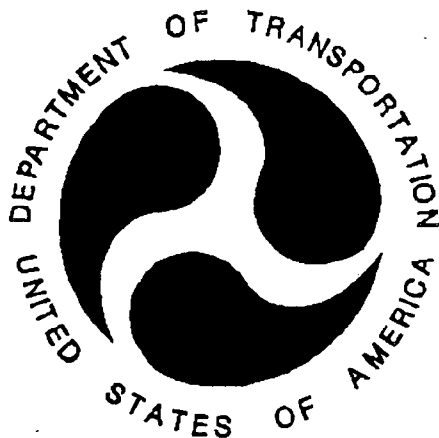


REPORT NUMBER KAR-20-04

NEW CAR ASSESSMENT PROGRAM
FRONTAL BARRIER IMPACT TEST

FUJI HEAVY IND.
2000 SUBARU LEGACY L AWD
4-DOOR SEDAN
NHTSA NUMBER: MY5500

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



DECEMBER 15, 1999

FINAL REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
SAFETY PERFORMANCE STANDARDS
OFFICE OF CRASHWORTHINESS STANDARDS
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Date of Acceptance

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16. Abstract A 35 mph (56.3 km/h) frontal barrier impact was conducted on a 2000 Subaru Legacy L AWD 4-DoorSedan at KARCO Engineering on December 7, 1999. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and footwell intrusion performance. The impact velocity was 56.75 km/h. The ambient temperature at the barrier face at the time of impact is 15.5 degrees Celcius. The vehicle's maximum post test static crush is 364 mm located to the right of the vehicle centerline. The test vehicle is equipped with a 3-point continuous belt system and second generation supplemental airbags in both front outboard seating positions. With respect to FMVSS 208 "Occupant Crash Protection", the occupant injury criteria summary is as follows:					
Measurement Description		Units	Threshold	Driver ATD	Passenger ATD
Head Injury Criteria (HIC)		N/A	1000	559.2	558.4
Max. Thorax Accel. (3 msec Clip)		G's	60	45.1	46.3
Left Femur force		Newtons	10009	-2814.7	-5140.1
Right Femur Force		Newtons	10009	-4983.4	-6134.5
17. Key Words 56.3 km/h NCAP Frontal Barrier Impact Test New Car Assessment Program (NCAP) 2000 Subaru Legacy L AWD 4-DoorSedan NHTSA No. MY5500				18. Distribution Statement Copies of this report are available from: NHTSA Technical Reference Division National Highway Traffic Safety Admin. 400 Seventh St., SW, Room 5108 Washington, DC 20590	
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SECTION 1

PURPOSE, TEST PROCEDURE AND SUMMARY OF TEST MY5500

1.1 PURPOSE

This 35 mph (56.3 km/h) frontal barrier impact test is part of the FY' 99 New Car Assessment Program (NCAP) frontal barrier crash worthiness evaluation program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract Number DTNH22-97-D-02007. The purpose of this test is to obtain vehicle crashworthiness, occupant restraint system performance, and lower leg data for frontal barrier impacts. The impact velocity used in this test is in excess of the current 30 mph (48.3 km/h) FMVSS 208/212/219/301 requirements.

1.2 TEST PROCEDURE

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

The test was conducted at KARCO Engineering on December 7, 1999 at a speed of 56.75 km/h. The test vehicle was instrumented with eight (8) accelerometers to measure longitudinal axi accelerations. The driver and passenger's restraint systems were instrumented with four (4) seat belt load cells to measure lap and shoulder belt-tension. The-specified impact velocity range was 55.5 to 57.1 km/h. The frontal barrier impact event was documented by one (1) real-time panning motion picture camera and eighteen (18) high-speed motion picture cameras. The pre- and post-test conditions were recorded by one (1) real-time motion picture camera. Camera locations and pertinent camera information is documented in the data sheets. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

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

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

1.3 SUMMARY OF FRONTAL BARRIER IMPACT TEST

A rigid load cell barrier was impacted by a 2000 SUBARU LEGACY L AWD 4-DOOR SEDAN at a velocity of 56.75 km/h. The test vehicle weight is 1676 kilograms with two (2) part 572E 50th percentile adult male ATDs. Twenty-four (24) load cell barrier data channels were obtained in conducting the December 7, 1999 NCAP test. The test vehicle is equipped with a horizontally opposed 2.5-liter, 4-cylinder engine and a 5-speed manual transmission.

The driver Head Injury Criteria (HIC) is 559.2. The maximum resultant chest deceleration over three (3) milliseconds is 45.1 g's. The left and right femur loads are -2814.7 and -4983.4 Newtons, respectively. Chest deflection for the driver ATD peaked at -29.3mm. The driver ATD head contacted the airbag and headrest, its chest and abdomen contacted the airbag, the left and right knees contacted the knee bolster and steering column.

The right front passenger's HIC is 558.4. The maximum resultant chest deceleration over three (3) milliseconds is 46.3 g's. The left and right femur loads are -5140.1 and -6134.5 Newtons respectively. Chest deflection for the passenger ATD peaked at -26.8 mm. The passenger ATD head contacted the airbag and headrest, the chest and abdomen contacted the airbag, the left knee contacted the glove box and the right knee had no contact.

Maximum seat belt spool out as measured by on-board pullout potentiometers is 185.2mm for the driver ATD and 206.6 mm for the passenger ATD. The shoulder belt stretch is not measured with pre-tensioner systems.

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

The test vehicle sustained a maximum static crush of 364 mm located to the right of the vehicle centerline. Both the driver and passenger side doors opened without the aid of tools.

1.4 GENERAL COMMENTS

The 2000 SUBARU LEGACY L AWD 4-DOOR SEDAN passed the requirements of FMVSS 208, FMVSS 212, FMVSS 219 and FMVSS 301-75. Data pertaining to these standards are presented in the data sheets.

The vehicle, occupant, camera and measurement data are presented in Section 2. Appendix A contains the still photograph prints. Appendix B contains the dummy and vehicle response data traces. Appendix C contains Load Cell Barrier information. Appendix D contains the instrumentation data channel assignments. Appendix E contains the dummy calibration data and Appendix F contains the owner's manual instructions for the occupant seating and restraint systems.

SECTION 2
OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2000 SUBARU LEGACY L AWD 4-DOOR SEDAN

NHTSA No.: MY5500

Test Program: 2000 NHTSA 35 MPH NCAP

Test Date: 12/7/99

CONVERSION FACTORS USED IN THIS REPORT*

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

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

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

Test Vehicle: 2000 Subaru Legacy L AWD
Test Program: 2000 NHTSA 35 MPH NCAP

NHTSA No.: MY5500
Test Date: 12/7/99

PRIMARY IMPACT DATA

Measured Parameter	Units	Value
Velocity at Impact	km/h	56.75
Test Weight	kg	1676
Impact Angle	degrees	0
Average Rebound	mm	212
Maximum Static Crush	mm	364

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Passenger
Front Door Opening	Opened	Opened
Rear Door Opening	Opened	Opened
Seat Track Shift (mm)	0	0
Seat Back Failure	None	None

TEST DUMMY INFORMATION

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

16mm MOVIE COVERAGE

High Speed	18
Real Time	1
Total	19

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

**DATA SHEET NO. 2
GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2000 Subaru Legacy L AWD
Test Program: 2000 NHTSA 35 MPH NCAP

NHTSA No.: MY5500
Test Date: 12/7/99

TEST VEHICLE INFORMATION

Manufacturer	Fuji Heavy Ind.
Model	Subaru Legacy
Body Style	4-Door Sedan
NHTSA NO.	MY5500
VIN	4S3BE6359Y6206608
Color	Winter Green
Delivery Date	11/30/99
Odometer Reading (mile)	132
Dealer	San Bernardino Subaru
Transmission	Manual
Final Drive	All Wheel Drive
Number of Cylinders	4
Engine Displacement (L)	2.5
Engine Placement	Horizontally Opposed

TEST VEHICLE OPTIONS

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

DATA FROM CERTIFICATION LABEL

Manufactured By	Fuji Heavy Ind.	GVWR (kg)	1996
Date of Manufacture	October-99	GAWR Front (kg)	1007
		GAWR Rear (kg)	989

DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	224	210
Cold Pressure (kPa)	224	210
Recommend Tire Size	205/60/15	205/60/15
Tire Size on Vehicle	205/60/15	205/60/15
Tire Manufacturer	Bridgestone	Bridgestone

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench	None	
Number of Occupants	2	3	0	5
Capacity Wt. (VCW) (kg)				386
Cargo Weight (RCLW) (kg)				45

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

Test Vehicle: 2000 Subaru Legacy L AWD
 Test Program: 2000 NHTSA 35 MPH NCAP

NHTSA No.: MY5500
 Test Date: 12/7/99

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	416	329		436	396	
Right	kg	409	328		444	399	
Ratio	%	55.7	44.3		52.5	47.5	
Totals	kg	825	657	1482	880	795	1675

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1482
Weight of 2 P572 ATD's	kg	152
Rated Cargo/Luggage Weight (RCLW)	kg	45
Calculated Vehicle Target Weight (TVTW)	kg	1679

TEST VEHICLE ATTITUDE AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	670	675	683	690	1245
As Tested	mm	636	636	647	645	1245

Vehicle Wheel base (mm): 2650

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

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

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

FUEL SYSTEM DATA

Fuel System Capacity From Owner's Manual (L): 64.0

Usable Capacity Figure Furnished by COTR (L): n/a

Actual Test Volume with entire fuel System Filled (L): 59.5

Test Fluid Type: Stoddard Solvent ; Specific Gravity: 0.764

Is Vehicle Fuel Pump Electric or Mechanical?: Electric

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

Fuel System Particulars: Will pump for 5 seconds when ignition is turned on.

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

Test Vehicle: 2000 Subaru Legacy L AWD
Test Program: 2000 NHTSA 35 MPH NCAP

NHTSA No.: MY5500
Test Date: 12/7/99

SPEED TRAP DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	55.51 to 57.12	56.75
Trap No. 1 Entry Distance	mm	< 1524	1524
Trap No. 1 Exit Distance	mm	< 1524	305
Trap No. 2 Velocity (Redundant)	km/h	55.51 to 57.12	56.79
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	4356	4149	-207
Center	mm	4676	4344	-332
Right Side	mm	4374	4110	-264

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	175
Center	mm	230
Right Side	mm	230
Average	mm	212

DATA SHEET NO. 4
TEST VEHICLE INFORMATION

Test Vehicle: 2000 SUBARU LEGACY L AWD 4-DOOR SEDAN

NHTSA No.: MY5500

Test Program: 2000 NHTSA 35 MPH NCAP

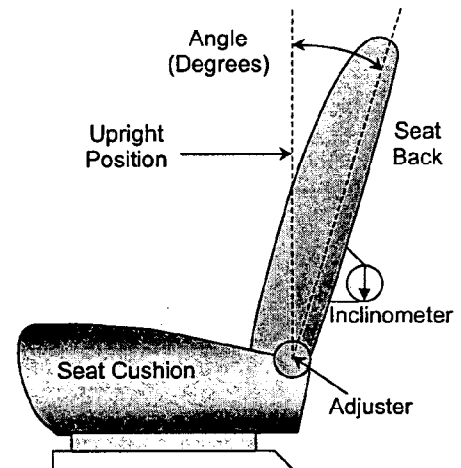
Test Date: 12/7/99

NOMINAL DESIGN RIDING POSITION

The driver and passenger seat backs are positioned to the manufacturers designated angle. The procedure is as follows: The seat back angle is adjusted so that the distance from the center of the inner sunvisor bracket bolt to the center of the outer headrest mounting hole is per manufacturers specifications. An inclinometer is placed against the flat surface of the tool and the seat back angle is measured directly from the dial face.

Driver seat back angle: 20.0° with a seated dummy

Passenger seat back angle: 20.0° with a seated dummy



FRONT SEAT ASSEMBLY

SEAT FORE/AFT POSITIONS

Both driver and passenger seats have manually operated seats. The total travel on the driver and the passenger is 18 seat positions. The fore/aft position is set at the 10th position for both driver and passenger.

Driver seat fore/aft total travel: 18 seat detent positions

Passenger seat fore/aft total travel: 18 seat detent positions

Driver seat fore/aft position: Set at 10th detent position

Passenger seat fore/aft position: Set at 10th detent position

SEAT BELT UPPER ANCHORAGE

The test vehicle is equipped with adjustable anchorages for both driver and passenger seat positions. There are 5 positions or detents. The anchorages were placed in the mid position.

DATA SHEET NO. 4...(continued)

TEST VEHICLE INFORMATION

Test Vehicle: 2000 SUBARU LEGACY L AWD 4-DOOR SEDAN

NHTSA No.: MY5500

Test Program: 2000 NHTSA 35 MPH NCAP

Test Date: 12/7/99

FUEL TANK CAPACITY DATA

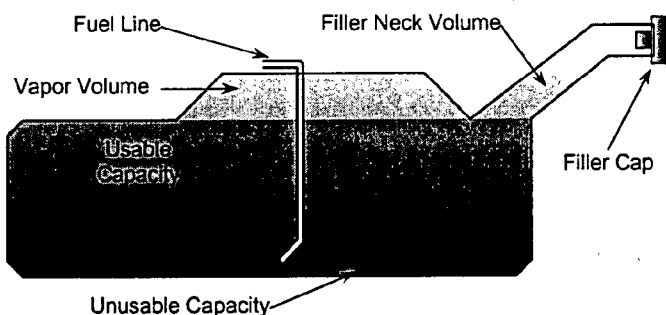
The "Usable Capacity" of the standard equipment fuel tank is: 64.0 liters

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

"Usable Capacity" used for certification tests FMVSS 301 requirements: 58.8 to 60.1 liters

Actual amount of Stoddard solvent added to vehicle for certification test: 59.5 liters

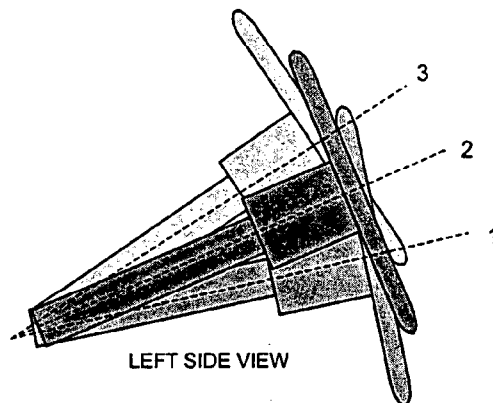
The test vehicle is equipped with an electric fuel pump. The fuel pump is key operated w/automatic shut-off after a few seconds. Fuel filler door is located on the right rear fender.



VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

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



STEERING COLUMN ASSEMBLY

Lowermost, position 1: 21°

Geometric center, position 2: 22.5°

Uppermost, position 3: 24°

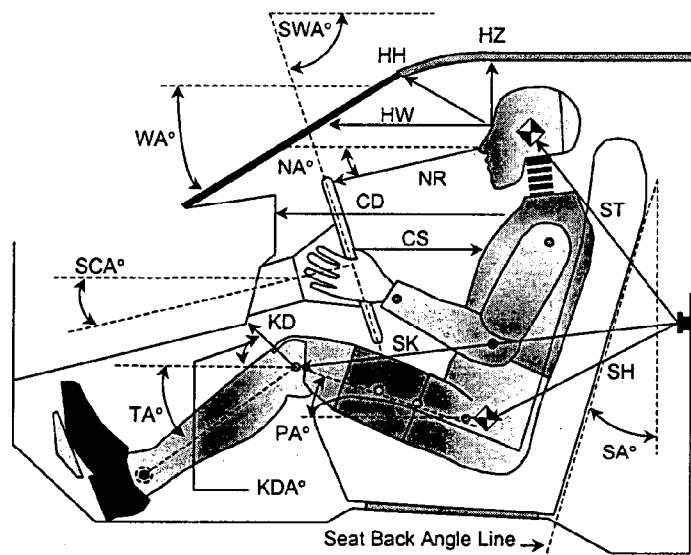
DATA SHEET NO. 5 **DUMMY POSITIONING IN VEHICLE**

Test Vehicle: 2000 SUBARU LEGACY L AWD 4-DOOR SEDAN

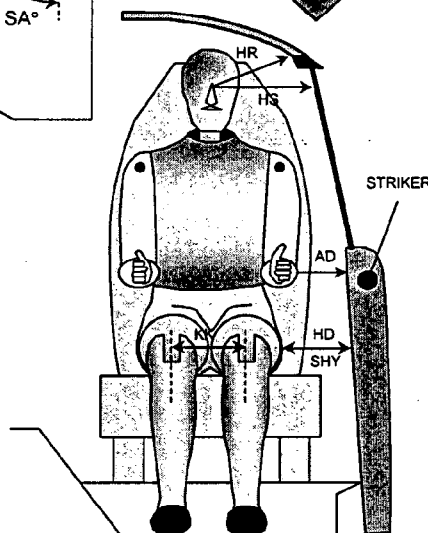
NHTSA No.: MY5500

Test Program: 2000 NHTSA 35 MPH NCAP

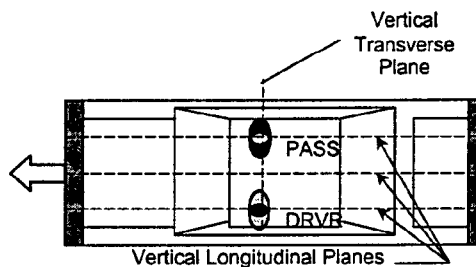
Test Date: 12/7/99



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. 5...(continued)
DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2000 Subaru Legacy L AWD
 Test Program: 2000 NHTSA 35 MPH NCAP

NHTSA No.: MY5500
 Test Date: 12/7/99

TEST DUMMY POSITION MEASUREMENTS

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA	Windshield Angle		30		
SWA	Steering Wheel Angle		67		
SCA	Steering Column Angle		23		
SA	Seat Back Angle		20		20
HZ	Head to Roof (Z)	200	90	200	90
HH	Head to Header	315	0	305	0
HW	Head to Windshield	575	0	560	0
HR	Head to Side Header (Y)	250		250	
NR	Nose to Rim	410	10		
CD	Chest to Dash	510		540	
CS	Chest to Steering Hub	305	0		
RA	Rim to Abdomen	190	0		
KDL	Left Knee to Dash	165	25	165	
KDR	Right Knee to Dash	170		165	22
PA	Pelvic Angle		23		23
TA	Tibia Angle		42		37
KK	Knee to Knee (Y)	255		205	
SK	Striker to Knee	563	0	551	1
ST	Striker to Head	544	81	540	7
SH	Striker to H-Point	211	32	215	30
SHY	Striker to H-Point (Y)	220		215	
HS	Head to Side Window	315		320	
HD	H-Point to Door (Y)	135		115	
AD	Arm to Door (Y)	120		20	
AA	Ankle to Ankle	n/a		n/a	

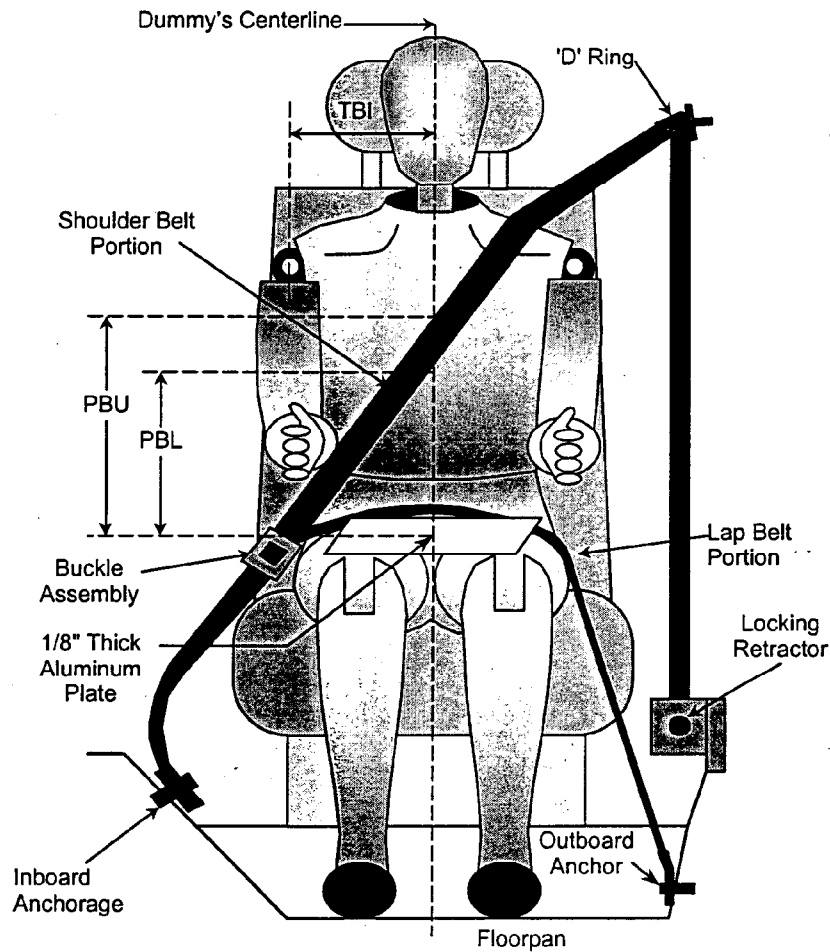
DATA SHEET NO. 6
SEAT BELT POSITIONING DATA

Test Vehicle: 2000 SUBARU LEGACY L AWD 4-DOOR SEDAN

NHTSA No.: MY5500

Test Program: 2000 NHTSA 35 MPH NCAP

Test Date: 12/7/99



SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
TBI - Dummy centerline to shoulder bolt	mm	224	220
PBU - Top surface of reference to belt upper edge	mm	295	290
PBL - Top surface of reference to belt lower edge	mm	220	220
Lap Belt tension	Newtons	10	10
Shoulder Belt tension	N/A	Retractor	Retractor

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

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

NHTSA No.: MY5500

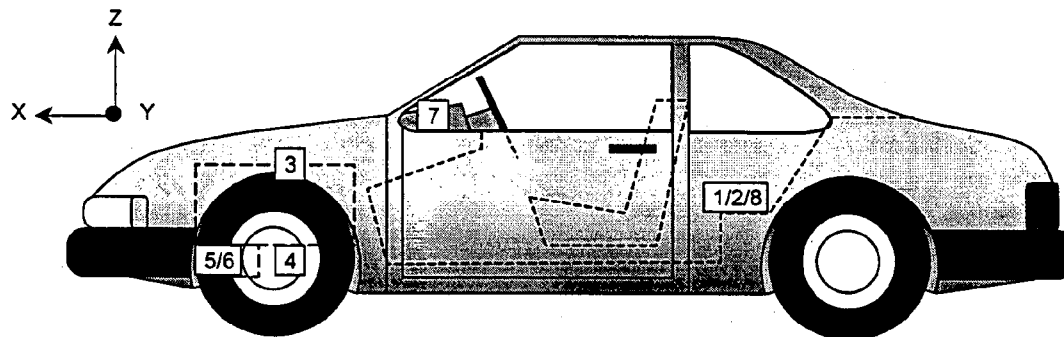
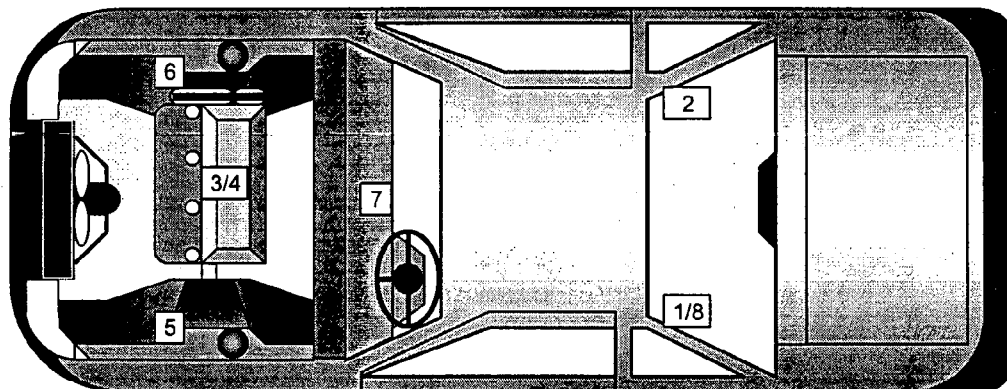
Test Program: 2000 NHTSA 35 mph NCAP

Test Date: 12/7/99

VEHICLE X-AXIS ACCELEROMETER PEAK DATA AND PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)			Peak Values				
		X	Y	Z	Units	Max	Time	Min	Time
1	Left Rear X-Member (Pri.)	1950	-670	355	G's	1.8	124.6	-49.7	38.0
2	Right Rear X-Member (Pri.)	1885	685	355	G's	1.3	121.2	-47.3	38.2
3	Engine Top	3934	-163	815	G's	83.3	38.4	-172.4	28.4
4	Engine Bottom	3984	0	204	G's	44.4	36.6	-168.8	28.9
5	Left Brake Caliper	3585	-710	325	G's	26.9	53.3	-97.3	42.0
6	Right Brake Caliper	3585	710	325	G's	35.7	47.4	-136.8	42.2
7	Instrument Panel	3144	0	955	G's	71.5	69.5	-91.4	43.6
8	Left Rear X-Member (Rednt.)	1910	-670	355	G's	1.6	123.8	-50.4	38.0

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



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

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

NHTSA No.: MY5500

Test Program: 2000 NHTSA 35 mph NCAP

Test Date: 12/7/99

HEAD PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	16.7	216.5	-56.6	71.8	18.2	225.0	-56.0	72.7
Head CG	Y	G's	1.6	162.5	-9.8	79.9	6.2	218.8	-15.9	86.5
Head CG	Z	G's	23.0	44.2	-6.3	102.0	25.6	71.3	-7.2	112.0
Head CG Resultant	N/A	G's	57.9	71.8			60.8	72.7		

CHEST PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	4.0	256.5	-45.5	56.6	4.0	267.5	-49.2	64.9
Chest CG	Y	G's	3.7	91.9	-5.3	47.9	2.9	73.7	-7.1	68.5
Chest CG	Z	G's	10.4	42.4	-7.3	107.4	12.6	83.3	-8.6	109.4
Chest CG Resultant	N/A	G's	45.7	56.4			49.2	64.9		

FEMUR PEAK FORCES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Femur	Z	Newtons	763.1	42.5	-2814.7	50.4	827.1	44.0	-5140.1	53.4
Right Femur	Z	Newtons	154.7	241.9	-4983.4	48.8	290.1	42.9	-6134.5	53.3

SEAT BELT SENSOR PEAK VALUES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Lap Belt Force	N/A	Newtons	7397.0	53.5	3.9	285.1	8277.0	53.2	-12.8	297.5
Shoulder Belt Force	N/A	Newtons	4615.2	72.4	-14.5	214.3	4918.3	47.8	-8.8	209.4
Shoulder Belt Pullout	N/A	MM	185.2	86.3	-6.5	29.9	206.6	86.0	-6.8	30.4
Shoulder Belt Stretch	N/A	MM/CM	0.000	0.0	0.000	0.0	0.000	0.0	0.000	0.0

* Not Used on vehicle with pre-tensioners.

HEAD INJURY CRITERIA (HIC)

Location	Driver				Passenger			
	HIC	Avg G's	T ¹	T ²	HIC	Avg G's	T ¹	T ²
Head CG Primary	559.2	47.5	55.5	91.4	558.4	47.5	60.5	96.4

CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T ¹	T ²	CLIP	T ¹	T ²
Chest CG Primary	45.1	55.5	58.5	46.3	63.9	66.9

DATA SHEET NO: 8...(continued)

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

NHTSA No.: MY5500

Test Program: 2000 NHTSA 35 mph NCAP

Test Date: 12/7/99

PELVIC PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Pelvis	X	G's	5.7	97.5	-71.9	50.8	5.0	111.1	-87.2	52.6
Pelvis	Y	G's	7.2	53.8	-5.4	42.0	2.4	24.1	-10.6	47.8
Pelvis	Z	G's	3.6	259.9	-29.7	58.0	4.8	269.3	-35.3	60.6

UPPER NECK PEAK FORCES AND MOMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Neck Force	X	Newtons	578.7	72.8	-341.0	146.3	804.8	78.0	-381.7	47.8
Neck Force	Y	Newtons	126.1	55.6	-93.7	77.0	254.7	67.0	-138.0	144.6
Neck Force	Z	Newtons	1335.0	56.6	-328.9	254.1	1114.0	56.8	-436.9	269.1
Neck Moment	X	N·m	6.0	218.1	-13.4	88.9	13.8	90.3	-9.0	65.7
Neck Moment	Y	N·m	28.8	57.6	-17.5	268.6	58.3	63.0	-24.1	269.3
Neck Moment	Z	N·m	8.3	18.9	-5.2	232.1	21.2	96.1	-8.9	149.5

FOOT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Foot Aft	X	G's	11.5	90.7	-53.8	47.3	14.5	77.3	-69.4	42.3
Left Foot Aft	Z	G's	3.7	288.9	-55.2	41.8	9.0	49.7	-57.7	43.2
Left Foot Fore	Z	G's	37.4	15.8	-73.1	41.6	47.8	49.0	-87.4	41.0
Right Foot Aft	X	G's	28.8	33.3	-92.9	46.2	19.9	79.5	-45.6	45.1
Right Foot Aft	Z	G's	22.0	43.4	-111.8	41.4	8.5	56.1	-46.0	45.1
Right Foot Fore	Z	G's	32.4	29.9	-206.2	33.0	0.0	0.0	0.0	0.0

* Passenger channel failed, no data.

UPPER AND LOWER TIBIA PEAK FORCES AND MOMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Lower Moment	X	N·m	16.0	68.8	-11.6	46.2	28.4	50.4	-9.6	42.8
Left Lower Moment	Y	N·m	29.3	82.7	-28.0	43.8	34.6	89.1	-50.4	43.7
Left Lower Force	Z	Newtons	67.2	182.5	-1771.5	41.2	192.6	183.8	-1985.0	29.7
Left Upper Moment	X	N·m	9.5	18.6	-40.8	66.2	15.1	72.7	-30.7	47.7
Left Upper Moment	Y	N·m	114.0	46.8	-87.7	42.8	48.0	53.3	-105.5	43.7
Right Lower Moment	X	N·m	23.5	42.0	-145.5	43.9	27.8	86.1	-16.6	47.7
Right Lower Moment	Y	N·m	112.2	66.7	-33.1	43.1	55.3	82.2	-36.9	43.9
Right Lower Force	Z	Newtons	103.8	248.5	-4659.0	44.0	124.5	262.0	-1775.2	80.7
Right Upper Moment	X	N·m	49.5	43.6	-60.3	49.9	10.6	272.7	-63.4	60.8
Right Upper Moment	Y	N·m	75.0	53.0	-129.1	41.0	44.5	51.6	-86.8	43.1

DATA SHEET NO. 8...(continued)

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

NHTSA No.: MY5500

Test Program: 2000 NHTSA 35 mph NCAP

Test Date: 12/7/99

CHEST PEAK DISPLACEMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	MM	0.2	2.8	-29.3	76.9	0.2	2.0	-26.8	77.0

HEAD REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	17.1	217.7	-56.5	72.9	17.8	225.4	-54.7	72.5
Head CG	Y	G's	2.3	149.0	-8.8	79.9	6.4	218.0	-17.4	89.1
Head CG	Z	G's	20.0	56.1	-7.5	106.6	23.3	71.4	-6.2	107.8
Head CG Resultant	N/A	G's	57.5	72.9			59.2	72.5		

CHEST REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	4.2	256.0	-45.1	56.4	4.0	267.5	-48.3	64.9
Chest CG	Y	G's	3.3	91.5	-6.9	48.0	5.1	73.7	-5.8	68.4
Chest CG	Z	G's	12.8	80.9	-6.9	106.3	14.5	83.3	-7.6	109.1
Chest CG Resultant	N/A	G's	45.6	73.7			48.3	64.9		

REDUNDANT HEAD INJURY CRITERIA (HIC)

Location	Driver				Passenger			
	HIC	Avg G's	T ¹	T ²	HIC	Avg G's	T ¹	T ²
Head CG Redundant	547.3	47.1	55.5	91.4	539.2	46.8	59.5	95.4

REDUNDANT CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T ¹	T ²	CLIP	T ¹	T ²
Chest CG Redundant	44.3	55.5	58.5	45.4	63.9	66.9

DATA SHEET NO. 9**SEAT BELT PERFORMANCE ASSESSMENT TEST DATA**Test Vehicle: 2000 SUBARU LEGACY L AWD 4-DOOR SEDANNHTSA No.: MY5500Test Program: 2000 NHTSA 35 MPH NCAPTest Date: 12/7/99**SEAT BELT PLACEMENT MEASUREMENTS**

Measurement Description	Units	Driver	Passenger
TCI - Dummy centerline to shoulder bolt	mm	224	220
PBU - Top surface of reference to belt upper edge	mm	295	290
PBL - Top surface of reference to belt lower edge	mm	220	220
Lap Belt tension	Newtons	10	10
Shoulder Belt tension	N/A	Retractor	Retractor

BELT LENGTH DATA

Measurement Description	Units	Driver	Passenger
Retractor reel to 'D' ring	mm	690	690
Shoulder belt length as measured on ATD	mm	855	785
Lap belt length as measured on ATD	mm	780	770
Remainder of belt on reel	mm	550	560
Total belt length for continuous webbing systems	mm	2875	2805

SHOULDER BELT SPOOL-OFF DATA

Measurement Description	Units	Driver	Passenger
As determined mechanically	mm	185.0	187.0
As determined electronically	mm	185.2	206.6

BELT STRETCH DATA

Measurement Description	Units	Driver	Passenger
Electronically from shoulder belt load cell and "D" ring	mm/cm	0.00*	0.00*
Mechanically	mm/cm	1.00	1.00

*Not used with shoulder belt pre-tensioner systems.

DATA SHEET NO. 10
SUMMARY OF FMVSS 212 DATA

Test Vehicle: 2000 SUBARU LEGACY L AWD 4-DOOR SEDAN

NHTSA No.: MY5500

Test Program: 2000 NHTSA 35 MPH NCAP

Test Date: 12/7/99

Windshield Mounting Details:

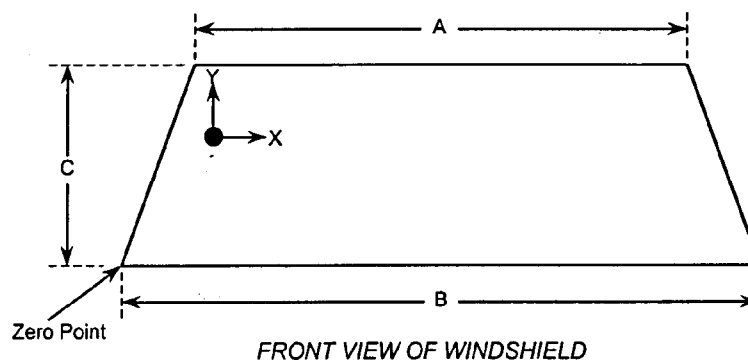
Windshield glass is secured to the vehicle frame with a rubber type adhesive. There is no molding that covers the windshield periphery at any point.

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

Temperature of windshield molding during test: 21.1 °C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% of Retention
Left Side	2088.5	2088.5	100
.2088.5	2088.5	2088.5	100
Total	4177.0	4177.0	100



WINDSHIELD DIMENSIONS

Item	Units	Segment Length	Molding Width
A	mm	1147	18
B	mm	1516	4
C	mm	757	20

DATA SHEET NO. 11

WINDSHIELD ZONE INTRUSION FMVSS 219 (PARTIAL) DATA

Test Vehicle: 2000 SUBARU LEGACY L AWD 4-DOOR SEDAN

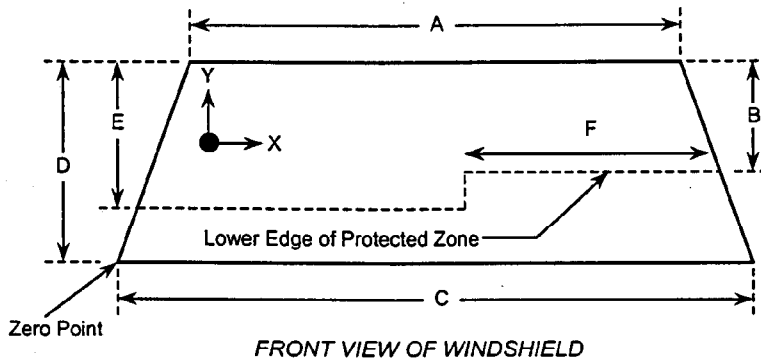
NHTSA No.: MY5500

Test Program: 2000 NHTSA 35 MPH NCAP

Test Date: 12/7/99

WINDSHIELD AND PROTECTED ZONE

Item	Units	Value
A	mm	1147
B	mm	400
C	mm	1516
D	mm	757
E	mm	473
F	mm	785



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: 2000 SUBARU LEGACY L AWD 4-DOOR SEDAN NHTSA No.: MY5500
Test Program: 2000 NHTSA 35 MPH NCAP Test Date: 12/7/99

Test Time: 1:02 PM Temperature at Time of Impact: 15.5 °C

STODDARD SOLVENT SPILLAGE MEASUREMENT

- A. From impact until vehicle motion ceases: 0.0 oz.
(Maximum Allowable = 1 ounce)
- B. For the 5 minute period after motion ceases: 0.0 oz.
(Maximum Allowable = 5 ounces)
- C. For the following 25 minutes: 0.0 oz.
(Maximum Allowable = 1 oz./minute)
- D. Spillage Details: No leakage occurred

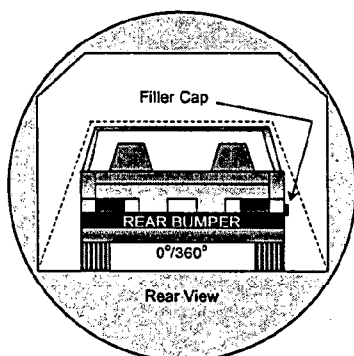
DATA SHEET NO. 13
FMVSS 301 STATIC ROLLOVER DATA SHEET

Test Vehicle: 2000 SUBARU LEGACY L AWD 4-DOOR SEDAN

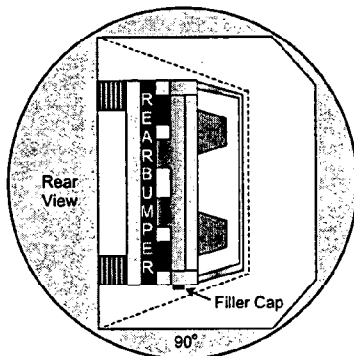
NHTSA No.: MY5500

Test Program: 2000 NHTSA 35 MPH NCAP

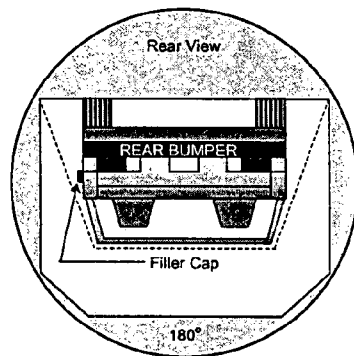
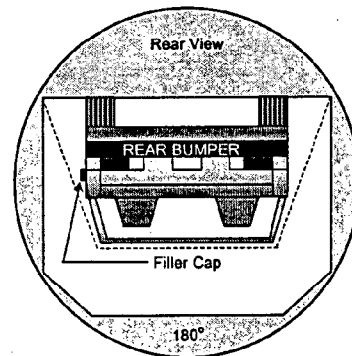
Test Date: 12/7/99



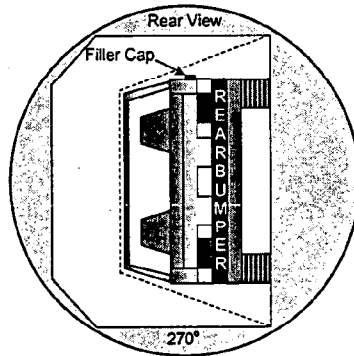
0° TO 90°



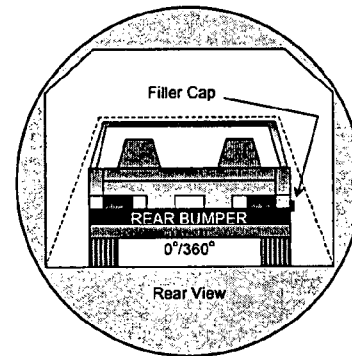
90° TO 180°



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. Details of Stoddard Solvent spillage locations:
 No solvent leakage occurred during static rollover testing.

TEST PHASE	Rotation Time (sec.)	Hold Time (sec.)	Spillage (oz.)
0° TO 90°	80	300	0.0
90° TO 180°	82	300	0.0
180° TO 270°	79	300	0.0
270° TO 360°	82	300	0.0

DATA SHEET NO. 14
VEHICLE MEASUREMENTS

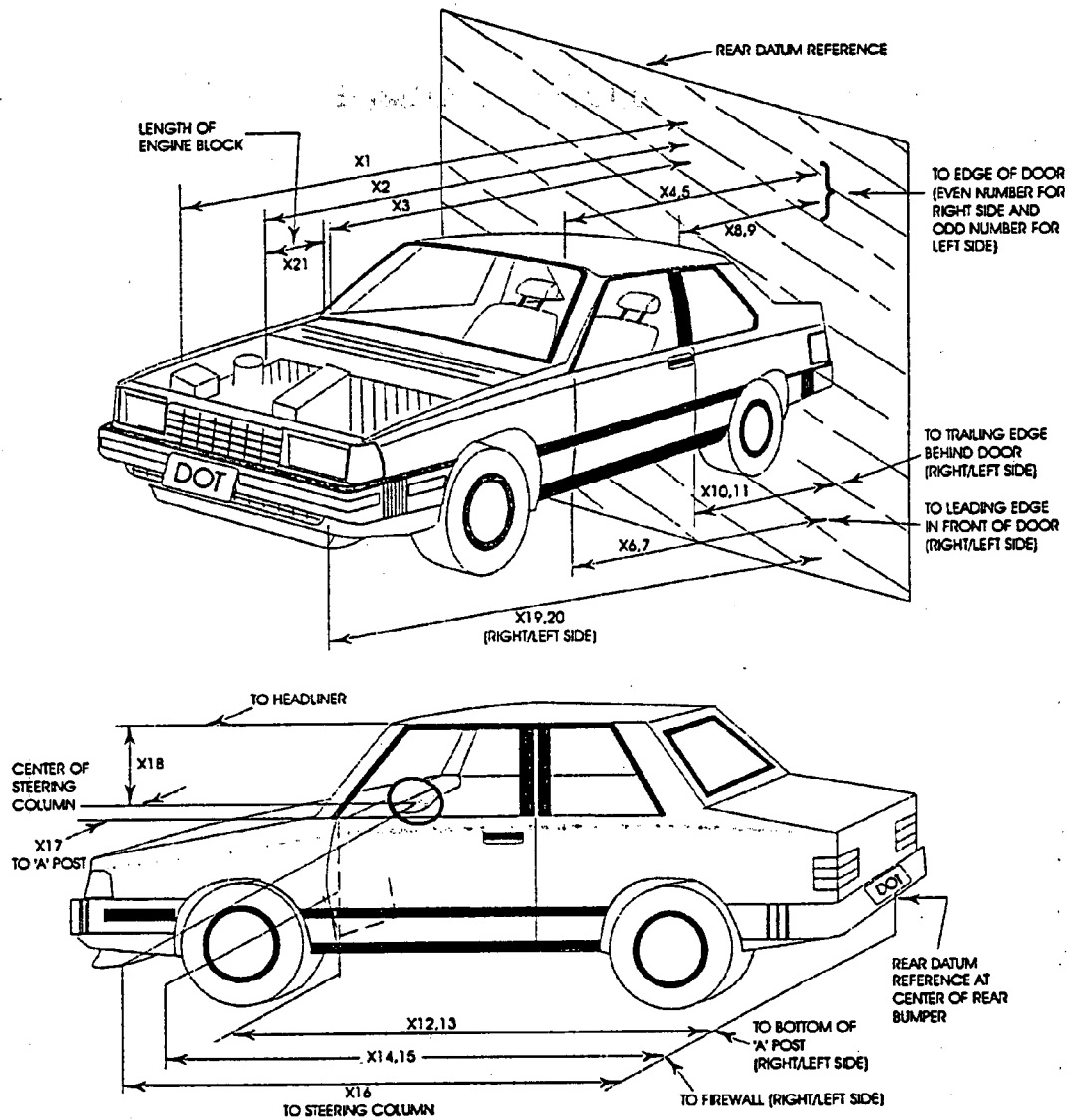
Test Vehicle: 2000 SUBARU LEGACY L AWD 4-DOOR SEDAN

NHTSA No.: MY5500

Test Program: 2000 NHTSA 35 MPH NCAP

Test Date: 12/7/99

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total length of vehicle at centerline	mm	4676	4344	-332
2	RSOV to front of engine	mm	4191	3823	-368
3	RSOV to firewall centerline	mm	3524	3476	-48
4	RSOV to leading edge of right door	mm	3200	3200	0
5	RSOV to leading edge of left door	mm	3200	3203	3
6	RSOV to lower leading edge of right door	mm	3192	3198	6
7	RSOV to lower leading edge of left door	mm	3195	3204	9
8	RSOV to upper trailing edge of right door	mm	2176	2180	4
9	RSOV to upper trailing edge of left door	mm	2180	2179	-1
10	RSOV to lower trailing edge of right door	mm	2168	2177	9
11	RSOV to lower trailing edge of left door	mm	2167	2175	8
12	RSOV to bottom of right 'A' pillar	mm	3189	3210	21
13	RSOV to bottom of left 'A' pillar	mm	3189	3218	29
14	RSOV to firewall on right side	mm	3551	3500	-51
15	RSOV to firewall of left side	mm	3548	3455	-93
16	RSOV to steering column	mm	2748	2729	-19
17	Center of steering column to left 'A' pillar	mm	386	410	24
18	Center of steering column to headlining	mm	455	420	-35
19	RSOV to right side of front bumper	mm	4374	4110	-264
20	RSOV to left side of front bumper	mm	4356	4149	-207
21	Length of engine block	mm	370	370	0
RD	RSOV to right side of dash panel	mm	2945	2950	5
CD	RSOV to center of dash panel	mm	2943	2875	-68
LD	RSOV to left side of dash panel	mm	2951	2935	-16



DATA SHEET NO. 15
CAMERA LOCATIONS

Test Vehicle: 2000 SUBARU LEGACY L AWD 4-DOOR SEDAN

NHTSA No.: MY5500

Test Program: 2000 NHTSA 35 MPH NCAP

Test Date: 12/7/99

No.	Camera View	Location (mm)			Angle (Deg.)	Film Plane to Head	Lens (mm)	Speed (fps)
		X	Y	Z				
1	Right Side, Real Time	3454	10973	1245	0	1651	Zoom	24
2	Left Side, No. 1	2000	8040	1285	1	7900	12	1010
3A	Left Side No. 2	1450	8860	1700	5	7950	35	1000
3B	Left Side No. 3A	1500	10980	1420	2	9070	50	1060
4	Left Side No. 3B	7950	8350	2935	9	11300	80	980
5	Left Side, No. 4	1850	8450	3200	19	8020	19	1020
6	Left Side, No. 5	1800	8190	2855	15	8200	19	1020
7	Right Side, No. 1	2100	8300	1035	1	7750	13	1000
8A	Right Side, No. 2A	1800	10500	1690	2	7950	35	1020
8B	Right Side, No. 2B	1700	9300	1380	0	10000	50	620
9	Right Side, No. 3	8450	7900	2955	11	10100	80	920
10	Right Side, No. 4	2450	0	1185	5	7430	24	1000
11	Overhead Overall	350	345	5486	90	N/A	13	1000
12	Front View, Driver	440	350	2900	40	N/A	13	1010
13	Front View, Passenger	440	0	2880	47	N/A	13	1000
14	Pit Camera, Engine	750	0	-1500	90	N/A	13	540
15	Pit Camera, Fuel Tank	4450	270	-1730	48	N/A	19	900
16	Onboard, Driver	3480	330	1130	5	1230	13	1040
17	Onboard, Passenger	3480	270	1130	5	1270	13	820

X - Barrier Face Y - Monorail Centerline Z - Ground

DATA SHEET NO. 16
PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2000 SUBARU LEGACY L AWD 4-DOOR SEDAN

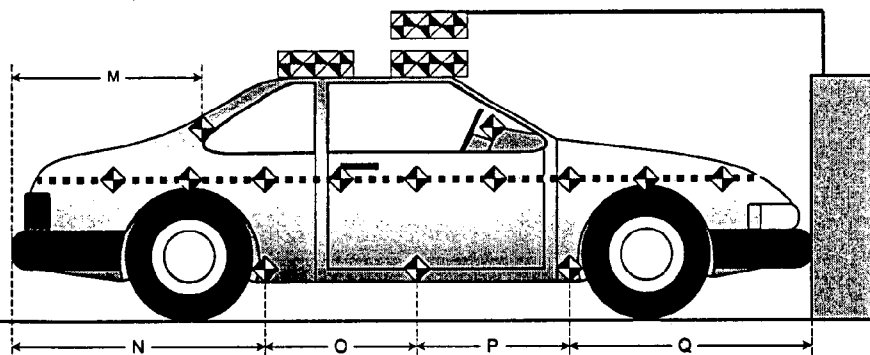
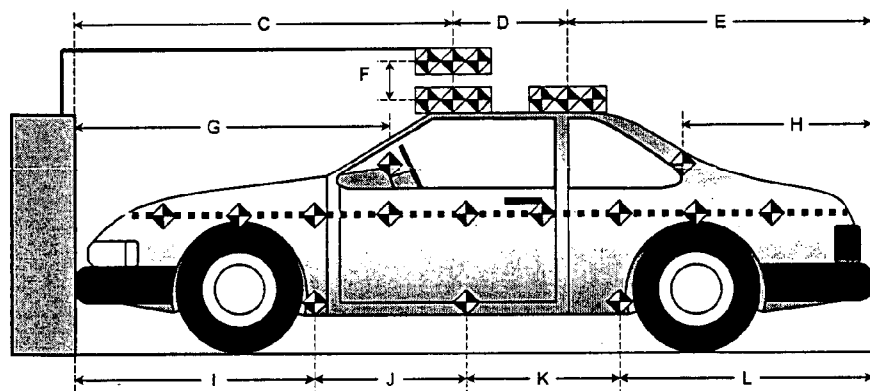
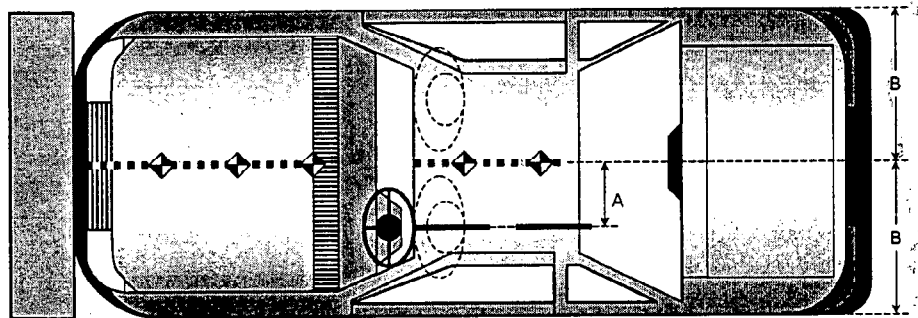
NHTSA No.: MY5500

Test Program: 2000 NHTSA 35 MPH NCAP

Test Date: 12/7/99

All Dimensions
in mm

Item	Value
A	394
B	865
C	2317
D	610
E	1762
F	153.6
G	1735
H	1135
I	1413
J	891
K	891
L	1485
M	1120
N	1481
O	892
P	892
Q	1415



DATA SHEET NO. 17
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2000 SUBARU LEGACY L AWD 4-DOOR SEDAN

NHTSA No.: MY5500

Test Program: 2000 NHTSA 35 MPH NCAP

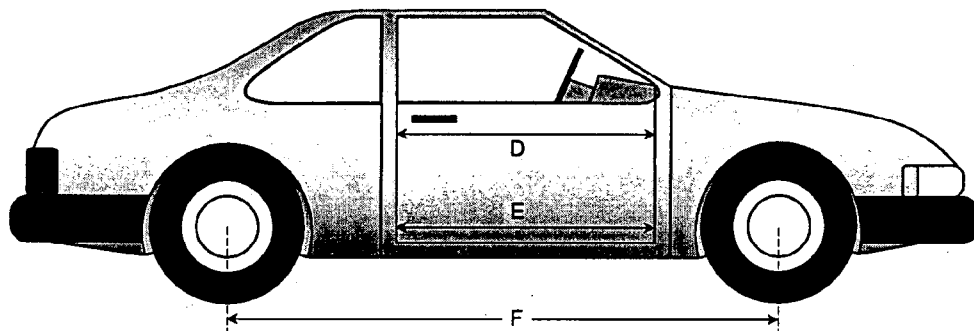
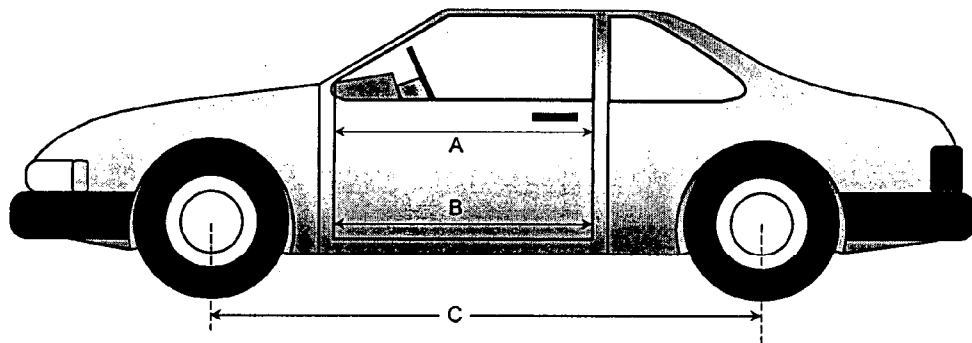
Test Date: 12/7/99

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	965	963	-2
B	Left Side Lower	mm	920	917	-3
D	Right Side Upper	mm	969	964	-5
E	Right Side Lower	mm	928	915	-13

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheel base	mm	2650	2630	-20
F	Right Side Wheel base	mm	2650	2595	-55



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

Test Vehicle: 2000 SUBARU LEGACY L AWD 4-DOOR SEDAN

NHTSA No.: MY5500

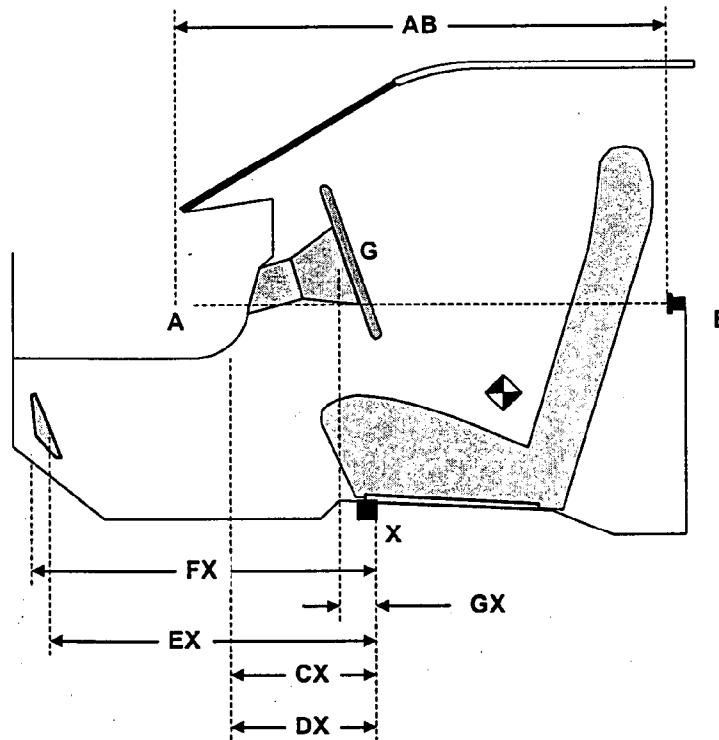
Test Program: 2000 NHTSA 35 MPH NCAP

Test Date: 12/7/99

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside window jam)	mm	965	963	-2
CX	Left Knee Bolster to X	mm	283	257	-26
DX	Right Knee Bolster to X	mm	289	255	-34
EX	Brake Pedal to X	mm	550	449	-101
FX	Foot Rest to X	mm	580	519	-61
GX	Center of Steering Wheel Hub to X	mm	55	20	-35

X = Left Front Seat Outboard Anchor Bolt Head



DRIVER COMPARTMENT

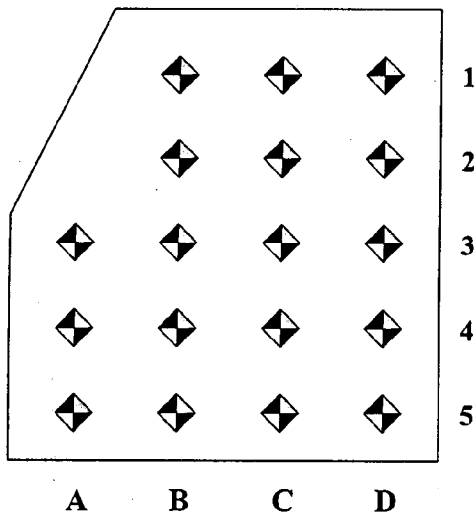
DATA SHEET NO. 17...(CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2000 SUBARU LEGACY L AWD 4-DOOR SEDAN

NHTSA No.: MY5500

Test Program: 2000 NHTSA 35 MPH NCAP

Test Date: 12/7/99



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	N/A	692	690	N/A	N/A	618	630	N/A	N/A	-74	-60	N/A
2	N/A	591	589	588	N/A	553	560	548	N/A	-38	-29	-40
3	494	490	485	485	489	478	482	463	-5	-12	-3	-22
4	391	390	386	386	385	380	377	373	-6	-10	-9	-13
5	290	288	285	285	283	278	275	273	-7	-10	-10	-12

DRIVER FLOOR PAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	N/A	70	74	N/A	N/A	46	45	N/A	15	-24	-29	N/A
2	N/A	-20	-23	-22	N/A	-19	-25	-21	-15	1	-2	1
3	-60	-50	-57	-60	-68	-75	-81	-71	-8	-25	-24	-11
4	-55	-65	-65	-50	-61	-75	-81	-60	-6	-10	-16	-10
5	-65	-65	-65	-60	-72	-68	-81	-74	-7	-3	-16	-14

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

Test Vehicle: 2000 SUBARU LEGACY L AWD 4-DOOR SEDAN

NHTSA No.: MY5500

Test Program: 2000 NHTSA 35 MPH NCAP

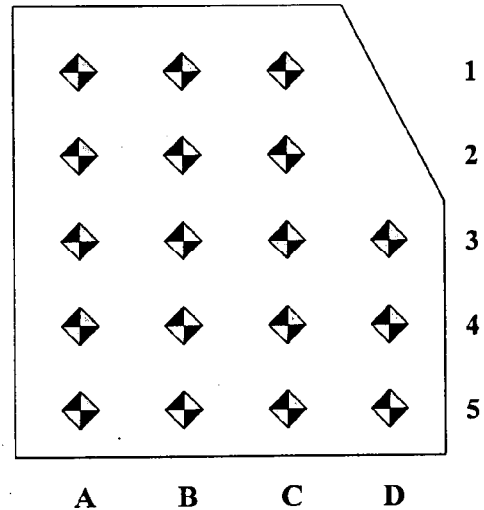
Test Date: 12/7/99

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

Columns A through D are evenly spaced.

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

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



PASSENGER FLOOR PAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	593	596	596	N/A	660	636	628	N/A	67	40	32	N/A
2	498	496	496	N/A	490	486	480	N/A	-8	-10	-16	N/A
3	393	394	396	529	387	391	390	391	-6	-3	-6	-138
4	293	294	294	429	287	292	289	293	-6	-2	-5	-136
5	191	192	191	330	187	190	187	193	-4	-2	-4	-137

PASSENGER FLOOR PAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	65	60	70	N/A	85	82	80	N/A	20	22	10	N/A
2	-70	-50	-40	N/A	-60	-48	-50	N/A	10	2	-10	N/A
3	-62	-63	-65	-83	-68	-65	-63	-62	-6	-2	2	21
4	-65	-65	-67	-78	-68	-65	-65	-65	-3	0	2	13
5	-65	-65	-65	-77	-67	-67	-63	-62	-2	-2	2	15

DATA SHEET NO. 18
FIXED BARRIER TYPE

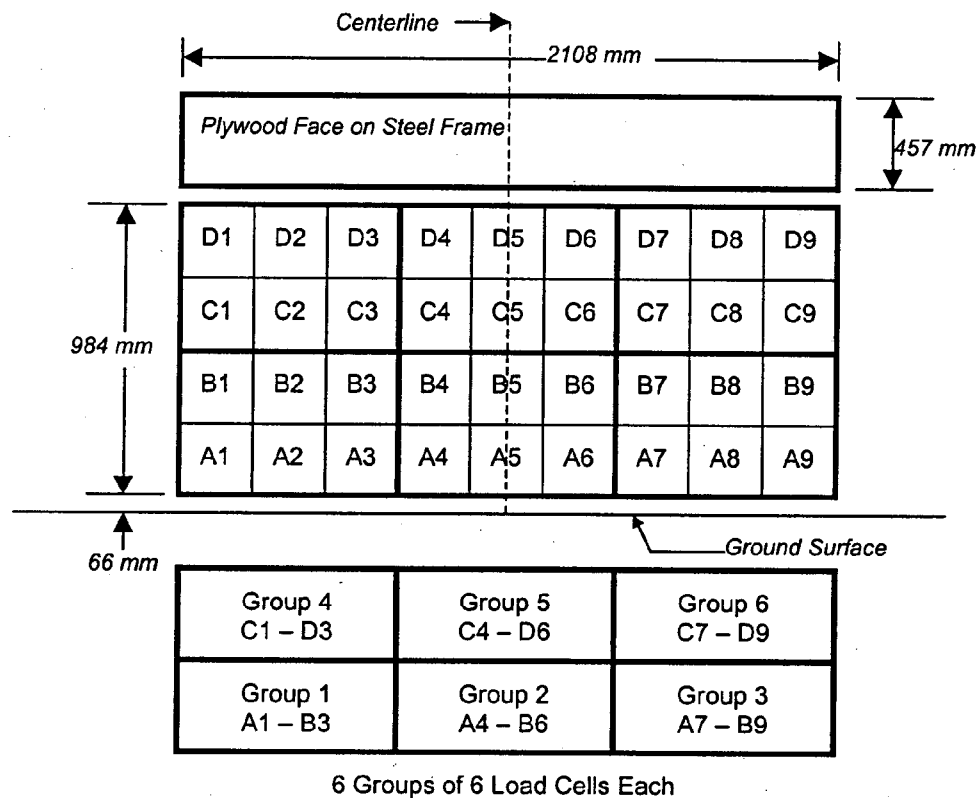
Test Vehicle: 2000 SUBARU LEGACY L AWD 4-DOOR SEDAN

NHTSA No.: MY5500

Test Program: 2000 NHTSA 35 MPH NCAP

Test Date: 12/7/99

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



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

- 1.) Data from 36 individual load cells
- 2.) Sum data from 6 groupings shown above (6 cells/group)
- 3.) Total or sum of all 36 individual load cells
- 4.) Sum of all 36 individual load cells vs. vehicle dynamic crush

DATA SHEET NO. 19
ACCIDENT INVESTIGATION DATA

Test Vehicle: 2000 Subaru Legacy L AWD
Test Program: 2000 NHTSA 35 MPH NCAP

NHTSA No.: MY5500
Test Date: 12/7/99

VEHICLE INFORMATION

VIN: 4S3BE6359Y6206608
Vehicle Size Category: 4-Door Sedan

Wheel base (mm): 2650
Test Weight (kg): 1676

ACCELEROMETER DATA

Accelerometer Location: Left rear floor pan
Cal. Procedure/Interval: 6 months / drop test
Integration Algorithm: NHTSA Standard
Impact Velocity (km/h): 56.75
Velocity Change (km/h): 66.27

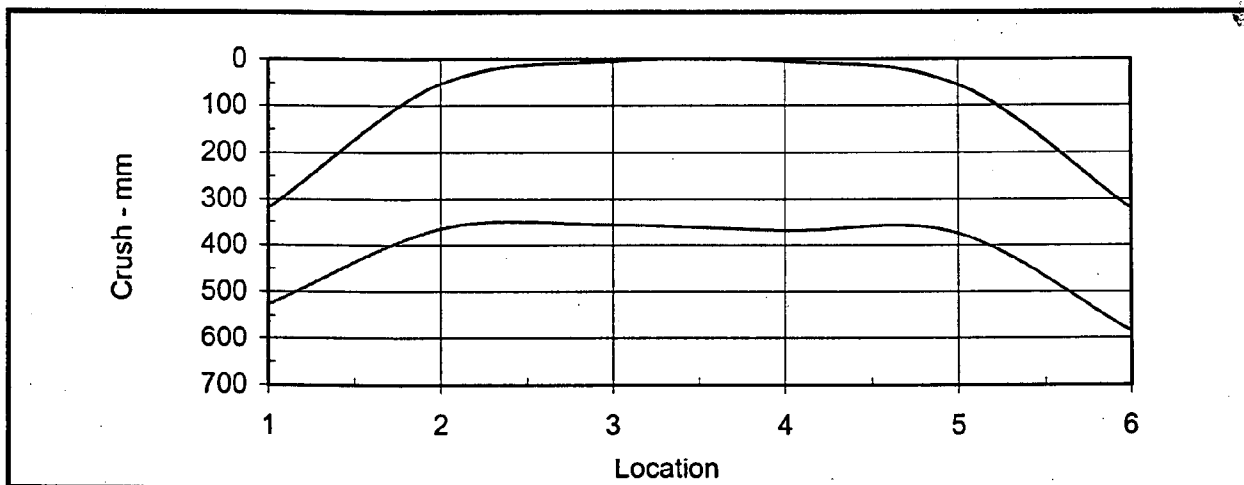
Linearity: Good

Time of Separation (msec): 68.9

CRUSH PROFILE

Collision Deformation Classification: 12FDEW6 Midpoint of Damage: Vehicle Centerline
Damage Region Length (mm): 1542 Impact Mode: Full Frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	320	527	-207
C2	Crush zone 2 on left side	mm	53	366	-313
C3	Crush zone 3 on left side	mm	5	357	-352
C4	Crush zone 4 on right side	mm	5	369	-364
C5	Crush zone 5 on right side	mm	55	375	-320
C6	Crush zone 6 at right side	mm	320	584	-264



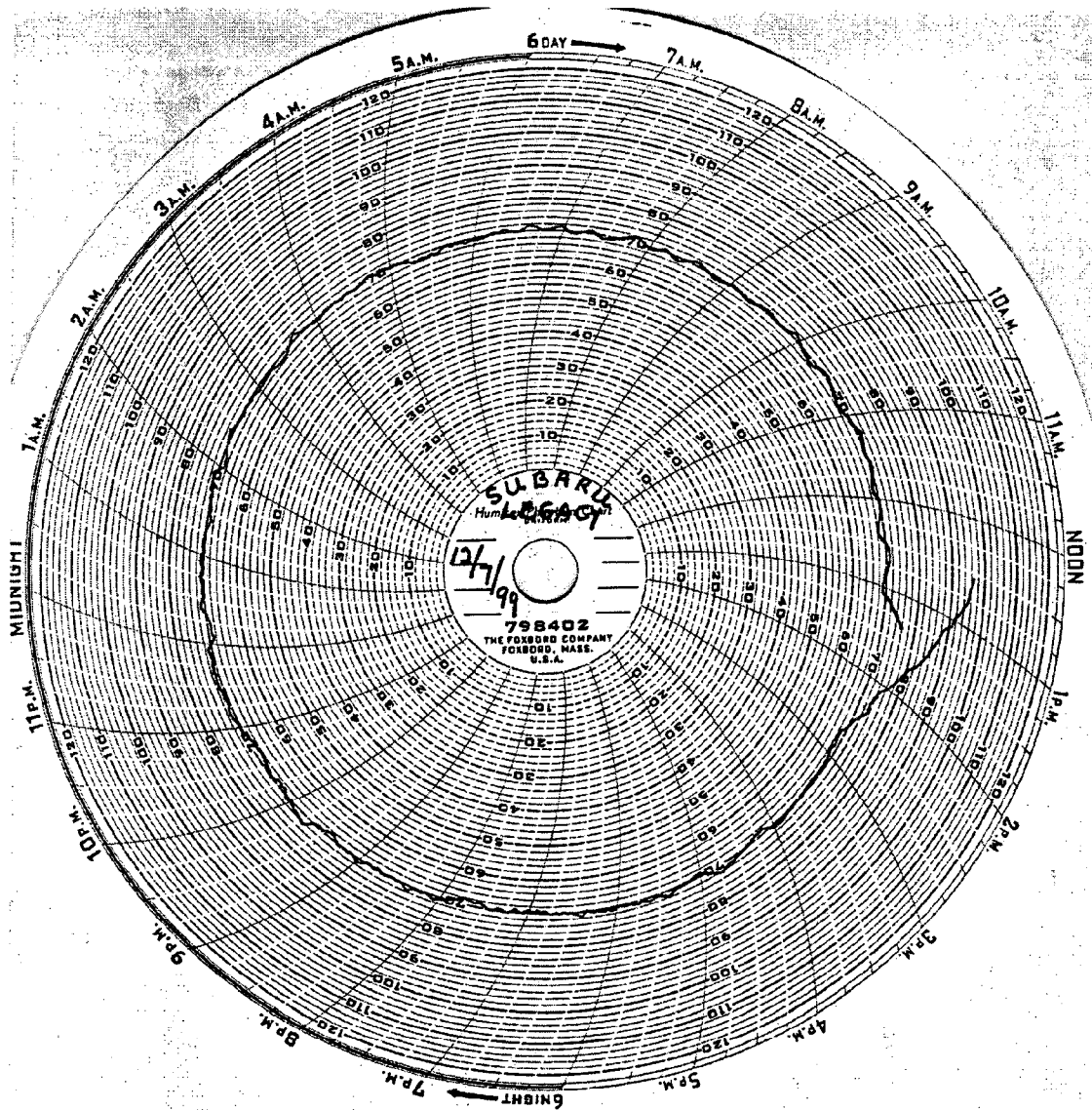
DATA SHEET NO. 20
DUMMY/ VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2000 SUBARU LEGACY L AWD 4-DOOR SEDAN

NHTSA No.: MY5500

Test Program: 2000 NHTSA 35 MPH NCAP

Test Date: 12/7/99



APPENDIX A
PHOTOGRAPHS

KAR200001-04

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FIGURE A-1. RIGHT FRONT AS RECEIVED

KAR20001-04

A-1

KAR20001-04

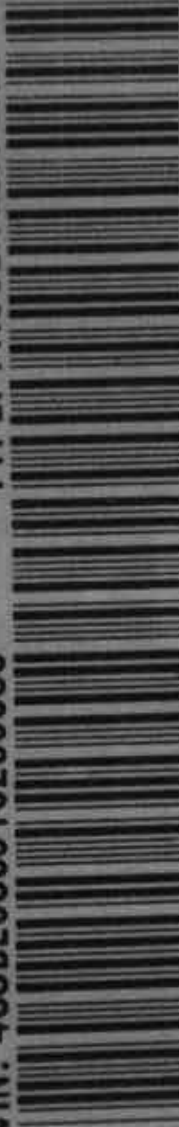


FIGURE A-2. LEFT REAR AS RECEIVED

MFD BY FUJI HEAVY INDUSTRIES LTD. DATE: 10/99
GVWR: 4400LB(1996KG) GAWR:F 2220LB(1007KG) R 2180LB(989KG)
THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE
SAFETY, BUMPER, AND THEFT PREVENTION STANDARDS IN EFFECT ON
THE DATE OF MANUFACTURE SHOWN ABOVE.

VIN: 4S3BE6359Y6206608

TYPE: PASSENGER CAR



ASSEMBLED BY SUBARU - ISUZU AUTOMOTIVE INC. MADE IN U.S.A.

FIGURE A-3. VEHICLE CERTIFICATION LABEL



FIGURE A-4. VEHICLE TIRE PLACARD



W
FIGURE A-5. PRETEST FRONT VIEW

KAR20001-04

A-5

KAR20001-04



FIGURE A-6. POST TEST FRONT VIEW

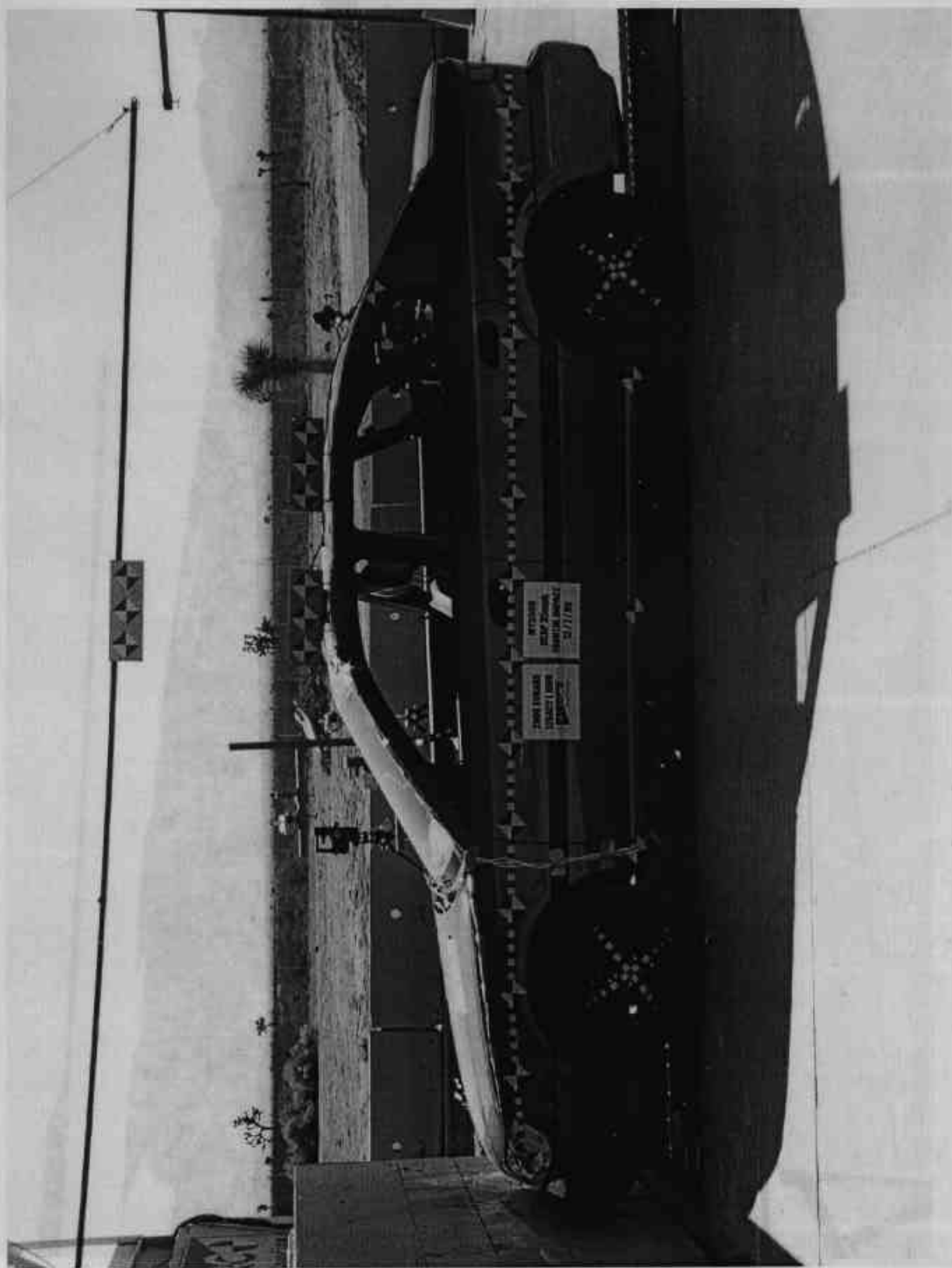


FIGURE A-7. PRETEST LEFT SIDE VIEW

KAR20001-04

A-7

KAR20001-04

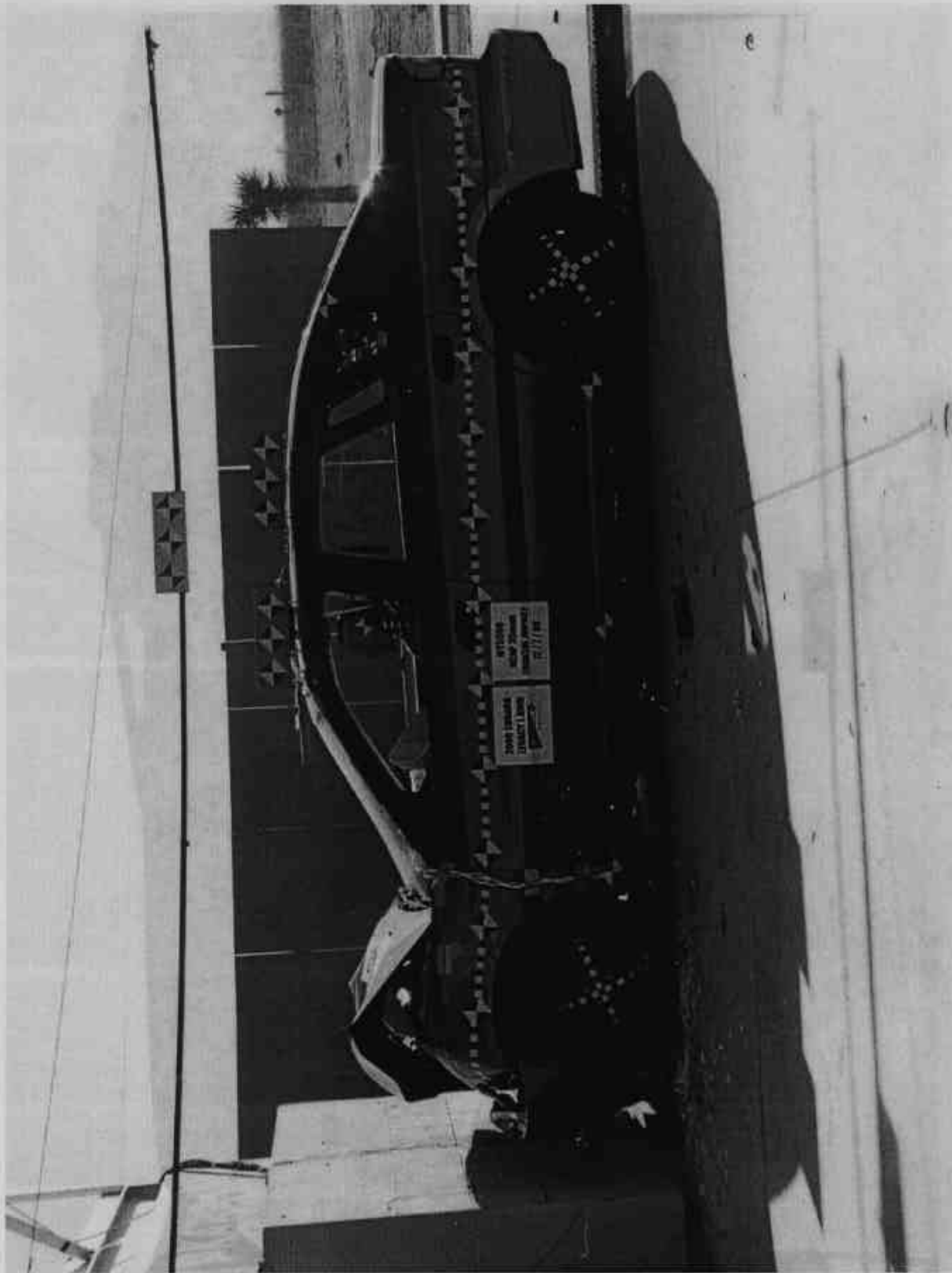


FIGURE A-8. POST TEST LEFT SIDE VIEW



FIGURE A-11. PRETEST RIGHT FRONT VIEW

A-11

KAR20001-04

KAR20001-04

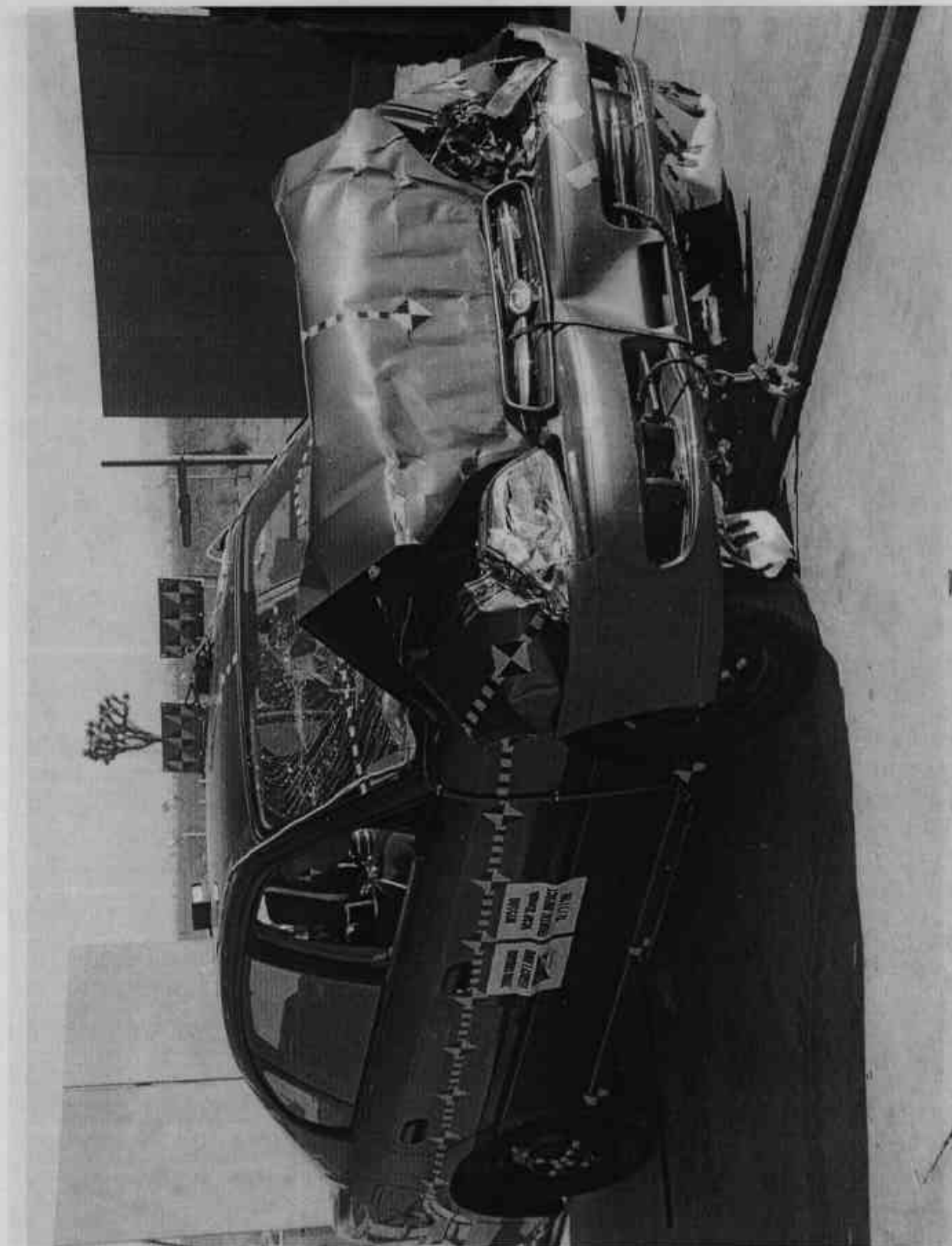


FIGURE A-12. POST TEST RIGHT FRONT VIEW

KAR5001-04

A-12

KAR20001-04



FIGURE A-13. PRETEST LEFT REAR VIEW



FIGURE A-14. POST TEST LEFT REAR VIEW

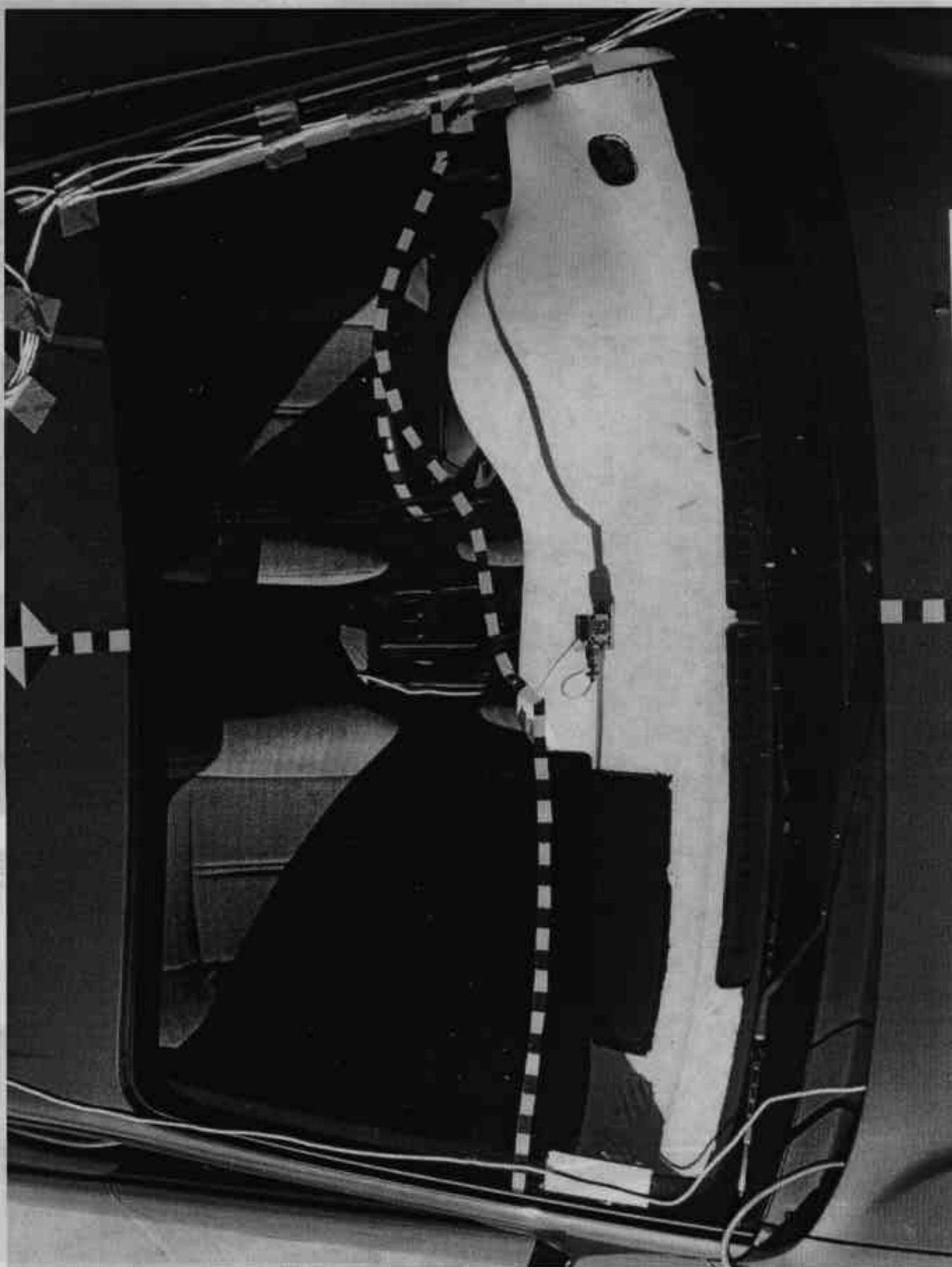


FIGURE A-15. PRETEST WINDSHIELD



FIGURE A-16. POST TEST WINDSHIELD

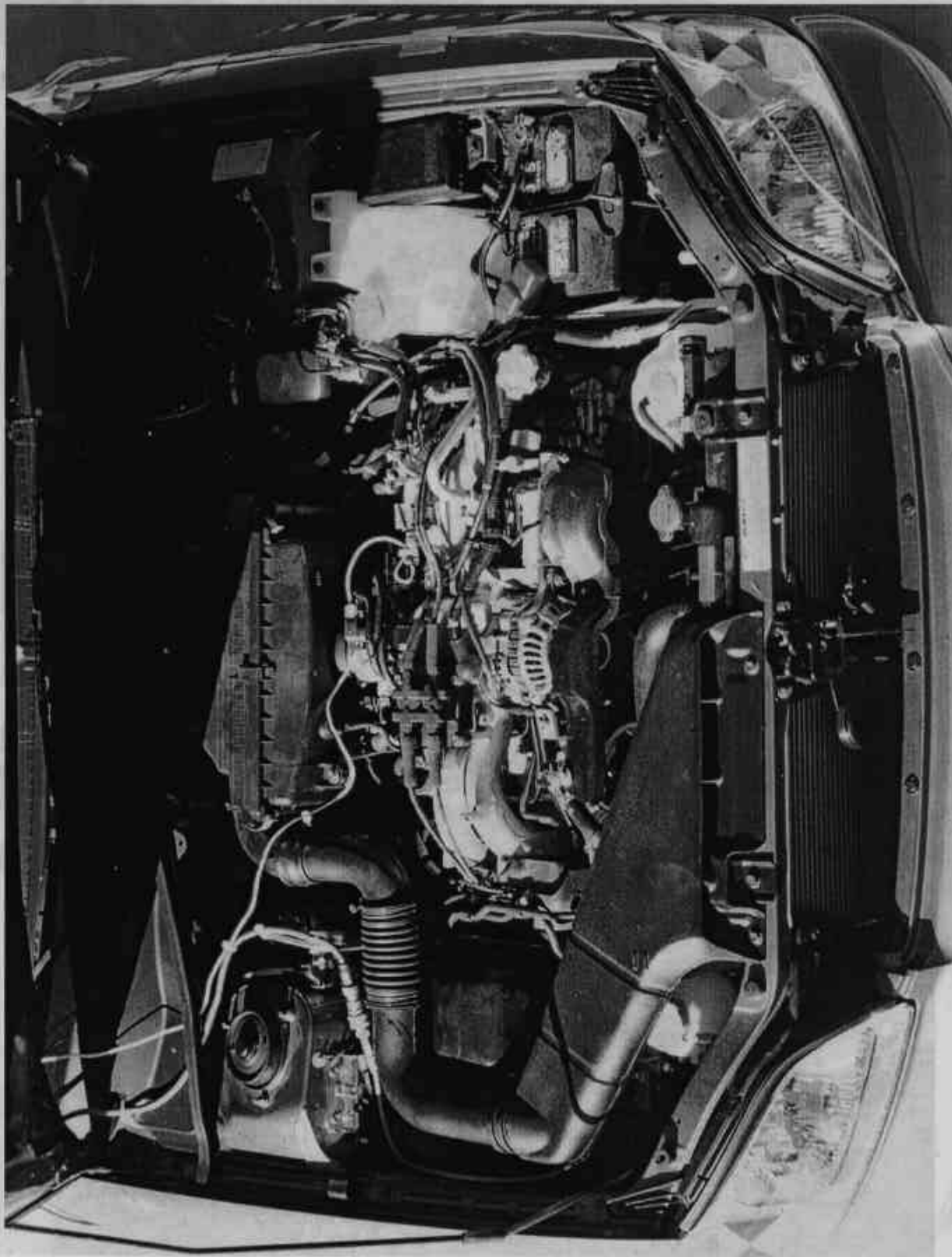


FIGURE A-17. PRETEST ENGINE COMPARTMENT

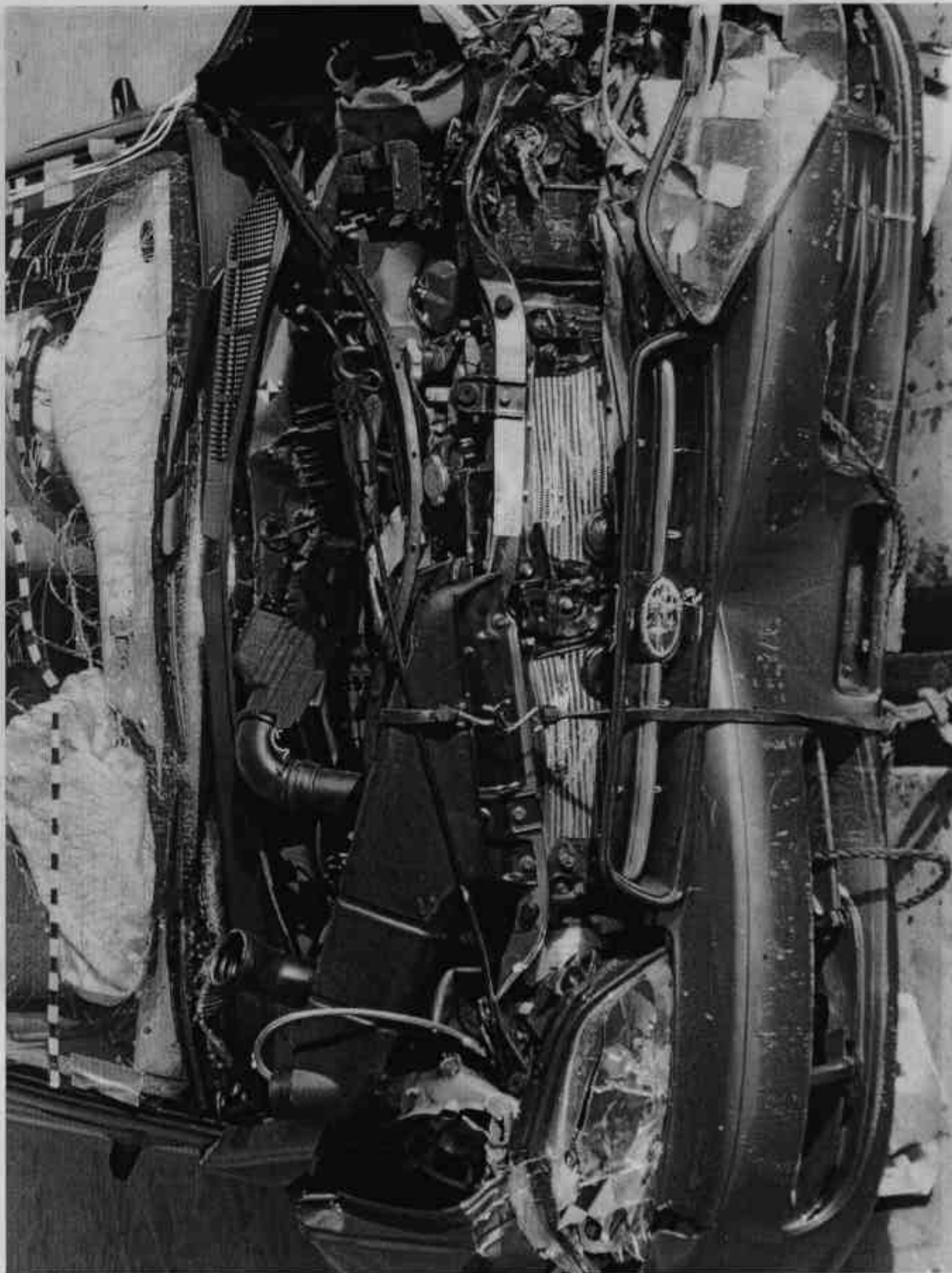


FIGURE A-18. POST TEST ENGINE COMPARTMENT



FIGURE A-19. PRETEST FUEL CAP

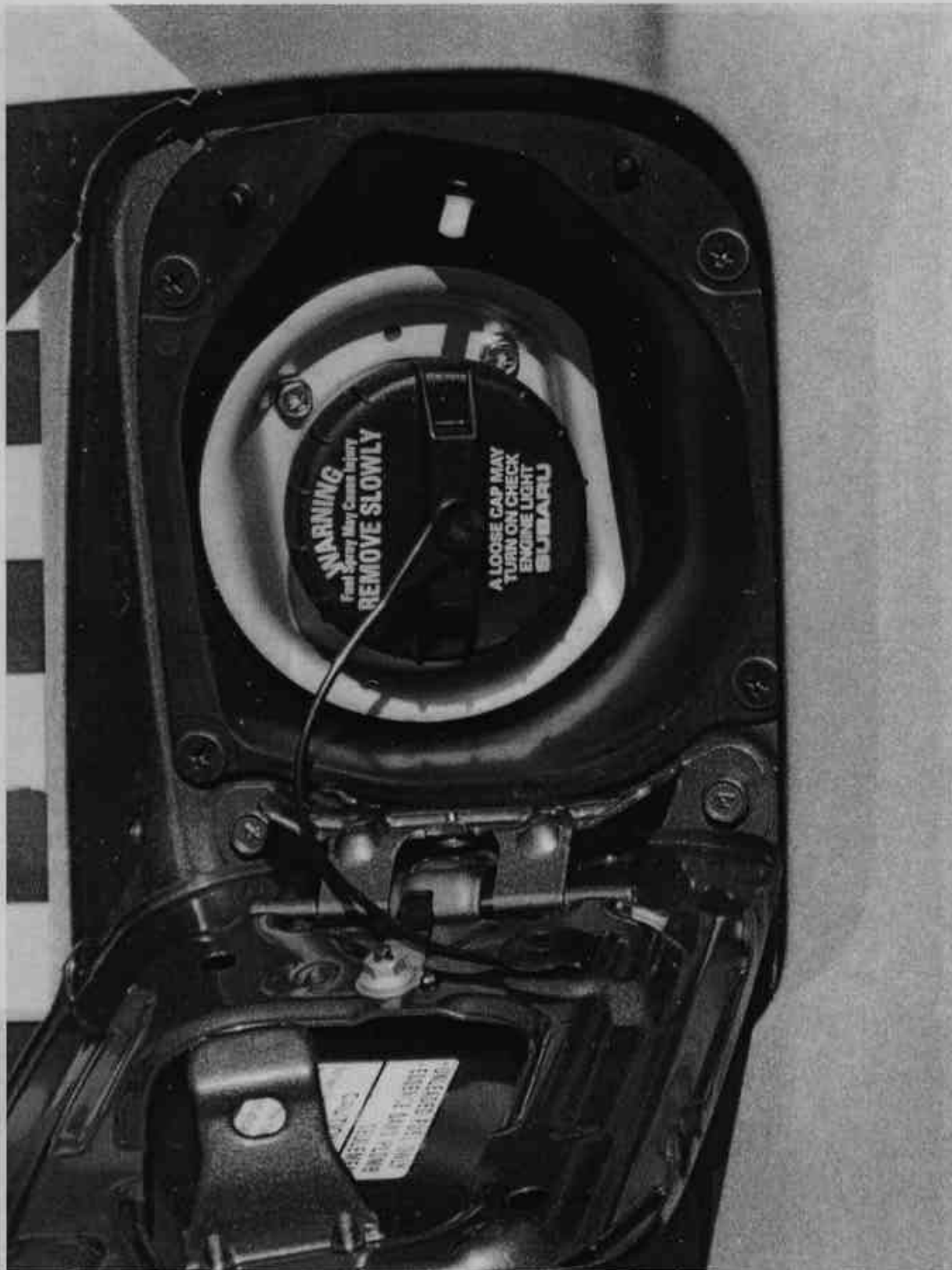


FIGURE A-20. POST TEST FUEL CAP

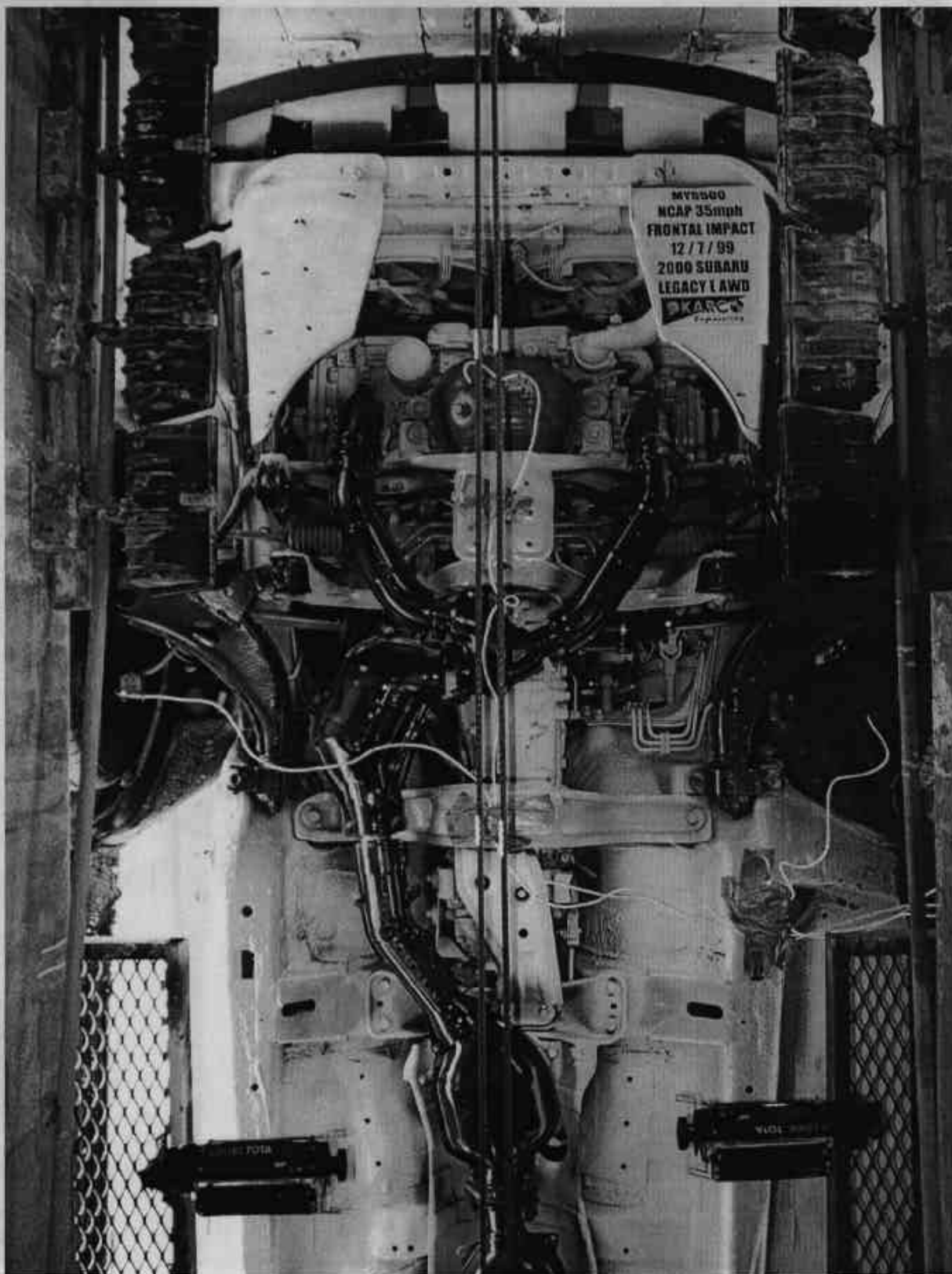


FIGURE A-21. PRETEST FRONT UNDERSIDE

KAR20001-04

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KAR20001-04

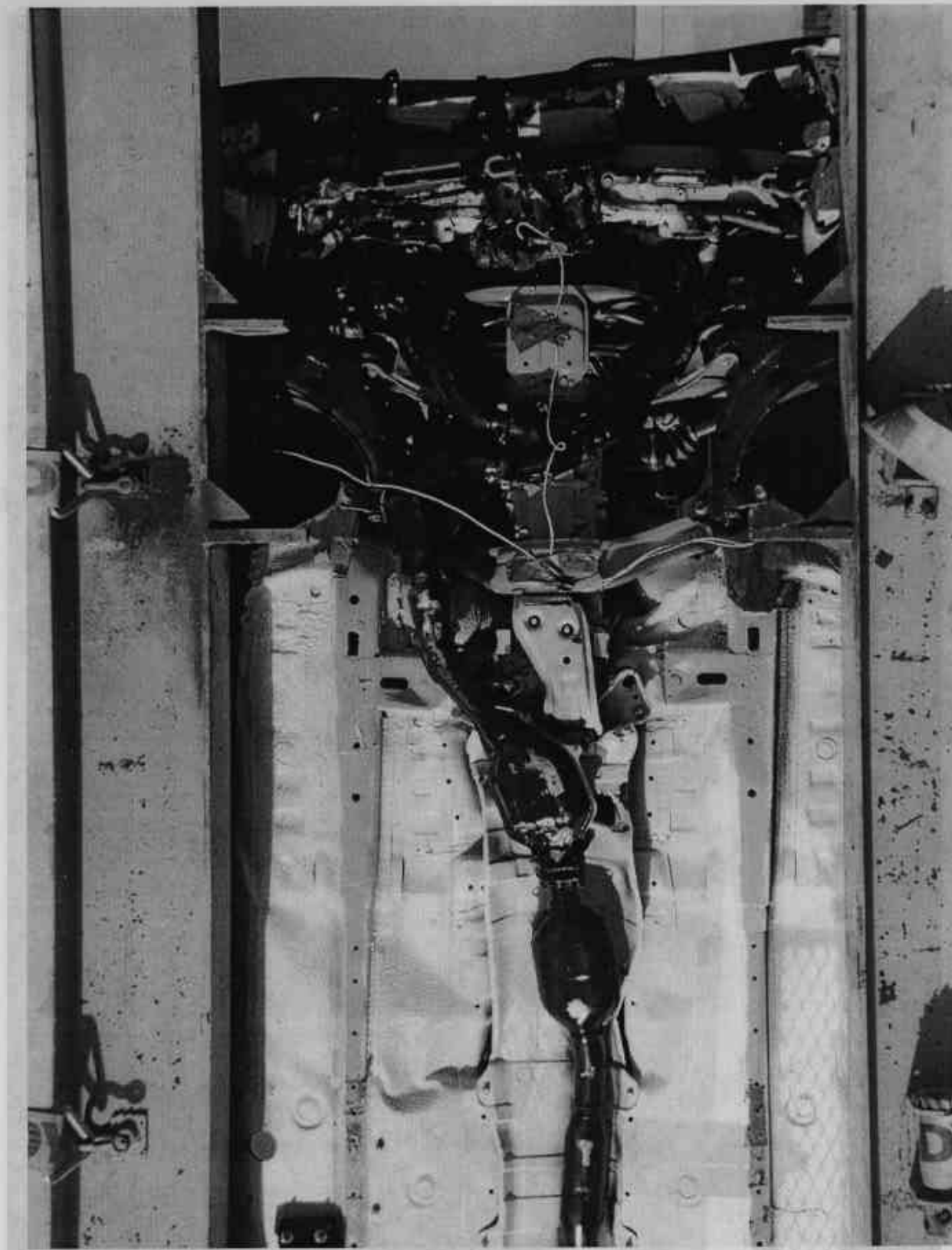


FIGURE A-22. POST TEST FRONT UNDERSIDE

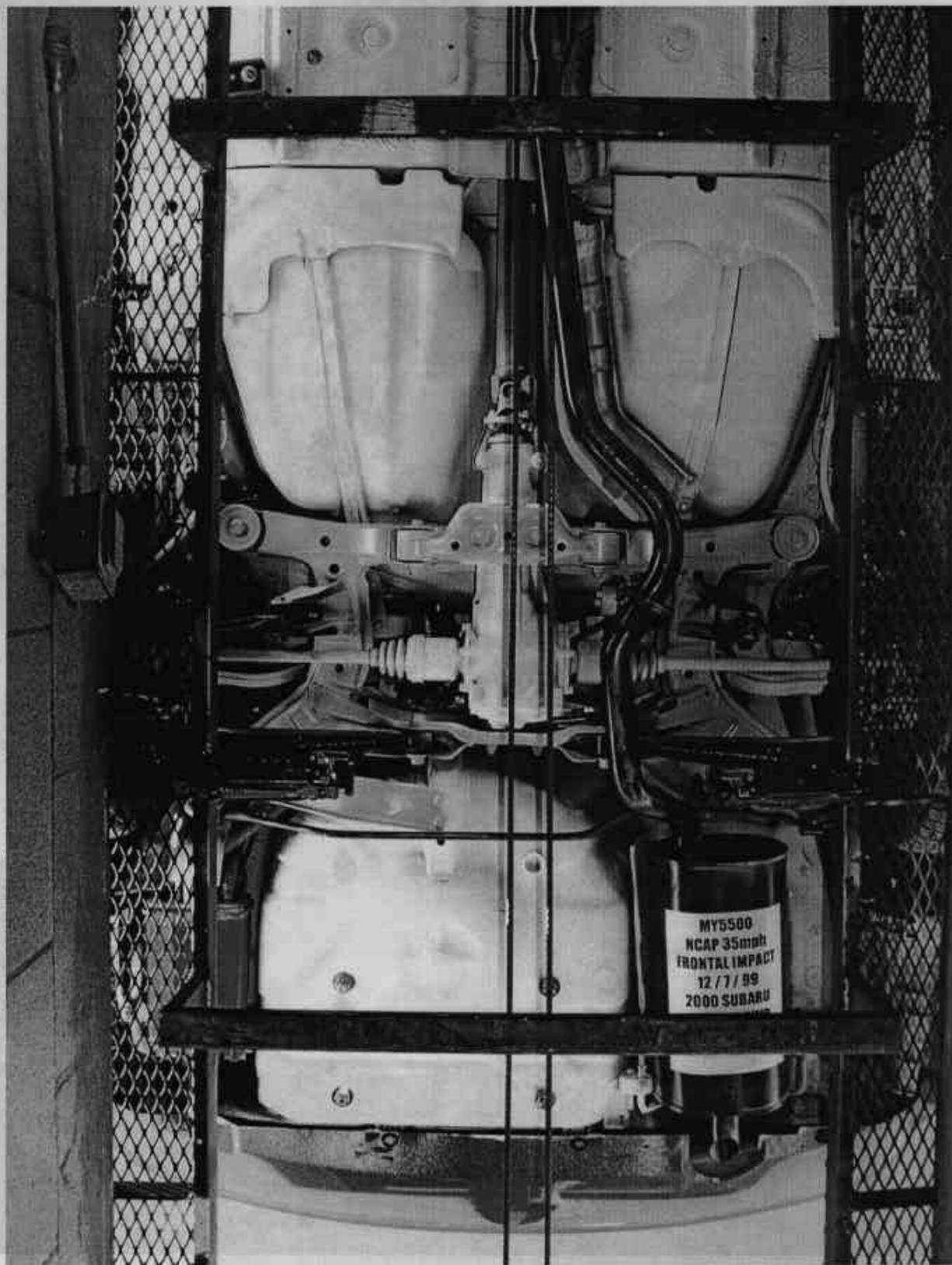


FIGURE A-23. PRETEST REAR UNDERSIDE

KAR20001-04

A-23

KAR20001-04

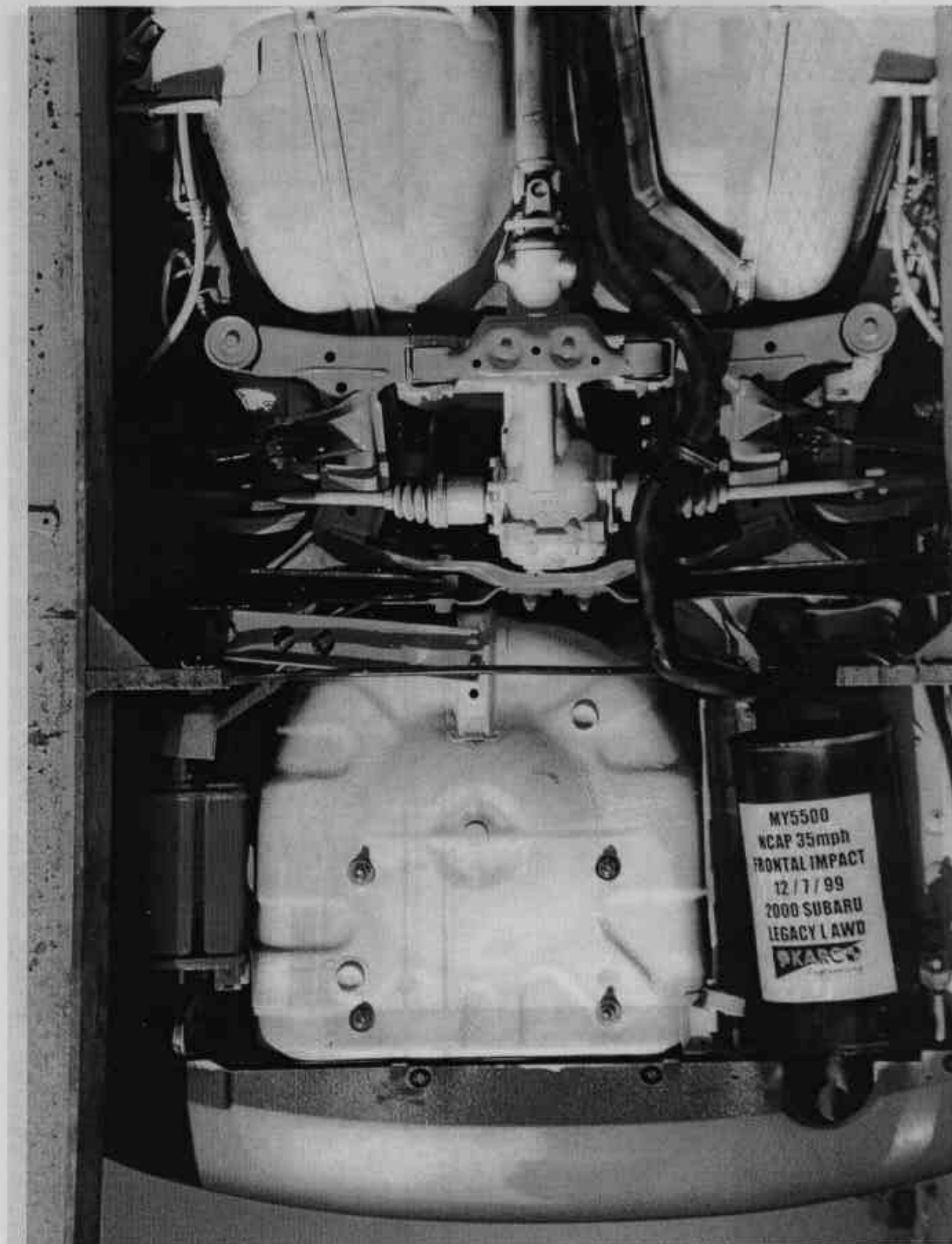


FIGURE A-24. POST TEST REAR UNDERSIDE

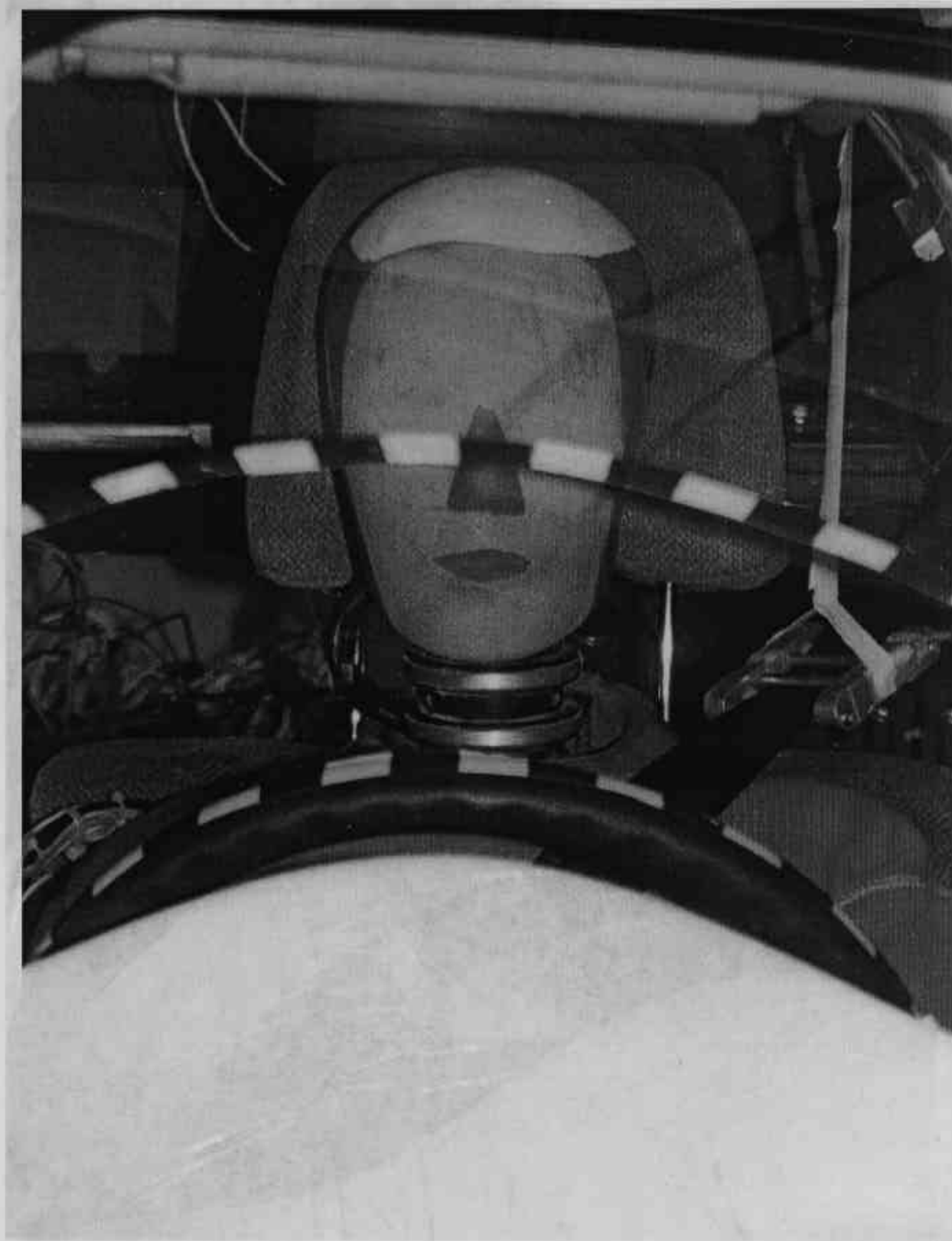


FIGURE A-25. PRETEST DRIVER DUMMY (FRONT VIEW)

KAR20001-04

A-25

KAR20001-04

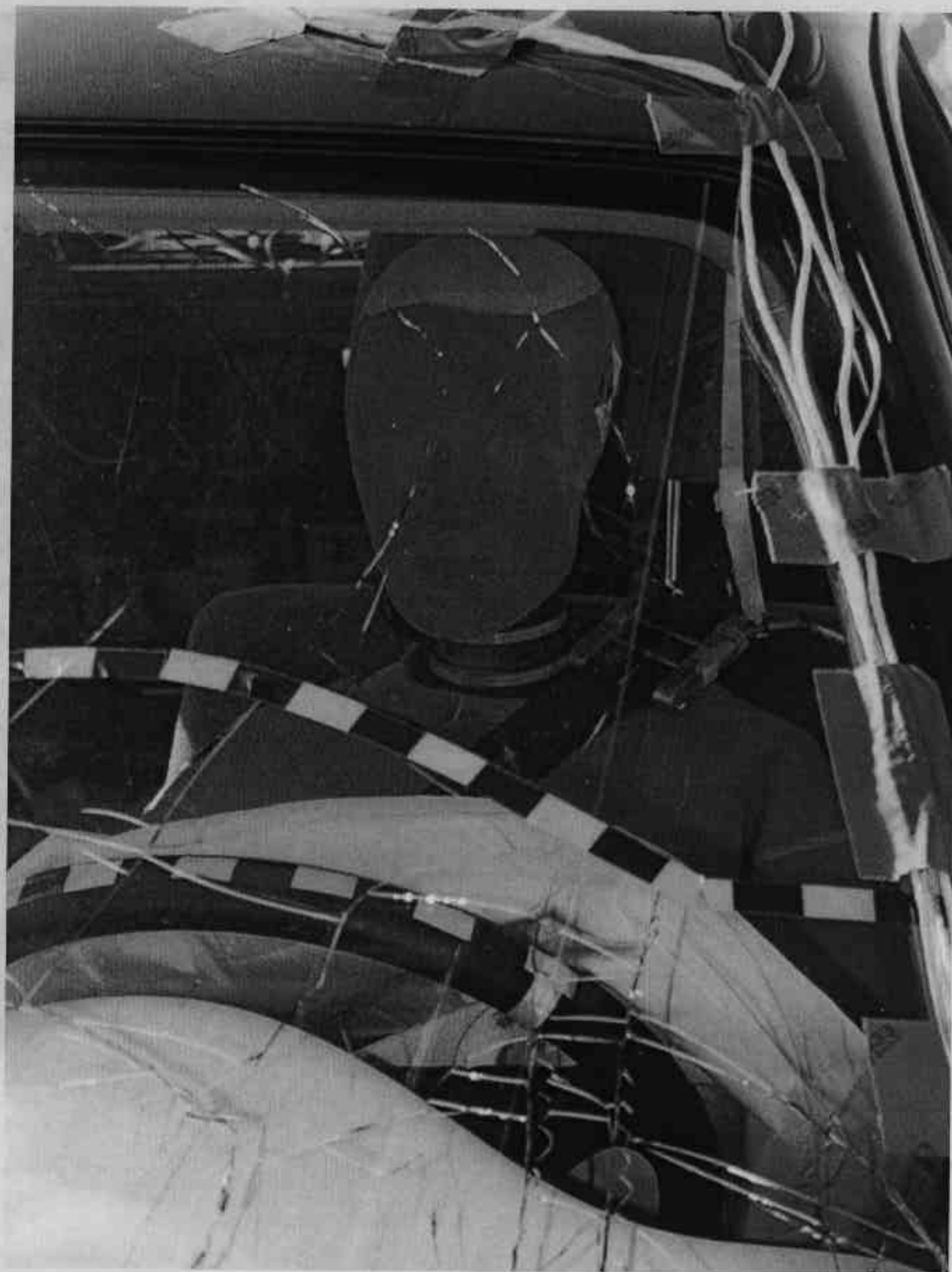


FIGURE A-26. POST TEST DRIVER DUMMY (FRONT VIEW)



FIGURE A-27. PRETEST DRIVER DUMMY (THRU WINDOW)



FIGURE A-28. POST TEST DRIVER DUMMY (THRU WINDOW)



FIGURE A-29. PRETEST DRIVER DUMMY (DOOR OPEN)

KAR20001-04

A-29

KAR20001-04



FIGURE A-30. POST TEST DRIVER DUMMY (DOOR OPEN)



FIGURE A-31. PRETEST DRIVER DUMMY (90° TO VEHICLE)

KAR20001-04

A-31

KAR20001-04



FIGURE A-32. POST TEST DRIVER DUMMY (90° TO VEHICLE)



