

REPORT NO. KAR-99-11

V 3007

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  
NEW CAR ASSESSMENT PROGRAM  
FRONTAL BARRIER IMPACT TEST

GENERAL MOTORS CORPORATION  
1999 OLDSMOBILE INTRIGUE 4 DOOR SEDAN  
NHTSA NO. MX0113

PREPARED BY:  
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FEBRUARY 10, 1999  
FINAL REPORT

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16. <i>Abstract</i>  A 35 mph (56.3 km/h) frontal barrier impact test was conducted on a 1999 OLDSMOBILE INTRIGUE 4 DOOR SEDAN at KARCO Engineering on January 22, 1999. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301 and footwell intrusion performance. The impact velocity was 56.3 km/h. The ambient temperature at the barrier face at the time of impact was 15.5°C. The vehicle's maximum post-test static crush was 635 mm, located to the right of the vehicle centerline. The test vehicle was equipped with a 3-point continuous belt system and second generation supplemental airbags at both frontal outboard-seating positions.  With respect to FMVSS 208 "Occupant Crash Protection – Injury Criteria" the occupant injury response data summary is as follows:																									
<table border="1"> <thead> <tr> <th><u>Injury Criteria</u></th> <th><u>Threshold Value</u></th> <th><u>Driver Dummy</u></th> <th><u>Passenger Dummy</u></th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC)</td> <td>1000</td> <td>570.9</td> <td>1163.0</td> </tr> <tr> <td>Chest Resultant Peak 3 msec clip</td> <td>60 G's</td> <td>45.9</td> <td>52.1</td> </tr> <tr> <td>Left Femur Force</td> <td>10009 N</td> <td>-4508.5</td> <td>-5029.7</td> </tr> <tr> <td>Right Femur Force</td> <td>10009 N</td> <td>-4375.1</td> <td>-4780.7</td> </tr> </tbody> </table>						<u>Injury Criteria</u>	<u>Threshold Value</u>	<u>Driver Dummy</u>	<u>Passenger Dummy</u>	Head Injury Criteria (HIC)	1000	570.9	1163.0	Chest Resultant Peak 3 msec clip	60 G's	45.9	52.1	Left Femur Force	10009 N	-4508.5	-5029.7	Right Femur Force	10009 N	-4375.1	-4780.7
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## SECTION 1

### PURPOSE, TEST PROCEDURE AND SUMMARY OF TEST MX0113

#### 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 was to obtain vehicle crashworthiness, occupant restraint system performance data and lower leg data for frontal barrier impacts. The velocity used in this test was in excess of the current 30 mph (48 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 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 January 22, 1999 at a speed of 56.3 km/h. The test vehicle was instrumented with eight (8) accelerometers to measure longitudinal axis accelerations. The driver and passenger's restraint systems were instrumented with four (4) seat belt load cells to measure lap and shoulder belt tension. The specified impact velocity range was 55.5 to 57.1 km/h. The frontal barrier impact event was documented by one (1) real-time panning motion picture camera and sixteen (16) 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/right femur load cells, left/right lower leg sensors and left/right foot accelerometers. In addition, chest displacement and neck six-axis load and moment sensors were utilized. The ATDs were positioned in the front outboard seating positions according to the dummy placement procedures specified in the Laboratory Indicant Test Procedure. Ninety-six 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 used in one test prior to this NCAP test. Injury criteria was not exceeded by the driver during this frontal barrier impact test, the passenger ATD sustained an HIC of 1163.0, which exceeds the 1000 limit.

### 1.3 SUMMARY OF FRONTAL BARRIER IMPACT TEST

An immovable barrier was impacted by a 1999 OLDSMOBILE INTRIGUE 4 DOOR SEDAN at a velocity of 56.3 km/h. The test weight, with two (2) 50<sup>th</sup> percentile male ATDs, was 1783 kg. Twenty four (24) load cell barrier data channels were obtained in conducting the January 22, 1999 NCAP test. The test vehicle was equipped with a transverse mounted 3.8 liter, 6 cyl. engine and a 4-speed automatic transmission.

The driver's Head Injury Criteria (HIC) was 570.9, the maximum chest deceleration over three (3) milliseconds was 45.9 g and the left and right femur loads were -4508.5 and -4375.1 Newtons, respectively. Chest deflection for the driver ATD was -25.7 mm. 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.

The right front passenger's HIC was 1163.0, maximum chest deceleration over three (3) milliseconds was 52.1 g and the left and right femur loads were -5029.7 and -4780.7 Newtons respectively. Chest deflection for the passenger ATD was -18.1 mm. The passenger ATD head contacted the airbag, and headrest, the chest and abdomen contacted the airbag and both knees contacted the glove box.

Seat belt spoolout, measured by on-board pullout potentiometers was 180.7 mm for the driver ATD and 262.2 mm for the passenger ATD. Shoulder belt stretch was 0.215 mm/cm for the driver ATD and 0.0 mm/cm for the passenger ATD. Channel failed for the passenger, no data available.

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

The test vehicle sustained a maximum static crush of 635 mm located to the right of the vehicle centerline. Both the driver side doors and the passenger side doors opened without the aid of tools.

### 1.4 GENERAL COMMENTS

The 1999 OLDSMOBILE INTRIGUE 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, vehicle and 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 restraint systems.

**SECTION 2.**

**OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS**

Test Vehicle: 1999 OLDSMOBILE INTRIGUE 4 DOOR SEDAN

NHTSA. NO MX0113

Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/22/99

**CONVERSION FACTORS USED IN THIS REPORT:**

- 2.2 pounds (lb.) = 1 kilogram (kg)
- 1 mile (mi.) = 1.609 kilometer (km)
- 1 gallon (gal.) = 3.785 liters (L)
- 1 pound/square inch (psi) = 7000 Pascal (7 kPa)

**DATA SHEET NO. 1**

**CRASH TEST SUMMARY**

Test Vehicle: 1999 OLDSMOBILE INTRIGUE 4 DOOR SEDAN

NHTSA. NO MX0113

Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/22/99

**VEHICLE REBOUND**

Measurements in mm	Left	Center	Right
Vehicle Rebound	765	535	585

**VEHICLE STATIC CRUSH**

Measurements in mm	Left	Center	Right
Pre-test Measurements	4575	4970	4575
Post-test Measurements	4325	4347	4374
Static Crush	-250	-623	-201
Average	-358		

**DOOR OPENING AND SEAT TRACK INFORMATION**

	Driver	Passenger
Door Opening (Front)	OPENED	OPENED
Door Opening (Rear)	OPENED	OPENED
Seat Track Shift (mm of shift)	NONE	NONE
Seat Back Failure	NONE	NONE

**DUMMY INFORMATION**

	Driver	Passenger
Dummy Type/No.	50% Male Hybrid III (S/N 34)	50% Male Hybrid III (S/N 35)
Data Channels	44	44
Visible Contact Points		
Head	AIR BAG/HEADREST	AIR BAG/HEADREST
Chest	AIR BAG	AIRBAG
Abdomen	AIRBAG	AIRBAG
Left Knee	KNEE BOLSTER	GLOVE BOX
Right Knee	KNEE BOLSTER	GLOVE BOX

**DATA SHEET NO. 2**

**GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 1999 OLDSMOBILE INTRIGUE 4 DOOR SEDAN

NHTSA. NO MX0113

Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/22/99

TEST VEHICLE INFORMATION			
Manufacturer	GENERAL MOTORS CORPORATION	VIN	1G3WH52K1XF313337
Manufacturing Date	9/98	Delivery Date	1/13/99
Dealer	RANCH MOTORS	NHTSA NO.	MX0113
Odometer Reading	49.0 mi	Fuel Type	UNLEADED
Engine Displacement	3.8 Liters	Cylinders	6
Transmission	AUTOMATIC	Final Drive	FRONT
Engine Placement	TRANSVERSE	Color	FOREST GREEN
Tire Press./Max. Cap. Front	210 kpa	Cold Tire Press. Front	210 kpa
Tire Press./Max. Cap. Rear	210 kpa	Cold Tire Press. Rear	210 kpa
Recommend Tire Size	P225/60/R16	Type of Spare	TEMPORARY 125/70/D16
Tire Size on Vehicle	P225/60R16	Manufacturer	GOODYEAR
GVWR	1990 kg	Cargo Capacity	76 kg
GAWR Front	1100 kg	GAWR Rear	890 kg
Air Conditioning	YES	Power Steering	YES
Power Brakes	YES	AM/FM/Cassette	YES
Disc Brakes (Front)	YES	Disc Brakes (Rear)	YES
Power Windows	YES	Tilt Steering	YES
Anti-lock Brakes (ABS)	YES	Power Seats	NO
Driver Airbag	YES	Passenger Airbag	YES



**DATA SHEET NO. 3**

**POST IMPACT DATA**

Test Vehicle: 1999 OLDSMOBILE INTRIGUE 4 DOOR SEDAN

NHTSA. NO MX0113

Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/22/99

REQUIRED IMPACT VELOCITY RANGE: 55.51 km/h to 57.11 km/h

BARRIER IMPACT VELOCITY: (speed traps within 5 feet of impact plane)

Trap No. 1 = 56.3 km/h      Trap No. 2 = 56.4 km/h

Distance from vehicle to barrier - -

A. entering trap = 1524 mm

B. leaving trap = 305 mm

VEHICLE STATIC CRUSH: (for Frontal and Rear Impacts Only)

Vehicle Length	Left	Center	Right
Pre-test Measurements (mm)	4575	4970	4575
Post-test Measurements (mm)	4325	4347	4374
Static Crush (mm)	-250	-623	-201

VEHICLE REBOUND: (from rigid barrier with rotational movement offsets only)

Measurements in mm		Left Front	Right Front	Left Rear	Right Rear
Vehicle Rebound	X axis	N/A	N/A	N/A	N/A
Vehicle Rebound	Y axis	N/A	N/A	N/A	N/A
Average	X axis	N/A			
Average	Y axis	N/A			

DATA SHEET NO. 4

TEST VEHICLE INFORMATION

Test Vehicle: 1999 OLDSMOBILE INTRIGUE 4 DOOR SEDAN

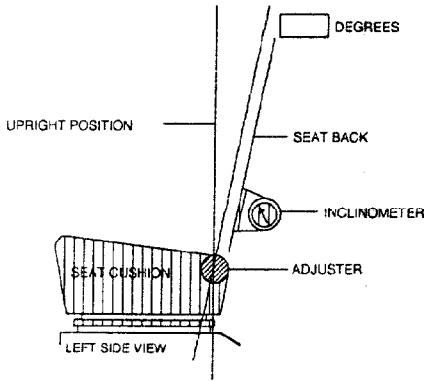
NHTSA. NO MX0113

Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/22/99

1. NOMINAL DESIGN RIDING POSITION -

For adjustable driver and passenger seat backs. Please describe how to position the inclinometer to measure the seat back angle. Include description of the location of the adjustment latch detent if applicable. Indicate, if applicable, how the detents are numbered (Is the first detent "0" or "1"?).



FRONT SEAT ASSEMBLY

Measurement Instructions: A special application tool with pointed probes was inserted through the fabric to make contact with the rigid portion of the lower seat frame assembly approximately 13 inches above the pivot point of the seat back. The inclinometer was placed against the flat surface of the tool and the seat back angle was measured directly from the dial face. For reference purposes the first detent from the front of the seat was identified as number "1".

Seat back angle for driver's seat = 26.5° w/seated dummy, taken at seat back cushion.

Measurement Instructions: A special application tool with pointed probes was inserted through the fabric to make contact with the rigid portion of the lower seat frame assembly approximately 13 inches above

the pivot point of the seat back. The inclinometer was placed against the flat surface of the tool and the seat back angle was measured directly from the dial face. For reference purposes the first detent from the front of the seat was identified as number "1".

Seat back angle for passenger's seat = 26.5° w/seated dummy, taken at seat back cushion.

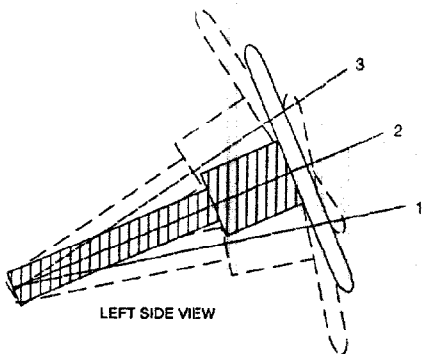
2. SEAT FORE & AFT POSITIONS:

Provide instructions for positioning the driver and front outboard passenger seat(s) in the center of fore and aft travel. For example, provide information to locate the detent in which the seat track is to be locked.

Positioning of the driver's seat: 24 seating positions, set to the 13<sup>th</sup> detent location from the front

Positioning of the passenger's seat (if applicable): 29 seating positions, set to 15th detent from the front.

3. STEERING COLUMN ADJUSTMENTS:



STEERING COLUMN ASSEMBLY

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 driving positions. If the tested vehicle has any of these adjustments, does your company use any specific procedures to determine the geometric center.

Operational Instructions:

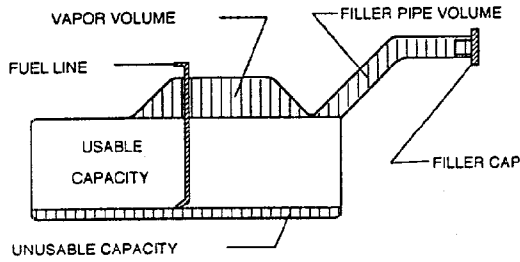
- Position No. 1 is at 12°
- Position No. 2 is at 17°
- Position No. 3 is at 32°

4. SEAT BELT UPPER ANCHORAGE:

4 Positions, set at the mid position #2.

DATA SHEET NO. 4 (continued)

5. FUEL TANK CAPACITY DATA



5.1 A. "Usable Capacity" of standard equipment fuel tank = 65.9 liters.

B. "Usable Capacity" of optional equipment fuel tank = N/A liters.

C. "Usable Capacity" of vehicle(s) used for certification testing to requirements of FMVSS 301 = 60.5 to 61.9 liters.

VEHICLE FUEL TANK ASSEMBLY

Operational Instructions:

5.2 Amount of Stoddard solvent added to vehicle(s) used for certification test(s) = 61.2 liters

5.3 Is vehicle equipped with electric fuel pump?

Yes X No     

If YES, explain the vehicle operating conditions under which the fuel pump will pump fuel.

See manufacturers data.

DATA SHEET NO. 5

DUMMY POSITIONING IN VEHICLE

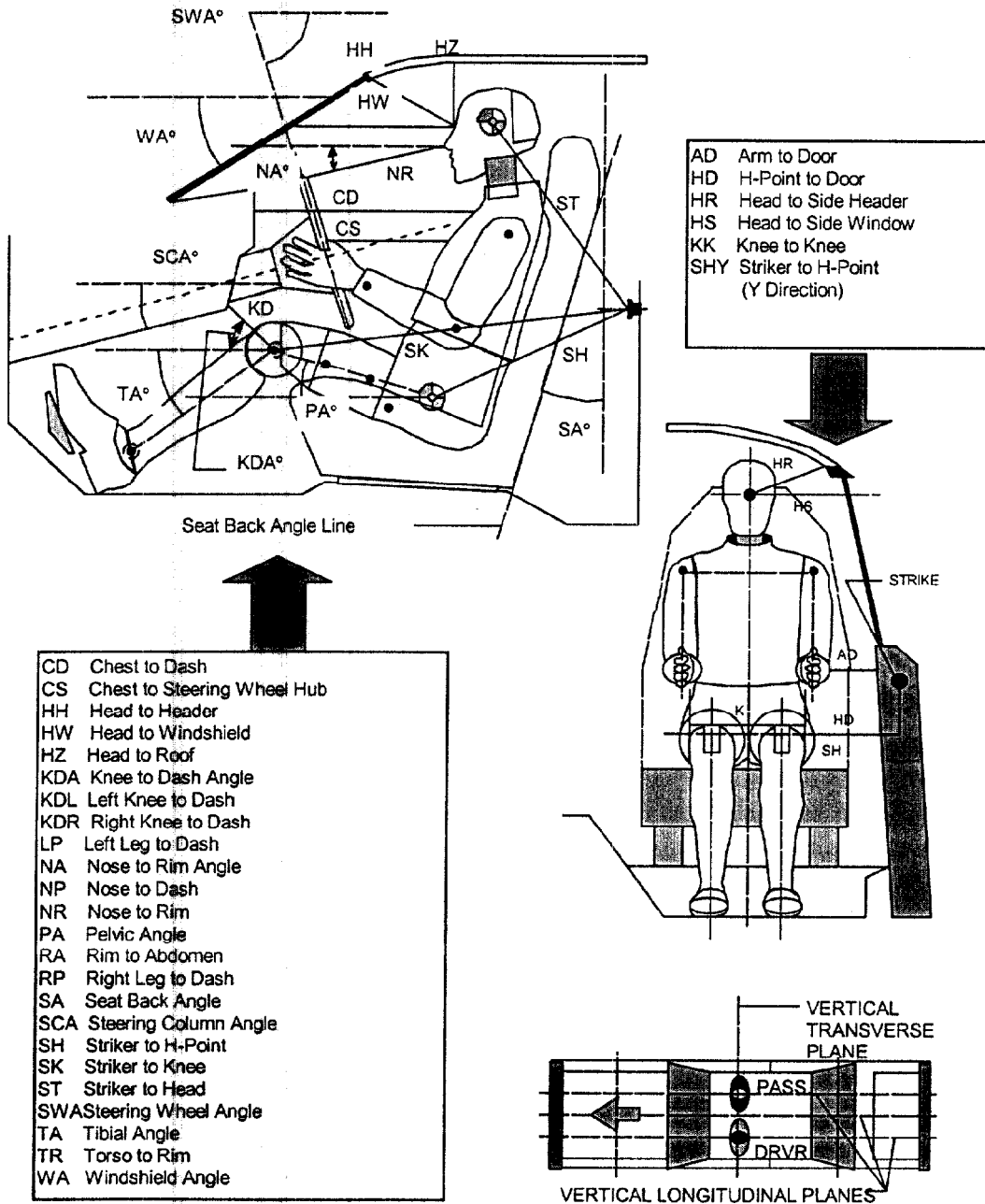
Test Vehicle: 1999 OLDSMOBILE INTRIGUE 4 DOOR SEDAN

NHTSA. NO MX0113

Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/22/99

DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS



DATA SHEET NO. 5...(continued)

DUMMY POSITIONING IN VEHICLE

FRONT SEAT MEASUREMENT TABLE

	DRIVER (Serial No. <u>34</u> )		PASS. (Serial No. <u>35</u> )	
	DISTANCE (mm)	ANGLE (°)	DISTANCE (mm)	ANGLE (°)
WA°		26		
SWA°		69		
SCA°		9		
SA°		26.5		26.5
HZ	200	90	165	90
HH	340	0	340	0
HW	550	0	560	0
HR	250		230	
NR	350	13		
CD	520		490	
CS	285	0		
RA	165	0		
KDL	160	31	135	
KDR	155		130	41
PA°		24		23
TA°		46		51
KK	260		190	
ST	585	6	600	9
SH	205	33	218	17
SHY	230		235	
HS	280		260	
HD	155		140	
AD	120		30	

DATA SHEET NO. 6

SEAT BELT POSITIONING DATA

Test Vehicle: 1999 OLDSMOBILE INTRIGUE 4 DOOR SEDAN

NHTSA. NO MX0113

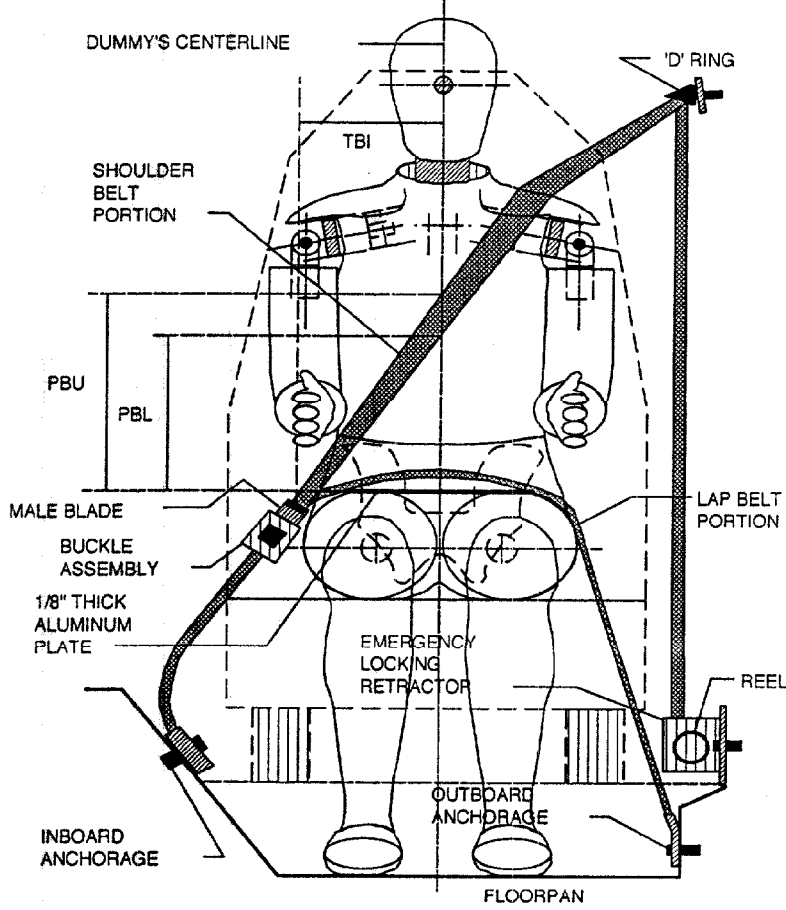
Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/22/99

SEAT BELT PLACEMENT MEASUREMENTS

Measurement Description	Units	Driver	Passenger
TCI - Dummy centerline to shoulder bolt	mm	190	190
PBU - Top surface of reference to belt upper edge	mm	340	360
PBL - Top surface of reference to belt lower edge	mm	279	275
Lap Belt tension	Newtons	10	10
Shoulder Belt tension	N/A	Retractor	Retractor

SEAT BELT POSITIONING DATA



FRONT VIEW OF DUMMY

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

TEST VEHICLE: 1999 OLDSMOBILE INTRIGUE 4 DOOR SEDAN NHTSA No.: MX0113

TEST PROGRAM: 1999 NHTSA 35 MPH NCAP TEST DATE: 1/22/99

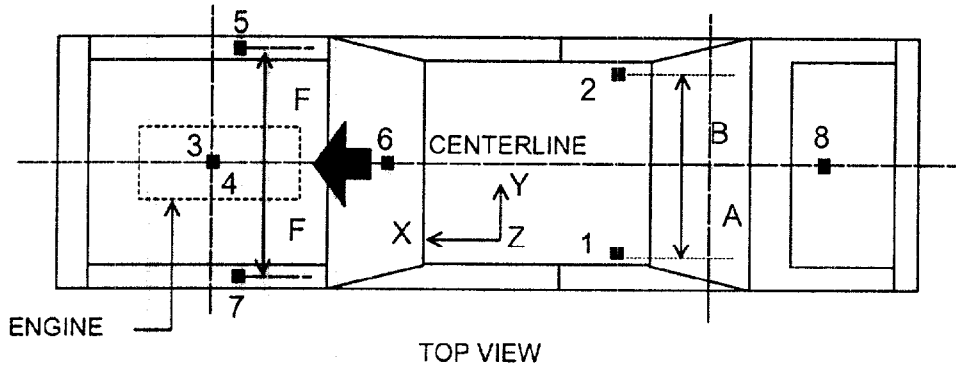
**VEHICLE X-AXIS ACCELEROMETER PEAK DATA AND PRE-TEST LOCATIONS**

No.	Accelerometer Location	Measurements (mm)			Peak Values				
		X	Y	Z	Units	Max	Time	Min	Time
1	Left Rear X-Member (Pri.)	1920	-652	340	G's	1.8	148.3	-35.2	48.0
2	Right Rear X-Member (Pri.)	1860	642	333	G's	2.5	147.0	-32.4	47.8
3	Engine Top	4195	-51	790	G's	51.1	55.9	-123.5	37.9
4	Engine Bottom	4180	5	151	G's	42.5	18.3	-124.1	22.8
5	Left Brake Caliper	3980	-710	258	G's	30.1	77.7	-76.6	50.5
6	Right Brake Caliper	3985	712	251	G's	16.2	65.8	-75.2	45.0
7	Instrument Panel	3160	-50	961	G's	6.5	31.2	-37.6	69.0*
8	Left Rear X-Member (Rednt.)	1805	-656	344	G's	2.0	148.9	-36.3	47.9

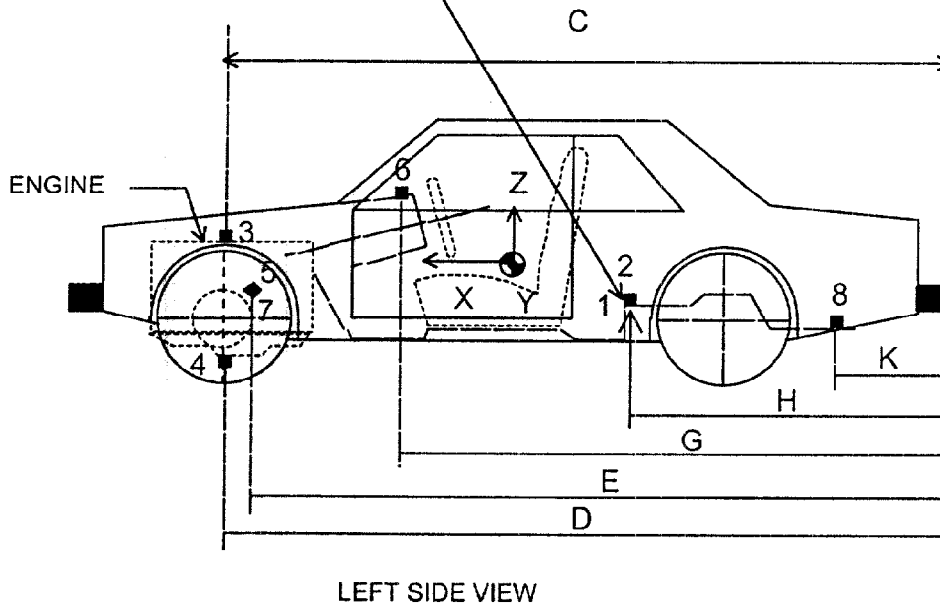
Reference Points      X - From Rear Surface of Vehicle      Y - Vehicle Centerline      Z - Ground Plane

\*Channel failed, check plot for failure time.

# VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY



REAR SEAT CUSHION  
ASSY. FRONT ATTACHMENT  
BRACKET SUPPORT



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

TEST VEHICLE: 1999 OLDSMOBILE INTRIGUE 4 DOOR SEDAN

NHTSA No.: MX0113

TEST PROGRAM: 1999 NHTSA 35 MPH NCAP

TEST DATE: 1/22/99

**HEAD PRIMARY PEAK ACCELERATIONS**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	15.0	115.5	-60.1	84.3	12.5	251.6	-84.4	89.5
Head CG	Y	G's	5.9	94.0	-9.2	112.8	18.8	131.8	-32.6	94.1
Head CG	Z	G's	23.1	81.9	-6.3	102.6	38.9	78.4	-8.4	100.3
Head CG Resultant	N/A	G's	63.3	84.3			89.4	89.5		

**CHEST PRIMARY PEAK ACCELERATIONS**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	4.0	207.1	-44.7	87.1	6.7	202.6	-49.0	84.0
Chest CG	Y	G's	1.6	113.1	-4.4	74.3	4.2	60.1	-4.7	108.7
Chest CG	Z	G's	12.4	81.2	-7.7	101.3	21.0	84.1	-6.8	108.7
Chest CG Resultant	N/A	G's	46.2	81.9			53.3	84.0		

**FEMUR PEAK FORCES**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Femur	Z	Newtons	270.3	50.0	-4508.5	63.4	1266.3	96.1	-5029.7	64.8
Right Femur	Z	Newtons	526.4	24.4	-4375.1	60.9	303.0	53.1	-4780.7	66.8

**SEAT BELT SENSOR PEAK VALUES**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Lap Belt Force	N/A	Newtons	6410.7	64.5	2.8	4.8	4531.9	66.4	-6.2	251.1
Shoulder Belt Force	N/A	Newtons	4437.1	88.1	5.7	0.0	6427.5	80.8	-6.2	222.0
Shoulder Belt Spoolout	N/A	MM	180.7	94.0	0.0	0.0	262.6	98.4	0.0	2.6
Shoulder Belt Stretch	N/A	MM/CM	0.215	90.7	-0.007	115.4	0.000	0.0	0.000	0.0

\* No data collected on passenger belt stretch.

**HEAD INJURY CRITERIA (HIC)**

Location	Driver				Passenger			
	HIC	Avg G's	T <sup>1</sup>	T <sup>2</sup>	HIC	Avg G's	T <sup>1</sup>	T <sup>2</sup>
Head CG Primary	570.9	47.9	60.7	96.6	1163.0	69.4	75.0	103.9

**CHEST CLIP (3MSEC)**

Location	Driver			Passenger		
	CLIP	T <sup>1</sup>	T <sup>2</sup>	CLIP	T <sup>1</sup>	T <sup>2</sup>
Chest CG Primary	45.9	81.6	84.6	52.1	82.5	85.5

**DATA SHEET NO. 8...(continued)**

TEST VEHICLE: 1999 OLDSMOBILE INTRIGUE 4 DOOR SEDAN

NHTSA No.: MX0113

TEST PROGRAM: 1999 NHTSA 35 MPH NCAP

TEST DATE: 1/22/99

**PELVIC PEAK ACCELERATIONS**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Pelvis	X	G's	2.4	120.4	-58.1	61.5	3.9	131.4	-66.8	66.9
Pelvis	Y	G's	5.2	103.0	-9.8	77.4	5.5	60.8	-9.2	90.4
Pelvis	Z	G's	2.4	250.7	-18.4	63.1	5.4	212.7	-16.5	82.0

**UPPER NECK PEAK FORCES AND MOMENTS**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Neck Force	X	Newtons	795.7	89.1	-289.3	133.9	1114.3	91.1	-319.8	62.4
Neck Force	Y	Newtons	100.0	225.2	-173.0	77.3	392.1	99.4	-201.3	160.1
Neck Force	Z	Newtons	1472.8	83.1	-251.9	113.2	1290.8	78.1	-518.8	100.2
Neck Moment	X	N·m	6.2	141.2	-9.2	86.0	12.9	95.1	-14.1	165.0
Neck Moment	Y	N·m	54.3	70.5	-12.6	230.4	70.2	90.5	-22.4	129.7
Neck Moment	Z	N·m	2.8	149.4	-11.0	92.5	29.1	108.7	-11.6	192.9

**FOOT PEAK ACCELERATIONS**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Foot Aft	X	G's	10.4	85.5	-52.8	68.7	28.1	76.6	-97.2	60.5
Left Foot Aft	Z	G's	9.1	90.0	-51.8	68.8	22.0	76.5	-37.4	39.6
Left Foot Fore	Z	G's	15.3	62.4	-69.0	59.3	21.9	59.9	-53.5	67.9
Right Foot Aft	X	G's	11.3	36.9	-132.9	59.1	10.0	81.4	-77.5	72.3
Right Foot Aft	Z	G's	11.4	83.7	-46.7	57.2	15.4	84.8	-77.1	70.4
Right Foot Fore	Z	G's	25.8	64.0	-117.8	56.7	21.5	84.9	-81.5	43.4

**UPPER AND LOWER TIBIA PEAK FORCES AND MOMENTS**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Lower Moment	X	N·m	31.8	69.9	-10.1	90.7	144.3	76.3	-20.4	58.9
Left Lower Moment	Y	N·m	18.6	37.5	-42.1	69.6	63.2	81.2	-76.3	62.8
Left Lower Force	Z	Newtons	143.0	82.1	-2098.2	37.0	1884.4	68.4	-1837.3	39.0
Left Upper Moment	X	N·m	24.4	73.2	-27.2	89.7	13.6	77.6	-48.4	59.9
Left Upper Moment	Y	N·m	15.6	147.2	-102.1	69.6	13.5	160.1	-174.3	63.0
Right Lower Moment	X	N·m	7.9	46.2	-125.8	68.3	36.8	70.0	-83.5	74.9
Right Lower Moment	Y	N·m	18.5	37.8	-70.0	60.0	20.2	87.1	-46.0	69.9
Right Lower Force	Z	Newtons	63.8	160.1	-3753.3	67.6	189.1	160.1	-2446.6	76.5
Right Upper Moment	X	N·m	24.7	47.7	-49.7	90.6	50.3	91.9	-35.6	78.1
Right Upper Moment	Y	N·m	21.2	151.5	-169.9	63.2	15.9	147.4	-131.0	74.8

**DATA SHEET NO. 8...(continued)**

TEST VEHICLE: 1999 OLDSMOBILE INTRIGUE 4 DOOR SEDAN NHTSA No.: MX0113

TEST PROGRAM: 1999 NHTSA 35 MPH NCAP TEST DATE: 1/22/99

**CHEST PEAK DISPLACEMENTS**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	MM	0.2	10.7	-25.7	81.4	0.3	14.3	-18.1	85.8

**HEAD REDUNDANT PEAK ACCELERATIONS**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	15.5	115.6	-58.7	84.1	14.1	130.2	-83.7	89.3
Head CG	Y	G's	6.7	92.8	-10.9	112.7	20.0	133.0	-29.4	95.6
Head CG	Z	G's	24.2	81.8	-10.8	112.2	42.4	83.0	-9.9	100.3
Head CG Resultant	N/A	G's	62.4	83.3			89.3	89.3		

**CHEST REDUNDANT PEAK ACCELERATIONS**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	4.3	207.4	-44.1	87.5	6.6	201.9	-48.0	83.9
Chest CG	Y	G's	1.6	30.1	-3.7	58.7	4.5	59.8	-3.2	111.9
Chest CG	Z	G's	11.6	84.6	-7.6	109.7	21.3	84.0	-5.4	110.1
Chest CG Resultant	N/A	G's	45.3	83.1			52.5	83.9		

**REDUNDANT HEAD INJURY CRITERIA (HIC)**

Location	Driver				Passenger			
	HIC	Avg G's	T <sup>1</sup>	T <sup>2</sup>	HIC	Avg G's	T <sup>1</sup>	T <sup>2</sup>
Head CG Redundant	560.9	47.5	61.6	97.5	1151.2	69.6	75.1	103.5

**REDUNDANT CHEST CLIP (3MSEC)**

Location	Driver			Passenger		
	CLIP	T <sup>1</sup>	T <sup>2</sup>	CLIP	T <sup>1</sup>	T <sup>2</sup>
Chest CG Redundant	45.1	82.3	85.3	51.9	82.2	85.2

**DATA SHEET NO. 9**

**SEAT BELT PERFORMANCE ASSESSMENT TEST DATA**

Test Vehicle: 1999 OLDSMOBILE INTRIGUE 4 DOOR SEDAN

NHTSA. NO MX0113

Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/22/99

**BELT LENGTH DATA**

Measurement Description	Units	Driver	Passenger
Retractor reel to 'D' ring	mm	680	680
Shoulder belt length as measured on ATD	mm	830	840
Lap belt length as measured on ATD	mm	785	760
Remainder of belt on reel	mm	755	775
Total belt length for continuous webbing systems	mm	3050	3055

**SHOULDER BELT SPOOL-OFF DATA**

Measurement Description	Units	Driver	Passenger
As determined mechanically	mm	162.0	238.0
As determined electronically	mm	180.7	262.6

**BELT STRETCH DATA**

Measurement Description	Units	Driver	Passenger
Electronically from shoulder belt load cell and "D" ring	mm/cm	0.22	no data
Mechanically	mm/cm	n/a	3.00

**DATA SHEET NO. 10**

**SUMMARY OF FMVSS 212 DATA**

Test Vehicle: 1999 OLDSMOBILE INTRIGUE 4 DOOR SEDAN

NHTSA. NO MX0113

Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/22/99

Details of windshield mounting (method of retention, type of trim, etc.):

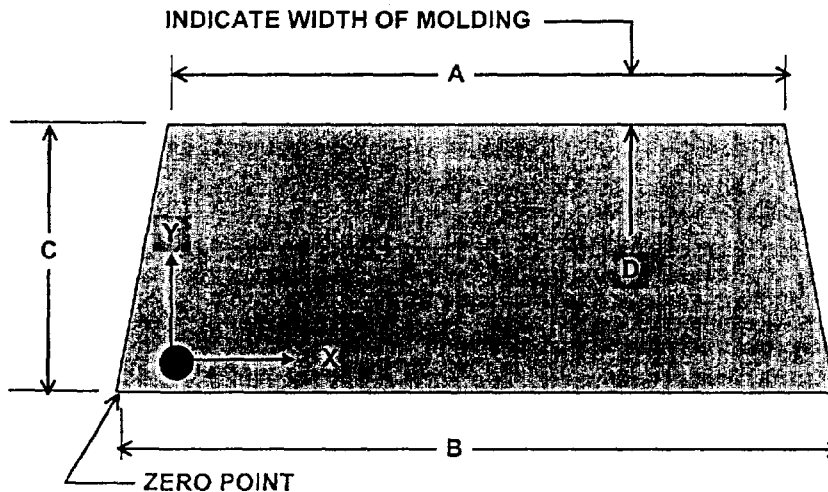
Windshield glass is secured to the vehicle frame with a rubber type adhesive, with rubber molding along the top and sides with rubber and plastic molding along the bottom.

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.

**WINDSHIELD PERIPHERY MEASUREMENTS**

	Units	Left Side	Right Side	Total
Pre-Test	mm	2115	2115	100%
Post-Test	mm	2115	2115	100%
Percent of retention	Percent	100%	100%	

Indicate area of retention failure.



**FRONT VIEW OF WINDSHIELD**

Width of molding: Top: 18 mm, Sides: 18 mm, Bottom: 0 mm

Temperature of windshield molding during test: 21.1 °C

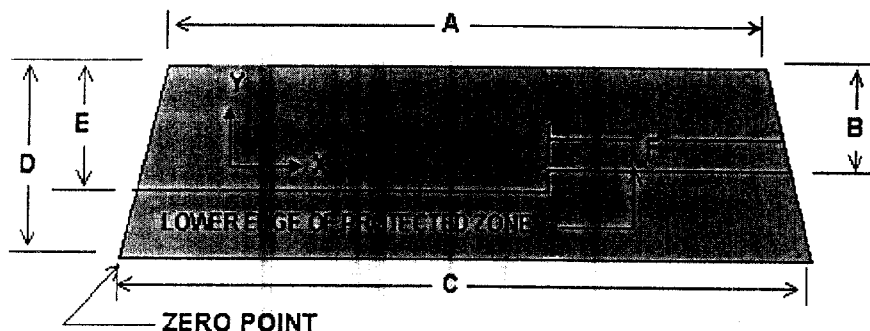
**DATA SHEET NO. 11  
WINDSHIELD ZONE INTRUSION FMVSS 219 (PARTIAL) DATA**

Test Vehicle: 1999 OLDSMOBILE INTRIGUE 4 DOOR SEDAN

NHTSA. NO MX0113

Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/22/99



**FRONT VIEW OF WINDSHIELD**

Item	Units	Value
A	mm	1160
B	mm	400
C	mm	1610
D	mm	730
E	mm	580
F	mm	700

Provide all dimensions necessary to reproduce the protected area.

**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 which 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 template 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: 1999 OLDSMOBILE INTRIGUE 4 DOOR SEDAN

NHTSA. NO MX0113

Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/22/99

Test Time: 1:22 PM      Temperature at Time of Impact: 15.5° C

STODDARD SOLVENT SPILLAGE MEASUREMENT:

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

DATA SHEET NO. 13

FMVSS 301 STATIC ROLLOVER DATA SHEET

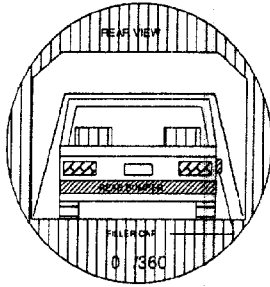
Test Vehicle: 1999 OLDSMOBILE INTRIGUE 4 DOOR SEDAN

NHTSA. NO MX0113

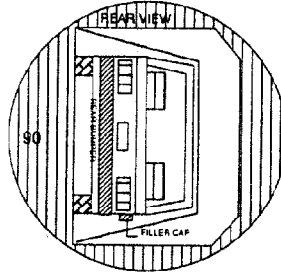
Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/22/99

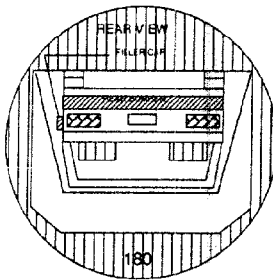
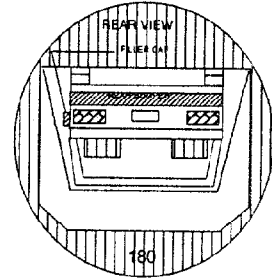
Time: 1:22 PM Temperature: 15.5 °C



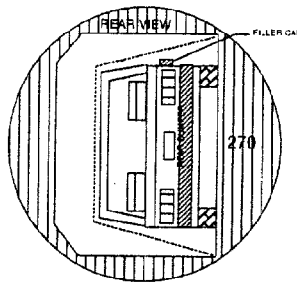
0° TO 90°



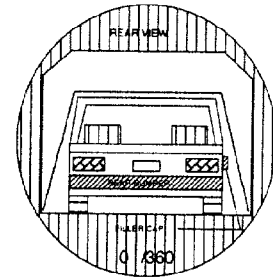
90° TO 180°



180° TO 270°



270° TO 360°



1. The specified fixture rollover rate for each 90° of rotation = 60 to 120 seconds.
2. The position hold time at each position = 300 seconds (minimum).
3. Provide details of Stoddard Solvent spillage locations:  
No solvent leakage occurred during rollover testing.

TEST PHASE	Rotation Time (sec.)	Hold Time (sec.)	Spillage (oz.)
0° TO 90°	82	300	0.0
90° TO 180°	83	300	0.0
180° TO 270°	79	300	0.0
270° TO 360°	82	300	0.0

DATA SHEET NO. 14

VEHICLE MEASUREMENTS

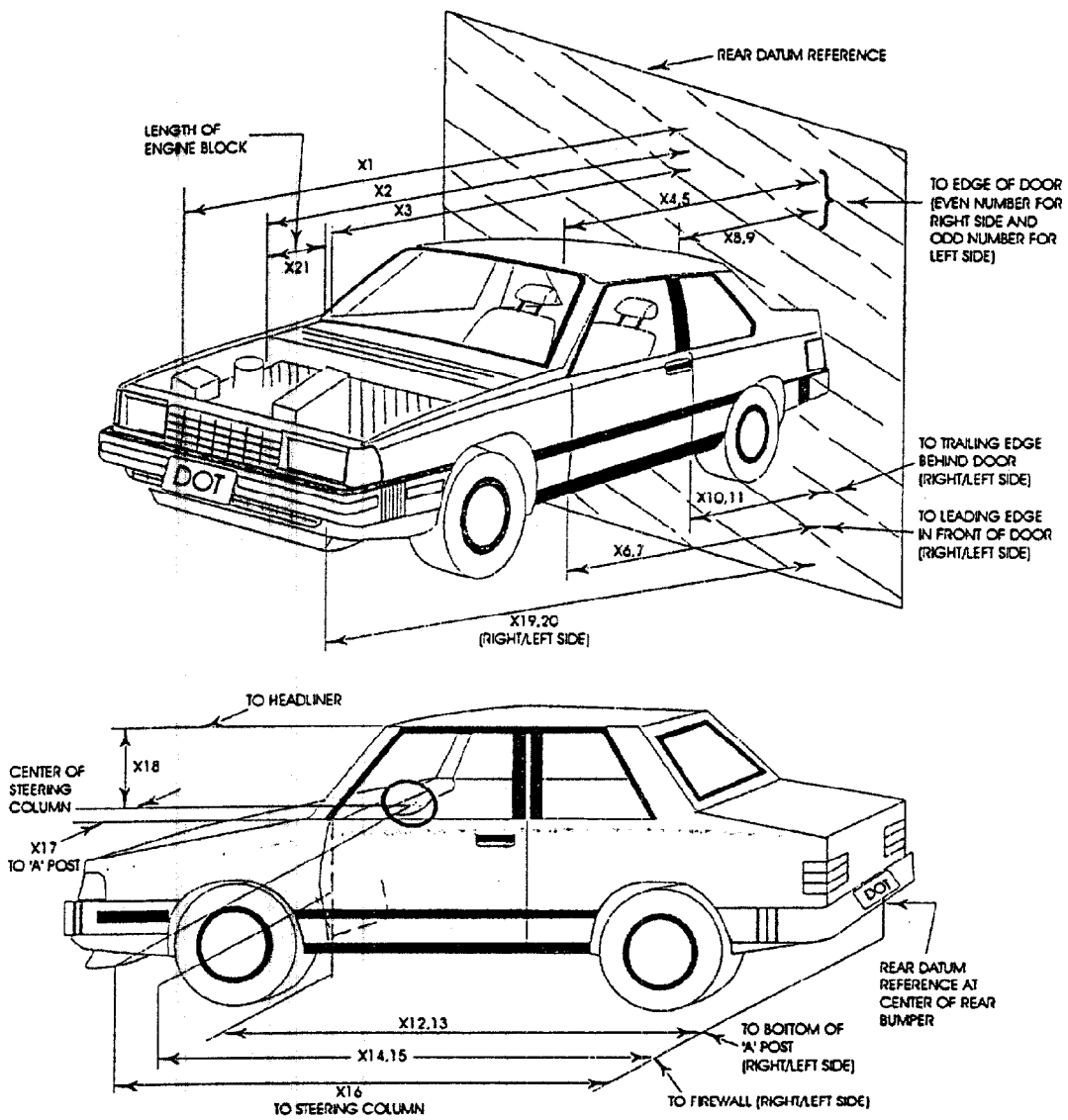
Test Vehicle: 1999 OLDSMOBILE INTRIGUE 4 DOOR SEDAN

NHTSA. NO MX0113

Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/22/99

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total length of vehicle at centerline	mm	4970	4347	-623
2	RSOV to front of engine	mm	4360	4114	-246
3	RSOV to firewall centerline	mm	3767	3743	-24
4	RSOV to leading edge of right door	mm	3340	3333	-7
5	RSOV to leading edge of left door	mm	3341	3326	-15
6	RSOV to lower leading edge of right door	mm	3327	3330	3
7	RSOV to lower leading edge of left door	mm	3321	3330	9
8	RSOV to upper trailing edge of right door	mm	2300	2290	-10
9	RSOV to upper trailing edge of left door	mm	2300	2275	-25
10	RSOV to lower trailing edge of right door	mm	2278	2302	24
11	RSOV to lower trailing edge of left door	mm	2293	2300	7
12	RSOV to bottom of right 'A' pillar	mm	3315	3320	5
13	RSOV to bottom of left 'A' pillar	mm	3315	3310	-5
14	RSOV to firewall on right side	mm	3725	3675	-50
15	RSOV to firewall of left side	mm	3735	3655	-80
16	RSOV to steering column	mm	2845	2888	43
17	Center of steering column to left 'A' pillar	mm	385	405	20
18	Center of steering column to headlining	mm	450	400	-50
19	RSOV to right side of front bumper	mm	4575	4374	-201
20	RSOV to left side of front bumper	mm	4575	4325	-250
21	Length of engine block	mm	540	540	0
RD	RSOV to right side of dash panel	mm	3056	3047	-9
CD	RSOV to center of dash panel	mm	3115	3125	10
LD	RSOV to left side of dash panel	mm	3052	3040	-12



**DATA SHEET NO. 15**

**CAMERA LOCATIONS**

Test Vehicle: 1999 OLDSMOBILE INTRIGUE 4 DOOR SEDAN

NHTSA. NO MX0113

Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/22/99

No.	Camera View	Location (mm)			Angle (°)	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	2057	8255	1206	1	7798	13	980
3	Left Side, No. 2	1219	6350	1467	5	5842	25	1000
4	Left Side, No. 3	3327	2946	2019	19	2921	19	960
5	Left Side, No. 4	2184	8357	3073	13	8103	19	960
6	Left Side, No. 5	2184	8357	2591	11	8128	19	920
7	Right Side, No. 1	1422	8230	870	0	8077	19	950
8	Right Side, No. 2	1727	8280	1518	3	7747	40	1170
9	Right Side, No. 3	3734	3200	2070	18	2921	19	1000
10	Right Side, No. 4	2388	8077	387	1	7163	35	950
11	Overhead Overall	1092	0	5791	90	N/A	13	*
12	Front View Driver	-305	406	2705	42	N/A	13	970
13	Front View, Passenger	-305	406	2705	45	N/A	13	990
14	Pit Camera, Engine	889	0	-1600	90	N/A	10	780
15	Pit Camera, Fuel Tank	4648	0	-1600	50	N/A	12	*
16	Onboard, Driver	4013	356	-1867	2	1143	13	520
17	Onboard, Passenger	4013	356	1080	5	1168	13	380

X = BARRIER FACE, Y = MONORAIL CENTERLINE, Z = GROUND

\* Cameras did not run.

**DATA SHEET NO. 16**  
**REFERENCE PHOTOGRAPH TARGETS**

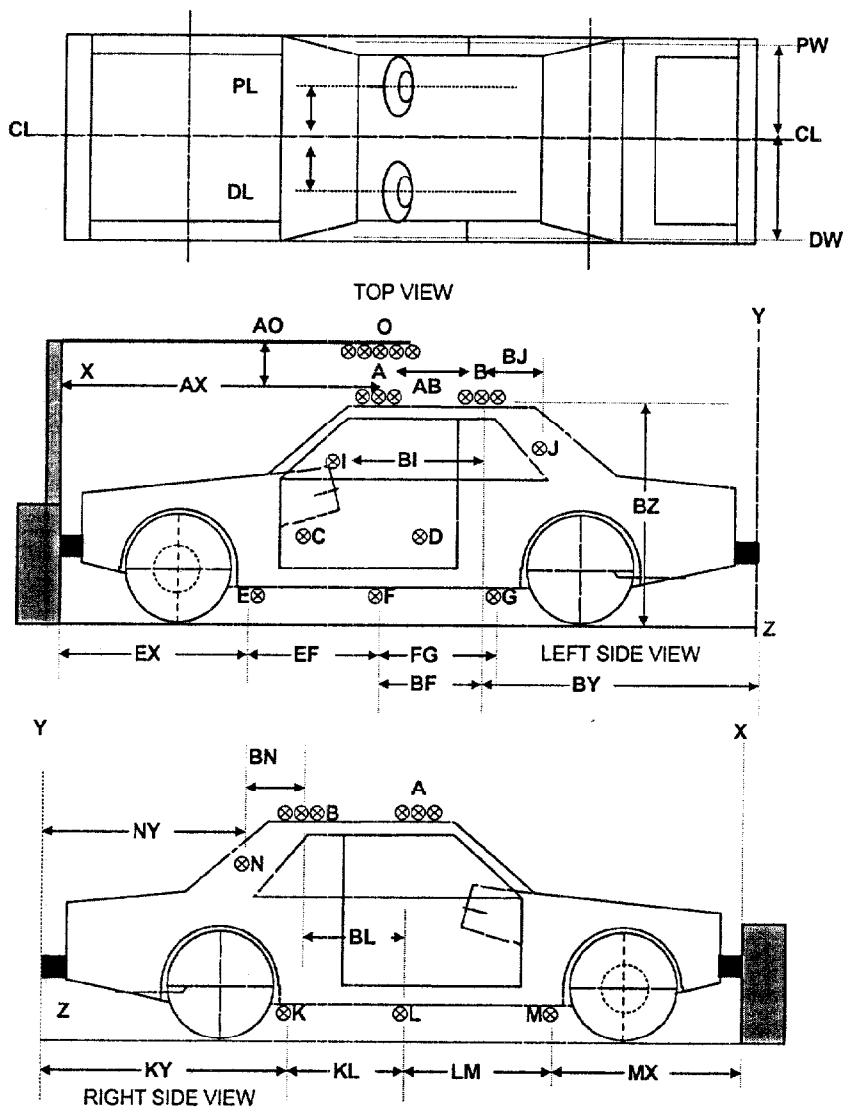
Test Vehicle: 1999 OLDSMOBILE INTRIGUE 4 DOOR SEDAN

NHTSA. NO MX0113

Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/22/99

Item	Value
AX	2525
AB	609
AO	150
BJ	546
BI	1275
BZ	1523
EX	1565
EF	940
FG	940
BF	600
BY	1880
NY	1300
BN	630
KY	1540
KL	942
BL	570
LM	945
MX	1560
CL/PL	365
CL/PW	800
CL/DL	365
CL/DW	800



DATA SHEET NO. 17

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 1999 OLDSMOBILE INTRIGUE 4 DOOR SEDAN

NHTSA. NO MX0113

Test Program: 1999 35 MPH FRONTAL IMPACT

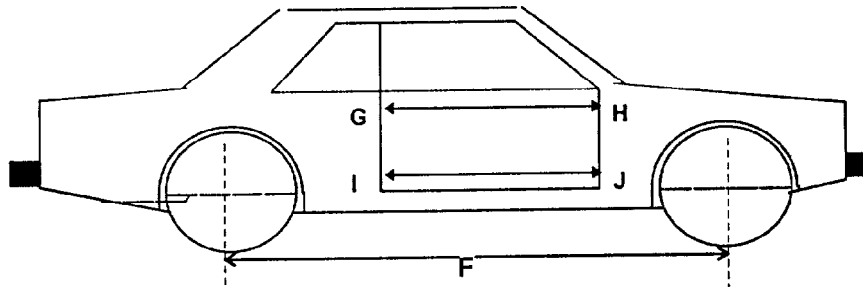
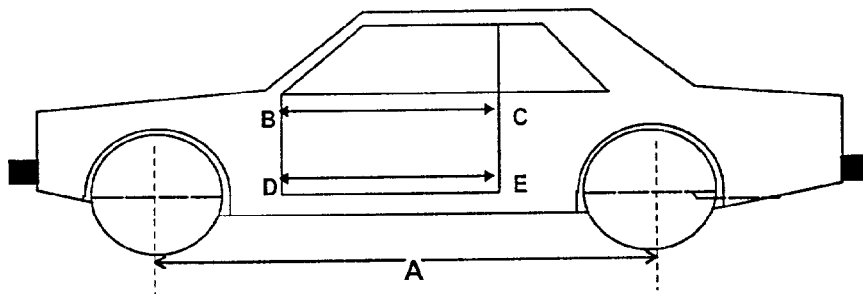
Test Date: 1/22/99

DOOR OPENING WIDTH

UNITS (mm)	LEFT SIDE		RIGHT SIDE	
	BC	DE	GH	IJ
PRE-TEST	940	912	945	927
POST-TEST	936	912	938	923
DIFFERENCE	-4	0	-7	-4

VEHICLE WHEELBASE CHANGE

UNITS (mm)	A = LEFT SIDE WHEELBASE	F = RIGHT SIDE WHEELBASE
PRE-TEST	2770	2770
POST-TEST	2691	2615
DIFFERENCE	-79	-155



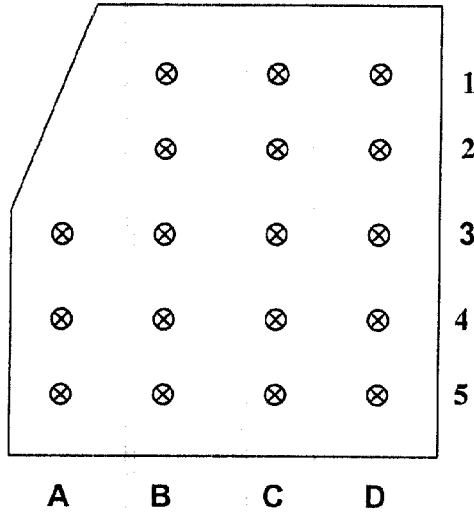
Data Sheet No. 17 .....(Continued)

Test Vehicle: 1999 OLDSMOBILE INTRIGUE 4 DOOR SEDAN

NHTSA. NO MX0113

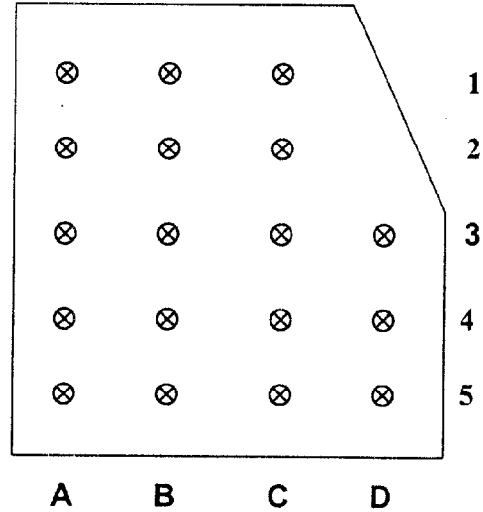
Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/22/99



⊕ X  
LEFT FRONT SEAT ANCHOR BOLT  
↓  
TO RSOV REFERENCE

DRIVER SIDE FLOOR PLAN



RIGHT FRONT SEAT ANCHOR BOLT  
↓  
TO RSOV REFERENCE

PASSENGER SIDE FLOORPAN

(Data Sheet No. 17 .....Continued)

Test Vehicle: 1999 OLDSMOBILE INTRIGUE 4 DOOR SEDAN

NHTSA. NO MX0113

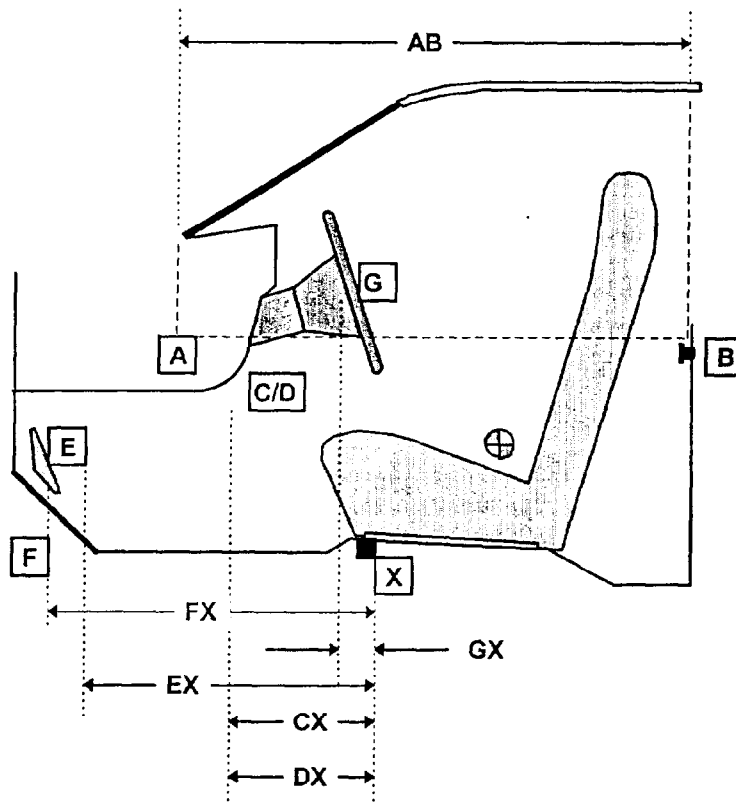
Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/22/99

**DRIVER COMPARTMENT INTRUSION (Distances in mm)**

REF.	DESCRIPTION	PRE-TEST	POST-TEST
AB	DOOR OPENING (INSIDE WINDOW JAM)	940	936
CX	LOWER LEFT KNEE BOLSTER TO X	275	200
DX	LOWER RIGHT KNEE BOLSTER TO X	290	213
EX	BRAKE PEDAL TO X	510	400
FX	FOOT REST TO X	535	503
GX	STEERING COLUMN HUB (CENTER) TO X	0	-40

X = LEFT FRONT SEAT ANCHOR BOLT



DRIVER COMPARTMENT

(Data Sheet No. 17 .....Continued)

DRIVER SIDE "X"

	A			B			C			D		
	PRE-TEST	POST-TEST	DIFF.	PRE-TEST	POST-TEST	DIFF.	PRE-TEST	POST-TEST	DIFF.	PRE-TEST	POST-TEST	DIFF.
1				694	635	-59	693	625	-68	691	615	-76
2				597	543	-54	595	513	-82	594	510	-84
3	497	468	-29	498	441	-57	498	418	-80	495	415	-80
4	396	374	-22	394	359	-35	398	354	-44	394	379	-15
5	300	289	-11	299	282	273	297	273	272	295	272	-23

DRIVER SIDE "Z"

	A			B			C			D		
	PRE-TEST	POST-TEST	DIFF.	PRE-TEST	POST-TEST	DIFF.	PRE-TEST	POST-TEST	DIFF.	PRE-TEST	POST-TEST	DIFF.
1				-14	47	61	-13	53	66	-15	53	68
2				-56	-17	39	-65	-18	47	-57	-20	37
3	-66	-54	12	-67	-15	52	-68	-18	50	-66	-14	52
4	-76	-84	-8	-77	-76	1	-93	-70	23	-92	-71	21
5	-82	-119	-37	-80	-110	-30	-95	-134	-39	-91	-111	-20

PASSENGER SIDE "X"

	A			B			C			D		
	PRE-TEST	POST-TEST	DIFF.	PRE-TEST	POST-TEST	DIFF.	PRE-TEST	POST-TEST	DIFF.	PRE-TEST	POST-TEST	DIFF.
1	725	654	-71	732	662	-70	719	669	-50			
2	658	582	-76	650	601	-49	656	610	-46			
3	565	502	-63	565	503	-62	555	530	-25	555	523	-32
4	475	407	-68	465	406	-59	456	425	-31	449	431	-18
5	371	356	-15	366	344	-22	362	327	-35	355	337	-18

PASSENGER SIDE "Z"

	A			B			C			D		
	PRE-TEST	POST-TEST	DIFF.	PRE-TEST	POST-TEST	DIFF.	PRE-TEST	POST-TEST	DIFF.	PRE-TEST	POST-TEST	DIFF.
1	88	138	50	89	131	42	85	134	49			
2	63	89	26	51	110	59	47	101	54			
3	-57	15	72	-55	18	73	-55	-4	51	-64	-28	36
4	-56	39	95	-63	22	85	-62	-33	29	-65	-62	3
5	-90	-29	61	-90	-66	-55	-75	-81	-6	-75	-92	-17

RSOV to anchor bolt  
Ground level to anchor bolt

DRIVER		
PRE	POST	DIFF.
2865	2865	0
N/A	N/A	

PASSENGER		
PRE	POST	DIFF.
2865	2865	0
N/A	N/A	

DATA SHEET NO. 18

OFFSET BARRIER ORIENTATION

Test Vehicle: 1999 OLDSMOBILE INTRIGUE 4 DOOR SEDAN

NHTSA. NO MX0113

Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/22/99

NOT APPLICABLE TO THIS TEST

A = VEHICLE WIDTH MEASURED AT WIDEST POINT N/A mm

B = 40% OFFSET FROM LEFT EDGE OF VEHICLE N/A mm

ACTUAL OFFSET DURING TEST N/A mm = N/A

DATA SHEET NO. 19

ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 1999 OLDSMOBILE INTRIGUE 4 DOOR SEDAN

NHTSA. NO MX0113

Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/22/99

VIN: 1G3WH52K1XF313337 Wheelbase: 2770 mm Test Weight: 1783 kg

Vehicle Size Category: OLDSMOBILE INTRIGUE 4 D00R SEDAN

ACCELEROMETER DATA:

LOCATION: Left and right rear floor pans

CALIBRATION PROCEDURE: 6 months/ drop test

LINEARITY: Good

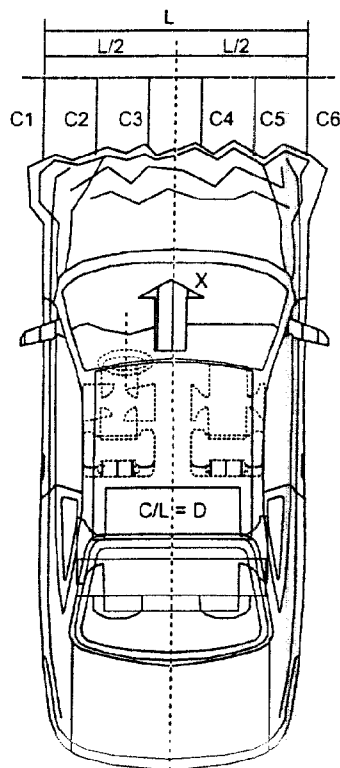
INTEGRATION ALGORITHM: NHTSA Standard

VEHICLE IMPACT SPEED: 56.3 km/h

TIME OF SEPARATION: 87.1 msec

VELOCITY CHANGE: 63.99 km/h

COLLISION DEFORMATION CLASSIFICATION (CDC) CODE: F (frontal)



IMPACT MODE: Full Frontal

CRUSH DEPTH DIMENSIONS:

C1 = 250 mm

C2 = 440 mm

C3 = 596 mm

C4 = 635 mm

C5 = 544 mm

C6 = 201 mm

MIDPOINT OF DAMAGE: Vehicle Centerline

LENGTH OF DAMAGE REGION: 1652 mm

DATA SHEET NO. 20

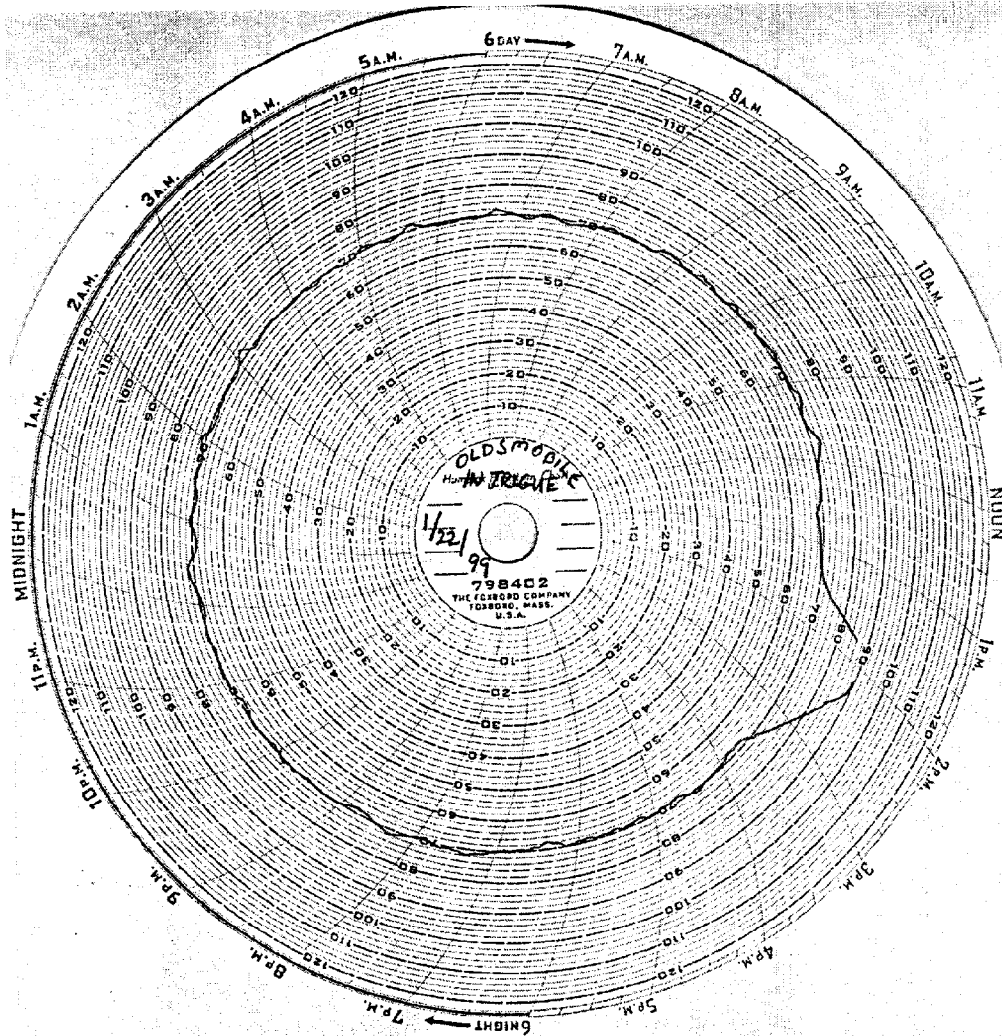
DUMMY/VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 1999 OLDSMOBILE INTRIGUE 4 DOOR SEDAN

NHTSA. NO MX0113

Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/22/99



**APPENDIX A**  
**PHOTOGRAPHS**

KAR99001-11

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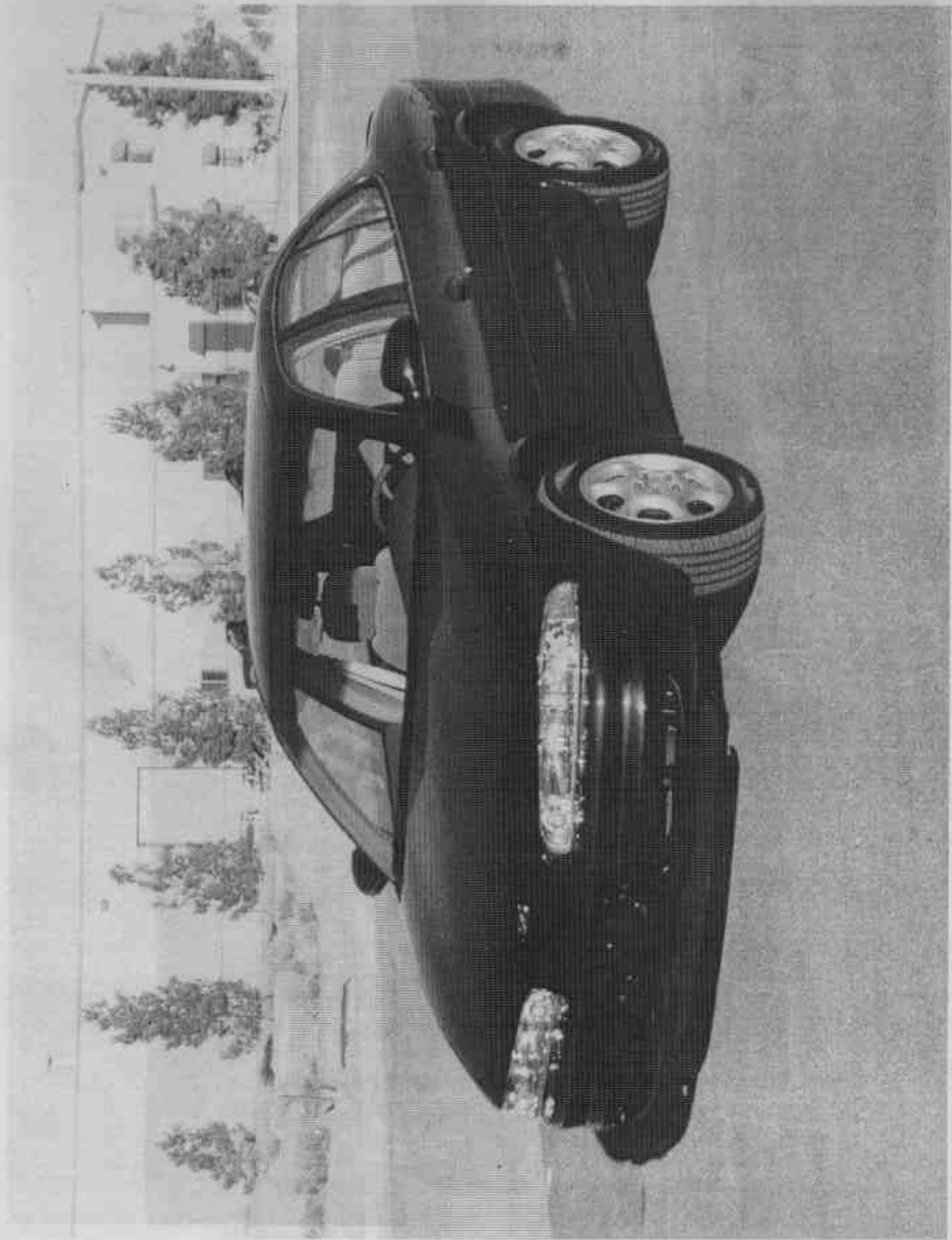


FIGURE A-1. RIGHT FRONT AS RECEIVED

A-1

KAR99001-11

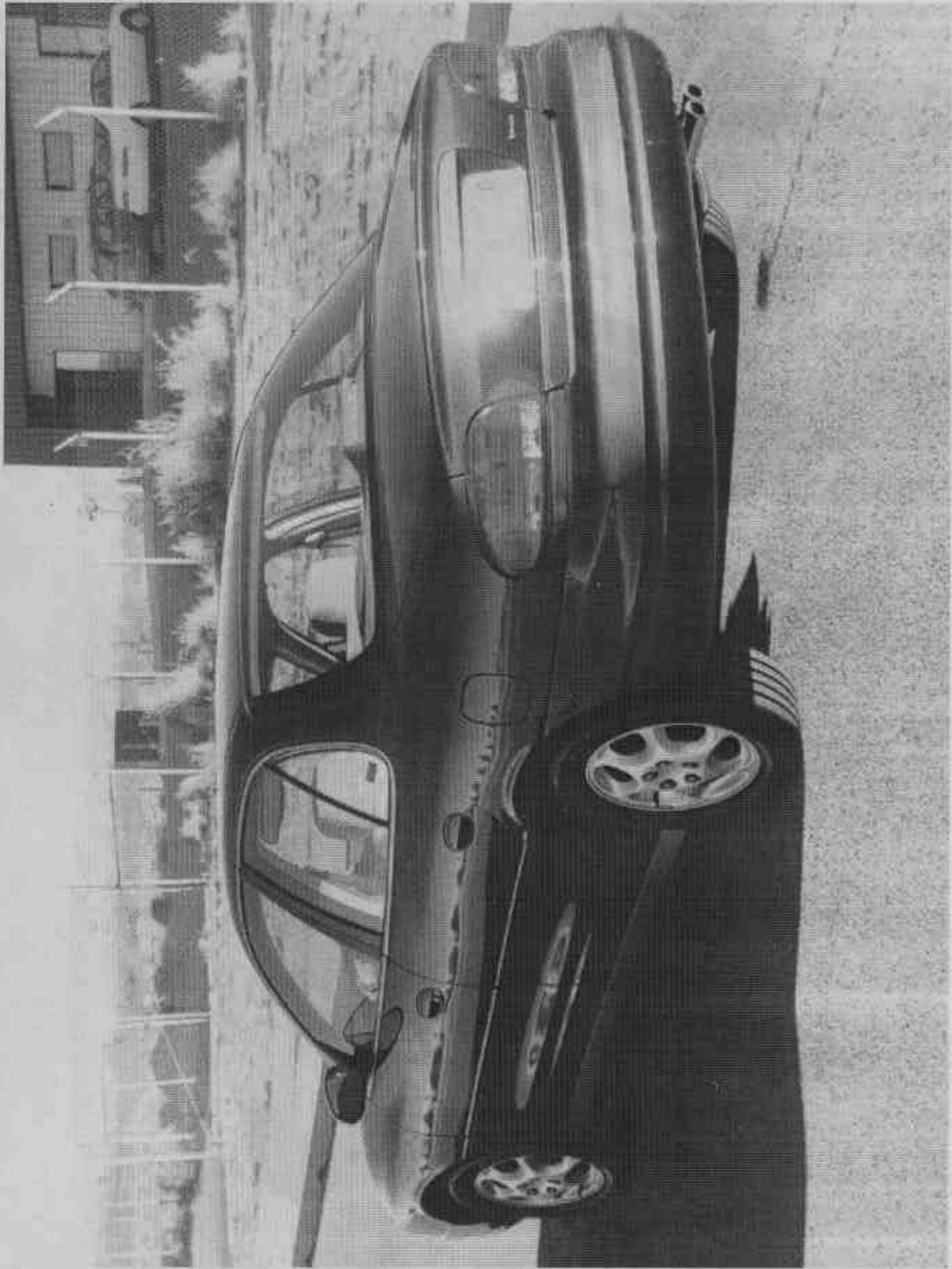
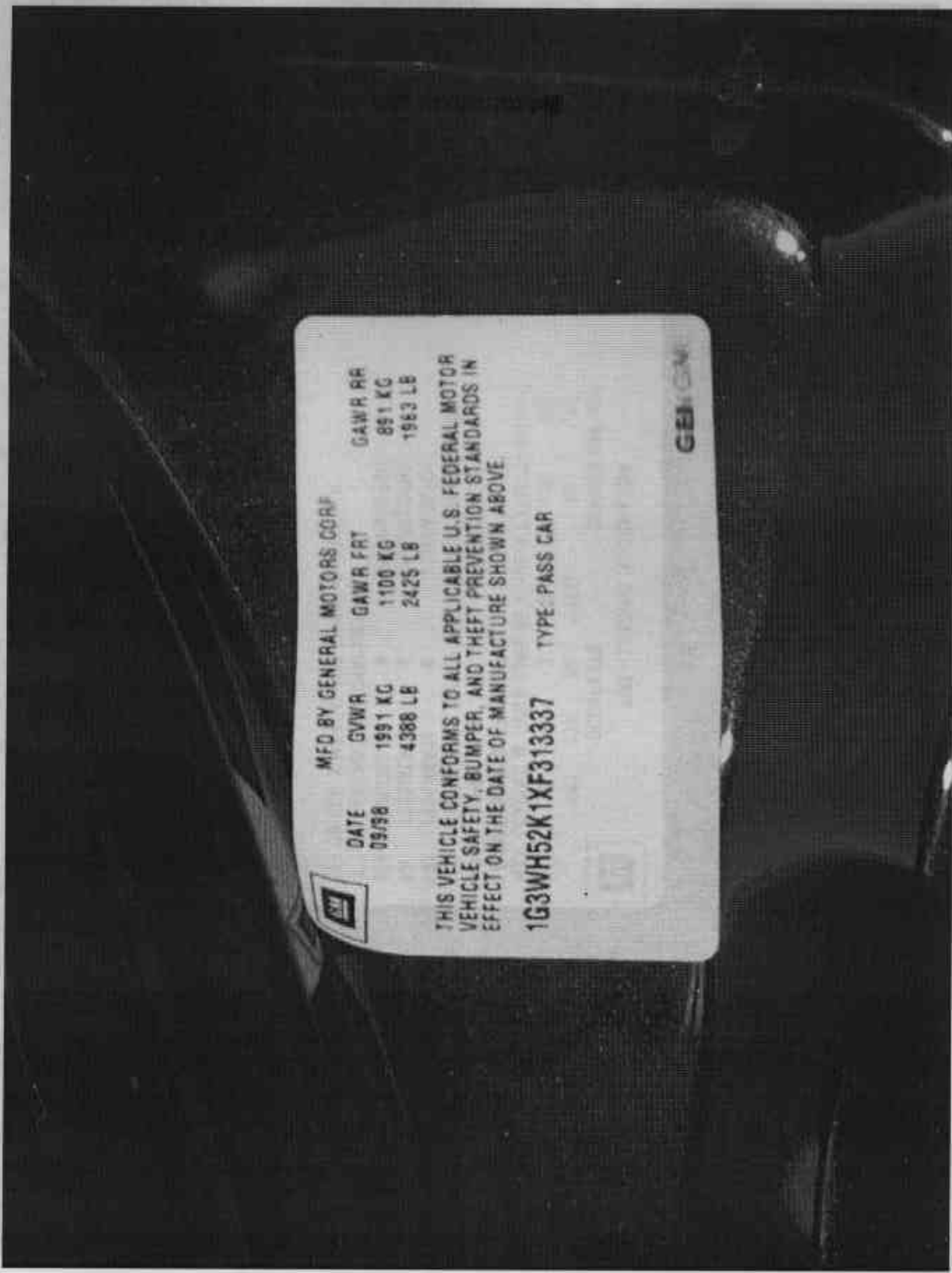


FIGURE A-2. LEFT REAR AS RECEIVED

A-2

KAR99001-11

ST/100997A



MFD BY GENERAL MOTORS CORP

DATE	GVWR	GAWR FRT	GAWR RR
09/98	1991 KG	1100 KG	891 KG
	4388 LB	2425 LB	1963 LB

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

1G3WH52K1XF313337 TYPE: PASS CAR

GEICO

FIGURE A-3. VEHICLE CERTIFICATION LABEL

KAR99001-11

KAR99001-11



FIGURE A-4. VEHICLE TIRE PLACARD



FIGURE A-5. PRETEST FRONT VIEW

KAR99001-11

A-5

KAR99001-11

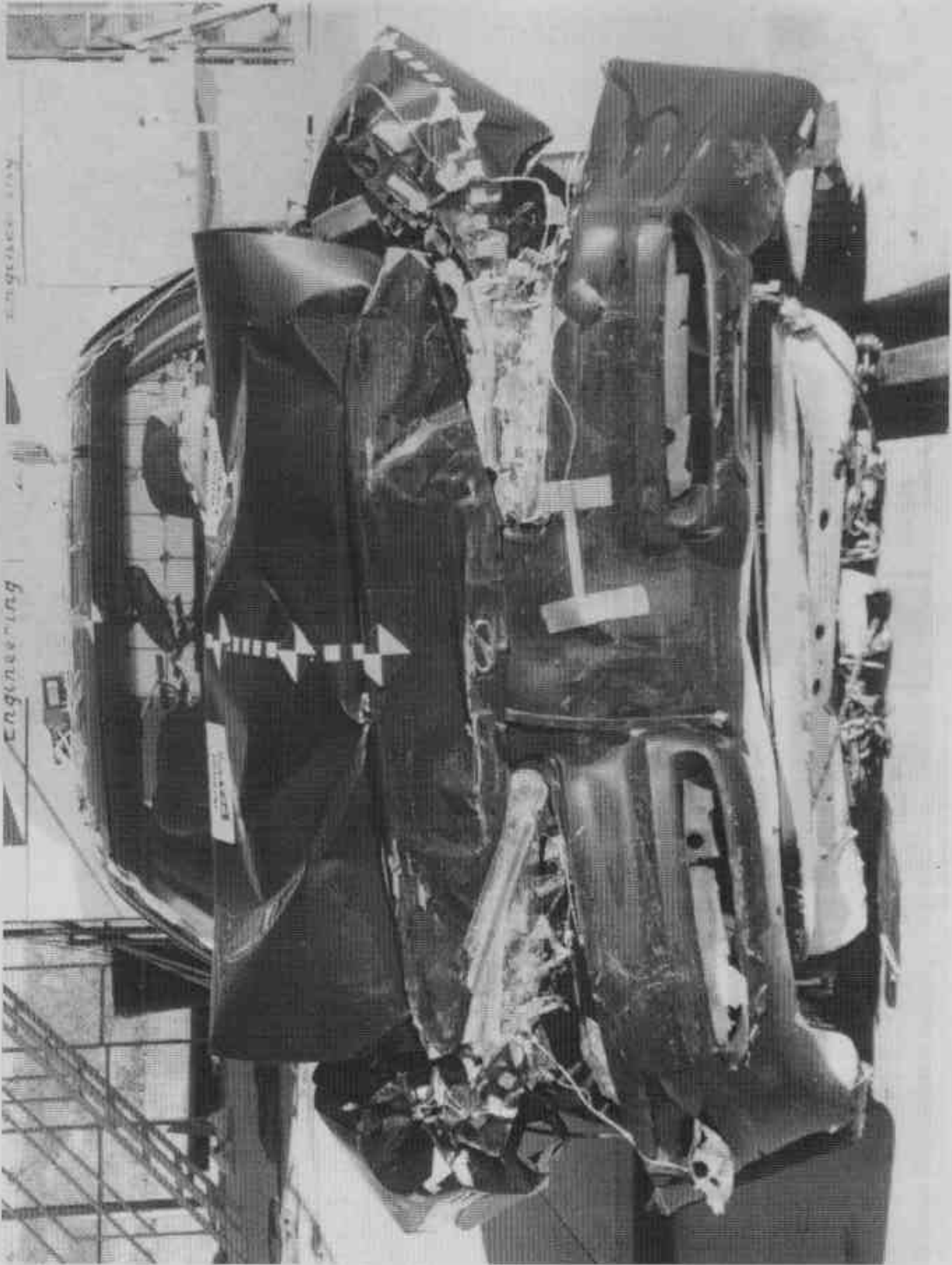


FIGURE A-6. POST TEST FRONT VIEW

A-6

KAR99001-11

SP-1000000000

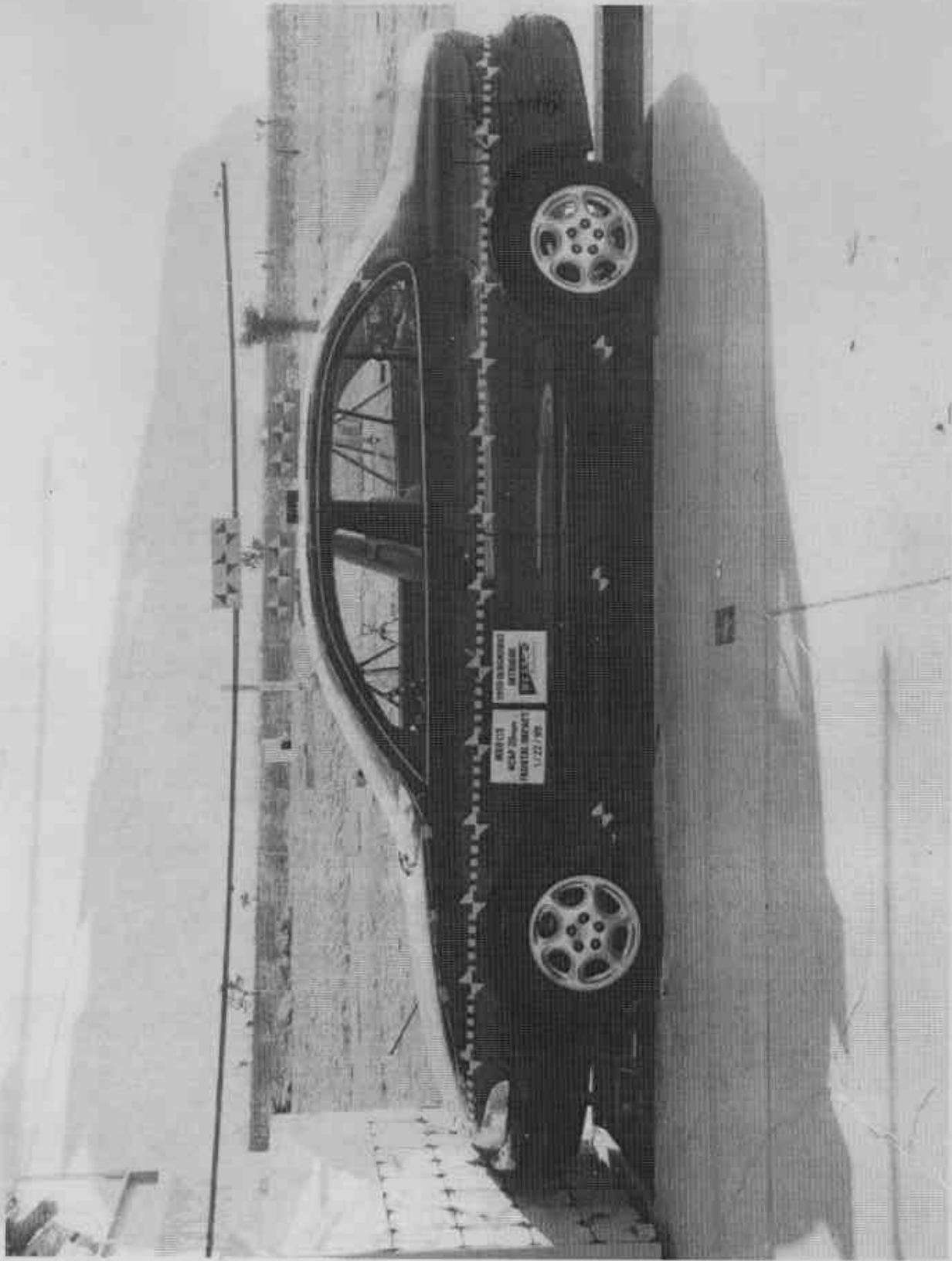


FIGURE A-7. PRETEST LEFT SIDE VIEW

KAR99001-11

A-7

KAR99001-11



FIGURE A-8. POST TEST LEFT SIDE VIEW

KAR99001-11

A-8

KAR99001-11

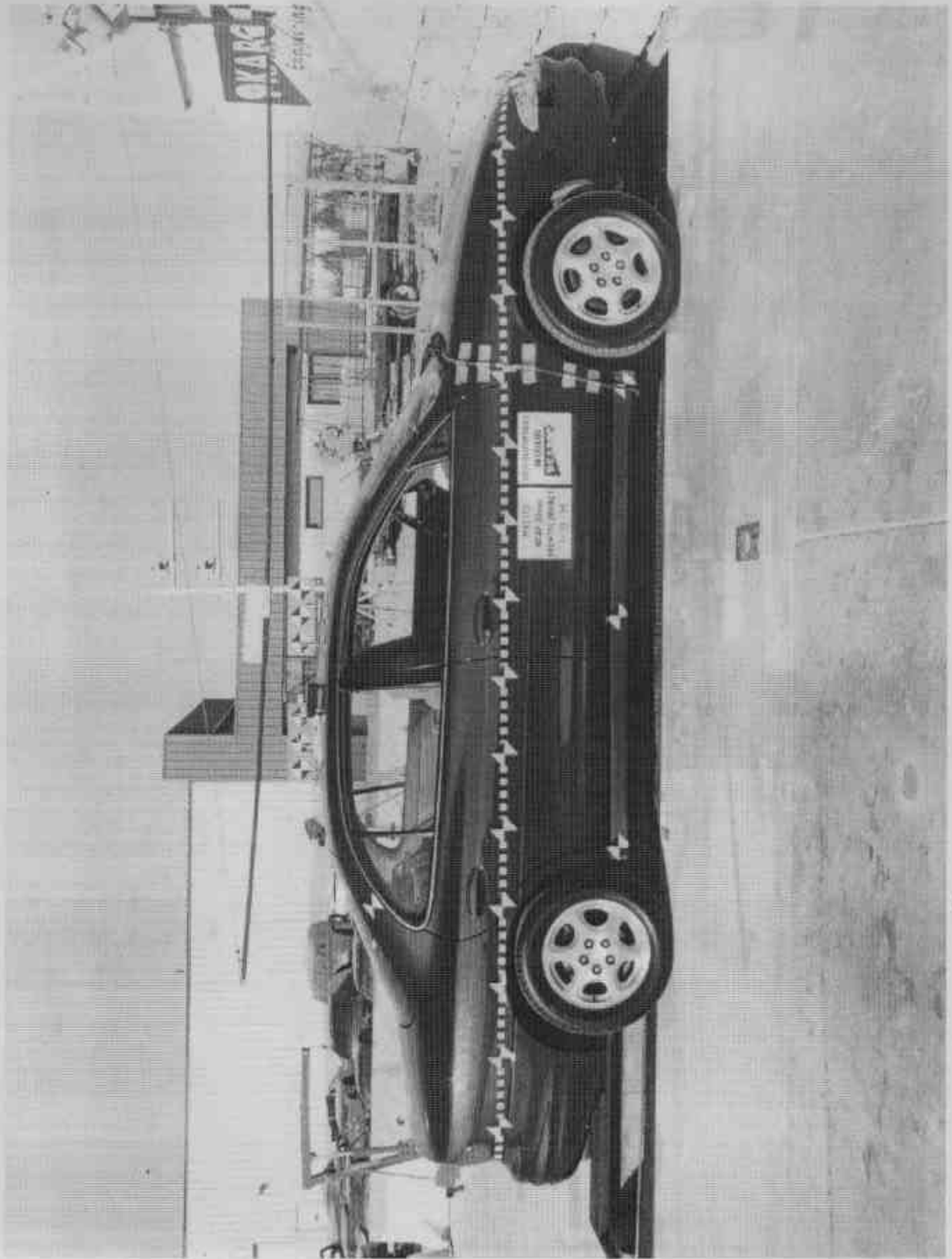


FIGURE A-9. PRETEST RIGHT SIDE VIEW

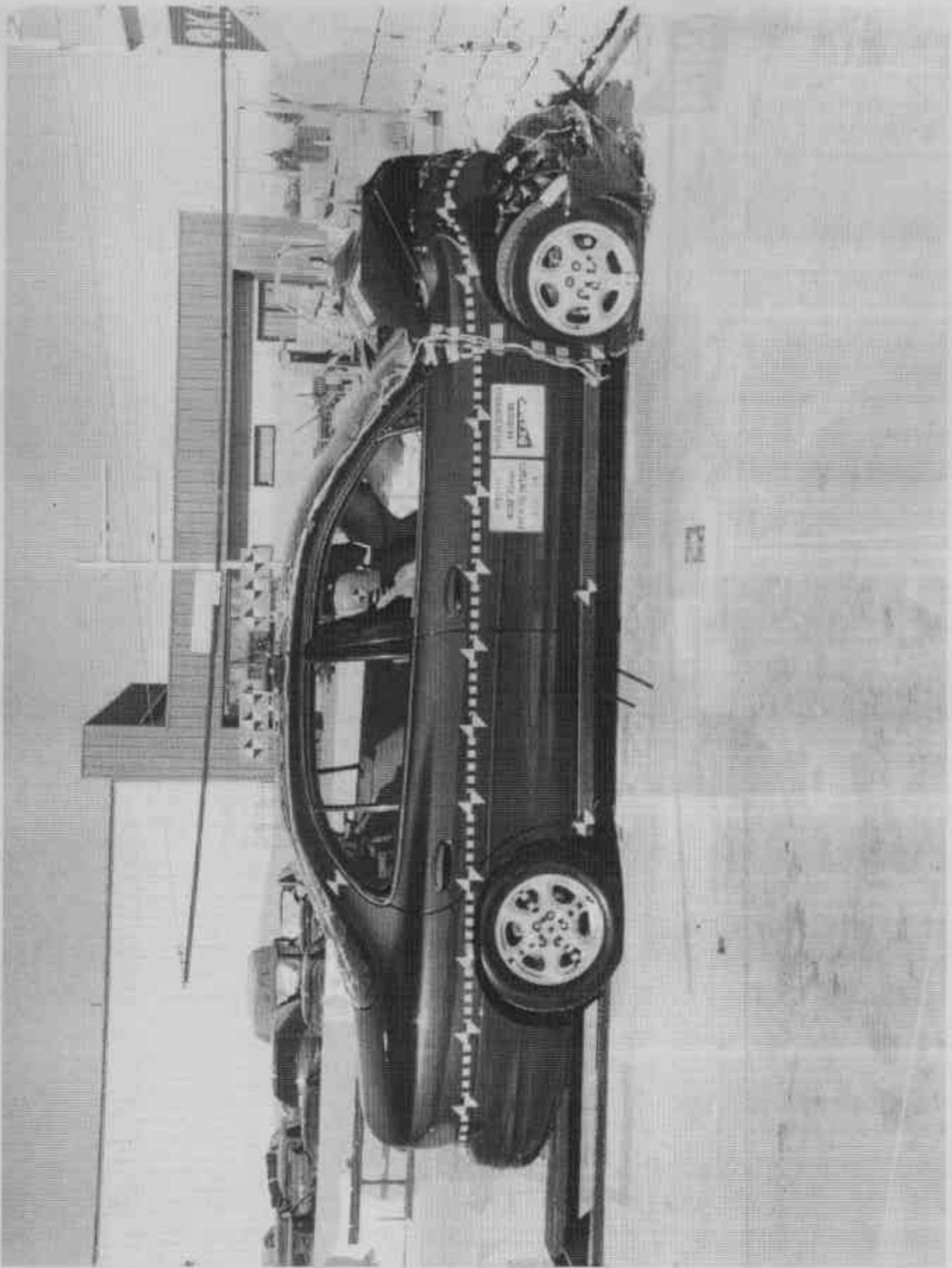


FIGURE A-10. POST TEST RIGHT SIDE VIEW

ST-190097A2

A-10

KAR99001-11



FIGURE A-11. PRETEST RIGHT FRONT VIEW

KAR99001-11

A-11

KAR99001-11



FIGURE A-12. POST TEST RIGHT FRONT VIEW

KAR99001-11

A-12

KAR99001-11



FIGURE A-13. PRETEST LEFT REAR VIEW



FIGURE A-14. POST TEST LEFT REAR VIEW

A-14

KAR99001-11

PARB00-F13

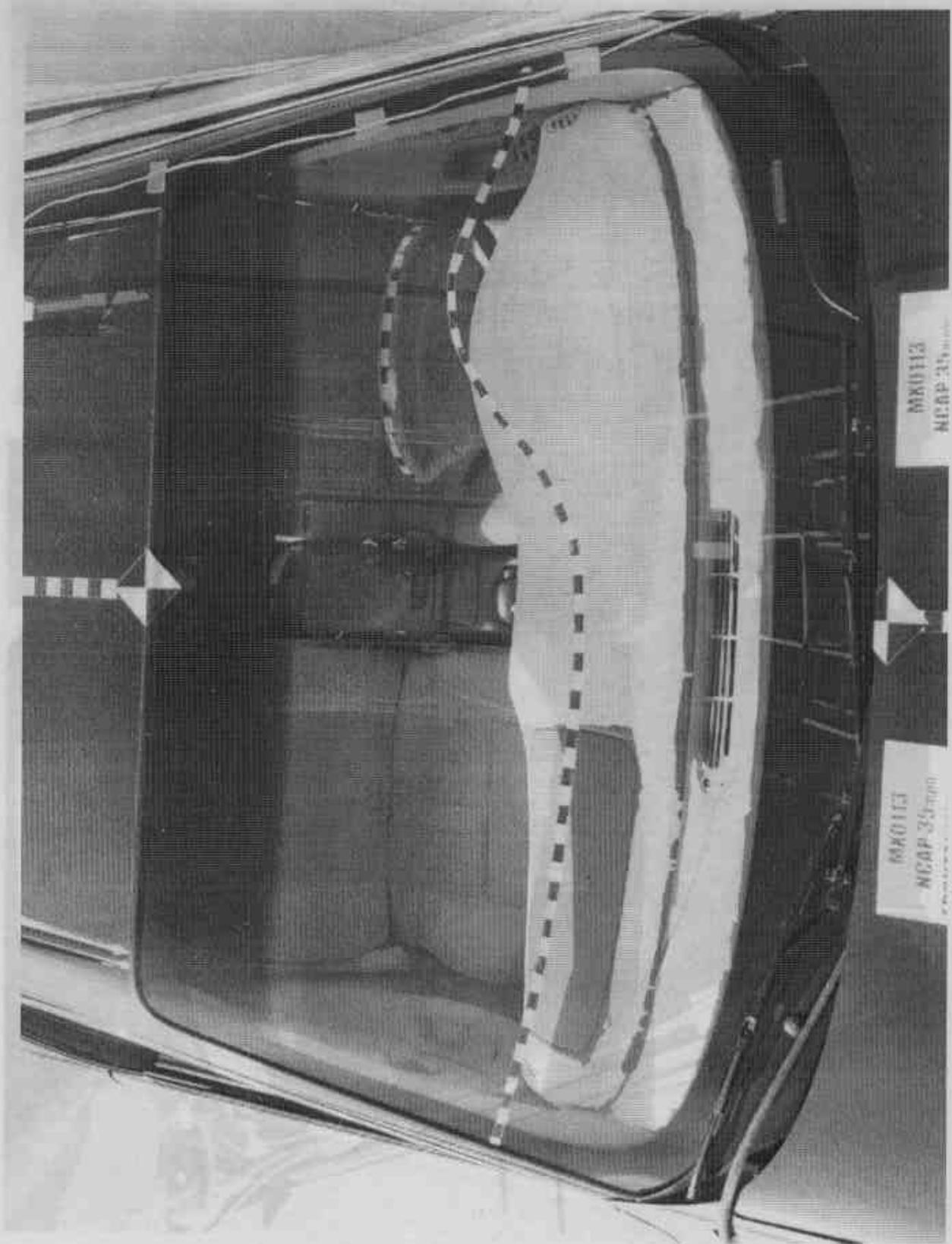


FIGURE A-15. PRETEST WINDSHIELD

A-15

KAR99001-11

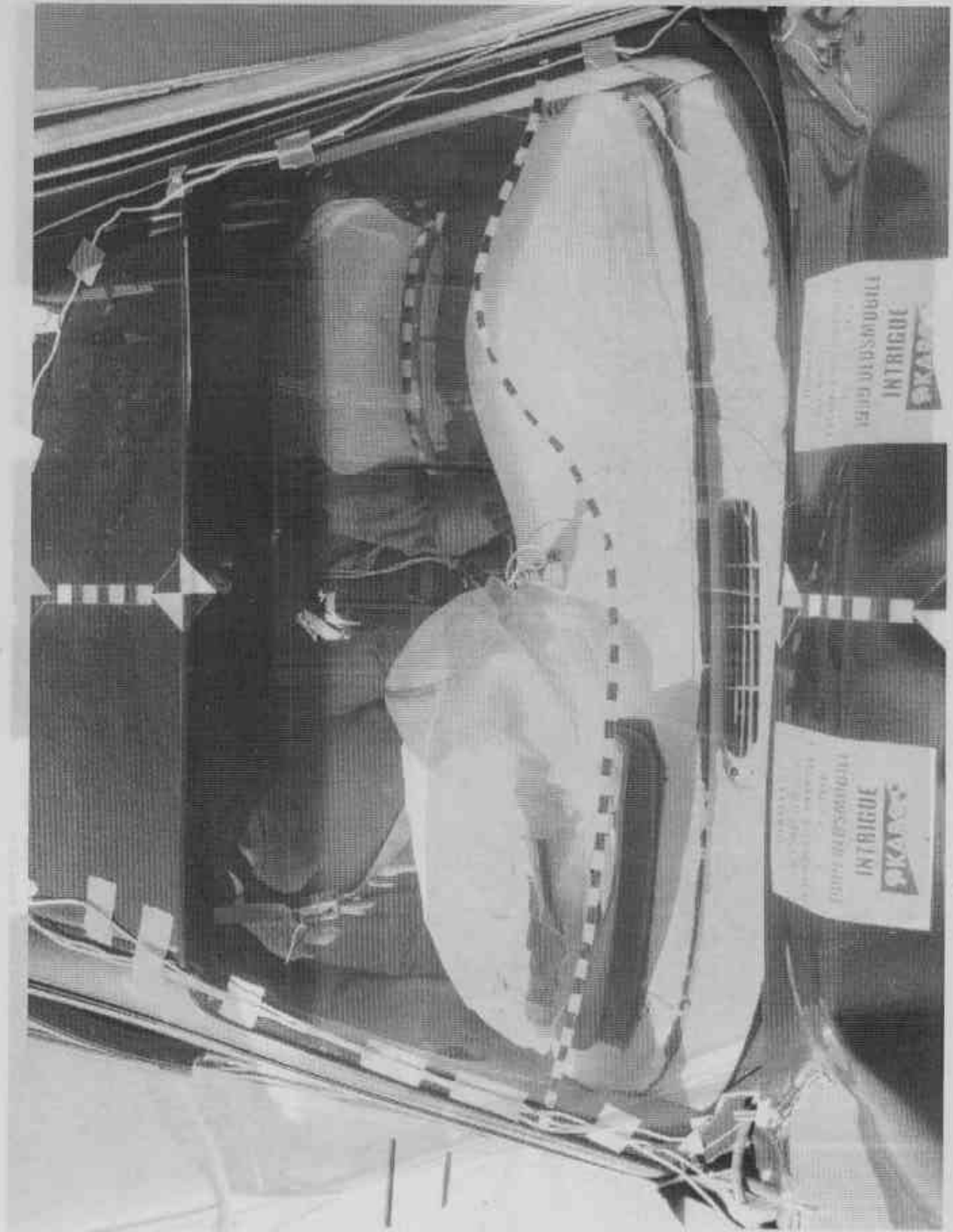


FIGURE A-16. POST TEST WINDSHIELD

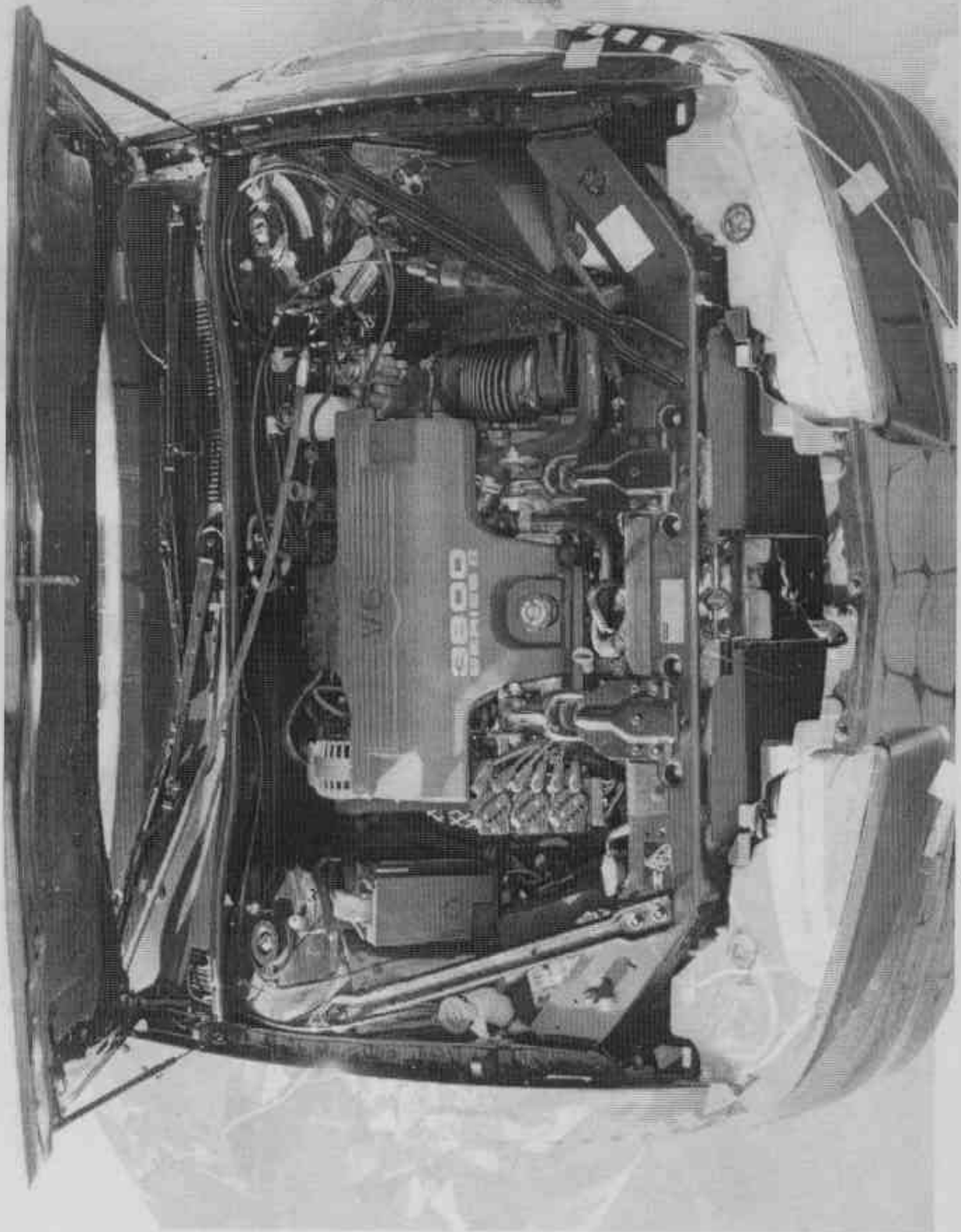


FIGURE A-17. PRETEST ENGINE COMPARTMENT

A-17

KAR99001-11

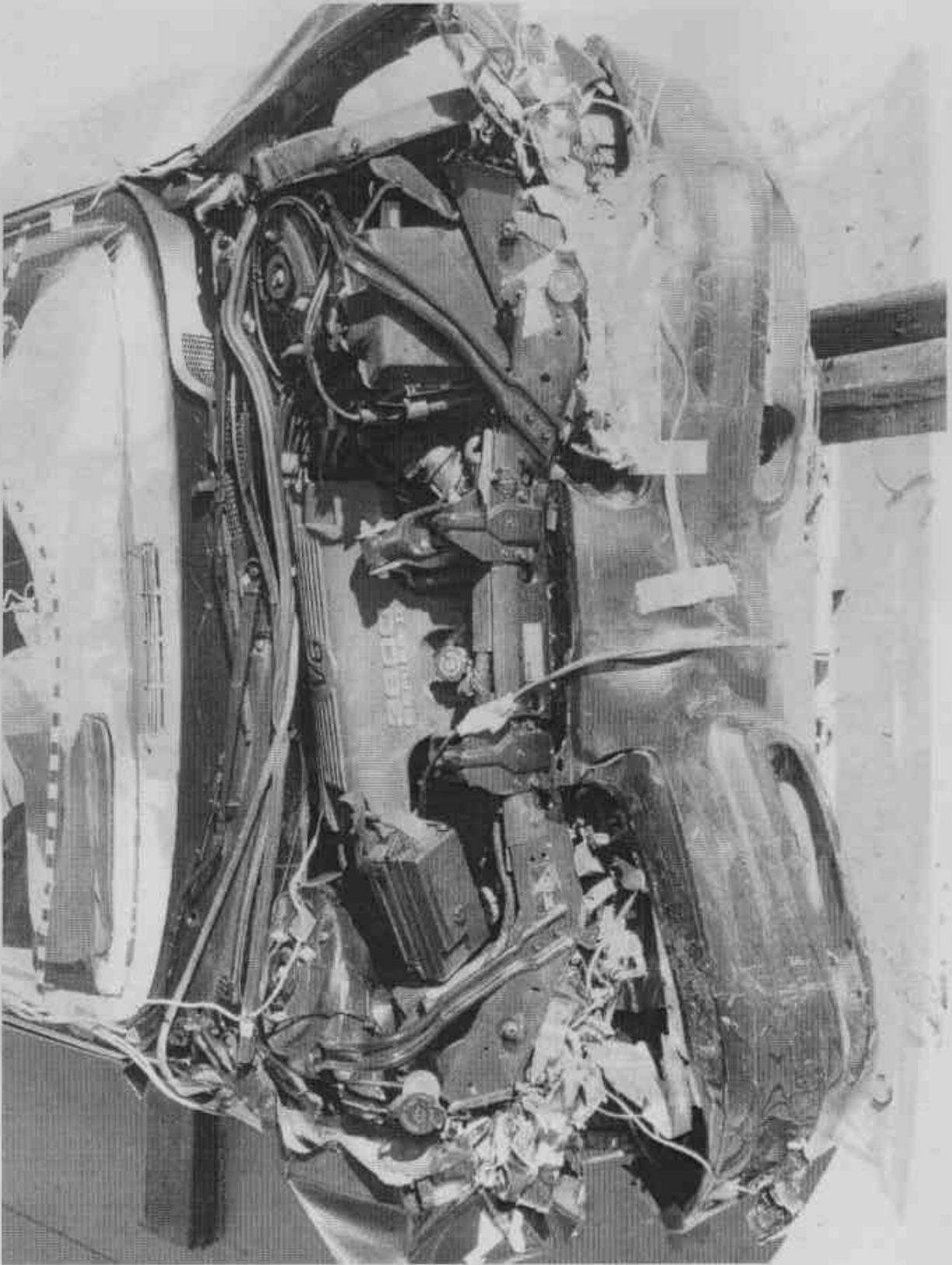


FIGURE A-18. POST TEST ENGINE COMPARTMENT

A-18

KAR99001-11

KAR99001-11

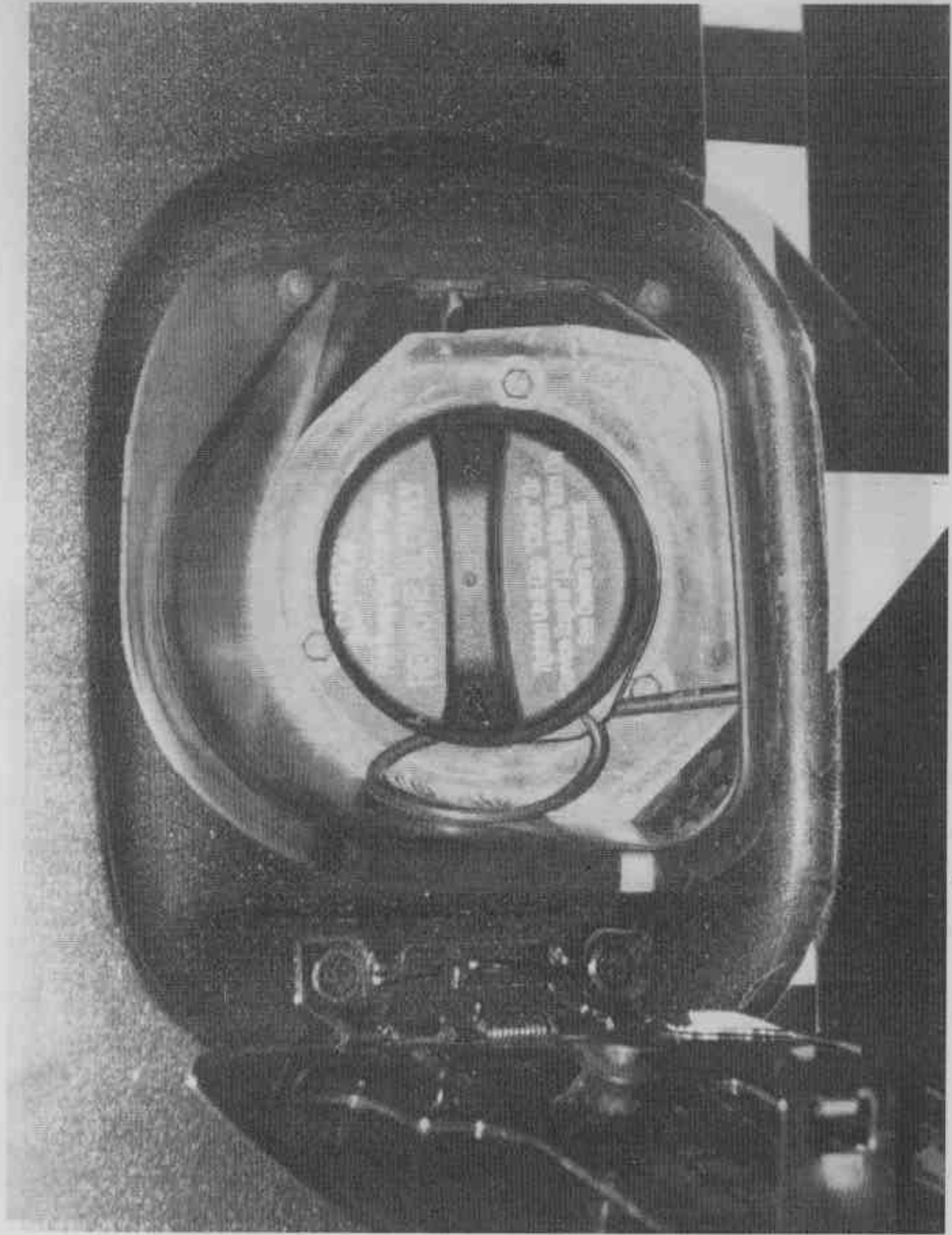


FIGURE A-19. PRETEST FUEL CAP

A-19

KAR99001-11



FIGURE A-20. POST TEST FUEL CAP

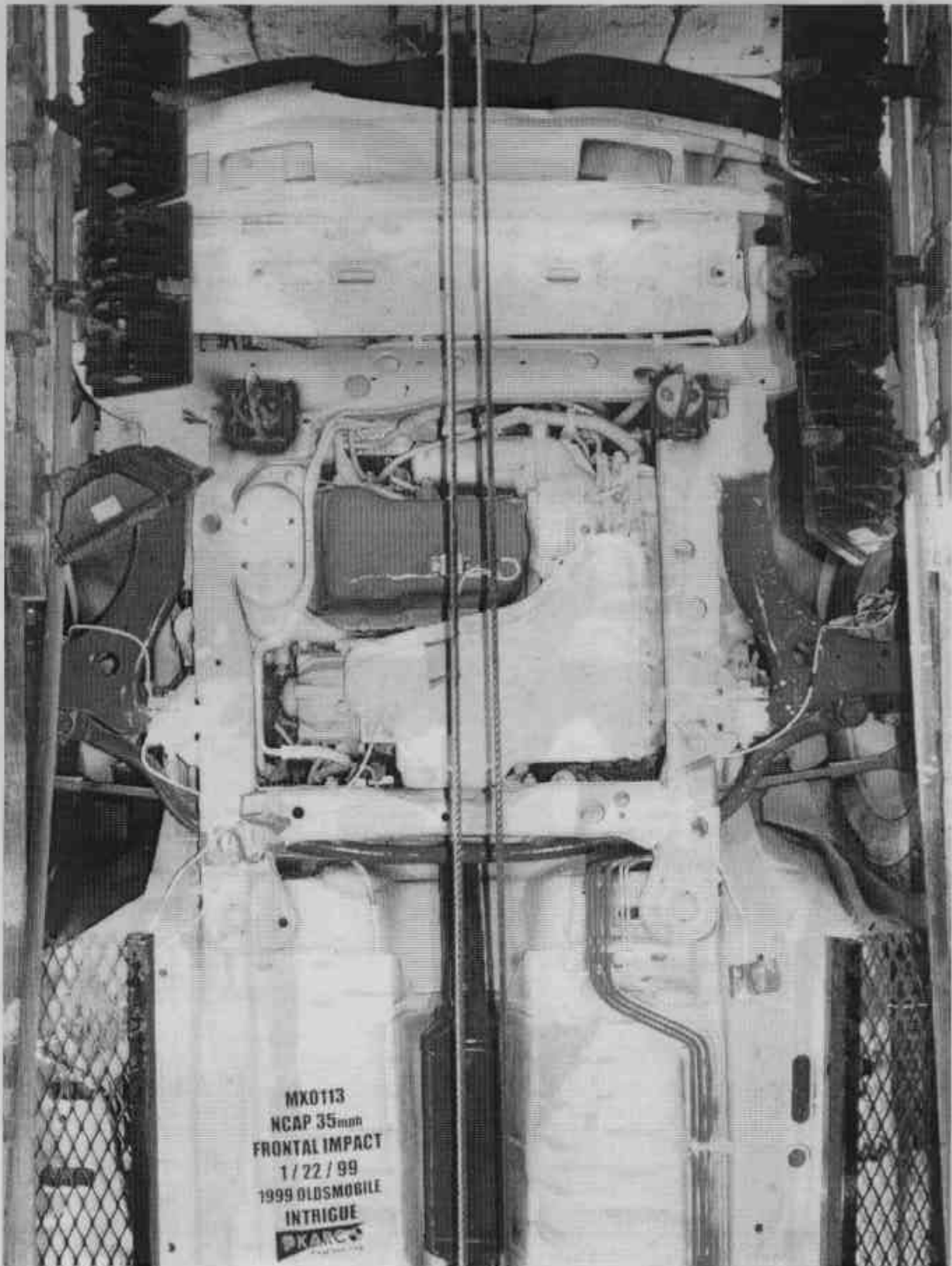


FIGURE A-21. PRETEST FRONT UNDERSIDE

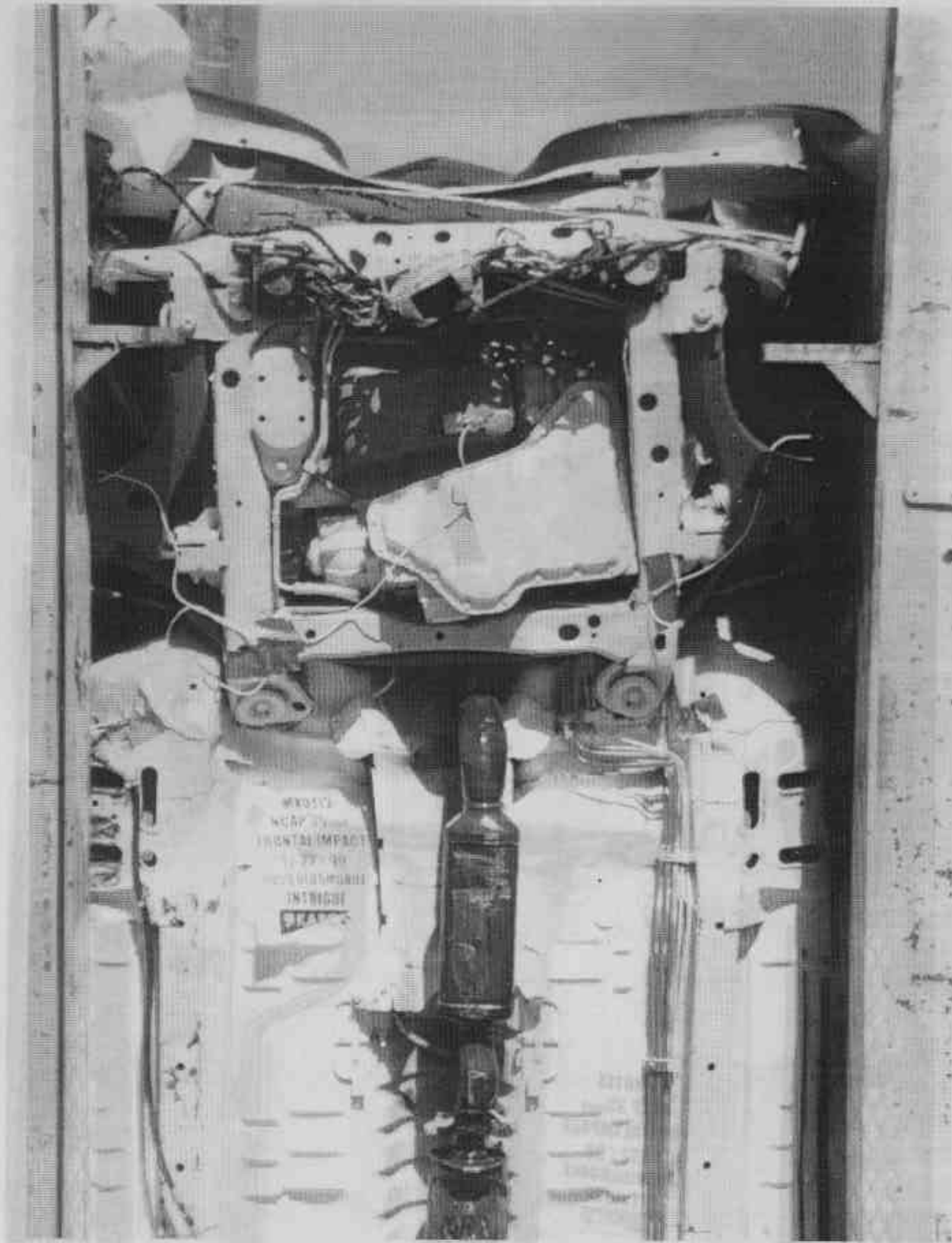


FIGURE A-22. POST TEST FRONT UNDERSIDE

KAR99001-11

A-22

KAR99001-11

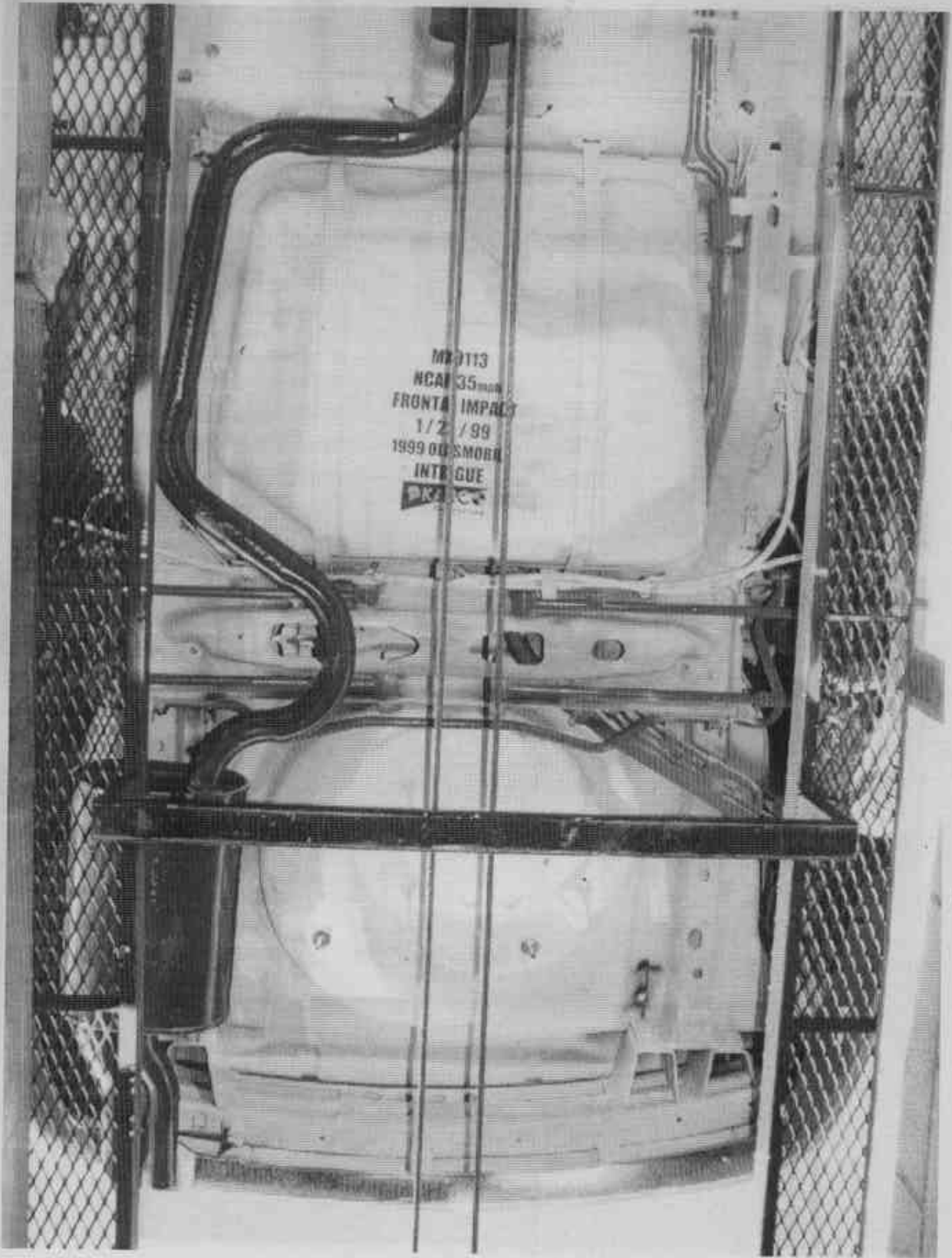


FIGURE A-23. PRETEST REAR UNDERSIDE

KAR99001-11

A-23

KAR99001-11

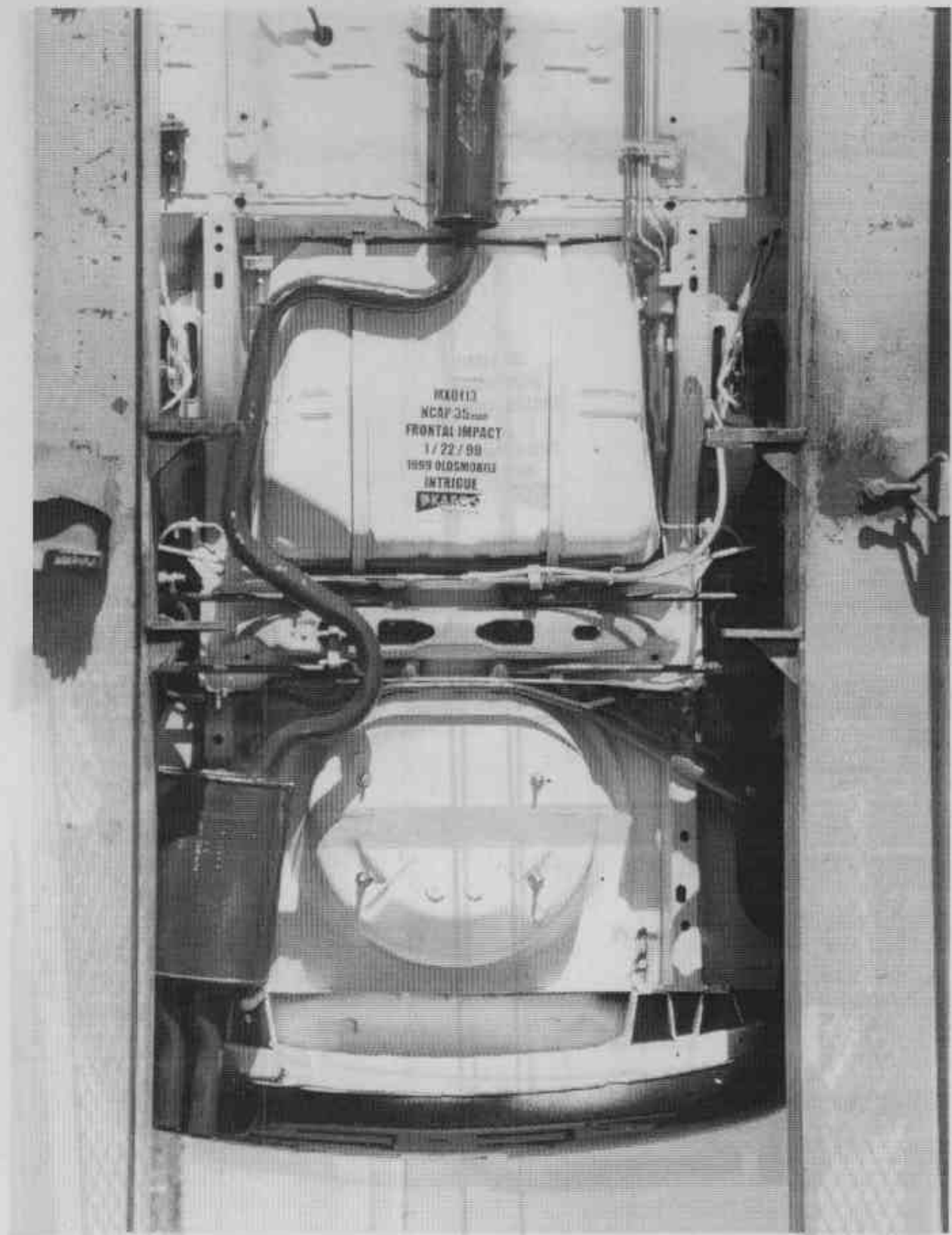


FIGURE A-24. POST TEST REAR UNDERSIDE

A-24

KAR99001-11

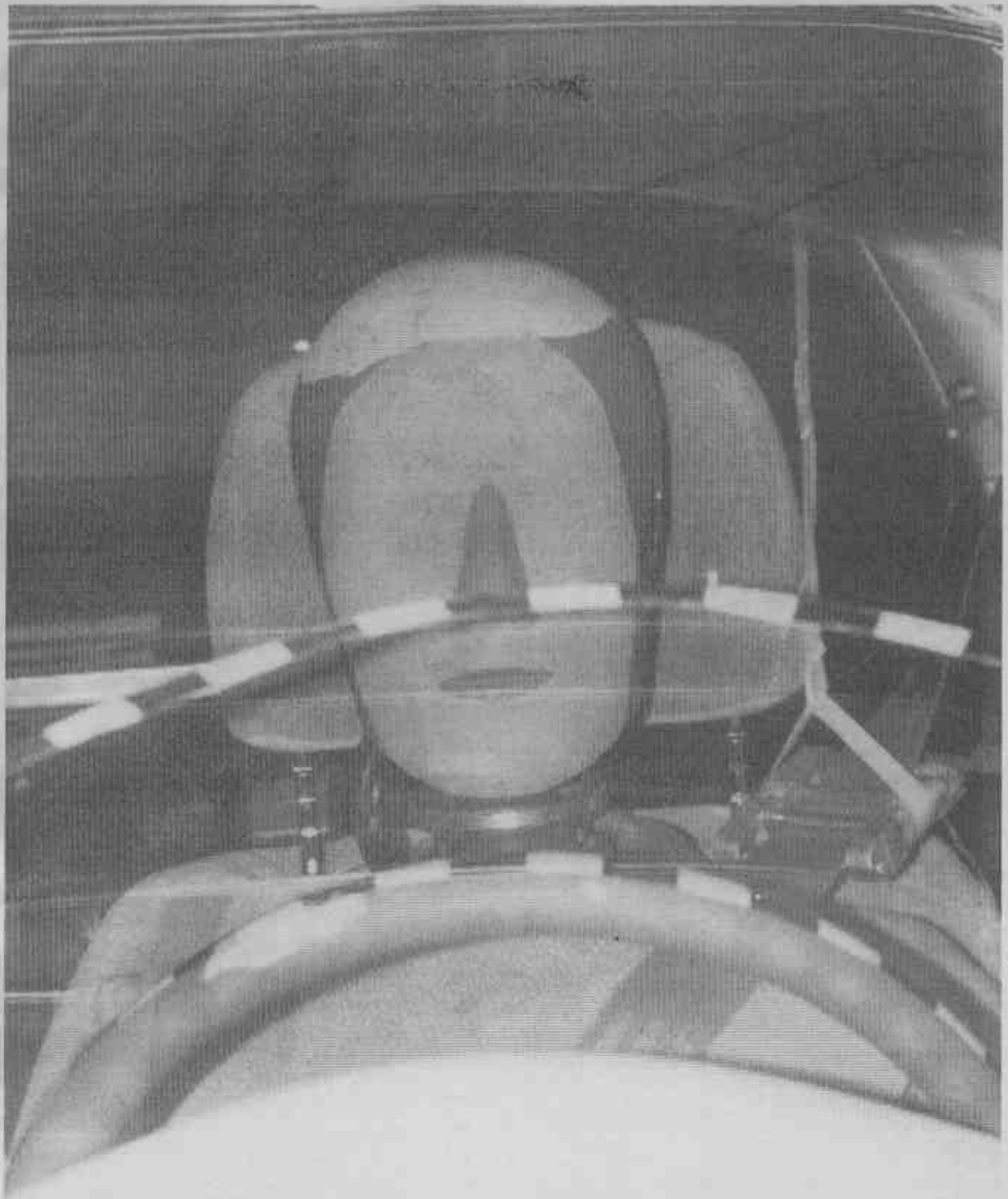


FIGURE A-25. PRETEST DRIVER DUMMY (FRONT VIEW)

