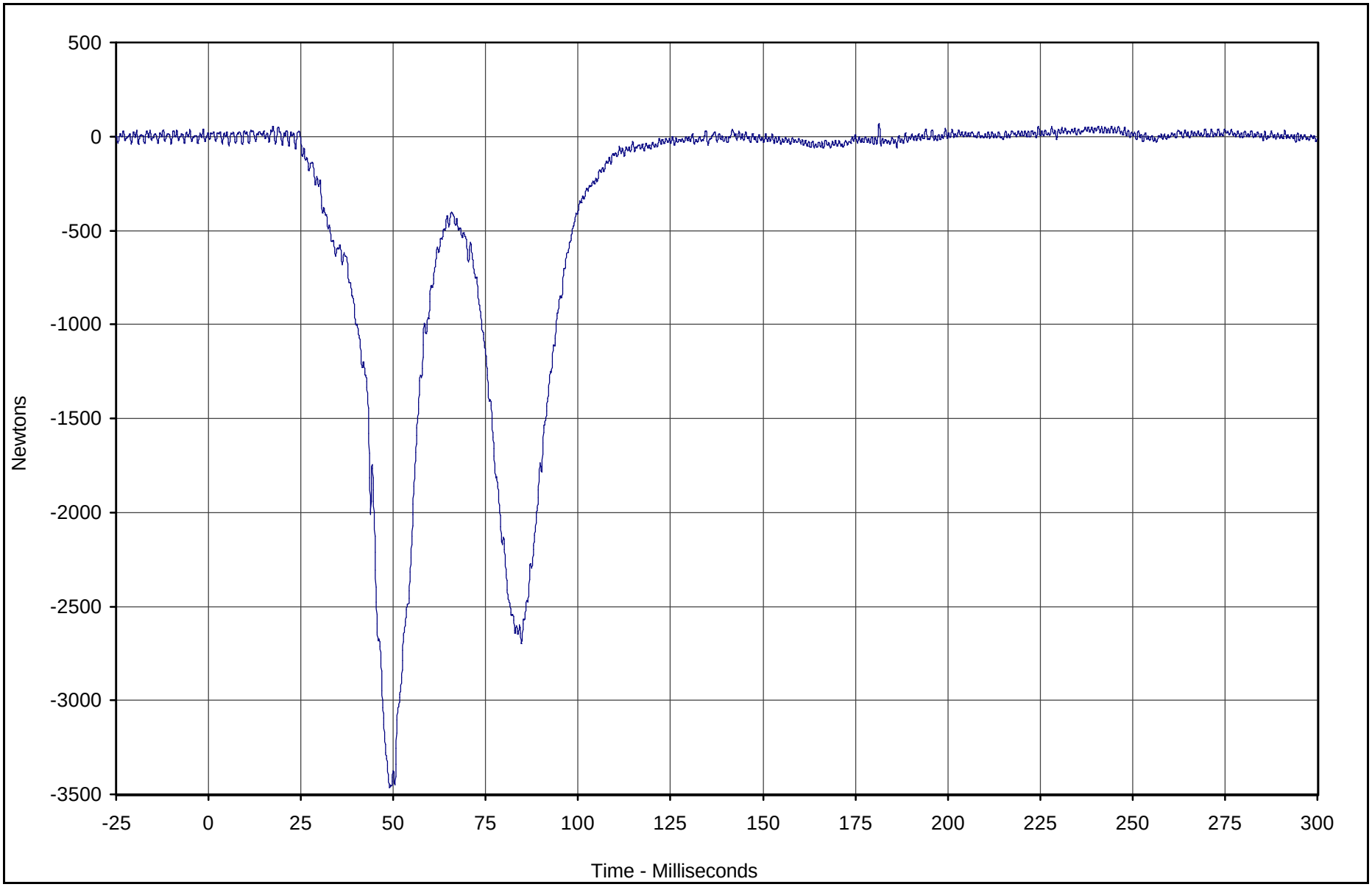
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Right Lower Tibia Moment Y	077	FIL	Nm	36.1	87.6	-21.0	46.8	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



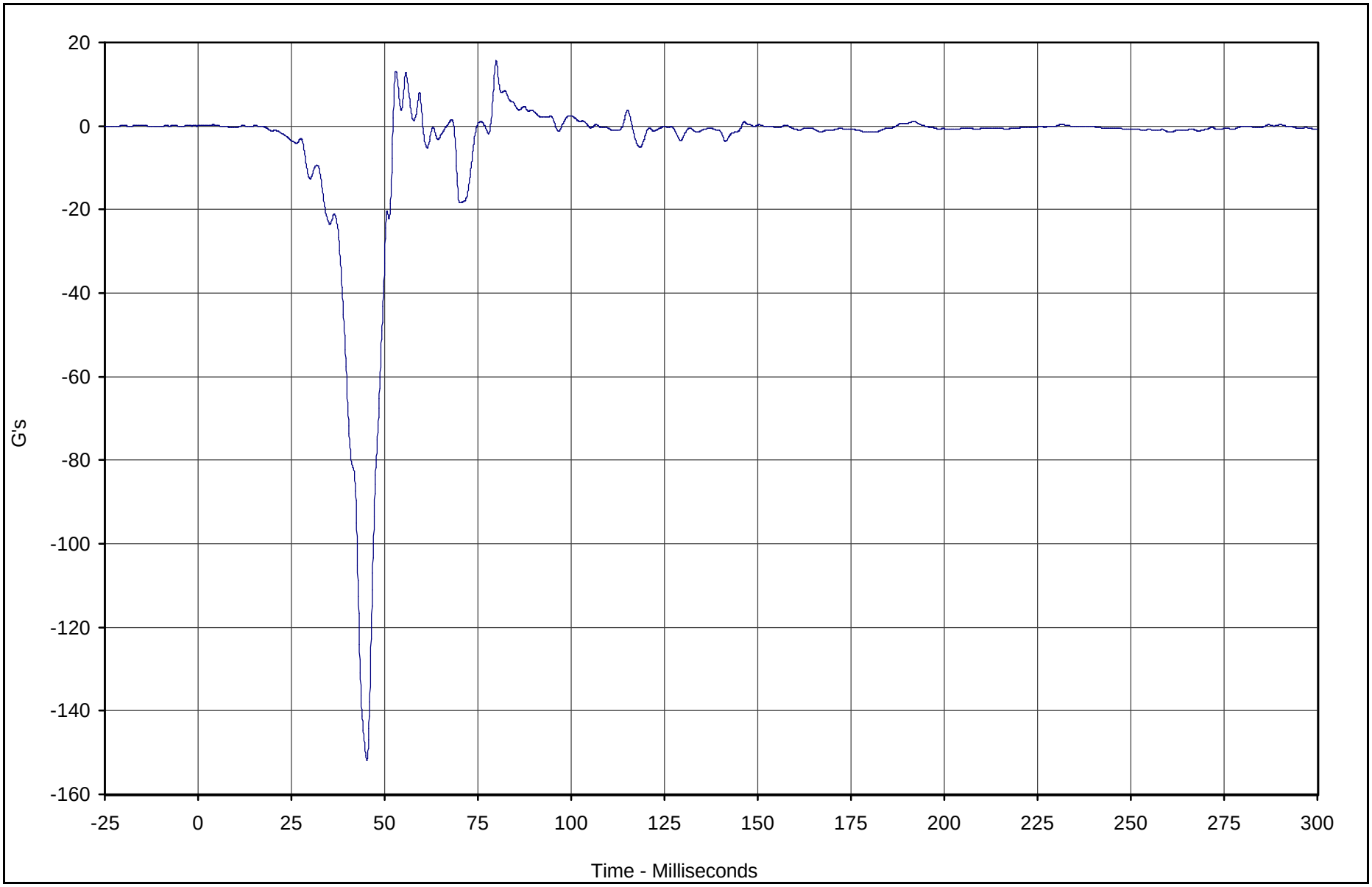
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Right lower Tibia Force Z	078	FIL	Newtons	68.1	181.4	-3465.3	49.0	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



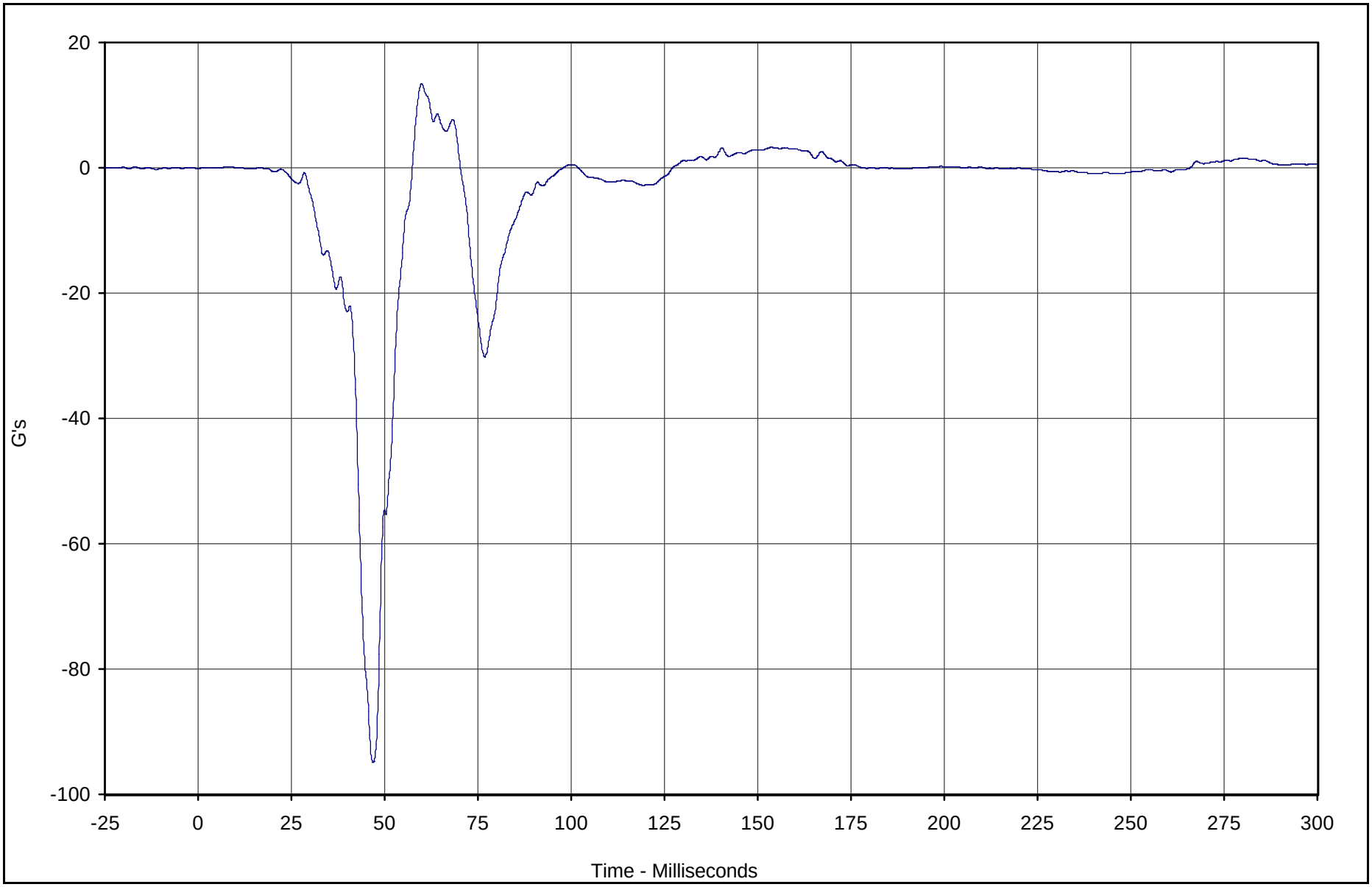
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Left Foot Aft X	079	FIL	G's	15.7	79.9	-151.8	45.3	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



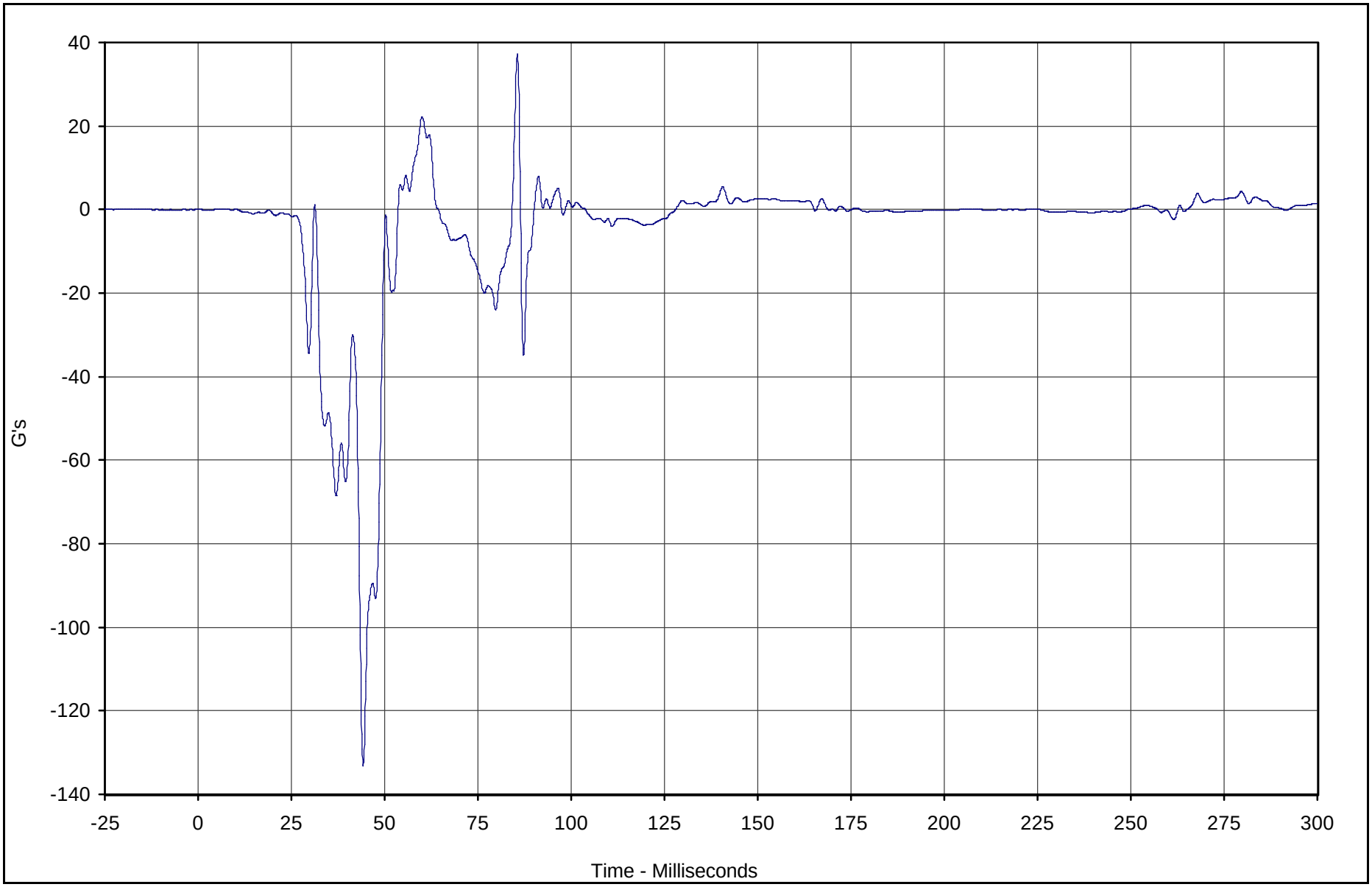
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Left Foot Aft Z	080	FIL	G's	13.4	59.9	-94.9	46.9	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



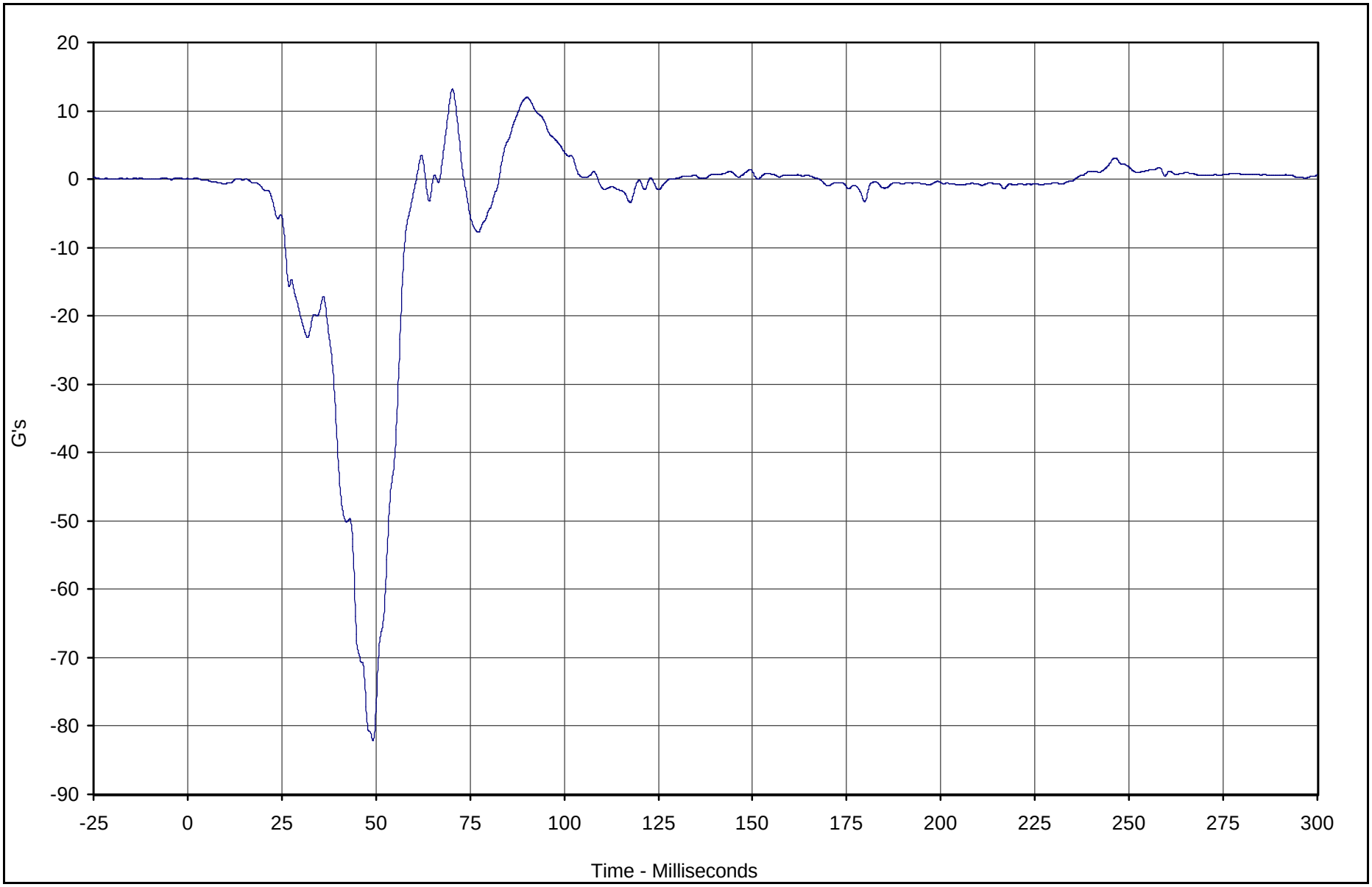
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Left Foot Fore Z	081	FIL	G's	37.2	85.6	-133.2	44.3	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



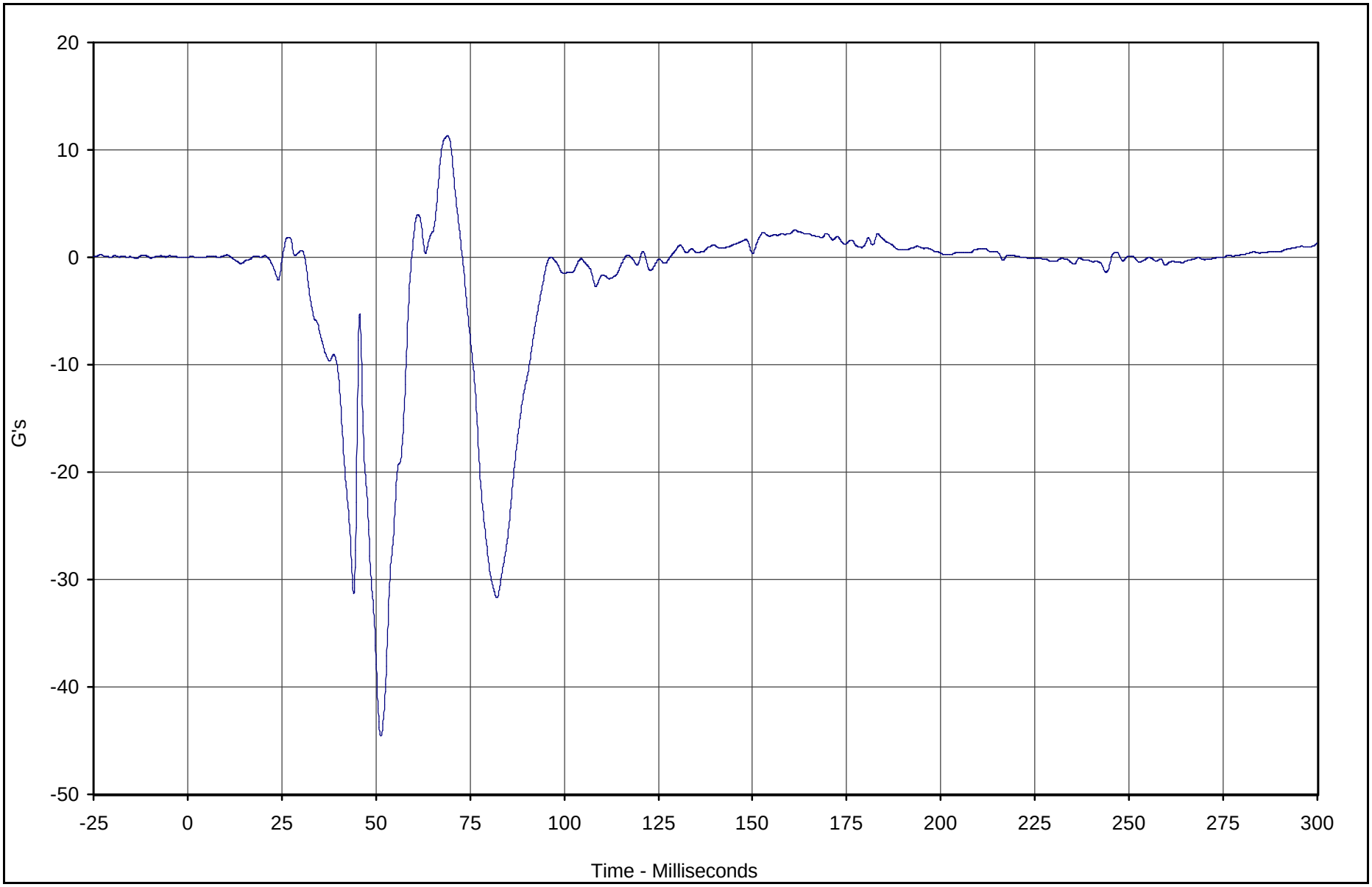
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Right Foot Aft X	082	FIL	G's	13.2	70.3	-82.1	49.3	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



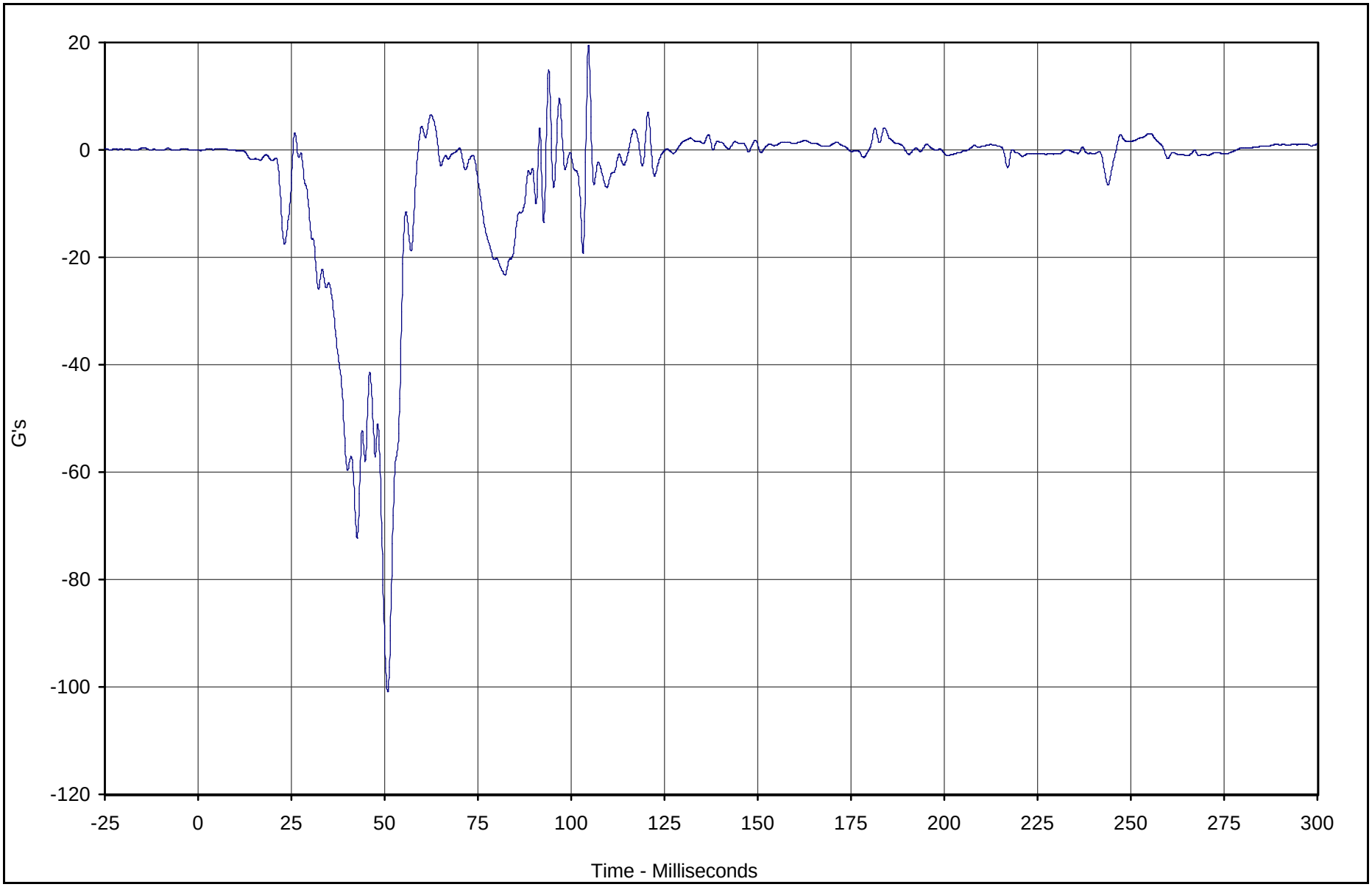
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Right Foot Aft Z	083	FIL	G's	11.3	69.0	-44.6	51.3	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



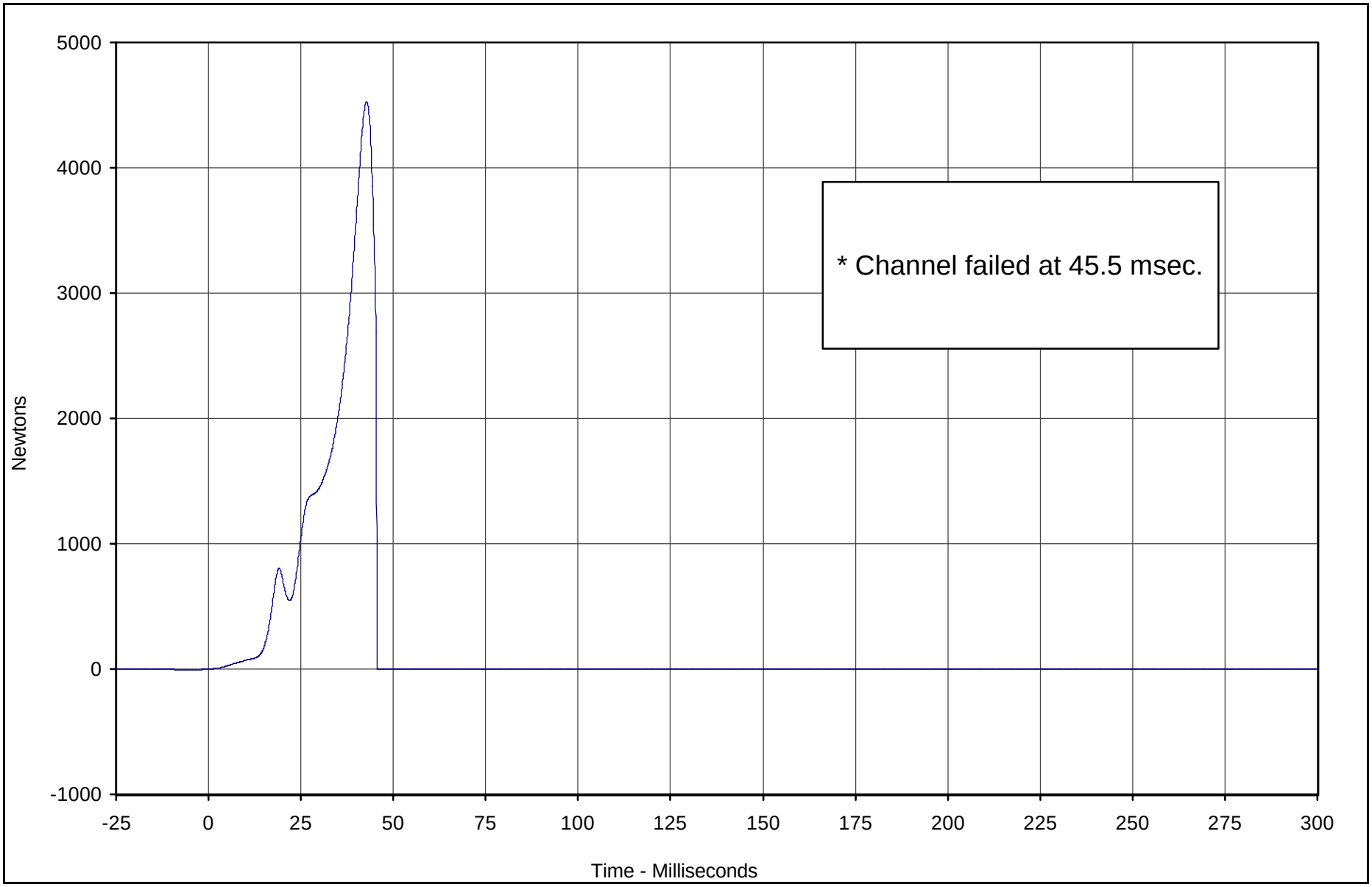
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Right Foot Fore Z	084	FIL	G's	19.4	104.7	-100.9	50.8	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



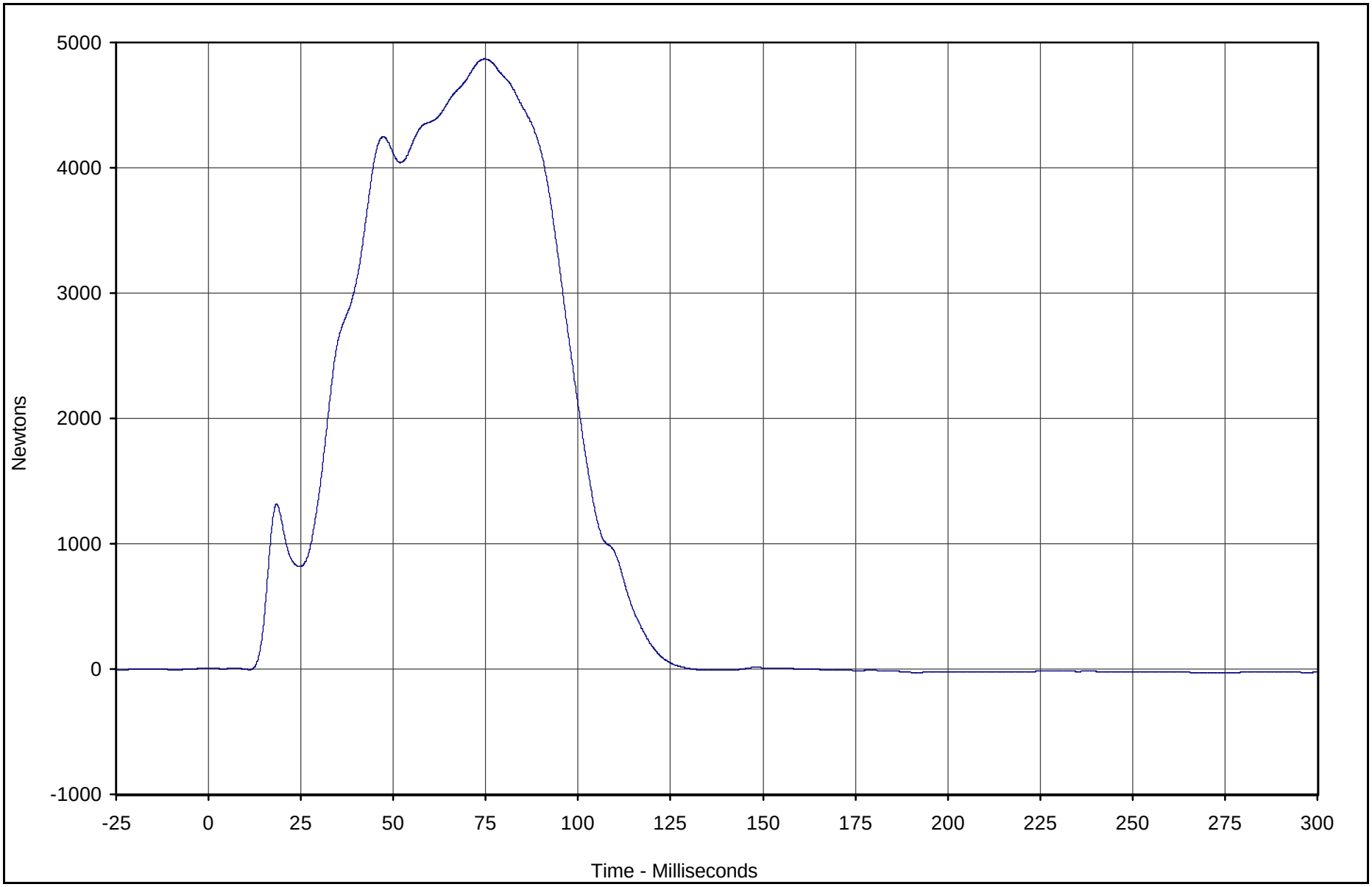
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Lap Belt Force	085	FIL	Newtons	4526.0	42.8	0.0	45.5	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



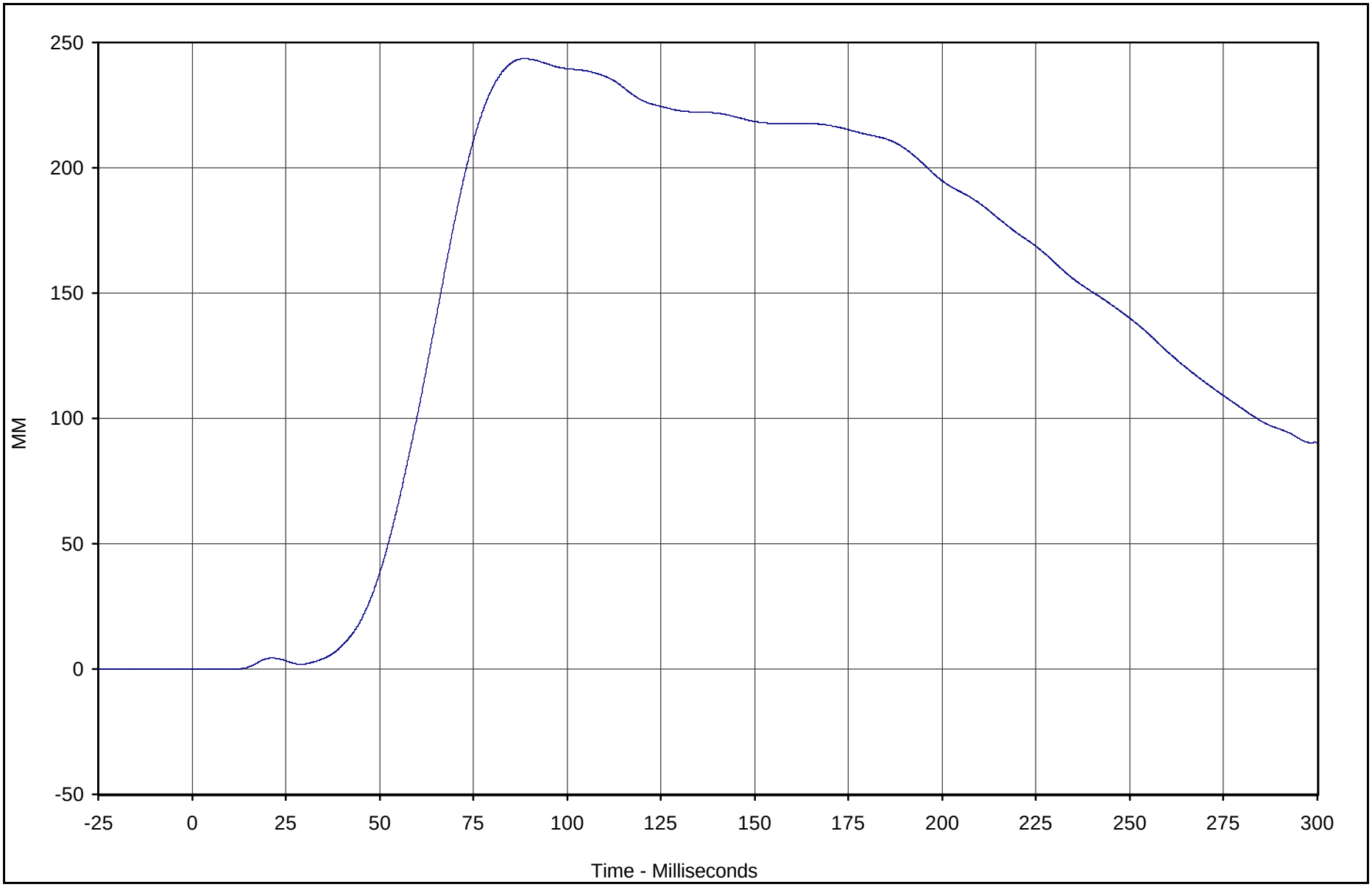
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Shoulder Belt Force	086	FIL	Newtons	4869.2	74.7	-30.3	267.8	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



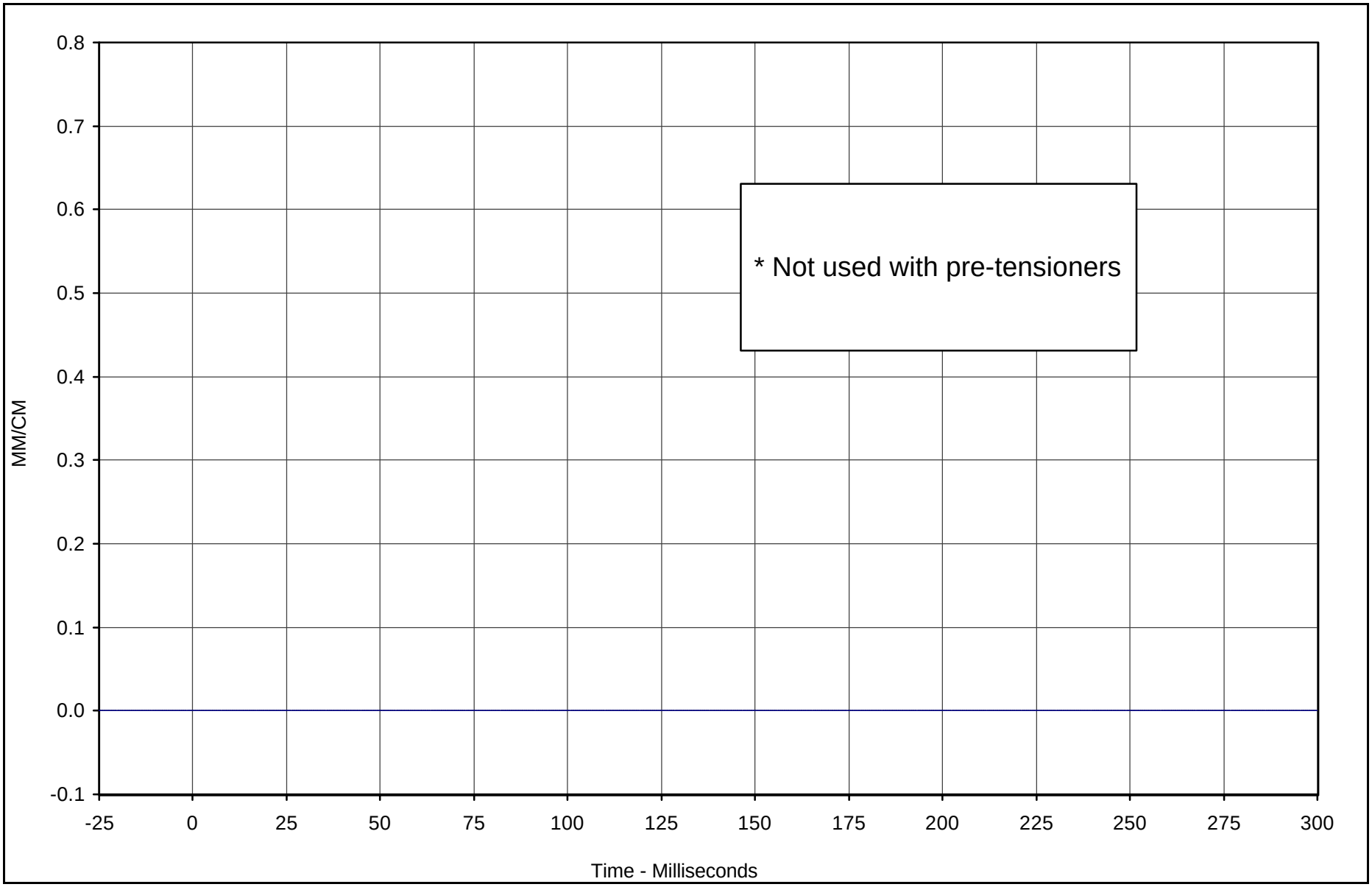
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Shoulder Belt Pullout	087	FIL	MM	243.5	88.7	0.0	11.1	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



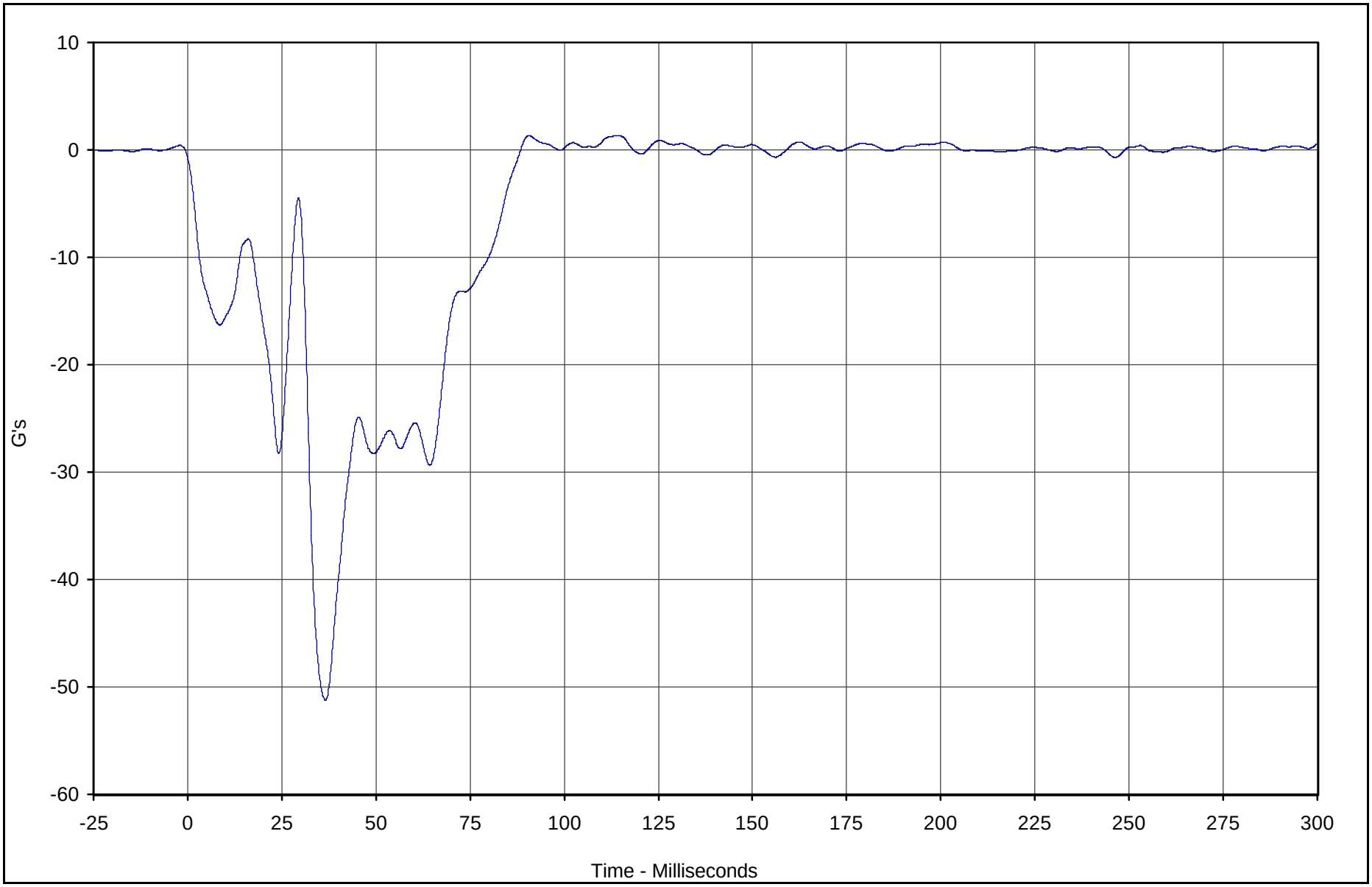
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Shoulder Belt Elongation	088	FIL	MM/CM	0.00	0.0	0.00	0.0	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



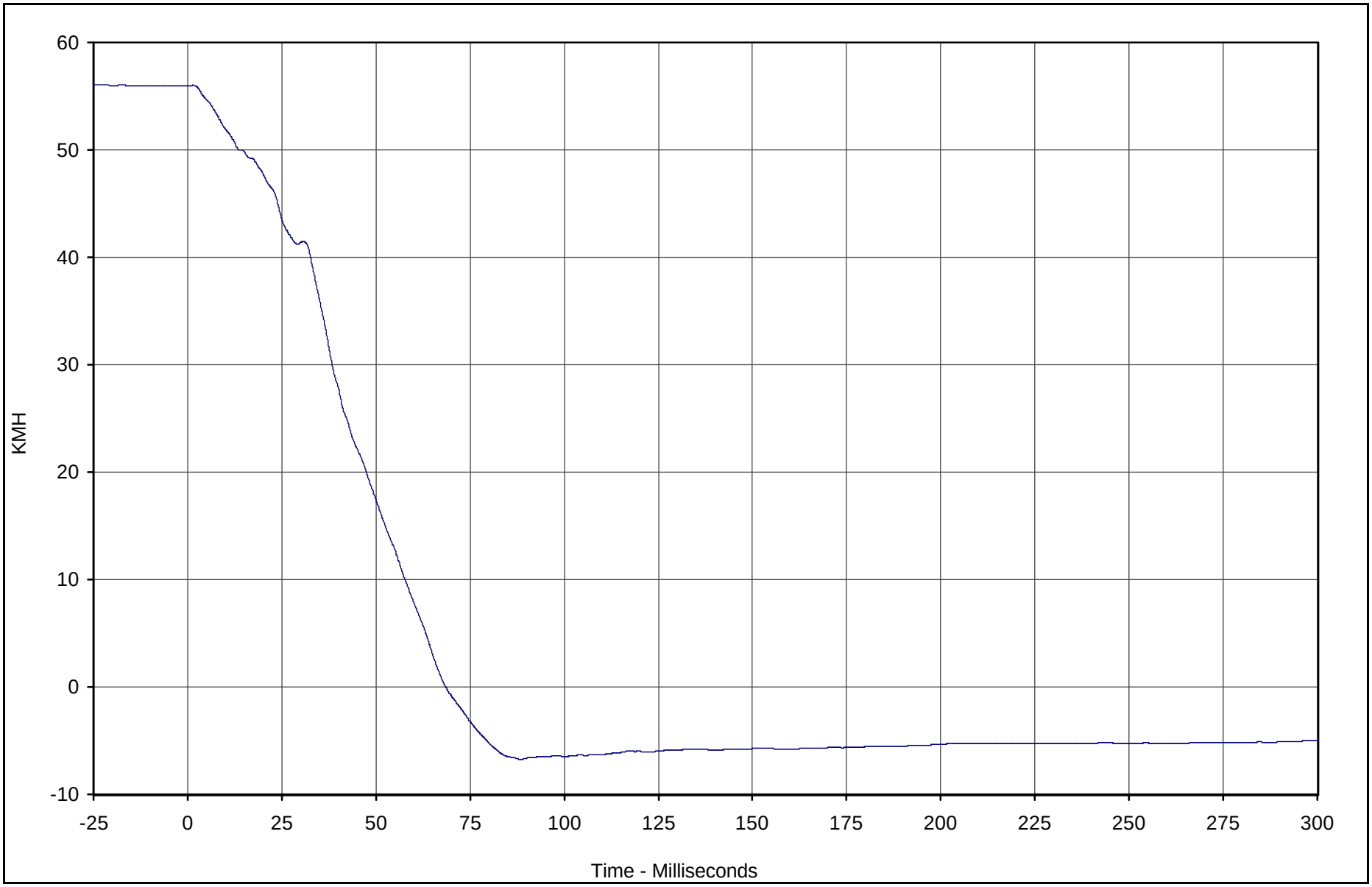
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Left Rear X	089	FIL	G's	1.3	114.2	-51.2	36.6	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



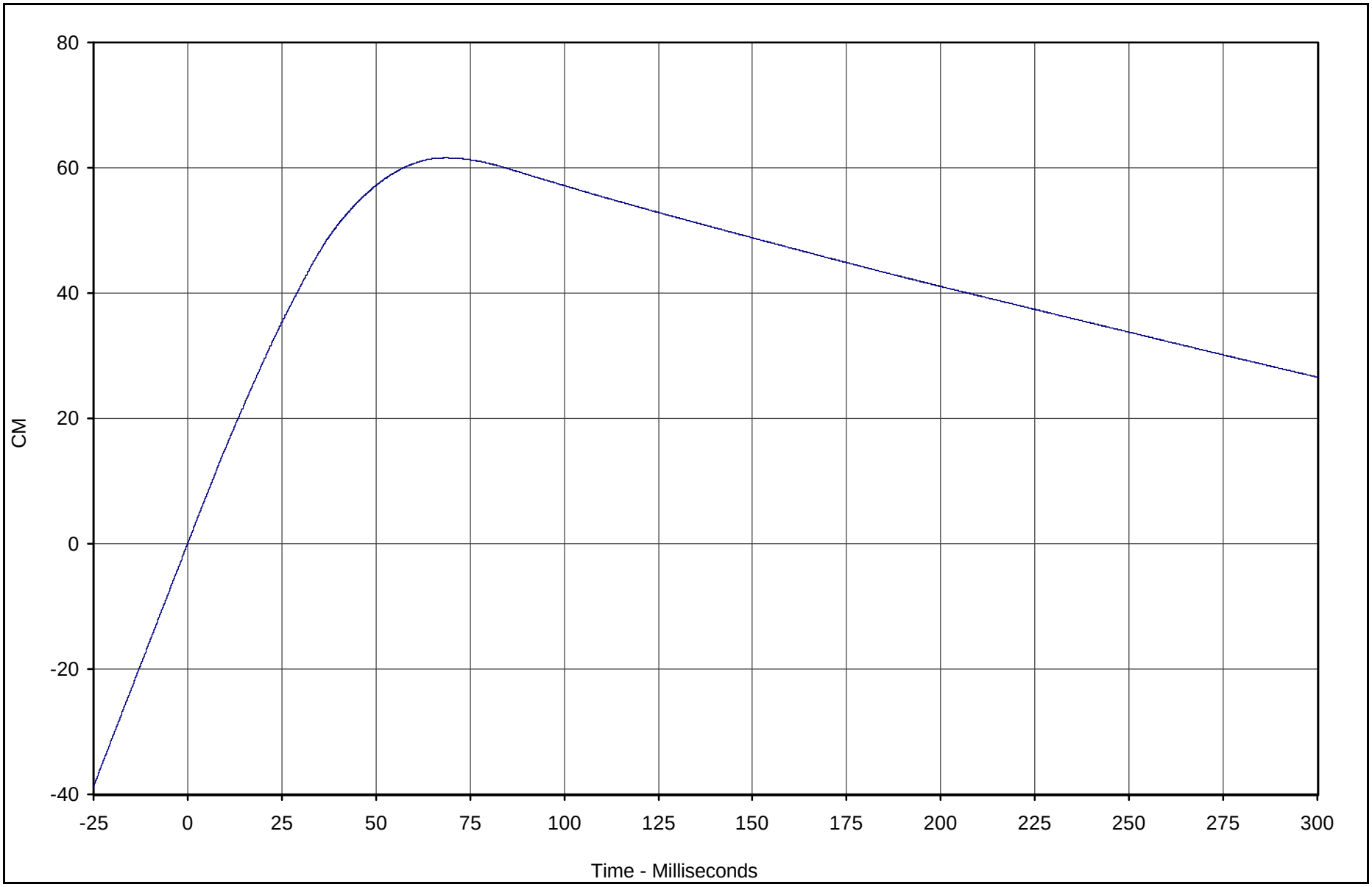
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Left Rear X Velocity	089	IN1	KMH	56.0	1.4	-6.7	88.6	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



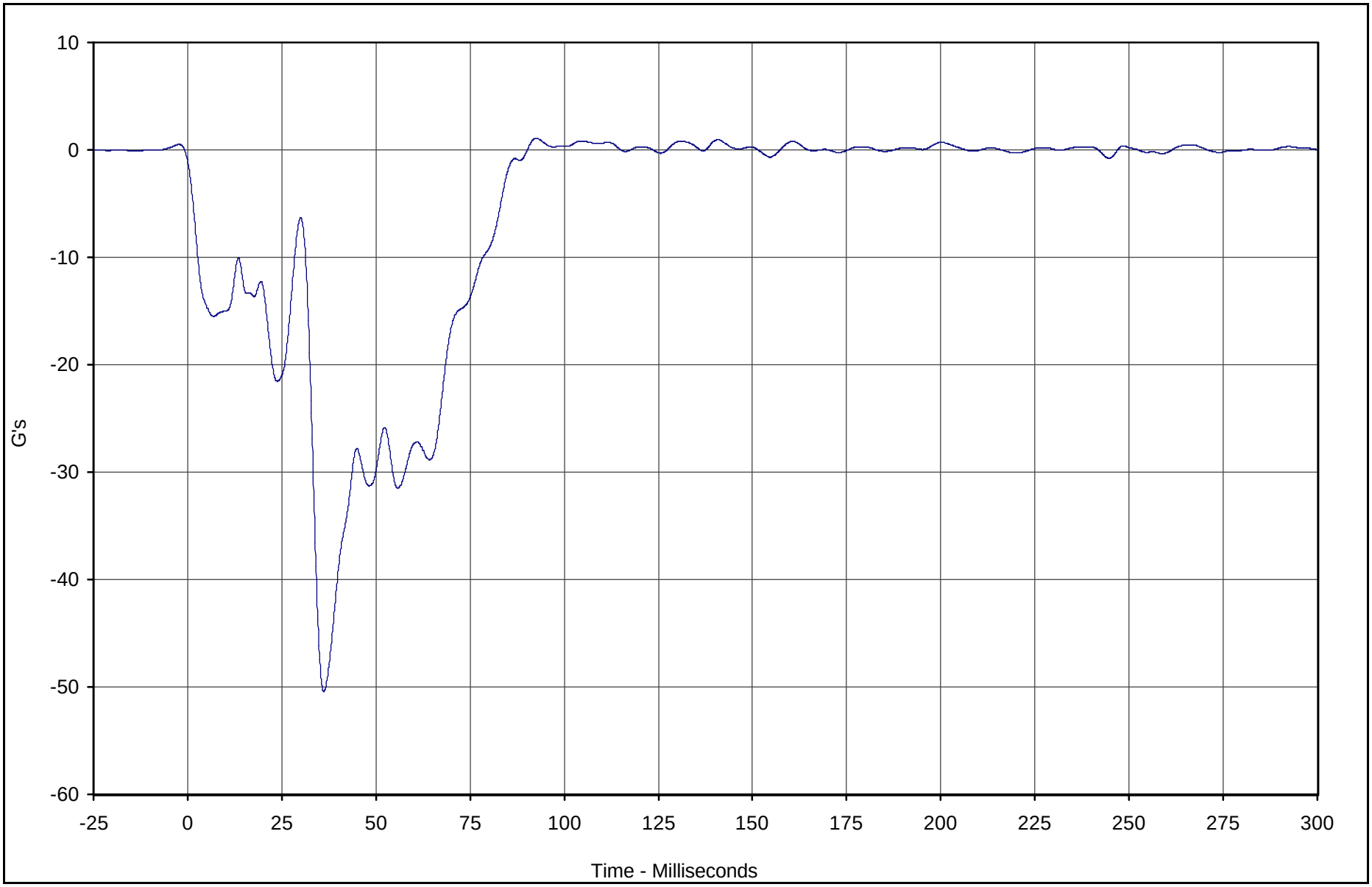
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Left Rear X Displ.	089	IN2	CM	61.6	68.5	0.0	0.0	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



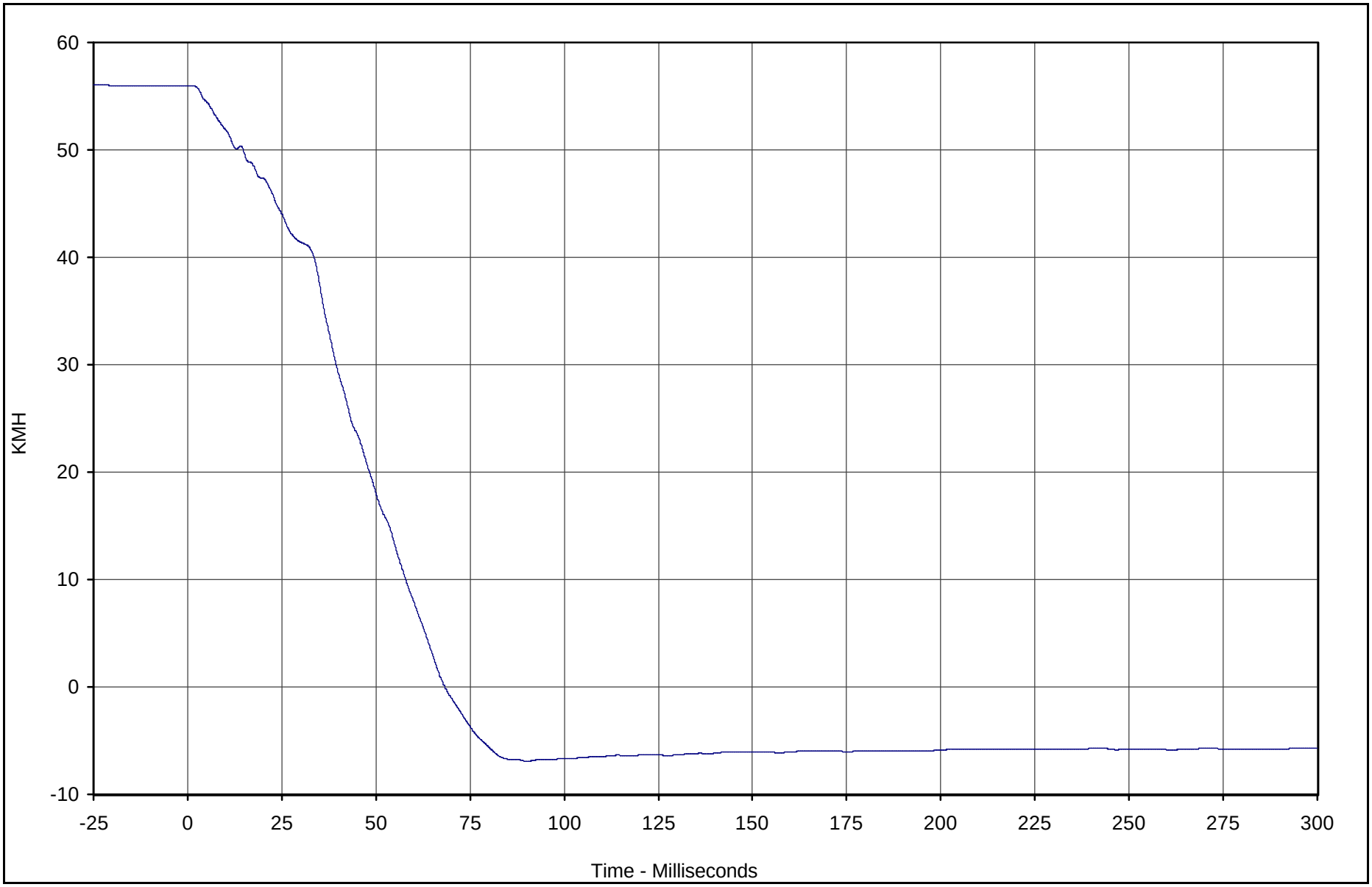
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Right Rear X	090	FIL	G's	1.1	92.6	-50.5	36.2	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



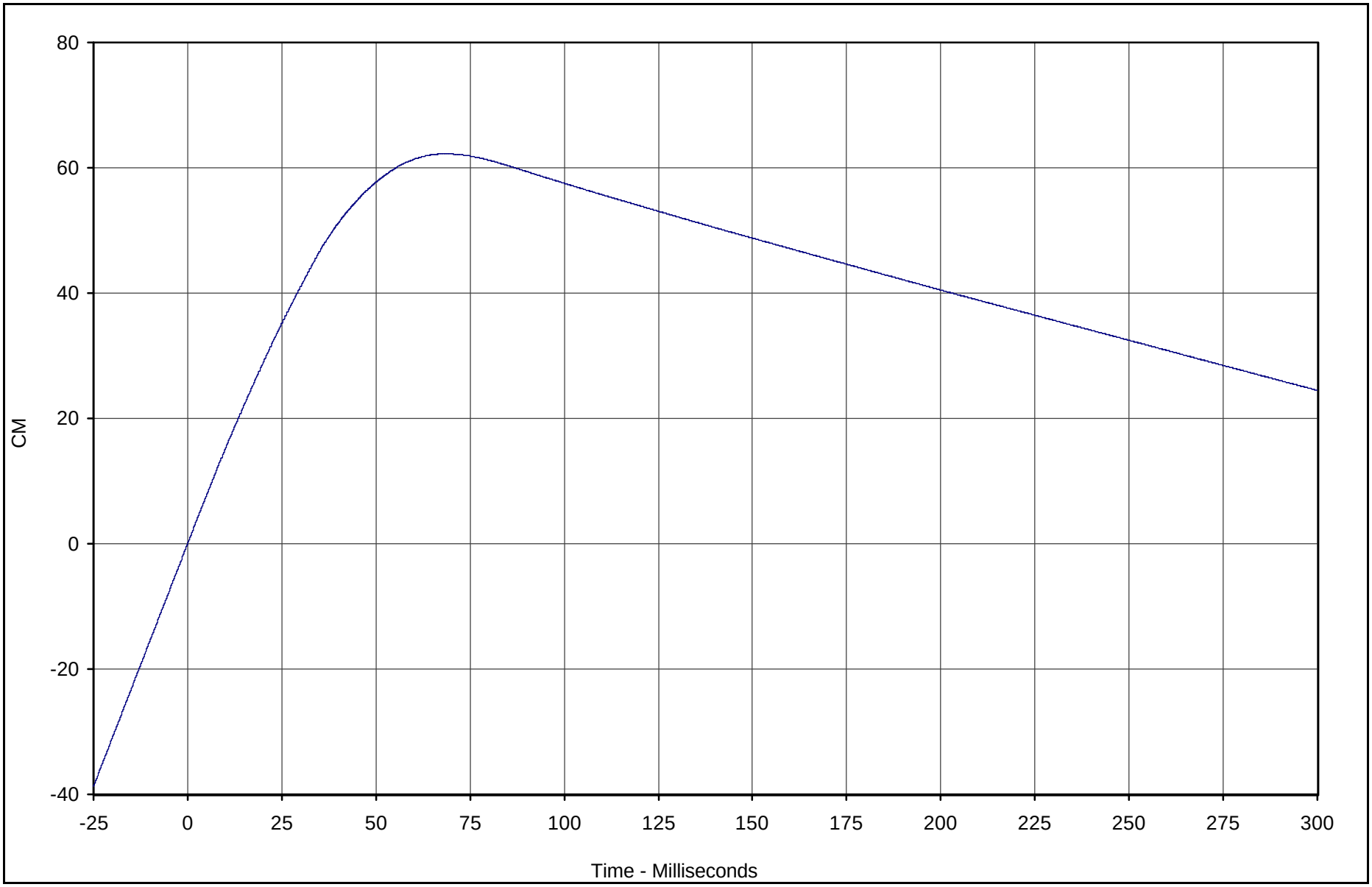
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Right Rear X Velocity	090	IN1	KMH	56.0	0.7	-6.9	90.0	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



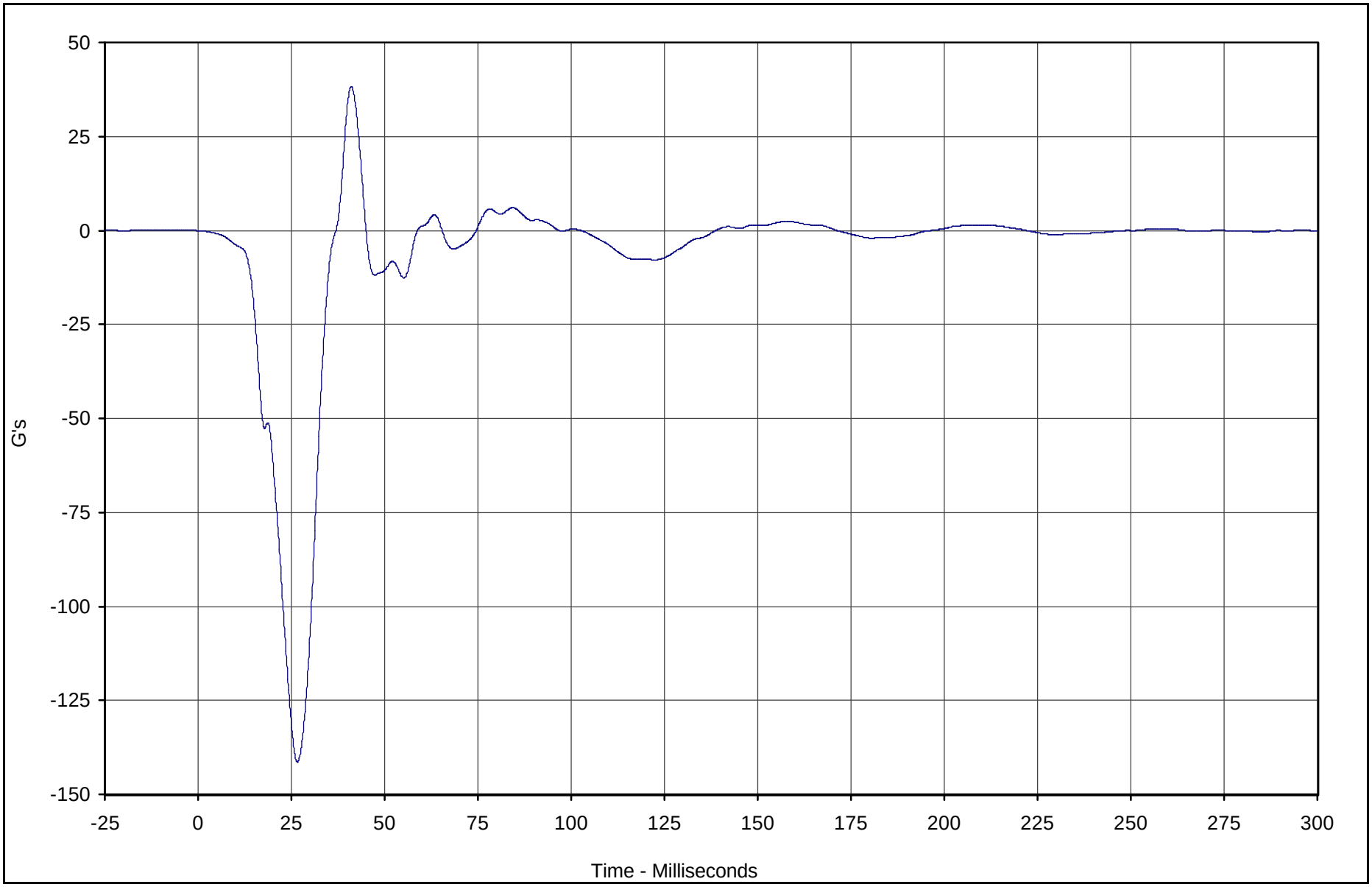
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Right Rear X Displ.	090	IN2	CM	62.2	68.3	0.0	0.0	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



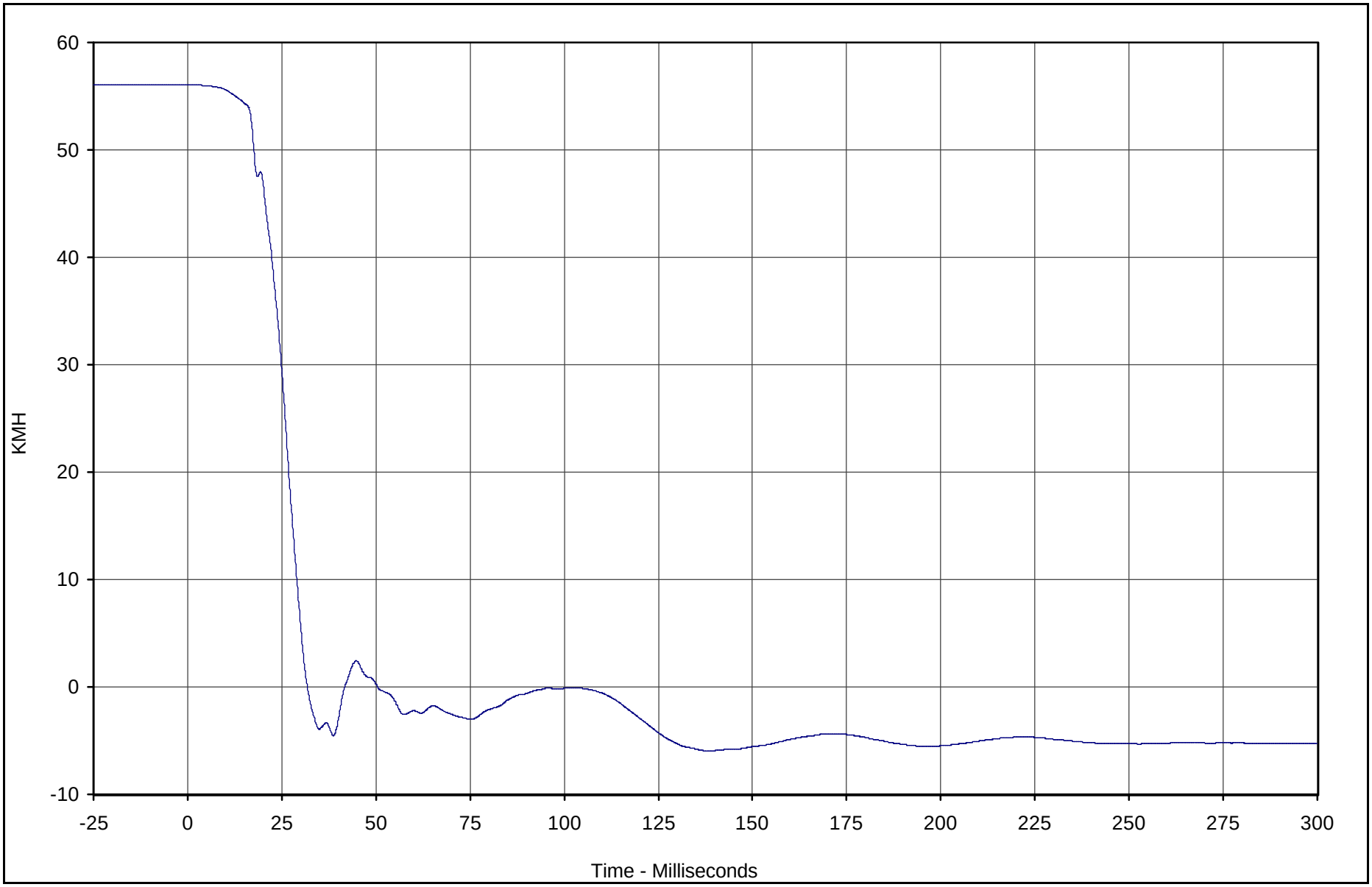
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Engine Top	091	FIL	G's	38.3	41.1	-141.4	26.6	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



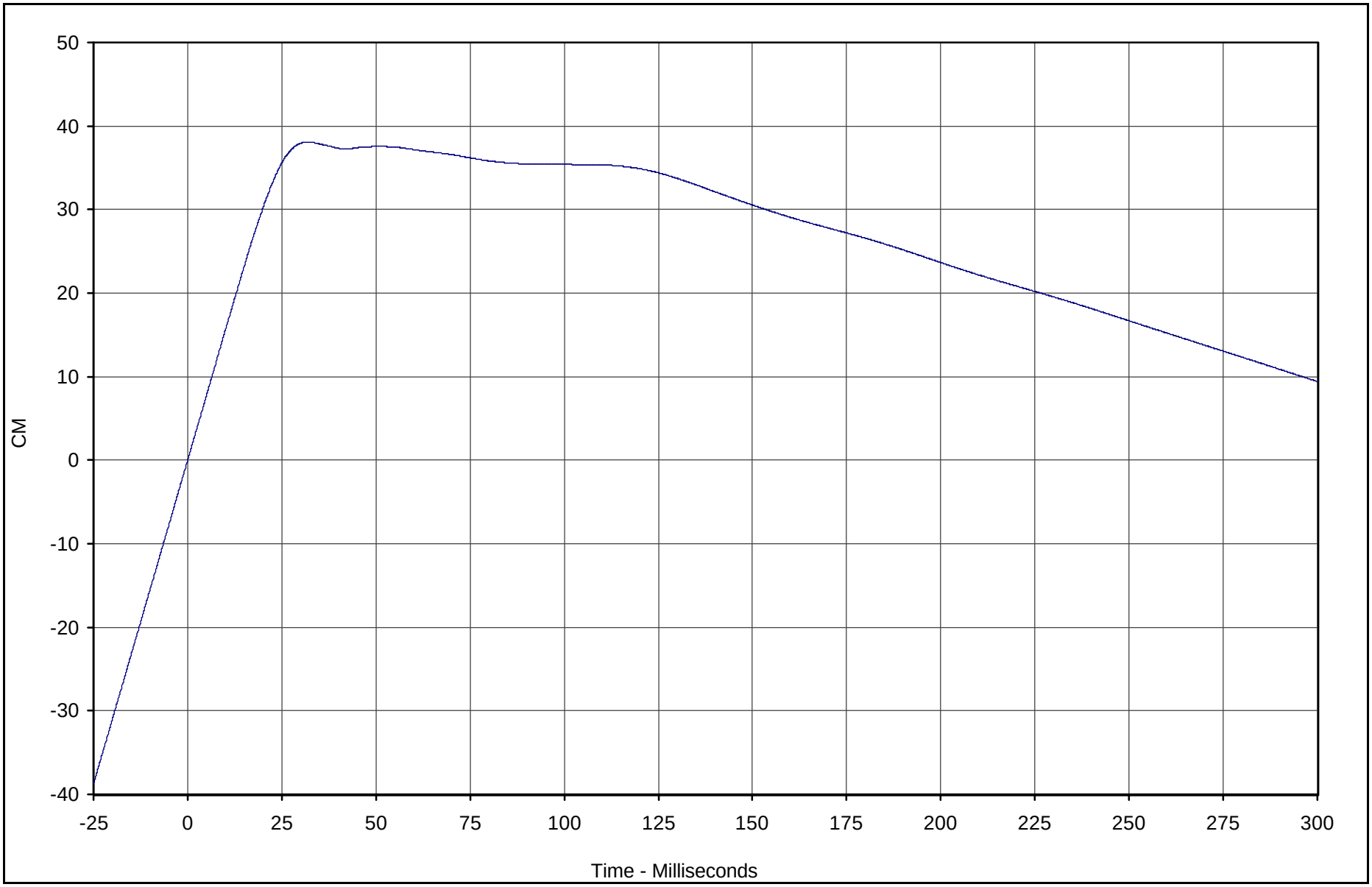
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Engine Top Velocity	091	IN1	KMH	56.0	0.0	-5.9	138.9	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



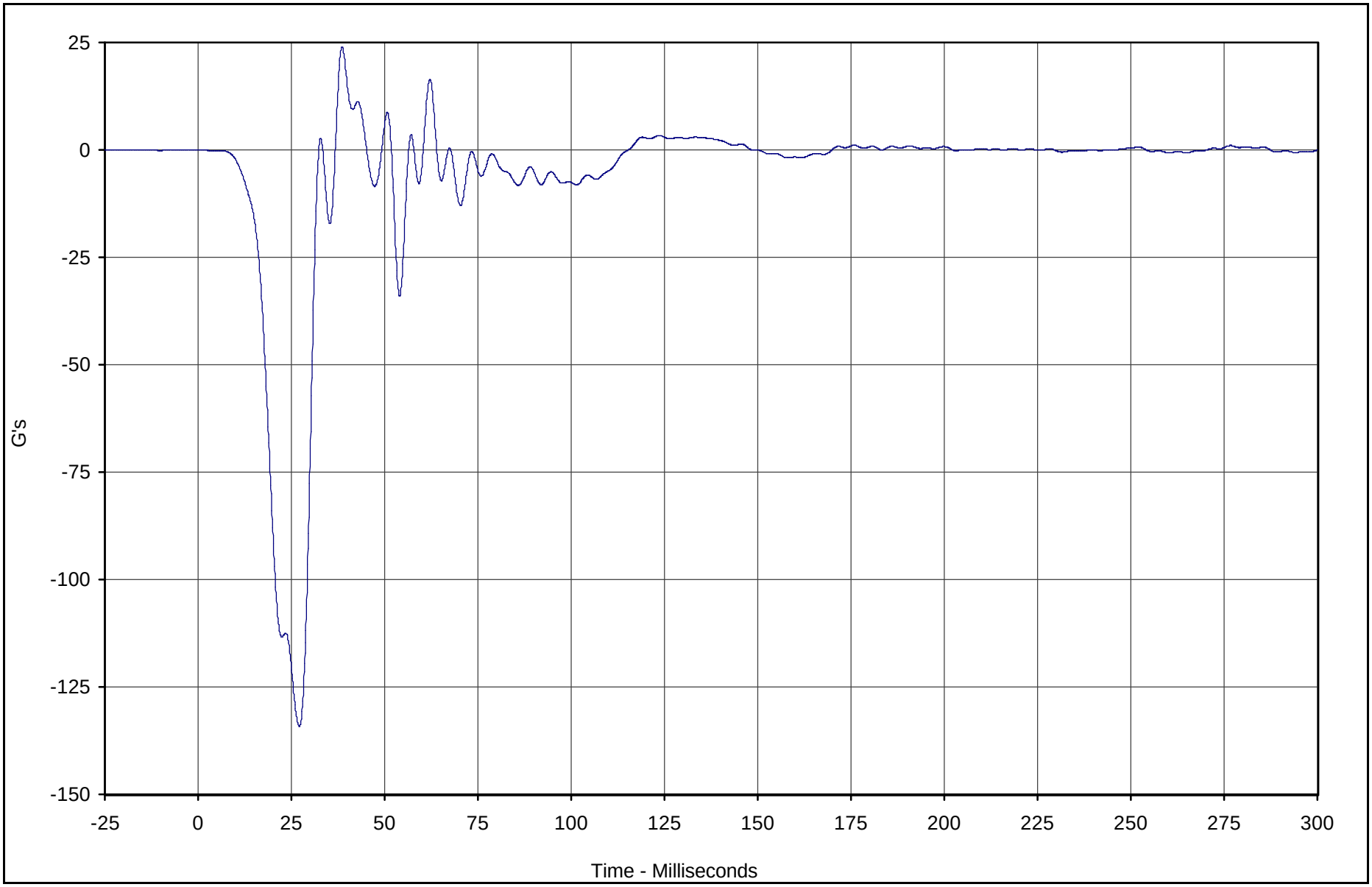
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Engine Top Displacement	091	IN2	CM	38.1	31.8	0.0	0.0	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



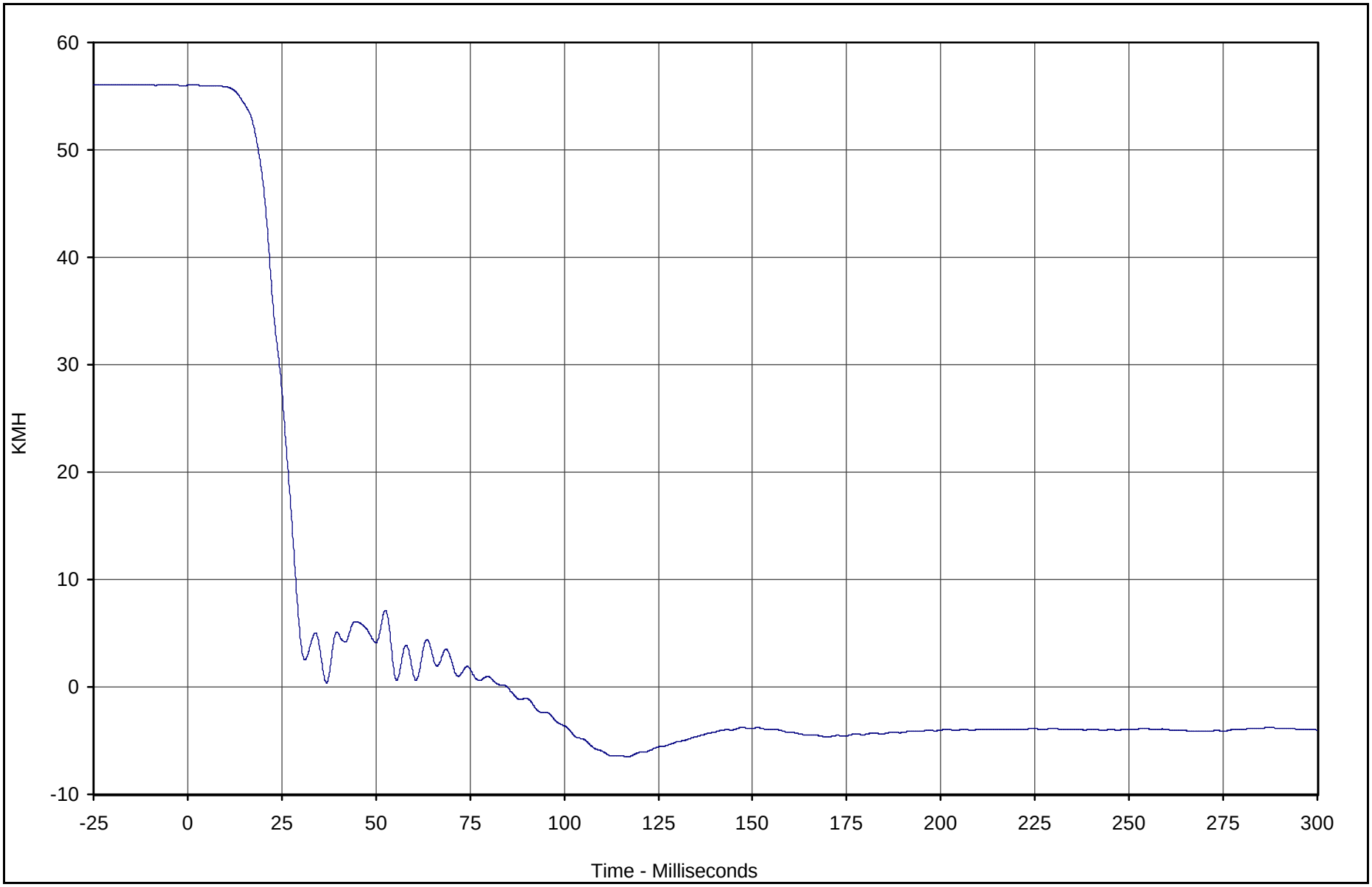
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Engine Bottom	092	FIL	G's	23.9	38.6	-134.2	27.1	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



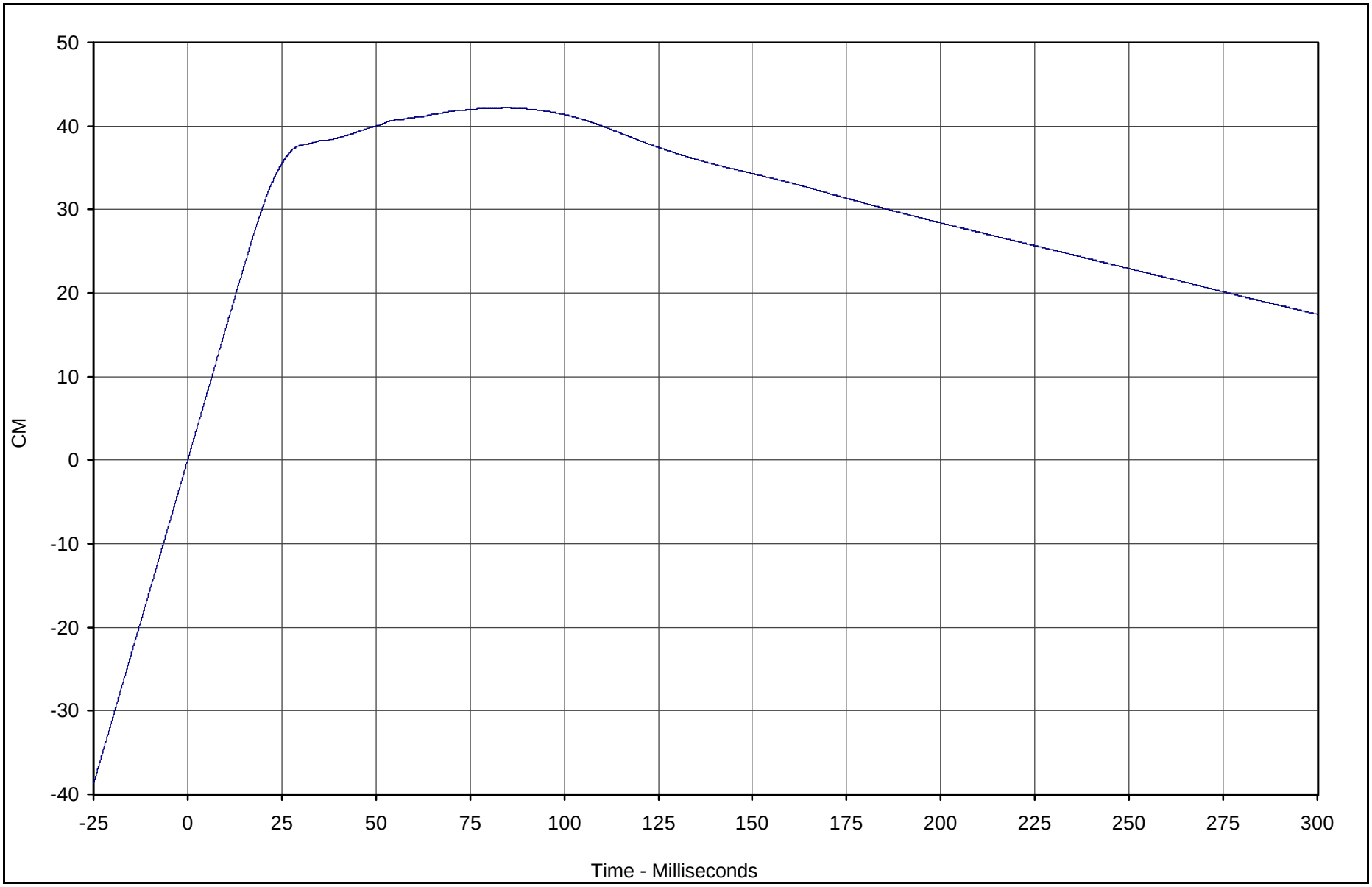
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Engine Bottom Velocity	092	IN1	KMH	56.0	1.0	-6.5	116.8	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



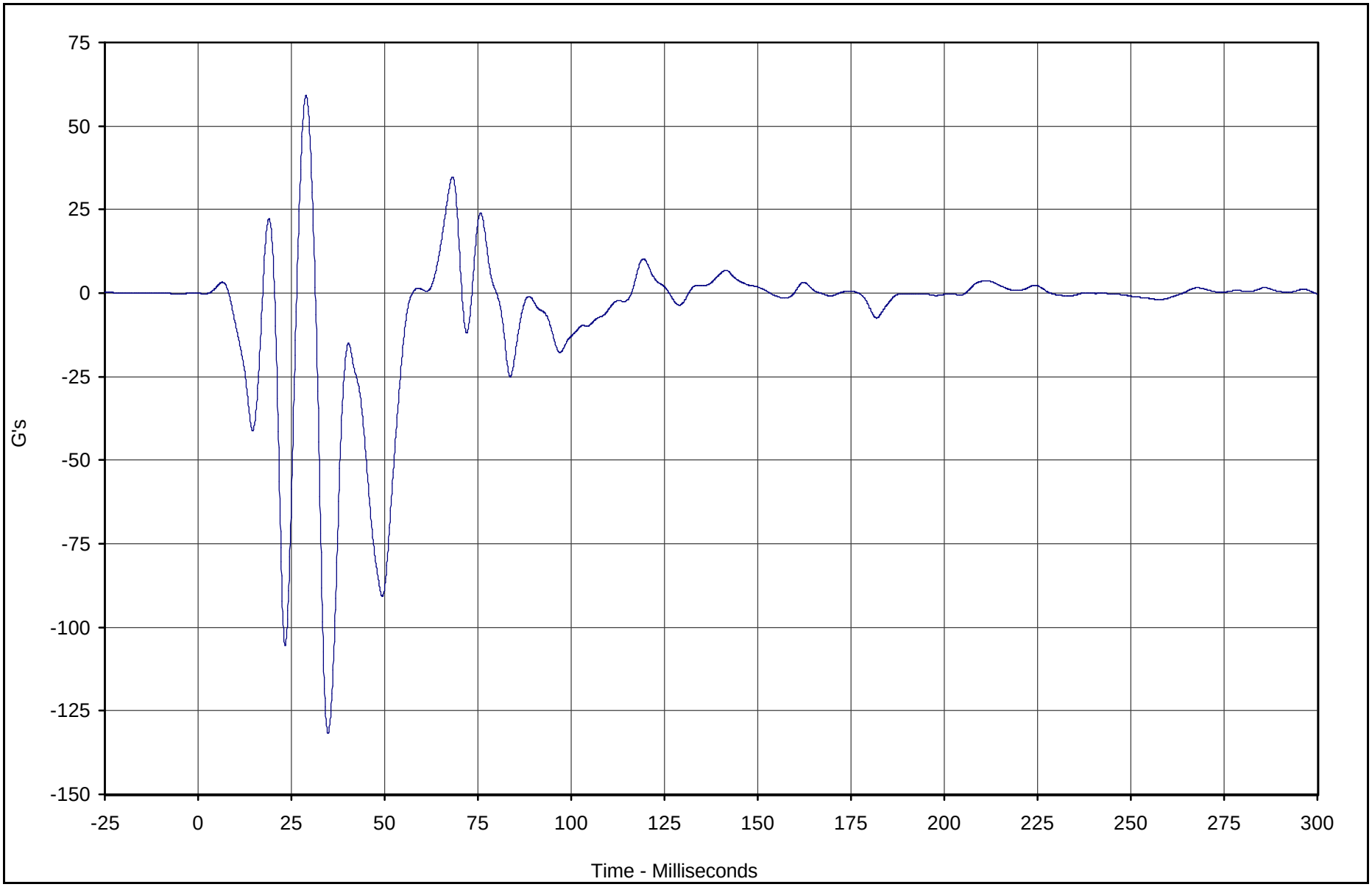
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Engine Bottom Displacement	092	IN2	CM	42.2	84.8	0.0	0.0	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



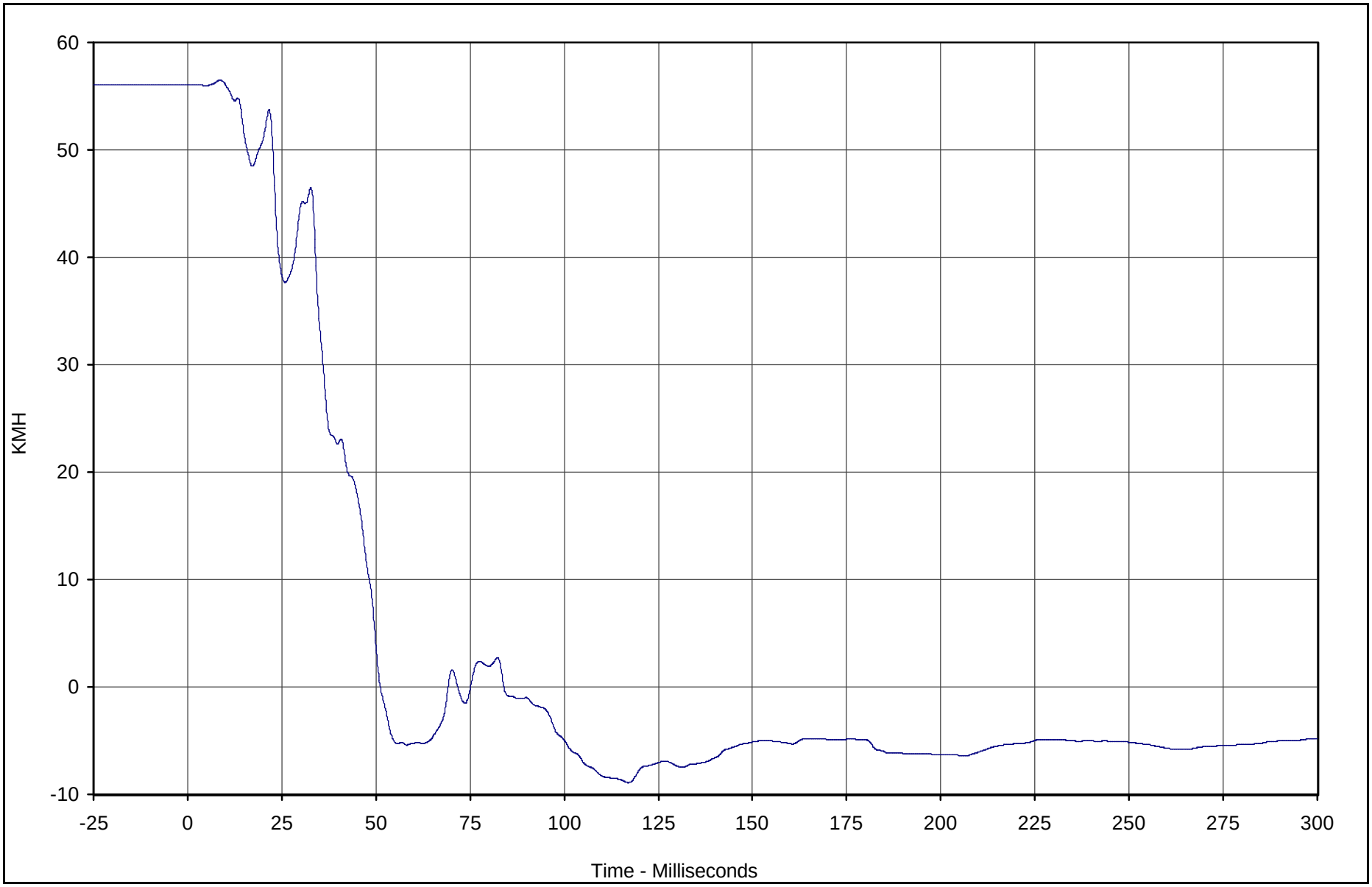
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Left Brake Caliper	093	FIL	G's	59.1	29.0	-131.6	34.8	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



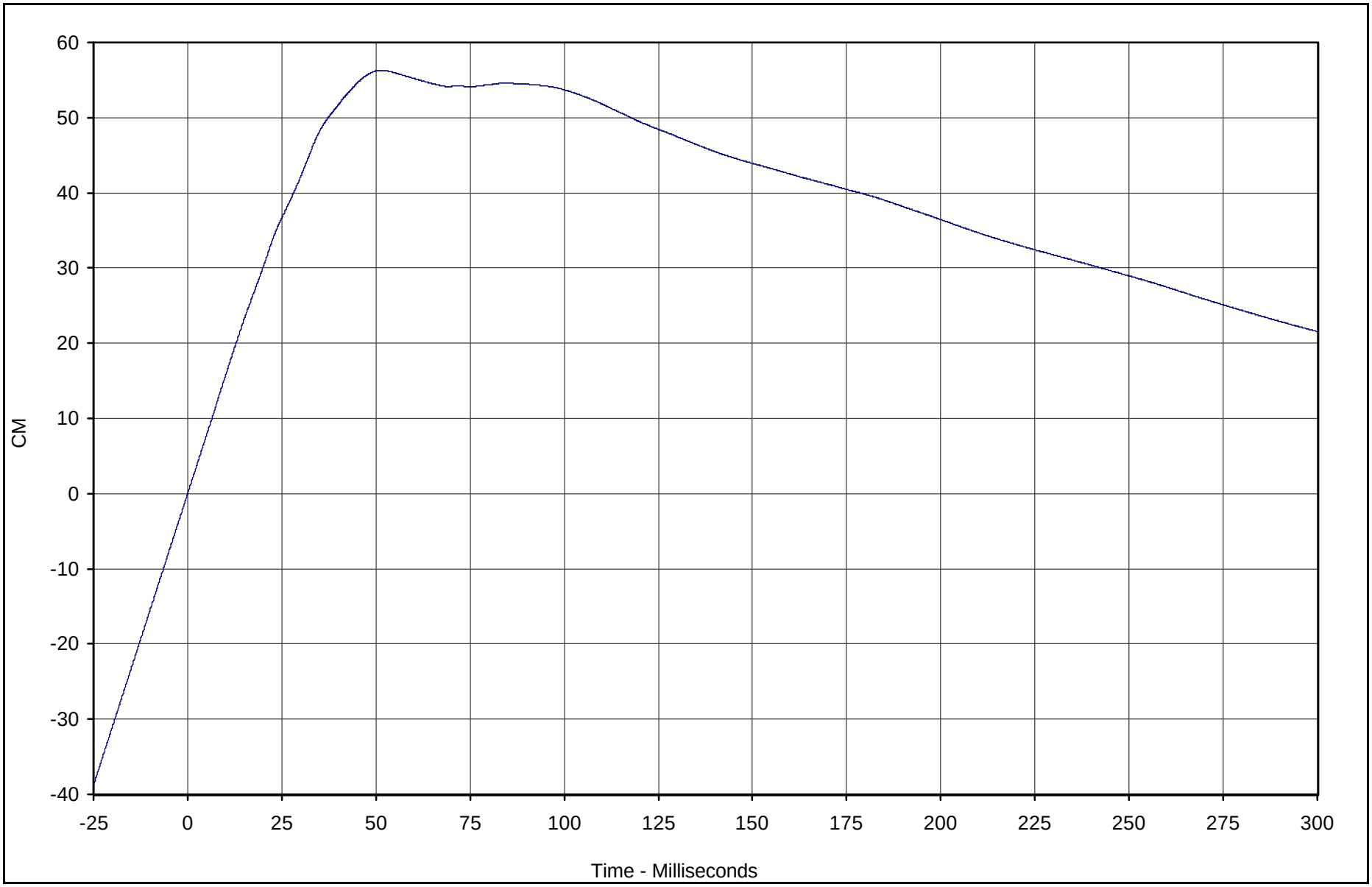
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Left Brake Caliper Velocity	093	IN1	KMH	56.5	8.6	-8.9	117.0	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



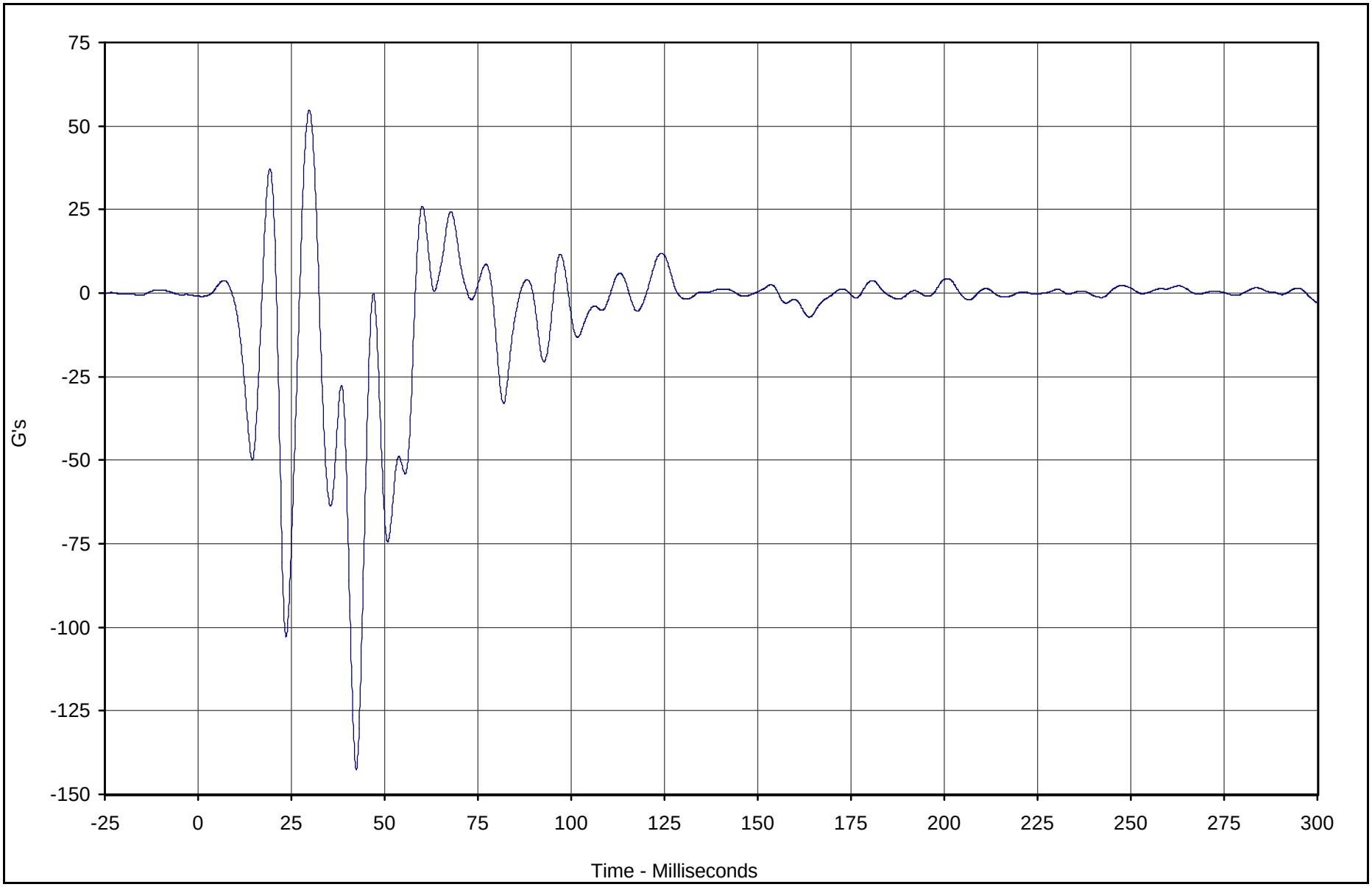
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Left Brake Caliper Displ.	093	IN2	CM	56.3	51.2	0.0	0.0	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



