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RUN 1683

REPORT NUMBER: CAL-97-06

**NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST**

**GENERAL MOTORS CORP.
1997 BUICK LESABRE
CUSTOM SEDAN**

NHTSA NUMBER: MV0119

CALSPAN TEST NUMBER: 8406-6

CALSPAN SRL CORPORATION
TRANSPORTATION SCIENCE CENTER
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March 18, 1997

FINAL REPORT

PREPARED FOR:

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Performance Standards
Office of Crashworthiness Standards
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16. <i>Abstract</i> A frontal load cell barrier test of a 1997 Buick LeSabre Custom Sedan was performed at Calspan SRL Corporation crash test facility in Buffalo, New York, on March 18, 1997. The impact velocity was 56.5 kph and the temperature at the barrier face was 15°C. The maximum post-test vehicle crush was 795 mm. The test vehicle was equipped with a 3-point belt system and supplemental airbags at both front outboard seating positions. With respect to FMVSS 208 "Occupant Crash Protection - Injury Criteria" both the driver and passenger appear to comply with the head, chest and femur requirements.					
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Section 1

PURPOSE AND TEST PROCEDURE

This 56.5 kph frontal barrier impact test is part of the Composite FY 92 Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No.DTNH22-96-D-02010.

The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for an impact speed in excess of the current 48.3 kph requirements.

The 56.5 kph frontal barrier impact test was conducted in accordance with the Office of Market Incentives (OMI) Laboratory Indicant Test procedure.

Section 2

SUMMARY OF TEST MV0119

A load cell barrier consisting of 36 load cells was impacted by a 1997 Buick LeSabre Custom Sedan at a velocity of 56.5 kph. The test was performed at the Calspan SRL Corporation on March 18, 1997. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

The frontal barrier impact event was documented by 1 real-time camera and 16 high-speed cameras. Camera locations and other pertinent camera information can be found in this report.

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

Both ATDs were fully instrumented with head and chest triaxial accelerometers and right/left femur load cells. Seat belt load cells were also on the driver's and passenger's lap and shoulder belts to measure dummy torso and pelvic section loading. The driver (position 1) ATD (Serial No. 245) and the right-front passenger (position 2) ATD (Serial No. 064) were used in previous tests (MV0117 and MV0118). Injury criteria for ATD No. 245 and 064 were not exceeded in both tests MV0117 and MV0118. Certification details, along with instrumentation calibration data, are found in Appendix C.

The 133 channels of data were recorded on a P.C. based data acquisition system. Appendix B contains the vehicle, load cell barrier and dummy response data traces. The design of the 3-point restraint system prohibited the electronic measurement of Belt Spool Out.

The driver's HIC was 565.7. The maximum chest deceleration over 3 milliseconds was 43.9 g's and maximum chest deflection was 19.2 mm. Femur loads were -3501.4 Newtons on the left and -5056.5 Newtons on the right.

The right front passenger's HIC was 686.4. Maximum chest deceleration over 3 milliseconds was 46.7 g's and maximum chest deflection was 17.5 mm. Femur loads were -5130.7 Newtons on the left and -3083.5 Newtons on the right.

Table 1

CRASH TEST SUMMARY

Vehicle NHTSA No. : MV0119 Test Mode : 56 kph Frontal Barrier
 Test Date : March 18, 1997 Time: 13:20 Temperature : 15 °C
 Vehicle Make/Model/Body Style : 1997 Buick LeSabre Custom Sedan

Vehicle Test Weight : 1788 kg

Vehicle/Barrier Impact Angle : 0 °

Impact Velocity : 56.5 kph

Maximum Static Crush : 795 mm

Vehicle Rebound : 266.3 mm

DUMMIES:DRIVERPASSENGER

Type :

572E

572E

Restraint System :

Airbag with 3-point belt
system

Airbag with 3-point belt
system

Number of Data Channels : 133

Number of Cameras : 1 Real Time

16 High Speed

DOOR OPENING DATA :

Closed/Operable - Left Front

Closed/Inoperable (tools required to open) - Right Front

Front Seat(s) Data :

DRIVERPASSENGER

Seat Track Failure :(mm of shift)

0

0

Seat Back Failure :

NONE

NONE

VISIBLE DUMMY CONTACT POINTS :DRIVERPASSENGER

Head :

Center of airbag / Back of
head to head rest

Center of airbag / Back of
head to head rest

Abdomen :

-

-

Chest

Airbag

Airbag

Knees

Knee Bolsters

Knee Bolsters

Table 2

GENERAL TEST AND VEHICLE PARAMETER DATATEST VEHICLE INFORMATION :

Year/Make/Model/Body Style : 1997 Buick LeSabre Custom Sedan

NHTSA No. : MV0119 ; VIN: 1G4HP52K1VH445569 ; Color : Green Gray

Engine Data: 6 cylinders; - CID; 3.8 Liters; - cc

Placement : - Longitudinal or In-Line; x Transverse of Lateral

Transmission Data : 4 speeds; - Manual; x Automatic; x Overdrive

Final Drive : - Rear Wheel Drive; x Front Wheel Drive; - Four Wheel Drive

Major Options : x A/C; x Pwr.Strg.; x Pwr. Brakes
x Pwr. Windows; x Pwr. Door Locks; x Tilt Wheel

Date Received : 2/27/97 ; Odometer Reading 198 km

Selling Dealer : Delia Inc.

& Address: 535 Main St. East Aurora, N.Y. 14052

DATA FROM TIRE VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by : General Motors Corp.

Date of Manufacture 5/96

GVWR : 2063 kg; GAWR: 1148 kg FRONT; 915 kg REAR

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load : 210 kpa FRONT
210 kpa REAR

Recommended Tire Size : P205/70R15

* Recommended Cold Tire Pressure : 210 kpa FRONT; 210 kpa REAR

Size of Tires on Test Vehicle: P205/70R15 ; Manufacturer: General

Vehicle Capacity Data :

Type of Front Seats: - Bench; - Bucket; x Split Bench

Number of Occupants: 3 Front; 3 Rear; 6 Total

Vehicle Capacity Weight (VCW) = 488 kg

No. of Occupants x 68 kg = 408 kg

Rated Cargo/Luggage Weight (RCLW) = 80 kg

*Tire pressure used for test

Table 2
GENERAL TEST AND VEHICLE PARAMETER DATA (cont.)

WEIGHT OF TEST VEHICLE AS RECEIVED FROM DEALER (with maximum fluids)= UDW:

Right Front = <u>508</u> kg	Right Rear = <u>276</u> kg
Left Front = <u>503</u> kg	Left Rear = <u>274</u> kg
TOTAL FRONT = <u>1,011</u> kg	TOTAL REAR = <u>550</u> kg
TOTAL DELIVERED WEIGHT = <u>1,561.0</u> kg	
% of Total Front of Vehicle Weight = <u>64.8</u> %	% of Total Rear Weight = <u>35.2</u> %

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT :

Total Delivered Weight (UDW)	=	<u>1,561</u> kg
Rated Cargo/Luggage Weight (RCLW)	=	<u>80</u> kg
Weight of 2 p.572 Dummies @ 76 each	=	<u>152</u> kg
TARGET TEST WEIGHT	=	<u>1,793</u> kg

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 75 KG OF CARGO WEIGHT:

Right Front = <u>530</u> kg	Right Rear = <u>363</u> kg
Left Front = <u>531</u> kg	Left Rear = <u>364</u> kg
TOTAL FRONT = <u>1,061</u> kg	TOTAL REAR = <u>727</u> kg
TOTAL TEST WEIGHT = <u>1,788.0</u> kg	
% of Total Front Weight = <u>59.3</u> %	% of Total Rear Weight = <u>40.7</u> %
Weight of Ballast Secured in Vehicle Trunk Area = <u>0</u> kg	
Vehicle Components Removed for Weight Reduction: <u>None</u>	

VEHICLE ATTITUDE (all dimension in millimeters):

AS DELIVERED :	RF	<u>730</u>	LF	<u>729</u>	RR	<u>737</u>	LR	<u>735</u>
FULLY LOADED :	RF	<u>727</u>	LF	<u>727</u>	RR	<u>711</u>	LR	<u>711</u>
AS TESTED :	RF	<u>719</u>	LF	<u>718</u>	RR	<u>677</u>	LR	<u>676</u>
Vehicle's Wheel Base : <u>2820</u> mm								
Location of Vehicle's C.G. : <u>1,146.6</u> mm rearward of front wheel center.								

FUEL SYSTEM DATA :

Fuel System Capacity From Owner's Manual	=	<u>68.5</u> liters
Usable Capacity Figure Furnished by COTR	=	<u>68.5</u> liters
Test Volume Range (92 to 94% of Usable Capacity)	=	<u>63.0</u> to <u>64.4</u> liters
ACTUAL TEST VOLUME=	<u>63.2</u> liters (with entire fuel system filled)	
Test Fluid Type:	<u>Stoddard Solution</u> ; Spec. Grav. = <u>0.764</u>	
Kinematic Viscosity =	<u>0.96</u> centistokes; Color = <u>Orange</u>	
Type of Fuel Pump:	Electric- <u>x</u> ; Mechanical- <u> </u>	
Does Electric Pump operate with ignition switch "ON" & engine "OFF"	Yes- <u>x</u> No- <u> </u>	
Details of Fuel System <u>Fuel filler is on left rear quarter panel behind rear axle, fuel tank is centered in front of rear axle with fuel lines run along right frame rail.</u>		

Table 3

POST IMPACT DATA

TYPE OF TEST:

Type of Test : Frontal Barrier Impact Angle : 0°
 Test Date : March 18, 1997 Time: 13:20 Temperature: 15 °C
 Vehicle NHTSA No. : MV0119
 Required Impact Velocity Range : 55.7 to 57.1 kph

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

Trap No. 1 = 56.5 kph; Trap No. 2 = 56.5 kph
 Distance from vehicle to barrier : (1) entering trap = 1321 mm
 (2) exiting trap = 305 mm

VEHICLE STATIC CRUSH: (mm) (For frontal and rear impacts only.)

Vehicle Length:

Pre-Test Right = 5045 ; C/L = 5080 ; Left = 5045
 Post-Test Right = 4300 ; C/L = 4285 ; Left = 4295
 Crush Right = 745.0 ; C/L = 795.0 ; Left = 750.0
 AVERAGE = 763.3 mm

VEHICLE REBOUND: (From rigid barrier only.)

Distance from front of test vehicle to impact point :
 Right = 237 ; C/L = 351 ; Left = 211
 AVERAGE = 266.3 mm

Section 3

OCCUPANT AND VEHICLE INFORMATION

I. DATA

1. Test Vehicle Information
2. Dummy Positioning Data
3. Vehicle Accelerometer Data
4. Dummy Injury Criteria Data Summary
5. Seat Belt Performance Assessment Data
6. Test Vehicle Measurements
7. Vehicle Intrusion Measurements
8. Camera Locations
9. Vehicle Target Locations
10. Load Cell Barrier Data
11. Post Test Air Bag Data

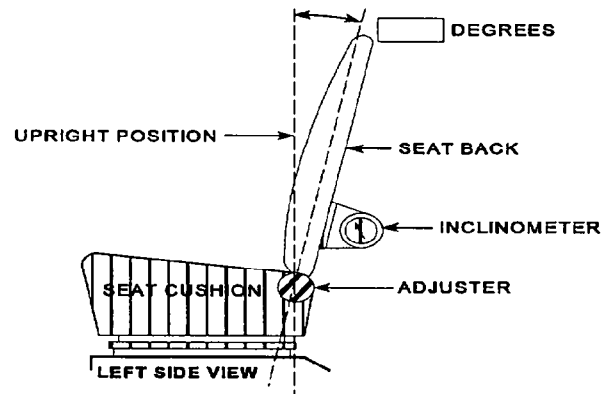
Figure 1

TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year : 1997 Vehicle Model: Buick LeSabre Body Style : Custom Sedan

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.



FRONT SEAT ASSEMBLY

Seat back angle for driver's seat : 26

Measurement instructions : 300 mm above pivot on seat frame place inclinometer, measure angle

Seat back angle for passenger's seat : 26

Measurement instructions : 300 mm above pivot on seat frame place inclinometer, measure angle

2. Seat Fore and Aft Positioning

Positioning of the driver's seat : Electronic Glide - positioned seat at its most forward and most rear positions and marked locations , took distance measurement from points and found center.

Positioning of the passenger's seat (if applicable) : Located 23 detents and placed on 12th notch.

3. Fuel Tank Capacity Data

3.1

A. "Usable Capacity" of the standard equipment fuel tank is 68.5 liters

B. "Usable Capacity" of the optional equipment fuel tank is - liters

C. "Usable Capacity" of the vehicle(s) used for certification testing to requirements of FMVSS 301 = 68.5 liters

3.2 Amount of Stoddard solvent added to vehicle(s) used for certification test(s) = 63.2 liters

3.3 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.

With ignition turned on.

Figure 1

TEST VEHICLE INFORMATION (cont.)

4. STEERING COLUMN ADJUSTMENTS :

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: 6 detents placed on the 4th from top

5. SEAT BELT UPPER ANCHORAGE

Nominal design riding position: 5 detents placed on 3rd from top

Figure 2

DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS

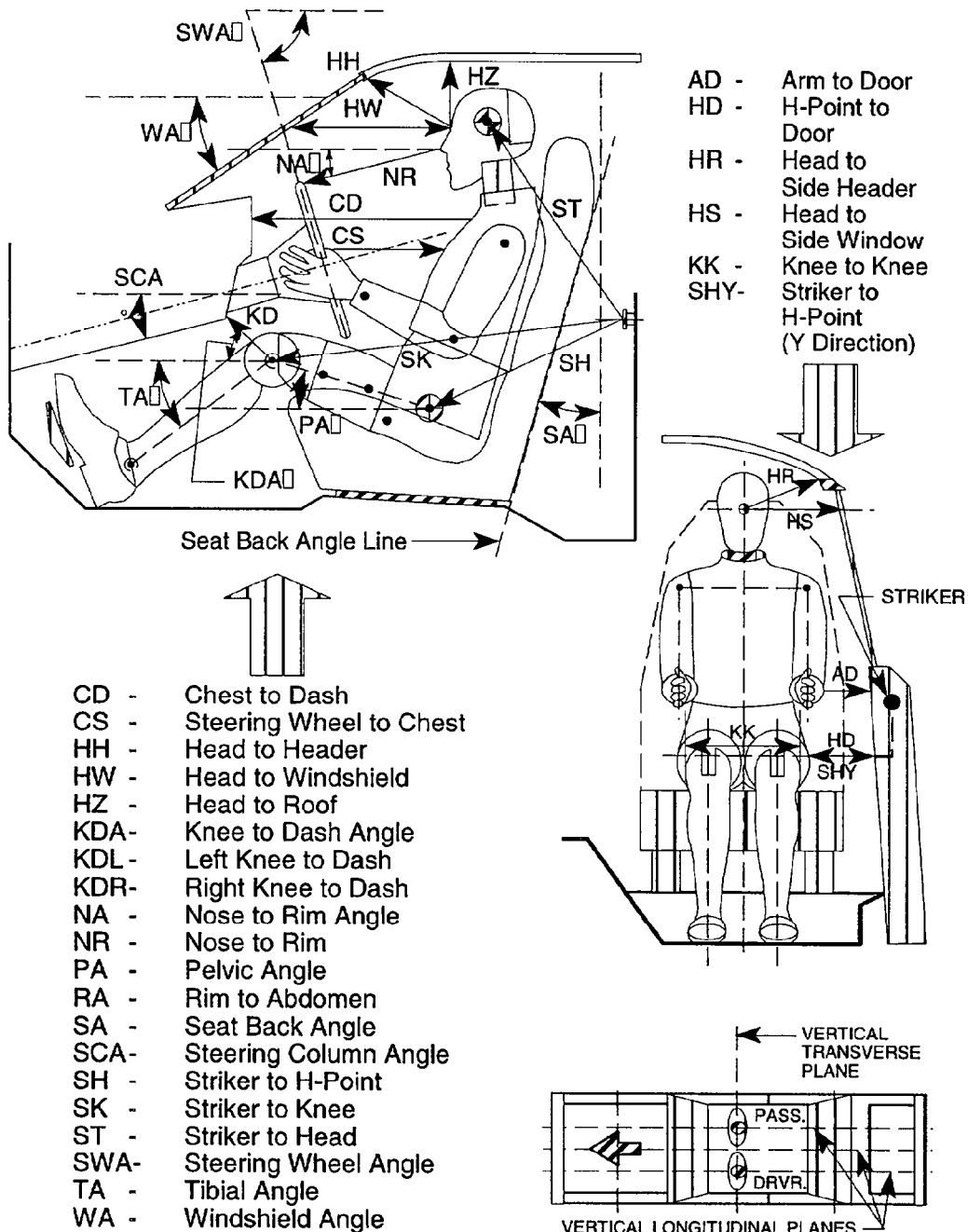


Table 4

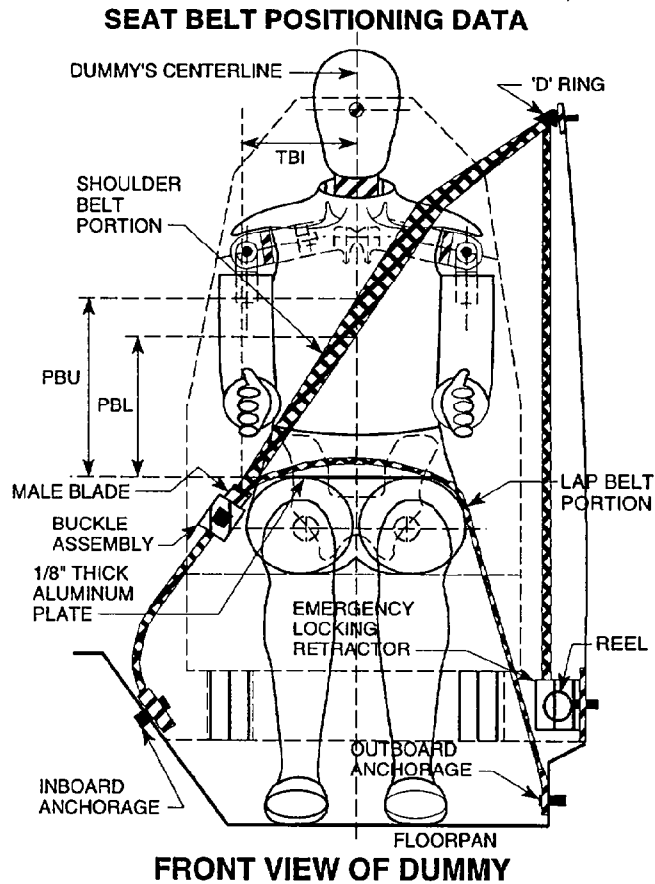
FRONT SEAT OCCUPANT MEASUREMENTS

	DRIVER (Serial #245)			PASS. (Serial # 064)		
WA ^o	30 deg.			N/A		
SWA ^o	67 deg.			N/A		
SCA ^o	23 deg.			N/A		
SA ^o	26 deg.			26 deg.		
HZ	196			166		
HH	333			311		
HW	629			557		
HR	306			281		
NR	344	Angle	-6 deg.	N/A		
CD	537			523		
CS	274			N/A		
RA	181			N/A		
KDL	155	Angle (KDA)	38 deg.	161		
KDR	161			137	Angle (KDA)	43 deg.
PA ^o	22.5 deg.			24 deg.		
TA ^o	38 deg.			36 deg.		
KK	298			234		
ST	465	Angle	85 deg.	485	Angle	81 deg.
SK	599	Angle	-1 deg.	617	Angle	-3 deg.
SH	273	Angle	-39 deg.	275	Angle	-40 deg.
SHY	261			263		
HS	398			347		
HD	164			155		
AD	154			141		

Dimensions in millimeters

Figure 3

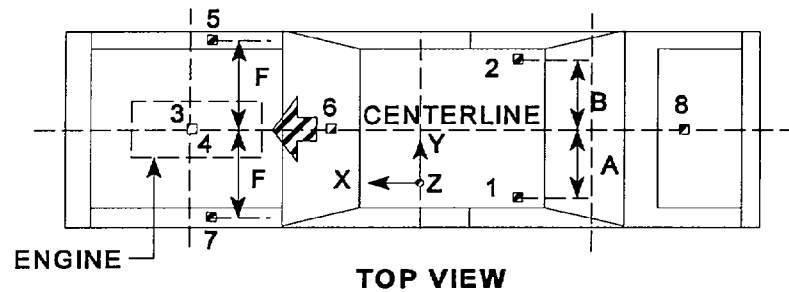
SEAT BELT POSITIONING DATA



	DRIVER DUMMY (mm)	PASSENGER DUMMY (mm)
PBU -- Top surface of alum. plate to upper edge	286	291
PBL-- Top surface of alum. plate to belt lower edge	214	219
<u>LAP BELT TENSION</u>	Retractor	Retractor
<u>SHOULDER BELT TENSION</u>	Retractor	Retractor

Figure 4

VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY



REAR SEAT CUSHION
ASSY. FRONT ATTACHMENT
BRACKET SUPPORT

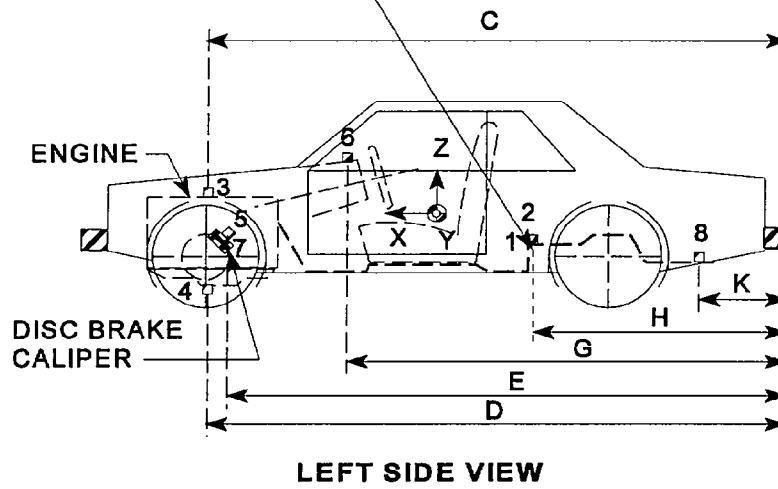


Table 5

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

DIMENSION	LENGTH (mm)
	PRE-TEST VALUES
A Left Rear Seat Crossmember Y	656mm 685 mm (redundant)
B Right Rear Seat Crossmember Y	651 mm 686 mm (redundant)
C Top of Engine X	677 mm from front
D Bottom of Engine X	845 mm from front
E Disc Brake Calipers X	1168 mm from front
F Disc Brake Calipers Y	595 mm
G Instrument Panel X	3158 mm
H Rear Seat Crossmembers X	1853 mm

LOCATION NUMBER	DESCRIPTION	MAXIMUM VALUE (g's)			
		Pos.	msec.	Neg.	msec.
1	Rear Seat X-Member @ Left Side	3.0	170.9	-30.7	75.4
2	Rear Seat X-Member @ Right Side	3.4	156.7	-29.0	80.2
3	Top of Engine Block	28.4	53.4	-120.8	38.2
4	Bottom of Engine	21.4	49.6	-112.0	37.2
5	Disc Brake Caliper @ Right Side	20.6	41.6	-104.0	54.1
6	Instrument Panel	69.3	63.3	-89.3	28.6
7	Disc Brake Caliper @ Left Side	23.0	60.5	-116.4	51.4
8	Rear Seat X-Member @ Left-Redundant	3.3	156.5	-30.9	75.5
9	Rear Seat X-Member @ Right-Redundant	3.7	157.0	-31.1	70.9

Table 6

DUMMY INJURY CRITERIA VALUESNHTSA Test No.: MV0119 Vehicle: 1997 Buick LeSabre Custom Sedan

	MAXIMUM HEAD ACCELERATION (g's)			
	X	Y	Z	R
Position #1 - Driver	-59.1	20.0	17.1	60.7
Position #2 - Passenger	-61.7	-6.9	24.2	65.7

	MAXIMUM CHEST ACCELERATION (g's)			
	X	Y	Z	R*
Position #1 - Driver	-45.1	-6.2	-9.8	43.9
Position #2 - Passenger	-48.5	4.0	-13.4	46.7

* The maximum chest resultant acceleration is defined as the maximum acceleration which exceeds 0.003 seconds in duration.

	MAXIMUM FORCE - FEMUR LOAD (N)	
	LEFT FEMUR	RIGHT FEMUR
Position #1 - Driver	-3501.4	-5056.5
Position #2 - Passenger	-5130.7	-3083.5

	MAXIMUM FORCE - SEAT BELT LOADS (N)		
	SHOULDER STRAP UPPER BELT LOAD	LAP STRAP RIGHT BELT LOAD	LAP STRAP LEFT BELT LOAD
Position #1 - Driver	5615.0	-	5878.5
Position #2 - Passenger	5276.8	3148.2	-

	HEAD INJURY CRITERIA (HIC)			
	HIC**	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂
Position #1 - Driver	565.7	66.2	102.2	47.70
Position #2 - Passenger	686.4	65.0	101.0	51.54

** HIC is as defined in FMVSS 208. The maximum time interval from t₁ to t₂ is 36 milliseconds.

Table 7
HYBRID III NECK AND CHEST DATA SHEET

Vehicle Year/Make/Model/Body Style: 1997 Buick LeSabre Custom Sedan
 NHTSA Test No.: MV0119 Test Date: March 18, 1997

MAXIMUM VALUES	DRIVER DUMMY	PASSENGER DUMMY
Neck Load X (N)	-572.1	611.9
Neck Load Y (N)	-209.0	-102.2
Neck Load Z (N)	1812.7	-1477.2
Neck Moment X (N-m)	-18.8	-14.3
Neck Moment Y (N-m)	34.5	-55.1
Neck Moment Z (N-m)	-11.1	21.6
Chest Deflection X (mm)	19.2	17.5
Time of Max. Occurrence (msec)	99.2	91.2

Note: All values listed occur during the primary impact event.

PELVIC DATA

MAXIMUM VALUES	DRIVER DUMMY	PASSENGER DUMMY
Pelvic X Acceleration (g's)	-54.8	-40.1
Pelvic Y Acceleration (g's)	-16.9	-6.6
Pelvic Z Acceleration (g's)	20.3	17.8

LOWER LEG INSTRUMENTATION (ABBREVIATED)

MAXIMUM VALUES	DRIVER DUMMY		PASSENGER DUMMY	
	Left	Right	Left	Right
Tibia Z Forces (N)	-2006.4	-2764.3	-1850.9	-2564.4
Tibia Y Moments (N-m)	-43.4	162.9	-25.9	222.3

ANKLE ACCELERATIONS

MAXIMUM VALUES	DRIVER DUMMY		PASSENGER DUMMY	
	Left	Right	Left	Right
X Acceleration (g's)	-49.3	-98.2	-50.7	-91.7
Z Acceleration (g's)	84.5	-95.6	-53.4	175.2

Table 8

REDUNDANT DUMMY INJURY CRITERIA VALUESNHTSA Test No.: MV0119 Vehicle: 1997 Buick LeSabre Custom Sedan

	MAXIMUM HEAD ACCELERATION (g's) REDUNDANT			
	X	Y	Z	R
Position #1 - Driver	-63.8	10.9	16.3	64.4
Position #2 - Passenger	-61.5	7.4	24.2	64.5

	MAXIMUM CHEST ACCELERATION (g's) REDUNDANT			
	X	Y	Z	R*
Position #1 - Driver	-44.5	-6.3	-10.3	43.8
Position #2 - Passenger	-46.8	5.3	-13.7	46.2

* The maximum chest resultant acceleration is defined as the maximum acceleration which exceeds 0.003 seconds in duration.

	HEAD INJURY CRITERIA (HIC) REDUNDANT			
	HIC**	t_1 (msec)	t_2 (msec)	Average Acceleration t_1 to t_2
Position #1 - Driver	581.2	66.8	102.8	48.22
Position #2 - Passenger	671.0	64.2	100.2	51.07

** HIC is as defined in FMVSS 208. The maximum time interval from t_1 to t_2 is 36 milliseconds.

Table 9

SEAT BELT PERFORMANCE ASSESSMENT TEST DATABELT LENGTH DATA:

Belt length from trim panel exit
to bolt hole anchor point for
continuous webbing systems.

DriverPassenger

0

0

Shoulder belt length as measured
on Part 572 Dummy.

875

886

Lap belt length as measured
on Part 572 Dummy.

671

674

SHOULDER BELT SPOOL-OFF DATA:

As determined by film analysis.

76.2

76.2

As determined mechanically.

*

*

As determined electronically.

*

*

BELT STRETCH DATA:

Measured electronically between shoulder
belt load cell and the "D" ring.

43.0 mm/M

47.5 mm/M

Measured mechanically.

0 mm

0 mm

* No allowable place to insert instrumentation - interior molding runs up to d-ring

Dimensions in millimeters

Figure 5

TEST VEHICLE MEASUREMENTS

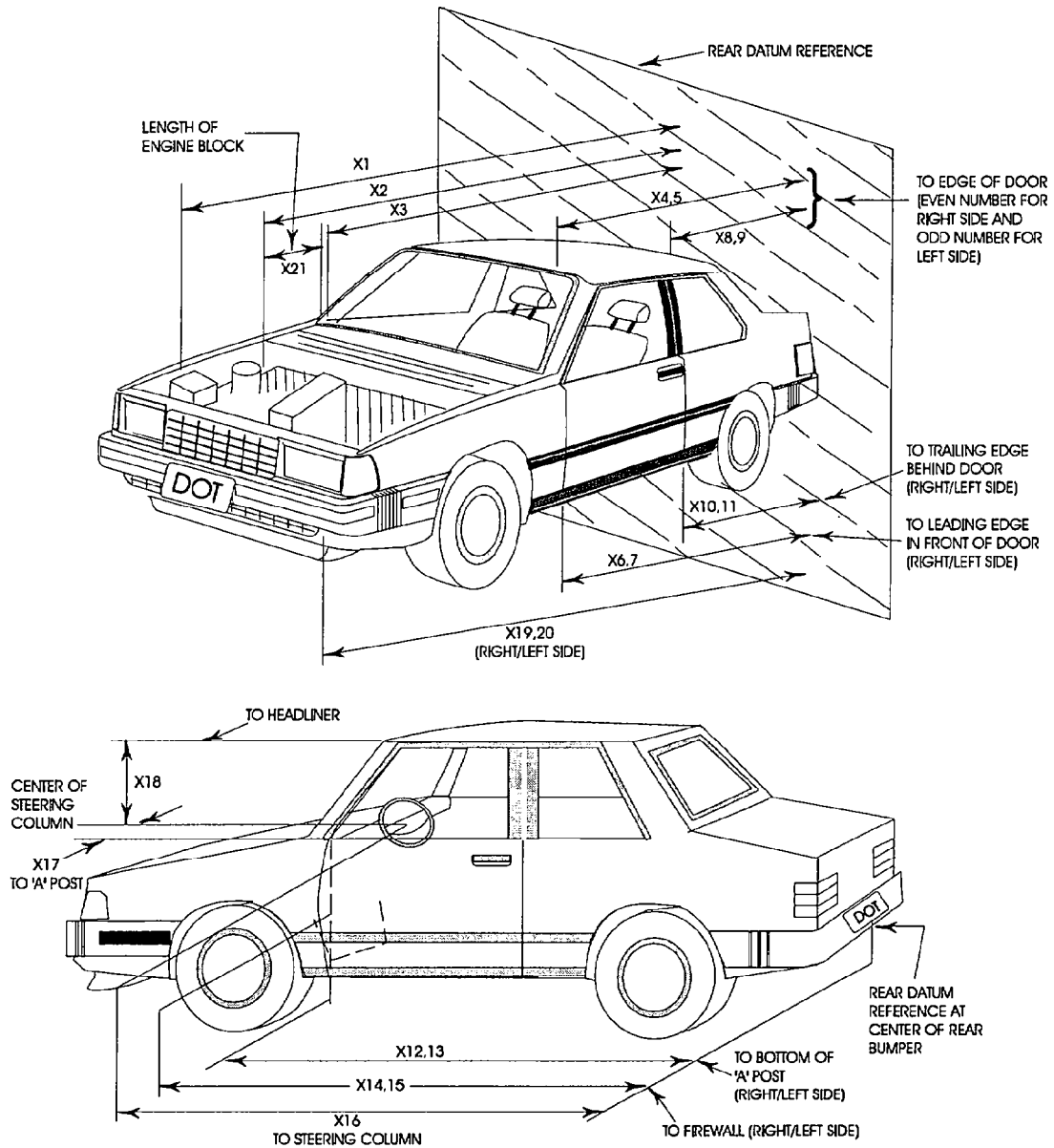


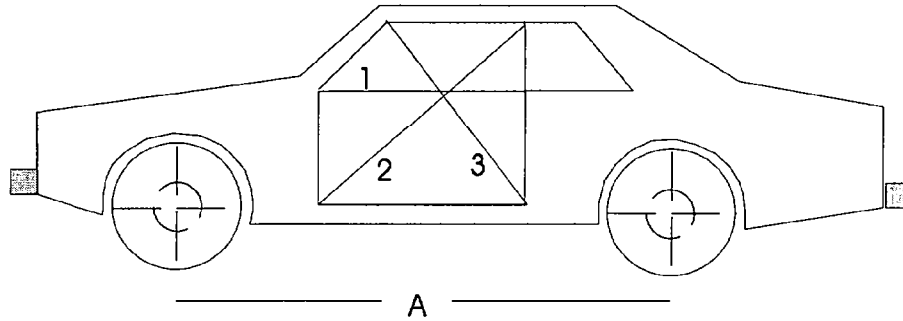
Table 10

VEHICLE MEASUREMENTS

No.		All Dimensions in mm		
		Pre-Test	Post-Test	Differences
X1	Total Length of Vehicle at Centerline	5080	4285	795
X2	Rear Surface of Vehicle to Front of Engine	4240	3980	260
X3	Rear Surface of Vehicle to Firewall	3740	3710	30
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	3405	3392	13
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	3404	3387	17
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	3405	3385	20
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	3407	3387	20
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	2346	2340	6
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	2362	2340	22
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	2355	2330	25
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	2356	2336	20
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	3425	3398	27
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	3432	3407	25
X14	Rear Surface of Vehicle to Firewall, Right Side	3655	3620	35
X15	Rear Surface of Vehicle to Firewall, Left Side	3710	3650	60
X16	Rear Surface of Vehicle to Steering Column	2915	2900	15
X17	Center of Steering Column to "A" Post	490	475	15
X18	Center of Steering Column to Headliner	420	370	50
X19	Rear Surface of Vehicle to Right Side of Front Bumper	5045	4300	745
X20	Rear Surface of Vehicle to Left Side of Front Bumper	5045	4295	750
X21	Length of Engine Block	600	600	0
RD	Rear Surface of Vehicle to Right Side of Dash Panel	3130	3135	-5
CD	Rear Surface of Vehicle to Center of Dash Panel	3170	3175	-5
LD	Rear Surface of Vehicle to Left Side of Dash Panel	3135	3120	15

Figure 6

VEHICLE INTRUSION MEASUREMENTS
DOOR OPENING WIDTH

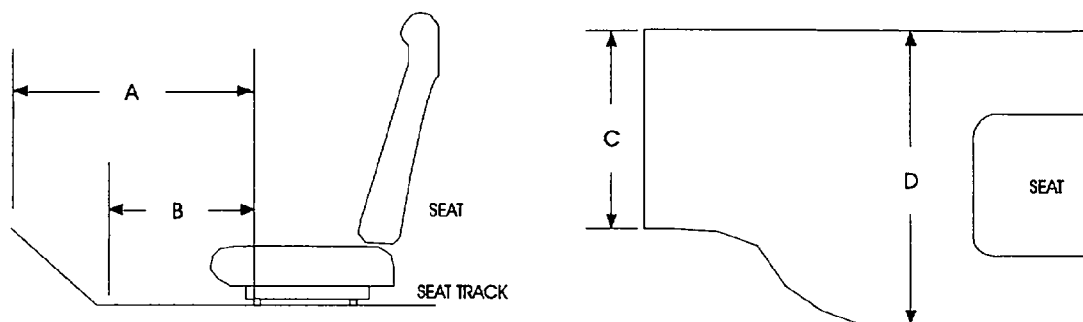


UNITS (mm)	LEFT			RIGHT		
MEASUREMENT	1	2	3	1	2	3
BEFORE TEST	970	1465	1125	970	1465	1000
AFTER TEST	955	1470	1035	940	1475	1020
DIFFERENCE	15	-5	90	30	-10	-20

UNITS (mm)	A = WHEELBASE LEFT	A = WHEELBASE RIGHT
BEFORE TEST	2820	2820
AFTER TEST	2695	2620
DIFFERENCE	125	200

Figure 7

VEHICLE INTRUSION MEASUREMENTS
STATIC FOOTWELL DEFORMATION



DRIVER

Measurement	Pre-Test	Post-Test	Difference
A	595	565	30
B	520	510	10
C	465	450	15
D	505	495	10

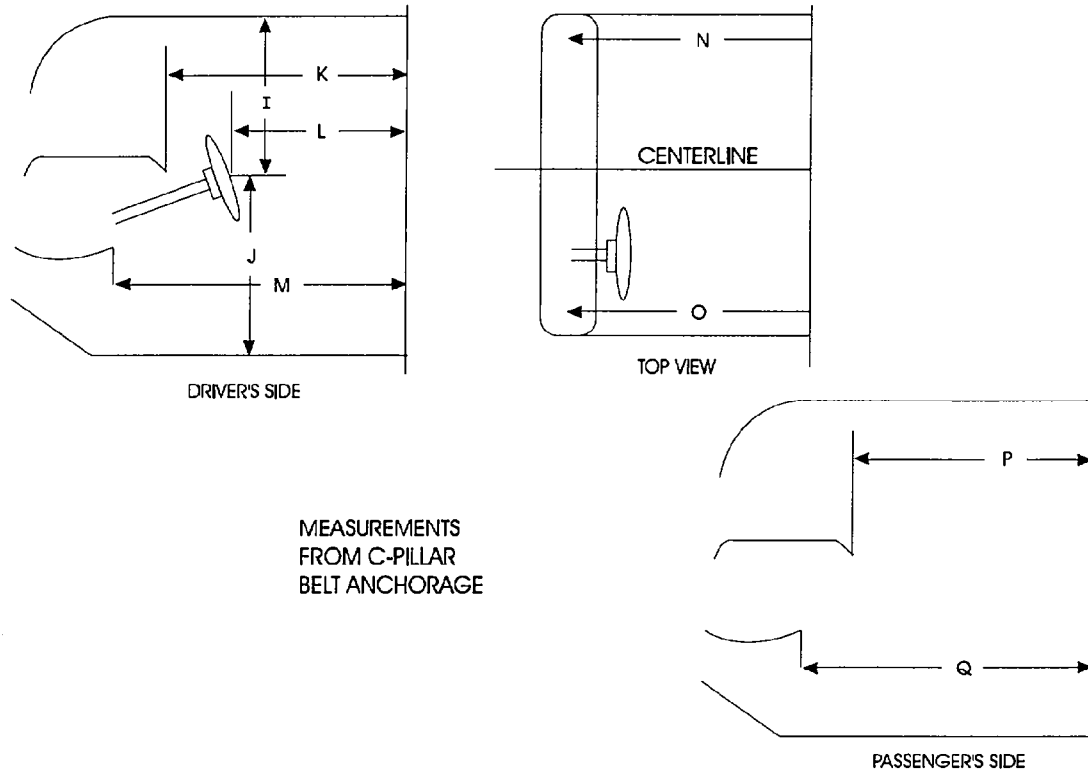
PASSENGER

Measurement	Pre-Test	Post-Test	Difference
A	570	475	95
B	490	445	45
C	435	NA	435
D	495	465	30

Units = mm

Figure 8

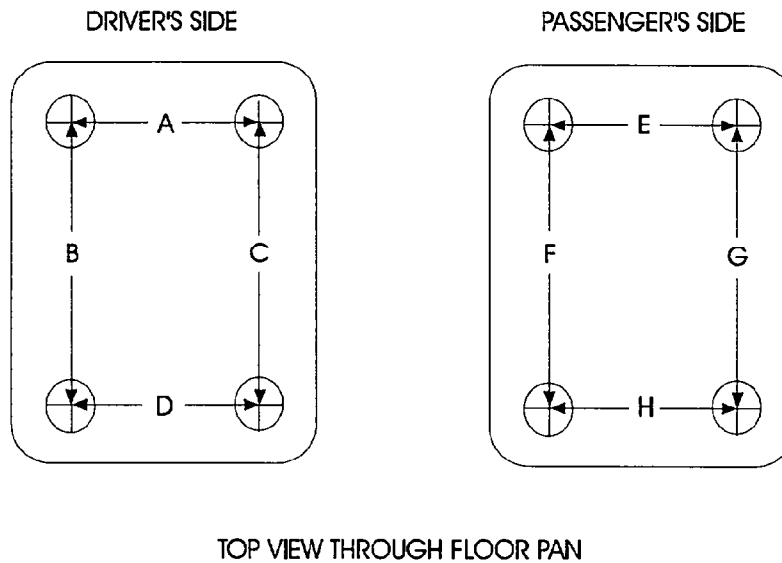
VEHICLE INTRUSION MEASUREMENTS
STATIC PASSENGER COMPARTMENT INTRUSION



Measurement	Pre-Test	Post-Test	Difference
I	400	360	40
J	640	680	-40
K	740	730	10
L	510	495	15
M	760	735	25
N	725	730	-5
O	730	715	15
P = K (PASS.)	760	770	-10
Q = M (PASS.)	780	770	10

Units = mm

Figure 9
FLOORBOARD DEFORMATION



Measurement	Pre-Test	Post-Test	Difference
A	470	495	-25
B	585	585	0
C	570	570	0
D	480	485	-5
E	465	510	-45
F	555	560	-5
G	553	525	28
H	470	475	-5

Units = mm

Figure 10

CAMERA POSITIONS FOR FRONTAL IMPACTS

NOTE: Camera information shown in Table 11.

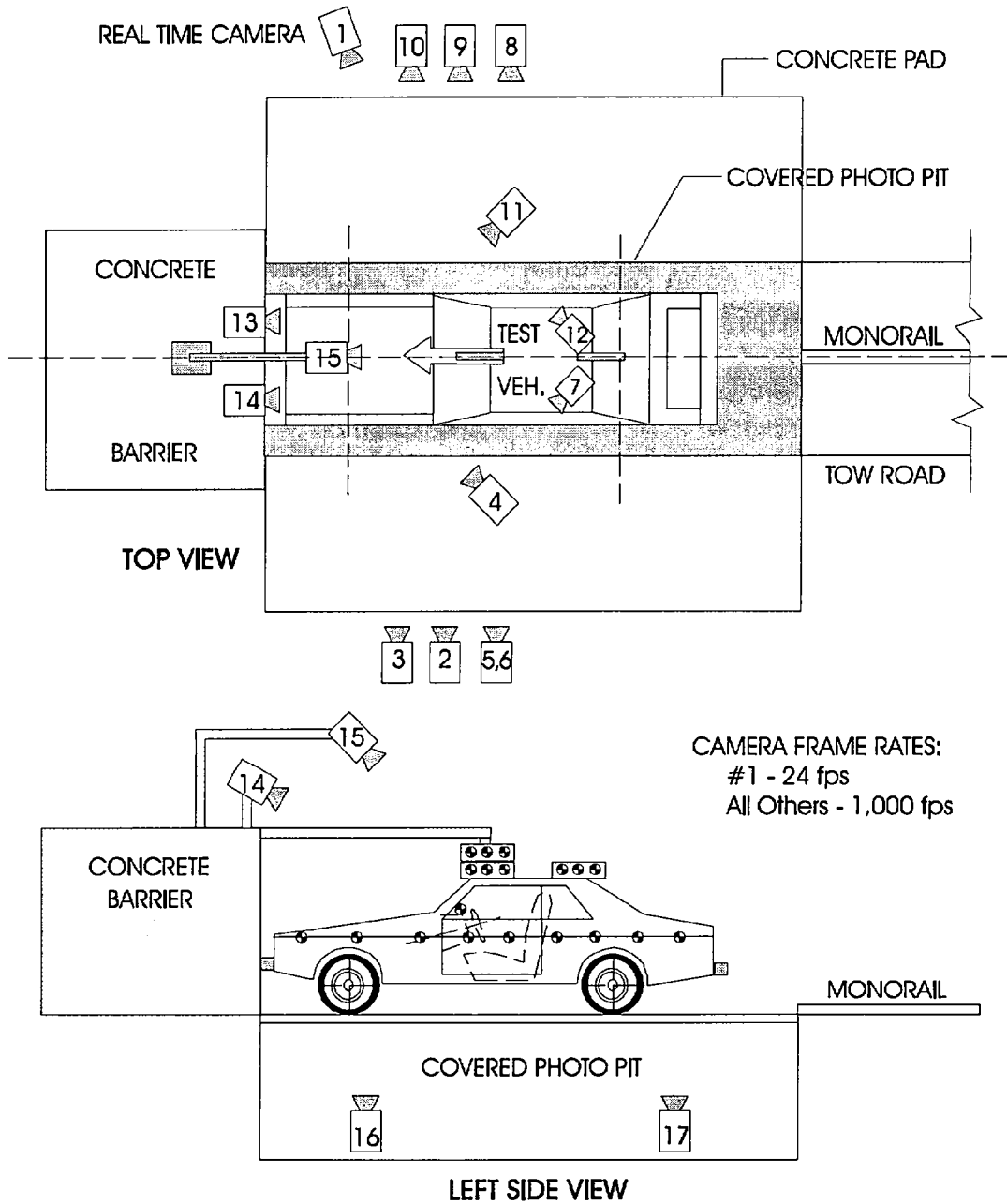


Table 11
HIGH-SPEED CAMERA LOCATIONS

NHTSA Test No.:			Vehicle:			1997 Buick LeSabre Custom Sedan		
CAMERA NO.	VIEW	CAMERA POSITIONS (mm)*			ANGLE** (deg)	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
		X	Y	Z				
1	Real-Time Camera	-	-	-	-	-	-	24
2	Overall Left Side	8514	2425	1131	-3	8084	13	1010
3	Left Side View	6618	1485	1129	-2	6188	25	1010
4	Driver and Interior View	5574	3403	1902	-11	-	25	1000
5	Steering Column (Bottom)	9291	1744	1168	-2	8861	35	1010
6	Steering Column (Top)	9291	1744	1776	-8	8861	35	1010
7	Left Belt	-	-	-	-	-	13	565
8	Overall Right Side	7001	2854	1097	-3	6571	13	1140
9	Right Side View	8583	1912	1078	-3	8153	25	1155
10	Right Passenger View	8503	2783	1496	-4	8073	35	990
11	Passenger and Interior View	5772	3539	1930	-12	-	25	1110
12	Right Belt	-	-	-	-	-	13	550
13	Passenger Front View	580	0	2000	-40	-	13	1060
14	Driver Front View	580	0	2000	-40	-	13	1090
15	Windshield View	0	530	3048	-53	-	13	1040
16	Pit View of Engine	0	505	-3048	90	-	13	975
17	Pit View of Fuel Tank	0	3432	-3048	90	-	13	920

*X = film plane to monorail centerline ** = referenced to horizontal plane

Y = film plane to impact location N.T. indicates No Timing

Z = film plane to ground

Figure 11

VEHICLE TARGET LOCATIONS

(Dimensions in millimeters)

A	354
B	1293
C	1214
D	2243
E	330
F	1654
G	933
H	933
I	128
J	1547
K	1061
L	1539
M	330
N	128
O	933
P	933
Q	1539
R	1061
S	1547

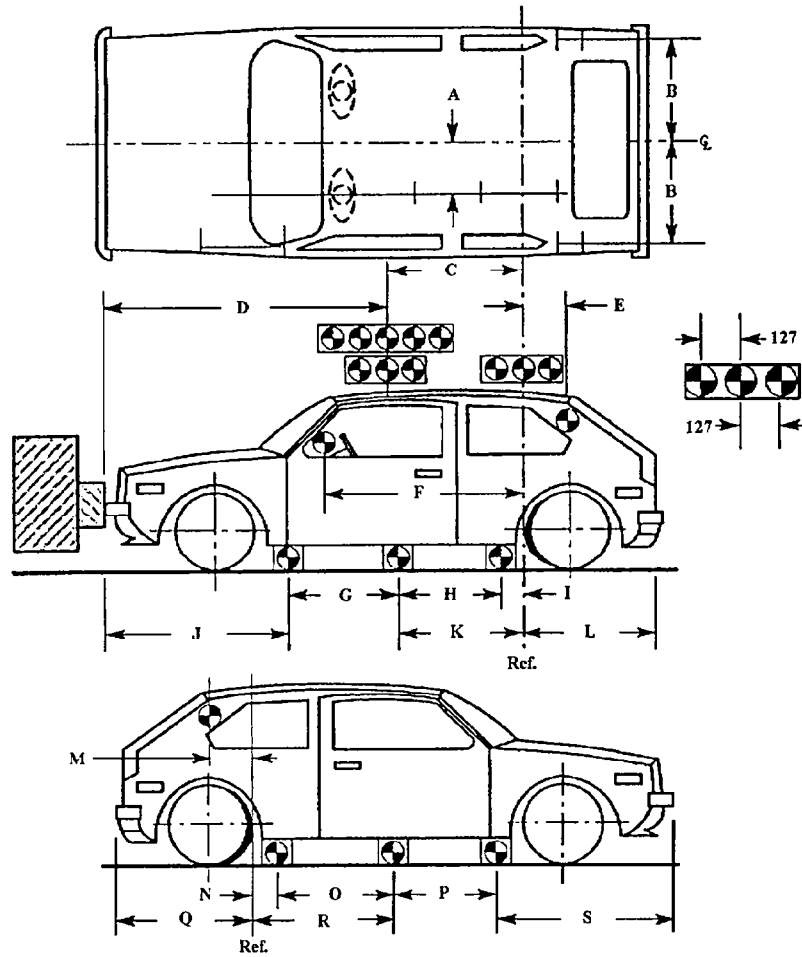
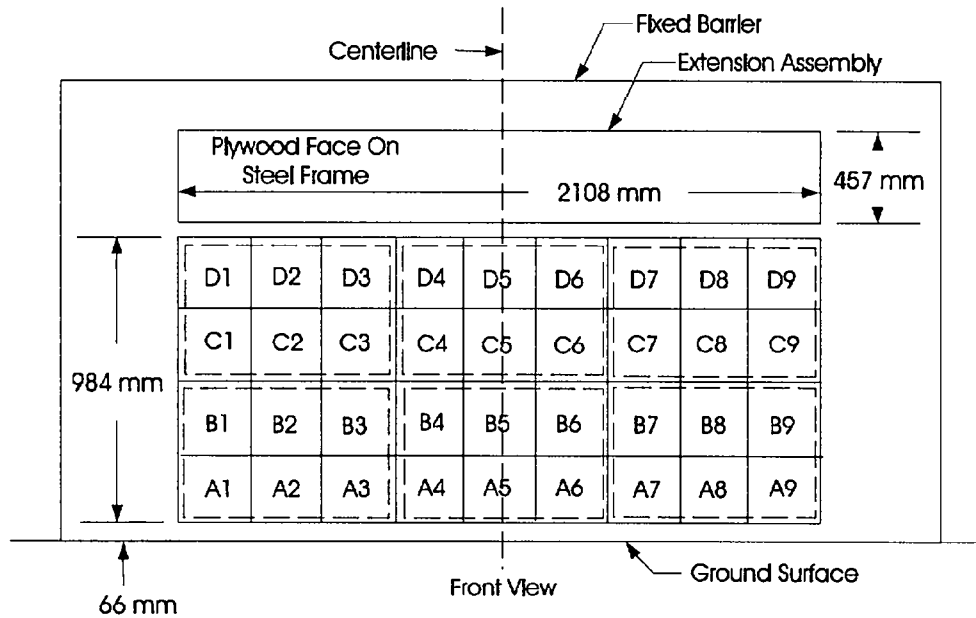


Figure 12

LOAD CELL LOCATIONS ON FIXED BARRIER

36 Load Cells
 4 Rows
 9 Columns
 6 Groupings (6 cells/group)



6 GROUPS OF 6 LOAD CELLS EACH

Group 4 C1 thru D3	Group 5 C4 thru D6	Group 6 C7 thru D9
Group 1 A1 thru B3	Group 2 A4 thru B6	Group 3 A7 thru B9

The following data is presented in Appendix B:

- (1) Data from 36 individual load cells
- (2) Total or Sum of 36 individual load cells
- (3) Data from 6 Groupings shown above (6 cells/group)

Table 12

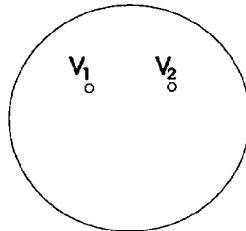
POST TEST AIR BAG DATANHTSA No. : MV0119 Test Date: March 18, 1997 Technician: J. CzarneckiVehicle Model Year/Make/Model: 1997 Buick LeSabre

- A. No. of vent holes: 2 -Driver 2 -Passenger
- B. Size of vent holes: (mm²) 25 -Driver 60 -Passenger
- C. Total vent area: (mm²) 50 -Driver 120 -Passenger
- D. Deflated air bag length and width dimensions or, if round, diameter. (mm)
- Driver: - -Length; - -Width; 620 -Diameter
- Passenger: 600 -Height; 650 -Width; 750 -Depth
- E. Is the air bag tethered?
- Driver: - -Yes; x -No; If yes, record length of tether-
- Passenger: - -Yes; x -No; If yes, record length of tether-

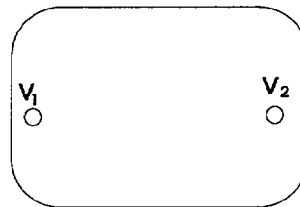
Sketch the air bag showing the location of the vent holes, how the bag is tethered, and where the bag is tethered. Also describe how the tethers are attached to the bag and the steering wheel.

(Note: Not to scale; V_n = Vent hole_n, T_n = Tether_n).

DRIVER
vents underneath bag



PASSENGER
vents underneath bag



- F. Record part numbers and manufacturer name of the air bag and gas generator.

Driver: Air bag: AB096715QACLB3

Generator: TIFT039J20455

Passenger: Air bag: AL71531512450284

Generator: GBMG4N2CDIT

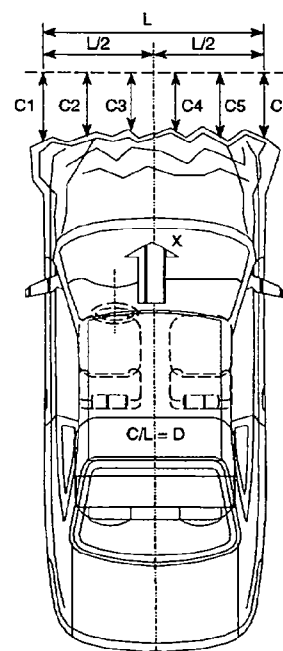
Table 13

ACCIDENT INVESTIGATION DIVISION DATA
FOR 56.3 KPH FRONTAL BARRIER IMPACT

Vehicle Make/Model/Body Style: Buick LeSabre Custom Sedan
 NHTSA Test No.: MV0119 VIN: 1G4HP52K1VH445569
 Model Year: 1997 Build Date: 5/96 Test Date: March 18, 1997
 Vehicle Size Category: Sedan Test Weight: 1788 kg
 Vehicle Wheelbase: 2820 mm; Front Overhang: 16332 mm; Overall Width: 1869 mm
 Collision Deformation Classification (CDC) Code: 12FDEW2

Crush Depth Dimensions:

	PRE	POST	DIFF	
C1 =	4875	4280	-595	mm
C2 =	5035	4300	-735	mm
C3 =	5080	4300	-780	mm
C4 =	5080	4310	-770	mm
C5 =	5035	4305	-730	mm
C6 =	4875	4285	-590	mm



Midpoint of Damage: $D = \frac{\text{Vehicle Centerline}}{\text{(Longitud.)}}$

Longitude Length of Damaged Region:
 L1= 1650 mm
 L2= 825 mm
 L3= 330 mm

Section 4

SUMMARY OF RESULTS OF FMVSS 212, 219 (Partial) AND 301

"Windshield Mounting" FMVSS No. 212 Data

"Windshield Zone Intrusion" FMVSS No. 219 Data

"Fuel System Integrity" FMVSS No. 301

Figure 13

FMVSS NO. 212 - "WINDSHIELD MOUNTING" DATA

DETAILS OF WINDSHIELD MOUNTING SUCH AS RETENTION METHOD, TRIM TYPE, ETC.:

Windshield is bonded in place and covered with 20 mm molding.

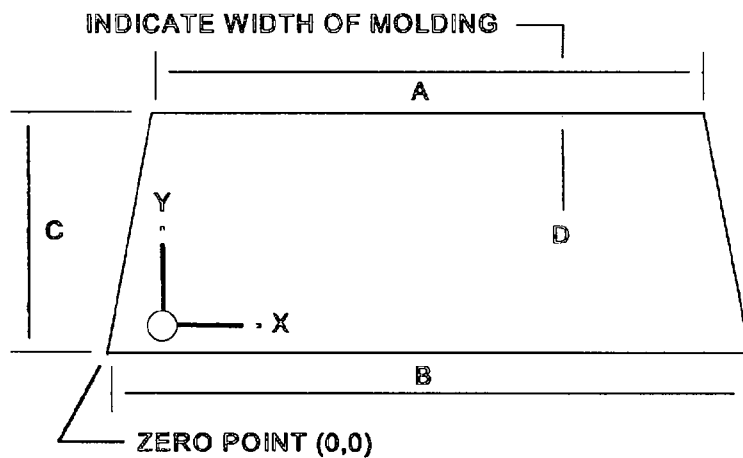
FMVSS 212 REQUIREMENTS:

The Post-Test periphery retention amount must be at least 75% of the Pre-Test periphery measurement for vehicles NOT equipped with automatic restraints, and 50% for each side of the windshield for vehicles equipped with automatic restraint systems for front occupants,

FMVSS 212 TEST DATA

	WINDSHIELD PERIPHERY		% OF RETENTION
	PRE-TEST (mm)	POST-TEST (mm)	
RIGHT SIDE	2196	2196	100
LEFT SIDE	2196	2196	100
TOTAL	4,392	4,392	100

AREA OF RETENTION FAILURE:



DIMENSIONS (mm)	
A	1281
B	1677
C	717
D	20

FRONT VIEW OF WINDSHIELD

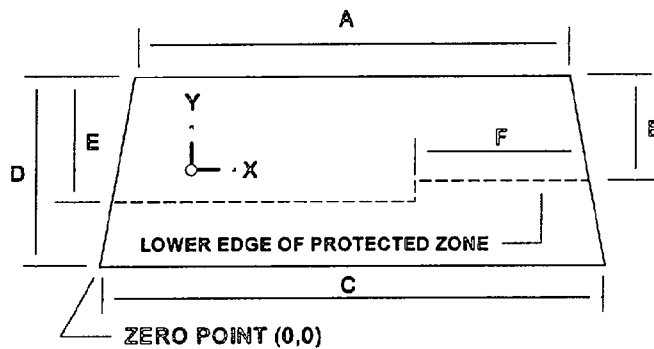
FAILURE DETAILS: None

Figure 14

FMVSS NO. 219 (PARTIAL) - "WINDSHIELD ZONE INTRUSION" DATA

PROTECTED ZONE LOWER EDGE REQUIREMENT:

The lower edge of the protected zone is determined by placing a 165 mm diameter rigid sphere weighing 6.8 kg in a position such that it simultaneously contacts the inner surface of the windshield and the top surface of the instrument panel including padding. The locus of points is drawn on the inner surface of the windshield contacted by the sphere across the width of the instrument panel. From the outermost contactable points extend the locus line horizontally to the edges of the windshield, then draw a line on the inner surface of the windshield below and 13 mm distant from the locus line. The LOWER EDGE OF THE PROTECTED ZONE is the longitudinal projection of this line onto the outer surface of the windshield.



FRONT VIEW OF WINDSHIELD

FMVSS 219 TEST DATA:
(Dimensions in mm)

DIMENSIONS	
A	1281
B	420
C	1677
D	717
E	438
F	-

DETAILS OF WINDSHIELD GLASS PENETRATION GREATER THAN 6 mm: None

(Show location of penetration on the above sketch)

COORDINATES		
	X	Y
1.		
2.		
3.		
4.		

Table 14

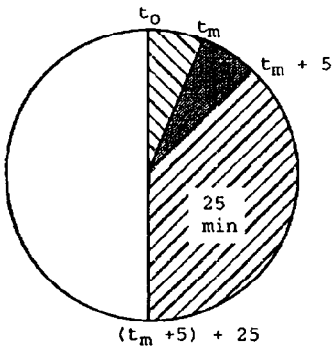
FMVSS NO. 301-75 "FUEL SYSTEM INTEGRITY" POST IMPACT TEST DATA

NHTSA TEST No.: MV0119 TEST DATE: March 18, 1997
VEHICLE MAKE/MODEL: 1997 Buick LeSabre

The test vehicle was filled from 92% to 94% of the manufacture's "usable" capacity. The electric fuel pump was operating if it will operate without engine operation. Two Part 572 anthropomorphic test devices were located at each of the front designated seating positions.

=====

TEST VEHICLE IMPACT TYPE: X Frontal (56 kph)
- Oblique (48 kph) with _____ deg. barrier face first
 contacting _____
 (driver/passenger) side
- Rear Moving Barrier (48 kph)
- Lateral Moving Barrier (32 kph)

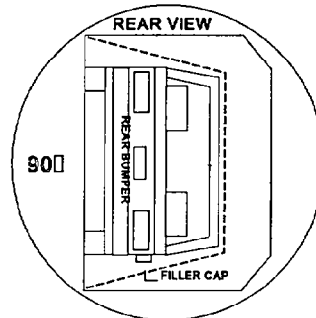
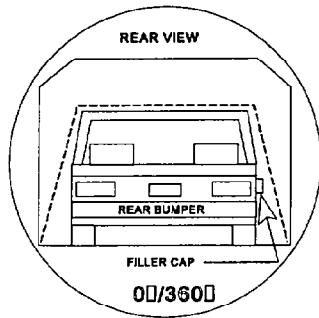
FUEL SPILLAGE MEASUREMENT:

1. From impact until vehicle motion ceases
2. For 5 minute period after vehicle motion ceases
3. For next 25 minutes

ACTUAL	MAX ALLOWED
0	28 g
0	141 g
0	28 g/min.

SOLVENT SPILLAGE DETAILS: None

Table 15

FMVSS NO. 301 STATIC ROLLOVER DATA SHEETTEST PHASE:NHTSA Test No.:
MV0119I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:Rollover Fixture 90 deg. Rotation Time
(Spec. Range = 1 to 3 minutes)2

minutes

29

seconds

FMVSS 301 Position Hold Time +

5

minutes

00

seconds

TOTAL7

minutes

29

seconds

Next whole minute interval

8

minutes

00

seconds

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

First 5 min. from onset of rotation	6th min.	7th min.	8th min. if reqd.
-------------------------------------	----------	----------	-------------------

(2) Maximum Allowable Solvent Spillage

141 g	28 g	28 g	28 g
-------	------	------	------

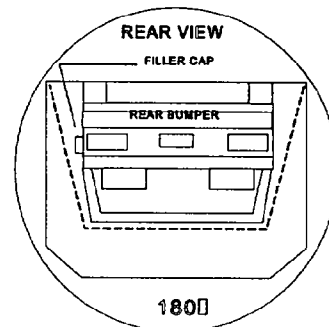
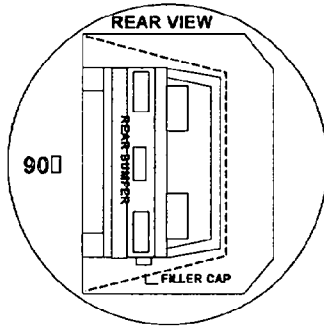
III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0	0	0	0
---	---	---	---

Note: Record spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATION(S): None

Table 15

FMVSS NO. 301 STATIC ROLLOVER DATA SHEETTEST PHASE:NHTSA Test No.:
MV0119I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:Rollover Fixture 90 deg. Rotation Time
(Spec. Range = 1 to 3 minutes)1 minutes 52 seconds

FMVSS 301 Position Hold Time +

5 minutes 00 seconds**TOTAL**6 minutes 52 seconds

Next whole minute interval

7 minutes 00 secondsII. FMVSS 301 REQUIREMENTS:

(1) Time Period

First 5 min. from onset of rotation	6th min.	7th min.	8th min. if reqd.
-------------------------------------	----------	----------	-------------------

(2) Maximum Allowable Solvent Spillage

141 g	28 g	28 g	28 g
-------	------	------	------

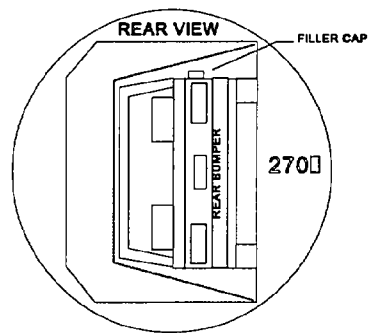
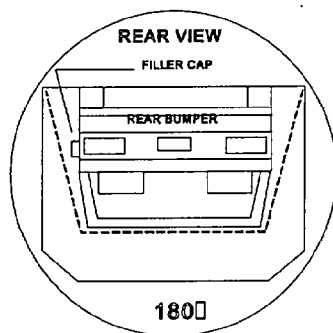
III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0	0	0	n/a
---	---	---	-----

Note: Record spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATION(S): None

Table 15

FMVSS NO. 301 STATIC ROLLOVER DATA SHEETTEST PHASE:NHTSA Test
No.: MV0119I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90 deg. Rotation Time
(Spec. Range = 1 to 3 minutes)

1 minutes 54 seconds

FMVSS 301 Position Hold Time +

5 minutes 00 seconds

TOTAL

6 minutes 54 seconds

Next whole minute interval

7 minutes 00 seconds

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

First 5 min. from onset of rotation	6th min.	7th min.	8th min. if reqd.
-------------------------------------	----------	----------	-------------------

(2) Maximum Allowable Solvent Spillage

141 g	28 g	28 g	28 g
-------	------	------	------

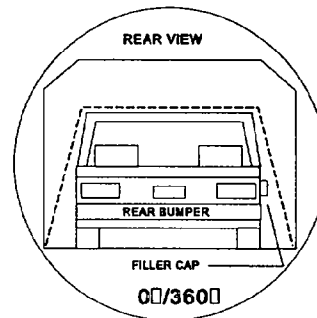
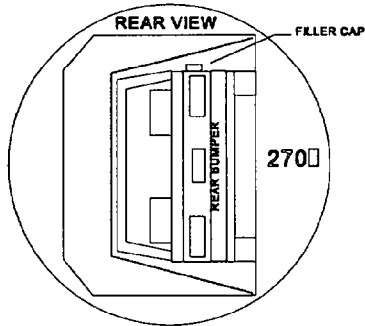
III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0	0	0	n/a
---	---	---	-----

Note: Record spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATION(S): None

Table 15

FMVSS NO. 301 STATIC ROLLOVER DATA SHEETTEST PHASE:NHTSA Test No.:
MV0119I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:Rollover Fixture 90 deg. Rotation Time
(Spec. Range = 1 to 3 minutes)1 minutes 59 seconds

FMVSS 301 Position Hold Time +

5 minutes 00 seconds**TOTAL**6 minutes 59 seconds

Next whole minute interval

7 minutes 00 secondsII. FMVSS 301 REQUIREMENTS:

(1) Time Period

First 5 min. from onset of rotation	6th min.	7th min.	8th min. if reqd.
-------------------------------------	----------	----------	-------------------

(2) Maximum Allowable Solvent Spillage

141 g	28 g	28 g	28 g
-------	------	------	------

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0	0	0	n/a
---	---	---	-----

Note: Record spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATION(S): None

Appendix A
PHOTOGRAPHS

PHOTOGRAPHS

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Figure A-1 LOAD CELL LOCATIONS