A-25

KAR99001-11

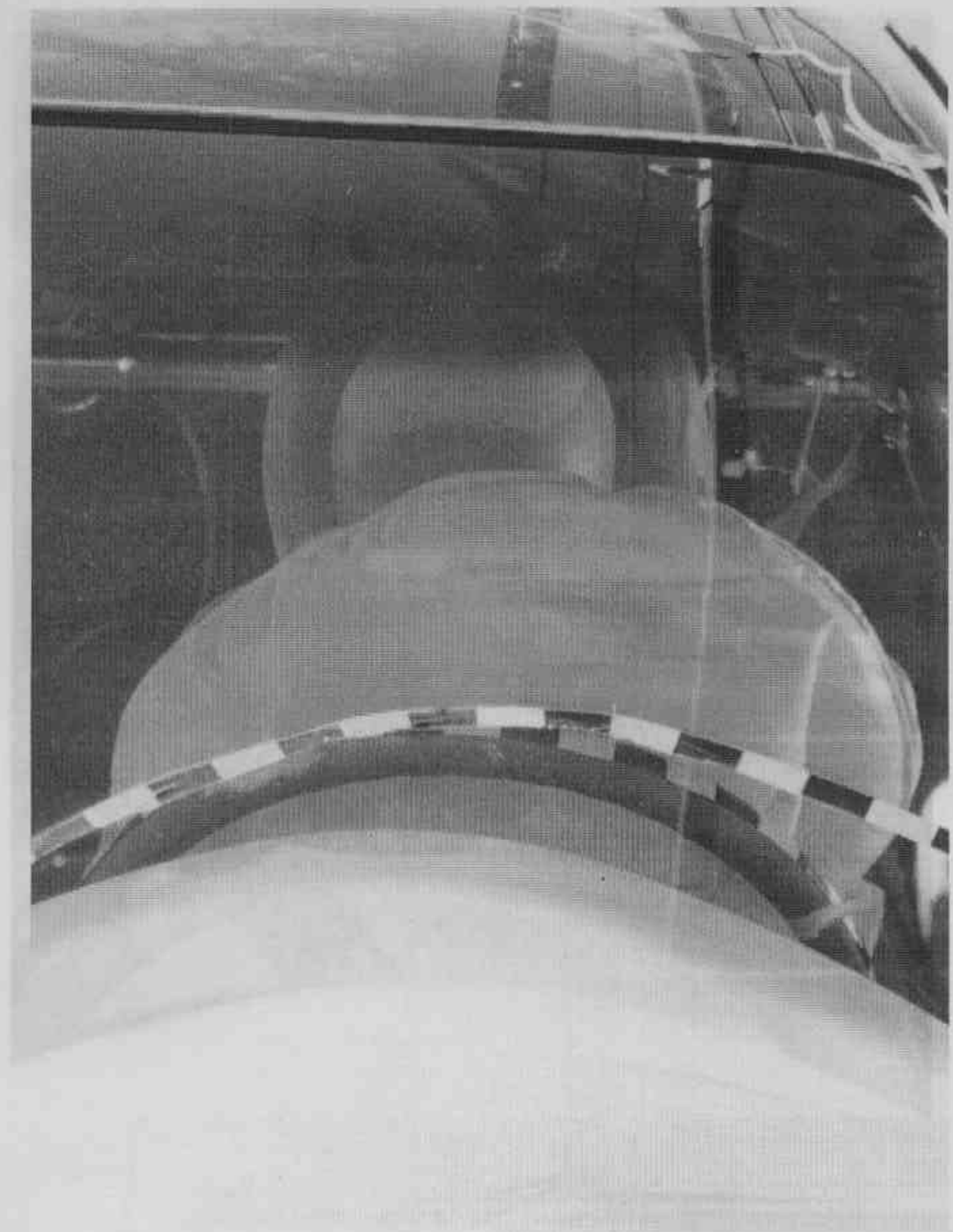


FIGURE A-26. POST TEST DRIVER DUMMY (FRONT VIEW)

CF-100001-21

A-26

KAR99001-11

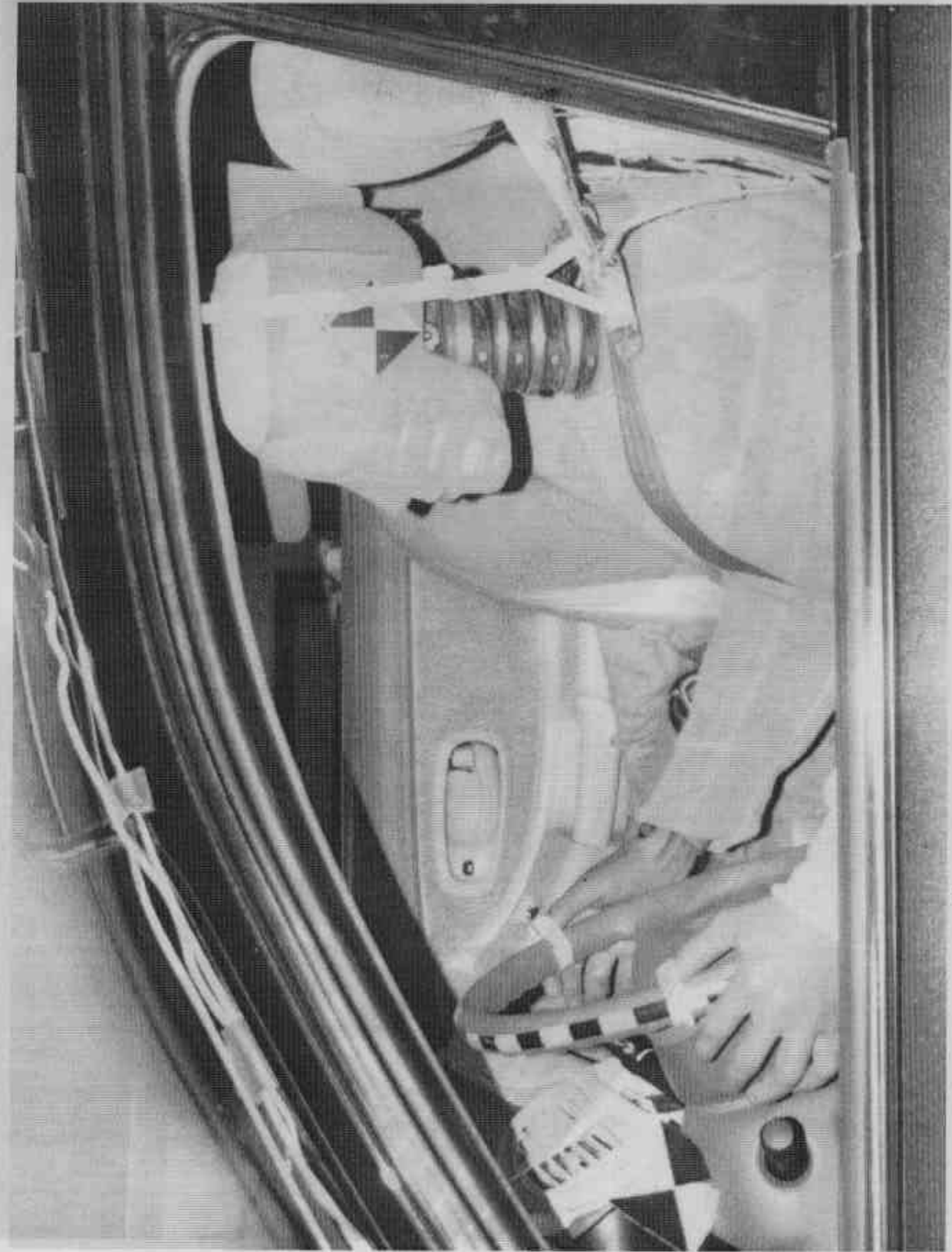


FIGURE A-27. PRETEST DRIVER DUMMY (THRU WINDOW)



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

KAR99001-11

A-28

KAR99001-11



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

A-29

KAR99001-11



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

A-30

KAR99001-11

KAR99001-11

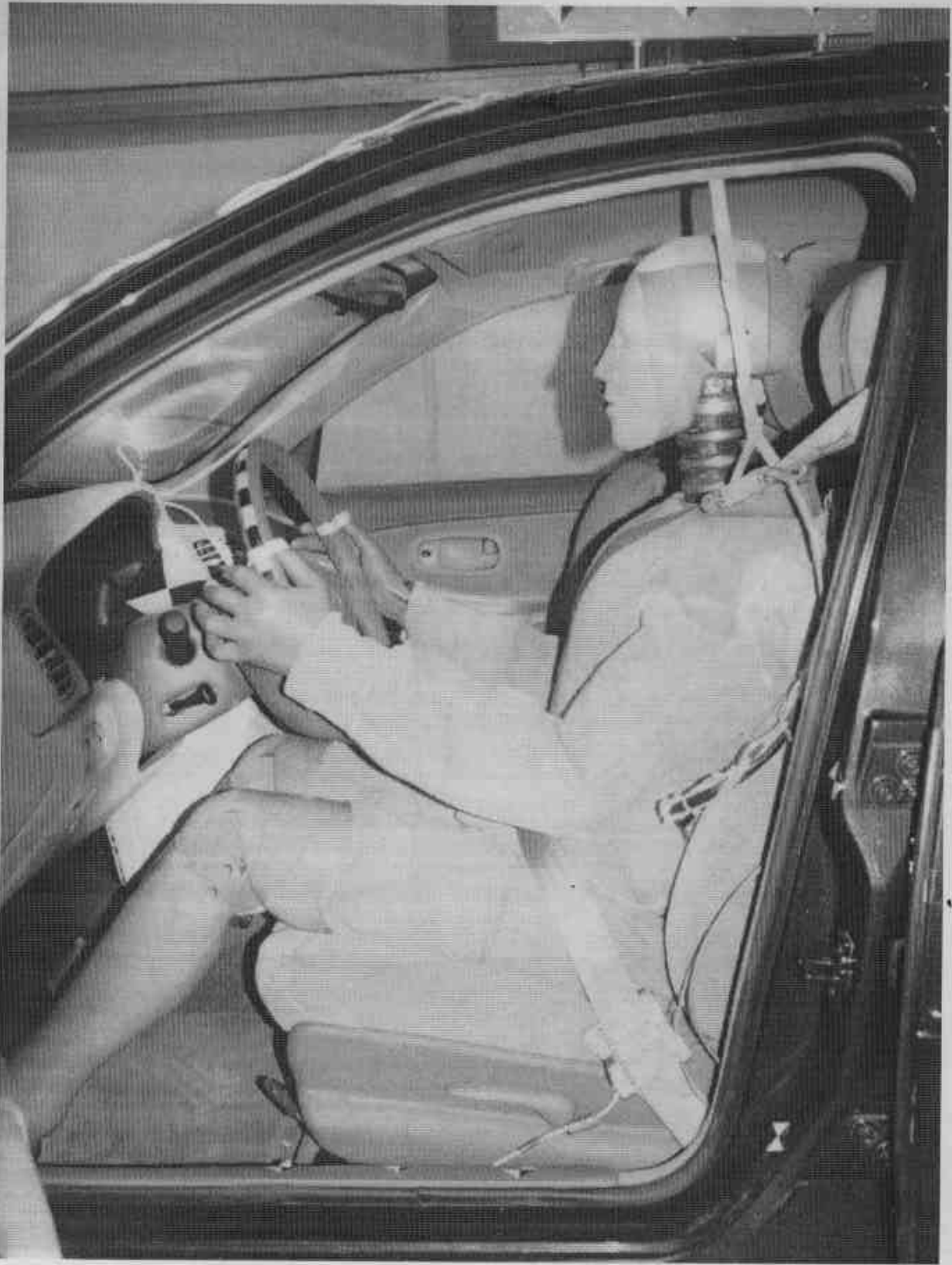


FIGURE A-31. PRETEST DRIVER DUMMY (90° TO VEHICLE)

ST-1000000000

A-31

KAR99001-11



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

KAR99001-11

A-32

KAR99001-11



FIGURE A-33. PRETEST DRIVER DUMMY FEET

KAR99001-13

KAR99001-11



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

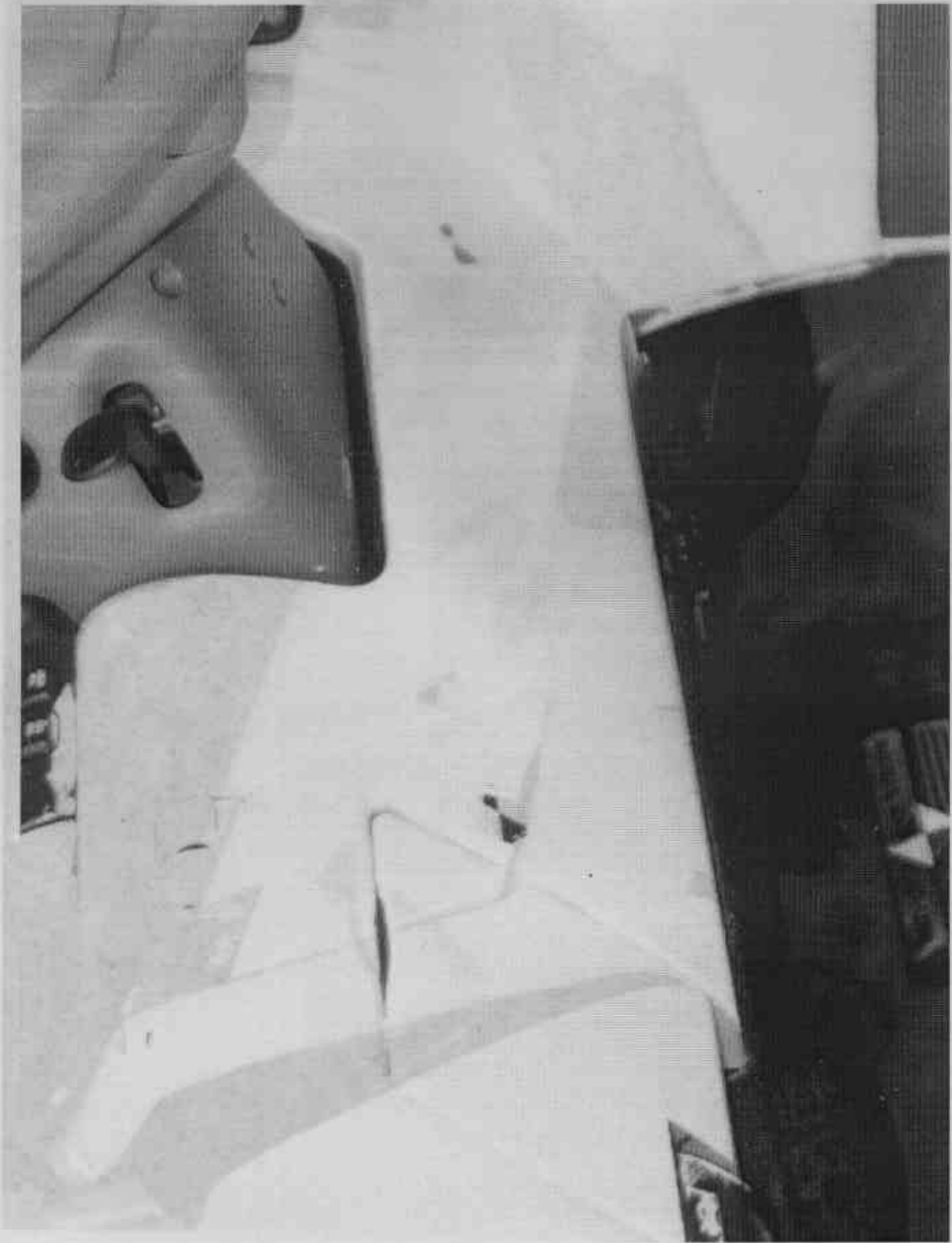


FIGURE A-35. PRETEST DRIVER KNEE BOLSTER

KAR0001-13

A-35

KAR99001-11



FIGURE A-36. POST TEST DRIVER KNEE BOLSTER

KAR99001-11

A-36

KAR99001-11



FIGURE A-37. PRETEST DRIVER SIDE FLOOR PAN

A-37

KAR99001-11



FIGURE A-38. POST TEST DRIVER SIDE FLOOR PAN

KAR99001-11

A-38

KAR99001-11

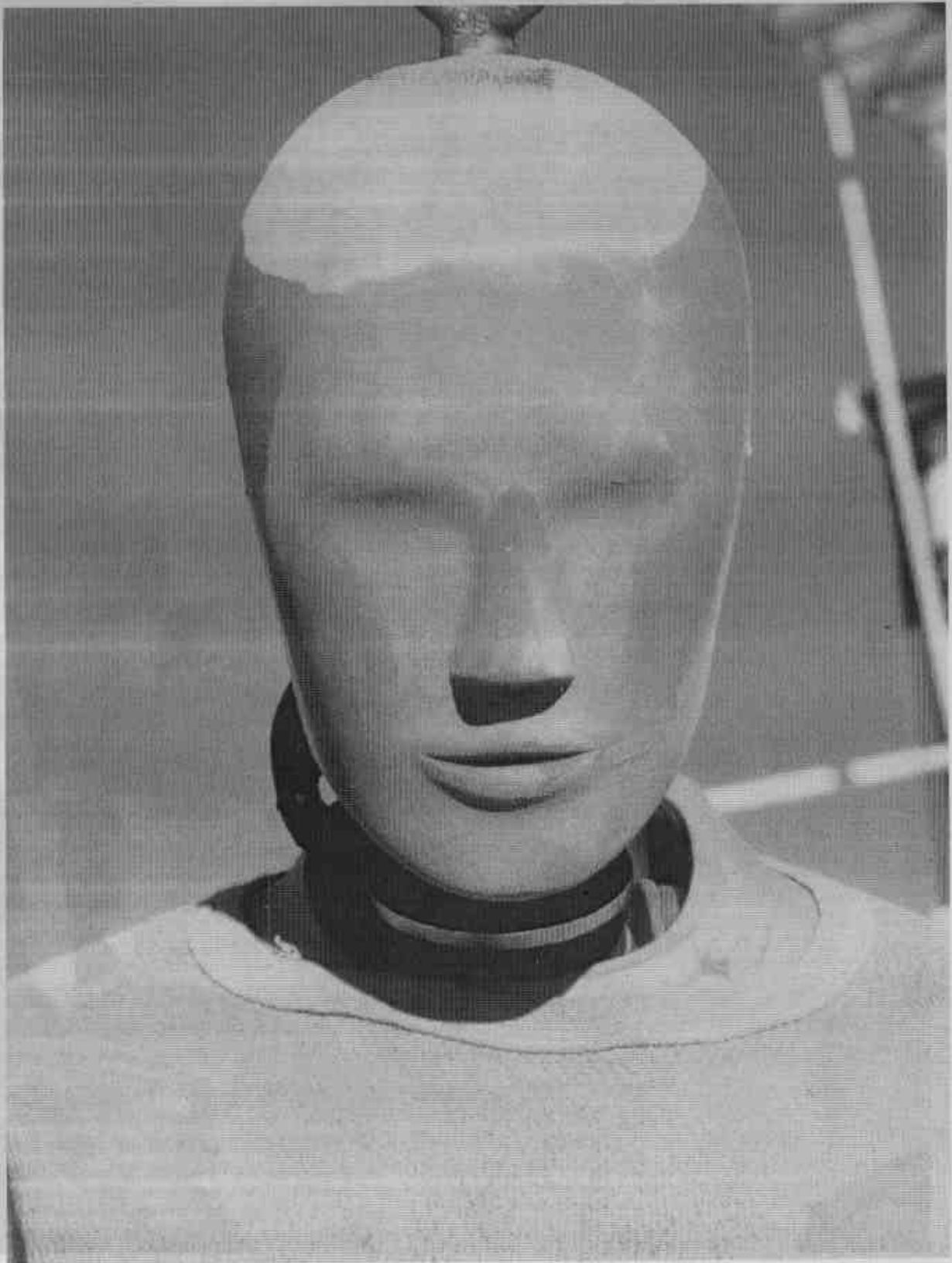


FIGURE A-39. POST TEST DRIVER HEAD

A-39

KAR99001-11

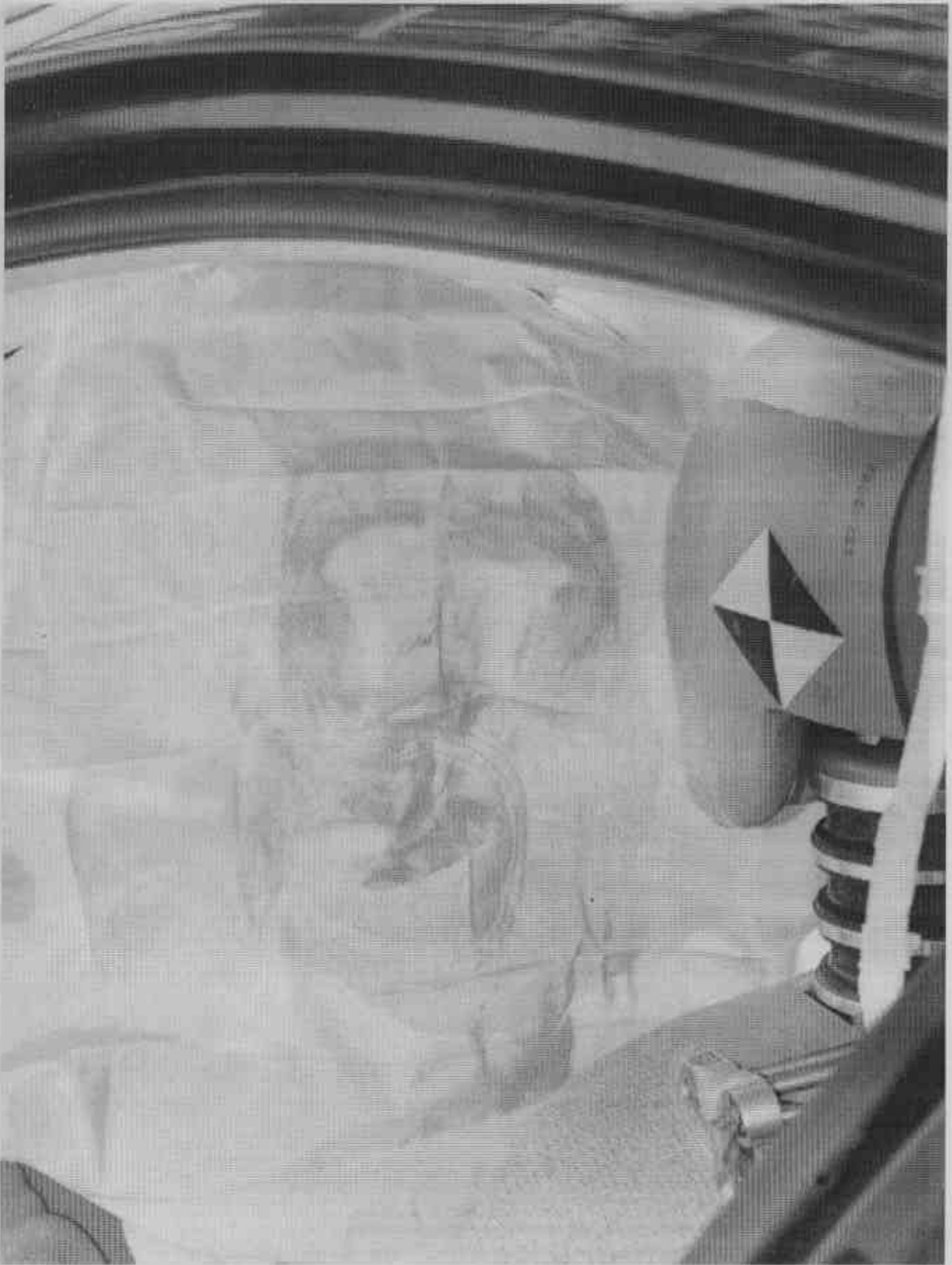


FIGURE A-40. POST TEST DRIVER DUMMY CONTACT

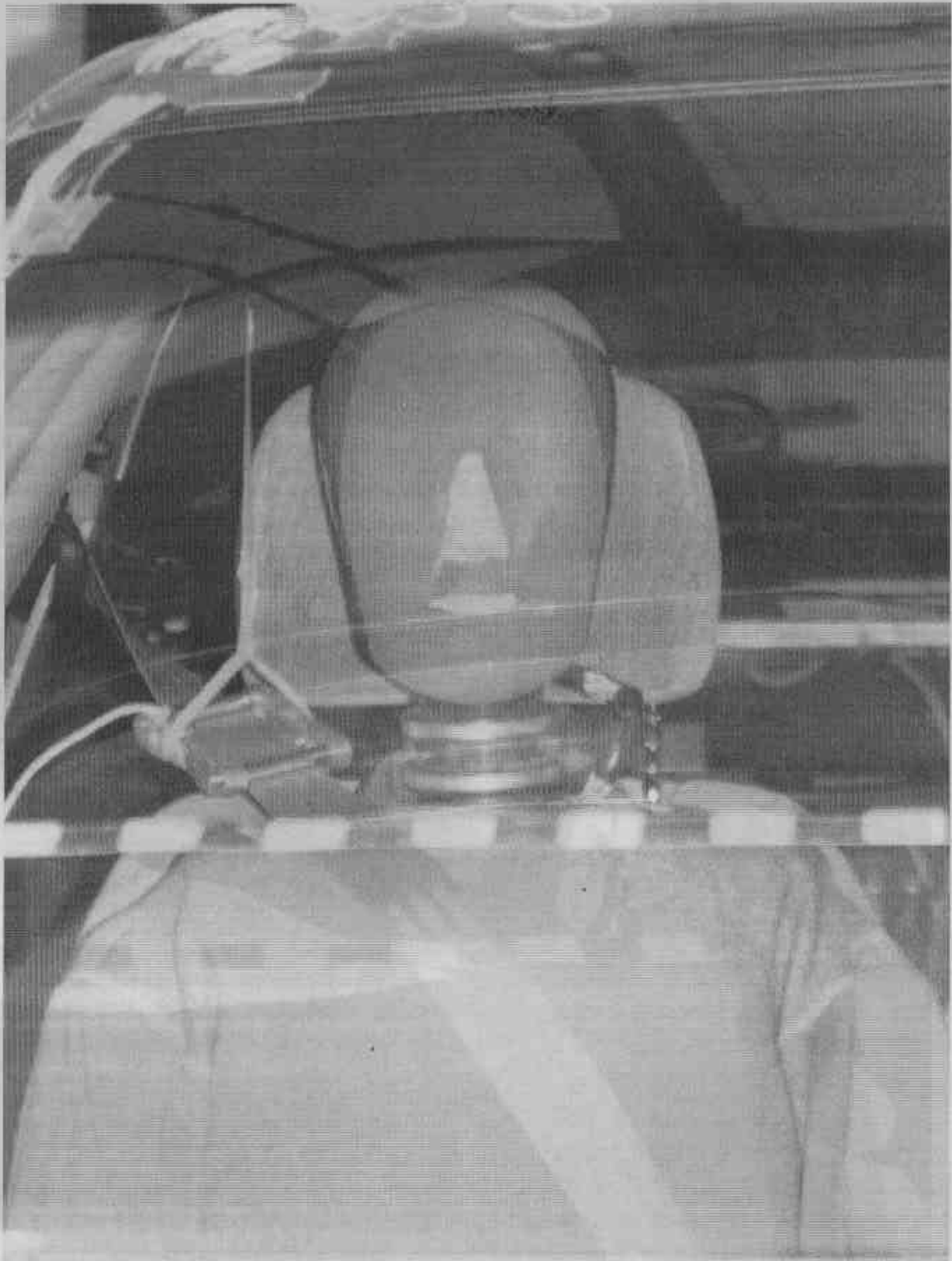


FIGURE A-41. PRETEST PASSENGER DUMMY (FRONT VIEW)

A-41

KAR99001-11



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

A-42

KAR99001-11



FIGURE A-43. PRETEST PASSENGER DUMMY (THRU WINDOW)

KAR99001-11

A-43

KAR99001-11



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

151-10000000

A-44

KAR99001-11



FIGURE A-45. PRETEST PASSENGER DUMMY (DOOR OPEN)

KAR99001-11

A-45

KAR99001-11



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

A-46

KAR99001-11 42



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

KAR9901-15

A-47

KAR99001-11



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



FIGURE A-49. PRETEST PASSENGER DUMMY FEET



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

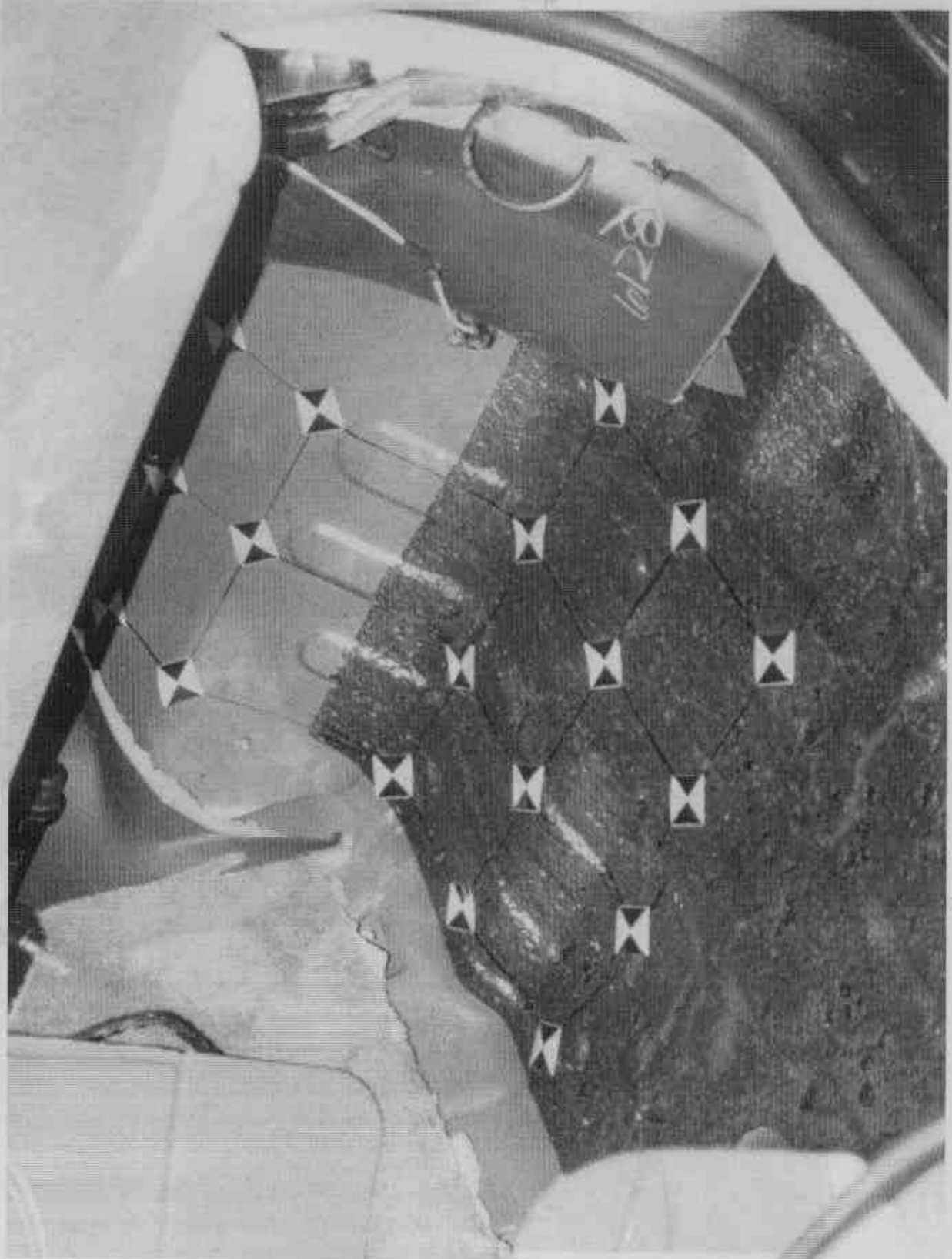


FIGURE A-51. PRETEST PASSENGER SIDE FLOOR PAN

A-51

KAR99001-11



FIGURE A-52. POST TEST PASSENGER SIDE FLOOR PAN

A-52

KAR99001-11

KAR99001-11

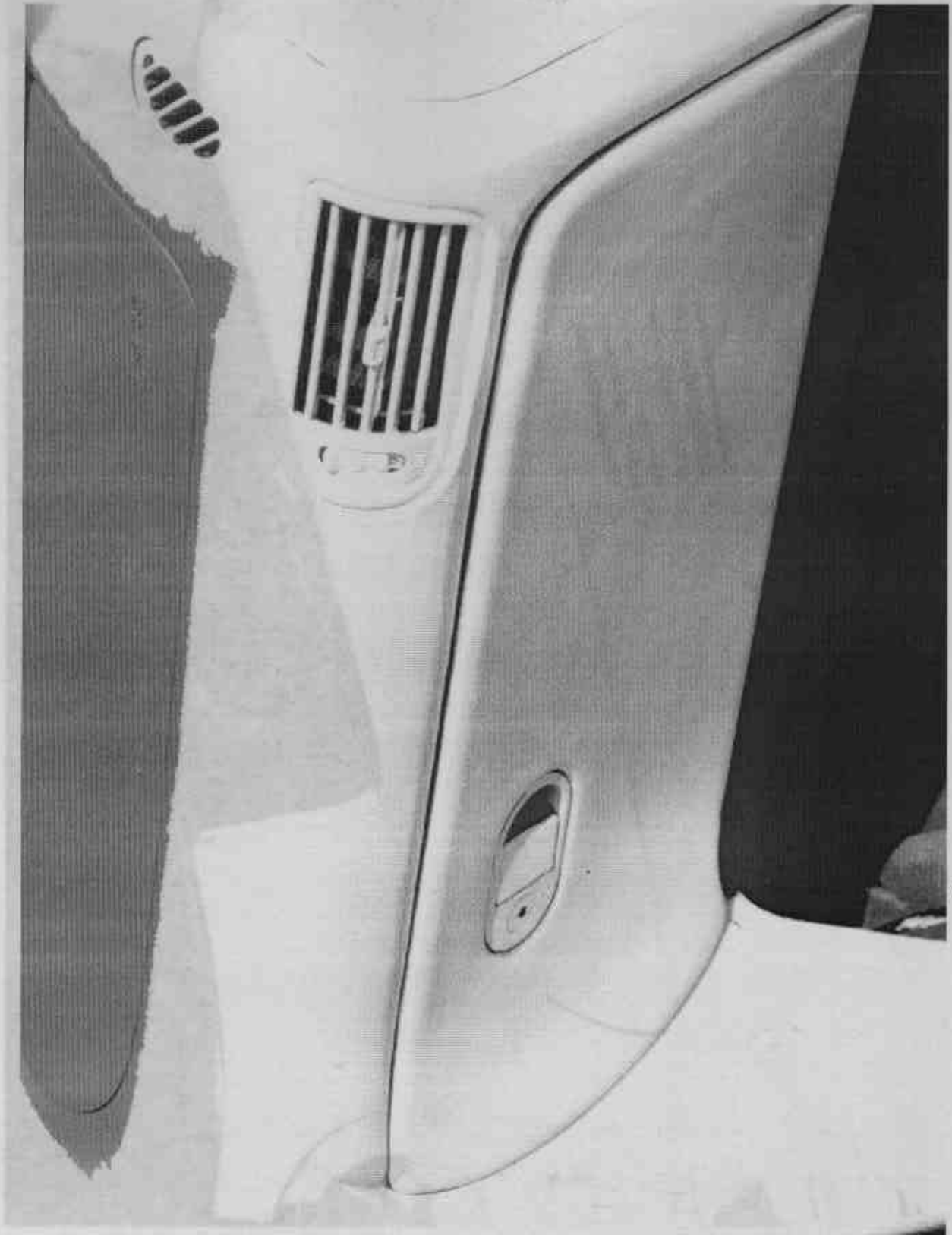


FIGURE A-53. PRETEST PASSENGER SIDE KNEE BOLSTER

A-53

KAR99001-11

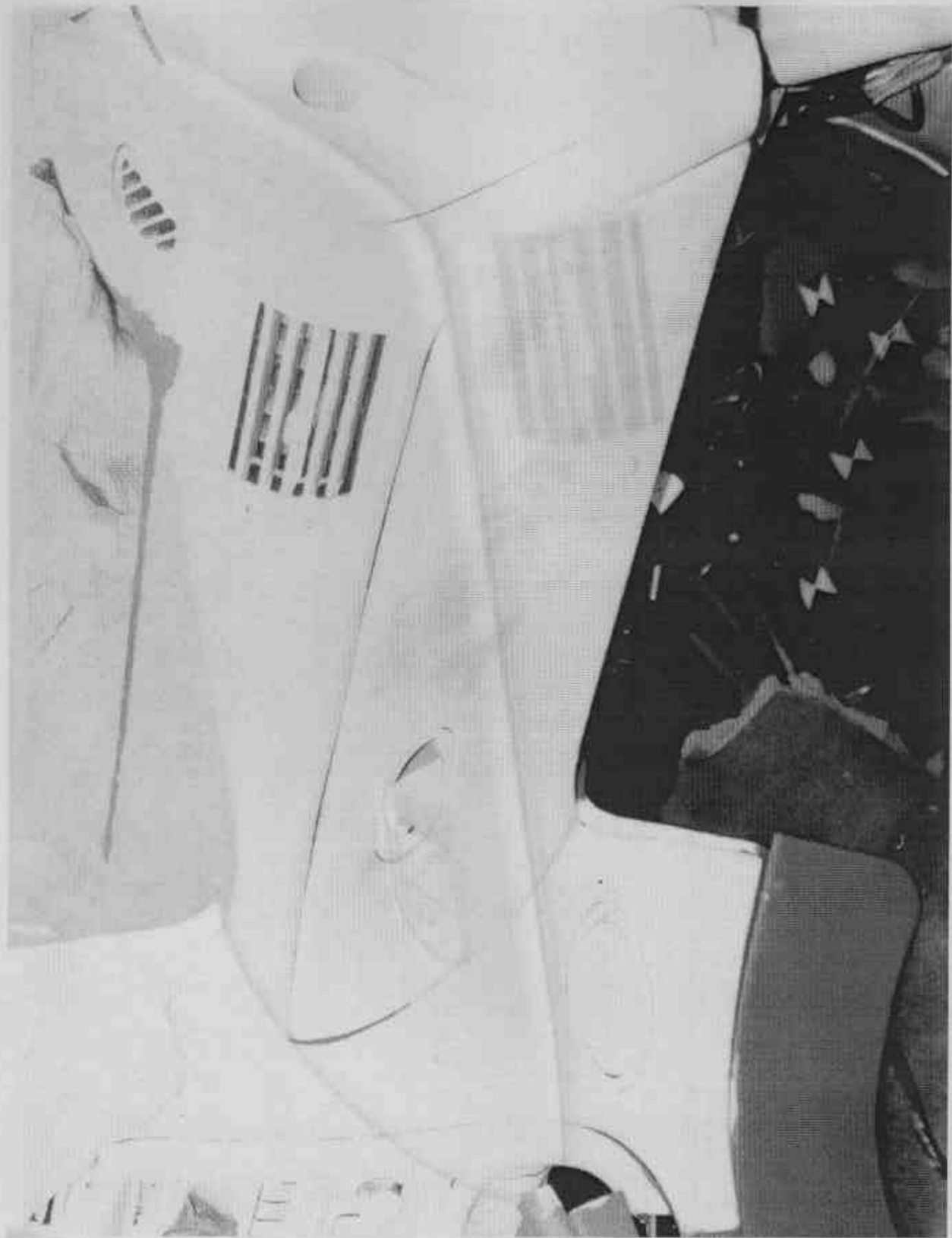


FIGURE A-54. POST TEST PASSENGER SIDE KNEE BOLSTER AND DUMMY CONTACT

KAR99001-11

A-54

KAR99001-11

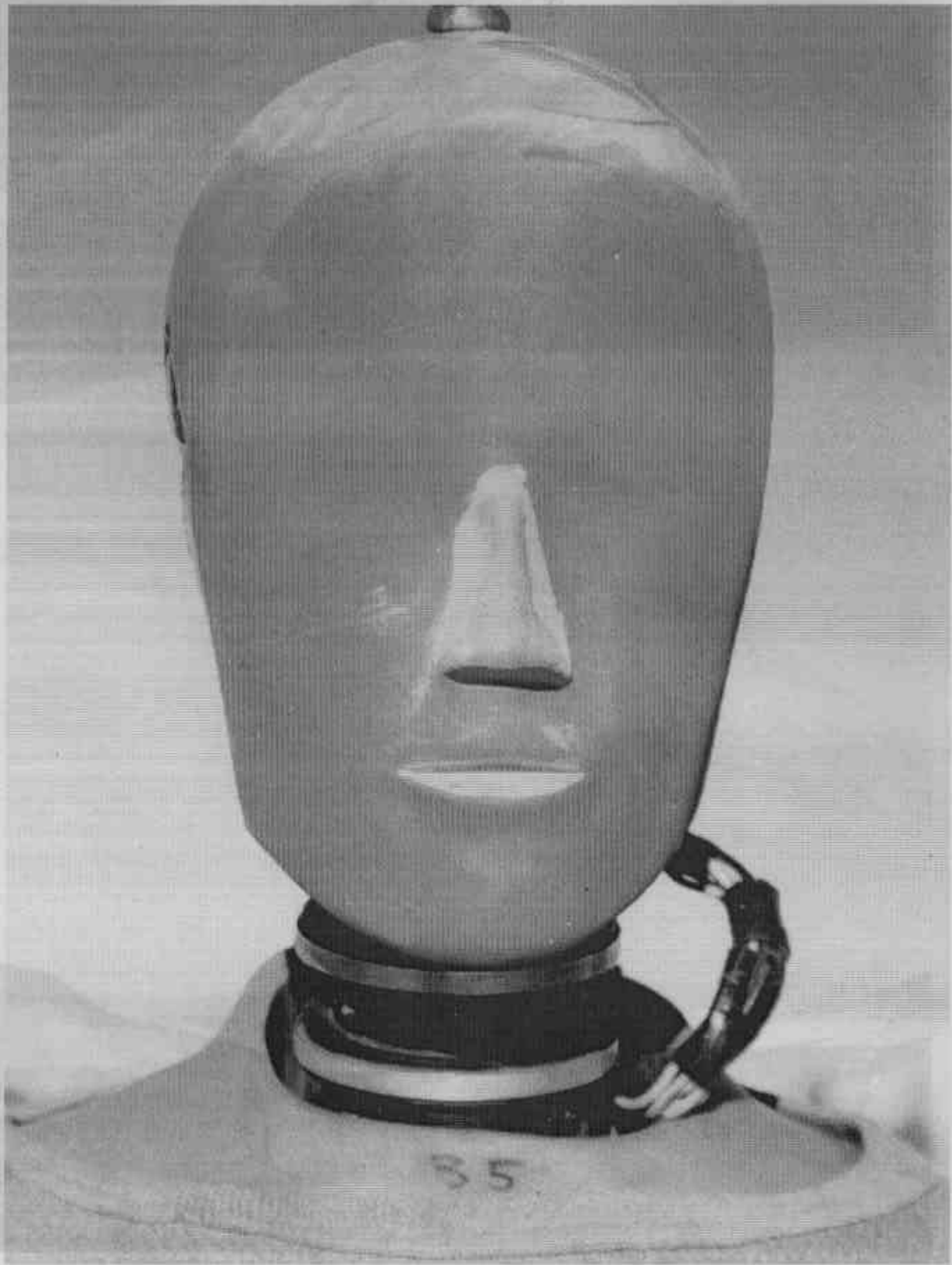


FIGURE A-55. POST TEST PASSENGER HEAD

A-55

KAR99001-11

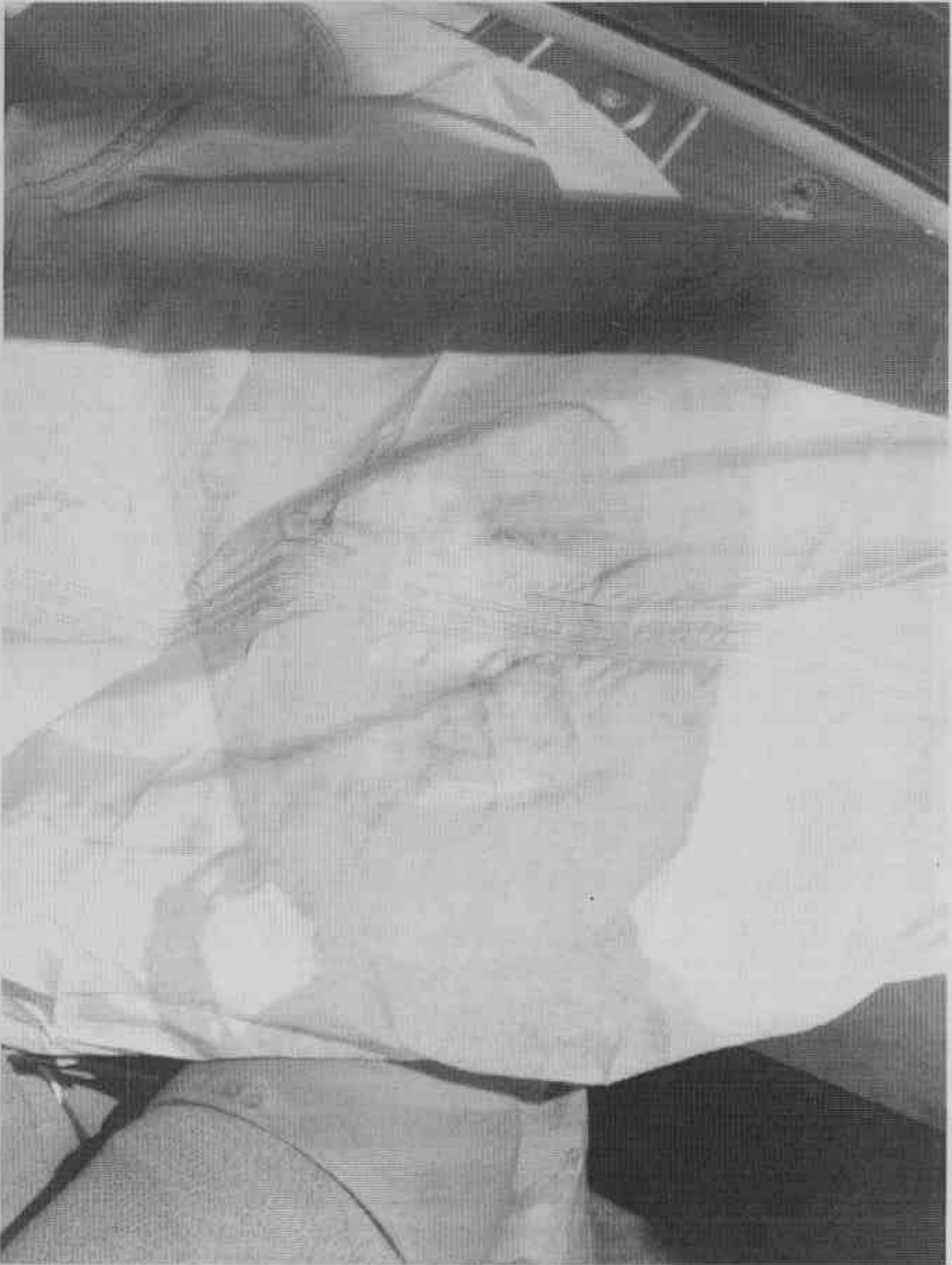


FIGURE A-56. POST TEST PASSENGER DUMMY CONTACT

31-100000A3

A-56

KAR99001-11

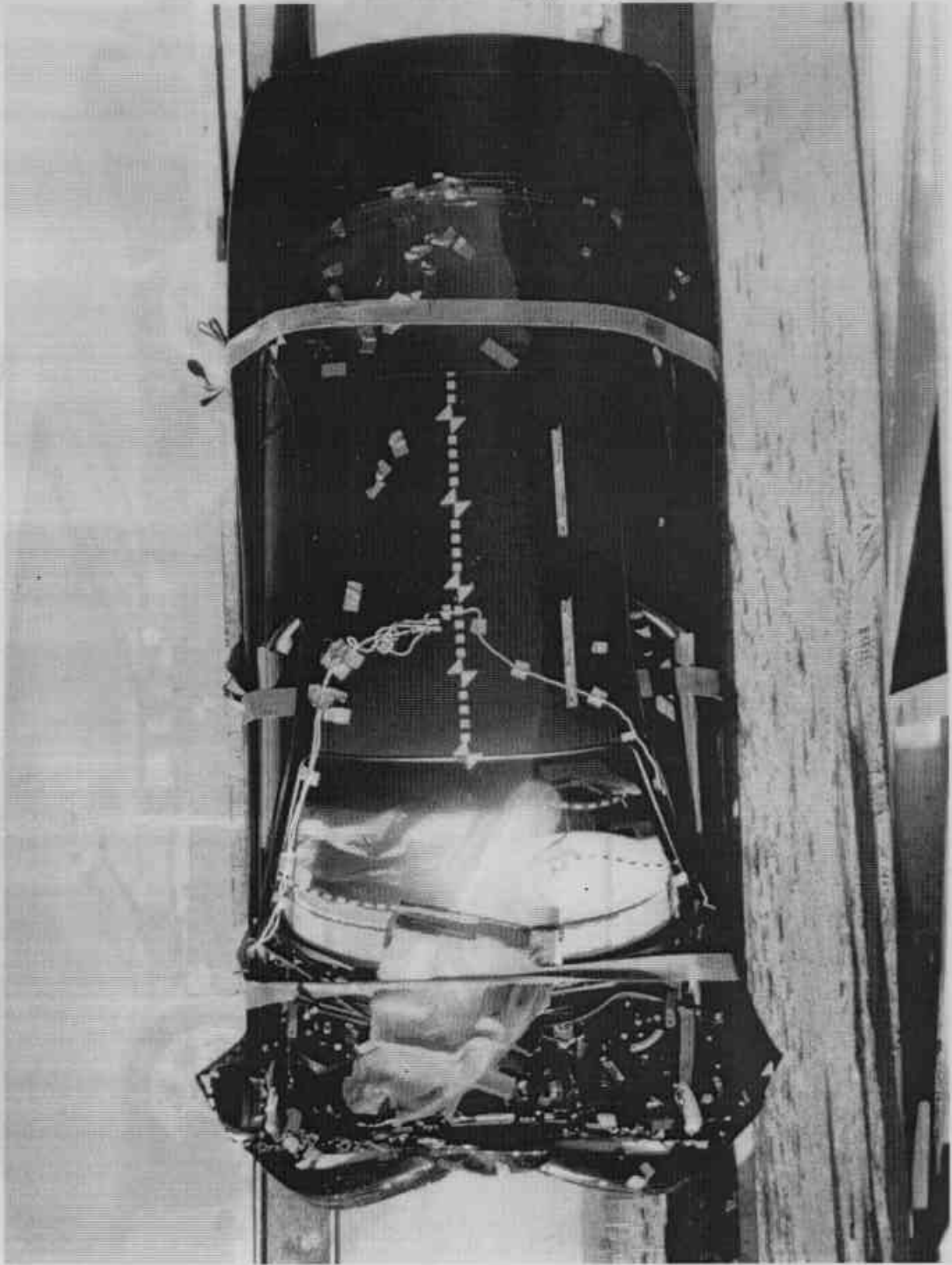


FIGURE A-57: VEHICLE ON ROLLOVER

A-57

KAR99001-11

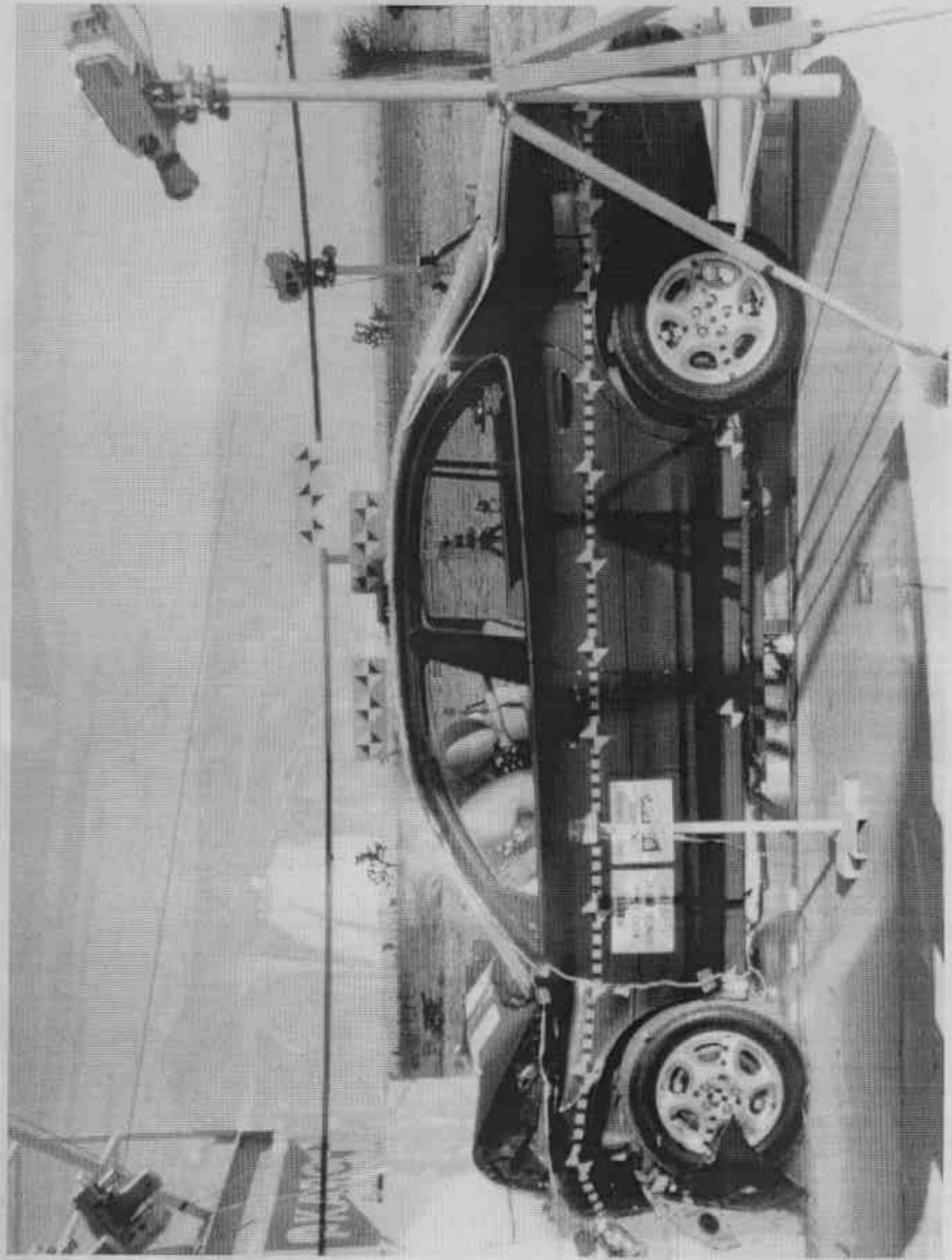


FIGURE A-58. VEHICLE DURING IMPACT

KAR99001-11

A-58

KAR99001-11

**APPENDIX B**  
**DUMMY AND VEHICLE RESPONSE DATA TRACES**

KAR99001-11

LIST OF DATA PLOTS

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B-2	Driver Head Primary X Velocity	B-2
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
B-15	Driver Neck Force Z	B-15
B-16	Driver Neck Force Resultant	B-16
B-17	Driver Neck Moment X	B-17
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
B-28	Driver Chest Redundant X Velocity	B-28
B-29	Driver Chest Redundant X Displacement	B-29
B-30	Driver Chest Redundant Y	B-30
B-31	Driver Chest Redundant Z	B-31
B-32	Driver Chest Redundant Resultant	B-32
B-33	Driver Chest Displacement X	B-33
B-34	Driver Pelvis X	B-34
B-35	Driver Pelvis X Velocity	B-35

LIST OF DATA PLOTS...(Continued)

Data Plot		Page
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B-37	Driver Pelvis Y	B-37
B-38	Driver Pelvis Z	B-38
B-39	Driver Pelvis Resultant	B-39
B-40	Driver Left Femur Force	B-40
B-41	Driver Right Femur Force	B-41
B-42	Driver Left Upper Tibia Moment X	B-42
B-43	Driver Left Upper Tibia Moment Y	B-43
B-44	Driver Right Upper Tibia Moment X	B-44
B-45	Driver Right Upper Tibia Moment Y	B-45
B-46	Driver Left Lower Tibia Moment X	B-46
B-47	Driver Left Lower Tibia Moment Y	B-47
B-48	Driver Left Lower Tibia Force Z	B-48
B-49	Driver Right Lower Tibia Moment X	B-49
B-50	Driver Right Lower Tibia Moment Y	B-50
B-51	Driver Right Lower Tibia Force Z	B-51
B-52	Driver Left Foot Aft X	B-52
B-53	Driver Left Foot Aft Z	B-53
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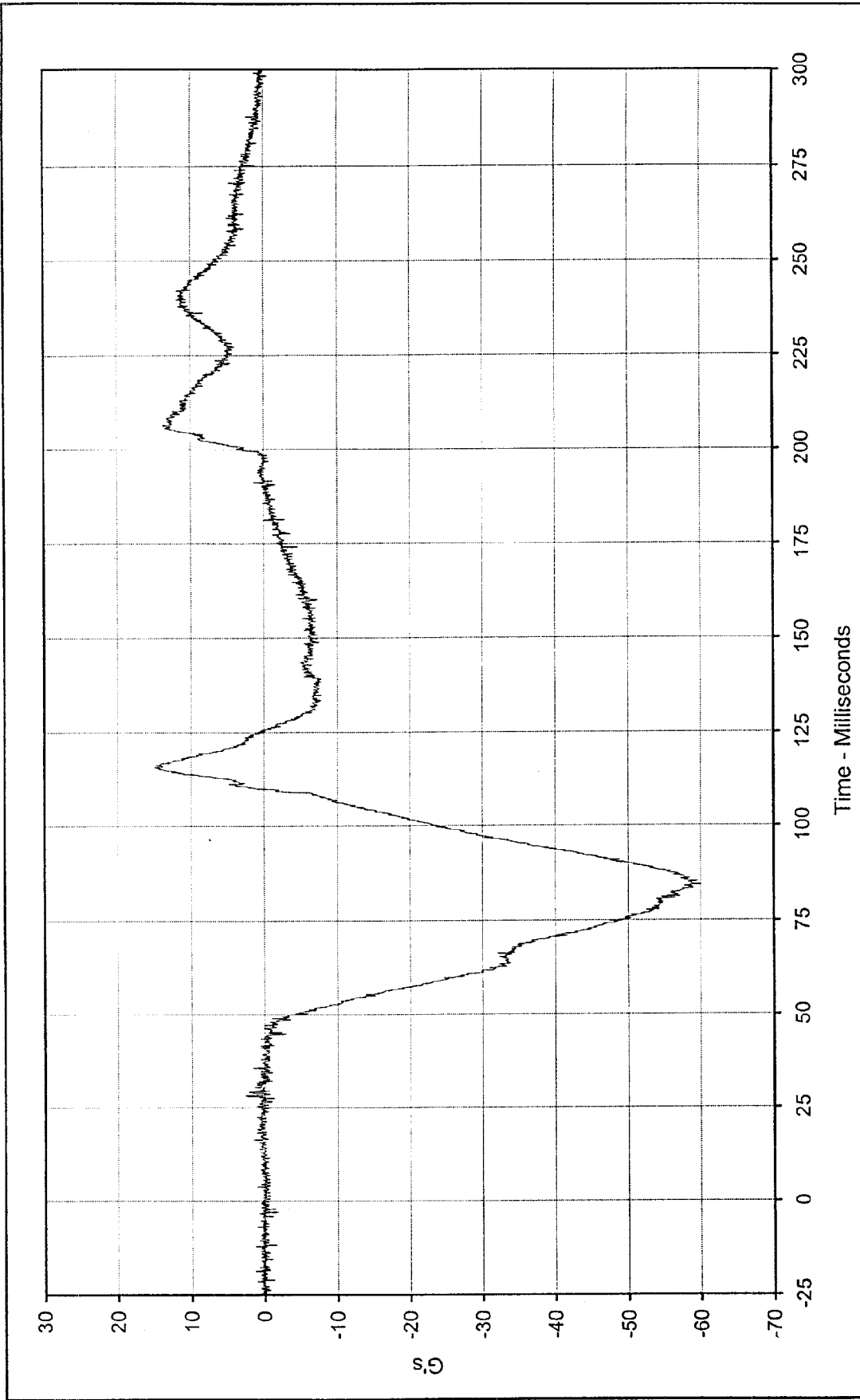
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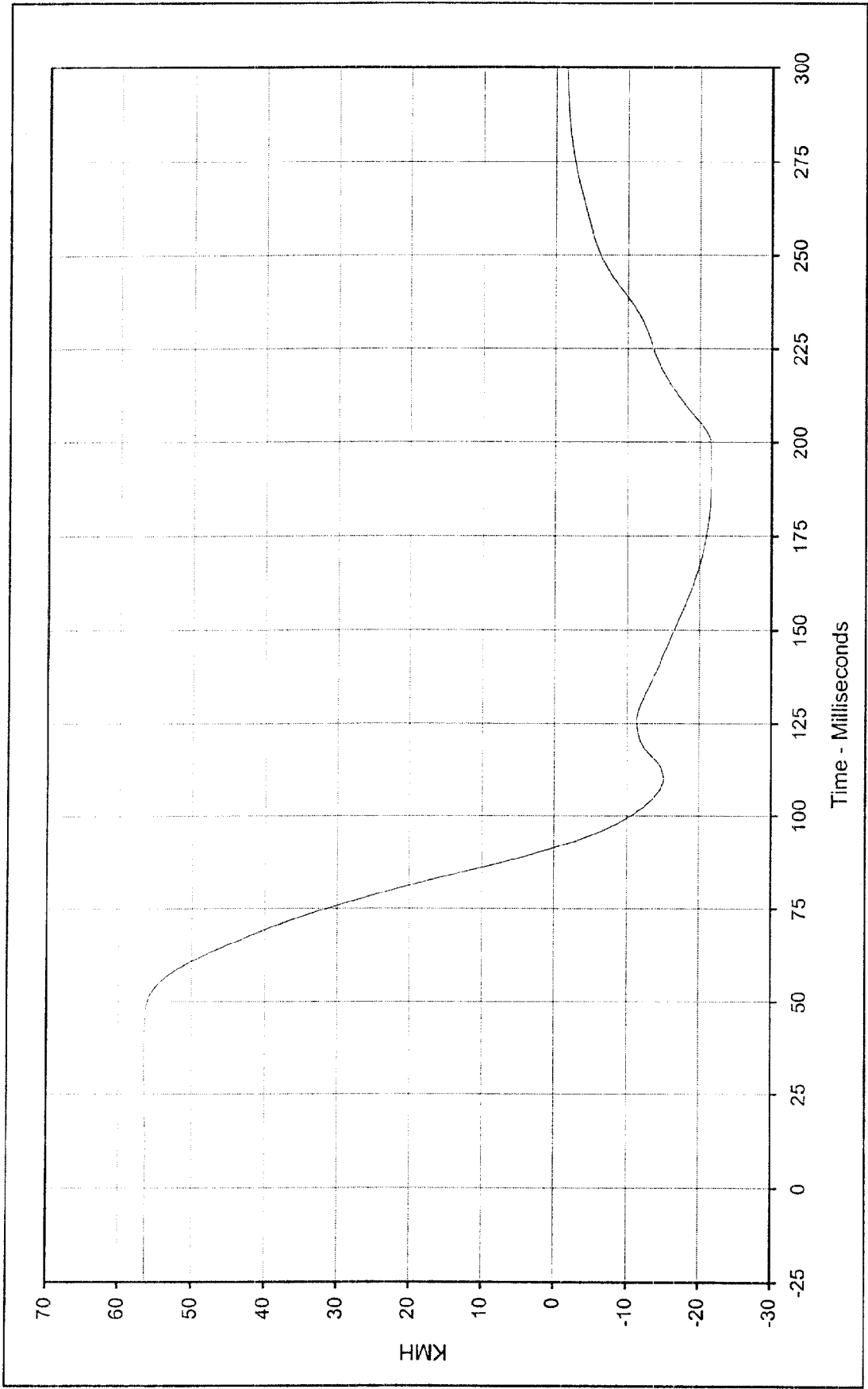
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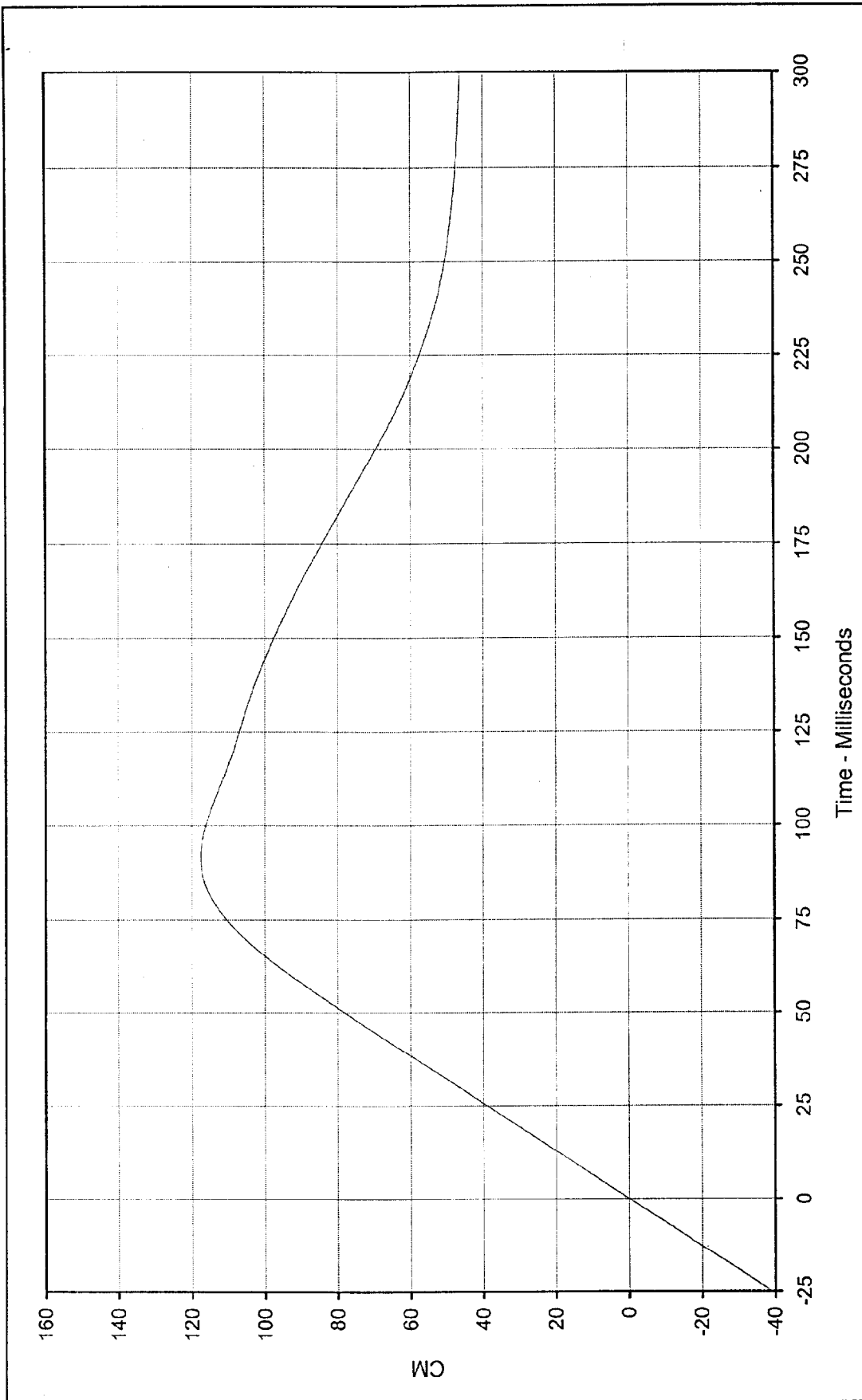
Curve Description: Driver Head Primary X      Test Program: 1999 NHTSA 35 mph NCAP    No.: MX0113  
 Maximum Value: 15.0    at 115.5    Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -60.1    at 84.3    Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: FIL-001





Curve Description: Driver Head Primary X Velocity      Testing Program 1999 NHTSA 35 mph NCAP      No.: MX0113  
 Maximum Value: 56.5      at 32.0      Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -21.6      at 191.7      Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: IN1-001

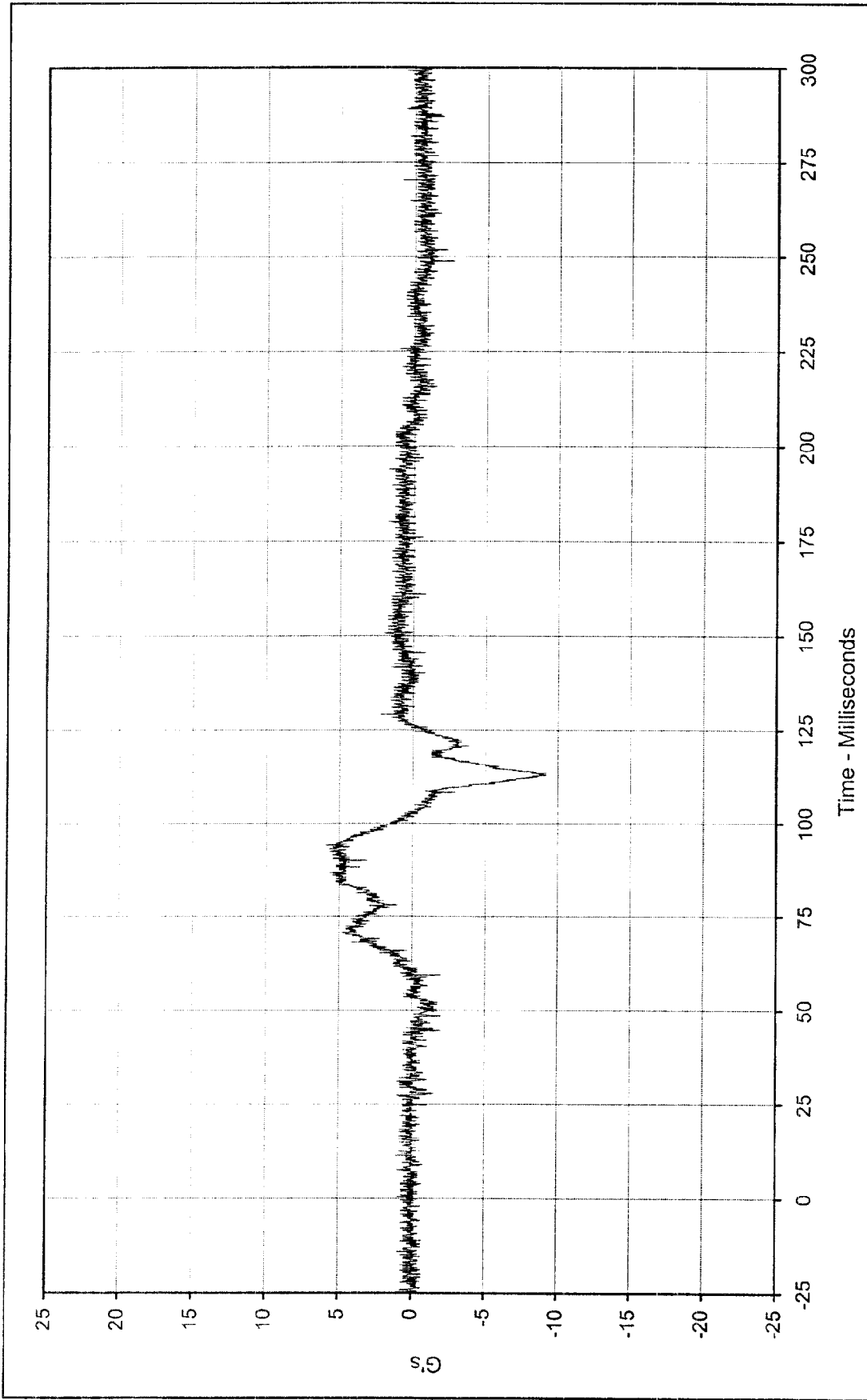




Curve Description: Driver Head Primary X Displ. Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 117.6 at 91.3 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: 0.0 at 0.0 Milliseconds

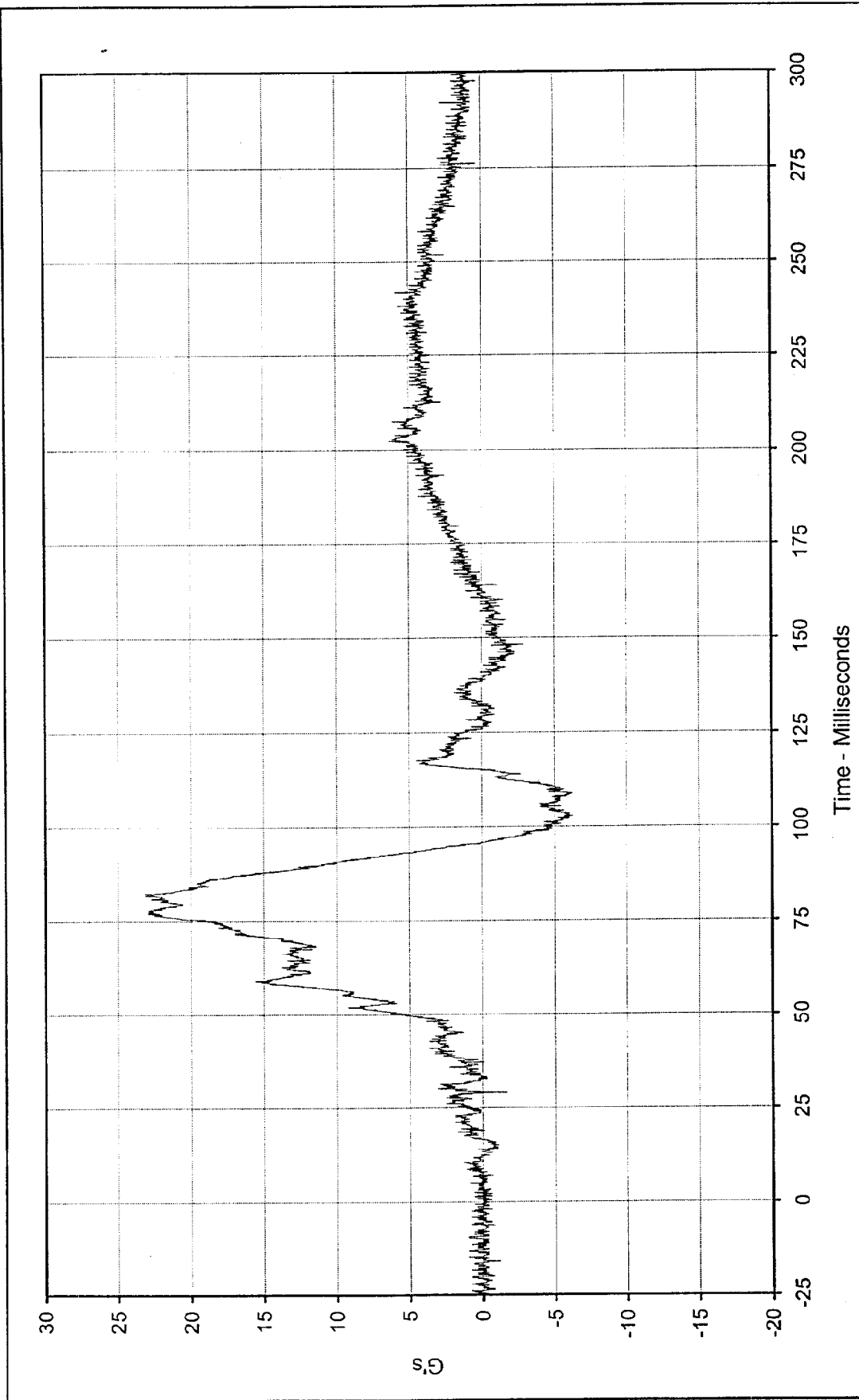


SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: IN2-001



Curve Description: Driver Head Primary Y      Test Program: 1999 NHTSA 35 mph NCAP    No.: MX0113  
 Maximum Value: 5.9    at 94.0    Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -9.2    at 112.8    Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: FIL-002

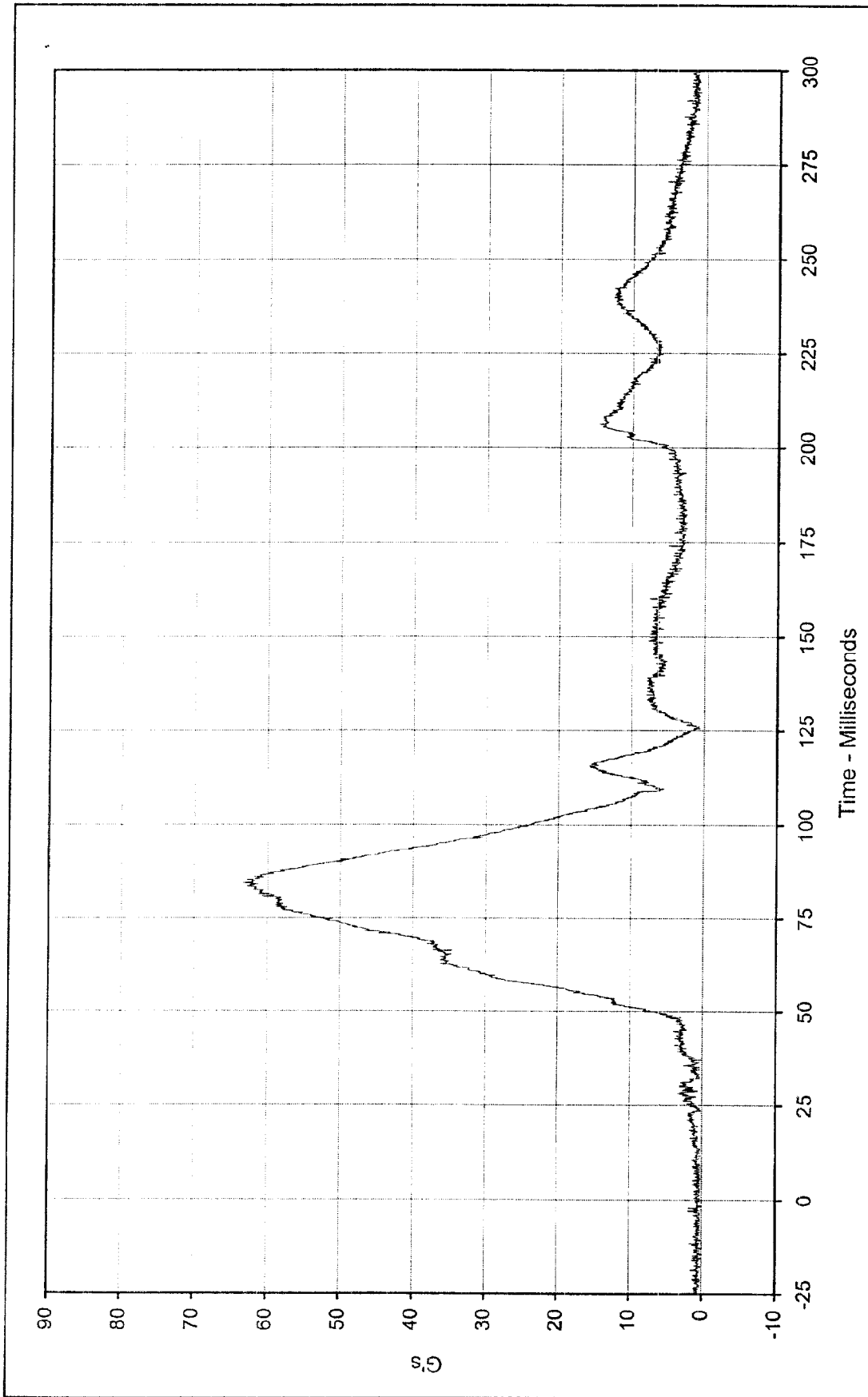




Curve Description: Driver Head Primary Z      Test Program: 1999 NHTSA 35 mph NCAP    No.: MX0113  
 Maximum Value: 23.1    at 81.9    Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -6.3    at 102.6    Milliseconds

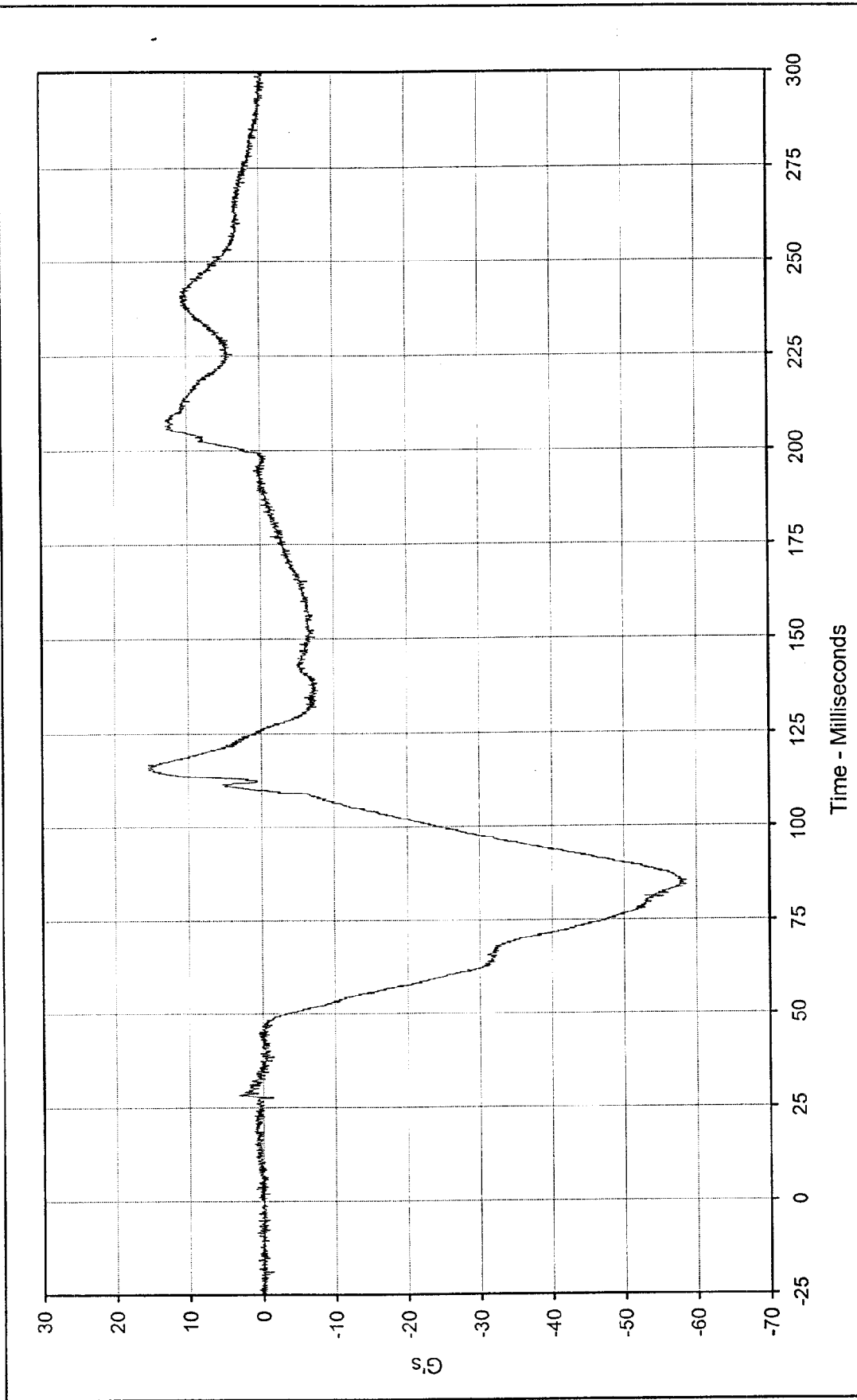


SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: FIL-003



Curve Description: Driver Head Resultant Primary      Test Program: 1999 NHTSA 35 mph NCAP      No.: MX0113  
 Maximum Value: 63.3      at 84.3      Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: 0.1      at 5.5      Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: RES-001

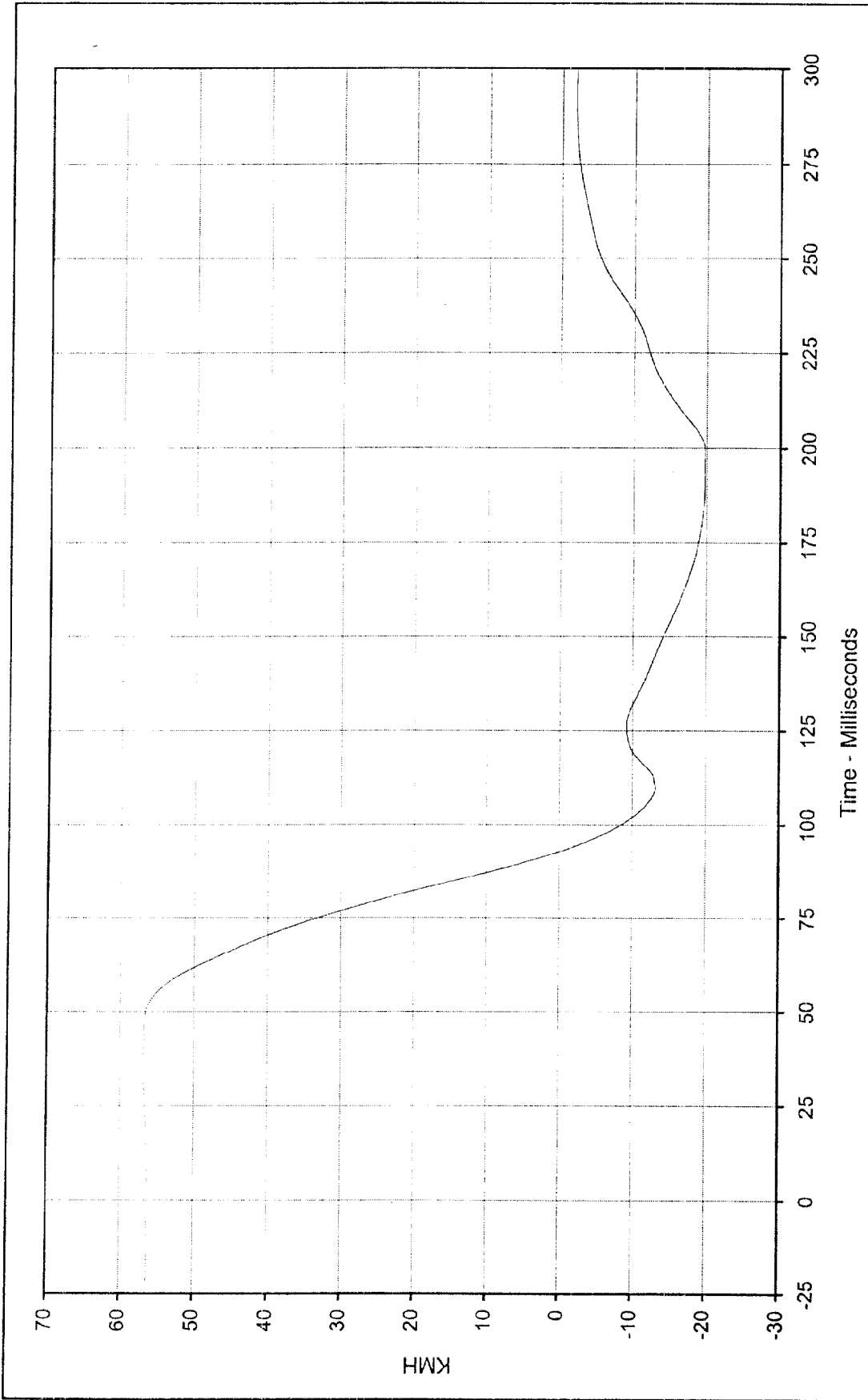




Curve Description: Driver Head Redundant X  
 Maximum Value: 15.5 at 115.6 Milliseconds  
 Minimum Value: -58.7 at 84.1 Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: FIL-004

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan





Curve Description: Driver Head Redundant X Velocity      Testing Program 1999 NHTSA 35 mph NCAP    No.: MX0113

Maximum Value: 56.8    at 35.0    Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

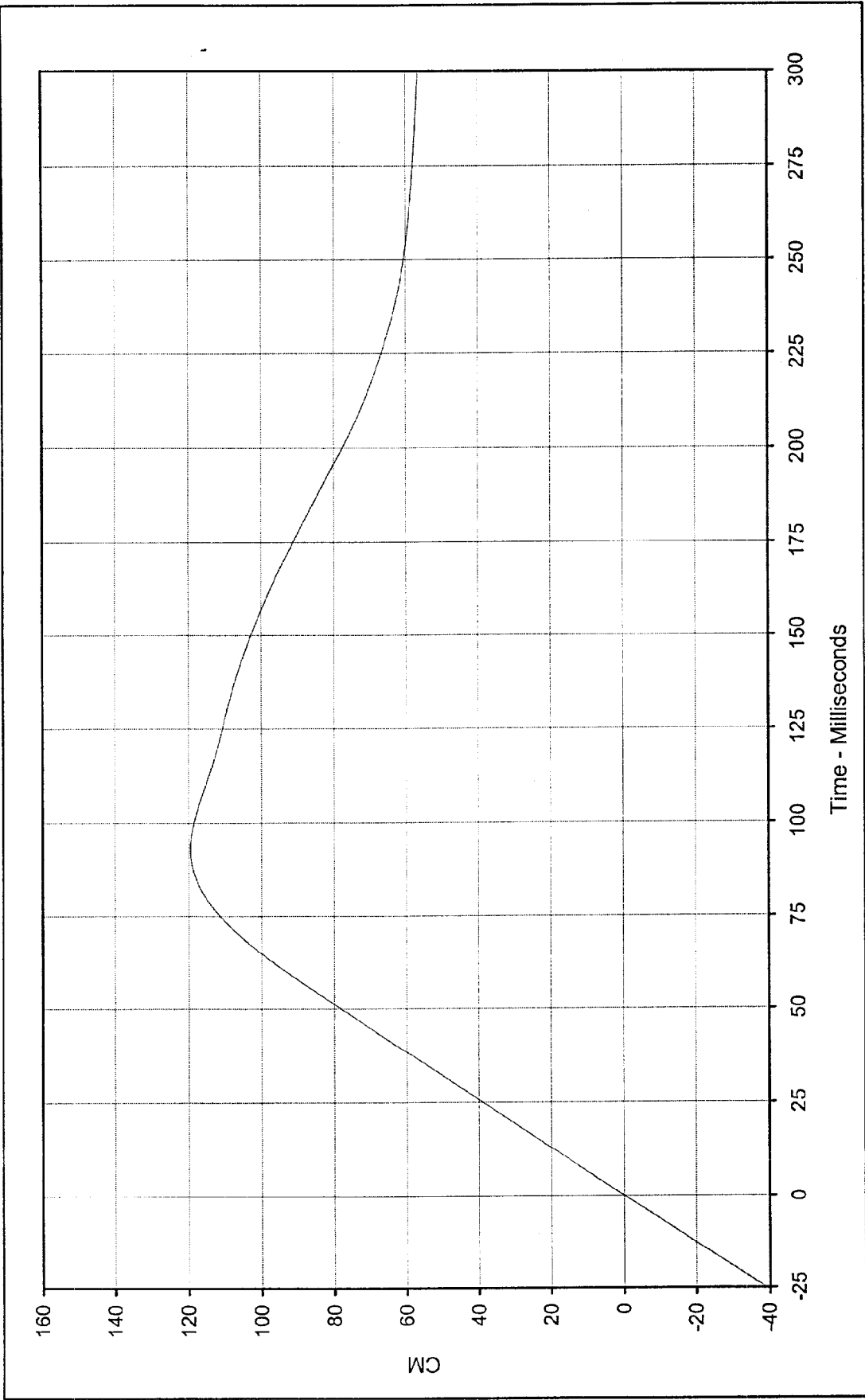
Minimum Value: -19.8    at 198.9    Milliseconds

SAE Filter Class: 180

Date of Test: 1/22/99

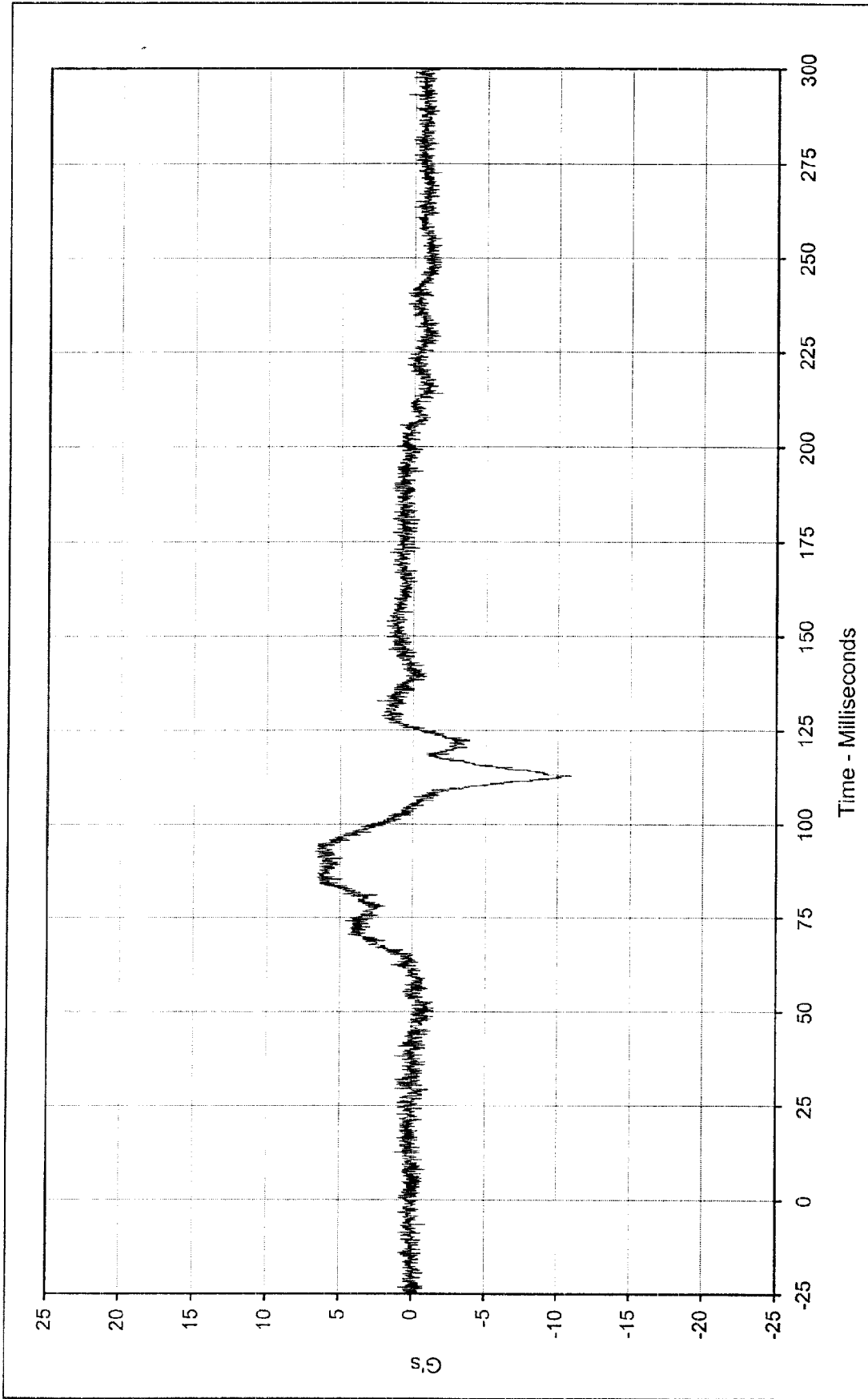
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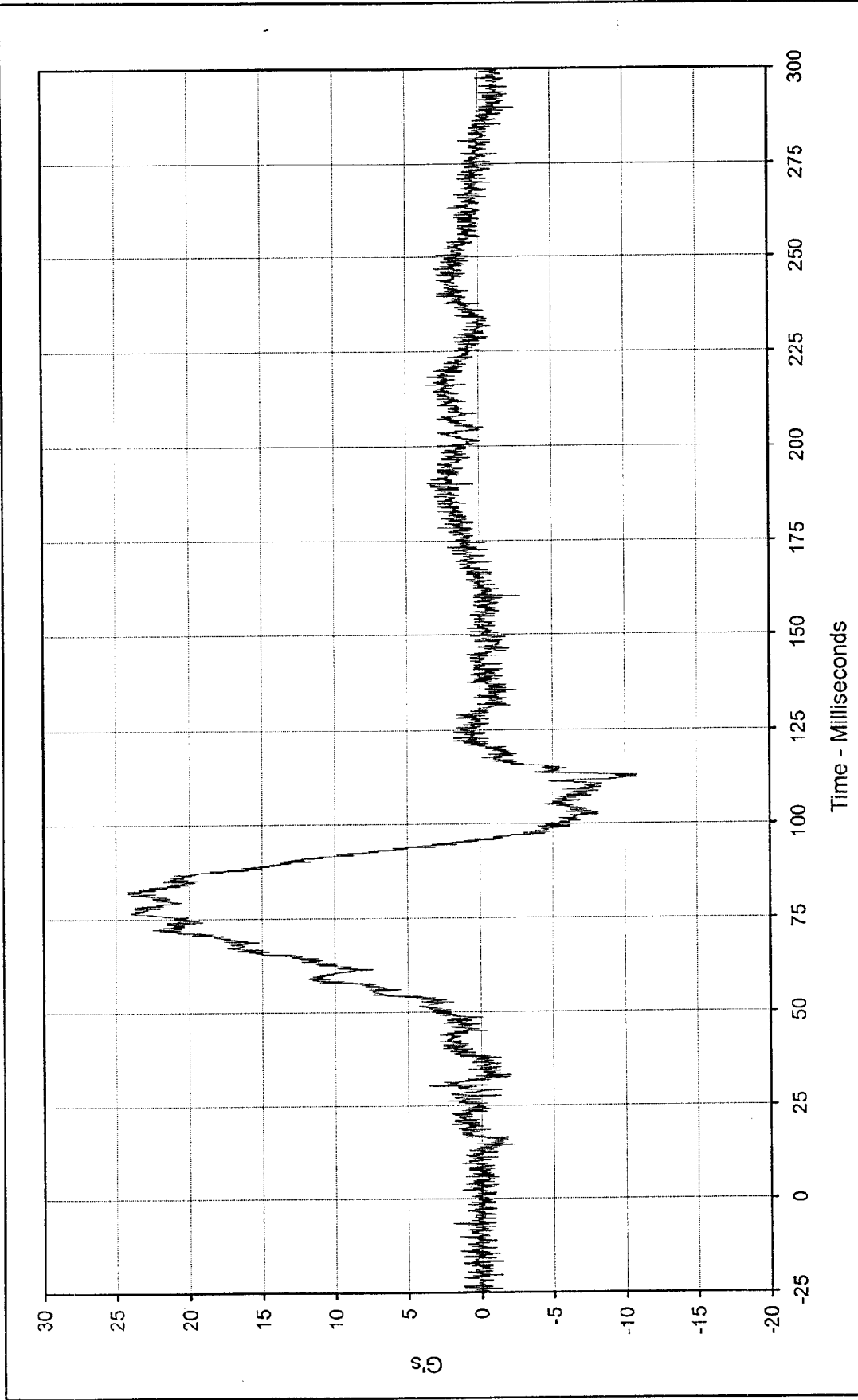
Curve Description: Driver Head Redundant X Displ.      Test Program: 1999 NHTSA 35 mph NCAP    No.: MX0113  
 Maximum Value: 119.4    at 92.7    Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -0.1    at 0.0    Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: IN2-004





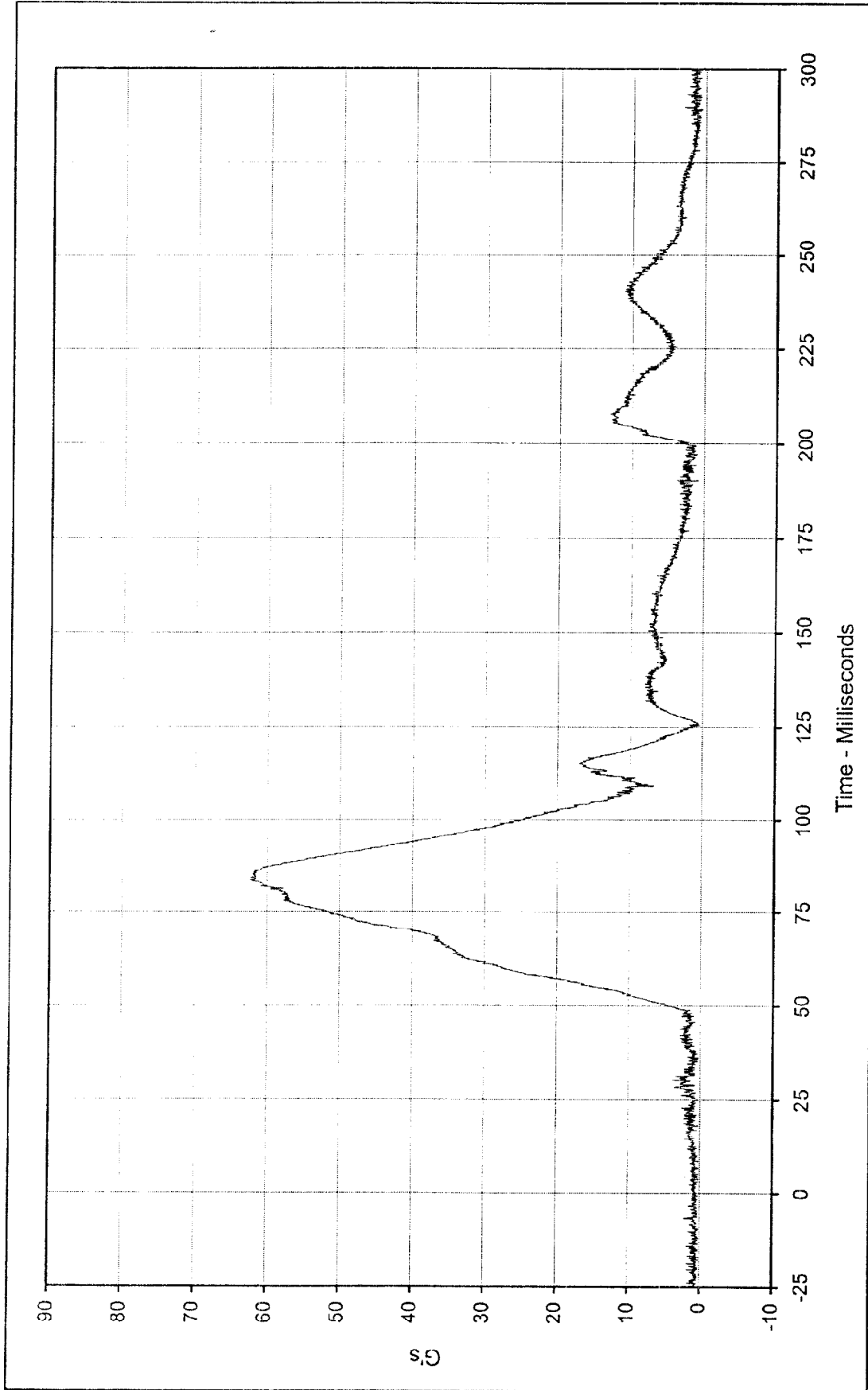
Curve Description: Driver Head Redundant Y      Test Program: 1999 NHTSA 35 mph NCAP    No.: MX0113  
 Maximum Value: 6.7    at 92.8    Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -10.9    at 112.7    Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: FIL-005





Curve Description: Driver Head Redundant Z Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 24.2 at 81.8 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -10.8 at 112.2 Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: FIL-006

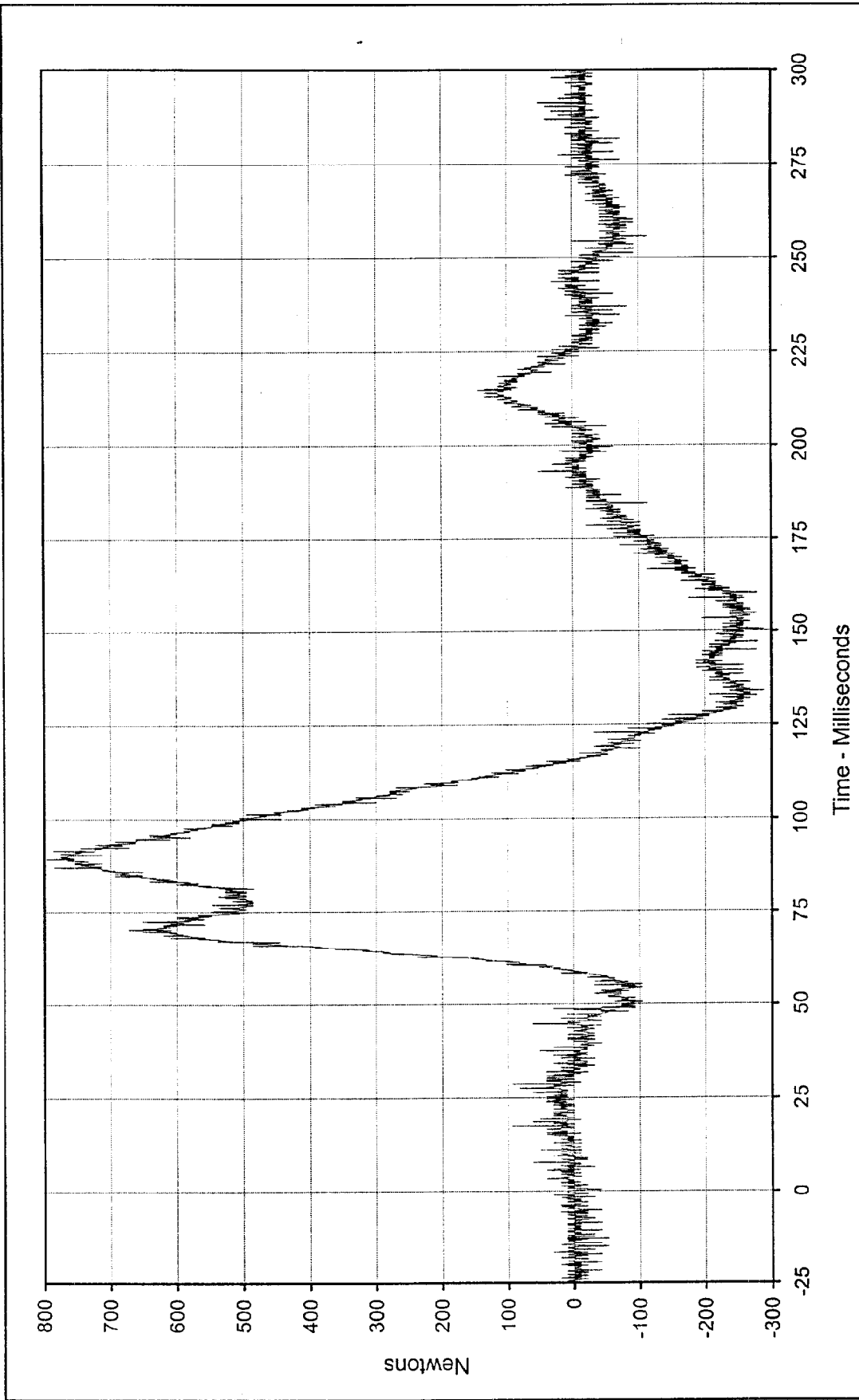




Curve Description: Driver Head Resultant Redundant  
 Maximum Value: 62.4 at 83.3 Milliseconds  
 Minimum Value: 0.1 at 8.6 Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: RES-004

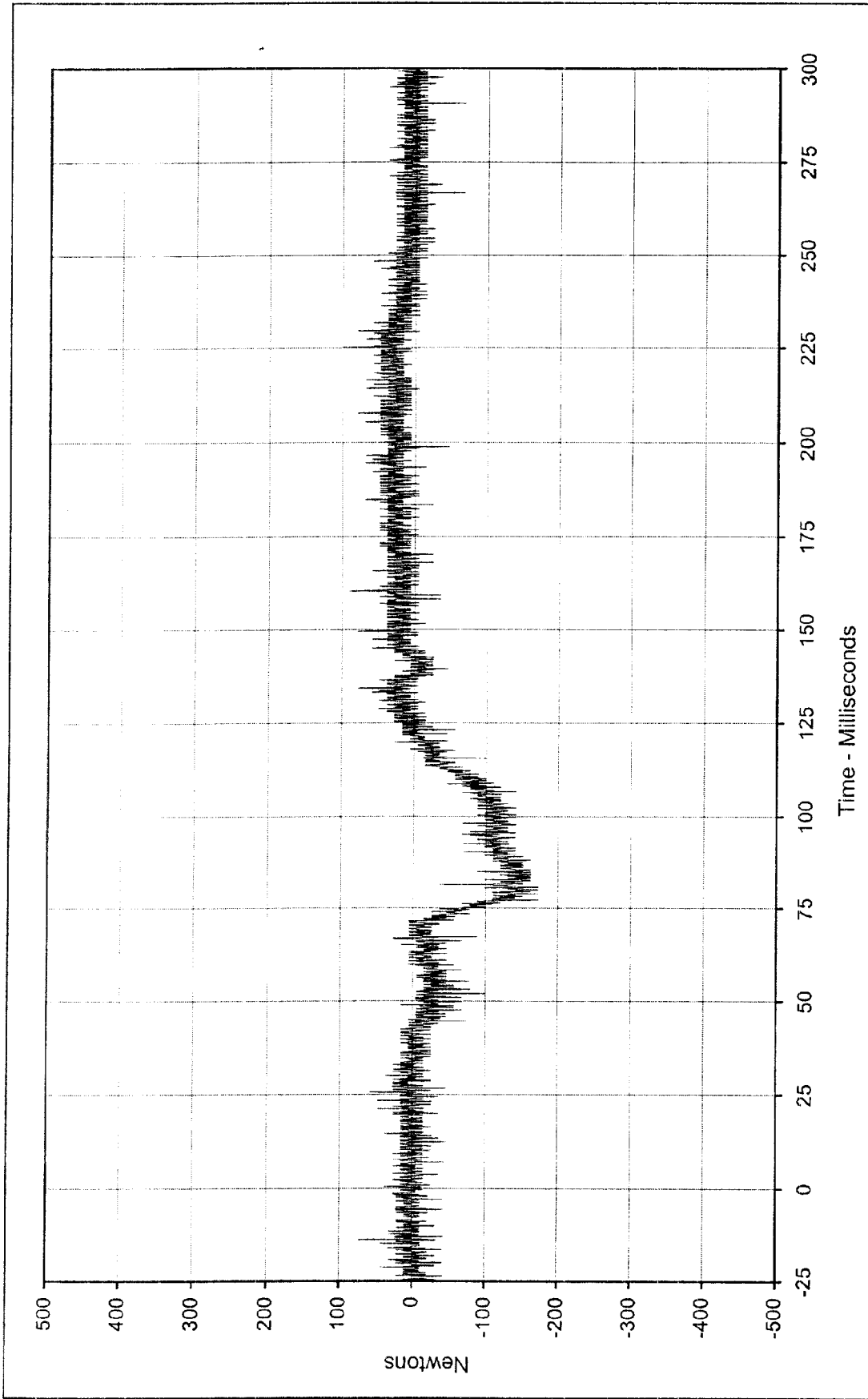
Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan





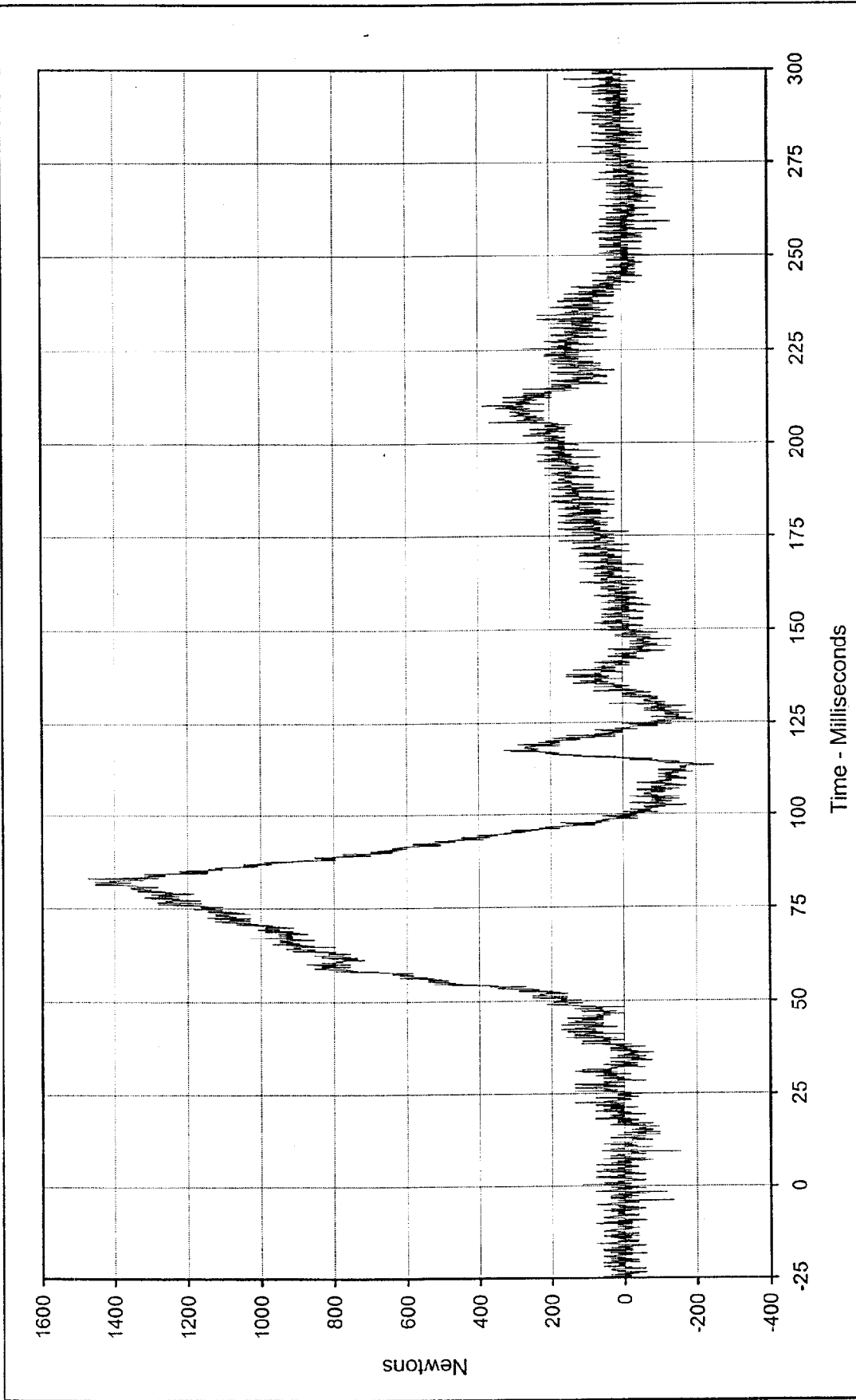
Curve Description: Driver Neck Force X Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 795.7 at 89.1 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -289.3 at 133.9 Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: FIL-007





Curve Description: Driver Neck Force Y      Test Program: 1999 NHTSA 35 mph NCAP    No.: MX0113  
 Maximum Value: 100.0    at 225.2    Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -173.0    at 77.3    Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: FIL-008

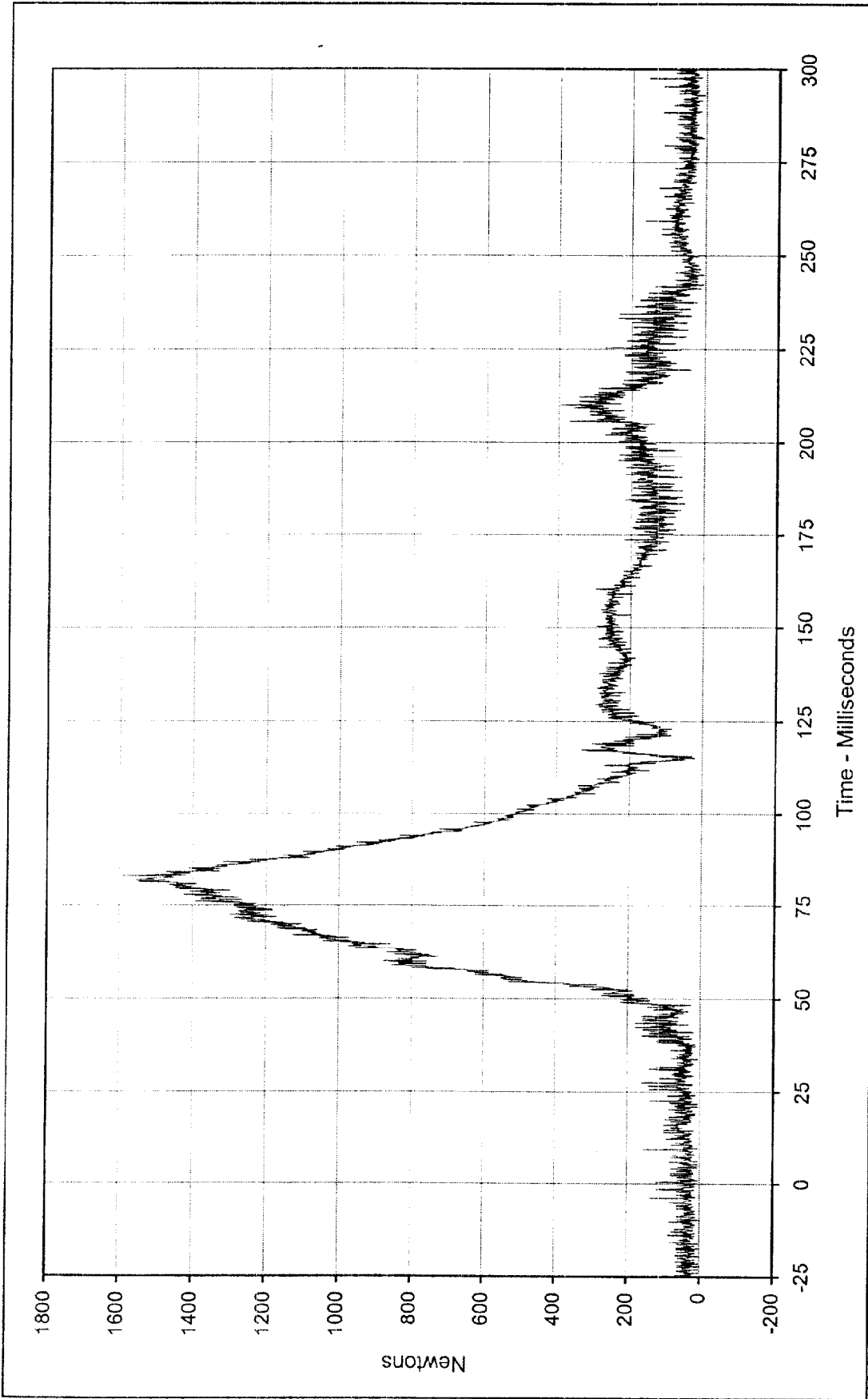




Curve Description: Driver Neck Force Z  
 Maximum Value: 1472.8 at 83.1 Milliseconds  
 Minimum Value: -251.9 at 113.2 Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: FIL-009

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

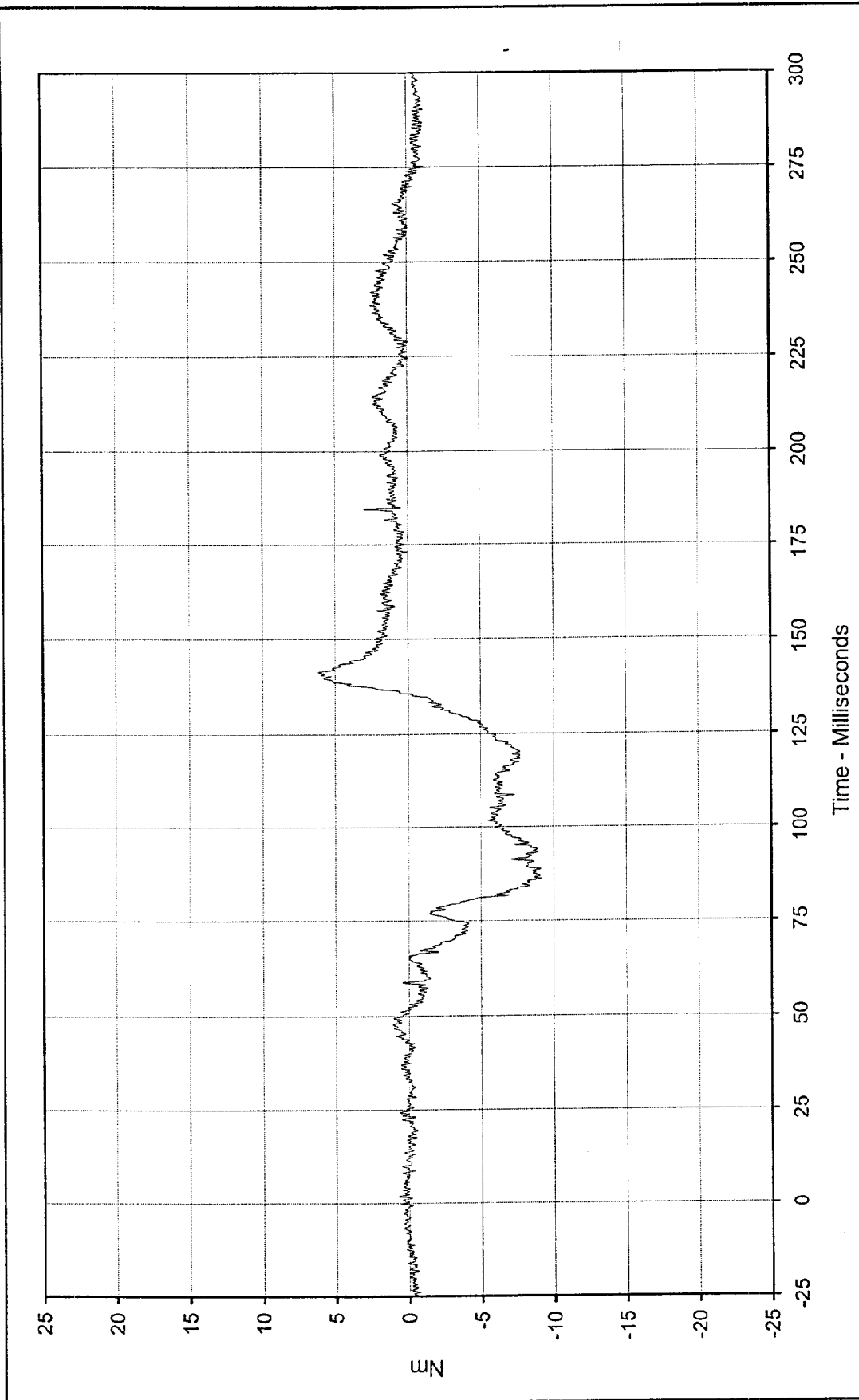




Curve Description: Driver Neck Force Resultant  
 Maximum Value: 1590.7 at 83.1 Milliseconds  
 Minimum Value: 5.0 at 0.9 Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: RES-007

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

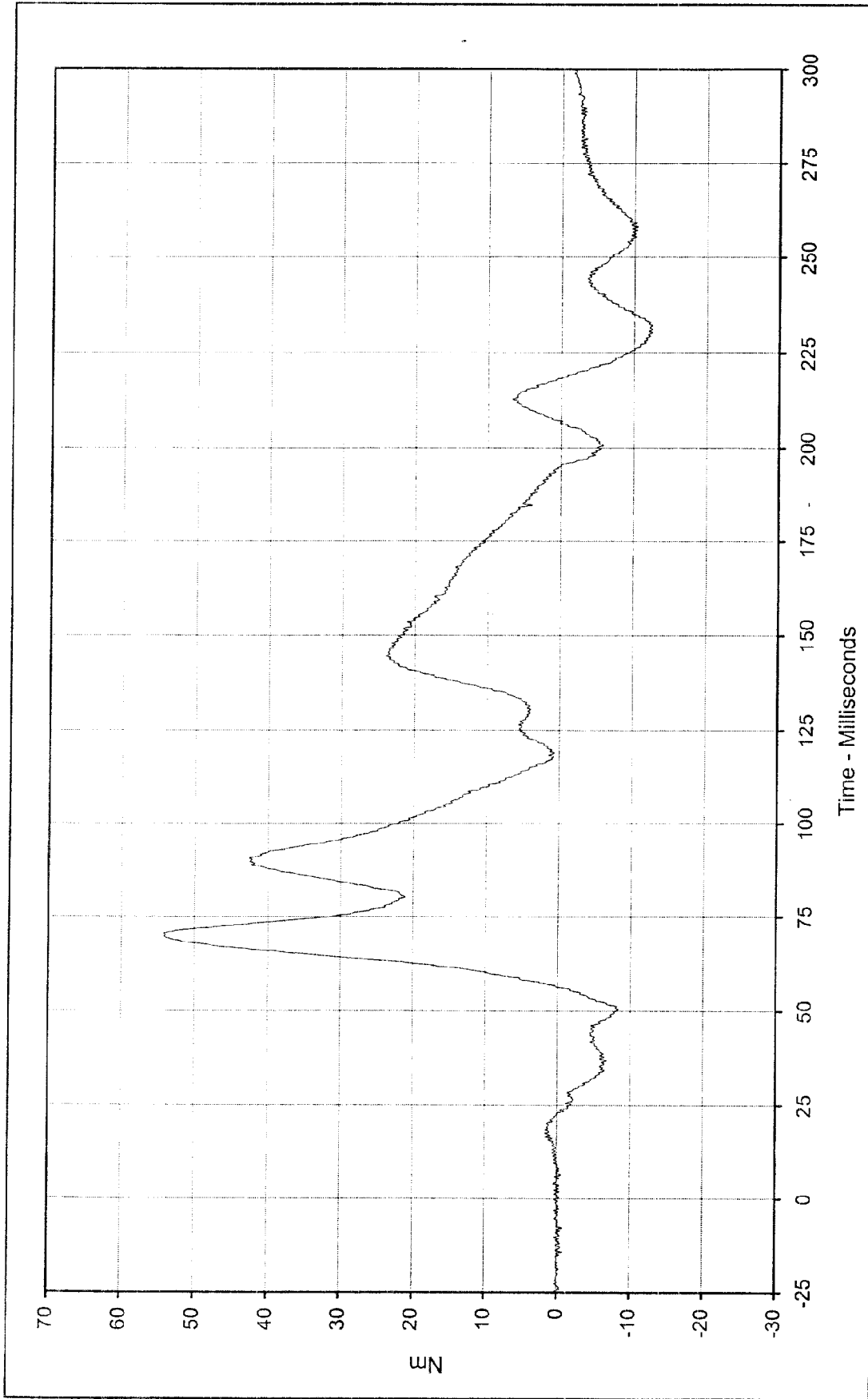




Curve Description: Driver Neck Moment X Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 6.2 at 141.2 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -9.2 at 86.0 Milliseconds