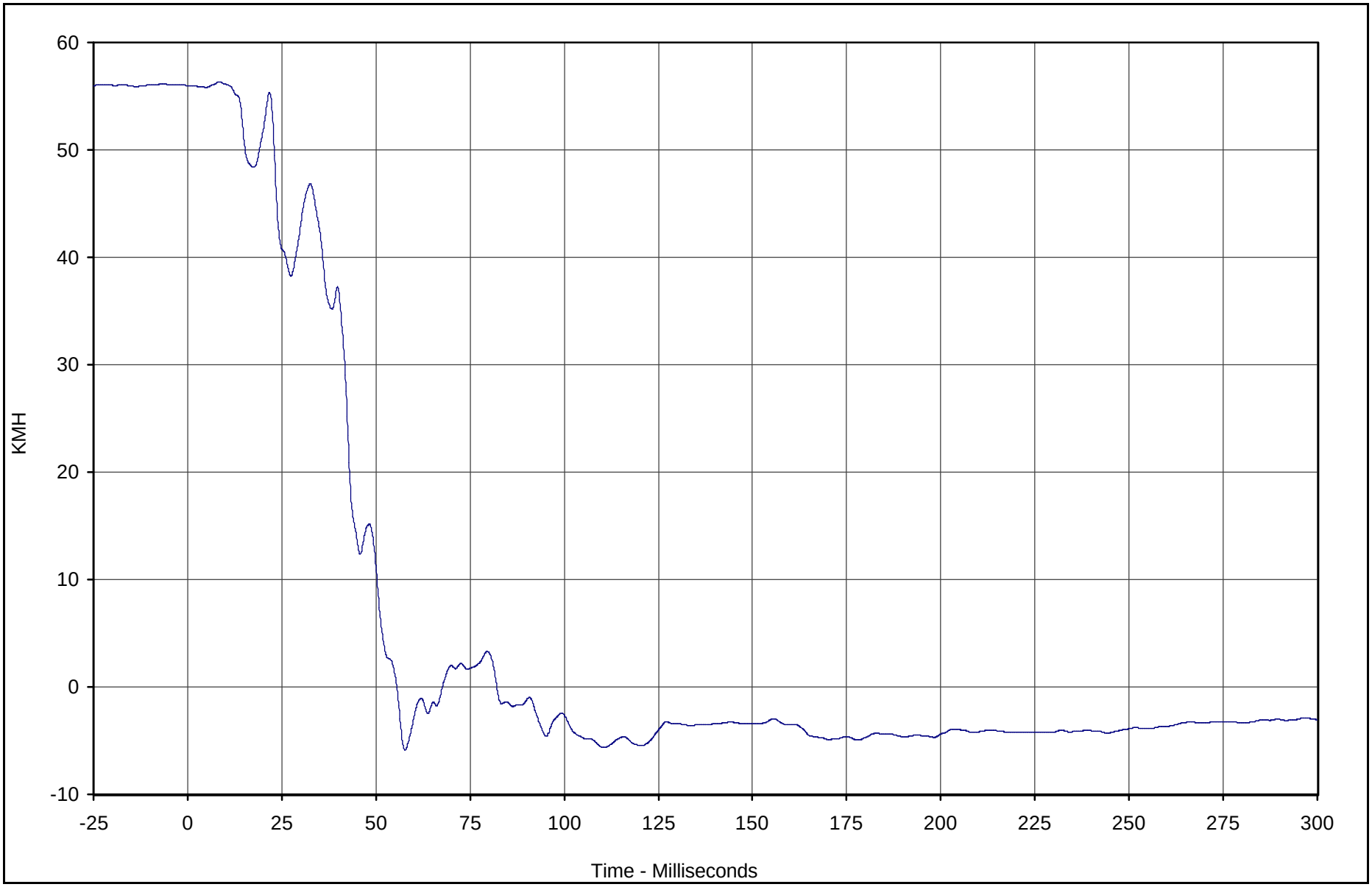
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Right Brake Caliper	094	FIL	G's	54.8	29.8	-142.6	42.4	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



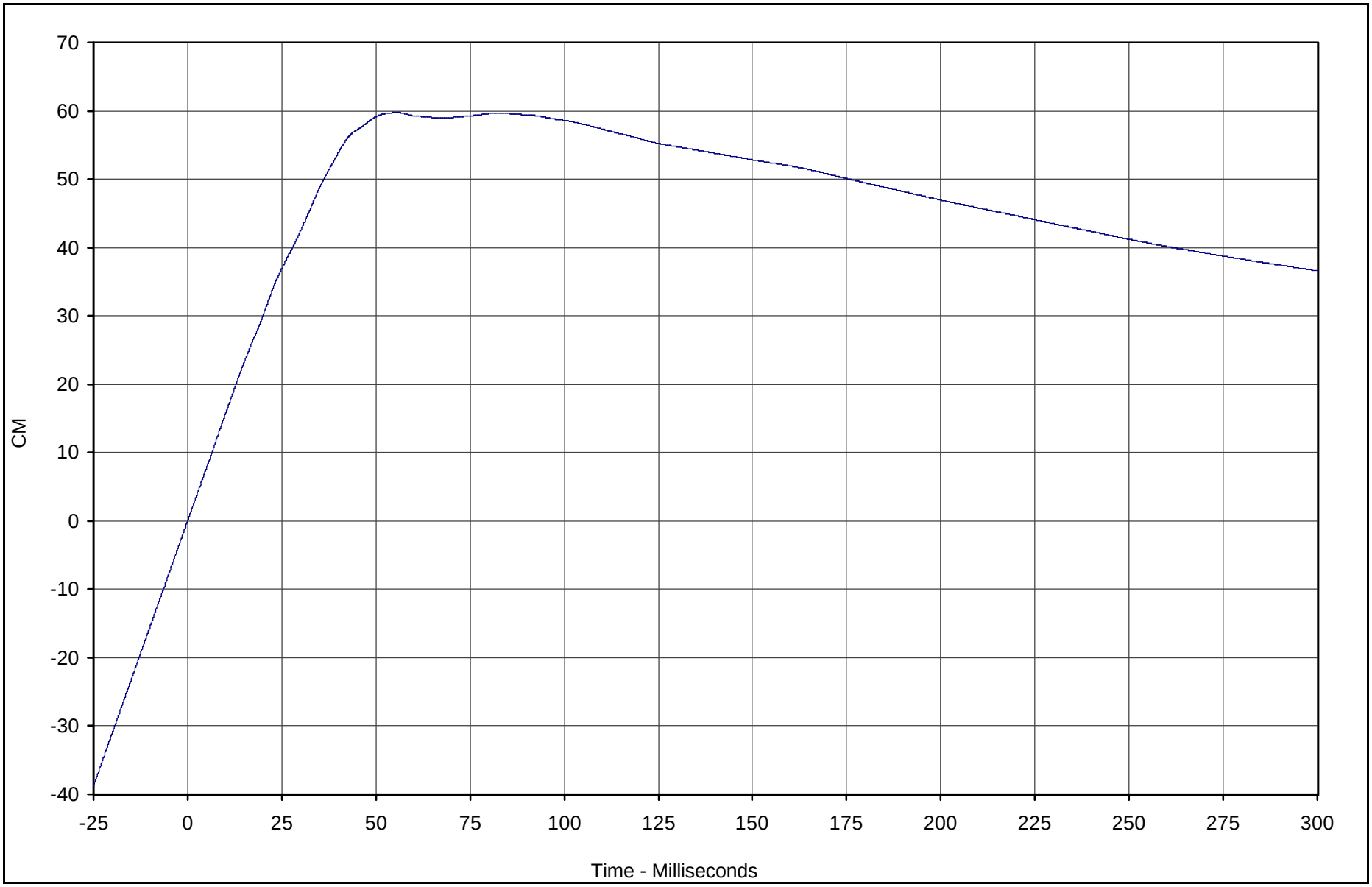
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Right Brake Caliper Velocity	094	IN1	KMH	56.3	8.5	-5.9	57.7	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



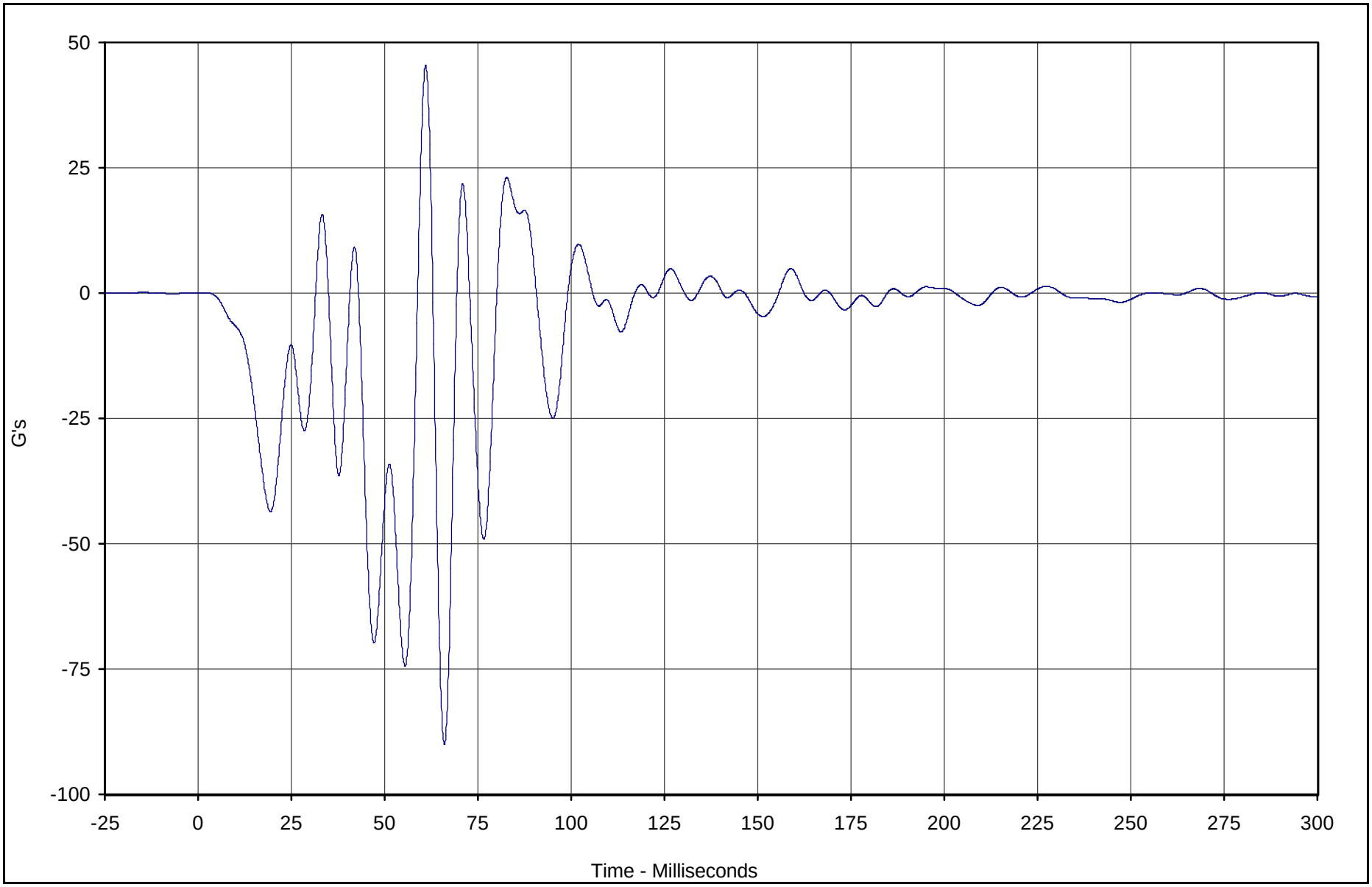
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Right Brake Caliper Displ.	094	IN2	CM	59.8	55.6	0.0	0.0	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



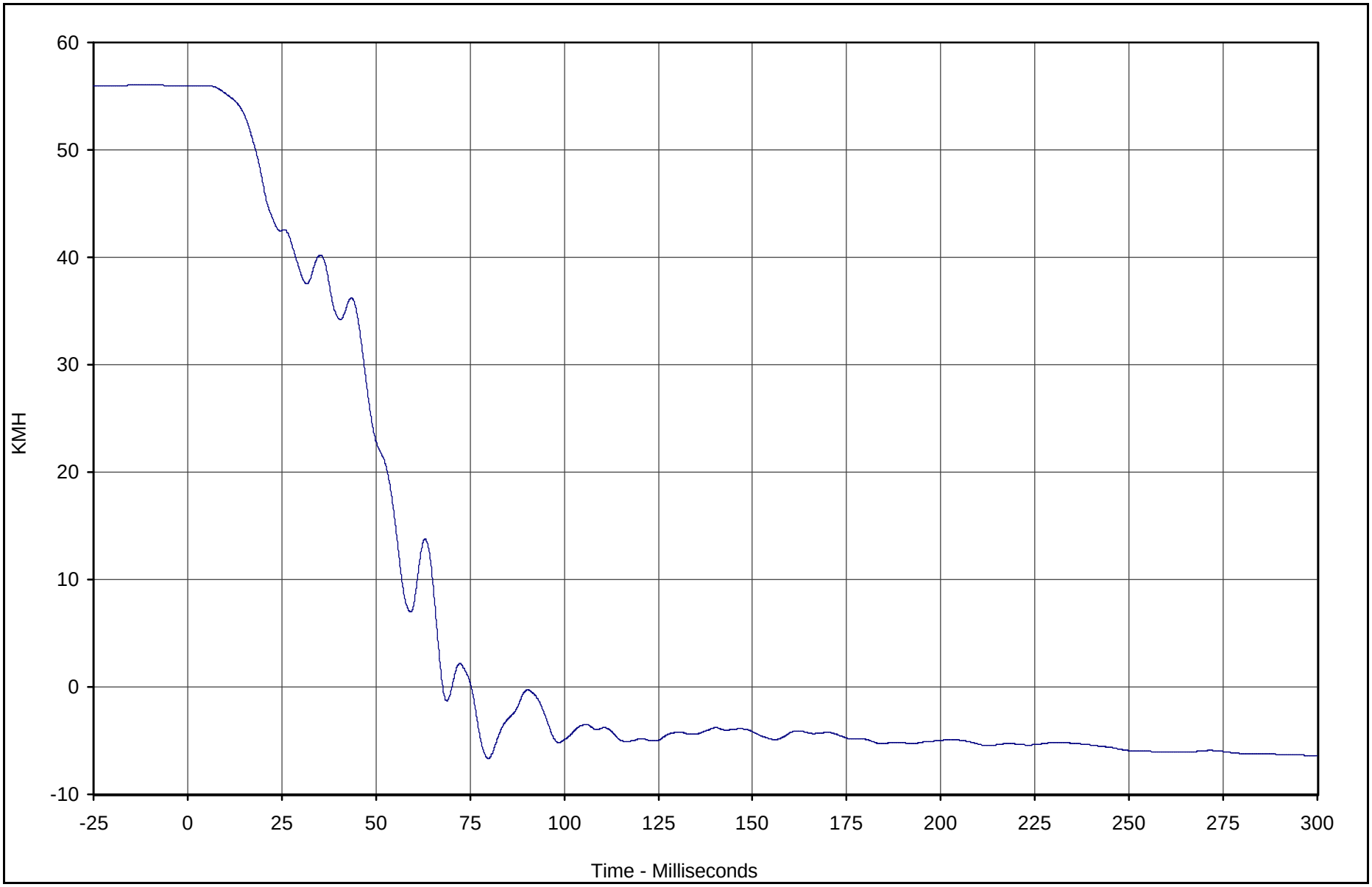
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Instrument Panel	095	FIL	G's	45.4	61.0	-90.1	66.0	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



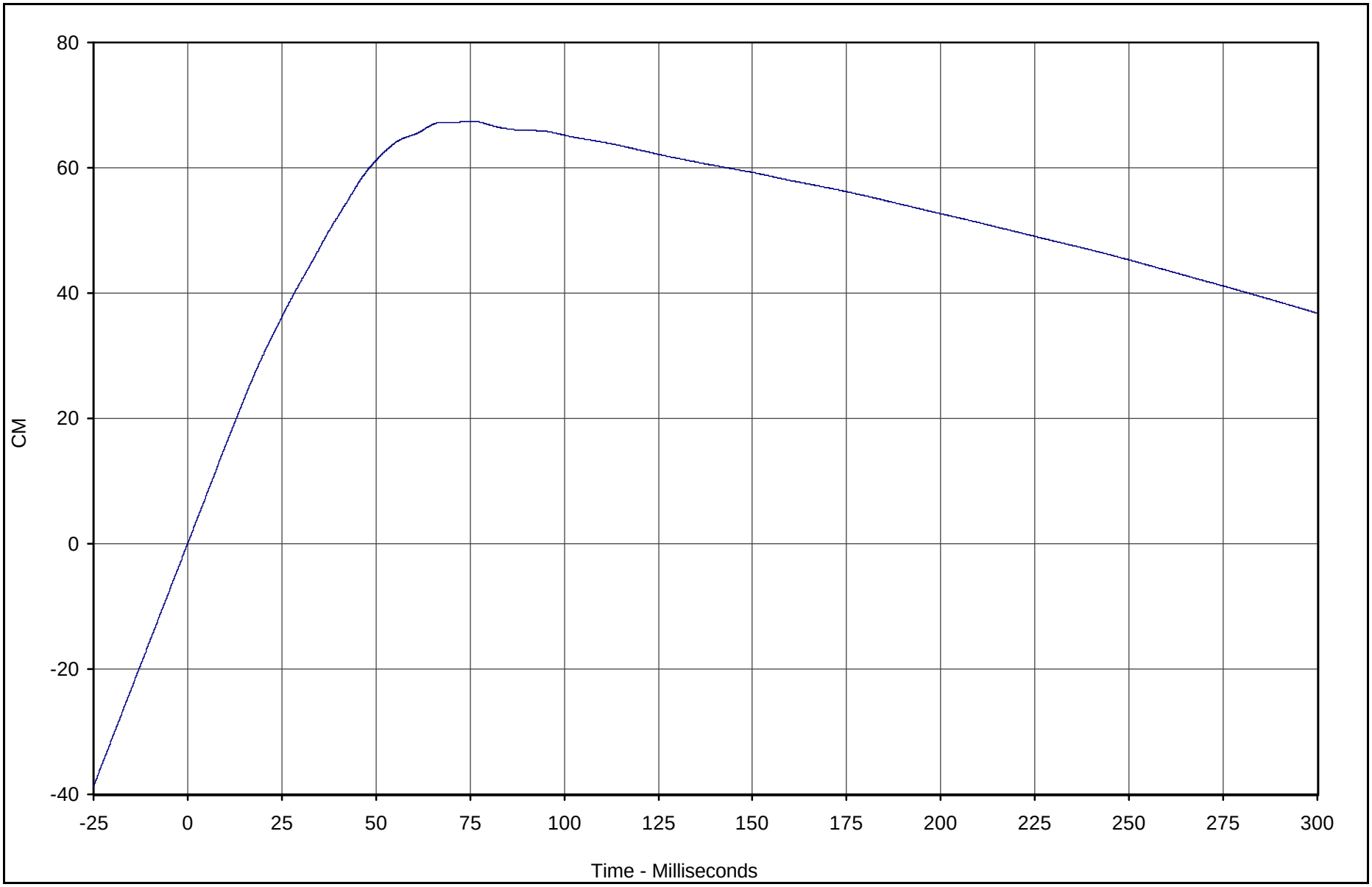
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Instrument Panel Velocity	095	IN1	KMH	56.0	0.0	-6.7	79.8	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



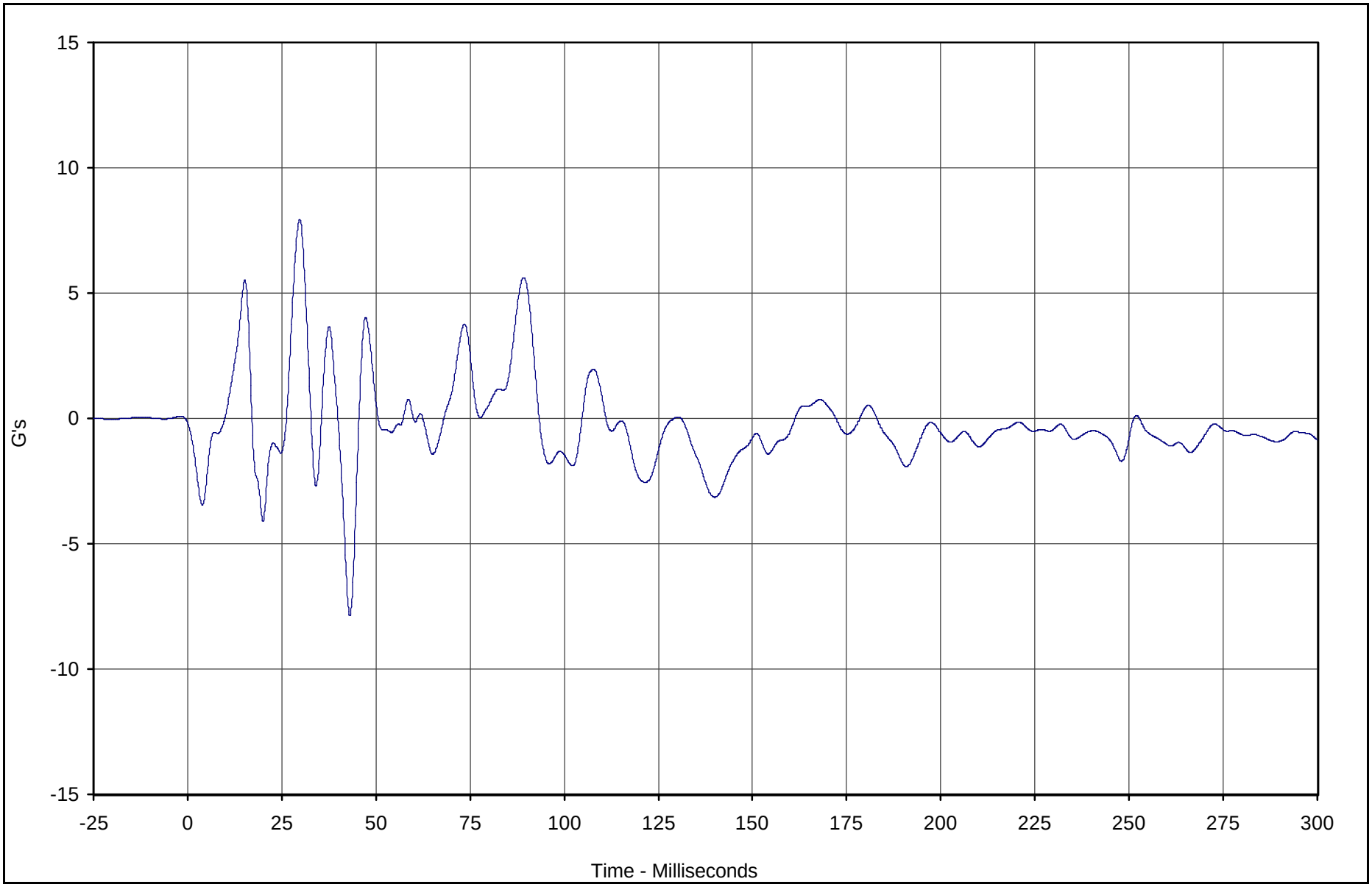
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Instrument Panel Displacement	095	IN2	CM	67.4	75.3	0.0	0.0	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



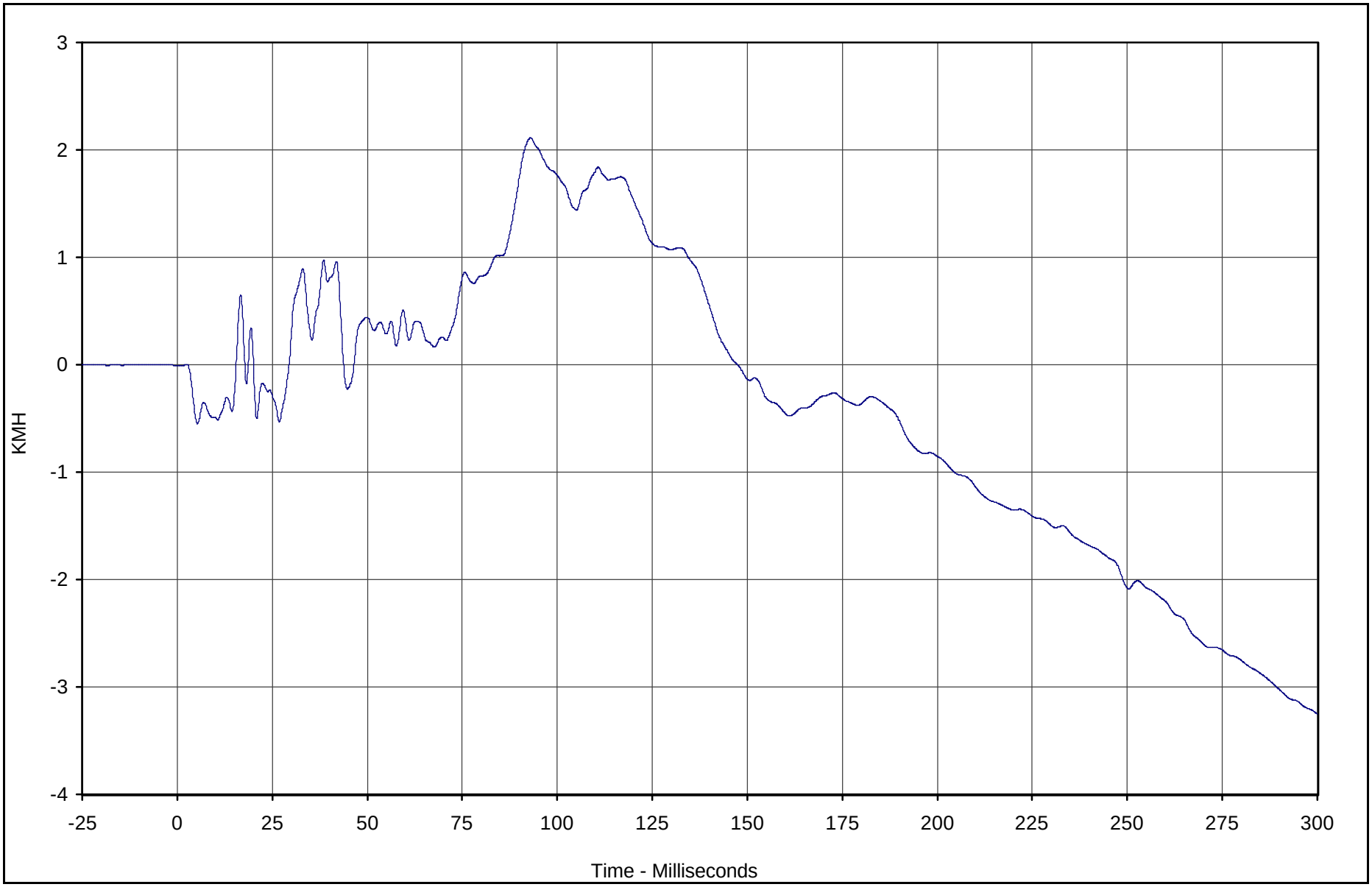
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Left Rear Z	096	FIL	G's	7.9	29.8	-7.9	43.1	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



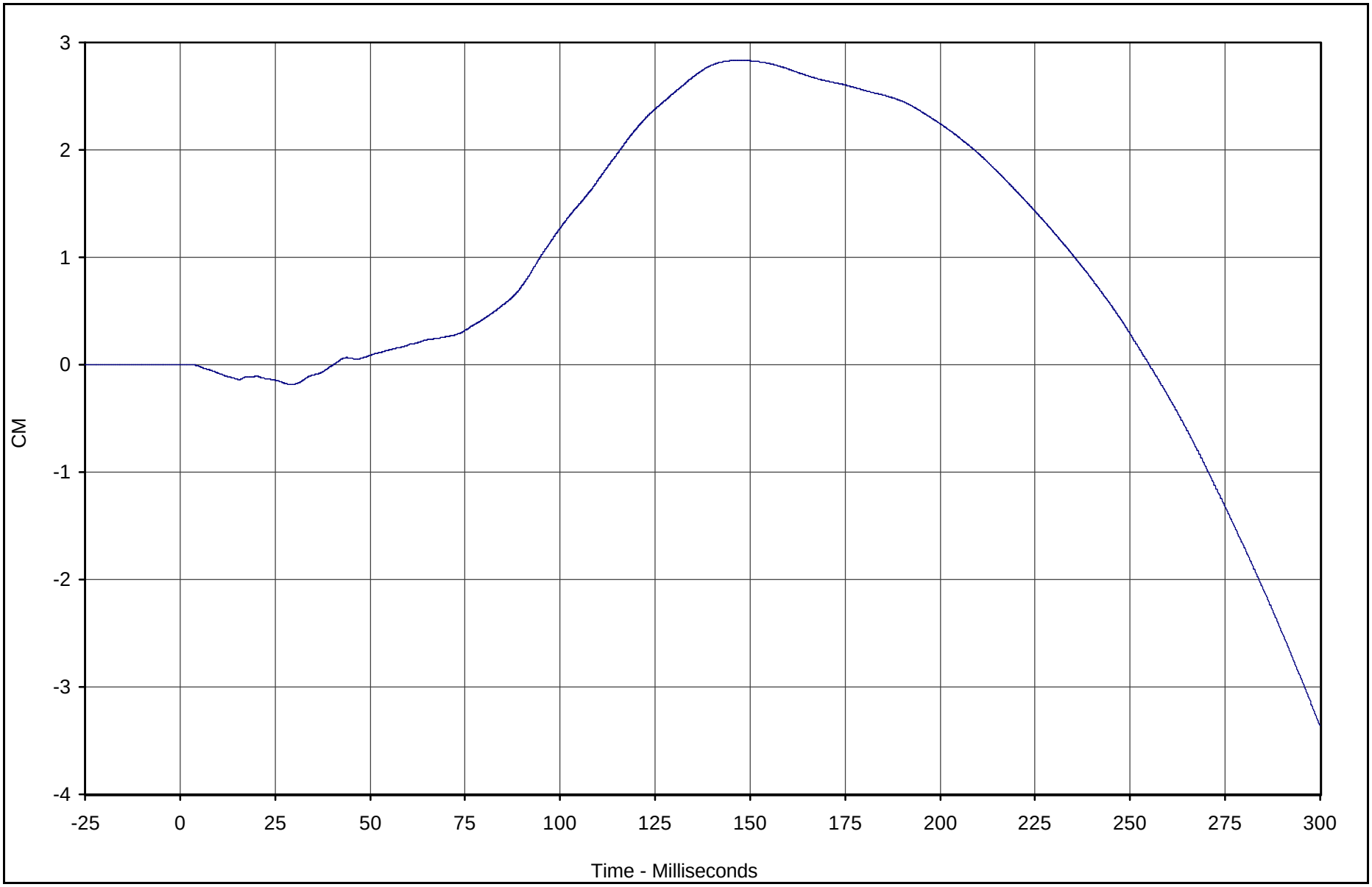
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Left Rear Z Velocity	096	IN1	KMH	2.1	92.9	-3.3	299.9	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



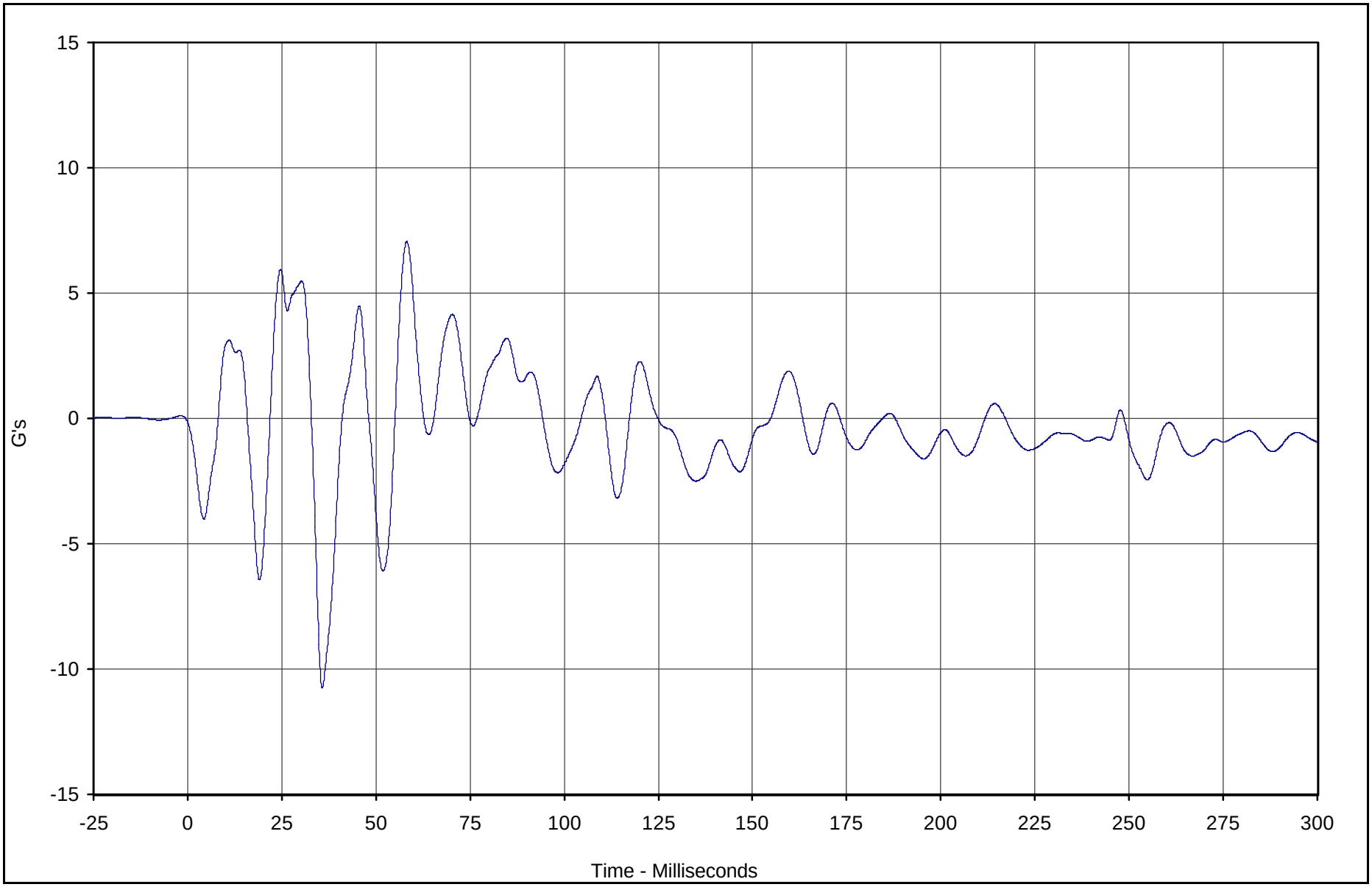
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Left Rear Z Displ.	096	IN2	CM	2.8	147.4	-3.4	299.9	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



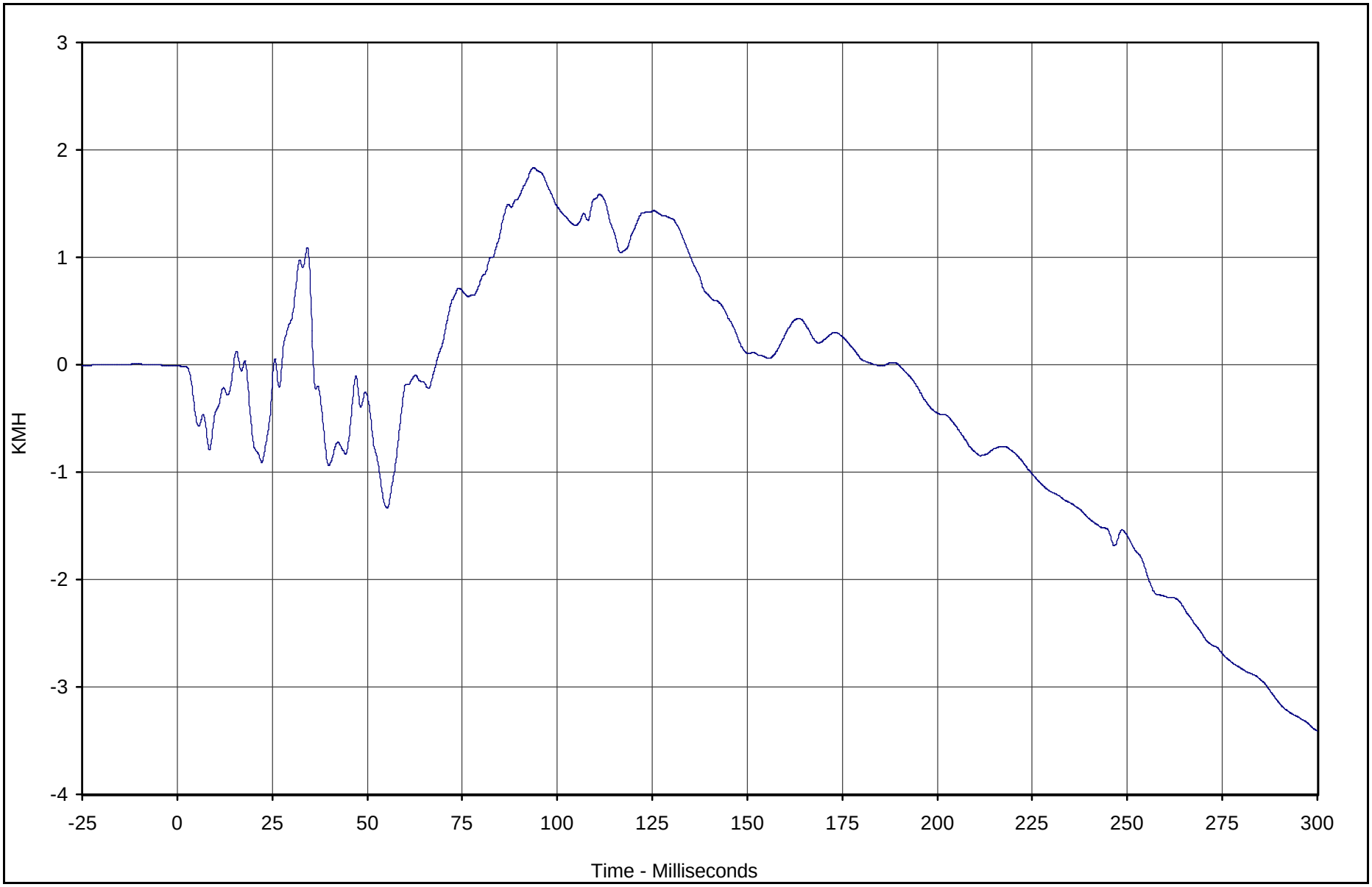
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Right Rear Z	097	FIL	G's	7.0	58.2	-10.8	35.8	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



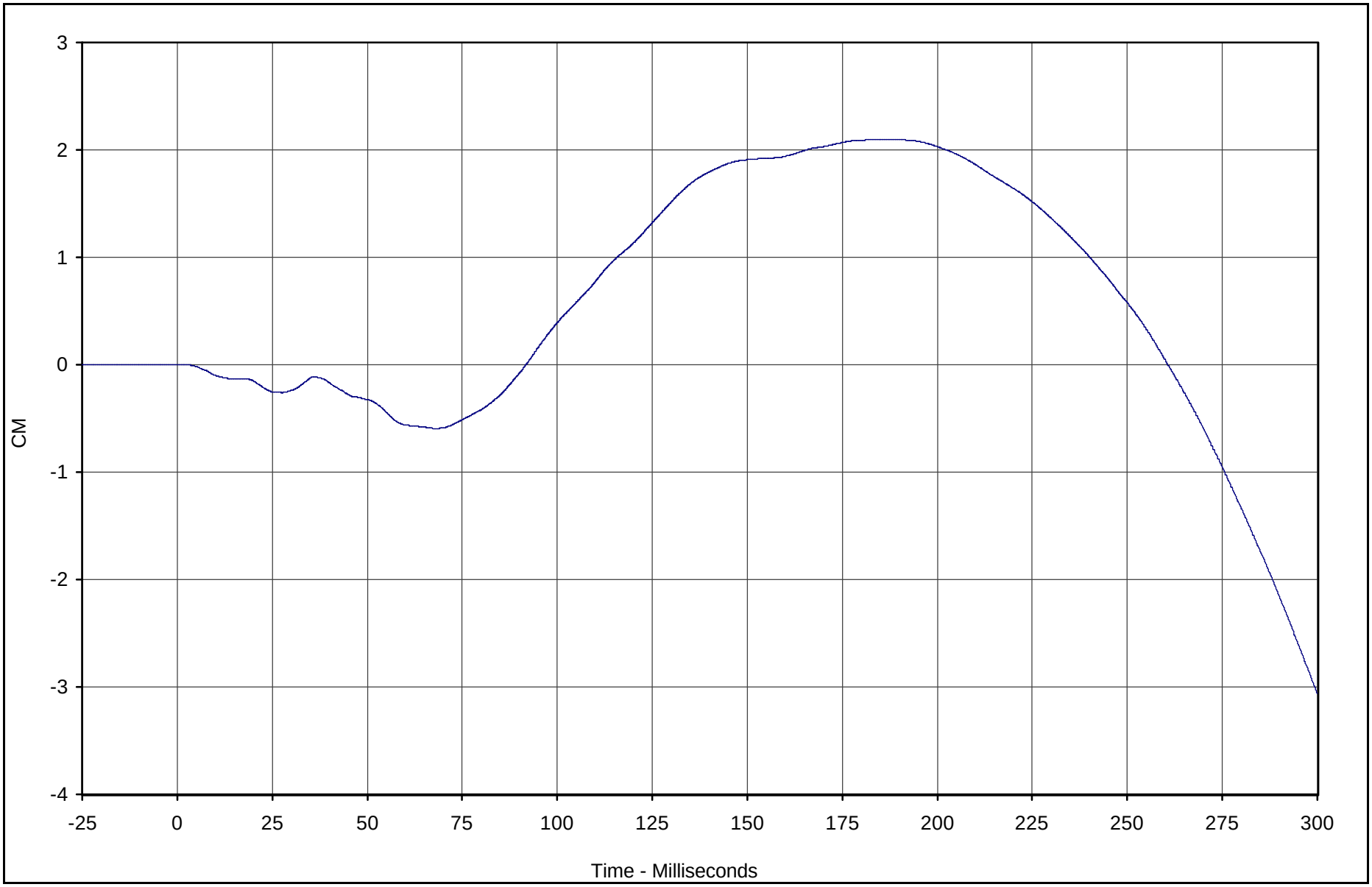
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Right Rear Z Velocity	097	IN1	KMH	1.8	93.8	-3.4	299.9	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Right Rear Z Displ.	097	IN2	CM	2.1	189.7	-3.1	299.9	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

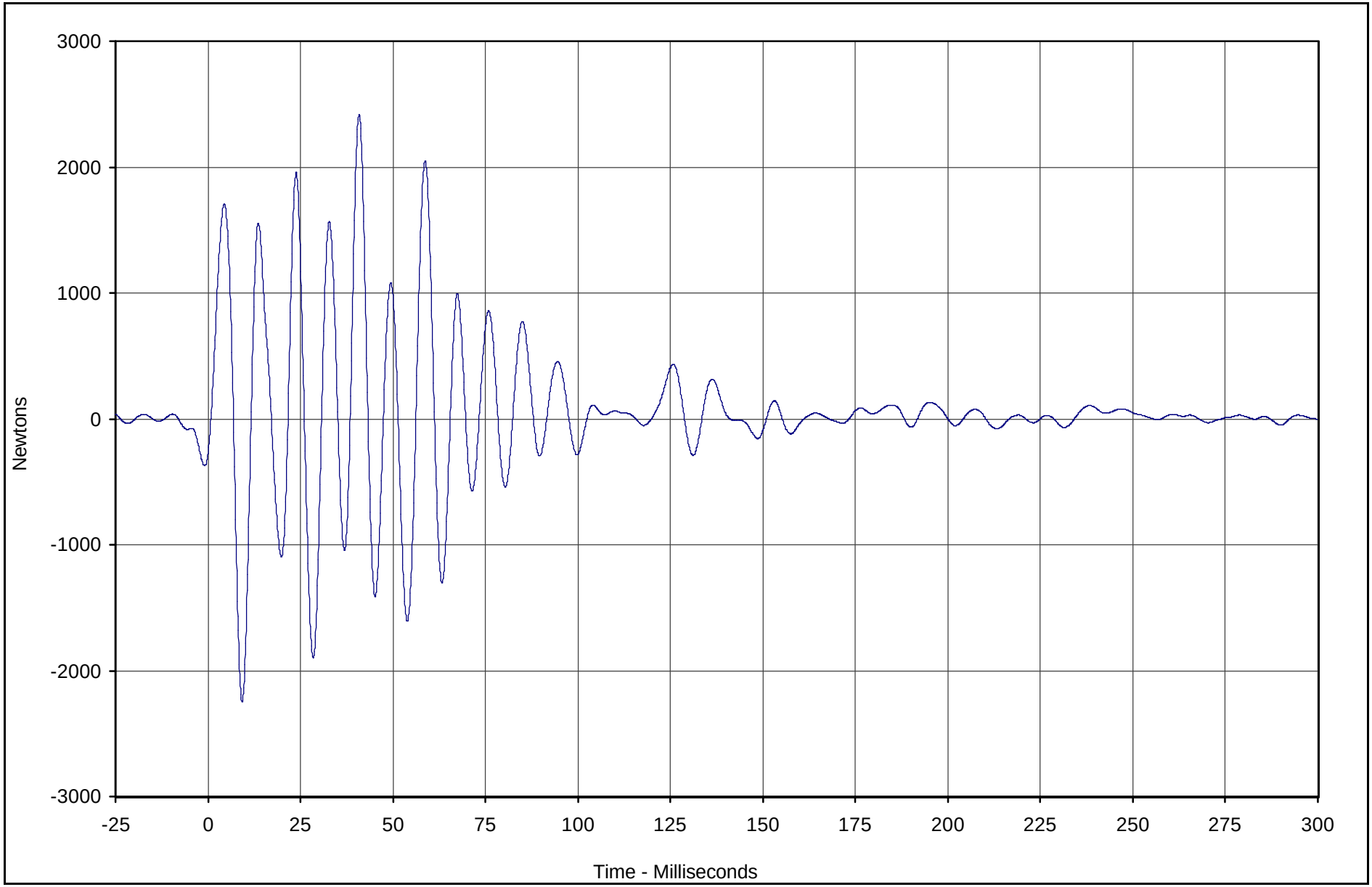
Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600

APPENDIX C

LOAD CELL BARRIER DATA PLOTS



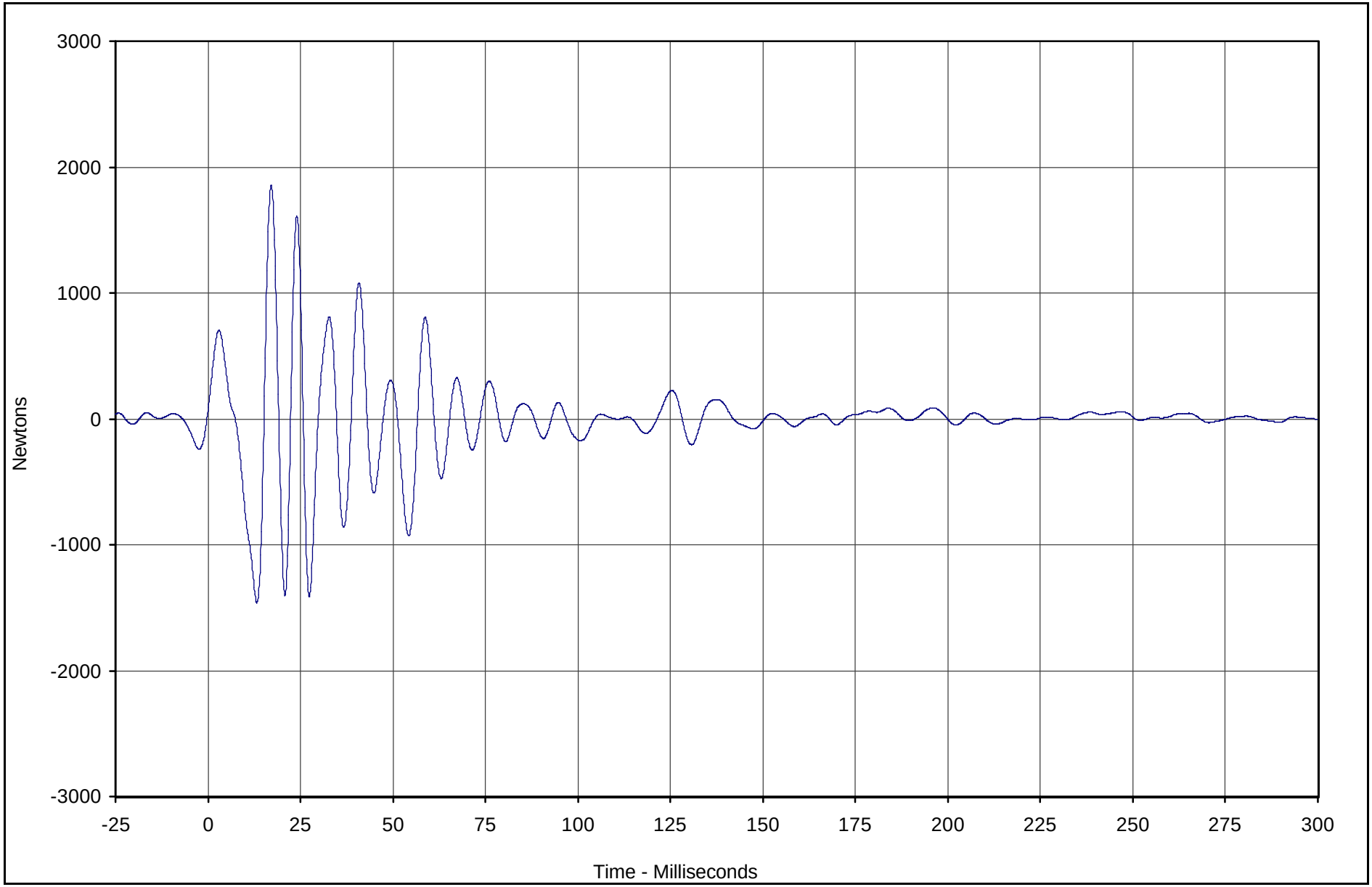
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force A1	098	FIL	Newtons	2416.3	40.9	-2246.1	9.2	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



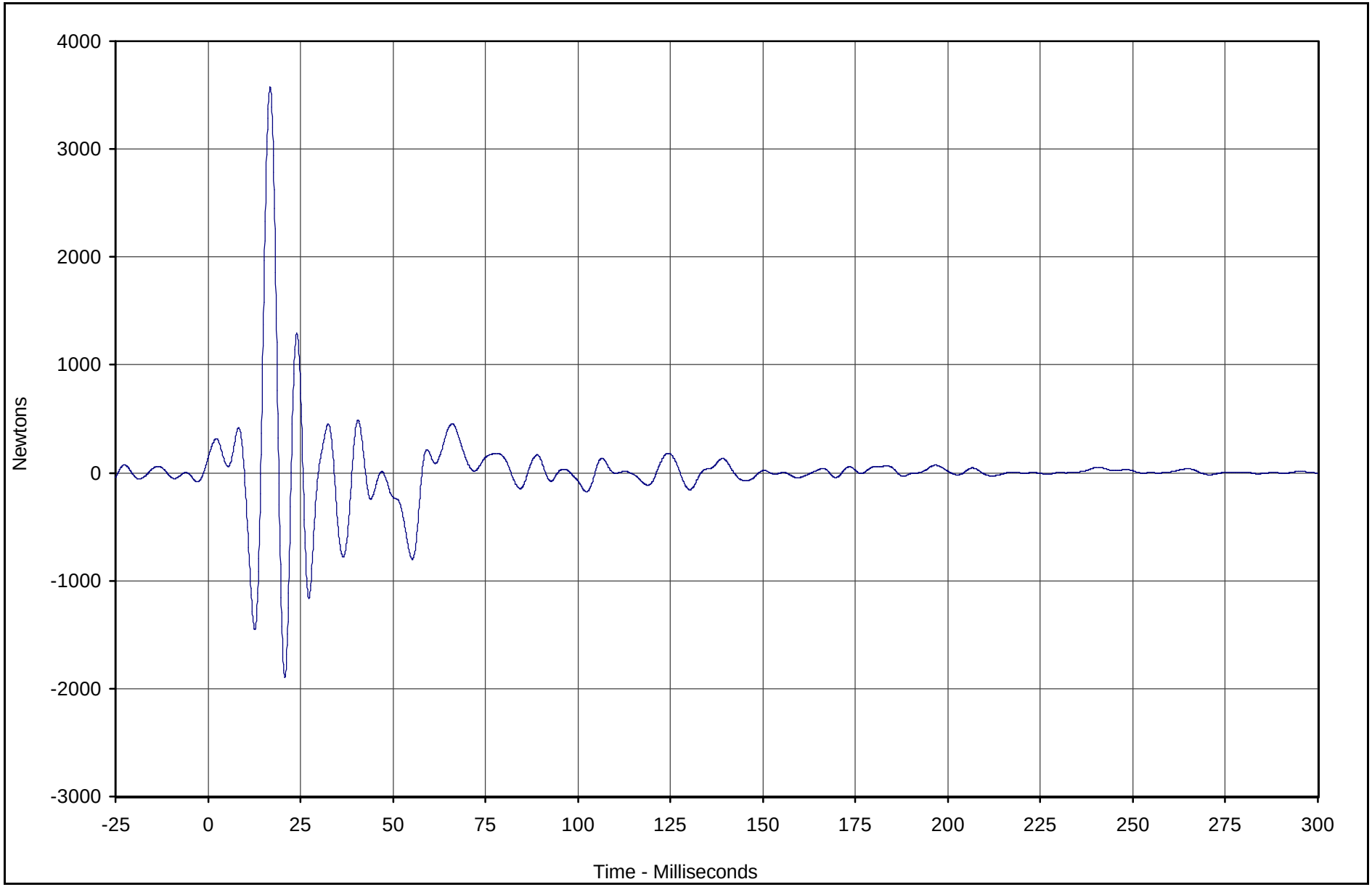
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force A2	099	FIL	Newtons	1854.5	17.1	-1461.4	13.2	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



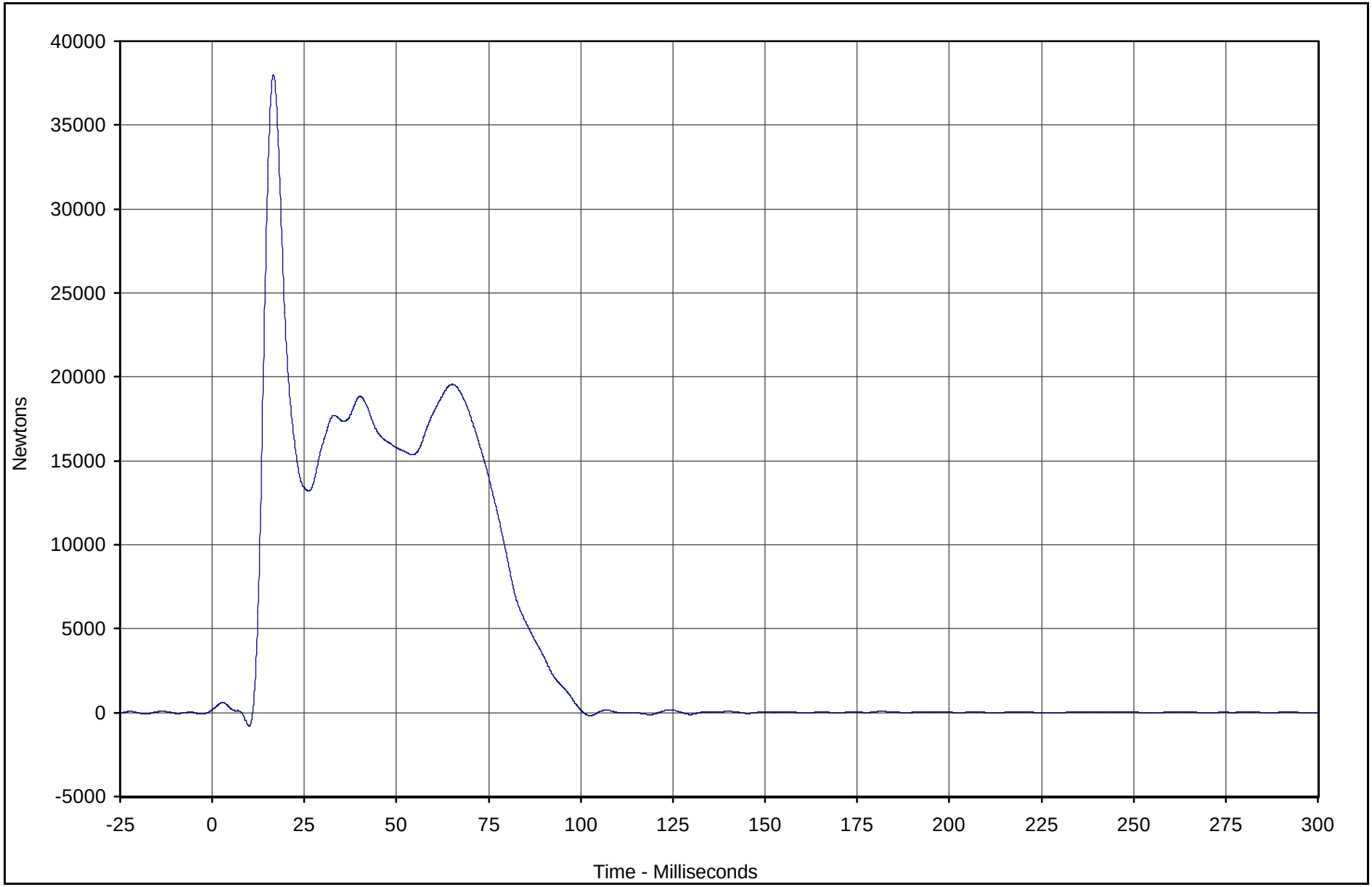
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force A3	100	FIL	Newtons	3575.8	16.8	-1895.8	20.8	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



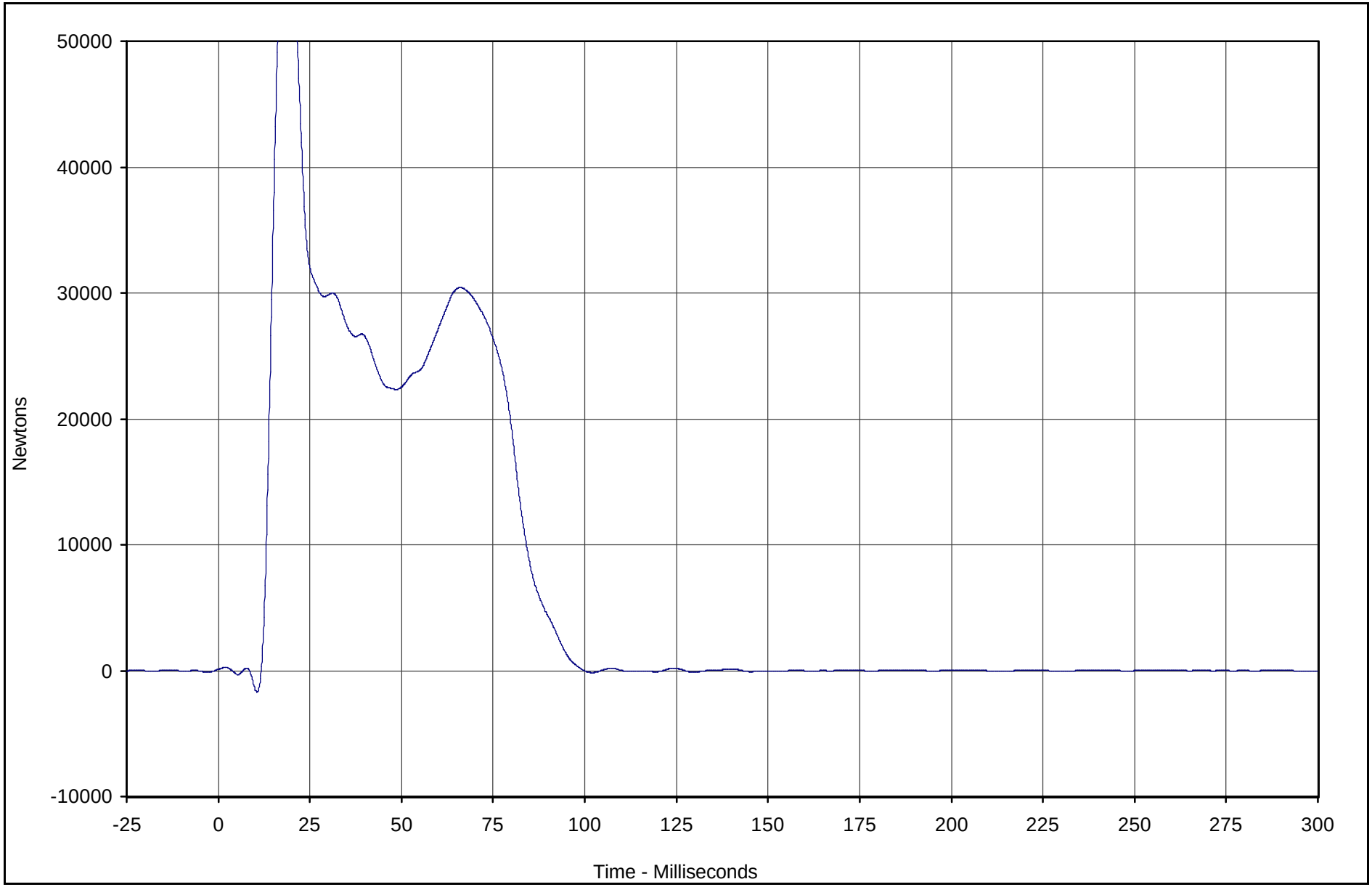
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force A4	101	FIL	Newtons	38020.2	16.6	-793.8	10.0	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



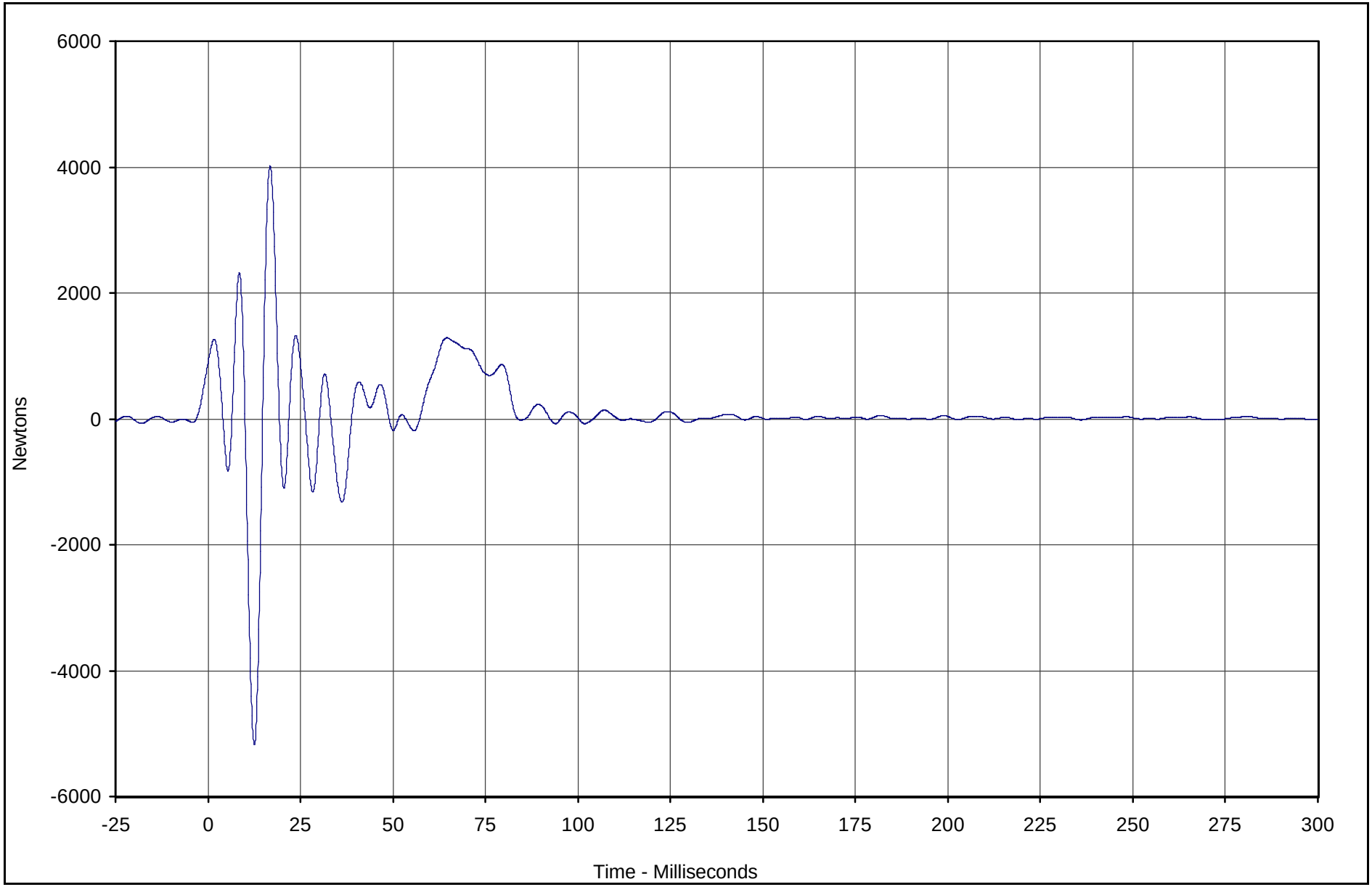
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force A5	102	FIL	Newtons	59688.0	18.2	-1702.6	10.6	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



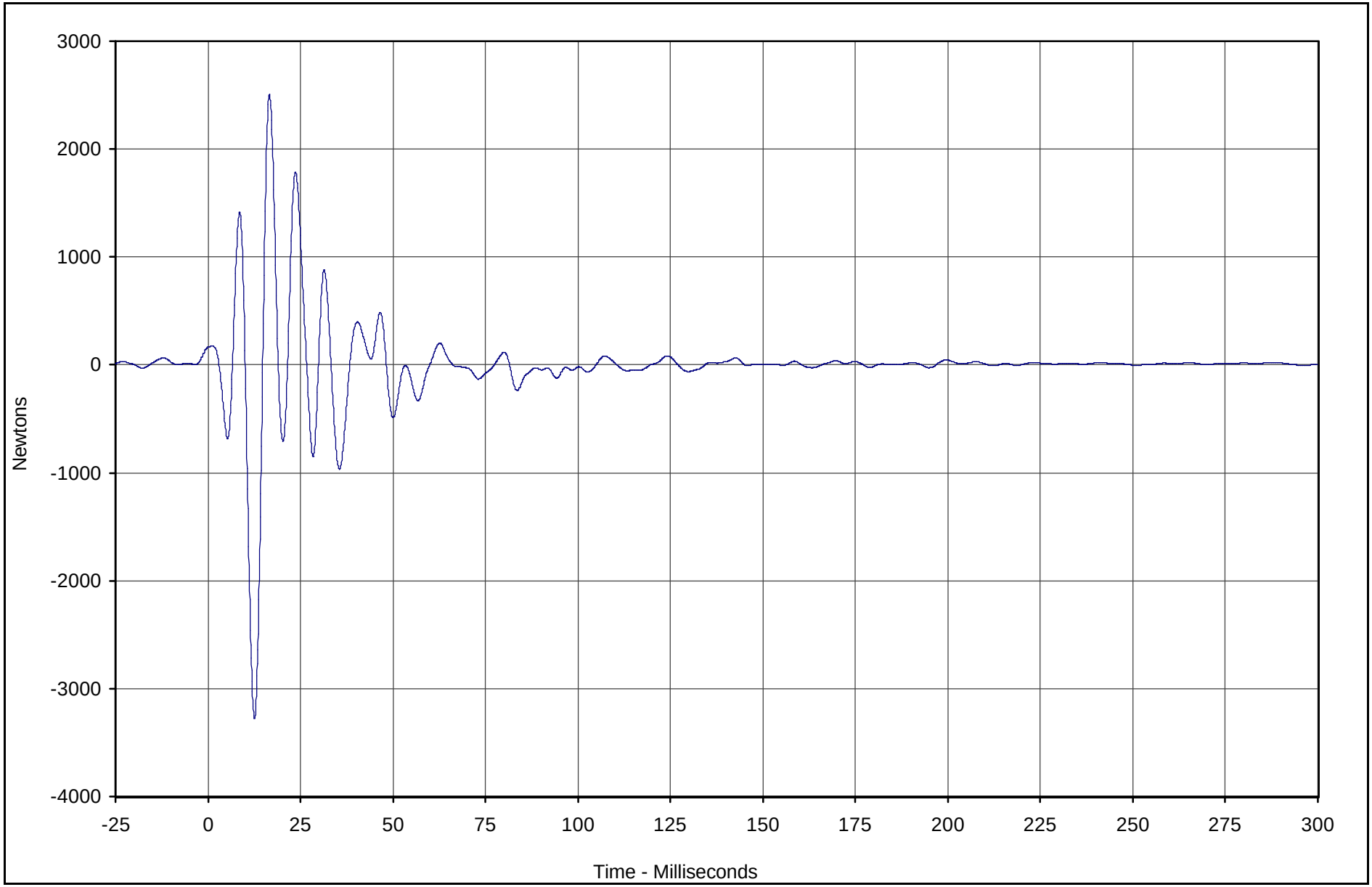
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force A6	103	FIL	Newtons	4021.0	16.8	-5174.9	12.5	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



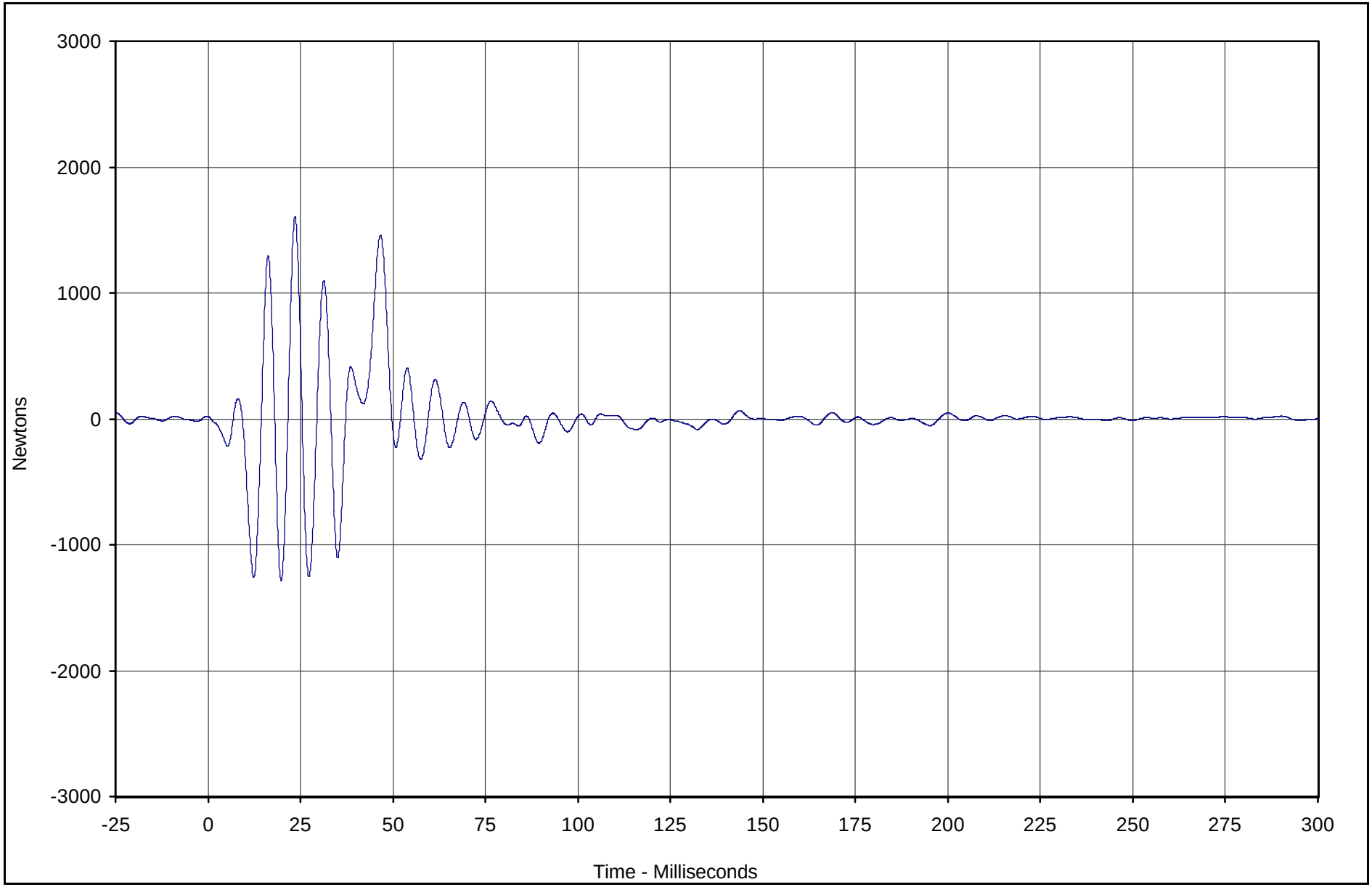
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force A7	104	FIL	Newtons	2506.6	16.6	-3280.4	12.6	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



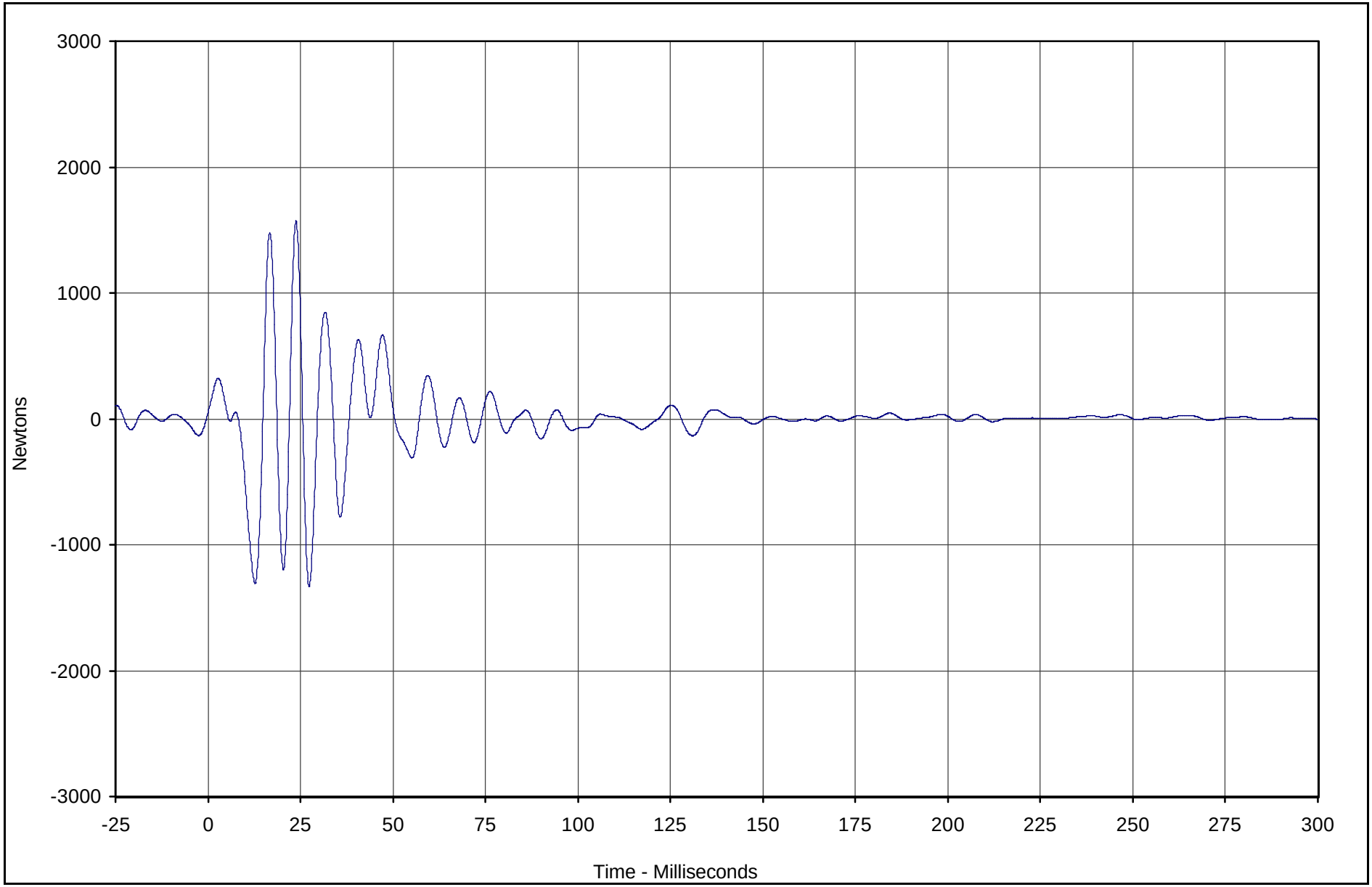
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force A8	105	FIL	Newtons	1605.5	23.5	-1286.3	19.8	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



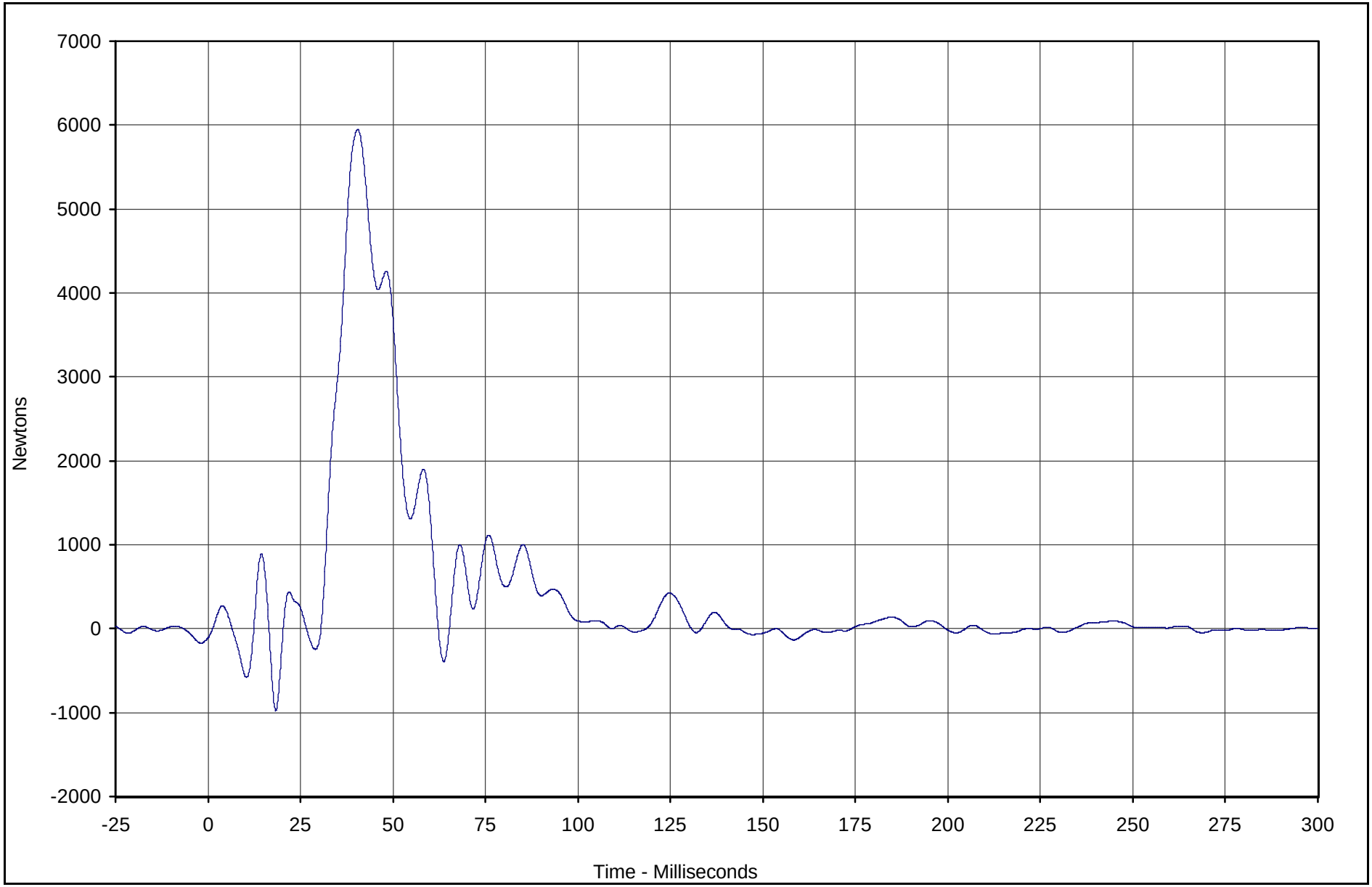
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force A9	106	FIL	Newtons	1574.5	23.8	-1331.2	27.4	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



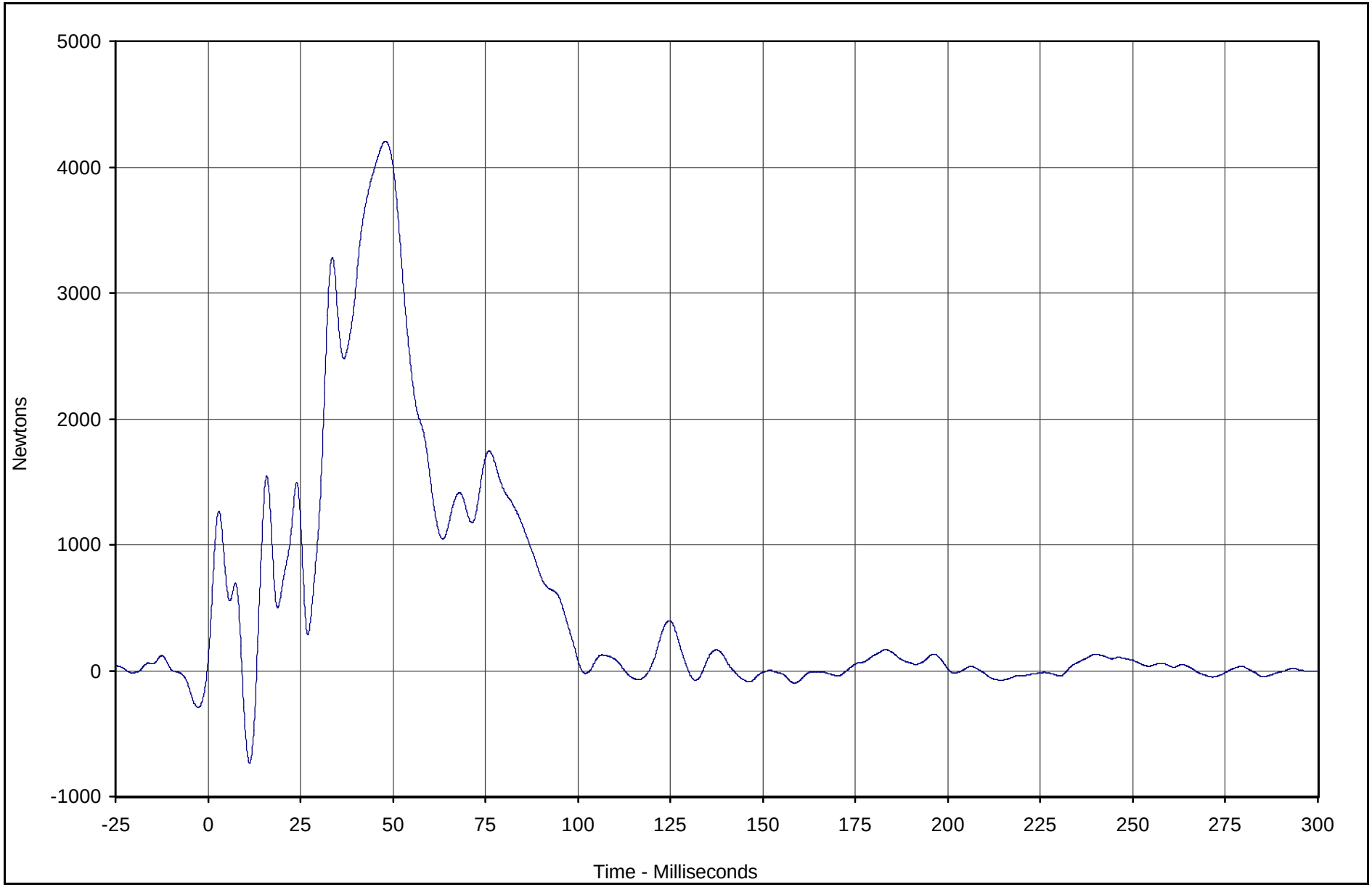
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force B1	107	FIL	Newtons	5944.0	40.5	-976.4	18.3	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



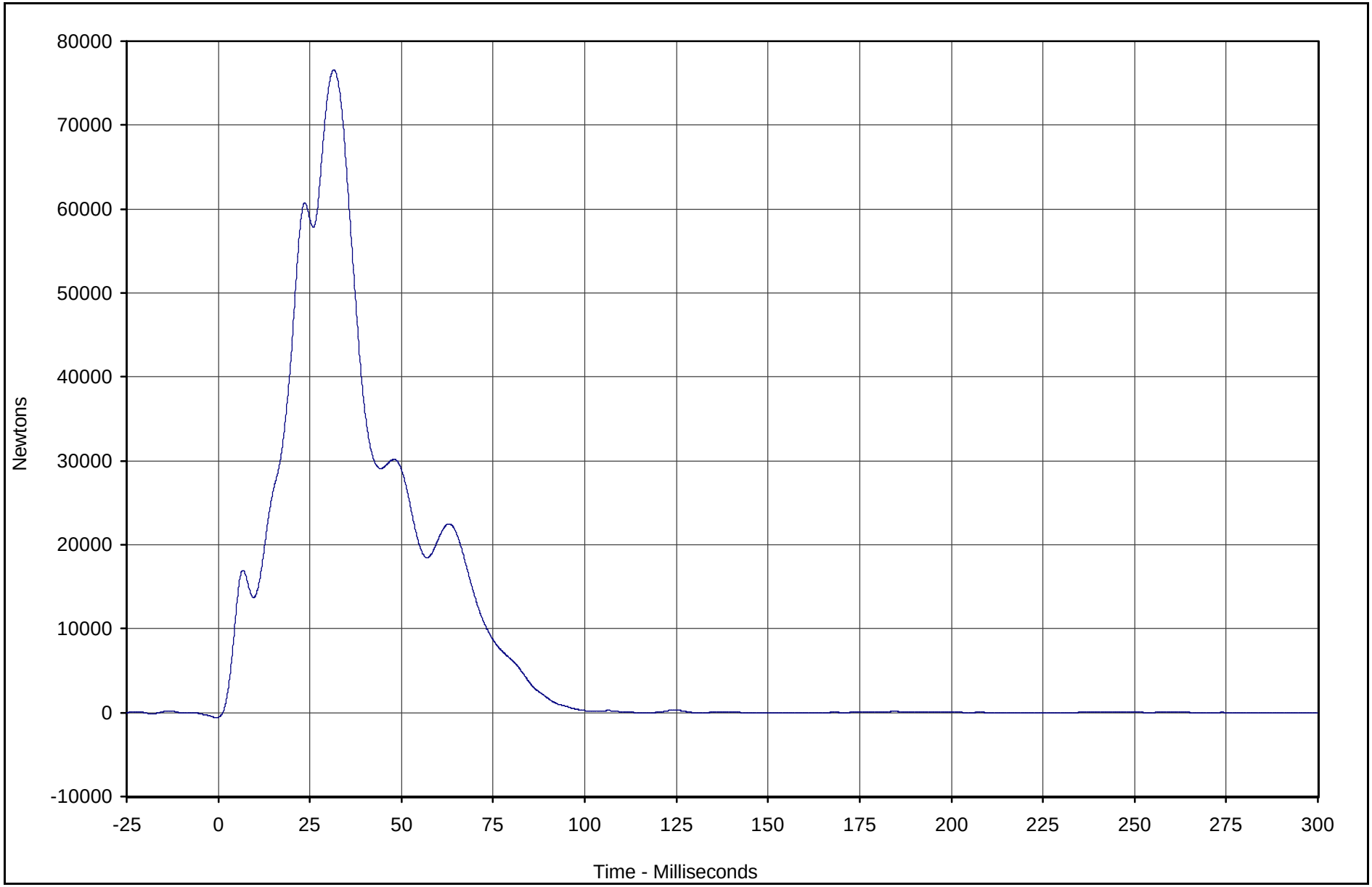
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force B2	108	FIL	Newtons	4206.3	47.9	-735.9	11.2	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



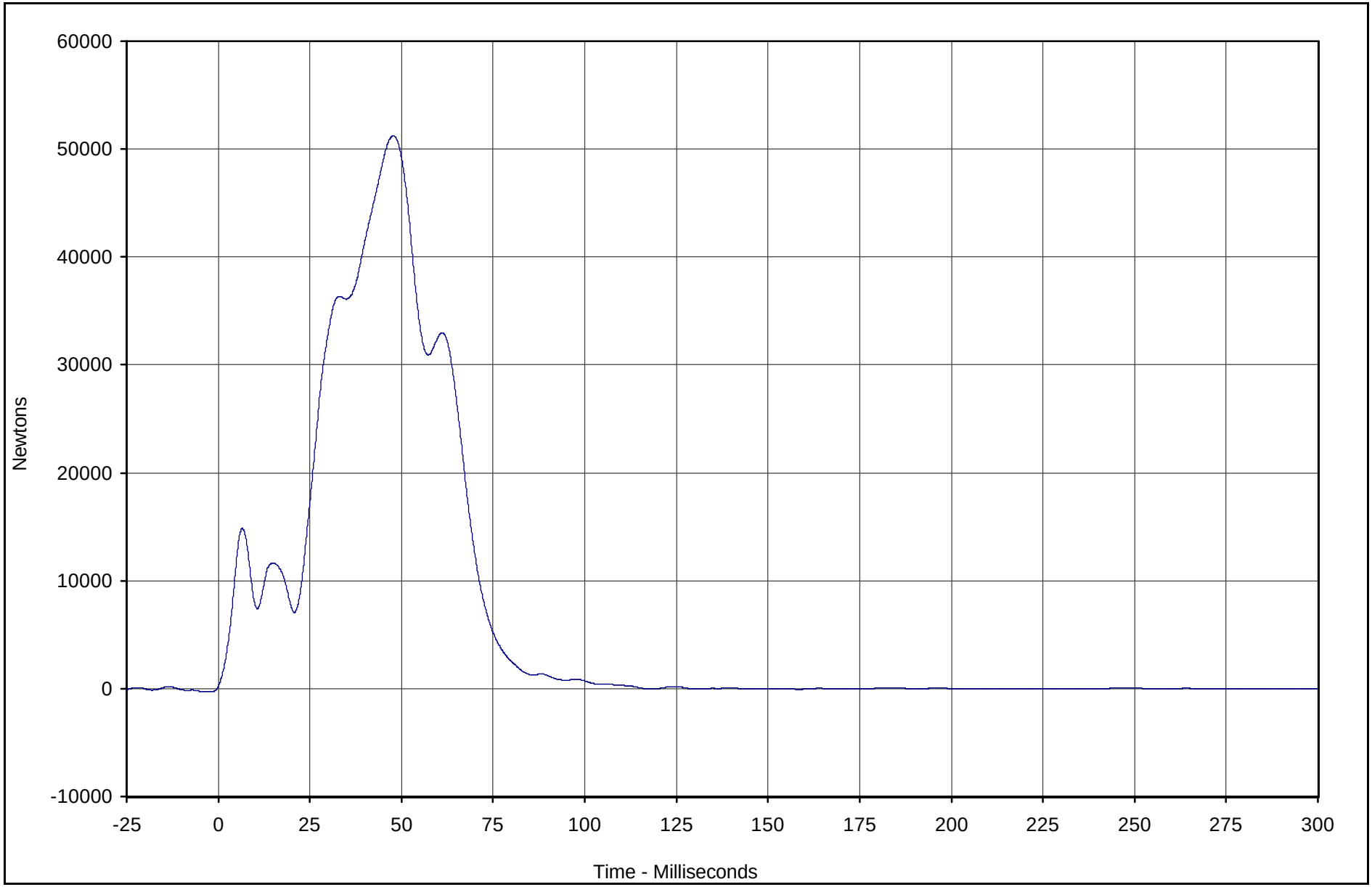
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force B3	109	FIL	Newtons	76569.1	31.5	-595.3	0.0	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



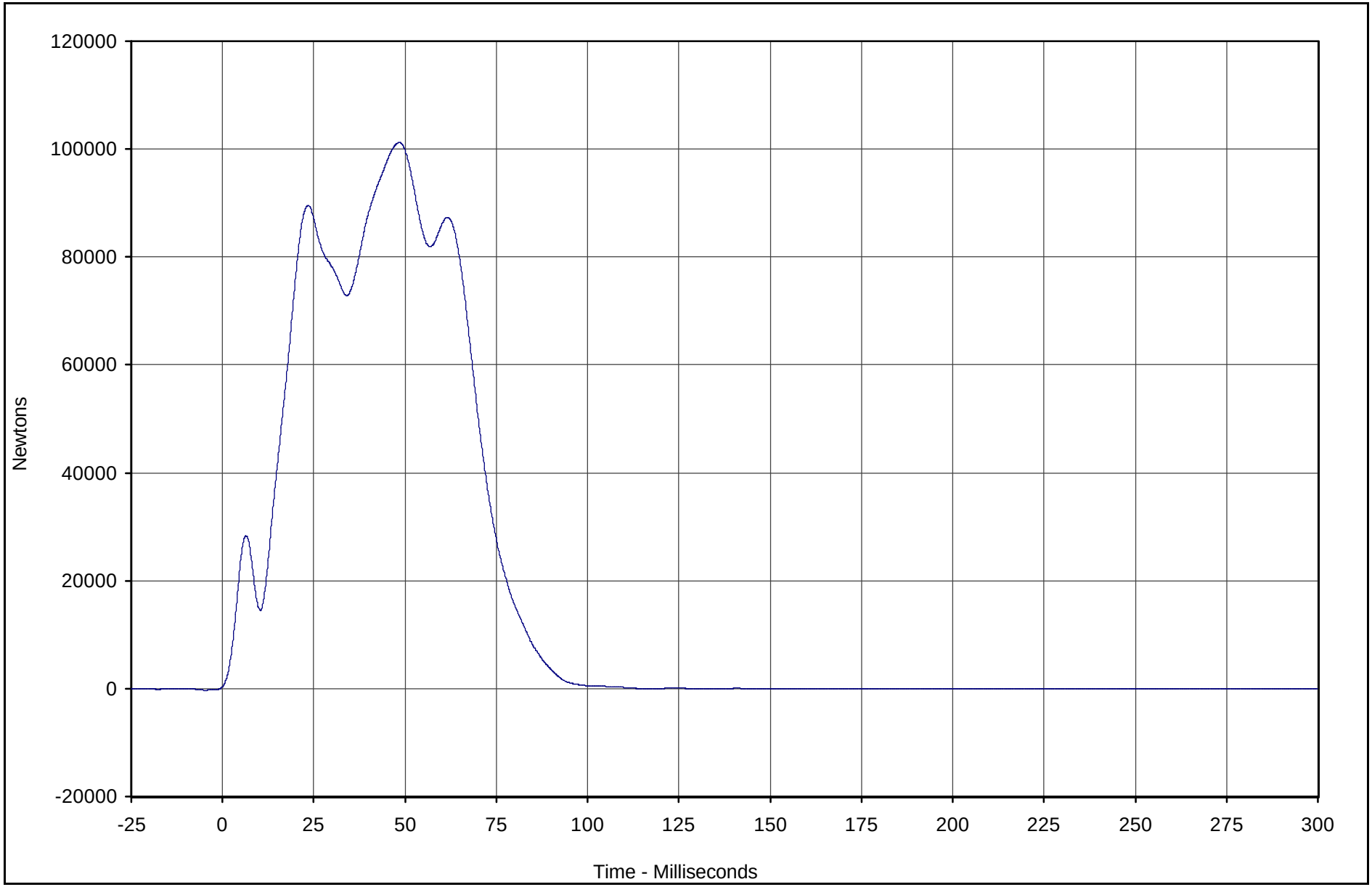
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force B4	110	FIL	Newtons	51233.4	47.8	-61.9	158.5	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



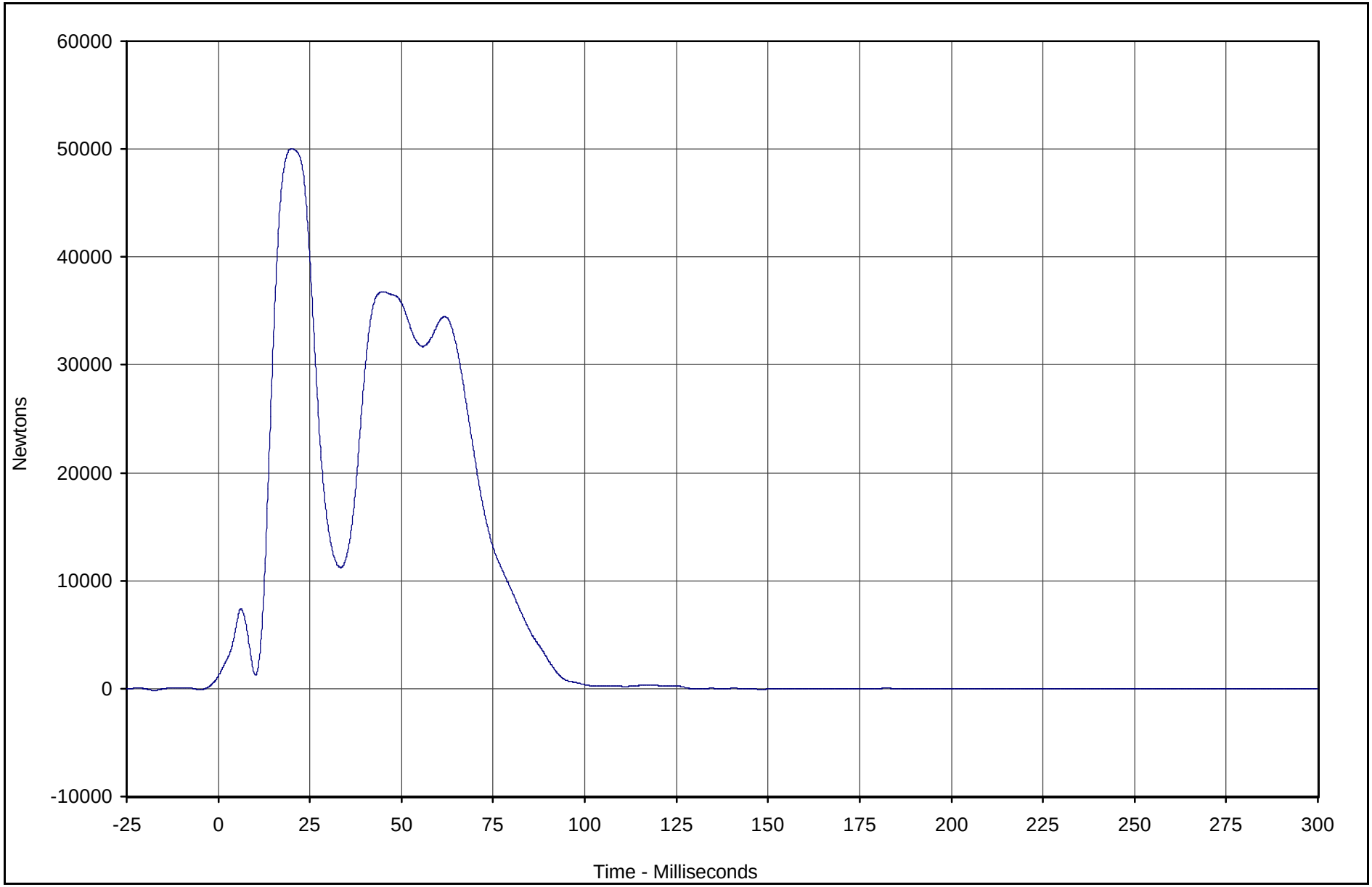
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force B5	111	FIL	Newtons	101195.8	48.4	-67.1	161.0	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



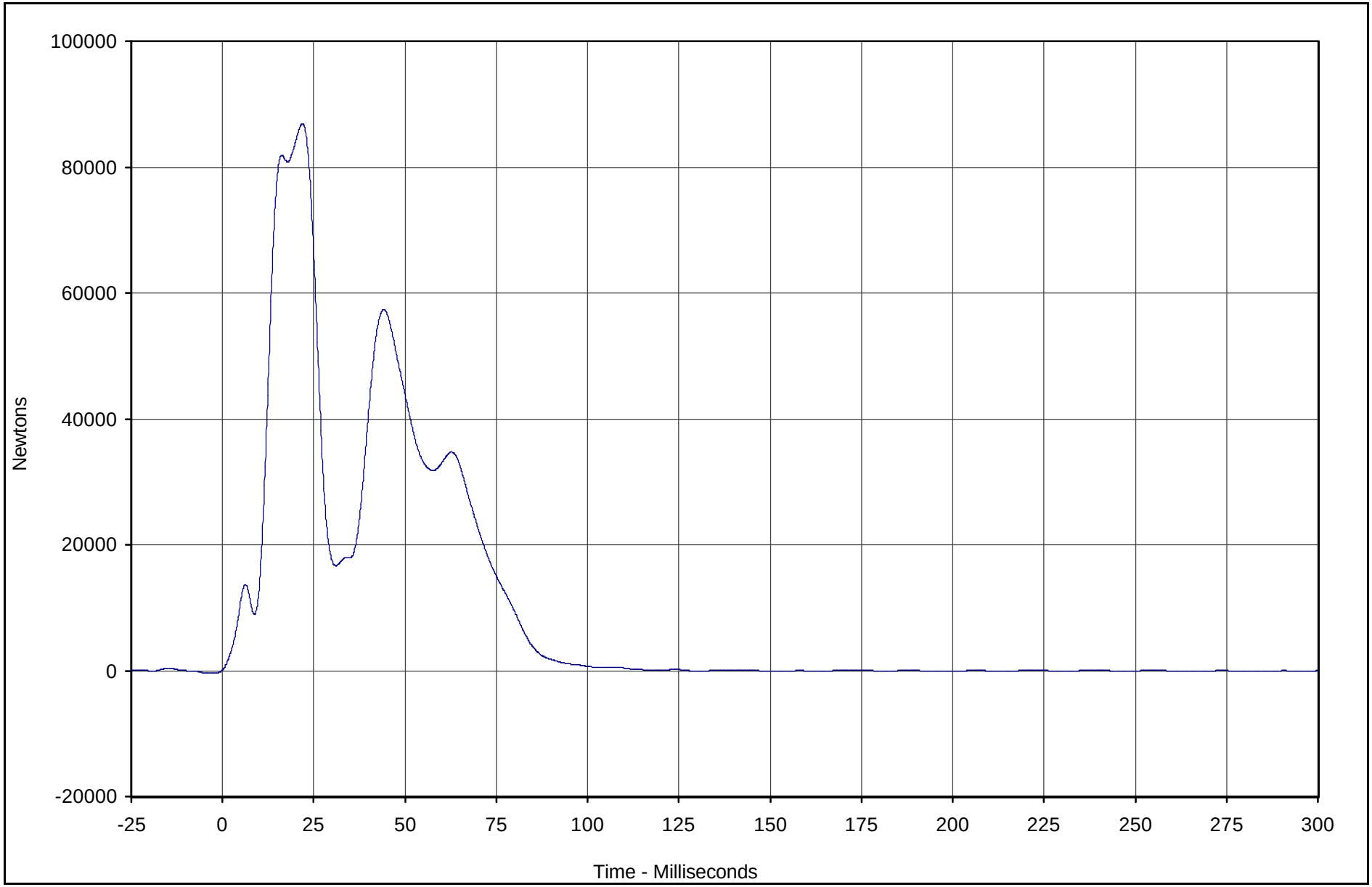
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force B6	112	FIL	Newtons	50034.5	20.0	-69.6	148.5	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



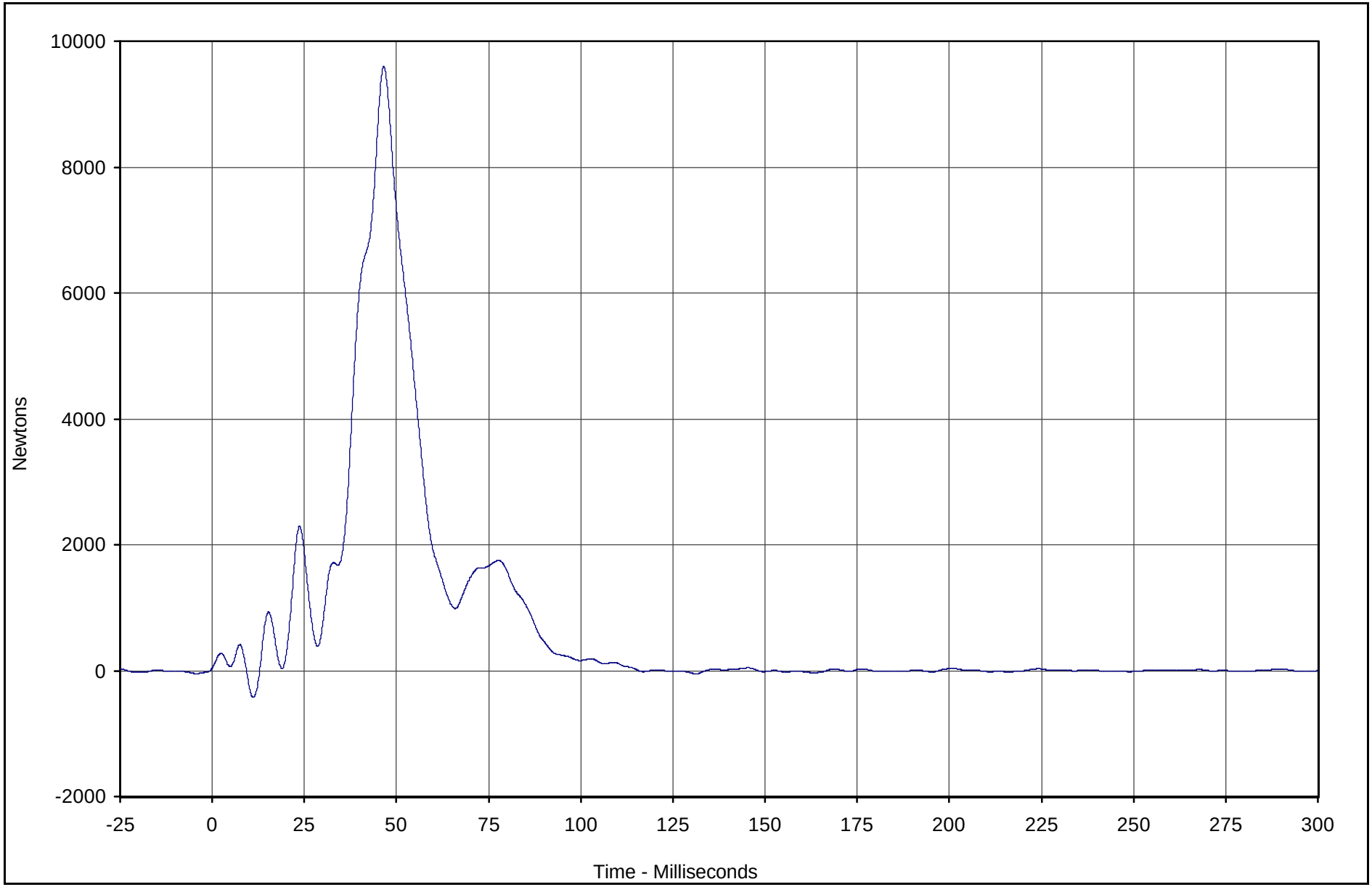
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force B7	113	FIL	Newtons	86909.9	21.9	-75.1	213.1	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