Figure A-2 PRE-TEST FRONT VIEW

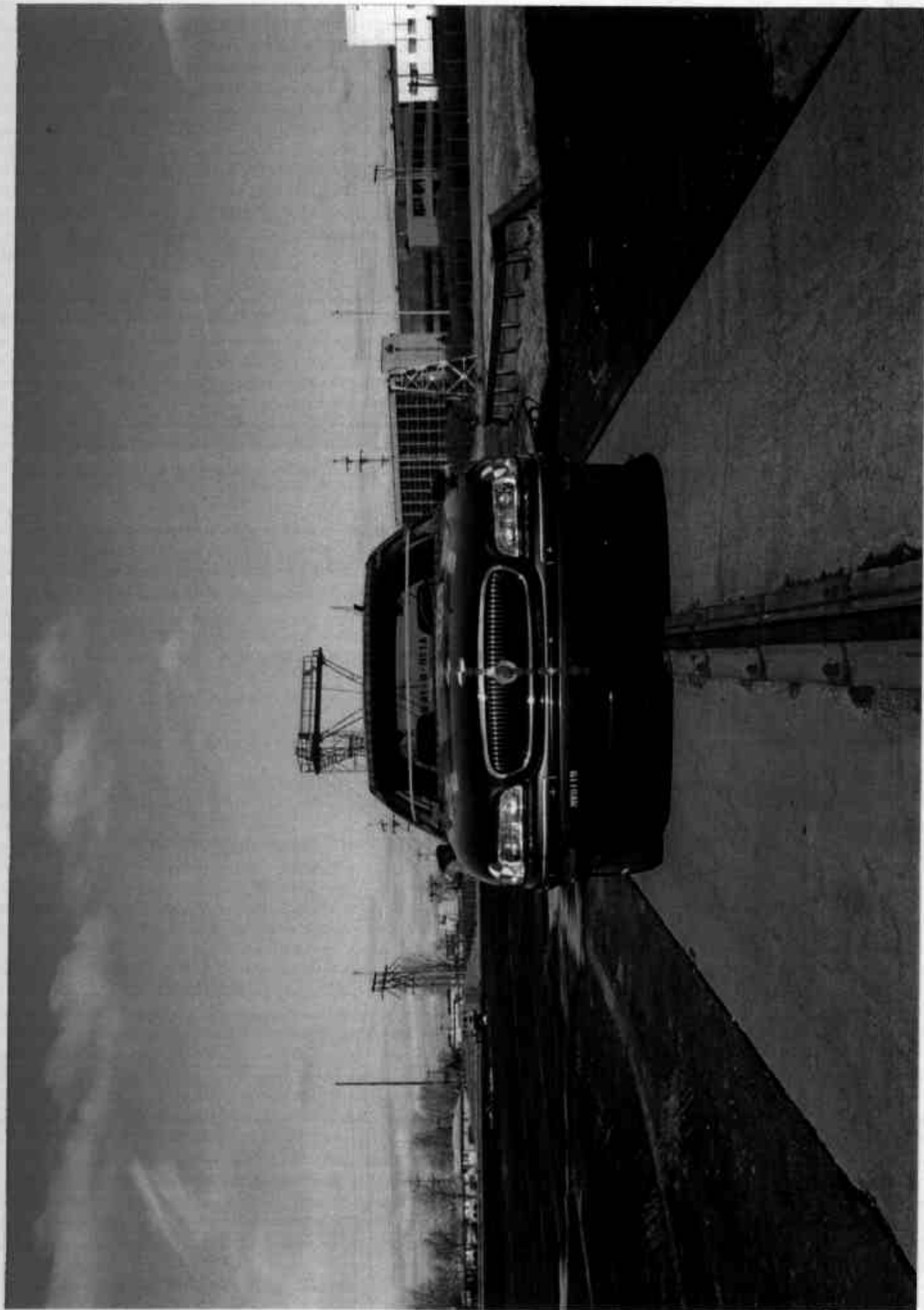


Figure A-3 POST-TEST FRONT VIEW





Figure A-4 PRE-TEST LEFT SIDE VIEW



Figure A-5 POST-TEST LEFT SIDE VIEW

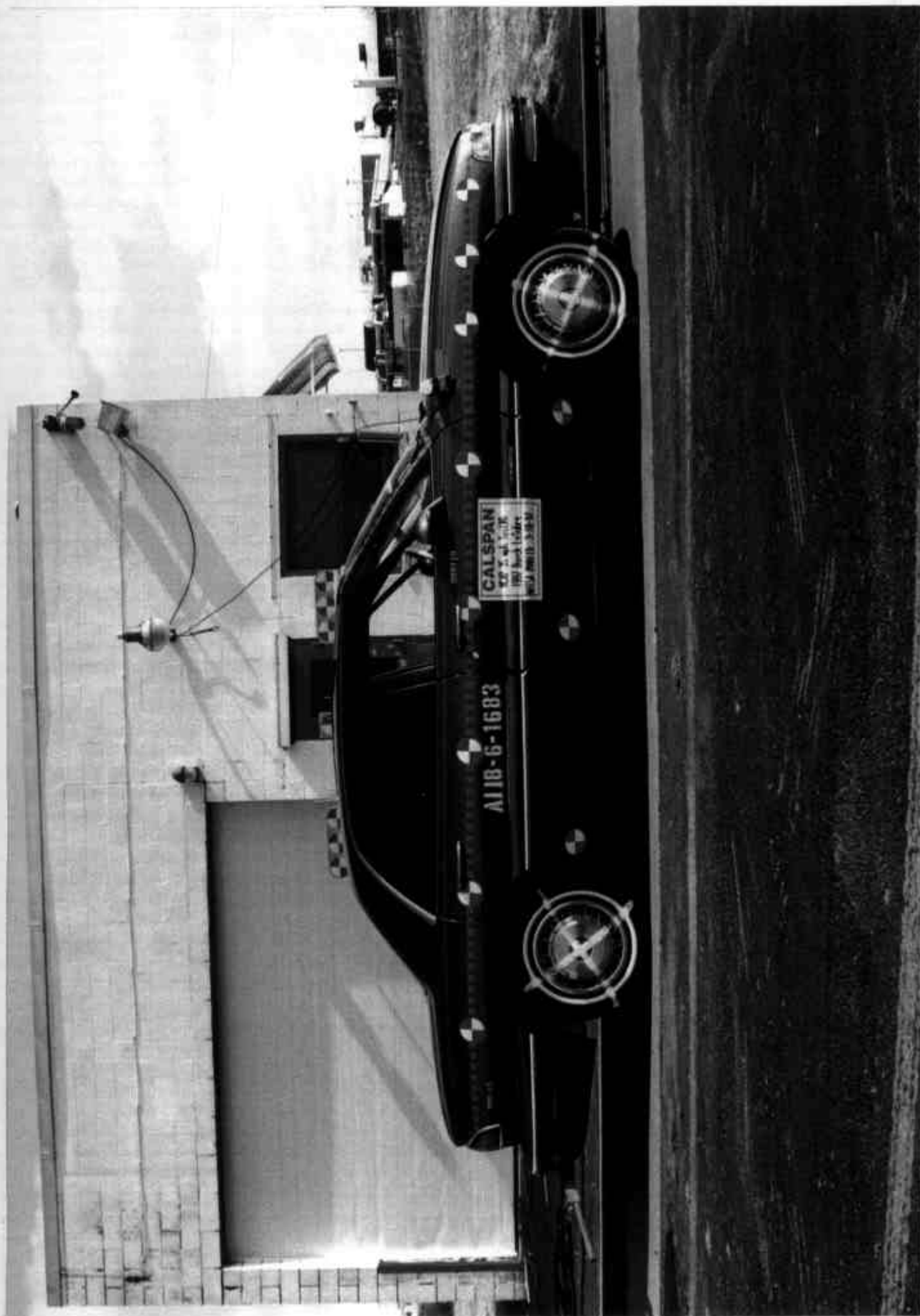


Figure A-6 PRE-TEST RIGHT SIDE VIEW



Figure A-7 POST-TEST RIGHT SIDE VIEW

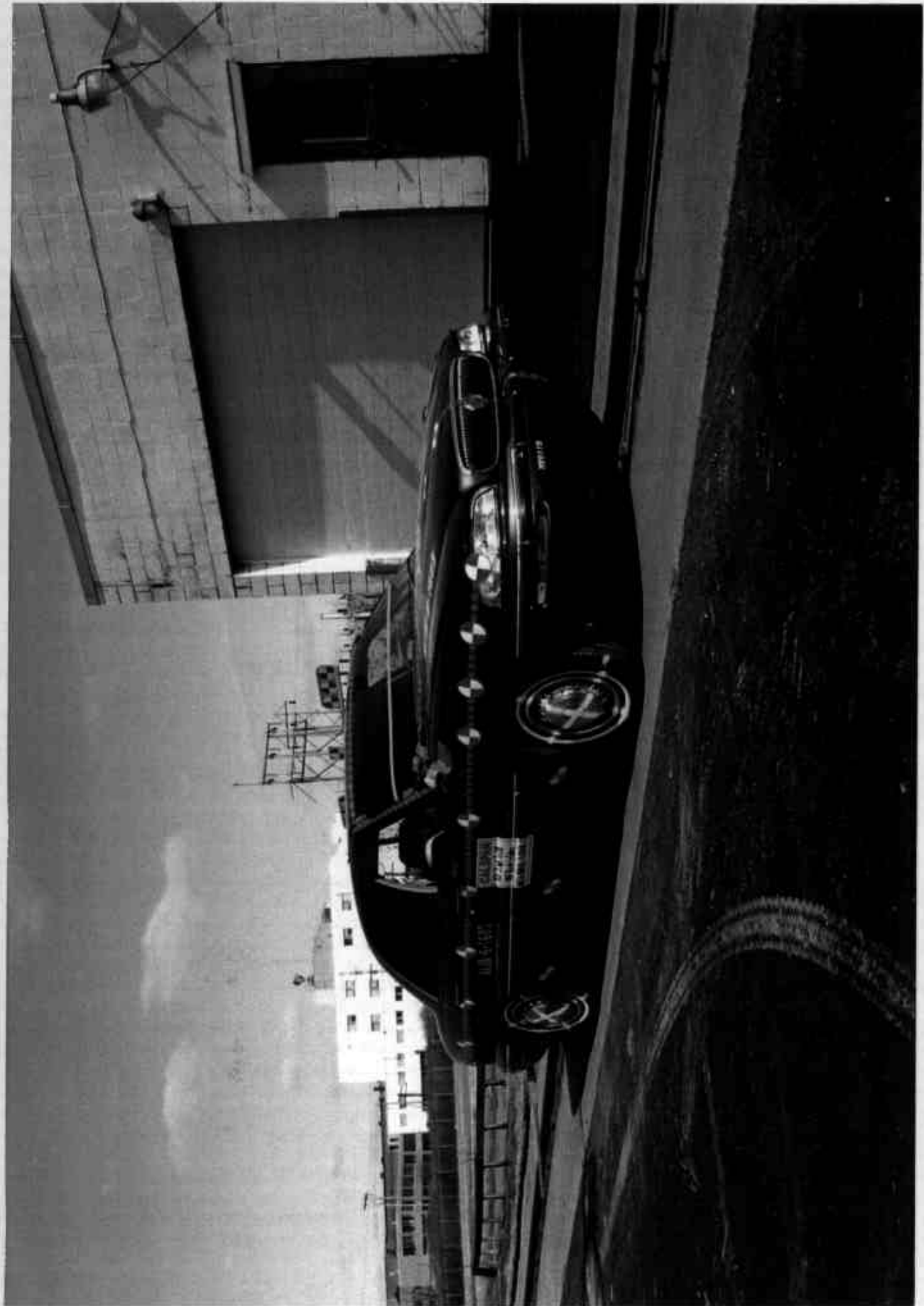


Figure A-8 PRE-TEST RIGHT FRONT THREE-QUARTER VIEW

Figure A-9 POST-TEST RIGHT FRONT THREE-QUARTER VIEW





Figure A-10 PRE-TEST LEFT REAR THREE-QUARTER VIEW



Figure A-11 POST-TEST LEFT REAR THREE-QUARTER VIEW



Figure A-12 PRE-TEST WINDSHIELD VIEW

Figure A-13 POST-TEST WINDSHIELD VIEW



Figure A-14 PRE-TEST ENGINE COMPARTMENT VIEW

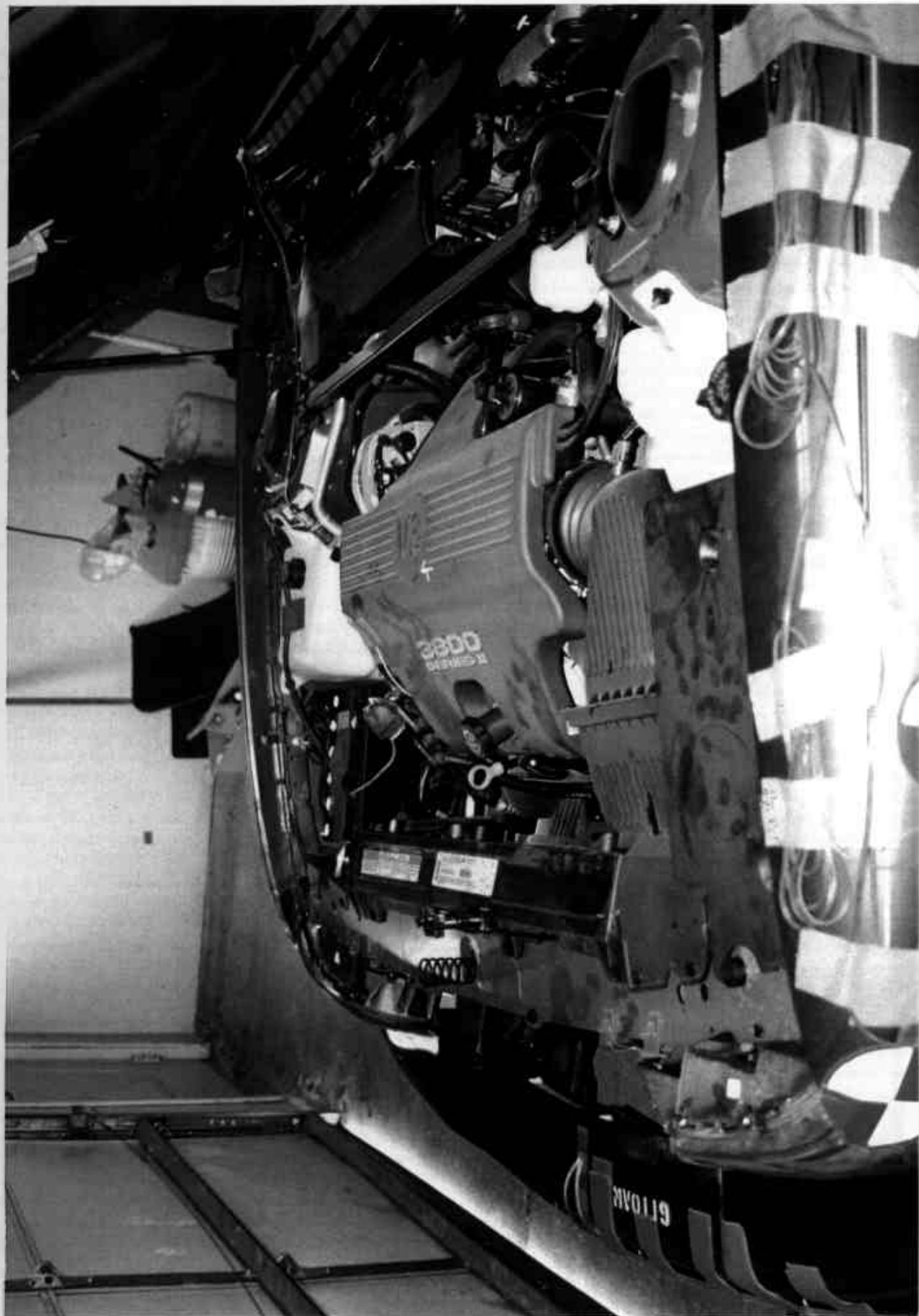




Figure A-15 FUEL CAP VIEW

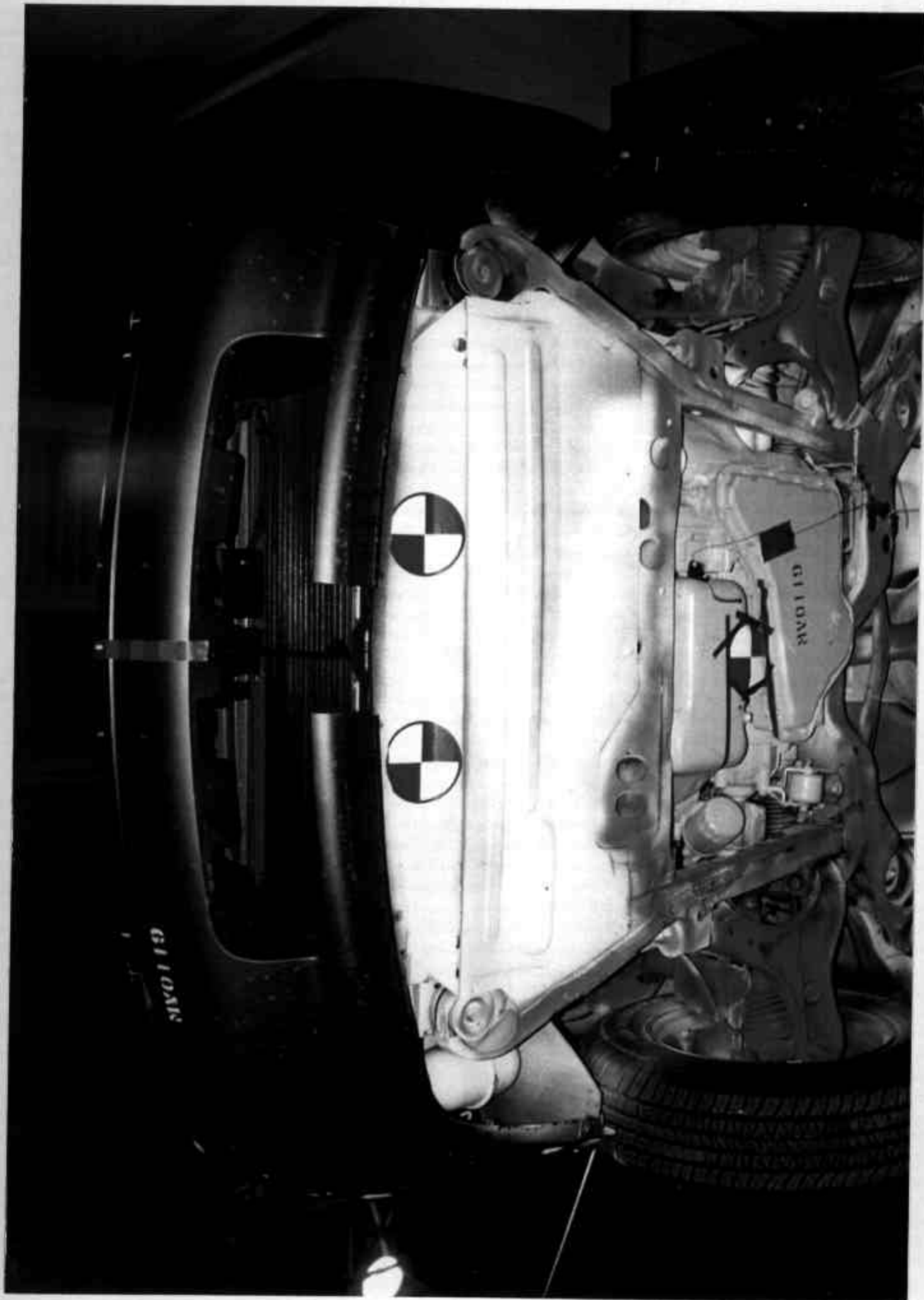


Figure A-16 PRE-TEST FRONT UNDERBODY VIEW

Figure A-17 POST-TEST FRONT UNDERBODY VIEW





Figure A-18 PRE-TEST FRONT SIDE UNDERBODY VIEW

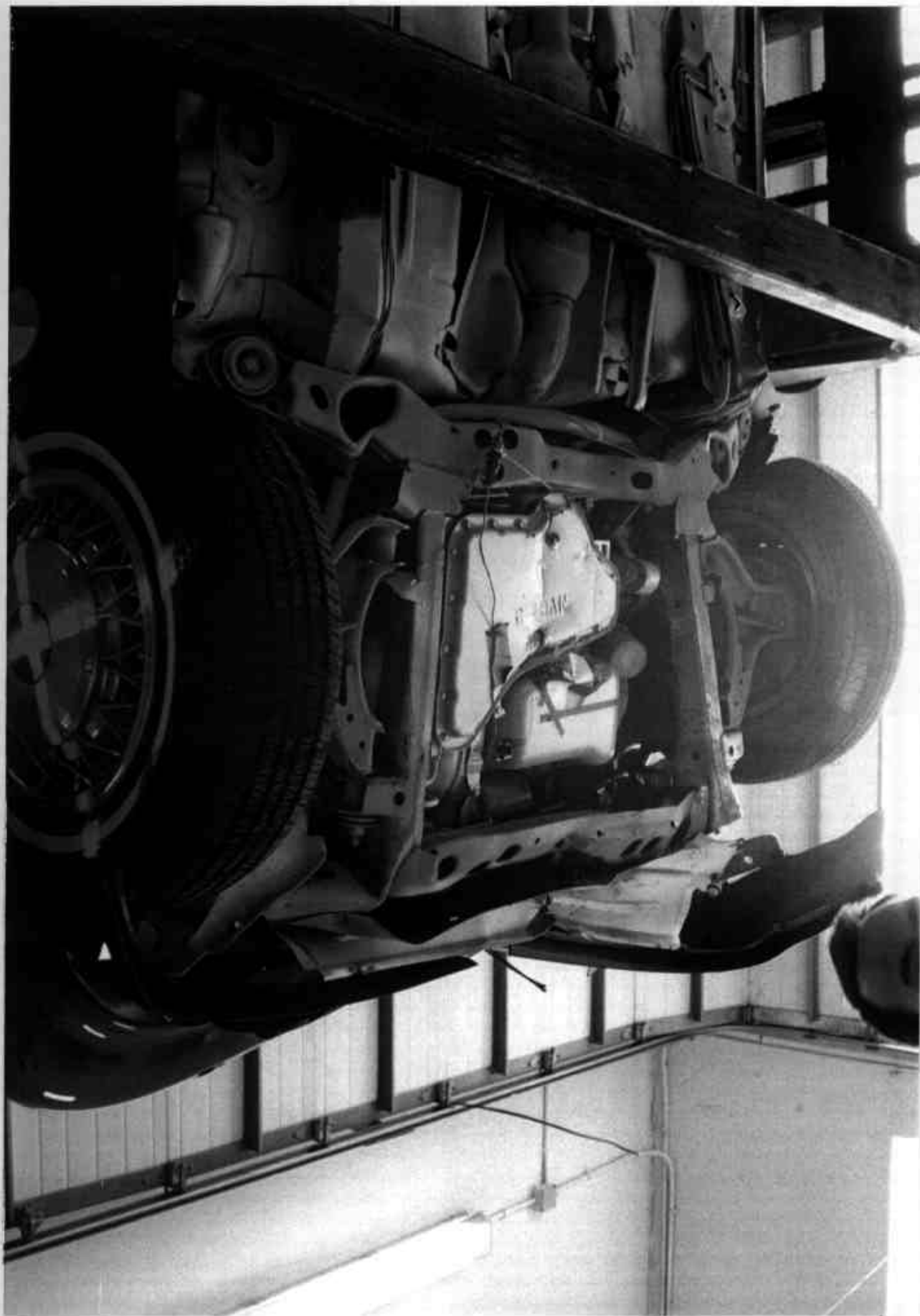


Figure A-19 POST-TEST FRONT SIDE UNDERBODY VIEW

Figure A-20 PRE-TEST REAR UNDERBODY VIEW

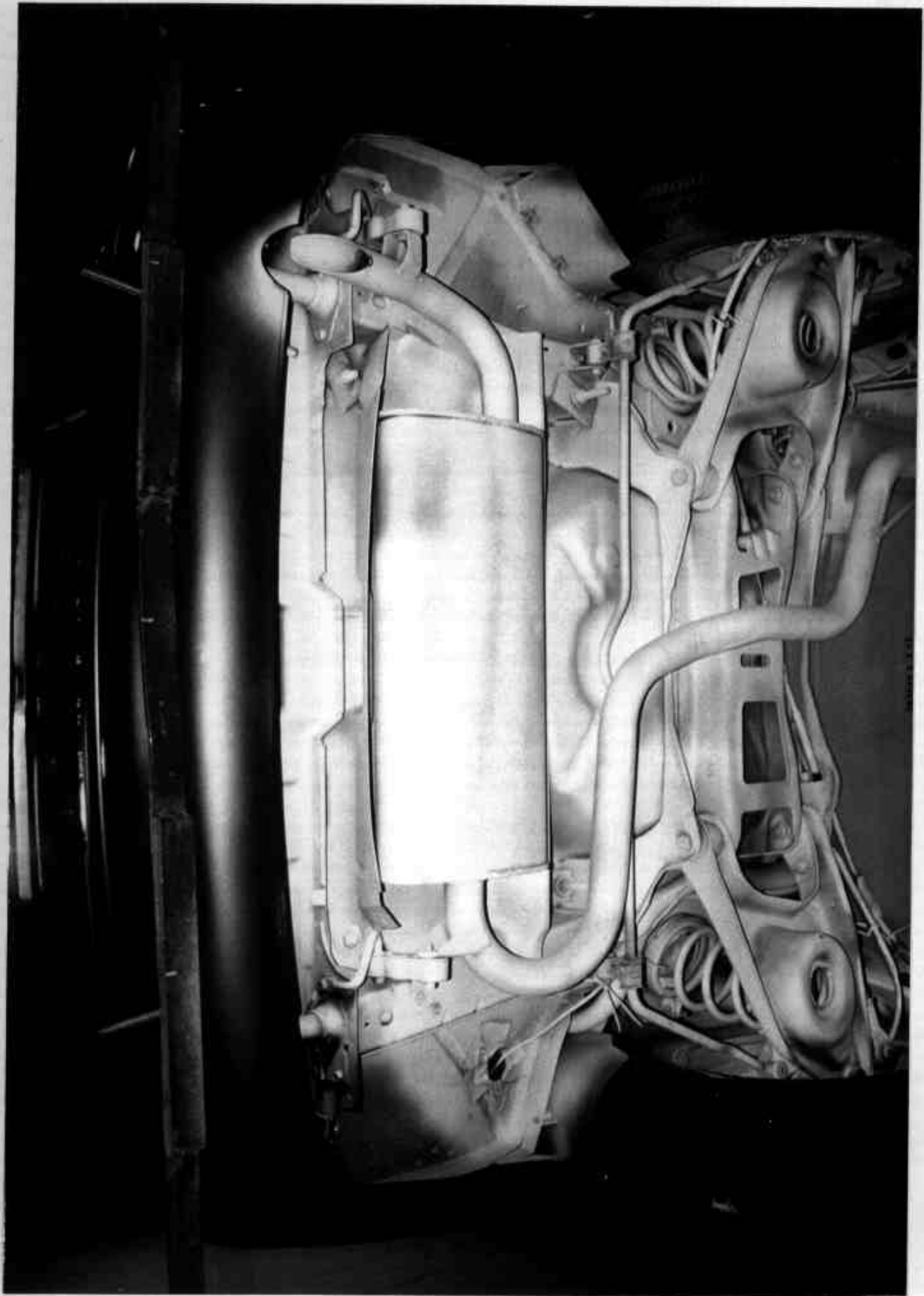




Figure A-21 POST-TEST REAR UNDERBODY VIEW

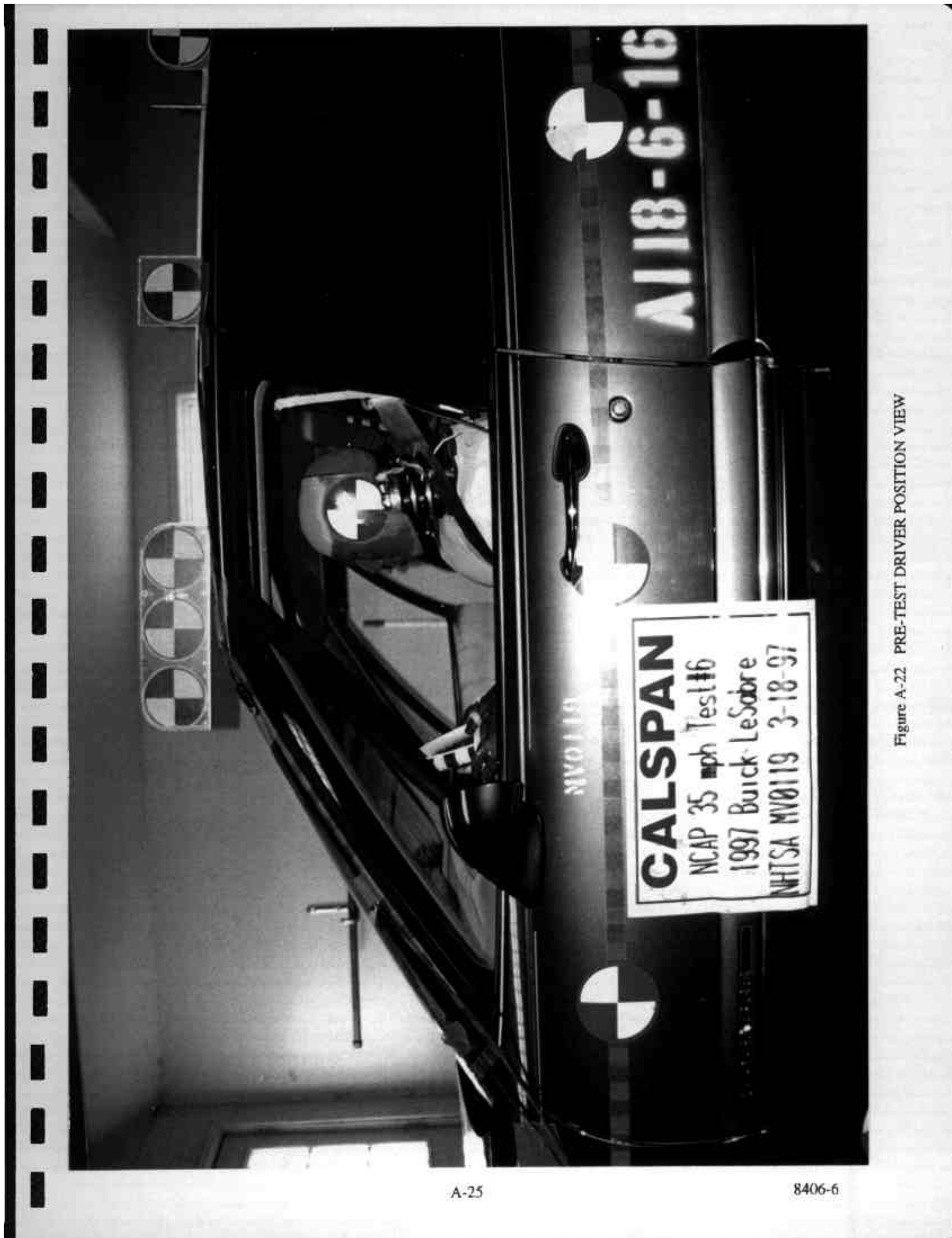


Figure A-22 PRE-TEST DRIVER POSITION VIEW

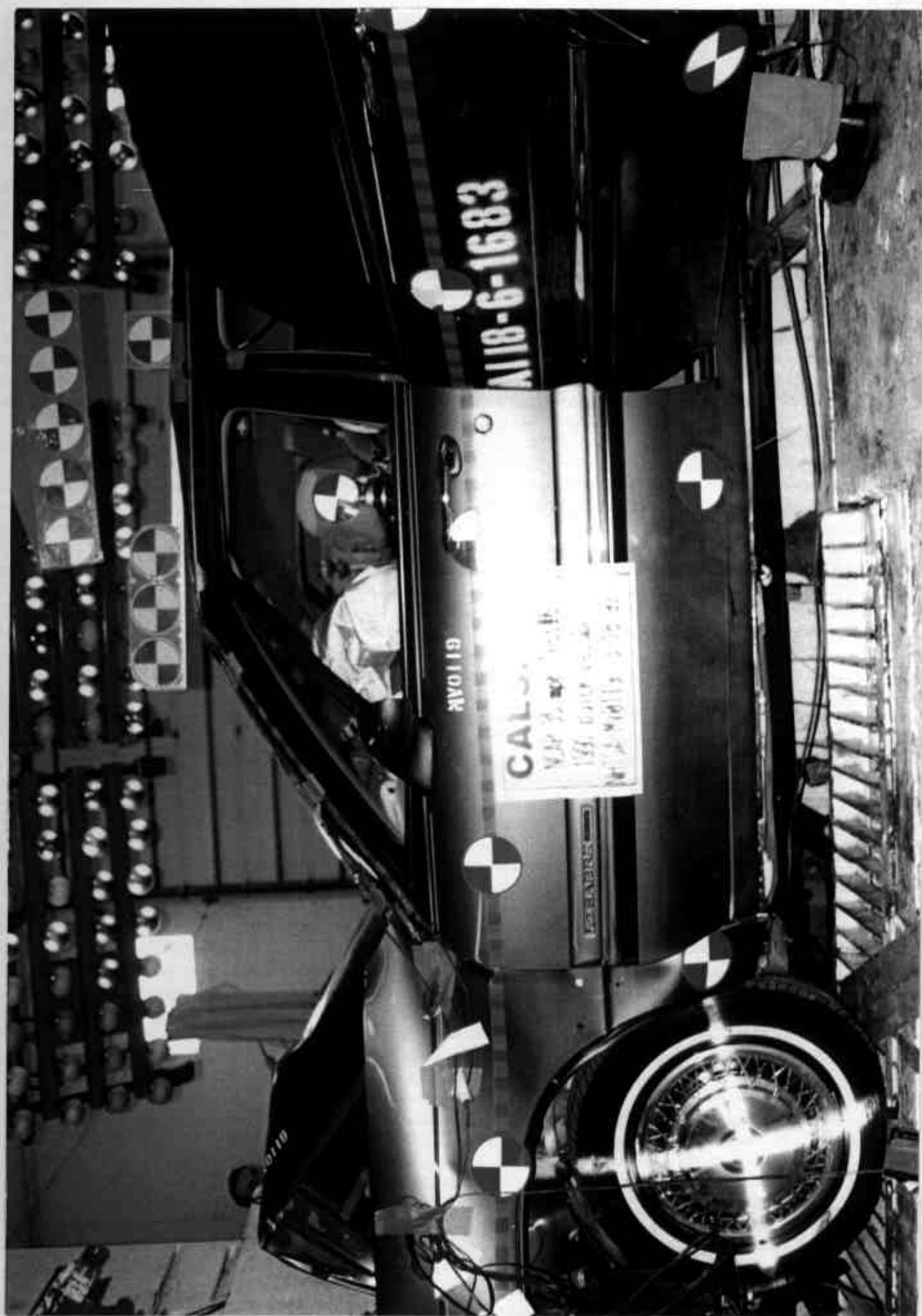


Figure A-23 POST-TEST DRIVER POSITION VIEW



Figure A-24 PRE-TEST PASSENGER POSITION VIEW



Figure A-25 POST-TEST PASSENGER POSITION VIEW



Figure A-26 PRE-TEST DRIVER AND INTERIOR VIEW



Figure A-27 POST-TEST DRIVER AND INTERIOR VIEW



Figure A-28 PRE-TEST PASSENGER AND INTERIOR VIEW



Figure A-29 POST-TEST PASSENGER AND INTERIOR VIEW



Figure A-30 PRE-TEST DRIVER HEAD LOCATION



Figure A-31 POST-TEST DRIVER HEAD LOCATION



Figure A-32 PRE-TEST PASSENGER HEAD LOCATION



Figure A-33 POST-TEST PASSENGER HEAD LOCATION



Figure A-34 PRE-TEST DRIVER FLOOR PAN VIEW

Figure A-35 POST-TEST DRIVER FLOOR PAN VIEW



Figure A-36 PRE-TEST PASSENGER FLOOR PAN VIEW





Figure A-37 POST-TEST PASSENGER FLOOR PAN VIEW



Figure A-38 ROLLOVER VIEW

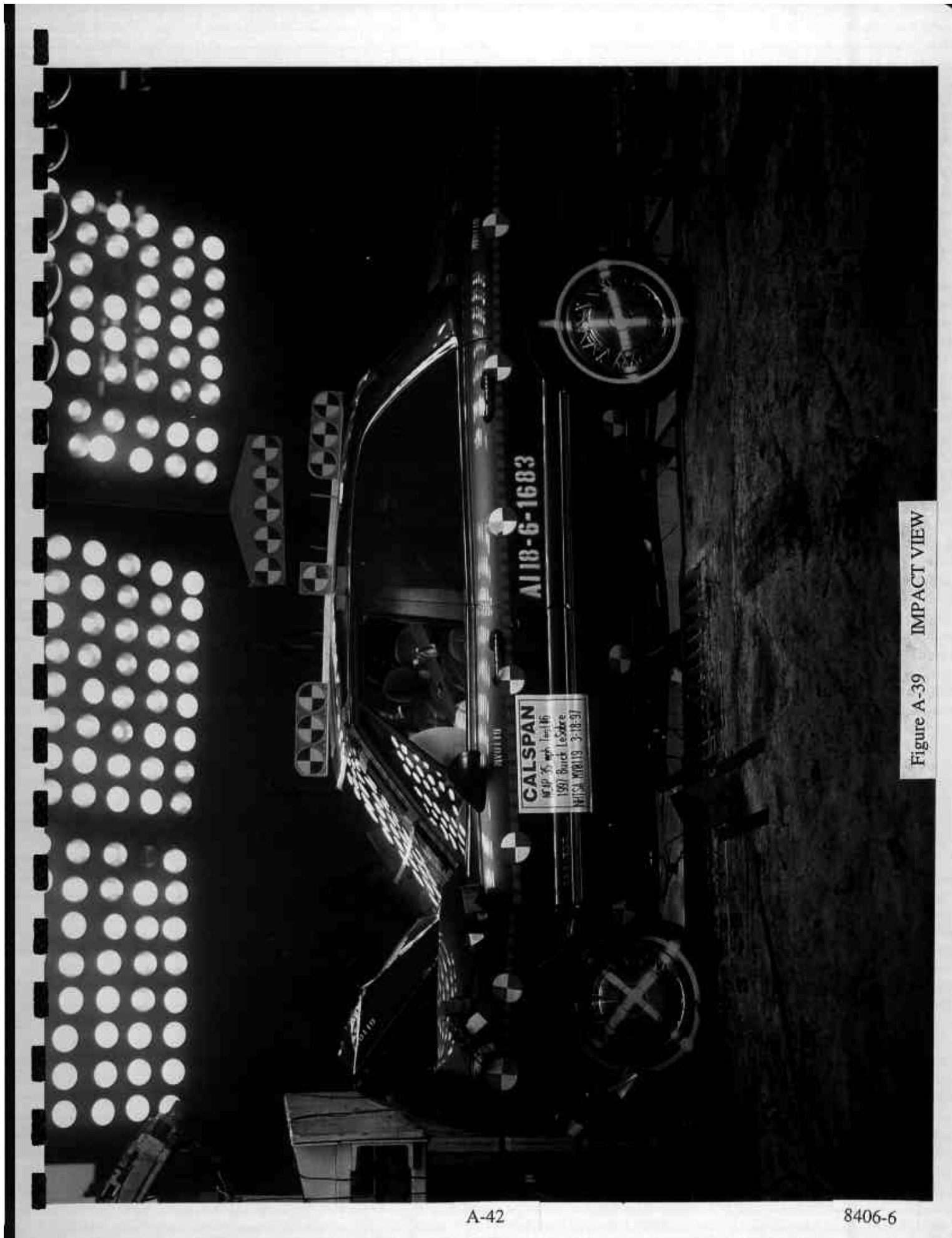


Figure A-39 IMPACT VIEW

Appendix B

DUMMY, VEHICLE AND LOAD CELL BARRIER RESPONSE DATA

NHTSA TEST NO. MV0119

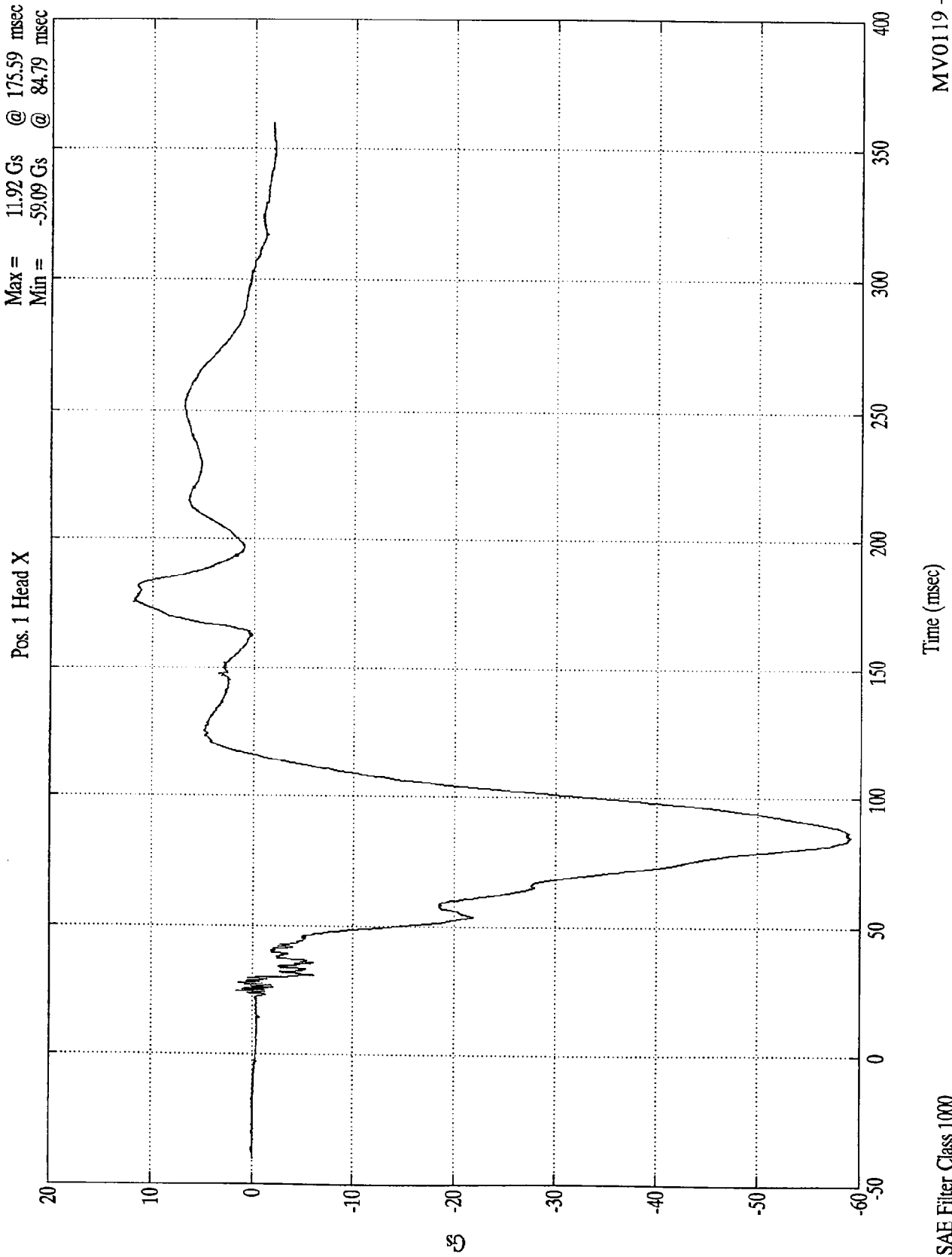
DUMMY DATA

CLASS	FILTER CHANNEL
Head Accelerations	1000
Chest Accelerations	180
Chest Displacements	60
Femur Forces	600
Belt Loads	60
Belt Displacements	180
Neck Forces	1000
Neck Moments	600

**Hybrid III Dummy Sign Conventions
Load Cells and Special Transducers**

Transducer	DOT/NHTSA Sign Convention (positive unless noted)
Upper Neck Load Cell	Fx Head forward Fy Head left Fz Neck in tension Mx Right ear to right shoulder My Chin to chest (flexion) Mz Chin to left shoulder (look left)
Chest Displacement Potentiometer	Compression is negative
Pelvic Load Cell (Lower Lumbar)	Fx Chest forward Fy Chest left Fz Spine in tension
Femur Load Cell	Compression is negative
Upper Tibia Load Cell (right and left leg)	Mx Support tibia, load right side center My Support tibia, load front (shin) center
Lower Tibia Load Cell (right and left leg)	Fy Foot right w/r to left Fz Tibia in tension Mx Support tibia, press right side center

NCAP TEST #6 - 1997 Buick LeSabre 4Door

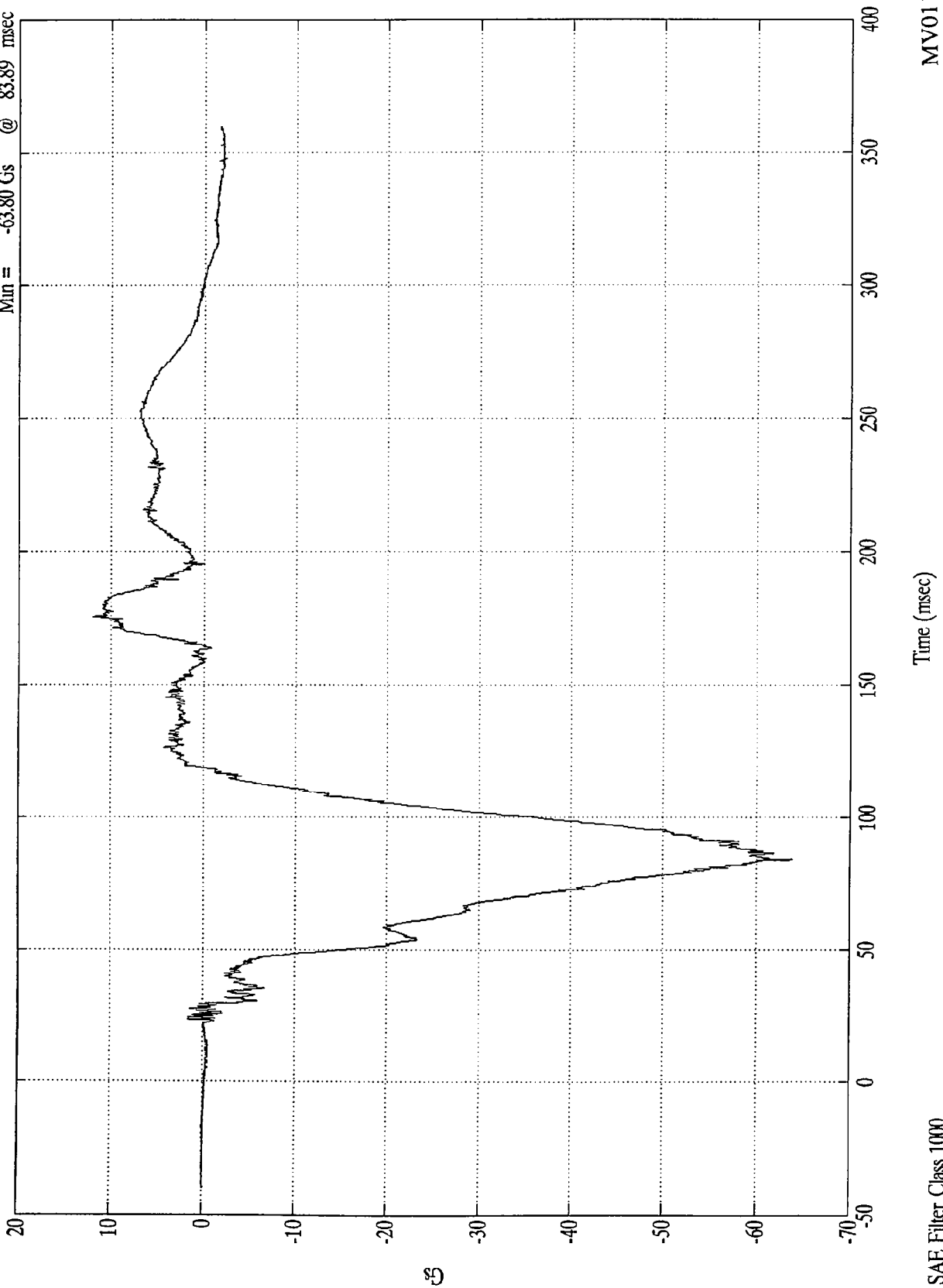


MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4Door

Pos. 1 Head X(R)

Max = 12.04 Gs @ 175.59 msec
Min = -63.80 Gs @ 83.89 msec

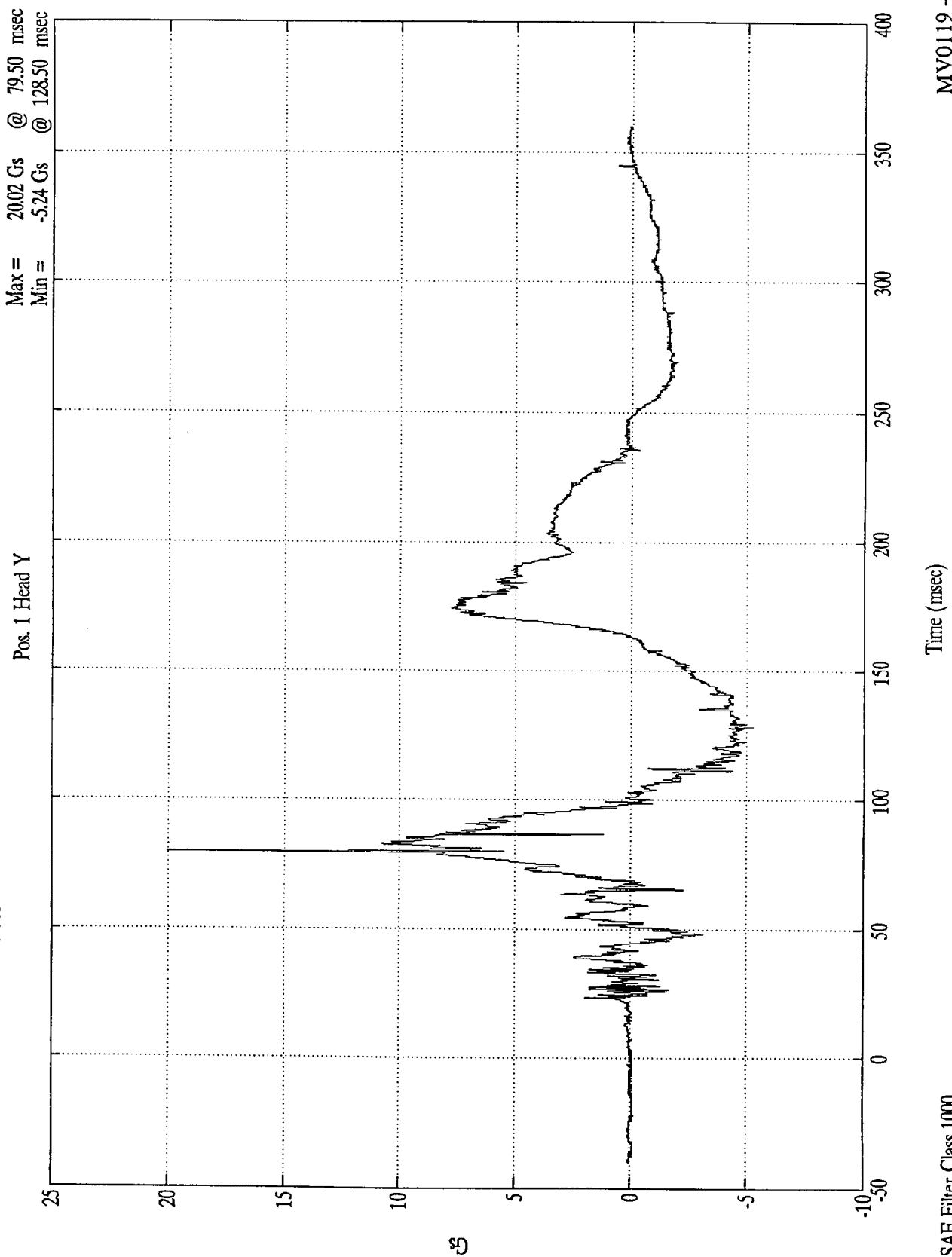


SAE Filter Class 1000

Time (msec)

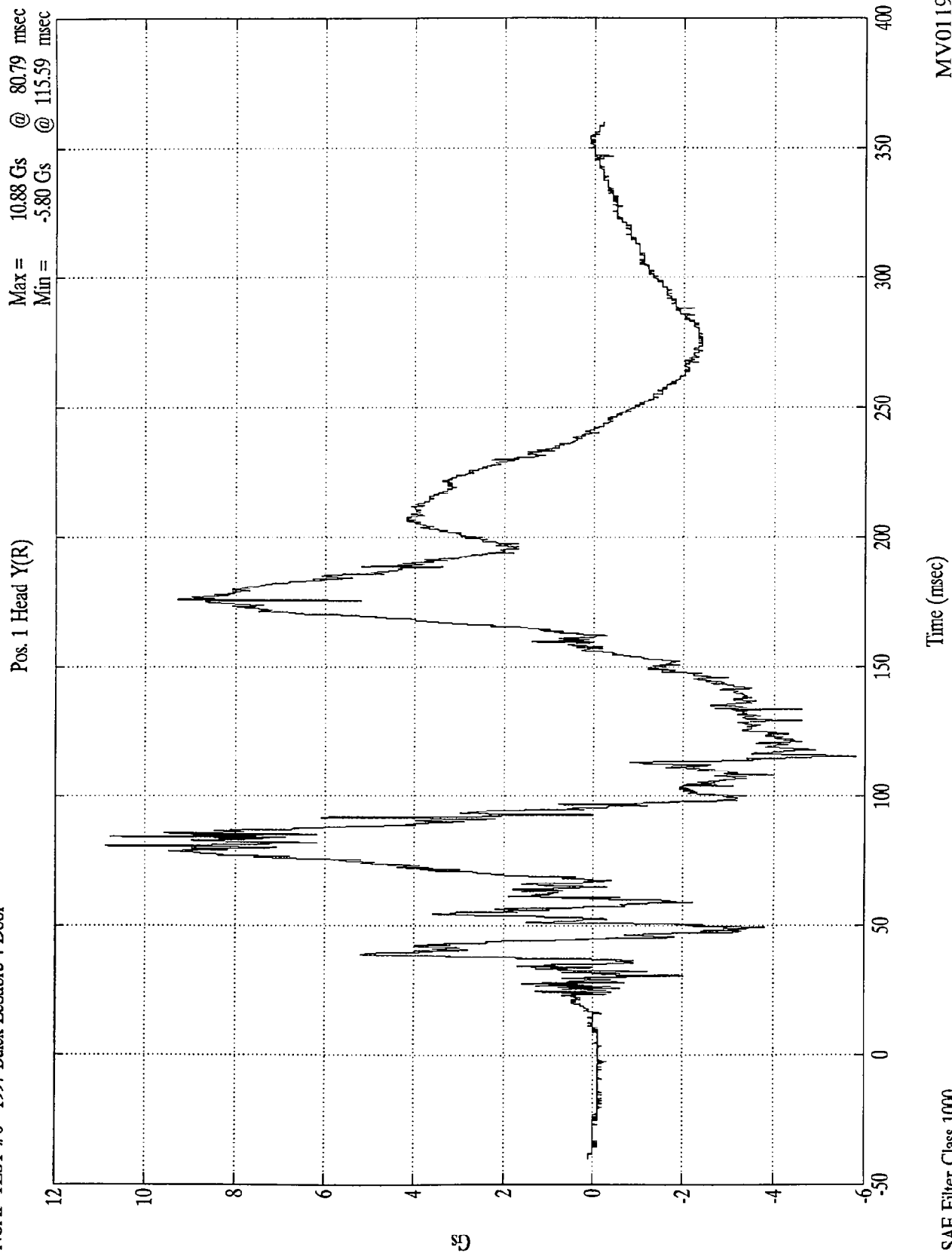
MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4Door



MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door



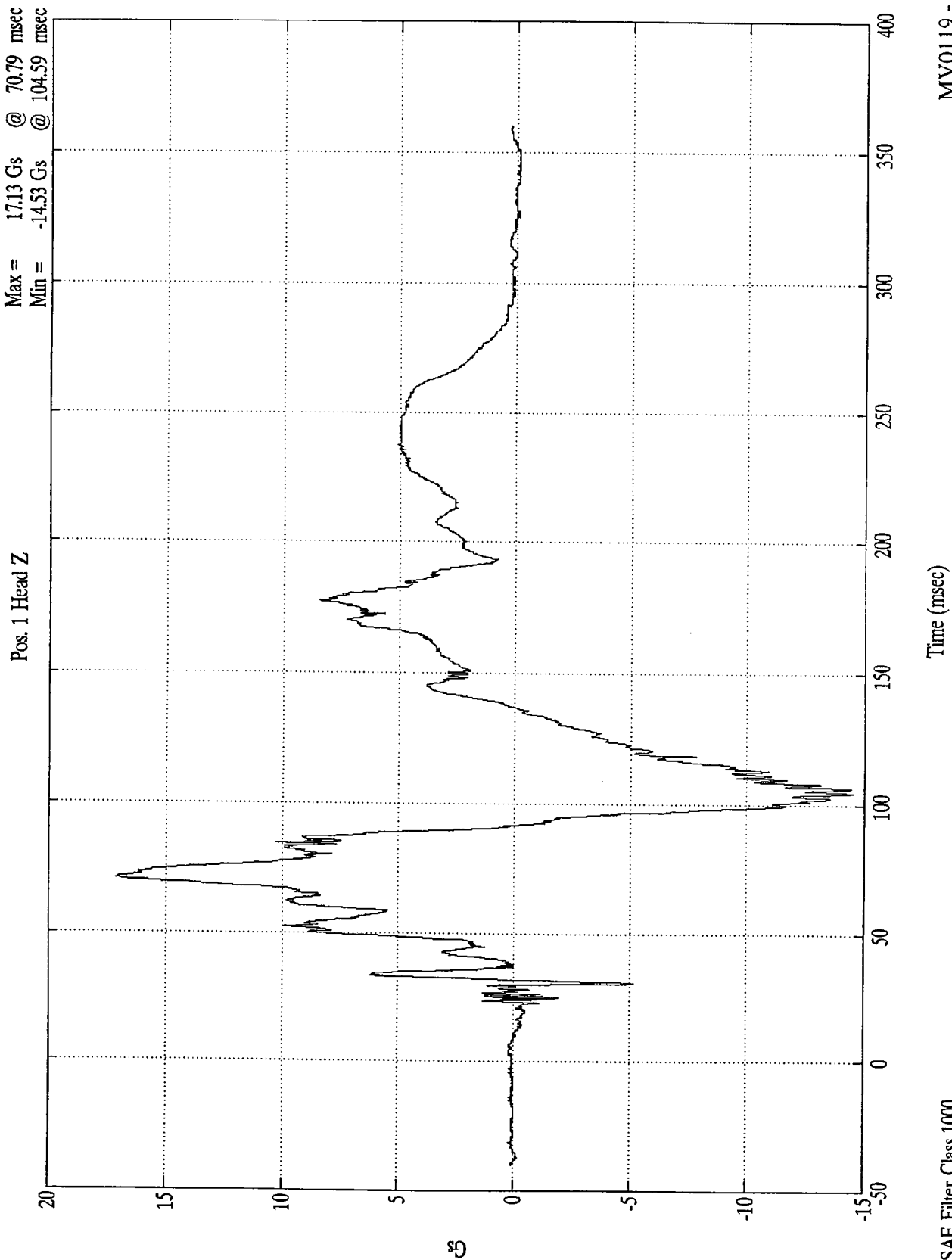
MV0119 - 3/18/97

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NCAP TEST #6 - 1997 Buick LeSabre 4Door

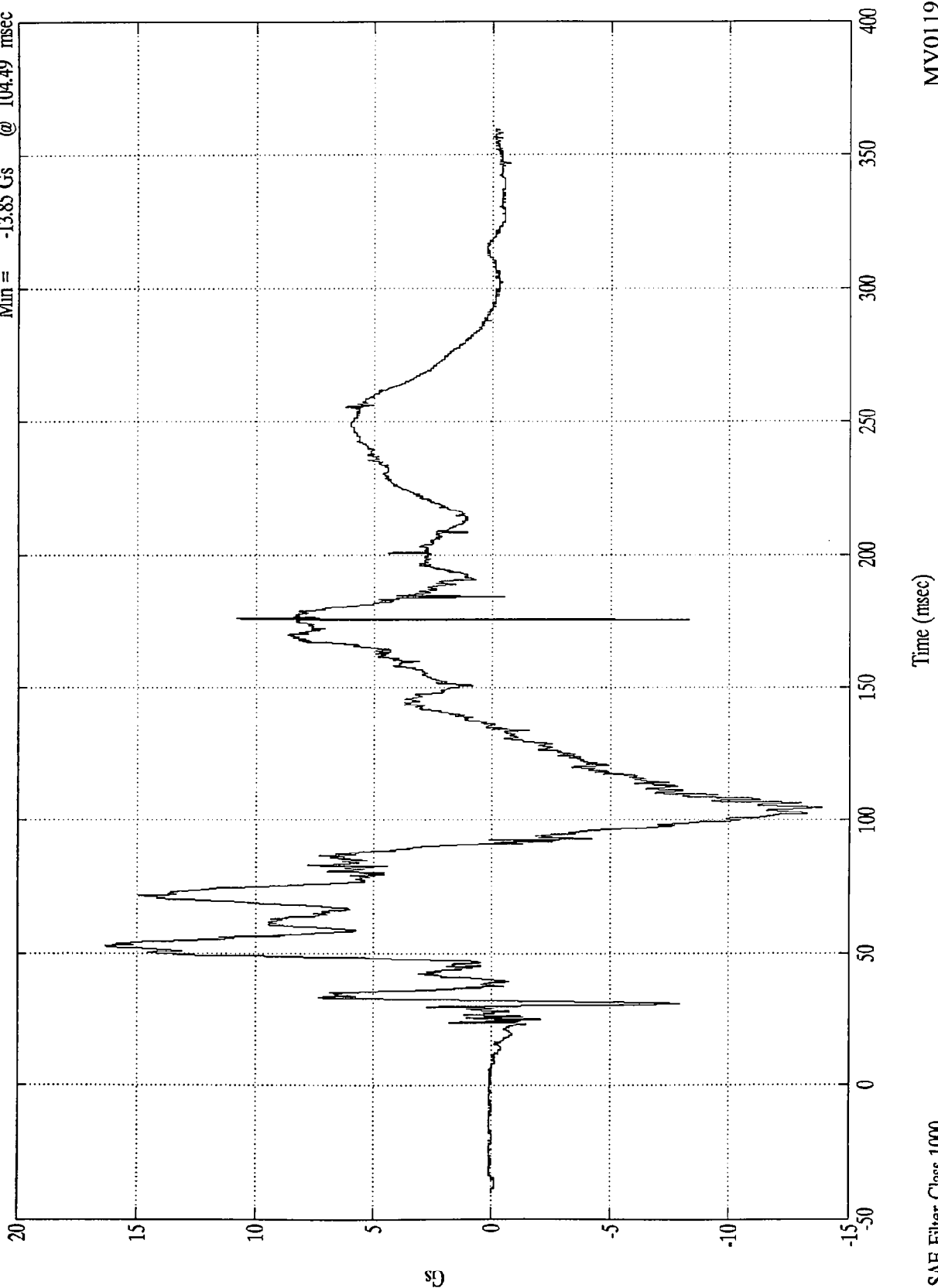


MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

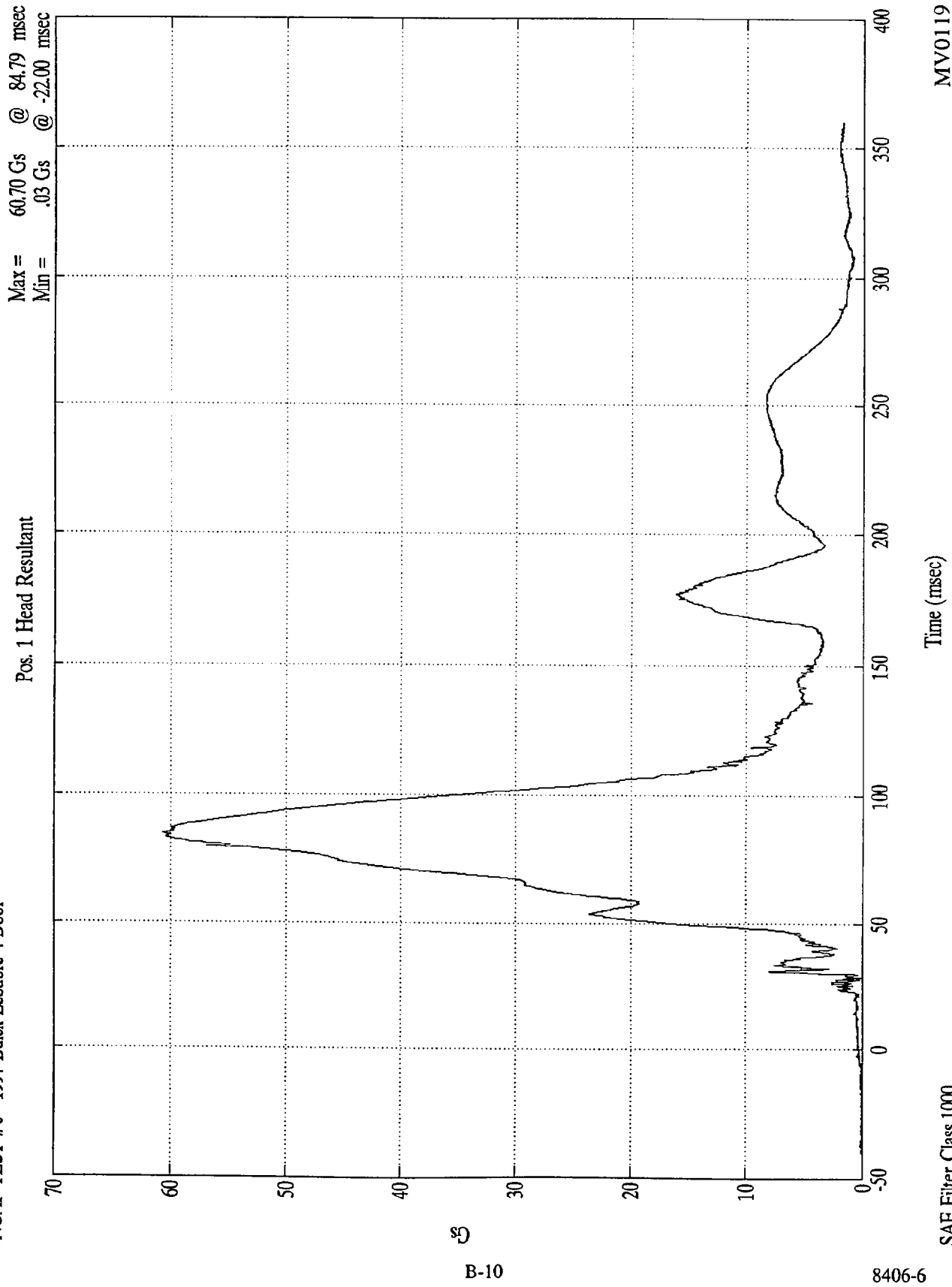
Max = 16.34 Gs @ 52.69 msec
Min = -13.85 Gs @ 104.49 msec

Pos. 1 Head Z(R)



MV01119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4Door

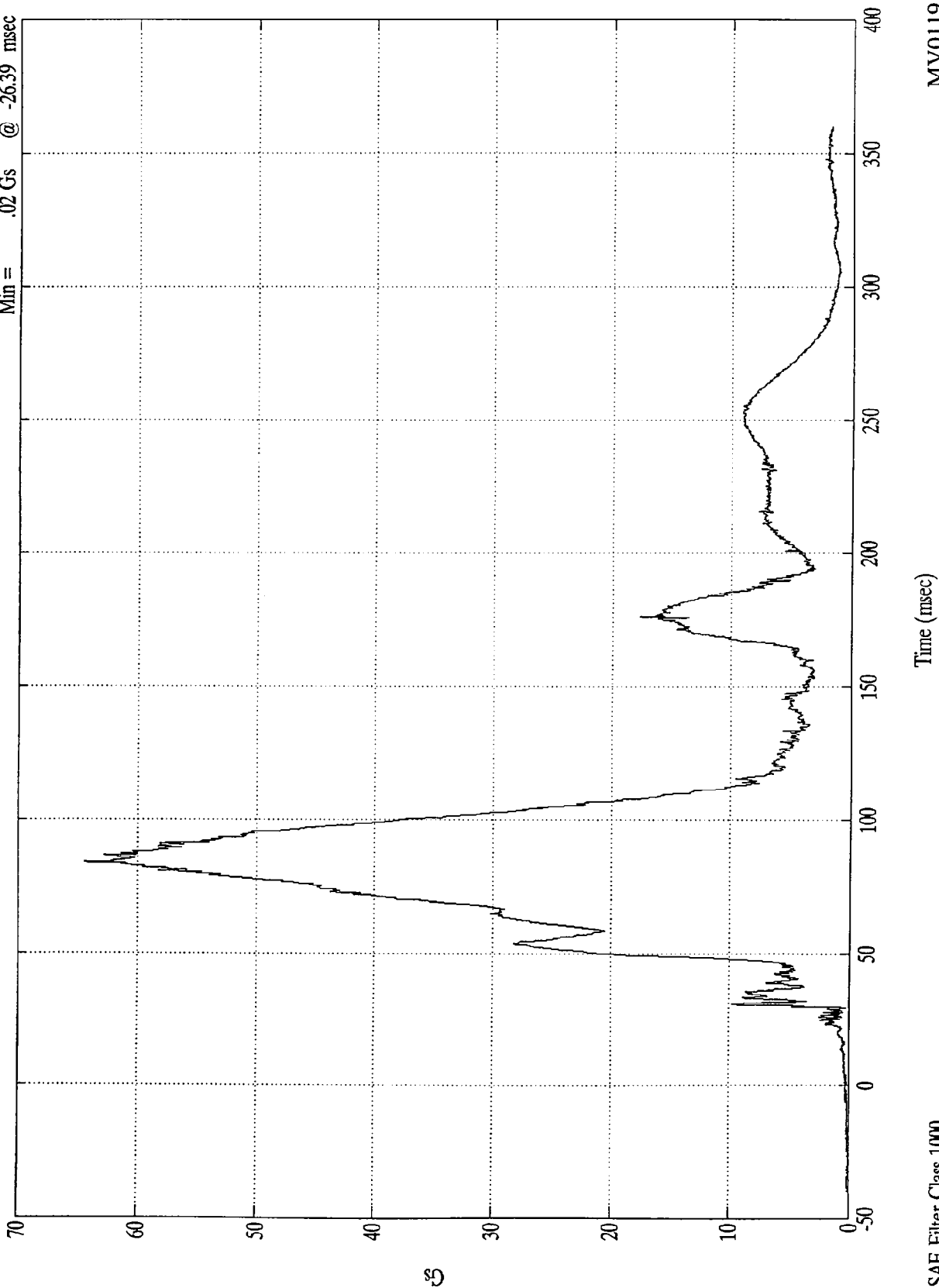


MV01119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 1 Head Resultant(RR)

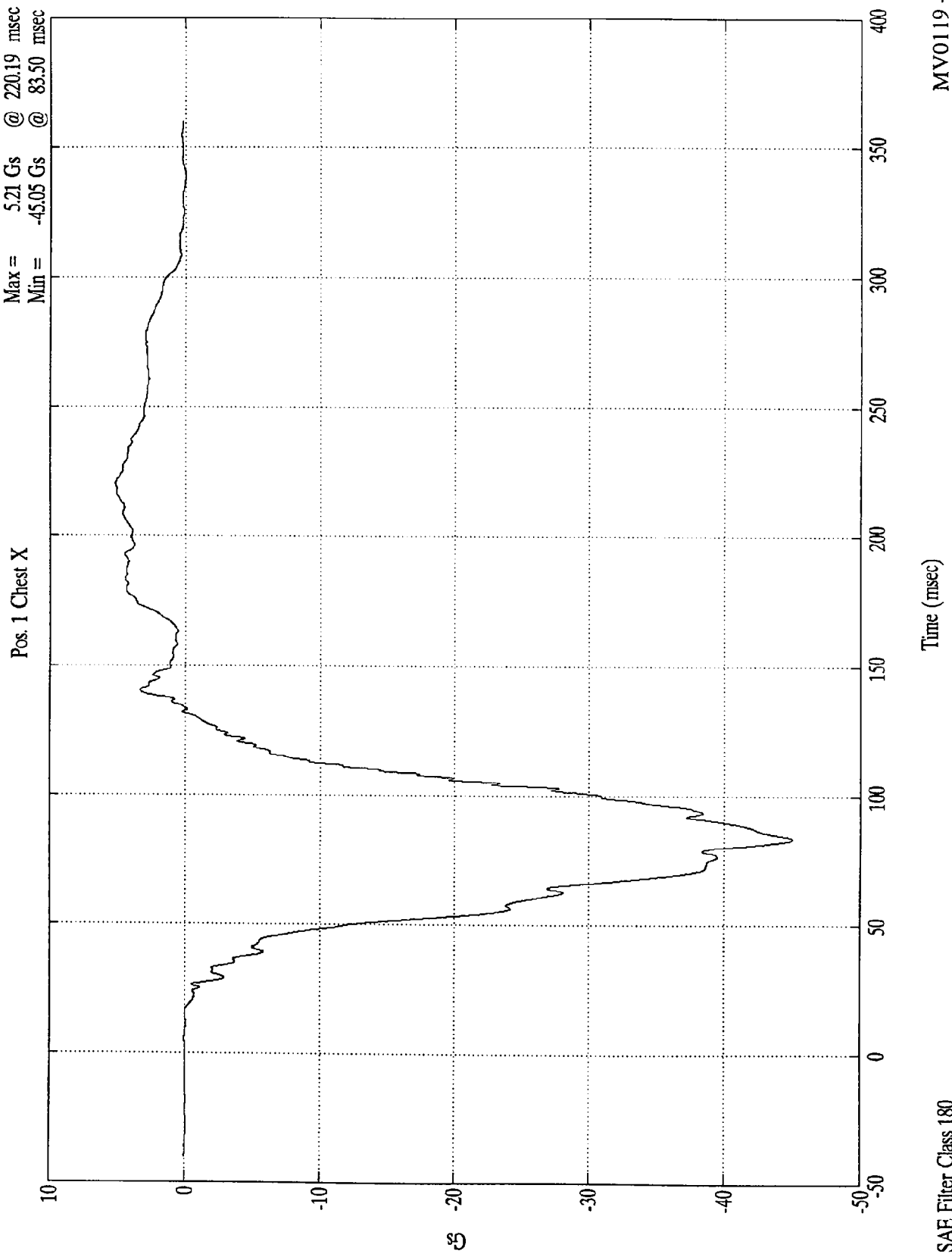
Max = 64.42 Gs @ 83.89 msec
Min = .02 Gs @ -26.39 msec



MV0119 - 3/18/97

SAE Filter Class 1000

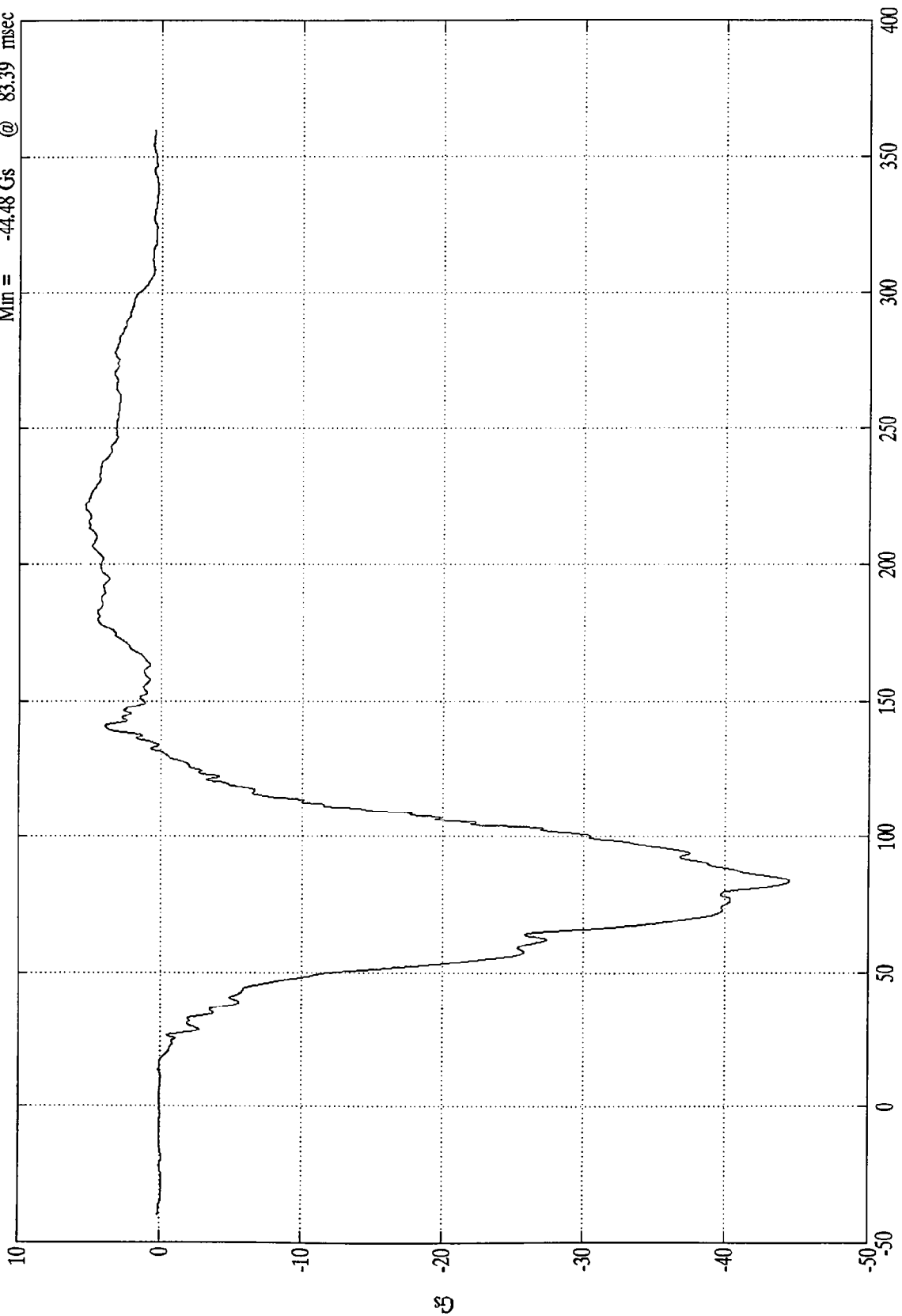
NCAP TEST #6 - 1997 Buick LeSabre 4Door



NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 5.35 Gs @ 221.80 msec
Min = -44.48 Gs @ 83.39 msec

Pos. 1 Chest X(R)

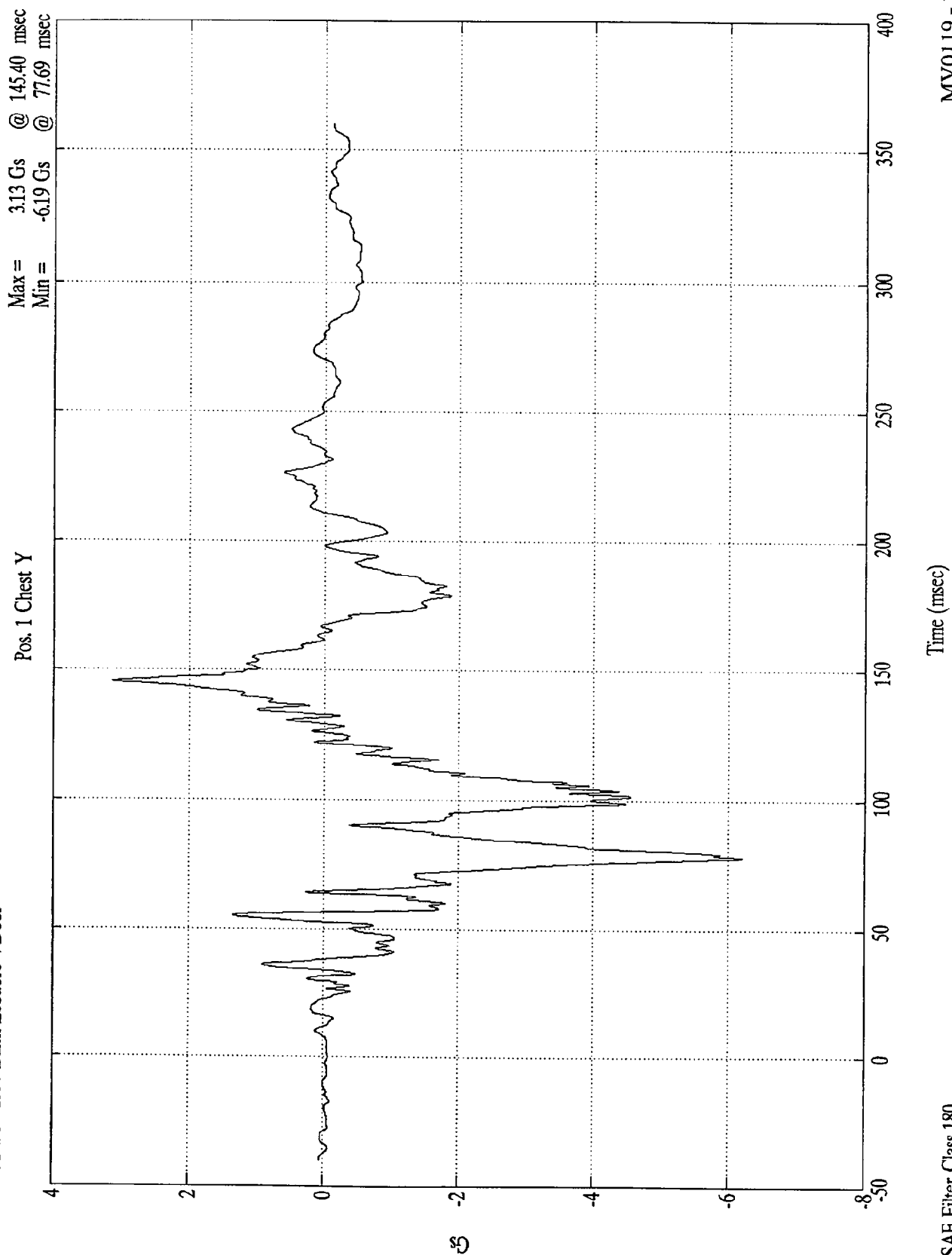


Time (msec)

SAE Filter Class 180

MV0119 - 3/18/97

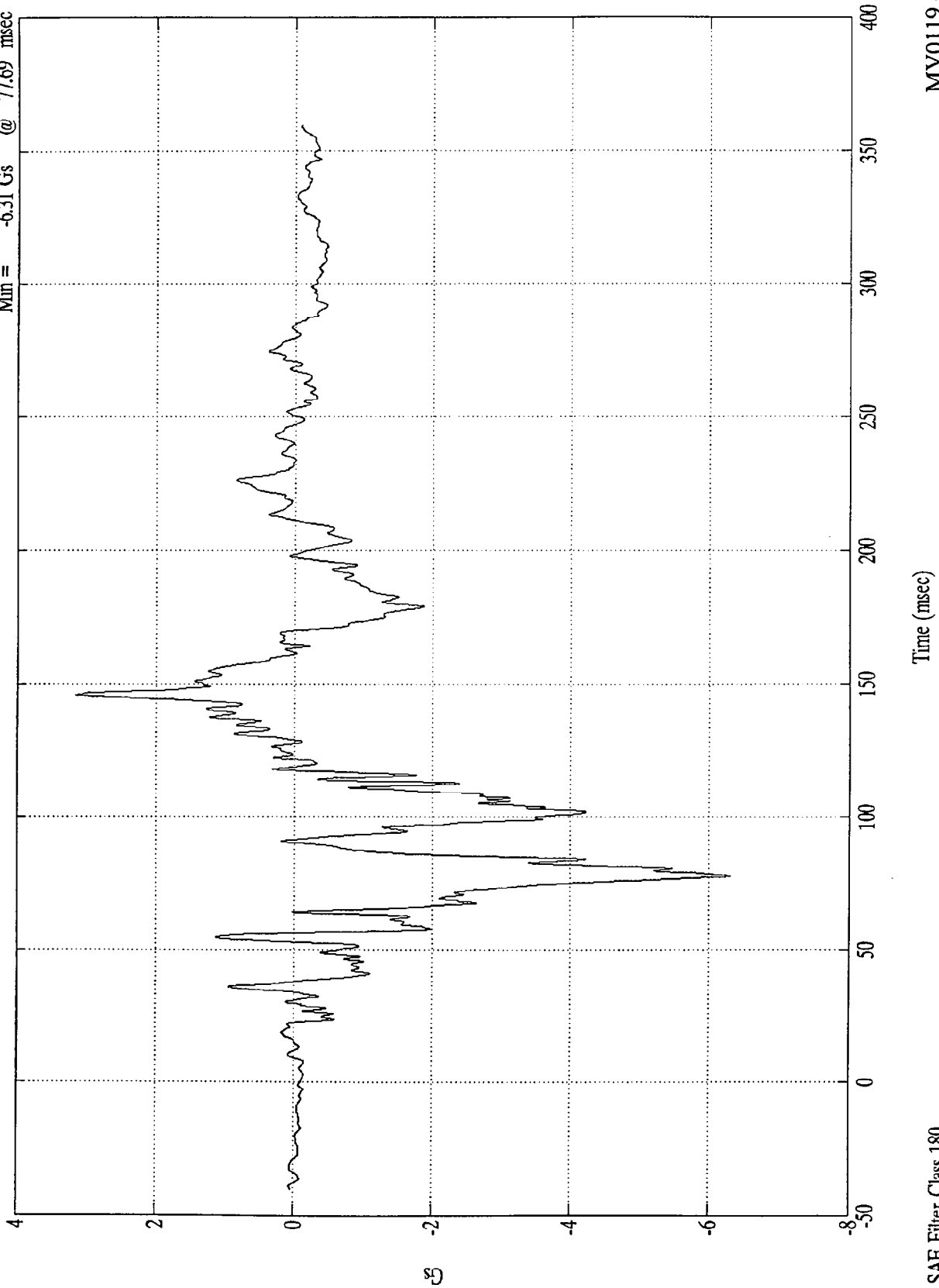
NCAP TEST #6 - 1997 Buick LeSabre 4-Door



MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

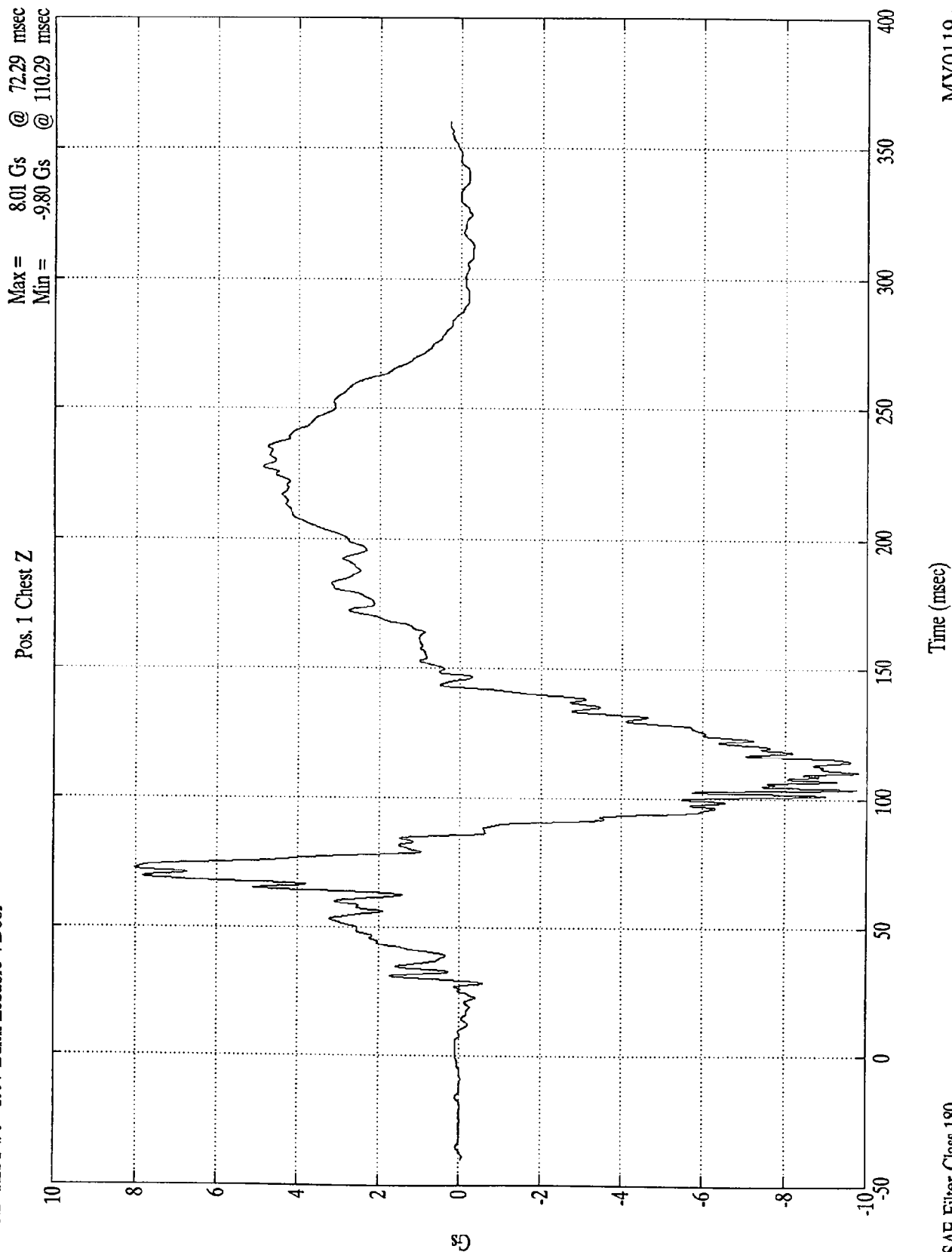
Pos. 1 Chest Y(R)
Max = 3.16 Gs @ 145.69 msec
Min = -6.31 Gs @ 77.69 msec



MV0119 - 3/18/97

SAE Filter Class 180

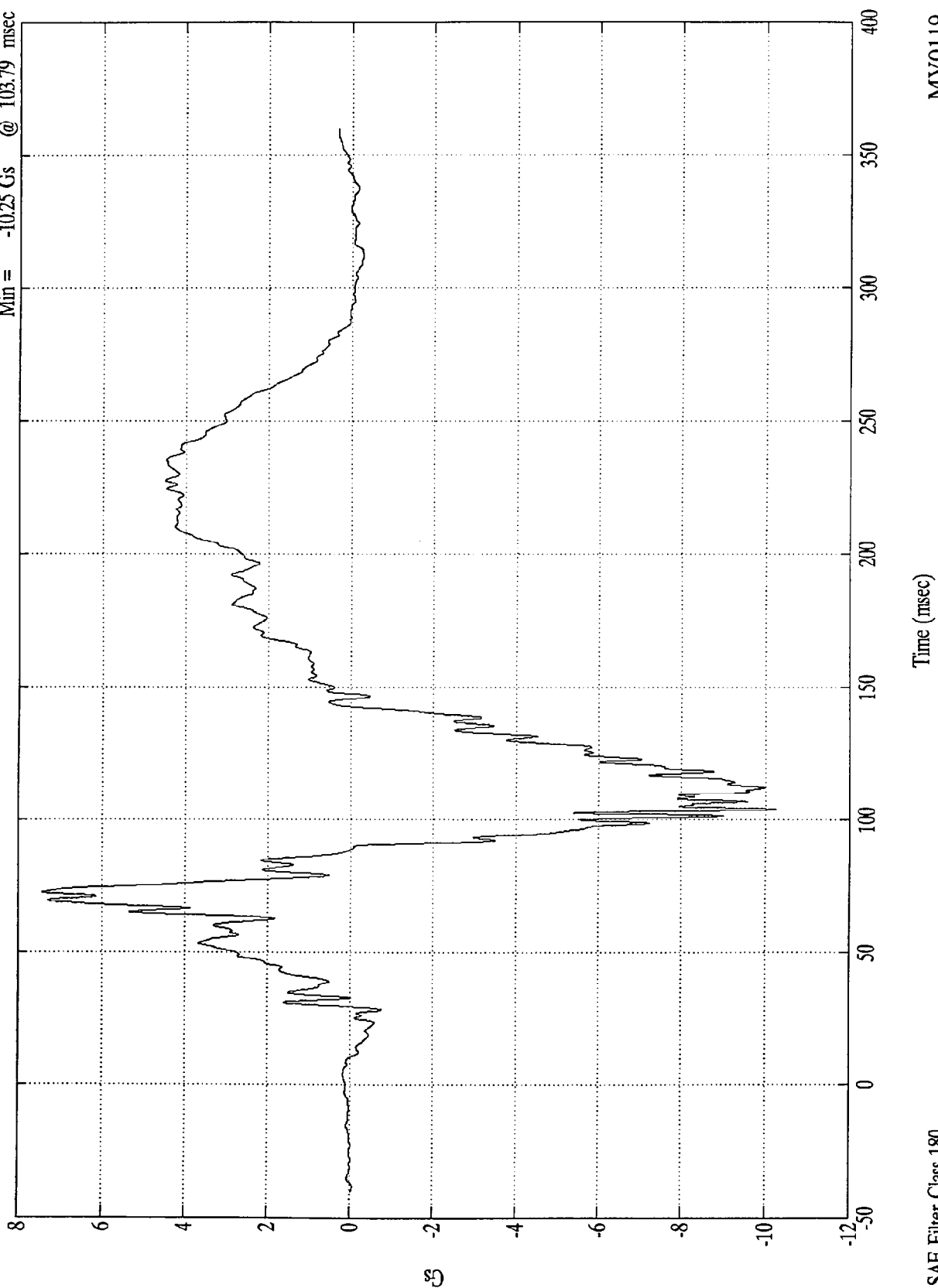
NCAP TEST #6 - 1997 Buick LeSabre 4Door



MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 1 Chest Z(R)
Max = 7.41 Gs @ 72.29 msec
Min = -10.25 Gs @ 103.79 msec



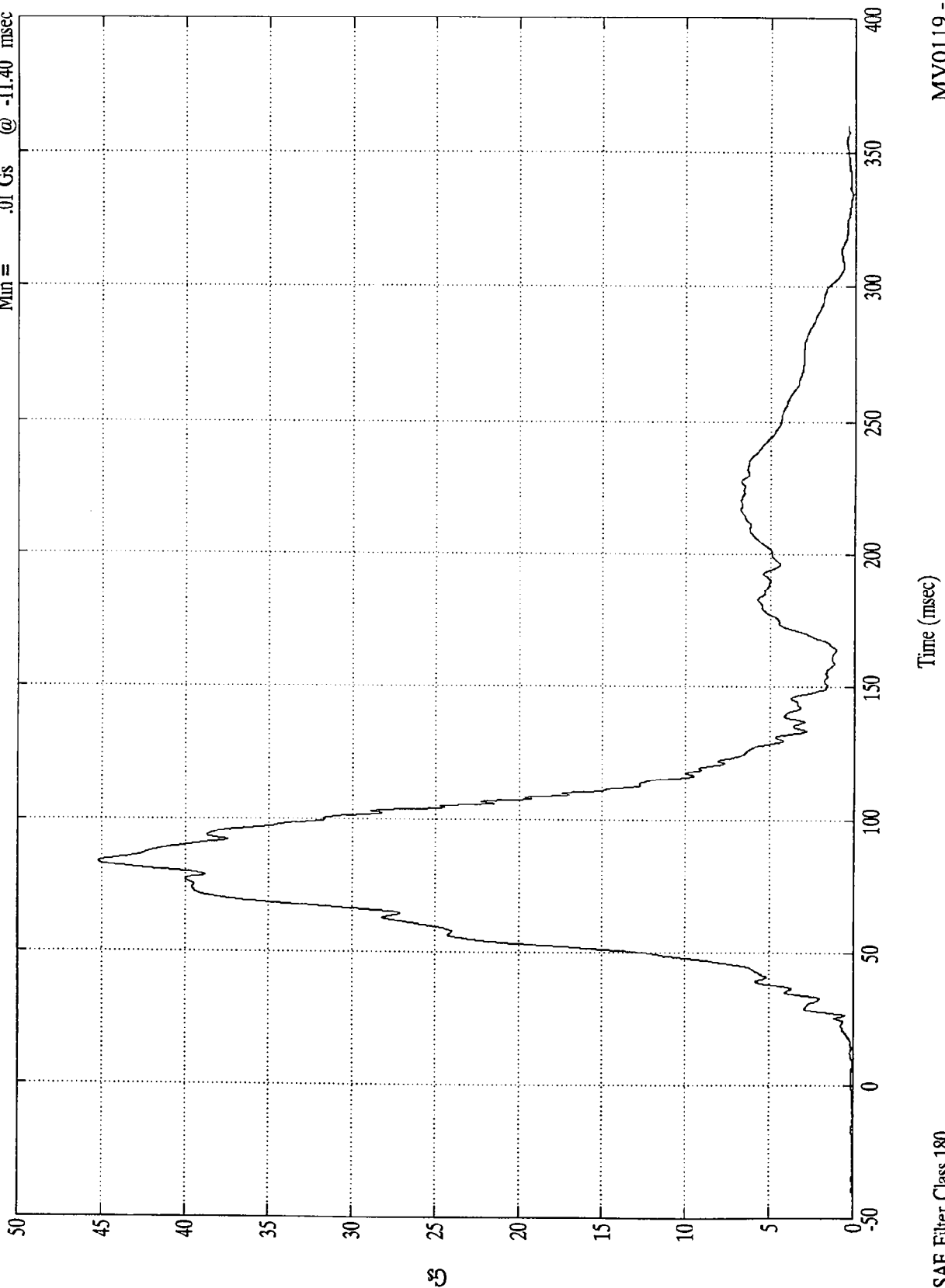
SAE Filter Class 180

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4 Door

Pos. 1 Chest Resultant

Max = 45.18 Gs @ 83.39 msec
Min = .01 Gs @ -11.40 msec

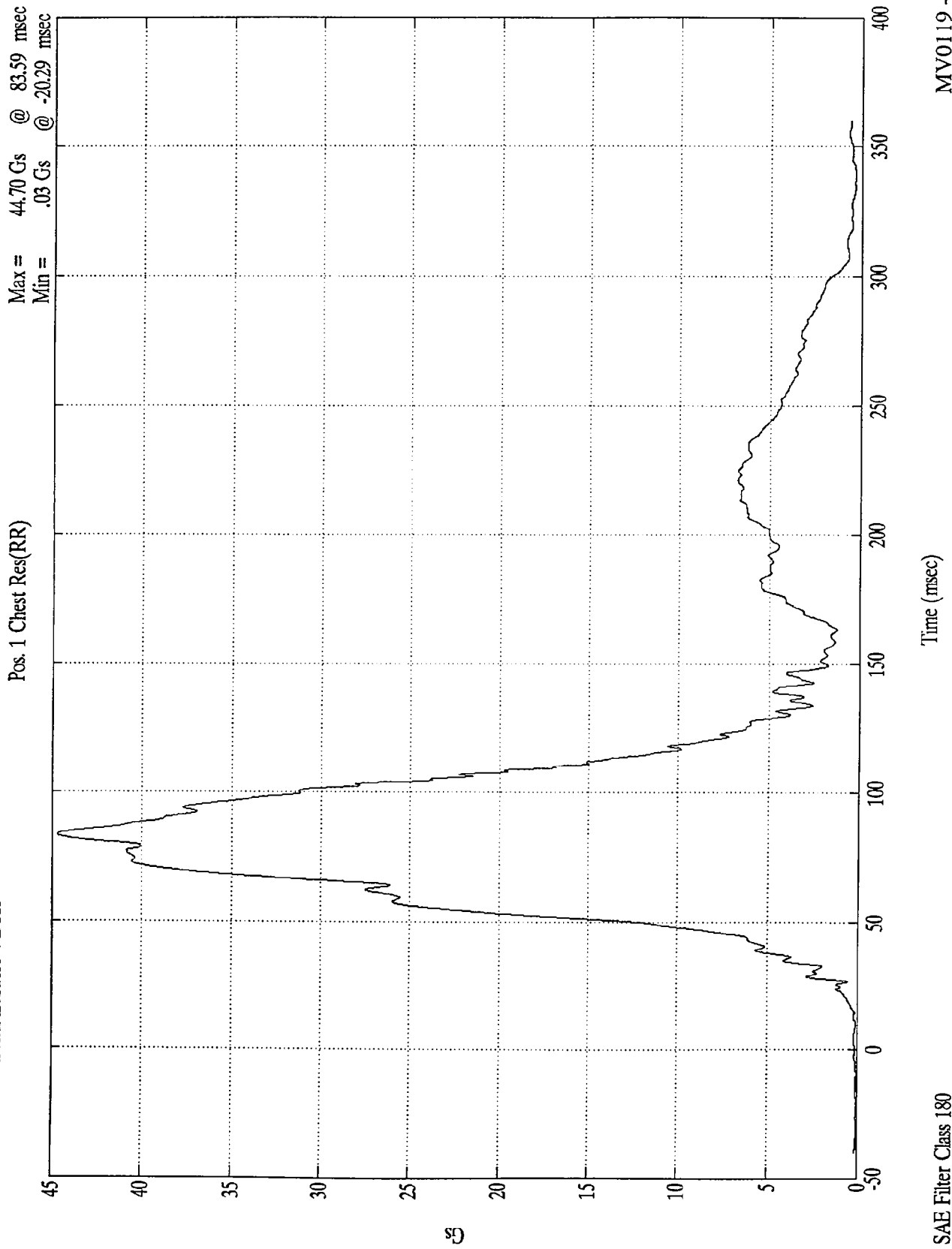


SAE Filter Class 180

Time (msec)

MV0119 - 3/18/97

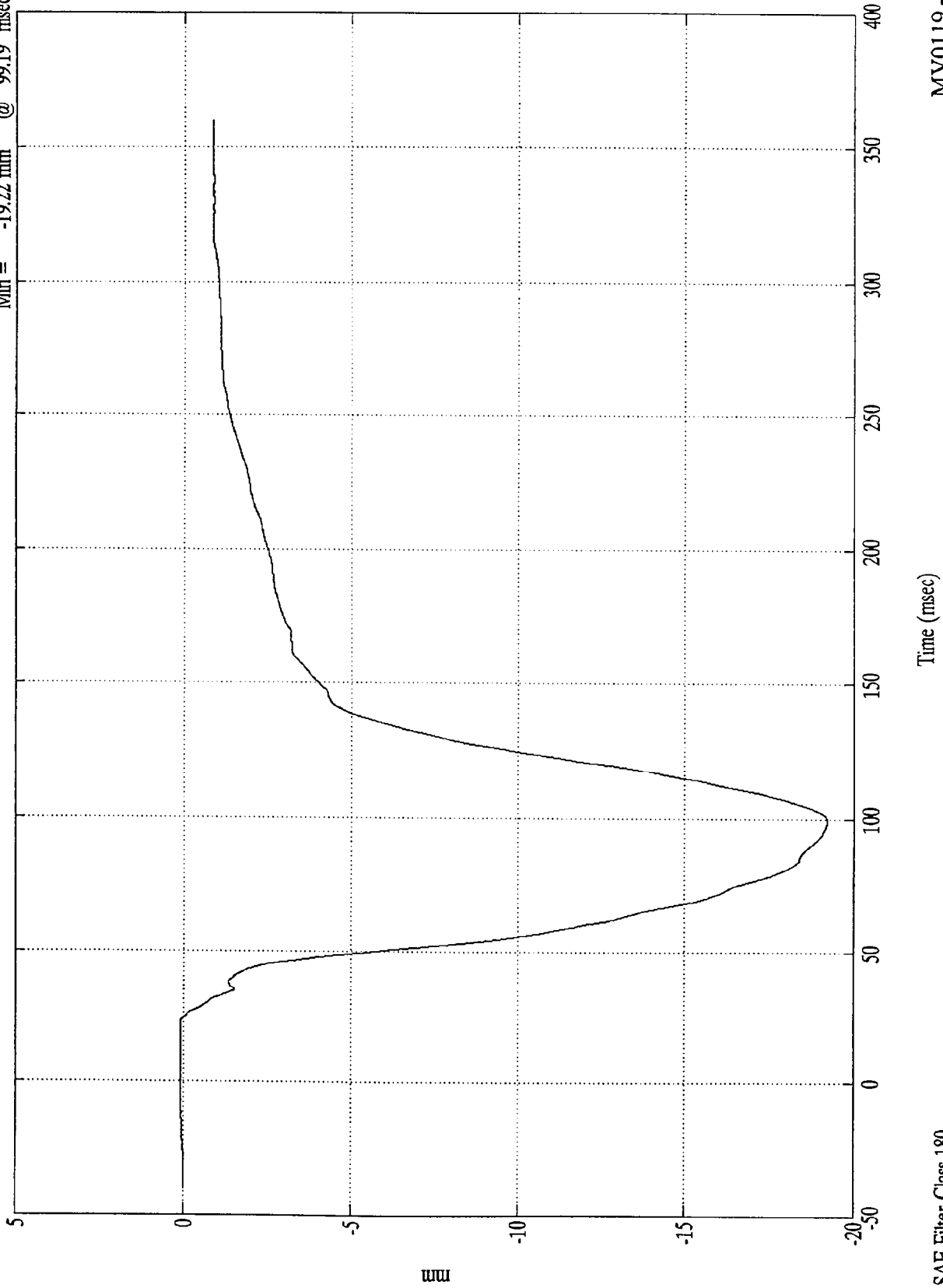
NCAP TEST #6 - 1997 Buick LeSabre 4-Door



MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 1 Chest Disp.
Max = .09 mm @ 17.60 msec
Min = -19.22 mm @ 99.19 msec



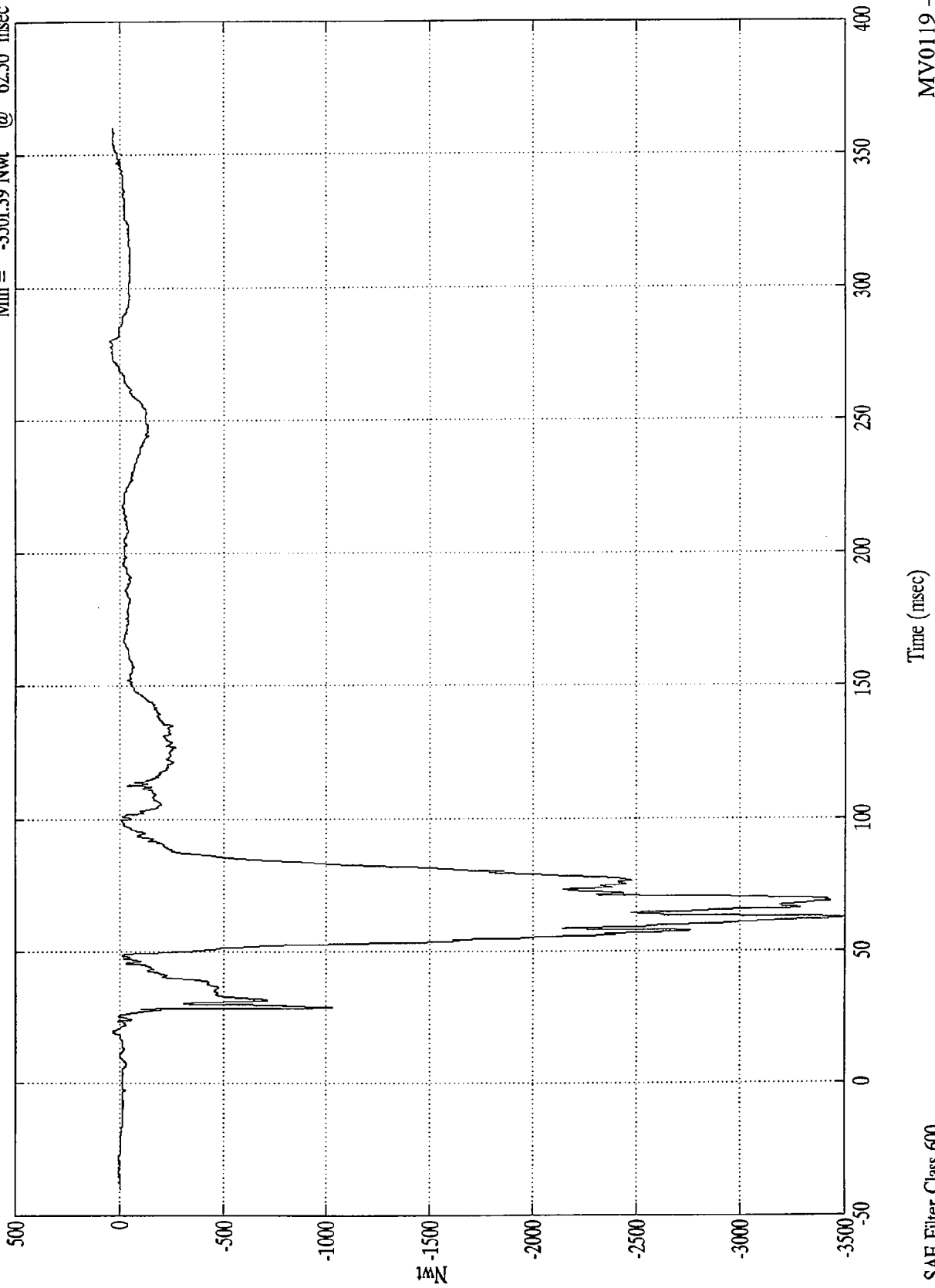
SAE Filter Class 180

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4Door

Pos. 1 Left Femur

Max = 48.16 Nwt @ 279.69 msec
Min = -3501.39 Nwt @ 62.50 msec



SAE Filter Class 600

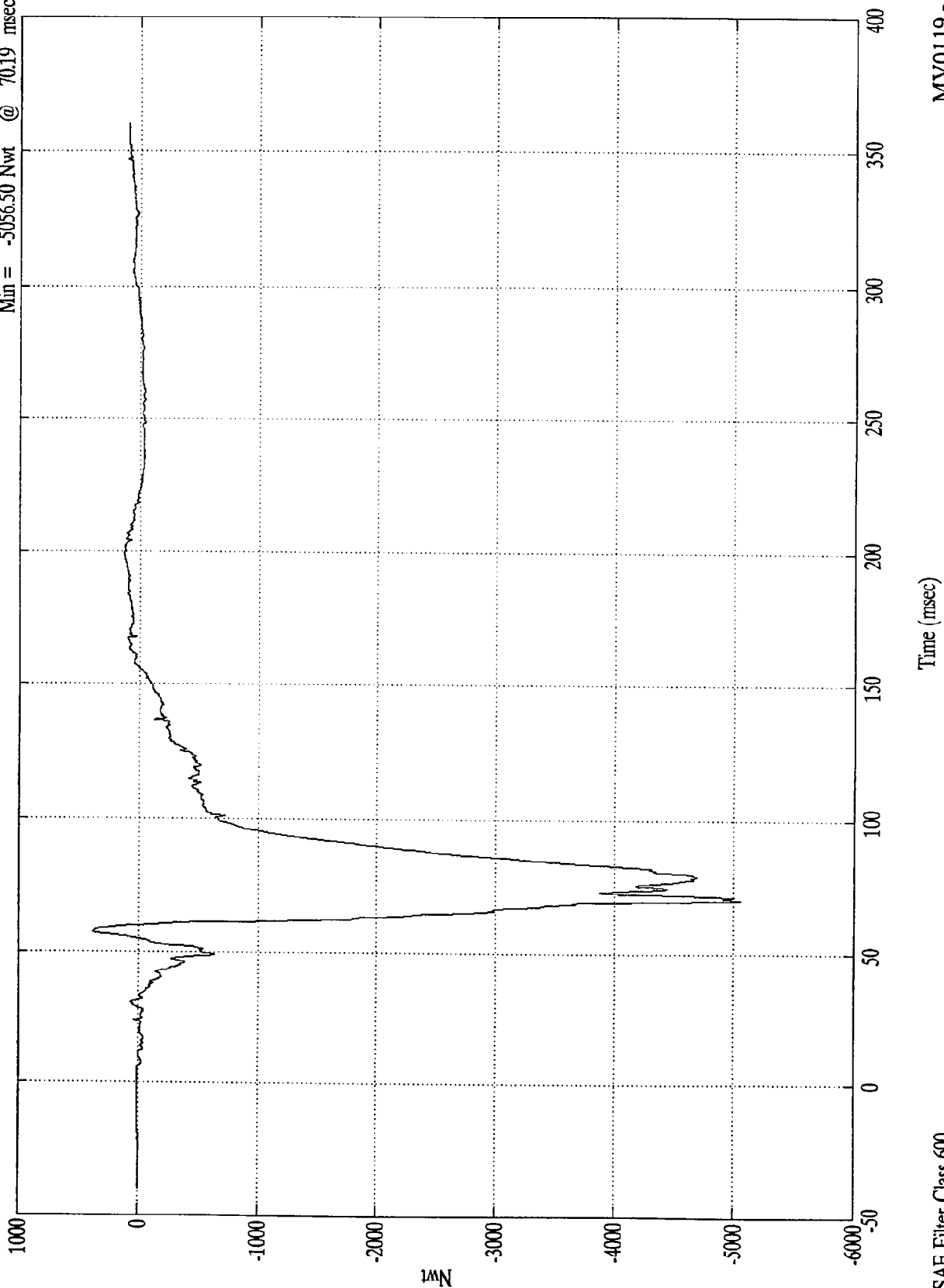
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4Door

Pos. 1 Right Femur

Max = 379.60 Nwt @ 57.29 msec
Min = -5056.50 Nwt @ 70.19 msec



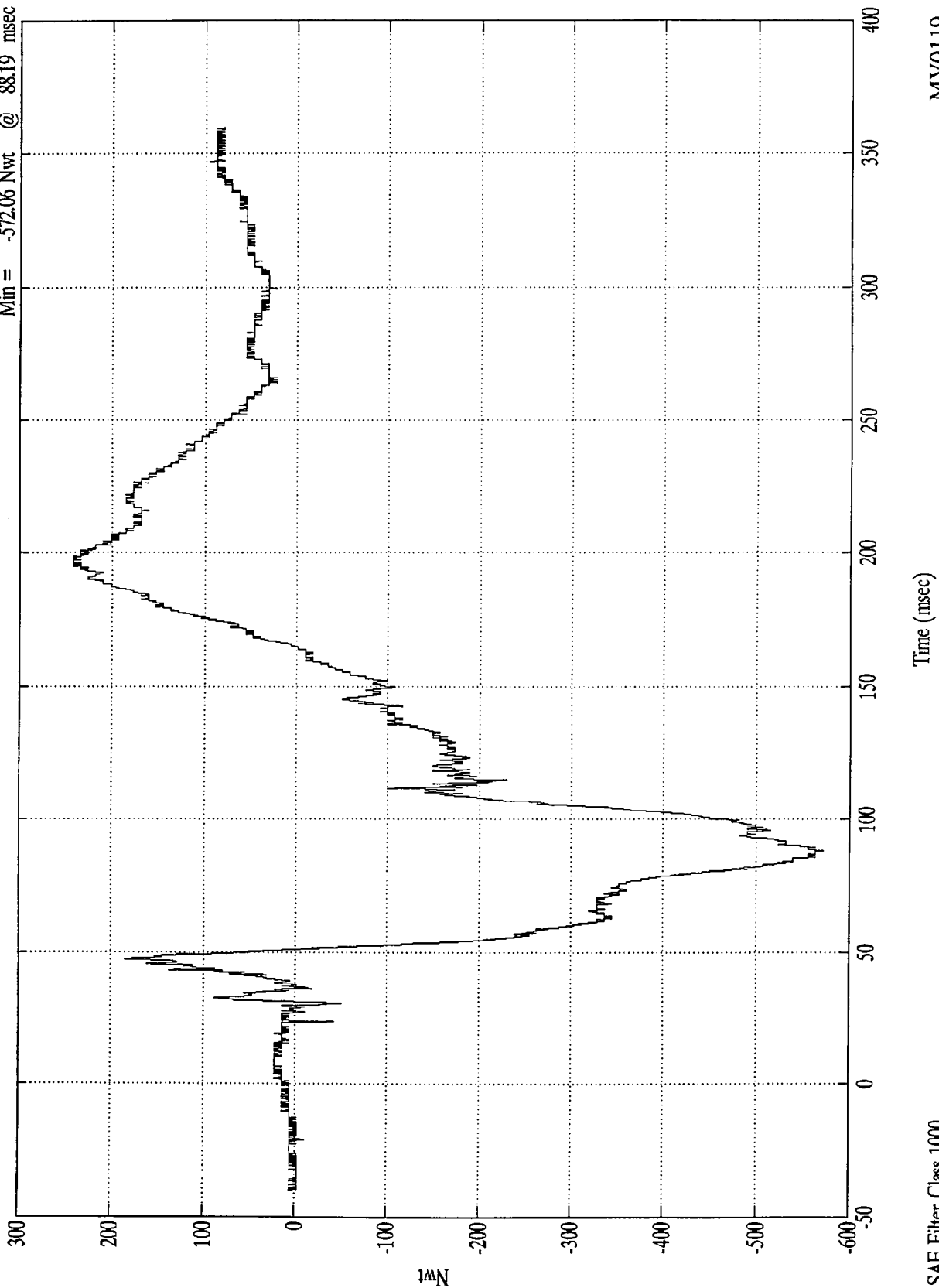
SAE Filter Class 600

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 1 Upper Neck Fx

Max = 242.71 Nwt @ 198.80 msec
Min = -572.06 Nwt @ 88.19 msec



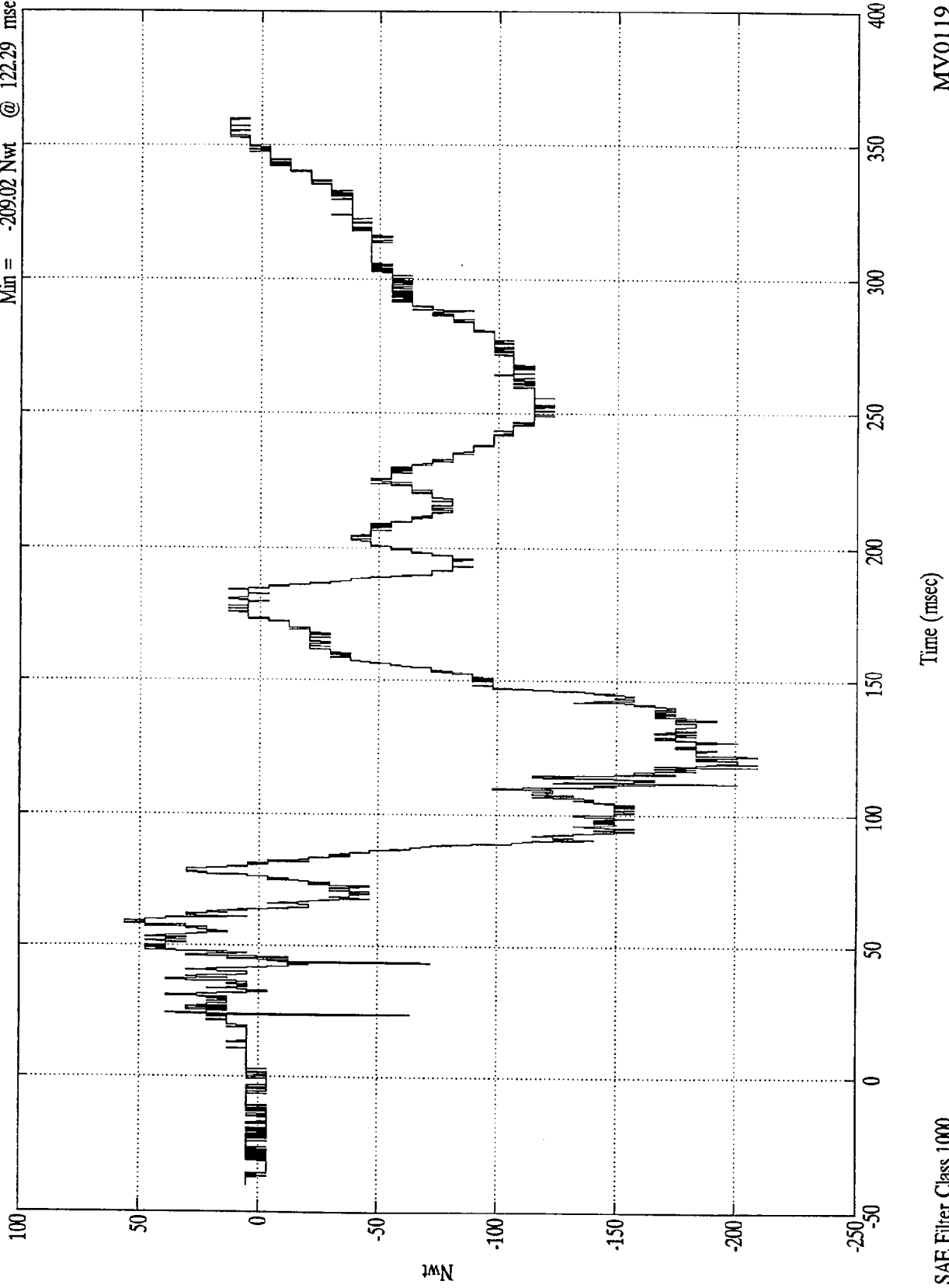
SAE Filter Class 1000

Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 1 Upper Neck Fy
 Max = 56.06 Nwt @ 59.09 msec
 Min = -209.02 Nwt @ 122.29 msec



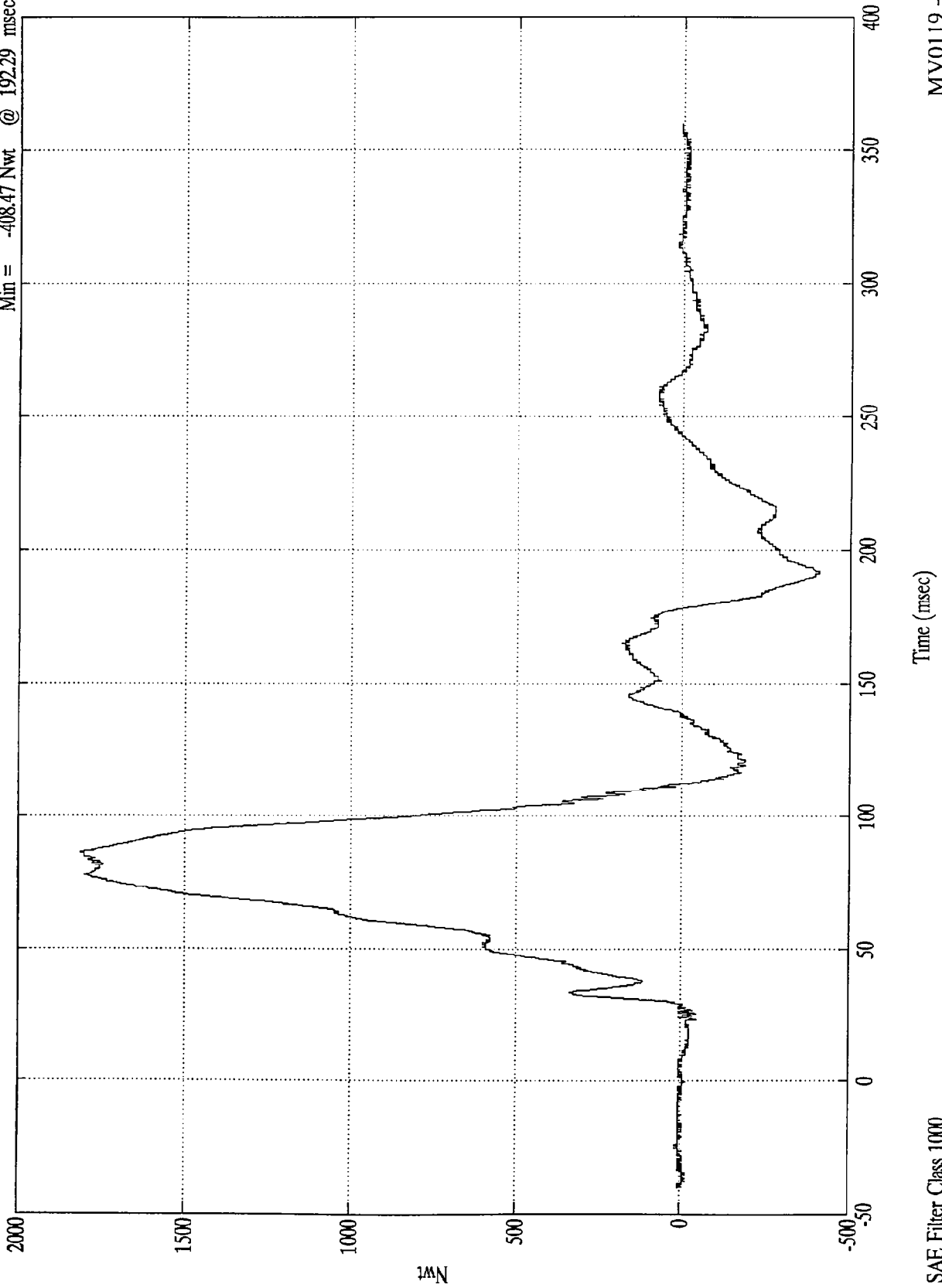
SAE Filter Class 1000

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4Door

Pos. 1 Upper Neck Fz

Max = 1812.73 Nwt @ 86.19 msec
Min = -408.47 Nwt @ 192.29 msec



SAE Filter Class 1000

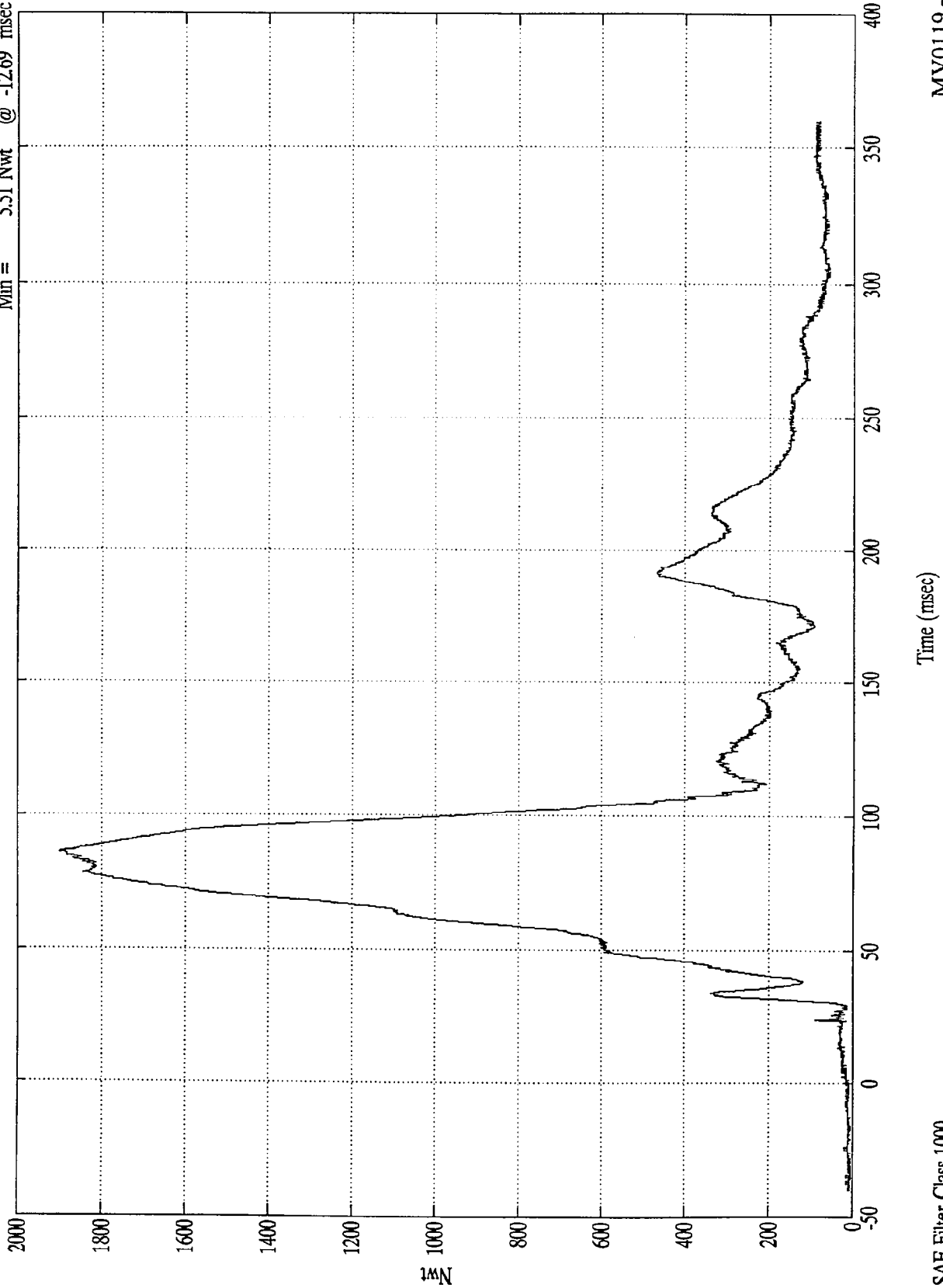
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4Door

Max = 1898.99 Nwt @ 85.99 msec
Min = 5.51 Nwt @ -12.69 msec

Pos. 1 Neck Force Res.