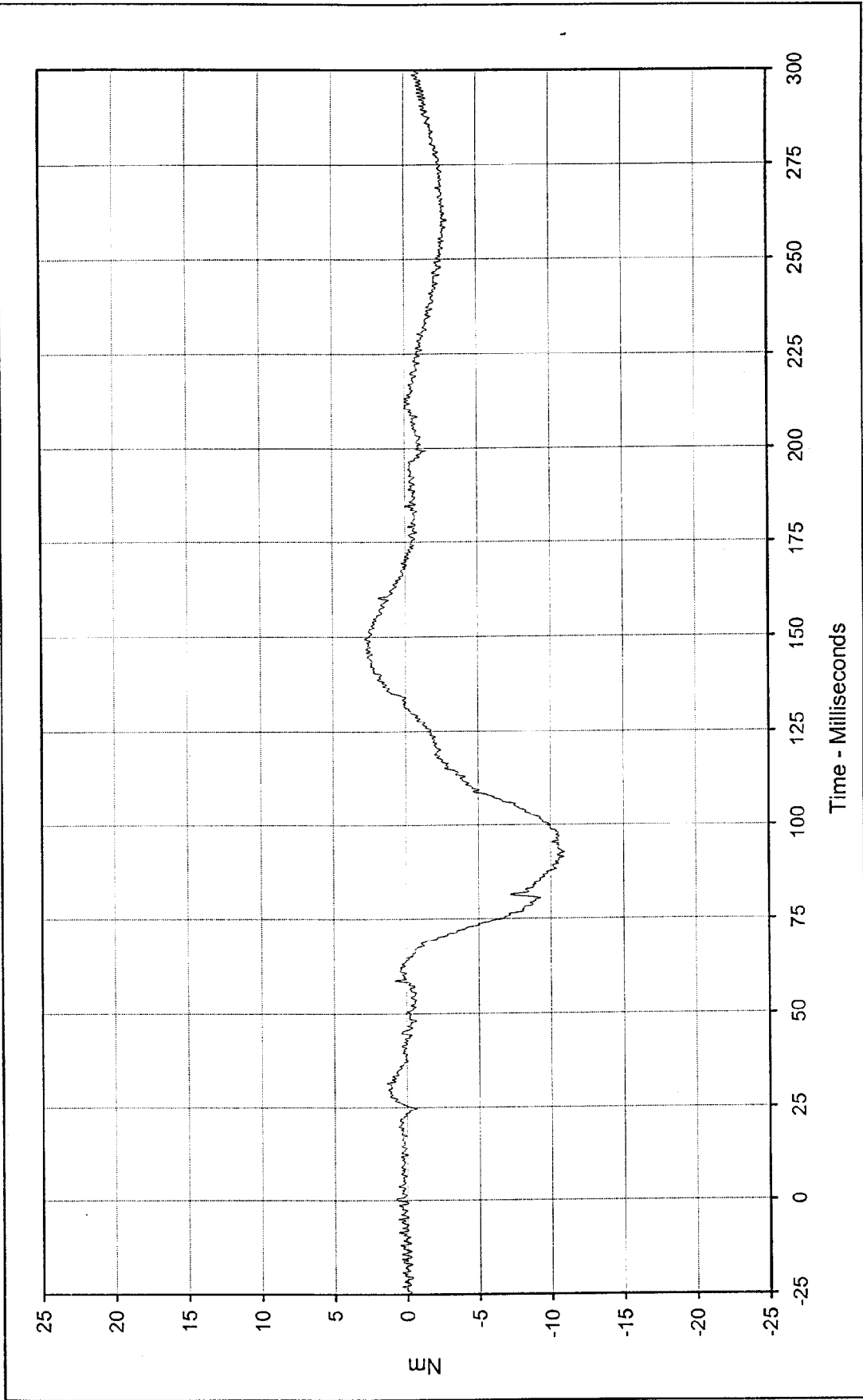
SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: FIL-010



Curve Description: Driver Neck Moment Y  
 Maximum Value: 54.3 at 70.5 Milliseconds  
 Minimum Value: -12.6 at 230.4 Milliseconds  
 SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: FIL-011

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

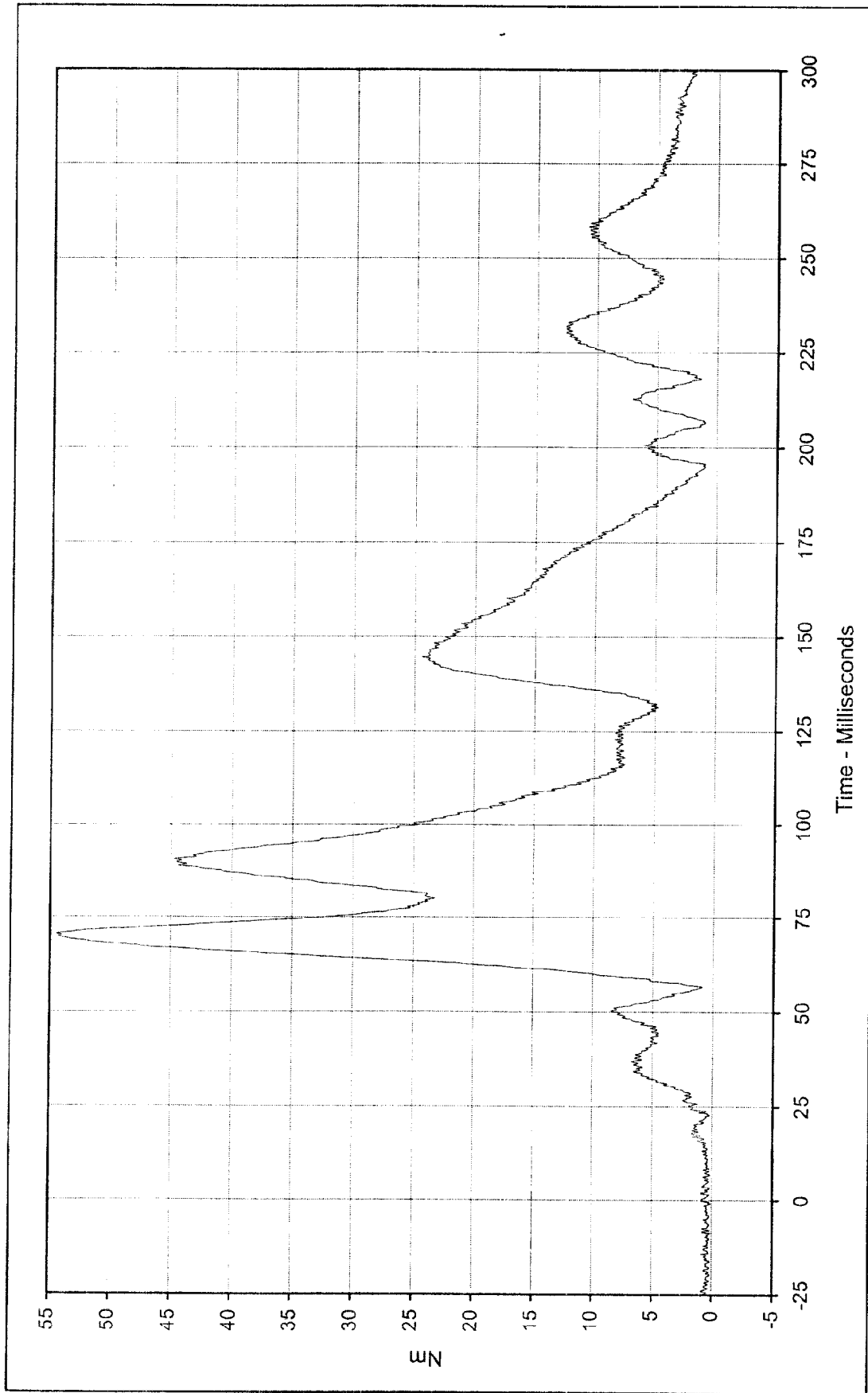




Curve Description: Driver Neck Moment Z Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 2.8 at 149.4 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -11.0 at 92.5 Milliseconds



SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: FIL-012

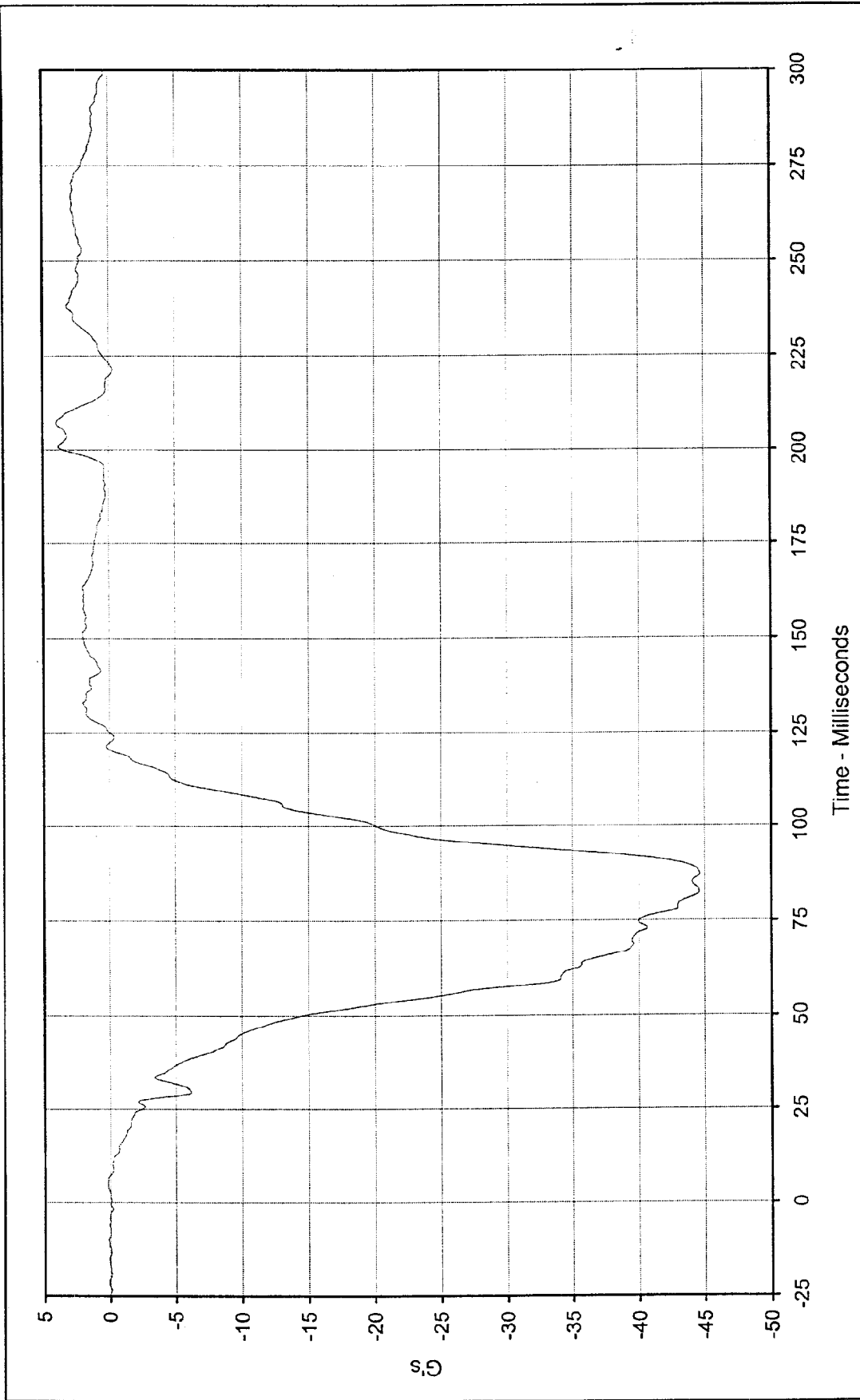


Curve Description: Driver Neck Moment Resultant  
 Maximum Value: 54.4 at 70.5 Milliseconds  
 Minimum Value: 0.1 at 6.7 Milliseconds  
 SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: RES-010

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113

Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

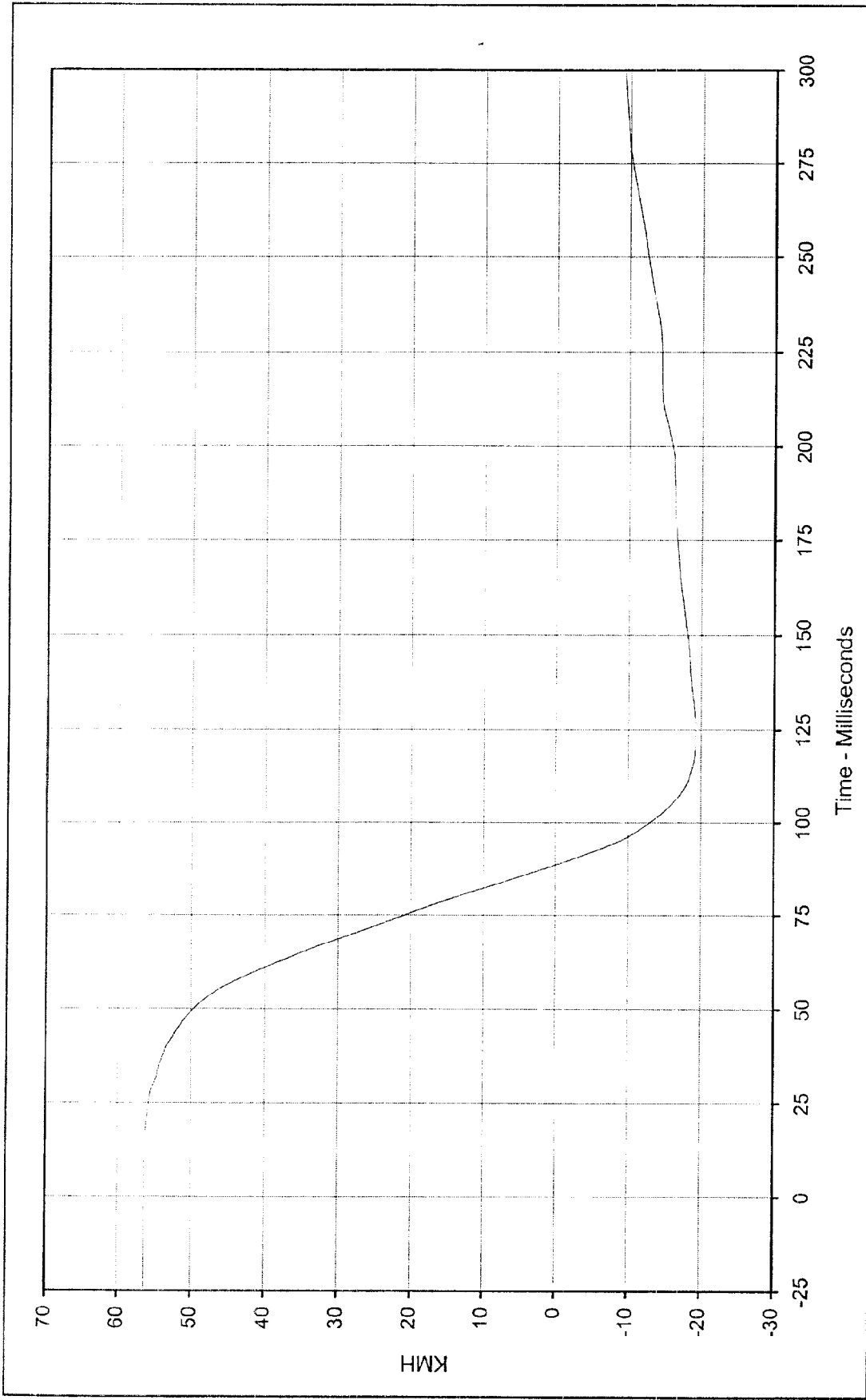




Curve Description: Driver Chest Primary X  
 Maximum Value: 4.0 at 207.1 Milliseconds  
 Minimum Value: -44.7 at 87.1 Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: FIL-013

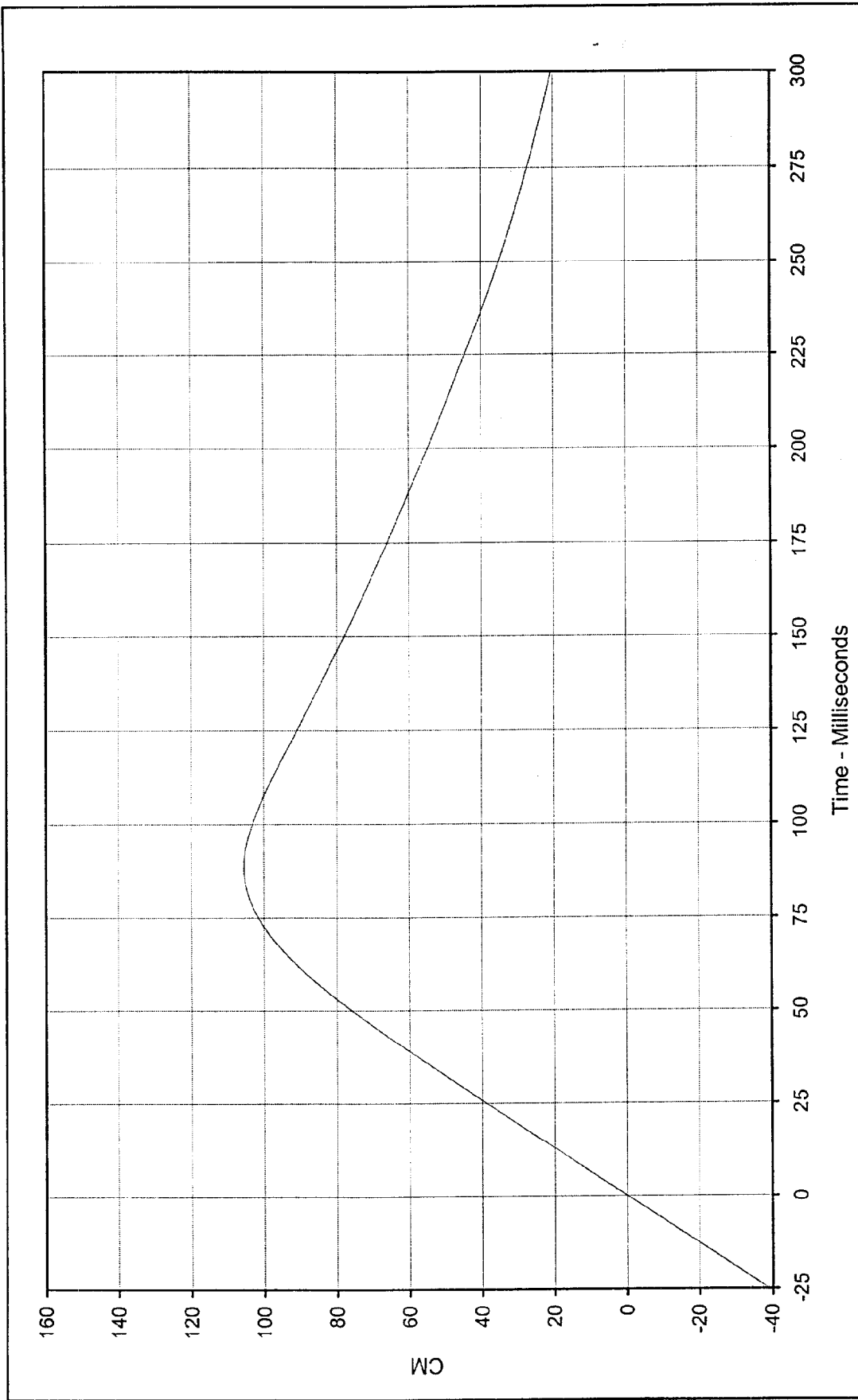
Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan





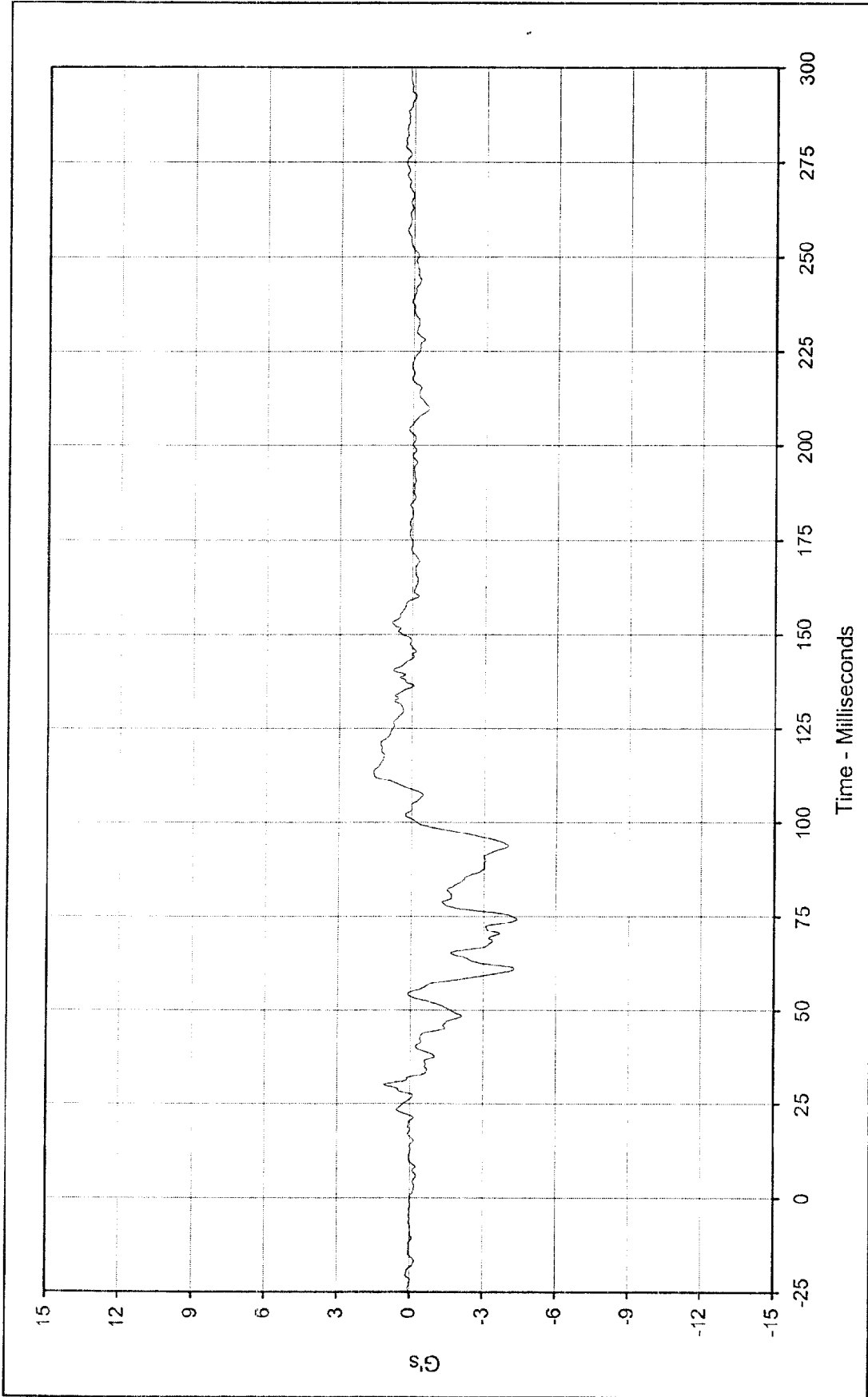
Curve Description: Driver Chest Primary X Velocity      Testing Program 1999 NHTSA 35 mph NCAP    No.: MX0113  
 Maximum Value: 56.3    at 7.3    Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -19.3    at 125.2    Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: IN1-013





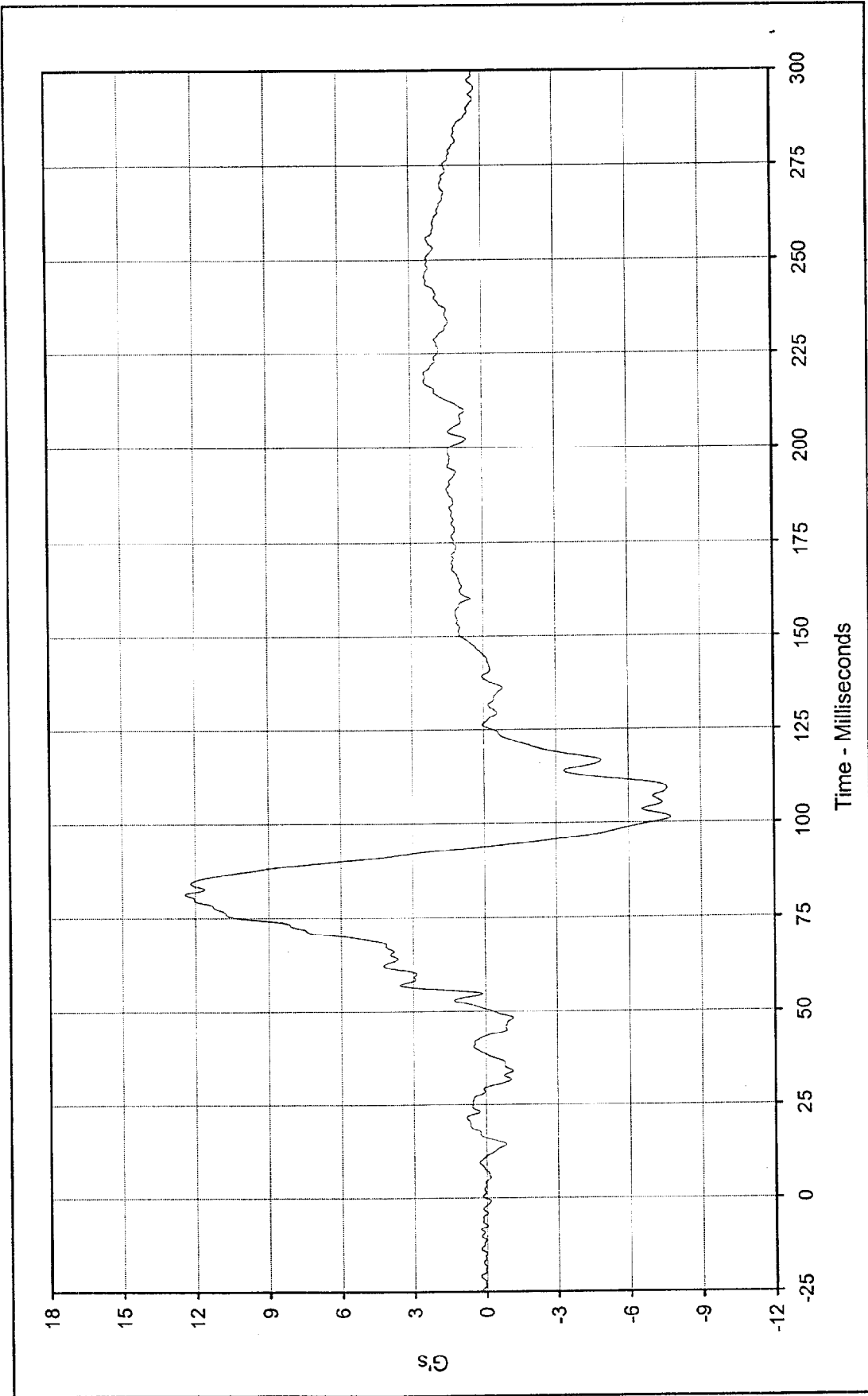
Curve Description: Driver Chest Primary X Displ.      Test Program: 1999 NHTSA 35 mph NCAP      No.: MX0113  
 Maximum Value: 105.5      at 88.5      Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -0.1      at 0.0      Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: IN2-013





Curve Description:	Driver Chest Primary Y	Test Program:	1999 NHTSA 35 mph NCAP No.: MX0113
Maximum Value:	1.6 at 113.1 Milliseconds	Test Vehicle:	1999 Oldsmobile Intrigue 4 Door Sedan
Minimum Value:	-4.4 at 74.3 Milliseconds		
SAE Filter Class:	180		
Date of Test:	1/22/99		
Curve Number:	FIL-014		

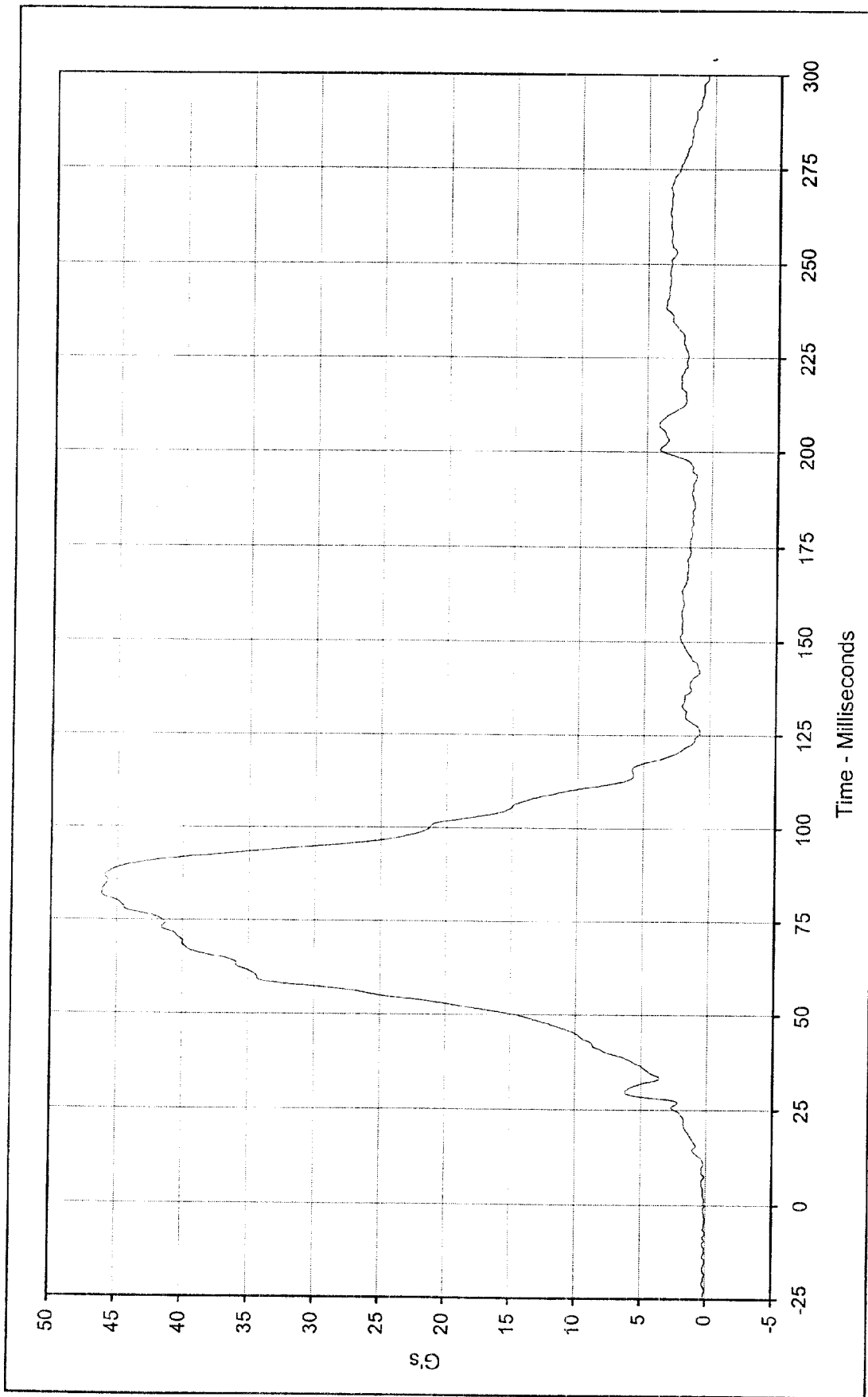




Curve Description: Driver Chest Primary Z Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 12.4 at 81.2 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -7.7 at 101.3 Milliseconds



SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: FIL-015



Curve Description: Driver Chest Resultant Primary Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113

Maximum Value: 46.2 at 81.9 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

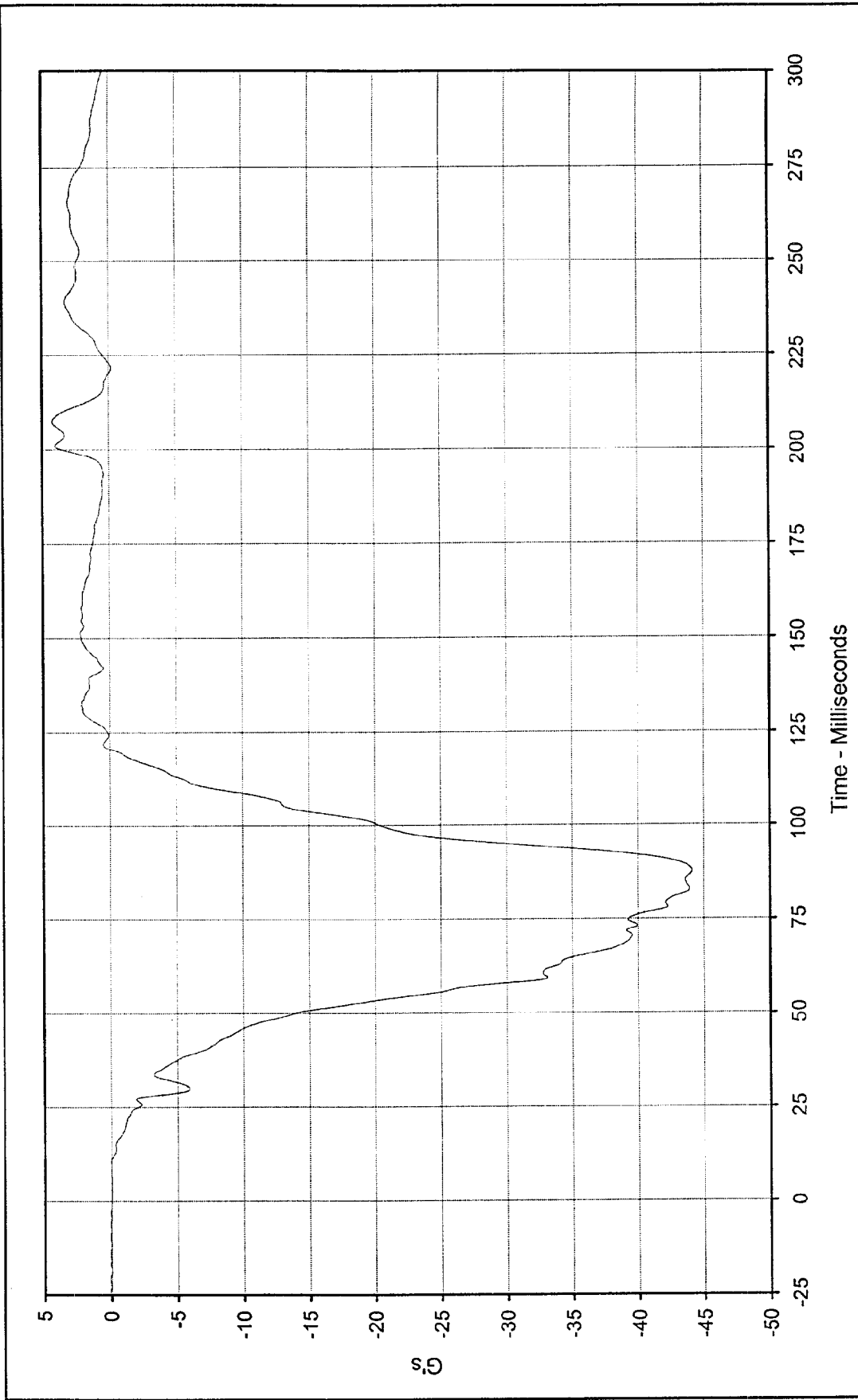
Minimum Value: 0.1 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 1/22/99

Curve Number: RES-013

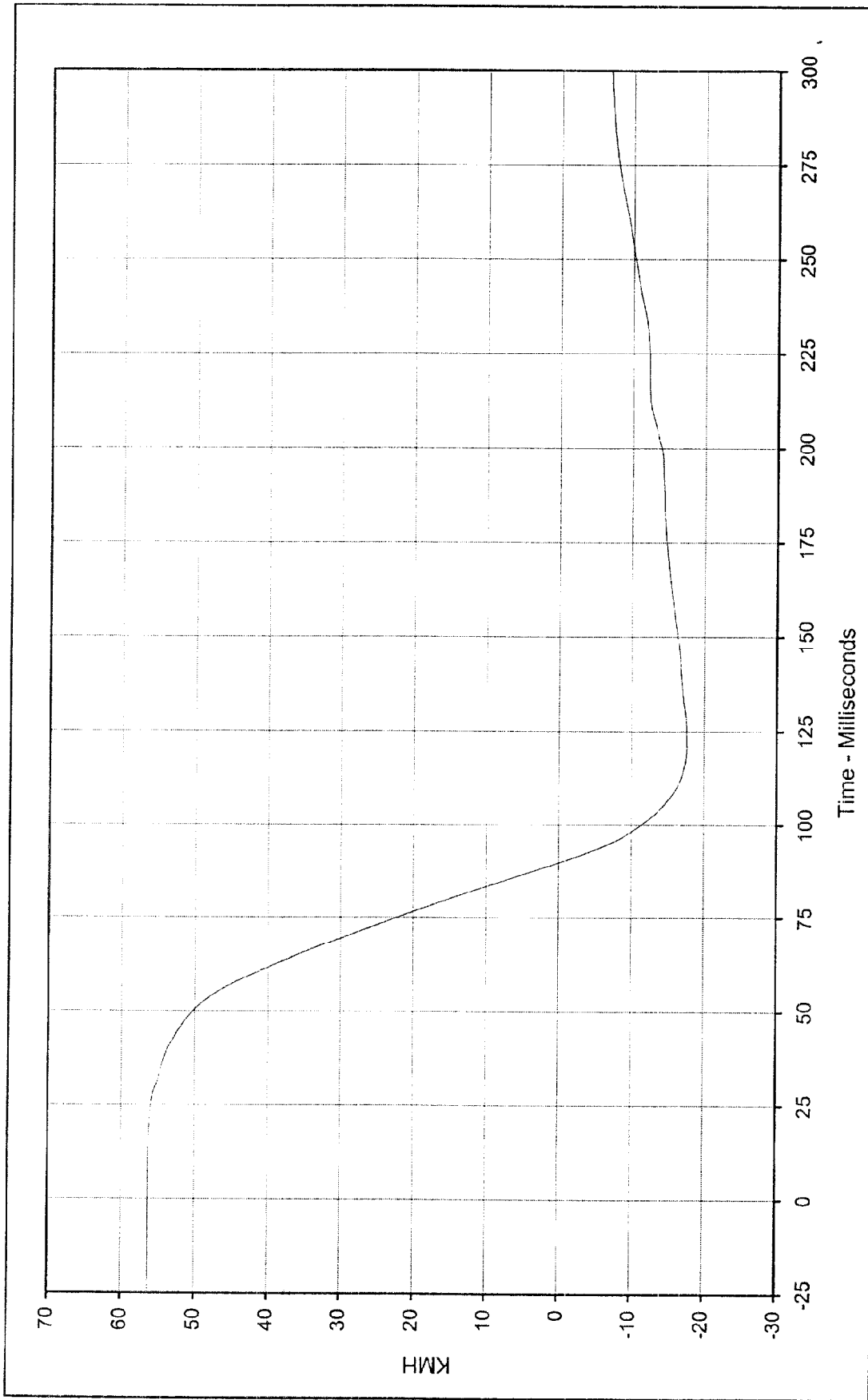




Curve Description: Driver Chest Redundant X  
 Maximum Value: 4.3 at 207.4 Milliseconds  
 Minimum Value: -44.1 at 87.5 Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: FIL-016

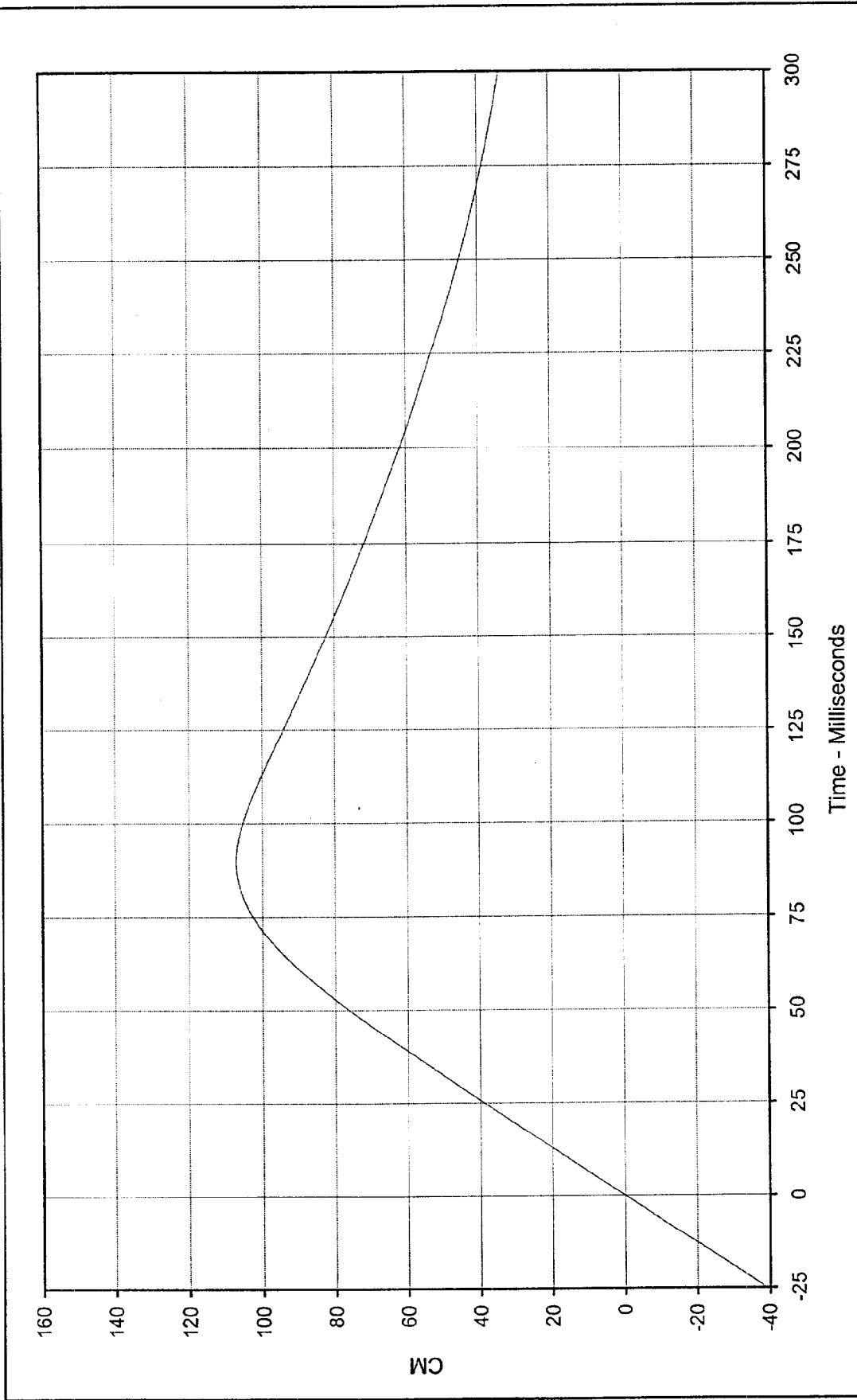
Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan





Curve Description: Driver Chest Redundant X Velocity      Testing Program 1999 NHTSA 35 mph NCAP      No.: MX0113  
 Maximum Value: 56.4      at 0.0      Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -17.6      at 120.5      Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: IN1-016

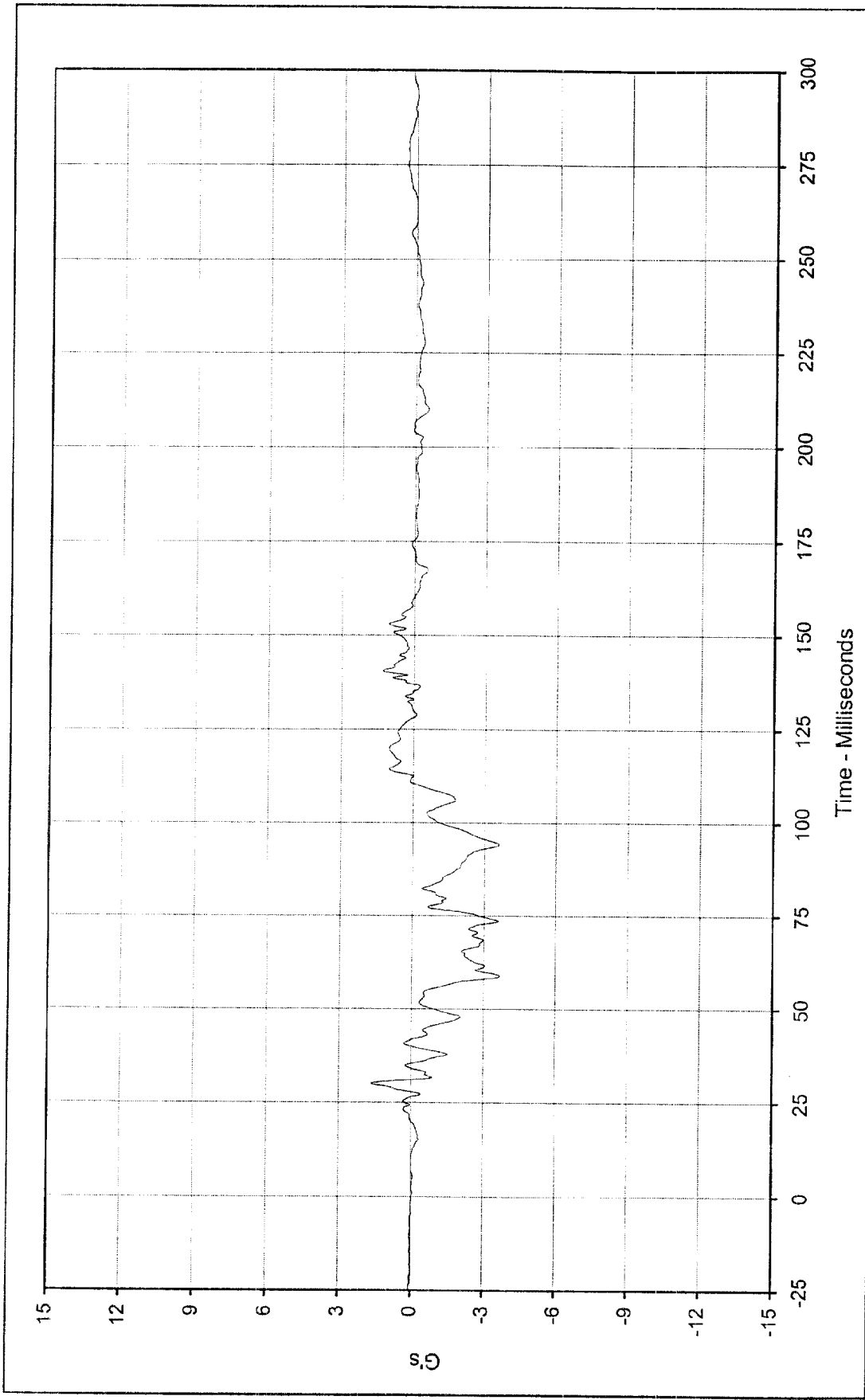




Curve Description: Driver Chest Redundant X Displ.  
 Maximum Value: 107.1 at 89.6 Milliseconds  
 Minimum Value: -0.1 at 0.0 Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: IN2-016

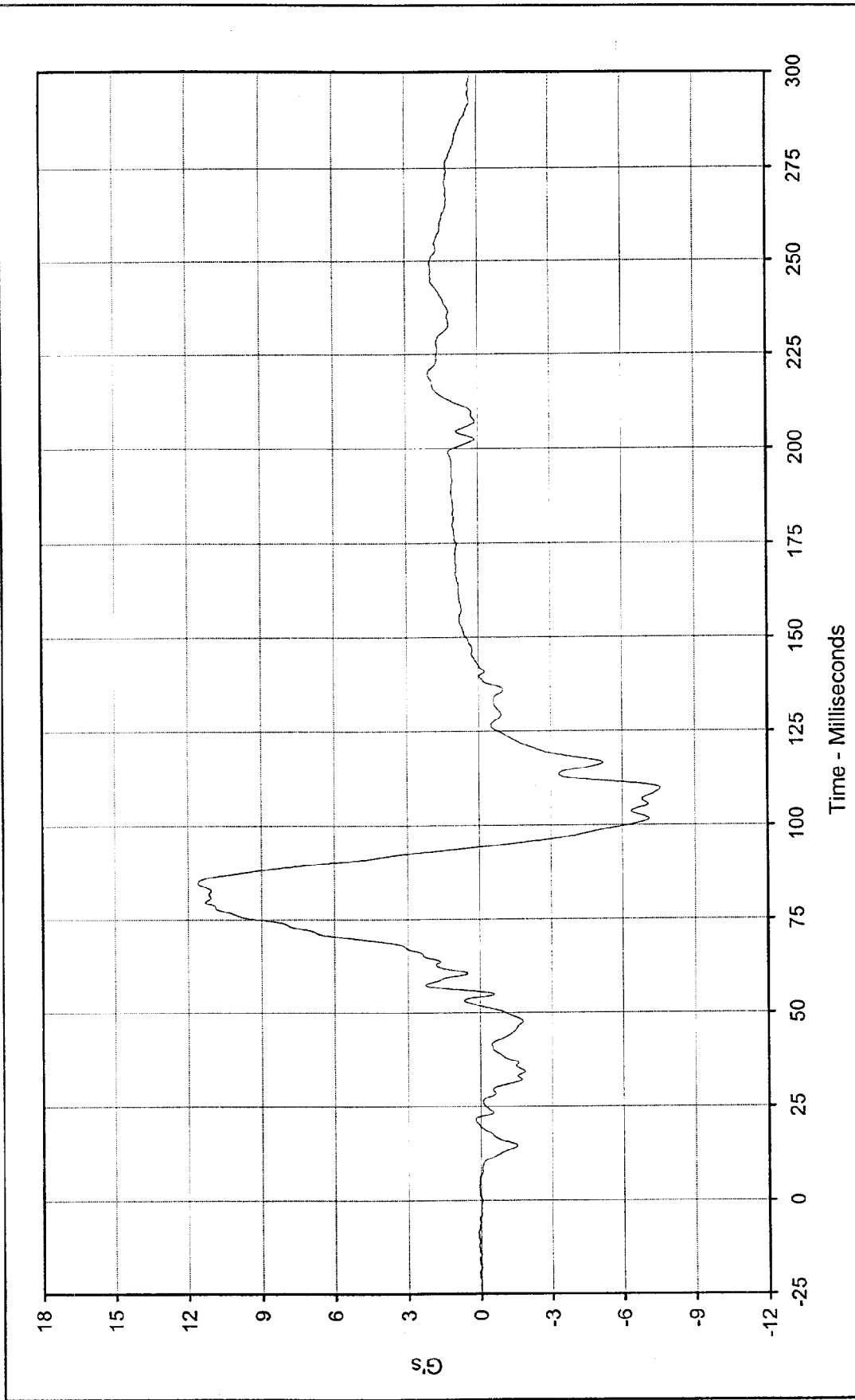
Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan





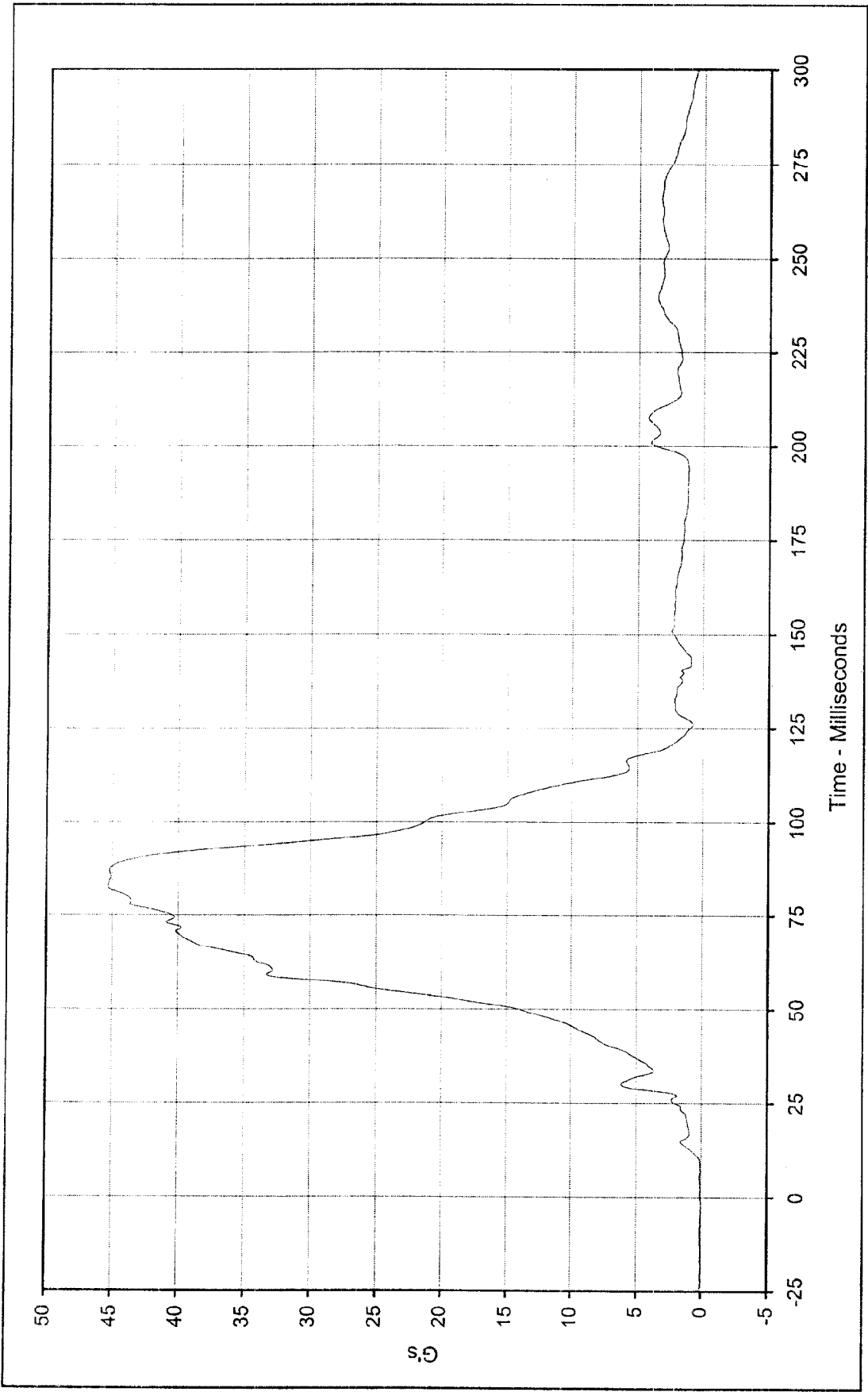
Curve Description: Driver Chest Redundant Y Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 1.6 at 30.1 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -3.7 at 58.7 Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: FIL-017





Curve Description: Driver Chest Redundant Z      Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 11.6 at 84.6 Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -7.6 at 109.7 Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: FIL-018

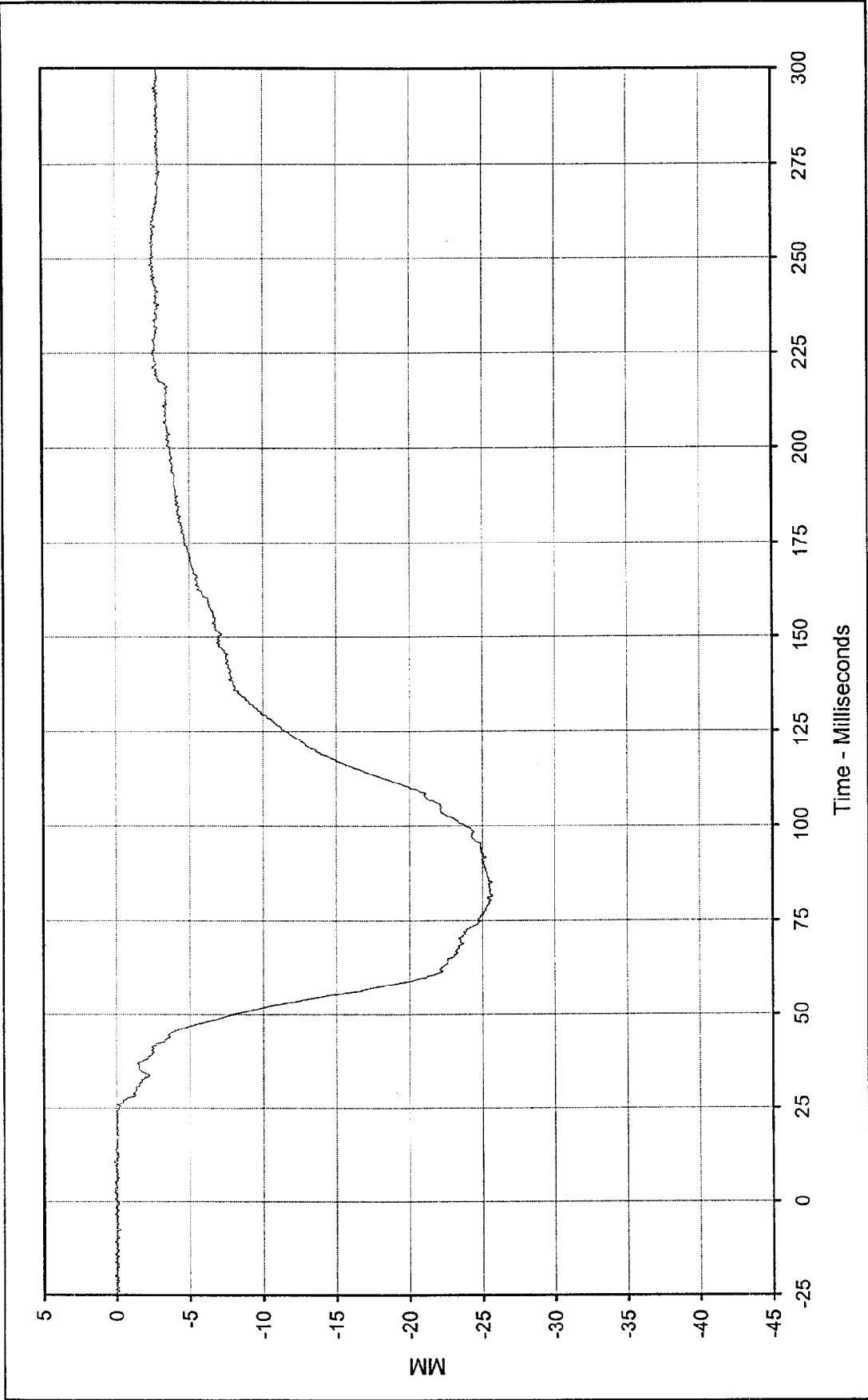




Curve Description: Driver Chest Resultant Redundant  
 Maximum Value: 45.3 at 83.1 Milliseconds  
 Minimum Value: 0.0 at 6.9 Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: RES-016

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

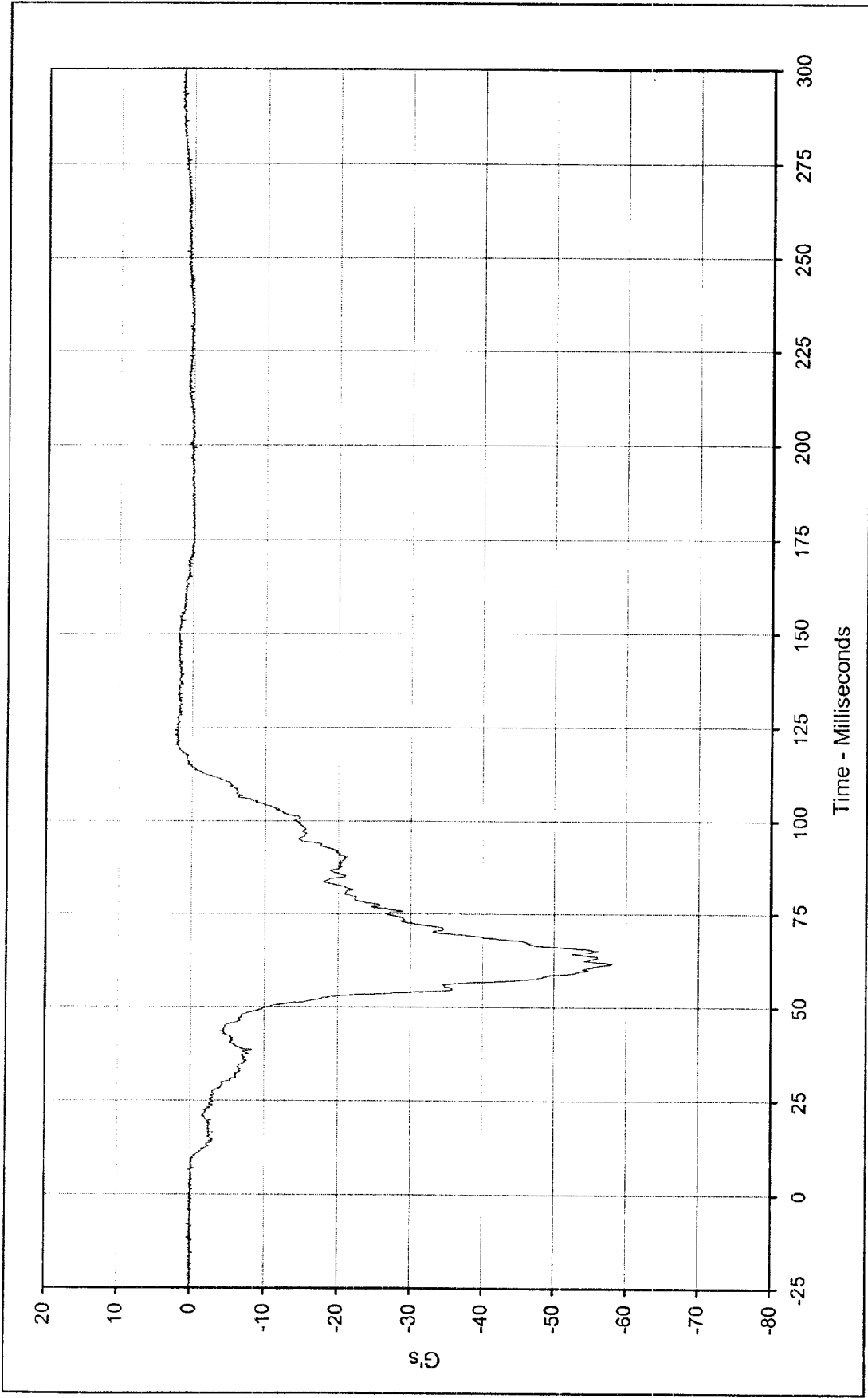




Curve Description: Driver Chest Displacement X  
 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

Maximum Value: 0.2 at 10.7 Milliseconds  
 Minimum Value: -25.7 at 81.4 Milliseconds  
 SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: FIL-019

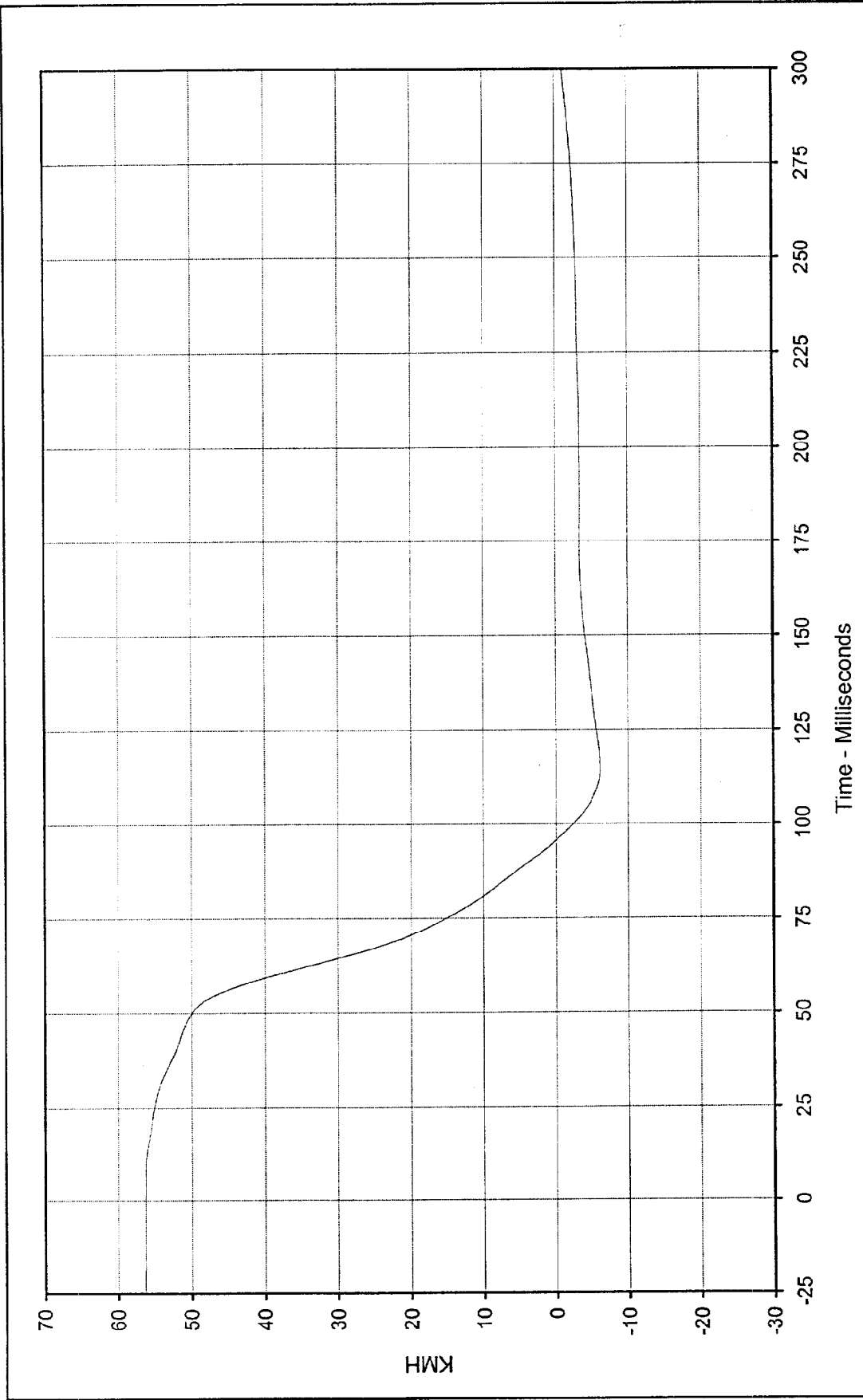




Curve Description: Driver Pelvis X  
 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 2.4 at 120.4 Milliseconds  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -58.1 at 61.5 Milliseconds



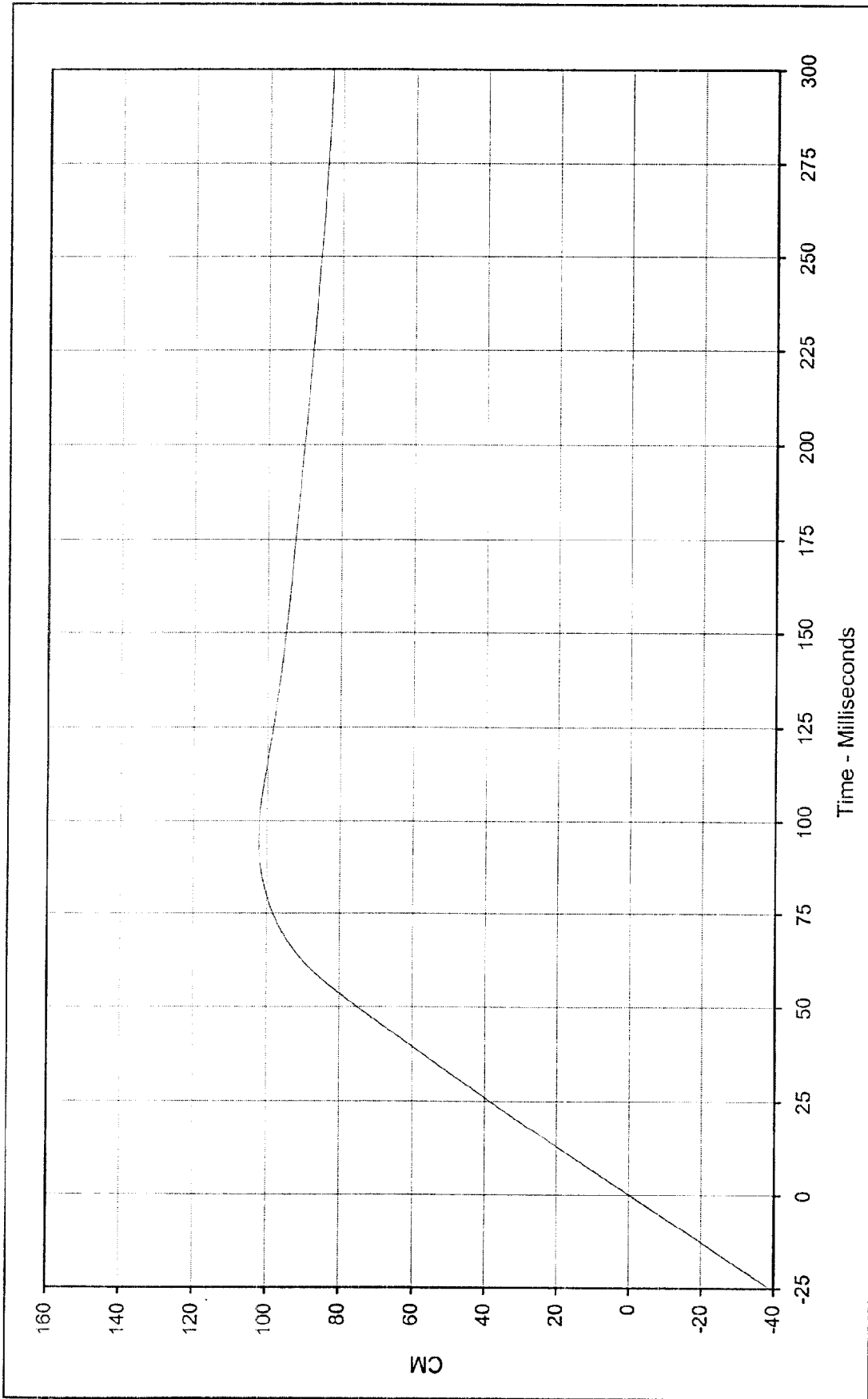
SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: FIL-020



Curve Description: Driver Pelvis X Velocity  
 Testing Program 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

Maximum Value: 56.3 at 0.0 Milliseconds  
 Minimum Value: -6.1 at 114.5 Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: IN1-020

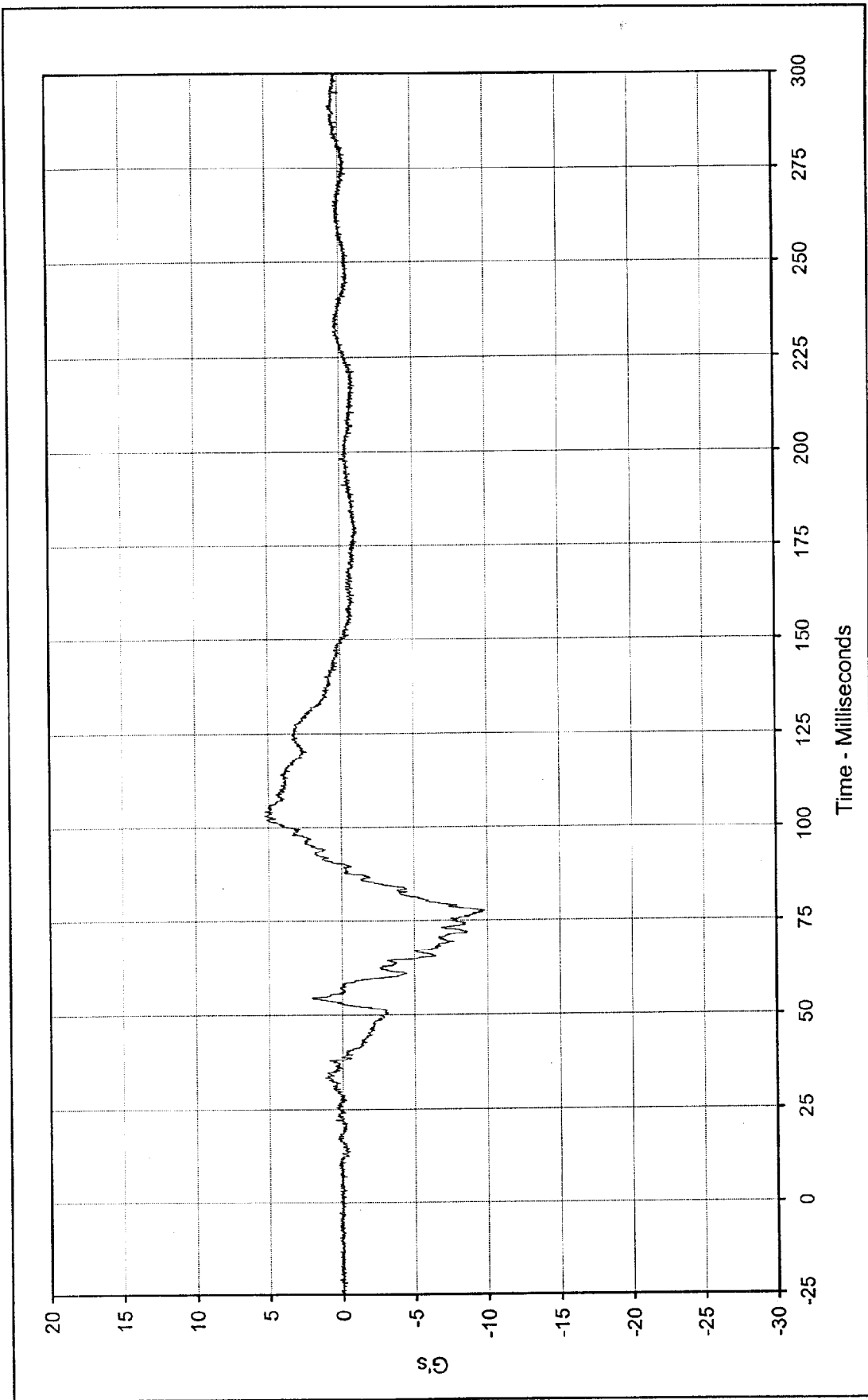




Curve Description: Driver Pelvis X Displ.  
 Maximum Value: 102.2 at 95.4 Milliseconds  
 Minimum Value: -0.1 at 0.0 Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: IN2-020

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

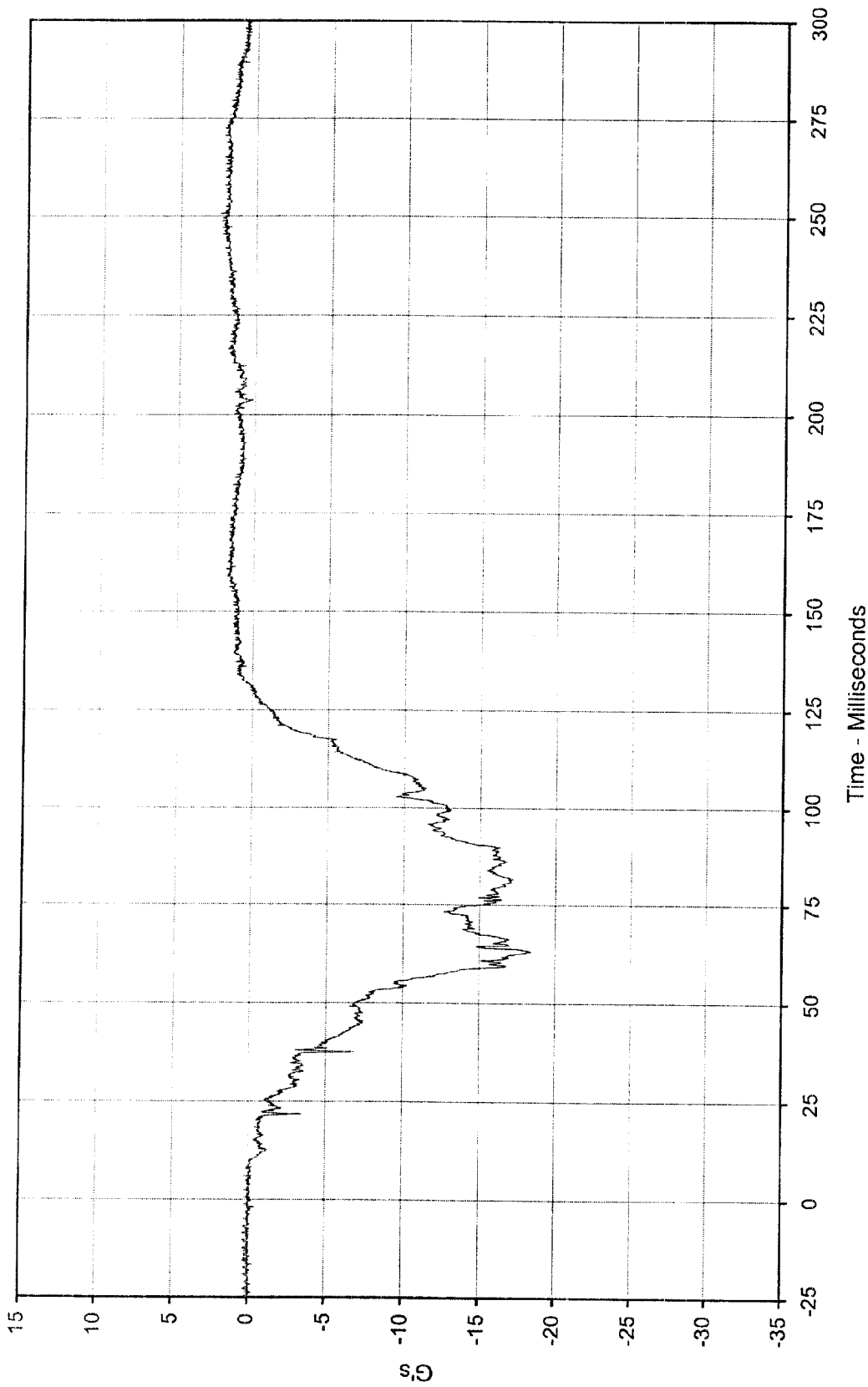




Curve Description: Driver Pelvis Y  
 Maximum Value: 5.2 at 103.0 Milliseconds  
 Minimum Value: -9.8 at 77.4 Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: FIL-021

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan





Curve Description: Driver Pelvis Z

Maximum Value: 2.4 at 250.7 Milliseconds

Minimum Value: -18.4 at 63.1 Milliseconds

SAE Filter Class: 1000

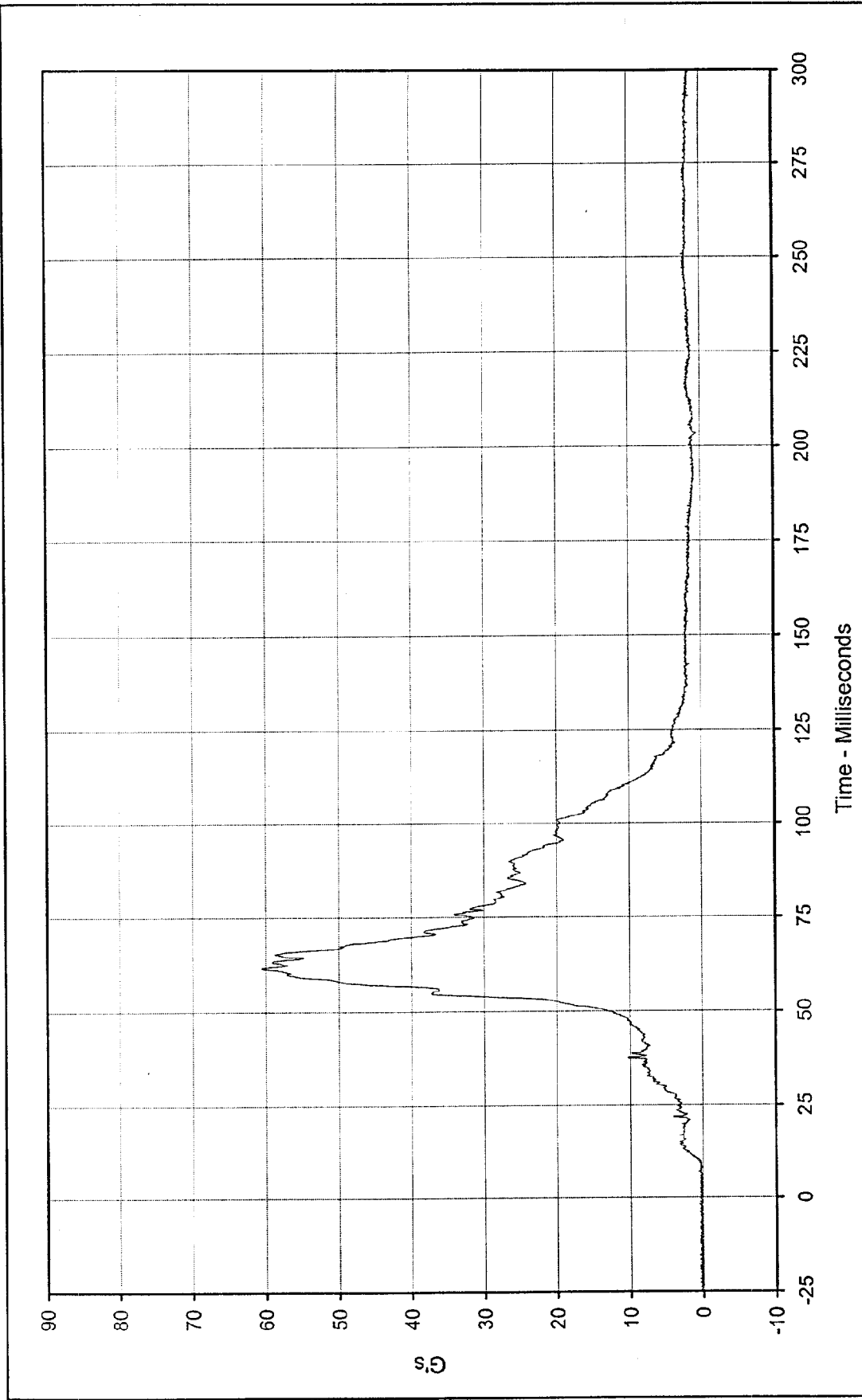
Date of Test: 1/22/99

Curve Number: FIL-022

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113

Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

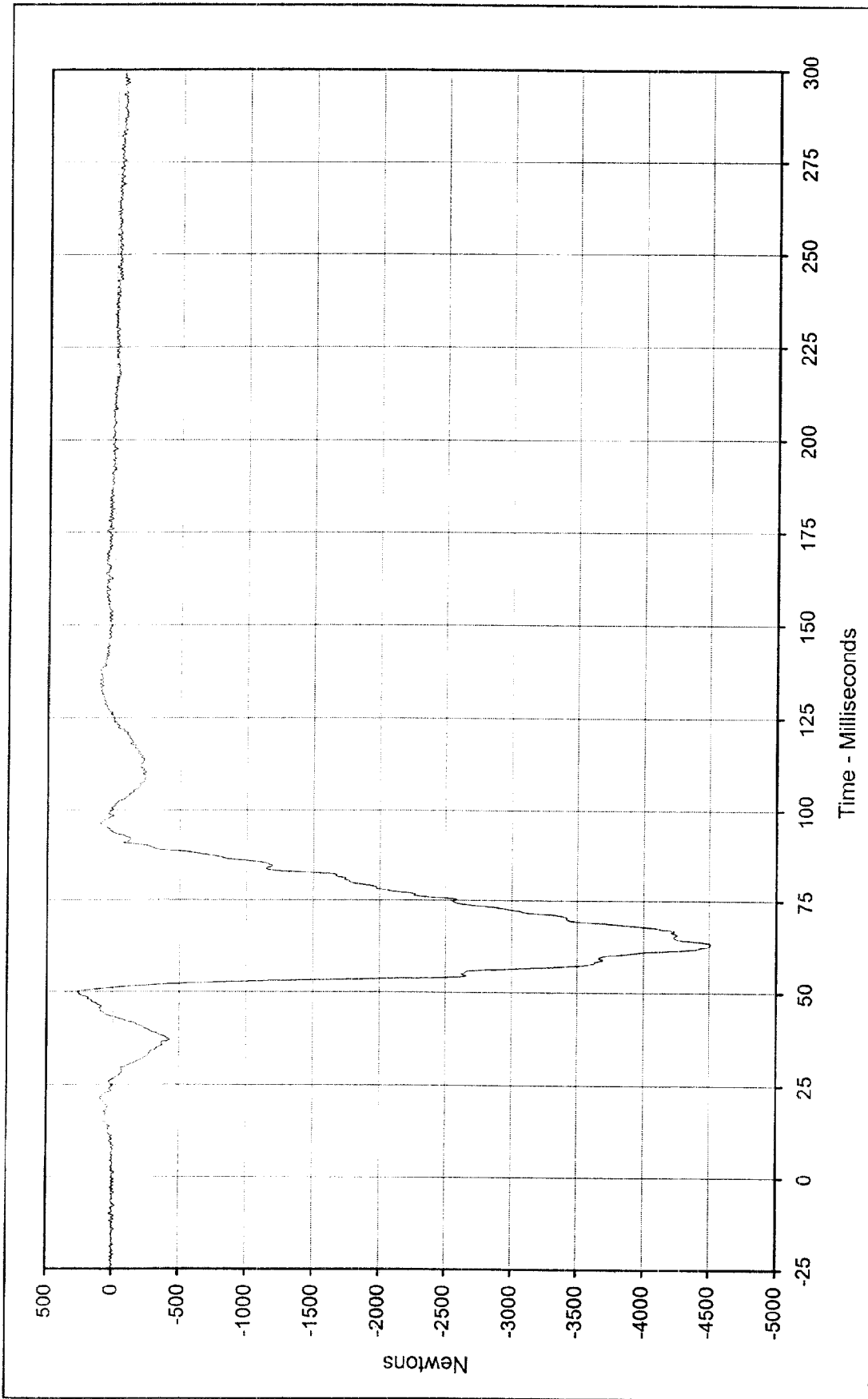




Curve Description: Driver Pelvis Resultant  
 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

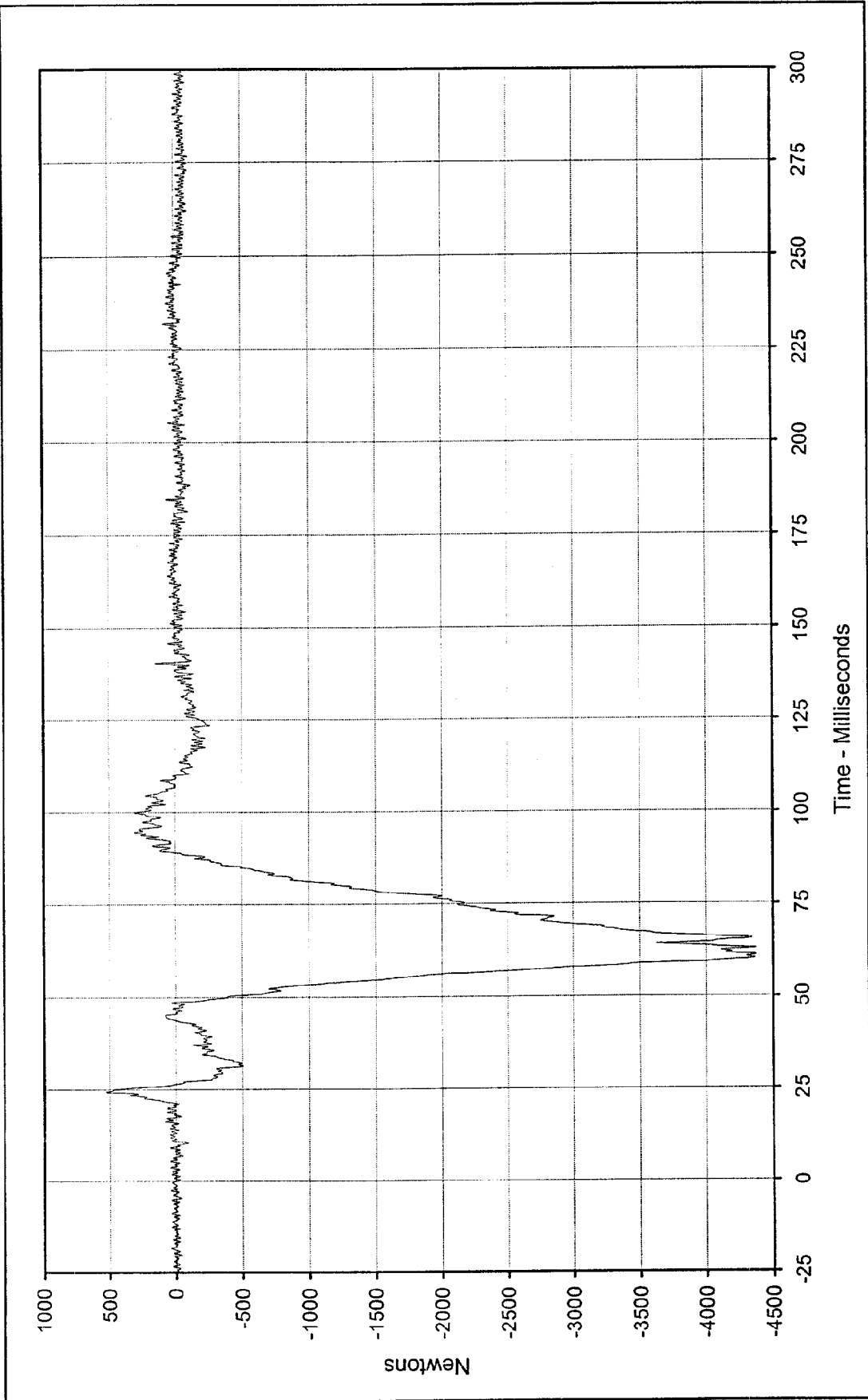
Maximum Value: 60.6 at 61.5 Milliseconds  
 Minimum Value: 0.0 at 5.3 Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: RES-020





Curve Description: Driver Left Femur Force      Test Program: 1999 NHTSA 35 mph NCAP    No.: MX0113  
 Maximum Value: 270.3    at 50.0    Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -4508.5    at 63.4    Milliseconds  
 SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: FIL-023

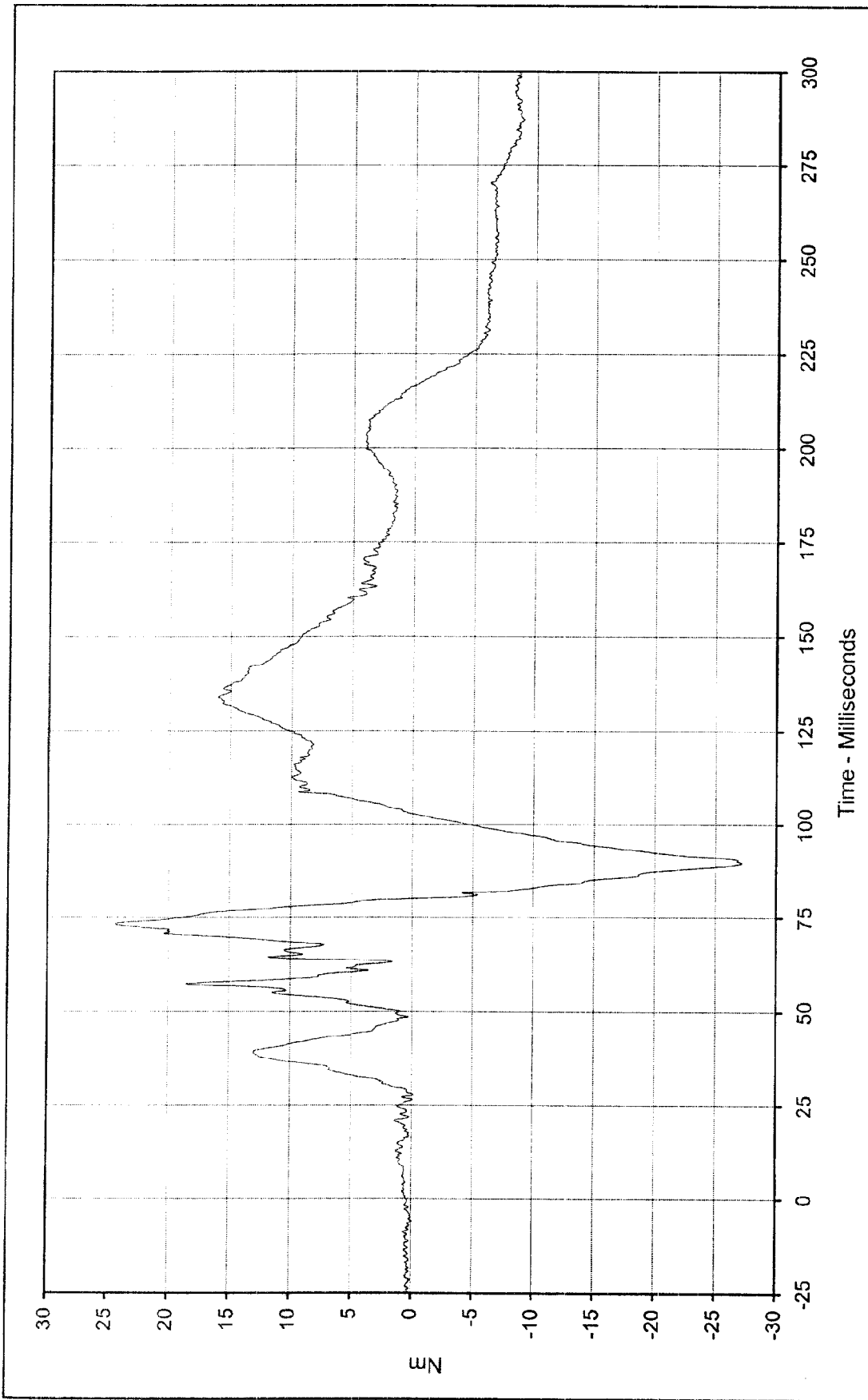




Curve Description: Driver Right Femur Force Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 526.4 at 24.4 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -4375.1 at 60.9 Milliseconds

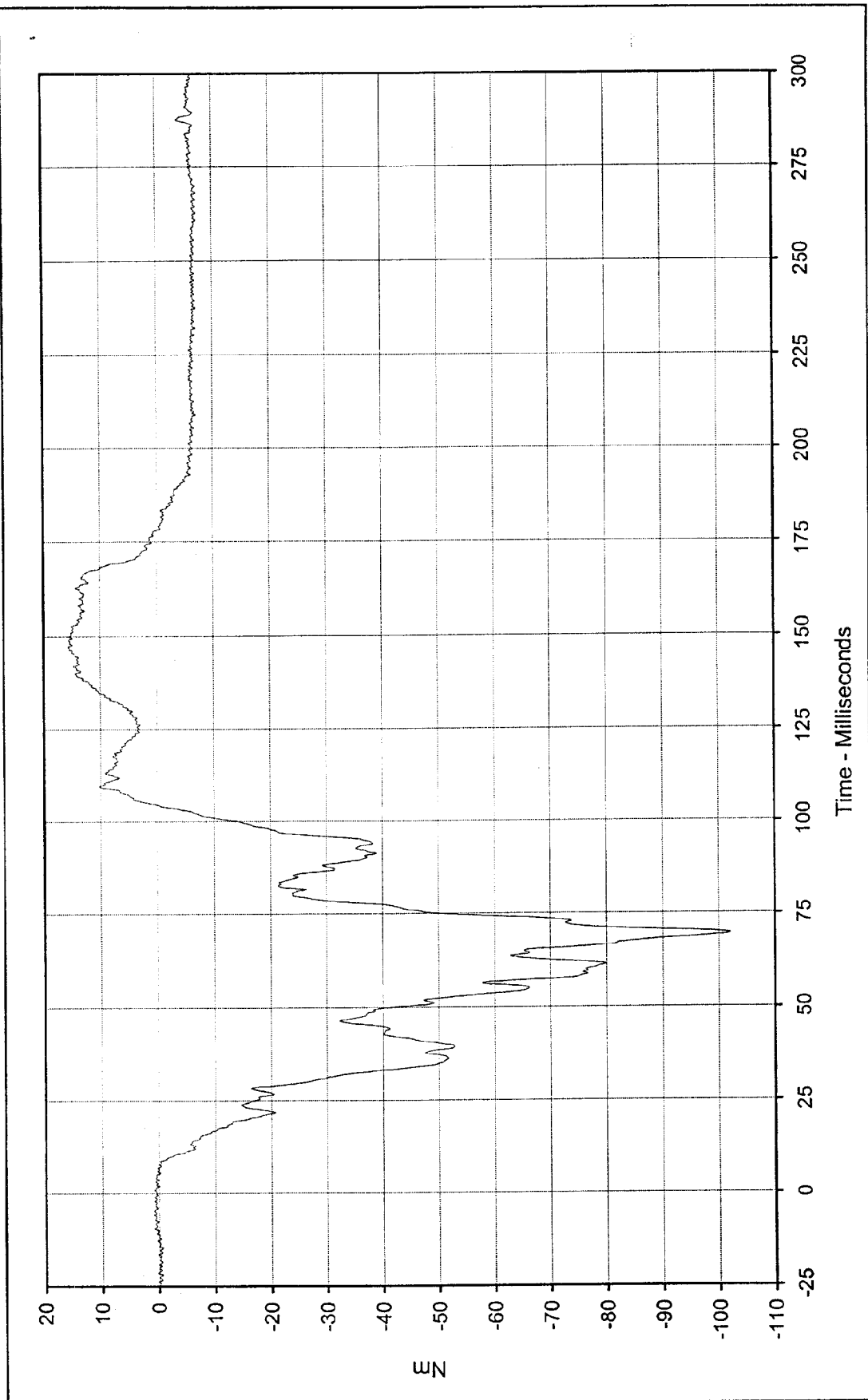


SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: FIL-024



Curve Description: Driver Left Upper Tibia Moment X      Test Program: 1999 NHTSA 35 mph NCAP      No.: MX0113  
 Maximum Value: 24.4      at 73.2      Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -27.2      at 89.7      Milliseconds  
 SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: FIL-025

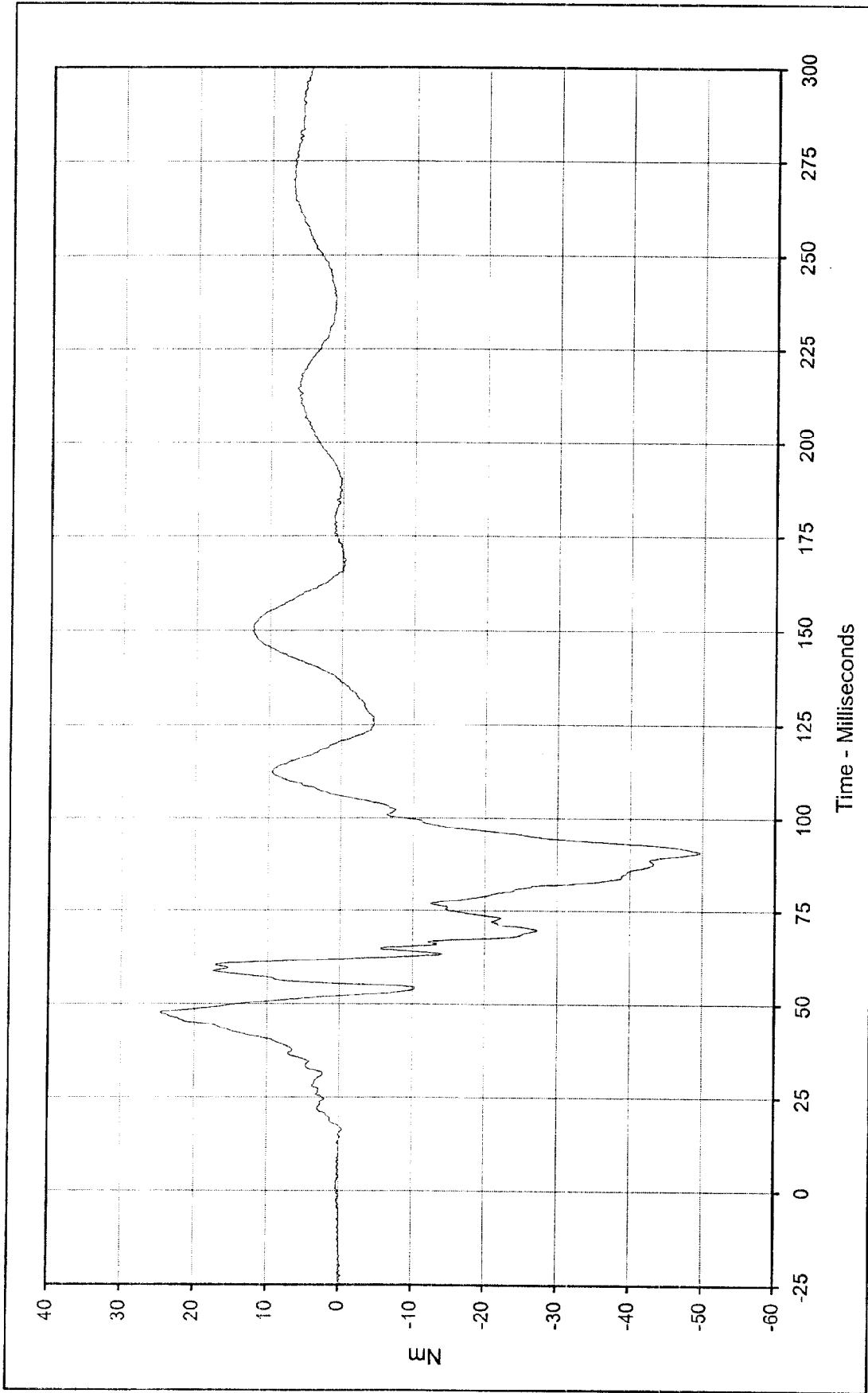




Curve Description: Driver Left Upper Tibia Moment Y Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 15.6 at 147.2 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -102.1 at 69.6 Milliseconds



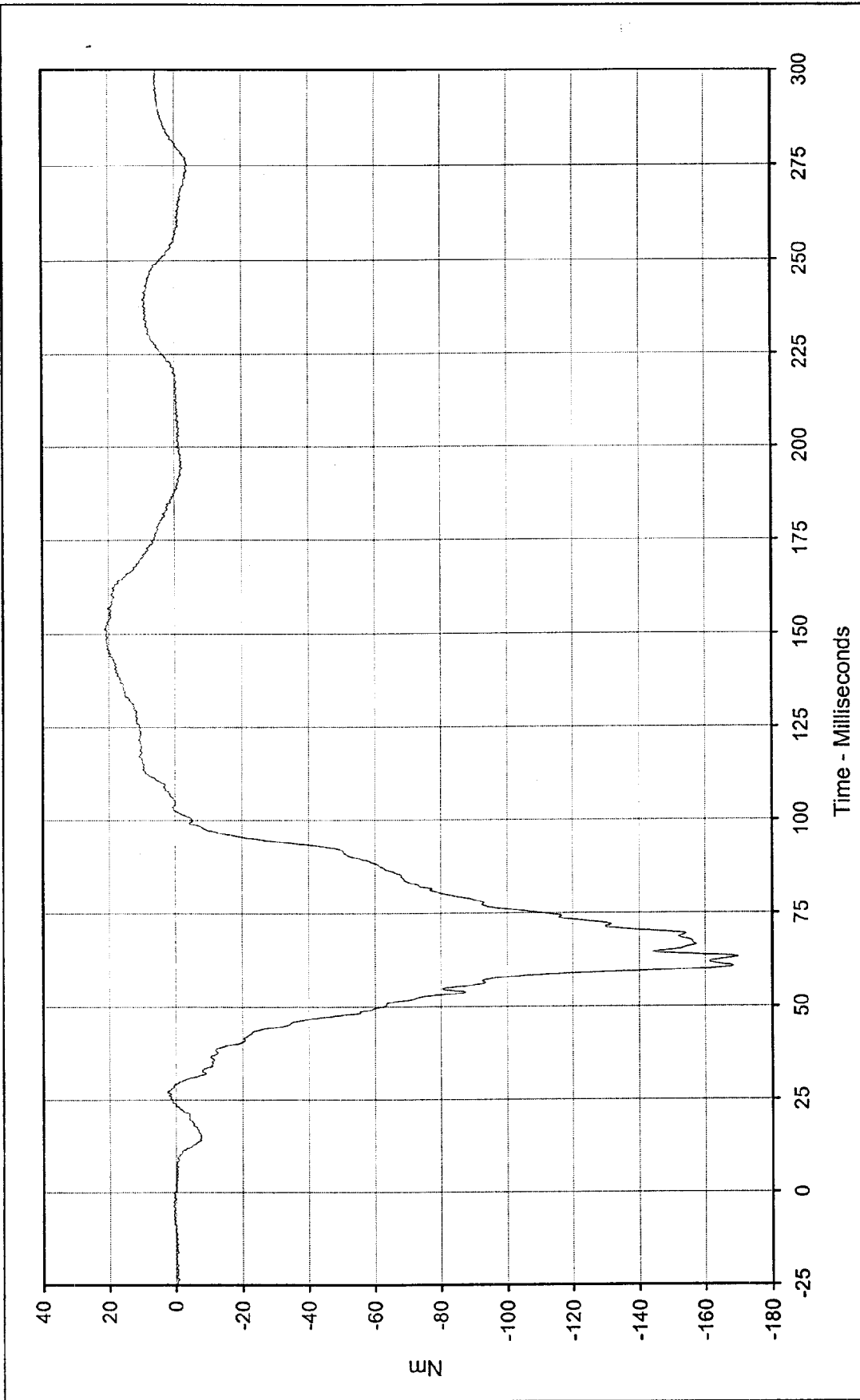
SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: FIL-026



Curve Description: Driver Right Upper Tibia Moment X  
 Maximum Value: 24.7 at 47.7 Milliseconds  
 Minimum Value: -49.7 at 90.6 Milliseconds  
 SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: FIL-027

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

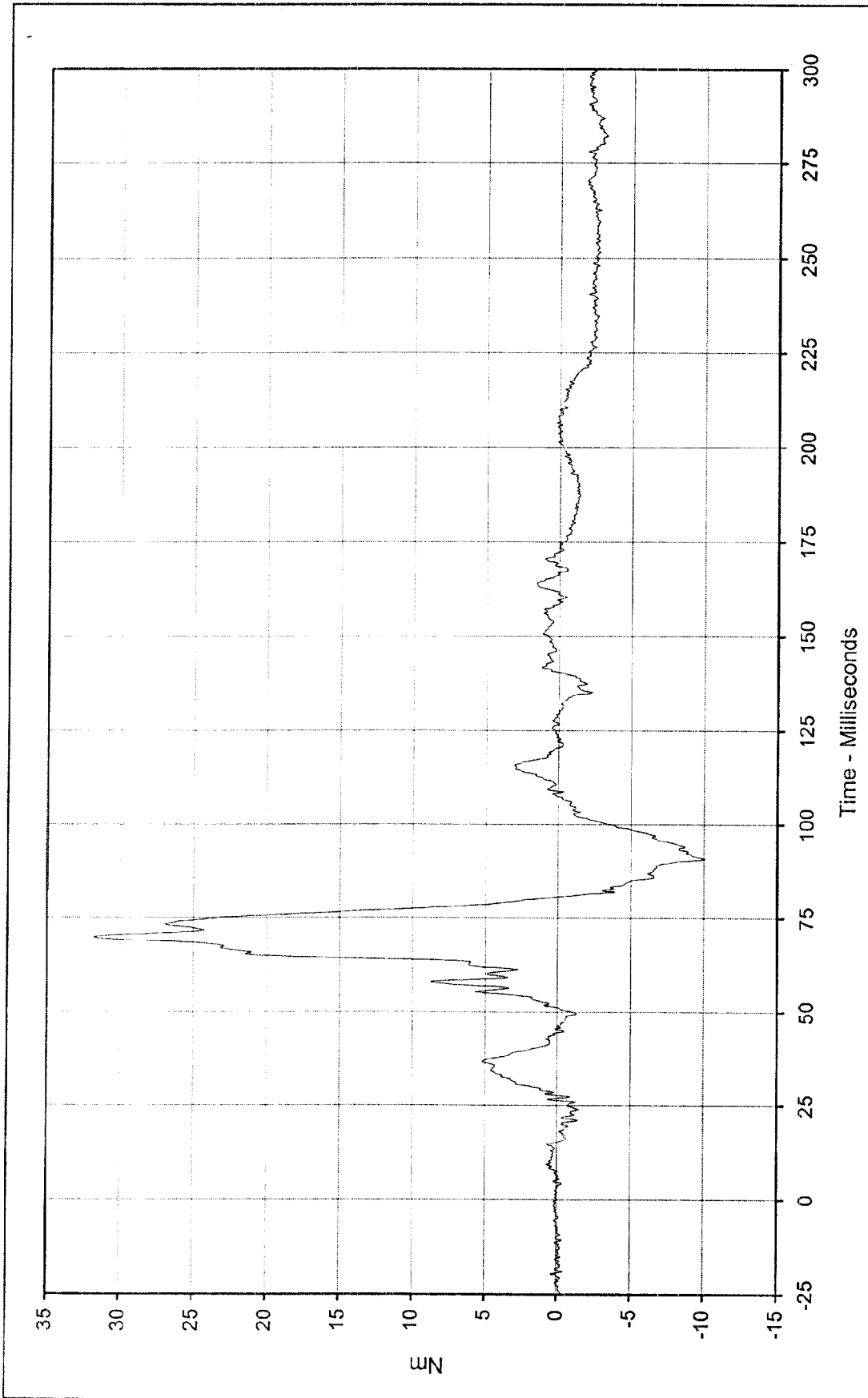




Curve Description: Driver Right Upper Tibia Moment Y      Test Program: 1999 NHTSA 35 mph NCAP      No.: MX0113  
 Maximum Value: 21.2      at 151.5      Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -169.9      at 63.2      Milliseconds

SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: FIL-028

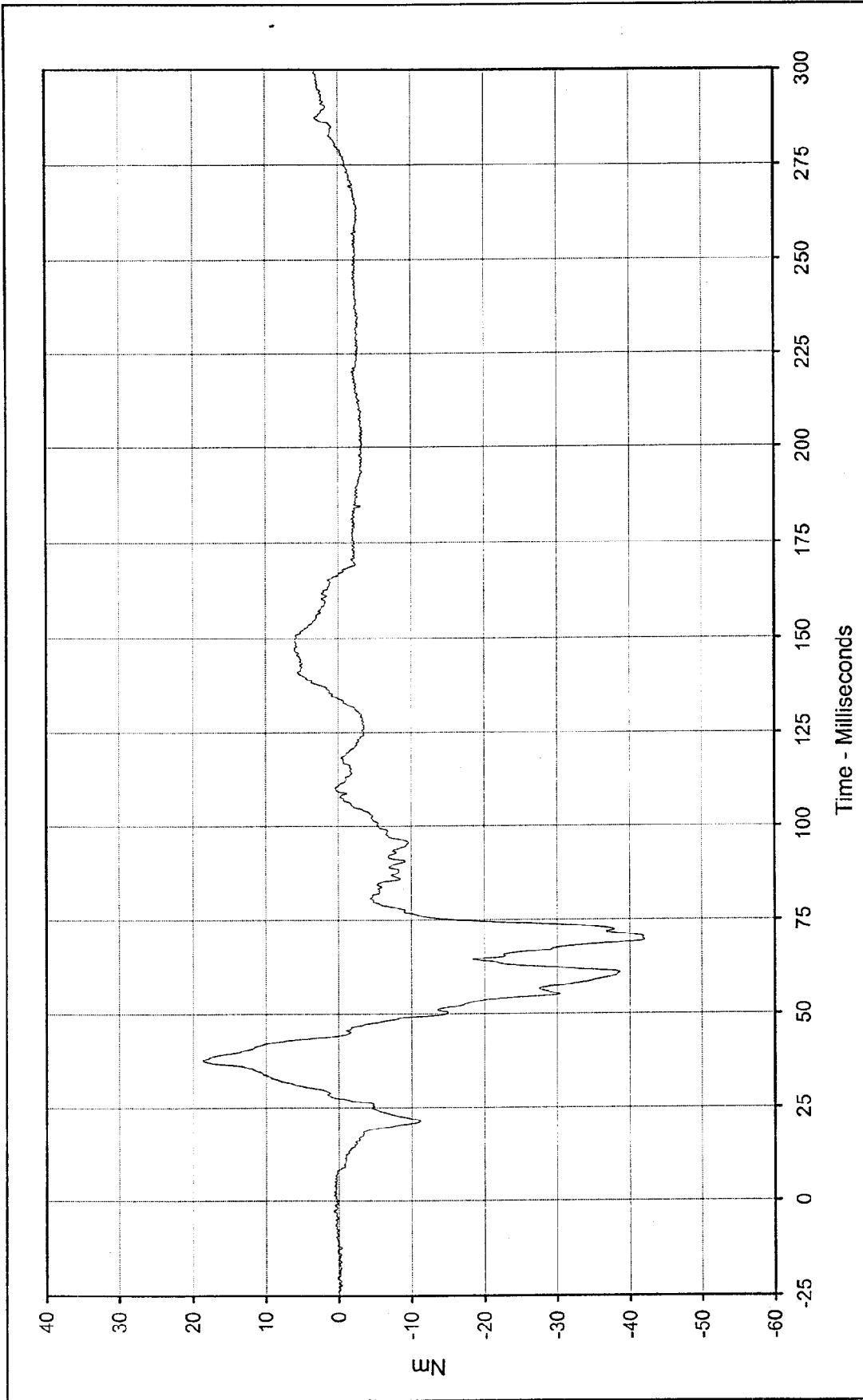




Curve Description: Driver Left Lower Tibia Moment X      Test Program: 1999 NHTSA 35 mph NCAP    No.: MX0113  
 Maximum Value: 31.8    at 69.9    Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -10.1    at 90.7    Milliseconds



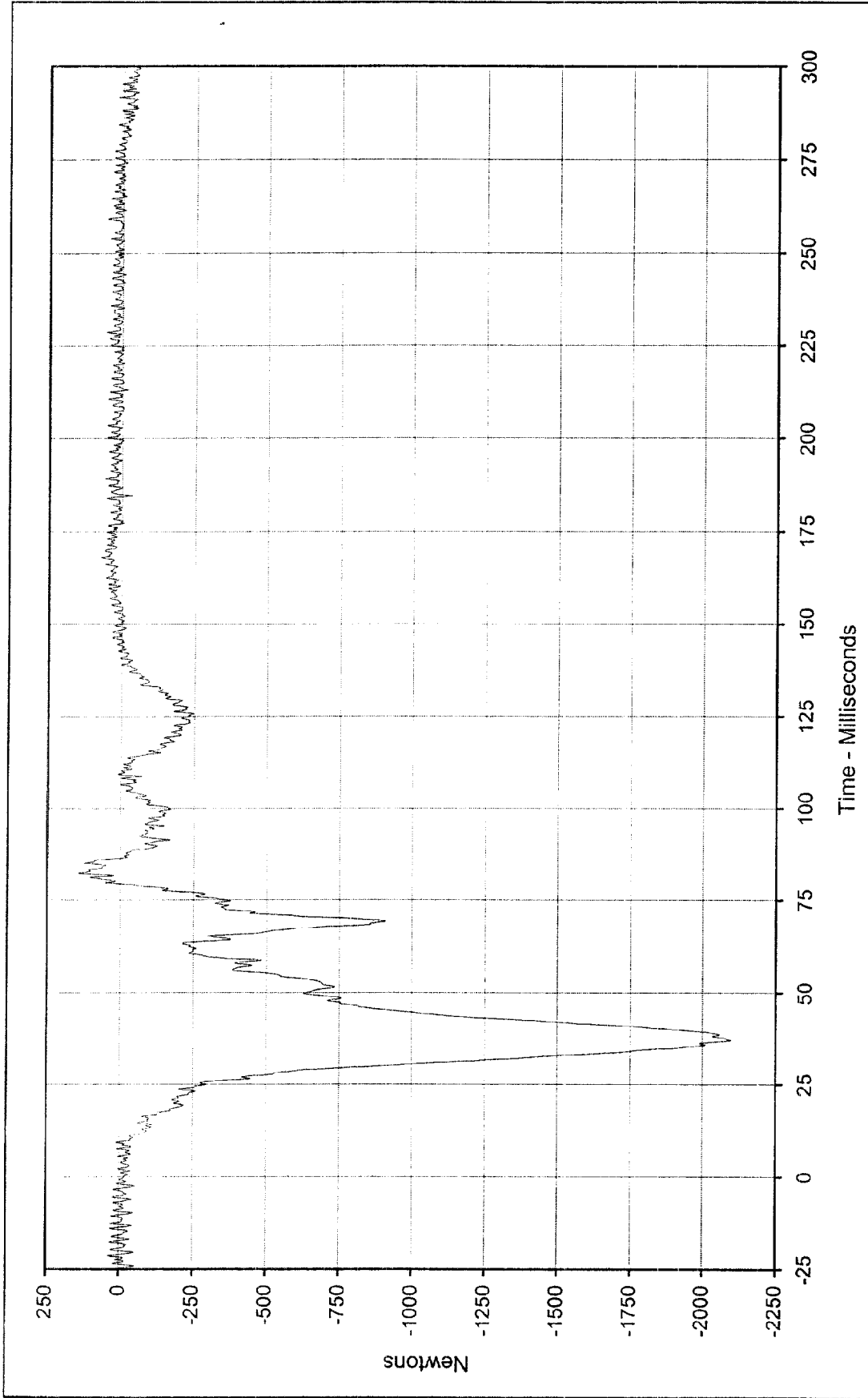
SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: FIL-029



Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

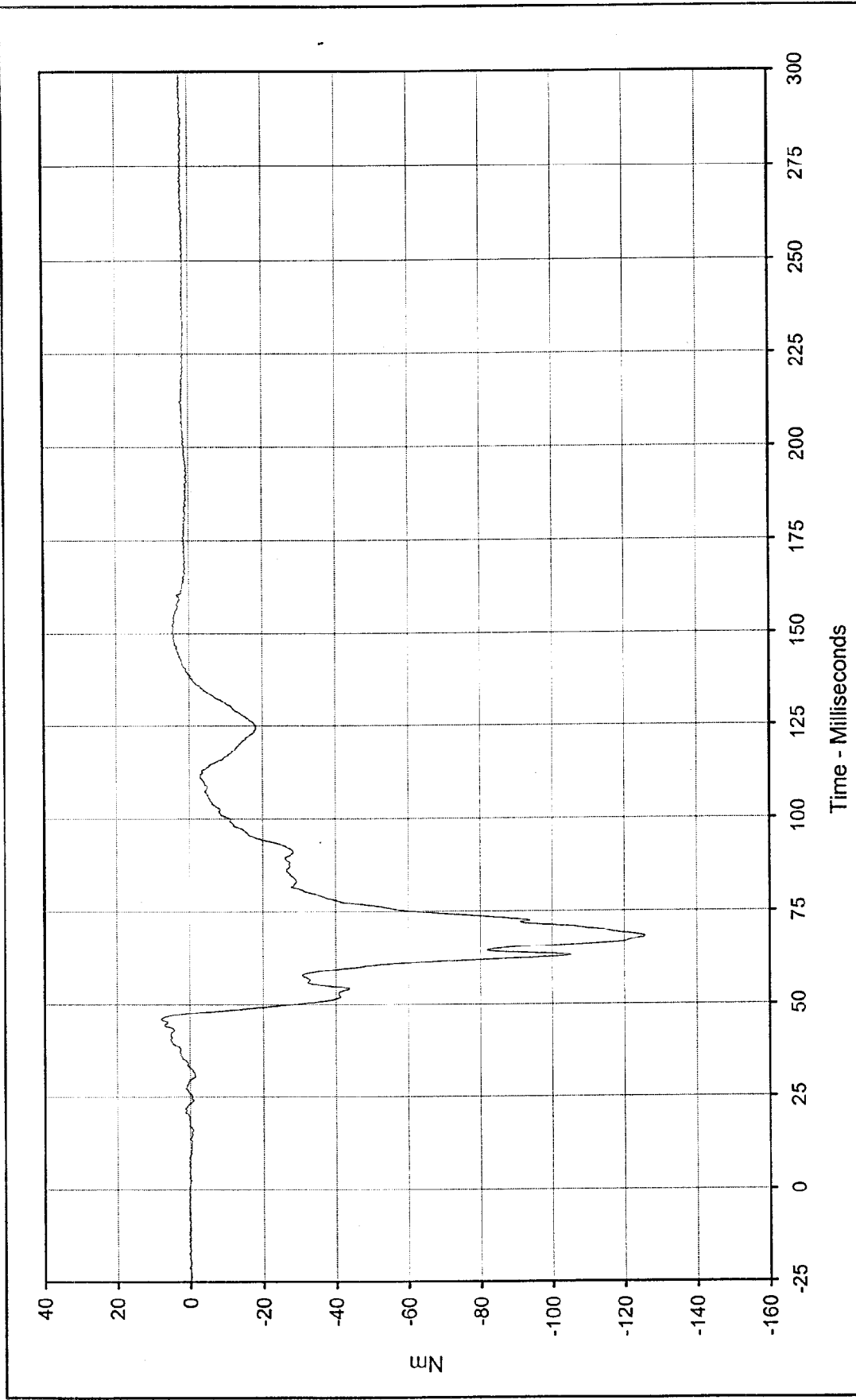
Curve Description: Driver Left Lower Tibia Moment Y  
 Maximum Value: 18.6 at 37.5 Milliseconds  
 Minimum Value: -42.1 at 69.6 Milliseconds  
 SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: FIL-030





Curve Description: Driver Left Lower Tibia Force Z      Test Program: 1999 NHTSA 35 mph NCAP    No.: MX0113  
 Maximum Value: 143.0    at 82.1    Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -2098.2    at 37.0    Milliseconds  
 SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: FIL-031

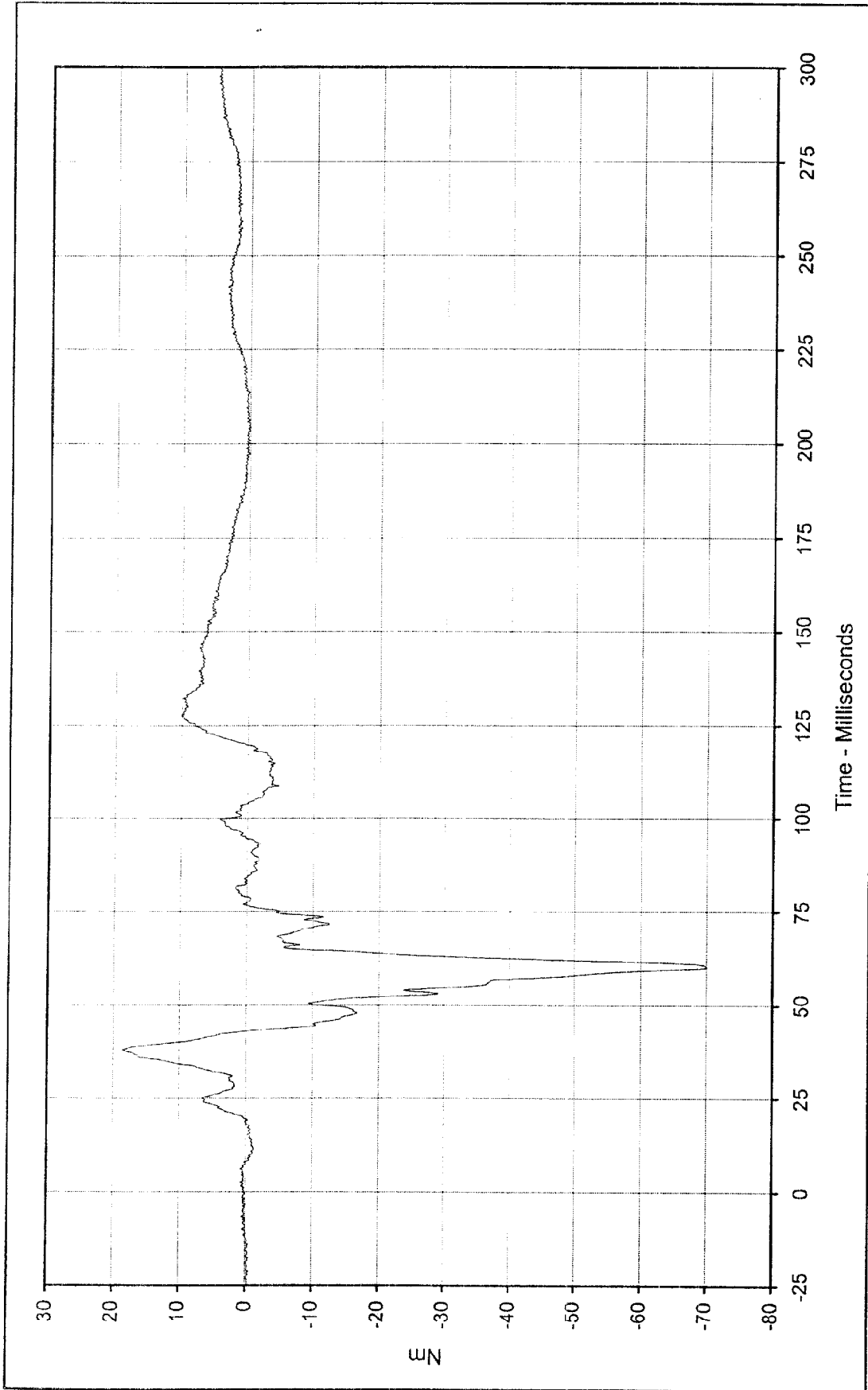




Curve Description: Driver Right Lower Tibia Moment X  
 Maximum Value: 7.9 at 46.2 Milliseconds  
 Minimum Value: -125.8 at 68.3 Milliseconds  
 SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: FIL-032

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

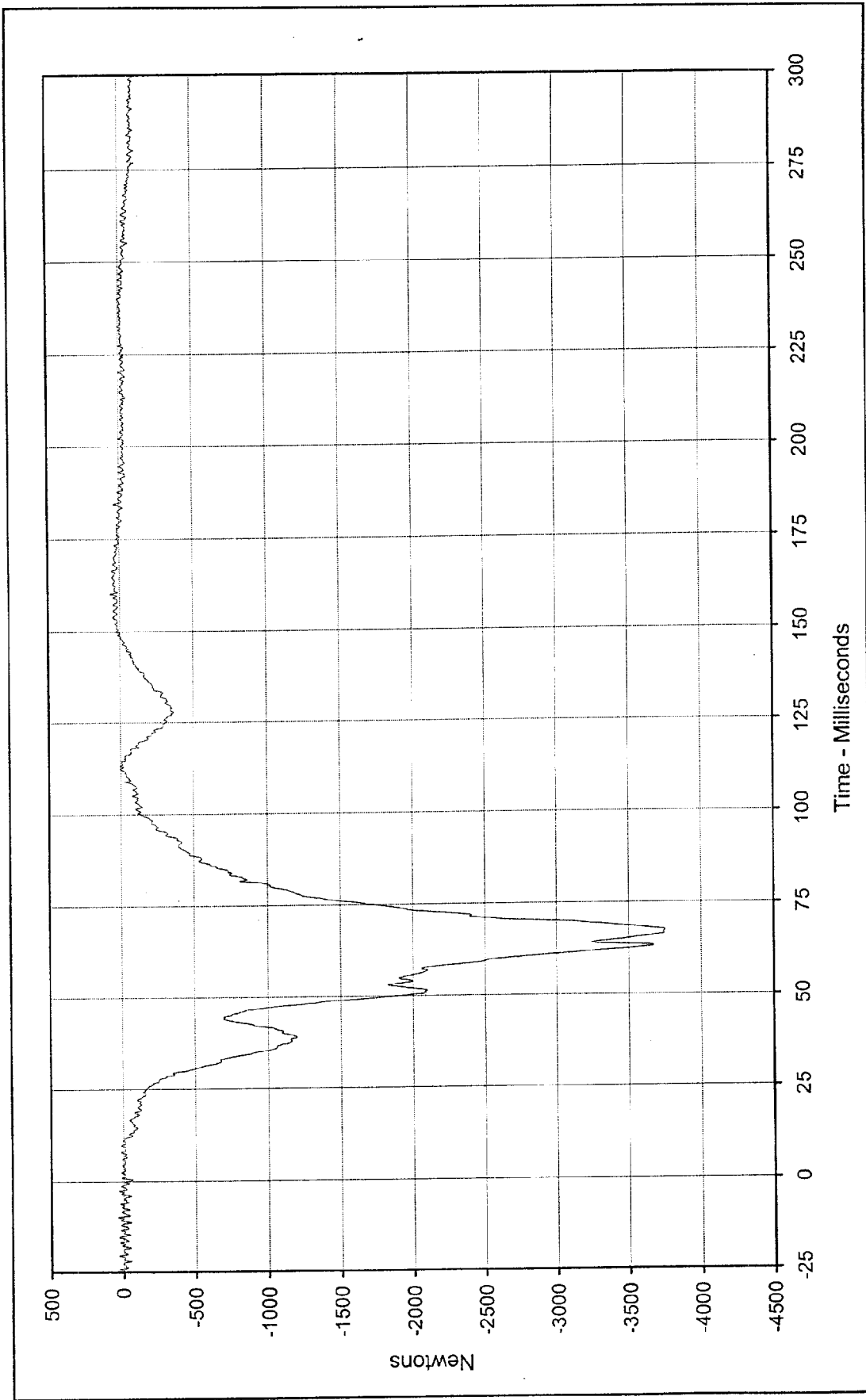




Curve Description: Driver Right Lower Tibia Moment Y  
 Maximum Value: 18.5 at 37.8 Milliseconds  
 Minimum Value: -70.0 at 60.0 Milliseconds  
 SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: FIL-033