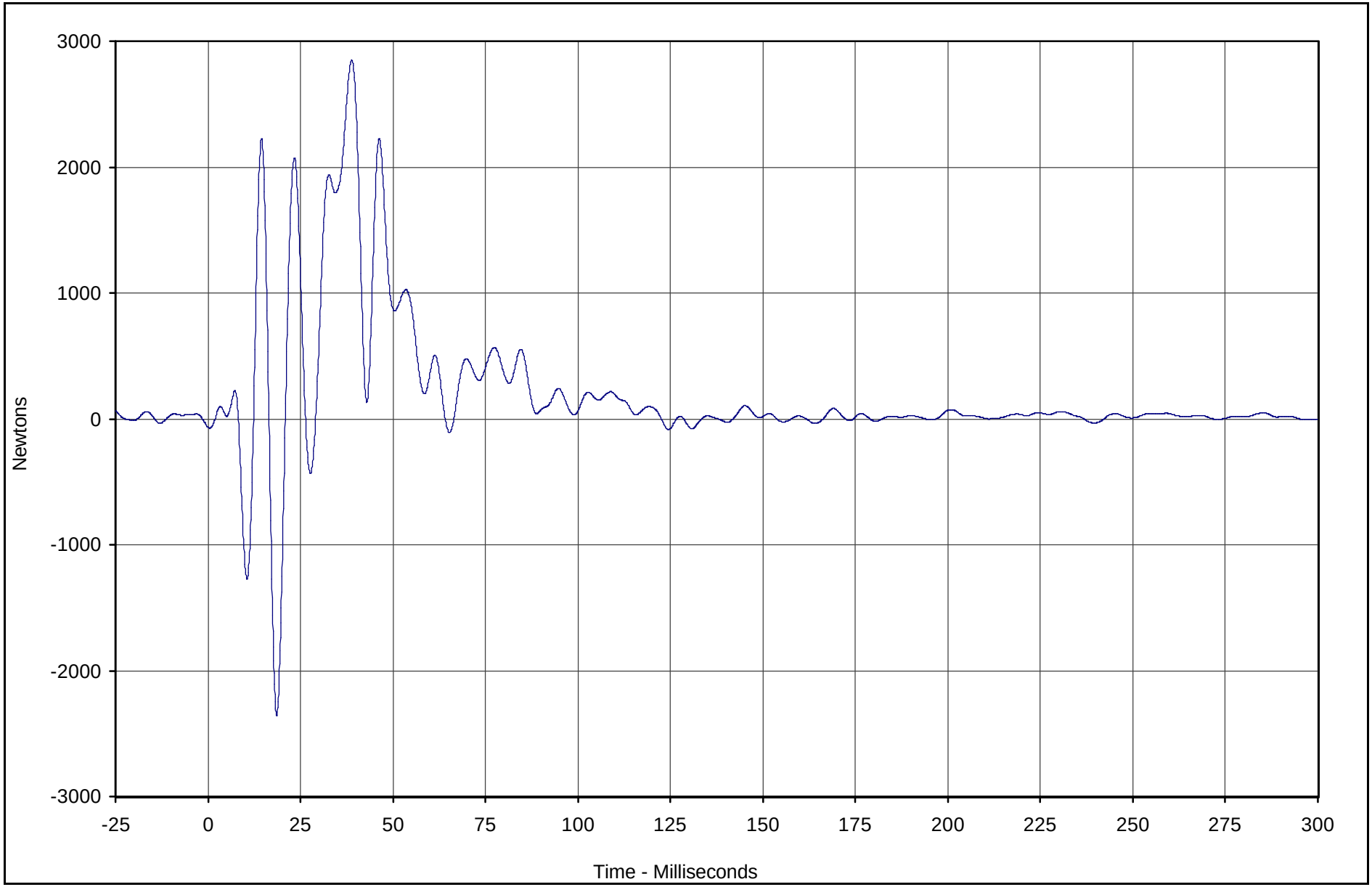
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force B8	114	FIL	Newtons	9597.0	46.6	-426.3	11.1	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



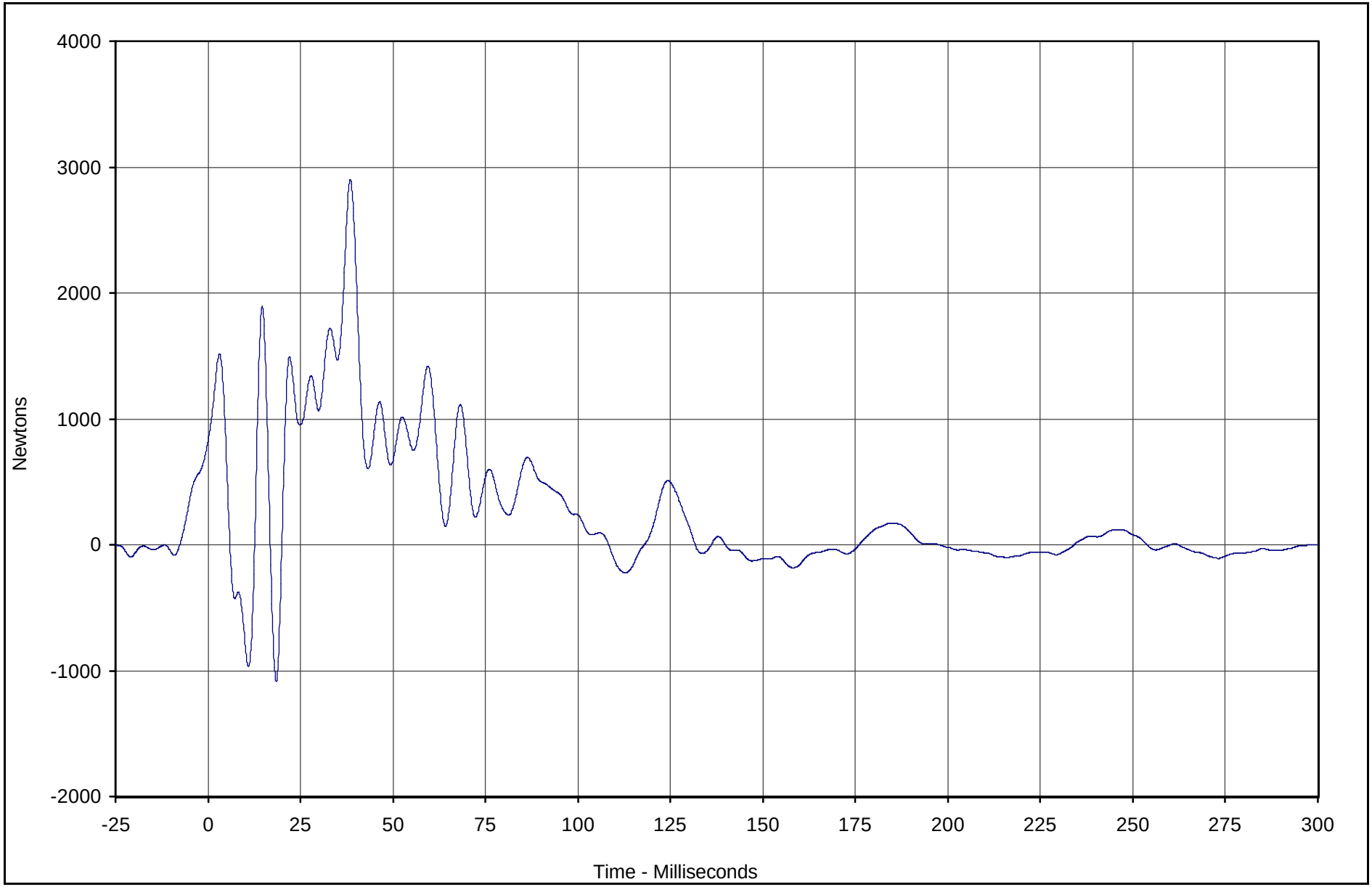
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force B9	115	FIL	Newtons	2850.5	38.9	-2357.2	18.6	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



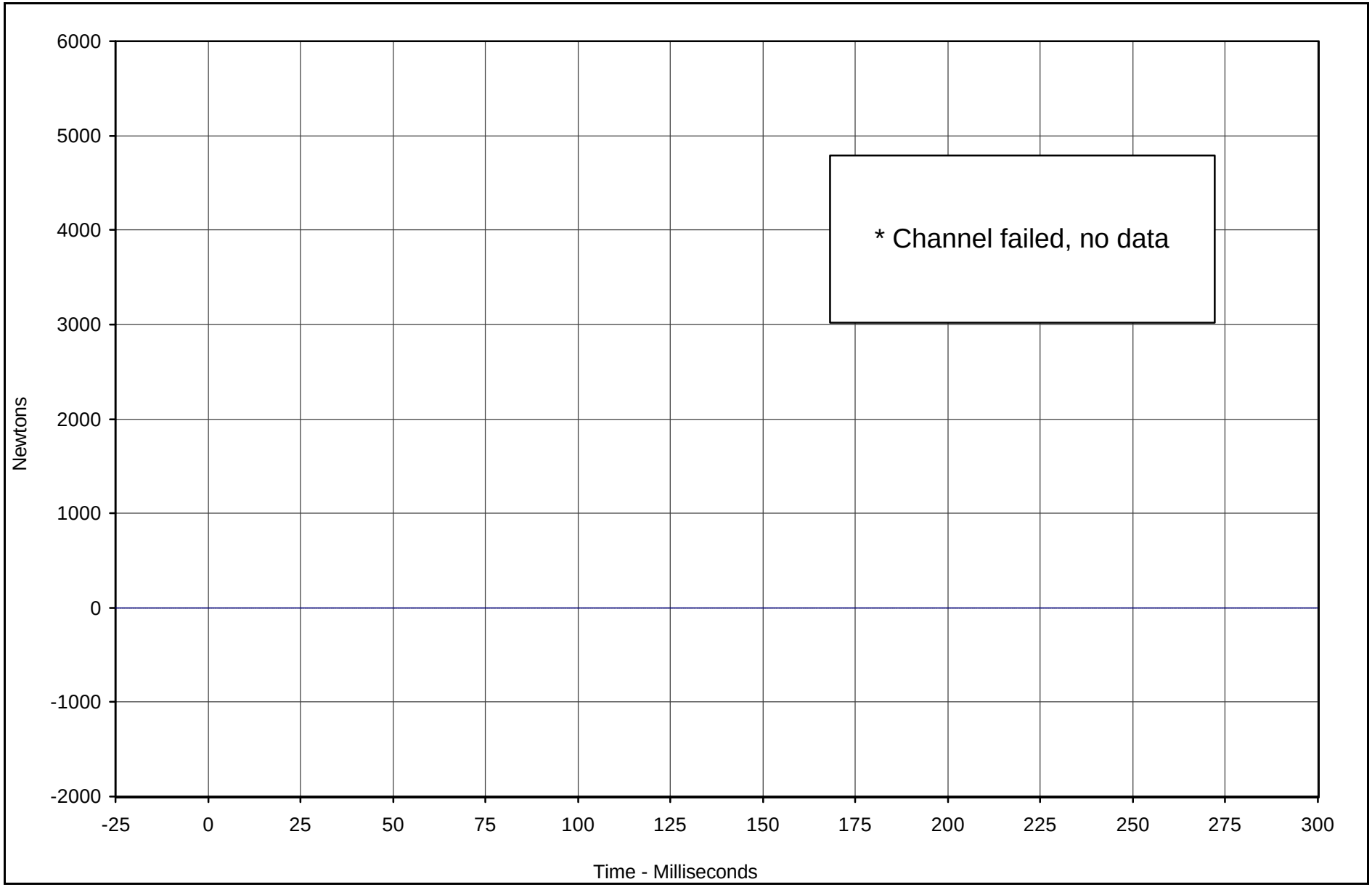
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force C1	116	FIL	Newtons	2901.7	38.5	-1088.5	18.5	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



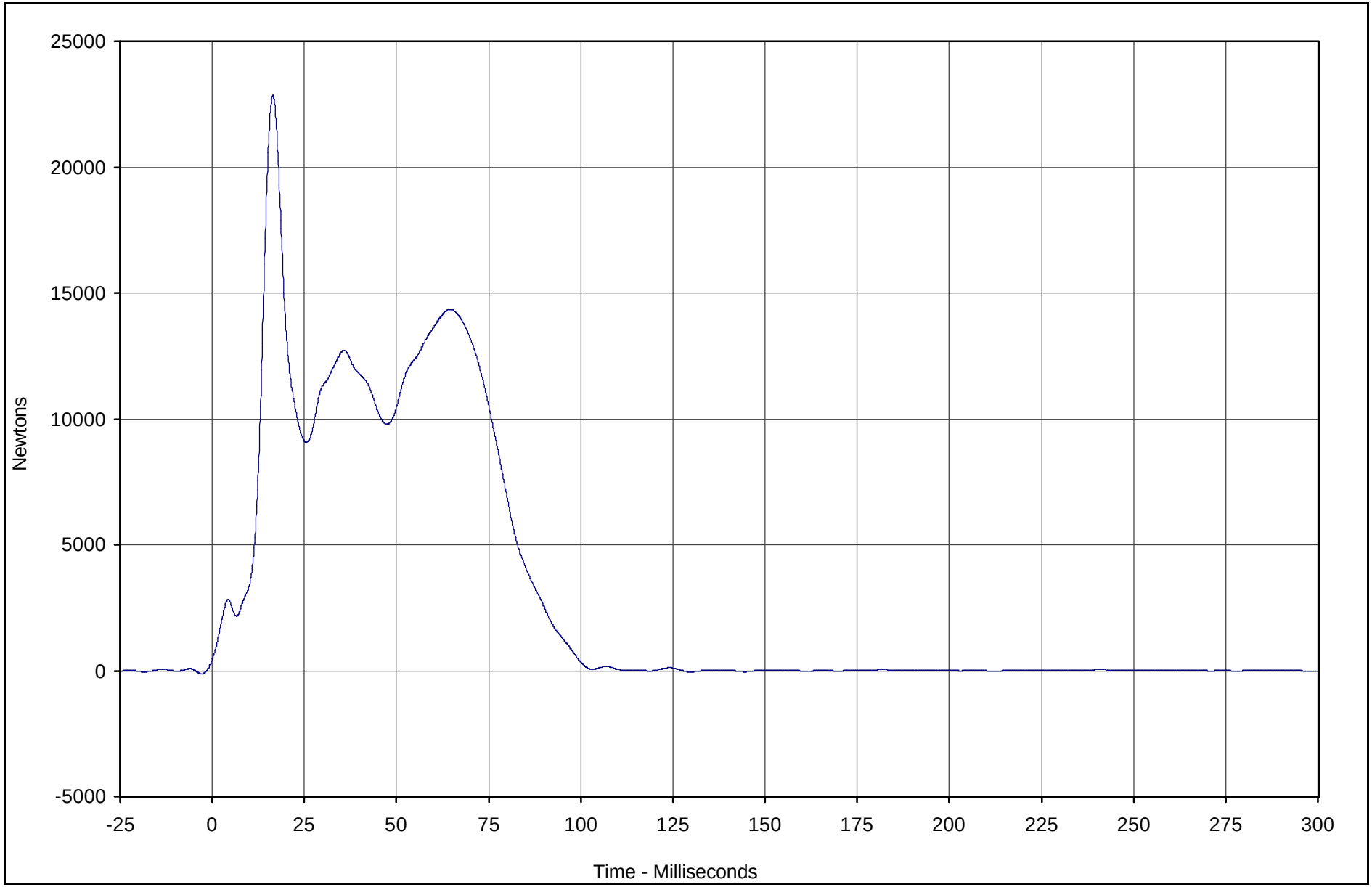
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force C2	117	FIL	Newtons	0.0	0.0	0.0	0.0	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



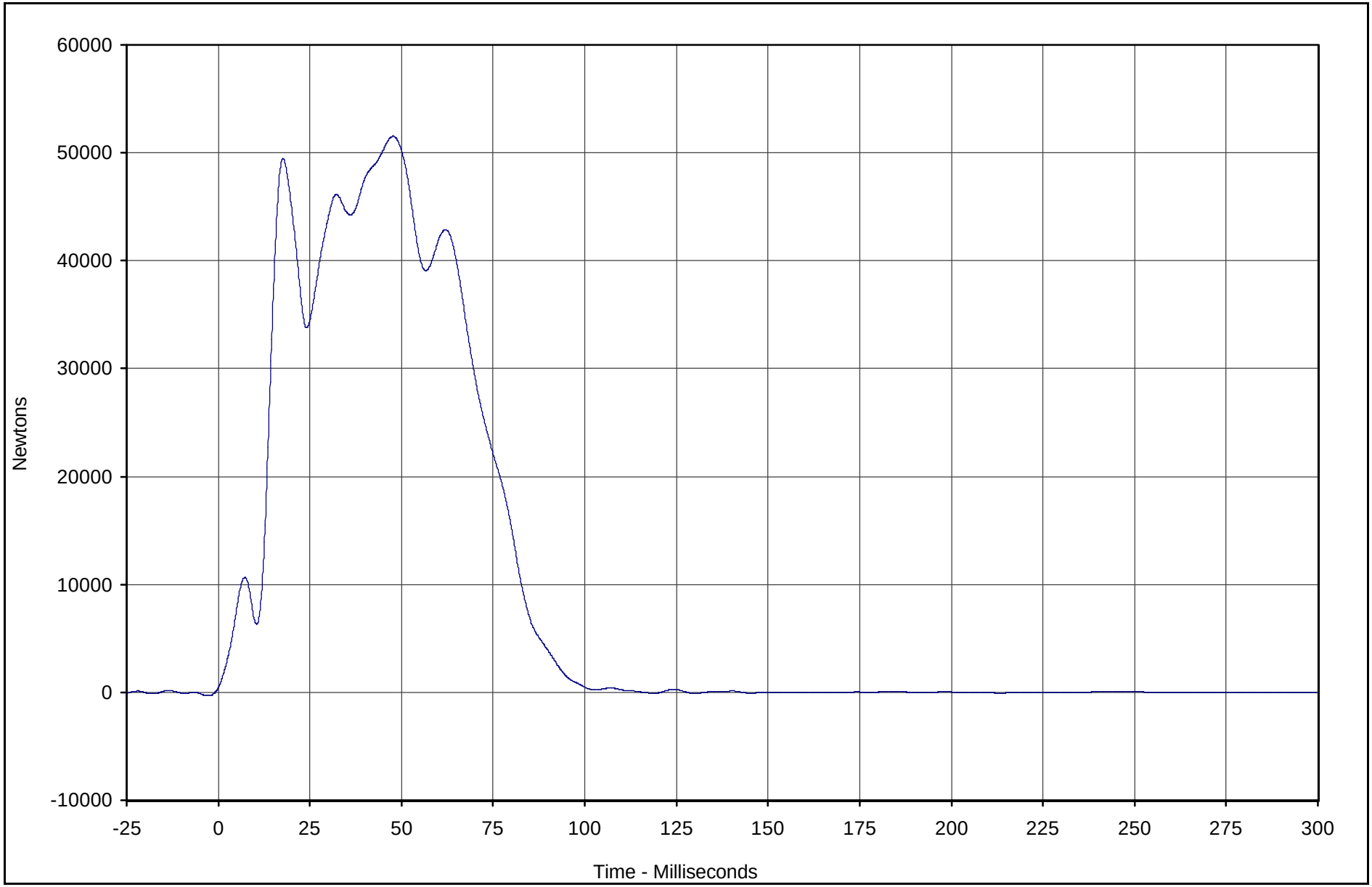
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force C3	118	FIL	Newtons	22842.8	16.5	-45.9	129.7	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



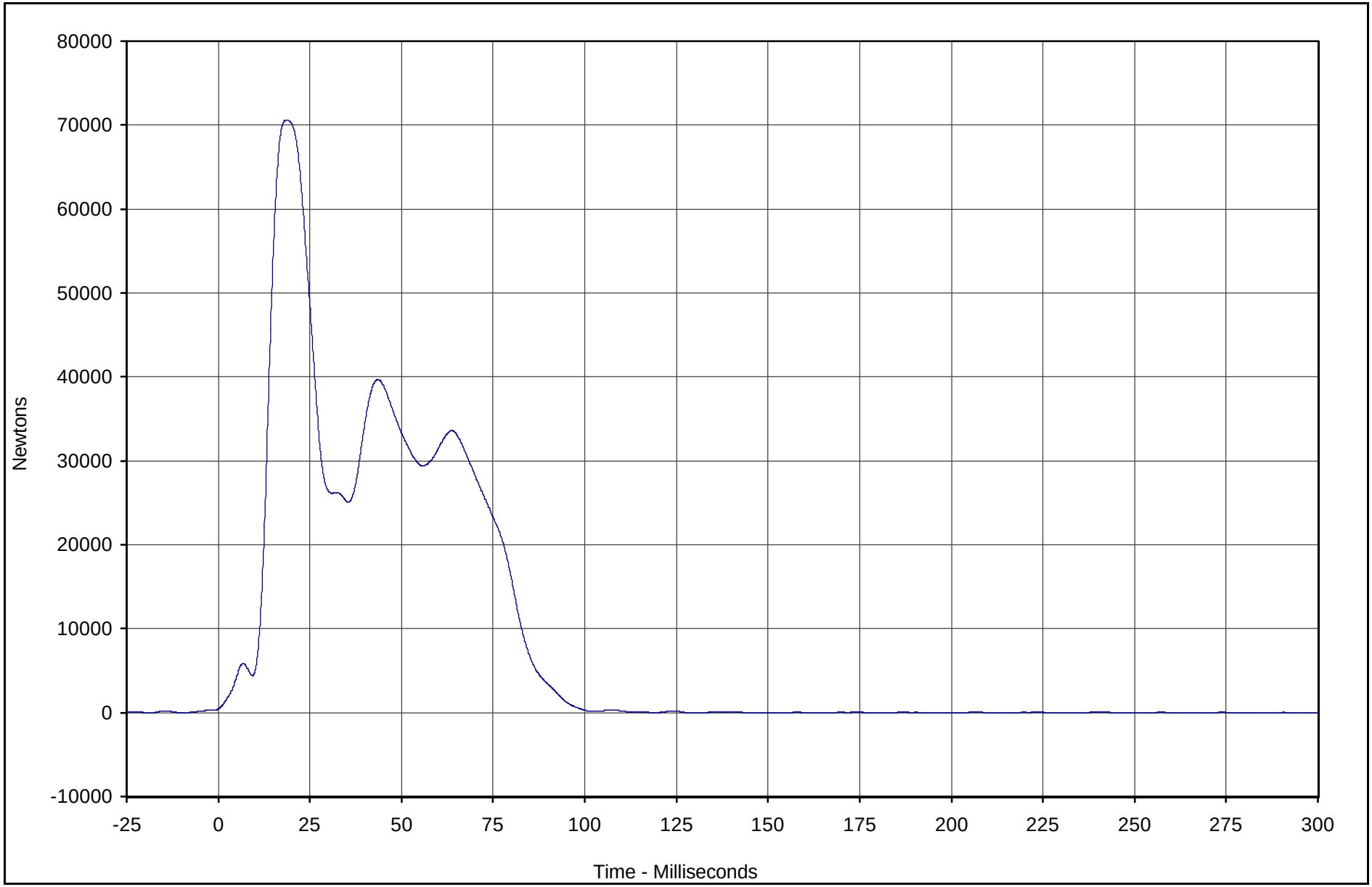
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force C4	119	FIL	Newtons	51527.0	47.7	-95.4	129.8	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



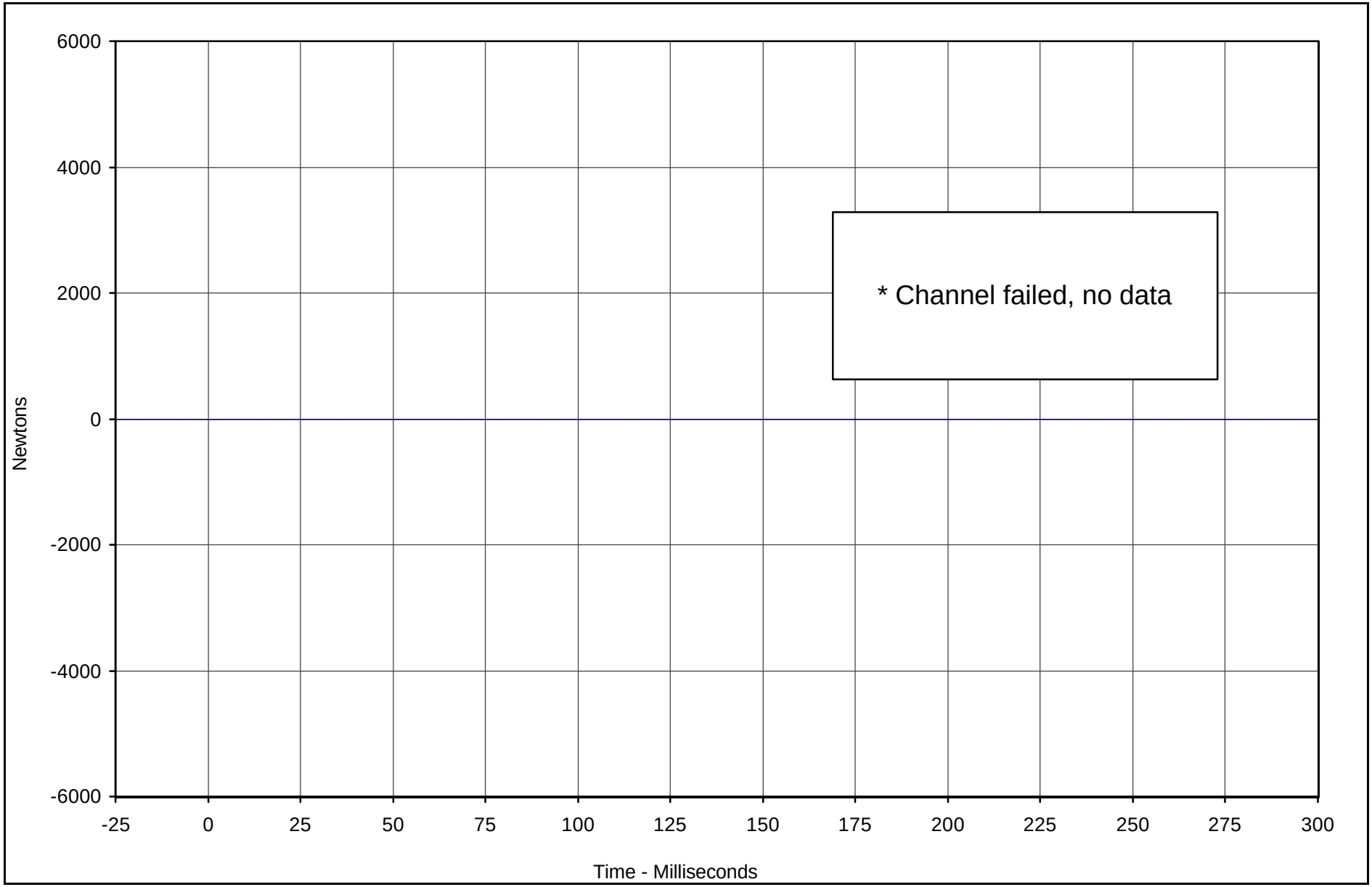
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force C5	120	FIL	Newtons	70620.6	18.7	-90.2	129.9	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



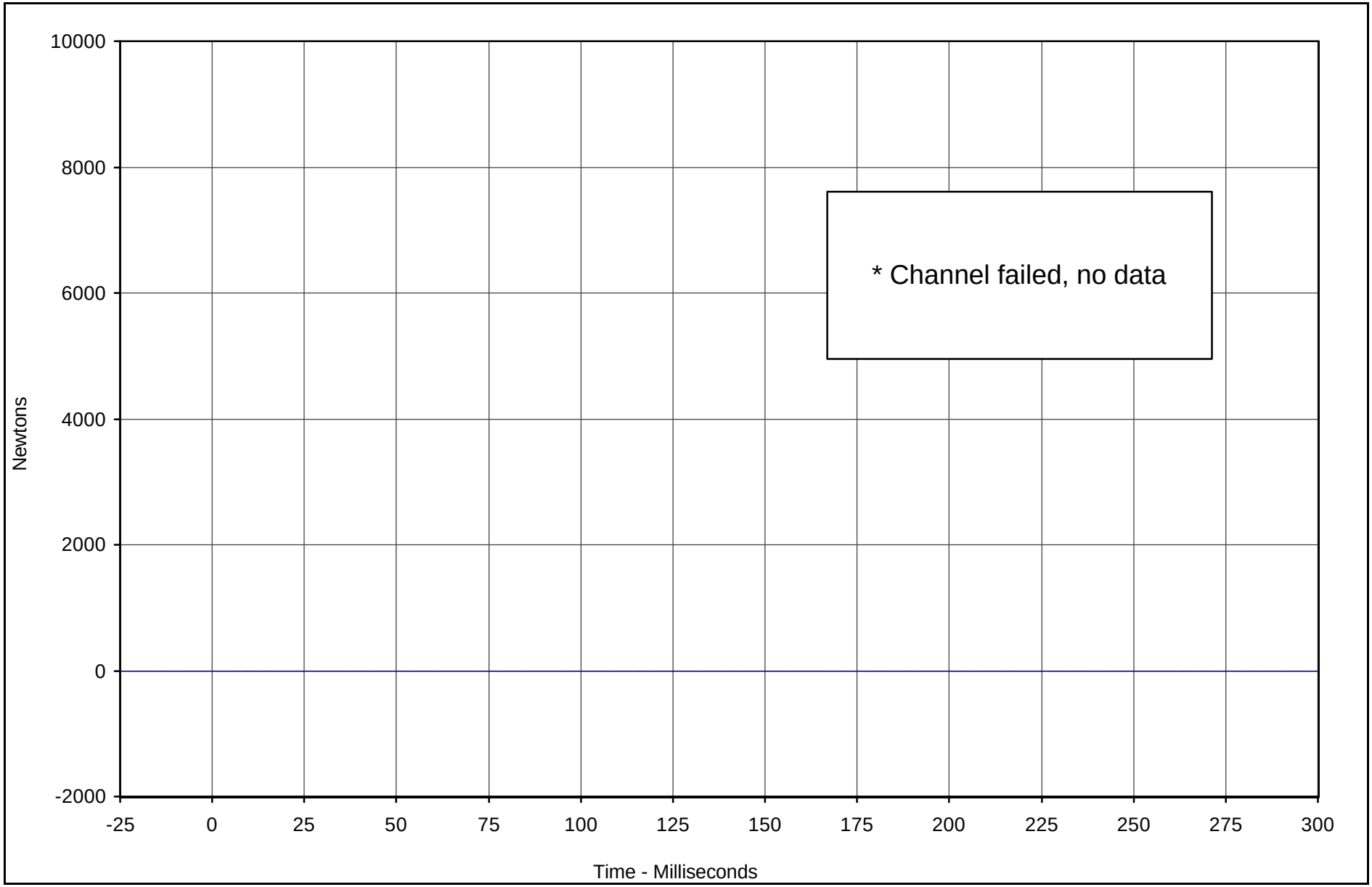
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force C6	121	FIL	Newtons	0.0	0.0	0.0	0.0	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



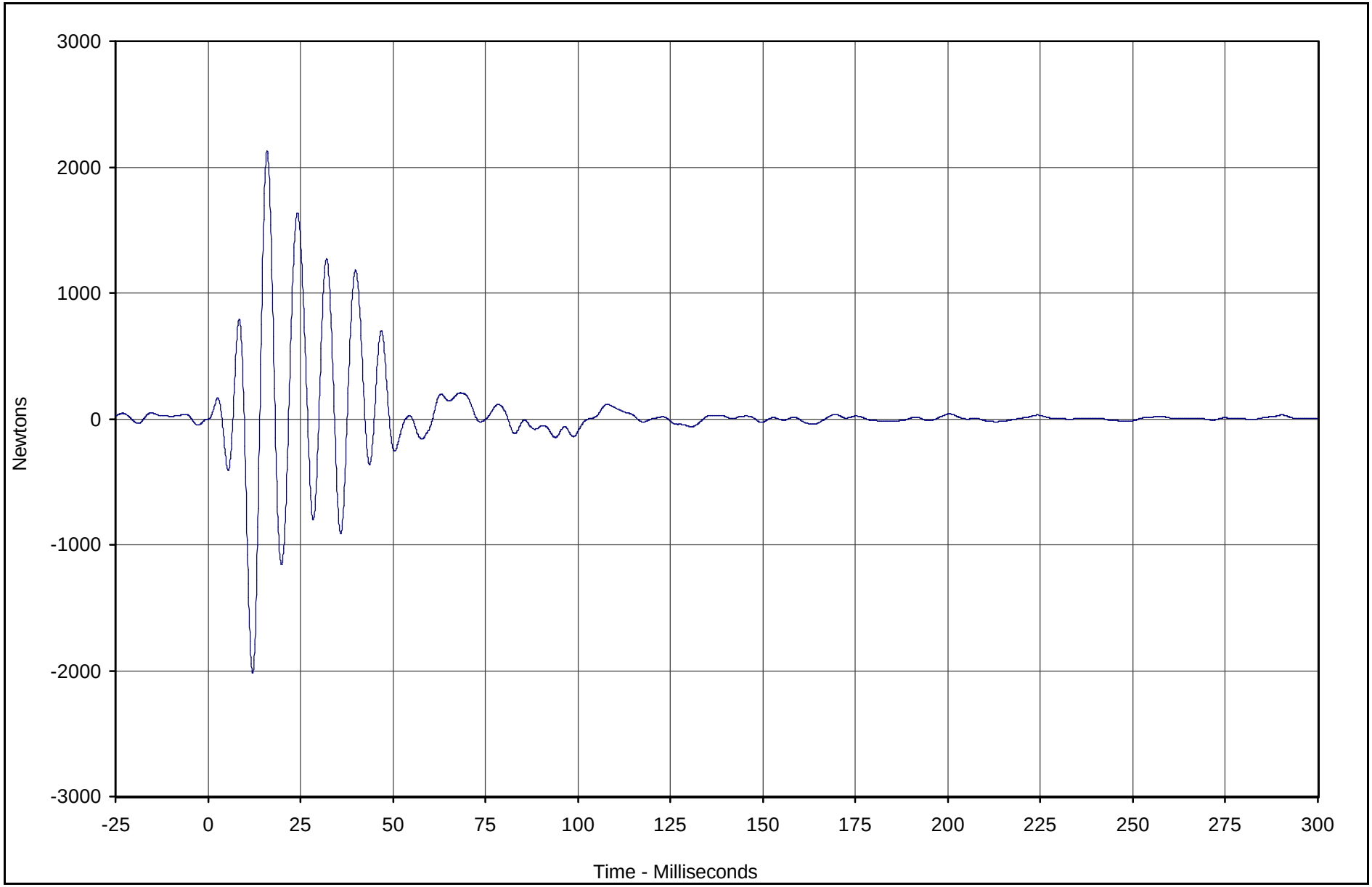
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force C7	122	FIL	Newtons	0.0	0.0	0.0	0.0	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



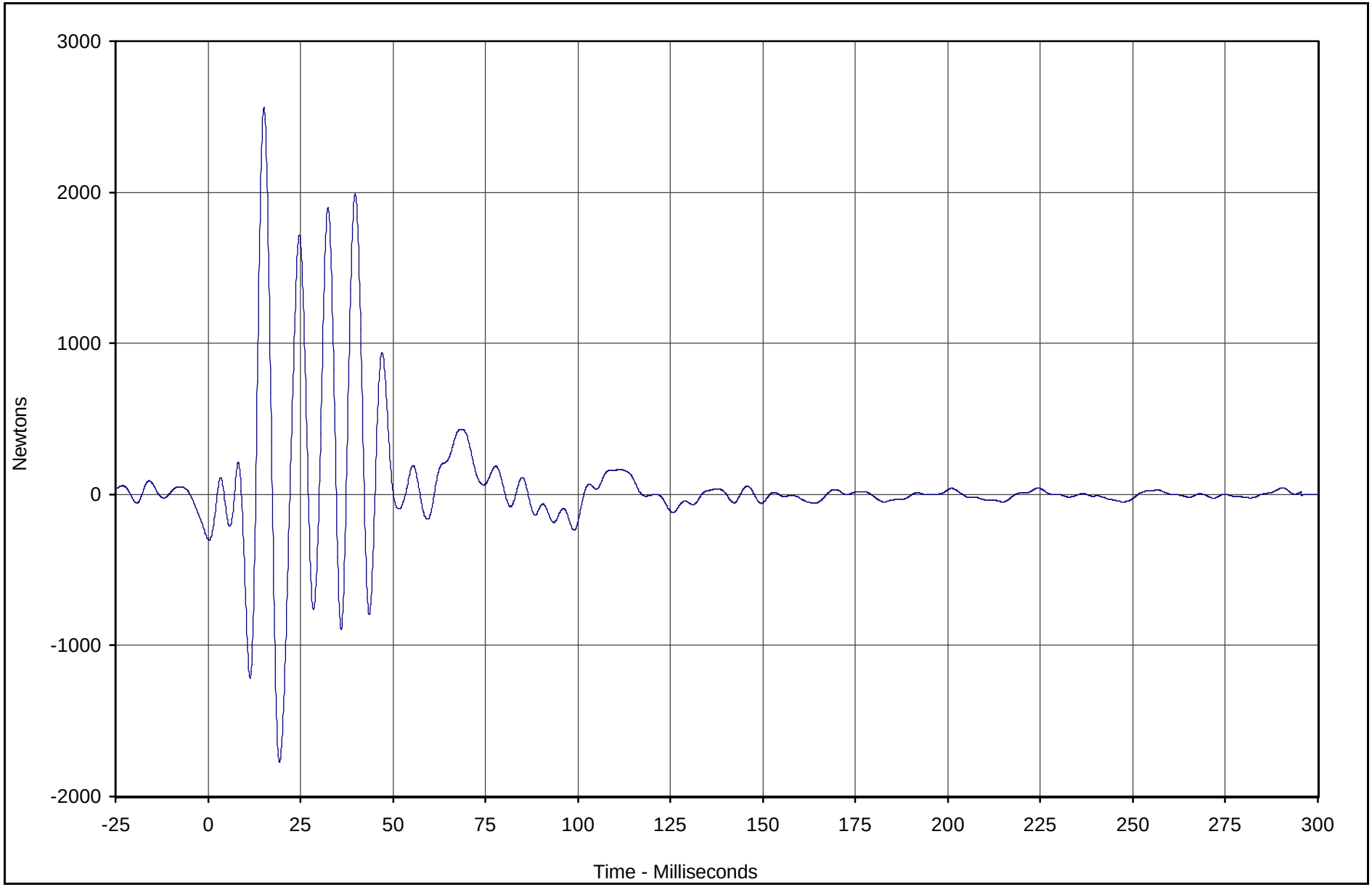
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force C8	123	FIL	Newtons	2128.2	16.0	-2020.7	12.1	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



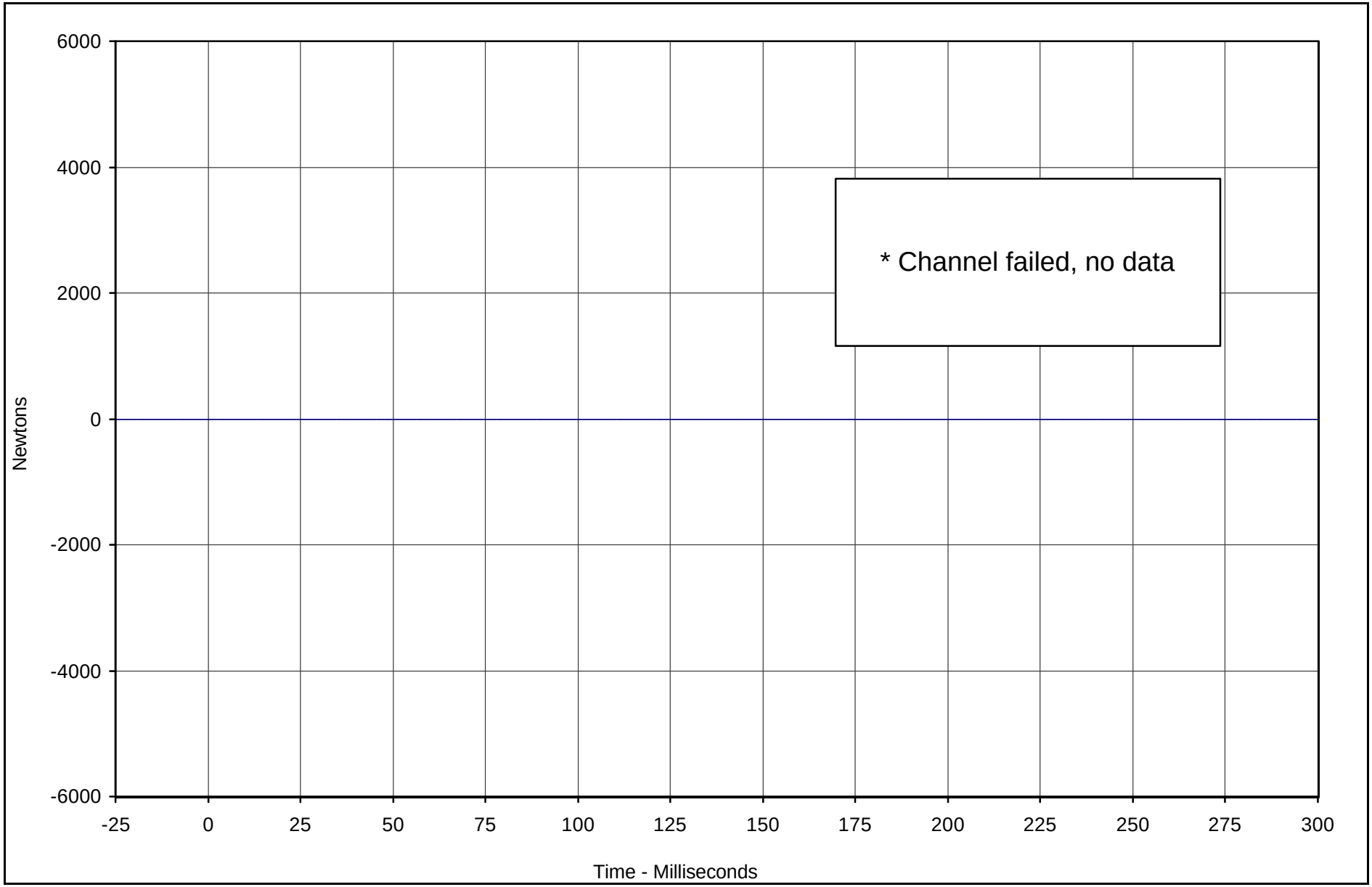
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force C9	124	FIL	Newtons	2560.6	15.2	-1773.9	19.3	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



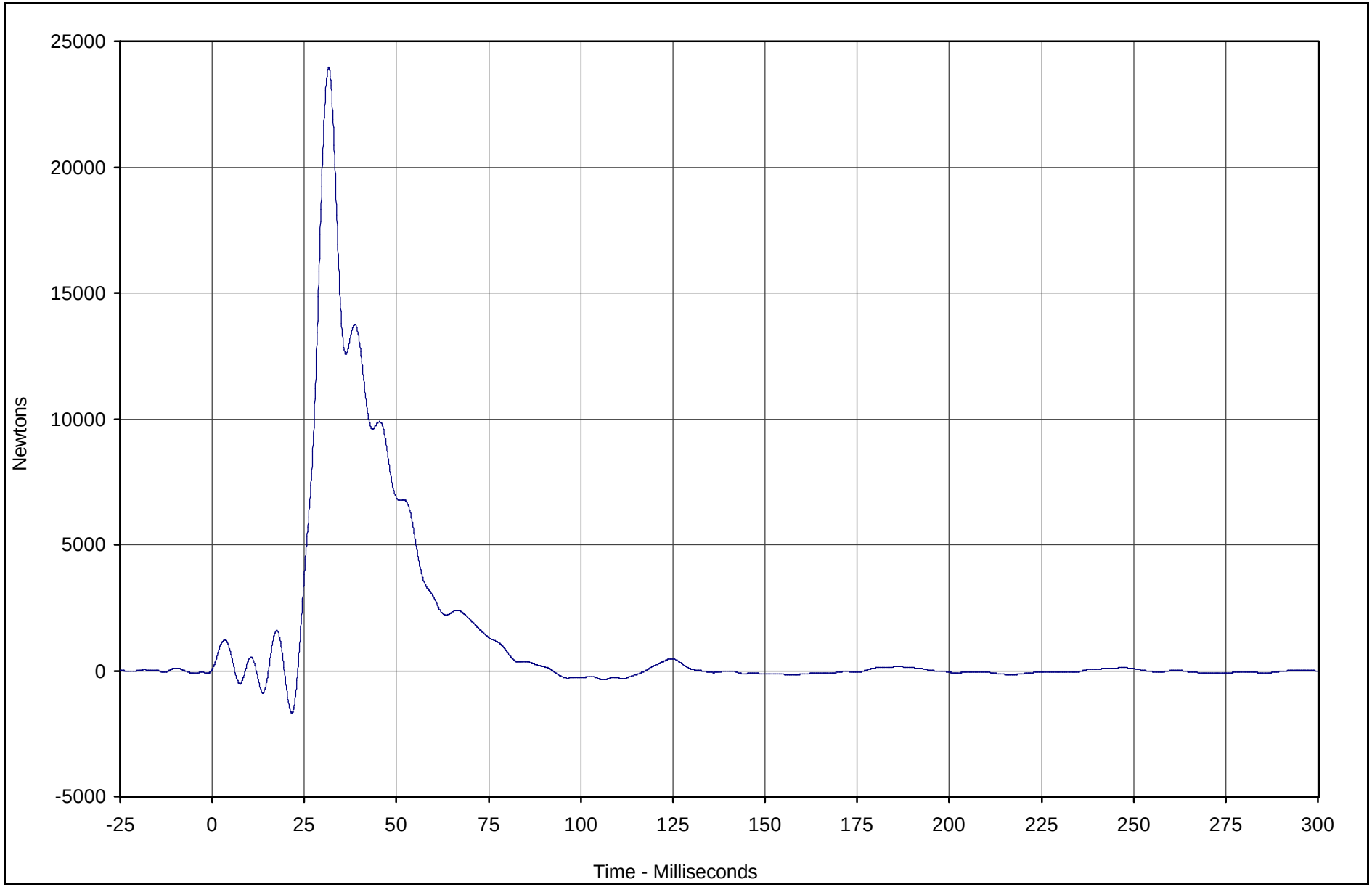
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force D1	125	FIL	Newtons	0.0	0.0	0.0	0.0	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



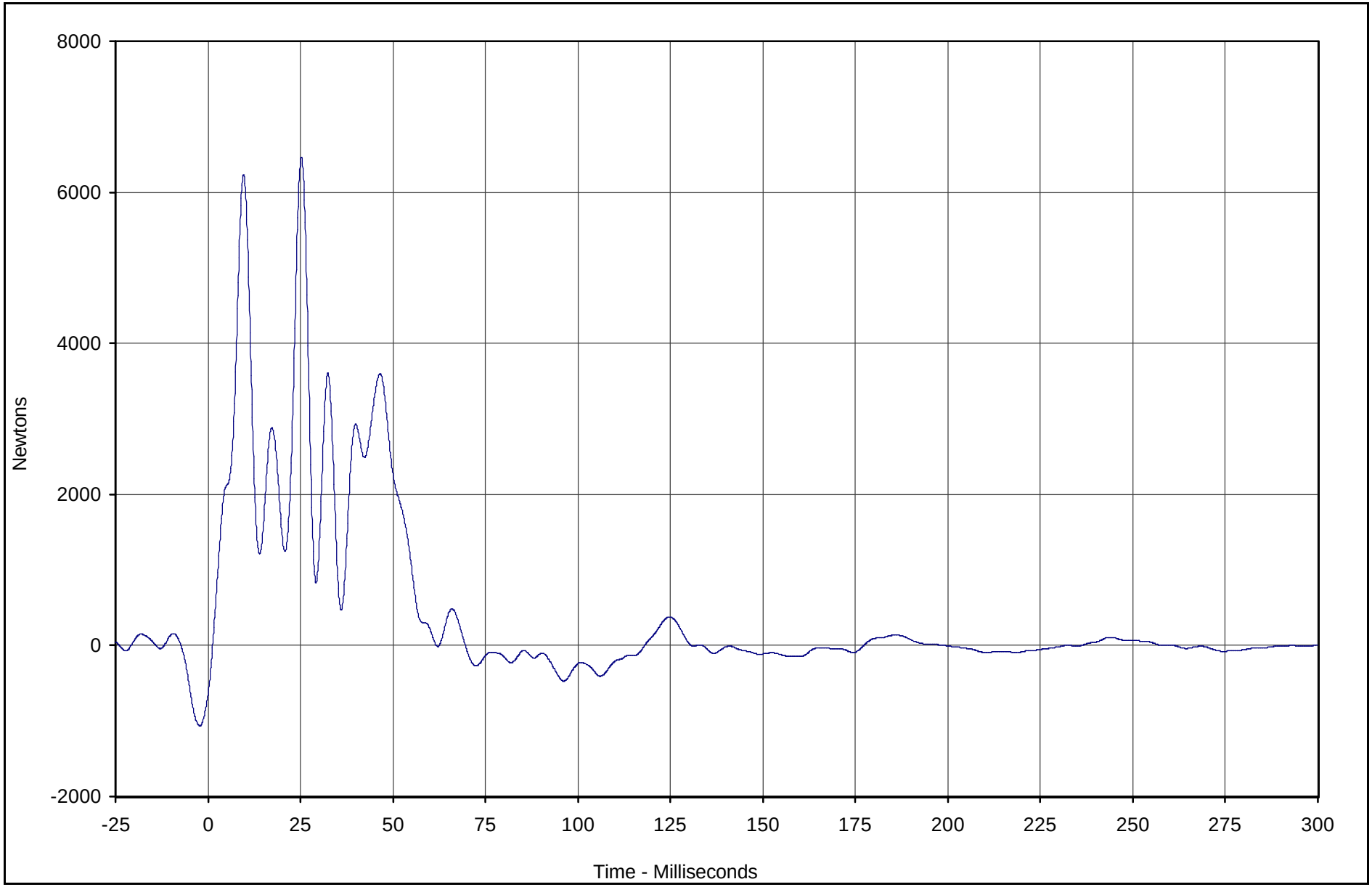
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force D2	126	FIL	Newtons	23968.8	31.6	-1680.0	21.6	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



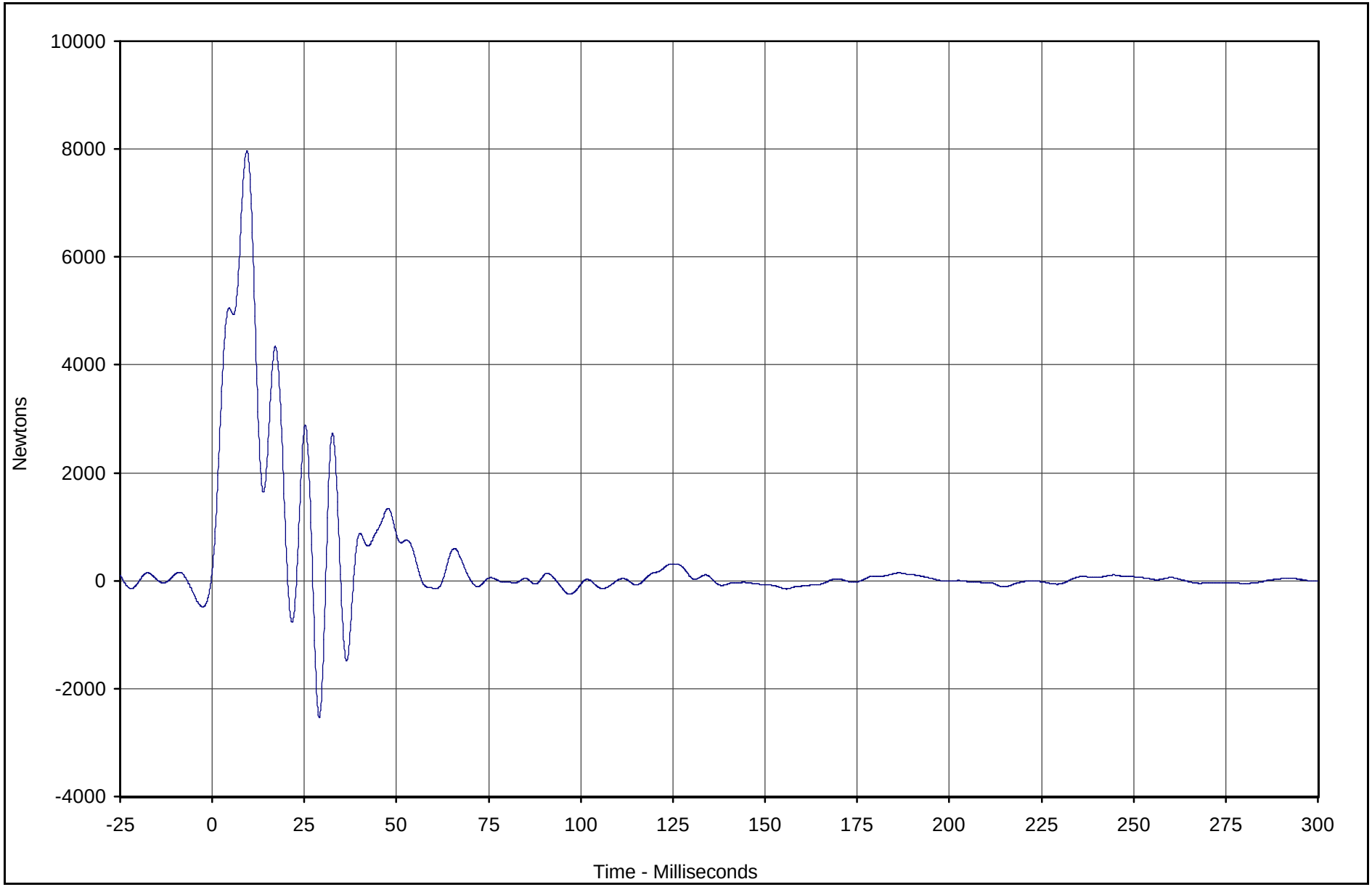
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force D3	127	FIL	Newtons	6465.3	25.3	-654.5	0.0	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



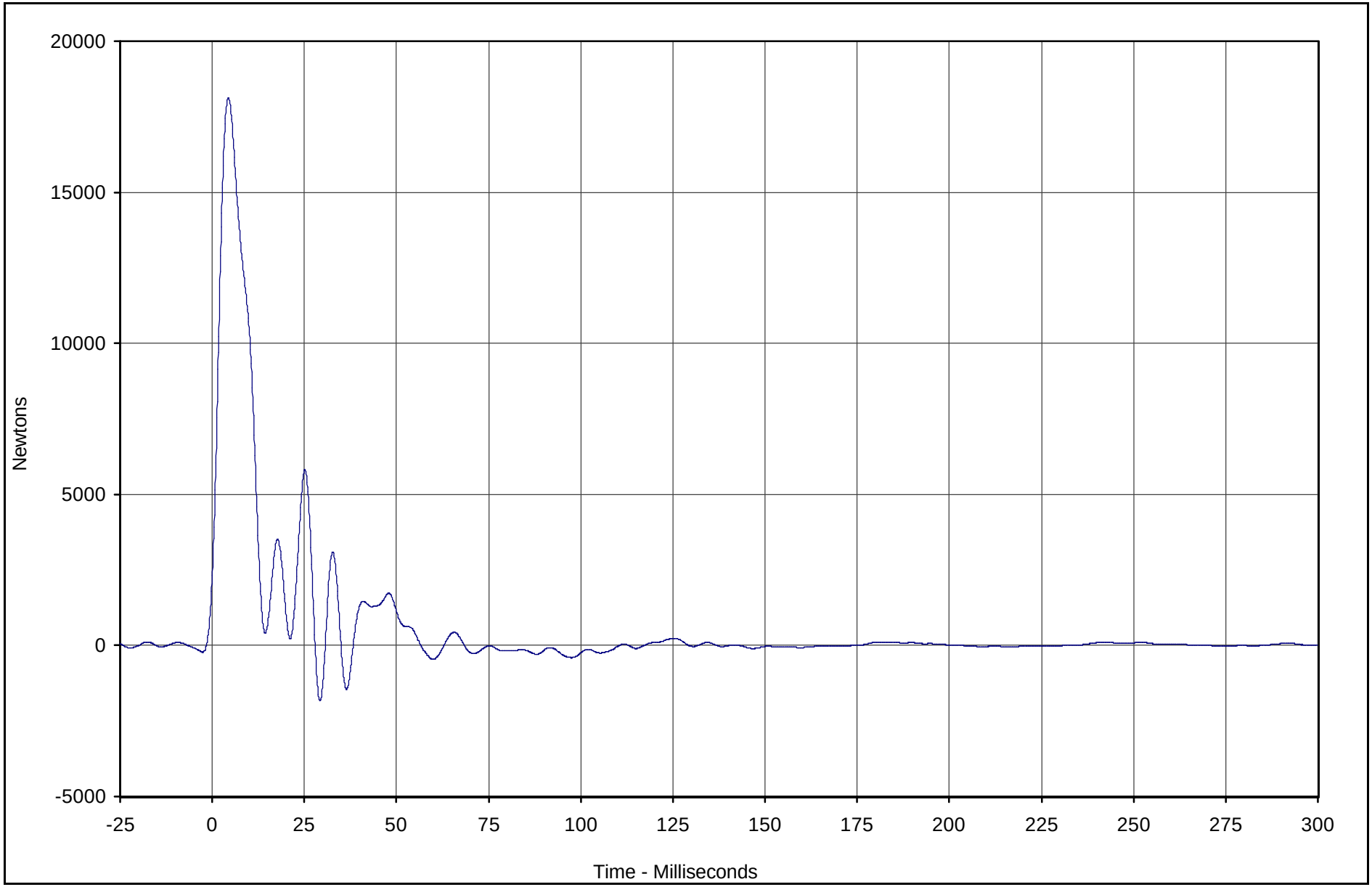
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force D4	128	FIL	Newtons	7966.6	9.4	-2534.8	29.0	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



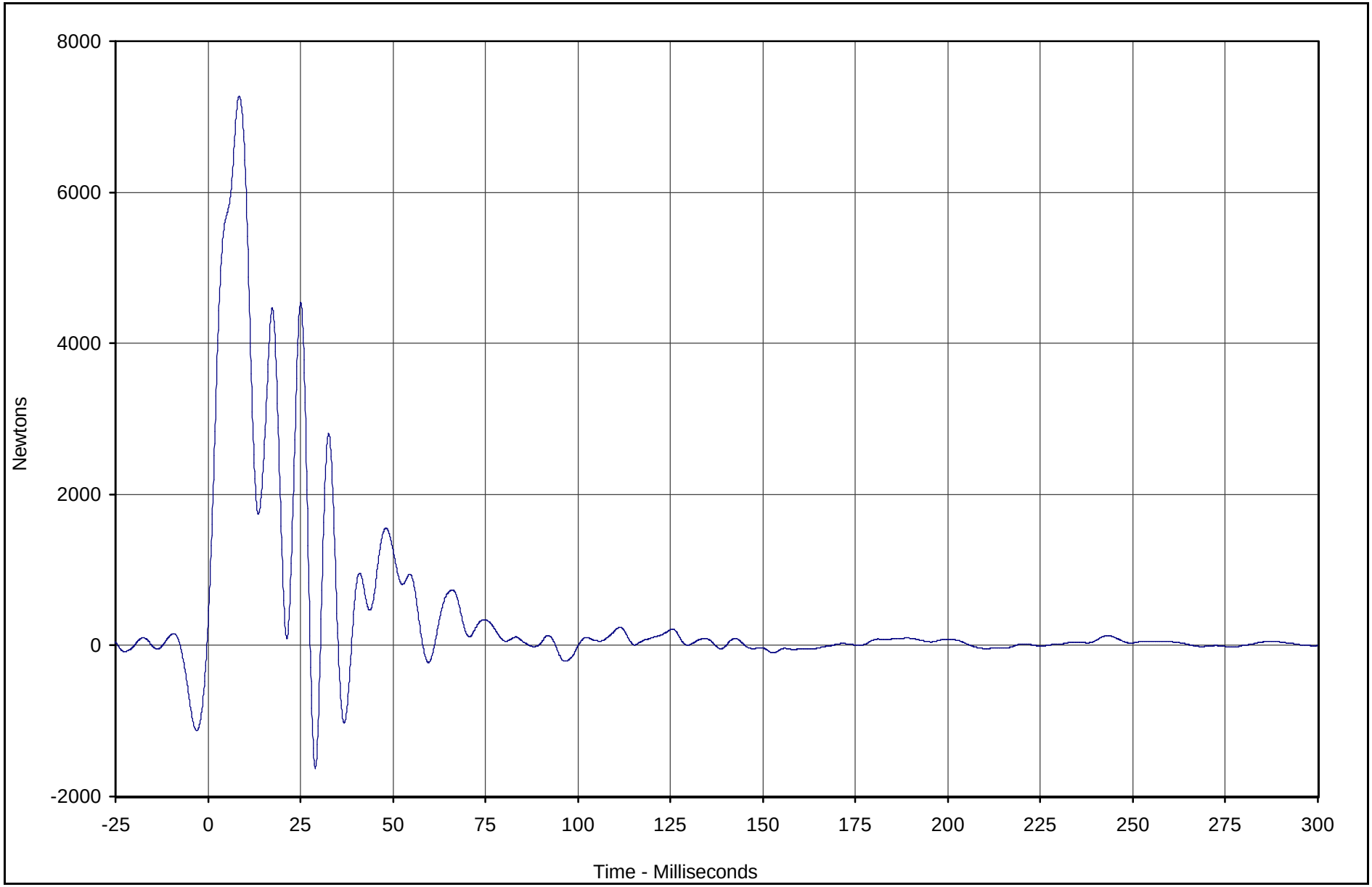
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force D5	129	FIL	Newtons	18124.6	4.4	-1837.6	29.2	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



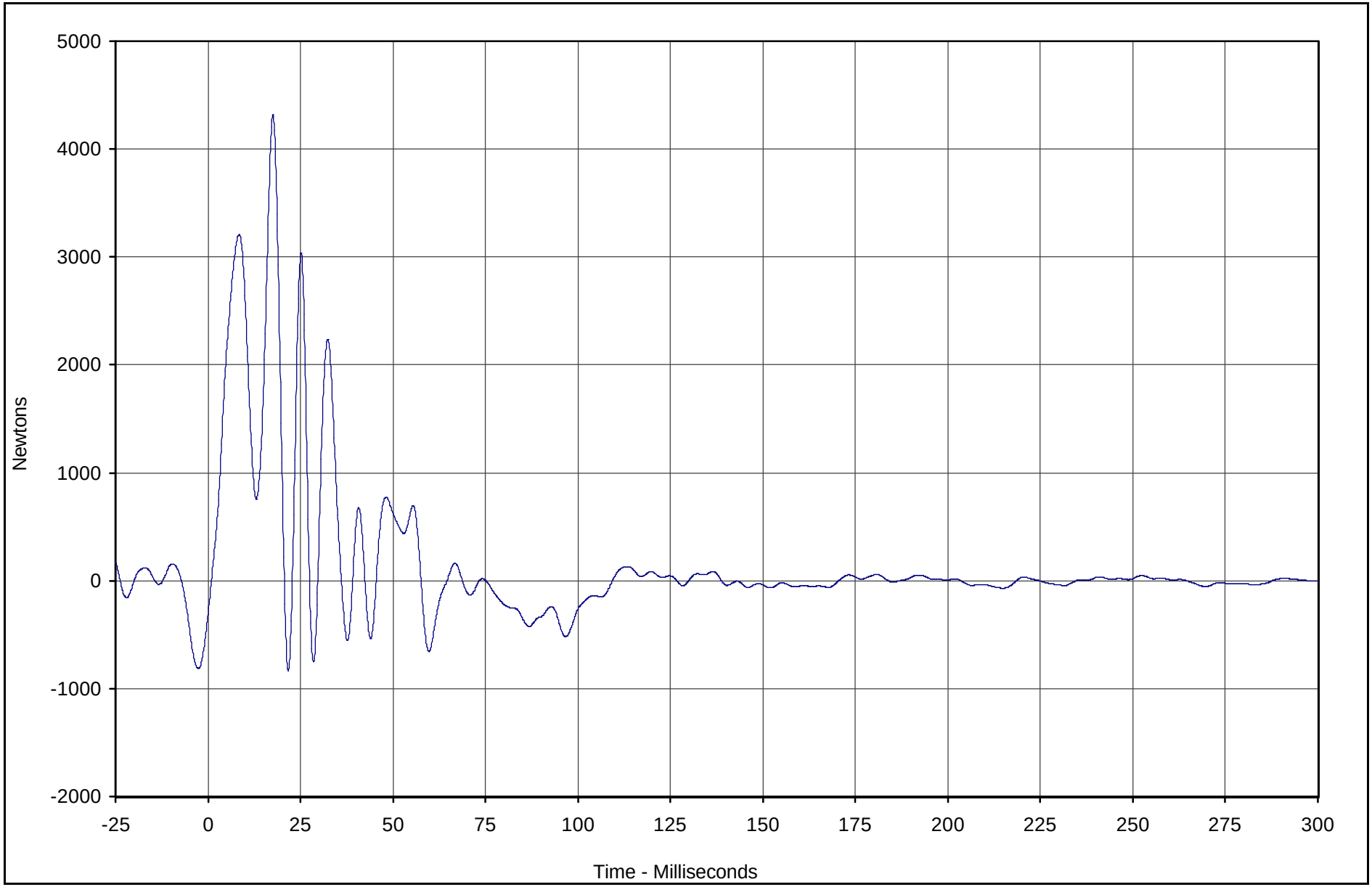
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force D6	130	FIL	Newtons	7270.3	8.5	-1626.3	29.0	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



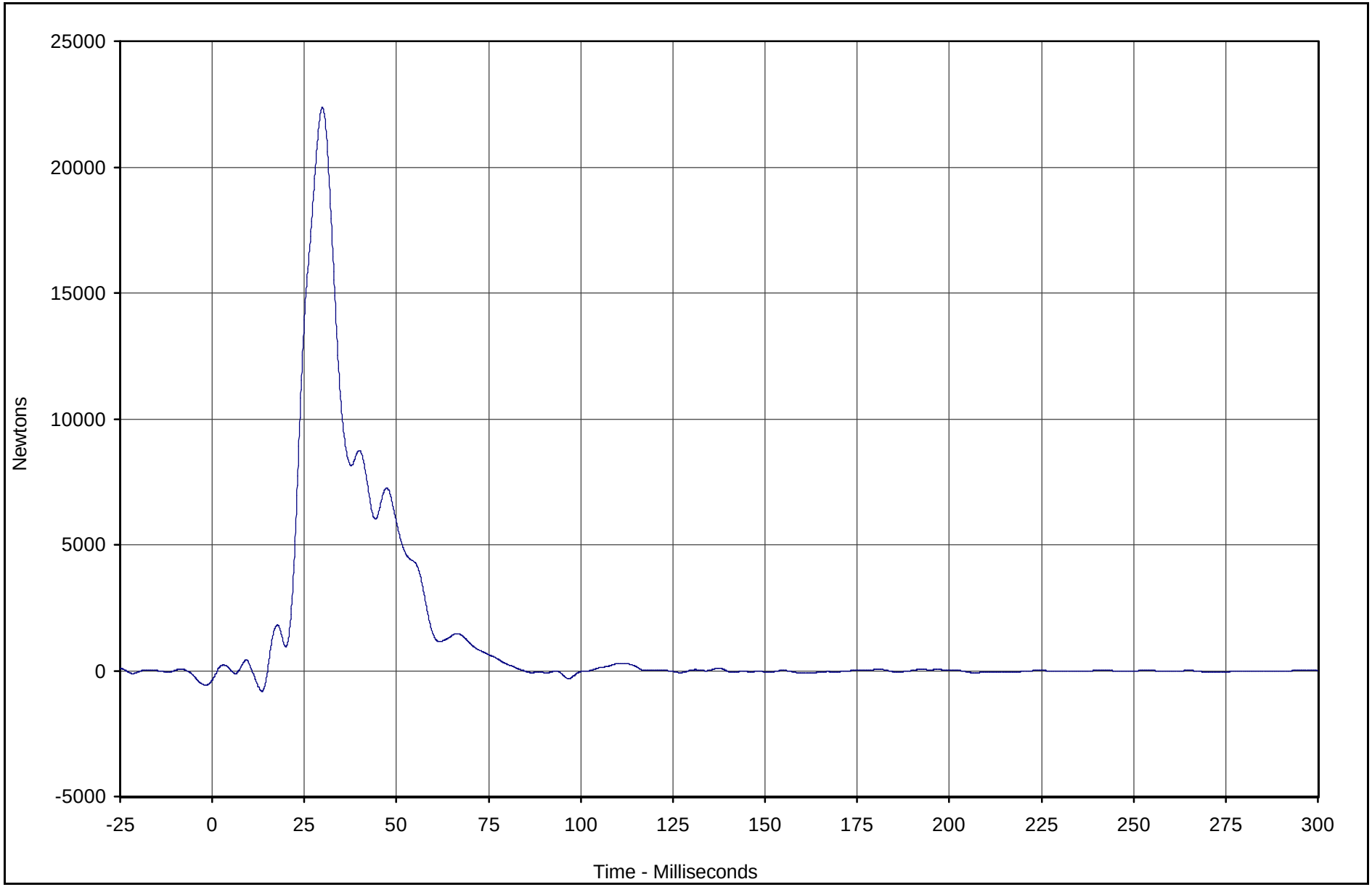
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force D7	131	FIL	Newtons	4316.2	17.6	-840.4	21.7	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



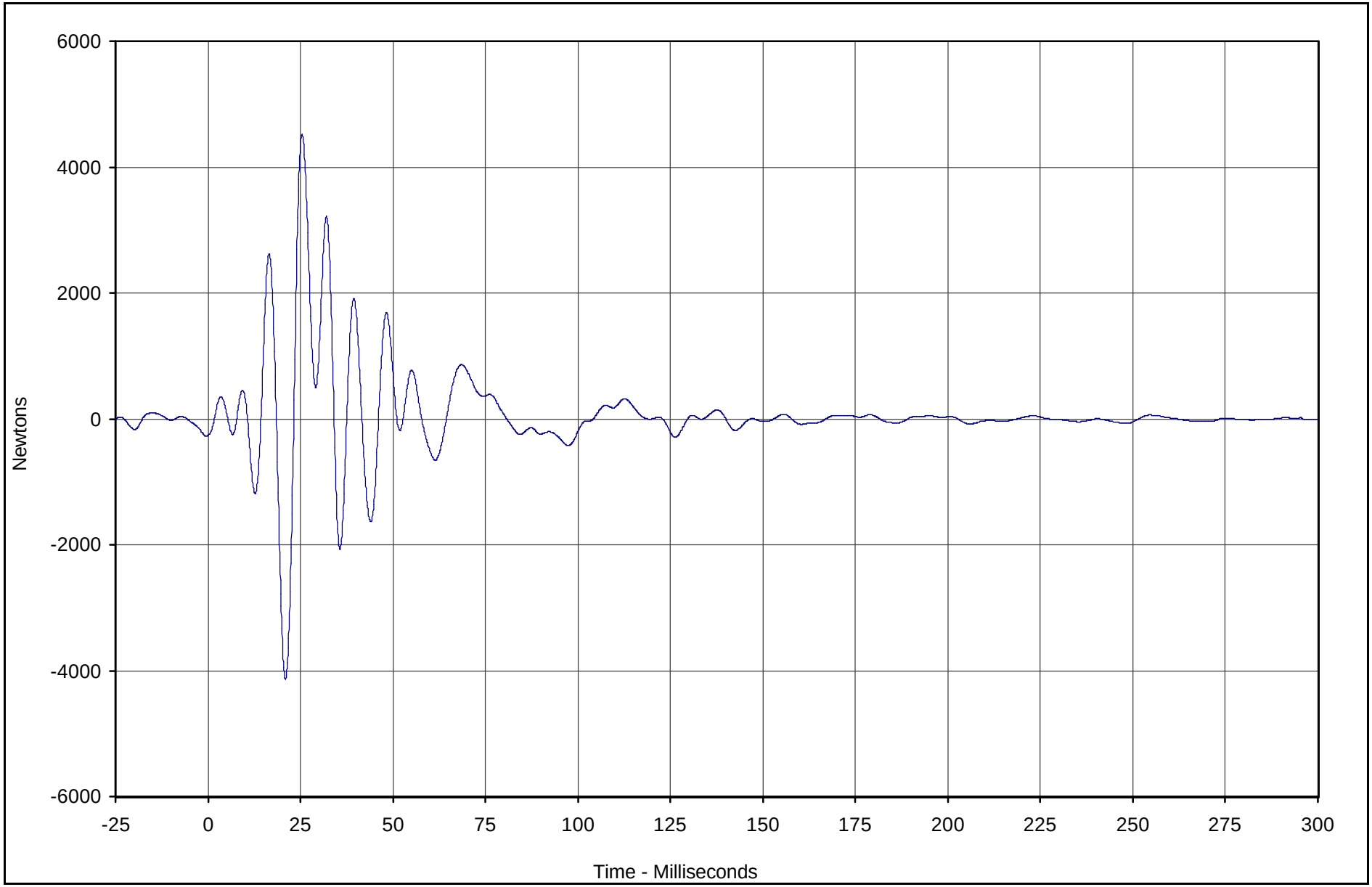
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force D8	132	FIL	Newtons	22367.0	29.9	-817.2	13.5	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



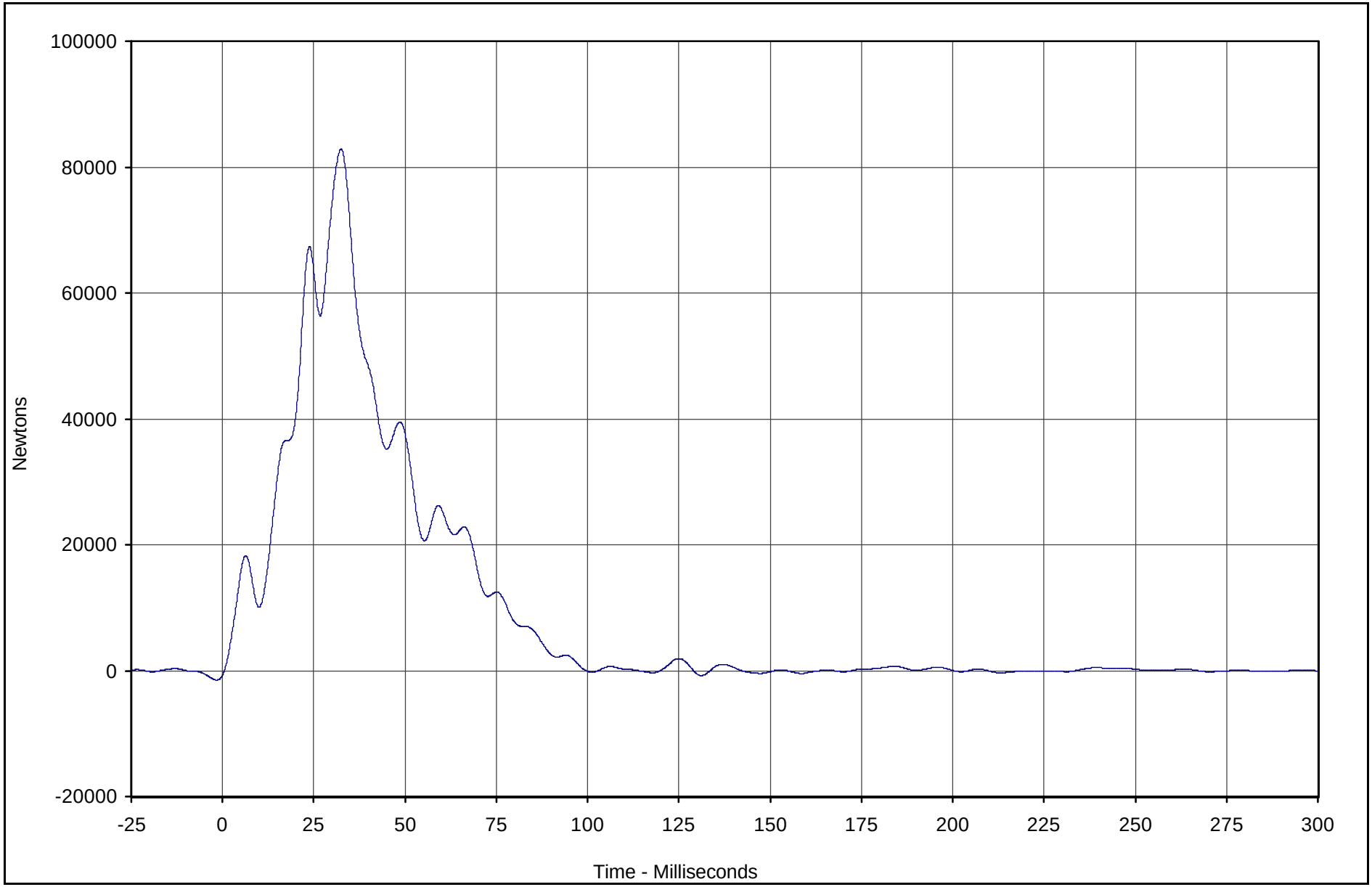
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force D9	133	FIL	Newtons	4523.0	25.5	-4133.6	21.0	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



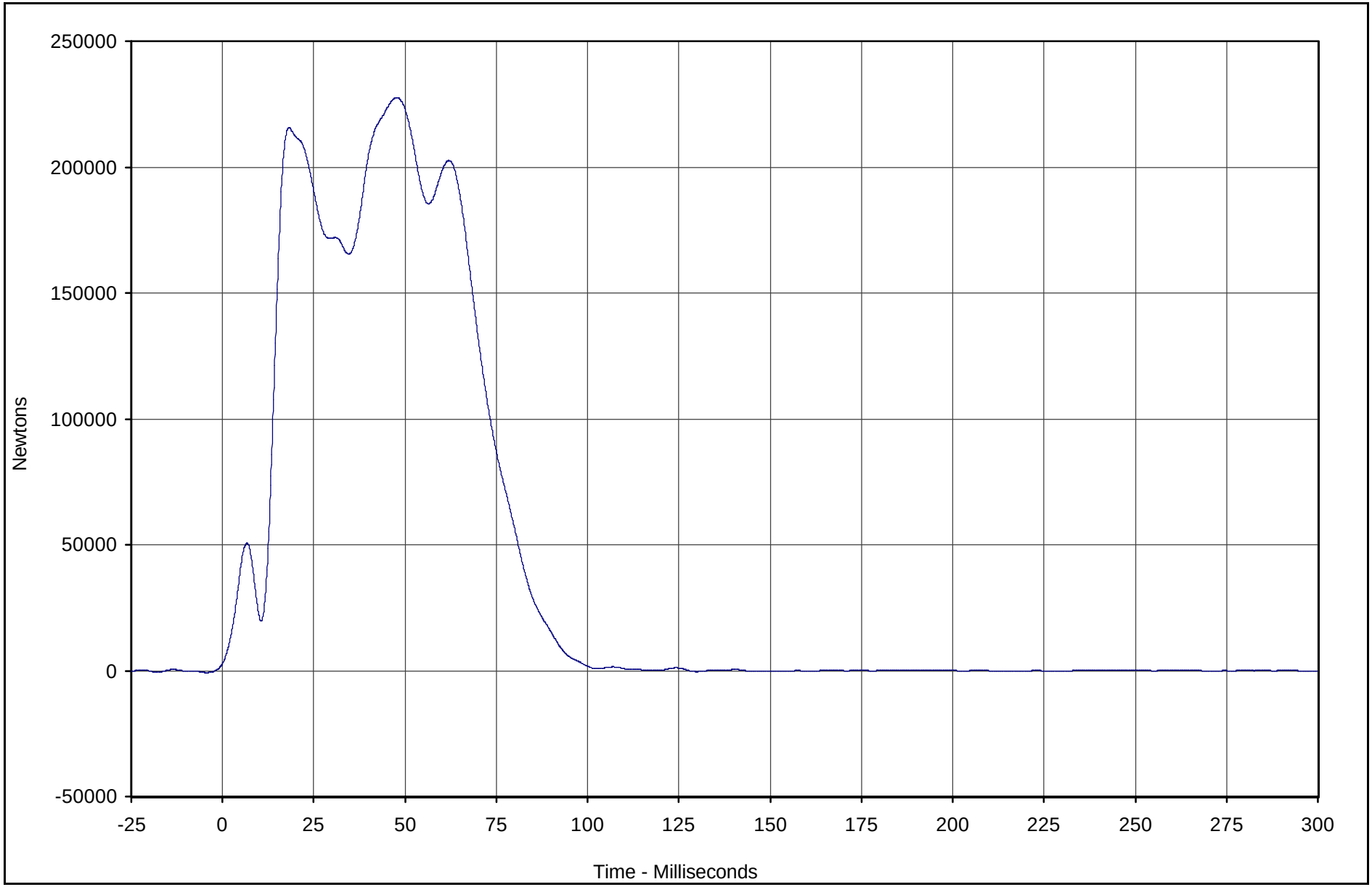
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force Sum Group 1	001	SUM	Newtons	82823.6	32.5	-785.0	131.2	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



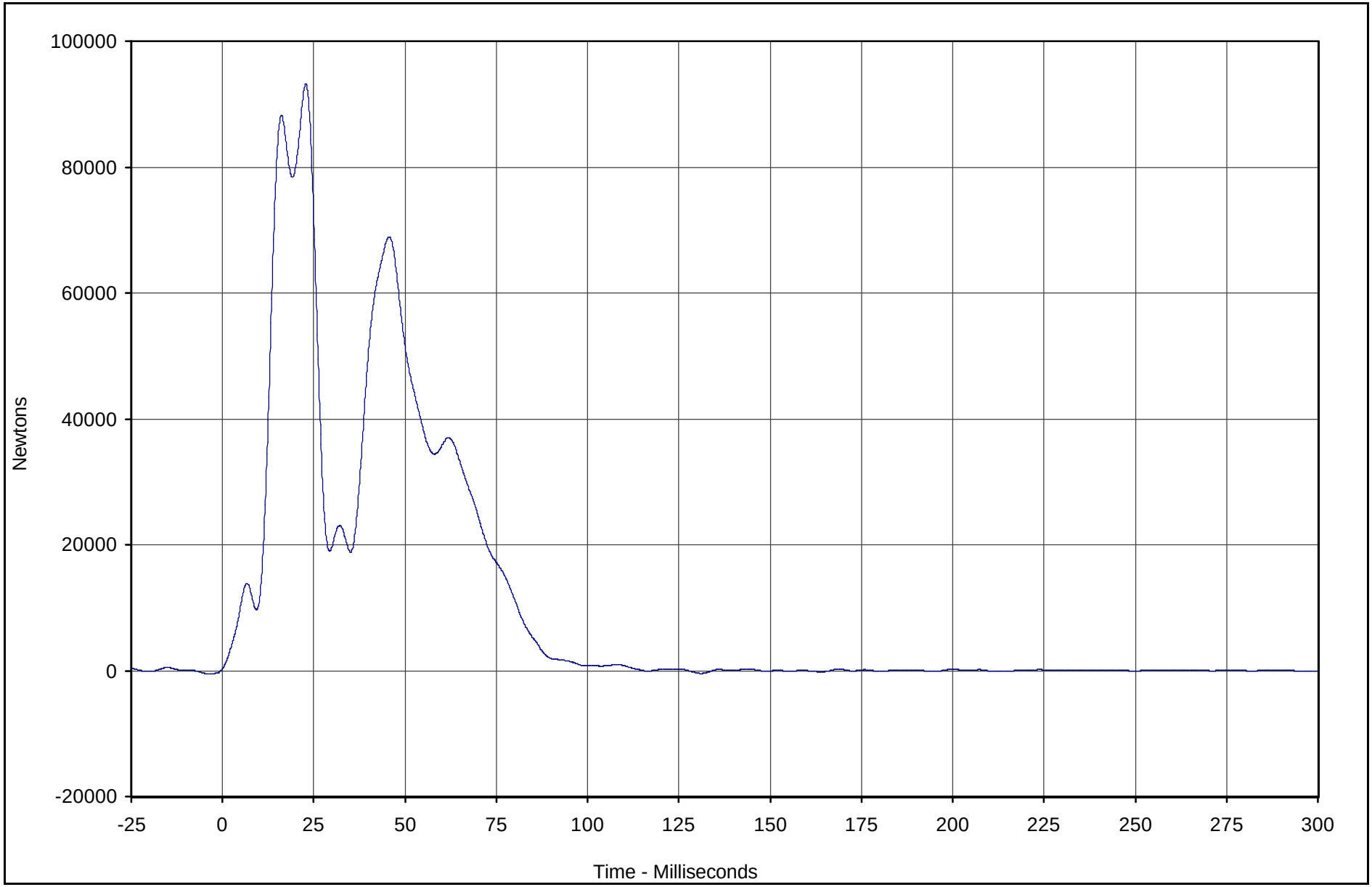
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force Sum Group 2	002	SUM	Newtons	227618.1	47.7	-379.8	129.9	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



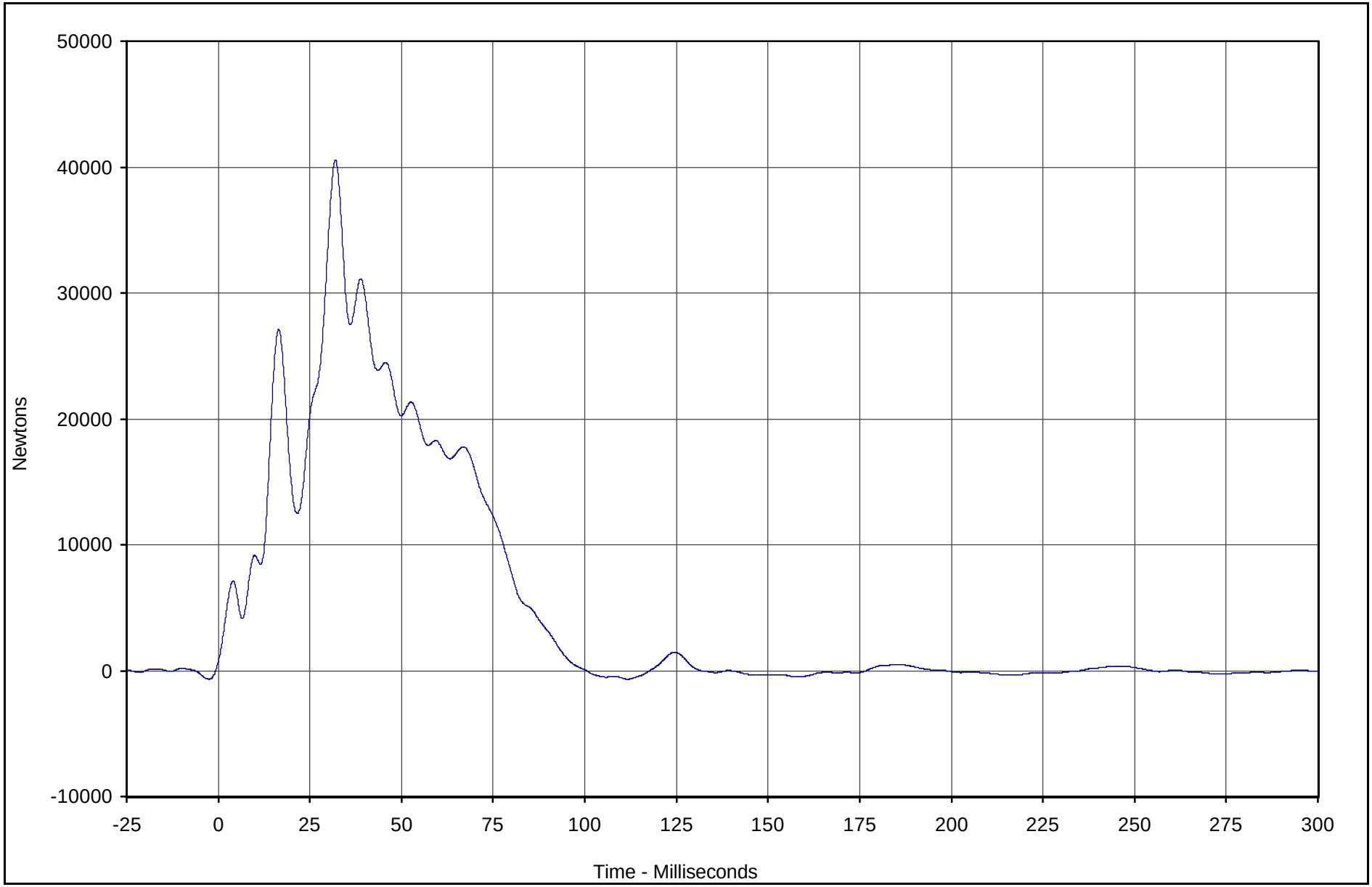
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force Sum Group 3	003	SUM	Newtons	93206.2	22.8	-453.6	131.1	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



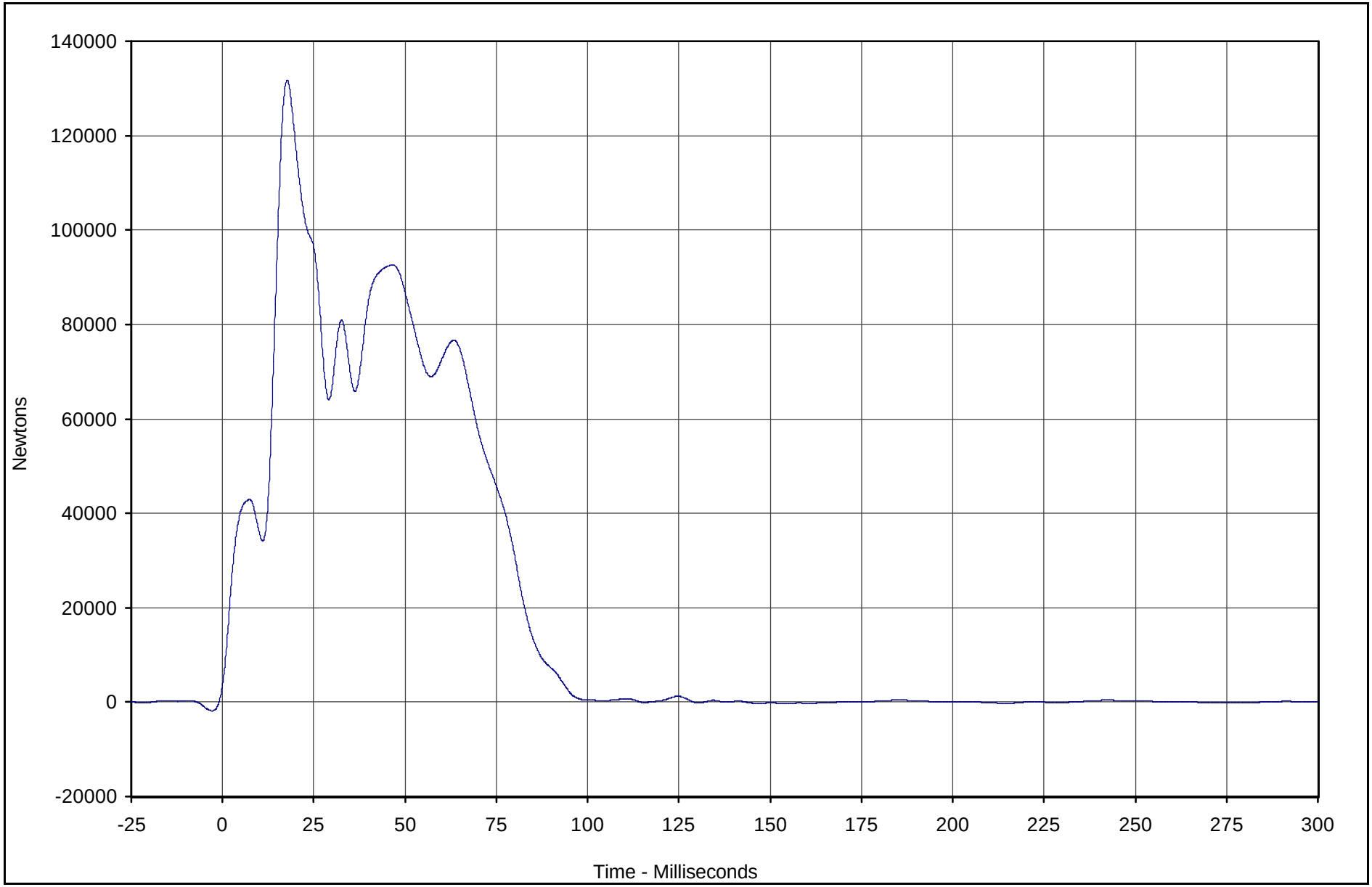
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force Sum Group 4	004	SUM	Newtons	40566.0	32.0	-679.4	111.7	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



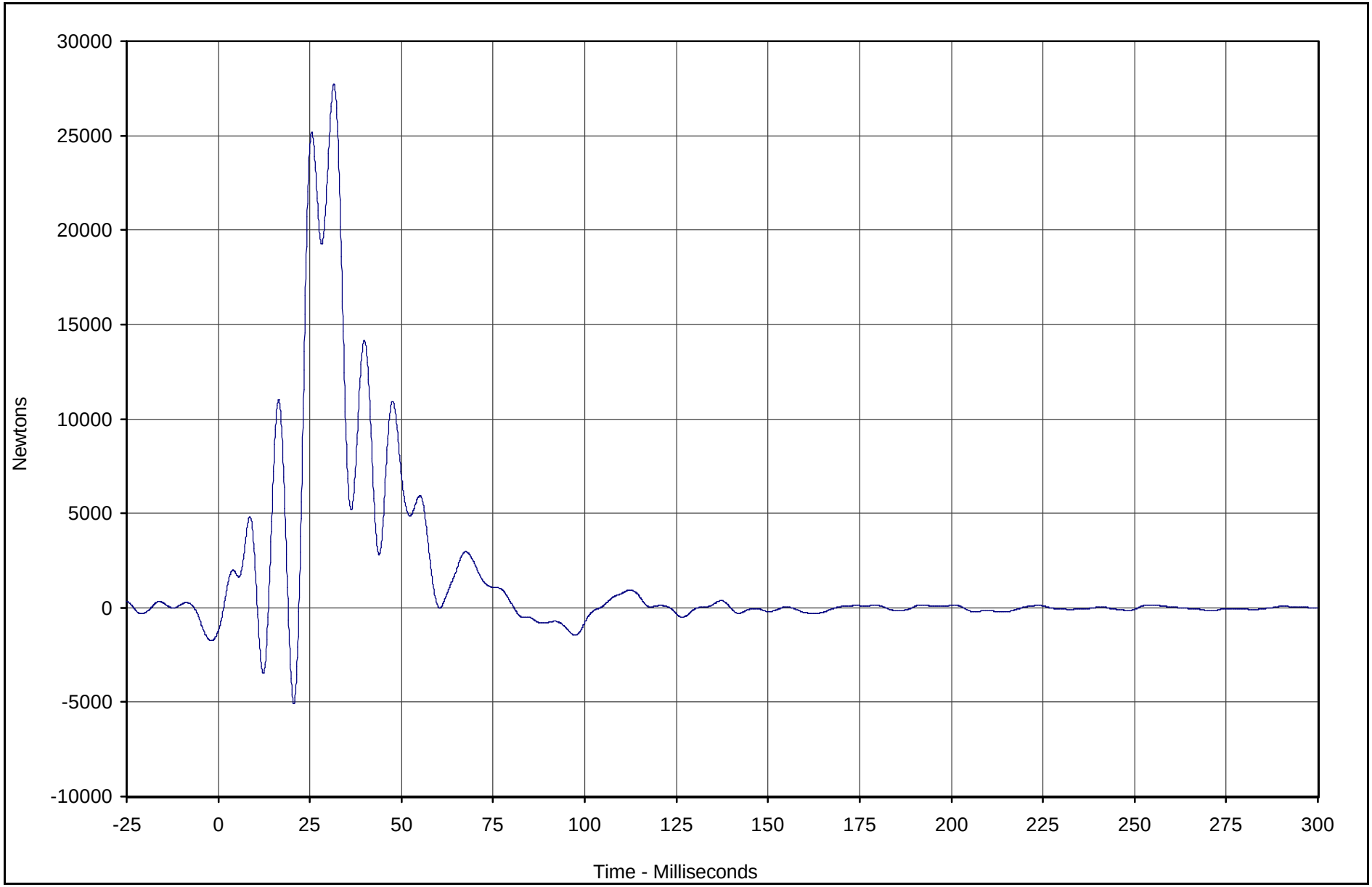
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force Sum Group 5	005	SUM	Newtons	131709.8	17.7	-311.1	154.9	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



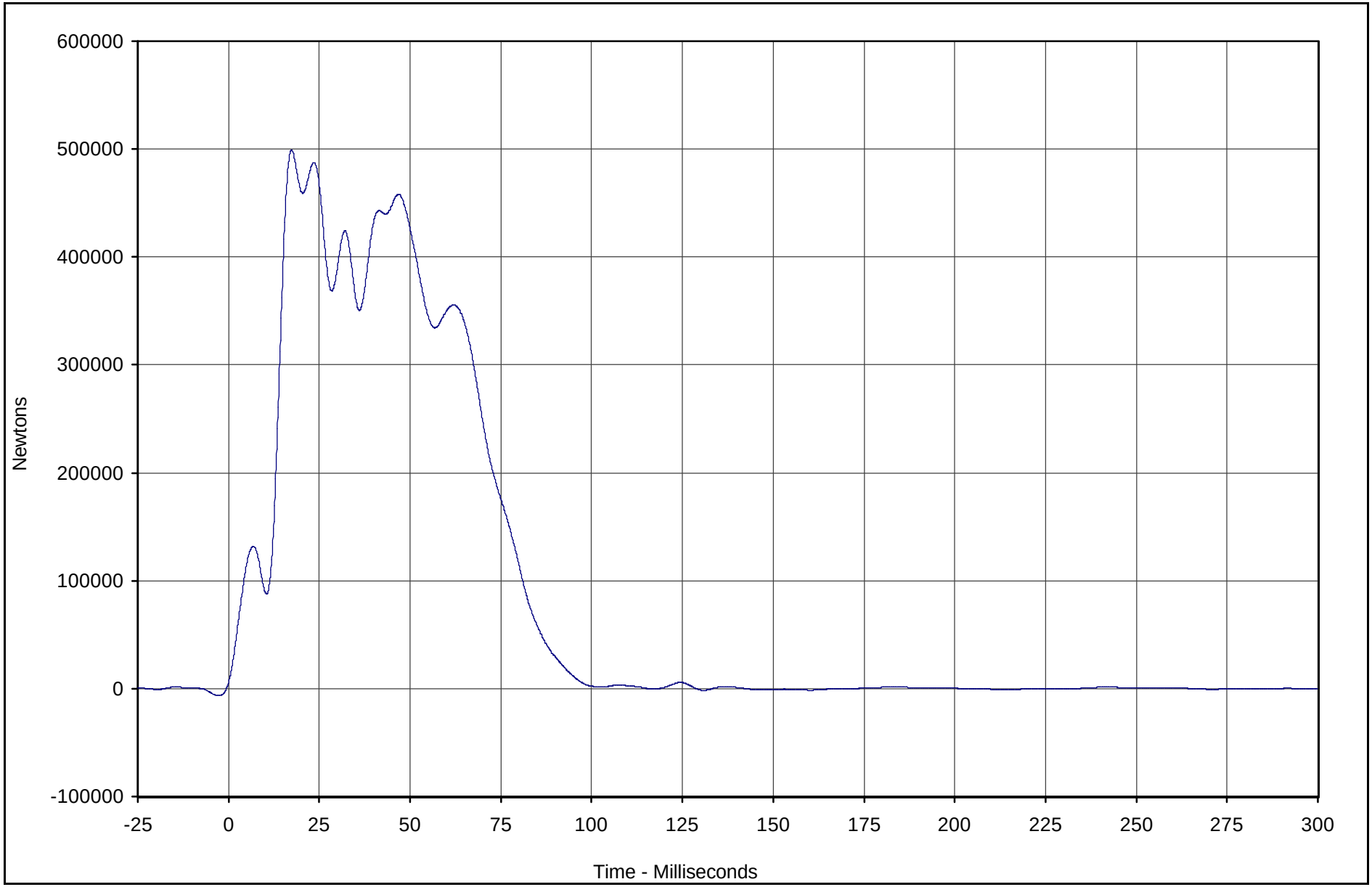
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force Sum Group 6	006	SUM	Newtons	27717.2	31.6	-5073.6	20.6	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



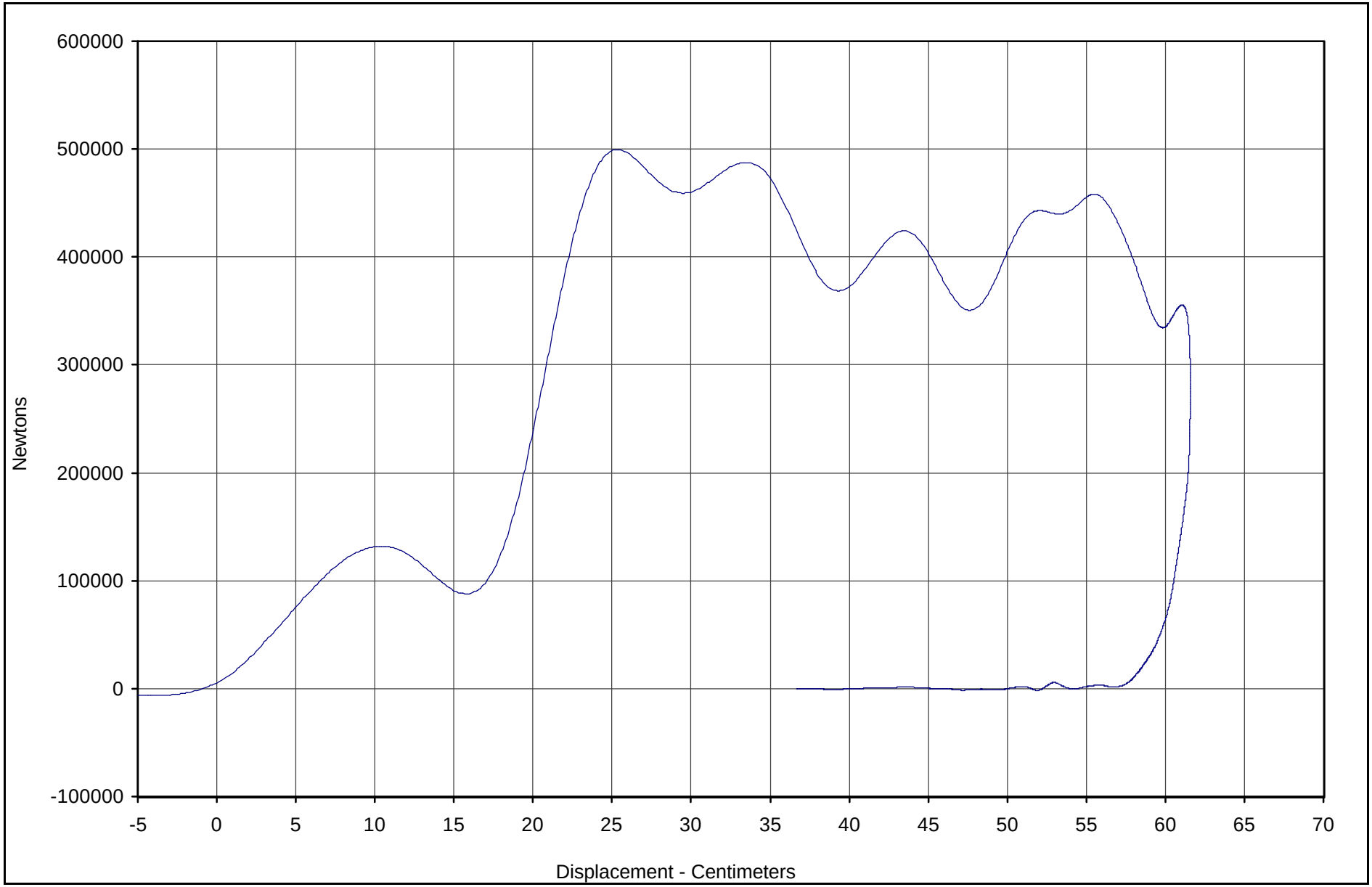
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force Total Sum	007	SUM	Newtons	499577	17.4	-1607.1	130.8	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