SAE Filter Class 1000

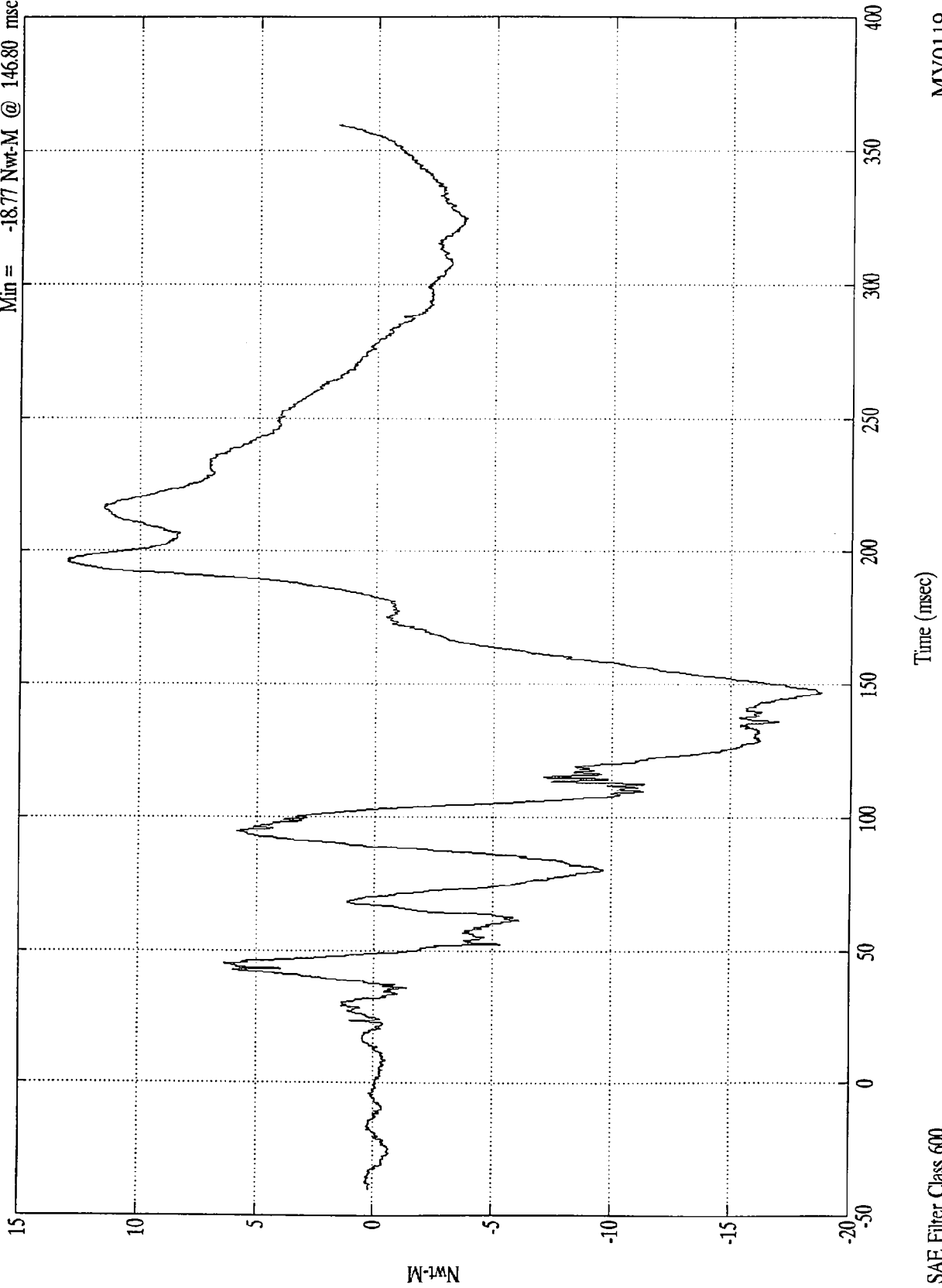
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 1 Upper Neck Mx

Max = 13.02 Nwt-M @ 195.89 msec
Min = -18.77 Nwt-M @ 146.80 msec



SAE Filter Class 600

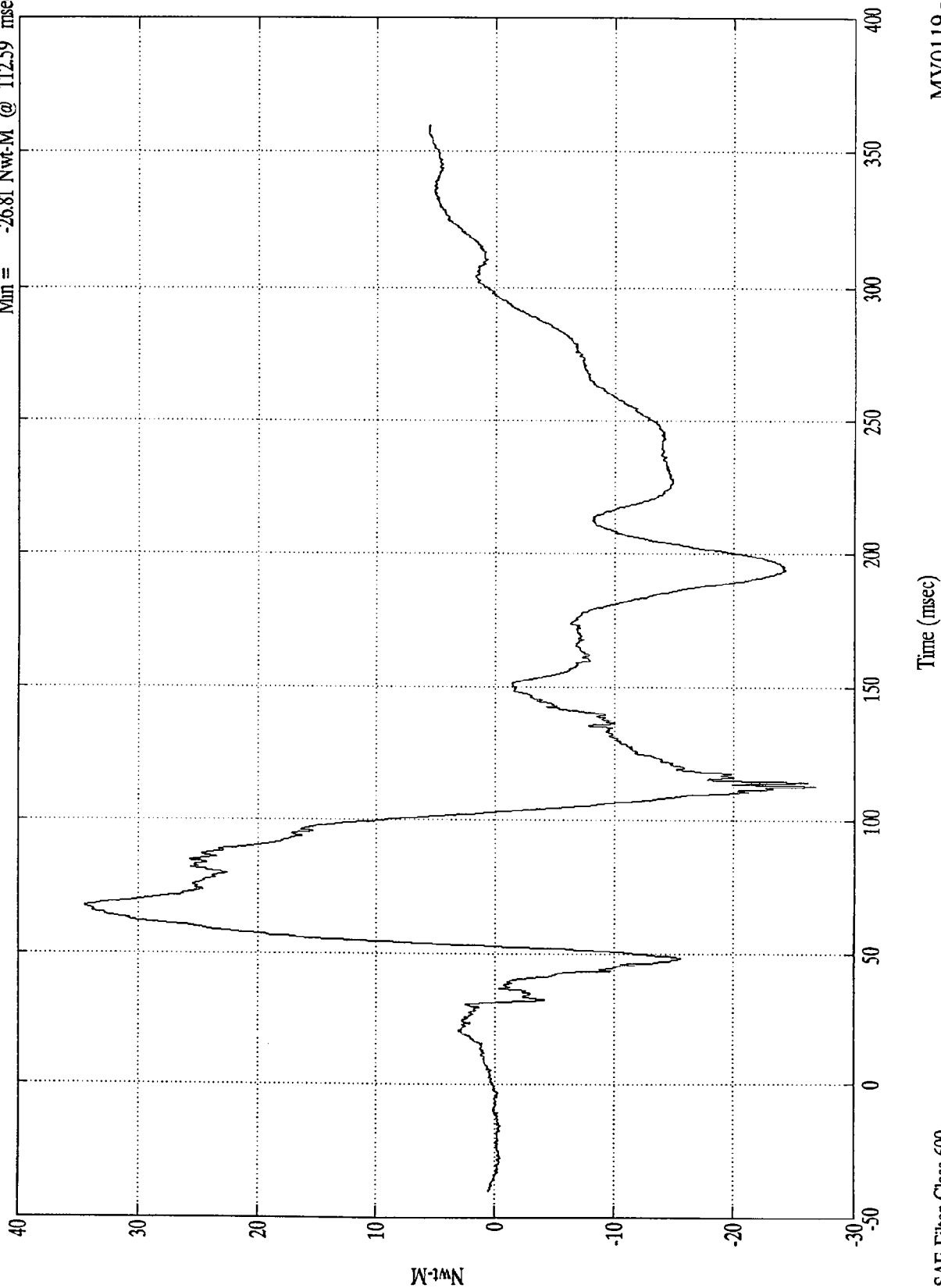
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 1 Upper Neck My

Max = 34.46 Nwt-M @ 67.40 msec
Min = -26.81 Nwt-M @ 112.59 msec



MV0119 - 3/18/97

SAE Filter Class 600

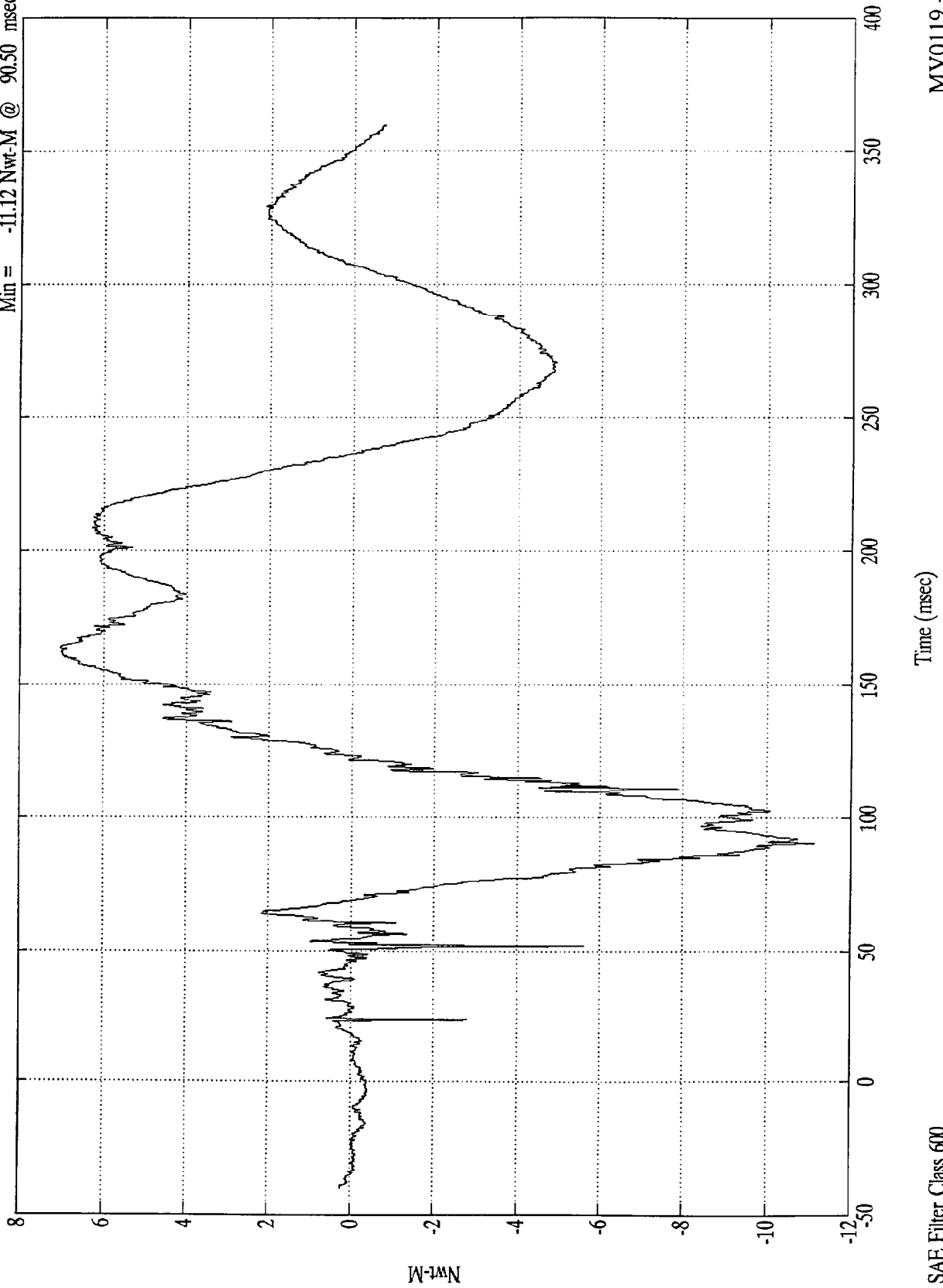
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NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 1 Upper Neck Mz

Max = 7.03 Nwt-M @ 163.80 msec
Min = -11.12 Nwt-M @ 90.50 msec



SAE Filter Class 600

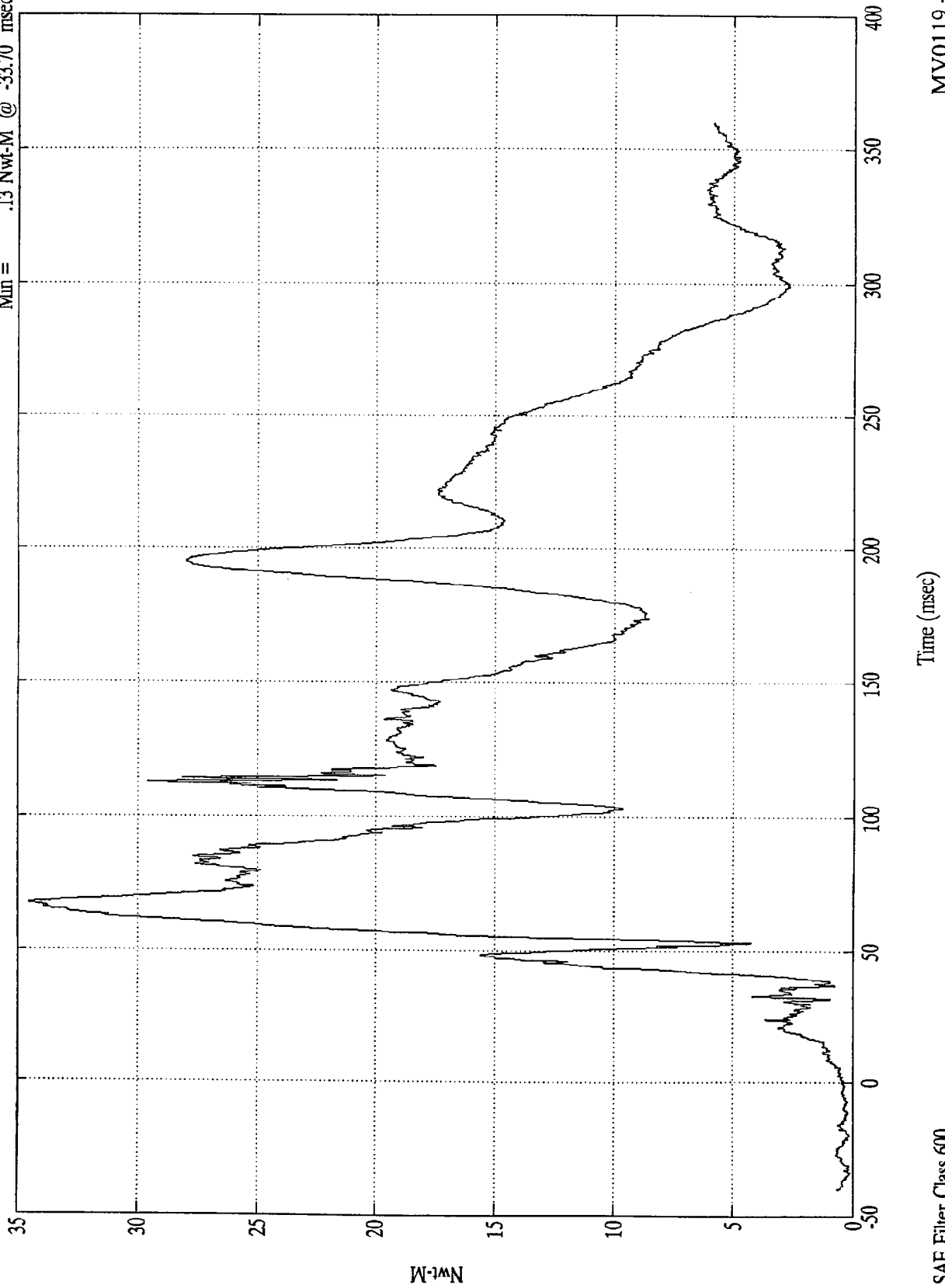
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 • 1997 Buick LeSabre 4-Door

Pos. 1 Neck Moment Res.

Max = 34.48 Nwt-M @ 67.40 msec
Min = .13 Nwt-M @ -33.70 msec

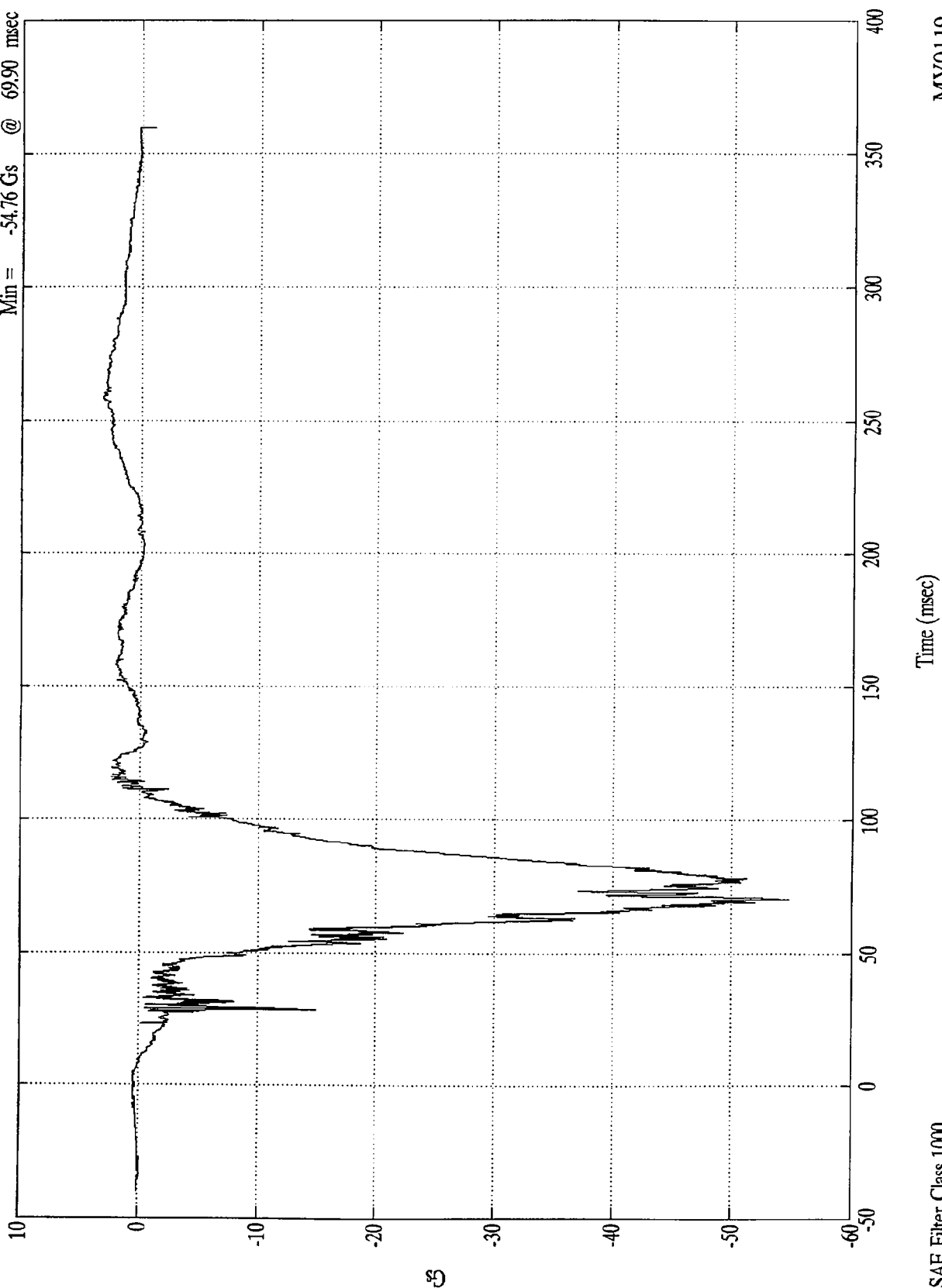


SAE Filter Class 600

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 1 Pelvic (X)
Max = 3.18 Gs @ 258.89 msec
Min = -54.76 Gs @ 69.90 msec

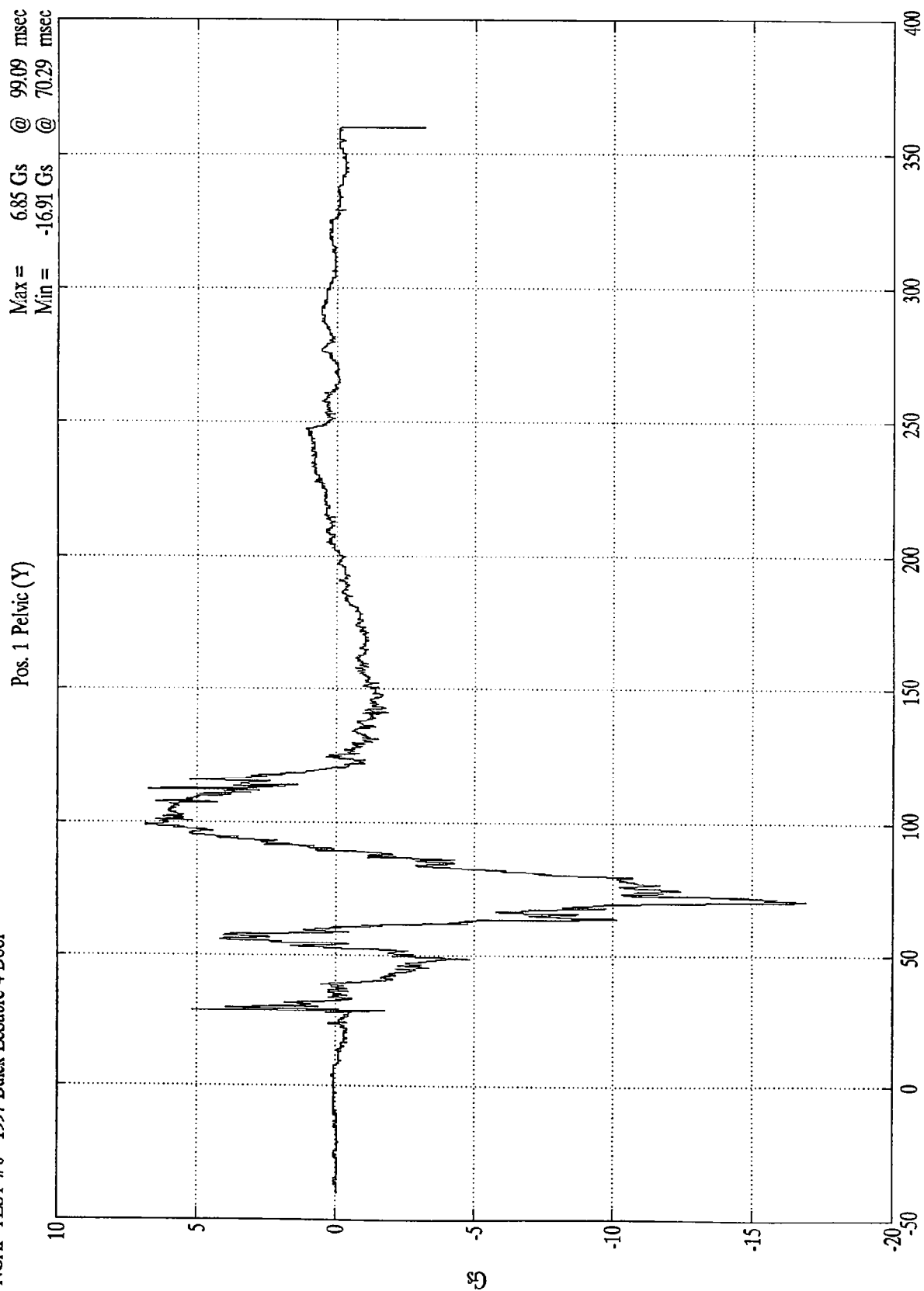


SAE Filter Class 1000

Time (msec)

8406-6

NCAP TEST #6 - 1997 Buick LeSabre 4Door



SAE Filter Class 1000

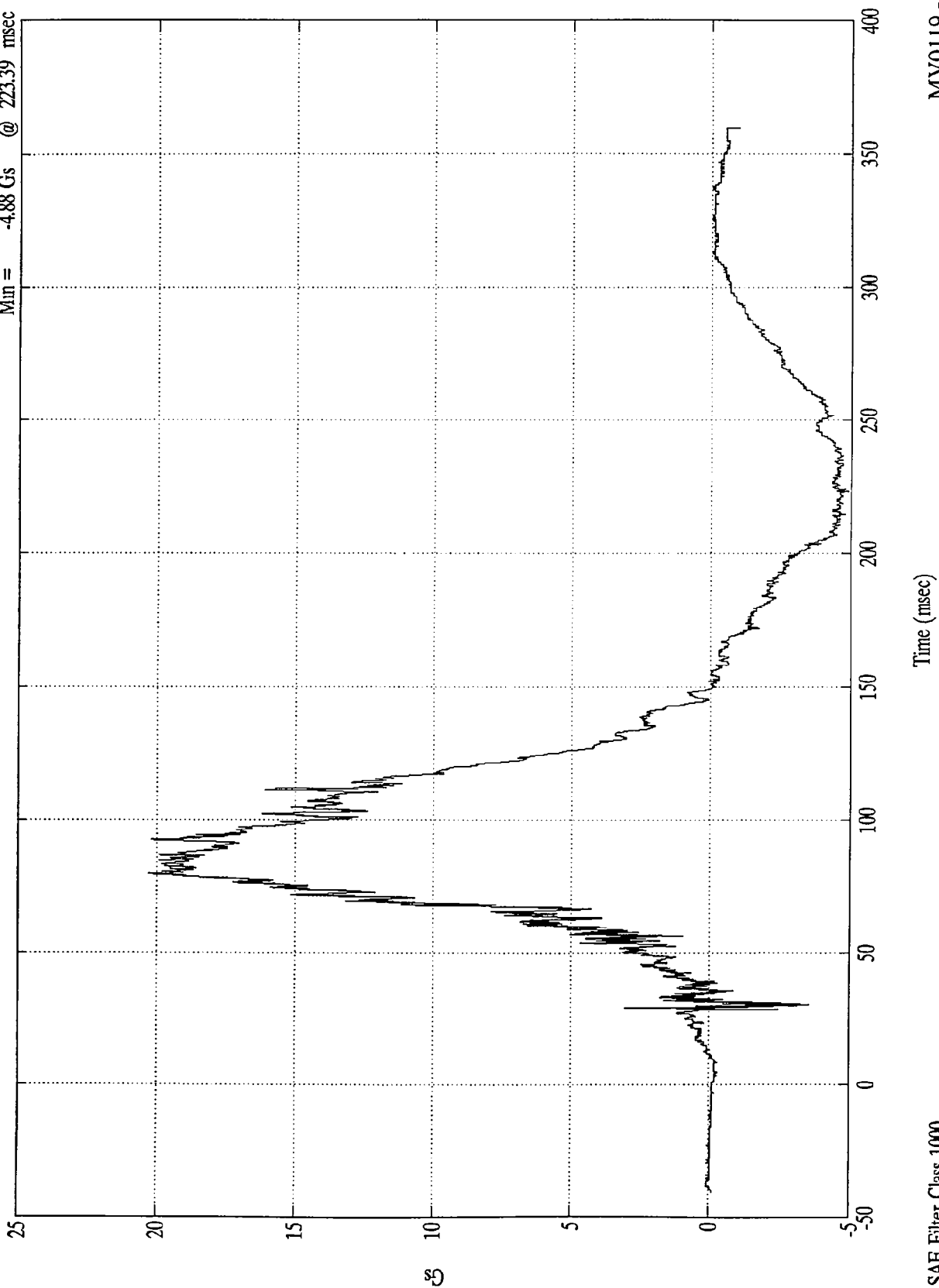
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 20.30 Gs @ 79.69 msec
Min = -4.88 Gs @ 223.39 msec

Pos. 1 Pelvic (Z)

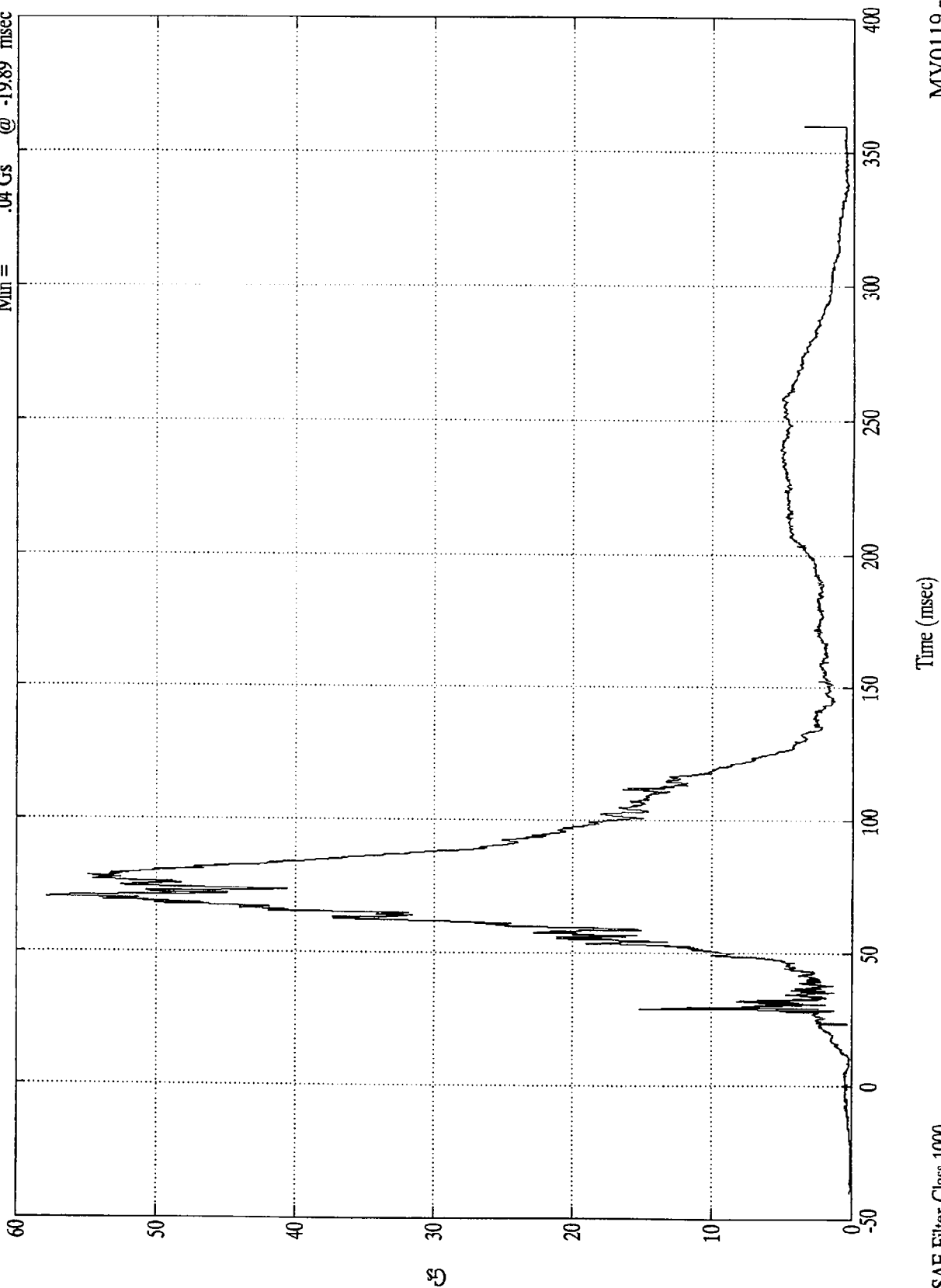


MV0119 - 3/18/97

SAE Filter Class 1000

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 1 Pelvic (R)
 Max = 57.88 Gs @ 69.90 msec
 Min = .04 Gs @ -19.89 msec



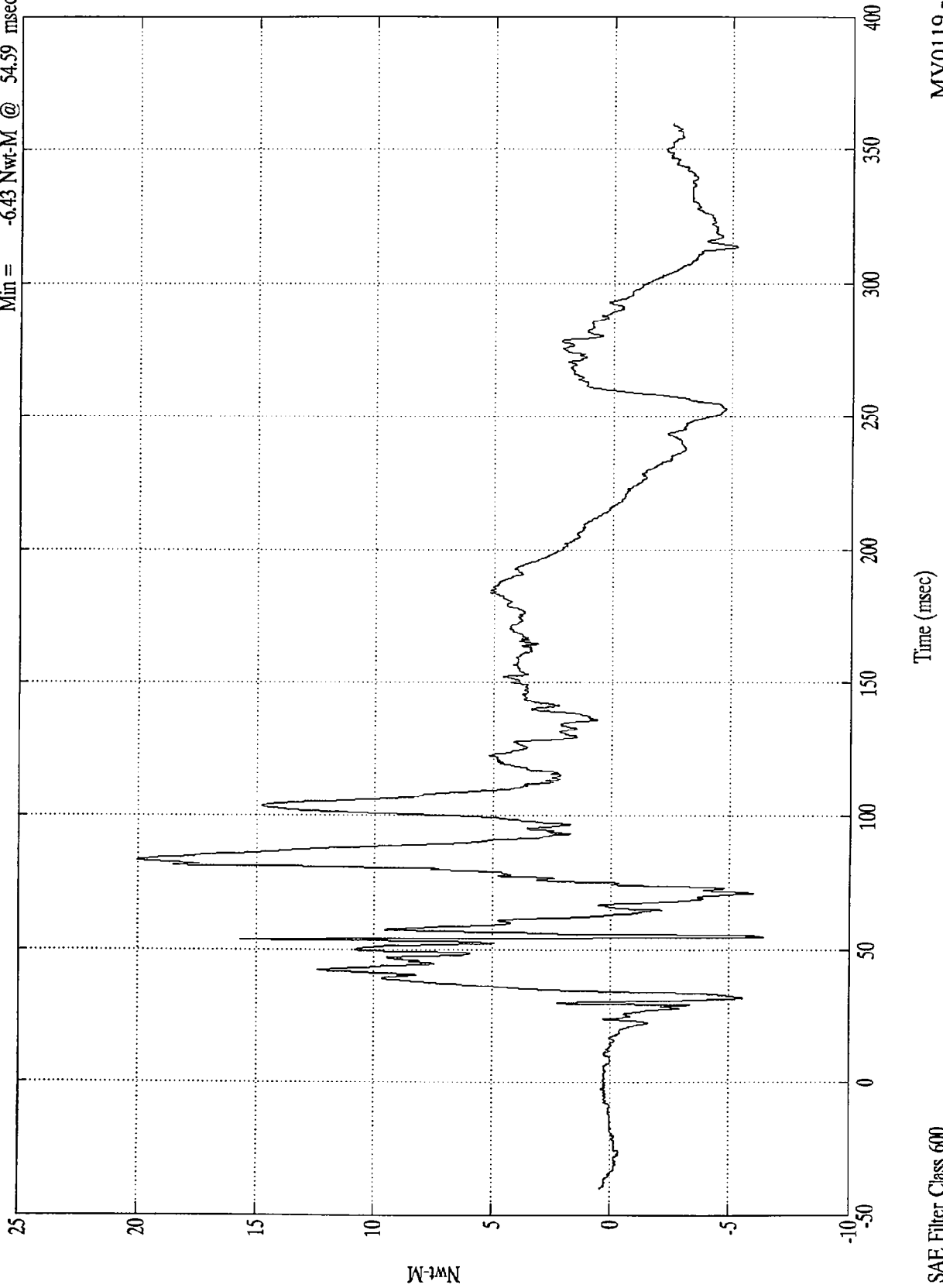
SAE Filter Class 1000

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

P1 Lt Upper Tibia Mx

Max = 20.02 Nwt-M @ 83.39 msec
Min = -6.43 Nwt-M @ 54.59 msec



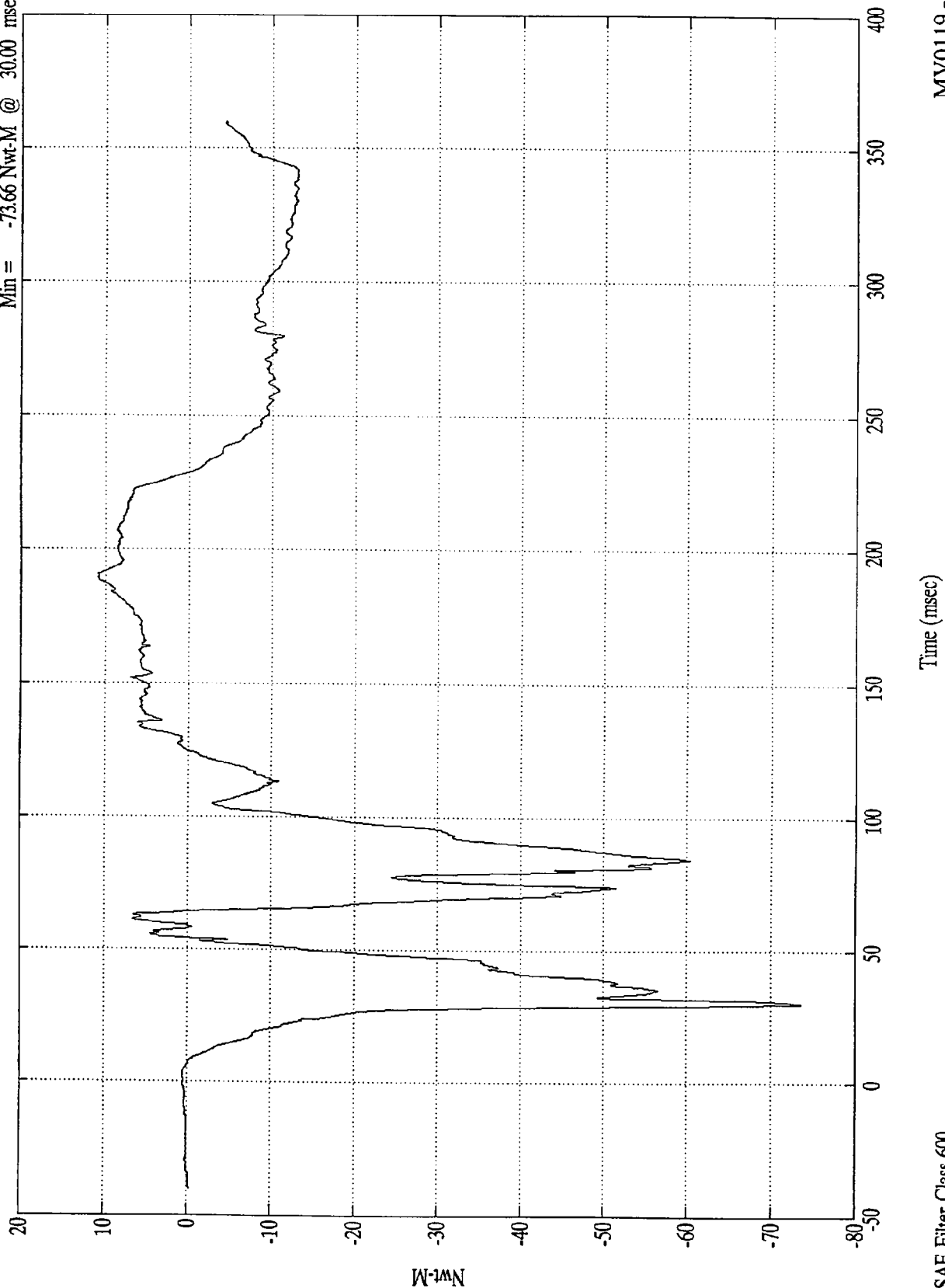
SAE Filter Class 600

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4Door

P1 Lt Upper Tibia My

Max = 10.84 Nwt-M @ 190.69 msec
Min = -73.66 Nwt-M @ 30.00 msec



SAE Filter Class 600

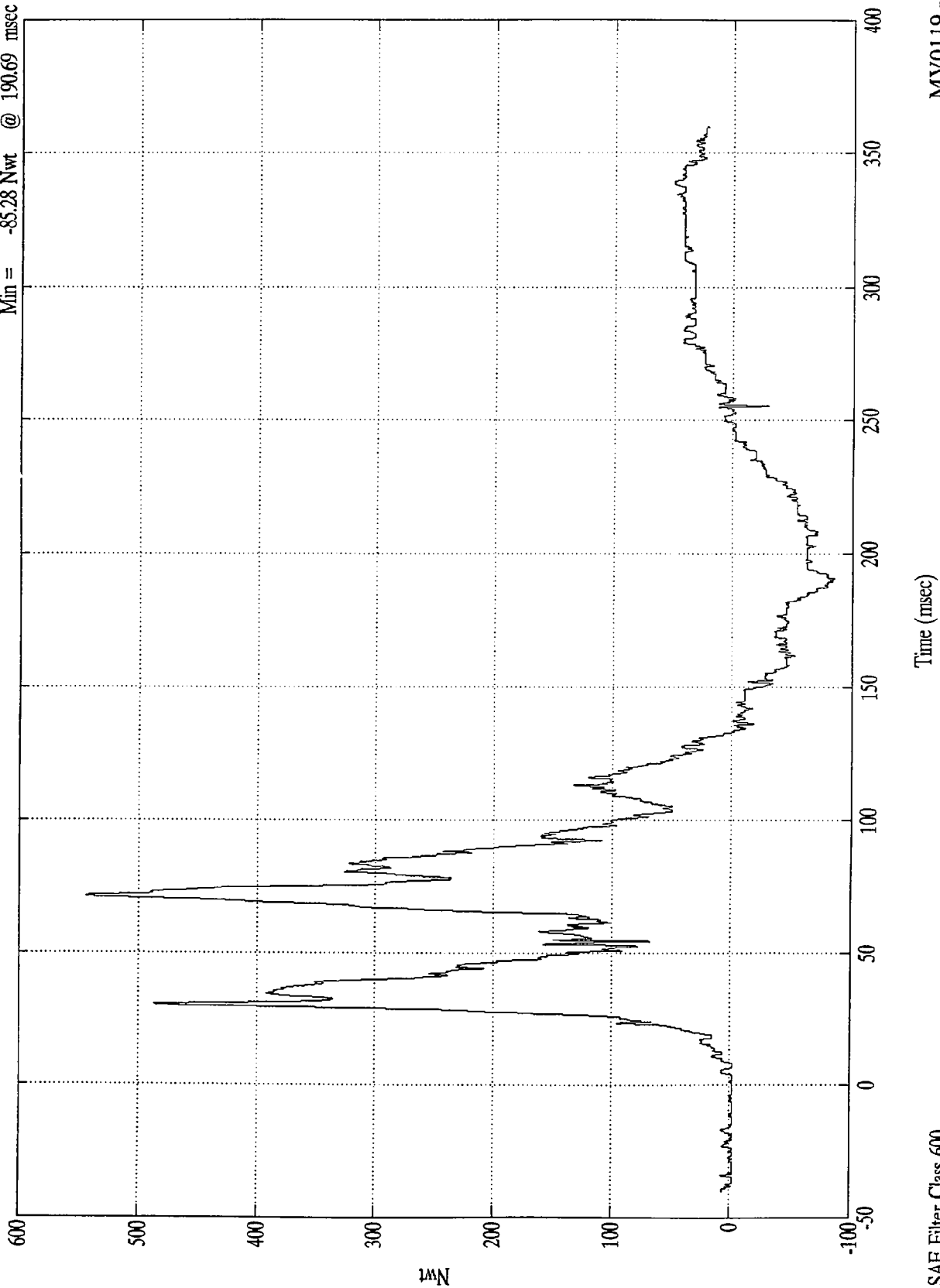
Time (msec)

MV0119 - 3/18/97

Nwt-M

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

P1 Lt Lower Tibia Fx
Max = 544.09 Nwt @ 70.99 msec
Min = -85.28 Nwt @ 190.69 msec



SAE Filter Class 600

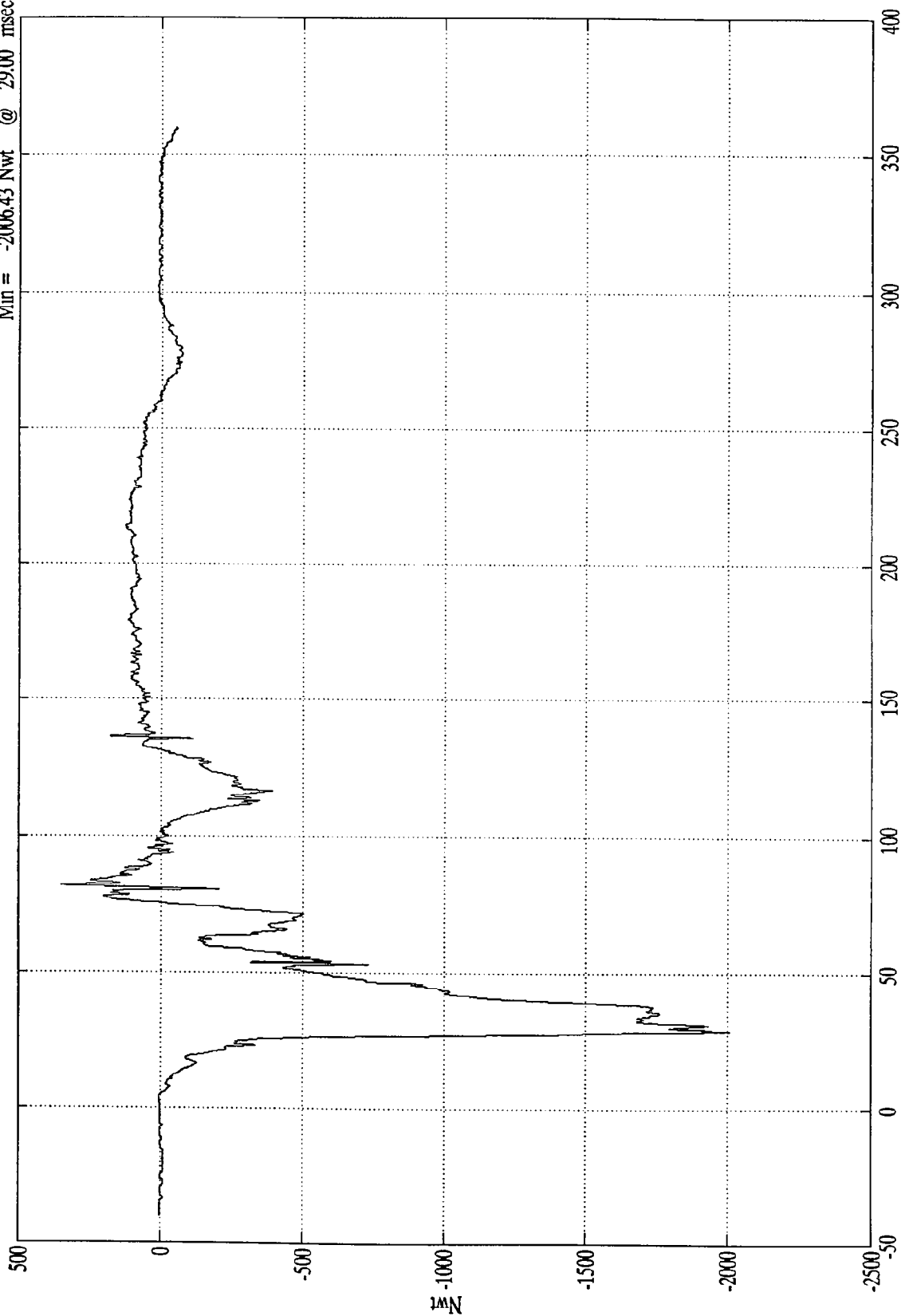
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 349.32 Nwt @ 81.90 msec
Min = -2006.43 Nwt @ 29.00 msec

Pt Lt Lower Tibia Fz



Time (msec)

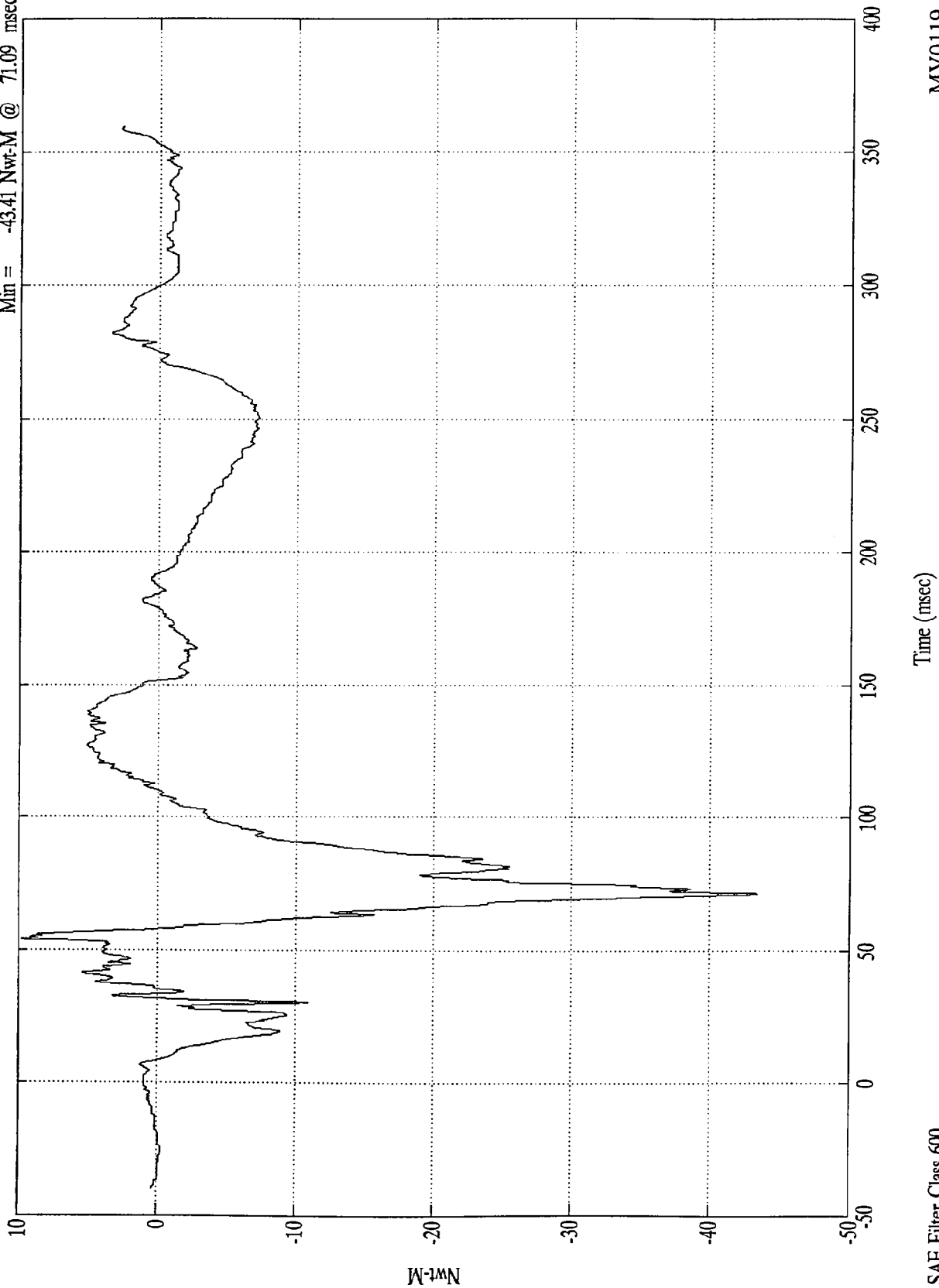
SAE Filter Class 600

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

P1 Lt Lower Tibia My

Max = 9.83 Nwt-M @ 53.99 msec
Min = -43.41 Nwt-M @ 71.09 msec



MV0119 - 3/18/97

SAE Filter Class 600

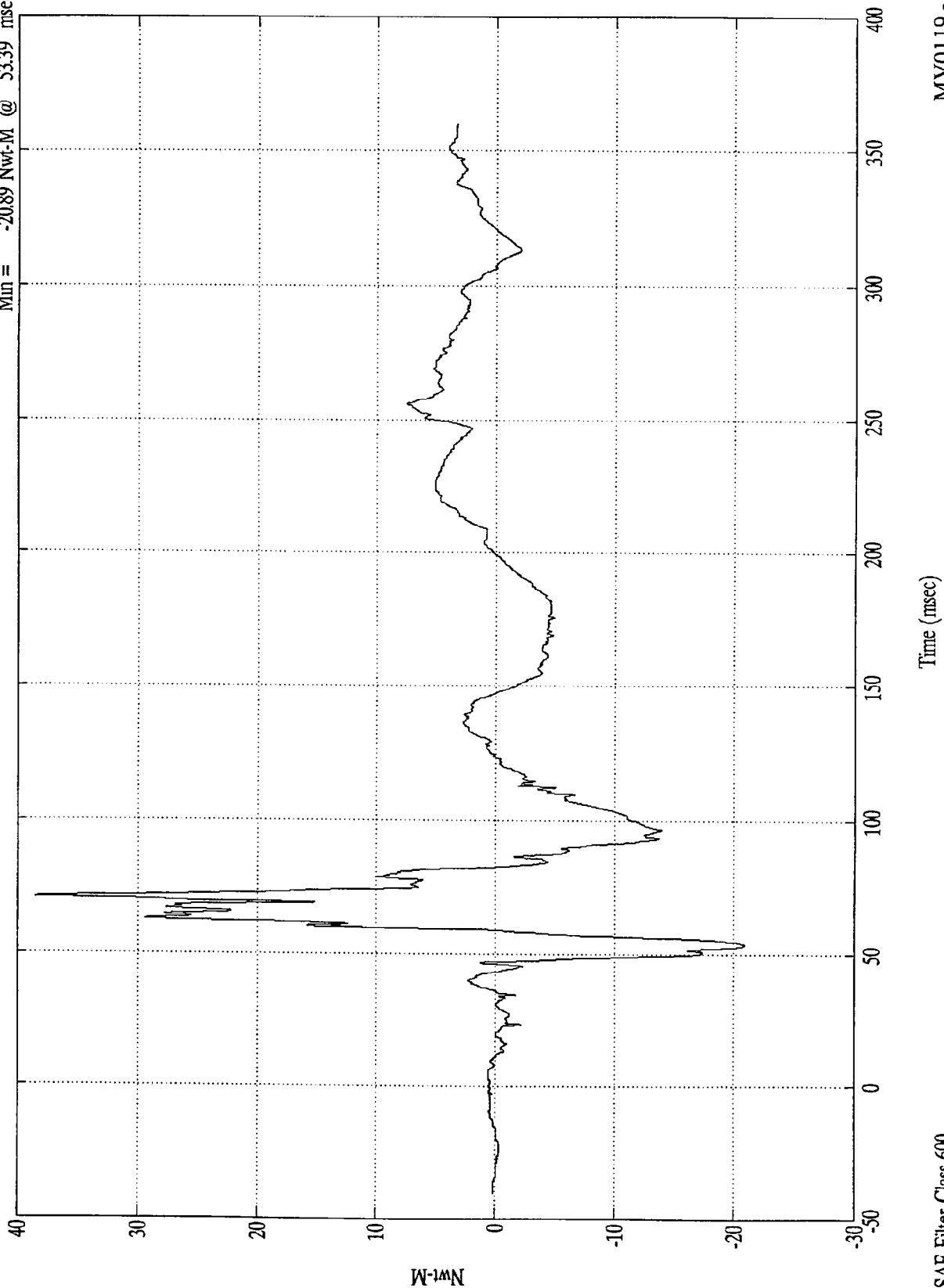
Nwt-M

Time (msec)

NCAP TEST #6 - 1997 Buick LeSabre 4Door

P1 Rt Upper Tibia Mx

Max = 38.54 Nwt-M @ 70.79 msec
Min = -20.89 Nwt-M @ 53.39 msec



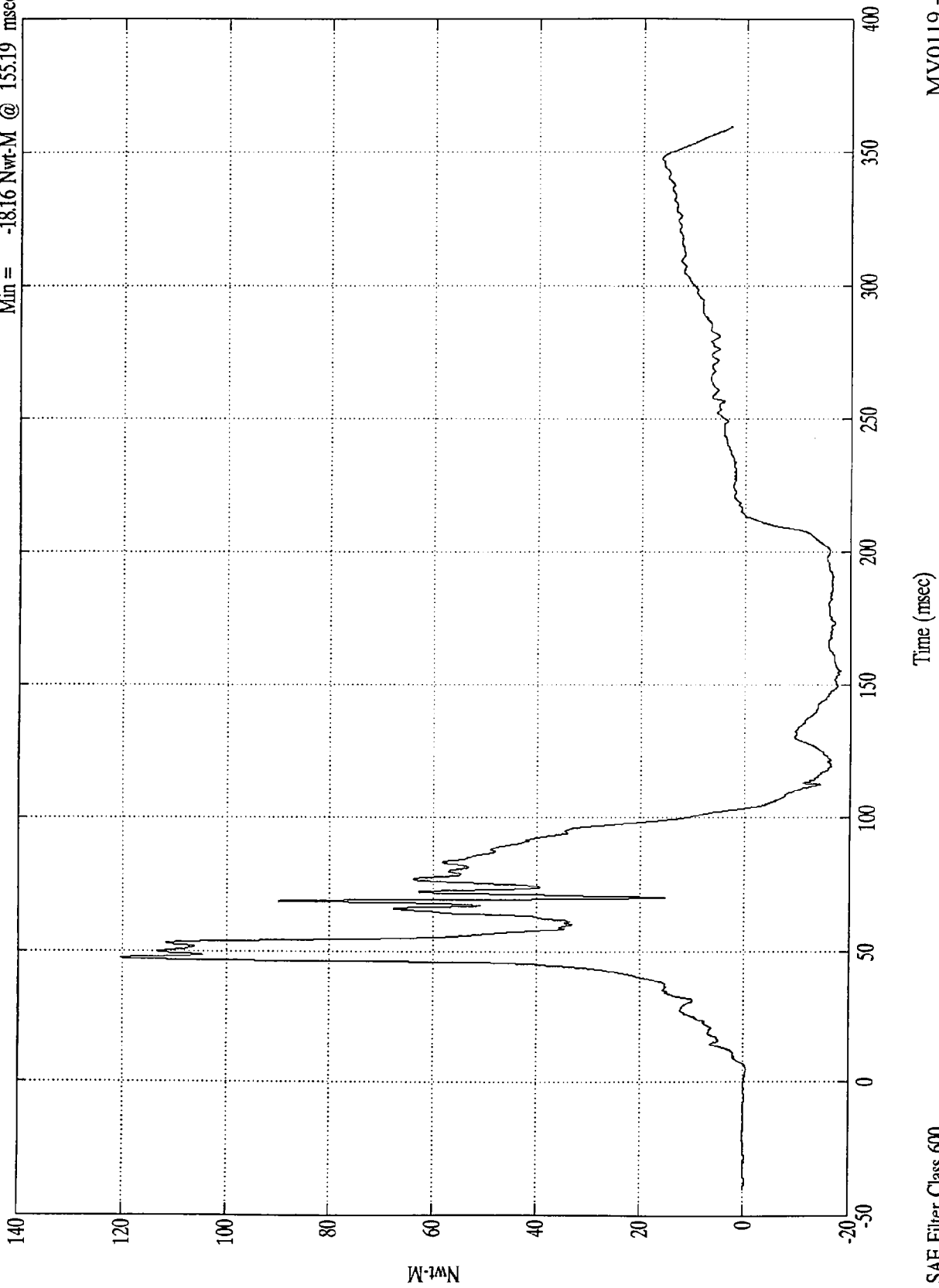
MV0119 - 3/18/97

SAE Filter Class 600

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

P1 Rt Upper Tibia My

Max = 120.36 Nwt-M @ 47.29 msec
Min = -18.16 Nwt-M @ 155.19 msec



SAE Filter Class 600

Time (msec)

MV0119 - 3/18/97

Nwt-M

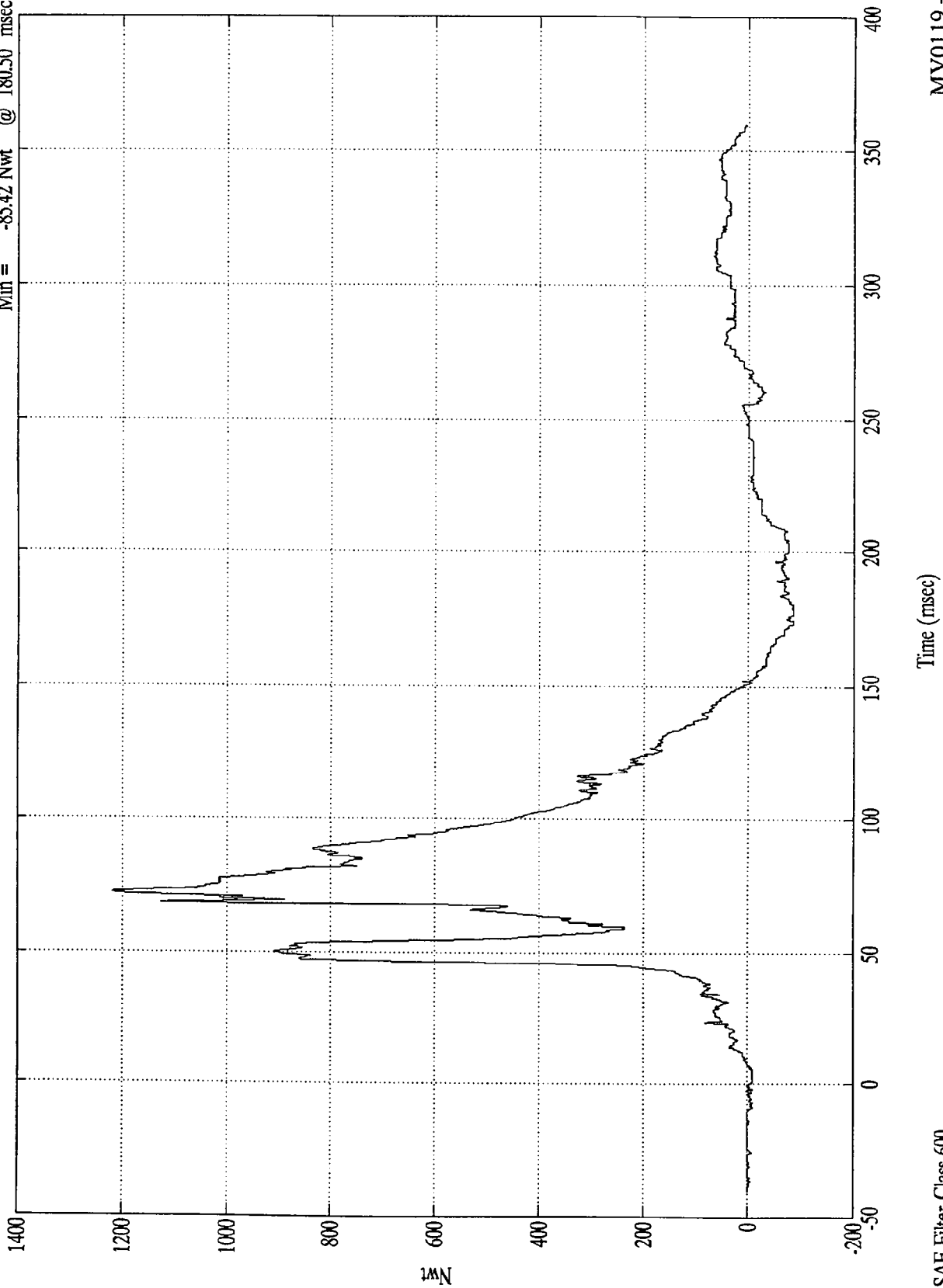
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8406-6

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 1219.40 Nwt @ 72.19 msec
Min = -85.42 Nwt @ 180.50 msec

P1 Rt Lower Tibia Fx



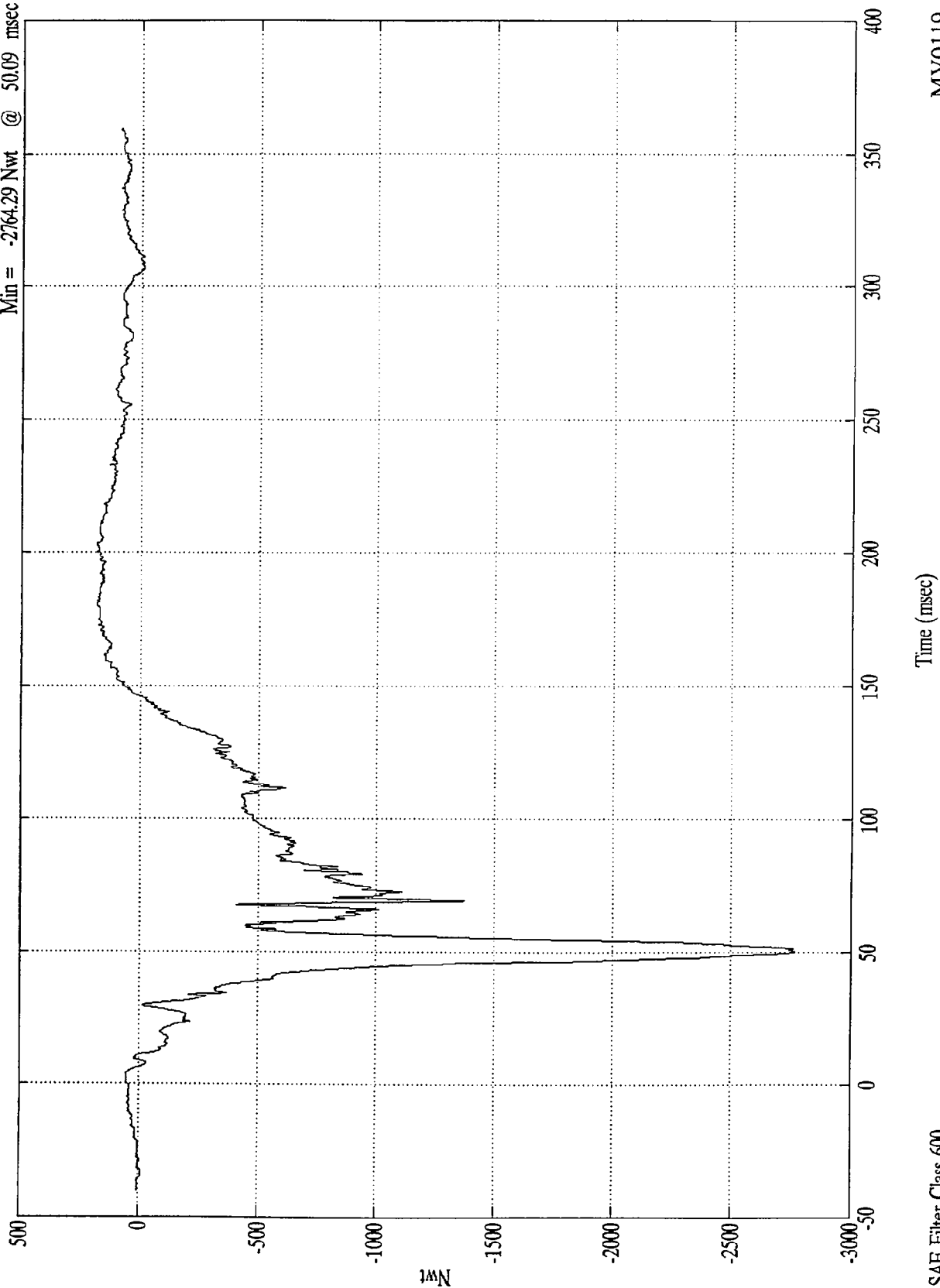
SAE Filter Class 600

Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

P1 Rt Lower Tibia Fz
Max = 182.52 Nwt @ 200.39 msec
Min = -2764.29 Nwt @ 50.09 msec



SAE Filter Class 600

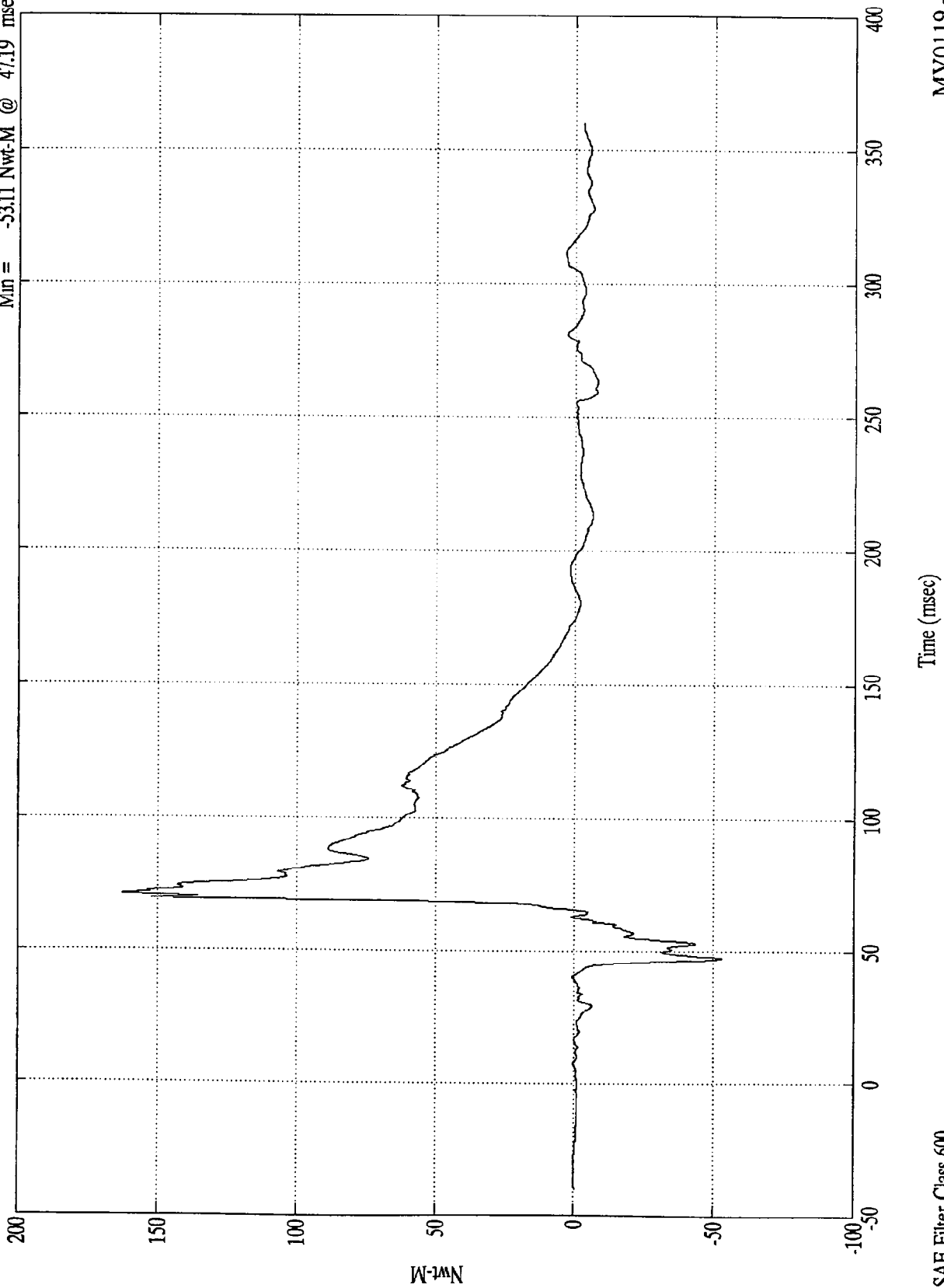
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4Door

PI Rt Lower Tibia My

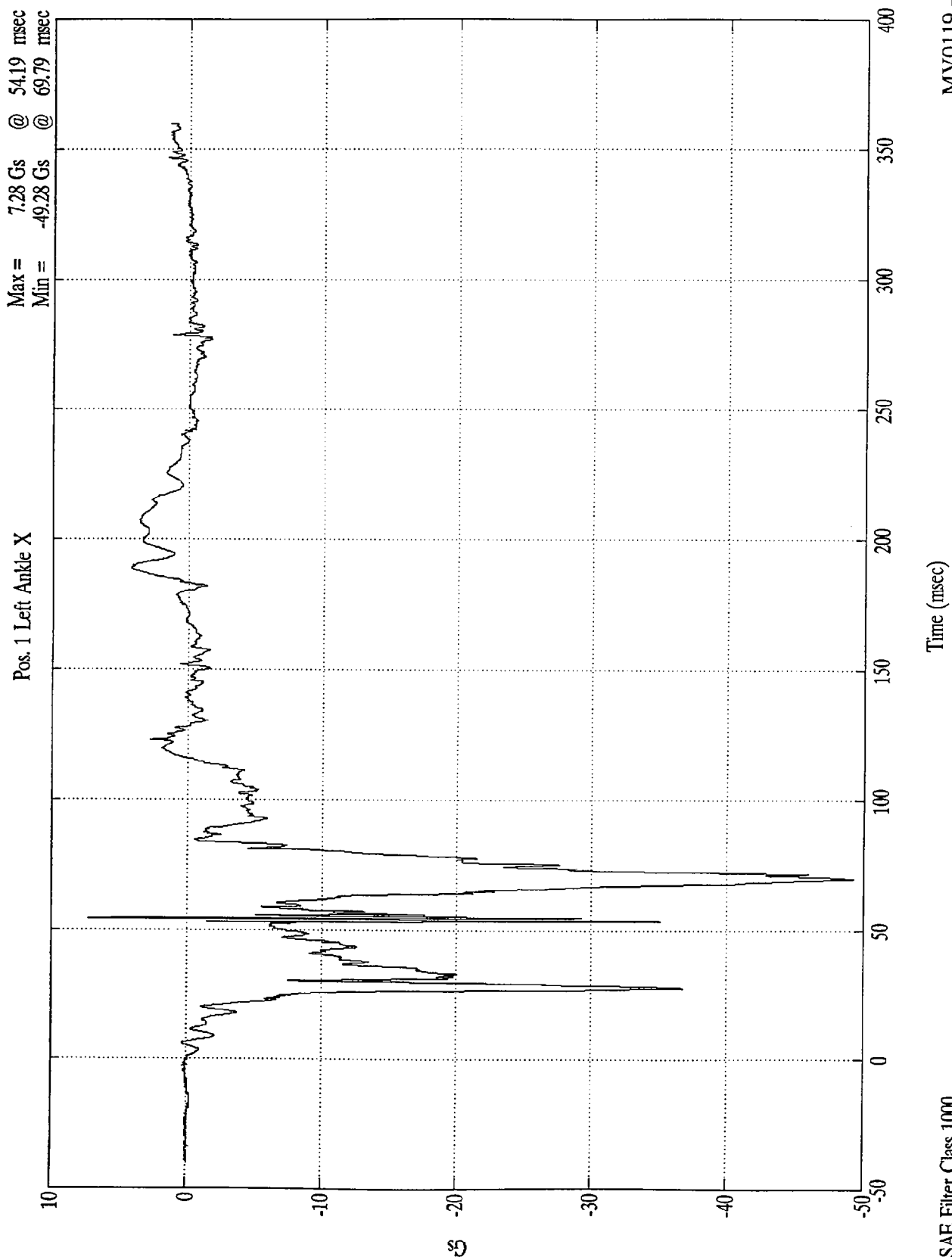
Max = 162.87 Nwt-M @ 70.79 msec
Min = -53.11 Nwt-M @ 47.19 msec



MV0119 - 3/18/97

SAE Filter Class 600

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

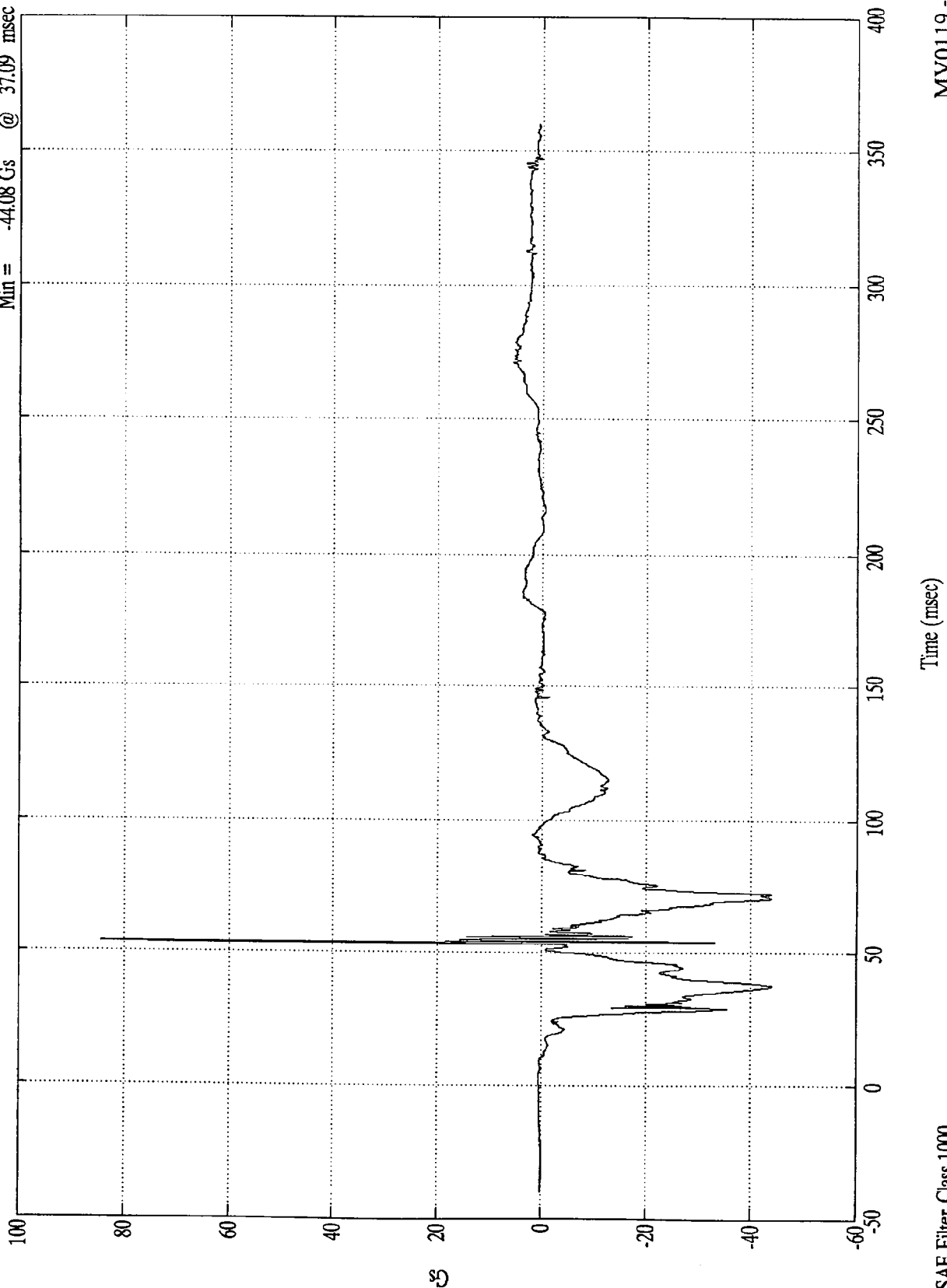


MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4Door

Max = 84.50 Gs @ 53.29 msec
Min = -44.08 Gs @ 37.09 msec

Pos. 1 Left Ankle Z

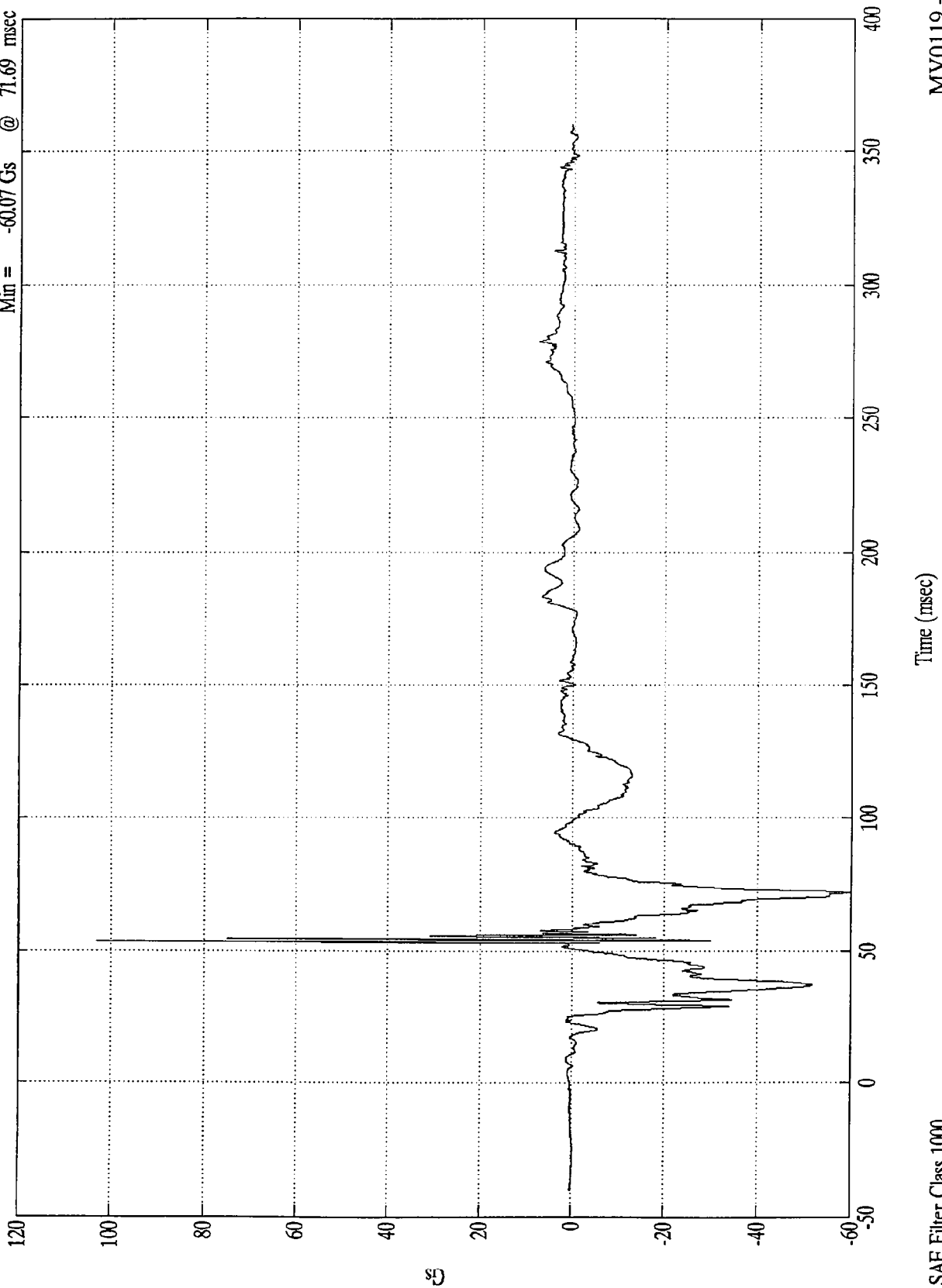


MV0119 - 3/18/97

SAE Filter Class 1000

NCAP TEST #6 - 1997 Buick LeSabre 4Door

Pos. 1 Left Toe Z
Max = 103.06 Gs @ 53.39 msec
Min = -60.07 Gs @ 71.69 msec



SAE Filter Class 1000

Time (msec)

MV0119 - 3/18/97

G

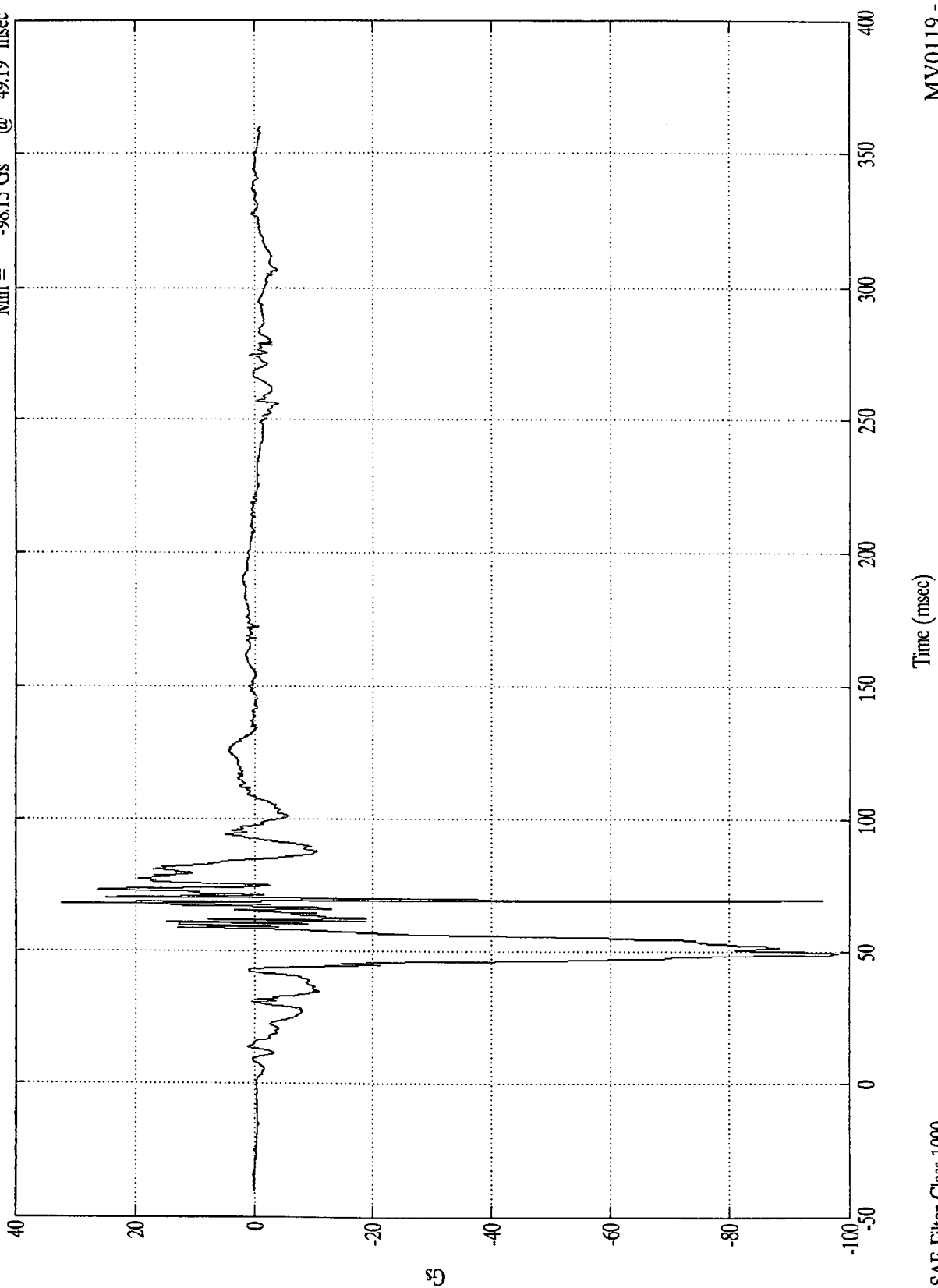
B-47

8406-6

NCAP TEST #6 - 1997 Buick LeSabre 4Door

Pos. 1 Right Ankle X

Max = 32.30 Gs @ 67.89 msec
Min = -98.15 Gs @ 49.19 msec



SAE Filter Class 1000

Time (msec)