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

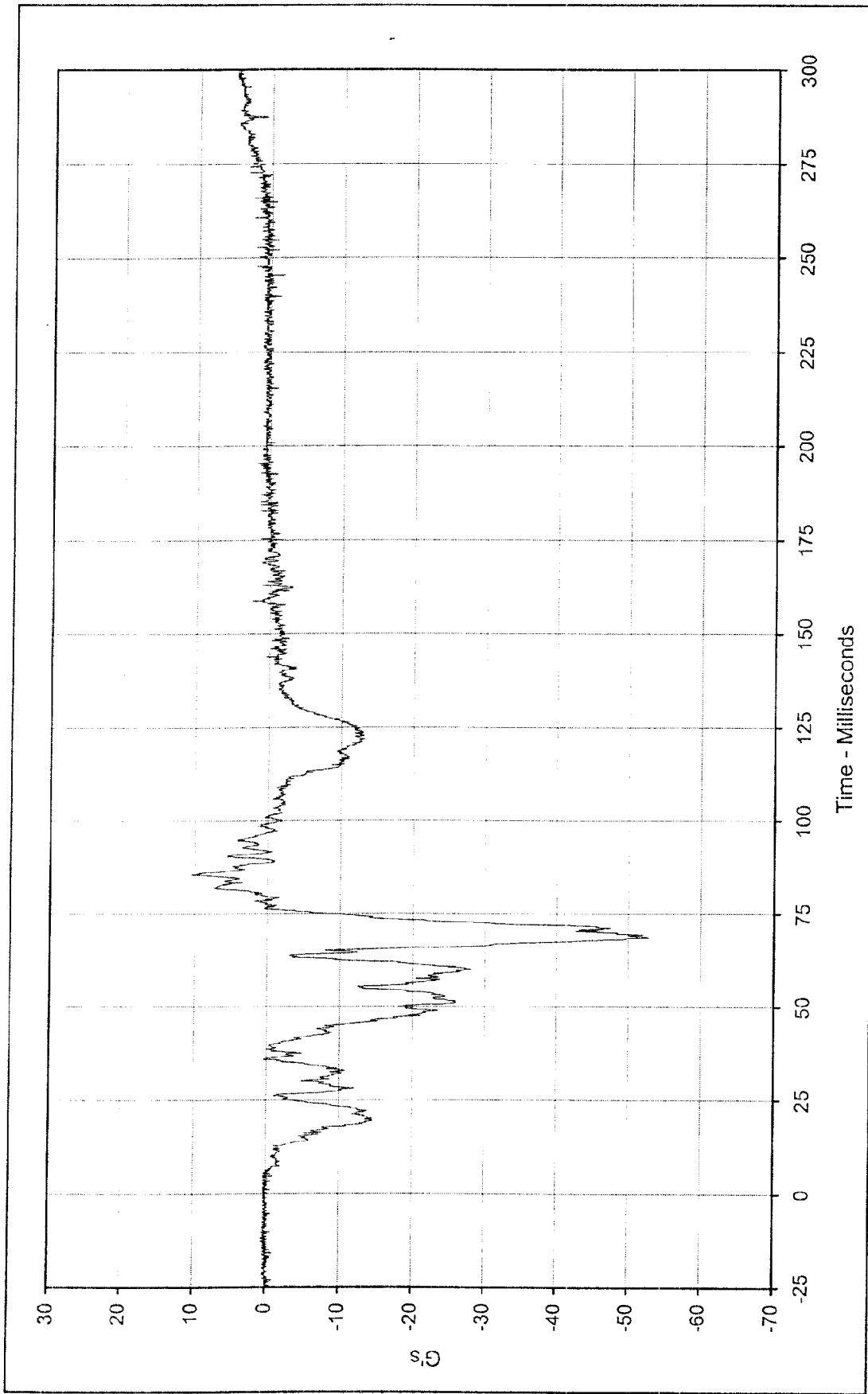




Curve Description: Driver Right Lower Tibia Force Z  
 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

Maximum Value: 63.8 at 160.1 Milliseconds  
 Minimum Value: -3753.3 at 67.6 Milliseconds  
 SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: FIL-034

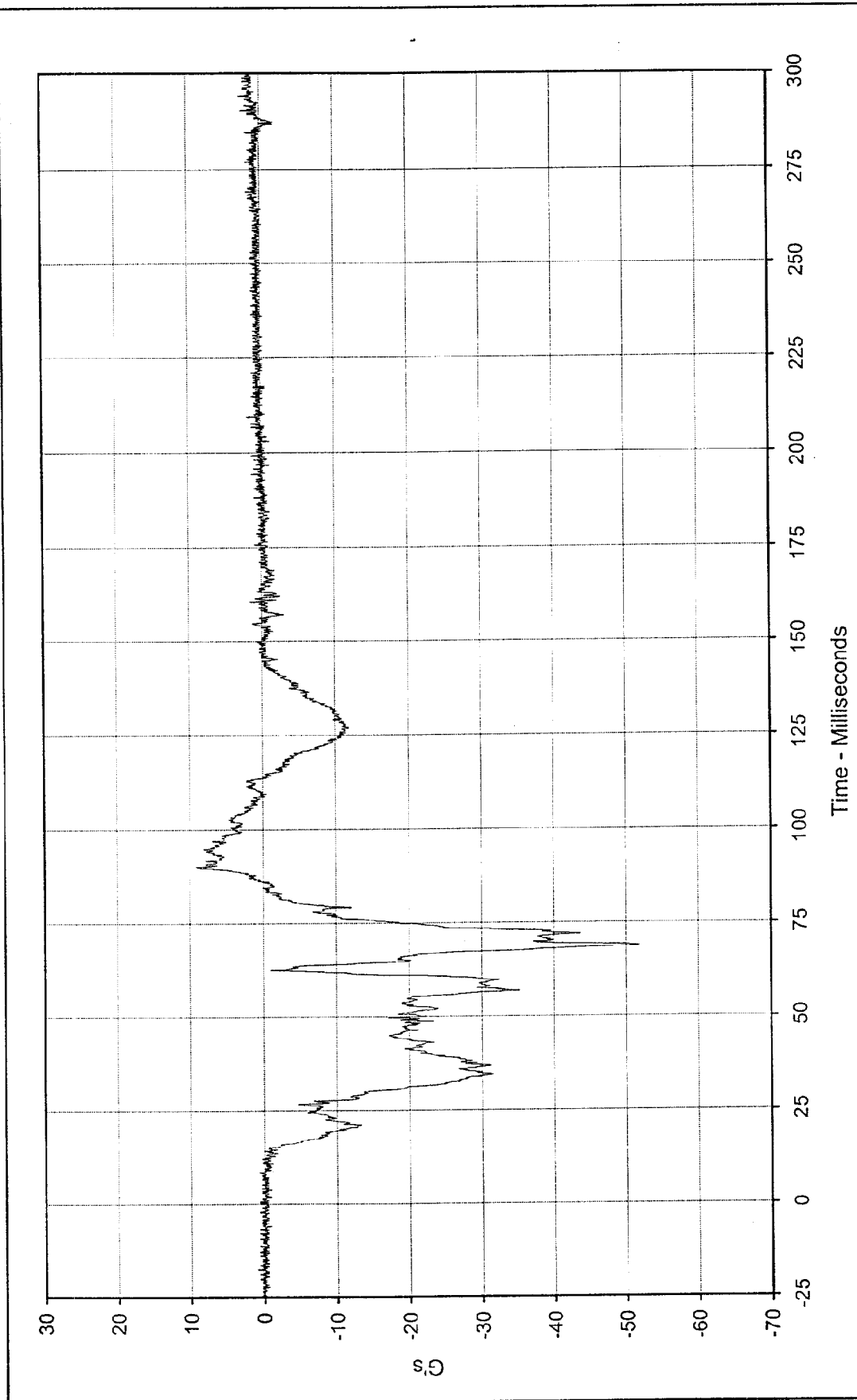




Curve Description: Driver Left Foot Aft X  
 Maximum Value: 10.4 at 85.5 Milliseconds  
 Minimum Value: -52.8 at 68.7 Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: FIL-035

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

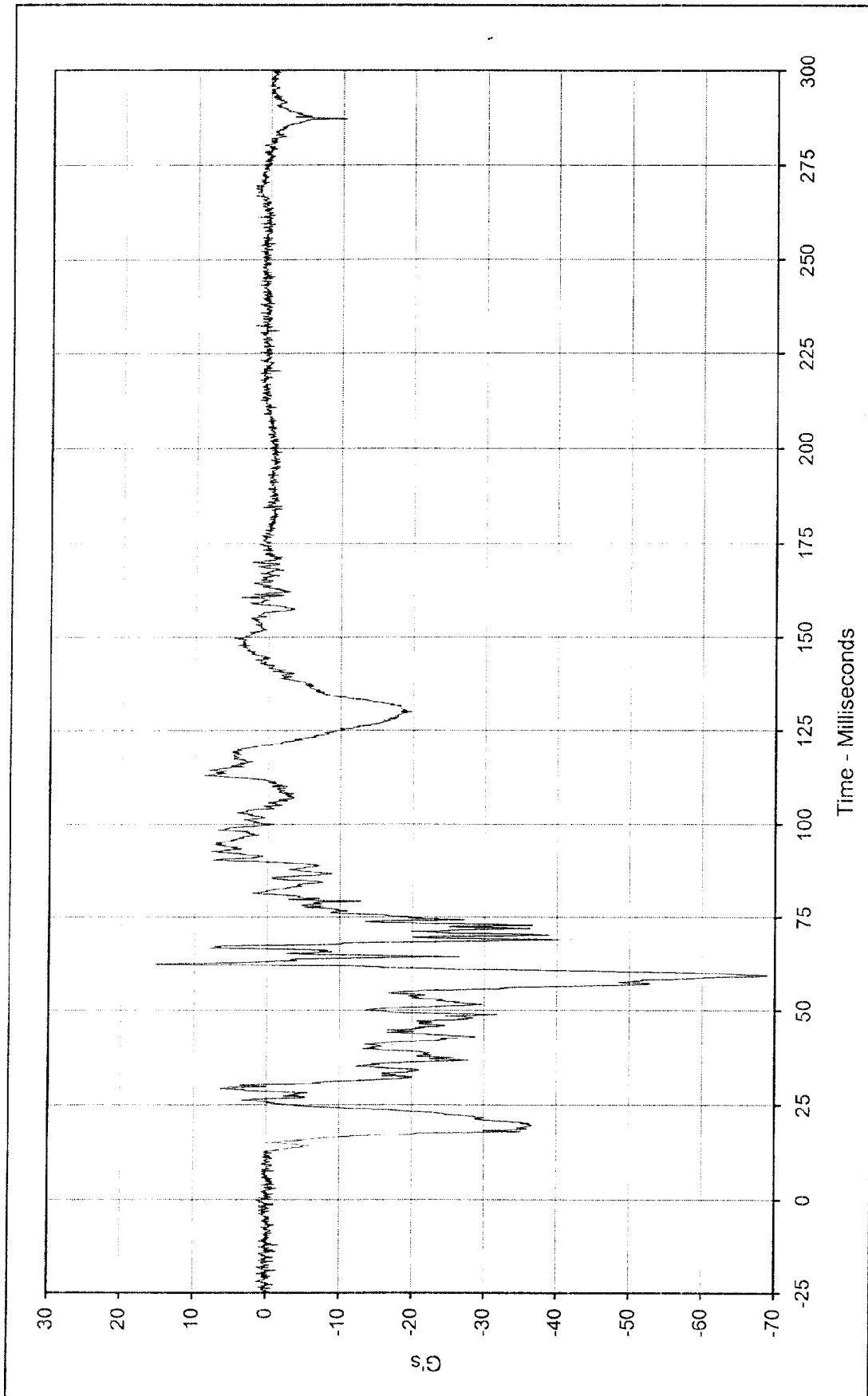




Curve Description: Driver Left Foot Aft Z  
 Maximum Value: 9.1 at 90.0 Milliseconds  
 Minimum Value: -51.8 at 68.8 Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: FIL-036

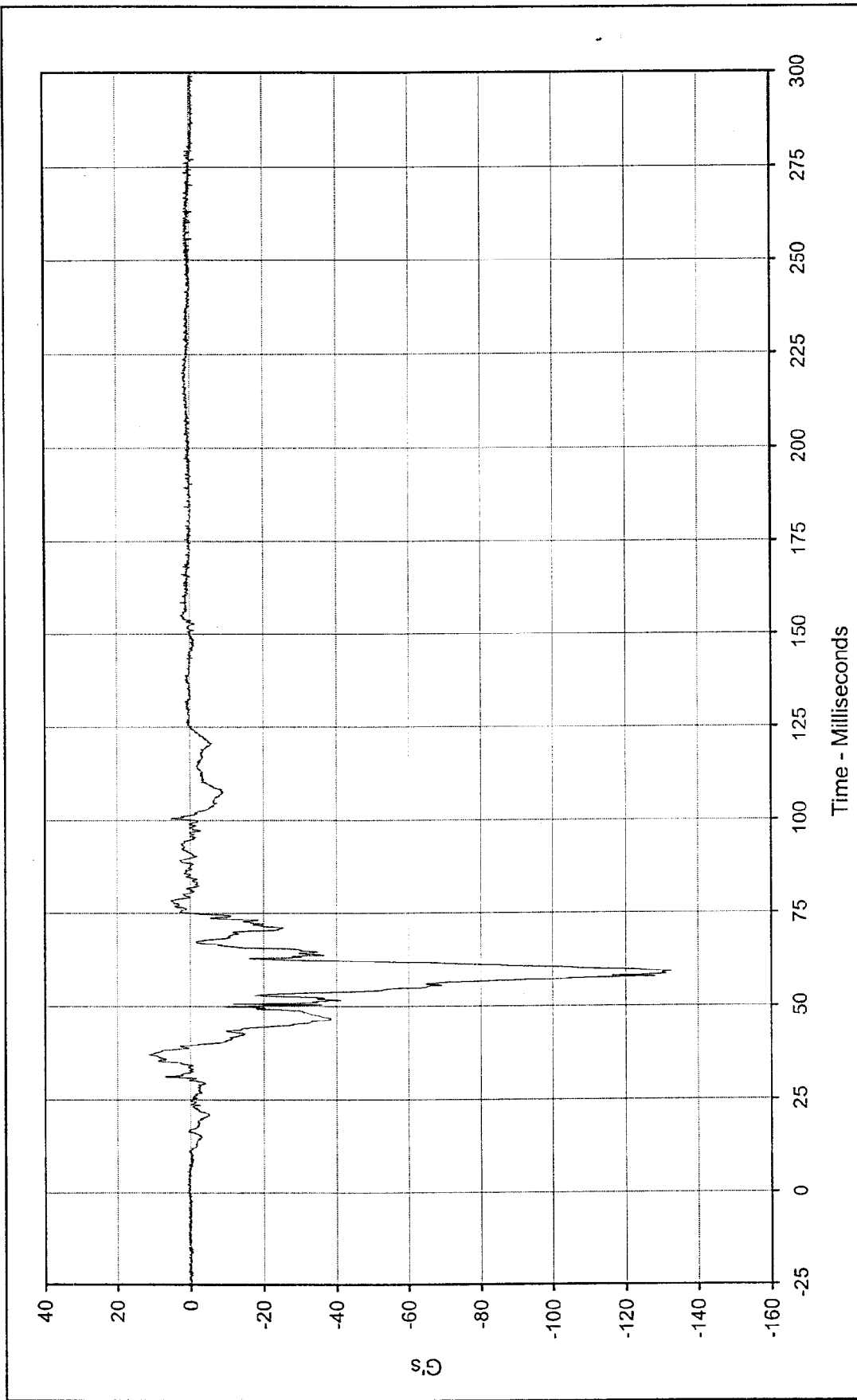
Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan





Curve Description: Driver Left Foot Fore Z      Test Program: 1999 NHTSA 35 mph NCAP      No.: MX0113  
Maximum Value: 15.3 at 62.4 Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
Minimum Value: -69.0 at 59.3 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 1/22/99  
Curve Number: FIL-037

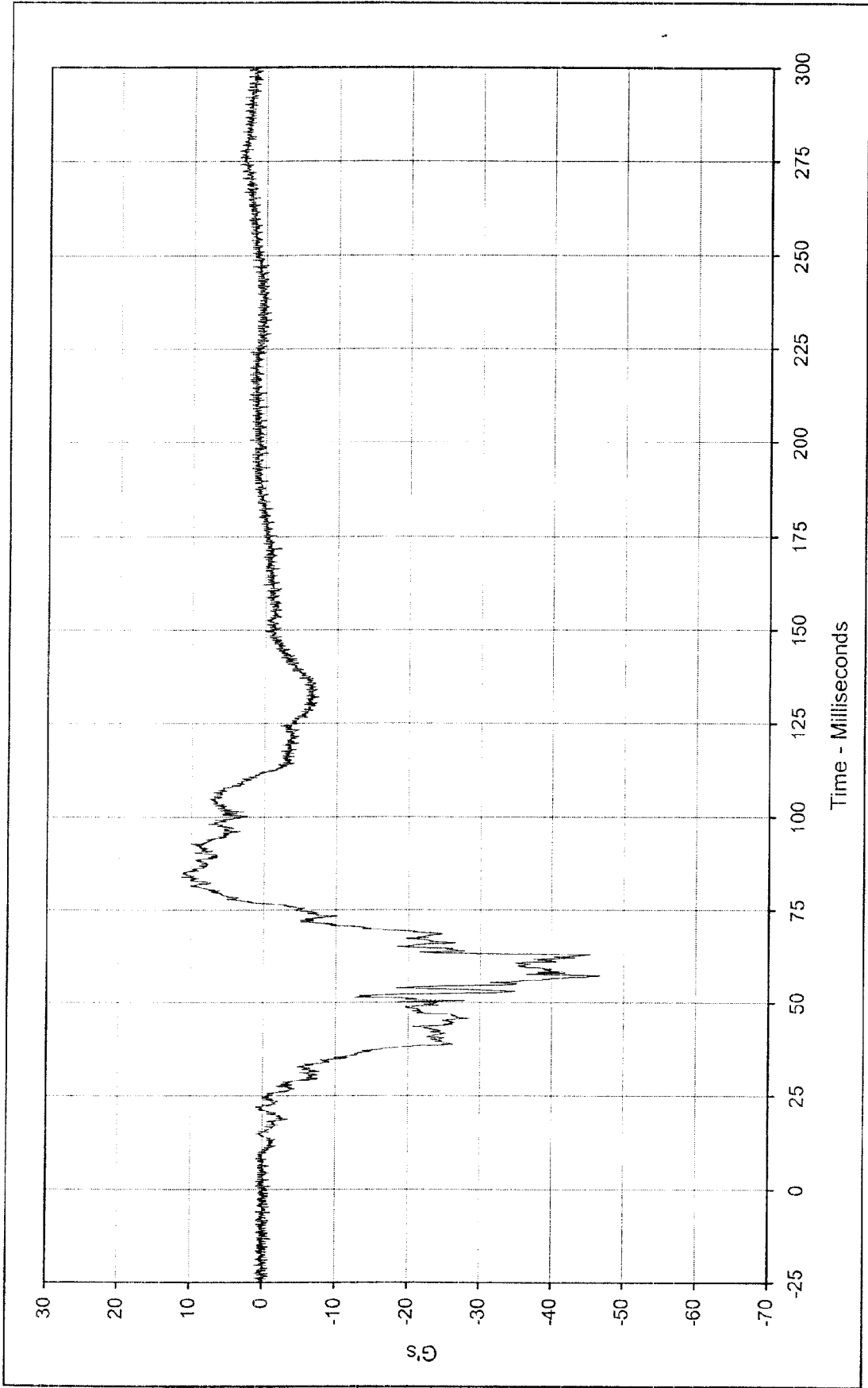




Curve Description: Driver Right Foot Aft X      Test Program: 1999 NHTSA 35 mph NCAP      No.: MX0113  
 Maximum Value: 11.3      at 36.9      Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -132.9      at 59.1      Milliseconds



SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: FIL-038



Curve Description: Driver Right Foot Aft Z Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113

Maximum Value: 11.4 at 83.7 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

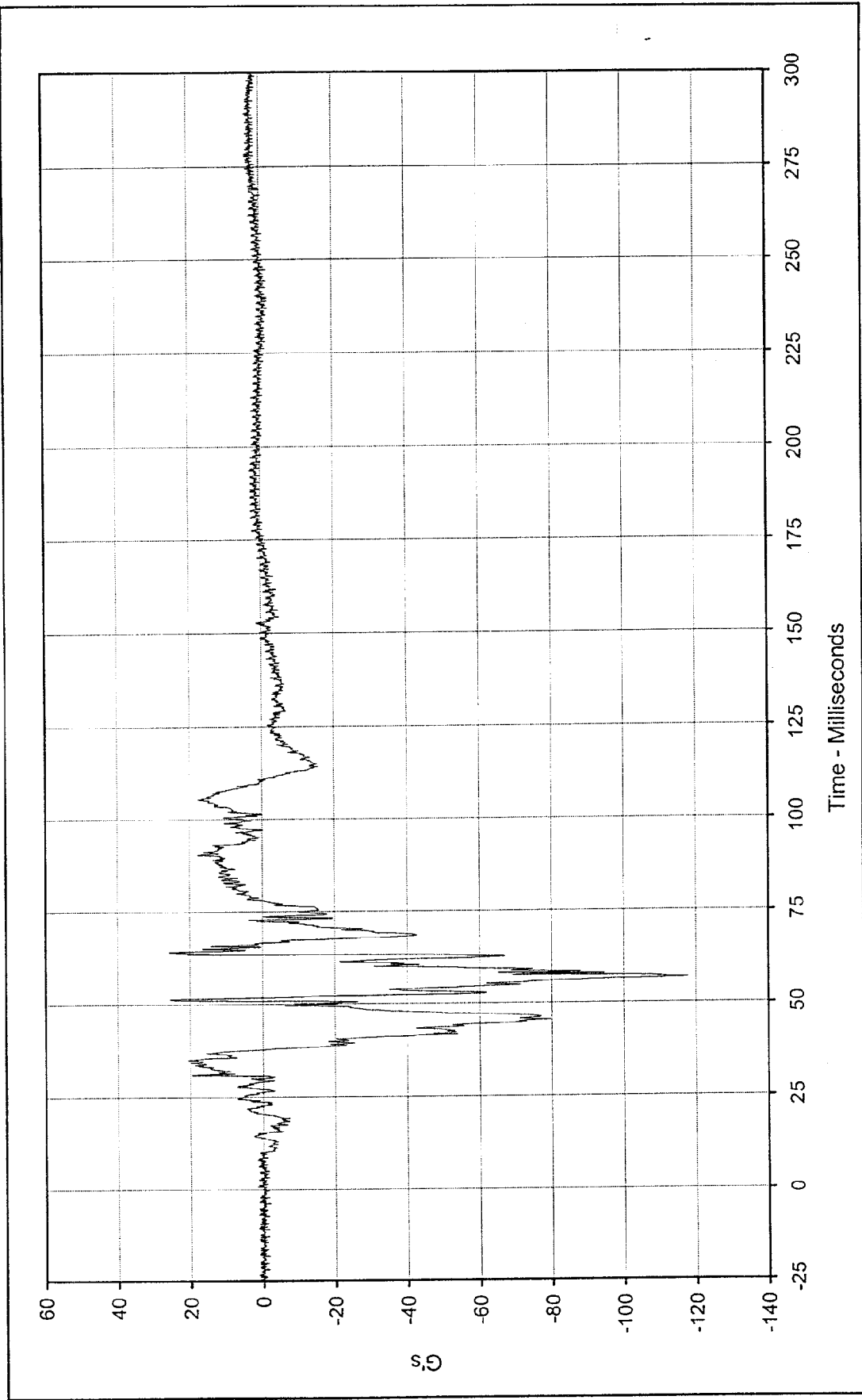
Minimum Value: -46.7 at 57.2 Milliseconds

SAE Filter Class: 1000

Date of Test: 1/22/99

Curve Number: FIL-039

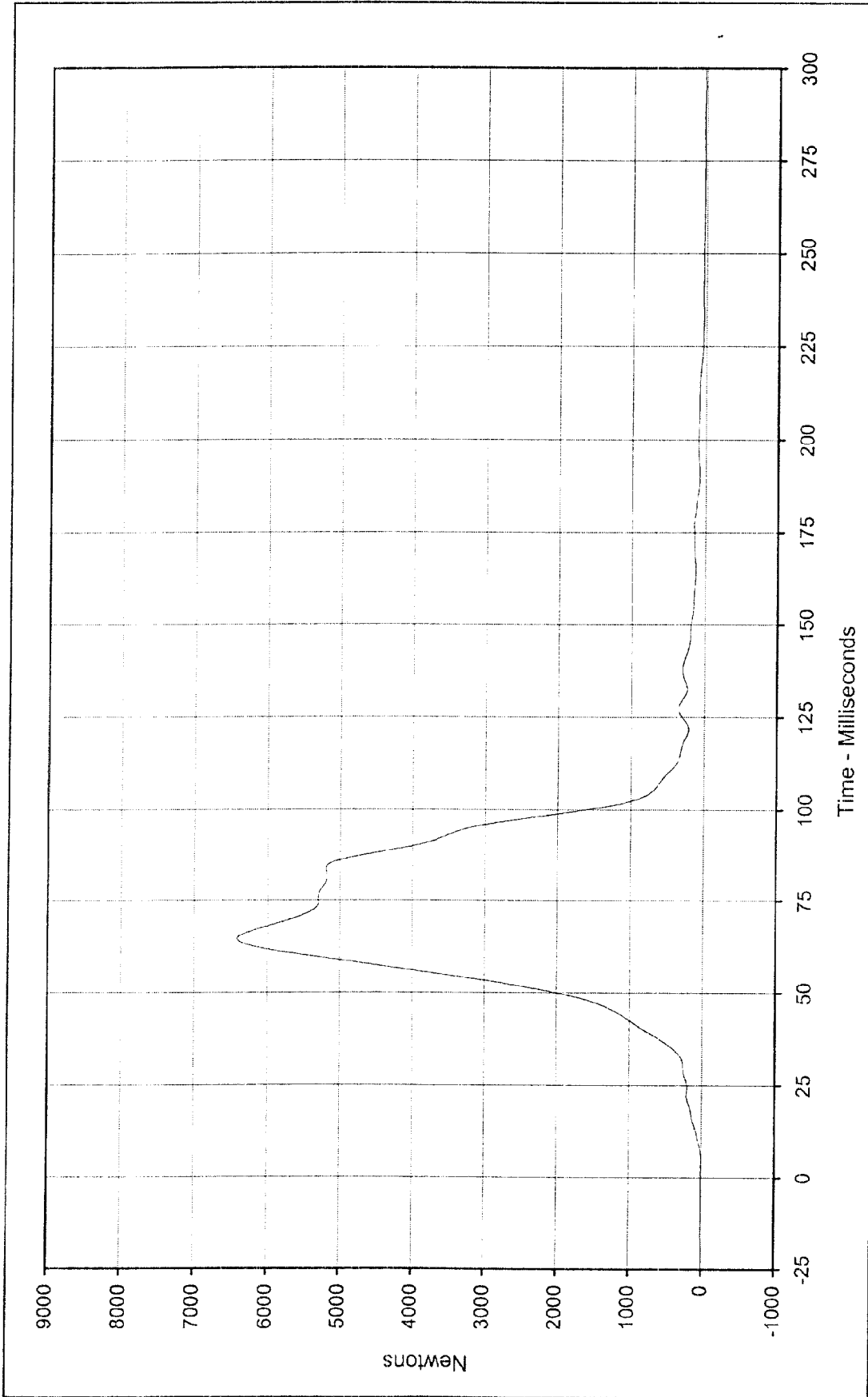




Curve Description: Driver Right Foot Fore Z      Test Program: 1999 NHTSA 35 mph NCAP      No.: MX0113  
 Maximum Value: 25.8      at 64.0      Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -117.8      at 56.7      Milliseconds



SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: FIL-040



Curve Description: Driver Lap Belt Force

Maximum Value: 6410.7 at 64.5 Milliseconds

Minimum Value: 2.8 at 4.8 Milliseconds

SAE Filter Class: 60

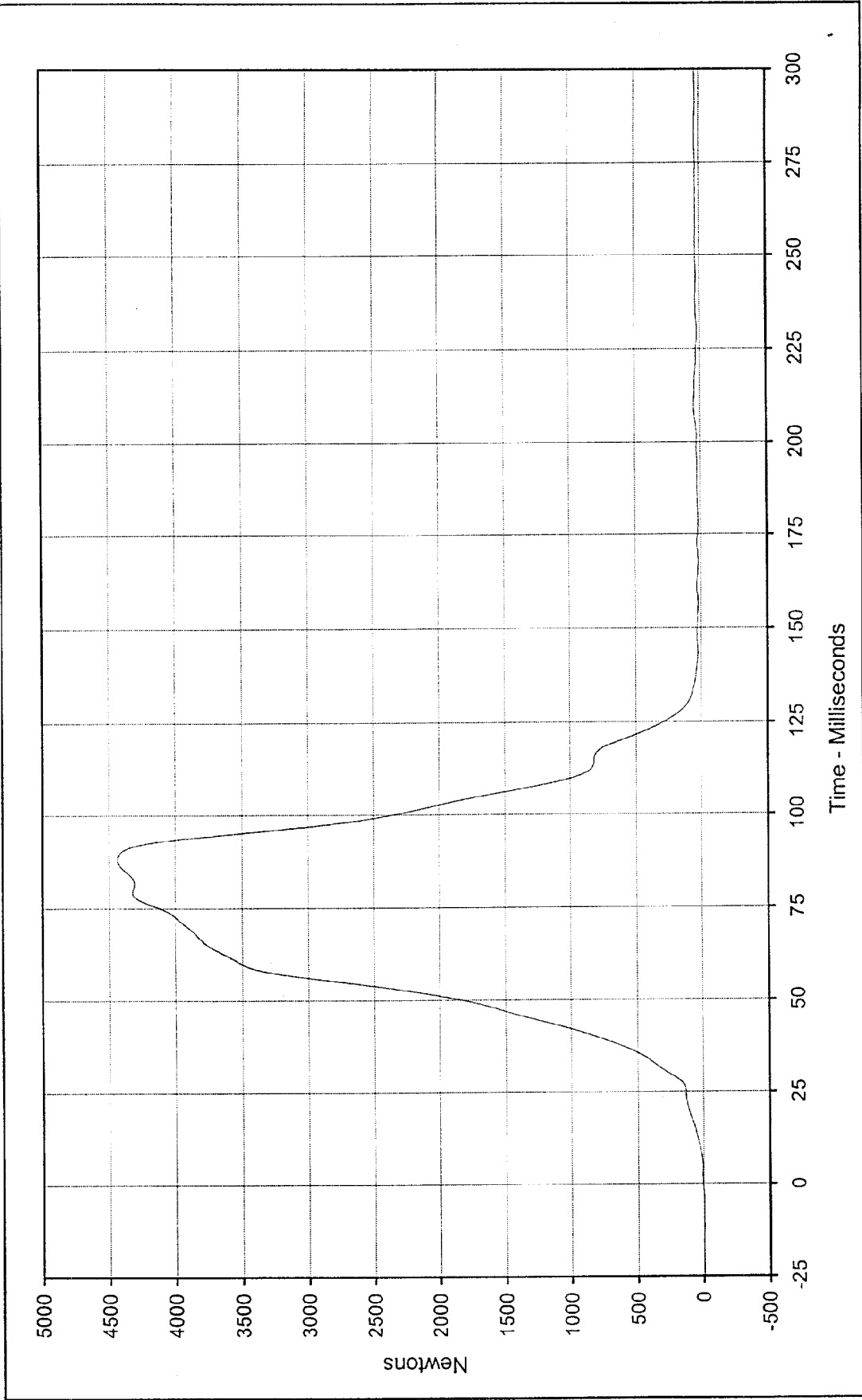
Date of Test: 1/22/99

Curve Number: FIL-041

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113

Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

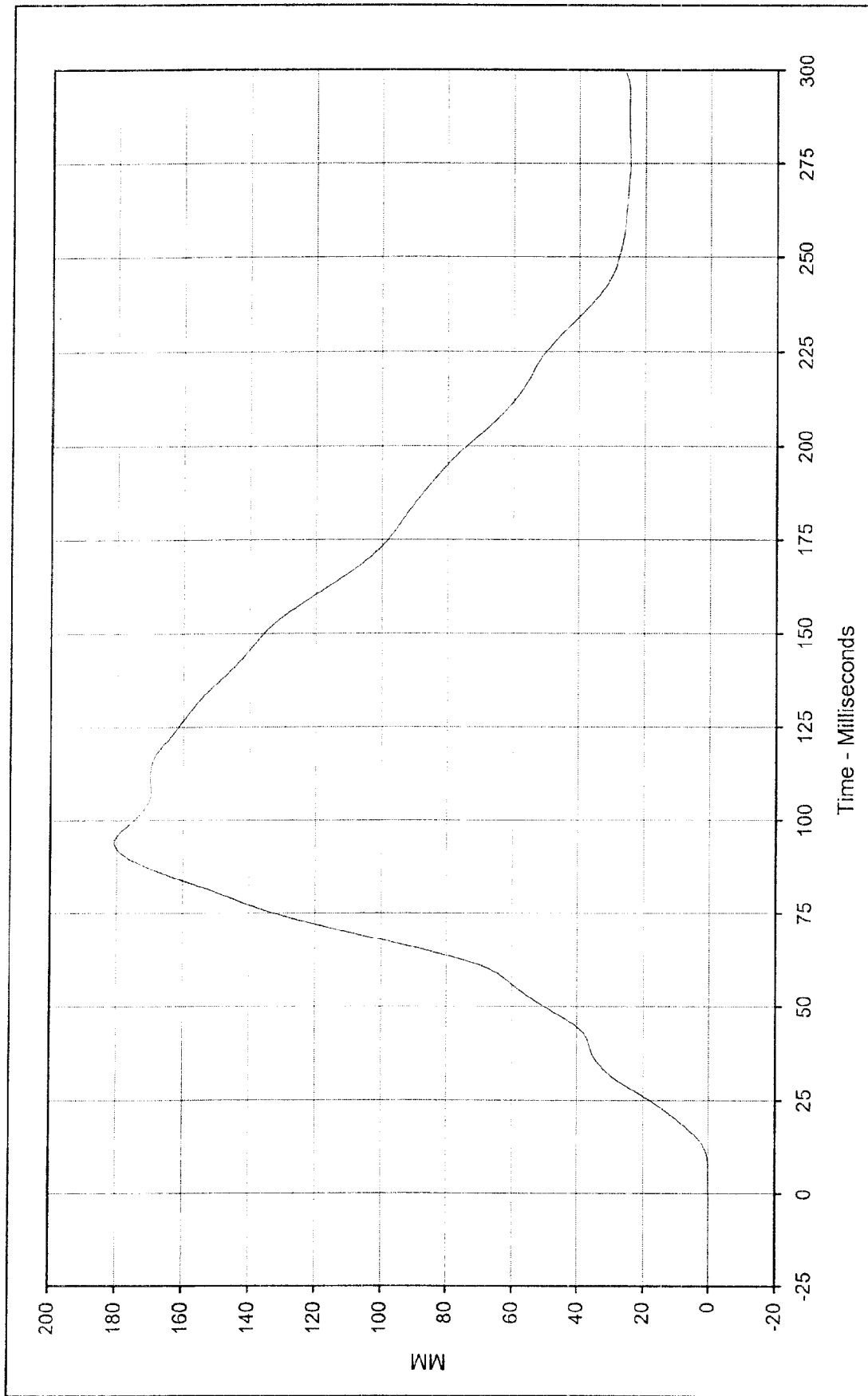




Curve Description: Driver Shoulder Belt Force Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 4437.1 at 88.1 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: 5.7 at 0.0 Milliseconds

SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-042



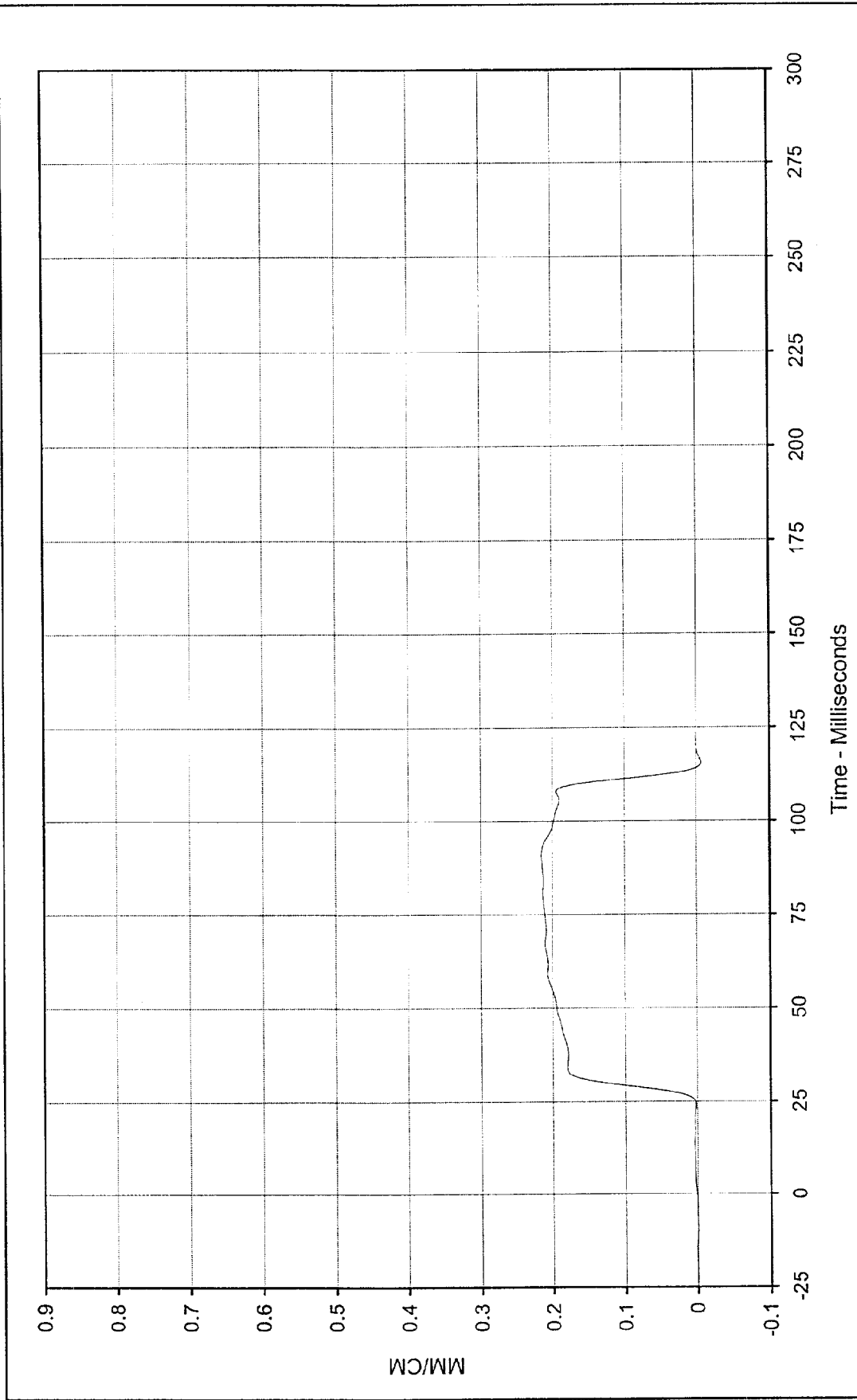


Curve Description: Driver Shoulder Belt Pullout  
 Maximum Value: 180.7 at 94.0 Milliseconds  
 Minimum Value: 0.0 at 0.0 Milliseconds



SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-043

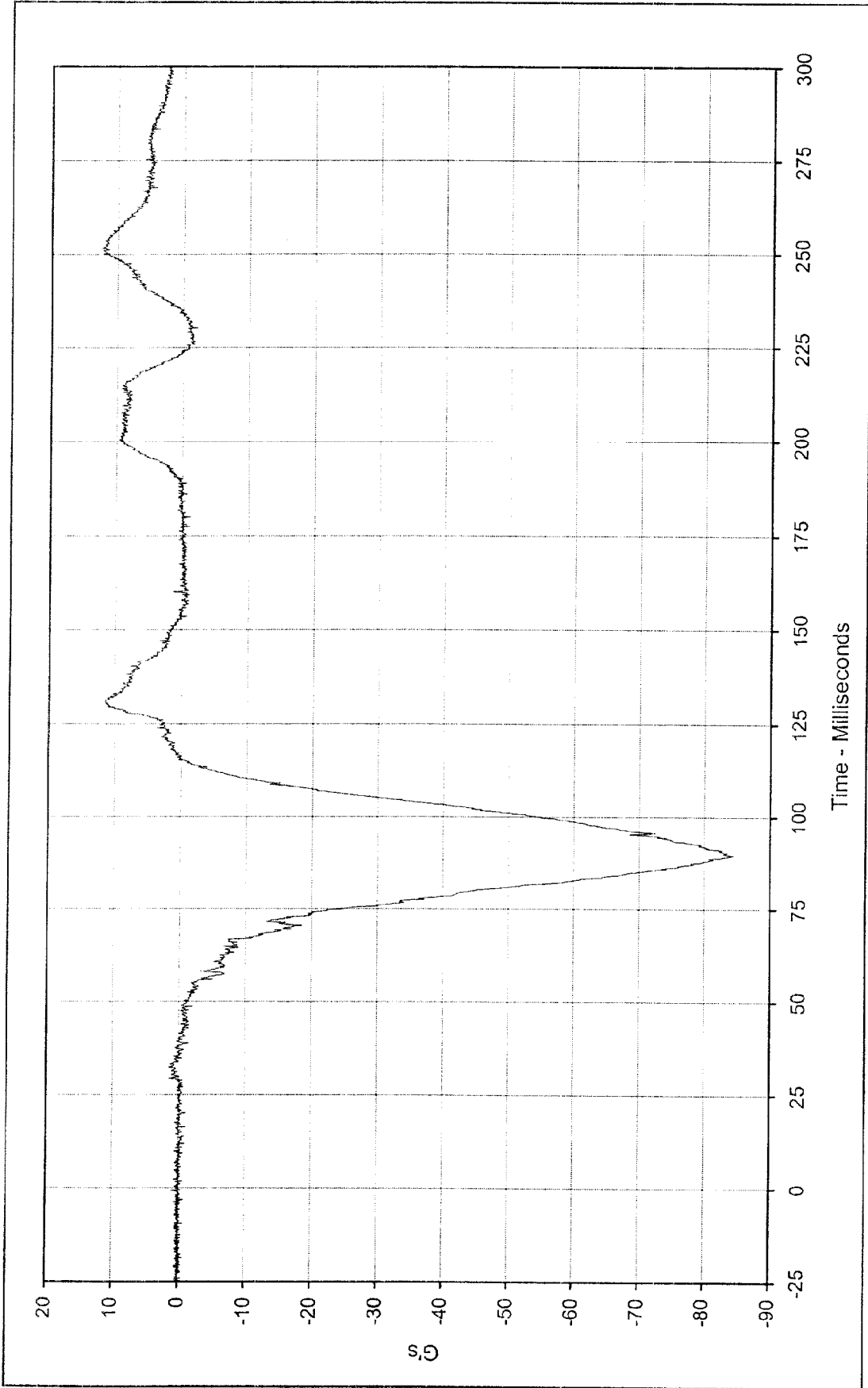
Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan



Curve Description: Driver Shoulder Belt Elongation      Test Program: 1999 NHTSA 35 mph NCAP      No.: MX0113  
 Maximum Value: 0.22      at 90.7      Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -0.01      at 115.4      Milliseconds



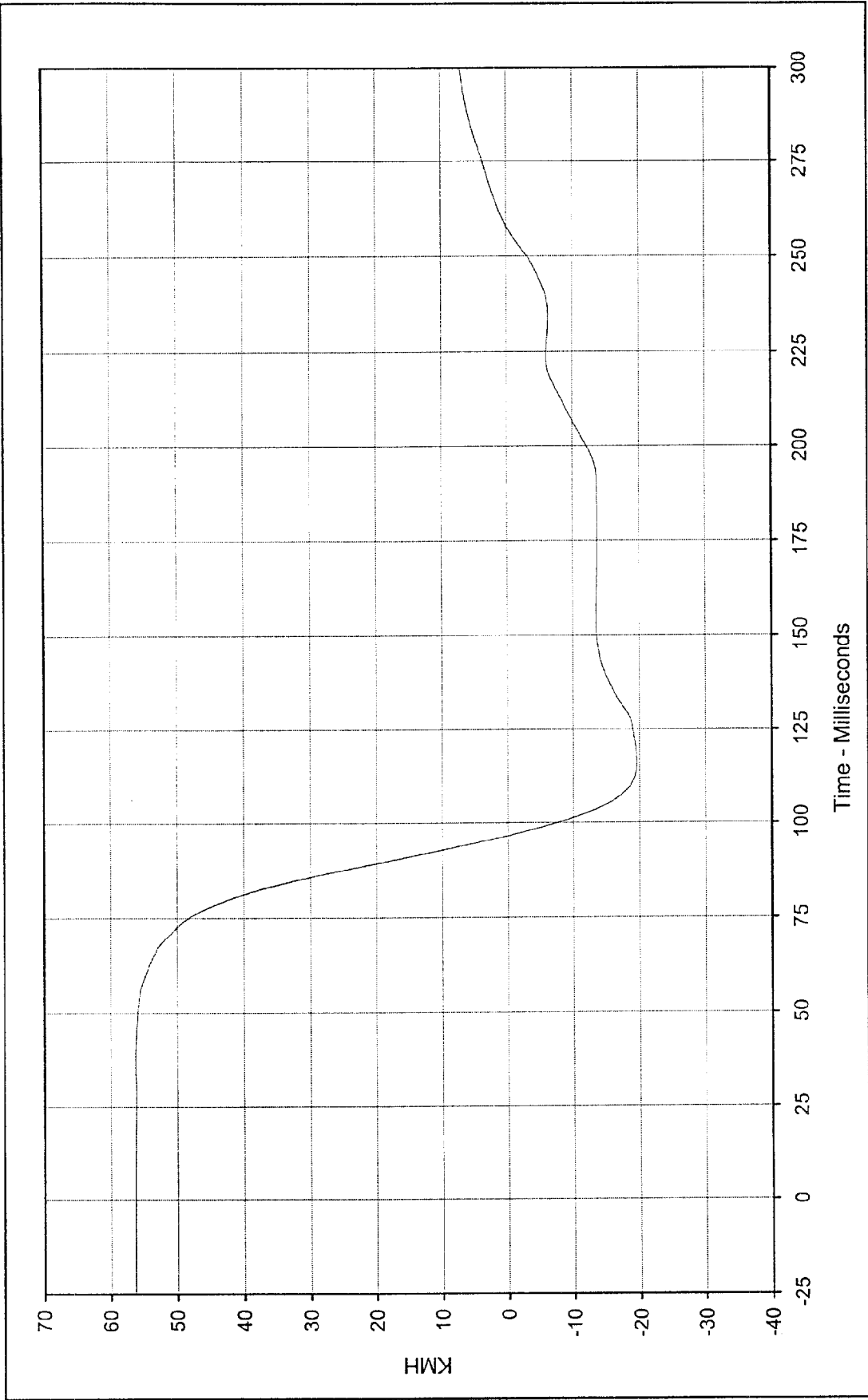
SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-044



Curve Description: Passenger Head Primary X  
 Maximum Value: 12.5 at 251.6 Milliseconds  
 Minimum Value: -84.4 at 89.5 Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: FIL-045

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

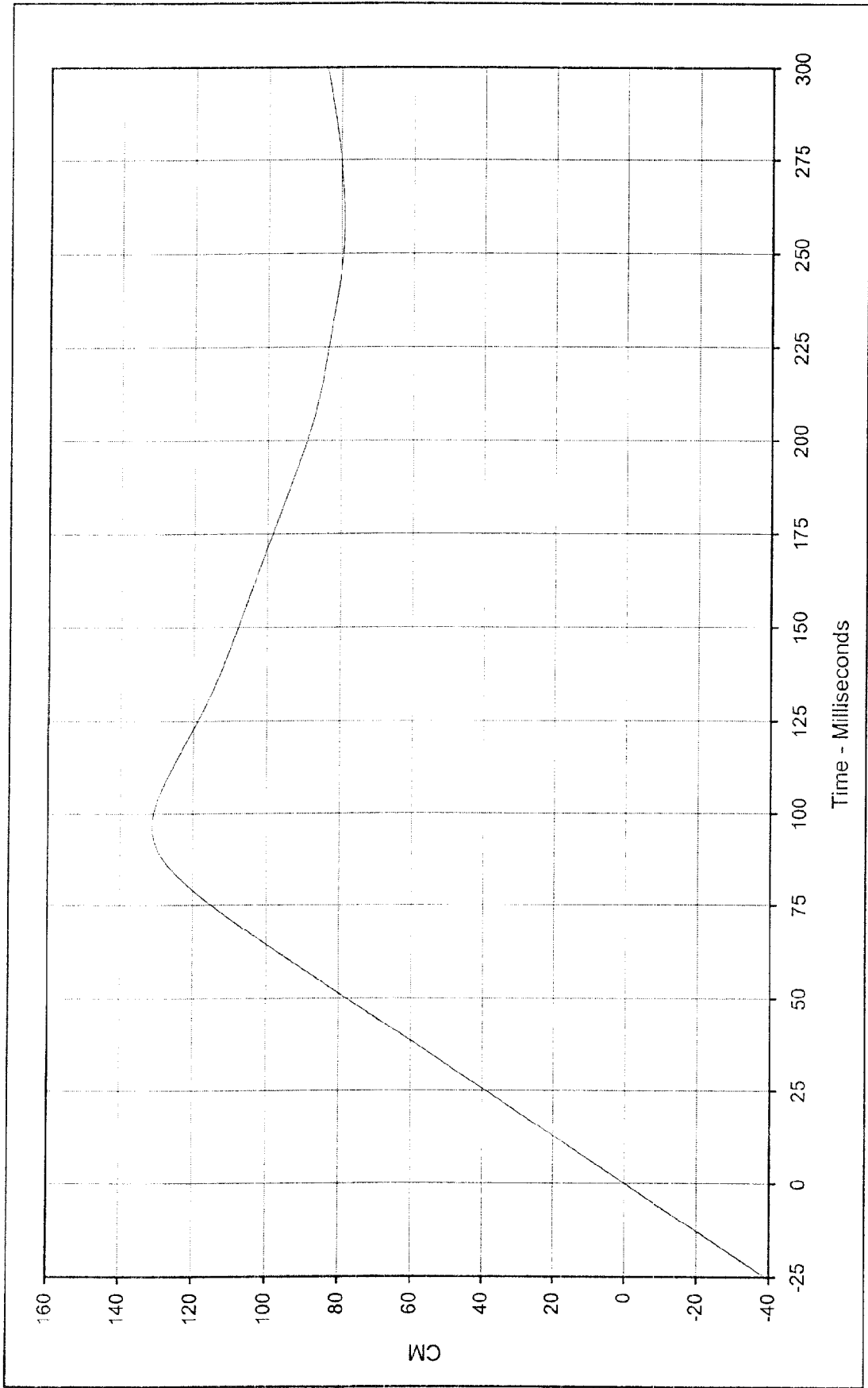




Curve Description: Passenger Head Primary X Velocity      Test Program: 1999 NHTSA 35 mph NCAP      No.: MX0113  
 Maximum Value: 56.3      at 0.8      Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -19.5      at 115.7      Milliseconds

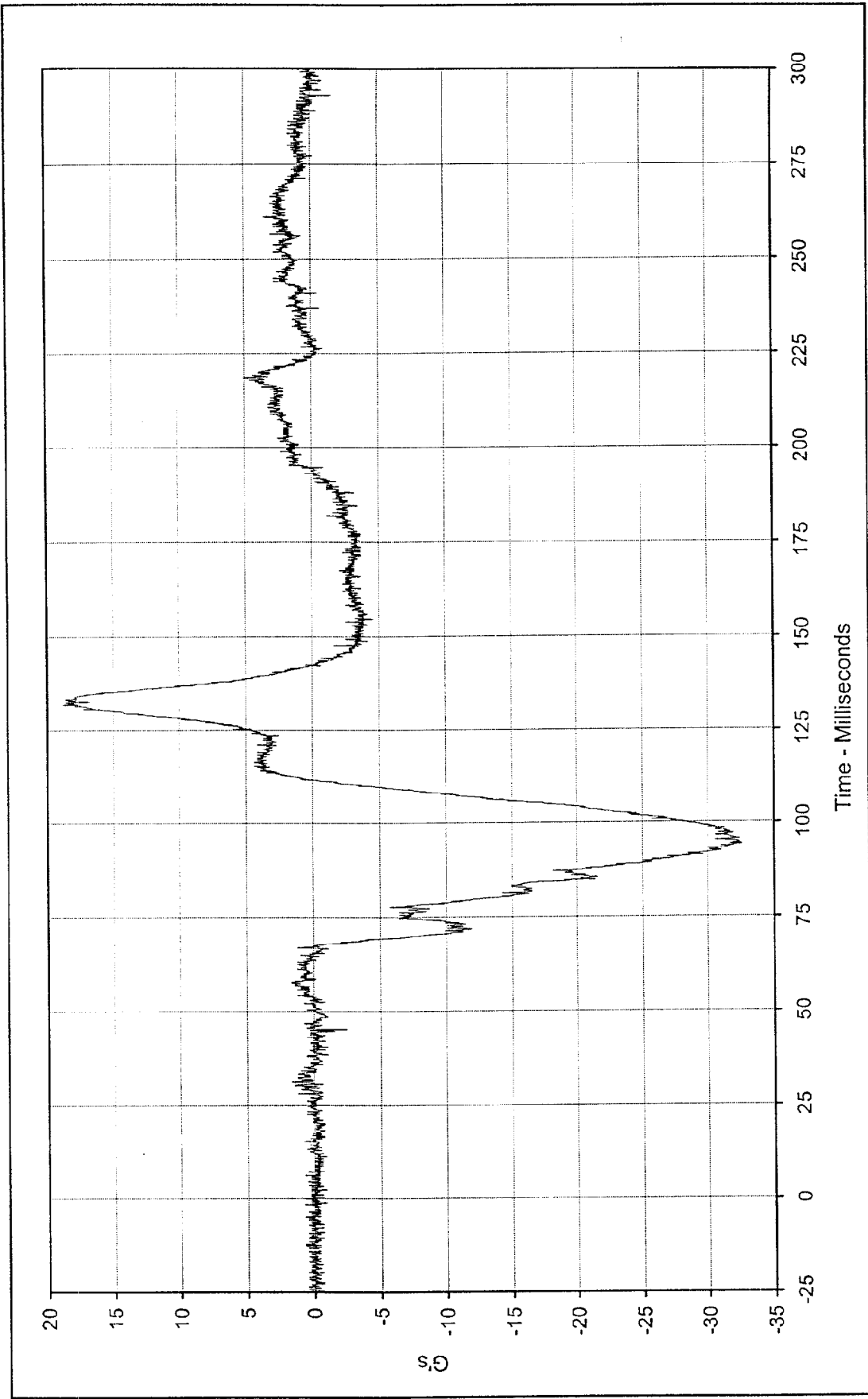


SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: IN1-045



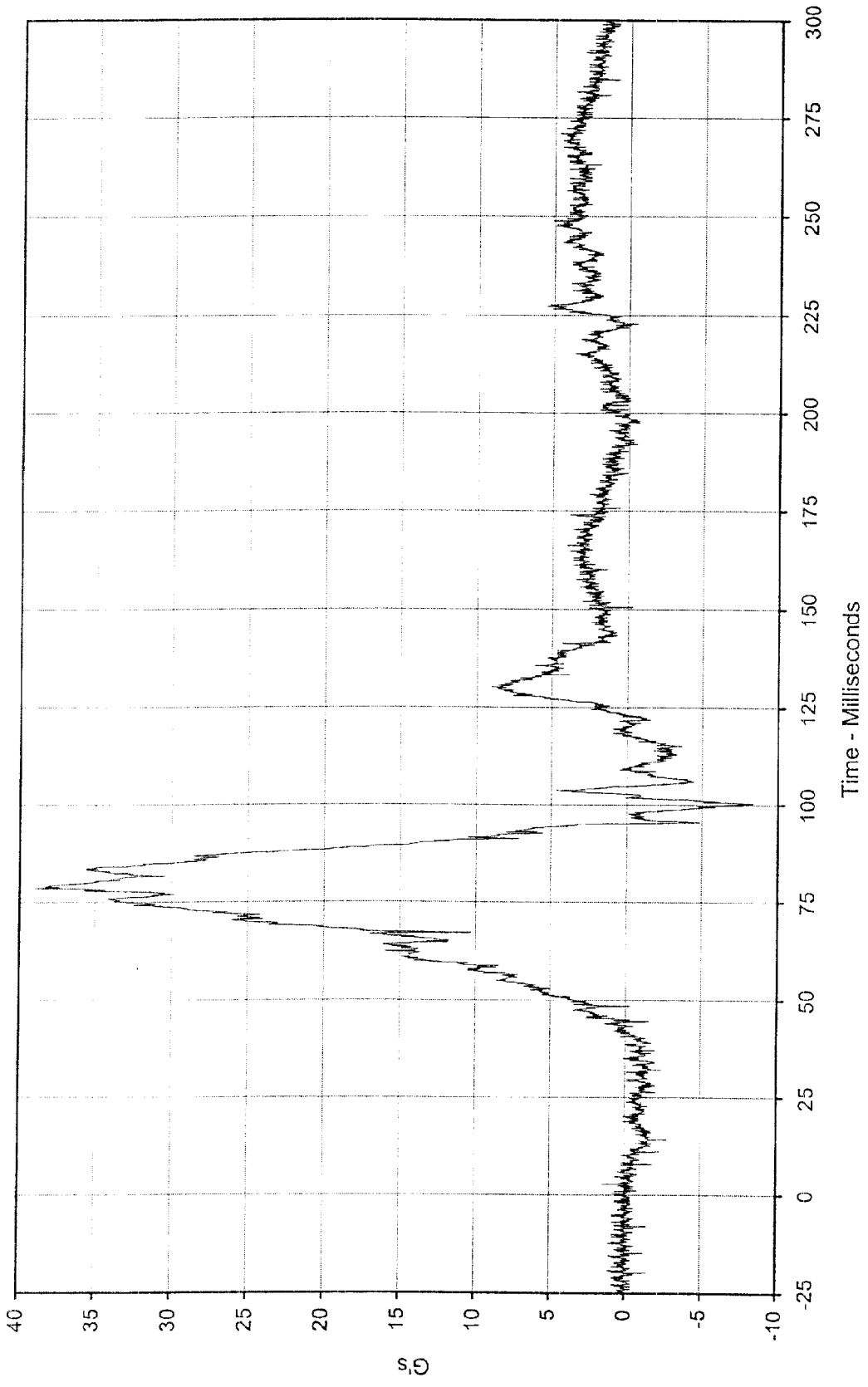
Curve Description: Passenger Head Primary X Displ.      Test Program: 1999 NHTSA 35 mph NCAP      No.: MX0113  
 Maximum Value: 131.2      at 96.5      Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -0.1      at 0.0      Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: IN2-045





Curve Description: Passenger Head Primary Y  
 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Maximum Value: 18.8 at 131.8 Milliseconds  
 Minimum Value: -32.6 at 94.1 Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: FIL-046

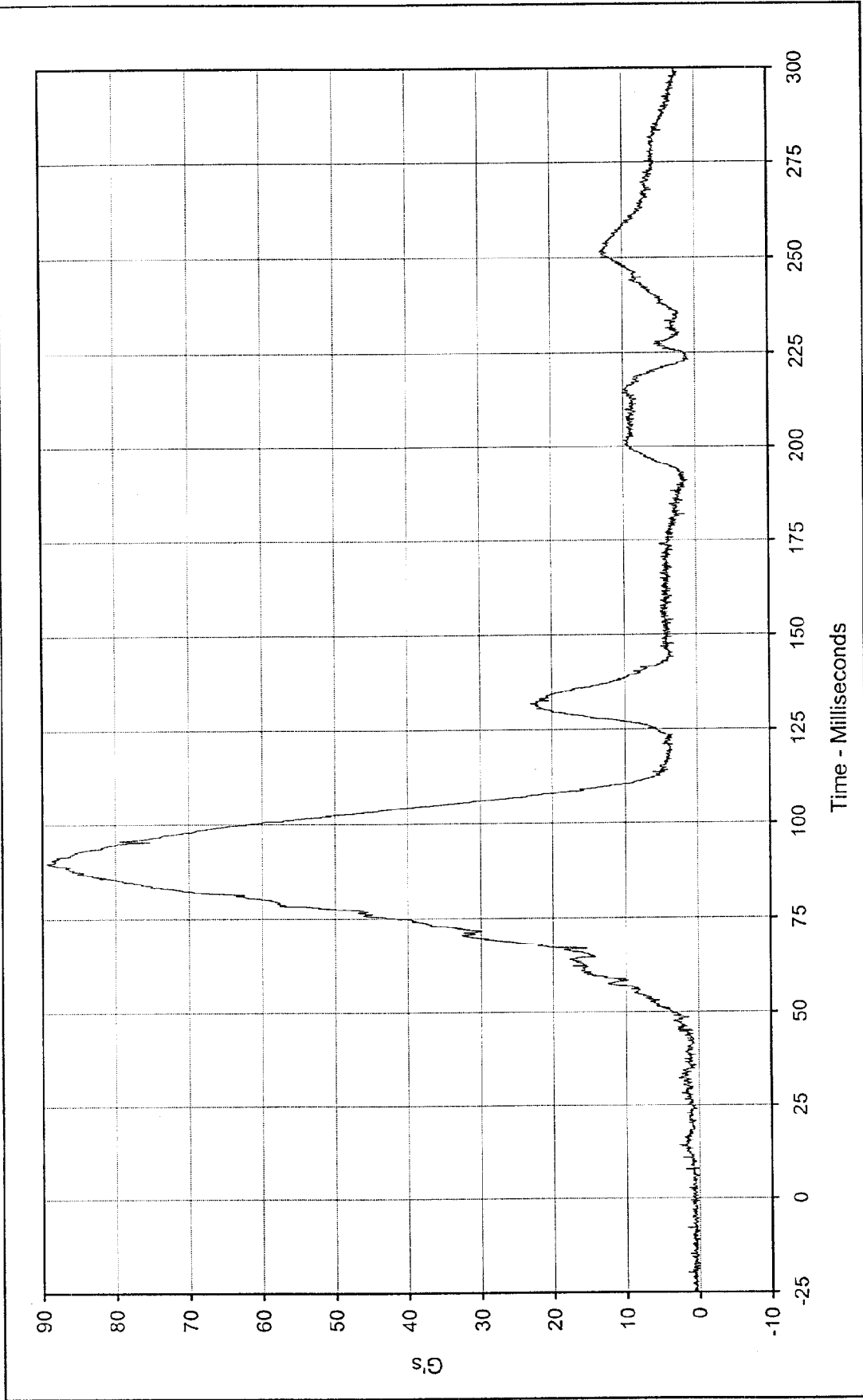




Curve Description: Passenger Head Primary Z  
 Maximum Value: 38.9 at 78.4 Milliseconds  
 Minimum Value: -8.4 at 100.3 Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: FIL-047

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

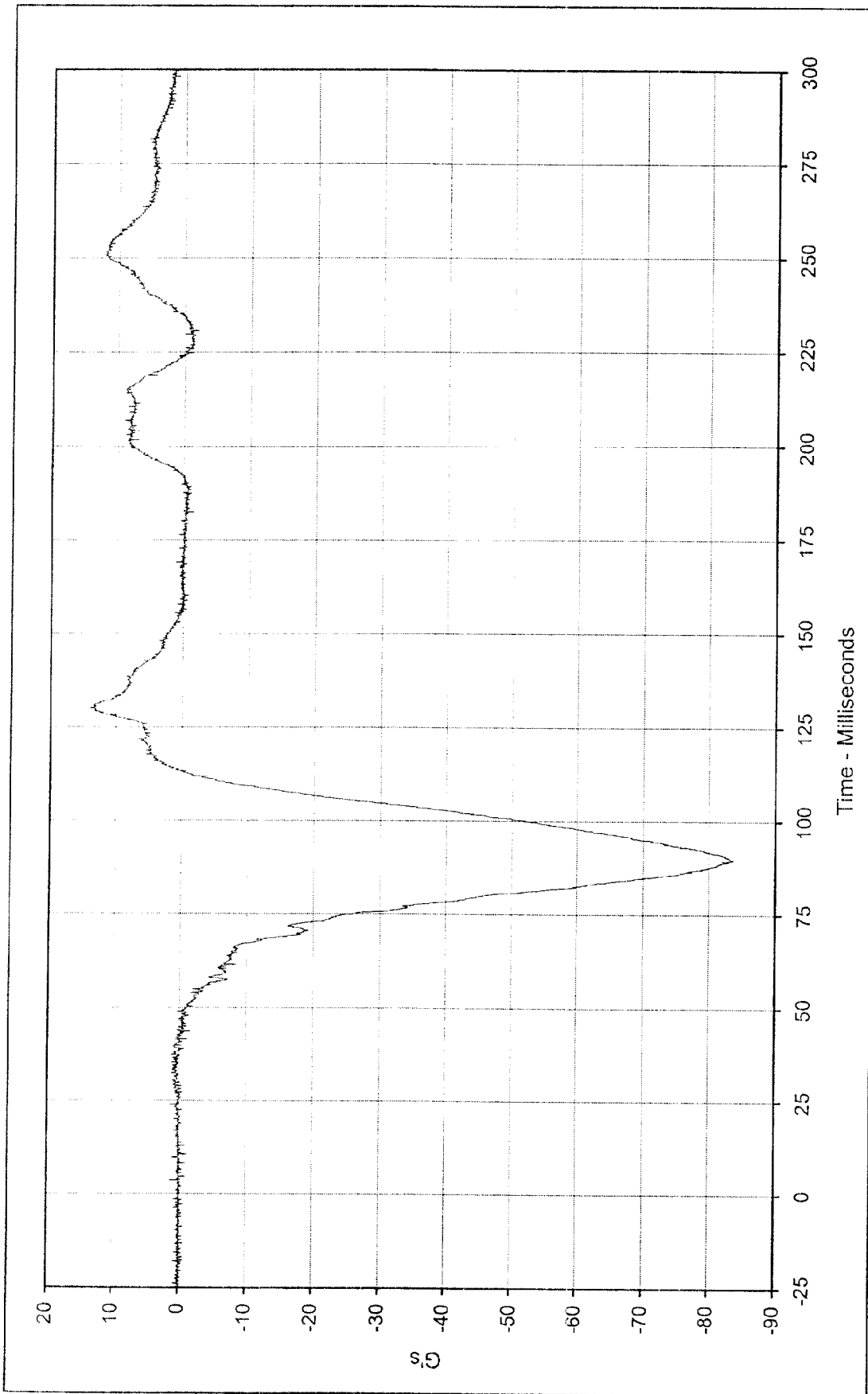




Curve Description: Passenger Head Resultant Primary  
 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 89.4 at 89.5 Milliseconds  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: 0.0 at 6.1 Milliseconds

SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: RES-045

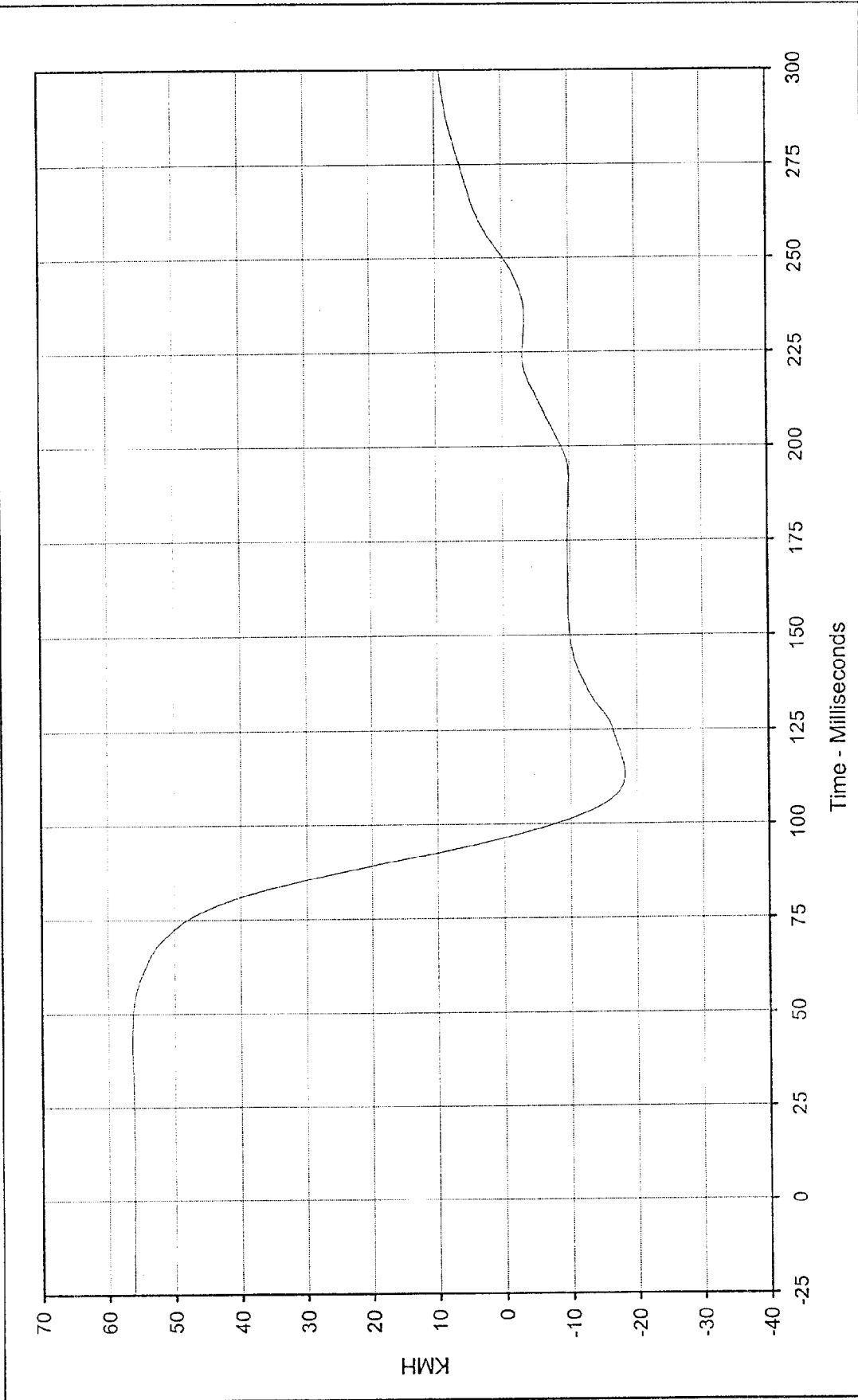




Curve Description: Passenger Head Redundant X  
 Maximum Value: 14.1 at 130.2 Milliseconds  
 Minimum Value: -83.7 at 89.3 Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: FIL-048

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

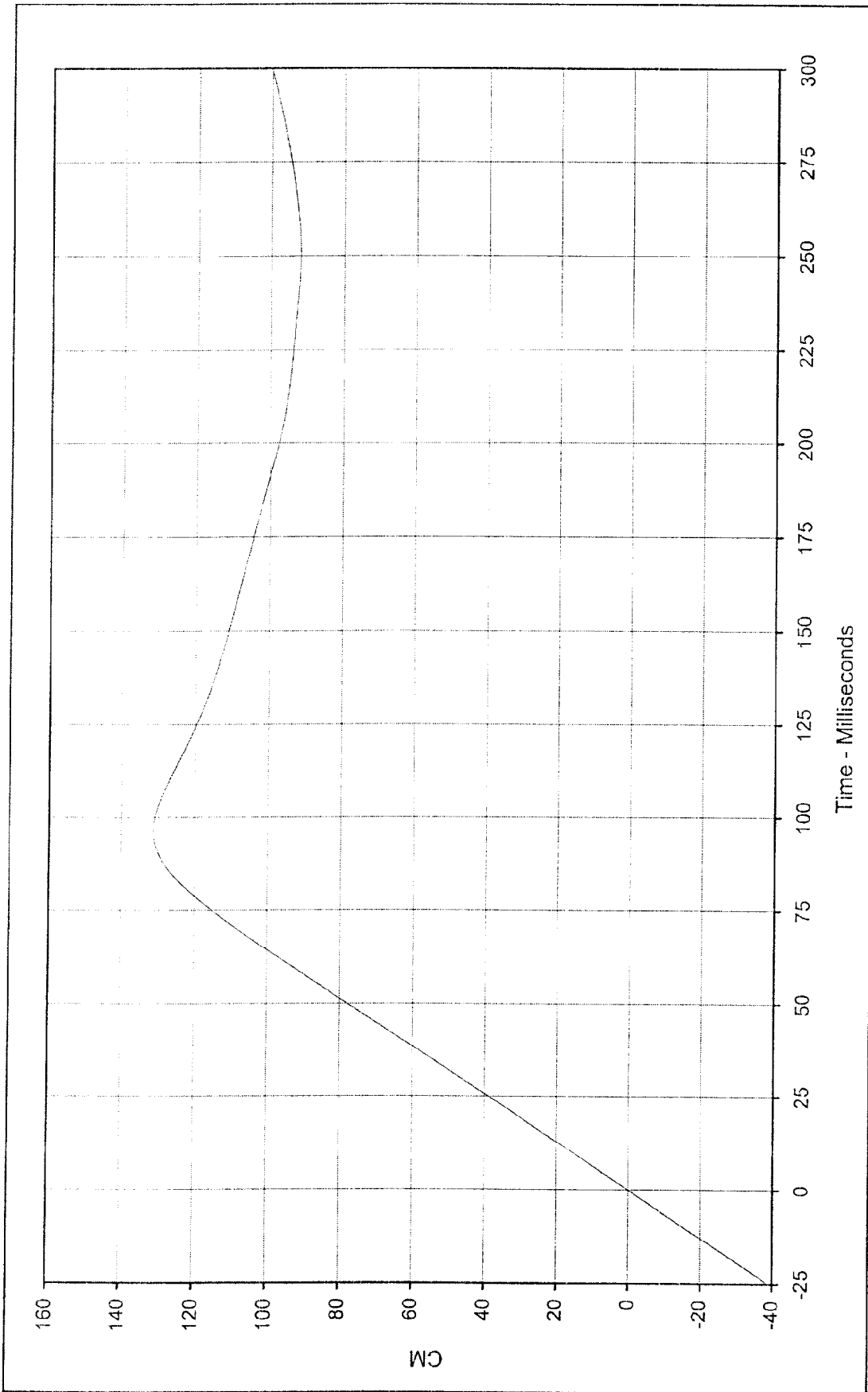




Curve Description: Passenger Head Redundant X Velocity  
 Maximum Value: 56.4 at 40.8 Milliseconds  
 Minimum Value: -18.2 at 113.1 Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: IN1-048

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan





Curve Description: Passenger Head Redundant X Displ.

Maximum Value: 131.2 at 96.3 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

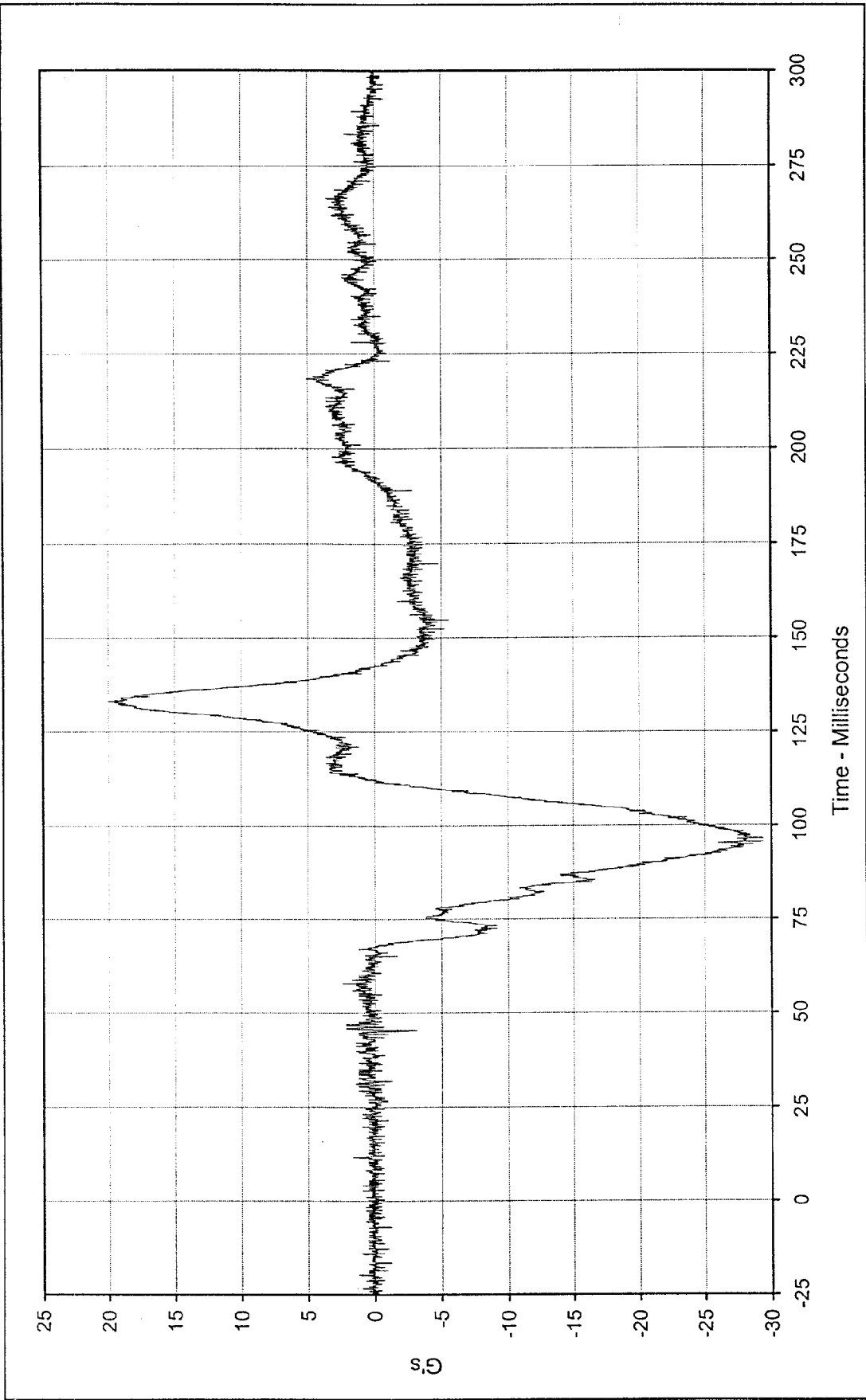
Date of Test: 1/22/99

Curve Number: IN2-048

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113

Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

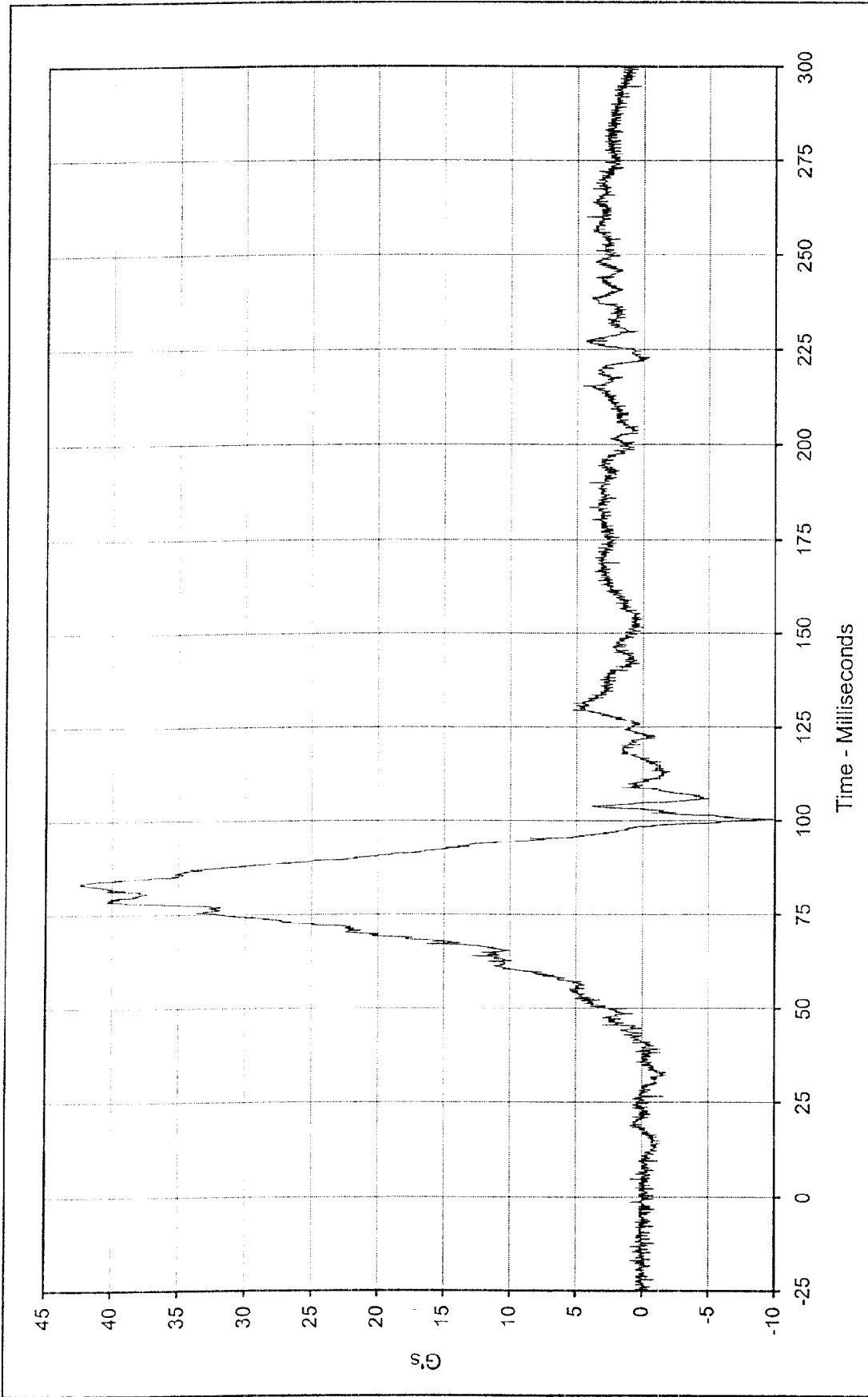




Curve Description: Passenger Head Redundant Y Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 20.0 at 133.0 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -29.4 at 95.6 Milliseconds

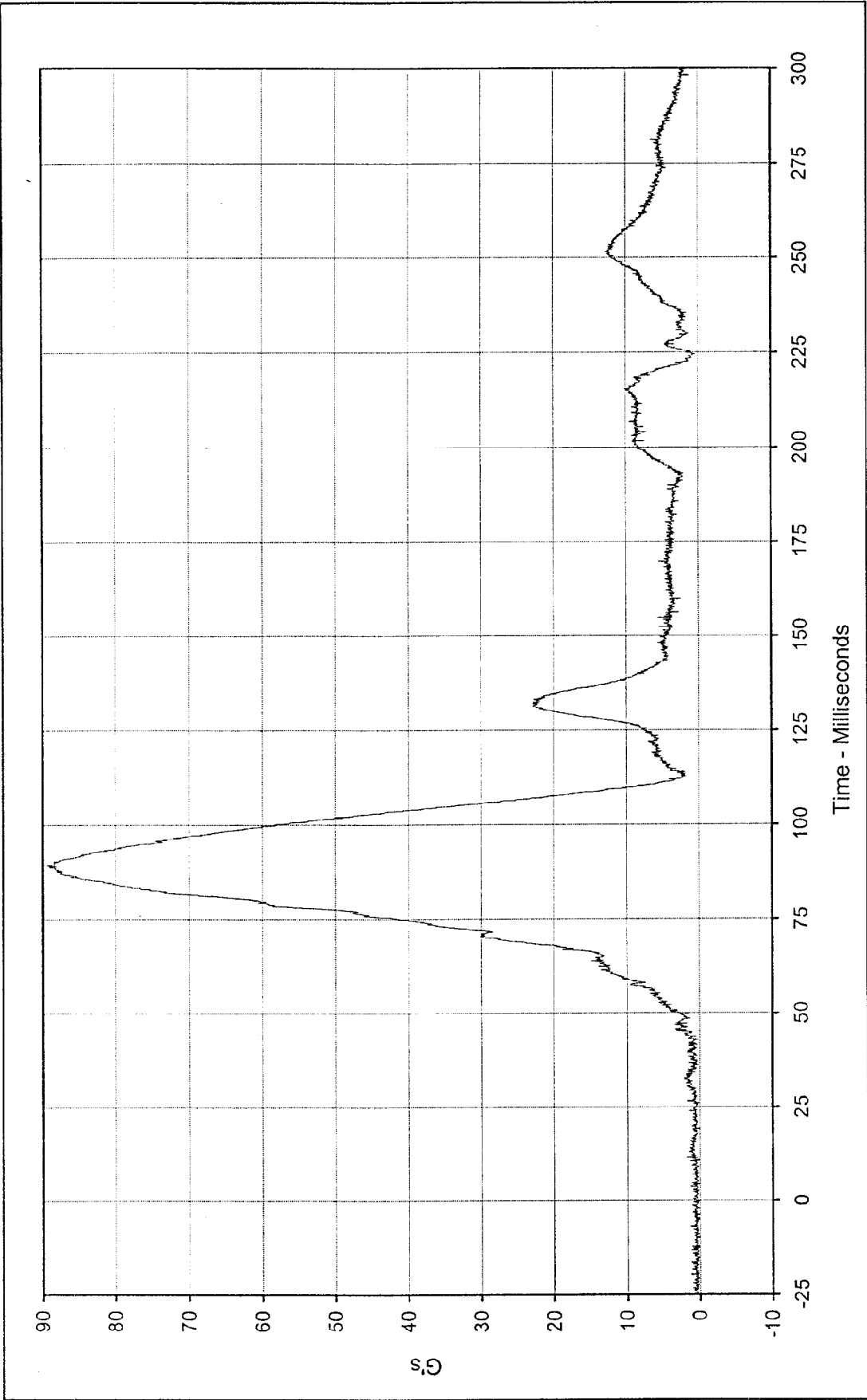


SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: FIL-049



Curve Description: Passenger Head Redundant Z      Test Program: 1999 NHTSA 35 mph NCAP    No.: MX0113  
 Maximum Value: 42.4    at 83.0    Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -9.9    at 100.3    Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: FIL-050

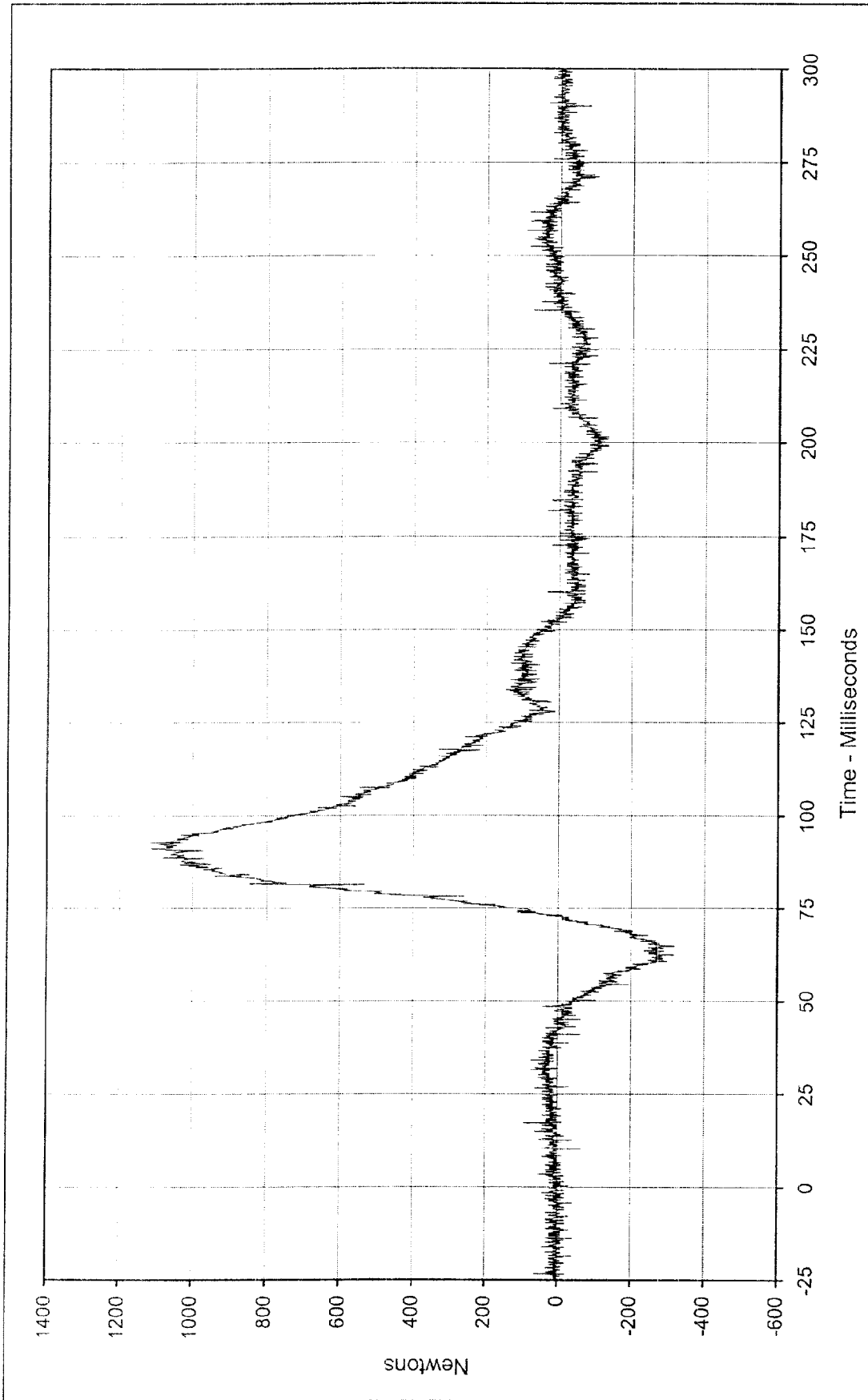




Curve Description: Passenger Head Resultant Redundant  
 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

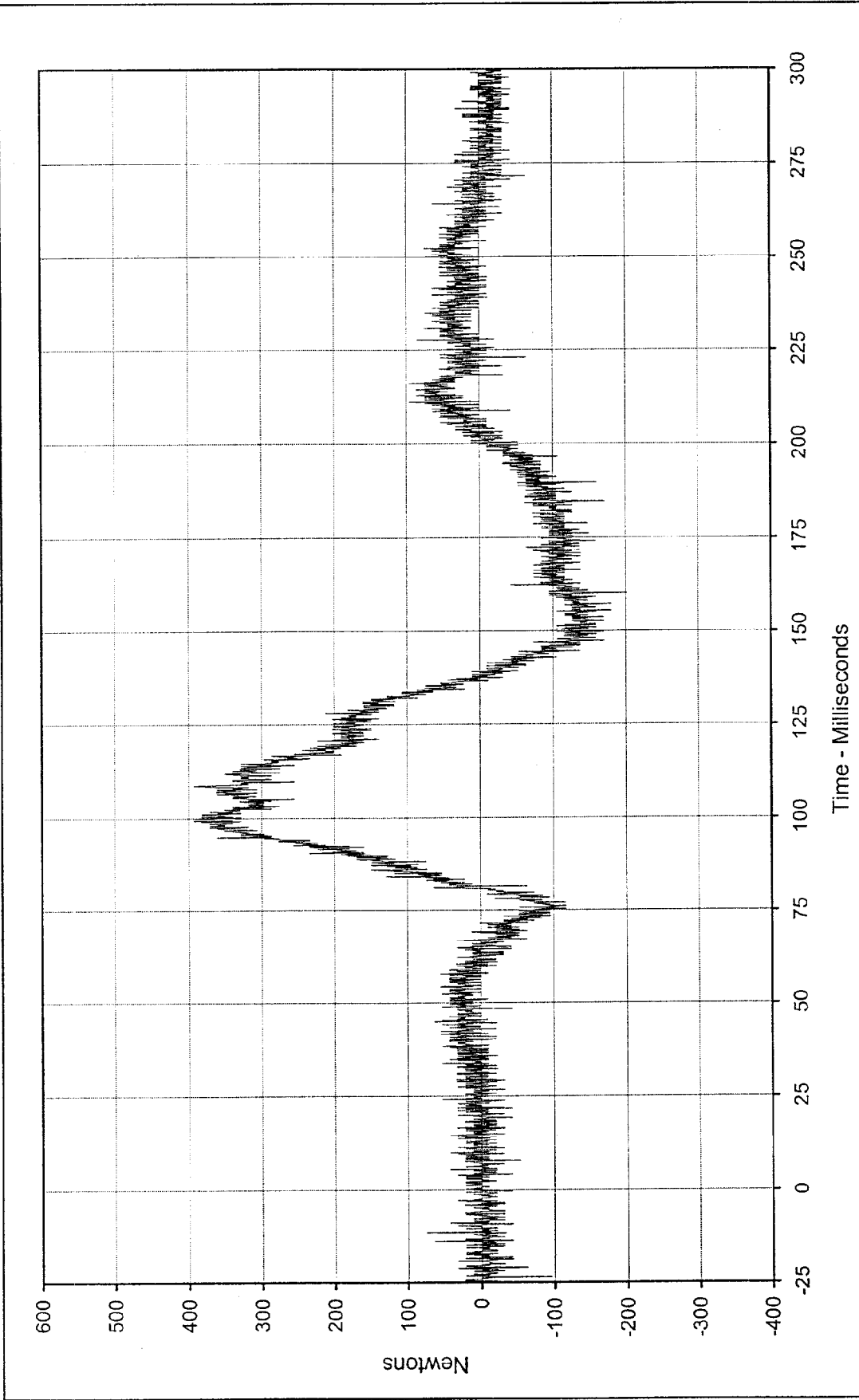
Maximum Value: 89.3 at 89.3 Milliseconds  
 Minimum Value: 0.0 at 4.3 Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: RES-048





Curve Description: Passenger Neck Force X Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 1114.3 at 91.1 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -319.8 at 62.4 Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: FIL-051

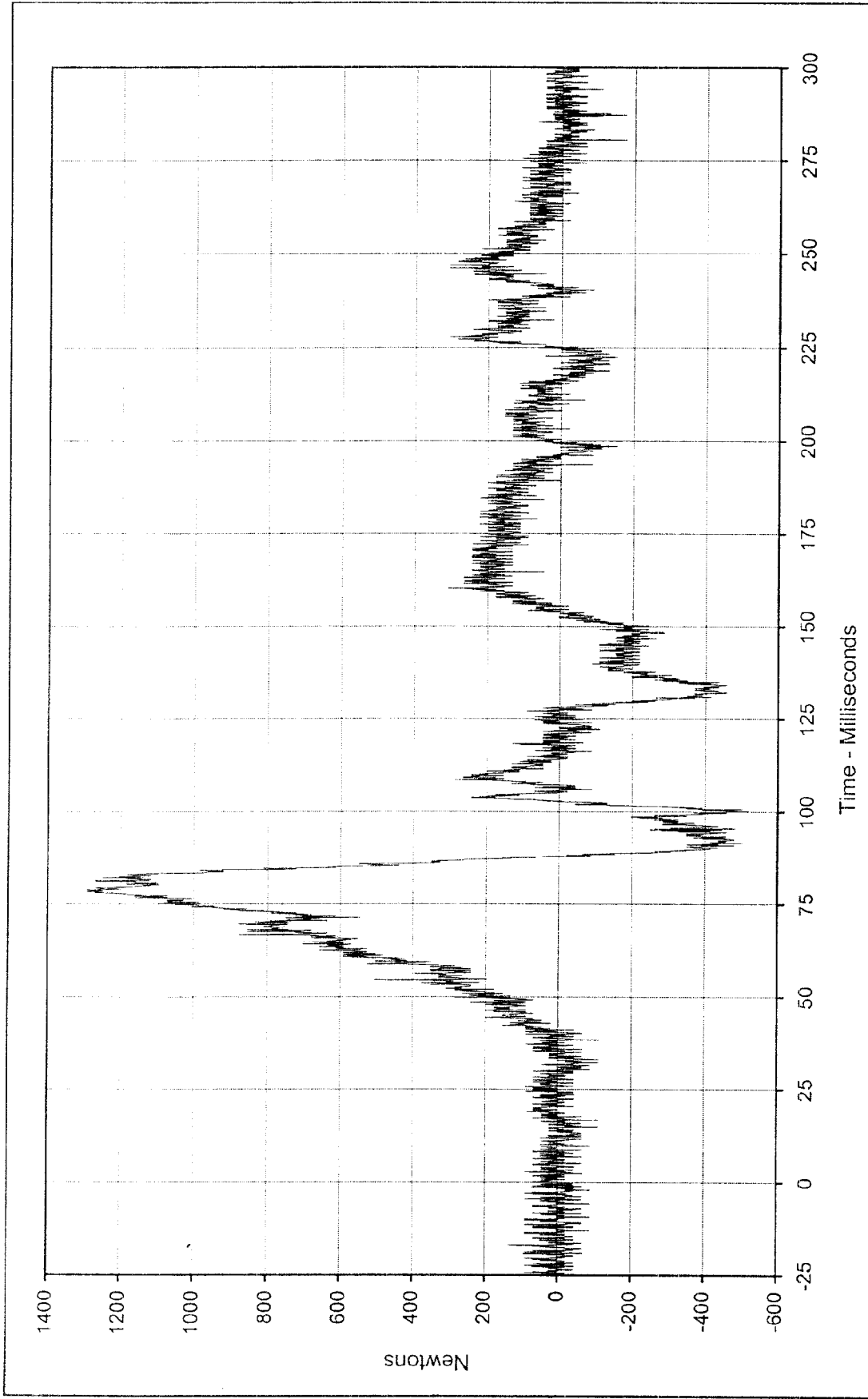




Curve Description: Passenger Neck Force Y Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 392.1 at 99.4 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -201.3 at 160.1 Milliseconds

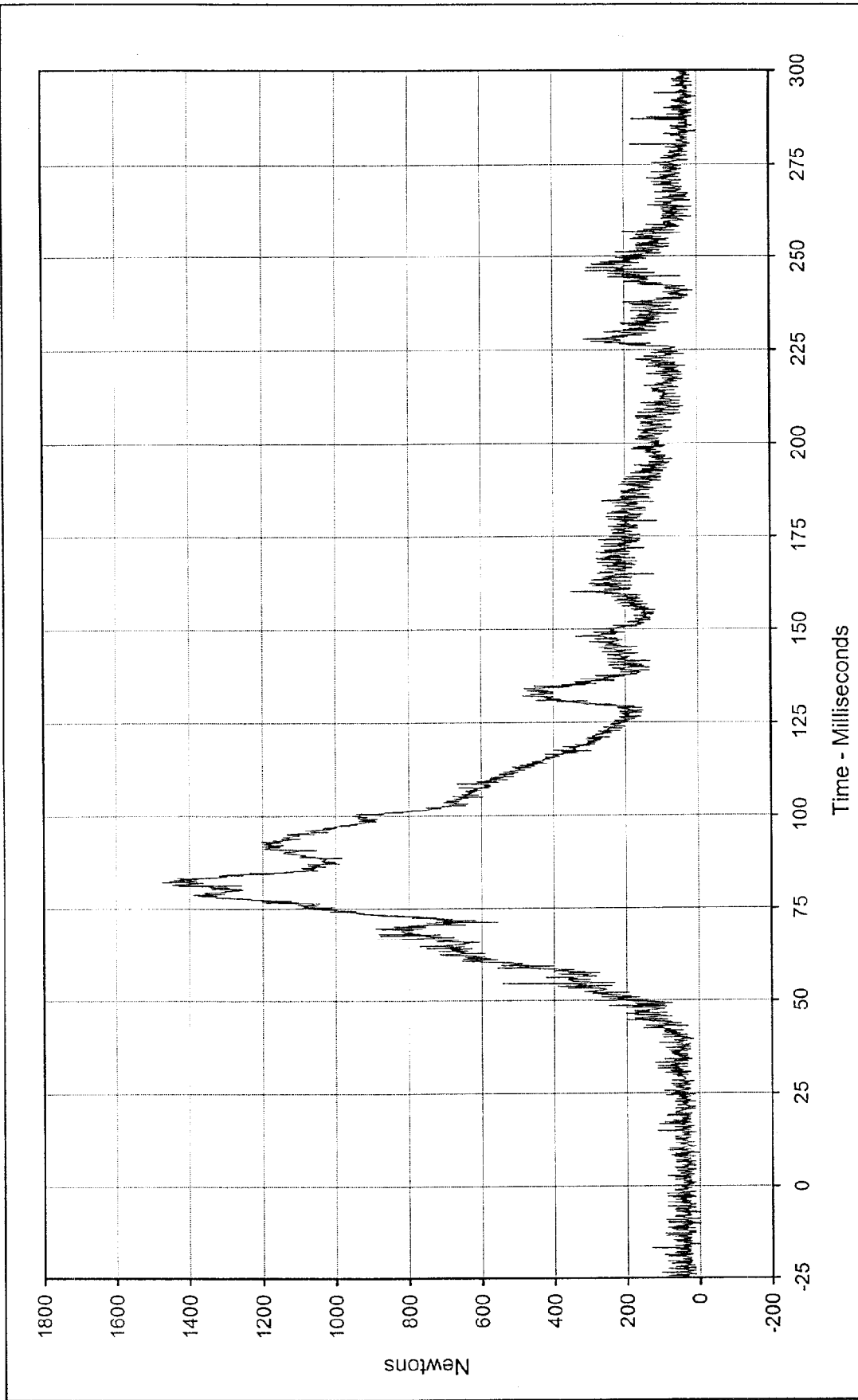


SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: FIL-052



Curve Description: Passenger Neck Force Z      Test Program: 1999 NHTSA 35 mph NCAP      No.: MX0113  
 Maximum Value: 1290.8      at 78.1      Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -518.8      at 100.2      Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: FIL-053

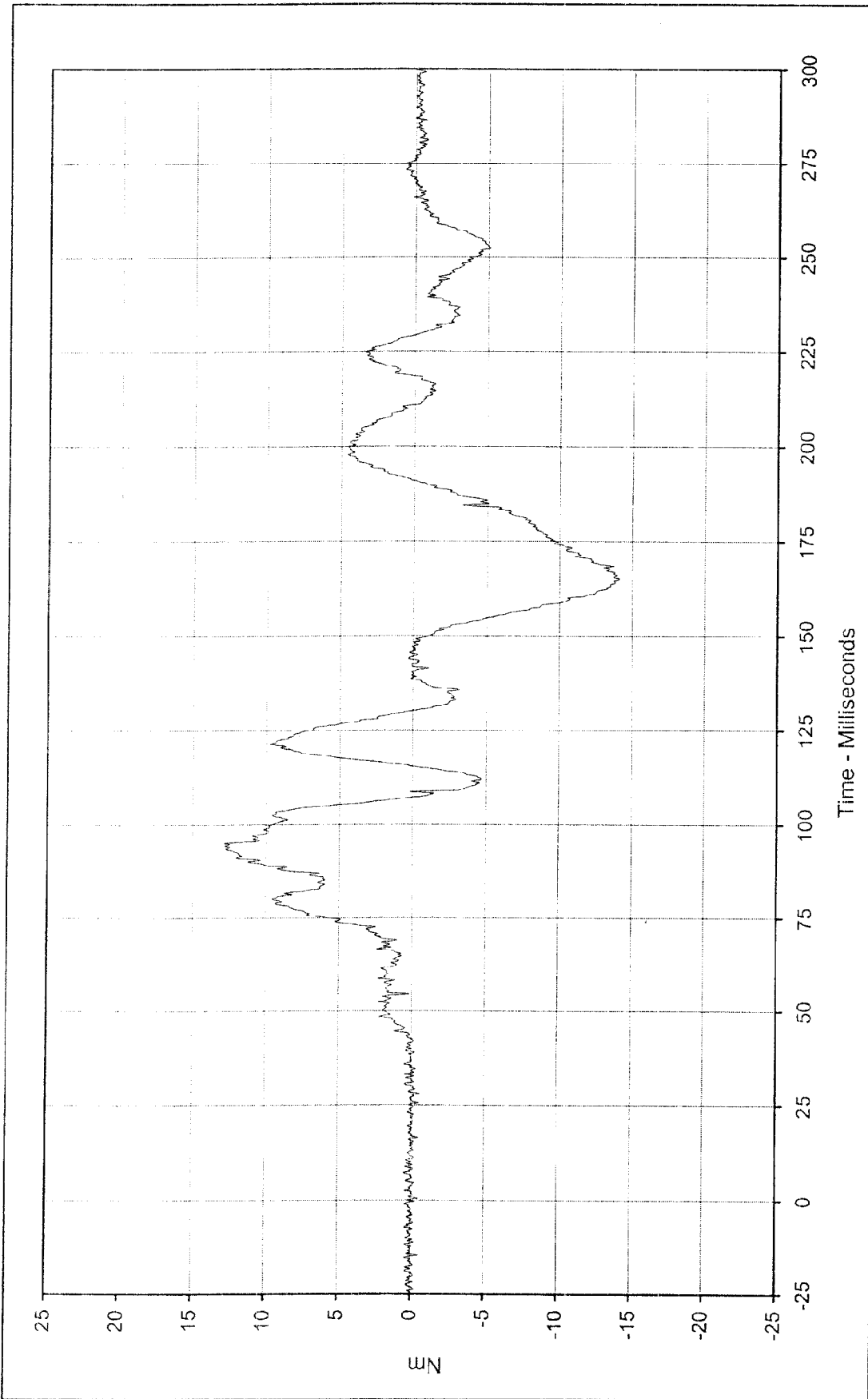




Curve Description: Passenger Neck Force Resultant  
 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 1473.1 at 82.1 Milliseconds  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: 0.0 at 8.9 Milliseconds

SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: RES-051

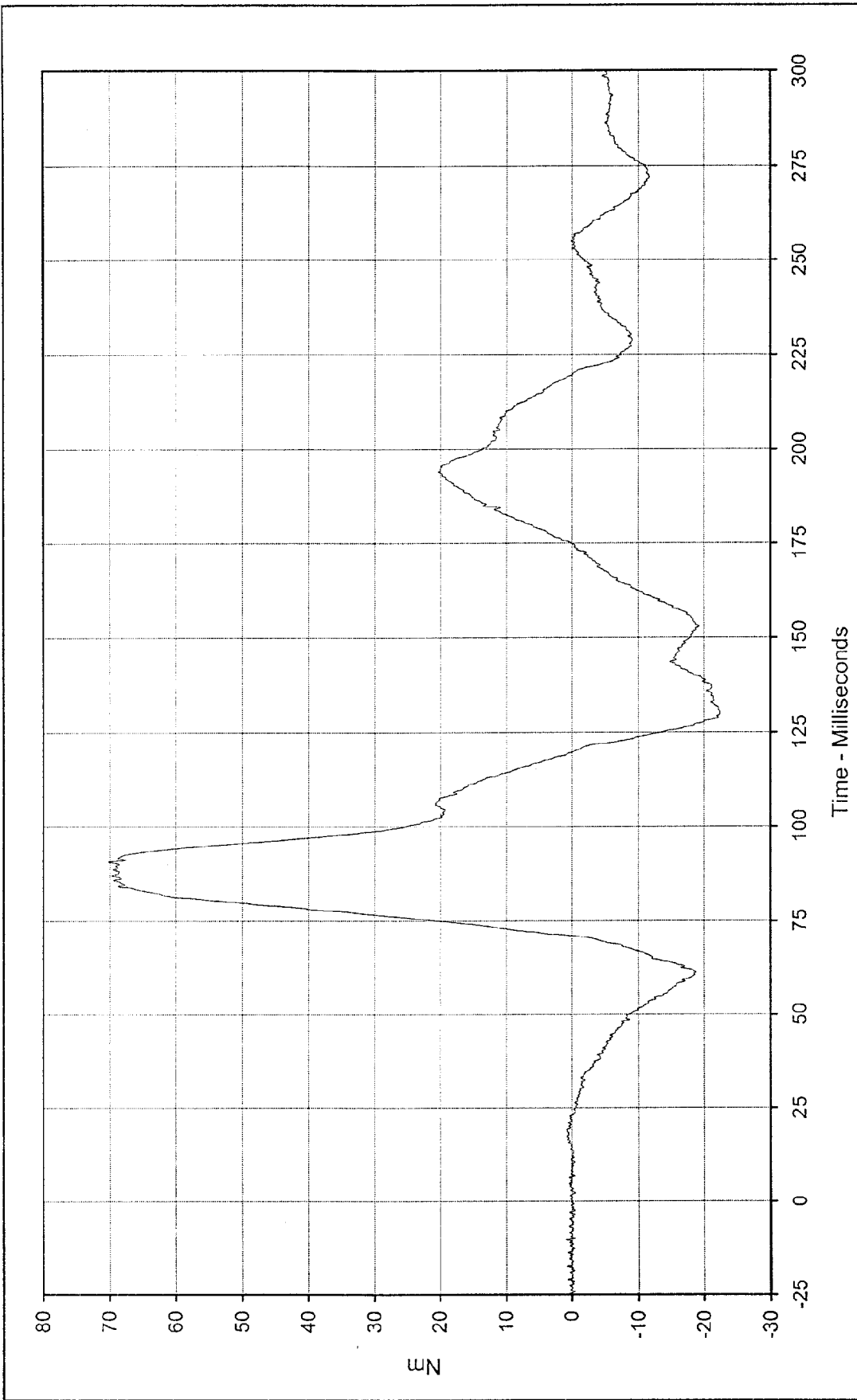




Curve Description: Passenger Neck Moment X  
 Maximum Value: 12.9 at 95.1 Milliseconds  
 Minimum Value: -14.1 at 165.0 Milliseconds  
 SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: FIL-054

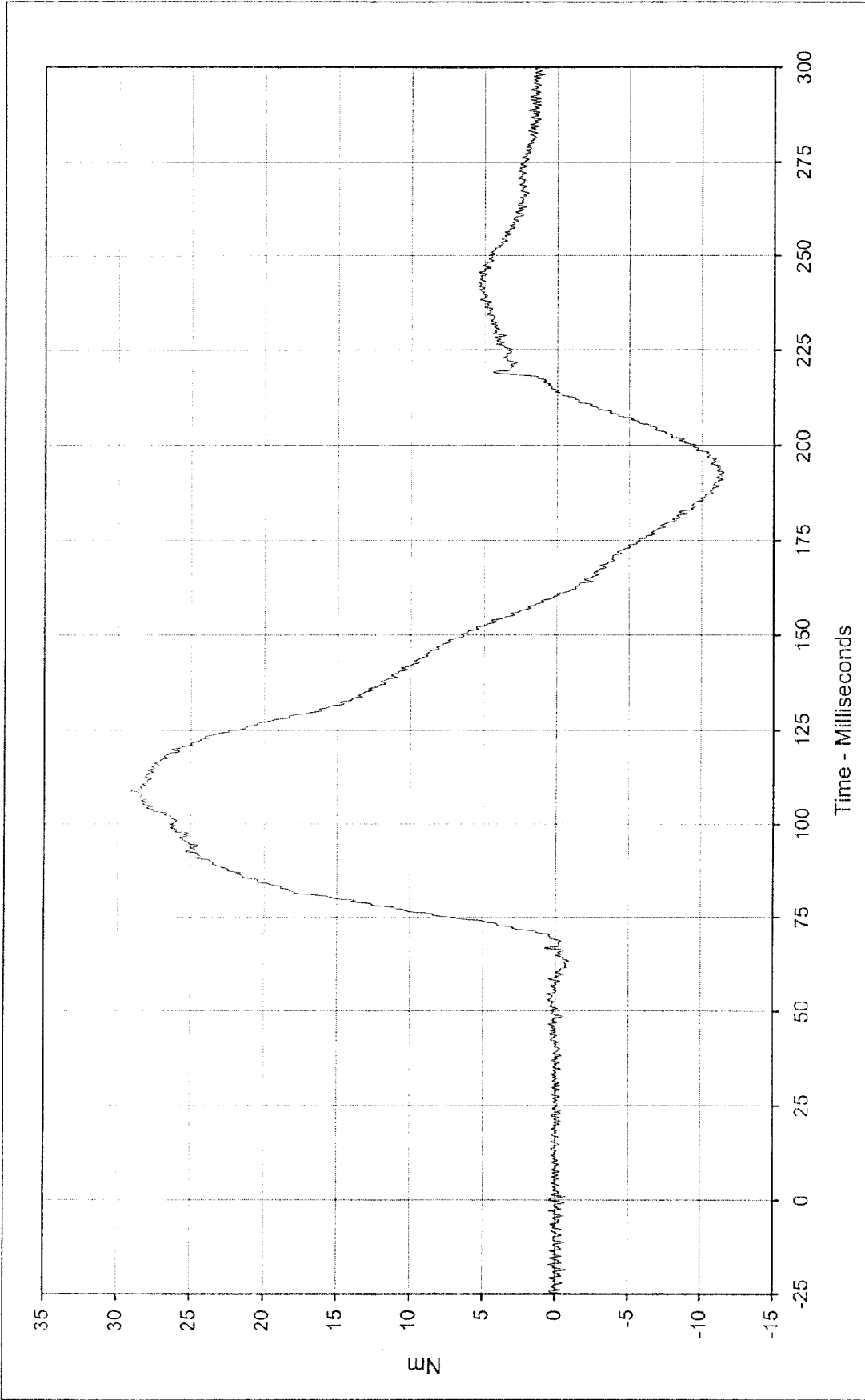
Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan





Curve Description: Passenger Neck Moment Y      Test Program: 1999 NHTSA 35 mph NCAP    No.: MX0113  
 Maximum Value: 70.2    at 90.5    Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -22.4    at 129.7    Milliseconds  
 SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: FIL-055

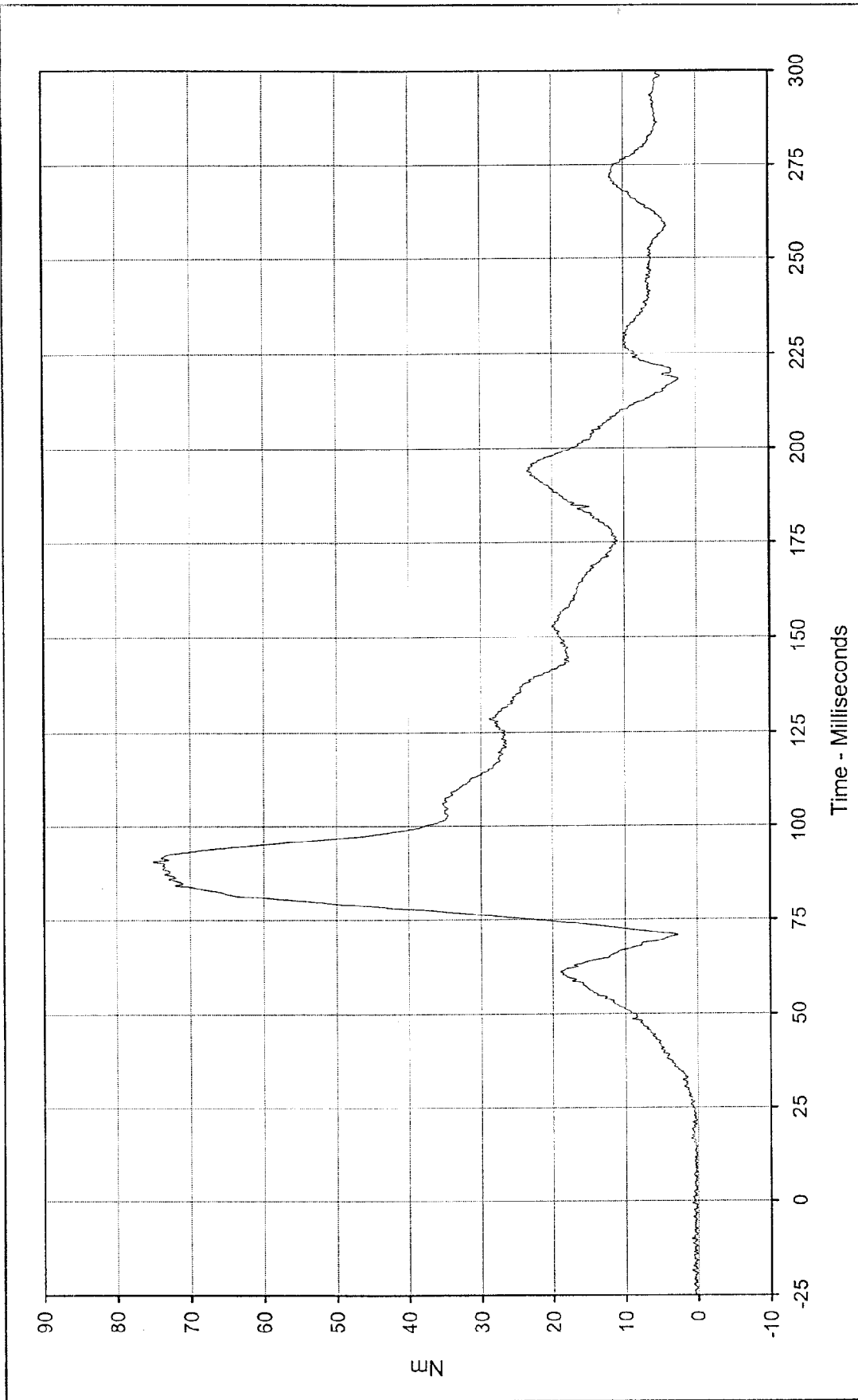




Curve Description: Passenger Neck Moment Z  
 Maximum Value: 29.1 at 108.7 Milliseconds  
 Minimum Value: -11.6 at 192.9 Milliseconds  
 SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: FIL-056

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

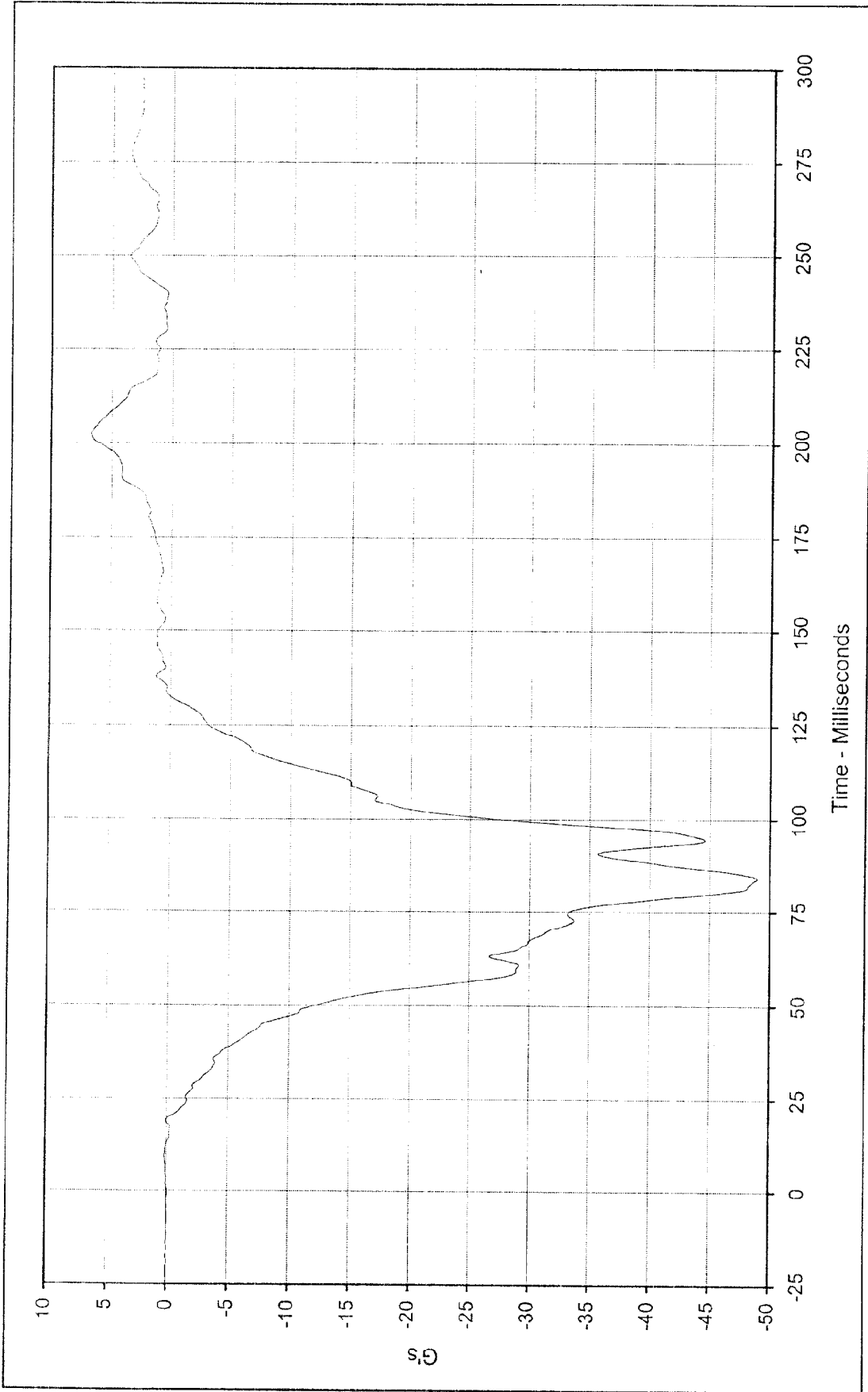




Curve Description: Passenger Neck Moment Resultant  
 Maximum Value: 75.0 at 90.5 Milliseconds  
 Minimum Value: 0.1 at 7.8 Milliseconds  
 SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: RES-054

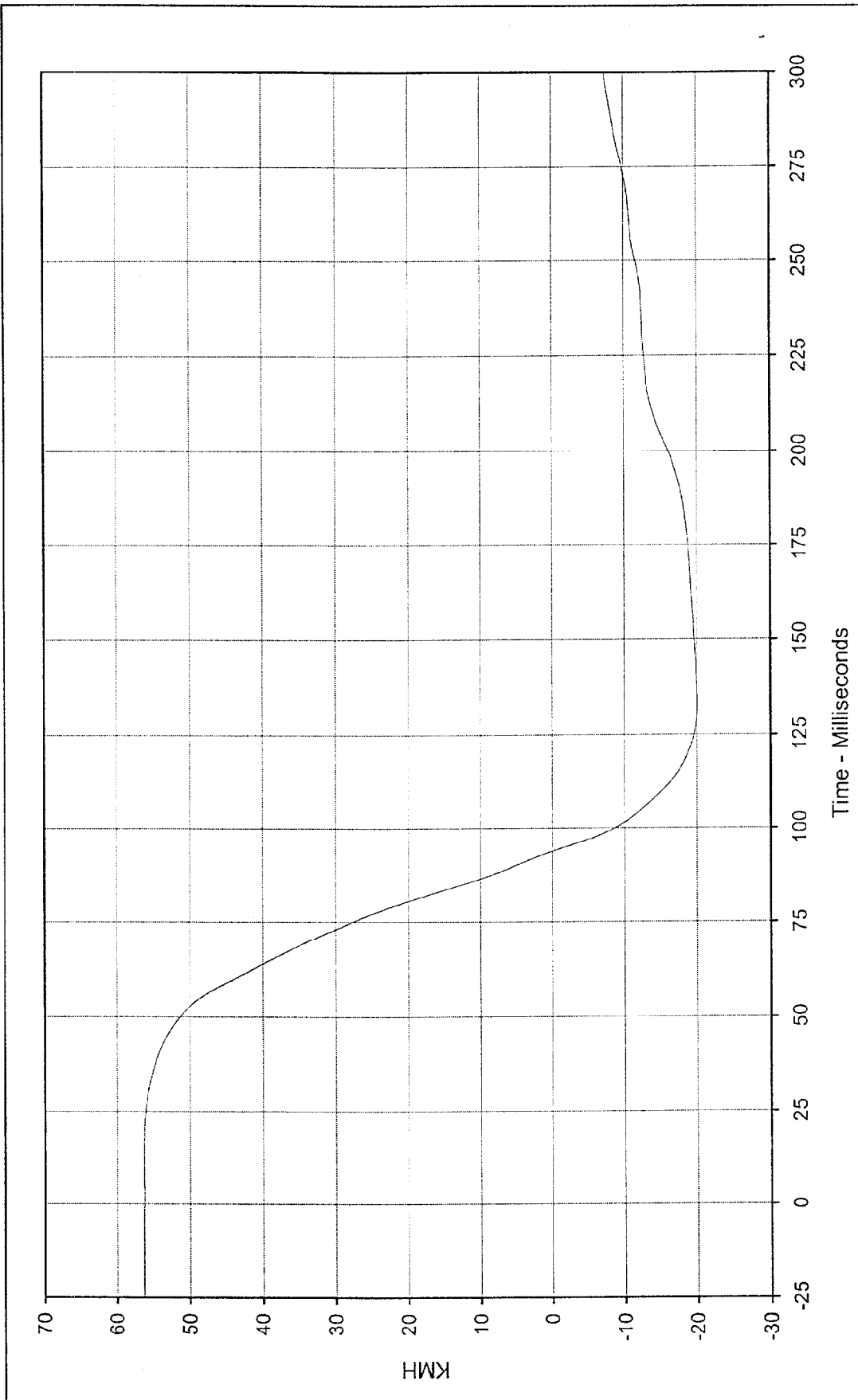
Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan





Curve Description: Passenger Chest Primary X      Test Program: 1999 NHTSA 35 mph NCAP    No.: MX0113  
 Maximum Value: 6.7    at 202.6    Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -49.0    at 84.0    Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: FIL-057

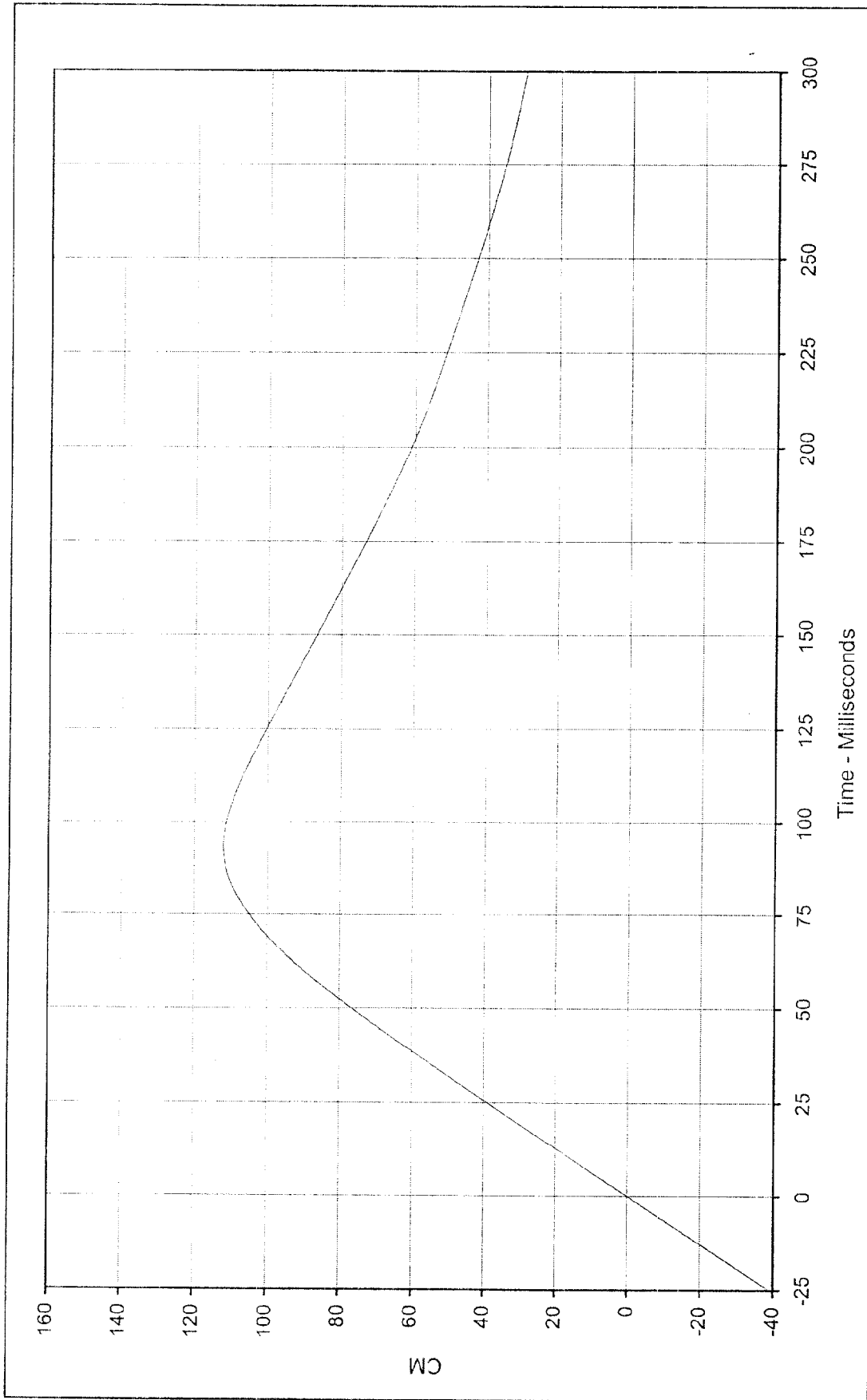




Curve Description: Passenger Chest Primary X Velocity Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 56.3 at 12.8 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -20.1 at 132.5 Milliseconds