Curve Description	CURNO	Type	Units	Max	CM	Energy (Joules)	SAE Class
Barrier Force Total Sum vs. Displ.	001	XVY	Newtons	499577	25.4	191332	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600

BARRIER LOAD CELL SUMMARY DATA

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600

Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

Location	Units	Max	Time	Min	Time	
Barrier Force A1	Newtons	2416.3	40.9	-2246.1	9.2	
Barrier Force A2	Newtons	1854.5	17.1	-1461.4	13.2	
Barrier Force A3	Newtons	3575.8	16.8	-1895.8	20.8	
Barrier Force A4	Newtons	38020.2	16.6	-793.8	10.0	
Barrier Force A5	Newtons	59688.0	18.2	-1702.6	10.6	
Barrier Force A6	Newtons	4021.0	16.8	-5174.9	12.5	
Barrier Force A7	Newtons	2506.6	16.6	-3280.4	12.6	
Barrier Force A8	Newtons	1605.5	23.5	-1286.3	19.8	
Barrier Force A9	Newtons	1574.5	23.8	-1331.2	27.4	
Barrier Force B1	Newtons	5944.0	40.5	-976.4	18.3	
Barrier Force B2	Newtons	4206.3	47.9	-735.9	11.2	
Barrier Force B3	Newtons	76569.1	31.5	-595.3	0.0	
Barrier Force B4	Newtons	51233.4	47.8	-61.9	158.5	
Barrier Force B5	Newtons	101195.8	48.4	-67.1	161.0	
Barrier Force B6	Newtons	50034.5	20.0	-69.6	148.5	
Barrier Force B7	Newtons	86909.9	21.9	-75.1	213.1	
Barrier Force B8	Newtons	9597.0	46.6	-426.3	11.1	
Barrier Force B9	Newtons	2850.5	38.9	-2357.2	18.6	
Barrier Force C1	Newtons	2901.7	38.5	-1088.5	18.5	
Barrier Force C2	Newtons	0.0	0.0	0.0	0.0	*
Barrier Force C3	Newtons	22842.8	16.5	-45.9	129.7	
Barrier Force C4	Newtons	51527.0	47.7	-95.4	129.8	
Barrier Force C5	Newtons	70620.6	18.7	-90.2	129.9	
Barrier Force C6	Newtons	0.0	0.0	0.0	0.0	*
Barrier Force C7	Newtons	0.0	0.0	0.0	0.0	*
Barrier Force C8	Newtons	2128.2	16.0	-2020.7	12.1	
Barrier Force C9	Newtons	2560.6	15.2	-1773.9	19.3	
Barrier Force D1	Newtons	0.0	0.0	0.0	0.0	*
Barrier Force D2	Newtons	23968.8	31.6	-1680.0	21.6	
Barrier Force D3	Newtons	6465.3	25.3	-654.5	0.0	
Barrier Force D4	Newtons	7966.6	9.4	-2534.8	29.0	
Barrier Force D5	Newtons	18124.6	4.4	-1837.6	29.2	
Barrier Force D6	Newtons	7270.3	8.5	-1626.3	29.0	
Barrier Force D7	Newtons	4316.2	17.6	-840.4	21.7	
Barrier Force D8	Newtons	22367.0	29.9	-817.2	13.5	
Barrier Force D9	Newtons	4523.0	25.5	-4133.6	21.0	
Barrier Force Sum Group 1	Newtons	82823.6	32.5	-785.0	131.2	
Barrier Force Sum Group 2	Newtons	227618.1	47.7	-379.8	129.9	
Barrier Force Sum Group 3	Newtons	93206.2	22.8	-453.6	131.1	
Barrier Force Sum Group 4	Newtons	40566.0	32.0	-679.4	111.7	
Barrier Force Sum Group 5	Newtons	131709.8	17.7	-311.1	154.9	
Barrier Force Sum Group 6	Newtons	27717.2	31.6	-5073.6	20.6	
Barrier Force Total Sum	Newtons	499577.3	17.4	-1607.1	130.8	

* Channels failed, no data

APPENDIX D

INSTRUMENTATION DATA CHANNEL ASSIGNMENTS

2003 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Driver A.T.D. Serial Number 34
9/9/03
2004 Mitsubishi Endeavor LS SUV

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

2003 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Driver A.T.D. Serial Number 34
9/9/03
2004 Mitsubishi Endeavor LS SUV

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
25	UP. TIBIA LEFT MOM.	X	GPUT09MX	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
26	UP. TIBIA LEFT MOM.	Y	GPUT09MY	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
27	UP. TIBIA RIGHT MOM.	X	GPUT09MX	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
28	UP. TIBIA RIGHT MOM.	Y	GPUT09MY	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
29	LWR. TIBIA LEFT MOM.	X	GPLT09MX	3 ch., lower tibia gage	R. A. Denton	3093	Nm
30	LWR. TIBIA LEFT MOM.	Y	GPLT09MY	3 ch., lower tibia gage	R. A. Denton	3093	Nm
31	LWR. TIBIA LEFT FORCE	Z	GPLT09FZ	3 ch., lower tibia gage	R. A. Denton	3093	N
32	LWR. TIBIA RIGHT MOM.	X	GPLT09MX	3 ch., lower tibia gage	R. A. Denton	3093	Nm
33	LWR. TIBIA RIGHT MOM.	Y	GPLT09MY	3 ch., lower tibia gage	R. A. Denton	3093	Nm
34	LWR. TIBIA RIGHT FORCE	Z	GPLT09FZ	3 ch., lower tibia gage	R. A. Denton	3093	N
35	FOOT LEFT, AFT	X	KEIC003X	Accel., Foot Triax	I.C. Sensor	3031-500	G
36	FOOT LEFT, AFT	Z	KEIC003Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
37	FOOT LEFT, FORE	Z	KEIC003Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
38	FOOT RIGHT, AFT	X	KEIC004X	Accel., Foot Triax	I.C. Sensor	3031-500	G
39	FOOT RIGHT, AFT	Z	KEIC004Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
40	FOOT RIGHT, FORE	Z	KEIC004Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
41	LAP BELT FORCE	X	KELC001	Load cell, Seat belt	Lebow	3371	N
42	SHOULDER BELT FORCE	X	KELC002	Load cell, Seat belt	Lebow	3371	N
43	SHOULDER BELT SPOOL	X	KEPP001	Pullout pot	Celesco	PTX101-0030	CM
44	SHOULDER BELT ELONG.	X	KEEP001	Linear pot., belt stretch	E.T.I.	LCP8-10 10K	MM/CM

2003 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Passenger A.T.D. Serial Number 35
9/9/03
2004 Mitsubishi Endeavor LS SUV

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

2003 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Passenger A.T.D. Serial Number 35
9/9/03
2004 Mitsubishi Endeavor LS SUV

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
69	UP. TIBIA LEFT MOM.	X	GPUT09MX	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
70	UP. TIBIA LEFT MOM.	Y	GPUT09MY	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
71	UP. TIBIA RIGHT MOM.	X	GPUT09MX	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
72	UP. TIBIA RIGHT MOM.	Y	GPUT09MY	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
73	LWR. TIBIA LEFT MOM.	X	GPLT09MX	3 ch., lower tibia gage	R. A. Denton	3093	Nm
74	LWR. TIBIA LEFT MOM.	Y	GPLT09MY	3 ch., lower tibia gage	R. A. Denton	3093	Nm
75	LWR. TIBIA LEFT FORCE	Z	GPLT09FZ	3 ch., lower tibia gage	R. A. Denton	3093	N
76	LWR. TIBIA RIGHT MOM.	X	GPLT09MX	3 ch., lower tibia gage	R. A. Denton	3093	Nm
77	LWR. TIBIA RIGHT MOM.	Y	GPLT09MY	3 ch., lower tibia gage	R. A. Denton	3093	Nm
78	LWR. TIBIA RIGHT FORCE	Z	GPLT09FZ	3 ch., lower tibia gage	R. A. Denton	3093	N
79	FOOT LEFT, AFT	X	KEIC002X	Accel., Foot Triax	I.C. Sensor	3031-500	G
80	FOOT LEFT, AFT	Z	KEIC002Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
81	FOOT LEFT, FORE	Z	KEIC002Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
82	FOOT RIGHT, AFT	X	KEIC001X	Accel., Foot Triax	I.C. Sensor	3031-500	G
83	FOOT RIGHT, AFT	Z	KEIC001Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
84	FOOT RIGHT, FORE	Z	KEIC001Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
85	LAP BELT FORCE	X	KELC003	Load cell, Seat belt	Lebow	3371	N
86	SHOULDER BELT FORCE	X	KELC004	Load cell, Seat belt	Lebow	3371	N
87	SHOULDER BELT SPOOL	X	KEPP001	Pullout pot	Celesco	PTX101-0030	MM
88	SHOULDER BELT ELONG.	X	KEEP001	Linear pot., belt stretch	E.T.I.	LCP8-10 10K	MM/CM

2003 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Vehicle Accelerometers
9/9/03
2004 Mitsubishi Endeavor LS SUV

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
89	Left Rear	X	KEVA002	Accel., Pre-Amp	I.C.S/Karco	3031-500	G
90	Right Rear	X	KEVA006	Accel., Vehicle block	I.C. Sensor	3031-200	G
91	Engine Top	X	KEVA009	Accel., Vehicle block	I.C. Sensor	3031-500	G
92	Engine Bottom	X	KEVA007	Accel., Vehicle block	I.C. Sensor	3031-500	G
93	Left Brake Caliper	X	KEVA008	Accel., Vehicle block	I.C. Sensor	3031-500	G
94	Right Brake Caliper	X	KEVA012	Accel., Vehicle block	I.C. Sensor	3031-500	G
95	Instrument Panel	X	KEVA011	Accel., Vehicle block	I.C. Sensor	3031-200	G
96	Left Rear	Z	KEVA001	Accel., Vehicle block	I.C. Sensor	3031-500	G
97	Right Rear	Z	KEVA010	Accel., Vehicle block	I.C. Sensor	3031-200	G

2003 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Rigid Load Cell Barrier
9/9/03
2004 Mitsubishi Endeavor LS SUV

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

2003 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Rigid Load Cell Barrier
9/9/03
2004 Mitsubishi Endeavor LS SUV

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

APPENDIX E

DUMMY CALIBRATION DATA

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

ATD Serial No.: 034 Location: Left Knee Test I.D.: LK08A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	^{o}C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force	N	4715 to 5782	5285	Pass
		Overall Test Results		Pass

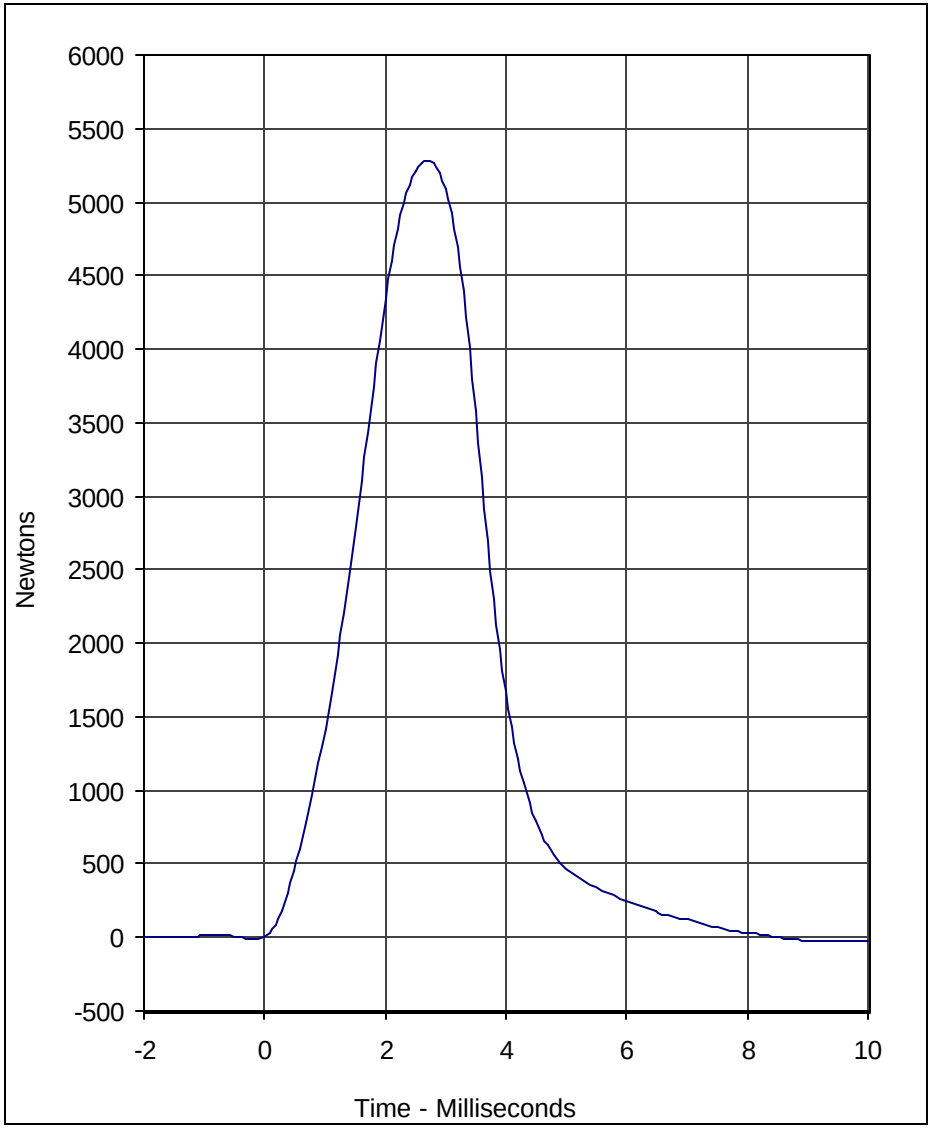
ATD Serial No.: 034 Location: Right Knee Test I.D.: RK08A

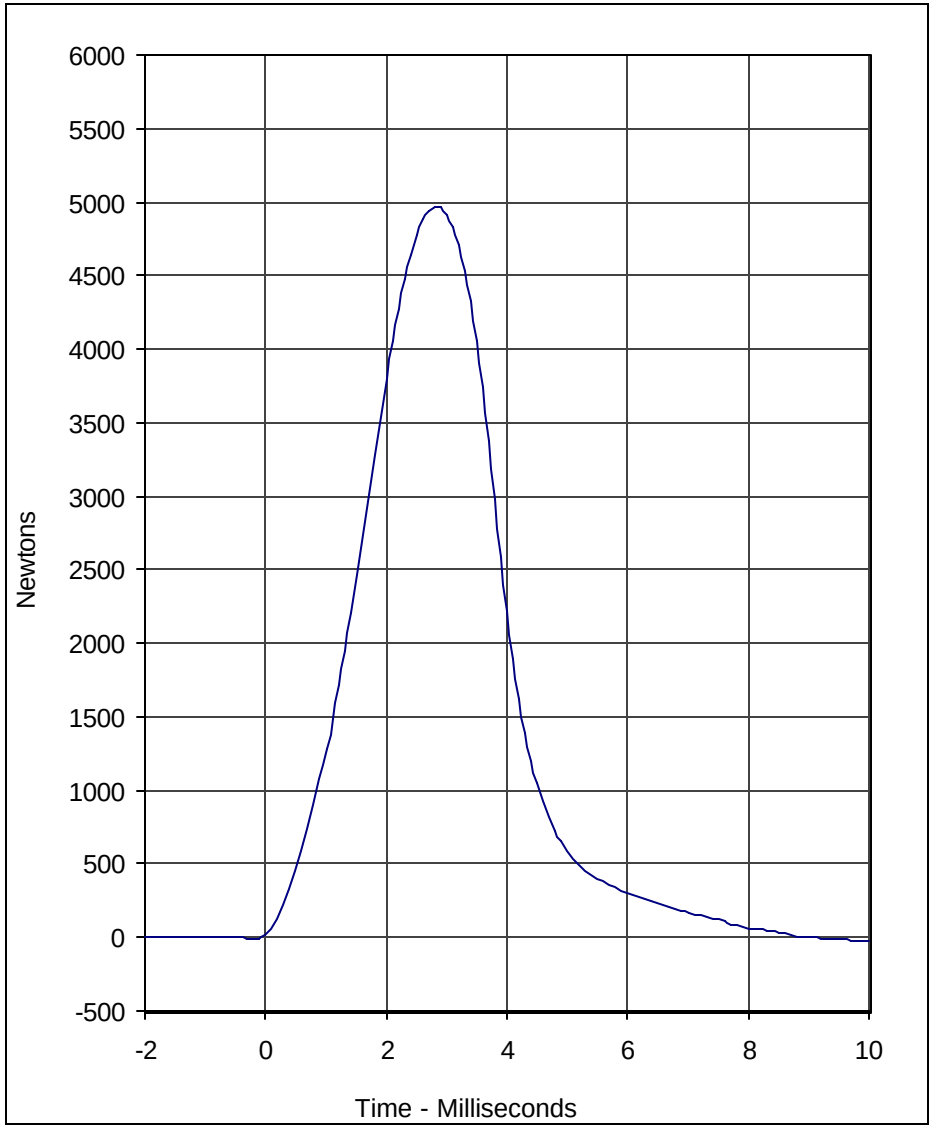
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	^{o}C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.13	Pass
Peak Probe Force	N	4715 to 5782	4972	Pass
		Overall Test Results		Pass

Laboratory Technician

August 25, 2003

Test Date





Curve Description	Location	Test I.D.	CURNO	Type
Probe Force	Left Knee	LK08A	001	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	5284.8	2.7	-23.7	9.7	600

Curve Description	Location	Test I.D.	CURNO	Type
Probe Force	Right Knee	RK08A	002	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	4971.8	2.8	-21.6	10.0	600

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

Test Date: 8/25/03

A.T.D. Serial No.: 034

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

ATD Serial No.: 034

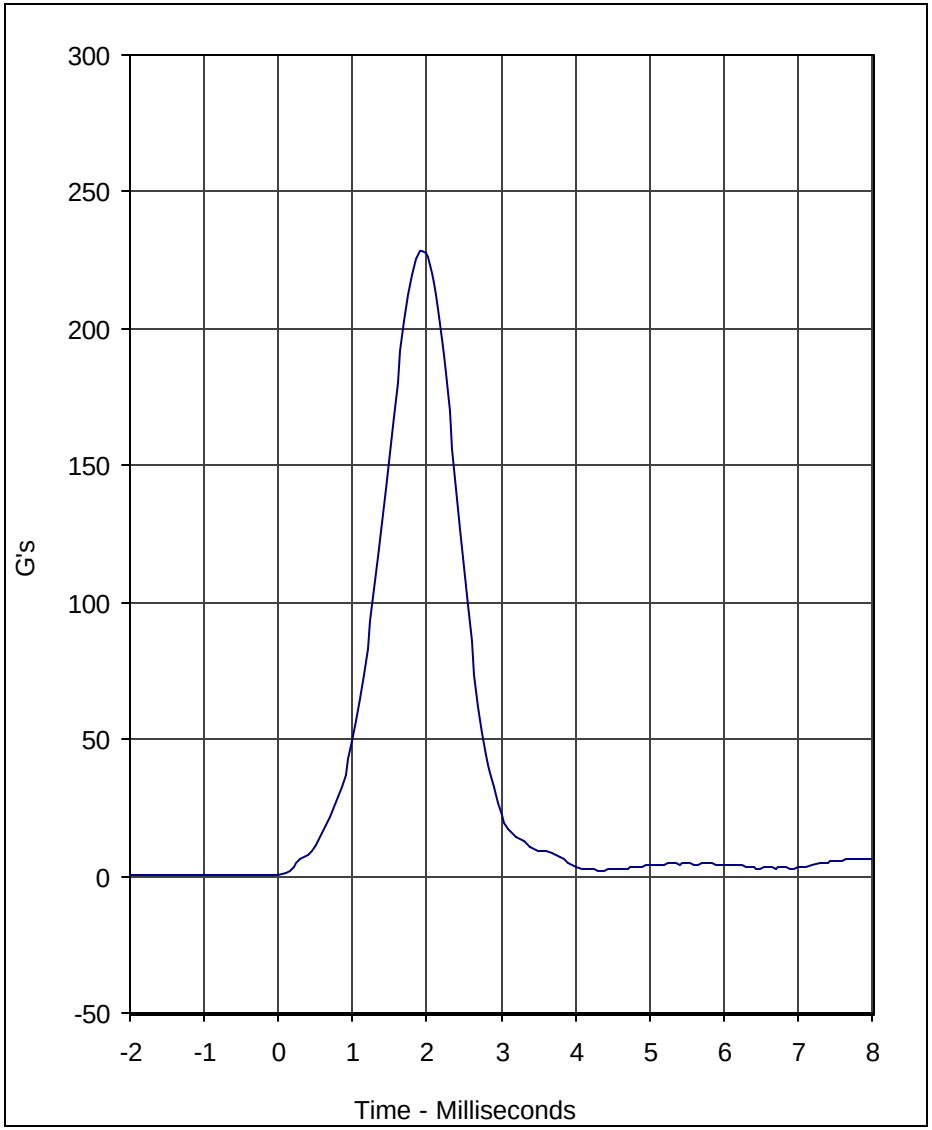
Test I.D.: HD08A

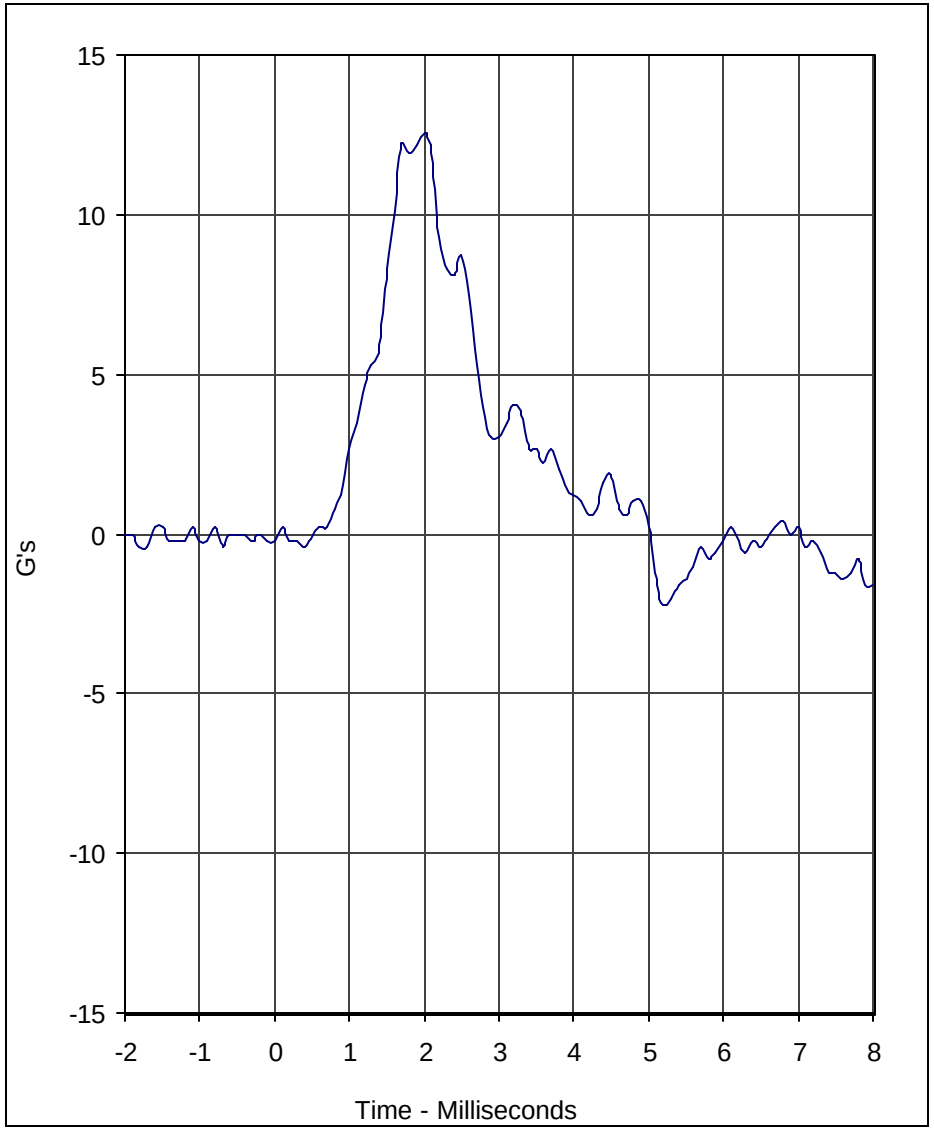
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	^{o}C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	228.3	Pass
Peak Lateral Acceleration	G's	≤15.0	12.6	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
		Overall Test Results		Pass

Laboratory Technician

August 25, 2003

Test Date





Curve Description	CURNO	Type
Head Resultant	001	RES

Units	Max	Time	Min	Time	SAE Class
G's	228.3	1.9	0.2	-1.9	1000

Curve Description	CURNO	Type
Head Y	002	FIL

Units	Max	Time	Min	Time	SAE Class
G's	12.6	2.0	-2.2	5.2	1000

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

Test Date: 8/25/03

A.T.D. Serial No.: 034

Test I.D.: HD08A

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

ATD Serial No.: 034

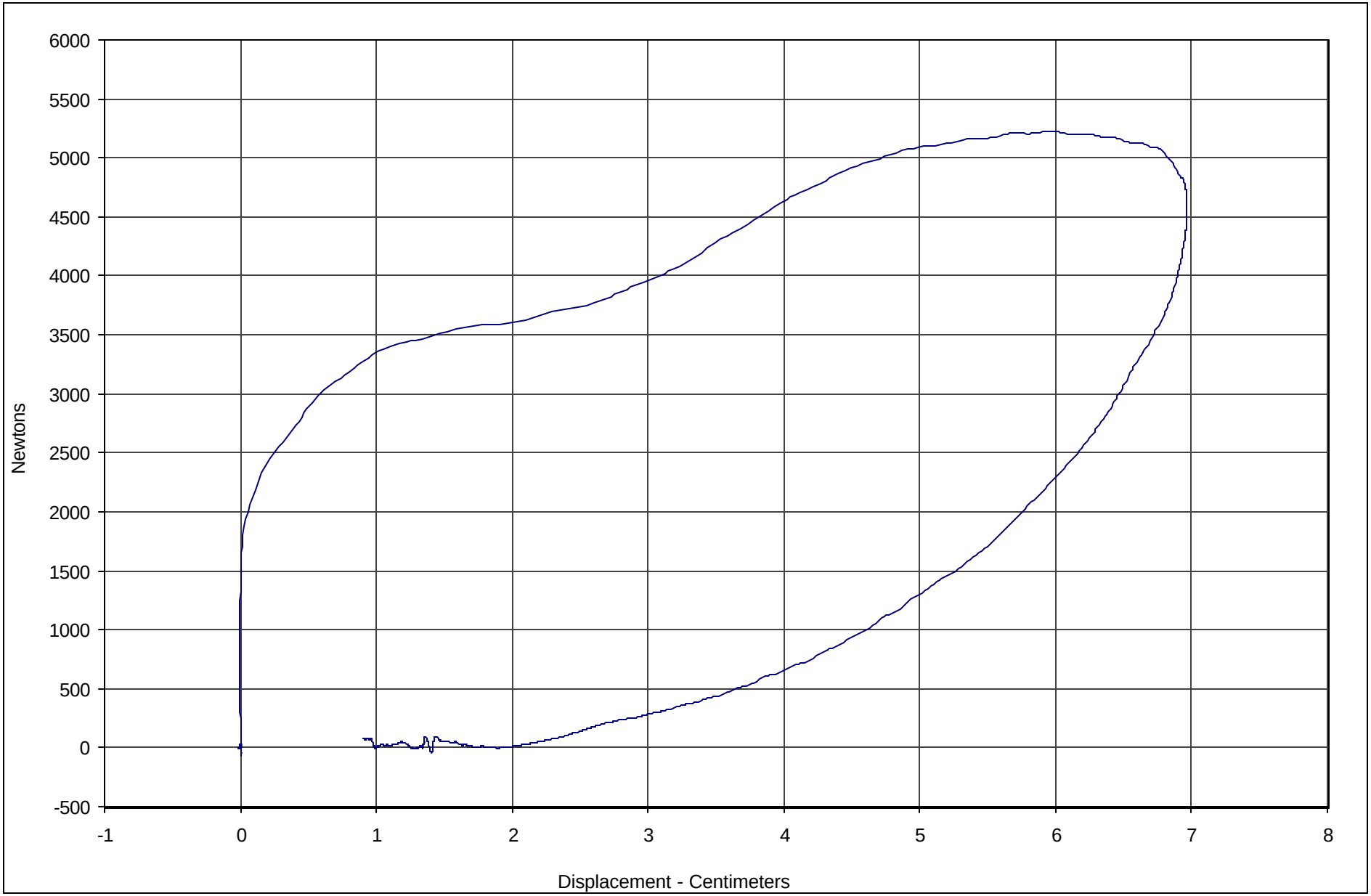
Test I.D.: CH12A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	^{o}C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	6.58 to 6.82	6.74	Pass
Peak Probe Force	Newtons	5159 to 5893	5223	Pass
Peak Sternum Displacement	CM	6.35 to 7.26	6.96	Pass
Internal Hysterysis	%	69 to 85	78.4	Pass
		Overall Test Results		Pass

Laboratory Technician

August 26, 2003

Test Date



Curve Description	CURNO	Type	Hysterysis	Peak Chest Displ.	Peak Probe Force	SAE Class
Probe Force vs. Chest Displacement	001	FIL	78.4	6.96	5223.0	180

Test Program: Hybrid III 50th Percentile Male Thorax Impact

A.T.D. Serial No.: 034

Test Date: 8/26/03

Test I.D.: CH12A

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

ATD Serial No.: 034

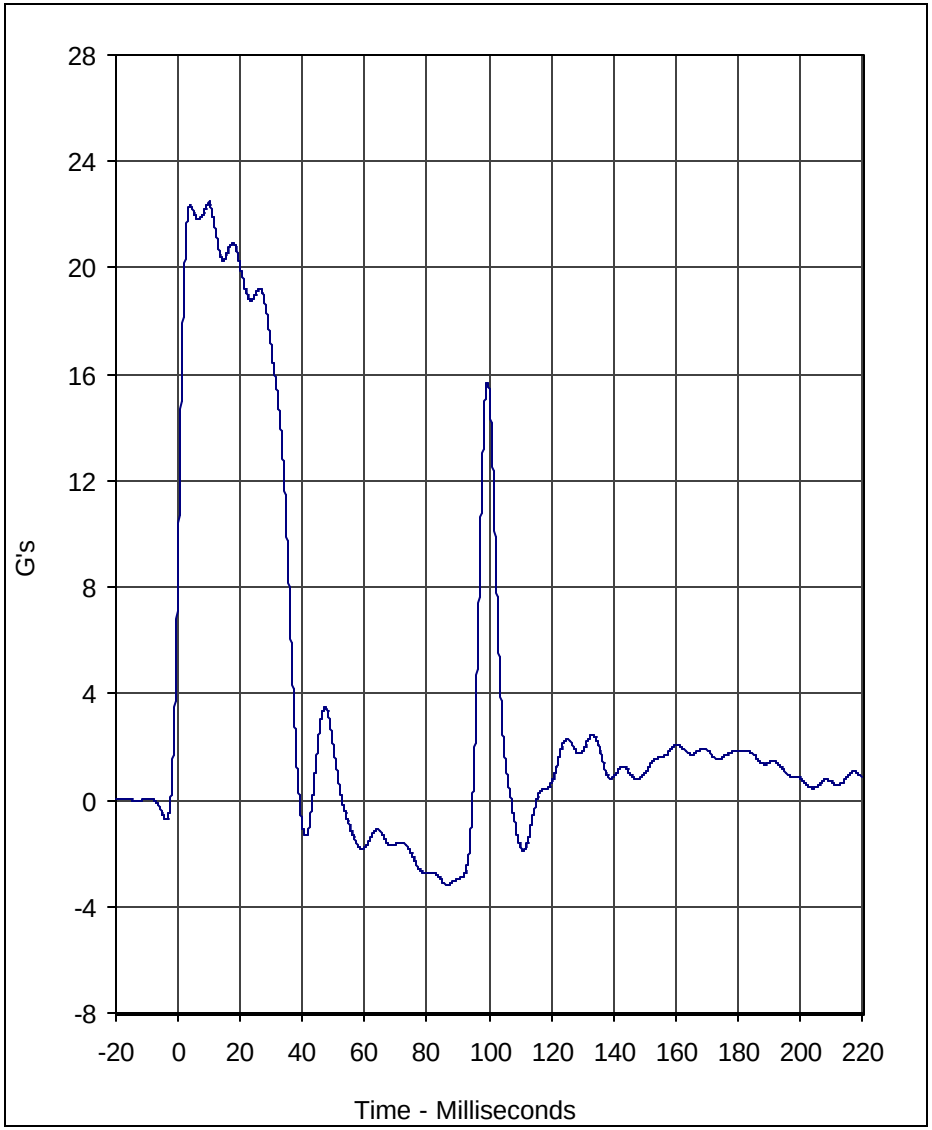
Test I.D.: NF08C

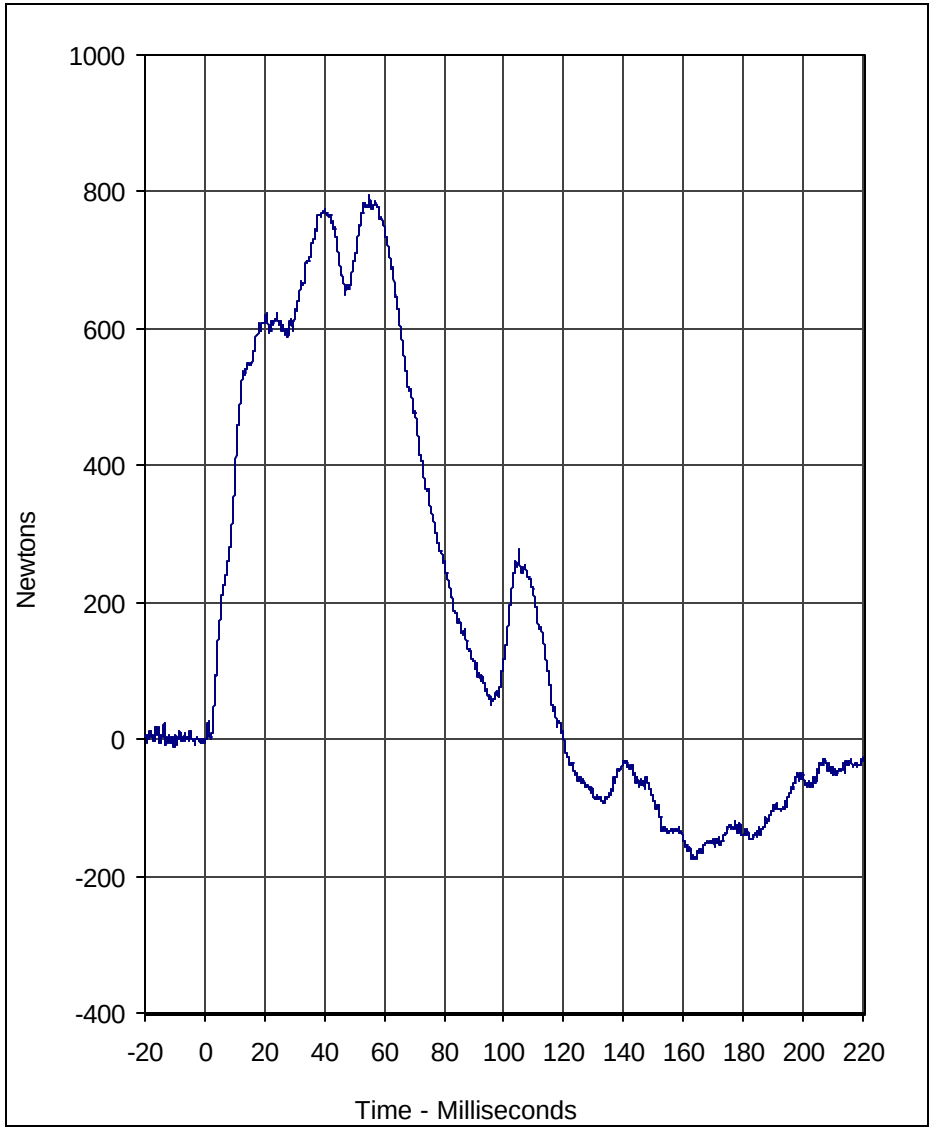
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.98	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	22.5	Pass
	20 Msec.	G's	17.6 to 22.6	20.1	Pass
	30 Msec.	G's	12.5 to 18.5	17.0	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	17.0	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	36.8	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	66.9	Pass
	Time	Msec.	57.0 to 64.0	62.5	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	119.2	Pass
Moment About Occipital Condyle	Maximum	Nm	84.1 to 108.5	87.3	Pass
	Time	Msec.	47.0 to 58.0	52.2	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	100.5	Pass
			Overall Test Results		Pass

Laboratory Technician

August 26, 2003

Test Date





Curve Description	CURNO	Type
Pendulum Deceleration	001	FIL

Units	Max	Time	Min	Time	SAE Class
G's	22.5	10.0	-3.2	86.7	60

Curve Description	CURNO	Type
Neck Force X	002	FIL

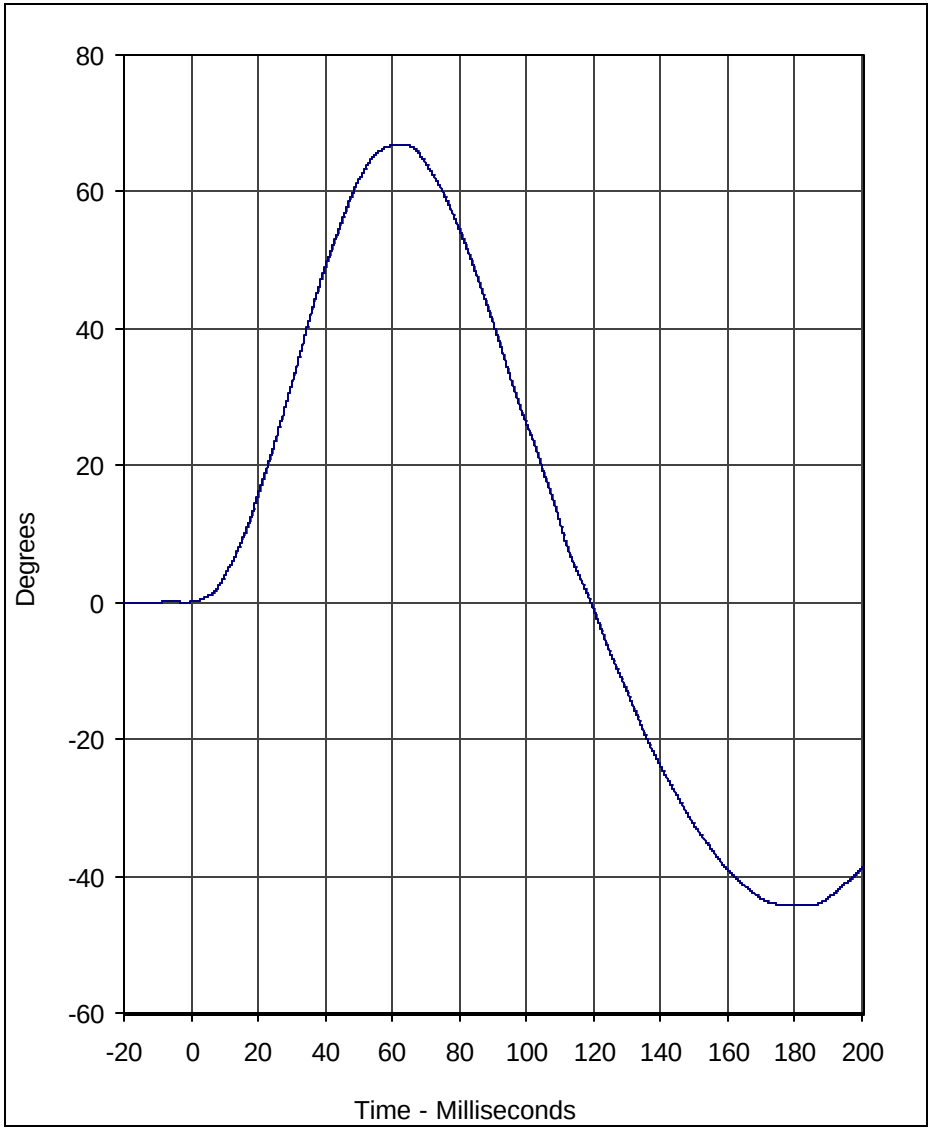
Units	Max	Time	Min	Time	SAE Class
Newtons	794.7	55.1	-176.0	162.7	600

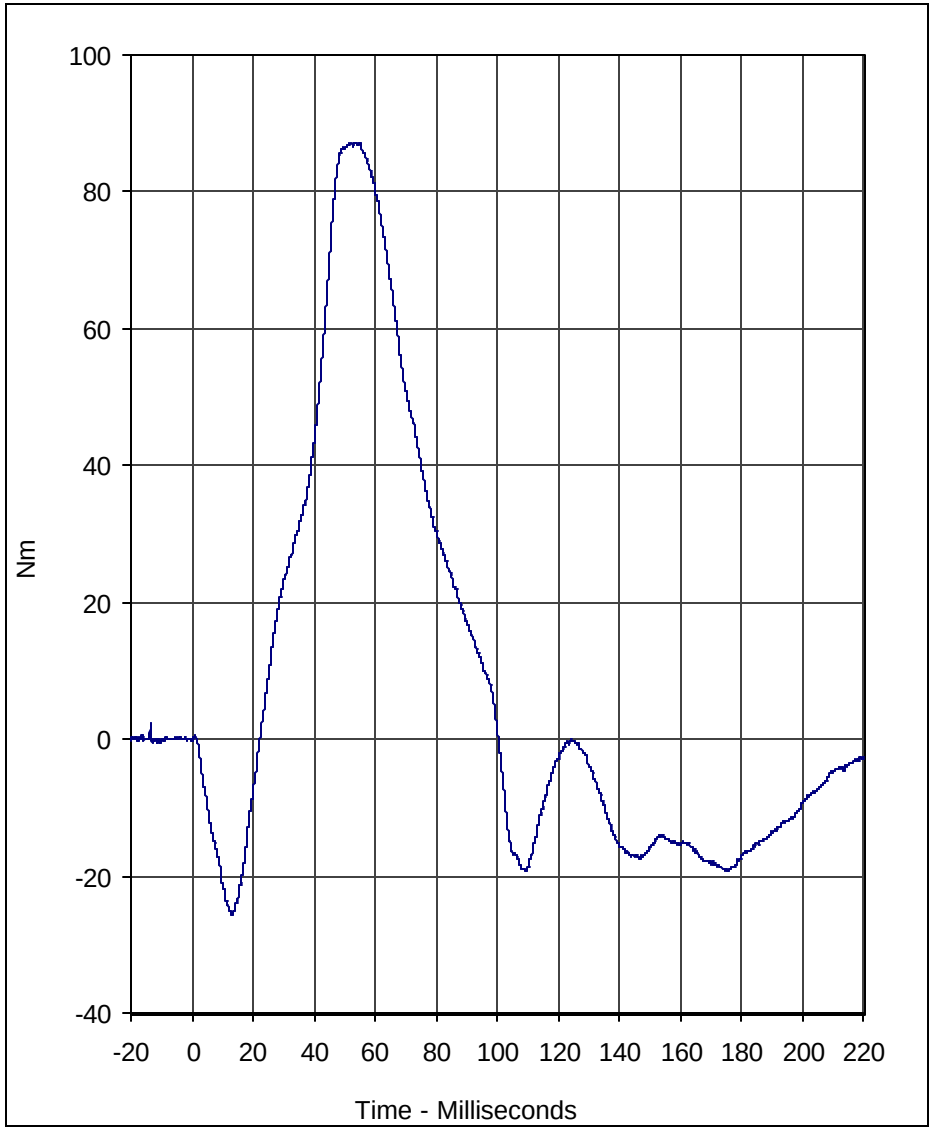
Test Program: Hybrid III 50th Percentile Male Neck Flexion Test

Test Date: 8/26/03

A.T.D. Serial No.: 034

Test I.D.: NF08C





Curve Description	CURNO	Type
"D" Plane Rotation	003	FIL

Units	Max	Time	Min	Time	SAE Class
Degrees	66.9	62.5	-44.3	182.3	60

Curve Description	CURNO	Type
Moment About Occipital Condyle	004	FIL

Units	Max	Time	Min	Time	SAE Class
Nm	87.3	52.2	-25.6	13.2	600

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

Test Date: 8/26/03

A.T.D. Serial No.: 034

Test I.D.: NF08C

KARCO Engineering

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

ATD Serial No.: 034

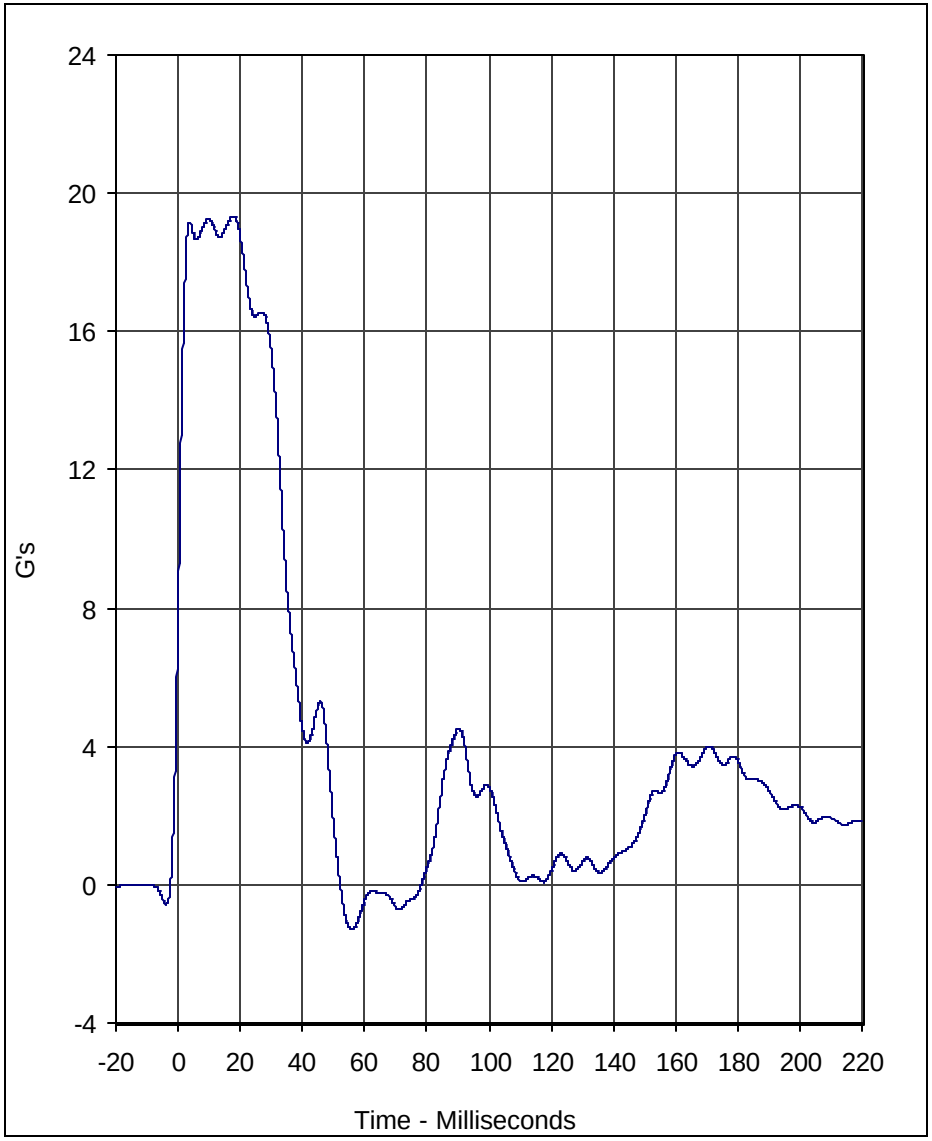
Test I.D.: NE08C

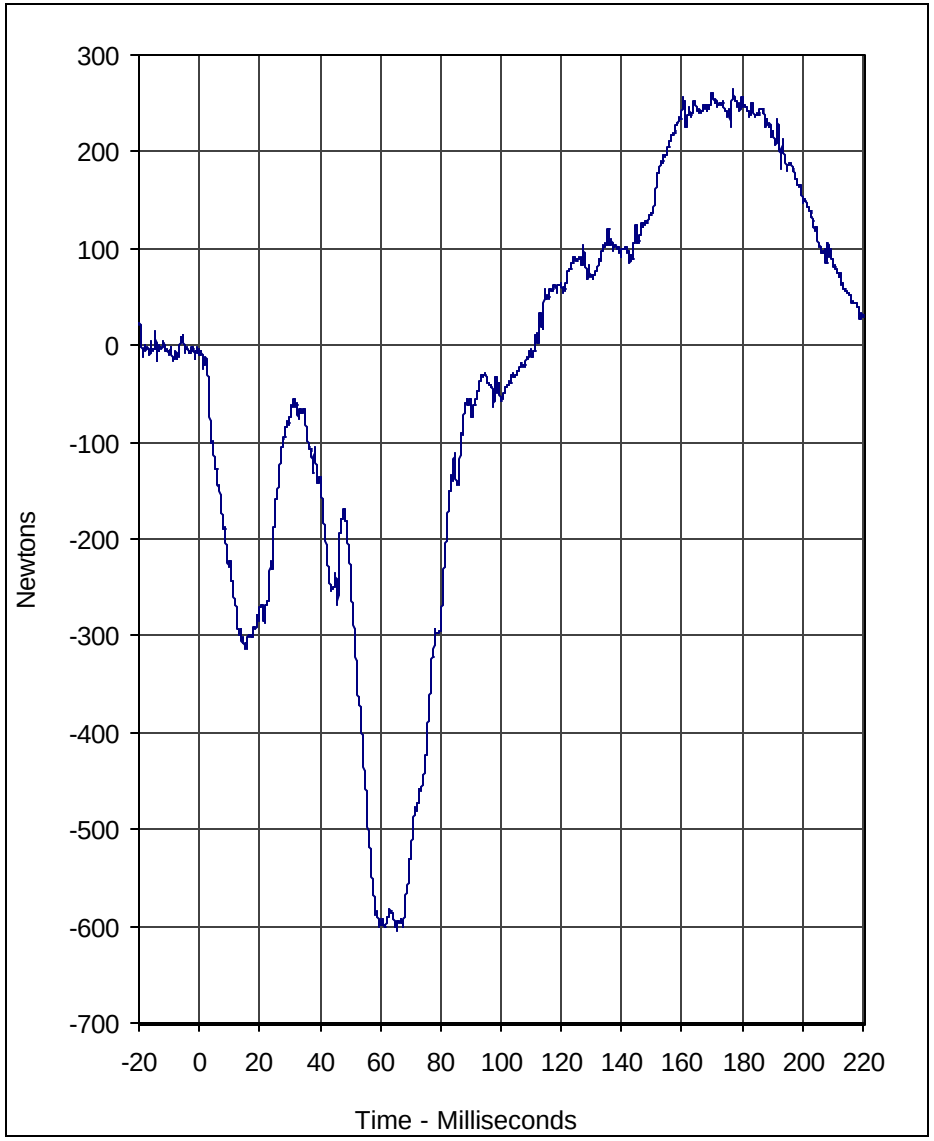
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.16	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	19.3	Pass
	20 Msec.	G's	14.0 to 19.0	18.7	Pass
	30 Msec.	G's	11.0 to 16.0	15.4	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	15.4	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	39.3	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	86.0	Pass
	Time	Msec.	72.0 to 82.0	75.7	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	151.8	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to- 79.9	-77.6	Pass
	Time	Msec.	65.0 to 79.0	68.2	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	147.9	Pass
			Overall Test Results		Pass

Laboratory Technician

August 26, 2003

Test Date





Curve Description	CURNO	Type
Pendulum Deceleration	001	FIL

Units	Max	Time	Min	Time	SAE Class
G's	19.3	17.8	-1.3	55.8	60

Curve Description	CURNO	Type
Neck Force X	002	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	264.9	176.9	-604.3	65.4	600

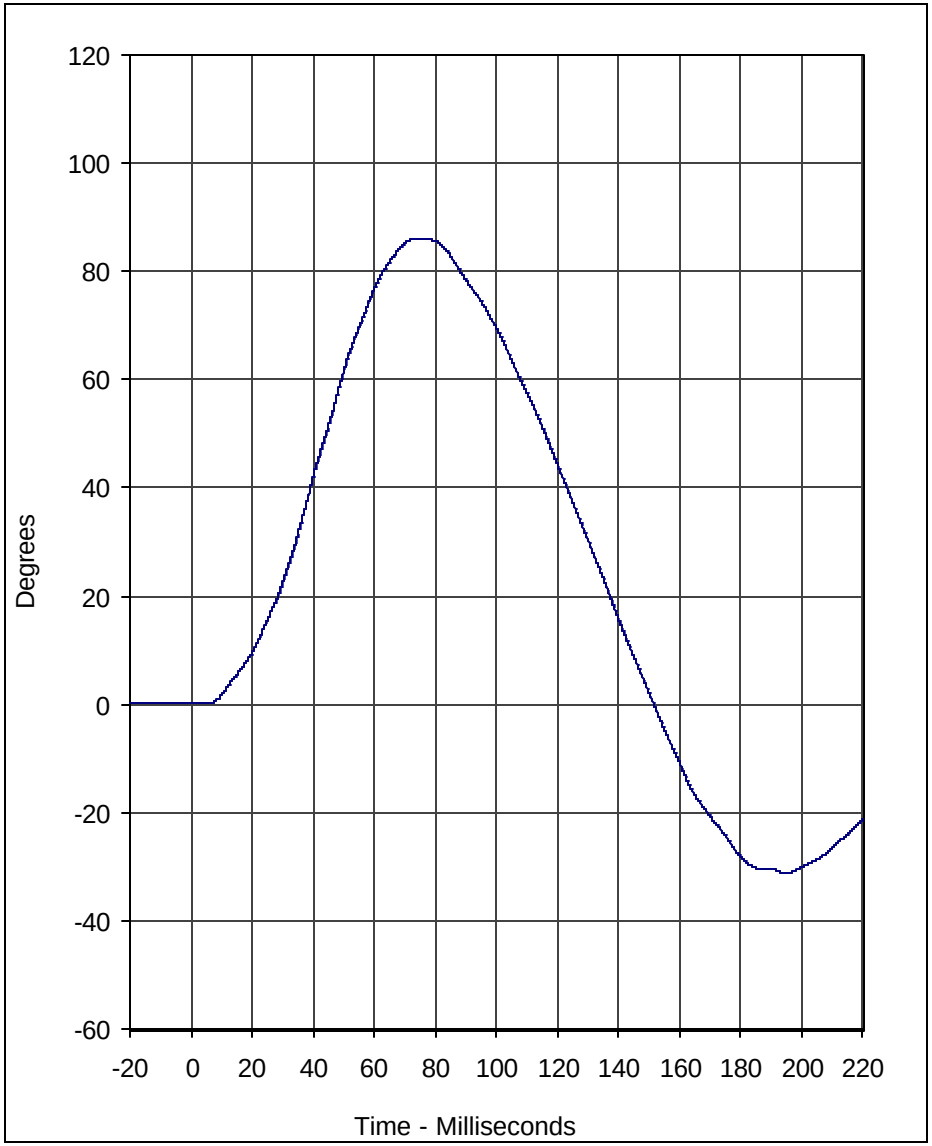
Test Program: Hybrid III 50th Percentile Male Neck Extension Test

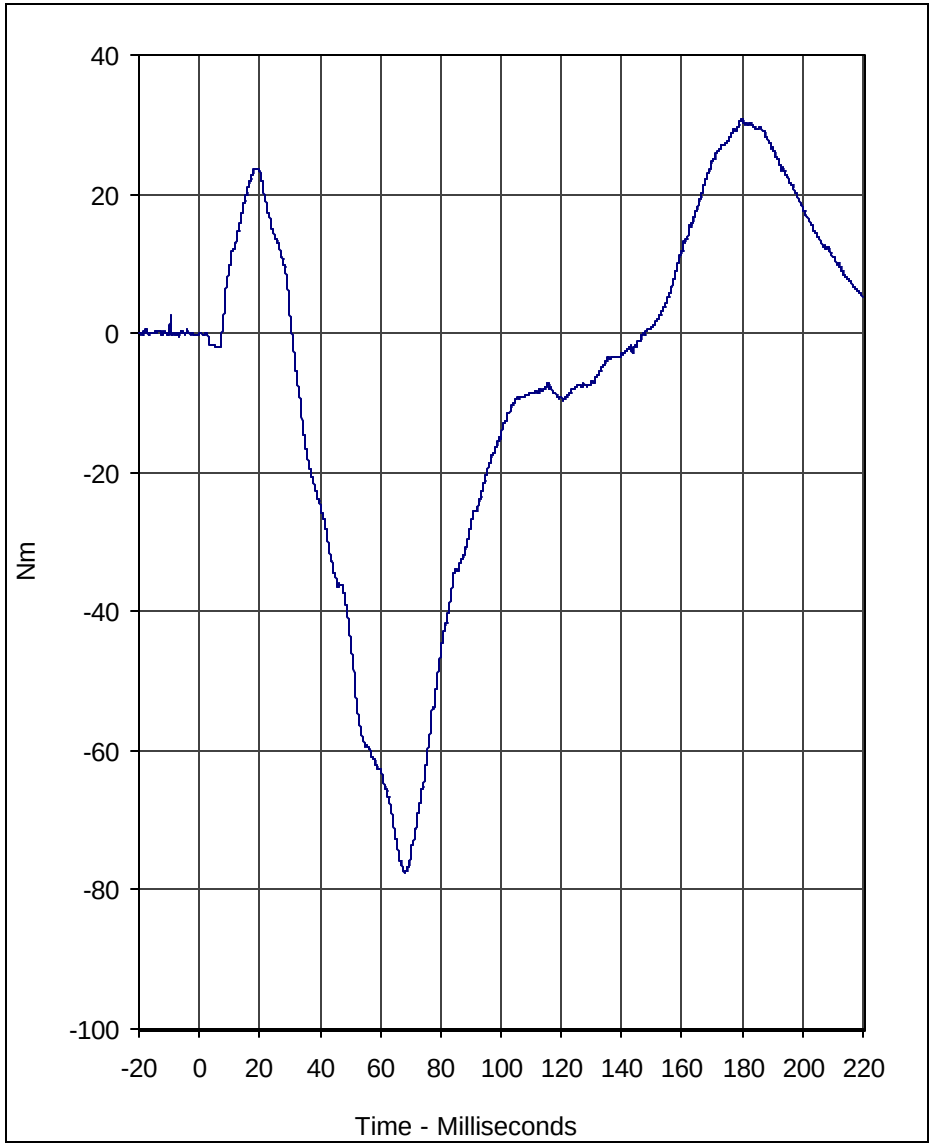
Test Date: 8/26/03

A.T.D. Serial No.: 034

Test I.D.: NE08C

KARCO Engineering





Curve Description	CURNO	Type
"D" Plane Rotation	003	FIL

Units	Max	Time	Min	Time	SAE Class
Degrees	86.0	75.7	-31.2	195.2	60

Curve Description	CURNO	Type
Moment About Occipital Condyle	004	FIL

Units	Max	Time	Min	Time	SAE Class
Nm	30.9	179.7	-77.6	68.2	600

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

Test Date: 8/26/03

A.T.D. Serial No.: 034

Test I.D.: NE08C

KARCO Engineering

Calibration Data Sheet
Hybrid III 50th Percentile Male
External Measurements

ATD Serial No.: 034

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	^{o}C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	879 to 889	880	Pass
B - Shoulder pivot height	mm	505 to 521	515	Pass
C - "H" point height	mm	84 to 89	85	Pass
D - "H" point from seat back	mm	135 to 140	135	Pass
E - Shoulder pivot from back	mm	84 to 94	90	Pass
F - Thigh clearance	mm	140 to 155	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	195	Pass
K - Buttock to knee length	mm	579 to 604	585	Pass
L - Poplipteal length	mm	429 to 455	440	Pass
M - Knee pivot height	mm	485 to 500	490	Pass
N - Buttock poplipteal length	mm	452 to 477	460	Pass
O - Chest depth	mm	213 to 229	220	Pass
P - Foot length	mm	251 to 267	255	Pass
V - Shoulder breadth	mm	422 to 437	435	Pass
W - Foot breadth	mm	91 to 107	100	Pass
Y - Chest circumference	mm	970 to 1001	990	Pass
Z - Waist circumference	mm	836 to 866	860	Pass
AA - Location for chest circumference	mm	429 to 434	430	Pass
BB - Location for waist circumference	mm	226 to 231	230	Pass
		Overall Test Results		Pass

Laboratory Technician

August 26, 2003
Test Date

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

ATD Serial No.: 035 Location: Left Knee Test I.D.: LK08B

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	^{o}C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.08	Pass
Peak Probe Force	N	4715 to 5782	5452	Pass
		Overall Test Results		Pass

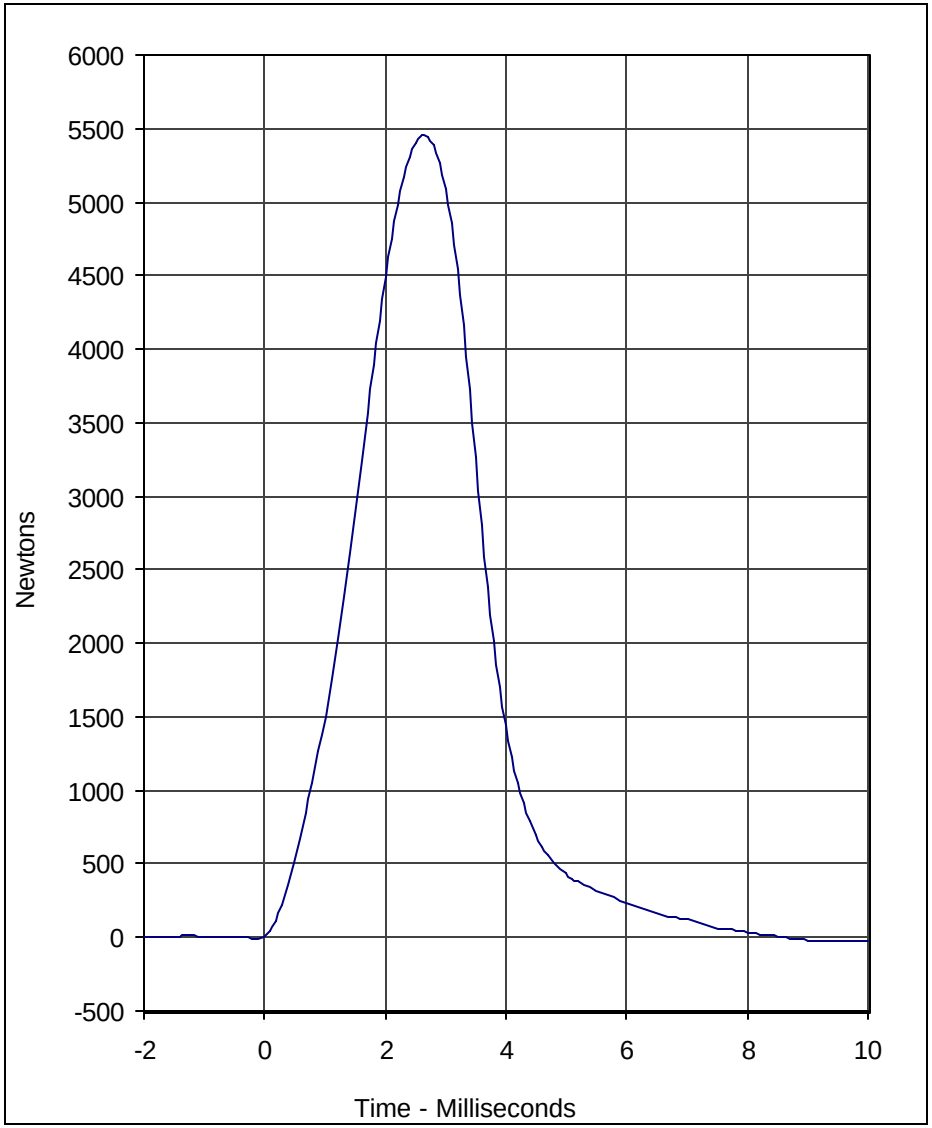
ATD Serial No.: 035 Location: Right Knee Test I.D.: RK08B

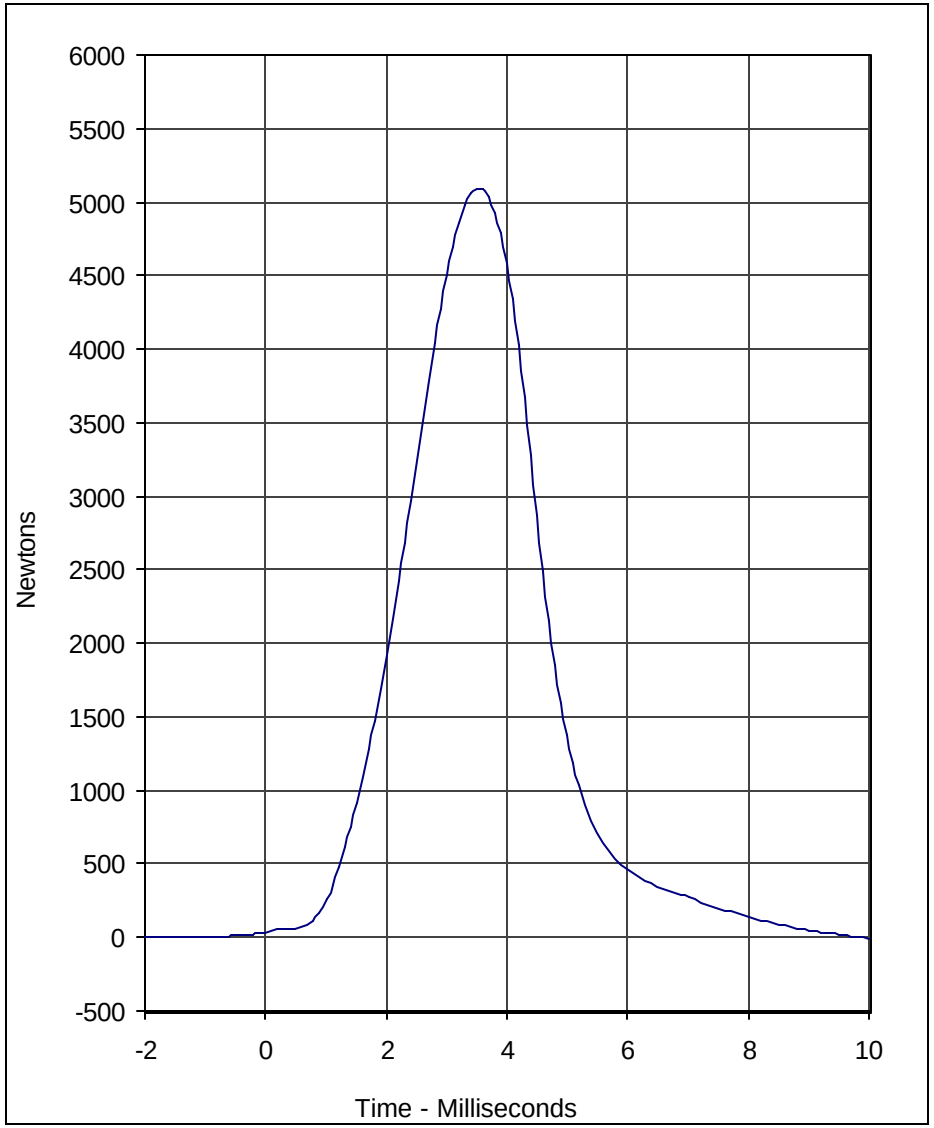
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	^{o}C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.12	Pass
Peak Probe Force	N	4715 to 5782	5092	Pass
		Overall Test Results		Pass

Laboratory Technician

August 25, 2003

Test Date





Curve Description	Location	Test I.D.	CURNO	Type
Probe Force	Left Knee	LK08B	001	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	5452.1	2.6	-26.6	9.2	600

Curve Description	Location	Test I.D.	CURNO	Type
Probe Force	Right Knee	RK08B	002	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	5092.2	3.5	-5.3	10.0	600

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

Test Date: 8/25/03

A.T.D. Serial No.: 035

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

ATD Serial No.: 035

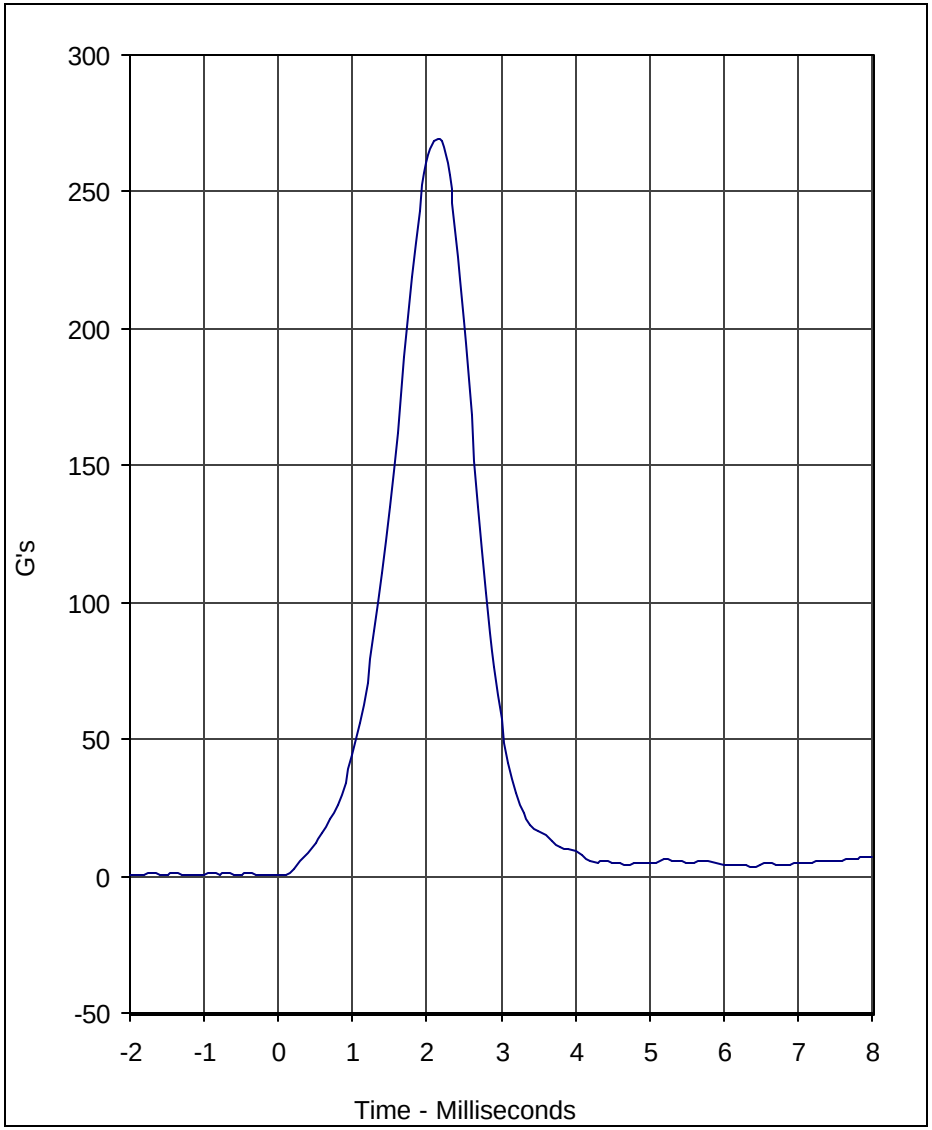
Test I.D.: HD08B

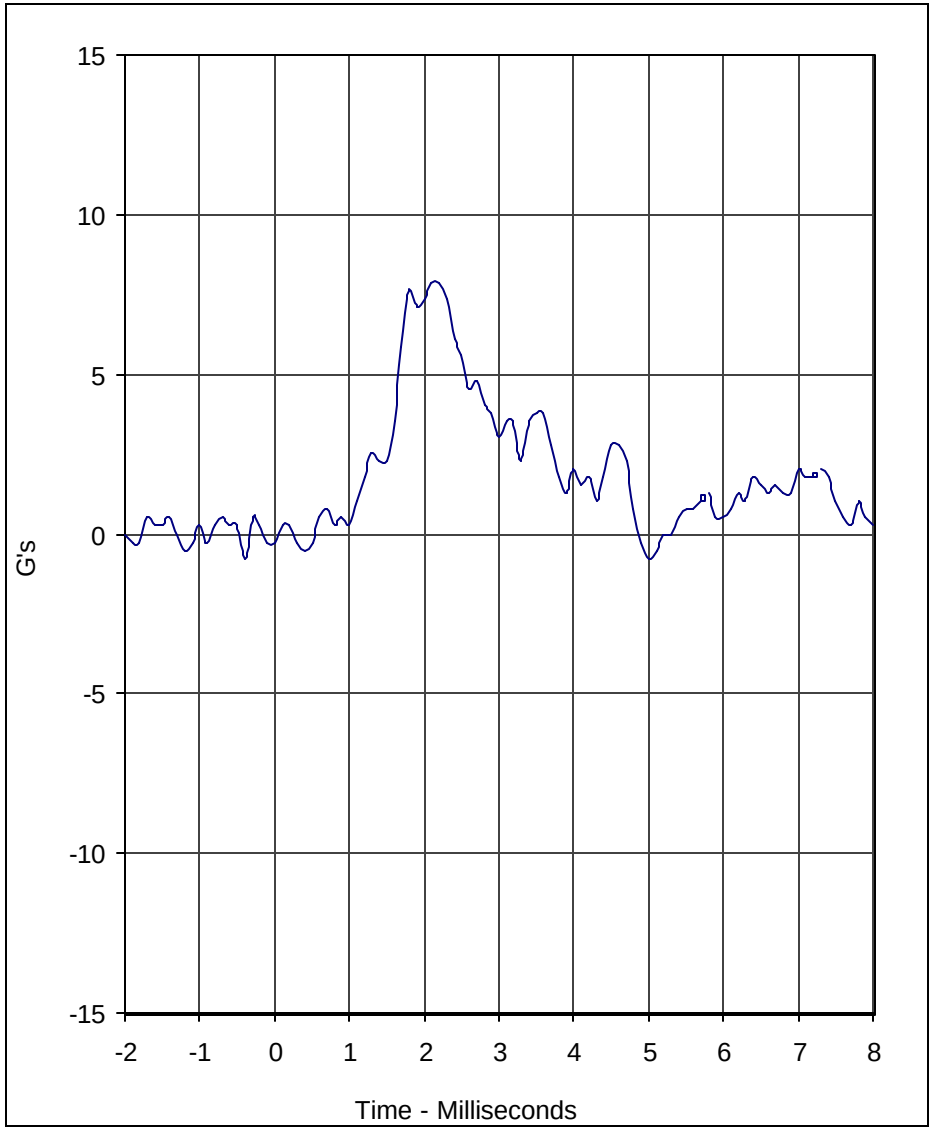
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	^{o}C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	268.9	Pass
Peak Lateral Acceleration	G's	≤15.0	7.9	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
		Overall Test Results		Pass

Laboratory Technician

August 25, 2003

Test Date





Curve Description	CURNO	Type
Head Resultant	001	RES

Units	Max	Time	Min	Time	SAE Class
G's	268.9	2.1	0.3	-1.8	1000

Curve Description	CURNO	Type
Head Y	002	FIL

Units	Max	Time	Min	Time	SAE Class
G's	7.9	2.1	-0.8	-0.4	1000

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

Test Date: 8/25/03

A.T.D. Serial No.: 035

Test I.D.: HD08B

KARCO Engineering

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

ATD Serial No.: 034

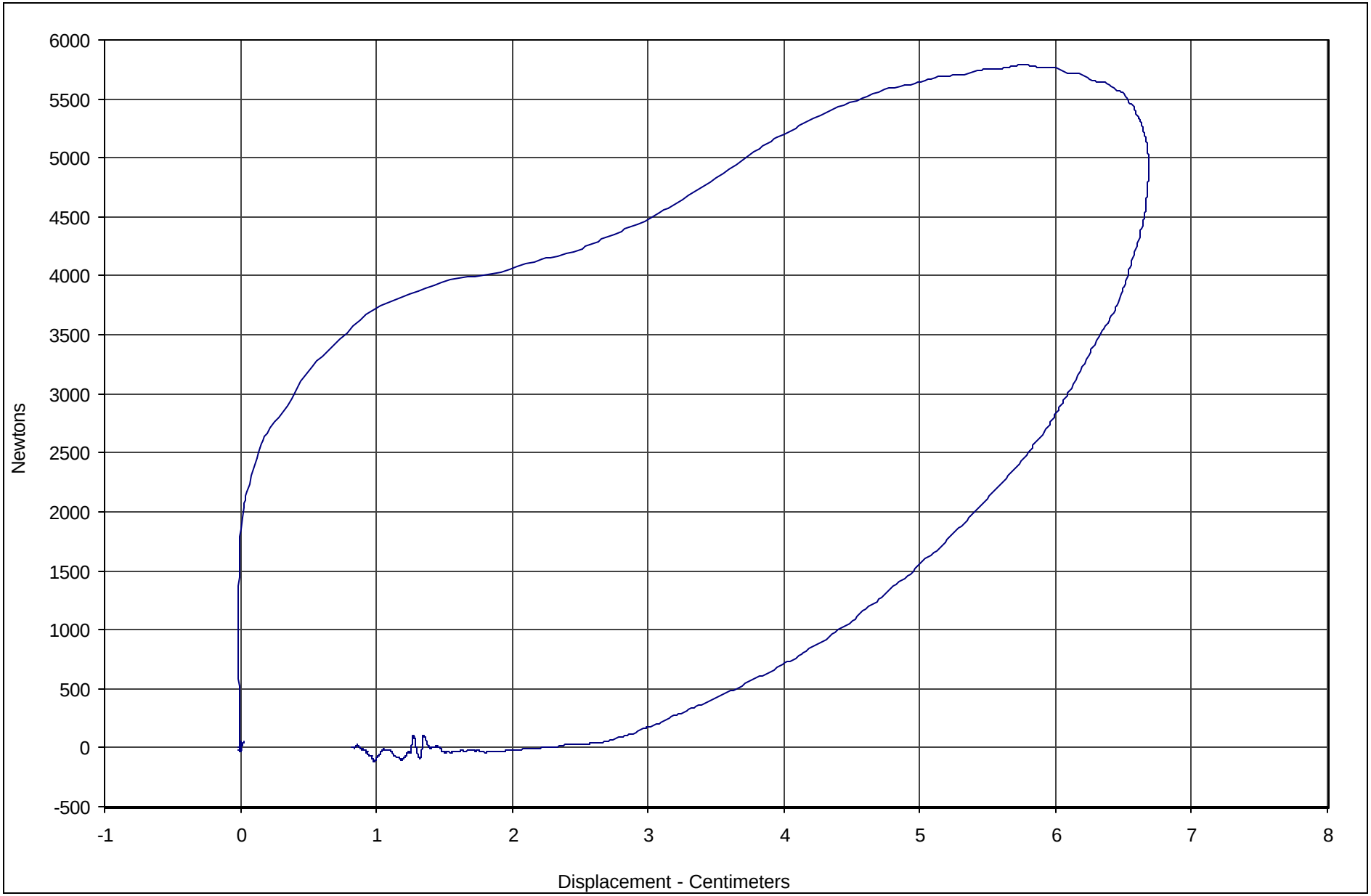
Test I.D.: CH12B

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	^{o}C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	6.58 to 6.82	6.67	Pass
Peak Probe Force	Newtons	5159 to 5893	5789	Pass
Peak Sternum Displacement	CM	6.35 to 7.26	6.68	Pass
Internal Hysterysis	%	69 to 85	80.2	Pass
		Overall Test Results		Pass

Laboratory Technician

August 26, 2003

Test Date



Curve Description	CURNO	Type	Hysterysis	Peak Chest Displ.	Peak Probe Force	SAE Class
Probe Force vs. Chest Displacement	001	FIL	80.2	6.68	5789.1	180

Test Program: Hybrid III 50th Percentile Male Thorax Impact

A.T.D. Serial No.: 034

Test Date: 8/26/03

Test I.D.: CH12B

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

ATD Serial No.: 035

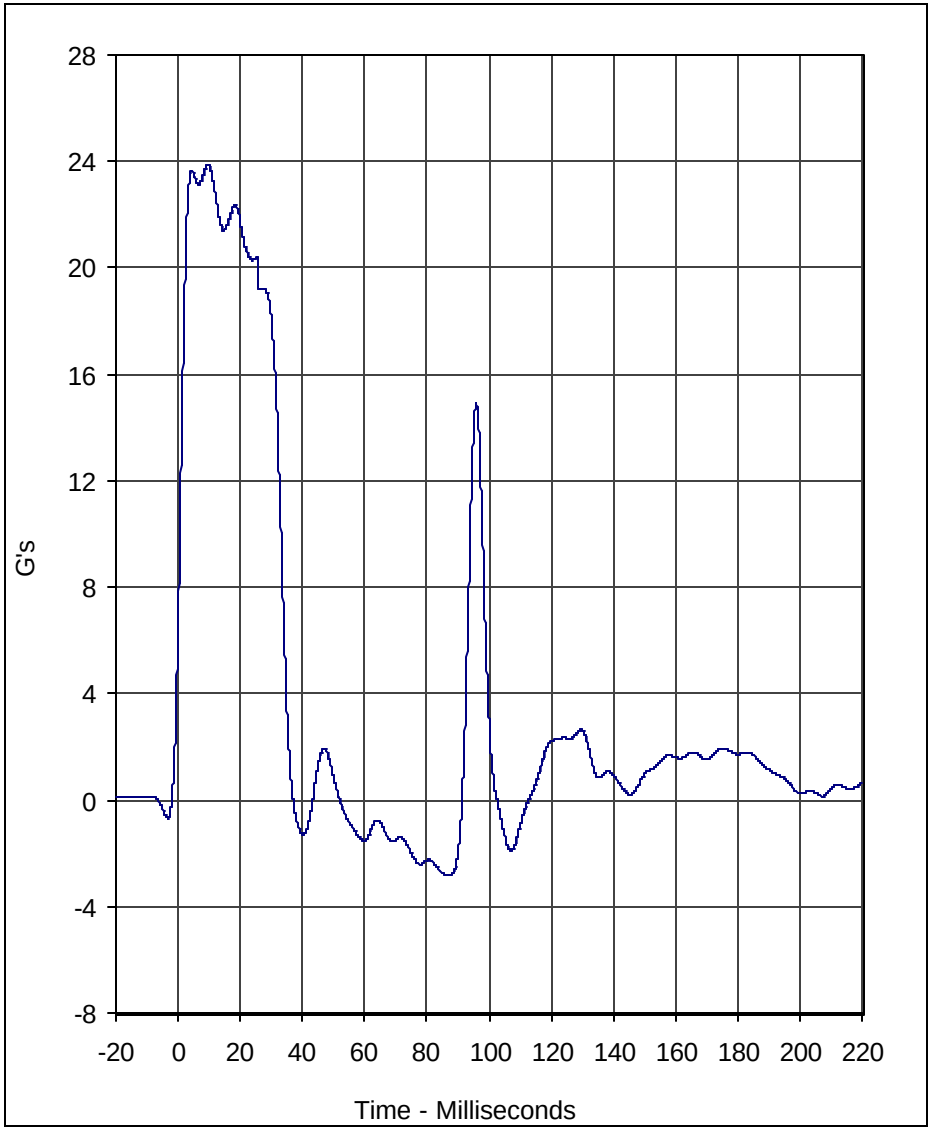
Test I.D.: NF08D

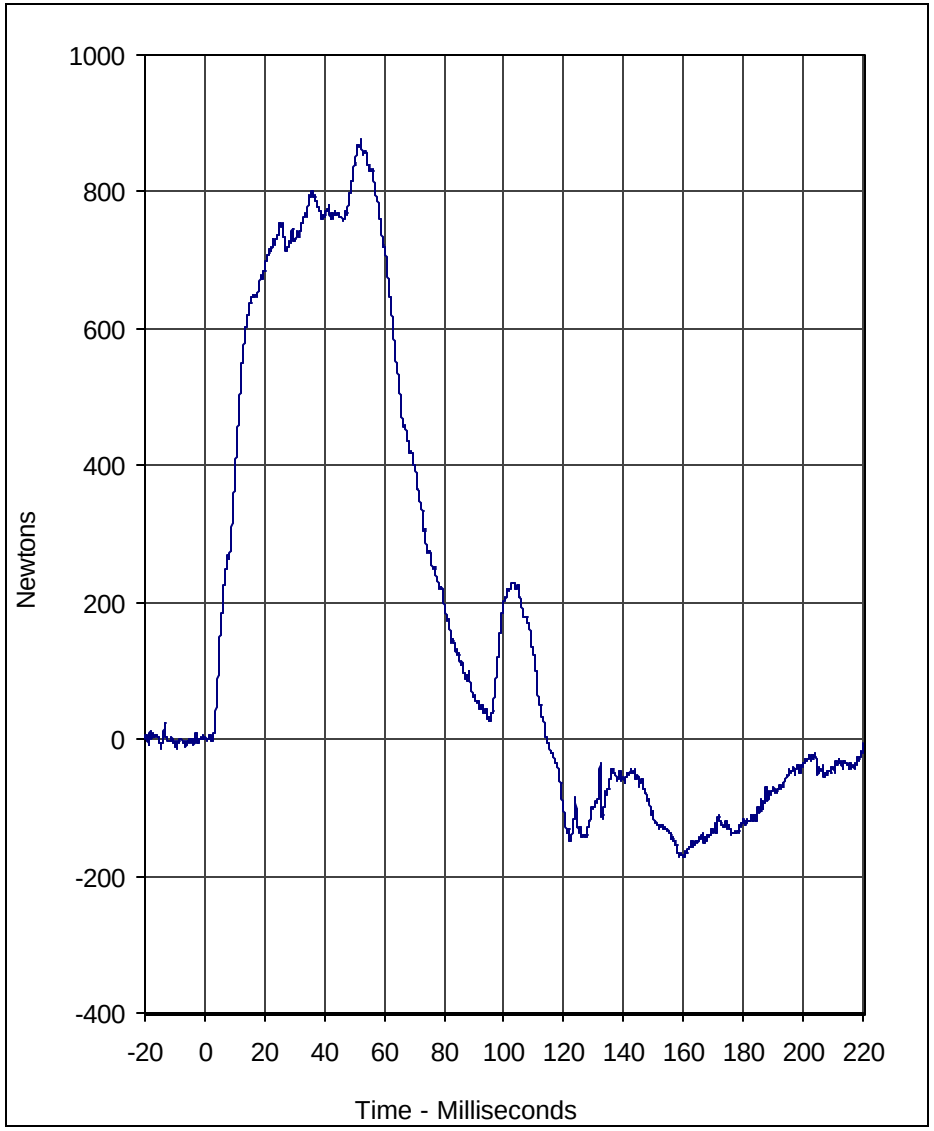
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.12	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	23.8	Pass
	20 Msec.	G's	17.6 to 22.6	21.8	Pass
	30 Msec.	G's	12.5 to 18.5	18.1	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	18.1	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	34.5	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	66.8	Pass
	Time	Msec.	57.0 to 64.0	59.2	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	113.1	Pass
Moment About Occipital Condyle	Maximum	Nm	84.1 to 108.5	91.2	Pass
	Time	Msec.	47.0 to 58.0	47.1	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	97.2	Pass
			Overall Test Results		Pass

Laboratory Technician

August 26, 2003

Test Date





Curve Description	CURNO	Type
Pendulum Deceleration	001	FIL

Units	Max	Time	Min	Time	SAE Class
G's	23.9	9.6	-2.8	87.2	60

Curve Description	CURNO	Type
Neck Force X	002	FIL

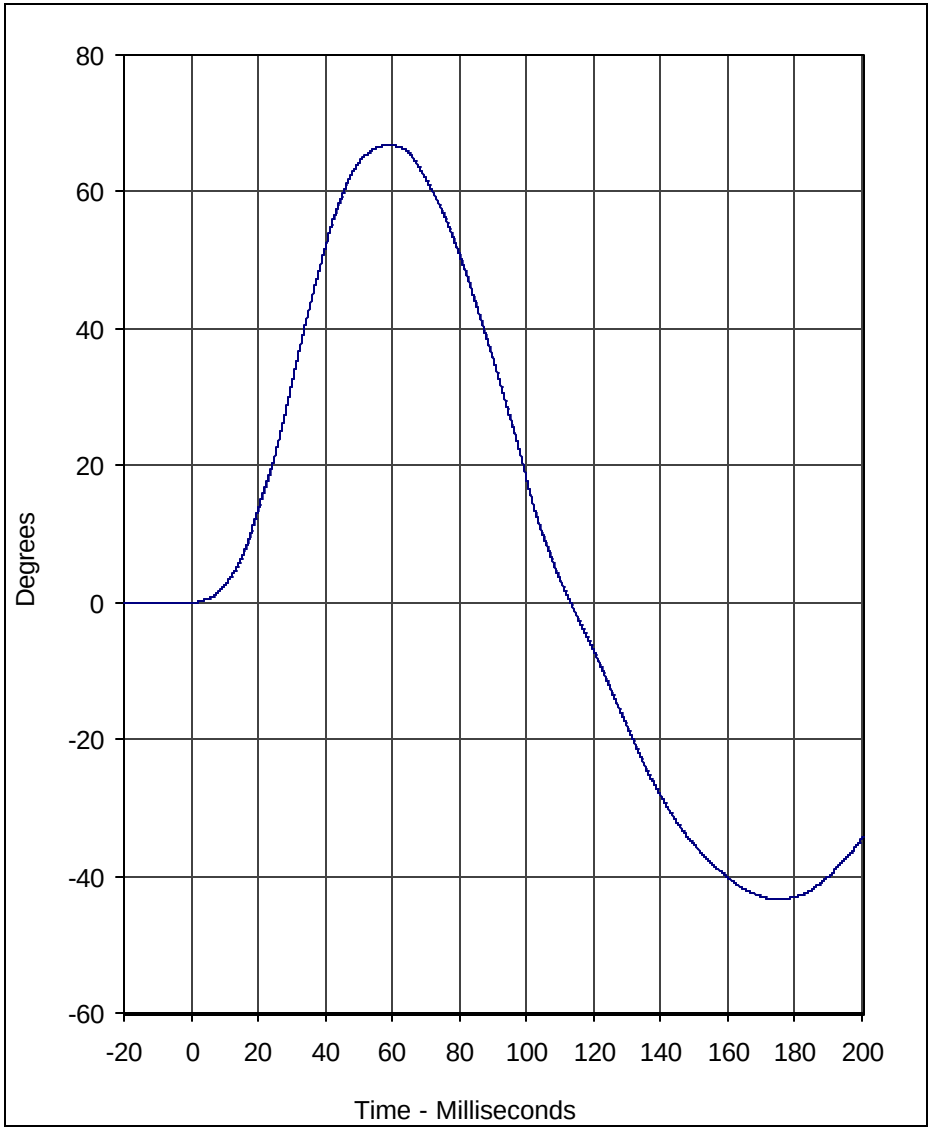
Units	Max	Time	Min	Time	SAE Class
Newtons	876.0	52.2	-171.9	160.2	600

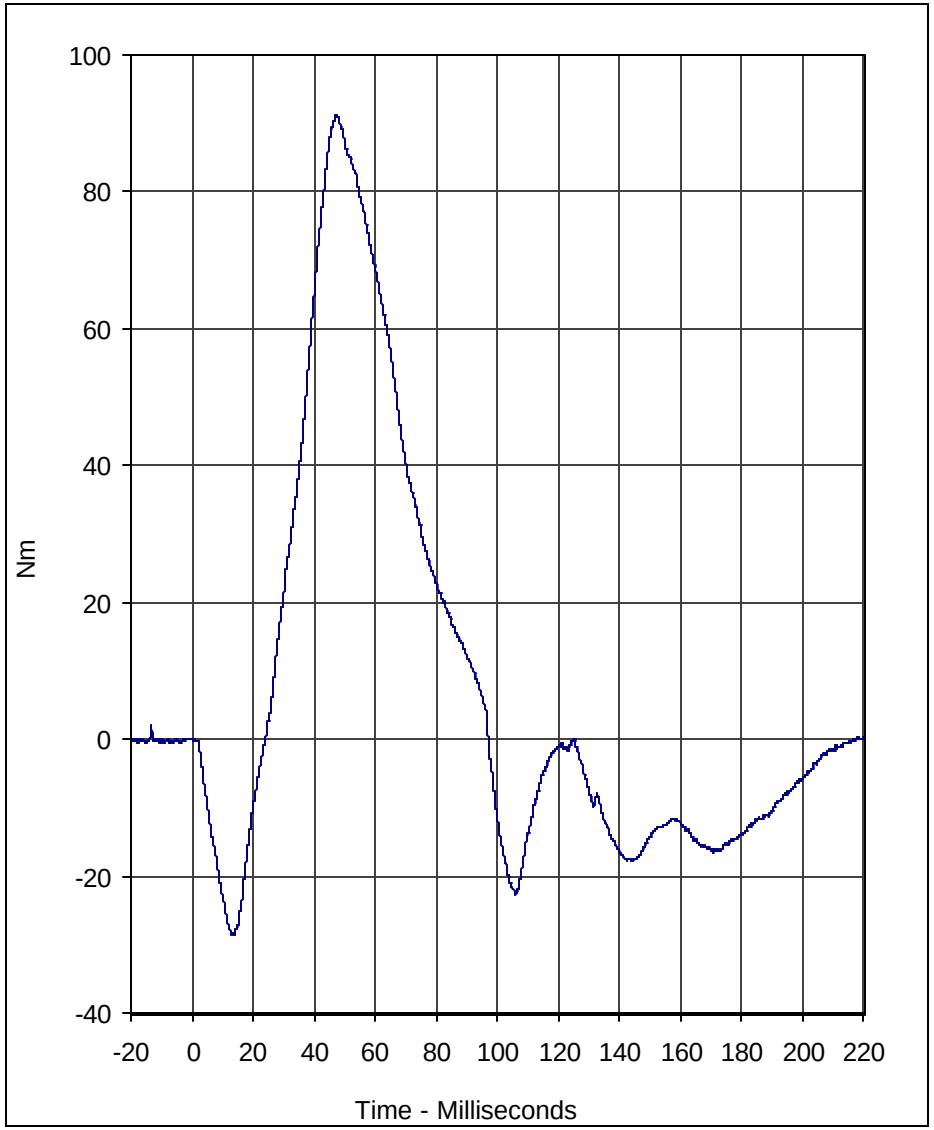
Test Program: Hybrid III 50th Percentile Male Neck Flexion Test

Test Date: 8/26/03

A.T.D. Serial No.: 035

Test I.D.: NF08D





Curve Description	CURNO	Type
"D" Plane Rotation	003	FIL

Units	Max	Time	Min	Time	SAE Class
Degrees	66.8	59.2	-43.3	174.1	60

Curve Description	CURNO	Type
Moment About Occipital Condyle	004	FIL

Units	Max	Time	Min	Time	SAE Class
Nm	91.2	47.1	-28.5	13.0	600

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

Test Date: 8/26/03

A.T.D. Serial No.: 035

Test I.D.: NF08D

KARCO Engineering

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

ATD Serial No.: 035

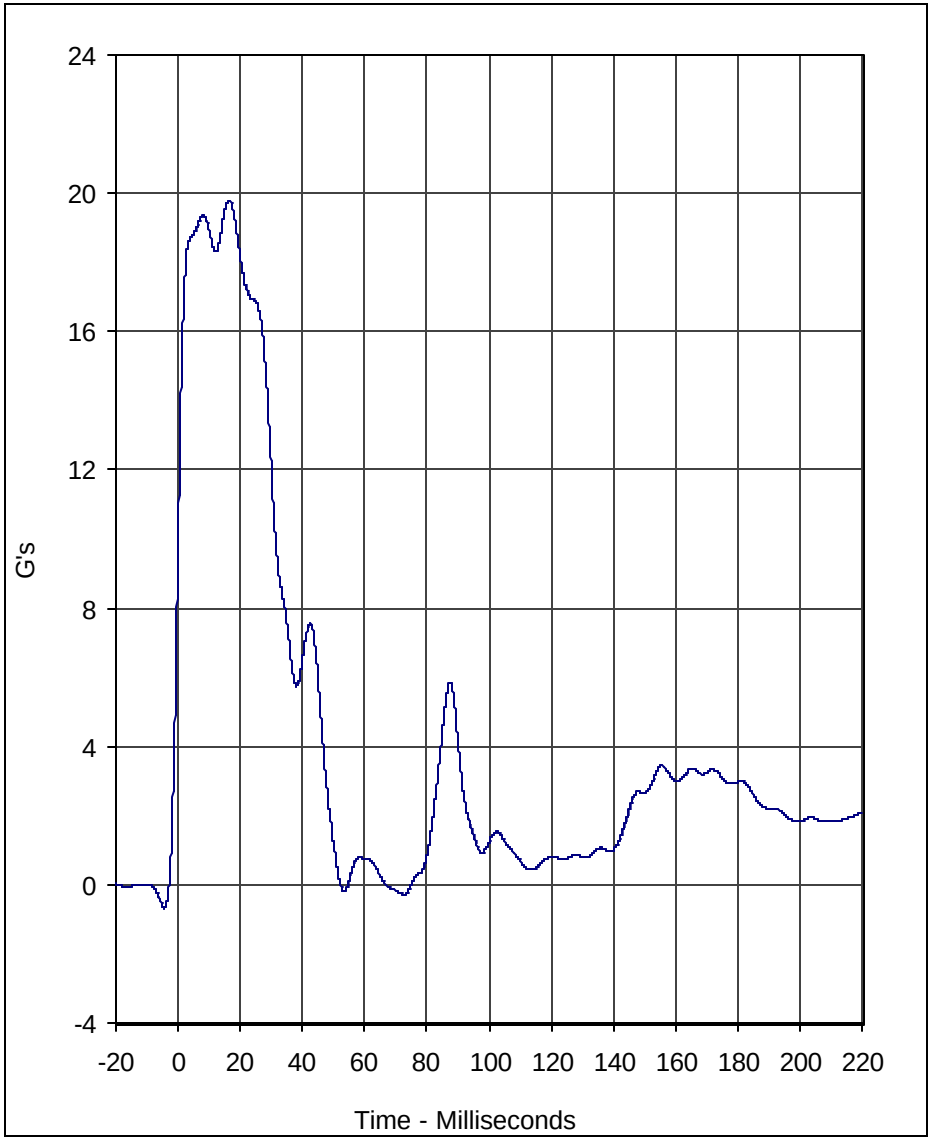
Test I.D.: NE08B

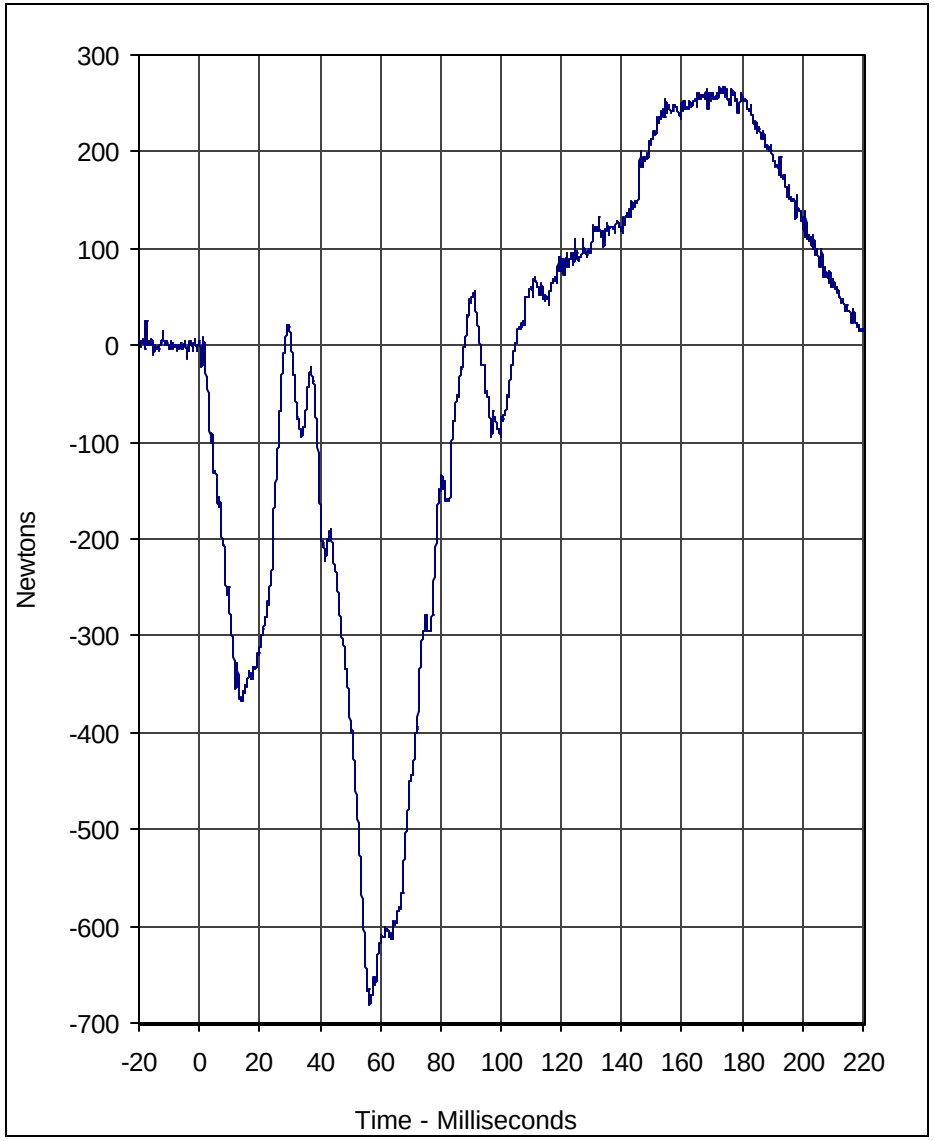
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.01	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	18.9	Pass
	20 Msec.	G's	14.0 to 19.0	18.2	Pass
	30 Msec.	G's	11.0 to 16.0	12.1	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	12.1	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	45.9	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	87.3	Pass
	Time	Msec.	72.0 to 82.0	73.5	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	148.1	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to- 79.9	-77.7	Pass
	Time	Msec.	65.0 to 79.0	65.8	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	132.3	Pass
			Overall Test Results		Pass

Laboratory Technician

August 26, 2003

Test Date





Curve Description	CURNO	Type
Pendulum Deceleration	001	FIL

Units	Max	Time	Min	Time	SAE Class
G's	19.8	16.4	-0.7	-4.4	60

Curve Description	CURNO	Type
Neck Force X	002	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	266.4	173.9	-680.6	56.5	600

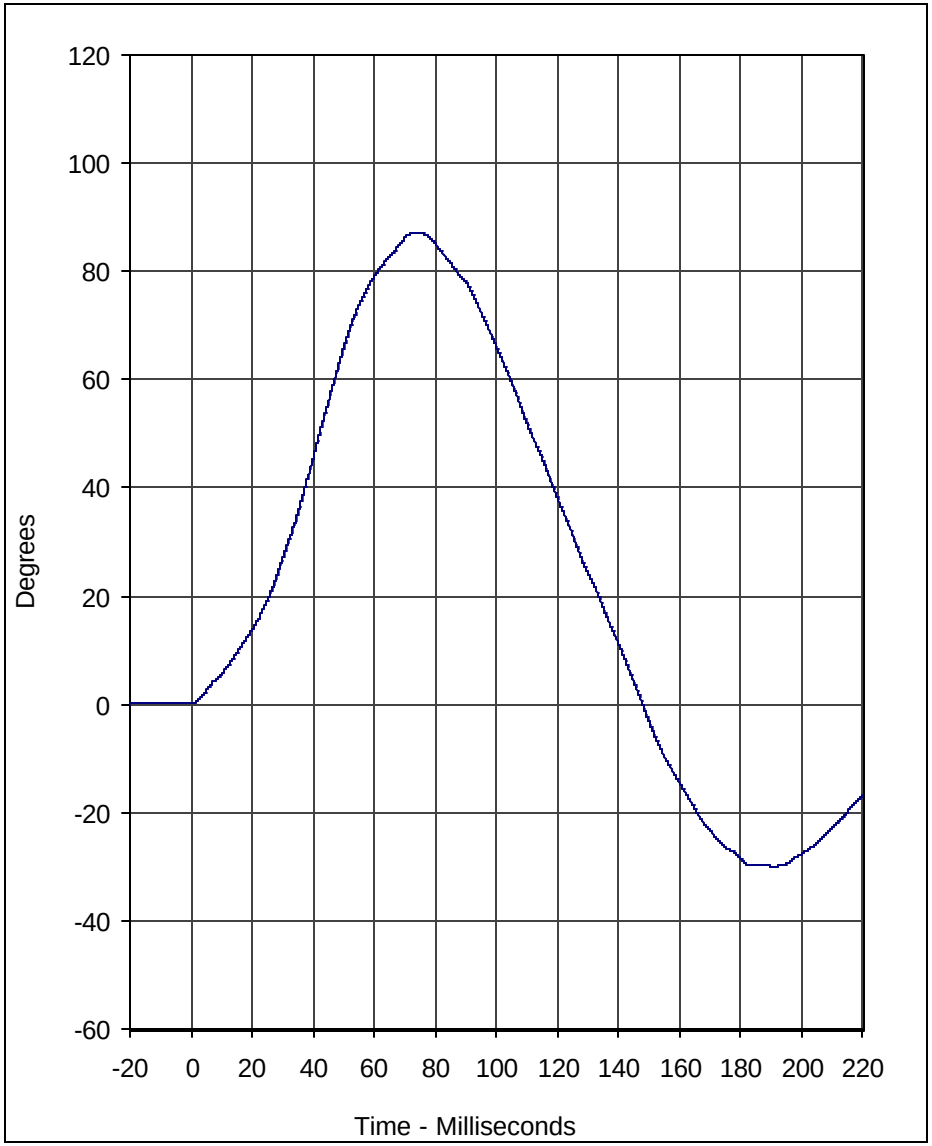
Test Program: Hybrid III 50th Percentile Male Neck Extension Test

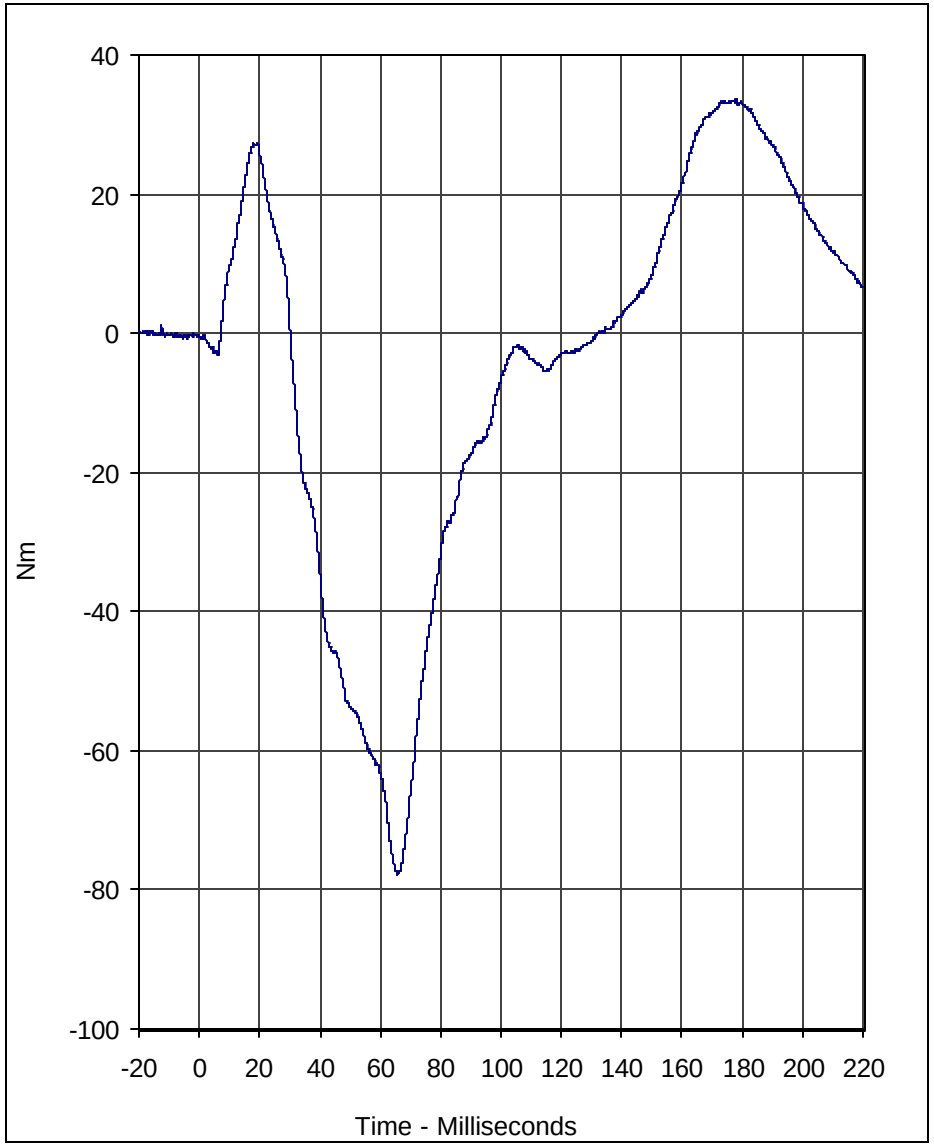
Test Date: 8/26/03

A.T.D. Serial No.: 035

Test I.D.: NE08B

KARCO Engineering





Curve Description	CURNO	Type
"D" Plane Rotation	003	FIL

Units	Max	Time	Min	Time	SAE Class
Degrees	87.3	73.5	-29.9	191.1	60

Curve Description	CURNO	Type
Moment About Occipital Condyle	004	FIL

Units	Max	Time	Min	Time	SAE Class
Nm	33.7	178.1	-77.7	65.8	600

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

Test Date: 8/26/03

A.T.D. Serial No.: 035

Test I.D.: NE08B

Calibration Data Sheet
Hybrid III 50th Percentile Male
External Measurements

ATD Serial No.: 035

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	^{o}C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
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	145	Pass
G - Elbow back to wrist pivot	mm	290 to 305	295	Pass
H - Skull cap to back line	mm	41 to 46	45	Pass
I - Shoulder to elbow length	mm	330 to 345	340	Pass
J - Elbow rest height	mm	190 to 211	200	Pass
K - Buttock to knee length	mm	579 to 604	600	Pass
L - Poplipteal length	mm	429 to 455	430	Pass
M - Knee pivot height	mm	485 to 500	495	Pass
N - Buttock poplipteal length	mm	452 to 477	470	Pass
O - Chest depth	mm	213 to 229	225	Pass
P - Foot length	mm	251 to 267	260	Pass
V - Shoulder breadth	mm	422 to 437	430	Pass
W - Foot breadth	mm	91 to 107	105	Pass
Y - Chest circumference	mm	970 to 1001	980	Pass
Z - Waist circumference	mm	836 to 866	855	Pass
AA - Location for chest circumference	mm	429 to 434	430	Pass
BB - Location for waist circumference	mm	226 to 231	230	Pass
		Overall Test Results		Pass

Laboratory Technician

August 26, 2003

Test Date

APPENDIX F

CHILD RESTRAINT SYSTEM

REPORT NUMBER TR-P23001-20-NC

NEW CAR ASSESSMENT PROGRAM
FRONTAL BARRIER IMPACT TEST

MITSUBISHI MOTORS
2004 MITSUBISHI ENDEAVOR LS
SUV

NHTSA NUMBER: M45600

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

9/9/03

FINAL REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
RULEMAKING
OFFICE OF CRASHWORTHINESS STANDARDS
MAIL CODE: NVS-111
400 SEVENTH STREET, SW, ROOM 5311
WASHINGTON, D.C. 20590

This final test report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, in response to Contract Number DTNH22-01-D-02005.