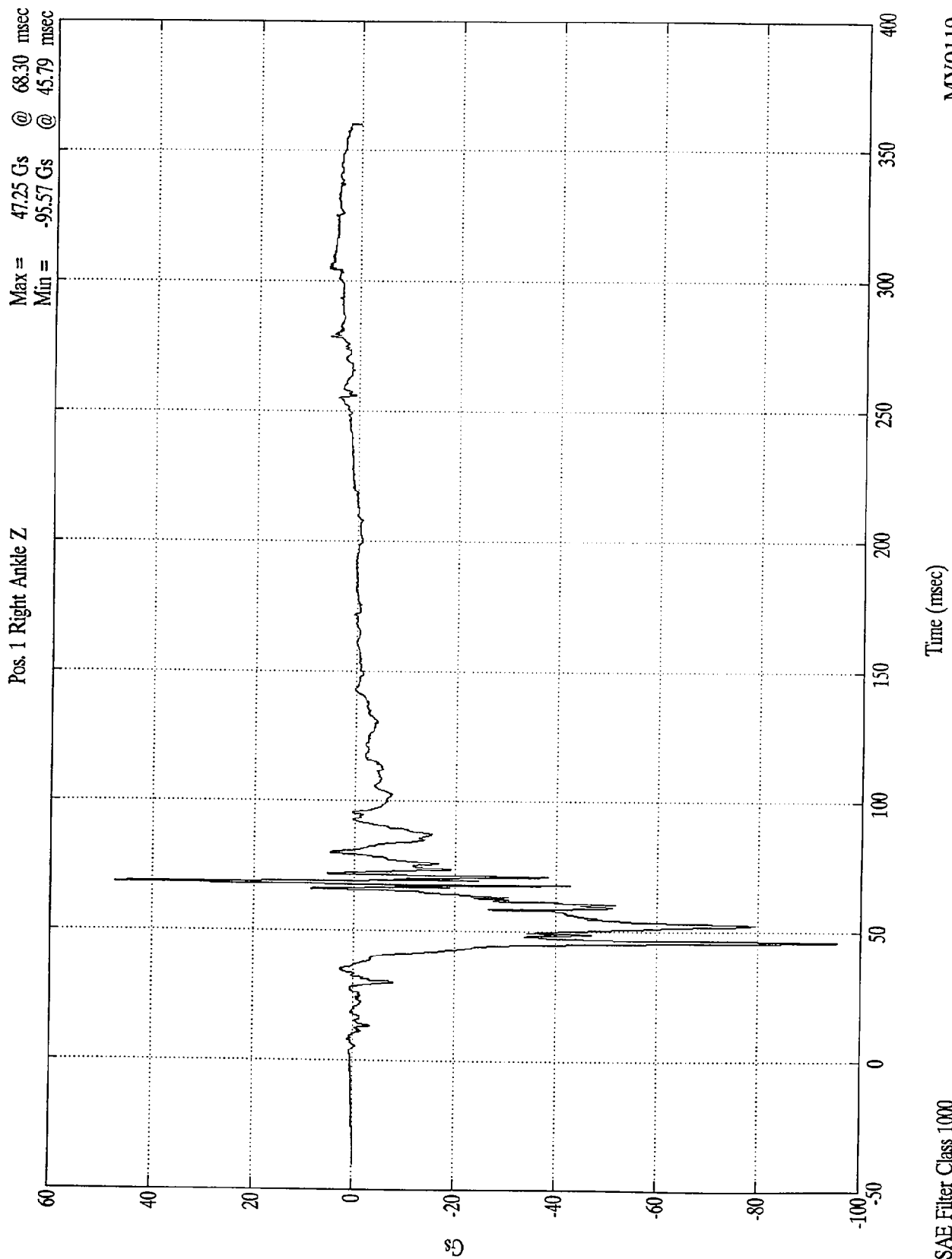
MV0119 - 3/18/97

g

B-48

8406-6

NCAP TEST #6 - 1997 Buick LeSabre 4Door

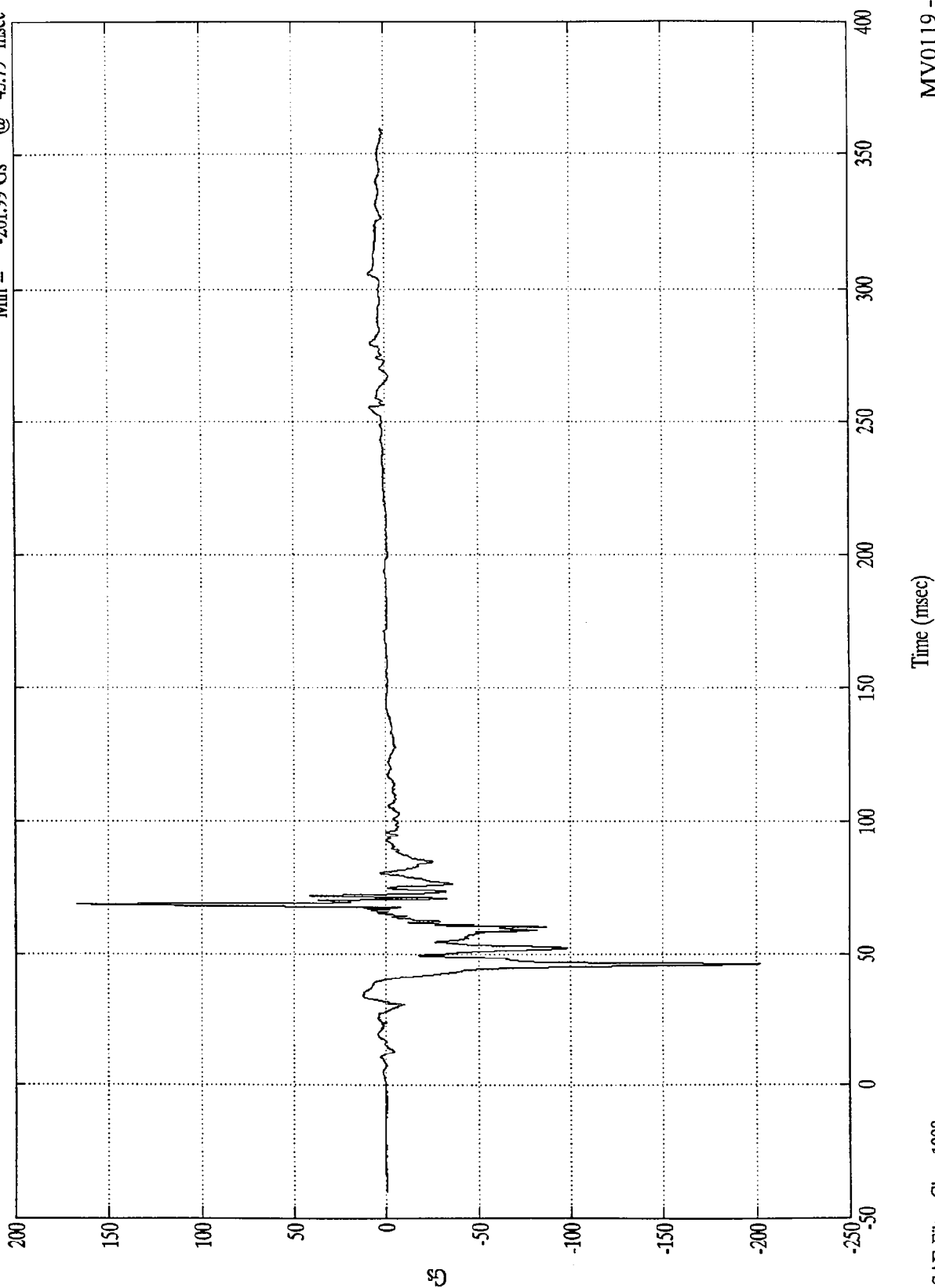


MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4Door

Pos. 1 Right Toe Z

Max = 167.25 Gs @ 68.59 msec
Min = -201.99 Gs @ 45.79 msec



MV0119 - 3/18/97

SAE Filter Class 1000

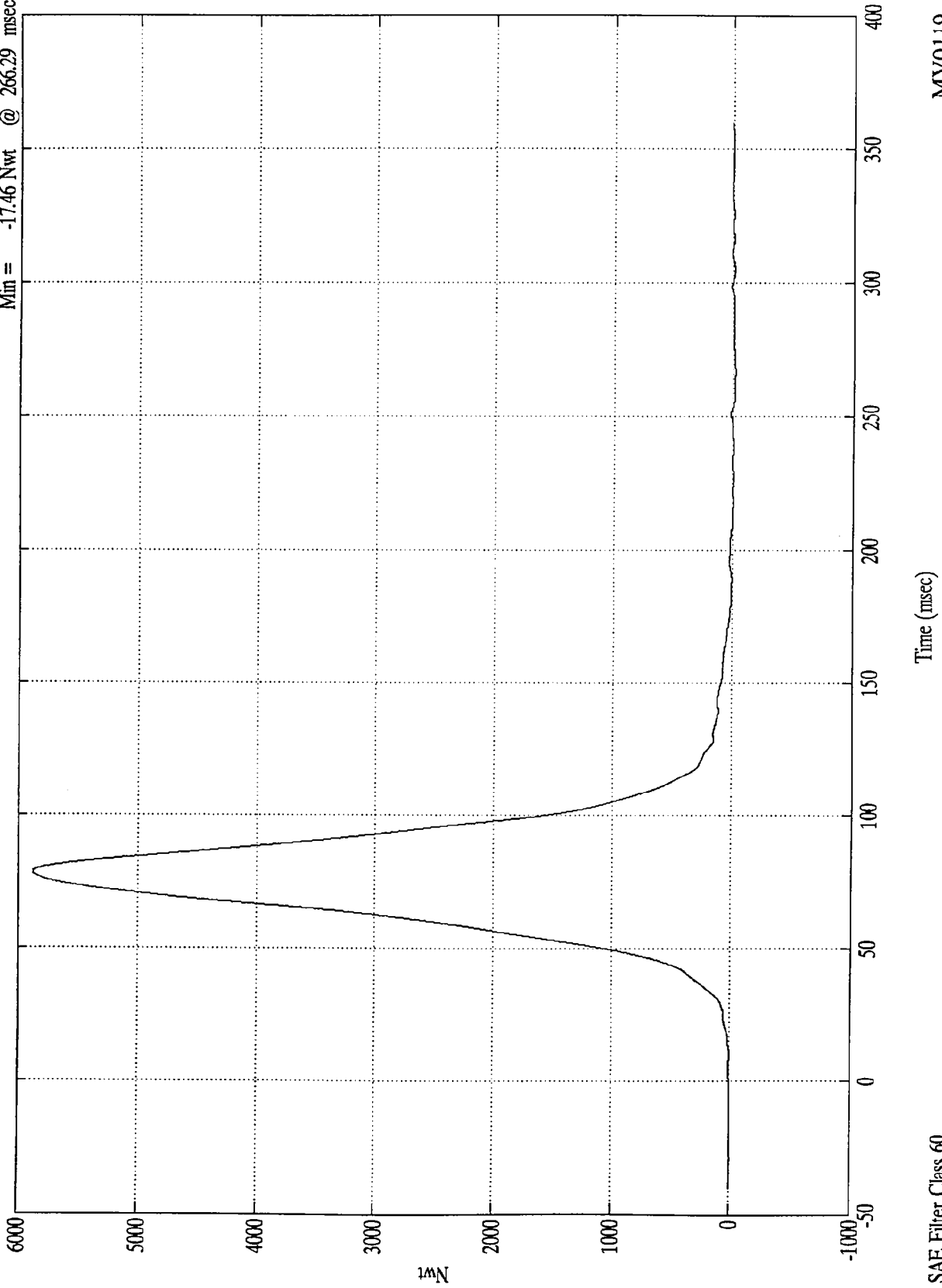
50

B-50

8406-6

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 1 Left Belt Load
Max = 5878.53 Nwt @ 78.49 msec
Min = -17.46 Nwt @ 266.29 msec



SAE Filter Class 60

Time (msec)

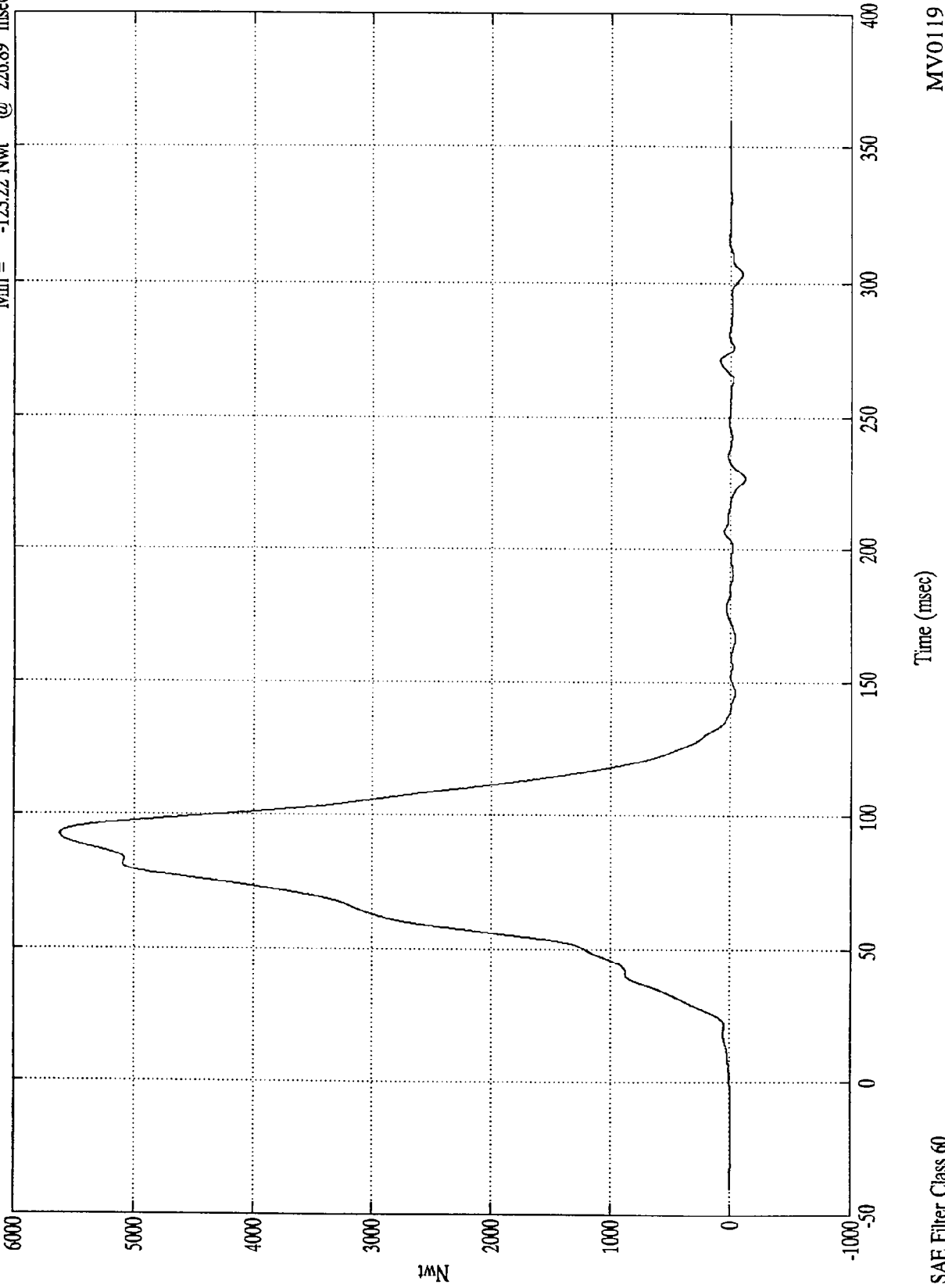
MV0119 - 3/18/97

Nwt

NCAP TEST #6 - 1997 Buick LeSabre 4Door

Pos. 1 Torso Belt Load

Max = 5615.03 Nwt @ 92.50 msec
Min = -123.22 Nwt @ 226.89 msec



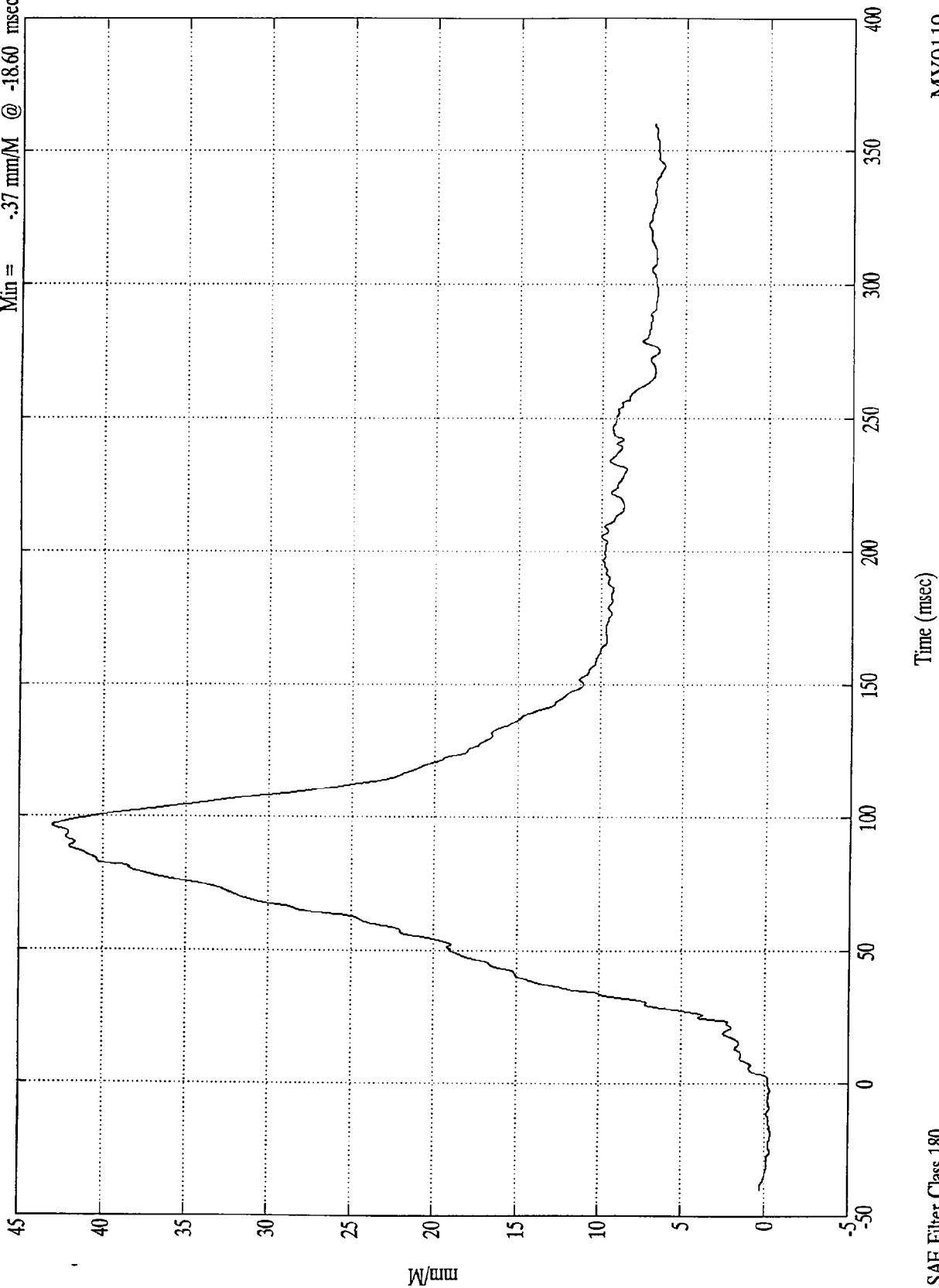
SAE Filter Class 60

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 1 Belt Elongation

Max = 43.01 mm/M @ 96.40 msec
Min = -37 mm/M @ -18.60 msec



SAE Filter Class 180

Time (msec)

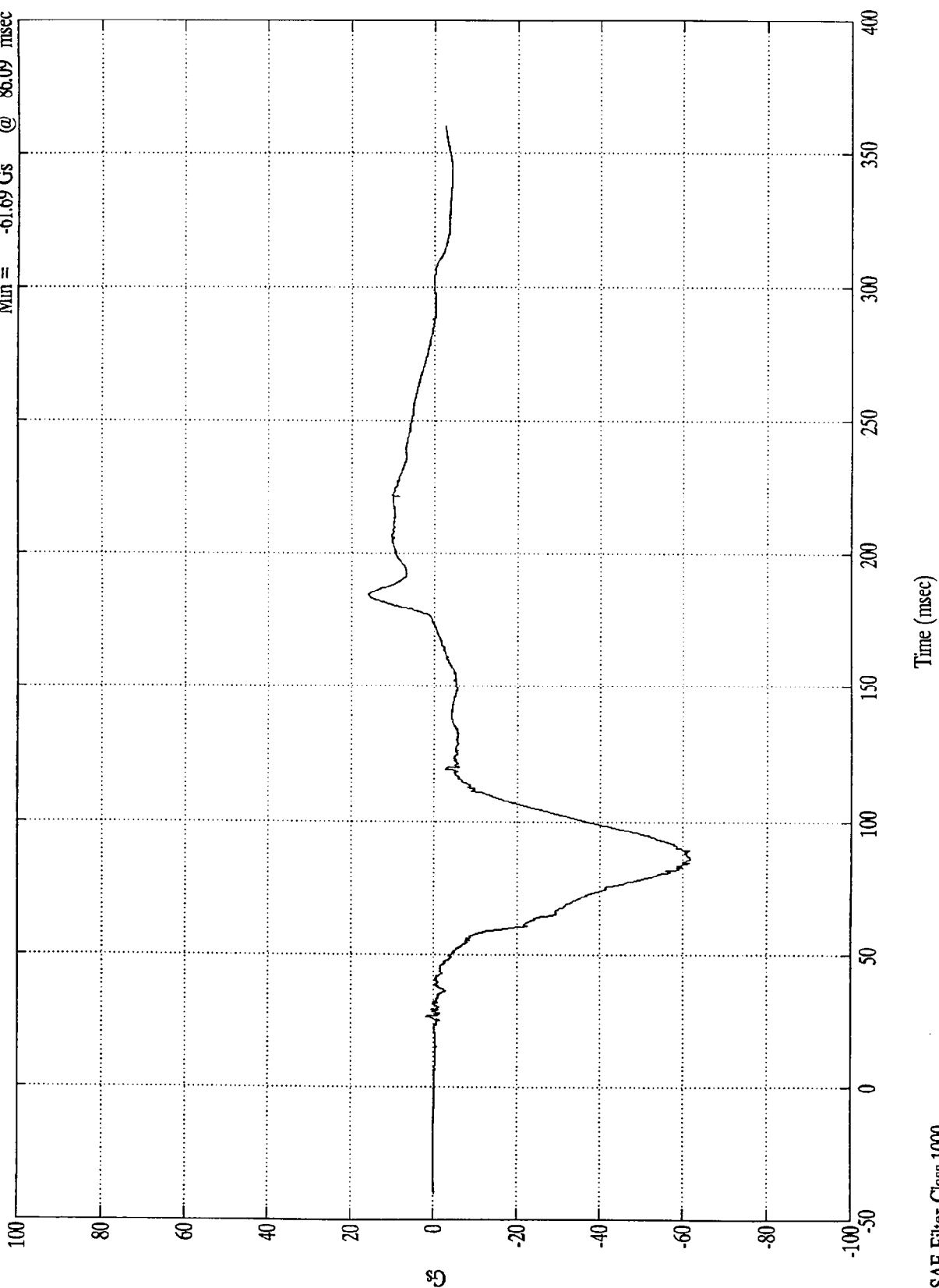
MV0119 - 3/18/97

mm/M

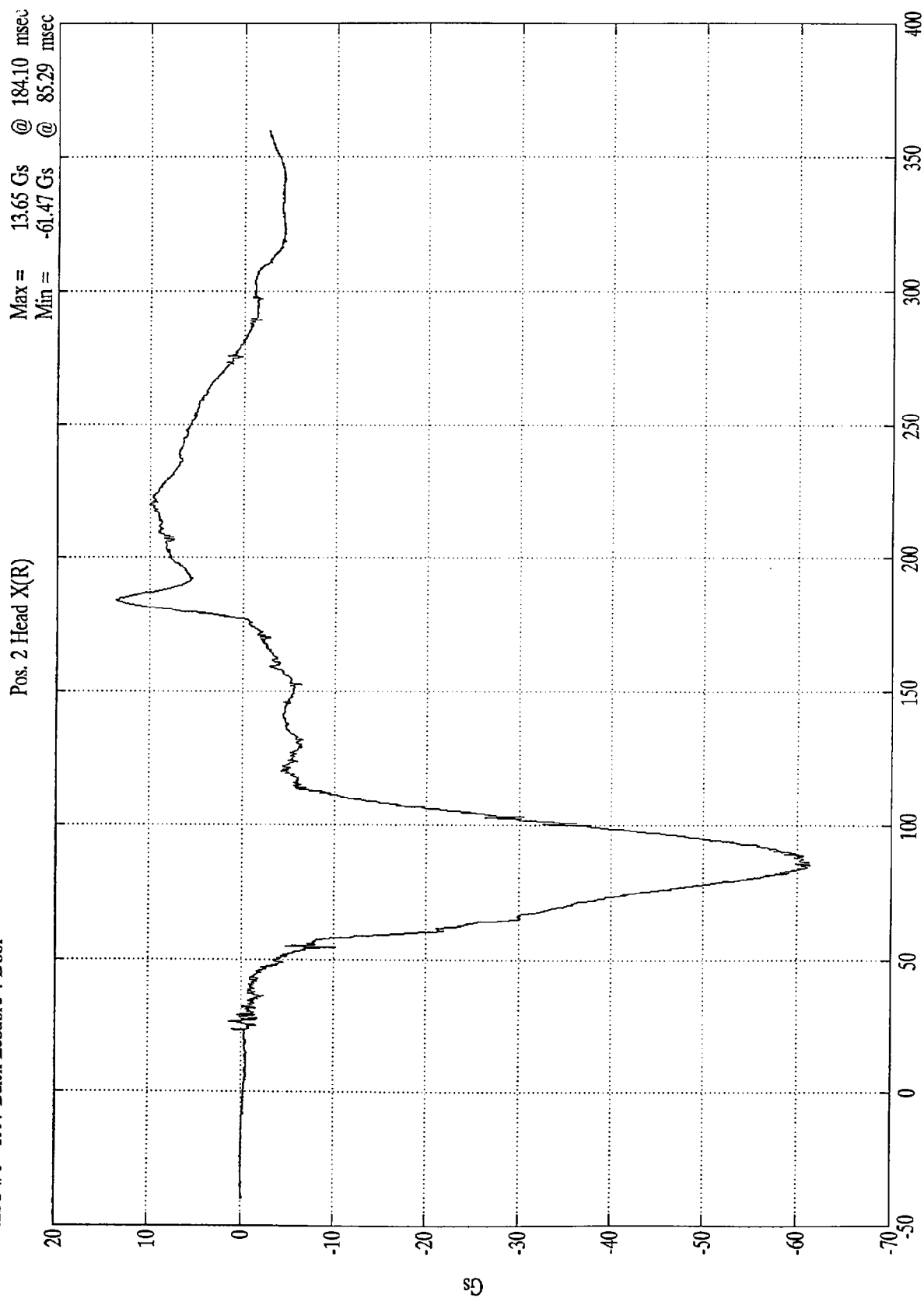
NCAP TEST #6 - 1997 Buick LeSabre 4Door

Max = 15.82 Gs @ 184.29 msec
Min = -61.69 Gs @ 86.09 msec

Pos. 2 Head X



NCAP TEST #6 - 1997 Buick LeSabre 4-Door

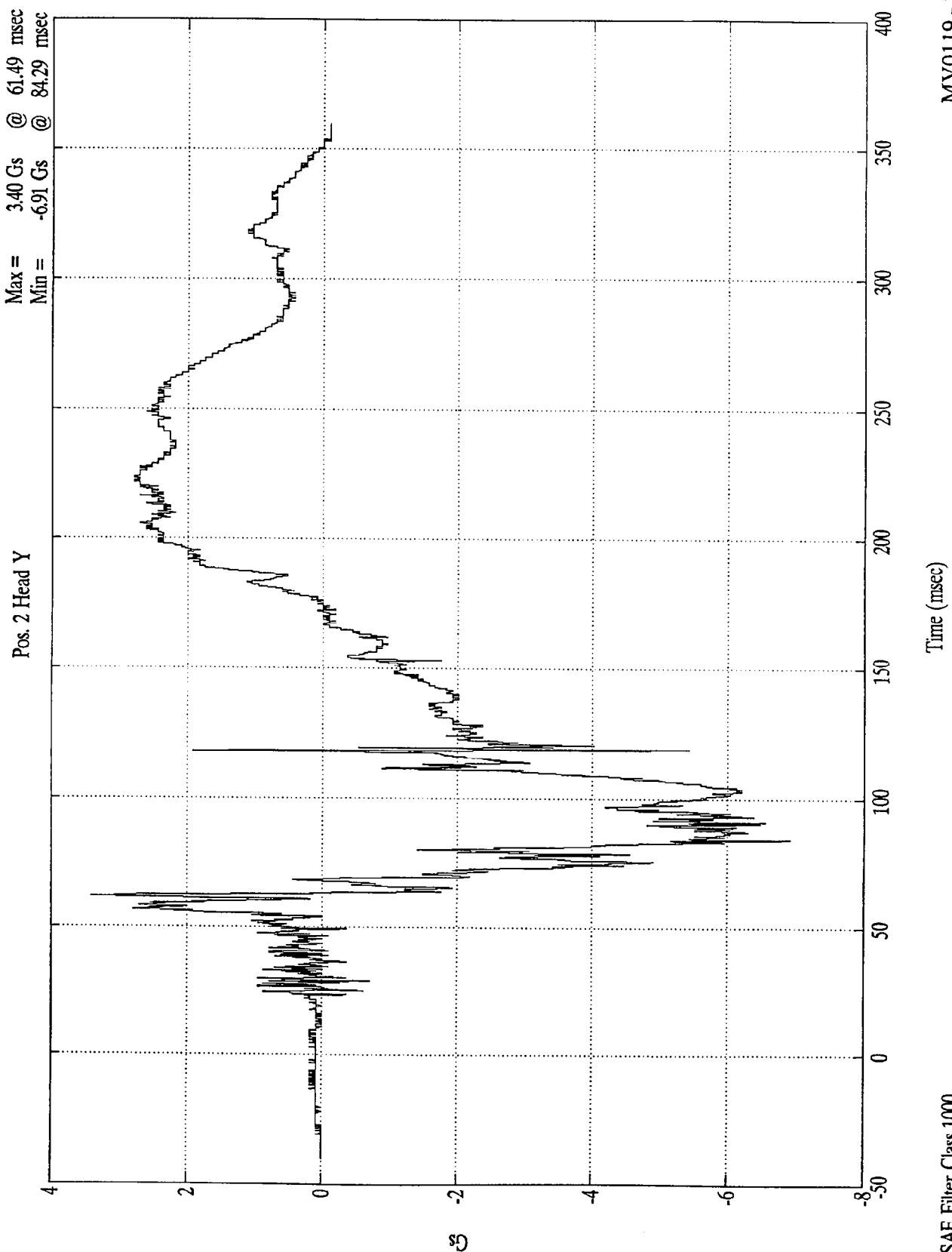


SAE Filter Class 1000

Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4Door

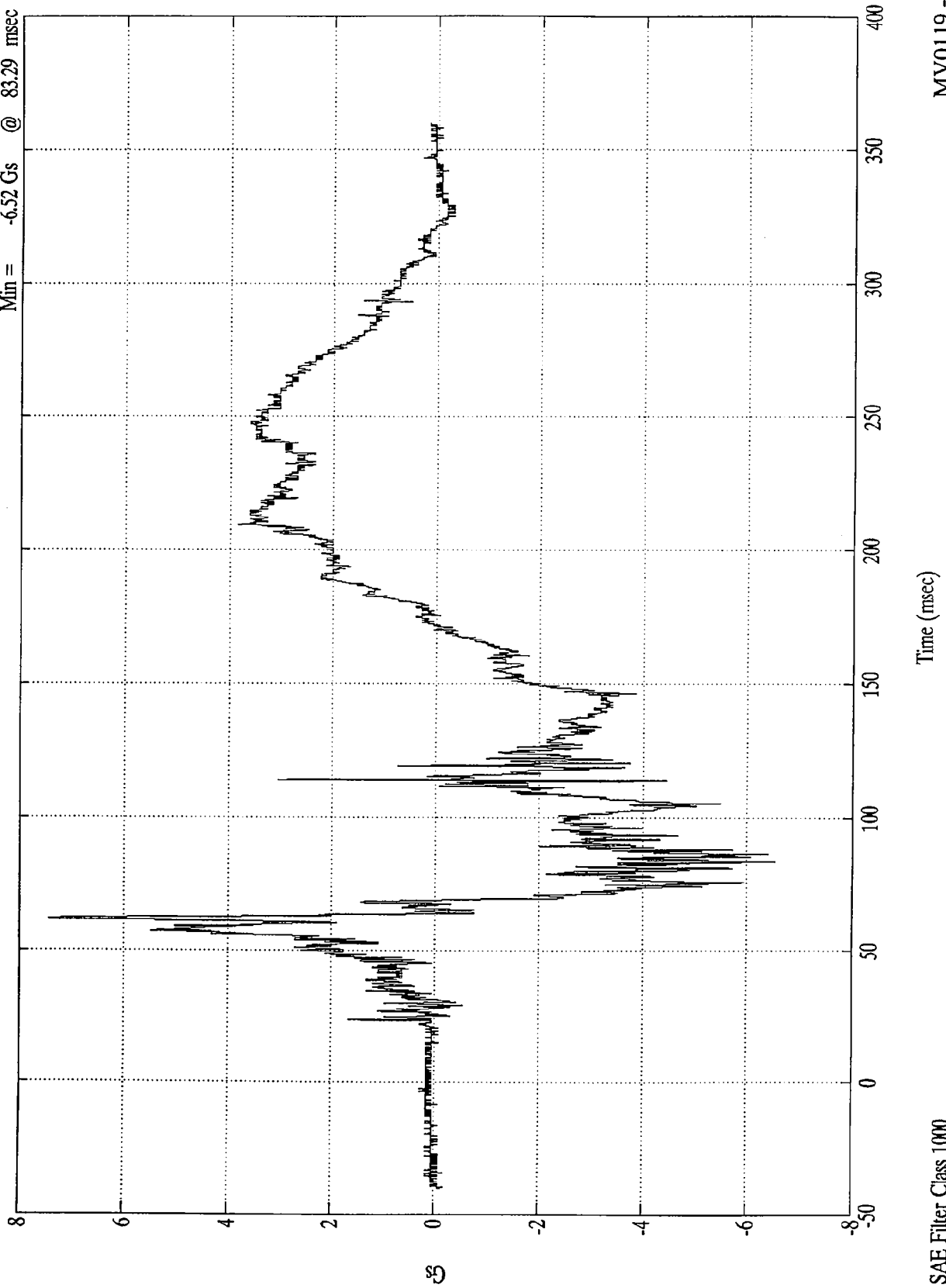


MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 2 Head Y(R)

Max = 7.43 Gs @ 61.49 msec
Min = -6.52 Gs @ 83.29 msec

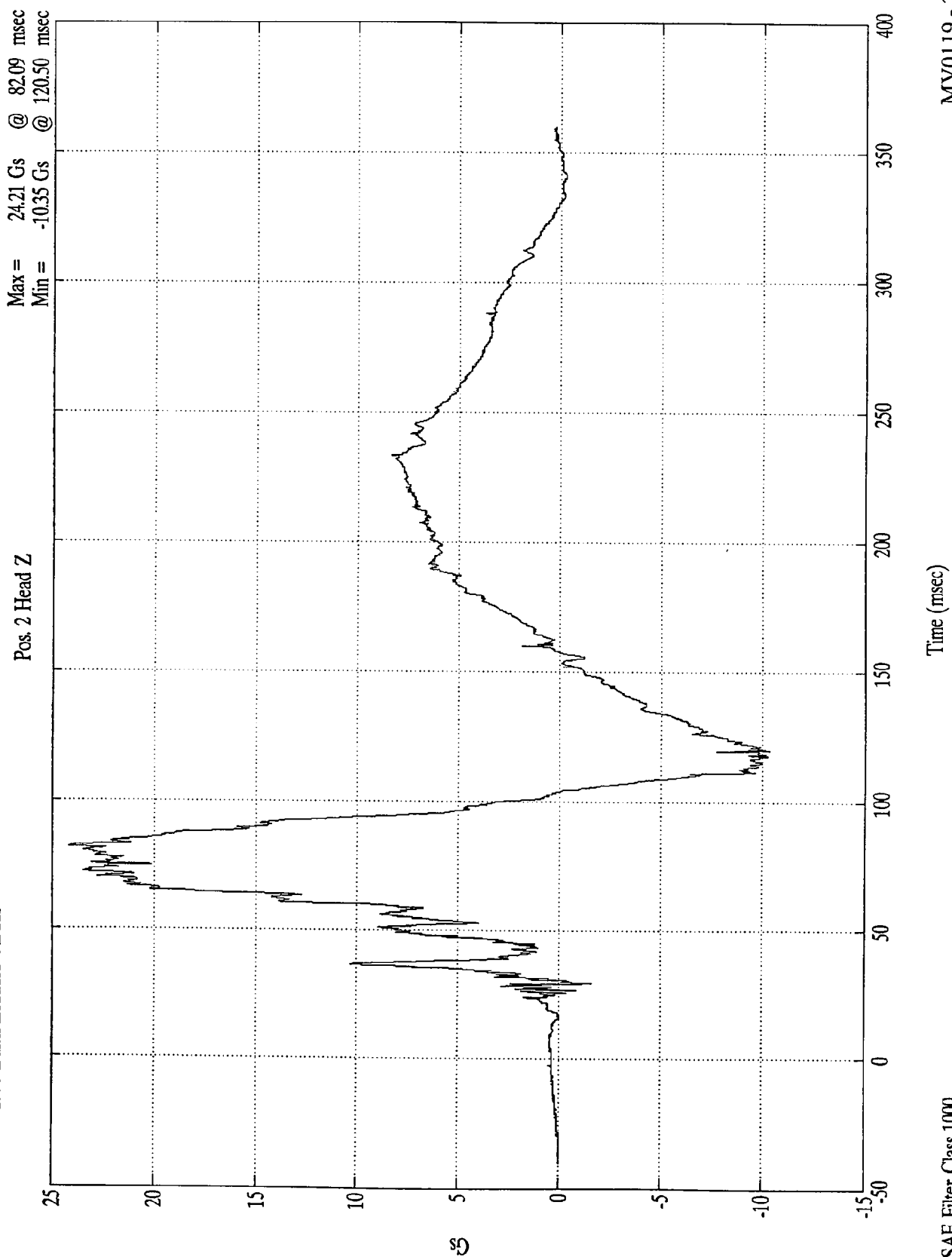


SAE Filter Class 1000

Time (msec)

MV0119 - 3/18/97

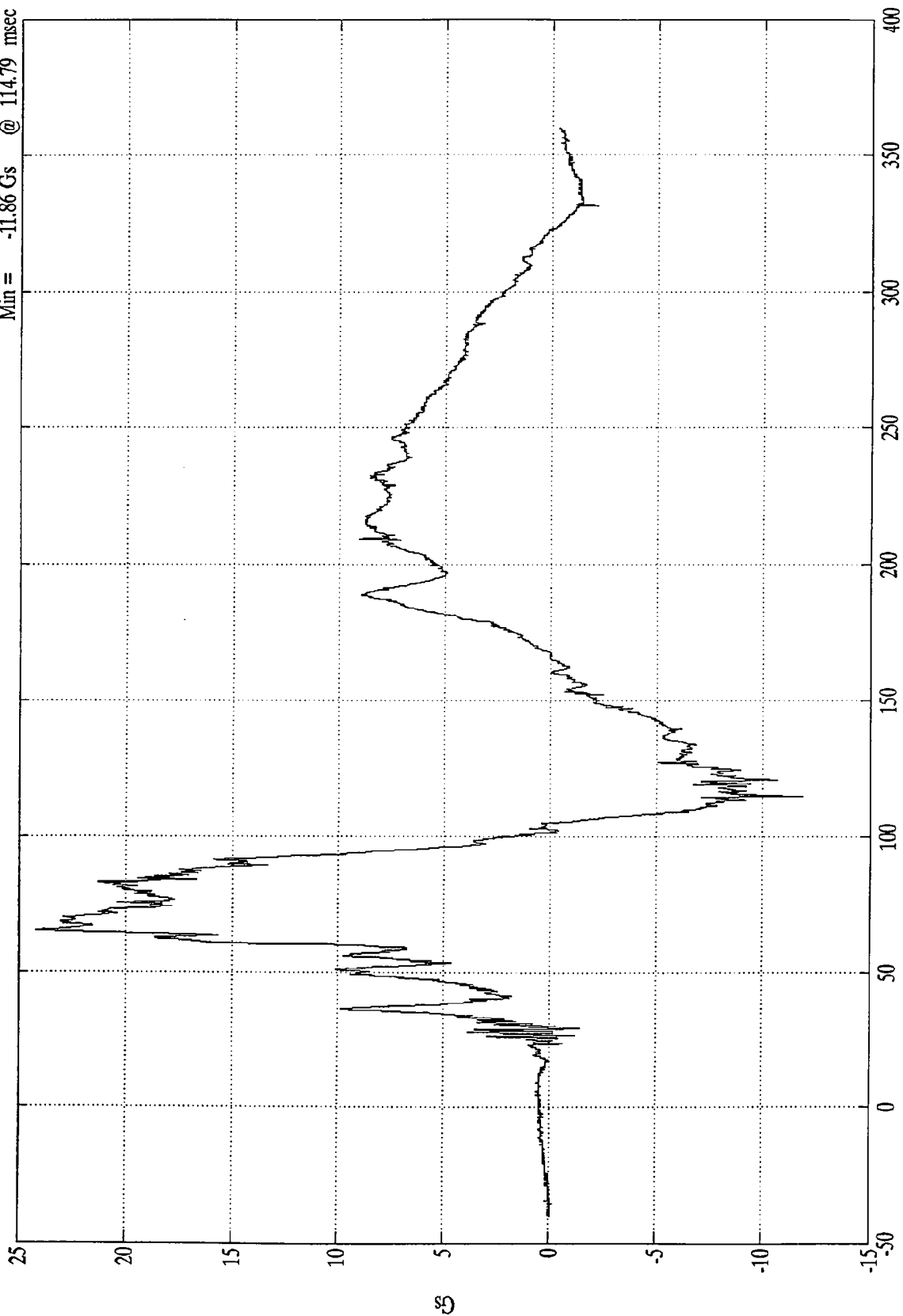
NCAP TEST #6 - 1997 Buick LeSabre 4-Door



NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 2 Head Z(R)

Max = 24.20 Gs @ 65.09 msec
Min = -11.86 Gs @ 114.79 msec



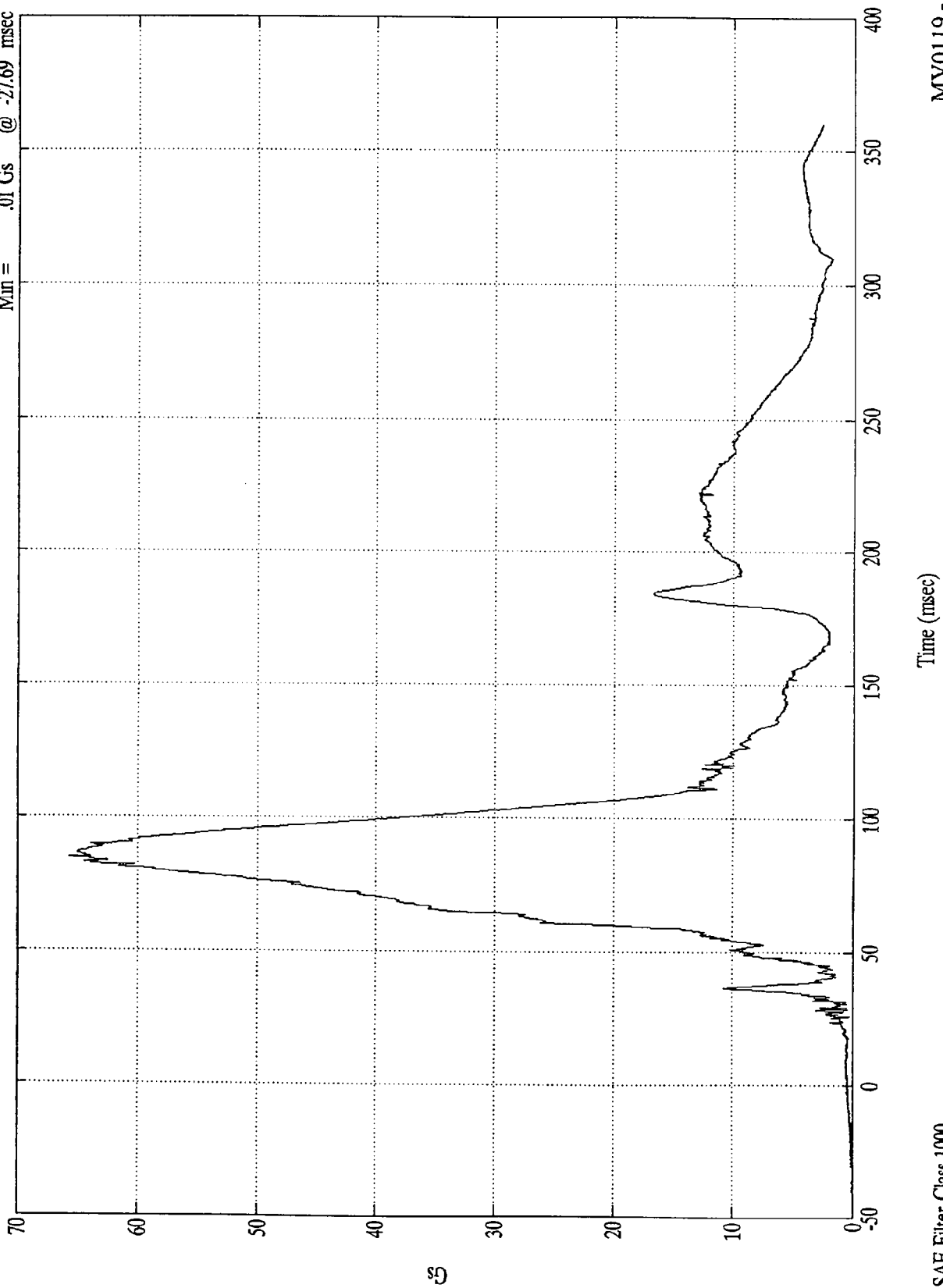
SAE Filter Class 1000

Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4Door

Pos. 2 Head Resultant
Max = 65.68 Gs @ 84.29 msec
Min = .01 Gs @ -27.69 msec



SAE Filter Class 1000

Time (msec)

MV0119 - 3/18/97

Gs

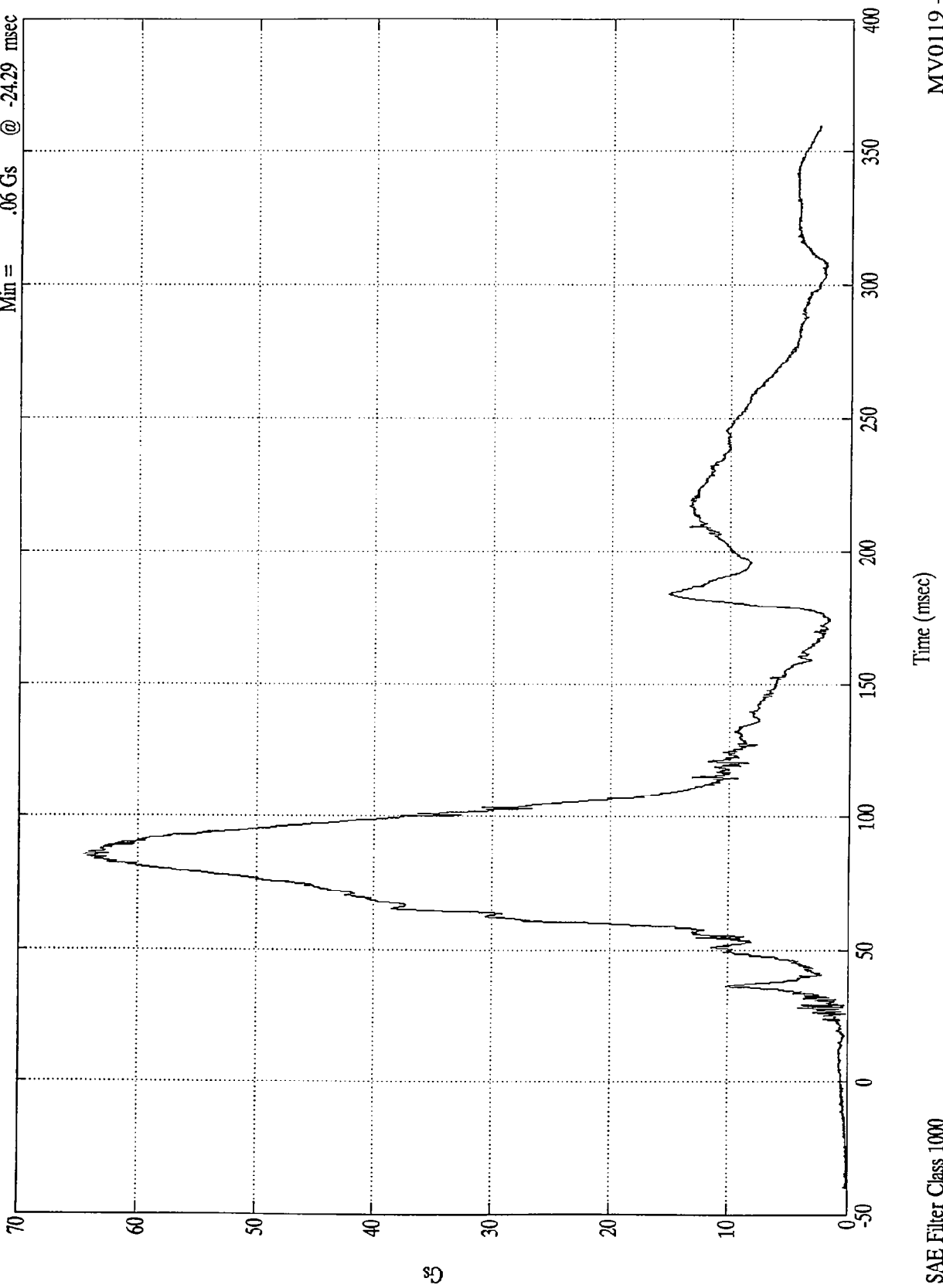
B-60

8406-6

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 2 Head Resultant(RR)

Max = 64.49 Gs @ 85.29 msec
Min = .06 Gs @ -24.29 msec



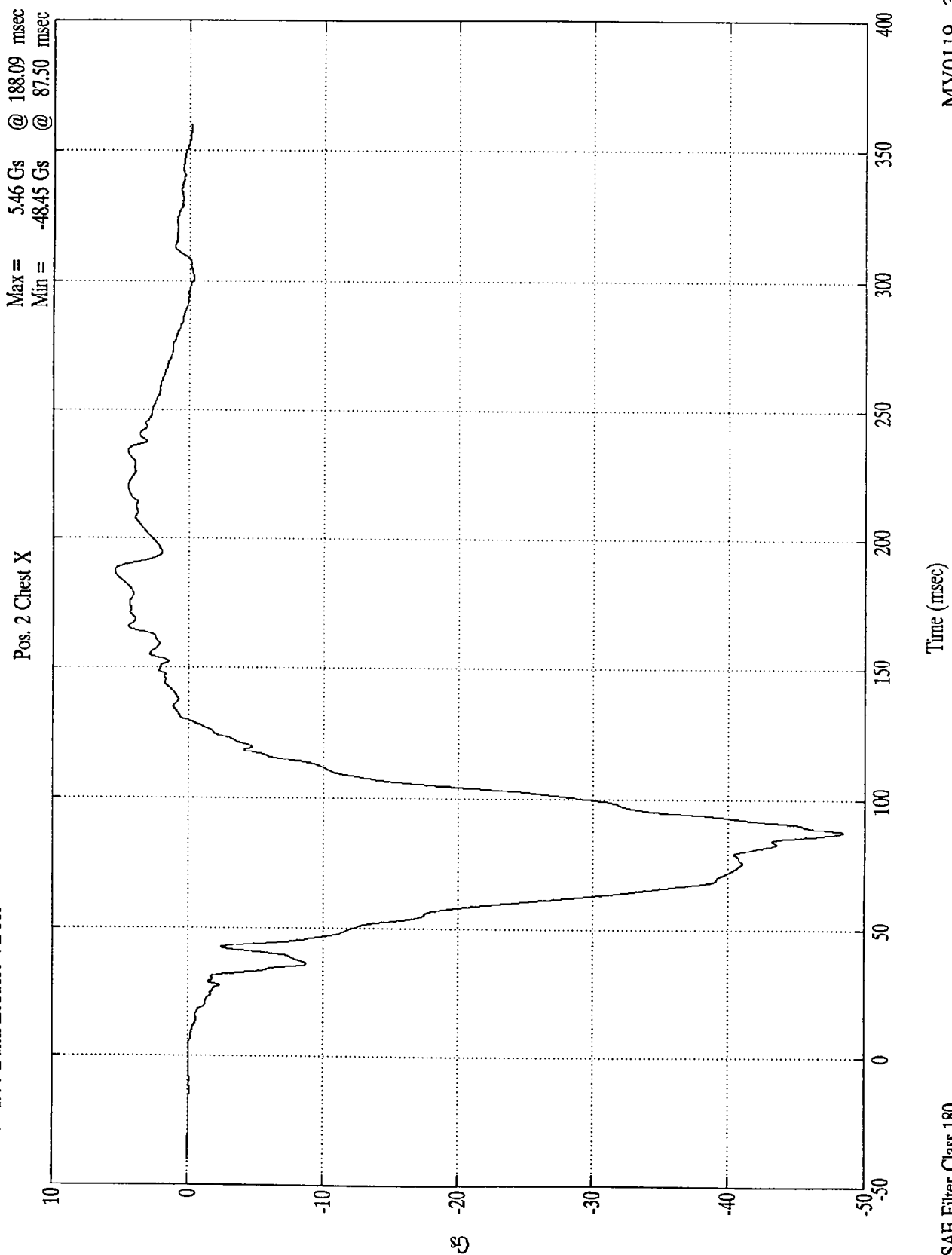
MV0119 - 3/18/97

SAE Filter Class 1000

Gs

Time (msec)

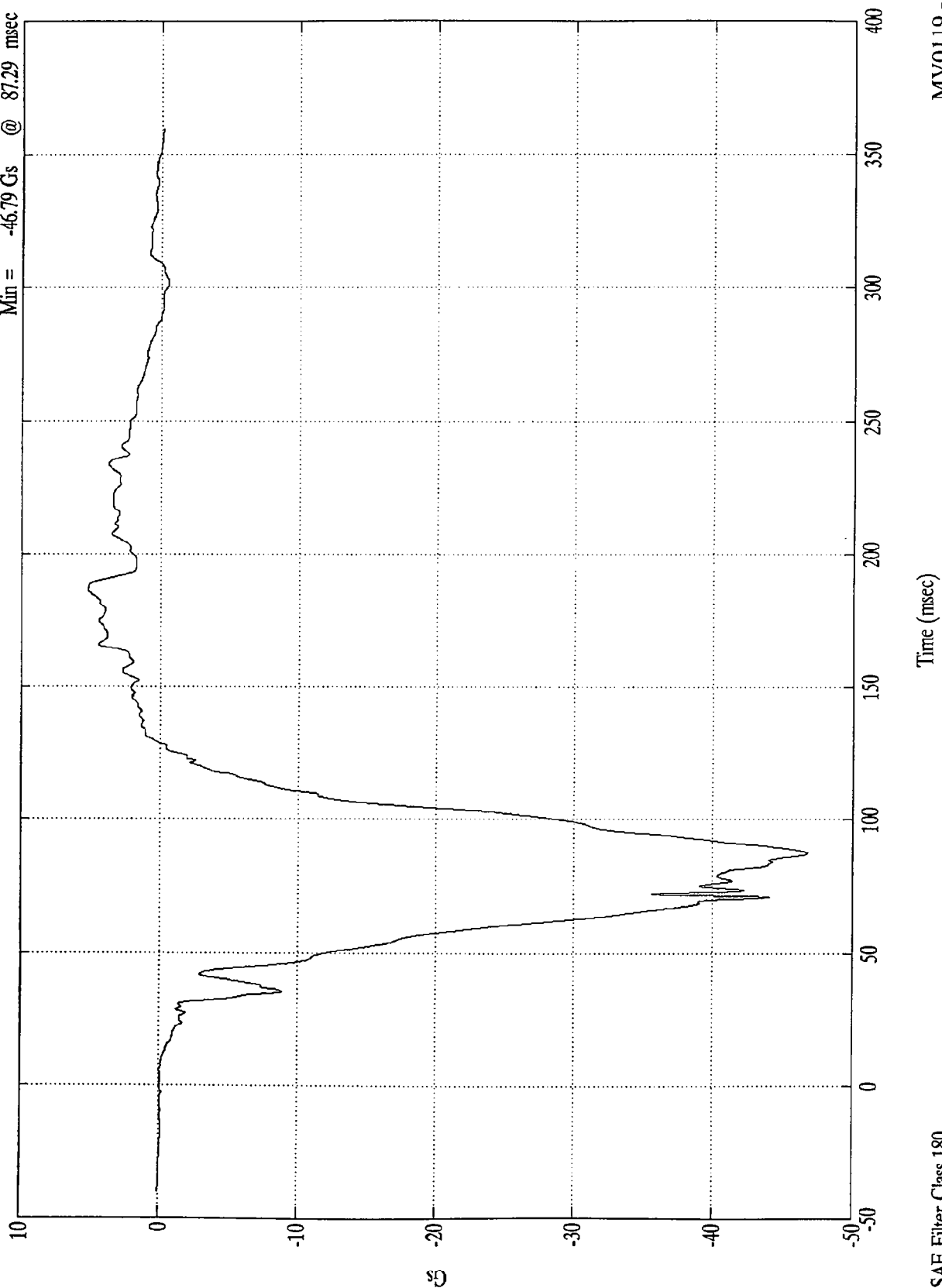
NCAP TEST #6 - 1997 Buick LeSabre 4Door



MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 2 Chest X(R)
Max = 5.24 Gs @ 186.50 msec
Min = -46.79 Gs @ 87.29 msec

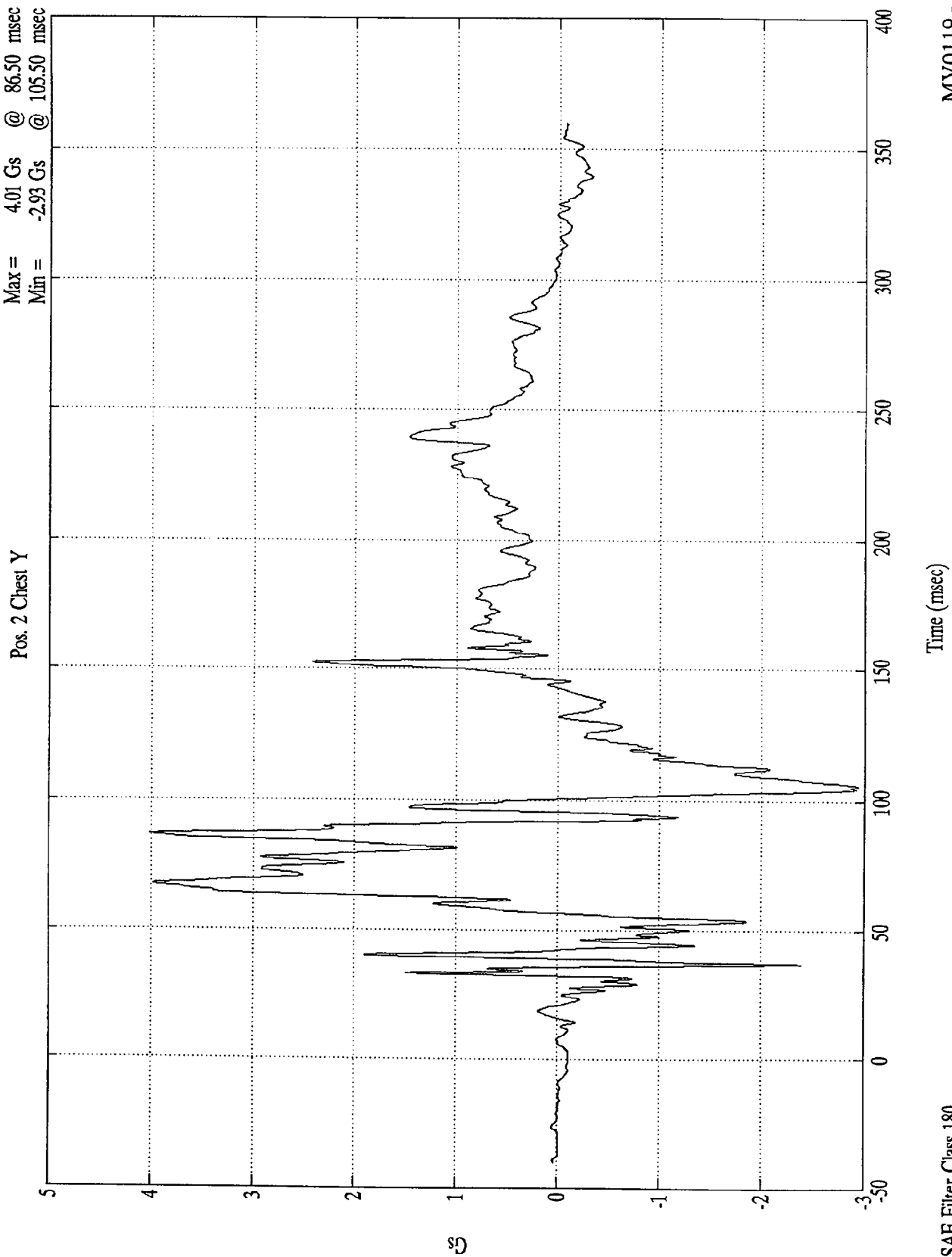


SAE Filter Class 180

Time (msec)

MV0119 - 3/18/97

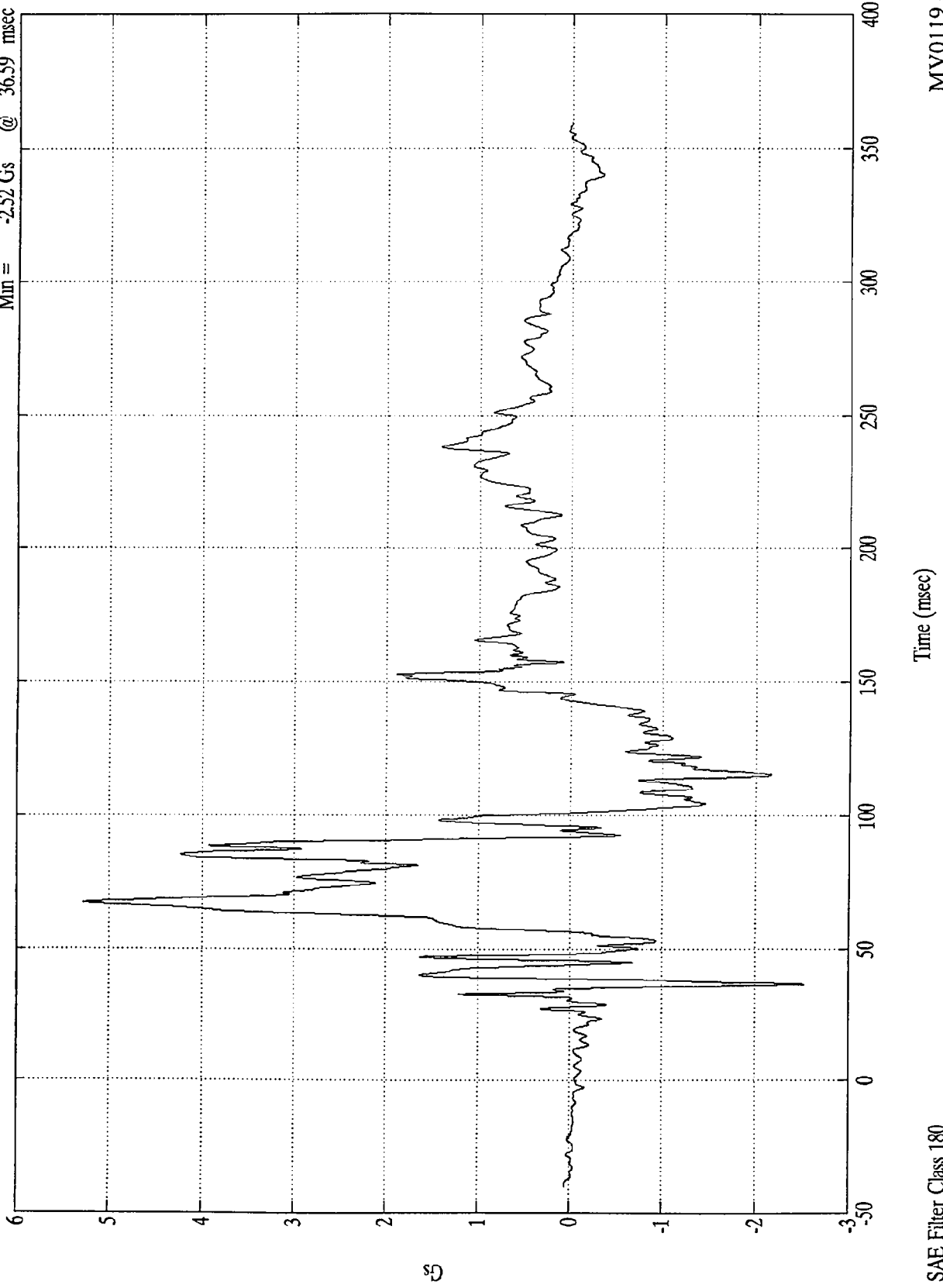
NCAP TEST #6 - 1997 Buick LeSabre 4-Door



MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 2 Chest Y(R)
Max = 5.28 Gs @ 67.19 msec
Min = -2.52 Gs @ 36.59 msec

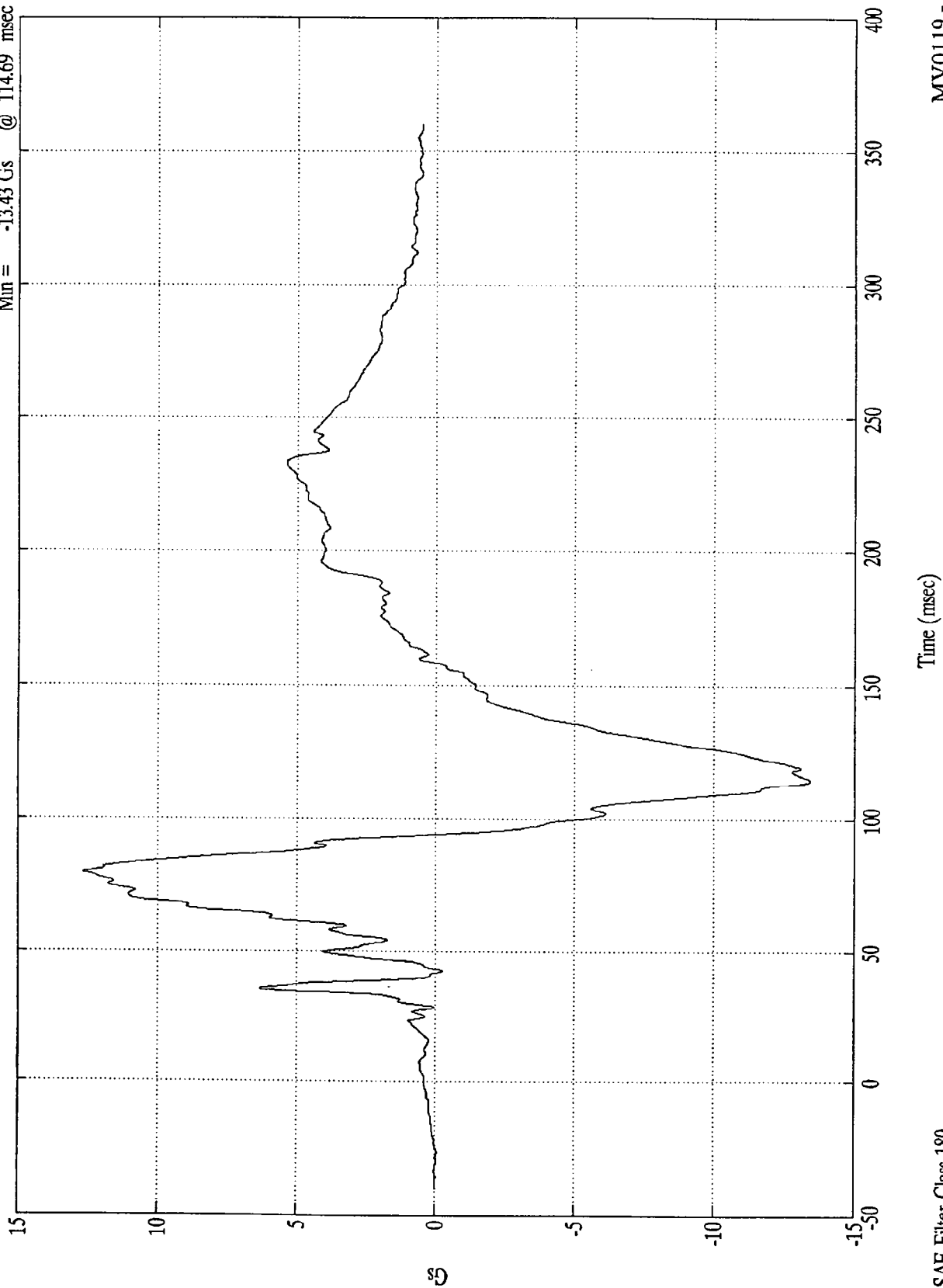


SAE Filter Class 180

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 2 Chest Z
Max = 12.66 Gs @ 79.50 msec
Min = -13.43 Gs @ 114.69 msec



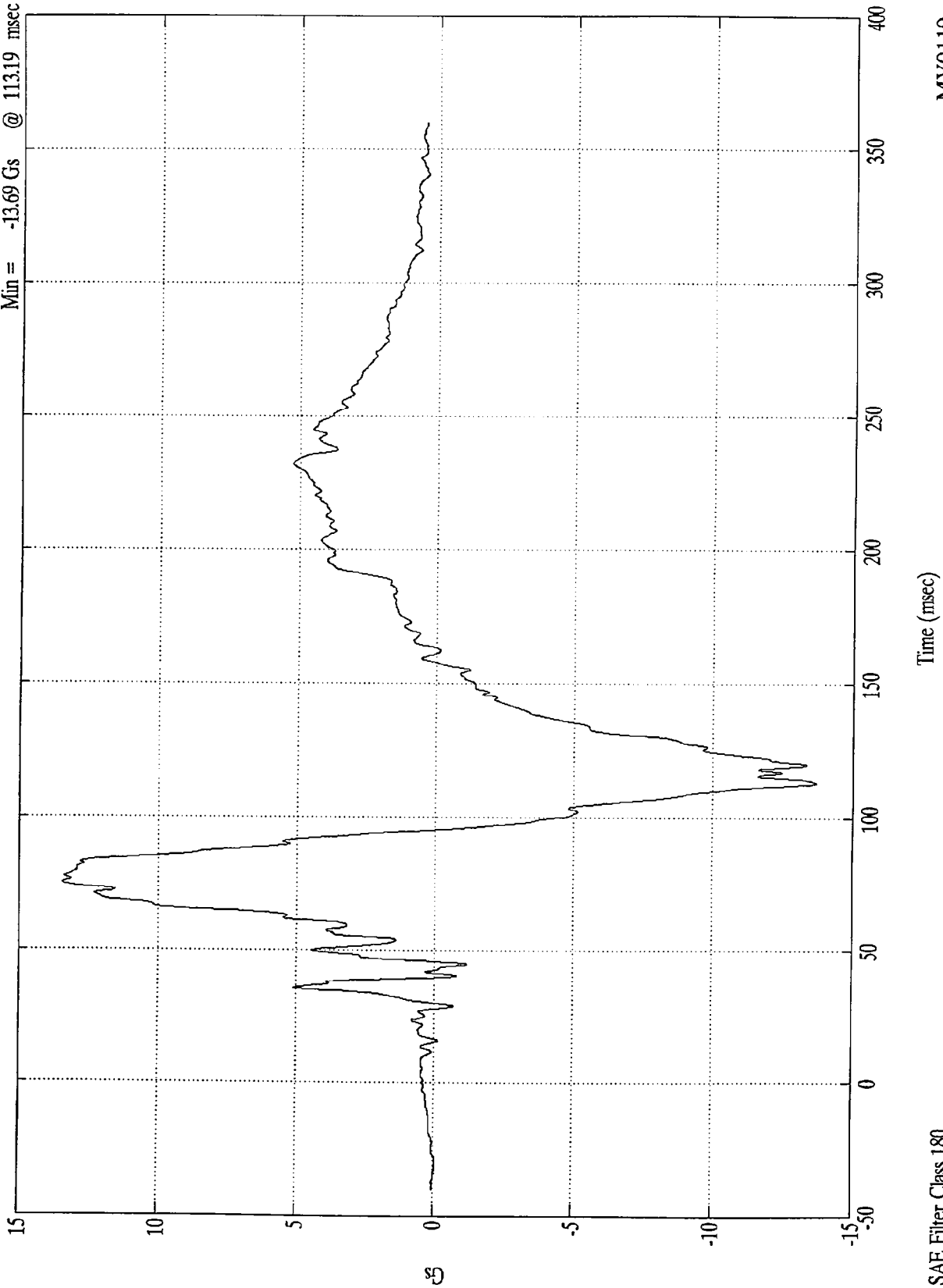
SAE Filter Class 180

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 13.45 Gs @ 75.19 msec
Min = -13.69 Gs @ 113.19 msec

Pos. 2 Chest Z(R)

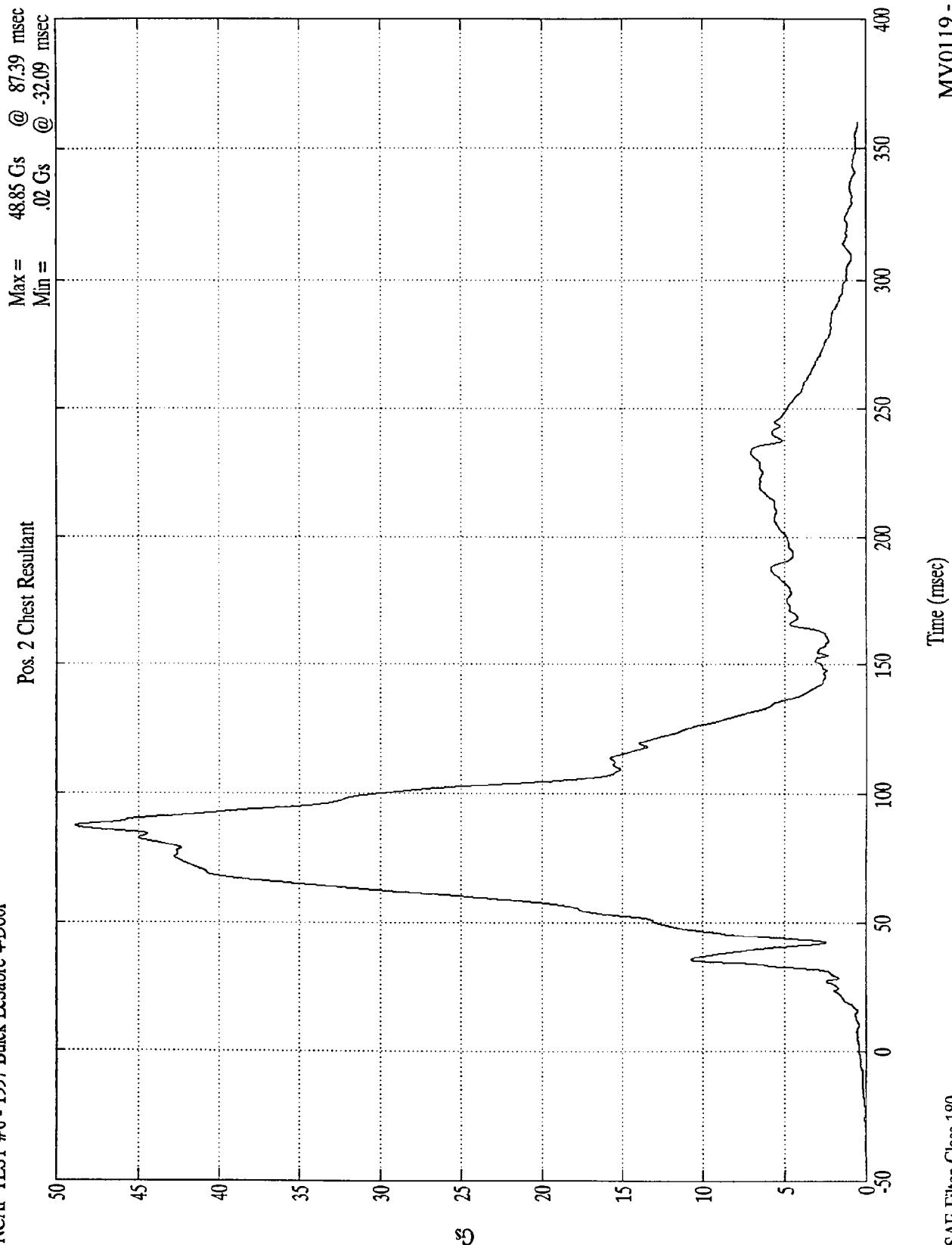


SAE Filter Class 180

Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door



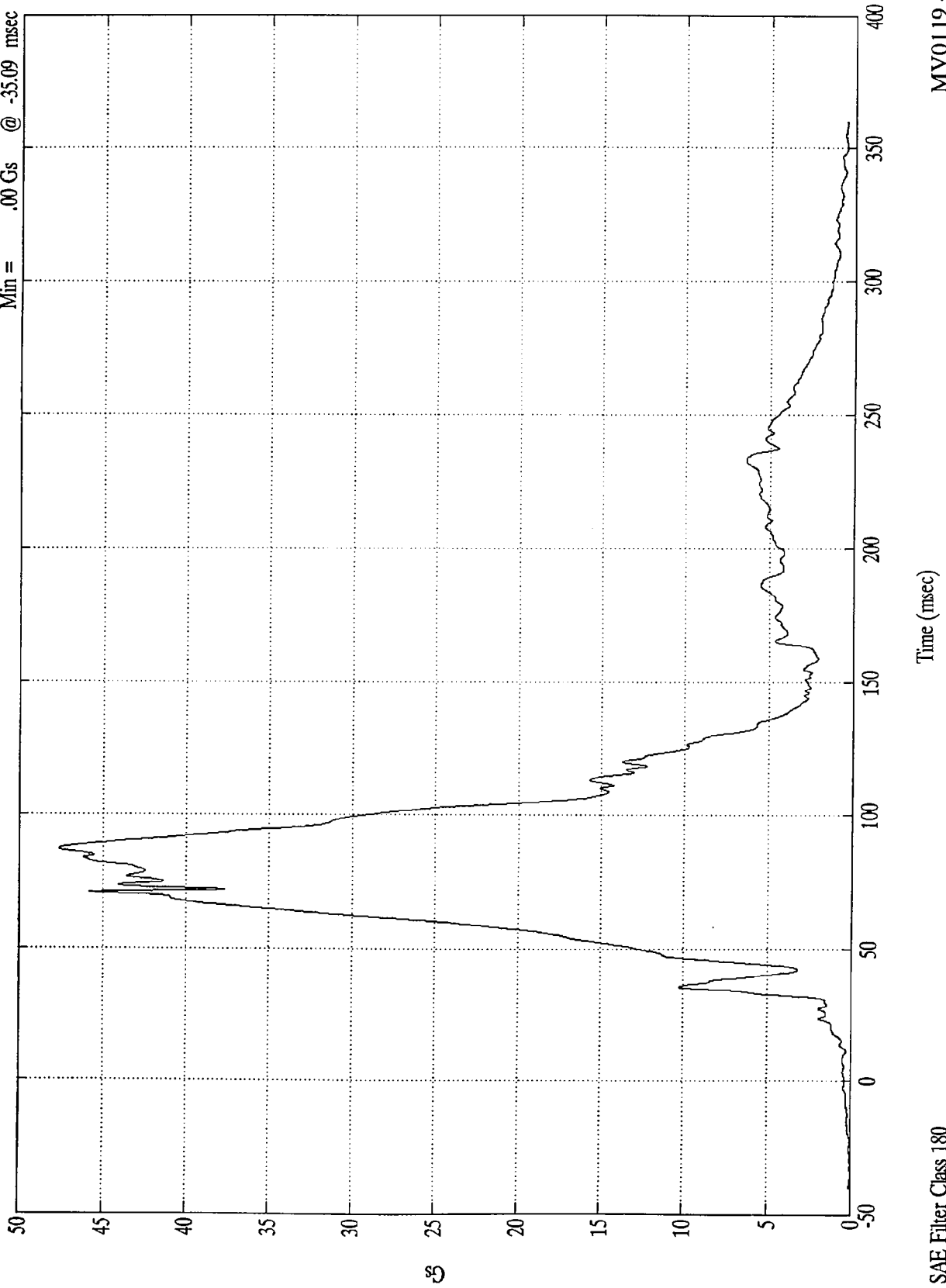
MV0119 - 3/18/97

SAE Filter Class 180

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 2 Chest Res(RR)

Max = 47.62 Gs @ 87.20 msec
Min = .00 Gs @ -35.09 msec



SAE Filter Class 180

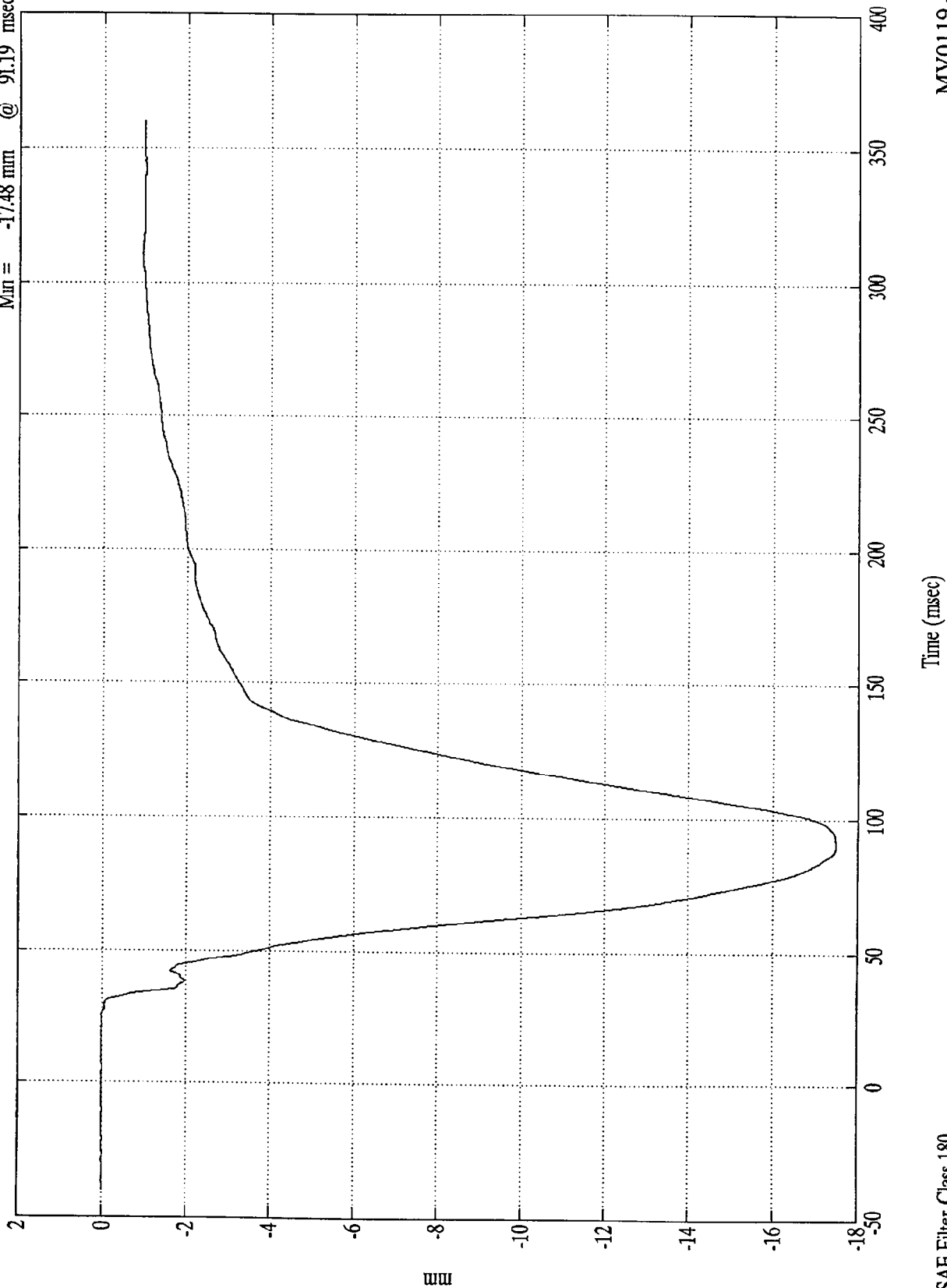
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 2 Chest Disp.