FIGURE A-33. PRETEST DRIVER DUMMY FEET

KAR20001-04

A-33

KAR20001-04



FIGURE A-34. POST TEST DRIVER DUMMY FEET AND KNEE CONTACT



FIGURE A-35. PRE TEST DRIVER KNEE BOLSTER

KAR20001-04

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KAR20001-04

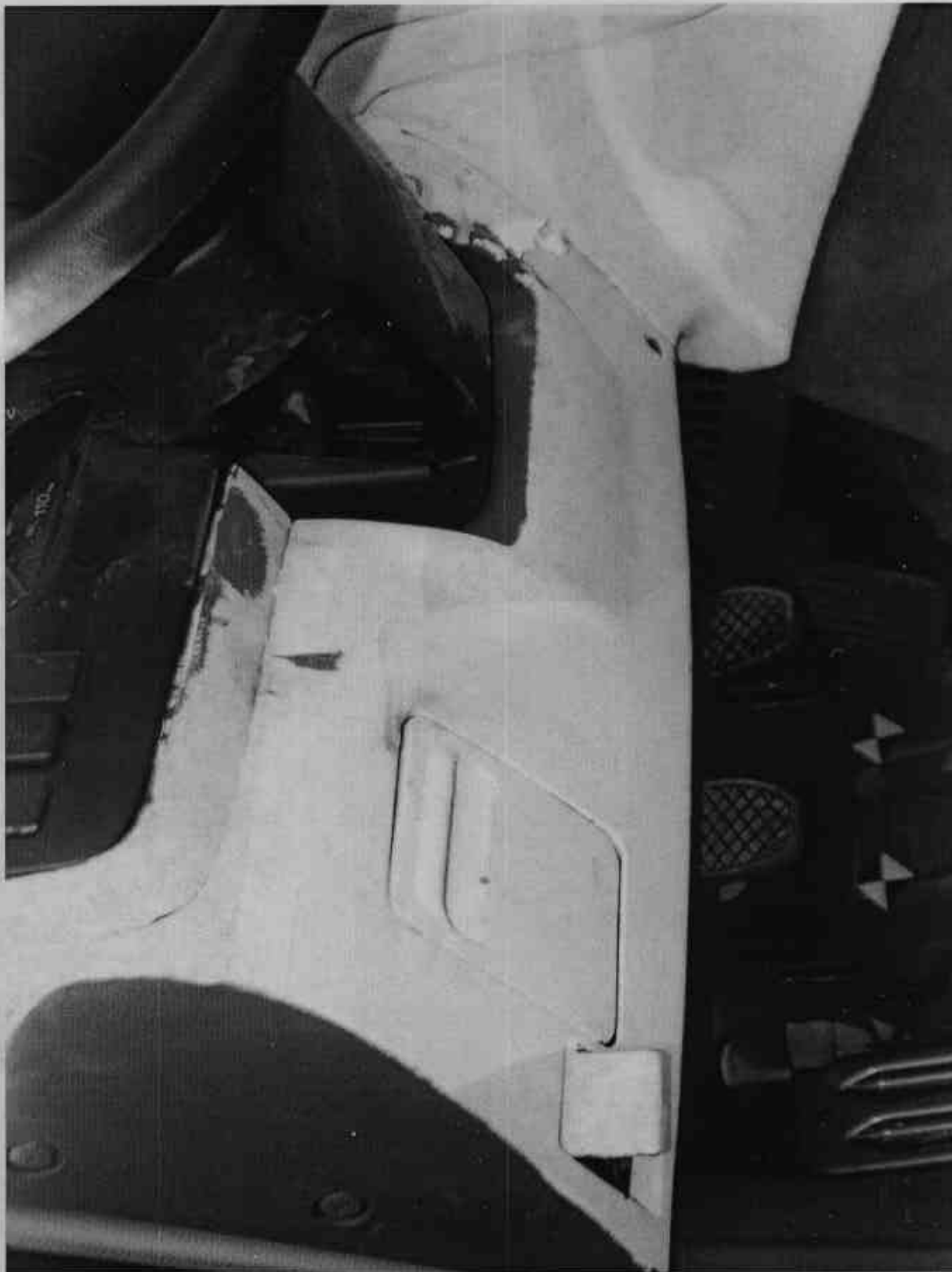


FIGURE A-36. POST TEST DRIVER KNEE BOLSTER

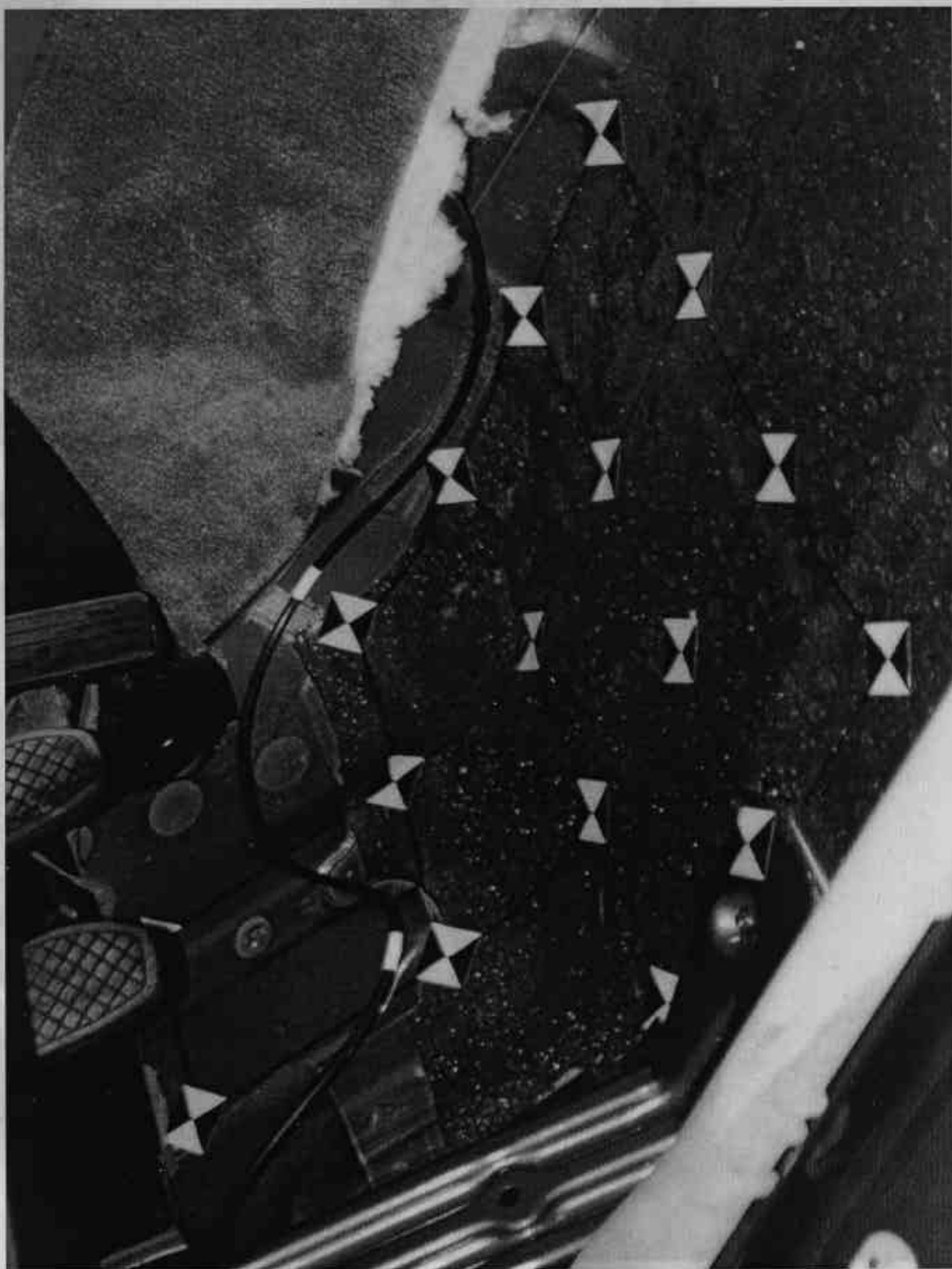


FIGURE A-37. PRE TEST DRIVER SIDE FLOOR PAN



FIGURE A-38. POST TEST DRIVER SIDE FLOOR PAN



FIGURE A-39. POST TEST DRIVER HEAD

KAR20001-04

A-39

KAR20001-04



FIGURE A-40. POST TEST DRIVER DUMMY CONTACT

KAR2001-04

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KAR20001-04



FIGURE A-41. PRE TEST PASSENGER DUMMY (FRONT VIEW)

KAR20001-04

A-41

KAR20001-04



FIGURE A-42. POST TEST PASSENGER DUMMY (FRONT VIEW)



FIGURE A-43. PRE TEST PASSENGER DUMMY (THRU WINDOW)



FIGURE A-44. POST TEST PASSENGER DUMMY (THRU WINDOW)



FIGURE A-45. PRE TEST PASSENGER DUMMY (DOOR OPEN)

KAR20001-04

A-45

KAR20001-04



FIGURE A-46. POST TEST PASSENGER DUMMY (DOOR OPEN)



FIGURE A-47. PRE TEST PASSENGER DUMMY (90° TO VEHICLE)

KAR20001-04

A-47

KAR20001-04



FIGURE A-48. POST TEST PASSENGER DUMMY (90° TO VEHICLE)

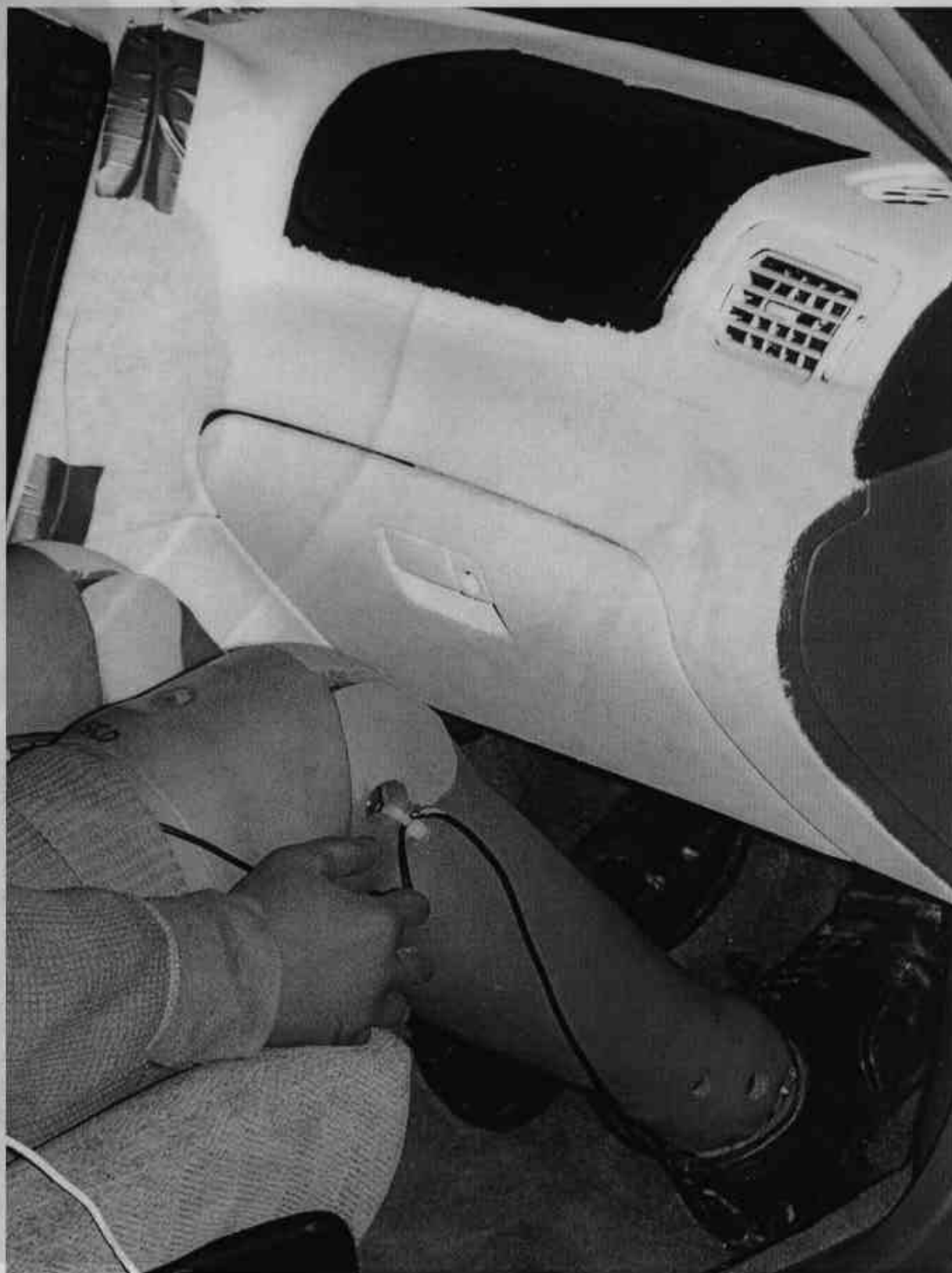


FIGURE A-49. PRE TEST PASSENGER DUMMY FEET



FIGURE A-50. POST TEST PASSENGER DUMMY FEET AND CONTACT POINT



FIGURE A-51. PRETEST PASSENGER SIDE FLOOR PAN

KAR2001-04

A-51

KAR2001-04



FIGURE A-52. POST TEST PASSENGER SIDE FLOOR PAN

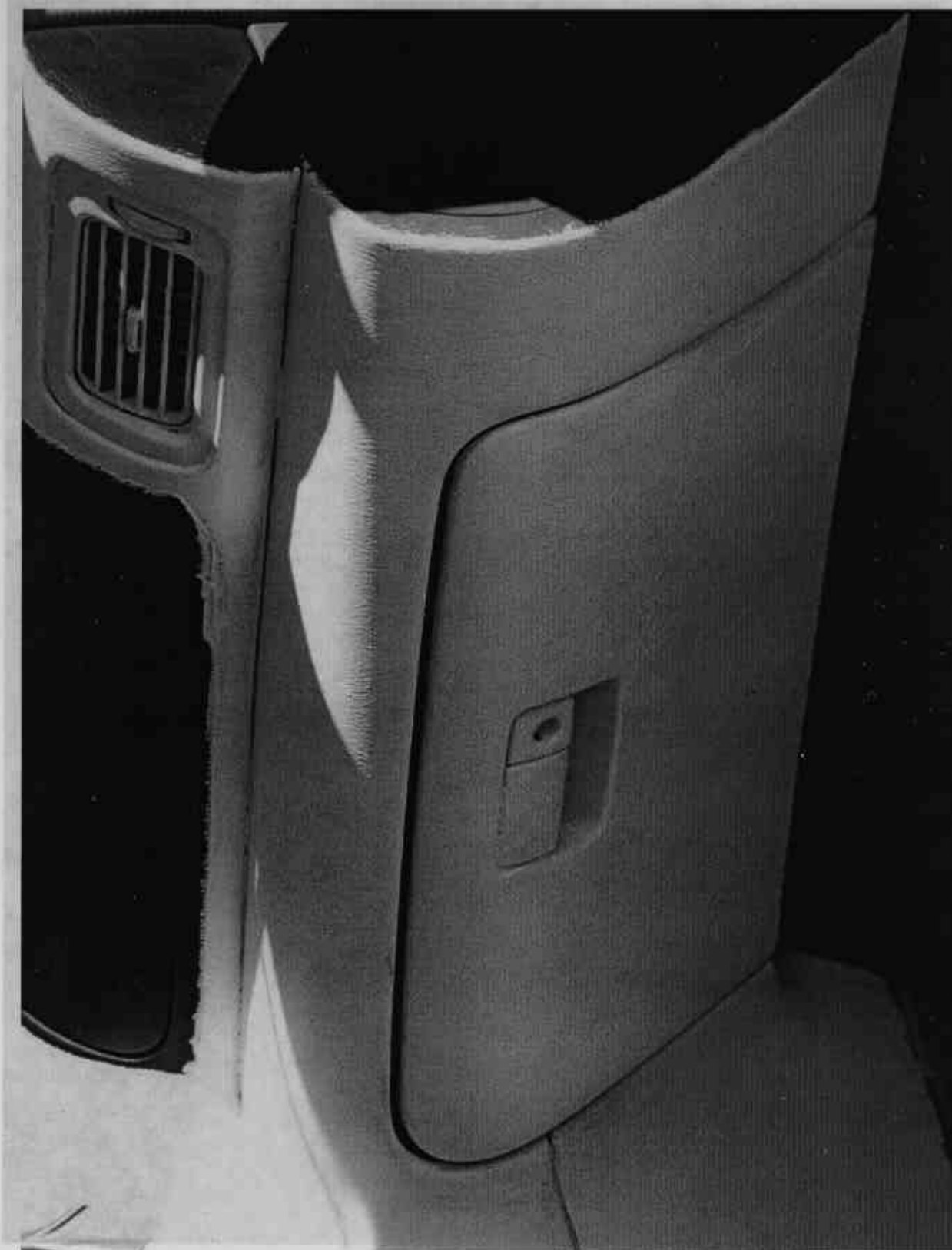


FIGURE A-53. PRE TEST PASSENGER SIDE KNEE BOLSTER

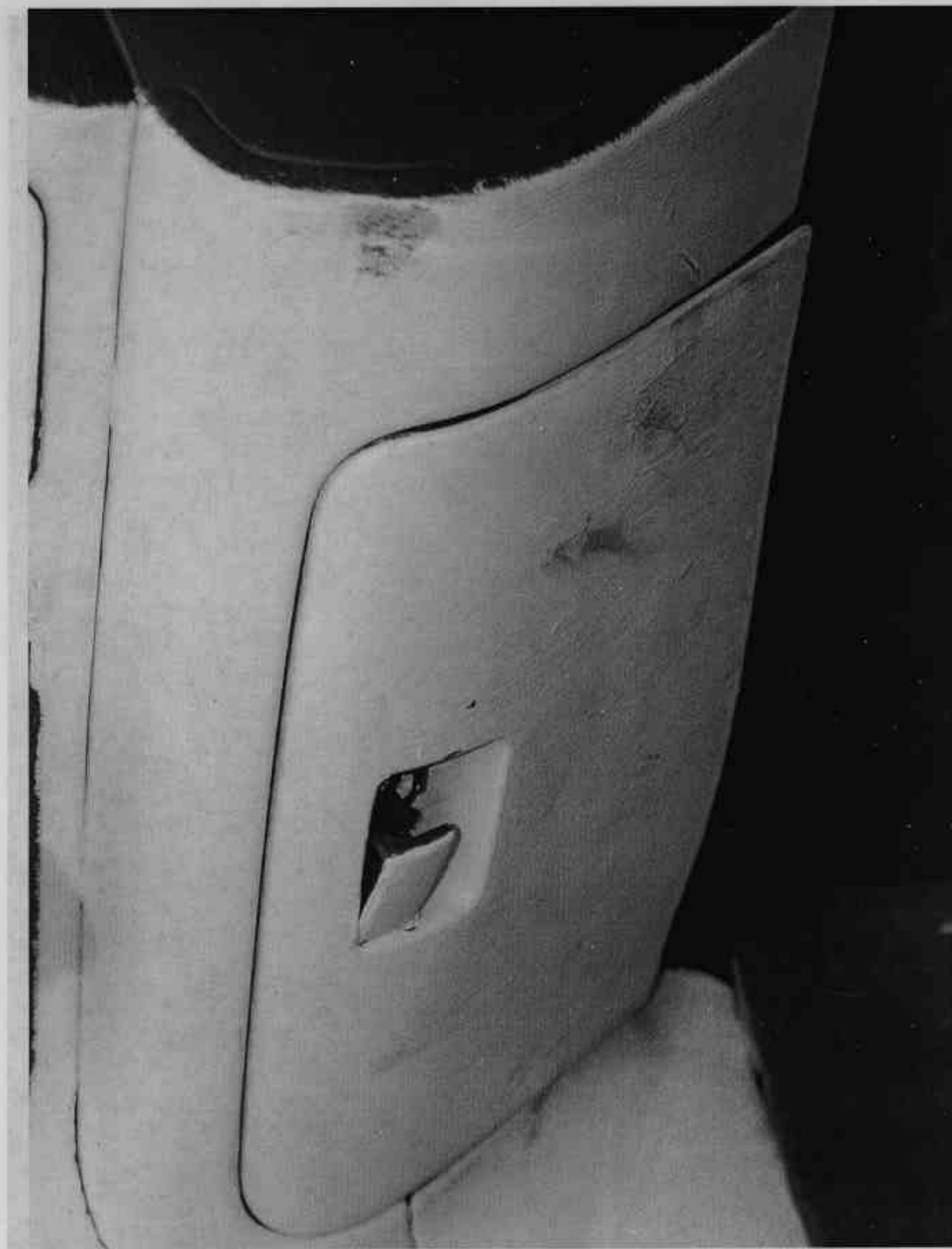


FIGURE A-54. POST TEST PASSENGER SIDE KNEE BOLSTER AND DUMMY CONTACT

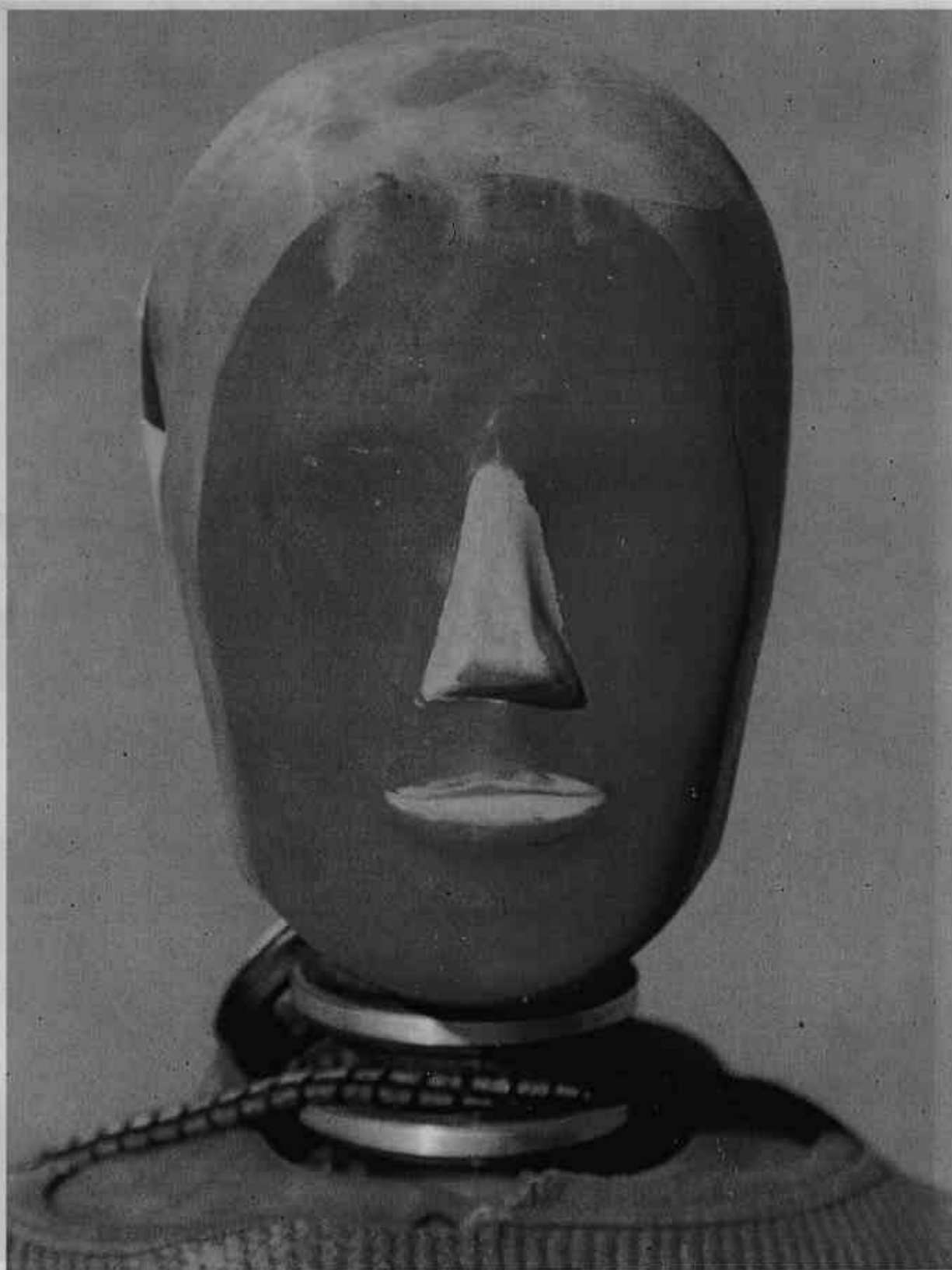


FIGURE A-55. POST TEST PASSENGER HEAD

A-55

KAR20001-04



FIGURE A-56. POST TEST PASSENGER DUMMY CONTACT

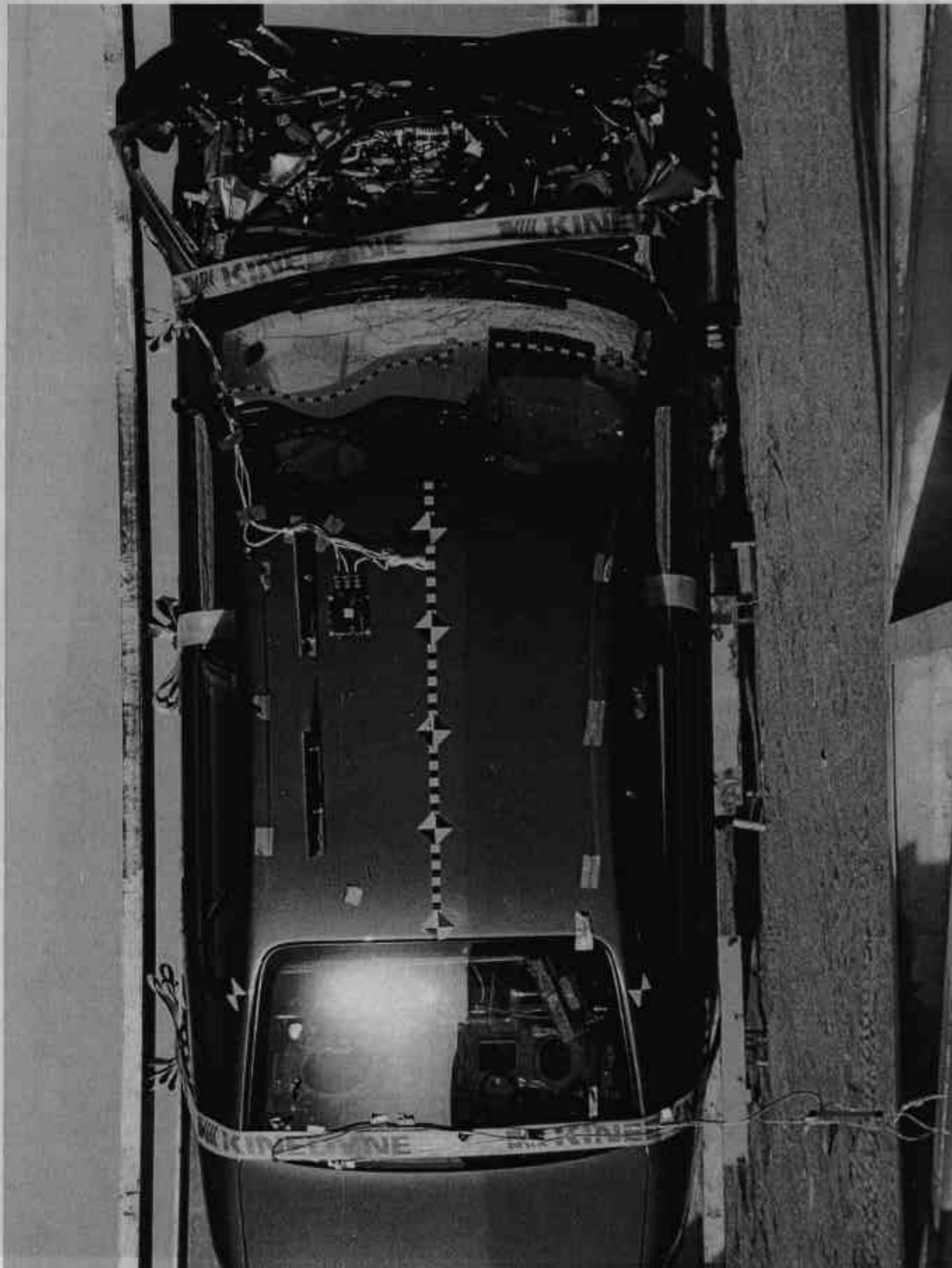


FIGURE A-57. VEHICLE ON ROLLOVER

KAR20001-04

A-57

KAR20001-04

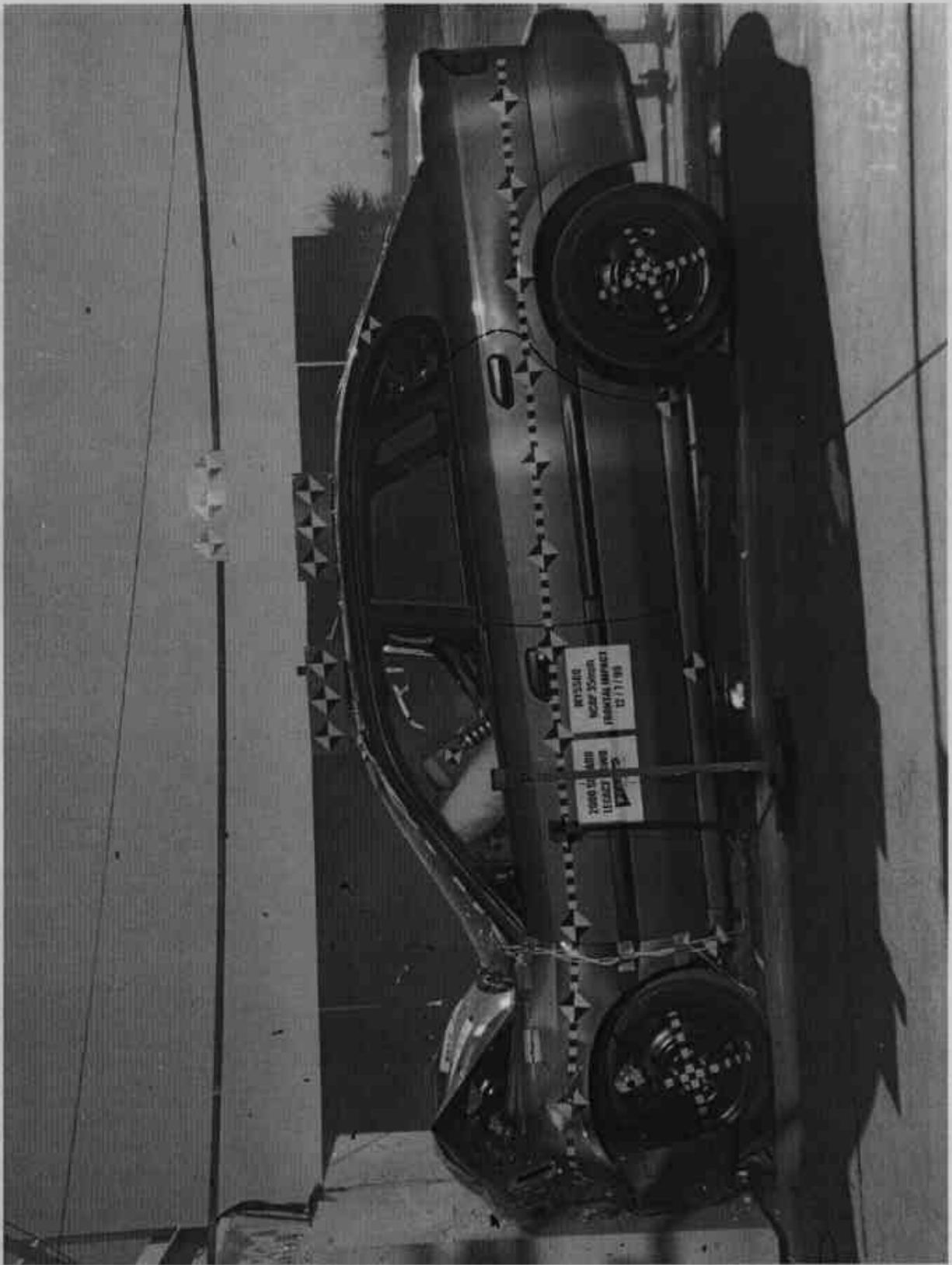


FIGURE A-58. VEHICLE DURING IMPACT

APPENDIX B
DUMMY AND VEHICLE RESPONSE DATA TRACES

KAR20001-04

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B-3	Driver Head Primary X Displacement	B-3
B-4	Driver Head Primary Y	B-4
B-5	Driver Head Primary Z	B-5
B-6	Driver Head Resultant Primary	B-6
B-7	Driver Head Redundant X	B-7
B-8	Driver Head Redundant X Velocity	B-8
B-9	Driver Head Redundant X Displacement	B-9
B-10	Driver Head Redundant Y	B-10
B-11	Driver Head Redundant Z	B-11
B-12	Driver Head Resultant Redundant	B-12
B-13	Driver Neck Force X	B-13
B-14	Driver Neck Force Y	B-14
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B-18	Driver Neck Moment Y	B-18
B-19	Driver Neck Moment Z	B-19
B-20	Driver Neck Moment Resultant	B-20
B-21	Driver Chest Primary X	B-21
B-22	Driver Chest Primary X Velocity	B-22
B-23	Driver Chest Primary X Displacement	B-23
B-24	Driver Chest Primary Y	B-24
B-25	Driver Chest Primary Z	B-25
B-26	Driver Chest Primary Resultant	B-26
B-27	Driver Chest Redundant X	B-27
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B-30	Driver Chest Redundant Y	B-30
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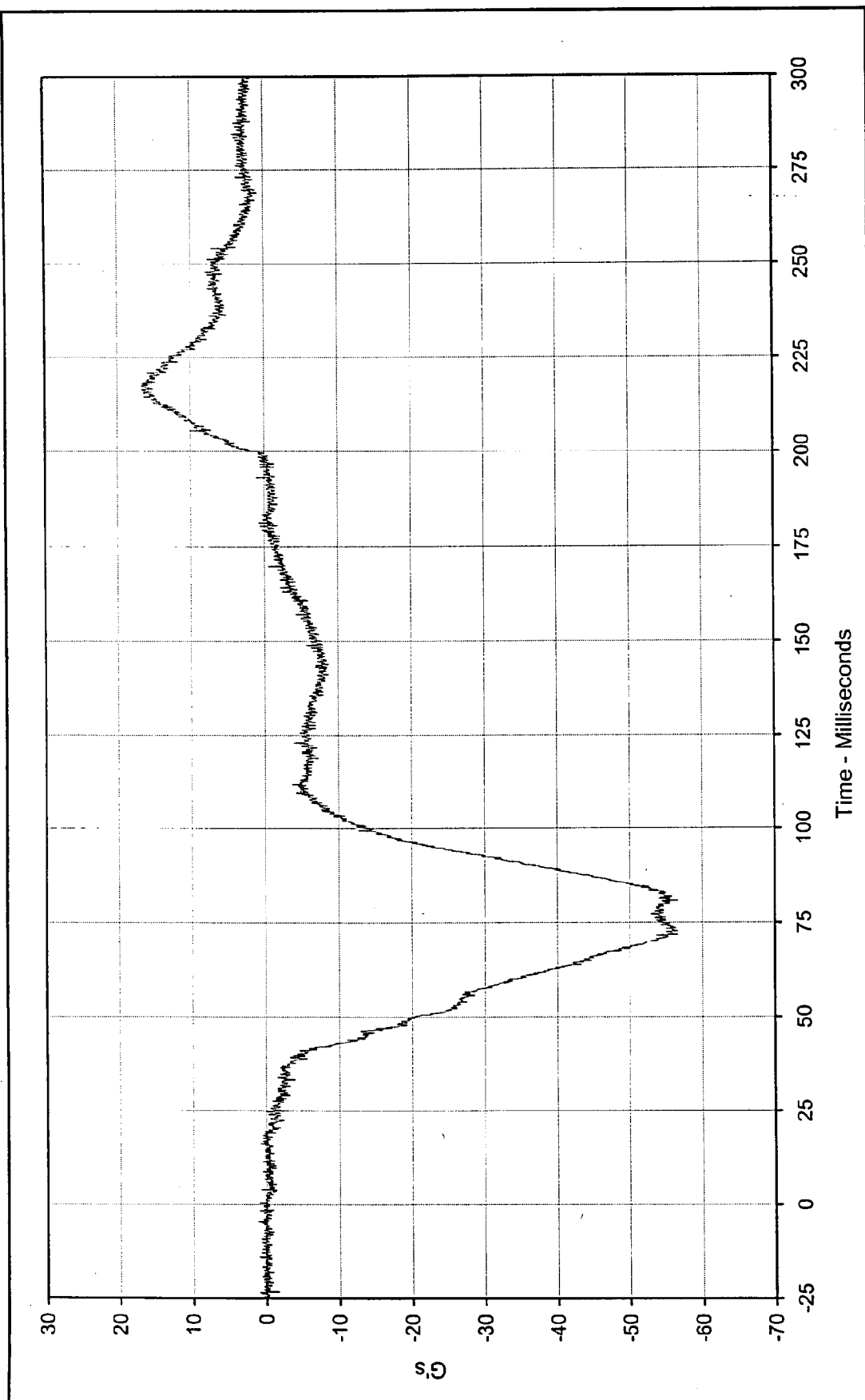
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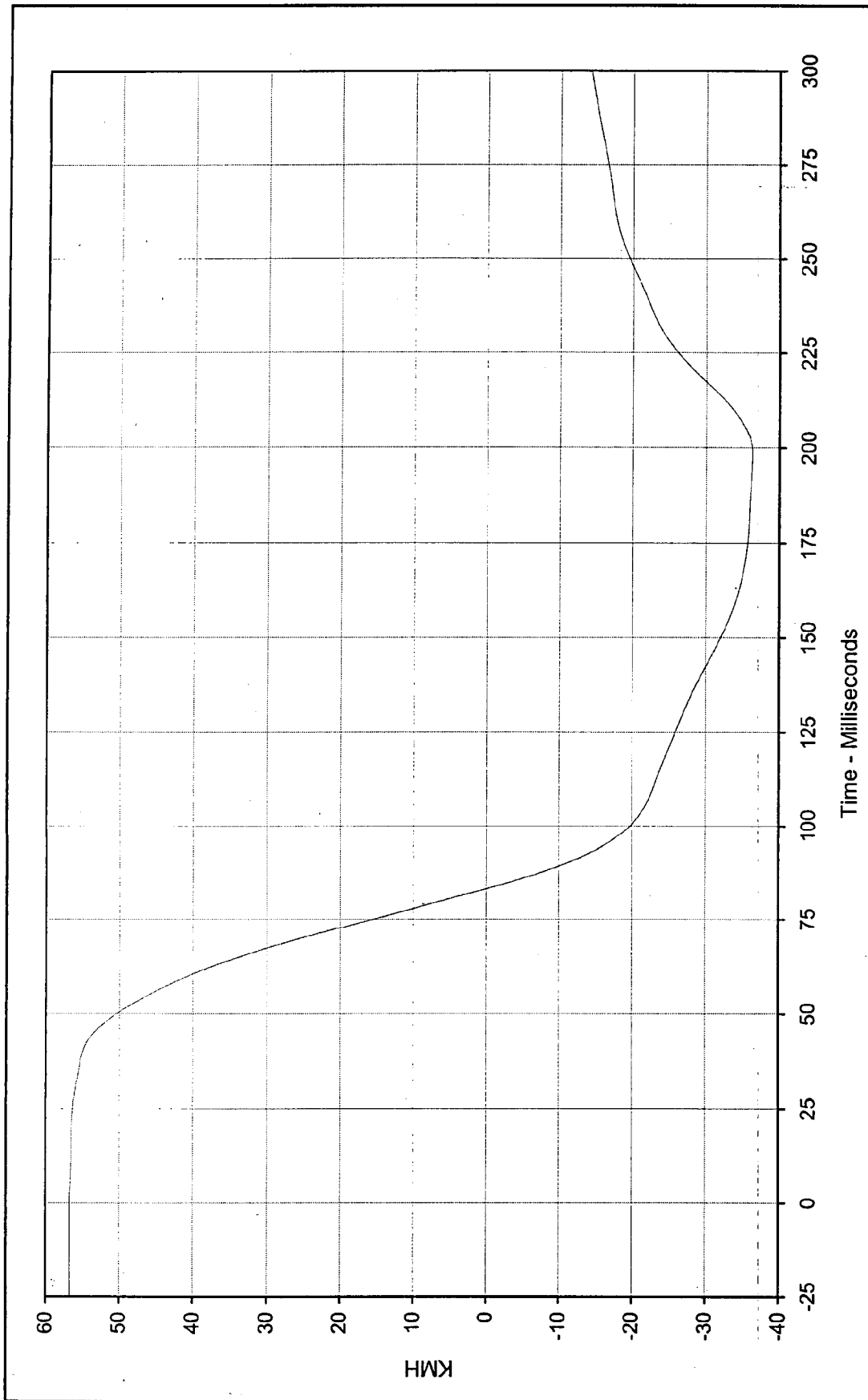
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Curve Description: Driver Head Primary X
 Maximum Value: 16.7 at 216.5 Milliseconds
 Minimum Value: -56.6 at 71.8 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 12/7/99
 Curve Number: FIL-001

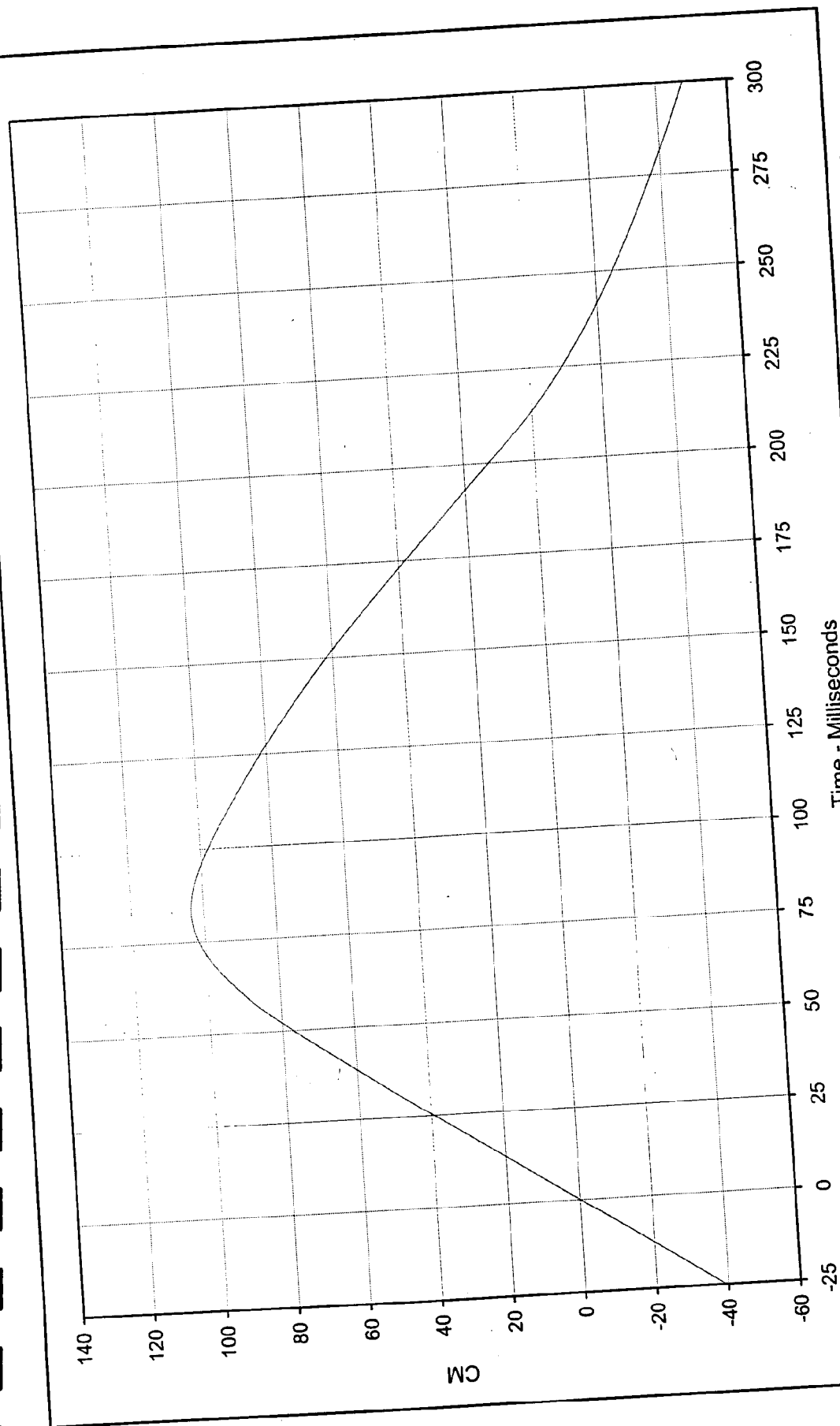
Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description:	Driver Head Primary X Velocity	Testing Program	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	56.7 at 0.9 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-36.3 at 198.6 Milliseconds			
SAE Filter Class:	180			
Date of Test:	12/7/99			
Curve Number:	IN1-001			

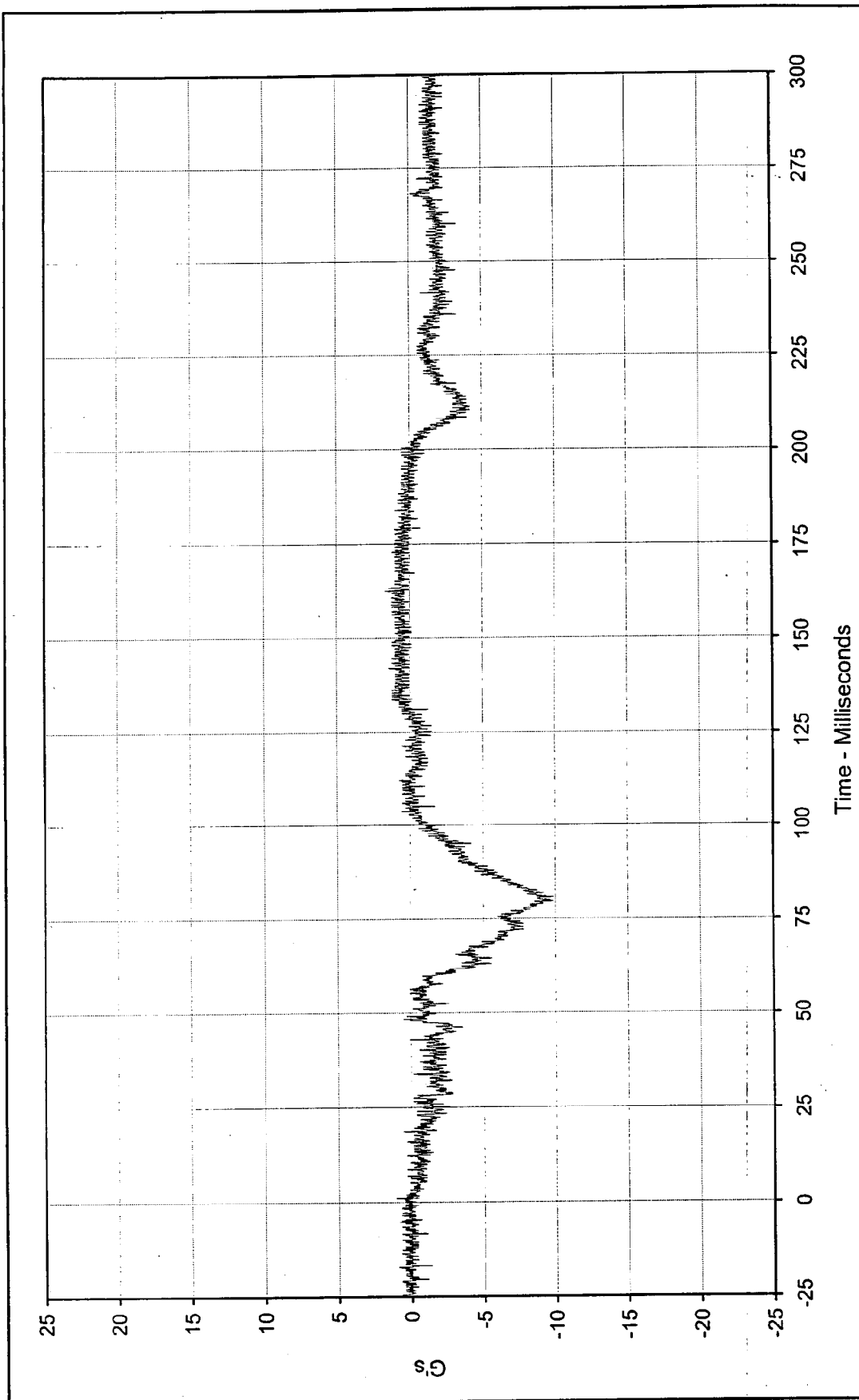




Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

Curve Description: Driver Head Primary X Displ.
 Maximum Value: 103.5 at 83.0 Milliseconds
 Minimum Value: -47.6 at 299.9 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/7/99
 Curve Number: IN2-001

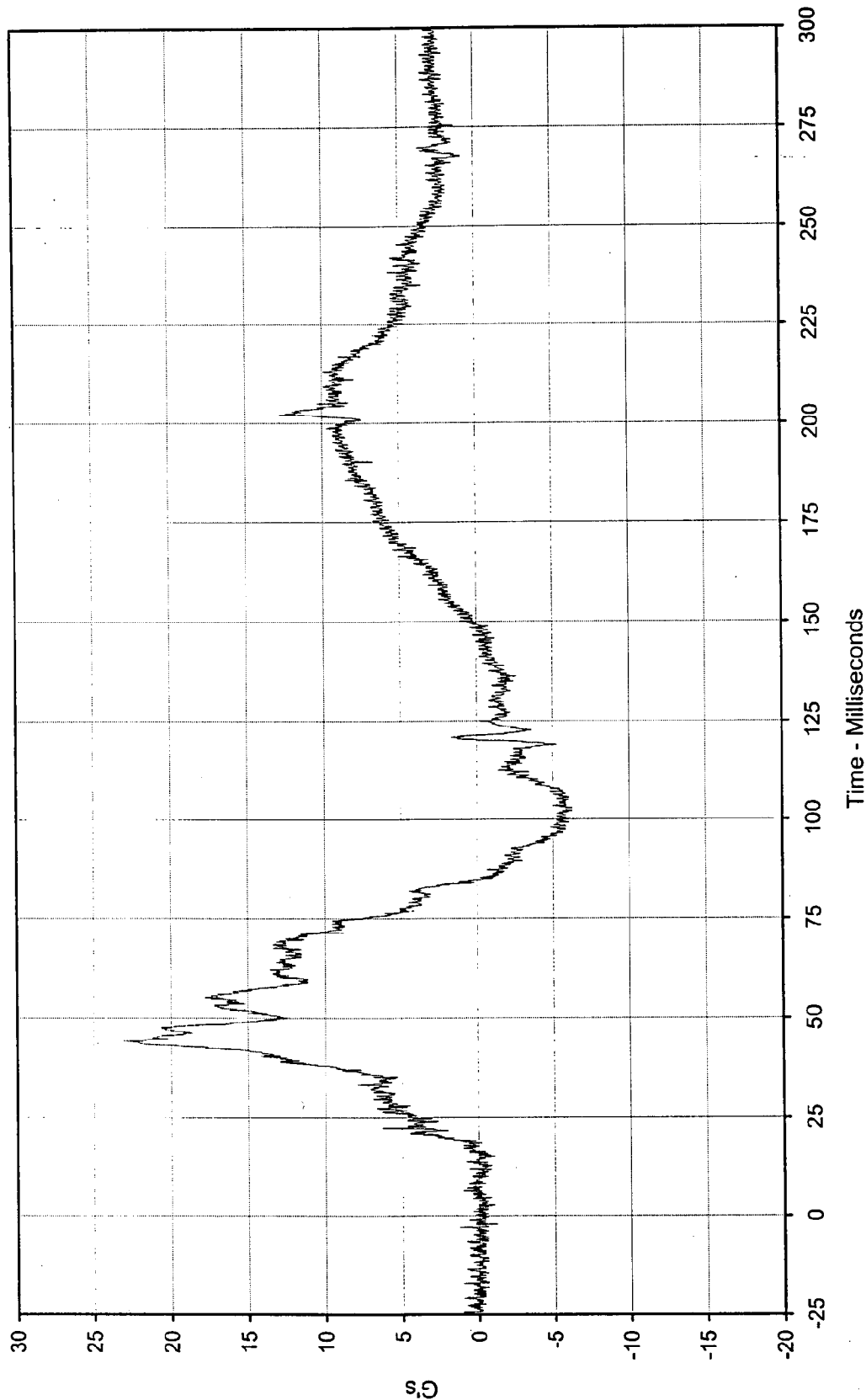




Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

Curve Description: Driver Head Primary Y
 Maximum Value: 1.6 at 162.5 Milliseconds
 Minimum Value: -9.8 at 79.9 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 12/7/99
 Curve Number: FIL-002





Curve Description: Driver Head Primary Z

Maximum Value: 23.0 at 44.2 Milliseconds

Minimum Value: -6.3 at 102.0 Milliseconds

SAE Filter Class: 1000

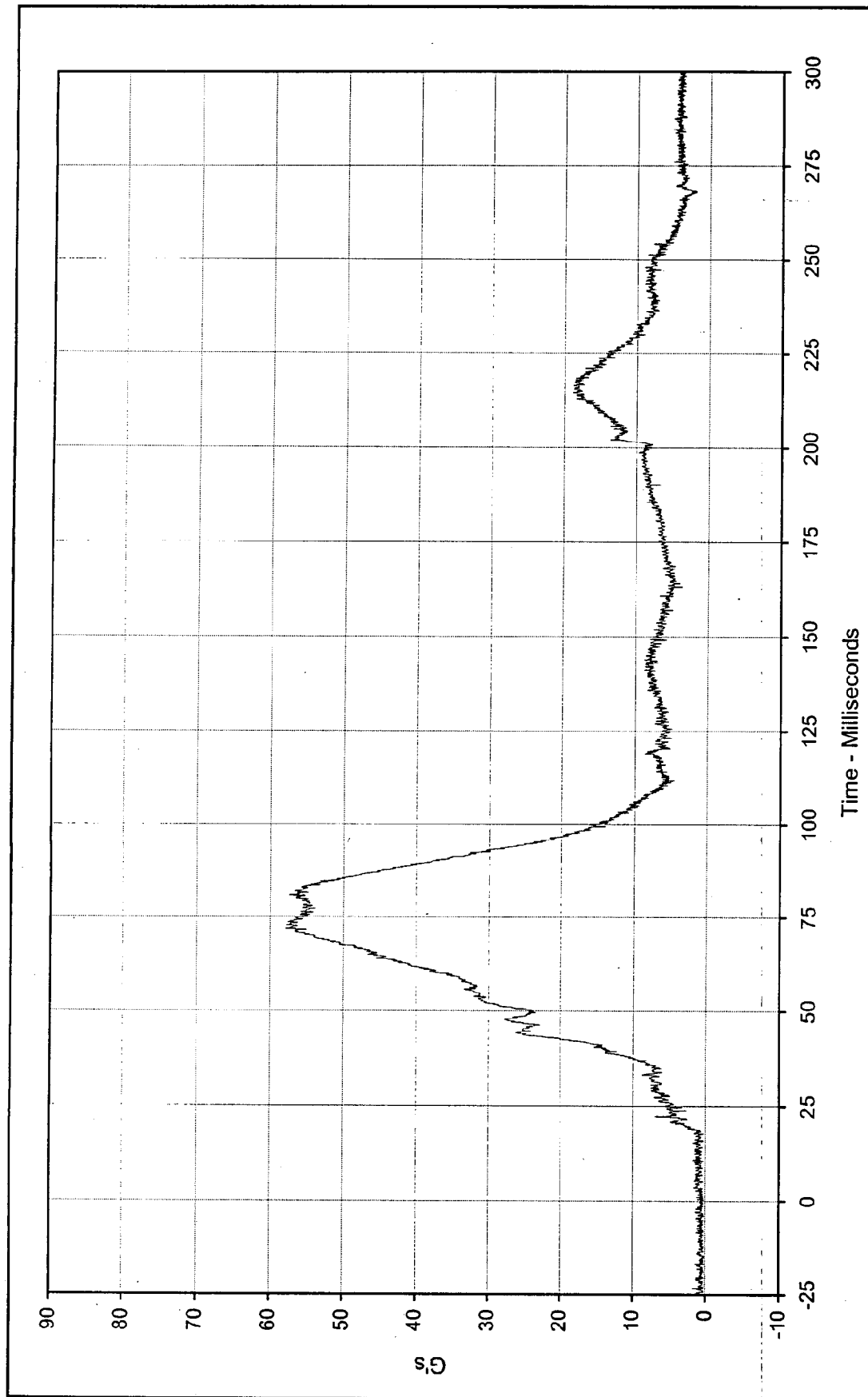
Date of Test: 12/7/99

Curve Number: FIL-003

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description: Driver Head Resultant Primary

Maximum Value: 57.9 at 71.8 Milliseconds

Minimum Value: 0.2 at 0.3 Milliseconds

SAE Filter Class: 1000

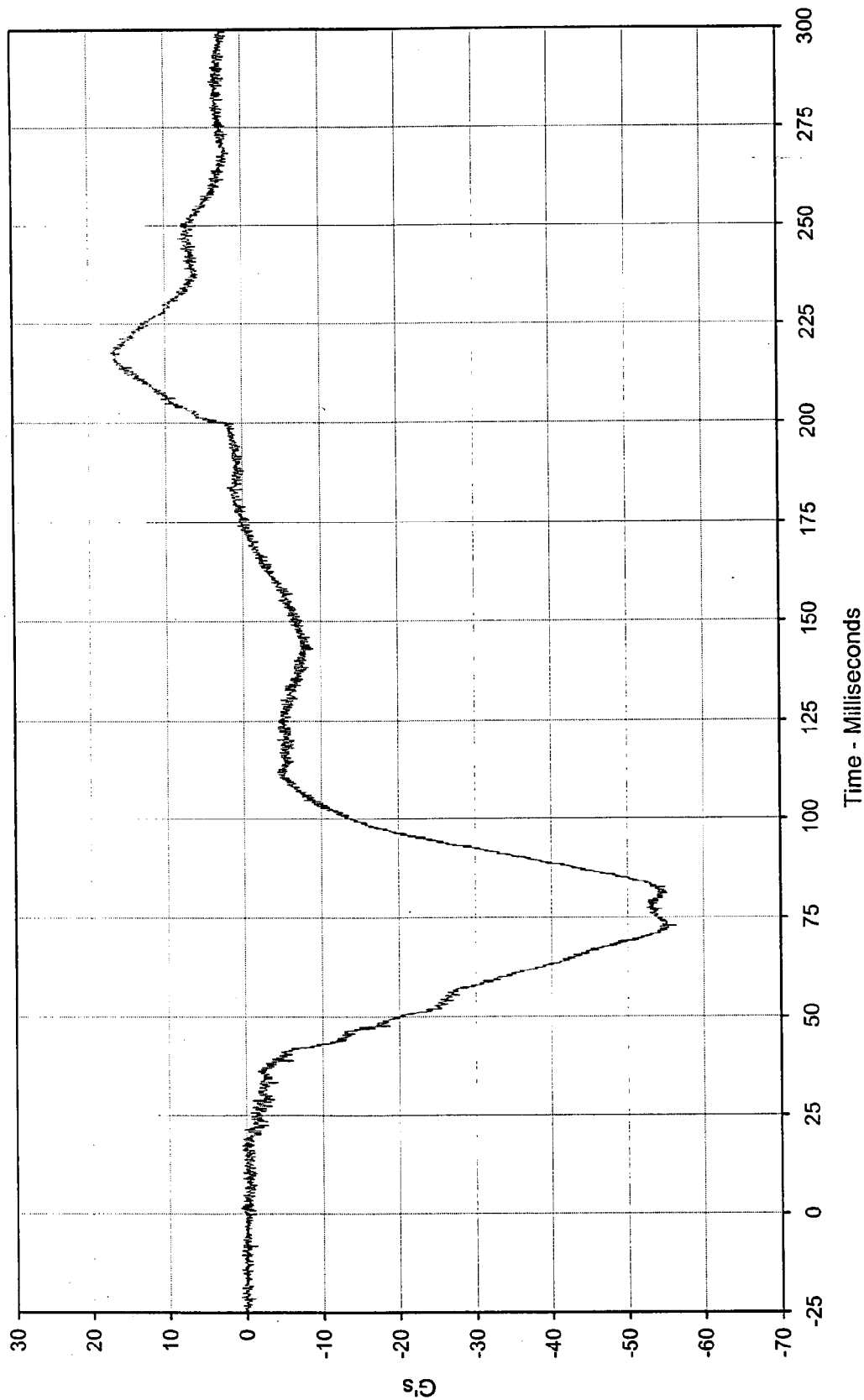
Date of Test: 12/7/99

Curve Number: RES-001

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description: Driver Head Redundant X

Maximum Value: 17.1 at 217.7 Milliseconds

Minimum Value: -56.5 at 72.9 Milliseconds

SAE Filter Class: 1000

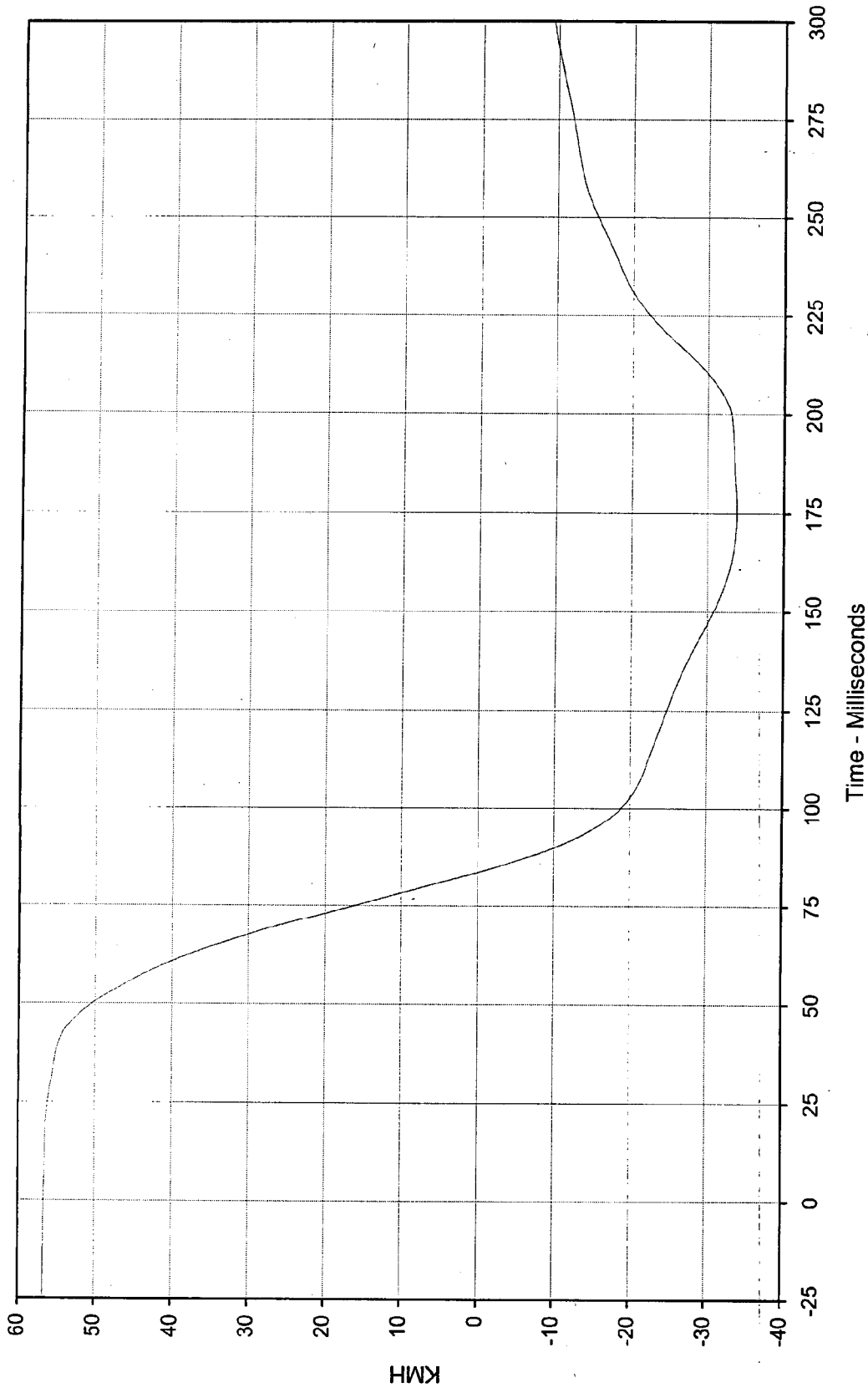
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Curve Number: FIL-004

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

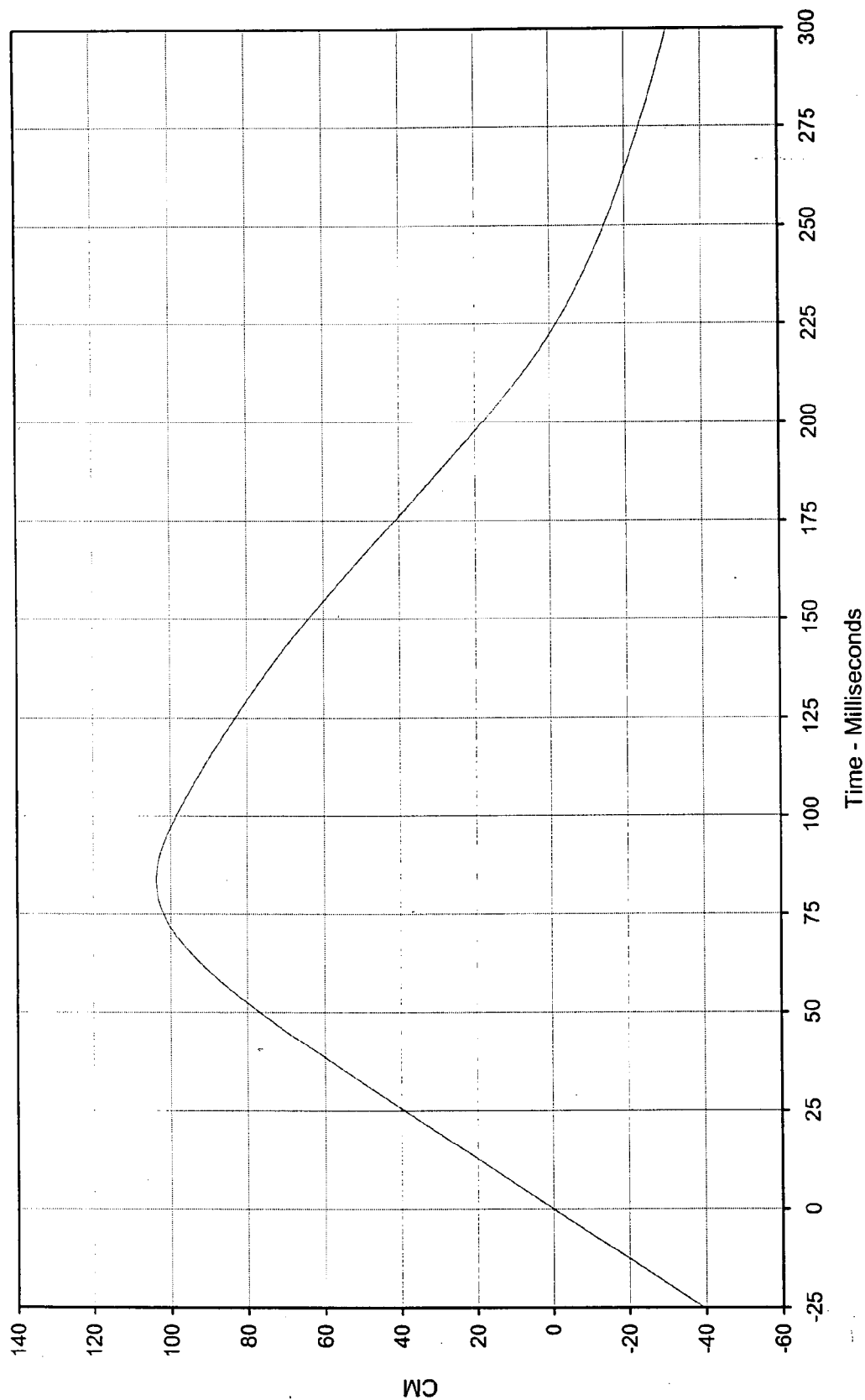




Curve Description: Driver Head Redundant X Velocity
 Maximum Value: 56.7 at 0.0 Milliseconds
 Minimum Value: -33.9 at 176.1 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/7/99
 Curve Number: IN1-004

Testing Program 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

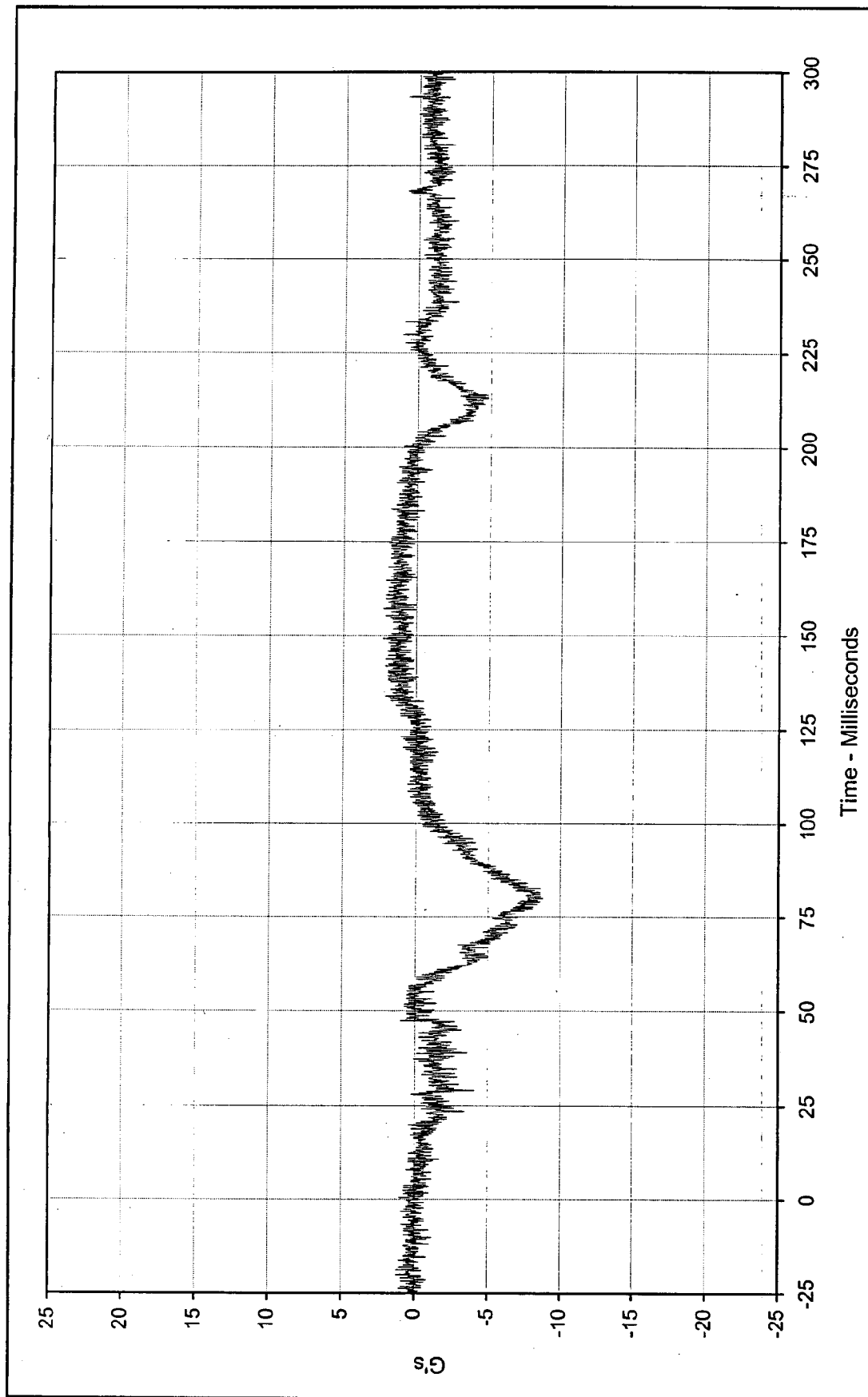




Curve Description: Driver Head Redundant X Displ.
 Maximum Value: 103.7 at 83.4 Milliseconds
 Minimum Value: -31.2 at 299.9 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/7/99
 Curve Number: IN2-004

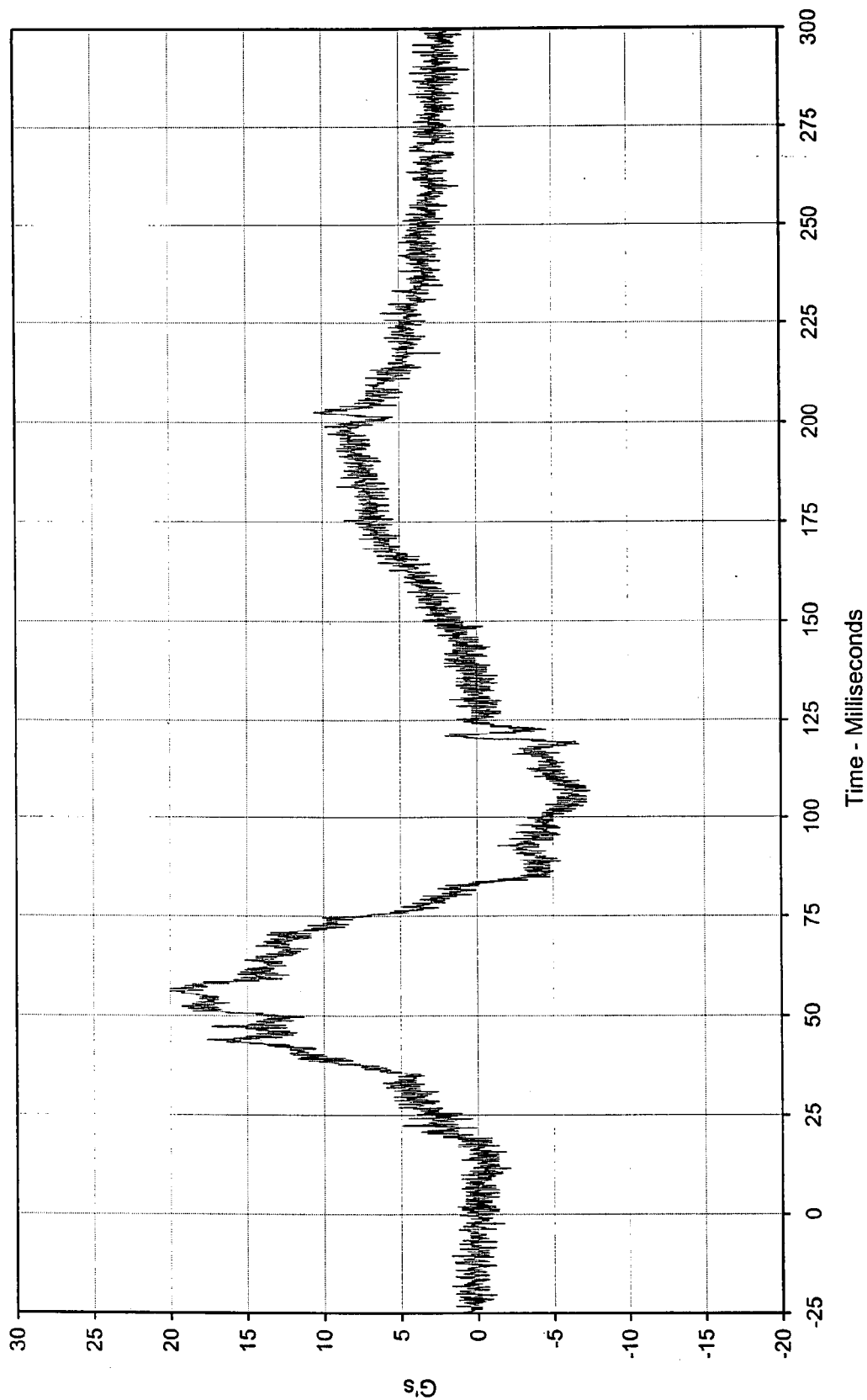
Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description:	Driver Head Redundant Y	Test Program:	2000 NHTSA 35 mph NCAP No.: MY5500
Maximum Value:	2.3 at 149.0 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan
Minimum Value:	-8.8 at 79.9 Milliseconds		
SAE Filter Class:	1000		
Date of Test:	12/7/99		
Curve Number:	FIL-005		





Curve Description: Driver Head Redundant Z

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Maximum Value: 20.0 at 56.1 Milliseconds

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

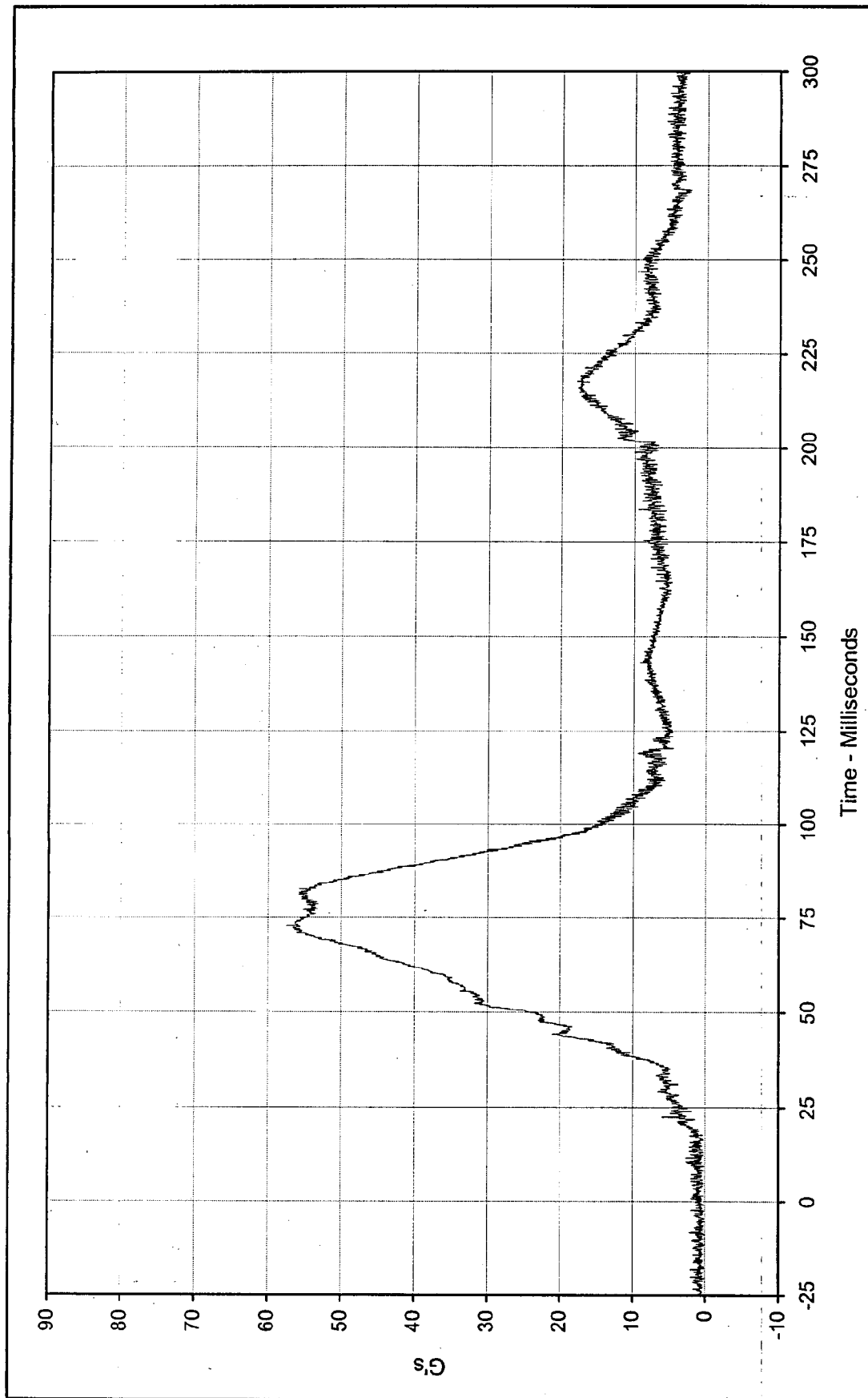
Minimum Value: -7.5 at 106.6 Milliseconds

SAE Filter Class: 1000

Date of Test: 12/7/99

Curve Number: FIL-006





Curve Description: Driver Head Resultant Redundant

Maximum Value: 57.5 at 72.9 Milliseconds

Minimum Value: 0.1 at 9.3 Milliseconds

SAE Filter Class: 1000

Date of Test: 12/7/99

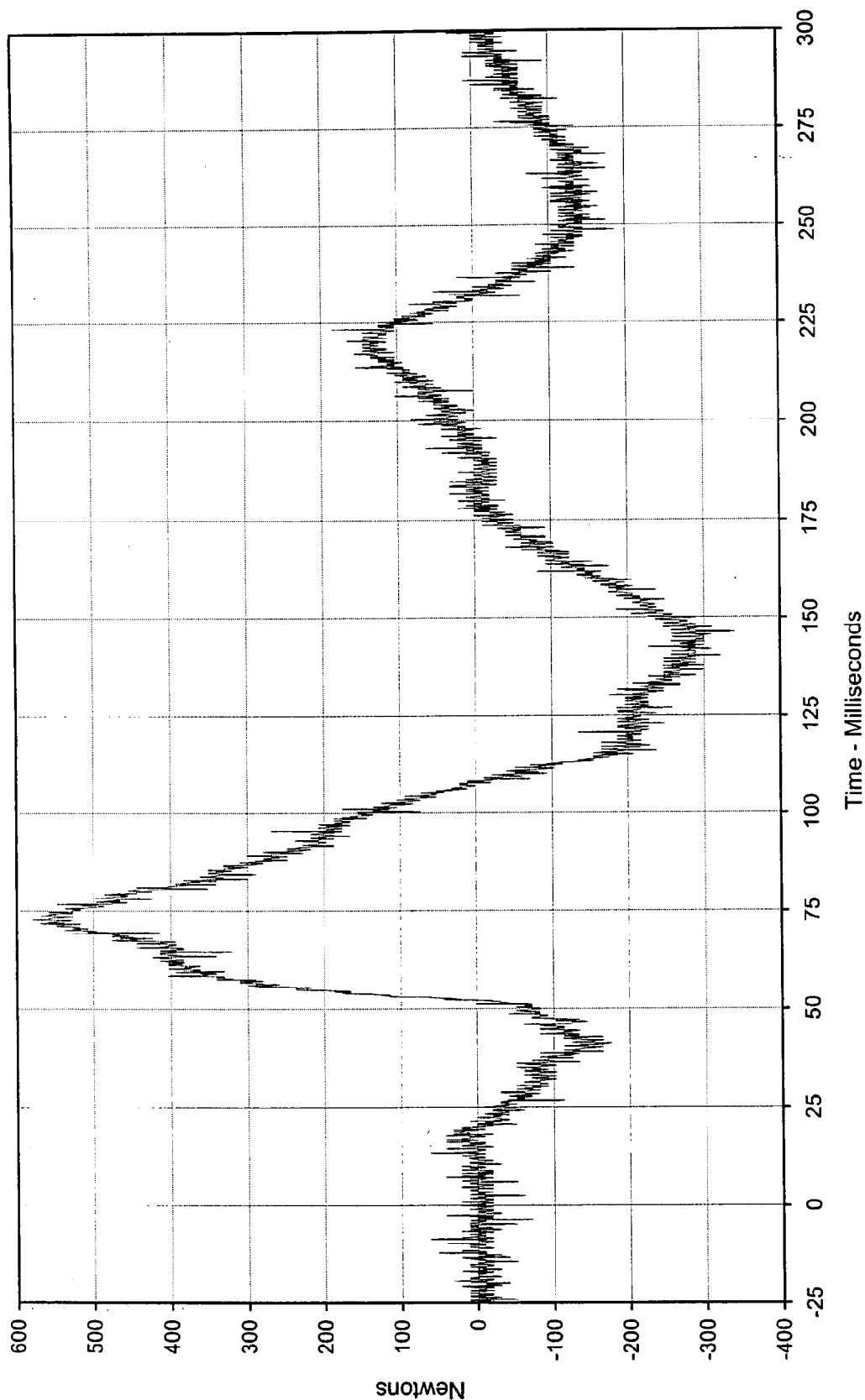
Curve Number: RES-004

Test Program: 2000 NHTSA 35 mph NCAP

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

No.: MY5500





Curve Description: Driver Neck Force X

Maximum Value: 578.7 at 72.8 Milliseconds

Minimum Value: -341.0 at 146.3 Milliseconds

SAE Filter Class: 1000

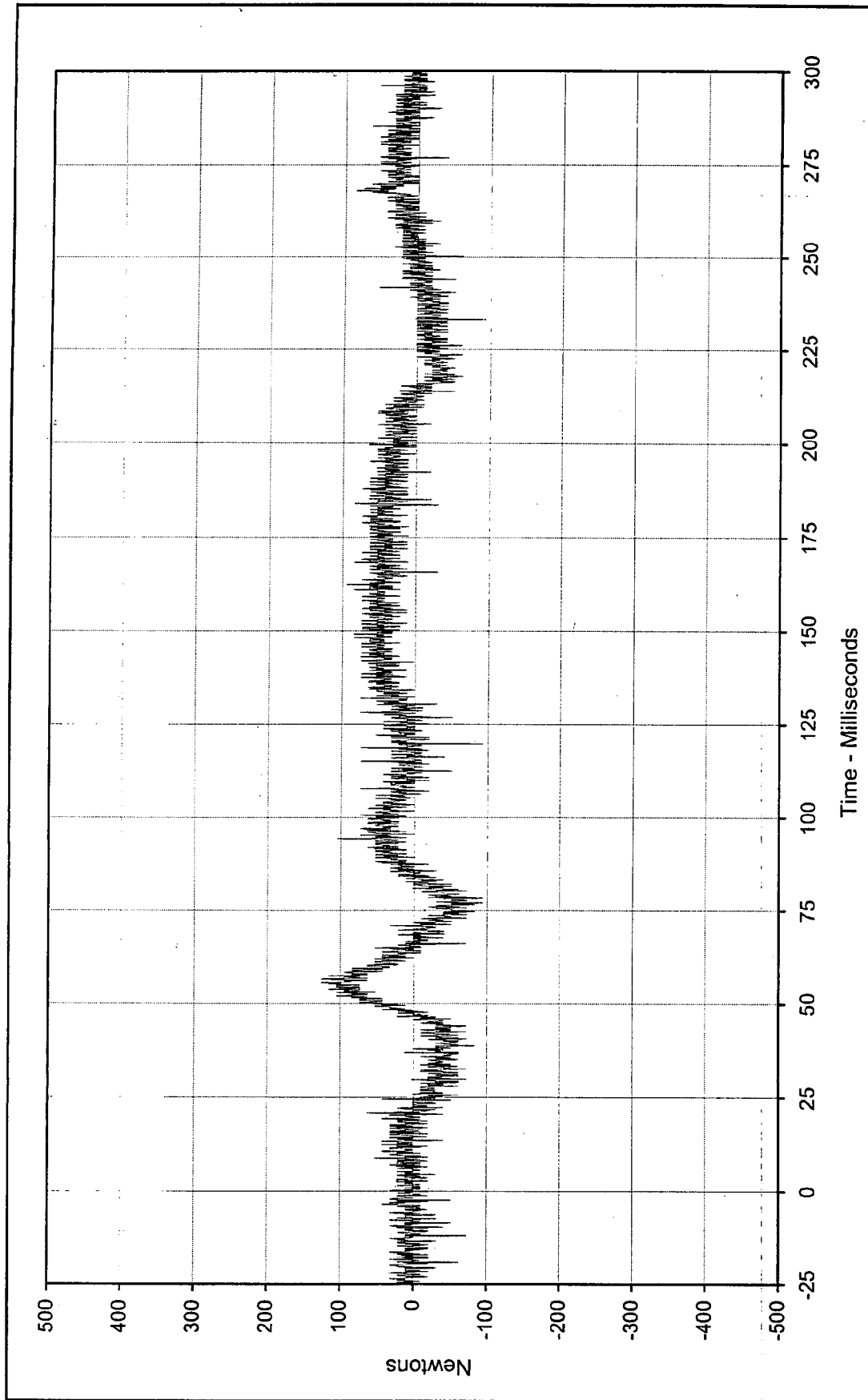
Date of Test: 12/7/99

Curve Number: FIL-007

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

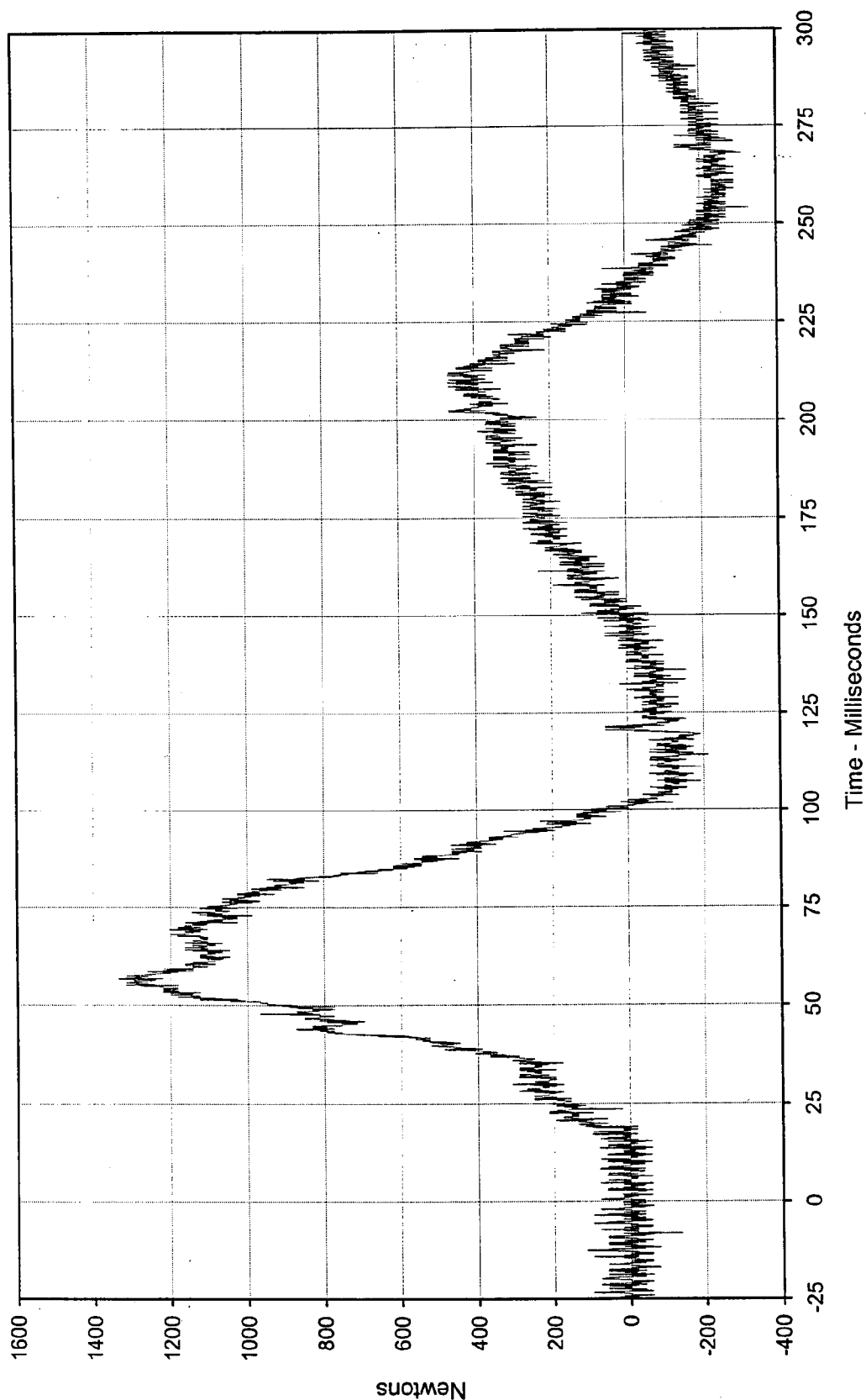
Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description:	Driver Neck Force Y	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	126.1 at 55.6 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-93.7 at 77.0 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	12/7/99			
Curve Number:	FIL-008			





Curve Description: Driver Neck Force Z Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Maximum Value: 1335.0 at 56.6 Milliseconds Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

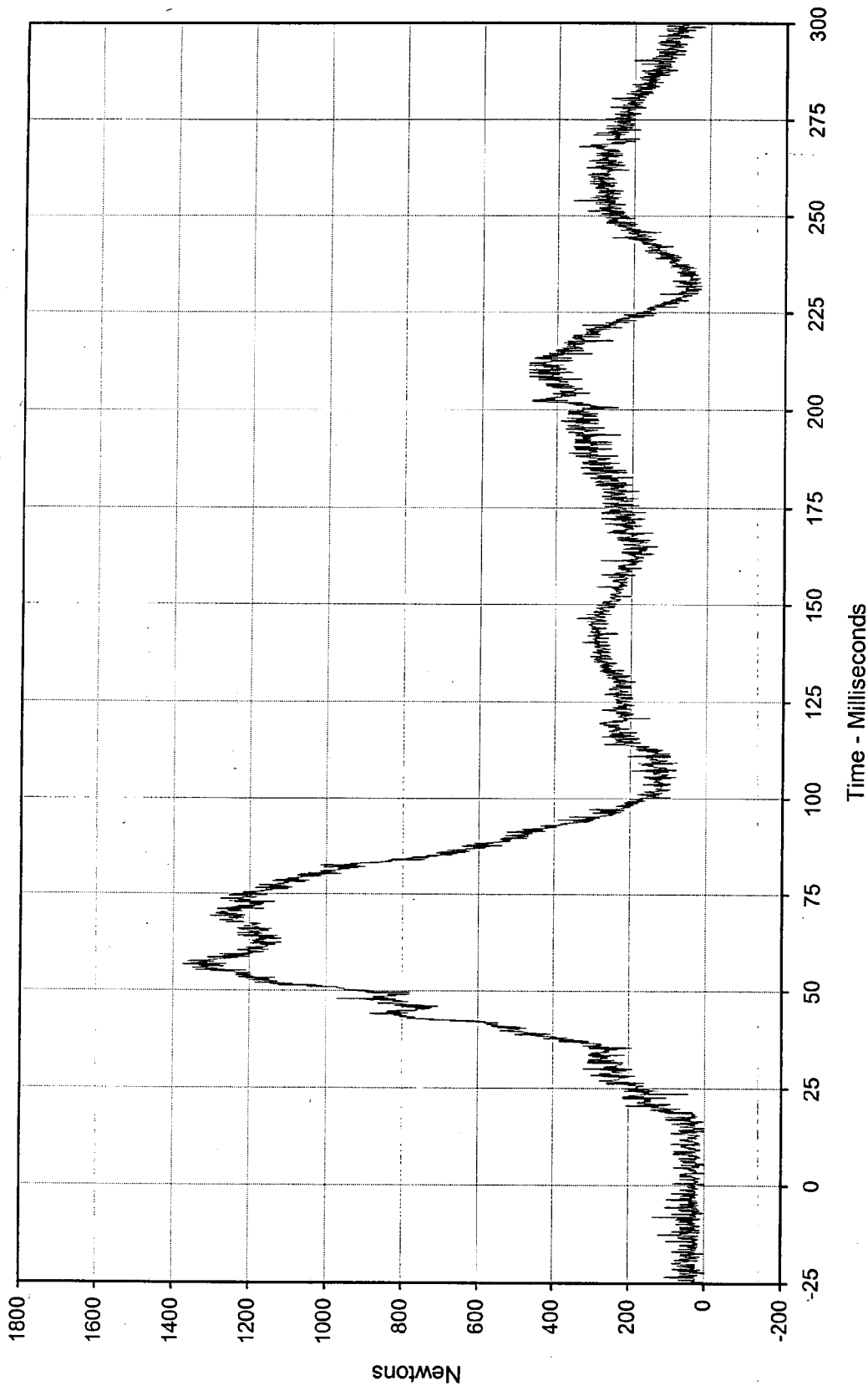
Minimum Value: -328.9 at 254.1 Milliseconds

SAE Filter Class: 1000

Date of Test: 12/7/99

Curve Number: FIL-009





Curve Description: Driver Neck Force Resultant

Maximum Value: 1374.5 at 56.6 Milliseconds

Minimum Value: 0.5 at 0.4 Milliseconds

SAE Filter Class: 1000

Date of Test: 12/7/99

Curve Number: RES-007

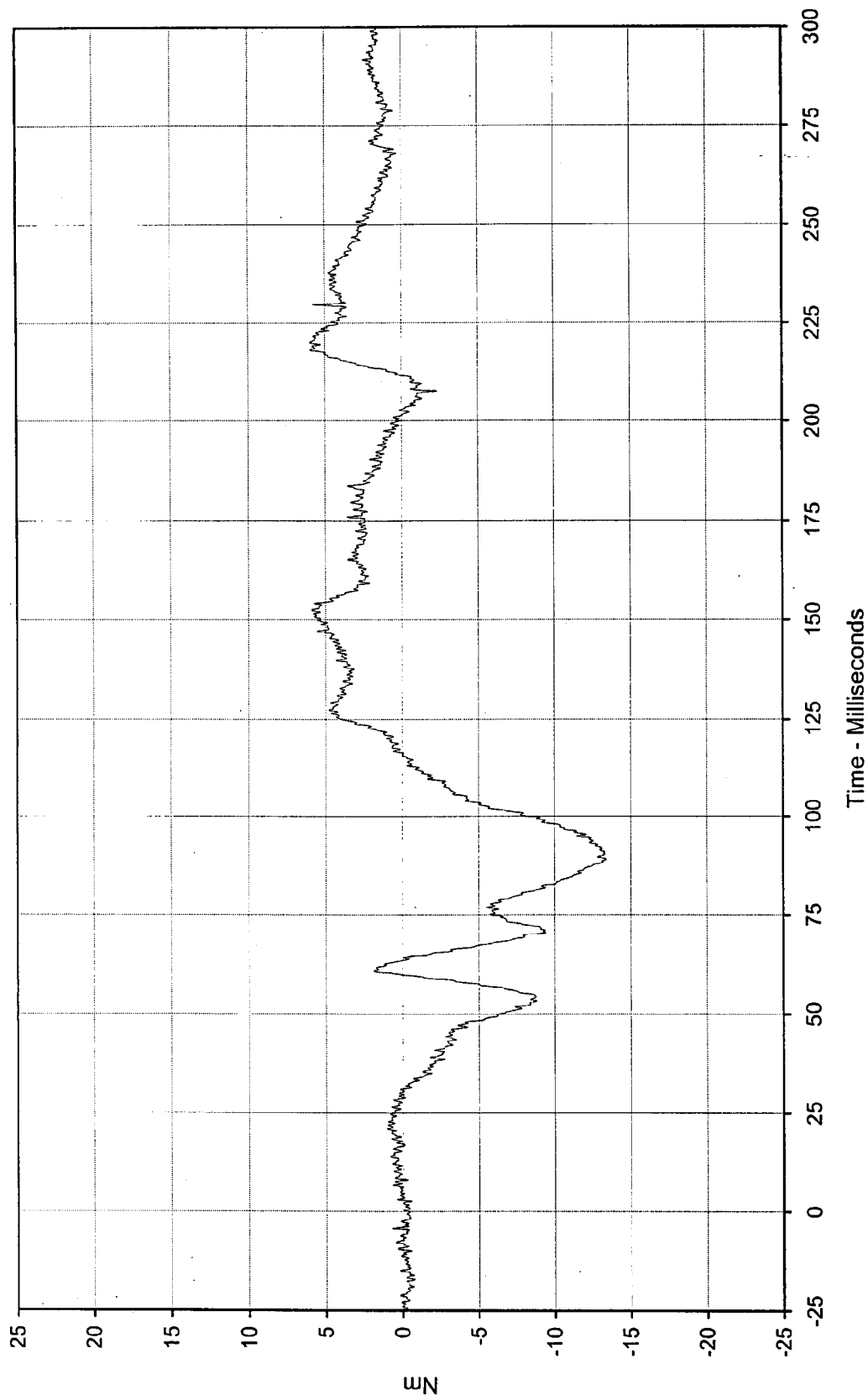
Test Program:

2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle:

2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description: Driver Neck Moment X

Maximum Value: 6.0 at 218.1 Milliseconds

Minimum Value: -13.4 at 88.9 Milliseconds

SAE Filter Class: 600

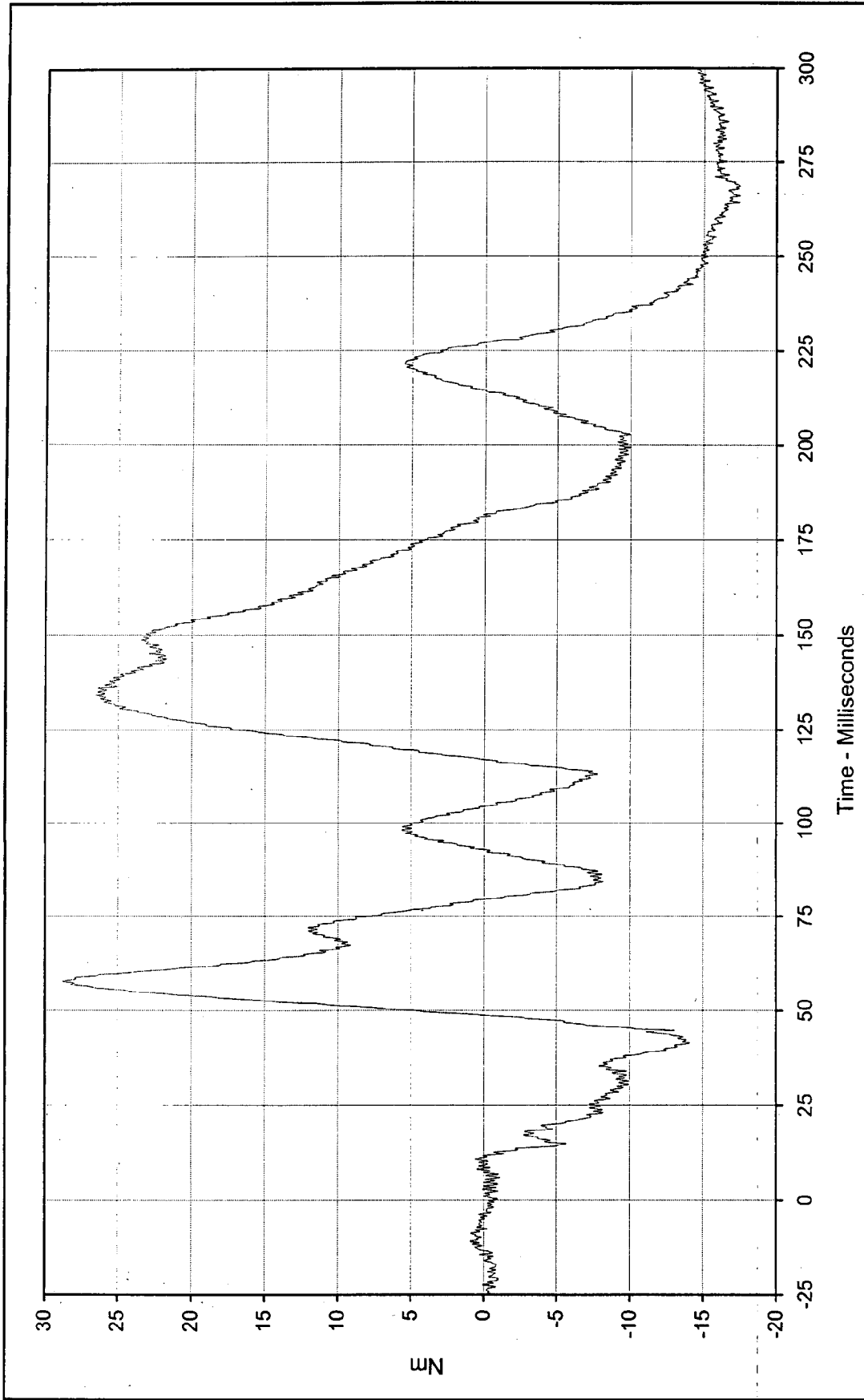
Date of Test: 12/7/99

Curve Number: FIL-010

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

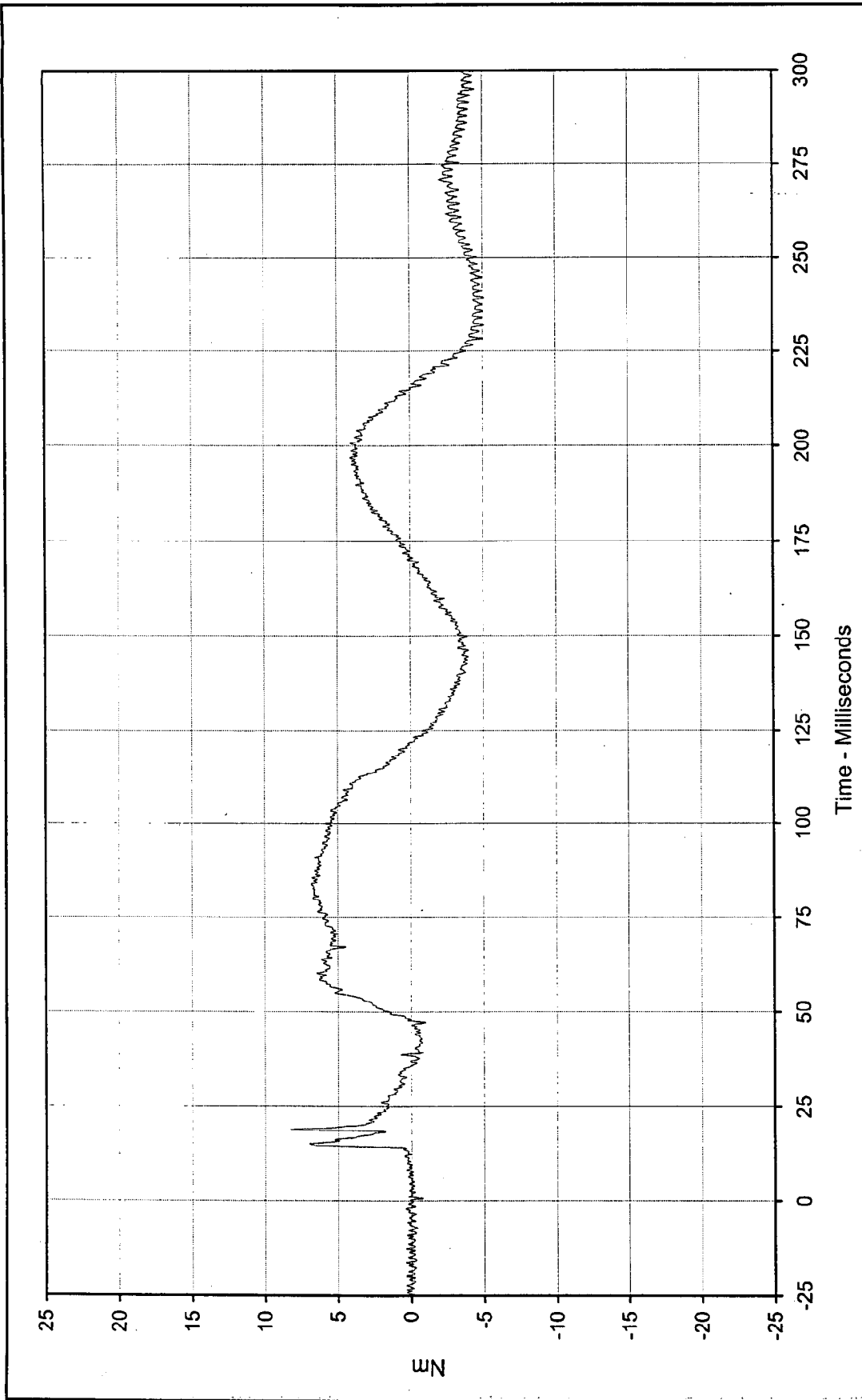
Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description:	Driver Neck Moment Y	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	28.8 at 57.6 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-17.5 at 268.6 Milliseconds			
SAE Filter Class:	600			
Date of Test:	12/7/99			
Curve Number:	FIL-011			

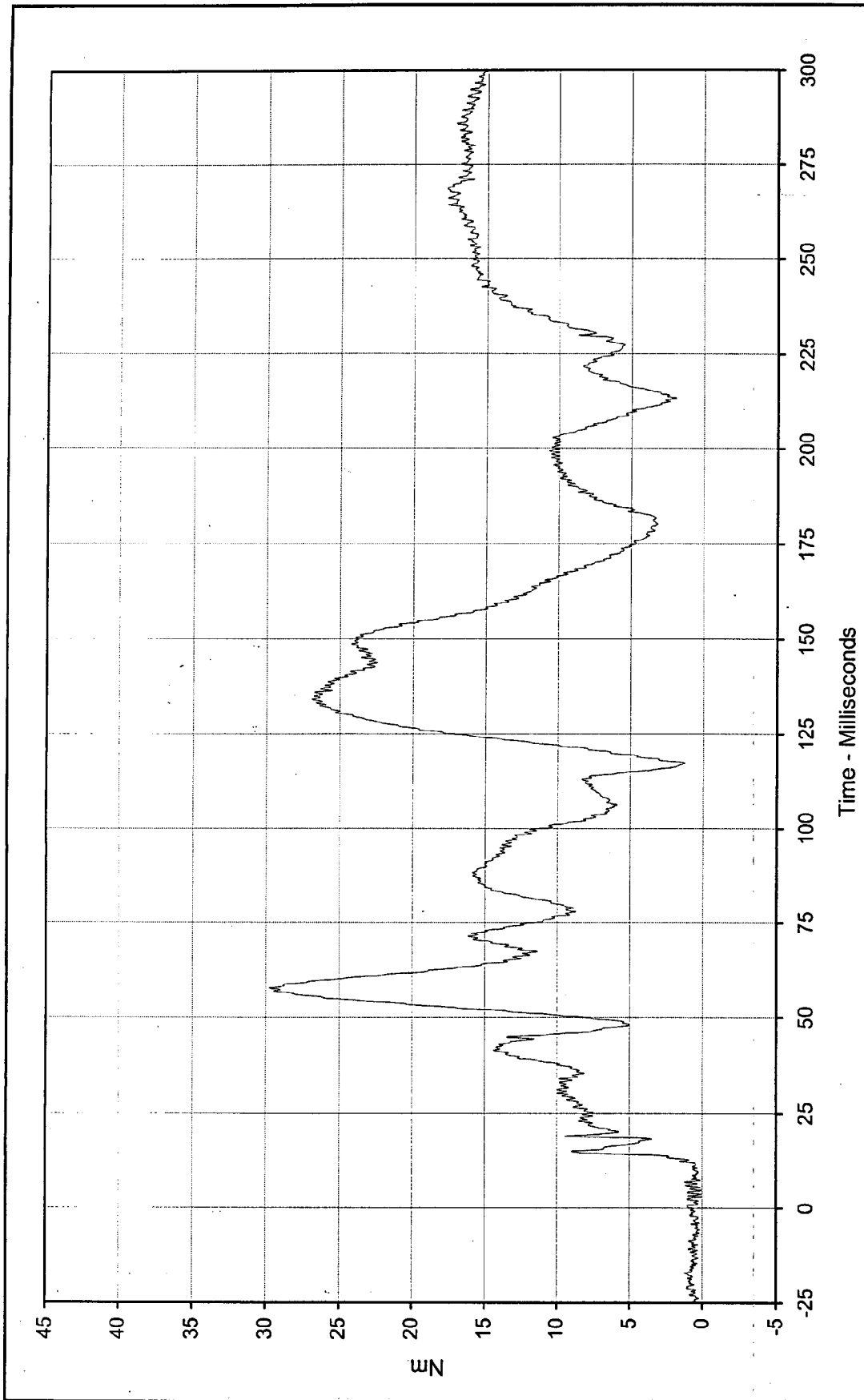




Curve Description: Driver Neck Moment Z
 Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

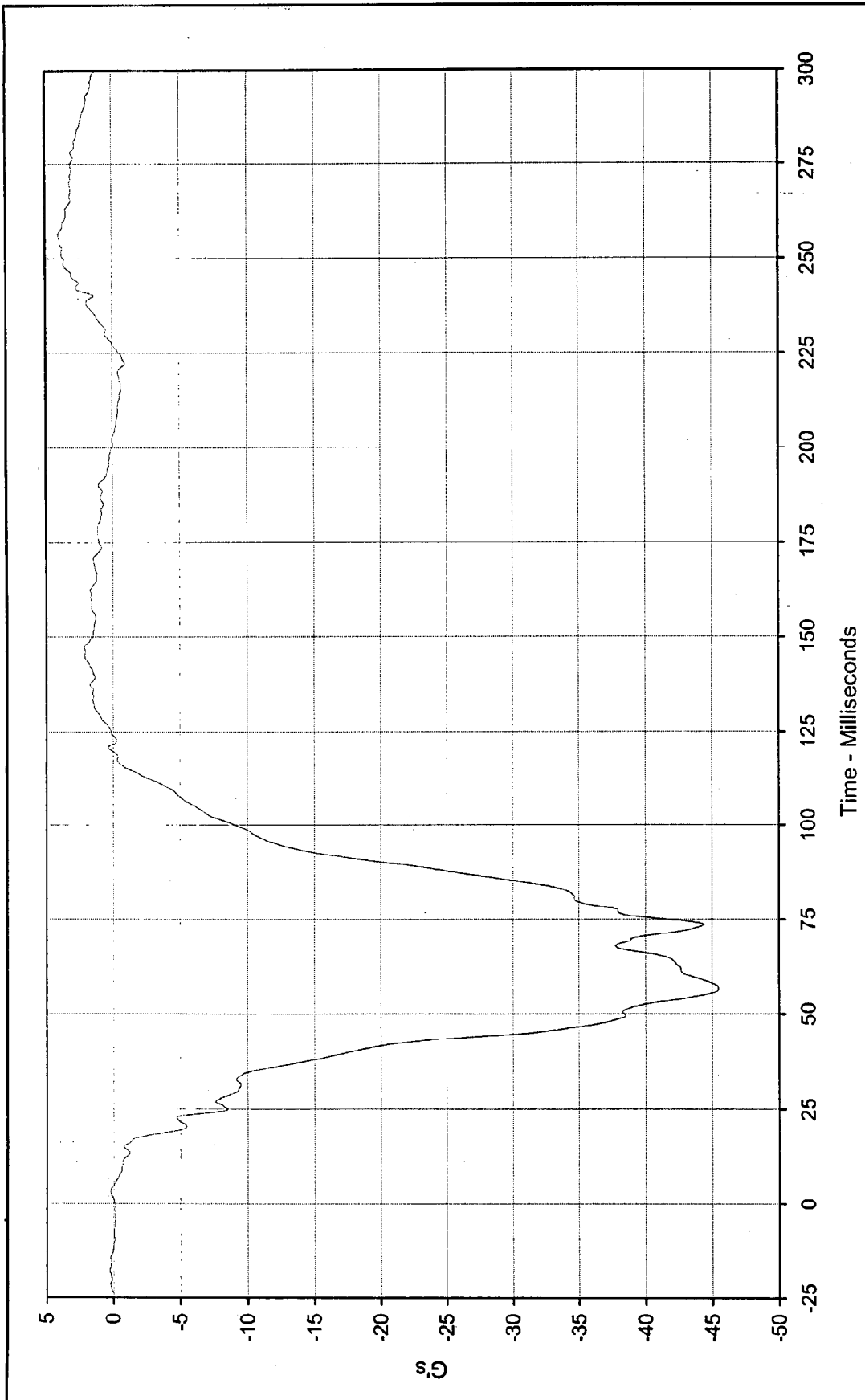
Maximum Value: 8.3 at 18.9 Milliseconds
 Minimum Value: -5.2 at 232.1 Milliseconds
 SAE Filter Class: 600
 Date of Test: 12/7/99
 Curve Number: FIL-012





Curve Description:	Driver Neck Moment Resultant	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	29.8 at 57.6 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	0.0 at 2.9 Milliseconds			
SAE Filter Class:	600			
Date of Test:	12/7/99			
Curve Number:	RES-010			

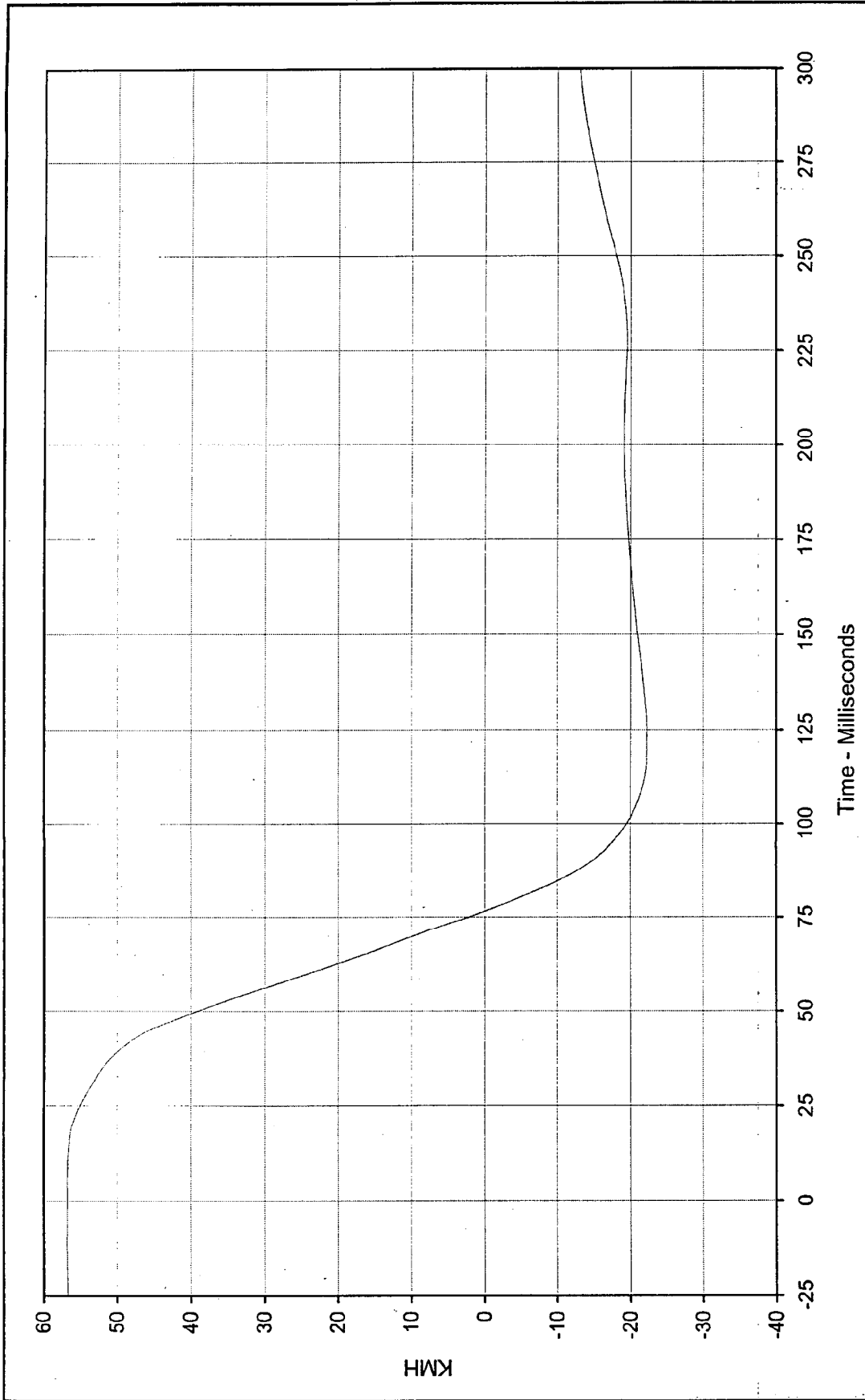




Curve Description: Driver Chest Primary X
 Maximum Value: 4.0 at 256.5 Milliseconds
 Minimum Value: -45.5 at 56.6 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/7/99
 Curve Number: FIL-013

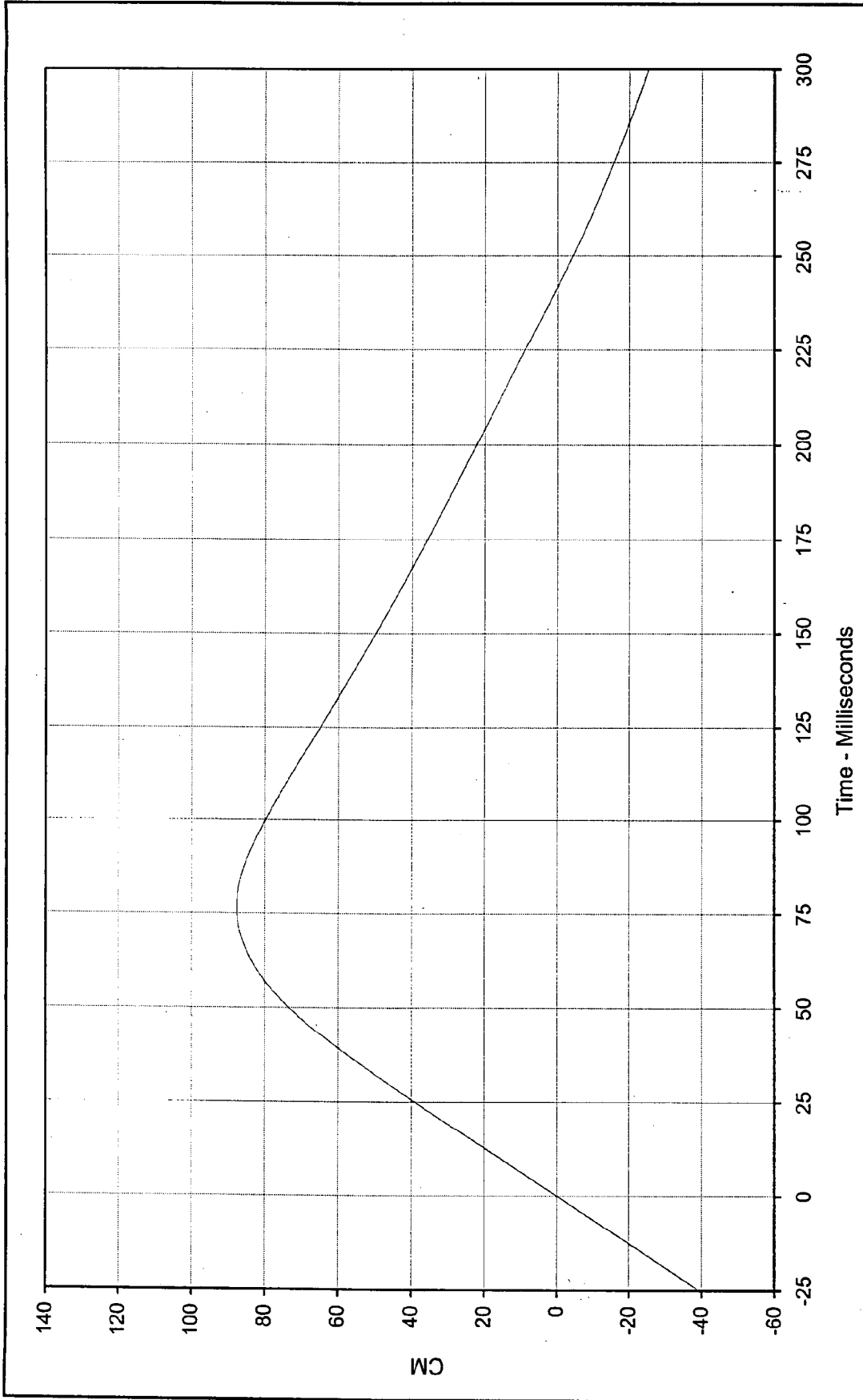
Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description:	Driver Chest Primary X Velocity	Testing Program	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	56.8	at	4.6	Milliseconds
Minimum Value:	-22.2	at	124.0	Milliseconds
SAE Filter Class:	180			
Date of Test:	12/7/99	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Curve Number:	IN1-013			

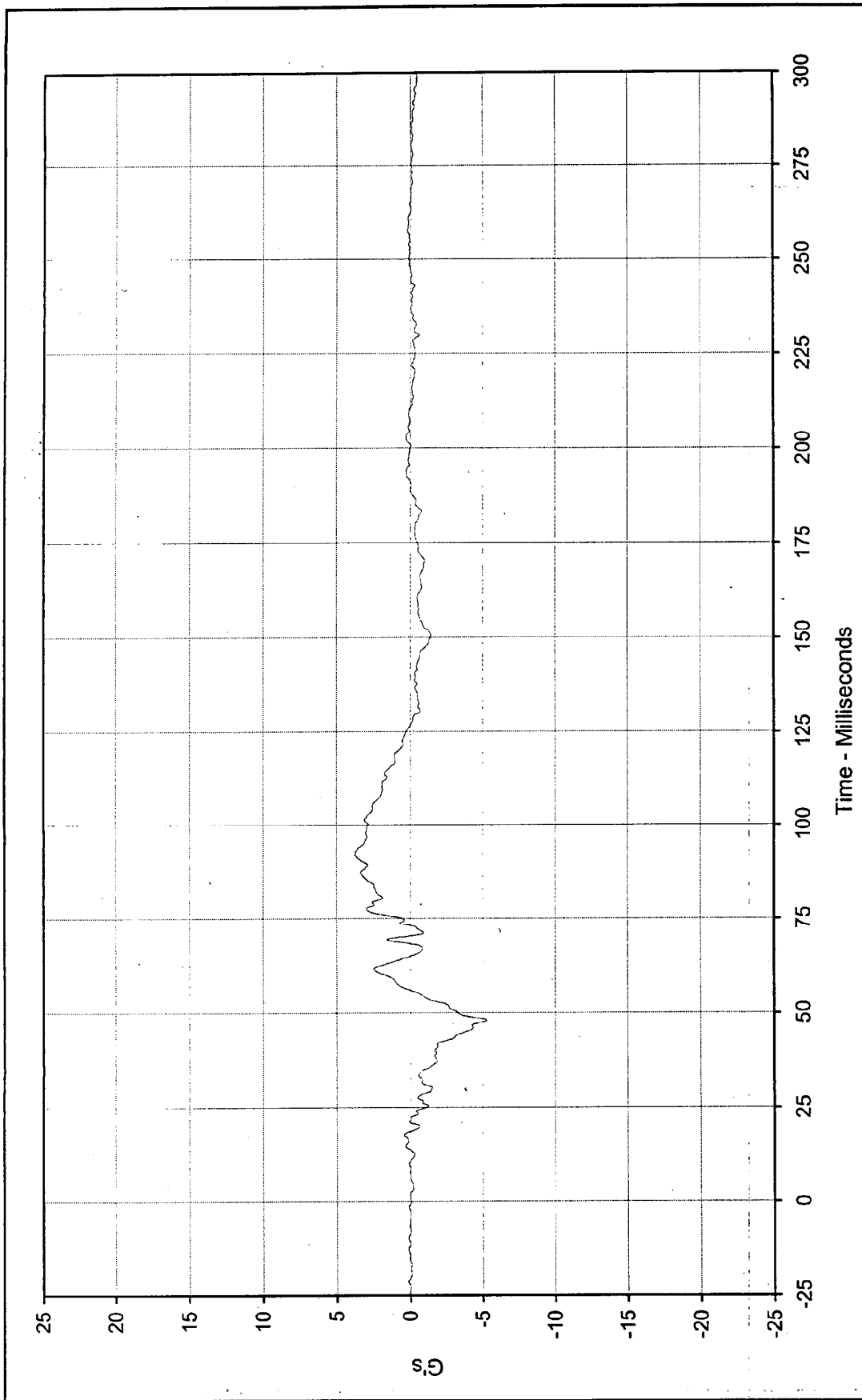




Curve Description: Driver Chest Primary X Displ.
 Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