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Prepared by: _____ Date: September 15, 2003
Mr. James E. Gorth, Project Engineer
KARCO Engineering, LLC

Reviewed by: _____ Date: September 15, 2003
Mr. Jerry L. Kratzke, Director of Operations
KARCO Engineering, LLC

Approved by: _____ Date: September 15, 2003
Mr. Frank D. Richardson, Program Manager
KARCO Engineering, LLC

FINAL REPORT ACCEPTED BY:

_____
Manager, New Car Assessment Program

_____
Date of Acceptance

_____
COTR, NCAP Frontal Impact Program

_____
Date of Acceptance

Technical Report Documentation Page

1. Report No. TR-23001-20-NC	**2. Government Accession No.**	**3. Recipients Catalog No.**
4. Title and Subtitle Final Report of Evenflo Vanguard 5 Final Report of Britax Roundabout NHTSA No. M45600		**5. Report Date** September 15, 2003 **6. Performing Organization Code**
7. Authors Mr. James E. Gorth, Project Engineer, Karco Mr. Frank Richardson, Program Manager, Karco		**8. Performing Organization Report No.** TR-23001-20-NC
9. Performing Organization Name and Address Karco Engineering, LLC 9270 Holly Rd. Adelanto, CA, 92301		**10. Work Unit No.** **11. Contract or Grant No.**
12. Sponsoring Agency Name and Address U. S. Department of Transportation National Highway Traffic Safety Administration Rulemaking Office of Crashworthiness Standards Mail Code NVS-111 400 Seventh Street, SW, Room 5311 Washington, D.C 20590		**13. Type of Report and Period Covered** Final Test Report Option Year 2 **14. Sponsoring Agency Code** DOT/NHTSA/NRM/OCS
15. Supplementary Notes		

16. Abstract

A frontal test was conducted on the subject CRS's Evenfo Vanguard 5 and a Britax Roundabout in conjunction with frontal NCAP testing on a 2004 Mitsubishi Endeavor LS SUV and in accordance with the specifications of the Office of Crashworthiness Standards Test Procedure for the determination of CRS crashworthiness. The test was conducted at Karco Engineering, LLC on September 9, 2003.

Measurement Description	Units		Left Rear	Right Rear
Head Injury Criteria (HIC) 36	N/A		889.3	694.3
Head Injury Criteria (HIC) 15	N/A		588.1	439.9
3 msec. Chest Clip	G's		47.0	54.2
Peak Chest Displacement	mm		-22.2	-14.7

17. Key Words 56.3 km/h NCAP Frontal Barrier Impact Test New Car Assessment Program (NCAP) 2004 Mitsubishi Endeavor LS SUV NHTSA No. M45200		**18. Distribution of Statement** Copies of this report available from: NHTSA Technical Reference Division National Highway Traffic Safety Admin. 400 Seventh St., SW, Room 5108 Washington, D.C. 20590	
19. Security Classification (this report) Unclassified	**20. Security Classification (this page)** Unclassified	**21. No. of Pages** 148	**22. Price**

Form DOT F1700.7 (8-72)

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F-5	Child Dummy Calibration Information	F5-1

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SECTION F-1

PURPOSE AND SUMMARY OF TEST M45600

The purpose of this test is to obtain CRS performance data during an NCAP (35mph) frontal impact test.

The 56.02 km/h NCAP frontal impact test was conducted in accordance with the Office of Crashworthiness Standards (OCS) NCAP Laboratory Test Procedure.

SUMMARY

Two three-year-old child dummies were instrumented with head, chest, and pelvic triaxial accelerometers. In addition chest displacement and upper and lower six axial neck force and moment load cell sensors were utilized. Triaxial accelerometers were installed on each CRS.

The right rear (Position 3) child dummy (Serial No. 139) and the left rear (Position 4) child dummy (Serial No. 082) were calibrated two tests prior to this test. Child dummy certification information is found in Section F-5.

CHILD DUMMY VALUES

Location	HIC 36 Values	HIC 15 Values	3 Msec. Chest Clip	Peak Chest Disp.
Right Rear Child	694.3	439.9	54.2	-14.7
Left Rear Child	889.3	588.1	47.0	-22.2

SECTION F-1

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

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600

Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

CHILD RESTRAINT DEVICE INFORMATION

Description	Position # 3 CRS	Position #4 CRS
Manufacturer	Evenflo	Britax
Model Name	Vanguard 5	Roundabout
Serial No.	3691261P1	E9L02297048
Type	Convertible	Convertible
Forward/Rearward	Forward	Forward

VISIBLE DUMMY CONTACT POINTS

Description	Position #3 CRS	Position #4 CRS
Dummy Type/ Serial No.	Hybrid III Three-year-old ATD No. 139	Hybrid III Three-year-old ATD No. 082
Head Contact	CRS/Chin to Retainer Clip	CRS/Chin to Retainer Clip
Chest Contact	None	None
Abdomen Contact	None	None
Left Knee Contact	None	None
Right Knee Contact	None	None
Left Toe Contact	Seatback	Seatback
Right Toe Contact	None	Seatback

POST TEST DOOR OPENINGS

Description	Position #3 CRS	Position #4 CRS
Left Side Doors	Remained closed/latched, opend w/o tools	Remained closed/latched, opend w/o tools
Right Side Doors	Remained closed/latched, opend w/o tools	Remained closed/latched, opend w/o tools
Hatch/Other Door	None	None

POST TEST SEAT DATA

Location	Seat Movement (mm)	Seat Back Failure
Left Front	None	None
Right Front	None	None
Left Rear	None	None
Right Rear	None	None

CAMERA COVERAGE

High Speed	5
Real Time	2
Total	7

SECTION F-1

DATA SHEET NO.2…..CRS PARAMETER DATA

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600

Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	534	396		577	489	
Right	kg	517	404		563	474	
Ratio	%	56.8	43.2		54.2	45.8	
Totals	kg	1051	800	1851	1140	963	2103

TARGET TEST WEIGHT CALCULATION

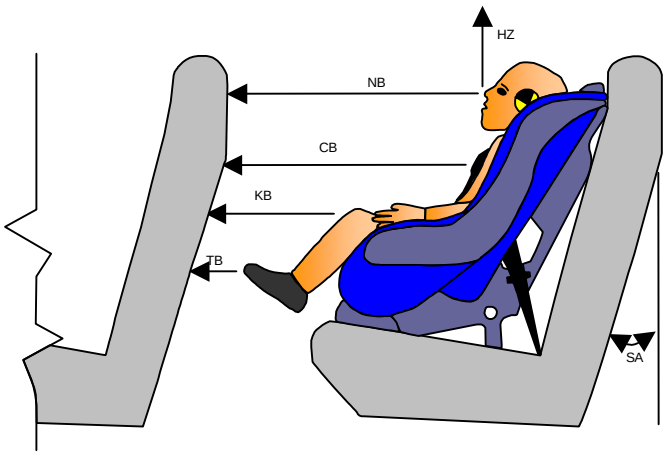
Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1851
Weight of 2 P572 ATD's	kg	152
Rated Cargo/Luggage Wt. (RCLW)	kg	110
Calculated Vehicle Target Wt. (TVTW)	kg	2113

SECTION F-1

DATA SHEET NO.3…..CHILD DUMMY POSITIONING IN VEHICLE

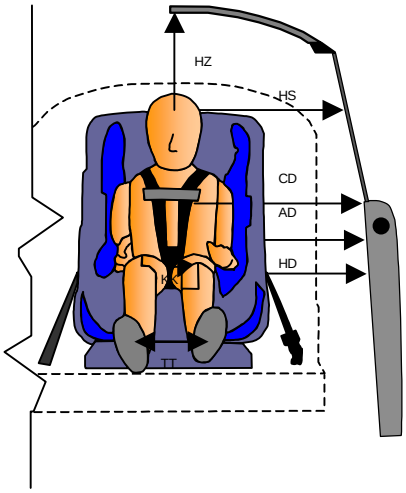
Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600

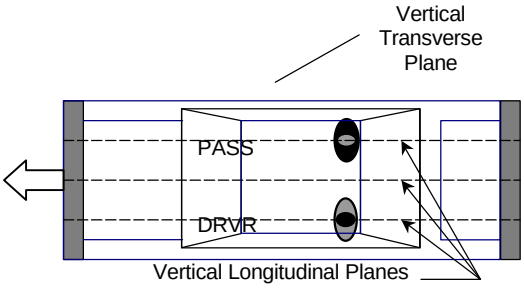
Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03



AD	Arm to Door
CD	Chest to Door
HD	H-Point to Door
HS	Head to Side Window
KK	Knee to Knee
TT	Toe to Toe

CB	Chest to Seat Back
HZ	Head to Roof
KB	Knee to Seat Back
NB	Nose to Seat Back
SA	Seat Back Angle
TB	Toe to Seat Back





DUMMY MEASUREMENTS FOR REAR SEAT OCCUPANTS

DATA SHEET NO.3…..CHILD DUMMY POSITIONING IN VEHICLE…(continued)

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600

Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

CHILD DUMMY POSITION MEASUREMENTS

Code	Measurement	Units	P3 CRS Serial No. 139			P4 CRS Serial No. 082		
			Pre-Test	Post-Test	Diff.	Pre-Test	Post-Test	Diff.
SA	Seat Back Angle	deg.	65	65	0	62	62	0
HS	Head to Side Window	mm	442	425	-17	430	430	0
CD	Chest to Door	mm	435	450	15	432	445	13
AD	Arm to Door	mm	325	320	-5	300	300	0
HD	H-Point to Door (Y)	mm	365	370	5	348	350	2
HZ	Head to Roof (Z)	mm	390	377	-13	352	350	-2
NB	Nose to Seat Back	mm	575	590	15	580	567	-13
CB	Chest to Seat Back	mm	555	600	45	550	550	0
KK	Knee to Knee	mm	181	200	19	186	205	19
FF	Foot to Foot	mm	185	257	72	185	260	75
KB-Left	Knee to Seat Back	mm	410	455	45	365	400	35
KB-Right	Knee to Seat Back	mm	410	450	40	370	392	22
TB-Left	Toe to Seat Back	mm	108	130	22	145	125	-20
TB-Right	Toe to Seat Back	mm	110	67	-43	140	140	0

DATA SHEET NO. 4 - 3 YEAR OLD HYBRID III ATD INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600

Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

HEAD PRIMARY PEAK ACCELERATIONS

			Left Rear (3 Yr.)				Right Rear (3 Yr.)			
Location	Axis	Units	Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	57.8	184.5	-51.4	88.8	41.7	204.4	-31.0	95.0
Head CG	Y	G's	34.9	88.8	-13.5	101.7	4.8	209.6	-8.1	113.7
Head CG	Z	G's	69.9	77.9	-13.0	43.1	59.2	78.0	-8.9	39.6
Head CG Resultant	N/A	G's	80.0	88.7			65.8	79.4		

PRIMARY HEAD INJURY CRITERAS (HIC)

	Left Rear (3 Yr.)				Right Rear (3 Yr.)			
Location	HIC	T^1	T^2	Avg G	HIC	T^1	T^2	Avg G
Head CG Primary (HIC36)	889.3	60.5	96.5	57.1	694.3	64.2	100.2	51.7
Head CG Primary (HIC15)	588.1	74.5	89.5	68.8	439.9	72.3	87.3	61.2

CHEST PRIMARY PEAK ACCELERATIONS

			Left Rear (3 Yr.)				Right Rear (3 Yr.)			
Location	Axis	Units	Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	4.3	167.3	-39.5	53.6	7.7	212.3	-40.9	61.1
Chest CG	Y	G's	3.1	164.5	-1.7	236.6	3.7	205.8	-7.7	63.5
Chest CG	Z	G's	21.0	82.5	-28.0	57.7	12.0	205.5	-38.9	64.3
Chest CG Resultant	N/A	G's	47.9	53.9			55.6	63.5		

PRIMARY CHEST CLIP (3MSEC)

	Left Rear (3 Yr.)			Right Rear (3 Yr.)		
Location	CLIP	T^1	T^2	CLIP	T^1	T^2
Chest CG Primary	47.0	22.4	52.4	54.2	31.9	61.9

CHEST PEAK DISPLACEMENTS

			Left Rear (3 Yr.)				Right Rear (3 Yr.)			
Location	Axis	Units	Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	MM	0.0	12.6	-22.2	93.4	0.0	14.9	-14.7	101.3

PELVIC PEAK ACCELERATIONS

			Left Rear (3 Yr.)				Right Rear (3 Yr.)			
Location	Axis	Units	Max	Time	Min	Time	Max	Time	Min	Time
Pelvis	X	G's	11.3	141.1	-42.5	62.1	14.3	120.8	-50.2	58.1
Pelvis	Y	G's	6.1	69.3	-4.6	95.7	10.3	66.6	-11.9	55.5
Pelvis	Z	G's	12.4	86.6	-35.4	62.1	13.3	205.3	-37.6	66.3
Pelvis Resultant	N/A	G's	55.3	62.1			58.1	58.4		

DATA SHEET NO. 4…(continued)

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600

Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

UPPER NECK PEAK FORCES AND MOMENTS

			Left Rear (3 Yr.)				Right Rear (3 Yr.)			
Location	Axis	Units	Max	Time	Min	Time	Max	Time	Min	Time
Neck Force	X	Newtons	52.5	171.5	-742.2	95.1	17.9	246.1	-811.4	96.1
Neck Force	Y	Newtons	48.2	86.7	-89.3	98.9	40.0	114.8	-132.0	76.3
Neck Force	Z	Newtons	1930.9	79.7	-341.8	43.3	1902.0	81.8	-228.5	40.1
Neck Force Resultant	N/A	Newtons	1997.3	79.7			2049.6	81.8		
Neck Moment	X	Nm	3.0	87.7	-4.7	104.1	5.8	106.3	-13.3	81.0
Neck Moment	Y	Nm	5.2	148.3	-12.1	198.0	4.5	74.3	-13.2	53.5
Neck Moment	Z	Nm	3.6	94.8	-2.4	110.2	2.0	81.6	-3.7	253.7
Neck Moment Resultant	N/A	Nm	12.1	198.0			13.4	81.0		

LOWER NECK PEAK FORCES AND MOMENTS

			Left Rear (3 Yr.)				Right Rear (3 Yr.)			
Location	Axis	Units	Max	Time	Min	Time	Max	Time	Min	Time
Neck Force	X	Newtons	246.7	187.0	-1448.9	83.0	200.4	201.8	-814.7	82.5
Neck Force	Y	Newtons	25.5	88.5	-89.7	98.1	114.8	67.3	-106.5	84.8
Neck Force	Z	Newtons	1296.9	78.0	-464.9	43.1	1171.6	80.2	-358.9	40.8
Neck Force Resultant	N/A	Newtons	1921.3	79.7			1416.5	81.7		
Neck Moment	X	Nm	8.6	87.9	-8.6	99.0	3.2	116.2	-28.6	82.4
Neck Moment	Y	Nm	116.4	87.9	-15.6	186.8	116.8	82.1	-12.5	200.9
Neck Moment	Z	Nm	5.7	87.6	-4.6	110.1	4.2	104.6	-15.2	81.8
Neck Moment Resultant	N/A	Nm	116.8	87.9			121.2	82.2		

CHILD SEAT TETHER BELT SENSOR PEAK VALUES

			Left Rear (3 Yr.)				Right Rear (3 Yr.)			
Location	Axis	Units	Max	Time	Min	Time	Max	Time	Min	Time
Tether Belt Force	N/A	Newtons	3468.4	64.1	-31.6	139.9	3354.3	71.3	-47.6	130.9

CHILD SEAT ACCELEROMETER PEAK VALUES

			Left Rear (3 Yr.)				Right Rear (3 Yr.)			
Location	Axis	Units	Max	Time	Min	Time	Max	Time	Min	Time
Child Seat	X	G's	8.5	133.4	-54.6	58.9	15.0	124.9	-55.2	51.0
Child Seat	Y	G's	10.3	75.6	-10.9	196.0	8.2	69.6	-5.3	45.6
Child Seat	Z	G's	14.8	212.7	-16.7	72.0	12.4	116.7	-27.9	57.1
Child Seat Resultant	N/A	G's	54.9	58.9			56.0	51.5		

SECTION F-1

DATA SHEET NO.5 …..CRS PERFORMANCE DATA

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600

Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

CRS PERFORMANCE DATA

Location	P3 CRS Serial No. 139		P4 CRS Serial No. 082	
	Damage	Description	Damage	Description
Upper Tether Strap	No	None	No	None
Upper Tether Buckle	No	None	No	None
Upper Tether Hook	No	None	No	None
Veh. Upper Tether Anchor	No	None	No	None
Lower Anchor Strap	No	None	No	N/A
Lower Anchor Buckle	No	None	No	N/A
Lower Anchor Hooks	No	None	No	None
Veh. Lower CRS Anchors	No	None	No	None
5 Point Harness Connections	No	None	No	None
Cracks on CRS	No	None	No	None
Fabric Tears on CRS	No	None	No	None
Vehicle Seat Structure	No	None	No	None
Vehicle Seat Fabric Tears	No	None	No	None

SECTION F-1

DATA SHEET NO.6 …..CRS CAMERA DATA

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV NHTSA No.: M45600

Test Program: 2003 NHTSA 35mph NCAP Test Date: 9/9/03

CAMERA LOCATIONS

No.	Camera View	Location(mm)			Angle (Deg.)	Film Plane to Head	Lens (mm)	Speed (fps)
		X	Y	Z				
1	Real Time	9144	-6096	1372	0	N/A	N/A	30
1B	Real Time	1930	8357	610	0	7885	N/A	30
2	Driver Side Child Dummy	2743	-737	1524	20	1305	50	1220
3	Driver Side Child Dummy	2489	8230	2388	20	7906	50	1000
4	Driver Side Child Dummy	2489	8230	1346	10	7840	50	DNR
5	Passenger Side Child Dummy	2743	737	1524	20	1305	35-85	870
6	Passenger Side Child Dummy	3048	-8839	2032	20	8437	35-85	1030
7	Passenger Side Child Dummy	2845	-8230	1524	10	7813	50	No Time

SECTION F-2

PHOTOGRAPHS

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5	Post-Test Rear View of Position 3CRS	F2-5
6	Pre-Test Left Side View of Position 3 CRS	F2-6
7	Post-Test Left Side View of Position 3 CRS	F2-7
8	Pre-Test Right Side View of Position 3 CRS	F2-8
9	Post-Test Right Side View of Position 3 CRS	F2-9
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31	Post-Test Position 4 Right Side View	F2-31
32	Post-Test Position 4 Contact Point (Back of Left Front Seat)	F2-32

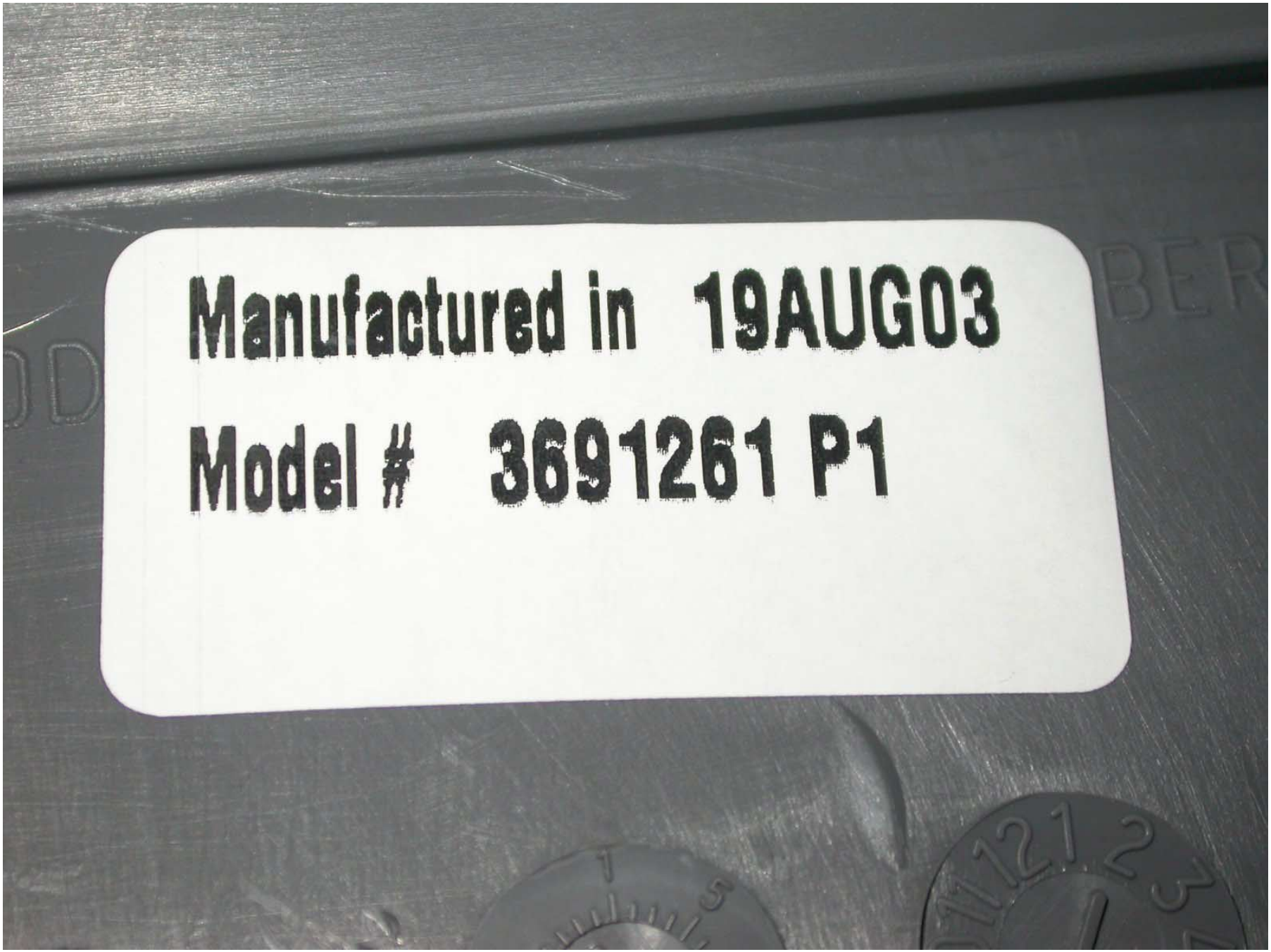

Figure F2-1: Close-up View Position 3 CRS Label

Figure F2-2: Pre-Test Frontal View of Position 3 CRS

Figure F2-3: Post-Test Frontal View of Position 3 CRS

Figure F2-4: Pre-Test Rear View of Position 3 CRS

Figure F2-5: Post-Test Rear View of Position 3 CRS

Figure F2-6: Pre-Test Left Side View of Position 3 CRS

Figure F2-7: Post-Test Left Side View of Position 3 CRS

Figure F2-8: Pre-Test Right Side View of Position 3 CRS

Figure F2-9: Post-Test Right Side View of Position 3 CRS

Figure F2-10: Pre-Test Position 3 Front View

Figure F2-11: Post-Test Position 3 Front View

Figure F2-12: Pre-Test Position 3 Left Side View

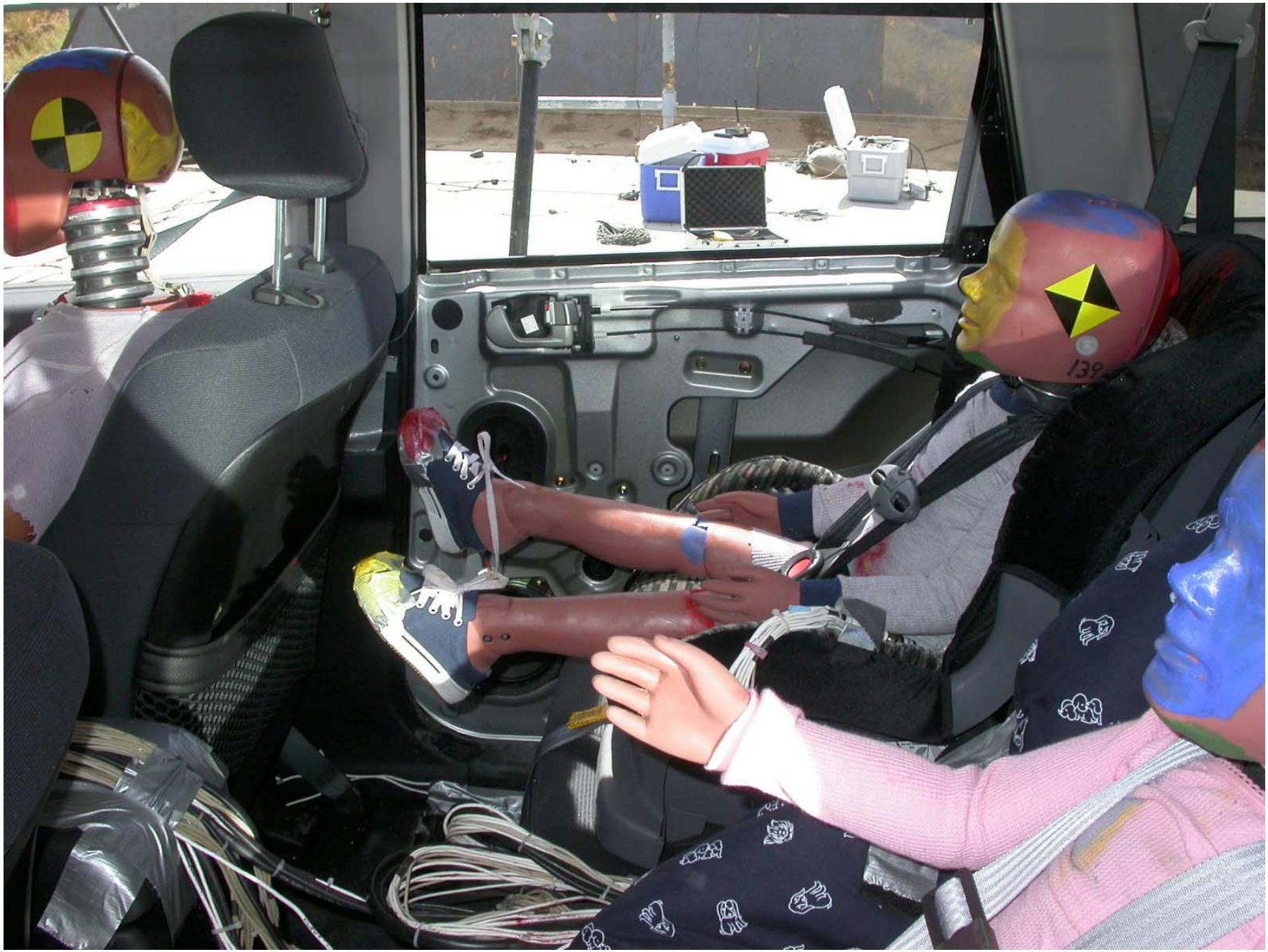

Figure F2-13: Post-Test Position 3 Left Side View

Figure F2-14: Pre-Test Position 3 Right Side View

Figure F2-15: Post-Test Position 3 Right Side View

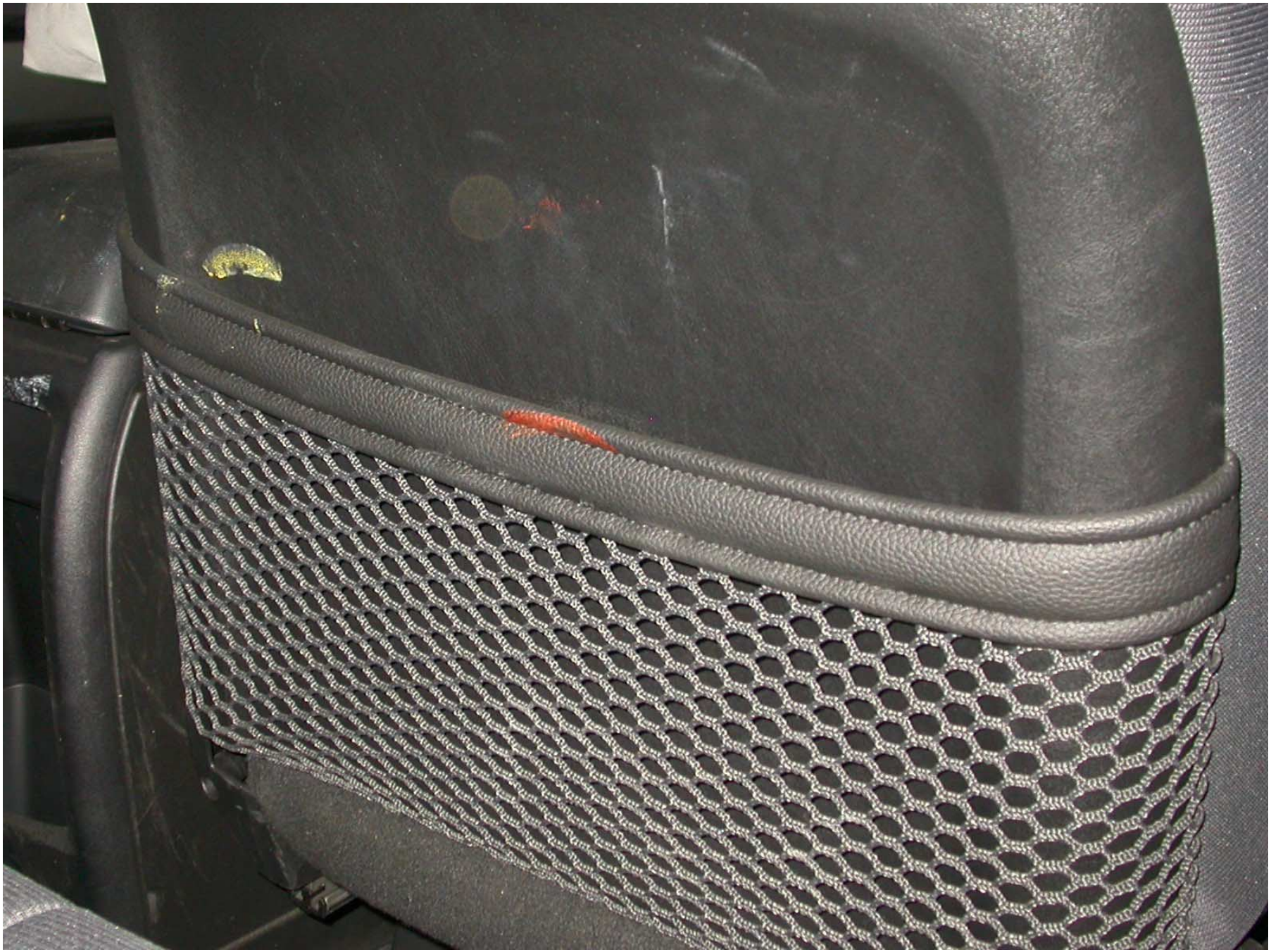

Figure F2-16: Post-Test Position 3 Contact Point (Back of Right Front Seat)

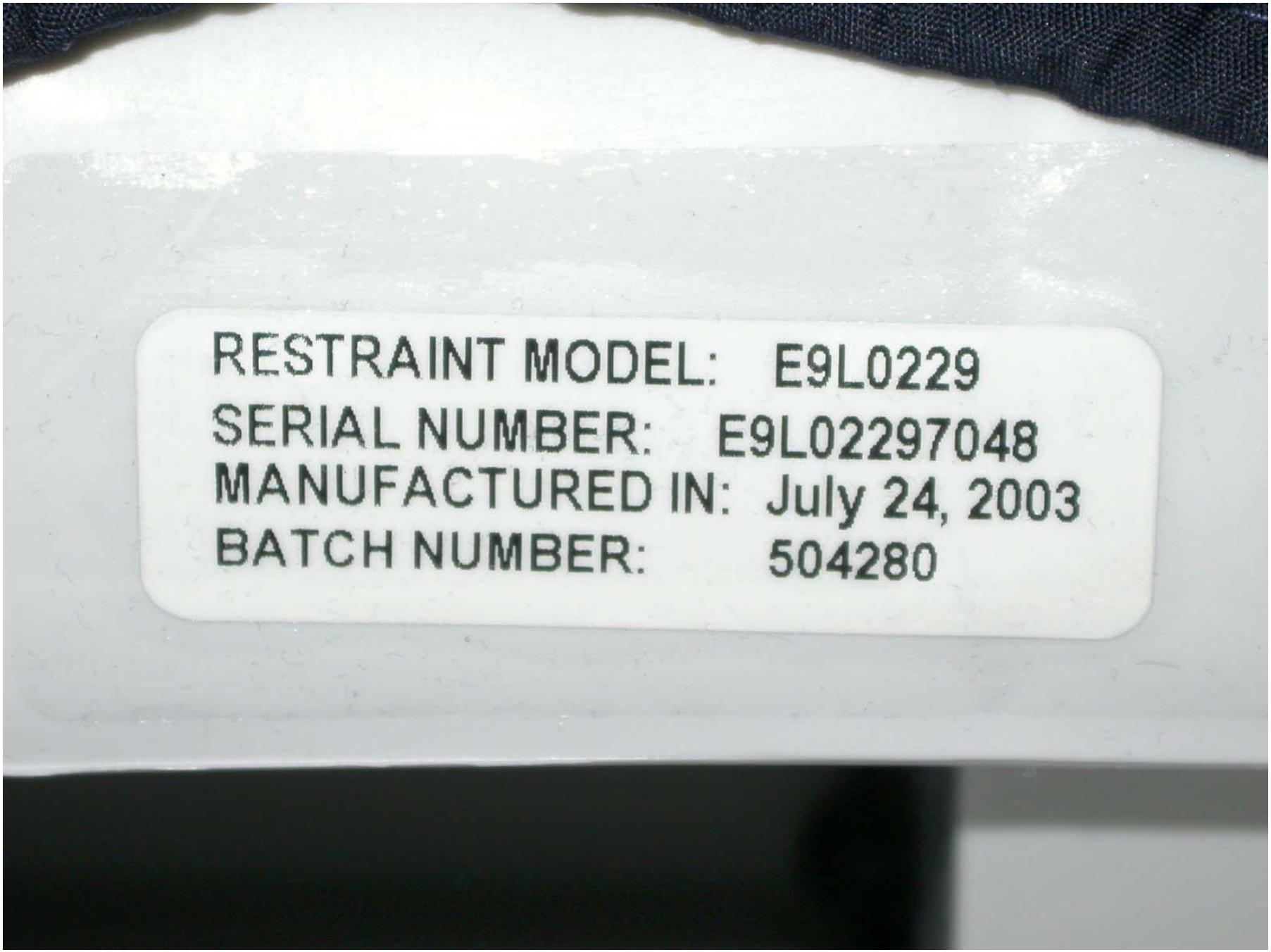

Figure F2-17: Close-up View Position 4 CRS Label

Figure F2-18: Pre-Test Frontal View of Position 4 CRS

Figure F2-19: Post-Test Front View of Position 4 CRS

Figure F2-20: Pre-Test Rear View of Position 4 CRS

Figure F2-21: Post-Test Rear View of Position 4 CRS

Figure F2-22: Pre-Test Left Side View of Position 4 CRS

Figure F2-23: Post-Test Left Side View of Position 4 CRS

Figure F2-24: Pre-Test Right Side View of Position 4 CRS

Figure F2-25: Post-Test Right Side View of Position 4 CRS

Figure F2-26: Pre-Test Position 4 Front View

Figure F2-27: Post-Test Position 4 Front View

Figure F2-28: Pre-Test Position 4 Left Side View

Figure F2-29: Post-Test Position 4 Left Side View

Figure F2-30: Pre-Test Position 4 Right Side View

Figure F2-31: Post-Test Position 4 Right Side View

Figure F2-32: Post-Test Position 4 Contact Point (Back of Left Front Seat)

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CHILD DUMMY RESPONSE AND CRS DATA TRACES

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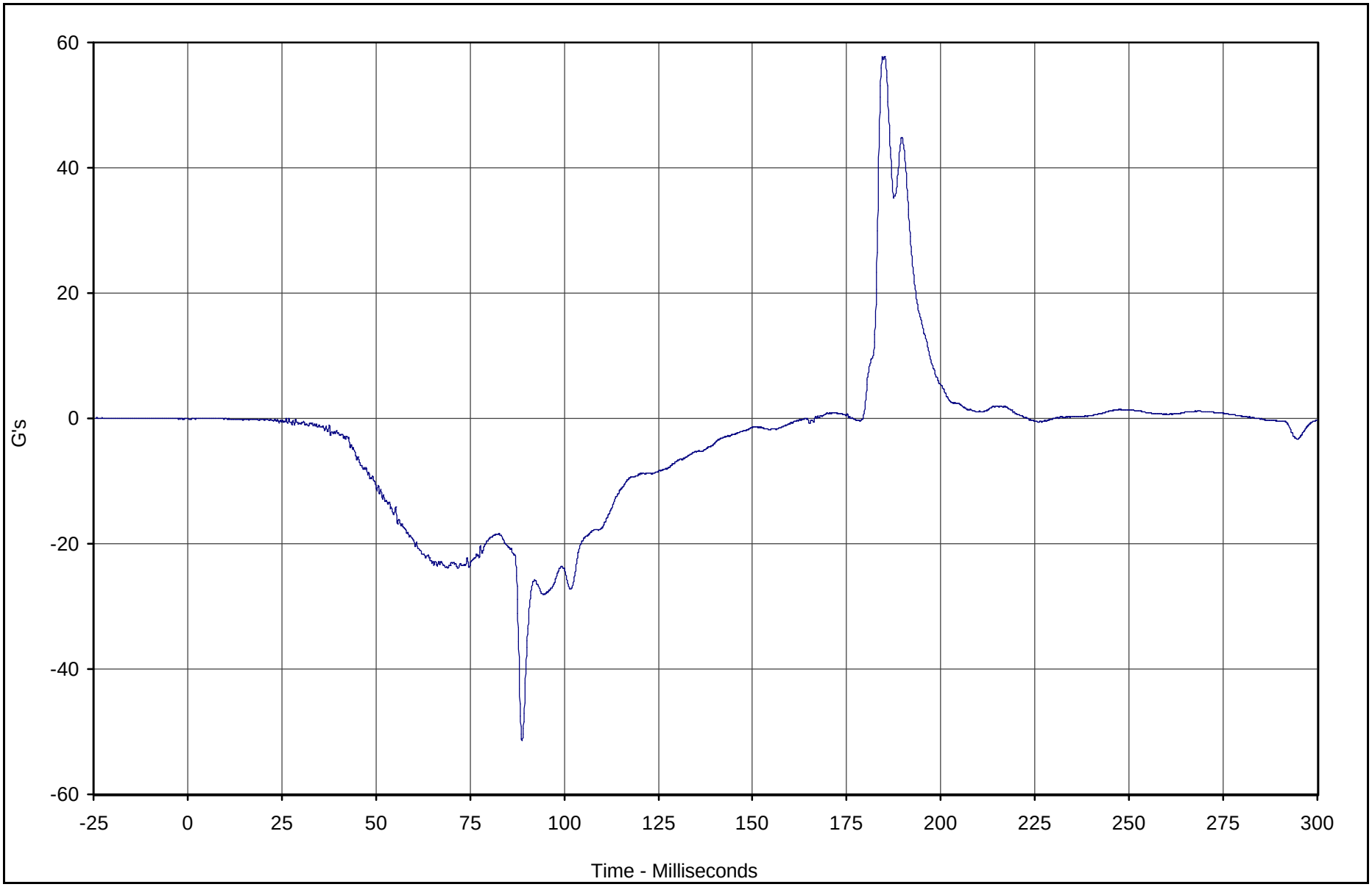


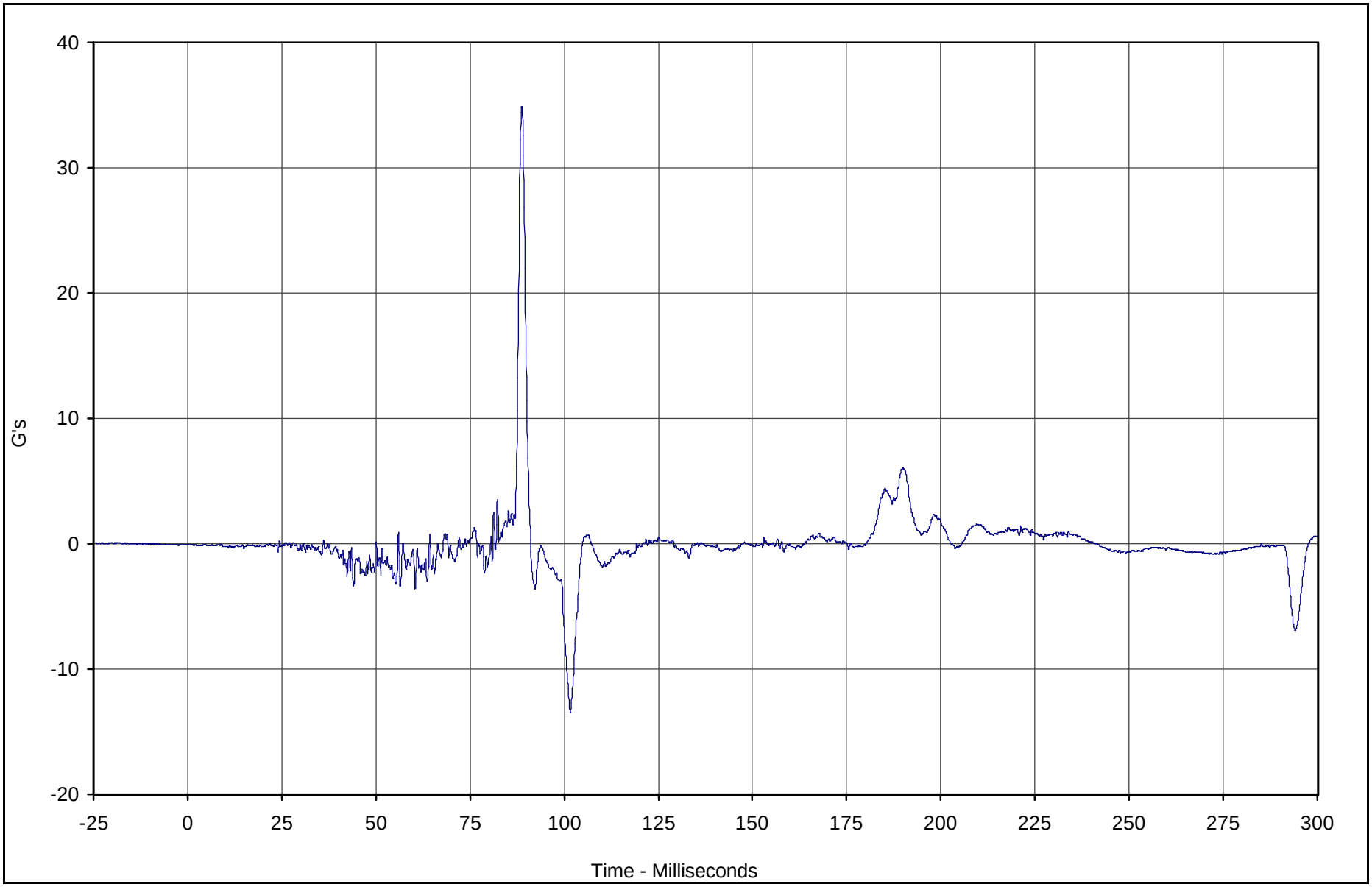
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Head X	134	FIL	G's	57.8	184.5	-51.4	88.8	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



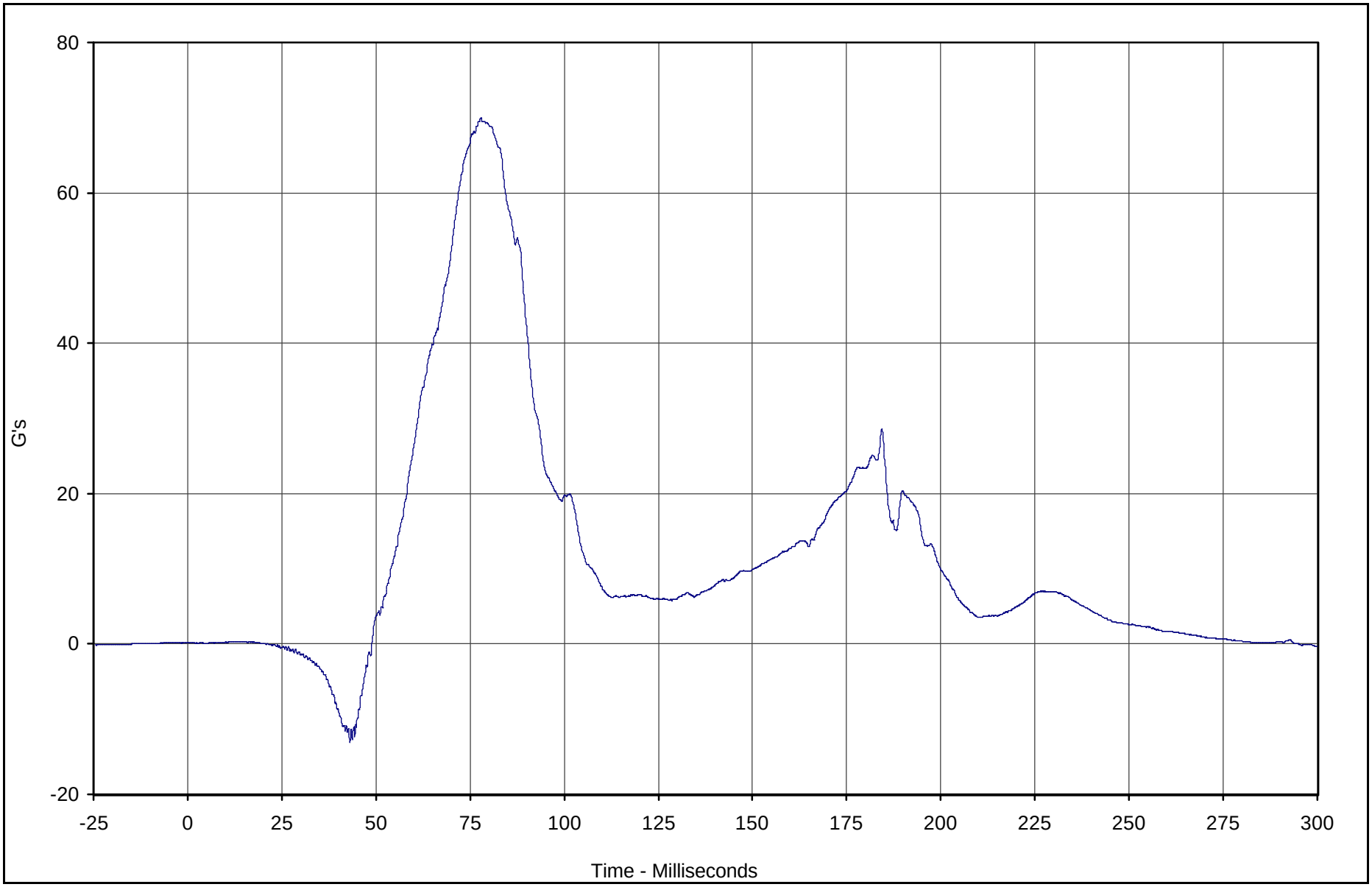
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Head Y	135	FIL	G's	34.9	88.8	-13.5	101.7	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



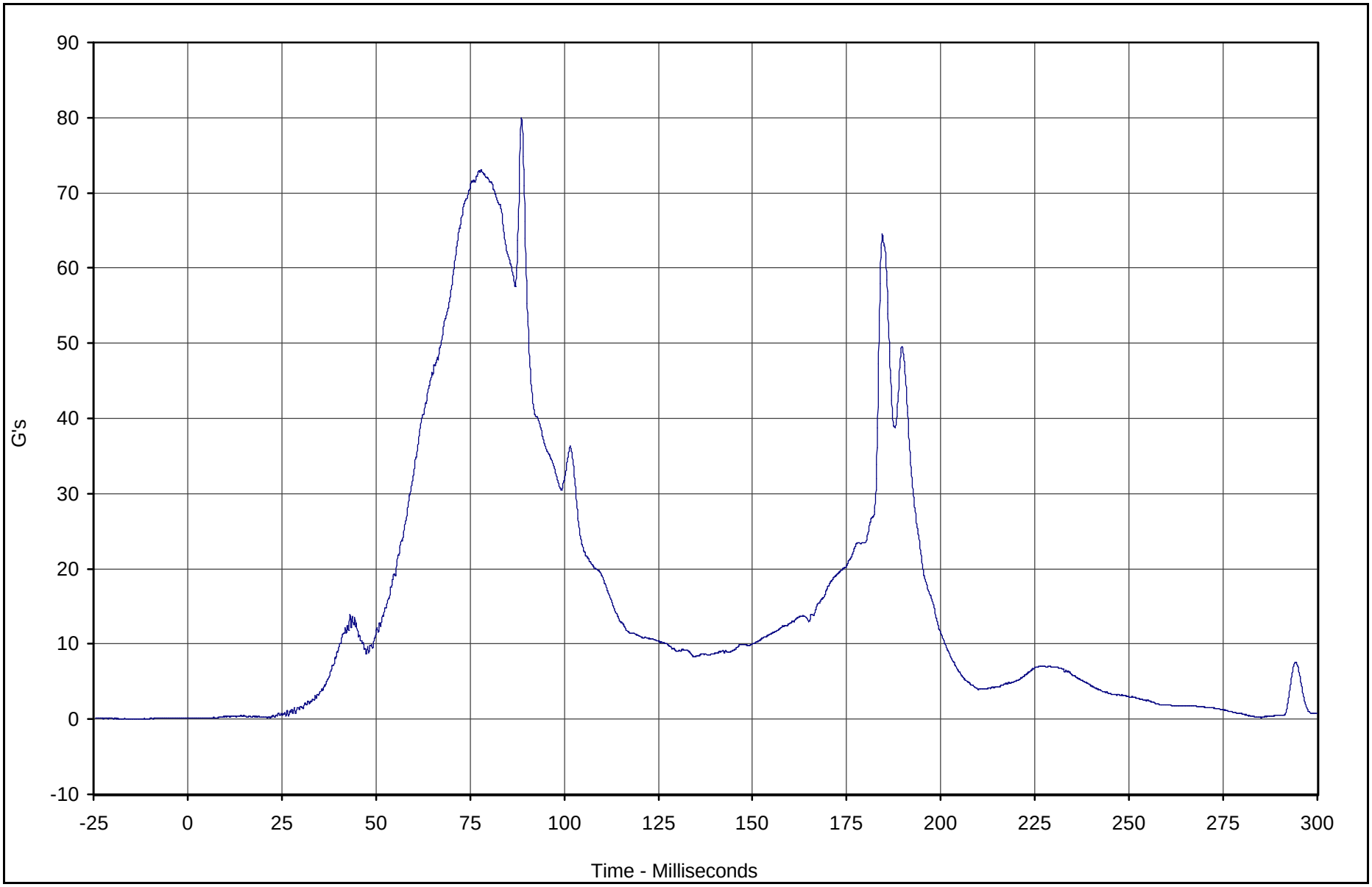
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Head Z	136	FIL	G's	69.9	77.9	-13.0	43.1	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



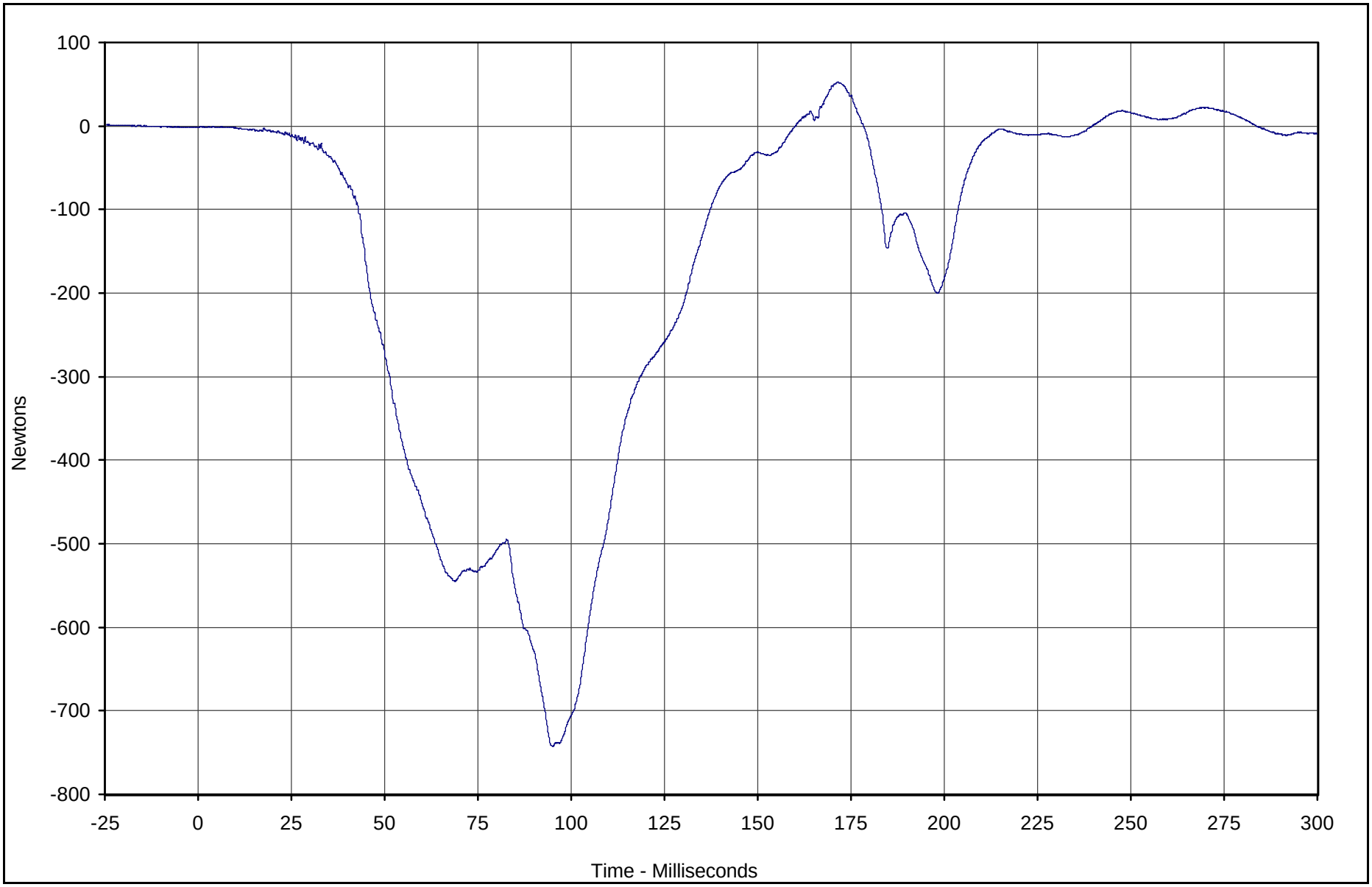
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Head Resultant	134	RES	G's	80.0	88.7	0.1	4.5	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



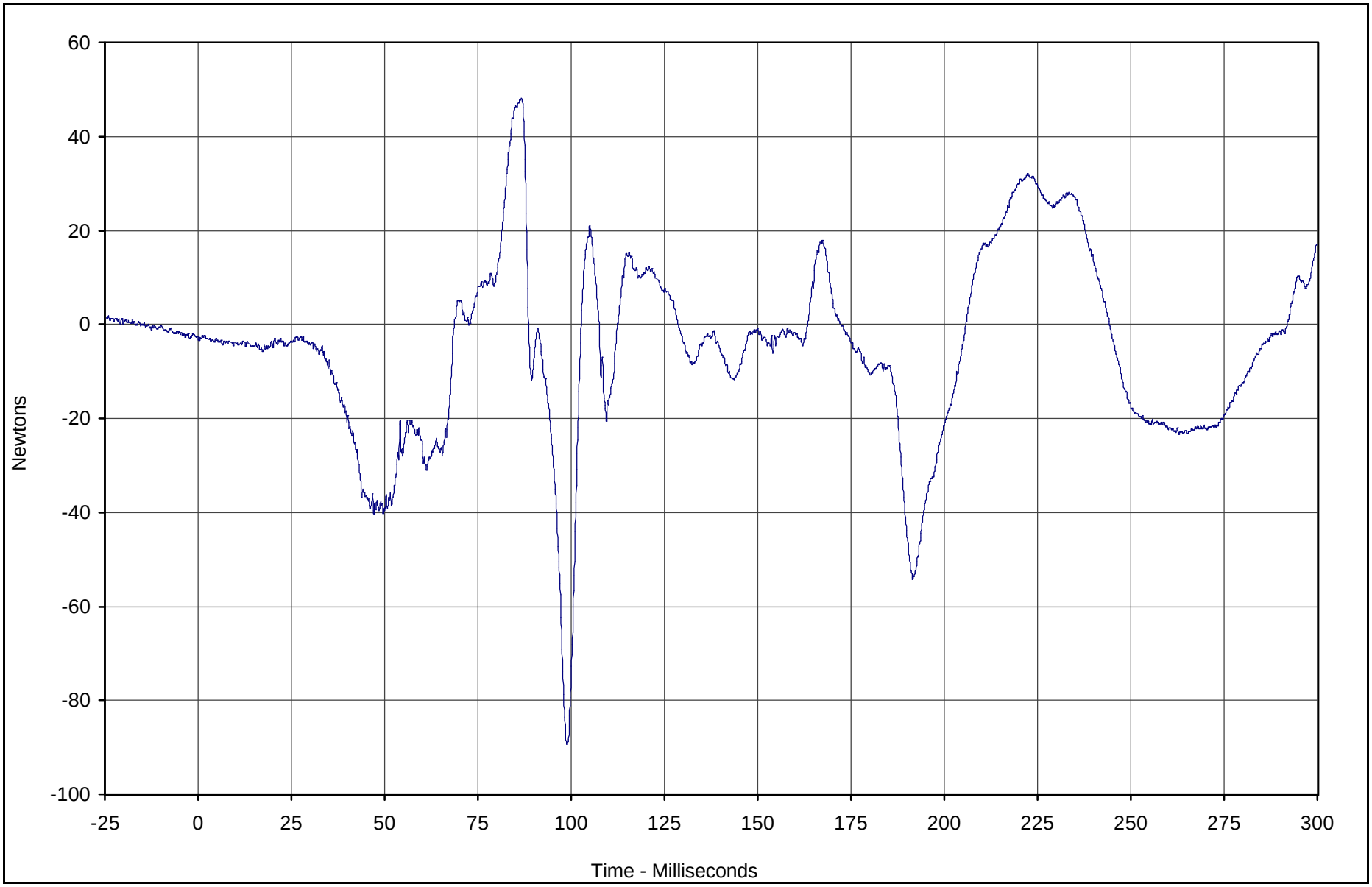
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Upper Neck Force X	137	FIL	Newtons	52.5	171.5	-742.2	95.1	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



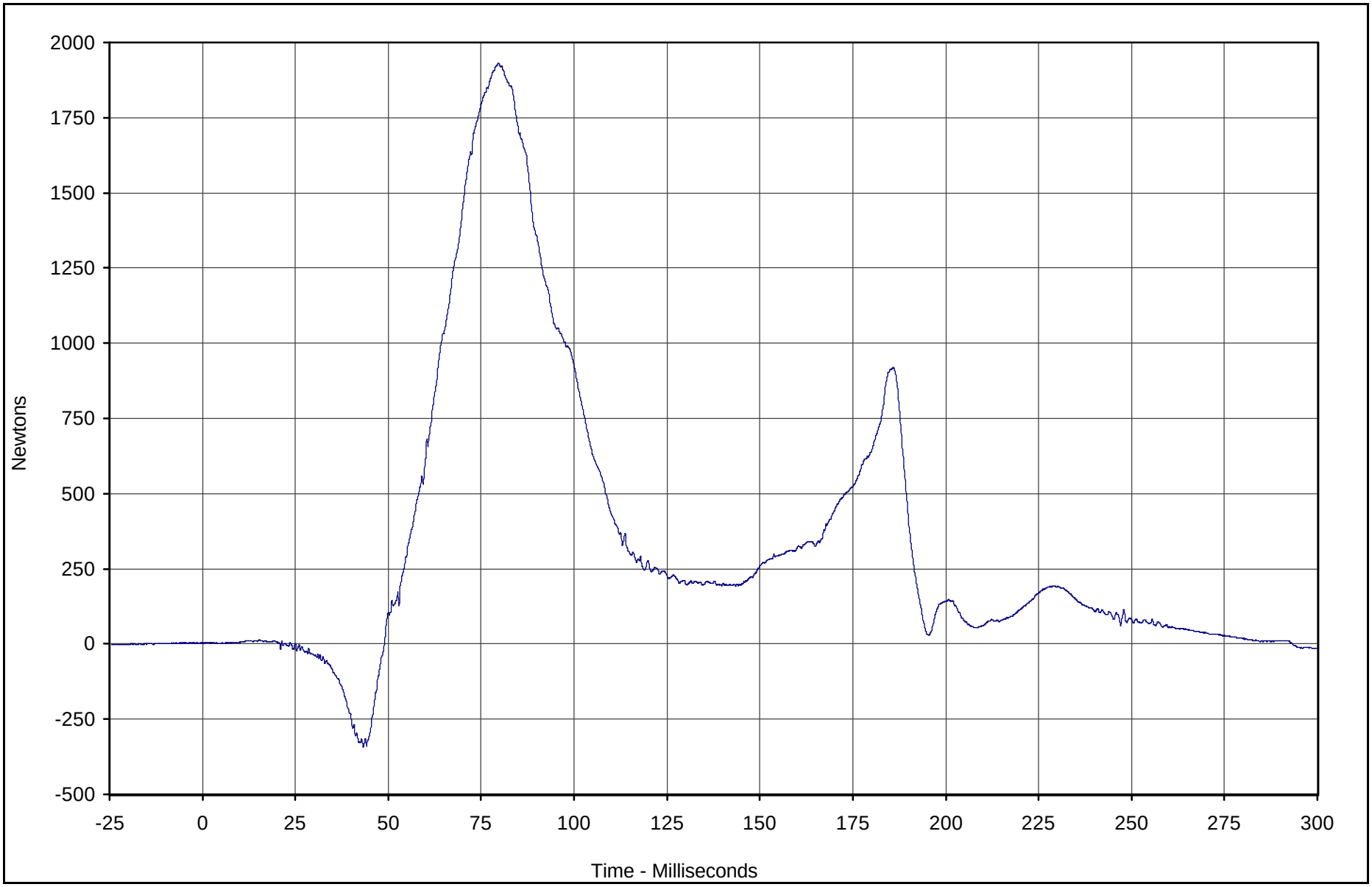
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Upper Neck Force Y	138	FIL	Newtons	48.2	86.7	-89.3	98.9	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



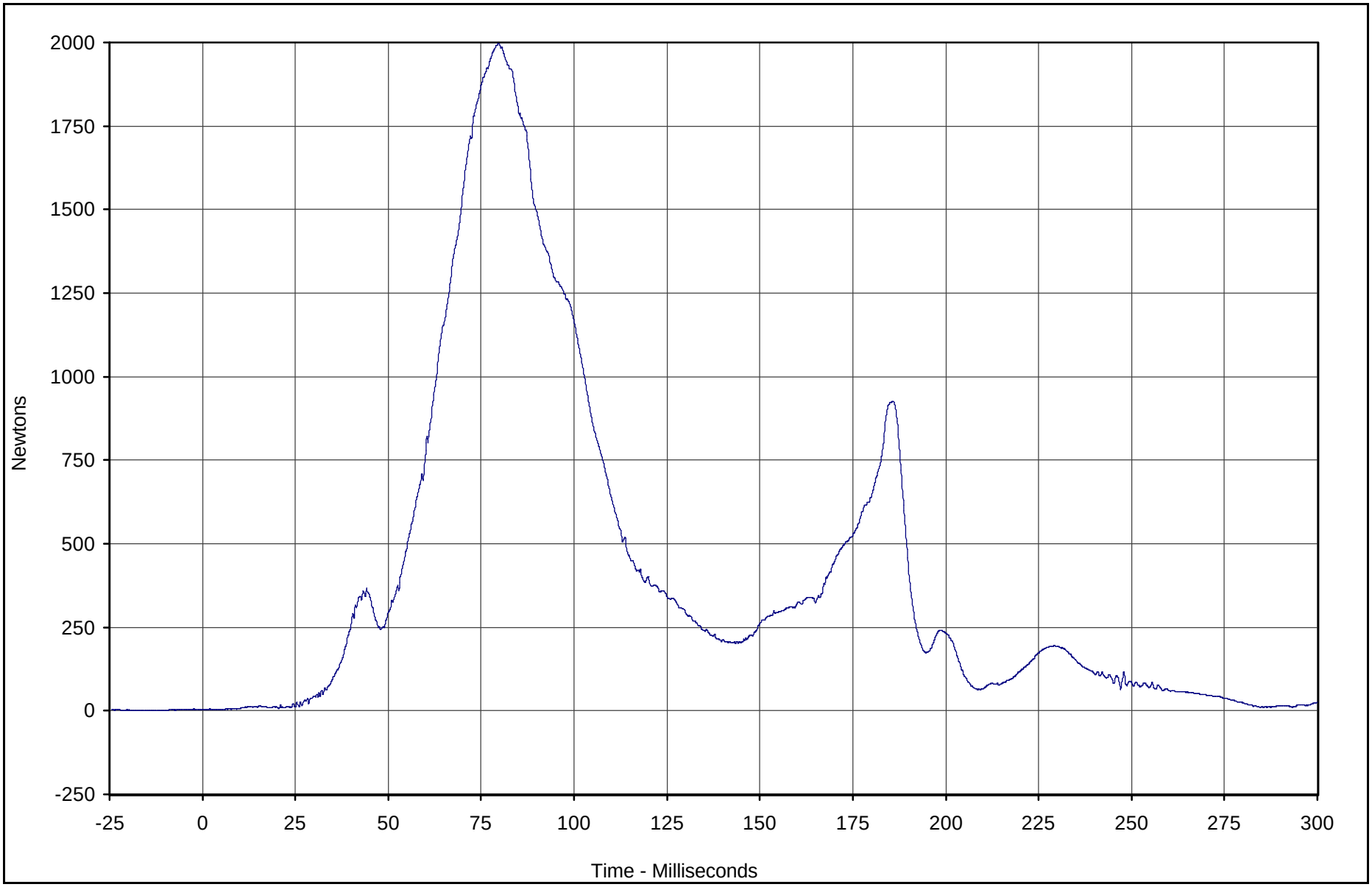
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Upper Neck Force Z	139	FIL	Newtons	1930.9	79.7	-341.8	43.3	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



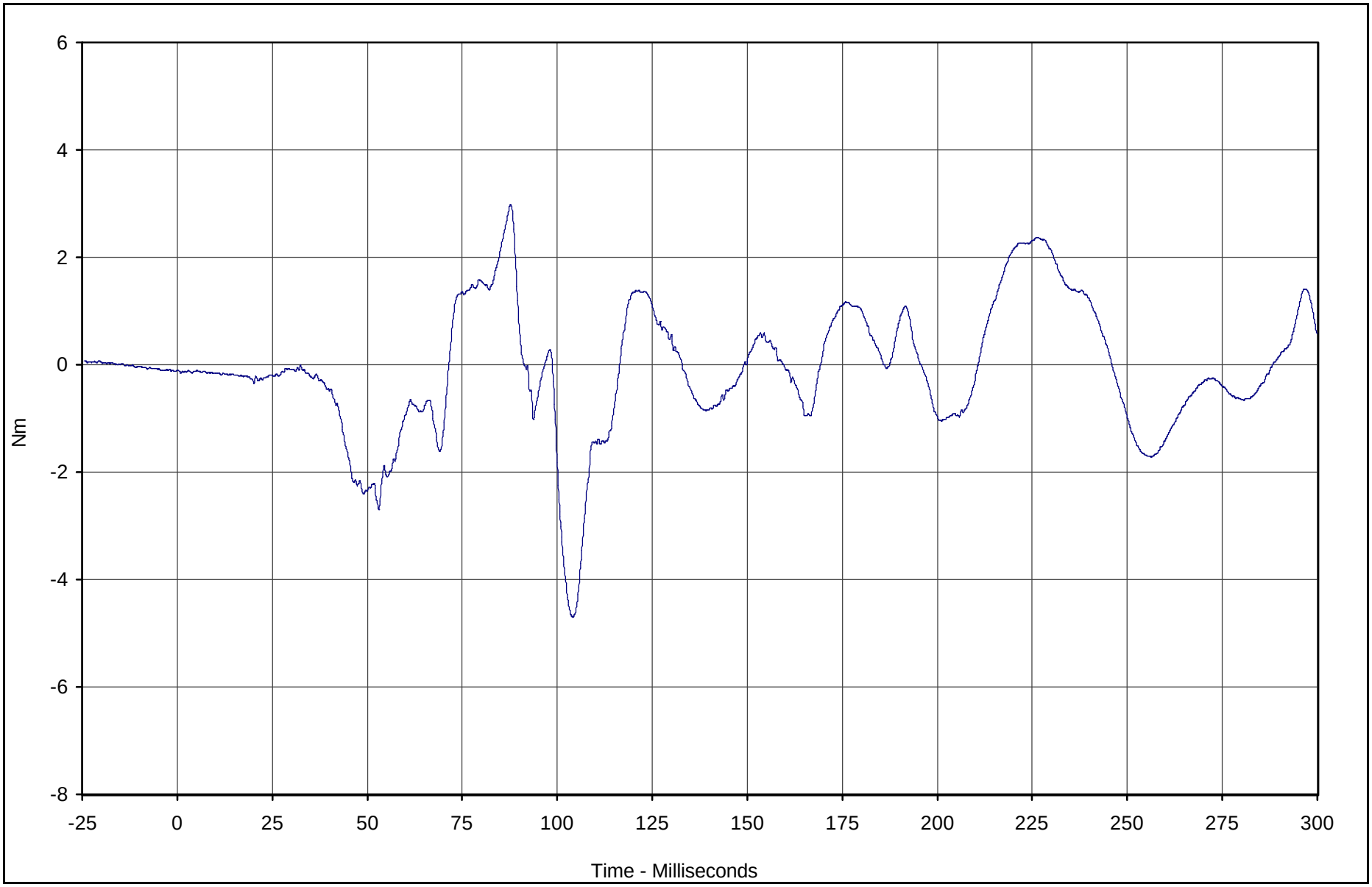
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Upper Neck Force Res.	137	RES	Newtons	1997.3	79.7	3.9	1.2	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



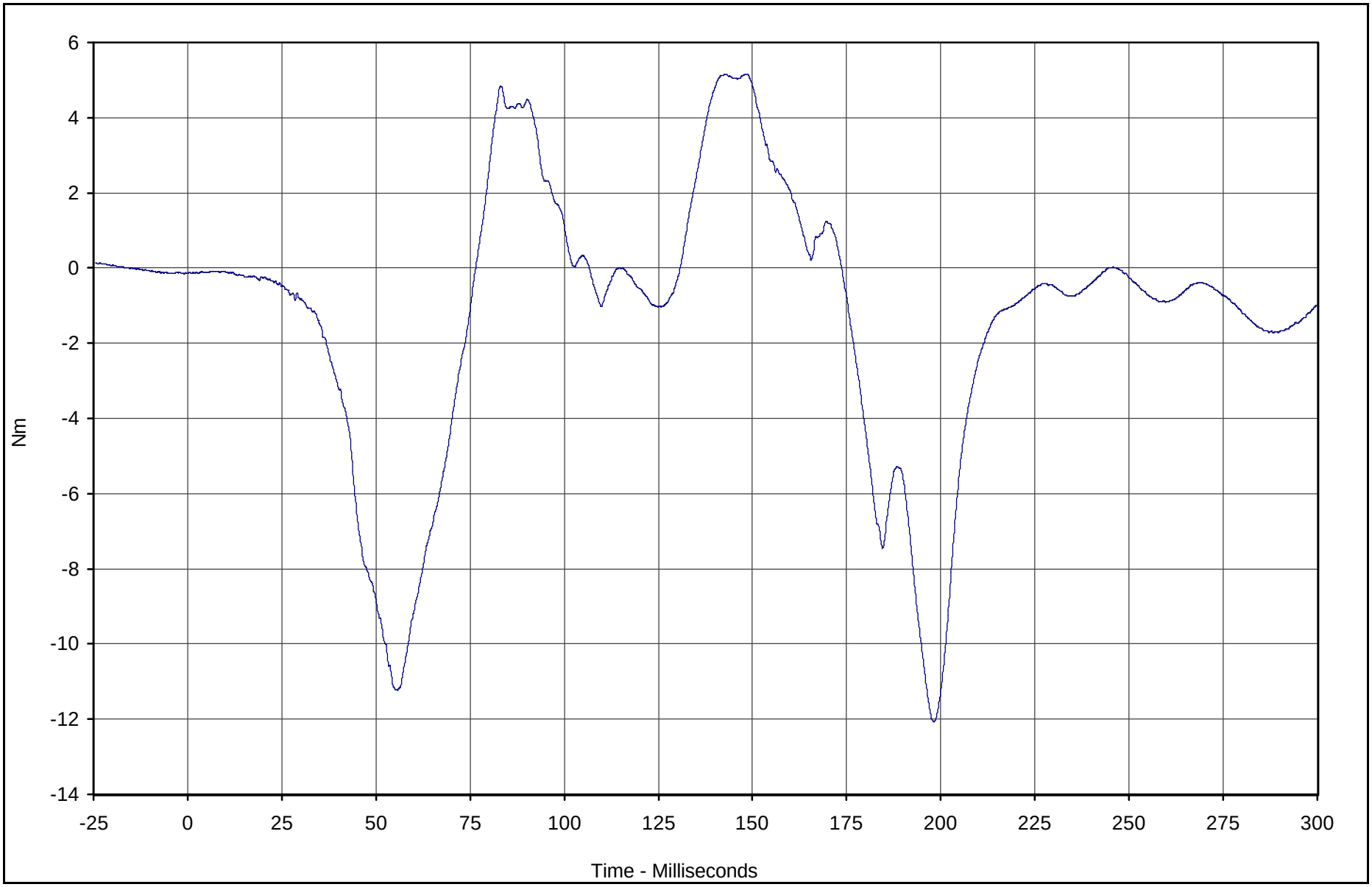
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Upper Neck Moment X	140	FIL	Nm	3.0	87.7	-4.7	104.1	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



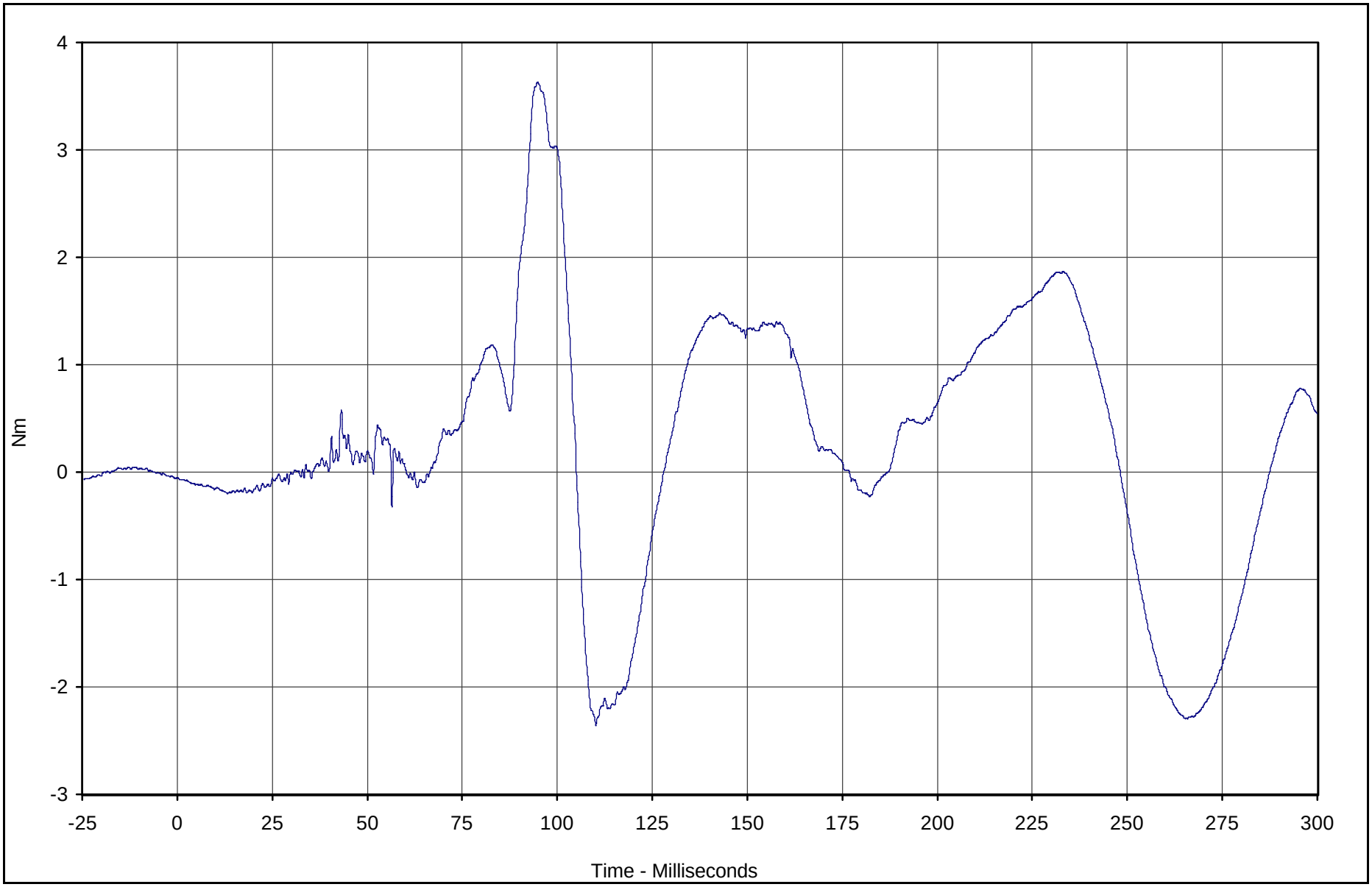
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Upper Neck Moment Y	141	FIL	Nm	5.2	148.3	-12.1	198.0	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



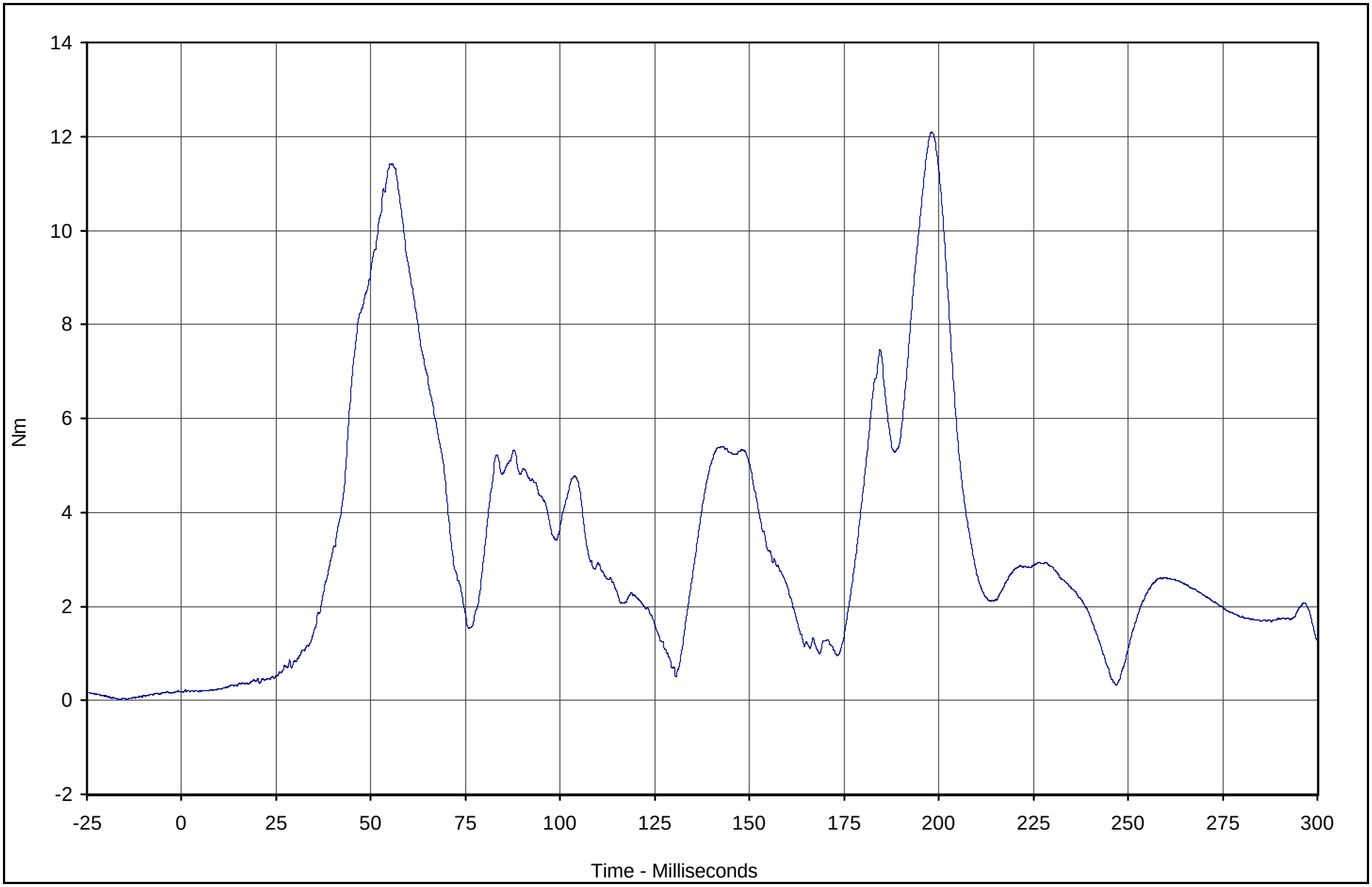
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Upper Neck Moment Z	142	FIL	Nm	3.6	94.8	-2.4	110.2	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



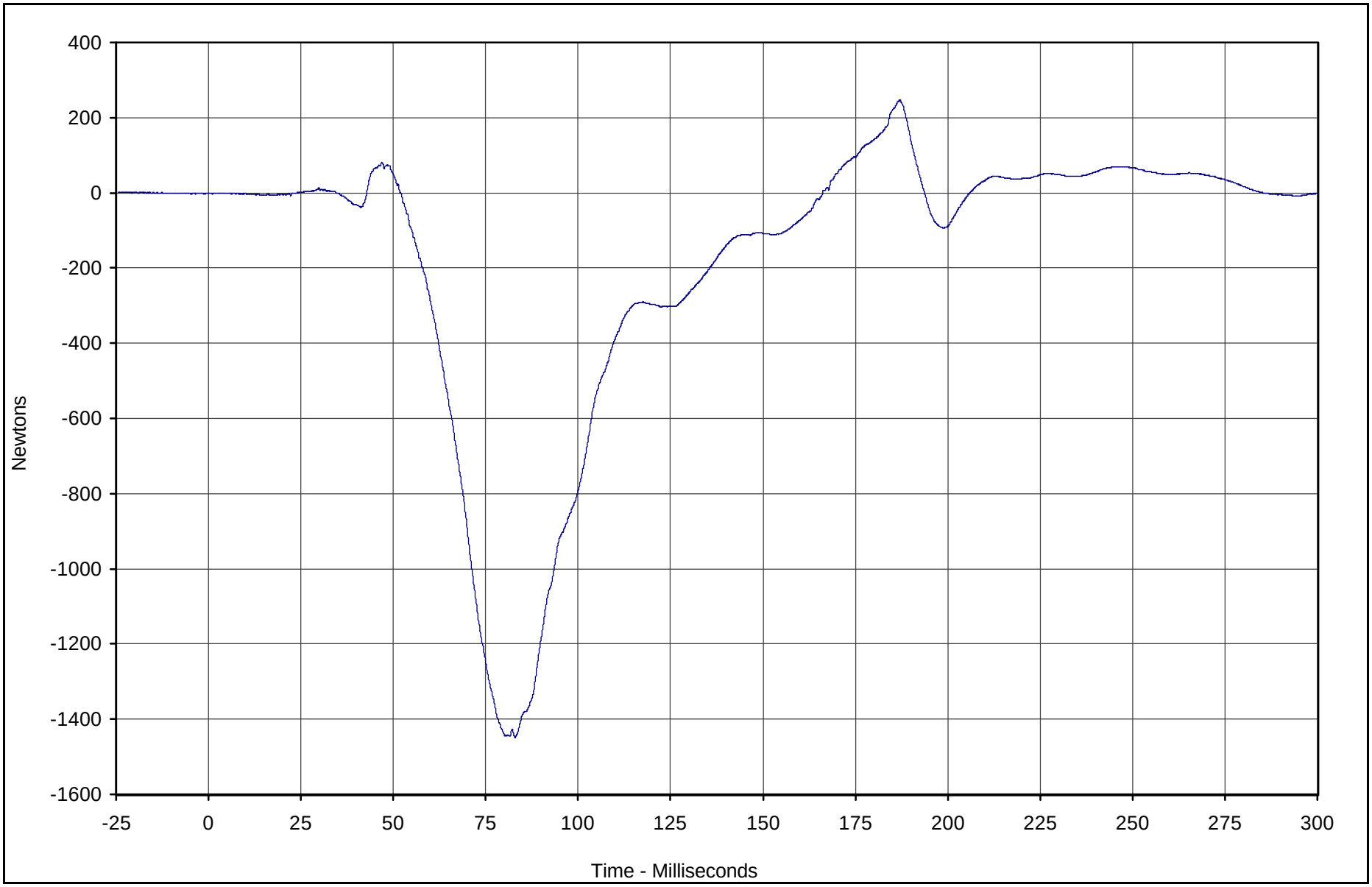
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Upper Neck Mom Res.	140	RES	Nm	12.1	198.0	0.2	0.4	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Lower Neck Force X	143	FIL	Newtons	246.7	187.0	-1448.9	83.0	1000

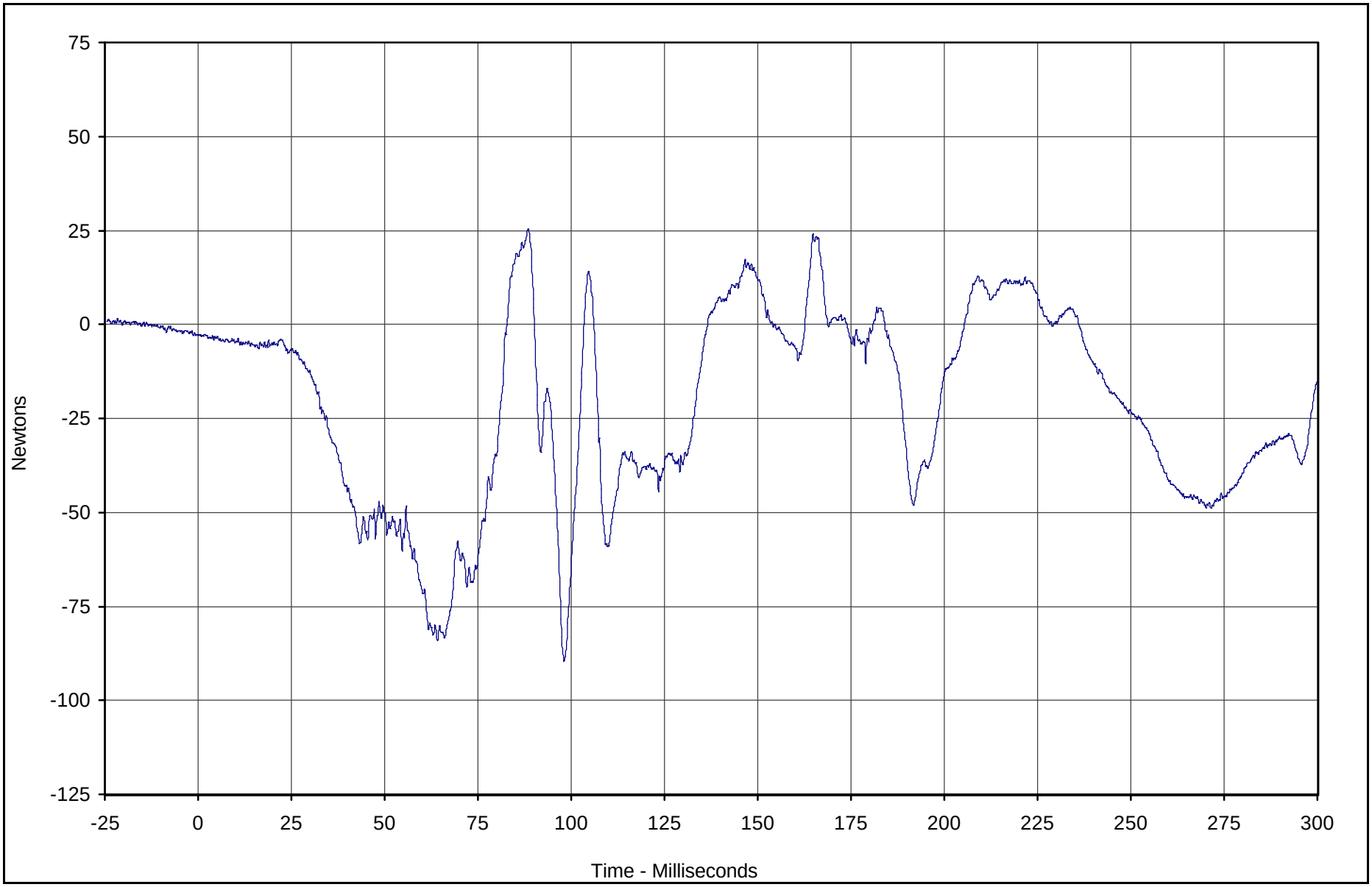
KARCO Engineering

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



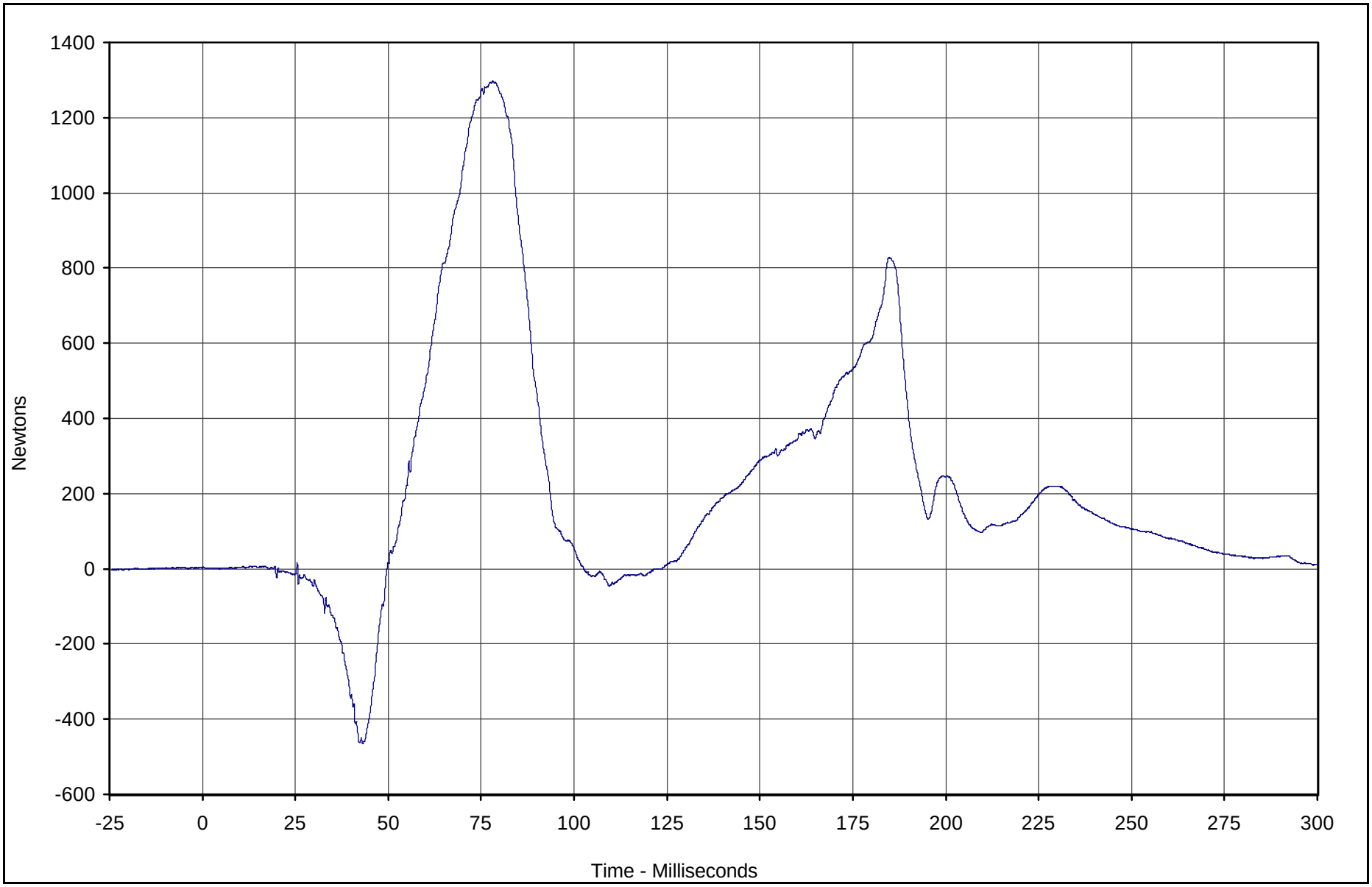
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Lower Neck Force Y	144	FIL	Newtons	25.5	88.5	-89.7	98.1	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



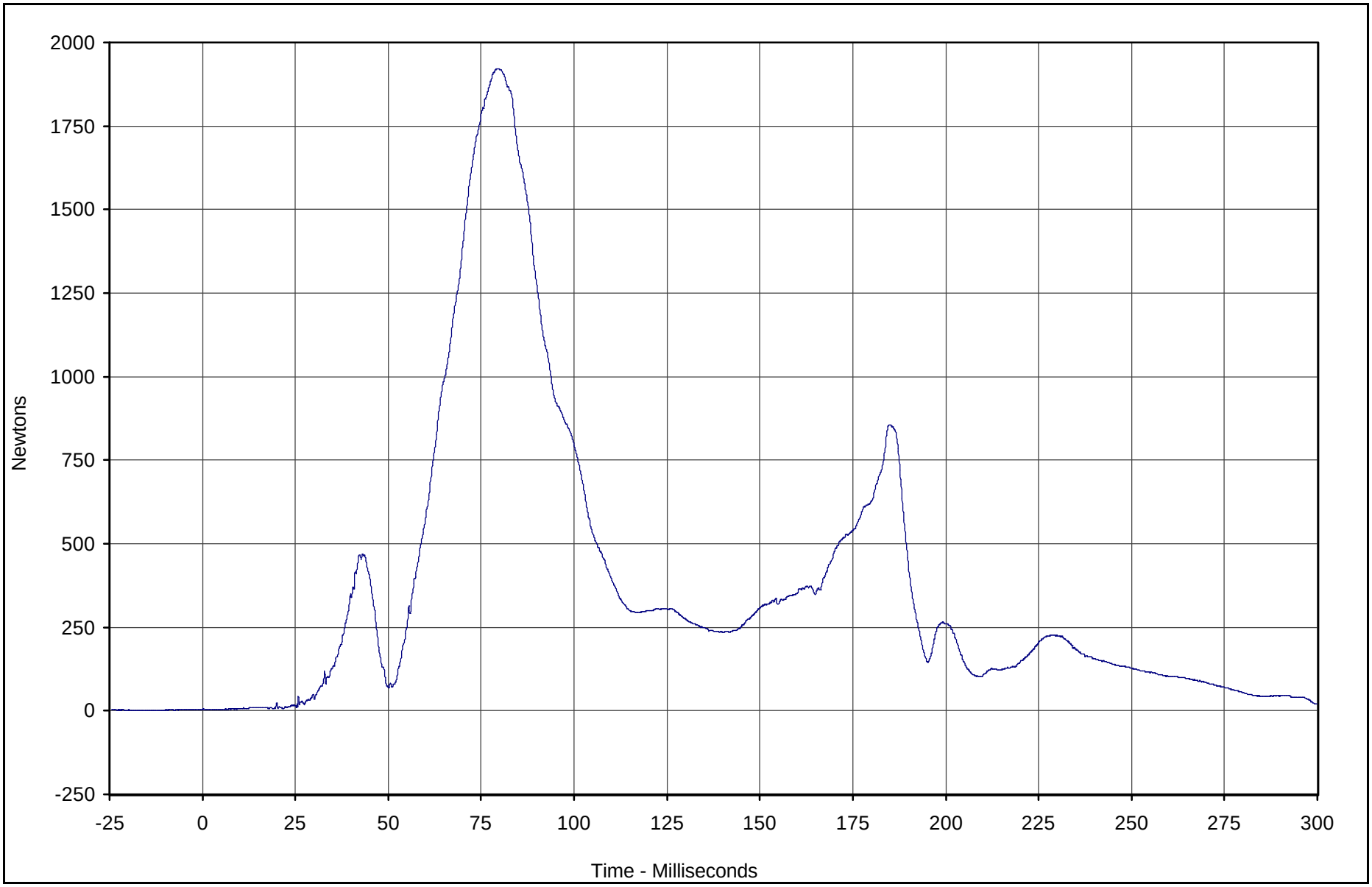
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Lower Neck Force Z	145	FIL	Newtons	1296.9	78.0	-464.9	43.1	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