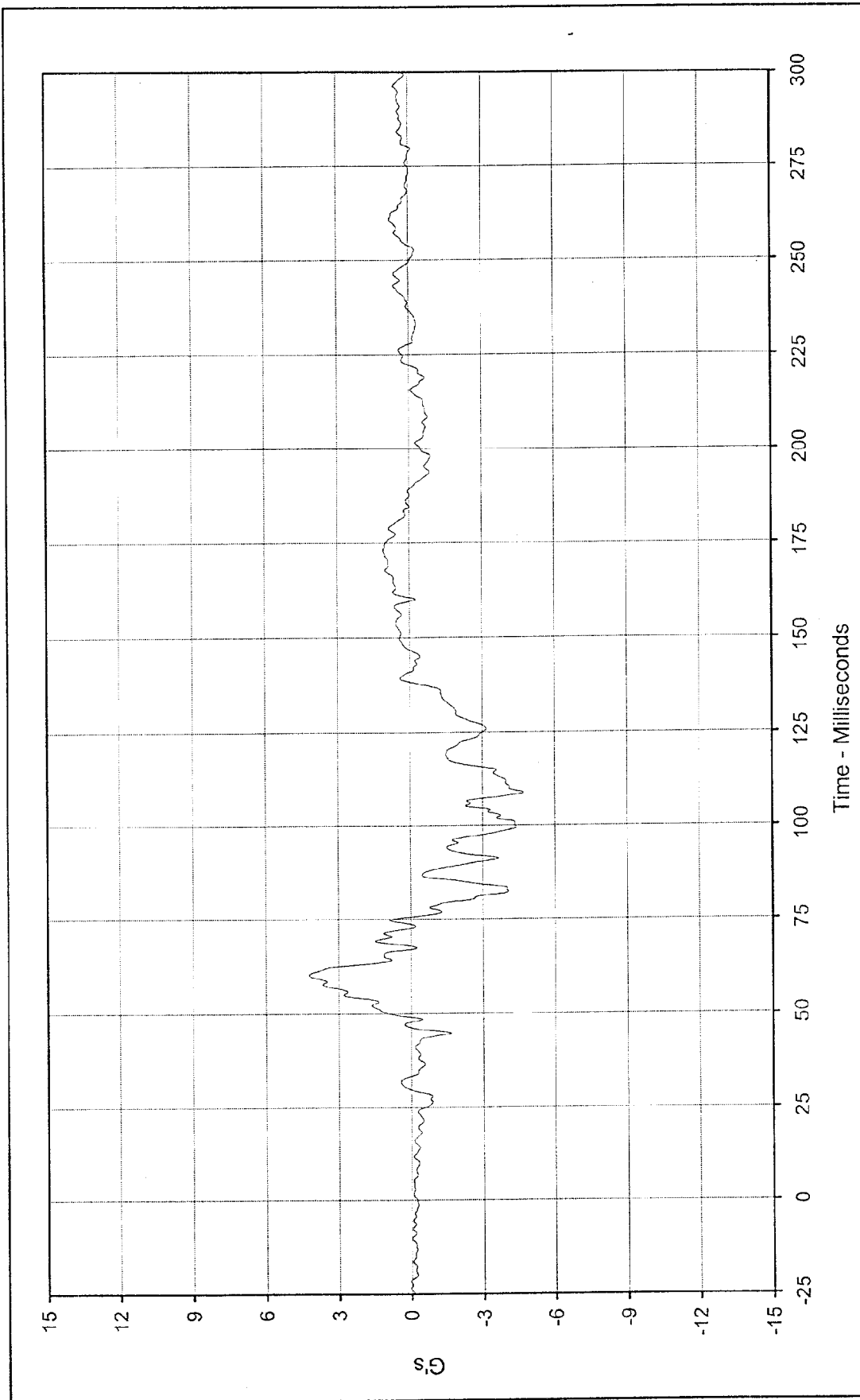
SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: IN1-057



Curve Description: Passenger Chest Primary X Displ.  
 Maximum Value: 112.1 at 93.7 Milliseconds  
 Minimum Value: -0.1 at 0.0 Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: IN2-057

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

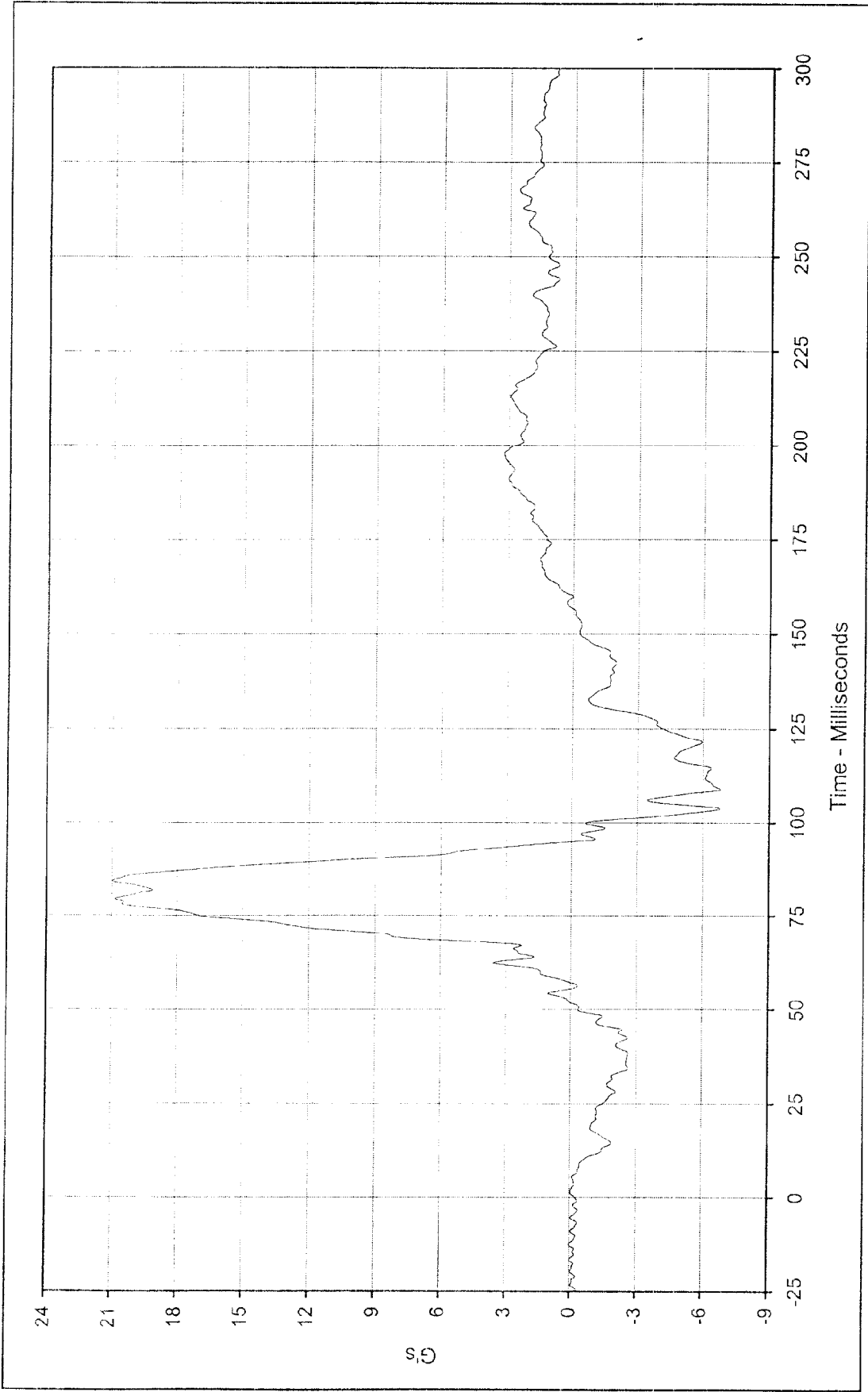




Curve Description: Passenger Chest Primary Y Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 4.2 at 60.1 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -4.7 at 108.7 Milliseconds



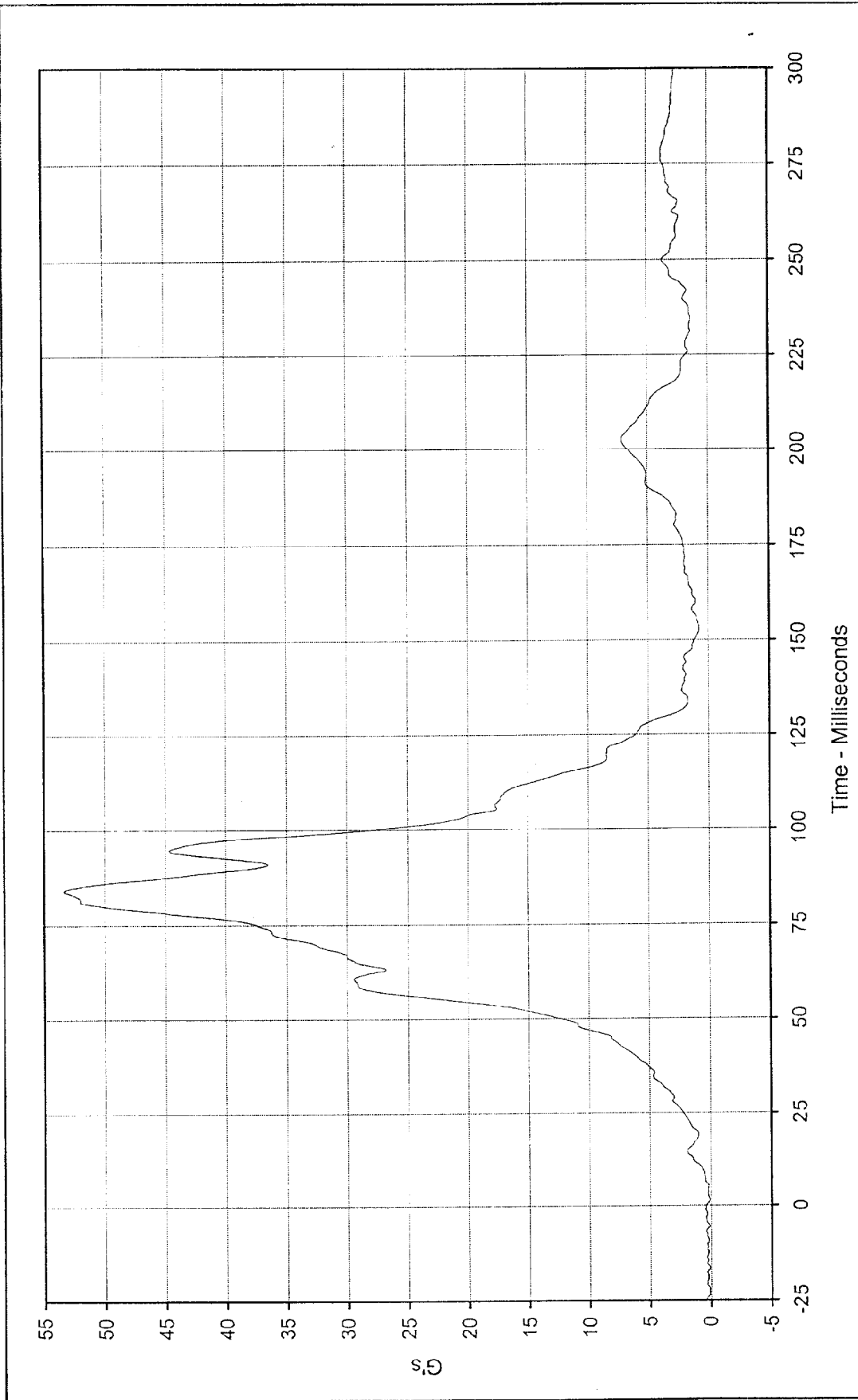
SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: FIL-058



Curve Description: Passenger Chest Primary Z  
 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

Maximum Value: 21.0 at 84.1 Milliseconds  
 Minimum Value: -6.8 at 108.7 Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: FIL-059

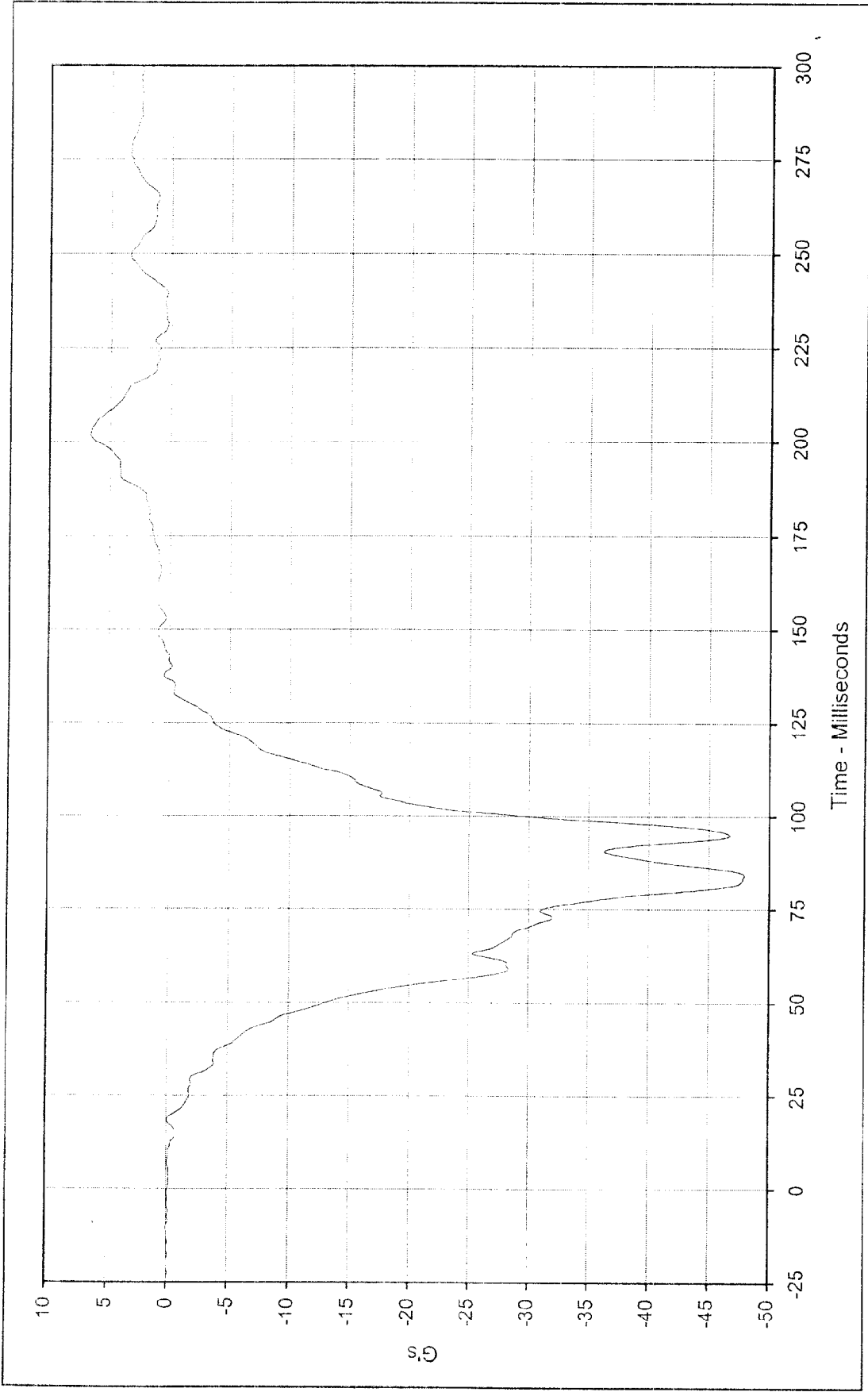




Curve Description: Passenger Chest Resultant Primary Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 53.3 at 84.0 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: 0.1 at 1.5 Milliseconds



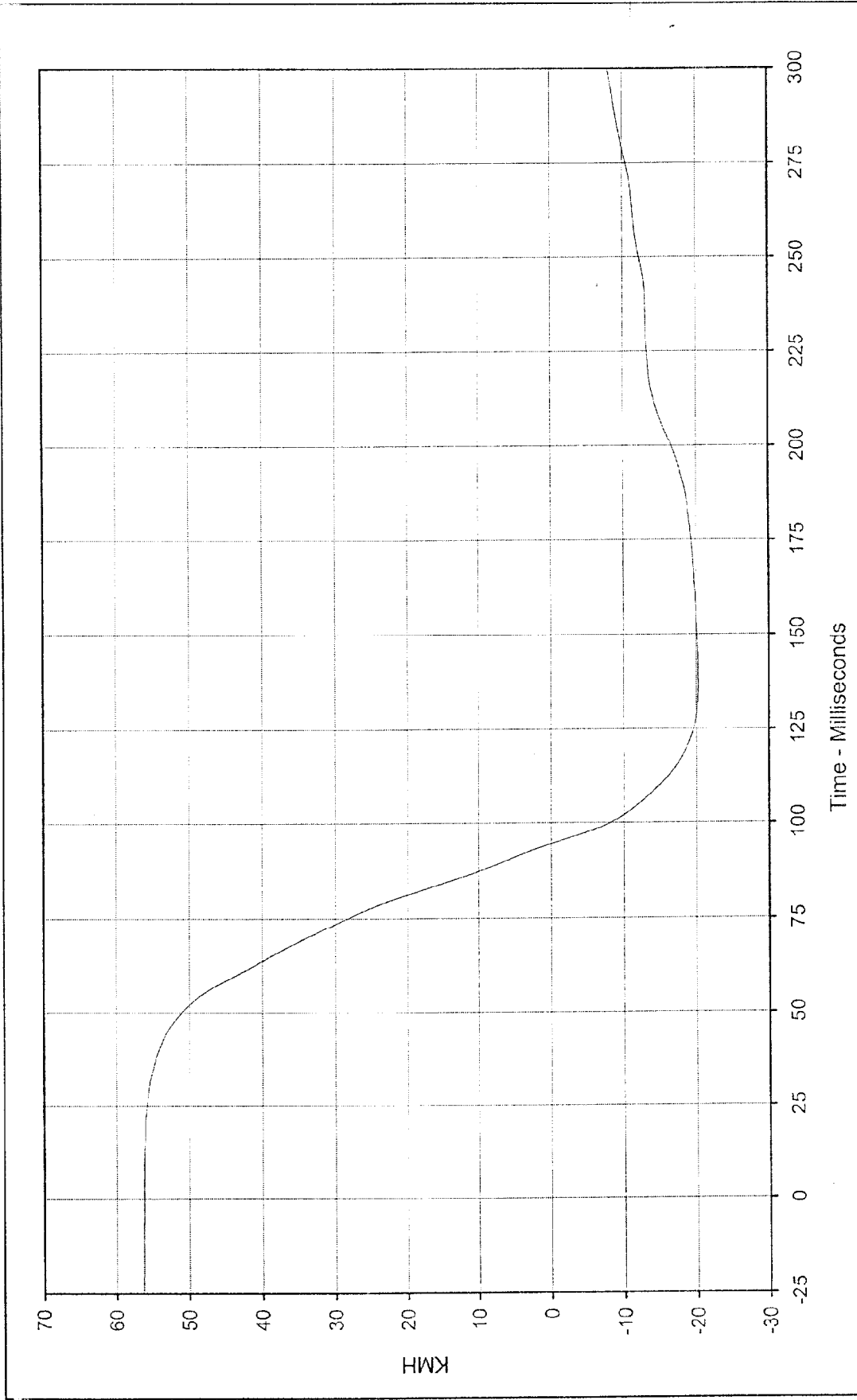
SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: RES-057



Curve Description: Passenger Chest Redundant X  
 Maximum Value: 6.6 at 201.9 Milliseconds  
 Minimum Value: -48.0 at 83.9 Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: FIL-060

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

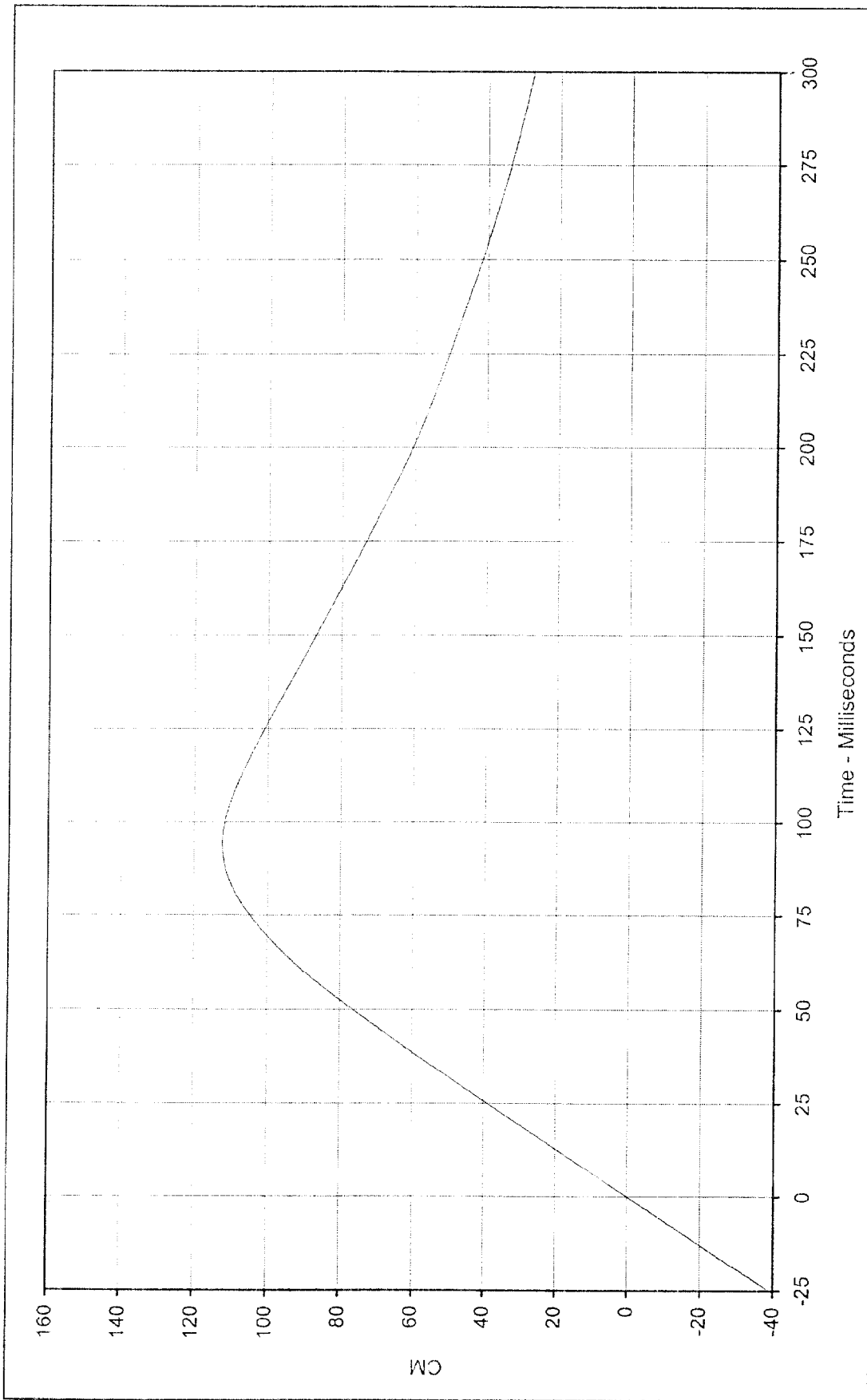




Curve Description: Passenger Chest Redundant X Velocity  
 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

Maximum Value: 56.3 at 0.0 Milliseconds  
 Minimum Value: -20.3 at 136.7 Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: IN1-060





Curve Description: Passenger Chest Redundant X Displ.

Maximum Value: 112.4 at 94.3 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

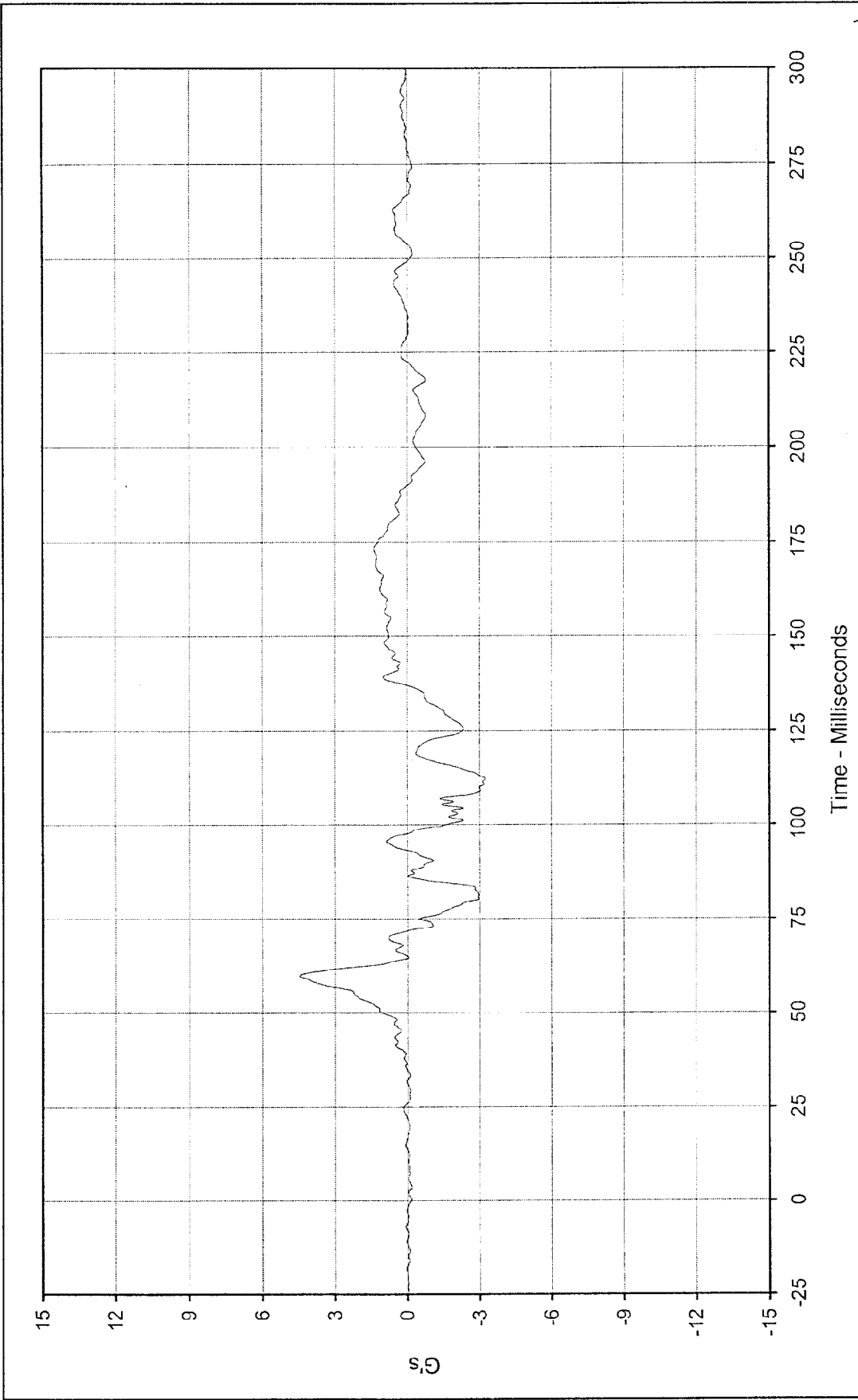
Date of Test: 1/22/99

Curve Number: IN2-060

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113

Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

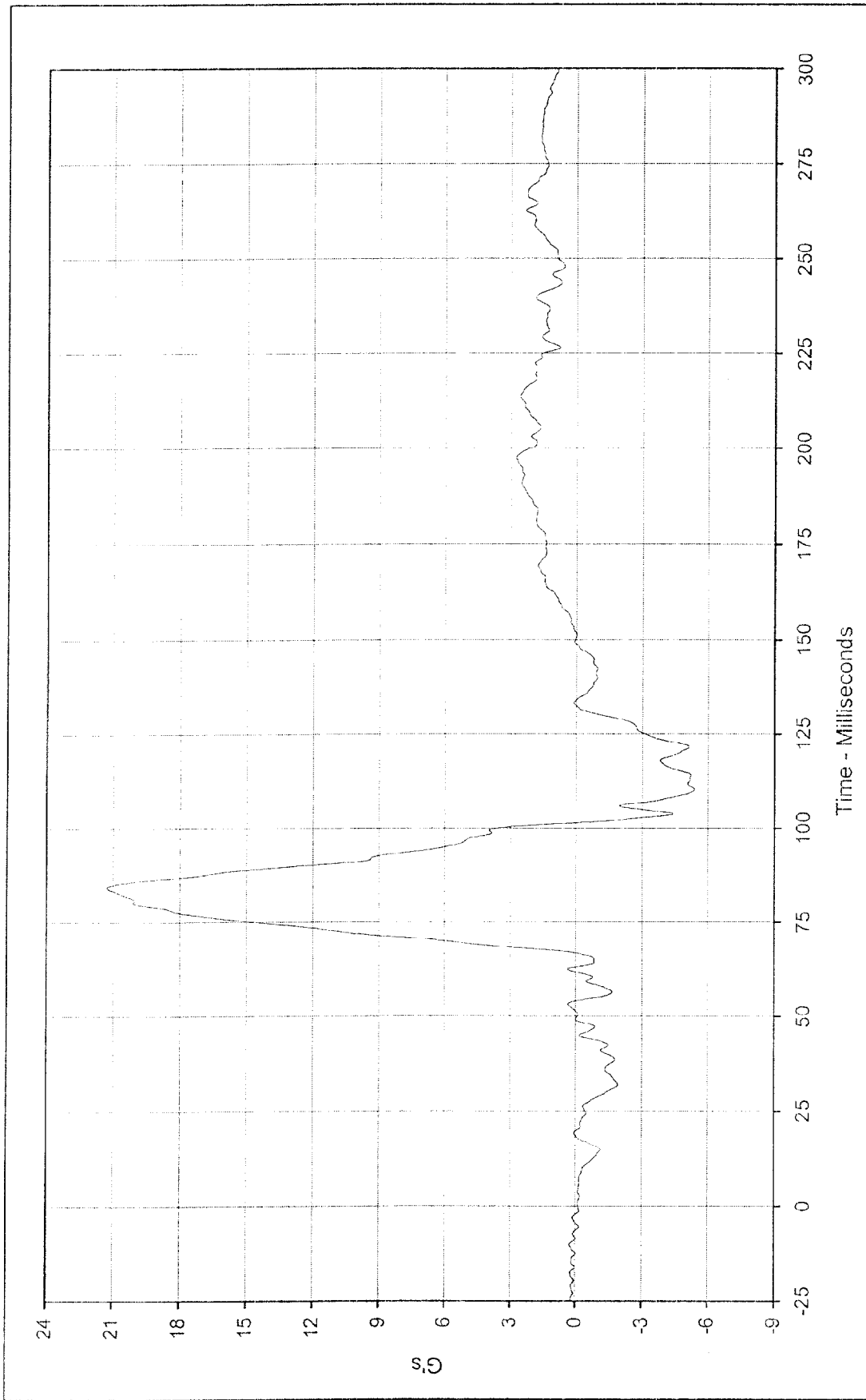




Curve Description: Passenger Chest Redundant Y Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 4.5 at 59.8 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -3.2 at 111.9 Milliseconds



SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: FIL-061



Curve Description: Passenger Chest Redundant Z Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113

Maximum Value: 21.3 at 84.0 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

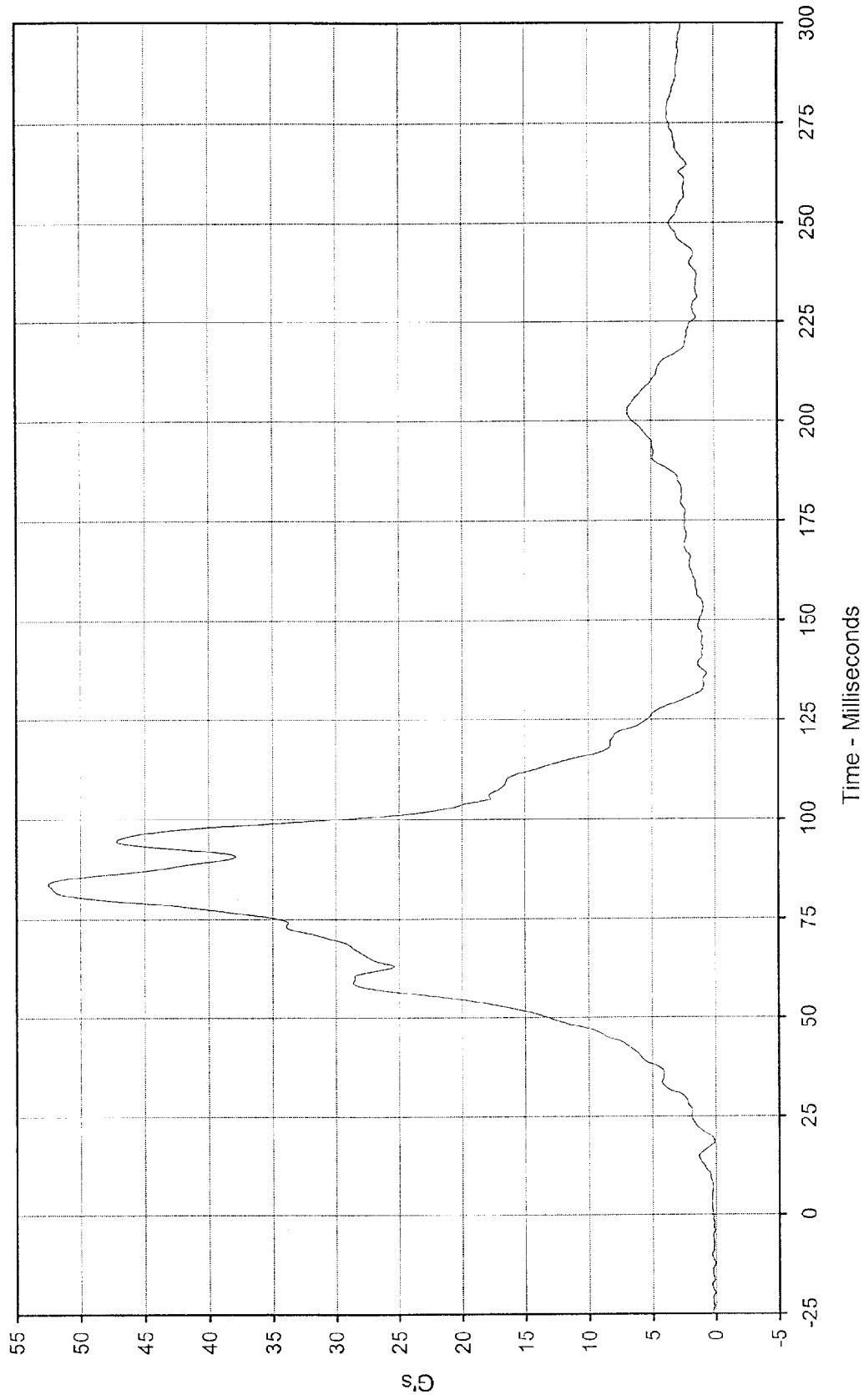
Minimum Value: -5.4 at 110.1 Milliseconds

SAE Filter Class: 180

Date of Test: 1/22/99

Curve Number: FIL-062

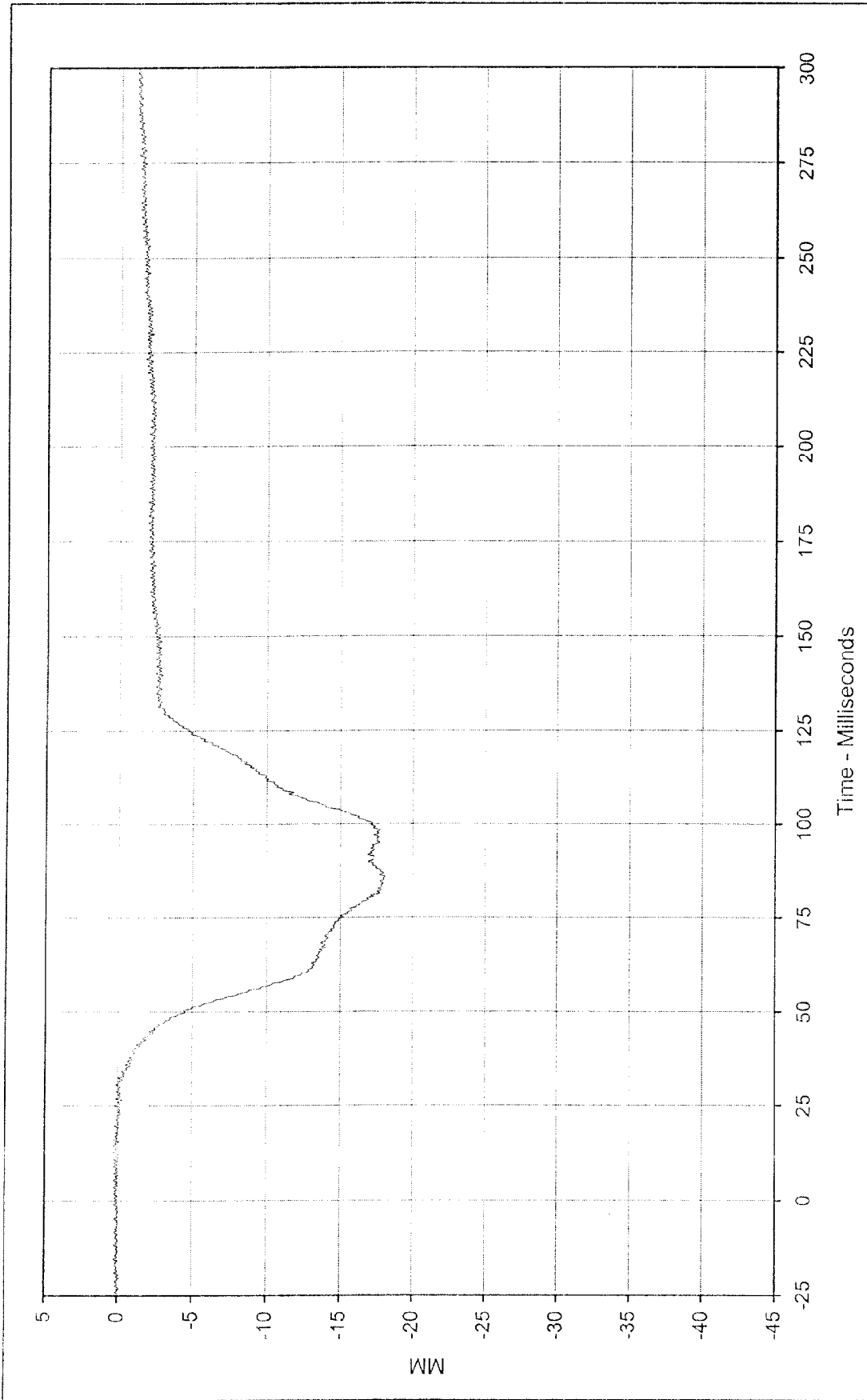




Curve Description: Passenger Chest Resultant Redundant  
 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

Maximum Value: 52.5 at 83.9 Milliseconds  
 Minimum Value: 0.1 at 18.3 Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: RES-060

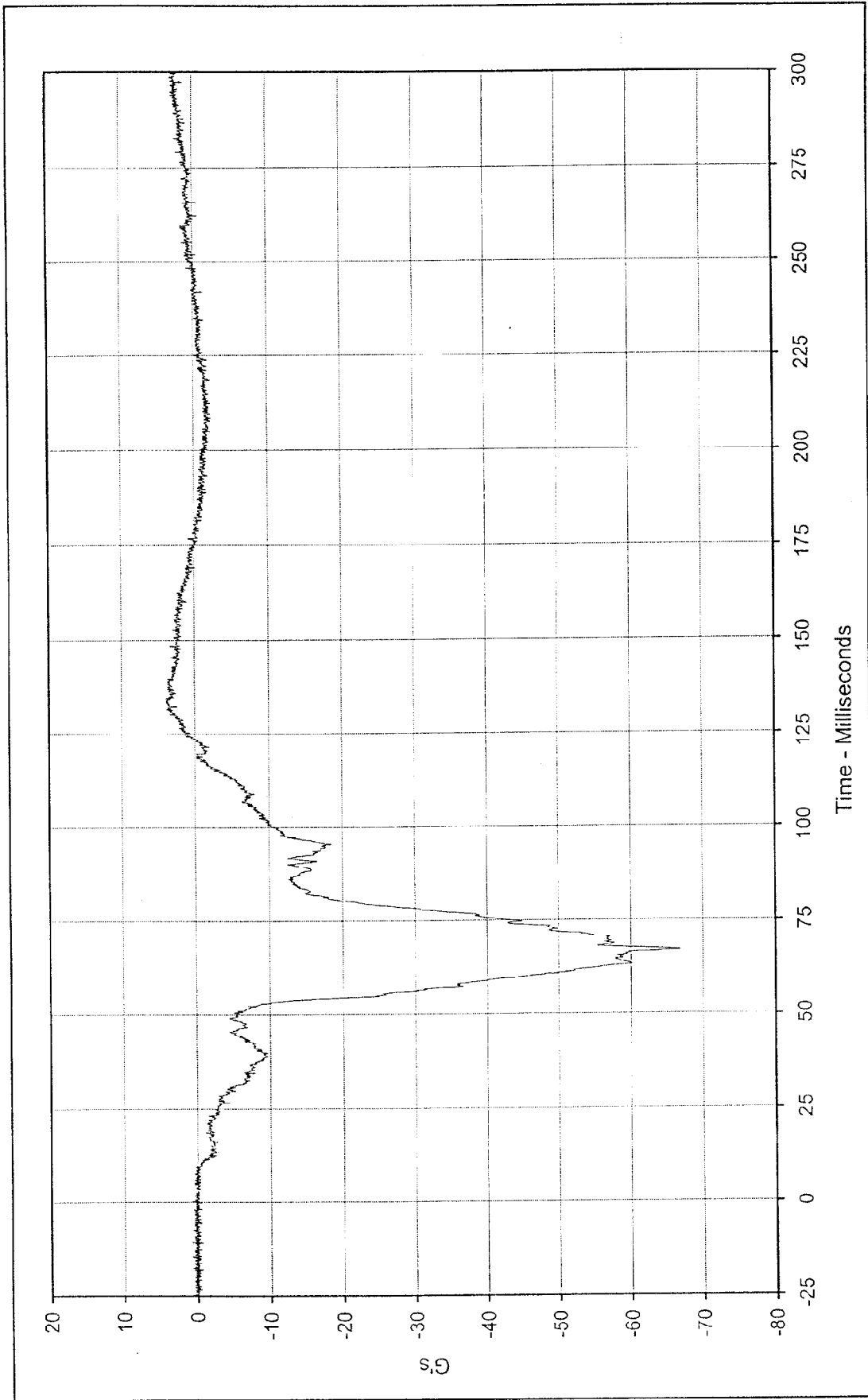




Curve Description: Passenger Chest Displacement X  
 Maximum Value: 0.3 at 14.3 Milliseconds  
 Minimum Value: -18.1 at 85.8 Milliseconds  
 SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: FIL-063

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

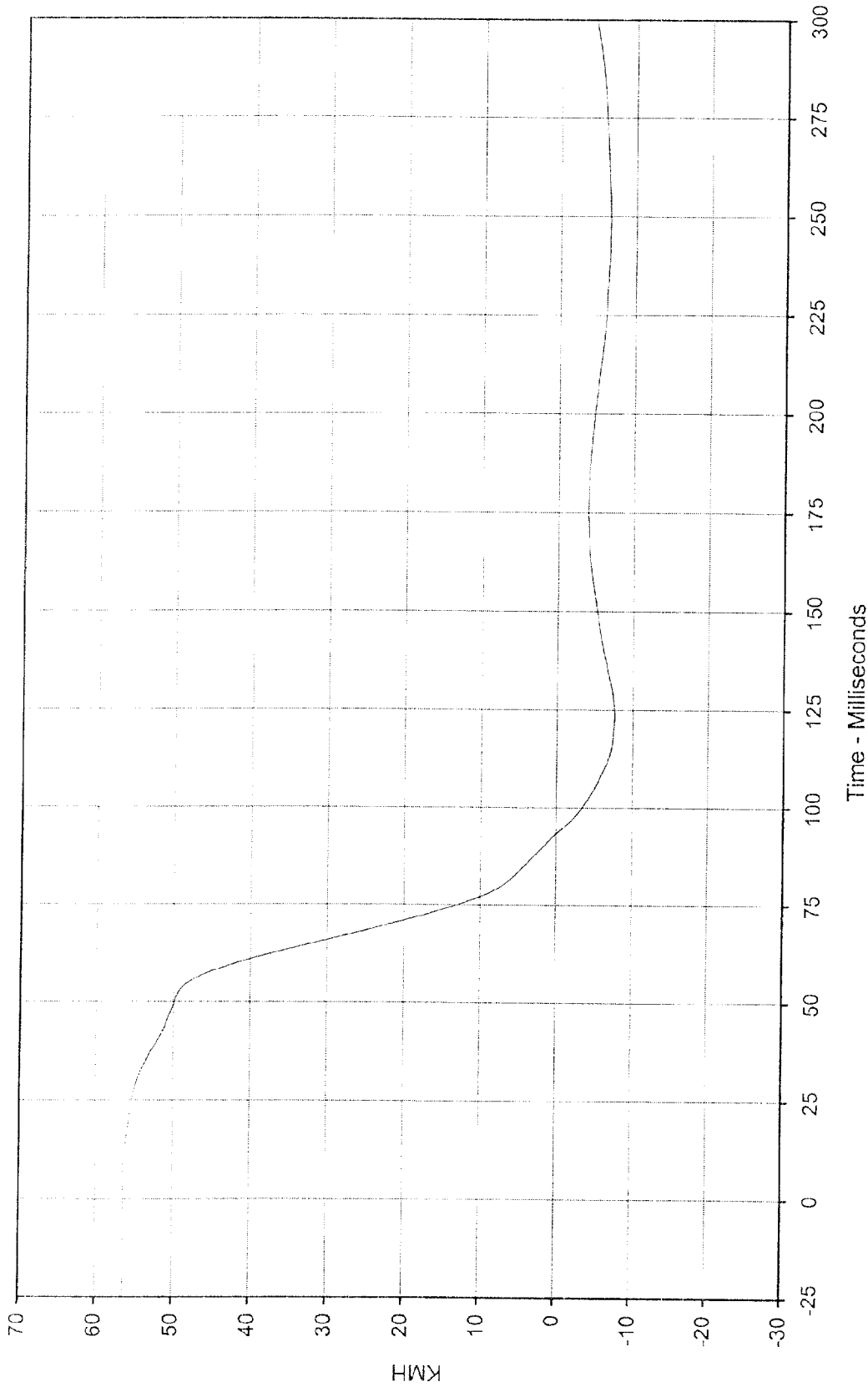




Curve Description: Passenger Pelvis X  
 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

Maximum Value: 3.9 at 131.4 Milliseconds  
 Minimum Value: -66.8 at 66.9 Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: FIL-064

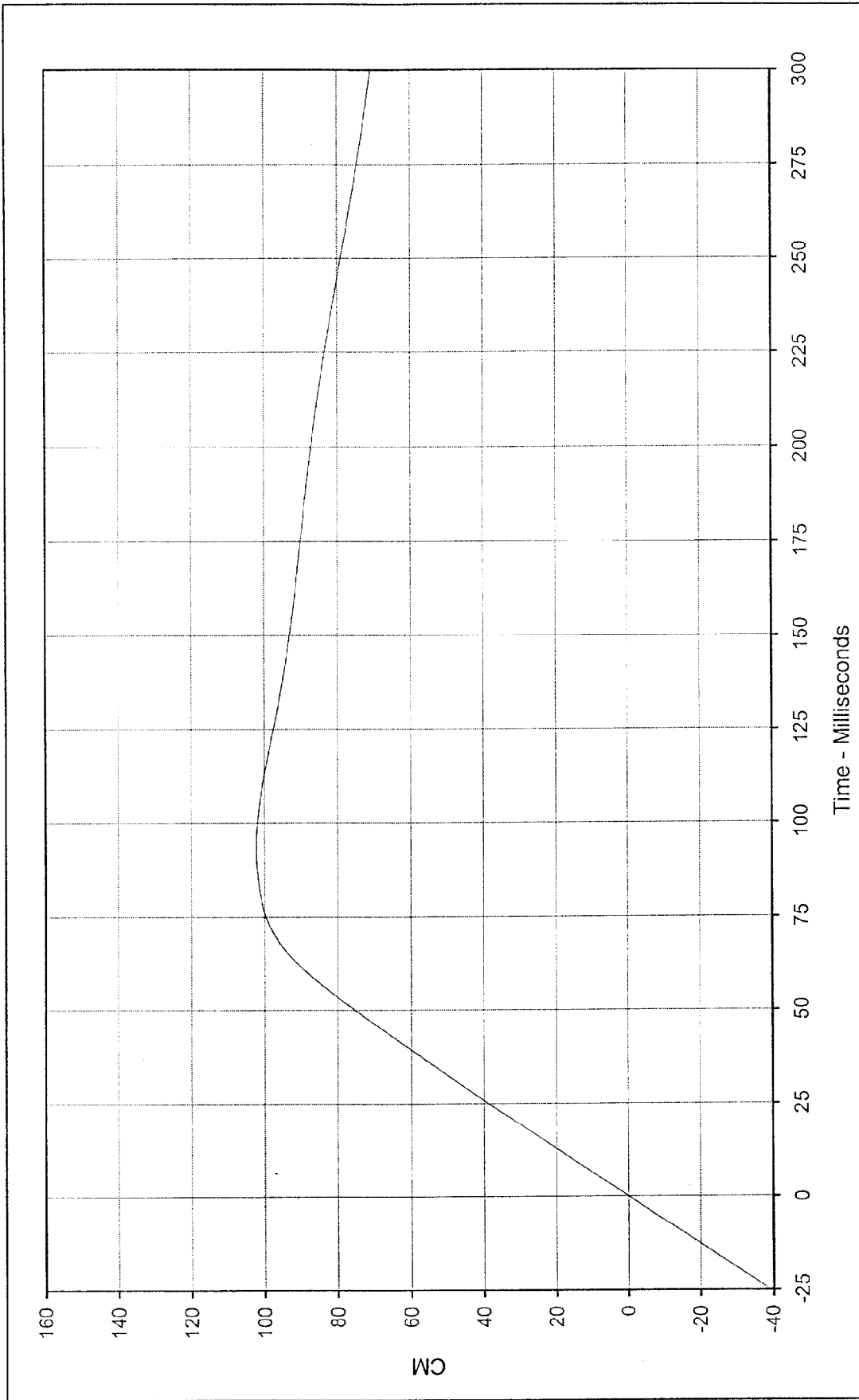




Curve Description: Passenger Pelvis X Velocity  
 Maximum Value: 56.4 at 2.2 Milliseconds  
 Minimum Value: -7.6 at 123.4 Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: IN1-064

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

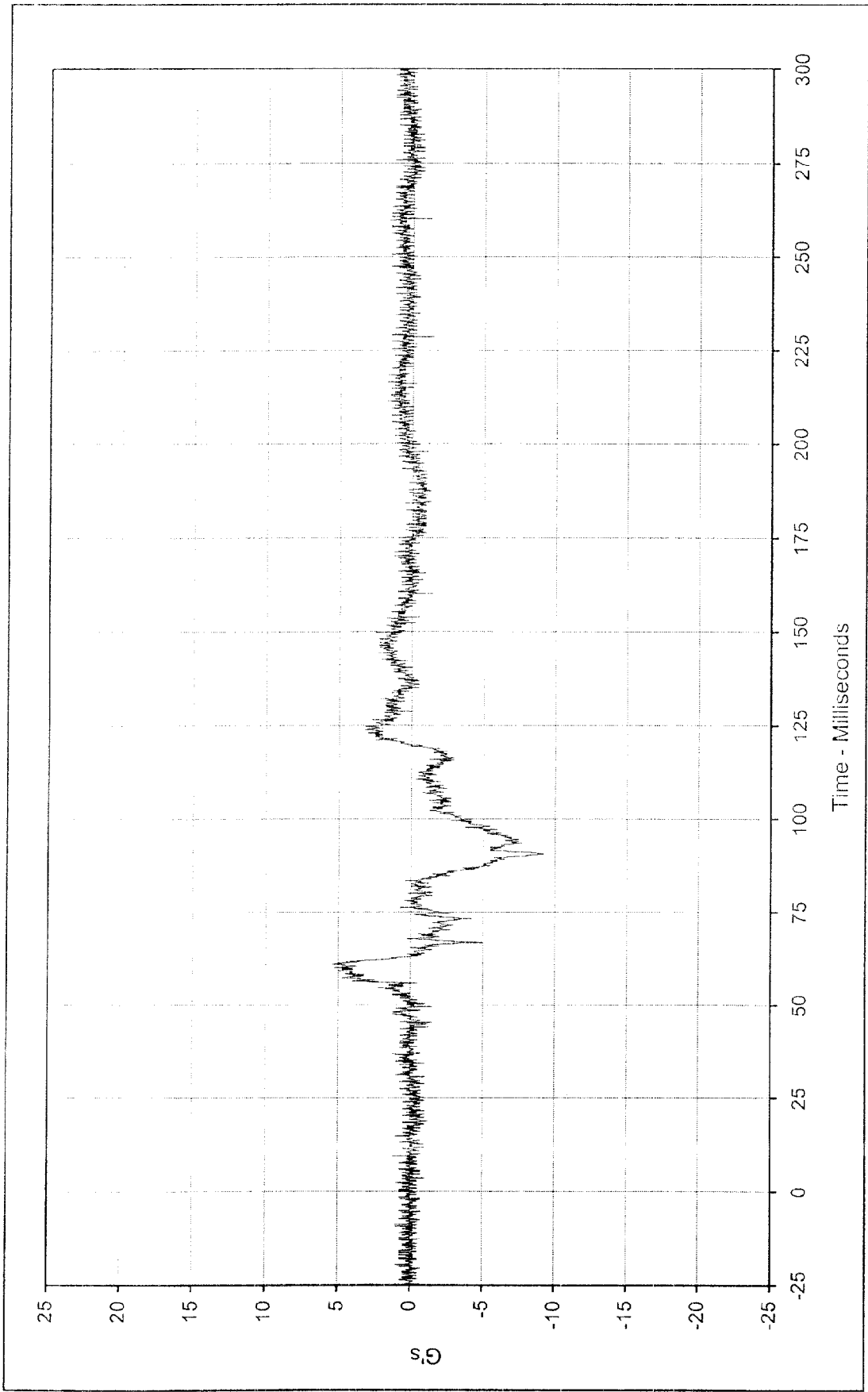




Curve Description: Passenger Pelvis, X Displ. Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 102.2 at 93.4 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -0.1 at 0.0 Milliseconds

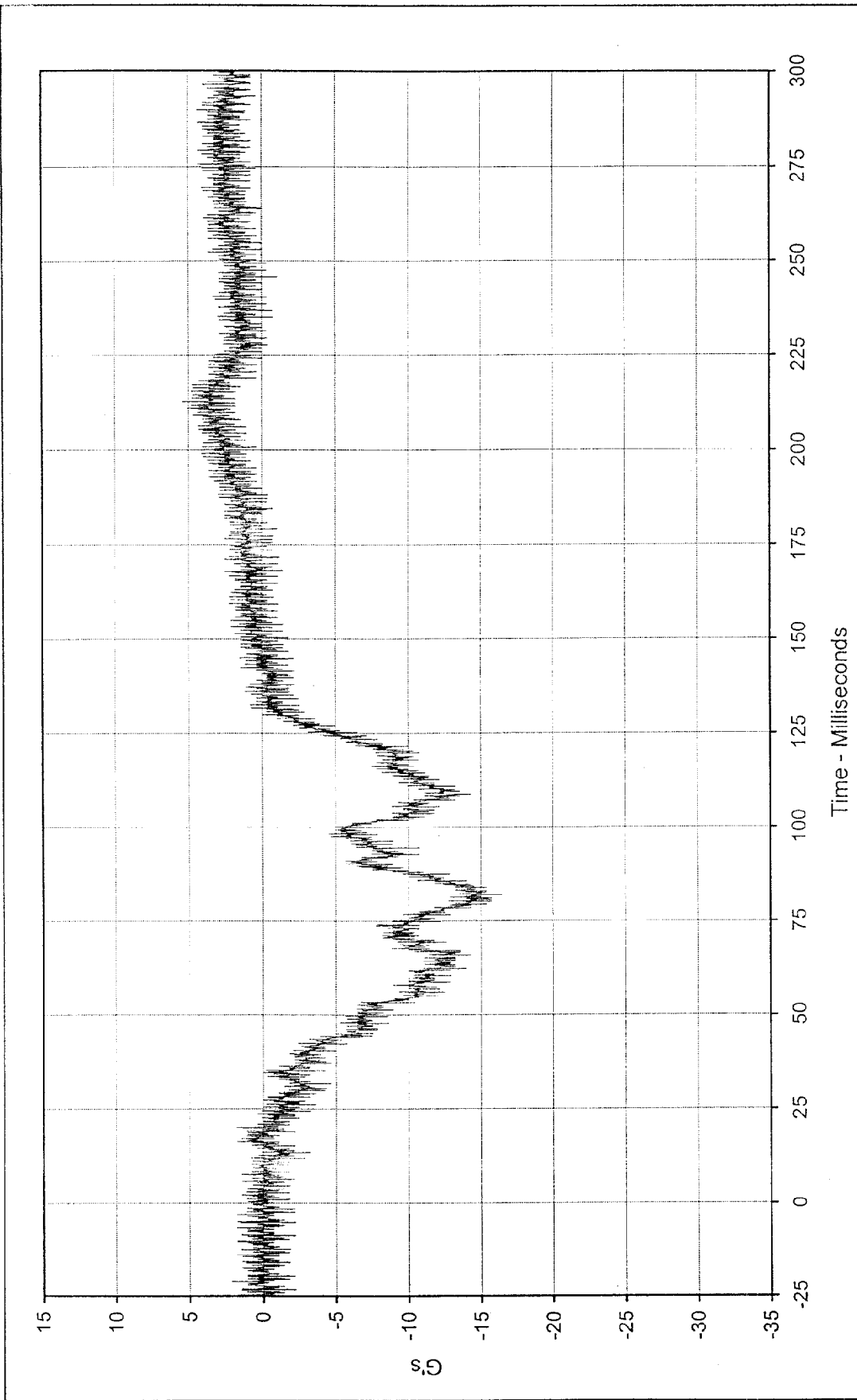


SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: IN2-064



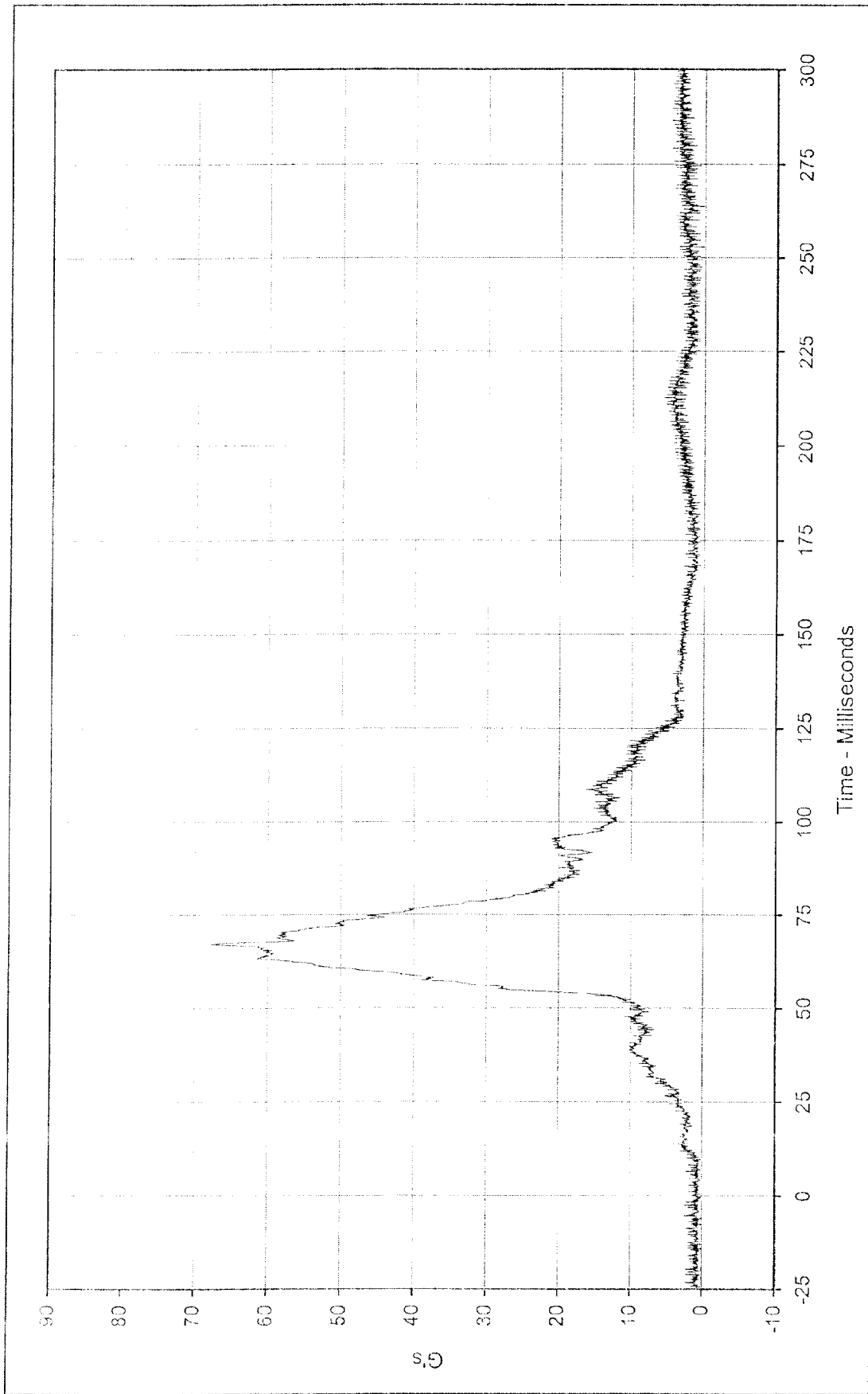
Curve Description: Passenger Pelvis Y Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 5.5 at 60.8 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -9.2 at 90.4 Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: FIL-065





Curve Description: Passenger Pelvis Z  
 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 5.4 at 212.7 Milliseconds  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -16.5 at 82.0 Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: FIL-066

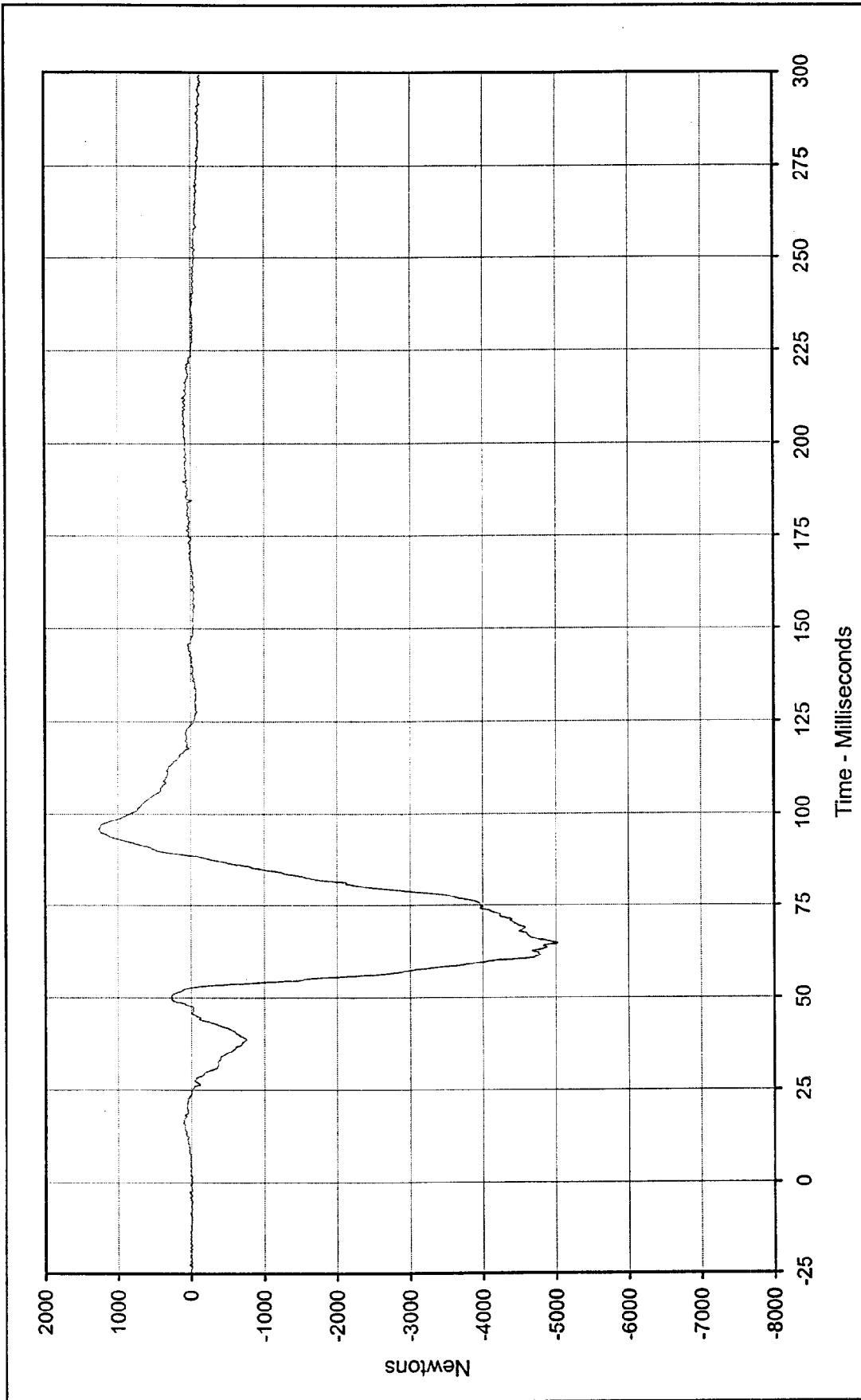




Curve Description: Passenger Pelvis Resultant  
 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

Maximum Value: 67.8 at 66.9 Milliseconds  
 Minimum Value: 0.2 at 0.4 Milliseconds  
 SAE Filter Class: 100C  
 Date of Test: 1/22/99  
 Curve Number: RES-034

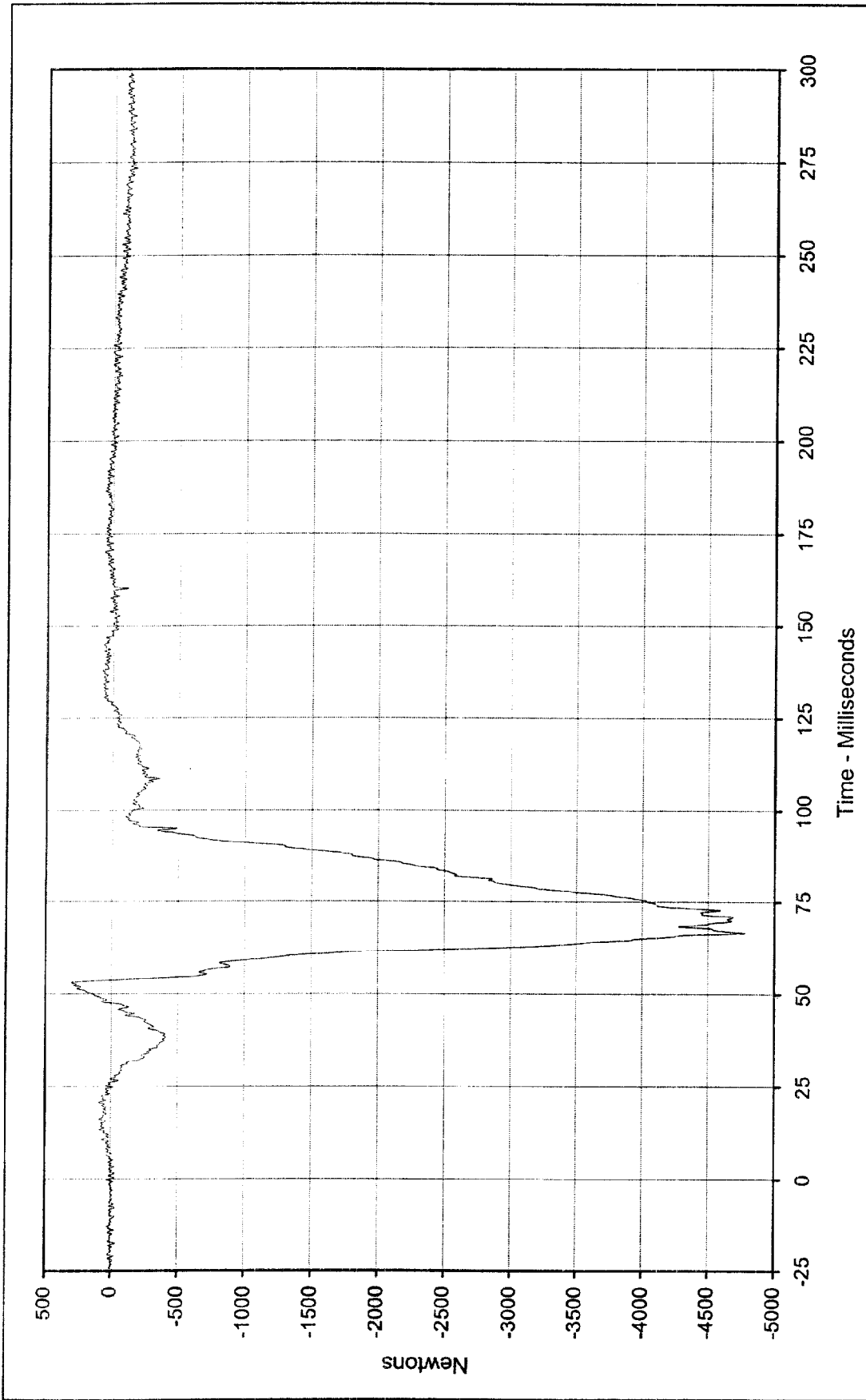




Curve Description: Passenger Left Femur Force      Test Program: 1999 NHTSA 35 mph NCAP      No.: MX0113  
 Maximum Value: 1266.3      at 96.1      Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -5029.7      at 64.8      Milliseconds

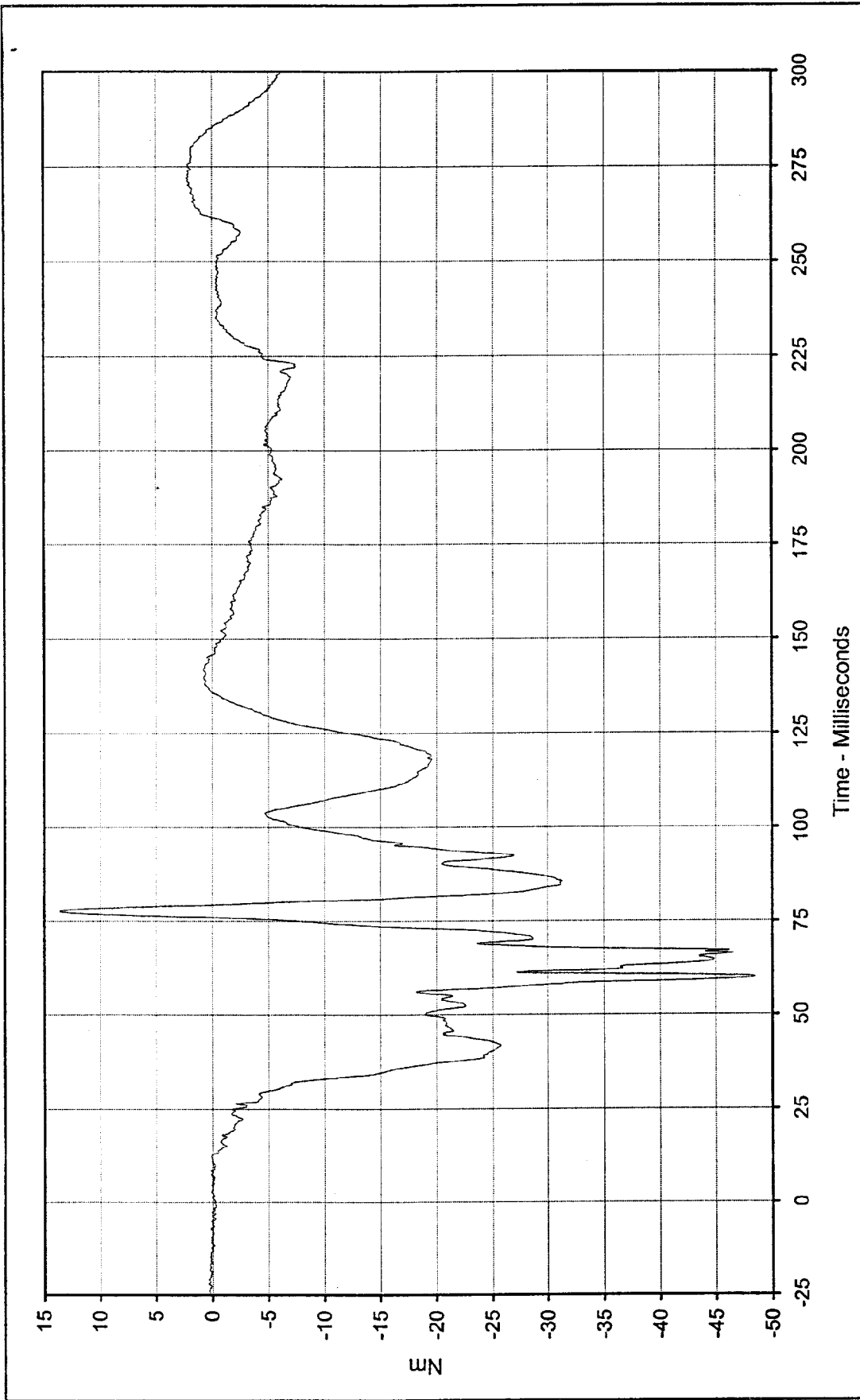


SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: FIL-067



Curve Description: Passenger Right Femur Force      Test Program: 1999 NHTSA 35 mph NCAP    No.: MX0113  
 Maximum Value: 303.0    at 53.1    Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -4780.7    at 66.8    Milliseconds  
 SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: FIL-068





Curve Description: Passenger Left Upper Tibia Moment X Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113

Maximum Value: 13.6 at 77.6 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

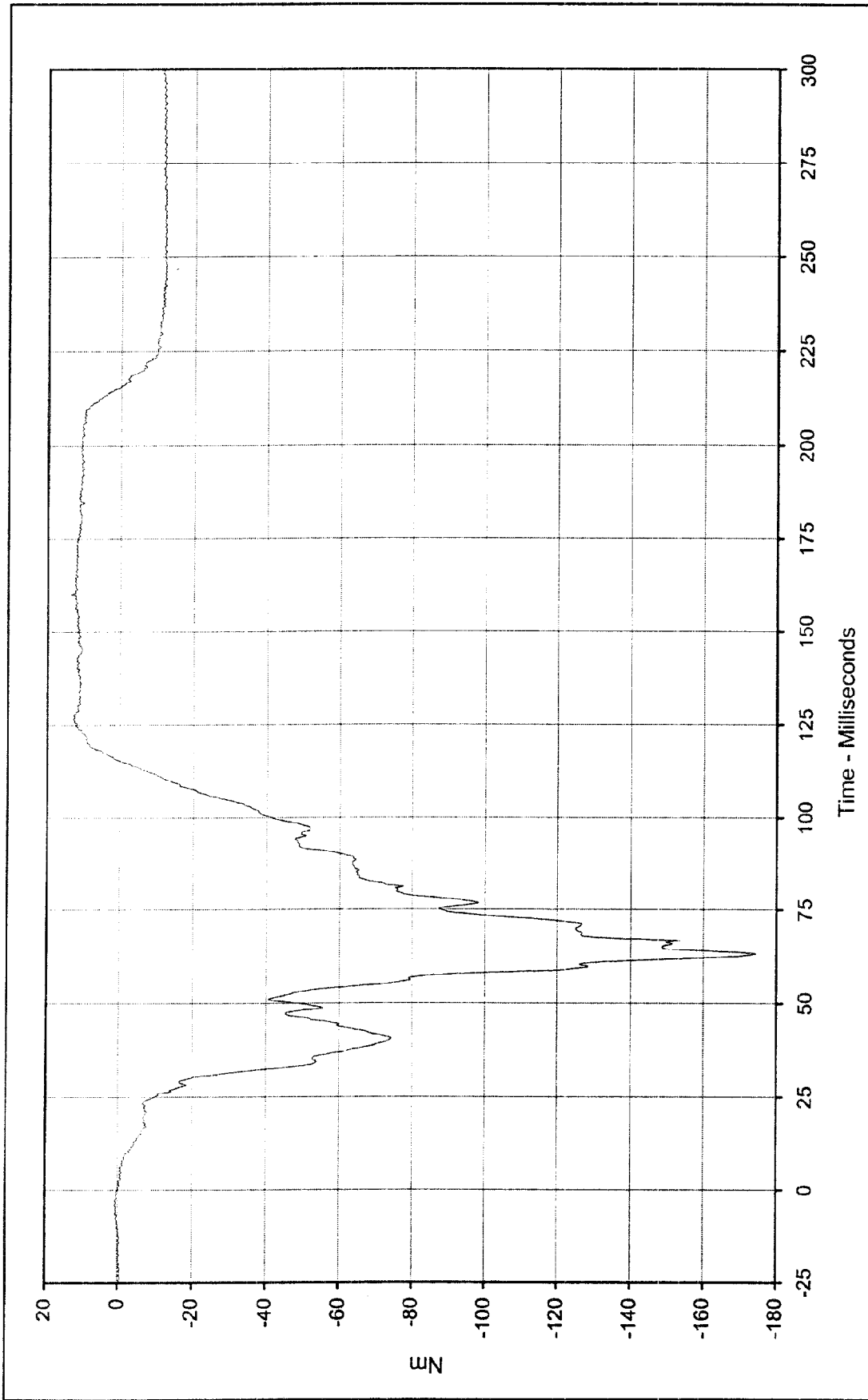
Minimum Value: -48.4 at 59.9 Milliseconds

SAE Filter Class: 600

Date of Test: 1/22/99

Curve Number: FIL-069

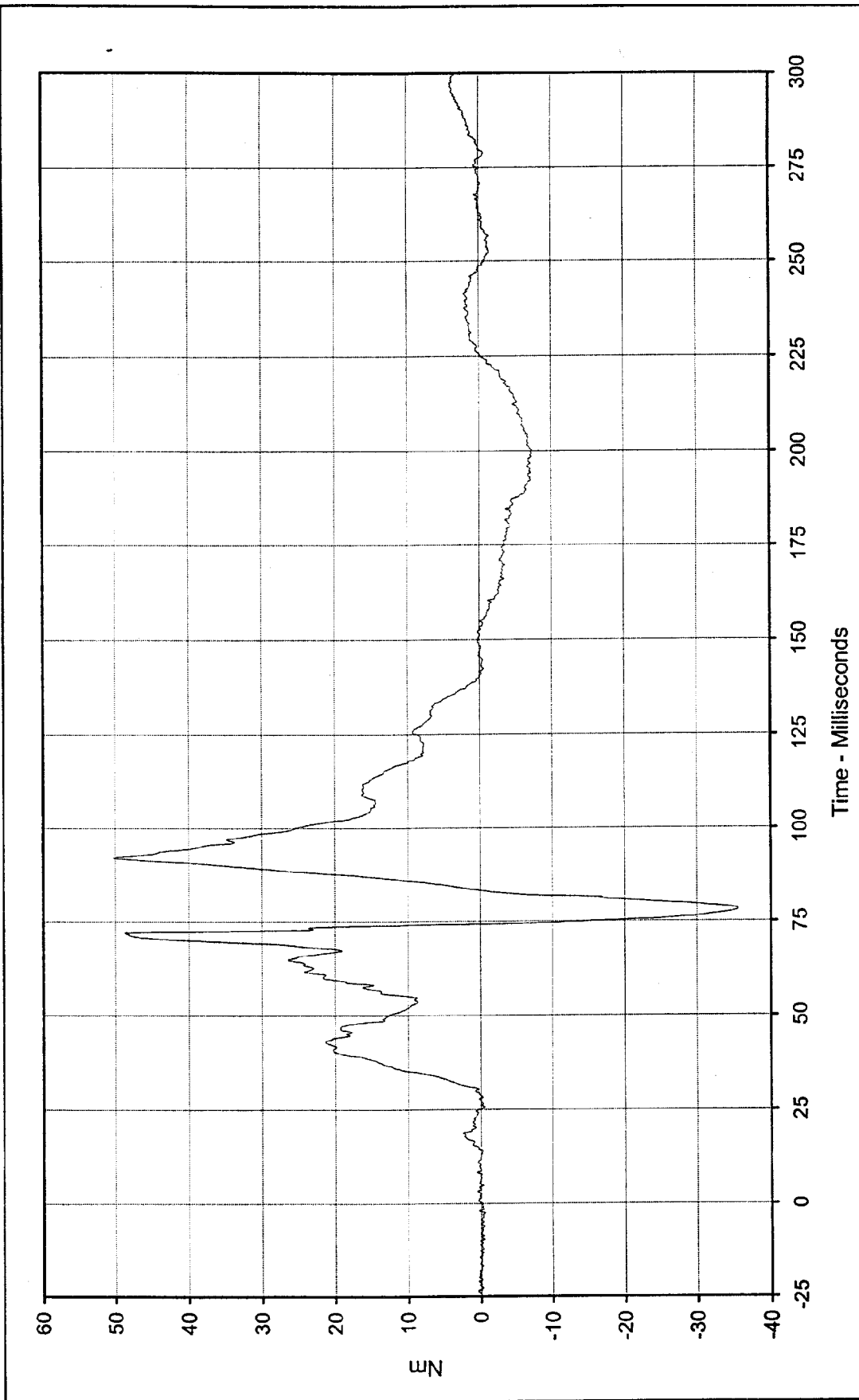




Curve Description: Passenger Left Upper Tibia Moment Y  
 Maximum Value: 13.5 at 160.1 Milliseconds  
 Minimum Value: -174.3 at 63.0 Milliseconds  
 SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: FIL-070

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

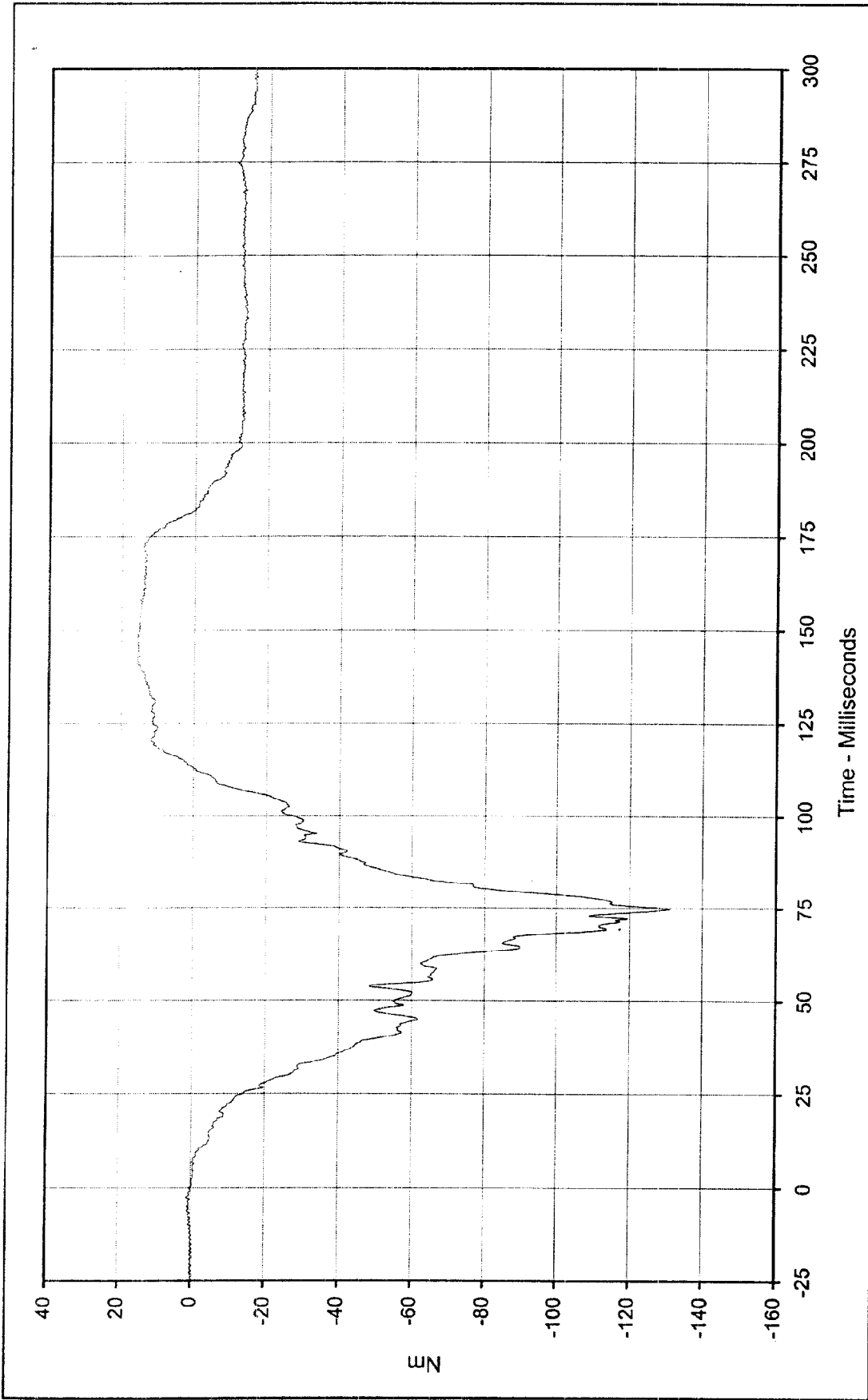




Curve Description: Passenger Right Upper Tibia Moment X      Test Program: 1999 NHTSA 35 mph NCAP      No.: MX0113  
 Maximum Value: 50.3      at 91.9      Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -35.6      at 78.1      Milliseconds



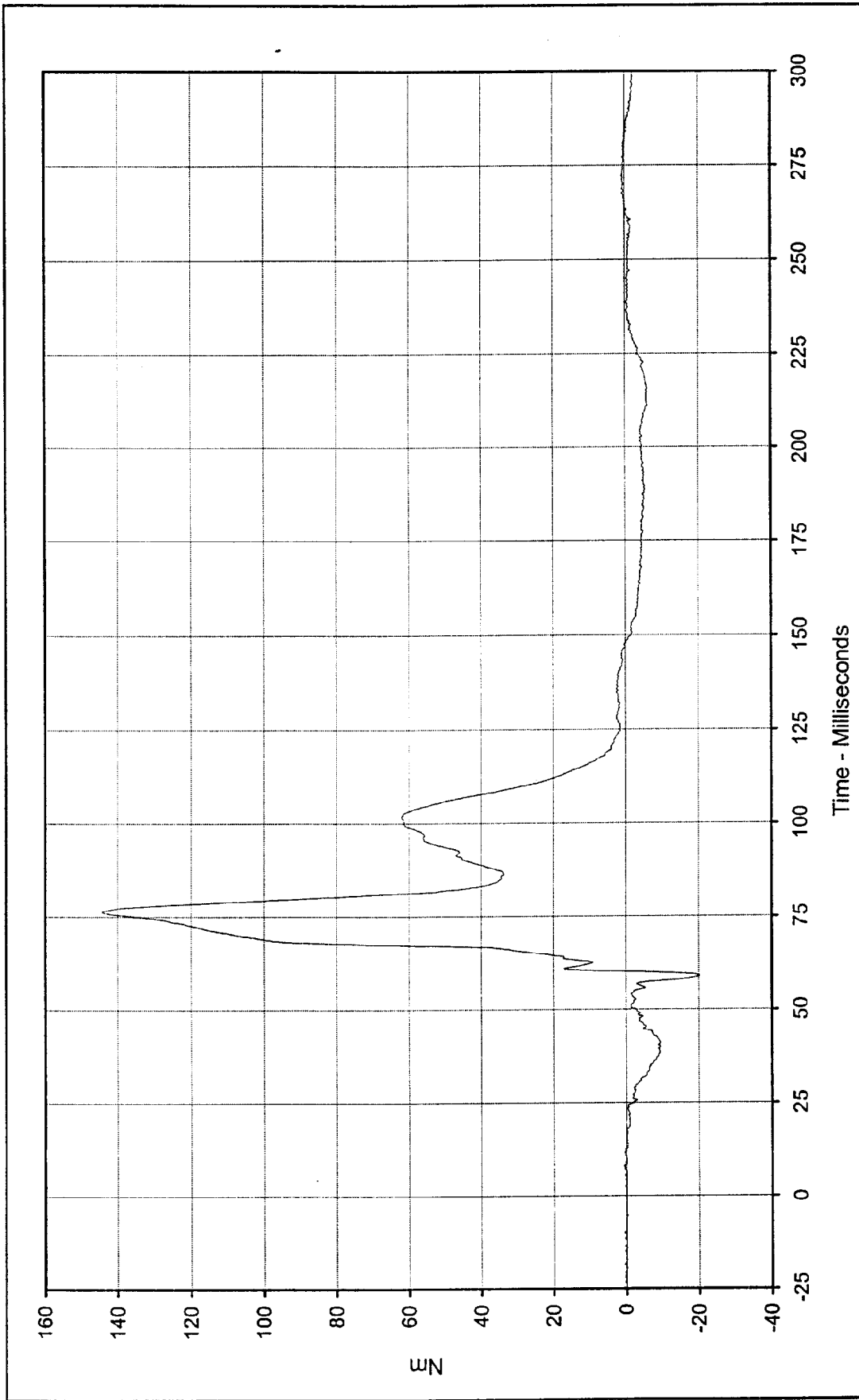
SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: FIL-071



Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

Curve Description: Passenger Right Upper Tibia Moment Y  
 Maximum Value: 15.9 at 147.4 Milliseconds  
 Minimum Value: -131.0 at 74.8 Milliseconds  
 SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: FIL-072

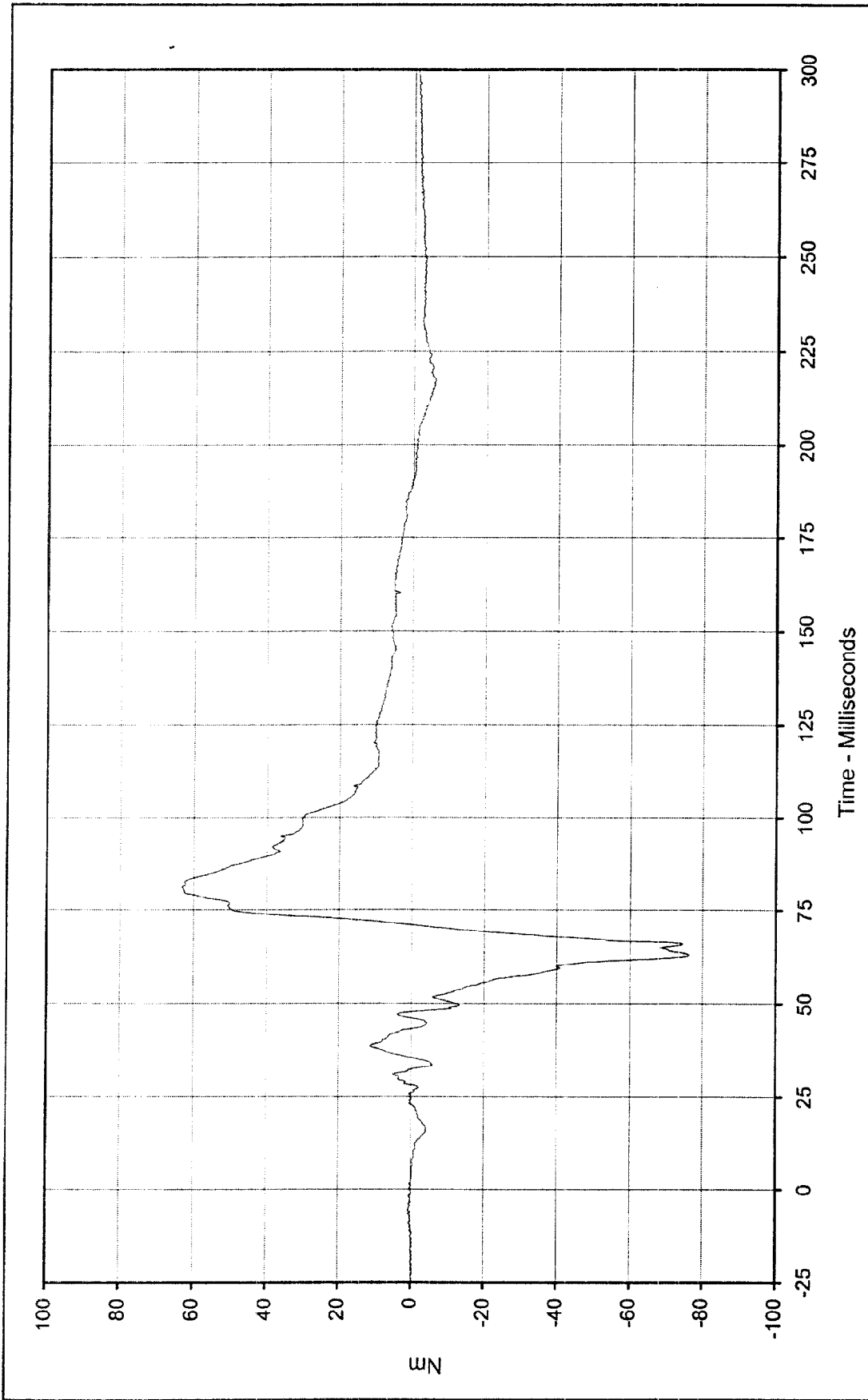




Curve Description: Passenger Left Lower Tibia Moment X  
 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

Maximum Value: 144.3 at 76.3 Milliseconds  
 Minimum Value: -20.4 at 58.9 Milliseconds  
 SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: FIL-073

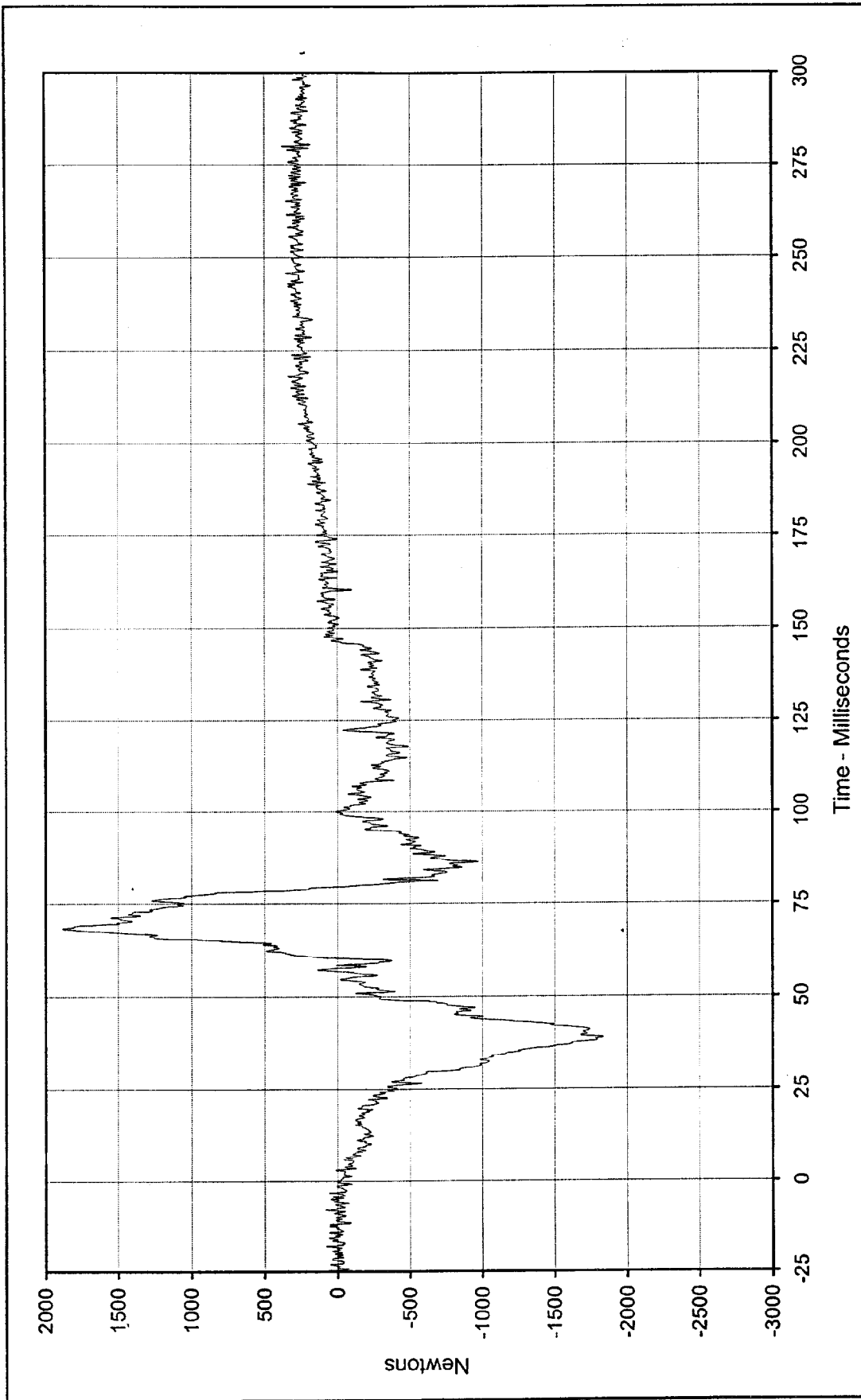




Curve Description: Passenger Left Lower Tibia Moment Y  
 Maximum Value: 63.2 at 81.2 Milliseconds  
 Minimum Value: -76.3 at 62.8 Milliseconds  
 SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: FIL-074

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

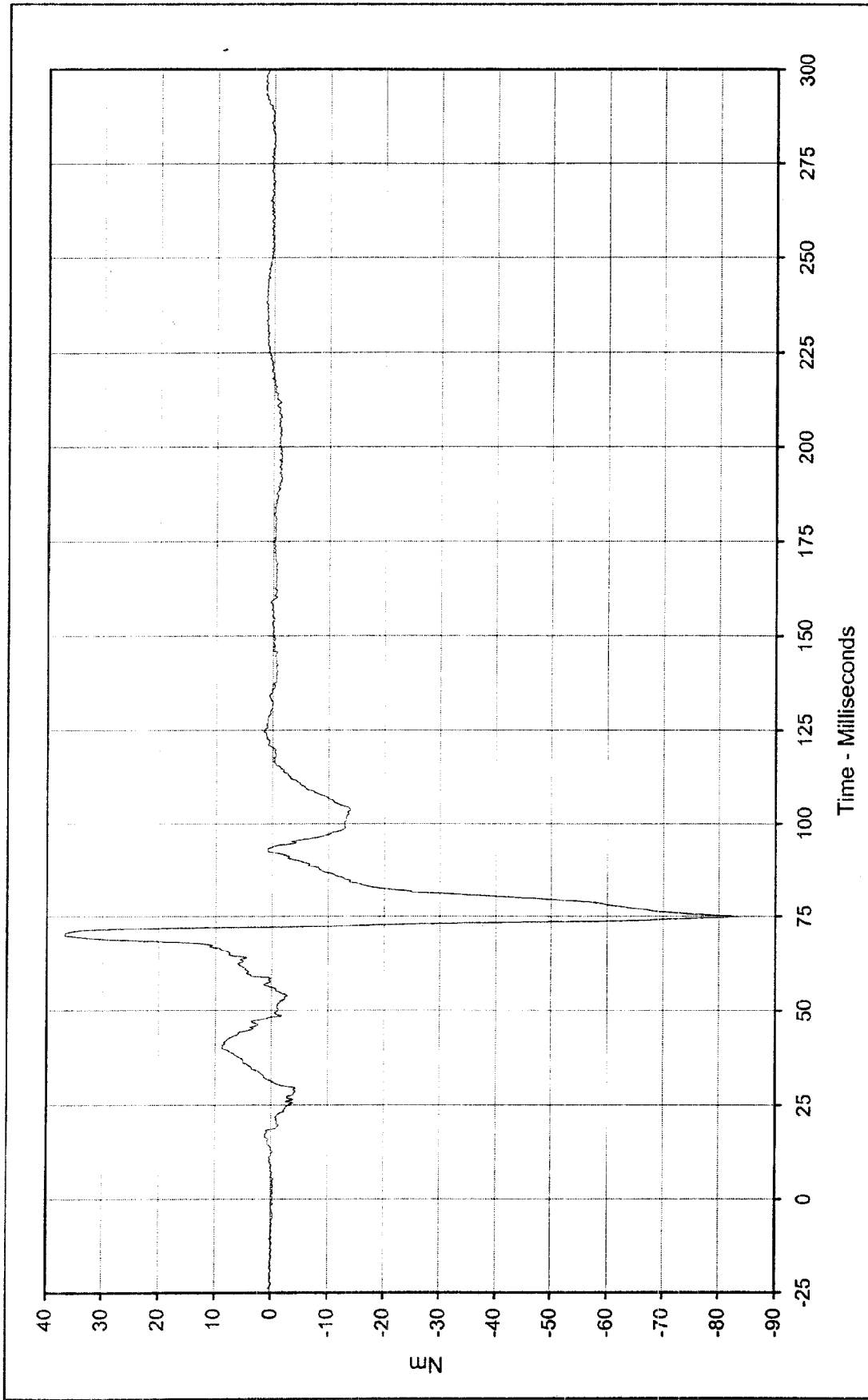




Curve Description: Passenger Left Lower Tibia Force Z  
 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

Maximum Value: 1884.4 at 68.4 Milliseconds  
 Minimum Value: -1837.3 at 39.0 Milliseconds  
 SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: FIL-075

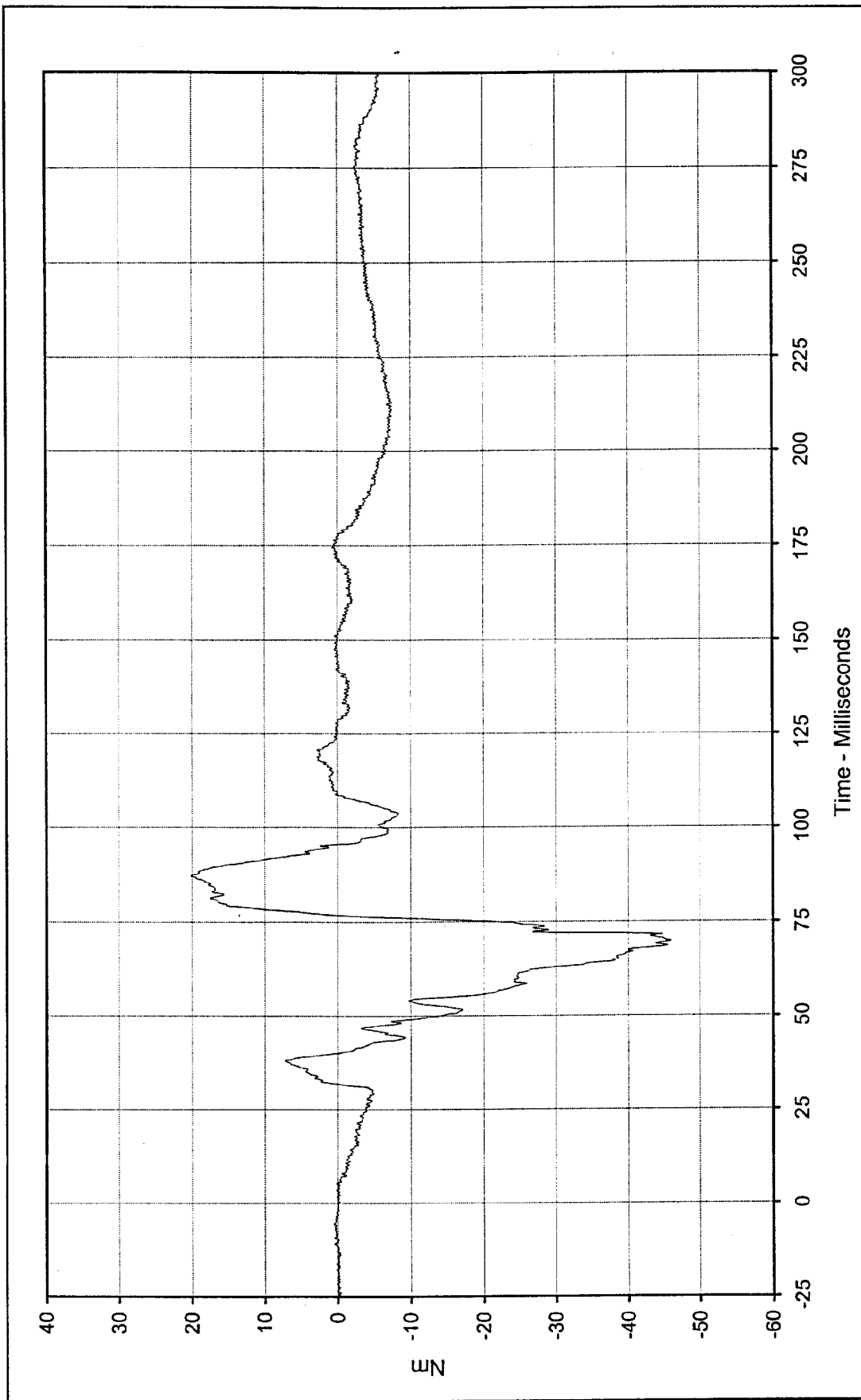




Curve Description: Passenger Right Lower Tibia Moment X      Test Program: 1999 NHTSA 35 mph NCAP      No.: MX0113  
 Maximum Value: 36.8      at 70.0      Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -83.5      at 74.9      Milliseconds



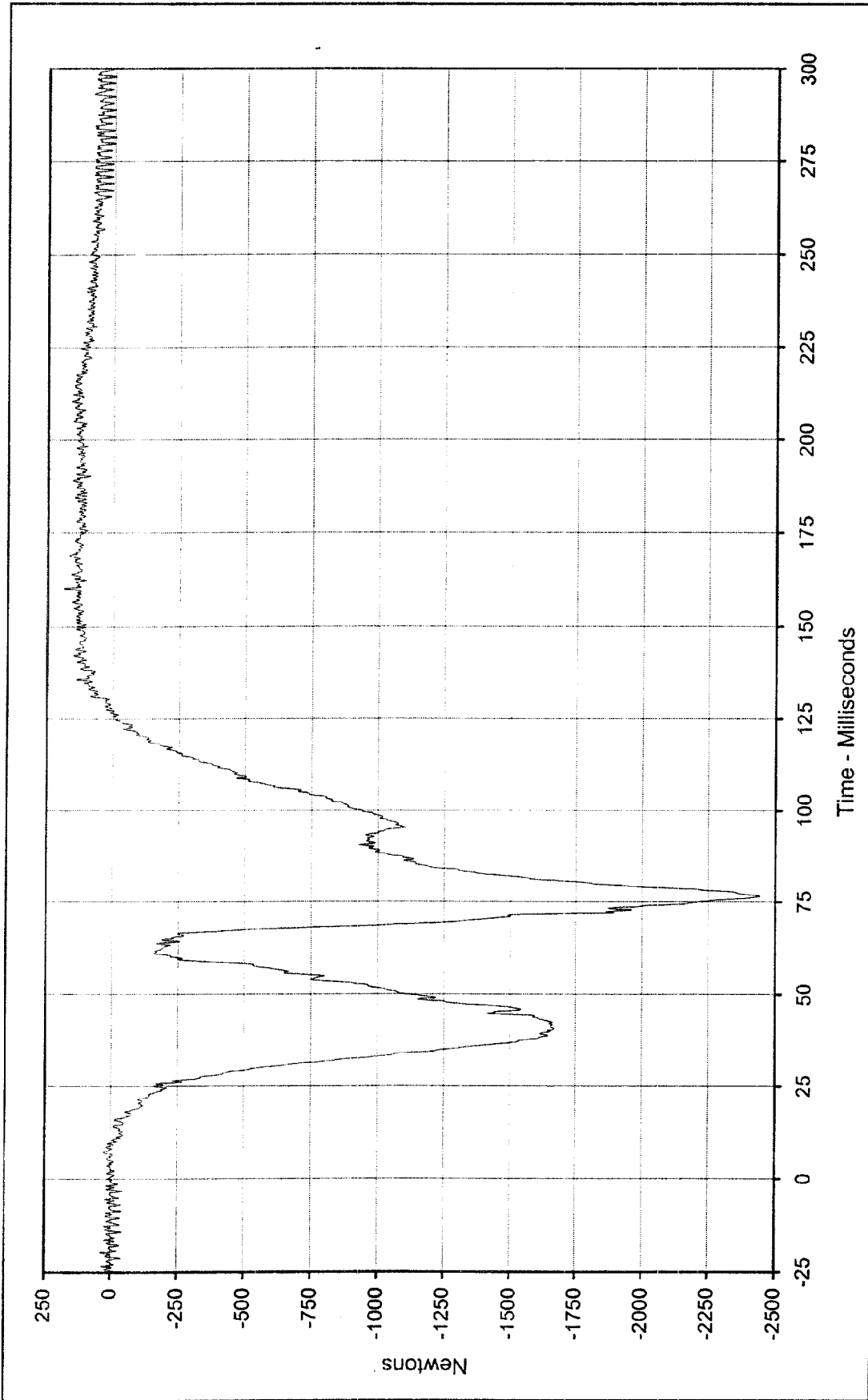
SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: FIL-076



Curve Description: Passenger Right Lower Tibia Moment Y  
 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

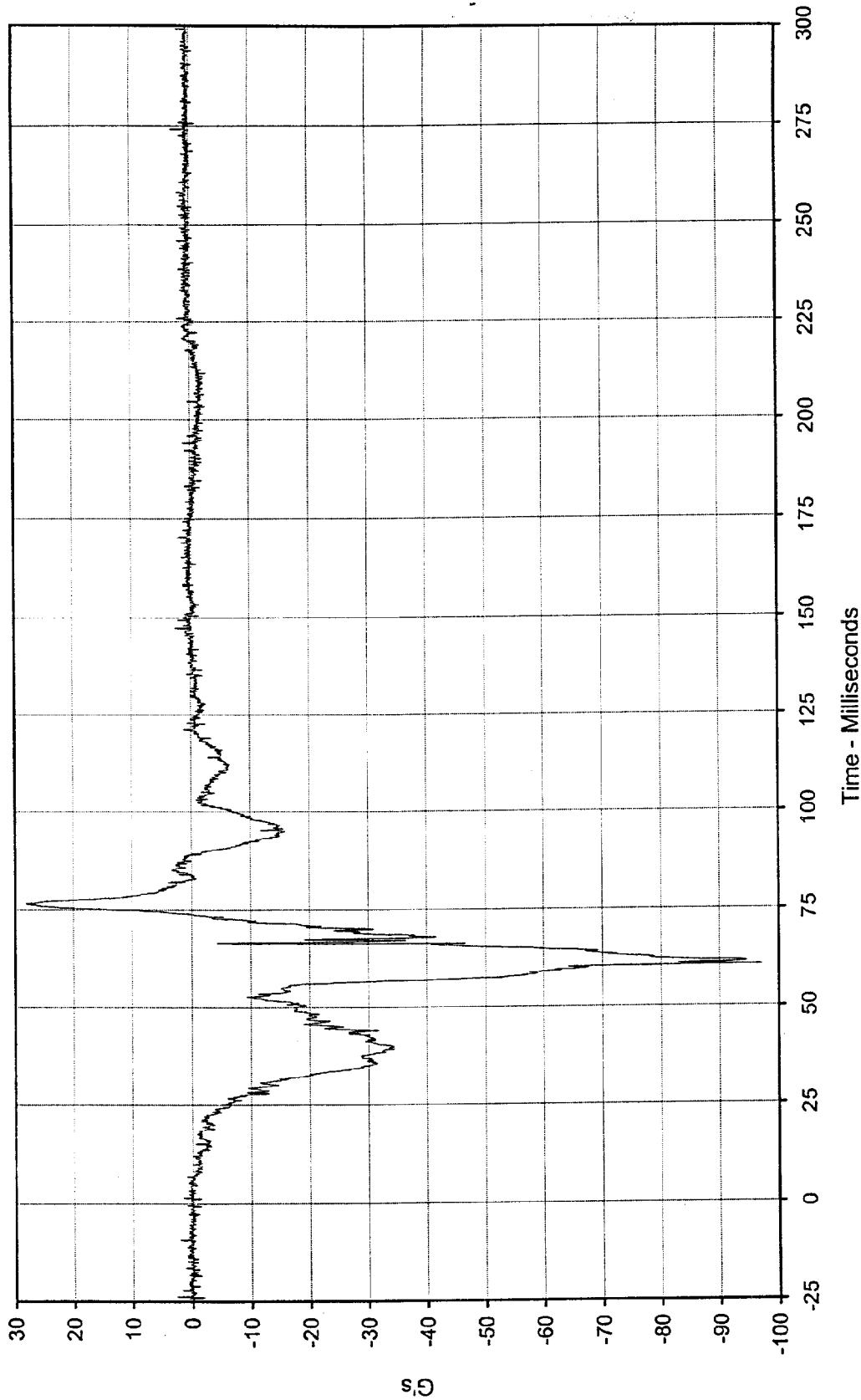
Maximum Value: 20.2 at 87.1 Milliseconds  
 Minimum Value: -46.0 at 69.9 Milliseconds  
 SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: FIL-077





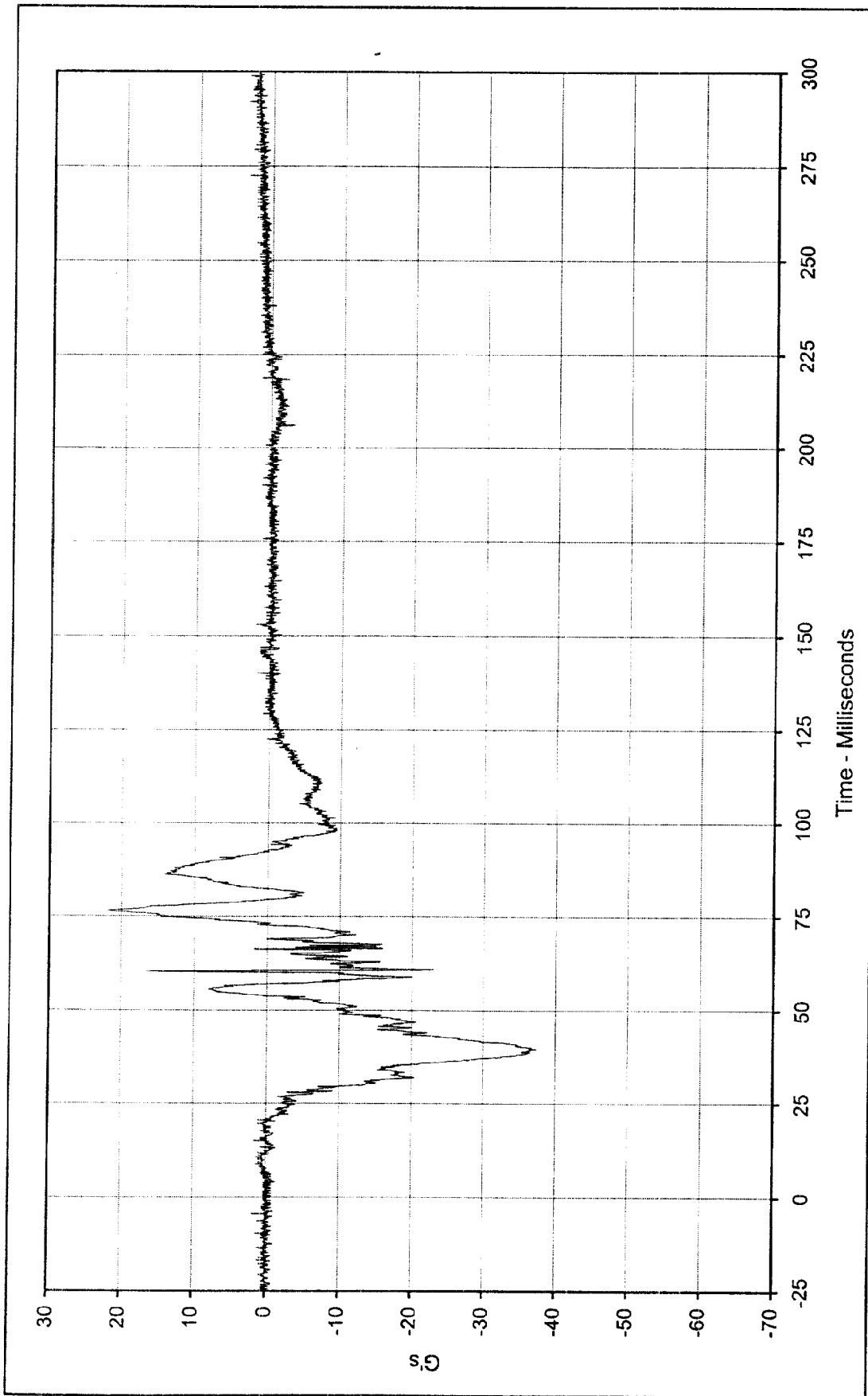
Curve Description: Passenger Right lower Tibia Force Z  
 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 189.1 at 160.1 Milliseconds  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -2446.6 at 76.5 Milliseconds  
 SAE Filter Class: 600  
 Date of Test: 1/22/99  
 Curve Number: FIL-078





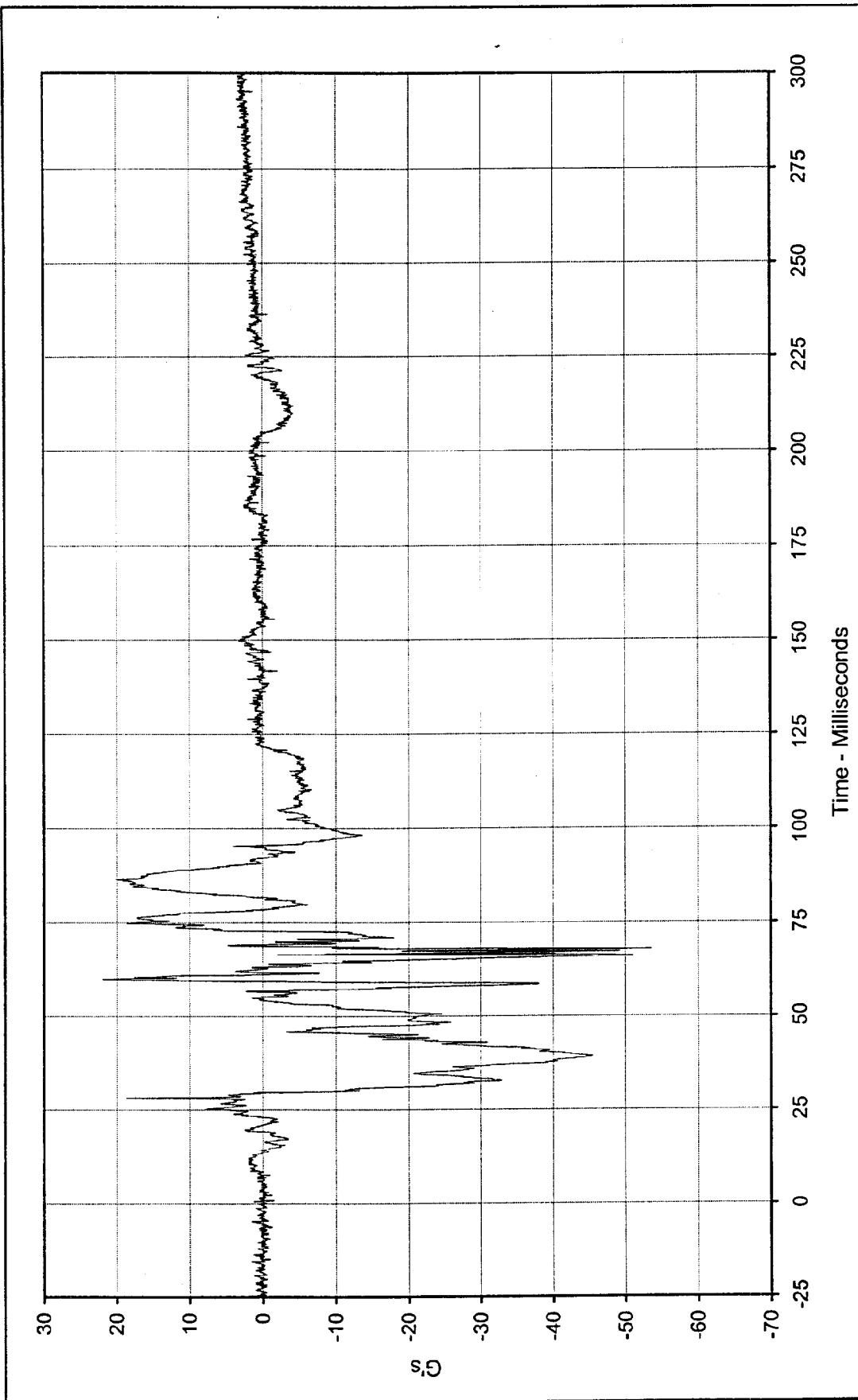
Curve Description: Passenger Left Foot Aft X      Test Program: 1999 NHTSA 35 mph NCAP      No.: MX0113  
 Maximum Value: 28.1      at 76.6      Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -97.2      at 60.5      Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: FIL-079





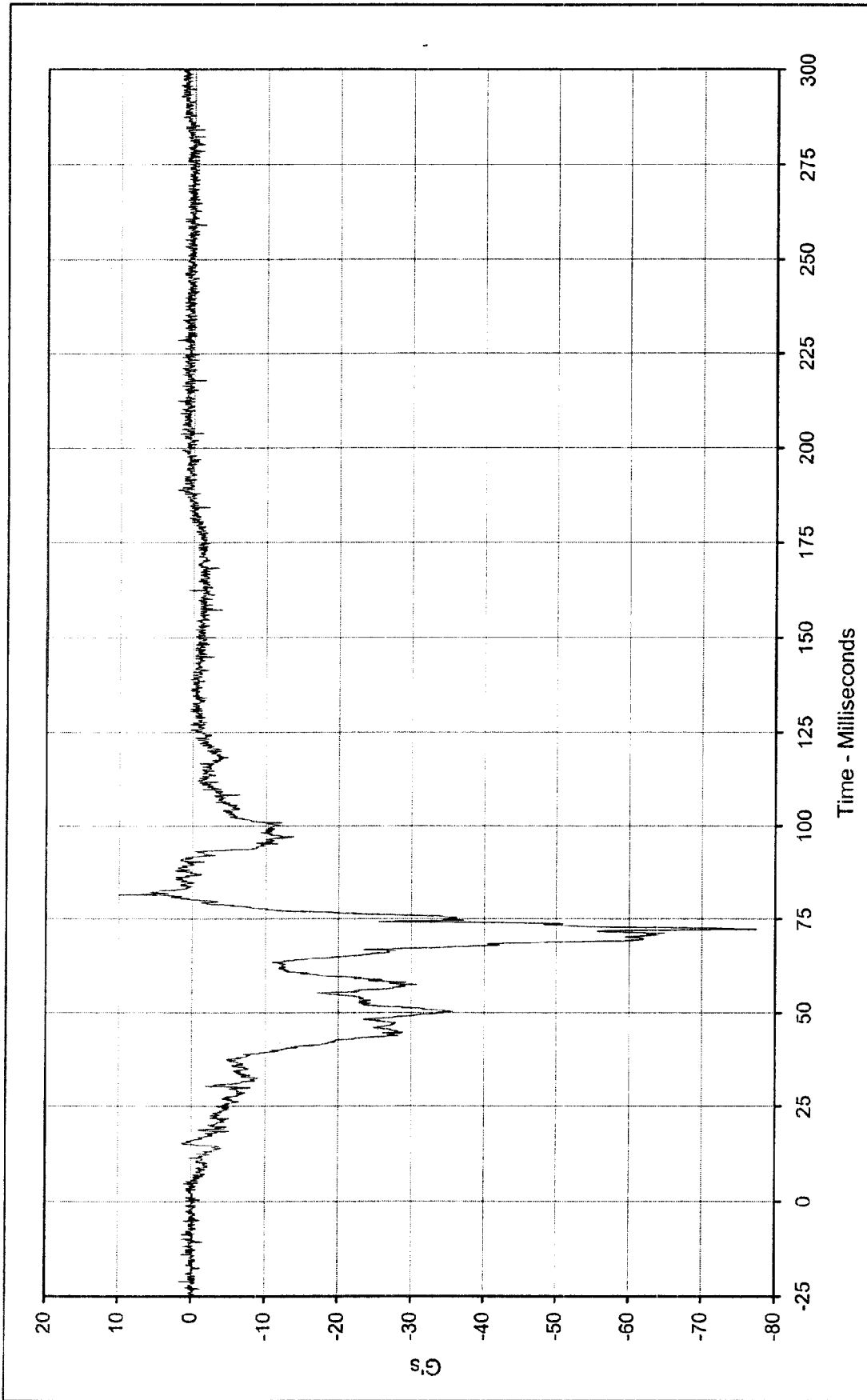
Curve Description: Passenger Left Foot Aft Z      Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 22.0 at 76.5 Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -37.4 at 39.6 Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: FIL-080





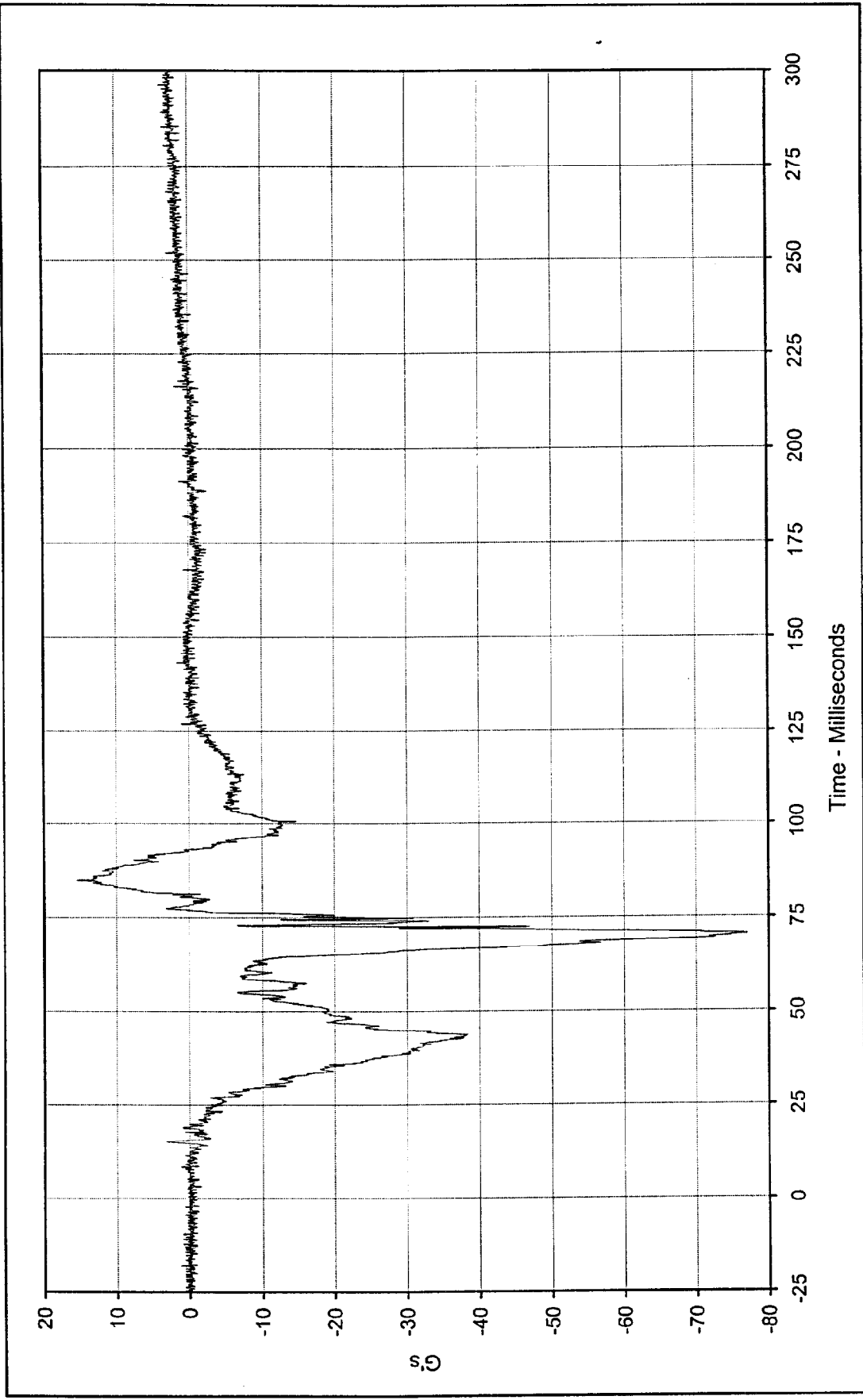
Curve Description:	Passenger Left Foot Fore Z	Test Program:	1999 NHTSA 35 mph NCAP	No.:	MX0113
Maximum Value:	21.9 at 59.9 Milliseconds	Test Vehicle:	1999 Oldsmobile Intrigue 4 Door Sedan		
Minimum Value:	-53.5 at 67.9 Milliseconds				
SAE Filter Class:	1000				
Date of Test:	1/22/99				
Curve Number:	FIL-081				





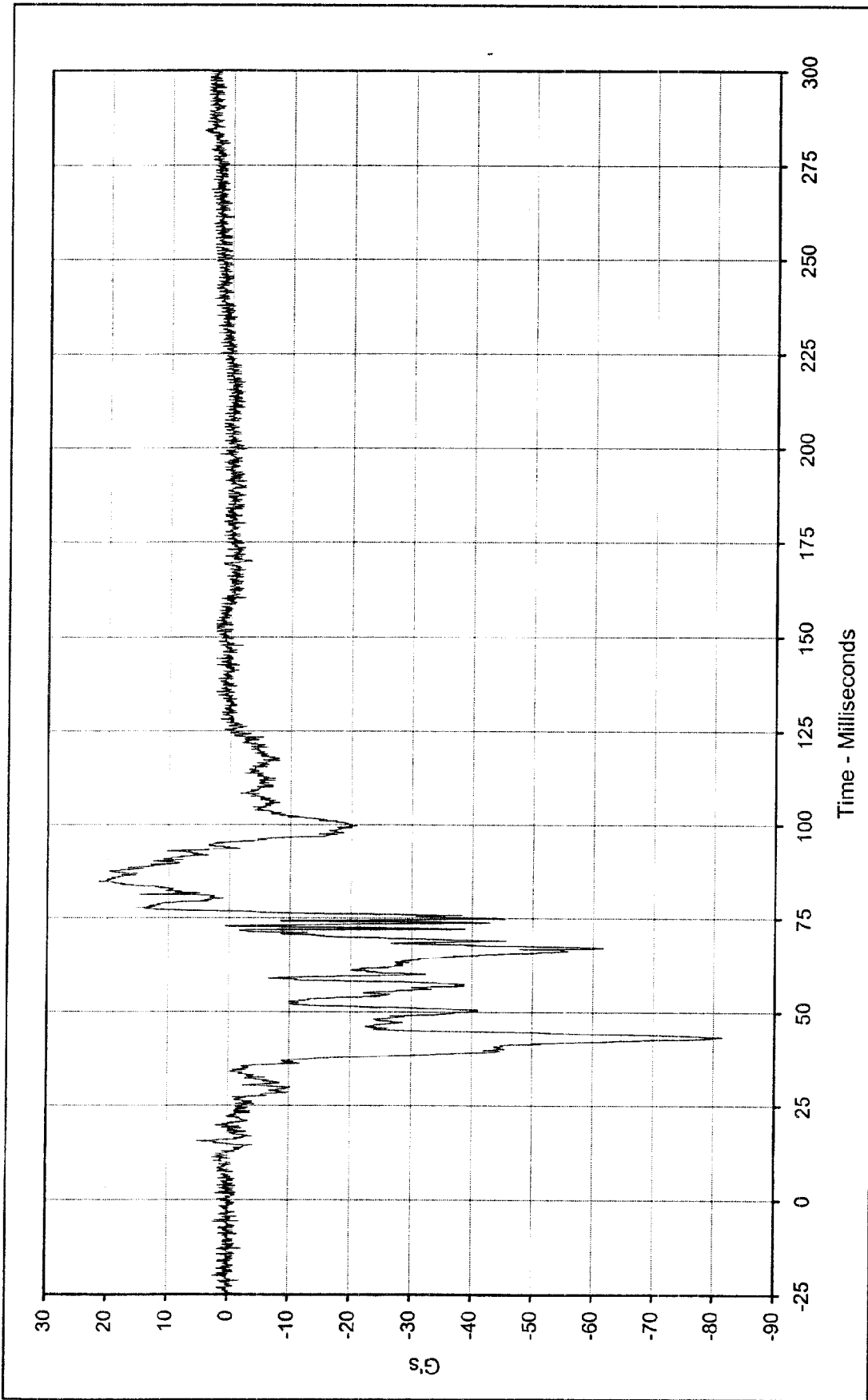
Curve Description: Passenger Right Foot Aft X      Test Program: 1999 NHTSA 35 mph NCAP      No.: MX0113  
 Maximum Value: 10.0      at 81.4      Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -77.5      at 72.3      Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: FIL-082