Max = .01 mm @ 23.50 msec
Min = -17.48 mm @ 91.19 msec



SAE Filter Class 180

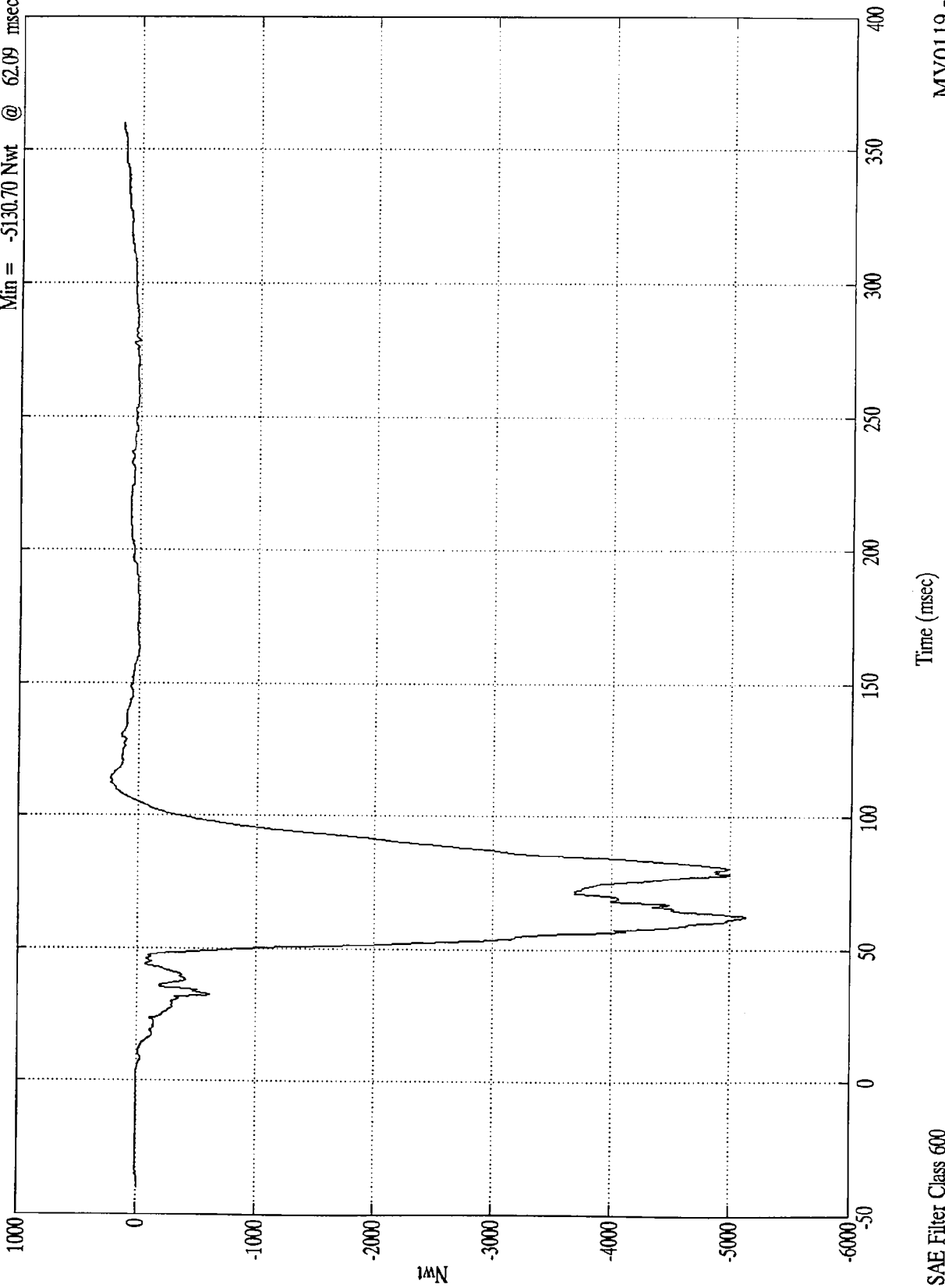
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4Door

Max = 231.64 Nwt @ 112.29 msec
Min = -5130.70 Nwt @ 62.09 msec

Pos. 2 Left Femur



SAE Filter Class 600

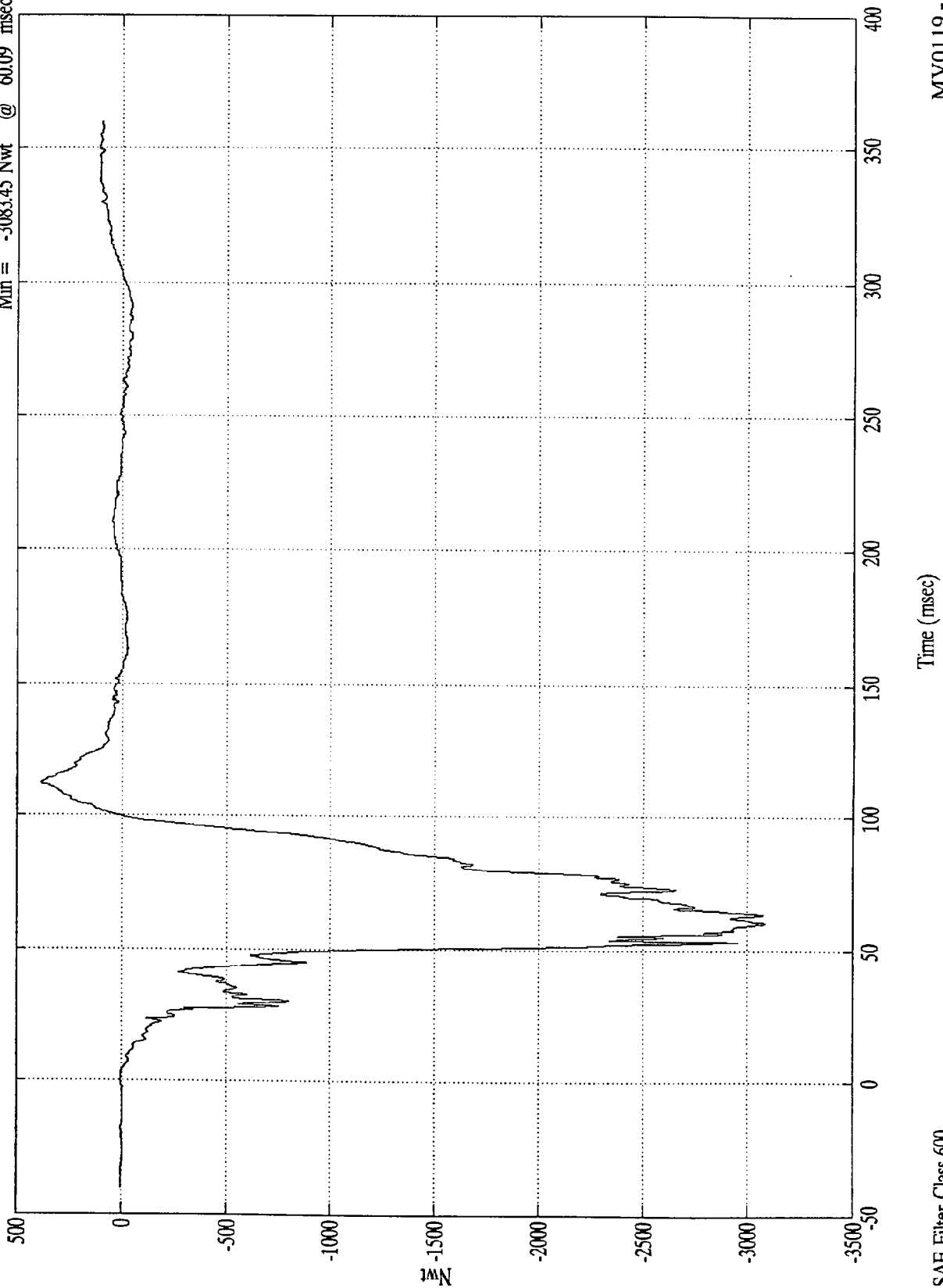
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 2 Right Femur

Max = 383.98 Nwt @ 111.89 msec
Min = -3083.45 Nwt @ 60.09 msec



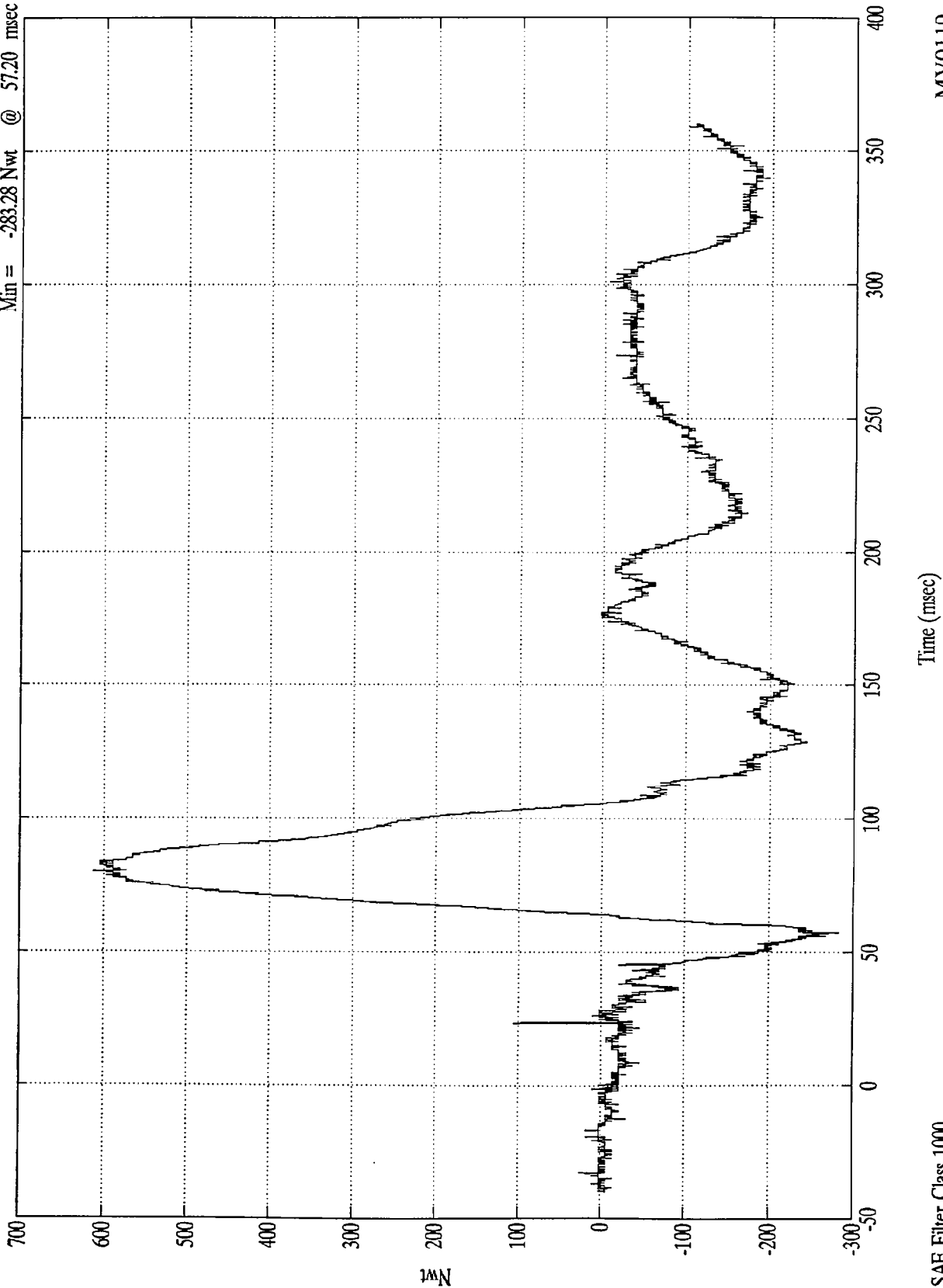
SAE Filter Class 600

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 2 Upper Neck Fx

Max = 611.89 Nwt @ 79.89 msec
Min = -283.28 Nwt @ 57.20 msec



SAE Filter Class 1000

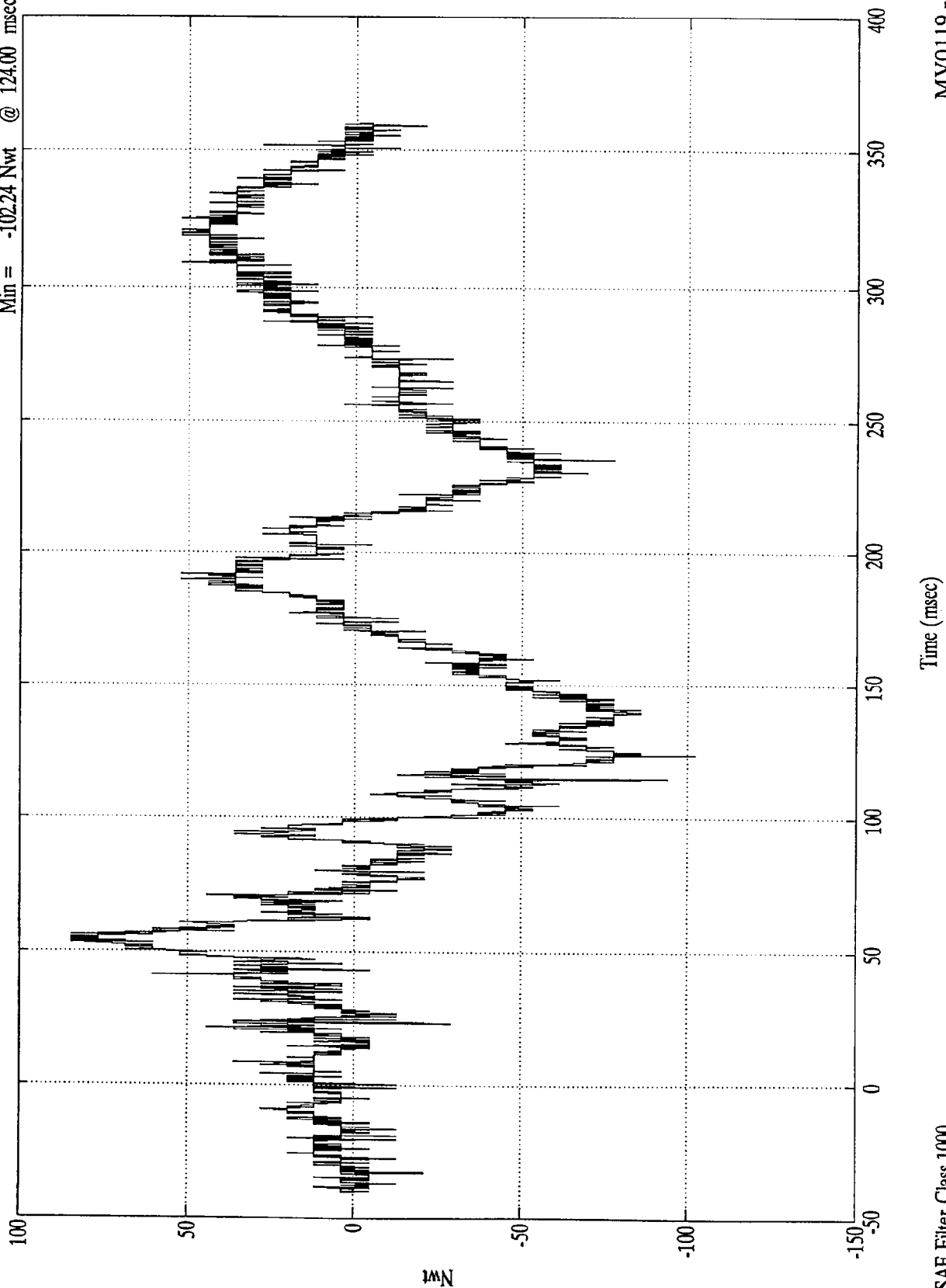
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 2 Upper Neck Fy

Max = 84.70 Nwt @ 55.90 msec
Min = -102.24 Nwt @ 124.00 msec

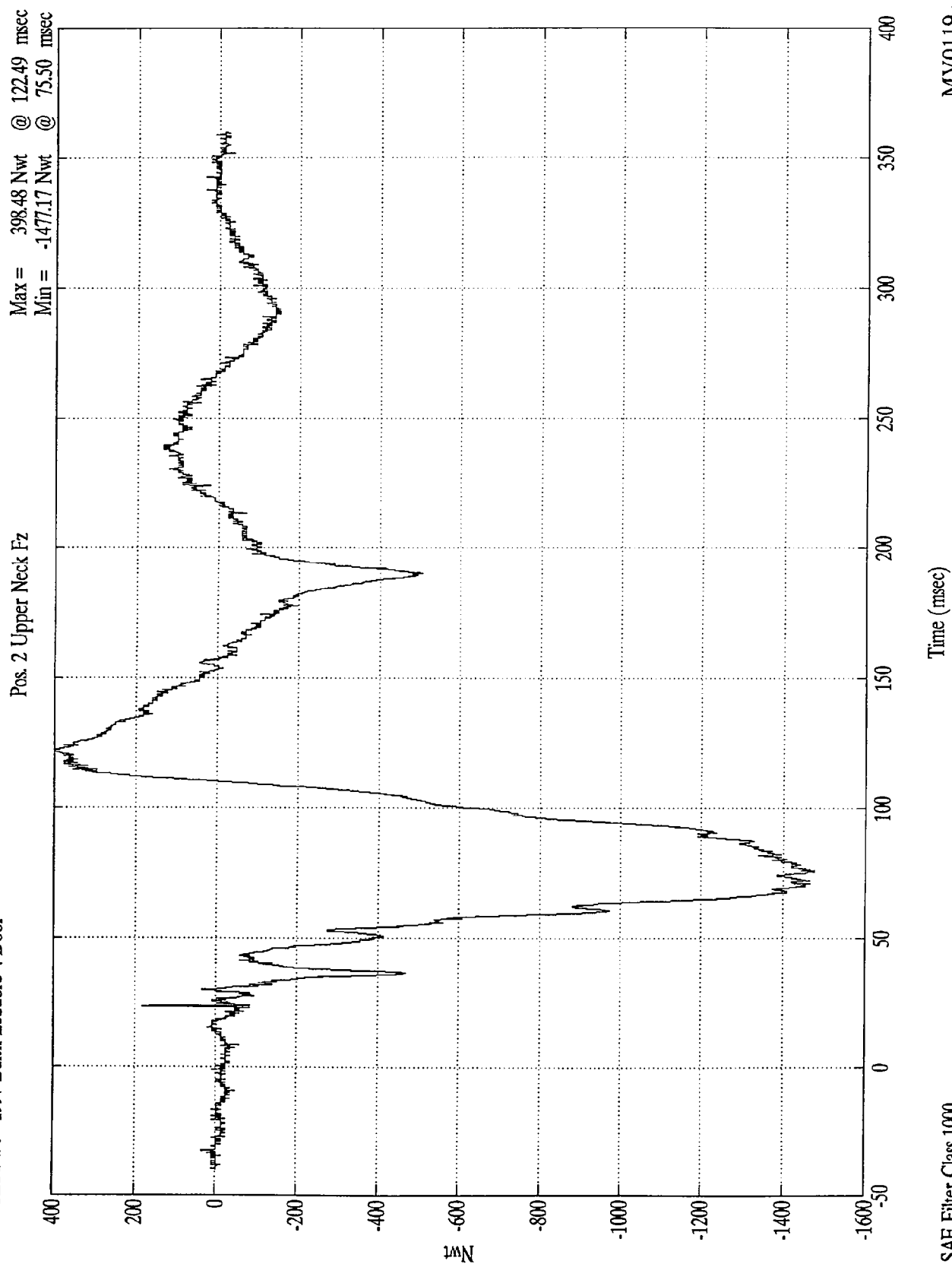


SAE Filter Class 1000

Time (msec)

MV0119 - 3/18/97

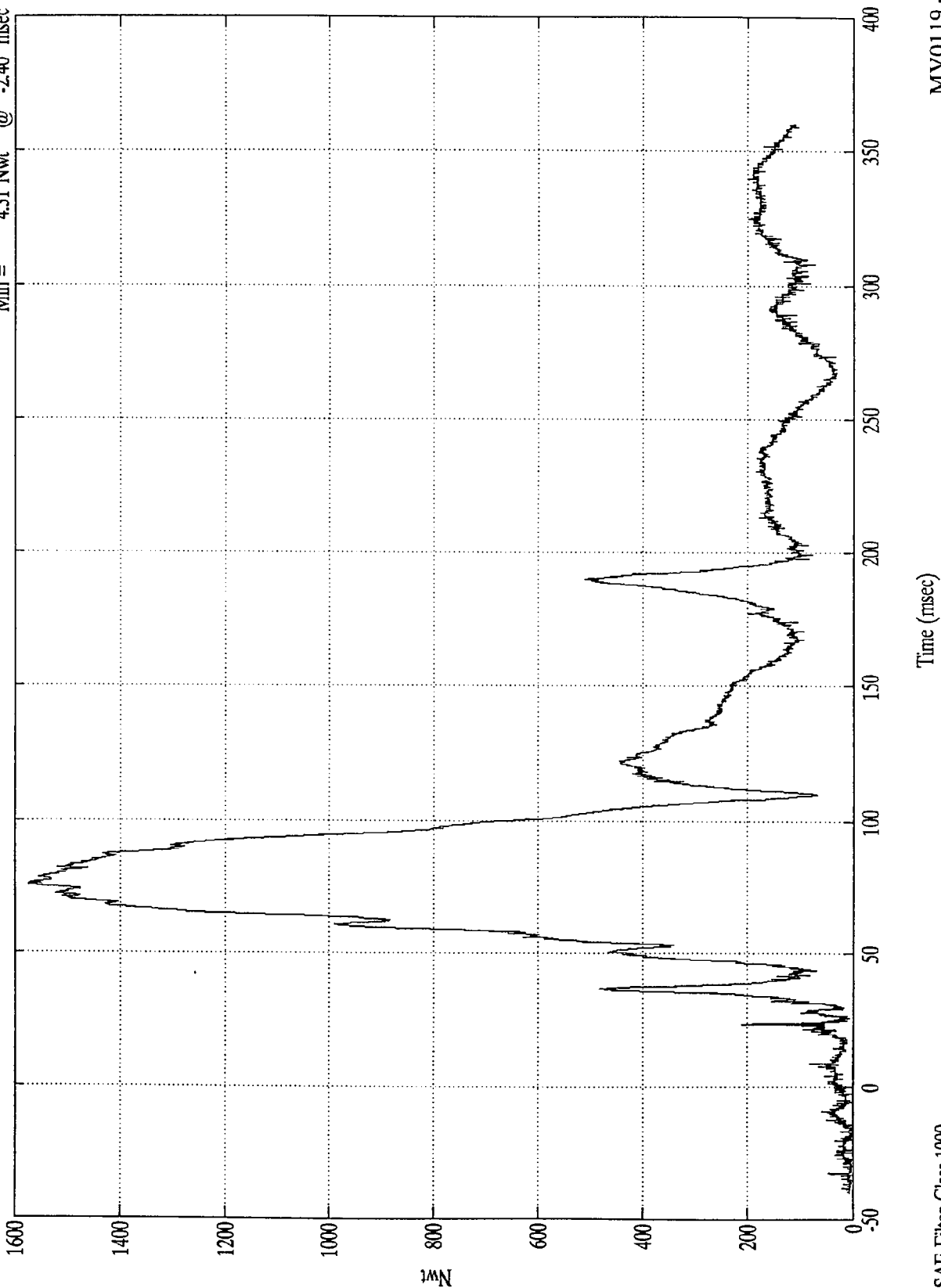
NCAP TEST #6 - 1997 Buick LeSabre 4Door



NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 2 Neck Force Res.

Max = 1575.73 Nwt @ 75.30 msec
Min = 4.31 Nwt @ -2.40 msec

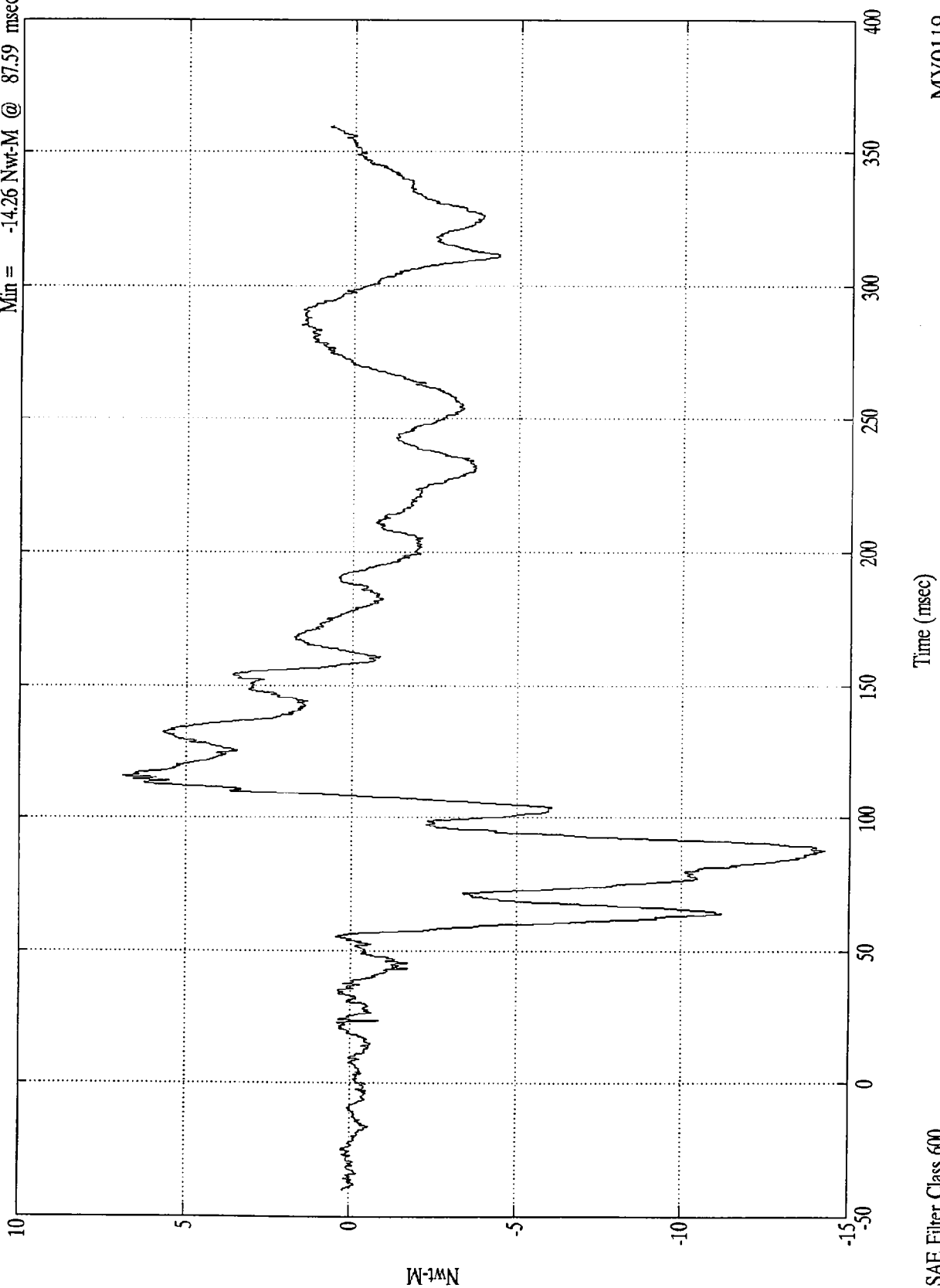


MV0119 - 3/18/97

SAE Filter Class 1000

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 2 Upper Neck Mx
Max = 6.90 Nwt-M @ 115.79 msec
Min = -14.26 Nwt-M @ 87.59 msec



SAE Filter Class 600

Time (msec)

MV0119 - 3/18/97

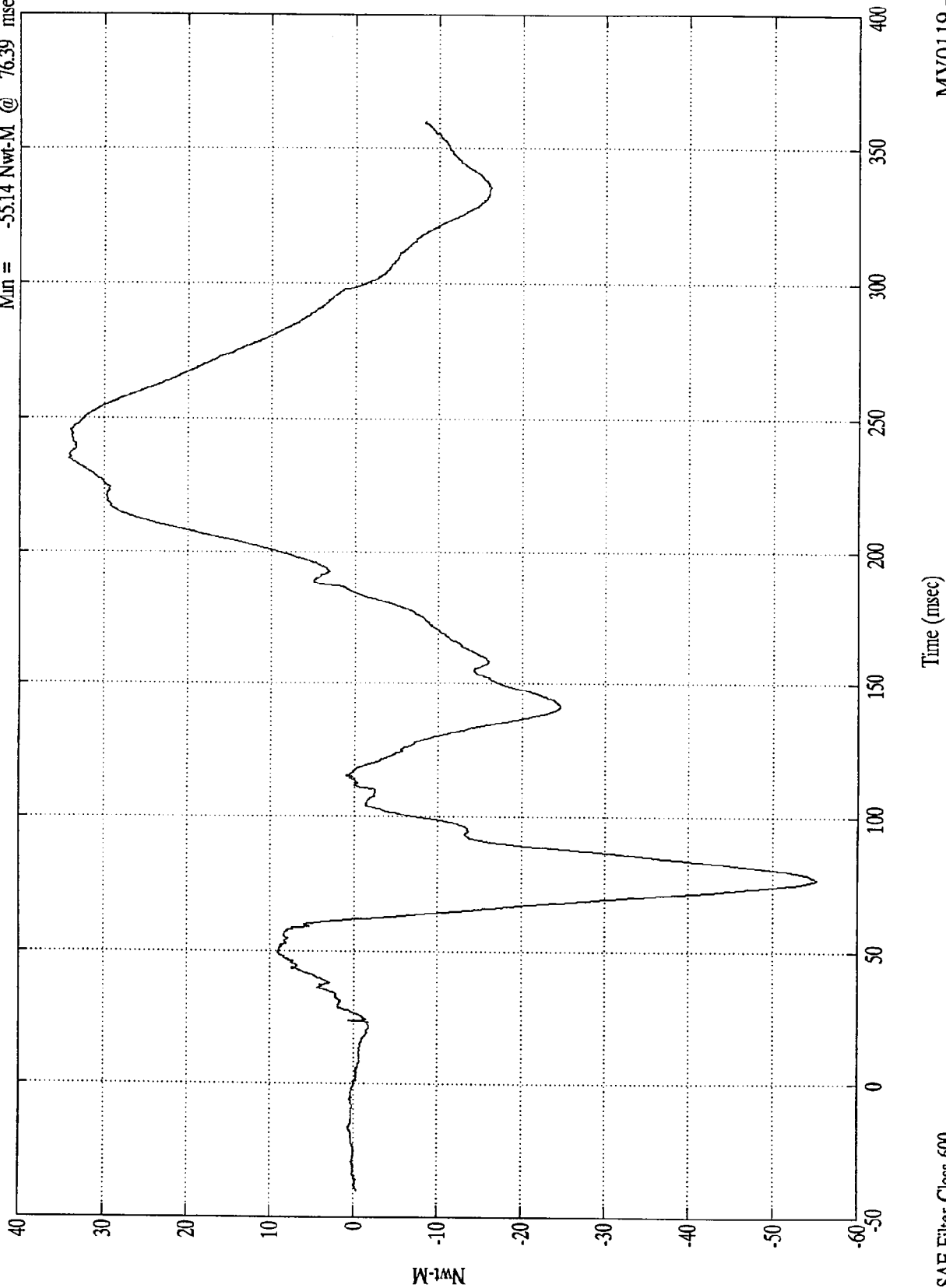
Nwt-M

B-77

8406-6

Pos 2 Upper Neck My

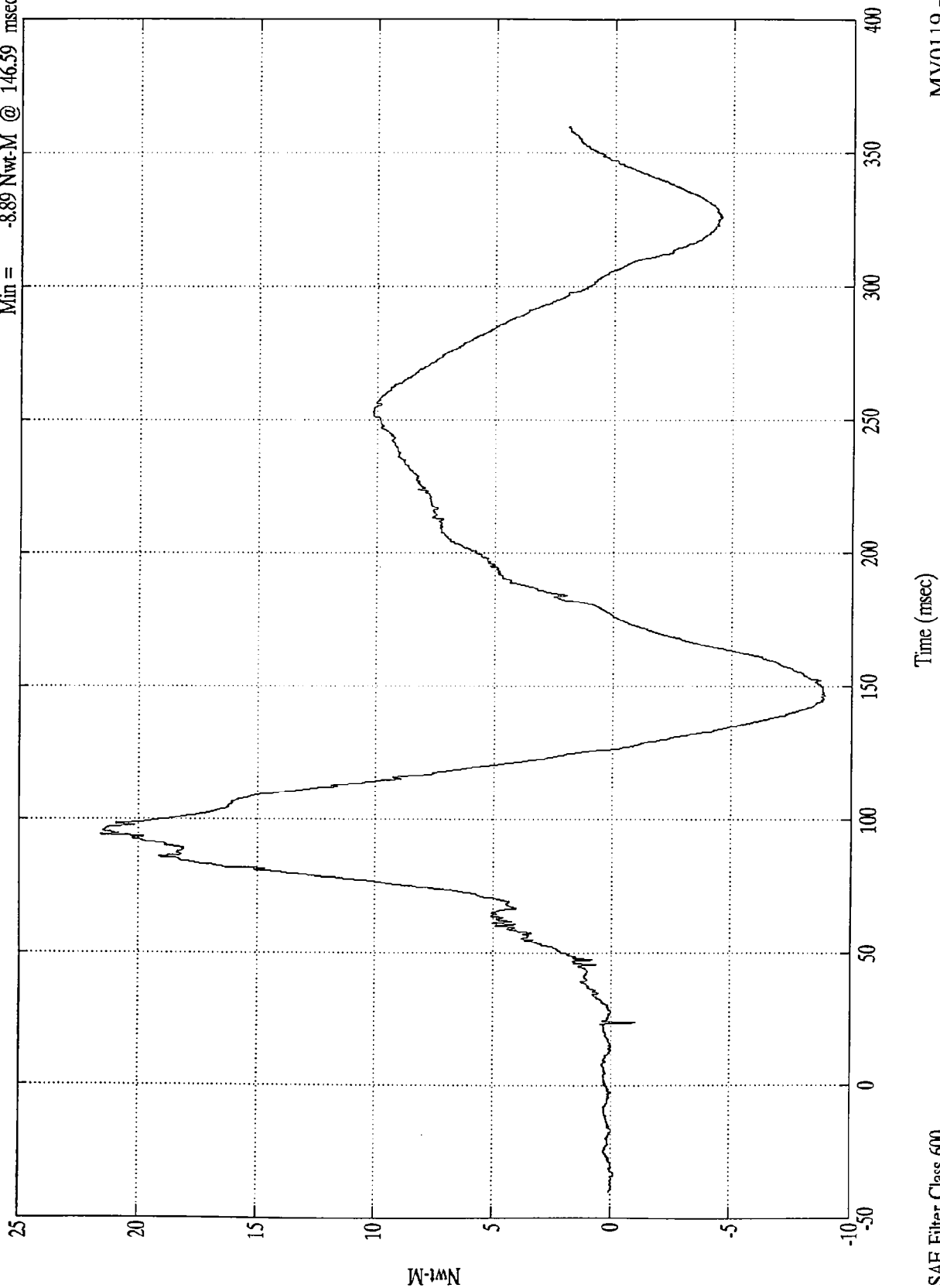
Max = 34.15 Nwt-M @ 235.00 msec
Min = -55.14 Nwt-M @ 76.39 msec



NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 2 Upper Neck Mz

Max = 21.61 Nwt-M @ 94.19 msec
Min = -8.89 Nwt-M @ 146.59 msec



SAE Filter Class 600

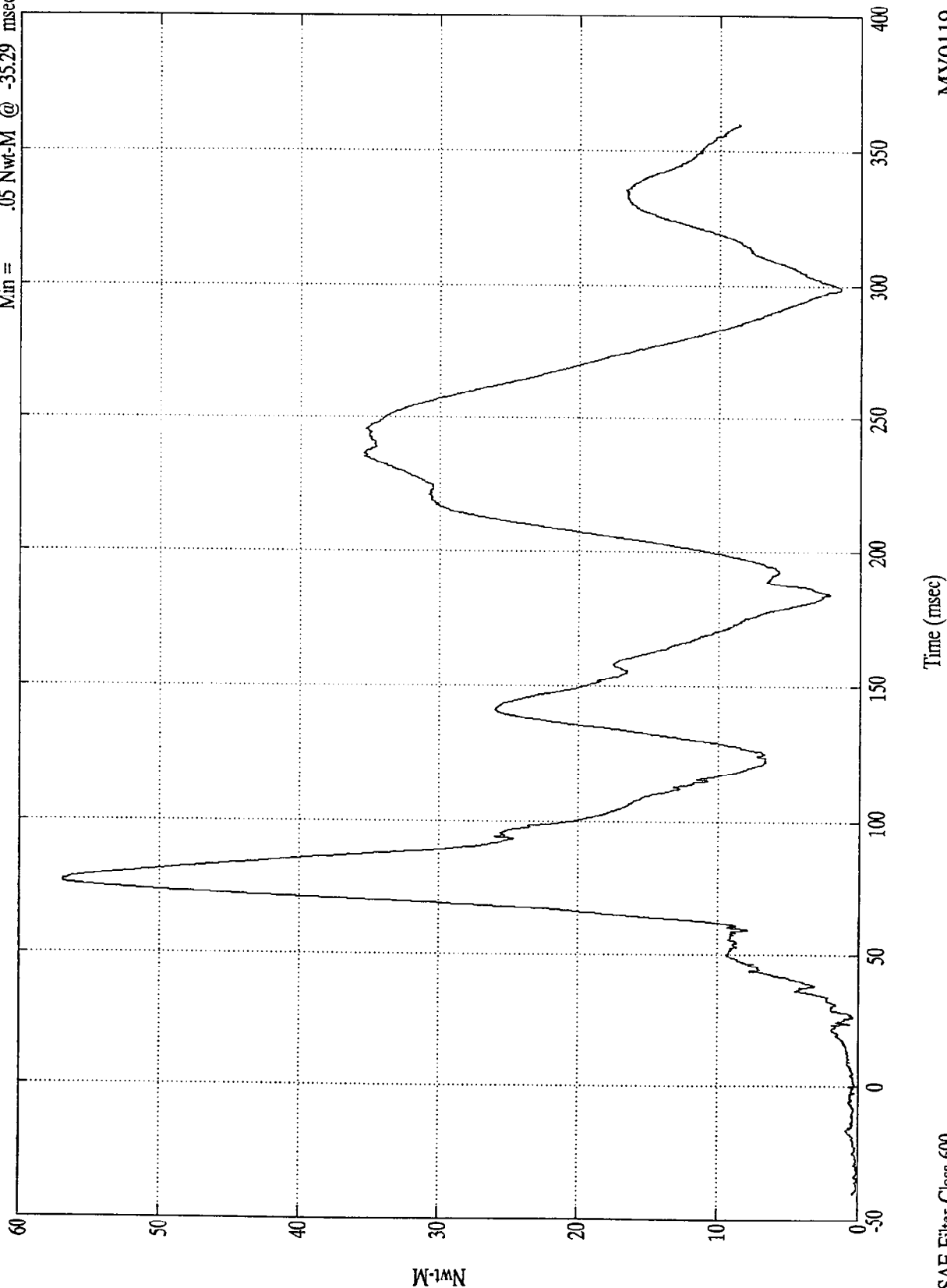
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 • 1997 Buick LeSabre 4-Door

Pos. 2 Neck Moment Res.

Max = 56.90 Nwt-M @ 76.50 msec
Min = .05 Nwt-M @ -35.29 msec



SAE Filter Class 600

Time (msec)

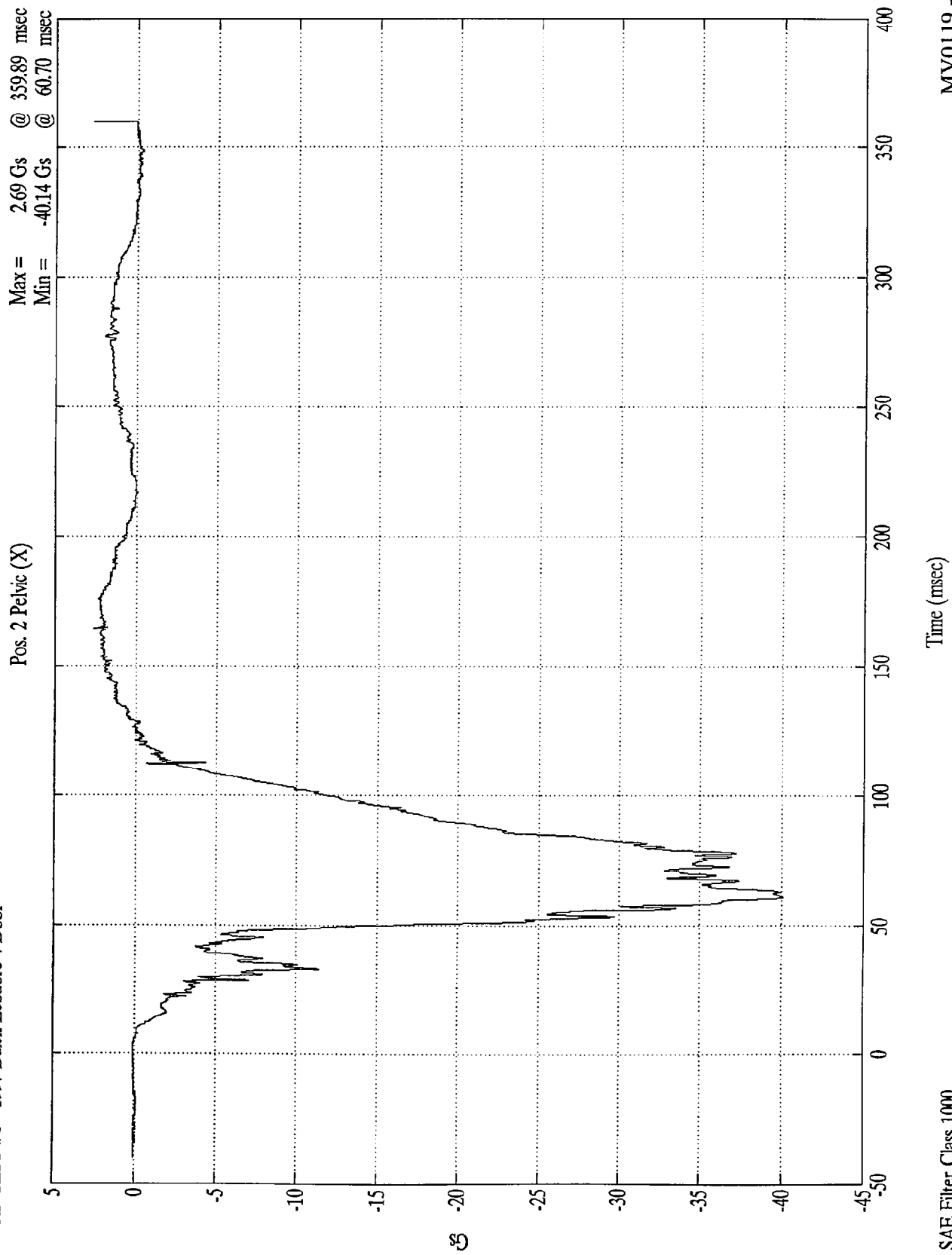
MV0119 - 3/18/97

Nwt-M

B-80

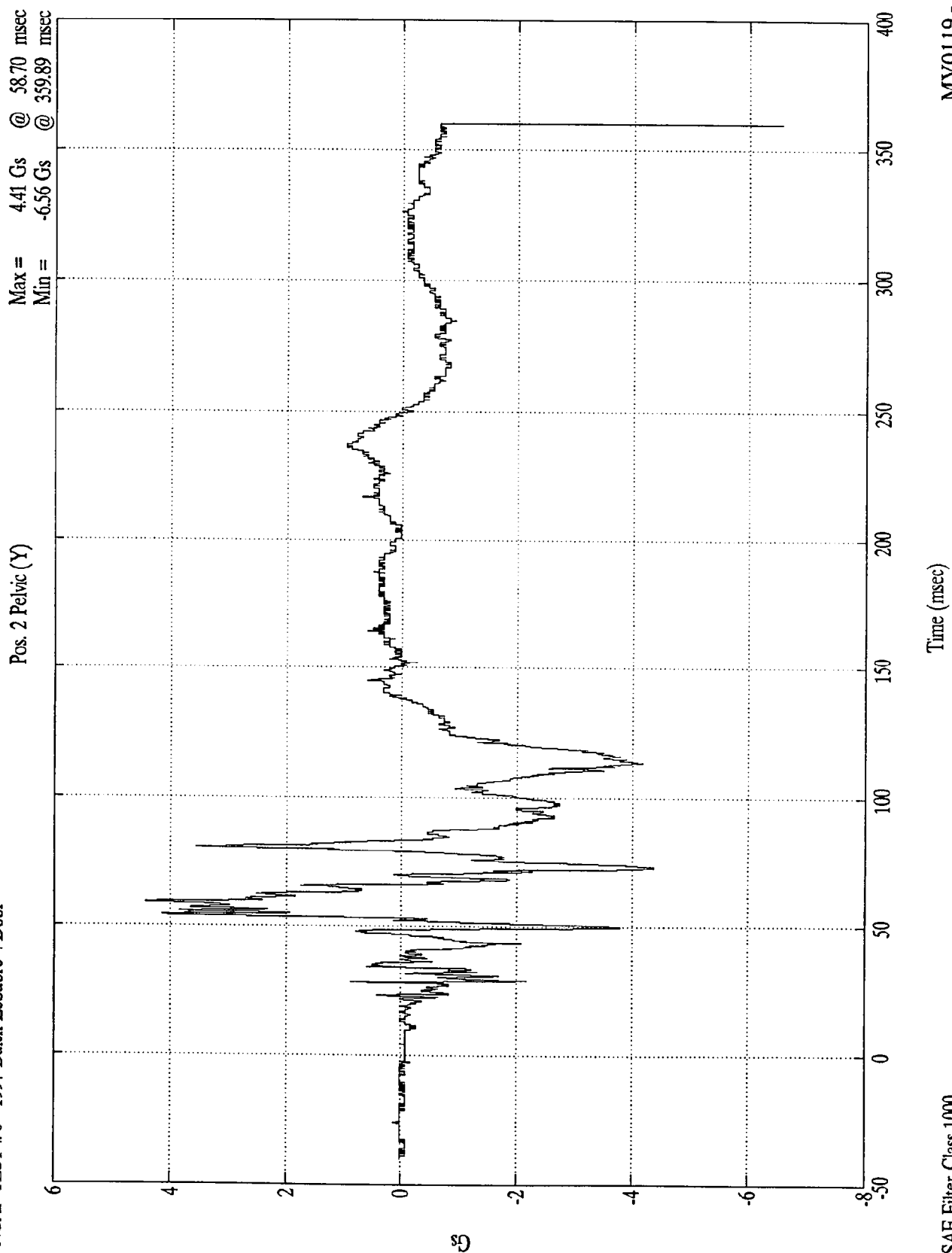
8406-6

NCAP TEST #6 - 1997 Buick LeSabre 4-Door



MV0119 - 3/18/97

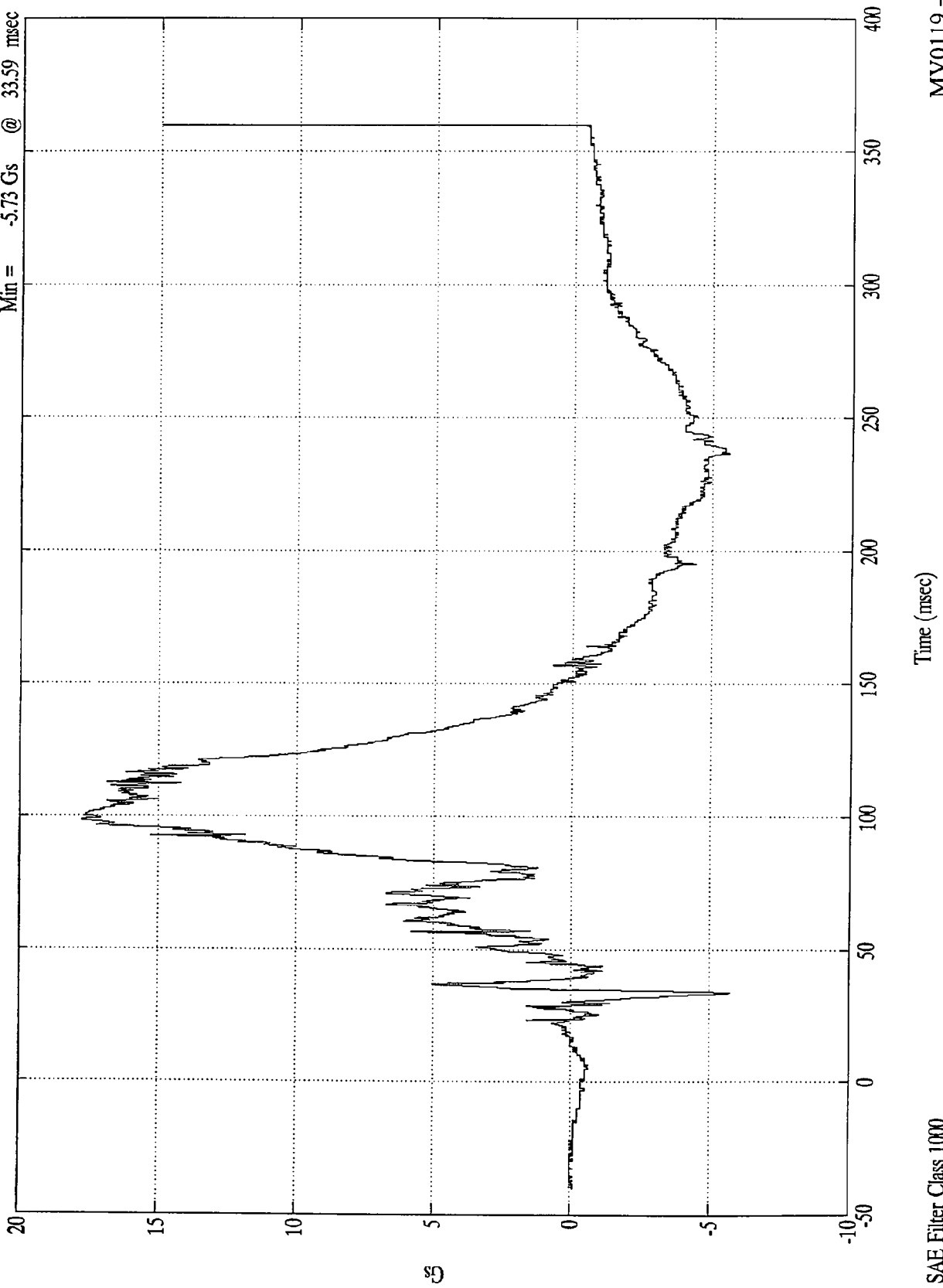
NCAP TEST #6 - 1997 Buick LeSabre 4Door



NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 17.75 Gs @ 98.69 msec
Min = -5.73 Gs @ 33.59 msec

Pos. 2 Pelvic (Z)

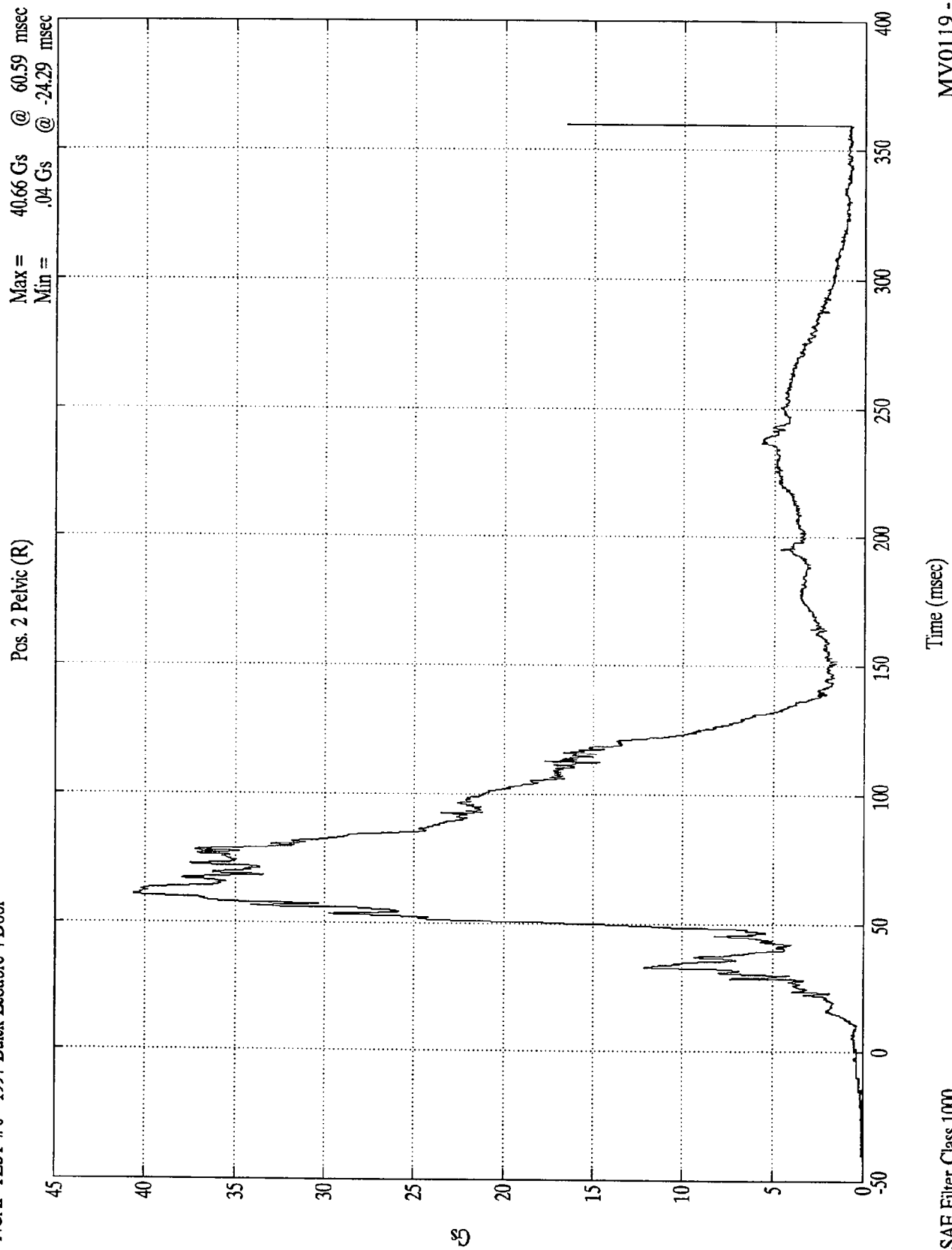


SAE Filter Class 1000

Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

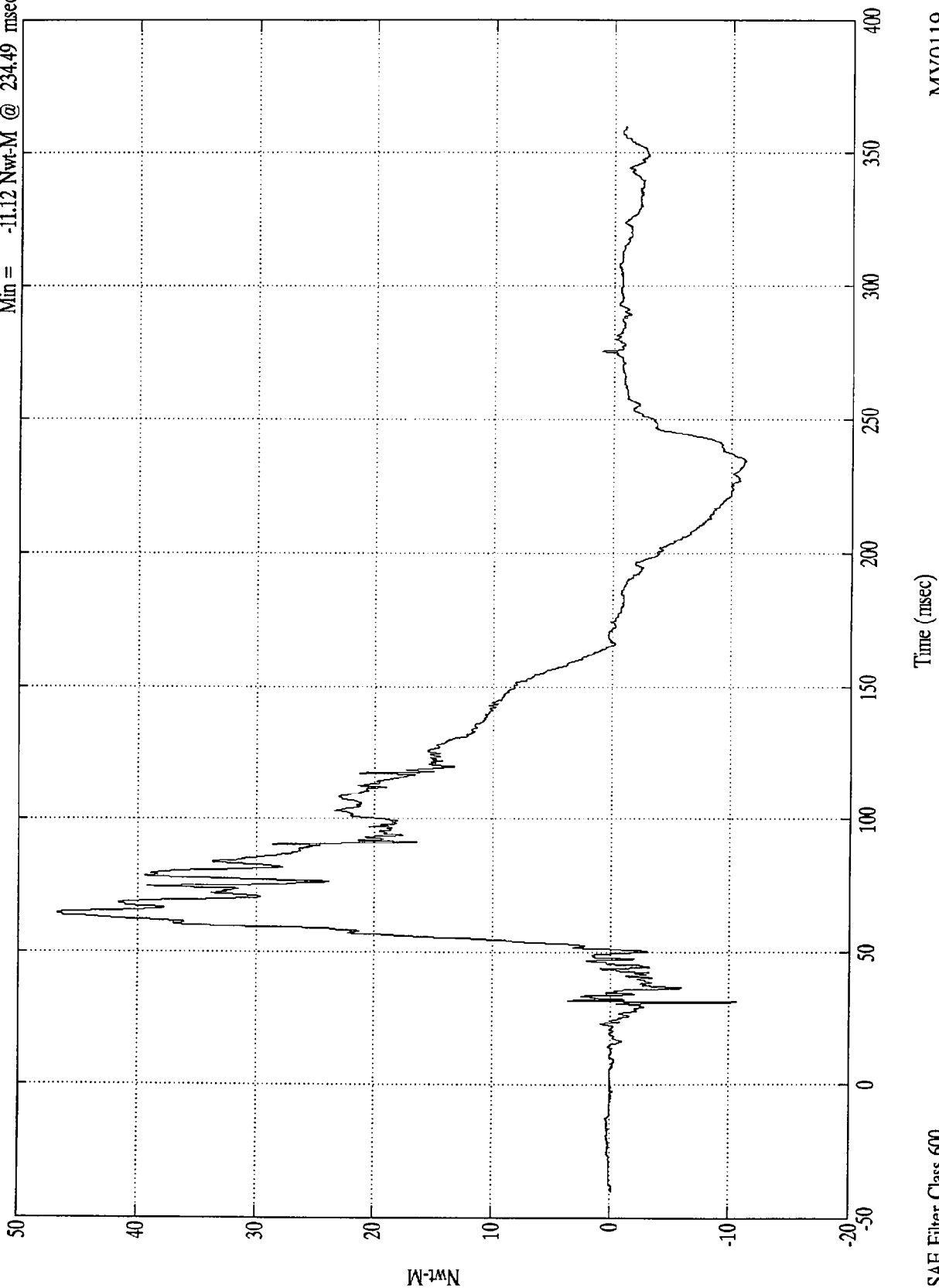


MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4Door

Pos. 2 Lt Upper Tibia Mx

Max = 46.70 Nwt-M @ 64.19 msec
Min = -11.12 Nwt-M @ 234.49 msec



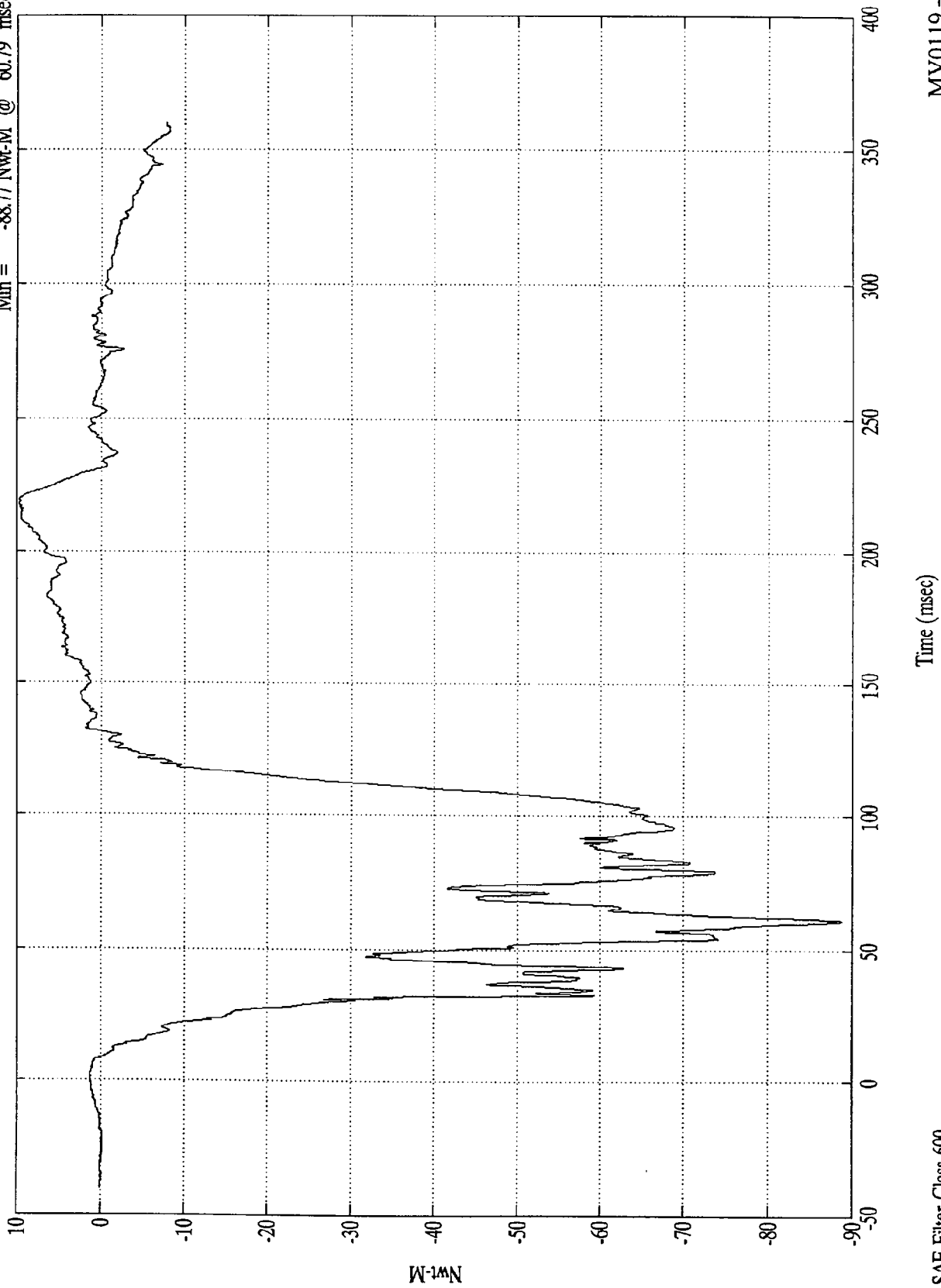
SAE Filter Class 600

Time (msec)

MV01119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 2 Lt Upper Tibia My
Max = 9.78 Nwt-M @ 218.09 msec
Min = -88.77 Nwt-M @ 60.79 msec



MV0119 - 3/18/97

Time (msec)

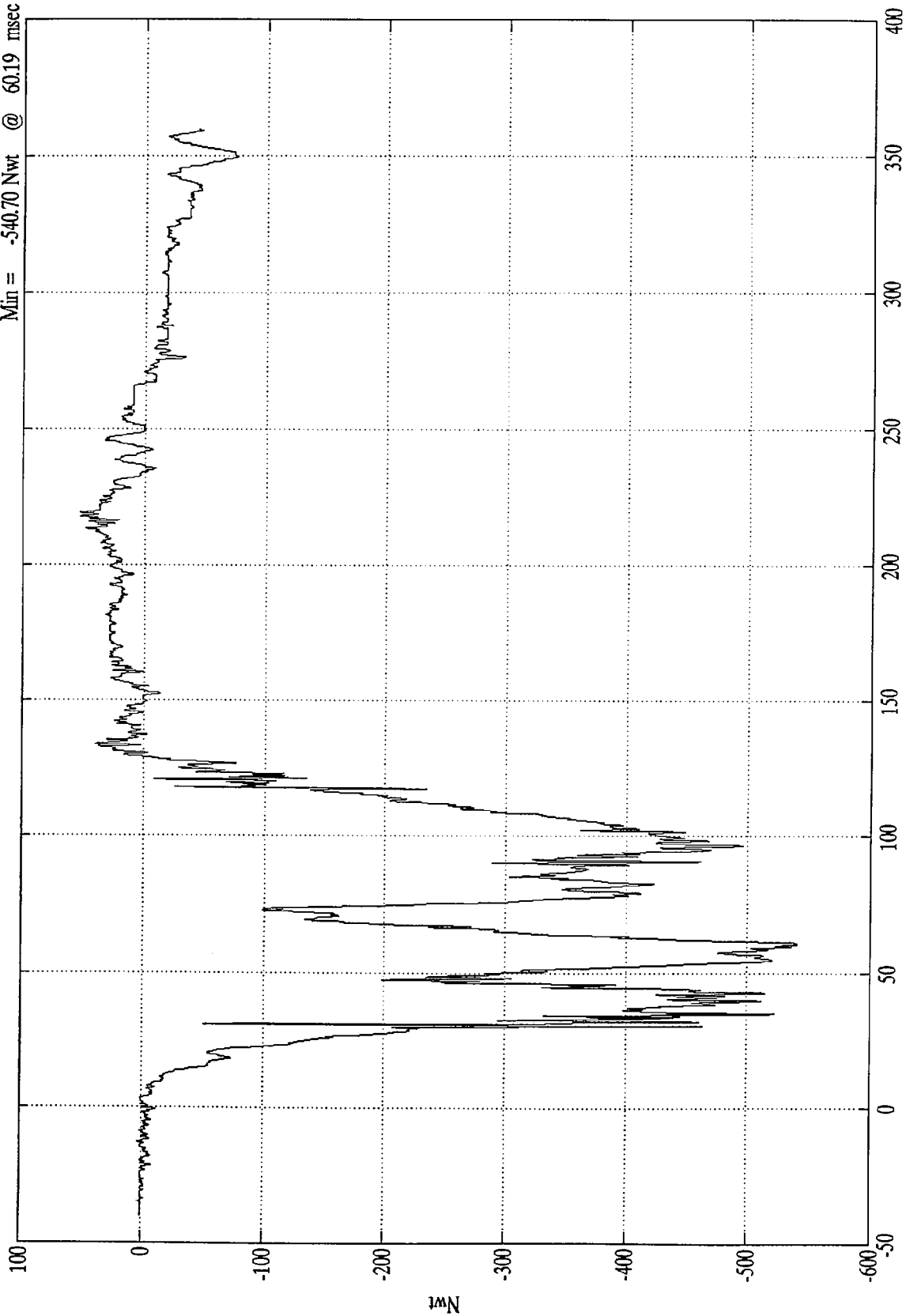
SAE Filter Class 600

Nwt-M

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 2 Lt Lower Tibia Fx

Max = 53.23 Nwt @ 218.30 msec
Min = -540.70 Nwt @ 60.19 msec



SAE Filter Class 600

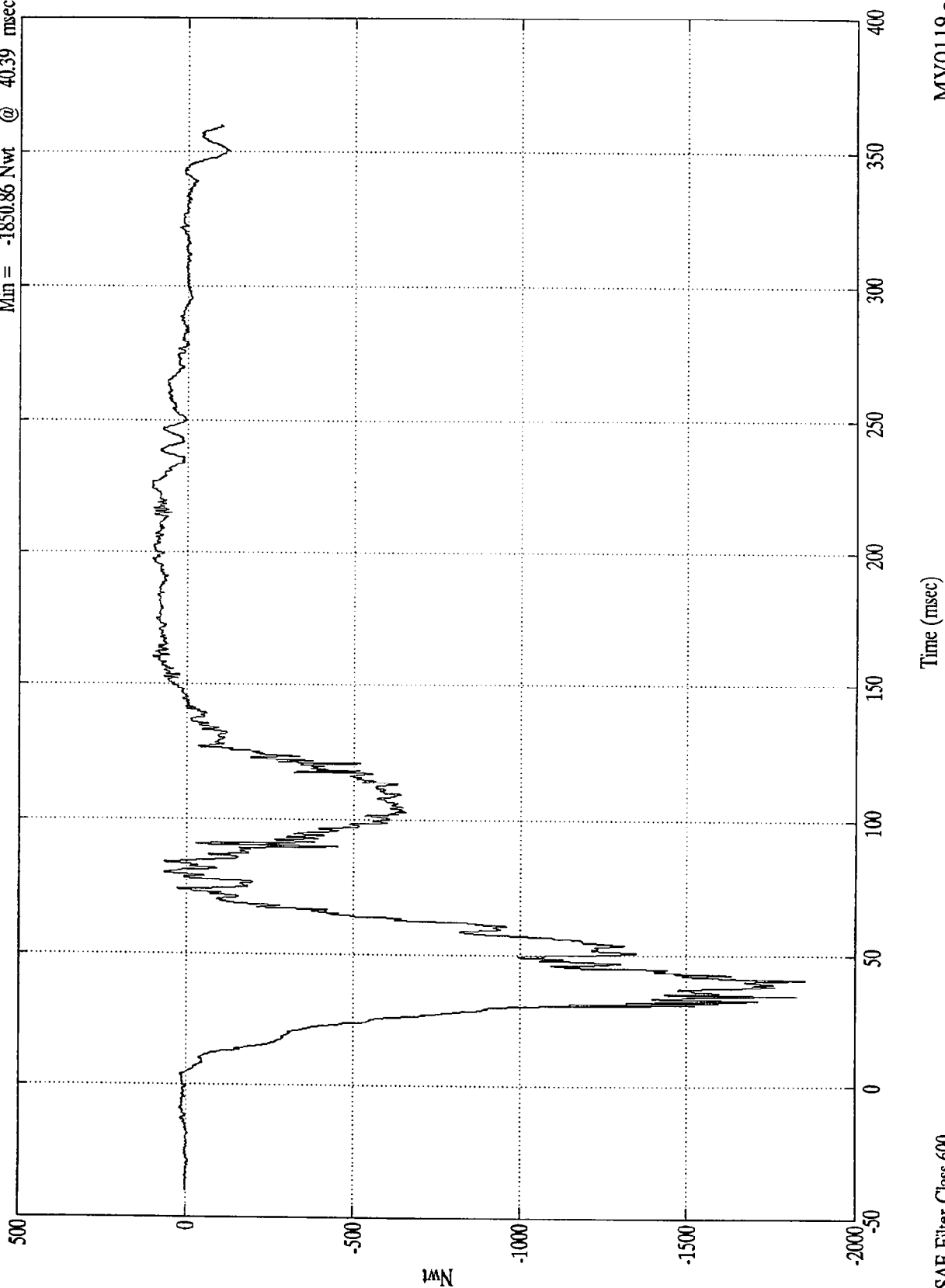
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4Door

Max = 105.00 Nwt @ 226.69 msec
Min = -1850.86 Nwt @ 40.39 msec

Pos. 2 Lt Lower Tibia Fz



SAE Filter Class 600

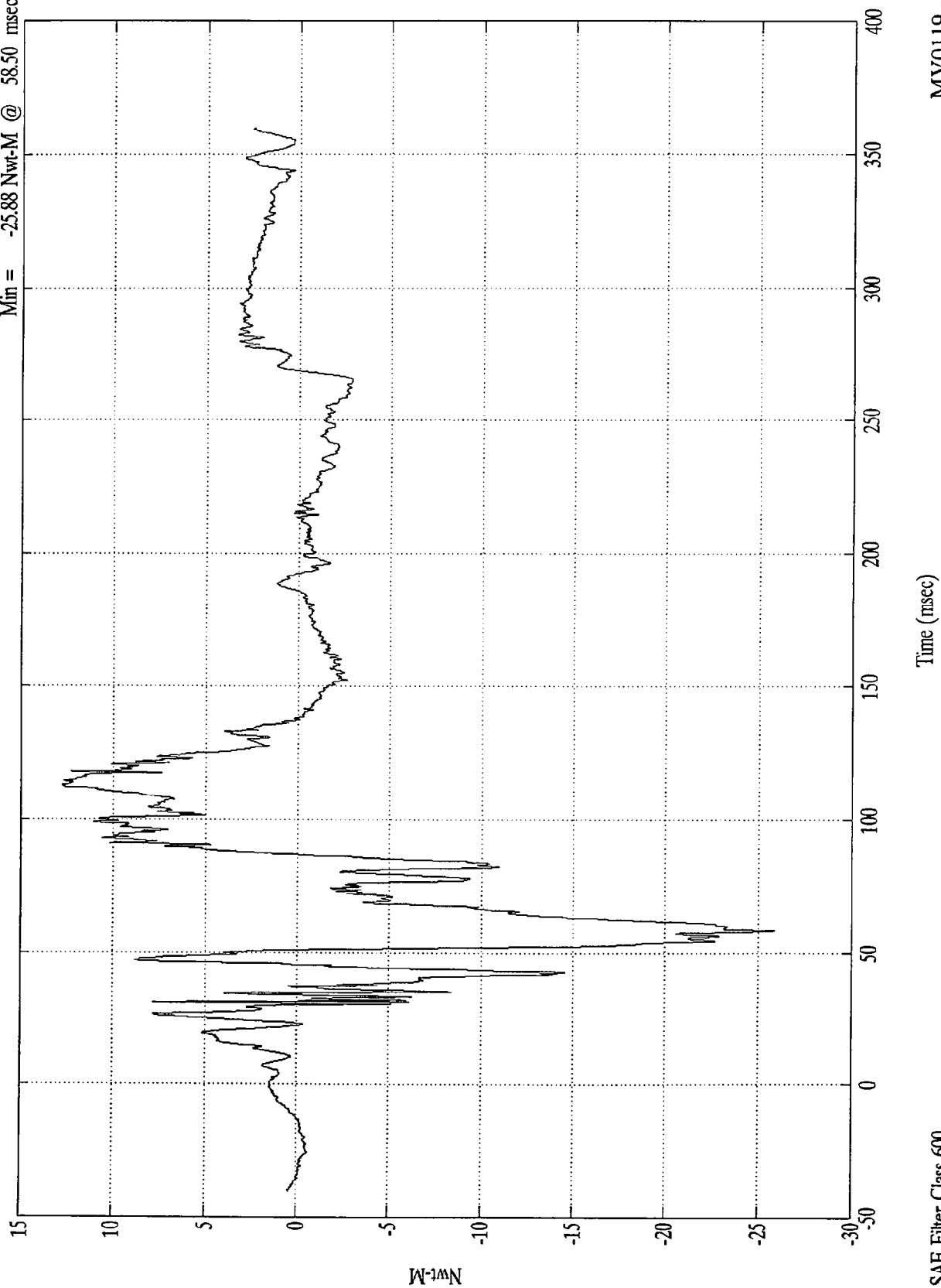
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 2 Lt Lower Tibia My

Max = 12.74 Nwt-M @ 112.79 msec
Min = -25.88 Nwt-M @ 58.50 msec



SAE Filter Class 600

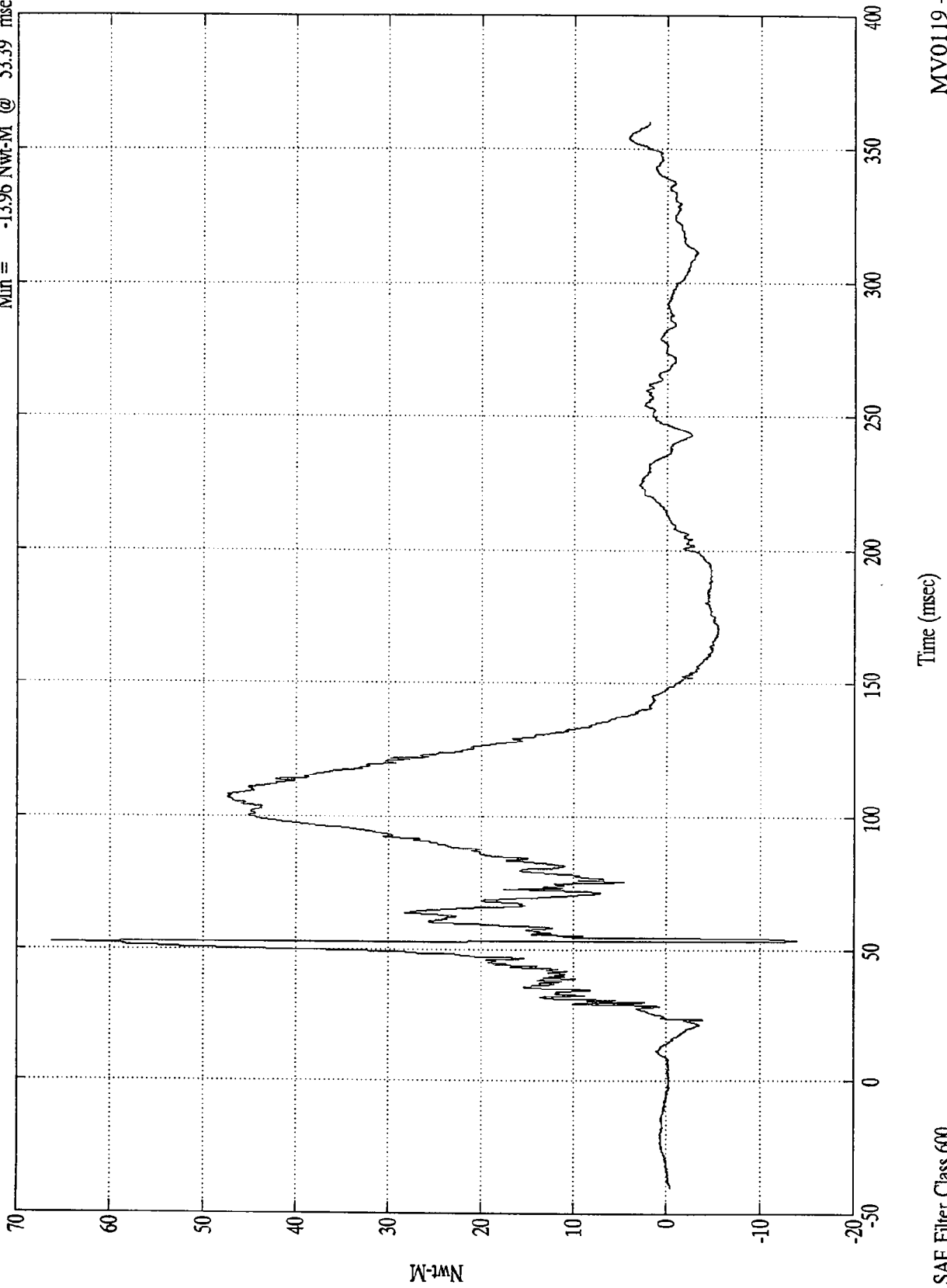
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 66.28 Nwt-M @ 52.40 msec
Min = -13.96 Nwt-M @ 53.39 msec

Pos. 2 Rt Upper Tibia Mx



SAE Filter Class 600

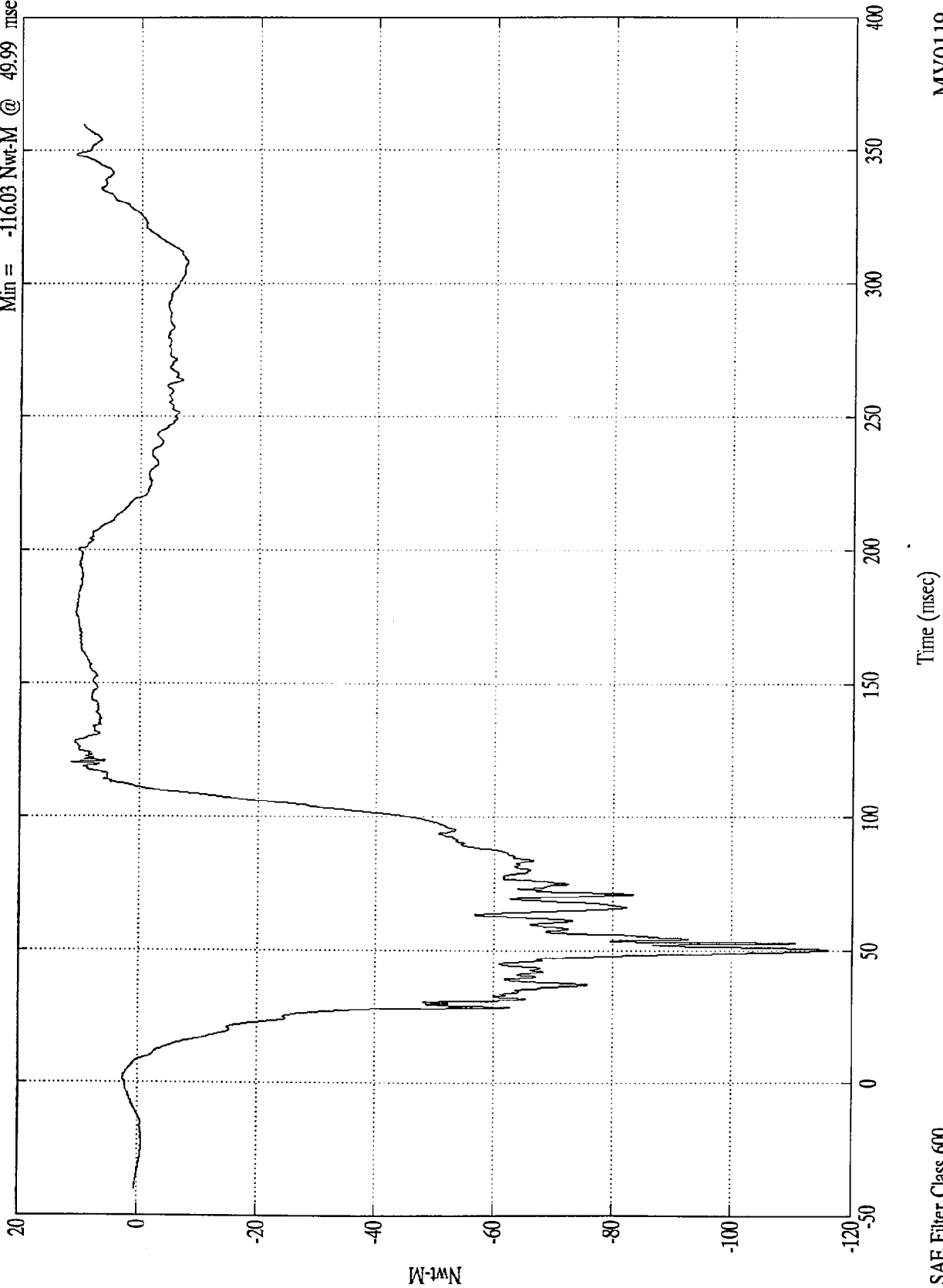
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 2 Rt Upper Tibia My

Max = 11.47 Nwt-M @ 120.29 msec
Min = -116.03 Nwt-M @ 49.99 msec



SAE Filter Class 600

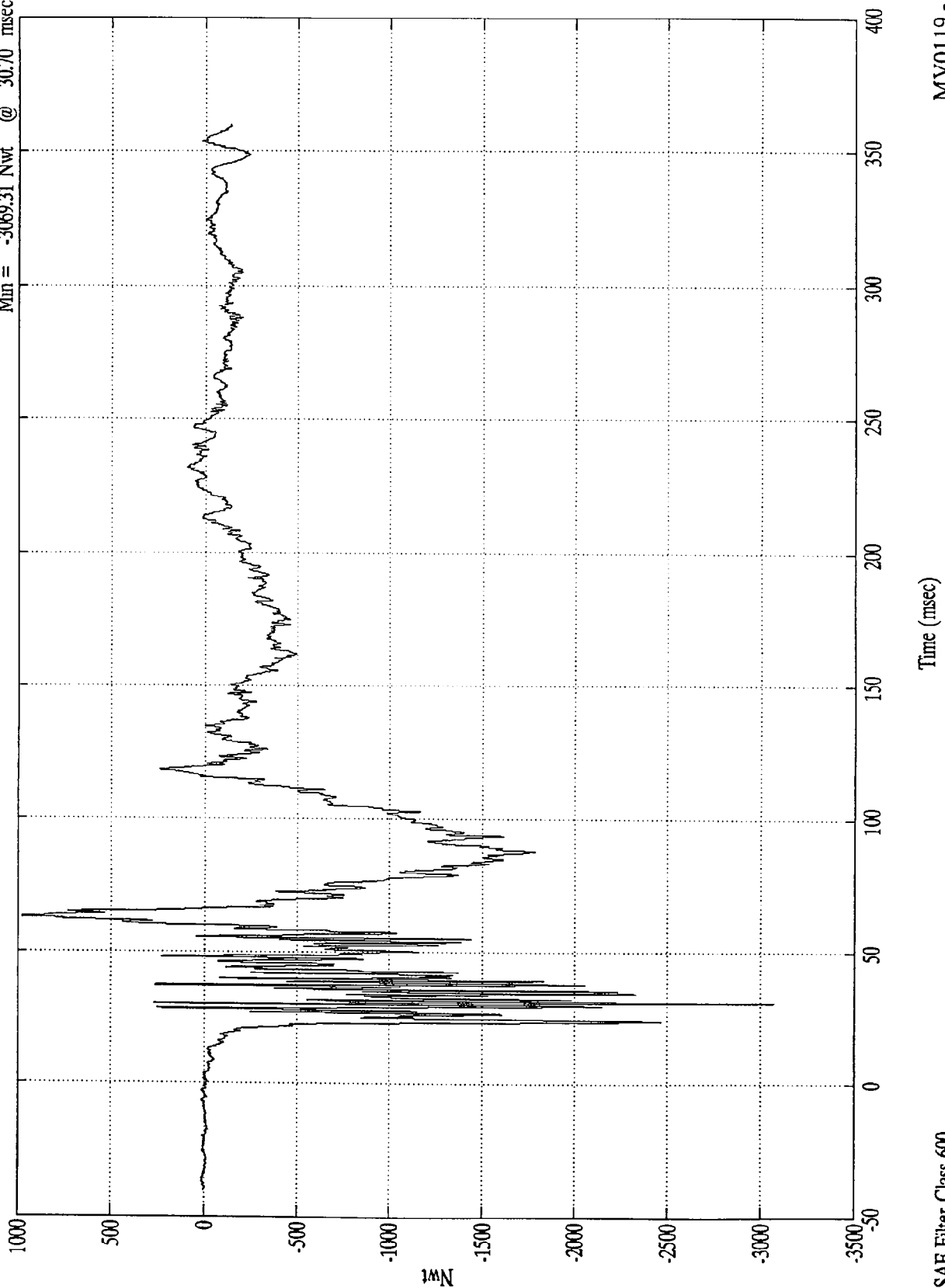
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4Door

Pos. 2 Rt Lower Tibia Fx

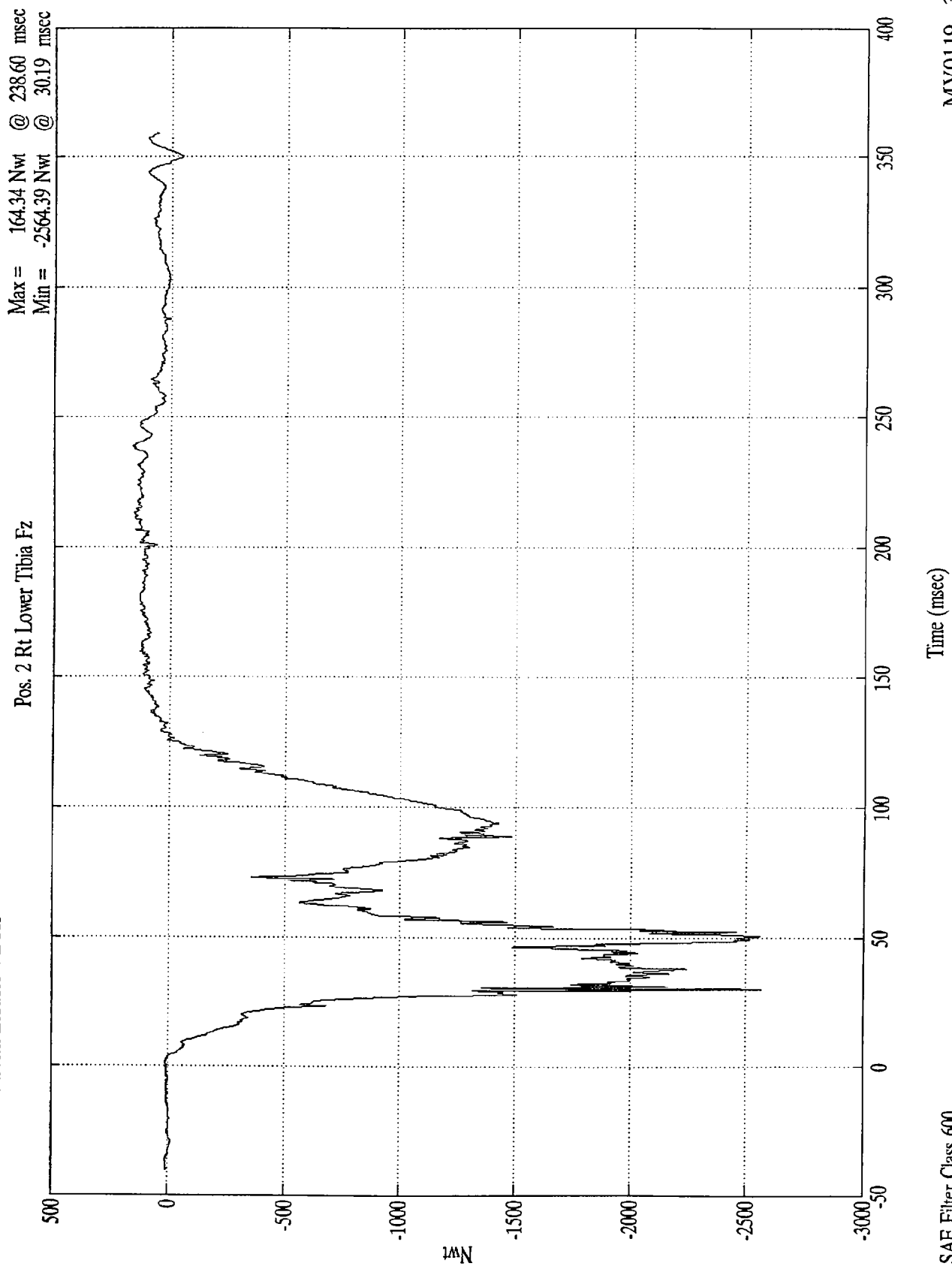
Max = 982.79 Nwt @ 62.69 msec
Min = -3069.31 Nwt @ 30.70 msec



SAE Filter Class 600

MV0119 - 3/18/97

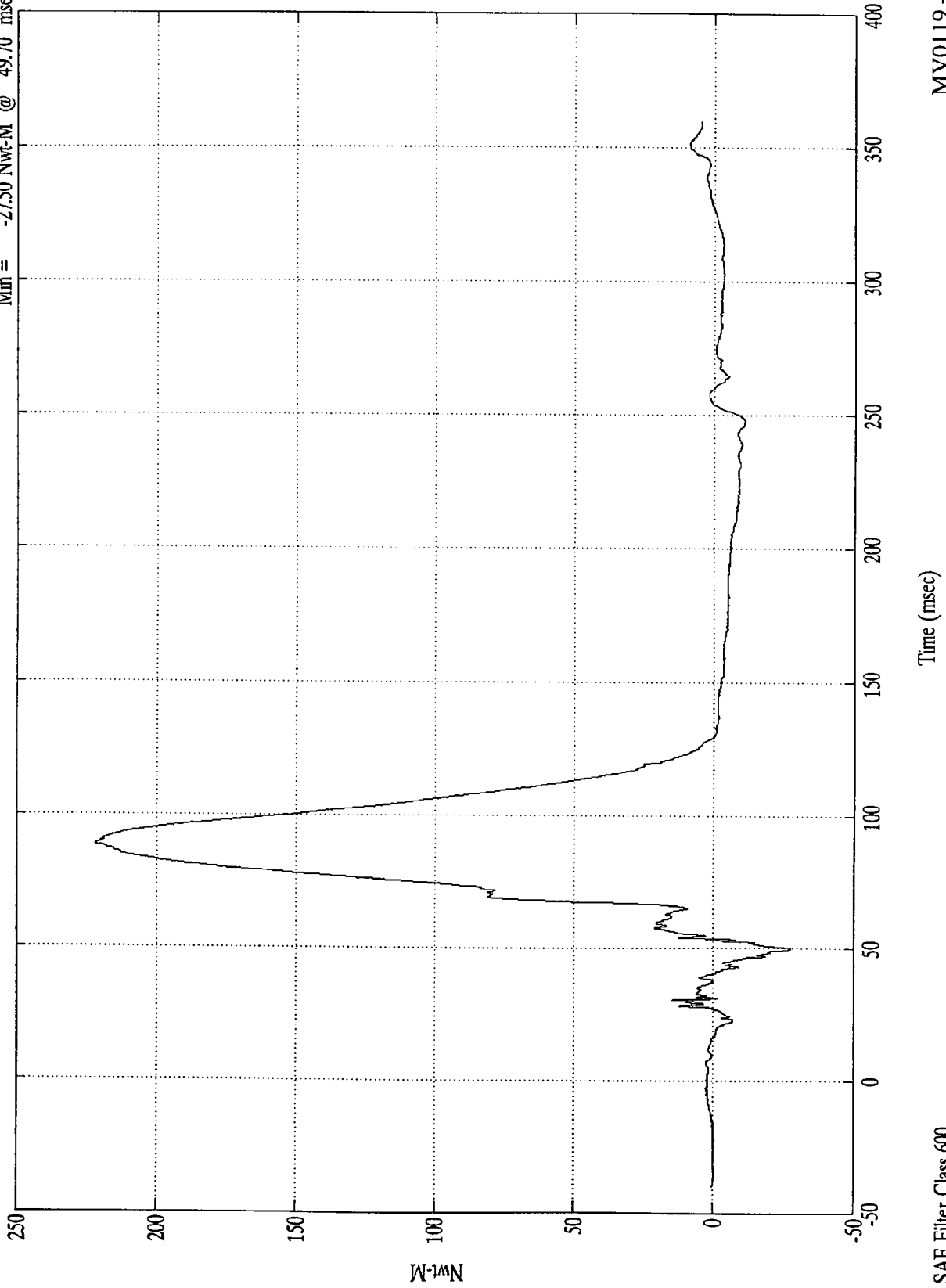
NCAP TEST #6 - 1997 Buick LeSabre 4-Door



NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 2 Rt Lower Tibia My

Max = 222.30 Nwt-M @ 88.50 msec
Min = -27.50 Nwt-M @ 49.70 msec



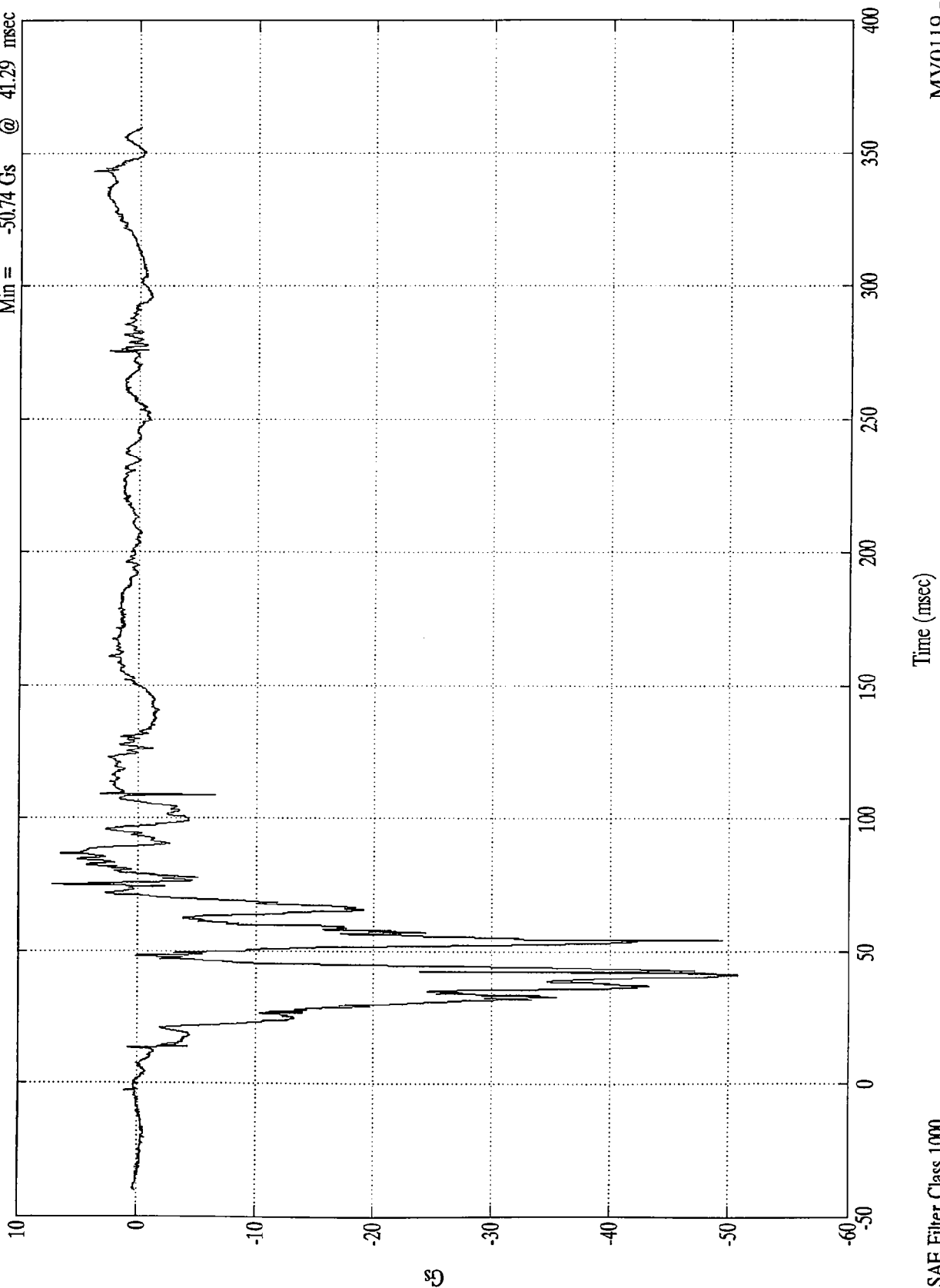
MV0119 - 3/18/97

SAE Filter Class 600

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 7.22 Gs @ 75.19 msec
Min = -50.74 Gs @ 41.29 msec

Pos. 2 Left Ankle X



SAE Filter Class 1000

Time (msec)

MV0119 - 3/18/97

Gs

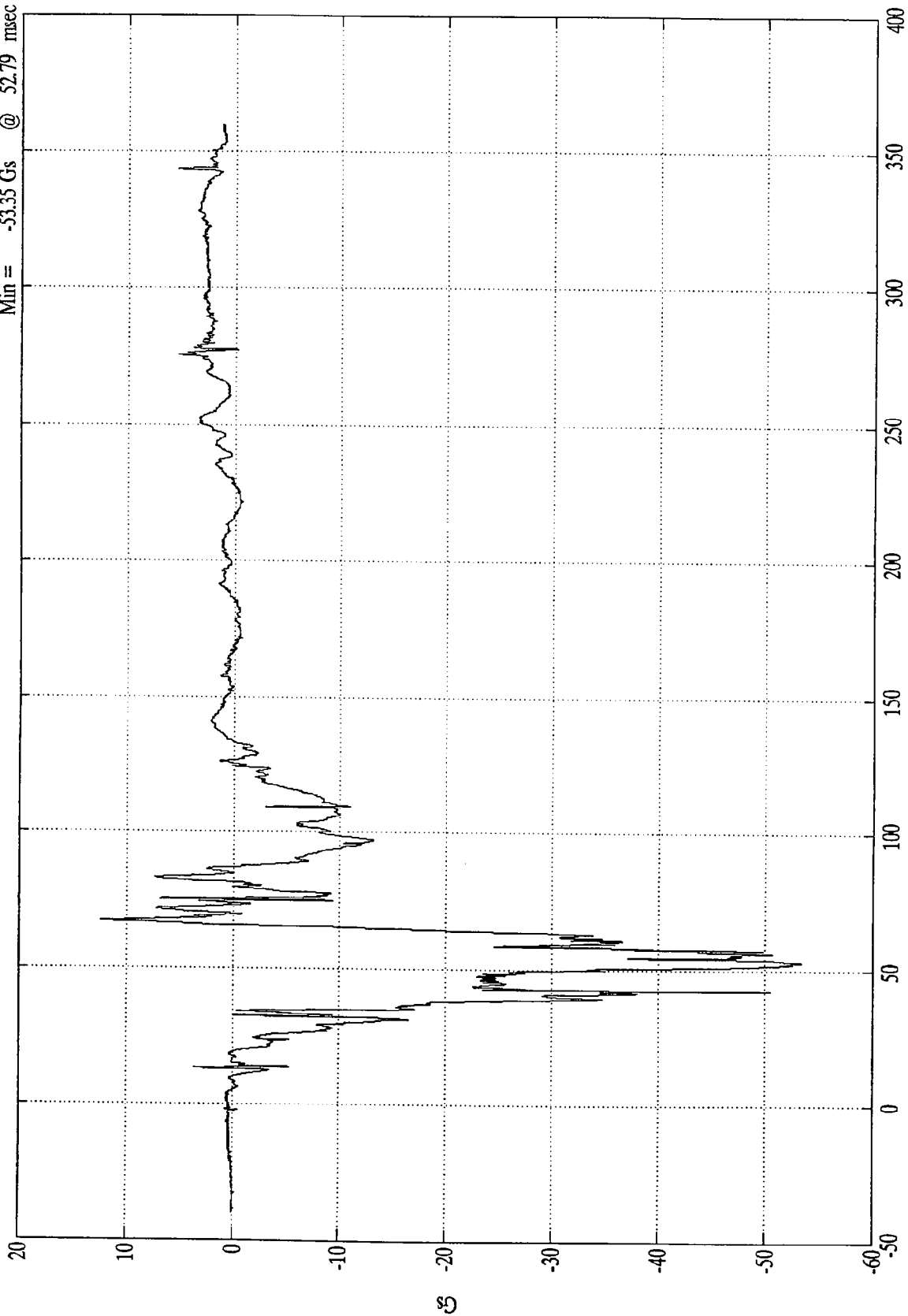
B-95

8406-6

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 12.38 Gs @ 66.40 msec
Min = -53.35 Gs @ 52.79 msec