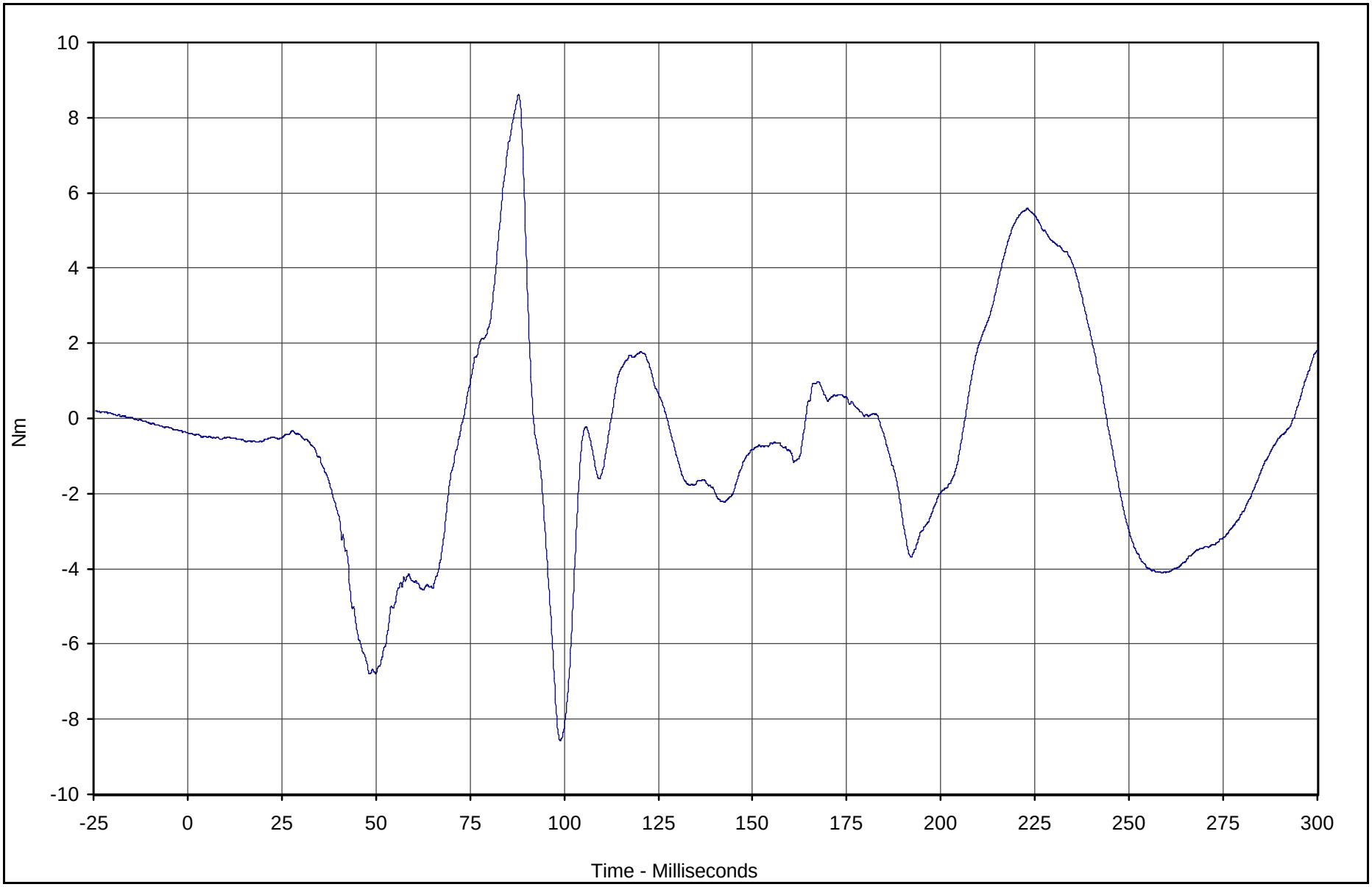
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Lower Neck Force Res.	143	RES	Newtons	1921.3	79.7	3.4	2.3	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



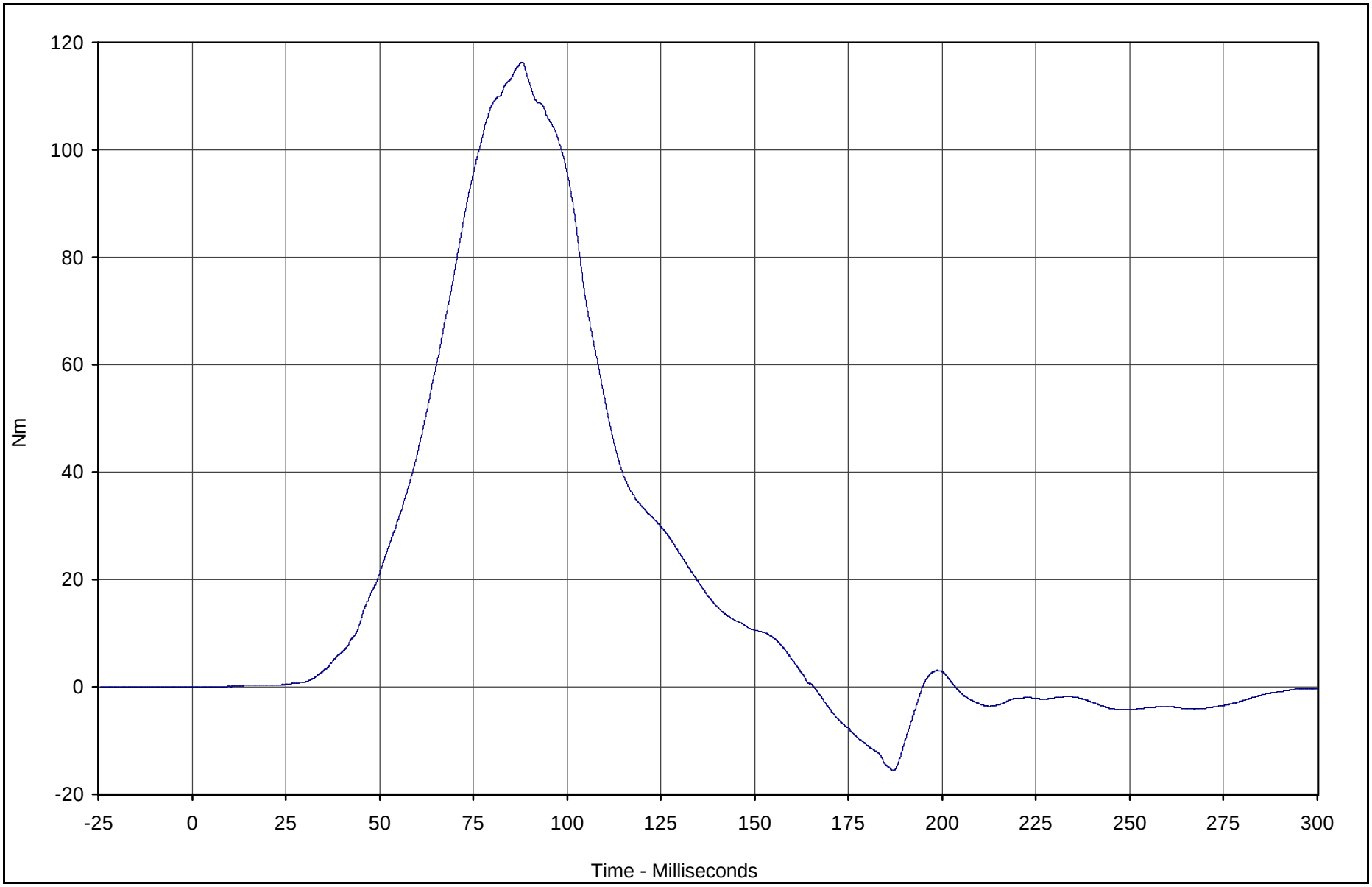
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Lower Neck Moment X	146	FIL	Nm	8.6	87.9	-8.6	99.0	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



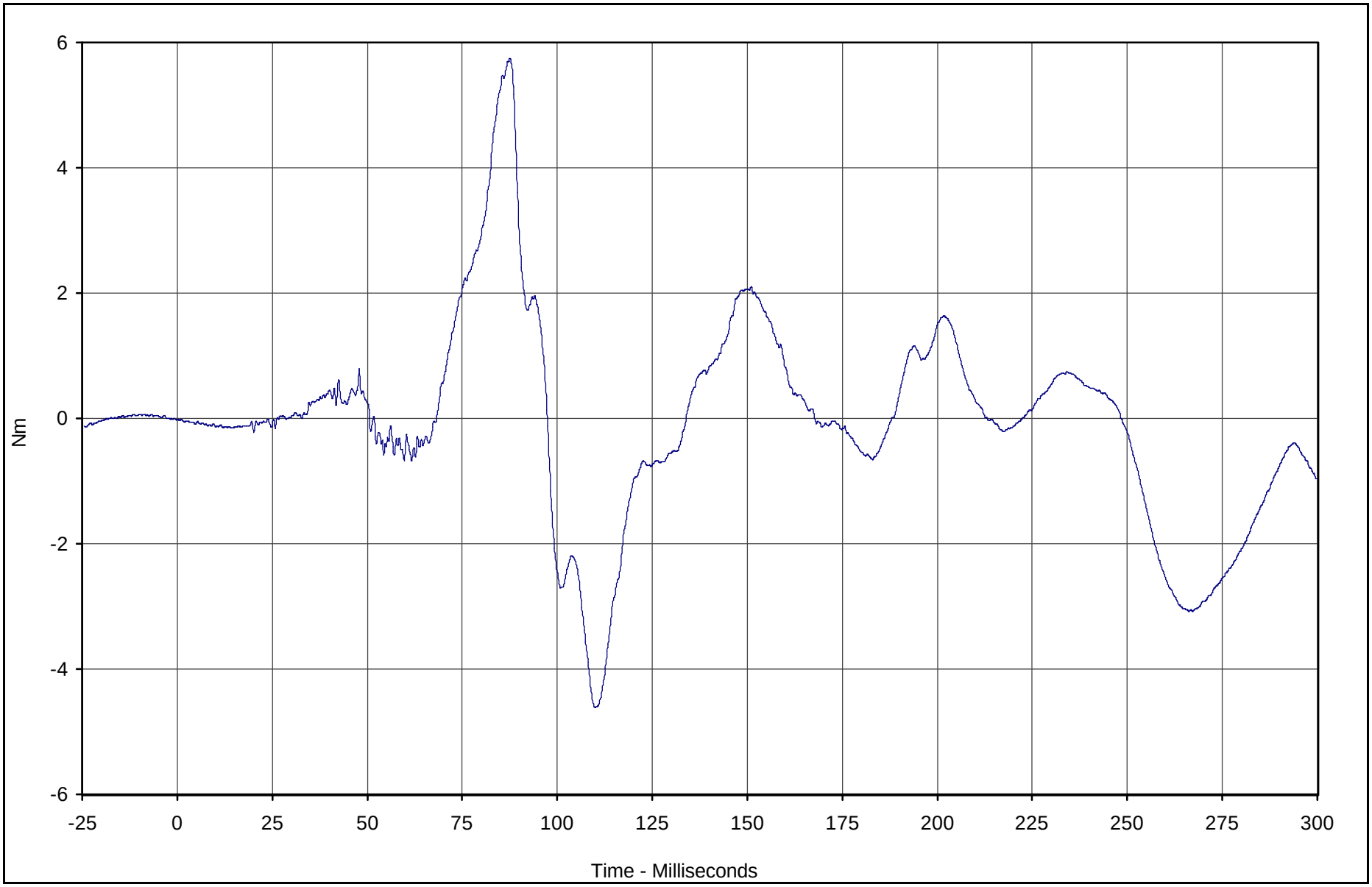
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Lower Neck Moment Y	147	FIL	Nm	116.4	87.9	-15.6	186.8	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



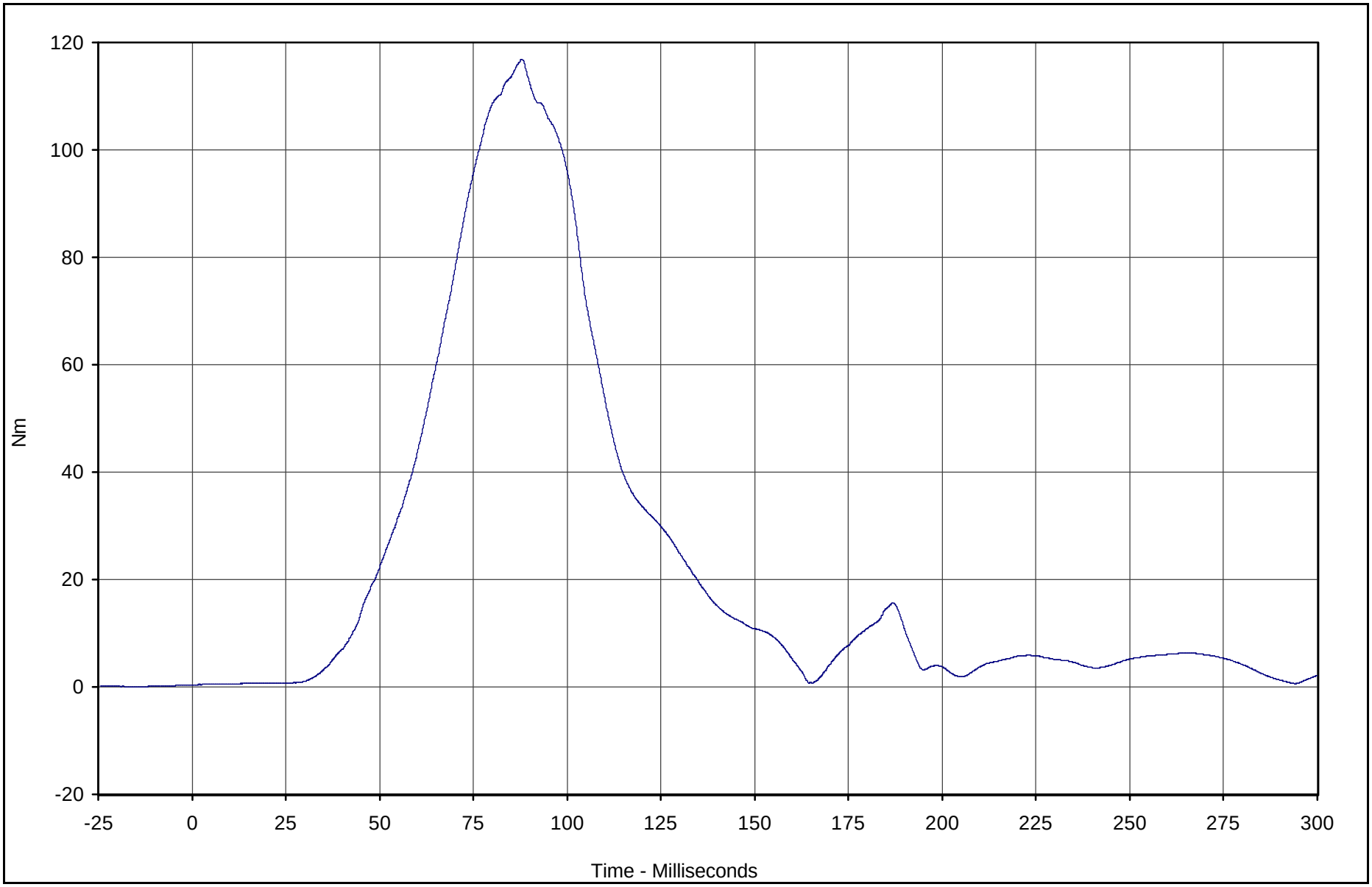
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Lower Neck Moment Z	148	FIL	Nm	5.7	87.6	-4.6	110.1	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



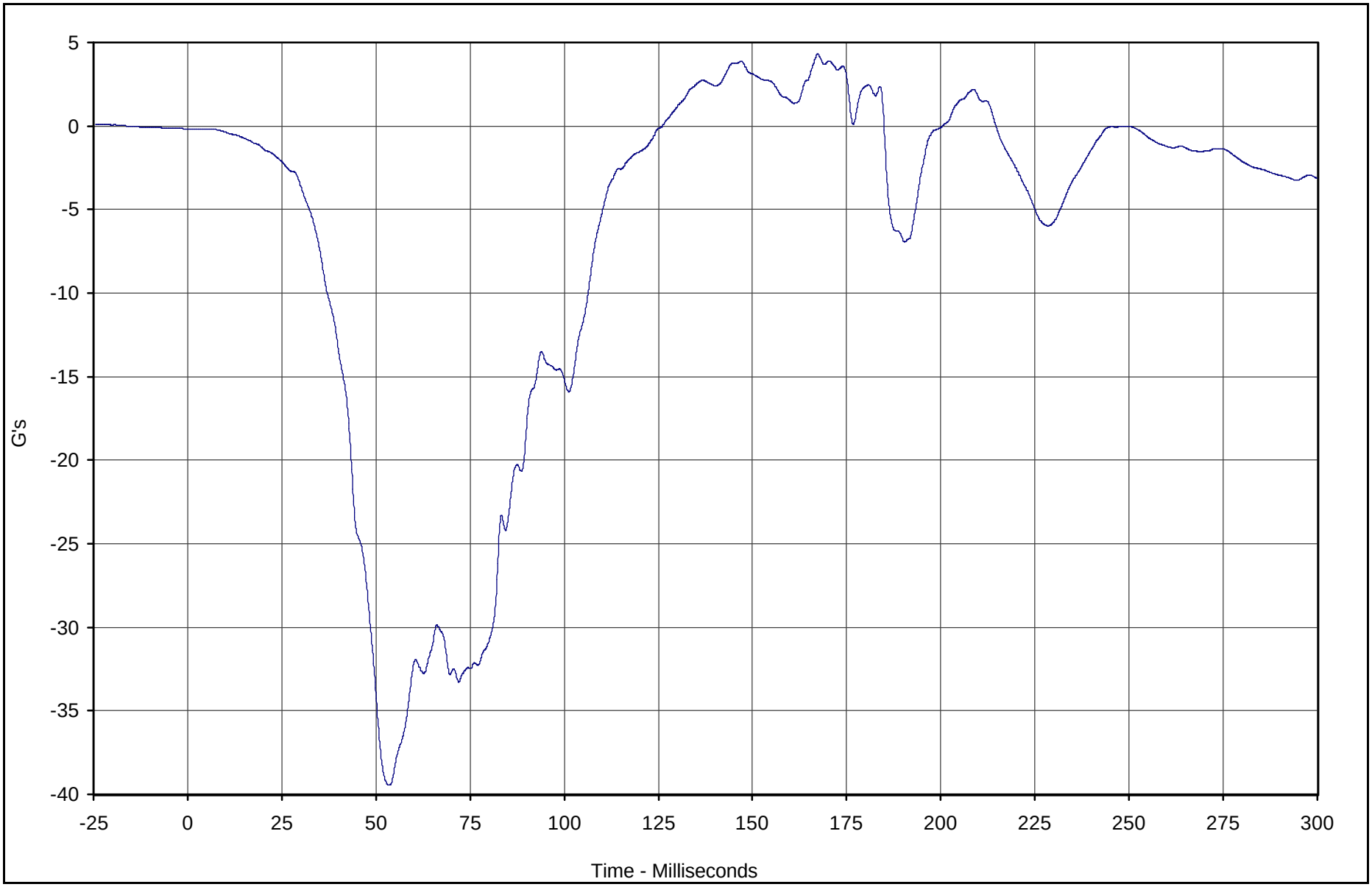
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Lower Neck Mom Res.	146	RES	Nm	116.8	87.9	0.4	0.0	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



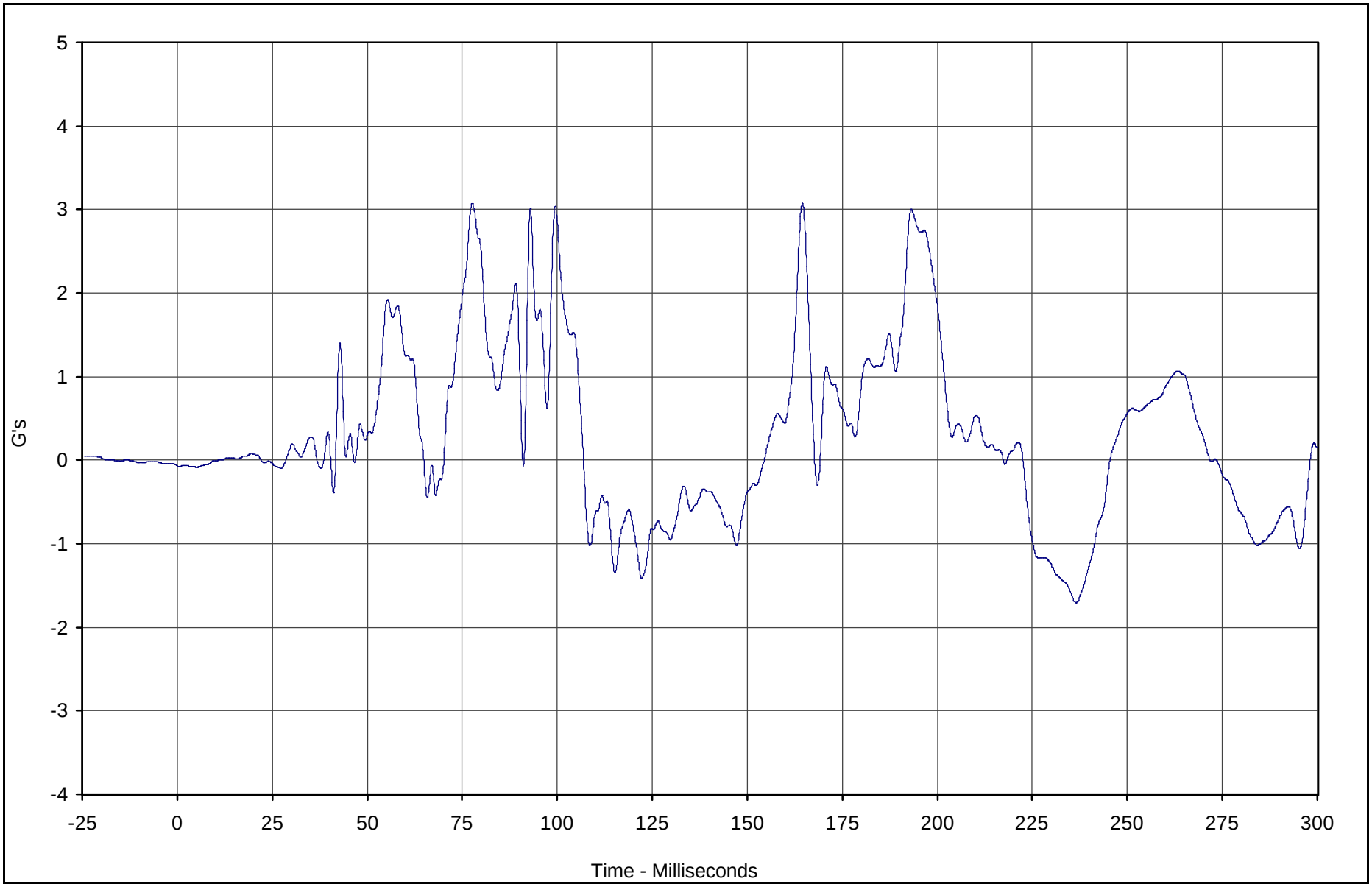
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Chest X	149	FIL	G's	4.3	167.3	-39.5	53.6	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



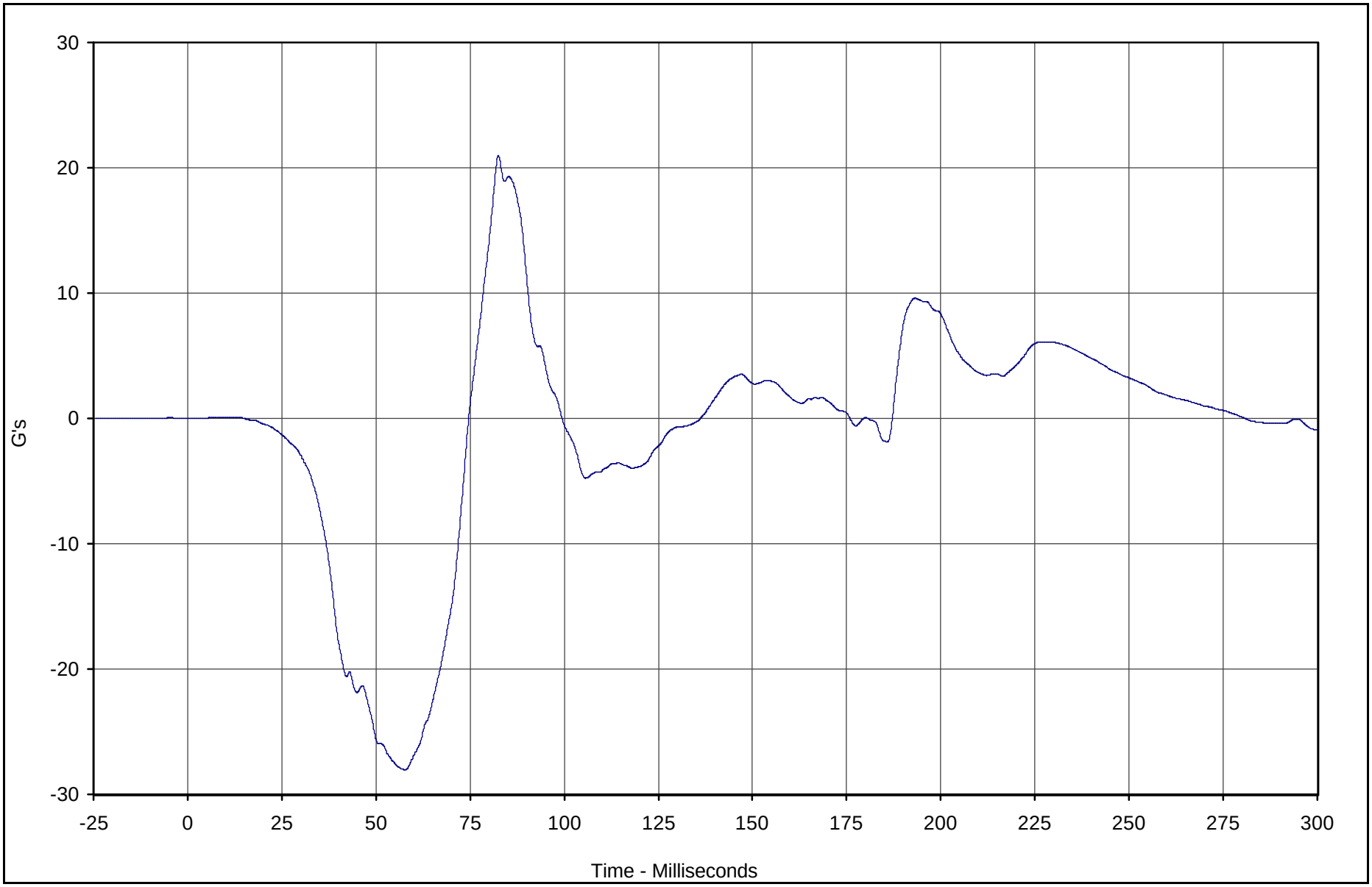
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Chest Y	150	FIL	G's	3.1	164.5	-1.7	236.6	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



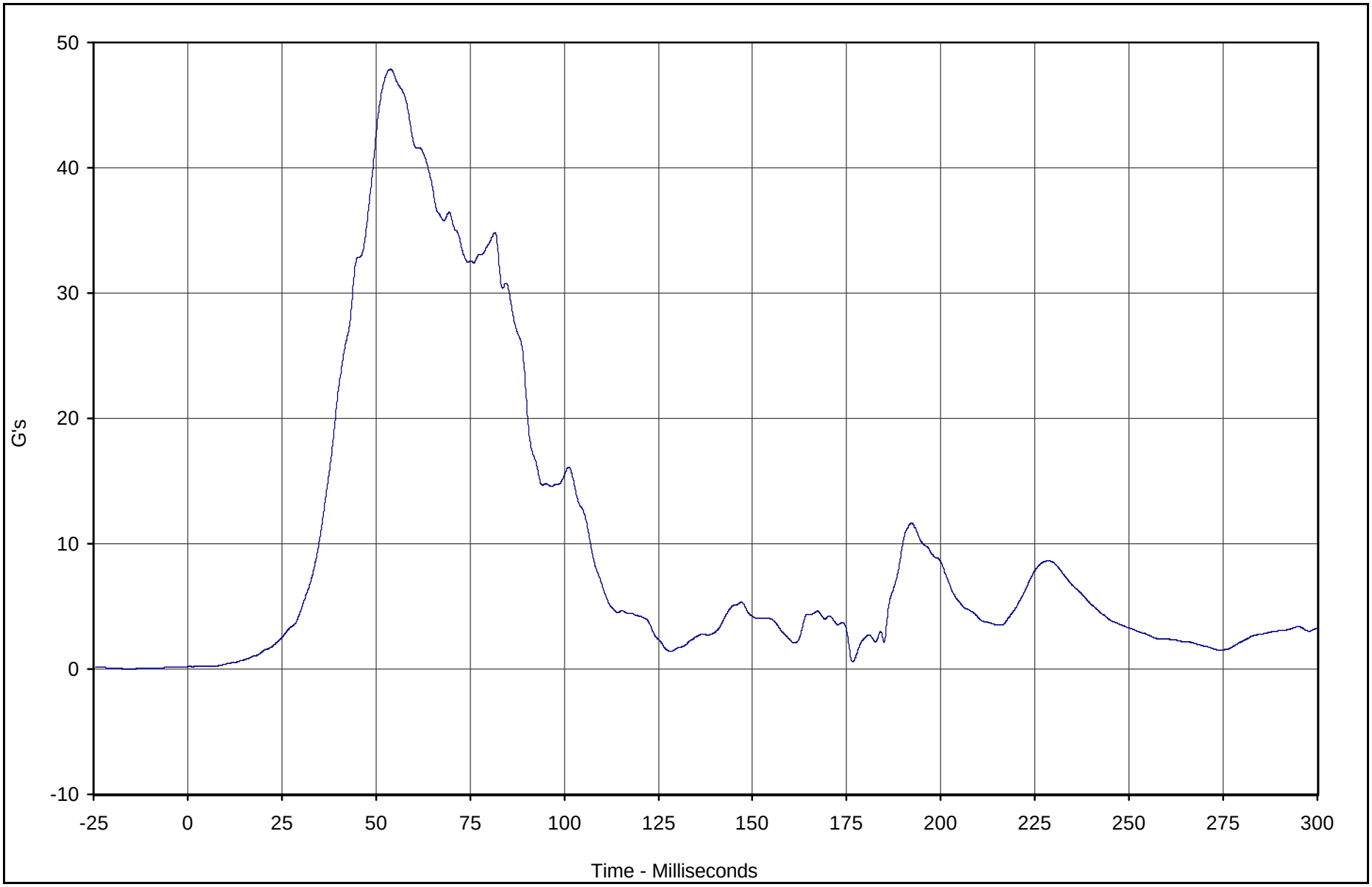
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Chest Z	151	FIL	G's	21.0	82.5	-28.0	57.7	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



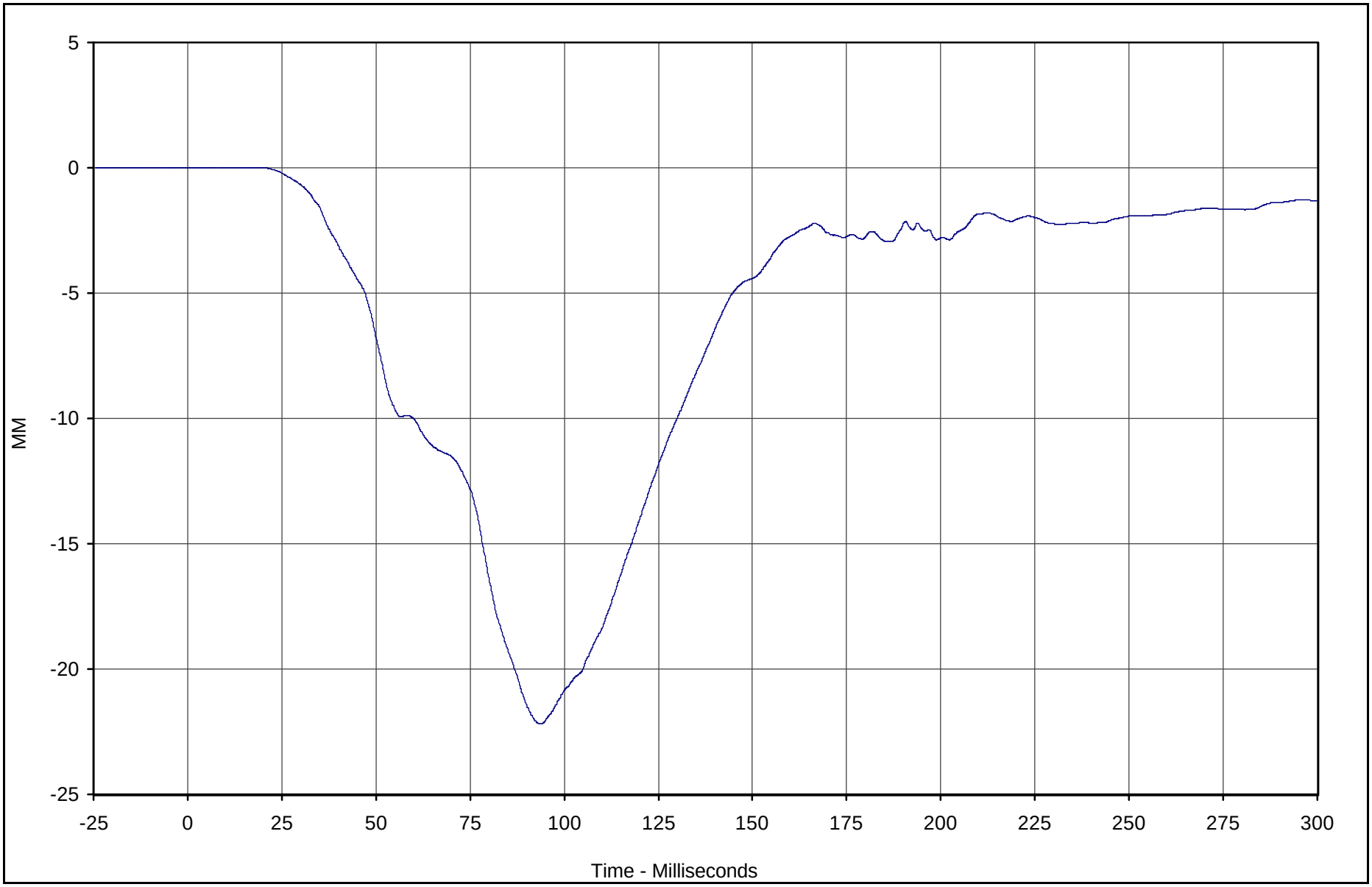
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Chest Resultant	149	RES	G's	47.9	53.9	0.2	0.0	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



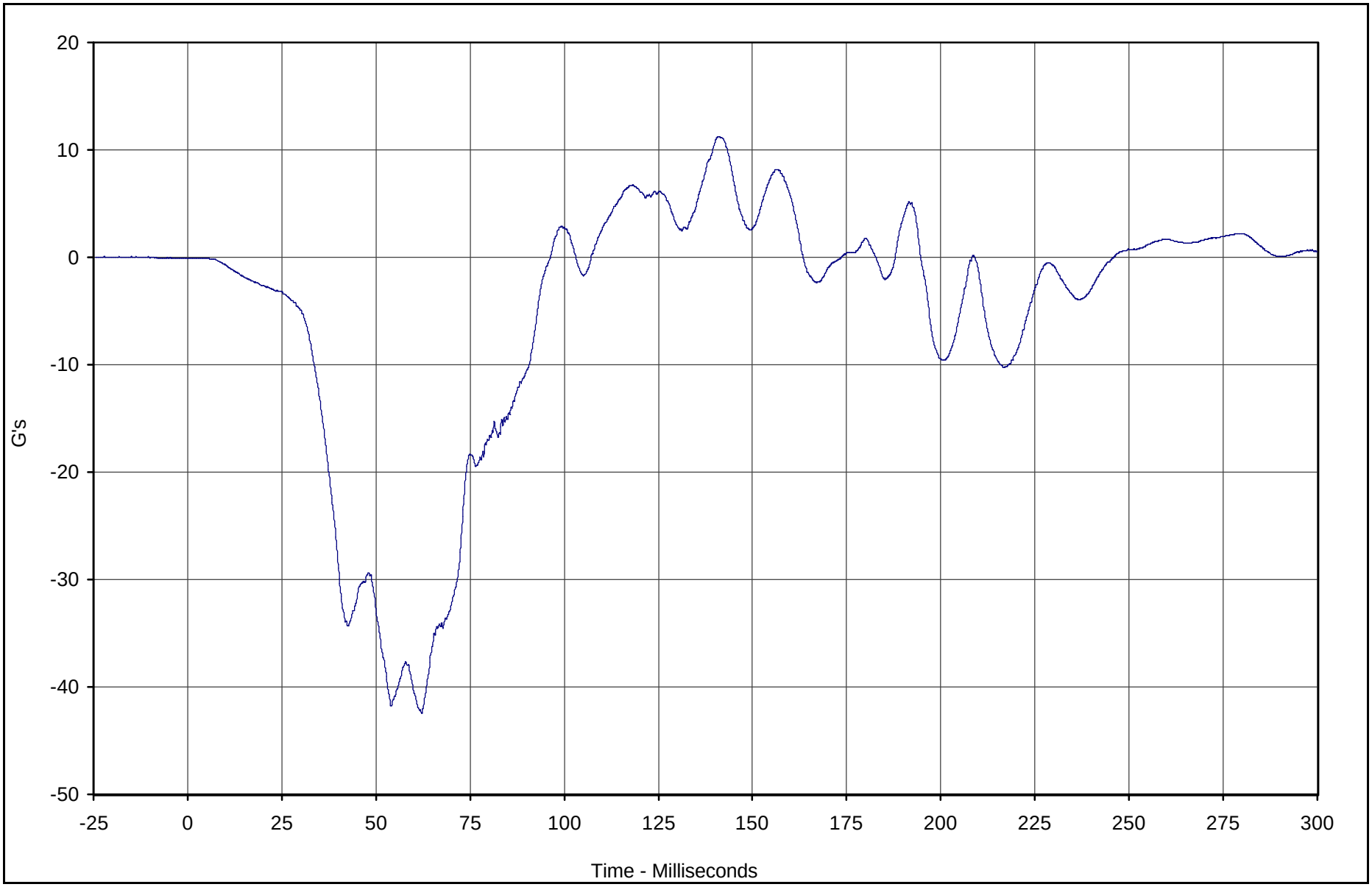
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Chest Displacement	152	FIL	MM	0.0	12.6	-22.2	93.4	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



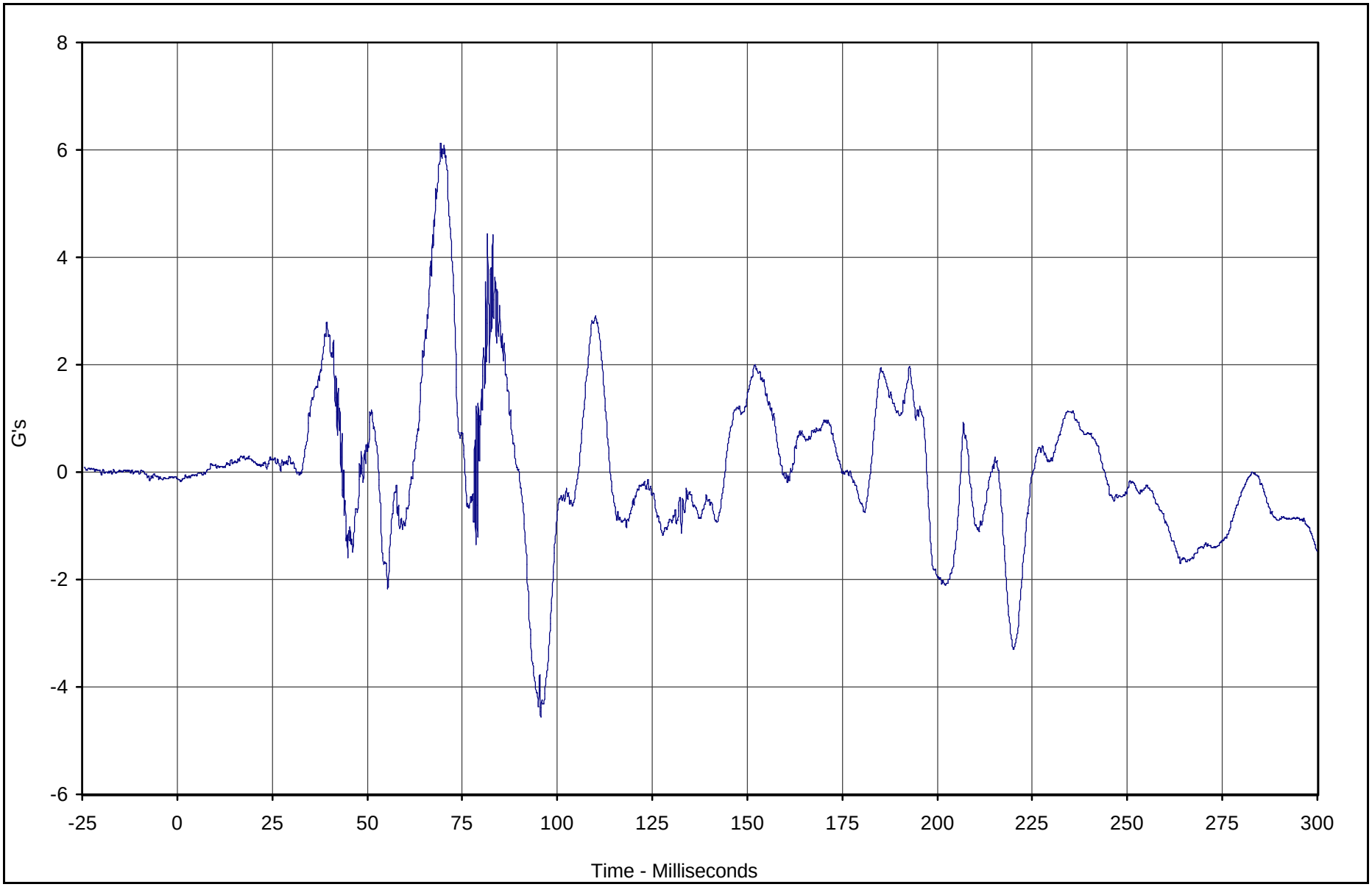
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Pelvis X	153	FIL	G's	11.3	141.1	-42.5	62.1	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



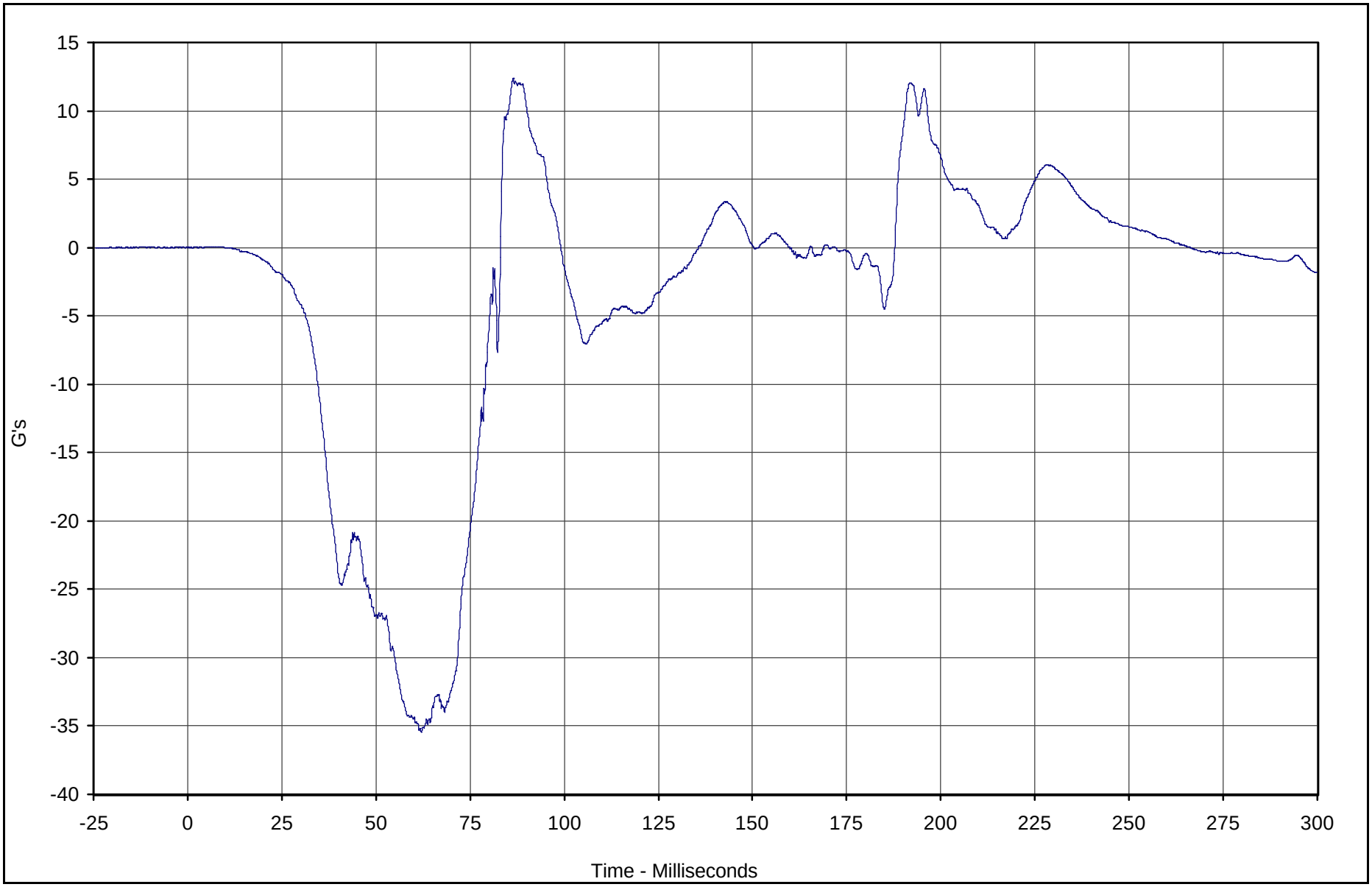
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Pelvis Y	154	FIL	G's	6.1	69.3	-4.6	95.7	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



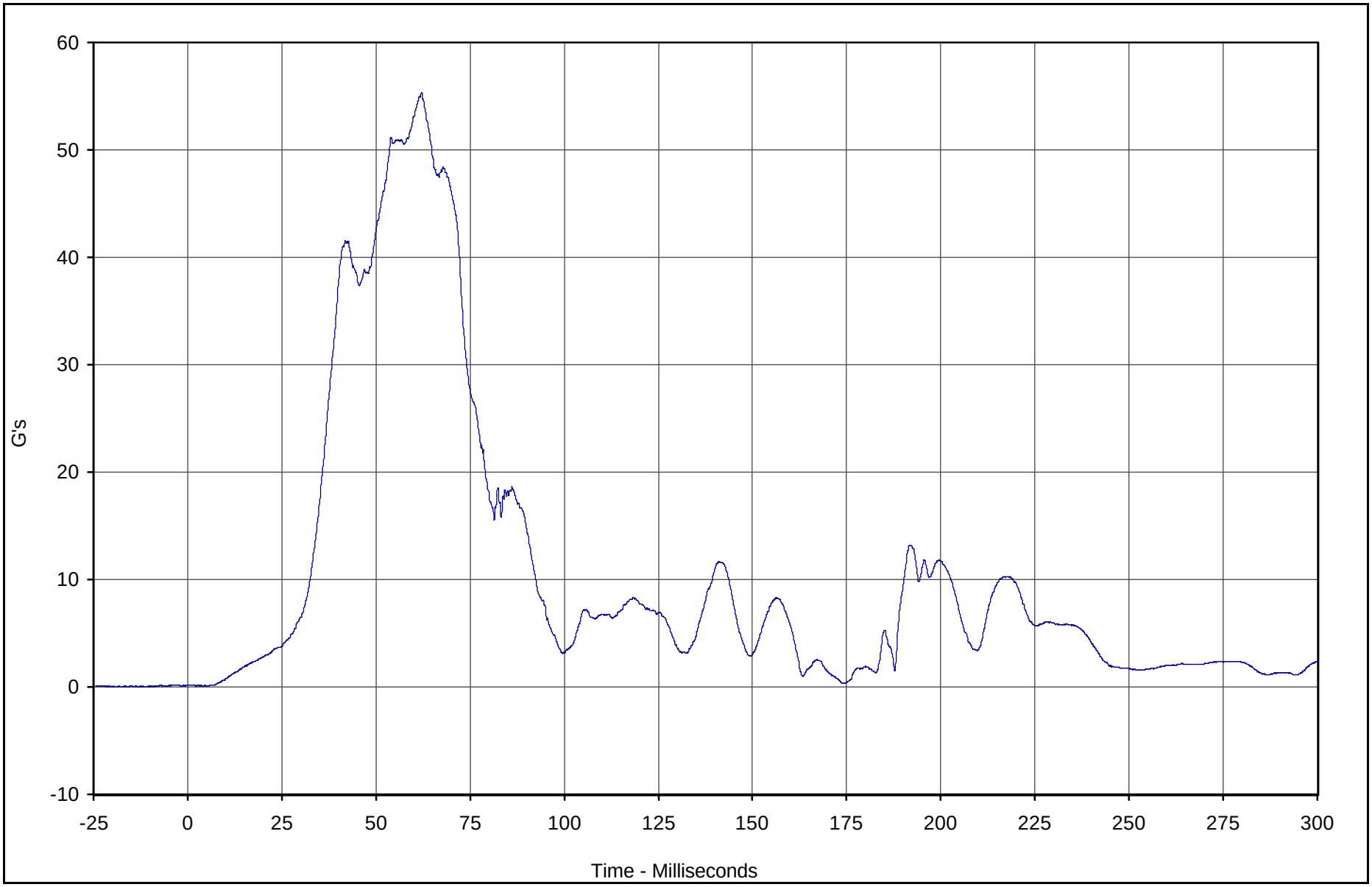
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Pelvis Z	155	FIL	G's	12.4	86.6	-35.4	62.1	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



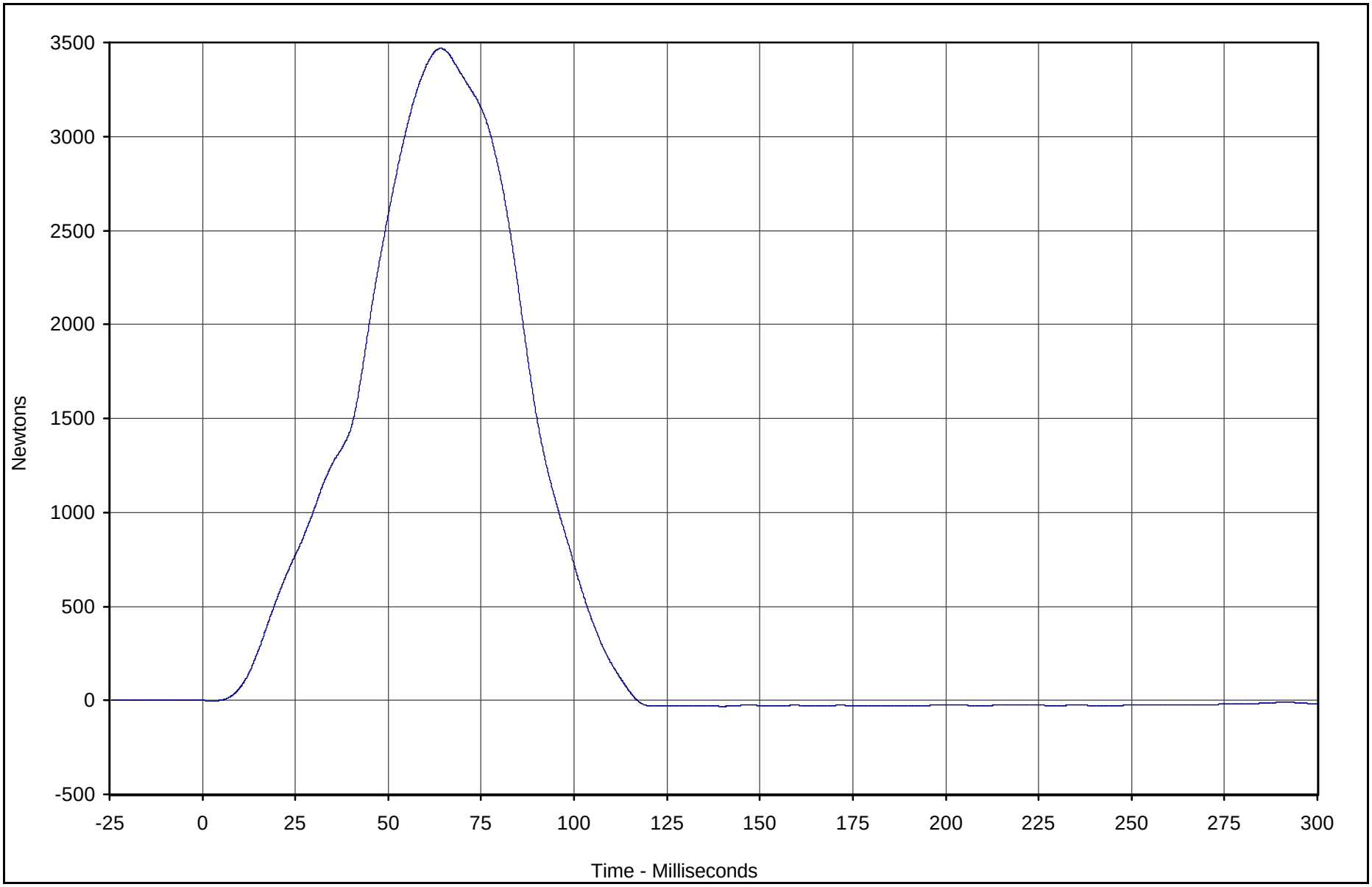
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Pelvis Resultant	153	RES	G's	55.3	62.1	0.1	4.2	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



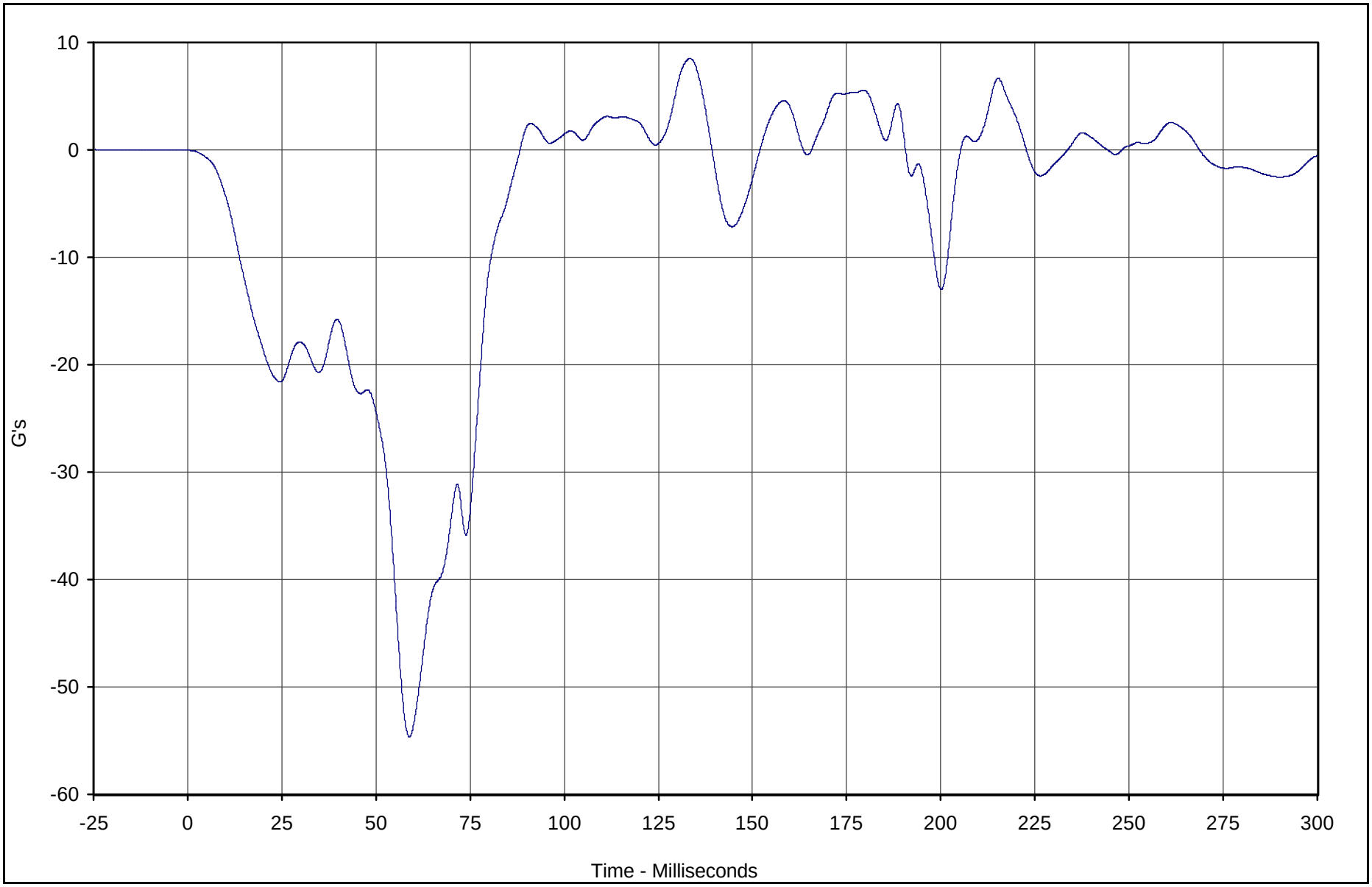
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Car Seat Tether Load	156	FIL	Newtons	3468.4	64.1	-31.6	139.9	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



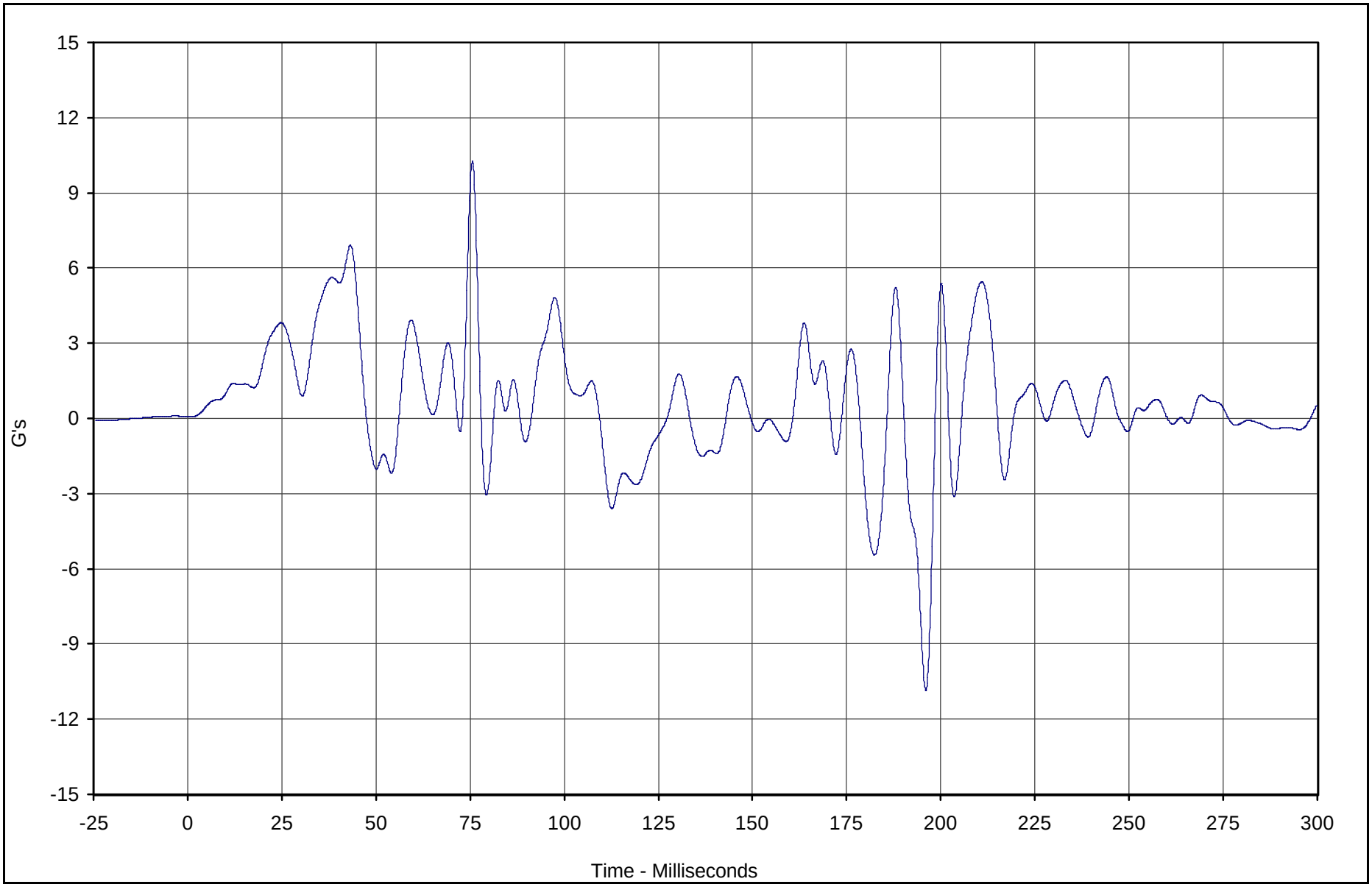
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Car Seat X	157	FIL	G's	8.5	133.4	-54.6	58.9	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



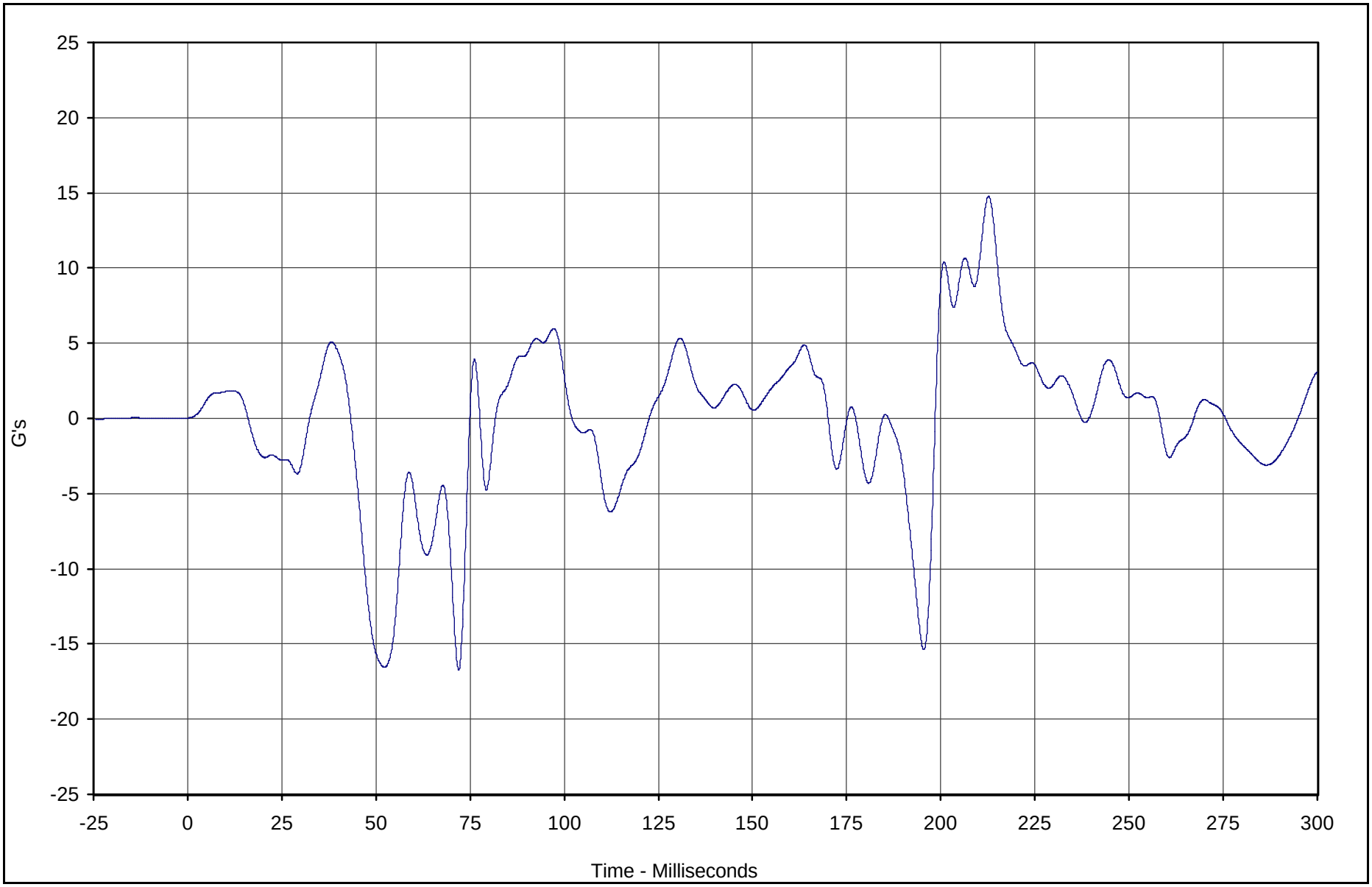
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Car Seat Y	158	FIL	G's	10.3	75.6	-10.9	196.0	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



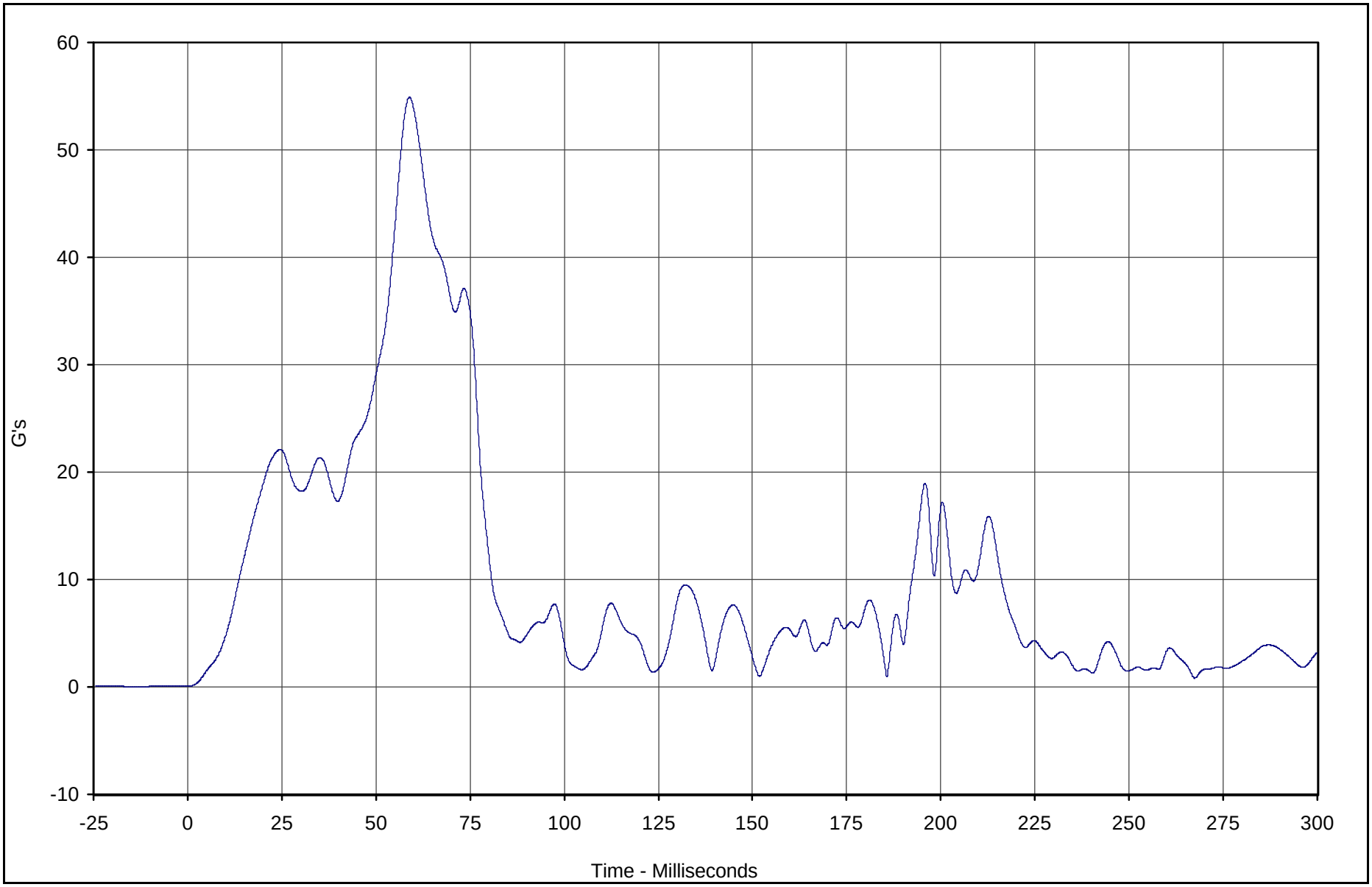
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Car Seat Z	159	FIL	G's	14.8	212.7	-16.7	72.0	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



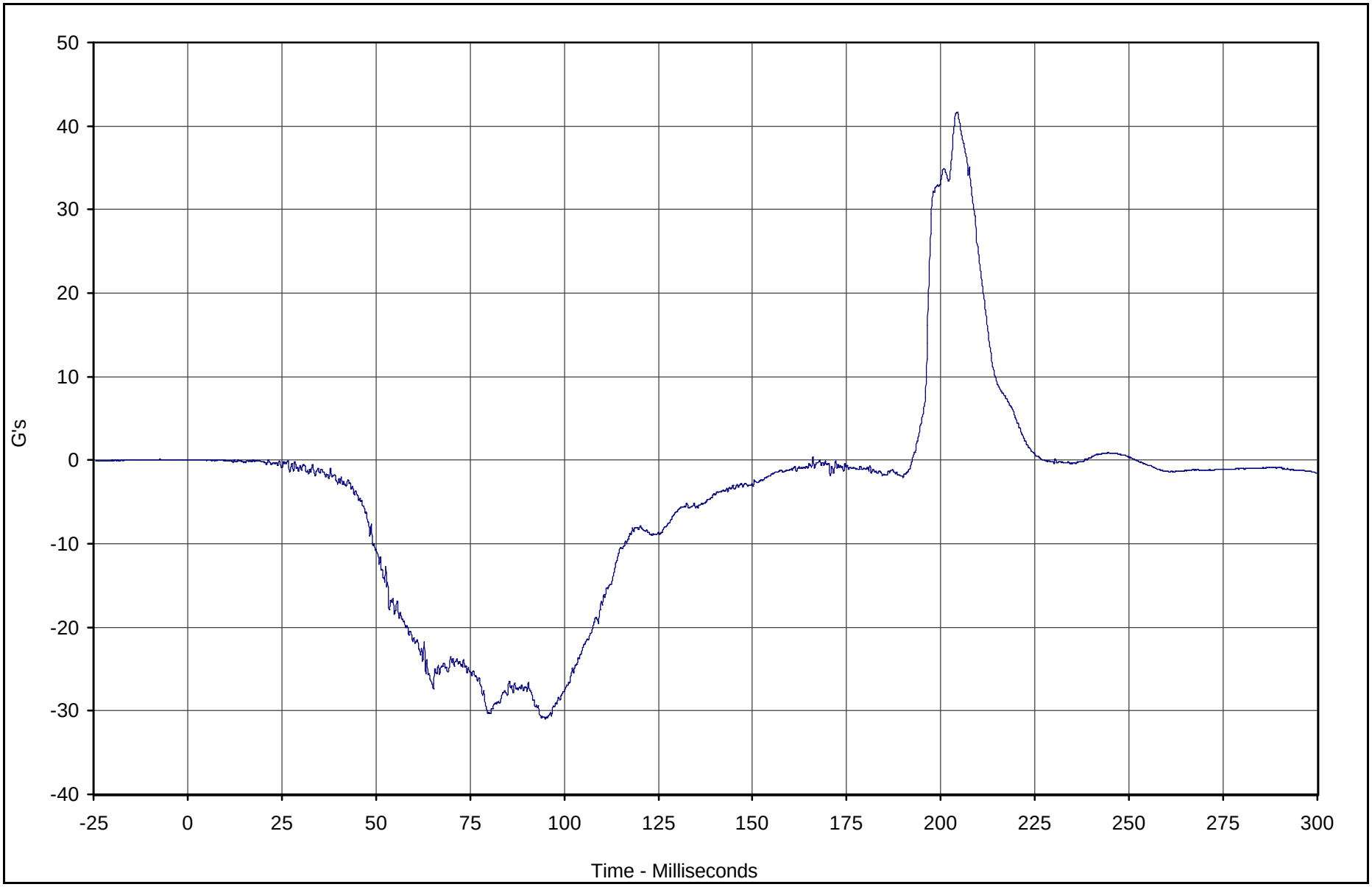
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Car Seat Resultant	157	RES	G's	54.9	58.9	0.1	0.0	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



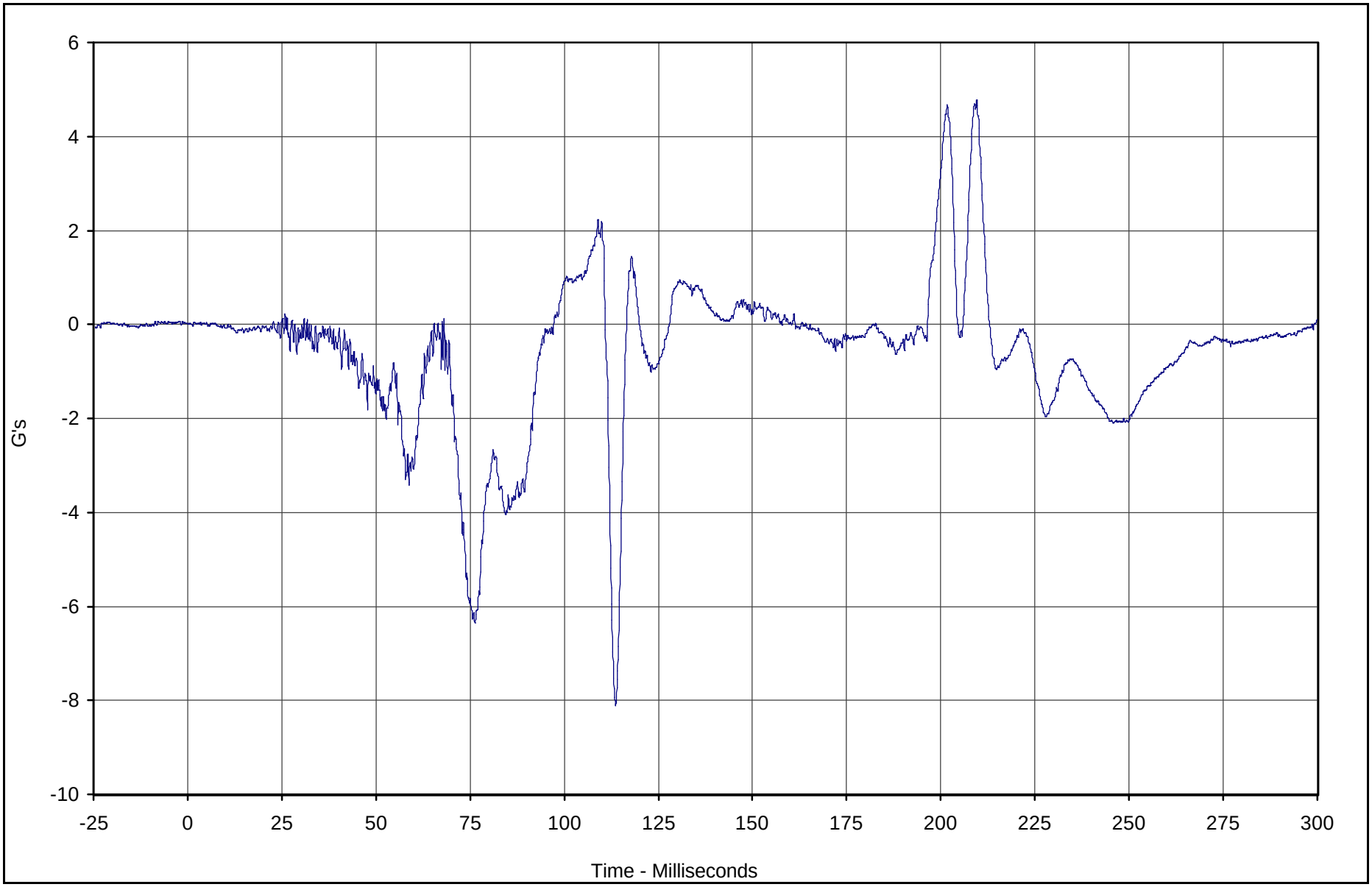
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Head X	160	FIL	G's	41.7	204.4	-31.0	95.0	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



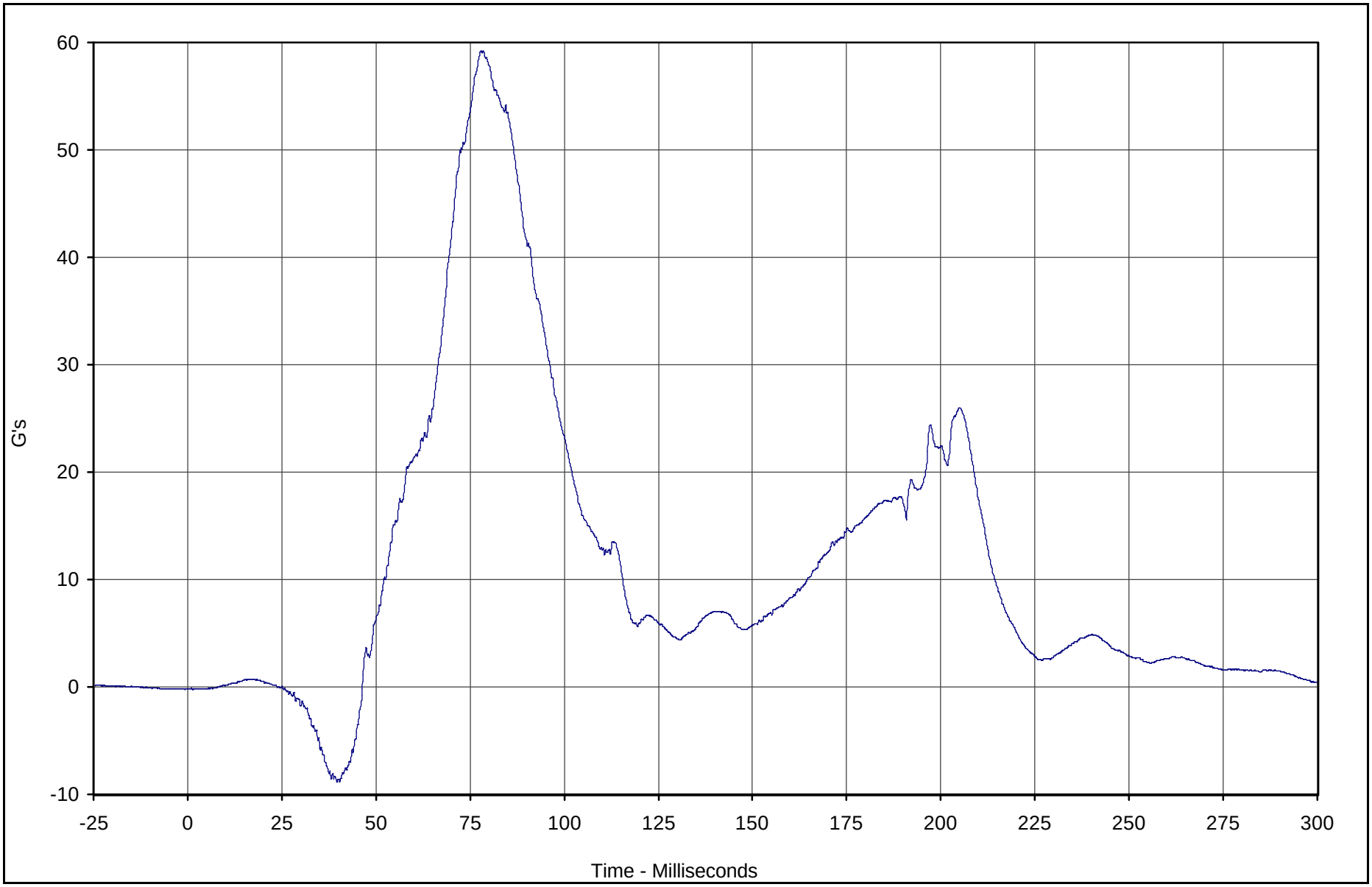
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Head Y	161	FIL	G's	4.8	209.6	-8.1	113.7	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 9/9/03

NHTSA No.: M45600



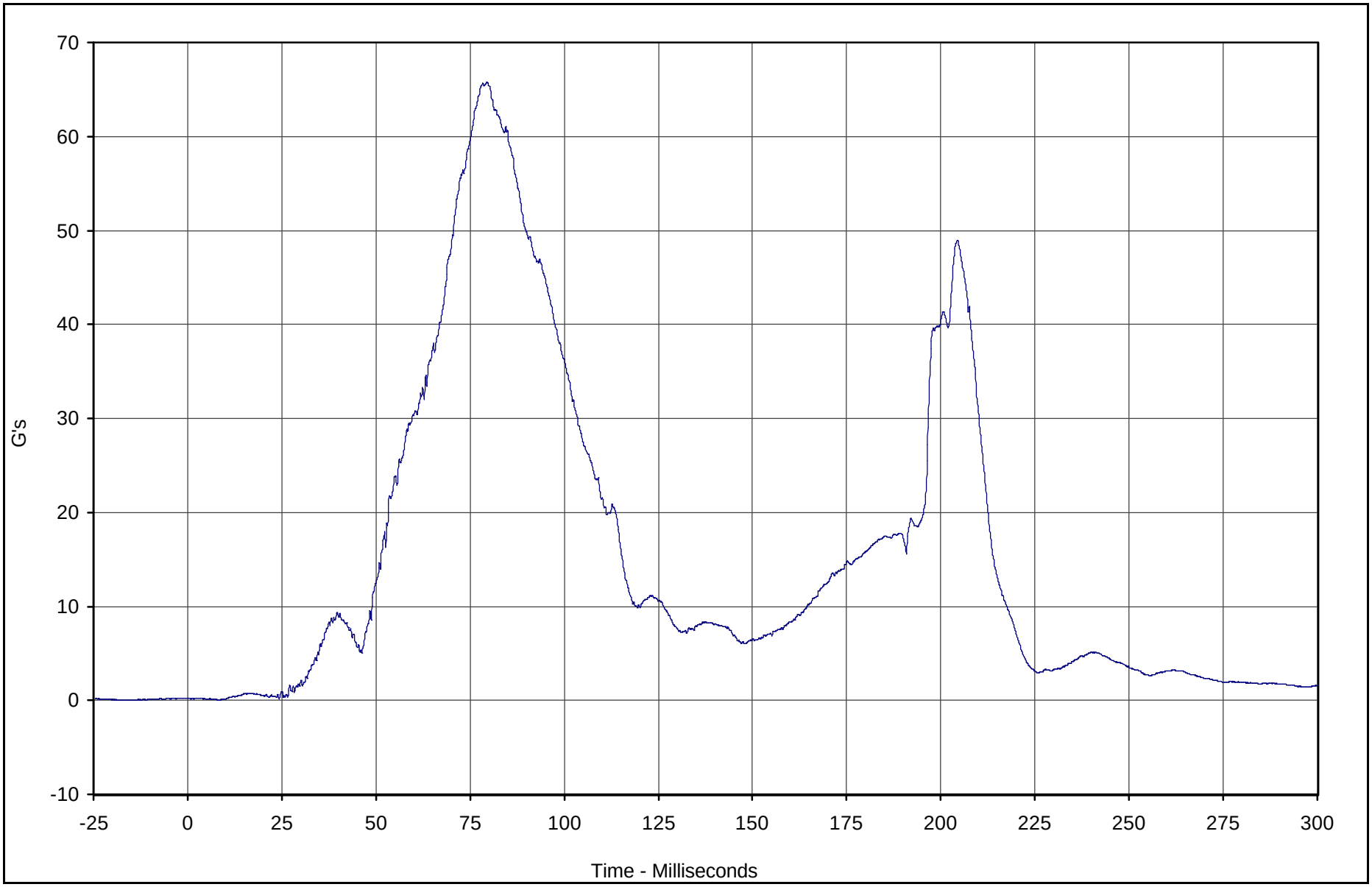
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Head Z	162	FIL	G's	59.2	78.0	-8.9	39.6	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



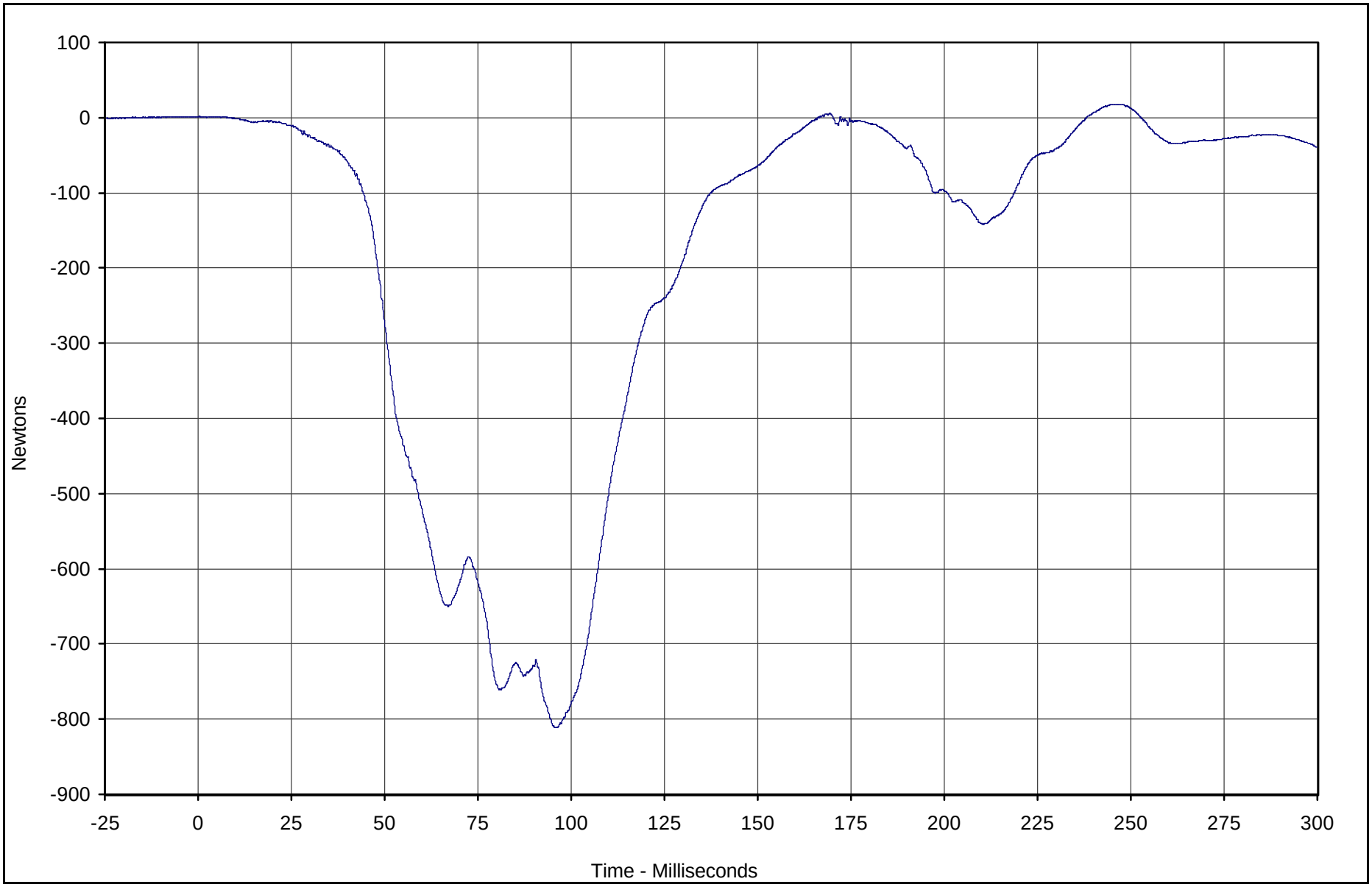
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Head Resultant	160	RES	G's	65.8	79.4	0.0	8.1	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Upper Neck Force X	163	FIL	Newtons	17.9	246.1	-811.4	96.1	1000

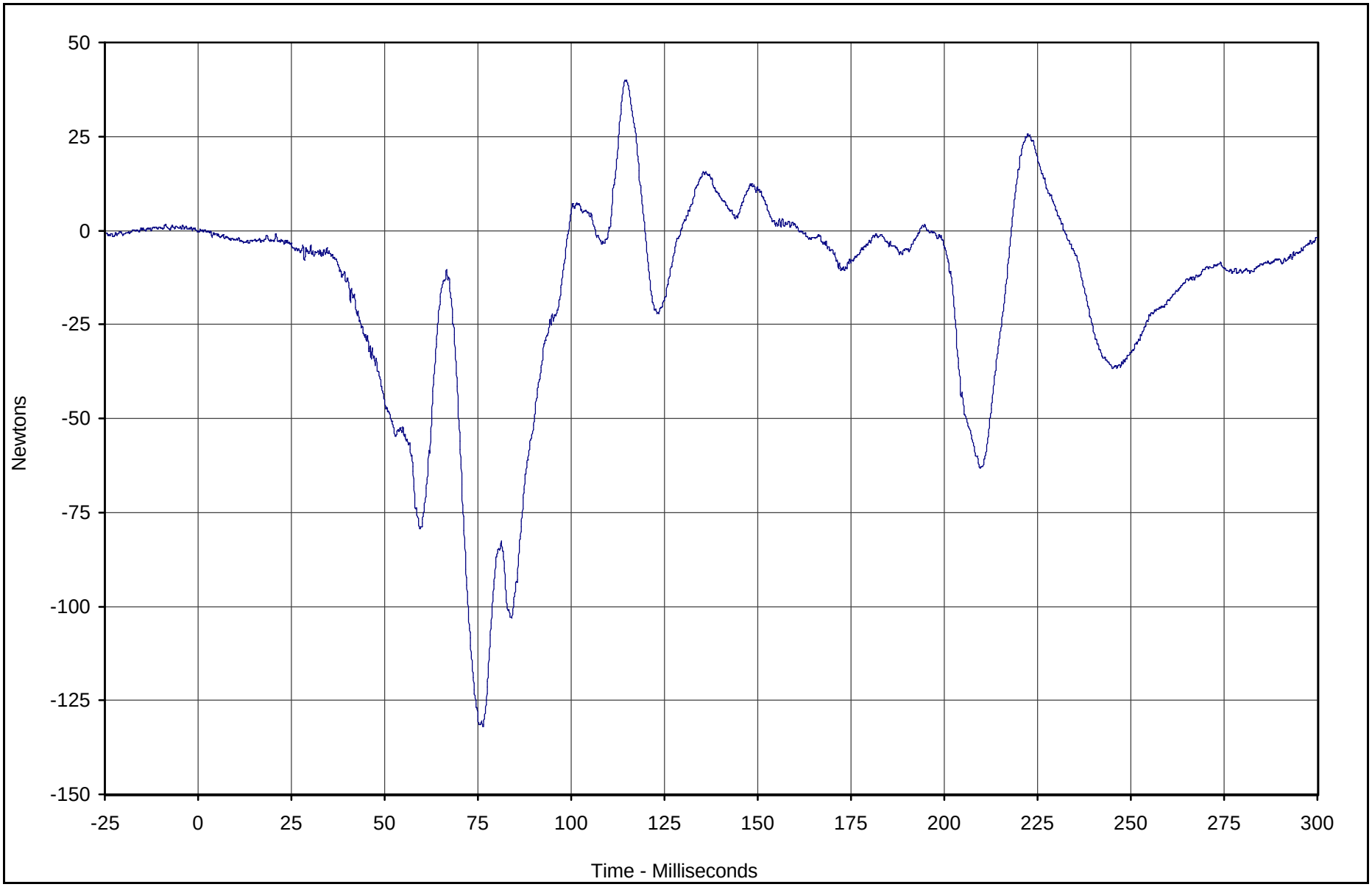
KARCO Engineering

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



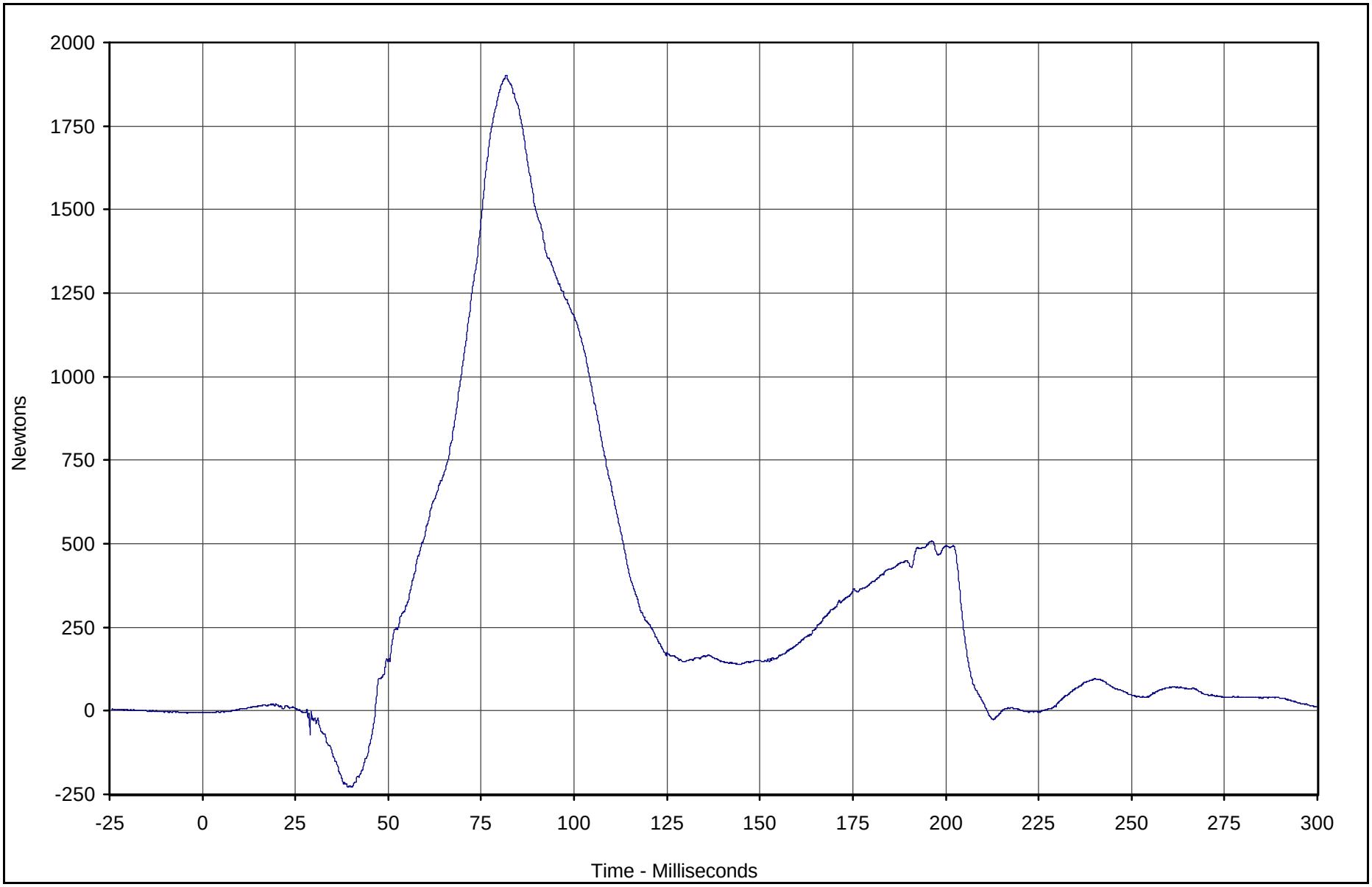
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Upper Neck Force Y	164	FIL	Newtons	40.0	114.8	-132.0	76.3	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



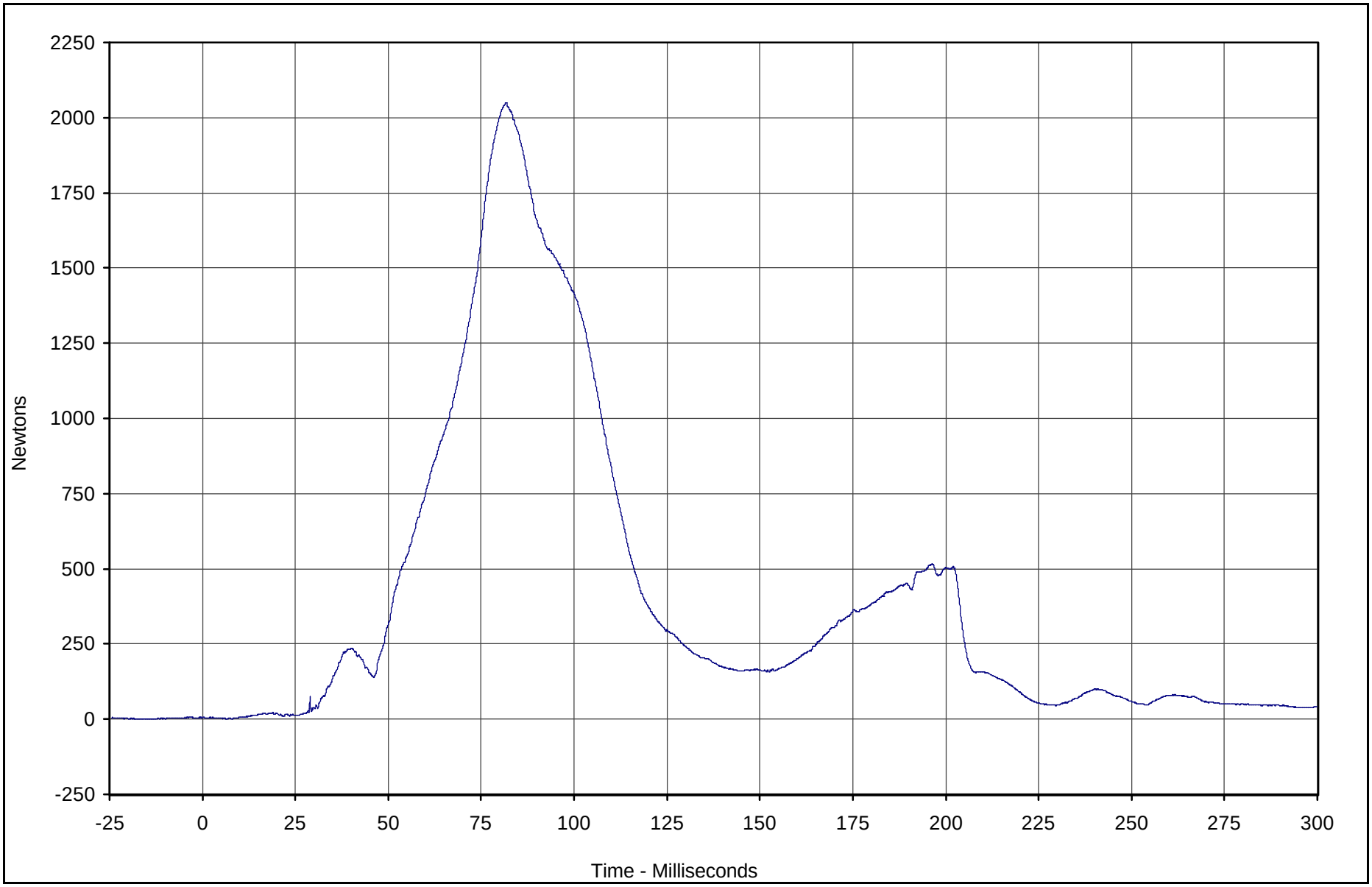
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Upper Neck Force Z	165	FIL	Newtons	1902.0	81.8	-228.5	40.1	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



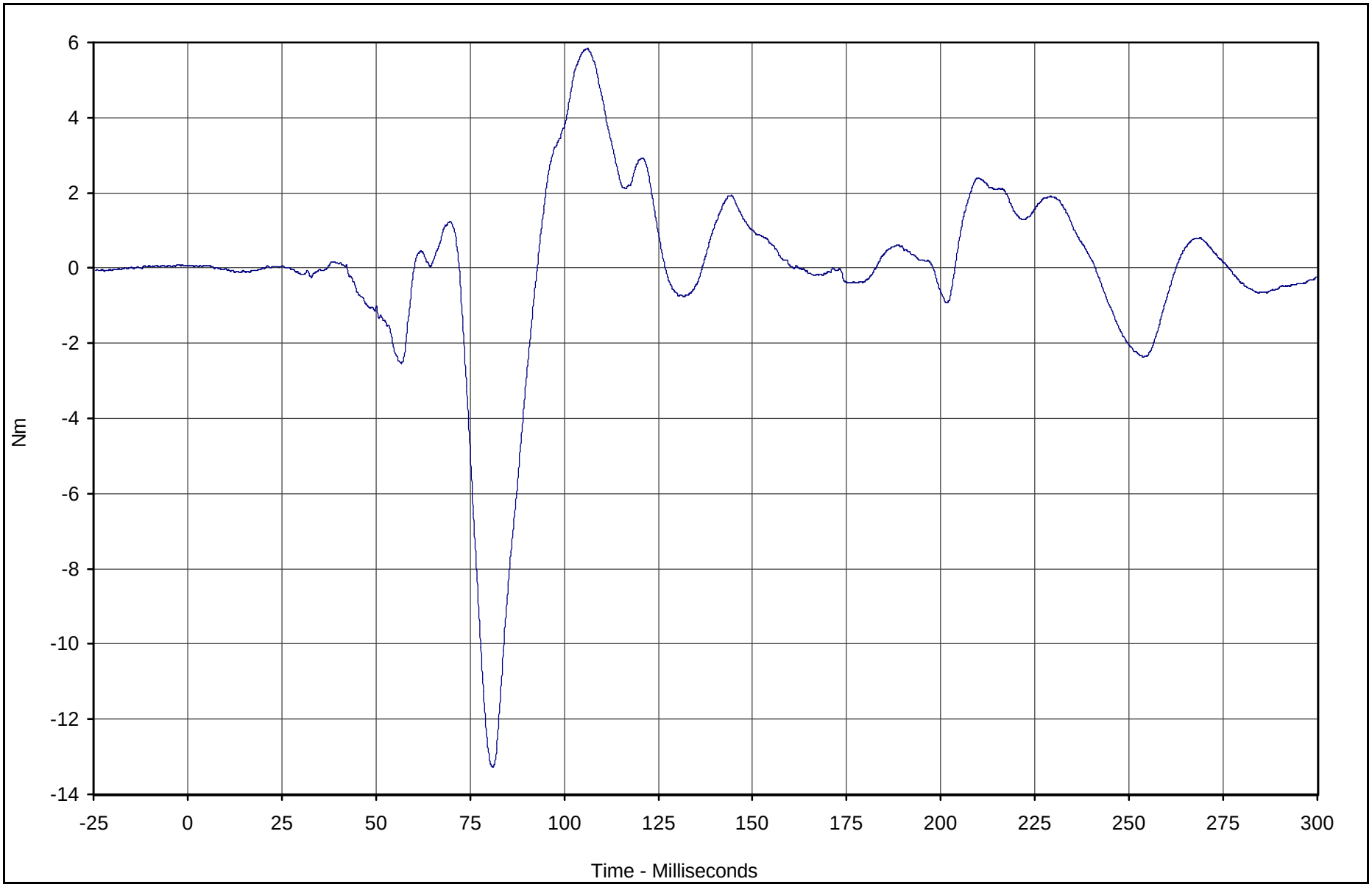
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Upper Neck Force Res.	163	RES	Newtons	2049.6	81.8	1.6	6.7	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



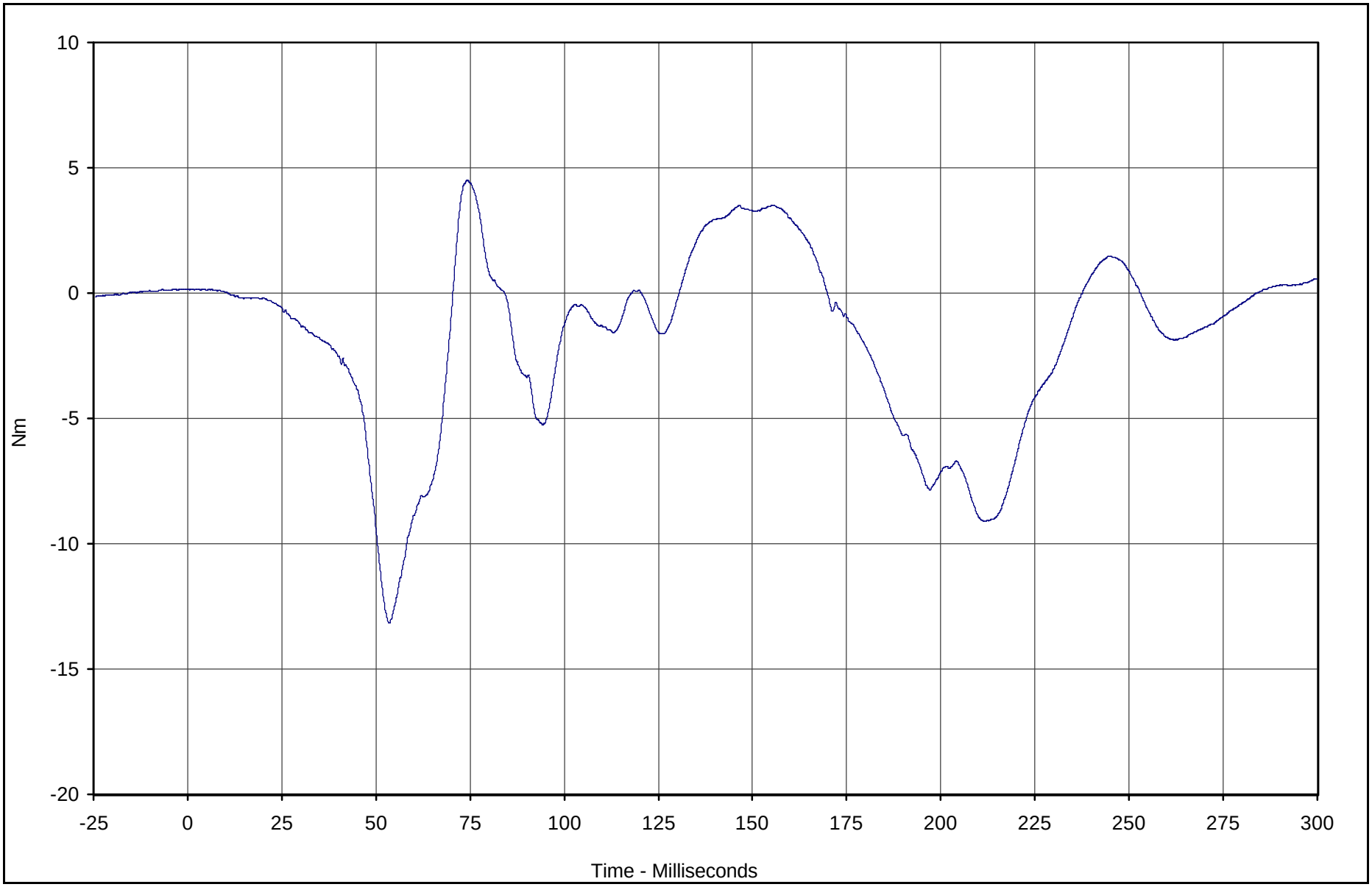
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Upper Neck Moment X	166	FIL	Nm	5.8	106.3	-13.3	81.0	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