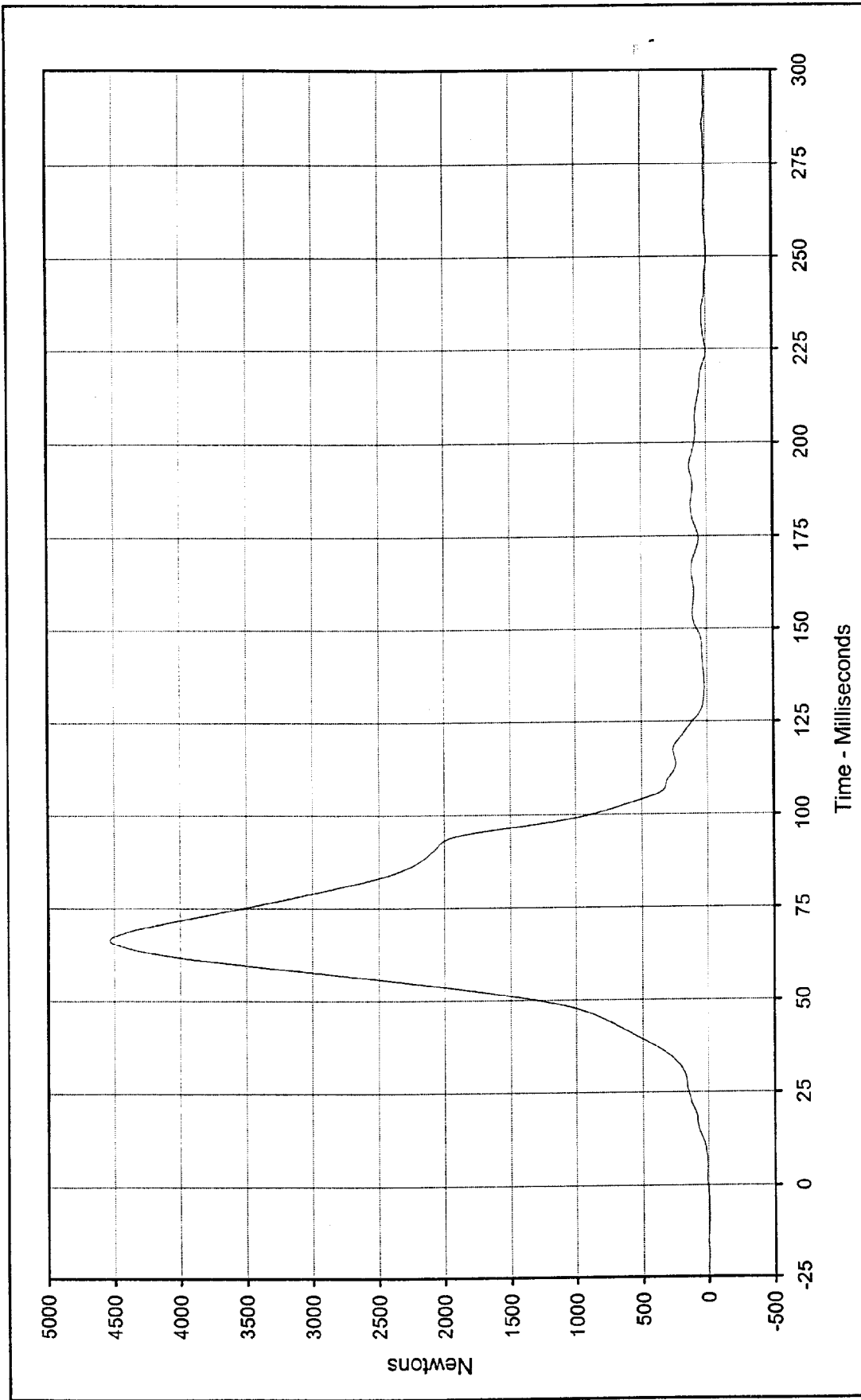
Curve Description: Passenger Right Foot Aft Z      Test Program: 1999 NHTSA 35 mph NCAP    No.: MX0113  
 Maximum Value: 15.4    at 84.8    Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -77.1    at 70.4    Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/22/99  
 Curve Number: FIL-083





Curve Description:	Passenger Right Foot Fore Z	Test Program:	1999 NHTSA 35 mph NCAP	No.:	MX0113	
Maximum Value:	21.5	at	84.9	Milliseconds	Test Vehicle:	1999 Oldsmobile Intrigue 4 Door Sedan
Minimum Value:	-81.5	at	43.4	Milliseconds		
SAE Filter Class:	1000					
Date of Test:	1/22/99					
Curve Number:	FIL-084					

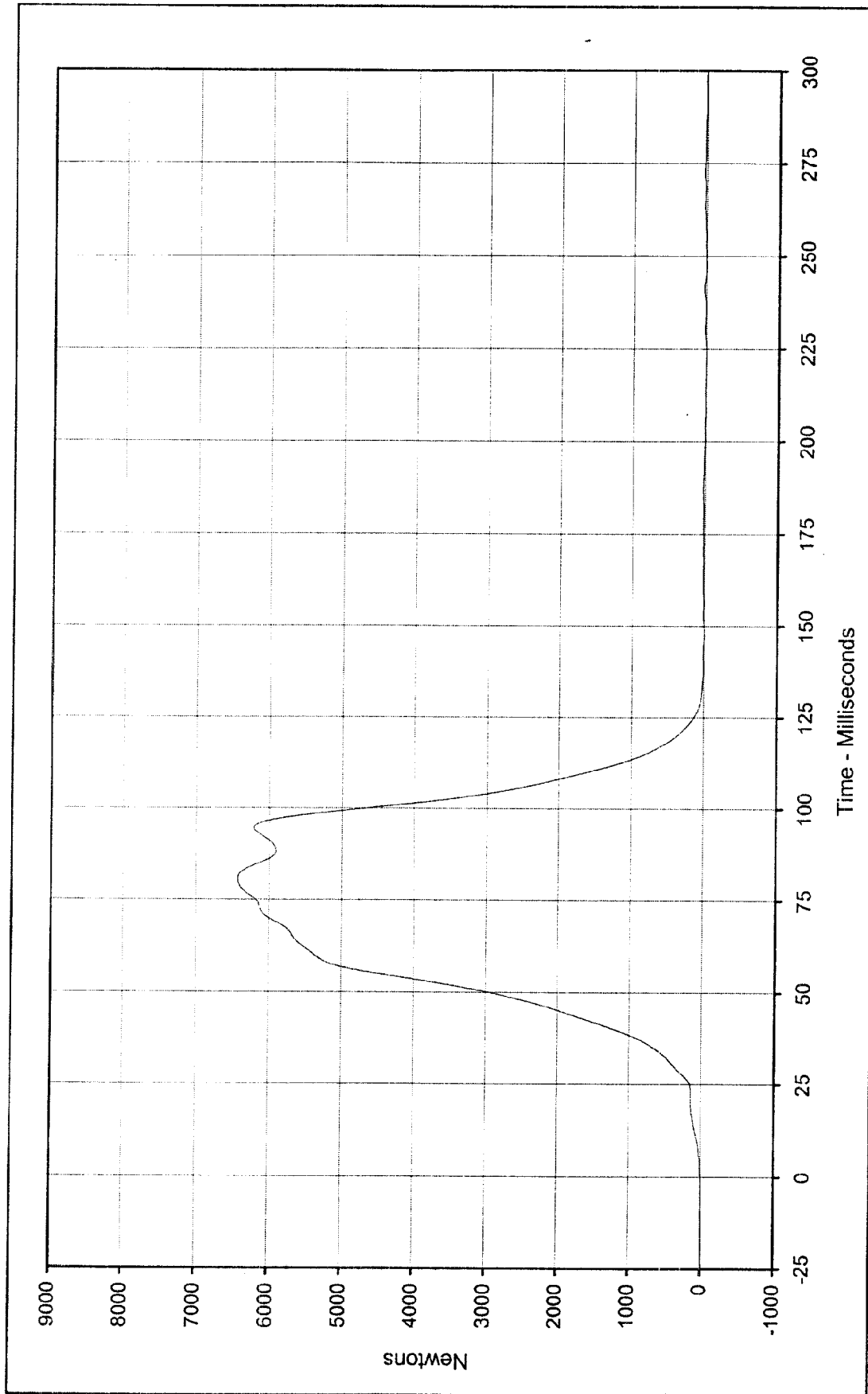




Curve Description: Passenger Lap Belt Force      Test Program: 1999 NHTSA 35 mph NCAP      No.: MX0113  
 Maximum Value: 4531.9      at 66.4      Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -6.2      at 251.1      Milliseconds



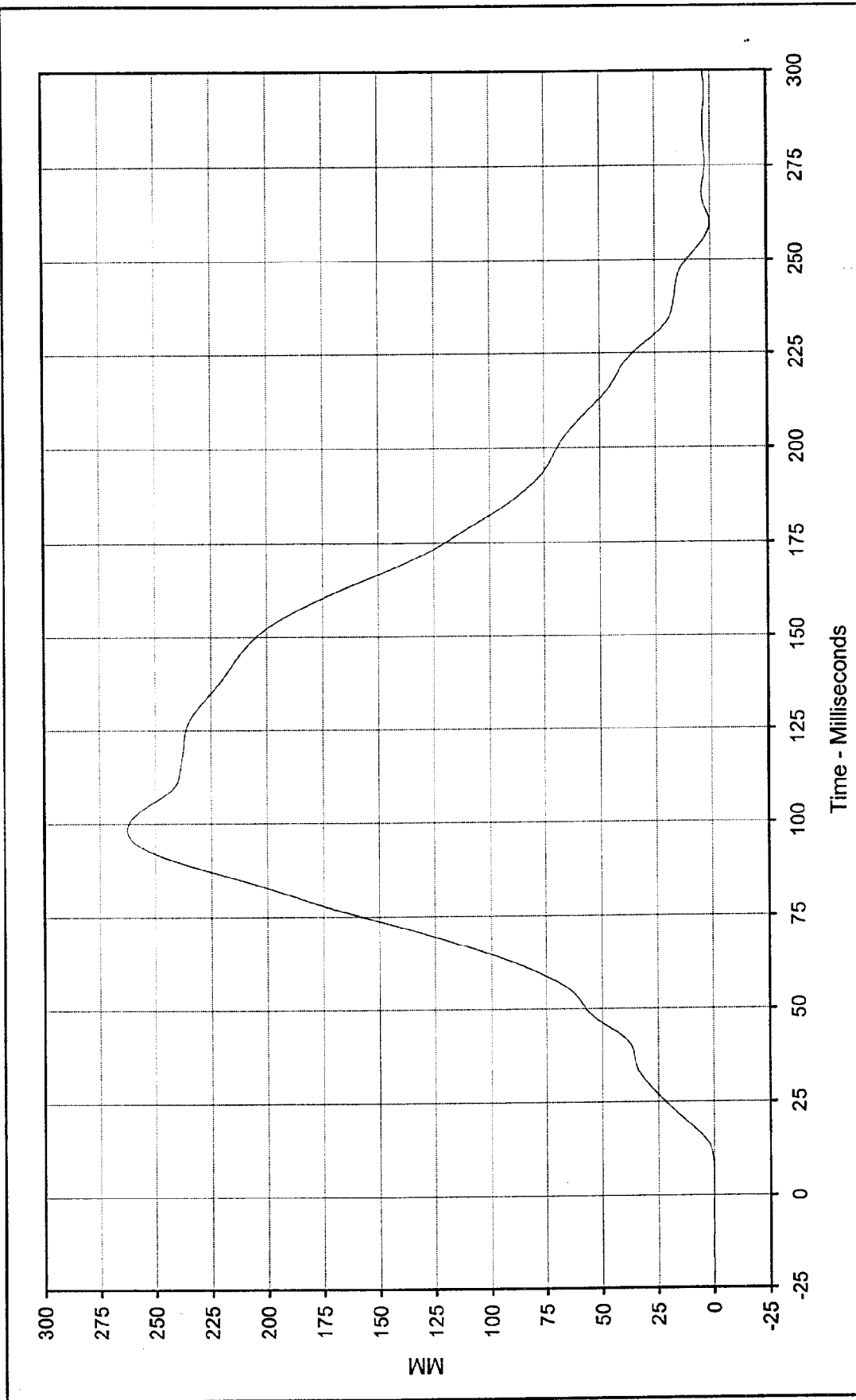
SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-085



Curve Description: Passenger Shoulder Belt Force      Test Program: 1999 NHTSA 35 mph NCAP    No.: MX0113  
 Maximum Value: 6427.5    at 80.8    Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -6.2    at 222.0    Milliseconds



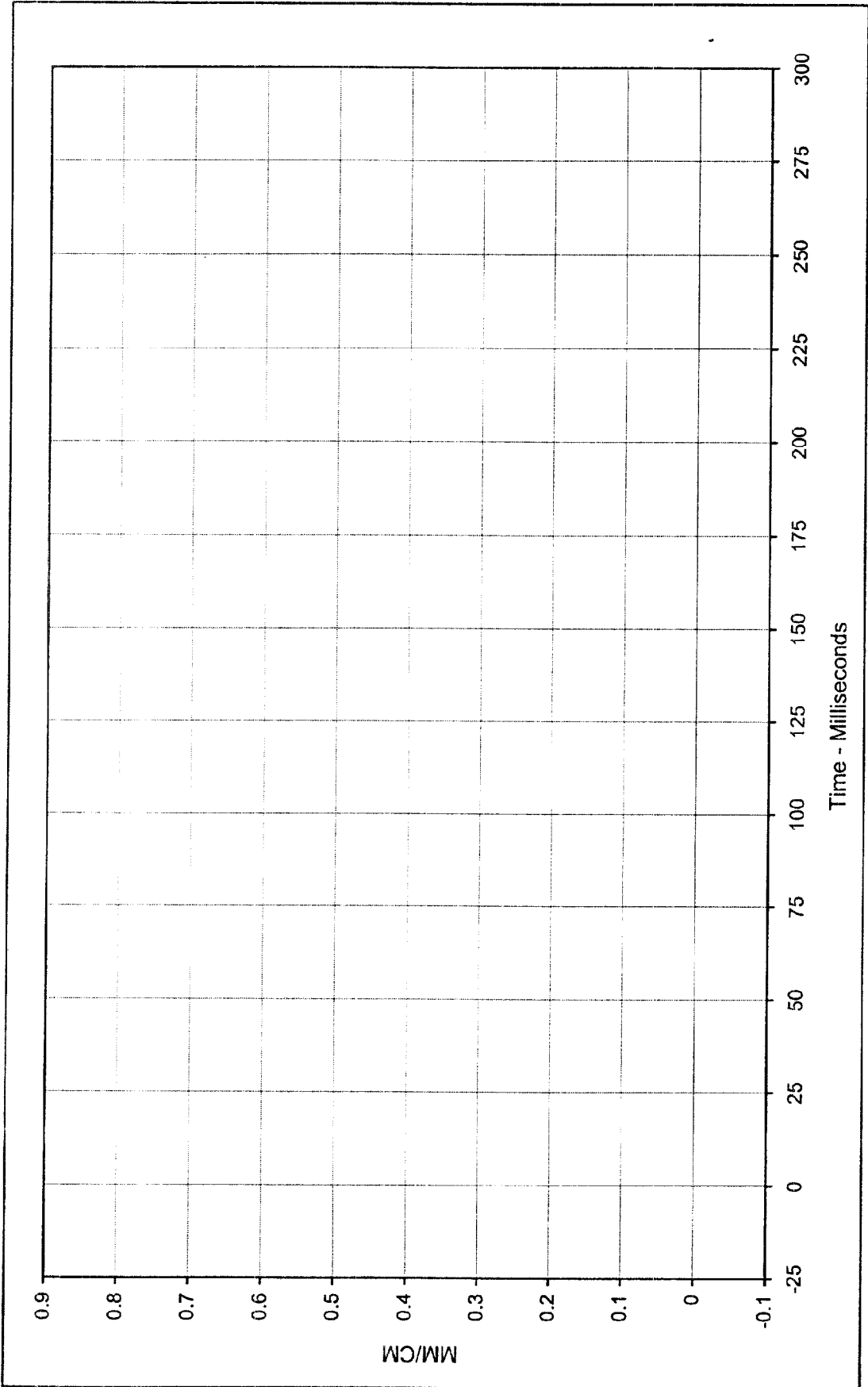
SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-086



Curve Description: Passenger Shoulder Belt Pullout  
 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 262.6 at 98.4 Milliseconds  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: 0.0 at 2.6 Milliseconds

SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-087



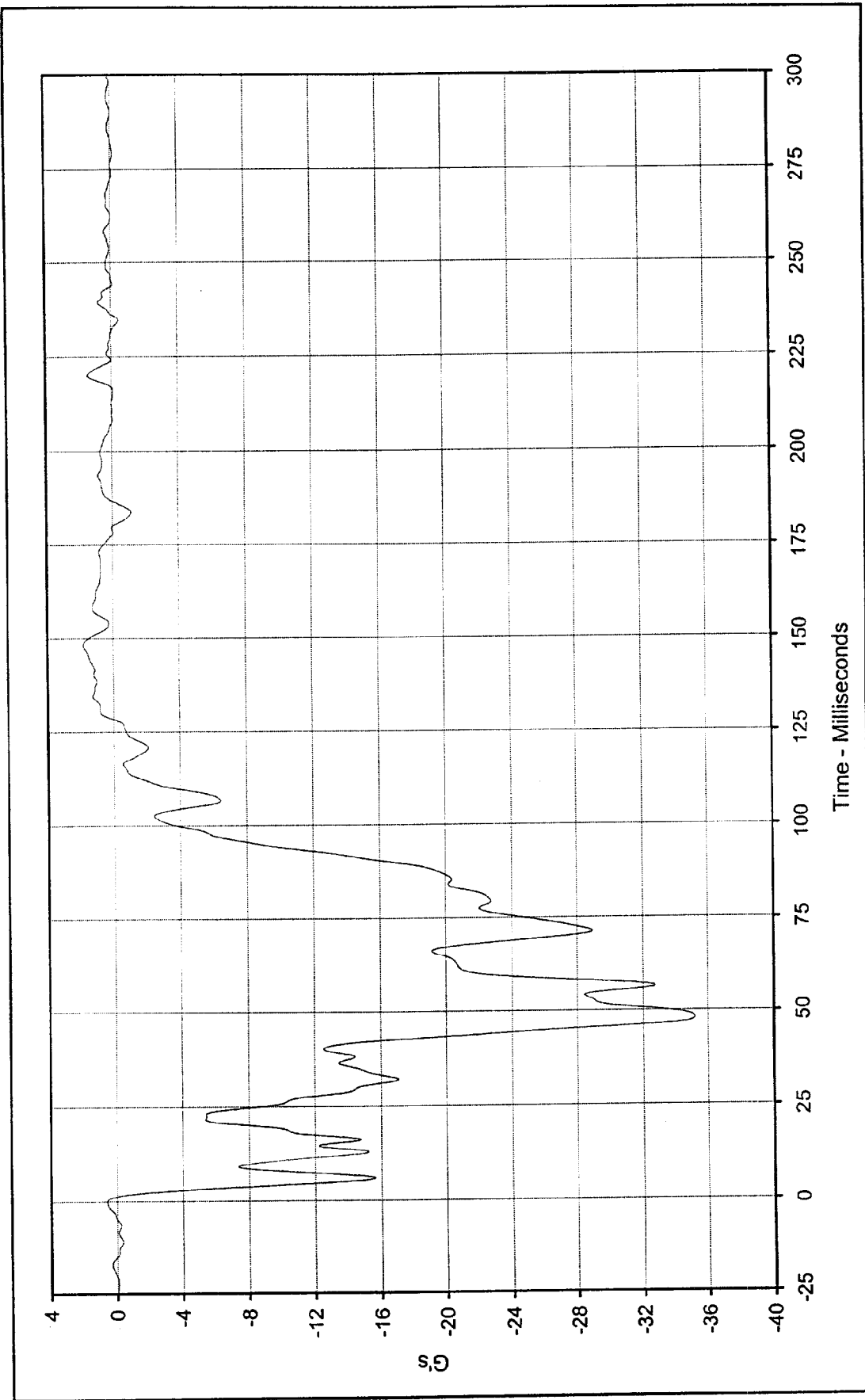


Curve Description: Passenger Shoulder Belt Elongation \*  
 Maximum Value: 0.00 at 0.0 Milliseconds  
 Minimum Value: 0.00 at 0.0 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-088

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

\* Channel Failed, No Data

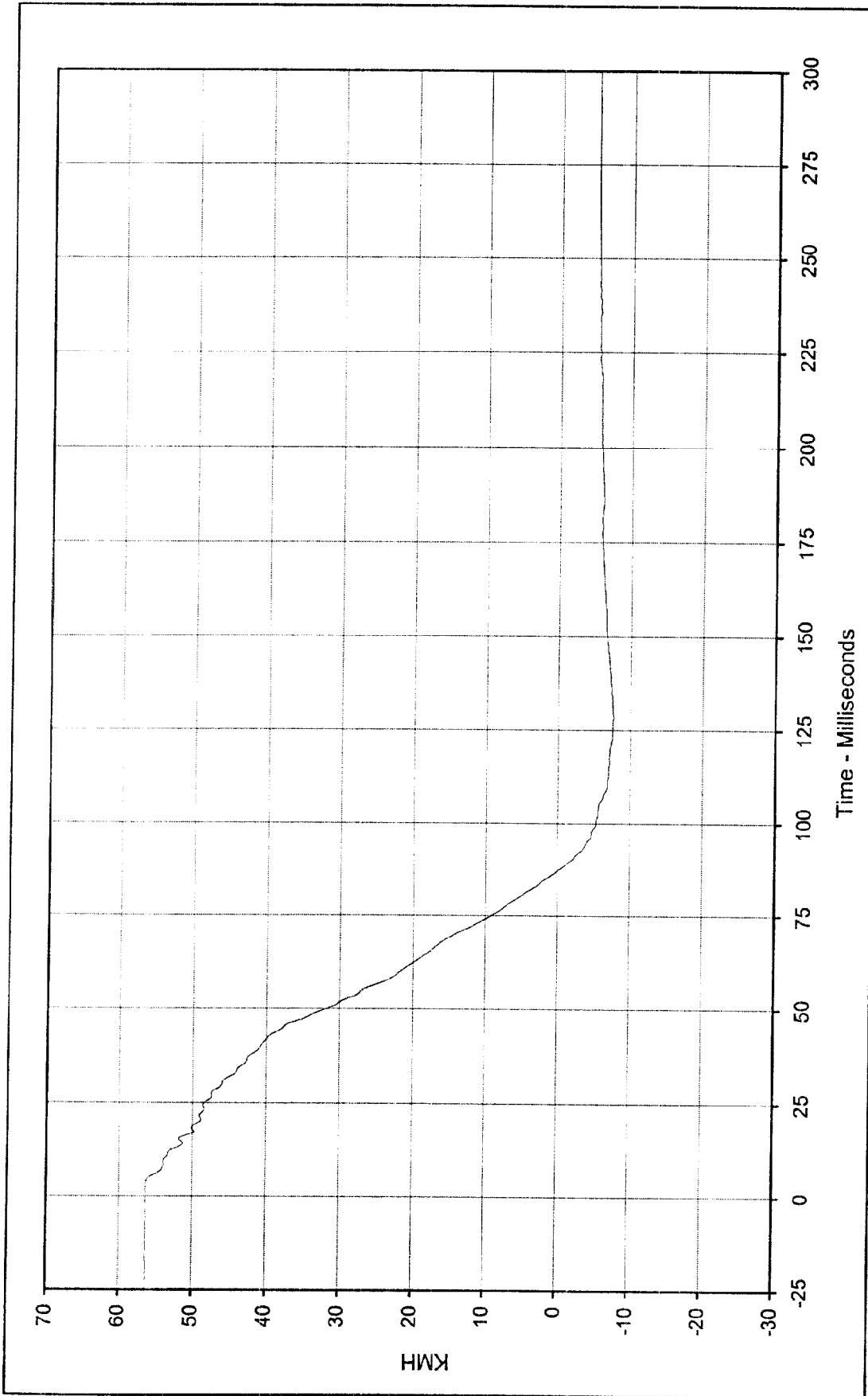




Curve Description: Vehicle Left Rear Primary  
 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

Maximum Value: 1.8 at 148.3 Milliseconds  
 Minimum Value: -35.2 at 48.0 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-089



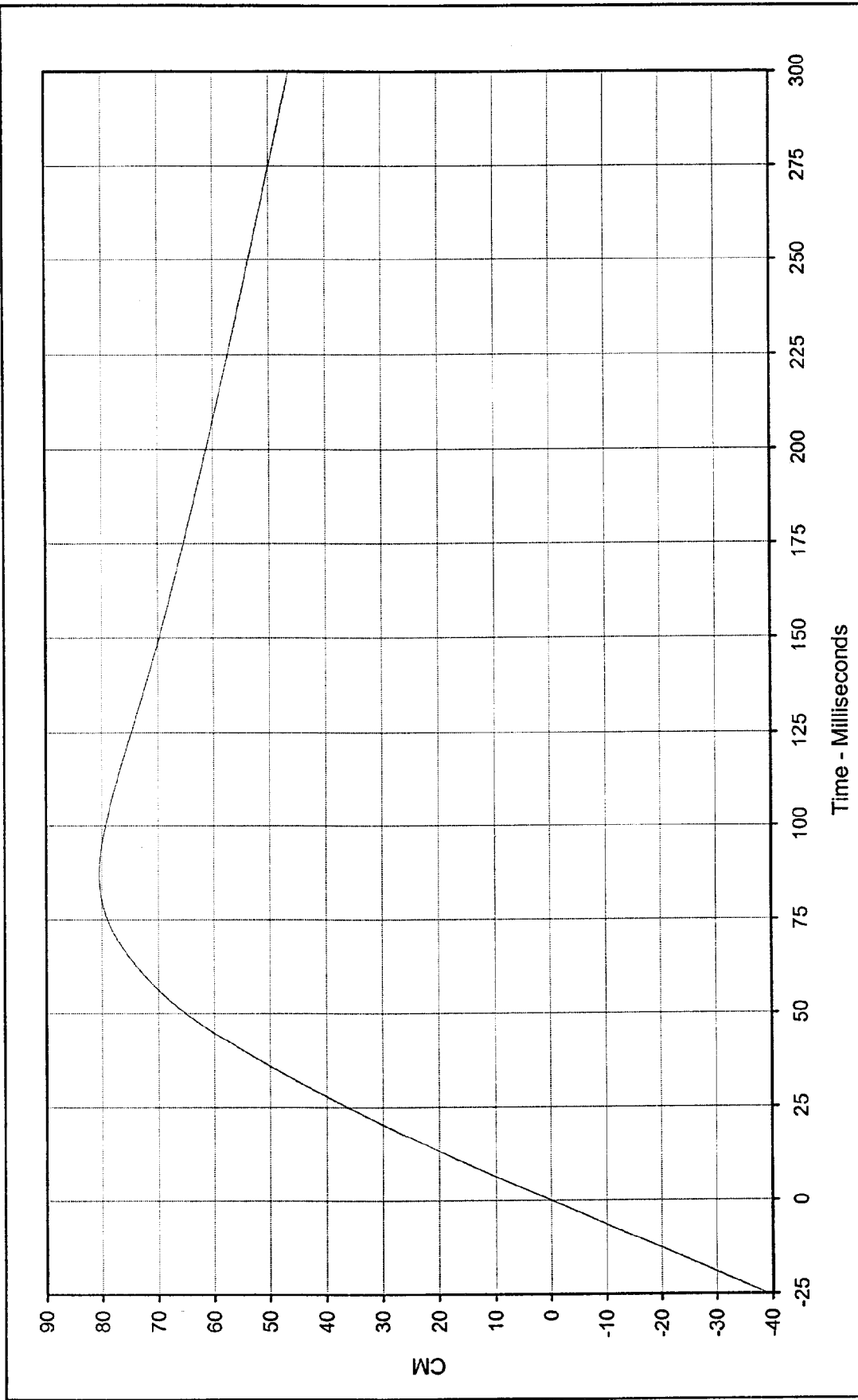


Curve Description: Vehicle Left Rear Primary Velocity  
 Maximum Value: 56.3 at 2.0 Milliseconds  
 Minimum Value: -7.7 at 128.4 Milliseconds

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

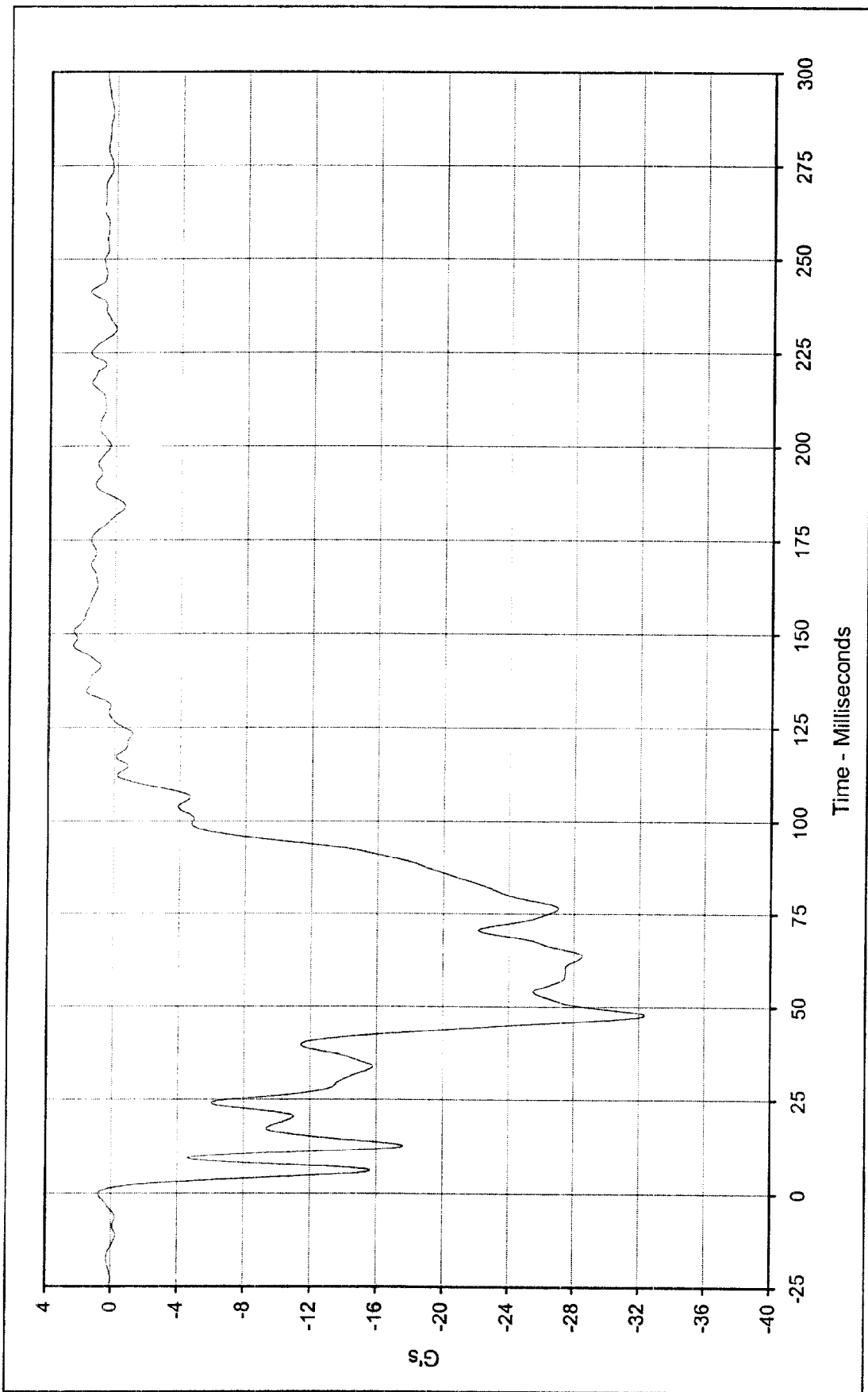


SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: IN1-089



Curve Description: Vehicle Left Rear Primary Displ.      Test Program: 1999 NHTSA 35 mph NCAP    No.: MX0113  
 Maximum Value: 80.6    at 87.0    Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: 0.0    at 0.0    Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: IN2-089

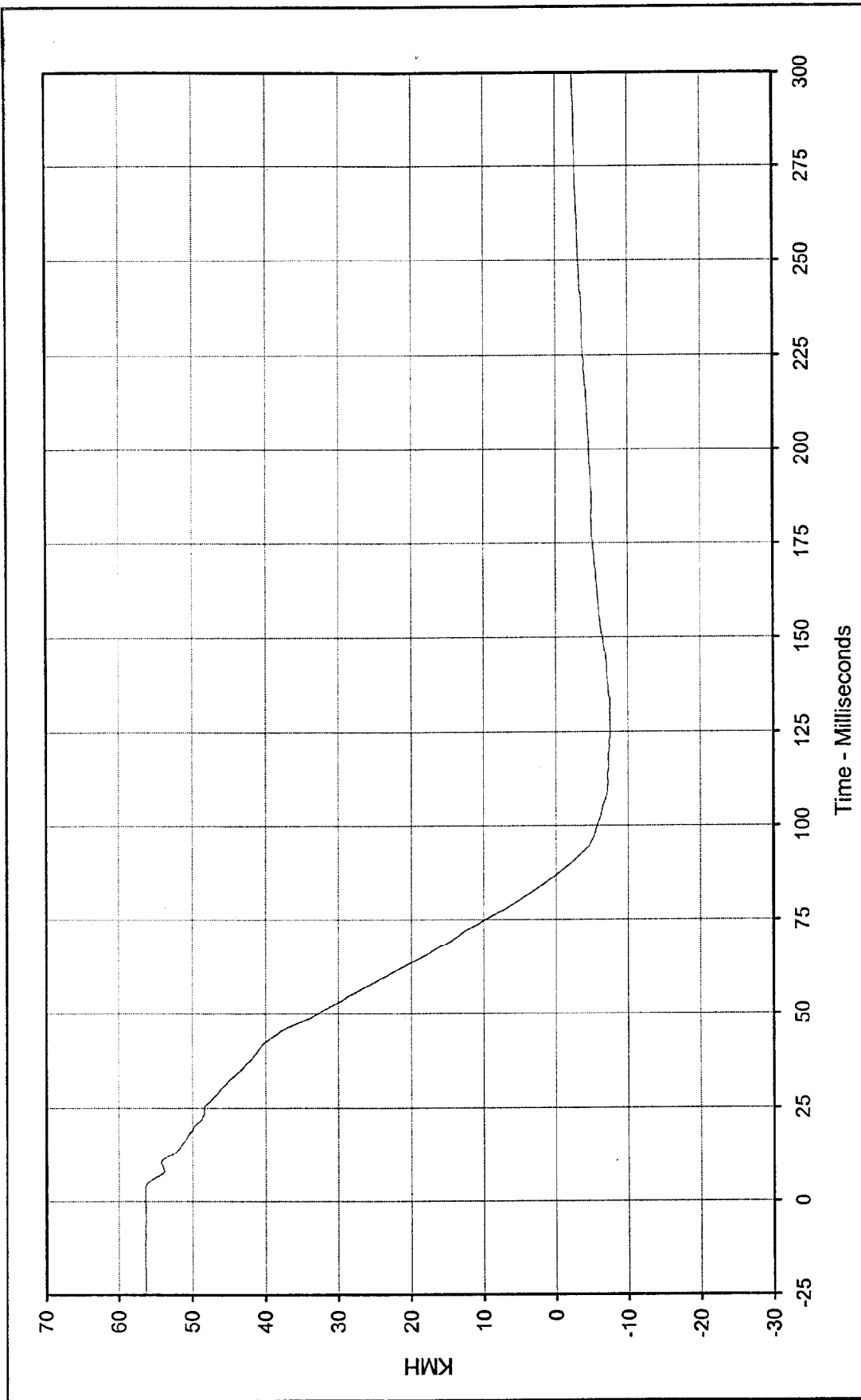




Curve Description: Vehicle Right Rear Primary      Test Program: 1999 NHTSA 35 mph NCAP      No.: MX0113  
 Maximum Value: 2.5      at 147.0      Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -32.4      at 47.8      Milliseconds



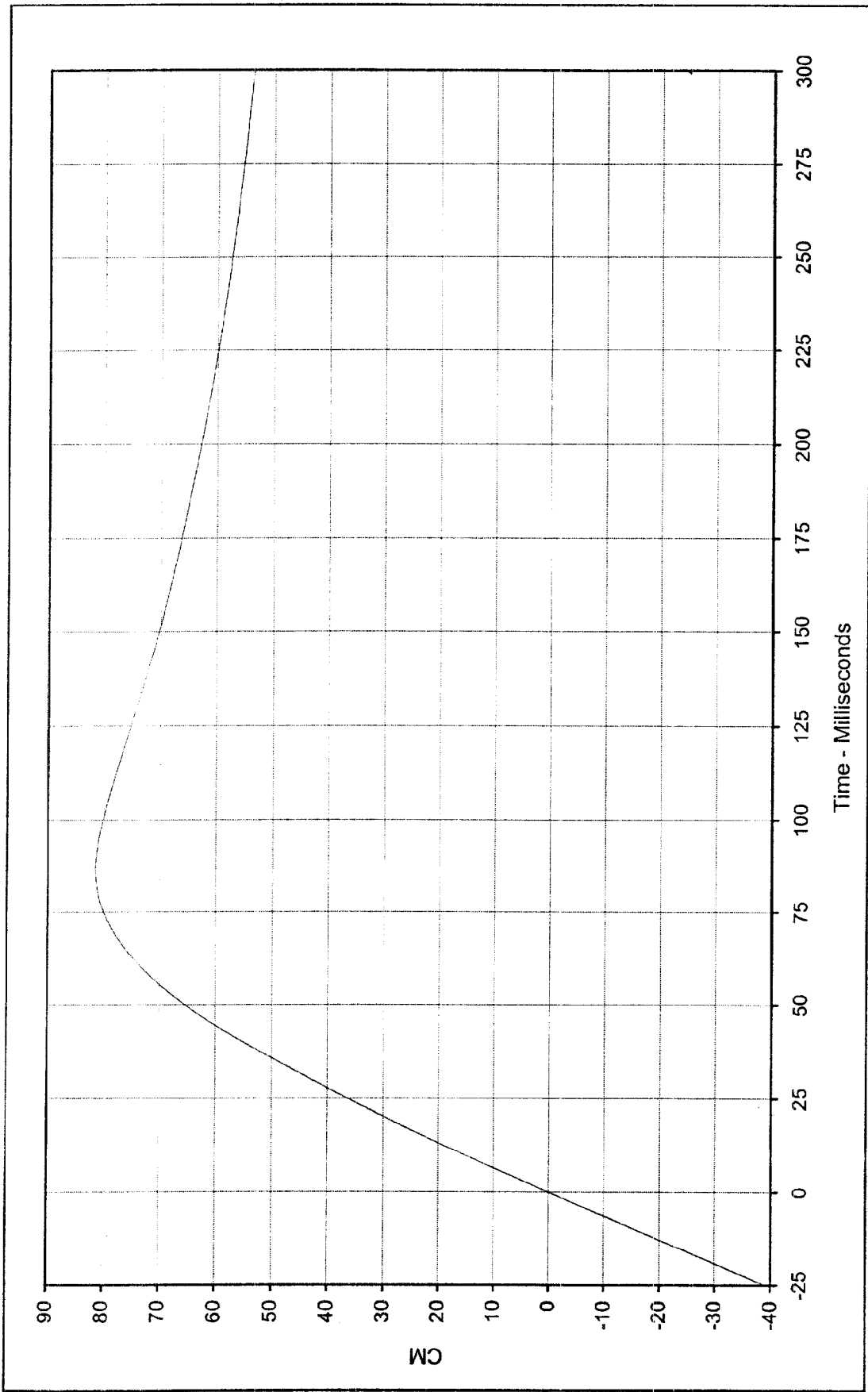
SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-090



Curve Description: Vehicle Right Rear Primary Velocity  
 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

Maximum Value: 56.4 at 3.5 Milliseconds  
 Minimum Value: -7.6 at 125.8 Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: IN1-090

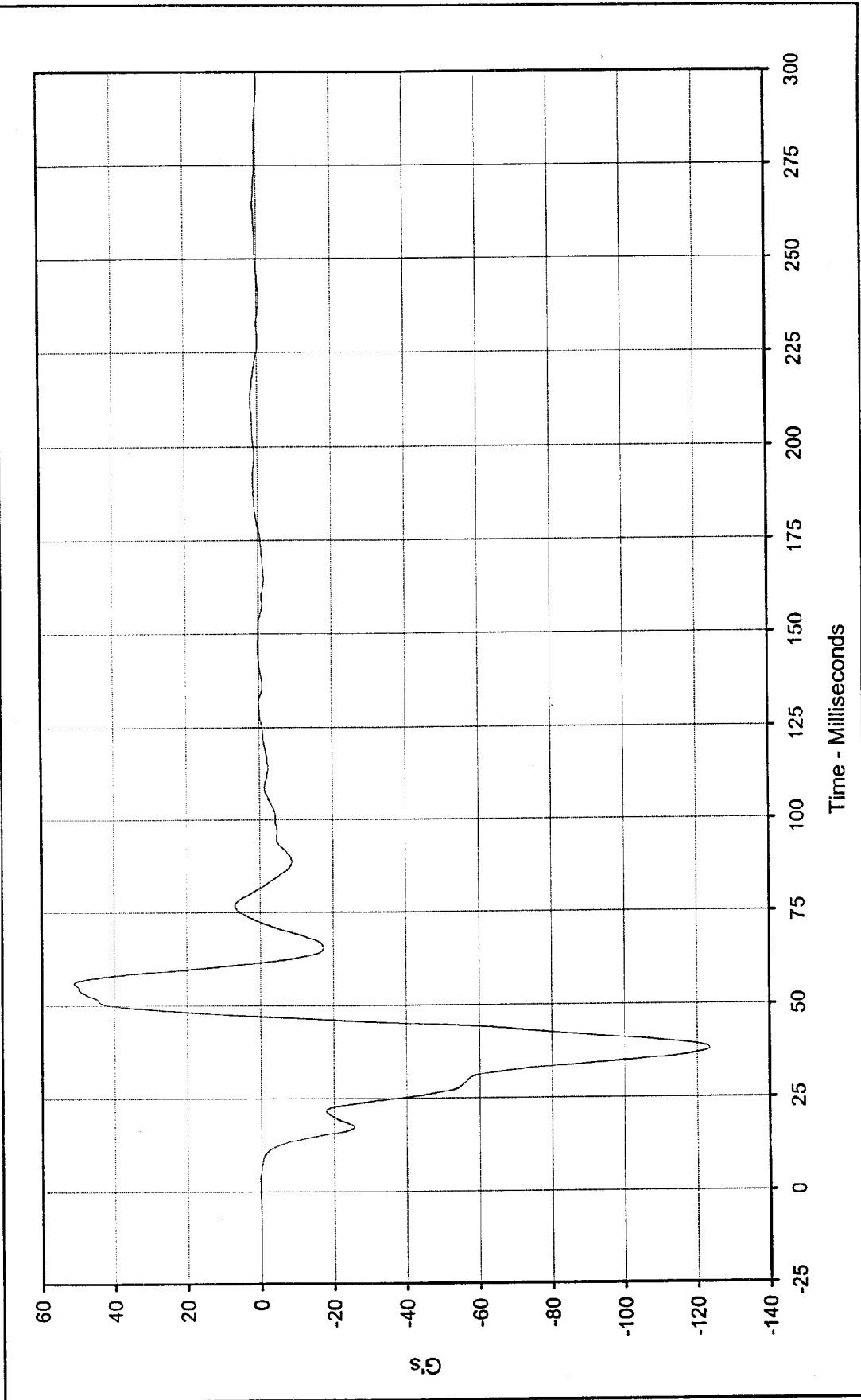




Curve Description: Vehicle Right Rear Primary Displ.  
 Maximum Value: 81.5 at 86.6 Milliseconds  
 Minimum Value: 0.0 at 0.0 Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: IN2-090

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

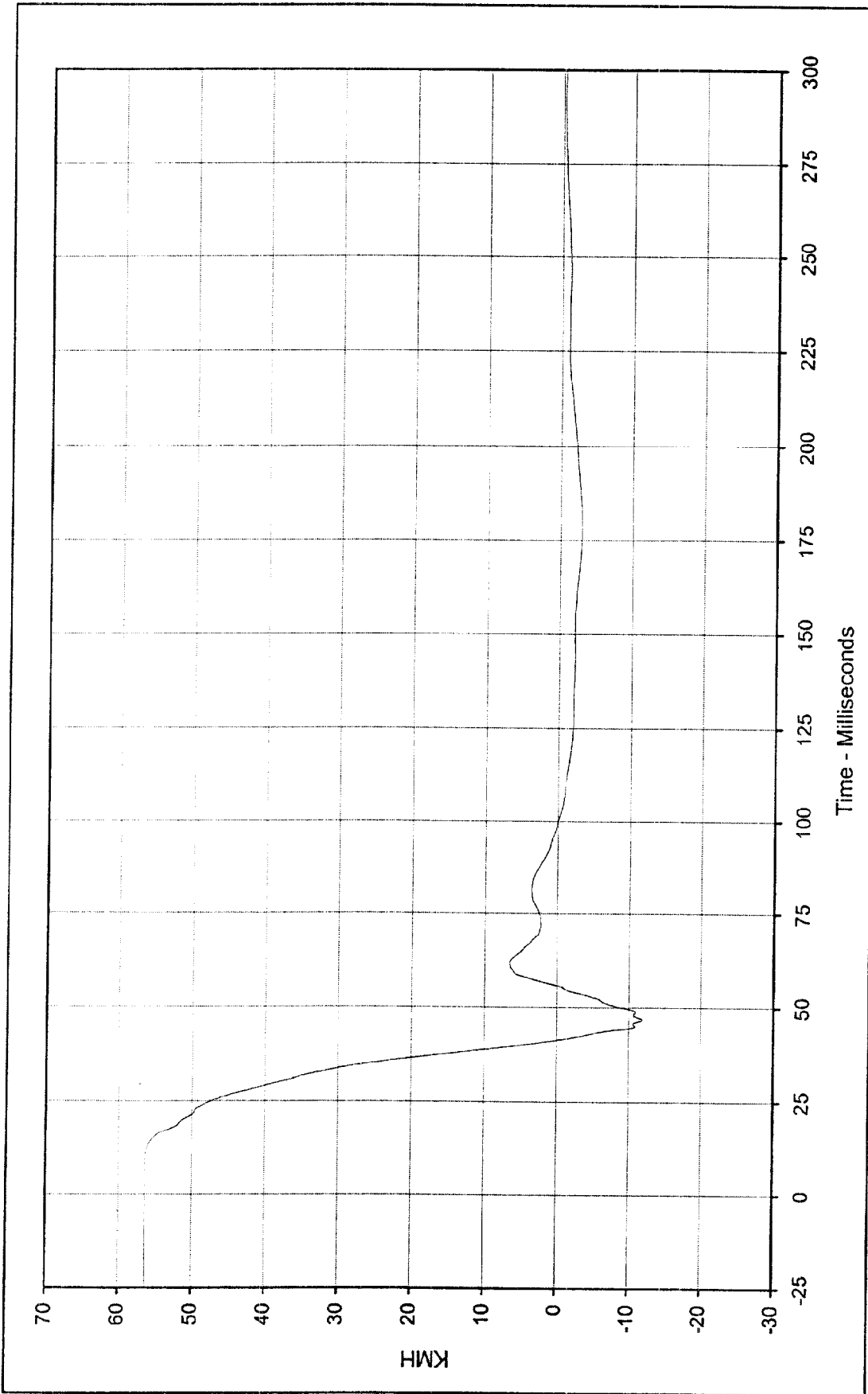




Curve Description: Vehicle Engine Top Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 51.1 at 55.9 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -123.5 at 37.9 Milliseconds

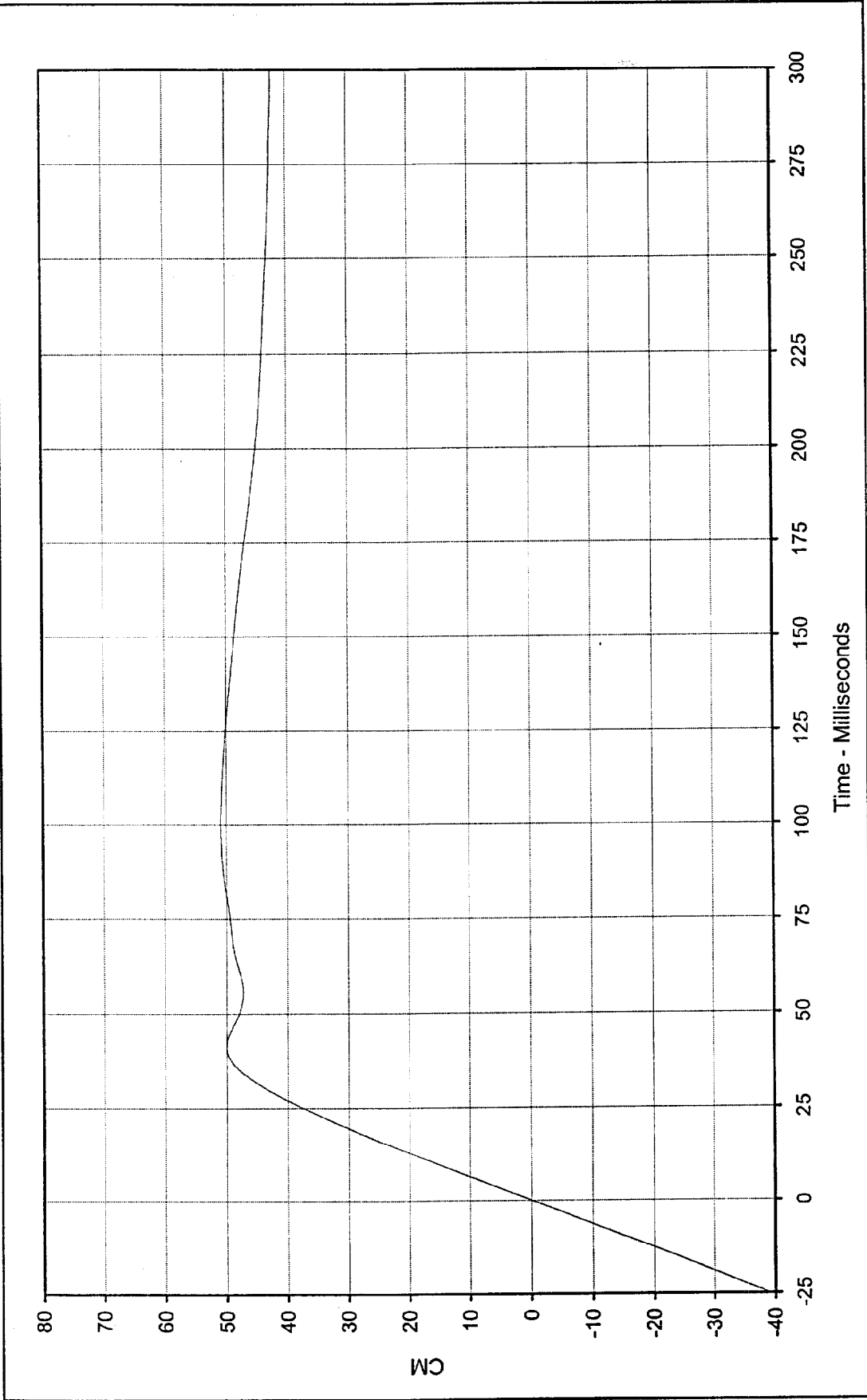


SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-091



Curve Description: Vehicle Engine Top Velocity Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 56.4 at 7.2 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -11.9 at 46.8 Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: IN1-091





Curve Description: Vehicle Engine Top Displacement Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113

Maximum Value: 50.9 at 99.9 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

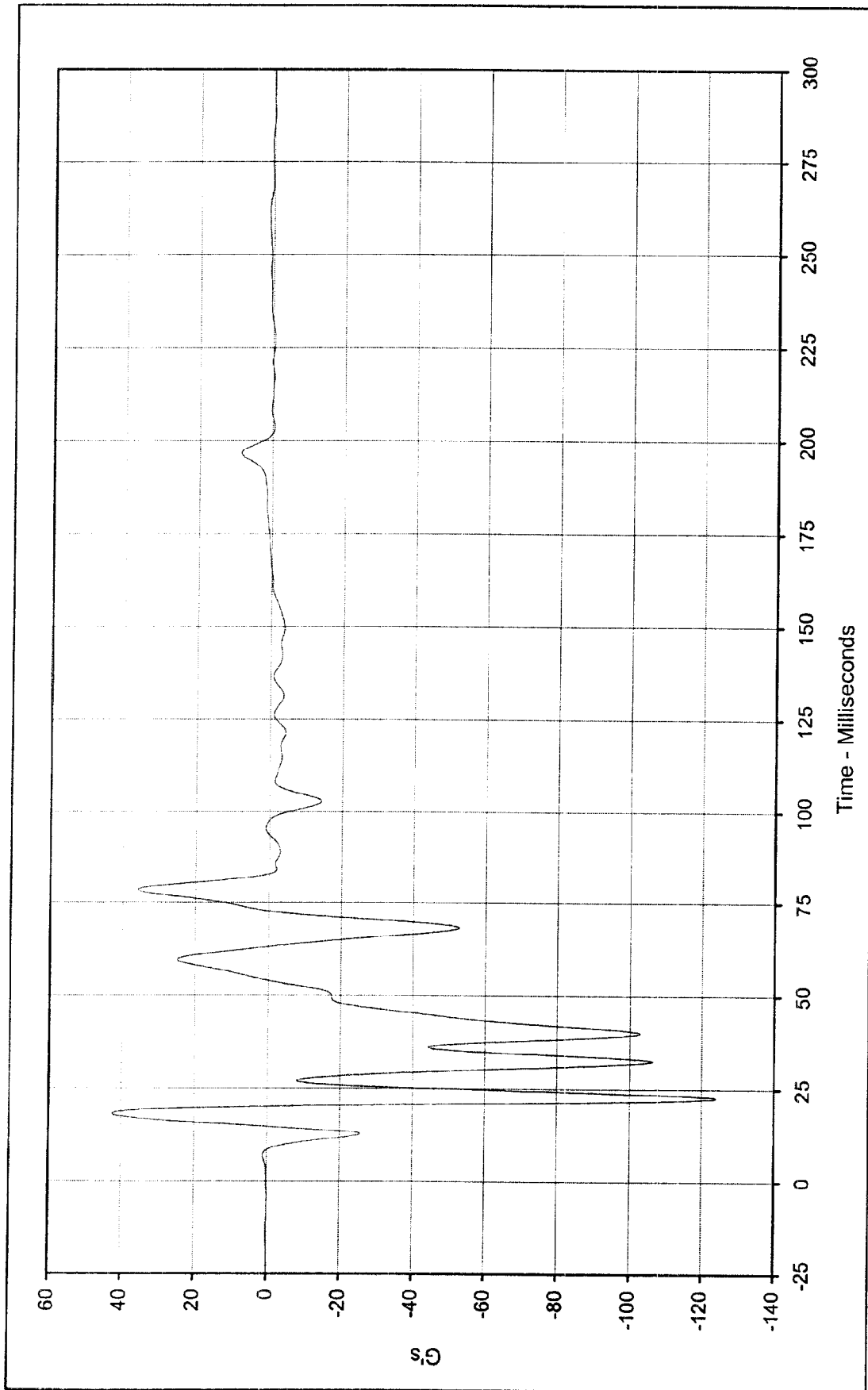
Minimum Value: -0.1 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 1/22/99

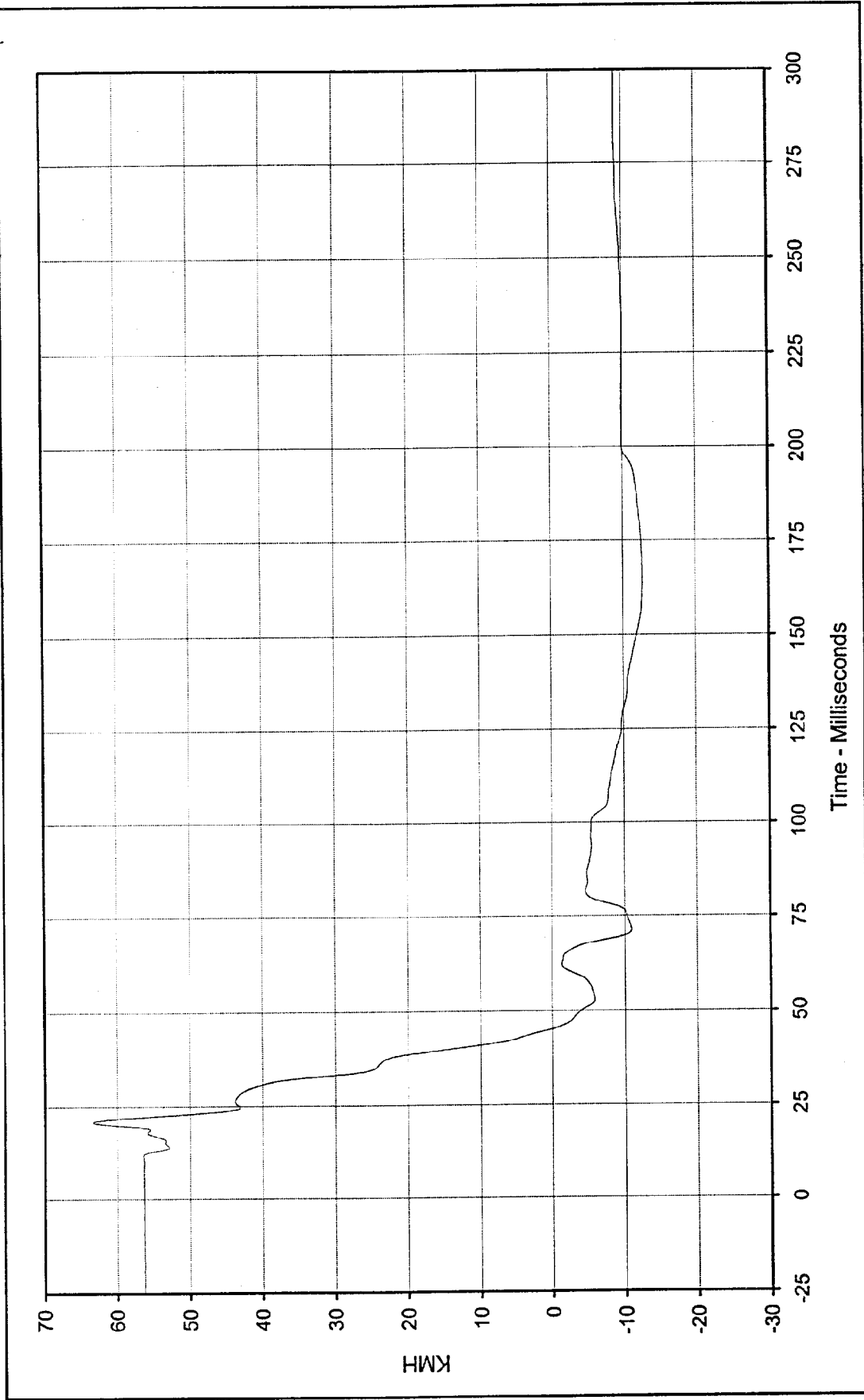
Curve Number: IN2-091





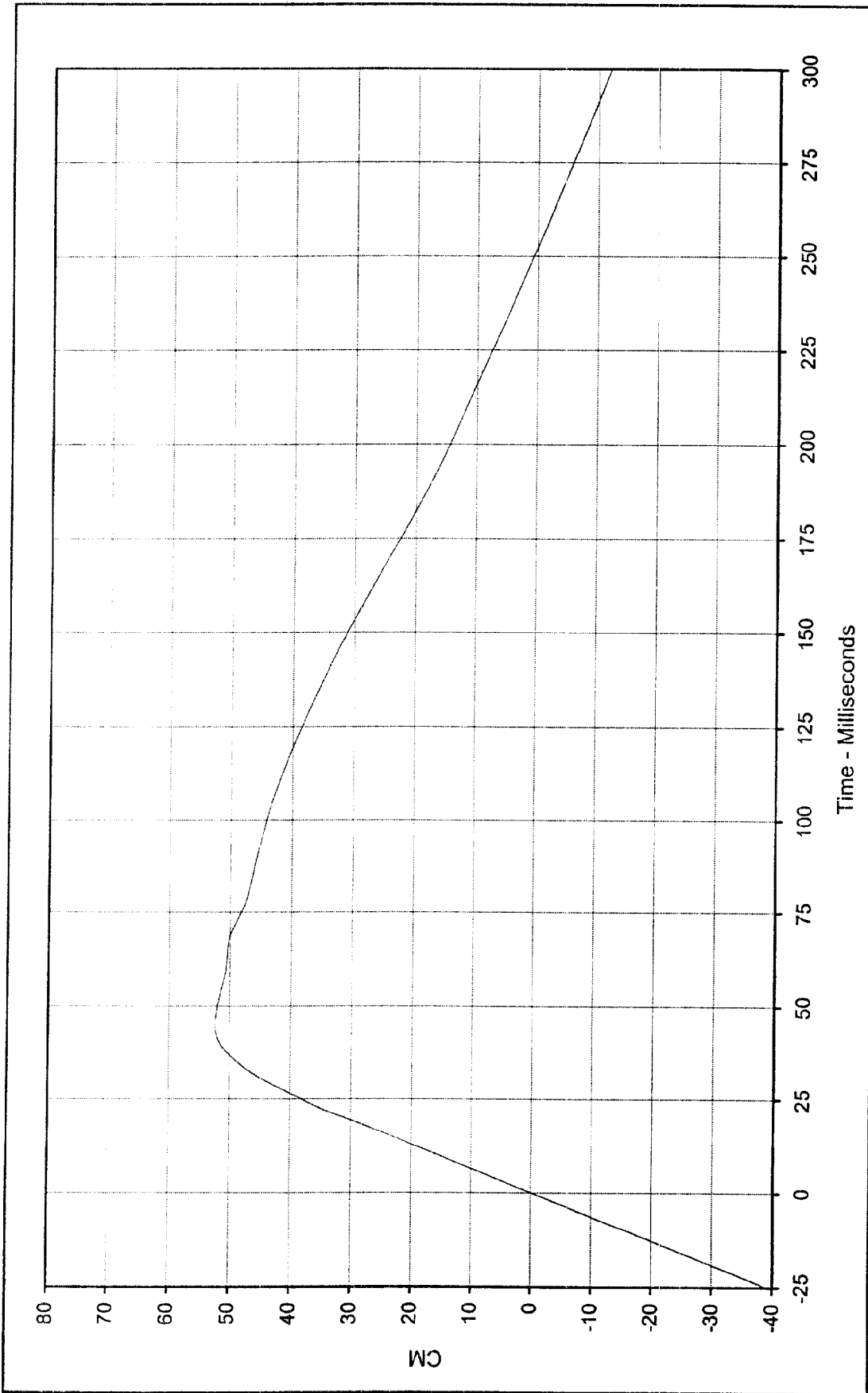
Curve Description: Vehicle Engine Bottom  
 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 42.5 at 18.3 Milliseconds  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -124.1 at 22.8 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-092





Curve Description: Vehicle Engine Bottom Velocity Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 63.3 at 20.8 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -12.7 at 165.3 Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: IN1-092





Curve Description: Vehicle Engine Bottom Displacement

Maximum Value: 52.4 at 45.1 Milliseconds

Minimum Value: -12.0 at 299.9 Milliseconds

SAE Filter Class: 180

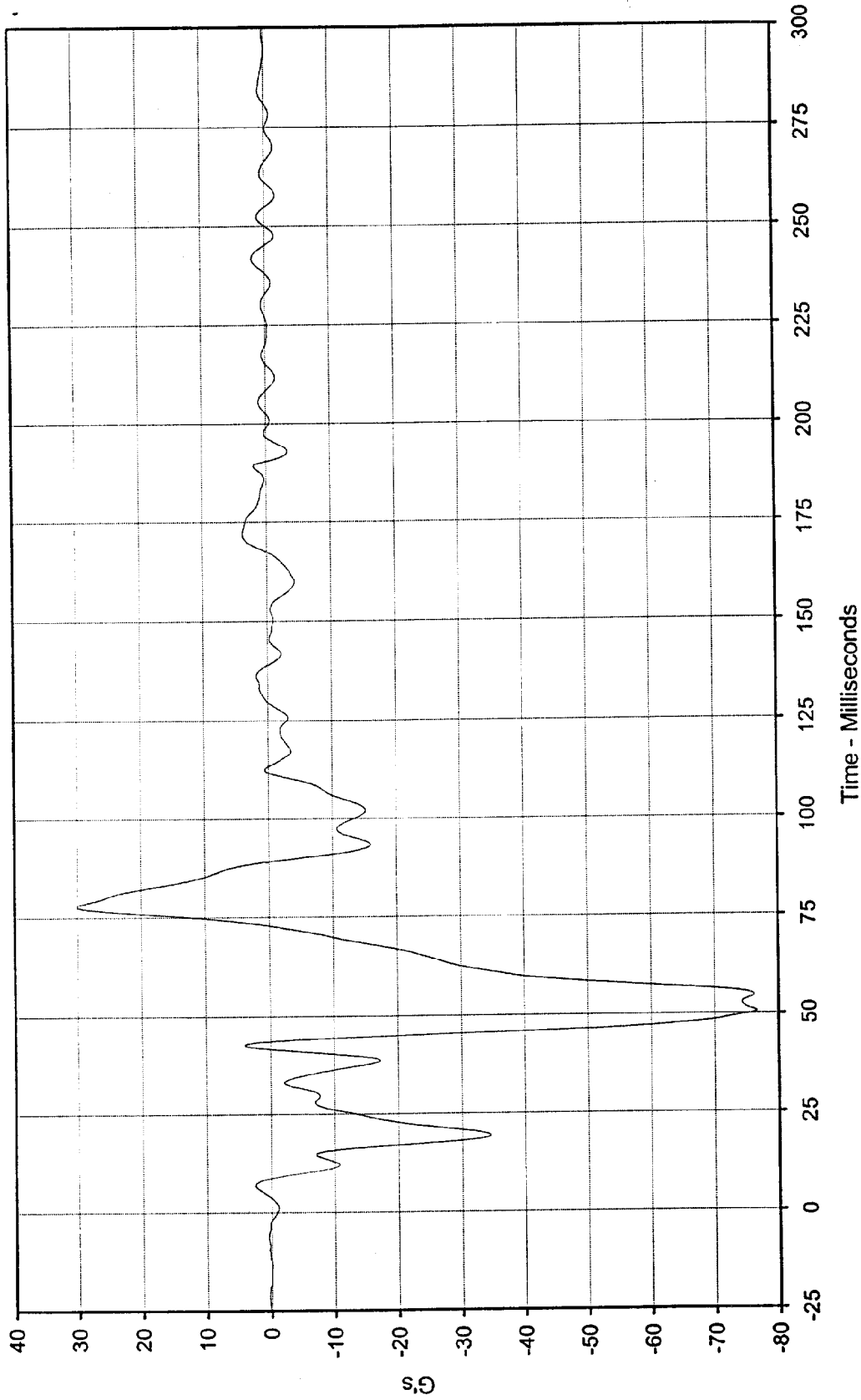
Date of Test: 1/22/99

Curve Number: IN2-092

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113

Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

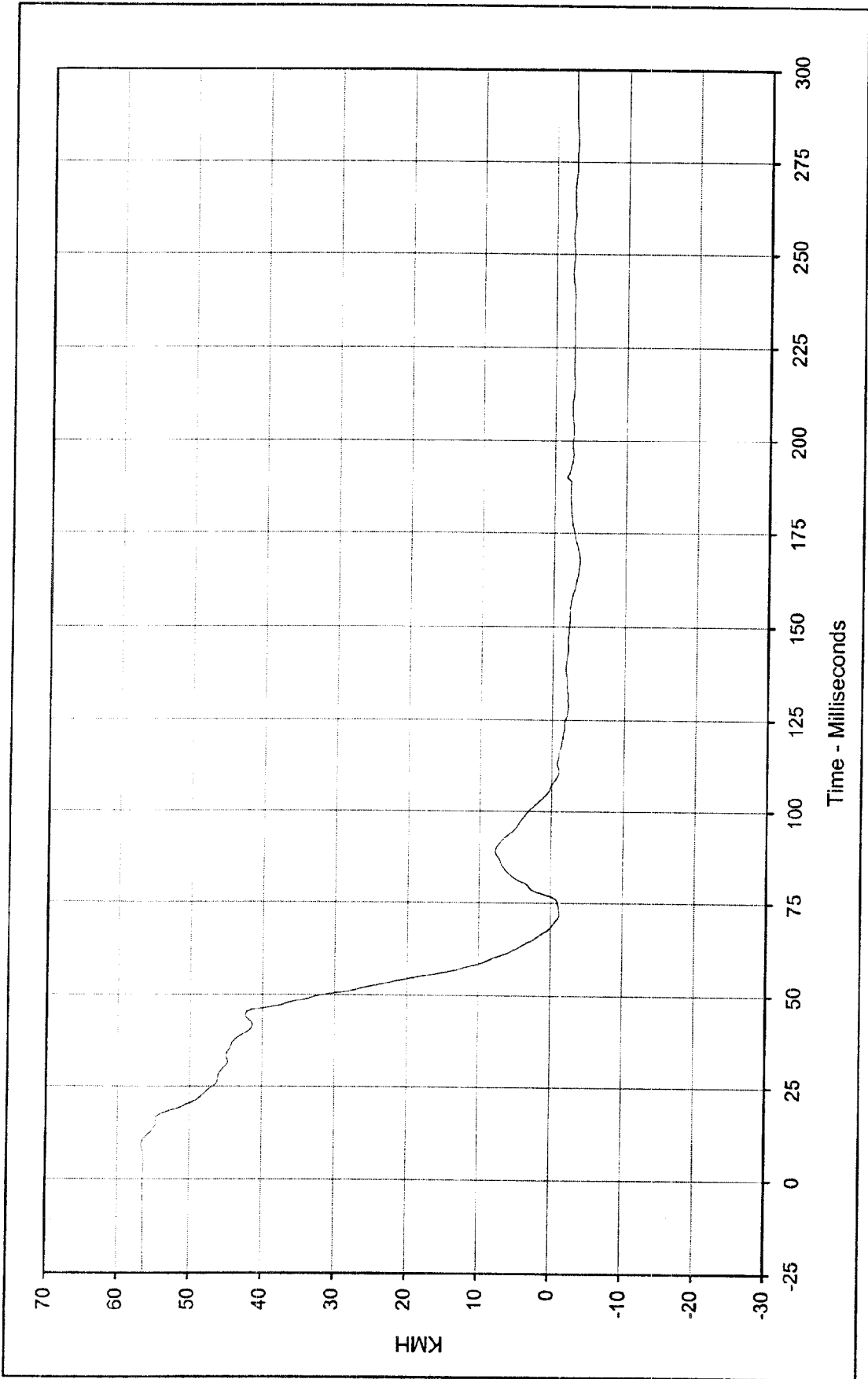




Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

Curve Description: Vehicle Left Brake Caliper  
 Maximum Value: 30.1 at 77.7 Milliseconds  
 Minimum Value: -76.6 at 50.5 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-093

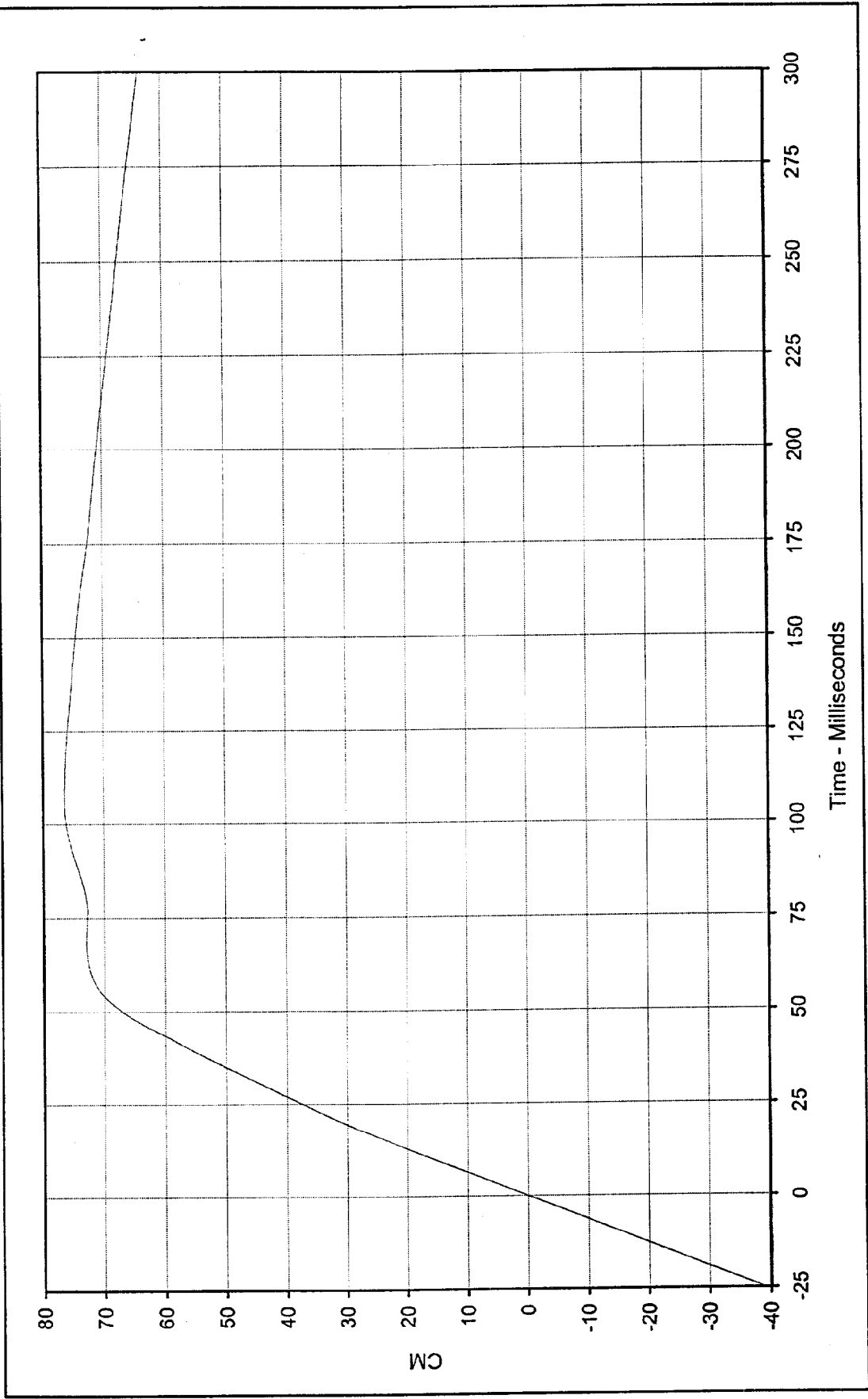




Curve Description: Vehicle Left Brake Caliper Velocity  
 Maximum Value: 56.7 at 9.3 Milliseconds  
 Minimum Value: -3.6 at 167.5 Milliseconds  
 SAE Filler Class: 180  
 Date of Test: 1/22/99  
 Curve Number: IN1-093

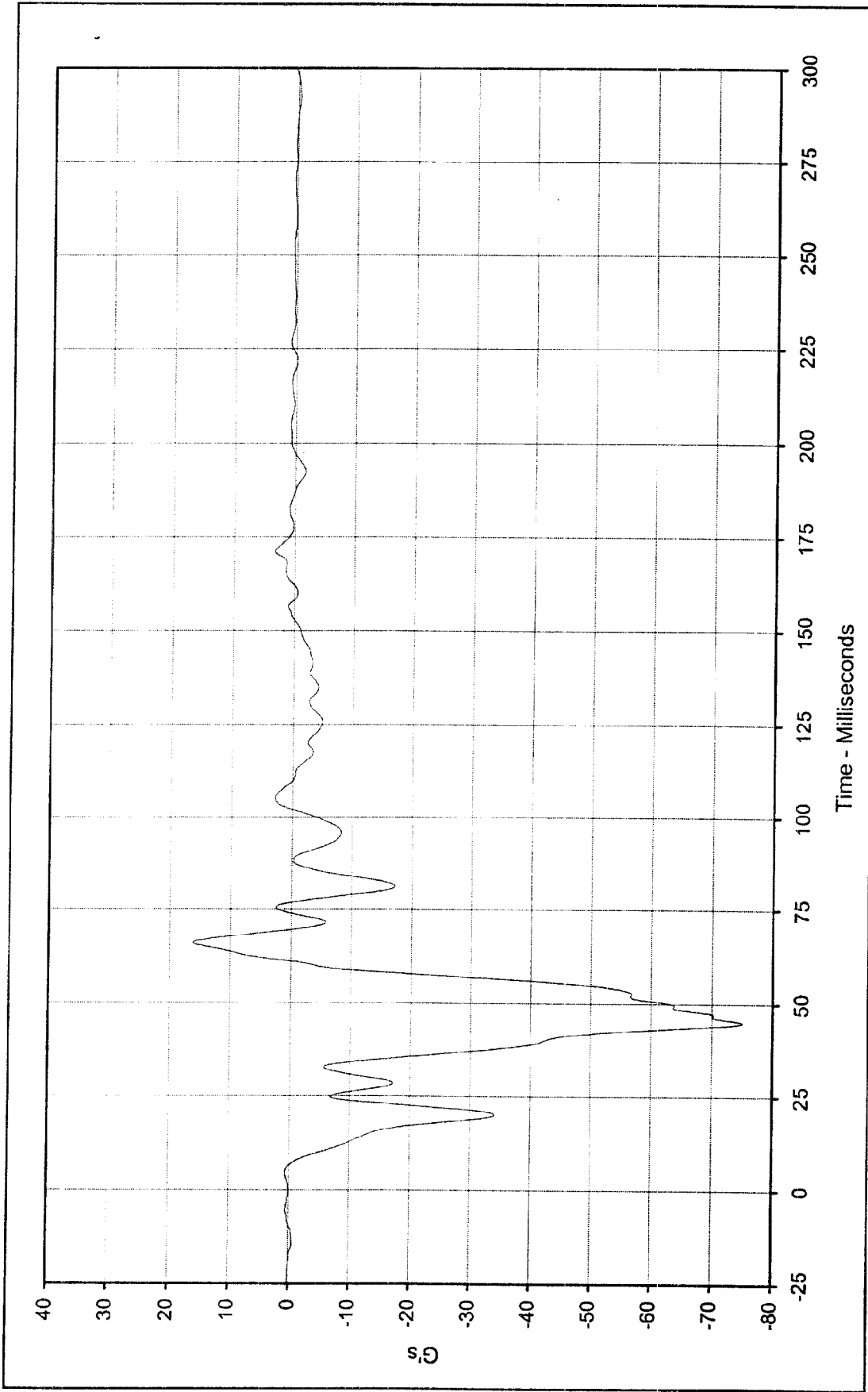
Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan





Curve Description: Vehicle Left Brake Caliper Displ.      Test Program: 1999 NHTSA 35 mph NCAP      No.: MX0113  
 Maximum Value: 76.5      at 107.1      Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: 0.0      at 0.0      Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: IN2-093

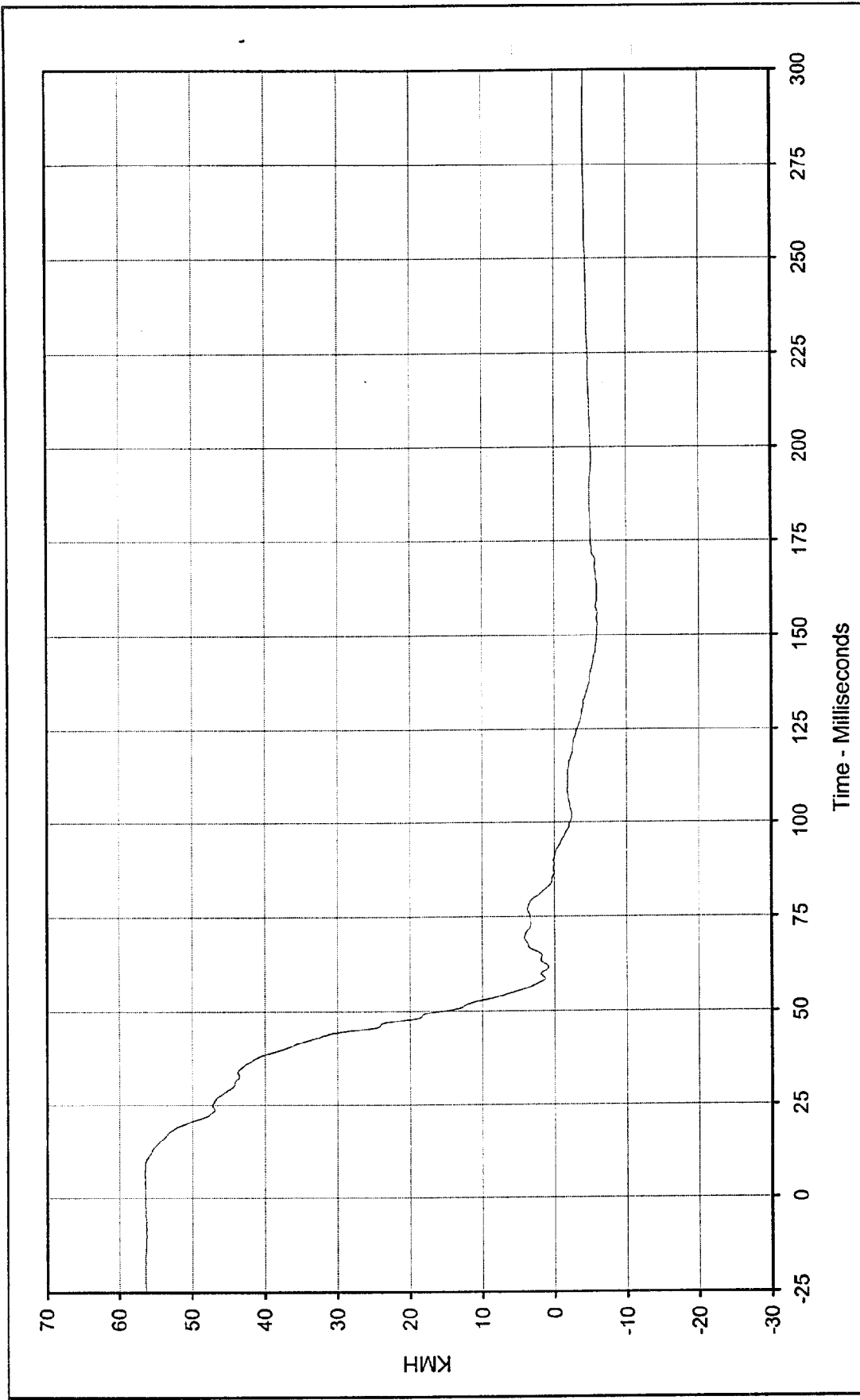




Curve Description: Vehicle Right Brake Caliper  
 Maximum Value: 16.2 at 65.8 Milliseconds  
 Minimum Value: -75.2 at 45.0 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-094

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan





Curve Description: Vehicle Right Brake Caliper Velocity      Test Program: 1999 NHTSA 35 mph NCAP      No.: MX0113

Maximum Value: 56.5      at 6.5      Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

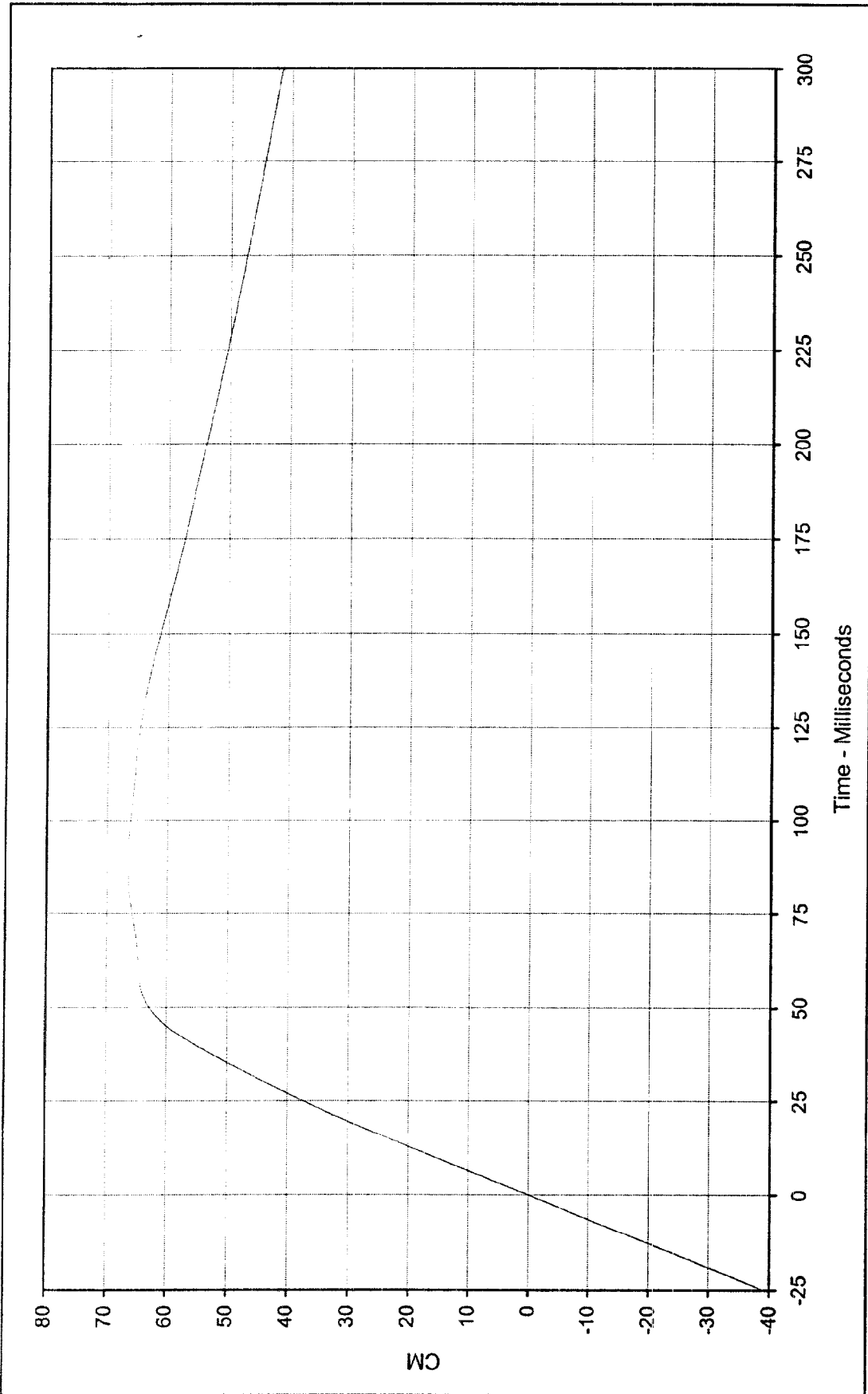
Minimum Value: -6.0      at 153.1      Milliseconds

SAE Filter Class: 180

Date of Test: 1/22/99

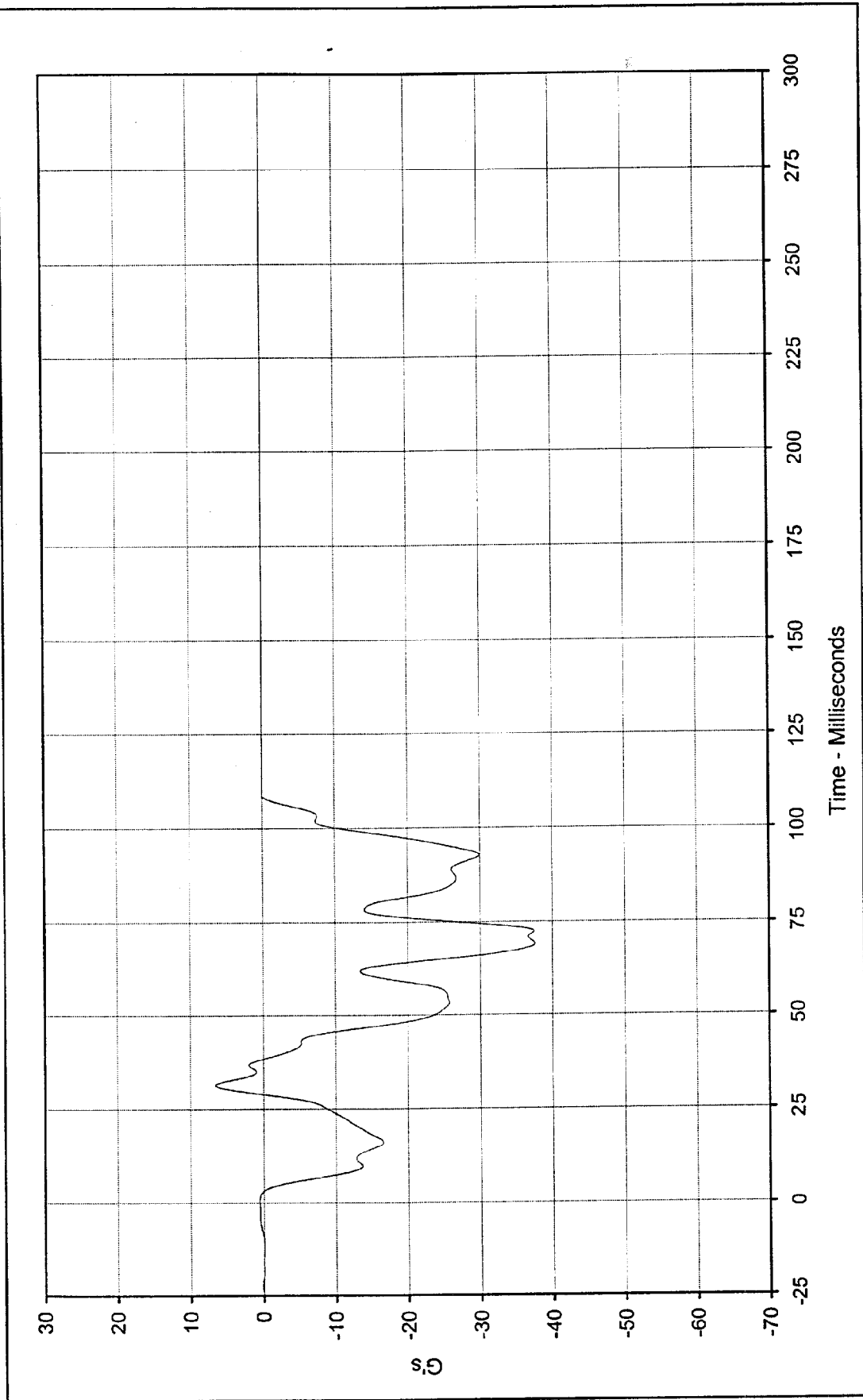
Curve Number: IN1-094





Curve Description: Vehicle Right Brake Caliper Displ.      Test Program: 1999 NHTSA 35 mph NCAP    No.: MX0113  
 Maximum Value: 66.4    at 90.7    Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: 0.0    at 0.0    Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: IN2-094

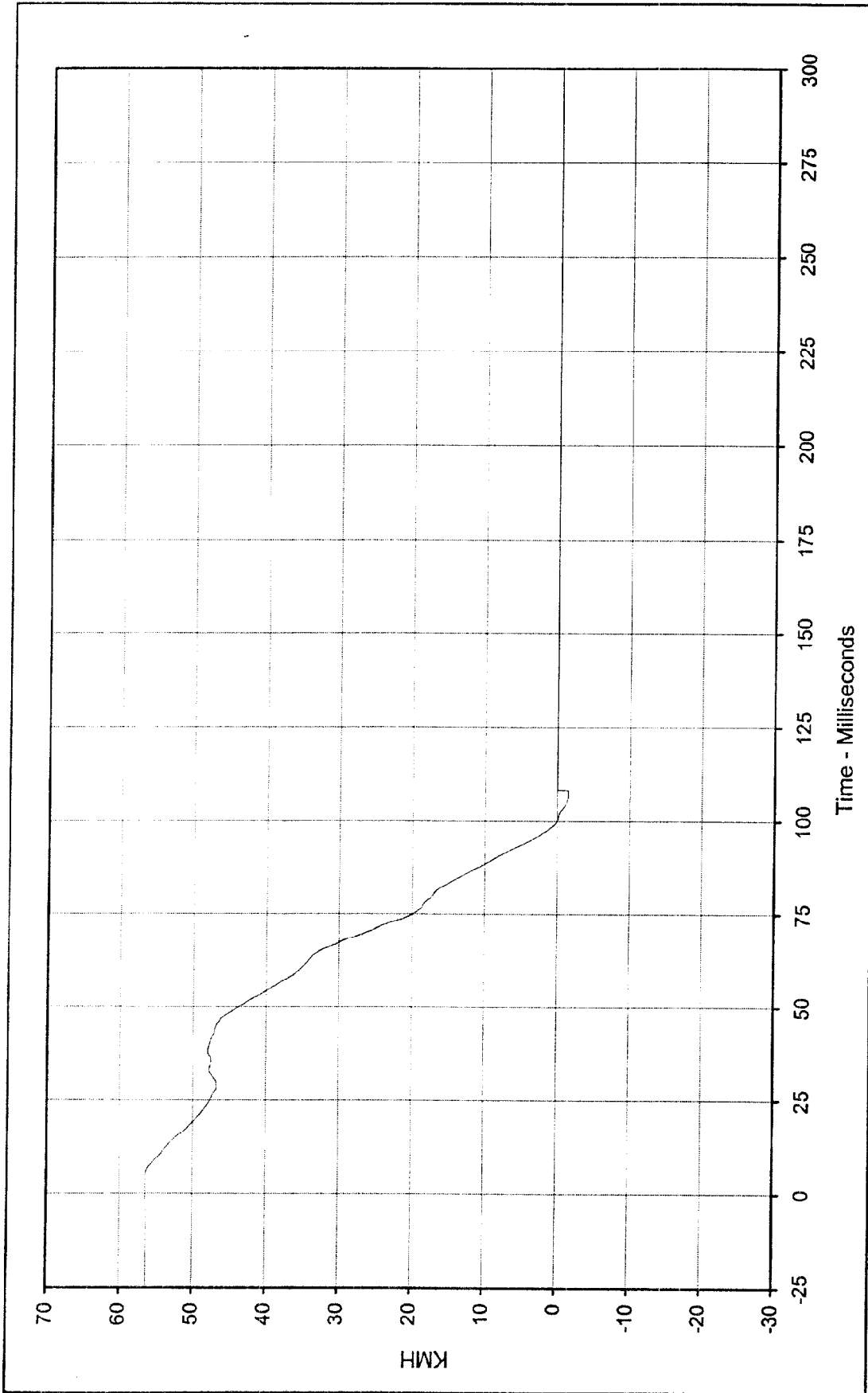




Curve Description: Vehicle Instrument Panel \* Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 6.5 at 31.2 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -37.6 at 69.0 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-095



\* Channel Failed at 108.3 Msec.

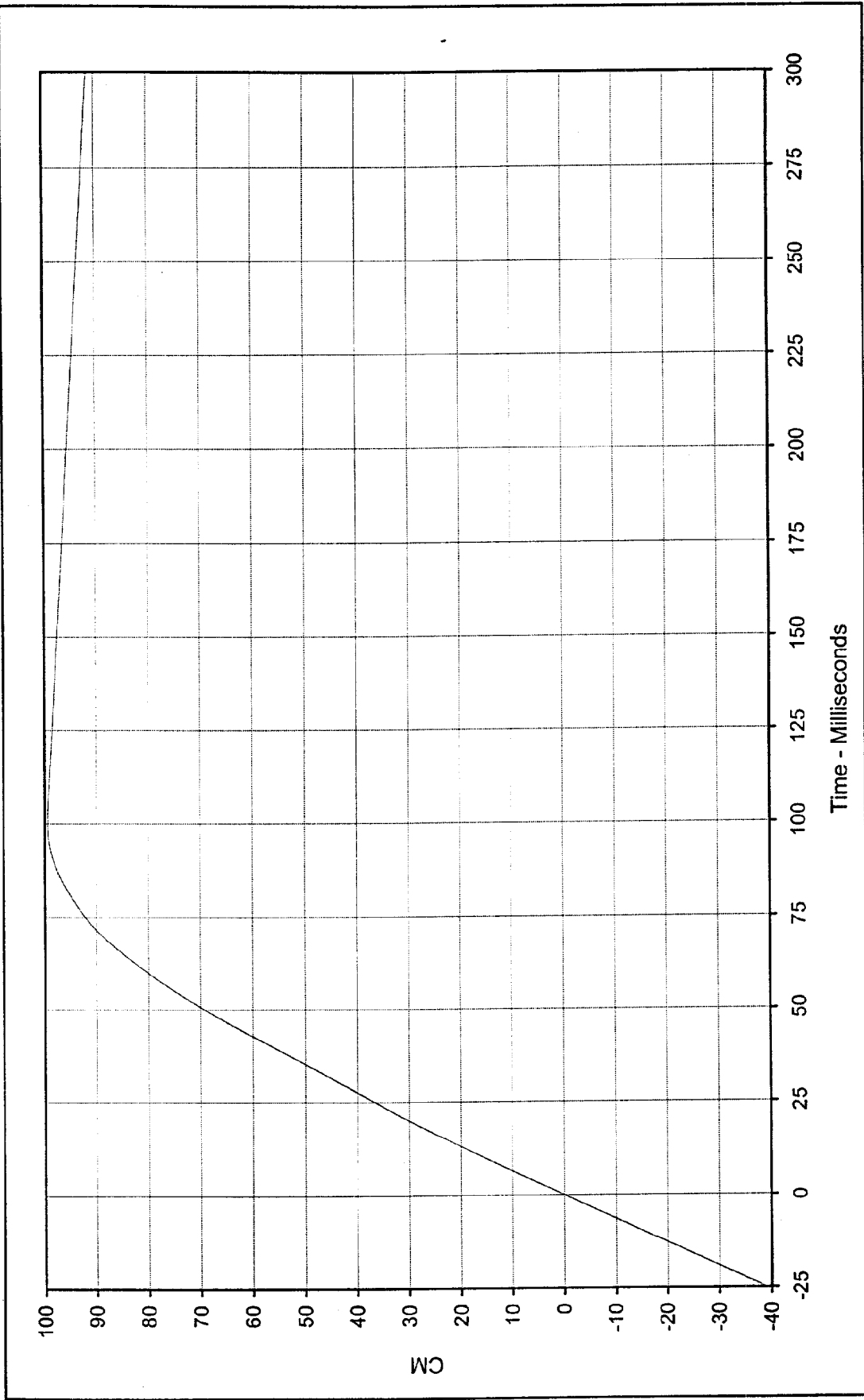


Curve Description: Vehicle Instrument Panel Velocity \*  
 Maximum Value: 56.4 at 2.2 Milliseconds  
 Minimum Value: -1.5 at 107.2 Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 1/22/99  
 Curve Number: IN1-095

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan



\* Channel Failed at 108.3 Msec.

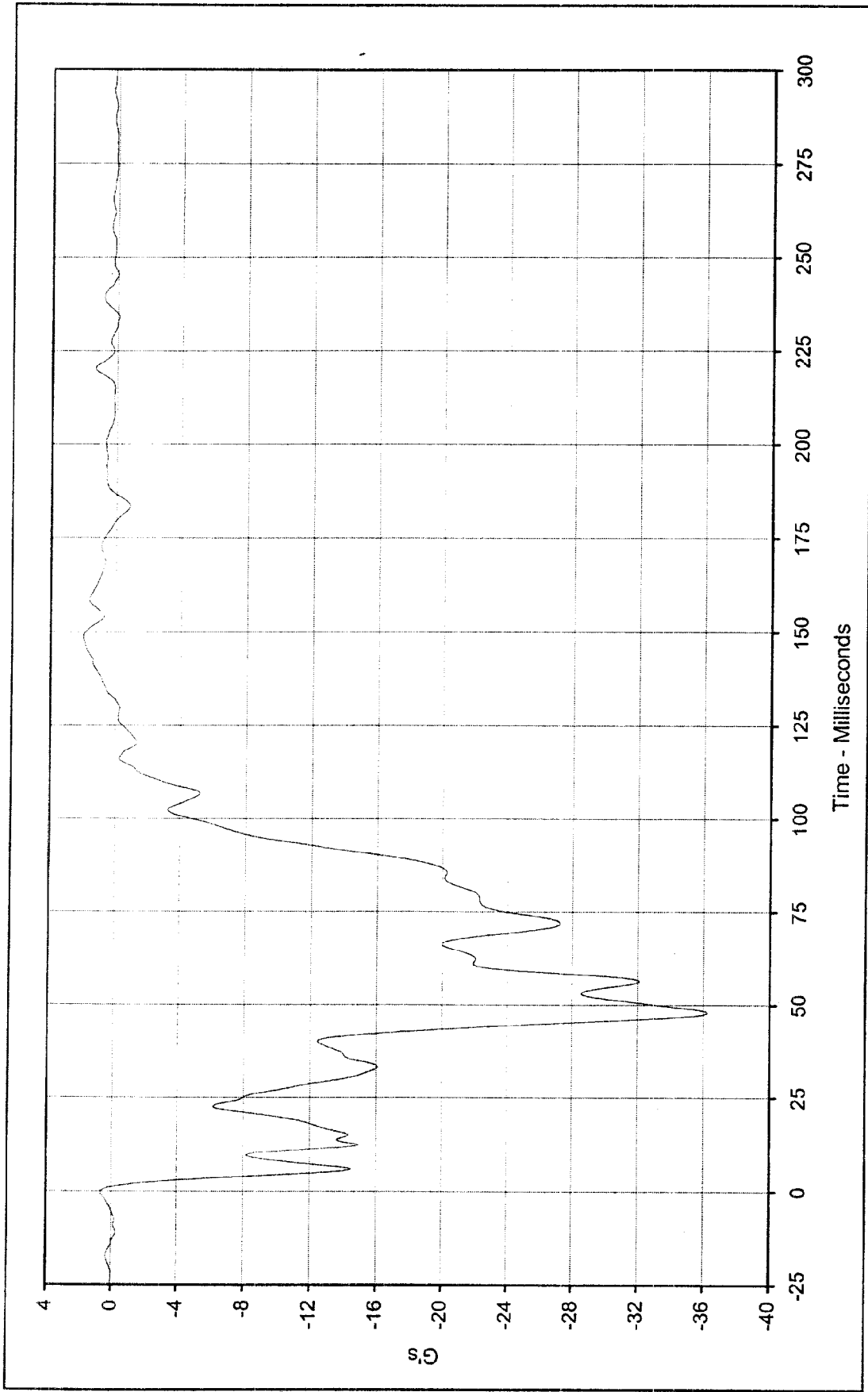


Curve Description: Vehicle Instrument Panel Displacement \*  
 Maximum Value: 99.4 at 100.2 Milliseconds  
 Minimum Value: -0.1 at 0.0 Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 1/22/89  
 Curve Number: IN2-095

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

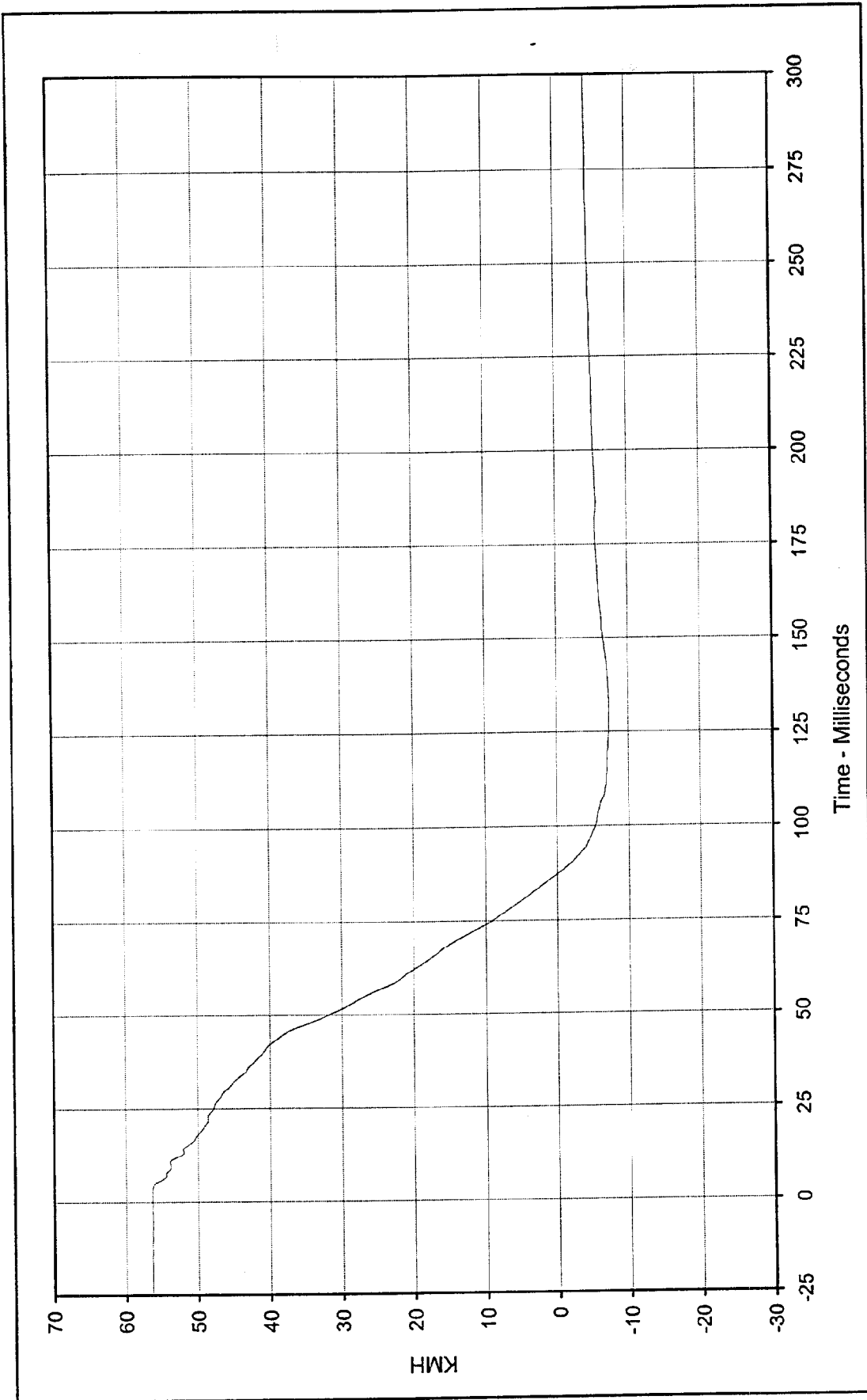


\* Channel Failed at 108.3 Msec.



Curve Description: Vehicle Left Rear Redundant Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 2.0 at 148.9 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -36.3 at 47.9 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-096





Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113

Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

Curve Description: Vehicle Left Rear Redundant Velocity

Maximum Value: 56.4 at 1.1 Milliseconds

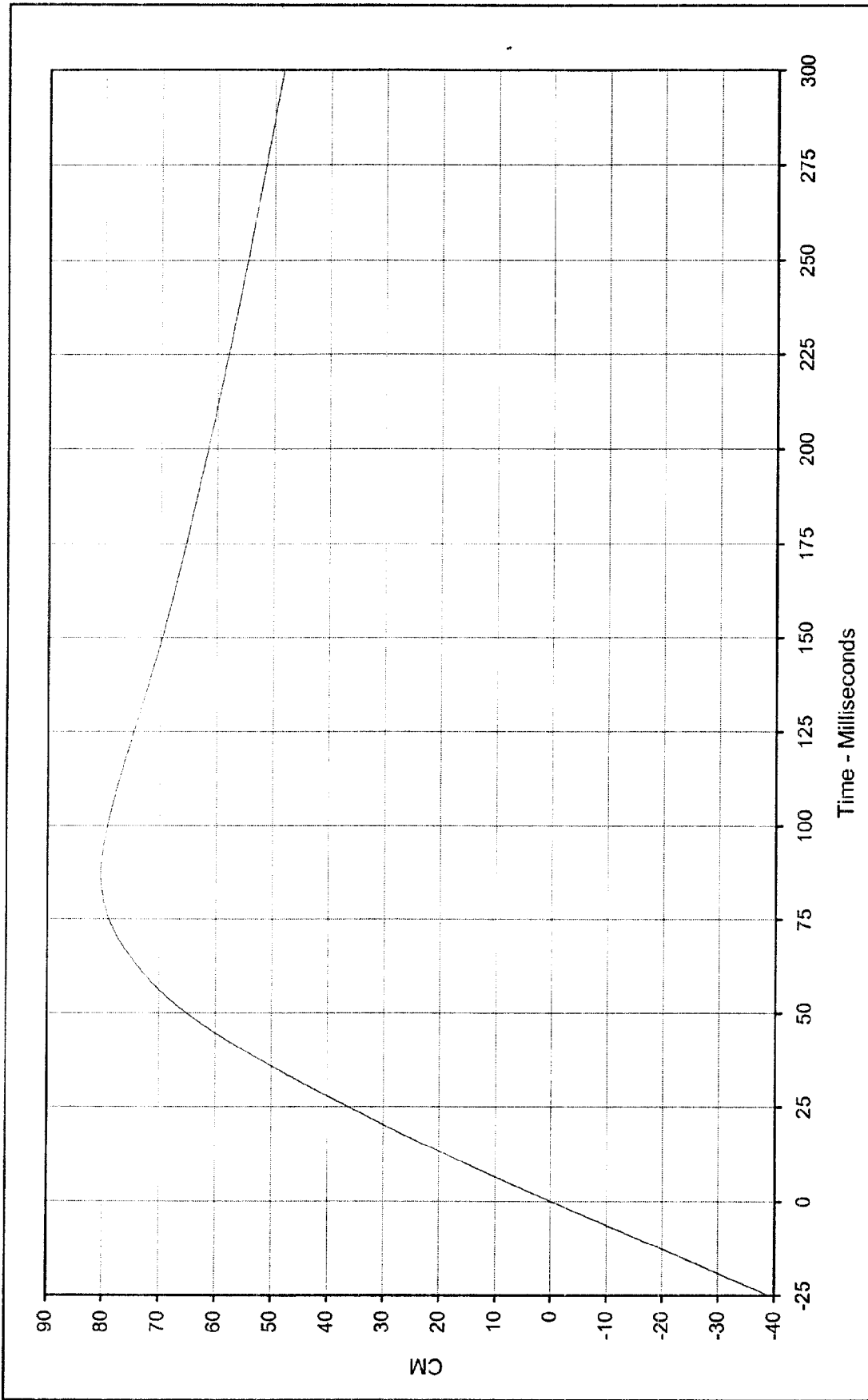
Minimum Value: -7.4 at 132.8 Milliseconds

SAE Filter Class: 180

Date of Test: 1/22/99

Curve Number: IN1-096





Curve Description: Vehicle Left Rear Redundant Displ.      Test Program: 1999 NHTSA 35 mph NCAP      No.: MX0113

Maximum Value: 80.4      at 87.1      Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

Minimum Value: 0.0      at 0.0      Milliseconds

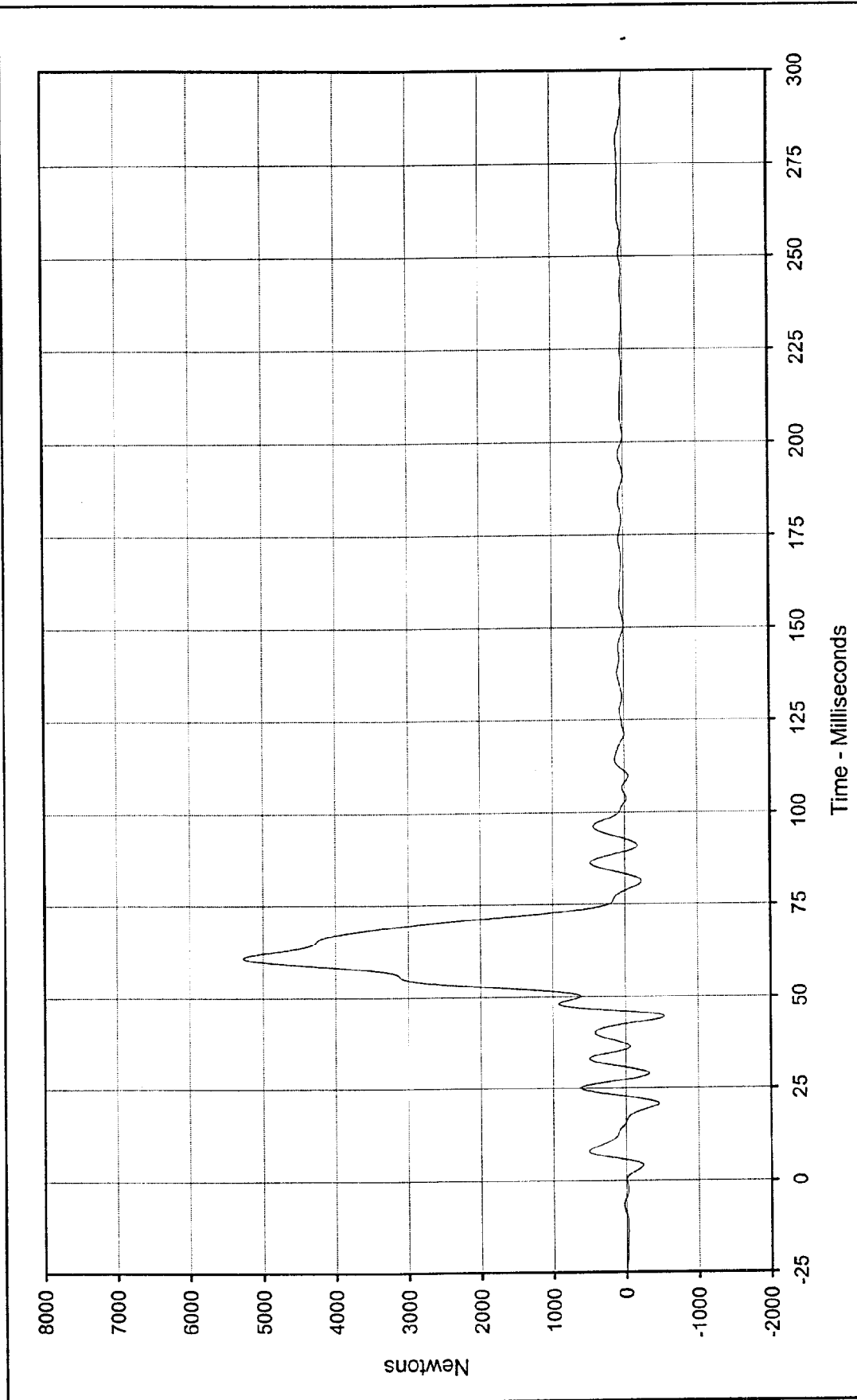
SAE Filter Class: 180

Date of Test: 1/22/99

Curve Number: IN2-096



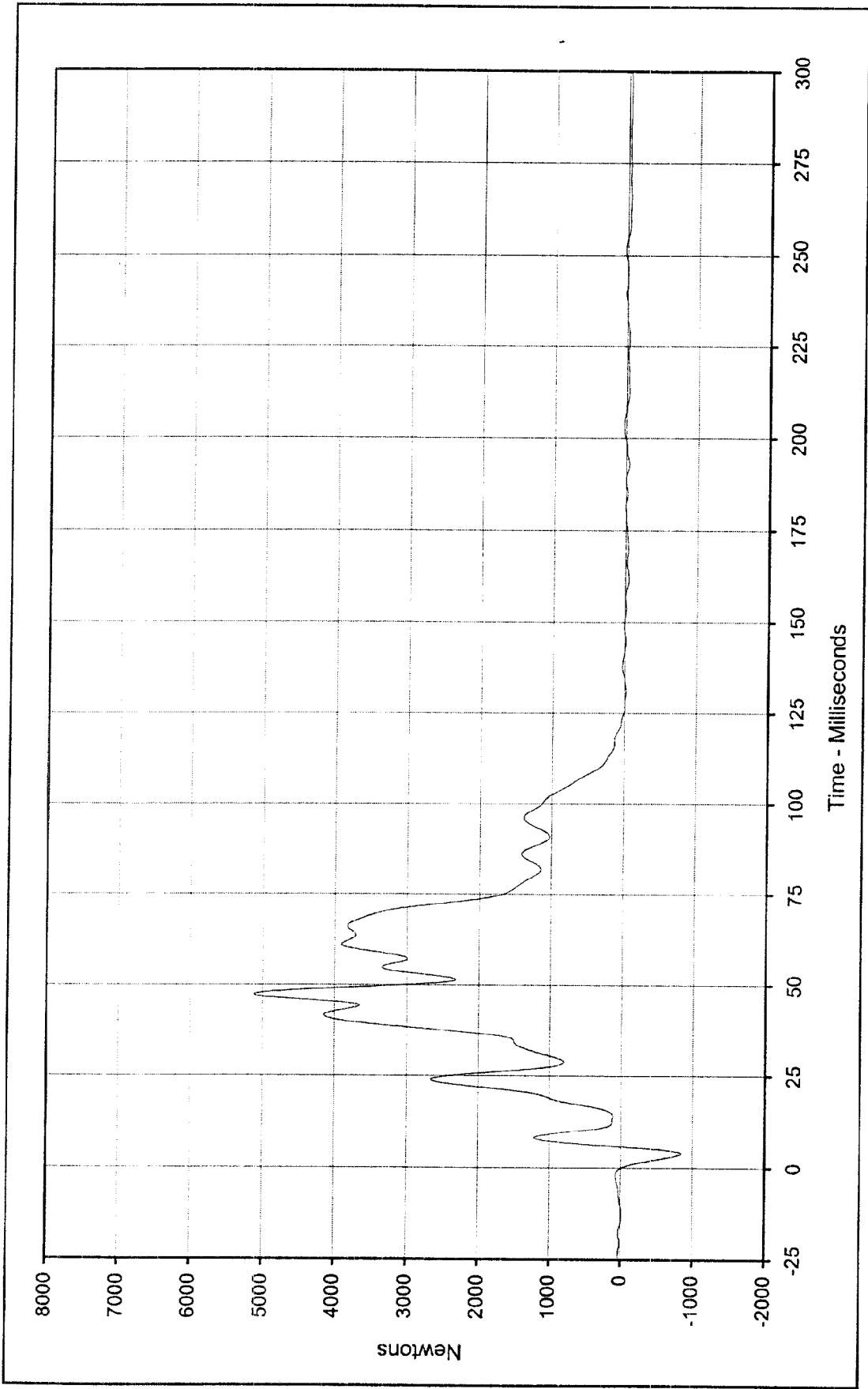
**APPENDIX C**  
**LOAD CELL BARRIER INFORMATION**



Curve Description: Barrier Force A2      Test Program: 1999 NHTSA 35 mph NCAP      No.: MX0113  
 Maximum Value: 5268.6      at 60.8      Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -536.7      at 44.6      Milliseconds



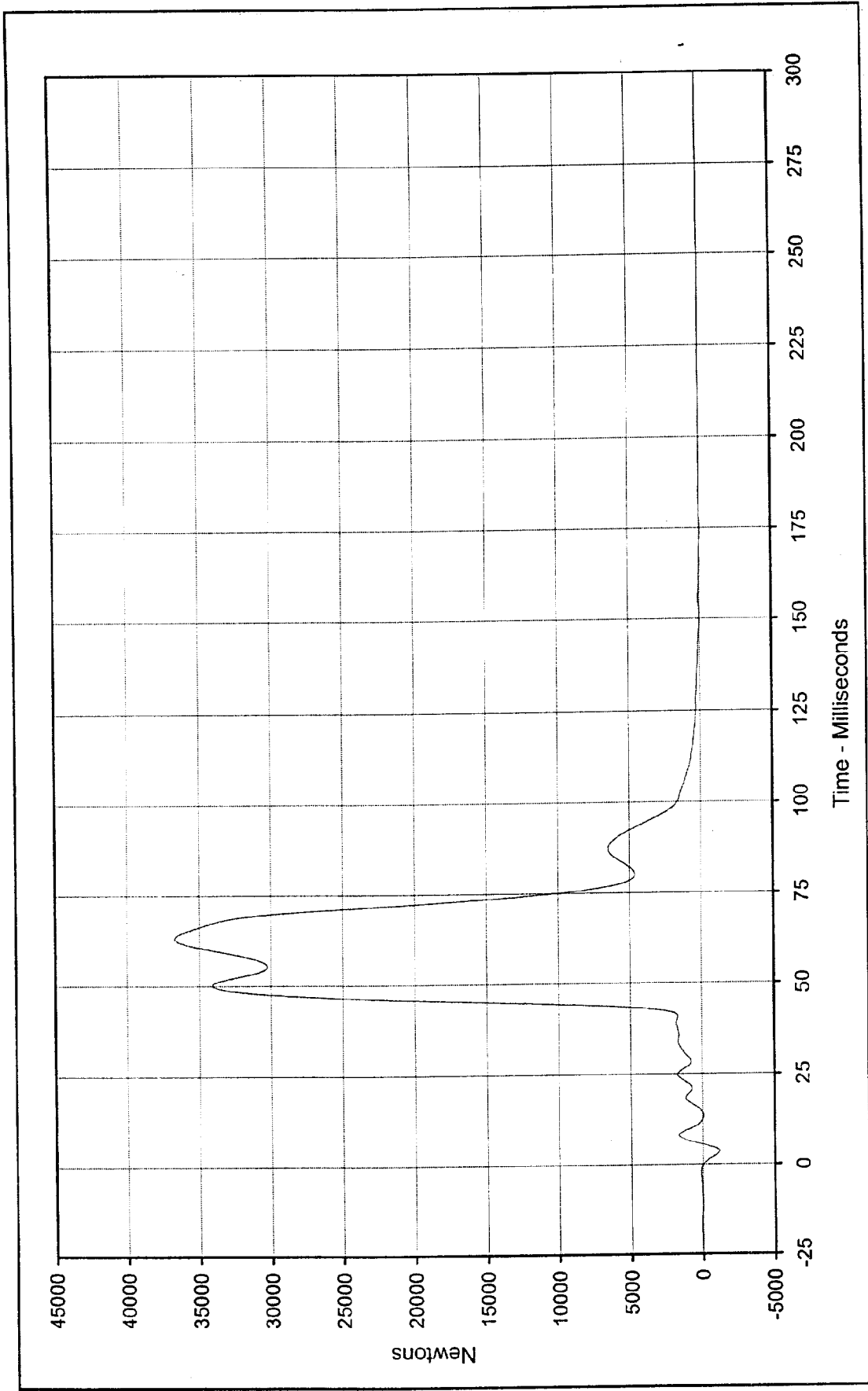
SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-099



Curve Description: Barrier Force A3 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 5123.8 at 47.3 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -841.0 at 3.9 Milliseconds



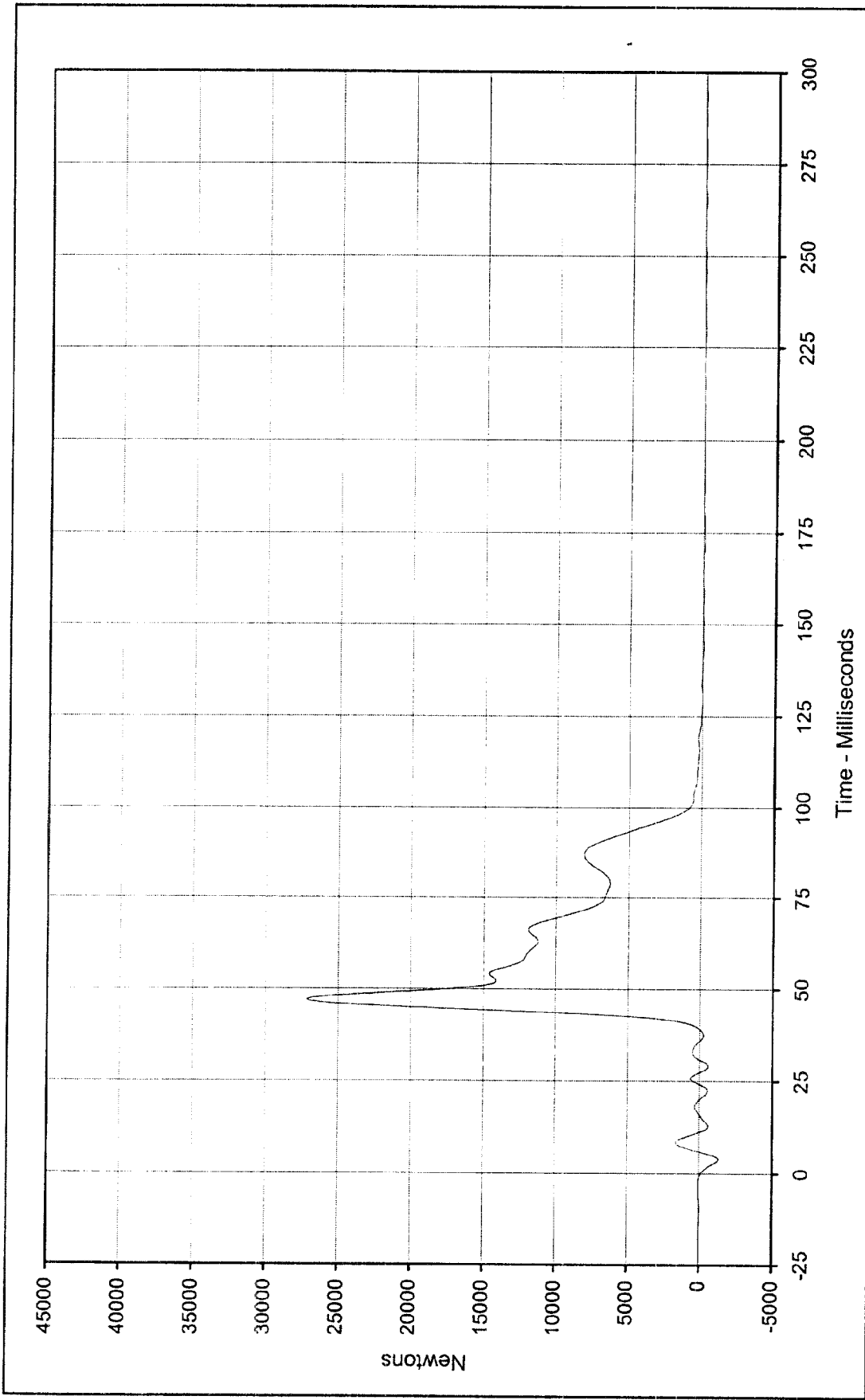
SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-100



Curve Description: Barrier Force A4  
 Maximum Value: 36694.7 at 63.1 Milliseconds  
 Minimum Value: -1163.1 at 3.6 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-101

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

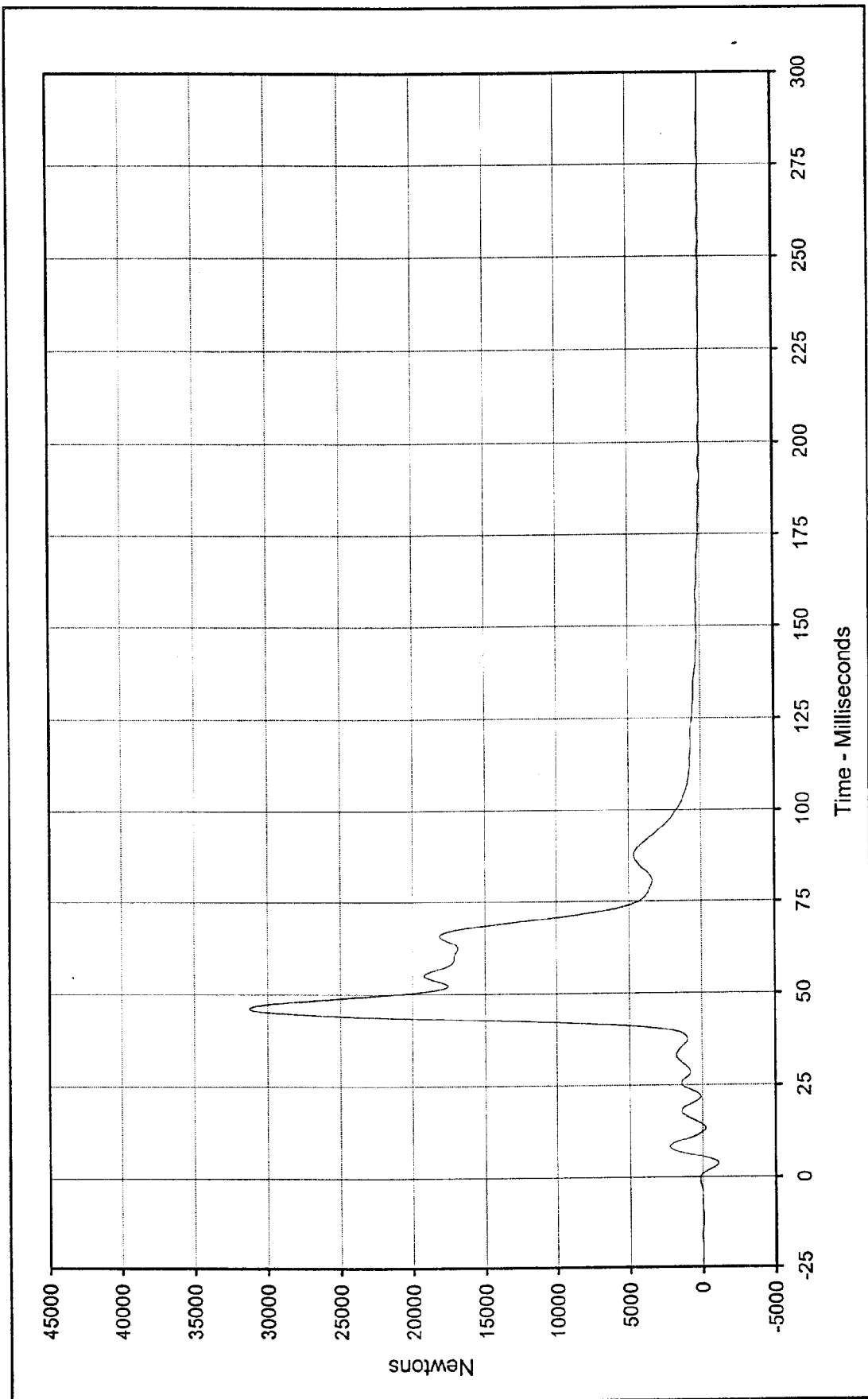




Curve Description: Barrier Force A5  
 Maximum Value: 27130.7 at 47.0 Milliseconds  
 Minimum Value: -1332.9 at 3.9 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-102