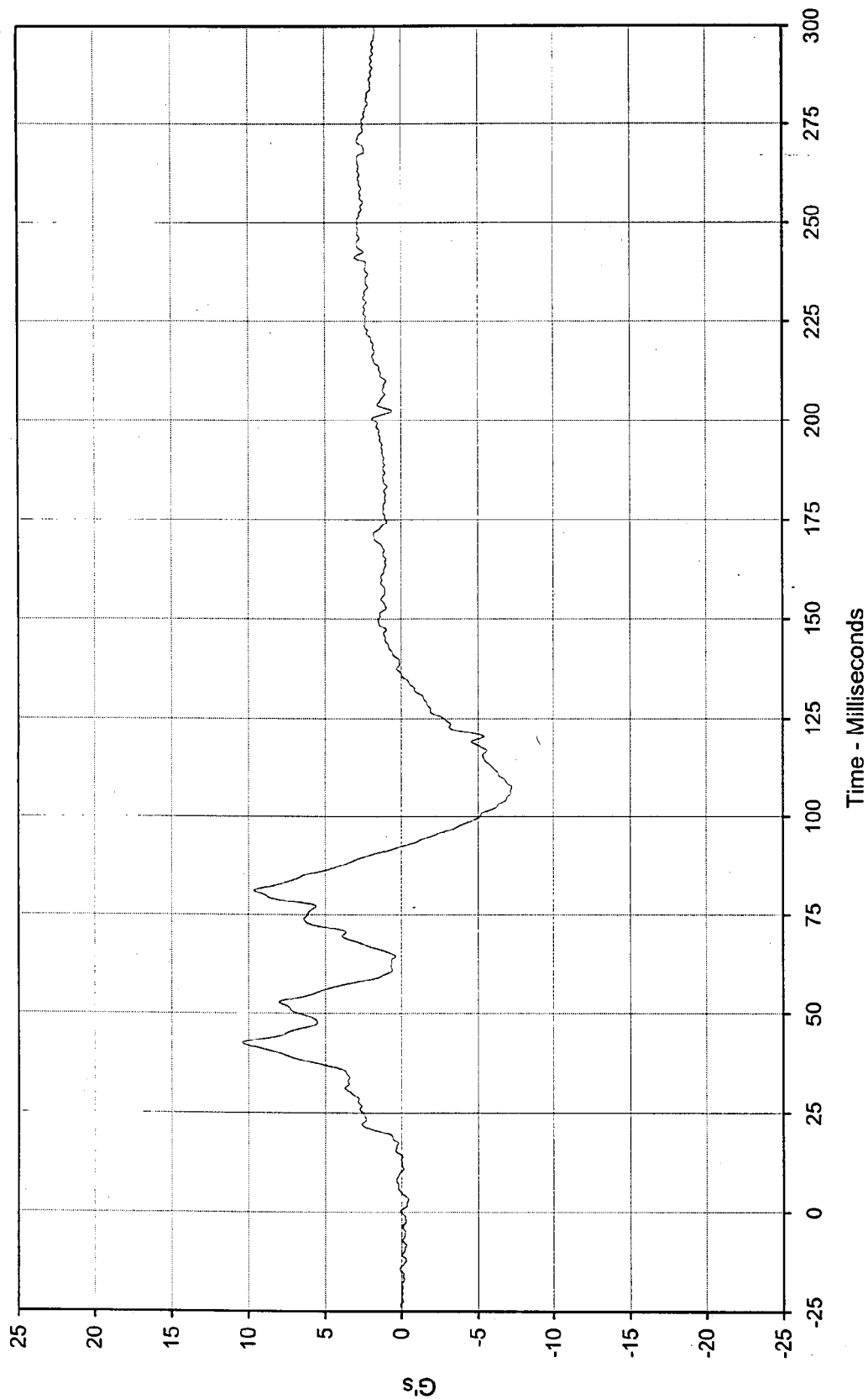
Maximum Value: 87.7 at 76.5 Milliseconds
 Minimum Value: -25.2 at 299.9 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/7/99
 Curve Number: IN2-013





Curve Description:	Driver Chest Primary Y		Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	3.7	at 91.9 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-5.3	at 47.9 Milliseconds			
SAE Filter Class:	180				
Date of Test:	12/7/99				
Curve Number:	FIL-014				





Curve Description: Driver Chest Primary Z

Maximum Value: 10.4 at 42.4 Milliseconds

Minimum Value: -7.3 at 107.4 Milliseconds

SAE Filter Class: 180

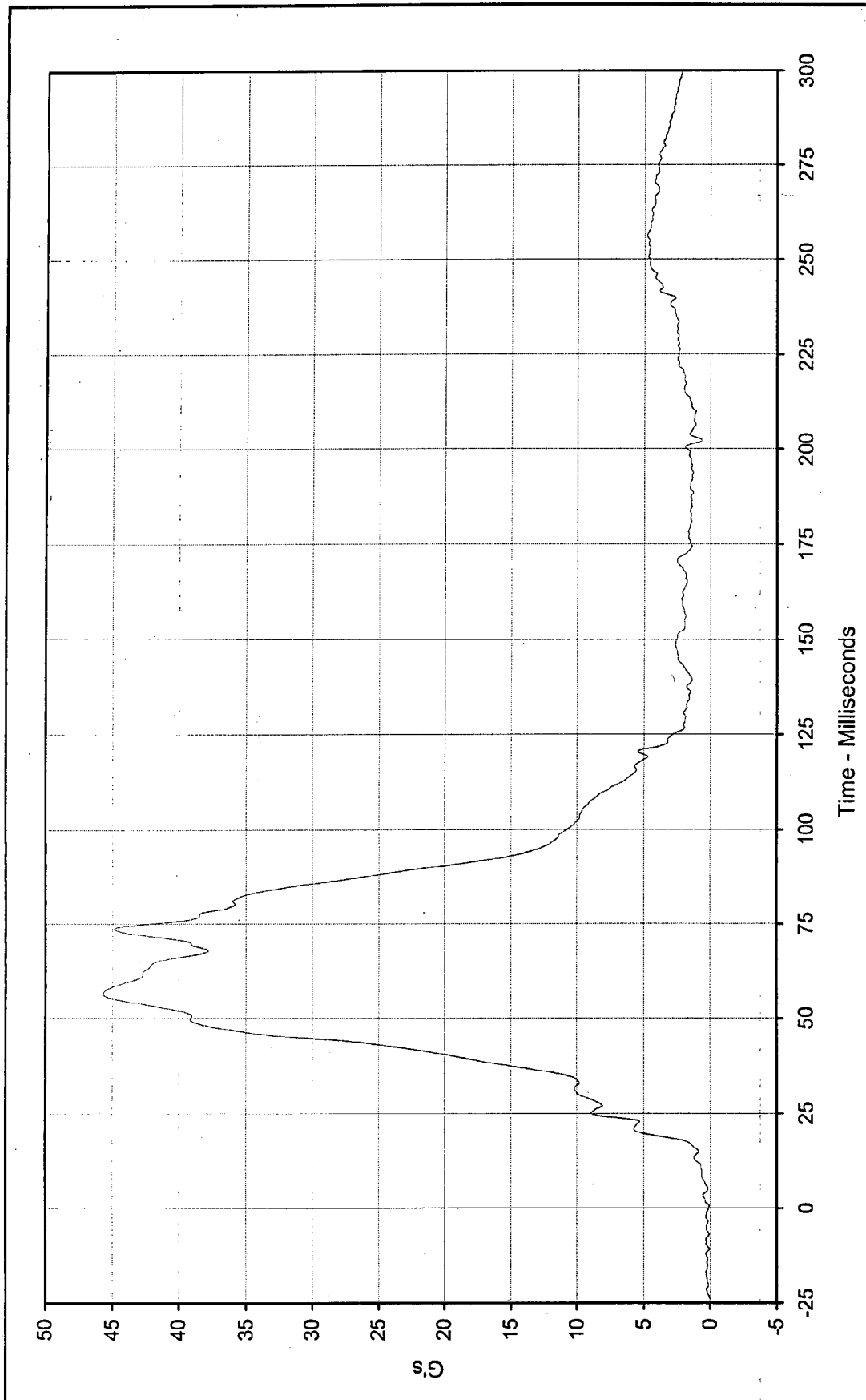
Date of Test: 12/7/99

Curve Number: FIL-015

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan



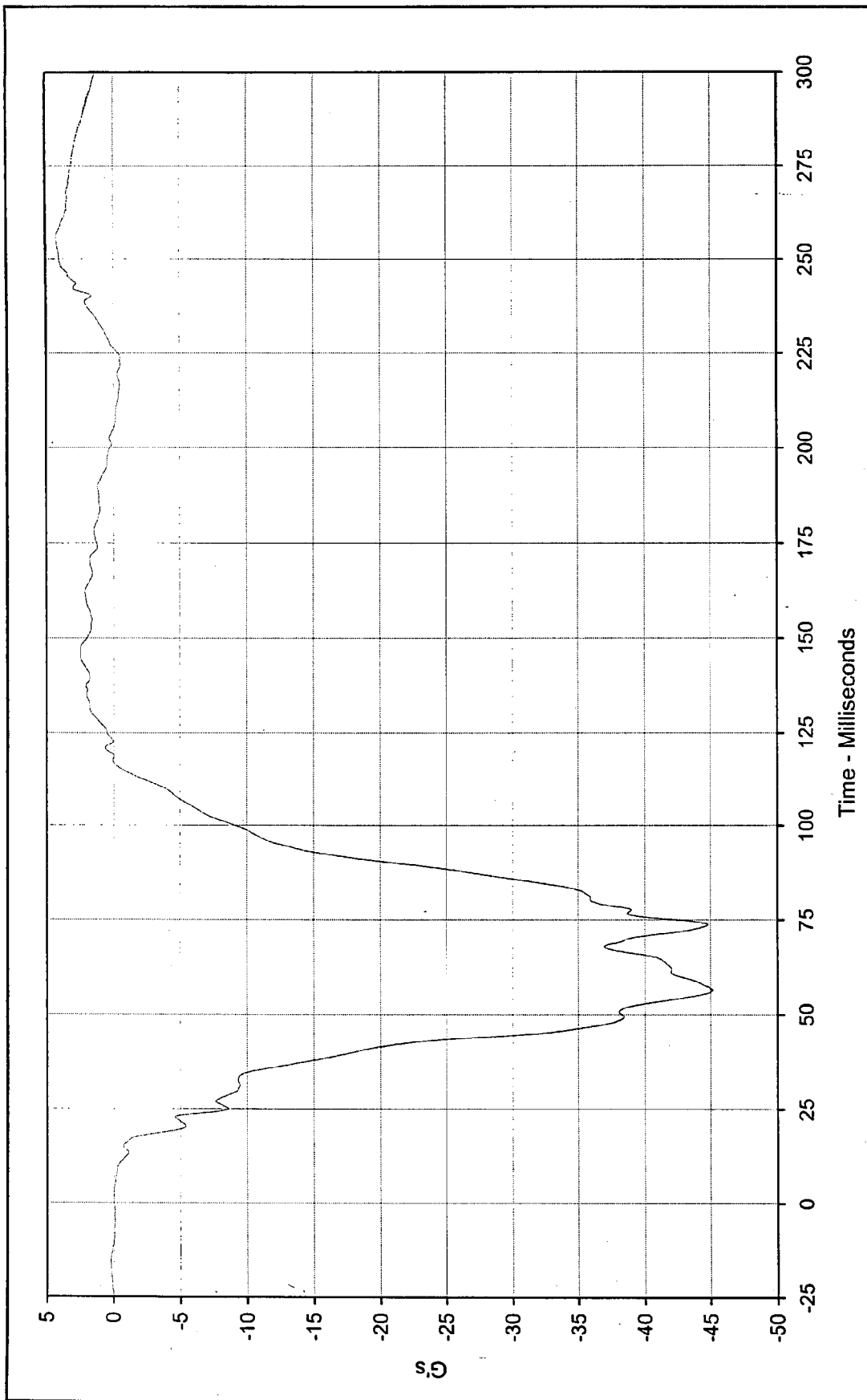


Curve Description:	Driver Chest Resultant Primary		Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	45.7	at 56.4	Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan
Minimum Value:	0.1	at 0.6	Milliseconds		
SAE Filter Class:	180				
Date of Test:	12/7/99				
Curve Number:	RES-013				



KARCO
Engineering

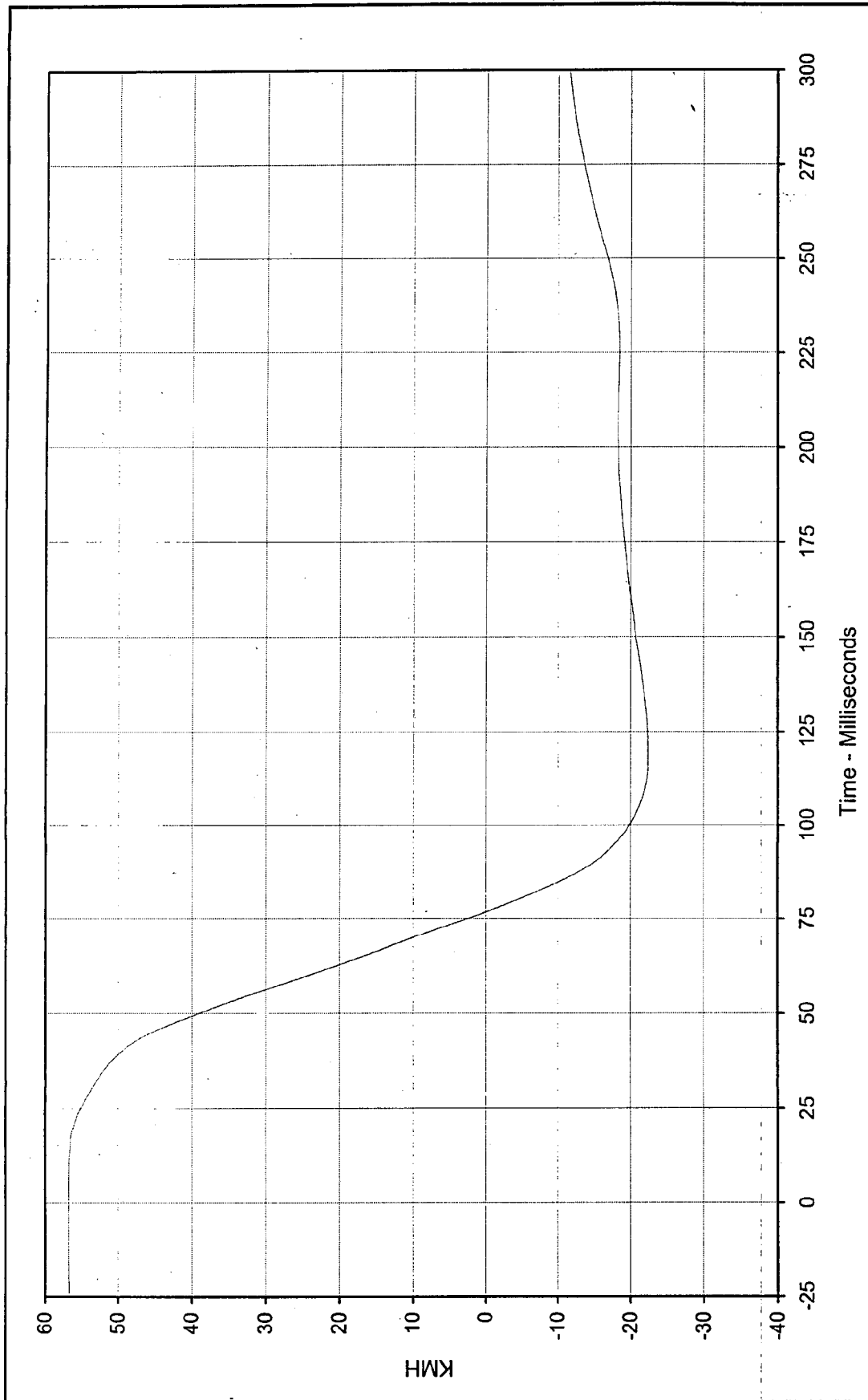




Curve Description: Driver Chest Redundant X
 Maximum Value: 4.2 at 256.0 Milliseconds
 Minimum Value: -45.1 at 56.4 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/7/99
 Curve Number: FIL-016

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan



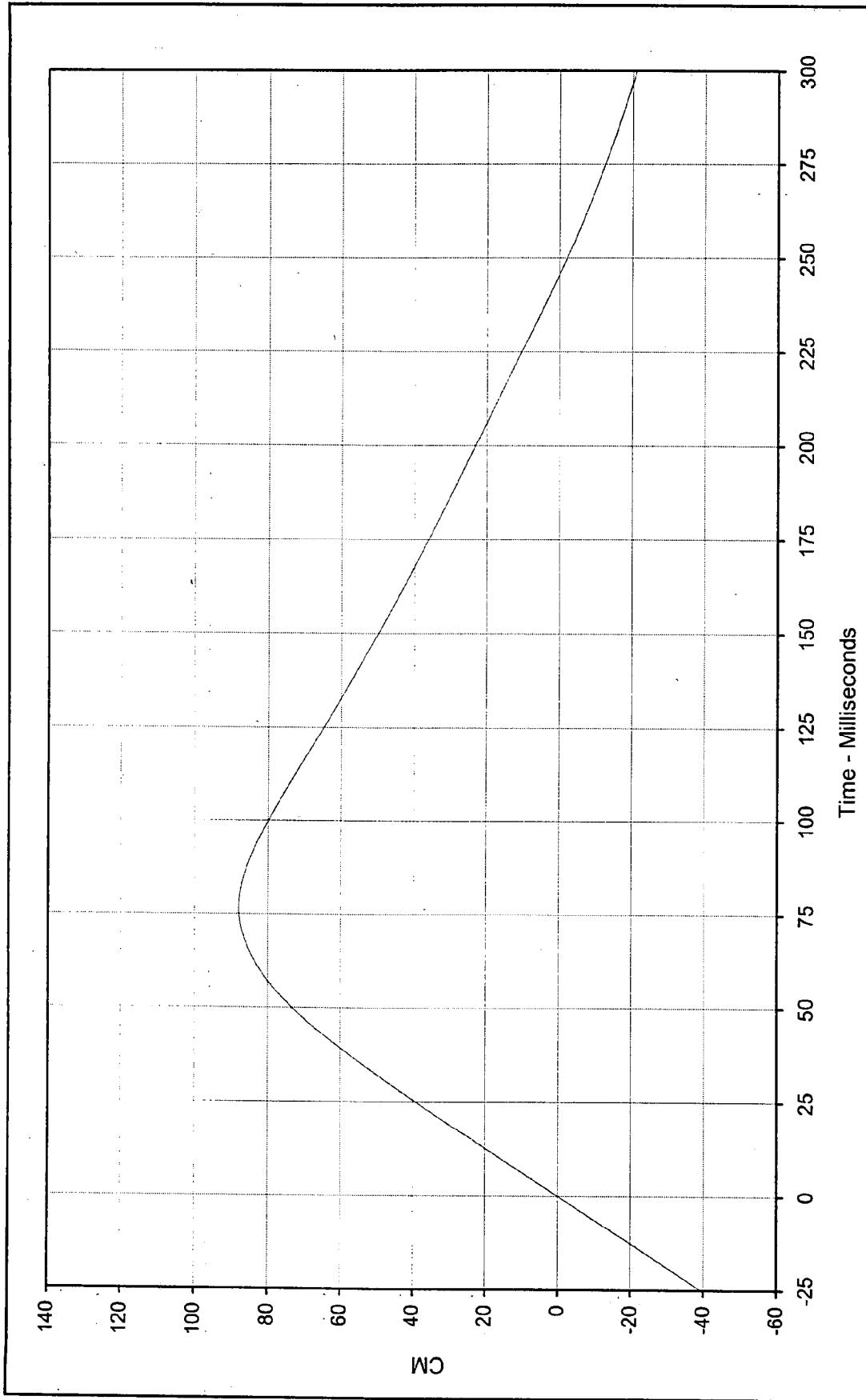


Curve Description: Driver Chest Redundant X Velocity

Maximum Value:	56.8	at	0.0	Milliseconds
Minimum Value:	-22.4	at	116.6	Milliseconds
SAE Filter Class:	180			
Date of Test:	12/7/99			
Curve Number:	IN1-016			

Testing Program	2000 NHTSA 35 mph NCAP	No.: MY5500
Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	

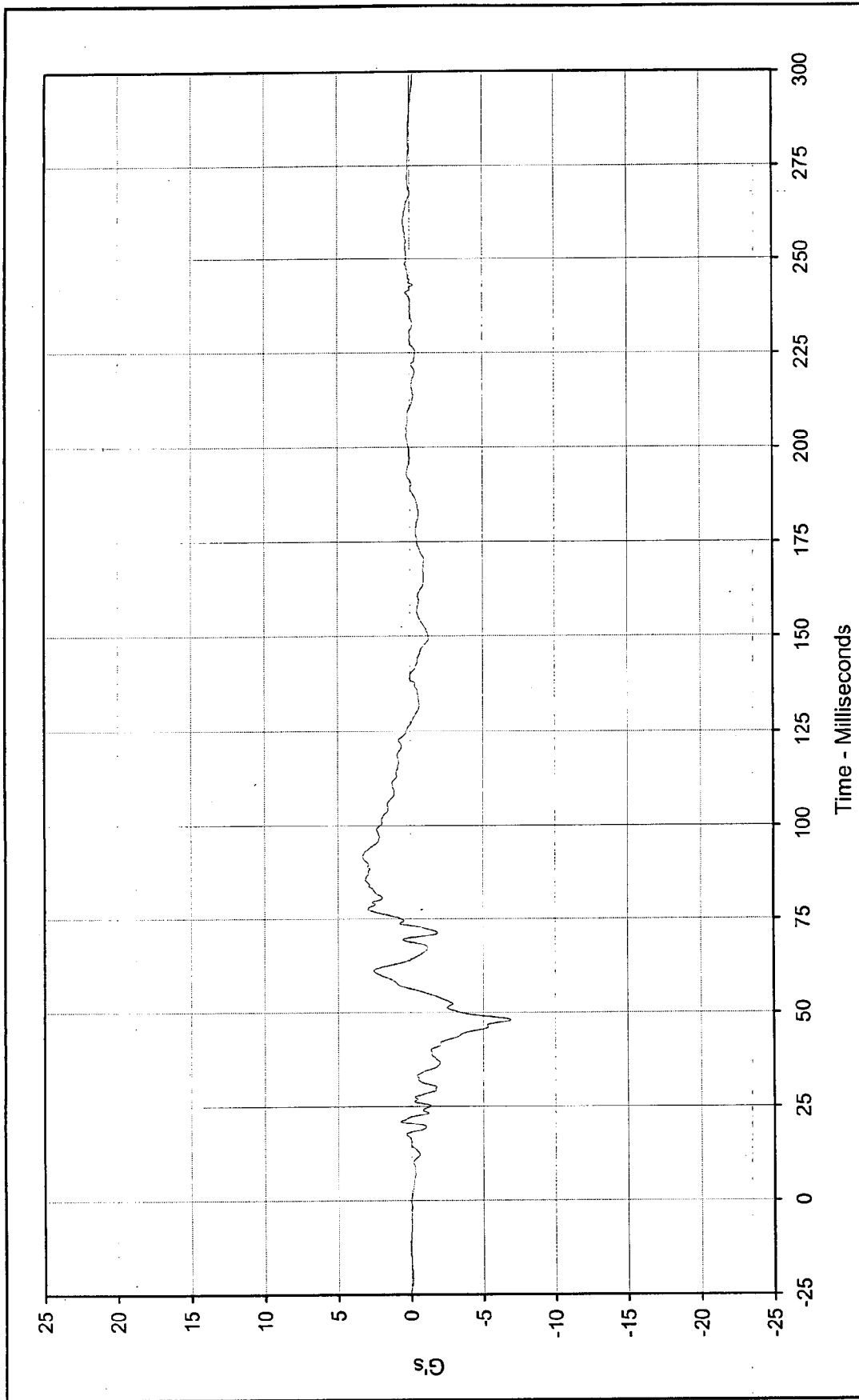




Curve Description: Driver Chest Redundant X Displ.
 Maximum Value: 87.8 at 76.7 Milliseconds
 Minimum Value: -21.0 at 299.9 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/7/99
 Curve Number: IN2-016

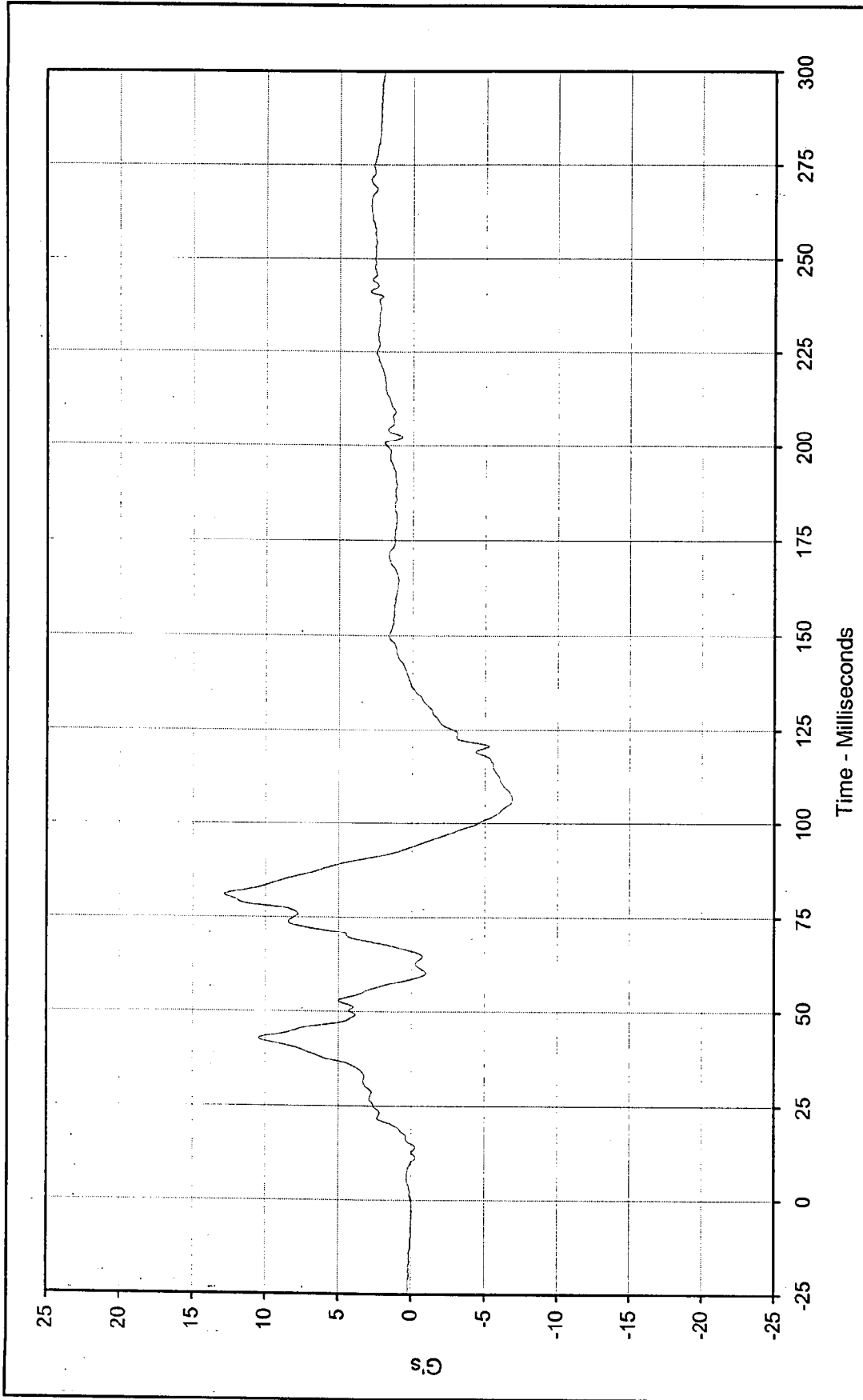
Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





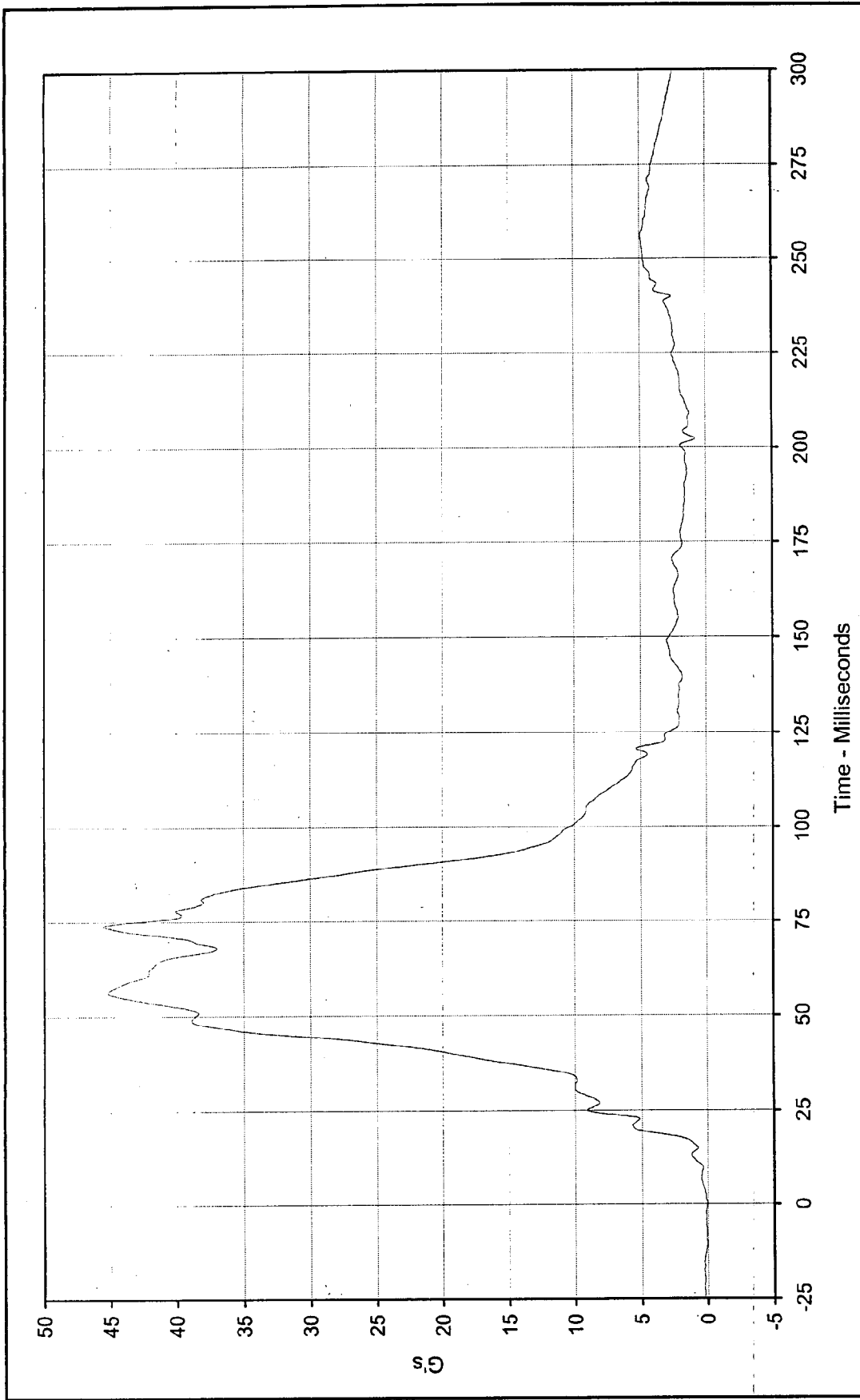
Curve Description:	Driver Chest Redundant Y	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	3.3 at 91.5 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-6.9 at 48.0 Milliseconds			
SAE Filler Class:	180			
Date of Test:	12/7/99			
Curve Number:	FIL-017			





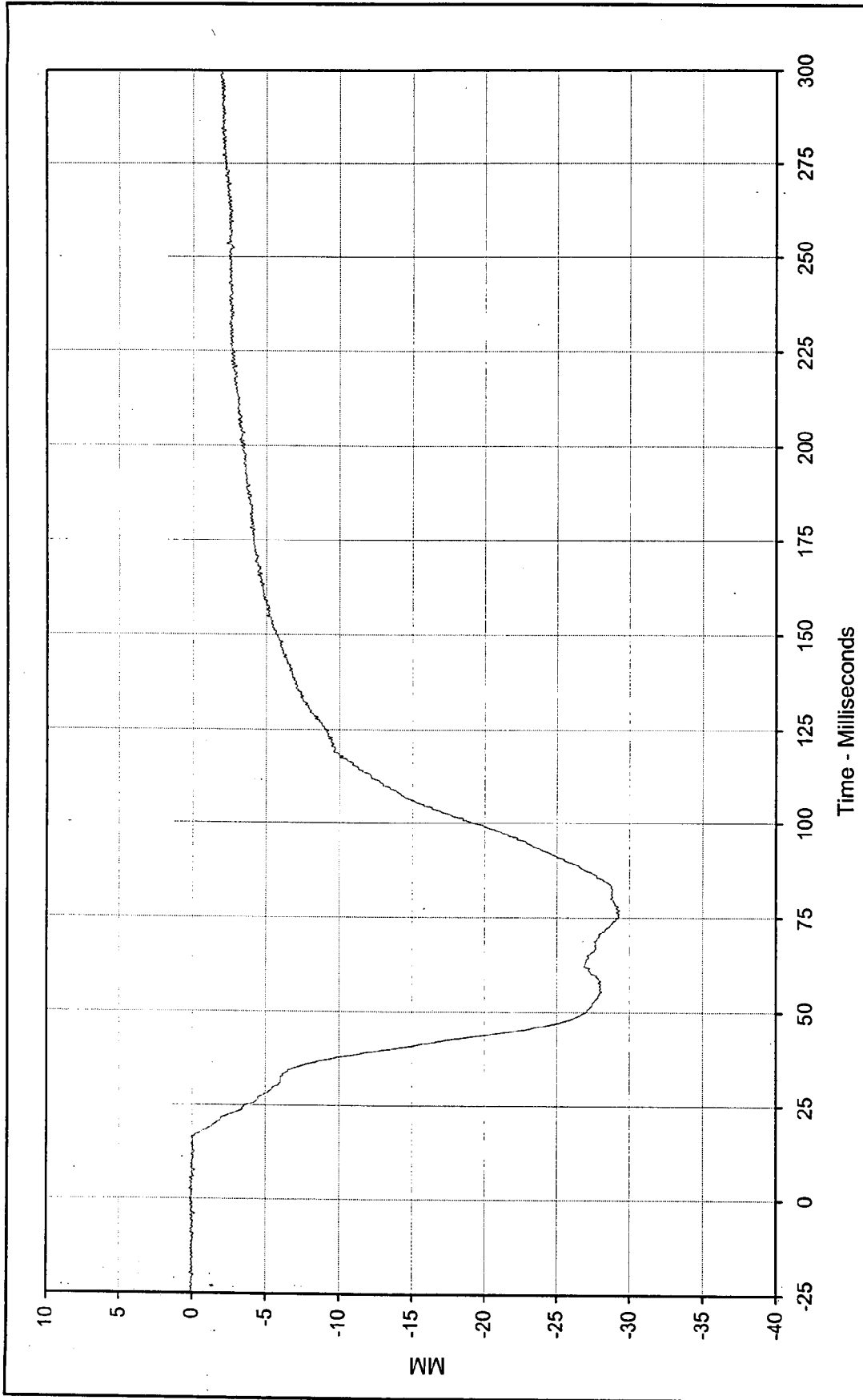
Curve Description:	Driver Chest Redundant Z	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	12.8 at 80.9 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-6.9 at 106.3 Milliseconds			
SAE Filter Class:	180			
Date of Test:	12/7/99			
Curve Number:	FIL-018			





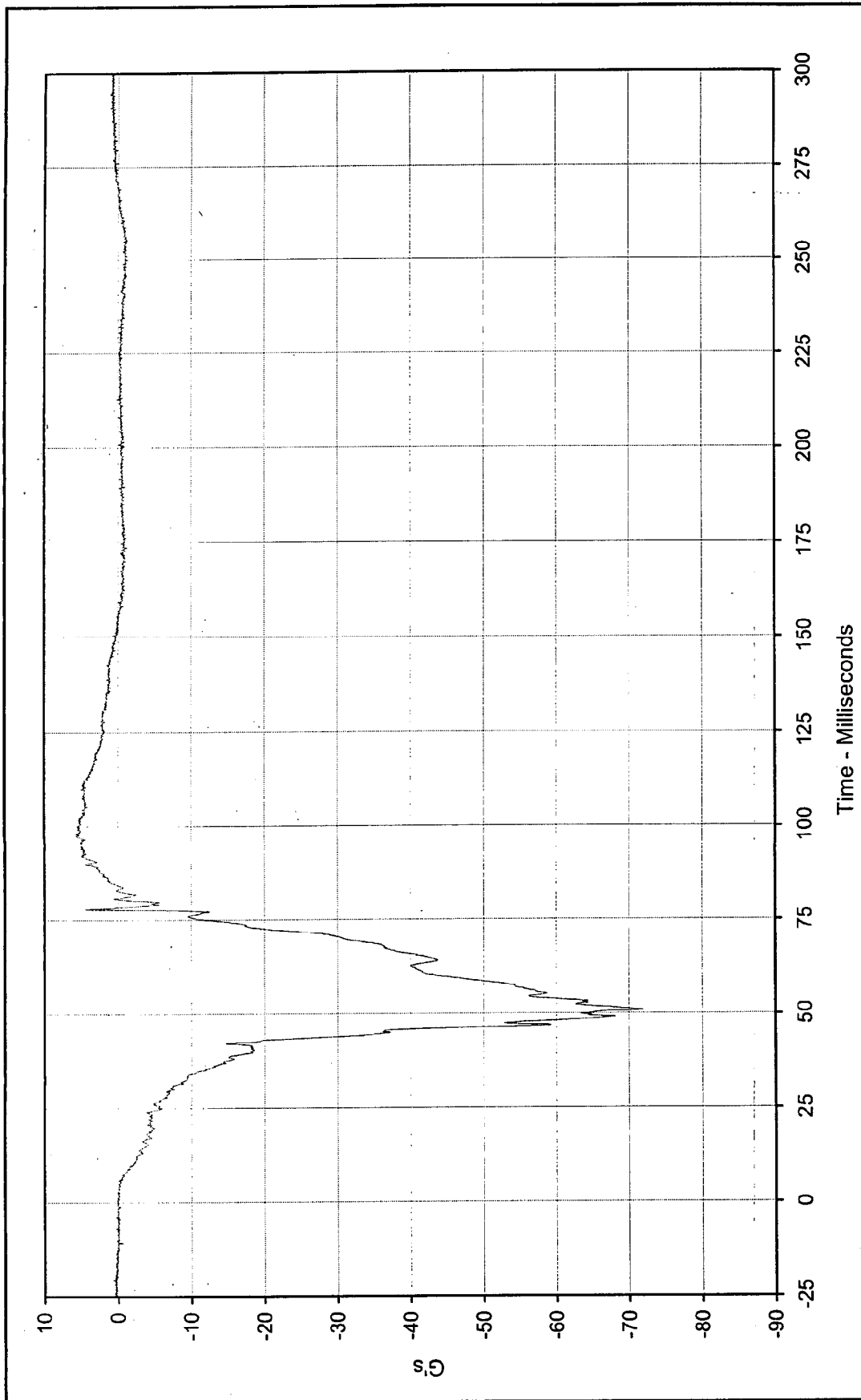
Curve Description: Driver Chest Resultant Redundant
 Maximum Value: 45.6 at 73.7 Milliseconds
 Minimum Value: 0.0 at 0.3 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/7/99
 Curve Number: RES-016





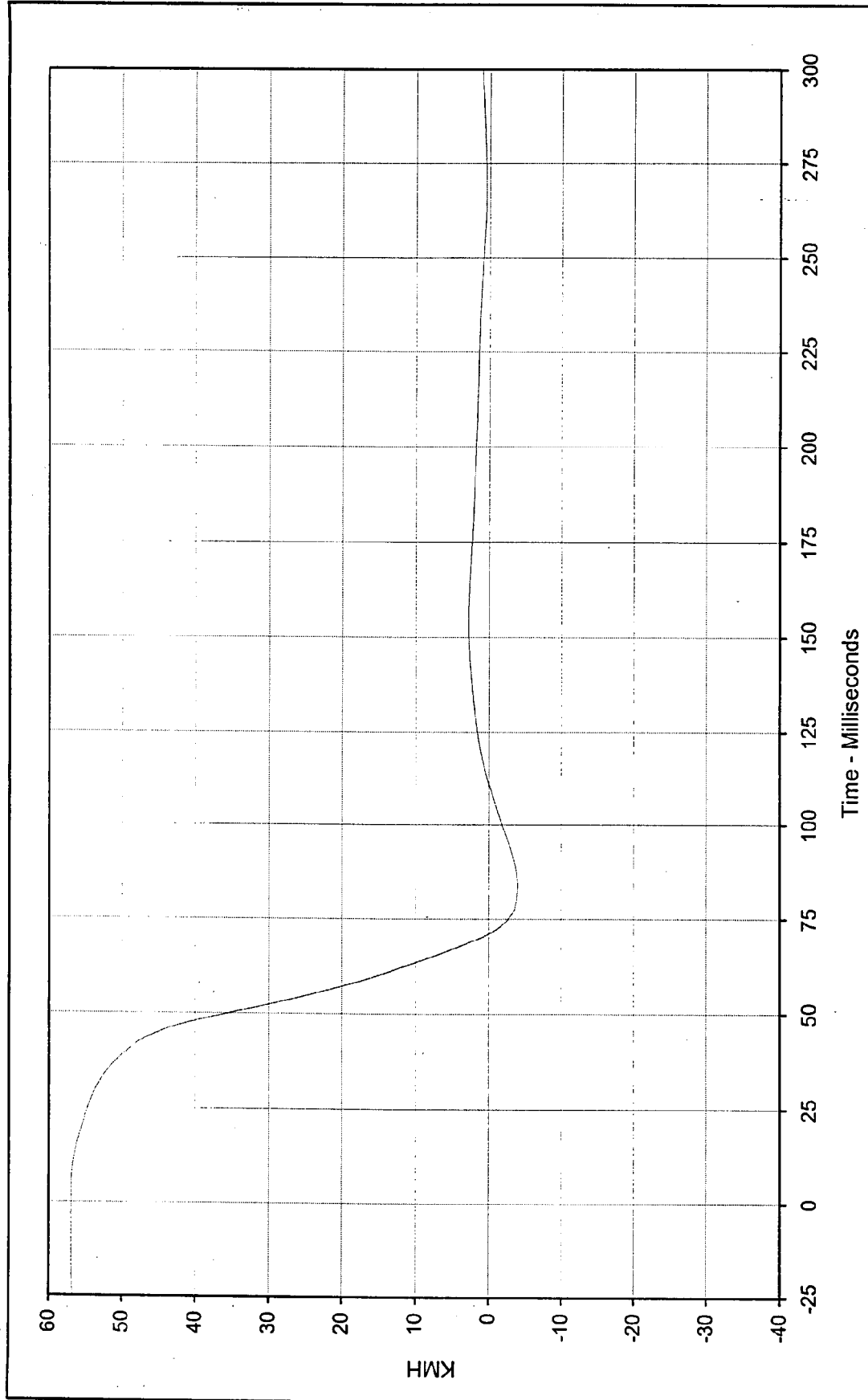
Curve Description:	Driver Chest Displacement X	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	0.2 at 2.8 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-29.3 at 76.9 Milliseconds			
SAE Filter Class:	600			
Date of Test:	12/7/99			
Curve Number:	FIL-019			





Curve Description:		Driver Pelvis X		Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	5.7	at	97.5	Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan
Minimum Value:	-71.9	at	50.8	Milliseconds		
SAE Filter Class:	1000					
Date of Test:	12/7/99					
Curve Number:	FIL-020					

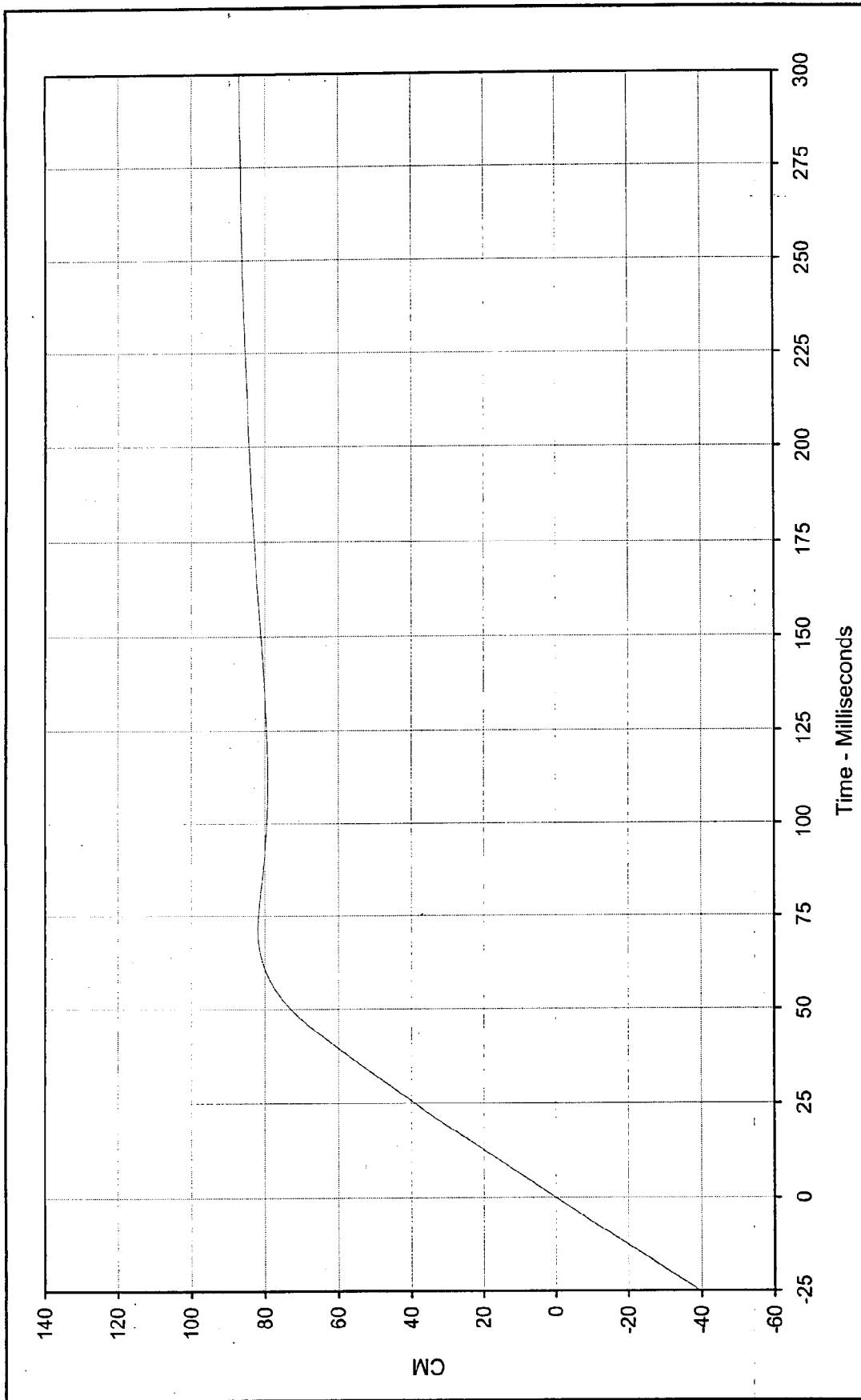




Curve Description: Driver Pelvis X Velocity
 Maximum Value: 56.9 at 1.1 Milliseconds
 Minimum Value: -4.0 at 84.0 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/7/99
 Curve Number: IN1-020

Testing Program 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

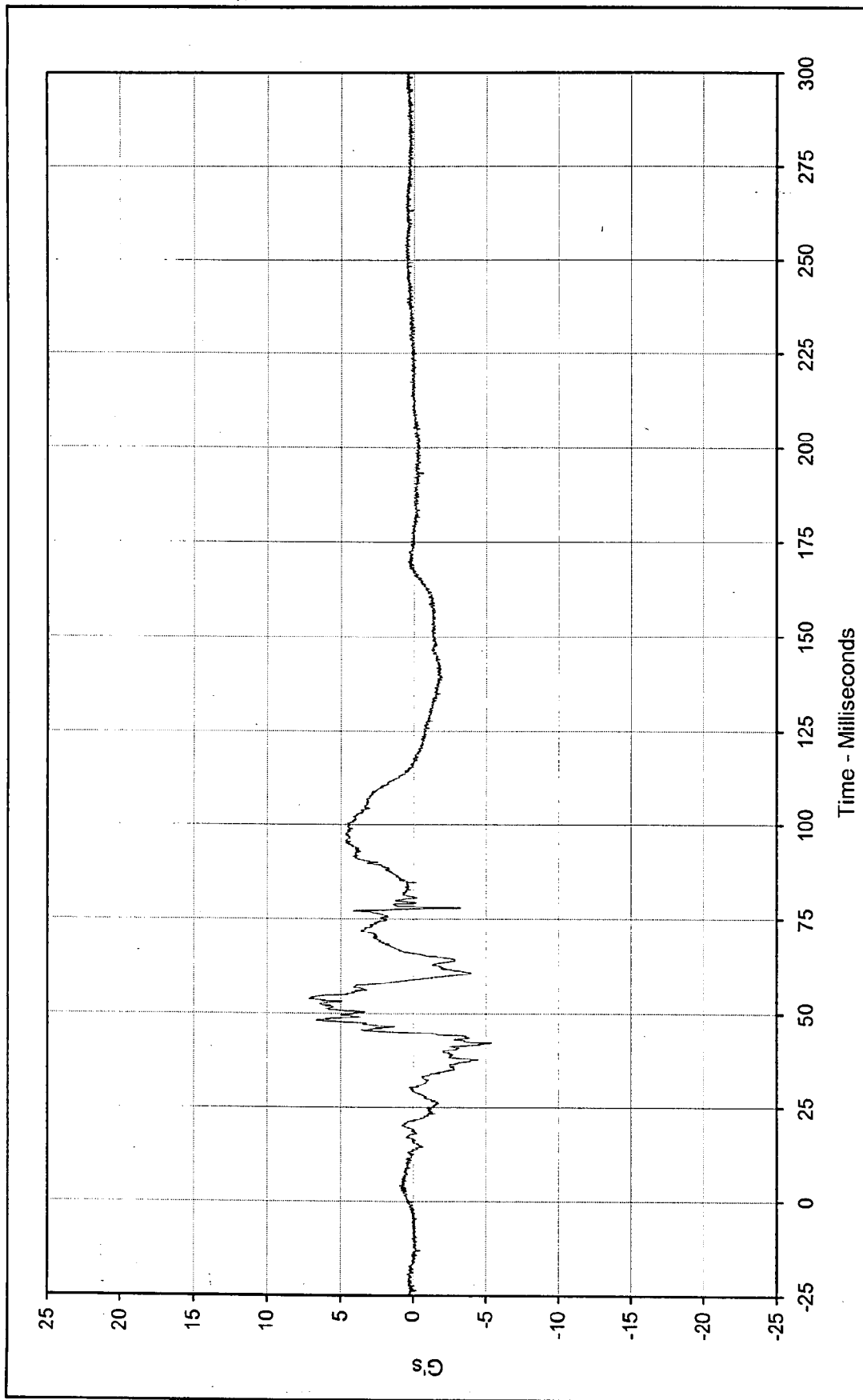




Curve Description: Driver Pelvis X Displ.
 Maximum Value: 87.1 at 299.9 Milliseconds
 Minimum Value: 0.0 at 0.0 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/7/99
 Curve Number: IN2-020

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

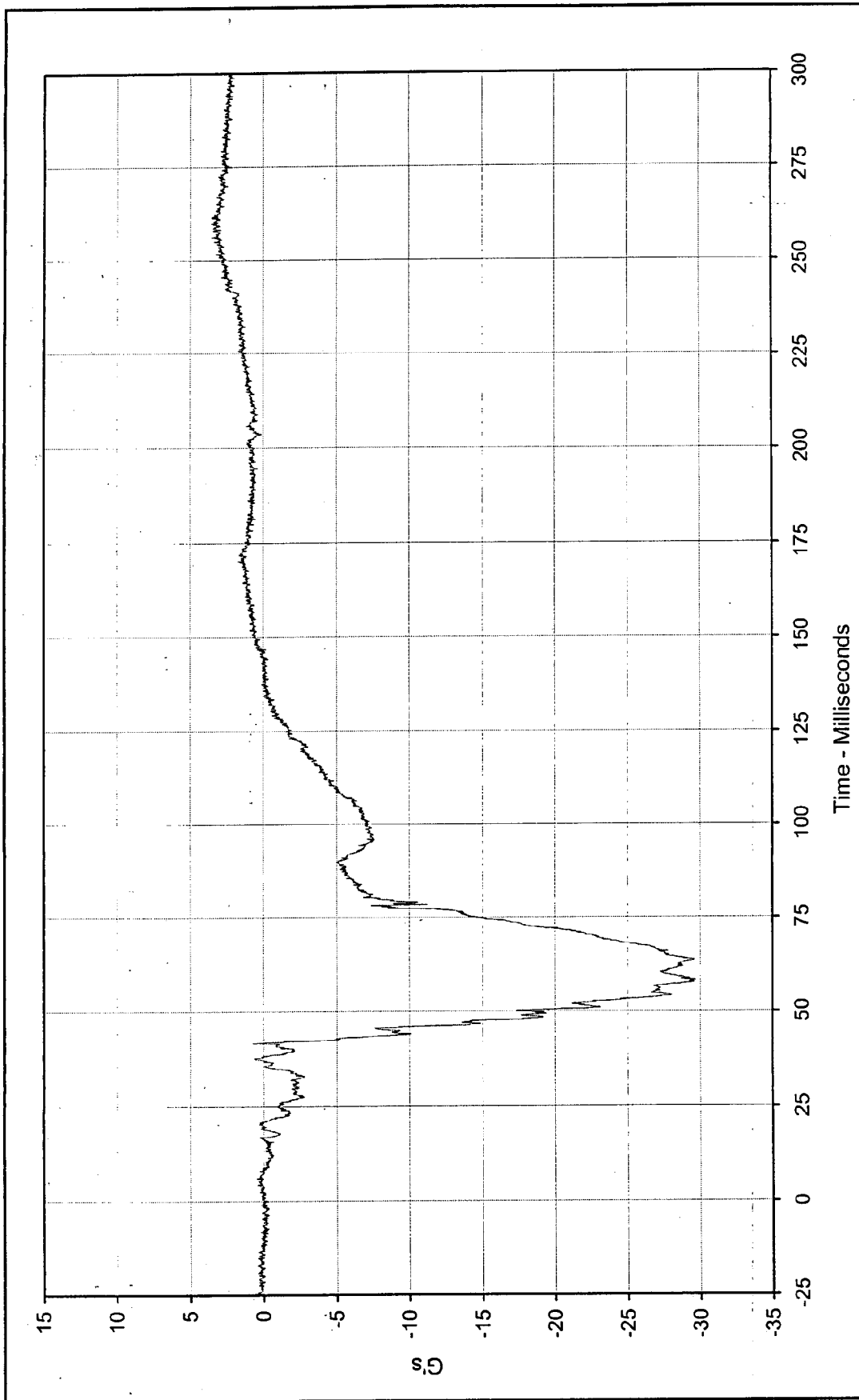




Curve Description: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Program: 2000 Subaru Legacy L AWD 4 Door Sedan
 Test Vehicle:

Driver Pelvis Y
 Maximum Value: 7.2 at 53.8 Milliseconds
 Minimum Value: -5.4 at 42.0 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 12/7/99
 Curve Number: FIL-021





Curve Description: Driver Pelvis Z

Maximum Value: 3.6 at 259.9 Milliseconds

Minimum Value: -29.7 at 58.0 Milliseconds

SAE Filter Class: 1000

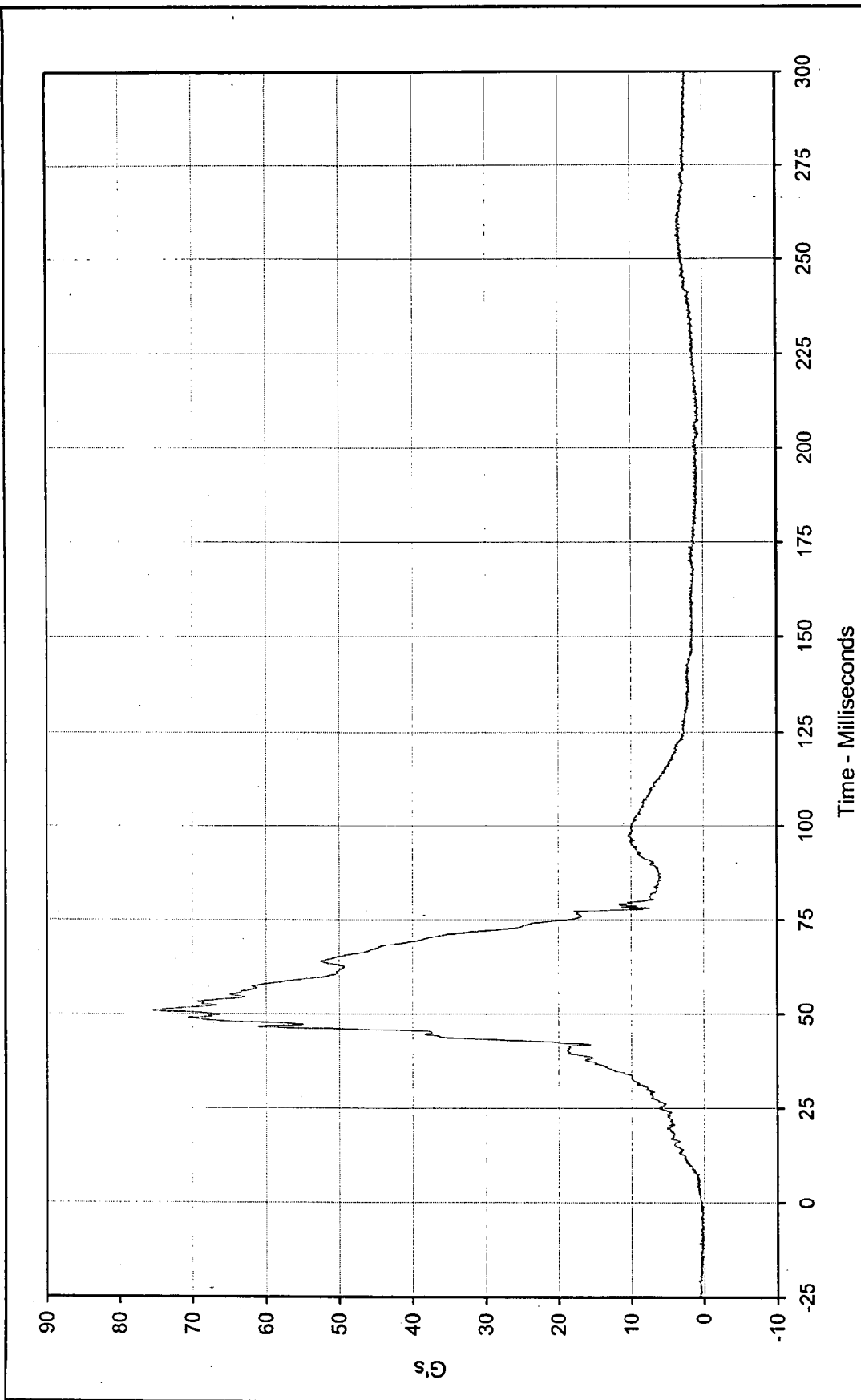
Date of Test: 12/7/99

Curve Number: FIL-022

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

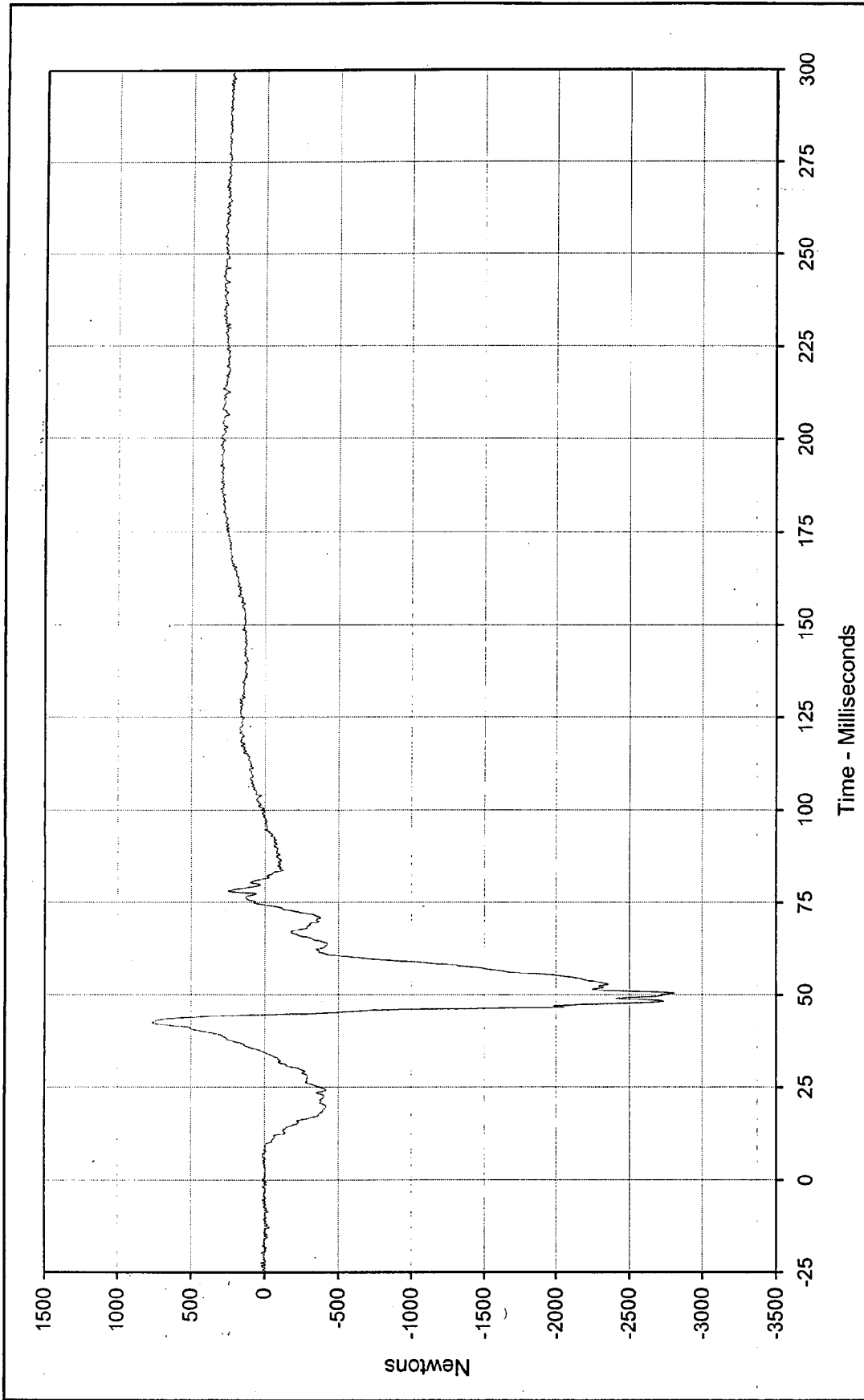




Curve Description: Driver Pelvis Resultant
 Maximum Value: 75.6 at 50.8 Milliseconds
 Minimum Value: 0.3 at 0.2 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 12/7/99
 Curve Number: RES-020

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

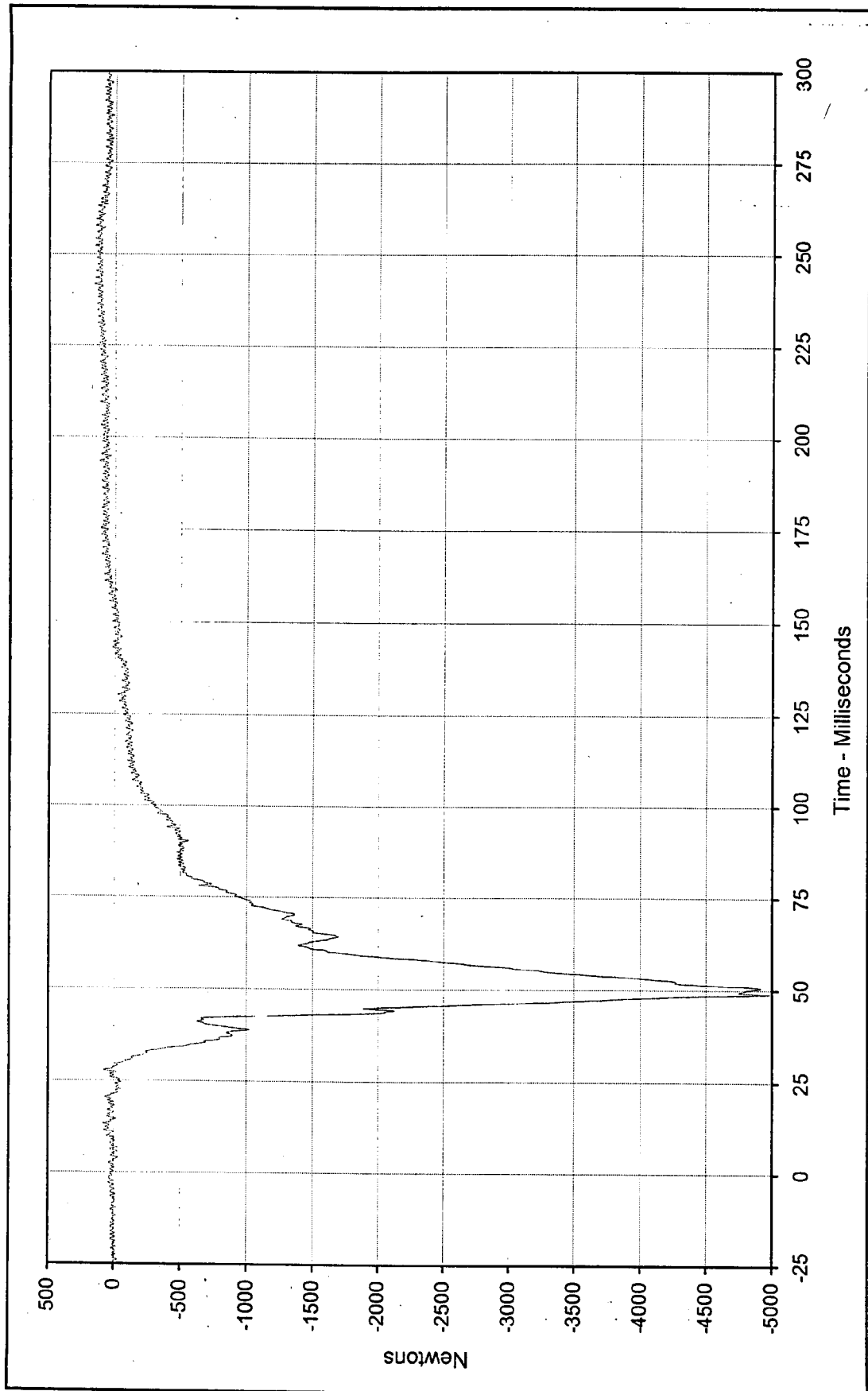




Curve Description: Driver Left Femur Force
 Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

Maximum Value: 763.1 at 42.5 Milliseconds
 Minimum Value: -2814.7 at 50.4 Milliseconds
 SAE Filter Class: 600
 Date of Test: 12/7/99
 Curve Number: FIL-023

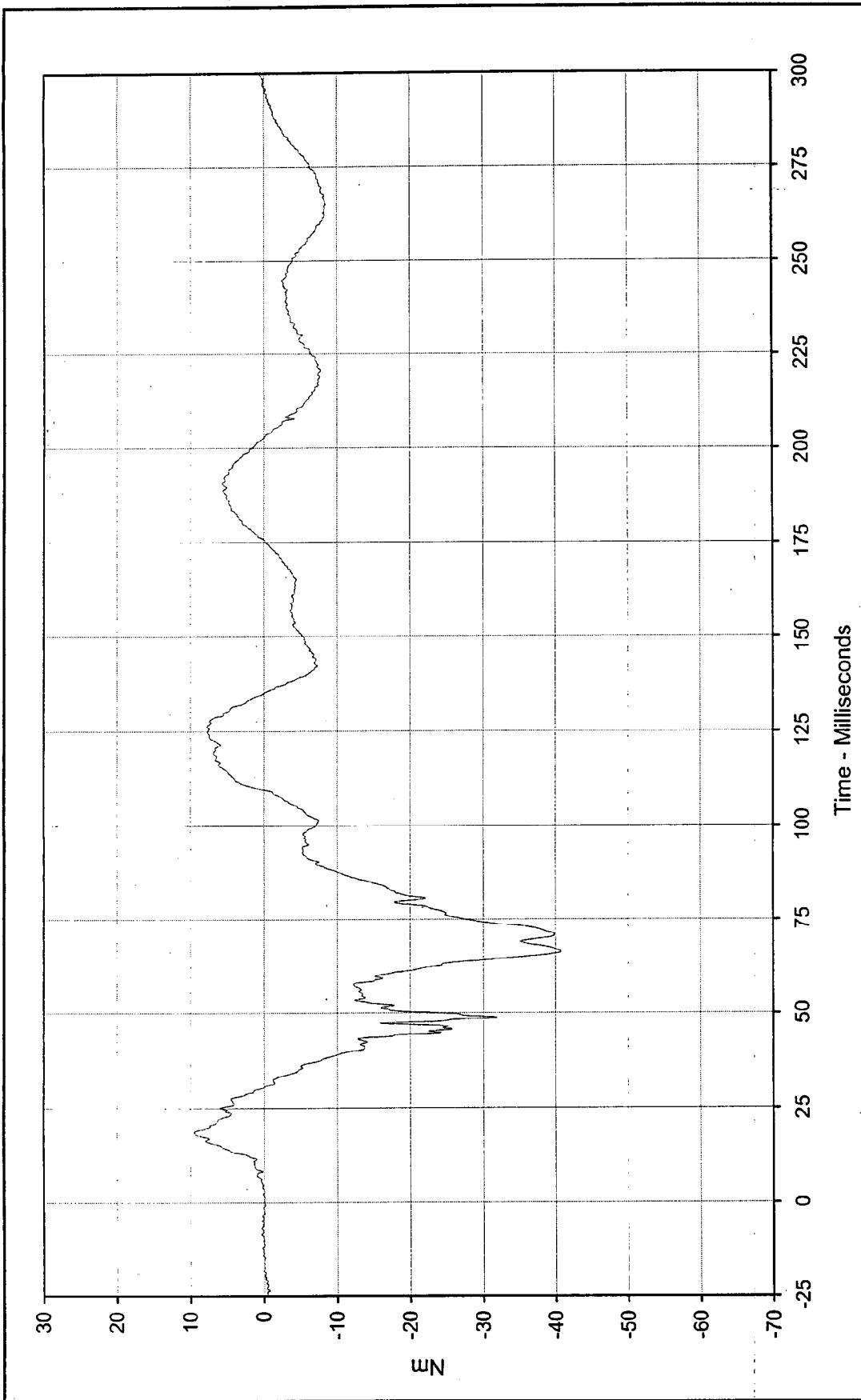




Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

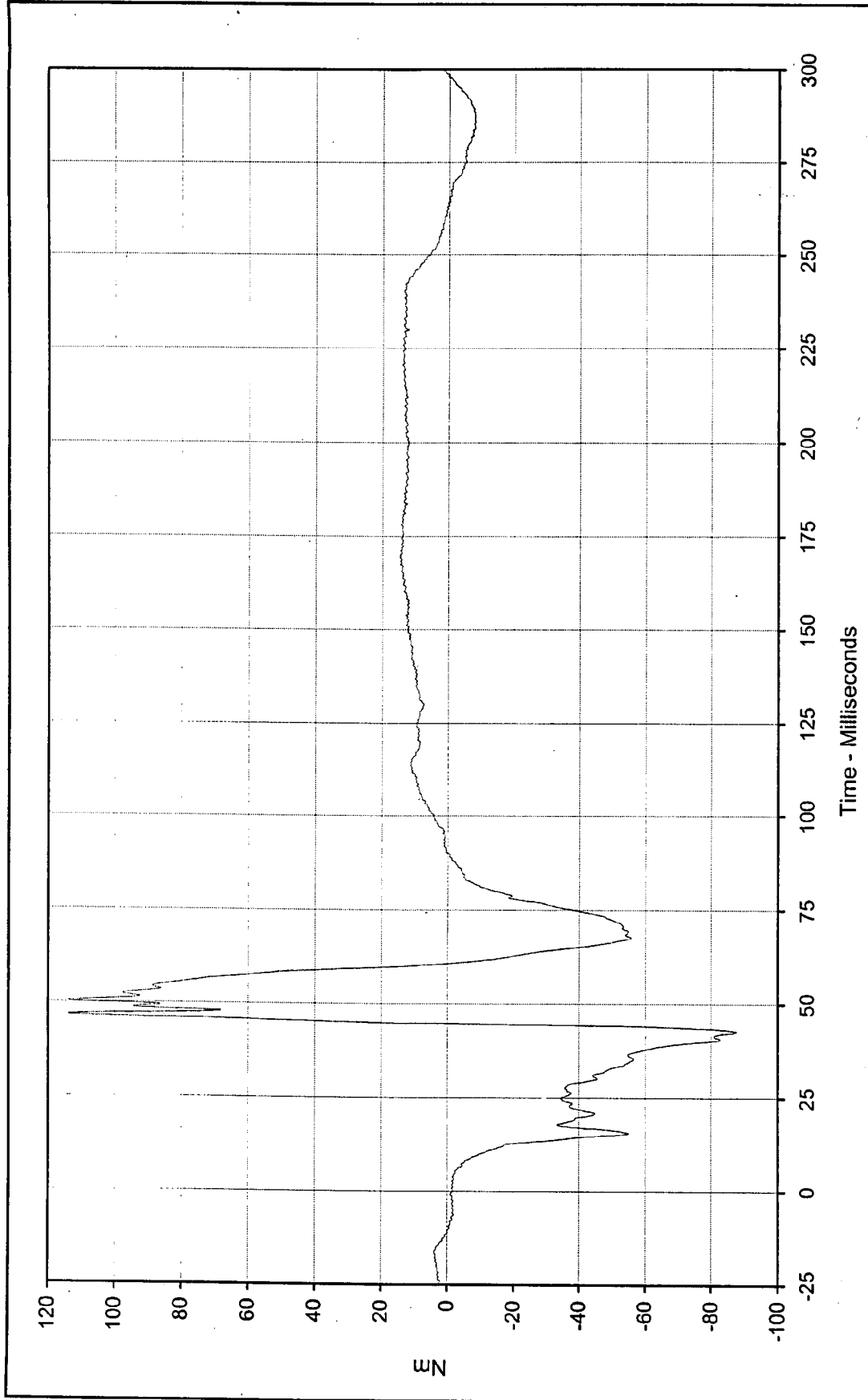
Curve Description: Driver Right Femur Force
 Maximum Value: 154.7 at 241.9 Milliseconds
 Minimum Value: -4983.4 at 48.8 Milliseconds
 SAE Filter Class: 600
 Date of Test: 12/7/99
 Curve Number: FIL-024





Curve Description:	Driver Left Upper Tibia Moment X	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	9.5 at 18.6 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-40.8 at 66.2 Milliseconds			
SAE Filter Class:	600			
Date of Test:	12/7/99			
Curve Number:	FIL-025			





Curve Description: Driver Left Upper Tibia Moment Y

Maximum Value: 114.0 at 46.8 Milliseconds

Minimum Value: -87.7 at 42.8 Milliseconds

SAE Filter Class: 600

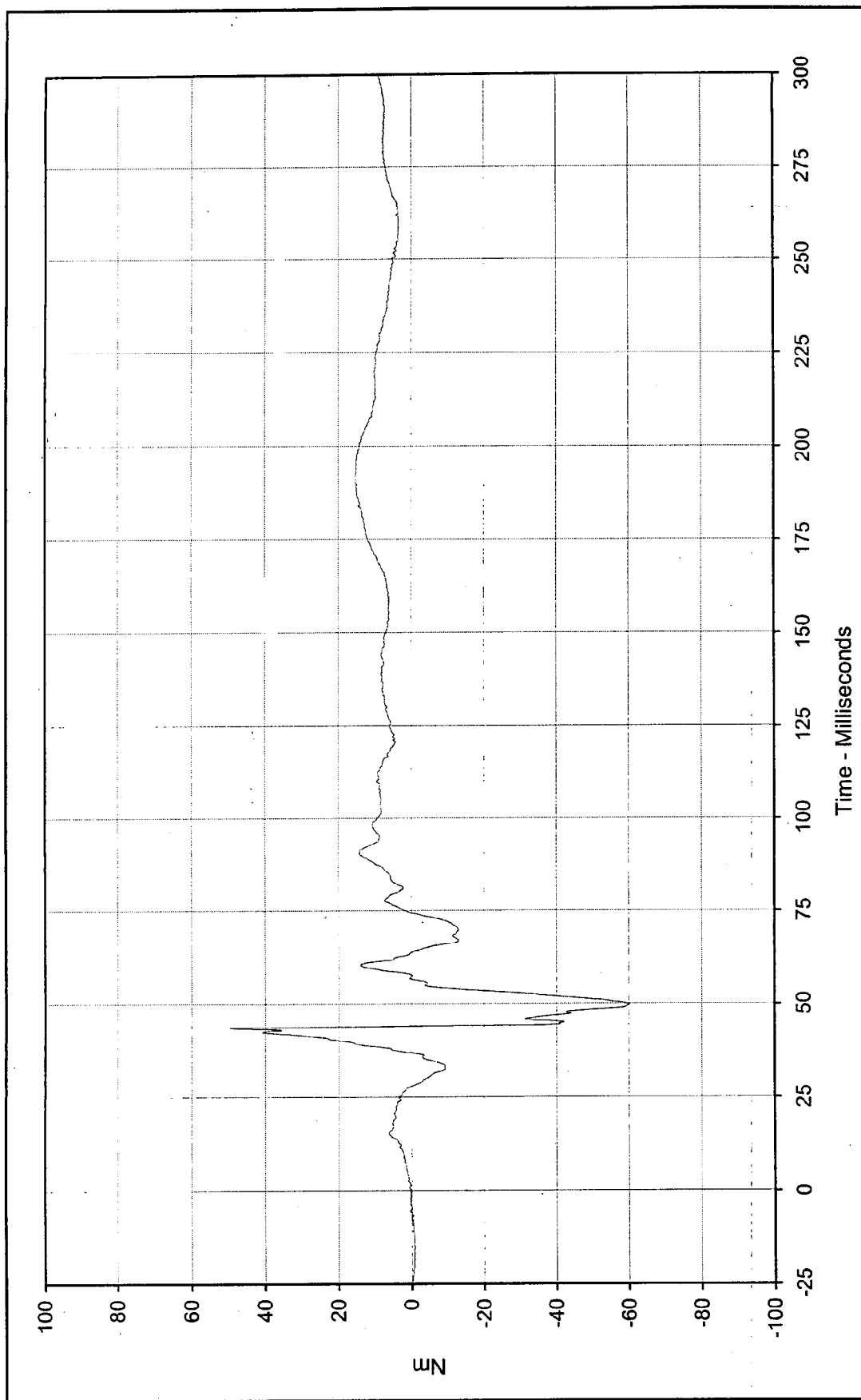
Date of Test: 12/7/99

Curve Number: FIL-026

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description: Driver Right Upper Tibia Moment X

Maximum Value: 49.5 at 43.6 Milliseconds

Minimum Value: -60.3 at 49.9 Milliseconds

SAE Filter Class: 600

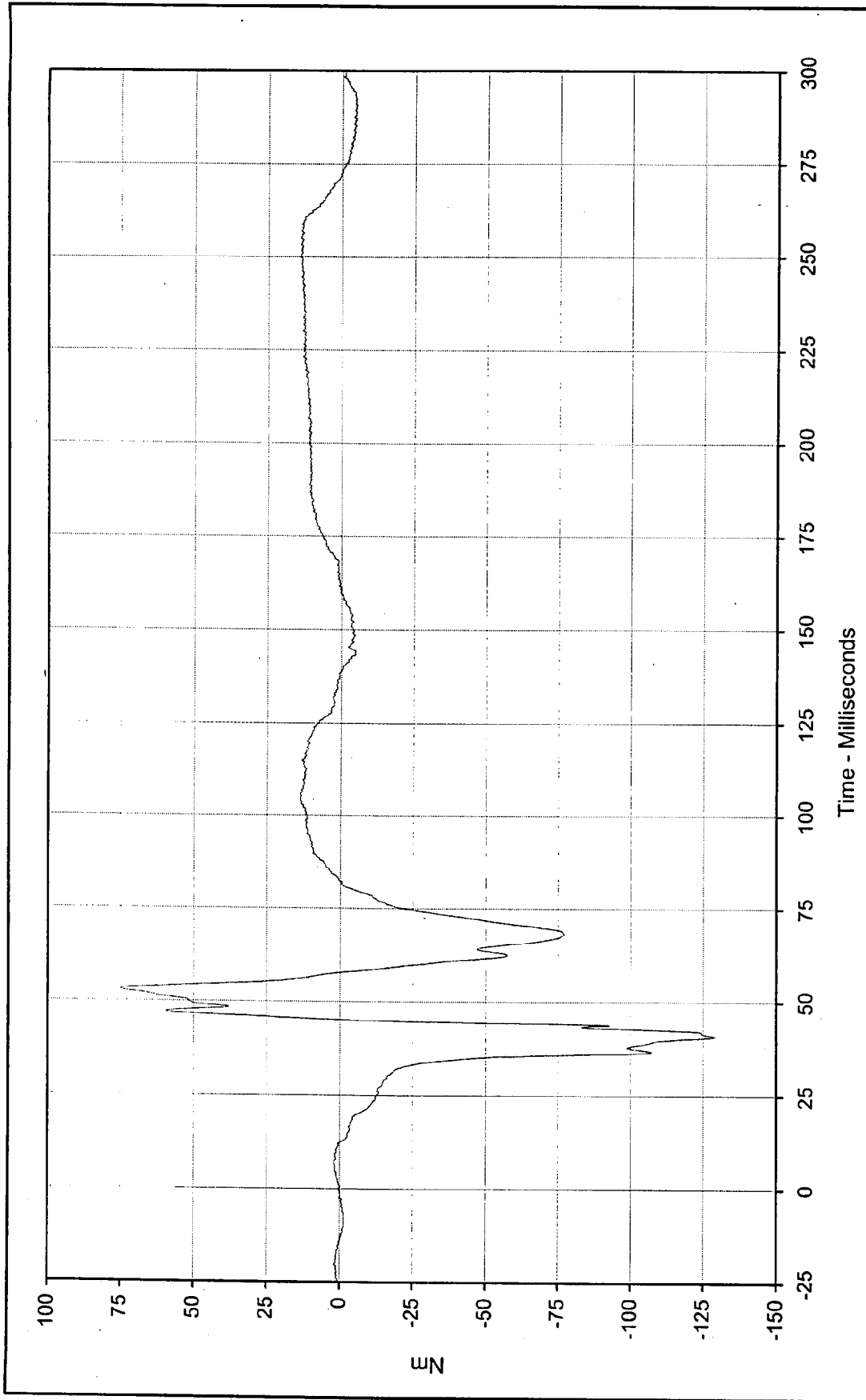
Date of Test: 12/7/99

Curve Number: FIL-027

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

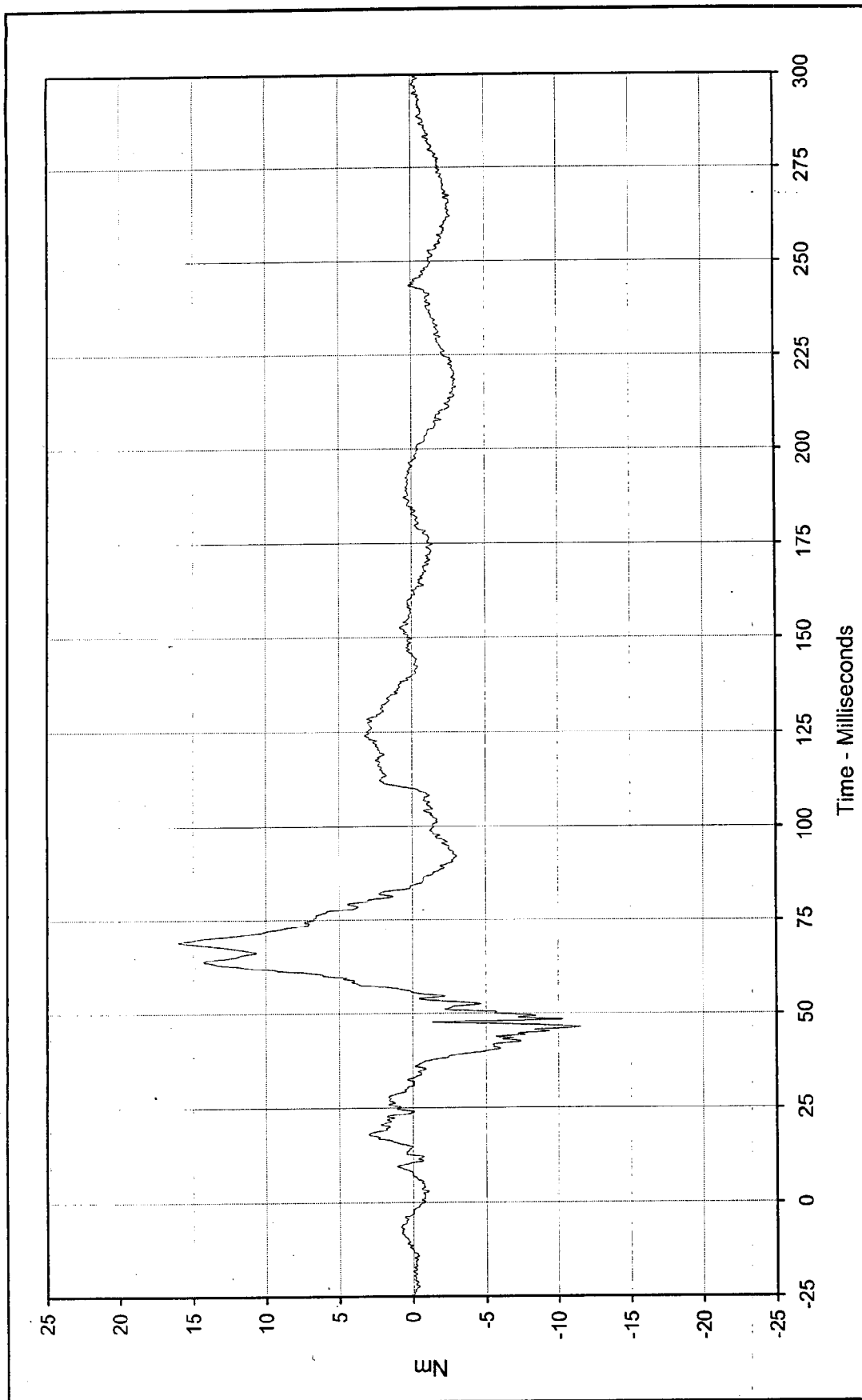




Curve Description: Driver Right Upper Tibia Moment Y
 Maximum Value: 75.0 at 53.0 Milliseconds
 Minimum Value: -129.1 at 41.0 Milliseconds
 SAE Filter Class: 600
 Date of Test: 12/7/99
 Curve Number: FIL-028

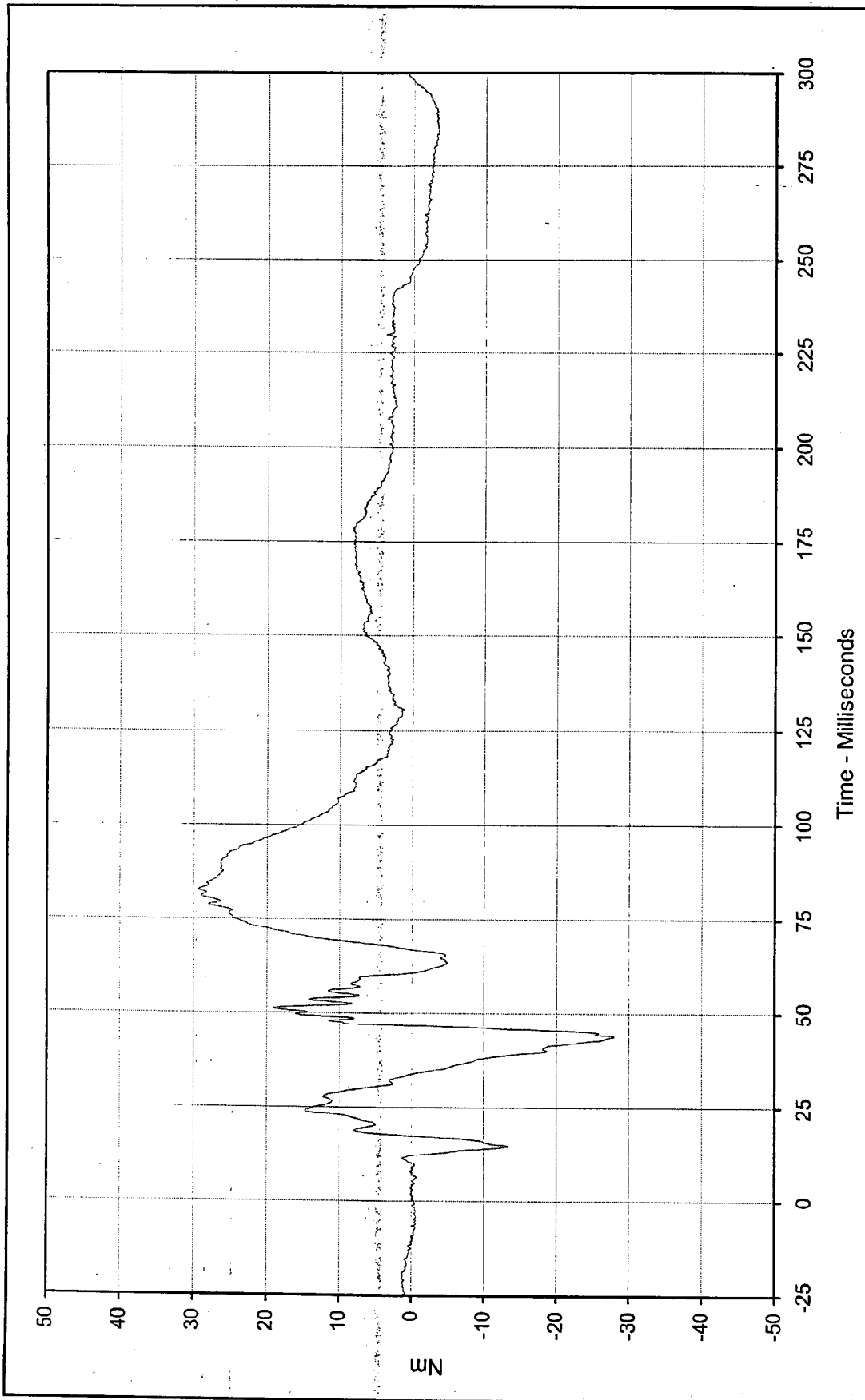
Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





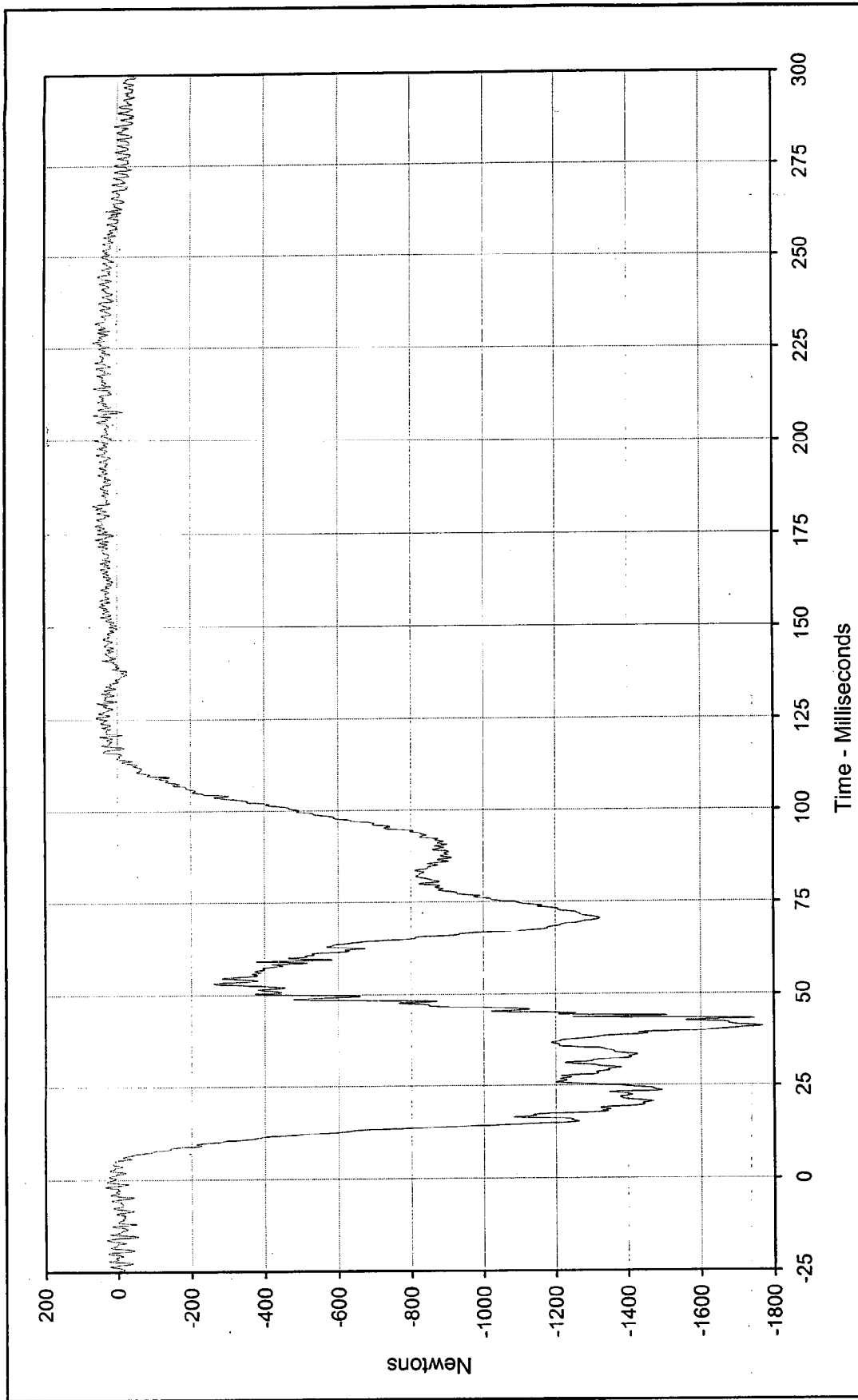
Curve Description:	Driver Left Lower Tibia Moment X	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	16.0 at 68.8 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-11.6 at 46.2 Milliseconds			
SAE Filter Class:	600			
Date of Test:	12/7/99			
Curve Number:	FIL-029			





Curve Description:	Driver Left Lower Tibia Moment Y	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	29.3 at 82.7 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-28.0 at 43.8 Milliseconds			
SAE Filter Class:	600			
Date of Test:	12/7/99			
Curve Number:	FIL-030			

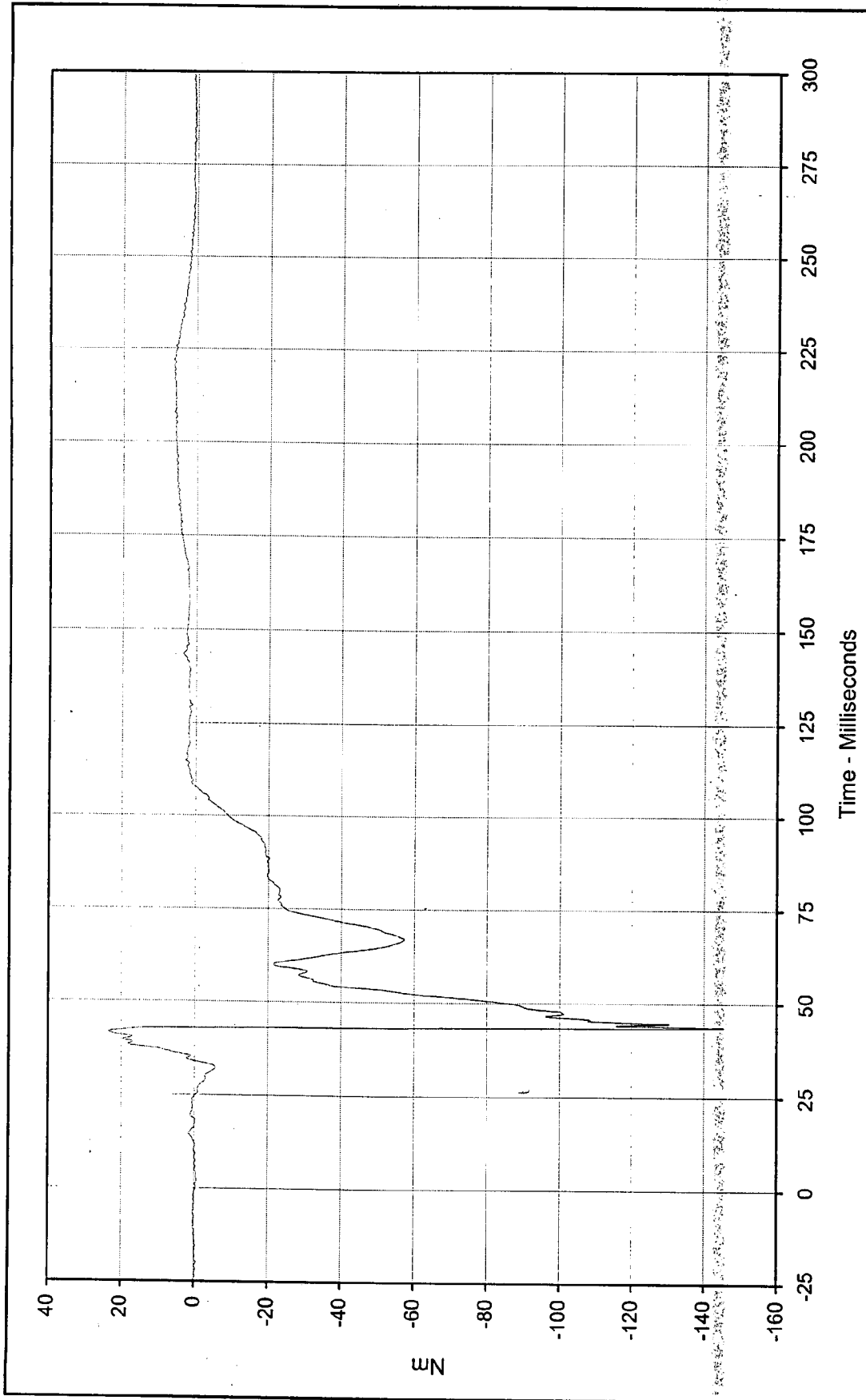




Curve Description: Driver Left Lower Tibia Force Z
 Maximum Value: 67.2 at 182.5 Milliseconds
 Minimum Value: -1771.5 at 41.2 Milliseconds
 SAE Filter Class: 600
 Date of Test: 12/7/99
 Curve Number: FIL-031

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description: Driver Right Lower Tibia Moment X

Maximum Value: 23.5 at 42.0 Milliseconds

Minimum Value: -145.5 at 43.9 Milliseconds

SAE Filter Class: 600

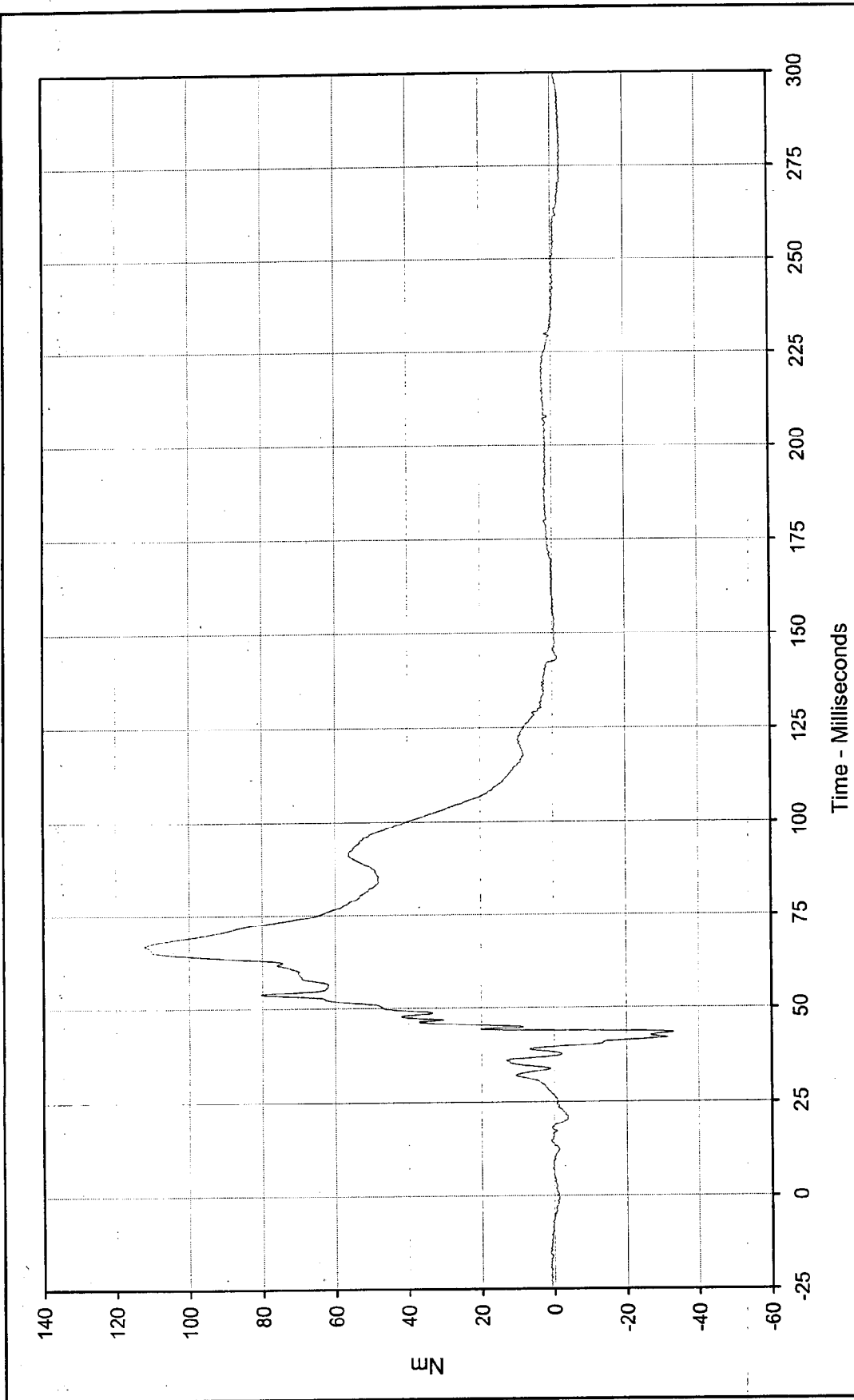
Date of Test: 12/7/99

Curve Number: FIL-032

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description: Driver Right Lower Tibia Moment Y

Maximum Value: 112.2 at 66.7 Milliseconds

Minimum Value: -33.1 at 43.1 Milliseconds

SAE Filter Class: 600

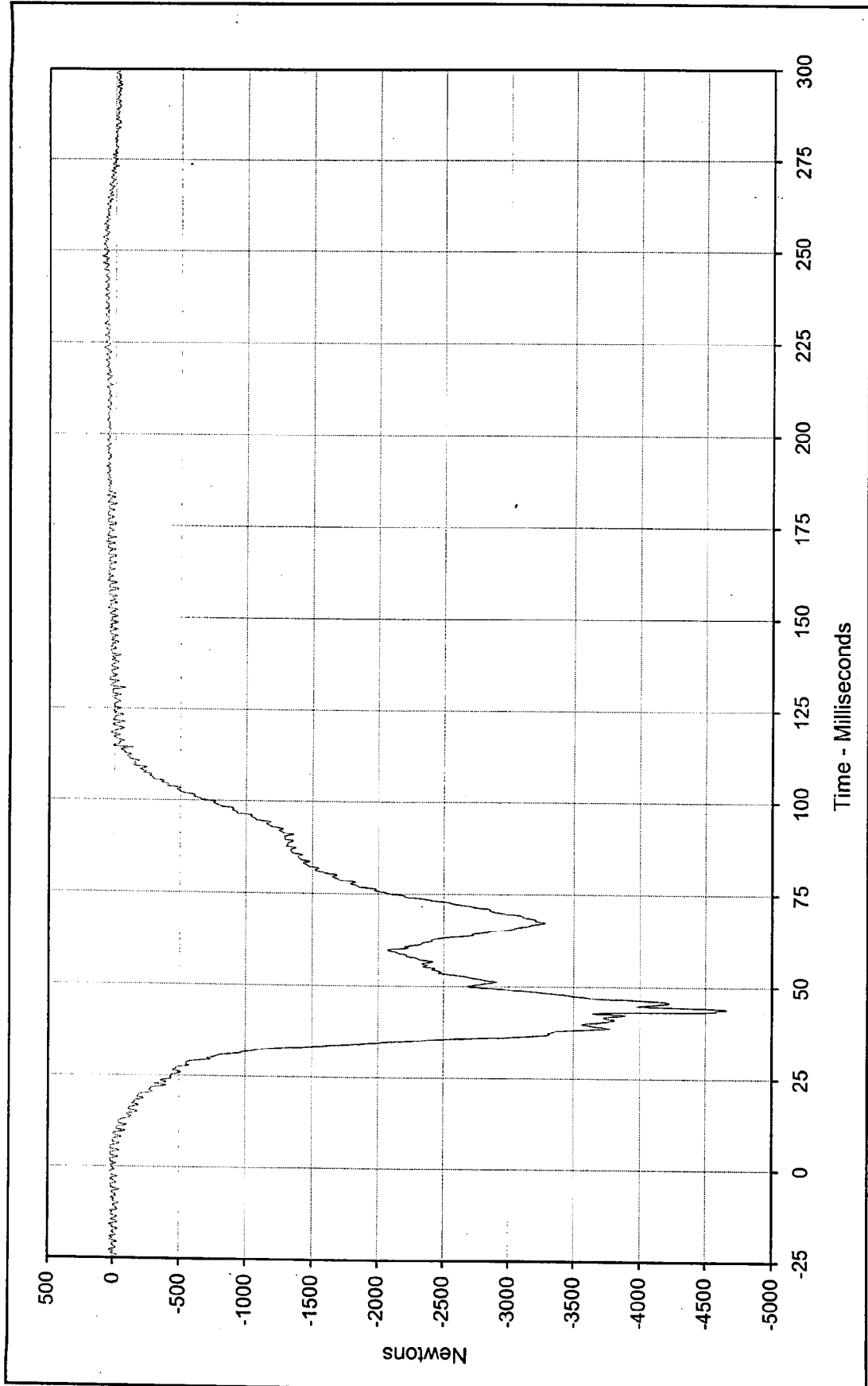
Date of Test: 12/7/99

Curve Number: FIL-033

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description: Driver Right Lower Tibia Force Z

Test Program: 2000 NHTSA 35 mph NCAP

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

Maximum Value: 103.8 at 248.5 Milliseconds

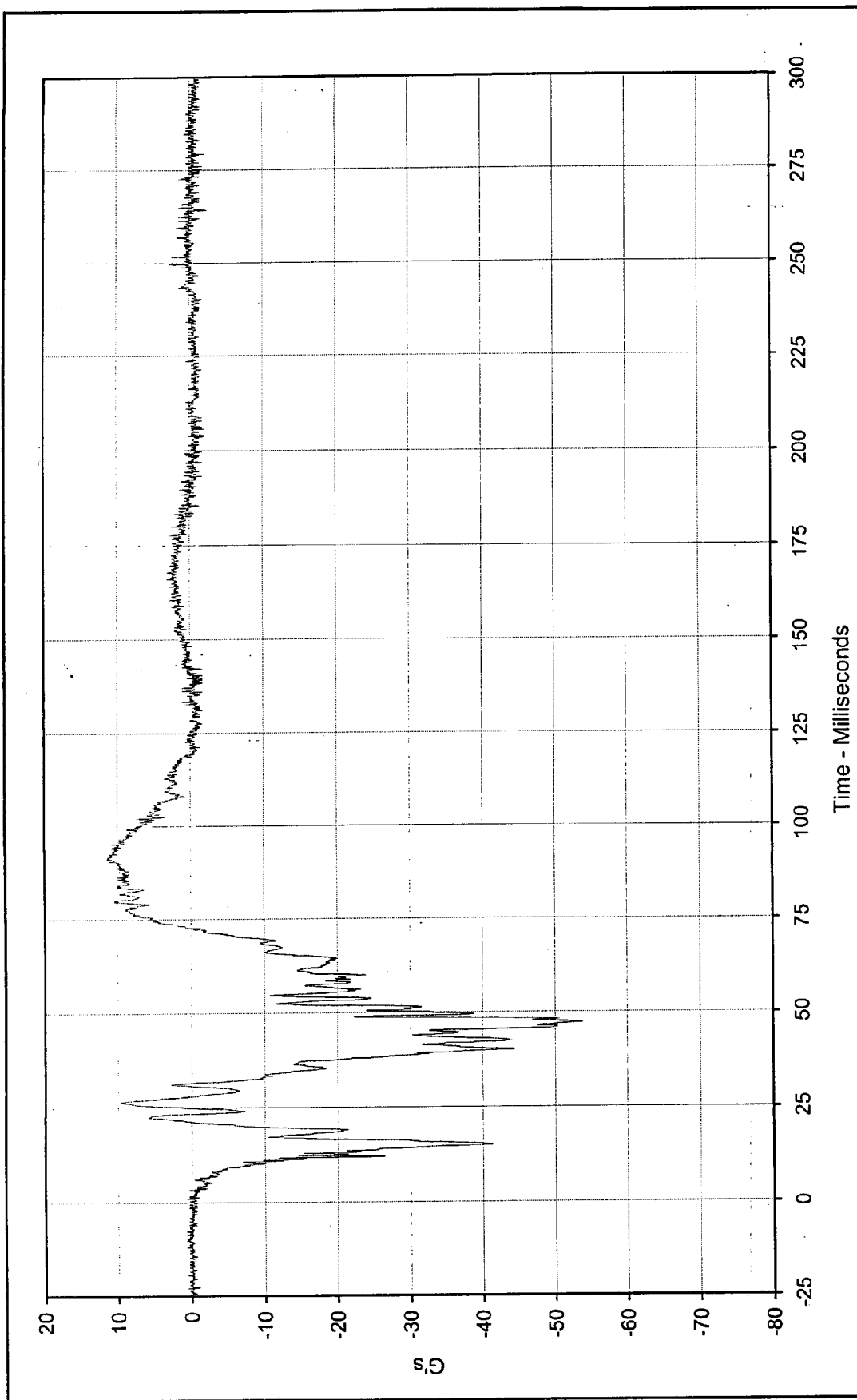
Minimum Value: -4659.0 at 44.0 Milliseconds

SAE Filter Class: 600

Date of Test: 12/7/99

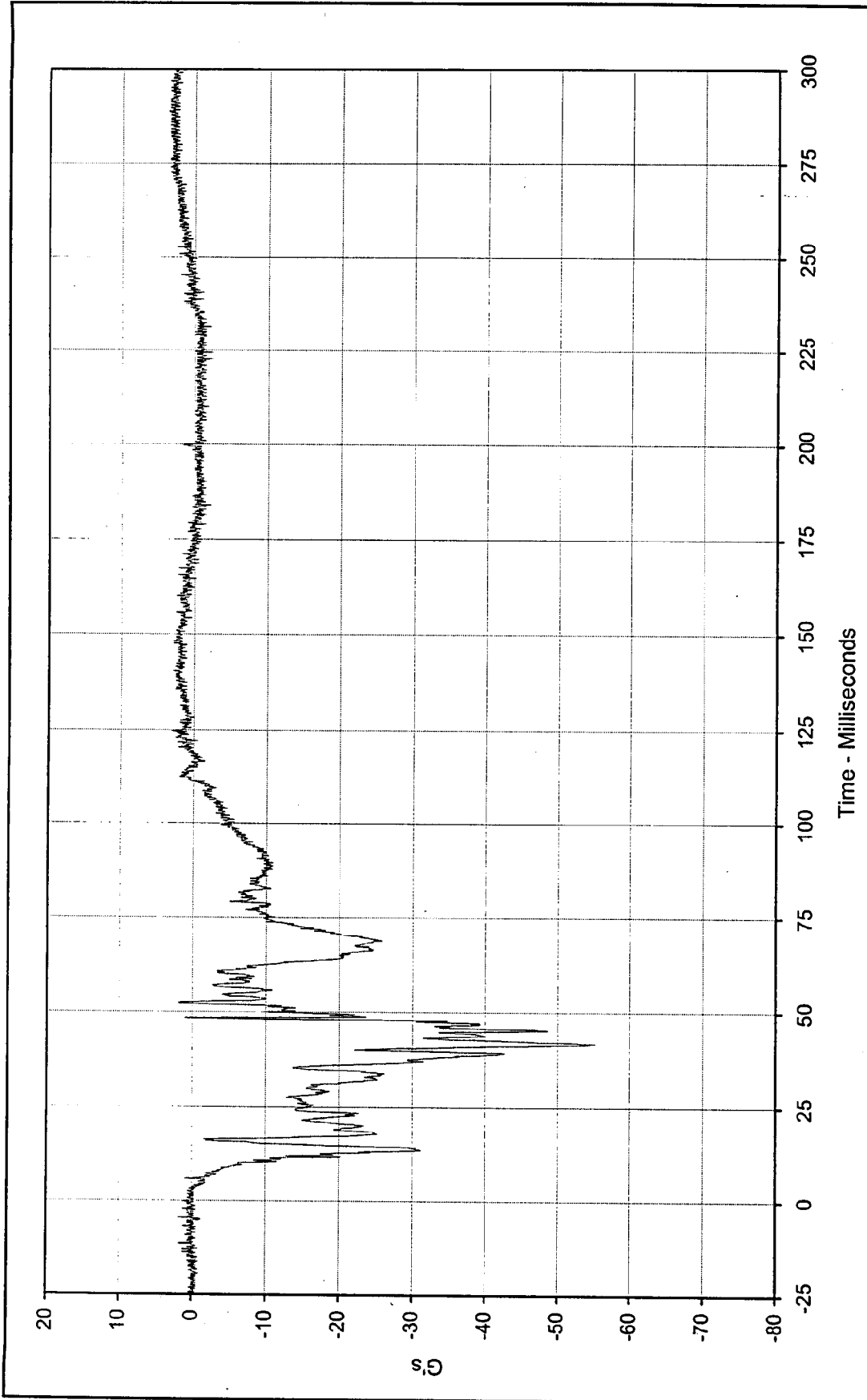
Curve Number: FIL-034





Curve Description:	Driver Left Foot Aft X		Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	11.5	at 11.5	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-53.8	at 47.3			
SAE Filter Class:	1000				
Date of Test:	12/7/99				
Curve Number:	FIL-035				

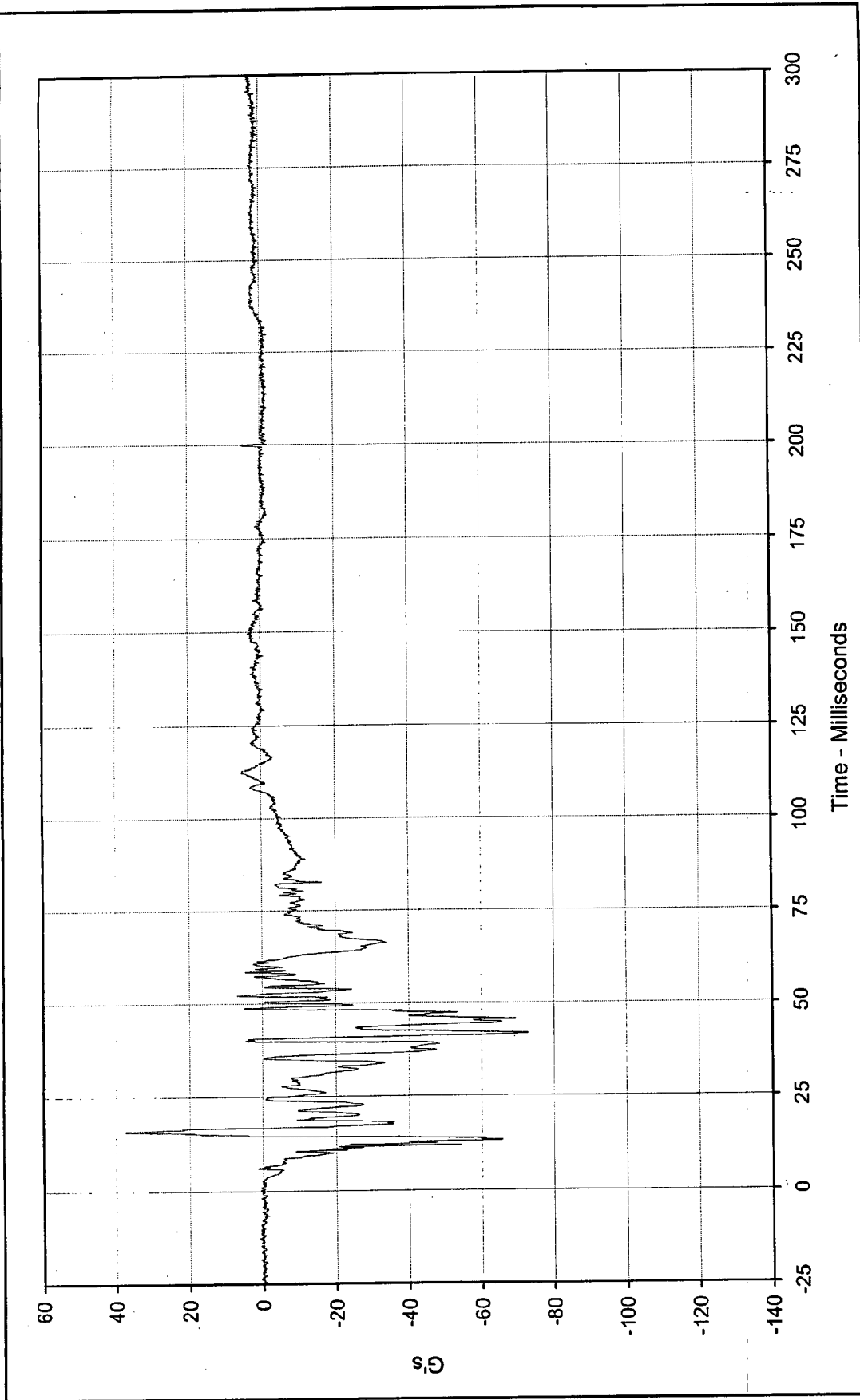




Curve Description:	Driver Left Foot Aft Z		Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	3.7	at 288.9	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-55.2	at 41.8			
SAE Filter Class:	1000				
Date of Test:	12/7/99				
Curve Number:	FIL-036				

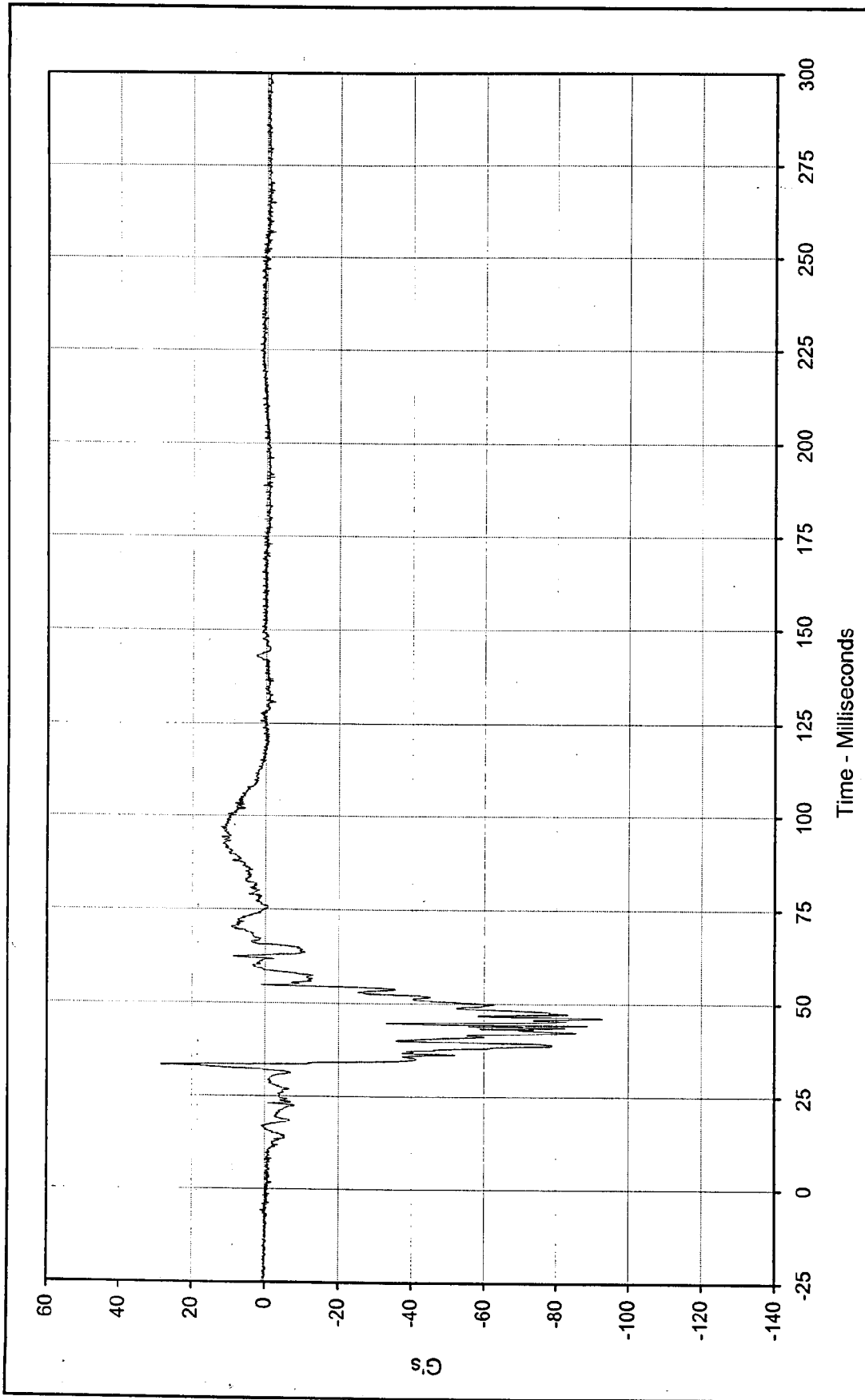






Curve Description:	Driver Left Foot Fore Z	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	37.4 at 15.8 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-73.1 at 41.6 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	12/7/99			
Curve Number:	FIL-037			