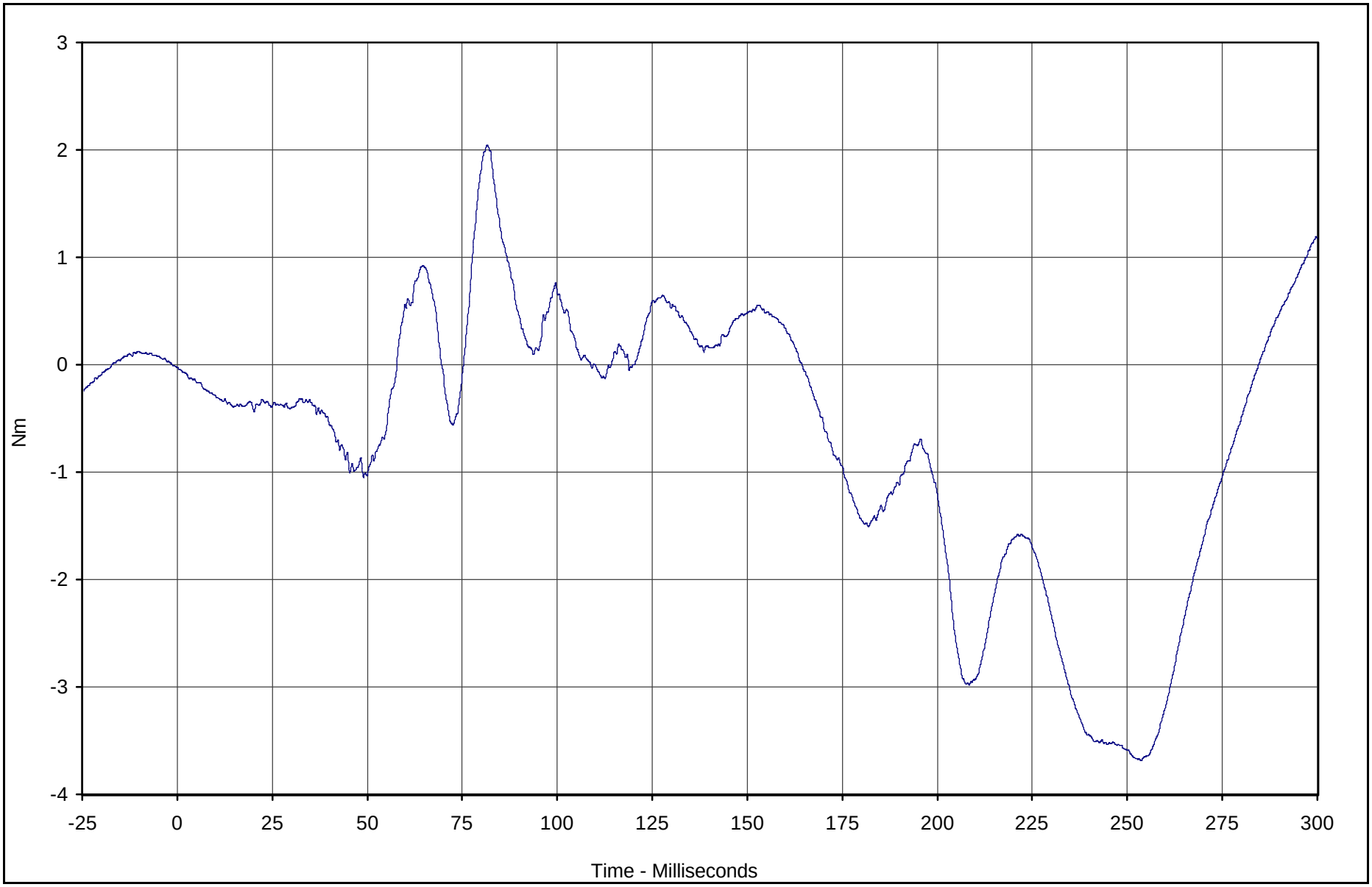
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Upper Neck Moment Y	167	FIL	Nm	4.5	74.3	-13.2	53.5	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



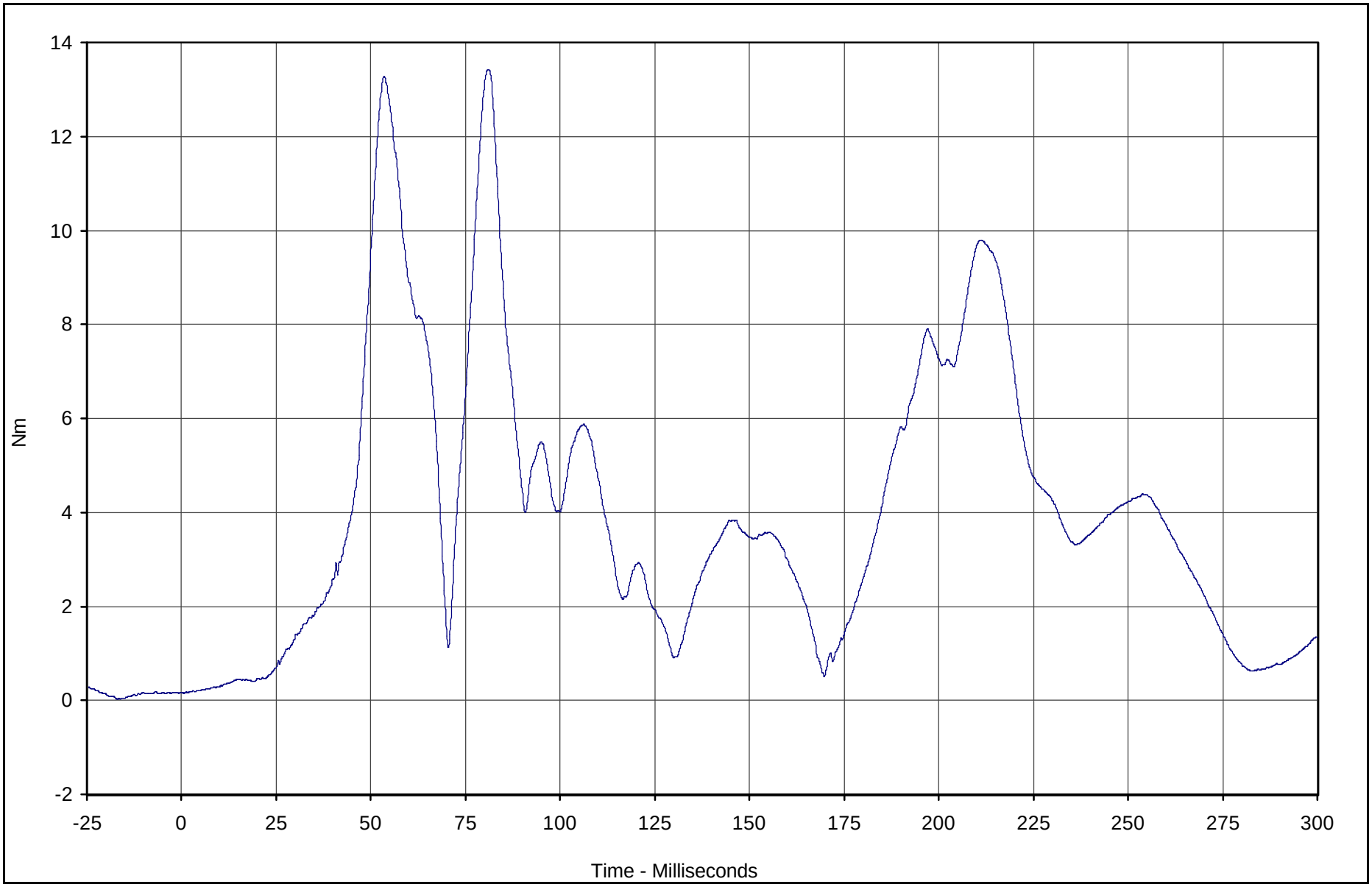
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Upper Neck Moment Z	168	FIL	Nm	2.0	81.6	-3.7	253.7	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



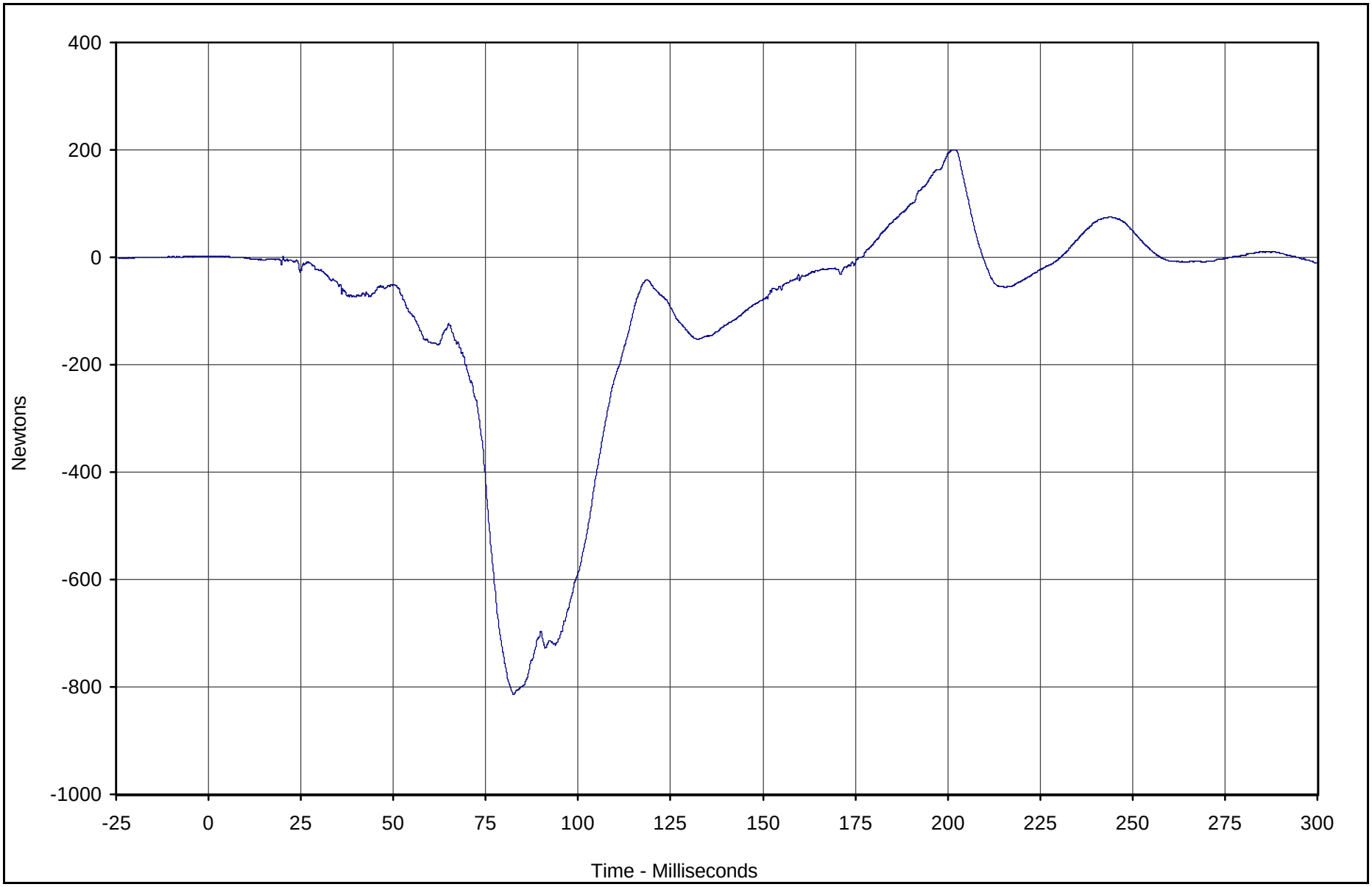
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Upper Neck Mom Res.	166	RES	Nm	13.4	81.0	0.1	0.6	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



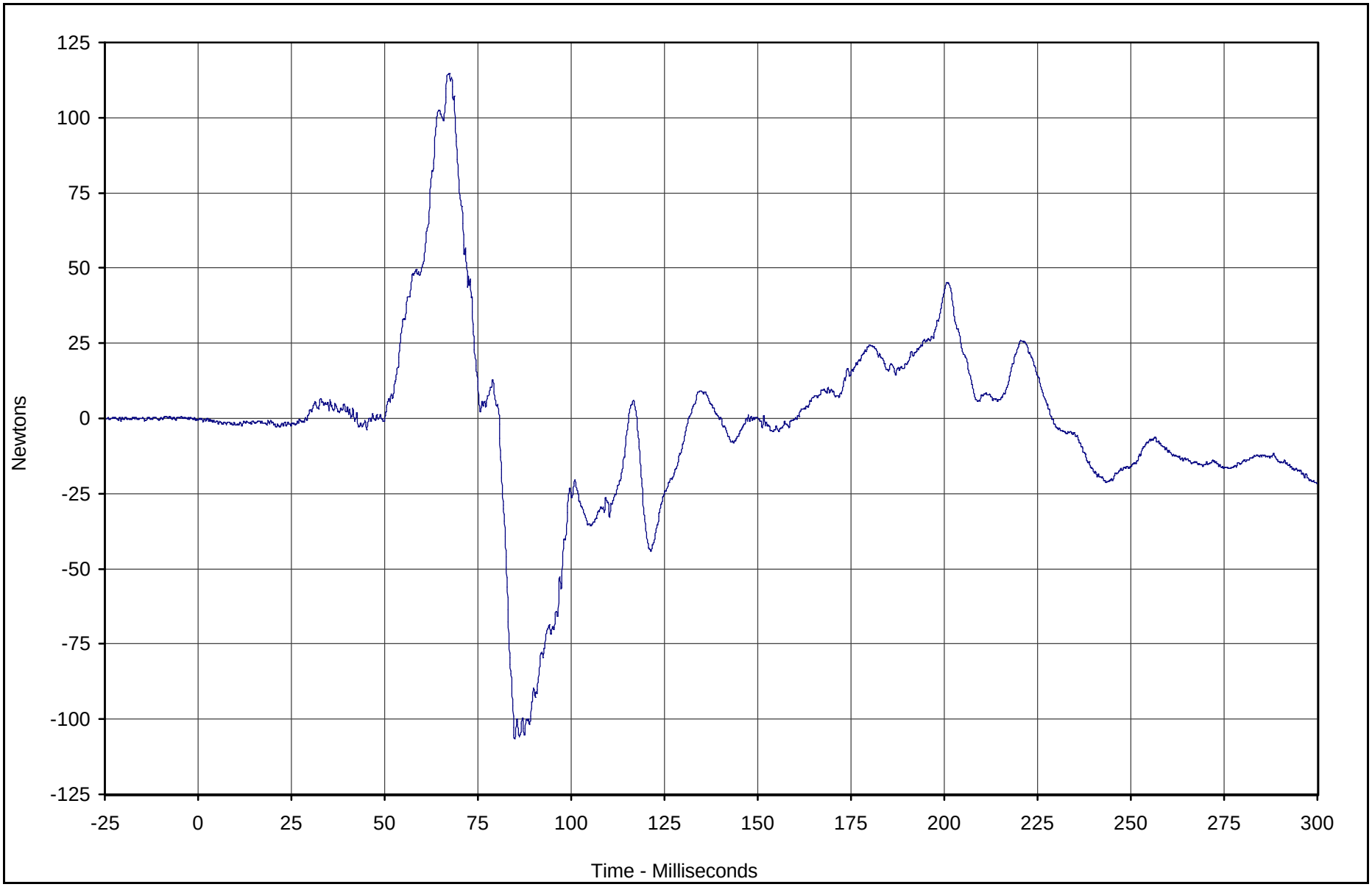
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Lower Neck Force X	169	FIL	Newtons	200.4	201.8	-814.7	82.5	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



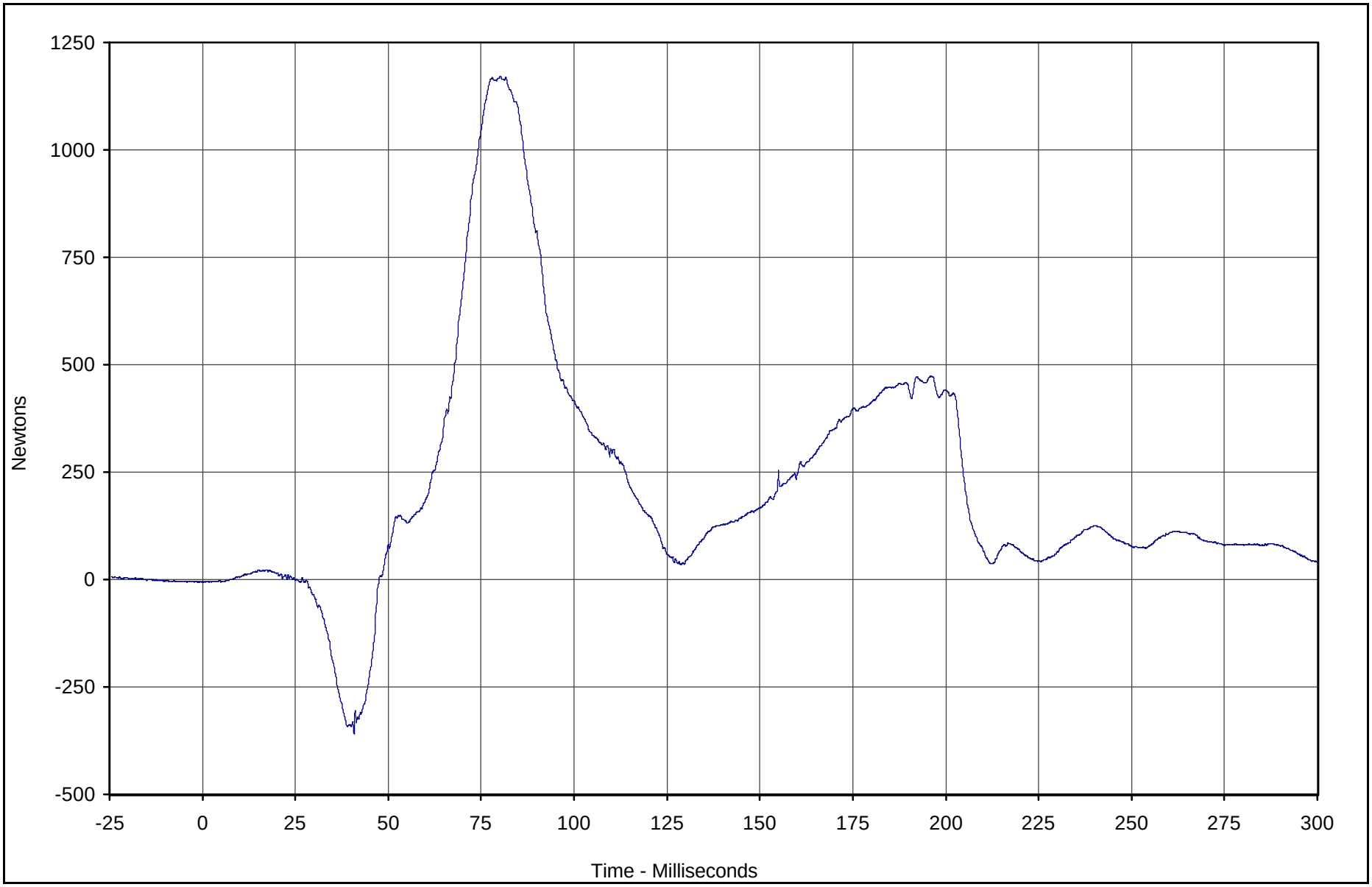
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Lower Neck Force Y	170	FIL	Newtons	114.8	67.3	-106.5	84.8	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



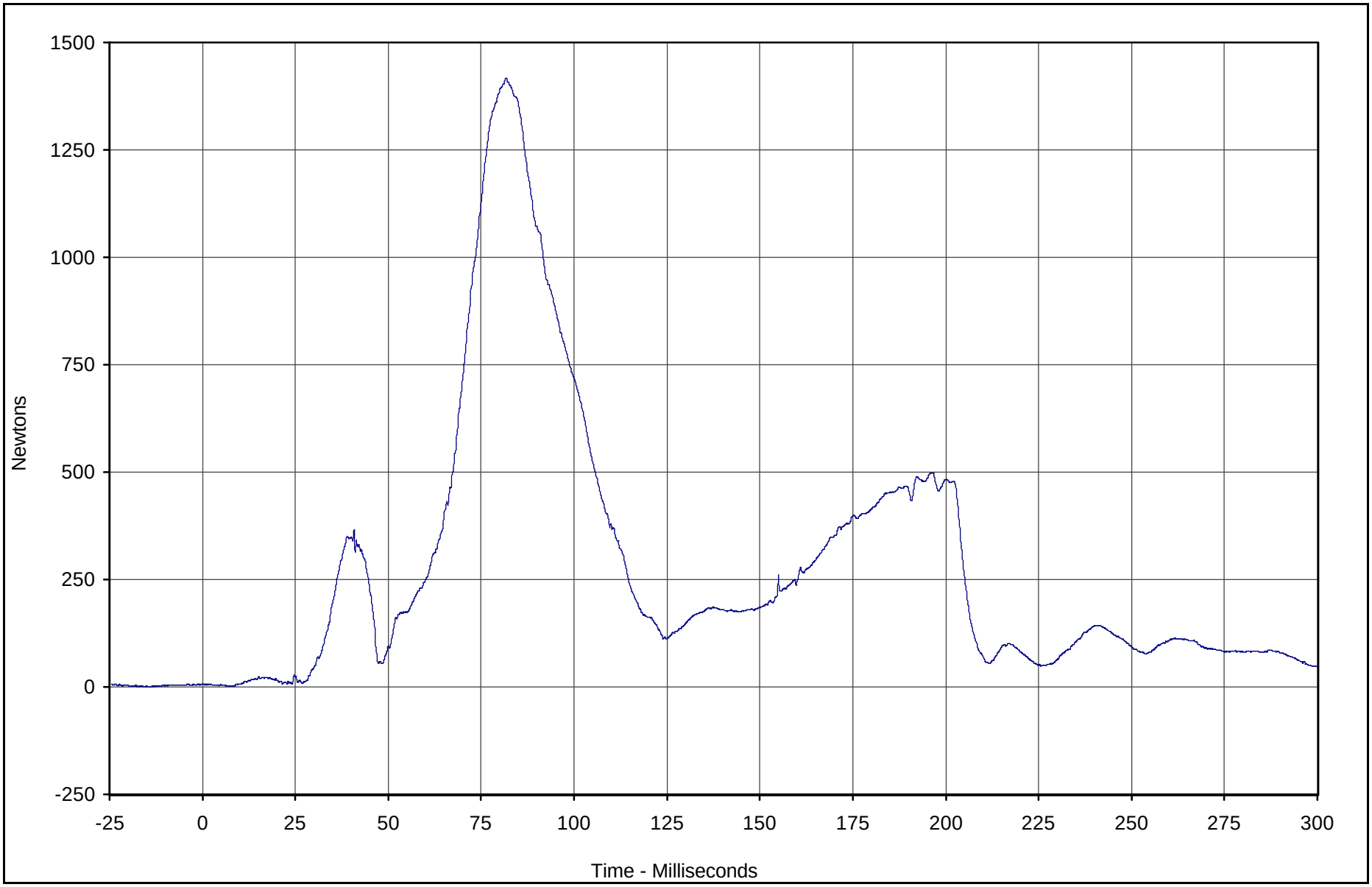
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Lower Neck Force Z	171	FIL	Newtons	1171.6	80.2	-358.9	40.8	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



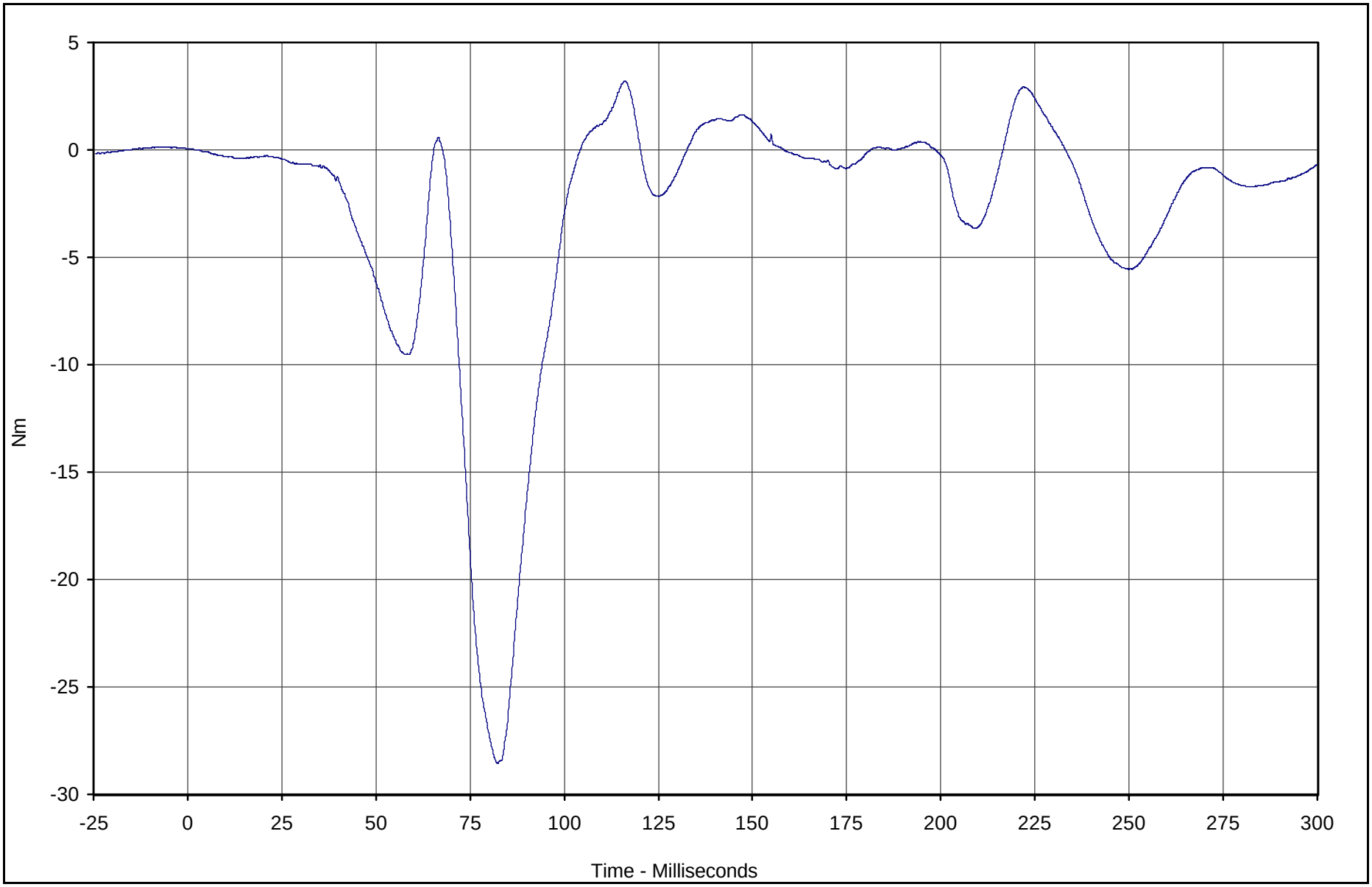
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Lower Neck Force Res.	169	RES	Newtons	1416.5	81.7	1.2	8.2	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



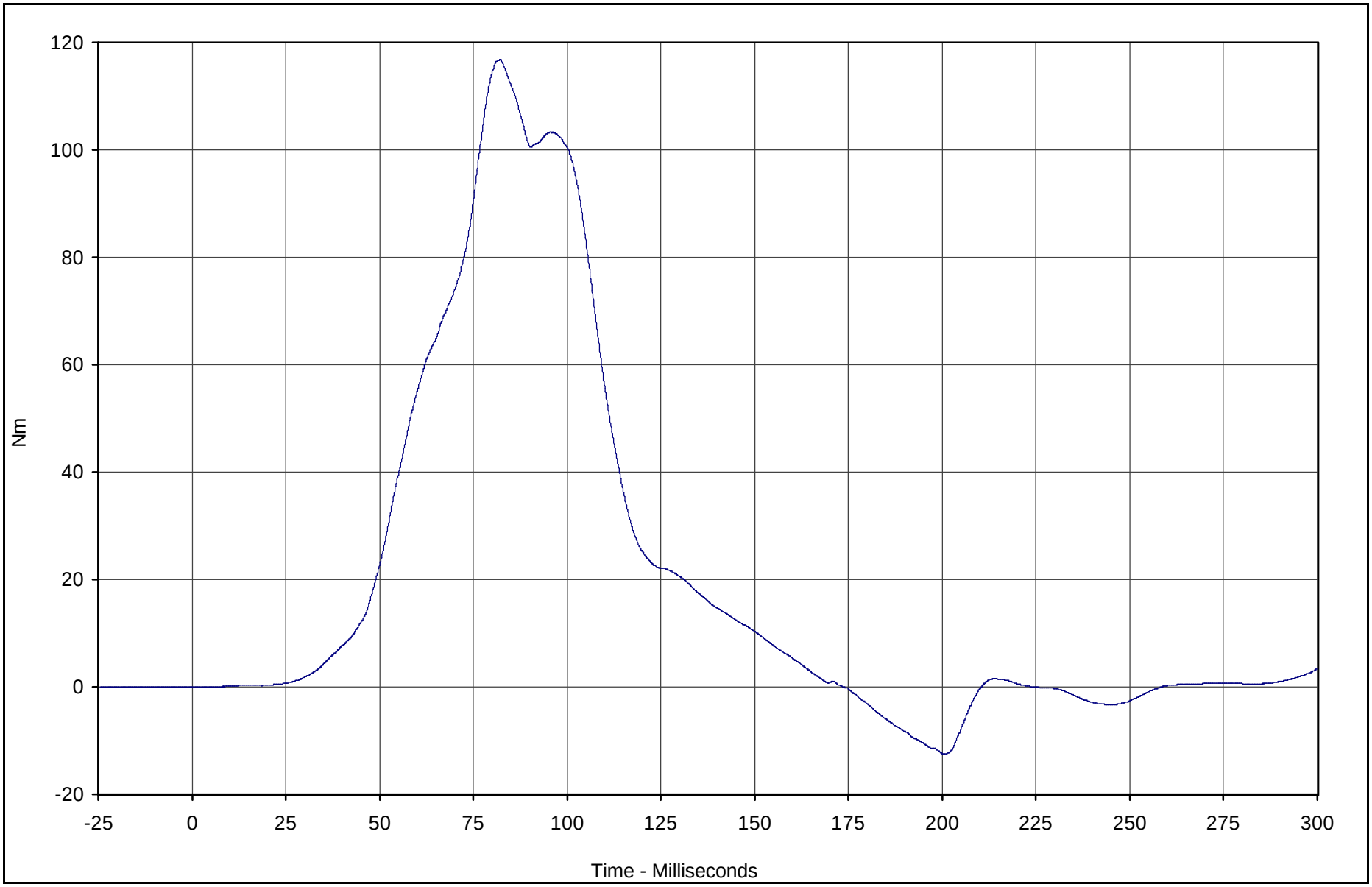
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Lower Neck Moment X	172	FIL	Nm	3.2	116.2	-28.6	82.4	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



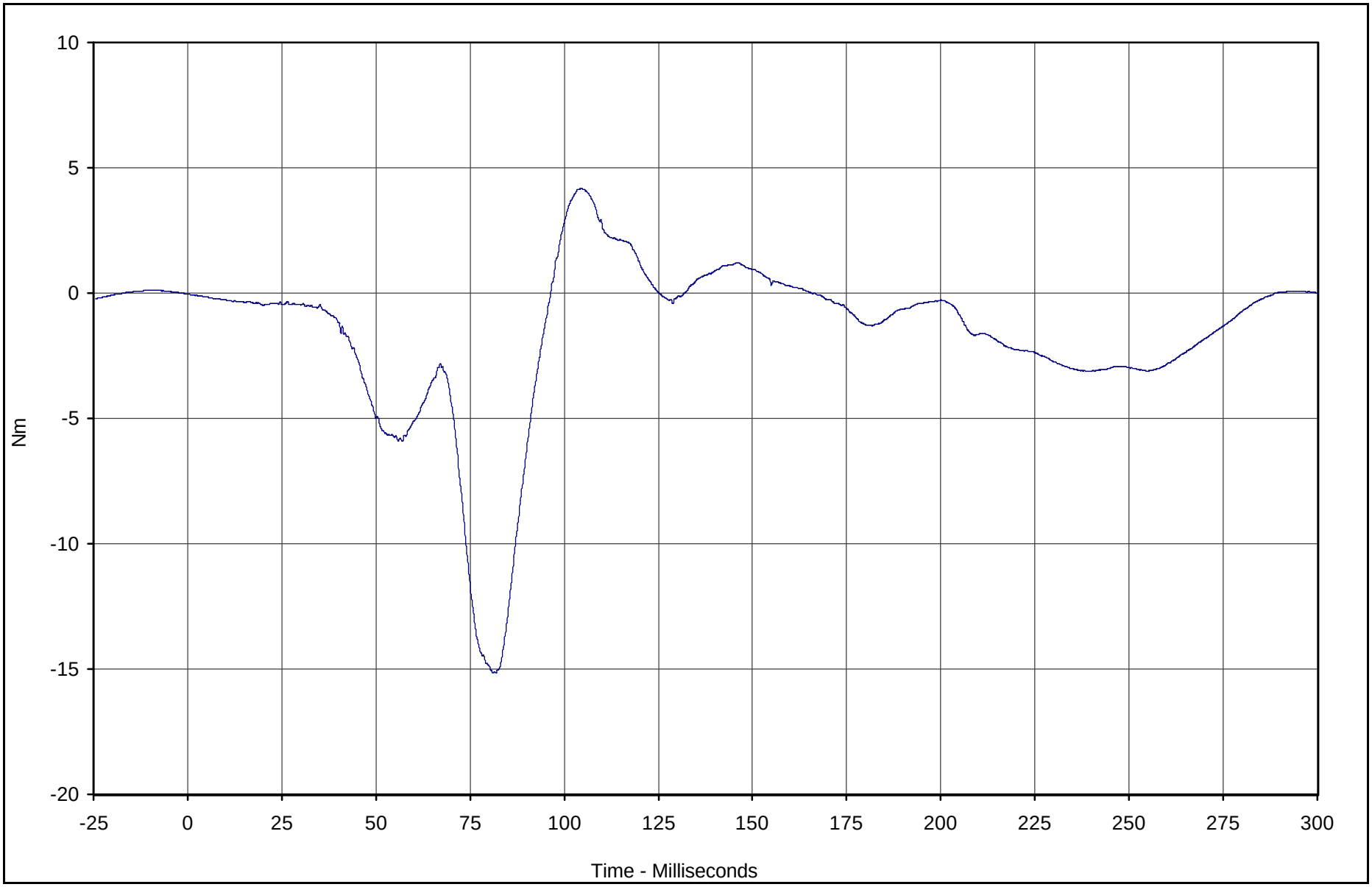
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Lower Neck Moment Y	173	FIL	Nm	116.8	82.1	-12.5	200.9	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



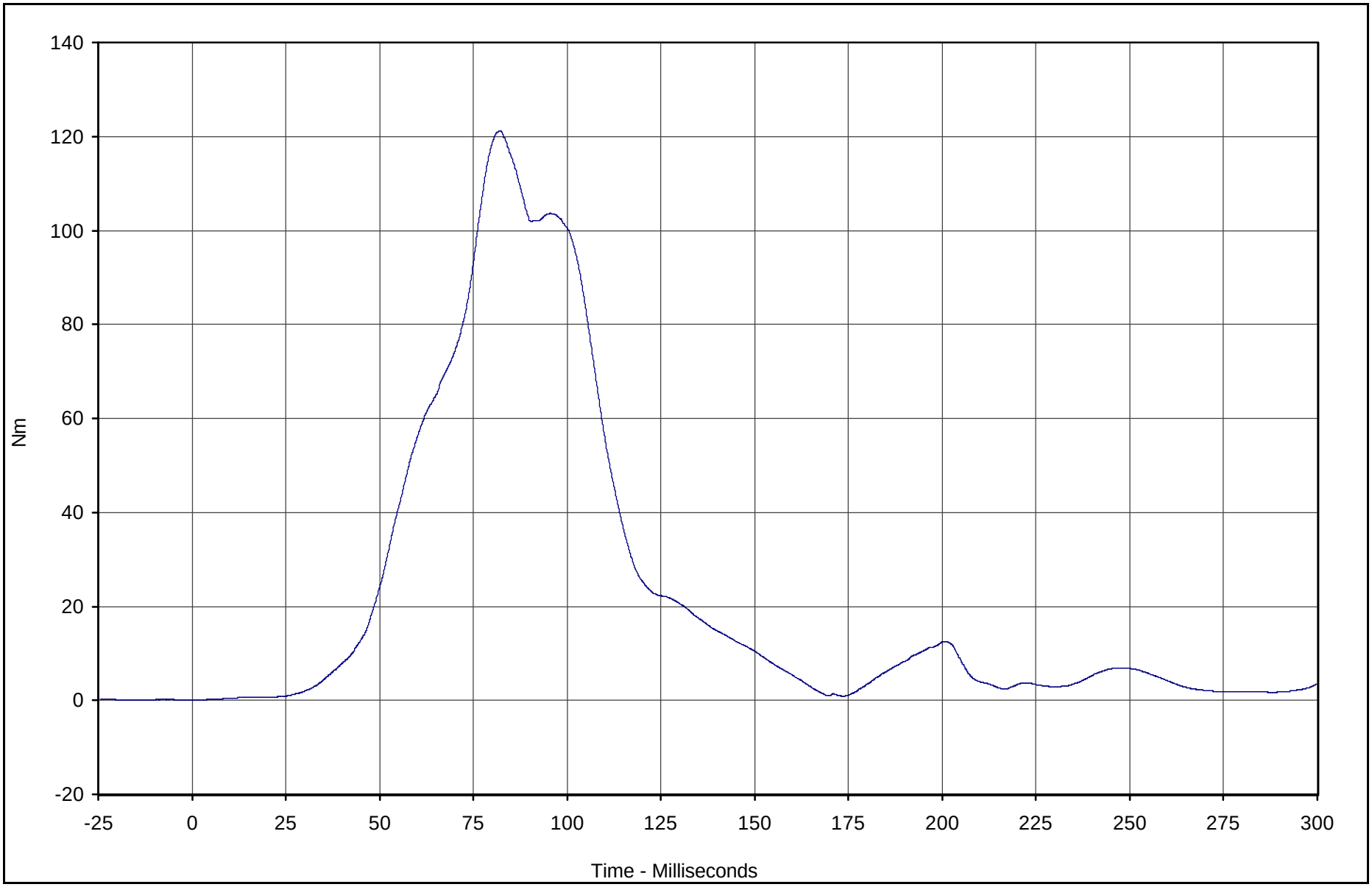
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Lower Neck Moment Z	174	FIL	Nm	4.2	104.6	-15.2	81.8	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



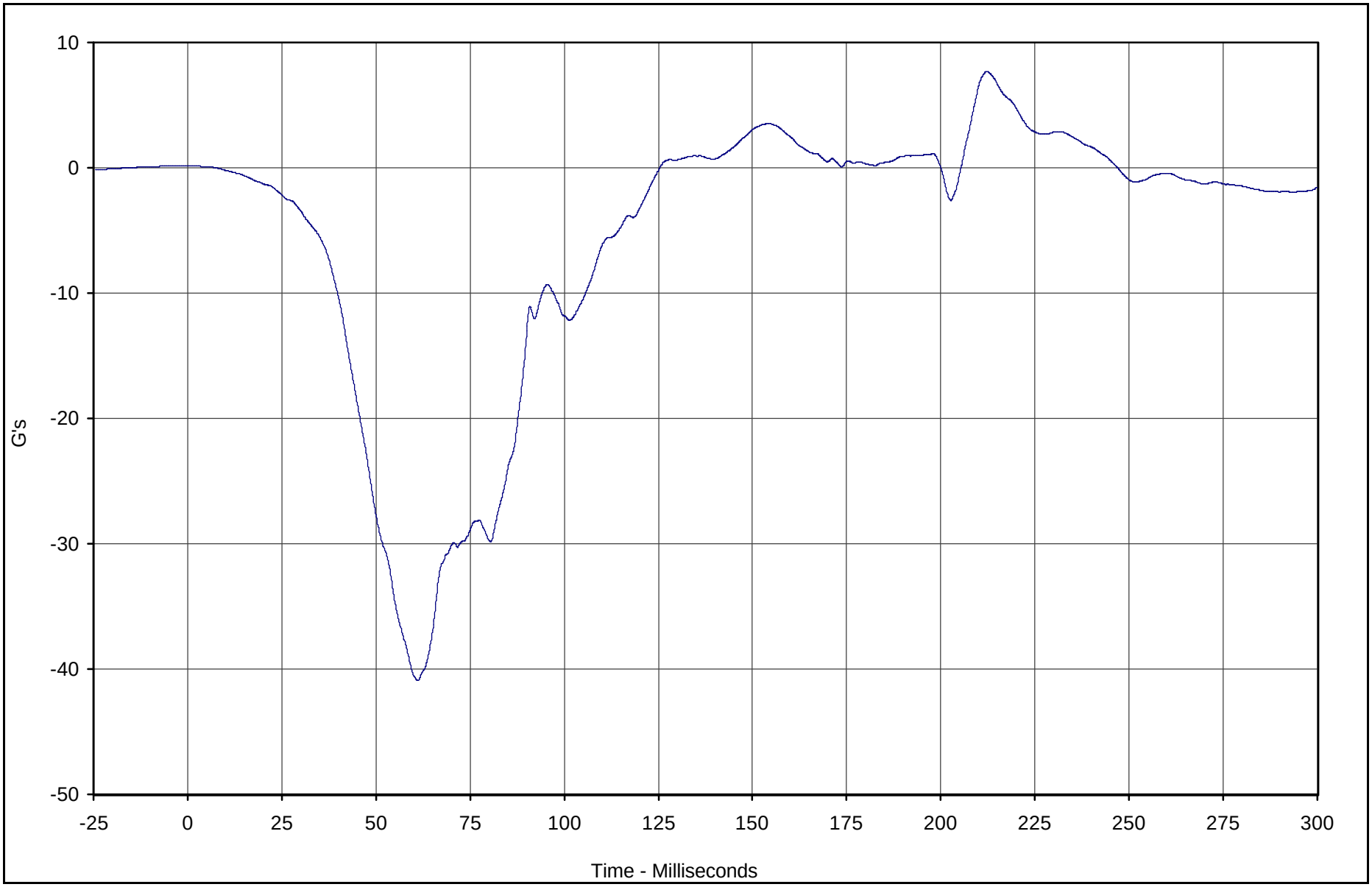
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Lower Neck Mom Res.	172	RES	Nm	121.2	82.2	0.1	0.1	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



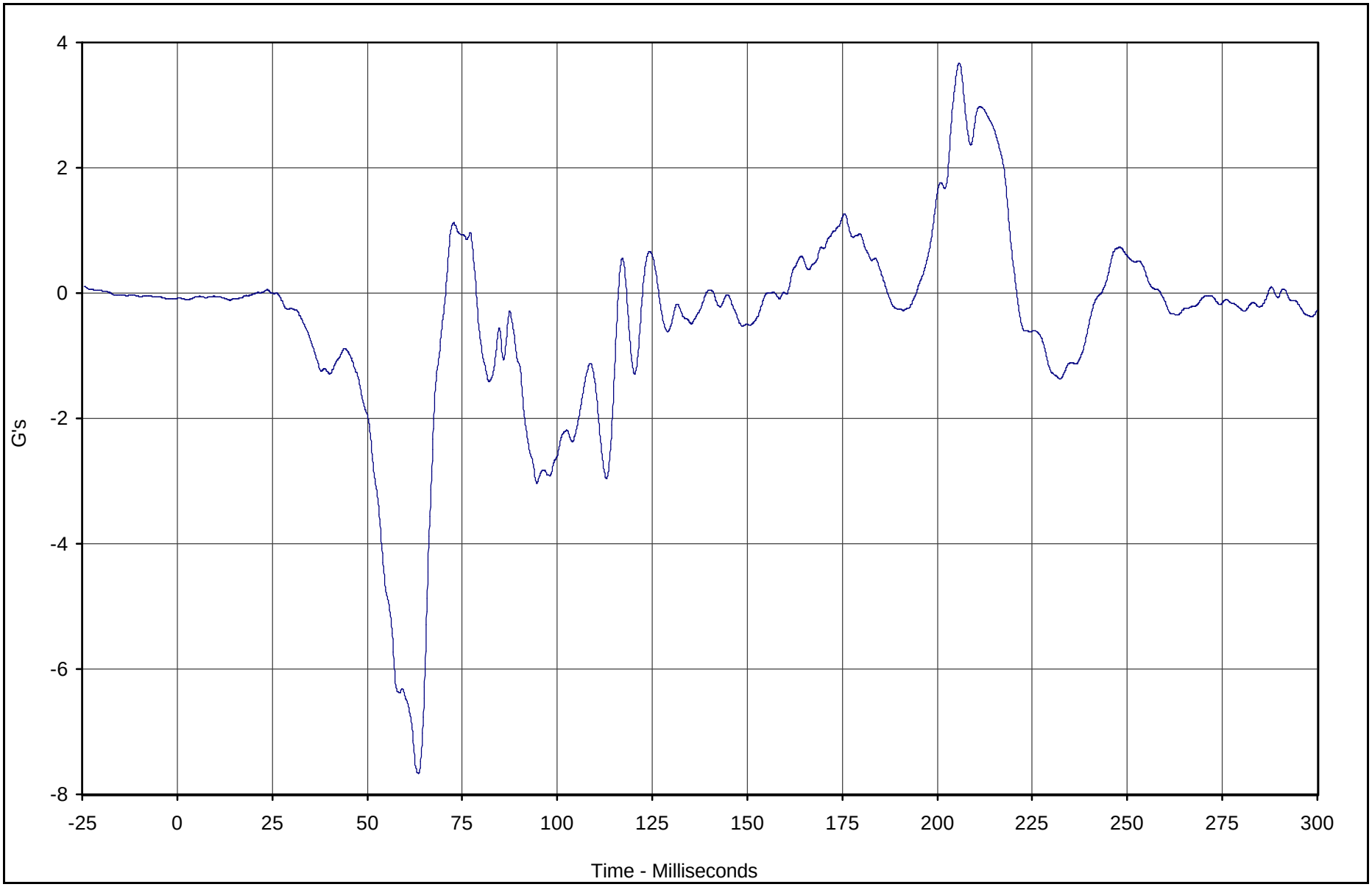
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Chest X	175	FIL	G's	7.7	212.3	-40.9	61.1	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Chest Y	176	FIL	G's	3.7	205.8	-7.7	63.5	180

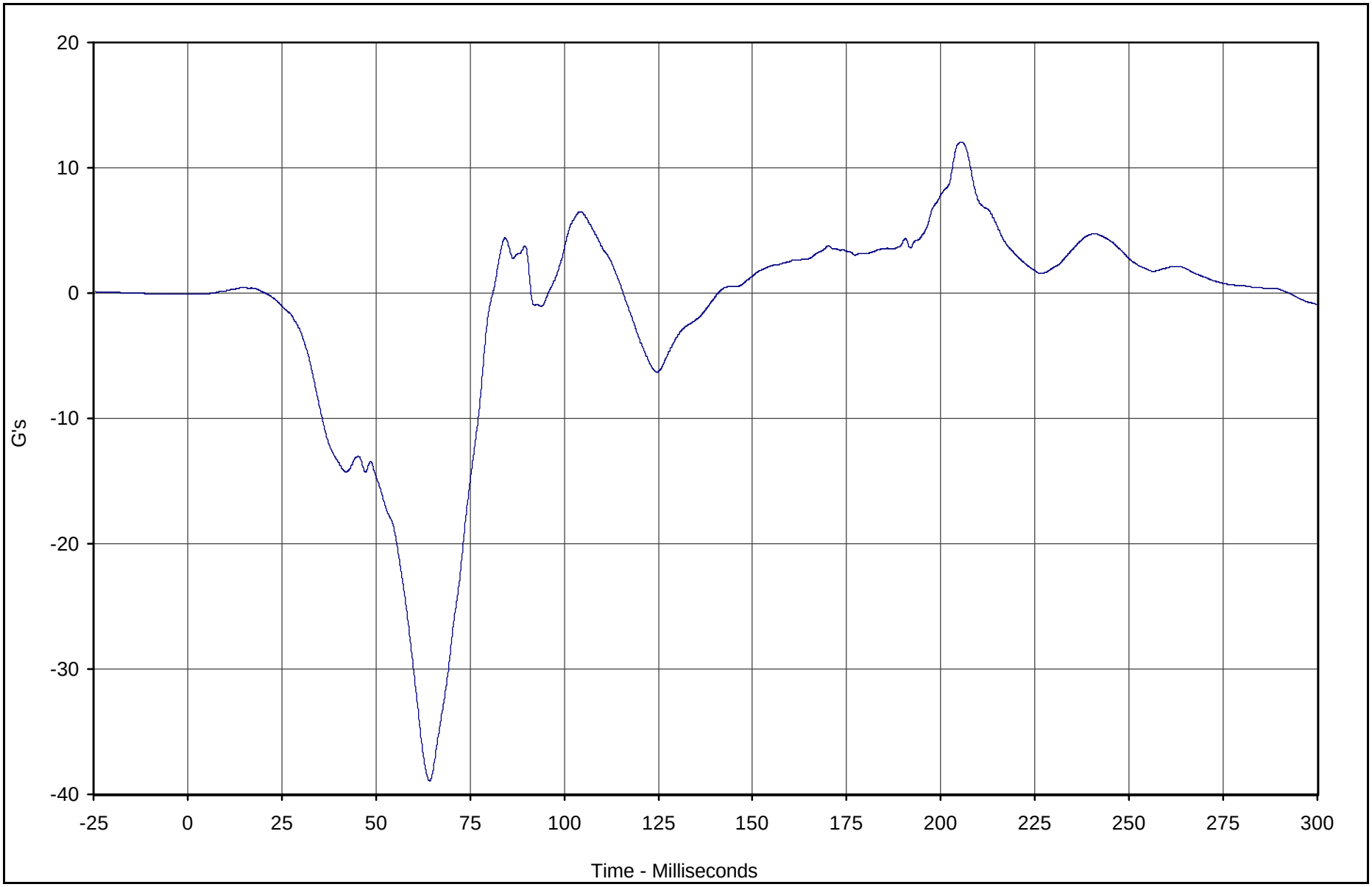
KARCO Engineering

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



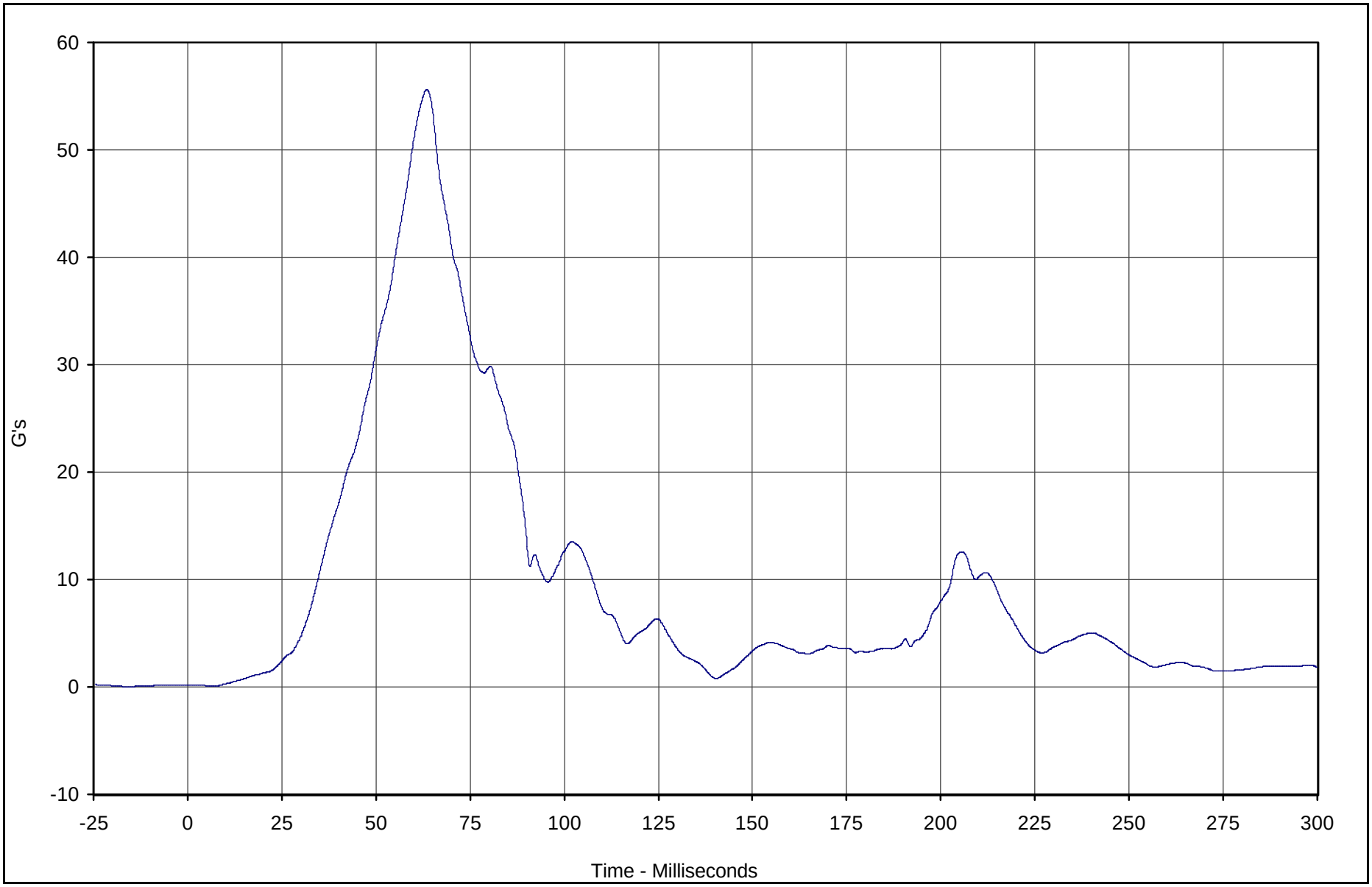
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Chest Z	177	FIL	G's	12.0	205.5	-38.9	64.3	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



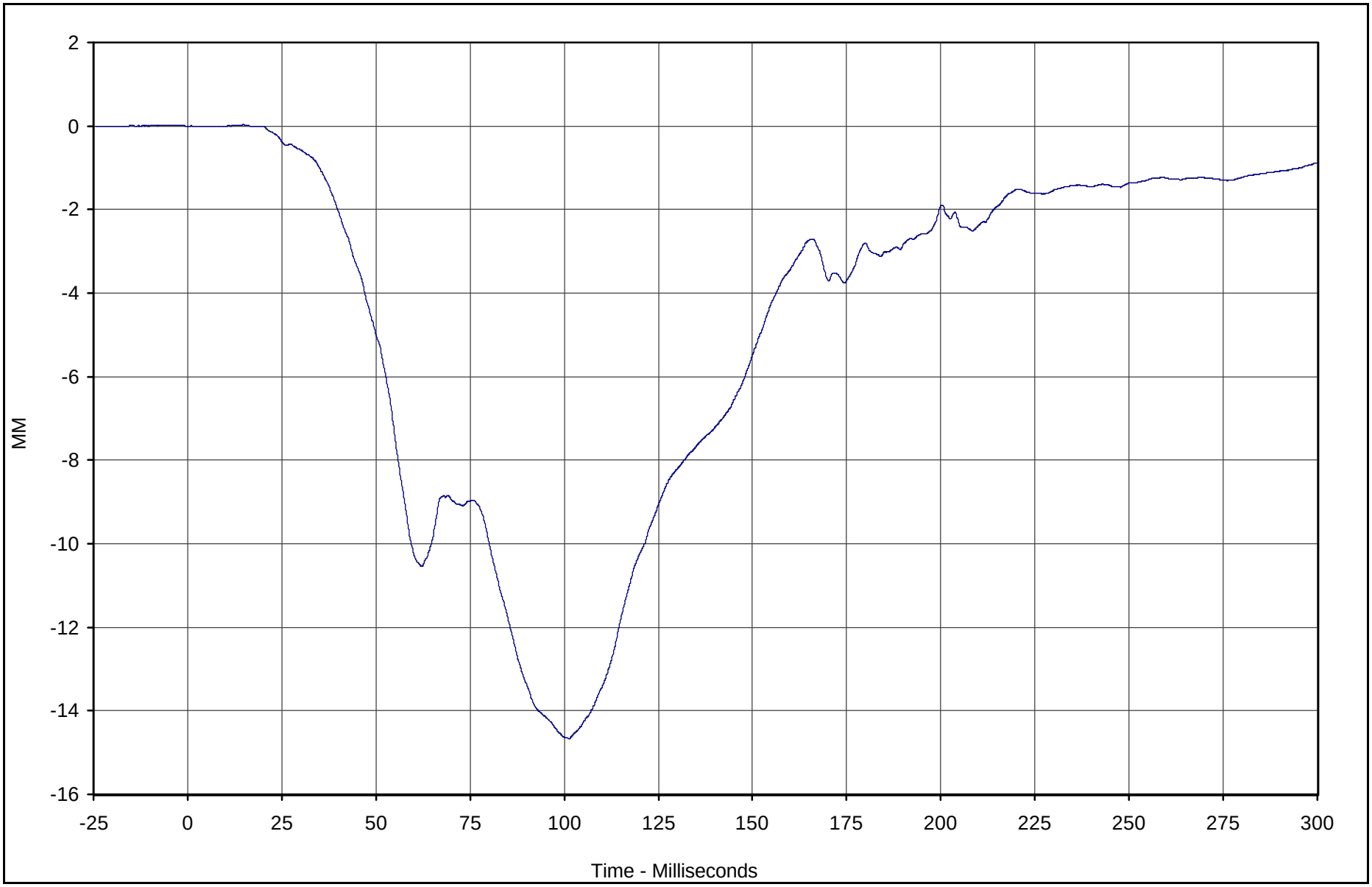
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Chest Resultant	177	RES	G's	55.6	63.5	0.1	6.6	180

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



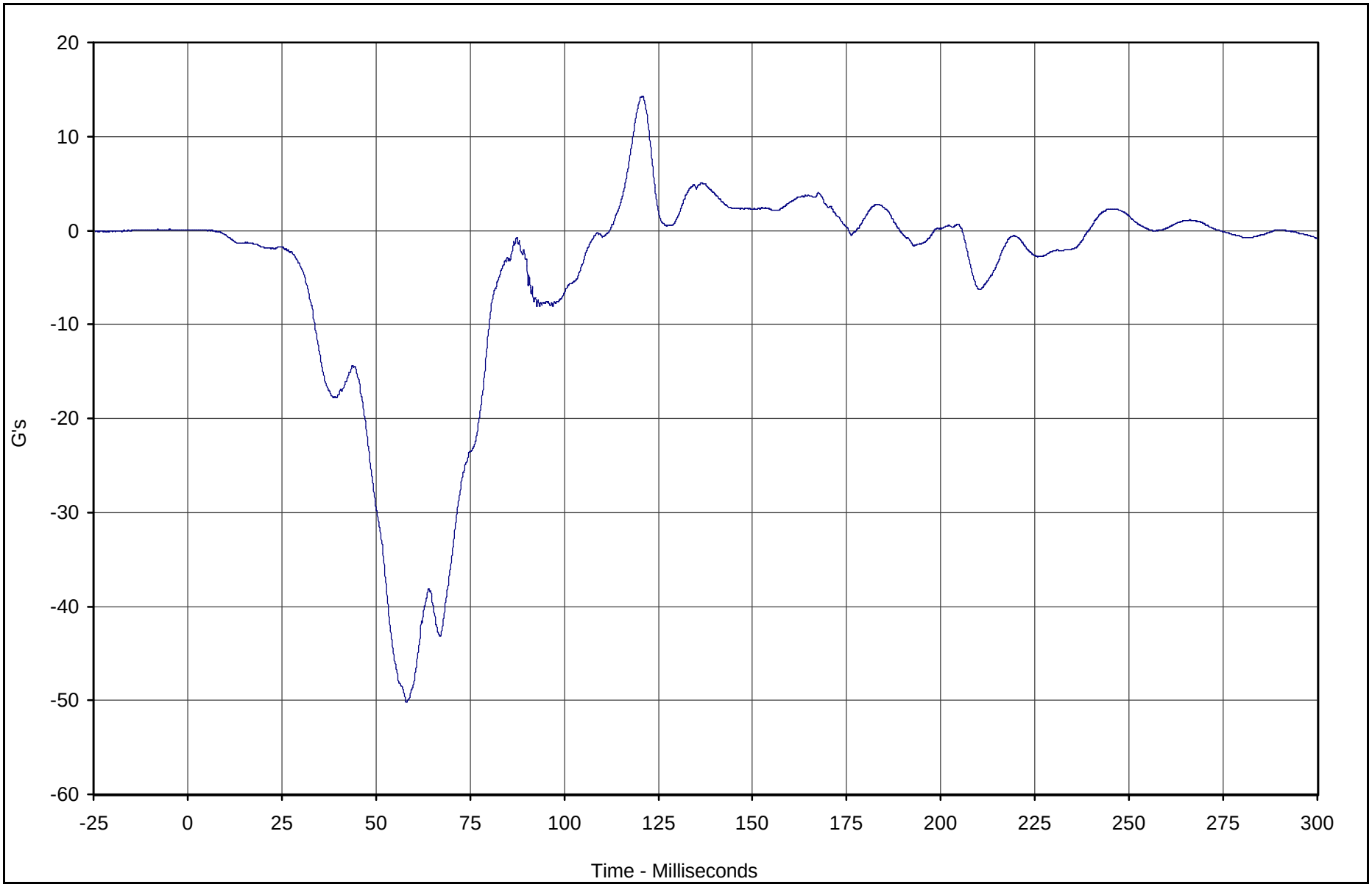
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Chest Displacement	178	FIL	MM	0.0	14.9	-14.7	101.3	600

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



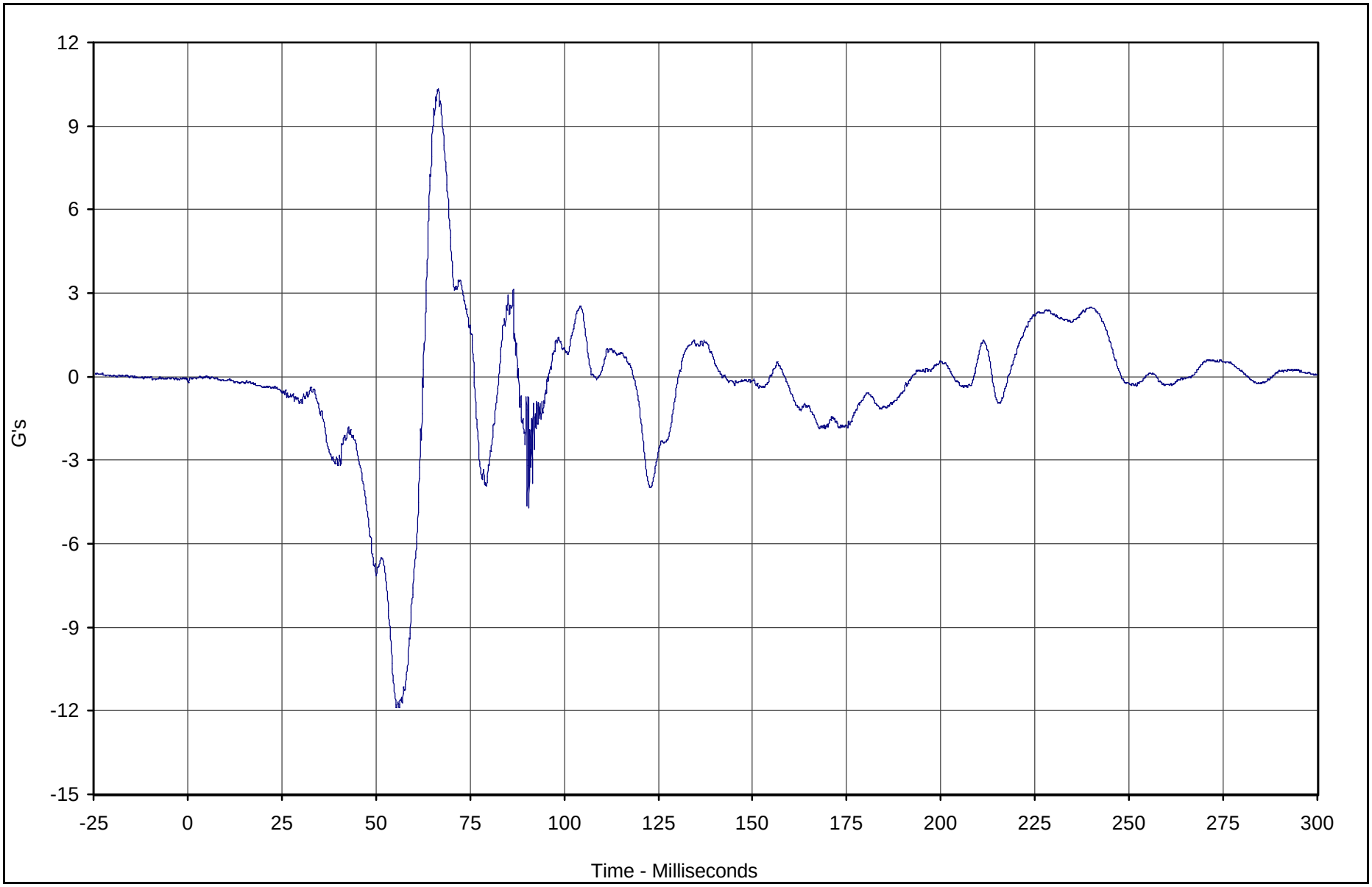
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Pelvis X	179	FIL	G's	14.3	120.8	-50.2	58.1	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



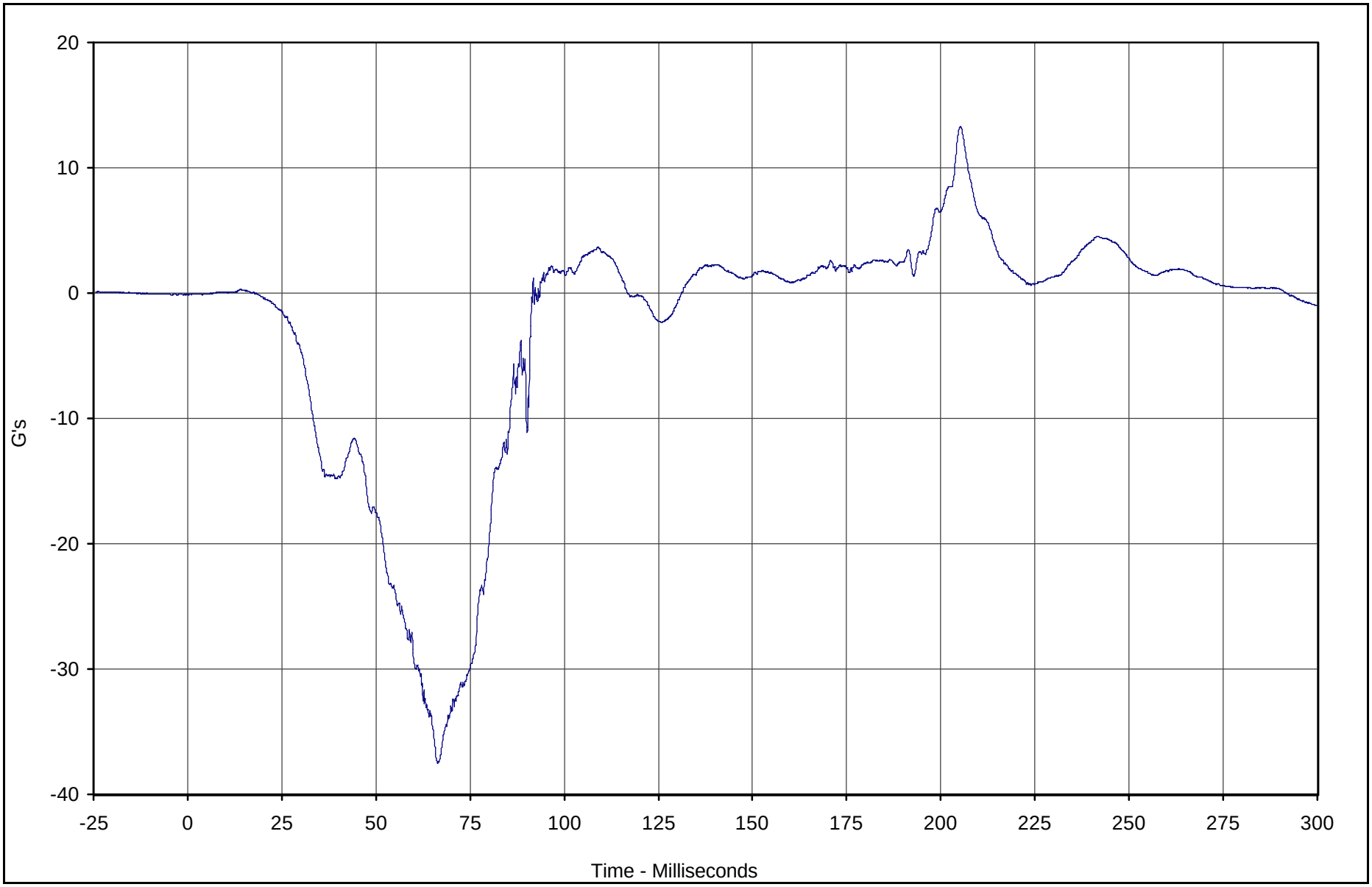
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Pelvis Y	180	FIL	G's	10.3	66.6	-11.9	55.5	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



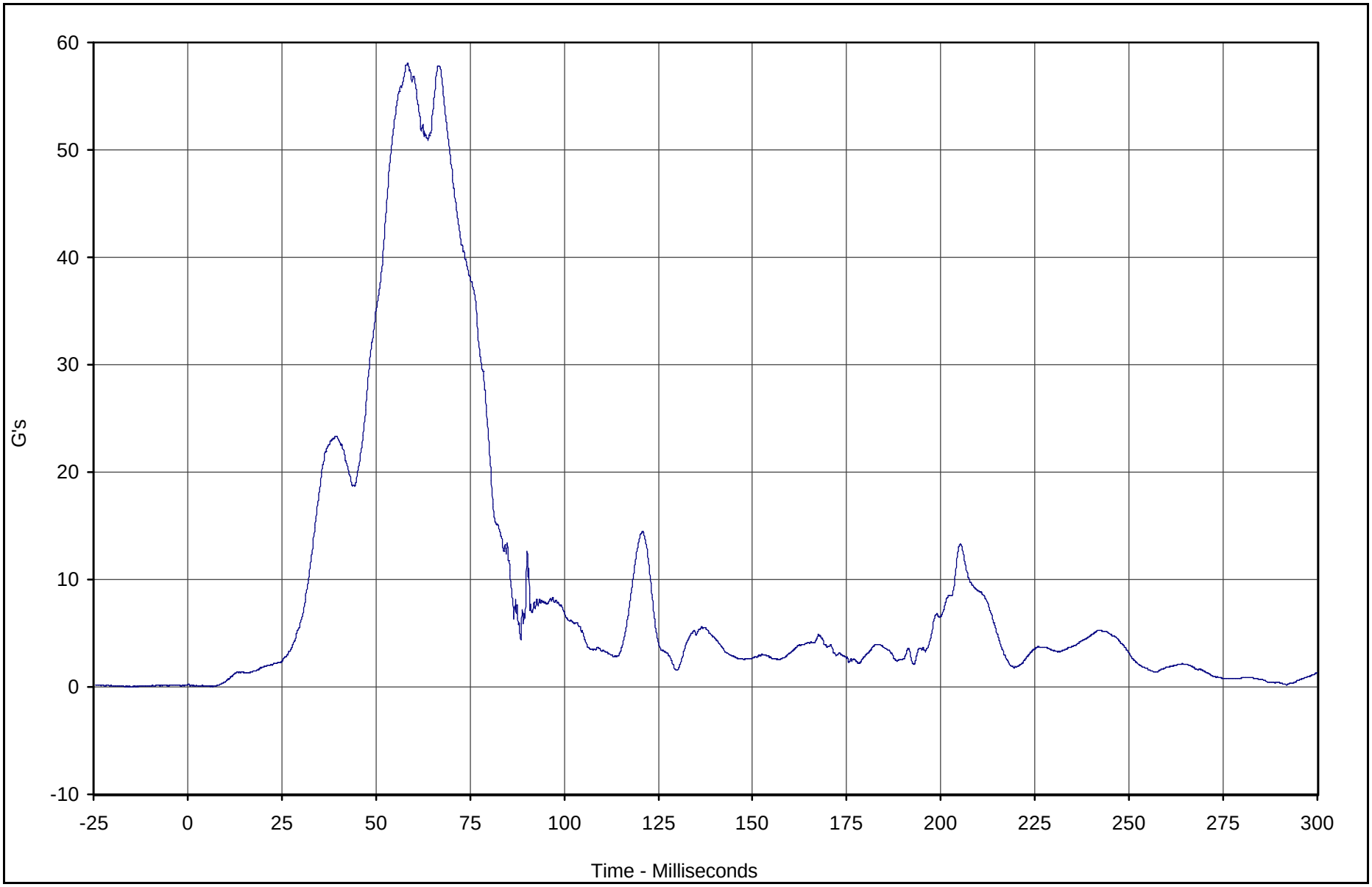
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Pelvis Z	181	FIL	G's	13.3	205.3	-37.6	66.3	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



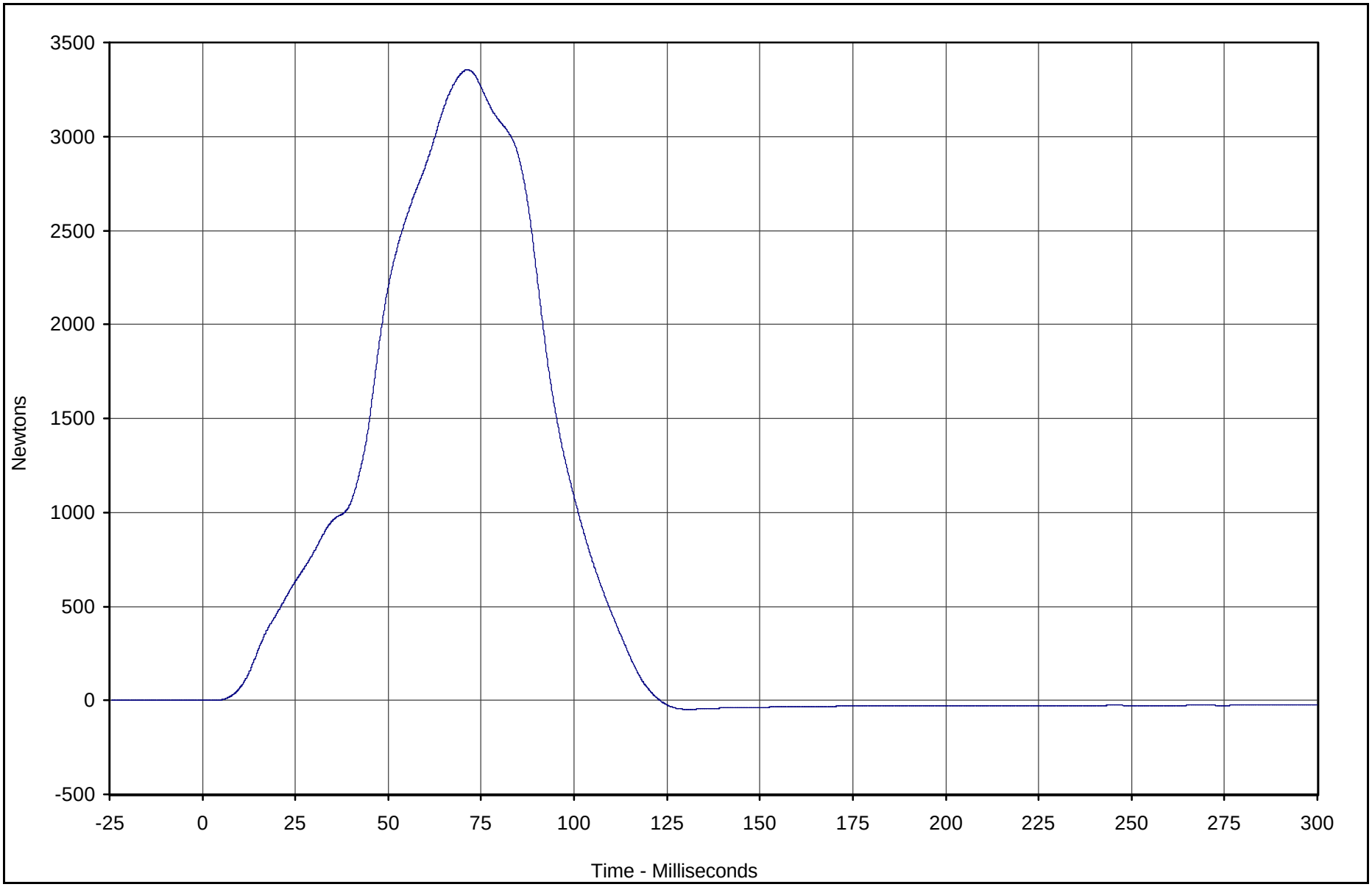
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Pelvis Resultant	179	RES	G's	58.1	58.4	0.0	6.6	1000

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



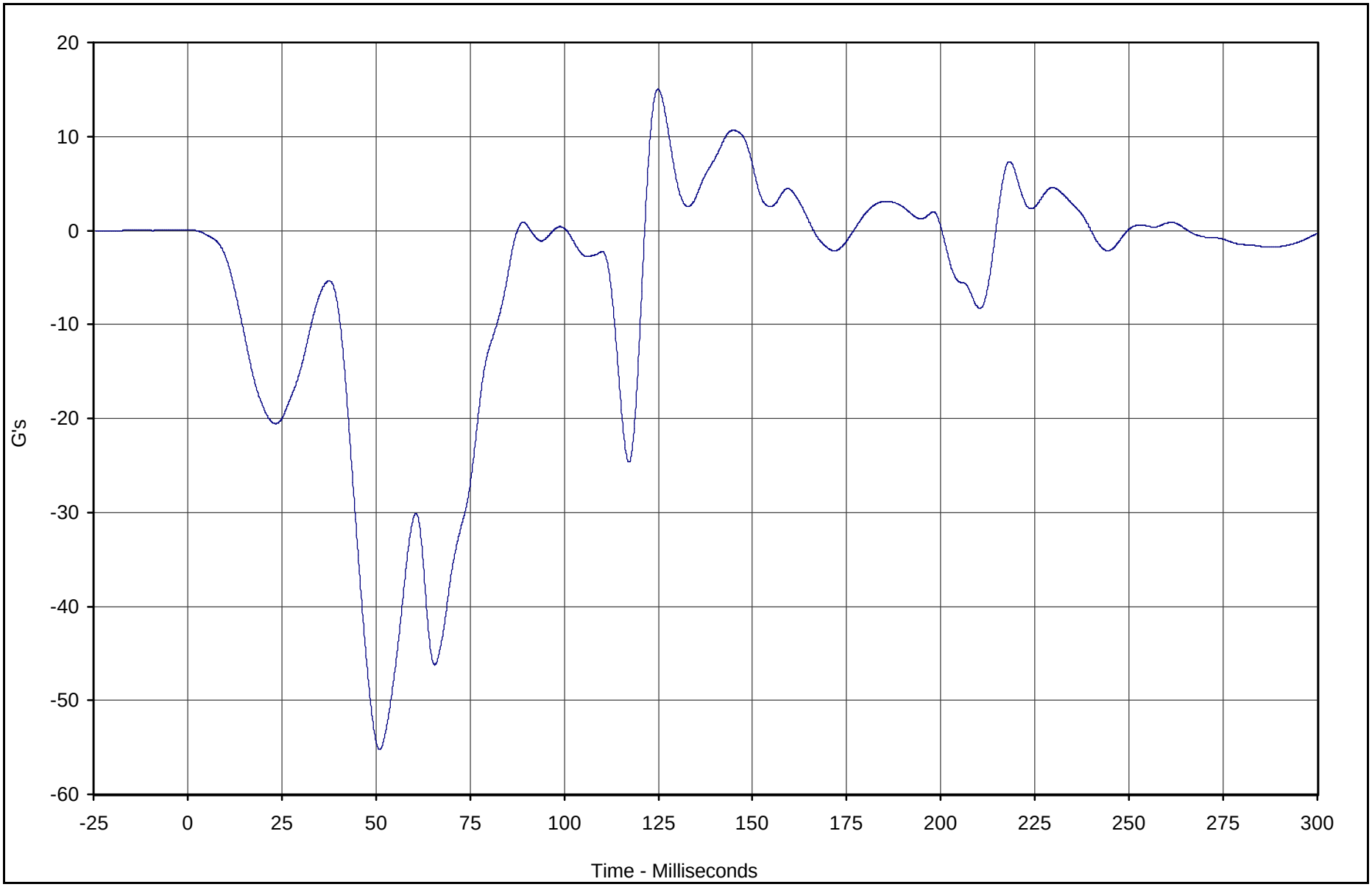
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Car Seat Tether Load	182	FIL	Newtons	3354.3	71.3	-47.6	130.9	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



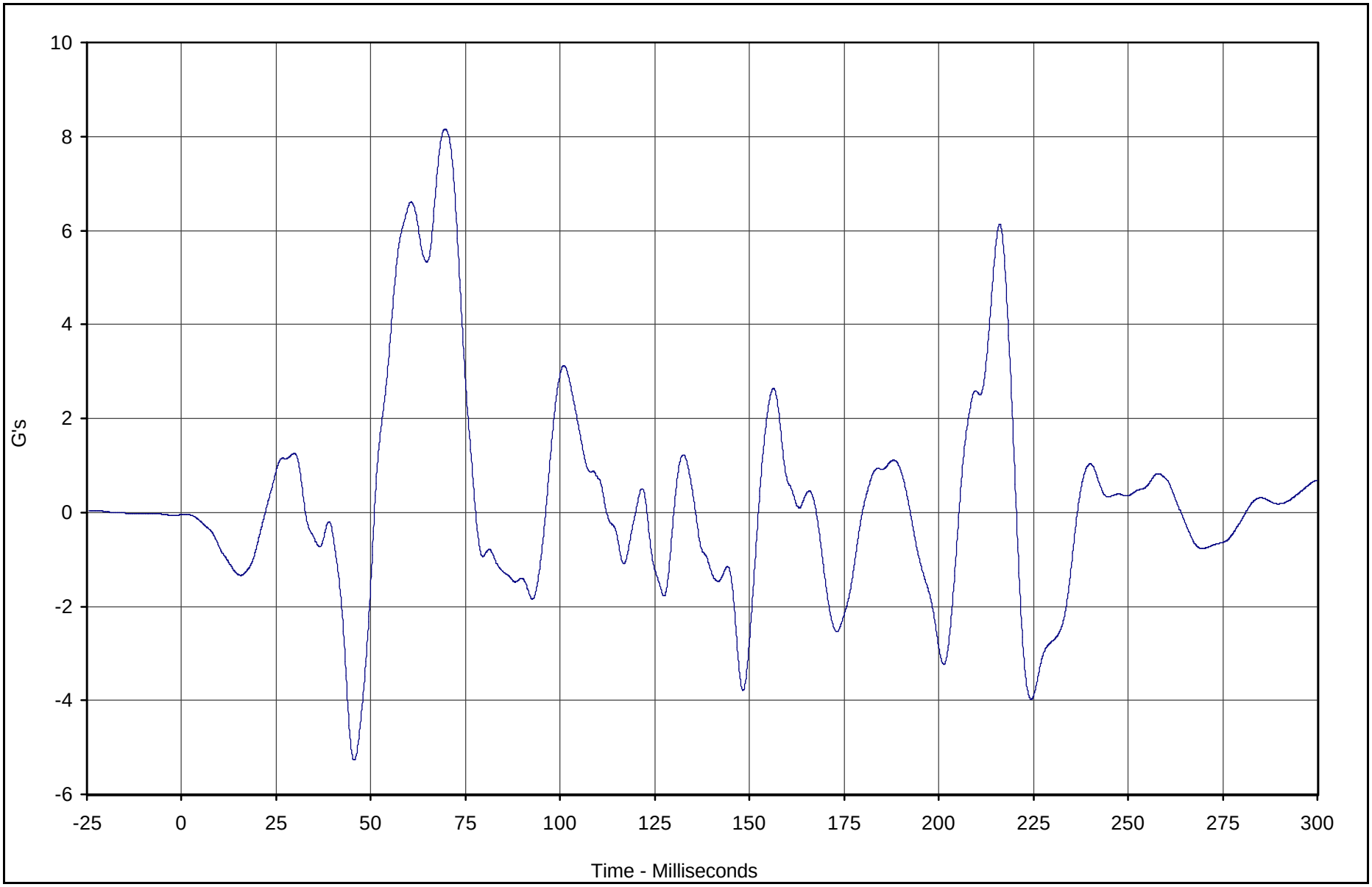
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Car Seat X	183	FIL	G's	15.0	124.9	-55.2	51.0	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



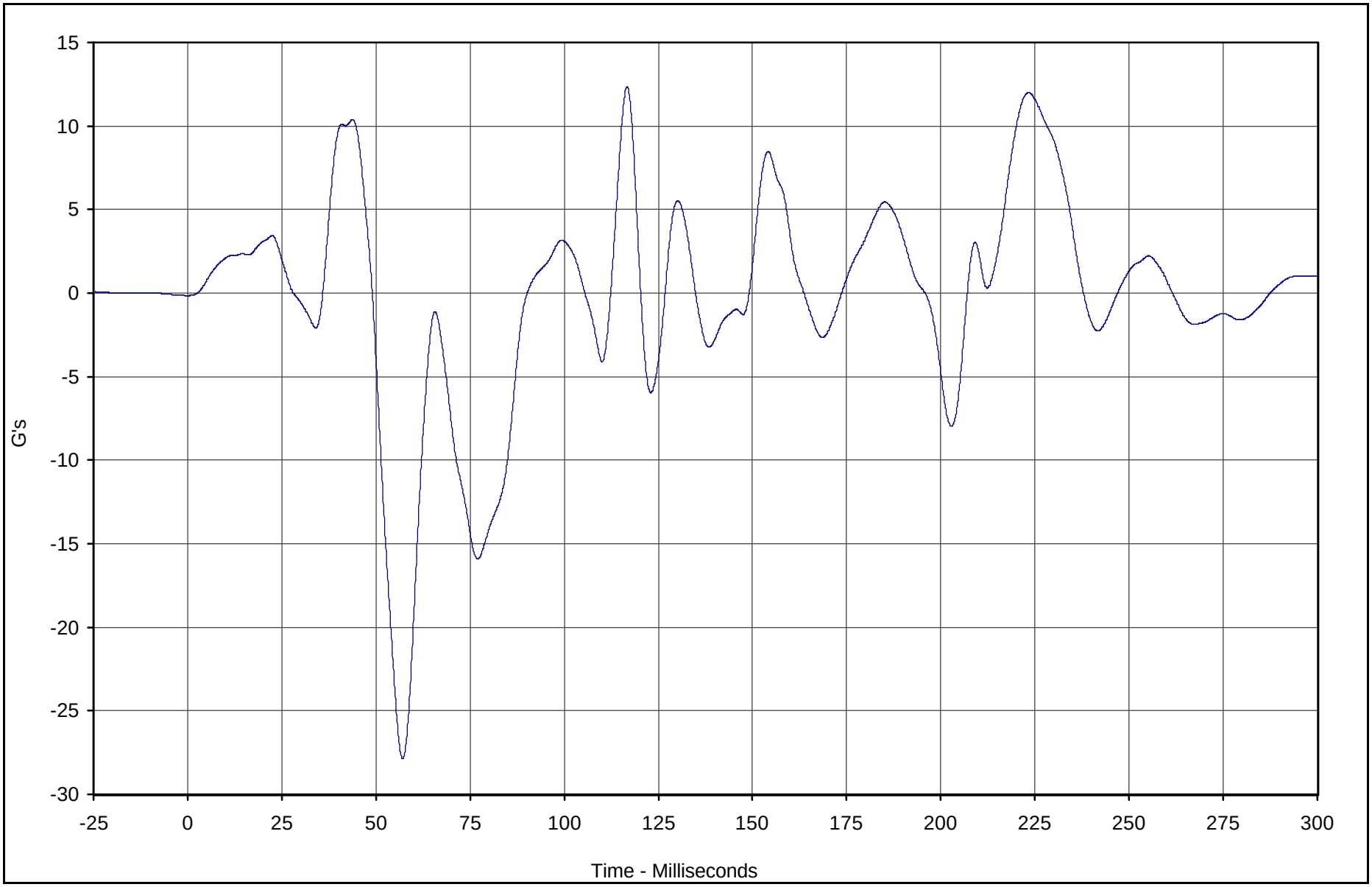
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Car Seat Y	184	FIL	G's	8.2	69.6	-5.3	45.6	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



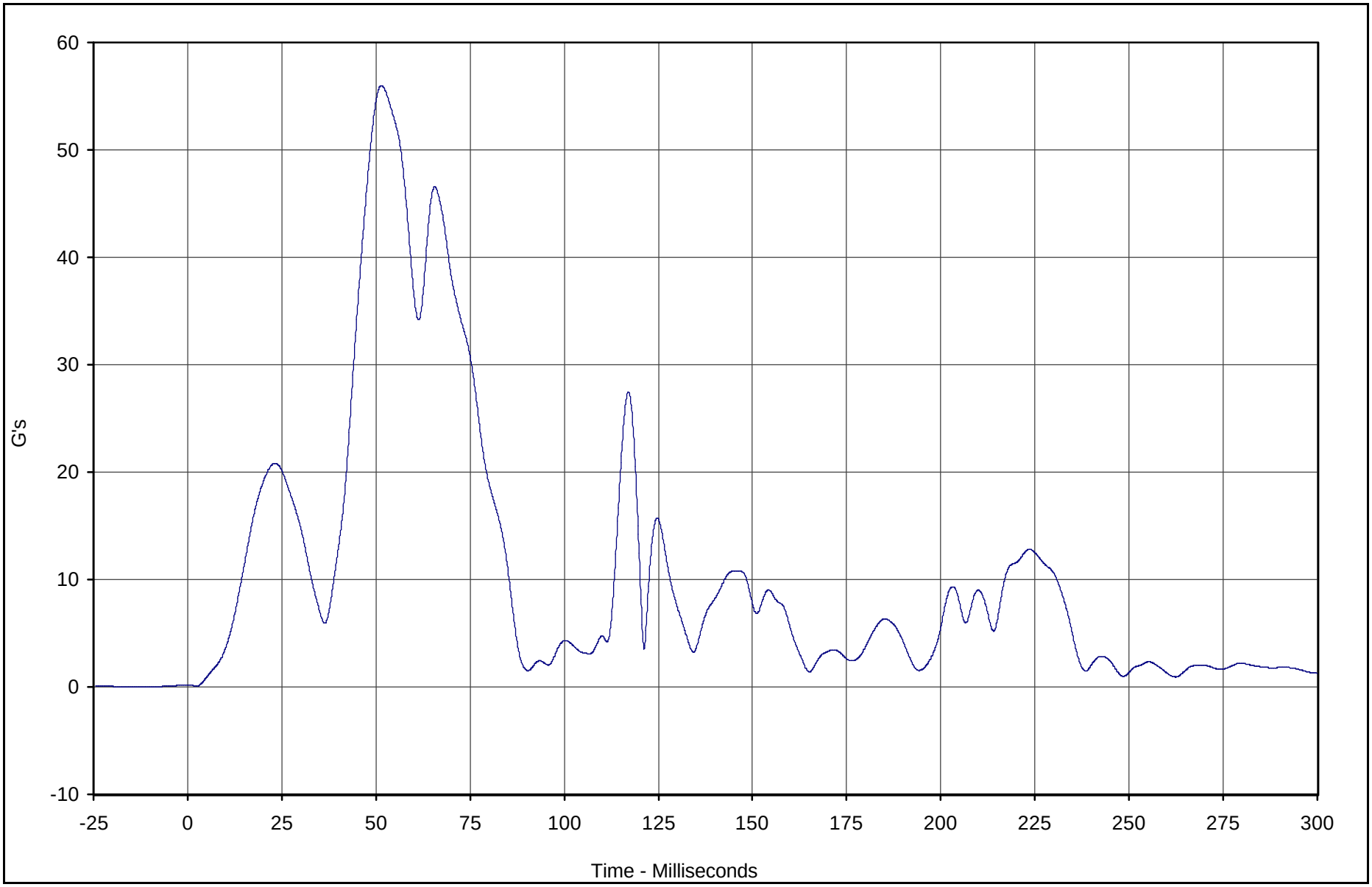
Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Car Seat Z	185	FIL	G's	12.4	116.7	-27.9	57.1	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Car Seat Resultant	183	RES	G's	56.0	51.5	0.1	2.4	60

Test Vehicle: 2004 Mitsubishi Endeavor LS SUV

Test Date: 9/9/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M45600

SECTION F-4

CHILD DUMMY INSTRUMENTATION INFORMATION

2003 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Left Rear Child A.T.D. Serial Number 082
9/9/03
2004 Mitsubishi Endeavor LS SUV

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
134	HEAD, PRIMARY	X	GPAC050	Accel.,1/2 bridge	Endevco	7264-2000	G
135	HEAD, PRIMARY	Y	GPAC051	Accel.,1/2 bridge	Endevco	7264-2000	G
136	HEAD, PRIMARY	Z	GPAC052	Accel.,1/2 bridge	Endevco	7264-2000	G
137	UPPER NECK FORCE	X	082UNFX	Load cell, six axis neck	R. A. Denton	IF-234	N
138	UPPER NECK FORCE	Y	082UNFY	Load cell, six axis neck	R. A. Denton	IF-234	N
139	UPPER NECK FORCE	Z	082UNFZ	Load cell, six axis neck	R. A. Denton	IF-234	N
140	UPPER NECK MOMENT	X	082UNMX	Load cell, six axis neck	R. A. Denton	IF-234	Nm
141	UPPER NECK MOMENT	Y	082UNMY	Load cell, six axis neck	R. A. Denton	IF-234	Nm
142	UPPER NECK MOMENT	Z	082UNMZ	Load cell, six axis neck	R. A. Denton	IF-234	Nm
143	LOWER NECK FORCE	X	082LNFX	Load cell, six axis neck	R. A. Denton	3303	N
144	LOWER NECK FORCE	Y	082LNFY	Load cell, six axis neck	R. A. Denton	3303	N
145	LOWER NECK FORCE	Z	082LNFZ	Load cell, six axis neck	R. A. Denton	3303	N
146	LOWER NECK MOMENT	X	082LNMX	Load cell, six axis neck	R. A. Denton	3303	Nm
147	LOWER NECK MOMENT	Y	082LNMY	Load cell, six axis neck	R. A. Denton	3303	Nm
148	LOWER NECK MOMENT	Z	082LNMZ	Load cell, six axis neck	R. A. Denton	3303	Nm
149	CHEST , PRIMARY	X	2116-A11	Accel., Full Bridge	Entran	2000JF	G
150	CHEST , PRIMARY	Y	2116-A14	Accel., Full Bridge	Entran	2000JF	G
151	CHEST , PRIMARY	Z	2116-A23	Accel., Full Bridge	Entran	2000JF	G
152	CHEST DISPLACEMENT	X	082CP	Rotary Pot Chest	Servo	14CBI	MM
153	PELVIS, PRIMARY	X	2116-A12	Accel., Full Bridge	Entran	2000JF	G
154	PELVIS, PRIMARY	Y	2116-A19	Accel., Full Bridge	Entran	2000JF	G
155	PELVIS, PRIMARY	Z	2116-A17	Accel., Full Bridge	Entran	2000JF	G
156	CAR SEAT TETHER	X	BL112	Load cell, Seat belt	FGP	FN4060	N
157	CAR SEAT	X	KETX1A	Accel.,1/2 bridge	Endevco	7264-200	G
158	CAR SEAT	Y	KETX1B	Accel.,1/2 bridge	Endevco	7264-200	G
159	CAR SEAT	Z	KETX1C	Accel.,1/2 bridge	Endevco	7264-200	G

2003 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Right Rear Child A.T.D. Serial Number 139
9/9/03
2004 Mitsubishi Endeavor LS SUV

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
160	HEAD, PRIMARY	X	GPAC047	Accel.,1/2 bridge	Endevco	7264-2000	G
161	HEAD, PRIMARY	Y	GPAC048	Accel.,1/2 bridge	Endevco	7264-2000	G
162	HEAD, PRIMARY	Z	GPAC049	Accel.,1/2 bridge	Endevco	7264-2000	G
163	UPPER NECK FORCE	X	139UNFX	Load cell, six axis neck	R. A. Denton	IF-234	N
164	UPPER NECK FORCE	Y	139UNFY	Load cell, six axis neck	R. A. Denton	IF-234	N
165	UPPER NECK FORCE	Z	139UNFZ	Load cell, six axis neck	R. A. Denton	IF-234	N
166	UPPER NECK MOMENT	X	139UNMX	Load cell, six axis neck	R. A. Denton	IF-234	Nm
167	UPPER NECK MOMENT	Y	139UNMY	Load cell, six axis neck	R. A. Denton	IF-234	Nm
168	UPPER NECK MOMENT	Z	139UNMZ	Load cell, six axis neck	R. A. Denton	IF-234	Nm
169	LOWER NECK FORCE	X	139LNFX	Load cell, six axis neck	R. A. Denton	3303	N
170	LOWER NECK FORCE	Y	139LNFY	Load cell, six axis neck	R. A. Denton	3303	N
171	LOWER NECK FORCE	Z	139LNFZ	Load cell, six axis neck	R. A. Denton	3303	N
172	LOWER NECK MOMENT	X	139LNMX	Load cell, six axis neck	R. A. Denton	3303	Nm
173	LOWER NECK MOMENT	Y	139LNMY	Load cell, six axis neck	R. A. Denton	3303	Nm
174	LOWER NECK MOMENT	Z	139LNMZ	Load cell, six axis neck	R. A. Denton	3303	Nm
175	CHEST , PRIMARY	X	2116-A01	Accel., Full Bridge	Entran	2000JF	G
176	CHEST , PRIMARY	Y	2116-A06	Accel., Full Bridge	Entran	2000JF	G
177	CHEST , PRIMARY	Z	2116-A07	Accel., Full Bridge	Entran	2000JF	G
178	CHEST DISPLACEMENT	X	139CP	Rotary Pot Chest	Servo	14CBI	MM
179	PELVIS, PRIMARY	X	2116-N07	Accel., Full Bridge	Entran	2000JF	G
180	PELVIS, PRIMARY	Y	2116-A03	Accel., Full Bridge	Entran	2000JF	G
181	PELVIS, PRIMARY	Z	2116-A17	Accel., Full Bridge	Entran	2000JF	G
182	CAR SEAT TETHER	X	BL113	Load cell, Seat belt	FGP	FN4060	N
183	CAR SEAT	X	KETX4A	Accel.,1/2 bridge	Endevco	7264-200	G
184	CAR SEAT	Y	KETX4B	Accel.,1/2 bridge	Endevco	7264-200	G
185	CAR SEAT	Z	KETX4C	Accel.,1/2 bridge	Endevco	7264-200	G

SECTION F-5

CHILD DUMMY CALIBRATION INFORMATION

Calibration Data Sheet
Hybrid III 3 Year Old
Head Drop Test

ATD Serial No.: 082

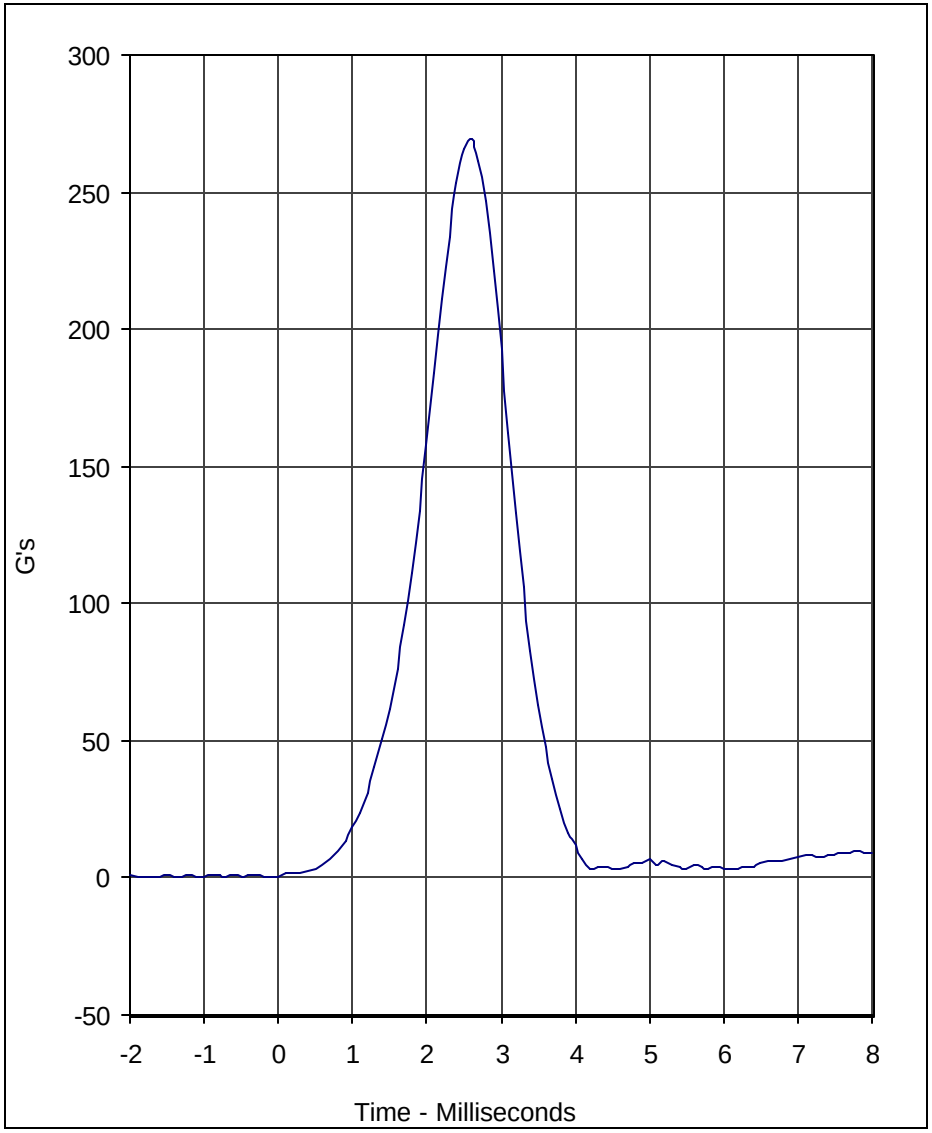
Test I.D.: HD09A

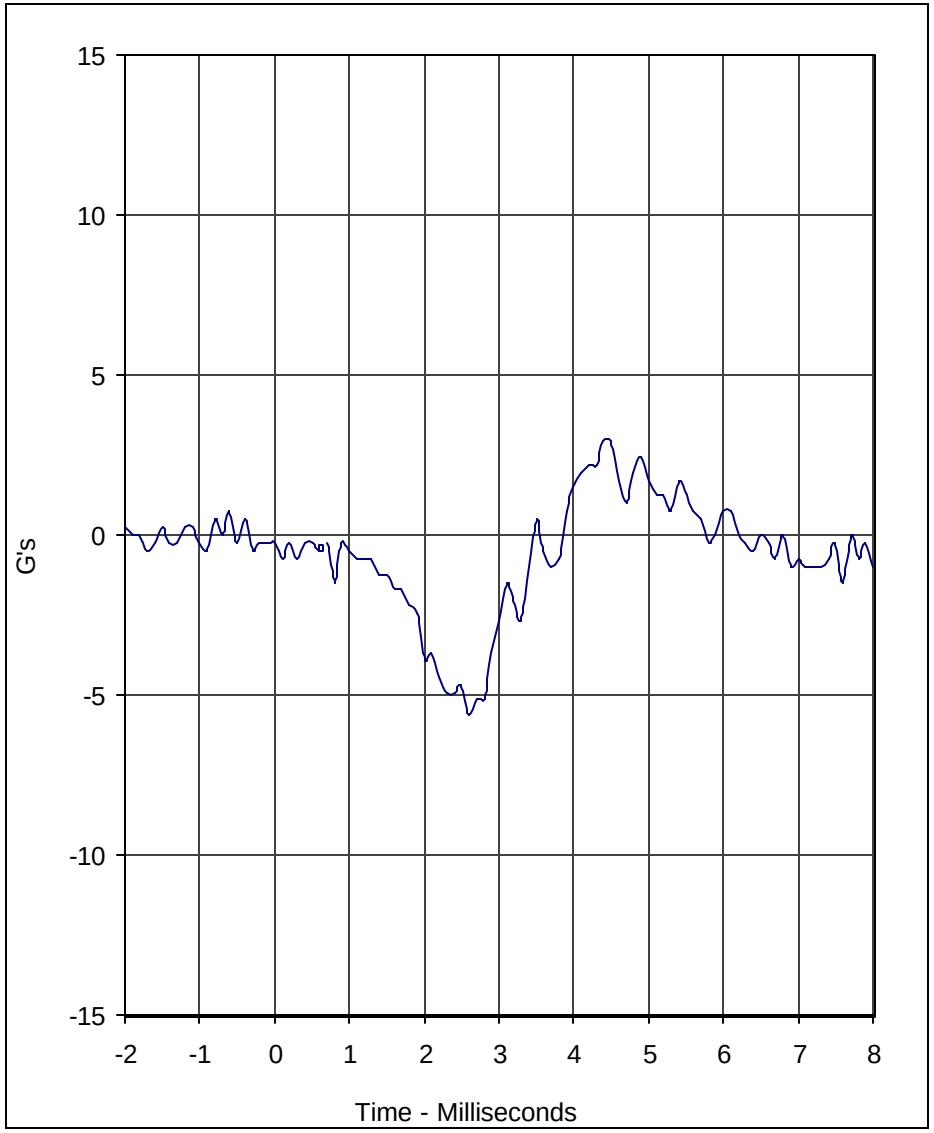
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	^{o}C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	250.0 to 280.0	269.3	Pass
Peak Lateral Acceleration	G's	≤15.0	5.6	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<10	4.3	Pass
		Overall Test Results		Pass