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

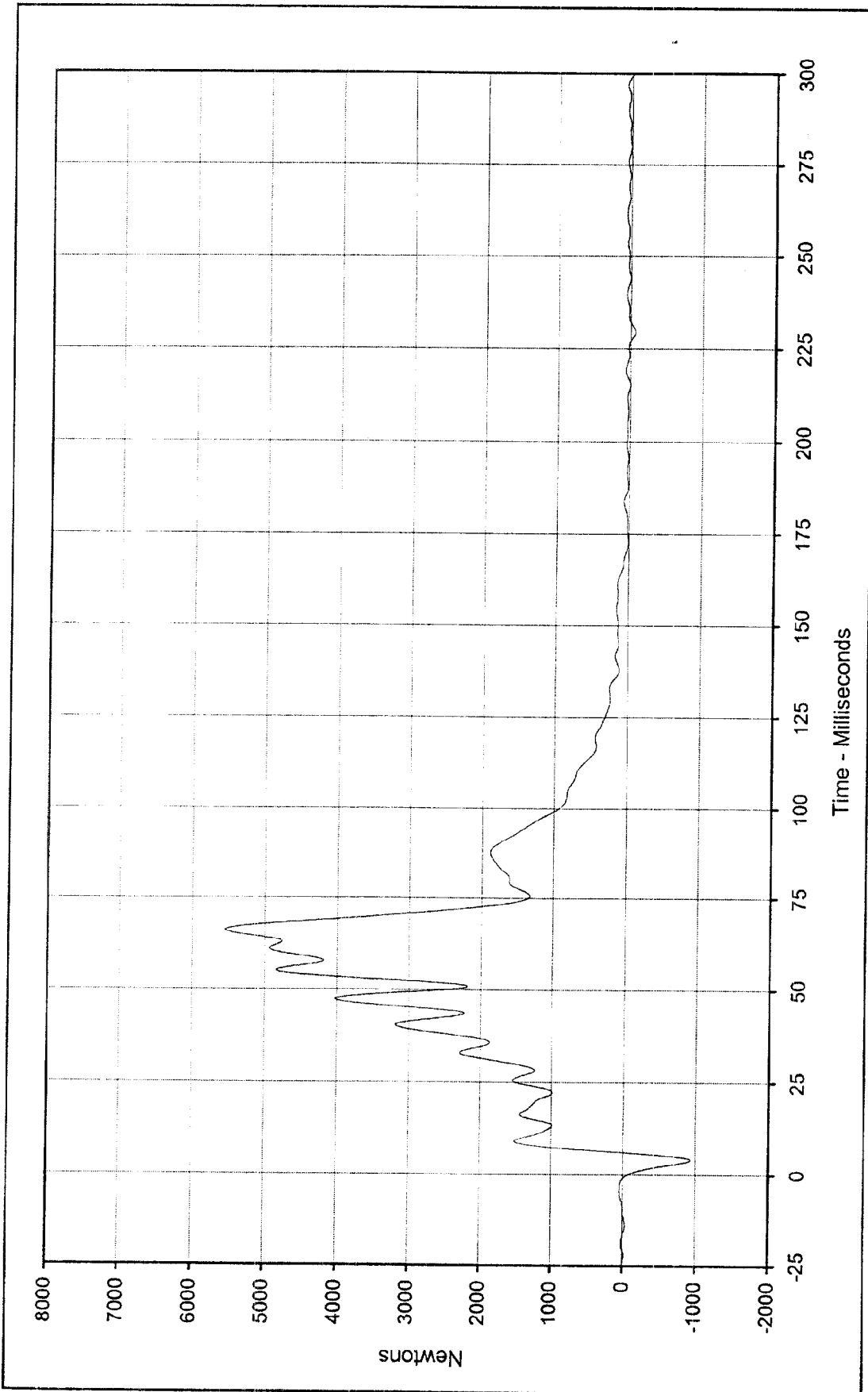




Curve Description: Barrier Force A6 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 31236.7 at 46.3 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -1106.9 at 3.6 Milliseconds



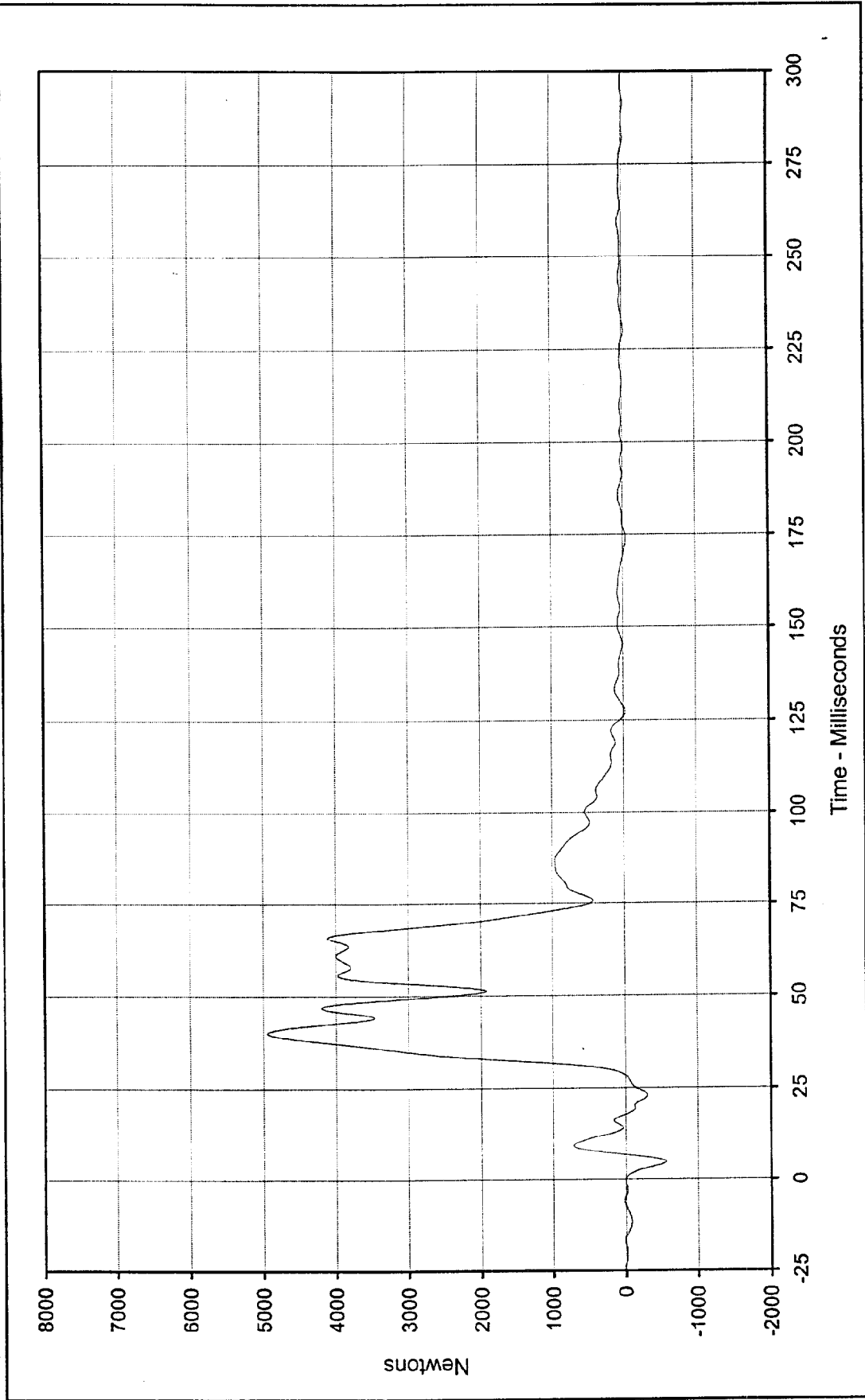
SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-103



Curve Description: Barrier Force A7  
 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 5540.2 at 66.1 Milliseconds  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -936.1 at 4.0 Milliseconds

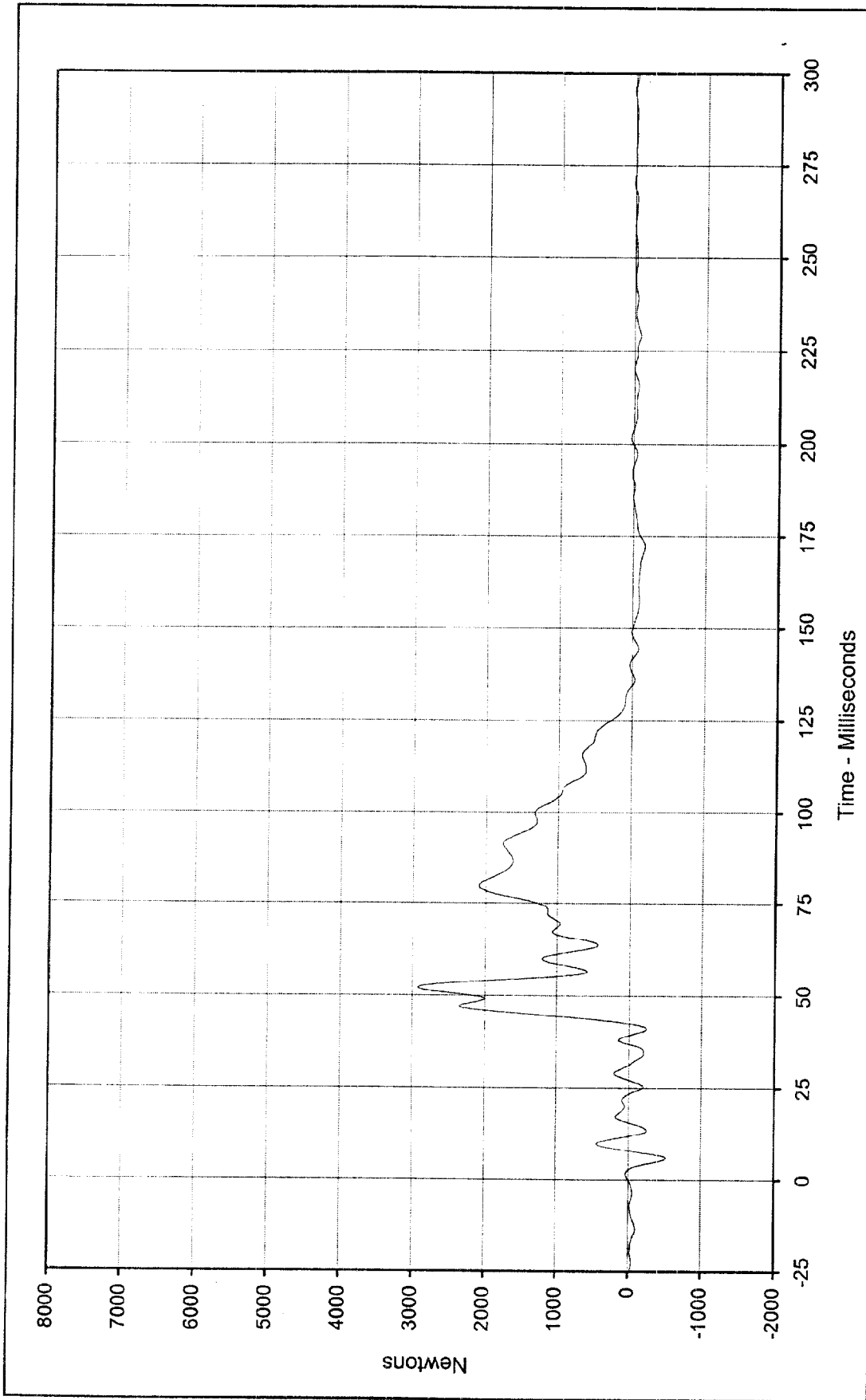


SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-104



Curve Description: Barrier Force A8 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 4942.9 at 40.0 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -560.8 at 4.8 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-105

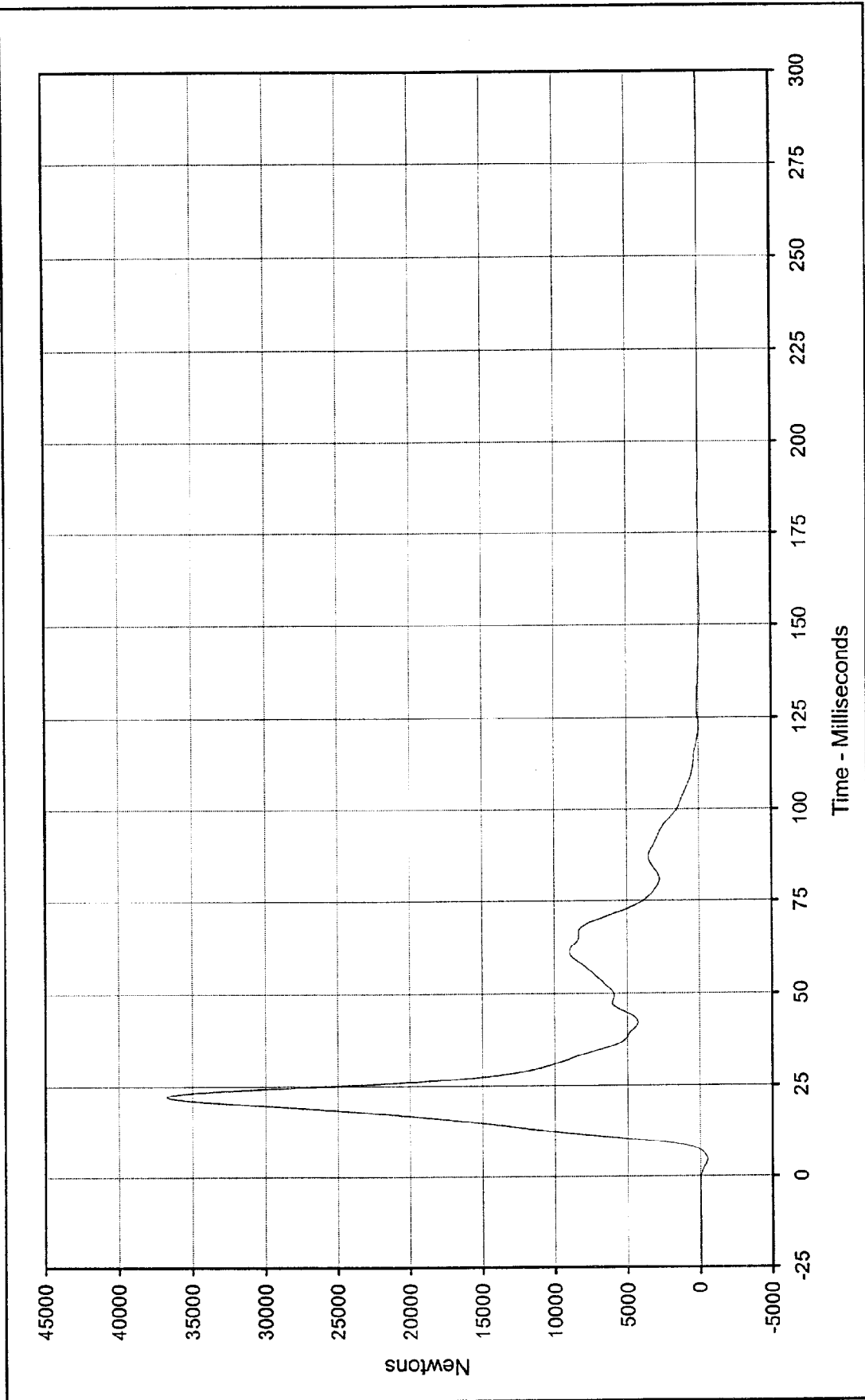




Curve Description: Barrier Force A9  
 Maximum Value: 2926.2 at 52.1 Milliseconds  
 Minimum Value: -519.7 at 6.0 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-106

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

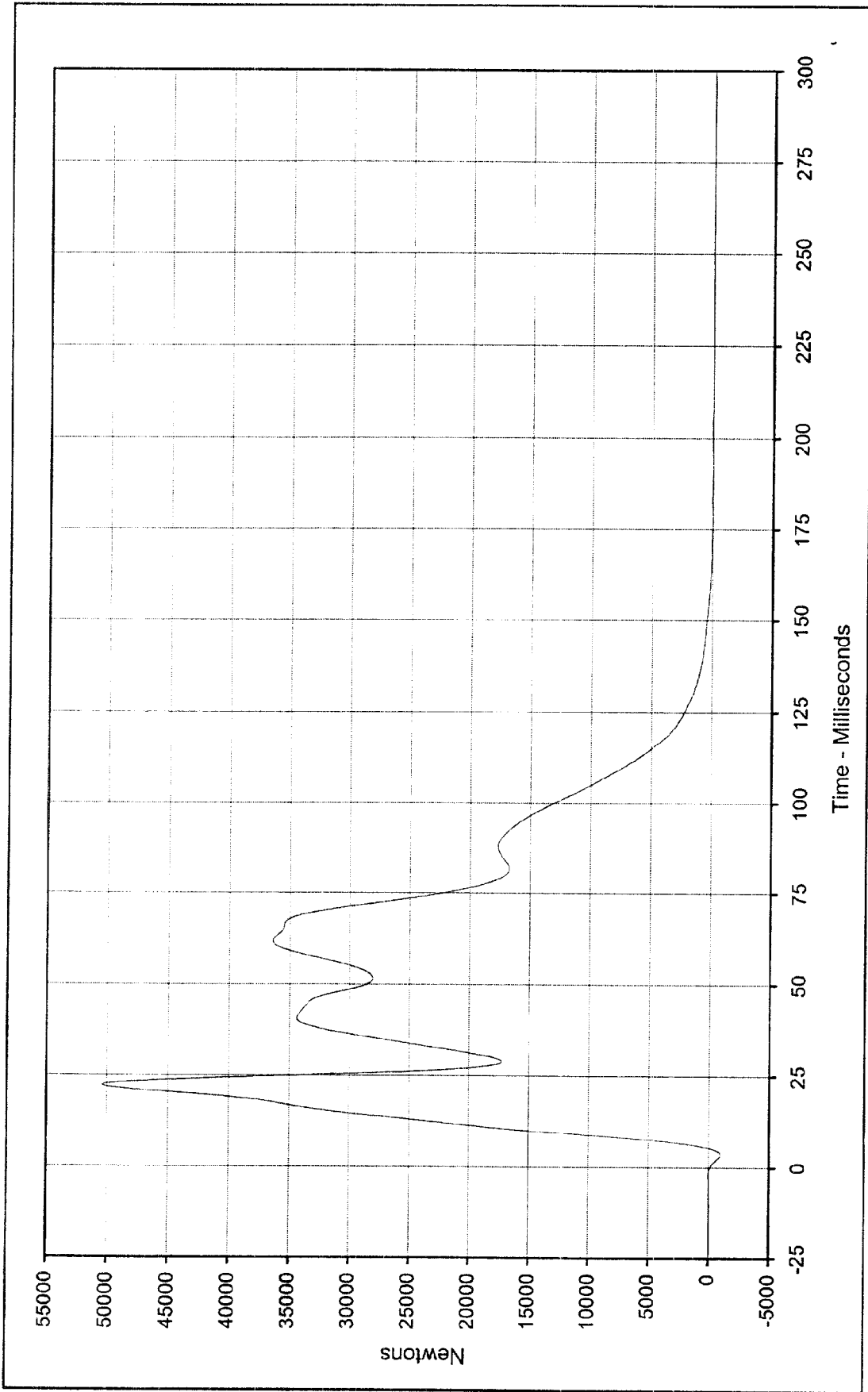




Curve Description: Barrier Force B2  
 Maximum Value: 36752.4 at 22.2 Milliseconds  
 Minimum Value: -509.6 at 4.5 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-108

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

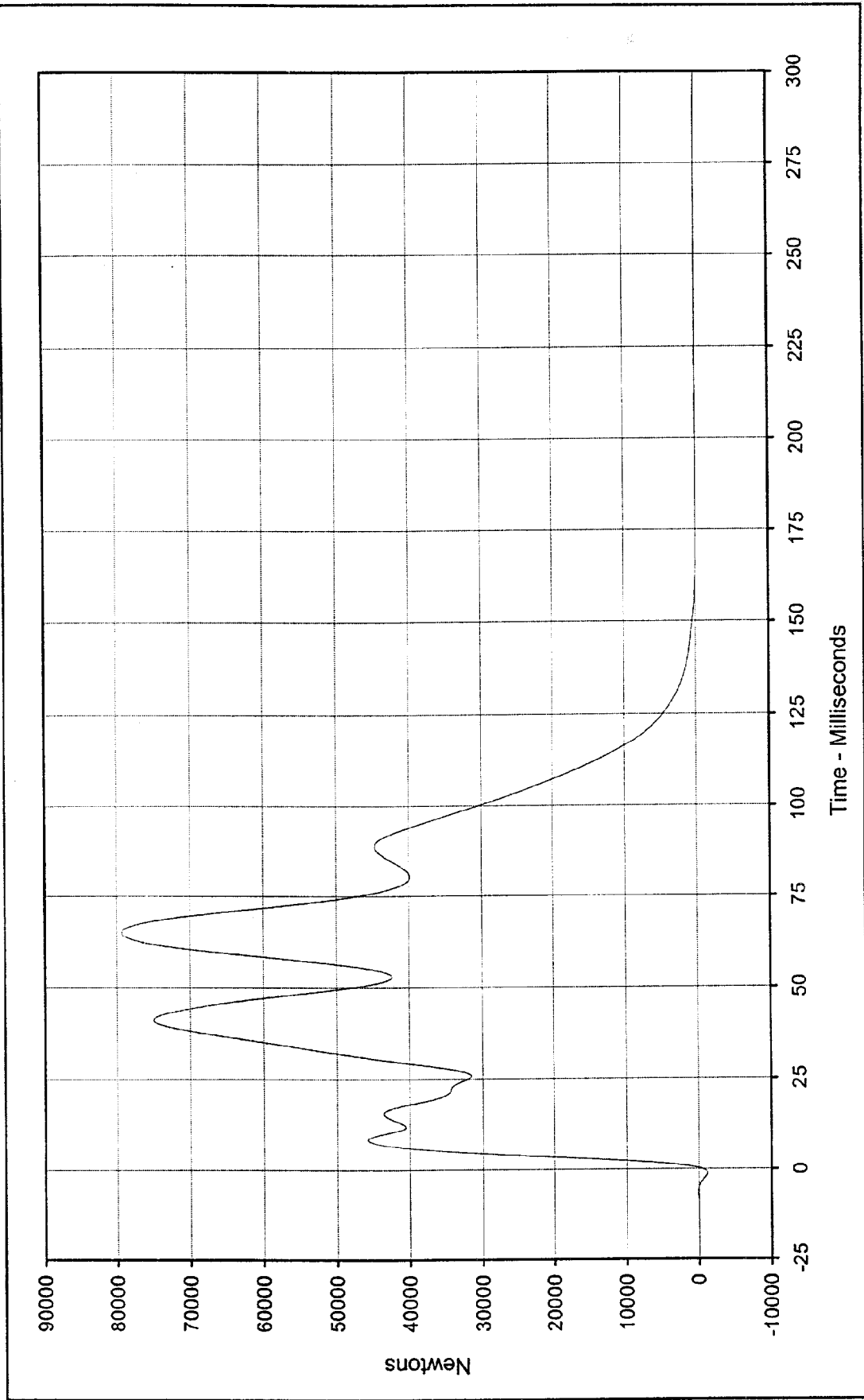




Curve Description: Barrier Force B3  
 Maximum Value: 50405.2 at 22.3 Milliseconds  
 Minimum Value: -986.7 at 3.5 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-109

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

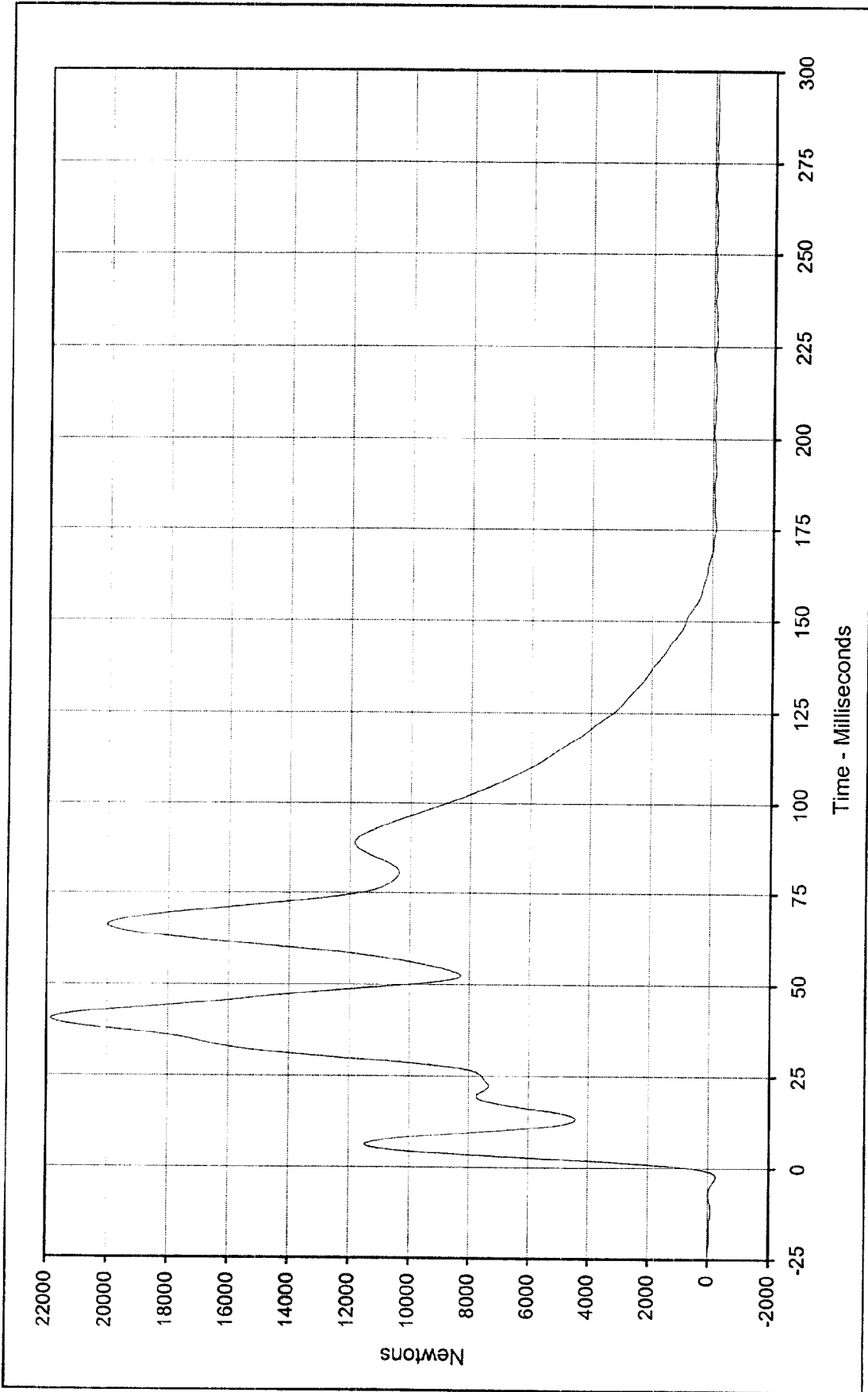




Curve Description: Barrier Force B4 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 79353.1 at 65.0 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -535.2 at 0.0 Milliseconds

SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-110

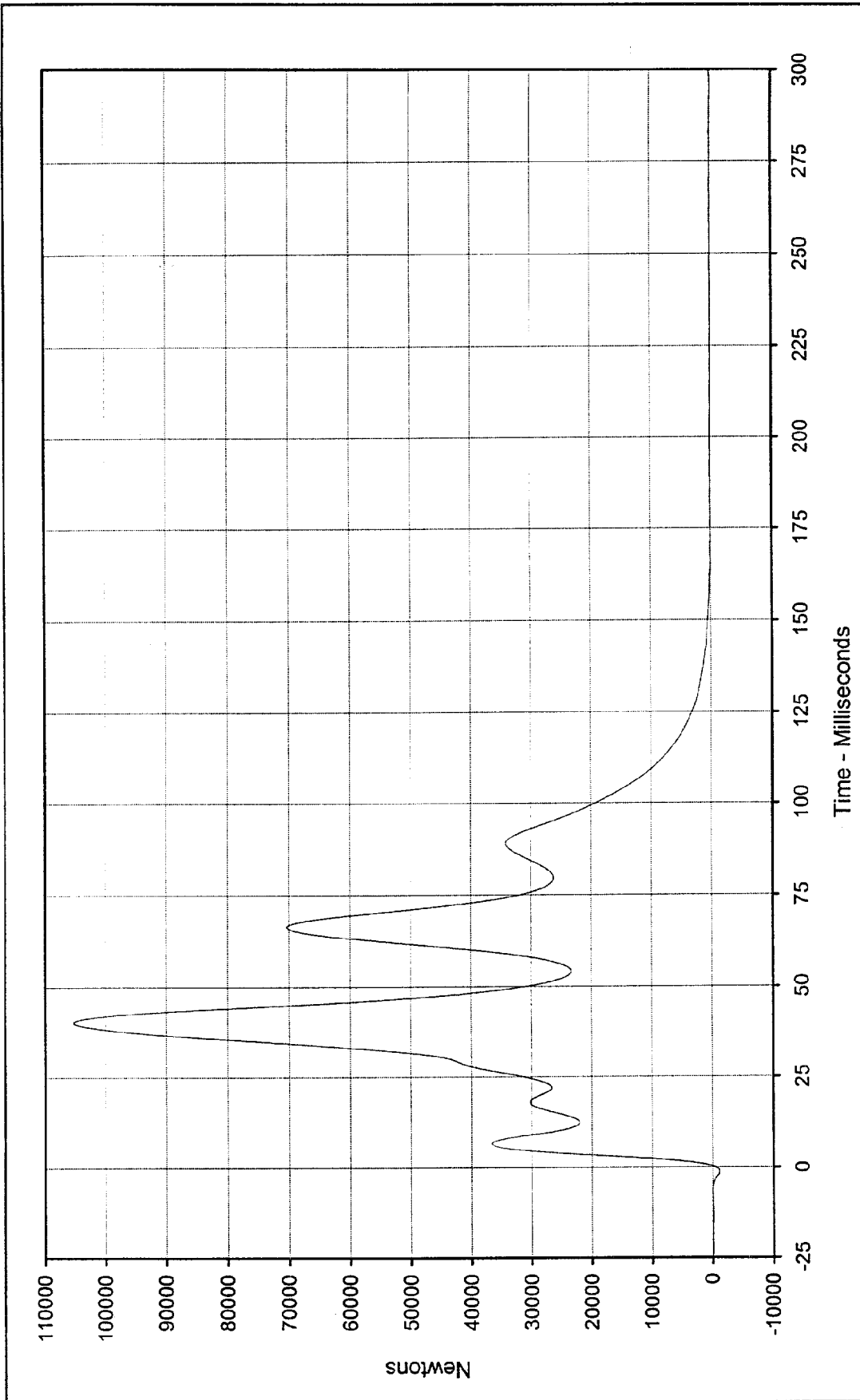




Curve Description: Barrier Force B5  
 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 21866.9 at 40.5 Milliseconds  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -118.5 at 175.8 Milliseconds



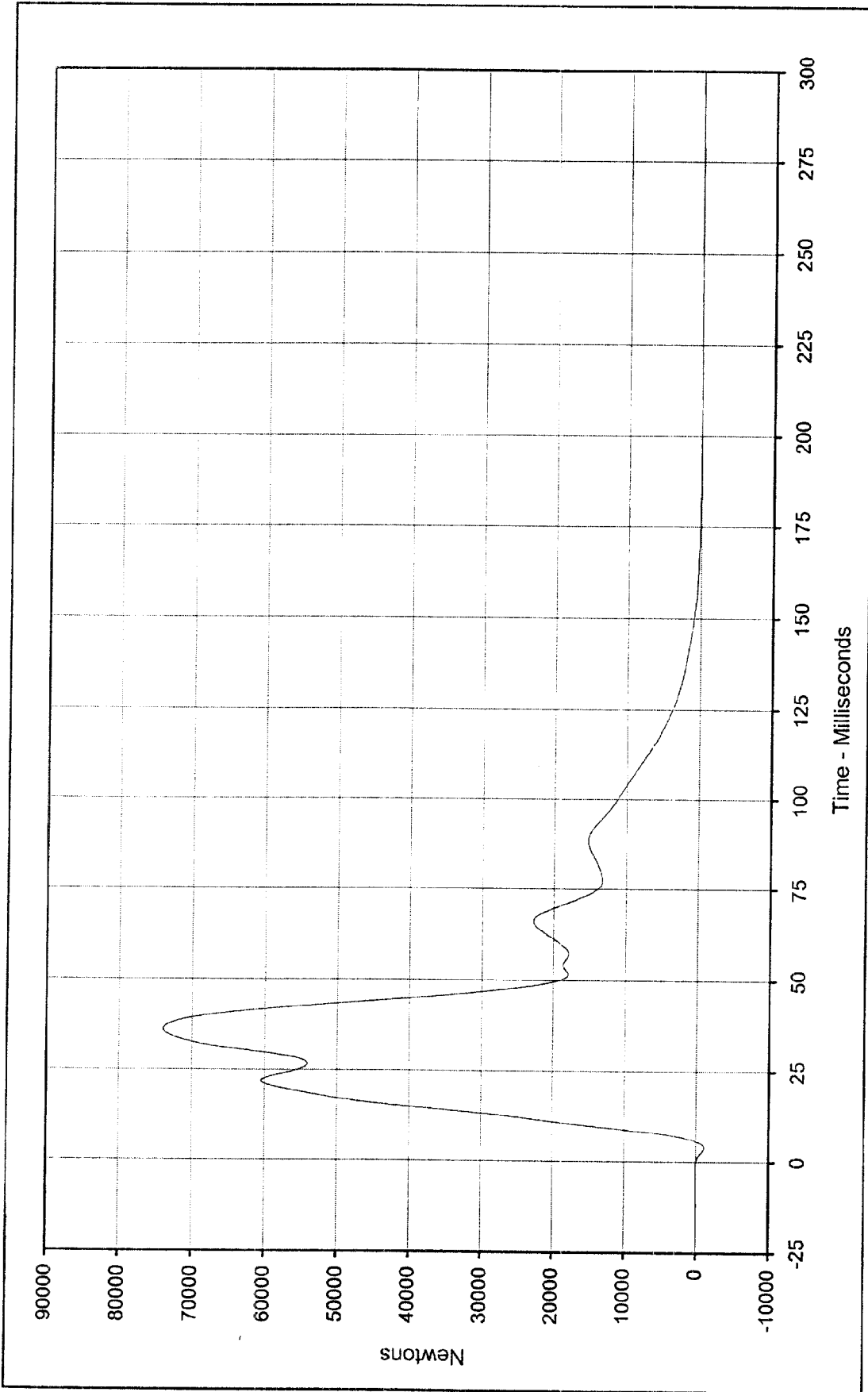
SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-111



Curve Description: Barrier Force B6 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 105301.5 at 40.3 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -495.4 at 0.0 Milliseconds



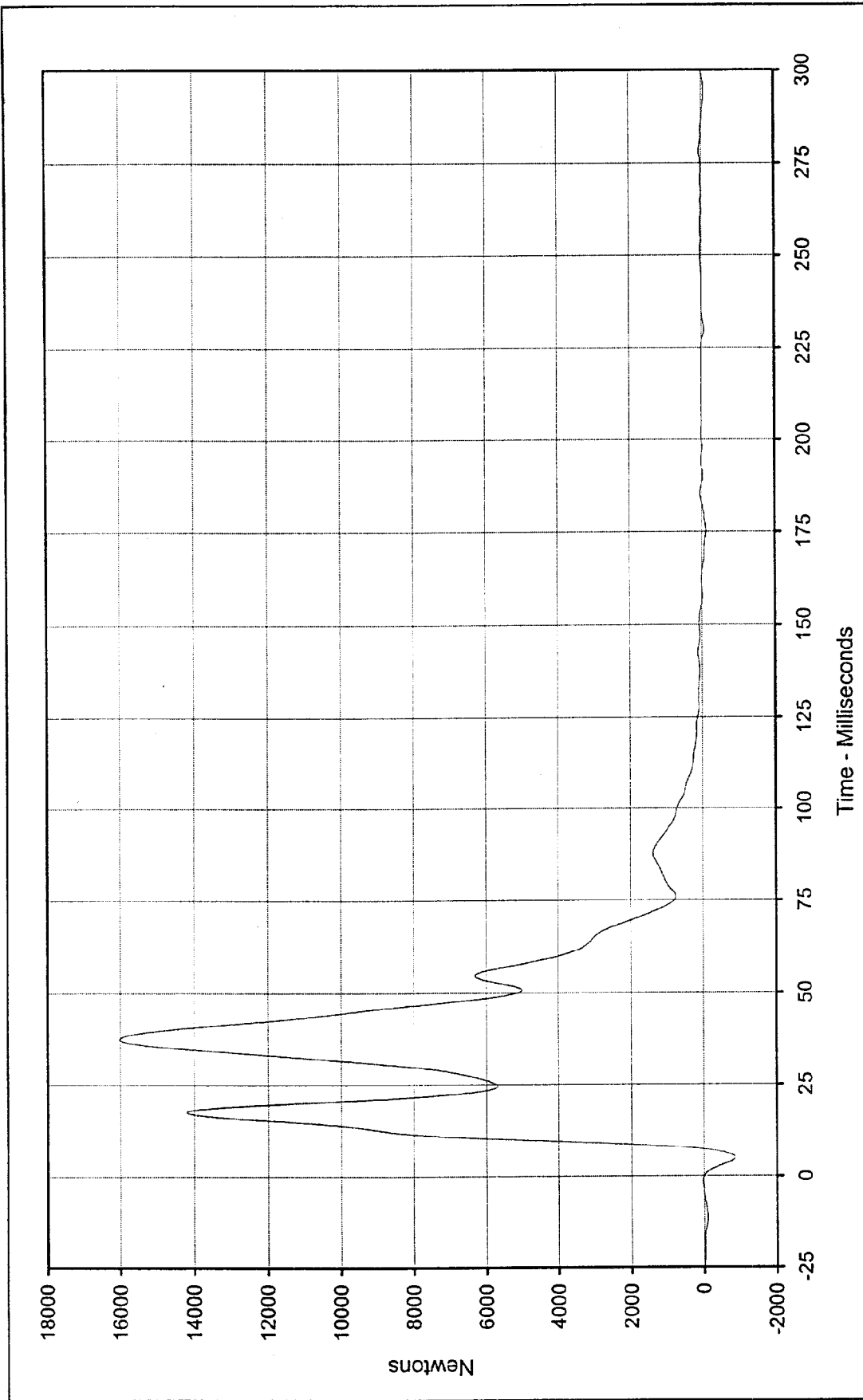
SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-112



Curve Description: Barrier Force B7  
 Maximum Value: 73995.0 at 36.3 Milliseconds  
 Minimum Value: -1136.5 at 4.0 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-113

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

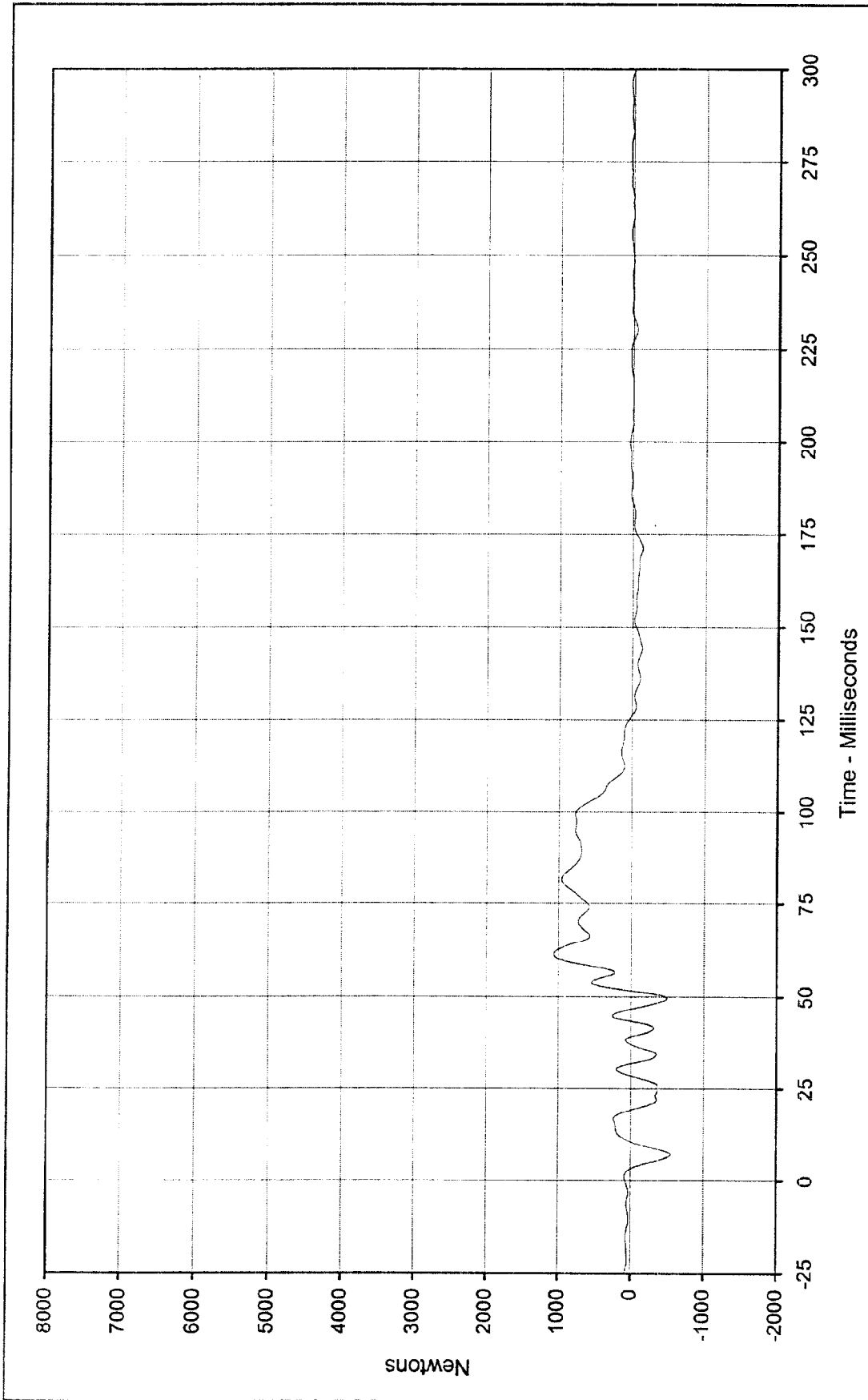




Curve Description: Barrier Force B8  
 Maximum Value: 16020.8 at 37.5 Milliseconds  
 Minimum Value: -847.8 at 5.0 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-114

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

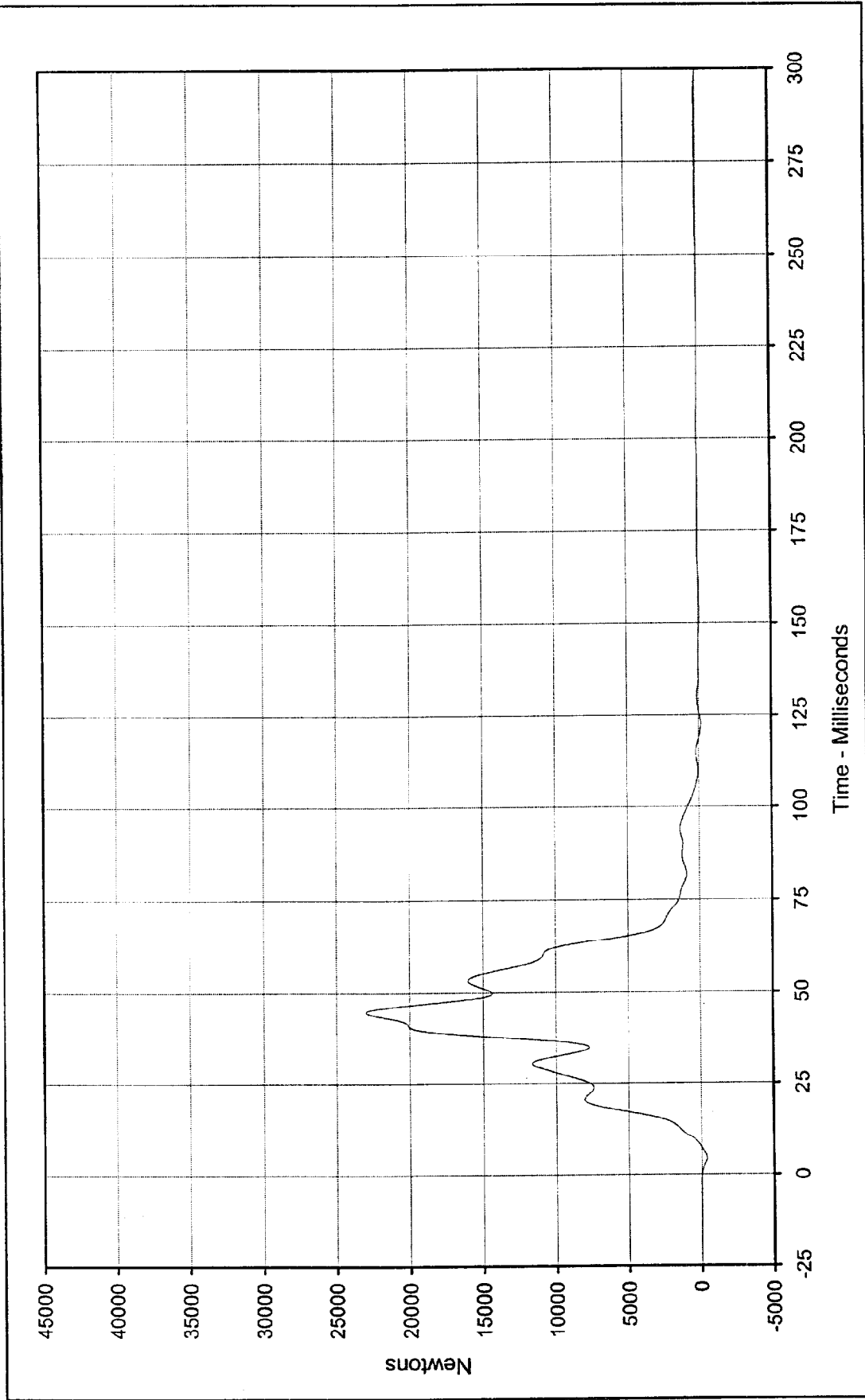




Curve Description: Barrier Force B9  
 Maximum Value: 1065.5 at 61.2 Milliseconds  
 Minimum Value: -548.6 at 7.0 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-115

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

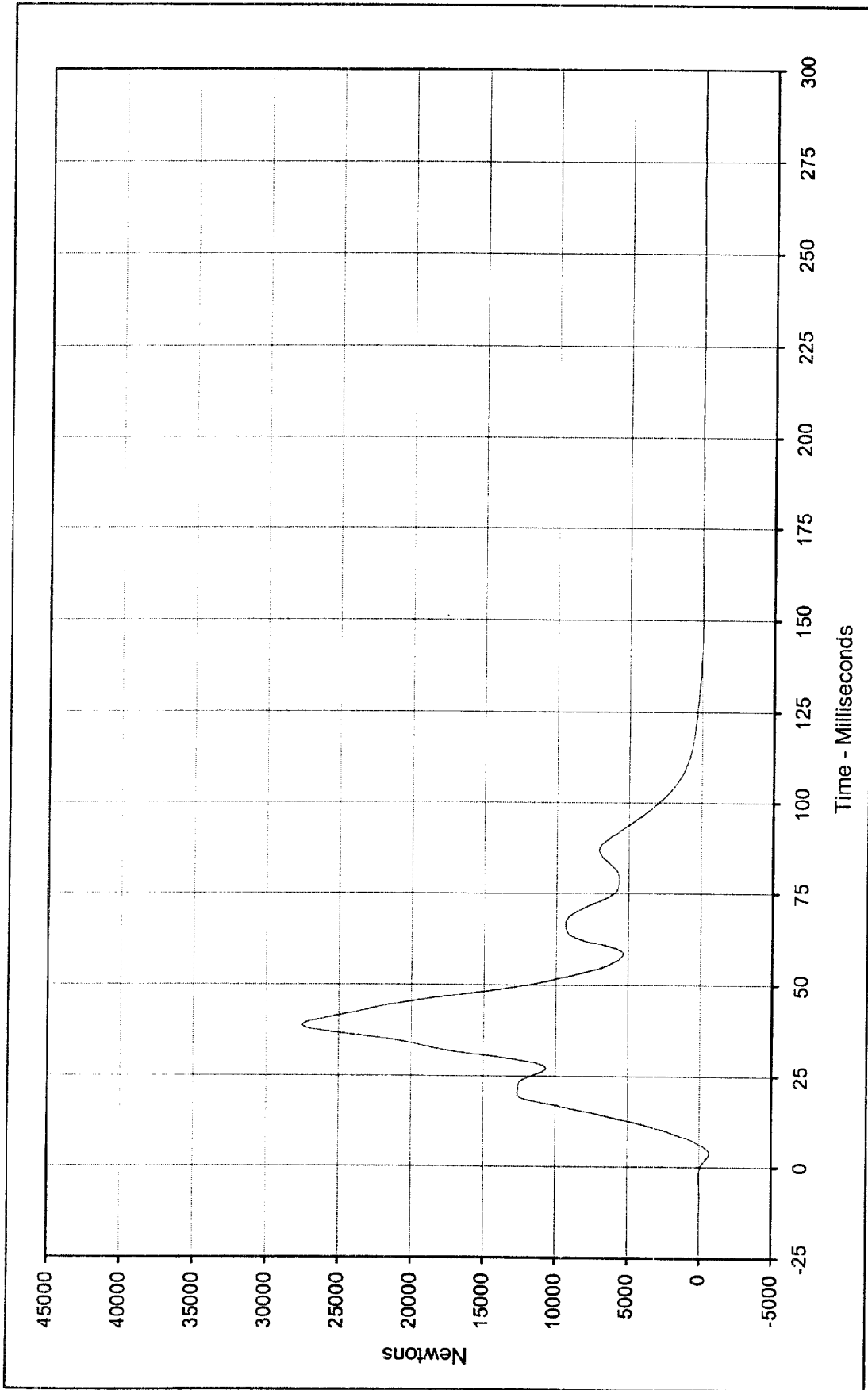




Curve Description: Barrier Force C2 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 22990.9 at 44.8 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -397.3 at 4.4 Milliseconds

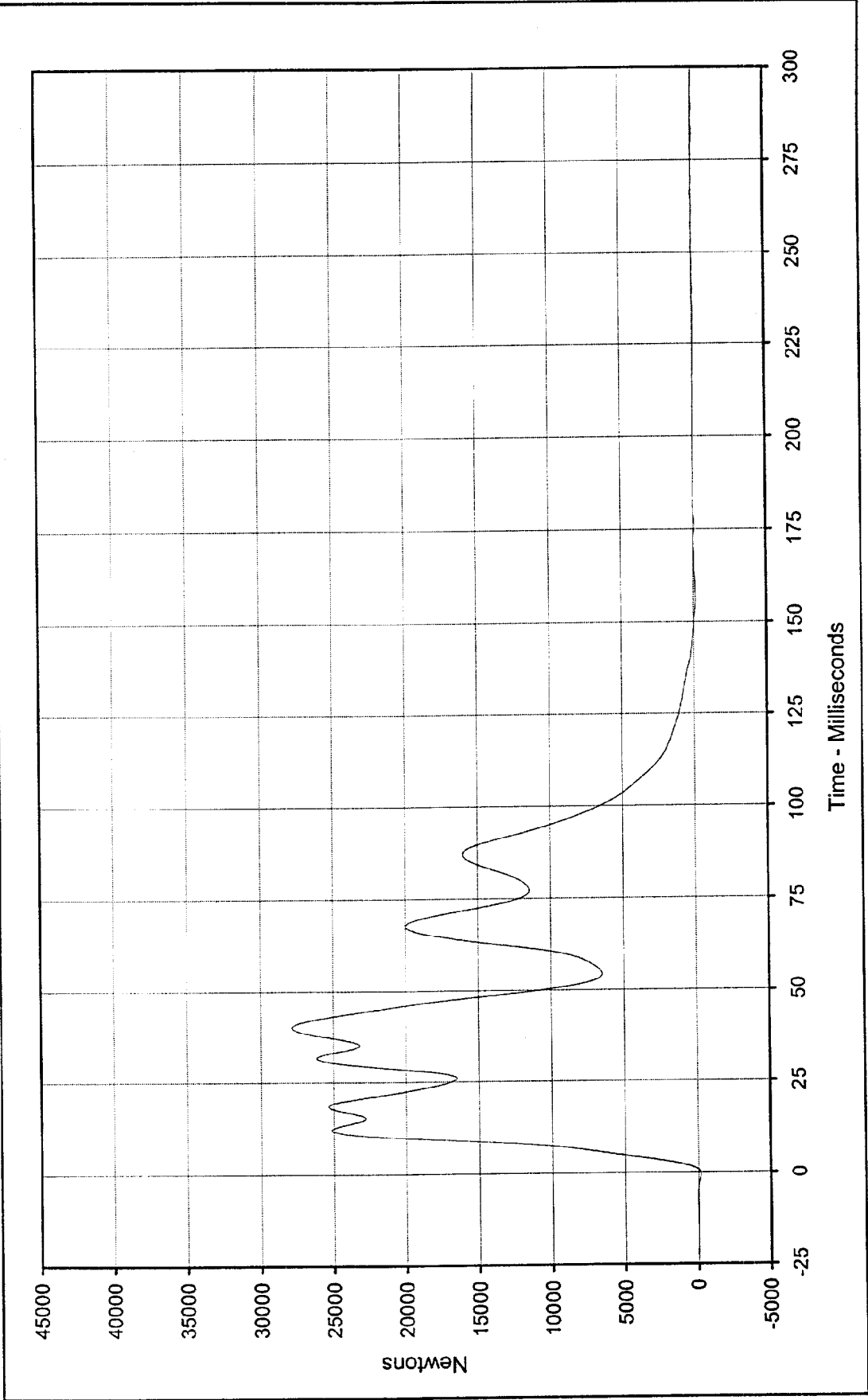
SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-117





Curve Description: Barrier Force C3      Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 27457.7 at 38.8 Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -709.3 at 3.7 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-118

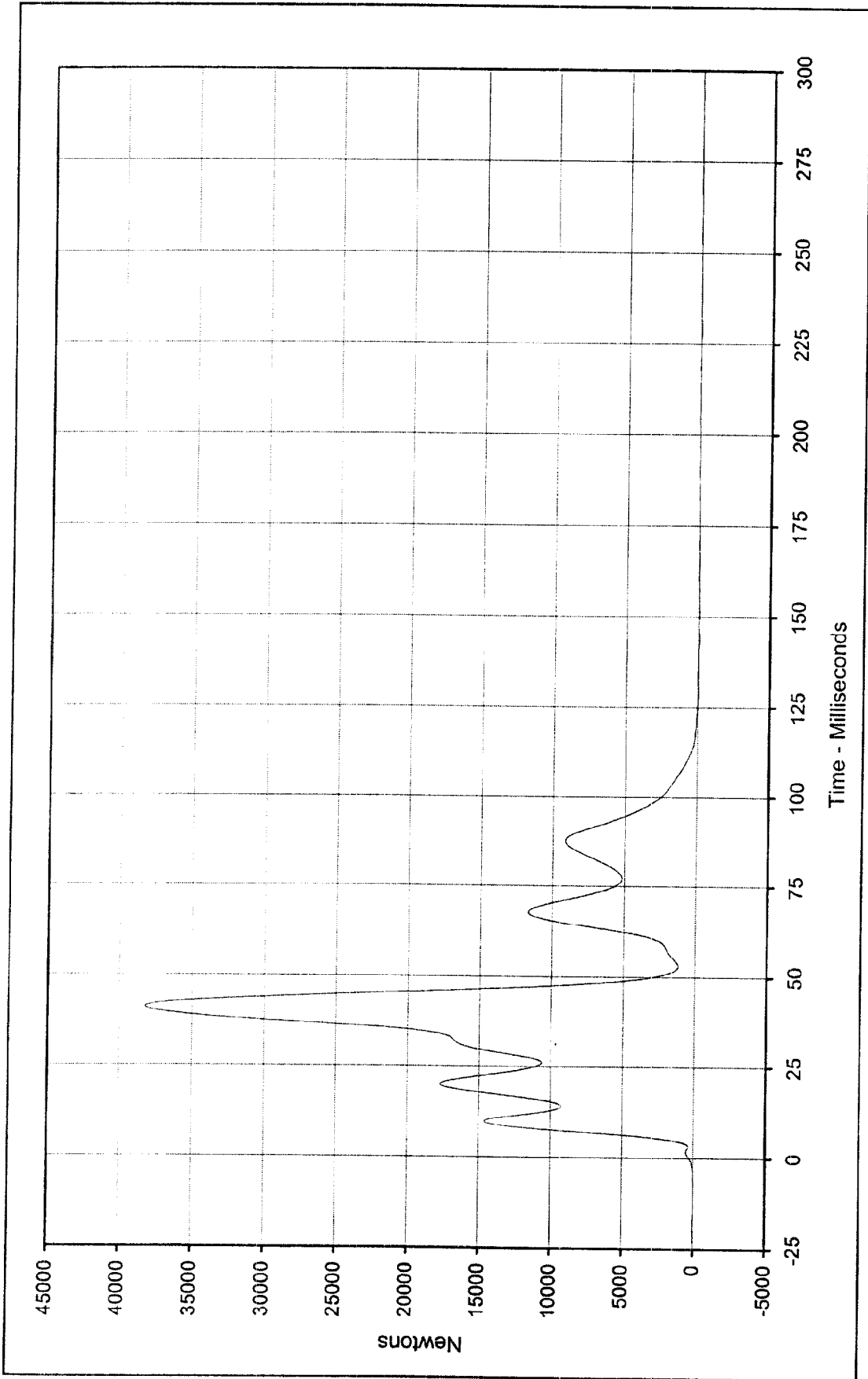




Curve Description: Barrier Force C4 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 27840.8 at 40.2 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -170.1 at 0.0 Milliseconds

SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-119

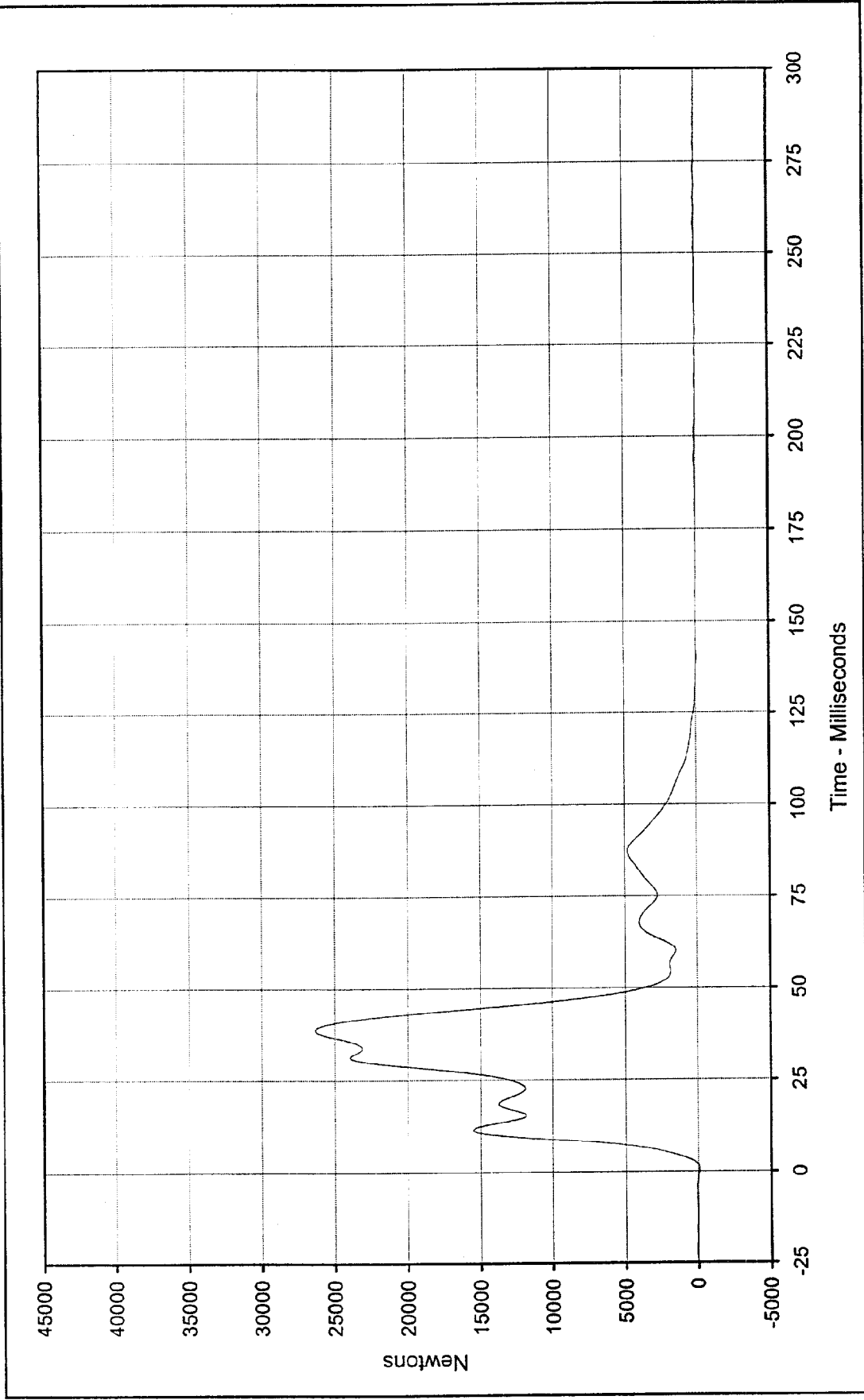




Curve Description: Barrier Force C5  
 Maximum Value: 38228.8 at 41.2 Milliseconds  
 Minimum Value: -61.5 at 143.7 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-120

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

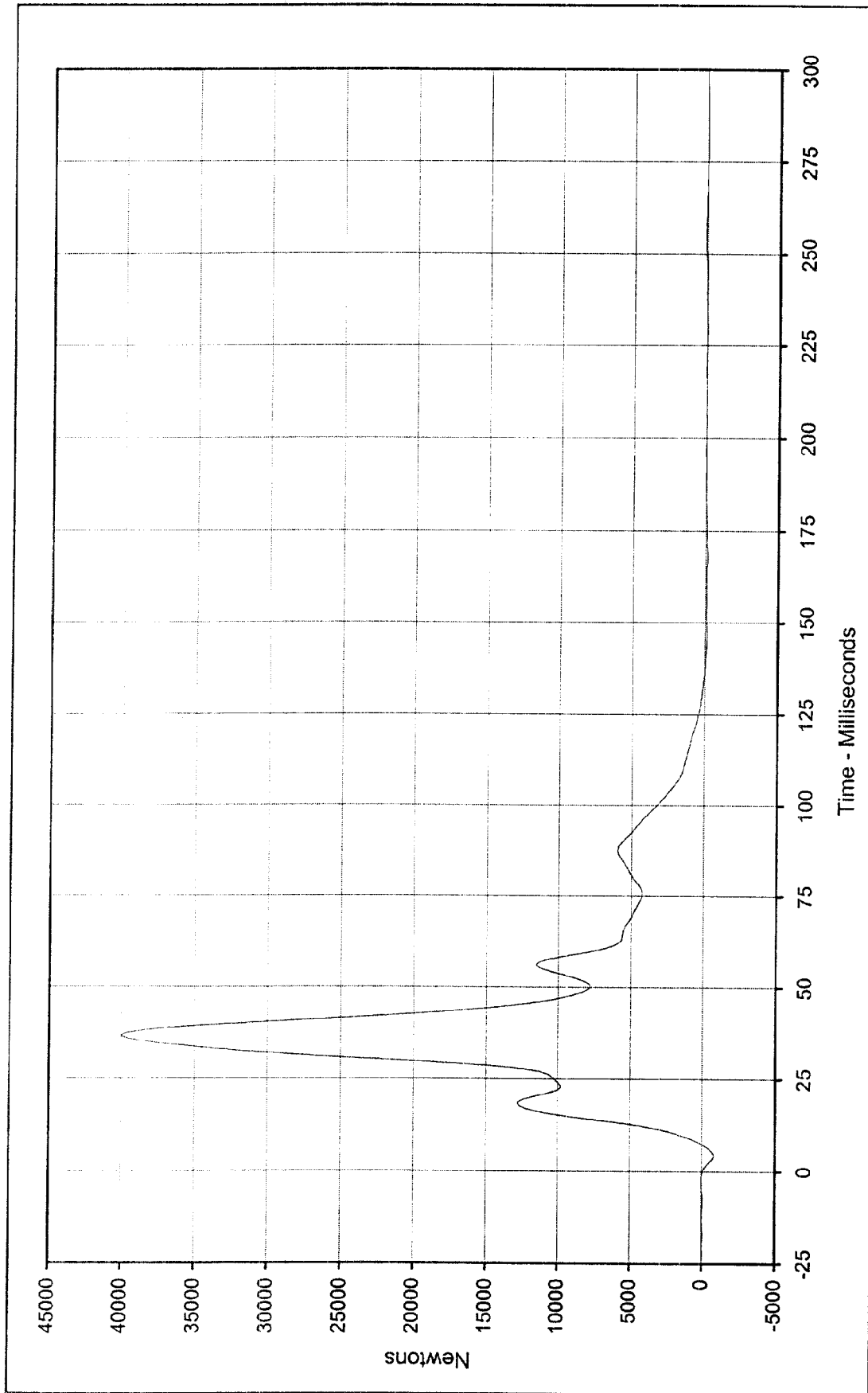




Curve Description: Barrier Force C6 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 26352.7 at 38.8 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -118.4 at 0.7 Milliseconds

SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-121

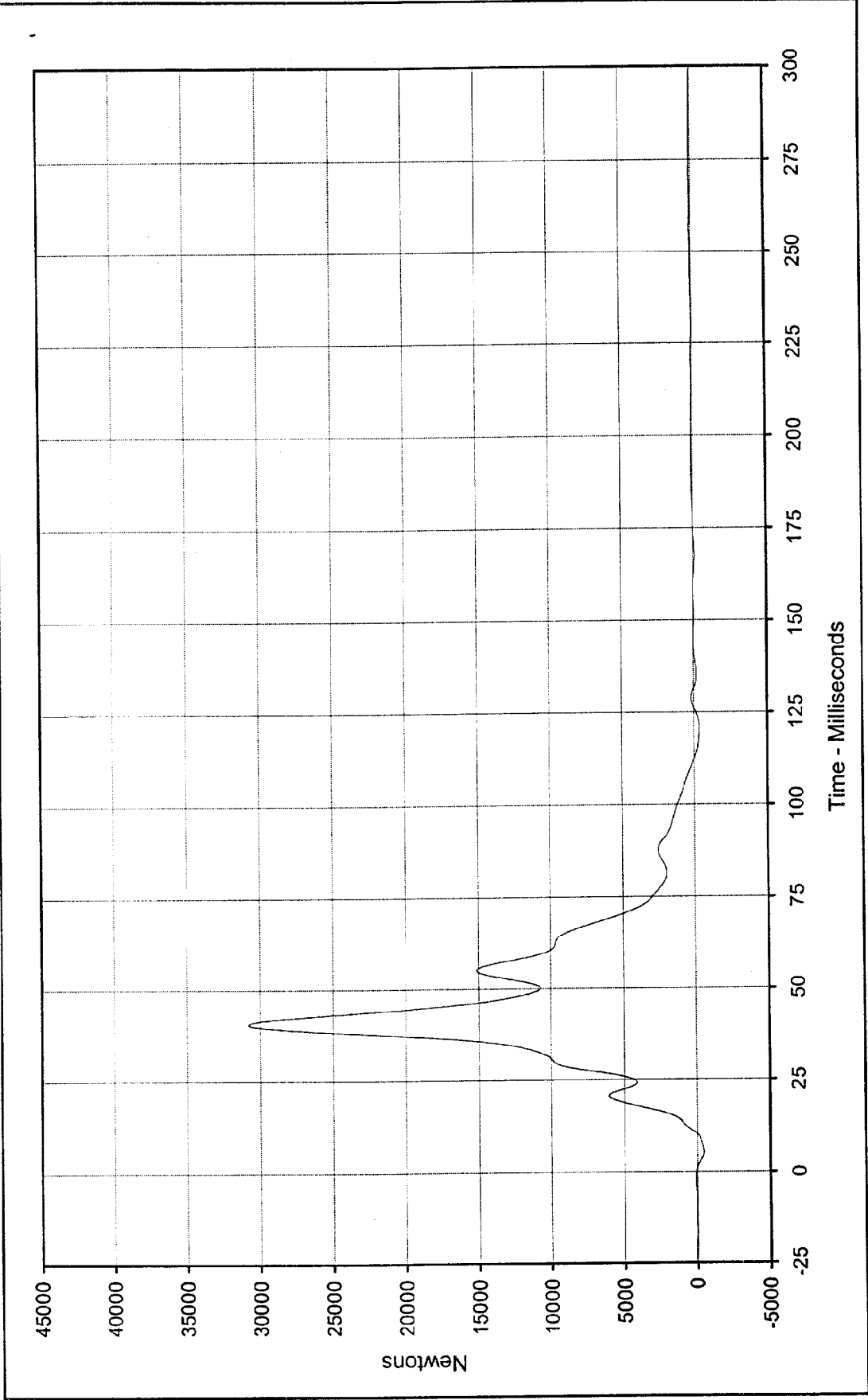




Curve Description: Barrier Force C7  
 Maximum Value: 39992.2 at 36.9 Milliseconds  
 Minimum Value: -819.3 at 4.2 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-122

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

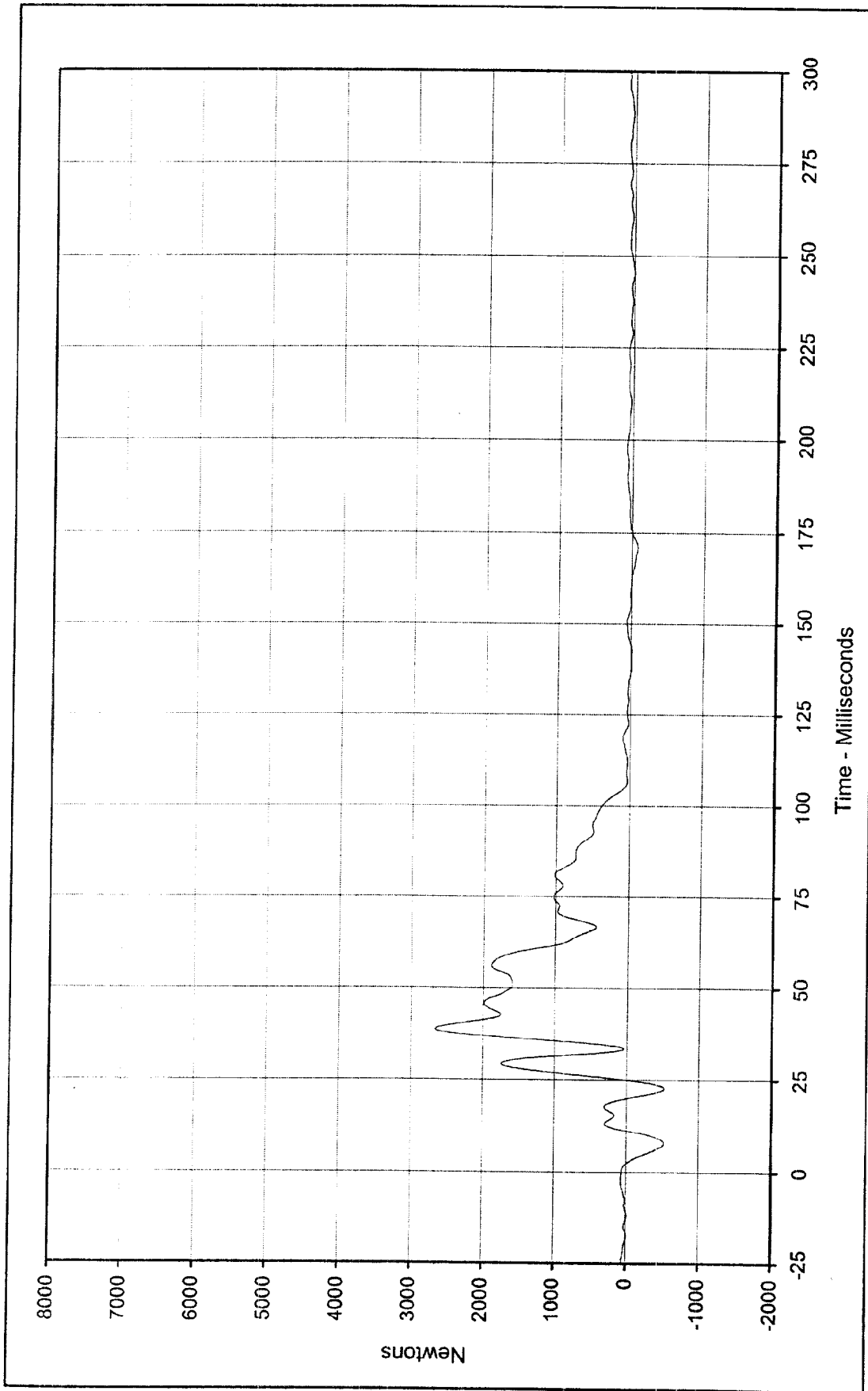




Curve Description: Barrier Force C8 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 30773.5 at 40.6 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -471.6 at 5.2 Milliseconds



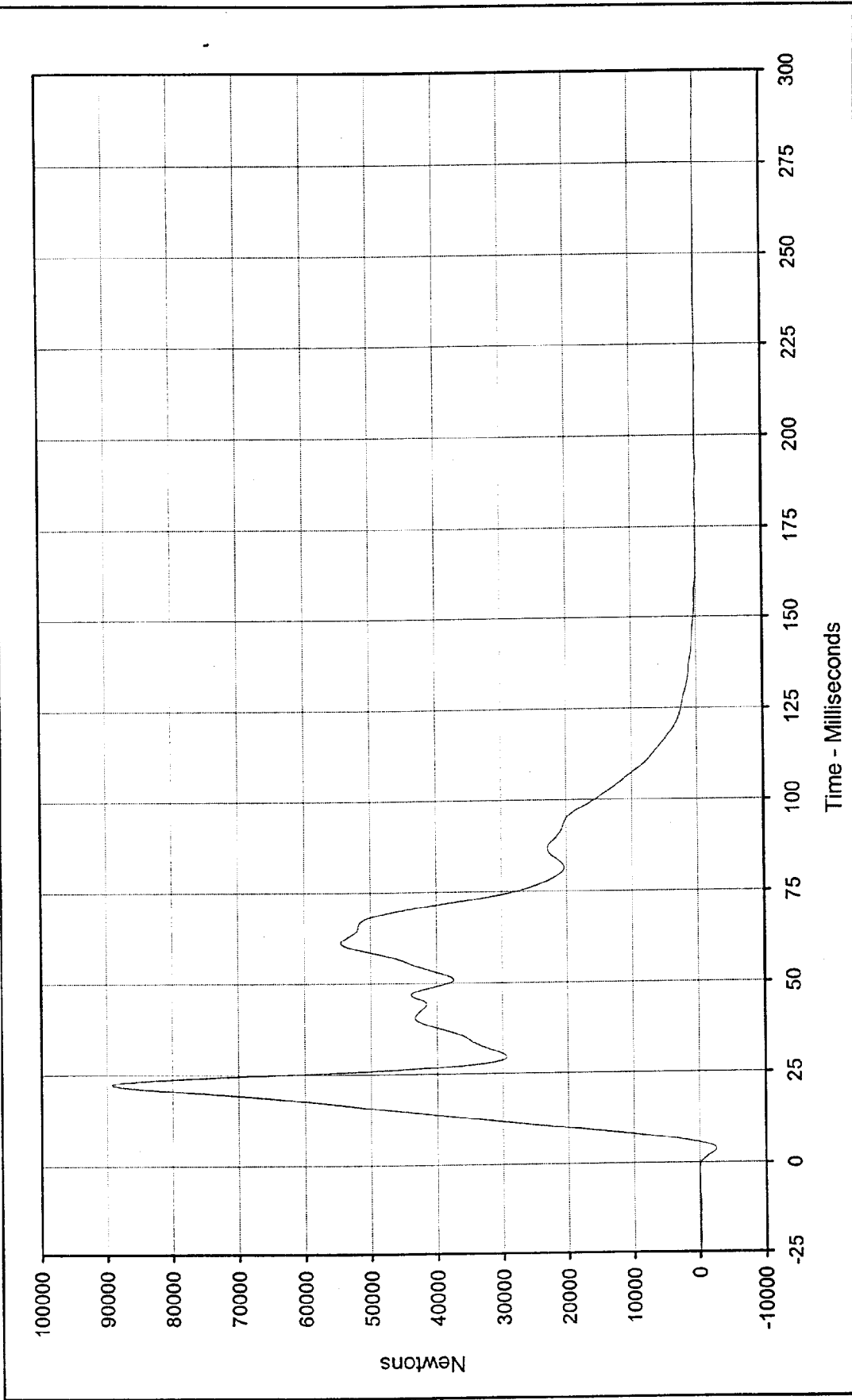
SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-123



Curve Description: Barrier Force C9  
 Maximum Value: 2662.4 at 22.7 Milliseconds  
 Minimum Value: -526.0 at 38.7 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: FIL-124

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan

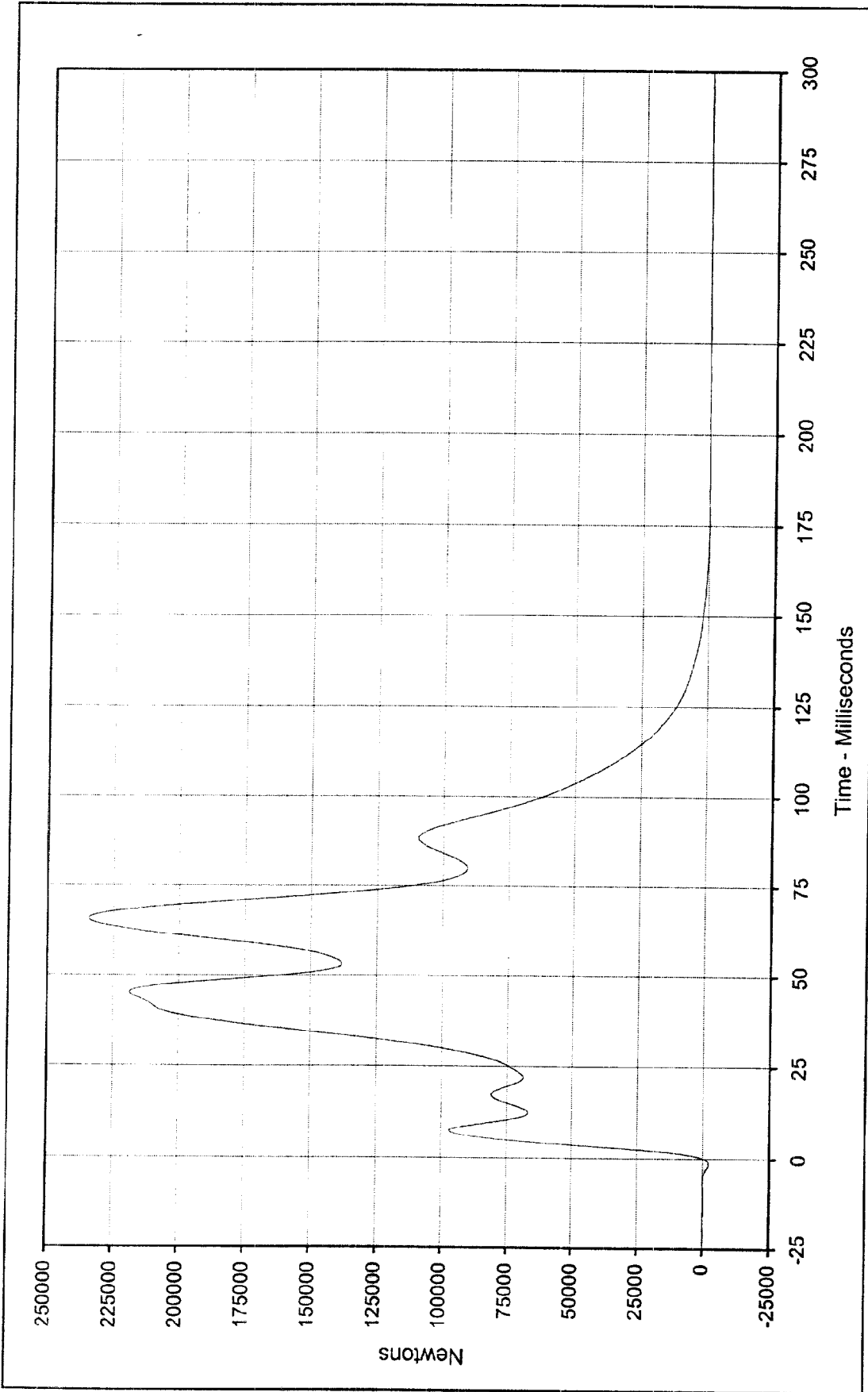




Curve Description: Barrier Force Sum No.1 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 89193.9 at 22.4 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -2506.9 at 3.8 Milliseconds

SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: SUM-001

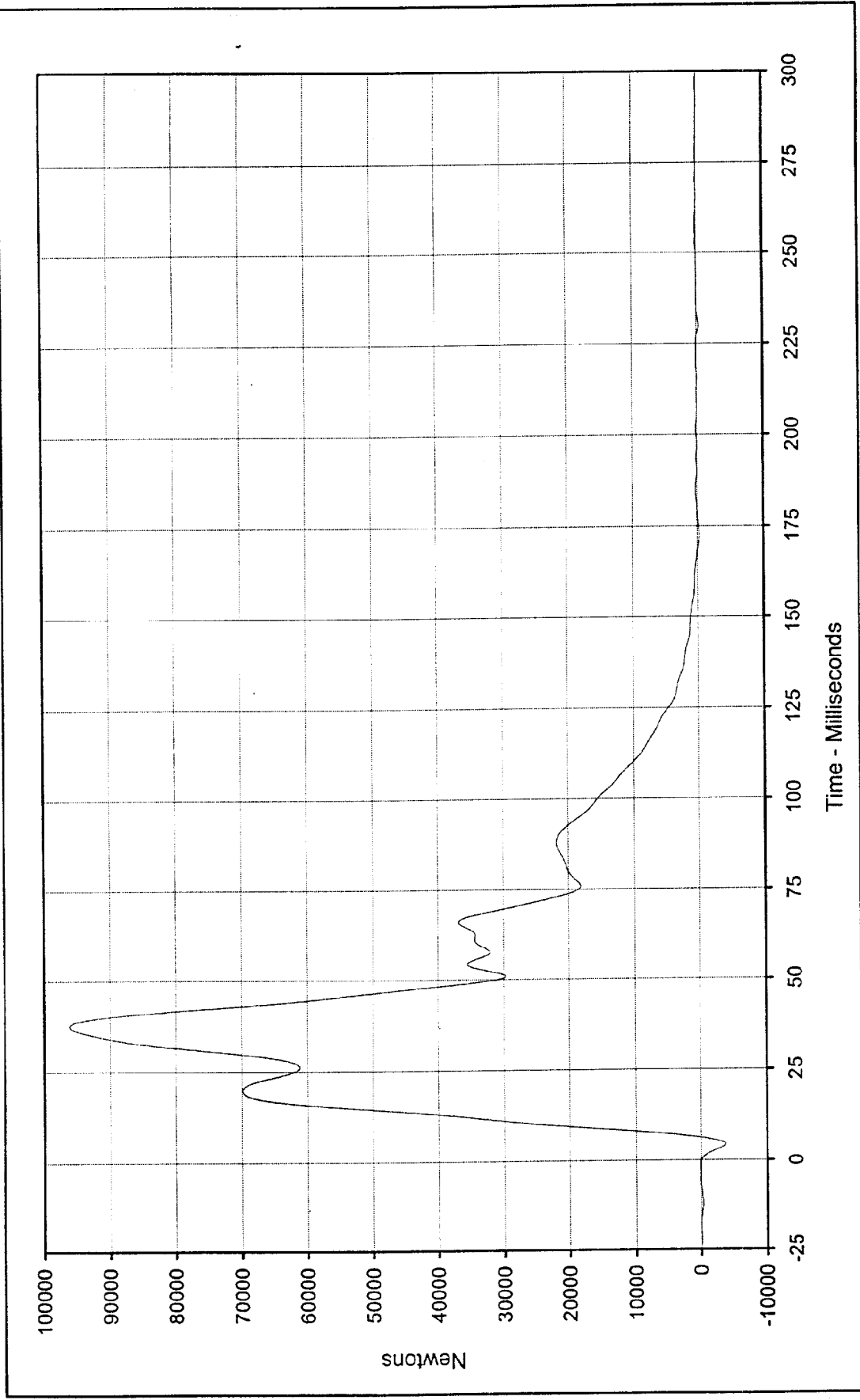




Curve Description: Barrier Force Sum No.2      Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 234388.7 at 65.9 Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -383.1 at 0.0 Milliseconds



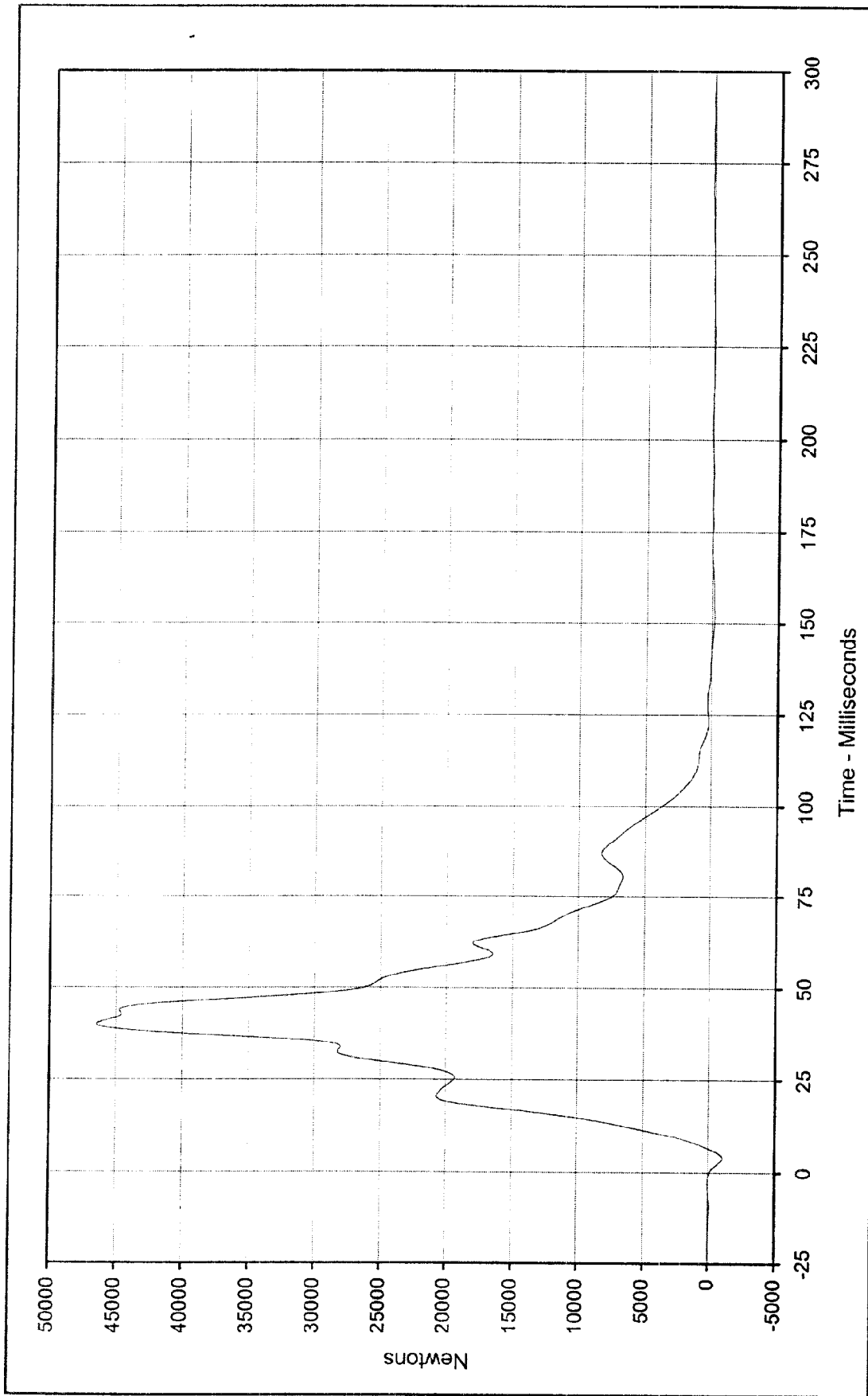
SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: SUM-002



Curve Description: Barrier Force Sum No.3 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 96158.7 at 37.6 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -37570.0 at 4.5 Milliseconds

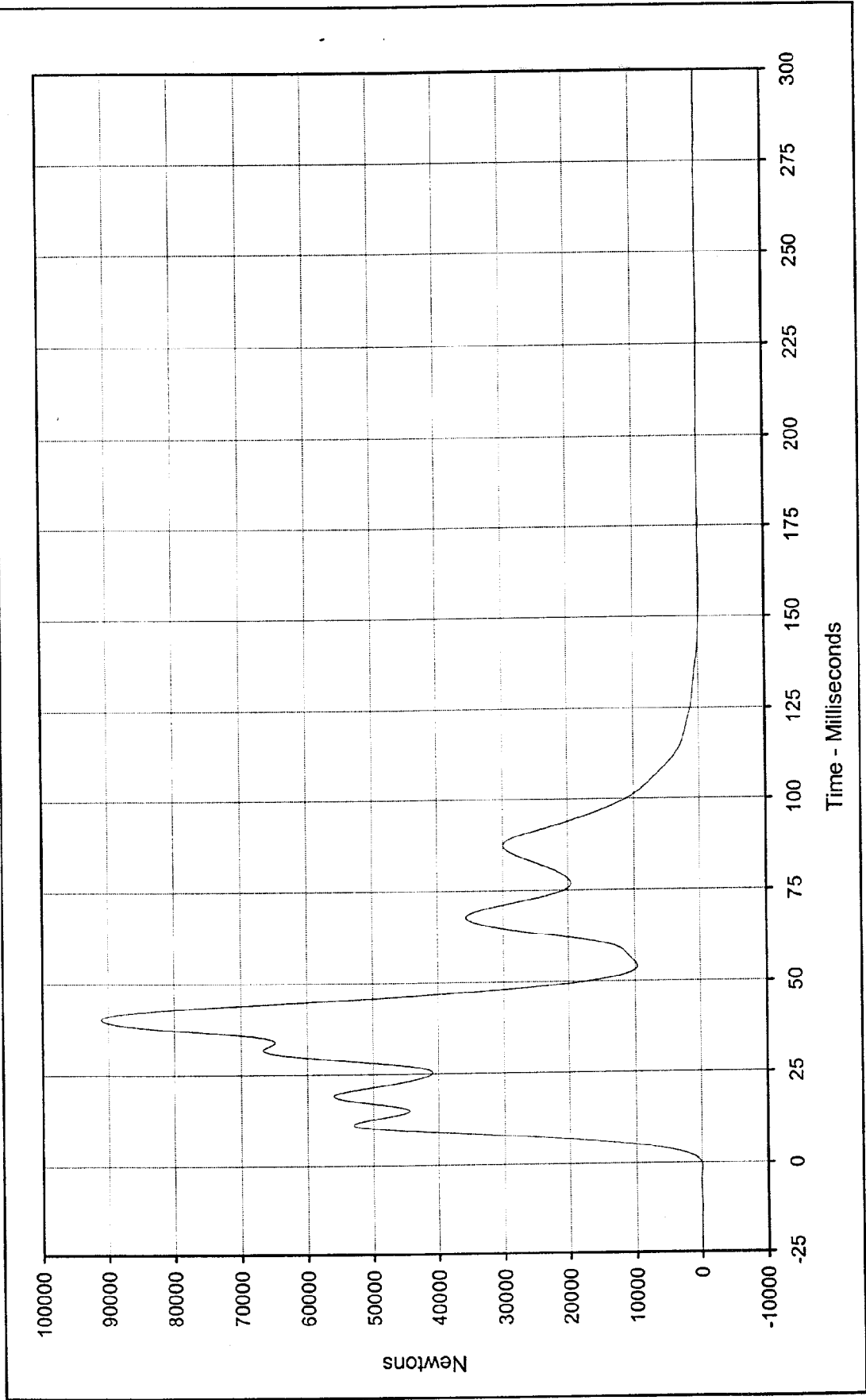


SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: SUM-003



Curve Description: Barrier Force Sum No.4      Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 46466.0 at 40.0 Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -1086.8 at 3.9 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: SUM-004

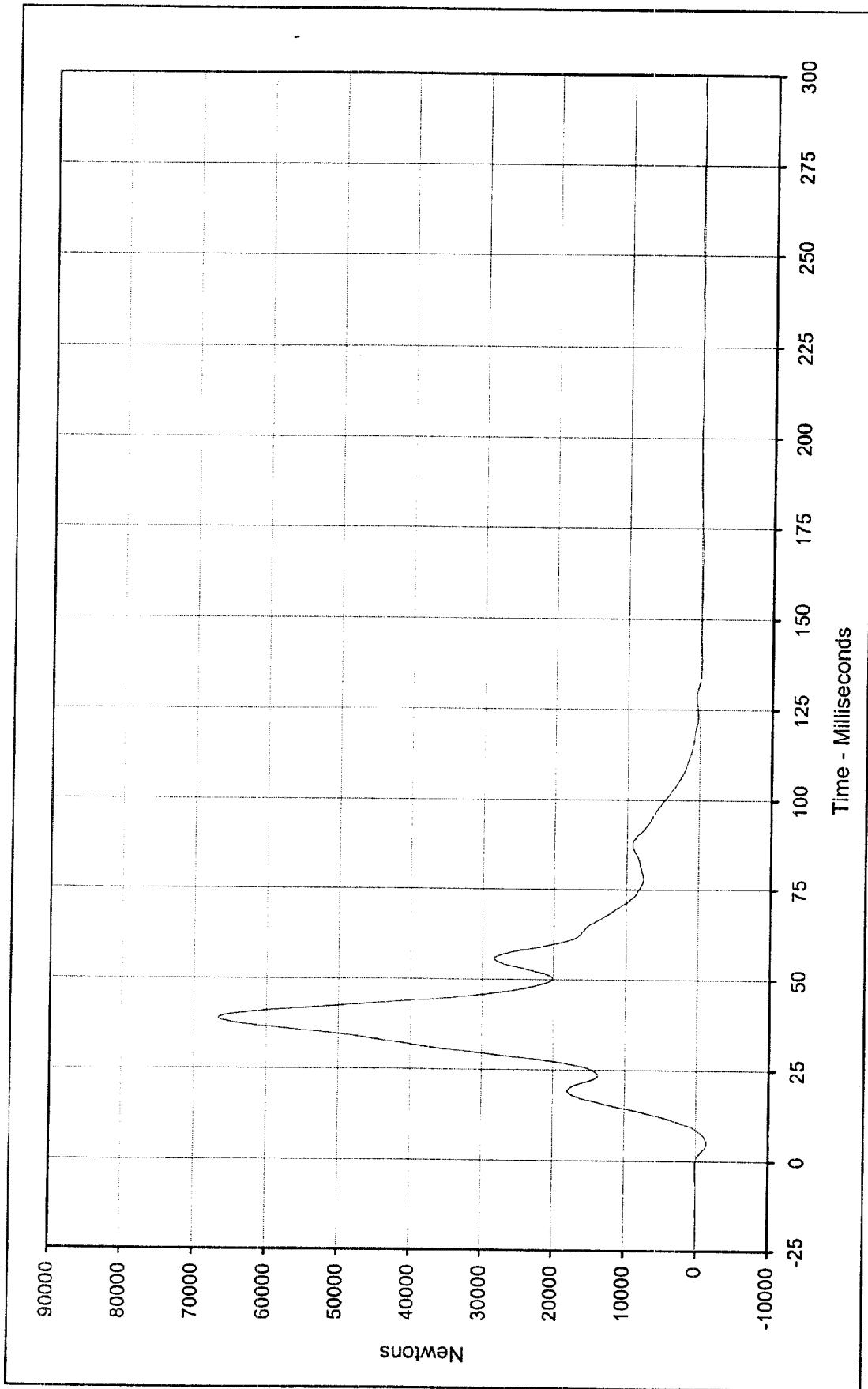




Curve Description: Barrier Force Sum No.5 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 91083.8 at 40.4 Milliseconds Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -187.0 at 155.3 Milliseconds

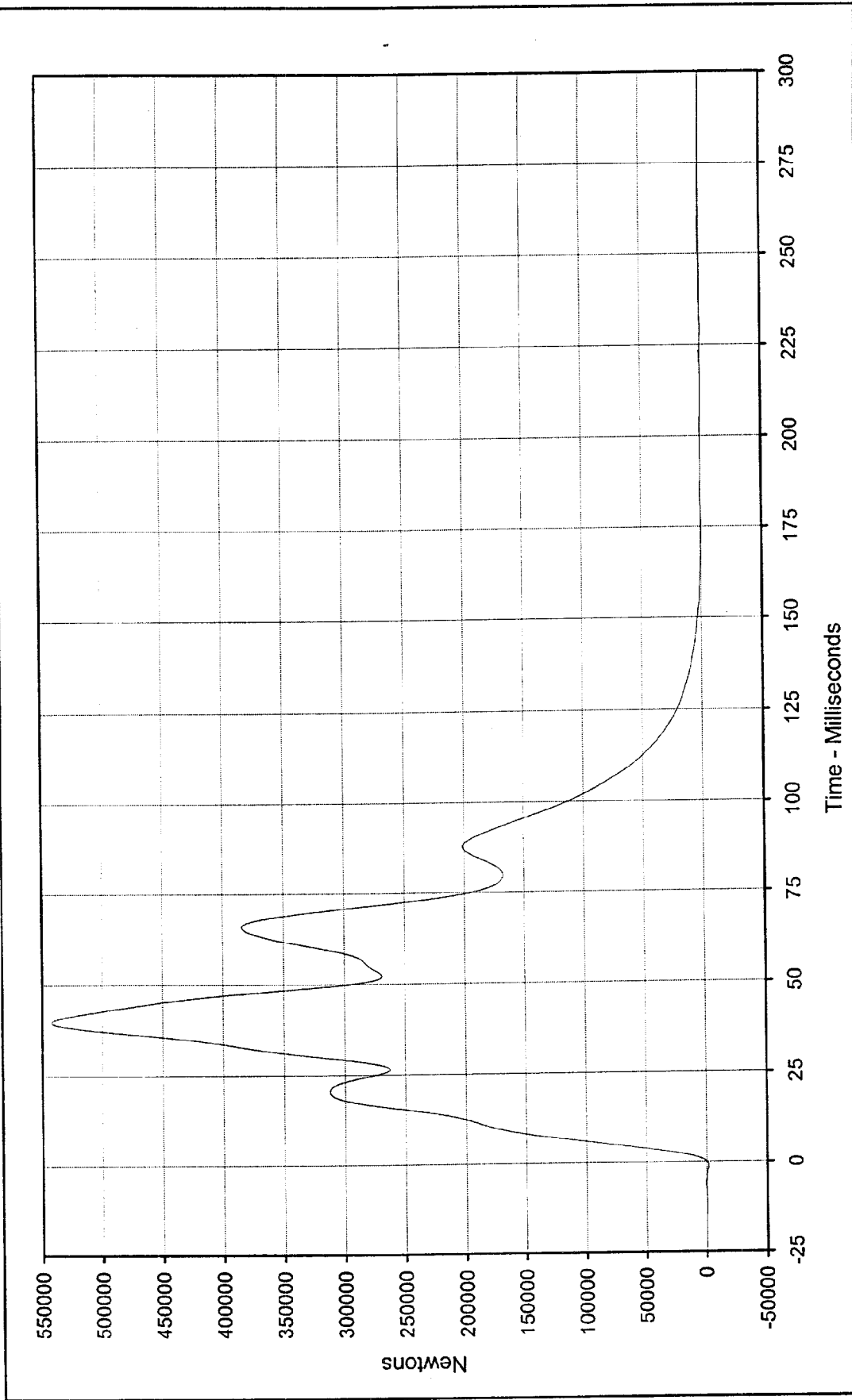


SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: SUM-005



Curve Description: Barrier Force Sum No.6      Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Value: 66669.5 at 39.0 Milliseconds      Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Minimum Value: -14799.8 at 4.9 Milliseconds  
 SAE Filler Class: 60  
 Date of Test: 1/22/99  
 Curve Number: SUM-006

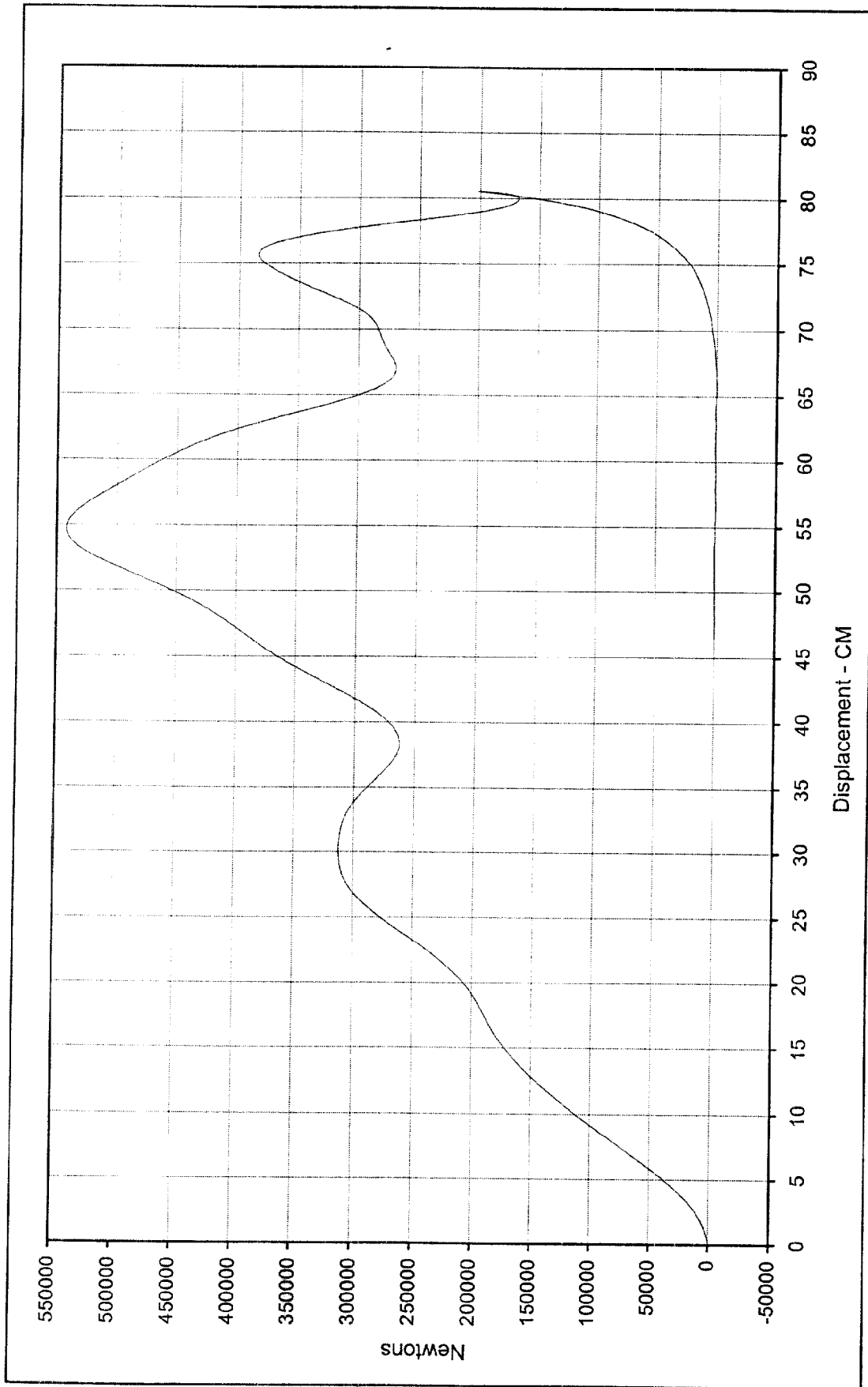




Curve Description: Barrier Force Sum Total  
 Maximum Value: 541894.5 at 39.9 Milliseconds  
 Minimum Value: -784.9 at 229.4 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/22/99  
 Curve Number: SUM-007

Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan





Curve Description: Sum Force Total vs. Dynamic Crush  
 Test Program: 1999 NHTSA 35 mph NCAP No.: MX0113  
 Maximum Displ.: 80.6 at 87.0 Milliseconds  
 Test Vehicle: 1999 Oldsmobile Intrigue 4 Door Sedan  
 Maximum Force: 541894.5 at 39.9 Milliseconds

SAE Filter Class: N/A  
 Date of Test: 1/22/99  
 Curve Number: XVY-001



## BARRIER LOAD CELL SUMMARY DATA

TEST VEHICLE: 1999 OLDSMOBILE INTRIGUE 4 DOOR SEDAN NHTSA No.: MX0113

TEST PROGRAM: 1999 NHTSA 35 MPH NCAP TEST DATE: 1/22/99

### BARRIER LOAD CELL PEAK FORCES

Location	Units	Max	Time	Min	Time
Barrier Force A2	Newtons	5268.6	60.8	-536.7	44.6
Barrier Force A3	Newtons	5123.8	47.3	-841.0	3.9
Barrier Force A4	Newtons	36694.7	63.1	-1163.1	3.6
Barrier Force A5	Newtons	27130.7	47.0	-1332.9	3.9
Barrier Force A6	Newtons	31236.7	46.3	-1106.9	3.6
Barrier Force A7	Newtons	5540.2	66.1	-936.1	4.0
Barrier Force A8	Newtons	4942.9	40.0	-560.8	4.8
Barrier Force A9	Newtons	2926.2	52.1	-519.7	6.0
Barrier Force B2	Newtons	36752.4	22.2	-509.6	4.5
Barrier Force B3	Newtons	50405.2	22.3	-986.7	3.5
Barrier Force B4	Newtons	79353.1	65.0	-535.2	0.0
Barrier Force B5	Newtons	21866.9	40.5	-118.5	175.8
Barrier Force B6	Newtons	105301.5	40.3	-495.4	0.0
Barrier Force B7	Newtons	73995.0	36.3	-1136.5	4.0
Barrier Force B8	Newtons	16020.8	37.5	-847.8	5.0
Barrier Force B9	Newtons	1065.5	61.2	-548.6	7.0
Barrier Force C2	Newtons	22990.9	44.8	-397.3	4.4
Barrier Force C3	Newtons	27457.7	38.8	-709.3	3.7
Barrier Force C4	Newtons	27840.8	40.2	-170.1	0.0
Barrier Force C5	Newtons	38228.8	41.2	-61.5	143.7
Barrier Force C6	Newtons	26352.7	38.8	-118.4	0.7
Barrier Force C7	Newtons	39992.2	36.9	-819.3	4.2
Barrier Force C8	Newtons	30773.5	40.6	-471.6	5.2
Barrier Force C9	Newtons	2662.4	38.7	-526.0	22.7
Barrier Force Sum No.1	Newtons	89193.9	22.4	-2506.9	3.8
Barrier Force Sum No.2	Newtons	234388.7	65.9	-383.1	0.0
Barrier Force Sum No.3	Newtons	96158.7	37.6	-3757.0	4.5
Barrier Force Sum No.4	Newtons	46466.0	40.0	-1086.8	3.9
Barrier Force Sum No.5	Newtons	91083.8	40.4	-187.0	155.3
Barrier Force Sum No.6	Newtons	66669.5	39.0	-1479.8	4.9
Barrier Force Sum Total	Newtons	541894.5	39.9	-784.9	229.4

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

**APPENDIX D**  
**INSTRUMENTATION DATA CHANNEL ASSIGNMENTS**

KAR99001-11

1999 NHTSA 35 mph NCAP  
Instrumentation Data Channel Assignments  
Driver A.T.D Serial Number 34  
1/22/99

1999 Oldsmobile Intrigue 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	7264-2000	G
17	CHEST , REDUNDANT	Y	KEAC022	Accel., 1/2 bridge	Endevco	7264-2000	G
18	CHEST , REDUNDANT	Z	KEAC024	Accel., 1/2 bridge	Endevco	7264-2000	G
19	CHEST DISPLACEMENT	X	GPCP001	Rotary Pot Chest	Servo	14CBI	MM
20	PELVIS, PRIMARY	X	KEAC019	Accel., 1/2 bridge	Endevco	7264-2000	G
21	PELVIS, PRIMARY	Y	KEAC020	Accel., 1/2 bridge	Endevco	7264-2000	G
22	PELVIS, PRIMARY	Z	KEAC021	Accel., 1/2 bridge	Endevco	7264-2000	G
23	LEFT FEMUR FORCE	Z	KEFF002	Load cell, Femur	R.A. Denton	2121	N
24	RIGHT FEMUR FORCE	Z	KEFF003	Load cell, Femur	R.A. Denton	2121	N

1999 NHTSA 35 mph NCAP  
Instrumentation Data Channel Assignments  
Driver A.T.D Serial Number 34  
1/22/99

1999 Oldsmobile Intrigue 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	Celesco	PTX101-0030	MM
44	SHOULDER BELT ELONG.	X	KEEP001	Linear pot., belt stretch	E.T.I.	LCP8-10 10K	MM/CM

**1999 NHTSA 35 mph NCAP  
Instrumentation Data Channel Assignments  
Driver A.T.D Serial Number 35  
1/22/99**

**1999 Oldsmobile Intrigue 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	KEFF001	Load cell, Femur	R.A. Denton	2121	N
68	RIGHT FEMUR FORCE	Z	GPLC001	Load cell, Femur	G.S.E.	2430	N

1999 NHTSA 35 mph NCAP  
Instrumentation Data Channel Assignments  
Driver A.T.D Serial Number 35  
1/22/99

1999 Oldsmobile Intrigue 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	GPLT09MX	3 ch., lower tibia gage	R. A. Denton	3093	Nm
74	LWR. TIBIA LEFT MOM.	Y	GPLT09MY	3 ch., lower tibia gage	R. A. Denton	3093	Nm
75	LWR. TIBIA LEFT FORCE	Z	GPLT09FZ	3 ch., lower tibia gage	R. A. Denton	3093	N
76	LWR. TIBIA RIGHT MOM.	X	GPLT09MX	3 ch., lower tibia gage	R. A. Denton	3093	Nm
77	LWR. TIBIA RIGHT MOM.	Y	GPLT09MY	3 ch., lower tibia gage	R. A. Denton	3093	Nm
78	LWR. TIBIA RIGHT FORCE	Z	GPLT09FZ	3 ch., lower tibia gage	R. A. Denton	3093	N
79	FOOT LEFT	X	KEIC002X	Accel., Foot Triax	I.C. Sensor	3031-500	G
80	FOOT LEFT	Y	KEIC002Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
81	FOOT LEFT	Z	KEIC002Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
82	FOOT RIGHT	X	KEIC001X	Accel., Foot Triax	I.C. Sensor	3031-500	G
83	FOOT RIGHT	Y	KEIC001Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
84	FOOT RIGHT	Z	KEIC001Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
85	LAP BELT FORCE	X	KELC003	Load cell, Seat belt	Lebow	3371	N
86	SHOULDER BELT FORCE	X	KELC004	Load cell, Seat belt	Lebow	3371	N
87	SHOULDER BELT SPOOL	X	KEPP001	Pullout pot	Celesco	PTX101-0030	CM
88	SHOULDER BELT ELONG.	X	KEEP001	Linear pot., belt stretch	E.T.I.	LCP8-10 10K	MM/CM

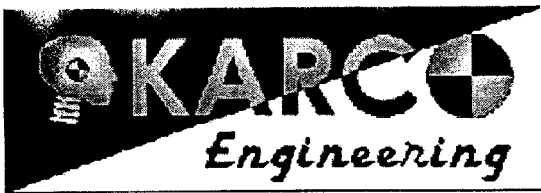
1999 NHTSA 35 mph NCAP  
Instrumentation Data Channel Assignments  
Vehicle Accelerometers  
1/22/99  
1999 Oldsmobile Intrigue 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
89	Left Rear X-Member (Pri.)	X	KEVA005	Accel., Vehicle block	I.C. Sensor	3031-500	G
90	Right Rear X-Member (Pri.)	X	KEVA006	Accel., Vehicle block	I.C. Sensor	3031-200	G
91	Engine Top	X	KEVA011	Accel., Vehicle block	I.C. Sensor	3031-200	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	KEVA009	Accel., Vehicle block	I.C. Sensor	3031-500	G
95	Instrument Panel	X	KEVA004	Accel., Vehicle block	I.C. Sensor	3031-500	G
96	Left Rear X-Member (Rednt.)	X	KEVA010	Accel., Vehicle block	I.C. Sensor	3031-200	G

APPENDIX E  
DUMMY CALIBRATION DATA

KAR99001-11

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# Hybrid III Calibration Data Sheet

## 50<sup>TH</sup> Percentile Male

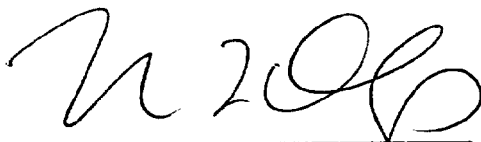
### Left Knee Impact Test

ATD Serial No.: 34

Part Serial No.: N/A

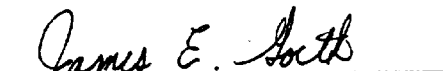
Test I.D.: KI01A

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	2.093	Pass
Peak Probe Force	Newtons	4715 to 5782	5498.6	Pass
Overall Test Results				Pass

  
\_\_\_\_\_  
Laboratory Technician

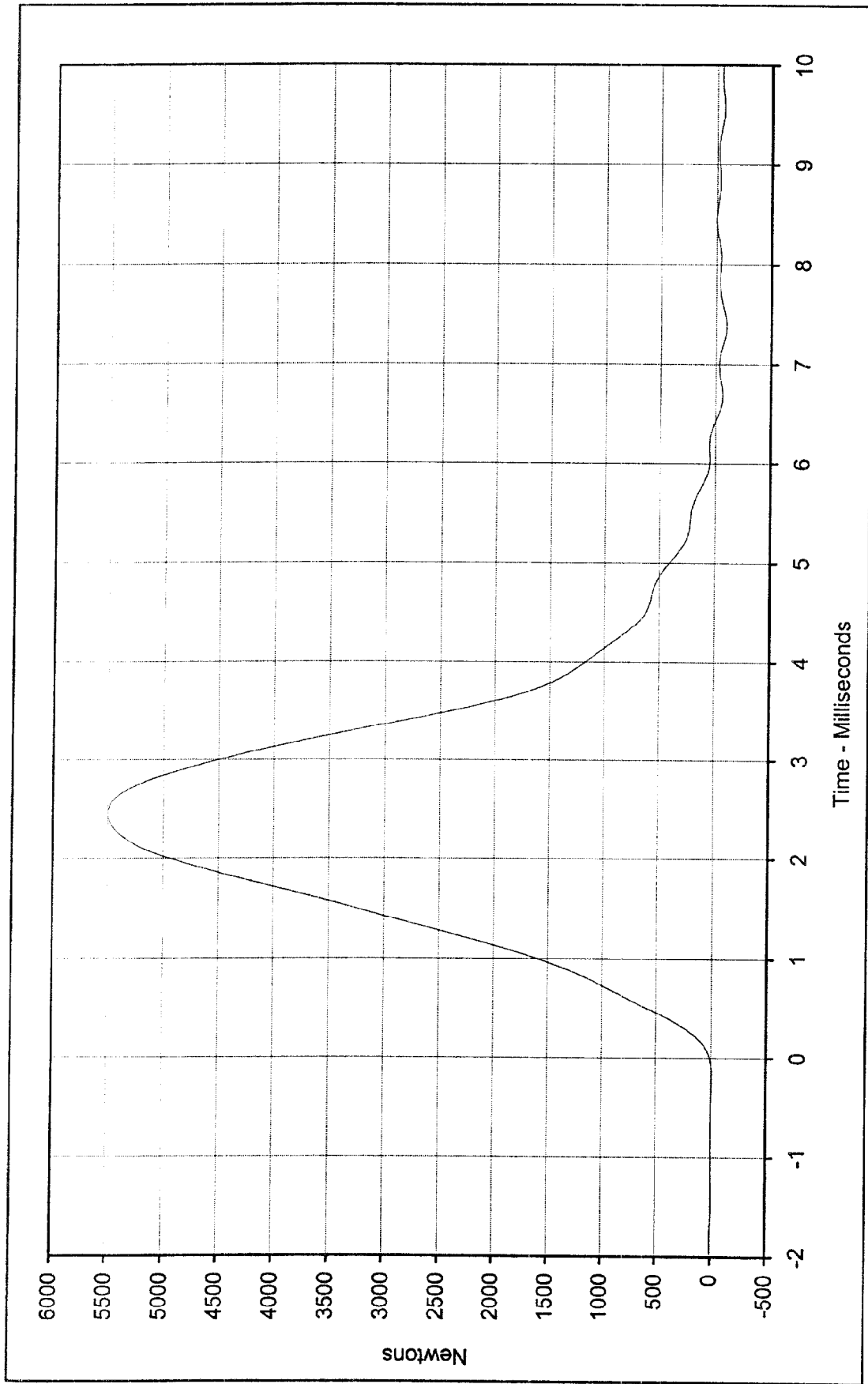
January 17, 1999

Test Date

  
\_\_\_\_\_  
Approved By

1/21/99

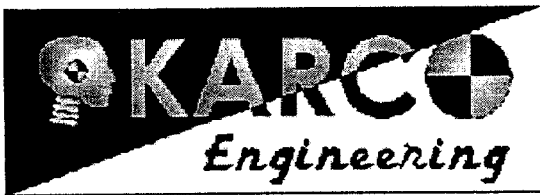
Date



Curve Description: Hybrid III Left Knee Impact Test  
 Testing Program: Hybrid III Left Knee Impact Test  
 Part S/N: N/A Test I.D.: KI01A

Probe Force  
 Maximum Value: 5498.6 at 2.5 Milliseconds  
 Minimum Value: -93.9 at 7.4 Milliseconds  
 SAE Filter Class: 600  
 Date of Test: 1/17/99  
 ATD Serial No.: 34





# Hybrid III Calibration Data Sheet

## 50<sup>TH</sup> Percentile Male

### Right Knee Impact Test

ATD Serial No.: 34

Part Serial No.: N/A

Test I.D.: KI01B

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	2.100	Pass
Peak Probe Force	Newtons	4715 to 5782	5483.8	Pass
Overall Test Results				Pass

Laboratory Technician

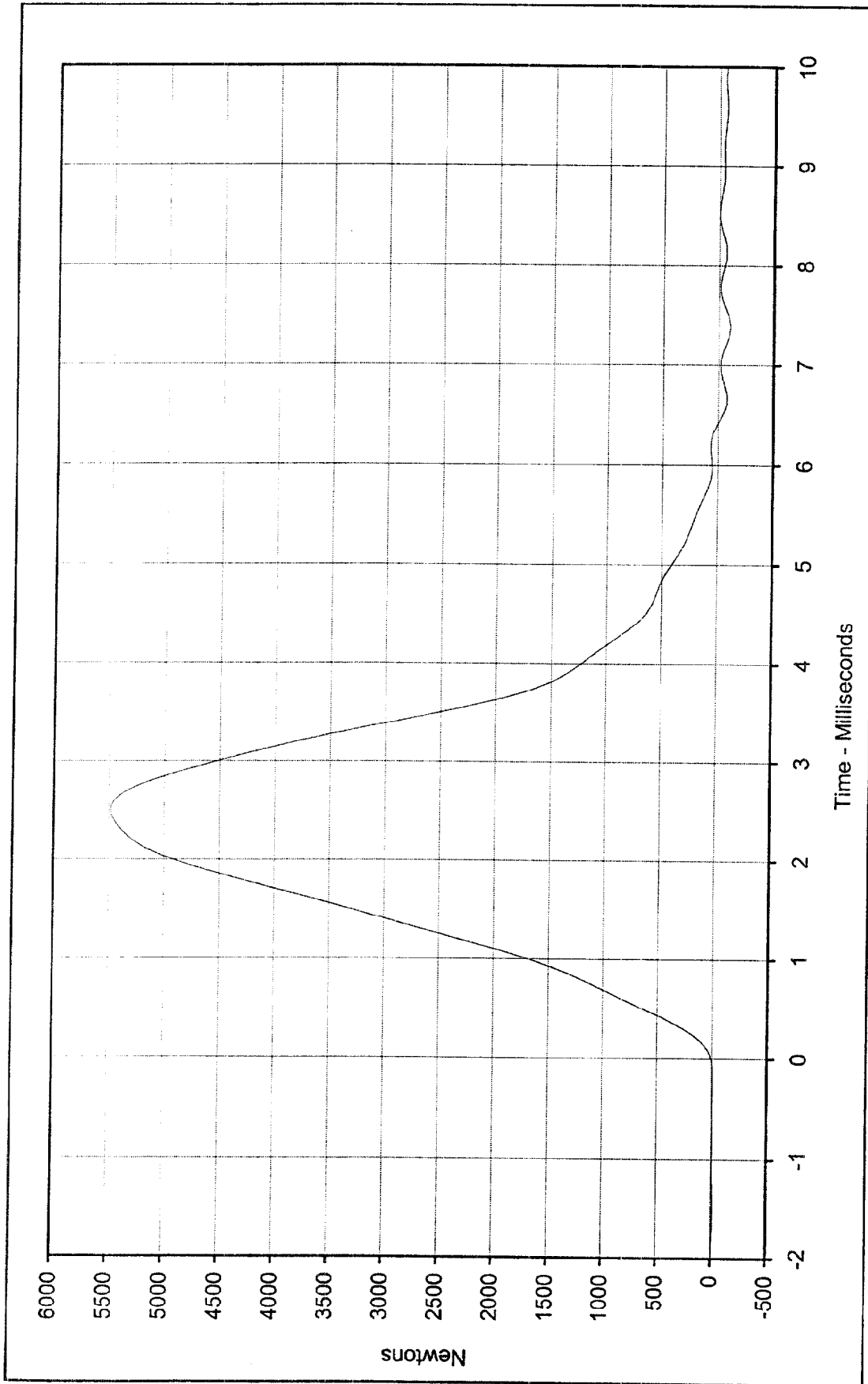
January 17, 1999

Test Date

Approved By

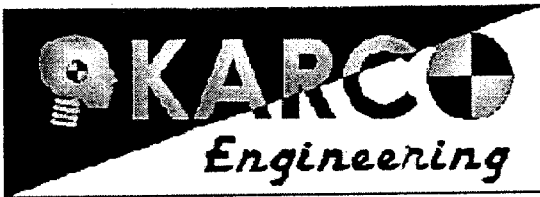
1/21/99

Date



Curve Description: Hybrid III Right Knee Impact Test  
 Testing Program: Hybrid III Right Knee Impact Test  
 Part S/N: N/A Test I.D.: KI01B  
 Maximum Value: 5483.8 at 2.5 Milliseconds  
 Minimum Value: -104.3 at 7.4 Milliseconds  
 SAE Filter Class: 600  
 Date of Test: 1/17/99  
 ATD Serial No.: 34





# Hybrid III Calibration Data Sheet

## 50<sup>TH</sup> Percentile Male


### Head Drop Calibration

ATD Serial No.: 034

Part Serial No.: n/a


Test I.D.: HD01A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	31	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	253.8	Pass
Peak Lateral Acceleration	G's	≤15.0	4.1	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

  
\_\_\_\_\_  
Laboratory Technician

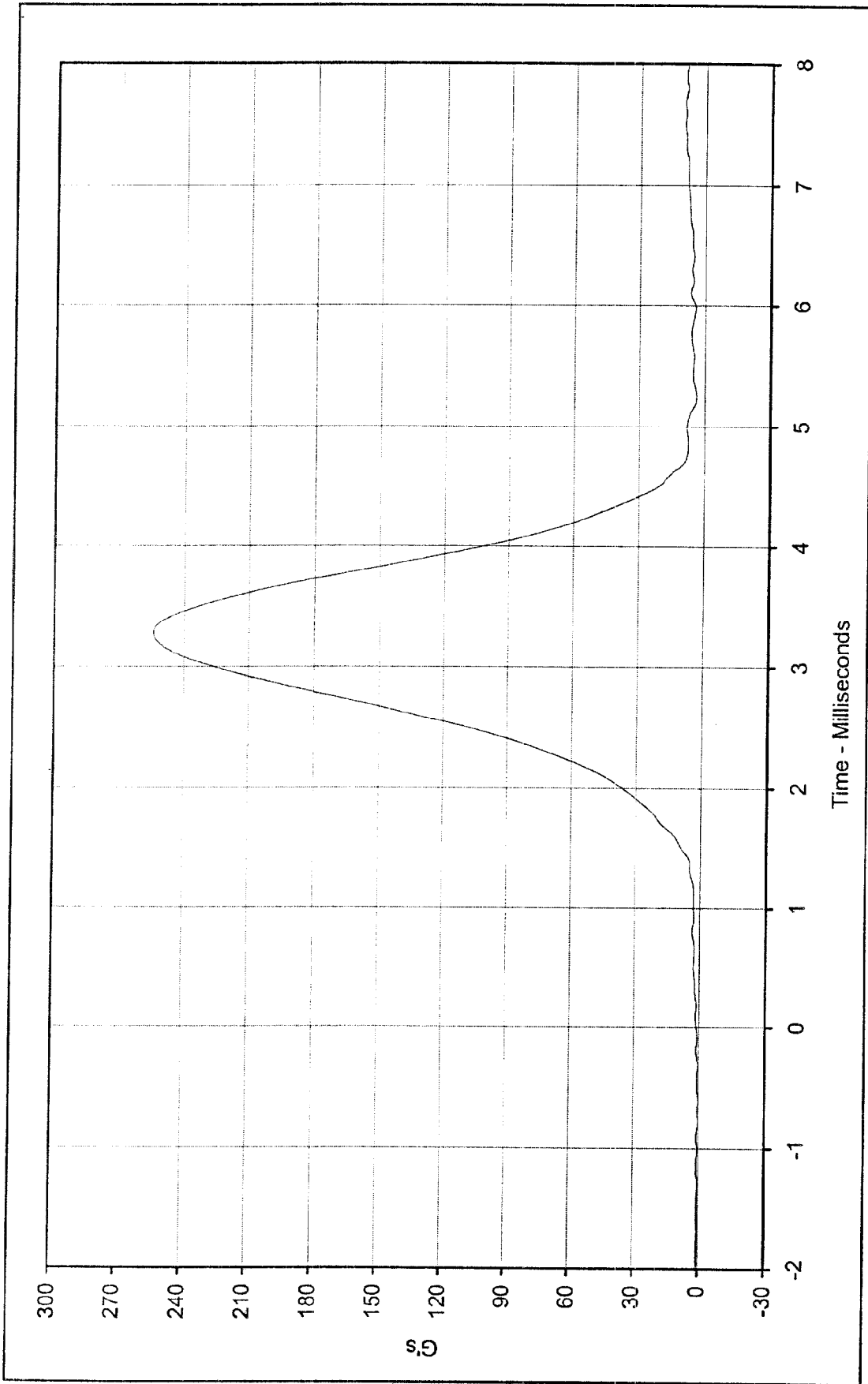
January 17, 1999

Test Date

  
\_\_\_\_\_  
Approved By

1/21/99

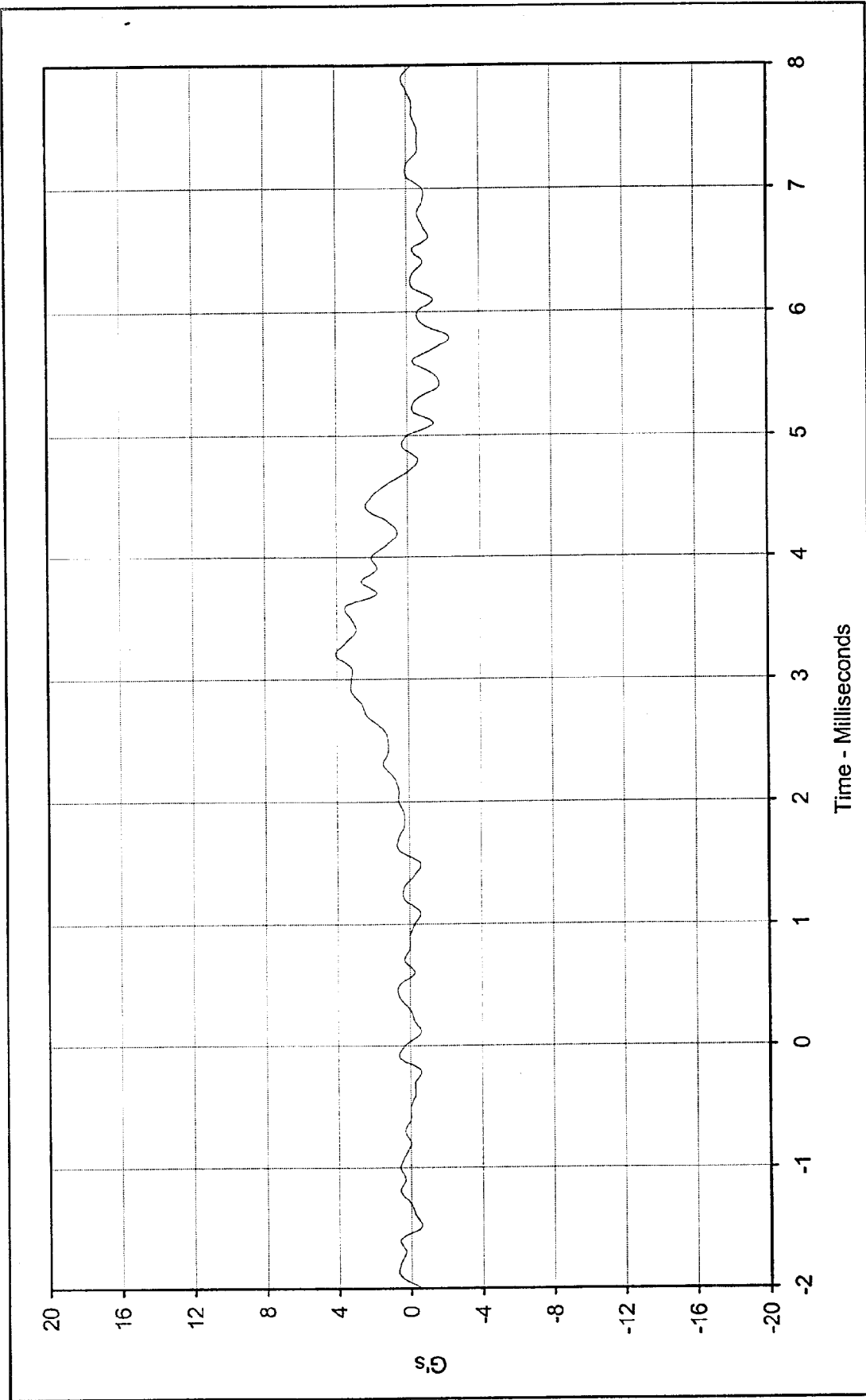
Date



Curve Description: Head Resultant Acceleration  
 Maximum Value: 253.8 at 3.3 Milliseconds  
 Minimum Value: 0.3 at -0.8 Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/17/99  
 ATD Serial No.: 034