Curve Description: Driver Right Foot Aft X

Maximum Value: 28.8 at 33.3 Milliseconds

Minimum Value: -92.9 at 46.2 Milliseconds

SAE Filter Class: 1000

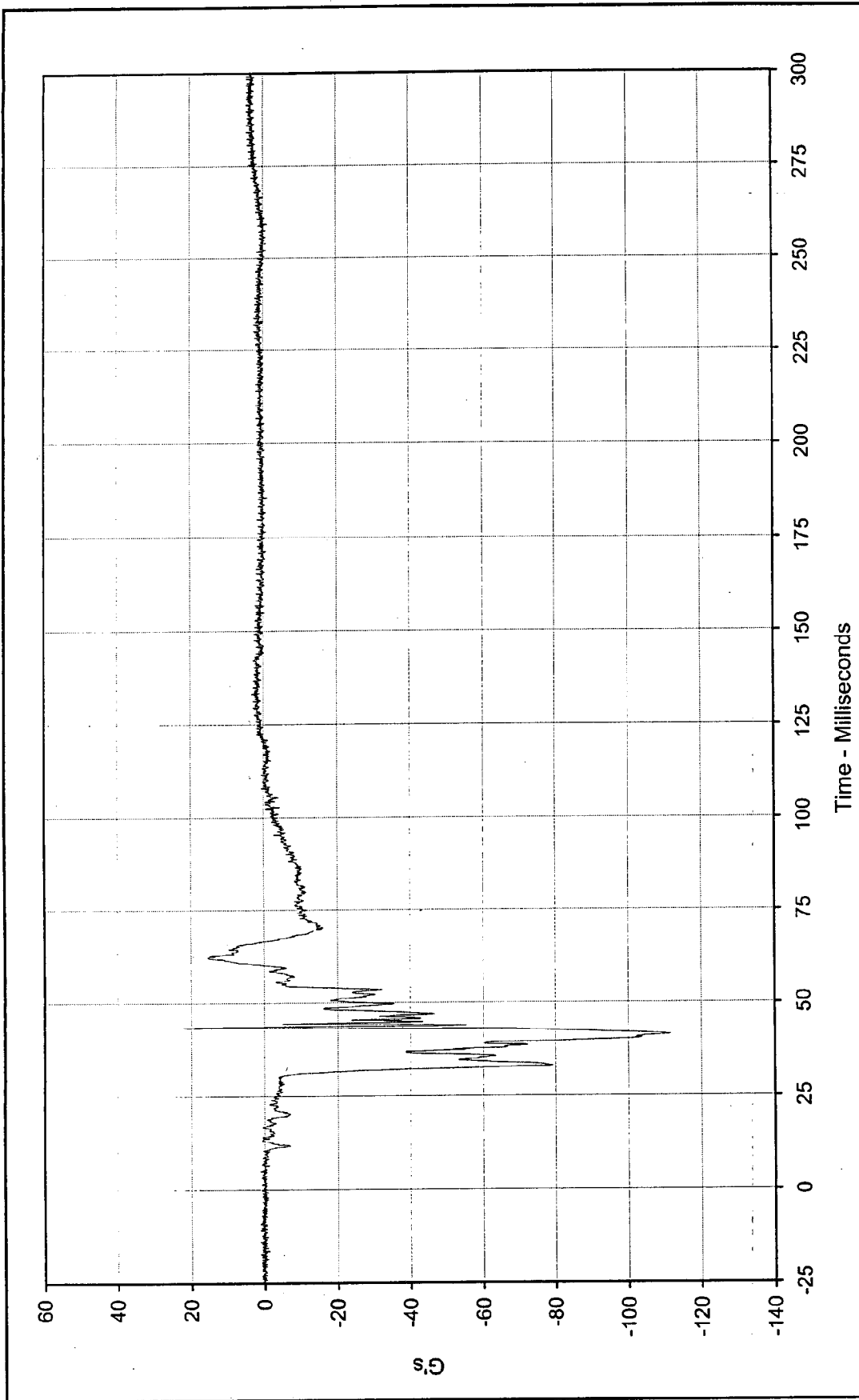
Date of Test: 12/7/99

Curve Number: FIL-038

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

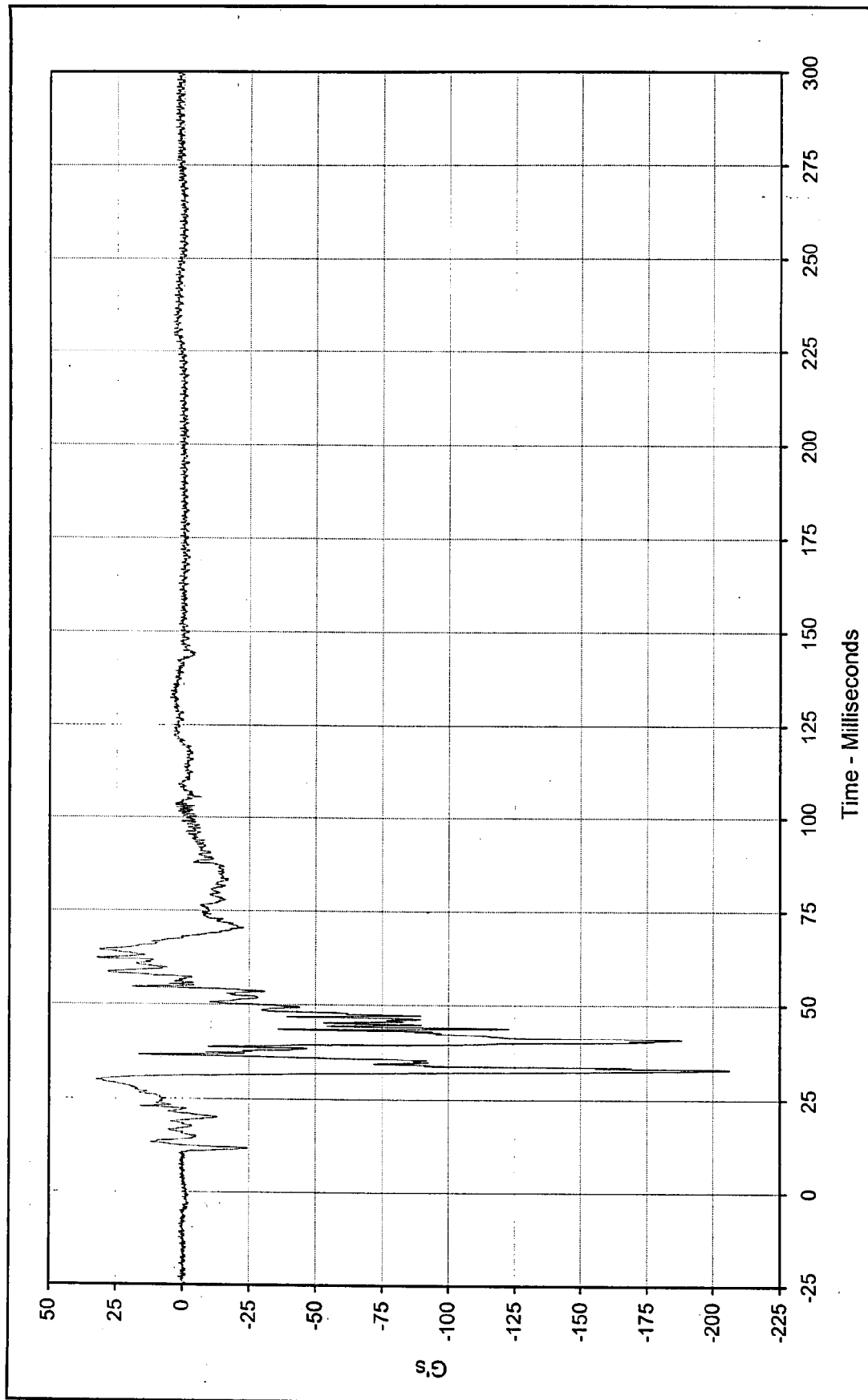
Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description:	Driver Right Foot Aft Z	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	22.0 at 43.4 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-111.8 at 41.4 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	12/7/99			
Curve Number:	FIL-039			

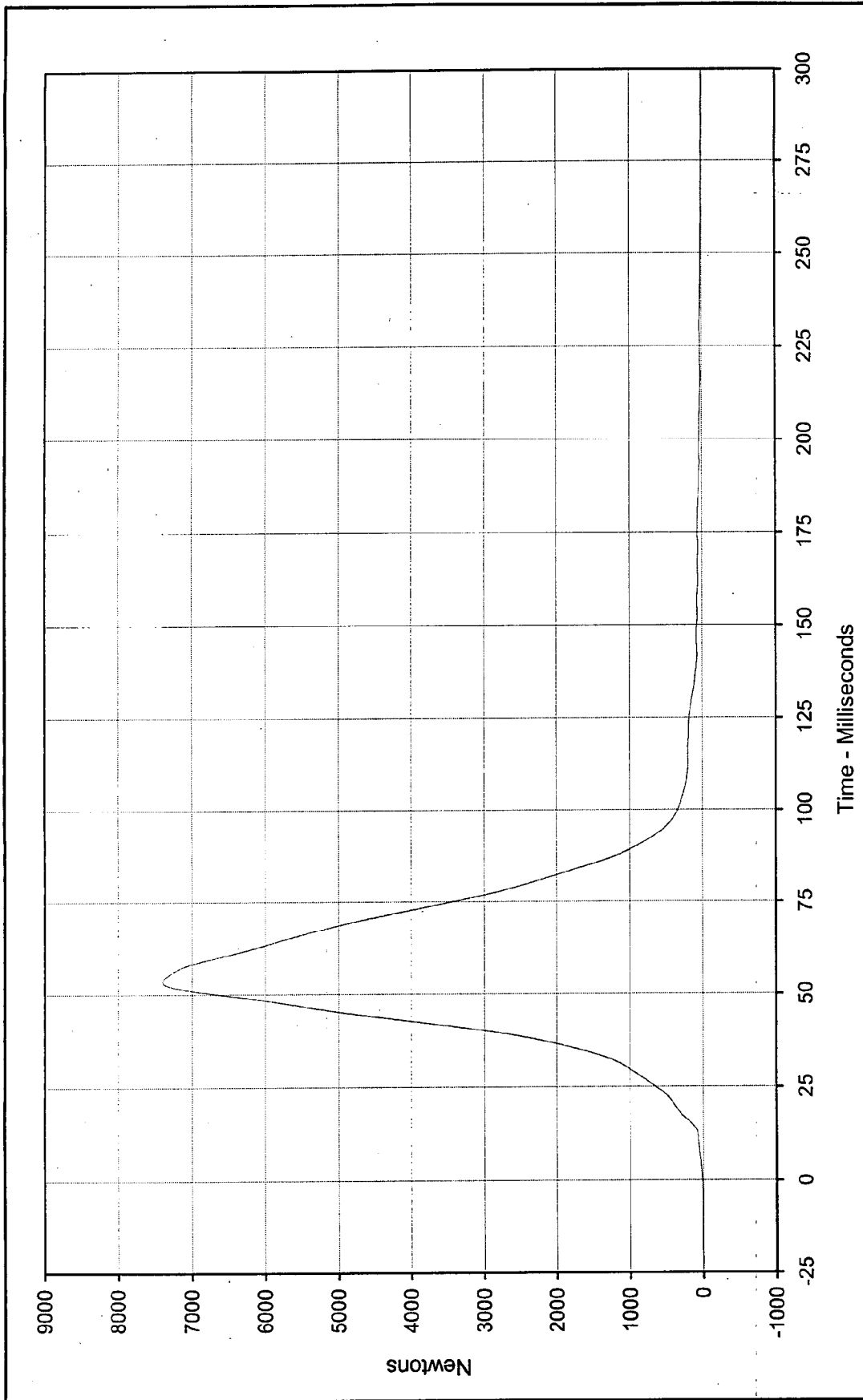




Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

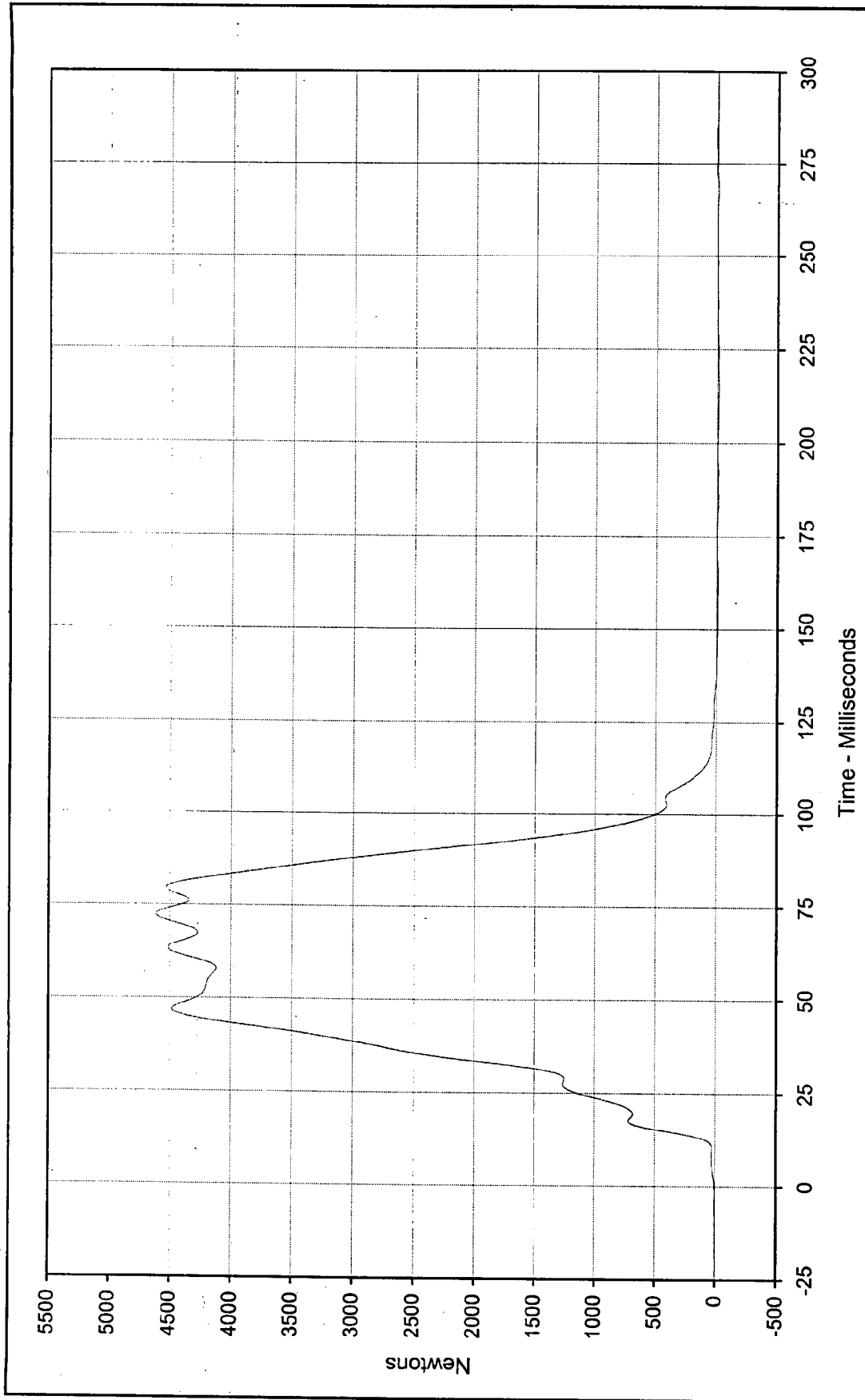
Curve Description: Driver Right Foot Fore Z
 Maximum Value: 32.4 at 29.9 Milliseconds
 Minimum Value: -206.2 at 33.0 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 12/7/99
 Curve Number: FIL-040





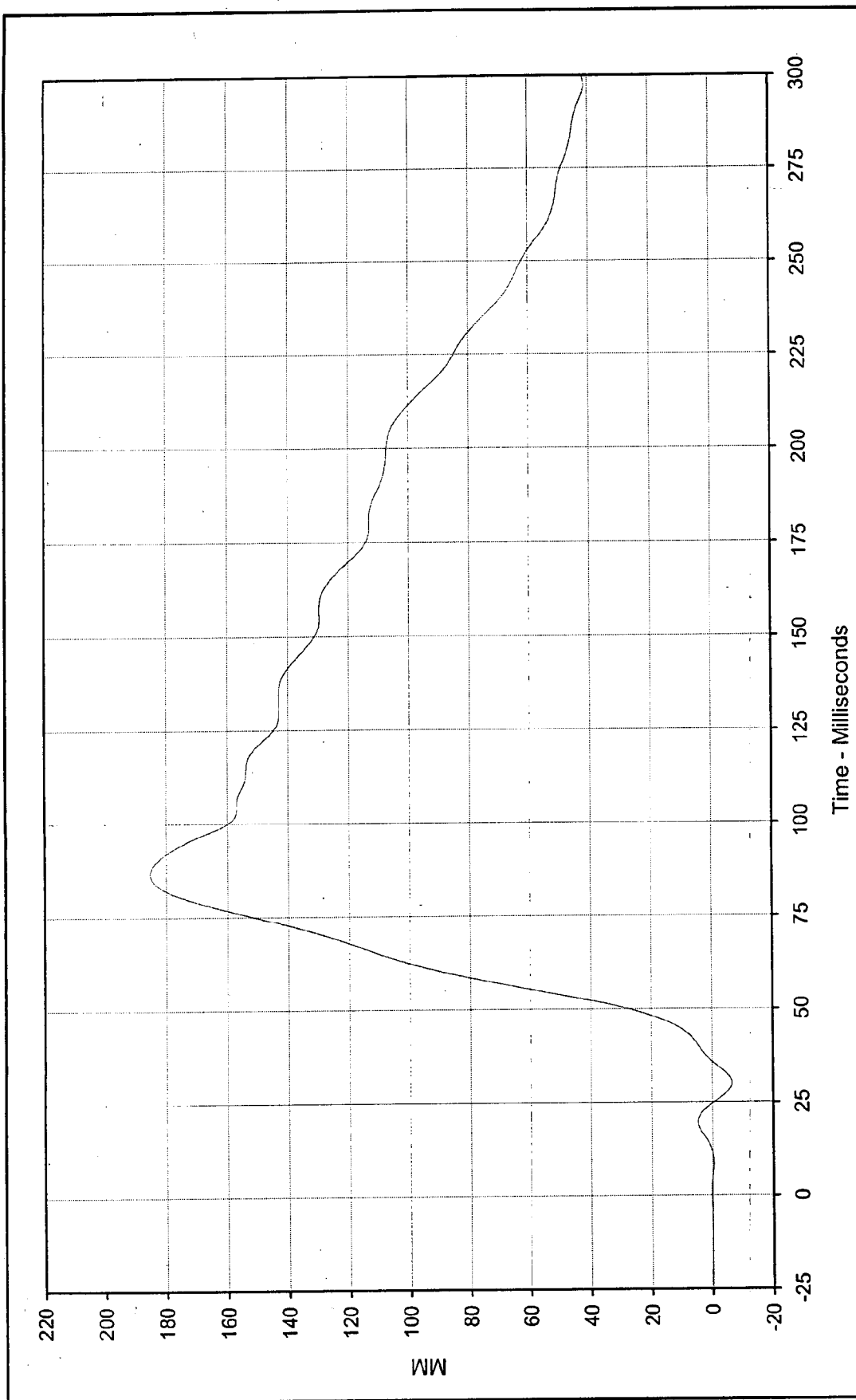
Curve Description:	Driver Lap Belt Force	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	7397.0 at 53.5 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	3.9 at 285.1 Milliseconds			
SAE Filter Class:	60			
Date of Test:	12/7/99			
Curve Number:	FIL-041			





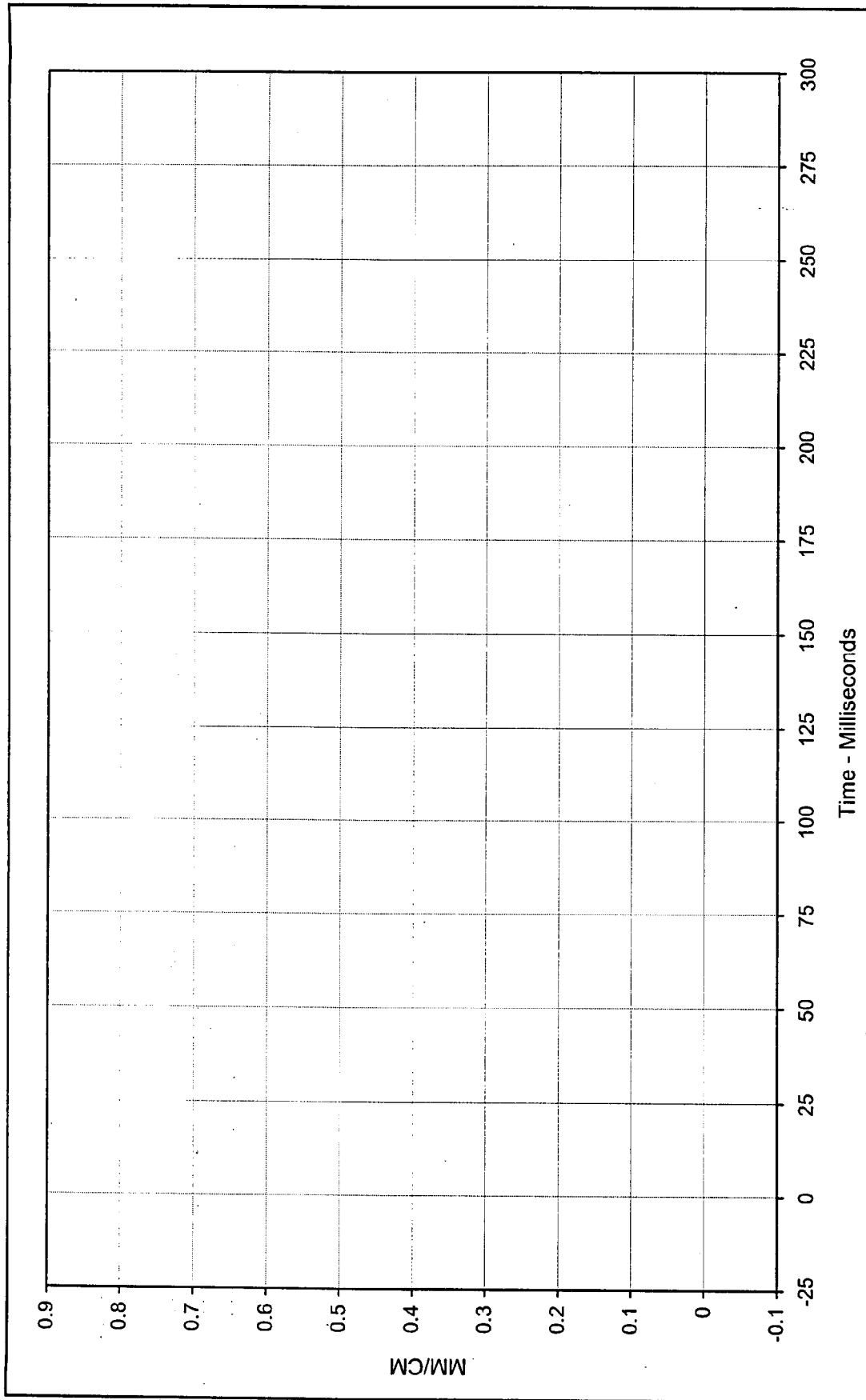
Curve Description:	Driver Shoulder Belt Force	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	4615.2 at 72.4 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-14.5 at 214.3 Milliseconds			
SAE Filter Class:	60			
Date of Test:	12/7/99			
Curve Number:	FIL-042			





Curve Description:	Driver Shoulder Belt Pullout	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	185.2 at 86.3 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-6.5 at 29.9 Milliseconds			
SAE Filter Class:	60			
Date of Test:	12/7/99			
Curve Number:	FIL-043			

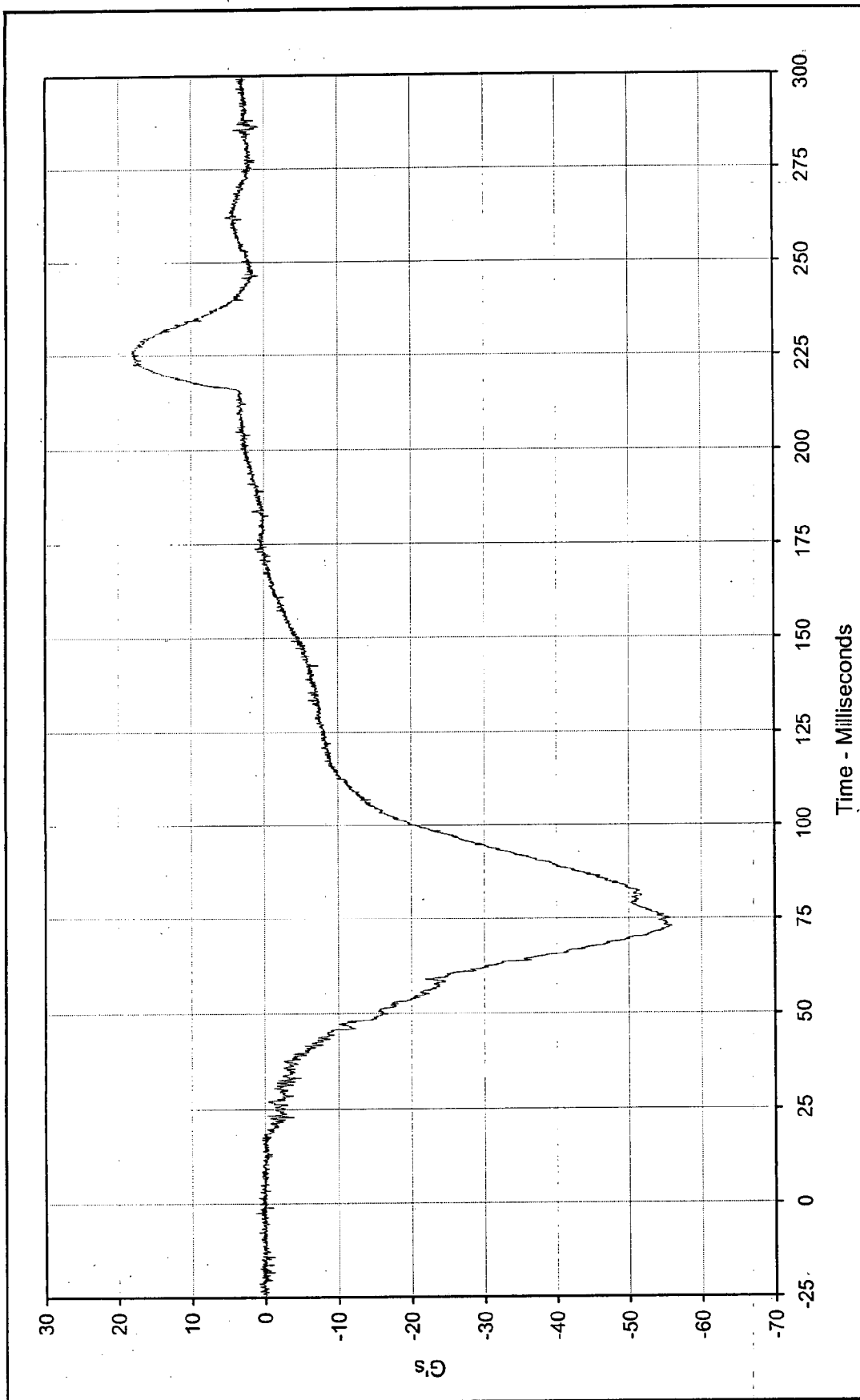




Curve Description:	Driver Shoulder Belt Elongation	*	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	0.00	at 0.0	Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan
Minimum Value:	0.00	at 0.0	Milliseconds		
SAE Filter Class:	60				
Date of Test:	12/7/99				
Curve Number:	FIL-044				



* Not Installed



Curve Description: Passenger Head Primary X

Maximum Value: 18.2 at 225.0 Milliseconds

Minimum Value: -56.0 at 72.7 Milliseconds

SAE Filter Class: 1000

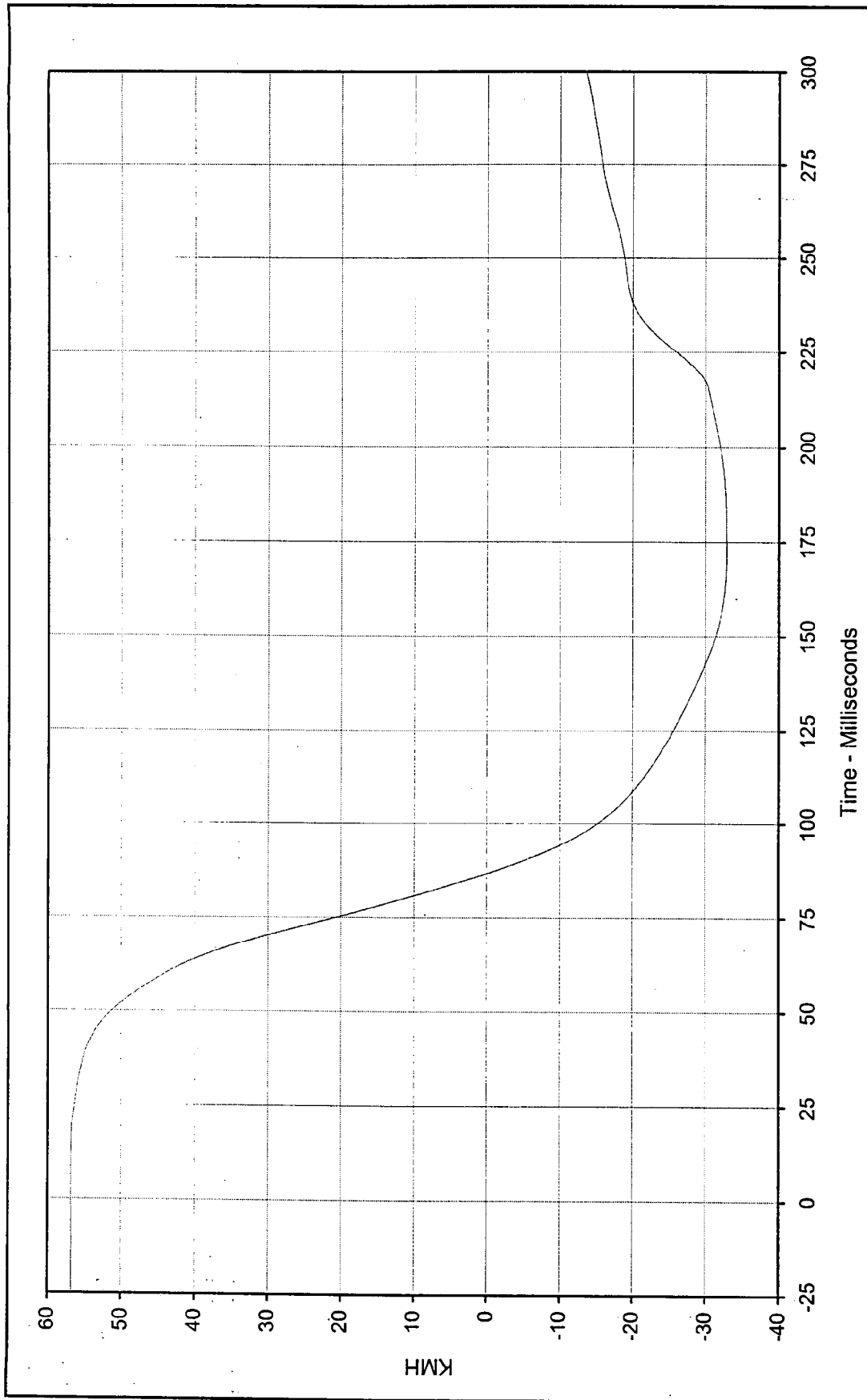
Date of Test: 12/7/99

Curve Number: FIL-045

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description: Passenger Head Primary X Velocity

Maximum Value: 56.8 at 4.9 Milliseconds

Minimum Value: -32.9 at 172.5 Milliseconds

SAE Filter Class: 180

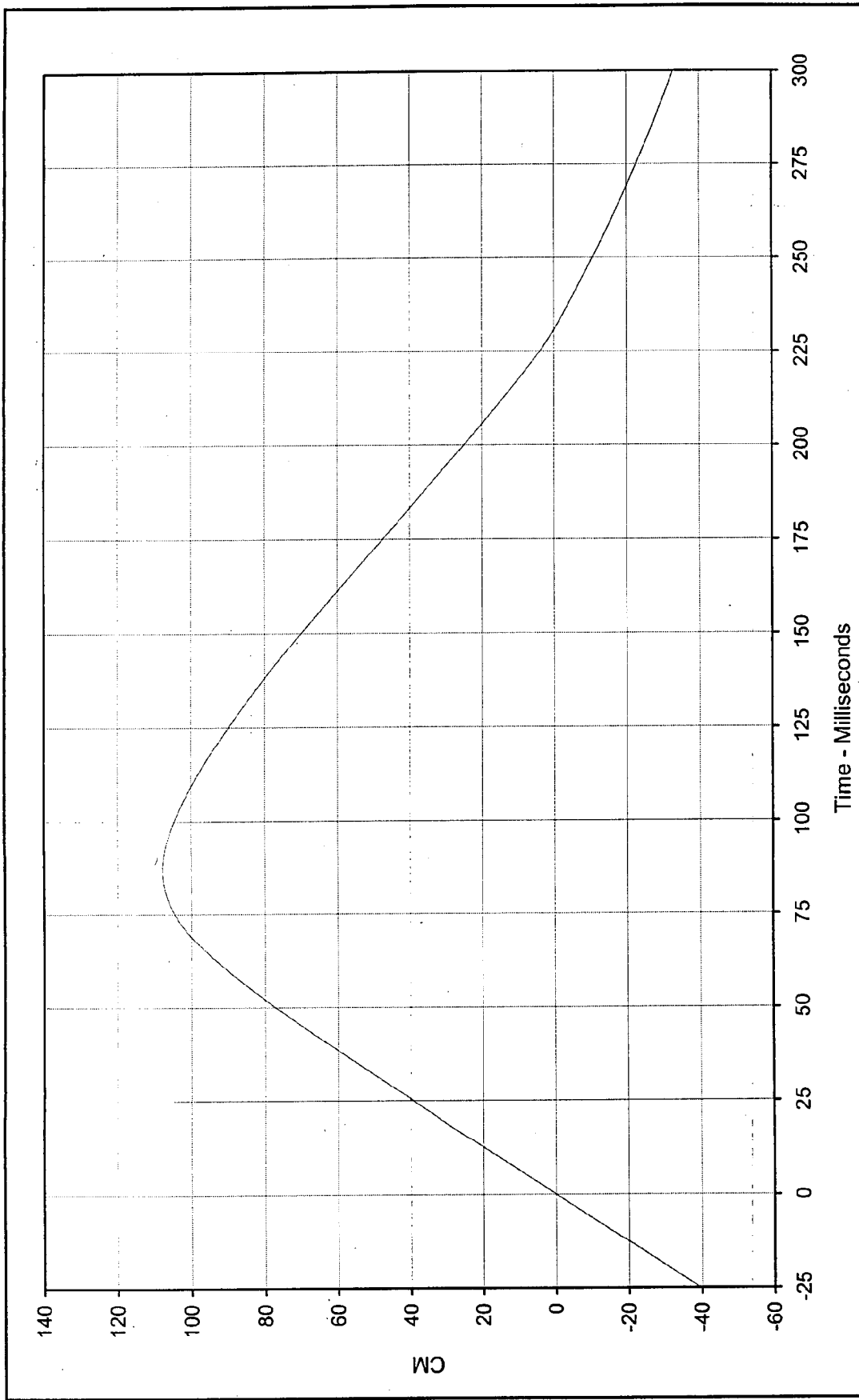
Date of Test: 12/7/99

Curve Number: IN1-045

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description: Passenger Head Primary X Displ.

Maximum Value: 107.7 at 86.6 Milliseconds

Minimum Value: -32.8 at 299.9 Milliseconds

SAE Filter Class: 180

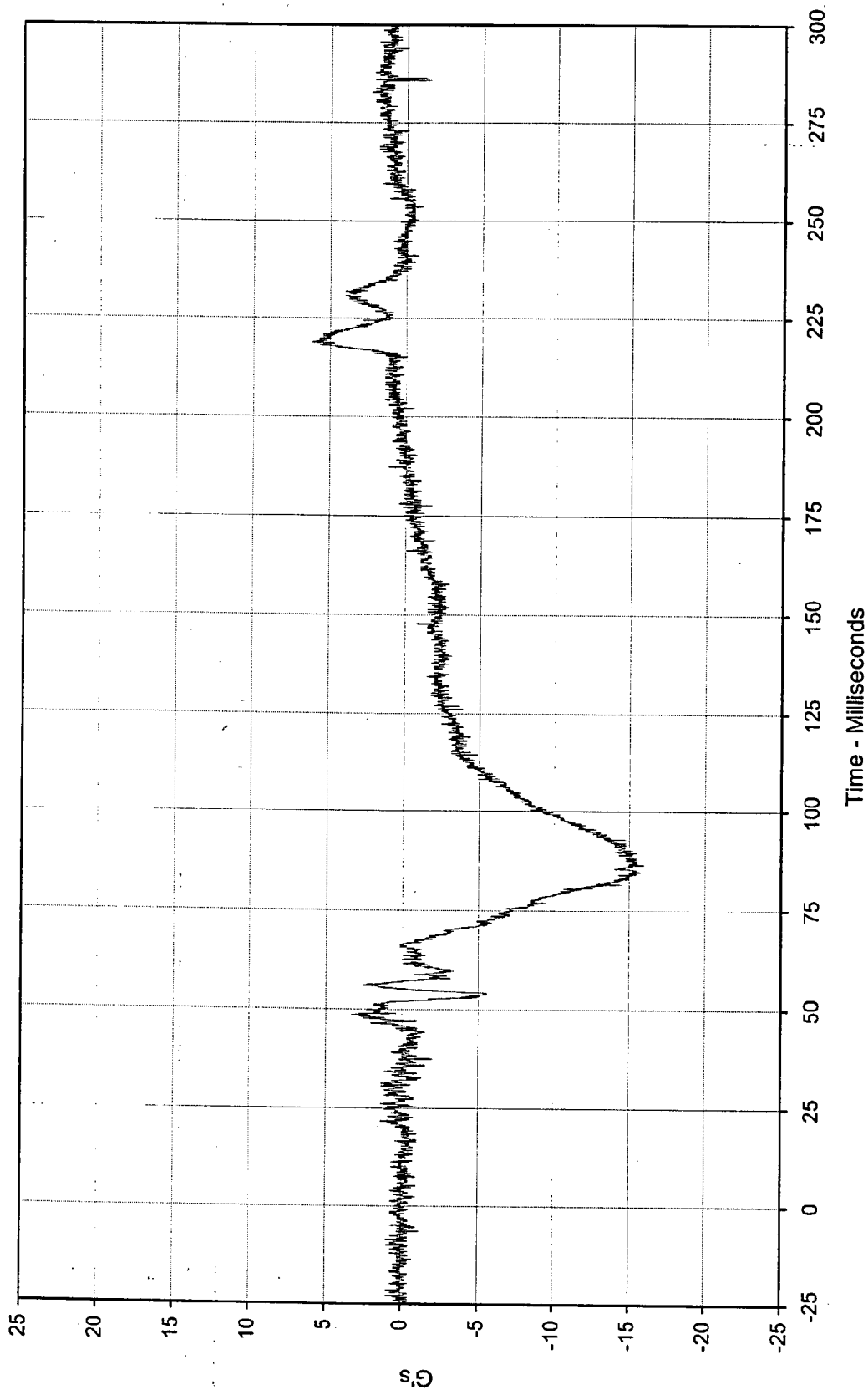
Date of Test: 12/7/99

Curve Number: IN2-045

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

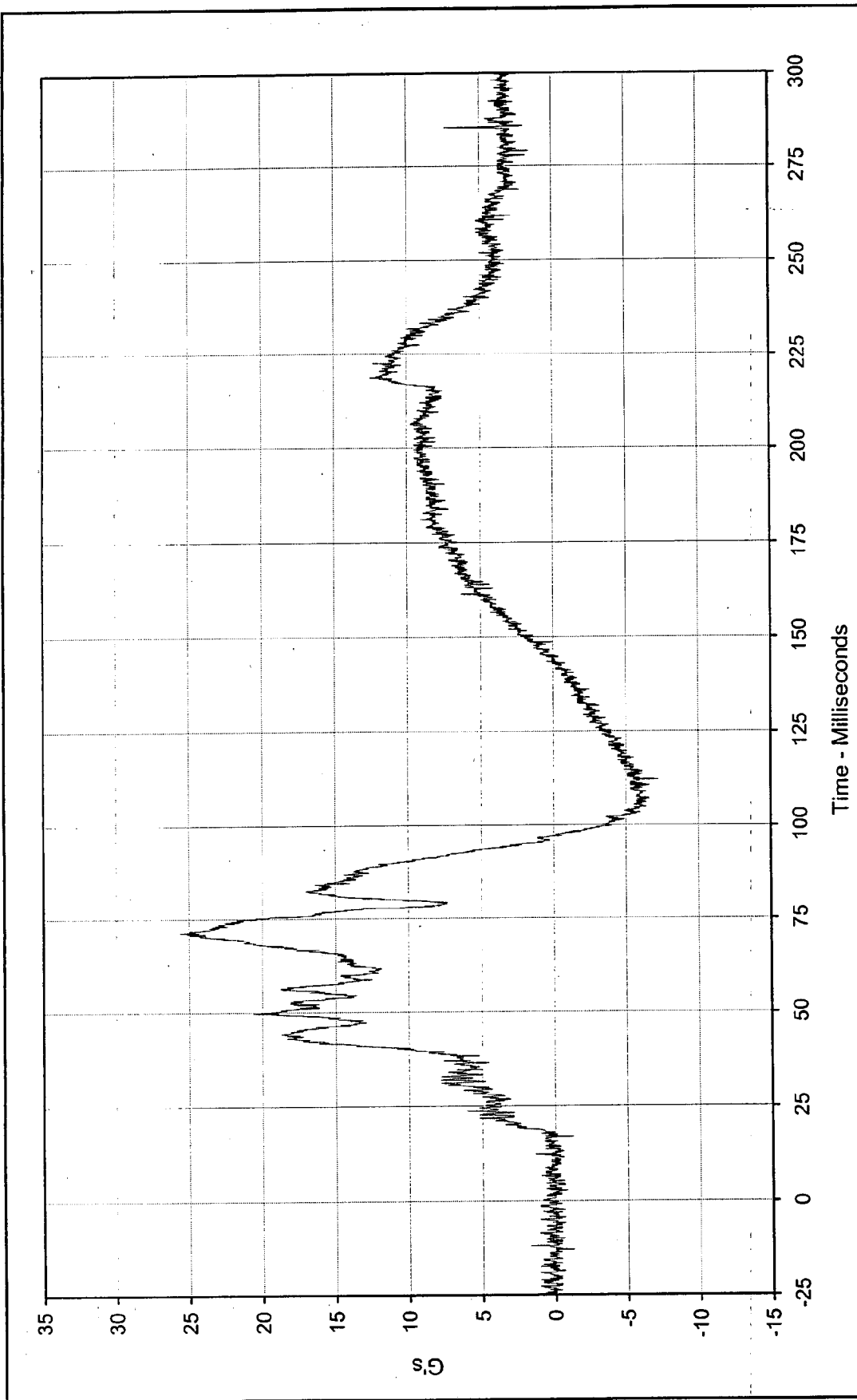
Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





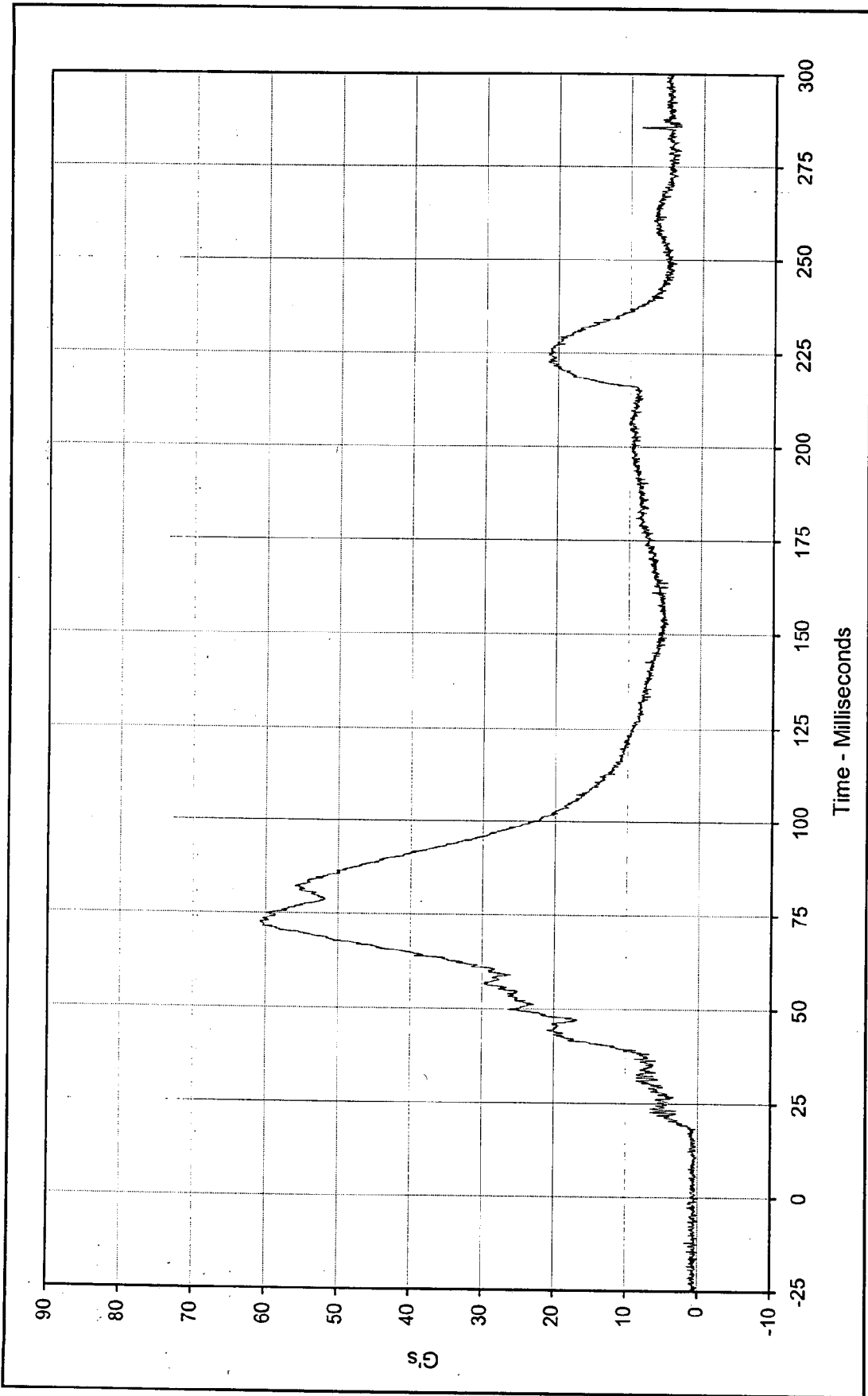
Curve Description:	Passenger Head Primary Y	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	6.2 at 218.8 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-15.9 at 86.5 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	12/7/99			
Curve Number:	FIL-046			





Curve Description:	Passenger Head Primary Z	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	25.6 at 71.3 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-7.2 at 112.0 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	12/7/99			
Curve Number:	FIL-047			

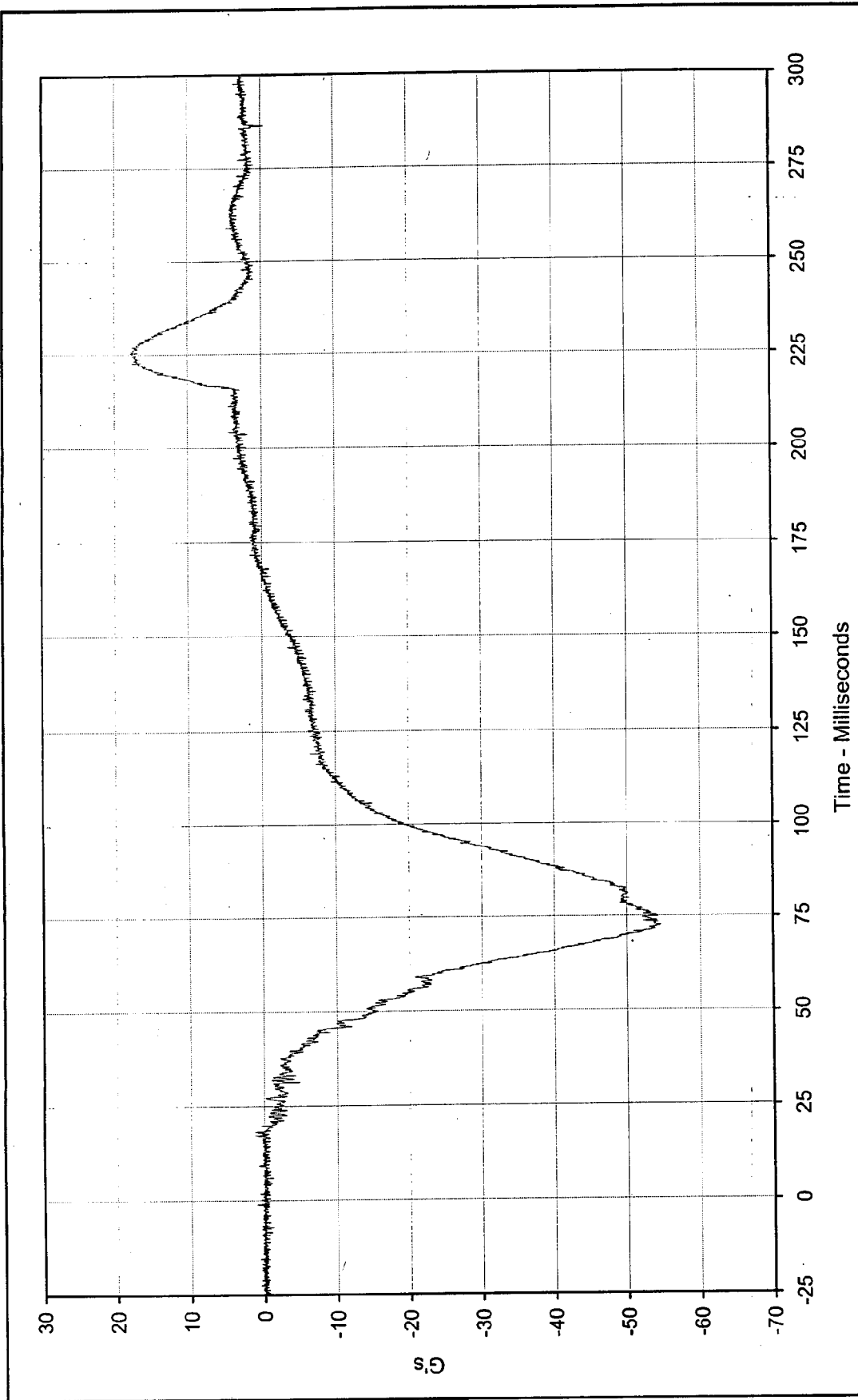




Curve Description: Passenger Head Resultant Primary
 Maximum Value: 60.8 at 72.7 Milliseconds
 Minimum Value: 0.1 at 5.6 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 12/7/99
 Curve Number: RES-045

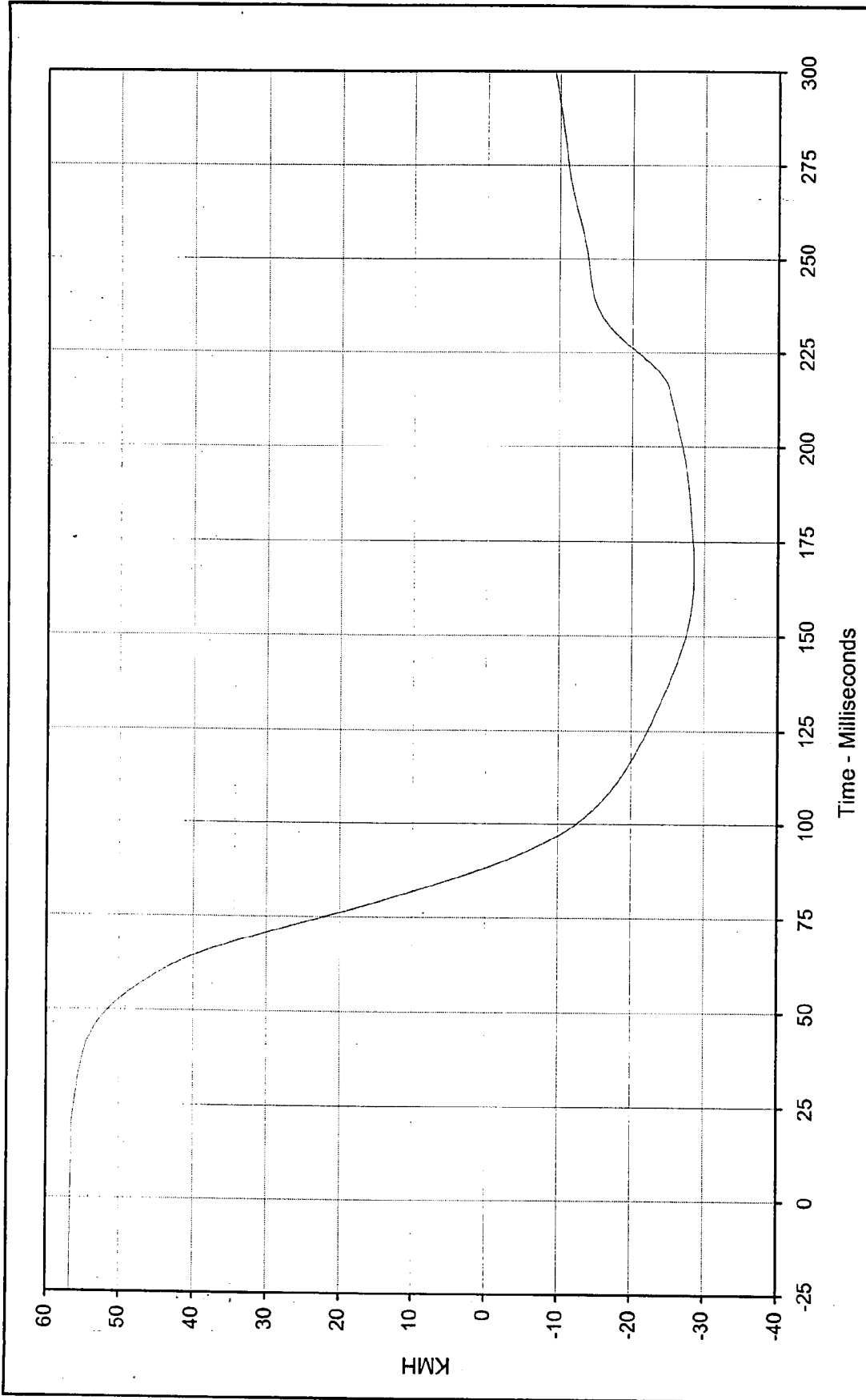
Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description:	Passenger Head Redundant X	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	17.8 at 225.4 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-54.7 at 72.5 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	12/7/99			
Curve Number:	FIL-048			





Curve Description: Passenger Head Redundant X Velocity

Maximum Value: 56.6 at 0.0 Milliseconds

Minimum Value: -28.6 at 168.1 Milliseconds

SAE Filter Class: 180

Date of Test: 12/7/99

Curve Number: IN1-048

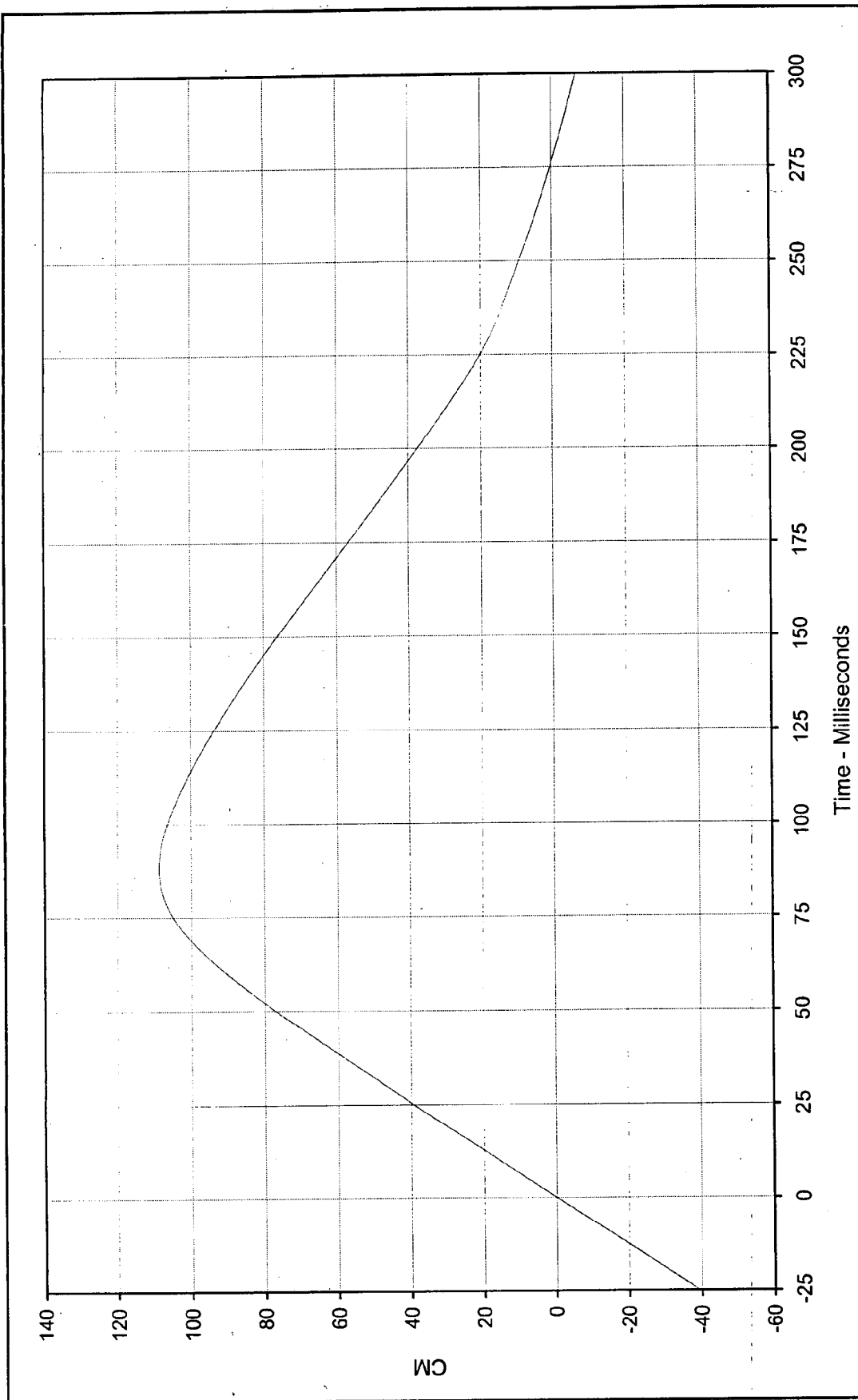
Test Program:

2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle:

2000 Subaru Legacy L AWD 4 Door Sedan

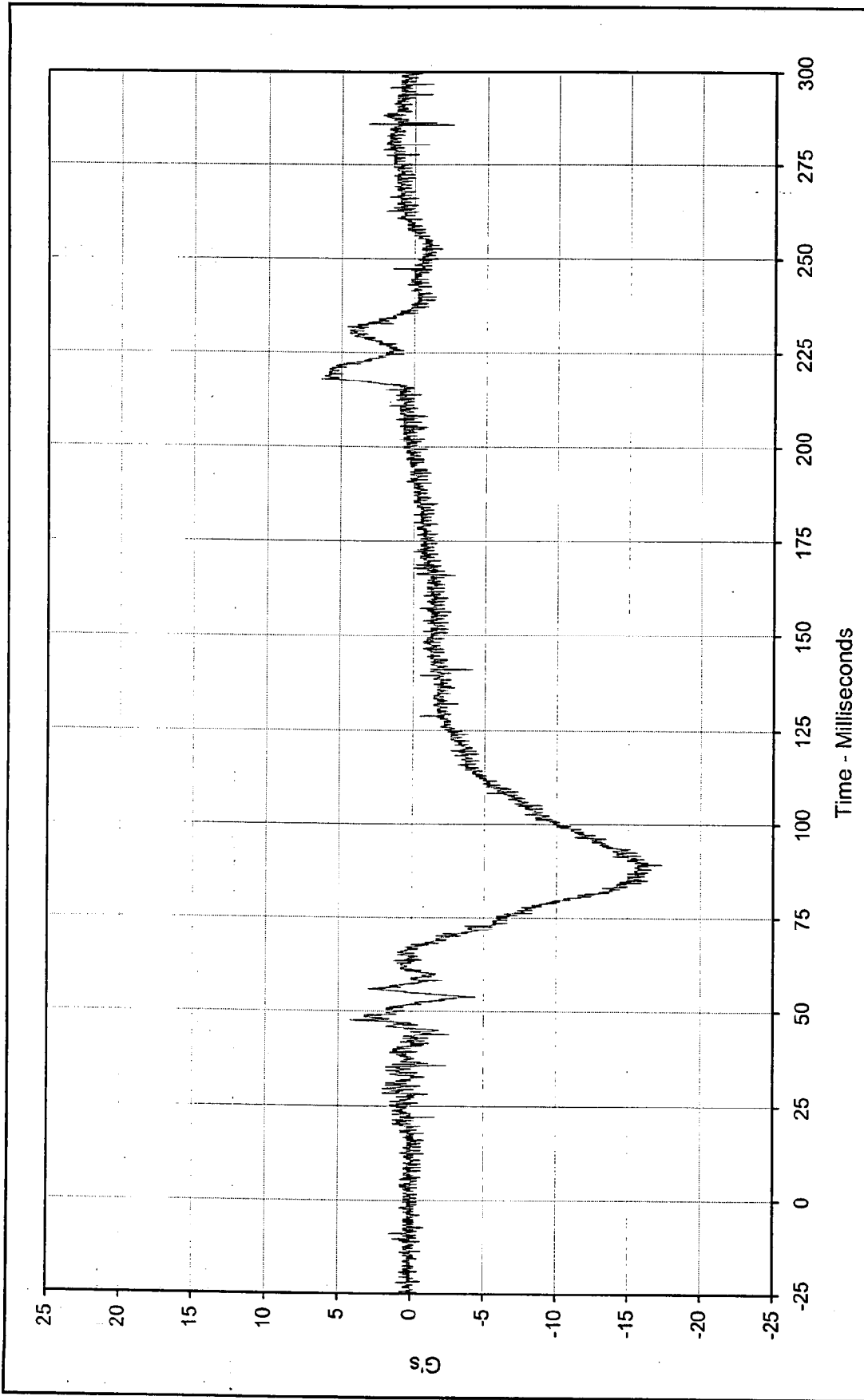




Curve Description: Passenger Head Redundant X Displ.
 Maximum Value: 108.7 at 88.0 Milliseconds
 Minimum Value: -6.7 at 299.9 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/7/99
 Curve Number: IN2-048

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

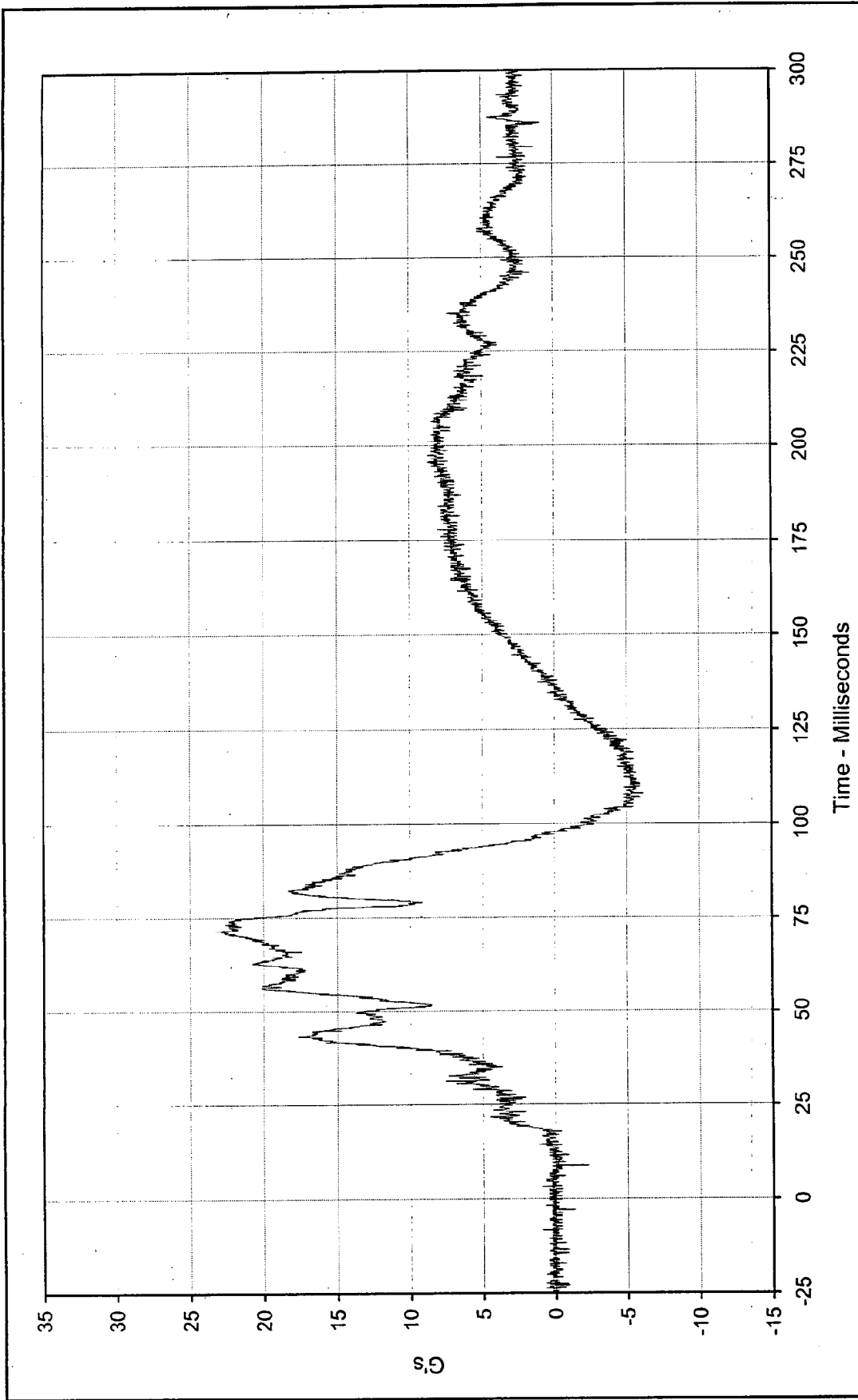




Curve Description: Passenger Head Redundant Y
 Maximum Value: 6.4 at 218.0 Milliseconds
 Minimum Value: -17.4 at 89.1 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 12/7/99
 Curve Number: FIL-049

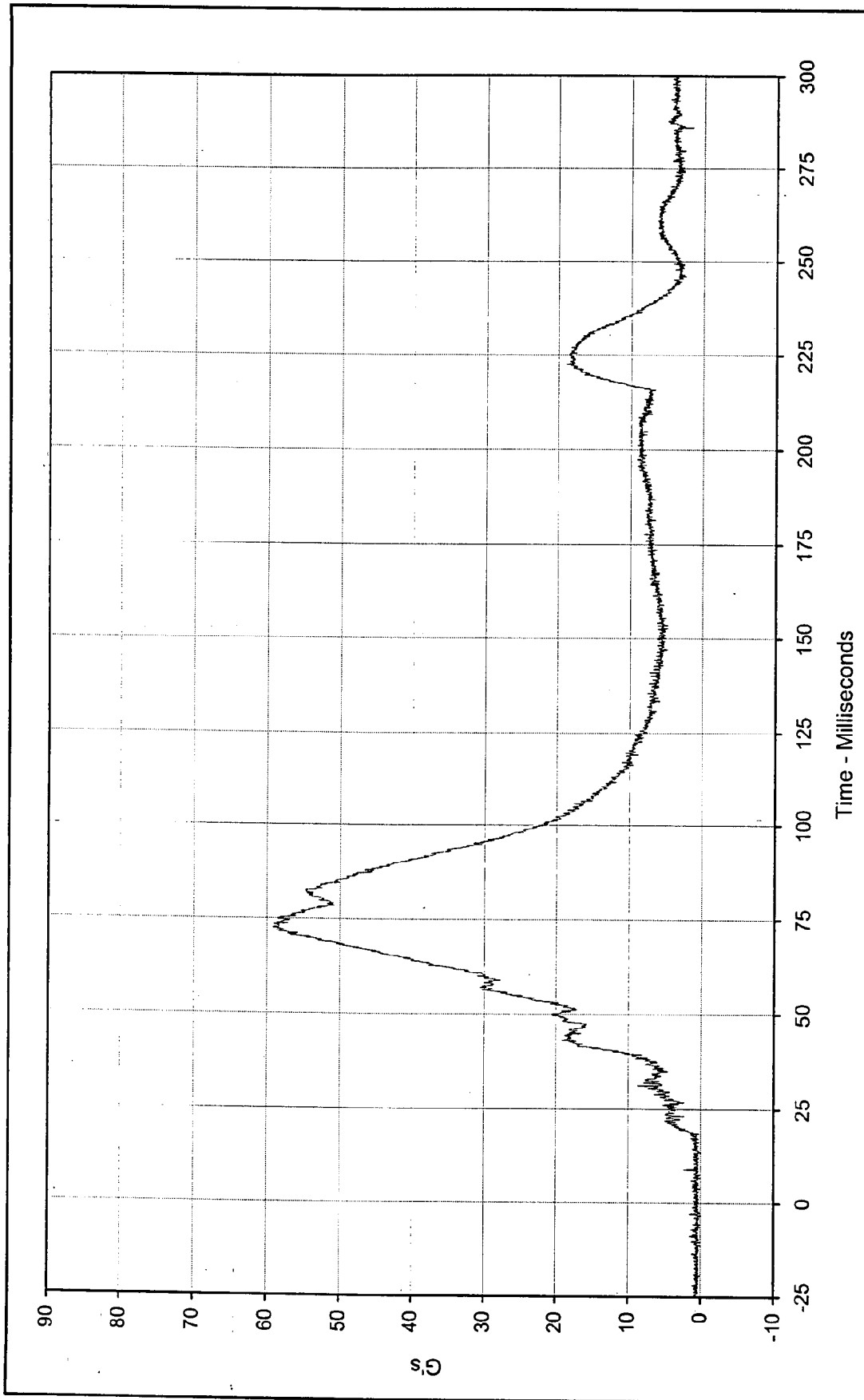
Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description:	Passenger Head Redundant Z	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	23.3 at 71.4 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-6.2 at 107.8 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	12/7/99			
Curve Number:	FIL-050			





Curve Description: Passenger Head Resultant Redundant

Maximum Value: 59.2 at 72.5 Milliseconds

Minimum Value: 0.0 at 3.7 Milliseconds

SAE Filter Class: 1000

Date of Test: 12/7/99

Curve Number: RES-048

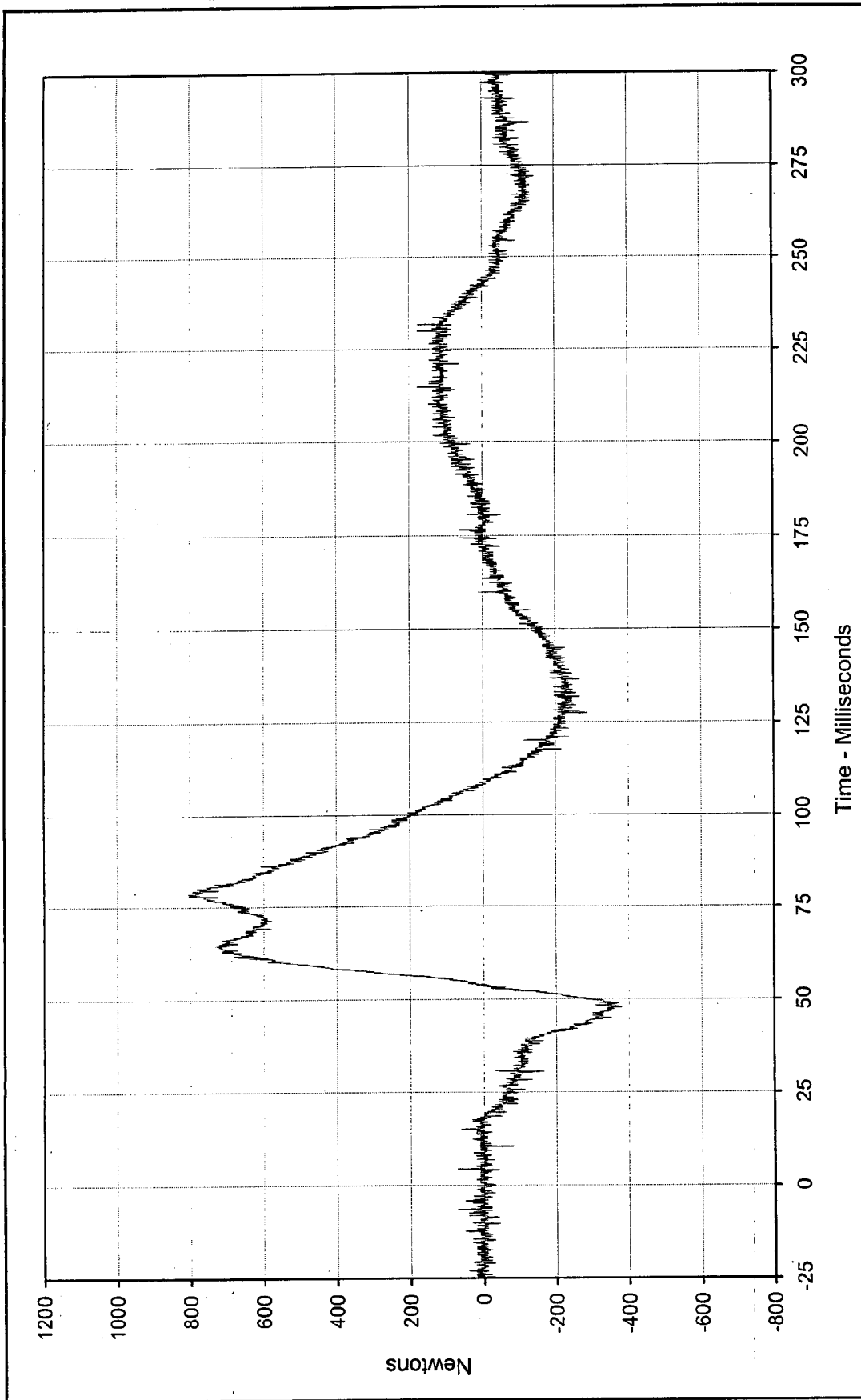
Test Program:

2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle:

2000 Subaru Legacy L AWD 4 Door Sedan

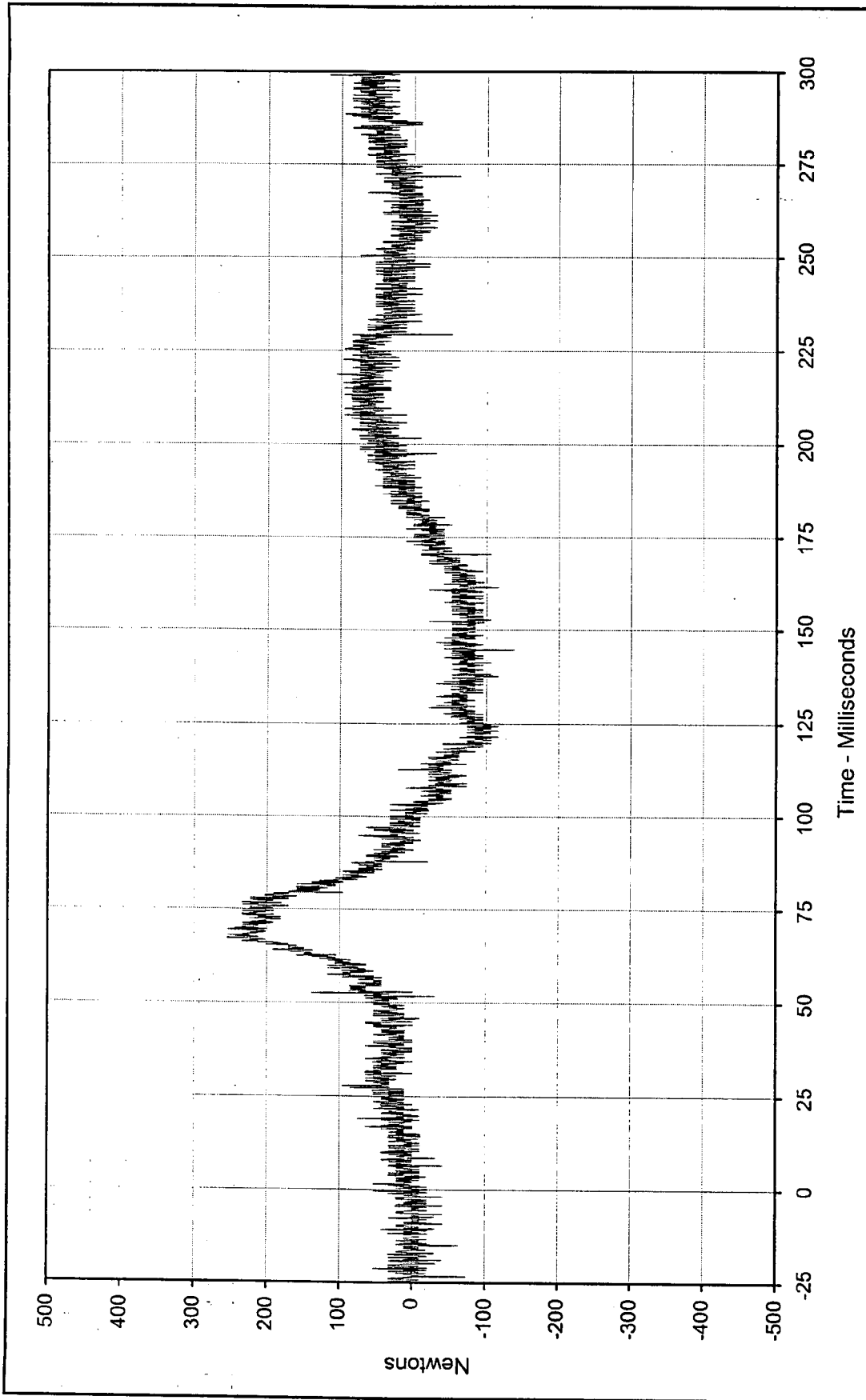




Curve Description:		Passenger Neck Force X		Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	804.8	at	78.0	Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan
Minimum Value:	-381.7	at	47.8	Milliseconds		
SAE Filler Class:	1000					
Date of Test:	12/7/99					
Curve Number:	FIL-051					

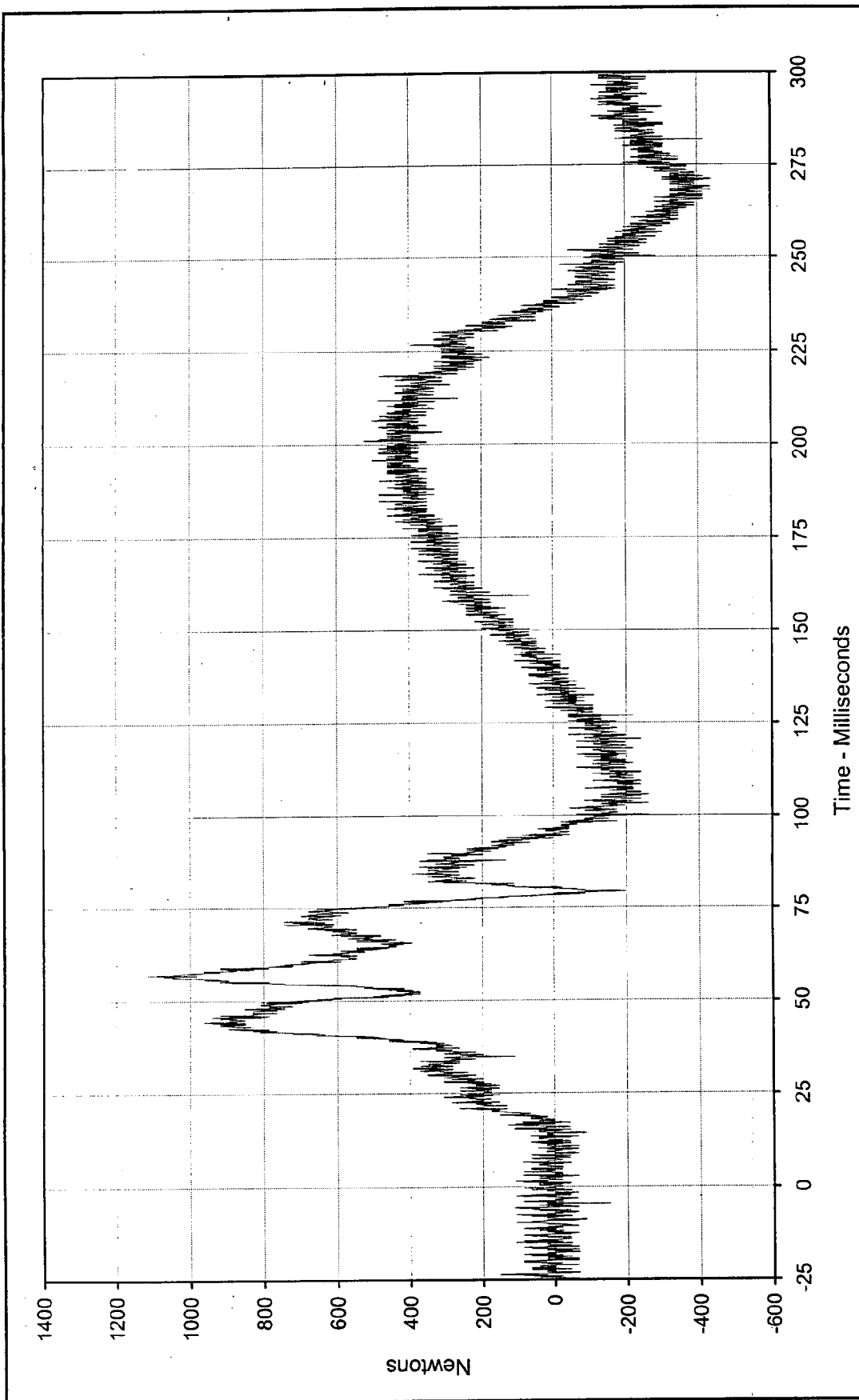
The logo for KARCO Engineering is displayed. It features a black rectangular background. On the left, there is a white lightbulb icon with a black outline. To the right of the lightbulb, the word "KARCO" is written in a large, bold, white, sans-serif font. Below "KARCO", the word "Engineering" is written in a smaller, italicized, white, sans-serif font. A white diagonal line runs from the bottom left to the top right, separating the lightbulb icon from the text.





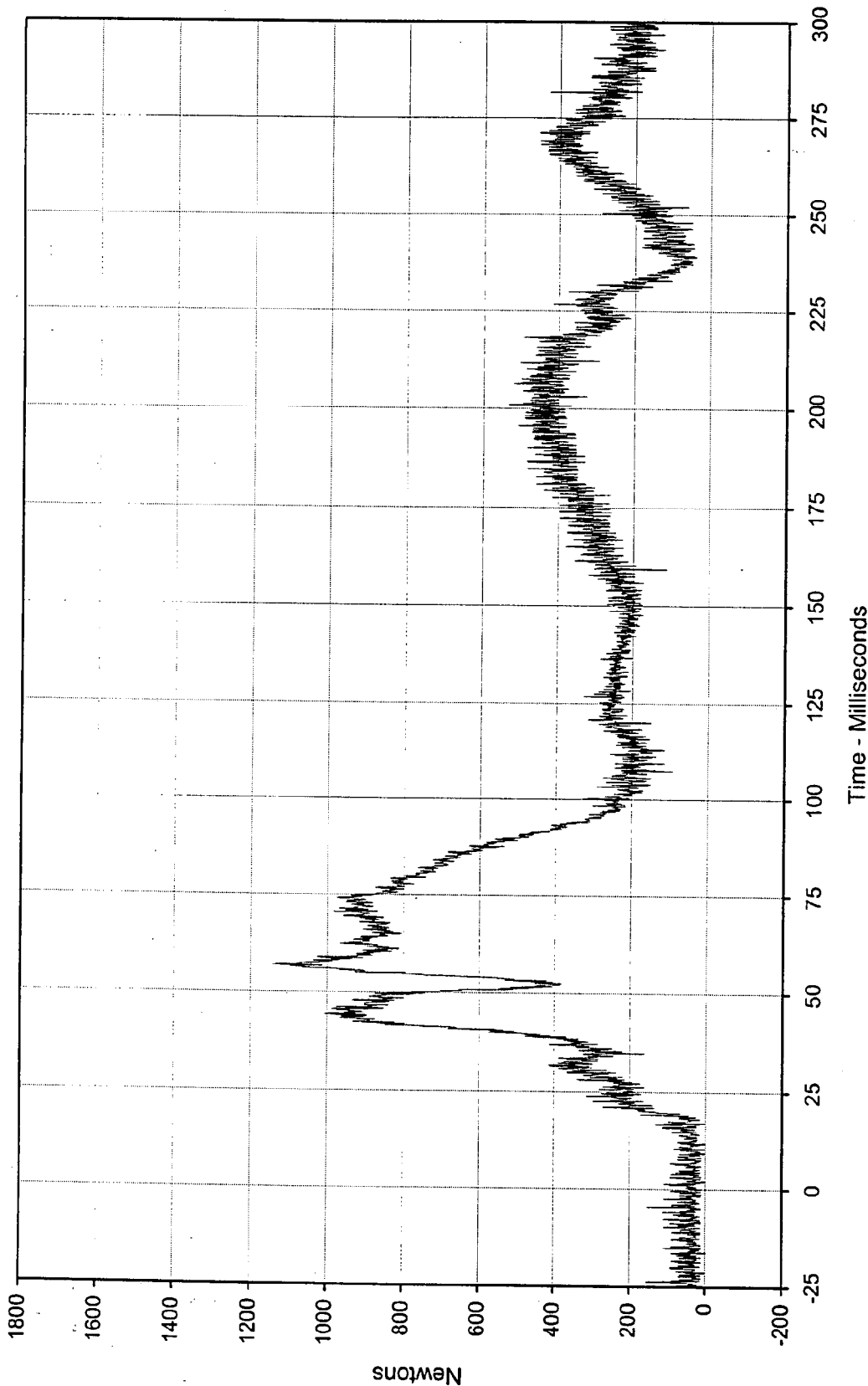
Curve Description:	Passenger Neck Force Y	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	254.7 at 67.0 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-138.0 at 144.6 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	12/7/99			
Curve Number:	FIL-052			





Curve Description:		Passenger Neck Force Z		Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	1114.0	at	56.8	Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan
Minimum Value:	-436.9	at	269.1	Milliseconds		
SAE Filter Class:	1000					
Date of Test:	12/7/99					
Curve Number:	FIL-053					





Curve Description: Passenger Neck Force Resultant

Maximum Value: 1142.9 at 56.8 Milliseconds

Minimum Value: 0.0 at 1.9 Milliseconds

SAE Filter Class: 1000

Date of Test: 12/7/99

Curve Number: RES-051

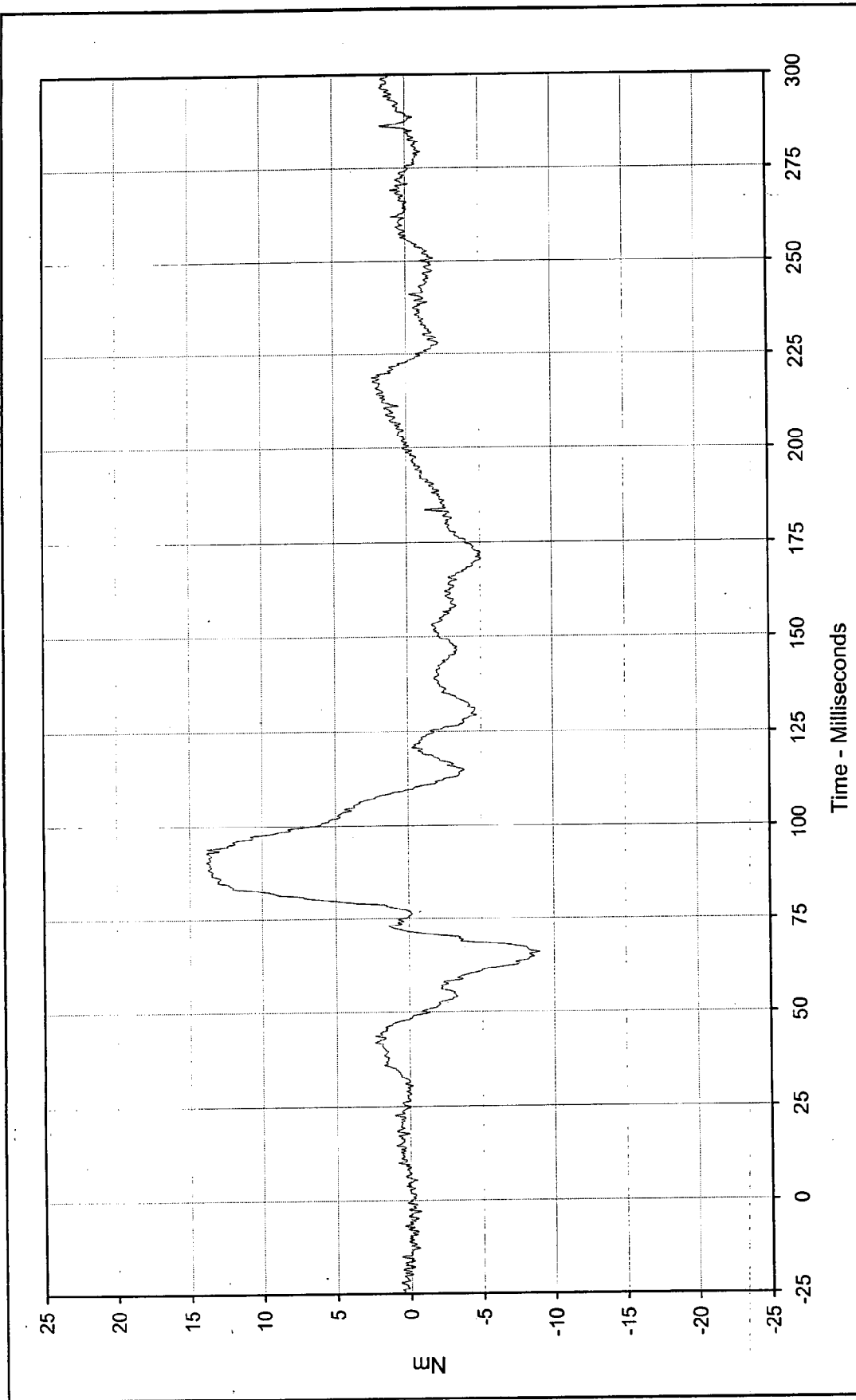
Test Program:

2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle:

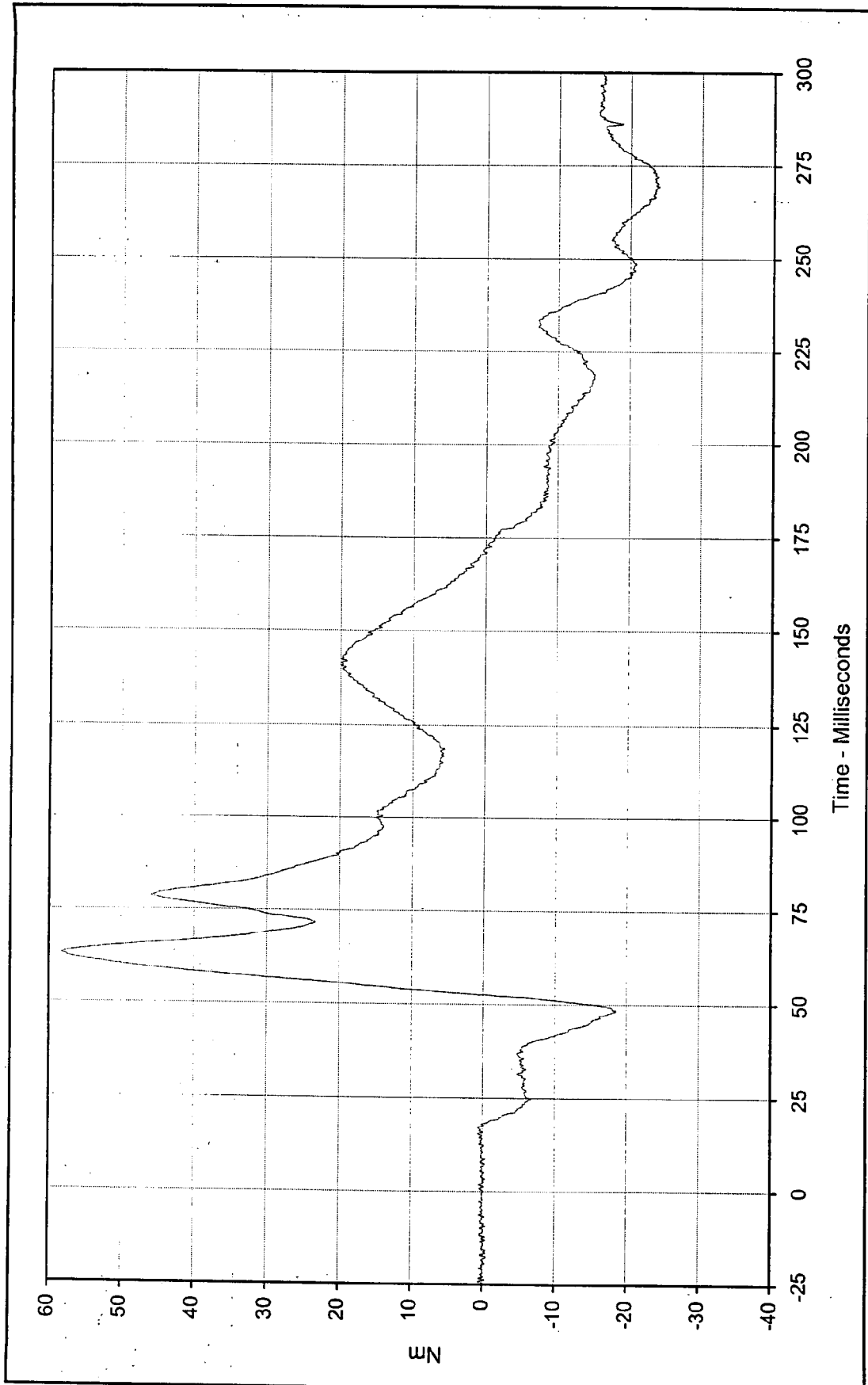
2000 Subaru Legacy L AWD 4 Door Sedan





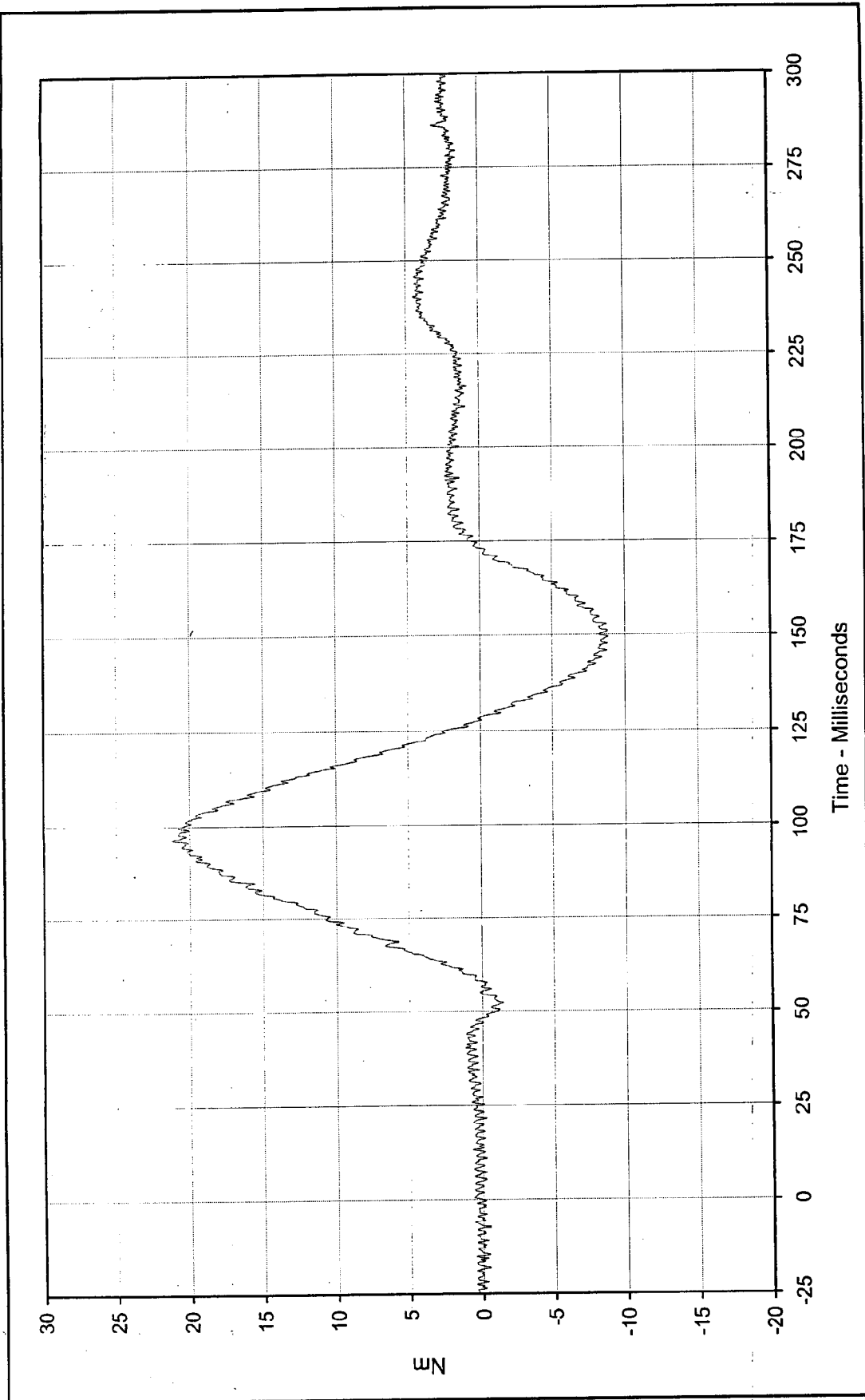
Curve Description:	Passenger Neck Moment X	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	13.8 at 90.3 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-9.0 at 65.7 Milliseconds			
SAE Filter Class:	600			
Date of Test:	12/7/99			
Curve Number:	FIL-054			





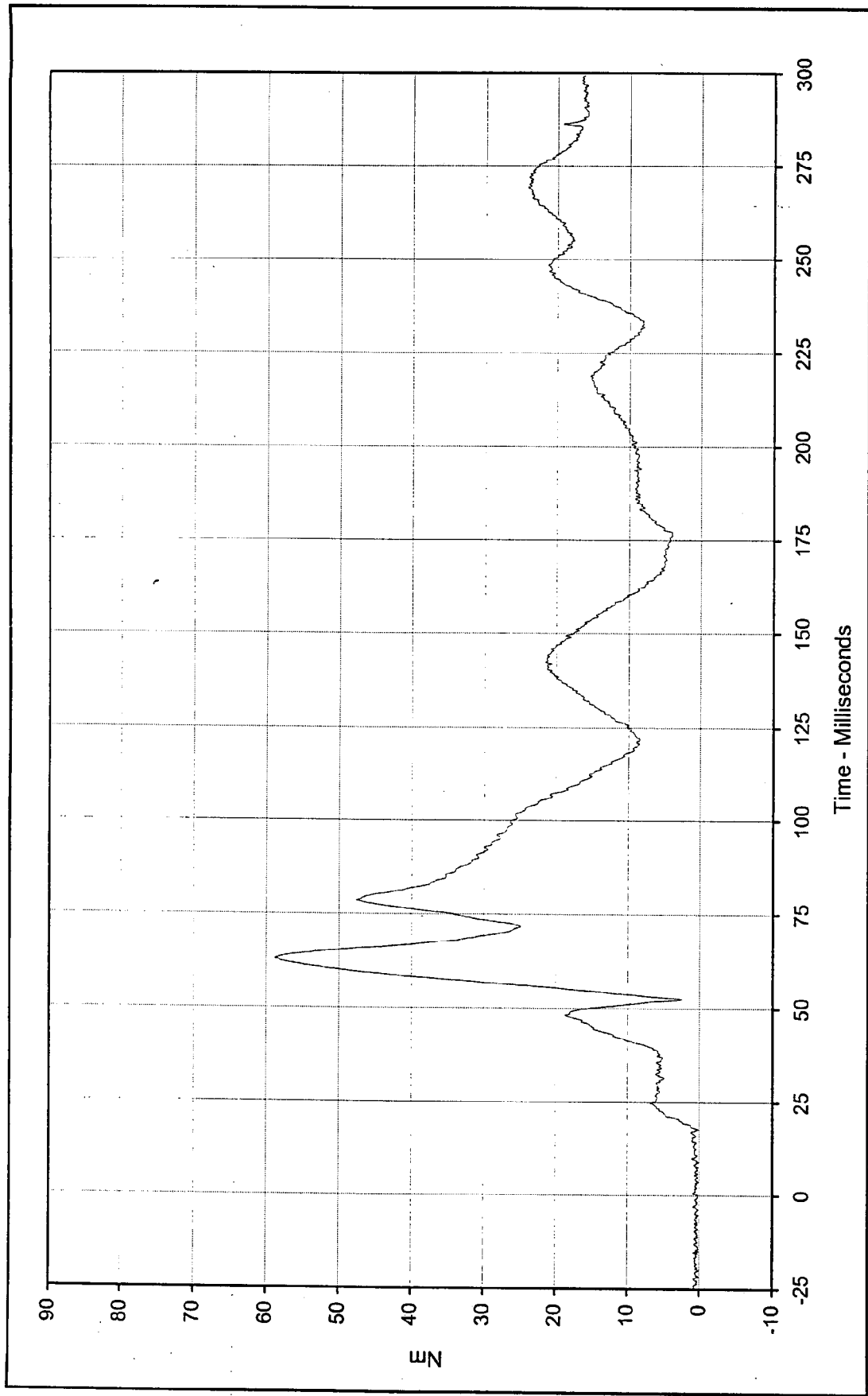
Curve Description:	Passenger Neck Moment Y	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	58.3 at 63.0 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-24.1 at 269.3 Milliseconds			
SAE Filter Class:	600			
Date of Test:	12/7/99			
Curve Number:	FIL-055			





Curve Description:	Passenger Neck Moment Z	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	21.2 at 96.1 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-8.9 at 149.5 Milliseconds			
SAE Filter Class:	600			
Date of Test:	12/7/99			
Curve Number:	FIL-056			





Curve Description: Passenger Neck Moment Resultant

Maximum Value: 58.8 at 63.0 Milliseconds

Minimum Value: 0.1 at 8.8 Milliseconds

SAE Filter Class: 600

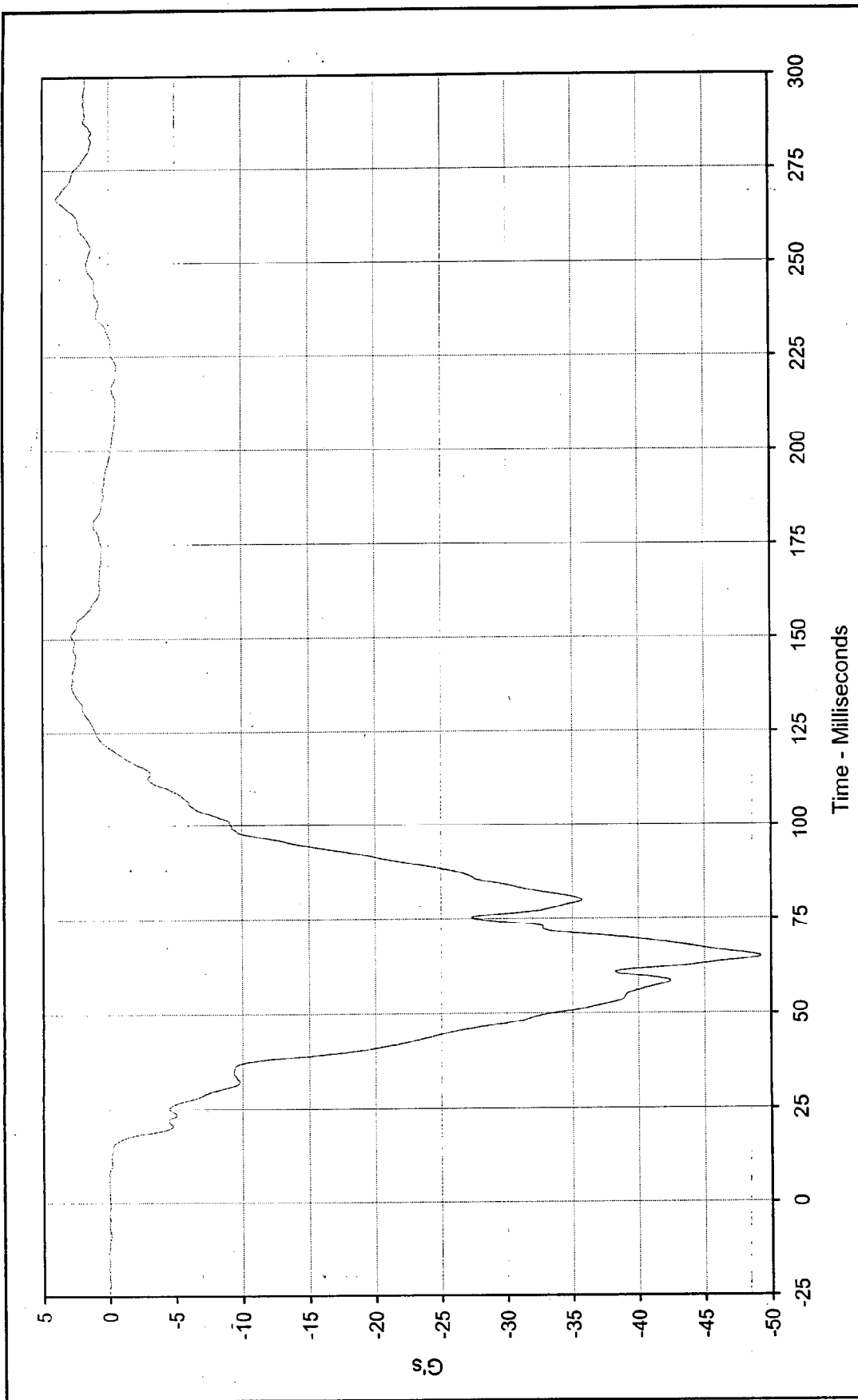
Date of Test: 12/7/99

Curve Number: RES-054

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

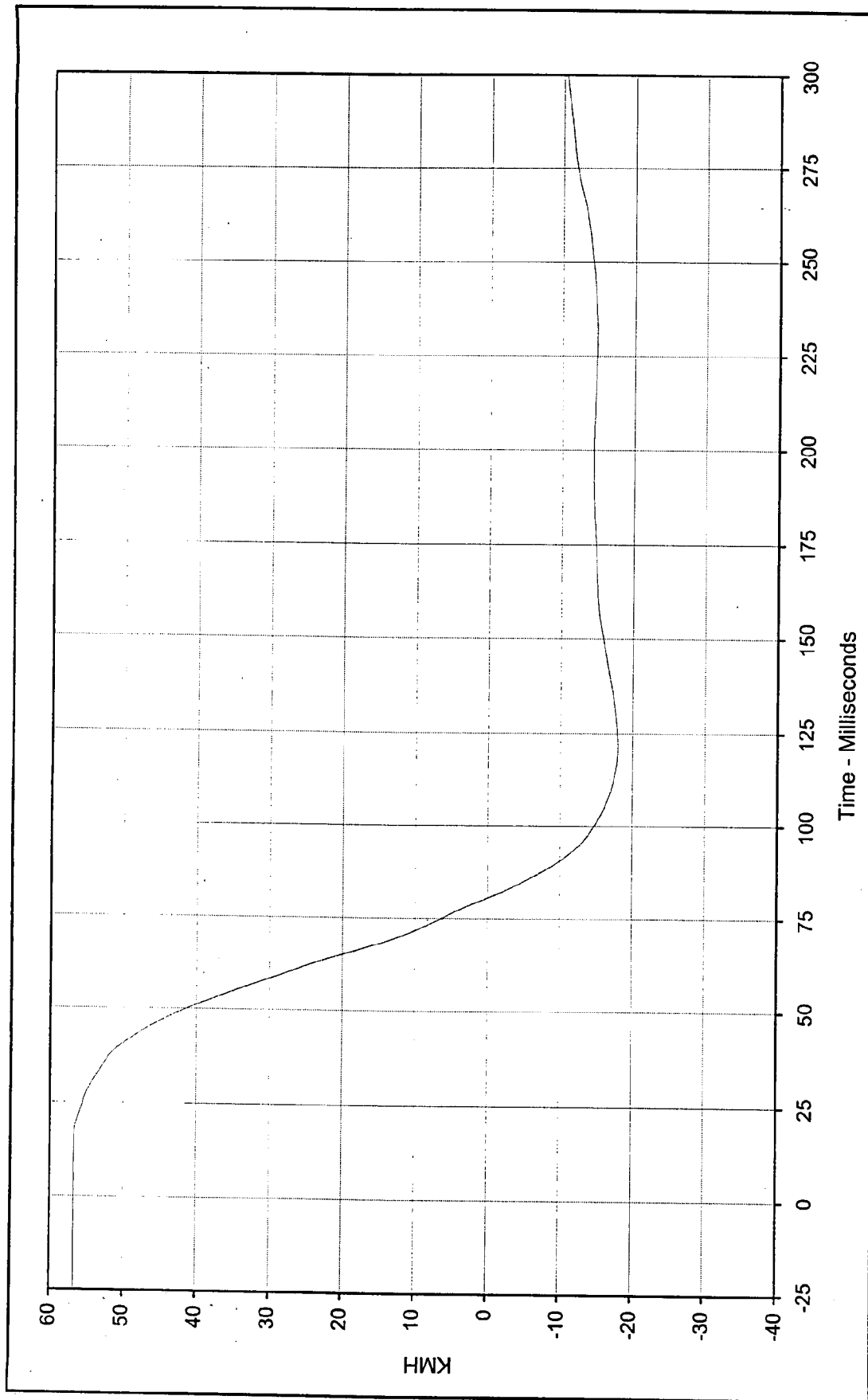
Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description:	Passenger Chest Primary X	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	4.0 at 267.5 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-49.2 at 64.9 Milliseconds			
SAE Filter Class:	180			
Date of Test:	12/7/99			
Curve Number:	FIL-057			





Curve Description: Passenger Chest Primary X Velocity

Maximum Value: 56.8 at 8.4 Milliseconds

Minimum Value: -18.0 at 120.9 Milliseconds

SAE Filter Class: 180

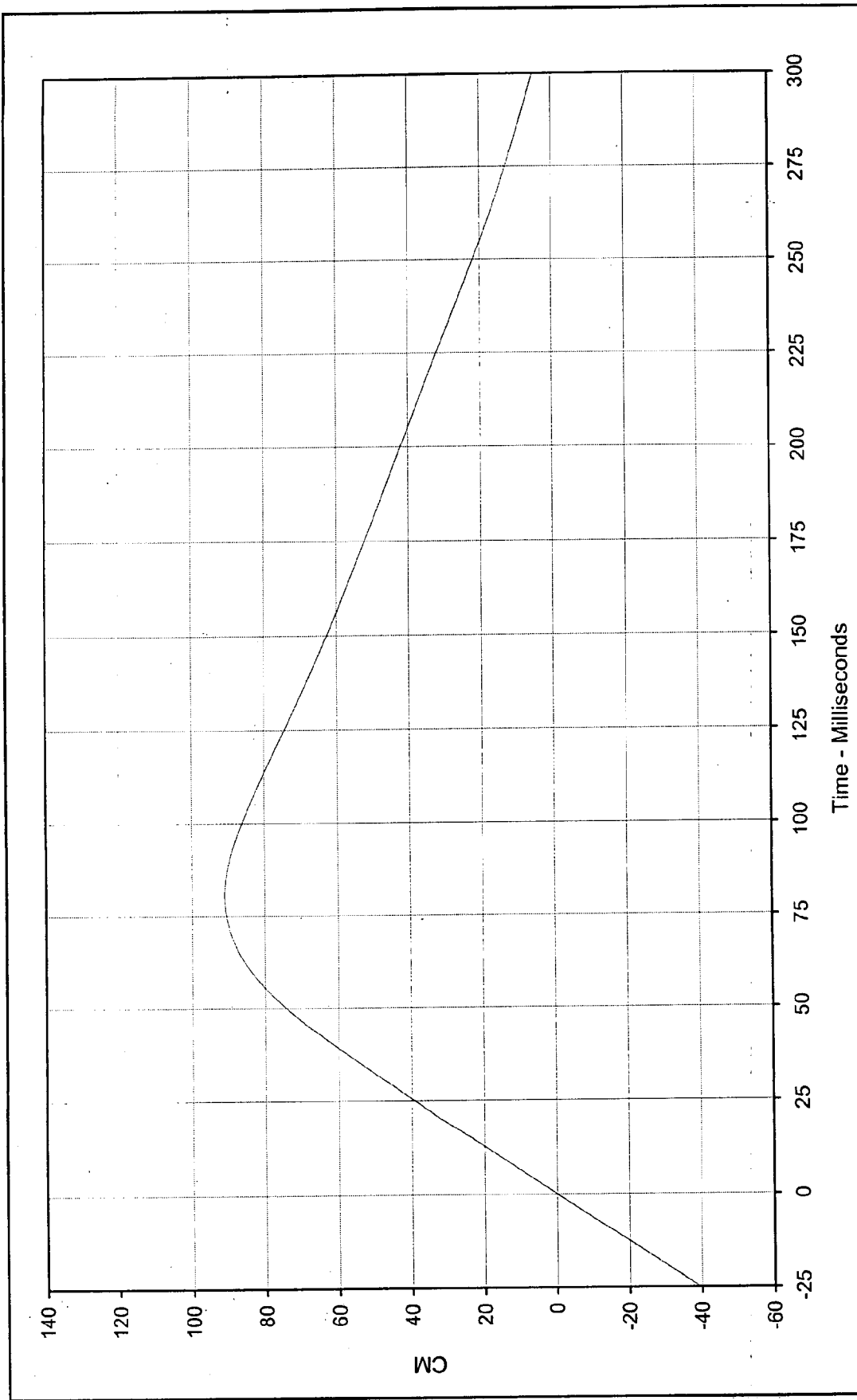
Date of Test: 12/7/99

Curve Number: IN1-057

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan



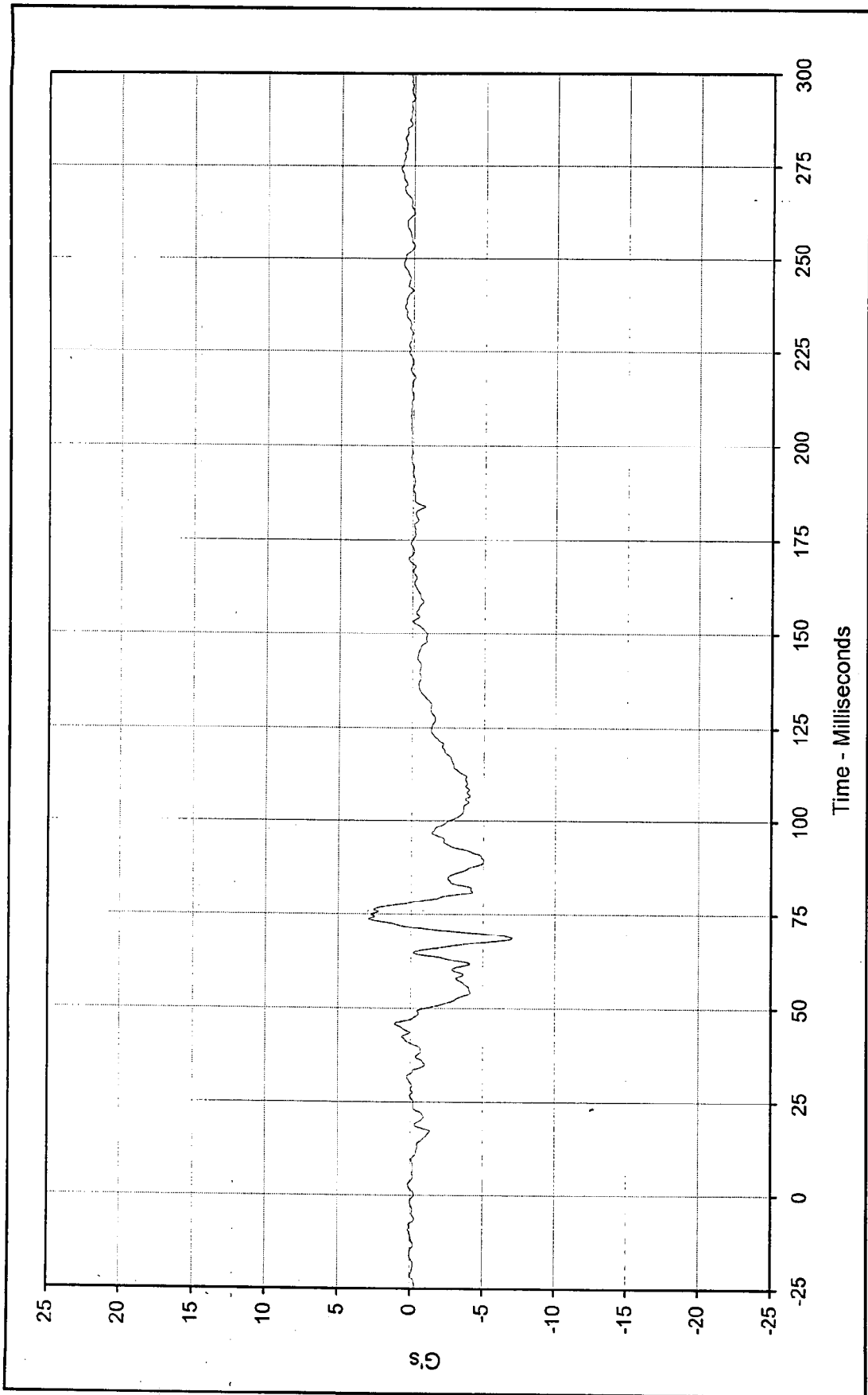


Curve Description: Passenger Chest Primary X Displ.
 Maximum Value: 91.1 at 80.4 Milliseconds
 Minimum Value: 0.0 at 0.0 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/7/99
 Curve Number: IN2-057

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

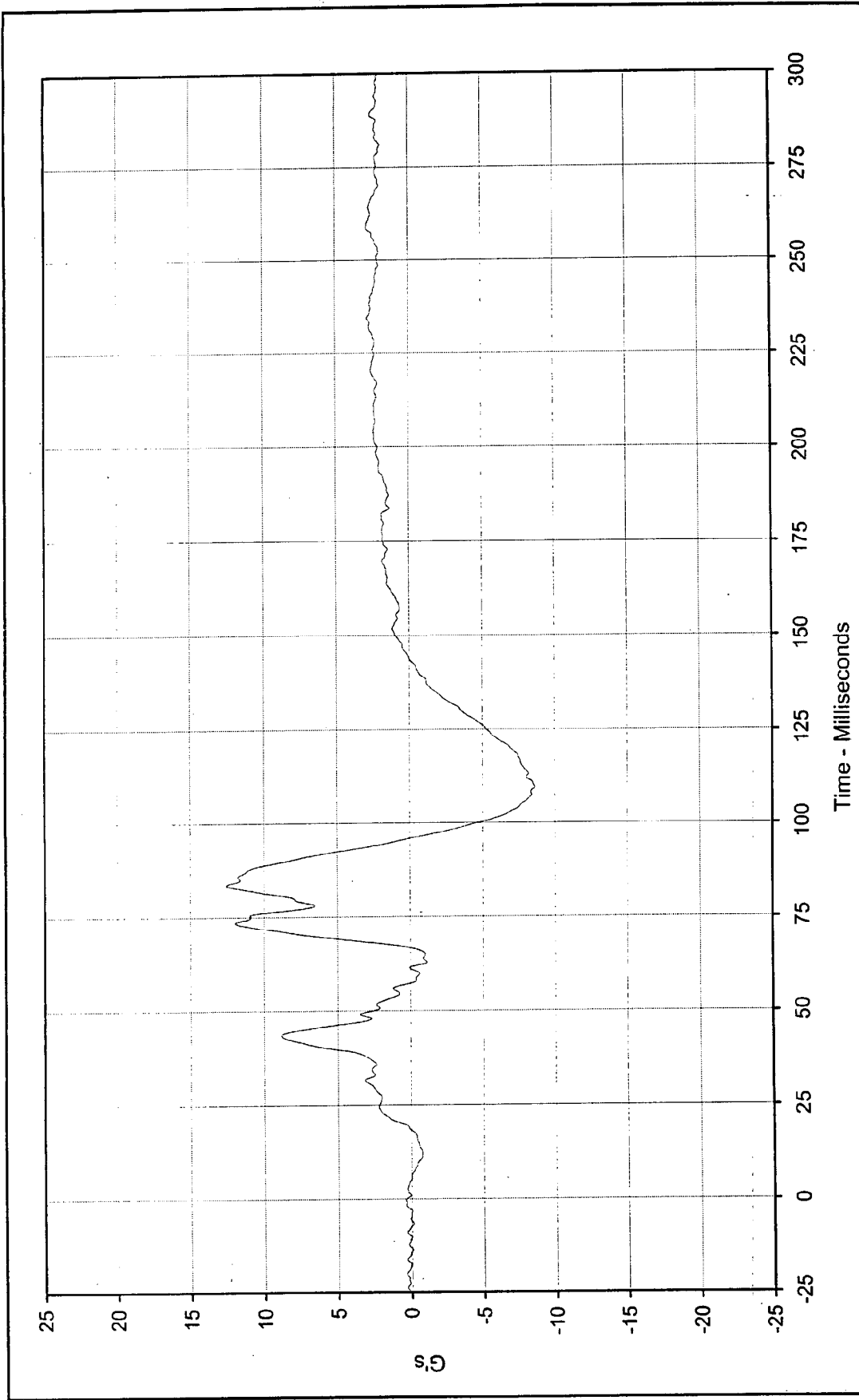
Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





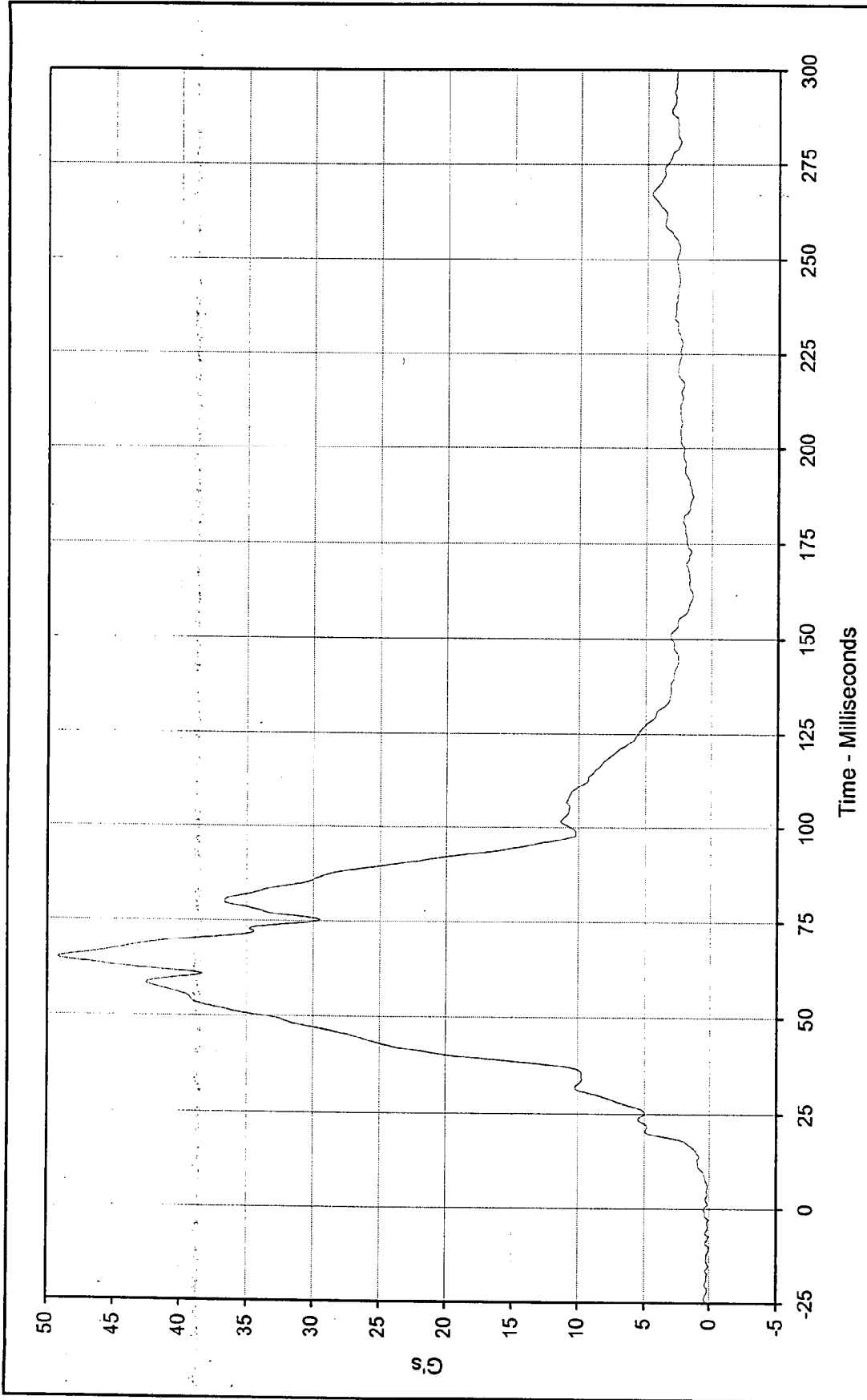
Curve Description:	Passenger Chest Primary Y	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	2.9 at 73.7 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-7.1 at 68.5 Milliseconds			
SAE Filter Class:	180			
Date of Test:	12/7/99			
Curve Number:	FIL-058			





Curve Description:	Passenger Chest Primary Z	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	12.6 at 83.3 milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-8.6 at 109.4 milliseconds			
SAE Filter Class:	180			
Date of Test:	12/7/99			
Curve Number:	FIL-059			

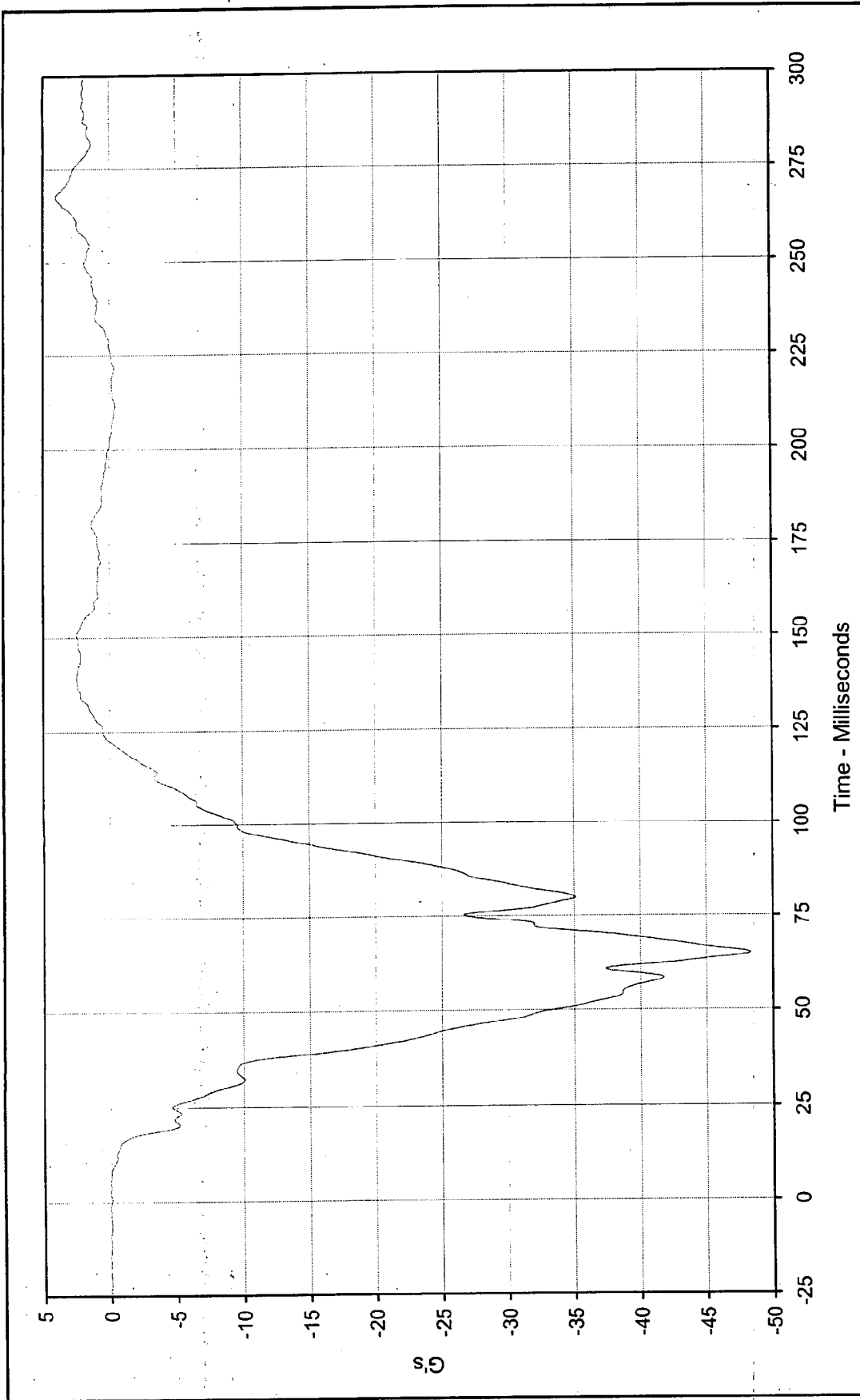




Curve Description: Passenger Chest Resultant Primary
 Maximum Value: 49.2 at 64.9 Milliseconds
 Minimum Value: 0.1 at 1.2 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/7/99
 Curve Number: RES-057

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

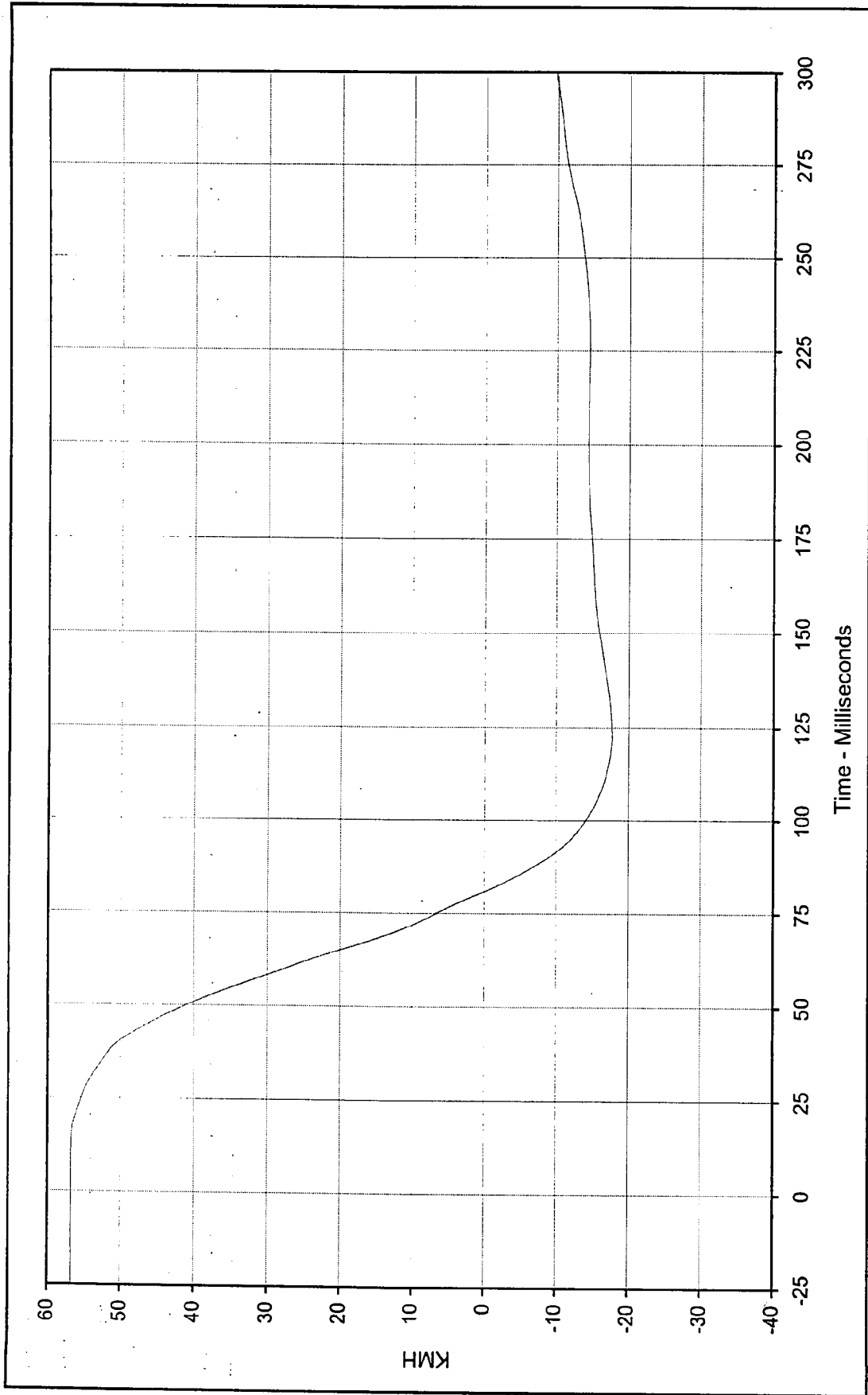




Curve Description: Passenger Chest Redundant X
 Maximum Value: 4.0 at 267.5 Milliseconds
 Minimum Value: -48.3 at 64.9 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/7/99
 Curve Number: FIL-060

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description: Passenger Chest Redundant X Velocity

Maximum Value: 56.8 at 6.7 Milliseconds

Minimum Value: -17.7 at 122.5 Milliseconds

SAE Filter Class: 180

Date of Test: 12/7/99

Curve Number: IN1-060

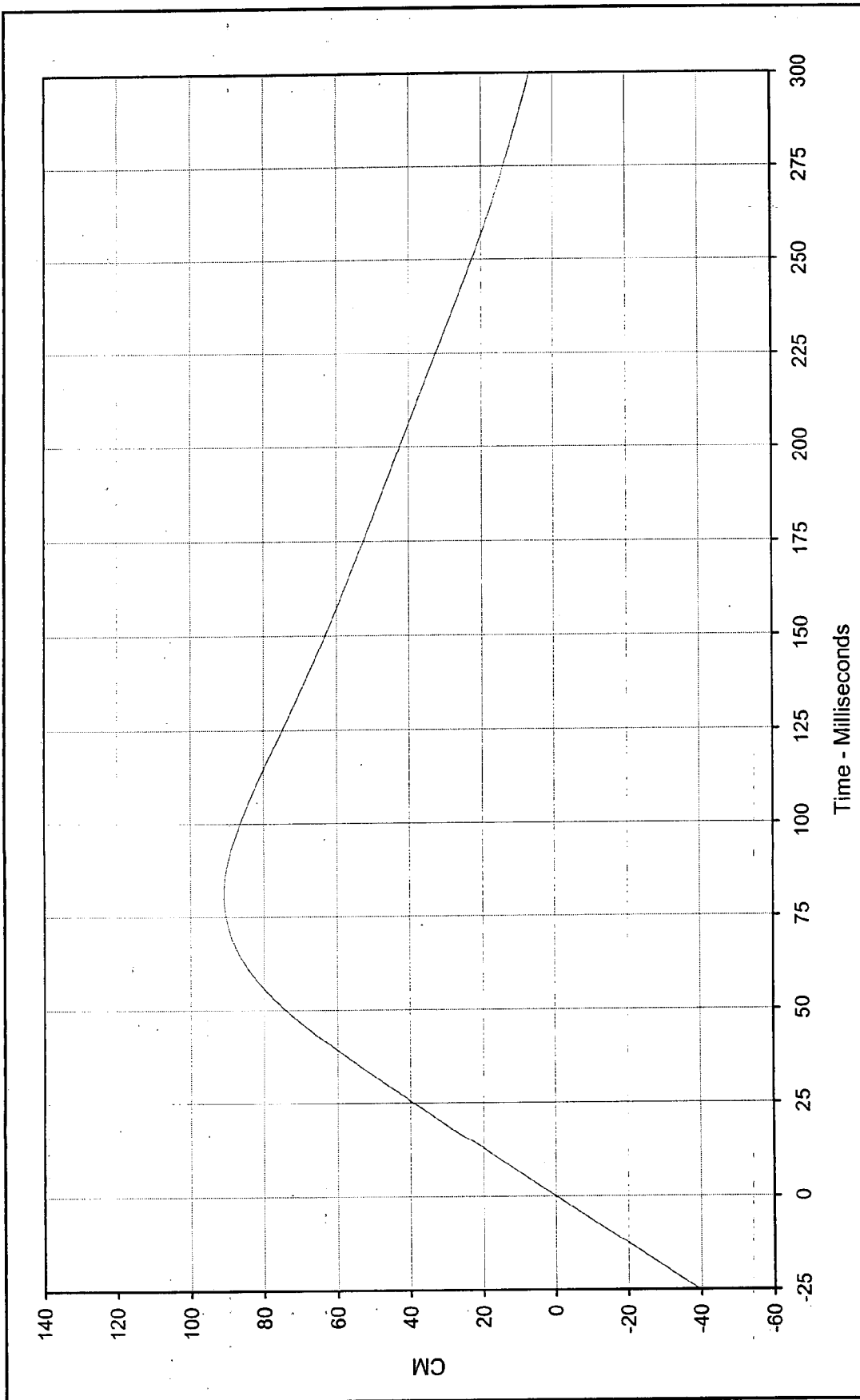
Test Program:

2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle:

2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description: Passenger Chest Redundant X Displ.