Pos. 2 Left Ankle Z



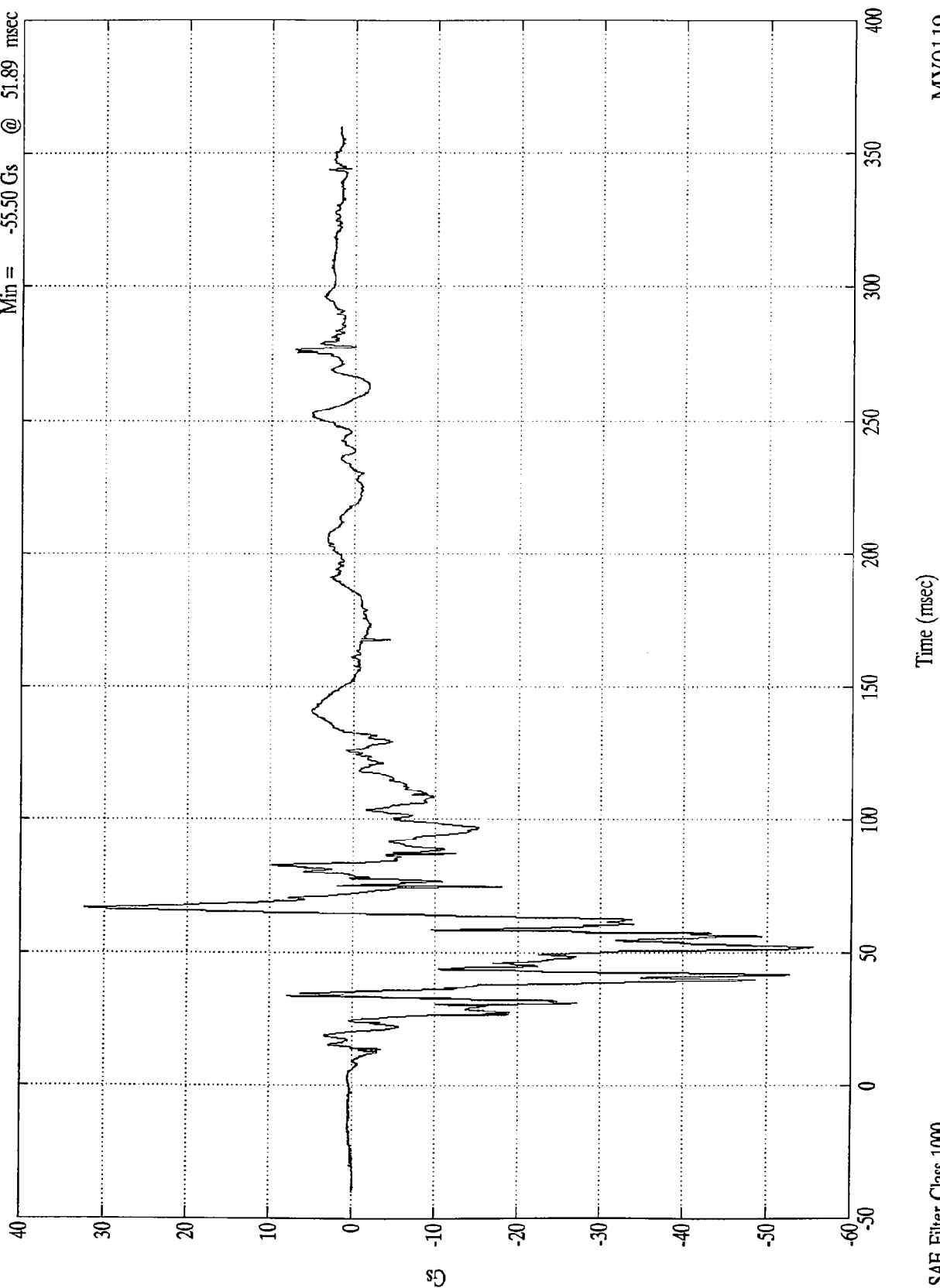
Time (msec)

SAE Filter Class 1000

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 2 Left Toe Z
 Max = 32.32 Gs @ 66.29 msec
 Min = -55.50 Gs @ 51.89 msec

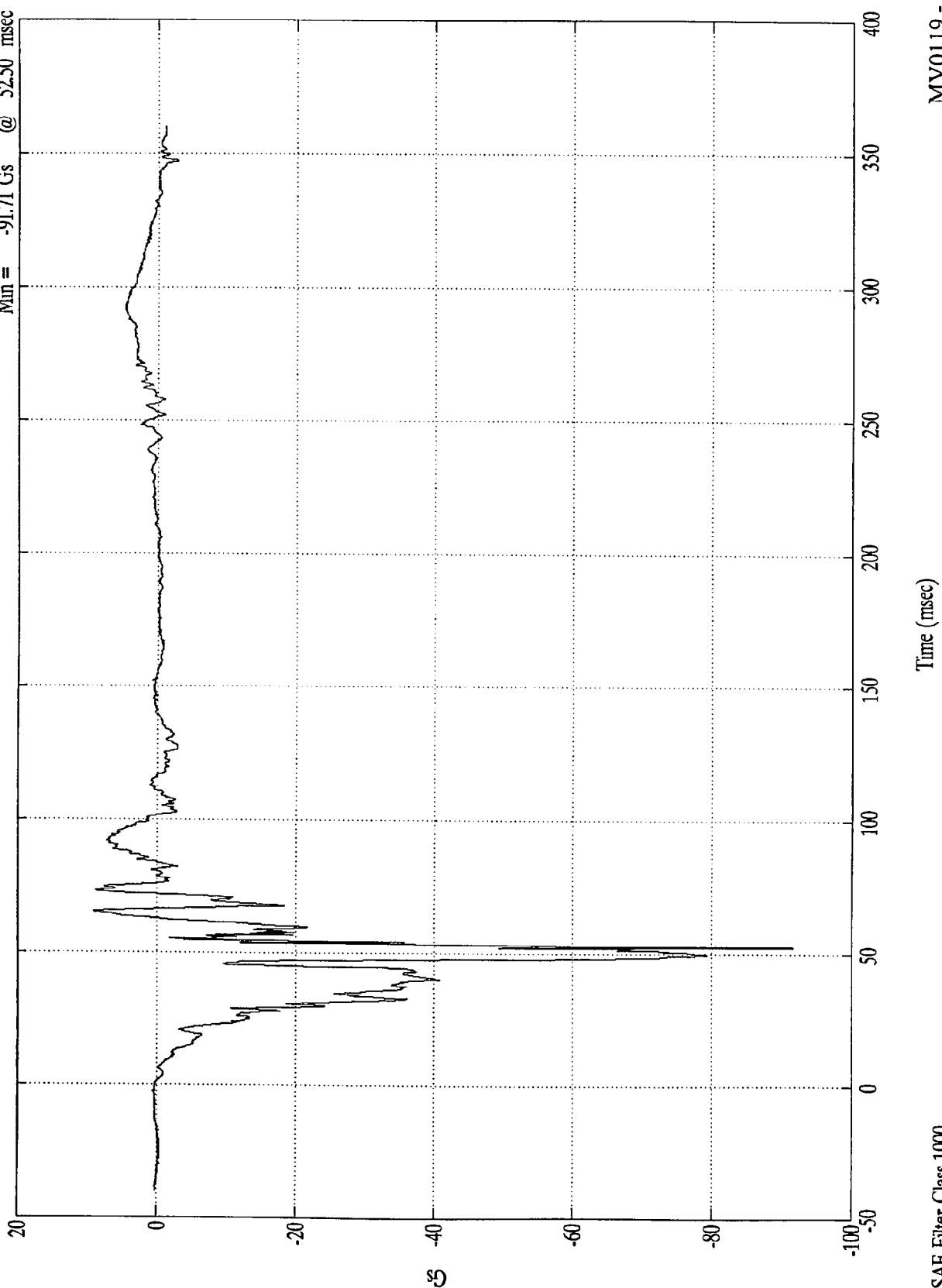


MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4Door

Pos. 2 Right Ankle X

Max = 9.16 Gs @ 65.00 msec
Min = -91.71 Gs @ 52.50 msec

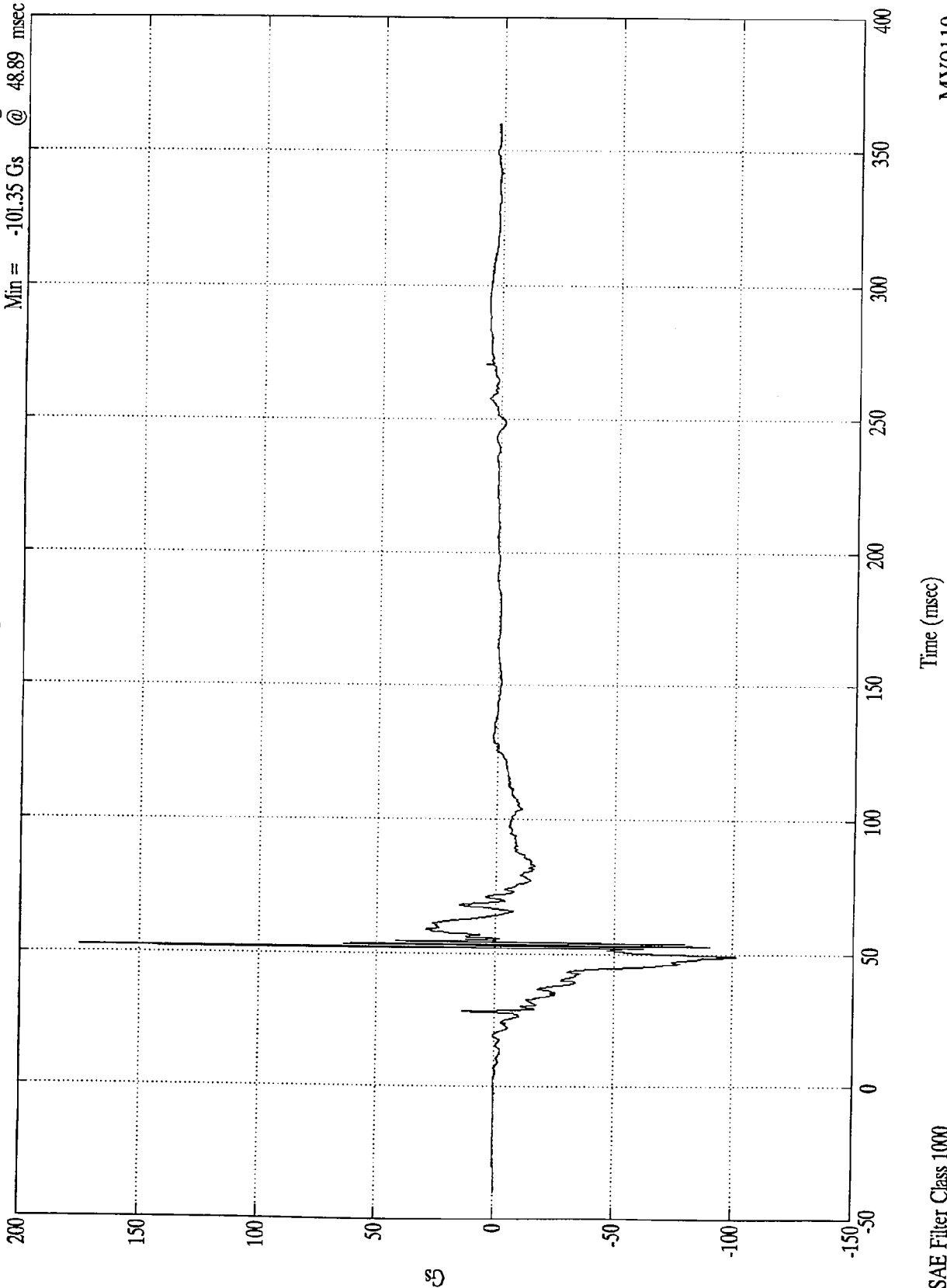


MV0119 - 3/18/97

SAE Filter Class 1000

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 2 Right Ankle Z
Max = 175.17 Gs @ 52.19 msec
Min = -101.35 Gs @ 48.89 msec



SAE Filter Class 1000

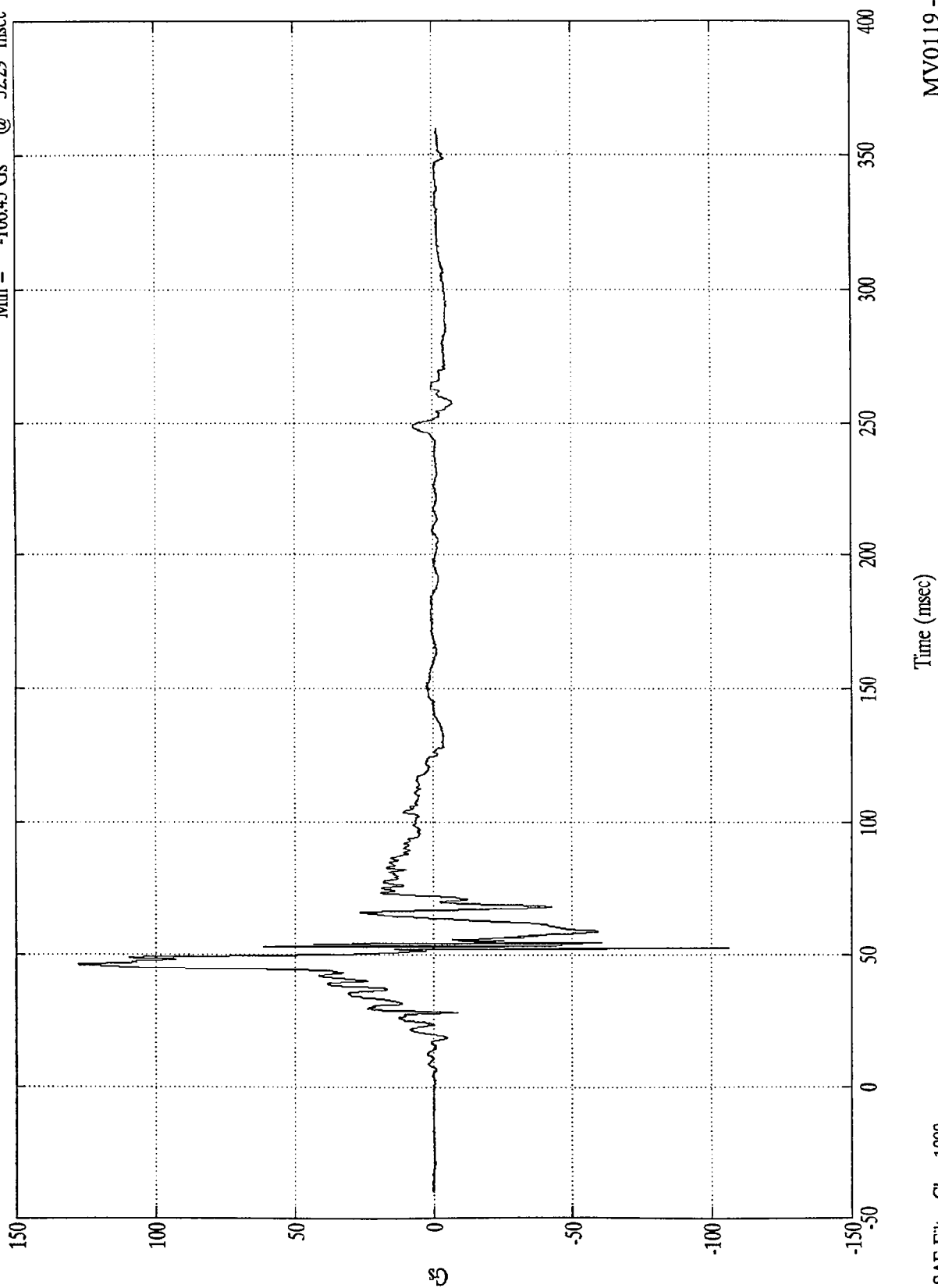
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 2 Right Toe Z

Max = 127.92 Gs @ 46.20 msec
Min = -106.45 Gs @ 52.29 msec



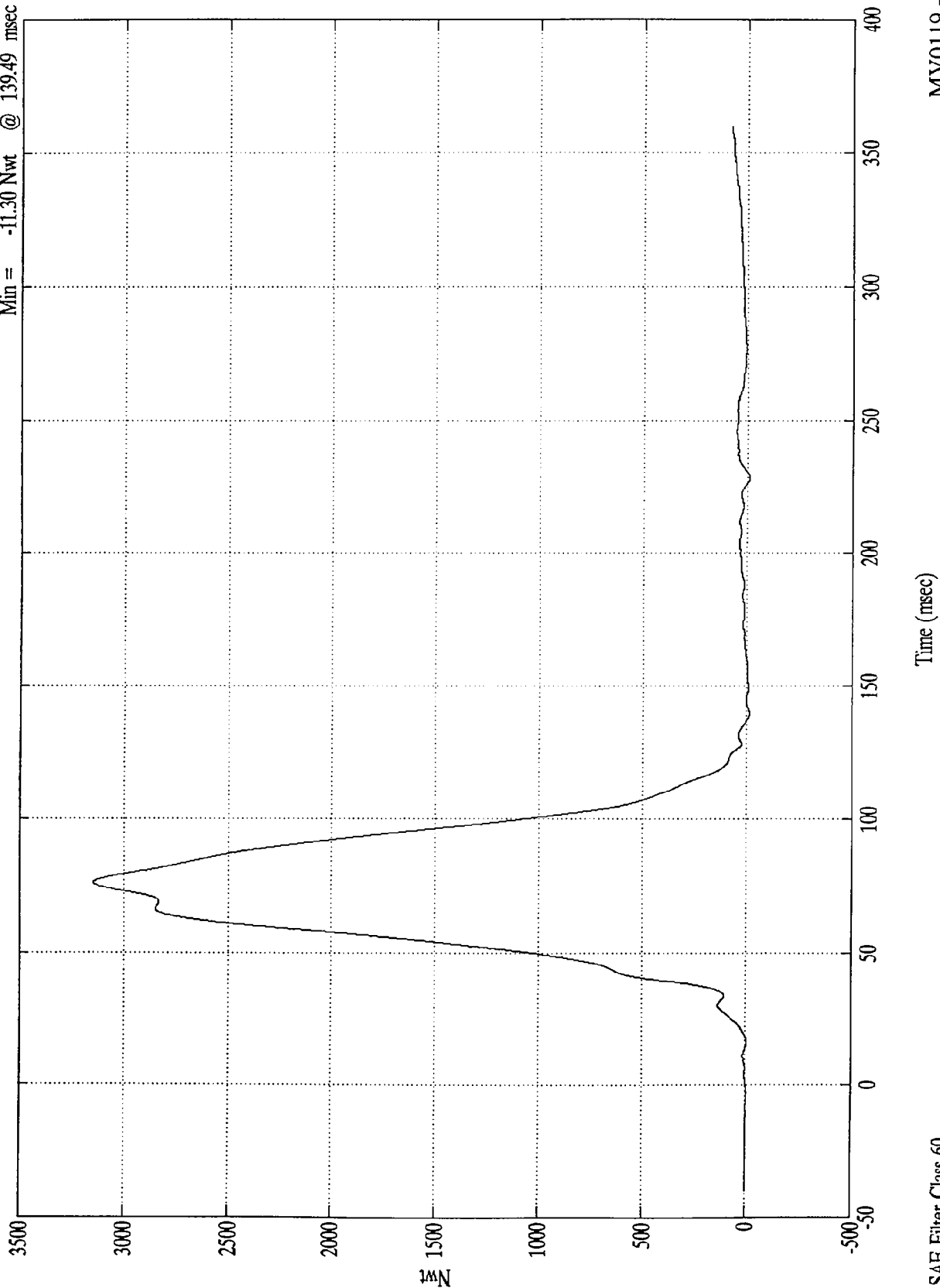
MV0119 - 3/18/97

SAE Filter Class 1000

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 2 Right Belt Load

Max = 3148.15 Nwt @ 76.09 msec
Min = -11.30 Nwt @ 139.49 msec



SAE Filter Class 60

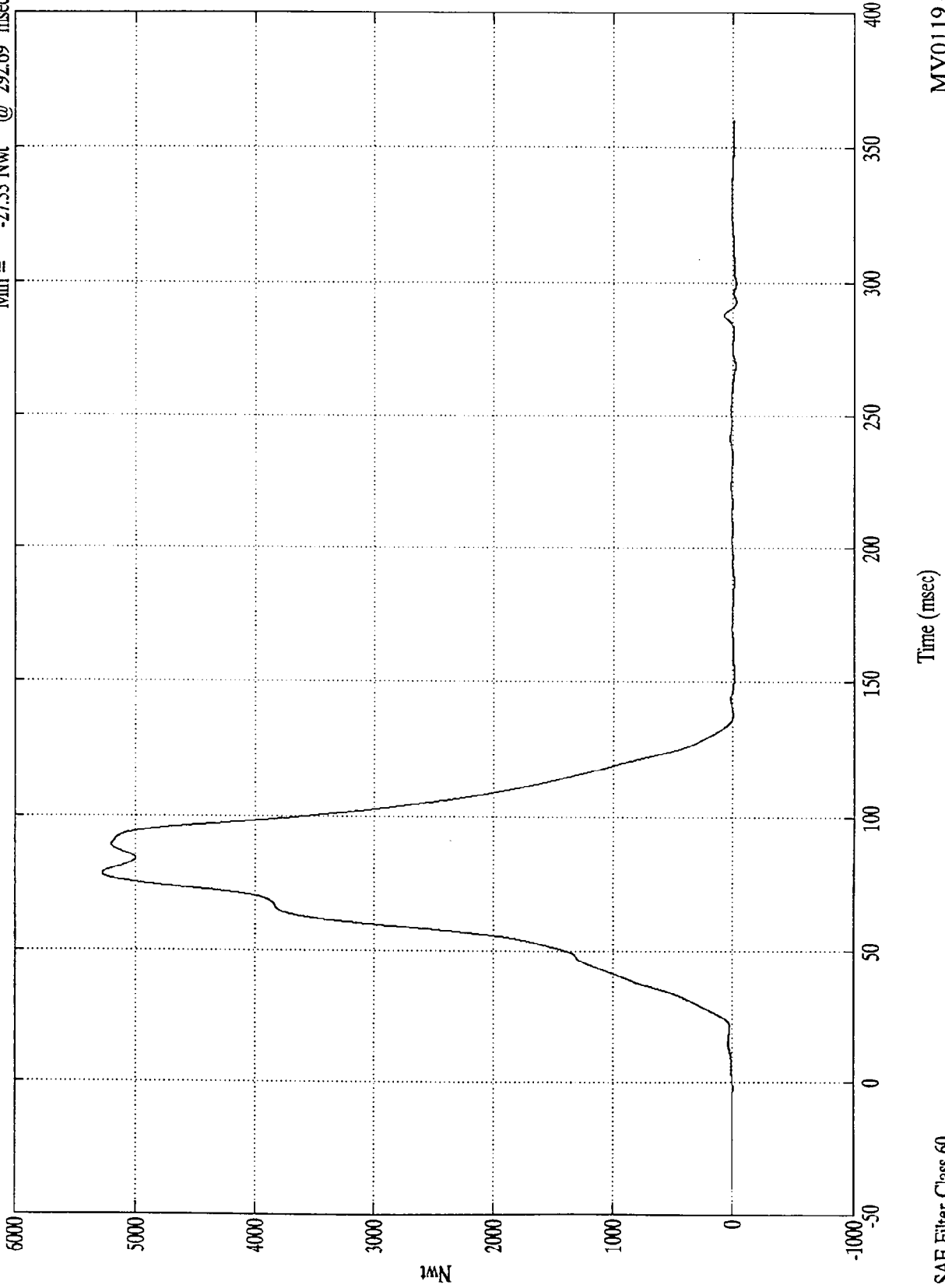
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 2 Torso Belt Load

Max = 5276.80 Nwt @ 78.30 msec
Min = -27.33 Nwt @ 292.69 msec



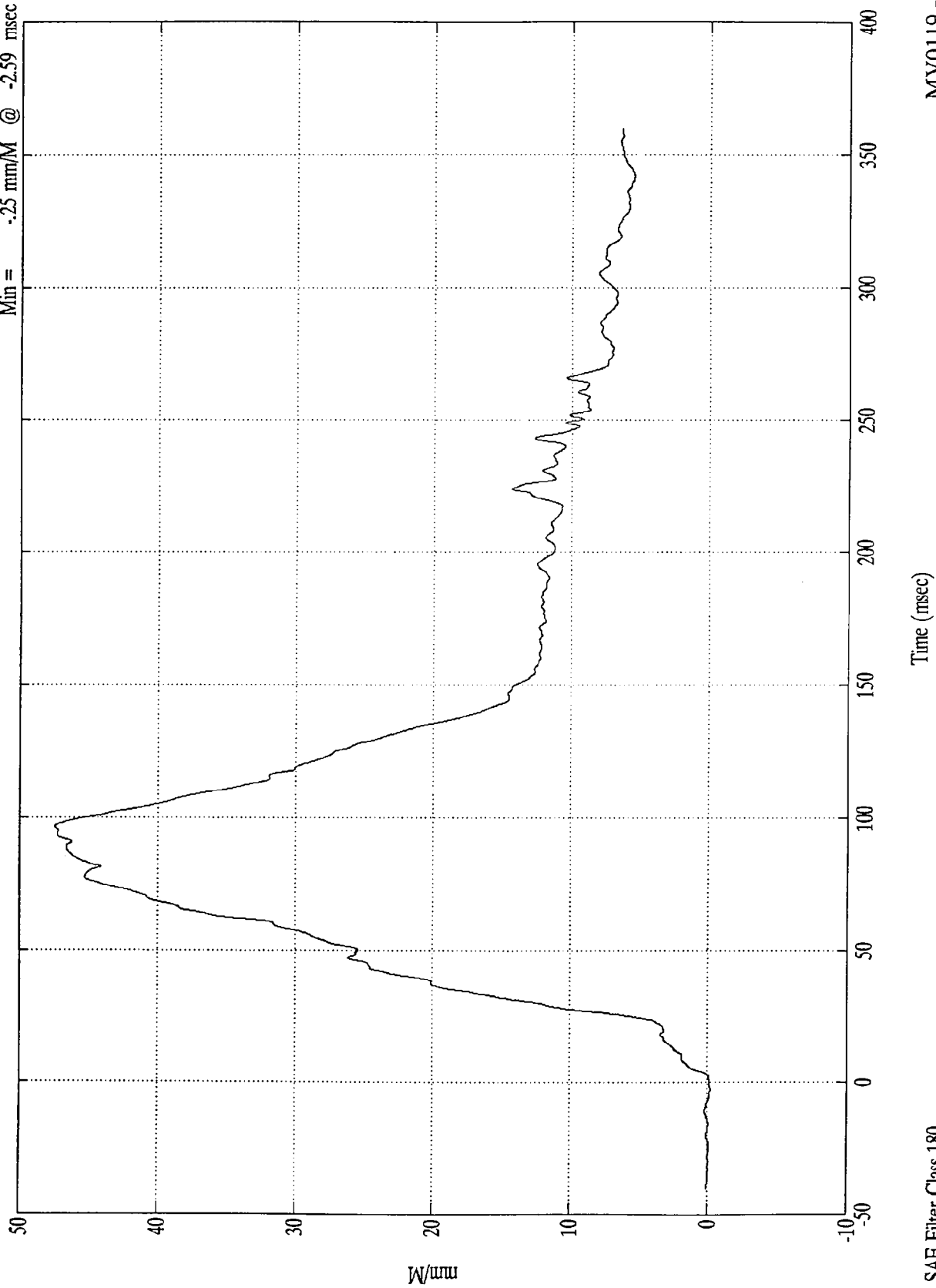
SAE Filter Class 60

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Pos. 2 Belt Elongation

Max = 47.48 mm/M @ 96.49 msec
Min = -2.5 mm/M @ -2.59 msec



SAE Filter Class 180

Time (msec)

MV0119 - 3/18/97

mm/M

B-103

8406-6

NHTSA TEST NO. MV0119

VEHICLE DATA

Acceleration

Velocity

Displacement

FILTER CHANNEL CLASS

60

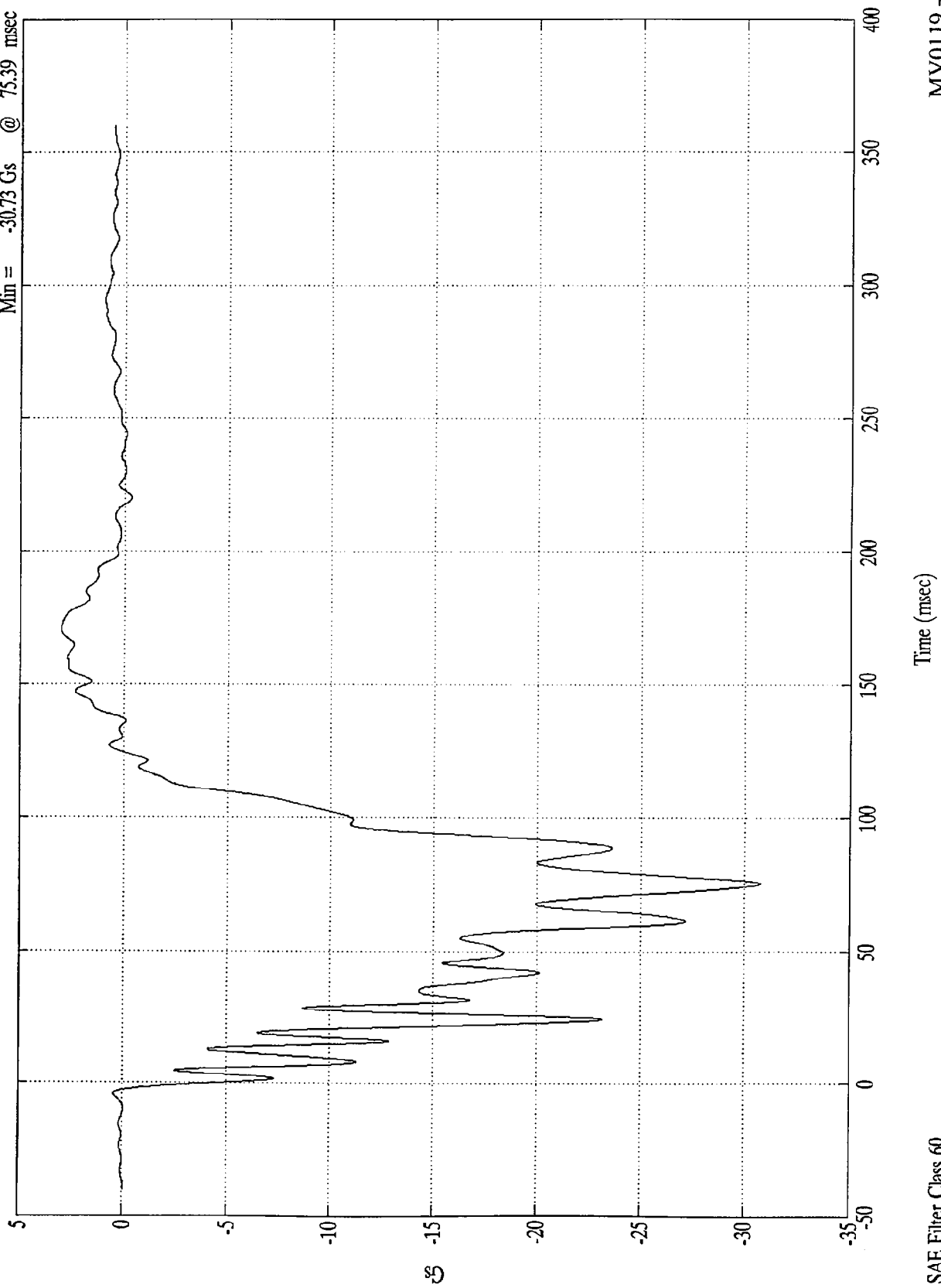
180

180

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 3.04 Gs @ 170.90 msec
Min = -30.73 Gs @ 75.39 msec

Acc. #1(x)



SAE Filter Class 60

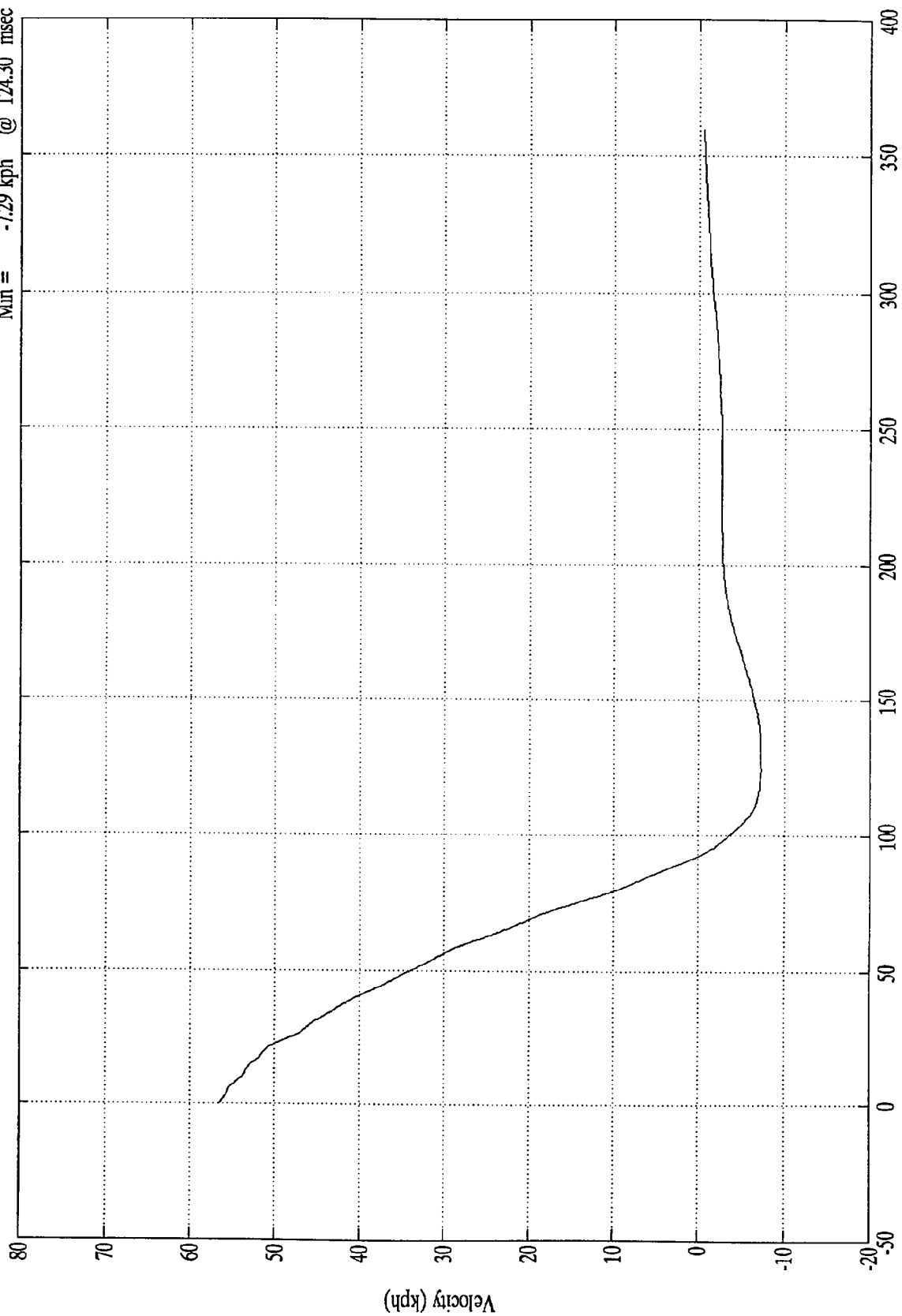
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 56.49 kph @ 0.00 msec
Min = -7.29 kph @ 124.30 msec

Acc. #1(x)



SAE Filter Class 180

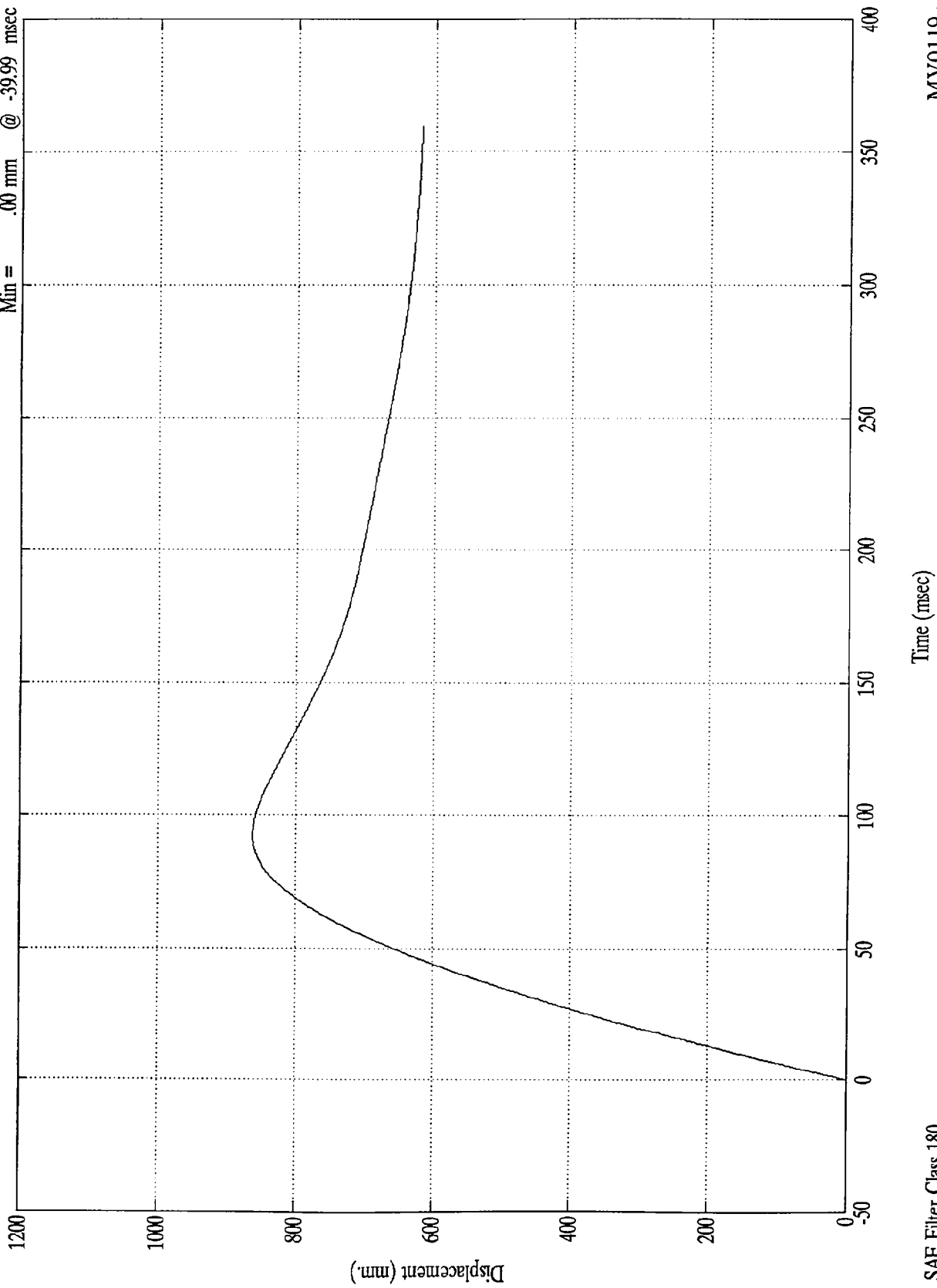
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 862.88 mm @ 92.20 msec
Min = .00 mm @ -39.99 msec

Acc. #1(x)

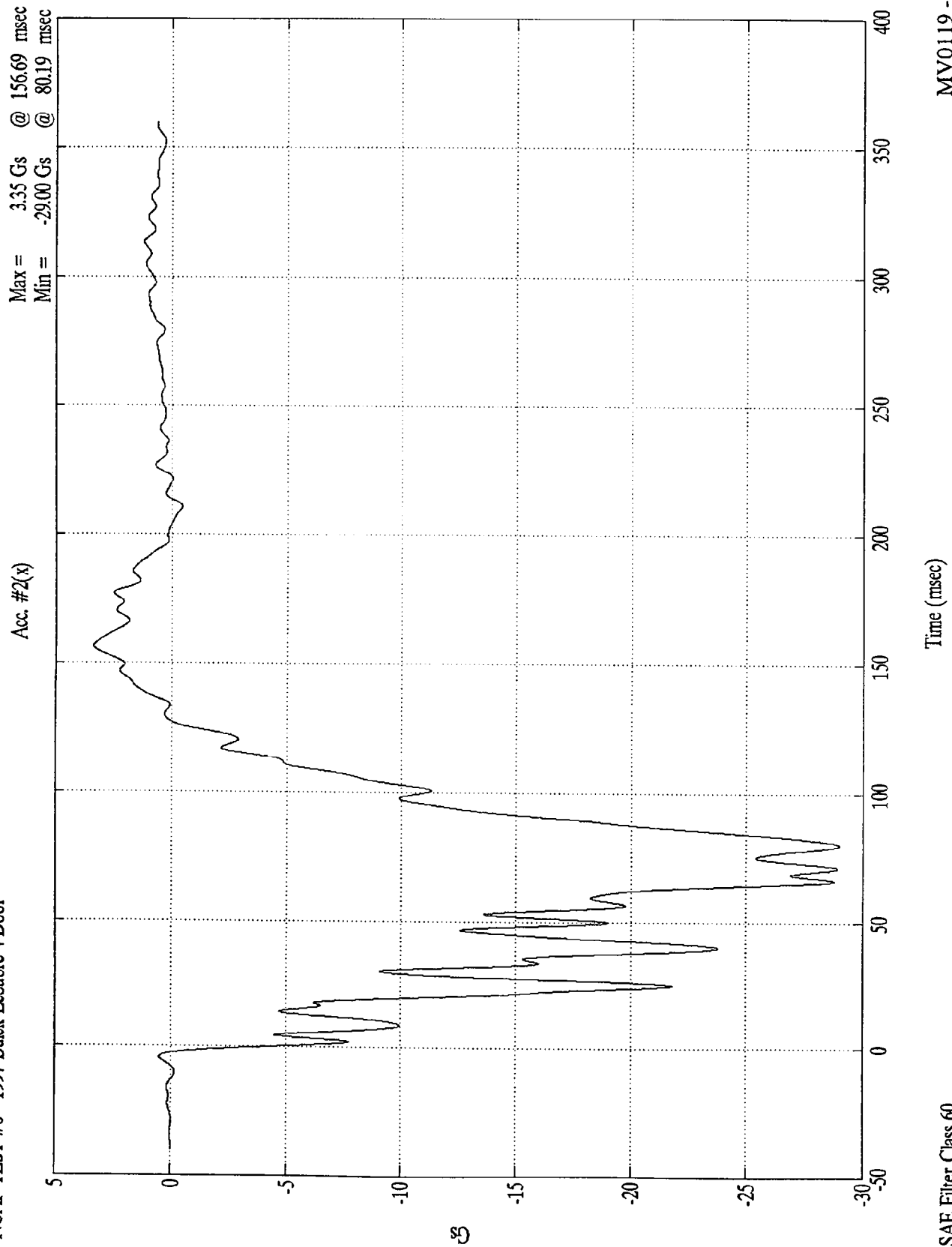


SAE Filter Class 180

Time (msec)

MV0119 - 3/18/97

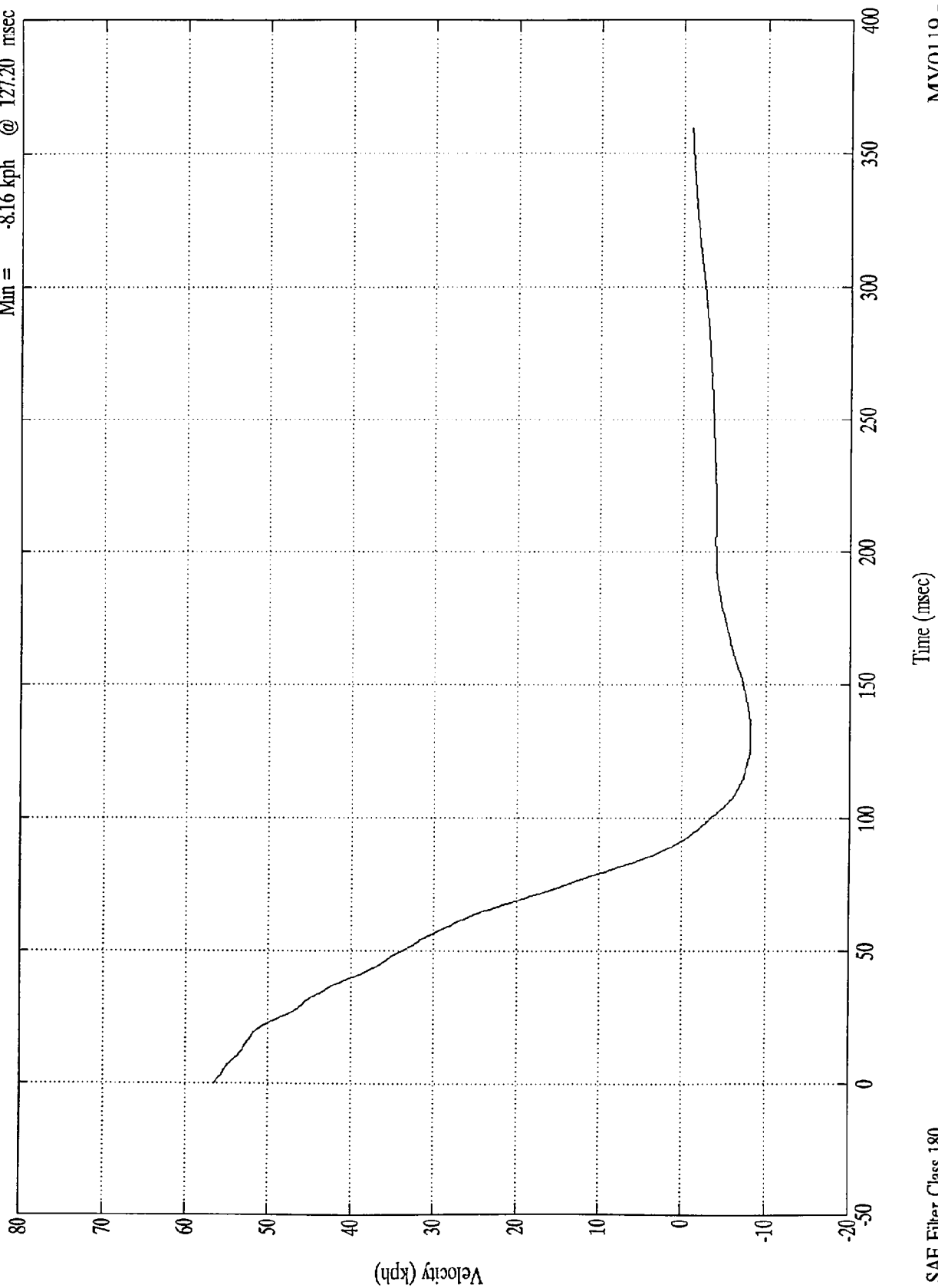
NCAP TEST #6 - 1997 Buick LeSabre 4-Door



NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 56.49 kph @ 0.00 msec
Min = -8.16 kph @ 127.20 msec

Acc. #2(x)



SAE Filter Class 180

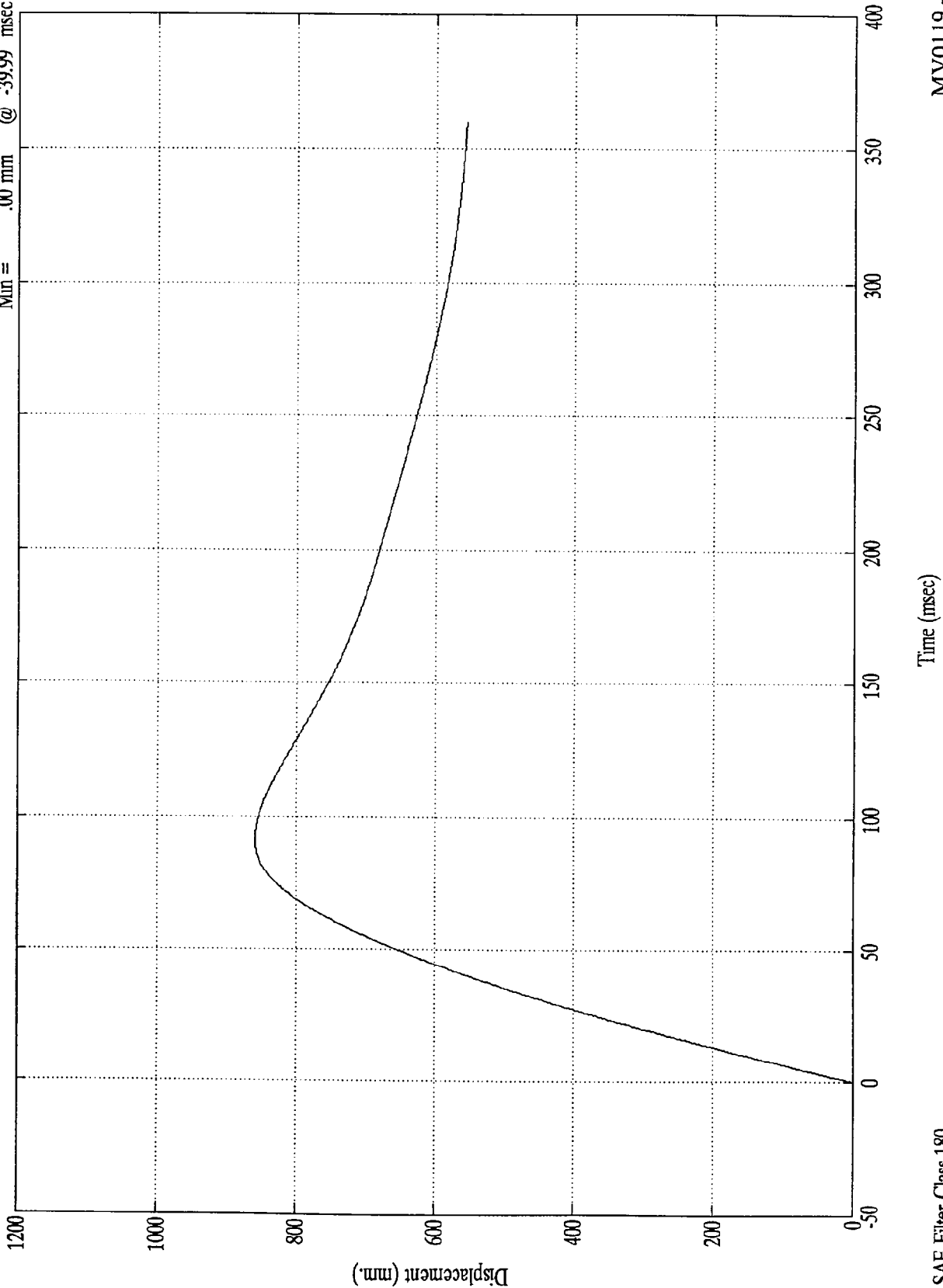
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 859.35 mm @ 91.39 msec
Min = .00 mm @ -39.99 msec

Acc. #2(x)



SAE Filter Class 180

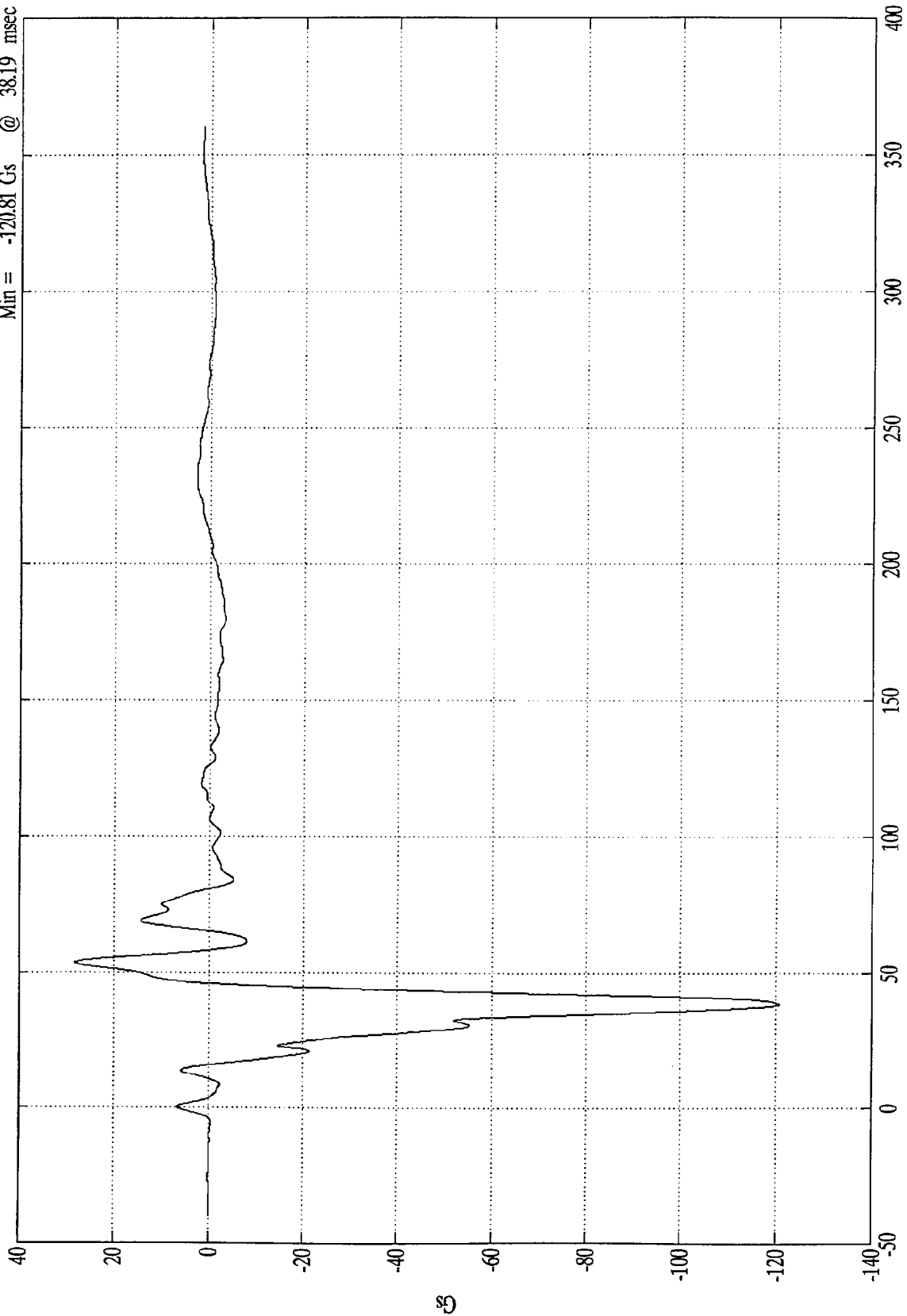
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 28.37 Gs @ 53.39 msec
Min = -120.81 Gs @ 38.19 msec

Acc. #3(x)



SAE Filter Class 60

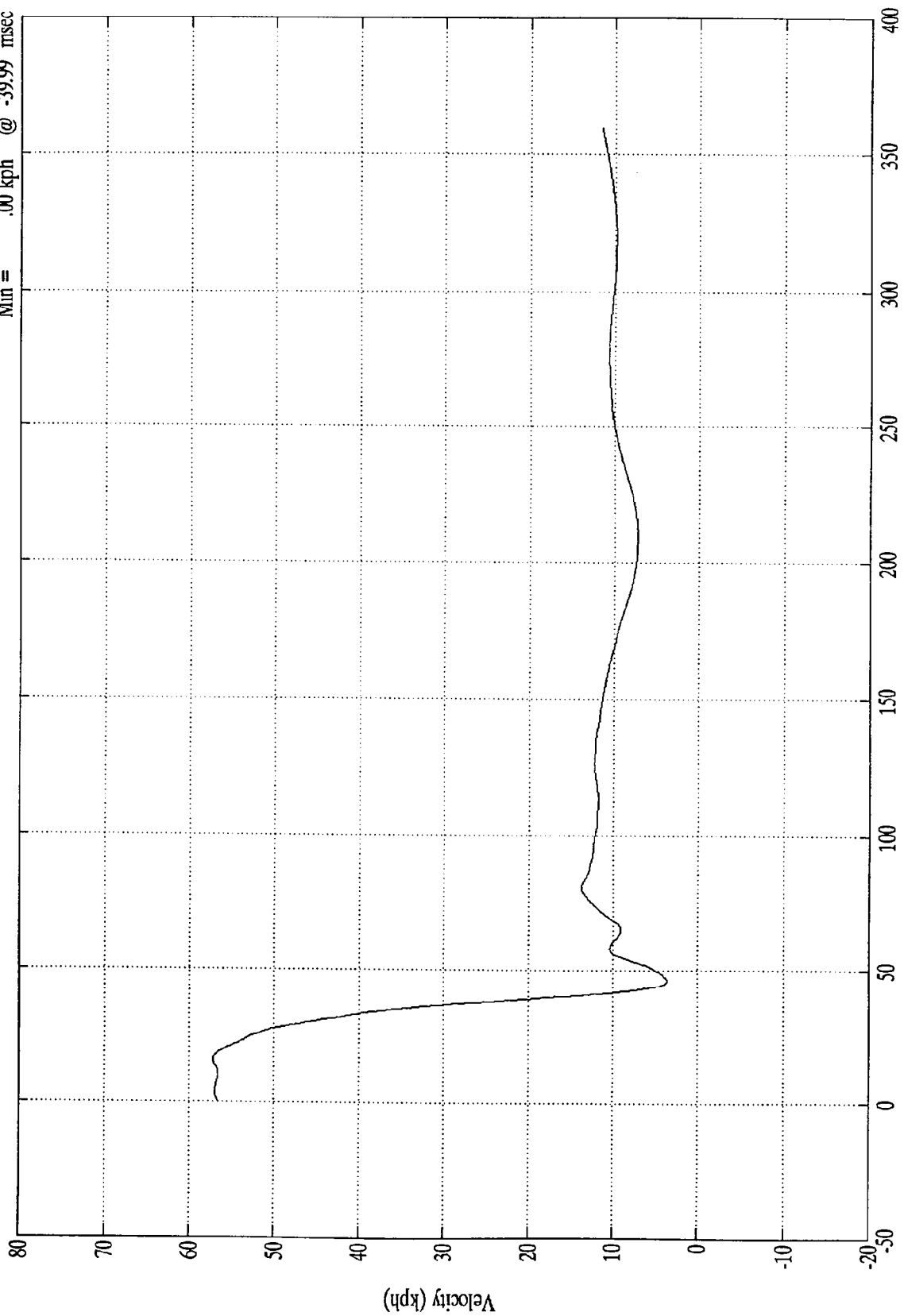
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 57.25 kph @ 16.20 msec
Min = .00 kph @ -39.99 msec

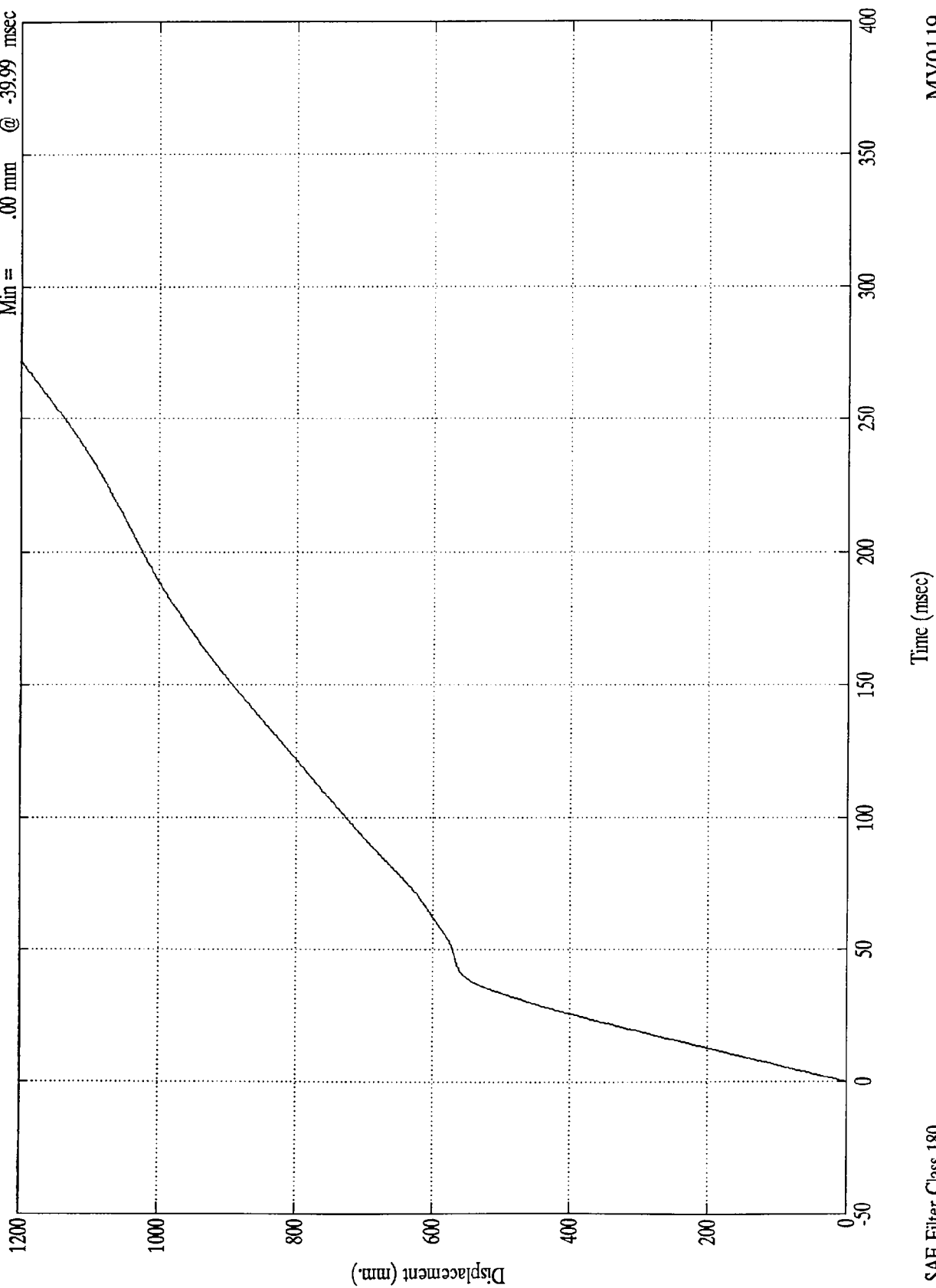
Acc. #3(x)



NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 1453.55 mm @ 359.89 msec
Min = .00 mm @ -39.99 msec

Acc. #3(x)



SAE Filter Class 180

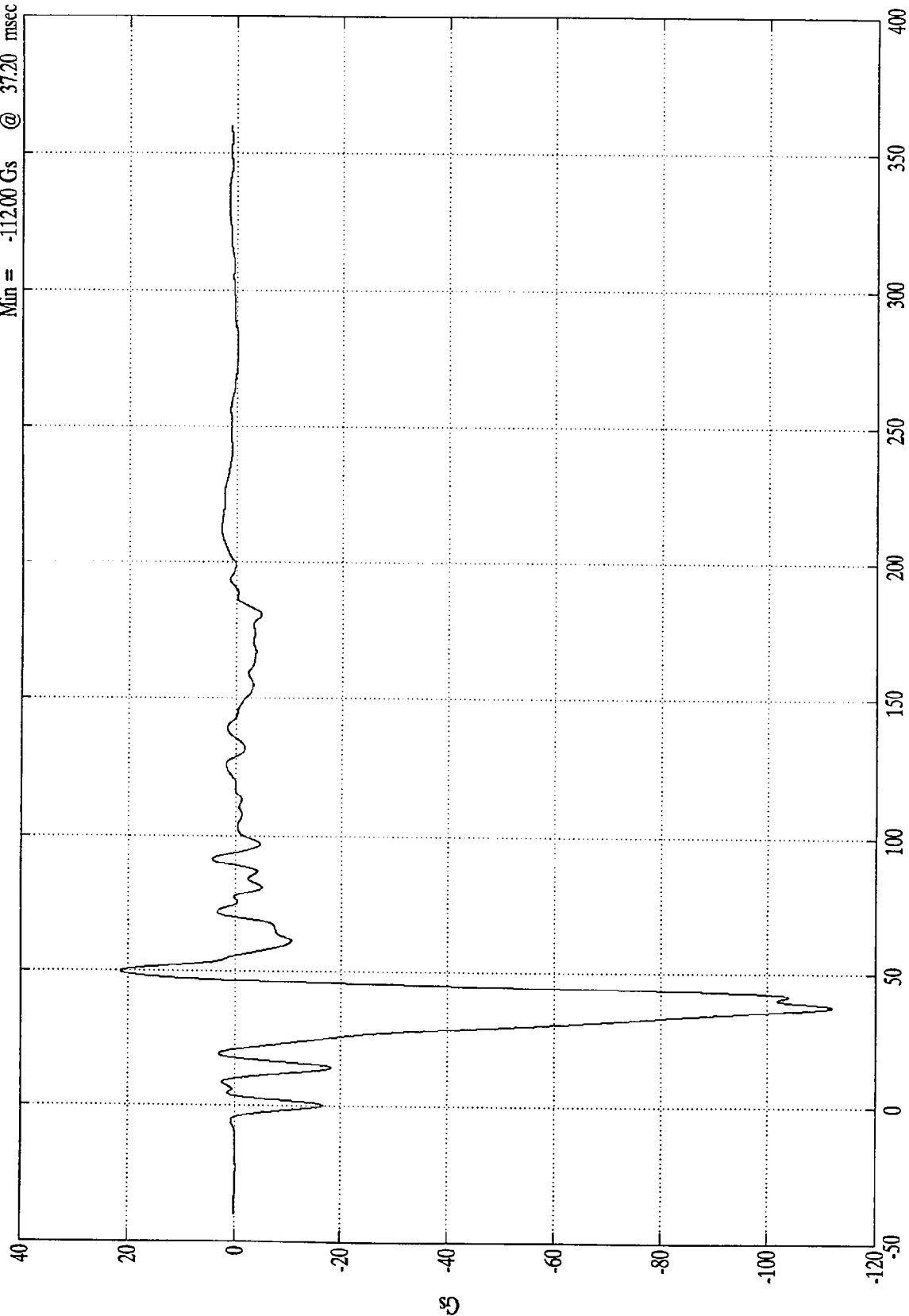
Time (msec)

MV01119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4Door

Max = 21.44 Gs @ 49.59 msec
Min = -112.00 Gs @ 37.20 msec

Acc. #4(x)



SAE Filter Class 60

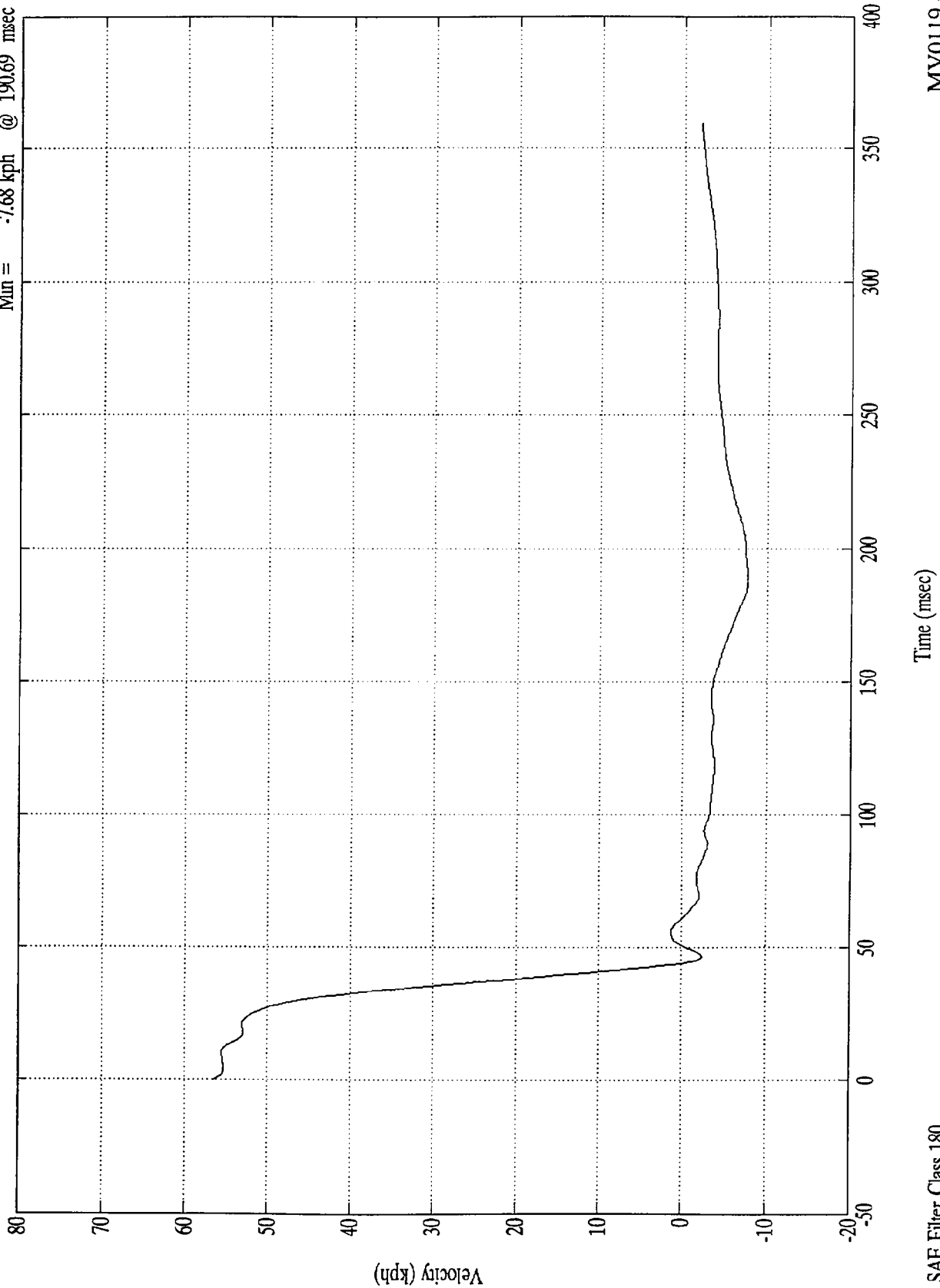
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 56.49 kph @ 0.00 msec
Min = -7.68 kph @ 190.69 msec

Acc. #4(x)



SAE Filter Class 180

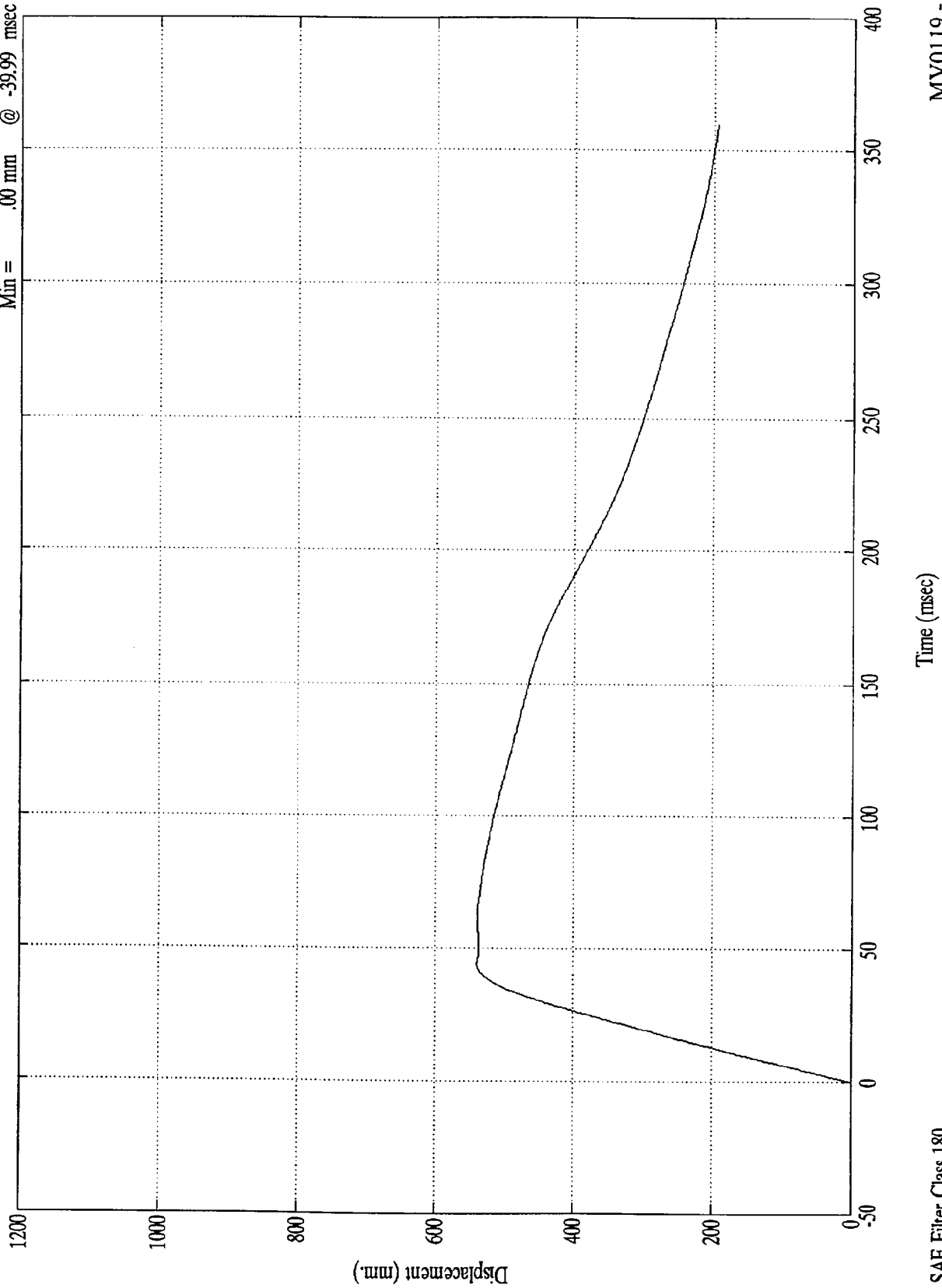
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 539.18 mm @ 43.99 msec
Min = .00 mm @ -39.99 msec

Acc. #4(x)



SAE Filter Class 180

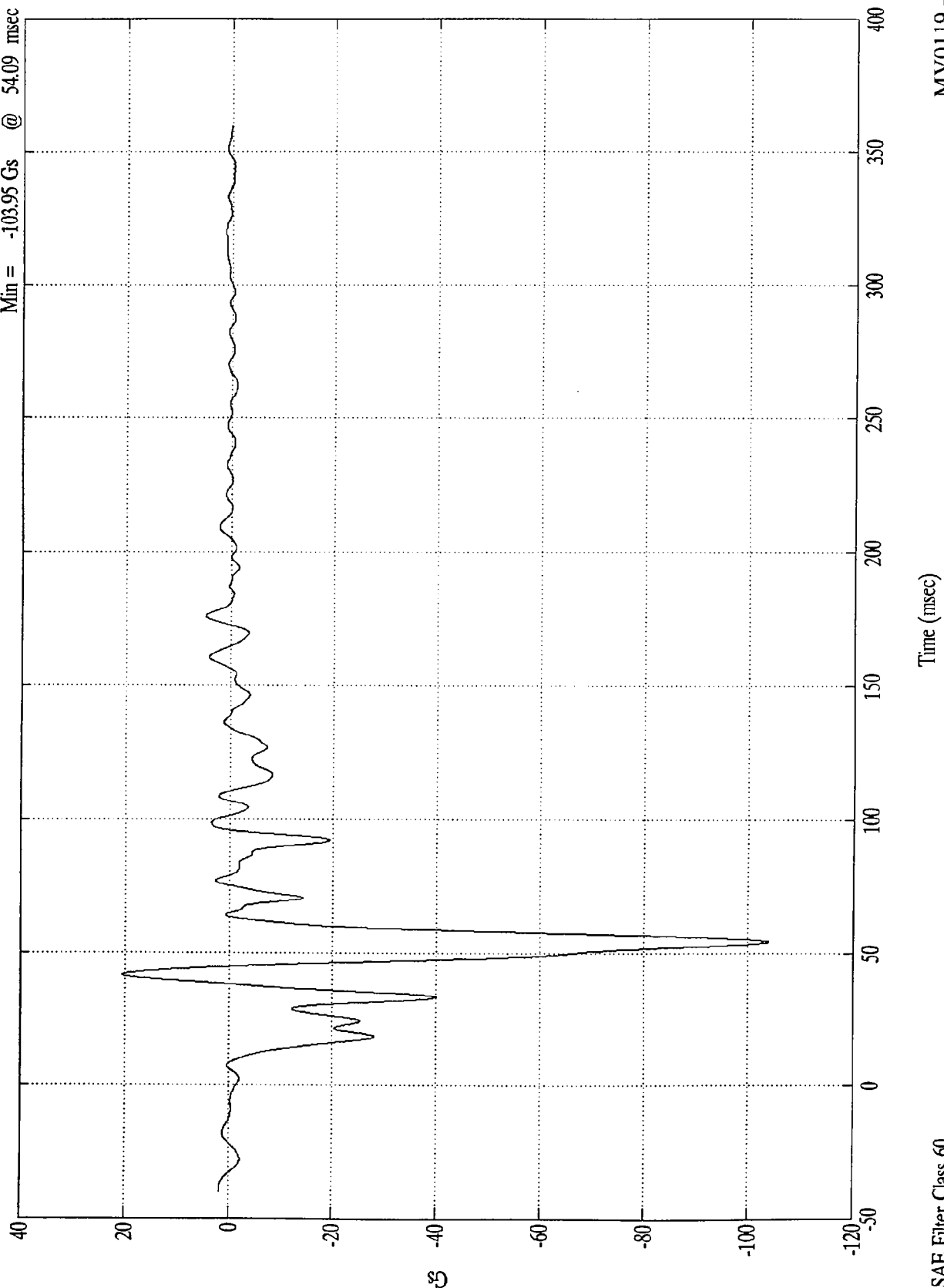
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 20.55 Gs @ 41.59 msec
Min = -103.95 Gs @ 54.09 msec

Acc. #5(x)



SAE Filter Class 60

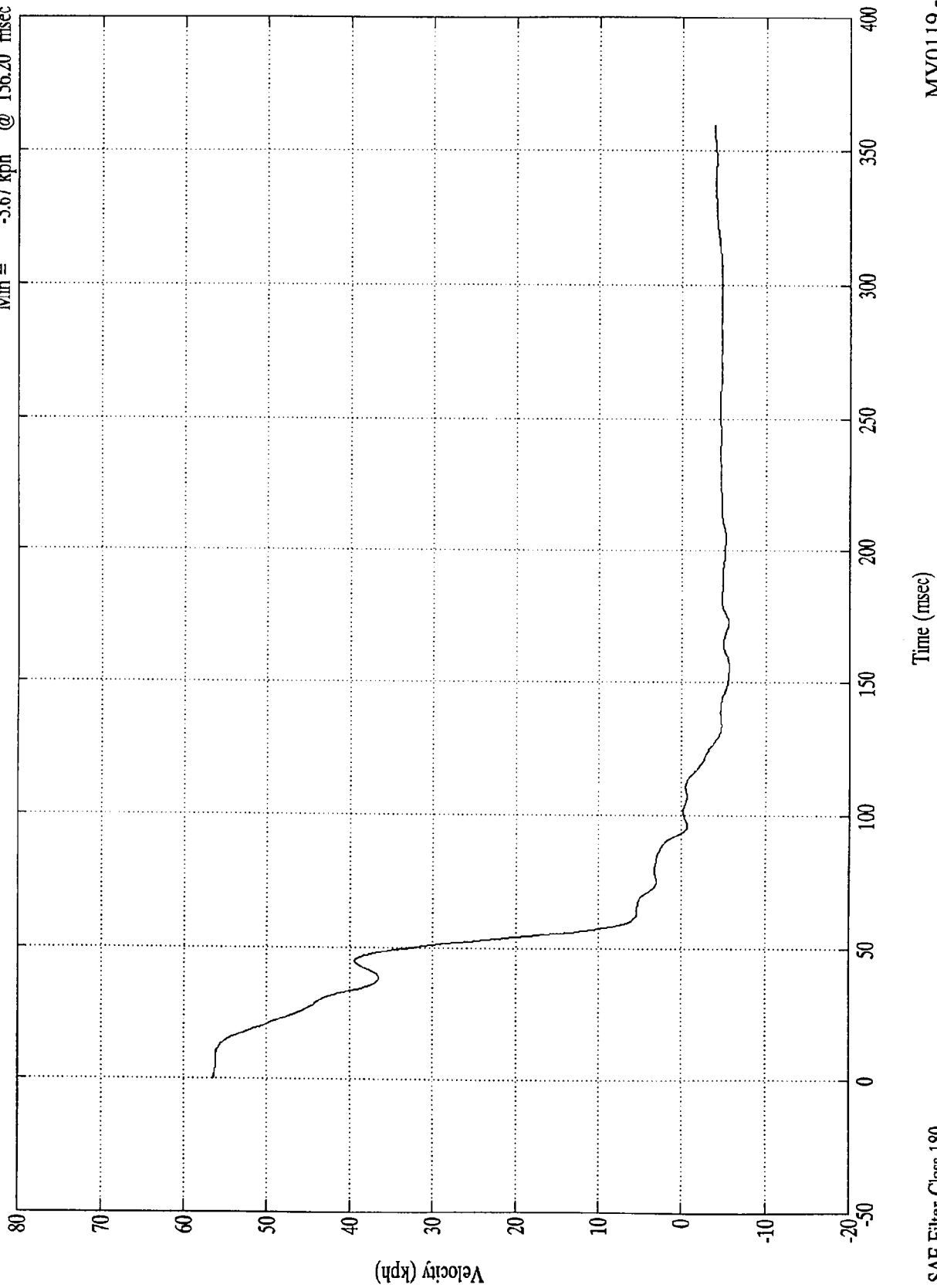
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4Door

Max = 56.49 kph @ 0.00 msec
Min = -5.67 kph @ 156.20 msec

Acc. #5(x)



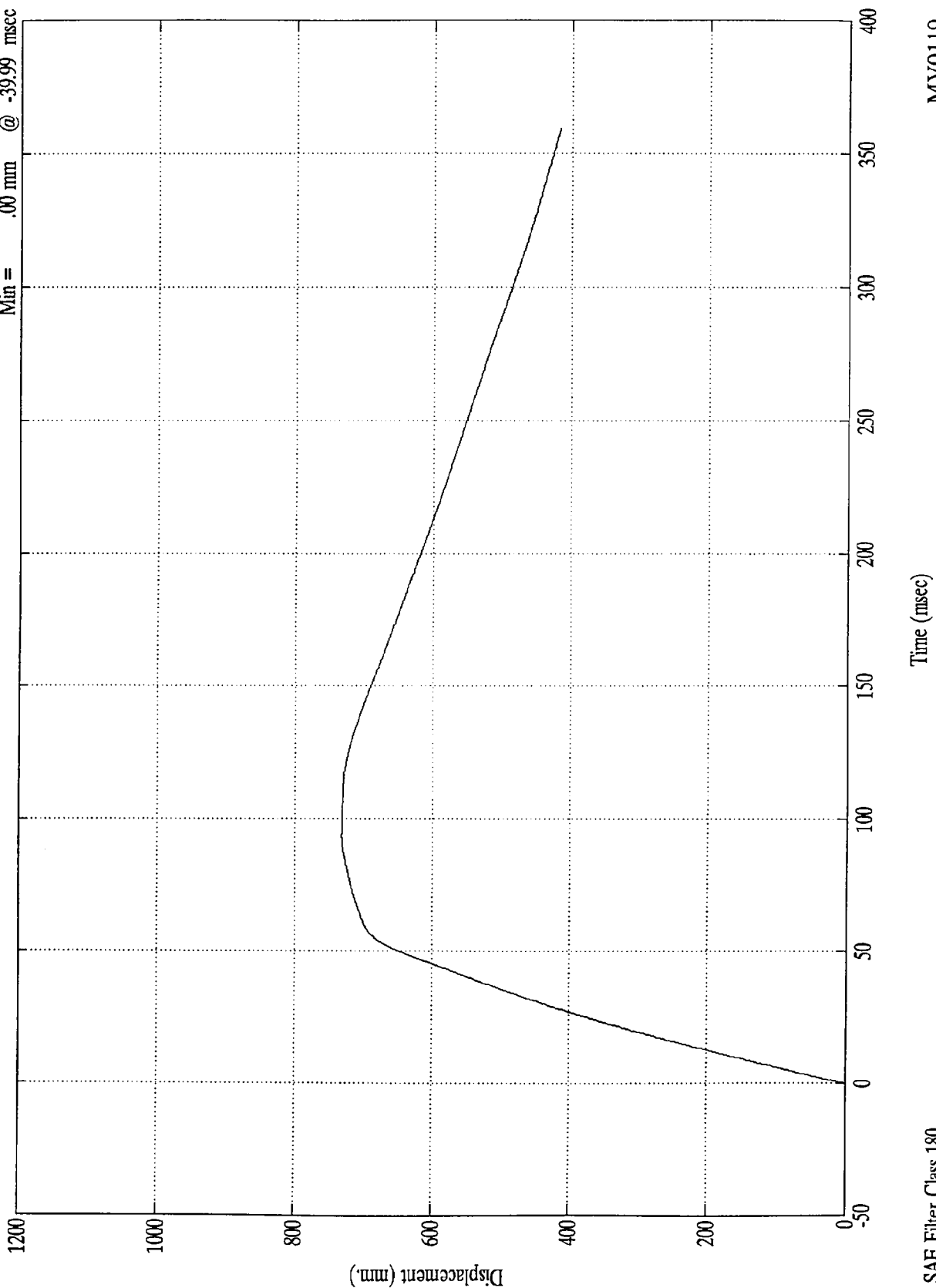
MV0119 - 3/18/97

SAE Filter Class 180

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 732.39 mm @ 93.40 msec
Min = .00 mm @ -39.99 msec

Acc. #5(x)



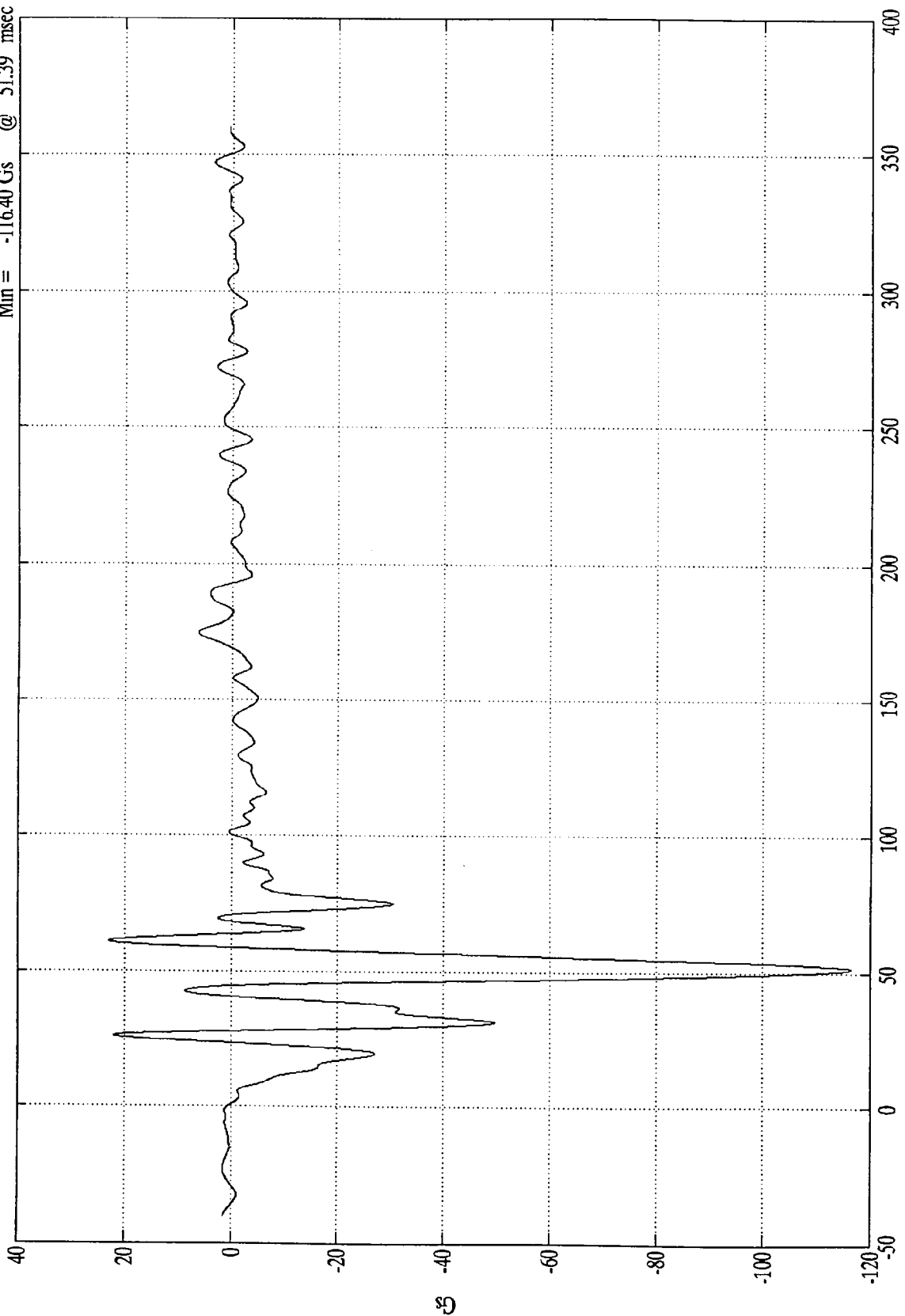
SAE Filter Class 180

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4Door

Max = 22.99 Gs @ 60.50 msec
 Min = -116.40 Gs @ 51.39 msec

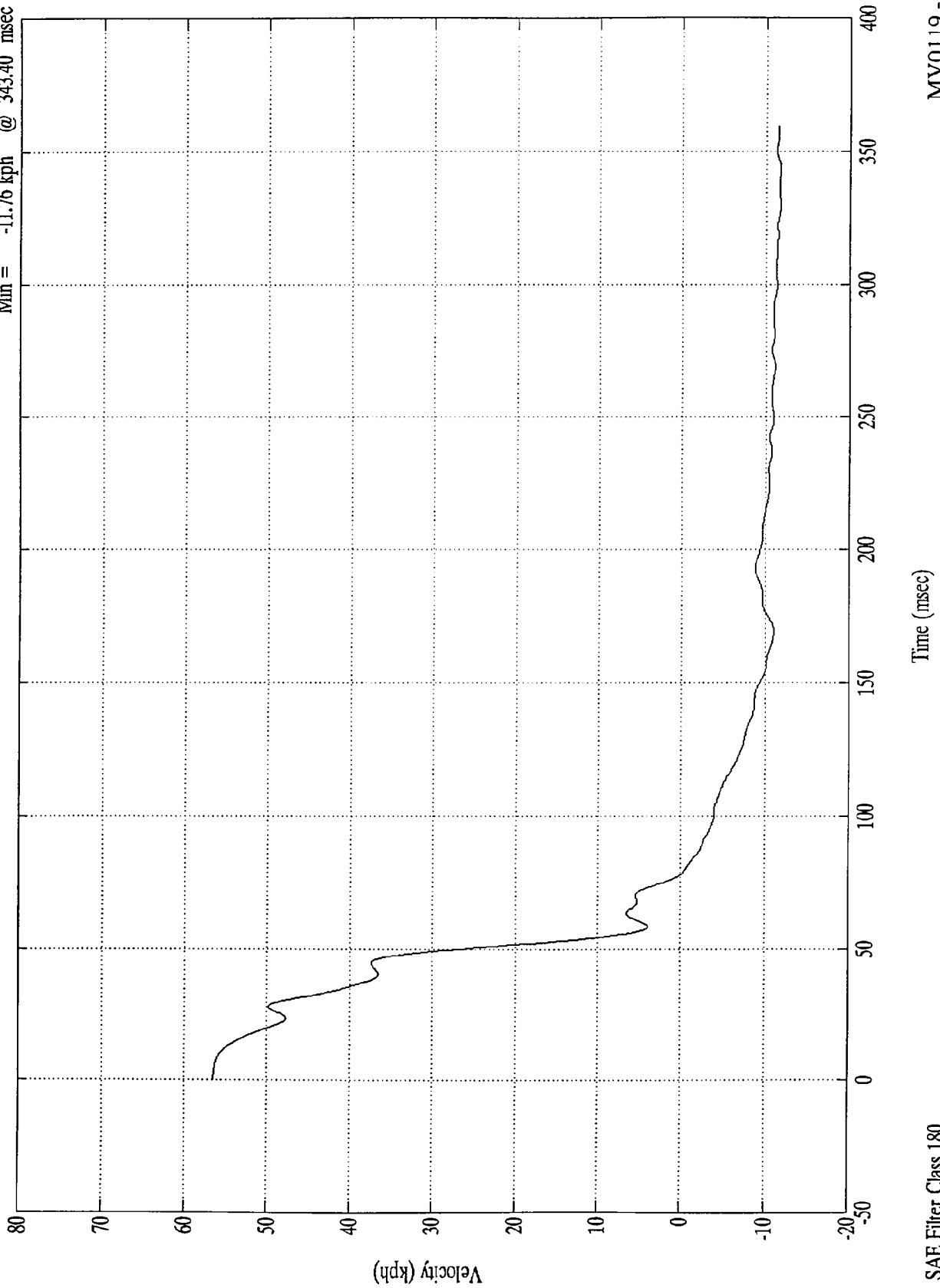
Acc. #6(x)



NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 56.50 kph @ 0.80 msec
Min = -11.76 kph @ 343.40 msec

Acc. #6(x)



SAE Filter Class 180

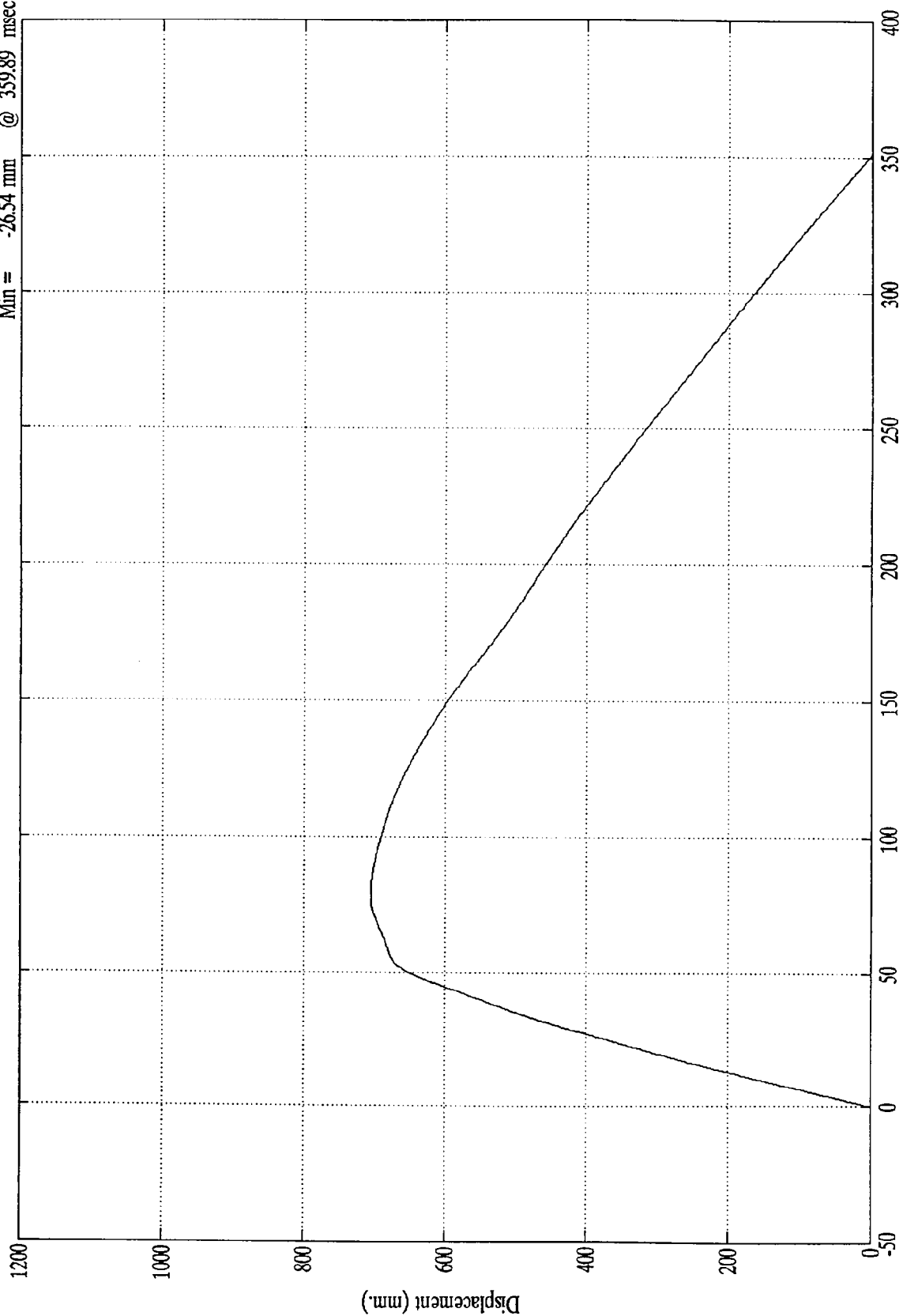
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 705.46 mm @ 78.10 msec
Min = -26.54 mm @ 359.89 msec