Testing Program: Hybrid III Head Drop Calibration (Male)  
 Test Information: S/N of Part: n/a Test I.D.: HD01A

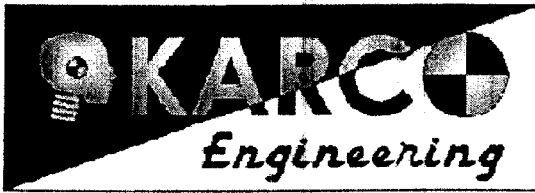




Curve Description: Head Acceleration Y Axis  
 Testing Program: Hybrid III Head Drop Calibration (Male)  
 Maximum Value: 4.1 at 3.2 Milliseconds  
 Test Information: S/N of Part: n/a Test I.D.: HD01A  
 Minimum Value: -2.3 at 5.8 Milliseconds



SAE Filter Class: 1000  
 Date of Test: 1/17/99  
 ATD Serial No.: 034



# Hybrid III Calibration Data Sheet

## 50<sup>TH</sup> Percentile Male

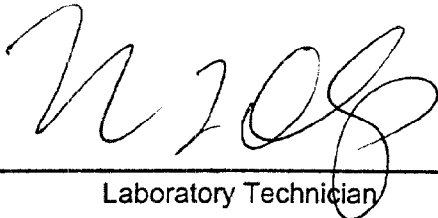
### Thorax Impact Test

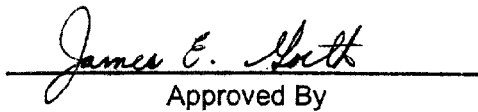
ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: CH13A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.9	Pass
Laboratory Relative Humidity	%	10 to 70	36	Pass
Probe Velocity	m/s	6.58 to 6.82	6.80	Pass
Peak Probe Force	Newtons	5159 to 5893	5752	Pass
Peak Sternum Displacement	CM	6.35 to 7.26	6.40	Pass
Internal Hysteresis	%	69 to 85	74.5	Pass
Overall Test Results				Pass

  
\_\_\_\_\_  
Laboratory Technician

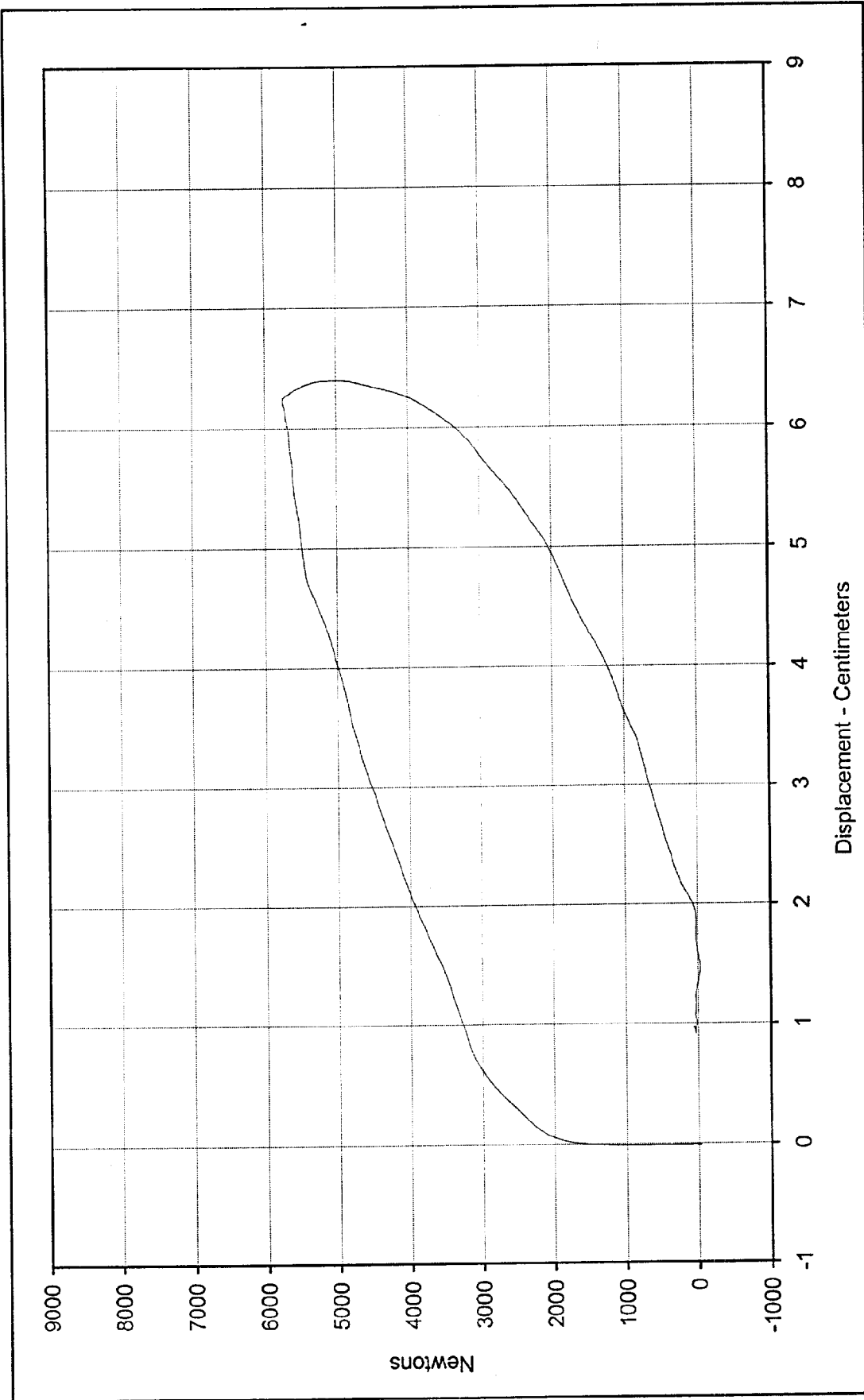
  
\_\_\_\_\_  
Approved By

January 15, 1999

Test Date

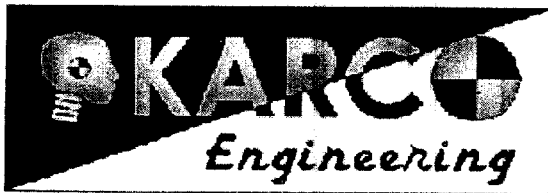
1/21/99

Date



Curve Description: Probe Force vs. Chest Displacement      Testing Program: Hybrid III Thorax Impact Test  
 Probe Force: 5752.0 Newtons      Test Information: SIN of Part: N/A      Test I.D.: CH13A  
 Chest Displ.: 6.40 Centimeters  
 SAE Filter Class: 180  
 Date of Test: 1/15/99  
 ATD Serial No.: 034





# Hybrid III Calibration Data Sheet

## 50<sup>TH</sup> Percentile Male

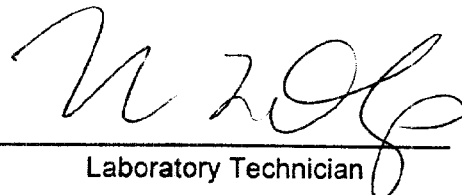
### Neck Flexion Test

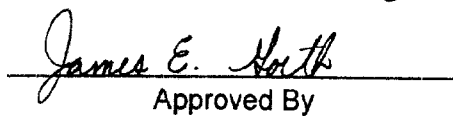
ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: NF01A

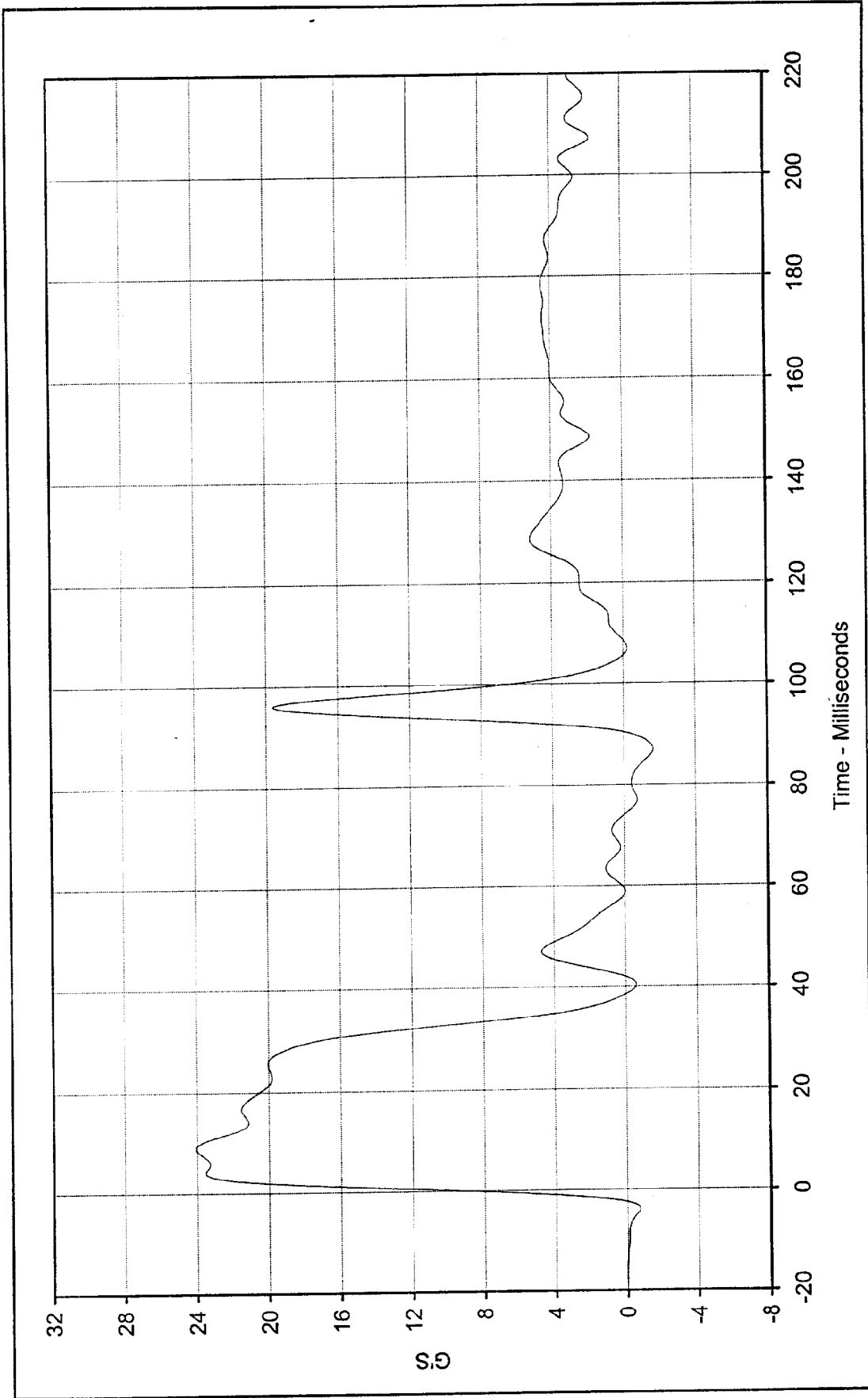
Tested Parameter	Units	Specification	Result	Pass/Fail	
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass	
Laboratory Relative Humidity	%	10 to 70	39	Pass	
Pendulum Velocity	m/s	6.89 to 7.13	6.96	Pass	
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	23.8	Pass
	20 Msec.	G's	17.6 to 22.6	20.5	Pass
	30 Msec.	G's	12.5 to 18.5	17.2	Pass
Peak Pendulum Decel. after 30 Msec.	G's	≤ 29.0	19.6	Pass	
Deceleration Decay, Time to Cross 5 G's	Msec.	34.0 to 42.0	34.4	Pass	
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	75.1	Pass
	Time	Msec.	57.0 to 64.0	63.9	Pass
"D" Plane Rotation Decay, Time To Zero Crossing	Msec.	113.0 to 128.0	122.5	Pass	
Moment About Occipital Condyle	Maximum	N • m	84.1 to 108.5	85.0	Pass
	Time	Msec.	47.0 to 58.0	54.2	Pass
Positive Moment Decay, Time To Zero Crossing	Msec.	97.0 to 107.0	99.5	Pass	
Overall Test Results				Pass	

  
 Laboratory Technician

  
 Approved By

January 16, 1999  
 Test Date

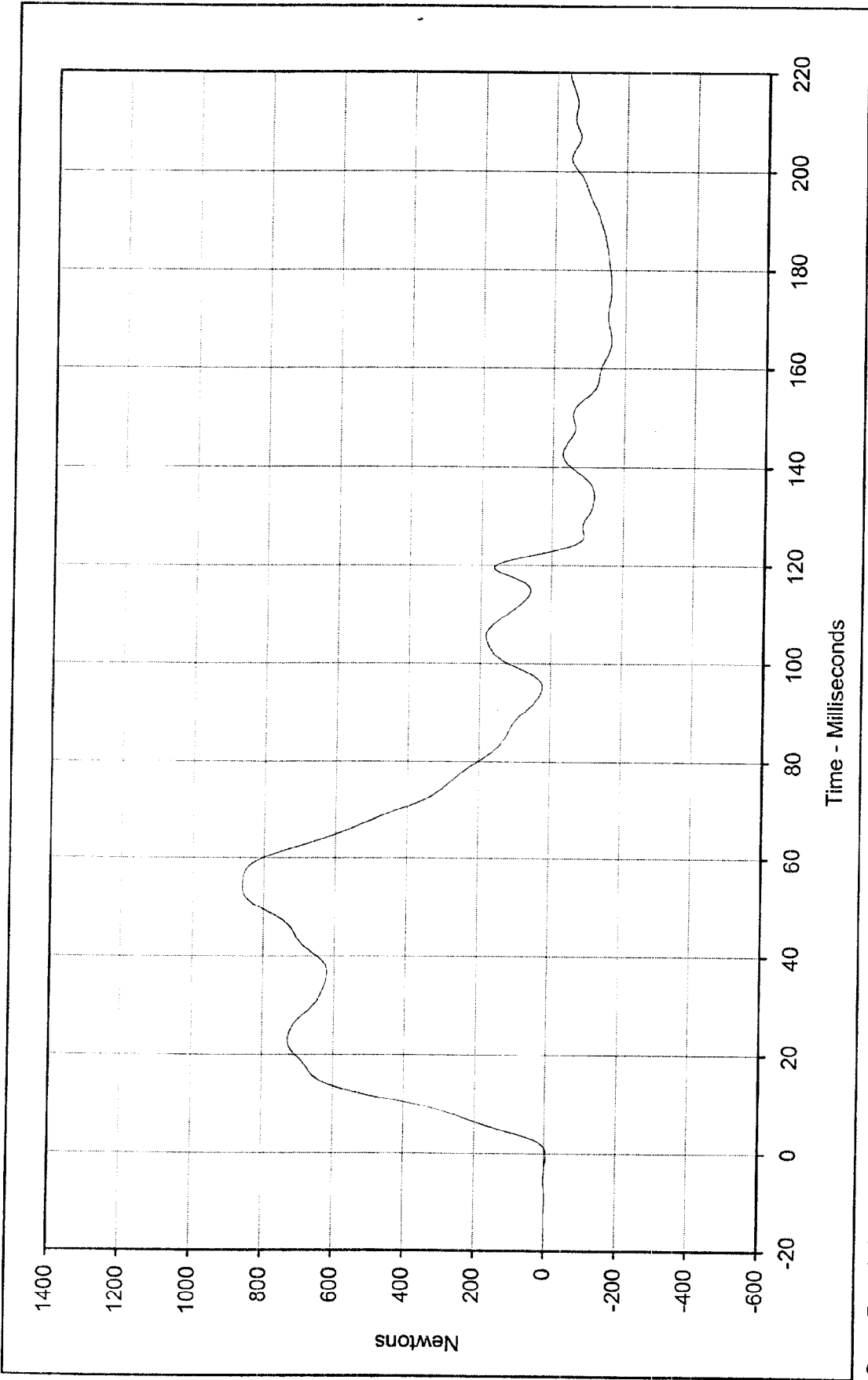
1/21/99  
 Date



Curve Description: Hybrid III Neck Flexion Test (Male)  
 Testing Program: S/N of Part: N/A Test I.D.: NF01A

Pendulum Deceleration  
 Maximum Value: 24.1 at 9.0 Milliseconds  
 Minimum Value: -1.6 at 87.0 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/16/99  
 ATD Serial No.: 034

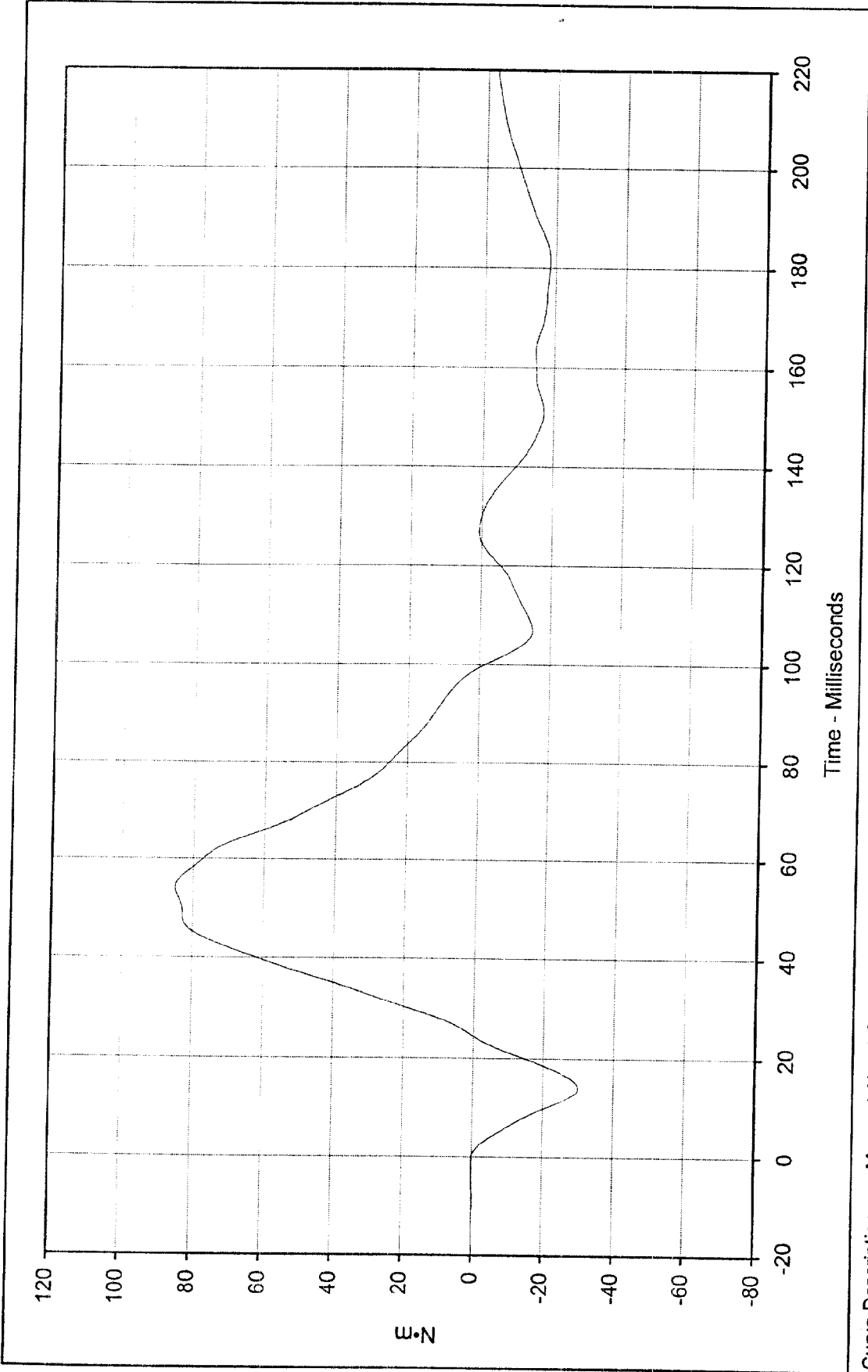




Curve Description: Neck Force X  
 Testing Program: Hybrid III Neck Flexion Test (Male)  
 Maximum Value: 860.6 at 54.3 Milliseconds  
 Minimum Value: -161.2 at 165.6 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/16/99  
 ATD Serial No.: 034  
 Test Information: S/N of Part: N/A Test I.D.: NF01A



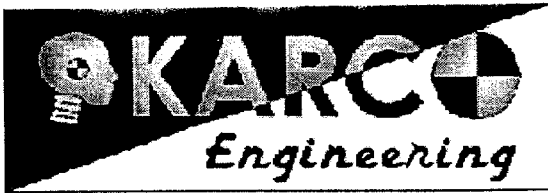




Curve Description: Moment About Occipital Condyles  
 Maximum Value: 85.0 at 54.2 Milliseconds  
 Minimum Value: -29.9 at 14.0 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/16/99  
 ATD Serial No.: 034

Testing Program Hybrid III Neck Flexion Test (Male)  
 Test Information: S/N of Part: N/A Test I.D.: NF01A





# Hybrid III Calibration Data Sheet

## - 50<sup>TH</sup> Percentile Male

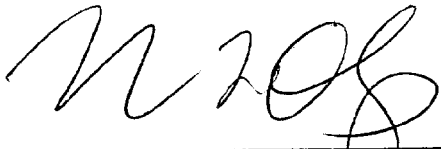
### Neck Extension Test

ATD Serial No.: 034

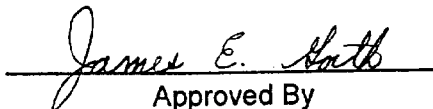
Part Serial No.: N/A

Test I.D.: NE01A

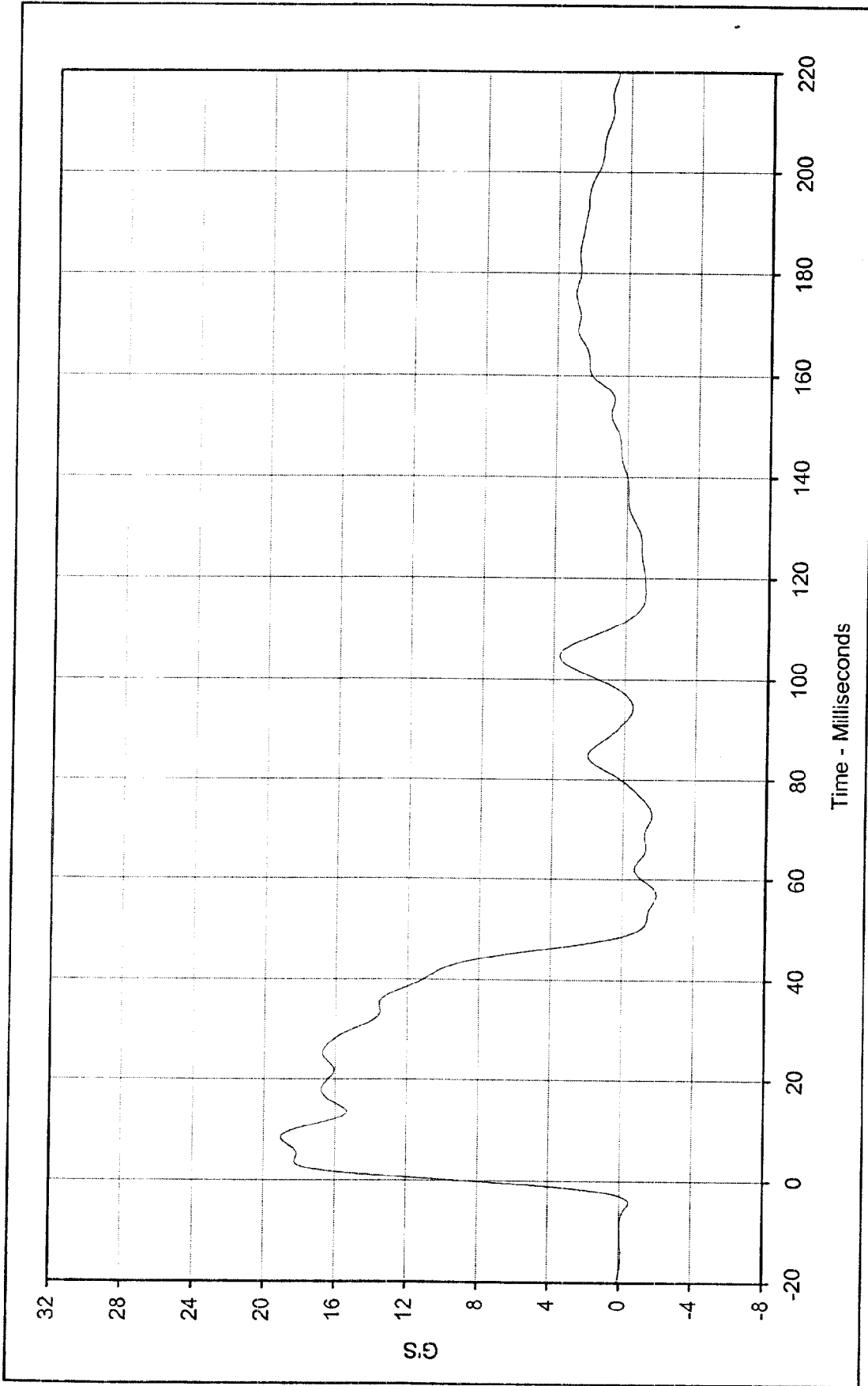
Tested Parameter	Units	Specification	Result	Pass/Fail	
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass	
Laboratory Relative Humidity	%	10 to 70	36	Pass	
Pendulum Velocity	m/s	5.95 to 6.19	6.15	Pass	
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	18.3	Pass
	20 Msec.	G's	14.0 to 19.0	16.4	Pass
	30 Msec.	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	45.7	Pass	
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	92.8	Pass
	Time	Msec.	72.0 to 82.0	76.8	Pass
"D" Plane Rotation Decay, Time To Zero Crossing	Msec.	147.0 to 174.0	151.2	Pass	
Moment About Occipital Condyle	Maximum	N • m	-52.9 to- 79.9	-69.5	Pass
	Time	Msec.	65.0 to 79.0	65.3	Pass
Negative Moment Decay, Time To Zero Crossing	Msec.	120.0 to 148.0	139.8	Pass	
Overall Test Results				Pass	

  
 \_\_\_\_\_  
 Laboratory Technician

January 16, 1999  
 \_\_\_\_\_  
 Test Date

  
 \_\_\_\_\_  
 Approved By

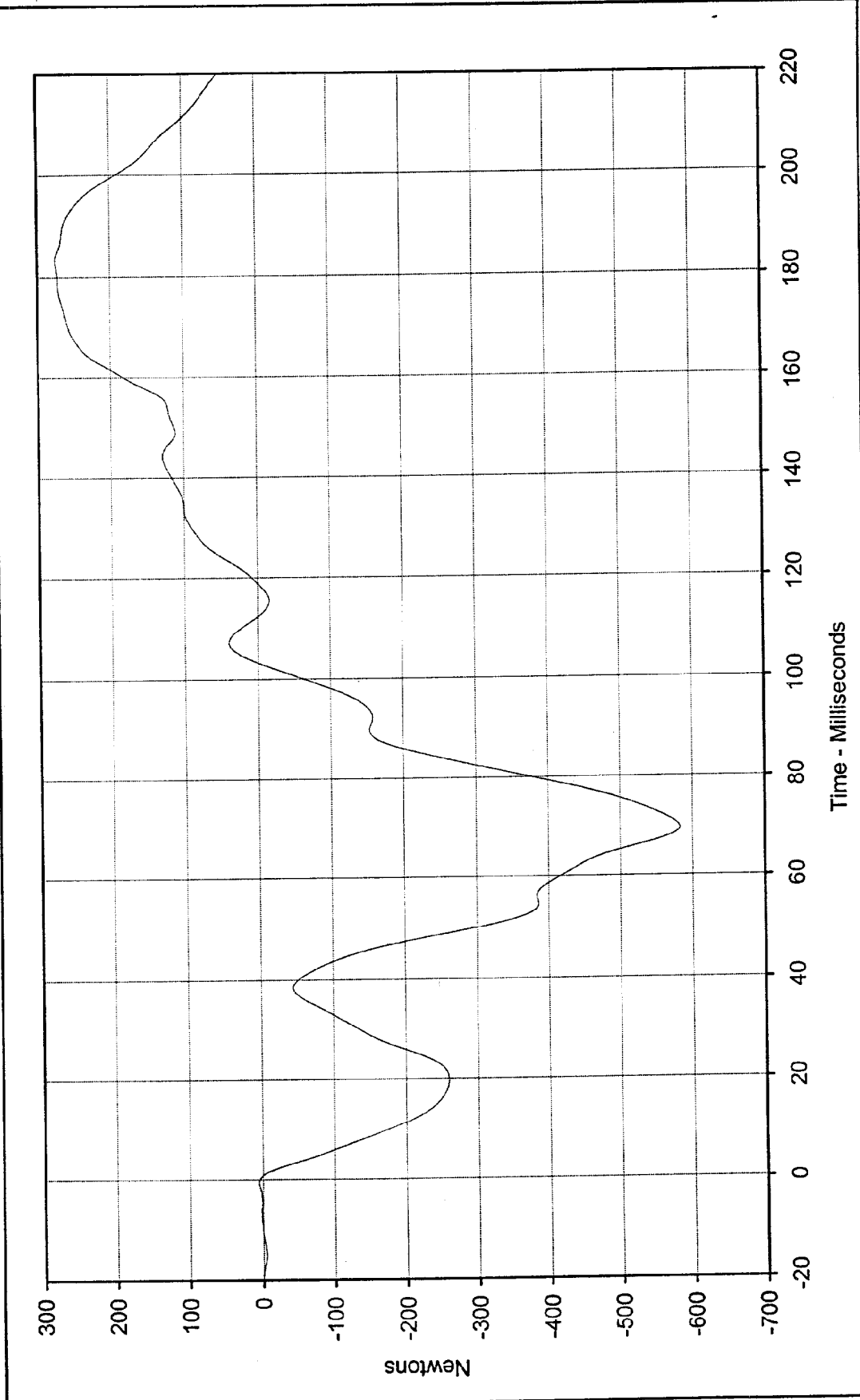
1/21/99  
 \_\_\_\_\_  
 Date



Curve Description:            Pendulum Deceleration  
 Maximum Value: 19.0 at 8.5 Milliseconds  
 Minimum Value: -1.9 at 56.9 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/16/99  
 ATD Serial No.: 034

Testing Program: Hybrid III Neck Extension Test (Male)  
 Test Information: S/N of Part: N/A Test I.D.: NE01A

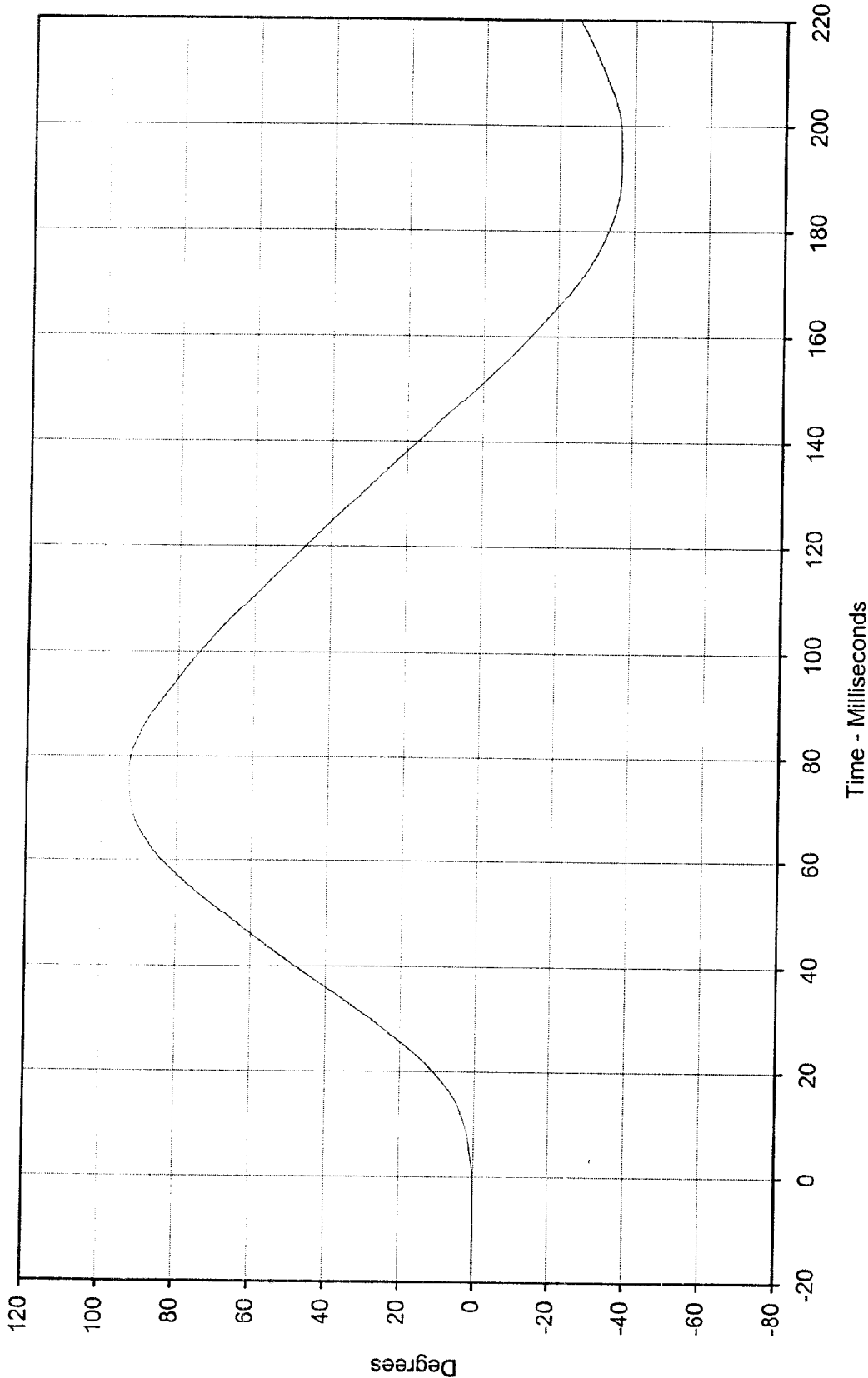




Testing Program: Hybrid III Neck Extension Test (Male)  
 Test Information: S/N of Part: N/A Test I.D.: NE01A

Curve Description: Neck Force X  
 Maximum Value: 275.4 at 183.2 Milliseconds  
 Minimum Value: -582.7 at 69.6 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/16/99  
 ATD Serial No.: 034

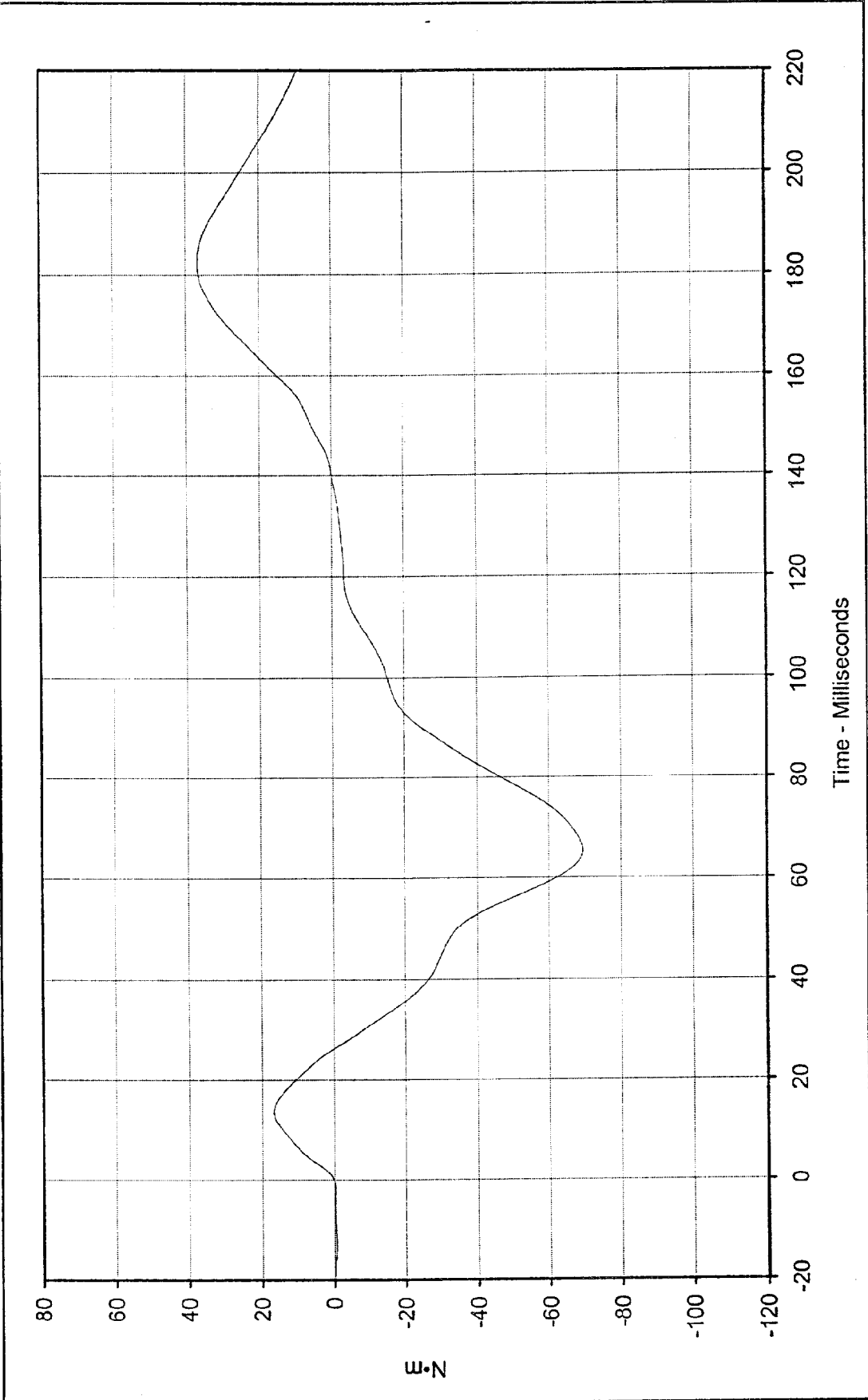




Curve Description: "D" Plane Rotation  
 Maximum Value: 92.8 at 76.8 Milliseconds  
 Minimum Value: -36.5 at 192.9 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/16/99  
 ATD Serial No.: 034

Testing Program: Hybrid III Neck Extension Test (Male)  
 Test Information: S/N of Part: N/A Test I.D.: NE01A





Curve Description: Moment About Occipital Condyles  
 Maximum Value: 36.8 at 182.5 Milliseconds  
 Minimum Value: -69.5 at 65.3 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/16/99  
 ATD Serial No.: 034

Testing Program: Hybrid III Neck Extension Test (Male)  
 Test Information: S/N of Part: N/A Test I.D.: NE01A





# Hybrid III Calibration Data Sheet

## 50<sup>TH</sup> Percentile Male

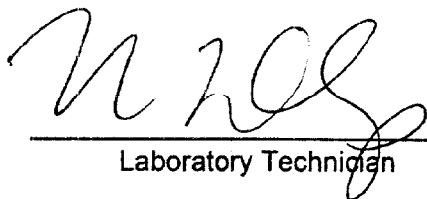
### External Measurements

ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: N/A

External Measurement Data				
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory temperature	°C	20.4 to 22.1	21.9	Pass
Laboratory relative humidity	%	10 to 70	35	Pass
A - Total sitting height	mm	878.8 to 889.0	885.0	Pass
B - Shoulder pivot height	mm	505.5 to 520.7	510.0	Pass
C - "H" point height	mm	83.8 to 88.9	84.0	Pass
D - "H" point from seat back	mm	134.6 to 139.7	138.0	Pass
E - Shoulder pivot from back	mm	83.8 to 94.0	85.0	Pass
F - Thigh clearance	mm	139.7 to 154.9	152.0	Pass
G - Elbow back to wrist pivot	mm	289.6 to 304.8	295.0	Pass
H - Skull cap to back line	mm	40.6 to 45.7	43.0	Pass
I - Shoulder to elbow length	mm	330.2 to 345.4	335.0	Pass
J - Elbow rest height	mm	190.5 to 210.8	206.0	Pass
K - Buttock to knee length	mm	579.1 to 604.5	581.0	Pass
L - Popliteal length	mm	429.3 to 454.7	444.0	Pass
M - Knee pivot height	mm	485.1 to 500.4	490.0	Pass
N - Buttock popliteal length	mm	452.1 to 477.5	465.0	Pass
O - Chest depth	mm	213.4 to 228.6	221.0	Pass
P - Foot length	mm	251.5 to 266.7	258.0	Pass
V - Shoulder breadth	mm	421.6 to 436.9	434.0	Pass
W - Foot breadth	mm	91.4 to 106.7	98.0	Pass
Y - Chest circumference	mm	970.3 to 1000.8	990.0	Pass
Z - Waist circumference	mm	835.7 to 866.1	850.0	Pass
AA - Location for chest circumference	mm	429.3 to 434.3	435.0	Pass
BB - Location for waist circumference	mm	226.1 to 231.1	230.0	Pass
Overall Test Results				Pass

  
 \_\_\_\_\_  
 Laboratory Technician

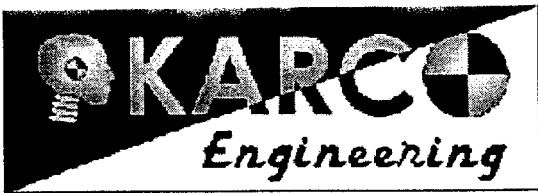
  
 \_\_\_\_\_  
 Approved By

January 18, 1999

\_\_\_\_\_ Test Date

1/21/99

\_\_\_\_\_ Date



# Hybrid III Calibration Data Sheet

## 50<sup>TH</sup> Percentile Male

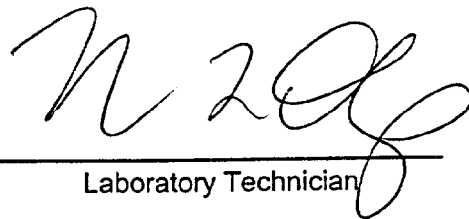
### Left Knee Impact Test

ATD Serial No.: 35

Part Serial No.: N/A

Test I.D.: KI01C

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	2.102	Pass
Peak Probe Force	Newtons	4715 to 5782	5488.1	Pass
Overall Test Results				Pass



Laboratory Technician

January 17, 1999

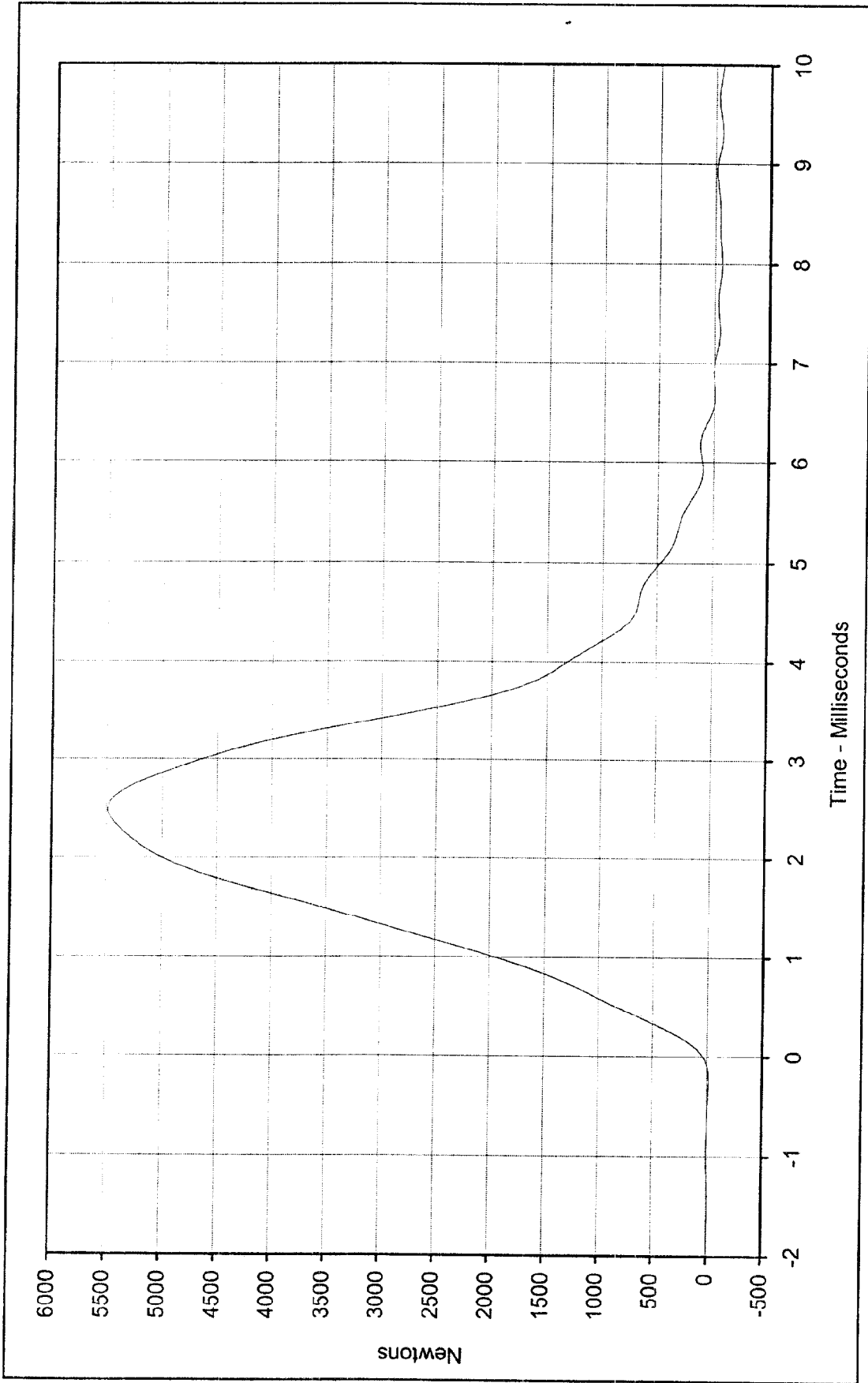
Test Date



Approved By

1/21/99

Date



Curve Description: Hybrid III Left Knee Impact Test  
 Testing Program: Hybrid III Left Knee Impact Test  
 Part S/N: N/A Test I.D.: K101C  
 Test Information:

Probe Force  
 Maximum Value: 5488.1 at 2.5 Milliseconds  
 Minimum Value: -61.3 at 8.0 Milliseconds  
 SAE Filter Class: 600  
 Date of Test: 1/17/99  
 ATD Serial No.: 35





# Hybrid III Calibration Data Sheet

## 50<sup>TH</sup> Percentile Male

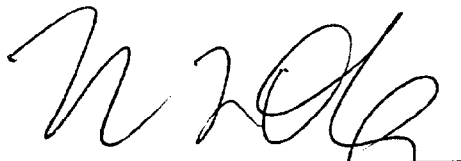
### Right Knee Impact Test

ATD Serial No.: 35

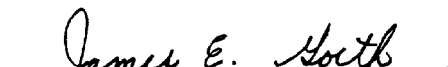
Part Serial No.: N/A

Test I.D.: KI01D

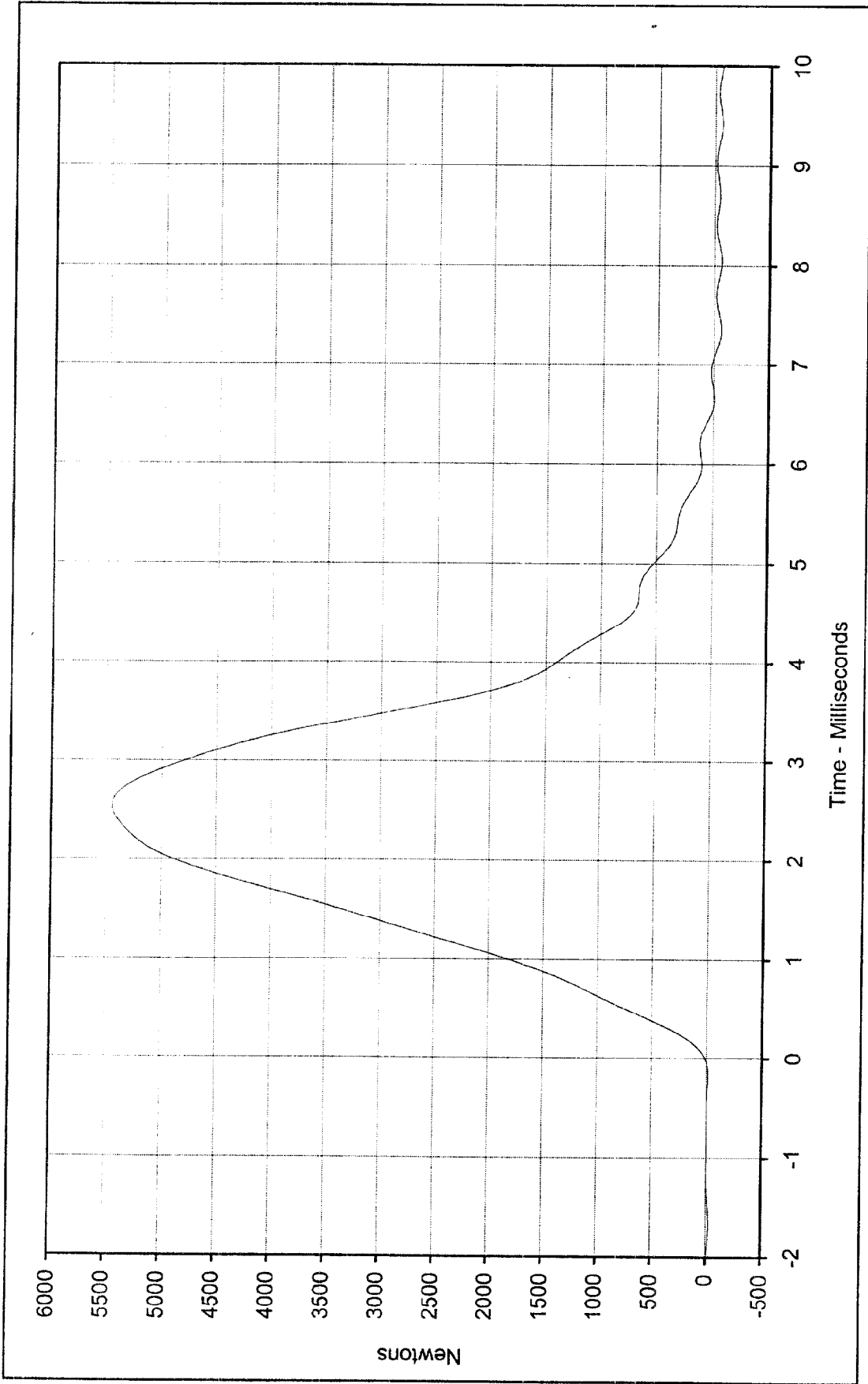
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	2.073 to 2.134	2.092	Pass
Peak Probe Force	Newtons	4715 to 5782	5440.4	Pass
Overall Test Results				Pass

  
\_\_\_\_\_  
Laboratory Technician

January 17, 1999  
Test Date

  
\_\_\_\_\_  
Approved By

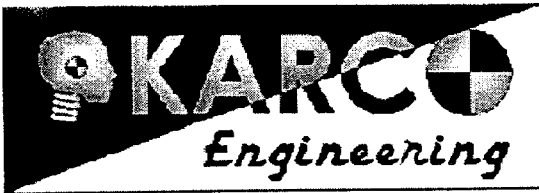
1/21/99  
Date



Curve Description: Hybrid III Right Knee Impact Test  
 Testing Program: Hybrid III Right Knee Impact Test  
 Test Information: Part S/N: N/A Test I.D.: K101D

Probe Force  
 Maximum Value: 5440.4 at 2.5 Milliseconds  
 Minimum Value: -65.3 at 7.4 Milliseconds  
 SAE Filter Class: 600  
 Date of Test: 1/17/99  
 ATD Serial No.: 35





# Hybrid III Calibration Data Sheet

## 50<sup>TH</sup> Percentile Male

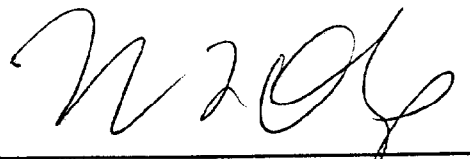
### Head Drop Calibration

ATD Serial No.: 035

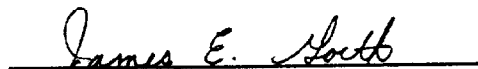
Part Serial No.: n/a

Test I.D.: HD01B

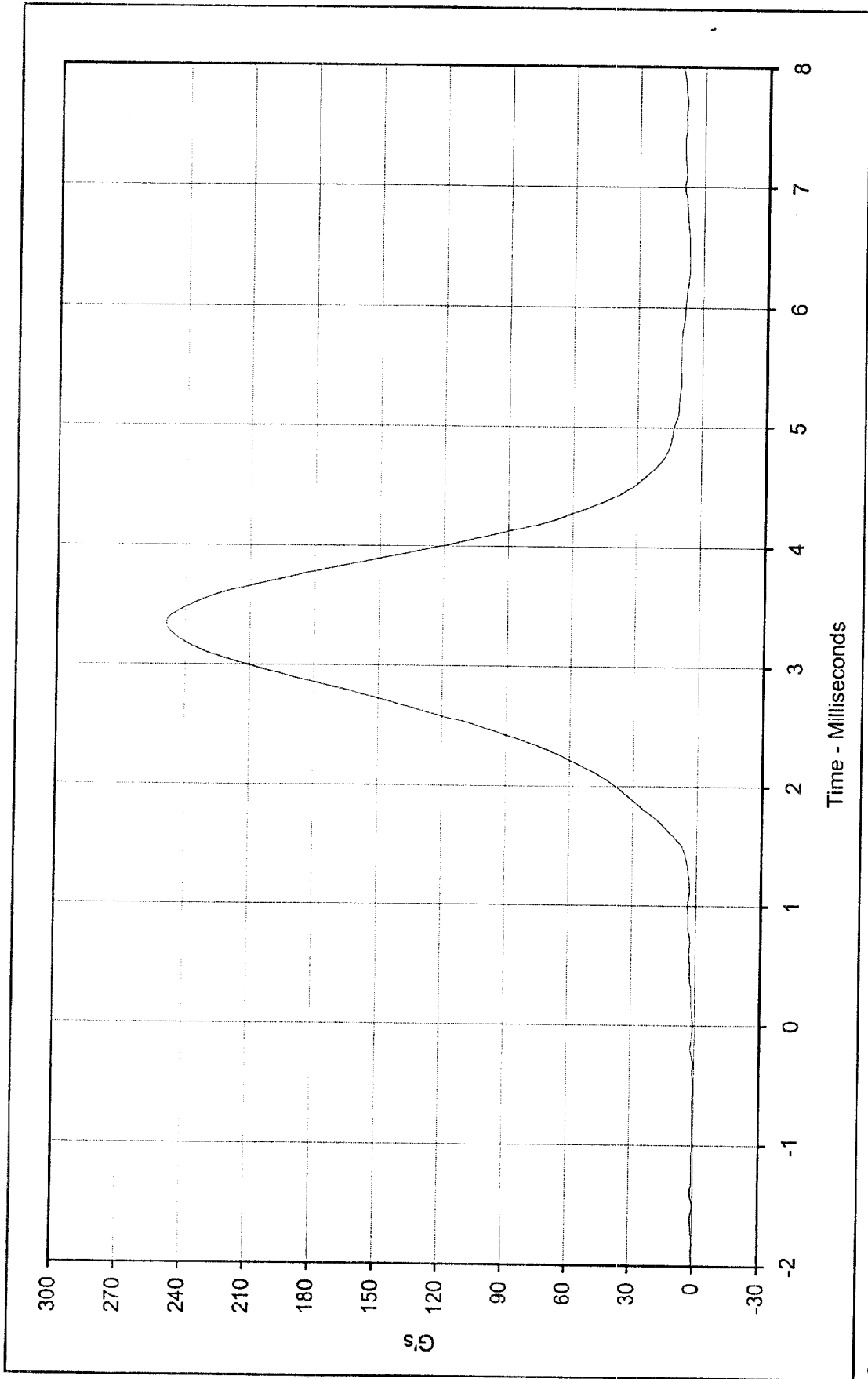
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	31	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	248.1	Pass
Peak Lateral Acceleration	G's	≤15.0	7.0	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

  
 \_\_\_\_\_  
 Laboratory Technician

January 17, 1999  
 \_\_\_\_\_  
 Test Date

  
 \_\_\_\_\_  
 Approved By

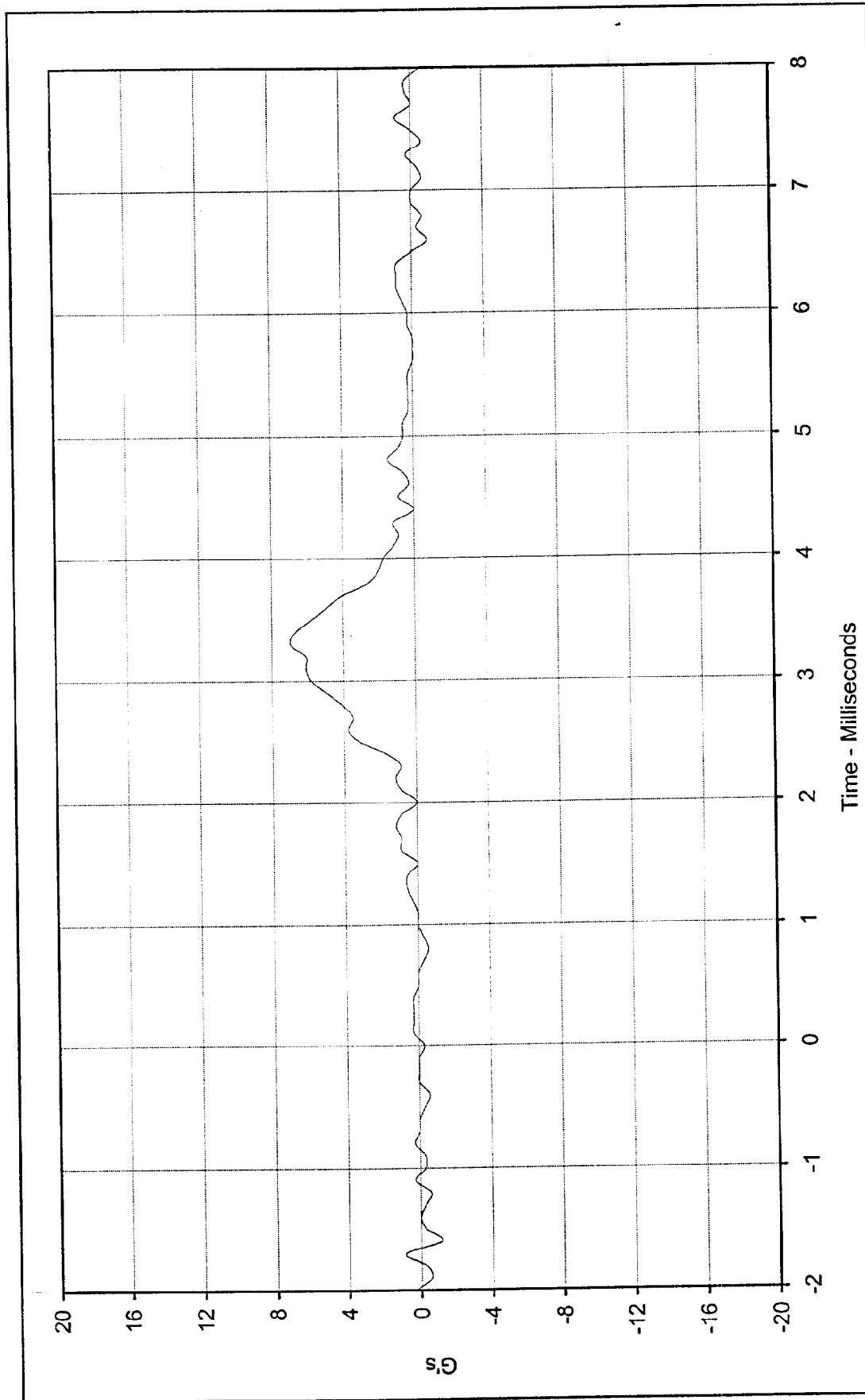
1/21/99  
 \_\_\_\_\_  
 Date



Curve Description: Head Resultant Acceleration  
 Maximum Value: 248.1 at 3.3 Milliseconds  
 Minimum Value: 0.4 at -0.5 Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/17/99  
 ATD Serial No.: 035

Testing Program: Hybrid III Head Drop Calibration (Male)  
 Test Information: S/N of Part: n/a Test I.D.: HD01B

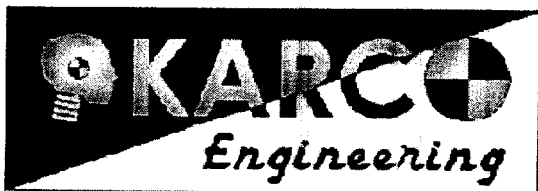




Testing Program: Hybrid III Head Drop Calibration (Male)  
 Test Information: S/N of Part: n/a Test I.D.: HD01B

Curve Description: Head Acceleration Y Axis  
 Maximum Value: 7.0 at 3.3 Milliseconds  
 Minimum Value: -1.2 at -1.6 Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 1/17/99  
 ATD Serial No.: 035





# Hybrid III Calibration Data Sheet

## 50<sup>TH</sup> Percentile Male

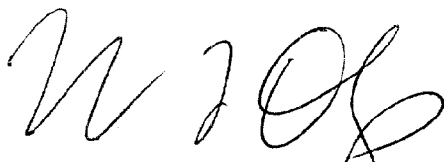
### Thorax Impact Test


ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: CH13B

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.9	Pass
Laboratory Relative Humidity	%	10 to 70	36	Pass
Probe Velocity	m/s	6.58 to 6.82	6.80	Pass
Peak Probe Force	Newtons	5159 to 5893	5680	Pass
Peak Sternum Displacement	CM	6.35 to 7.26	6.44	Pass
Internal Hysteresis	%	69 to 85	72.6	Pass
Overall Test Results				Pass

  
\_\_\_\_\_  
Laboratory Technician

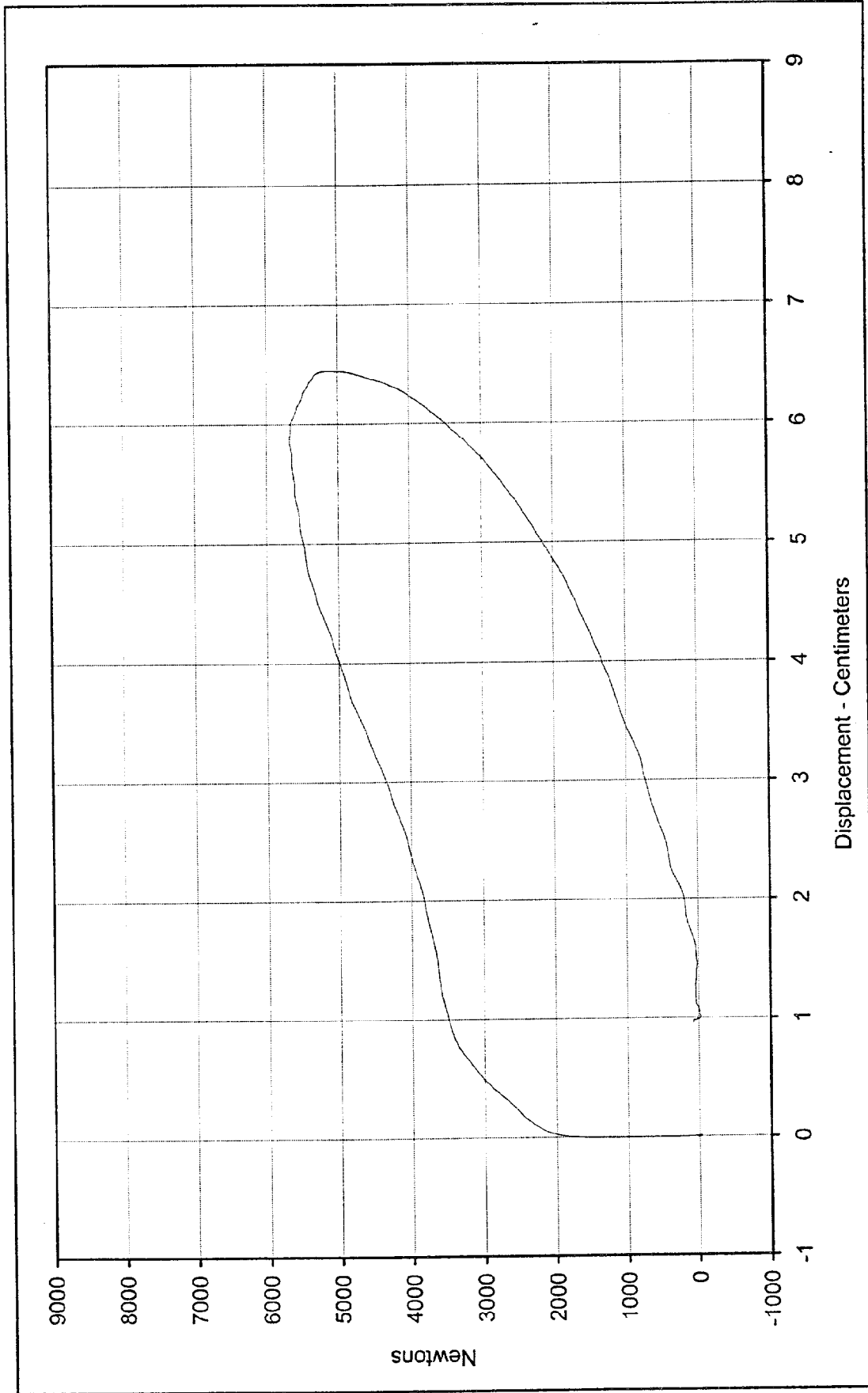
  
\_\_\_\_\_  
Approved By

January 15, 1999

Test Date

1/21/99

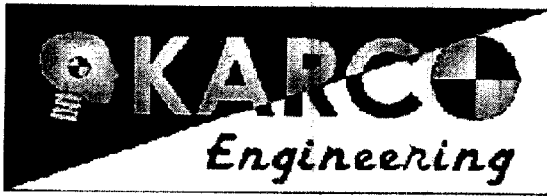
Date



Curve Description: Probe Force vs. Chest Displacement      Testing Program: Hybrid III Thorax Impact Test  
 Probe Force: 5680.2 Newtons      Test Information: S/N of Part: N/A    Test I.D.: CH13B

Chest Displ.: 6.44 Centimeters  
 SAE Filter Class: 180  
 Date of Test: 1/15/99  
 ATD Serial No.: 035





# Hybrid III Calibration Data Sheet

## 50<sup>TH</sup> Percentile Male

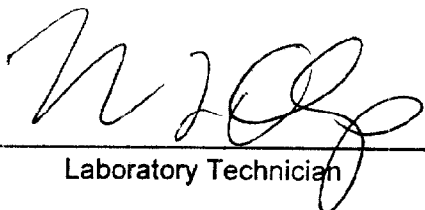
### Neck Flexion Test

ATD Serial No.: 035

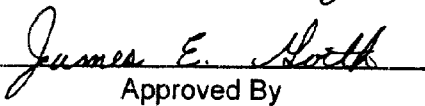
Part Serial No.: N/A

Test I.D.: NF01B

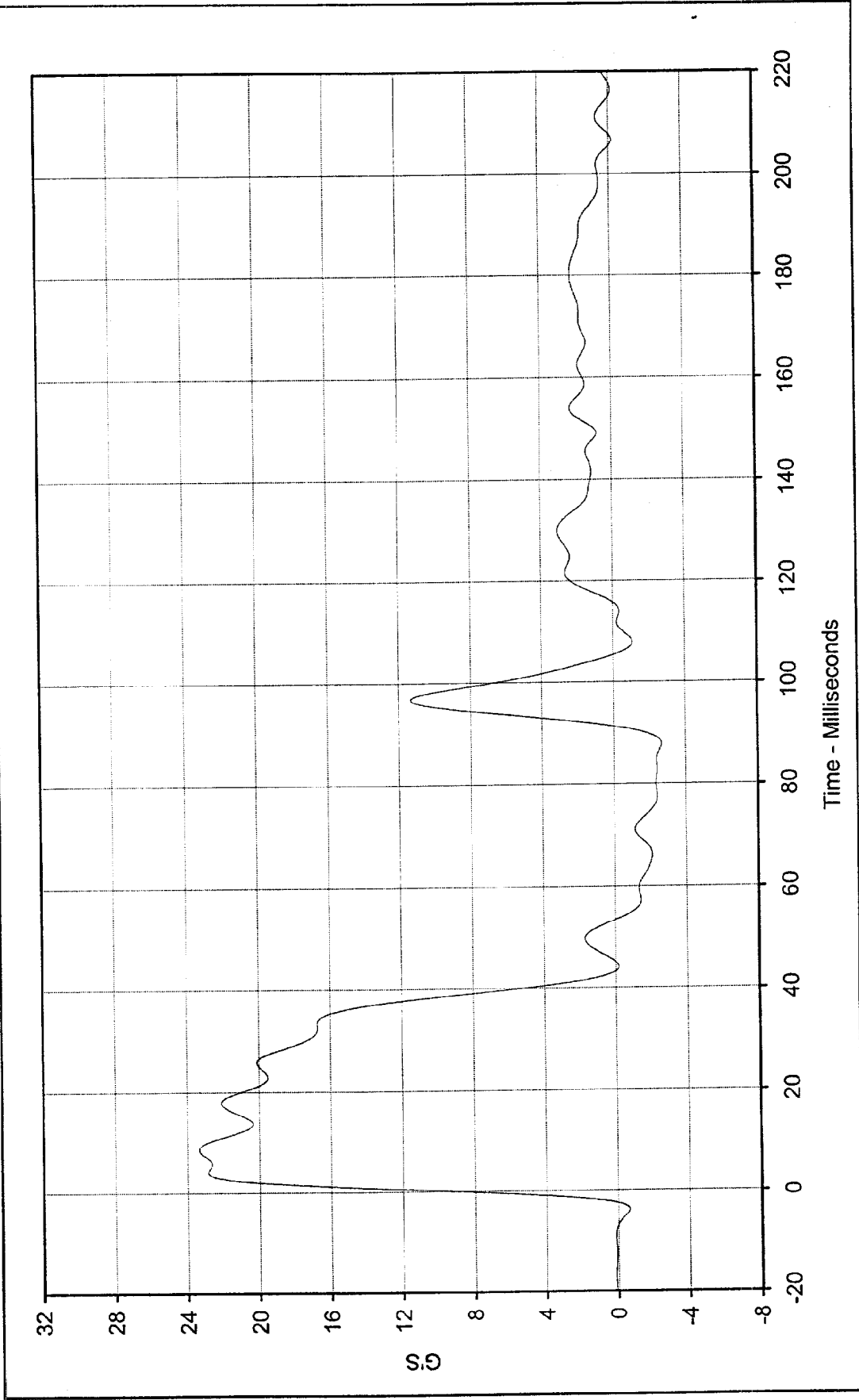
Tested Parameter	Units	Specification	Result	Pass/Fail	
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass	
Laboratory Relative Humidity	%	10 to 70	39	Pass	
Pendulum Velocity	m/s	6.89 to 7.13	6.99	Pass	
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	22.9	Pass
	20 Msec.	G's	17.6 to 22.6	21.0	Pass
	30 Msec.	G's	12.5 to 18.5	17.4	Pass
Peak Pendulum Decel. after 30 Msec.	G's	≤ 29.0	17.4	Pass	
Deceleration Decay, Time to Cross 5 G's	Msec.	34.0 to 42.0	40.1	Pass	
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	64.8	Pass
	Time	Msec.	57.0 to 64.0	62.1	Pass
"D" Plane Rotation Decay, Time To Zero Crossing	Msec.	113.0 to 128.0	113.7	Pass	
Moment About Occipital Condyle	Maximum	N • m	84.1 to 108.5	87.7	Pass
	Time	Msec.	47.0 to 58.0	52.7	Pass
Positive Moment Decay, Time To Zero Crossing	Msec.	97.0 to 107.0	98.6	Pass	
Overall Test Results				Pass	

  
 Laboratory Technician

January 16, 1999  
 Test Date

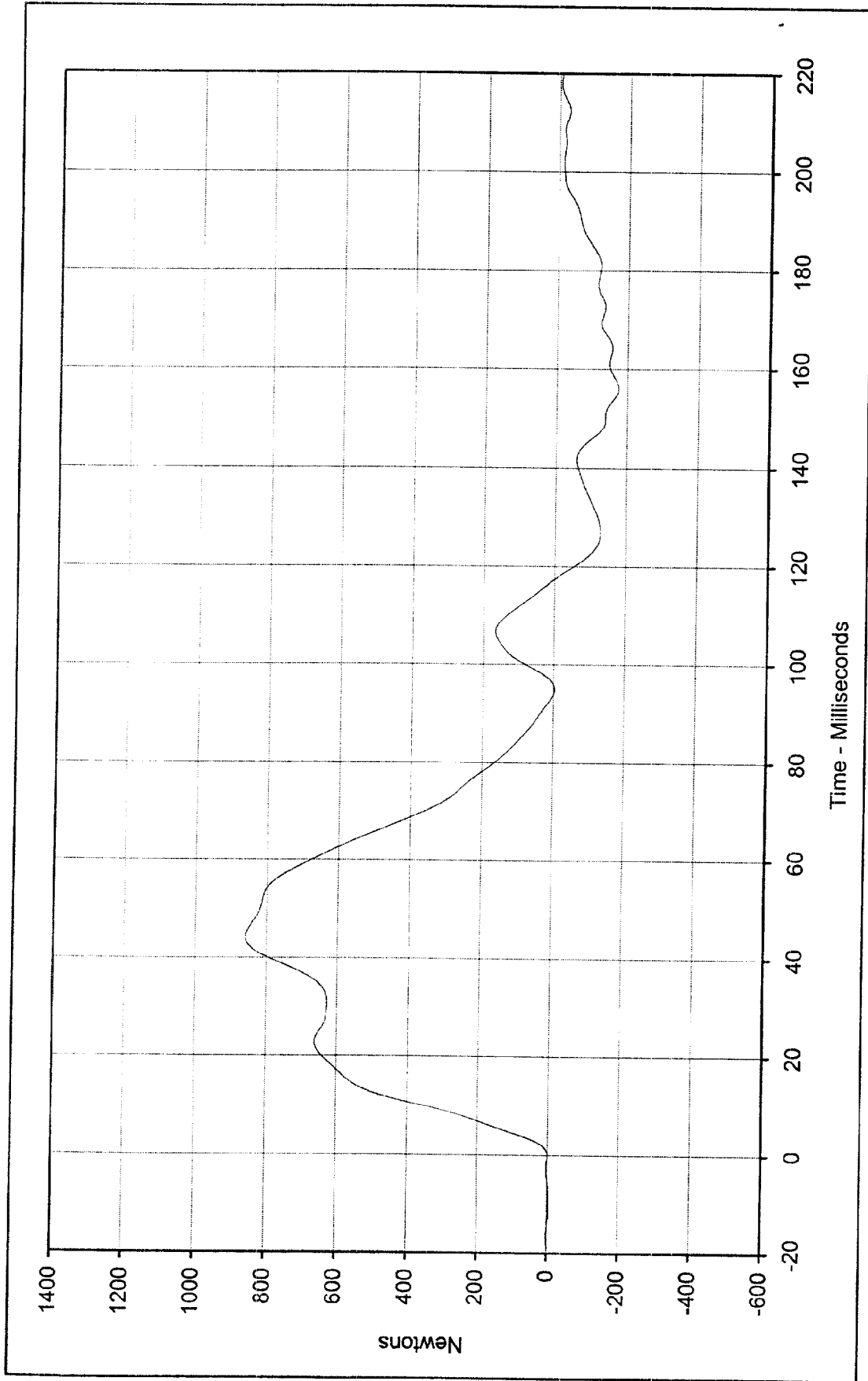
  
 Approved By

1/21/99  
 Date



Curve Description: Hybrid III Neck Flexion Test (Male)  
 Testing Program: Hybrid III Neck Flexion Test (Male)  
 Test Information: S/N of Part: N/A Test I.D.: NF01B  
 Pendulum Deceleration  
 Maximum Value: 23.4 at 8.7 Milliseconds  
 Minimum Value: -2.7 at 87.8 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/16/99  
 ATD Serial No.: 035

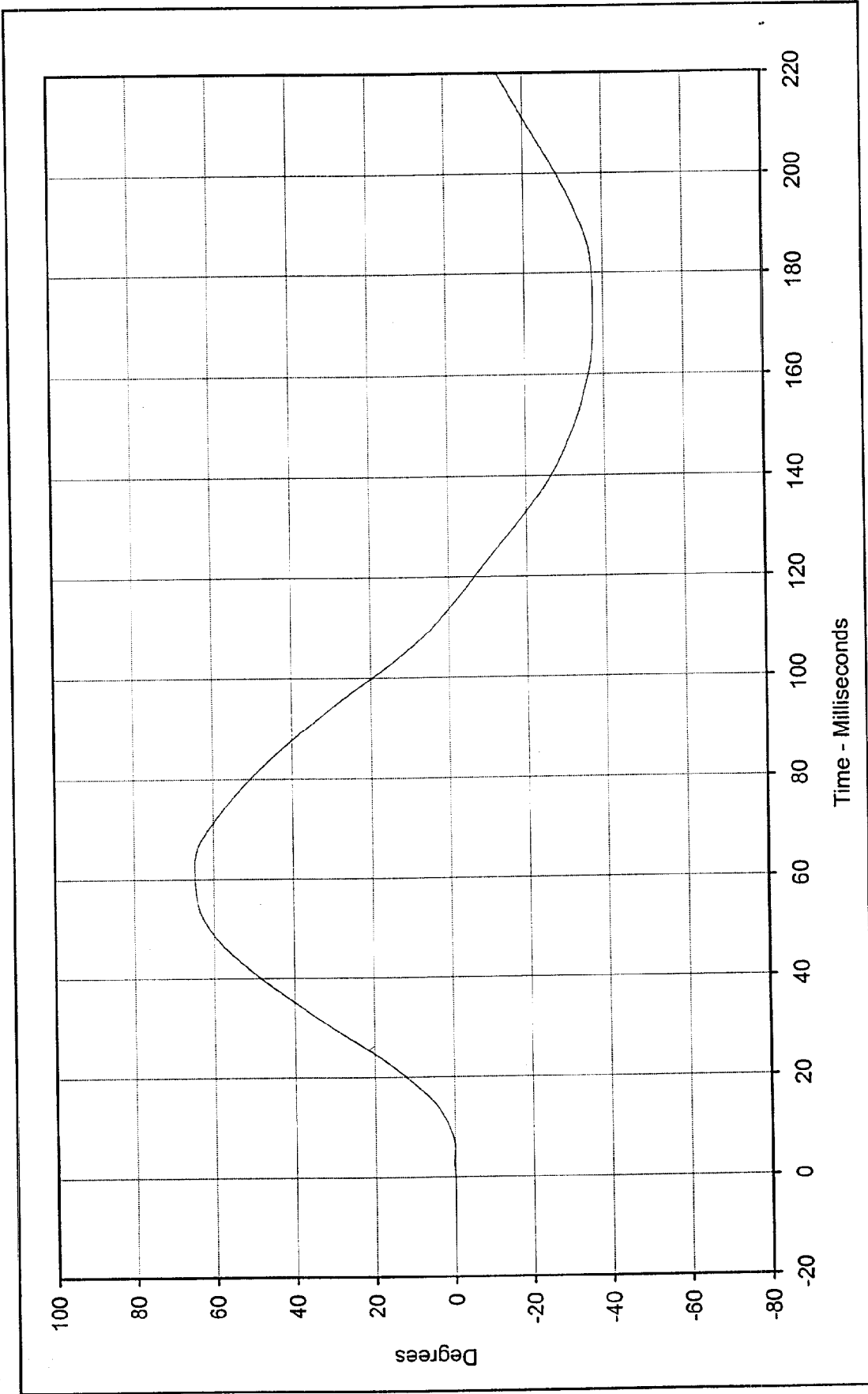




Curve Description: Neck Force X  
 Maximum Value: 858.8 at 44.0 Milliseconds  
 Minimum Value: -175.1 at 156.1 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/16/99  
 ATD Serial No.: 035

Testing Program: Hybrid III Neck Flexion Test (Male)  
 Test Information: S/N of Part: N/A Test I.D.: NF01B

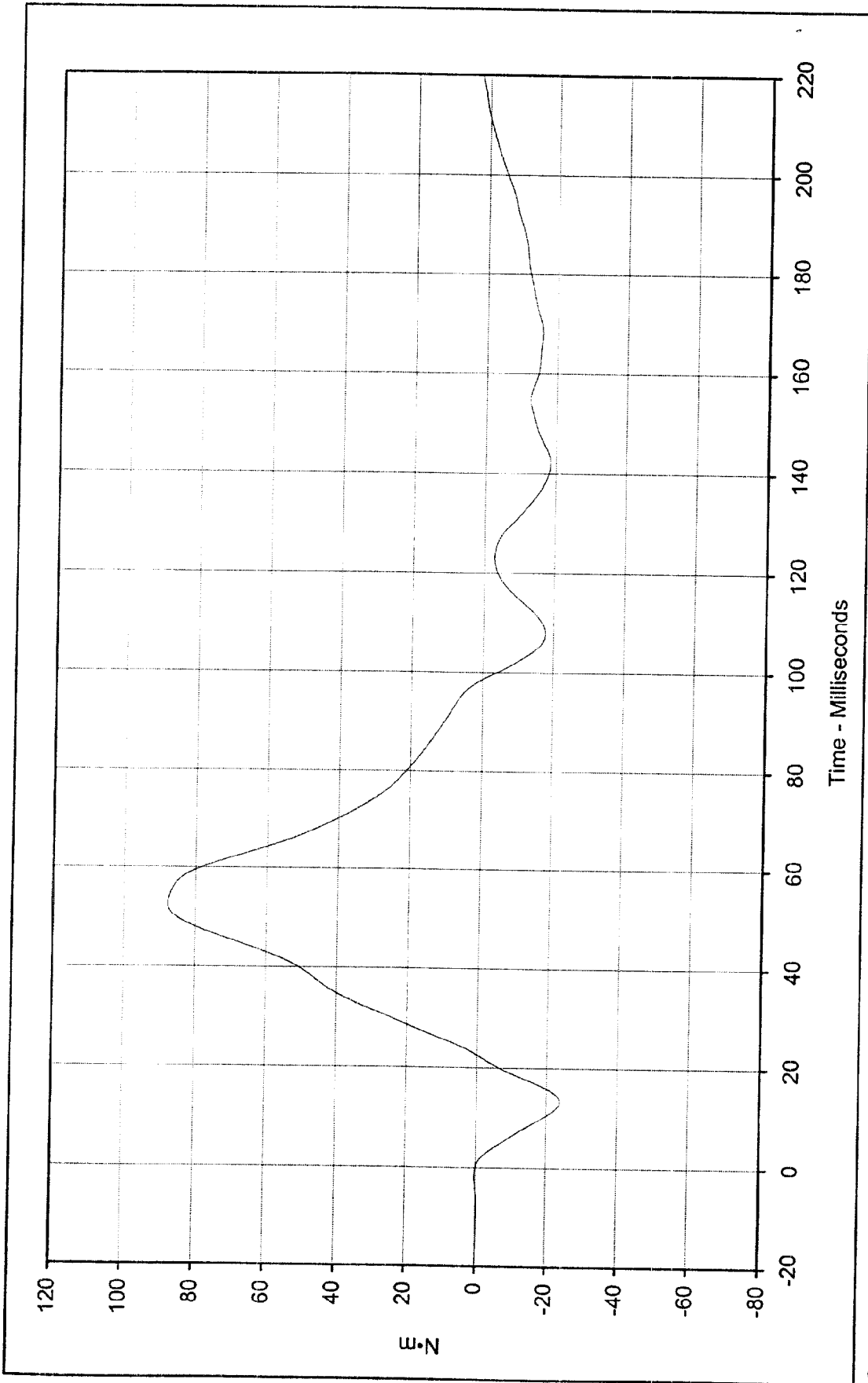




Testing Program: Hybrid III Neck Flexion Test (Male)  
 Test Information: S/N of Part: N/A Test I.D.: NF01B

Curve Description: "D" Plane Rotation  
 Maximum Value: 64.8 at 62.1 Milliseconds  
 Minimum Value: -37.5 at 175.0 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/16/99  
 ATD Serial No.: 035

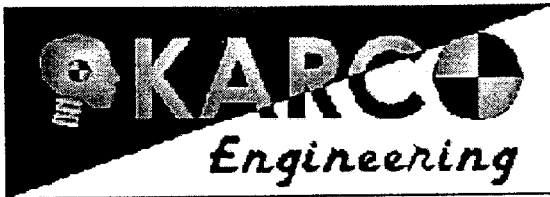




Curve Description: Moment About Occipital Condyles  
 Maximum Value: 87.7 at 52.7 Milliseconds  
 Minimum Value: -23.7 at 13.4 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/16/99  
 ATD Serial No.: 035

Testing Program: Hybrid III Neck Flexion Test (Male)  
 Test Information: S/N of Part: N/A Test I.D.: NF01B





# Hybrid III Calibration Data Sheet

## 50<sup>TH</sup> Percentile Male

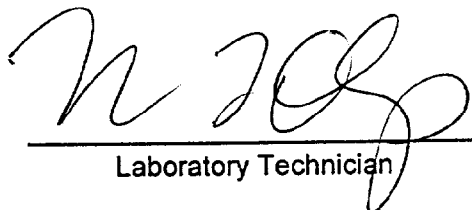
### Neck Extension Test

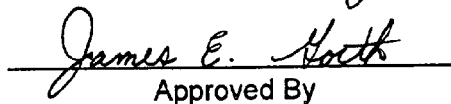
ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: NE01B

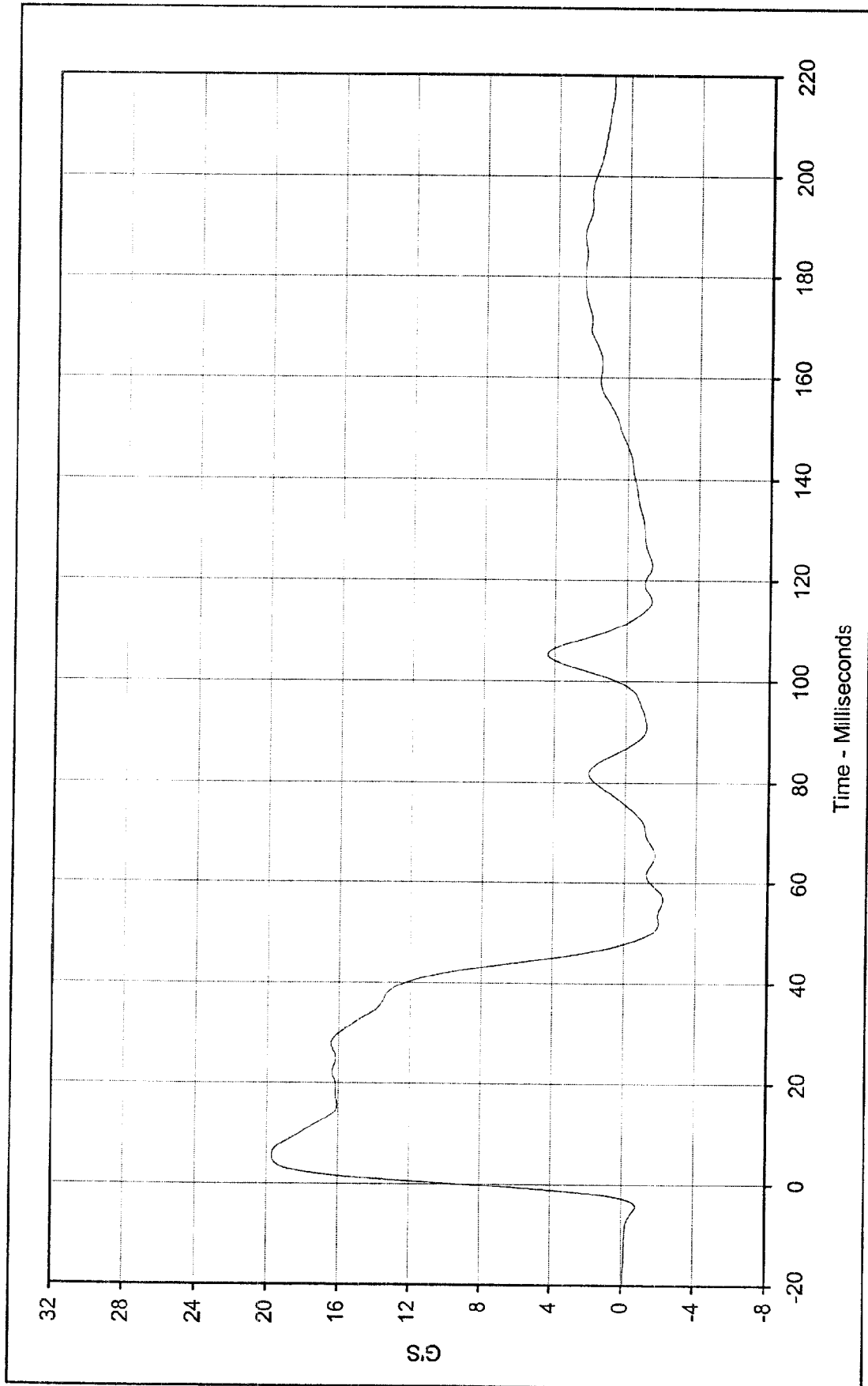
Tested Parameter	Units	Specification	Result	Pass/Fail	
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass	
Laboratory Relative Humidity	%	10 to 70	36	Pass	
Pendulum Velocity	m/s	5.95 to 6.19	6.16	Pass	
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	18.2	Pass
	20 Msec.	G's	14.0 to 19.0	16.2	Pass
	30 Msec.	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	44.5	Pass	
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	100.2	Pass
	Time	Msec.	72.0 to 82.0	79.9	Pass
"D" Plane Rotation Decay, Time To Zero Crossing	Msec.	147.0 to 174.0	160.1	Pass	
Moment About Occipital Condyle	Maximum	N • m	-52.9 to- 79.9	-68.5	Pass
	Time	Msec.	65.0 to 79.0	71.5	Pass
Negative Moment Decay, Time To Zero Crossing	Msec.	120.0 to 148.0	142.8	Pass	
Overall Test Results				Pass	

  
 Laboratory Technician

  
 Approved By

January 16, 1999  
 Test Date

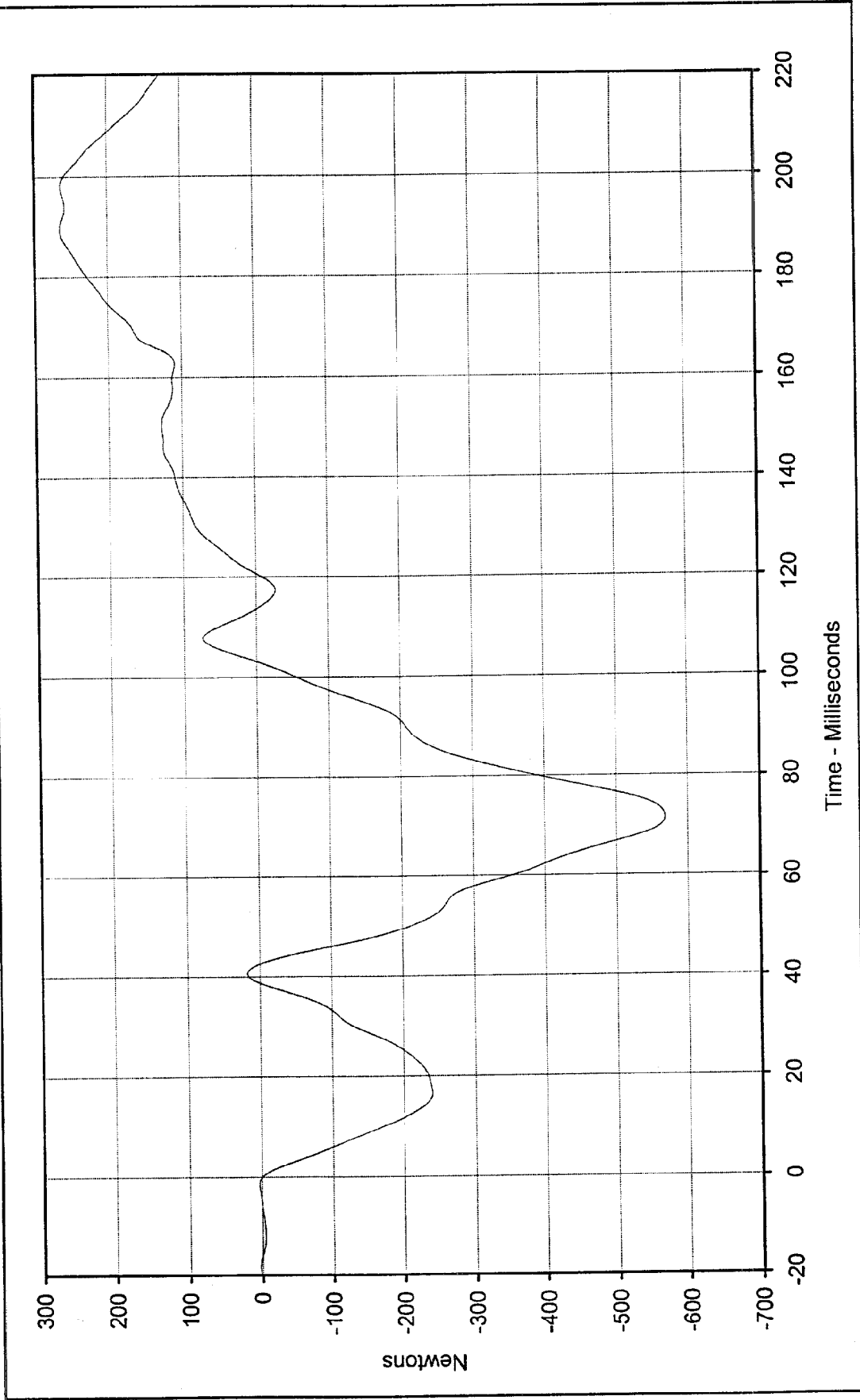
1/21/99  
 Date



Curve Description: Pendulum Deceleration  
 Maximum Value: 19.7 at 5.6 Milliseconds  
 Minimum Value: -2.2 at 56.7 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/16/99  
 ATD Serial No.: 035

Testing Program: Hybrid III Neck Extension Test (Male)  
 Test Information: S/N of Part: N/A Test I.D.: NE01B

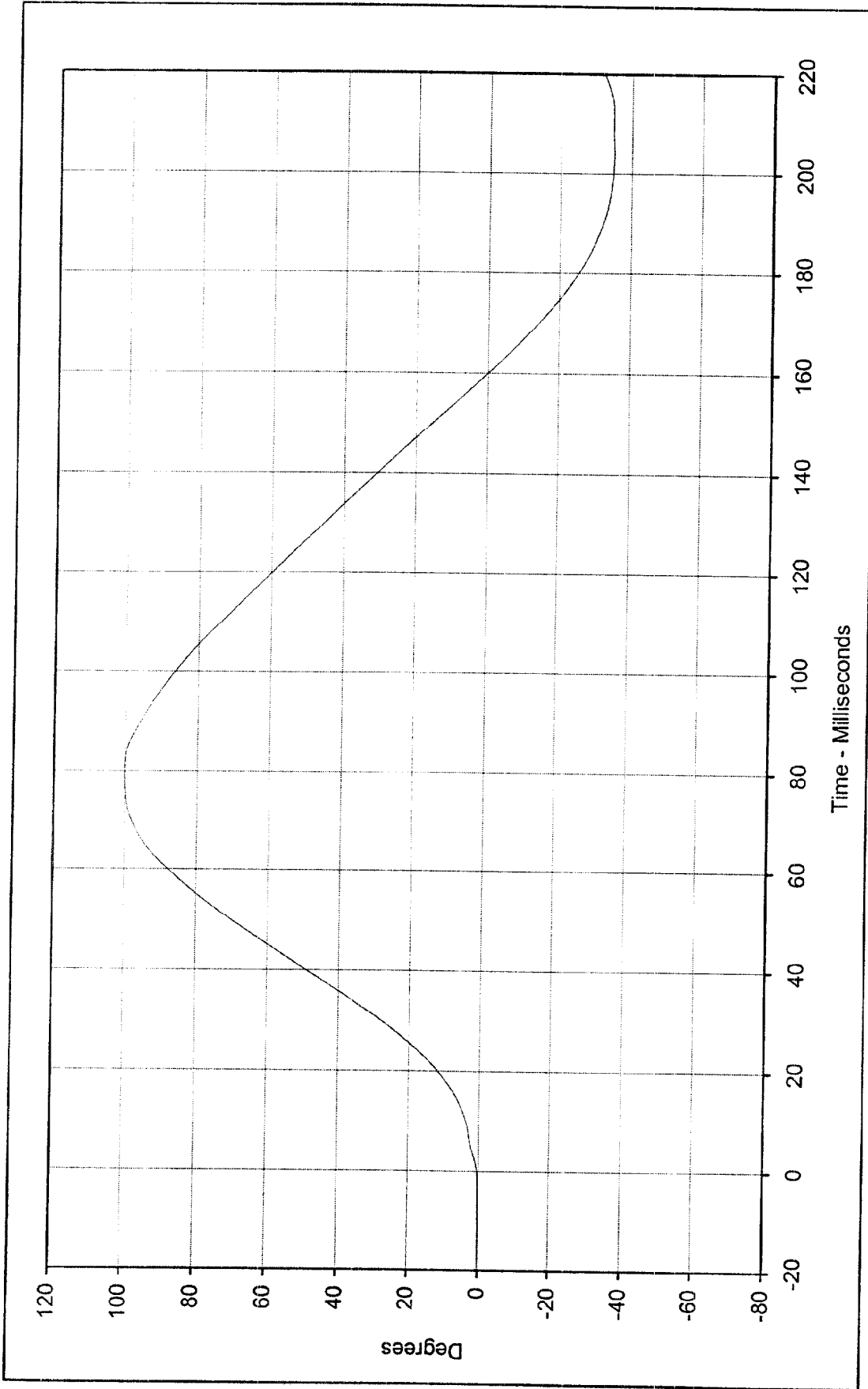




Curve Description: Neck Force X      Testing Program: Hybrid III Neck Extension Test (Male)  
 Maximum Value: 265.1 at 189.6 Milliseconds      Test Information: S/N of Part: N/A    Test I.D.: NE01B  
 Minimum Value: -568.5 at 71.5 Milliseconds

SAE Filter Class: 60  
 Date of Test: 1/16/99  
 ATD Serial No.: 035

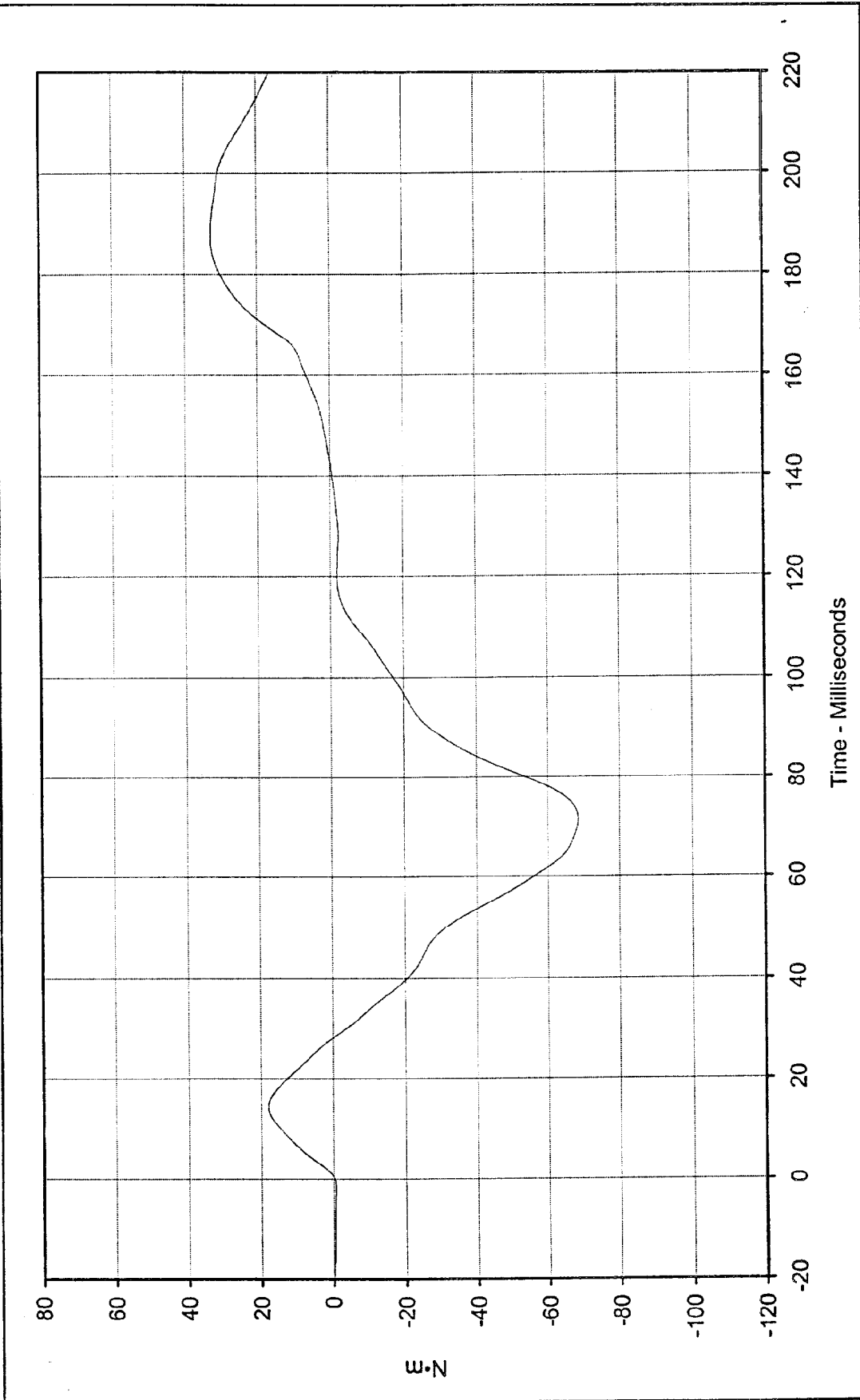




Curve Description: "D" Plane Rotation  
 Maximum Value: 100.2 at 79.9 Milliseconds  
 Minimum Value: -35.0 at 204.0 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 1/16/99  
 ATD Serial No.: 035

Testing Program: Hybrid III Neck Extension Test (Male)  
 Test Information: S/N of Part: N/A Test I.D.: NE01B

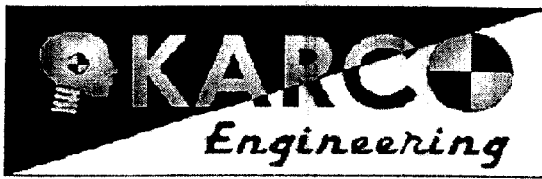




Curve Description: Moment About Occipital Condyles      Testing Program Hybrid III Neck Extension Test (Male)  
 Maximum Value: 32.7 at 187.5 Milliseconds      Test Information: S/N of Part: N/A Test I.D.: NE01B  
 Minimum Value: -68.5 at 71.5 Milliseconds



SAE Filter Class: 60  
 Date of Test: 1/16/99  
 ATD Serial No.: 035



# Hybrid III Calibration Data Sheet

## 50<sup>TH</sup> Percentile Male

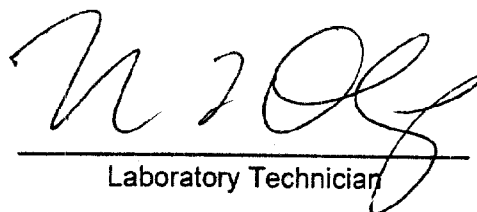
### External Measurements

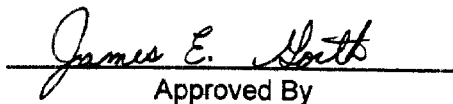
ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: N/A

External Measurement Data				
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory temperature	°C	20.4 to 22.1	21.9	Pass
Laboratory relative humidity	%	10 to 70	35	Pass
A - Total sitting height	mm	878.8 to 889.0	887.0	Pass
B - Shoulder pivot height	mm	505.5 to 520.7	507.0	Pass
C - "H" point height	mm	83.8 to 88.9	88.5	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	91.0	Pass
F - Thigh clearance	mm	139.7 to 154.9	152.0	Pass
G - Elbow back to wrist pivot	mm	289.6 to 304.8	300.5	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	344.0	Pass
J - Elbow rest height	mm	190.5 to 210.8	209.0	Pass
K - Buttock to knee length	mm	579.1 to 604.5	602.0	Pass
L - Popliteal length	mm	429.3 to 454.7	443.0	Pass
M - Knee pivot height	mm	485.1 to 500.4	487.0	Pass
N - Buttock popliteal length	mm	452.1 to 477.5	475.0	Pass
O - Chest depth	mm	213.4 to 228.6	223.0	Pass
P - Foot length	mm	251.5 to 266.7	261.0	Pass
V - Shoulder breadth	mm	421.6 to 436.9	430.0	Pass
W - Foot breadth	mm	91.4 to 106.7	93.0	Pass
Y - Chest circumference	mm	970.3 to 1000.8	980.0	Pass
Z - Waist circumference	mm	835.7 to 866.1	860.0	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

  
 Laboratory Technician

  
 Approved By

January 18, 1999  
 Test Date

1/21/99  
 Date

**APPENDIX F**  
**VEHICLE OWNER'S MANUAL**  
**OCCUPANT RESTRAINT INSTRUCTIONS**

KAR99001-11

## Seats and Seat Controls

This section tells you how to adjust the seats and explains reclining seatbacks, folding rear seats and head restraints.

### Manual Front Seat

#### CAUTION:

You can lose control of the vehicle if you try to adjust a manual driver's seat while the vehicle is moving. The sudden movement could startle and confuse you, or make you push a pedal when you don't want to. Adjust the driver's seat only when the vehicle is not moving.

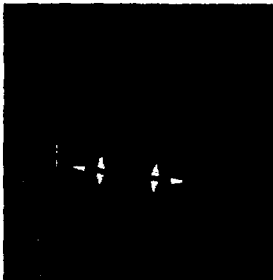


Lift the lever under the front of the seat up, using a twisting motion. This will unlock the seat. Slide the seat to where you want it and release the lever. Try to move the seat with your body to be sure the seat is locked into place.

1-2

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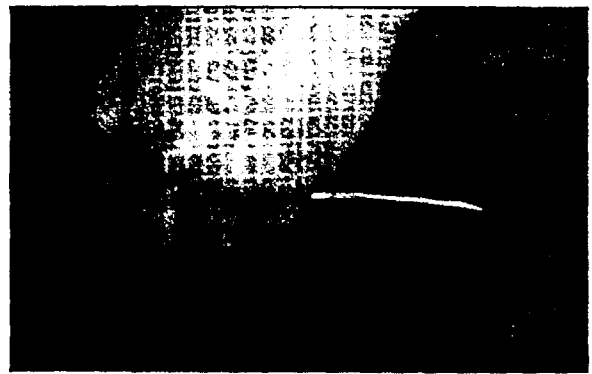
### 6-Way Power Seat (If Equipped)



This switch is designed to imitate the movements of your seat cushion. It is located on the left side of the driver's or the right side of the passenger's seat cushion.

To move the seat forward or rearward, push the switch forward or rearward. To raise or lower the seat, push the switch up or down. To raise or lower the front portion of your seat, push the front of the switch up or down. To raise or lower the rear portion of your seat, push the rear of the switch up or down.

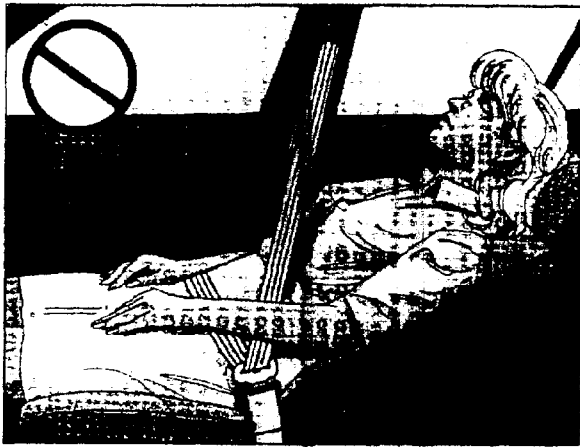
### Reclining Front Seatbacks



Lift the lever to release the seatback, then move the seatback to where you want it. Release the lever to lock the seatback in place. Pull up on the lever without pushing on the seatback and the seatback will move forward. This lever is located on the left side of the driver's or the right side of the passenger's seat cushion.

---

1-3



But don't have a seatback reclined if your vehicle is moving.

### **⚠ CAUTION:**

Sitting in a reclined position when your vehicle is in motion can be dangerous. Even if you buckle up, your safety belts can't do their job when you're reclined like this.

The shoulder belt can't do its job because it won't be against your body. Instead, it will be in front of you. In a crash you could go into it, receiving neck or other injuries.

The lap belt can't do its job either. In a crash the belt could go up over your abdomen. The belt forces would be there, not at your pelvic bones. **This could cause serious internal injuries.**

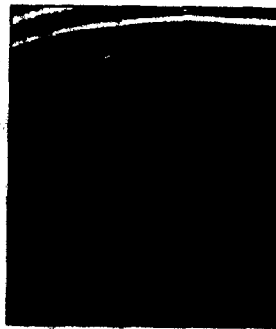
**For proper protection when the vehicle is in motion, have the seatback upright. Then sit well back in the seat and wear your safety belt properly.**

1-4

### **Head Restraints**

Slide the head restraint up or down so that the top of the restraint is closest to the top of your ears. This position reduces the chance of a neck injury in a crash.

### **Split Folding Rear Seat**



Pull the seat tab latch forward to fold down the rear seatback or pull the remote release straps in the trunk. To return the seat to its original position, push it back up and make sure it latches.

### **Safety Belts: They're for Everyone**

This part of the manual tells you how to use safety belts properly. It also tells you some things you should not do with safety belts.

And it explains the Supplemental Restraint System (SRS), or air bag system.

### **⚠ CAUTION:**

**Don't let anyone ride where he or she can't wear a safety belt properly. If you are in a crash and you're not wearing a safety belt, your injuries can be much worse. You can hit things inside the vehicle or be ejected from it. You can be seriously injured or killed. In the same crash, you might not be if you are buckled up. Always fasten your safety belt, and check that your passengers' belts are fastened properly too.**

1-5

---

**⚠ CAUTION:**

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



Your vehicle has a light that comes on as a reminder to buckle up. (See "Safety Belt Reminder Light" in the Index.)

In most states and Canadian provinces, the law says to wear safety belts. Here's why: They *work*.

You never know if you'll be in a crash. If you do have a crash, you don't know if it will be a bad one.

A few crashes are mild, and some crashes can be so serious that even buckled up a person wouldn't survive. But most crashes are in between. In many of them, people who buckle up can survive and sometimes walk away. Without belts they could have been badly hurt or killed.

After more than 30 years of safety belts in vehicles, the facts are clear. In most crashes buckling up does matter . . . a lot!

## Here Are Questions Many People Ask About Safety Belts -- and the Answers

**Q:** Won't I be trapped in the vehicle after an accident if I'm wearing a safety belt?

**A:** You *could* be -- whether you're wearing a safety belt or not. But you can unbuckle a safety belt, even if you're upside down. And your chance of being conscious during and after an accident, so you *can* unbuckle and get out, is *much* greater if you are belted.

**Q:** If my vehicle has air bags, why should I have to wear safety belts?

**A:** Air bags are in many vehicles today and will be in most of them in the future. But they are supplemental systems only; so they work *with* safety belts -- not instead of them. Every air bag system ever offered for sale has required the use of safety belts. Even if you're in a vehicle that has air bags, you still have to buckle up to get the most protection. That's true not only in frontal collisions, but especially in side and other collisions.

**Q:** If I'm a good driver, and I never drive far from home, why should I wear safety belts?

**A:** You may be an excellent driver, but if you're in an accident -- even one that isn't your fault -- you and your passengers can be hurt. Being a good driver doesn't protect you from things beyond your control, such as bad drivers.

Most accidents occur within 25 miles (40 km) of home. And the greatest number of serious injuries and deaths occur at speeds of less than 40 mph (65 km/h).

Safety belts are for everyone.

1-10

## How to Wear Safety Belts Properly

### Adults

This part is only for people of adult size.

Be aware that there are special things to know about safety belts and children. And there are different rules for smaller children and babies. If a child will be riding in your vehicle, see the part of this manual called "Children." Follow those rules for everyone's protection.

First, you'll want to know which restraint systems your vehicle has.

We'll start with the driver position.

### Driver Position

This part describes the driver's restraint system.

#### Lap-Shoulder Belt

The driver has a lap-shoulder belt. Here's how to wear it properly.

1. Close and lock the door.
2. Adjust the seat (to see how, see "Seats" in the Index) so you can sit up straight.



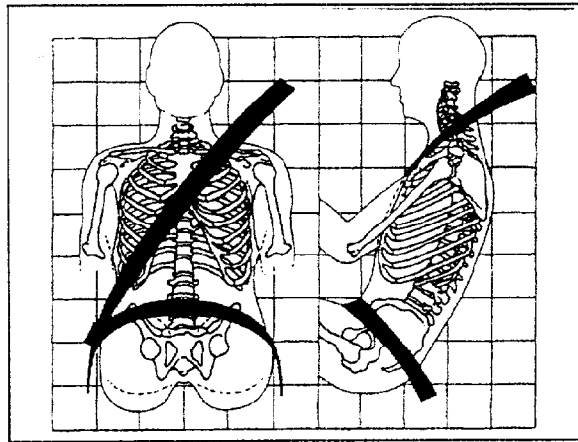
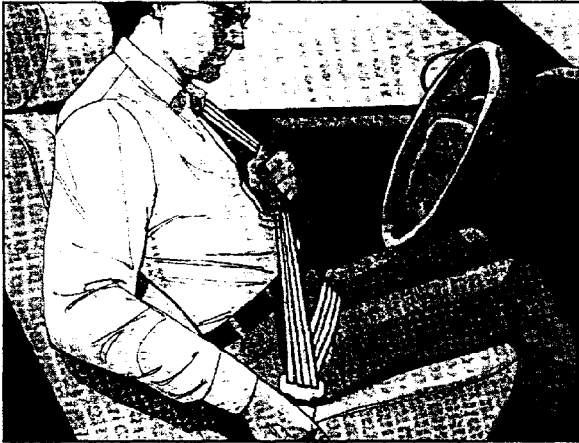
3. Pick up the latch plate and pull the belt across you. Don't let it get twisted.

The shoulder belt may lock if you pull the belt across you very quickly. If this happens, let the belt go back slightly to unlock it. Then pull the belt across you more slowly.

1-11

4. Push the latch plate into the buckle until it clicks. Pull up on the latch plate to make sure it is secure. If the belt isn't long enough, see "Safety Belt Extender" at the end of this section.

Make sure the release button on the buckle is positioned so you would be able to unbuckle the safety belt quickly if you ever had to.



The lap part of the belt should be worn low and snug on the hips, just touching the thighs. In a crash, this applies force to the strong pelvic bones. And you'd be less likely to slide under the lap belt. If you slid under it, the belt would apply force at your abdomen. This could cause serious or even fatal injuries. The shoulder belt should go over the shoulder and across the chest. These parts of the body are best able to take belt restraining forces.

5. To make the lap part tight, pull down on the buckle end of the belt as you pull up on the shoulder belt.

The safety belt locks if there's a sudden stop or crash, or if you pull the belt very quickly out of the retractor.

1-12

#### Shoulder Belt Height Adjuster

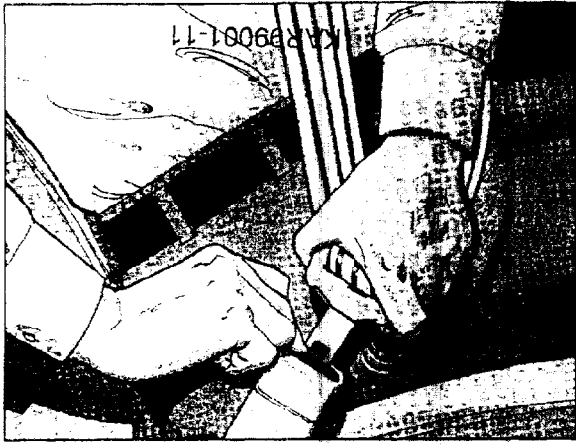
Before you begin to drive, move the shoulder belt adjuster to the height that is right for you.



To move it down, squeeze the release lever and the shoulder belt guide as shown and move the height adjuster to the desired position. You can move the adjuster up just by pushing up on the shoulder belt guide. After you move the adjuster to where you want it, try to move it down without squeezing the release lever to make sure it has locked into position.

Adjust the height so that the shoulder portion of the belt is centered on your shoulder. The belt should be away from your face and neck, but not falling off your shoulder.

1-13

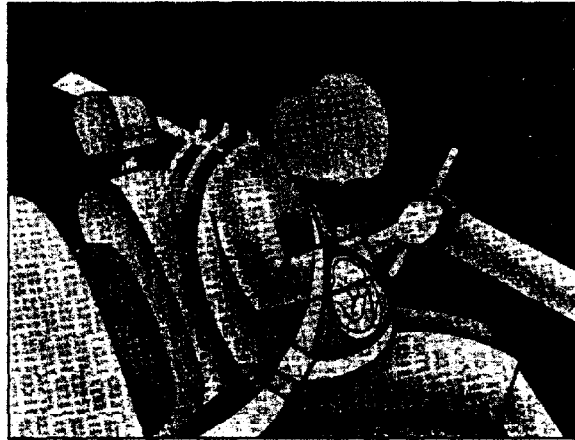


To unlatch the belt, just push the button on the buckle. The belt should go back out of the way.

Before you close the door, be sure the belt is out of the way. If you slam the door on it, you can damage both the belt and your vehicle.

## Safety Belt Use During Pregnancy

Safety belts work for everyone, including pregnant women. Like all occupants, they are more likely to be seriously injured if they don't wear safety belts.



A pregnant woman should wear a lap-shoulder belt, and the lap portion should be worn as low as possible, below the rounding, throughout the pregnancy.

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The best way to protect the fetus is to protect the mother. When a safety belt is worn properly, it's more likely that the fetus won't be hurt in a crash. For pregnant women, as for anyone, the key to making safety belts effective is wearing them properly.

### Right Front Passenger Position

To learn how to wear the right front passenger's safety belt properly, see "Driver Position" earlier in this section.

The right front passenger's safety belt works the same way as the driver's safety belt -- except for one thing. If you ever pull the shoulder portion of the belt out all the way, you will engage the child restraint locking feature. If this happens, just let the belt go back all the way and start again.

### Supplemental Restraint System (SRS)

This part explains the Supplemental Restraint System (SRS) or air bag system.

Your vehicle has "Next Generation" frontal air bags -- one air bag for the driver and another air bag for the right front passenger.

Next Generation frontal air bags are designed to help reduce the risk of injury from the force of an inflating air bag. But even these air bags must inflate very quickly if they are to do their job and comply with federal regulations.

Here are the most important things to know about the air bag system:

#### CAUTION:

**You can be severely injured or killed in a crash if you aren't wearing your safety belt -- even if you have air bags. Wearing your safety belt during a crash helps reduce your chance of hitting things inside the vehicle or being ejected from it.**

CAUTION: (Continued)

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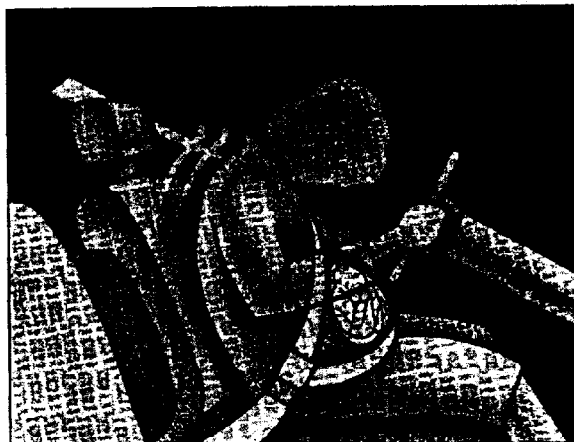


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You can be severely injured or killed in a crash if you aren't wearing your safety belt -- even if you have air bags. Wearing your safety belt during a crash helps reduce your chance of hitting things inside the vehicle or being ejected from it.

CAUTION: (Continued)

1-19

**CAUTION:** (Continued)

Air bags are “supplemental restraints” to the safety belts. All air bags -- even Next Generation air bags -- are designed to work with safety belts, but don't replace them. Air bags are designed to work only in moderate to severe crashes where the front of your vehicle hits something. They aren't designed to inflate at all in rollover, rear, side or low-speed frontal crashes. And, for unrestrained occupants, Next Generation air bags may provide less protection in frontal crashes than more forceful air bags have provided in the past. Everyone in your vehicle should wear a safety belt properly -- whether or not there's an air bag for that person.

 **CAUTION:**

Air bags inflate with great force, faster than the blink of an eye. If you're too close to an inflating air bag, as you would be if you were leaning forward, it could seriously injure you. This is true even with Next Generation frontal air bags. Safety belts help keep you in position before and during a crash. Always wear your safety belt, even with Next Generation air bags. The driver should sit as far back as possible while still maintaining control of the vehicle.

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 **CAUTION:**

Children who are up against, or very close to, any air bag when it inflates can be seriously injured or killed. This is true even though your vehicle has Next Generation frontal air bags. Air bags plus lap-shoulder belts offer the best protection for adults, but not for young children and infants. Neither the vehicle's safety belt system nor its air bag system is designed for them. Young children and infants need the protection that a child restraint system can provide. Always secure children properly in your vehicle. To read how, see the part of this manual called “Children” and see the caution labels on the sunvisors and the right front passenger's safety belt.



There is an air bag readiness light on the instrument panel, which shows an air bag symbol.

The system checks the air bag electrical system for malfunctions. The light tells you if there is an electrical problem. See “Air Bag Readiness Light” in the Index for more information.

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## How the Air Bag System Works



The right front passenger's air bag is in the instrument panel on the passenger's side.

### Where are the air bags?

The driver's air bag is in the middle of the steering wheel.

1-22

### **⚠ CAUTION:**

If something is between an occupant and an air bag, the bag might not inflate properly or it might force the object into that person. The path of an inflating air bag must be kept clear. Don't put anything between an occupant and an air bag, and don't attach or put anything on the steering wheel hub or on or near any other air bag covering.

### When should an air bag inflate?

An air bag is designed to inflate in a moderate to severe frontal or near-frontal crash. The air bag will inflate only if the impact speed is above the system's designed "threshold level." If your vehicle goes straight into a wall that doesn't move or deform, the threshold level is about 9 to 14 mph (14 to 23 km/h). The threshold level can vary, however, with specific vehicle design, so that it can be somewhat above or below this range. If your vehicle strikes something that will move or deform, such as a parked car, the threshold level will be higher. The air bag is not designed to inflate in rollovers, side impacts or rear impacts, because inflation would not help the occupant.

In any particular crash, no one can say whether an air bag should have inflated simply because of the damage to a vehicle or because of what the repair costs were. Inflation is determined by the angle of the impact and how quickly the vehicle slows down in frontal or near-frontal impacts.

### What makes an air bag inflate?

In an impact of sufficient severity, the air bag sensing system detects that the vehicle is in a crash. The sensing system triggers a release of gas from the inflator, which inflates the air bag. The inflator, air bag and related hardware are all part of the air bag modules inside the steering wheel and in the instrument panel in front of the right front passenger.

1-23

### How does an air bag restrain?

In moderate to severe frontal or near-frontal collisions, even belted occupants can contact the steering wheel or the instrument panel. Air bags supplement the protection provided by safety belts. Air bags distribute the force of the impact more evenly over the occupant's upper body, stopping the occupant more gradually. But air bags would not help you in many types of collisions, including rollovers, rear impacts and side impacts, primarily because an occupant's motion is not toward those air bags. Air bags should never be regarded as anything more than a supplement to safety belts, and then only in moderate to severe frontal or near-frontal collisions.

### What will you see after an air bag inflates?

After an air bag inflates, it quickly deflates, so quickly that some people may not even realize the air bag inflated. Some components of the air bag module -- the steering wheel hub for the driver's air bag, or the instrument panel for the right front passenger's bag -- will be hot for a short time. The parts of the bag that come into contact with you may be warm, but not too hot to touch. There will be some smoke and dust coming from vents in the deflated air bags. Air bag inflation doesn't prevent the driver from seeing or from being able to steer the vehicle, nor does it stop people from leaving the vehicle.

### CAUTION:

**When an air bag inflates, there is dust in the air. This dust could cause breathing problems for people with a history of asthma or other breathing trouble. To avoid this, everyone in the vehicle should get out as soon as it is safe to do so. If you have breathing problems but can't get out of the vehicle after an air bag inflates, then get fresh air by opening a window or door.**

In many crashes severe enough to inflate an air bag, windshields are broken by vehicle deformation. Additional windshield breakage may also occur from the right front passenger air bag.

- Air bags are designed to inflate only once. After they inflate, you'll need some new parts for your air bag system. If you don't get them, the air bag system won't be there to help protect you in another crash. A new system will include air bag modules and possibly other parts. The service manual for your vehicle covers the need to replace other parts.

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- Your vehicle is equipped with a crash sensing and diagnostic module, which records information about the air bag system. The module records information about the readiness of the system, when the sensors are activated and driver's safety belt usage at deployment.
- Let only qualified technicians work on your air bag system. Improper service can mean that your air bag system won't work properly. See your dealer for service.

### NOTICE:

**If you damage the covering for the driver's or the right front passenger's air bag, the bag may not work properly. You may have to replace the air bag module in the steering wheel or both the air bag module and the instrument panel for the right front passenger's air bag. Do not open or break the air bag coverings.**

If your vehicle ever gets into a lot of water -- such as water up to the carpeting or higher -- or if water enters your vehicle and soaks the carpet, the air bag controller can be soaked and ruined. If this ever happens, and then you start your vehicle, the damage could make the air bags inflate, even if there's no crash. You would have to replace the air bags as well as the sensors and related parts. If your vehicle is ever in a flood, or if it's exposed to water that soaks the carpet, you can avoid needless repair costs by turning off the vehicle immediately and disconnecting the battery cables. Don't let anyone start the vehicle under any circumstances. See your dealer for service.

### Servicing Your Air Bag-Equipped Vehicle

Air bags affect how your vehicle should be serviced. There are parts of the air bag system in several places around your vehicle. You don't want the system to inflate while someone is working on your vehicle. Your dealer and the Intrigue Service Manual have information about servicing your vehicle and the air bag system. To purchase a service manual, see "Service and Owner Publications" in the Index.

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**Supplement to the 1999 Oldsmobile Intrigue Owner's Manual**

*This information replaces the "Tire Chains" portion located in Section 6 on page 6-53 and the "Fuel Tank Capacity" portion located in Section 6 on page 6-70 and page 7 of the Quick Guide pages in your owner's manual.*

**Tire Chains**

**NOTICE:**

Use tire chains only where legal and only when you must. Use only SAE Class "S" type chains that are the proper size for your tires. Install them on the front tires and tighten them as tightly as possible with the ends securely fastened. Drive slowly and follow the chain manufacturer's instructions. If you can hear the chains contacting your vehicle, stop and retighten them. If the contact continues, slow down until it stops. Driving too fast or spinning the wheels with chains on will damage your vehicle.

**Fuel Tank Capacity**

Fuel Tank ..... 17.0 gallons (64.3 L)

Part No. 99INT001

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