Maximum Value: 90.9 at 80.8 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

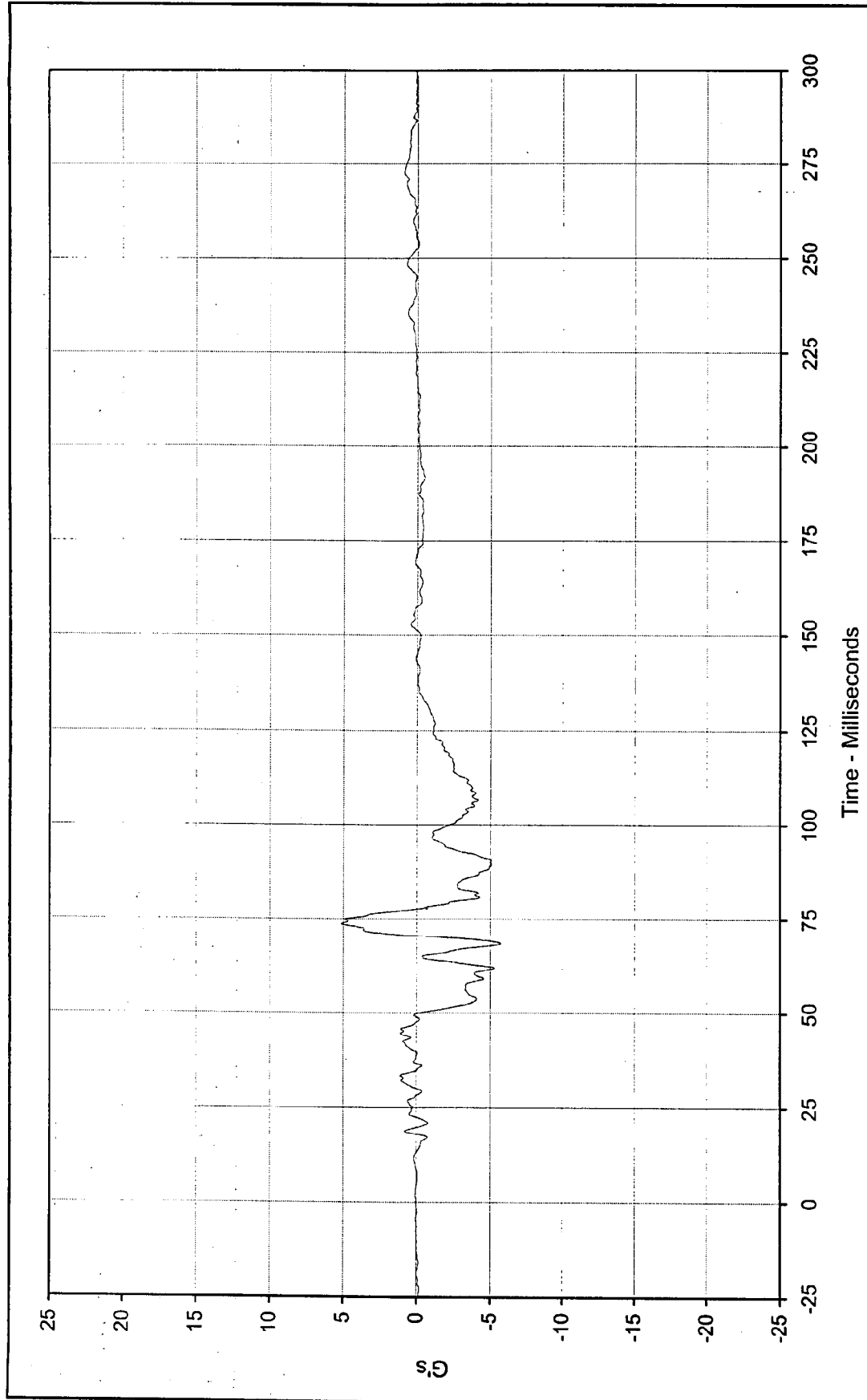
Date of Test: 12/7/99

Curve Number: IN2-060

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

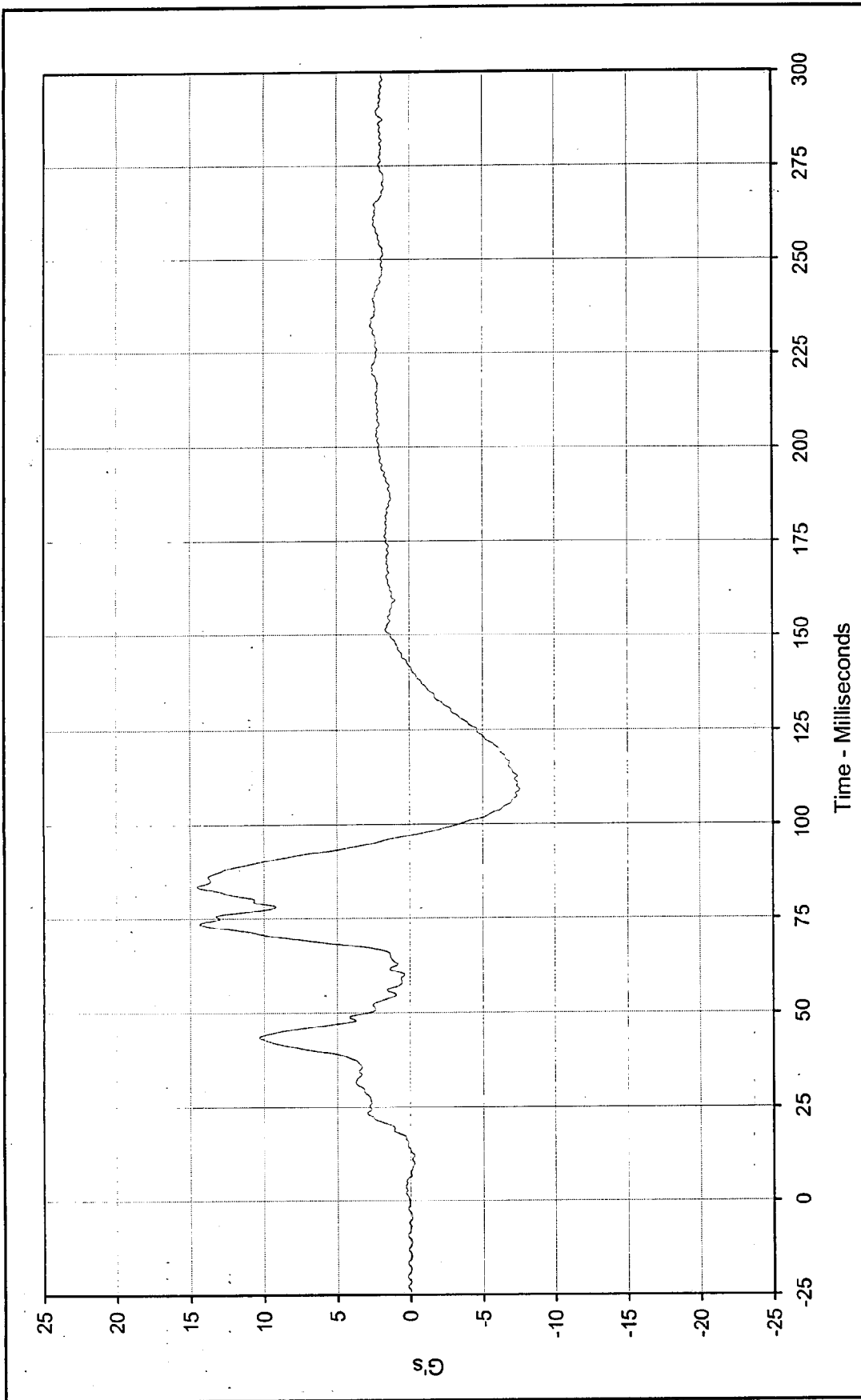




Curve Description:	Passenger Chest Redundant Y	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	5.1 at 73.7 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-5.8 at 68.4 Milliseconds			

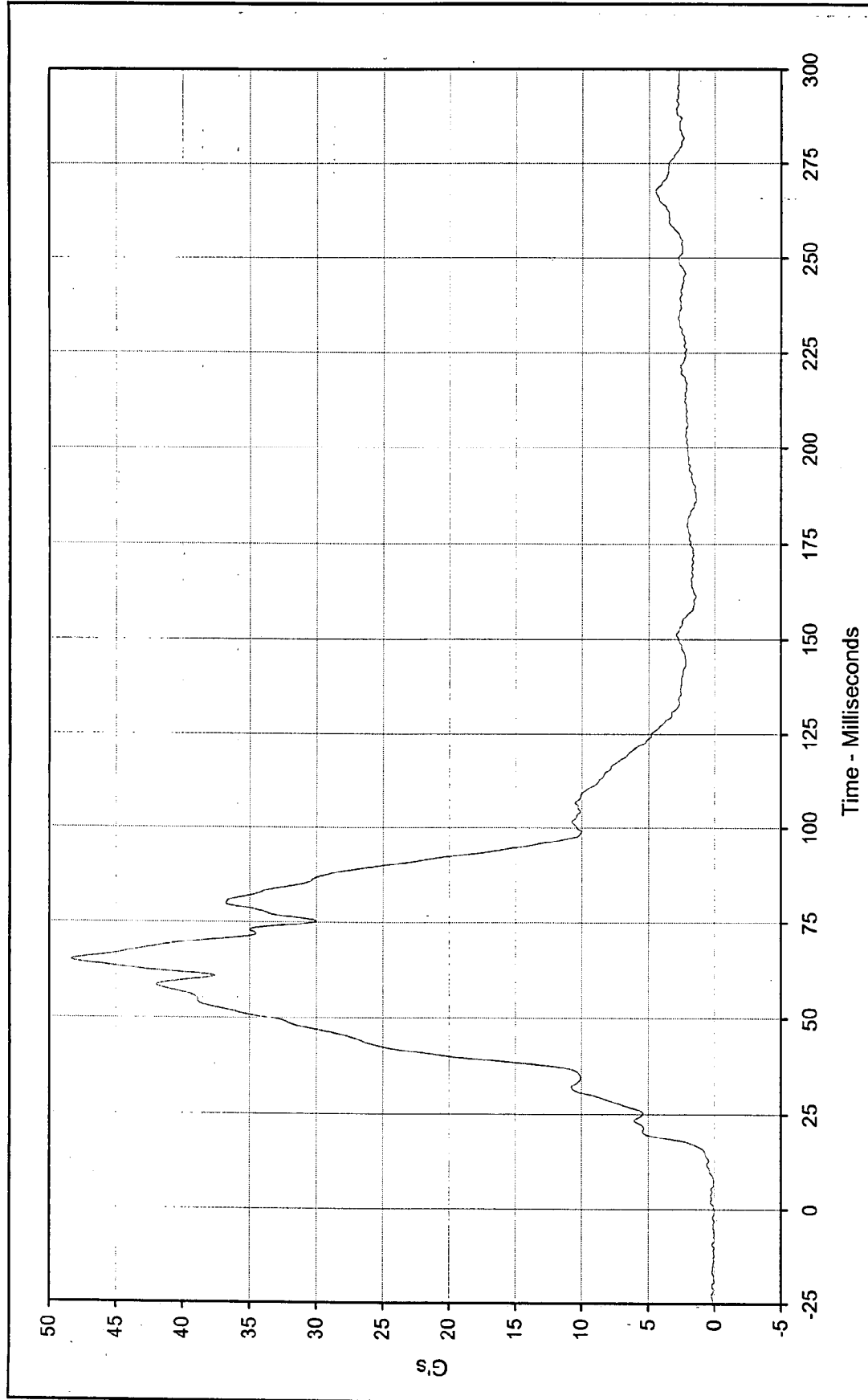


SAE Filter Class:	180
Date of Test:	12/7/99
Curve Number:	FIL-061



Curve Description:	Passenger Chest Redundant Z	Test Program:	2000 NHTSA 35 mph NCAP No.: MY5500
Maximum Value:	14.5 at 83.3 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan
Minimum Value:	-7.6 at 109.1 Milliseconds		
SAE Filter Class:	180		
Date of Test:	12/7/99		
Curve Number:	FIL-062		





Curve Description: Passenger Chest Resultant Redundant

Maximum Value: 48.3 at 64.9 milliseconds

Minimum Value: 0.1 at 0.0 milliseconds

SAE Filter Class: 180

Date of Test: 12/7/99

Curve Number: RES-060

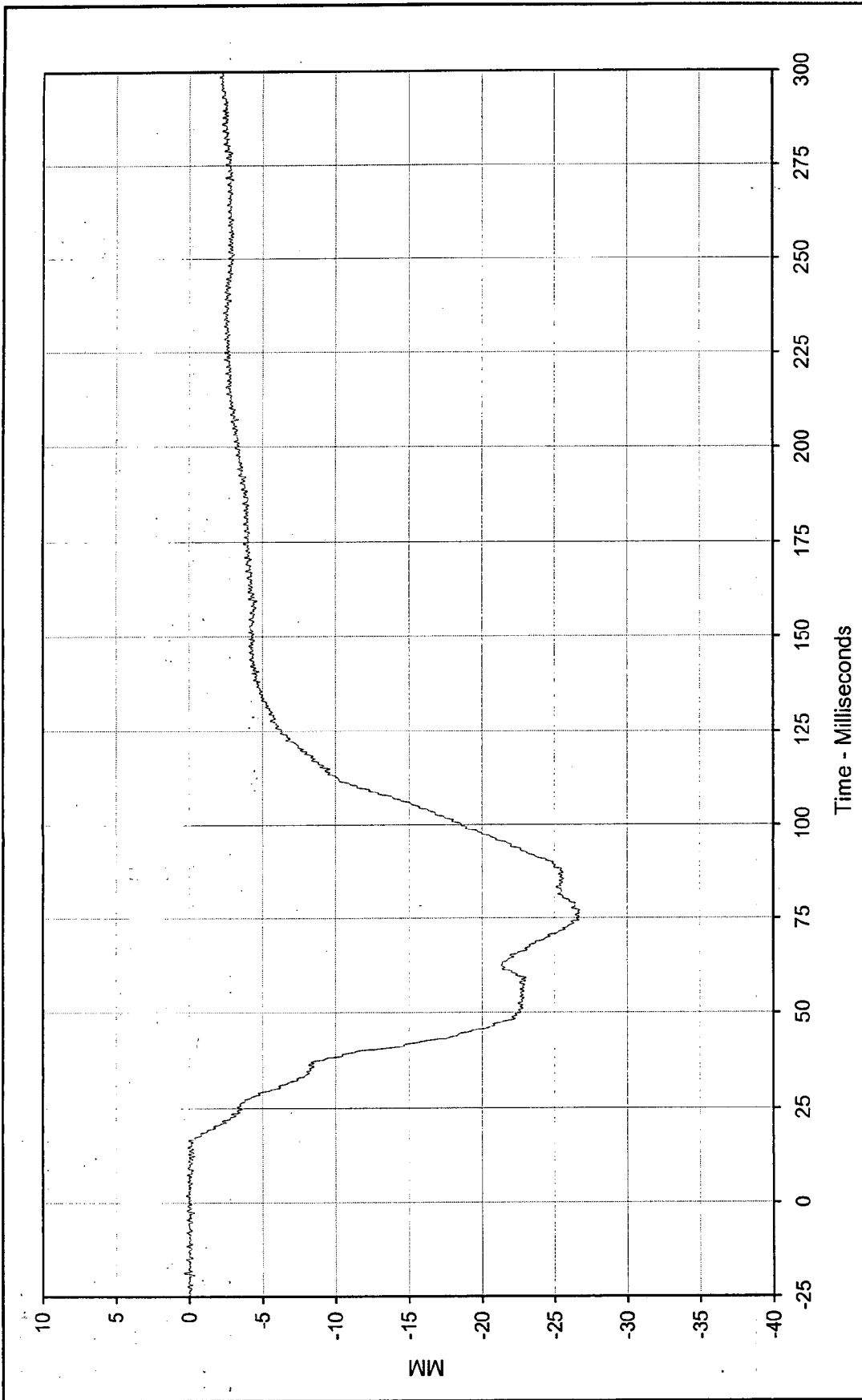
Test Program:

2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle:

2000 Subaru Legacy L AWD 4 Door Sedan

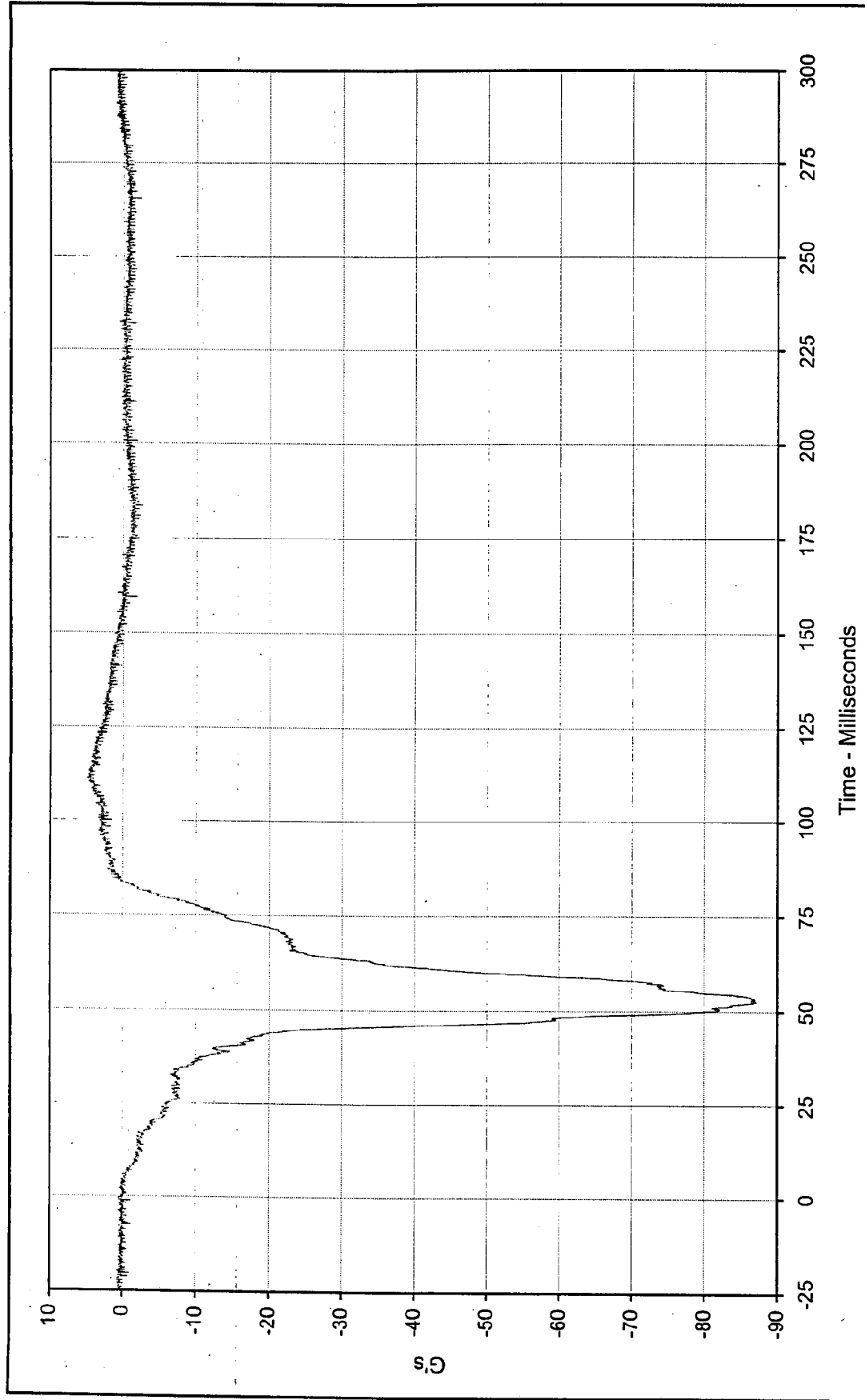




Curve Description: Passenger Chest Displacement X
 Maximum Value: 0.2 at 2.0 Milliseconds
 Minimum Value: -26.8 at 77.0 Milliseconds
 SAE Filter Class: 600
 Date of Test: 12/7/99
 Curve Number: FIL-063

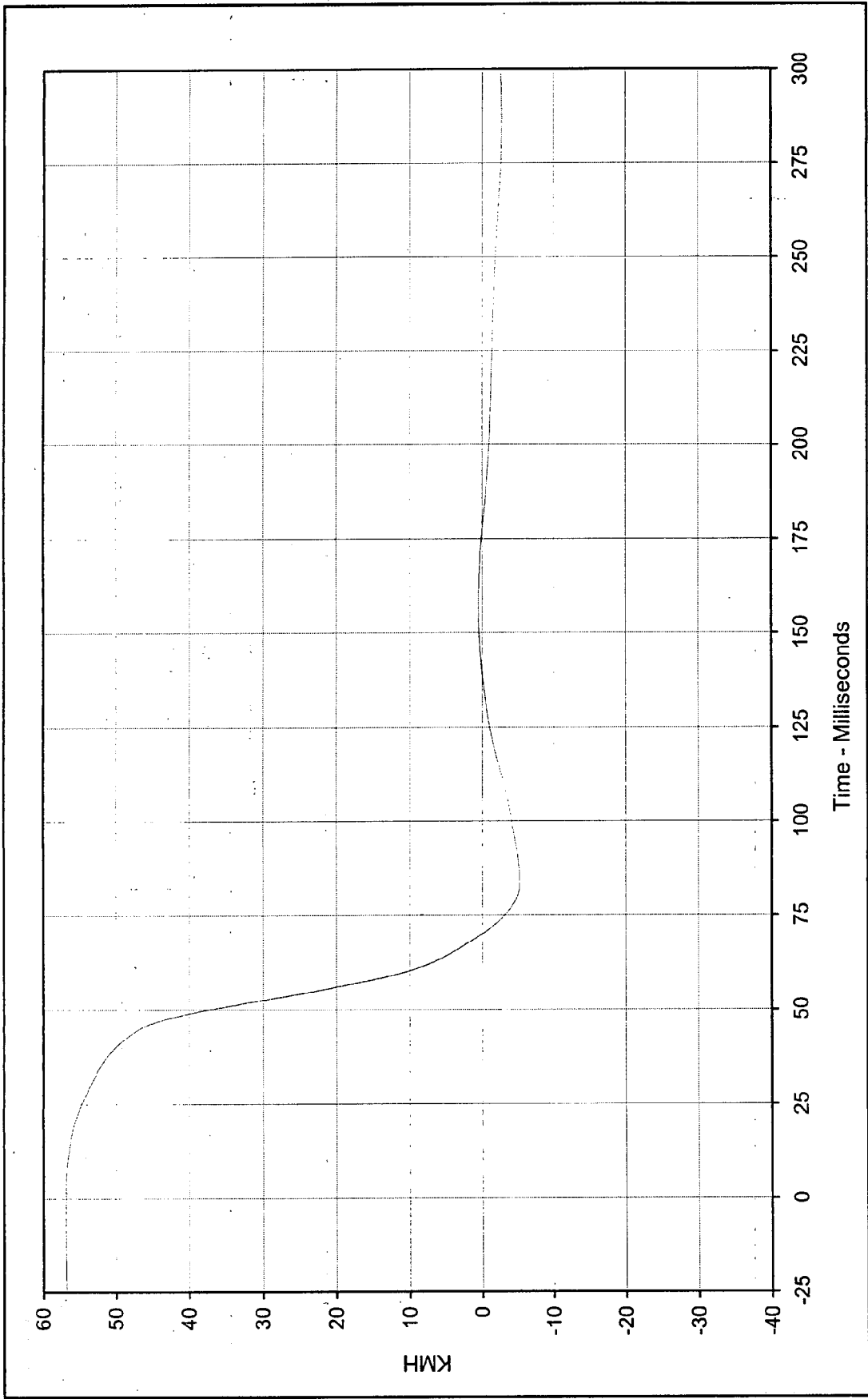
Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





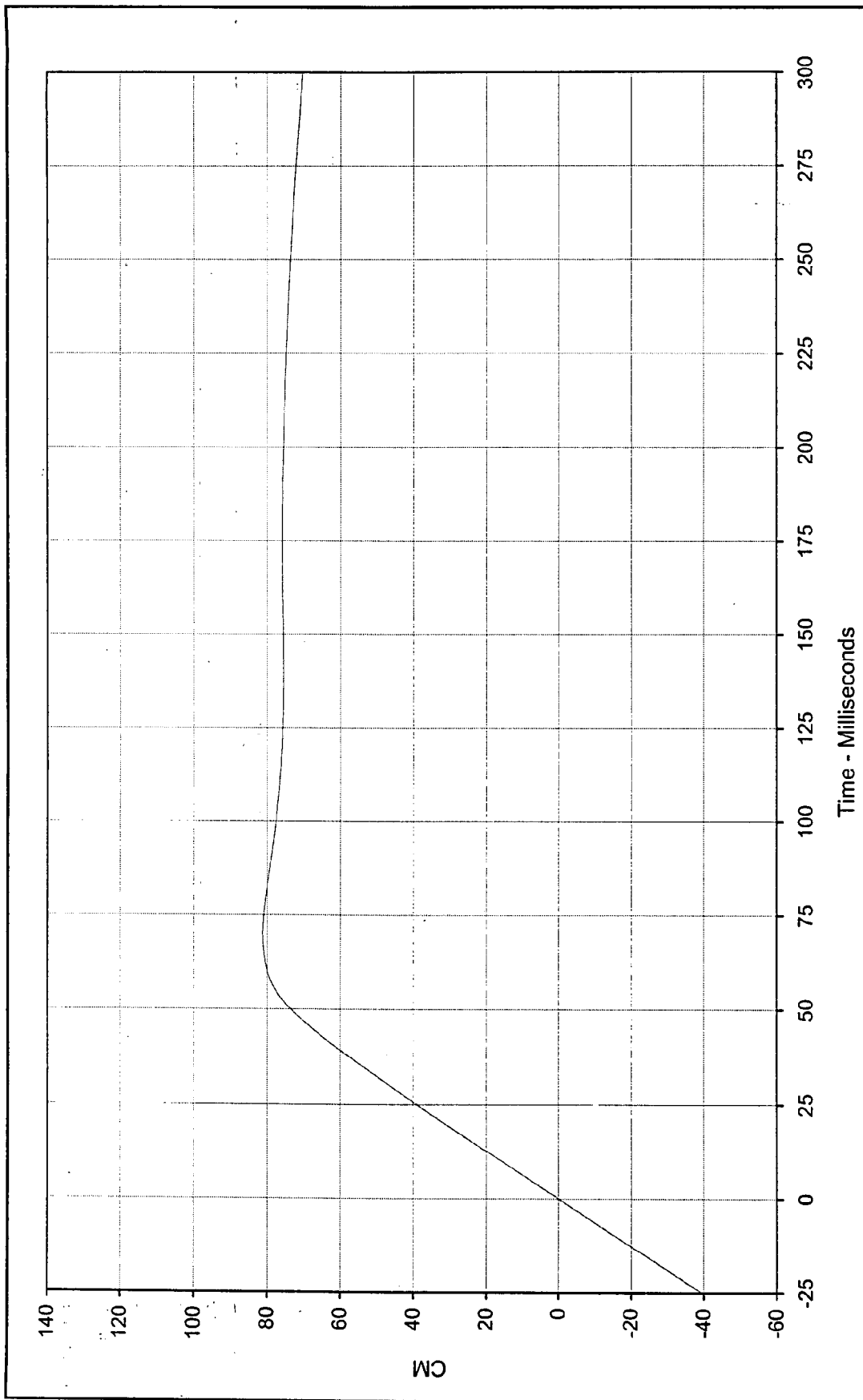
Curve Description:	Passenger Pelvis X	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	5.0 at 111.1 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-87.2 at 52.6 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	12/7/99			
Curve Number:	FIL-064			





Curve Description:	Passenger Pelvis X Velocity	Test Program:	2000 NHTSA 35 mph NCAP No.: MY5500
Maximum Value:	56.9 at 0.0 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan
Minimum Value:	-5.2 at 83.7 Milliseconds		
SAE Filter Class:	180		
Date of Test:	12/7/99		
Curve Number:	IN1-064		

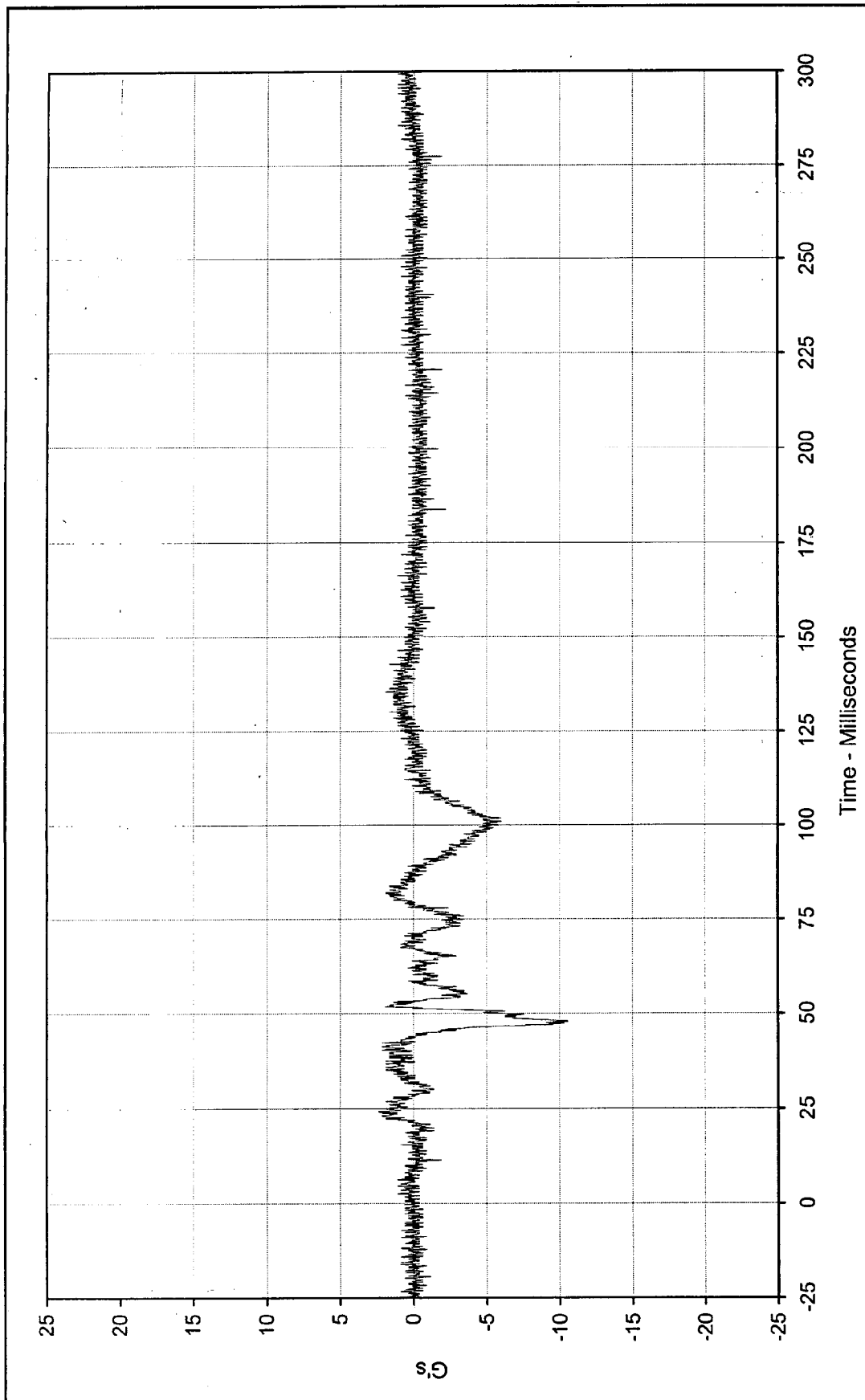




Curve Description: Passenger Pelvis X Displ.
 Maximum Value: 81.1 at 70.0 Milliseconds
 Minimum Value: 0.0 at 0.0 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/7/99
 Curve Number: IN2-064

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan



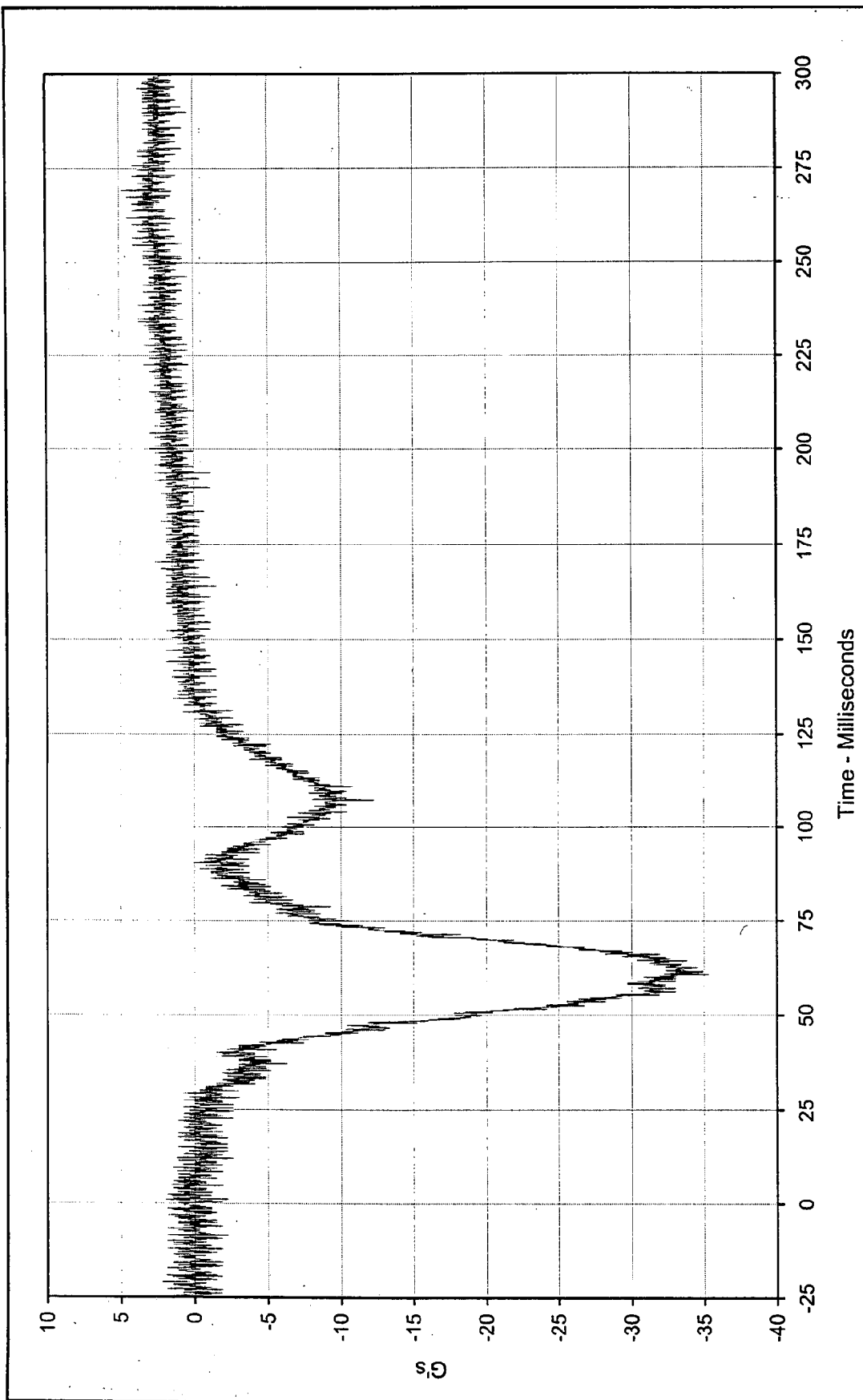


Curve Description:	Passenger Pelvis Y			Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	2.4	at	24.1	Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan
Minimum Value:	-10.6	at	47.8	Milliseconds		
SAE Filter Class:	1000					
Date of Test:	12/7/99					
Curve Number:	FIL-065					



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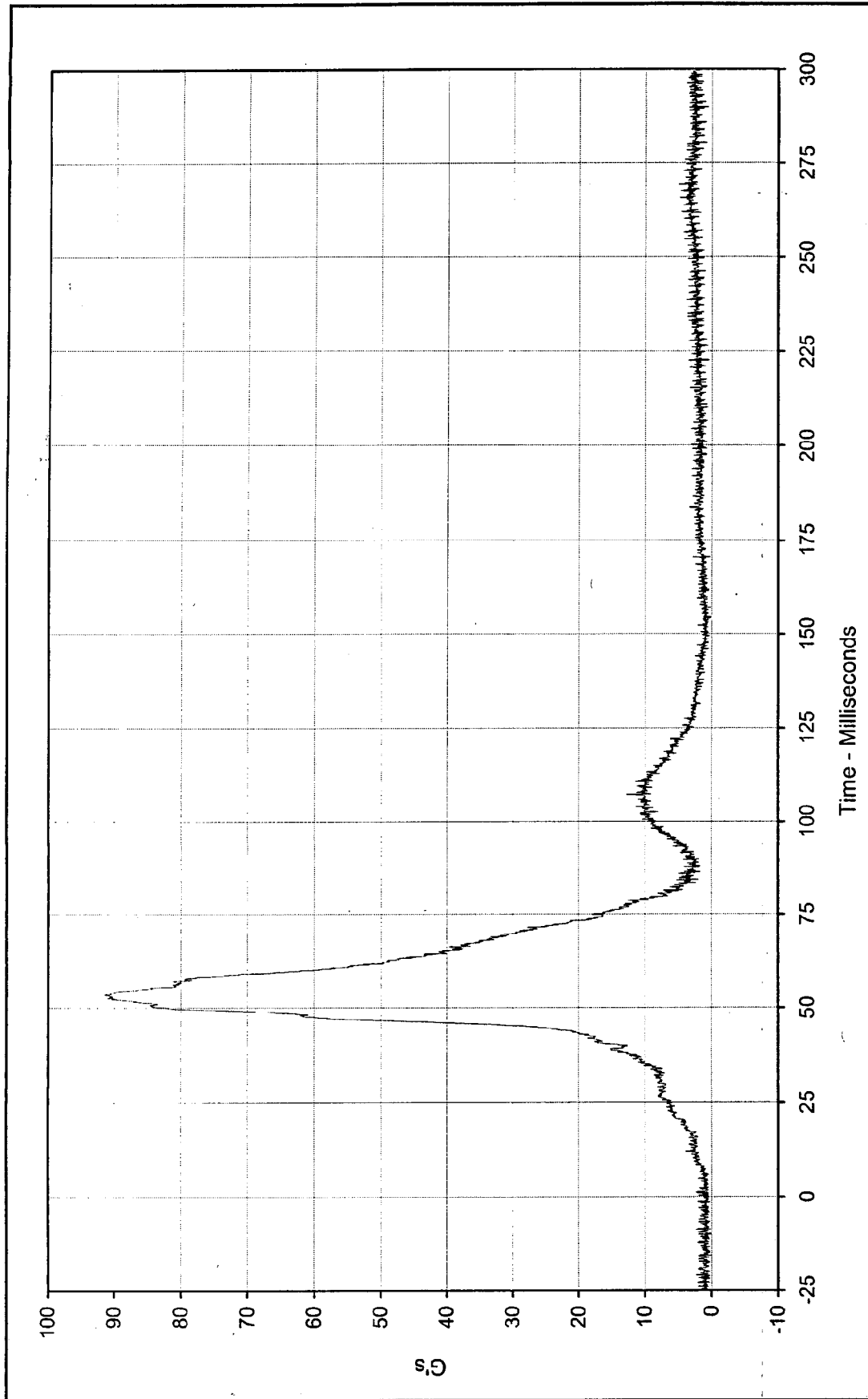




Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

Curve Description: Passenger Pelvis Z
 Maximum Value: 4.8 at 269.3 Milliseconds
 Minimum Value: -35.3 at 60.6 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 12/7/99
 Curve Number: FIL-066



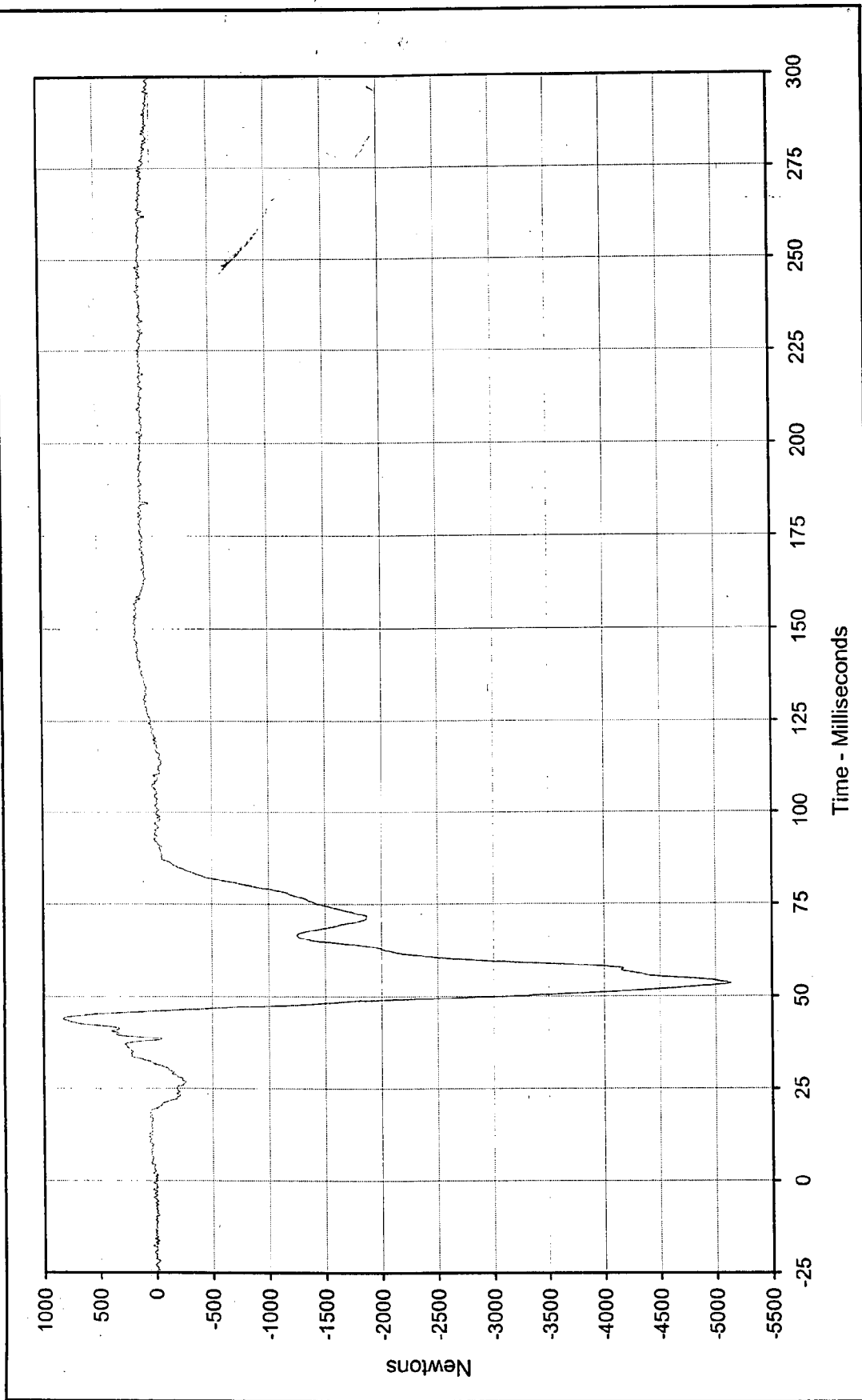


B-100

Curve Description:	Passenger Pelvis Resultant	Test Program:	2000 NHTSA 35 mph NCAP No.: MY5500
Maximum Value:	91.5 at 53.4 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan
Minimum Value:	0.1 at 154.3 Milliseconds		
SAE Filter Class:	1000		
Date of Test:	12/7/99		
Curve Number:	RES-064		



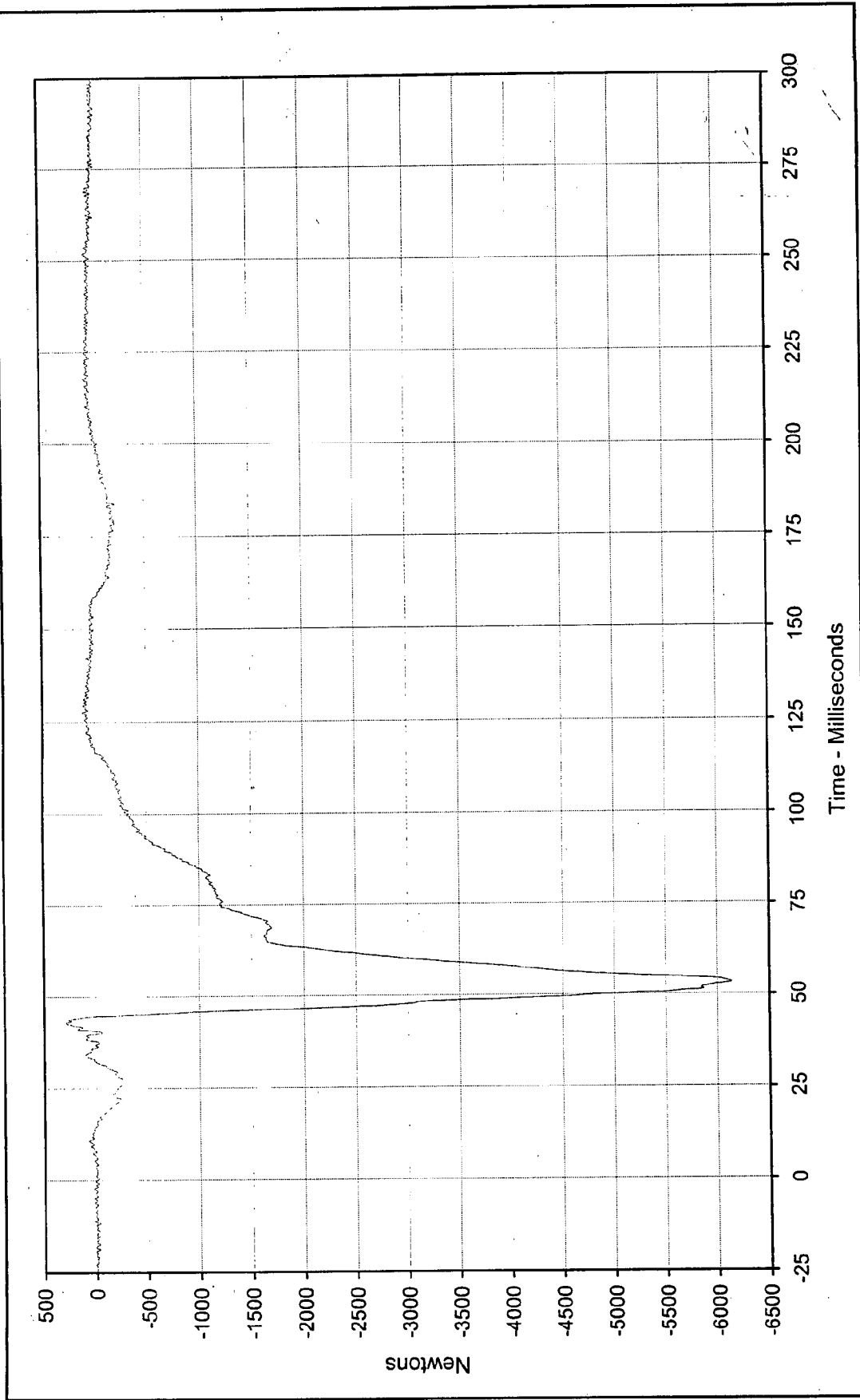
KAR20001-04



Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

Curve Description: Passenger Left Femur Force
 Maximum Value: 827.1 at 44 Milliseconds
 Minimum Value: -5140.1 at 53.4 Milliseconds
 SAE Filter Class: 600
 Date of Test: 12/7/99
 Curve Number: FIL-067

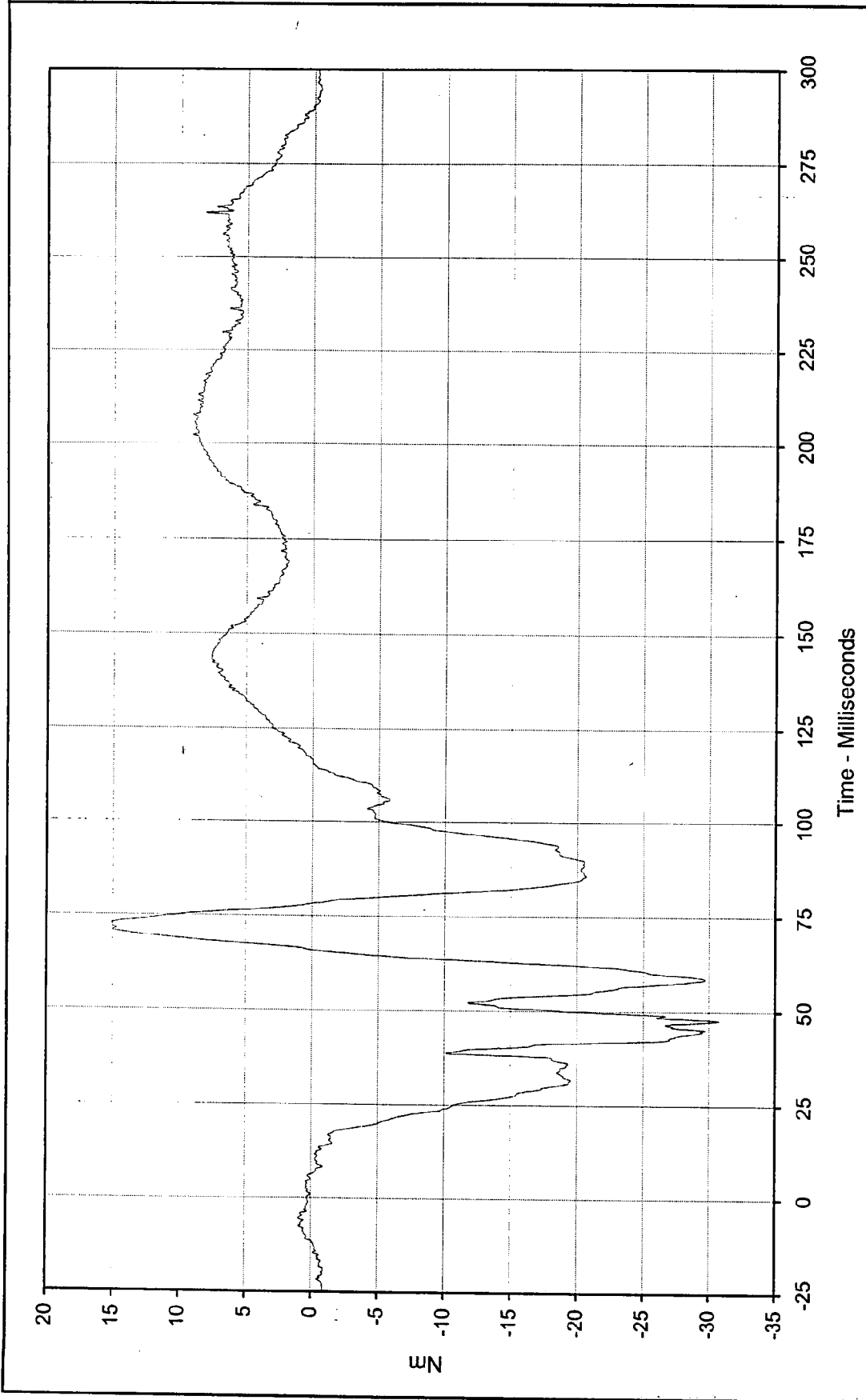




Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan



Curve Description: Passenger Right Femur Force
 Maximum Value: 290.1 at 42.9 Milliseconds
 Minimum Value: -6134.5 at 53.3 Milliseconds
 SAE Filter Class: 600
 Date of Test: 12/7/99
 Curve Number: FIL-068



Curve Description: Passenger Left Upper Tibia Moment X

Maximum Value: 15.1 at 15.1 Milliseconds

Minimum Value: -30.7 at 30.7 Milliseconds

SAE Filter Class: 600

Date of Test: 12/7/99

Curve Number: FIL-069

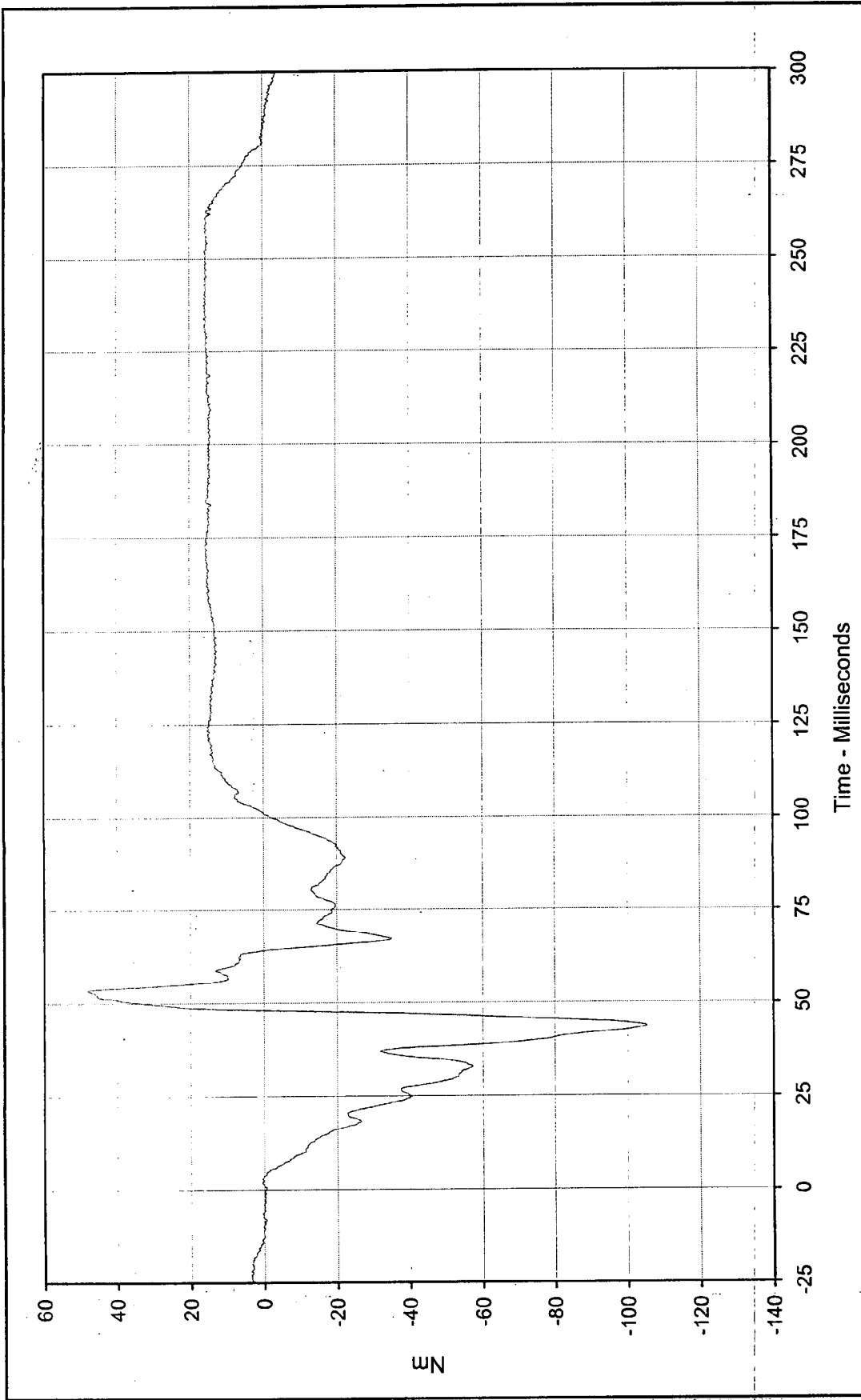
Test Program:

2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle:

2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description: Passenger Left Upper Tibia Moment Y

Maximum Value: 48.0 at 53.3 Milliseconds

Minimum Value: -105.5 at 43.7 Milliseconds

SAE Filter Class: 600

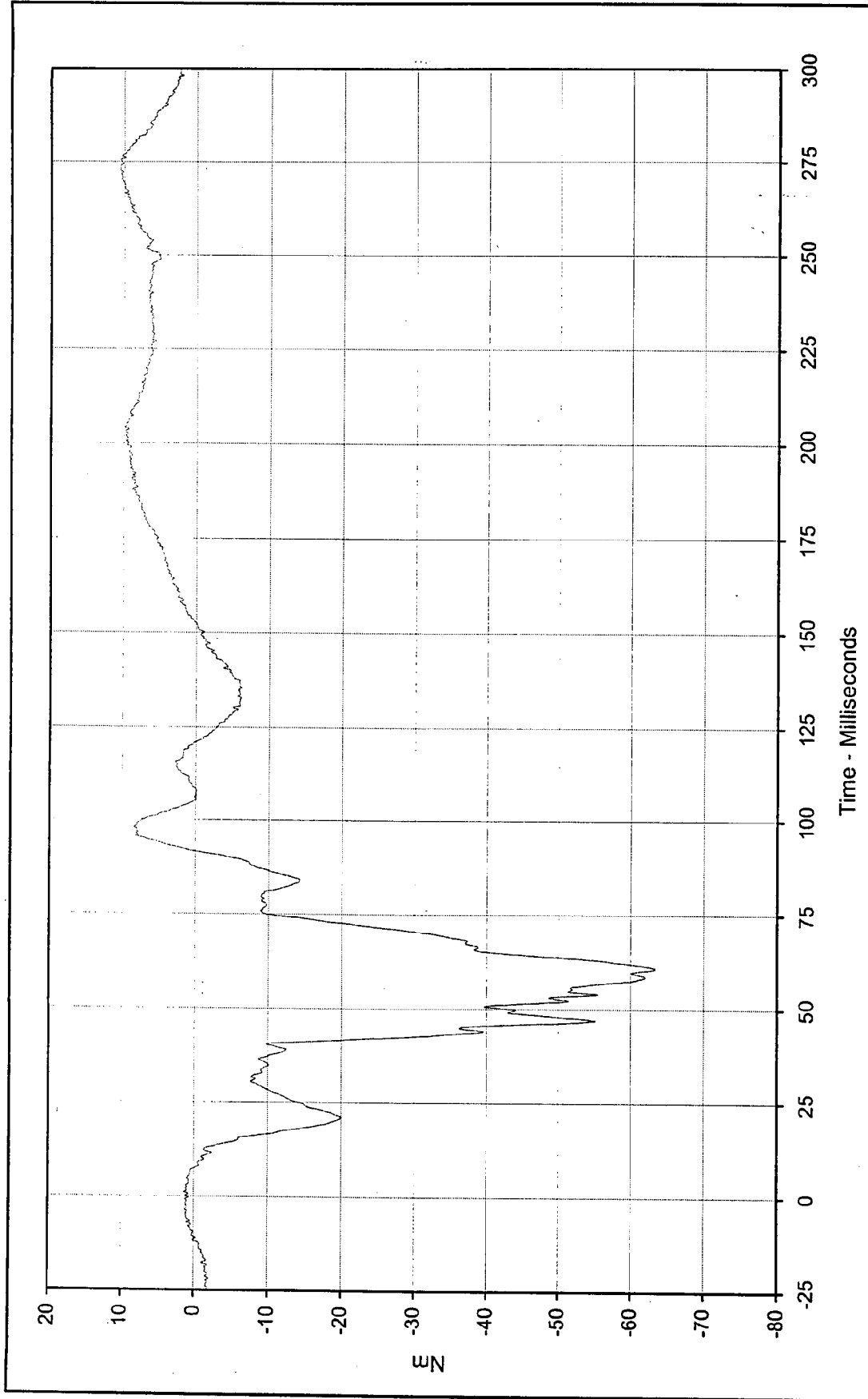
Date of Test: 12/7/99

Curve Number: FIL-070

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description: Passenger Right Upper Tibia Moment X

Maximum Value: 10.6 at 272.7 Milliseconds

Minimum Value: -63.4 at 60.8 Milliseconds

SAE Filter Class: 600

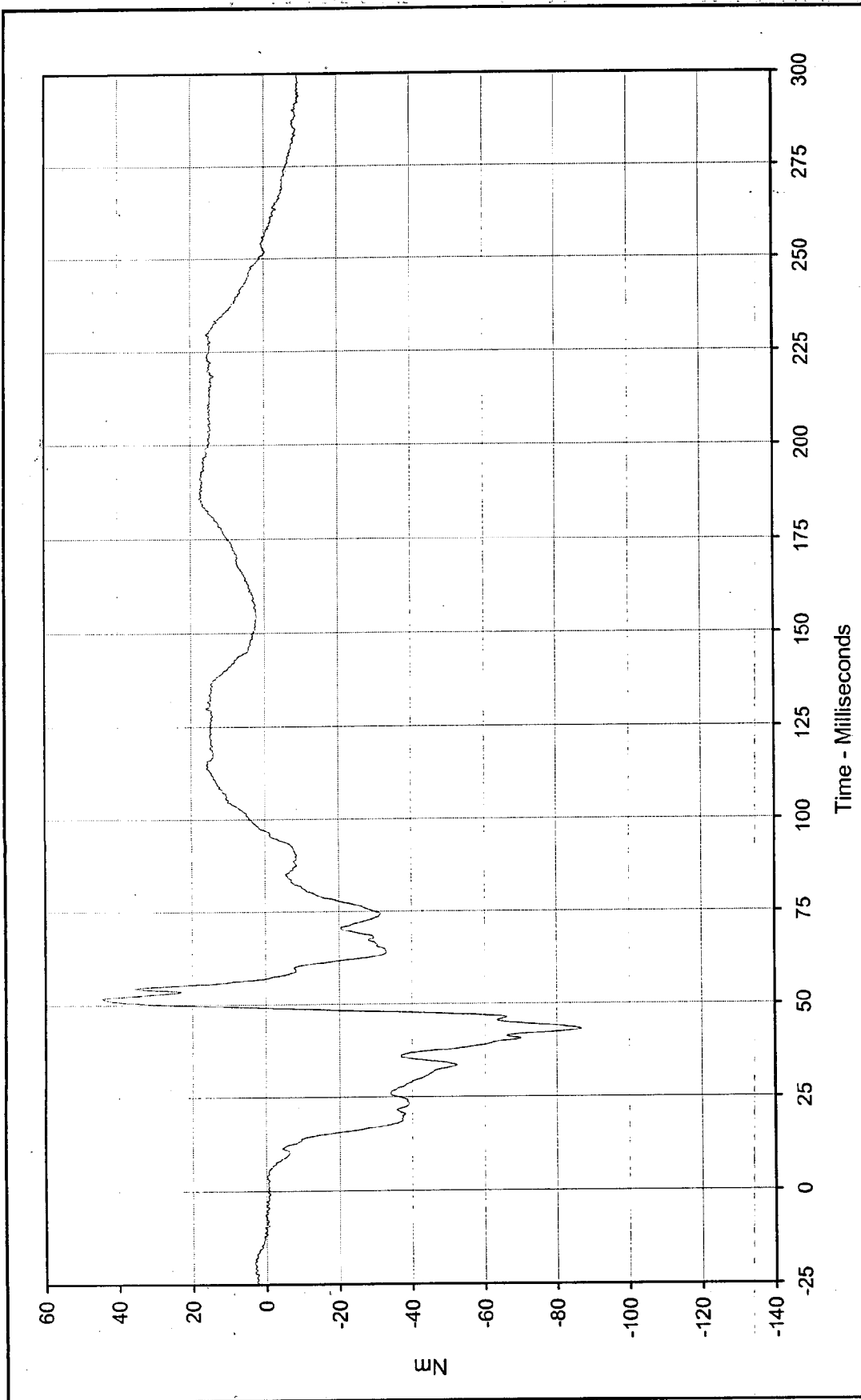
Date of Test: 12/7/99

Curve Number: FIL-071

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description: Passenger Right Upper Tibia Moment Y

Maximum Value: 44.5 at 51.6 Milliseconds

Minimum Value: -86.8 at 43.1 Milliseconds

SAE Filter Class: 600

Date of Test: 12/7/99

Curve Number: FIL-072

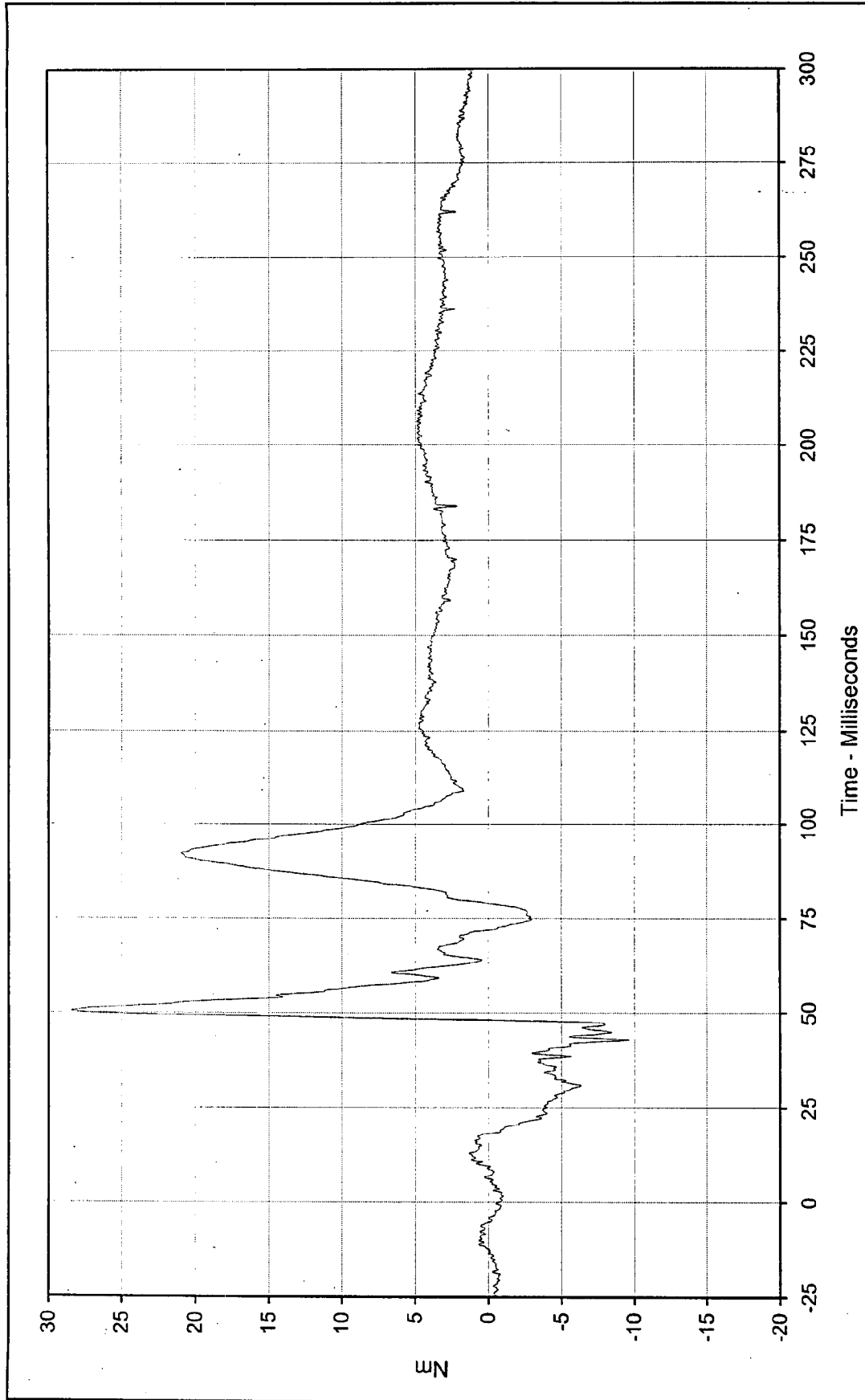
Test Program:

2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle:

2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description: Passenger Left Lower Tibia Moment X

Maximum Value: 28.4 at 50.4 Milliseconds

Minimum Value: -9.6 at 42.8 Milliseconds

SAE Filter Class: 600

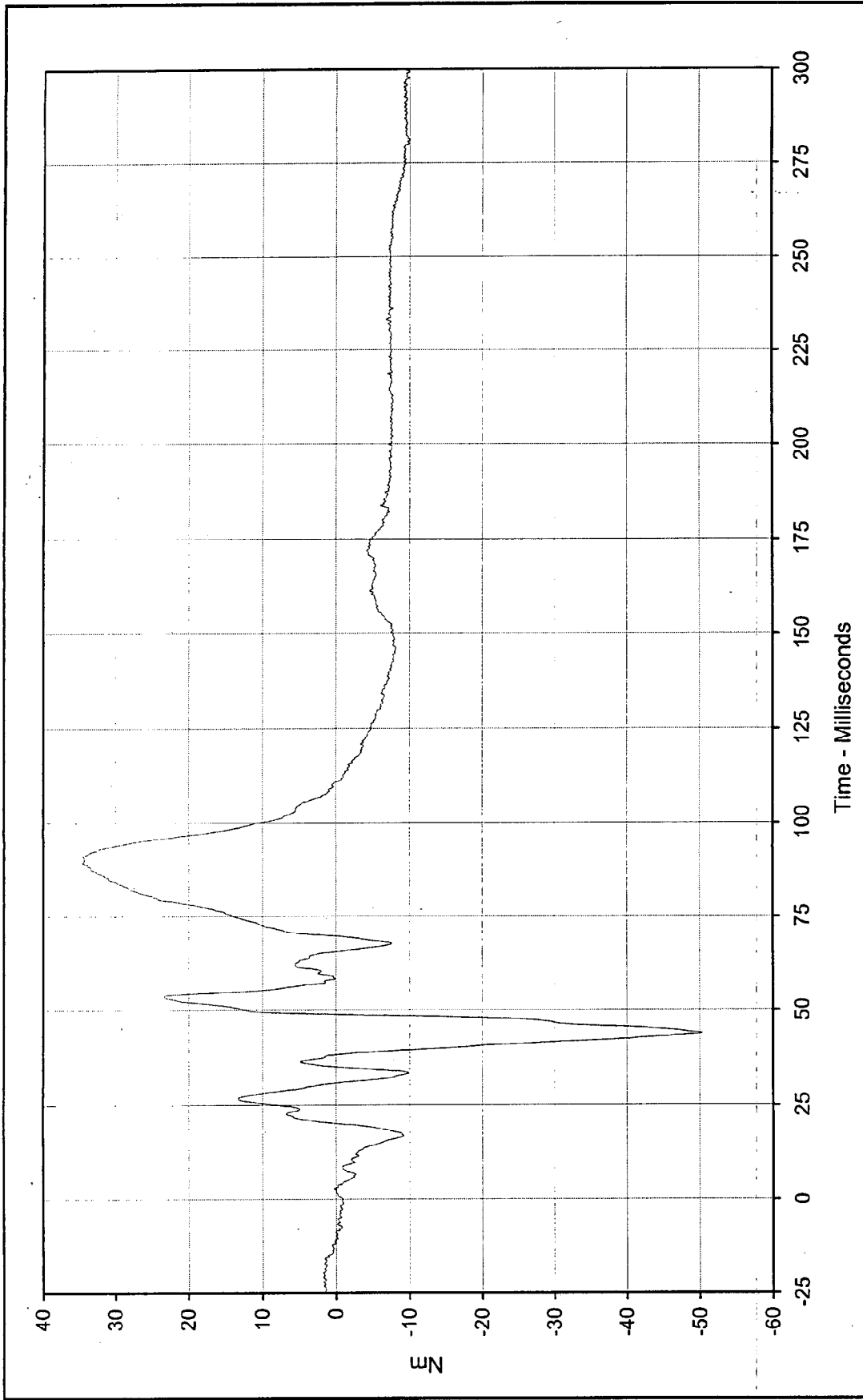
Date of Test: 12/7/99

Curve Number: FIL-073

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

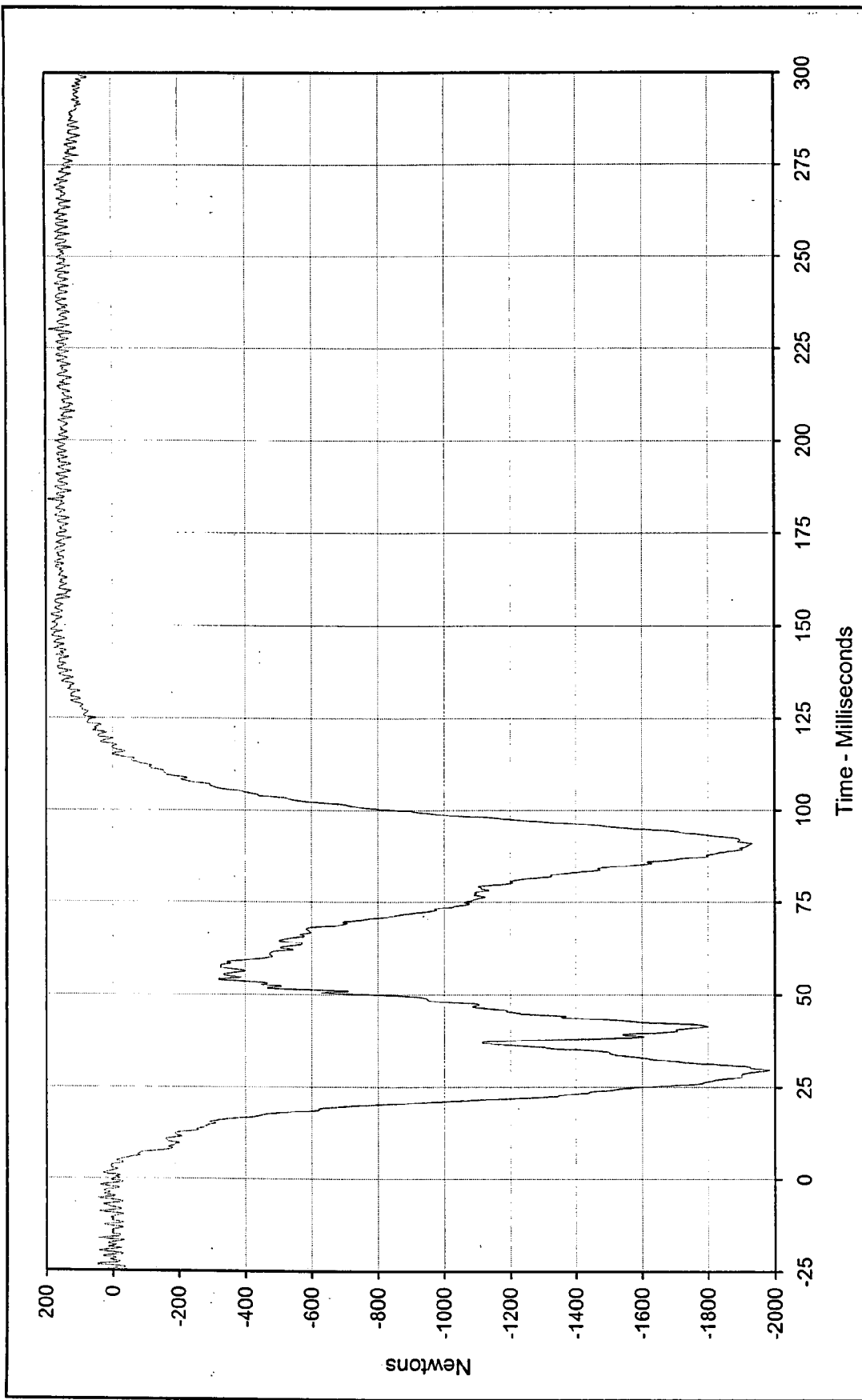
Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description: Passenger Left Lower Tibia Moment Y	Test Program: 2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value: 34.6 at 89.1 Milliseconds	Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value: -50.4 at 43.7 Milliseconds		
SAE Filter Class: 600		
Date of Test: 12/7/99		
Curve Number: FIL-074		

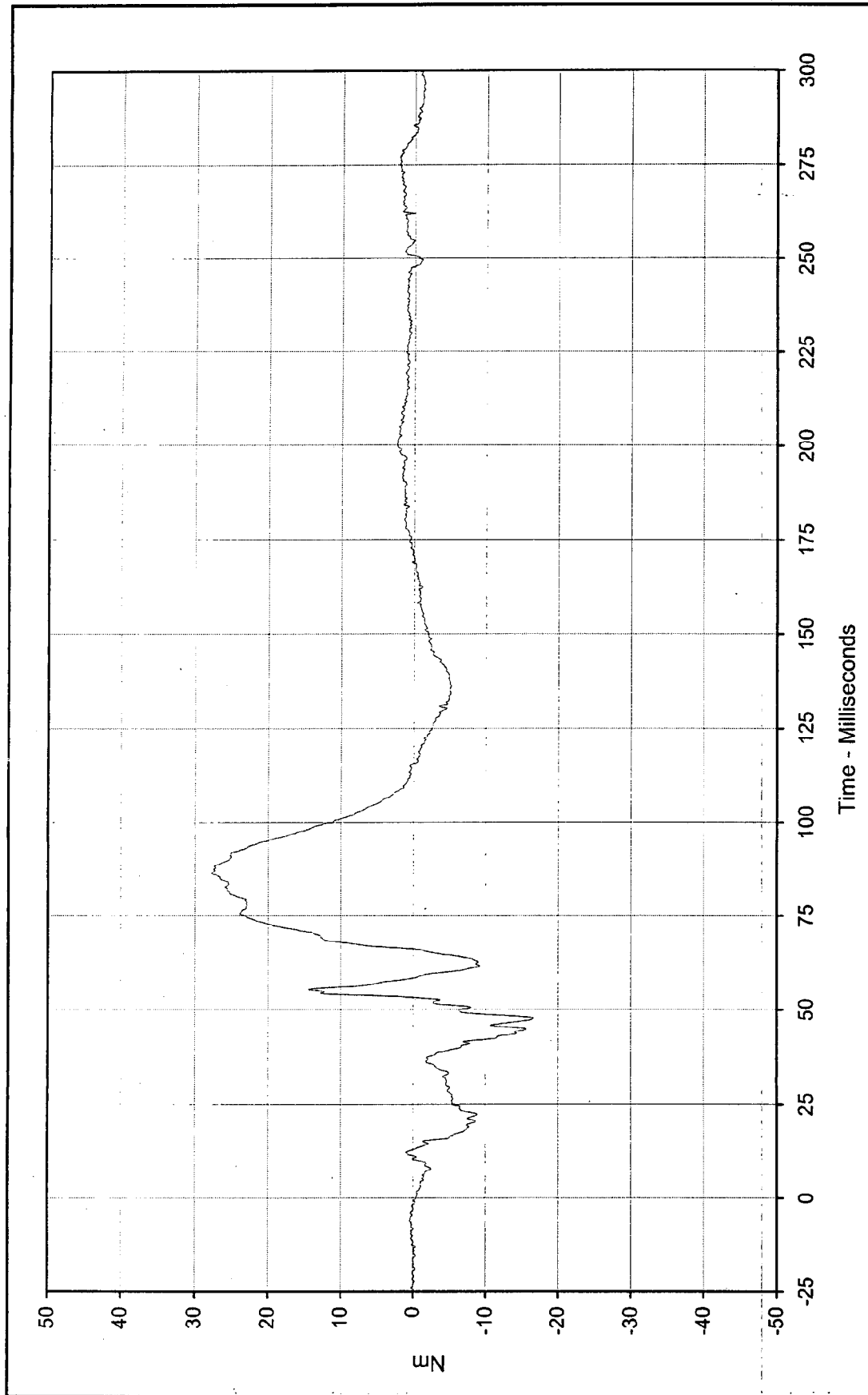




Curve Description:	Passenger Left Lower Tibia Force Z	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	192.6 at 183.8 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-1985.0 at 29.7 Milliseconds			



SAE Filter Class:	600
Date of Test:	12/7/99
Curve Number:	FIL-075



Curve Description: Passenger Right Lower Tibia Moment X

Maximum Value: 27.8 at 86.1 Milliseconds

Minimum Value: -16.6 at 47.7 Milliseconds

SAE Filter Class: 600

Date of Test: 12/7/99

Curve Number: FIL-076

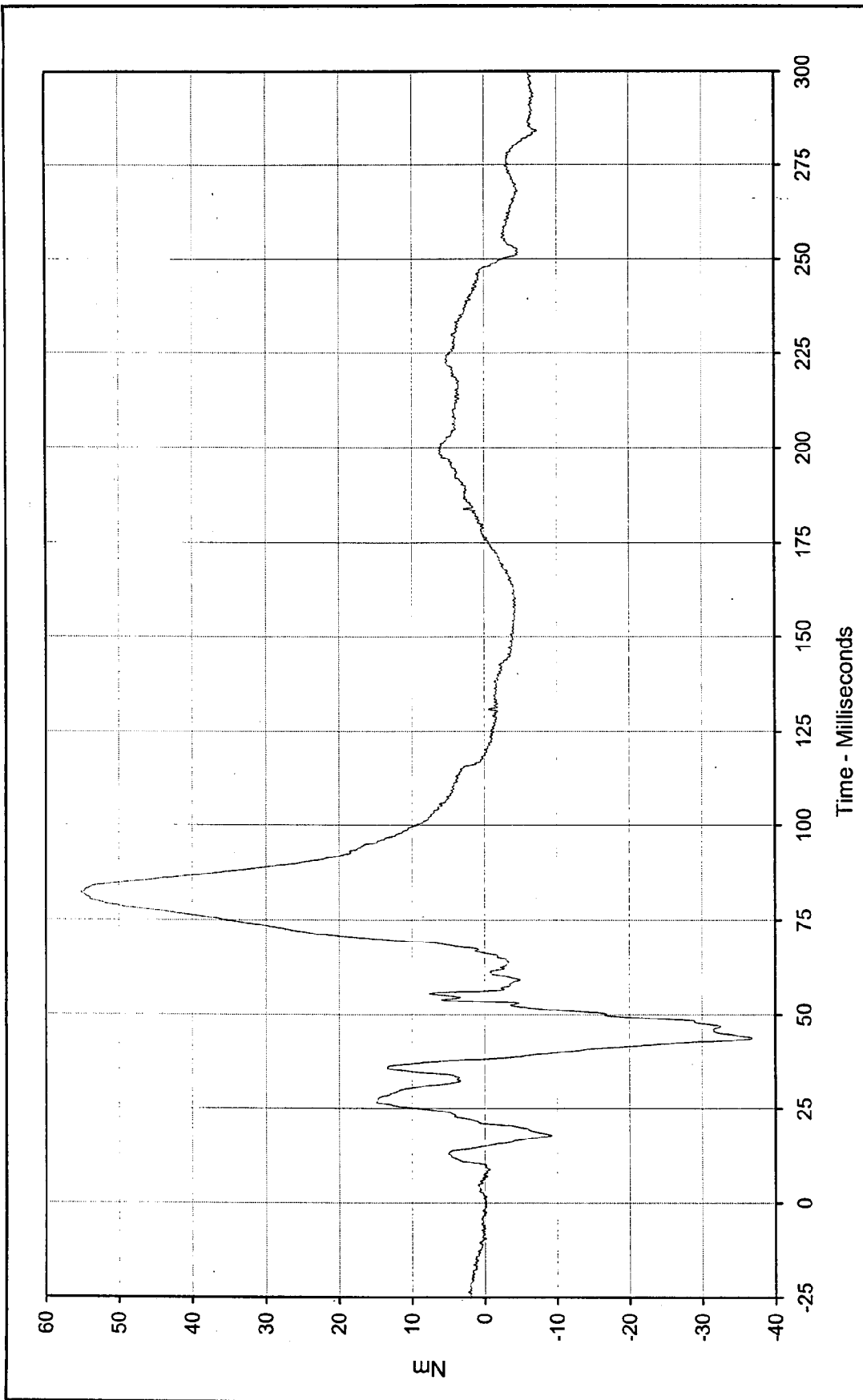
Test Program:

Test Vehicle:

2000 NHTSA 35 mph NCAP No.: MY5500

2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description: Passenger Right Lower Tibia Moment Y

Maximum Value: 55.3 at 82.2 Milliseconds

Minimum Value: -36.9 at 43.9 Milliseconds

SAE Filter Class: 600

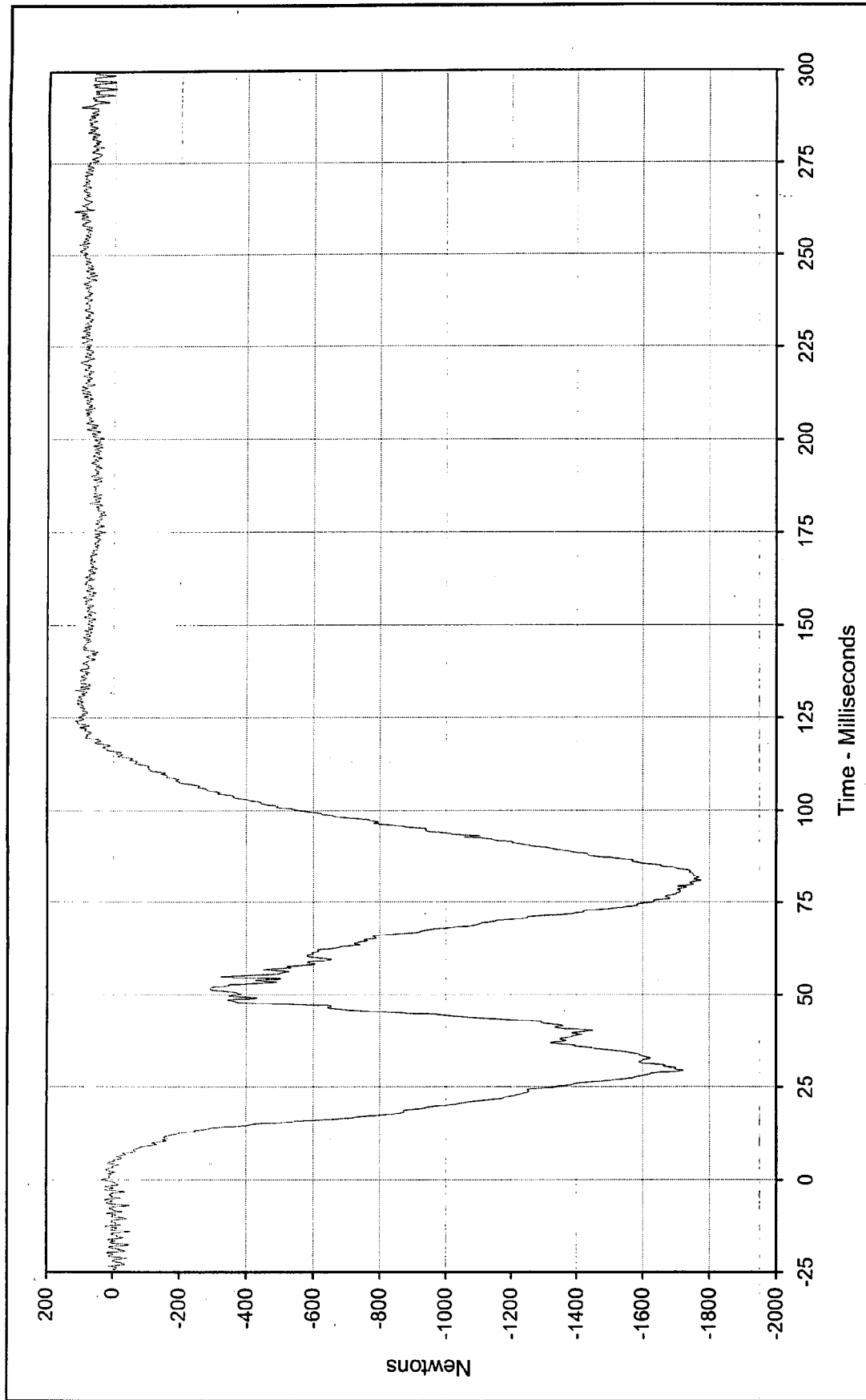
Date of Test: 12/7/99

Curve Number: FIL-077

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description: Passenger Right lower Tibia Force Z

Maximum Value: 124.5 at 262.0 Milliseconds

Minimum Value: -1775.2 at 80.7 Milliseconds

SAE Filter Class: 600

Date of Test: 12/7/99

Curve Number: FIL-078

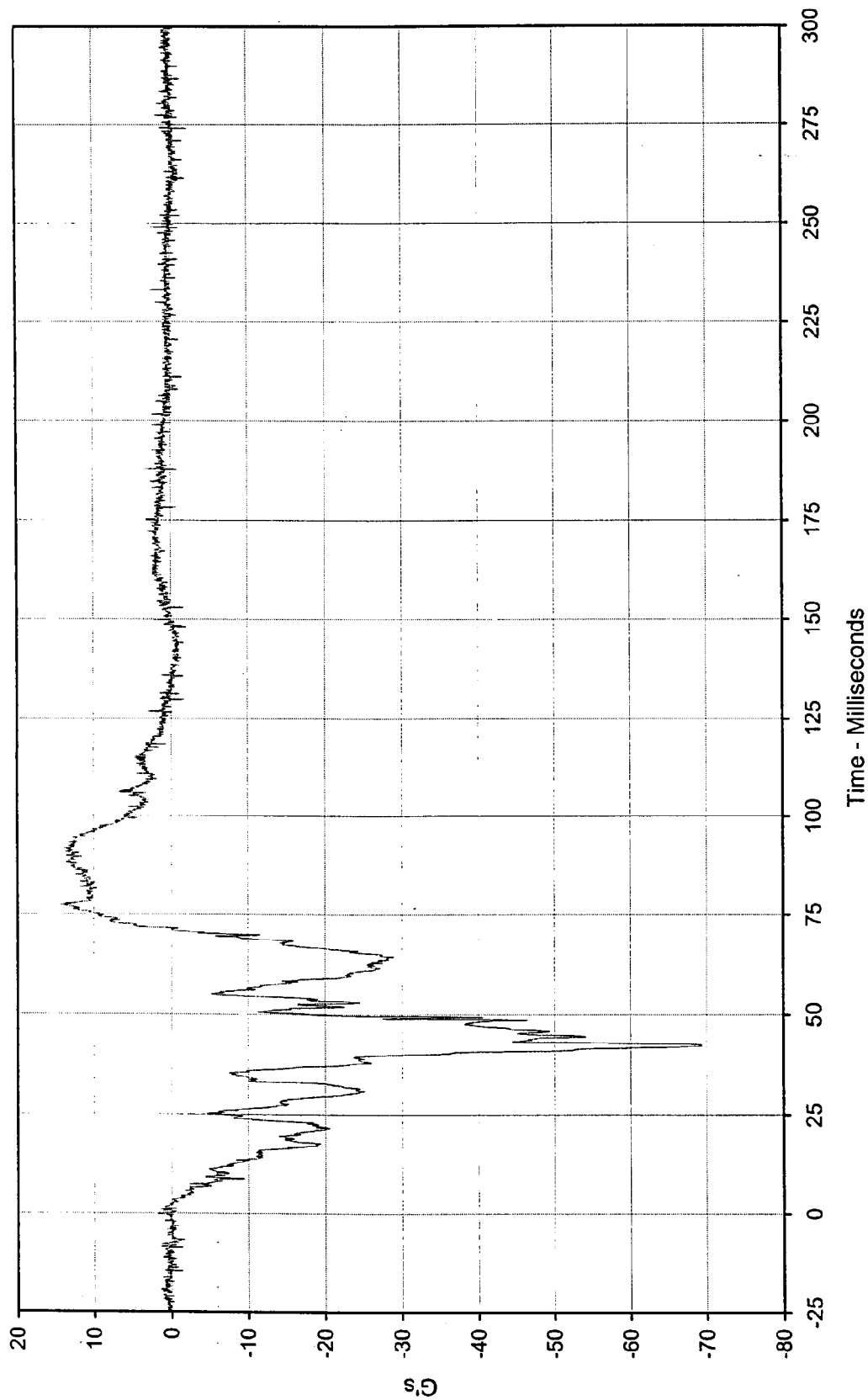
Test Program:

Test Vehicle:

2000 NHTSA 35 mph NCAP No.: MY5500

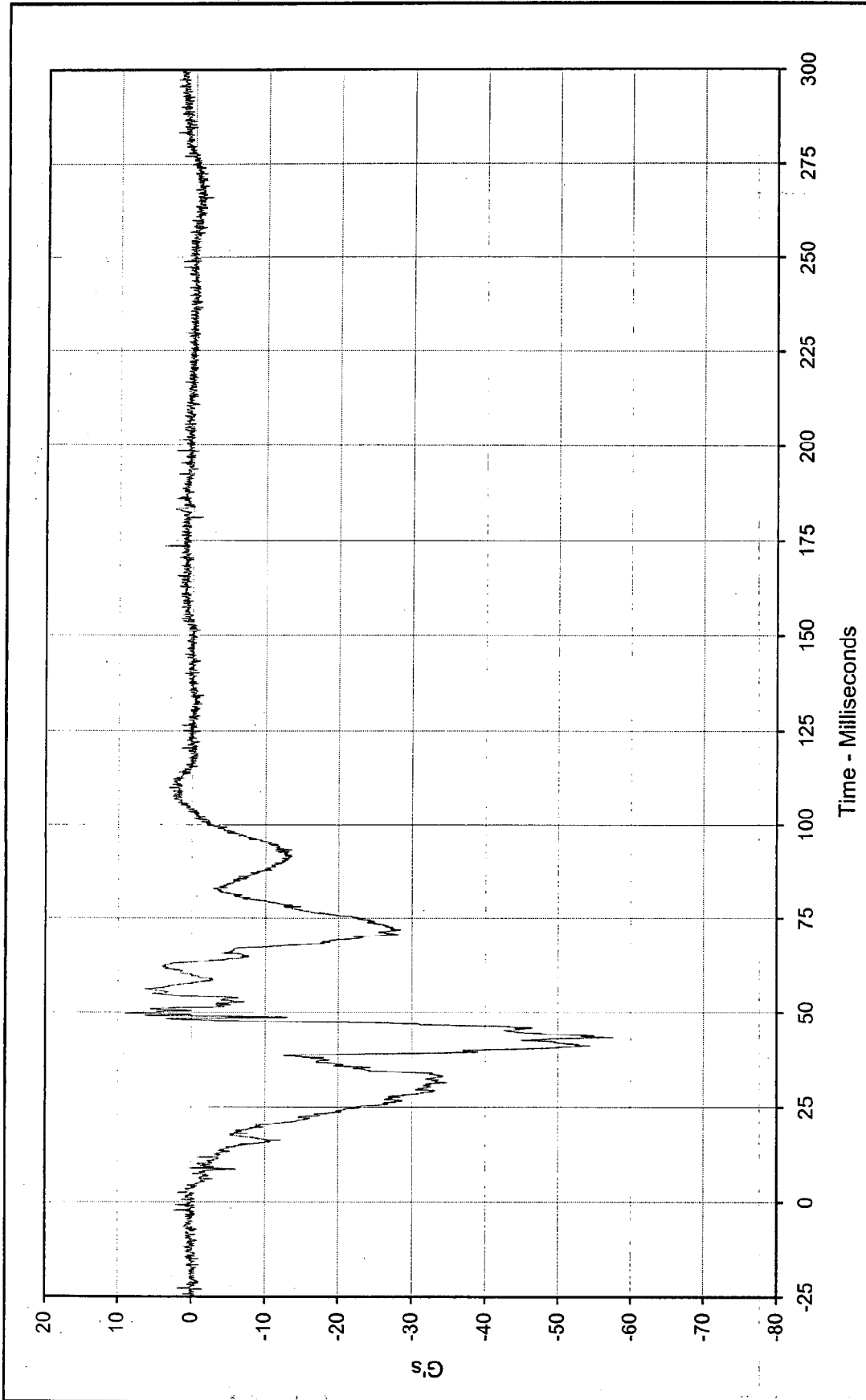
2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description:		Passenger Left Foot Aft X		Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	14.5	at	77.3	Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan
Minimum Value:	-69.4	at	42.3	Milliseconds		
SAE Filter Class:	1000					
Date of Test:	12/7/99					
Curve Number:	FIL-079					

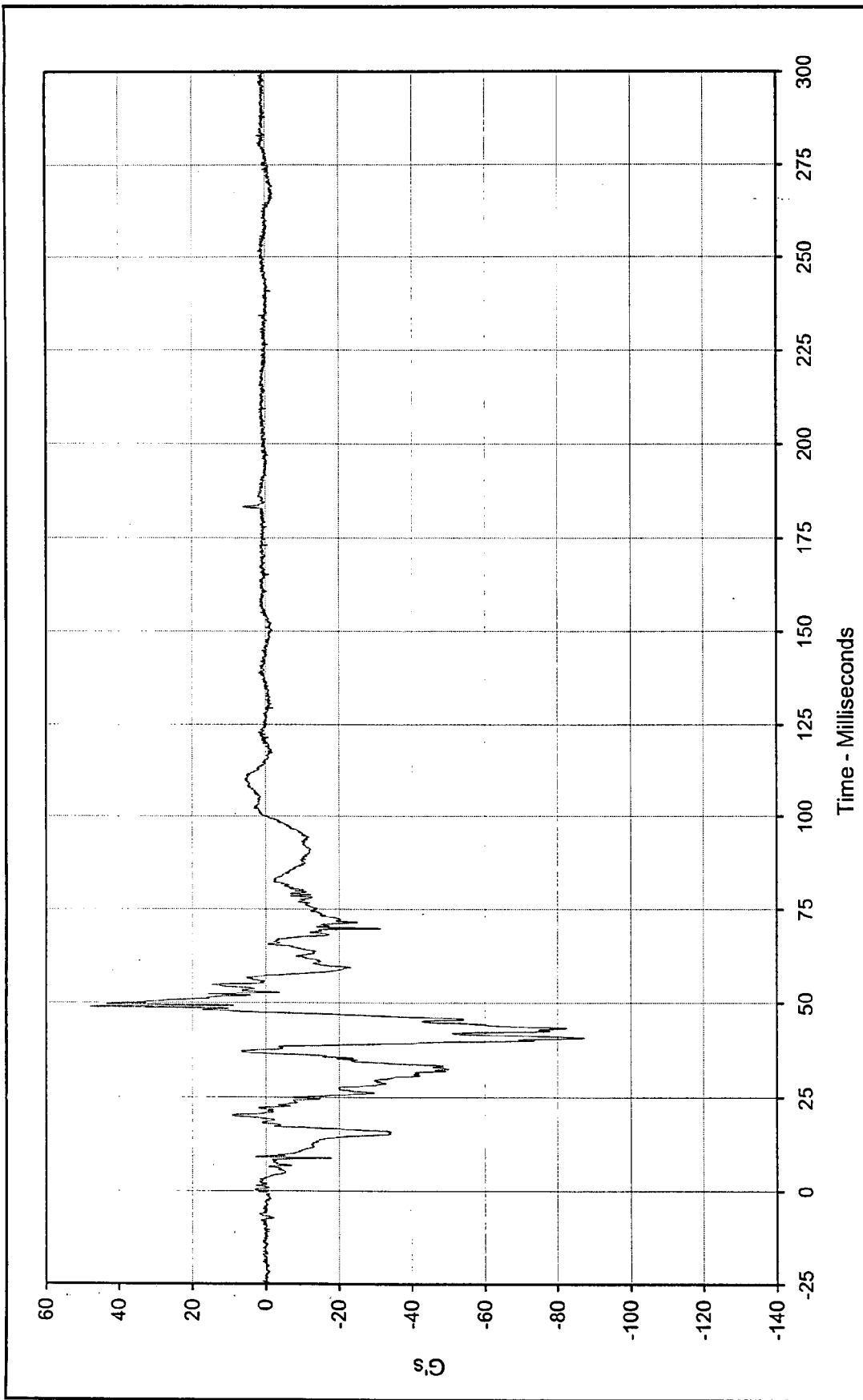




Curve Description: Passenger Left Foot Aft Z
 Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

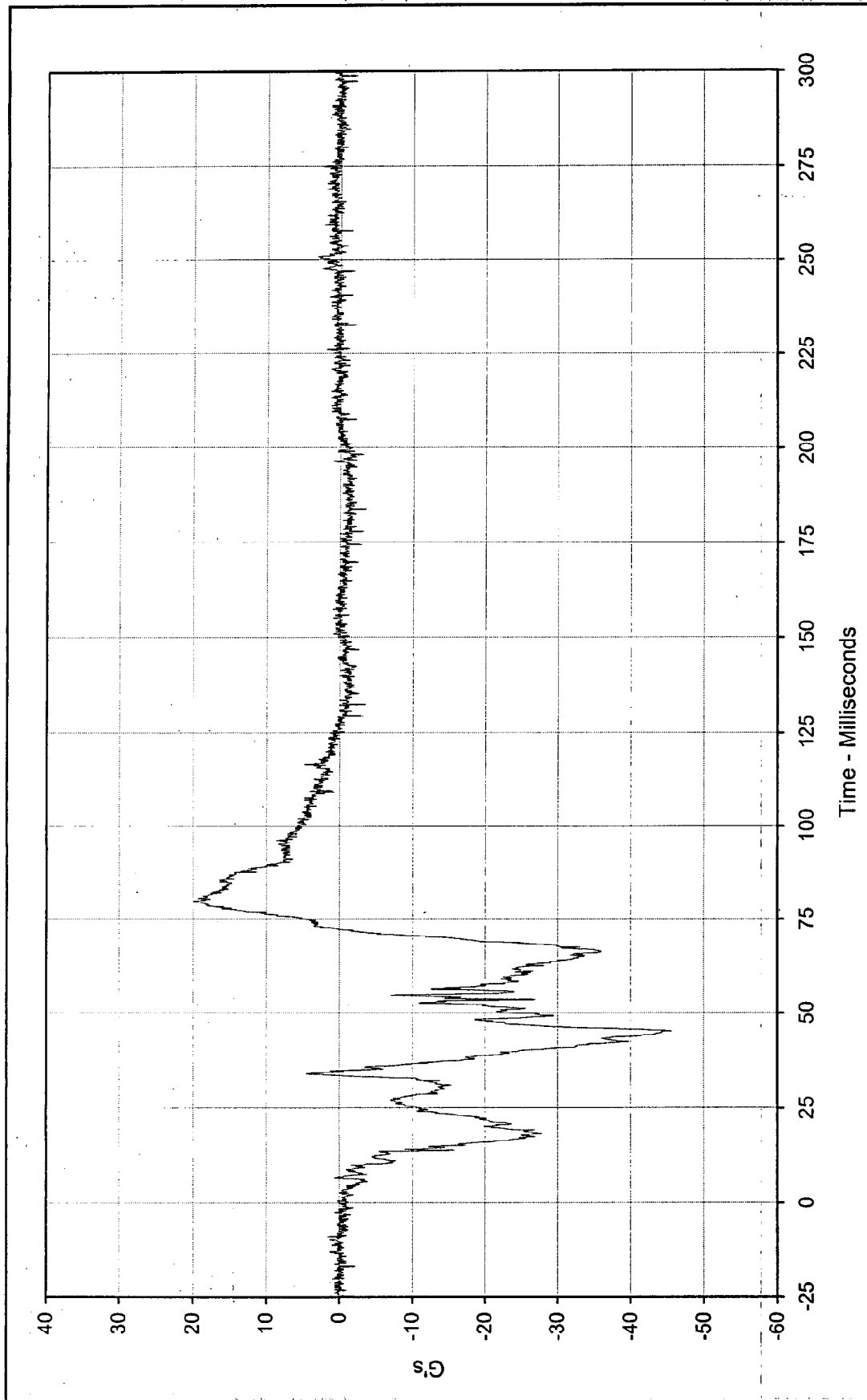
Maximum Value: 9.0 at 49.7 Milliseconds
 Minimum Value: -57.7 at 43.2 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 12/7/99
 Curve Number: FIL-080





Curve Description:		Passenger Left Foot Fore Z		Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	47.8	at	49.0	Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan
Minimum Value:	-87.4	at	41.0	Milliseconds		
SAE Filter Class:	1000					
Date of Test:	12/7/99					
Curve Number:	FIL-081					

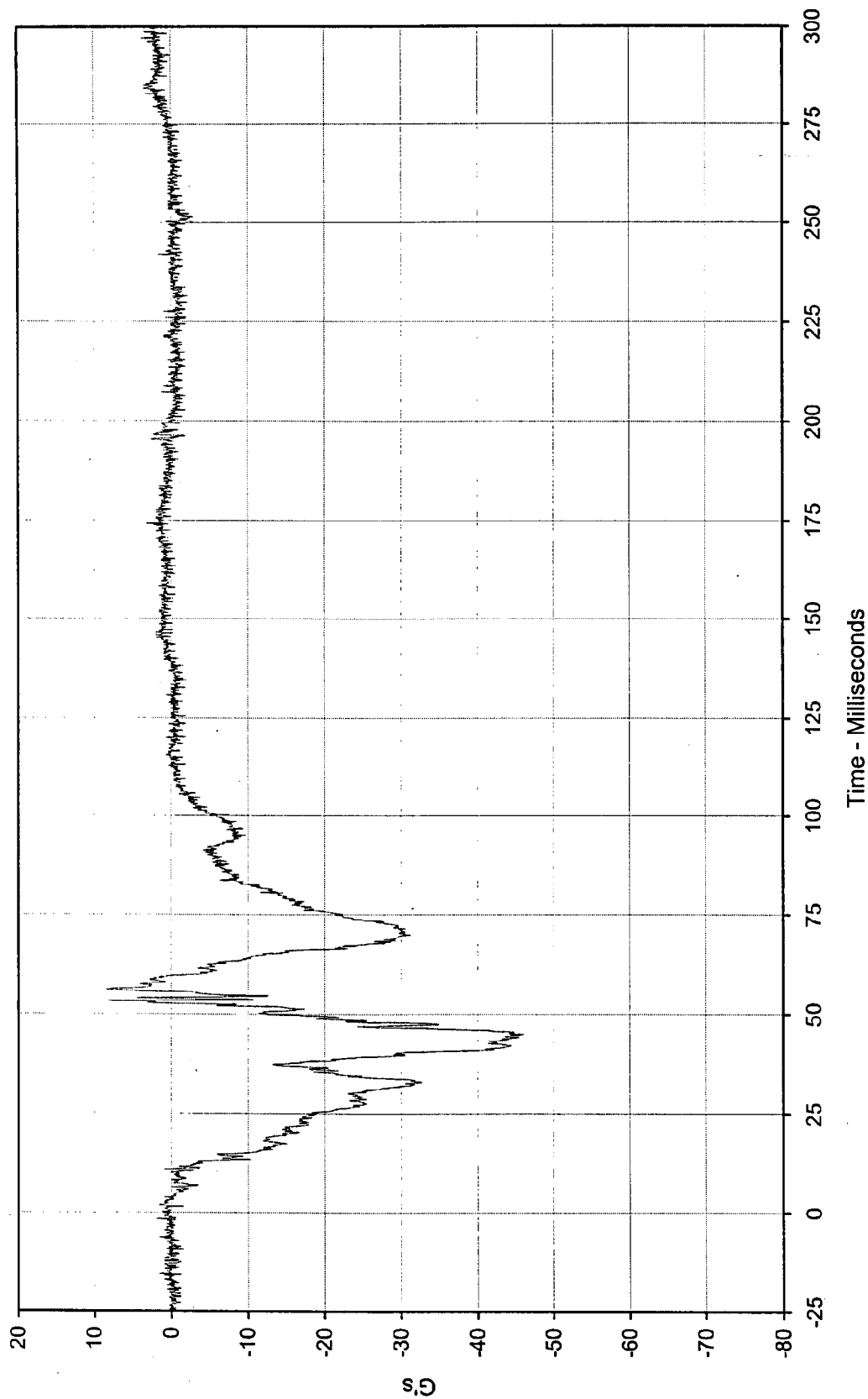




Curve Description: Passenger Right Foot Aft X
 Maximum Value: 19.9 at 79.5 Milliseconds
 Minimum Value: -45.6 at 45.1 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 12/7/99
 Curve Number: FIL-082

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description: Passenger Right Foot Aft Z

Maximum Value: 8.5 at 56.1 Milliseconds

Minimum Value: -46.0 at 45.1 Milliseconds

SAE Filter Class: 1000

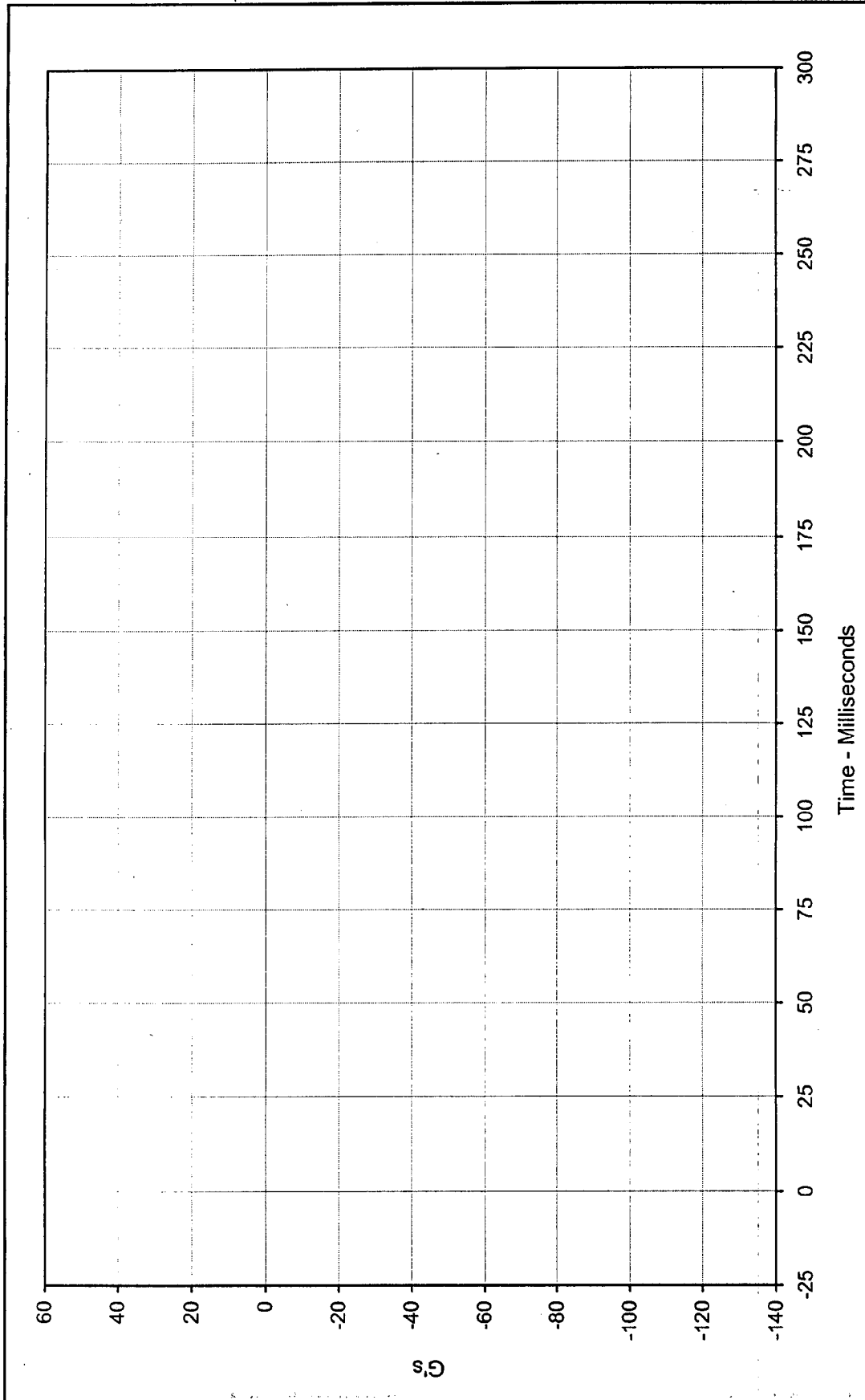
Date of Test: 12/7/99

Curve Number: FIL-083

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

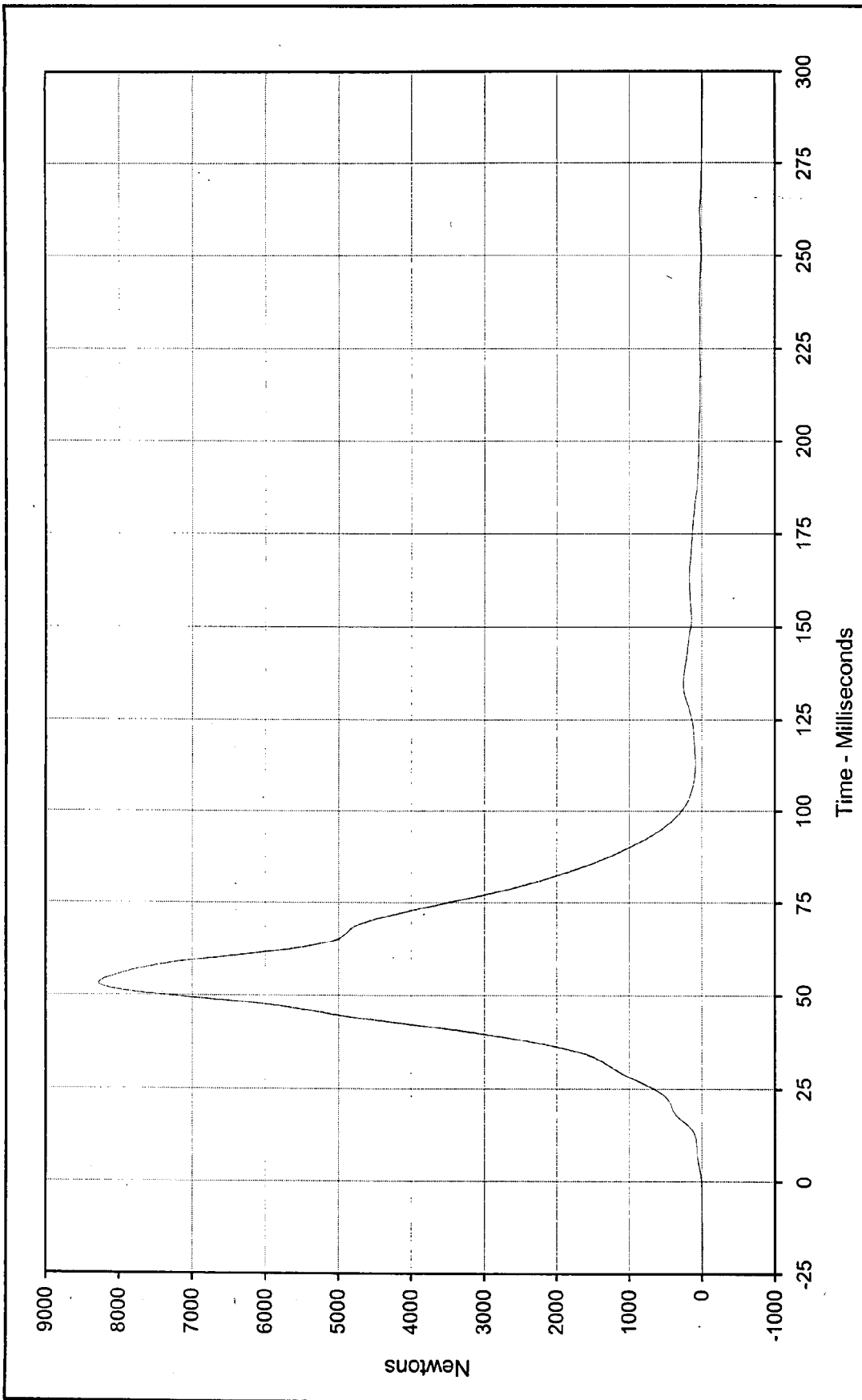




Curve Description: Passenger Right Foot Fore Z * Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Maximum Value: 0.0 at 0.0 Milliseconds Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan
 Minimum Value: 0.0 at 0.0 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 12/7/99
 Curve Number: FIL-084