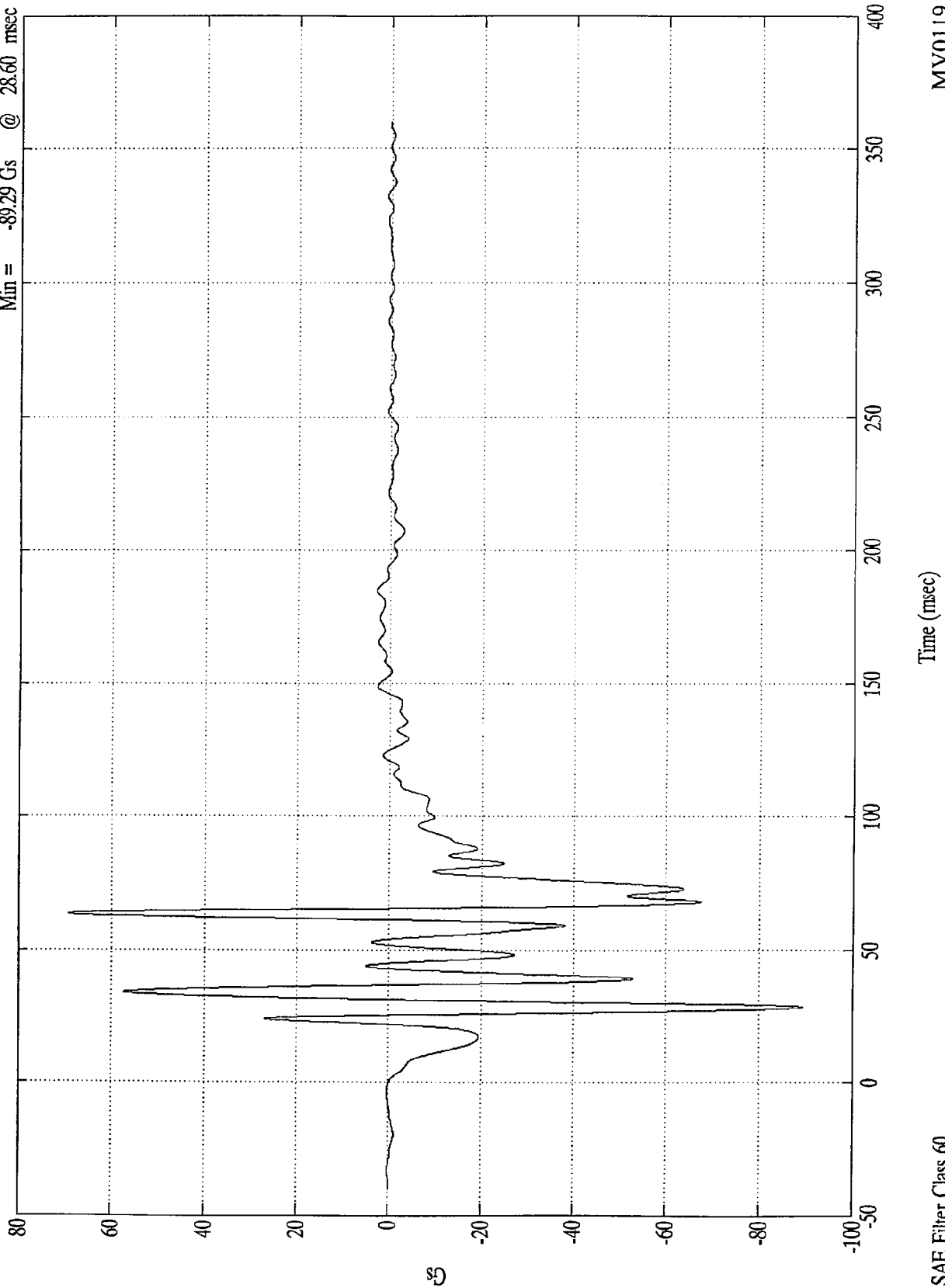
Acc. #6(x)



NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 69.32 Gs @ 63.29 msec
 Min = -89.29 Gs @ 28.60 msec

Acc. #7(x)



SAE Filter Class 60

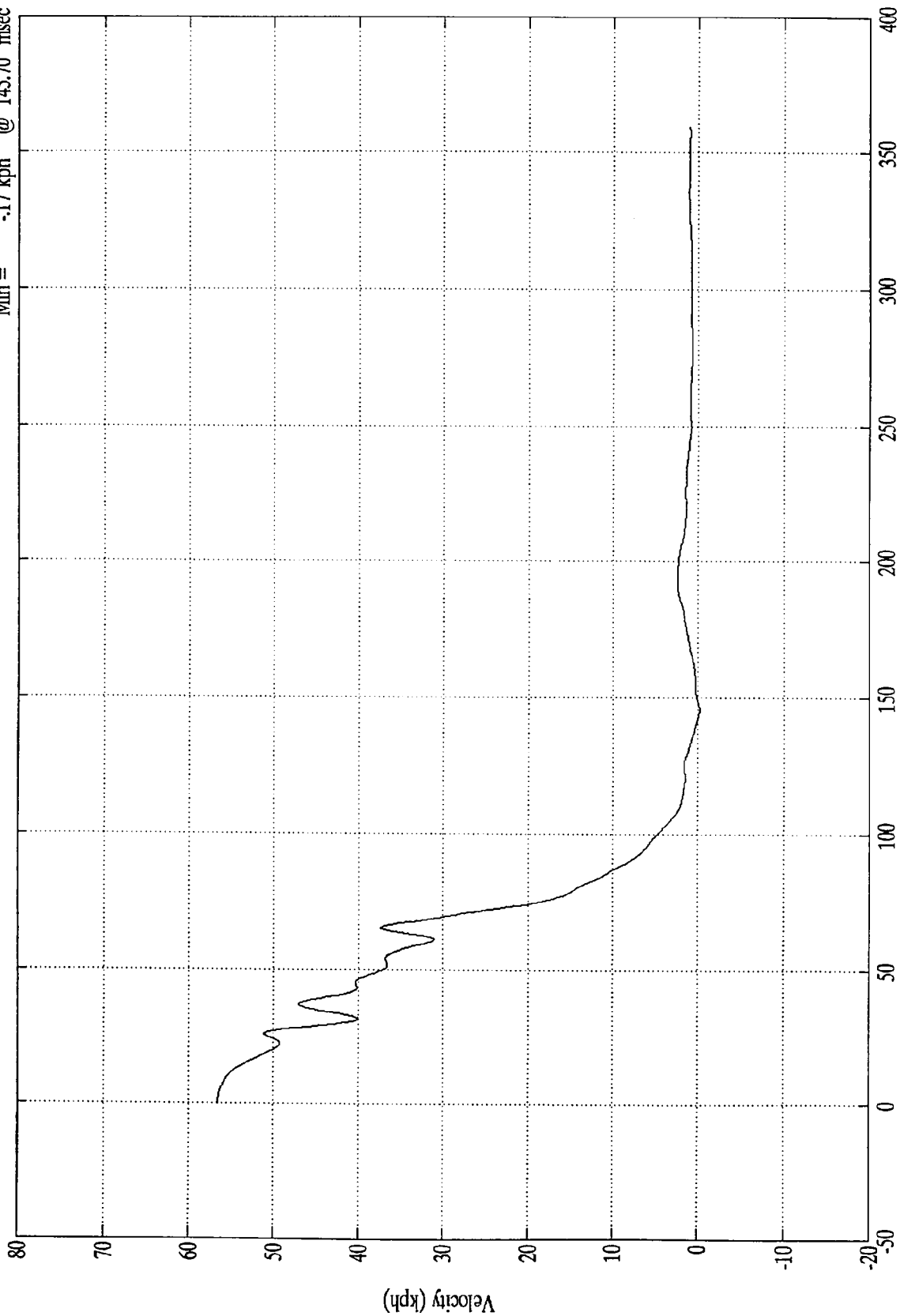
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 56.49 kph @ 0.10 msec
Min = -17 kph @ 145.70 msec

Acc. #7(x)



SAE Filter Class 180

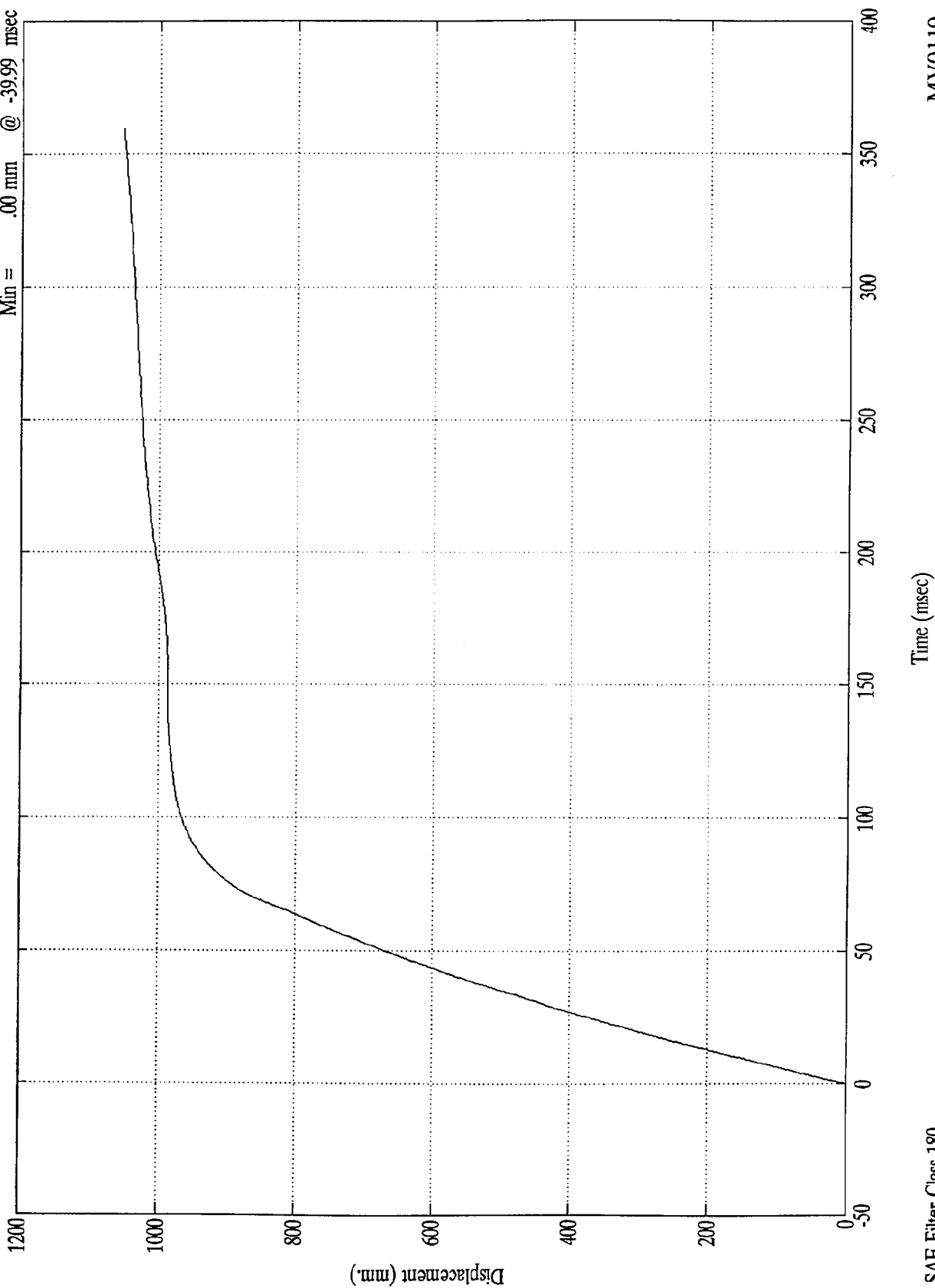
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 1052.71 mm @ 359.89 msec
Min = .00 mm @ -39.99 msec

Acc. #7(x)

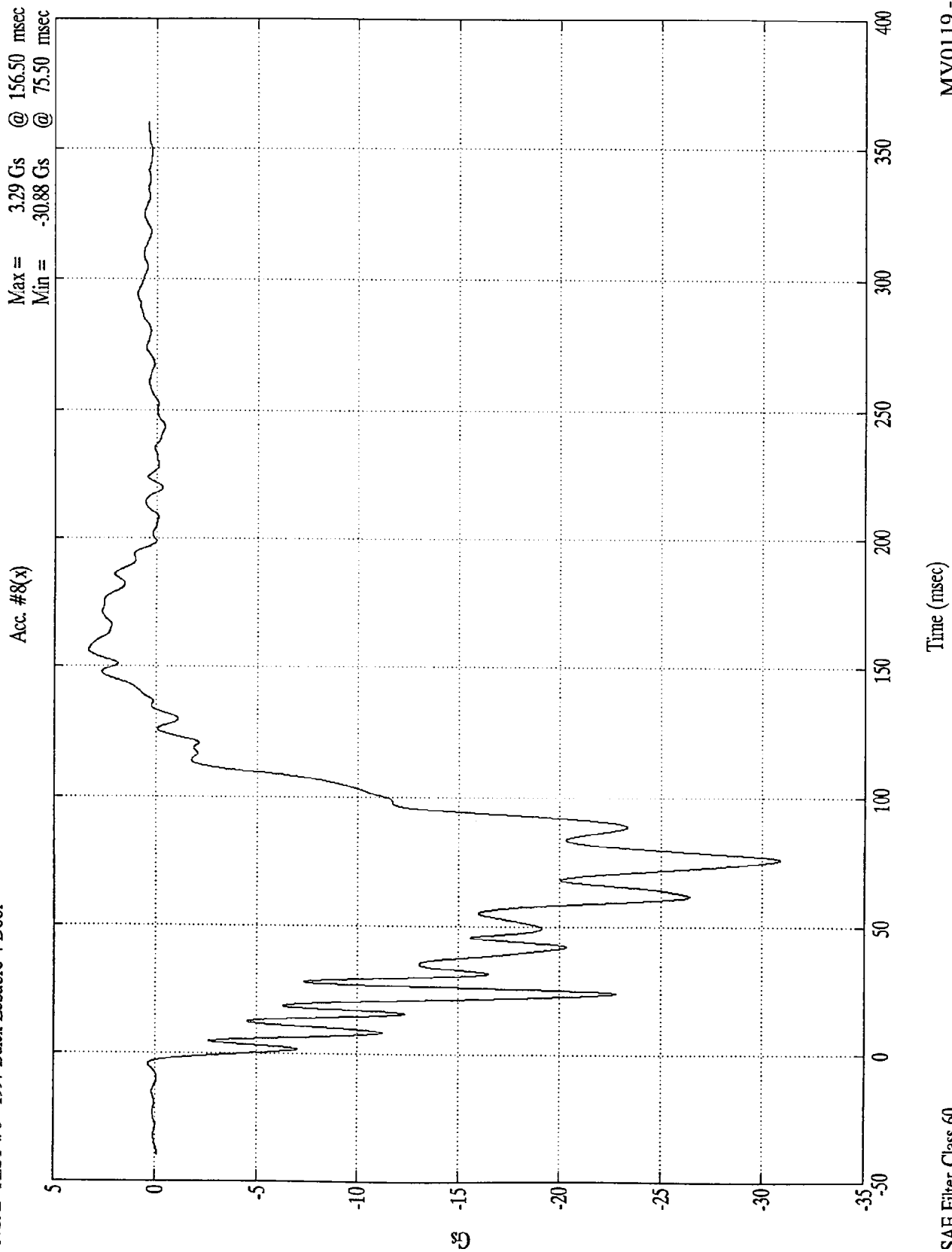


SAE Filter Class 180

Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

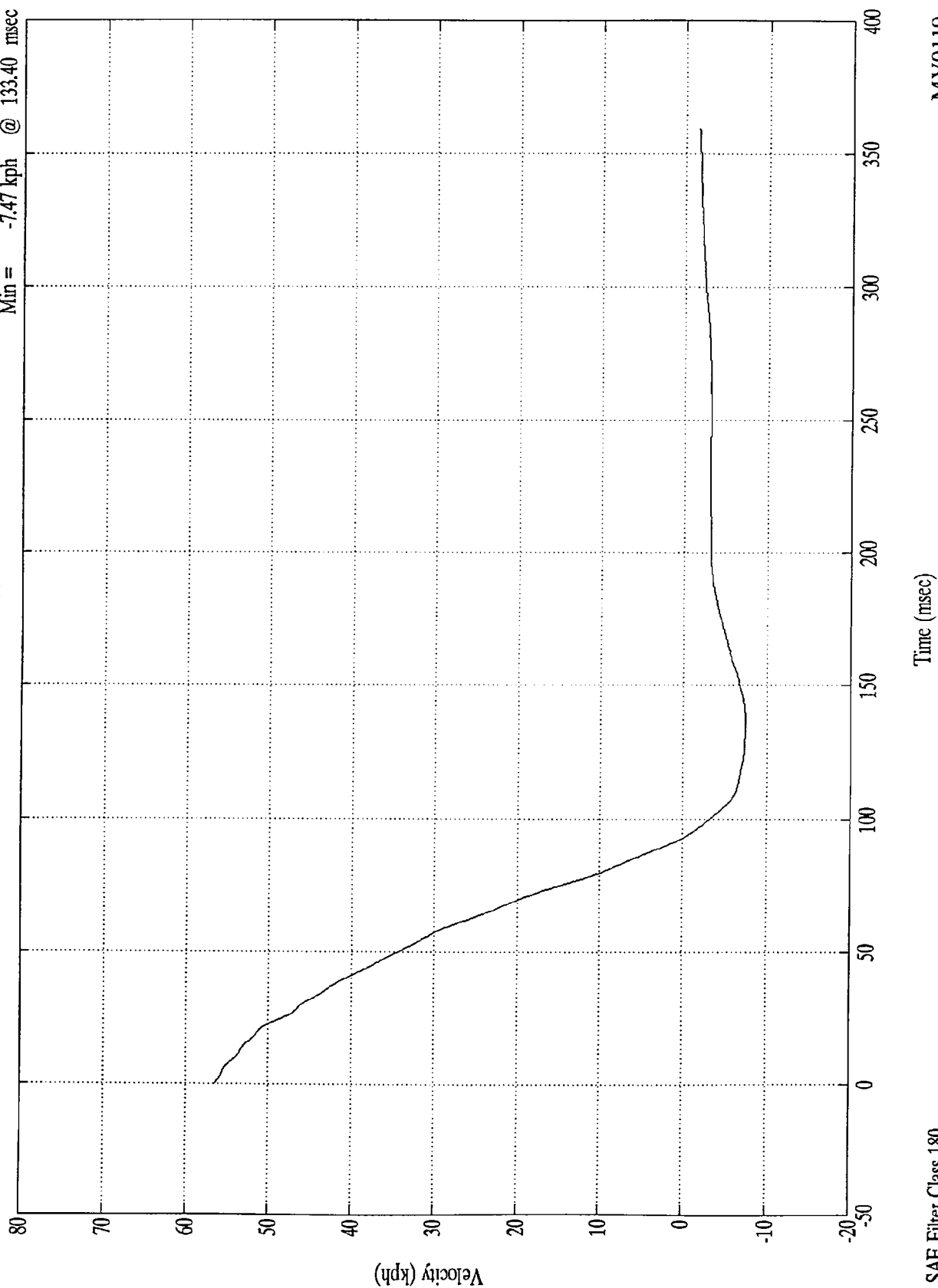


MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 56.49 kph @ 0.00 msec
Min = -7.47 kph @ 133.40 msec

Acc. #8(x)



SAE Filter Class 180

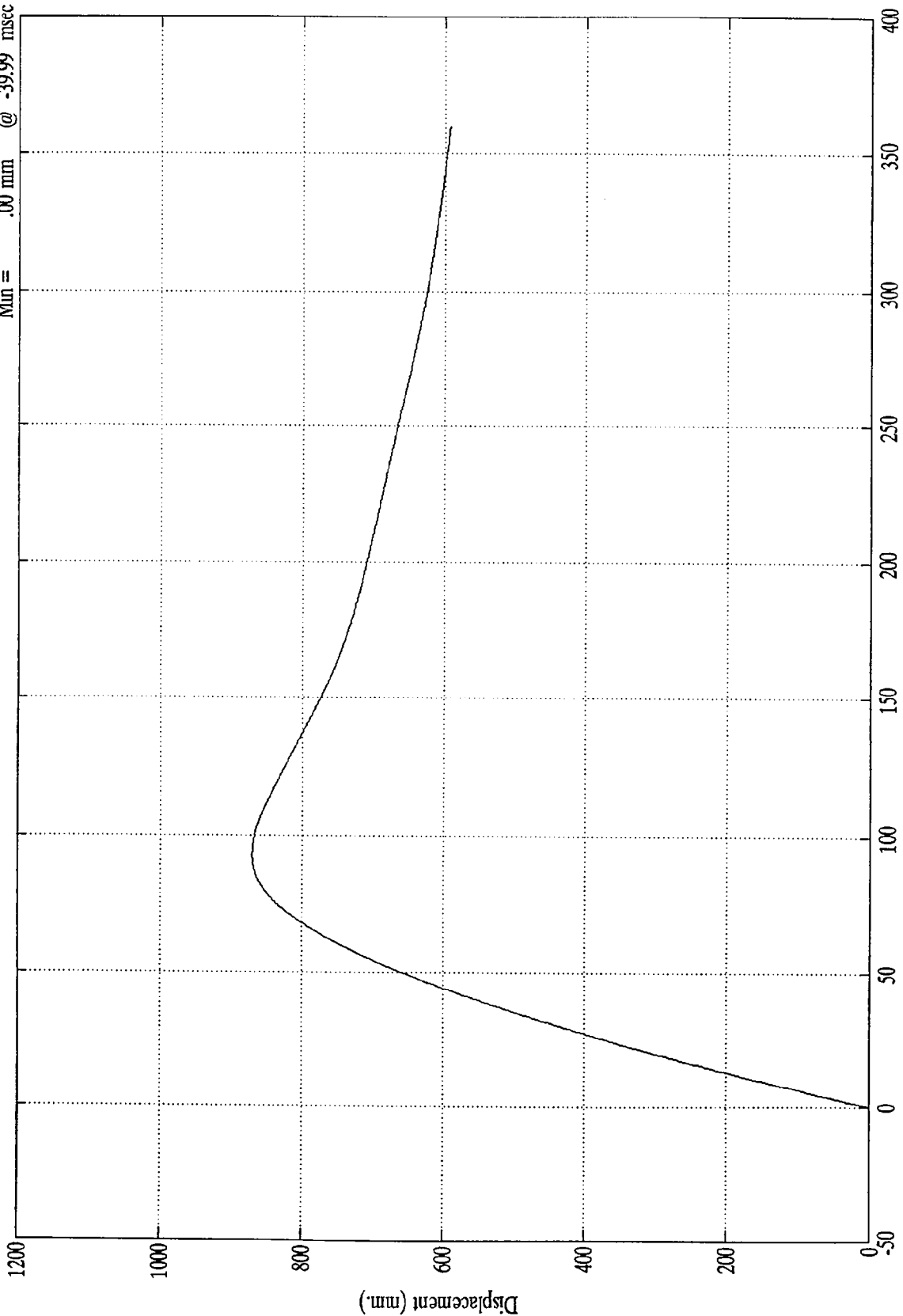
Time (msec)

MV0119 - 3/18/97

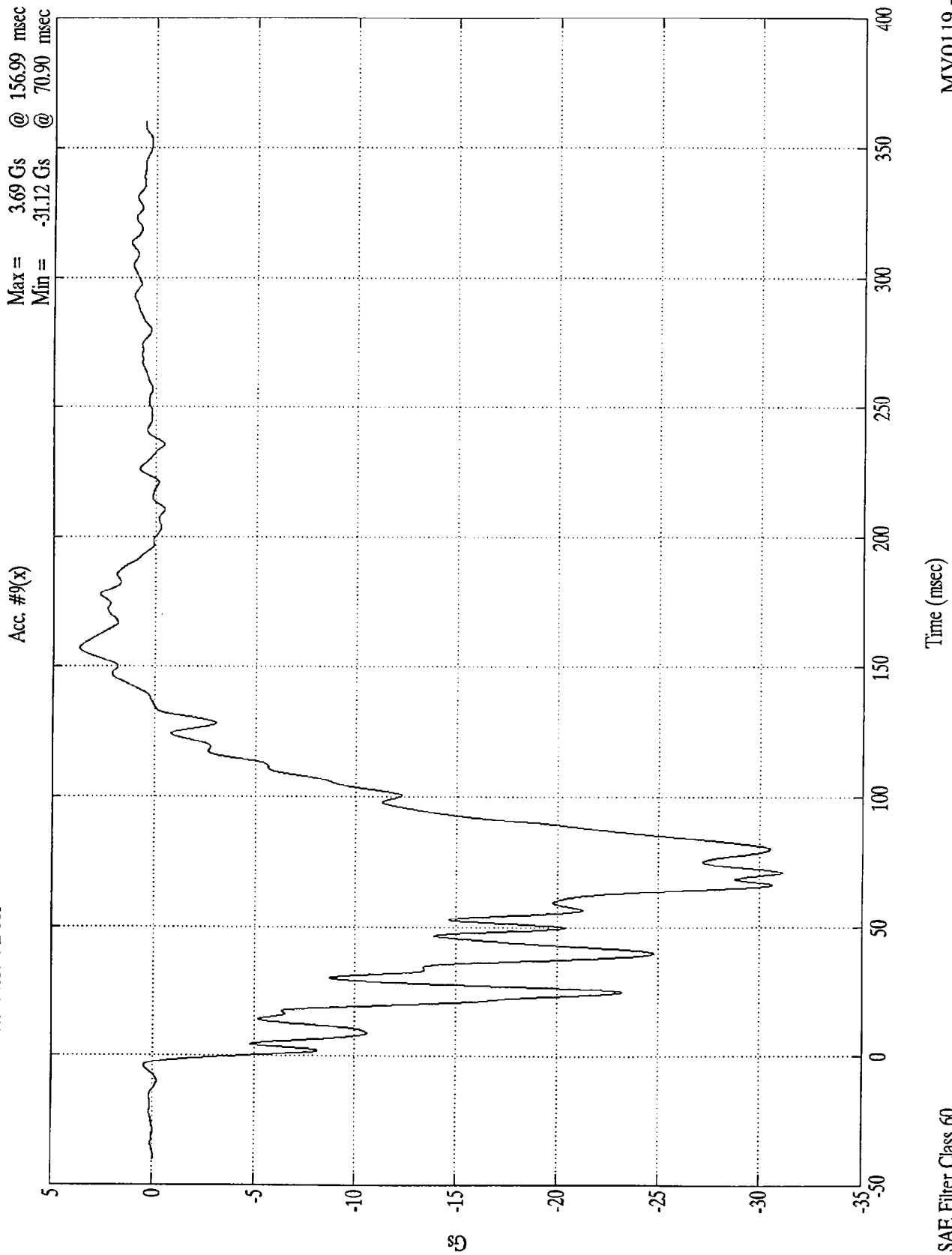
NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 870.69 mm @ 92.90 msec
Min = .00 mm @ -39.99 msec

Acc. #8(x)



NCAP TEST #6 - 1997 Buick LeSabre 4-Door



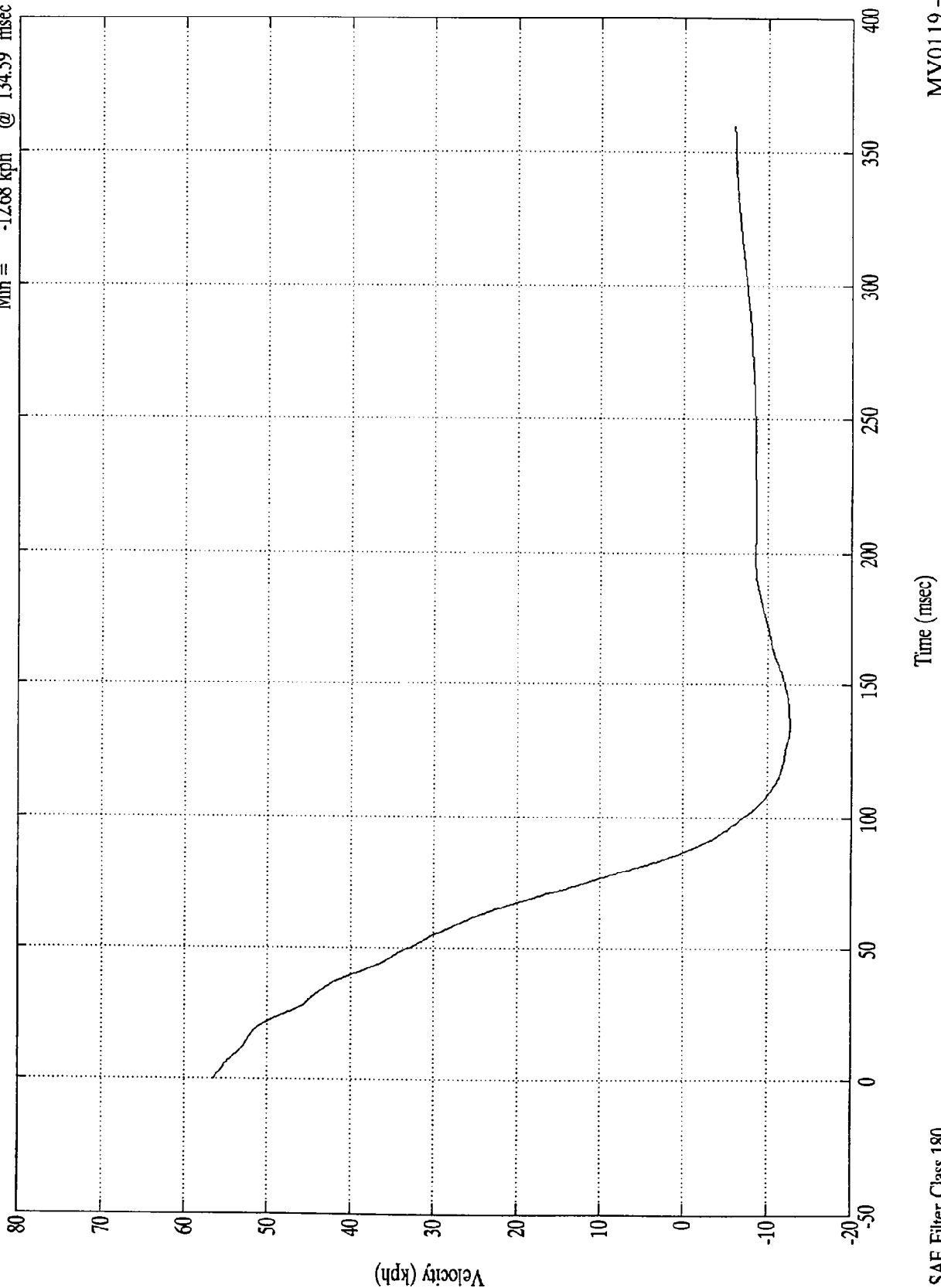
SAE Filter Class 60

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4 Door

Max = 56.49 kph @ 0.00 msec
Min = -12.68 kph @ 134.59 msec

Acc. #9(x)



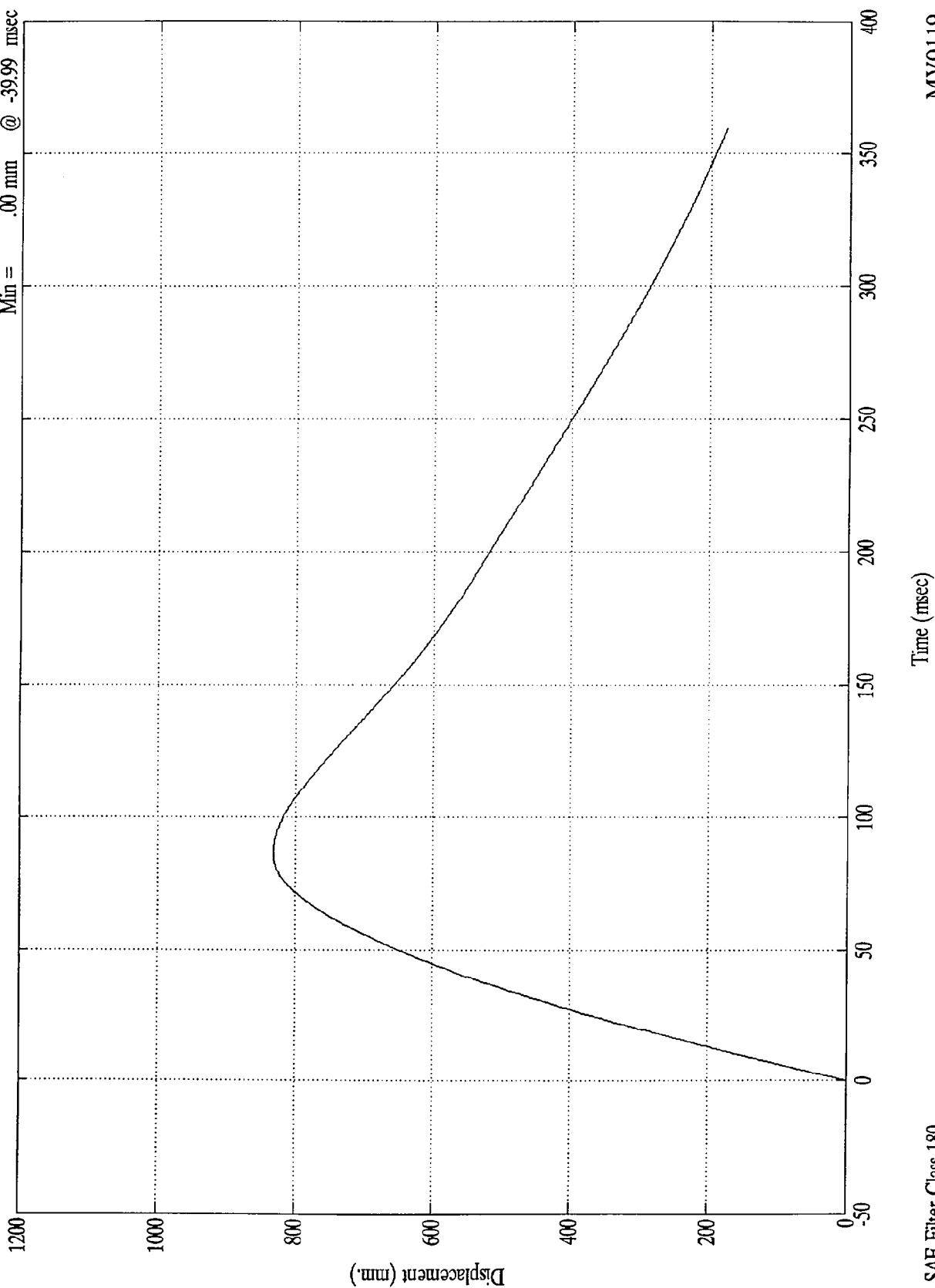
SAE Filter Class 180

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 832.79 mm @ 86.80 msec
Min = .00 mm @ -39.99 msec

Acc. #9(x)



SAE Filter Class 180

Time (msec)

MV0119 - 3/18/97

NHTSA TEST NO. MV0119

LOAD CELL BARRIER DATA

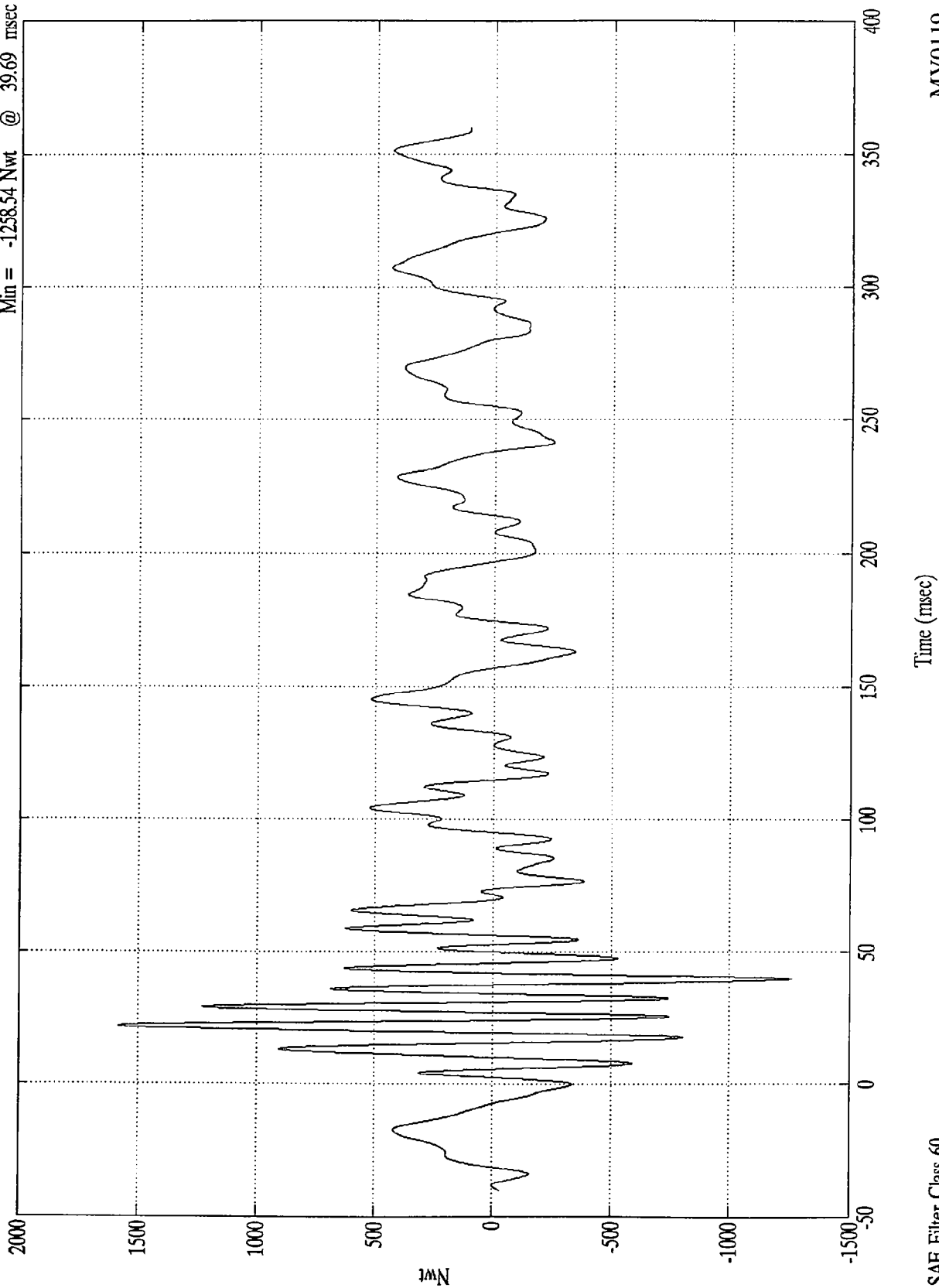
FILTER CHANNEL CLASS

60

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Barrier Load Cell A1

Max = 1580.60 Nwt @ 21.69 msec
Min = -1258.54 Nwt @ 39.69 msec



SAE Filter Class 60

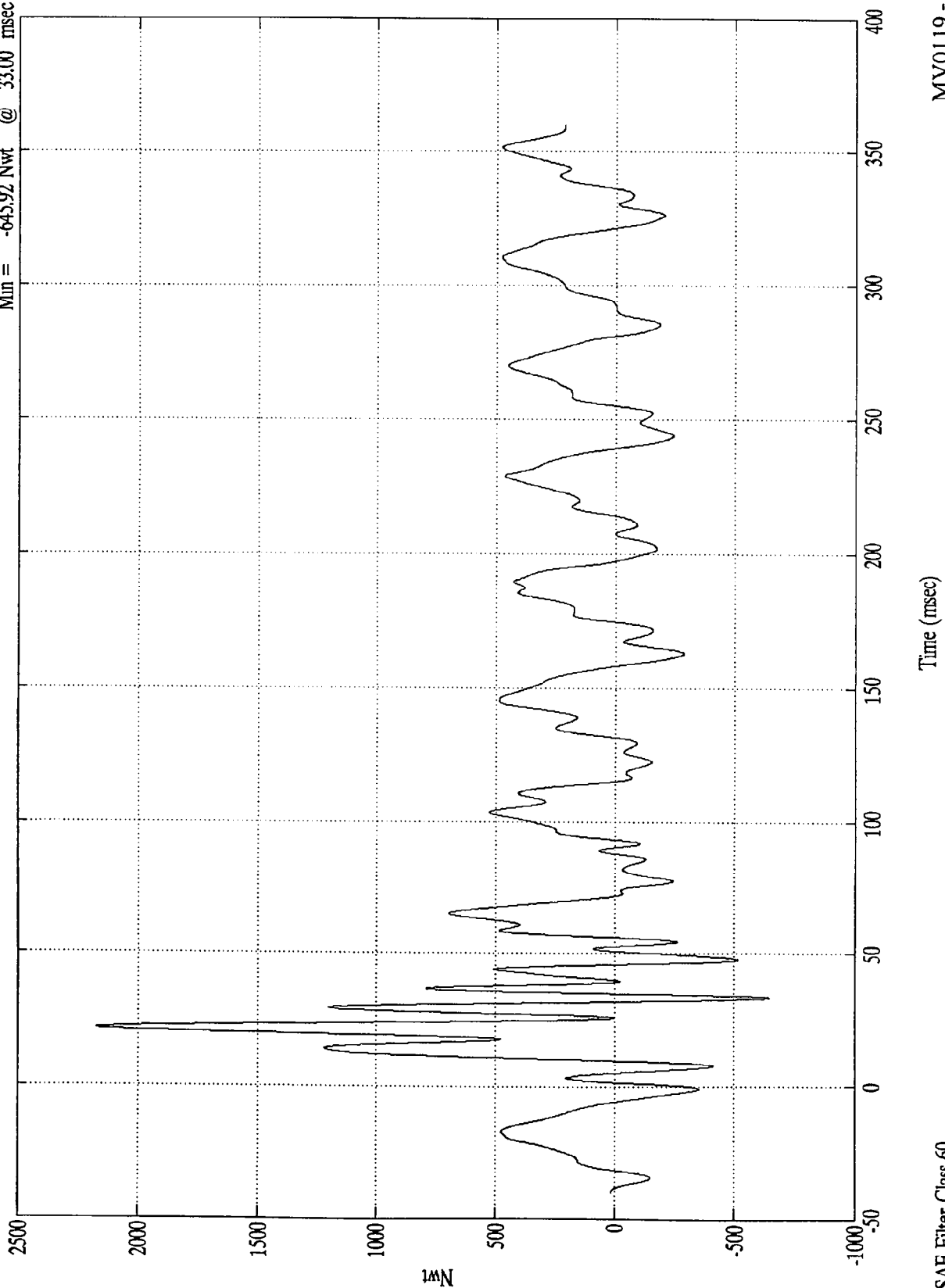
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Barrier Load Cell A2

Max = 2176.31 Nwt @ 21.39 msec
Min = -645.92 Nwt @ 33.00 msec



SAE Filter Class 60

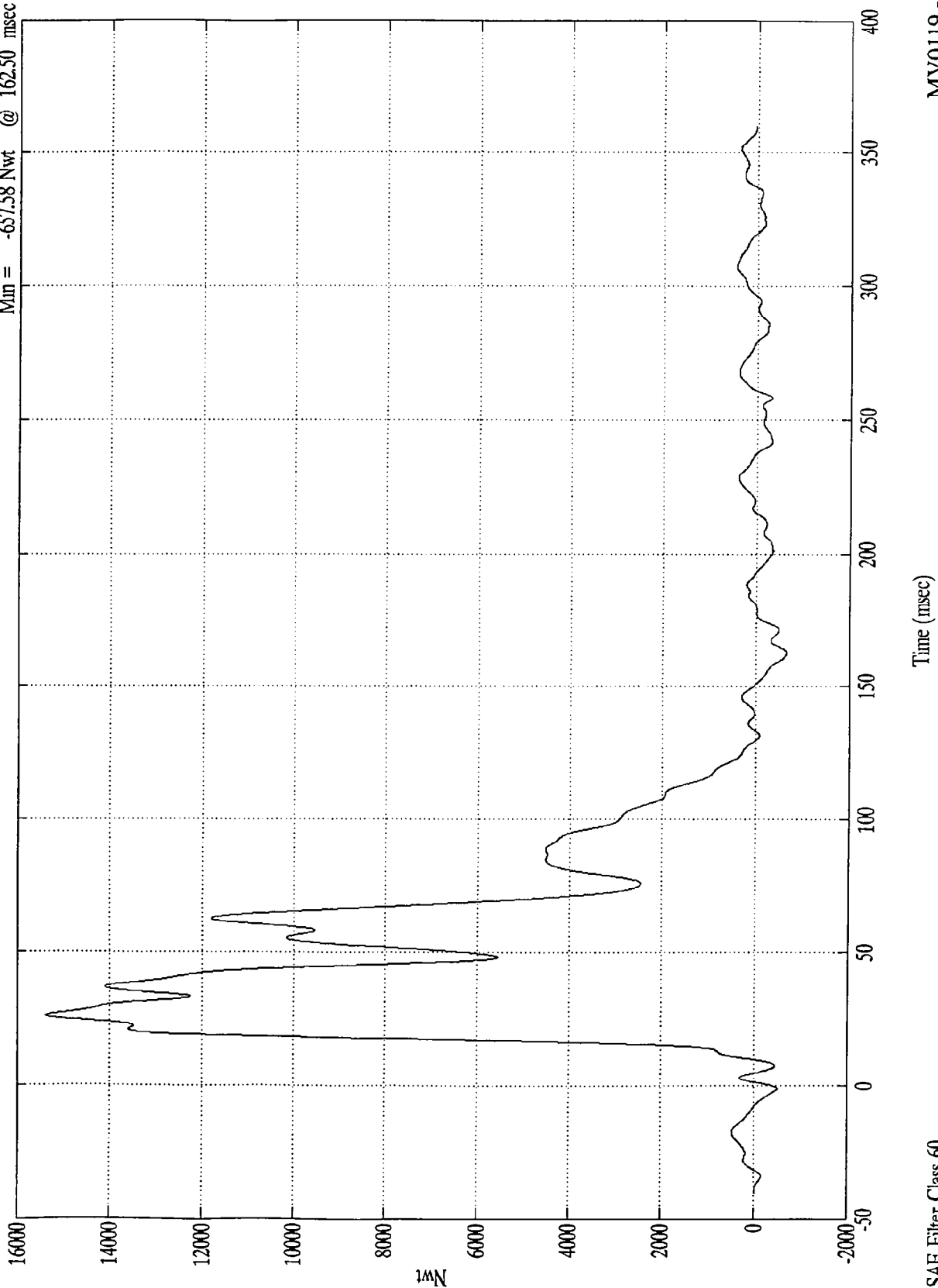
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Barrier Load Cell A3

Max = 15390.94 Nwt @ 25.69 msec
Min = -657.58 Nwt @ 162.50 msec



SAE Filter Class 60

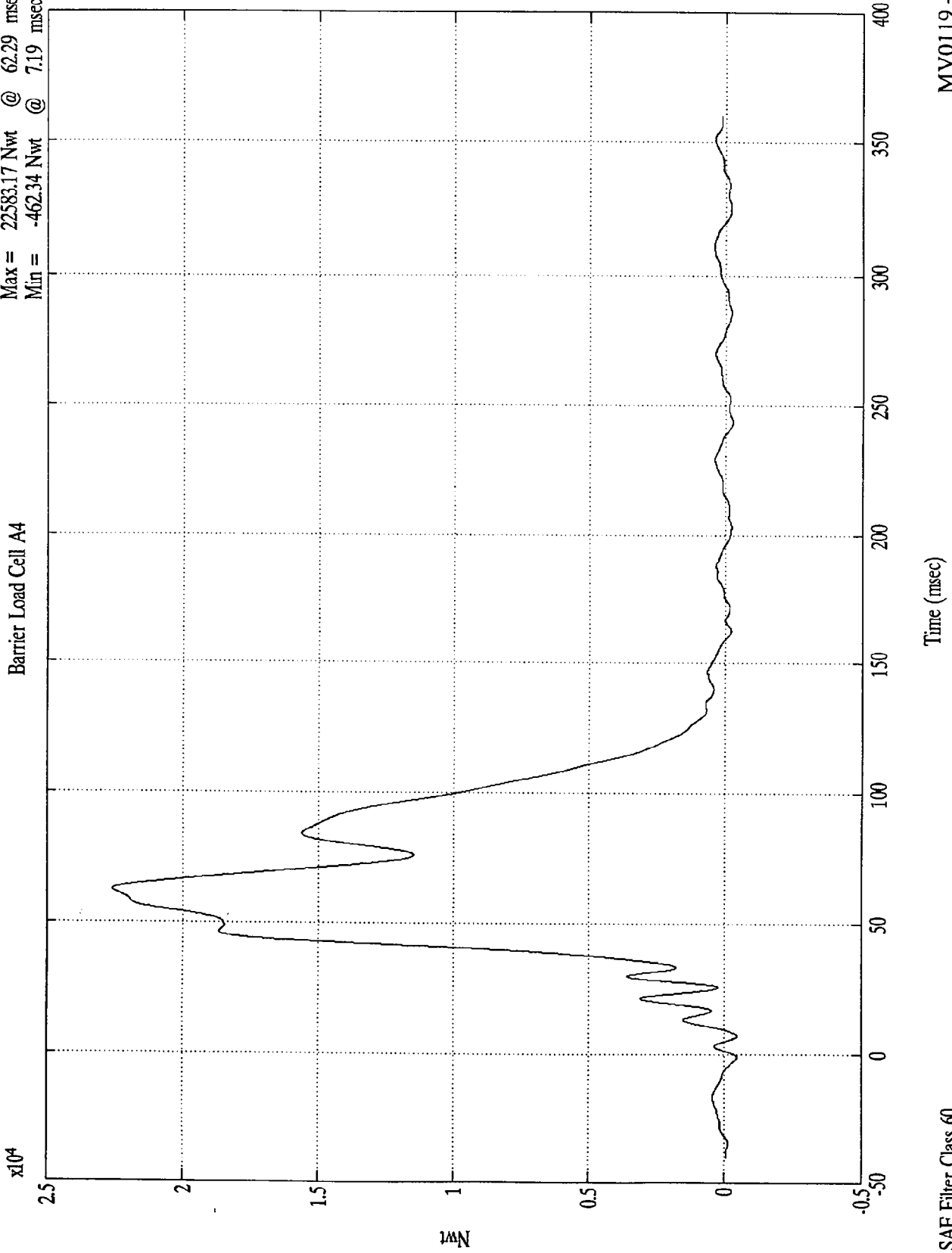
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 22583.17 Nwt @ 62.29 msec
Min = -462.34 Nwt @ 7.19 msec

Barrier Load Cell A4

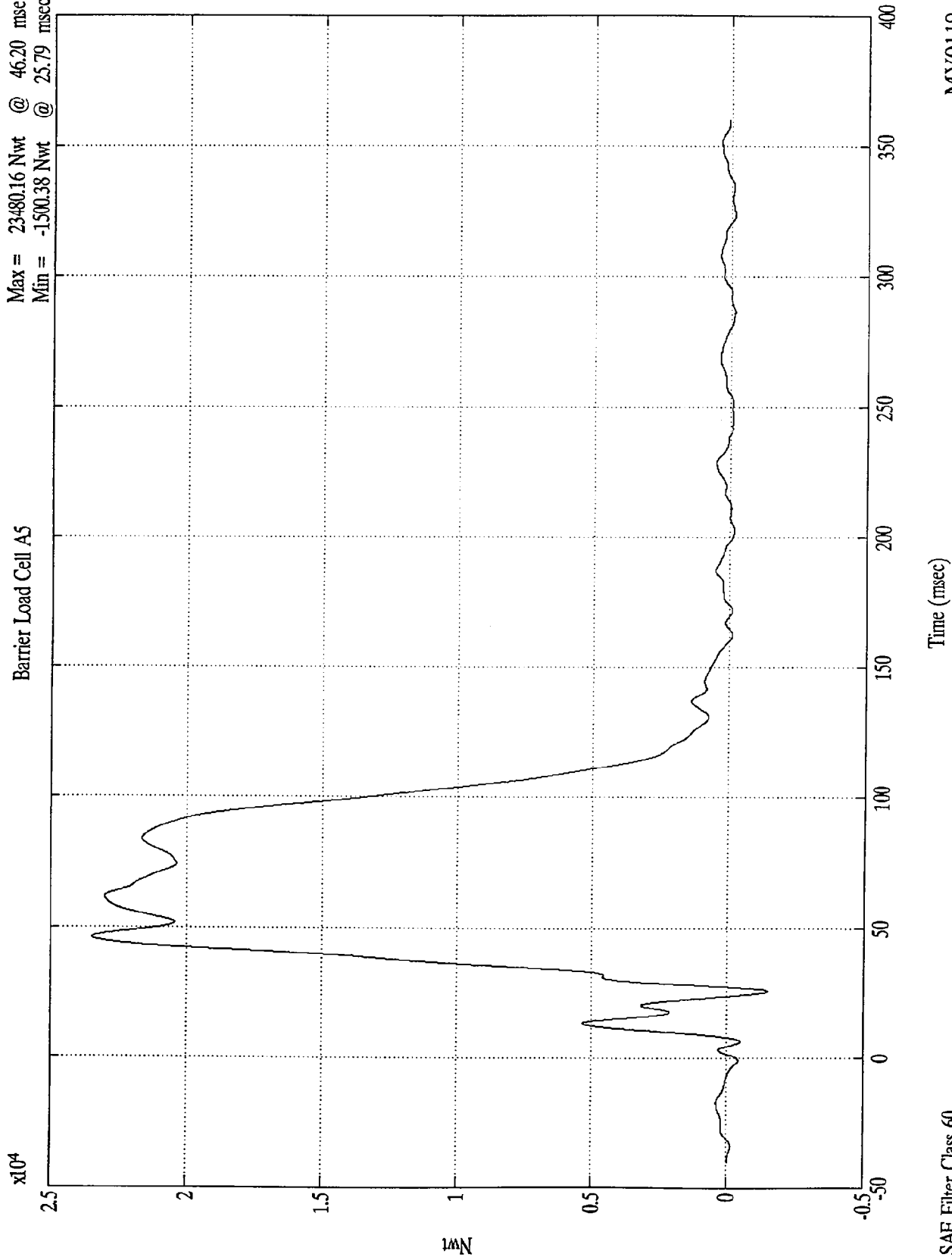


SAE Filter Class 60

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Barrier Load Cell A5
Max = 23480.16 Nwt @ 46.20 msec
Min = -1500.38 Nwt @ 25.79 msec



SAE Filter Class 60

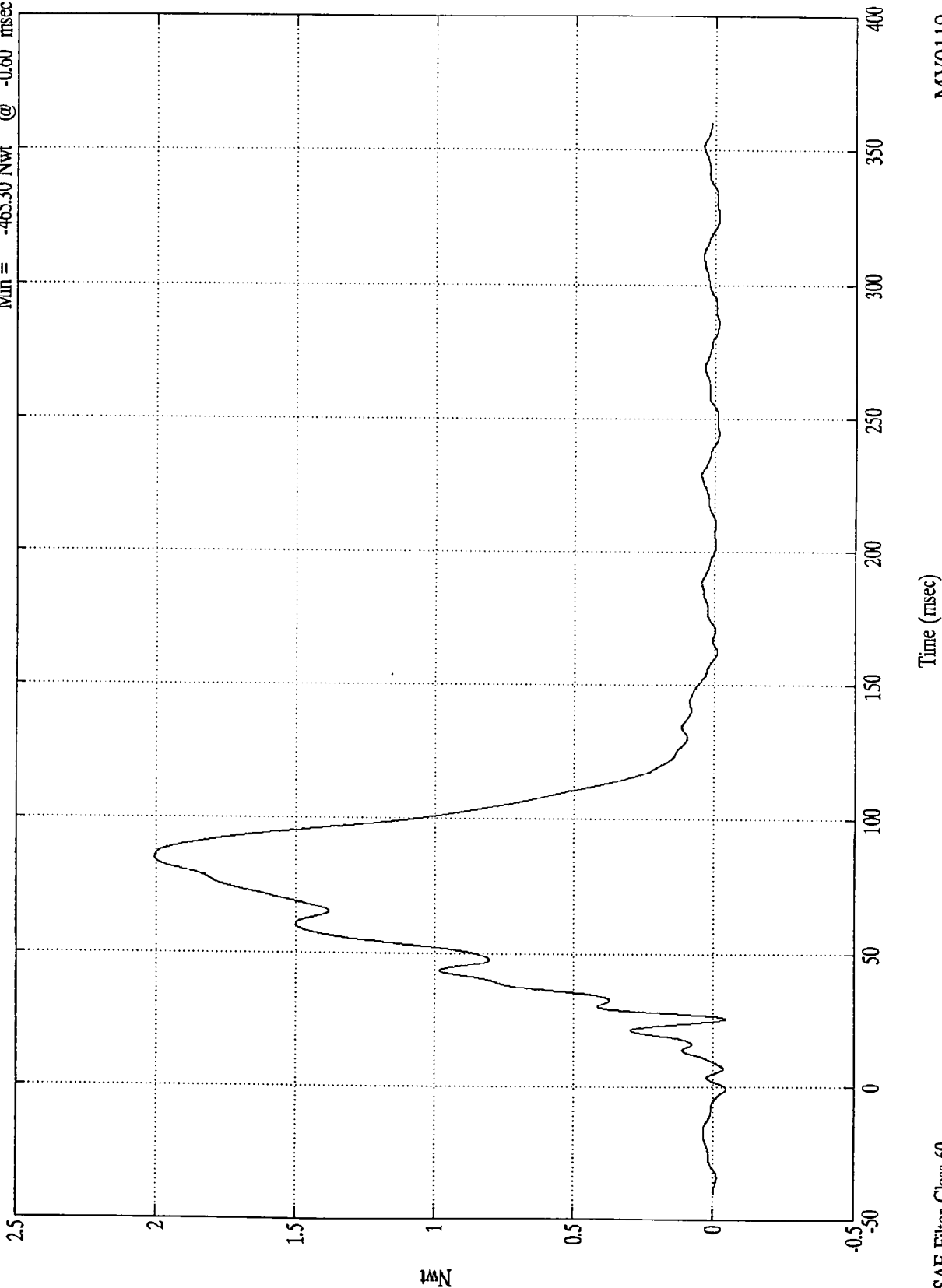
MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 20069.01 Nwt @ 84.90 msec
Min = -465.30 Nwt @ -0.60 msec

Barrier Load Cell A6

$\times 10^4$



MV0119 - 3/18/97

Time (msec)

SAE Filter Class 60

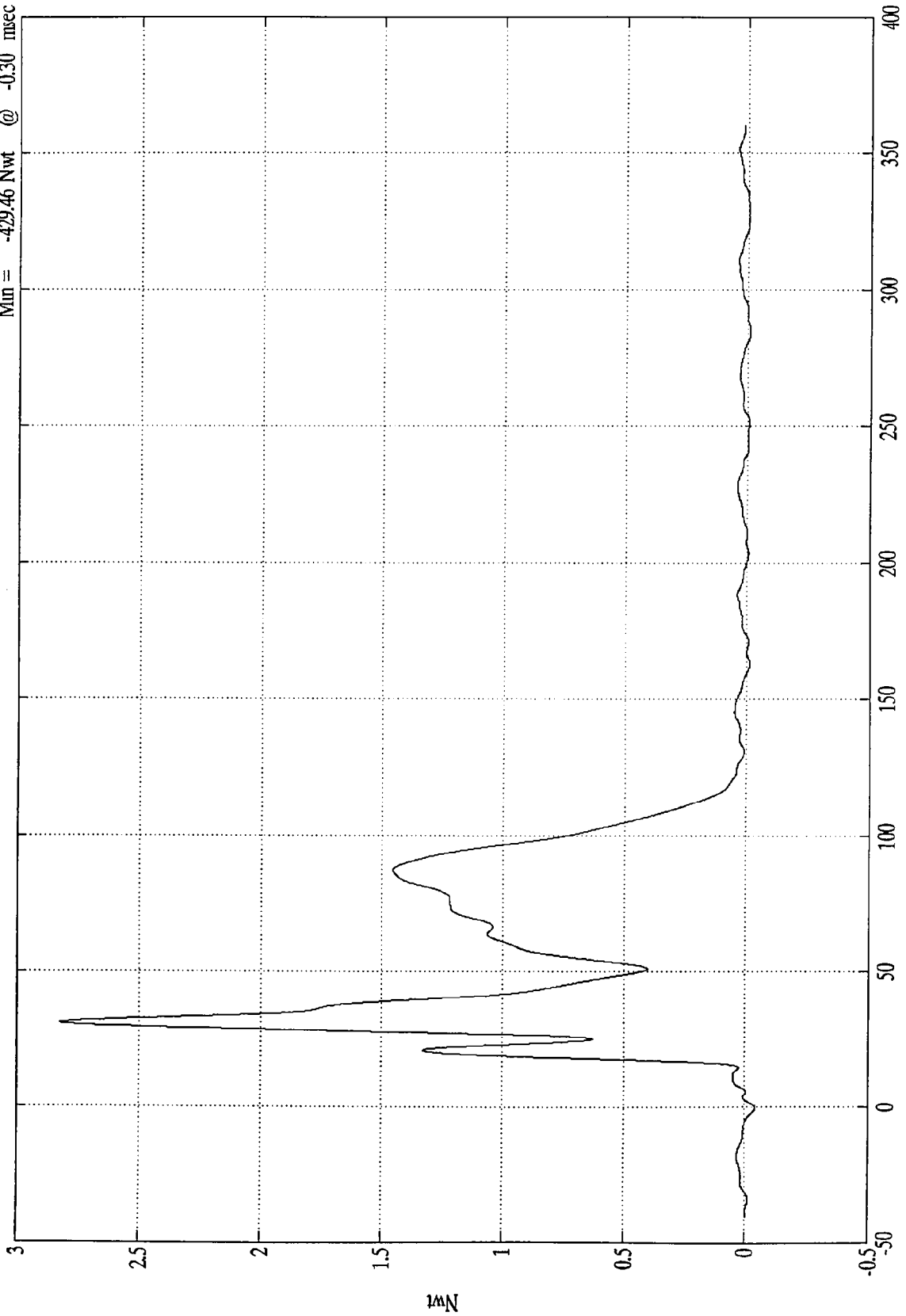
Nwt

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

$\times 10^4$

Barrier Load Cell A7

Max = 28259.60 Nwt @ 30.89 msec
Min = -429.46 Nwt @ -0.30 msec



Nwt

SAE Filter Class 60

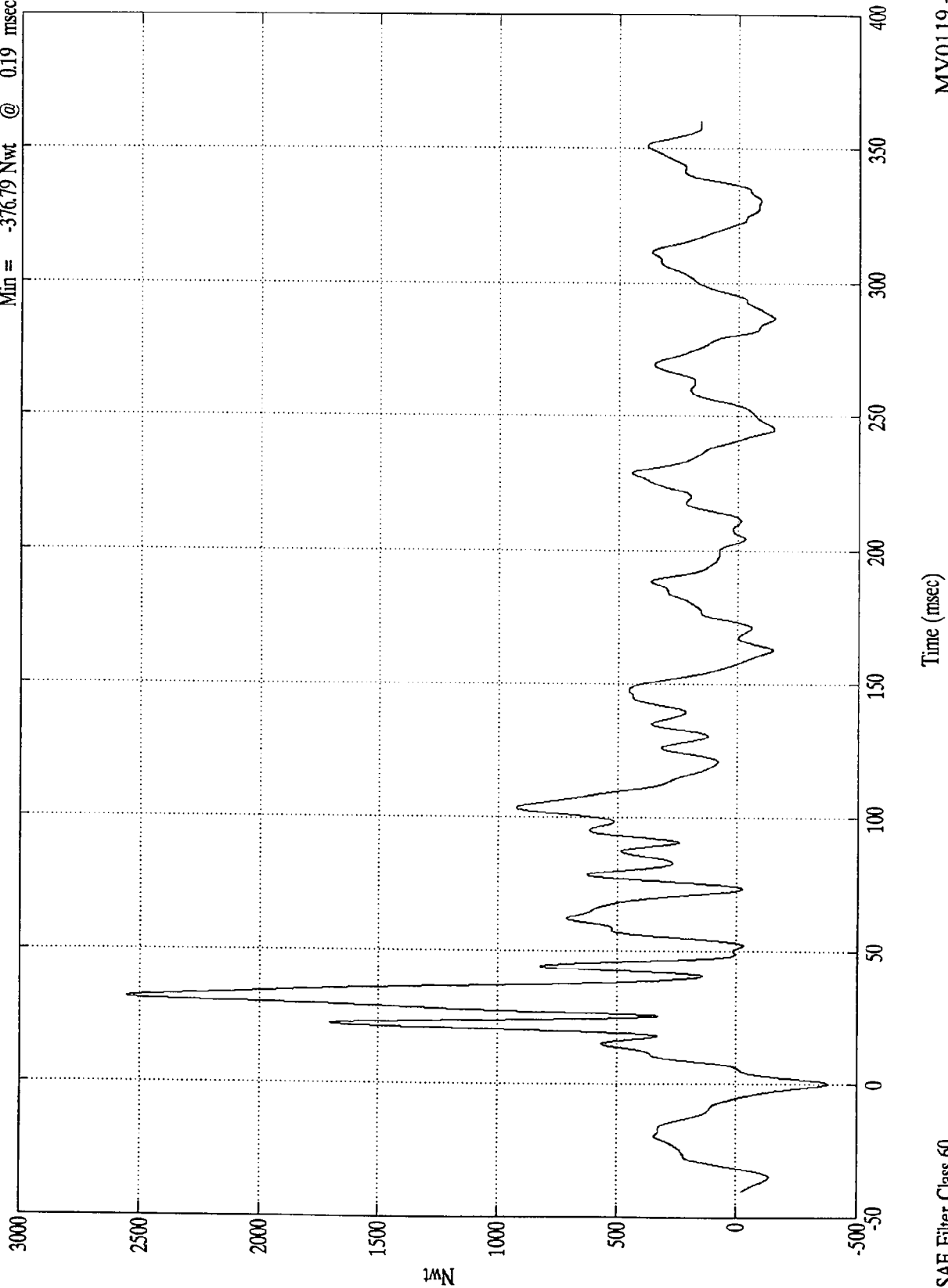
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4Door

Barrier Load Cell A8

Max = 2556.05 Nwt @ 31.79 msec
Min = -376.79 Nwt @ 0.19 msec



SAE Filter Class 60

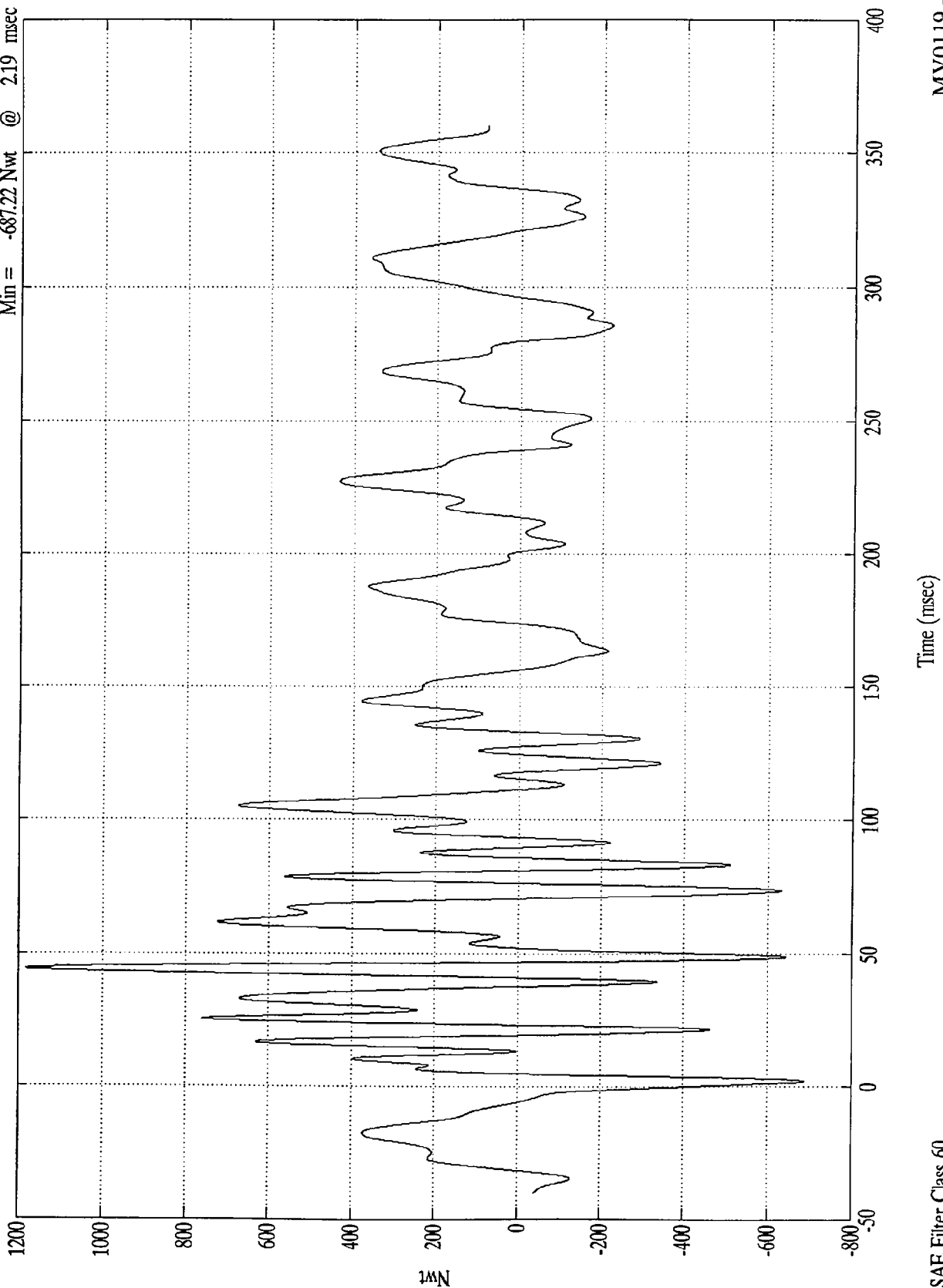
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4 Door

Barrier Load Cell A9

Max = 1183.40 Nwt @ 44.20 msec
Min = -687.22 Nwt @ 2.19 msec



SAE Filter Class 60

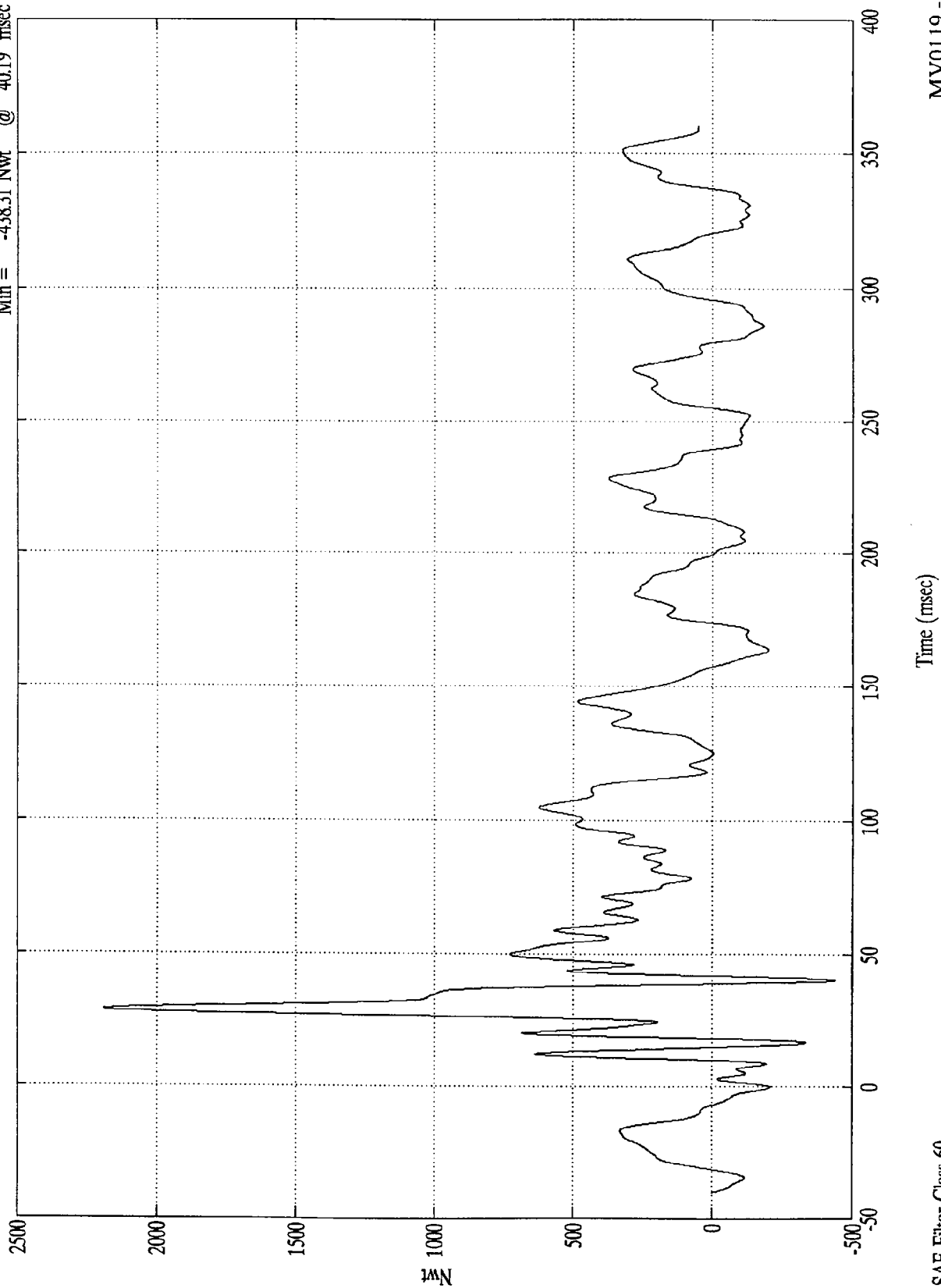
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Barrier Load Cell B1

Max = 2191.42 Nwt @ 28.89 msec
Min = -438.31 Nwt @ 40.19 msec



SAE Filter Class 60

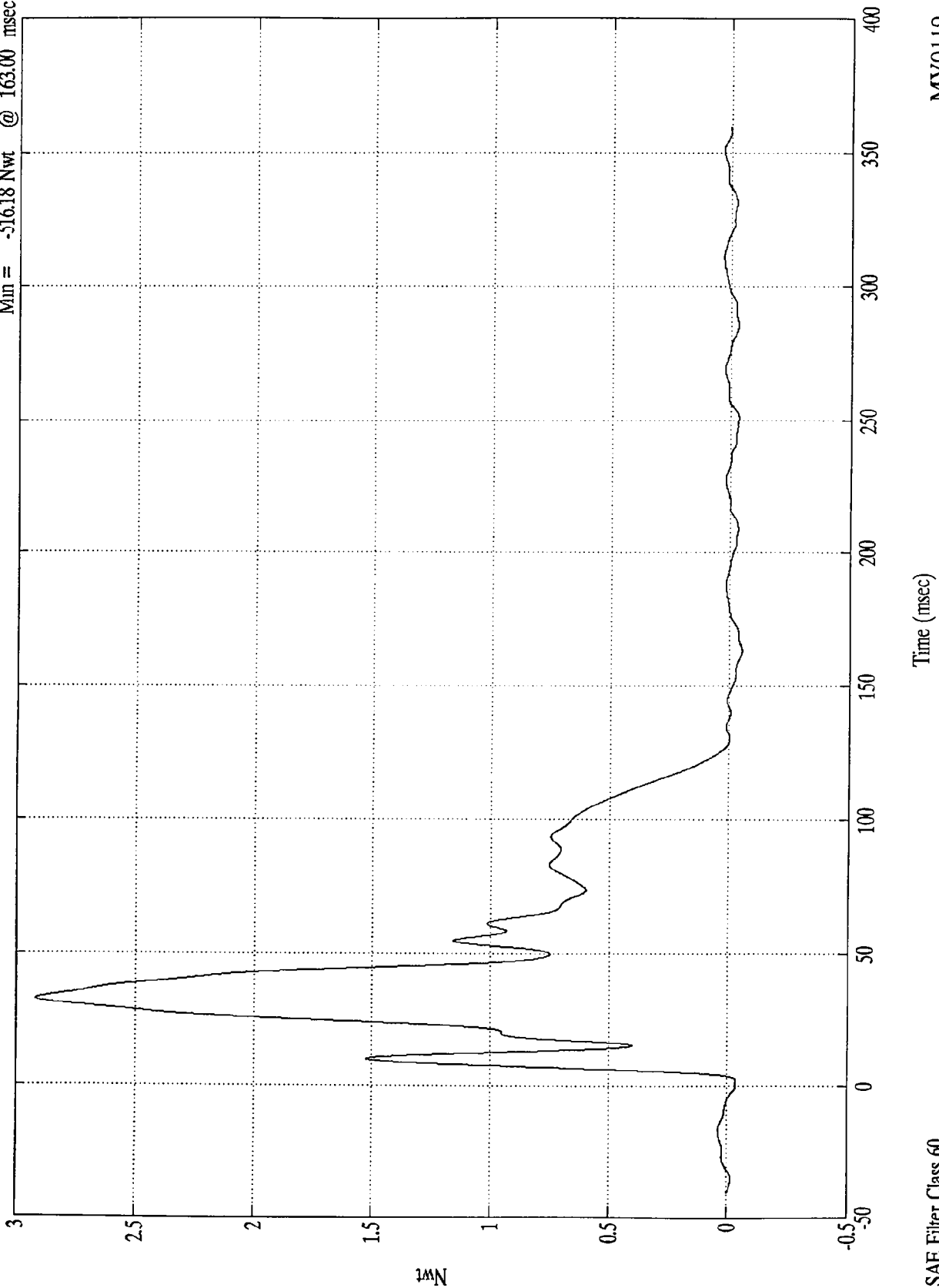
MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

$\times 10^4$

Barrier Load Cell B2

Max = 29192.83 Nwt @ 32.69 msec
Min = -516.18 Nwt @ 163.00 msec



SAE Filter Class 60

Time (msec)

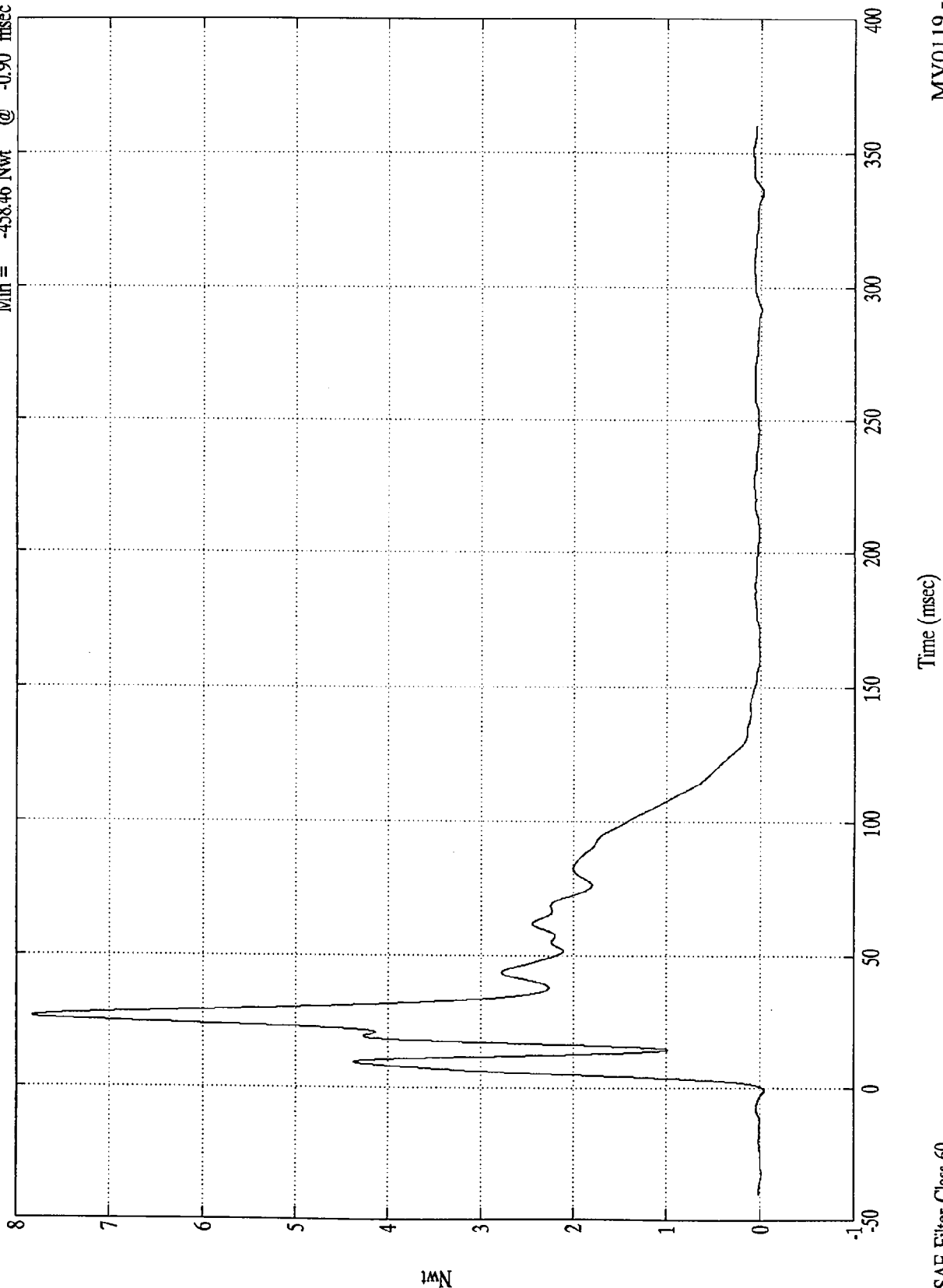
MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Barrier Load Cell B3

Max = 78332.12 Nwt @ 26.50 msec
Min = -458.46 Nwt @ -0.90 msec

$\times 10^4$



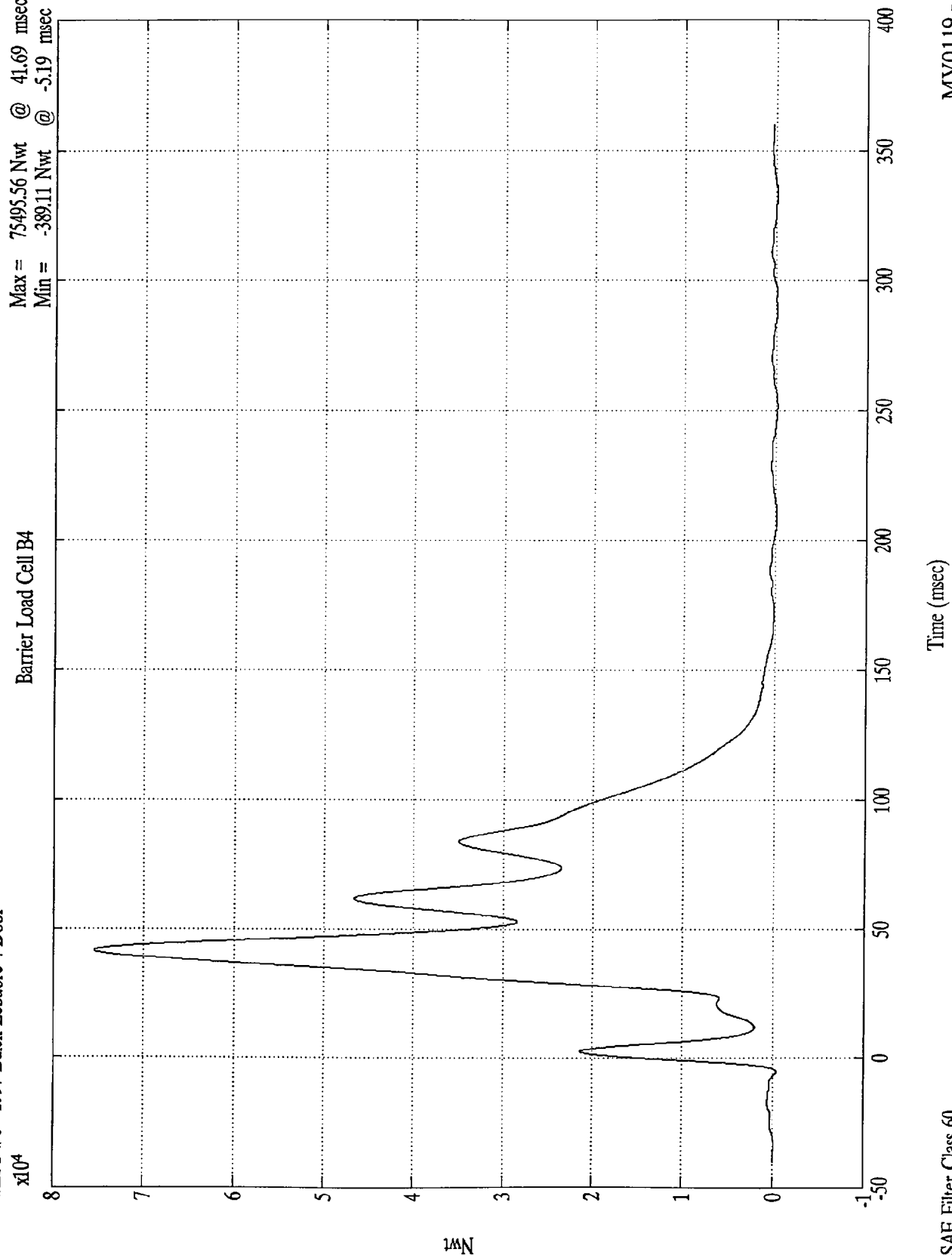
SAE Filter Class 60

Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Barrier Load Cell B4
Max = 75495.56 Nwt @ 41.69 msec
Min = -389.11 Nwt @ -5.19 msec



SAE Filter Class 60

Time (msec)

MV0119 - 3/18/97

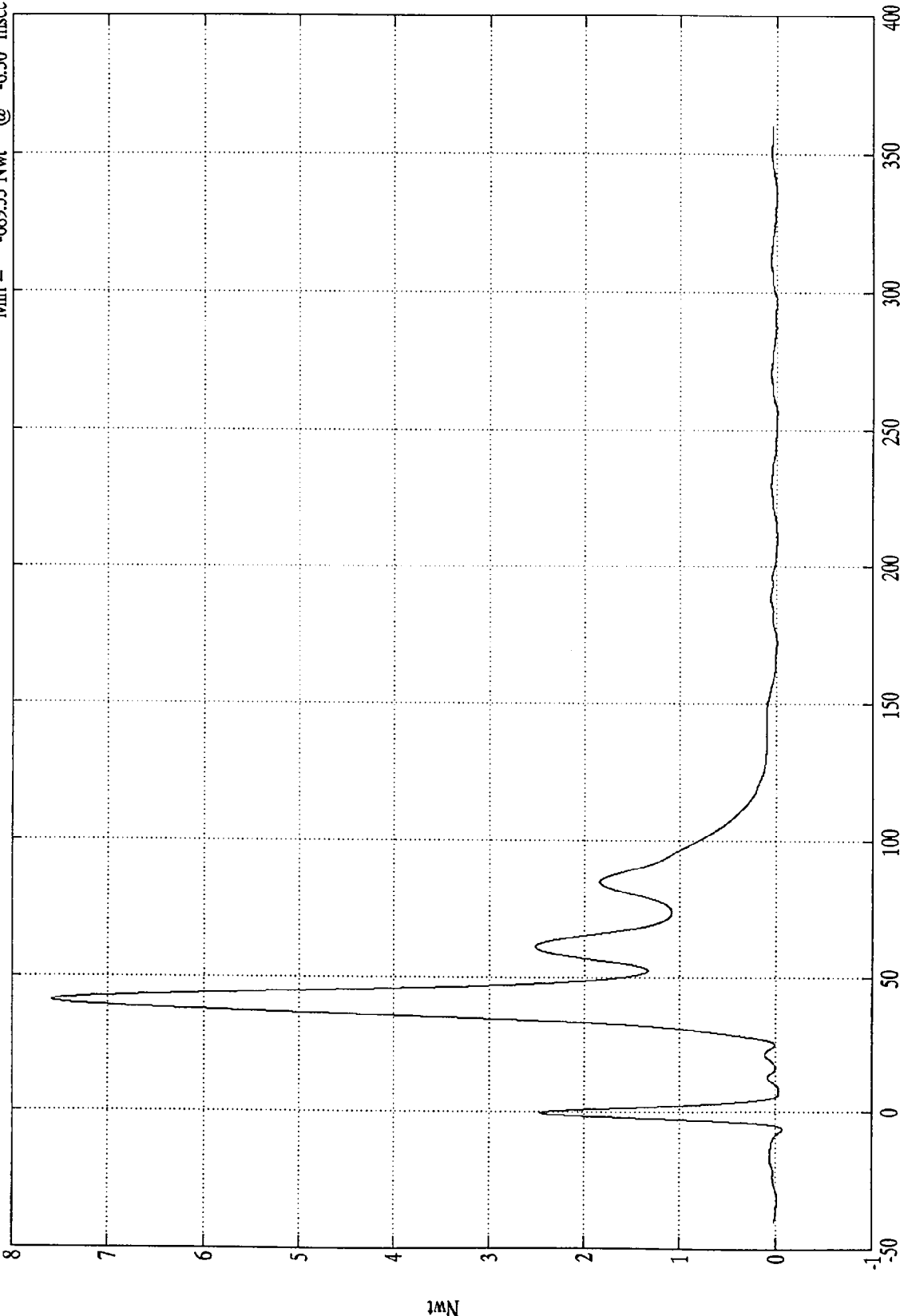
Nwt

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 75918.61 Nwt @ 40.89 msec
Min = -689.53 Nwt @ -6.30 msec

Barrier Load Cell B5

$\times 10^4$



Time (msec)

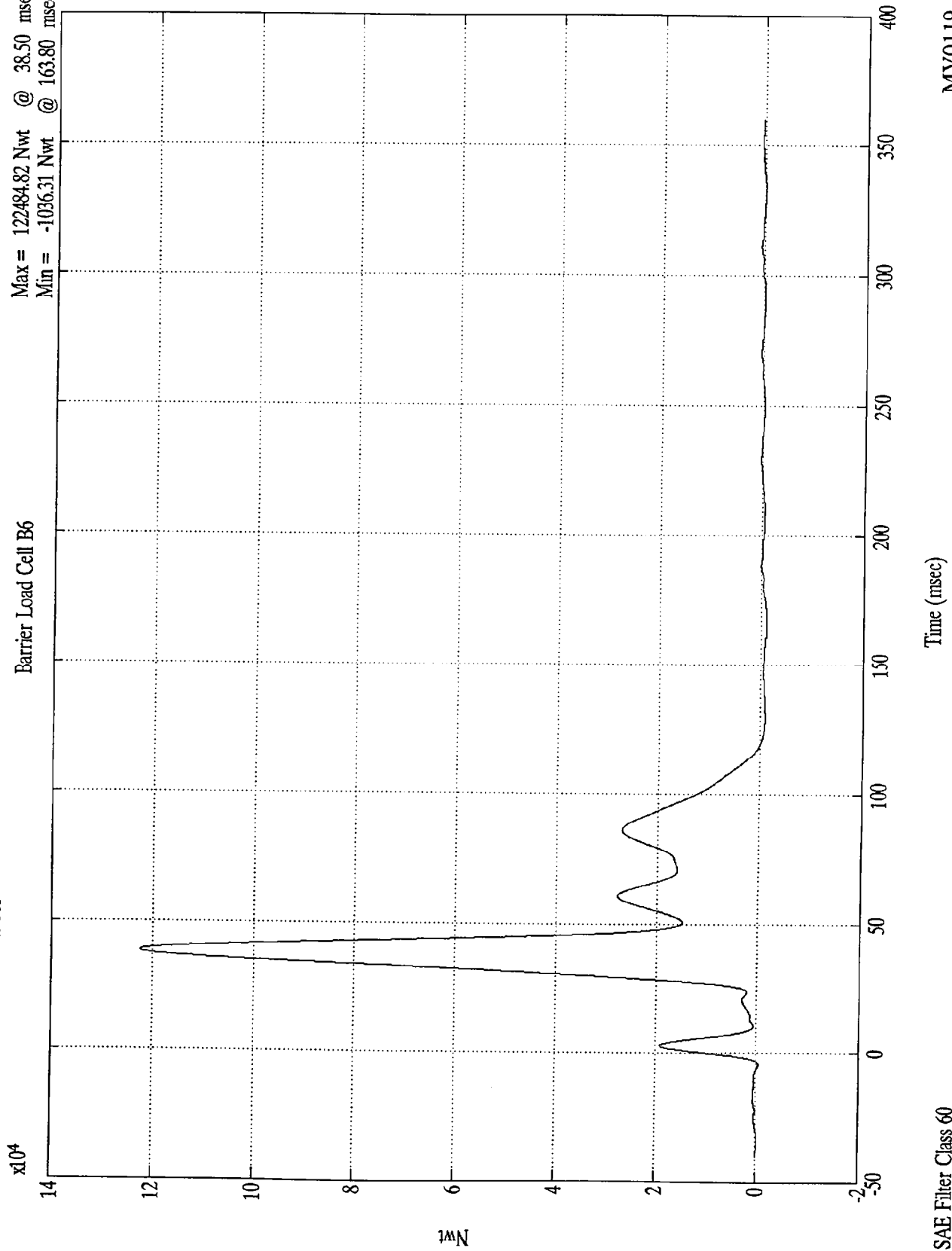
SAE Filter Class 60

MV0119 - 3/18/97

Nwt

NCAP TEST #6 - 1997 Buick LeSabre 4Door

Barrier Load Cell B6
Max = 122484.82 Nwt @ 38.50 msec
Min = -1036.31 Nwt @ 163.80 msec