Laboratory Technician

August 25, 2003

Test Date





Curve Description	CURNO	Type
Head Resultant	001	RES

Units	Max	Time	Min	Time	SAE Class
G's	269.3	2.6	0.1	-0.7	1000

Curve Description	CURNO	Type
Head Y	002	FIL

Units	Max	Time	Min	Time	SAE Class
G's	2.9	4.4	-5.6	2.6	1000

Test Program: Hybrid III 3 Year Old Head Drop Test

Test Date: 8/25/03

A.T.D. Serial No.: 082

Test I.D.: HD09A

KARCO Engineering

Calibration Data Sheet
Hybrid III 3 Year Old
Thorax Impact Test

ATD Serial No.: 082

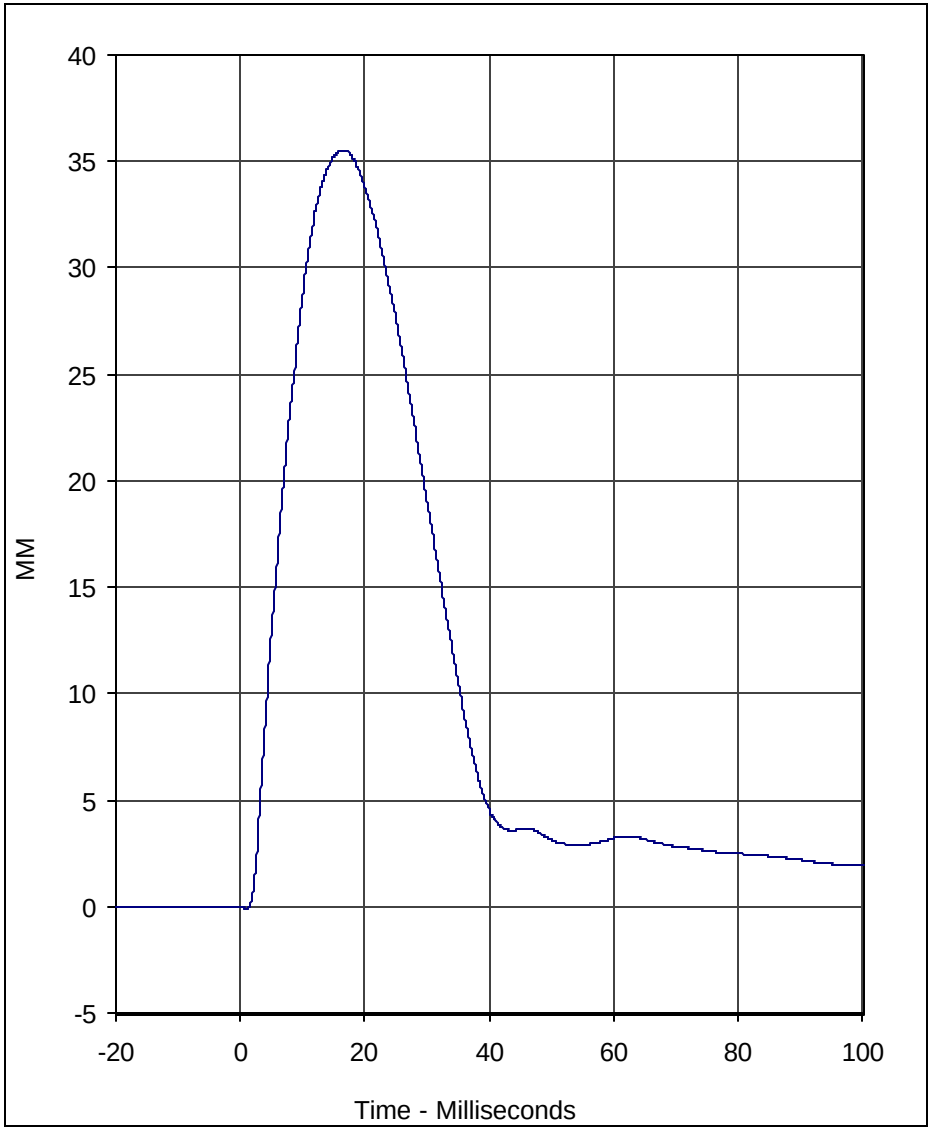
Test I.D.: CH09A

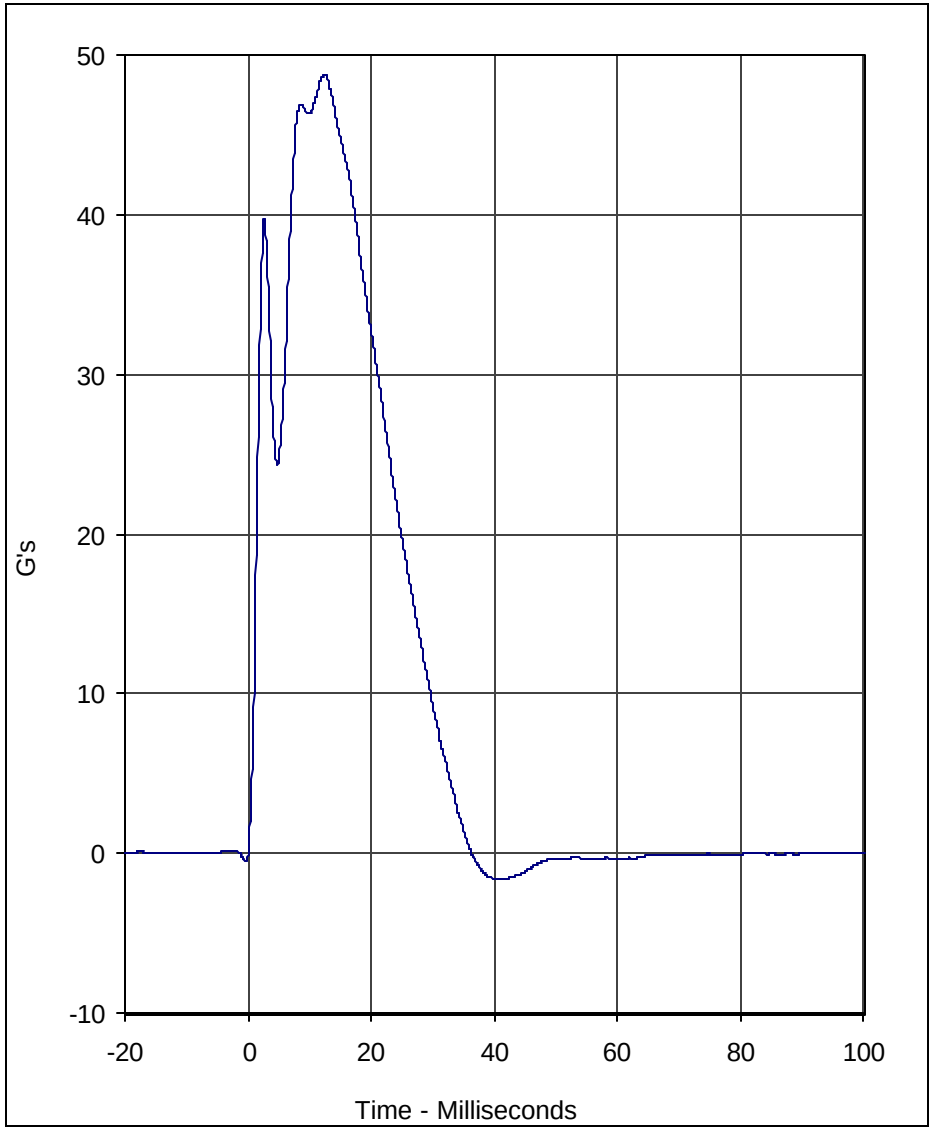
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	^{o}C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	5.9 to 6.1	6.02	Pass
Peak Chest Compression	MM	32 to 38	35.5	Pass
Peak Probe Force Between 32 and 38 MM	Newtons	680 to 810	759.0	Pass
Peak Probe Force Between 12.5 and 32 MM	Newtons	≤860	751.1	Pass
Internal Hysterysis	%	65 to 85	71.3	Pass
		Overall Test Results		Pass

Laboratory Technician

August 26, 2003

Test Date





Curve Description	CURNO	Type
Chest Compression	001	FIL

Units	Max	Time	Min	Time	SAE Class
MM	35.5	16.7	-0.1	1.0	600

Curve Description	CURNO	Type
Probe Acceleration	002	FIL

Units	Max	Time	Min	Time	SAE Class
G's	48.8	12.5	-1.6	41.8	180

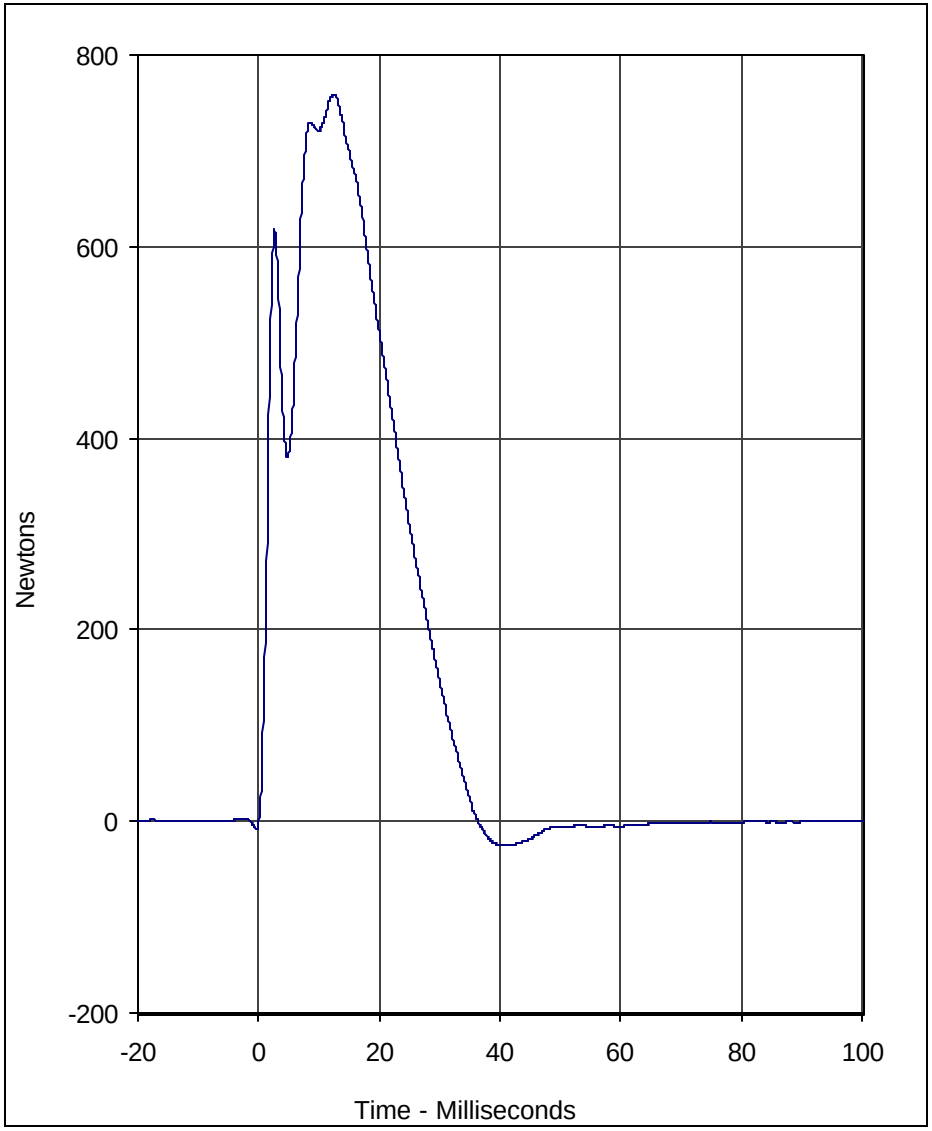
Test Program: Hybrid III 3 Year Old Thorax Impact

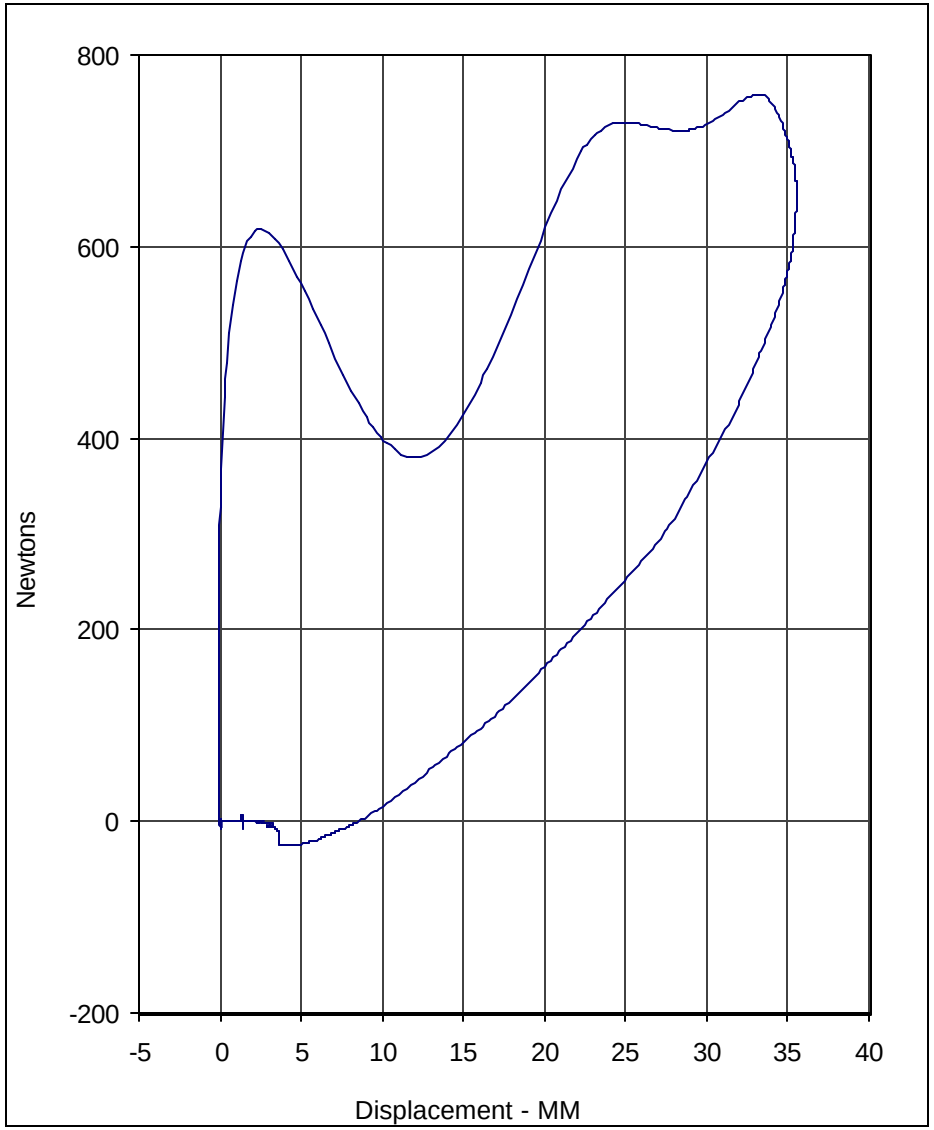
Test Date: 8/26/03

A.T.D. Serial No.: 082

Test I.D.: CH09A

KARCO Engineering





Curve Description	CURNO	Type
Probe Force	003	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	759.0	12.5	-24.8	41.8	180

Curve Description	CURNO	Type
Probe Force vs. Chest Compression	004	FIL

Units	Hysterysis	SAE Class
%	71.3	180/600

Test Program: Hybrid III 3 Year Old Thorax Impact

Test Date: 8/26/03

A.T.D. Serial No.: 082

Test I.D.: CH09A

KARCO Engineering

Calibration Data Sheet
Hybrid III 3 Year Old
Neck Flexion Test

ATD Serial No.: 082

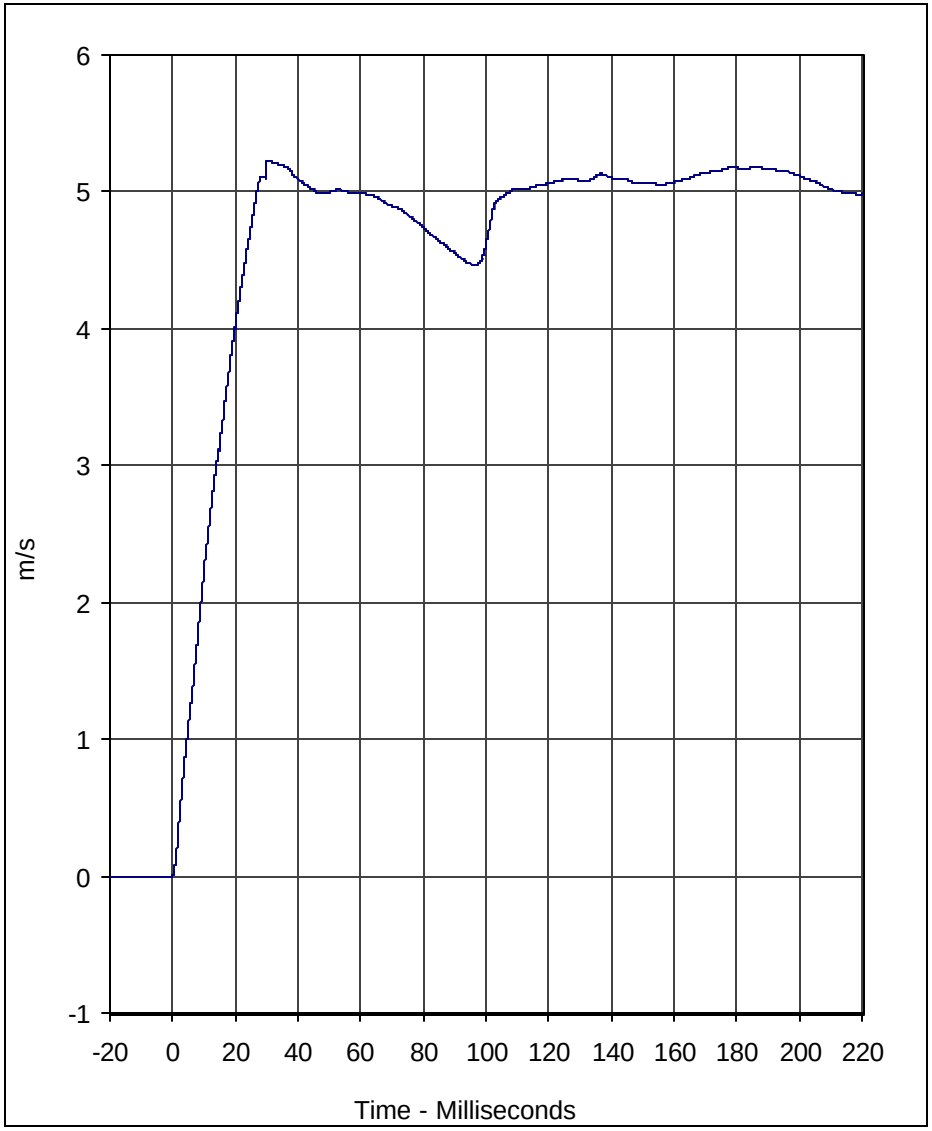
Test I.D.: NF09A

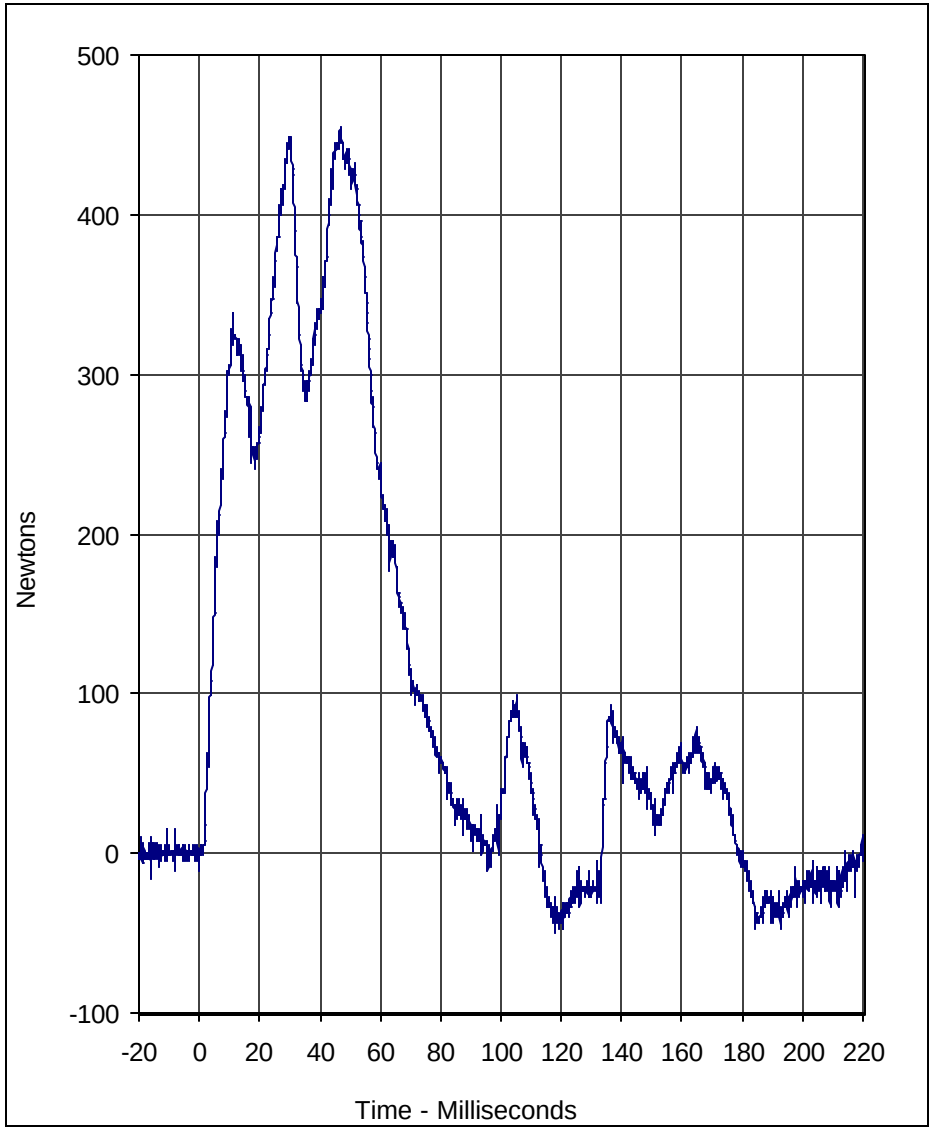
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		^{o}C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.40 to 5.60	5.43	Pass
Pendulum Deceleration	10 Msec.	m/s	2.0 to 2.7	2.2	Pass
	20 Msec.	m/s	3.0 to 4.0	4.0	Pass
	30 Msec.	m/s	4.0 to 5.1	5.1	Pass
"D" Plane Rotation	Maximum	Degrees	70.0 to 82.0	73.6	Pass
Peak Moment in Rotation	Maximum	Nm	42.0 to 53.0	45.1	Pass
Positive Moment Decay, Time to 10Nm		Msec.	60.0 to 80.0	73.4	Pass
			Overall Test Results		Pass

Laboratory Technician

August 26, 2003

Test Date





Curve Description	CURNO	Type
Pendulum Velocity	001	FIL

Units	Max	Time	Min	Time	SAE Class
m/s	5.2	30.8	0.0	-0.5	180

Curve Description	CURNO	Type
Neck Force X	002	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	454.5	46.7	-50.0	118.0	1000

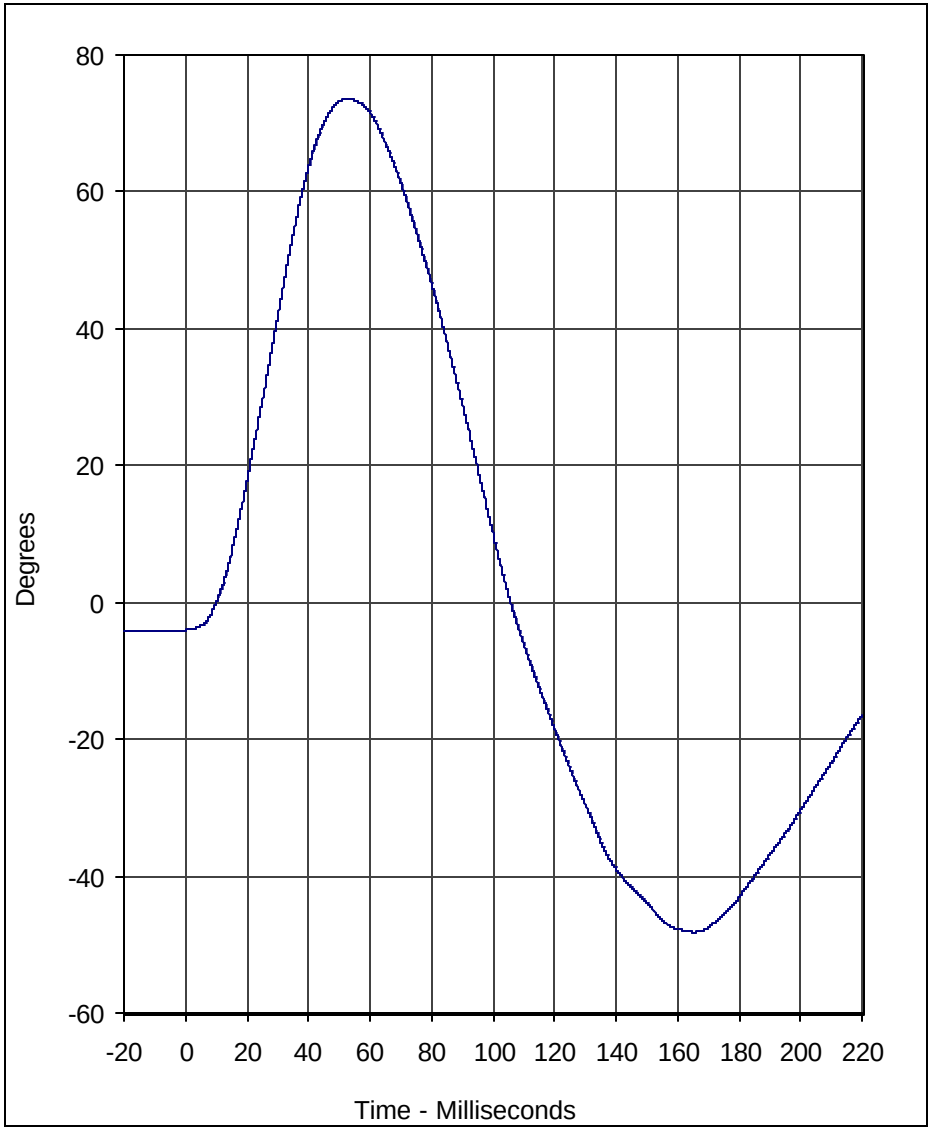
Test Program: 3 Year Old Hybrid III Neck Flexion Test

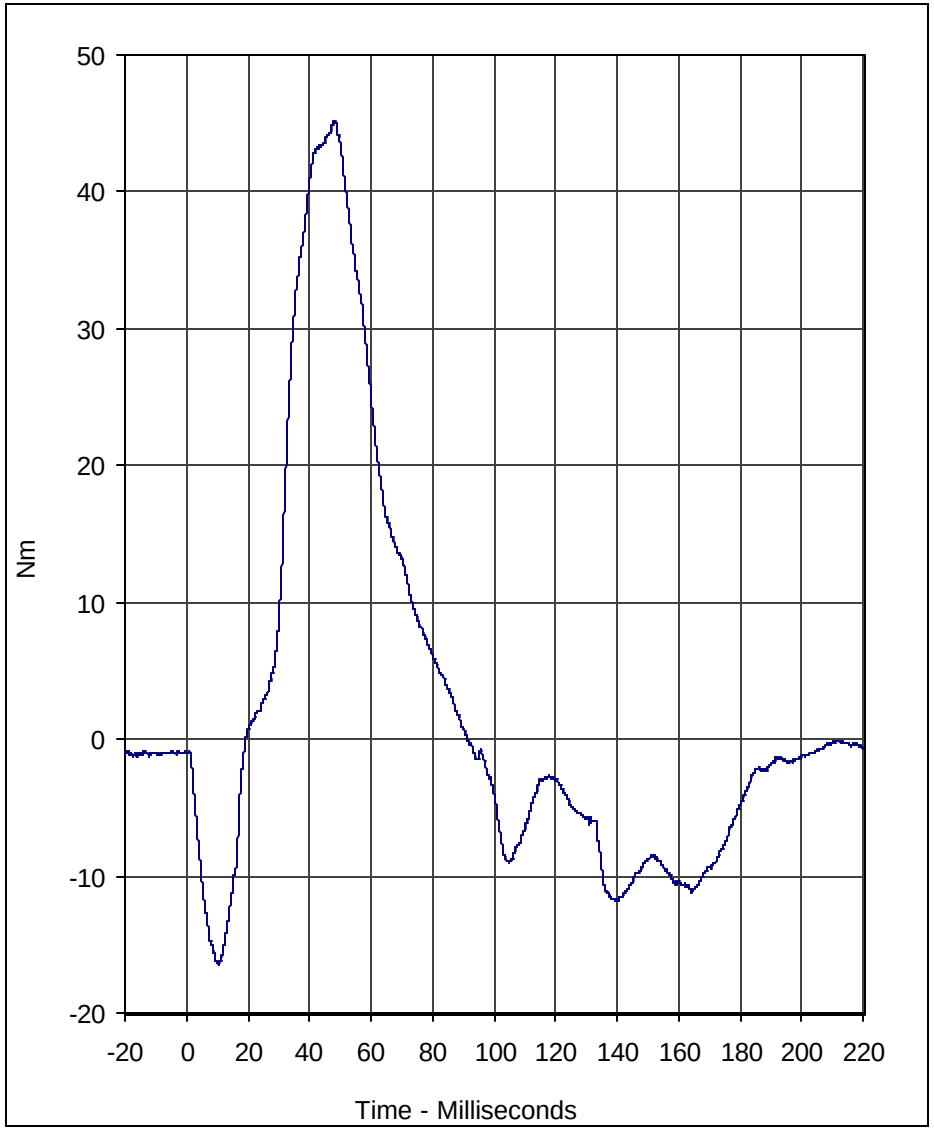
Test Date: 8/26/03

A.T.D. Serial No.: 082

Test I.D.: NF09A

KARCO Engineering





Curve Description	CURNO	Type
"D" Plane Rotation	003	FIL

Units	Max	Time	Min	Time	SAE Class
Degrees	73.6	52.9	-48.2	165.4	60

Curve Description	CURNO	Type
Neck Moment Y	002	FIL

Units	Max	Time	Min	Time	SAE Class
Nm	45.1	48.5	-16.5	10.4	600

Test Program: 3 Year Old Hybrid III Neck Flexion Test

Test Date: 8/26/03

A.T.D. Serial No.: 082

Test I.D.: NF09A

KARCO Engineering

Calibration Data Sheet
Hybrid III 3 Year Old
Neck Extension Test

ATD Serial No.: 082

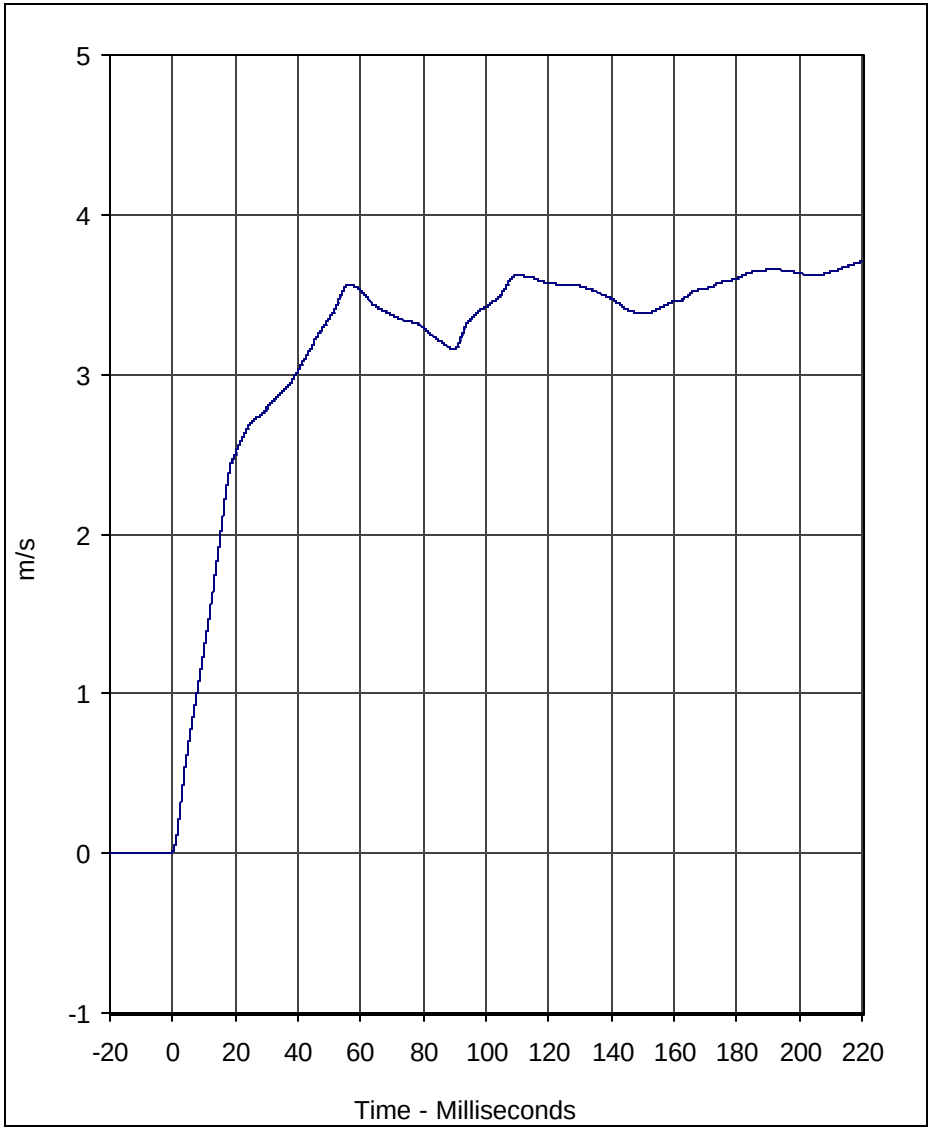
Test I.D.: NE09A

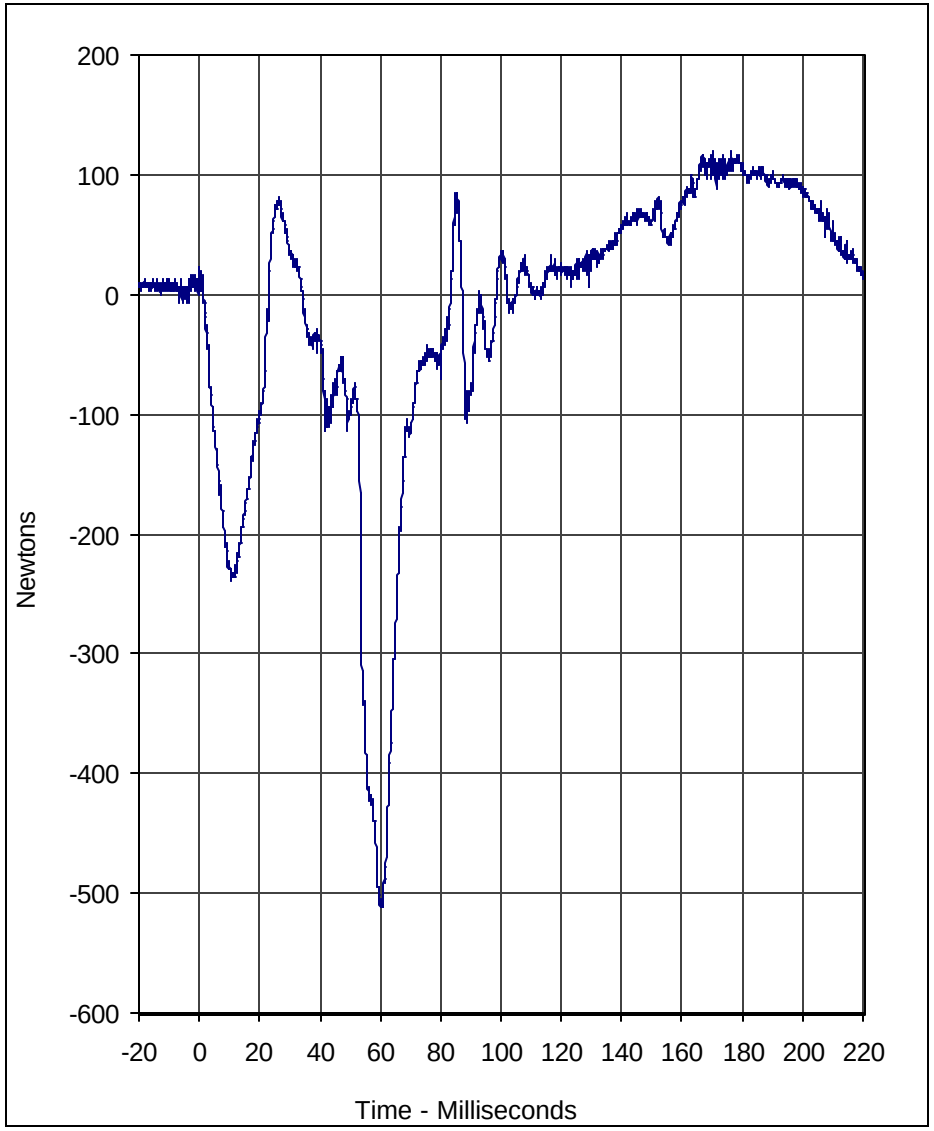
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		^{o}C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	3.55 to 3.75	3.60	Pass
Pendulum Deceleration	10 Msec.	m/s	1.0 to 1.4	1.3	Pass
	20 Msec.	m/s	1.9 to 2.5	2.5	Pass
	30 Msec.	m/s	2.8 to 3.5	2.8	Pass
"D" Plane Rotation	Maximum	Degrees	83.0 to 93.0	85.2	Pass
Peak Moment in Rotation	Maximum	Nm	-43.7 to -53.3	-46.9	Pass
Positive Moment Decay, Time to 10Nm		Msec.	60.0 to 80.0	68.2	Pass
			Overall Test Results		Pass

Laboratory Technician

August 26, 2003

Test Date





Curve Description	CURNO	Type
Pendulum Velocity	001	FIL

Units	Max	Time	Min	Time	SAE Class
m/s	3.7	220.0	0.0	-0.7	180

Curve Description	CURNO	Type
Neck Force X	002	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	119.7	170.5	-511.0	59.9	1000

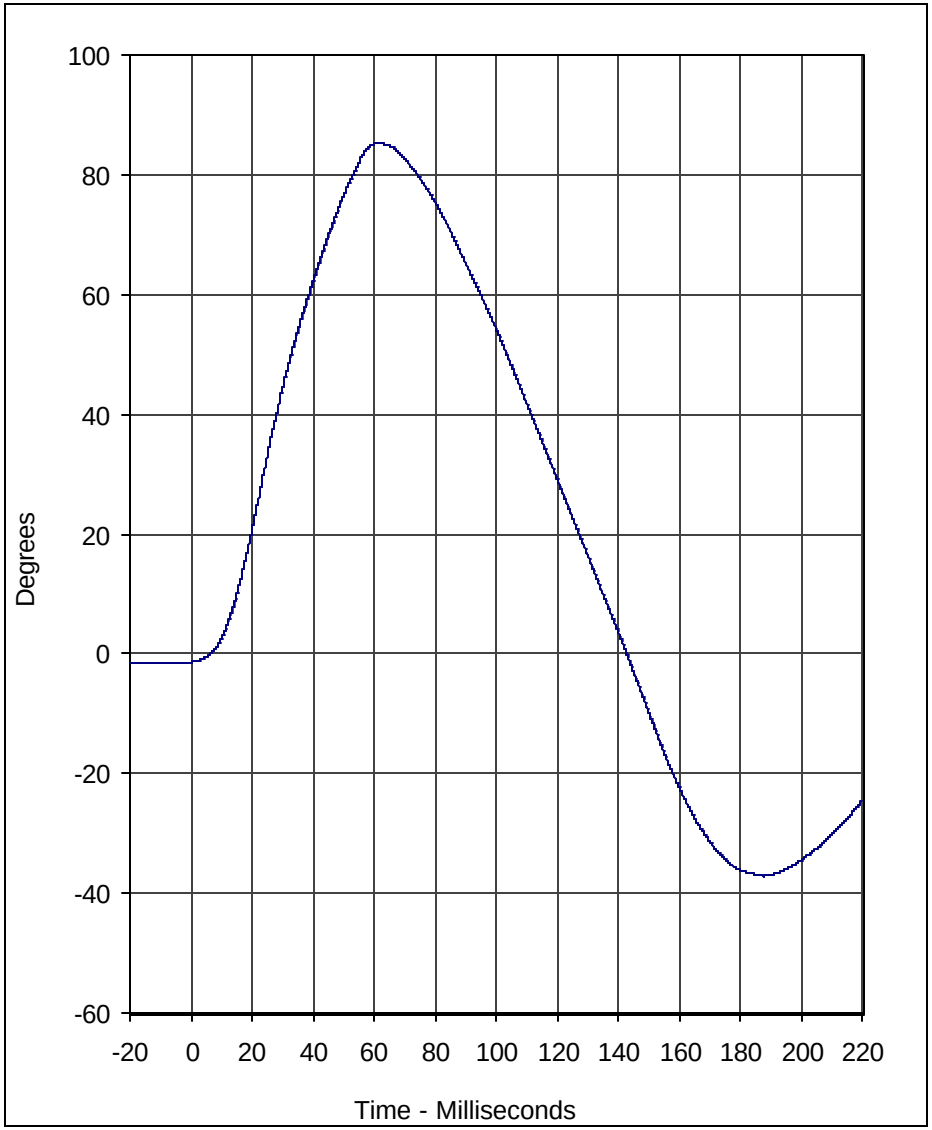
Test Program: 3 Year Old Hybrid III Neck Extension Test

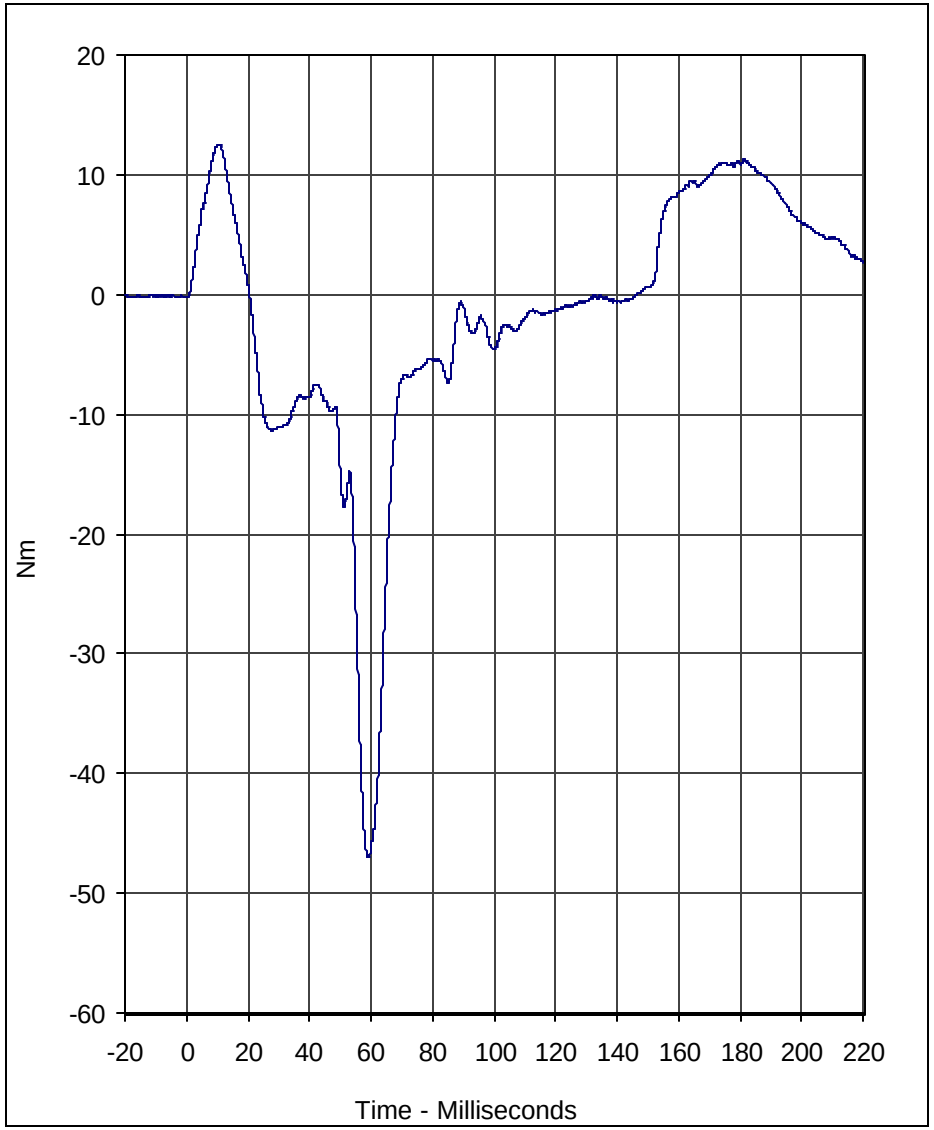
Test Date: 8/26/03

A.T.D. Serial No.: 082

Test I.D.: NE09A

KARCO Engineering





Curve Description	CURNO	Type
"D" Plane Rotation	003	FIL

Units	Max	Time	Min	Time	SAE Class
Degrees	85.2	61.6	-37.1	187.8	60

Curve Description	CURNO	Type
Neck Moment Y	002	FIL

Units	Max	Time	Min	Time	SAE Class
Nm	12.5	10.2	-46.9	59.0	600

Test Program: 3 Year Old Hybrid III Neck Extension Test

Test Date: 8/26/03

A.T.D. Serial No.: 082

Test I.D.: NE09A

KARCO Engineering

Calibration Data Sheet
Hybrid III 3 Year Old
Torso Flexion Test

ATD Serial No.: 082

Test I.D.: TF09A

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
Initial reference plane angle	Degrees	≤15.0	4.2	Pass
Peak Force at 45 +/-0.5 degrees	Newtons	130.0 to 180.0	160.4	Pass
Torso rotation rate	deg/sec	0.5 to 1.5	1.1	Pass
Final reference plane angle	Degrees	+/-10	4.3	Pass
		Overall Test Results		Pass

Laboratory Technician

August 26, 2003

Test Date

Calibration Data Sheet
Hybrid III 3 Year Old
External Measurements

ATD Serial No.: 082

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	539 to 554	545	Pass
B - Shoulder pivot height	mm	307 to 323	320	Pass
C - "H" point height	mm	34 to 45	40	Pass
D - "H" point from backline	mm	57 to 67	60	Pass
E - Shoulder pivot from back	mm	61 to 71	65	Pass
F - Thigh clearance	mm	81 to 91	90	Pass
G - Elbow back to wrist pivot	mm	247 to 263	260	Pass
H - Skull cap to back line	mm	48 to 58	50	Pass
I - Shoulder to elbow length	mm	185 to 201	195	Pass
J - Elbow rest height	mm	134 to 149	145	Pass
K - Buttock to knee length	mm	285 to 300	295	Pass
L - Poplipteal length	mm	219 to 234	230	Pass
M - Knee pivot height	mm	242 to 257	255	Pass
N - Buttock poplipteal length	mm	218 to 233	230	Pass
O - Chest depth with jacket	mm	139 to 154	145	Pass
P - Foot length	mm	138 to 148	140	Pass
R - Buttock to knee pivot length	mm	251 to 262	260	Pass
S - Head Breadth	mm	128 to 144	135	Pass
T - Head Depth	mm	167 to 183	180	Pass
U - Hip breadth	mm	201 to 216	210	Pass
V - Shoulder breadth	mm	237 to 252	245	Pass
W - Foot breadth	mm	54 to 64	60	Pass
X - Head circumference	mm	500 to 516	510	Pass
Y - Chest circumference with jacket	mm	527 to 553	545	Pass
Z - Waist circumference	mm	527 to 553	550	Pass
AA - Location for chest circumference	mm	249 to 259	255	Pass
BB - Location for waist circumference	mm	160 to 170	165	Pass
		Overall Test Results		Pass

Laboratory Technician

August 26, 2003
Test Date

Calibration Data Sheet
Hybrid III 3 Year Old
Head Drop Test

ATD Serial No.: 139

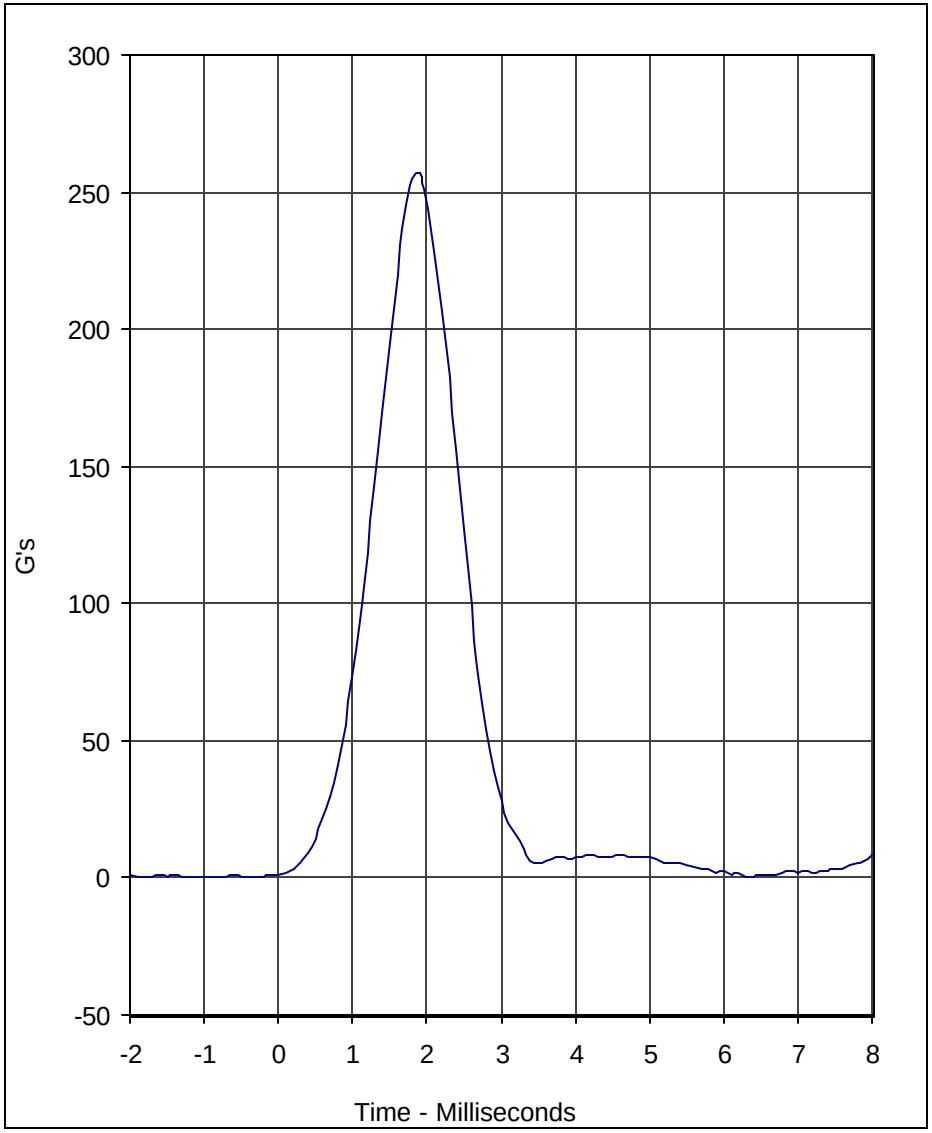
Test I.D.: HD09B

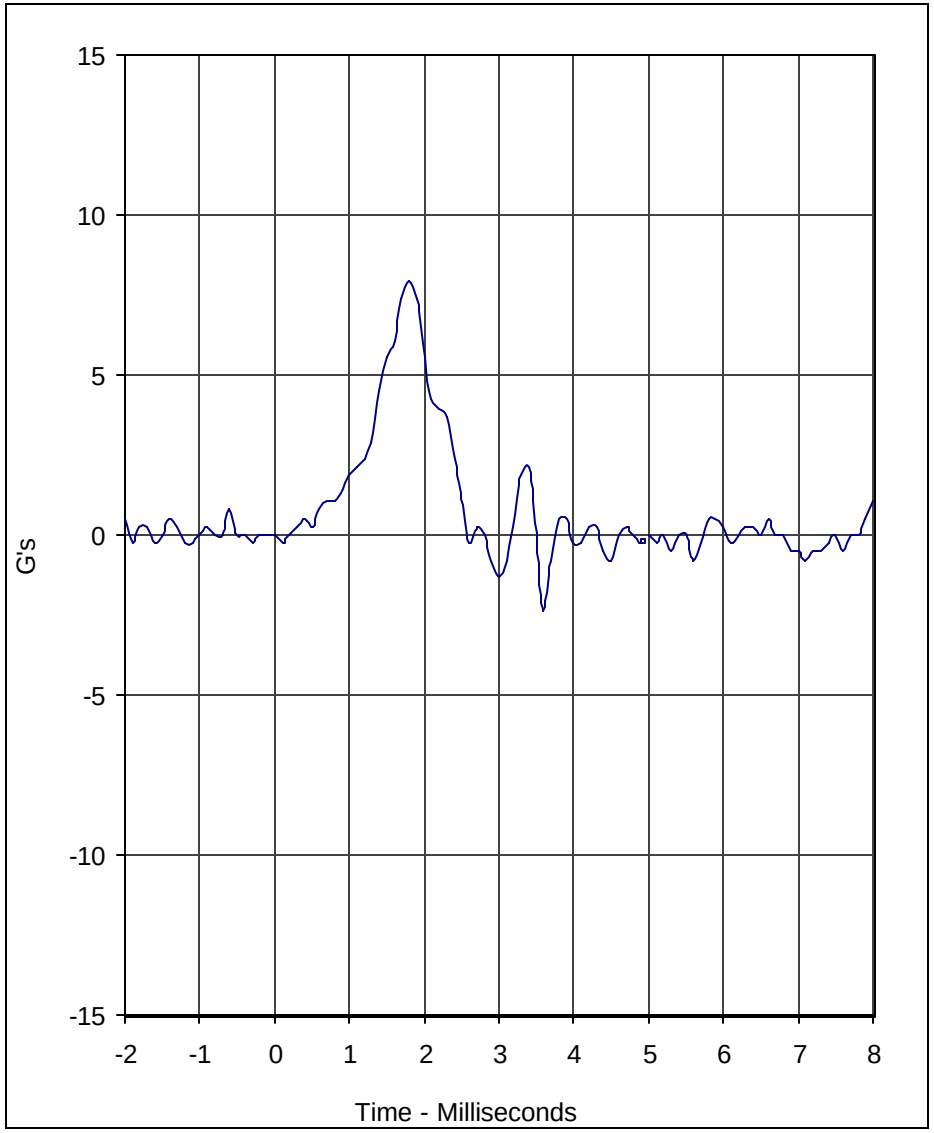
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	^{o}C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	250.0 to 280.0	257.0	Pass
Peak Lateral Acceleration	G's	≤15.0	7.9	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<10	3.2	Pass
		Overall Test Results		Pass

Laboratory Technician

August 25, 2003

Test Date





Curve Description	CURNO	Type
Head Resultant	001	RES

Units	Max	Time	Min	Time	SAE Class
G's	257.0	1.9	0.0	-0.8	1000

Curve Description	CURNO	Type
Head Y	002	FIL

Units	Max	Time	Min	Time	SAE Class
G's	7.9	1.8	-2.4	3.6	1000

Test Program: Hybrid III 3 Year Old Head Drop Test

Test Date: 8/25/03

A.T.D. Serial No.: 139

Test I.D.: HD09B

KARCO Engineering

Calibration Data Sheet
Hybrid III 3 Year Old
Thorax Impact Test

ATD Serial No.: 139

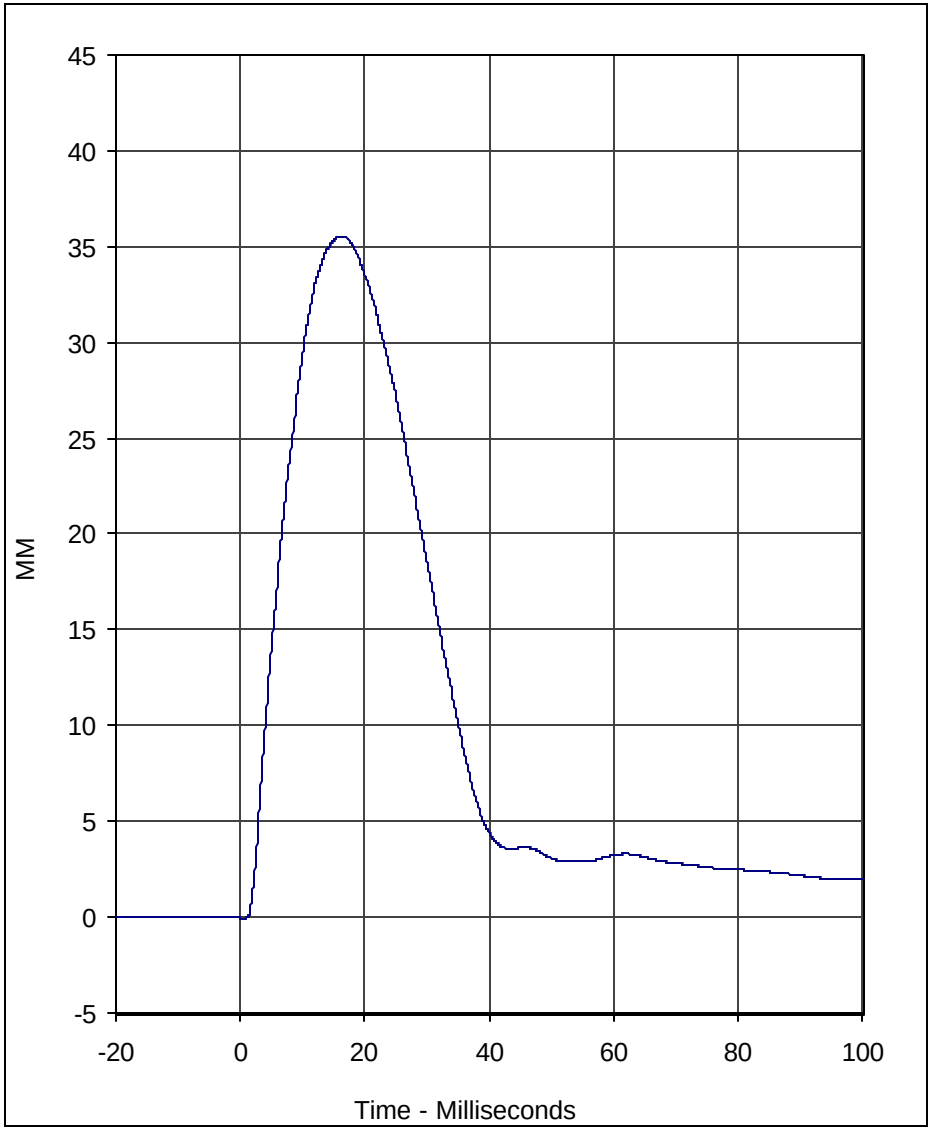
Test I.D.: CH09B

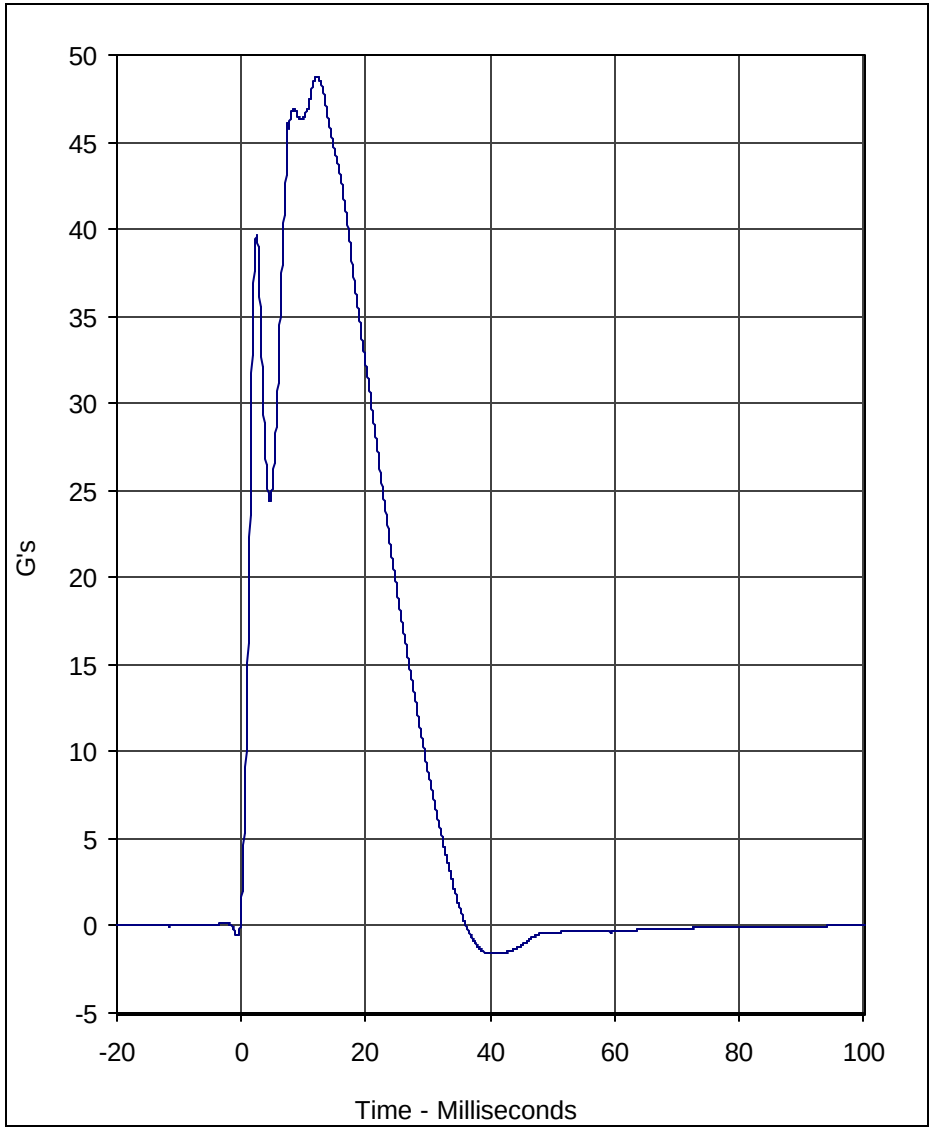
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	^{o}C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	5.9 to 6.1	6.06	Pass
Peak Chest Compression	MM	32 to 38	35.5	Pass
Peak Probe Force Between 32 and 38 MM	Newtons	680 to 810	759.0	Pass
Peak Probe Force Between 12.5 and 32 MM	Newtons	≤860	749.1	Pass
Internal Hysterysis	%	65 to 85	70.8	Pass
		Overall Test Results		Pass

Laboratory Technician

August 26, 2003

Test Date





Curve Description	CURNO	Type
Chest Compression	001	FIL

Units	Max	Time	Min	Time	SAE Class
MM	35.5	16.4	-0.1	0.7	600

Curve Description	CURNO	Type
Probe Acceleration	002	FIL

Units	Max	Time	Min	Time	SAE Class
G's	48.8	12.3	-1.6	41.6	180

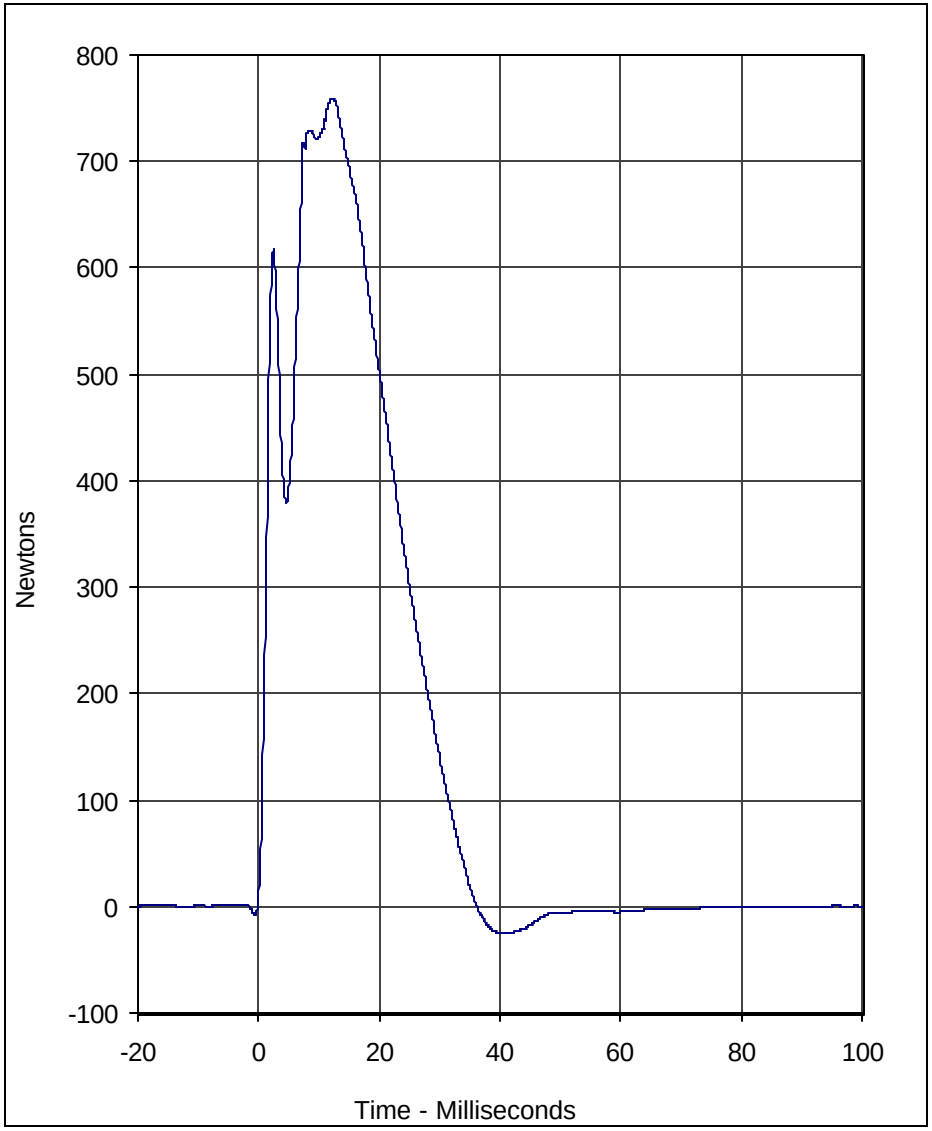
Test Program: Hybrid III 3 Year Old Thorax Impact

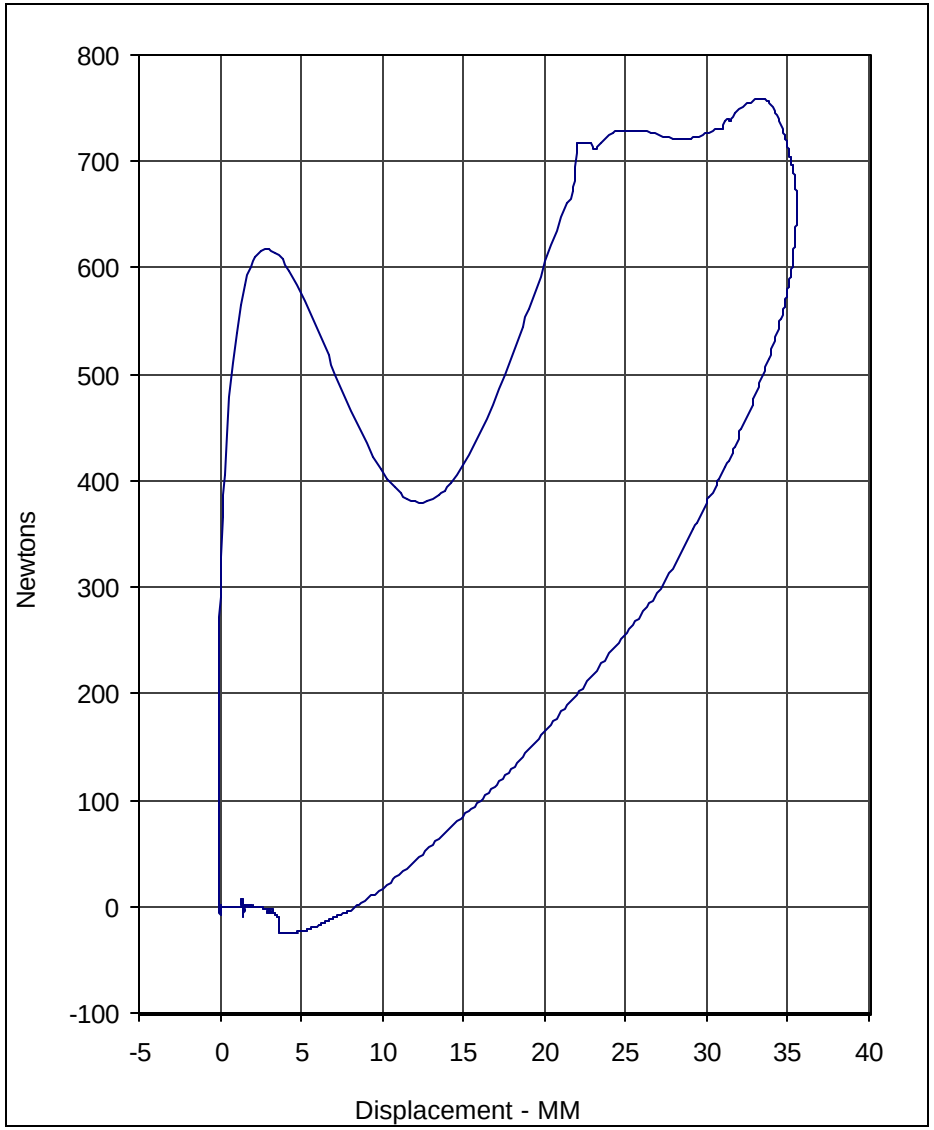
Test Date: 8/26/03

A.T.D. Serial No.: 139

Test I.D.: CH09B

KARCO Engineering





Curve Description	CURNO	Type
Probe Force	003	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	759.0	12.3	-24.8	41.6	180

Curve Description	CURNO	Type
Probe Force vs. Chest Compression	004	FIL

Units	Hysterysis	SAE Class
%	70.8	180/600

Test Program: Hybrid III 3 Year Old Thorax Impact

Test Date: 8/26/03

A.T.D. Serial No.: 139

Test I.D.: CH09B

KARCO Engineering

Calibration Data Sheet
Hybrid III 3 Year Old
Neck Flexion Test

ATD Serial No.: 139

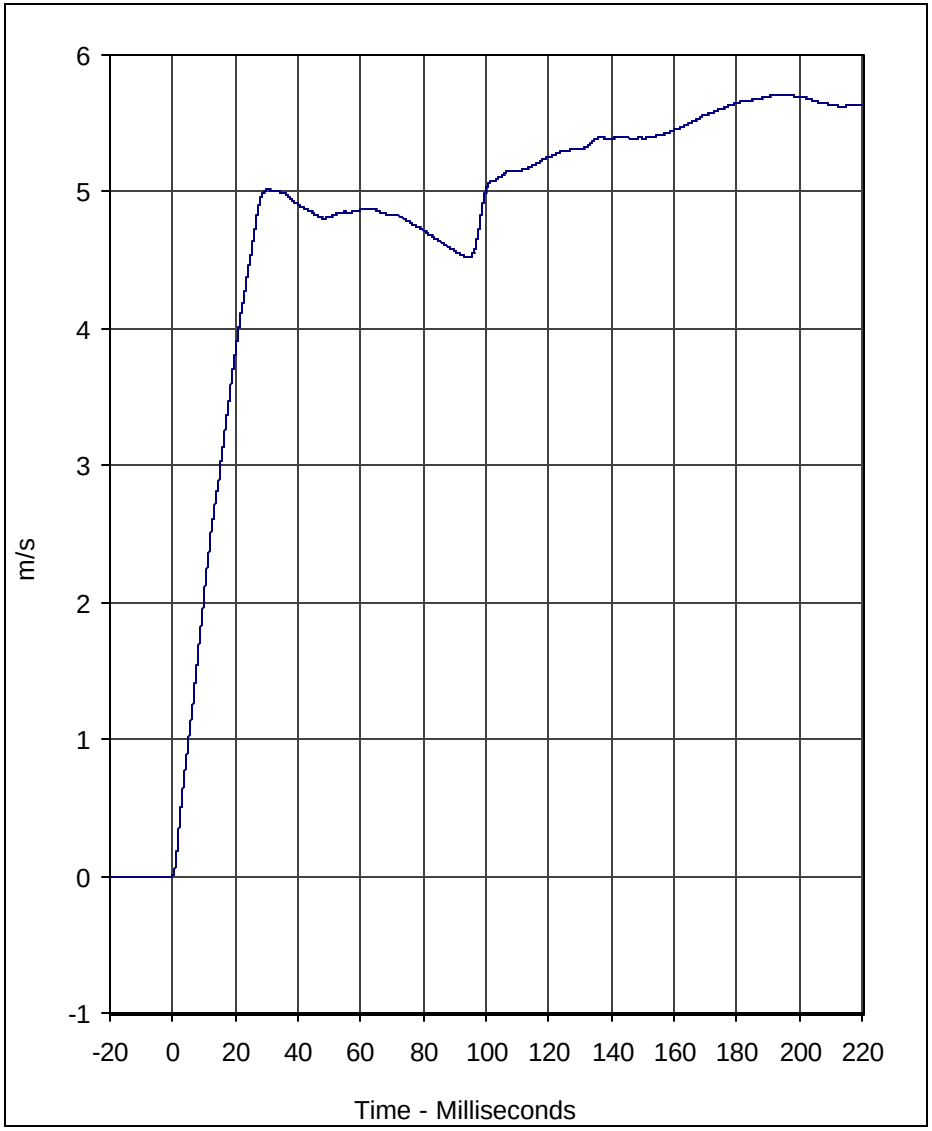
Test I.D.: NF09B

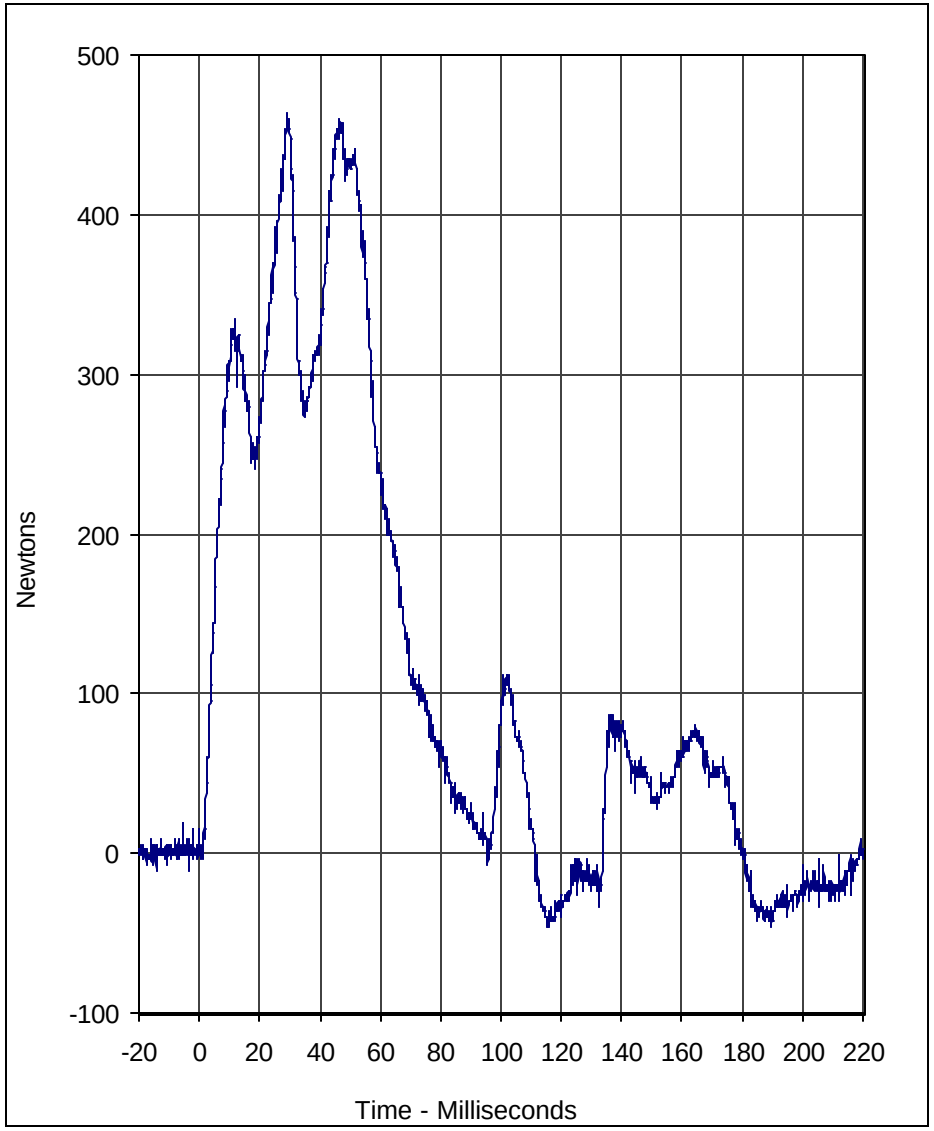
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		^{o}C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.40 to 5.60	10.89	Fail
Pendulum Deceleration	10 Msec.	m/s	2.0 to 2.7	2.0	Pass
	20 Msec.	m/s	3.0 to 4.0	3.8	Pass
	30 Msec.	m/s	4.0 to 5.1	5.0	Pass
"D" Plane Rotation	Maximum	Degrees	70.0 to 82.0	74.0	Pass
Peak Moment in Rotation	Maximum	Nm	42.0 to 53.0	46.5	Pass
Positive Moment Decay, Time to 10Nm		Msec.	60.0 to 80.0	73.0	Pass
			Overall Test Results		Fail

Laboratory Technician

August 26, 2003

Test Date





Curve Description	CURNO	Type
Pendulum Velocity	001	FIL

Units	Max	Time	Min	Time	SAE Class
m/s	5.7	193.6	0.0	-0.5	180

Curve Description	CURNO	Type
Neck Force X	002	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	463.5	29.0	-45.9	115.5	1000

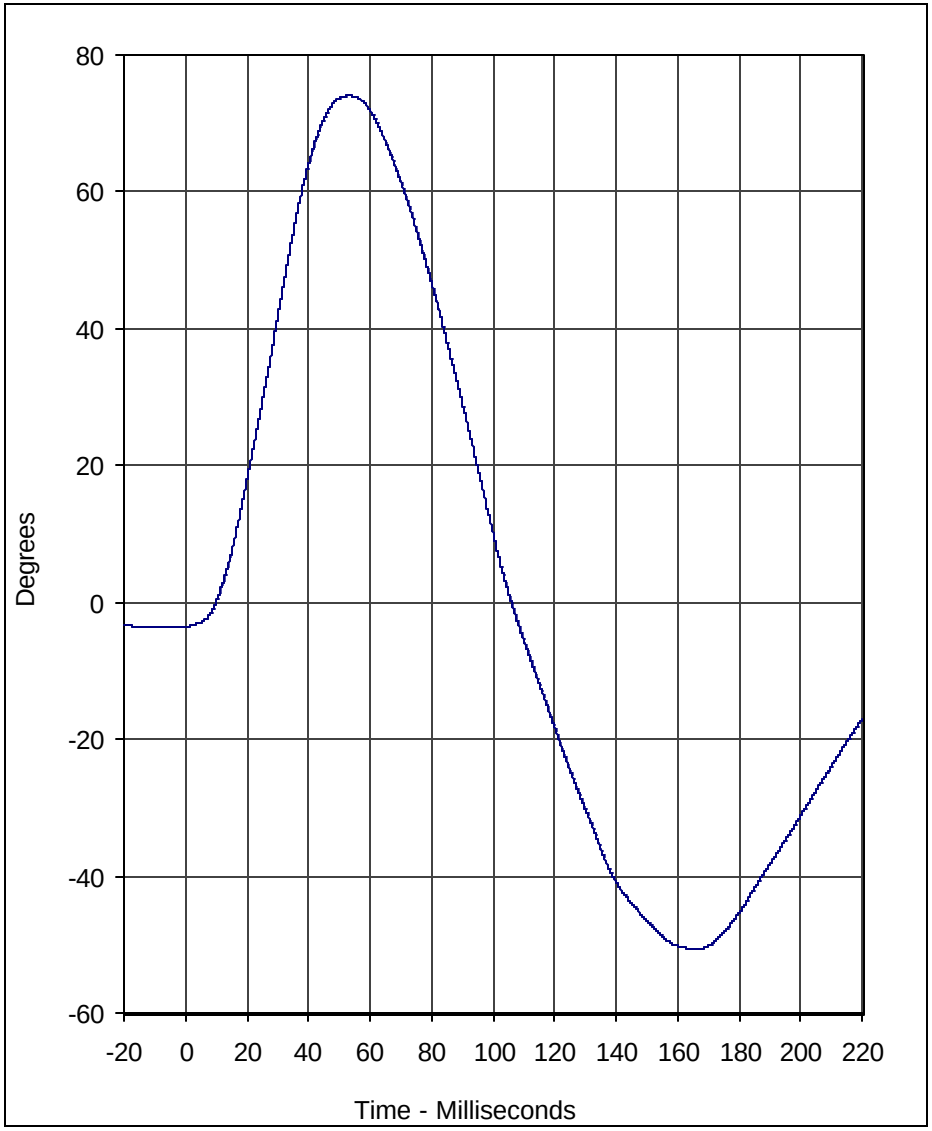
Test Program: 3 Year Old Hybrid III Neck Flexion Test

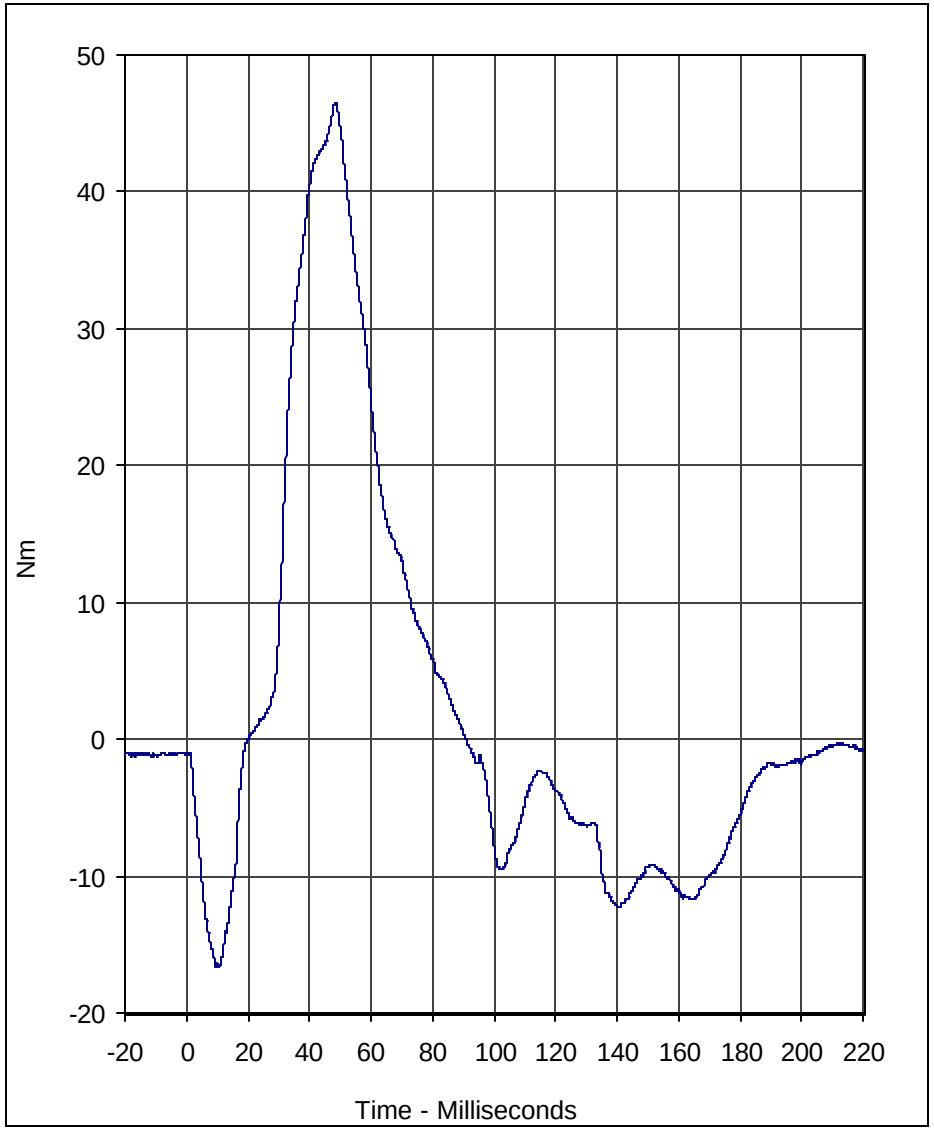
Test Date: 8/26/03

A.T.D. Serial No.: 139

Test I.D.: NF09B

KARCO Engineering





Curve Description	CURNO	Type
"D" Plane Rotation	003	FIL

Units	Max	Time	Min	Time	SAE Class
Degrees	74.0	53.2	-50.7	166.6	60

Curve Description	CURNO	Type
Neck Moment Y	002	FIL

Units	Max	Time	Min	Time	SAE Class
Nm	46.5	48.4	-16.6	10.7	600

Test Program: 3 Year Old Hybrid III Neck Flexion Test

Test Date: 8/26/03

A.T.D. Serial No.: 139

Test I.D.: NF09B

KARCO Engineering

Calibration Data Sheet
Hybrid III 3 Year Old
Neck Extension Test

ATD Serial No.: 139

Test I.D.: NE09B

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		^{o}C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	3.55 to 3.75	3.60	Pass
Pendulum Deceleration	10 Msec.	m/s	1.0 to 1.4	1.3	Pass
	20 Msec.	m/s	1.9 to 2.5	2.5	Pass
	30 Msec.	m/s	2.8 to 3.5	2.8	Pass
"D" Plane Rotation	Maximum	Degrees	83.0 to 93.0	85.9	Pass
Peak Moment in Rotation	Maximum	Nm	-43.7 to -53.3	-47.0	Pass
Positive Moment Decay, Time to 10Nm		Msec.	60.0 to 80.0	67.0	Pass
			Overall Test Results		Pass

Laboratory Technician

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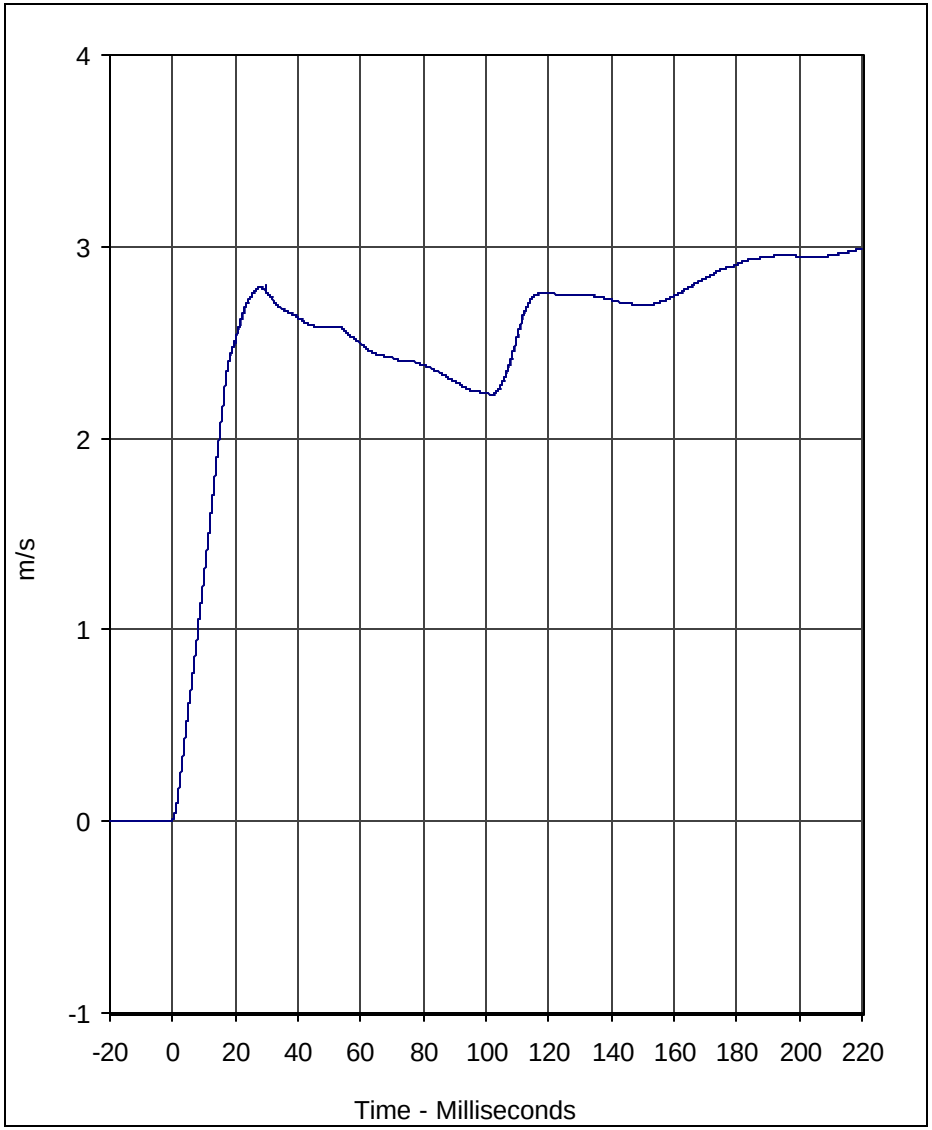
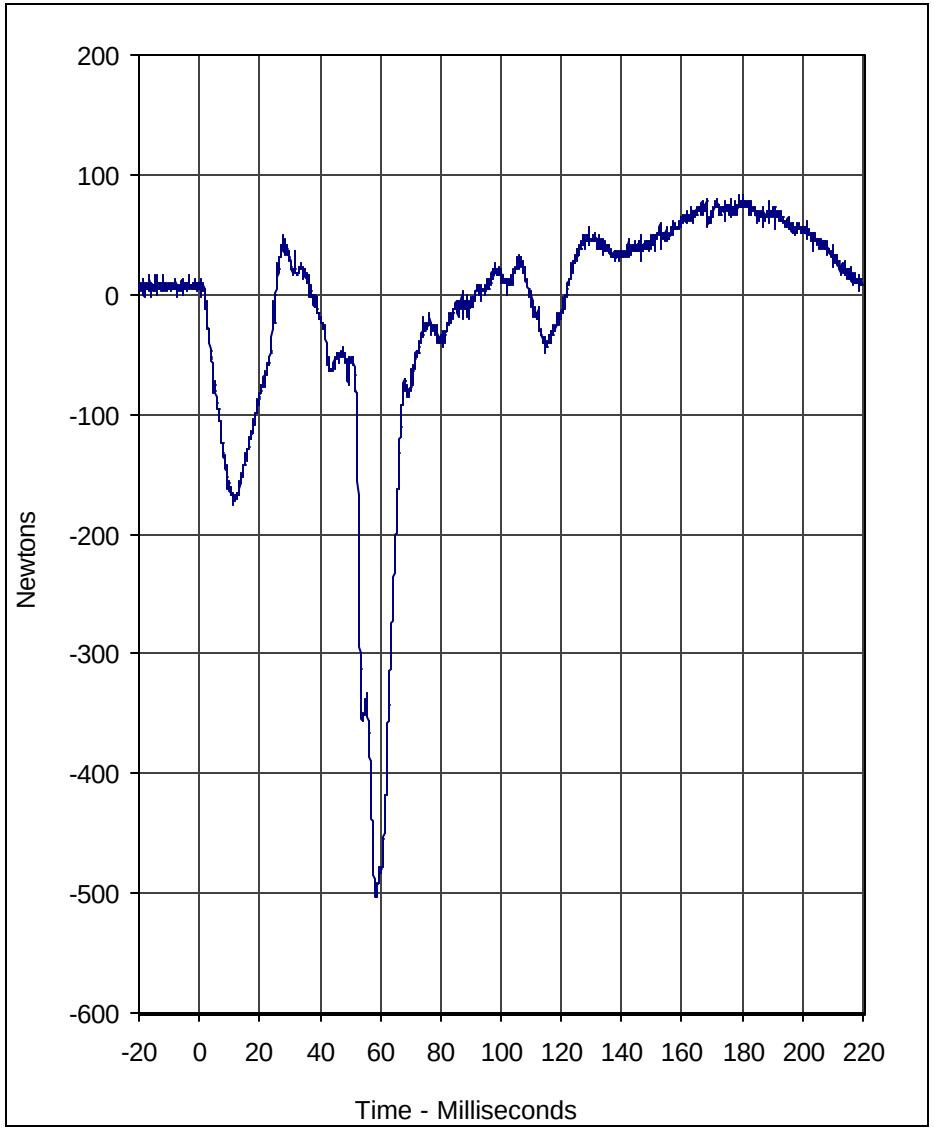
Test Date





Curve Description	CURNO	Type
Pendulum Velocity	001	FIL

Units	Max	Time	Min	Time	SAE Class
m/s	3.0	220.0	0.0	-0.6	180

Curve Description	CURNO	Type
Neck Force X	002	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	82.7	179.1	-503.7	58.6	1000

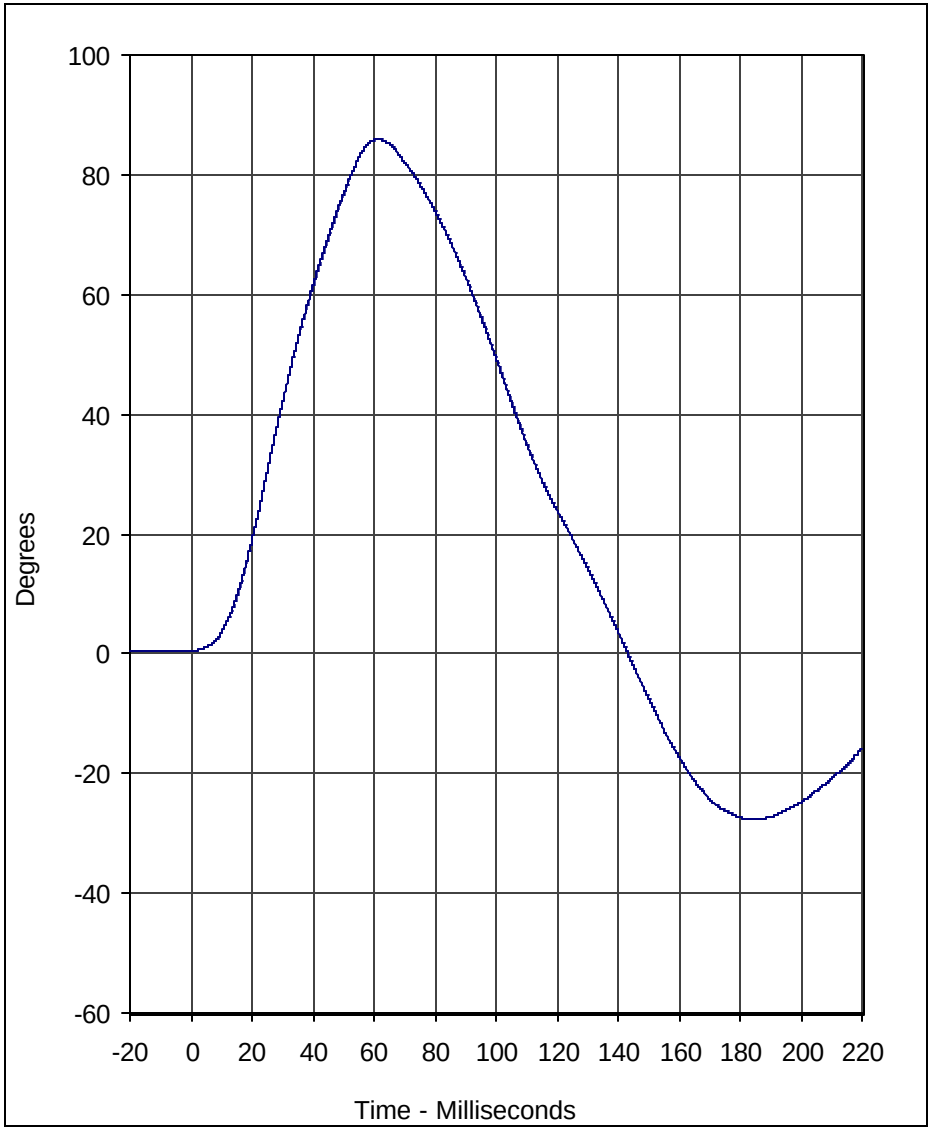
Test Program: 3 Year Old Hybrid III Neck Extension Test

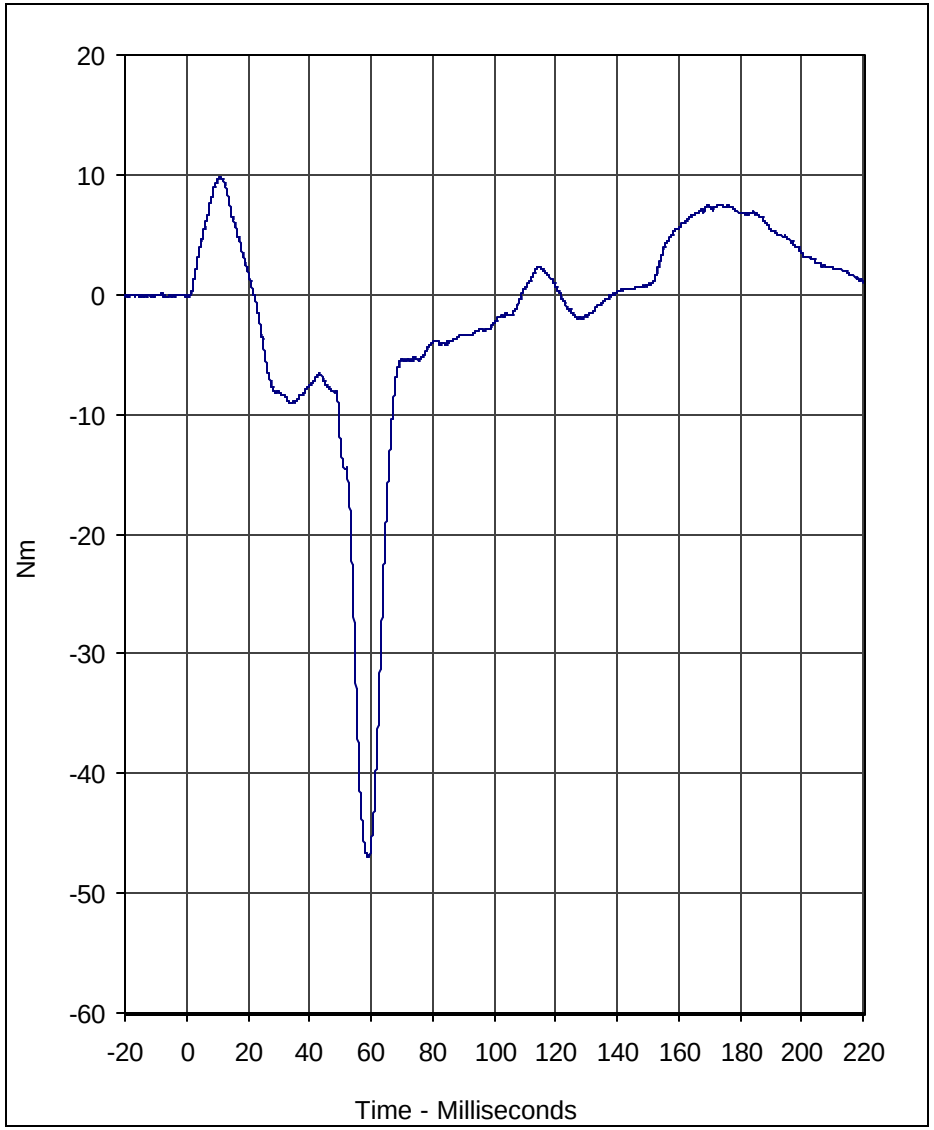
Test Date: 8/26/03

A.T.D. Serial No.: 139

Test I.D.: NE09B

KARCO Engineering





Curve Description	CURNO	Type
"D" Plane Rotation	003	FIL

Units	Max	Time	Min	Time	SAE Class
Degrees	85.9	61.1	-27.6	184.7	60

Curve Description	CURNO	Type
Neck Moment Y	002	FIL

Units	Max	Time	Min	Time	SAE Class
Nm	9.8	10.9	-47.0	59.0	600

Test Program: 3 Year Old Hybrid III Neck Extension Test

Test Date: 8/26/03

A.T.D. Serial No.: 139

Test I.D.: NE09B

KARCO Engineering

Calibration Data Sheet
Hybrid III 3 Year Old
Torso Flexion Test

ATD Serial No.: 139

Test I.D.: TF09A

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
Initial reference plane angle	Degrees	≤15.0	2.7	Pass
Peak Force at 45 +/-0.5 degrees	Newtons	130.0 to 180.0	137.5	Pass
Torso rotation rate	deg/sec	0.5 to 1.5	0.8	Pass
Final reference plane angle	Degrees	+/-10	5.2	Pass
		Overall Test Results		Pass

Laboratory Technician

August 26, 2003

Test Date

Calibration Data Sheet
Hybrid III 3 Year Old
External Measurements

ATD Serial No.: 139

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	539 to 554	545	Pass
B - Shoulder pivot height	mm	307 to 323	320	Pass
C - "H" point height	mm	34 to 45	40	Pass
D - "H" point from backline	mm	57 to 67	60	Pass
E - Shoulder pivot from back	mm	61 to 71	65	Pass
F - Thigh clearance	mm	81 to 91	90	Pass
G - Elbow back to wrist pivot	mm	247 to 263	260	Pass
H - Skull cap to back line	mm	48 to 58	50	Pass
I - Shoulder to elbow length	mm	185 to 201	190	Pass
J - Elbow rest height	mm	134 to 149	140	Pass
K - Buttock to knee length	mm	285 to 300	290	Pass
L - Poplipteal length	mm	219 to 234	225	Pass
M - Knee pivot height	mm	242 to 257	250	Pass
N - Buttock poplipteal length	mm	218 to 233	225	Pass
O - Chest depth with jacket	mm	139 to 154	150	Pass
P - Foot length	mm	138 to 148	140	Pass
R - Buttock to knee pivot length	mm	251 to 262	255	Pass
S - Head Breadth	mm	128 to 144	135	Pass
T - Head Depth	mm	167 to 183	175	Pass
U - Hip breadth	mm	201 to 216	205	Pass
V - Shoulder breadth	mm	237 to 252	245	Pass
W - Foot breadth	mm	54 to 64	60	Pass
X - Head circumference	mm	500 to 516	515	Pass
Y - Chest circumference with jacket	mm	527 to 553	545	Pass
Z - Waist circumference	mm	527 to 553	550	Pass
AA - Location for chest circumference	mm	249 to 259	255	Pass
BB - Location for waist circumference	mm	160 to 170	165	Pass
		Overall Test Results		Pass

Laboratory Technician

August 26, 2003
Test Date