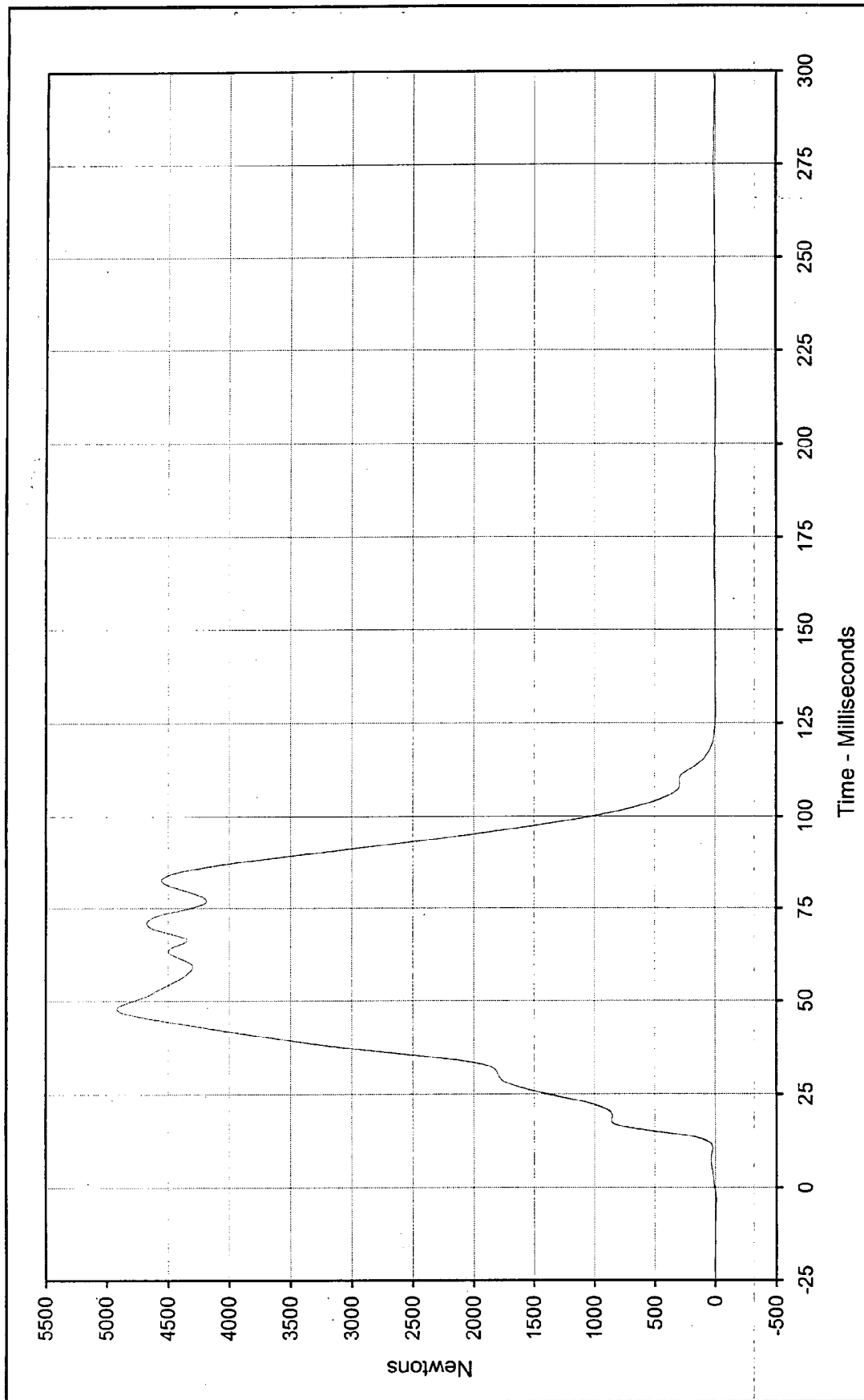


* Channel Failed, No Data



Curve Description:	Passenger Lap Belt Force	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	8277.0 at 53.2 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-12.8 at 297.5 Milliseconds			
SAE Filter Class:	60			
Date of Test:	12/7/99			
Curve Number:	FIL-085			

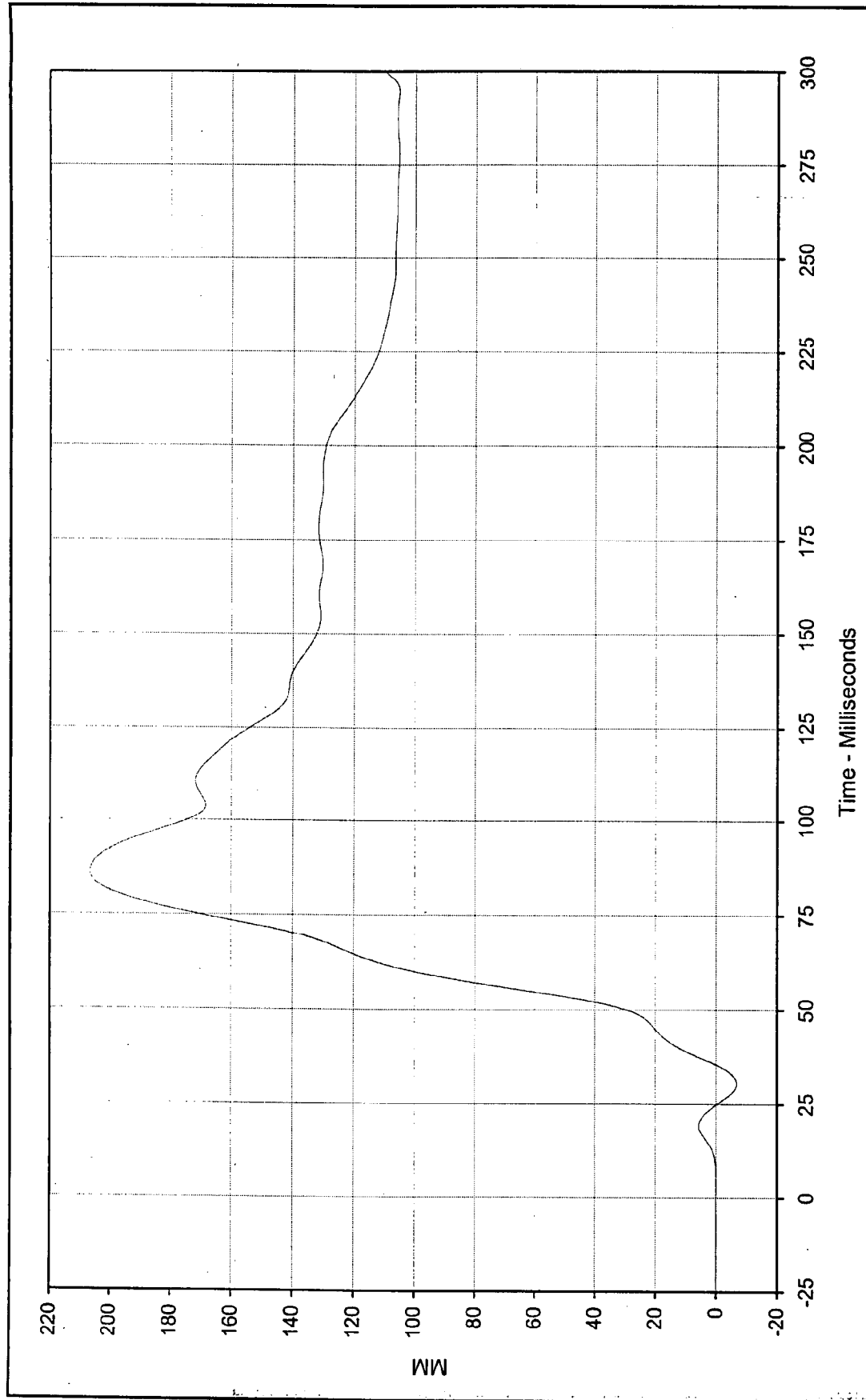




Curve Description: Passenger Shoulder Belt Force
 Maximum Value: 4918.3 at 47.8 Milliseconds
 Minimum Value: -8.8 at 209.4 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/7/99
 Curve Number: FIL-086

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description: Passenger Shoulder Belt Pullout

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

Maximum Value: 205.6 at 86.0 Milliseconds

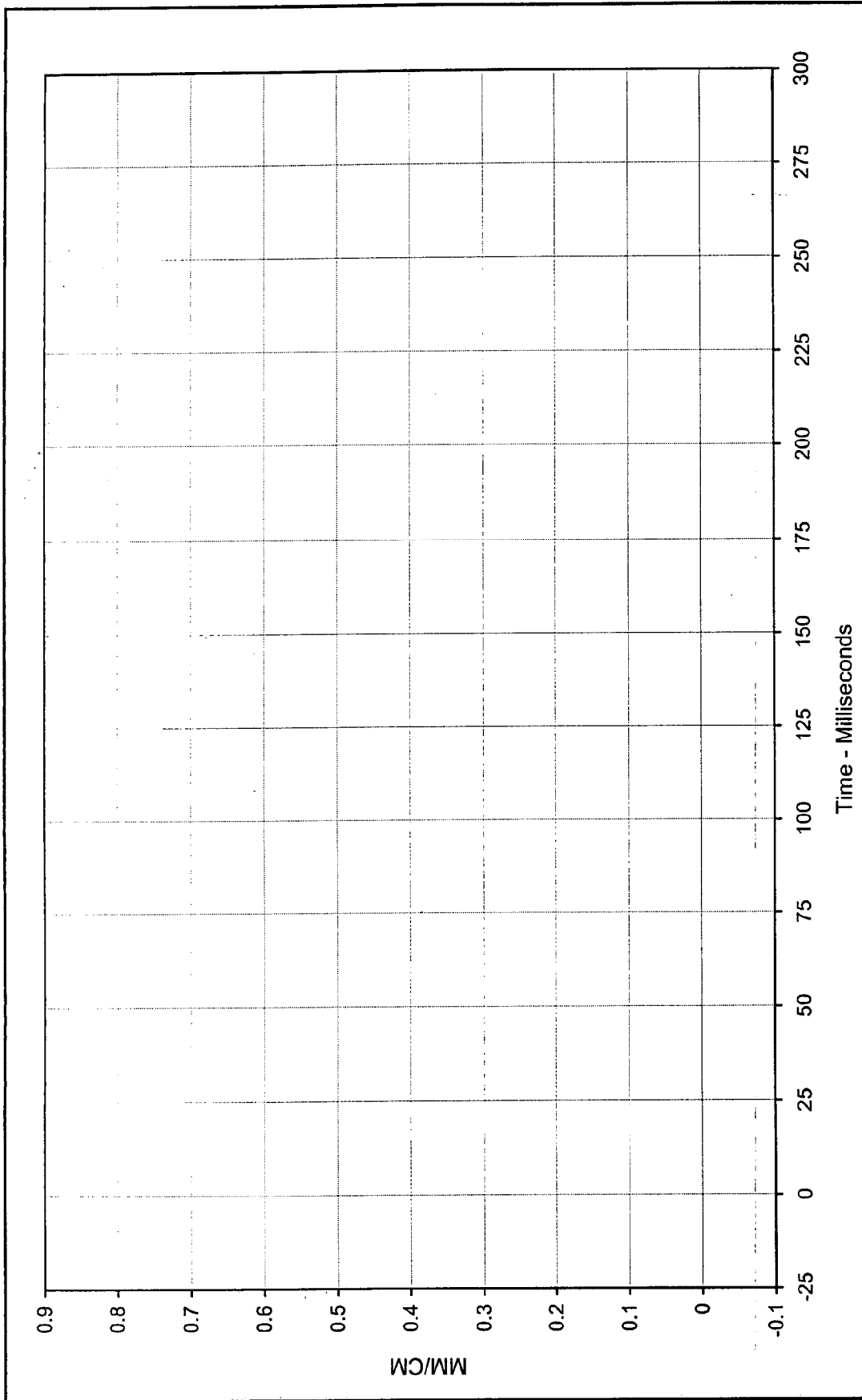
Minimum Value: -6.8 at 30.4 Milliseconds

SAE Filter Class: 60

Date of Test: 12/7/99

Curve Number: FIL-087

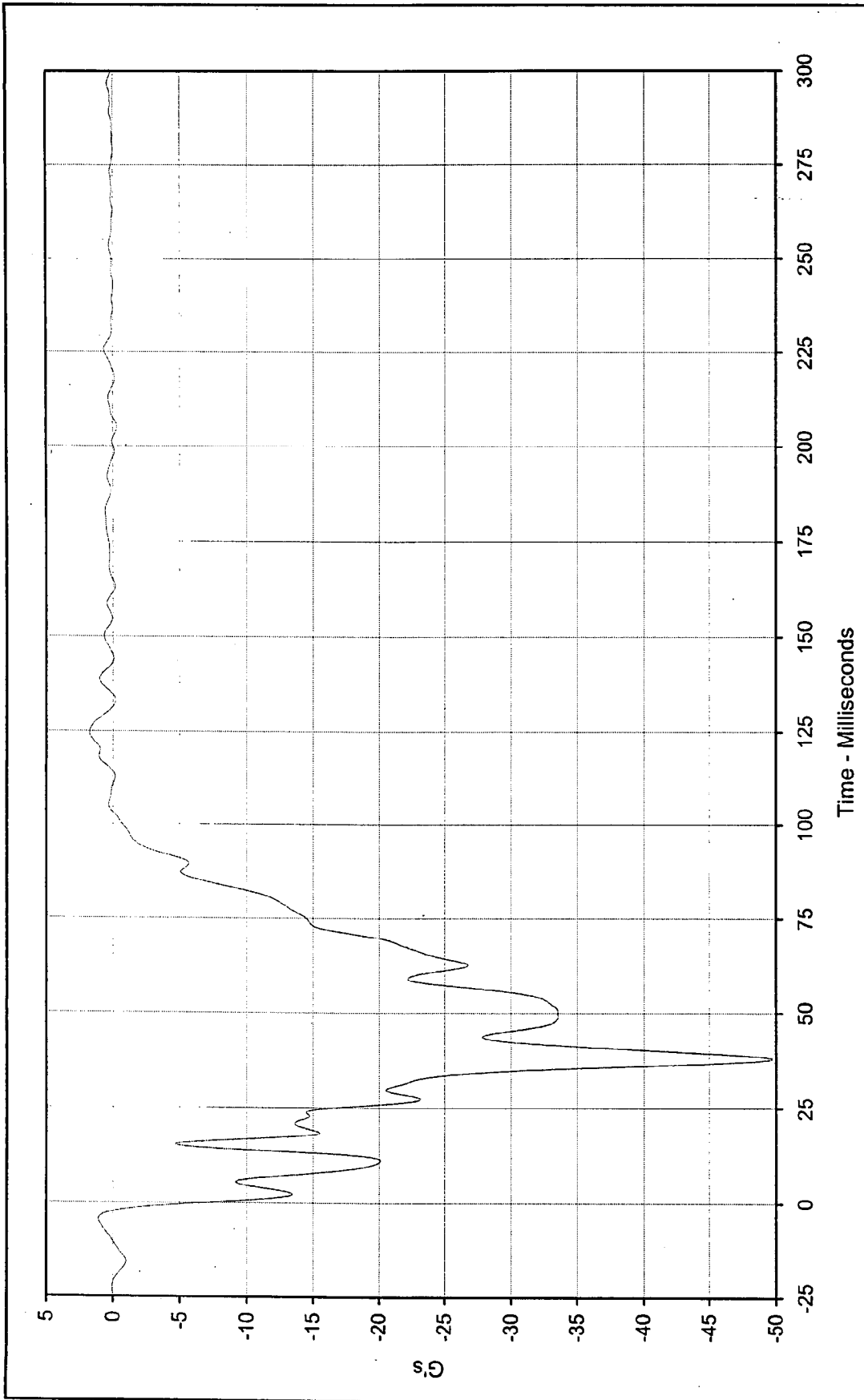




Curve Description:	Passenger Shoulder Belt Elongation *	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	0.00 at 0.0 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	0.00 at 0.0 Milliseconds			
SAE Filter Class:	60			
Date of Test:	12/7/99			
Curve Number:	FIL-088			



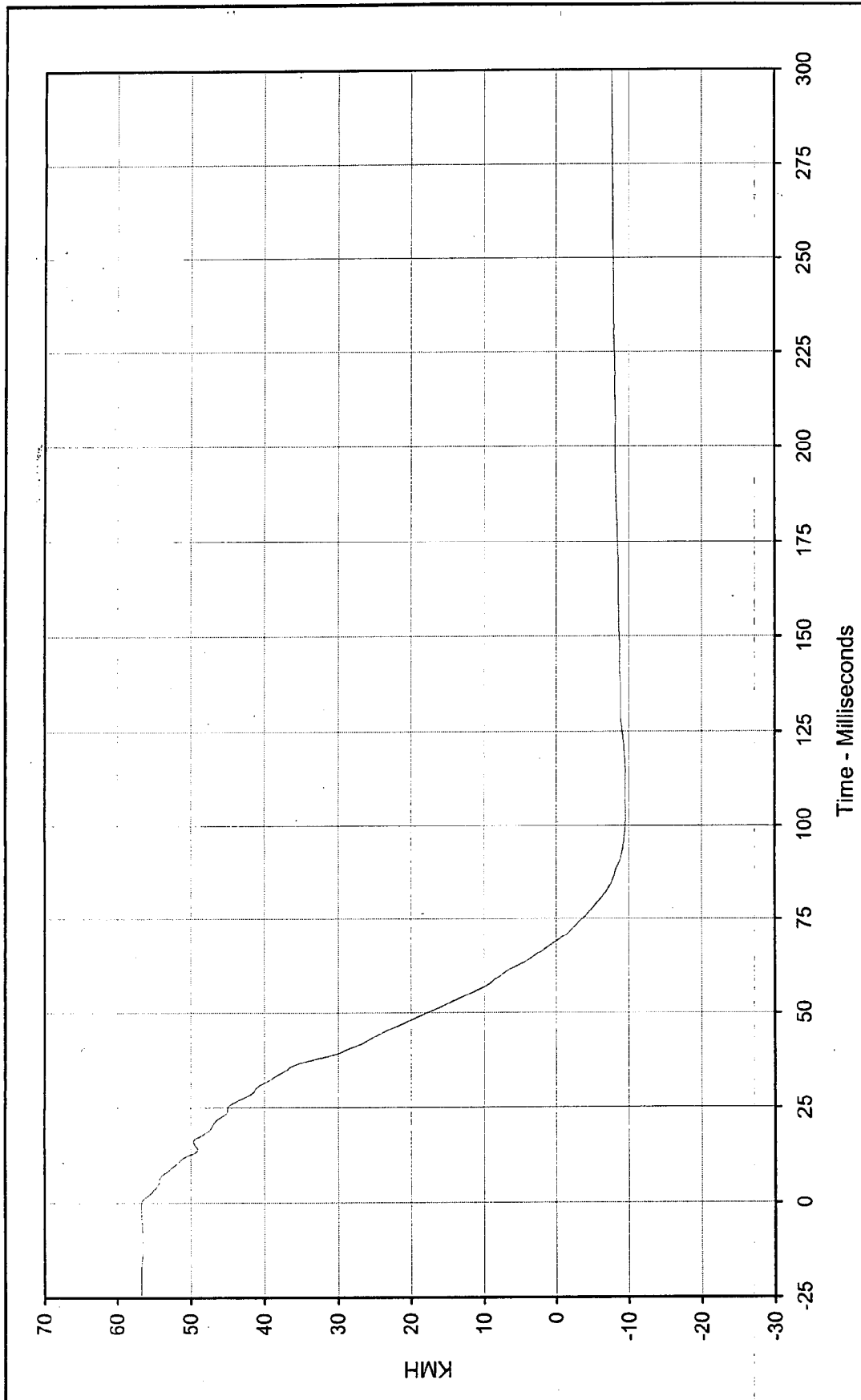
* Not Installed



Curve Description:	Vehicle Left Rear Primary	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	1.8 at 124.6 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-49.7 at 38.0 Milliseconds			



SAE Filler Class:	60
Date of Test:	12/7/99
Curve Number:	FIL-089



Curve Description: Vehicle Left Rear Primary Velocity

Maximum Value: 56.7 at 0.0 Milliseconds

Minimum Value: -9.5 at 103.2 Milliseconds

SAE Filter Class: 180

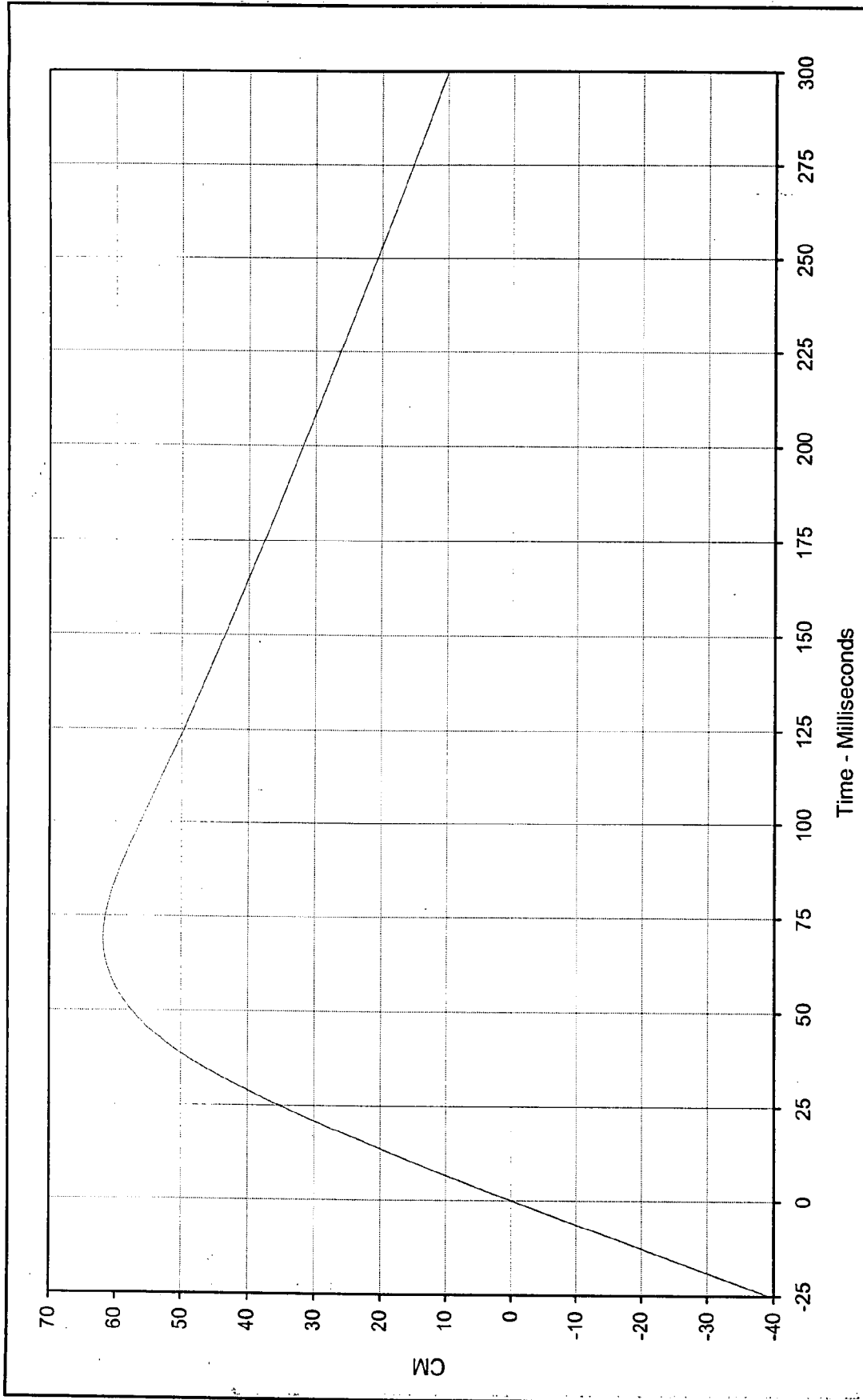
Date of Test: 12/7/99

Curve Number: IN1-089

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description: Vehicle Left Rear Primary Displ.

Maximum Value: 61.8 at 68.9 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

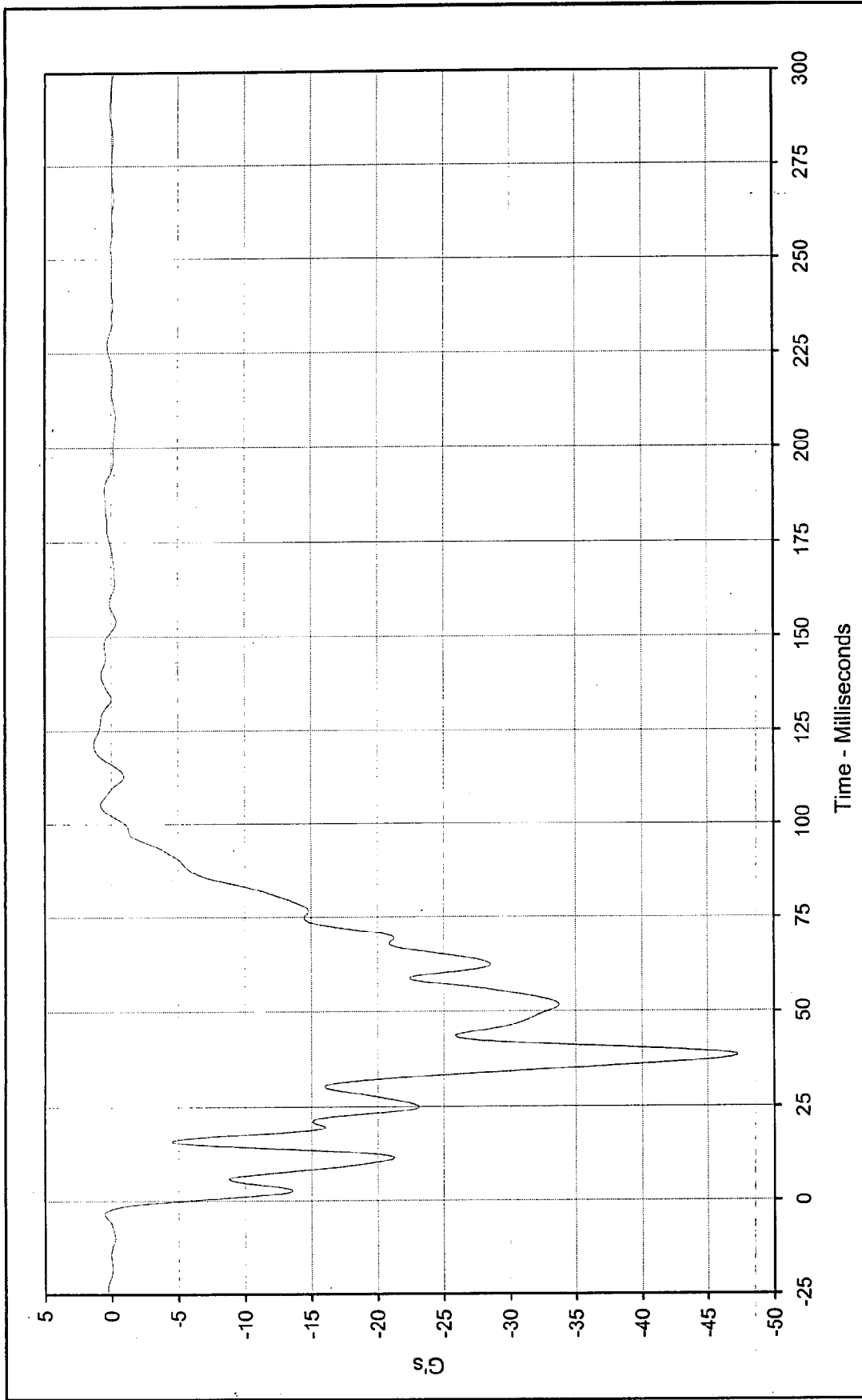
Date of Test: 12/7/99

Curve Number: IN2-089

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description: Vehicle Right Rear Primary

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Maximum Value: 1.3 at 121.2 Milliseconds

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

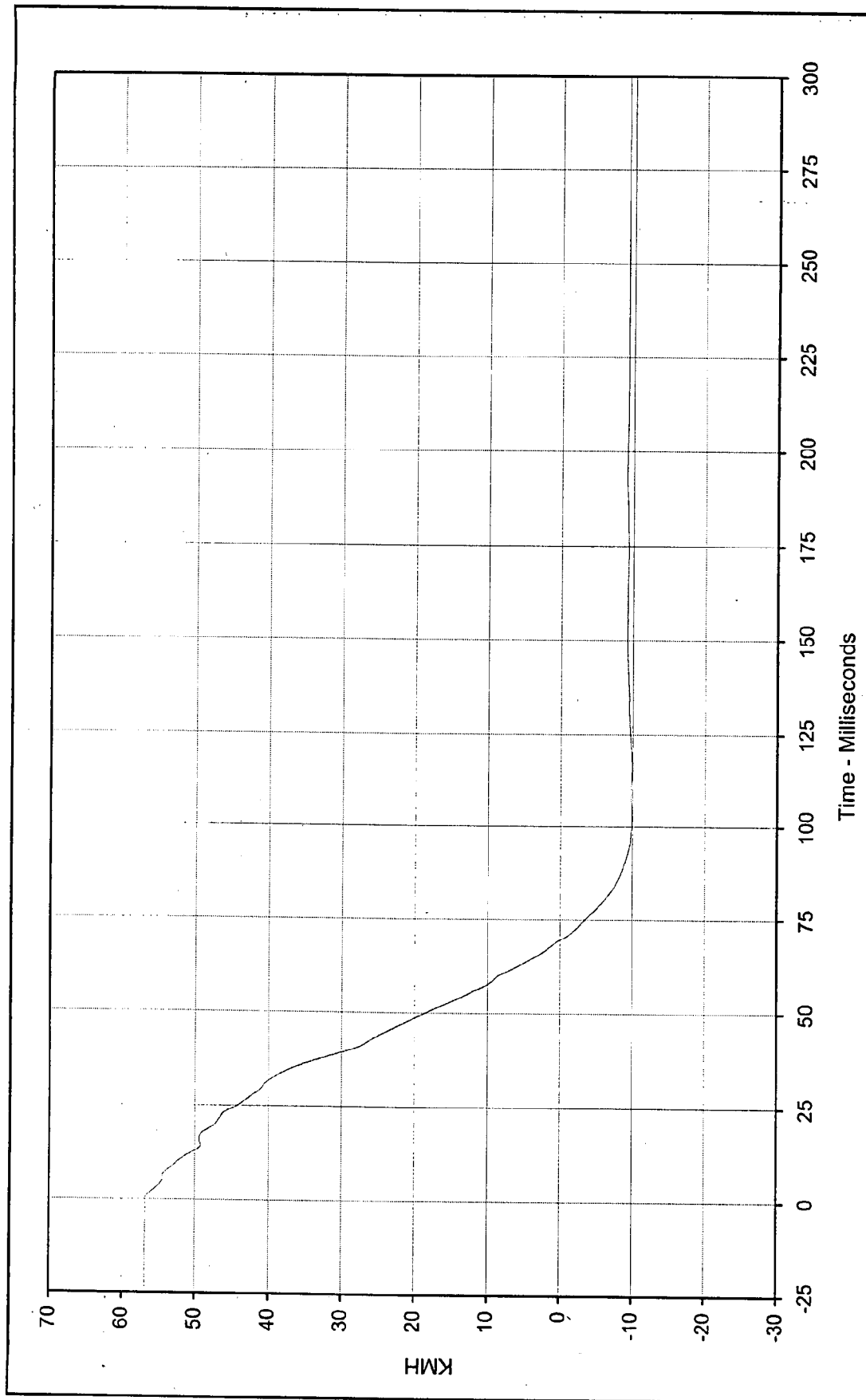
Minimum Value: -47.3 at 38.2 Milliseconds

SAE Filter Class: 60

Date of Test: 12/7/99

Curve Number: FIL-090





Curve Description: Vehicle Right Rear Primary Velocity

Maximum Value: 56.8 at 0.0 Milliseconds

Minimum Value: -9.9 at 116.4 Milliseconds

SAE Filter Class: 180

Date of Test: 12/7/99

Curve Number: IN1-090

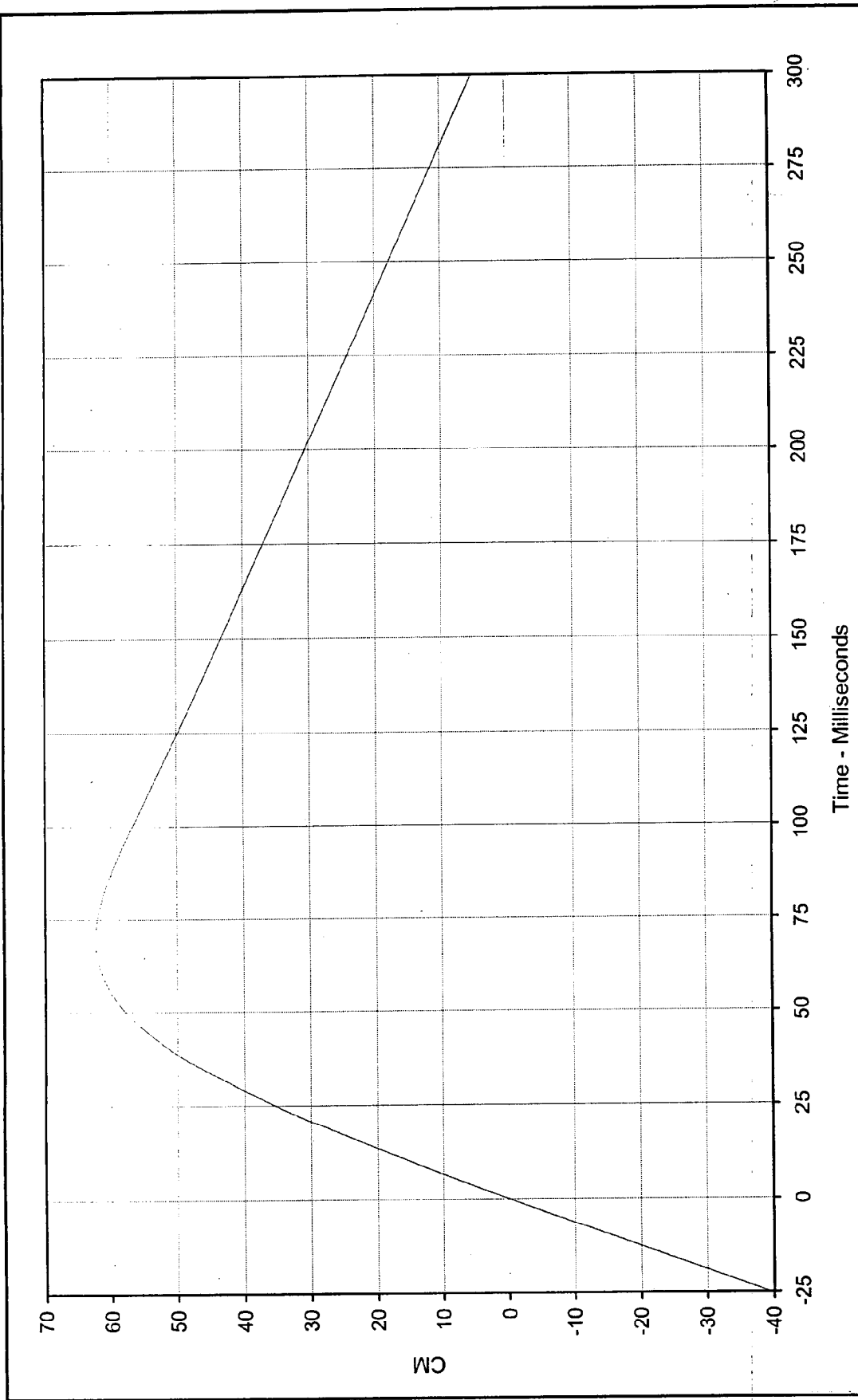
Test Program:

2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle:

2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description: Vehicle Right Rear Primary Displ.

Maximum Value: 62.4 at 69.4 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filler Class: 180

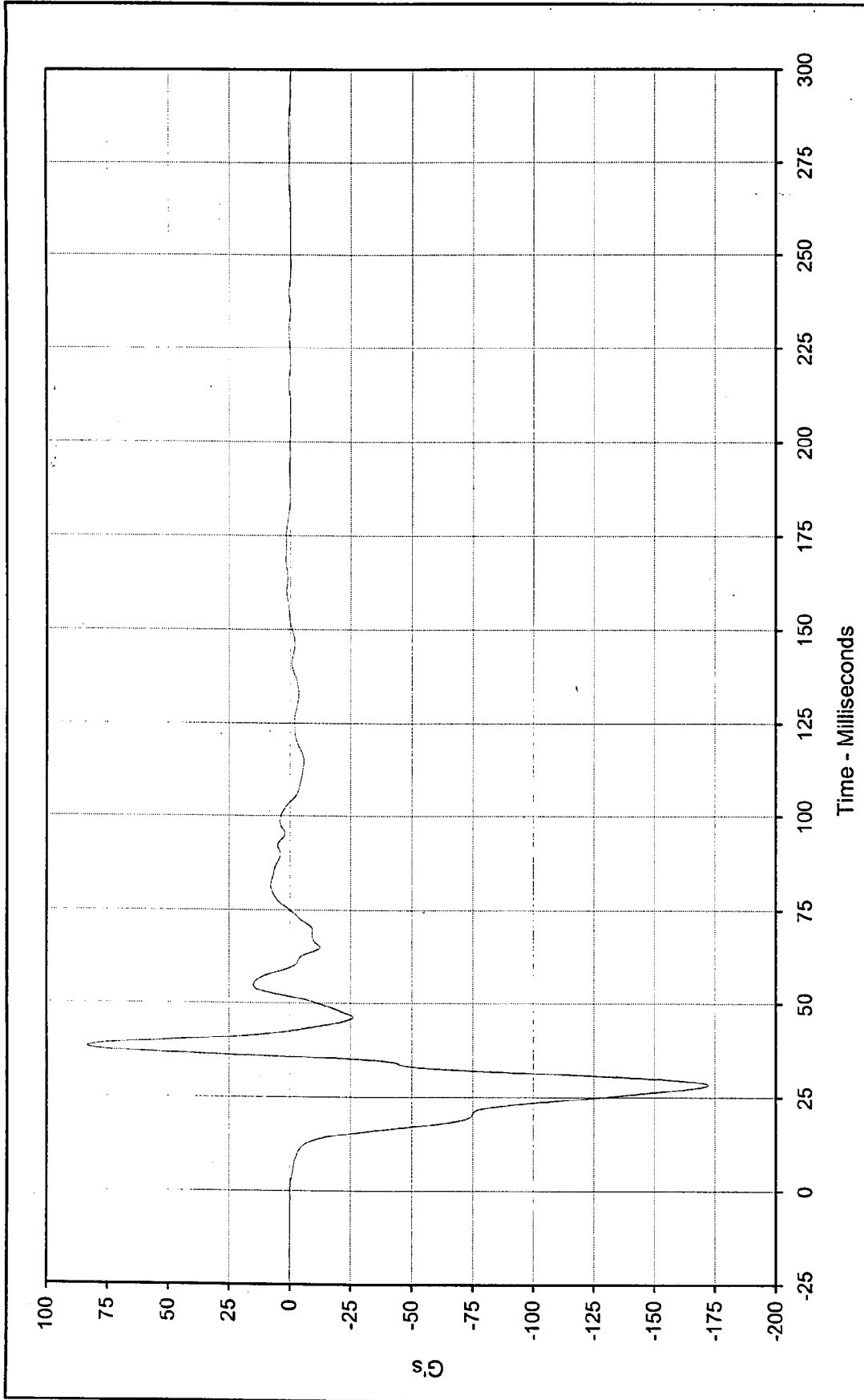
Date of Test: 12/7/99

Curve Number: IN2-090

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

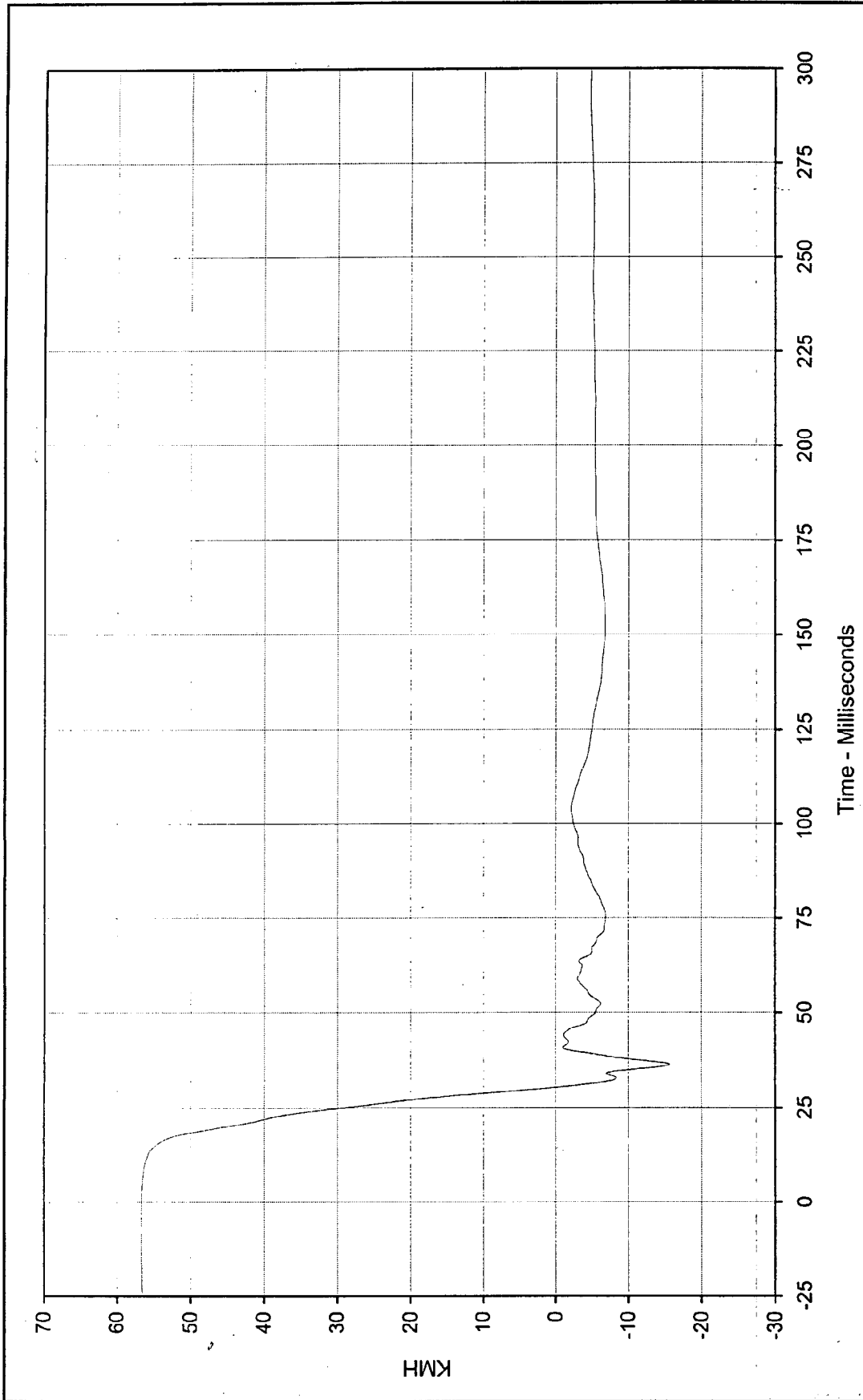




Curve Description: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Program: 2000 Subaru Legacy L AWD 4 Door Sedan
 Test Vehicle:

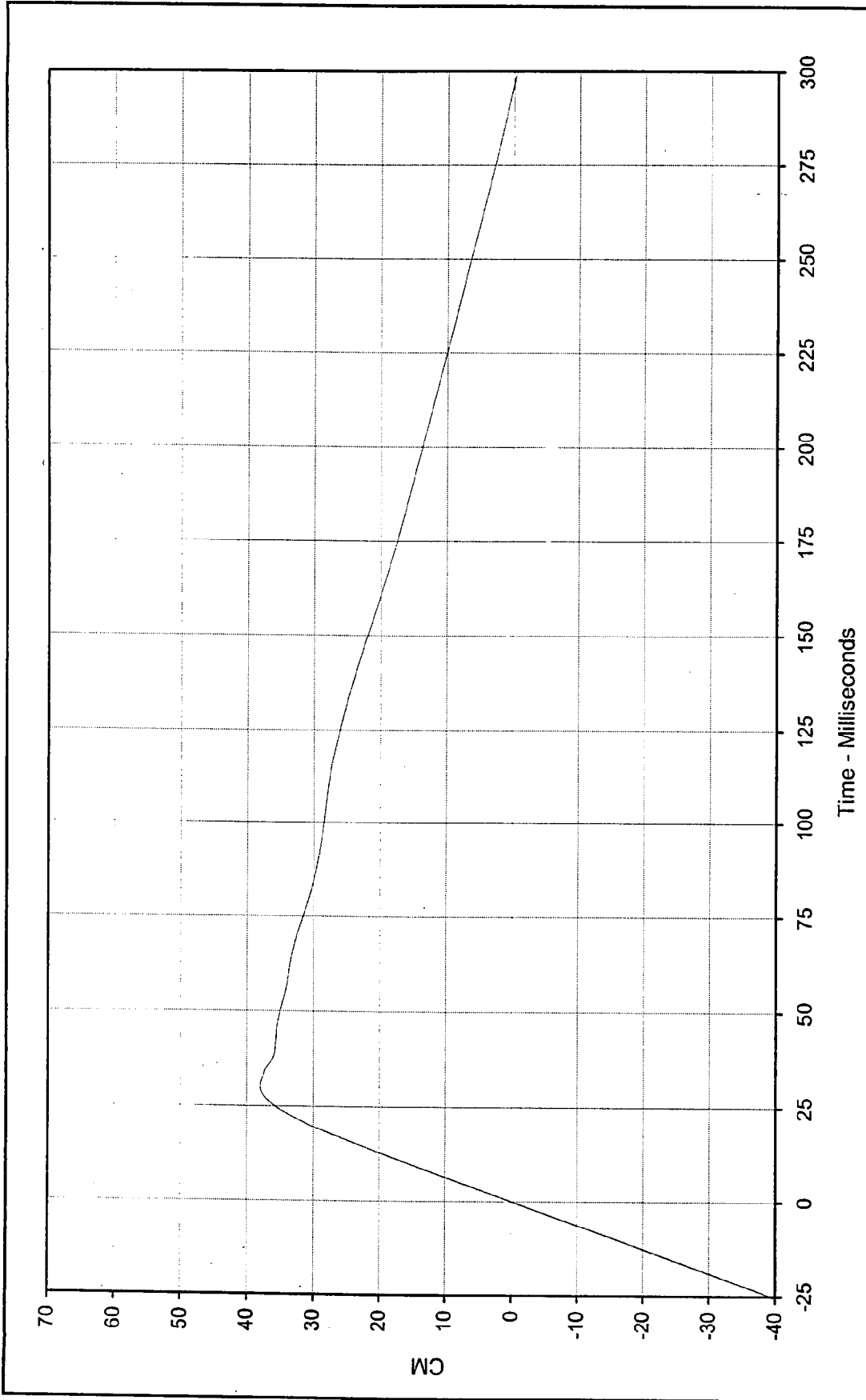
Vehicle Engine Top
 Maximum Value: 83.3 at 38.4 Milliseconds
 Minimum Value: -172.4 at 28.4 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/7/99
 Curve Number: FIL-091





Curve Description:		Vehicle Engine Top Velocity		Test Program:	
Maximum Value:	56.7	at	0.3	Milliseconds	2000 NHTSA 35 mph NCAP No.: MY5500
Minimum Value:	-15.6	at	36.1	Milliseconds	Test Vehicle:
SAE Filter Class:	180				
Date of Test:	12/7/99				
Curve Number:	IN1-091				





Curve Description: Vehicle Engine Top Displacement

Maximum Value: 38.0 at 30.2 Milliseconds

Minimum Value: -0.4 at 299.9 Milliseconds

SAE Filter Class: 180

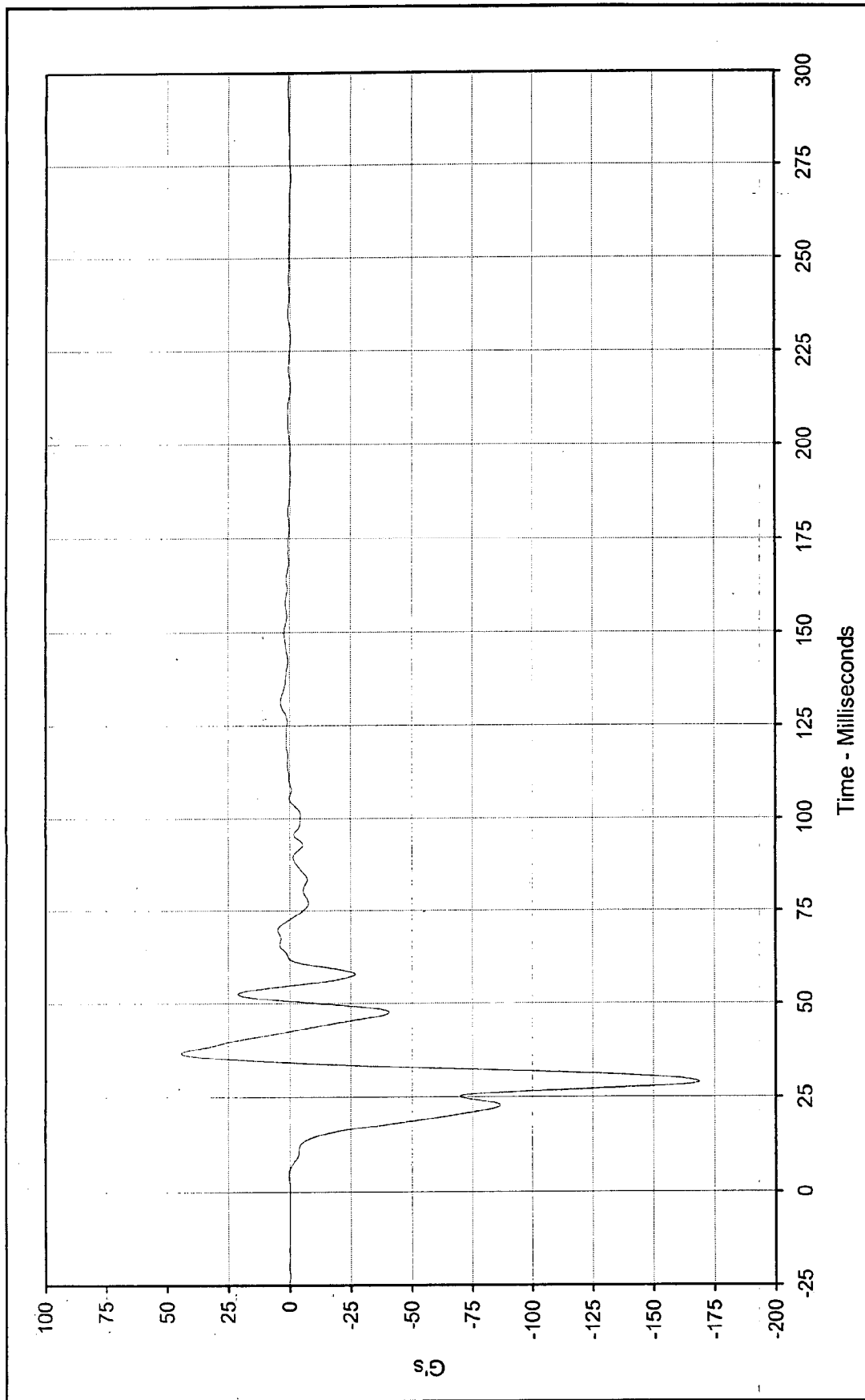
Date of Test: 12/7/99

Curve Number: IN2-091

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

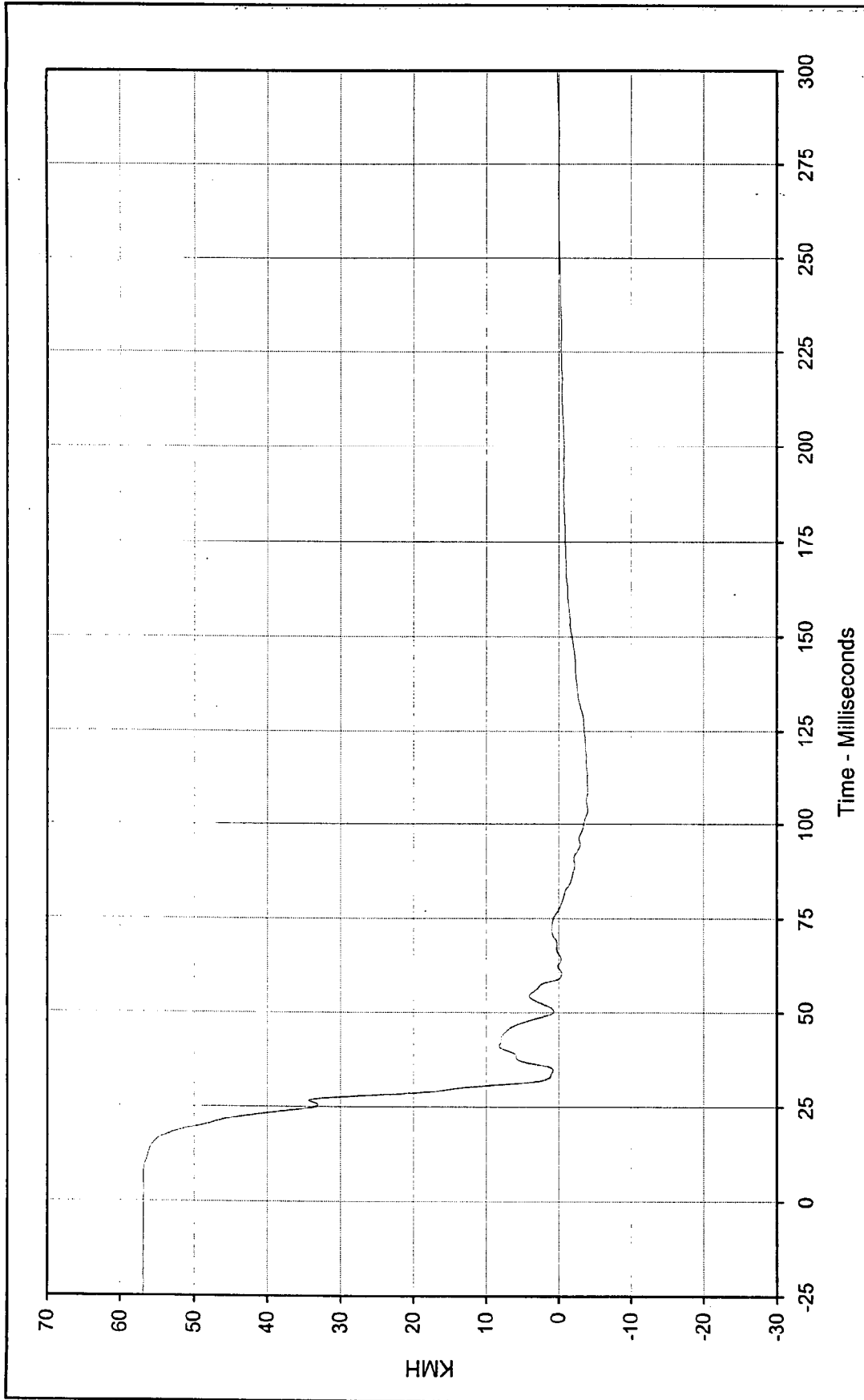




Curve Description: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Program: 2000 Subaru Legacy L AWD 4 Door Sedan
 Test Vehicle:

Vehicle Engine Bottom
 Maximum Value: 44.4 at 36.6 Milliseconds
 Minimum Value: -168.8 at 28.9 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/7/99
 Curve Number: FIL-092





Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

Curve Description: Vehicle Engine Bottom Velocity

Maximum Value: 56.9 at 7.0 Milliseconds

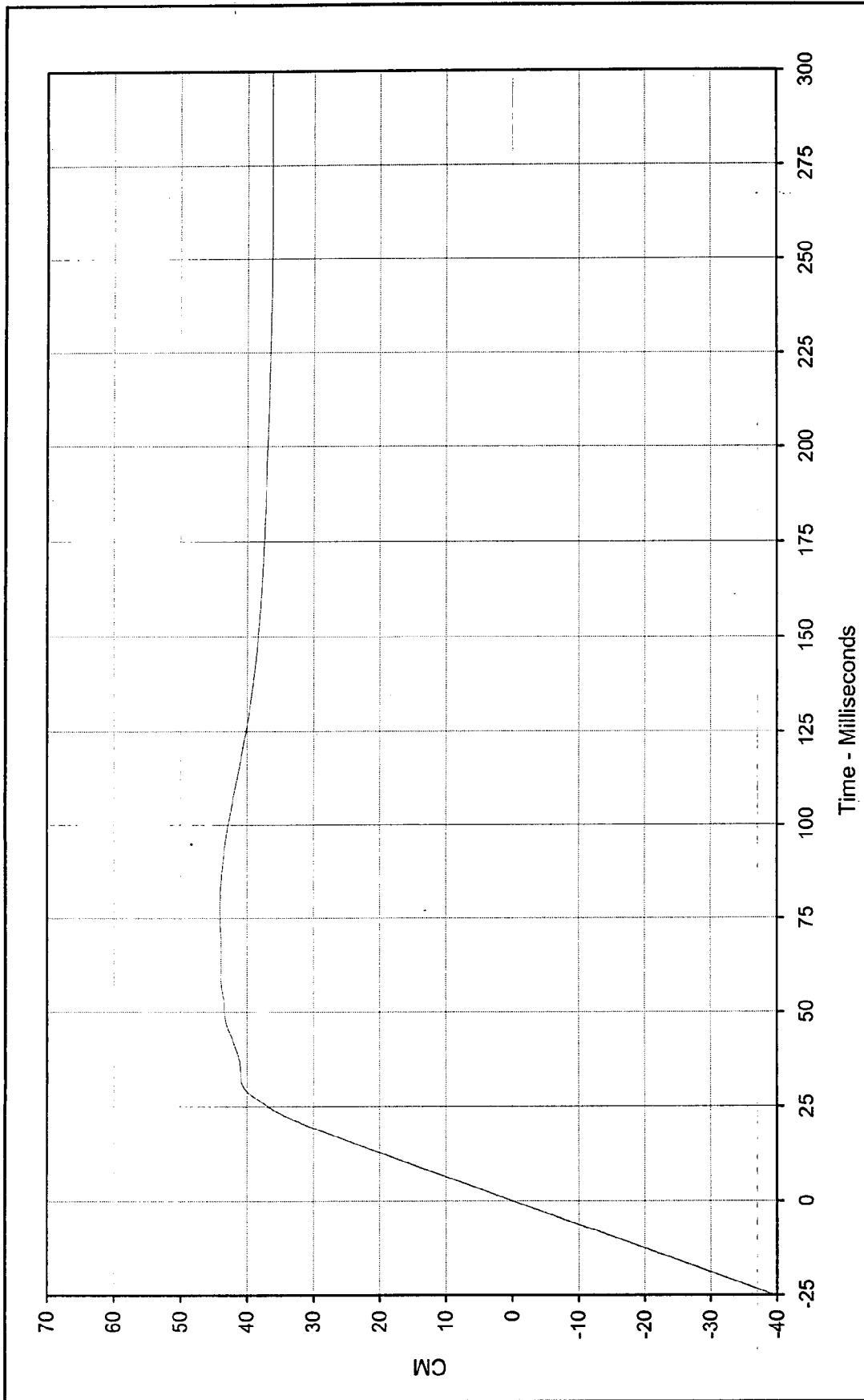
Minimum Value: -4.1 at 108.7 Milliseconds

SAE Filter Class: 180

Date of Test: 12/7/99

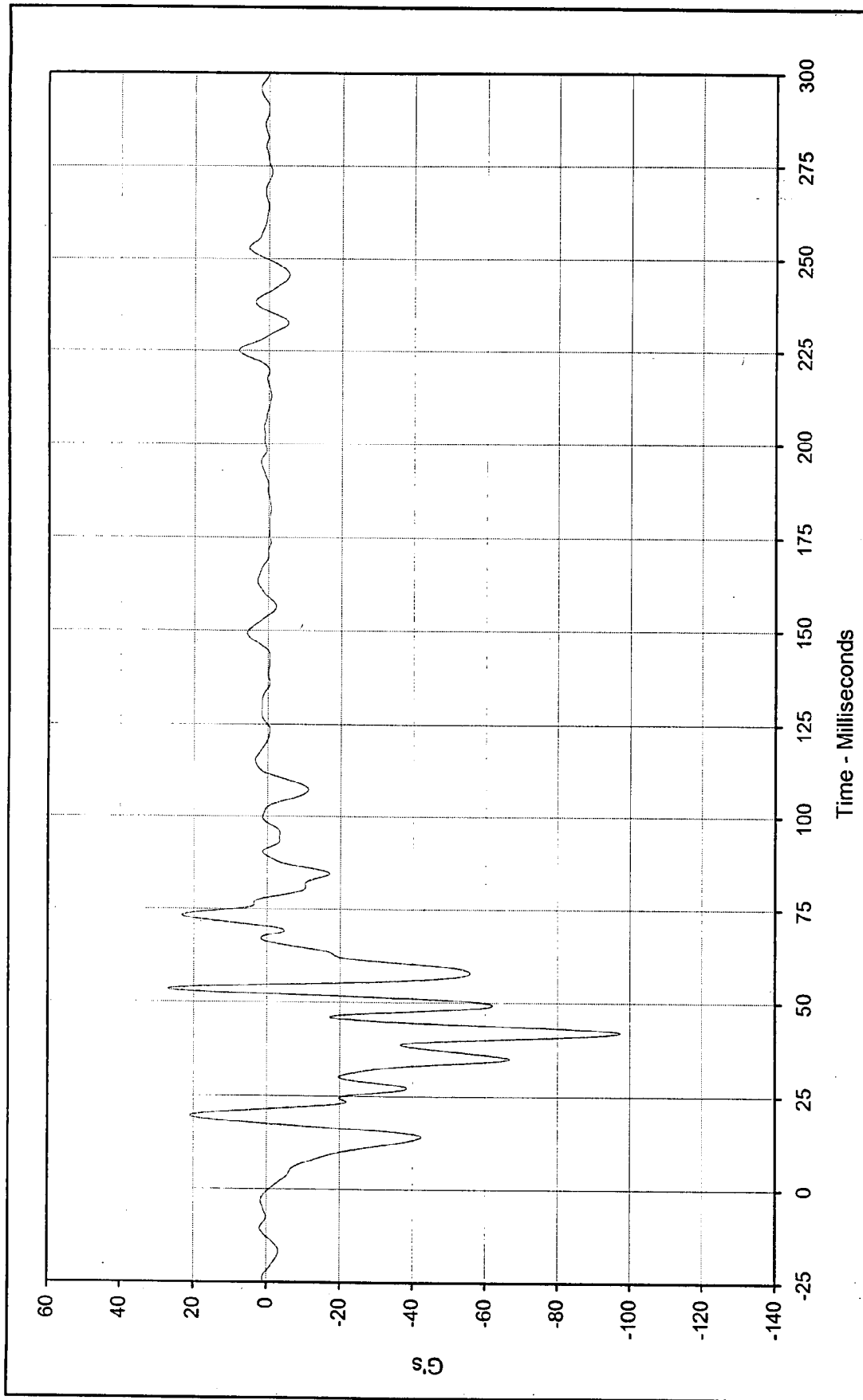
Curve Number: IN1-092





Curve Description: Vehicle Engine Bottom Displacement	Test Program: 2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value: 44.1 at 77.3 Milliseconds	Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value: 0.0 at 0.0 Milliseconds		
SAE Filter Class: 180		
Date of Test: 12/7/99		
Curve Number: IN2-092		

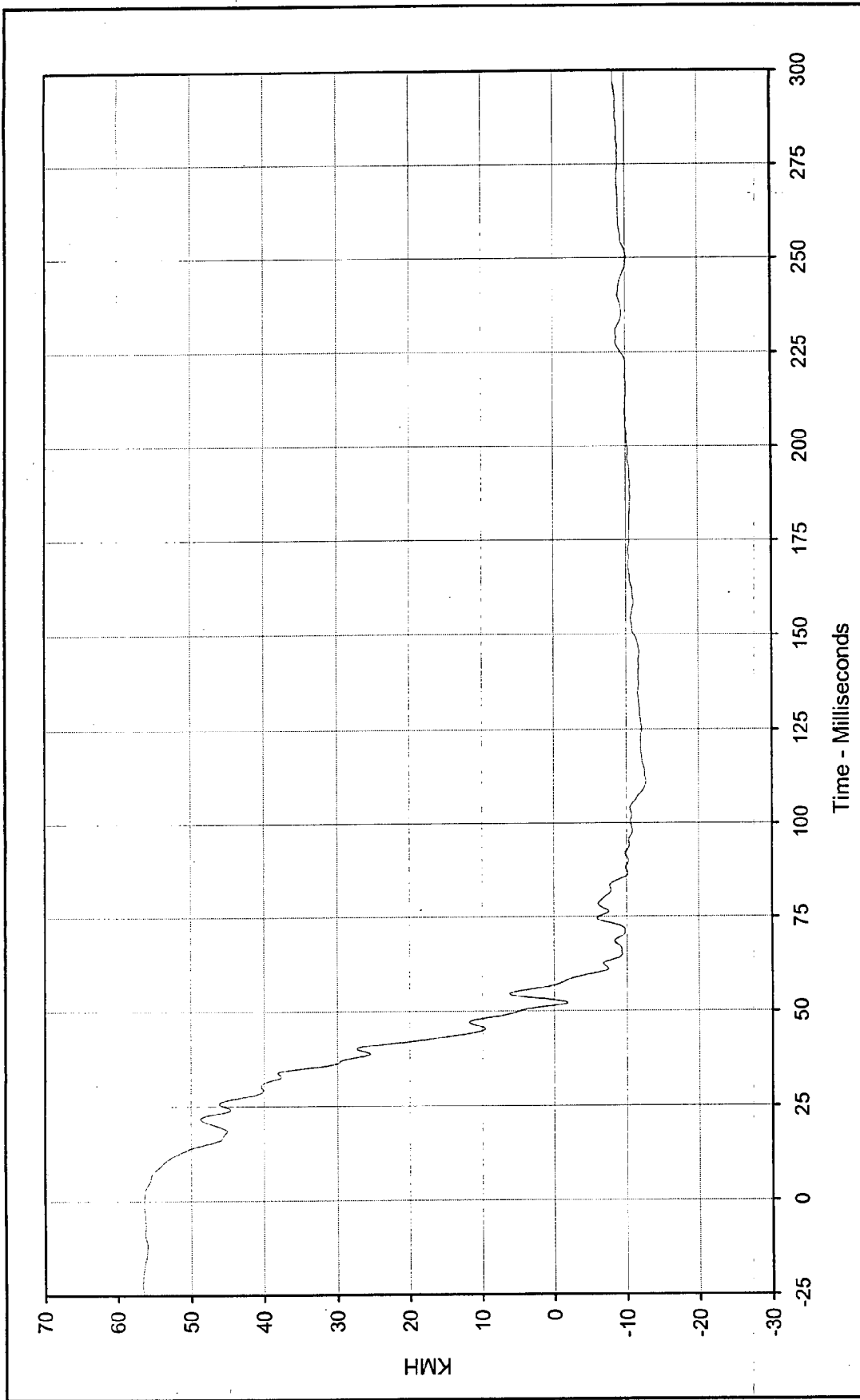




Curve Description: Vehicle Left Brake Caliper
 Maximum Value: 26.9 at 53.3 Milliseconds
 Minimum Value: -97.3 at 42.0 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/7/99
 Curve Number: FIL-093

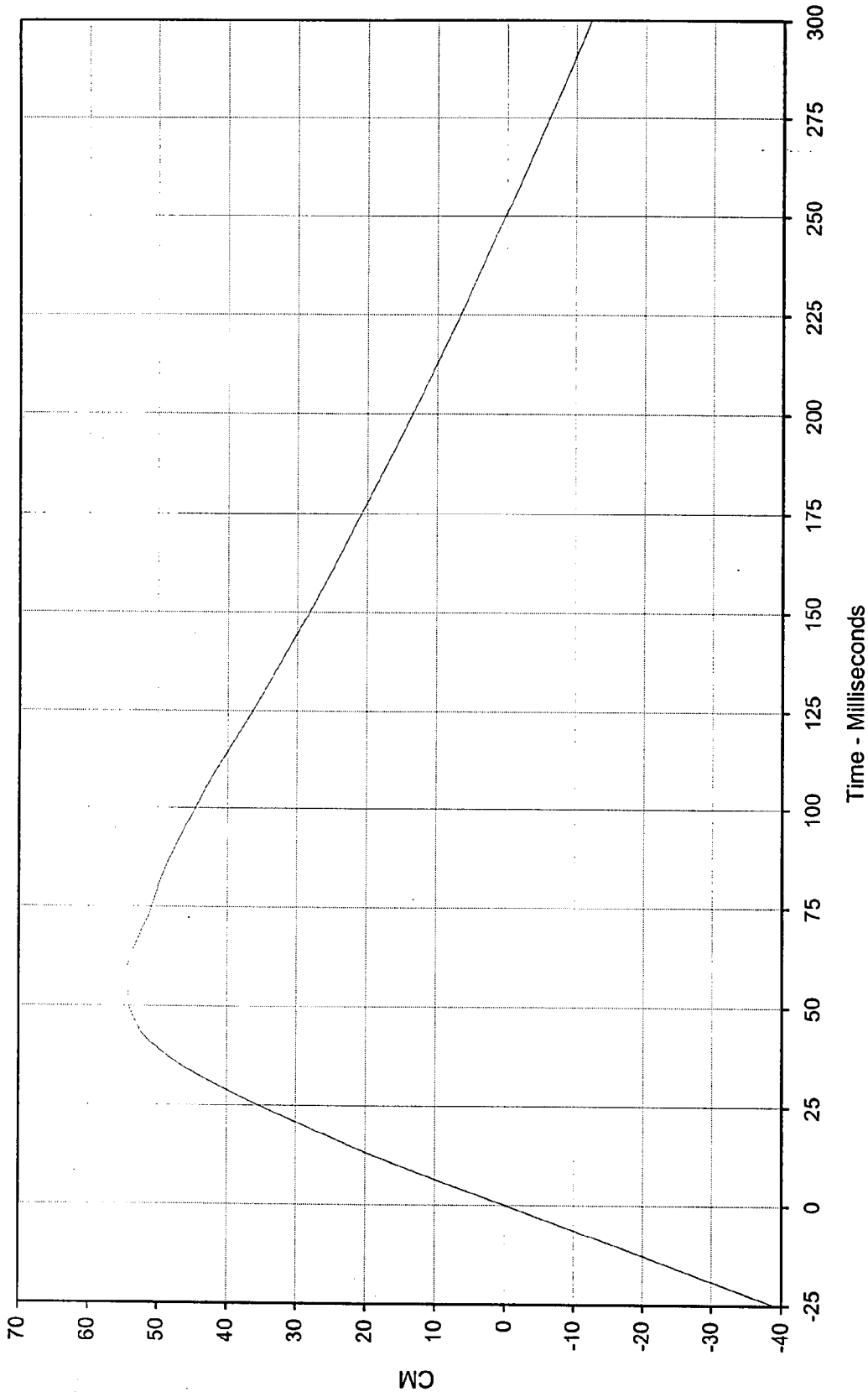
Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description:	Vehicle Left Brake Caliper Velocity	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	56.4 at 0.0 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	12.8 at 111.1 Milliseconds			
SAE Filter Class:	180			
Date of Test:	12/7/99			
Curve Number:	IN1-093			

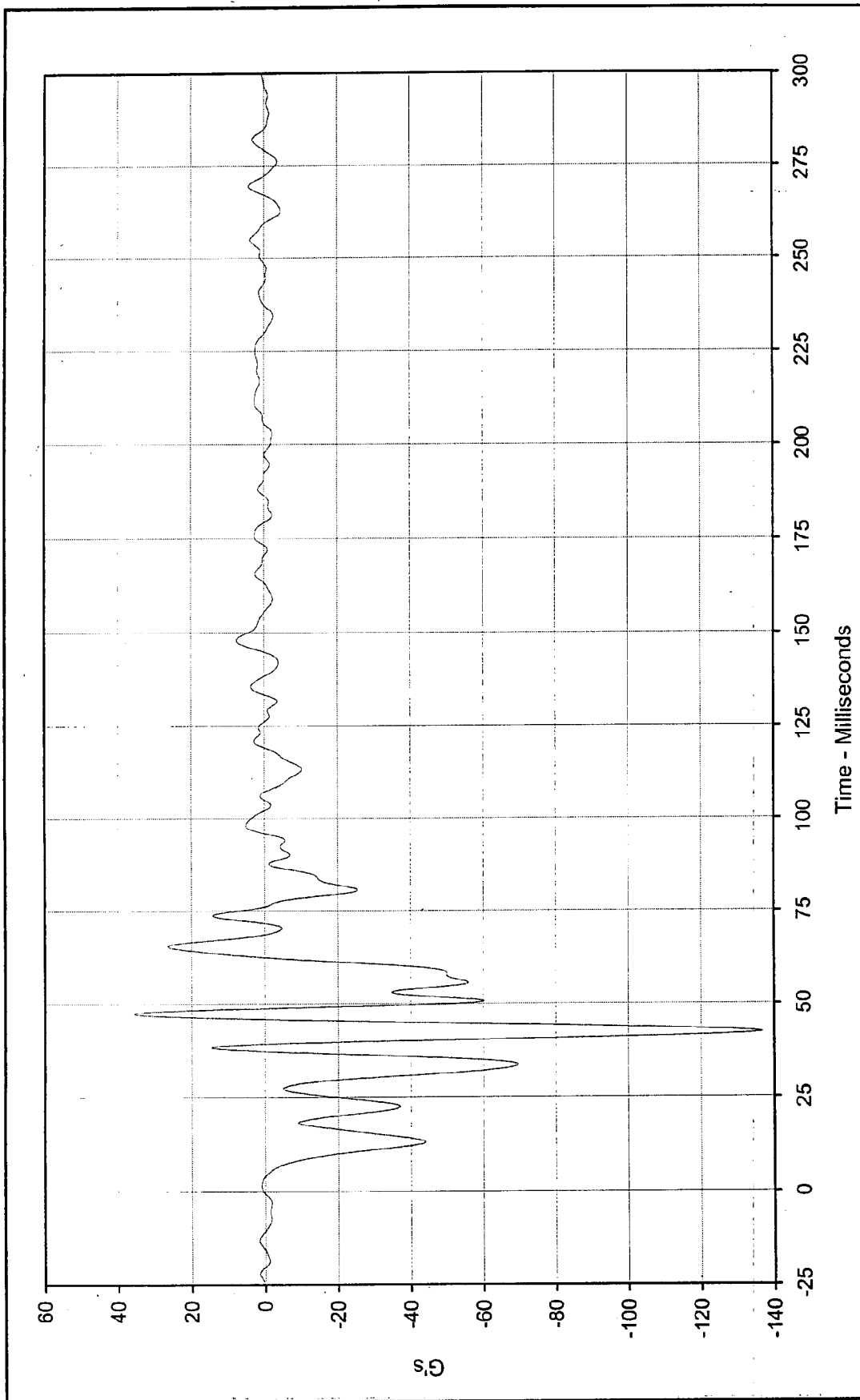




Curve Description: Vehicle Left Brake Caliper Displ.
 Maximum Value: 54.6 at 56.8 Milliseconds
 Minimum Value: -12.1 at 299.9 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/7/99
 Curve Number: IN2-093

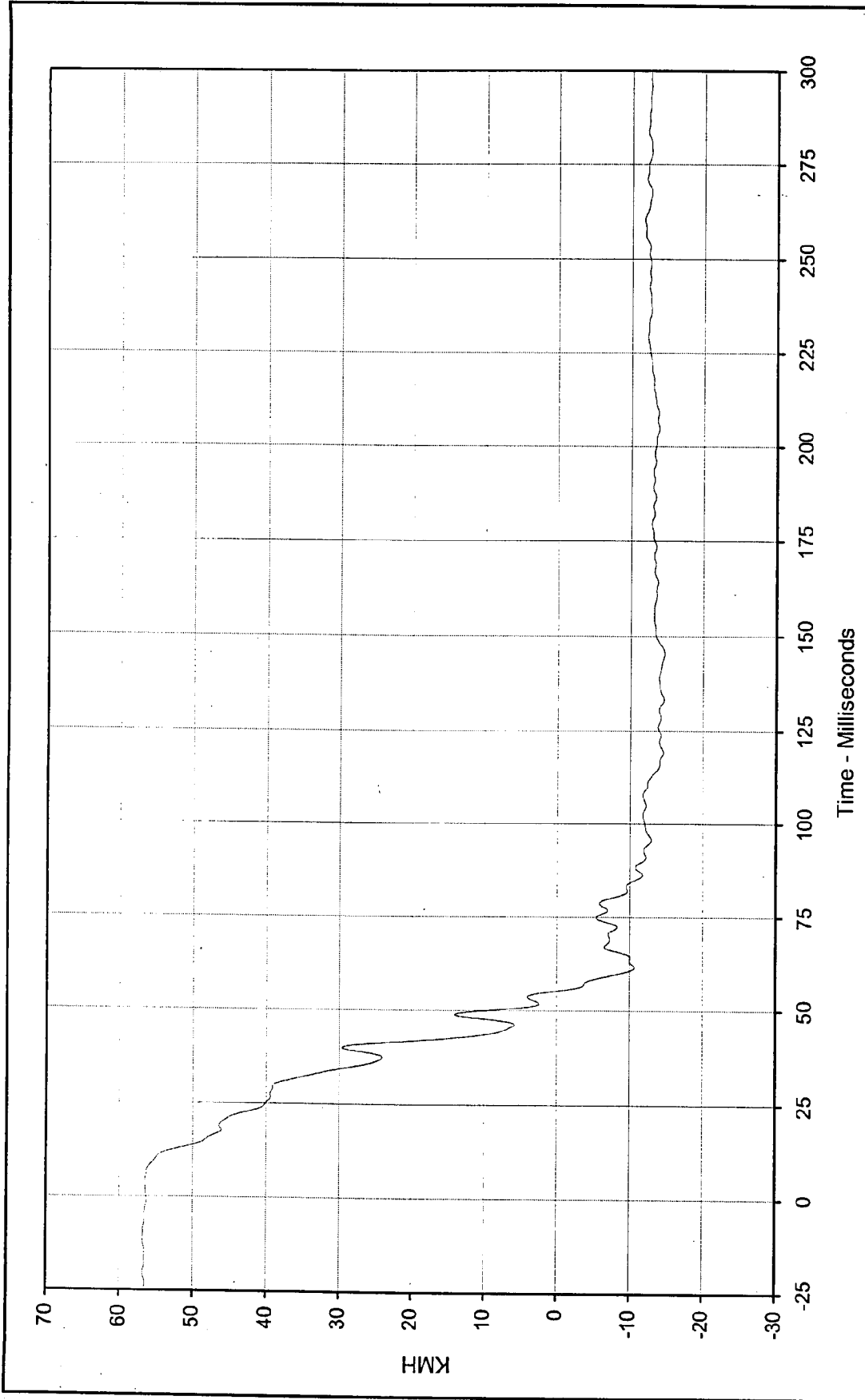
Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description:	Vehicle Right Brake Caliper	Test Program:	2000 NHTSA 35 mph NCAP No.: MY5500
Maximum Value:	35.7 at 47.4 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan
Minimum Value:	-136.8 at 42.2 Milliseconds		
SAE Filter Class:	60		
Date of Test:	12/7/99		
Curve Number:	FIL-094		





Curve Description: Vehicle Right Brake Caliper Velocity

Maximum Value: 56.4 at 4.1 Milliseconds

Minimum Value: -14.7 at 145.2 Milliseconds

SAE Filter Class: 180

Date of Test: 12/7/99

Curve Number: IN1-094

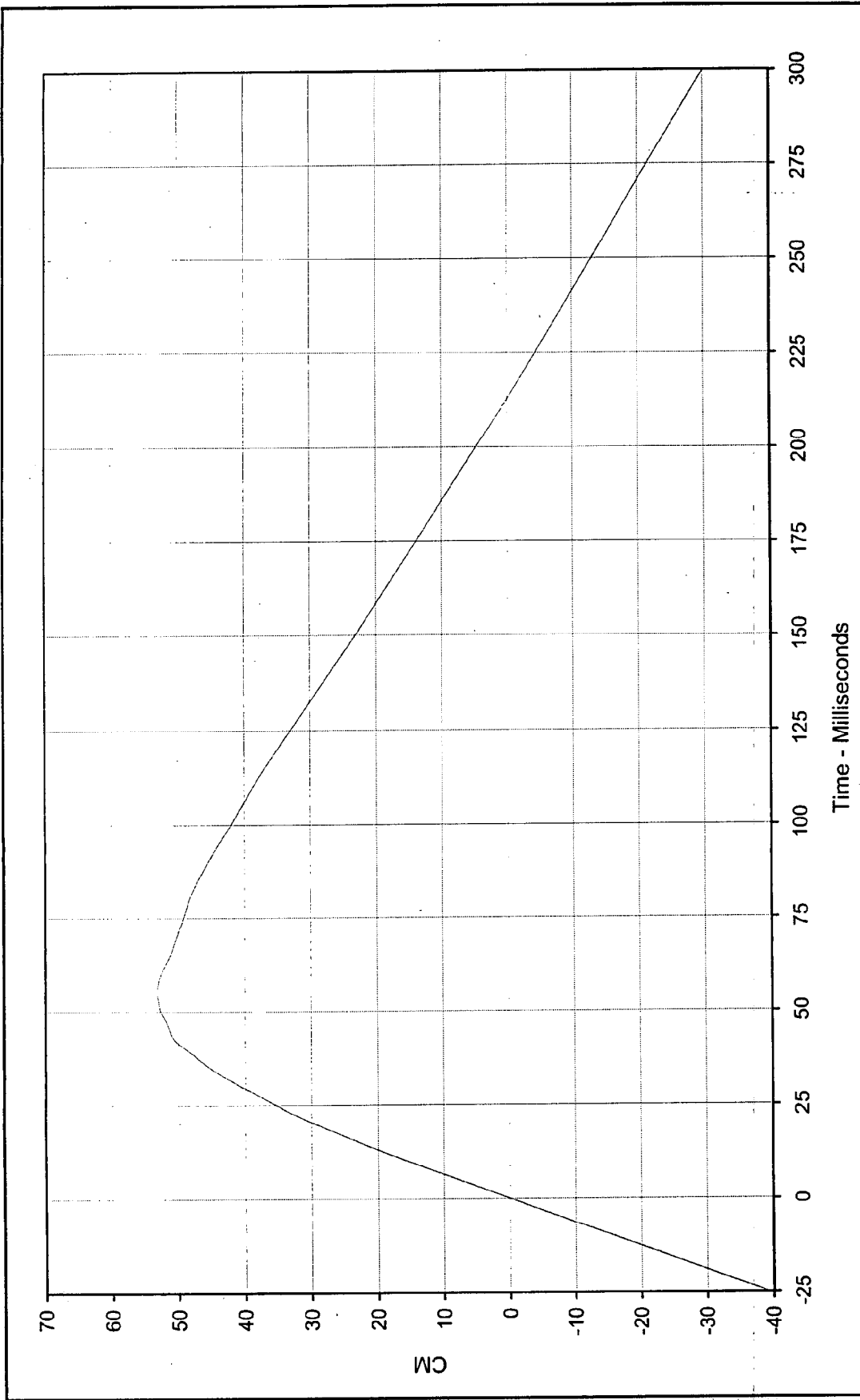
Test Program:

2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle:

2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description: Vehicle Right Brake Caliper Displ.

Maximum Value: 53.2 at 55.2 Milliseconds

Minimum Value: -30.1 at 299.9 Milliseconds

SAE Filter Class: 180

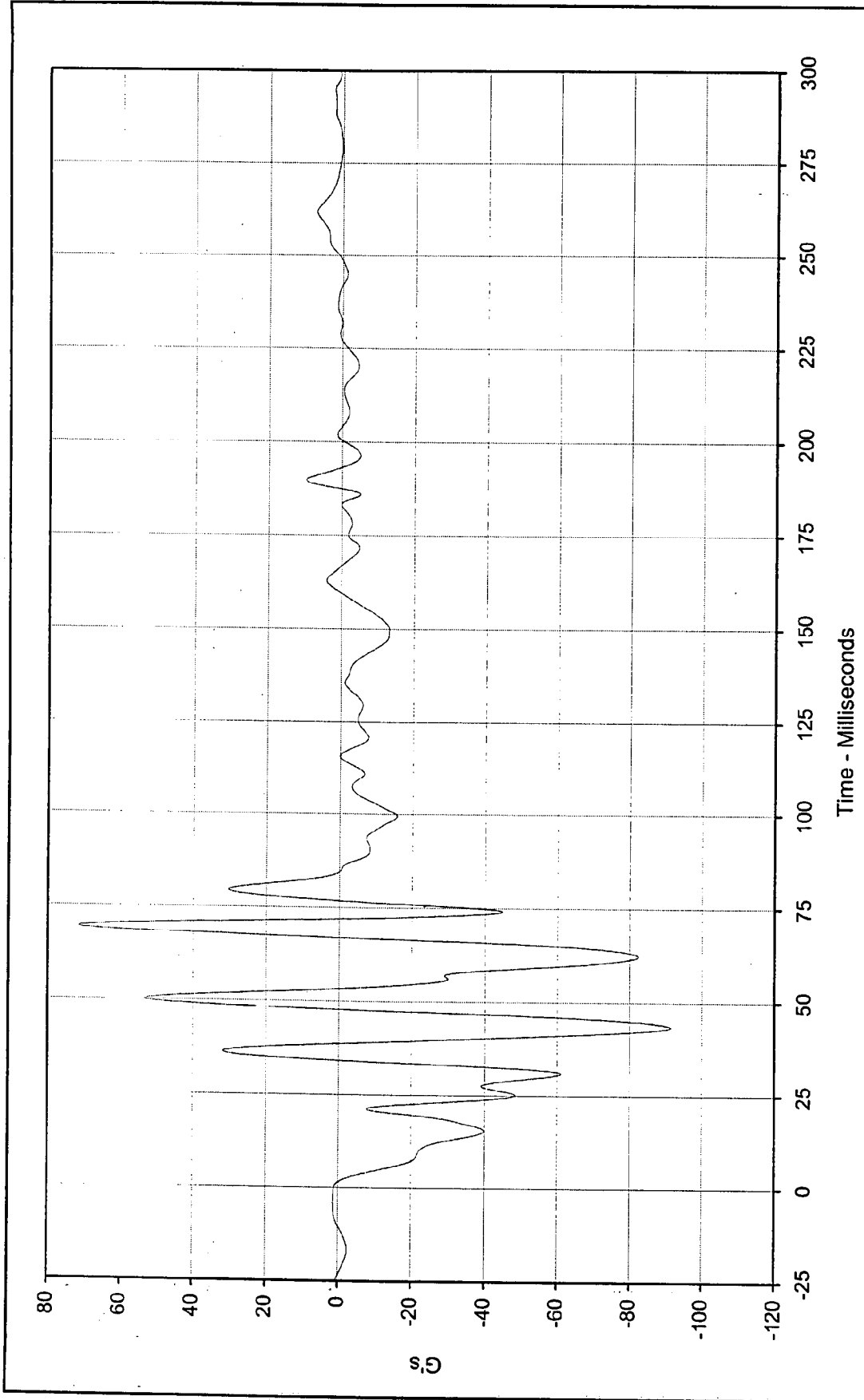
Date of Test: 12/7/99

Curve Number: IN2-094

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

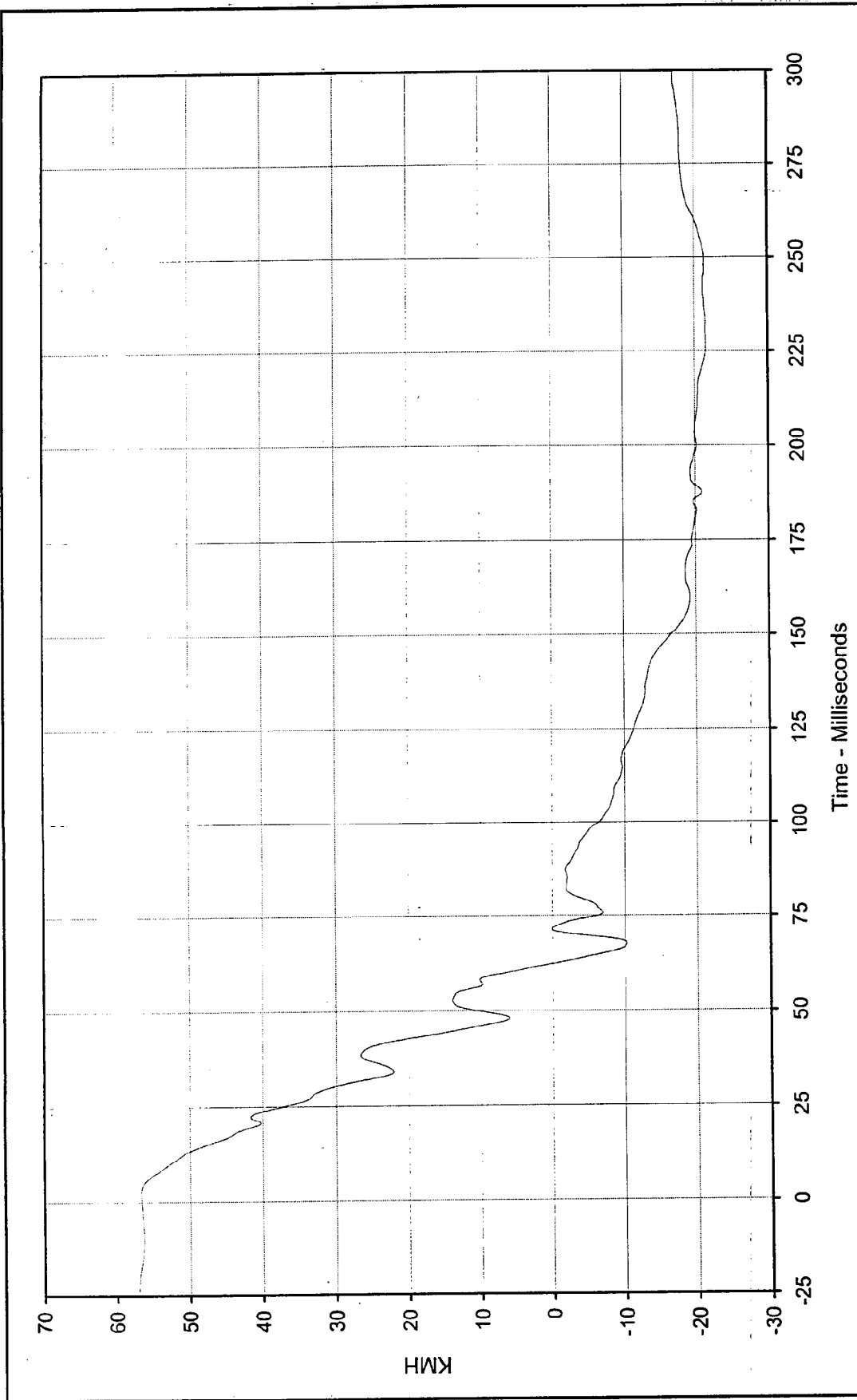




Curve Description:	Vehicle Instrument Panel		Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	71.5	at 69.5	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-91.4	at 43.6			
SAE Filter Class:	60				
Date of Test:	12/7/99				
Curve Number:	FIL-095				



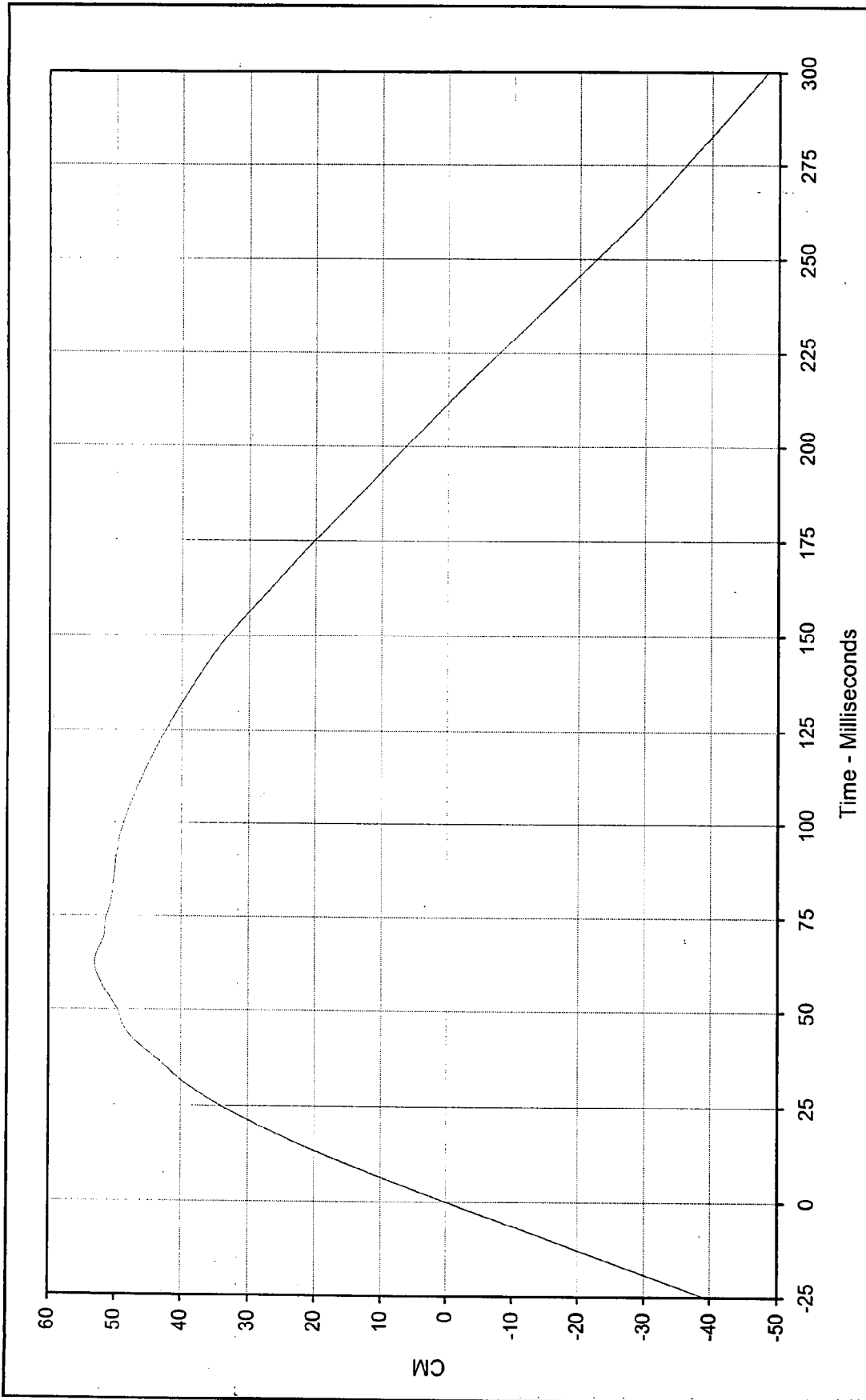




Curve Description:	Vehicle Instrument Panel Velocity		Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	56.7	at 2.3	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-21.6	at 228.0			
SAE Filter Class:	180				
Date of Test:	12/7/99				
Curve Number:	IN1-095				

The logo for KARCO Engineering features the word "KARCO" in a large, bold, sans-serif font. To the left of the letters "K" and "A" is a stylized lightbulb icon. A diagonal line runs from the bottom left to the top right, passing behind the text. Above the line, the word "Engineering" is written in a cursive script. The background of the logo is black, and the text and icon are white.





Curve Description: Vehicle Instrument Panel Displacement

Maximum Value: 53.0 at 62.2 Milliseconds

Minimum Value: -48.3 at 299.9 Milliseconds

SAE Filter Class: 180

Date of Test: 12/7/99

Curve Number: IN2-095

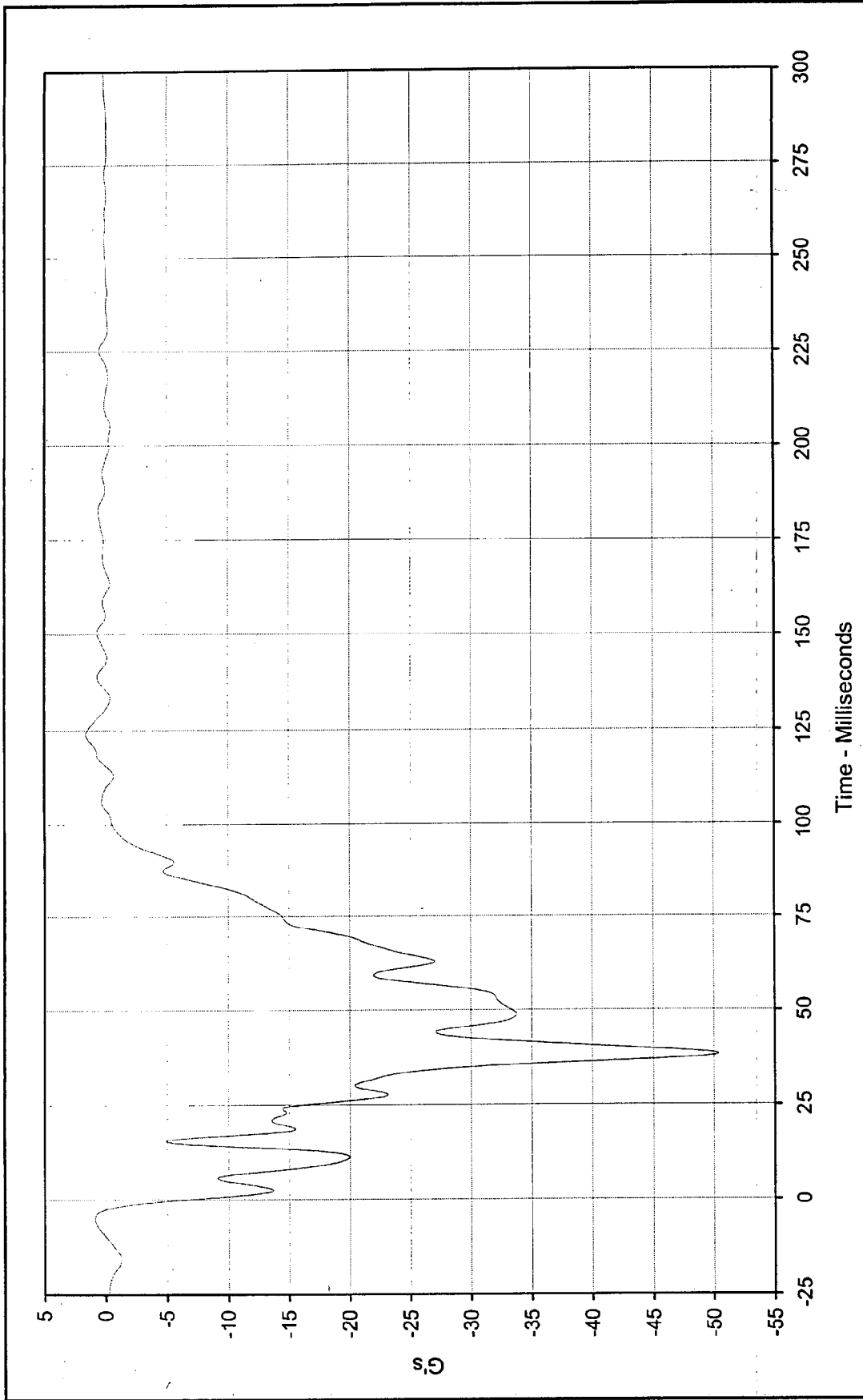
Test Program:

2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle:

2000 Subaru Legacy L AWD 4 Door Sedan

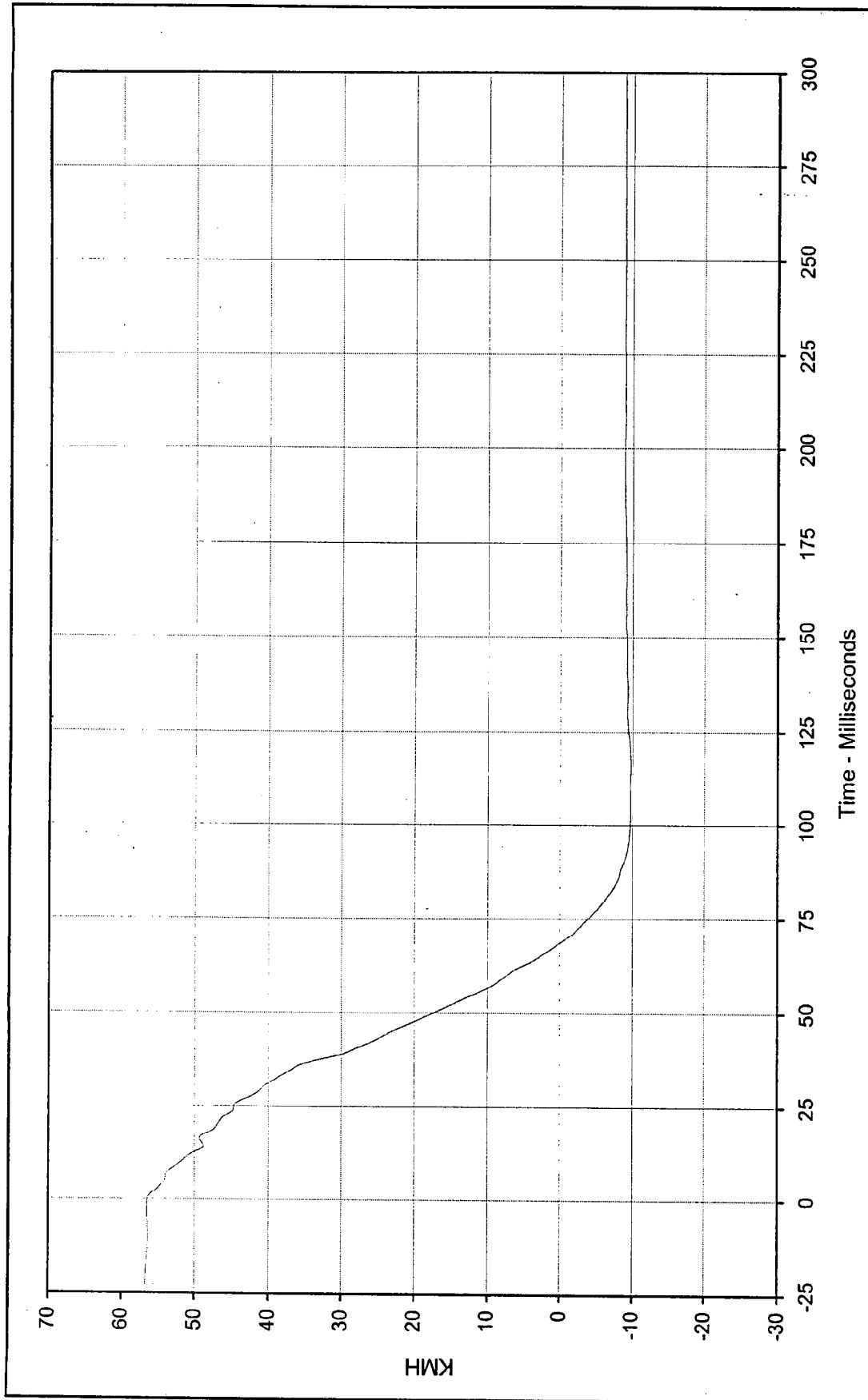




Curve Description: Vehicle Left Rear Redundant
 Maximum Value: 1.6 at 123.8 Milliseconds
 Minimum Value: -50.4 at 38.0 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/7/99
 Curve Number: FIL-096

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description: Vehicle Left Rear Redundant Velocity

Maximum Value: 56.5 at 0.0 Milliseconds

Minimum Value: -9.8 at 115.5 Milliseconds

SAE Filter Class: 180

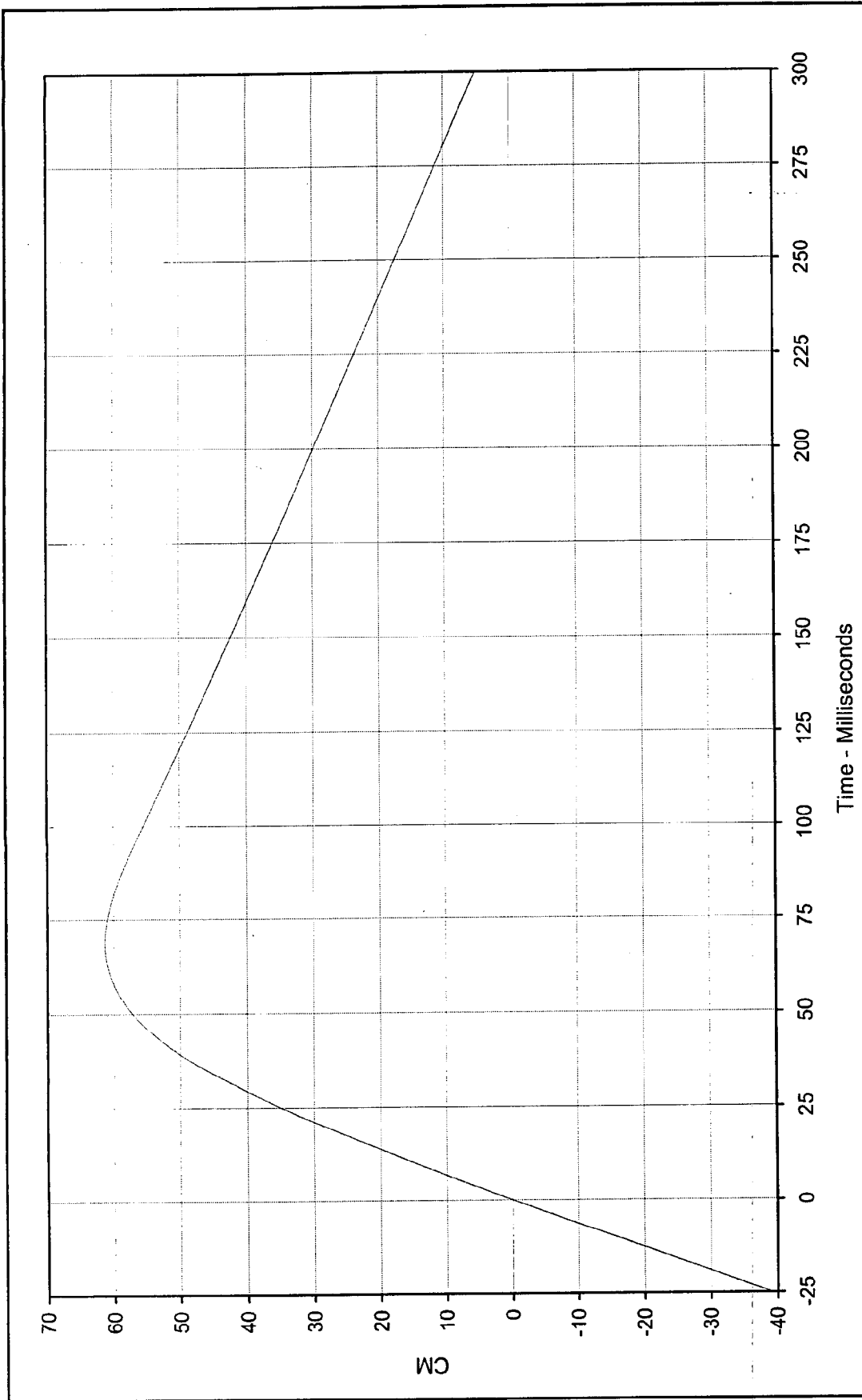
Date of Test: 12/7/99

Curve Number: IN1-096

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan



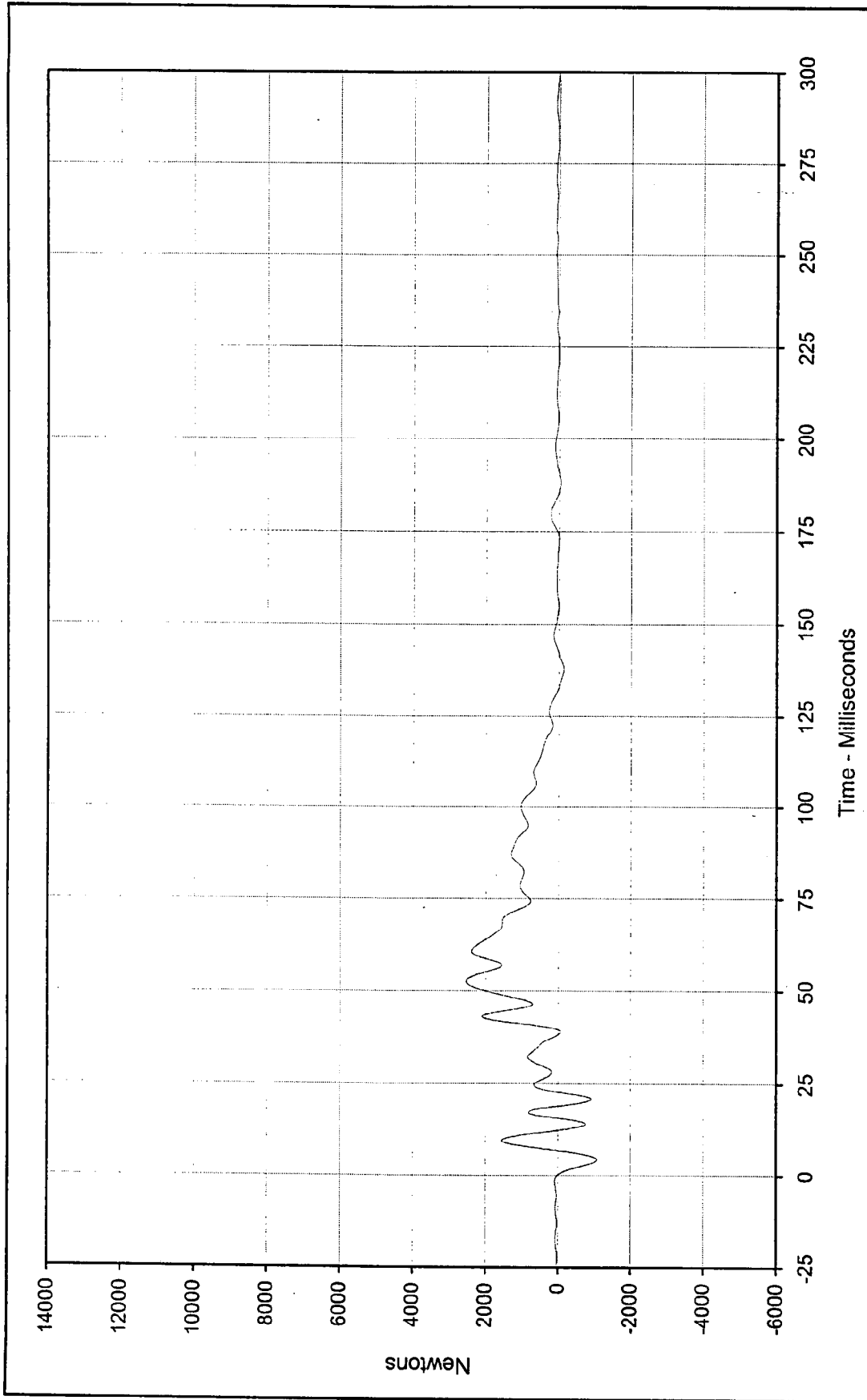


Curve Description:	Vehicle Left Rear Redundant Displ.	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	61.3 at 68.6 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	0.0 at 0.0 Milliseconds			
SAE Filter Class:	180			
Date of Test:	12/7/99			
Curve Number:	IN2-096			



APPENDIX C
LOAD CELL BARRIER INFORMATION

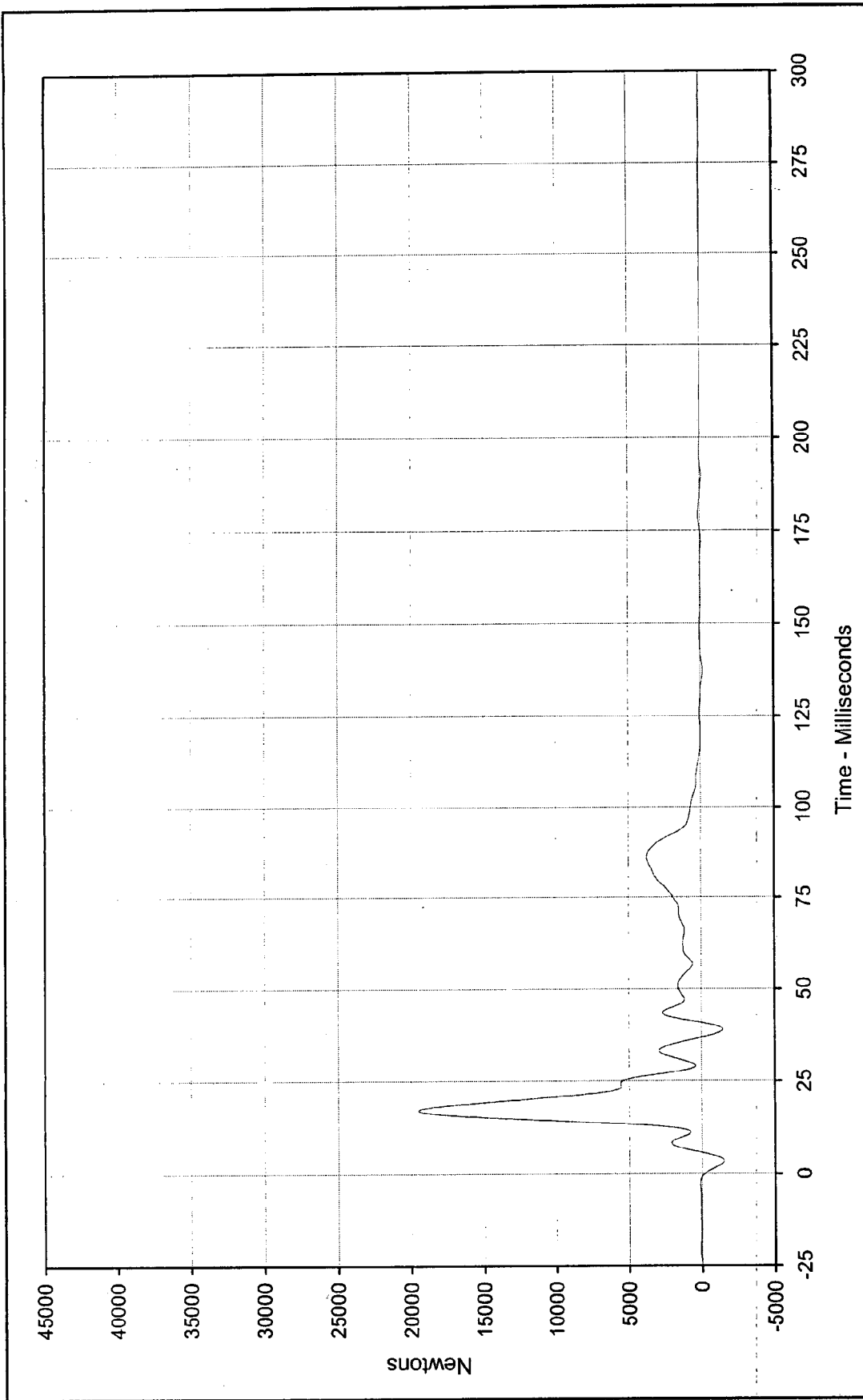
KAR20001-04



Curve Description: Barrier Force A2
 Maximum Value: 2536.7 at 52.6 Milliseconds
 Minimum Value: -1082.6 at 4.3 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/7/99
 Curve Number: FIL-099

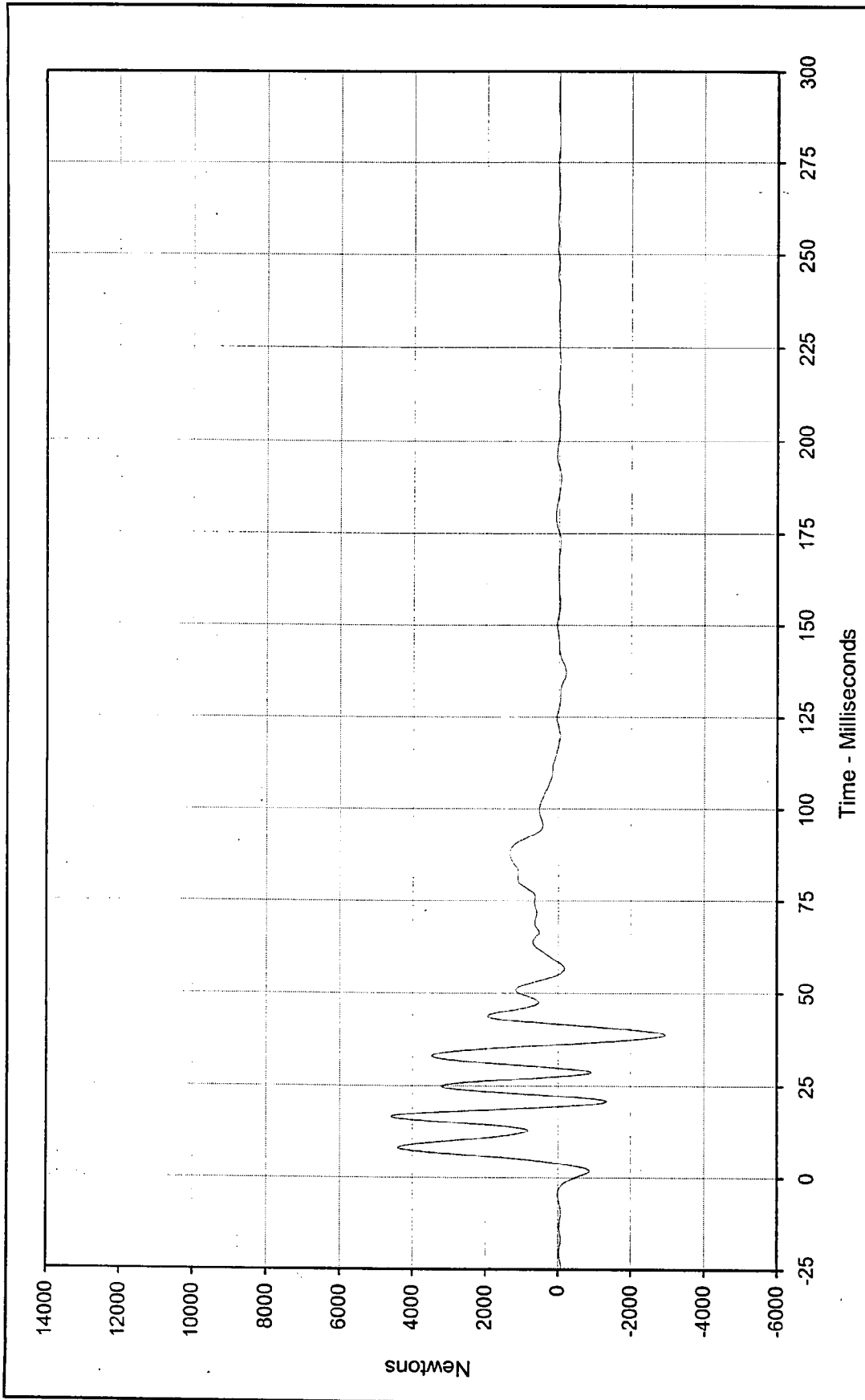
Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description:	Barrier Force A3	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	19509.3 at 17.4 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-1520.0 at 3.4 Milliseconds			
SAE Filter Class:	60			
Date of Test:	12/7/99			
Curve Number:	FIL-100			

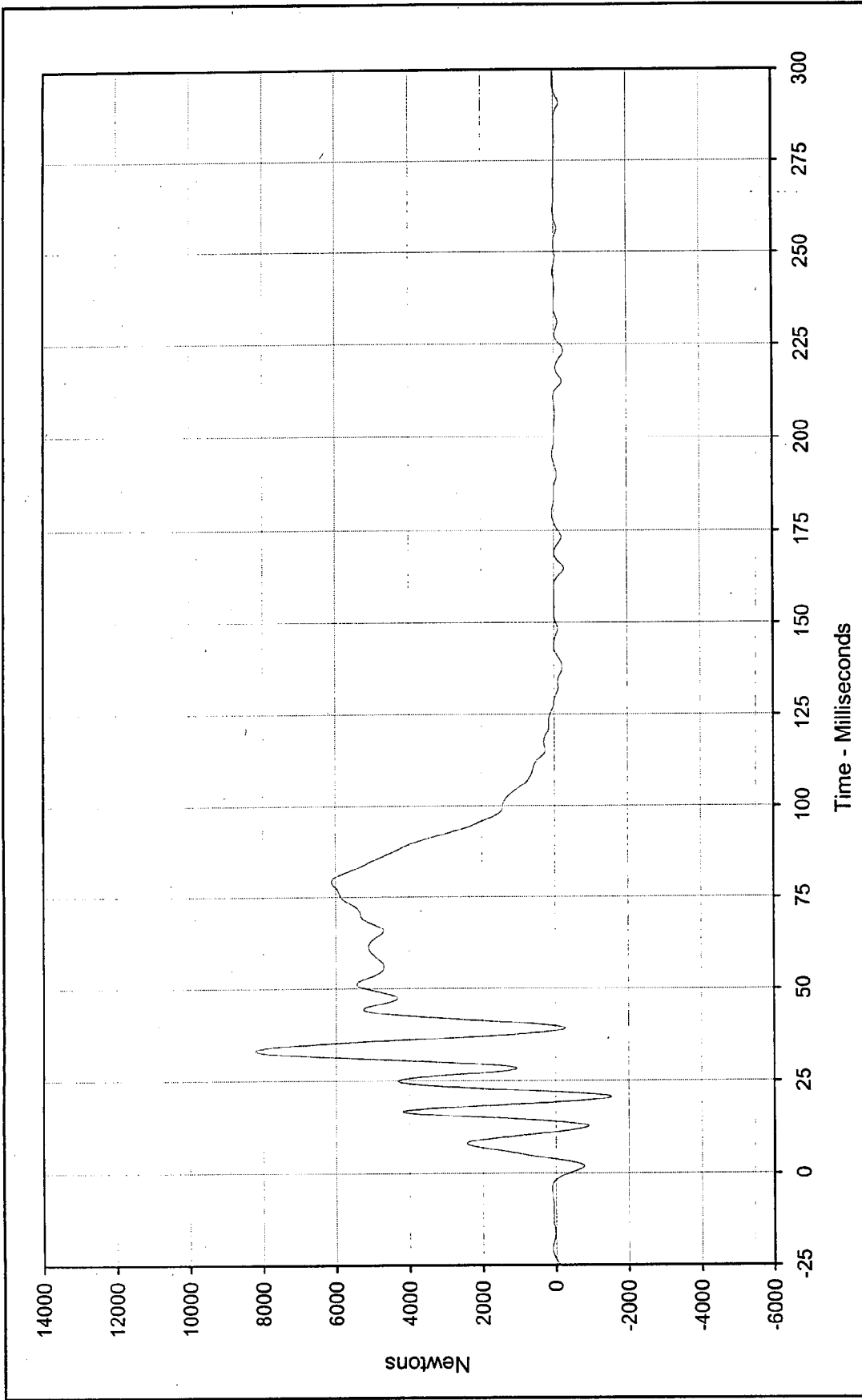




Curve Description: Barrier Force A4
Maximum Value: 4579.7 at 16.6 Milliseconds
Minimum Value: -2953.4 at 38.8 Milliseconds
SAE Filter Class: 60
Date of Test: 12/7/99
Curve Number: FIL-101

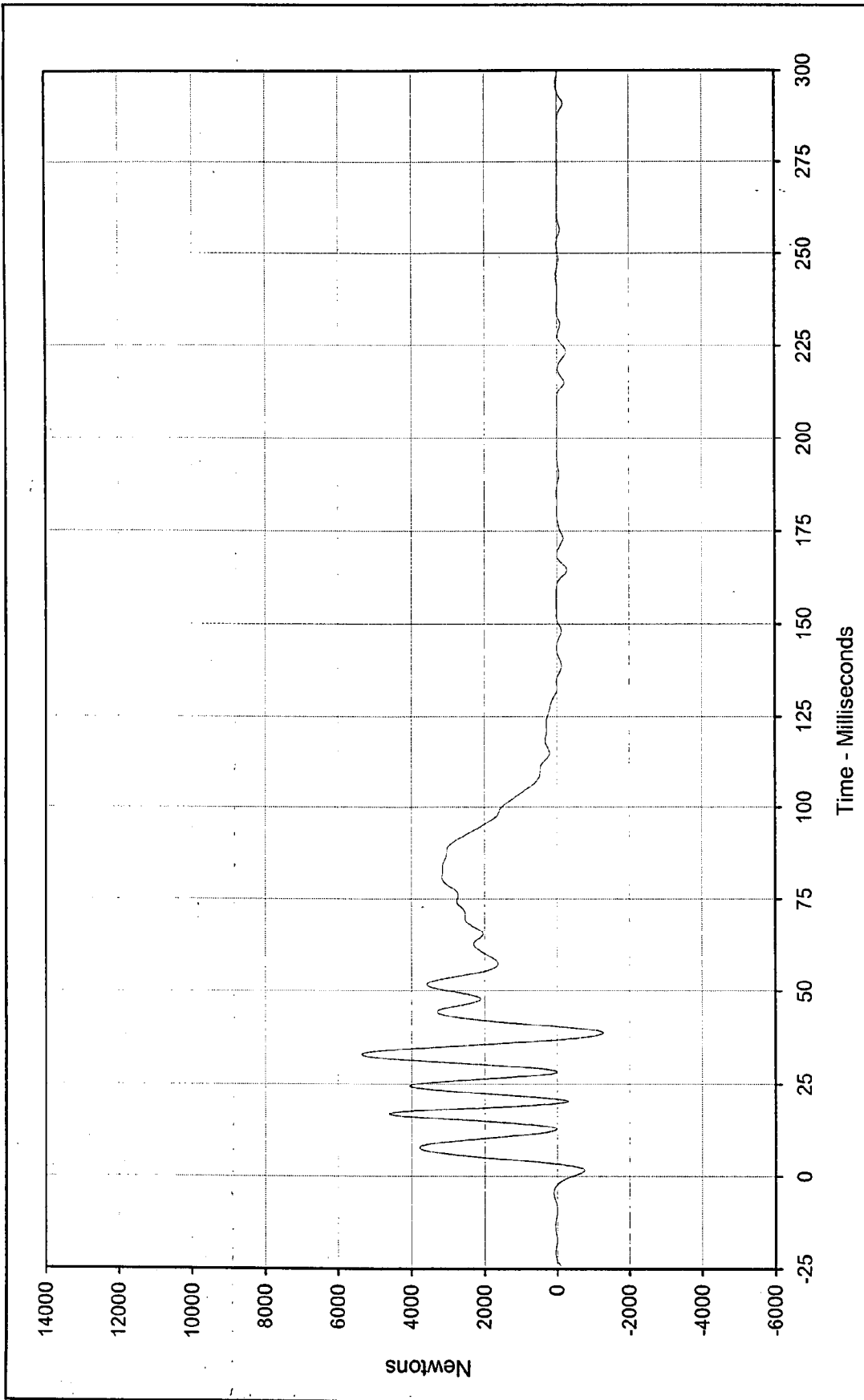
Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description:	Barrier Force A5	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	8224.1 at 33.2 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-1527.7 at 20.7 Milliseconds			
SAE Filter Class:	60			
Date of Test:	12/7/99			
Curve Number:	FIL-102			

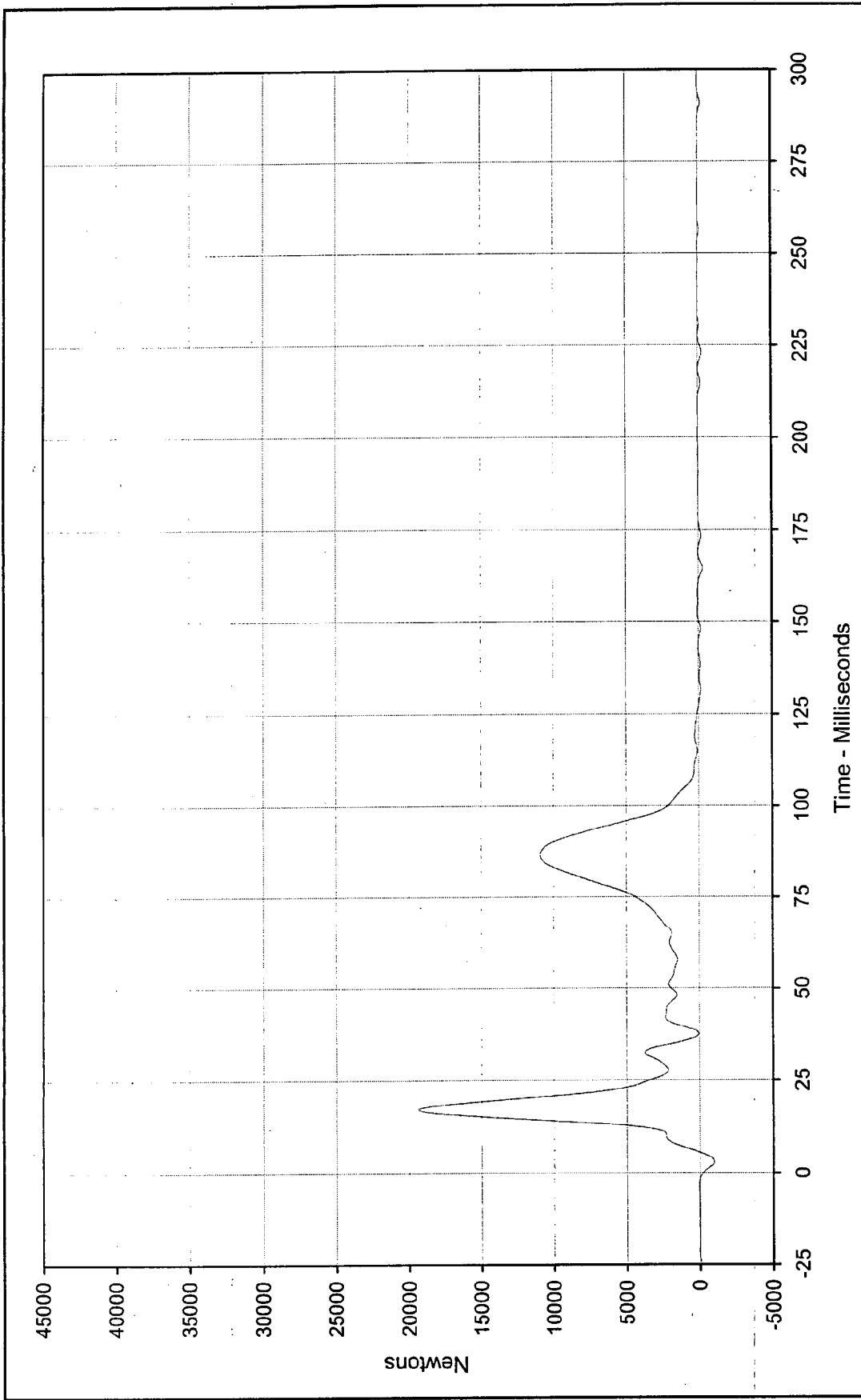




Curve Description: Barrier Force A6
 Maximum Value: 5346.5 at 32.9 Milliseconds
 Minimum Value: -1282.7 at 38.8 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/7/99
 Curve Number: FIL-103

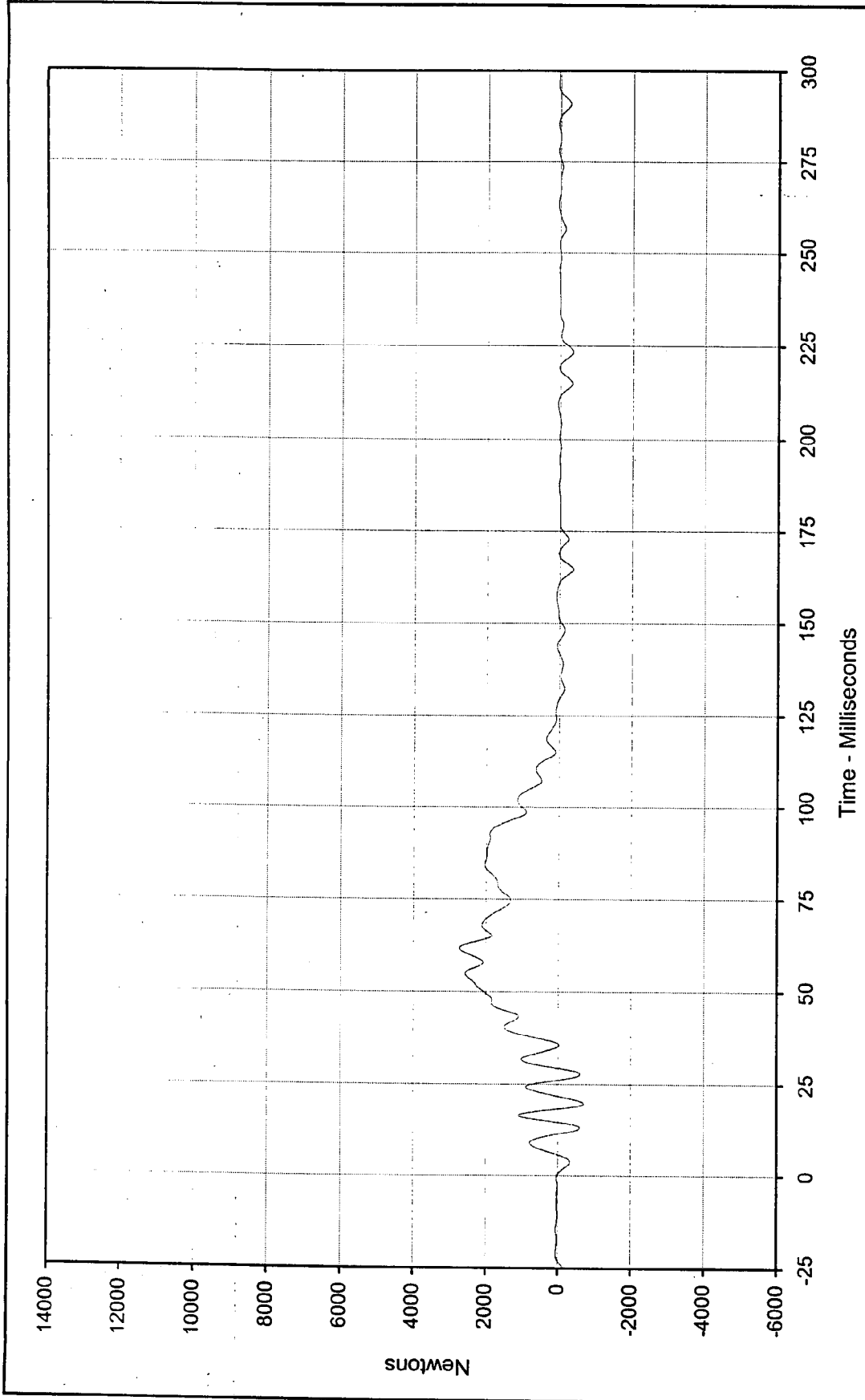
Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description:		Barrier Force A7		Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	19366.0	at	17.5	Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan
Minimum Value:	-984.6	at	3.0	Milliseconds		
SAE Filter Class:	60					
Date of Test:	12/7/99					
Curve Number:	FIL-104					

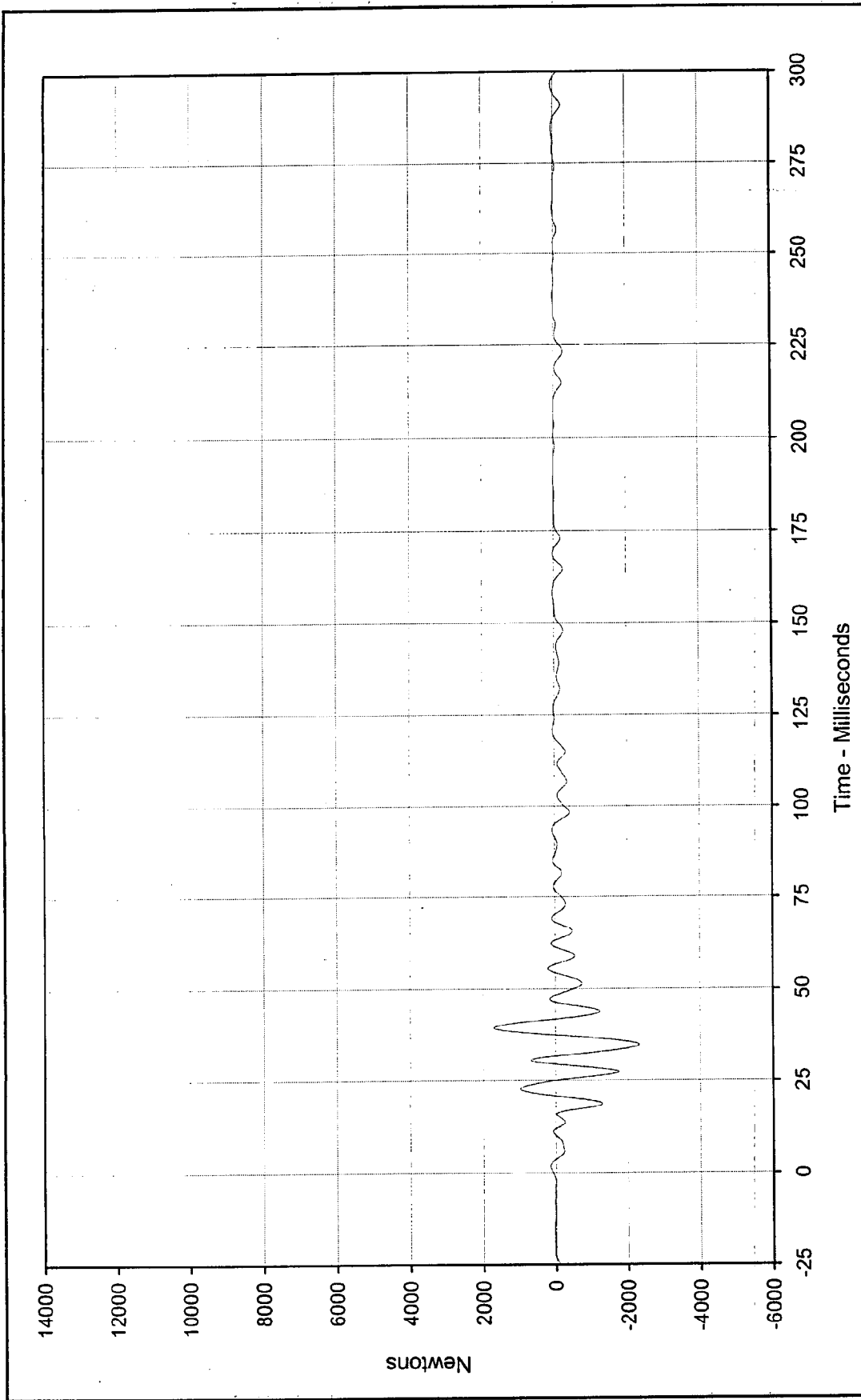




Curve Description: Barrier Force A8
 Maximum Value: 2721.0 at 61.7 Milliseconds
 Minimum Value: -709.0 at 19.8 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/7/99
 Curve Number: FIL-105

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan



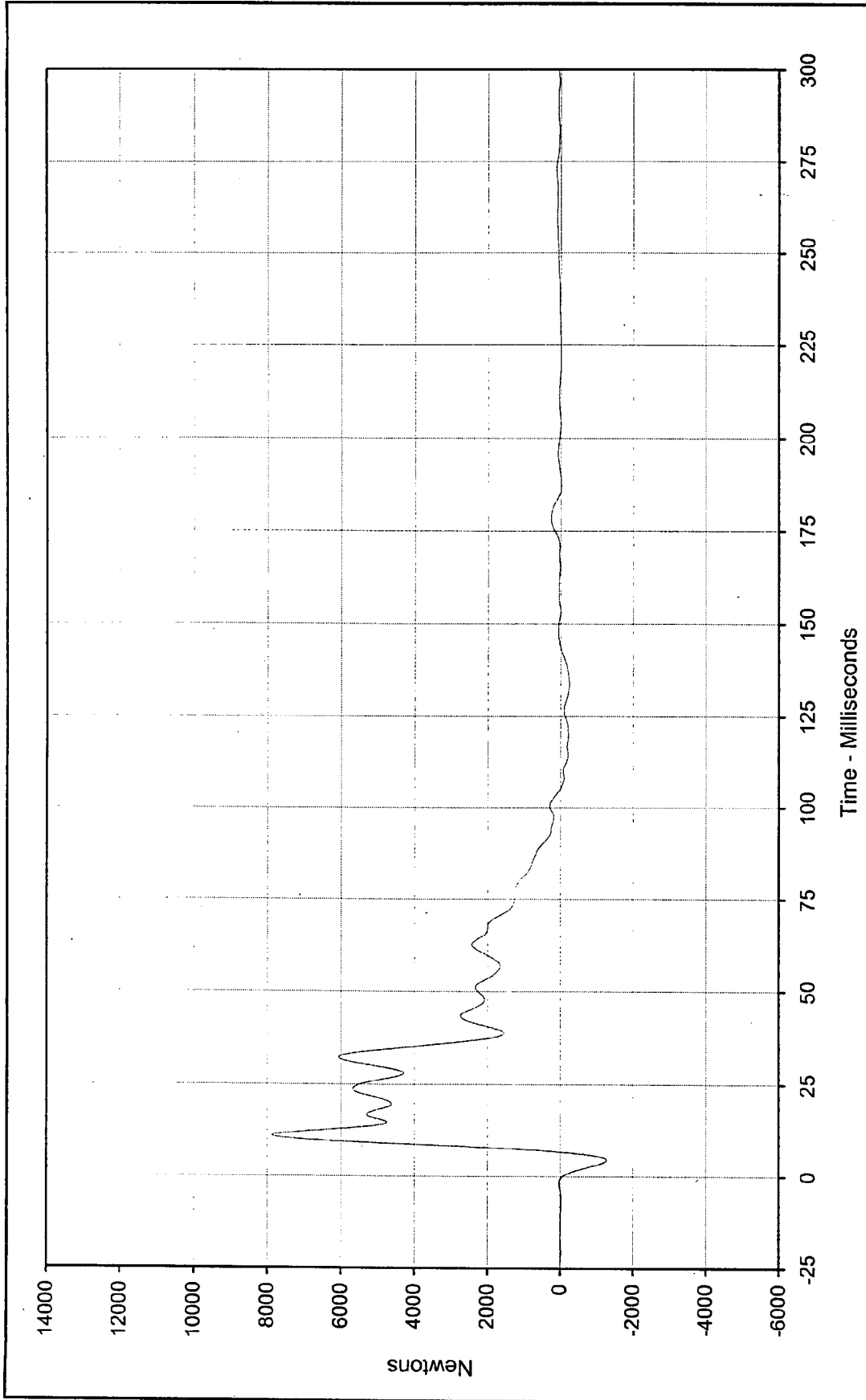


Curve Description: Barrier Force A9
 Maximum Value: 1701.1 at 39.4 Milliseconds
 Minimum Value: -2323.1 at 34.7 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/7/99
 Curve Number: FIL-106

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

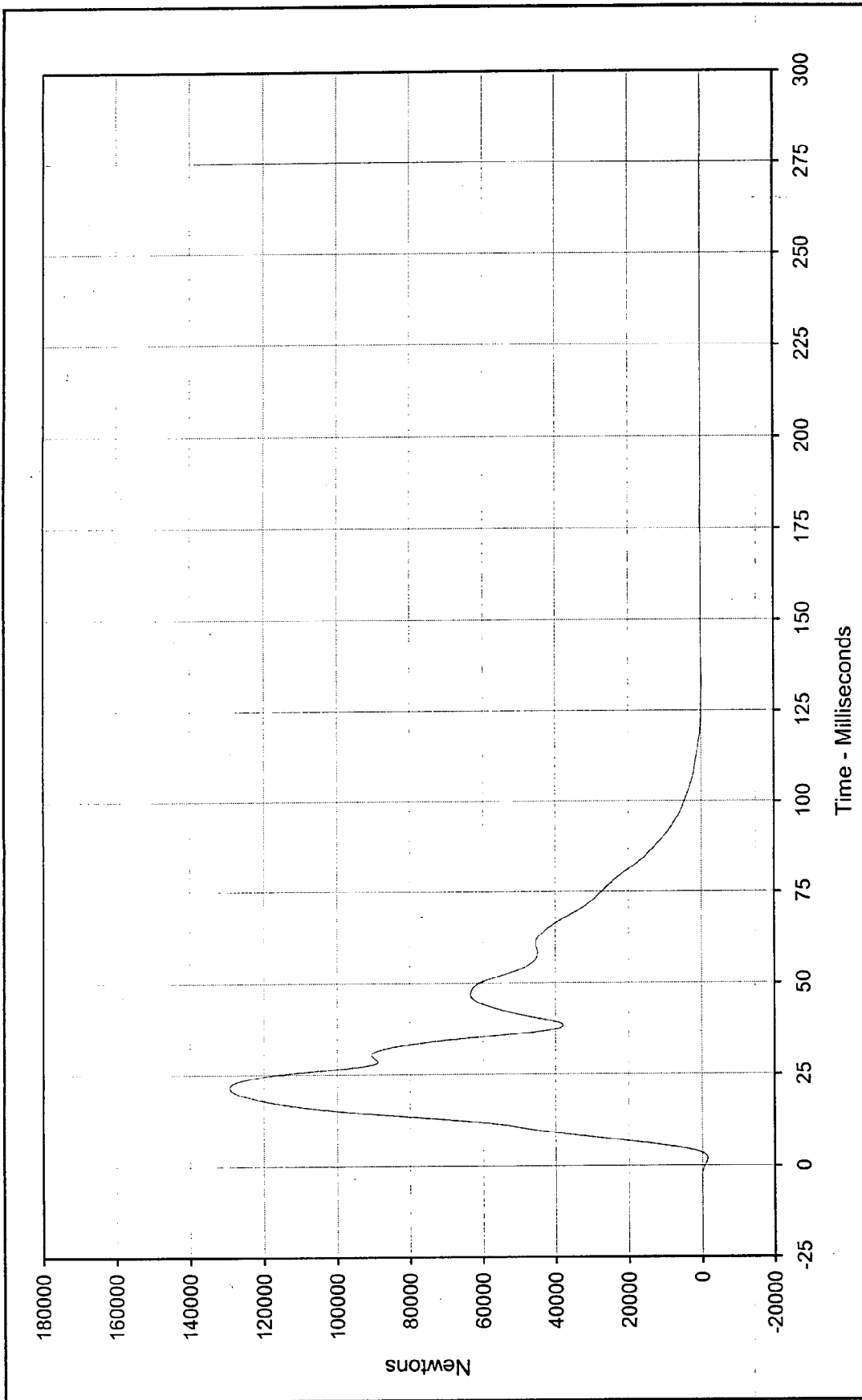




Curve Description: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Program: 2000 Subaru Legacy L AWD 4 Door Sedan
 Test Vehicle:

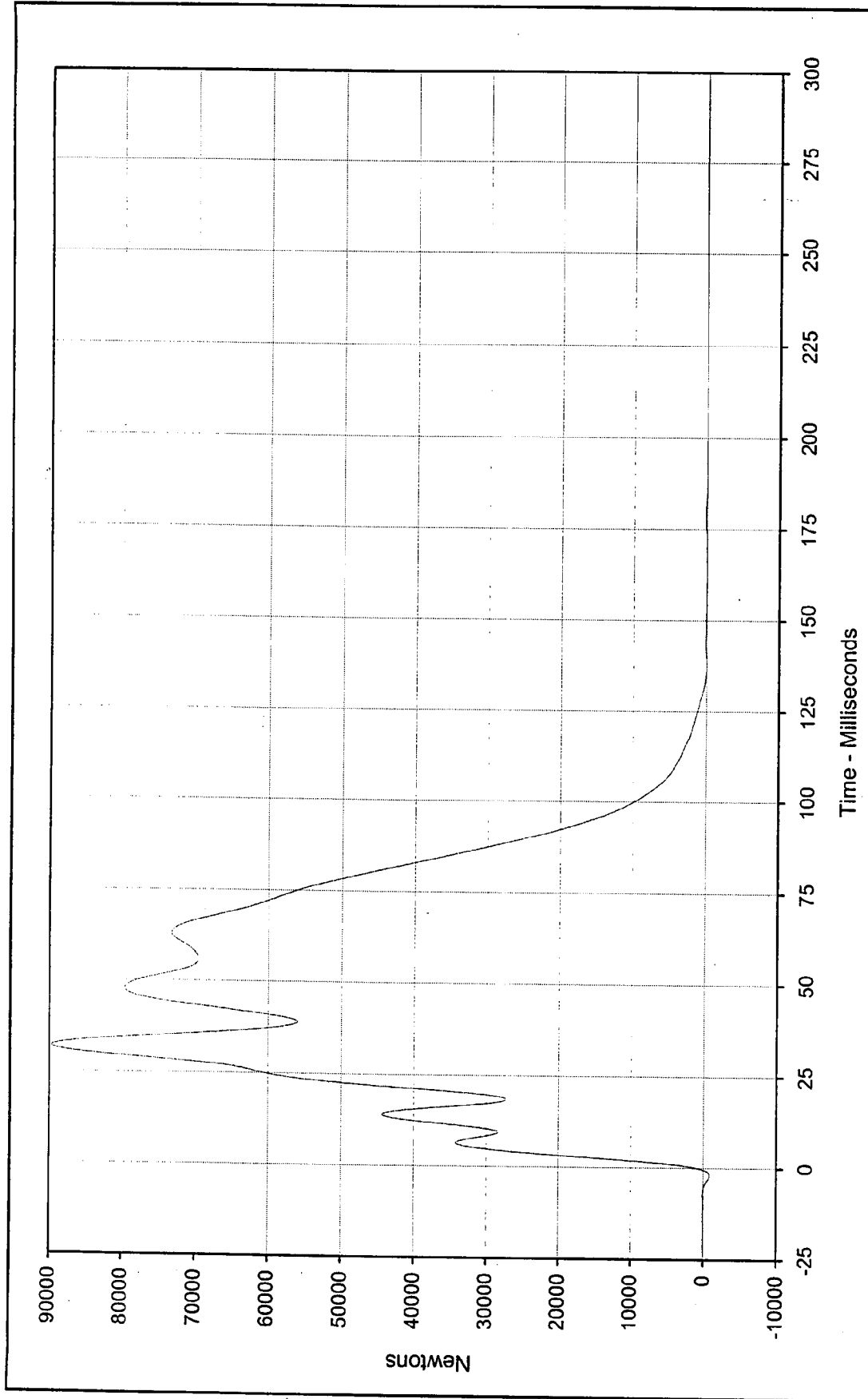
Barrier Force B2
 Maximum Value: 7869.7 at 11.0 Milliseconds
 Minimum Value: -1280.0 at 4.4 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/7/99
 Curve Number: FIL-108





Curve Description:	Barrier Force B3	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	129292.3 at 21.6 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-1574.7 at 2.0 Milliseconds			
SAE Filter Class:	60			
Date of Test:	12/7/99			
Curve Number:	FIL-109			

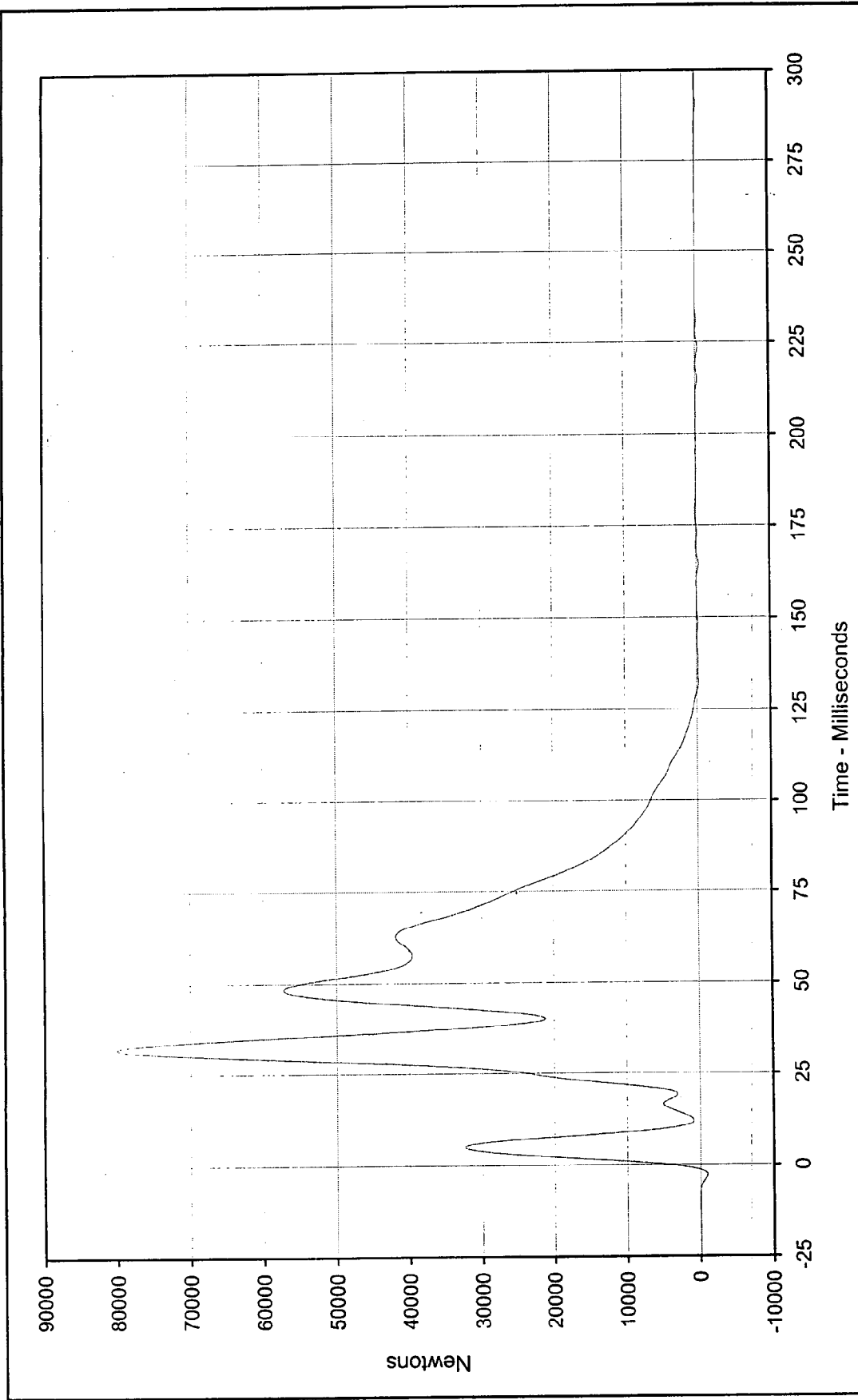




Curve Description: Barrier Force B4
 Maximum Value: 89683.4 at 31.9 Milliseconds
 Minimum Value: -65.2 at 299.9 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/7/99
 Curve Number: FIL-110

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

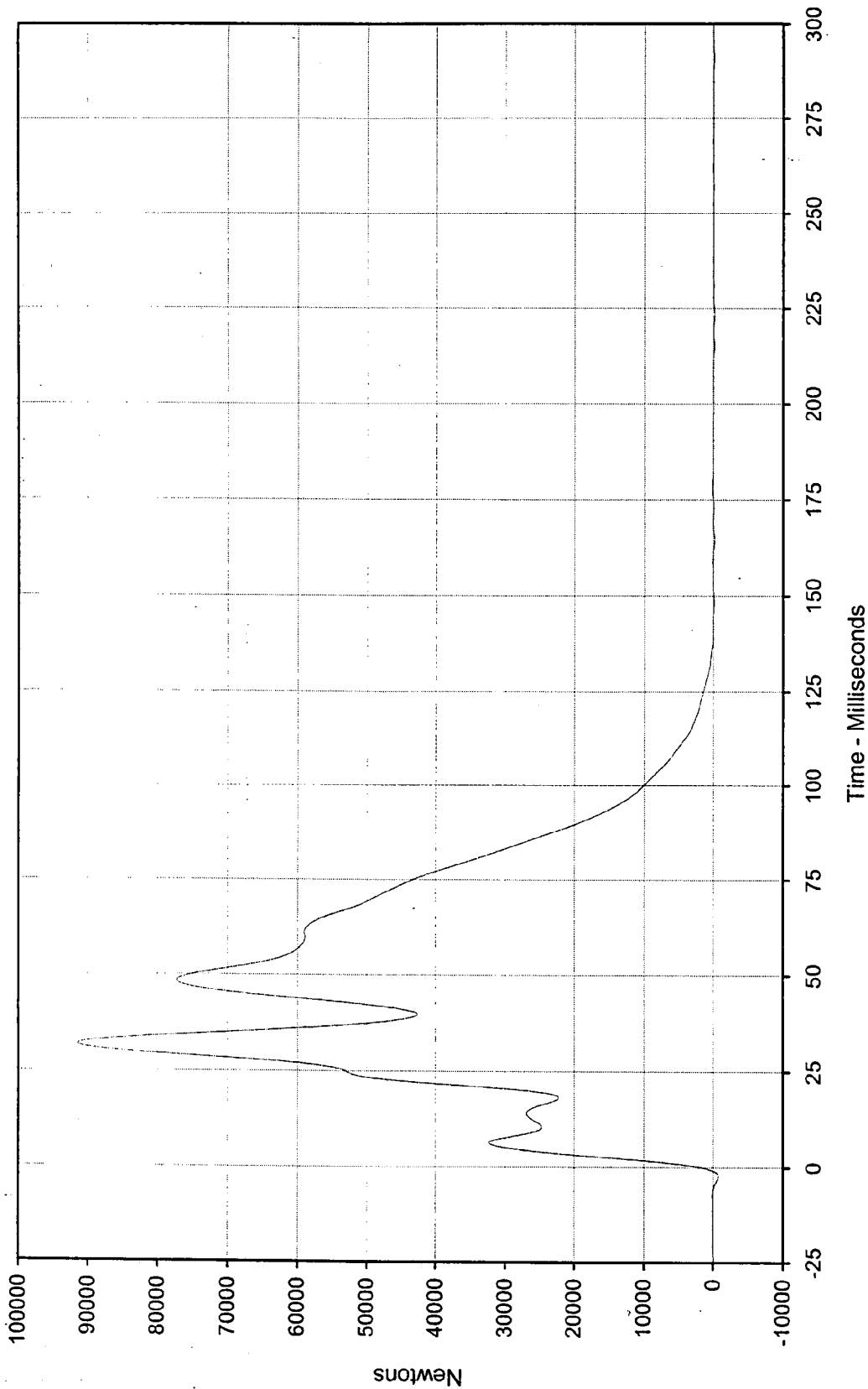




Curve Description: Barrier Force B5
 Maximum Value: 80105.9 at 32.0 Milliseconds
 Minimum Value: -312.1 at 164.5 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/7/99
 Curve Number: FIL-111

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description: Barrier Force B6

Maximum Value: 91514.0 at 31.9 Milliseconds

Minimum Value: -203.9 at 223.3 Milliseconds

SAE Filter Class: 60

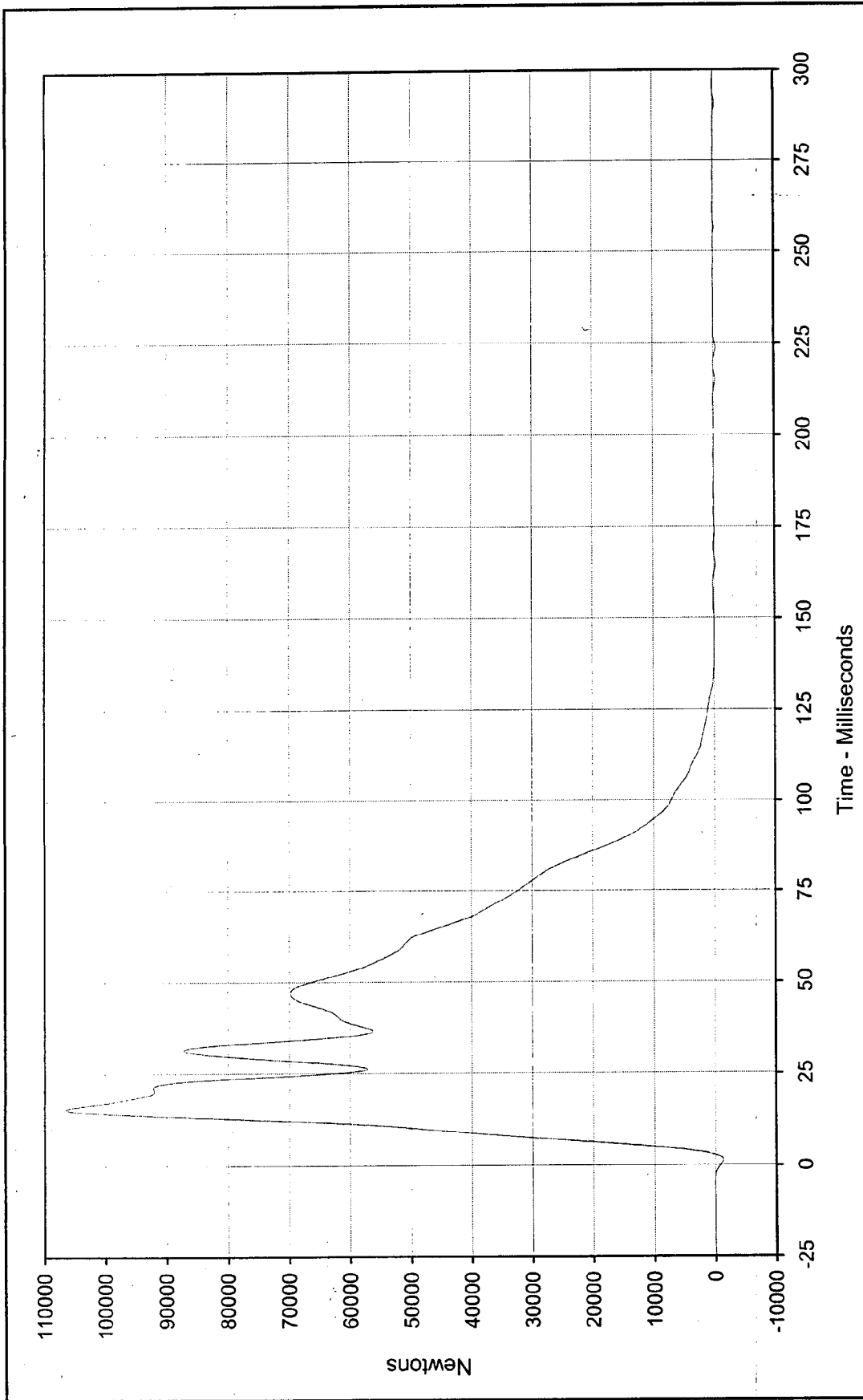
Date of Test: 12/7/99

Curve Number: FIL-112

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

Curve Description: Barrier Force B7

Maximum Value: 106540.0 at 15.6 Milliseconds

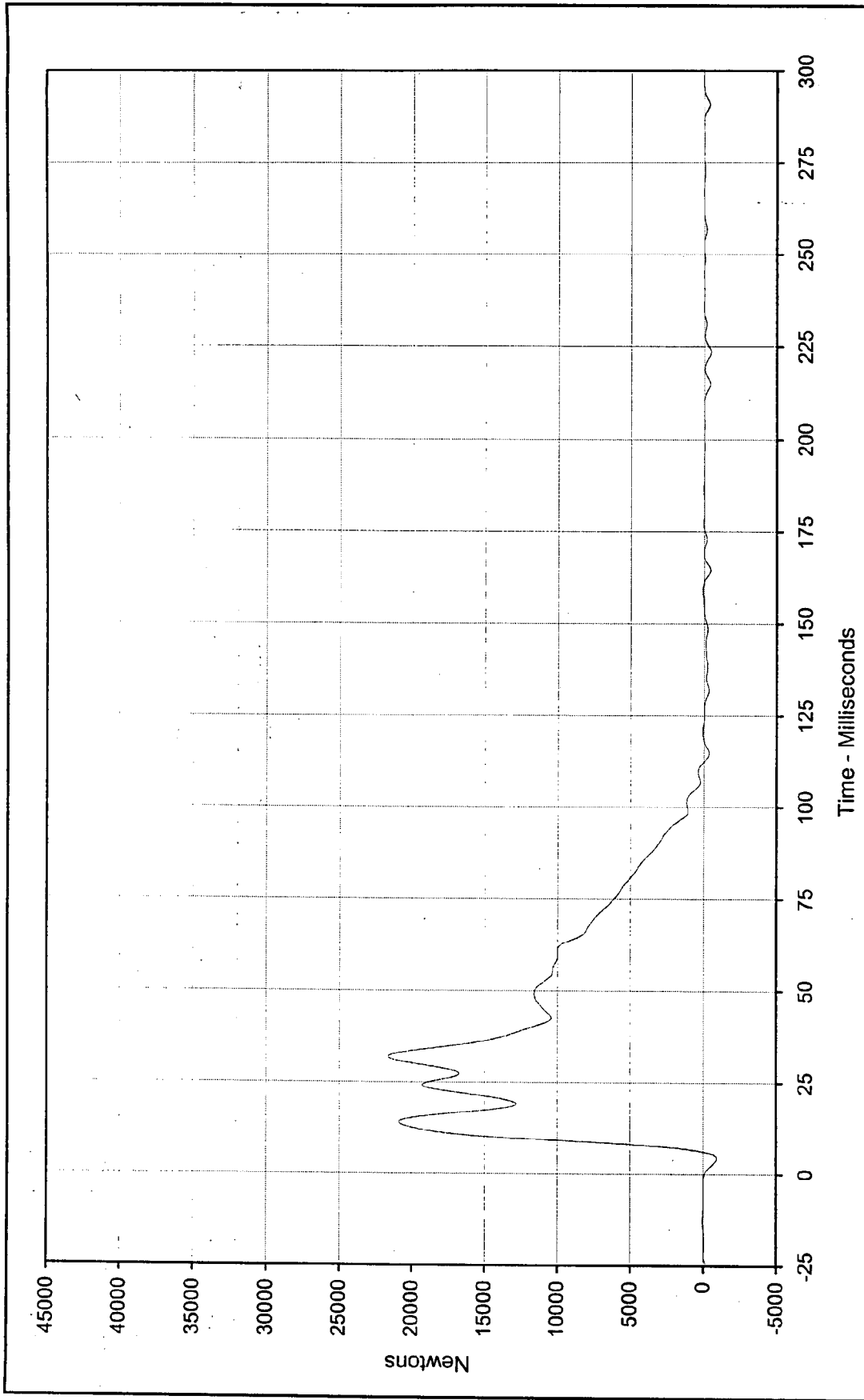
Minimum Value: -1230.4 at 1.3 Milliseconds

SAE Filter Class: 60

Date of Test: 12/7/99

Curve Number: FIL-113

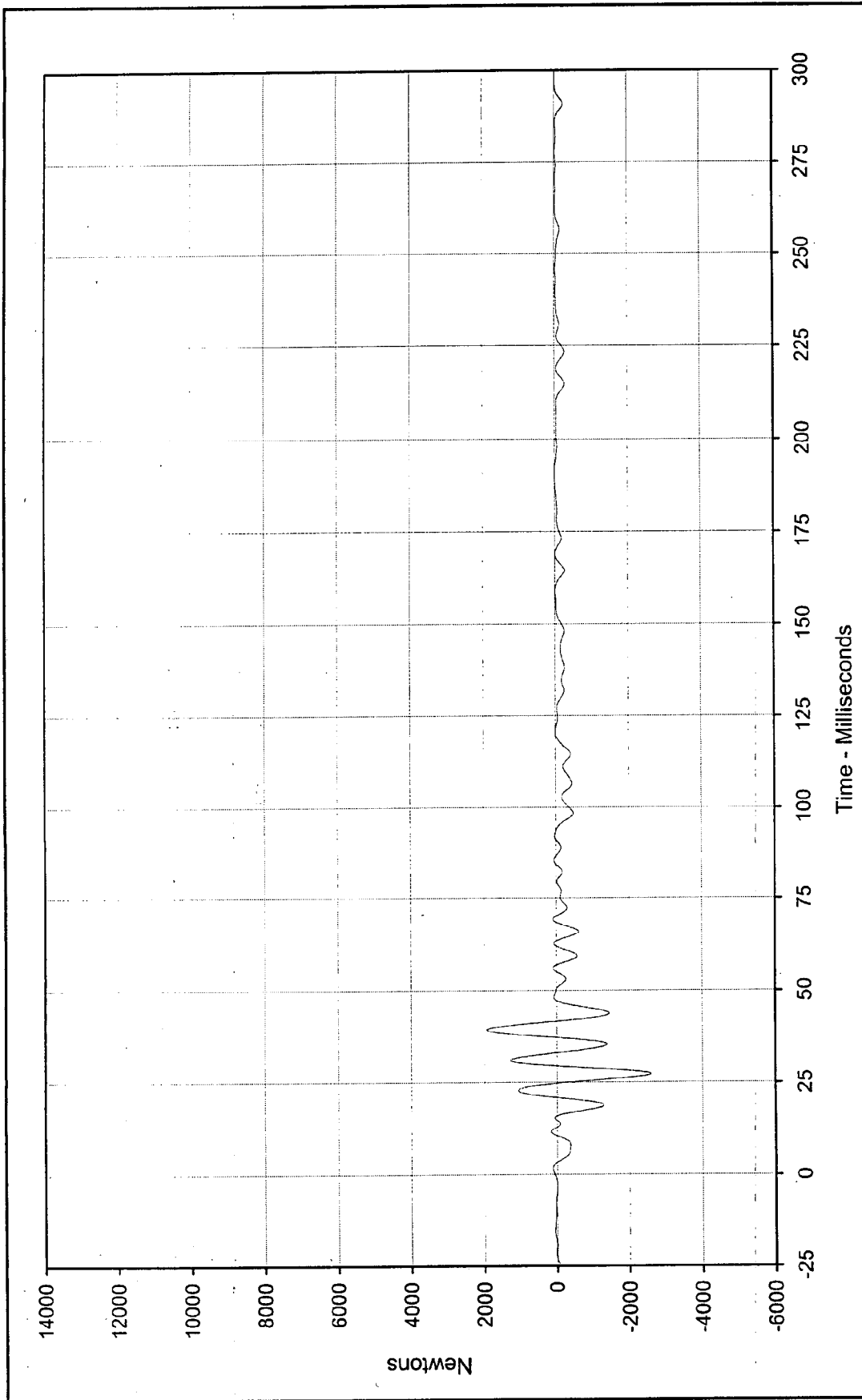




Curve Description: Barrier Force B8
 Maximum Value: 21633.5 at 31.9 Milliseconds
 Minimum Value: -9509.9 at 4.3 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/7/99
 Curve Number: FIL-114

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description: Barrier Force B9

Maximum Value: 1924.3 at 39.4 Milliseconds

Minimum Value: -2586.0 at 27.3 Milliseconds

SAE Filter Class: 60

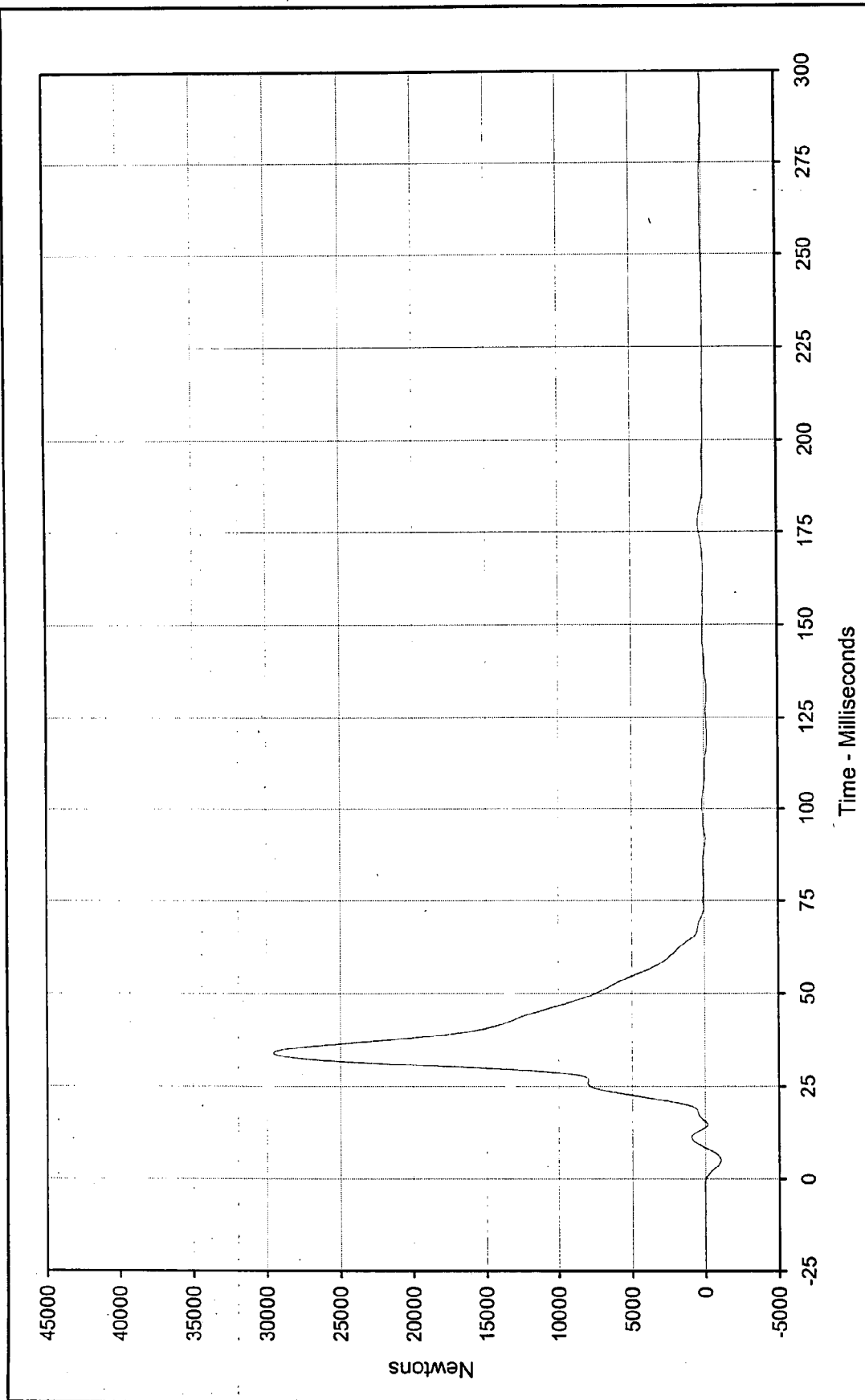
Date of Test: 12/7/99

Curve Number: FIL-115

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

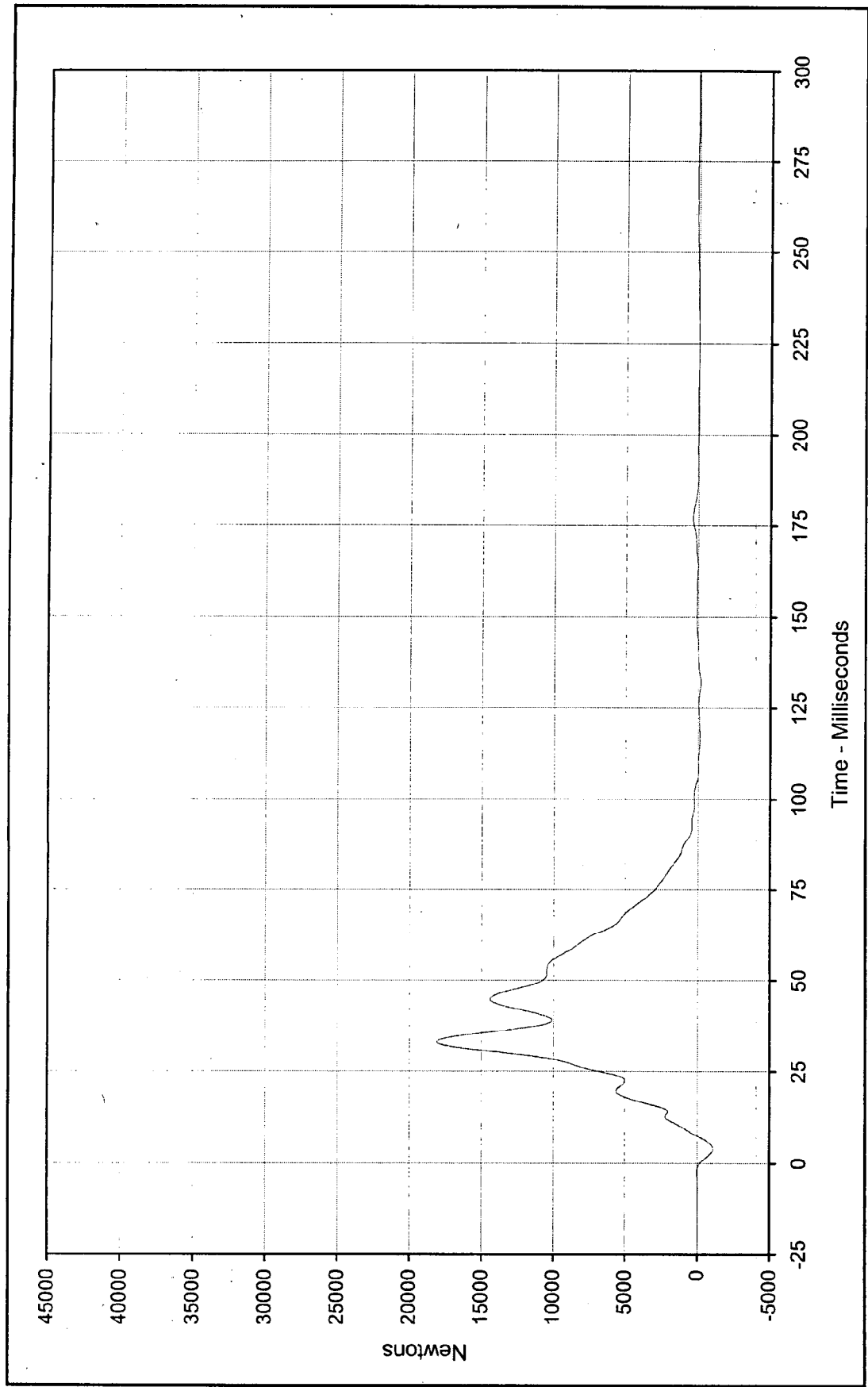




Curve Description: Barrier Force C2
 Maximum Value: 29553.3 at 34.0 Milliseconds
 Minimum Value: -1070.8 at 5.0 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/7/99
 Curve Number: FIL-117

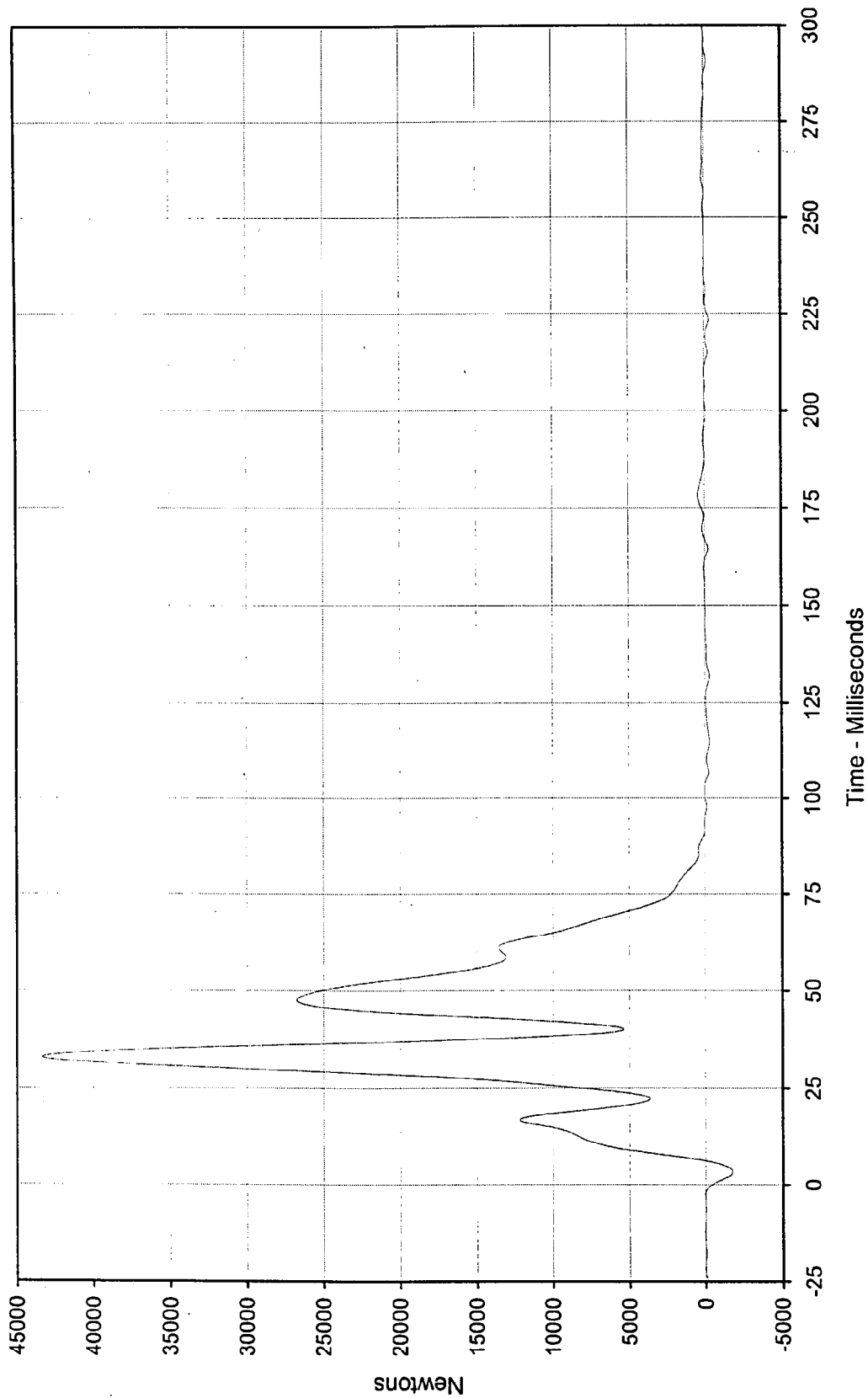
Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description:	Barrier Force C3	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	18104.7 at 33.0 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-1105.1 at 3.9 Milliseconds			
SAE Filter Class:	60			
Date of Test:	12/7/99			
Curve Number:	FIL-118			

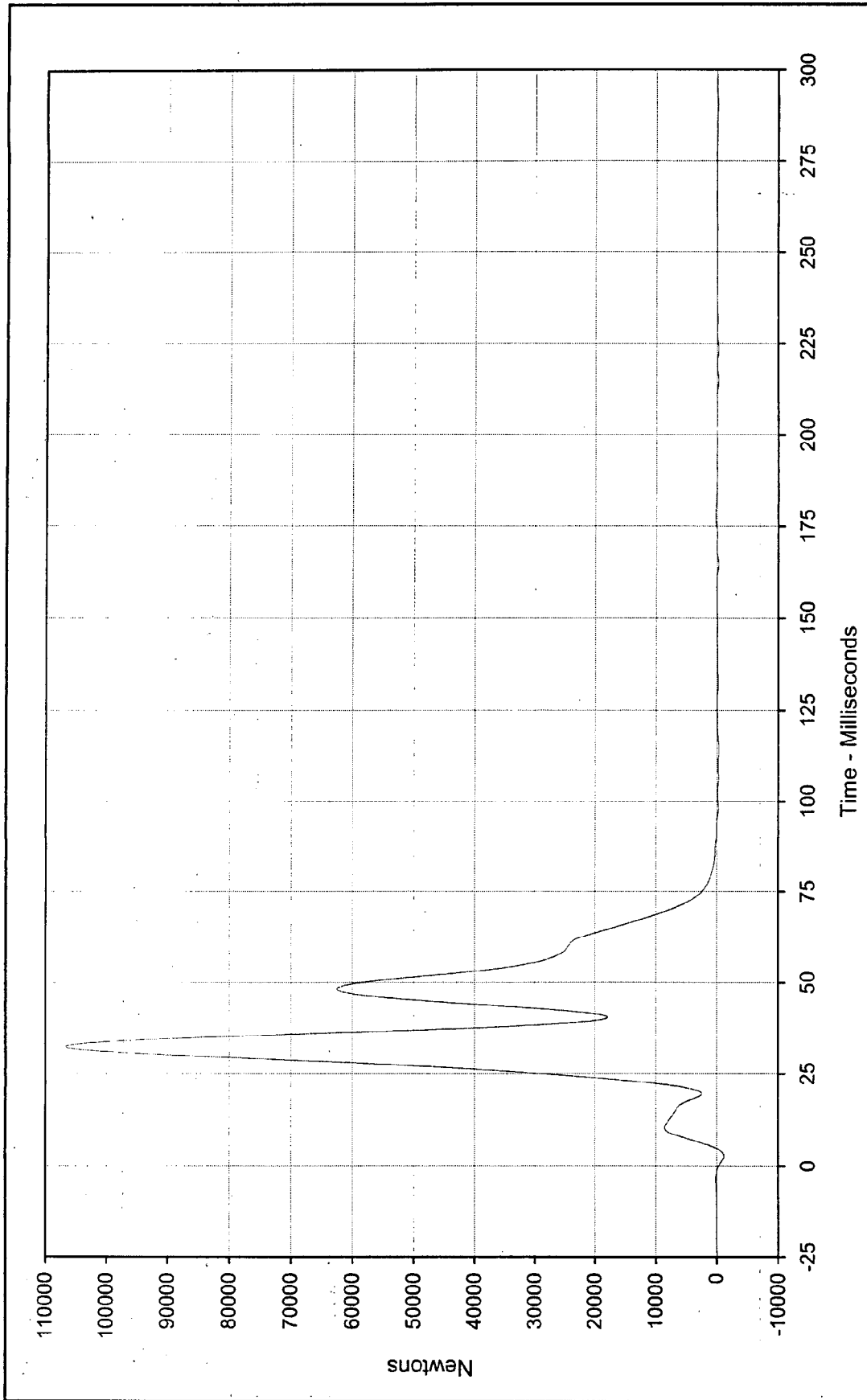




Curve Description: Barrier Force C4
 Maximum Value: 4384.8 at 32.9 Milliseconds
 Minimum Value: -1768.4 at 3.4 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/7/99
 Curve Number: FIL-119

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan



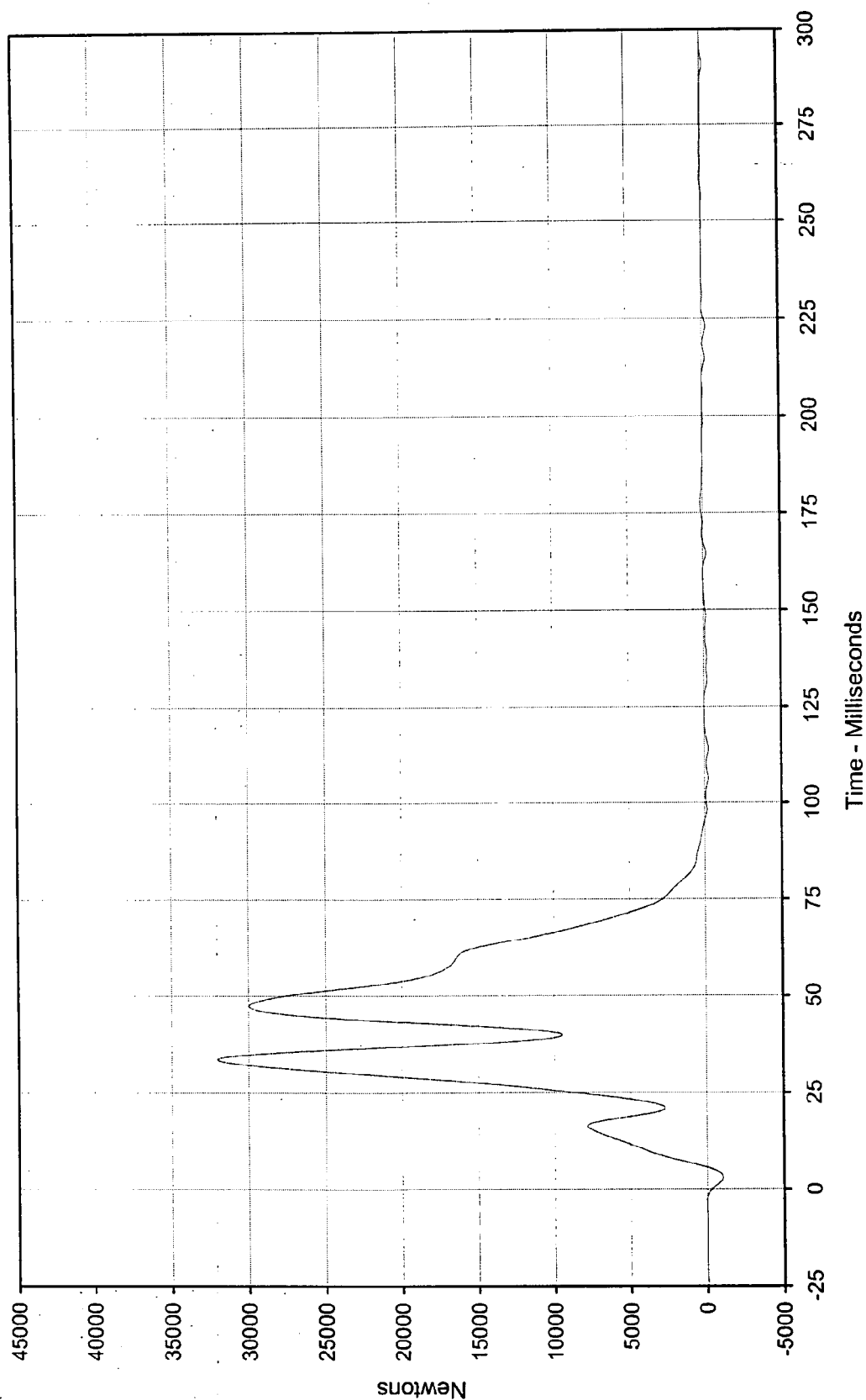


Curve Description:		Barrier Force C5		Test Program:		2000 NHTSA 35 mph NCAP		No.: MY5500	
Maximum Value:		106701.2	at	32.5	Milliseconds	Test Vehicle:		2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:		-1228.8	at	2.7	Milliseconds				
SAE Filter Class:		60							
Date of Test:		12/7/99							
Curve Number:		FIL-120							



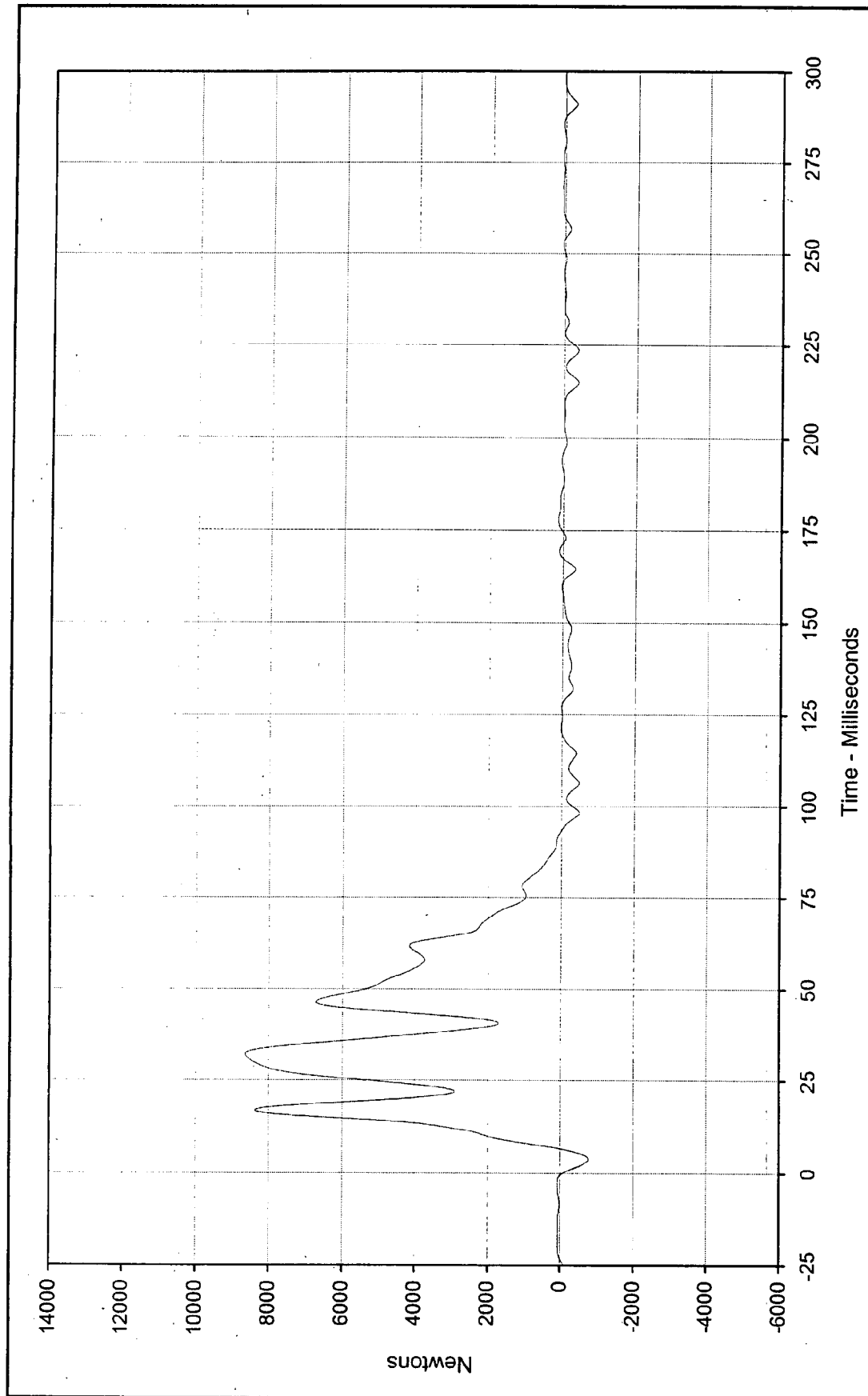
KARCO
Engineering





Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

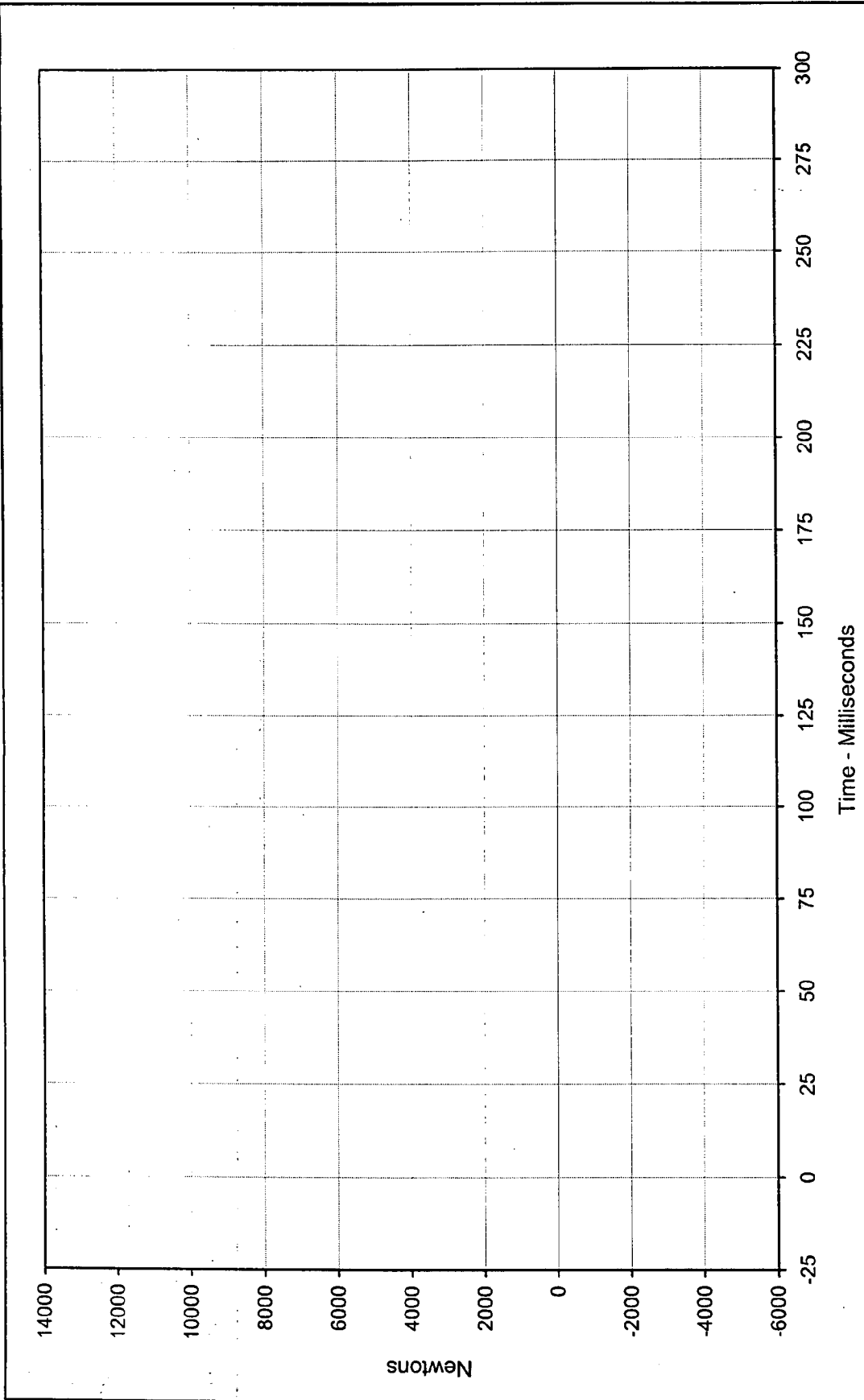
Curve Description: Barrier Force C6
Maximum Value: 32033.9 at 33.5 Milliseconds
Minimum Value: -1039.7 at 3.0 Milliseconds
SAE Filter Class: 60
Date of Test: 12/7/99
Curve Number: FIL-121



Curve Description: Barrier Force C7
Maximum Value: 8642.7 at 32.0 Milliseconds
Minimum Value: -771.9 at 3.7 Milliseconds
SAE Filter Class: 60
Date of Test: 12/7/99
Curve Number: FIL-122

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan



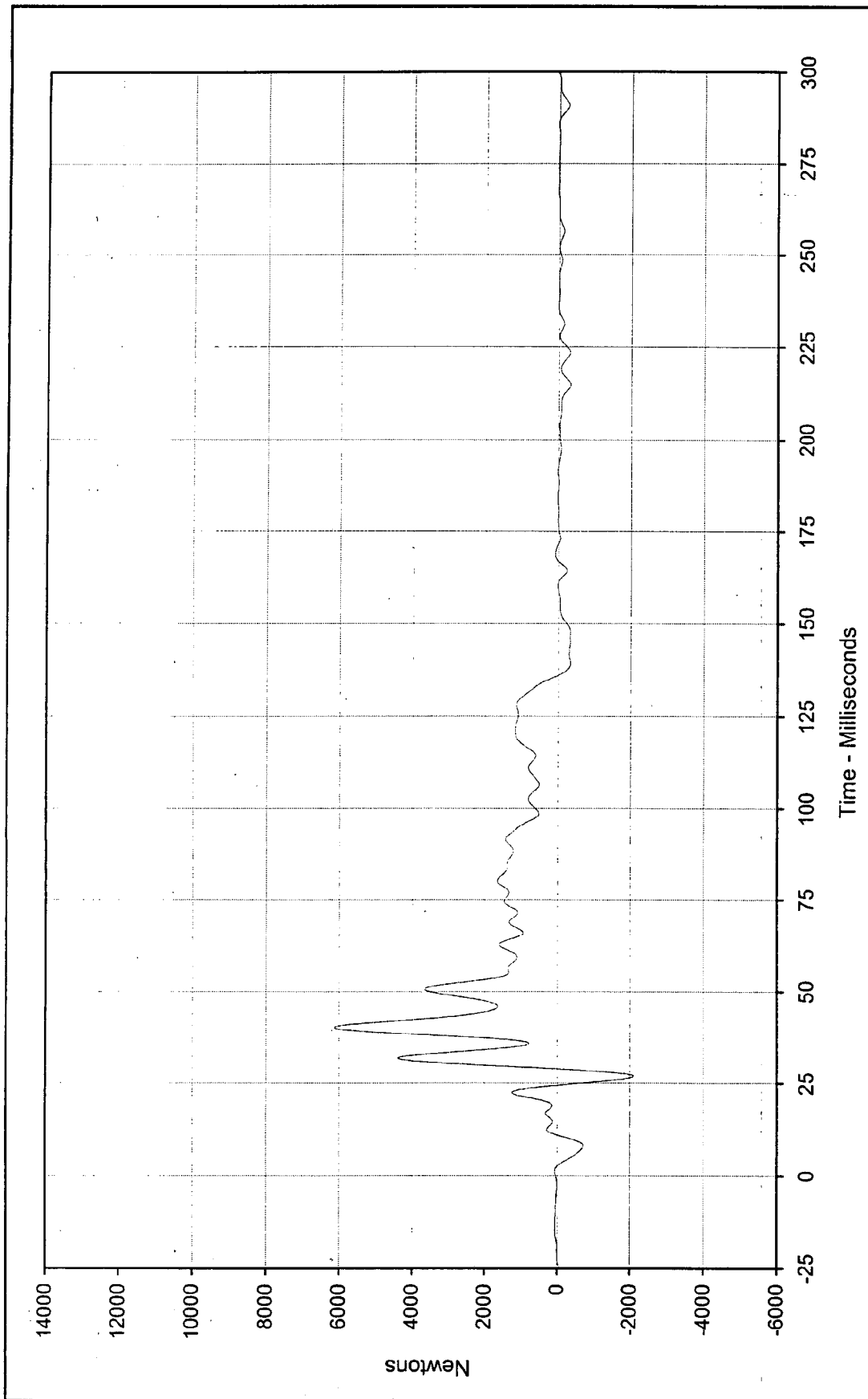


Curve Description: Barrier Force C8 * Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Maximum Value: 0.0 at 0.0 Milliseconds Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan
 Minimum Value: 0.0 at 0.0 Milliseconds



SAE Filter Class: 60
 Date of Test: 12/7/99
 Curve Number: FIL-123

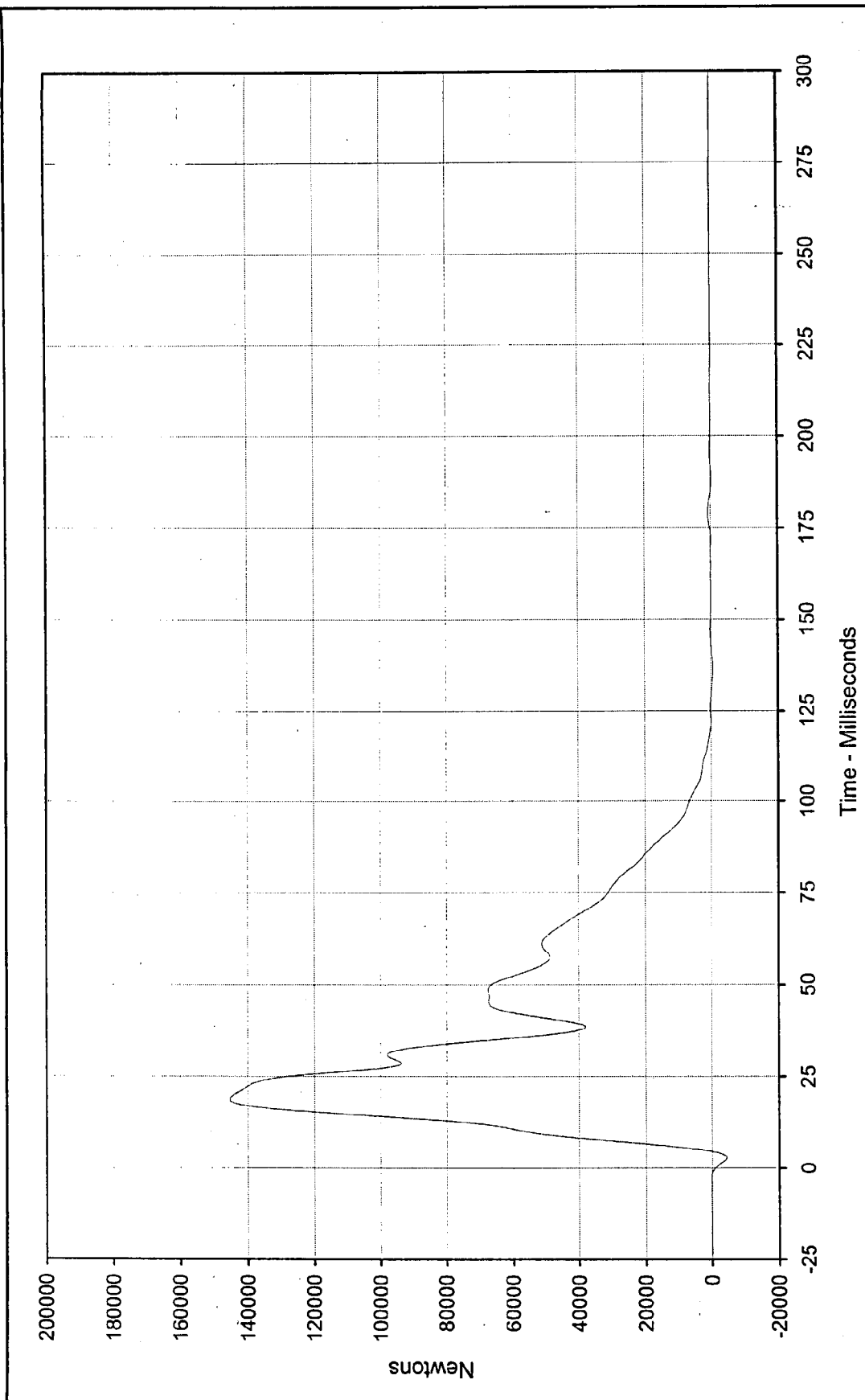
* Channel Failed, No Data



Curve Description: Barrier Force C9 Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Maximum Value: 6134.6 at 40.3 Milliseconds Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan
 Minimum Value: -2099.2 at 27.0 Milliseconds



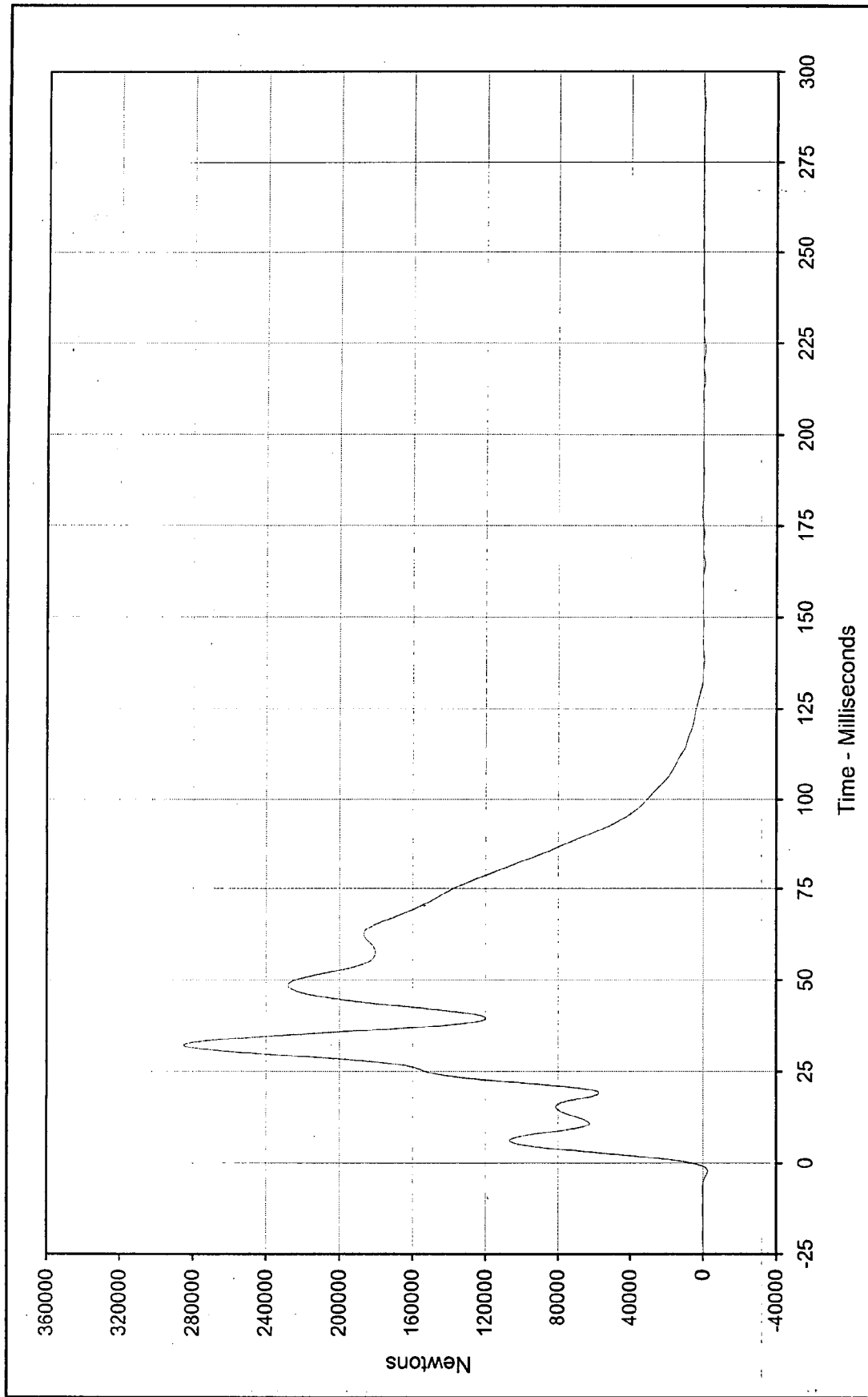
SAE Filter Class: 60
 Date of Test: 12/7/99
 Curve Number: FIL-124



Curve Description: Barrier Force Sum Group 1
 Maximum Value: 145442.4 at 18.8 Milliseconds
 Minimum Value: -4322.8 at 2.8 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/7/99
 Curve Number: SUM-001

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





Curve Description: Barrier Force Sum Group 2

Maximum Value: 285067.3 at 32.1 Milliseconds

Minimum Value: -1110.9 at 223.3 Milliseconds

SAE Filter Class: 60

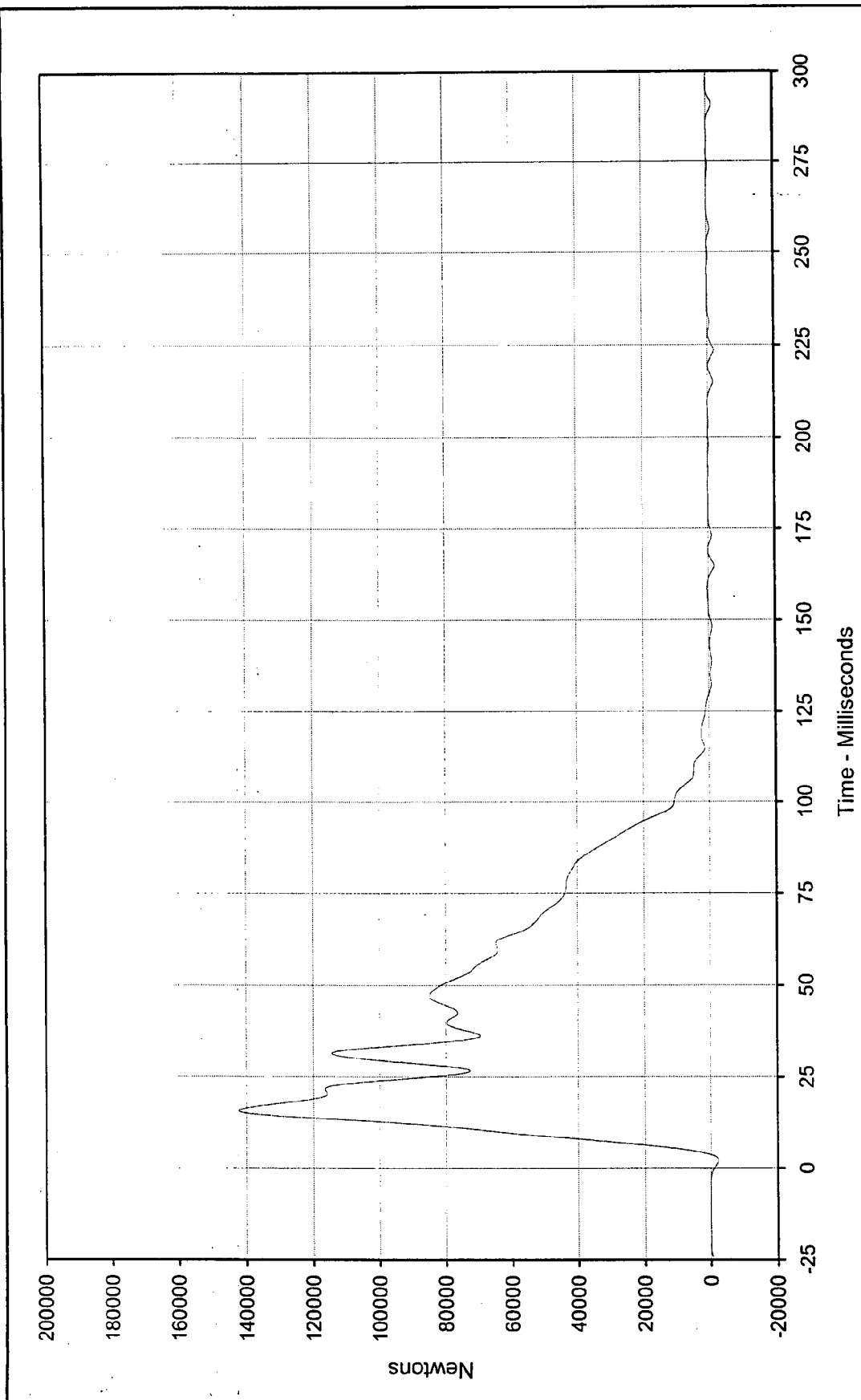
Date of Test: 12/7/99

Curve Number: SUM-002

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

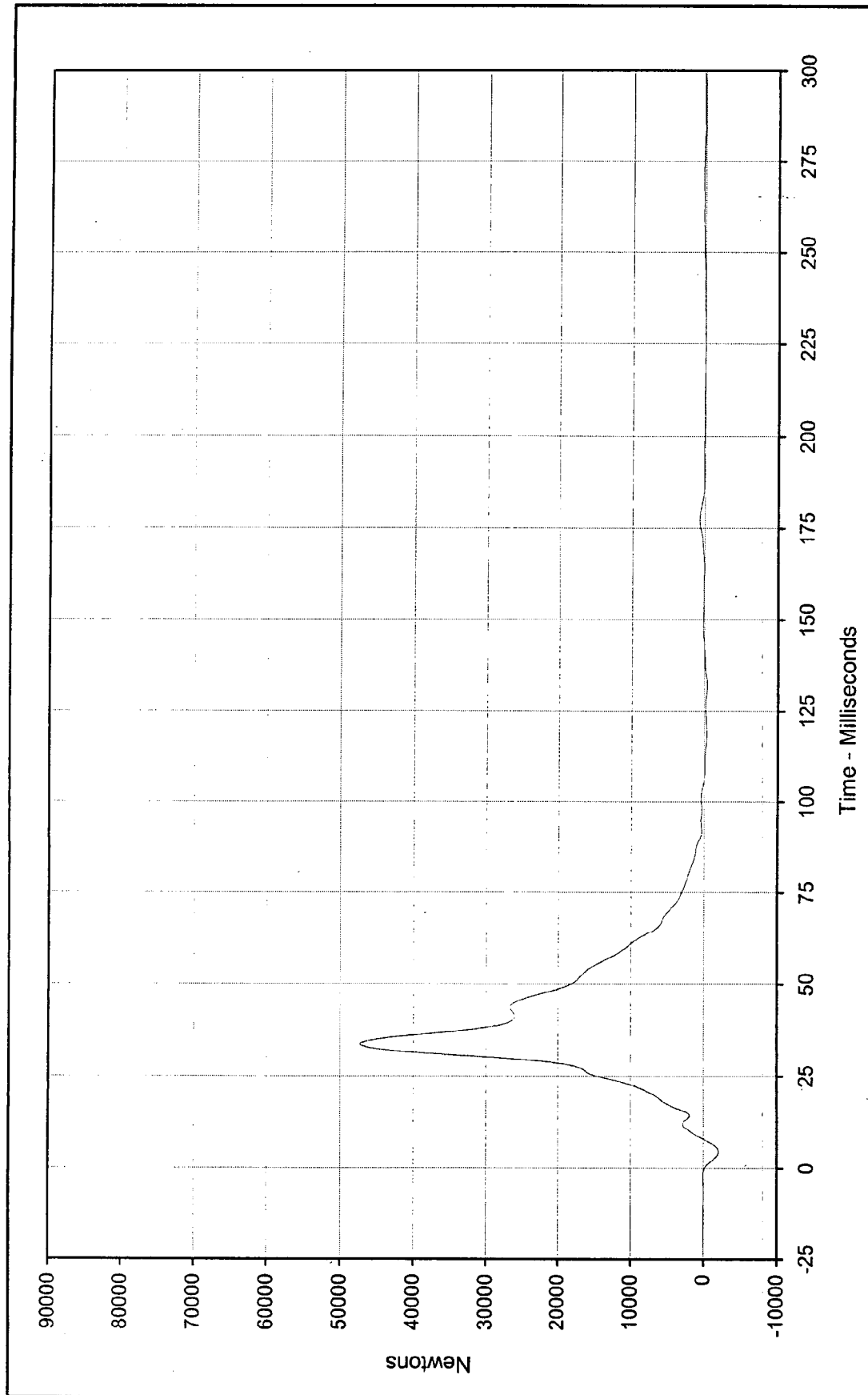




Curve Description: Barrier Force Sum Group 3
 Maximum Value: 142378.5 at 15.8 Milliseconds
 Minimum Value: -2224.9 at 2.0 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/7/99
 Curve Number: SUM-003

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

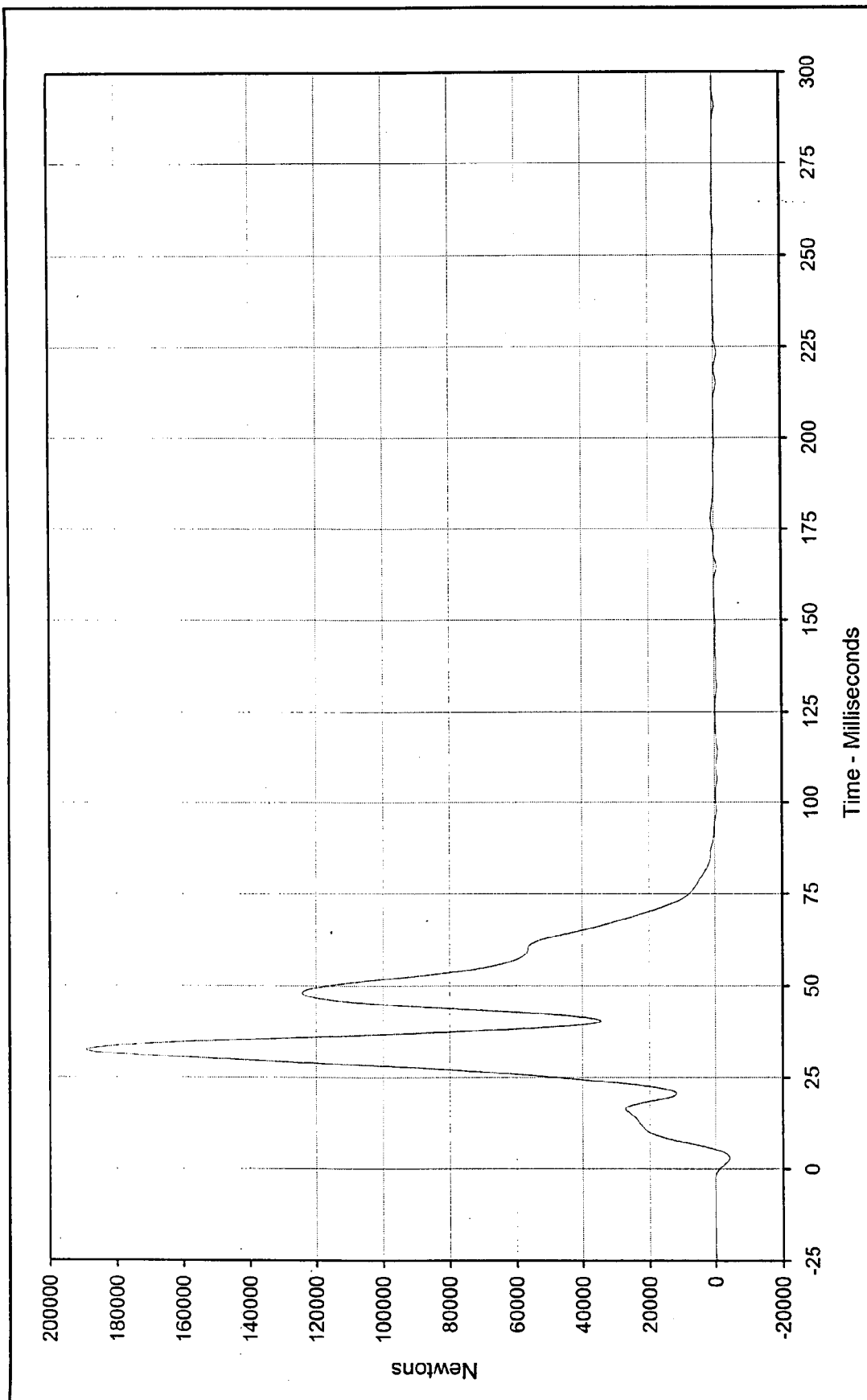




Curve Description: Barrier Force Sum Group 4
Maximum Value: 47298.0 at 33.6 Milliseconds
Minimum Value: -2107.7 at 4.5 Milliseconds
SAE Filter Class: 60
Date of Test: 12/7/99
Curve Number: SUM-004

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

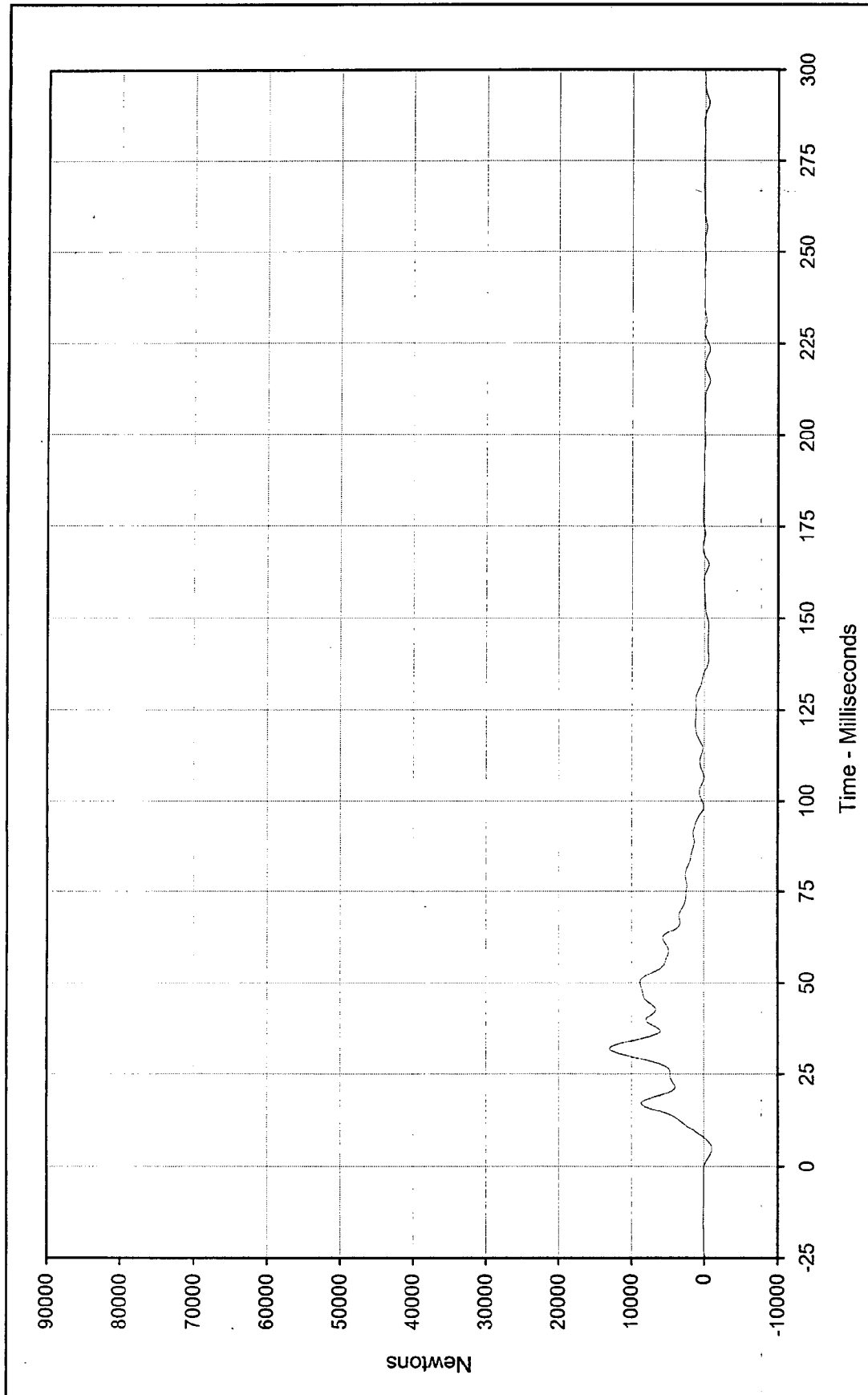




Curve Description: Barrier Force Sum Group 5
 Maximum Value: 189120.7 at 32.7 Milliseconds
 Minimum Value: -4180.2 at 3.0 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/7/99
 Curve Number: SUM-005

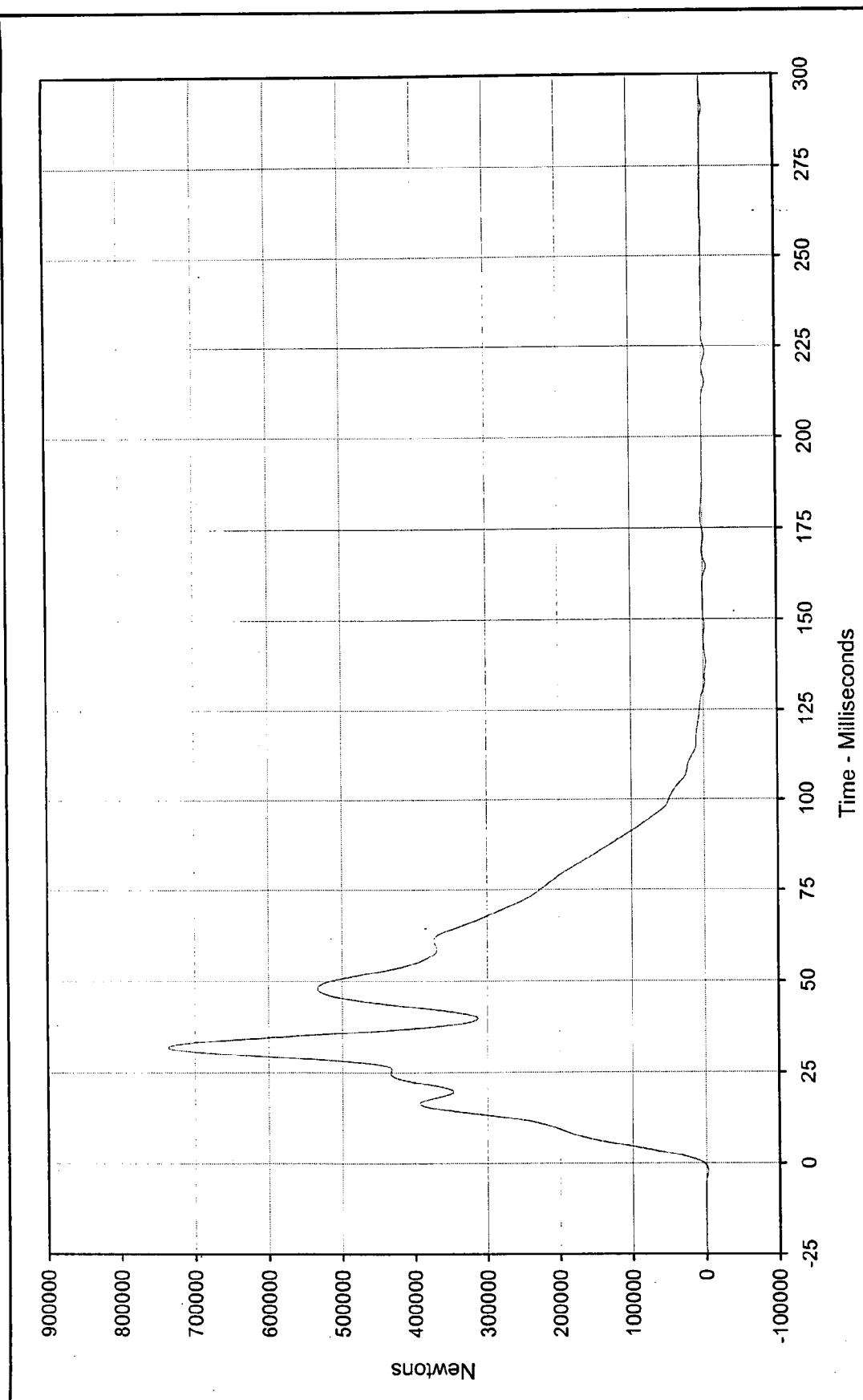
Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500
 Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan





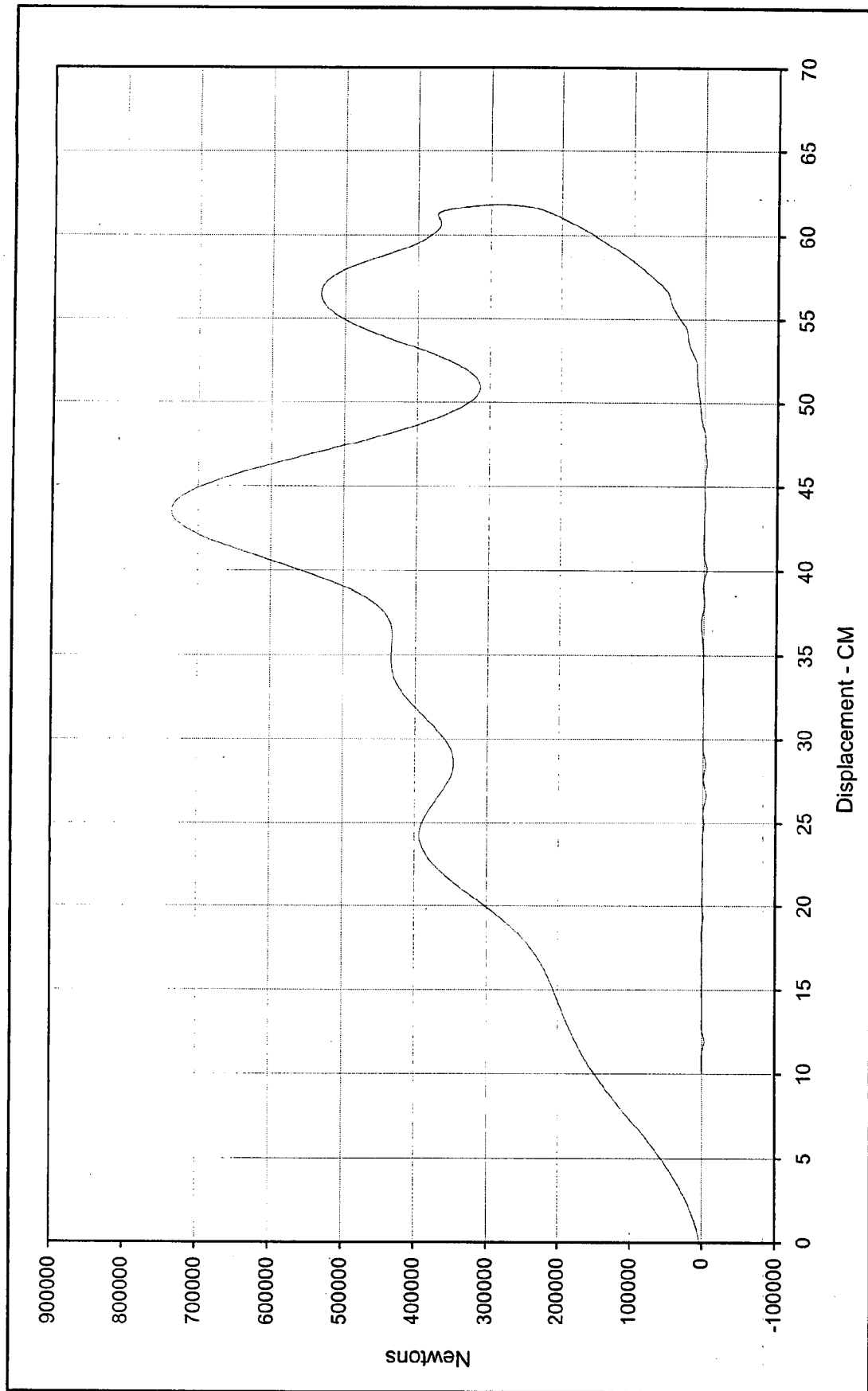
Curve Description:	Barrier Force Sum Group 6	Test Program:	2000 NHTSA 35 mph NCAP	No.: MY5500
Maximum Value:	13021.2 at 31.8 Milliseconds	Test Vehicle:	2000 Subaru Legacy L AWD 4 Door Sedan	
Minimum Value:	-1029.8 at 4.7 Milliseconds			
SAE Filter Class:	60			
Date of Test:	12/7/99			
Curve Number:	SUM-006			





Curve Description: 2000 NHTSA 35 mph NCAP No.: MY5500
Test Program: 2000 Subaru Legacy L AWD 4 Door Sedan
Test Vehicle:

Barrier Force Sum Total
Maximum Value: 736329.9 at 32.2 Milliseconds
Minimum Value: -49226 at 223.3 Milliseconds
SAE Filter Class: 60
Date of Test: 12/7/99
Curve Number: SUM-007



Curve Description: Sum Force Total vs. Dynamic Crush

Maximum Displ.: 61.8 at 68.9 Milliseconds

Maximum Force: 736329.9 at 32.2 Milliseconds

Measured Energy: 207,990 joules

Date of Test: 12/7/99

Curve Number: XYY-001

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5500

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan



BARRIER LOAD CELL SUMMARY DATA

Test Vehicle: 2000 Subaru Legacy L AWD 4 Door Sedan

NHTSA No.: MY5500

Test Program: 2000 NHTSA 35 mph NCAP

Test Date: 12/7/99

BARRIER LOAD CELL PEAK FORCES

Location	Units	Max	Time	Min	Time
Barrier Force A2	Newtons	2536.7	52.6	-1082.6	4.3
Barrier Force A3	Newtons	19509.3	17.4	-1520.0	3.4
Barrier Force A4	Newtons	4579.7	16.6	-2953.4	38.8
Barrier Force A5	Newtons	8224.1	33.2	-1527.7	20.7
Barrier Force A6	Newtons	5346.5	32.9	-1282.7	38.8
Barrier Force A7	Newtons	19366.0	17.5	-984.6	3.0
Barrier Force A8	Newtons	2721.0	61.7	-709.0	19.8
Barrier Force A9	Newtons	1701.1	39.4	-2323.1	34.7
Barrier Force B2	Newtons	7869.7	11.0	-1280.0	4.4
Barrier Force B3	Newtons	129292.3	21.6	-1574.7	2.0
Barrier Force B4	Newtons	89683.4	31.9	-65.2	299.9
Barrier Force B5	Newtons	80105.9	32.0	-312.1	164.5
Barrier Force B6	Newtons	91514.0	31.9	-203.9	223.3
Barrier Force B7	Newtons	106540.0	15.6	-1230.4	1.3
Barrier Force B8	Newtons	21633.5	31.9	-950.9	4.3
Barrier Force B9	Newtons	1924.3	39.4	-2586.0	27.3
Barrier Force C2	Newtons	29553.3	34.0	-1070.8	5.0
Barrier Force C3	Newtons	18104.7	33.0	-1105.1	3.9
Barrier Force C4	Newtons	43384.8	32.9	-1768.4	3.4
Barrier Force C5	Newtons	106701.2	32.5	-1228.8	2.7
Barrier Force C6	Newtons	32033.9	33.5	-1039.7	3.0
Barrier Force C7	Newtons	8642.7	32.0	-771.9	3.7
Barrier Force C8	Newtons	0.0	0.0	0.0	0.0 *
Barrier Force C9	Newtons	6134.6	40.3	-2099.2	27.0
Barrier Force Sum Group 1	Newtons	145442.4	18.8	-4322.8	2.8
Barrier Force Sum Group 2	Newtons	285067.3	32.1	-1110.9	223.3
Barrier Force Sum Group 3	Newtons	142378.5	15.8	-2224.9	2.0
Barrier Force Sum Group 4	Newtons	47298.0	33.6	-2107.7	4.5
Barrier Force Sum Group 5	Newtons	189120.7	32.7	-4180.2	3.0
Barrier Force Sum Group 6	Newtons	13021.2	31.8	-1029.8	4.7
Barrier Force Sum Total	Newtons	736329.9	32.2	-4922.6	223.3

* Channel Failed, No Data

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

APPENDIX D
INSTRUMENTATION DATA CHANNEL ASSIGNMENTS

KAR20001-04

2000 NHTSA 35 mph NCAP
Instrumentation Data Channel Assignments
Driver A.T.D Serial Number 34
12/7/99

2000 Subaru Legacy L AWD 4 Door Sedan

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

2000 NHTSA 35 mph NCAP
Instrumentation Data Channel Assignments
Driver A.T.D Serial Number 34
12/7/99

2000 Subaru Legacy L AWD 4 Door Sedan

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

2000 NHTSA 35 mph NCAP
Instrumentation Data Channel Assignments
Driver A.T.D Serial Number 35
12/7/99
2000 Subaru Legacy L AWD 4 Door Sedan

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

2000 NHTSA 35 mph NCAP
Instrumentation Data Channel Assignments
Driver A.T.D Serial Number 35
12/7/99
2000 Subaru Legacy L AWD 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
69	UP. TIBIA LEFT MOM.	X	GPUT09MX	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
70	UP. TIBIA LEFT MOM.	Y	GPUT09MY	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
71	UP. TIBIA RIGHT MOM.	X	GPUT09MX	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
72	UP. TIBIA RIGHT MOM.	Y	GPUT09MY	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
73	LWR. TIBIA LEFT MOM.	X	GPUT09MX	3 ch., lower tibia gage	R. A. Denton	3093	Nm
74	LWR. TIBIA LEFT MOM.	Y	GPUT09MY	3 ch., lower tibia gage	R. A. Denton	3093	Nm
75	LWR. TIBIA LEFT FORCE	Z	GPUT09FZ	3 ch., lower tibia gage	R. A. Denton	3093	N
76	LWR. TIBIA RIGHT MOM.	X	GPUT09MX	3 ch., lower tibia gage	R. A. Denton	3093	Nm
77	LWR. TIBIA RIGHT MOM.	Y	GPUT09MY	3 ch., lower tibia gage	R. A. Denton	3093	Nm
78	LWR. TIBIA RIGHT FORCE	Z	GPUT09FZ	3 ch., lower tibia gage	R. A. Denton	3093	N
79	FOOT LEFT	X	KEIC002X	Accel., Foot Triax	I.C. Sensor	3031-500	G
80	FOOT LEFT	Y	KEIC002Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
81	FOOT LEFT	Z	KEIC002Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
82	FOOT RIGHT	X	KEIC001X	Accel., Foot Triax	I.C. Sensor	3031-500	G
83	FOOT RIGHT	Y	KEIC001Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
84	FOOT RIGHT	Z	KEIC001Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
85	LAP BELT FORCE	X	KELC003	Load cell, Seat belt	Lebow	3371	N
86	SHOULDER BELT FORCE	X	KELC004	Load cell, Seat belt	Lebow	3371	N
87	SHOULDER BELT SPOOL	X	KEPP001	Pullout pot	Celeco	PTX101-0030	CM
88	SHOULDER BELT ELONG.	X	KEEP001	Linear pot., belt stretch	E.T.I.	LCP8-10 10K	MM/CM

2000 NHTSA 35 mph NCAP
Instrumentation Data Channel Assignments
Vehicle Accelerometers and Reference Channel
12/7/99
2000 Subaru Legacy L AWD 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
89	Left Rear X-Member (Pri.)	X	KEVA002	Accel., Pre-Amp	I.C.S/Karco	3031-500	G
90	Right Rear X-Member (Pri.)	X	KEVA006	Accel., Vehicle block	I.C. Sensor	3031-200	G
91	Engine Top	X	KEVA001	Accel., Vehicle block	I.C. Sensor	3031-500	G
92	Engine Bottom	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	KEVA003	Accel., Vehicle block	I.C. Sensor	3031-500	G
95	Instrument Panel	X	KEVA005	Accel., Vehicle block	I.C. Sensor	3031-500	G
96	Left Rear X-Member (Rednt.)	X	KEVA011	Accel., Vehicle block	I.C. Sensor	3031-200	G
97	ZERO REFERENCE	N/A	N/A	N/A	N/A	N/A	N/A

2000 NHTSA 35 mph NCAP
Instrumentation Data Channel Assignments
Rigid Load Cell Barrier
12/7/99

2000 Subaru Legacy L AWD 4 Door Sedan

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

2000 NHTSA 35 mph NCAP
Instrumentation Data Channel Assignments
Rigid Load Cell Barrier
12/7/99
2000 Subaru Legacy L AWD 4 Door Sedan

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

APPENDIX E
DUMMY CALIBRATION DATA



Hybrid III Calibration Data Sheet

50TH Percentile Male

Left Knee Impact Test

ATD Serial No.: 34

Part Serial No.: n/a

Test I.D.: LK11A

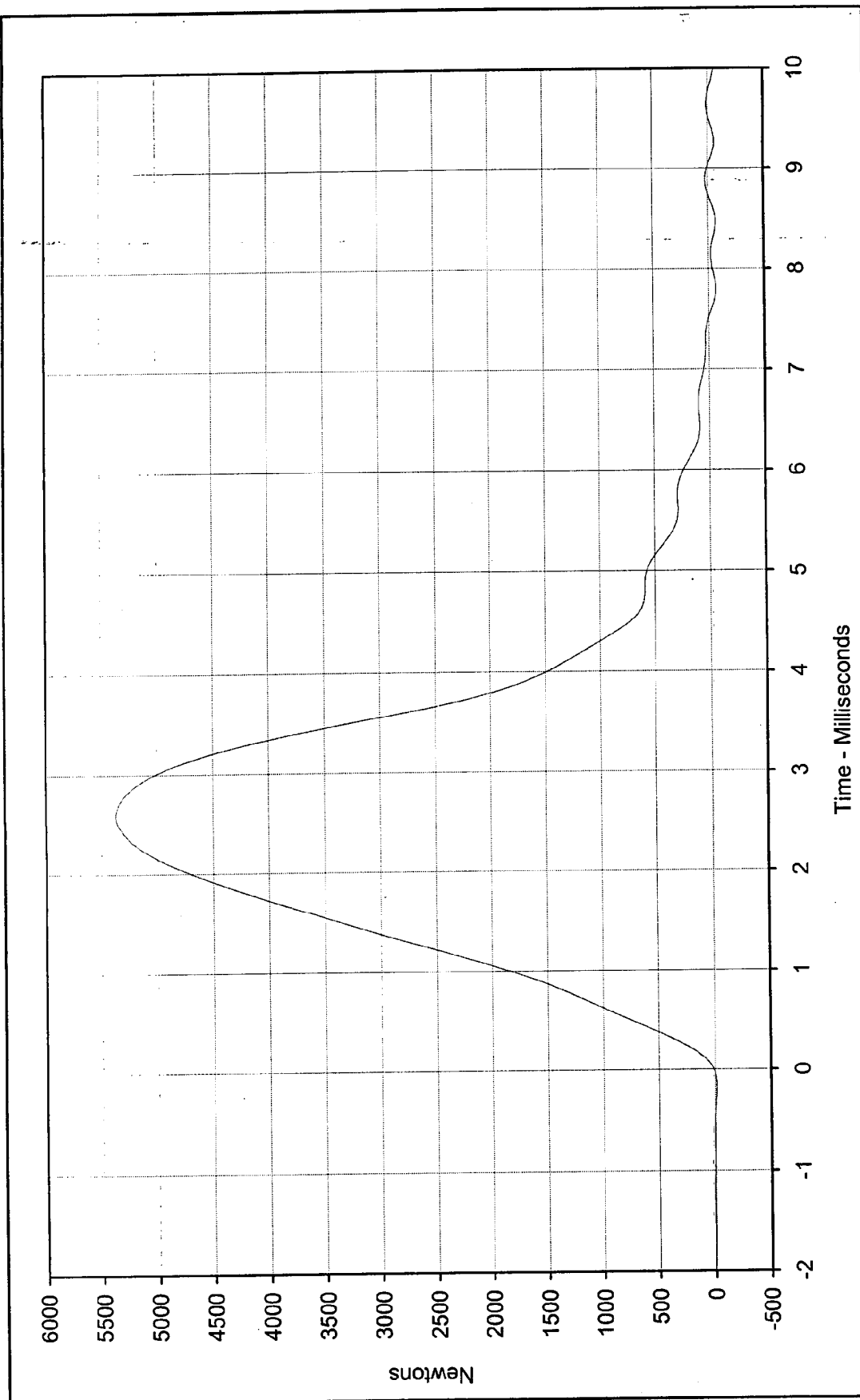
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	2.073 to 2.134	2.091	Pass
Peak Probe Force	Newtons	4715 to 5782	5368.1	Pass
Overall Test Results				Pass

[Signature]
Laboratory Technician

James E. Keith
Approved By

November 19, 1999
Test Date

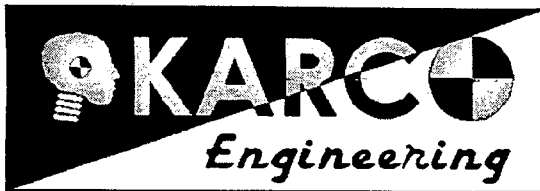
11/20/99
Date



Testing Program: Hybrid III Left Knee Impact Test
 Test Information: Part S/N: n/a Test I.D.: LK11A



Curve Description: Probe Force
 Maximum Value: 5368.1 at 2.6 Milliseconds
 Minimum Value: -66.5 at 7.8 Milliseconds
 SAE Filter Class: 600
 Date of Test: 11/19/99
 ATD Serial No.: 34



Hybrid III Calibration Data Sheet

50TH Percentile Male

Right Knee Impact Test

ATD Serial No.: 34

Part Serial No.: n/a

Test I.D.: RK11A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	2.073 to 2.134	2.092	Pass
Peak Probe Force	Newtons	4715 to 5782	5448.0	Pass
Overall Test Results				Pass

Laboratory Technician

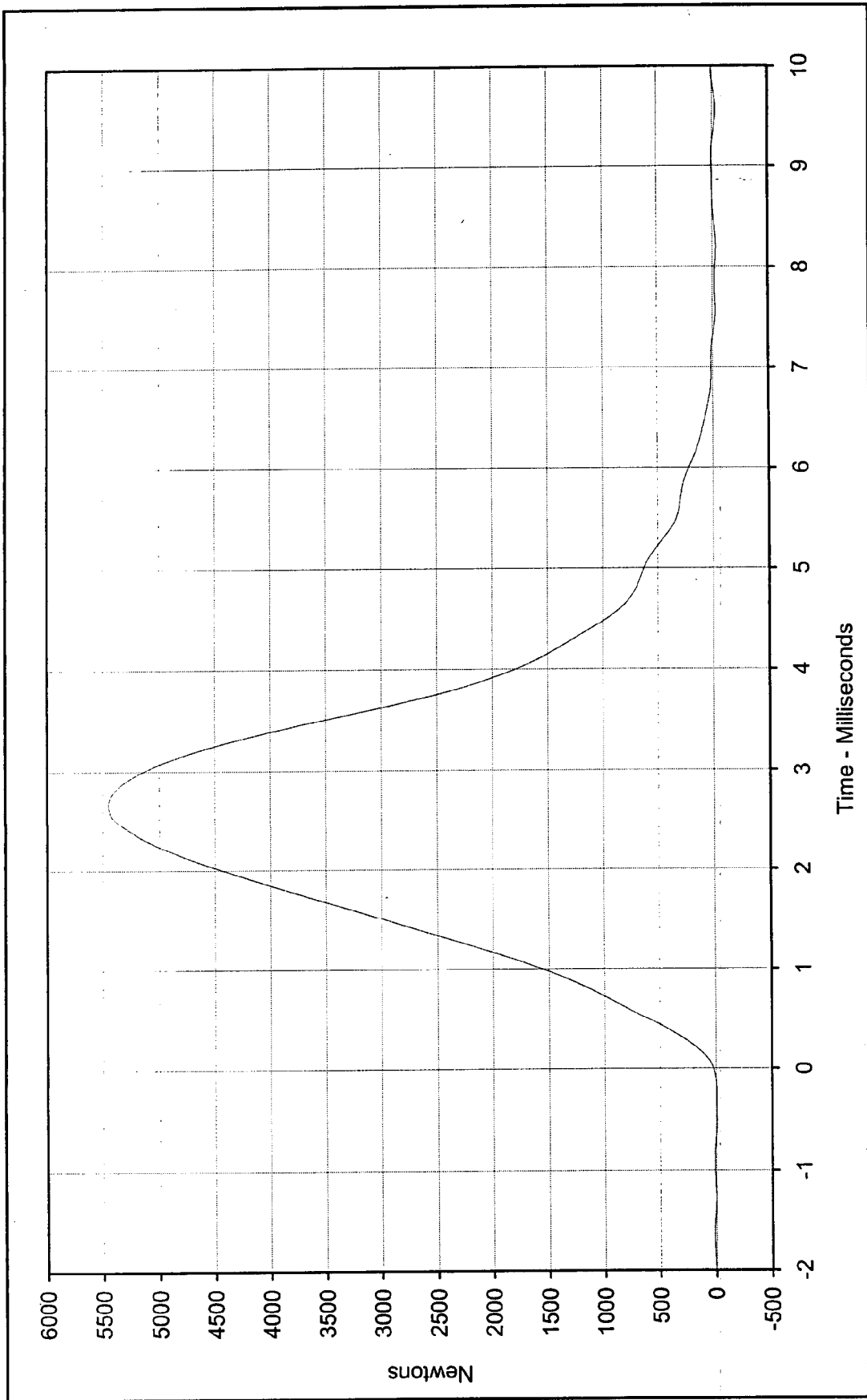
November 19, 1999

Test Date

Approved By

11/20/99

Date



Testing Program: Hybrid III Right Knee Impact Test
 Test Information: Part S/N: n/a Test I.D.: RK11A



Curve Description: Probe Force
 Maximum Value: 5448.0 at 2.7 Milliseconds
 Minimum Value: -29.7 at 7.6 Milliseconds
 SAE Filter Class: 600
 Date of Test: 11/19/99
 ATD Serial No.: 34



Hybrid III Calibration Data Sheet

50TH Percentile Male

Head Drop Calibration

ATD Serial No.: 034

Part Serial No.: n/a

Test I.D.: HD11B

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	269.6	Pass
Peak Lateral Acceleration	G's	≤15.0	9.4	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

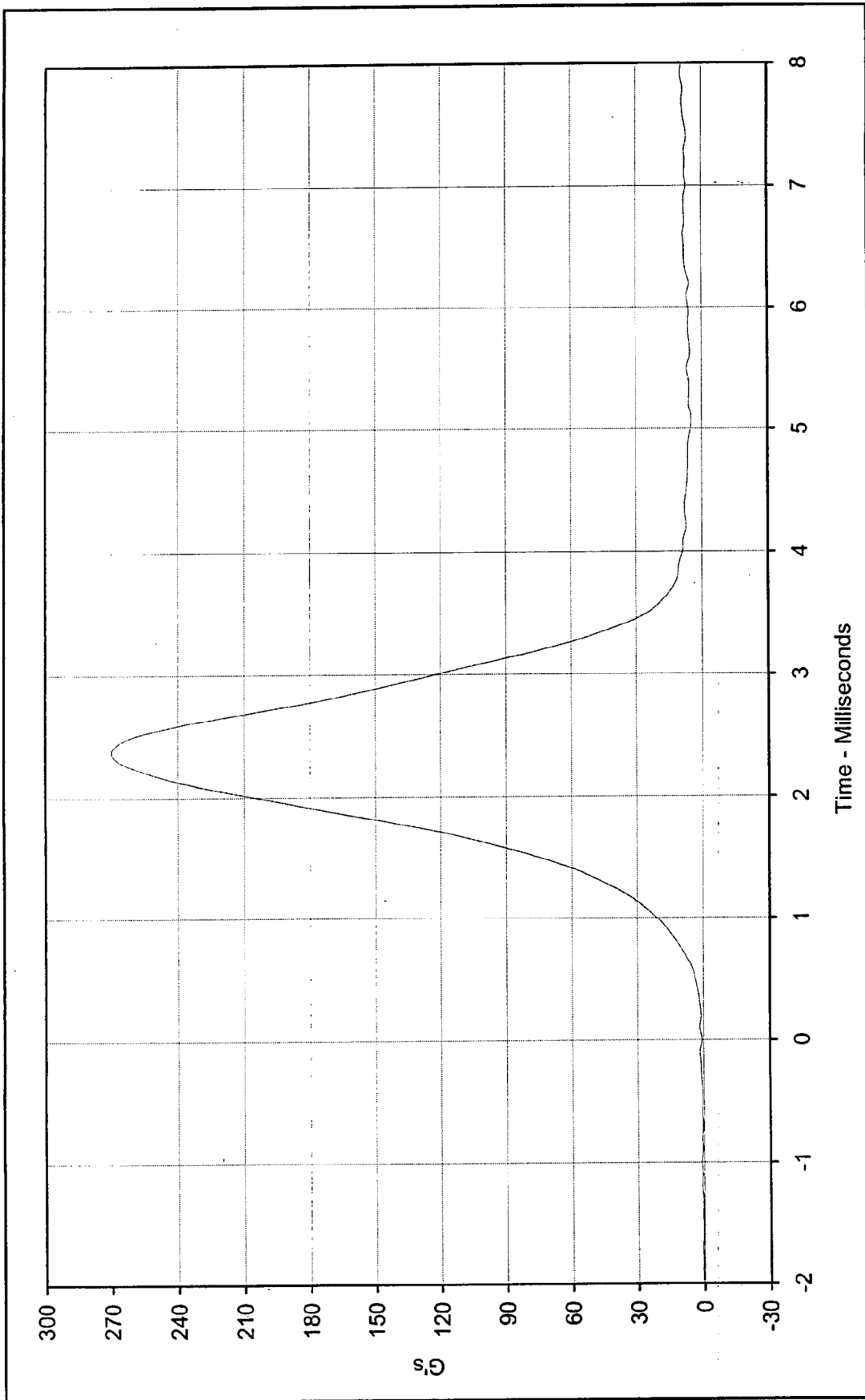
N 208
Laboratory Technician

James E. North
Approved By

November 18, 1999

Test Date

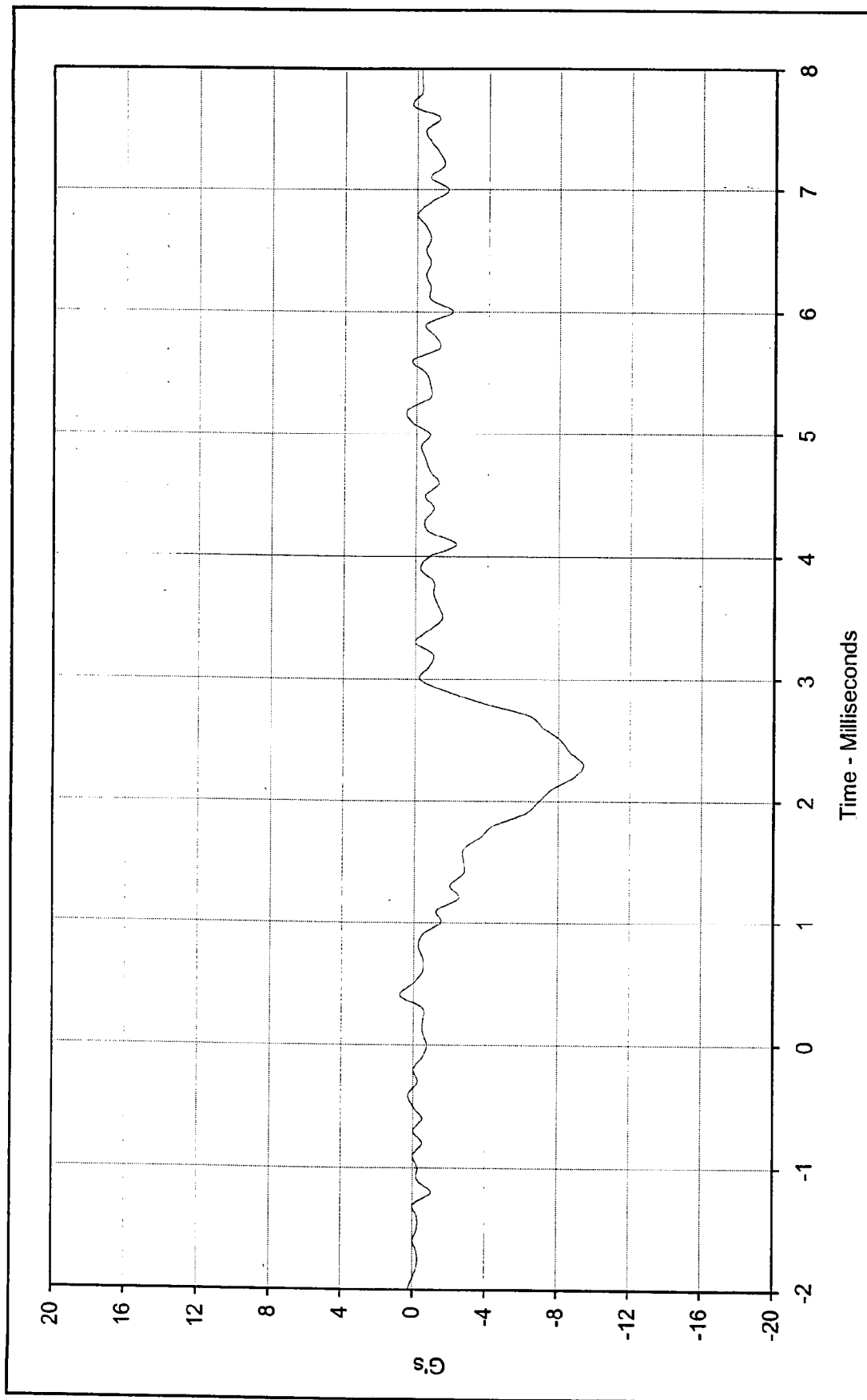
11/19/99
Date



Testing Program: Hybrid III Head Drop Calibration (Male)
 Test Information: S/N of Part: n/a Test I.D.: HD11B



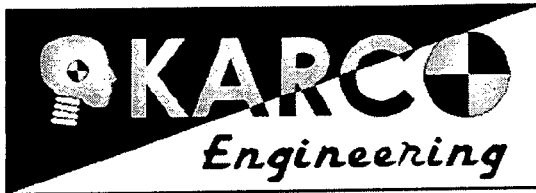
Curve Description: Head Resultant Acceleration
 Maximum Value: 269.6 at 2.4 Milliseconds
 Minimum Value: 0.3 at -1.6 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 11/18/99
 ATD Serial No.: 034



Curve Description: Hybrid III Head Drop Calibration (Male)
 Test Information: S/N of Part: n/a Test I.D.: HD11B

Maximum Value: 0.7 at 0.4 Milliseconds
 Minimum Value: -9.4 at 2.3 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 11/18/99
 ATD Serial No.: 034





Hybrid III Calibration Data Sheet

50TH Percentile Male

Thorax Impact Test

ATD Serial No.: 34

Part Serial No.: N/A

Test I.D.: CH11B

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	39	Pass
Probe Velocity	m/s	6.58 to 6.82	6.74	Pass
Peak Probe Force	Newtons	5159 to 5893	5760	Pass
Peak Sternum Displacement	CM	6.35 to 7.26	6.55	Pass
Internal Hysteresis	%	69 to 85	79.1	Pass
Overall Test Results				Pass

Laboratory Technician

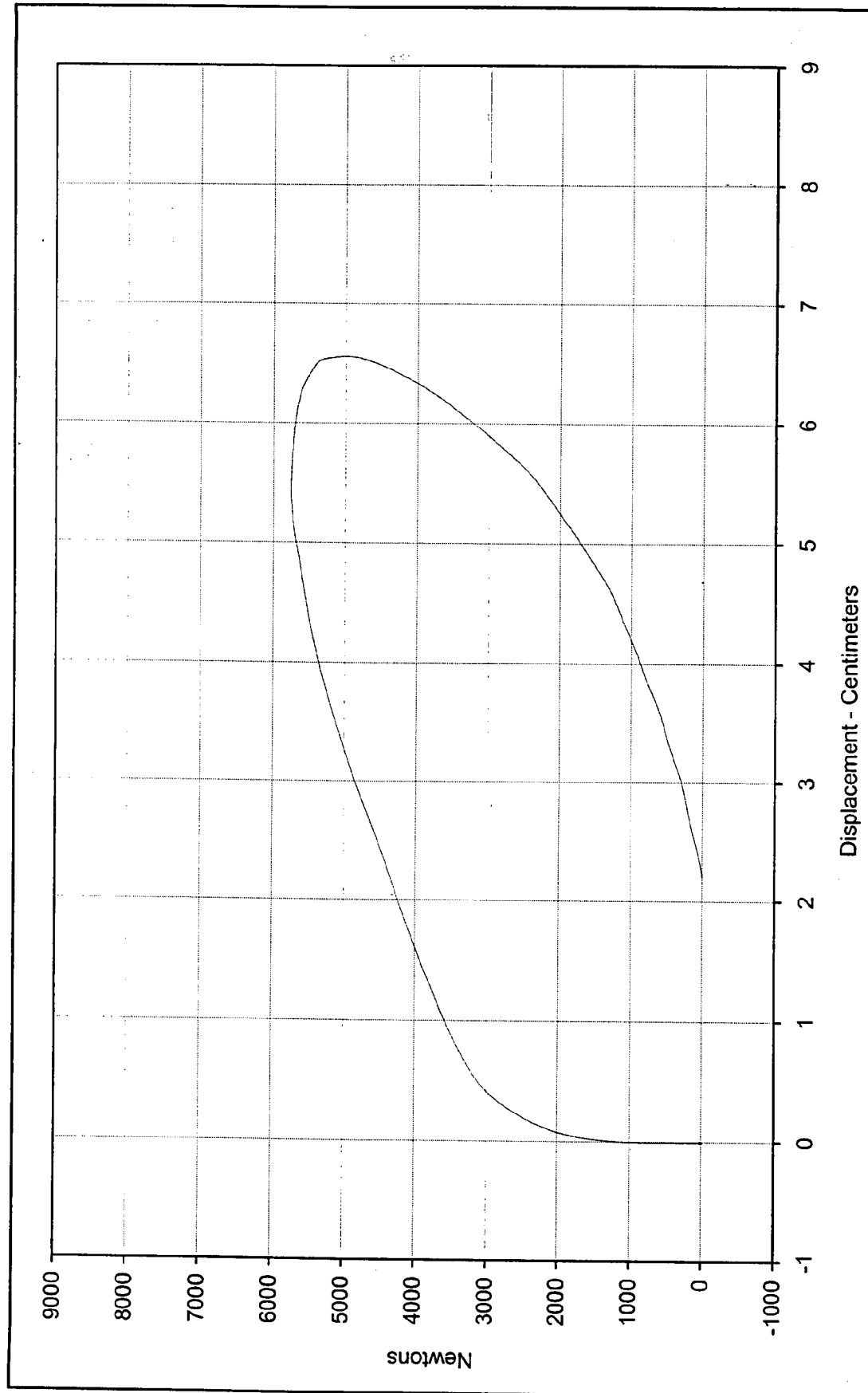
November 22, 1999

Test Date

Approved By

11/22/99

Date



Curve Description: Probe Force vs. Chest Displacement Testing Program: Hybrid III Thorax Impact Test
 Probe Force: 5759.5 Newtons Test Information: S/N of Part: N/A Test I.D.: CH11B

Chest Displ.: 6.55 Centimeters

SAE Filter Class: 180

Date of Test: 11/22/99

ATD Serial No.: 34





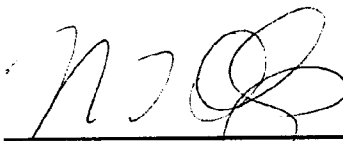
Hybrid III Calibration Data Sheet

50TH Percentile Male

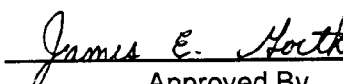
Neck Flexion Test

ATD Serial No.: 34Part Serial No.: n/aTest I.D.: NF11B

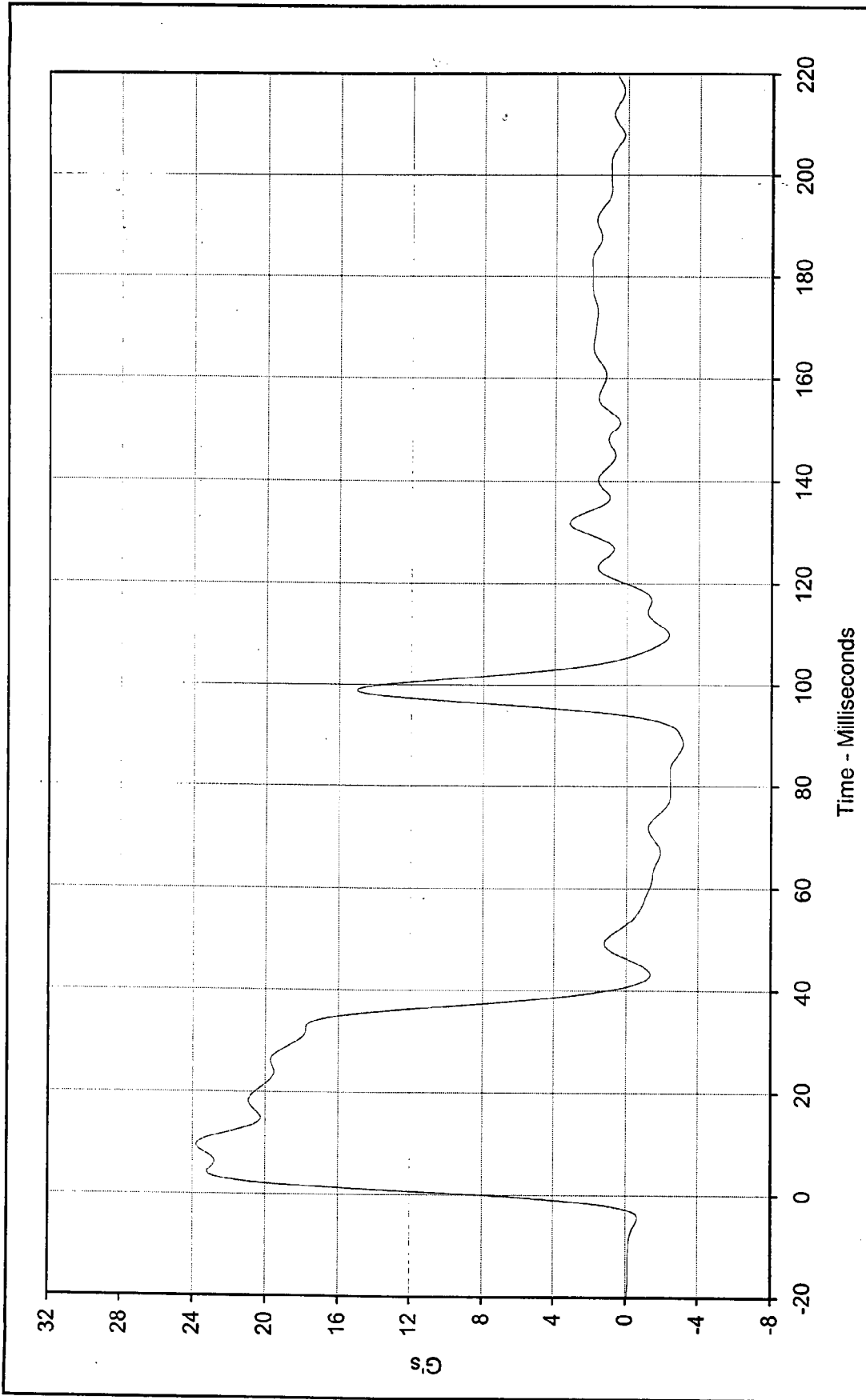
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity		%	10 to 70	40	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.00	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	23.7	Pass
	20 Msec.	G's	17.6 to 22.6	20.6	Pass
	30 Msec.	G's	12.5 to 18.5	18.3	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	18.3	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	38.5	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	76.2	Pass
	Time	Msec.	57.0 to 64.0	62.2	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	125.6	Pass
Moment About Occipital Condyle	Maximum	N • m	84.1 to 108.5	89.9	Pass
	Time	Msec.	47.0 to 58.0	57.5	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	101.6	Pass
Overall Test Results					Pass


Laboratory Technician

November 19, 1999
Test Date


Approved By

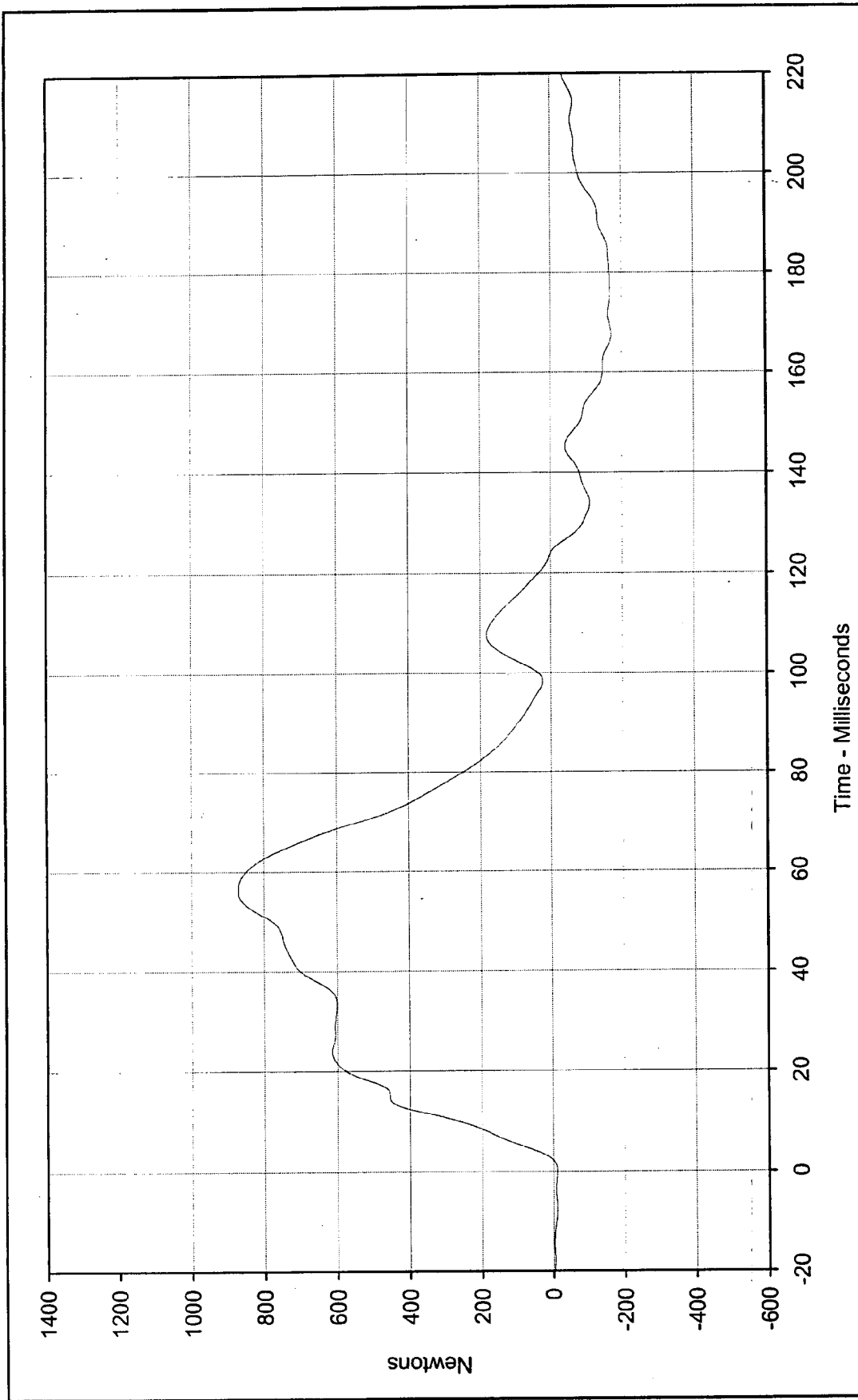
11/19/99
Date



Curve Description: Pendulum Deceleration
 Maximum Value: 23.8 at 9.5 Milliseconds
 Minimum Value: -3.1 at 88.3 Milliseconds
 SAE Filter Class: 60
 Date of Test: 11/19/99
 ATD Serial No.: 34

Testing Program: Hybrid III Neck Flexion Test (Male)
 Test Information: S/N of Part: n/a Test I.D.: NF11B

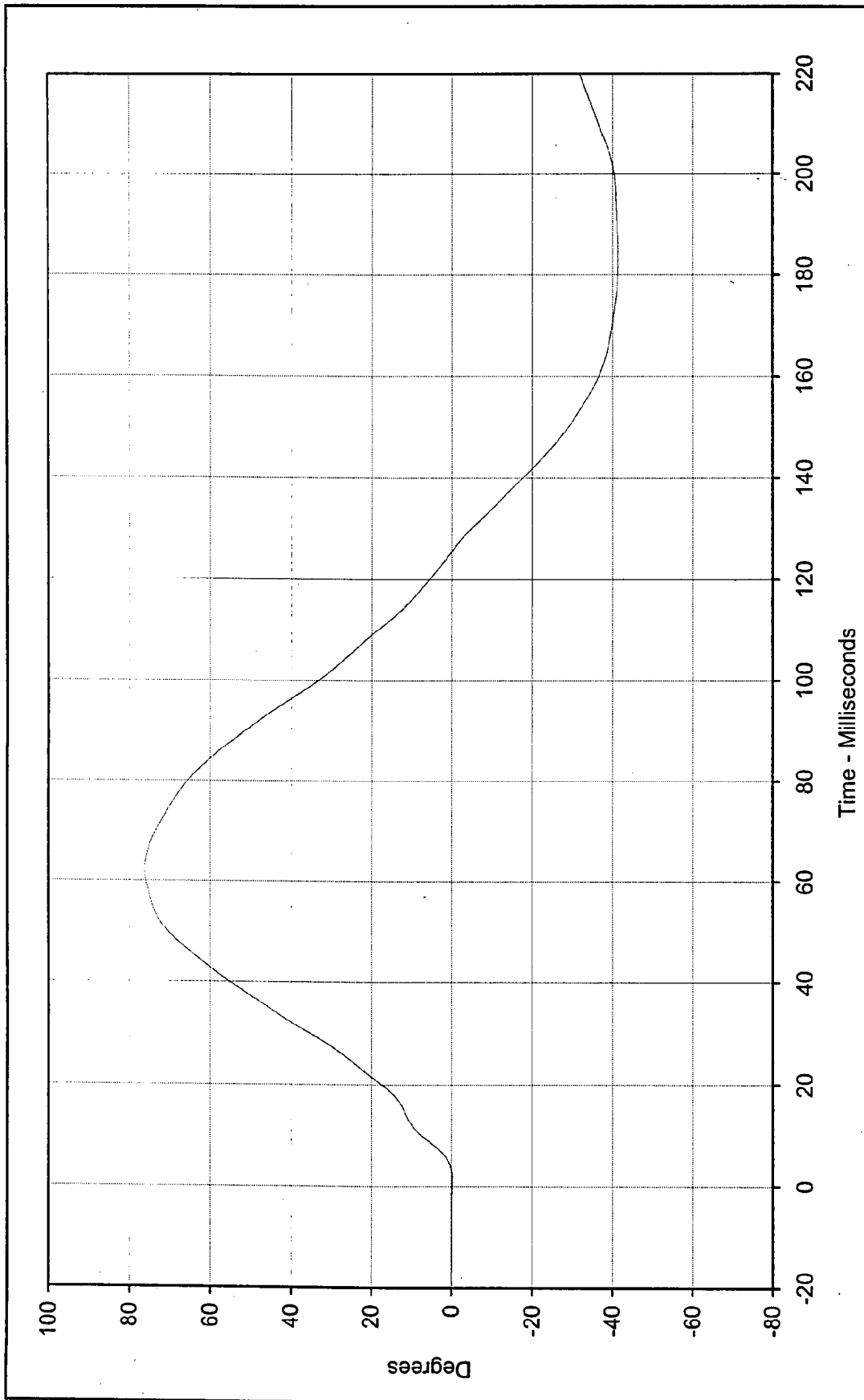




Testing Program: Hybrid III Neck Flexion Test (Male)
 Test Information: S/N of Part: n/a Test I.D.: NF11B



Curve Description: Neck Force X
 Maximum Value: 870.7 at 56.2 Milliseconds
 Minimum Value: -171.1 at 167.6 Milliseconds
 SAE Filter Class: 60
 Date of Test: 11/19/99
 ATD Serial No.: 34



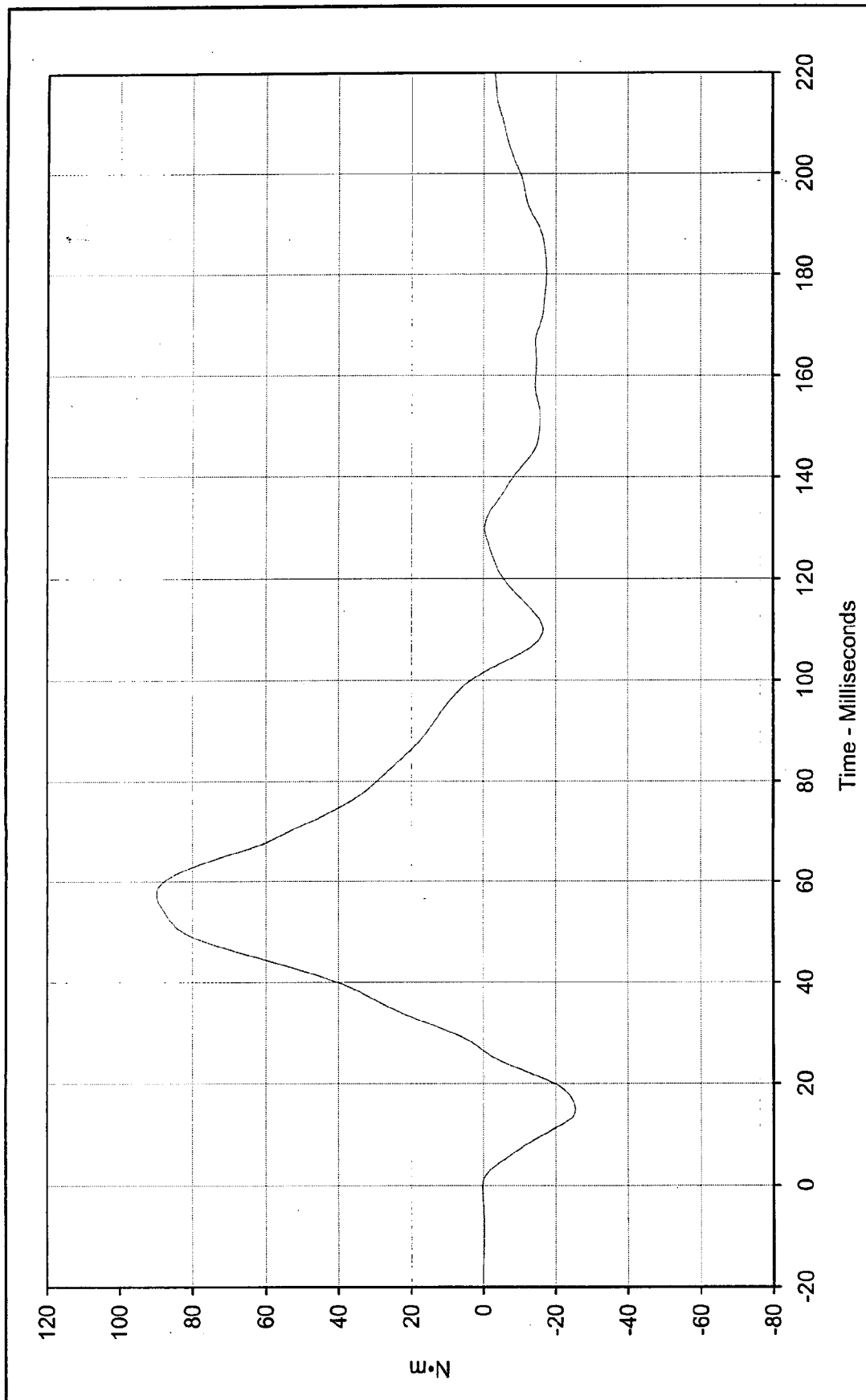
E-13

Testing Program: Hybrid III Neck Flexion Test (Male)
 Test Information: S/N of Part: n/a Test I.D.: NF11B

Curve Description: "D" Plane Rotation
 Maximum Value: 76.2 at 62.2 Milliseconds
 Minimum Value: -41.4 at 184.5 Milliseconds
 SAE Filter Class: 60
 Date of Test: 11/19/99
 ATD Serial No.: 34



KAR20001-04



Curve Description: Moment About Occipital Condyles

Maximum Value: 89.9 at 57.5 Milliseconds

Minimum Value: -25.5 at 14.9 Milliseconds

SAE Filter Class: 60

Date of Test: 11/19/99

ATD Serial No.: 34

Testing Program Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: n/a Test I.D.: NF11B





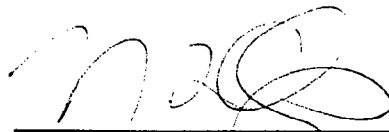
Hybrid III Calibration Data Sheet

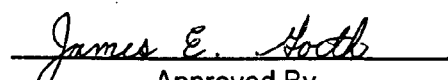
50TH Percentile Male

Neck Extension Test

ATD Serial No.: 34Part Serial No.: n/aTest I.D.: NE11A

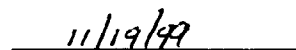
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	36	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.10	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	17.4	Pass
	20 Msec.	G's	14.0 to 19.0	17.4	Pass
	30 Msec.	G's	11.0 to 16.0	15.1	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	15.1	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	43.5	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	102.3	Pass
	Time	Msec.	72.0 to 82.0	75.8	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	158.7	Pass
Moment About Occipital Condyle	Maximum	N • m	-52.9 to- 79.9	-77.0	Pass
	Time	Msec.	65.0 to 79.0	70.0	Pass
Negative Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	136.5	Pass
Overall Test Results					Pass

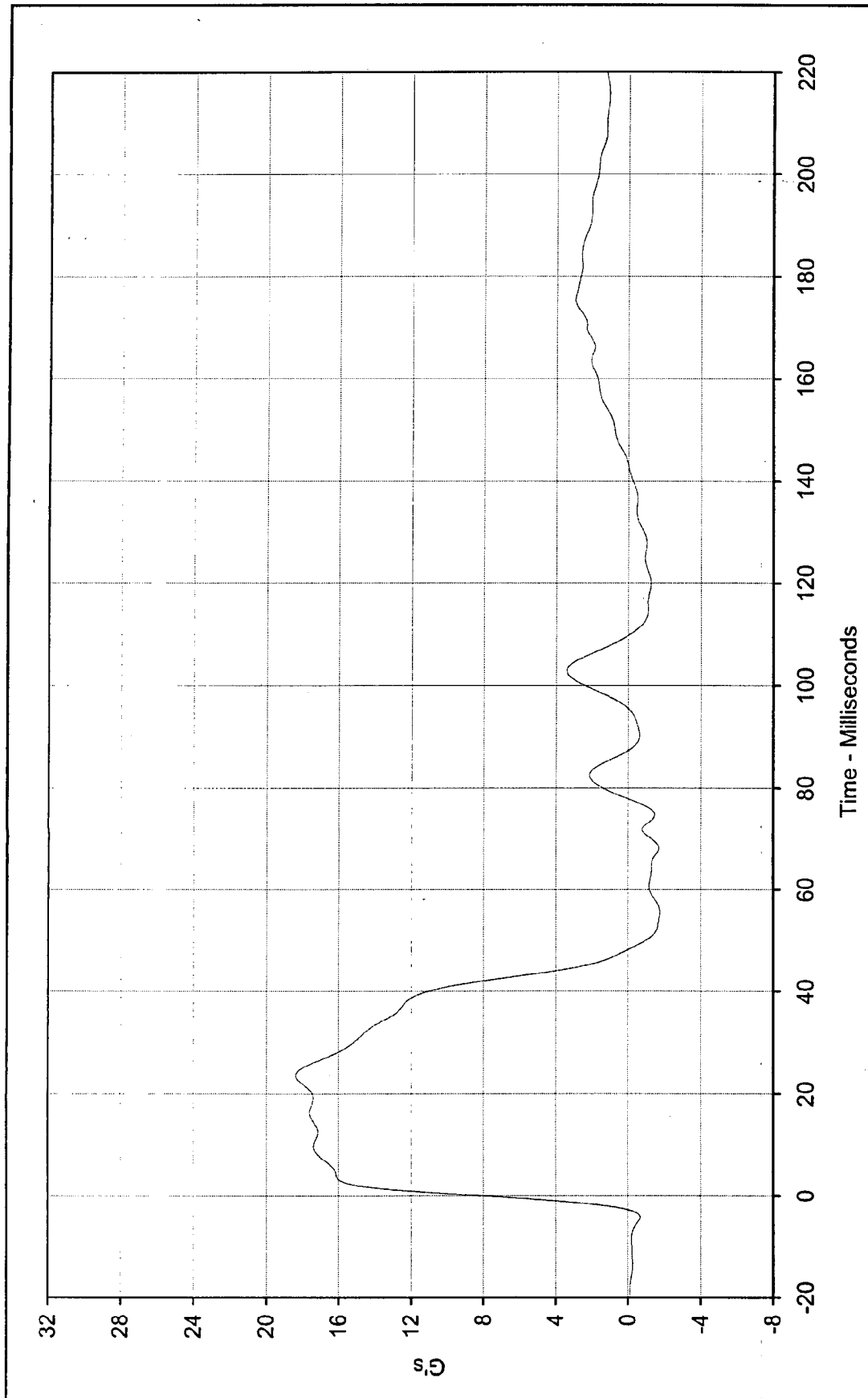

Laboratory Technician


Approved By

November 19, 1999

Test Date

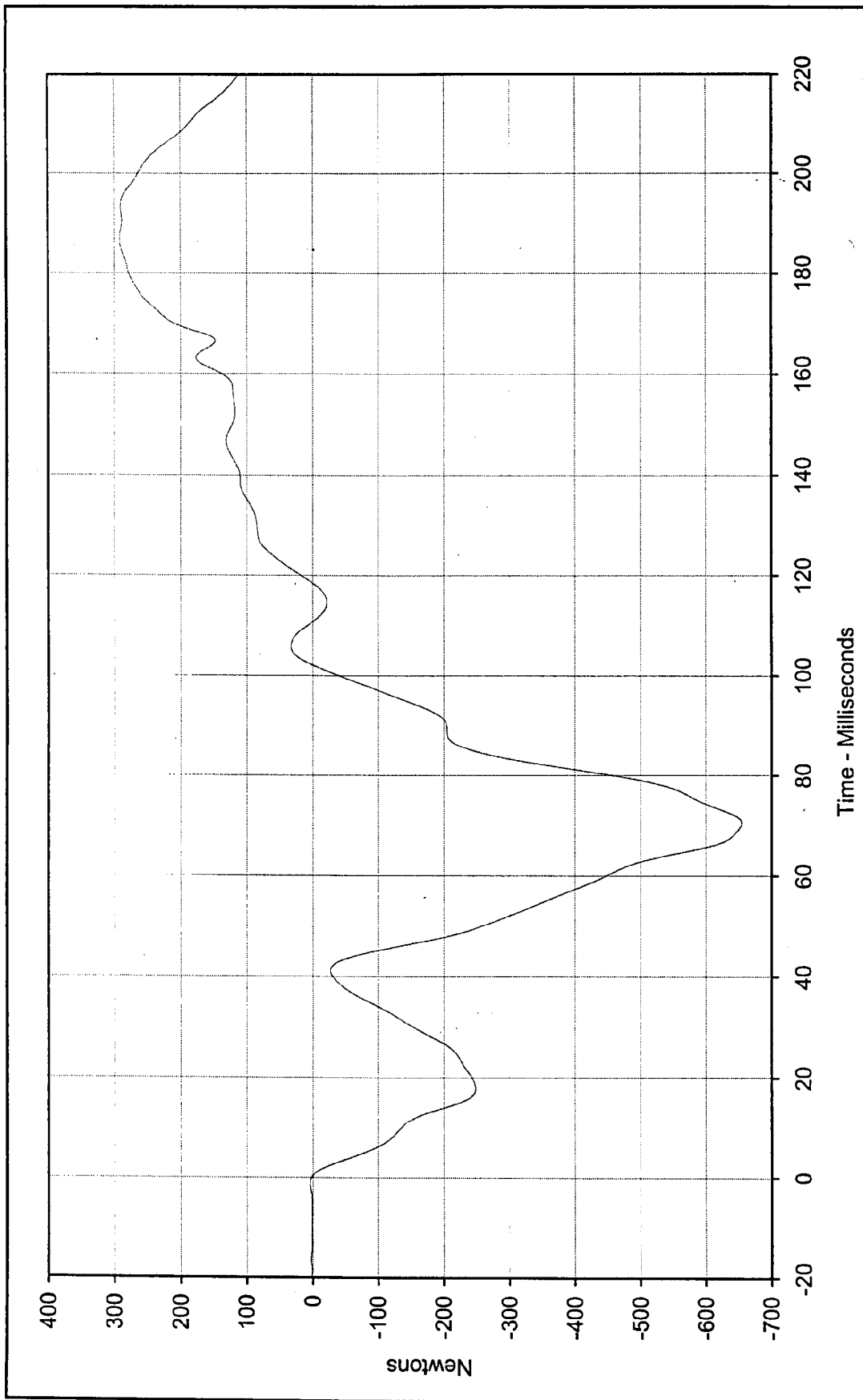

Date



Curve Description: Hybrid III Neck Extension Test (Male)
 Testing Program: Hybrid III Neck Extension Test (Male)
 Test Information: S/N of Part: n/a Test I.D.: NE11A

Pendulum Deceleration
 Maximum Value: 18.4 at 23.5 Milliseconds
 Minimum Value: -1.7 at 55.6 Milliseconds
 SAE Filter Class: 60
 Date of Test: 11/19/99
 ATD Serial No.: 34

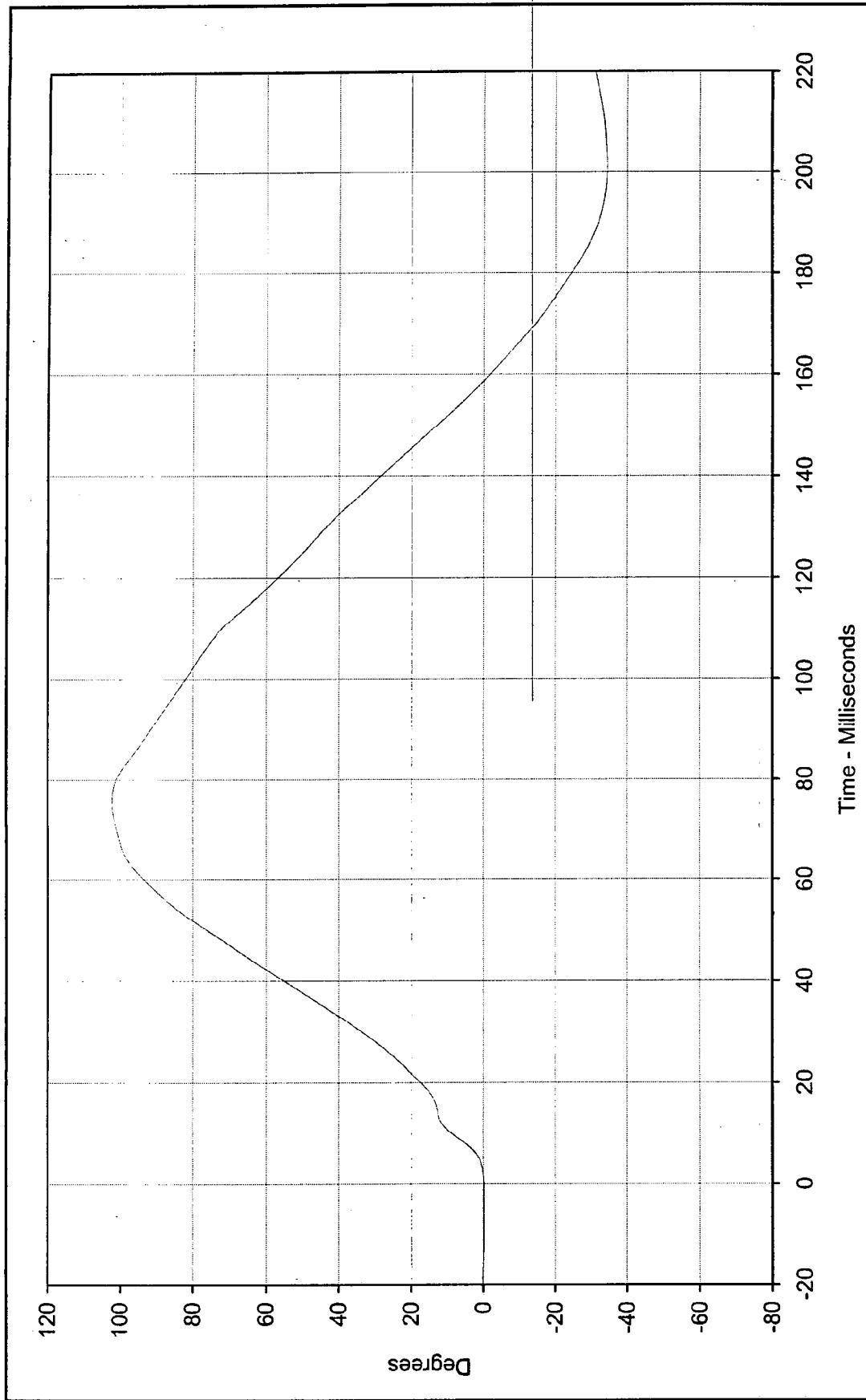




Testing Program: Hybrid III Neck Extension Test (Male)
Test Information: S/N of Part: n/a Test I.D.: NE11A

Curve Description: Neck Force X
Maximum Value: 291.6 at 187.1 Milliseconds
Minimum Value: -654.8 at 70.6 Milliseconds
SAE Filter Class: 60
Date of Test: 11/19/99
ATD Serial No.: 34





Curve Description: "D" Plane Rotation

Maximum Value: 102.3 at 75.8 Milliseconds

Minimum Value: -34.4 at 201.2 Milliseconds

SAE Filter Class: 60

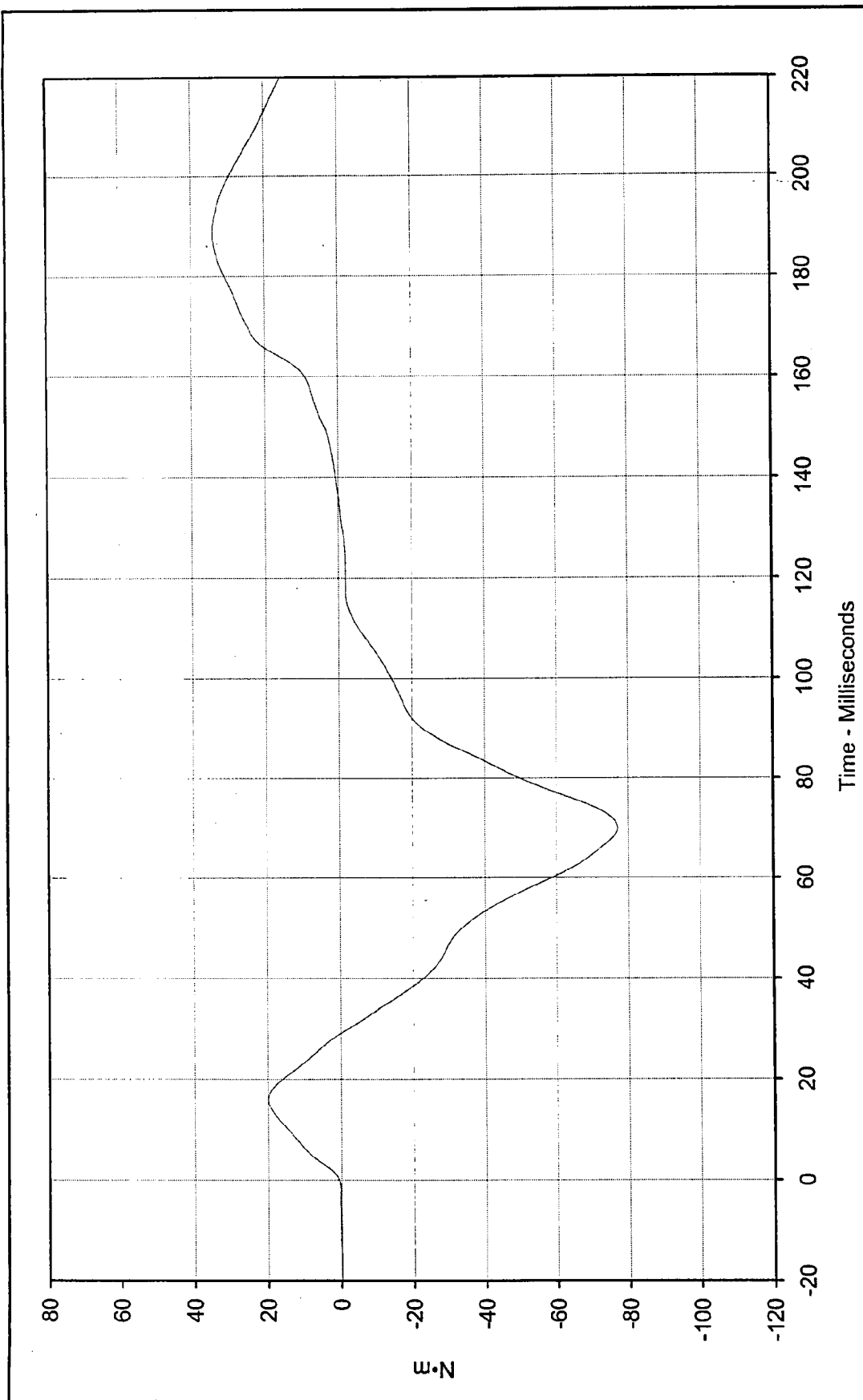
Date of Test: 11/19/99

ATD Serial No.: 34

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: n/a Test I.D.: NE11A





Testing Program: Hybrid III Neck Extension Test (Male)
 Test Information: S/N of Part: n/a Test I.D.: NE11A

Curve Description: Moment About Occipital Condyles
 Maximum Value: 34.1 at 188.6 Milliseconds
 Minimum Value: -77.0 at 70.0 Milliseconds
 SAE Filter Class: 60
 Date of Test: 11/19/99
 ATD Serial No.: 34





Hybrid III Calibration Data Sheet

50TH Percentile Male

External Measurements

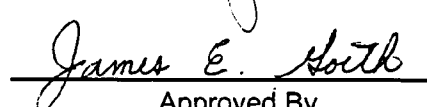
ATD Serial No.: 34Part Serial No.: N/ATest I.D.: N/A

External Measurement Data				
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory temperature	°C	20.4 to 22.1	20.9	Pass
Laboratory relative humidity	%	10 to 70	43	Pass
A - Total sitting height	mm	878.8 to 889.0	888.5	Pass
B - Shoulder pivot height	mm	505.5 to 520.7	507.0	Pass
C - "H" point height	mm	83.8 to 88.9	88.2	Pass
D - "H" point from seat back	mm	134.6 to 139.7	136.5	Pass
E - Shoulder pivot from back	mm	83.8 to 94.0	93.0	Pass
F - Thigh clearance	mm	139.7 to 154.9	151.0	Pass
G - Elbow back to wrist pivot	mm	289.6 to 304.8	300.4	Pass
H - Skull cap to back line	mm	40.6 to 45.7	44.0	Pass
I - Shoulder to elbow length	mm	330.2 to 345.4	340.0	Pass
J - Elbow rest height	mm	190.5 to 210.8	208.0	Pass
K - Buttock to knee length	mm	579.1 to 604.5	603.1	Pass
L - Popliteal length	mm	429.3 to 454.7	451.0	Pass
M - Knee pivot height	mm	485.1 to 500.4	500.0	Pass
N - Buttock popliteal length	mm	452.1 to 477.5	470.0	Pass
O - Chest depth	mm	213.4 to 228.6	225.0	Pass
P - Foot length	mm	251.5 to 266.7	255.0	Pass
V - Shoulder breadth	mm	421.6 to 436.9	429.0	Pass
W - Foot breadth	mm	91.4 to 106.7	103.2	Pass
Y - Chest circumference	mm	970.3 to 1000.8	980.3	Pass
Z - Waist circumference	mm	835.7 to 866.1	865.0	Pass
AA - Location for chest circumference	mm	429.3 to 434.3	430.0	Pass
BB - Location for waist circumference	mm	226.1 to 231.1	230.0	Pass
Overall Test Results				Pass


Laboratory Technician

November 22, 1999

Test Date


Approved By11/22/99
Date



Hybrid III Calibration Data Sheet

50TH Percentile Male

Left Knee Impact Test

ATD Serial No.: 35

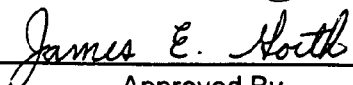
Part Serial No.: n/a

Test I.D.: LK11B

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	2.073 to 2.134	2.092	Pass
Peak Probe Force	Newtons	4715 to 5782	5565.1	Pass
Overall Test Results				Pass



Laboratory Technician



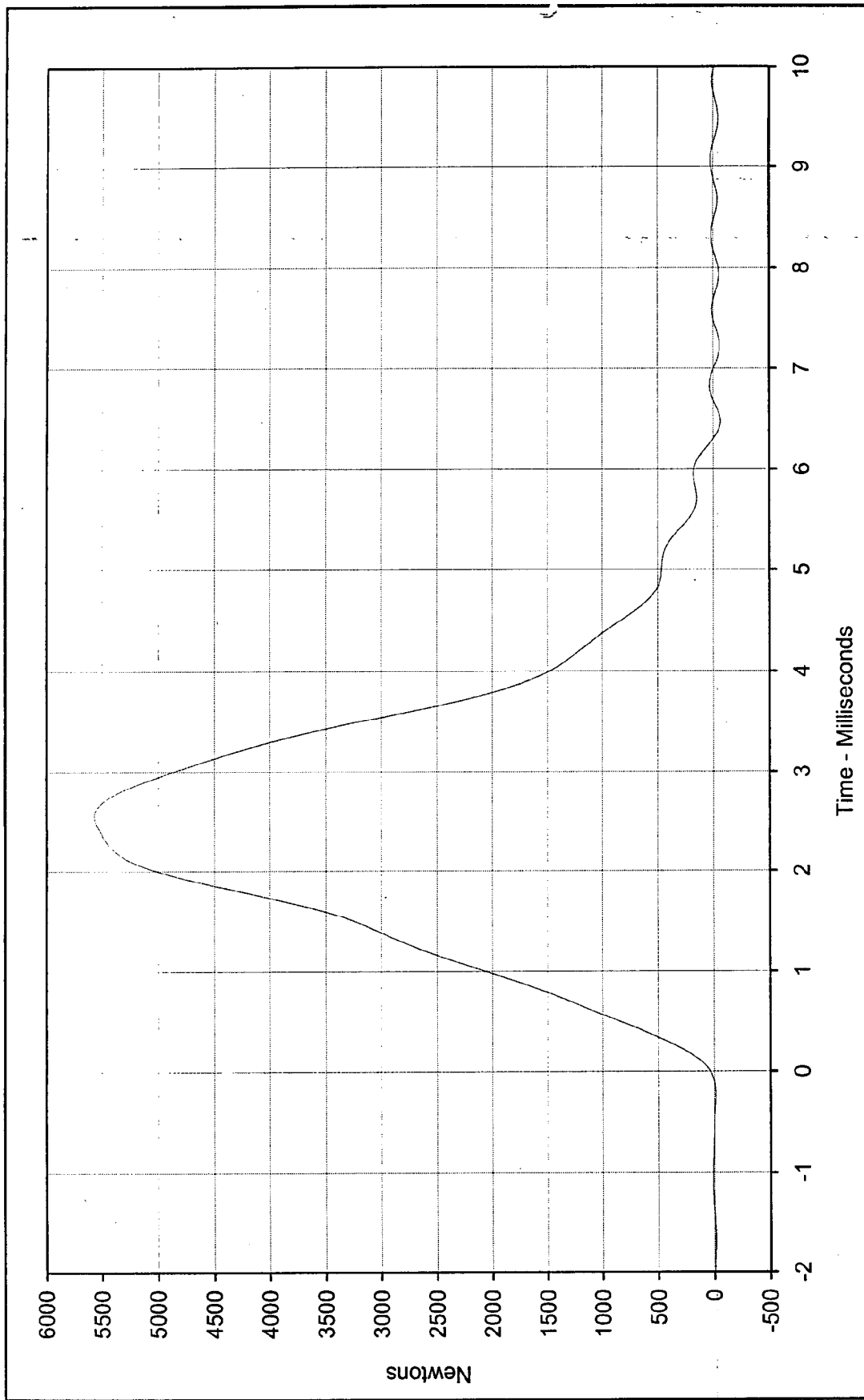
Approved By

November 19, 1999

Test Date

11/19/99

Date



Testing Program: Hybrid III Left Knee Impact Test
 Test Information: Part S/N: n/a Test I.D.: LK11B



Curve Description: Probe Force
 Maximum Value: 5565.1 at 2.6 Milliseconds
 Minimum Value: -64.1 at 6.5 Milliseconds
 SAE Filter Class: 600
 Date of Test: 11/19/99
 ATD Serial No.: 35



Hybrid III Calibration Data Sheet

50TH Percentile Male

Right Knee Impact Test

ATD Serial No.: 35

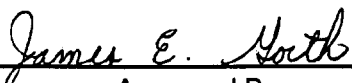
Part Serial No.: n/a

Test I.D.: RK11B

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	2.073 to 2.134	2.096	Pass
Peak Probe Force	Newtons	4715 to 5782	5357.5	Pass
Overall Test Results				Pass



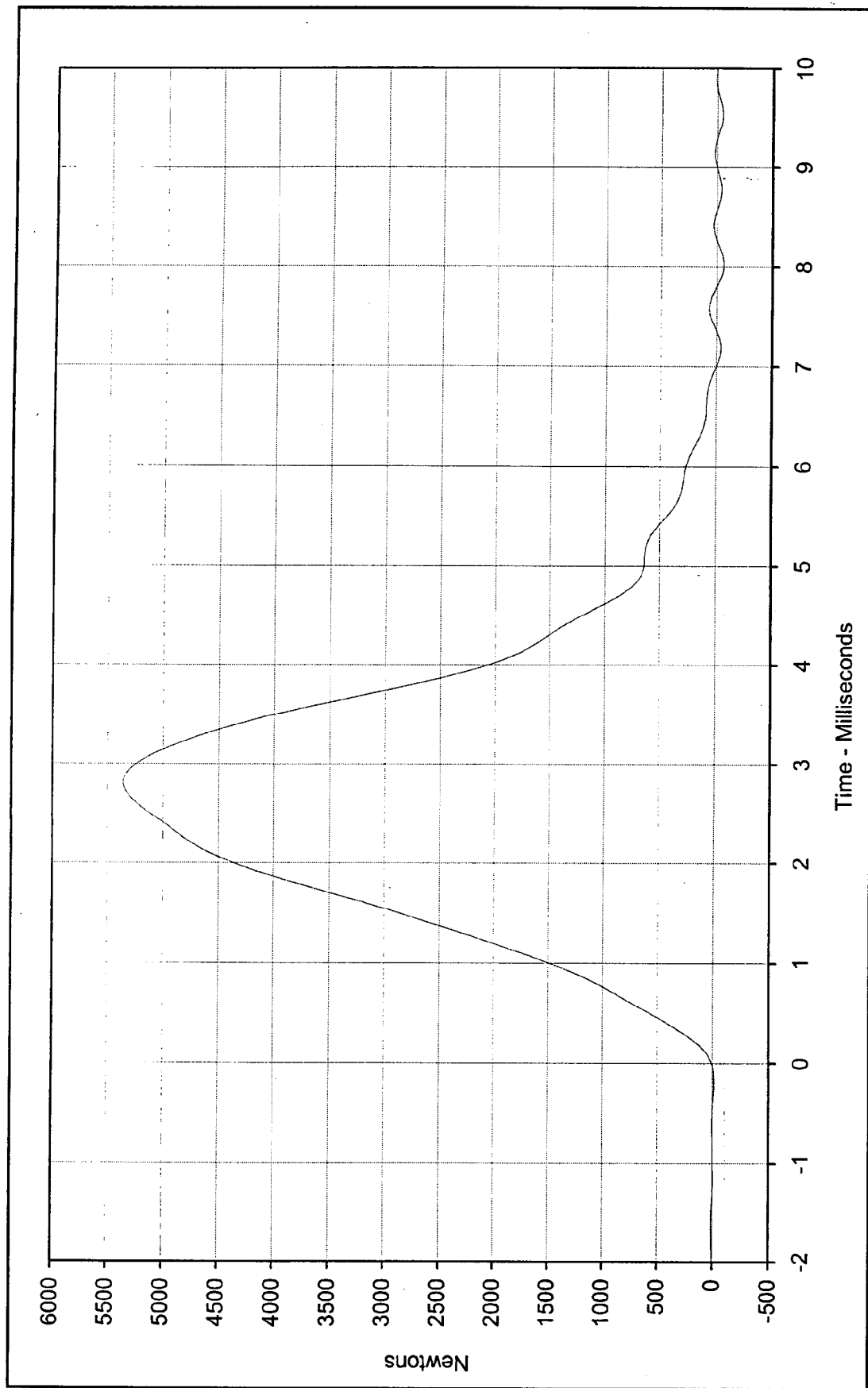
Laboratory Technician



Approved By

November 19, 1999
Test Date

11/19/99
Date



Curve Description: Hybrid III Right Knee Impact Test
Maximum Value: 5357.5 at 2.8 Milliseconds
Minimum Value: -61.9 at 8.0 Milliseconds
SAE Filter Class: 600
Date of Test: 11/19/99
ATD Serial No.: 35





Hybrid III Calibration Data Sheet

50TH Percentile Male

Head Drop Calibration

ATD Serial No.: 035

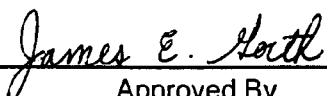
Part Serial No.: n/a

Test I.D.: HD11A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	255.8	Pass
Peak Lateral Acceleration	G's	≤15.0	5.5	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



Laboratory Technician

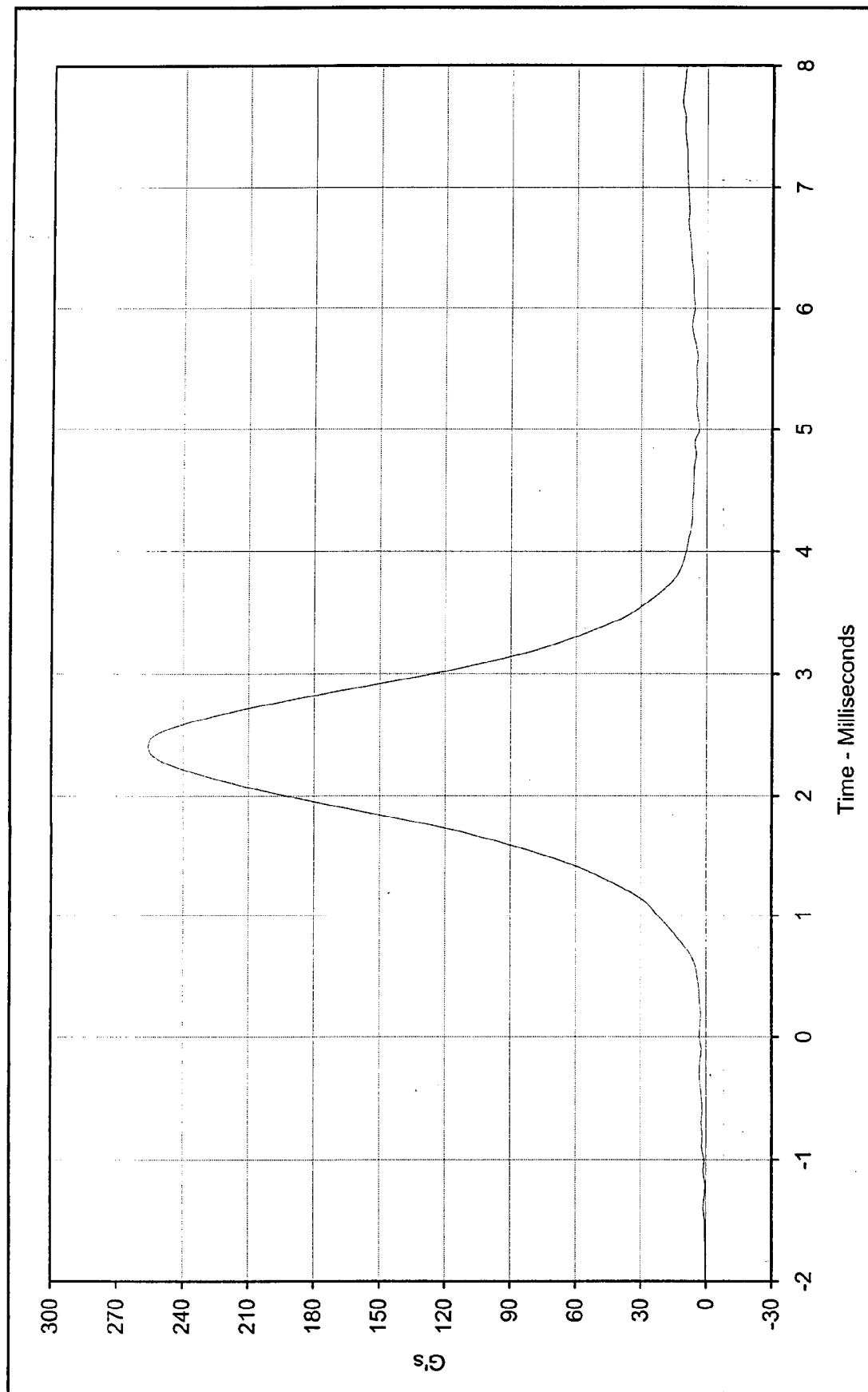


Approved By

November 18, 1999

Test Date

11/18/99
Date



Curve Description: Head Resultant Acceleration

Maximum Value: 255.8 at 2.4 Milliseconds

Minimum Value: 0.3 at -1.8 Milliseconds

SAE Filter Class: 1000

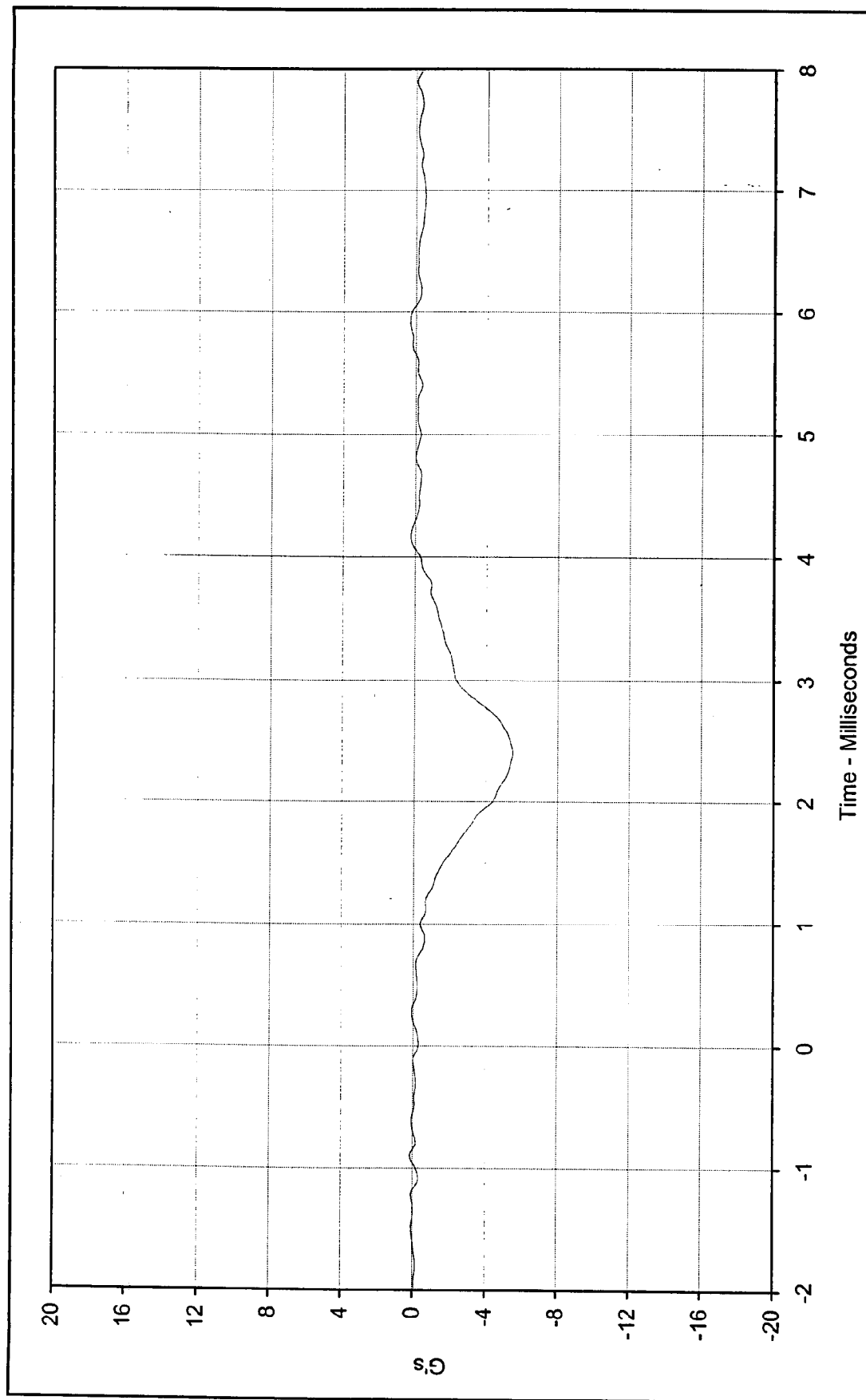
Date of Test: 11/18/99

ATD Serial No.: 035

Testing Program: Hybrid III Head Drop Calibration (Male)

Test Information: S/N of Part: n/a Test I.D.: HD11A





Curve Description: Hybrid III Head Drop Calibration (Male)
 Maximum Value: 0.3 at 5.9 Milliseconds
 Minimum Value: -5.5 at 2.4 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 11/18/99
 ATD Serial No.: 035





Hybrid III Calibration Data Sheet

50TH Percentile Male

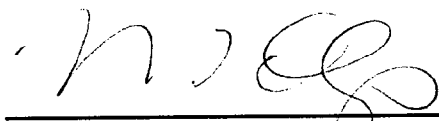
Thorax Impact Test

ATD Serial No.: 35

Part Serial No.: N/A

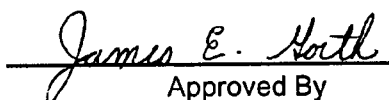
Test I.D.: CH11A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	39	Pass
Probe Velocity	m/s	6.58 to 6.82	6.69	Pass
Peak Probe Force	Newtons	5159 to 5893	5423	Pass
Peak Sternum Displacement	CM	6.35 to 7.26	6.45	Pass
Internal Hysteresis	%	69 to 85	77.4	Pass
Overall Test Results				Pass



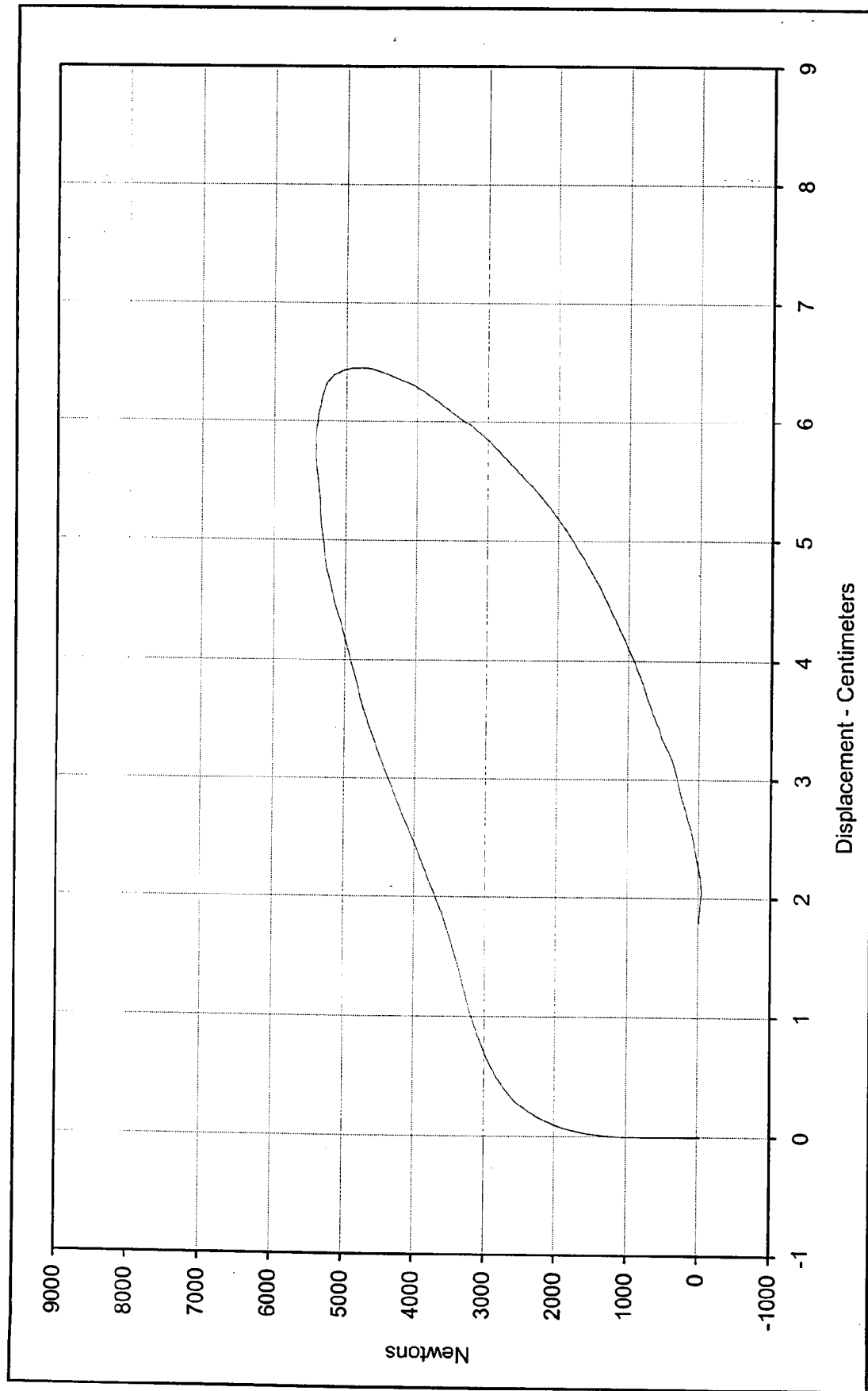
Laboratory Technician

November 22, 1999
Test Date



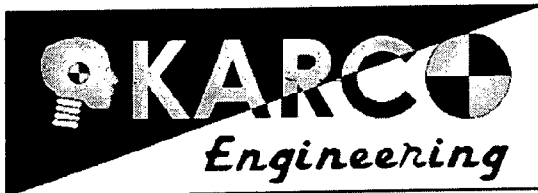
Approved By

11/22/99
Date



Curve Description:	Probe Force vs. Chest Displacement	Testing Program:	Hybrid III Thorax Impact Test
Probe Force:	5422.8 Newtons	Test Information:	S/N of Part: N/A Test I.D.: CH11A
Chest Displ.:	6.45 Centimeters		
SAE Filter Class:	180		
Date of Test:	11/22/99		
ATD Serial No.:	35		





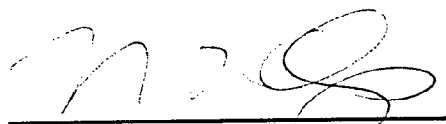
Hybrid III Calibration Data Sheet

50TH Percentile Male

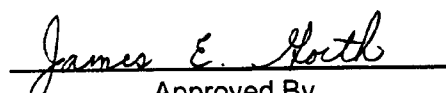
Neck Flexion Test

ATD Serial No.: 35Part Serial No.: n/aTest I.D.: NF11A

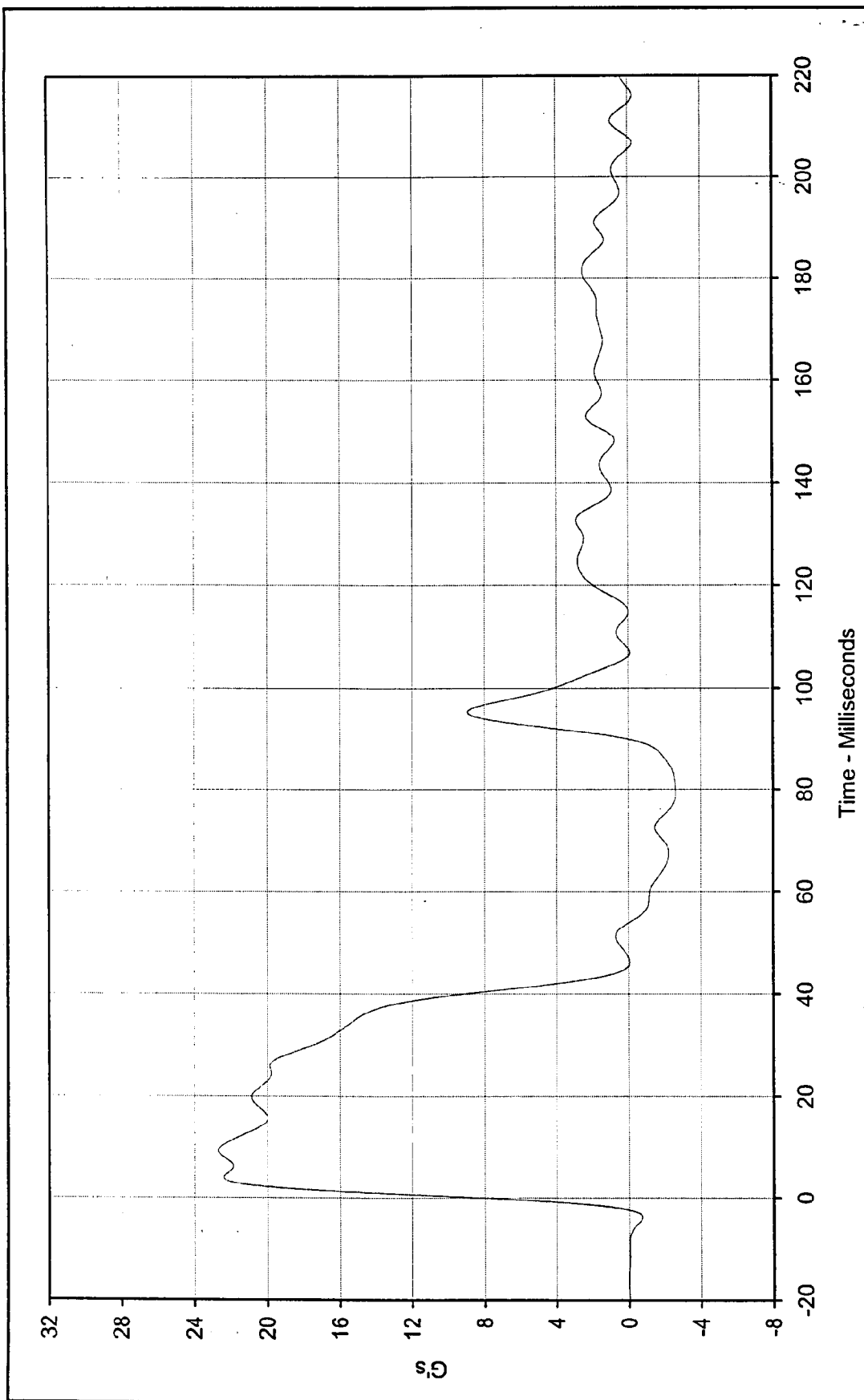
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity		%	10 to 70	40	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.00	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	22.5	Pass
	20 Msec.	G's	17.6 to 22.6	20.9	Pass
	30 Msec.	G's	12.5 to 18.5	17.6	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	17.6	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	41.6	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	66.6	Pass
	Time	Msec.	57.0 to 64.0	59.1	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	114.9	Pass
Moment About Occipital Condyle	Maximum	N • m	84.1 to 108.5	89.8	Pass
	Time	Msec.	47.0 to 58.0	54.5	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	99.8	Pass
Overall Test Results					Pass


Laboratory Technician

November 19, 1999
Test Date


Approved By

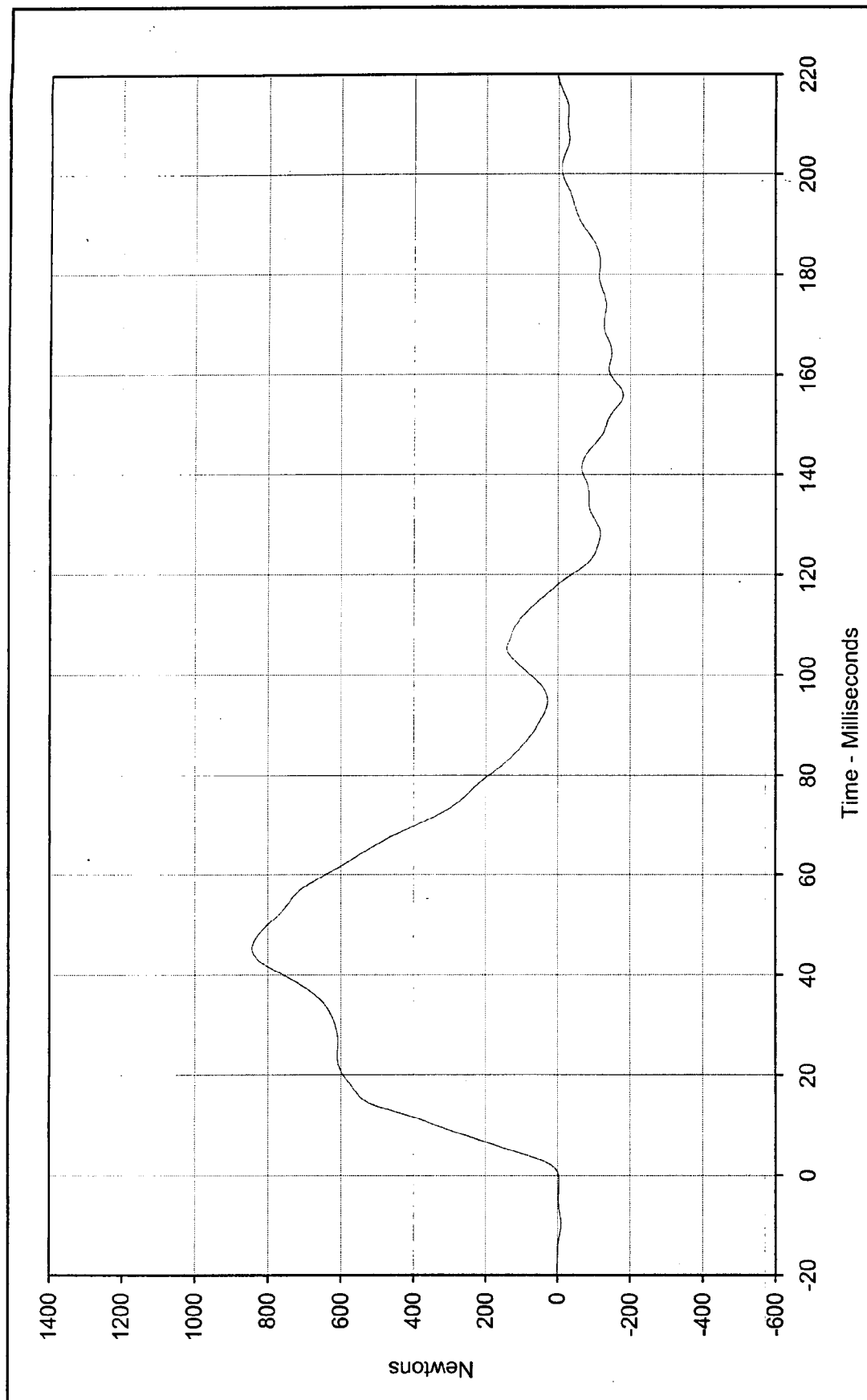
11/19/99
Date



Testing Program: Hybrid III Neck Flexion Test (Male)
 Test Information: S/N of Part: n/a Test I.D.: NF11A



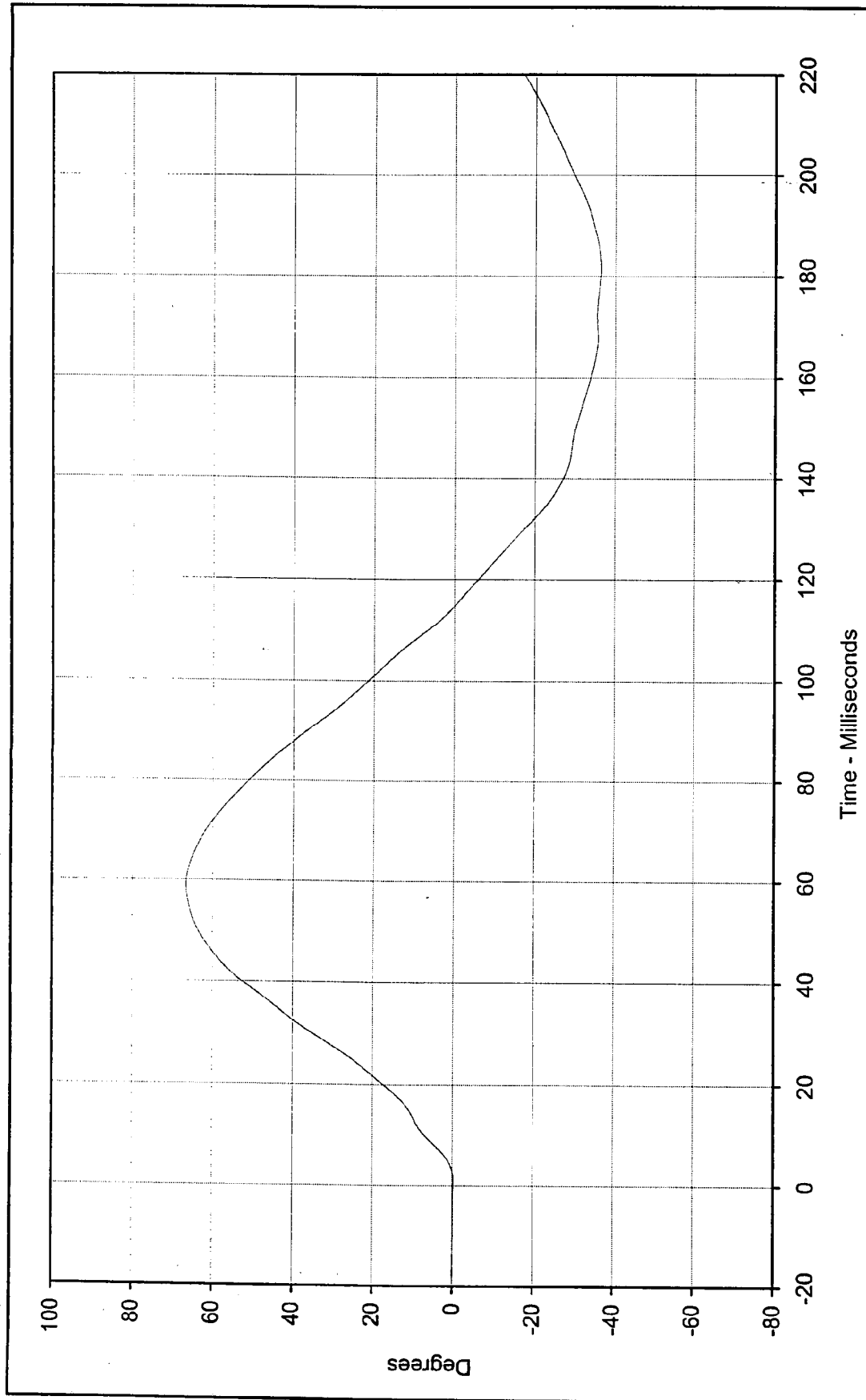
Curve Description: Pendulum Deceleration
 Maximum Value: 22.7 at 9.2 Milliseconds
 Minimum Value: -2.6 at 79.4 Milliseconds
 SAE Filter Class: 60
 Date of Test: 11/19/99
 ATD Serial No.: 35



Testing Program: Hybrid III Neck Flexion Test (Male)
 Test Information: S/N of Part: n/a Test I.D.: NF11A



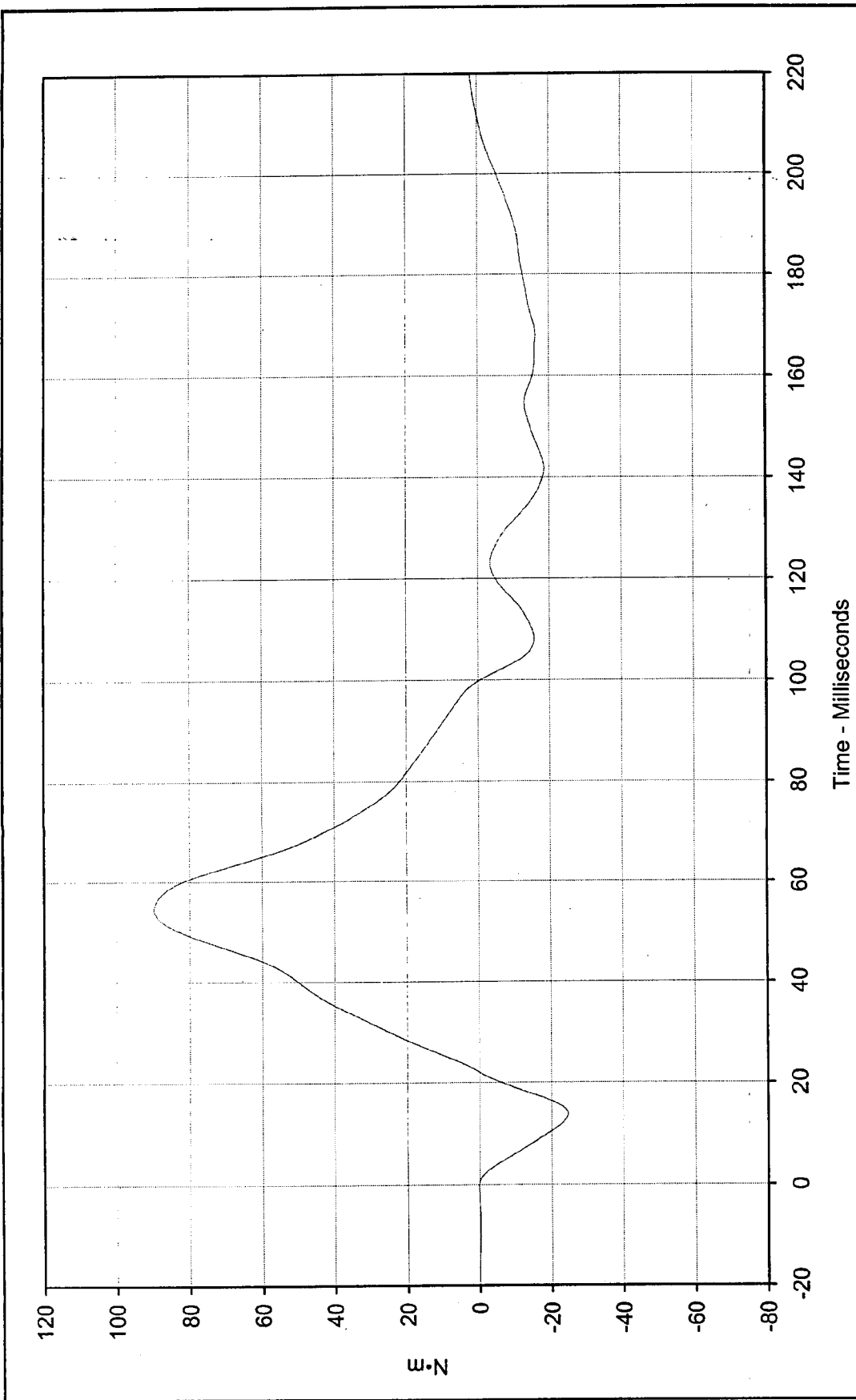
Curve Description: Neck Force X
 Maximum Value: 842.9 at 45.2 Milliseconds
 Minimum Value: -180.3 at 155.9 Milliseconds
 SAE Filter Class: 60
 Date of Test: 11/19/99
 ATD Serial No.: 35



Testing Program: Hybrid III Neck Flexion Test (Male)
 Test Information: S/N of Part: n/a Test I.D.: NF11A

Curve Description: "D" Plane Rotation
 Maximum Value: 66.6 at 59.1 Milliseconds
 Minimum Value: -36.4 at 181.5 Milliseconds
 SAE Filter Class: 60
 Date of Test: 11/19/99
 ATD Serial No.: 35





E-34

Curve Description: Moment About Occipital Condyles Testing Program: Hybrid III Neck Flexion Test (Male)

Maximum Value: 89.8 at 54.5 Milliseconds Test Information: S/N of Part: n/a Test I.D.: NF11A

Minimum Value: -24.6 at 13.9 Milliseconds

SAE Filter Class: 60

Date of Test: 11/19/99

ATD Serial No.: 35



KAR20001-04



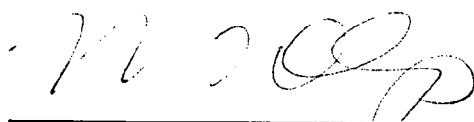
Hybrid III Calibration Data Sheet

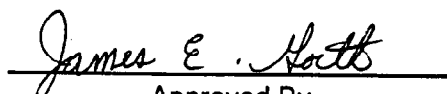
50TH Percentile Male

Neck Extension Test

ATD Serial No.: 35Part Serial No.: n/aTest I.D.: NE11B

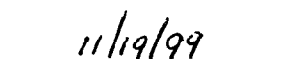
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	36	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.17	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	18.2	Pass
	20 Msec.	G's	14.0 to 19.0	18.3	Pass
	30 Msec.	G's	11.0 to 16.0	15.9	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	15.9	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	43.7	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	92.6	Pass
	Time	Msec.	72.0 to 82.0	78.7	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	156.9	Pass
Moment About Occipital Condyle	Maximum	N • m	-52.9 to- 79.9	-62.5	Pass
	Time	Msec.	65.0 to 79.0	68.9	Pass
Negative Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	137.8	Pass
Overall Test Results					Pass

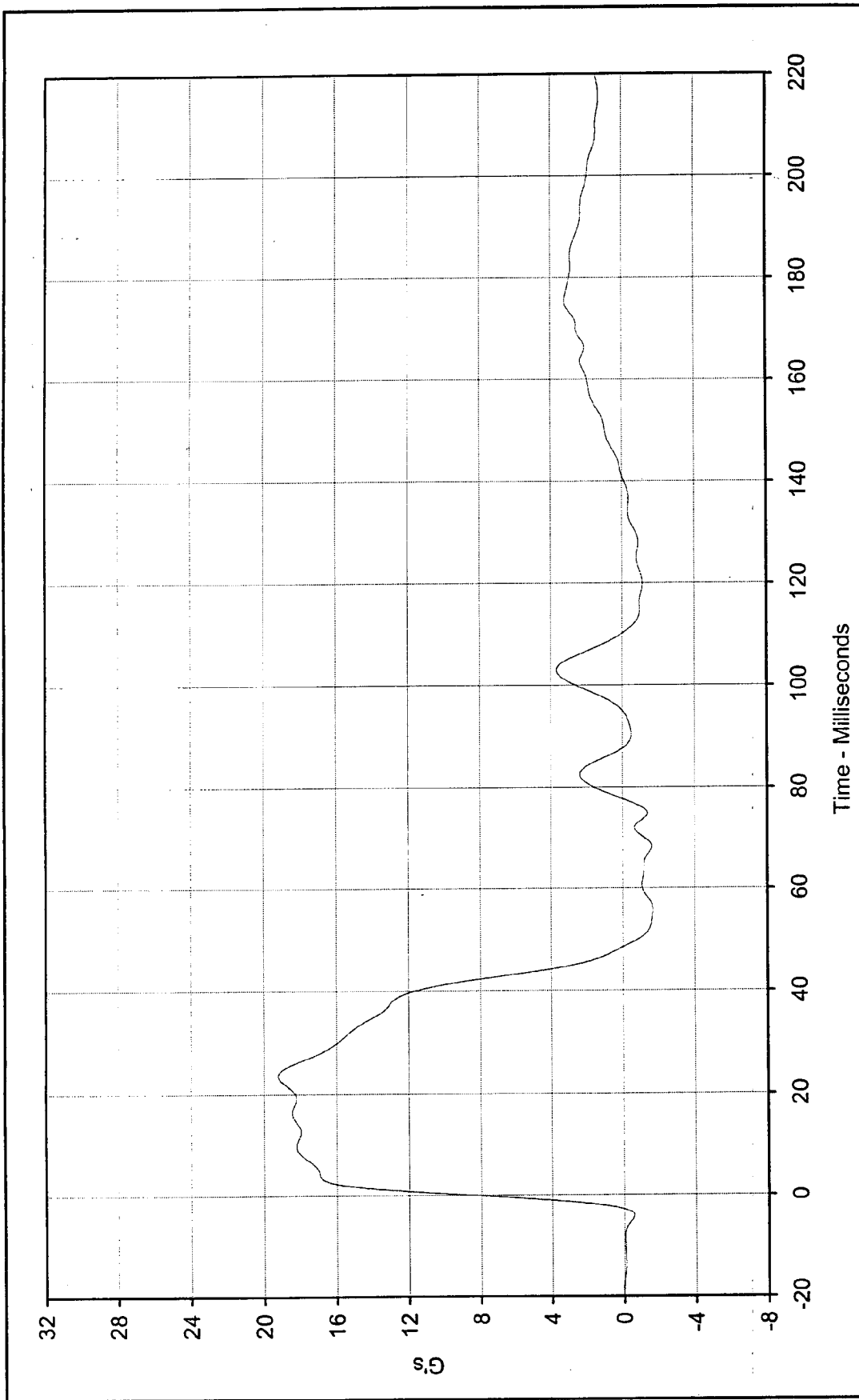

Laboratory Technician


Approved By

November 19, 1999

Test Date


Date



E-36

Curve Description: Hybrid III Neck Extension Test (Male)

Maximum Value: 19.2 at 23.5 Milliseconds

Minimum Value: -1.7 at 55.6 Milliseconds

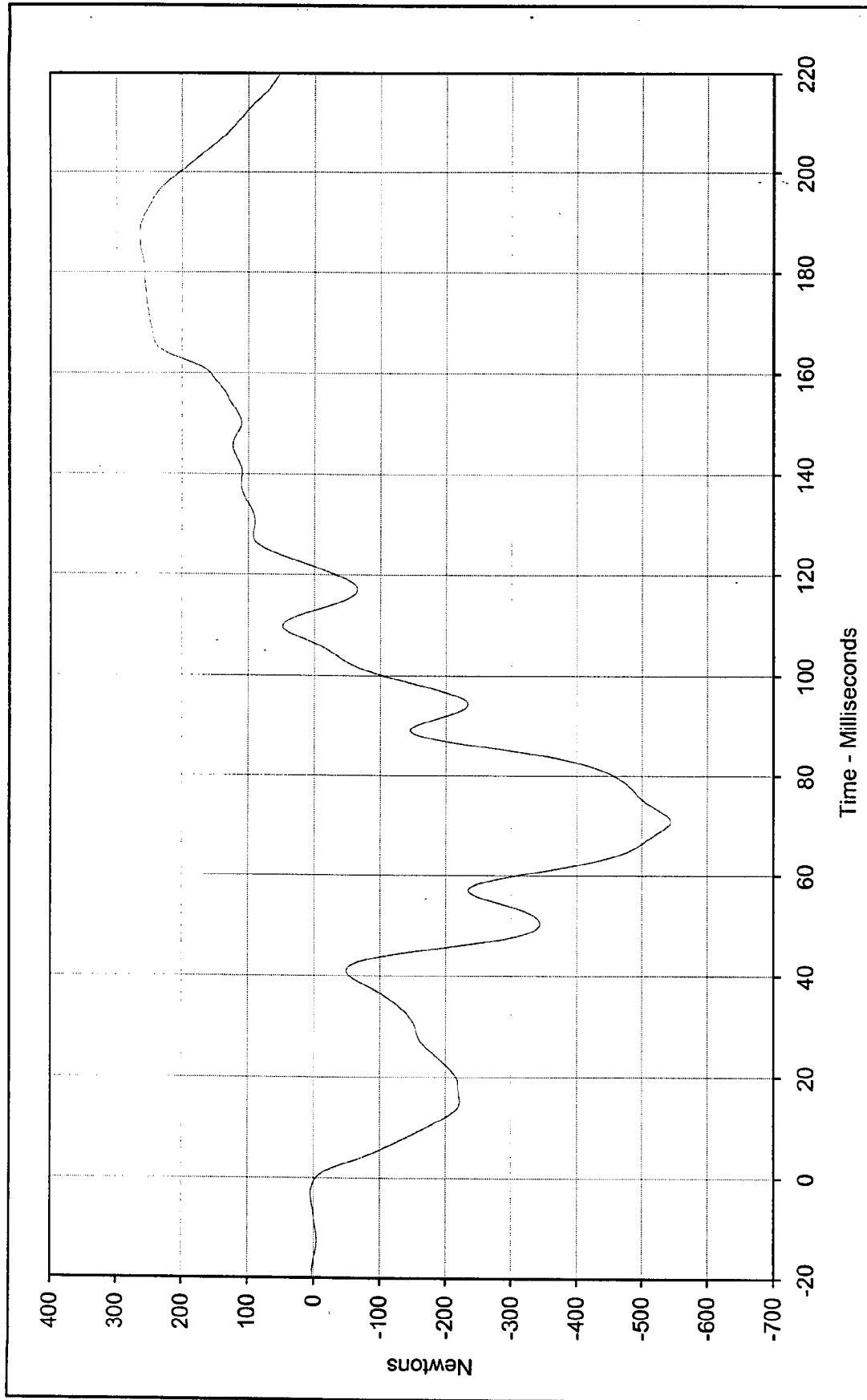
SAE Filter Class: 60

Date of Test: 11/19/99

ATD Serial No.: 35



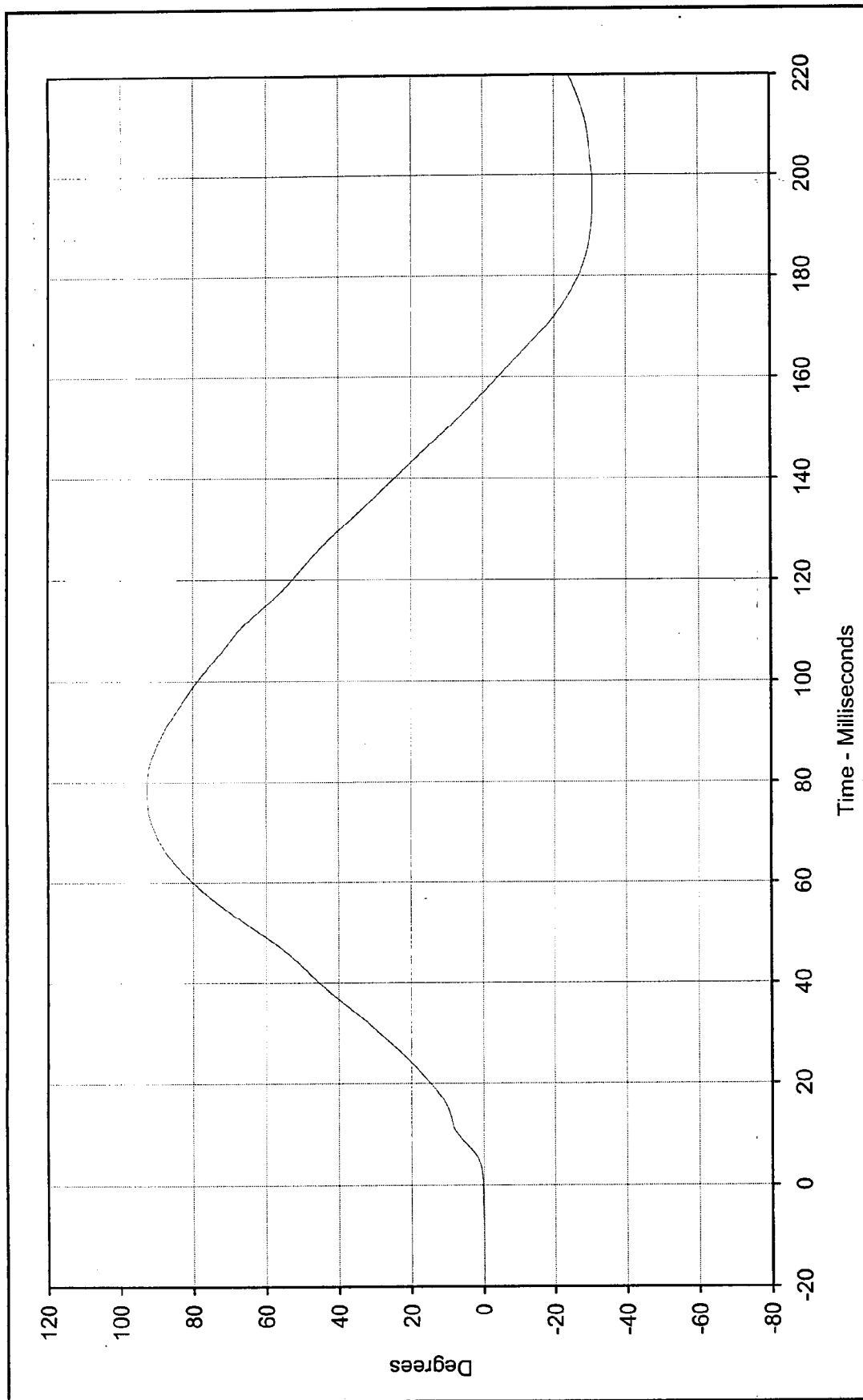
KAR20001-04



Testing Program: Hybrid III Neck Extension Test (Male)
 Test Information: S/N of Part: n/a Test I.D.: NE11B



Curve Description: Neck Force X
 Maximum Value: 264.2 at 188.0 Milliseconds
 Minimum Value: -544.2 at 70.9 Milliseconds
 SAE Filter Class: 60
 Date of Test: 11/19/99
 ATD Serial No.: 35



Curve Description: "D" Plane Rotation Testing Program: Hybrid III Neck Extension Test (Male)

Maximum Value: 92.6 at 78.7 Milliseconds

Minimum Value: -30.8 at 197.1 Milliseconds

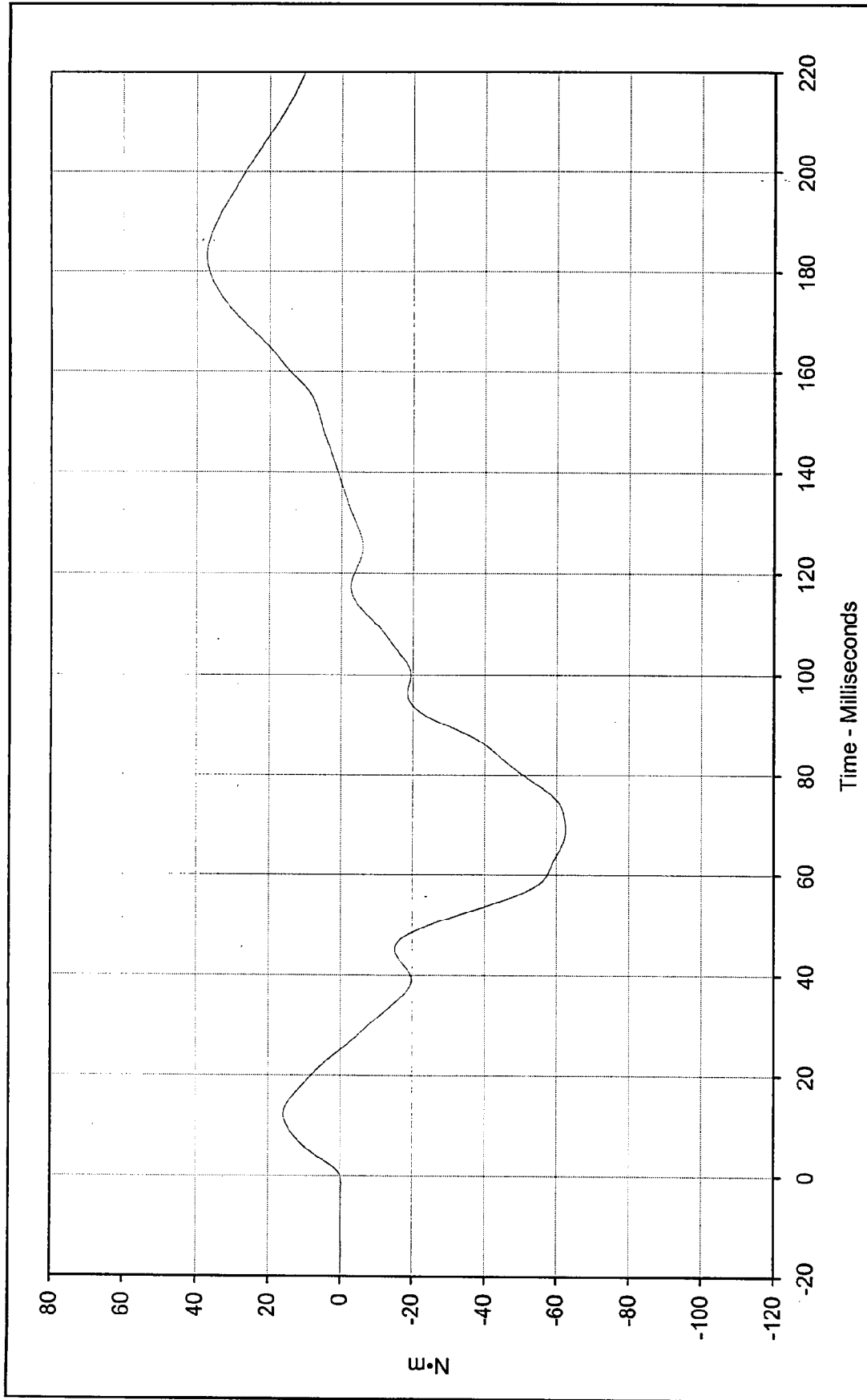
SAE Filter Class: 60

Date of Test: 11/19/99

ATD Serial No.: 35

Test Information: S/N of Part: n/a Test I.D.: NE11B





E-39

Testing Program: Hybrid III Neck Extension Test (Male)
 Test Information: S/N of Part: n/a Test I.D.: NE11B

Curve Description: Moment About Occipital Condyles
 Maximum Value: 37.2 at 183.0 Milliseconds
 Minimum Value: -62.5 at 68.9 Milliseconds
 SAE Filter Class: 60
 Date of Test: 11/19/99
 ATD Serial No.: 35



KAR20001-04



Hybrid III Calibration Data Sheet

50TH Percentile Male

External Measurements

ATD Serial No.: 35Part Serial No.: N/ATest I.D.: N/A

External Measurement Data				
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory temperature	°C	20.4 to 22.1	20.9	Pass
Laboratory relative humidity	%	10 to 70	43	Pass
A - Total sitting height	mm	878.8 to 889.0	888.1	Pass
B - Shoulder pivot height	mm	505.5 to 520.7	506.0	Pass
C - "H" point height	mm	83.8 to 88.9	87.1	Pass
D - "H" point from seat back	mm	134.6 to 139.7	137.0	Pass
E - Shoulder pivot from back	mm	83.8 to 94.0	92.0	Pass
F - Thigh clearance	mm	139.7 to 154.9	152.8	Pass
G - Elbow back to wrist pivot	mm	289.6 to 304.8	300.4	Pass
H - Skull cap to back line	mm	40.6 to 45.7	44.0	Pass
I - Shoulder to elbow length	mm	330.2 to 345.4	340.0	Pass
J - Elbow rest height	mm	190.5 to 210.8	207.0	Pass
K - Buttock to knee length	mm	579.1 to 604.5	603.1	Pass
L - Popliteal length	mm	429.3 to 454.7	451.0	Pass
M - Knee pivot height	mm	485.1 to 500.4	500.0	Pass
N - Buttock popliteal length	mm	452.1 to 477.5	476.0	Pass
O - Chest depth	mm	213.4 to 228.6	225.0	Pass
P - Foot length	mm	251.5 to 266.7	255.0	Pass
V - Shoulder breadth	mm	421.6 to 436.9	429.0	Pass
W - Foot breadth	mm	91.4 to 106.7	103.2	Pass
Y - Chest circumference	mm	970.3 to 1000.8	980.3	Pass
Z - Waist circumference	mm	835.7 to 866.1	865.0	Pass
AA - Location for chest circumference	mm	429.3 to 434.3	430.0	Pass
BB - Location for waist circumference	mm	226.1 to 231.1	229.0	Pass
Overall Test Results				Pass

[Signature]
Laboratory Technician

James E. Holt
Approved By

November 22, 1999

Test Date

11/22/99
Date

APPENDIX F
VEHICLE OWNER'S MANUAL
OCCUPANT RESTRAINT INSTRUCTIONS

KAR20001-04

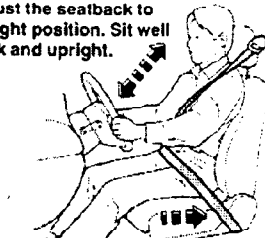
adults, their risk of being injured from deployment is greater. For that reason, we strongly recommend that ALL children (including those in child seats and those that have outgrown child restraint devices) sit in the REAR seat properly restrained at all times in a child restraint device or in a seatbelt, whichever is appropriate for the child's age, height and weight.

Secure ALL types of child restraint devices (including forward facing child seat) in the REAR seats at all times.

NEVER INSTALL A REARWARD FACING CHILD SEAT IN THE FRONT SEAT. DOING SO RISKS SERIOUS INJURY OR DEATH TO THE CHILD BY PLACING THE CHILD'S HEAD TOO CLOSE TO THE SRS AIRBAG.

According to accident statistics, children are safer when properly restrained in the rear seating positions than in the front seating positions. For instructions and precautions concerning child restraint systems, see the "Child restraint systems" section in this chapter.

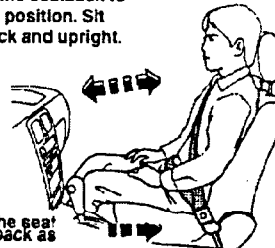
Adjust the seatback to upright position. Sit well back and upright.



Move the seat as far from the steering wheel as practical.

HS0233

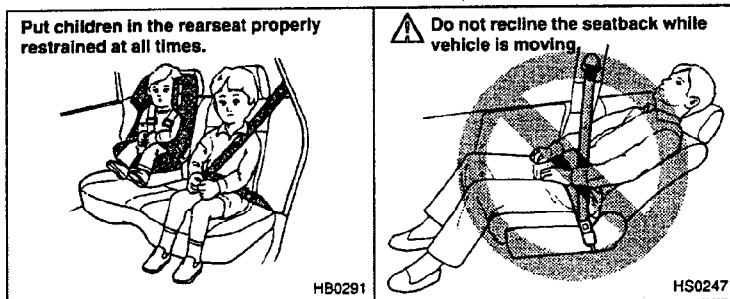
Adjust the seatback to upright position. Sit well back and upright.



Move the seat as far back as possible.

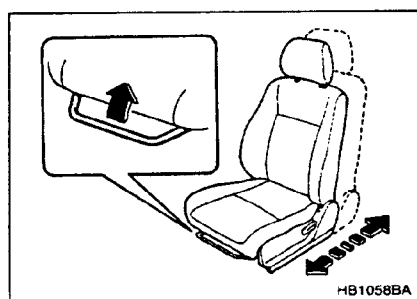
HB0290

CONTINUED



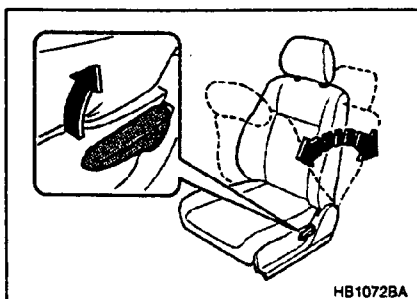
▼ Fore and aft adjustment

▼ Manual seat



Pull the lever upward and slide the seat to the desired position. Then release the lever and move the seatback and forth to make sure that it is securely locked into place.

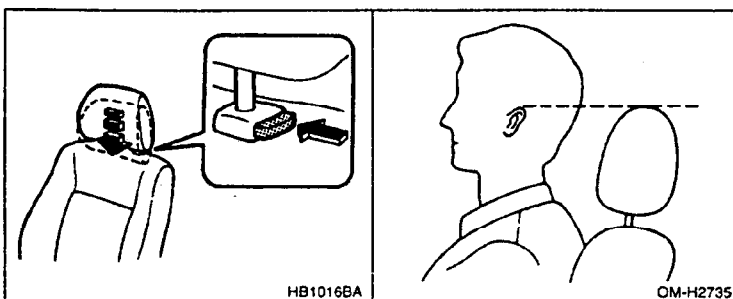
▼ Reclining the seatback



Pull the reclining lever up and adjust the seatback to the desired position. Then release the lever and make sure the seat is securely locked into place.

The seatback placed in a reclined position can spring back upward with force when released. When operating the reclining lever to return the seatback, hold it lightly so that it may be raised back gradually.

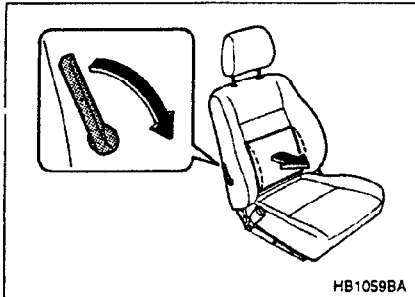
▼ Head restraint adjustment



To raise the head restraint, pull it up. To lower it, push the head restraint down while pressing the release button on the top of the seatback.

The best position for the head restraint is just above or level with the top of the ears.

▼ **Lumbar support (If equipped)**



Pull the lever forward or backward.

Pulling the lever forward will increase the amount of support for your lower back.

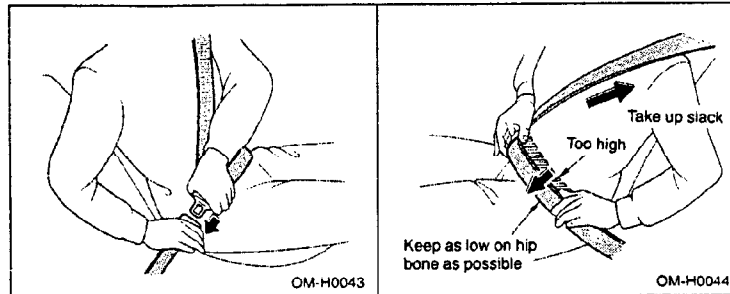
Seat heater (if equipped)

⚠ CAUTION

- Use of the seat heater for a long period of time while the engine is not running can cause battery discharge.
- Do not put anything on the seat which insulates against heat, such as a blanket, cushion, or similar items. This may cause the seat heater to overheat.
- When cleaning the seat, do not use benzine, paint thinner, or any similar materials.

The seat heater operates when the ignition switch is either in the "ACC" or "ON" position.

▼ Front and rear seatbelts (except rear center seatbelt on station wagon)



1. Adjust the seat position:

Driver's seat: Adjust the seatback to the upright position. Move the seatback as far from the steering wheel as practical while still maintaining full vehicle control.

Front passenger's seat: Adjust the seatback to the upright position. Move the seat as far back as possible.

2. Sit well back in the seat.

3. Pick up the tongue plate and pull the belt out slowly. Do not let it get twisted. If the belt stops before reaching the buckle, return the belt slightly and pull it out more slowly. If the belt still cannot be unlocked, let the belt retract slightly after giving a strong pull on it, then pull it out slowly again.

4. Insert the tongue plate into the buckle until you hear a click.

5. To make the lap part tight, pull up on the shoulder belt. And place the lap belt as low as possible on your hips, not on your waist.

▼ Rear center seatbelt on station wagon

⚠ WARNING

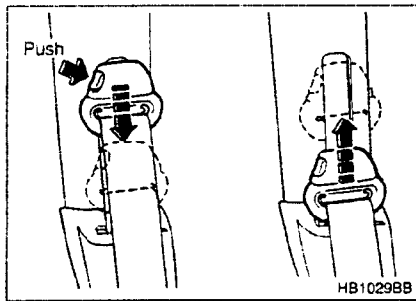
- Fastening the seatbelt with the webbing twisted can increase the risk or severity of injury in an accident. When fastening the belt after it is out from the retractor, especially when inserting the smaller tongue plate into the mating buckle (smaller one on right-

- CONTINUED -

■ Adjusting the front seat shoulder belt anchor height

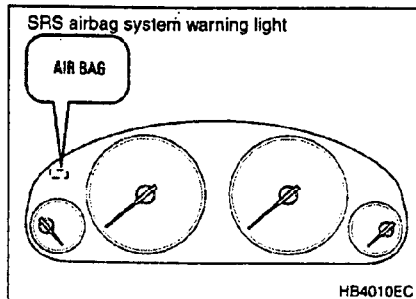
WARNING

When wearing the front seatbelts, make sure the shoulder portion of the webbing does not pass over your neck. If it does, adjust the seatbelt anchor to a lower position. Placing the shoulder belt over the neck may result in neck injury during sudden braking or in a collision.



The shoulder belt anchor height should be adjusted to the position best suited for you. To lower the anchor height, push the release button and slide the anchor down. To raise the anchor height, slide the anchor up. Pull down on the anchor to make sure that it is locked in place. Always adjust the anchor height so that the shoulder belt passes over the middle of the shoulder without touching the neck.

▼ System monitors



A diagnostic system continually monitors the readiness of the seatbelt pretensioner while the vehicle is being driven. The seatbelt pretensioners share the control module with the airbag system. Therefore, if any malfunction occurs in a seatbelt pretensioner, the SRS airbag system warning light will illuminate. The SRS airbag system warning light will show normal system operation by lighting for about 6 seconds when the ignition key is turned to the "ON" position.

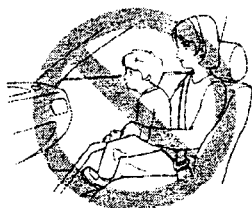
The following components are monitored by the indicator:

- Front sub sensor (Right hand side)
- Front sub sensor (Left hand side)
- Airbag control module (including impact sensors)
- Seatbelt pretensioner (Driver's side)
- Seatbelt pretensioner (Passenger's side)
- All related wiring

In the event of a malfunction indicated by any of following, the vehicle should be taken promptly to your nearest SUBARU dealer to have the system checked. Unless checked and repaired, the seatbelt pretensioners and airbags will not function reliably:

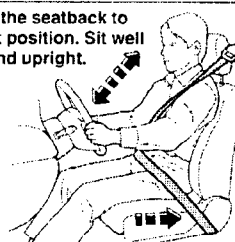
- Flashing or flickering of the indicator light.
- No illumination of the warning light when the ignition switch is first turned to the "ON" position.
- Continuous illumination of the warning light.
- Illumination of the warning light while driving.

⚠ Never hold a child on your lap or in your arms.



HB0308

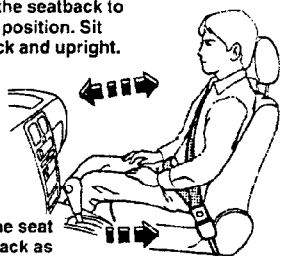
Adjust the seatback to upright position. Sit well back and upright.



Move the seat as far from the steering wheel as practical.

HS0233

Adjust the seatback to upright position. Sit well back and upright.



Move the seat as far back as possible.

HB0290

⚠ WARNING

- Do not put any objects over the steering wheel pad and dashboard. If the SRS frontal airbag deploys, those objects could interfere with its proper operation and could be propelled inside the vehicle and cause injury.
- Do not attach accessories to the windshield, or fit an extra-wide mirror over the rear view mirror. If the SRS airbag deploys, those objects could become projectiles that could seriously injure vehicle occupants.