SAE Filter Class 60

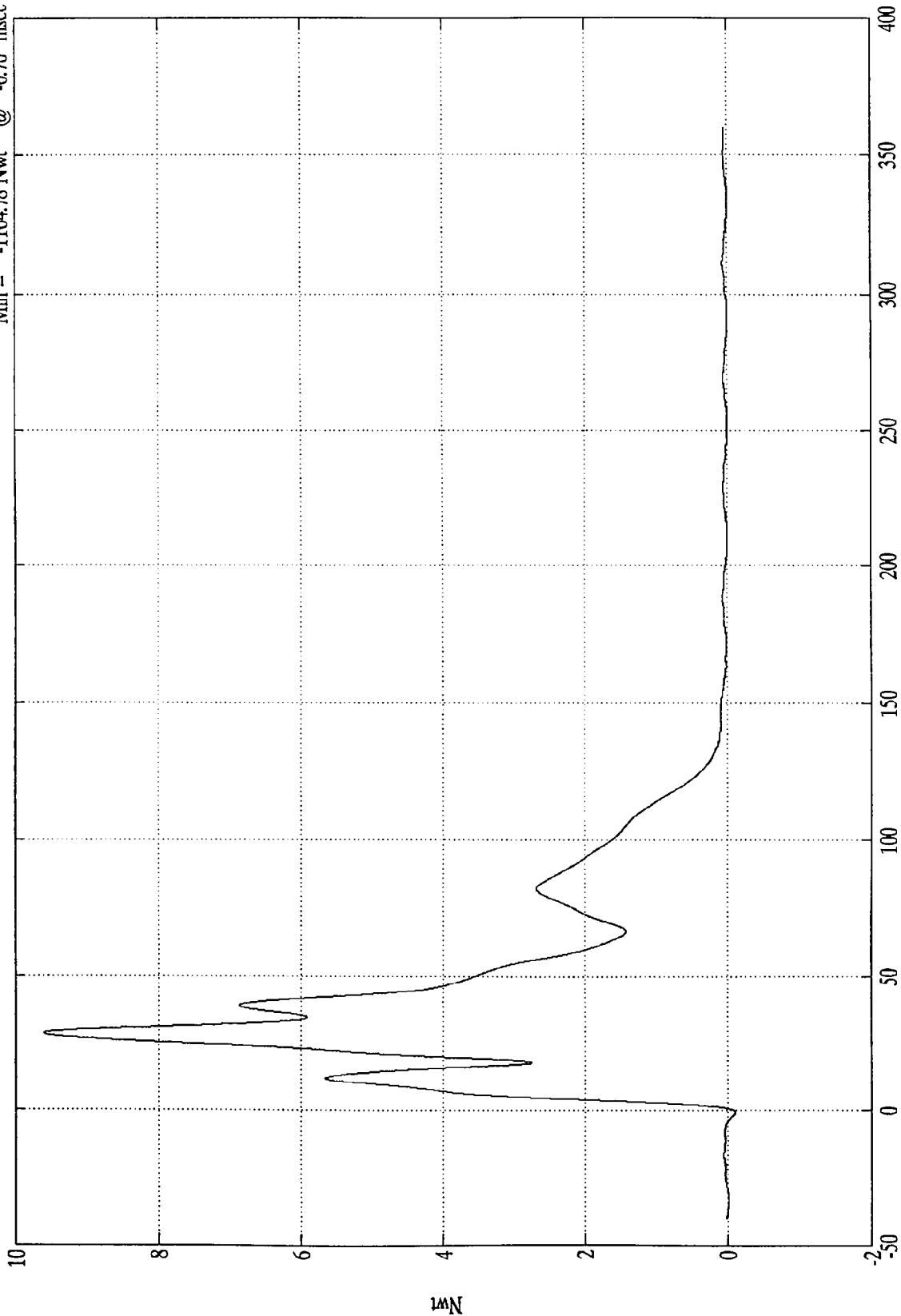
MV0119 - 3/18/97

NCAP TEST #6 • 1997 Buick LeSabre 4-Door

Max = 96100.56 Nwt @ 28.29 msec
Min = -1104.78 Nwt @ -0.70 msec

Barrier Load Cell B7

$\times 10^4$



SAE Filter Class 60

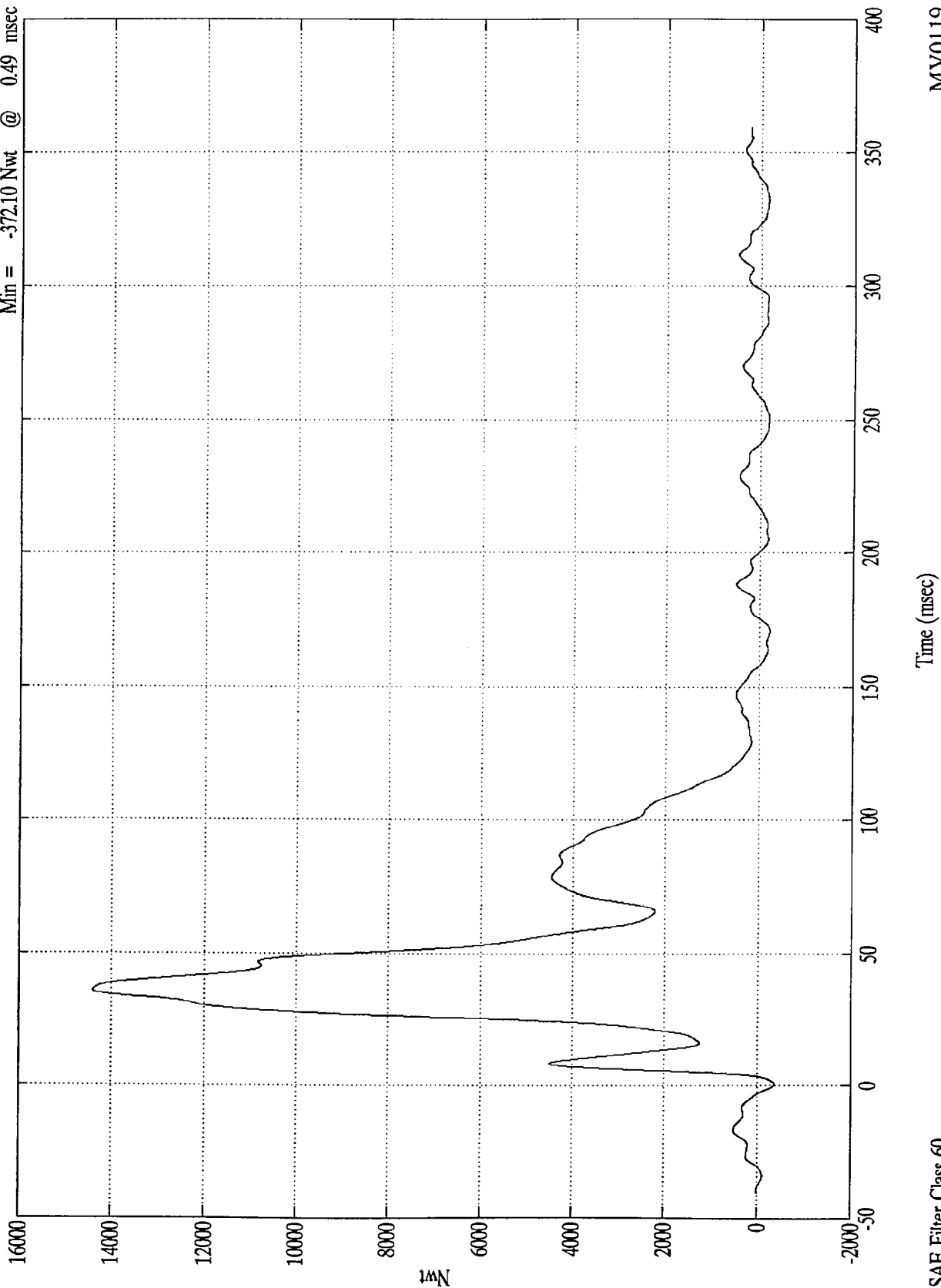
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Barrier Load Cell B8

Max = 14409.43 Nwt @ 36.00 msec
Min = -372.10 Nwt @ 0.49 msec



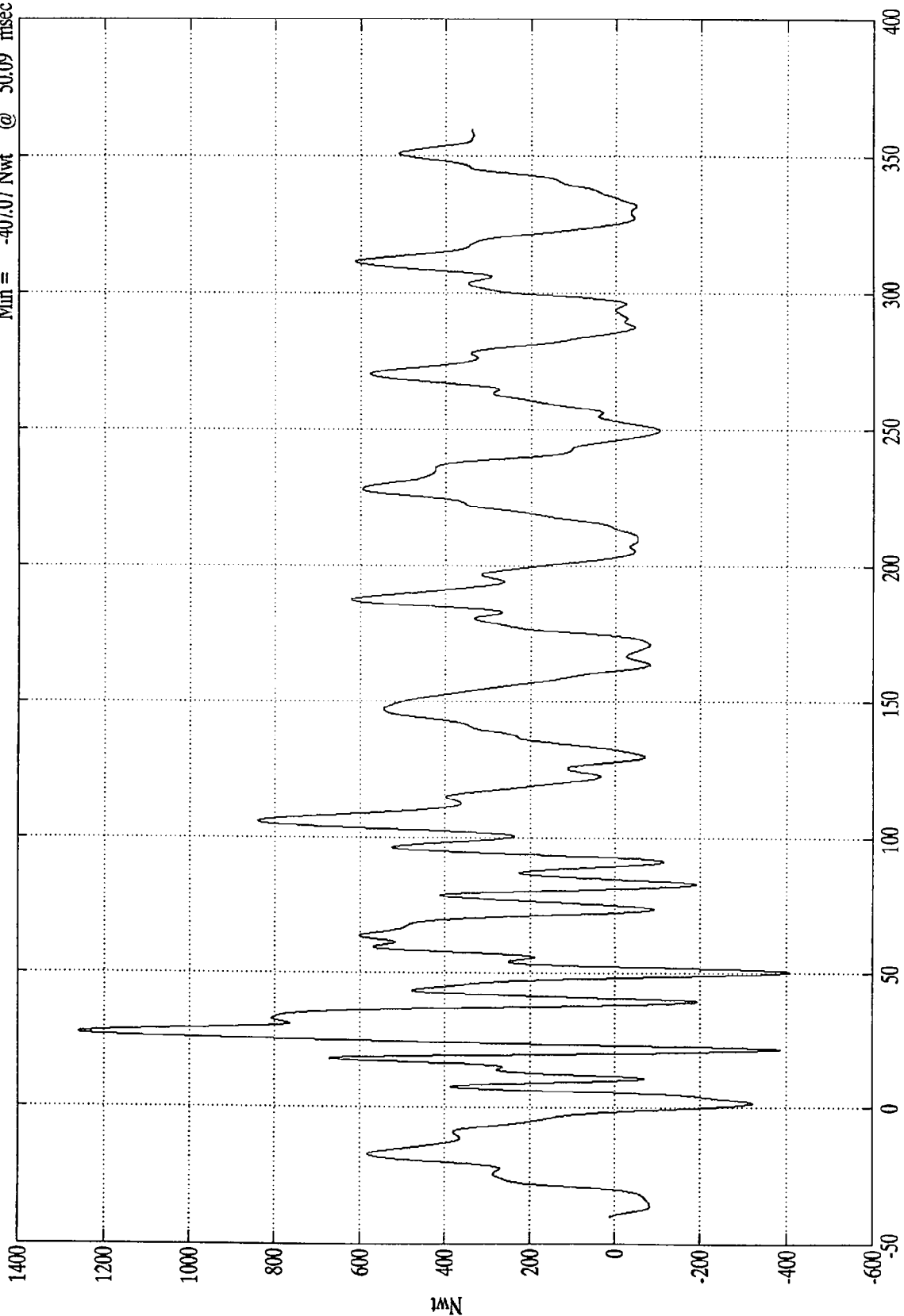
SAE Filter Class 60

Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Barrier Load Cell B9
Max = 1258.40 Nwt @ 27.29 msec
Min = -407.07 Nwt @ 50.09 msec



SAE Filter Class 60

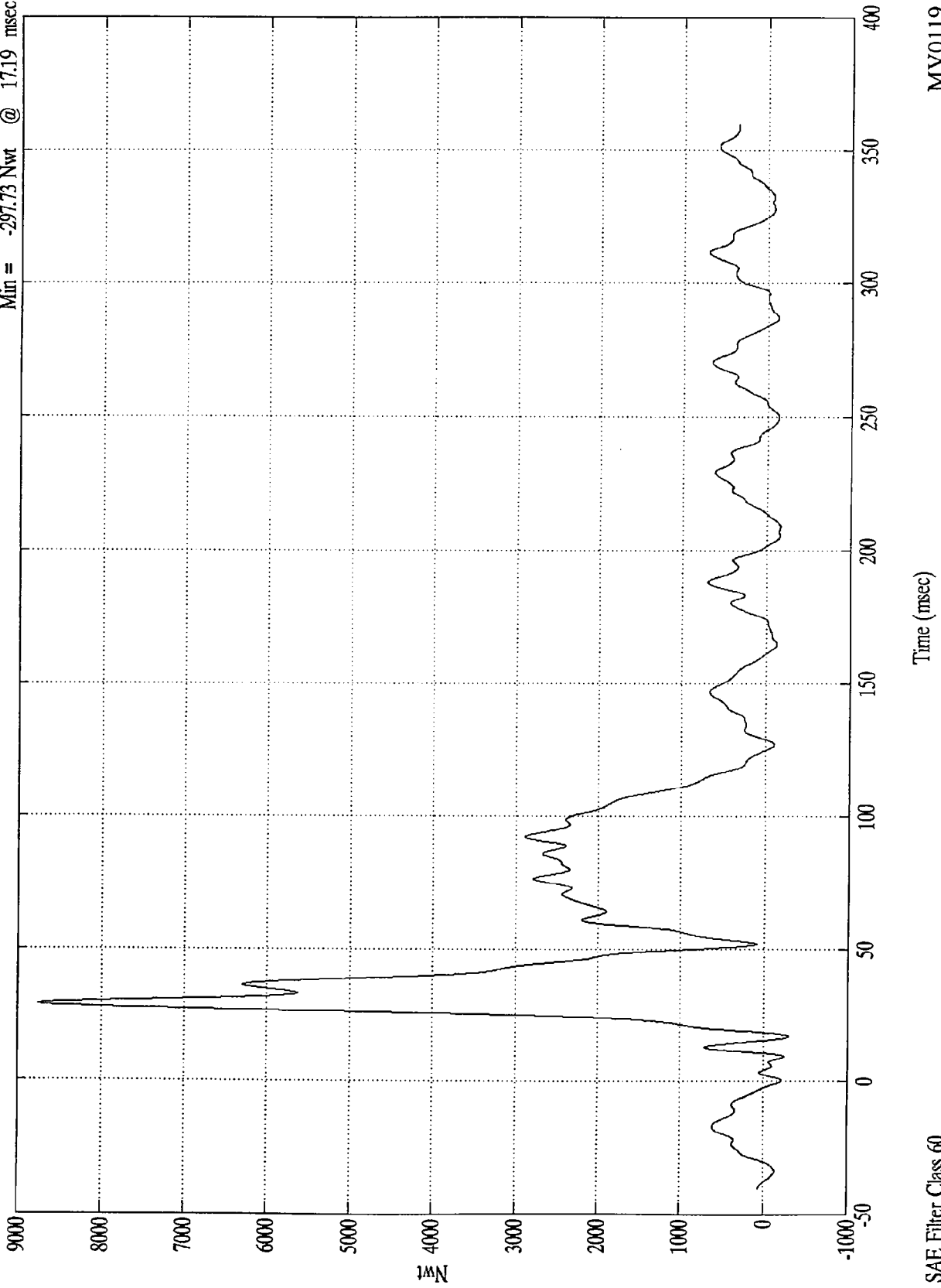
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 8750.40 Nwt @ 29.00 msec
Min = -297.73 Nwt @ 17.19 msec

Barrier Load Cell C1



SAE Filter Class 60

Time (msec)

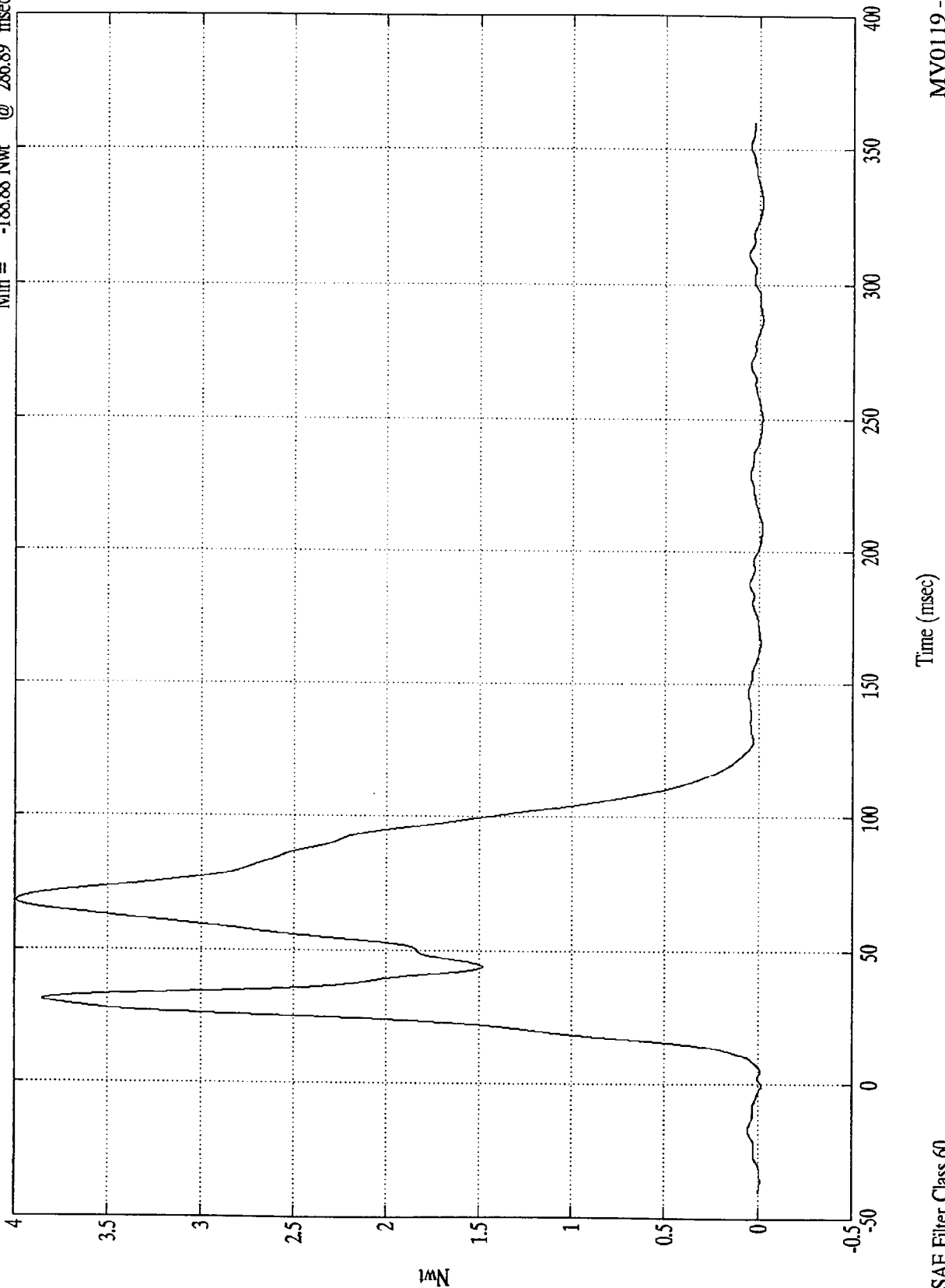
MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4Door

Max = 39932.02 Nwt @ 67.49 msec
Min = -18888 Nwt @ 286.89 msec

Barrier Load Cell C2

$\times 10^4$



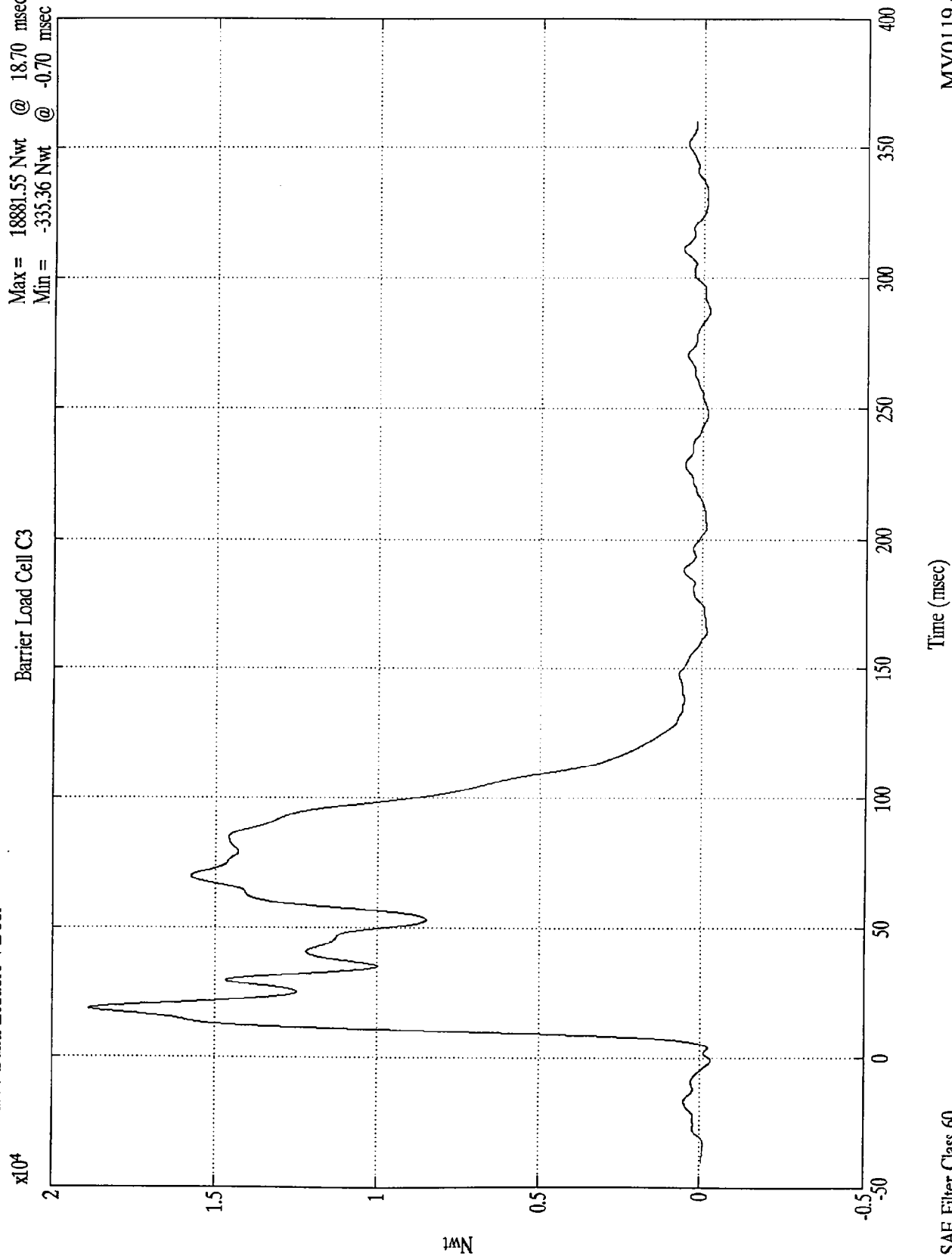
MV0119 - 3/18/97

SAE Filter Class 60

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 18881.55 Nwt @ 18.70 msec
Min = -335.36 Nwt @ -0.70 msec

Barrier Load Cell C3



SAE Filter Class 60

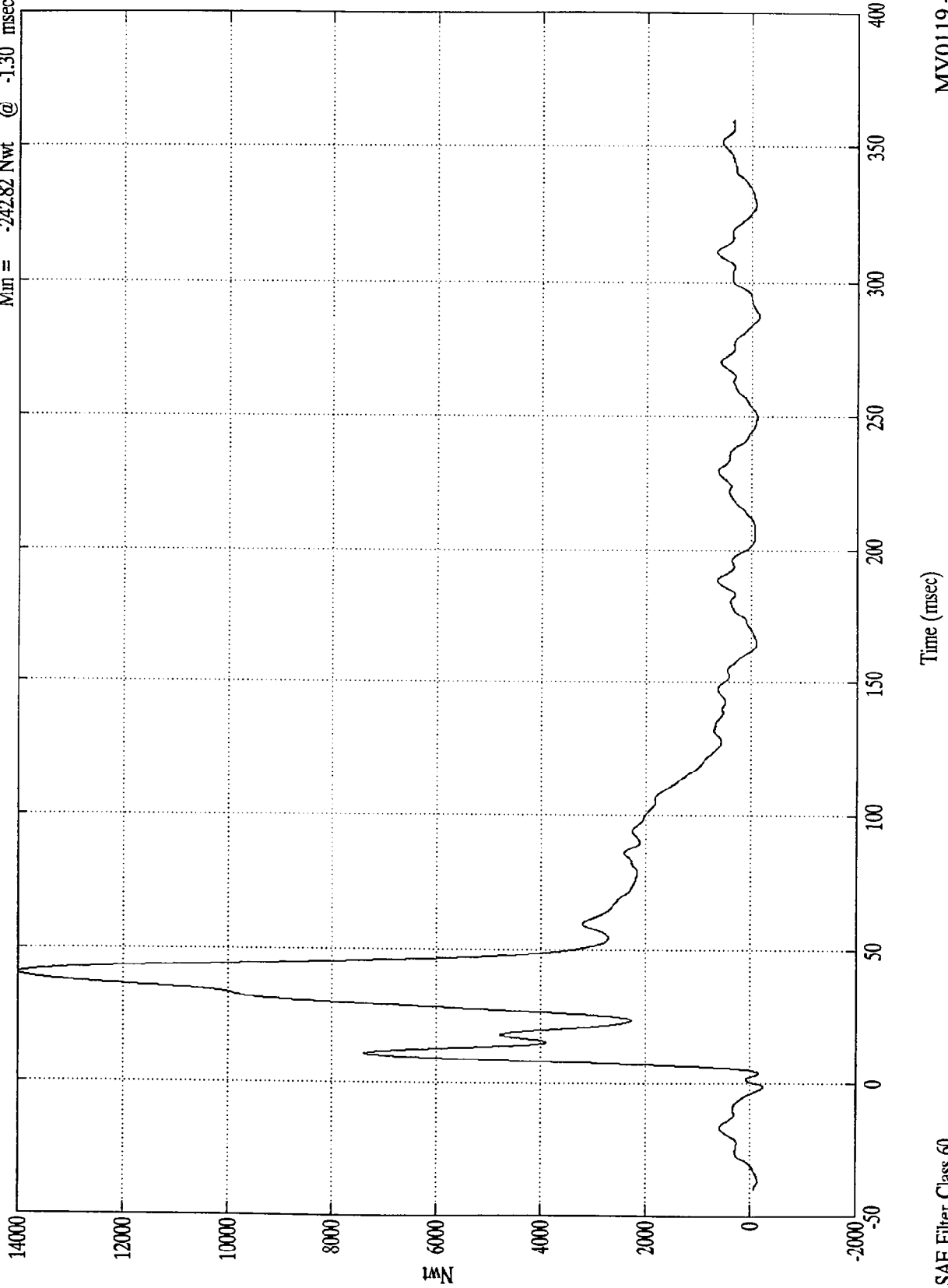
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Barrier Load Cell C4

Max = 14006.05 Nwt @ 40.29 msec
Min = -242.82 Nwt @ -1.30 msec



SAE Filter Class 60

Time (msec)

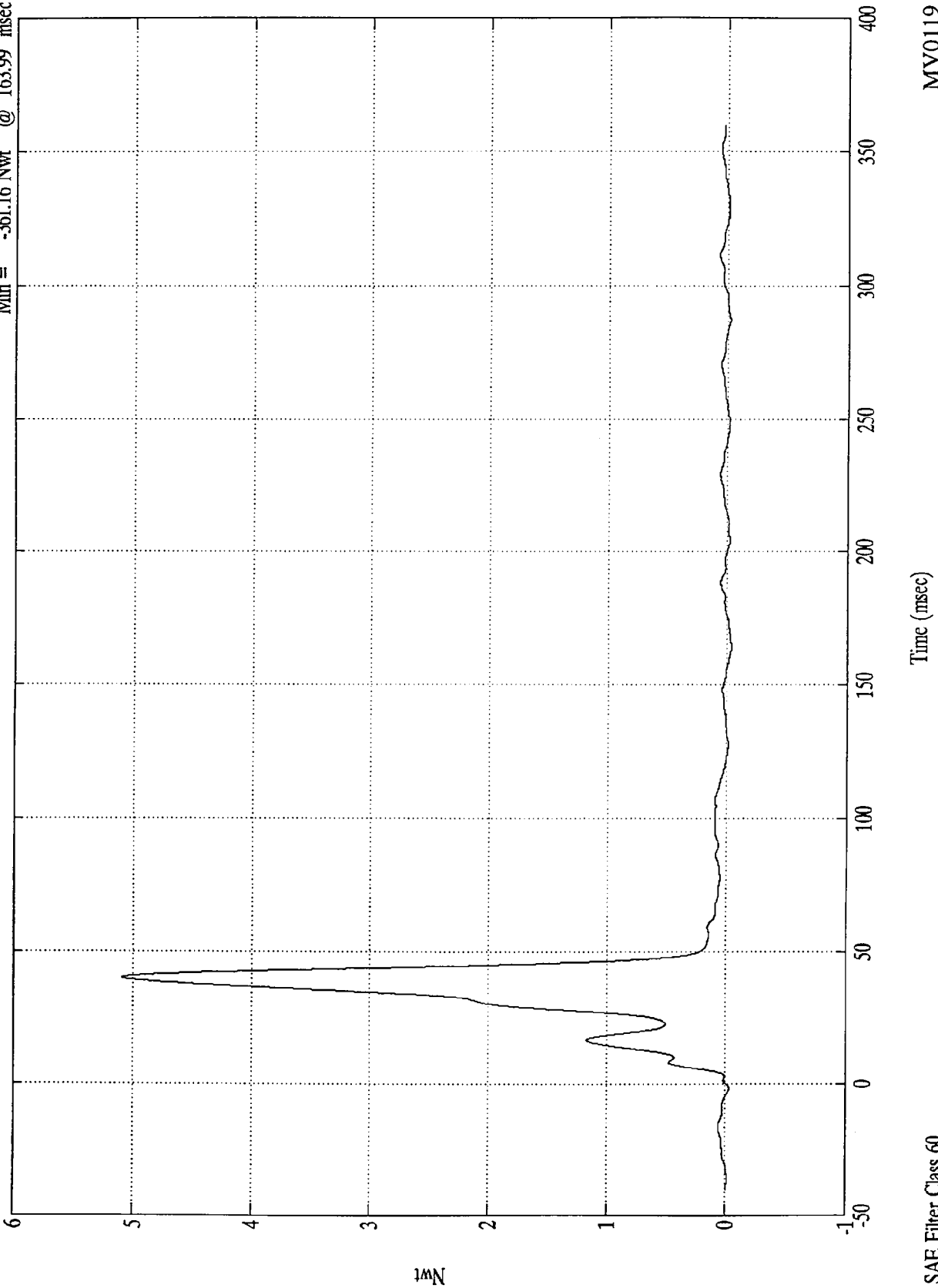
MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

$\times 10^4$

Barrier Load Cell C5

Max = 50924.41 Nwt @ 40.29 msec
Min = -361.16 Nwt @ 163.99 msec



SAE Filter Class 60

Time (msec)

MV0119 - 3/18/97

Nwt

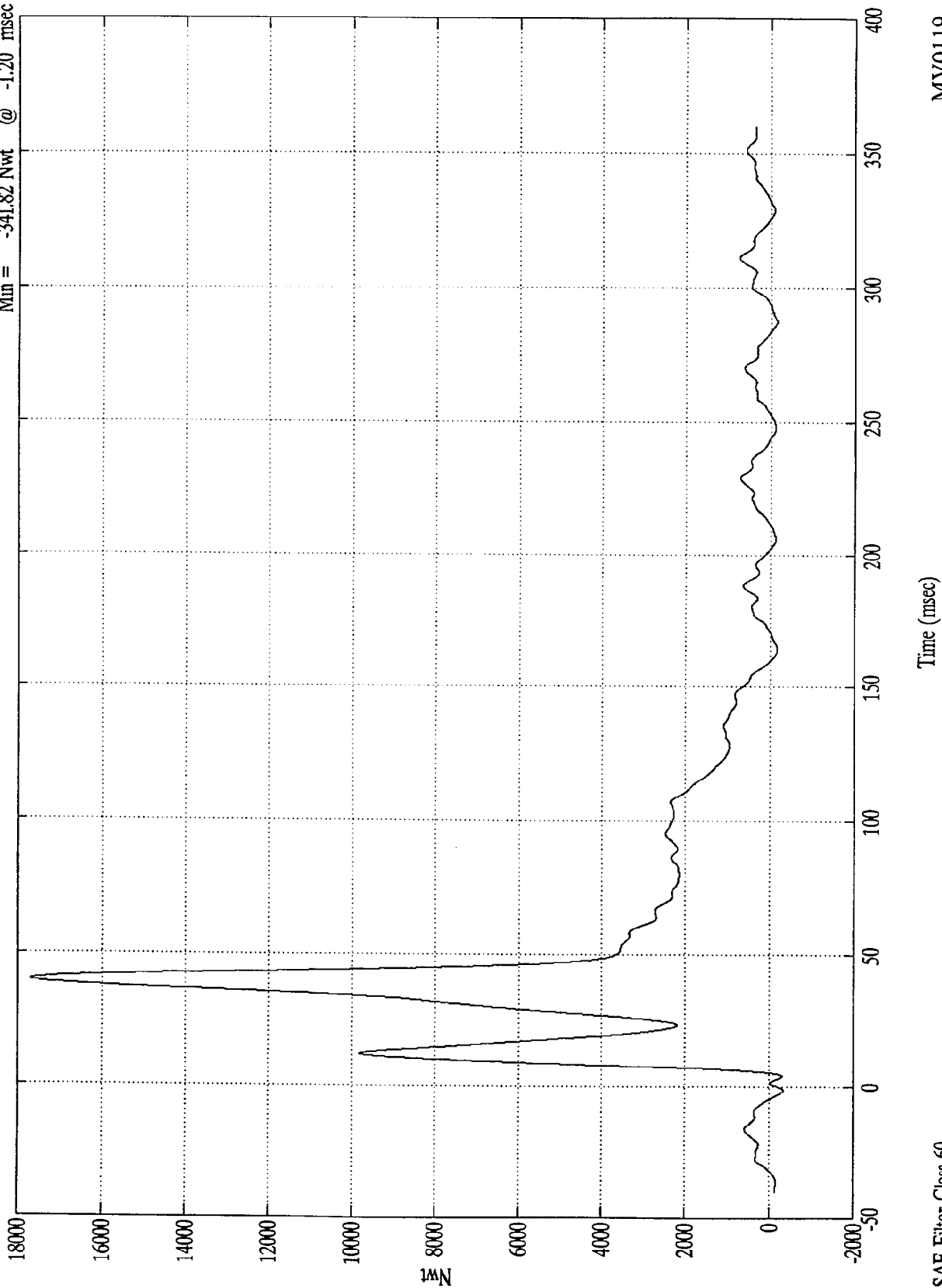
B-155

8406-6

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Barrier Load Cell C6

Max = 17706.82 Nwt @ 39.69 msec
Min = -341.82 Nwt @ -1.20 msec



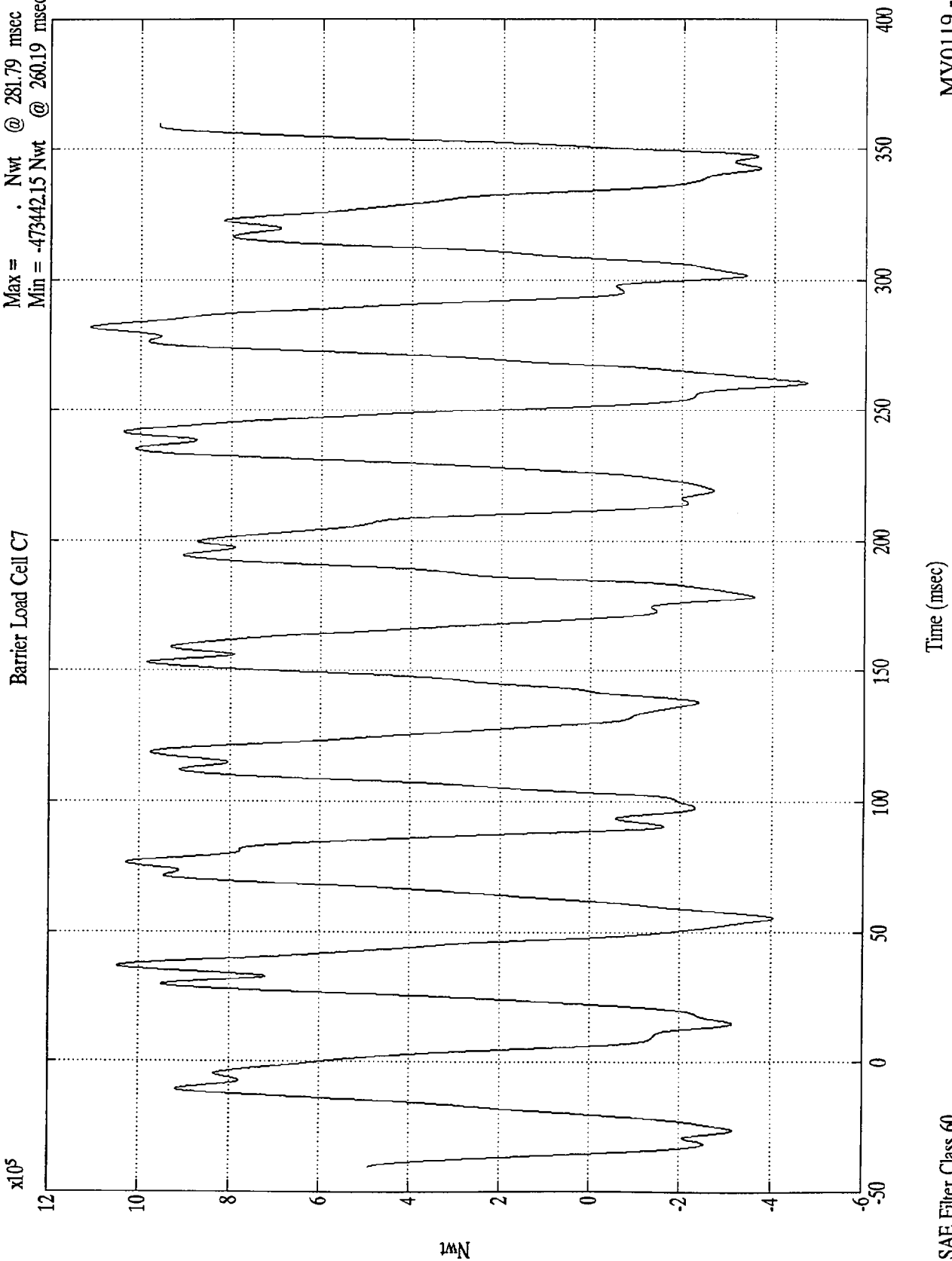
SAE Filter Class 60

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Barrier Load Cell C7

Max = . Nwt @ 281.79 msec
Min = -473442.15 Nwt @ 260.19 msec



SAE Filter Class 60

Time (msec)

MV0119 - 3/18/97

Nwt

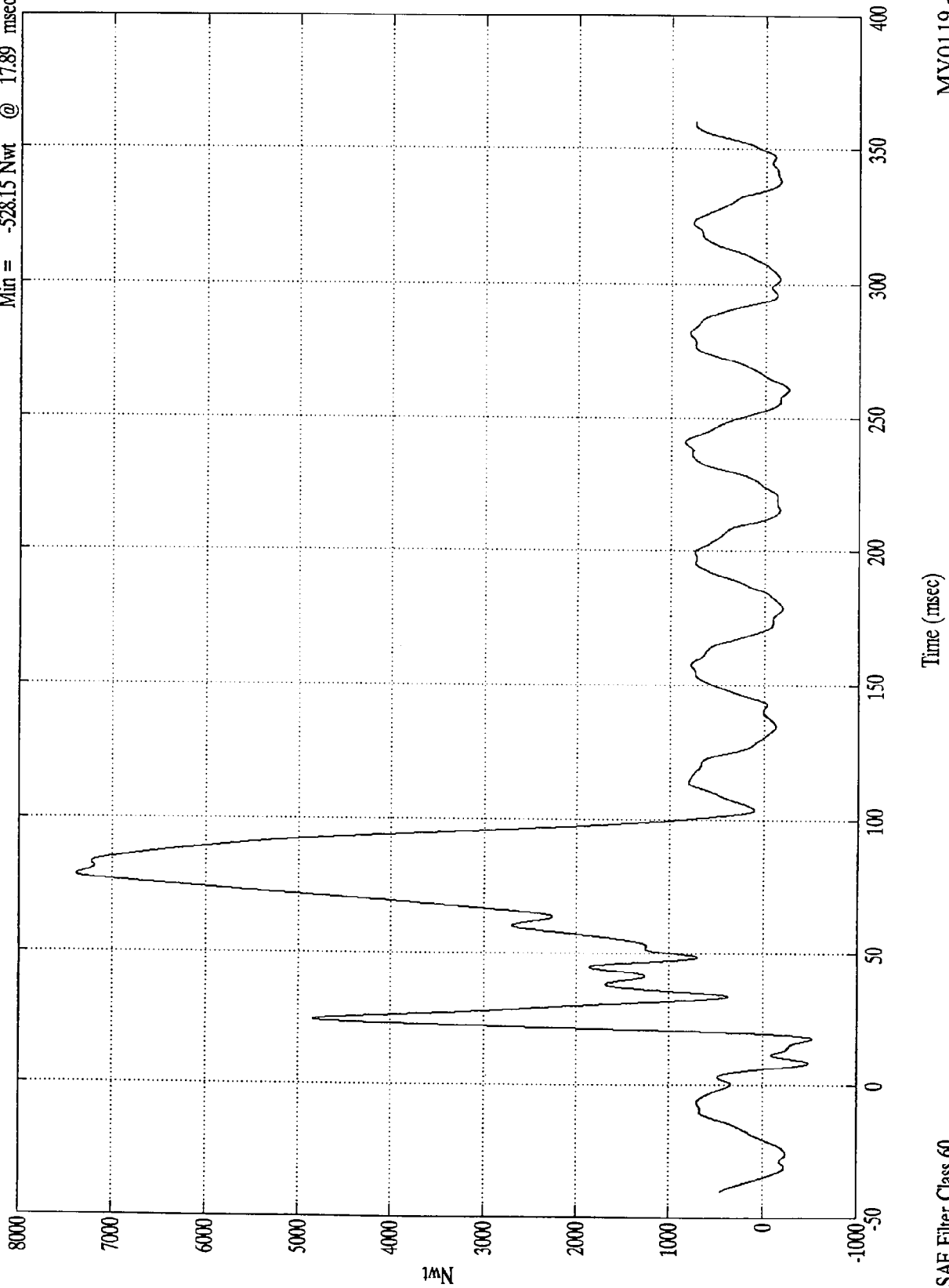
B-157

8406-6

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Barrier Load Cell C8

Max = 7384.71 Nwt @ 78.40 msec
Min = -528.15 Nwt @ 17.89 msec



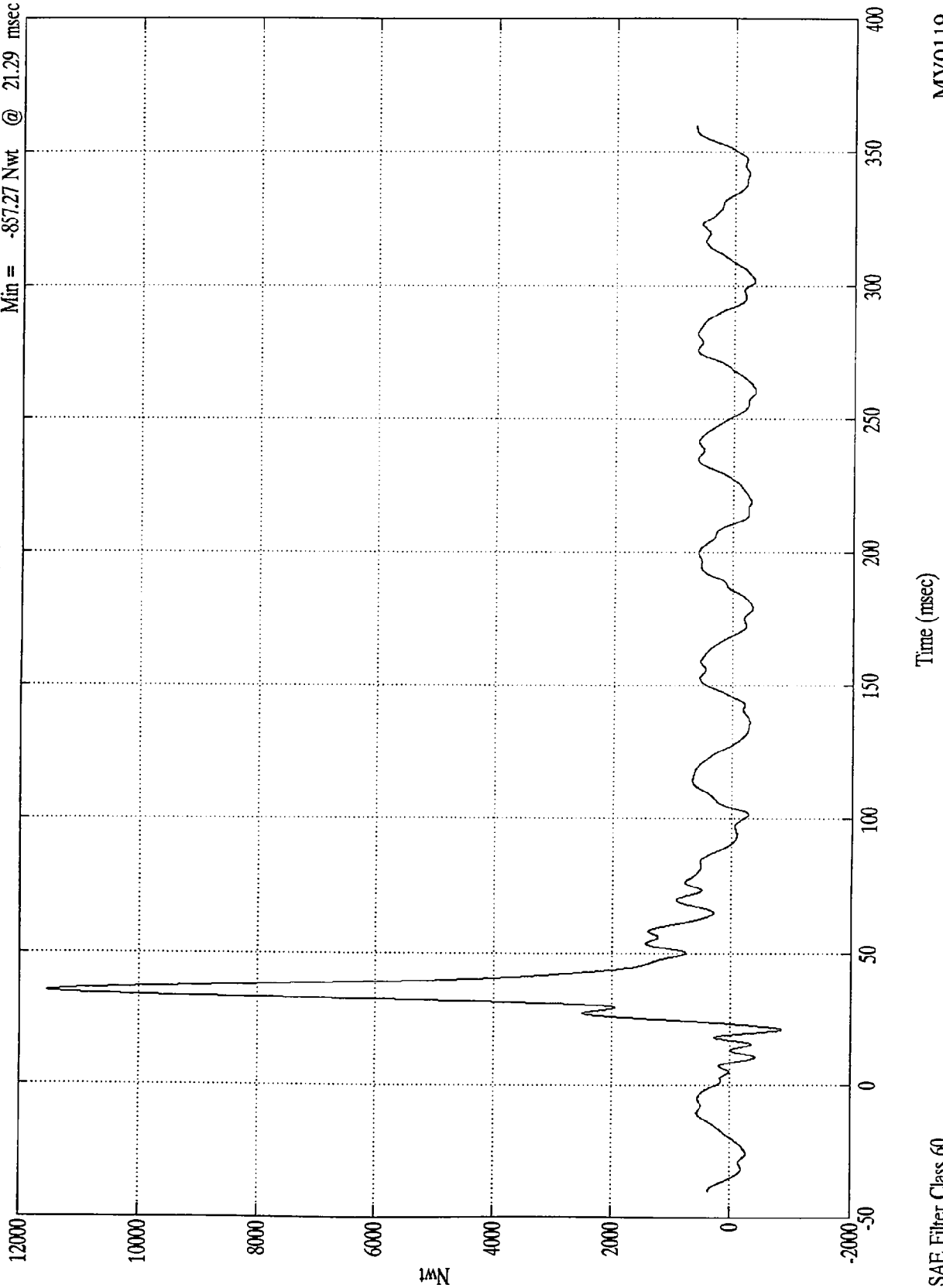
SAE Filter Class 60

Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Barrier Load Cell C9
Max = 11548.88 Nwt @ 35.39 msec
Min = -857.27 Nwt @ 21.29 msec



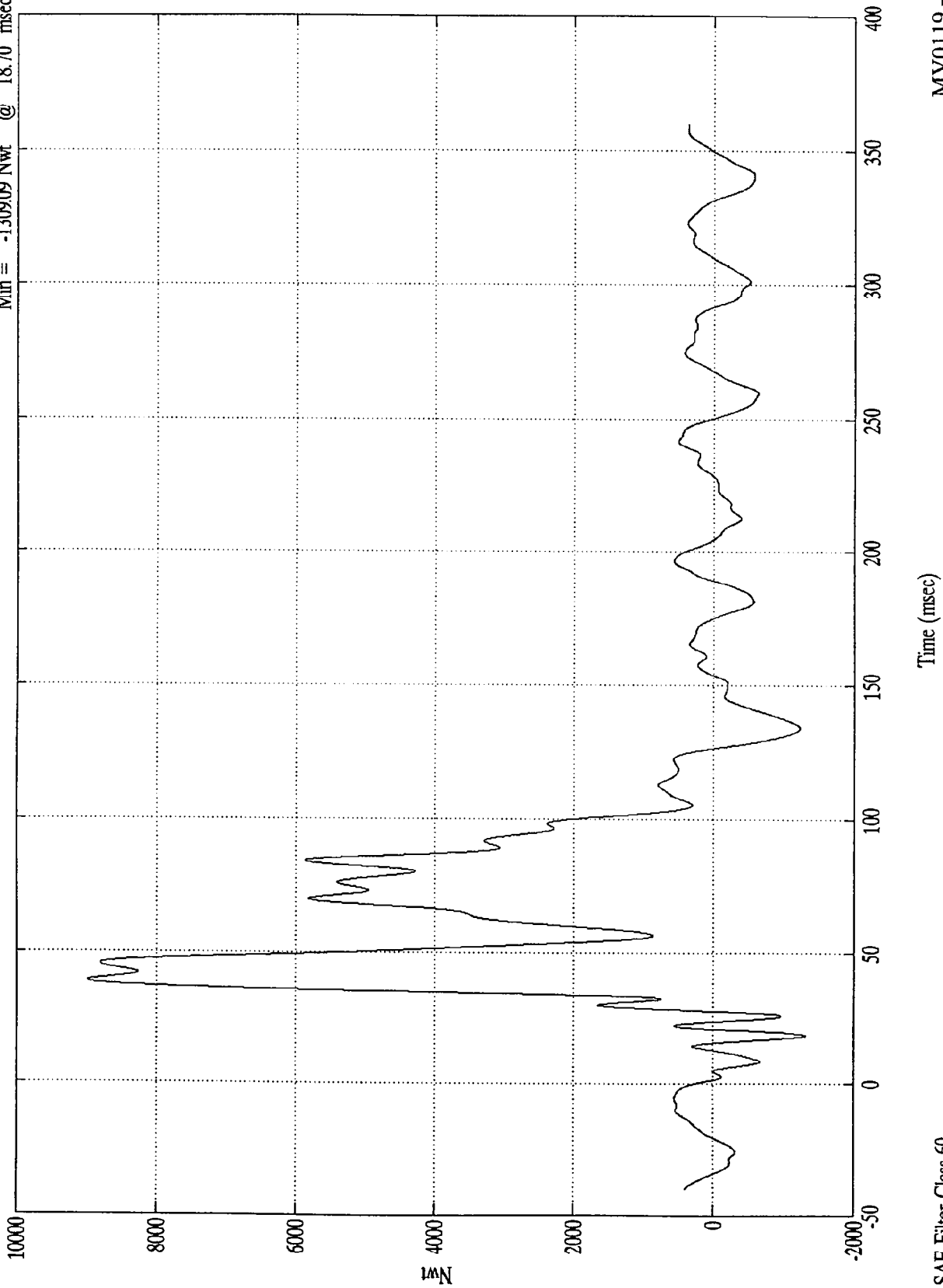
SAE Filter Class 60

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4 Door

Max = 8987.58 Nwt @ 38.59 msec
Min = -1309.09 Nwt @ 18.70 msec

Barrier Load Cell DI



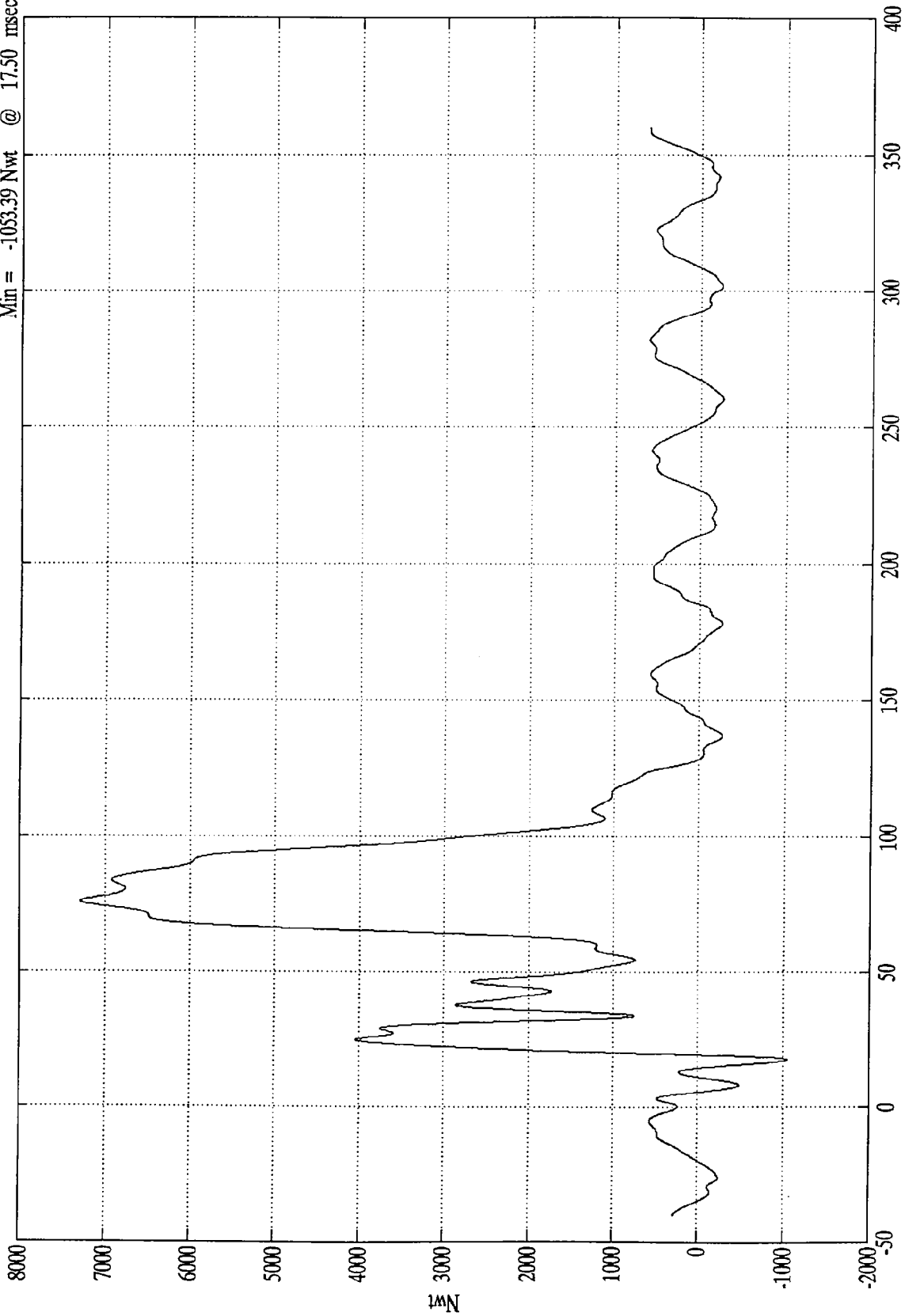
MV0119 - 3/18/97

SAE Filter Class 60

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 7285.90 Nwt @ 75.59 msec
Min = -1053.39 Nwt @ 17.50 msec

Barrier Load Cell D2



SAE Filter Class 60

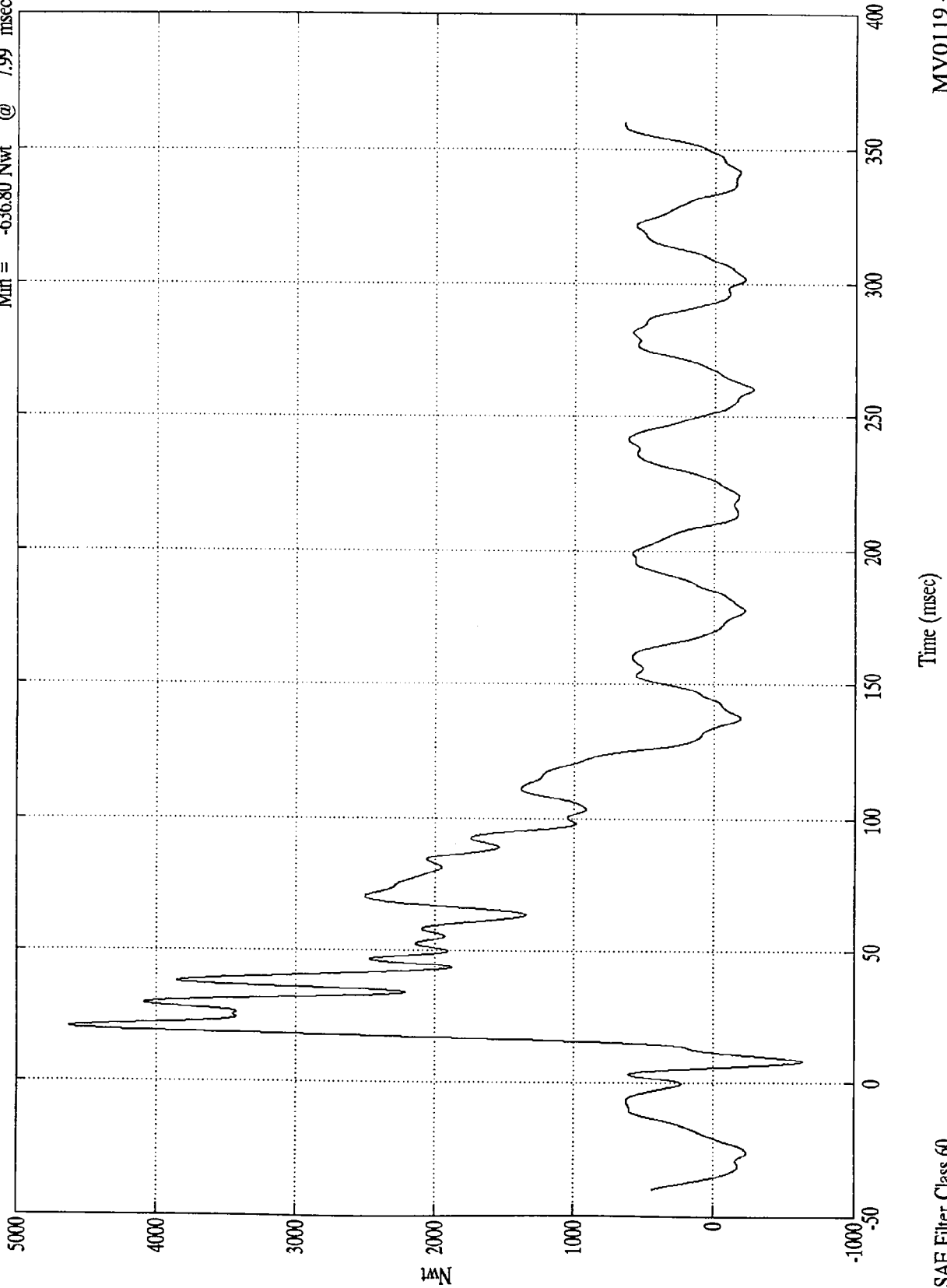
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Barrier Load Cell D3

Max = 4622.03 Nwt @ 20.39 msec
Min = -636.80 Nwt @ 7.99 msec



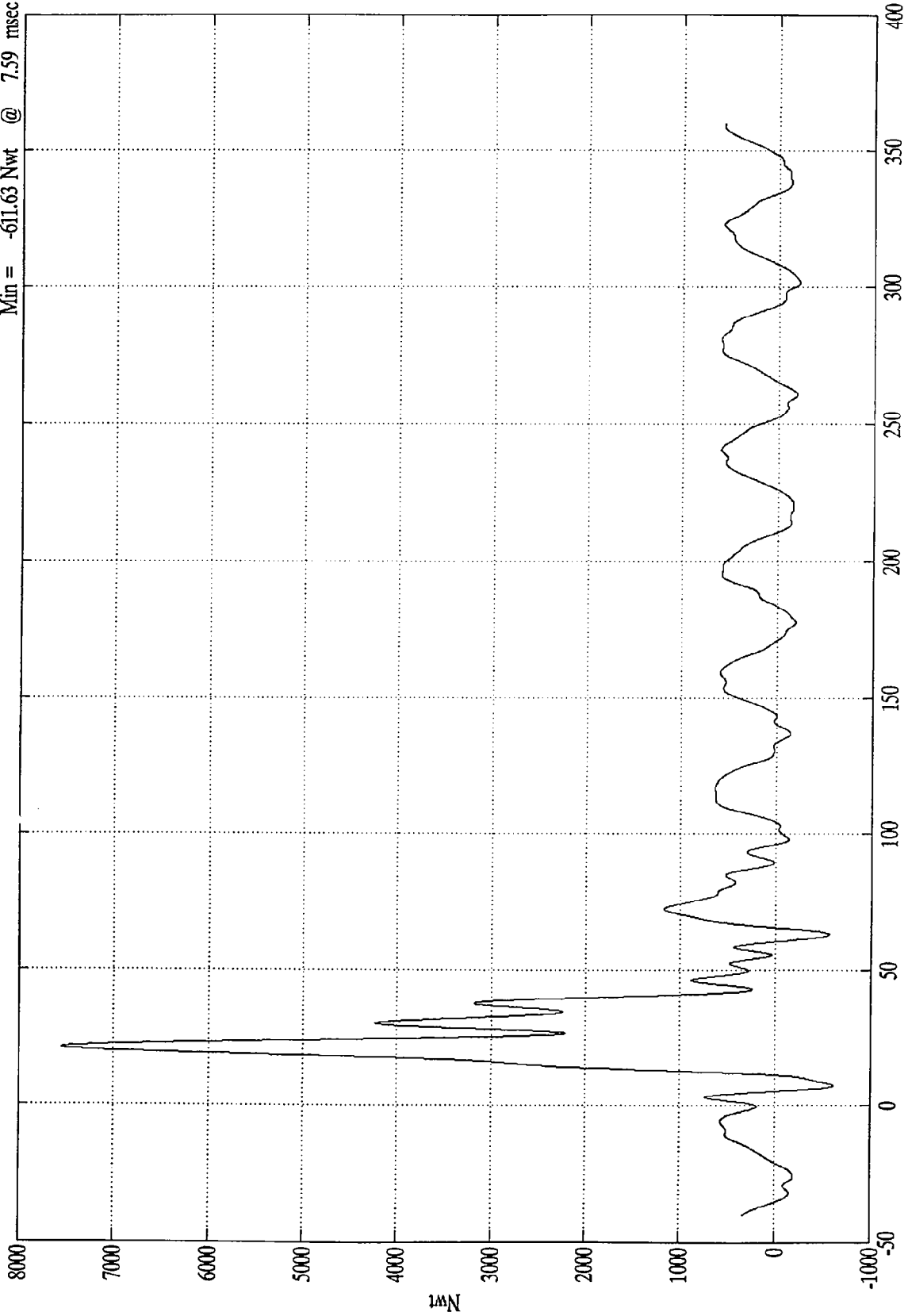
SAE Filter Class 60

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4 Door

Max = 7549.23 Nwt @ 21.00 msec
Min = -611.63 Nwt @ 7.59 msec

Barrier Load Cell D4



SAE Filter Class 60

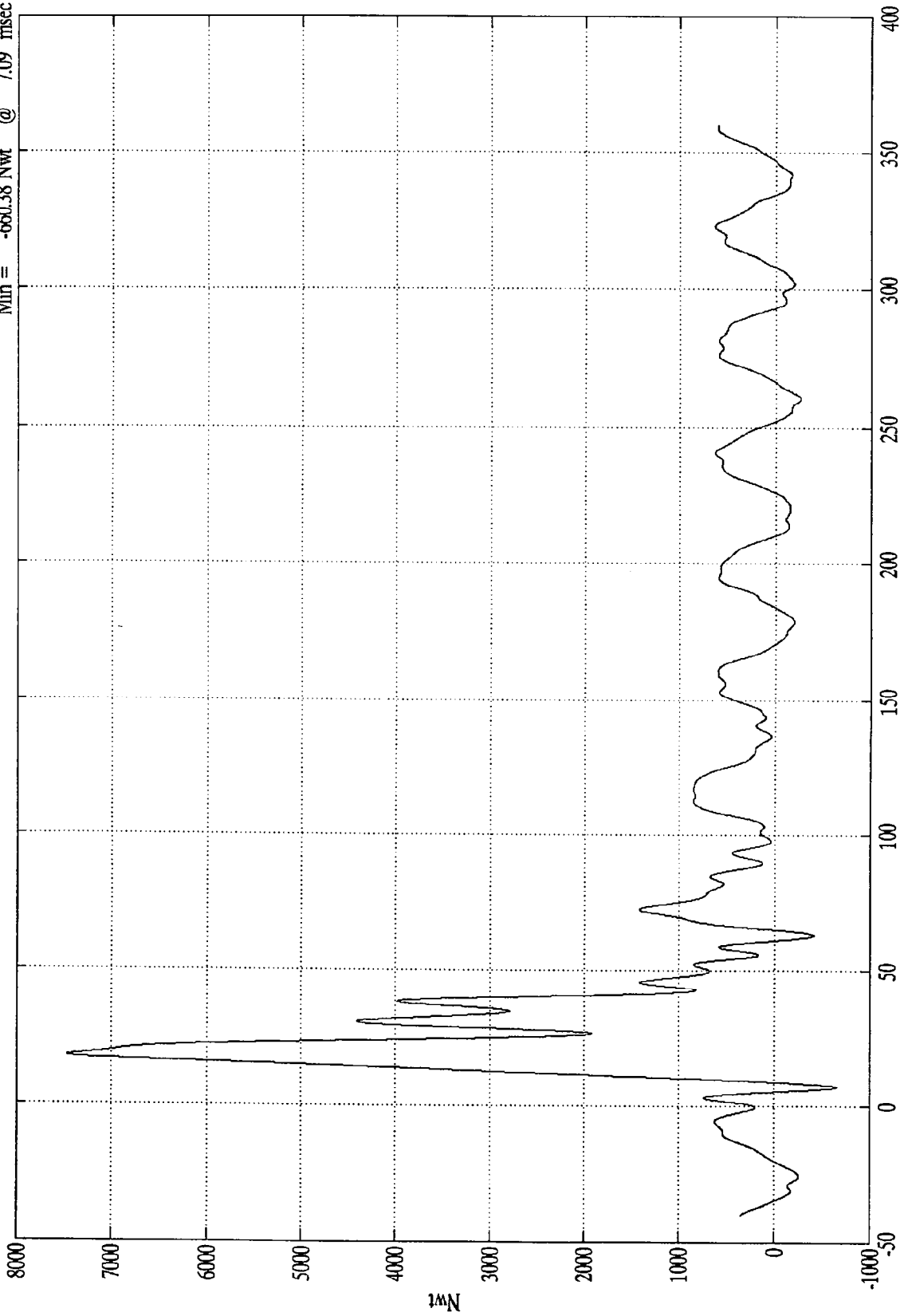
Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4 Door

Barrier Load Cell D5

Max = 7469.20 Nwt @ 17.89 msec
Min = -660.38 Nwt @ 7.09 msec



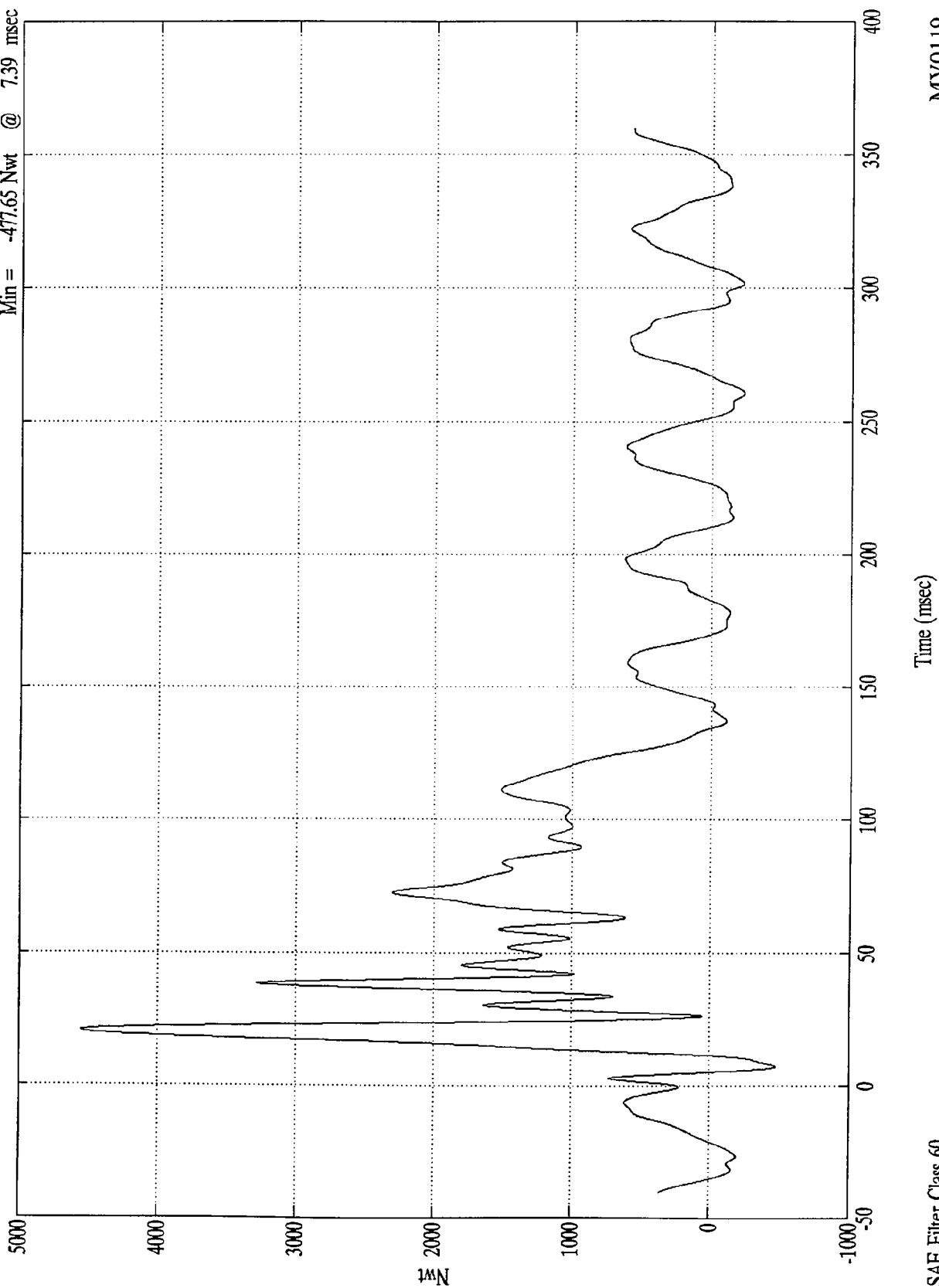
SAE Filter Class 60

Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Barrier Load Cell D6
Max = 4551.11 Nwt @ 20.70 msec
Min = -477.65 Nwt @ 7.39 msec

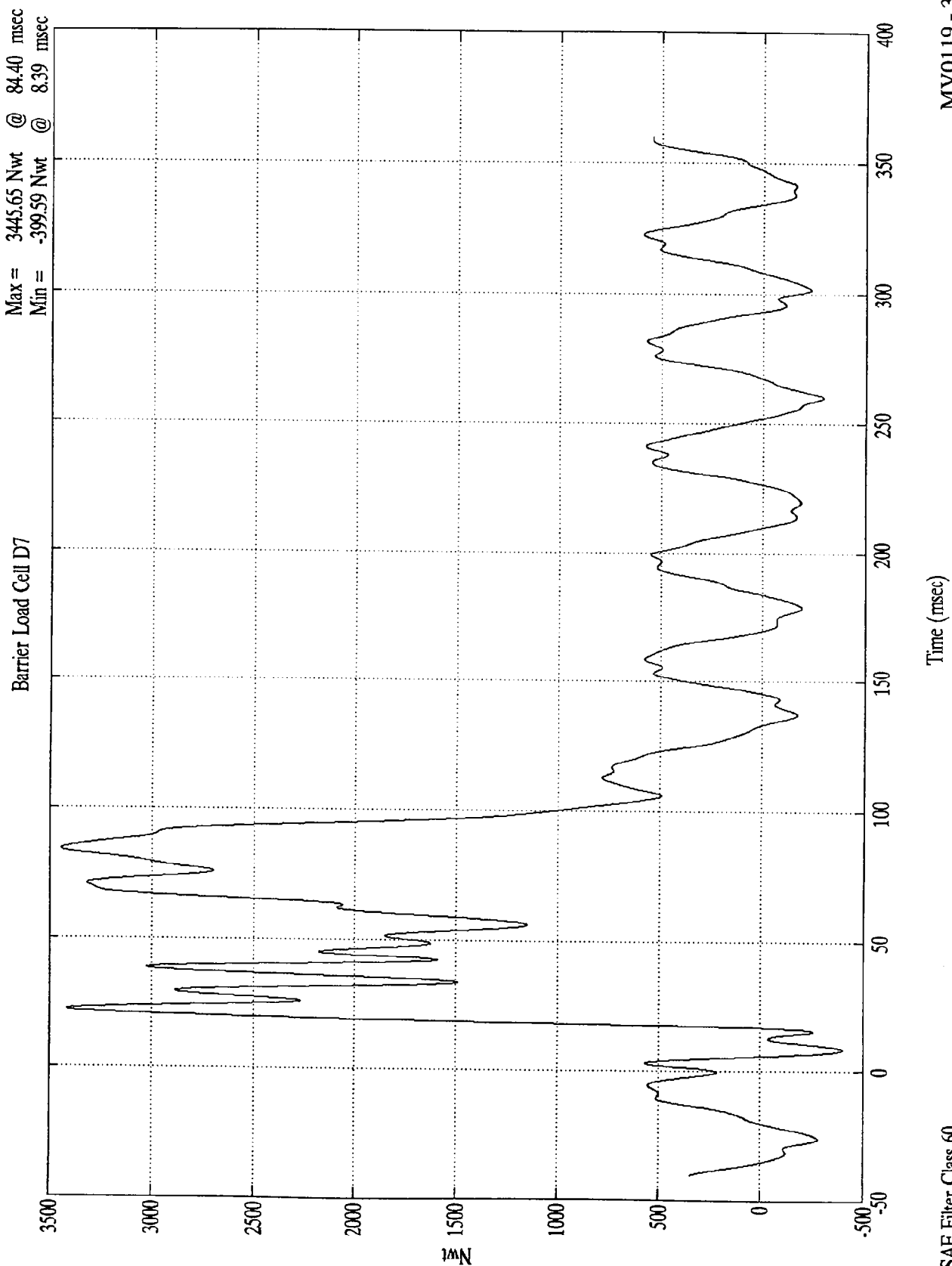


SAE Filter Class 60

Time (msec)

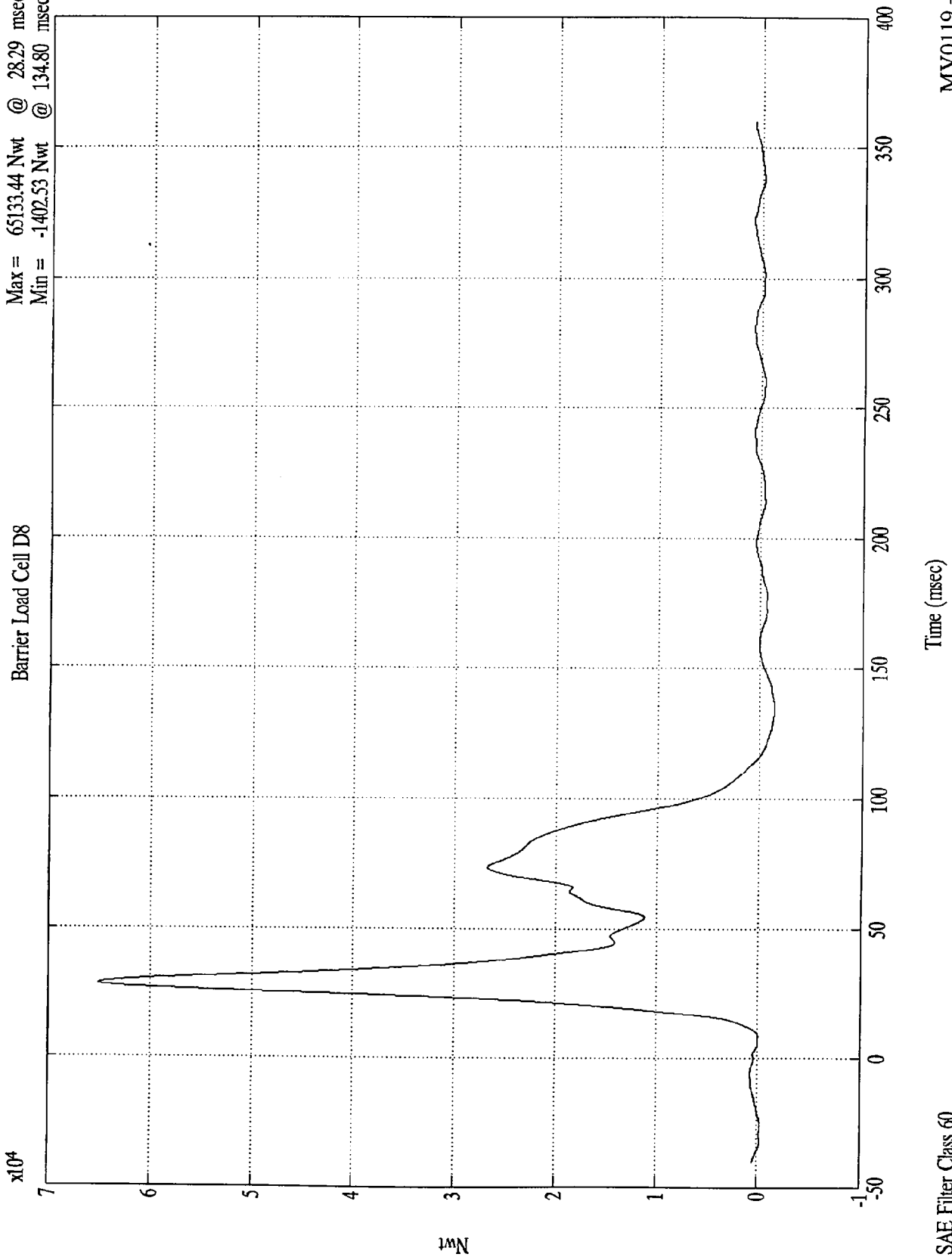
MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4-Door



NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Barrier Load Cell D8
Max = 65133.44 Nwt @ 28.29 msec
Min = -1402.53 Nwt @ 134.80 msec



SAE Filter Class 60

Time (msec)

MV0119 - 3/18/97

Nwt

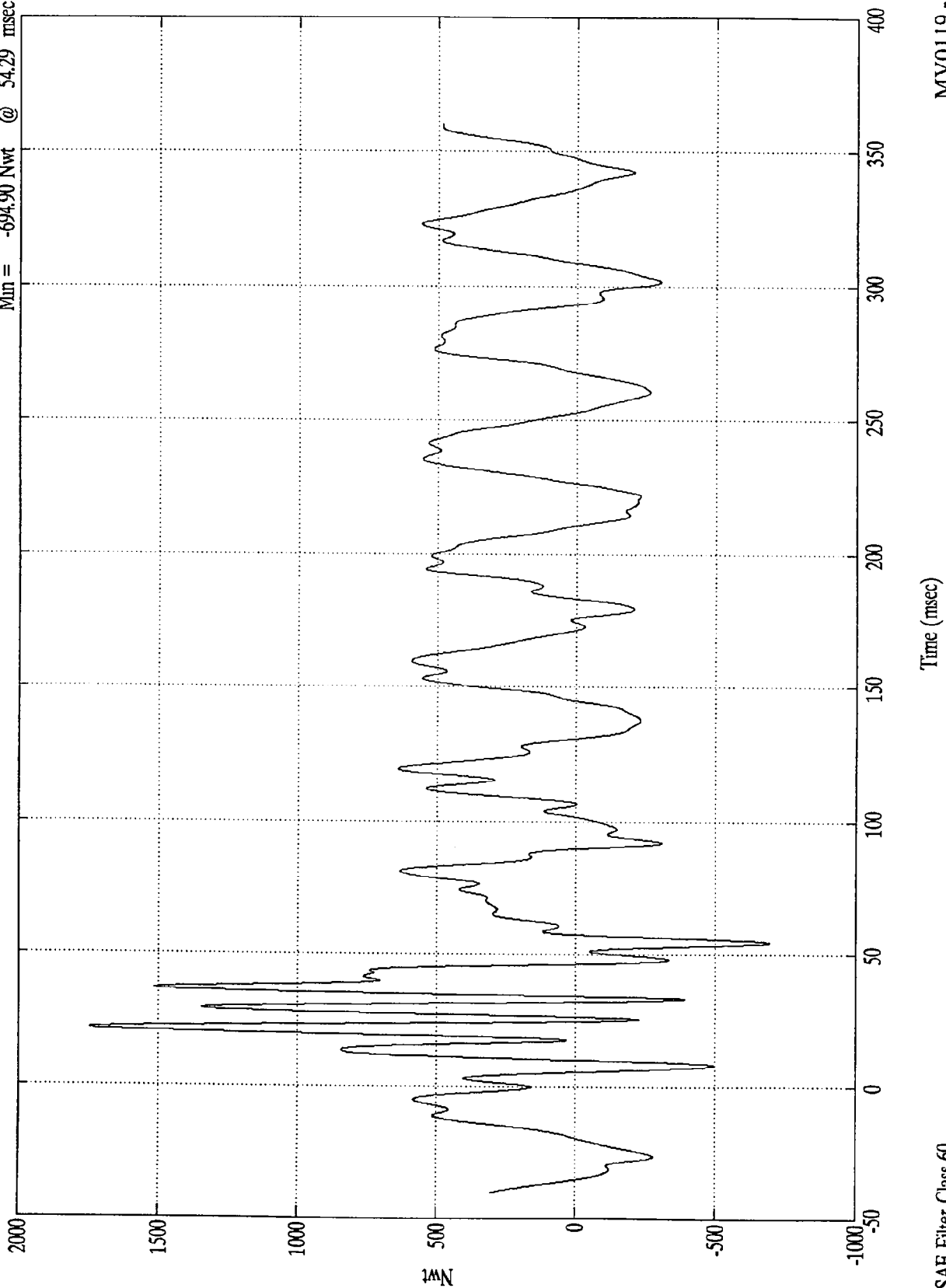
B-167

8406-6

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Barrier Load Cell D9

Max = 1746.89 Nwt @ 21.39 msec
Min = -694.90 Nwt @ 54.29 msec



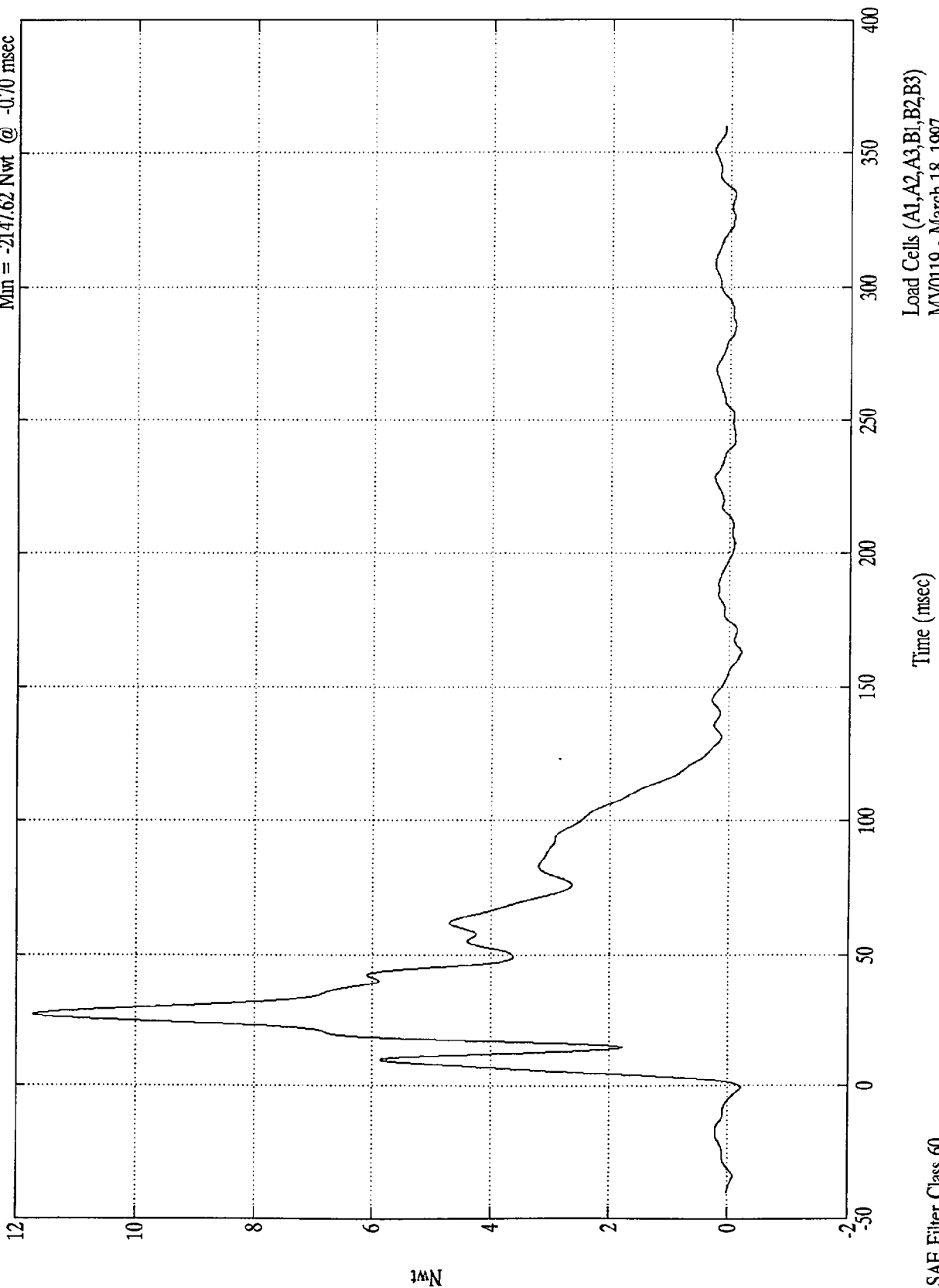
SAE Filter Class 60

Time (msec)

MV0119 - 3/18/97

NCAP TEST #6 - 1997 Buick LeSabre 4Door

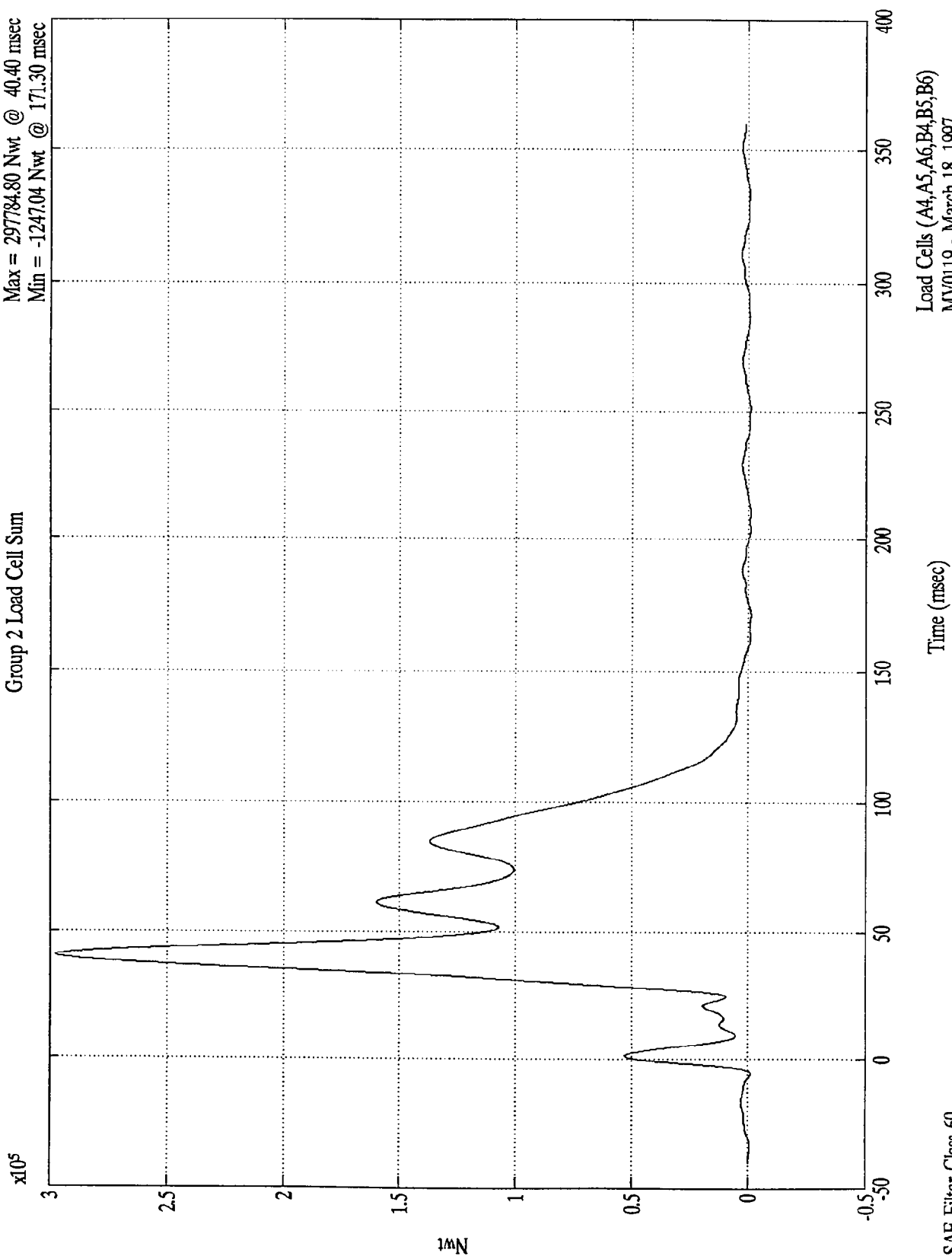
Group 1 Load Cell Sum
Max = 117153.70 Nwt @ 27.00 msec
Min = -2147.62 Nwt @ -0.70 msec



NCAP TEST #6 - 1997 Buick LeSabre 4Door

Max = 297784.80 Nwt @ 40.40 msec
Min = -1247.04 Nwt @ 171.30 msec

Group 2 Load Cell Sum



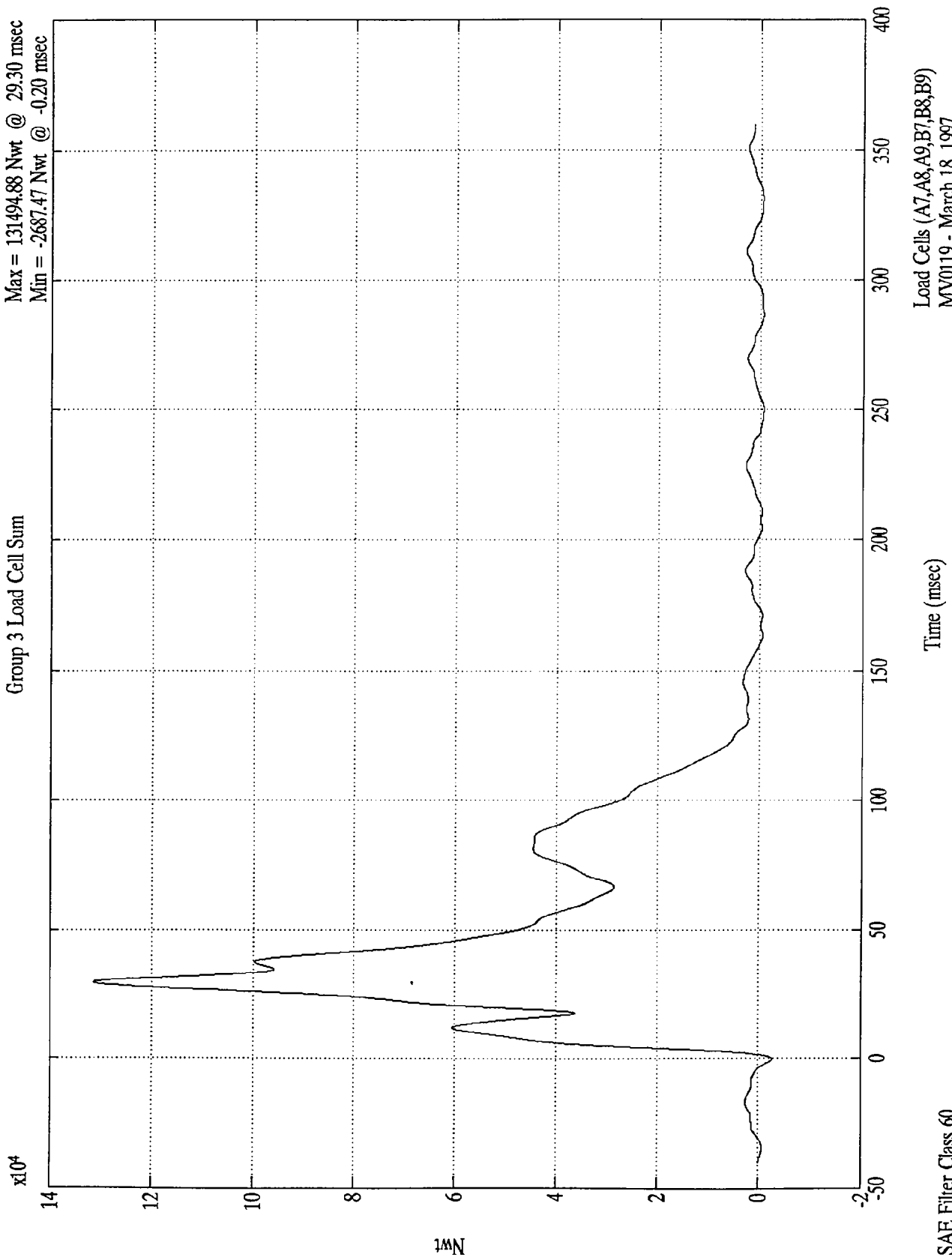
Load Cells (A4,A5,A6,B4,B5,B6)
MV0119 - March 18, 1997

SAE Filter Class 60

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

Max = 131494.88 Nwt @ 29.30 msec
Min = -2687.47 Nwt @ -0.20 msec

Group 3 Load Cell Sum



Load Cells (A7,A8,A9,B7,B8,B9)
MV0119 - March 18, 1997

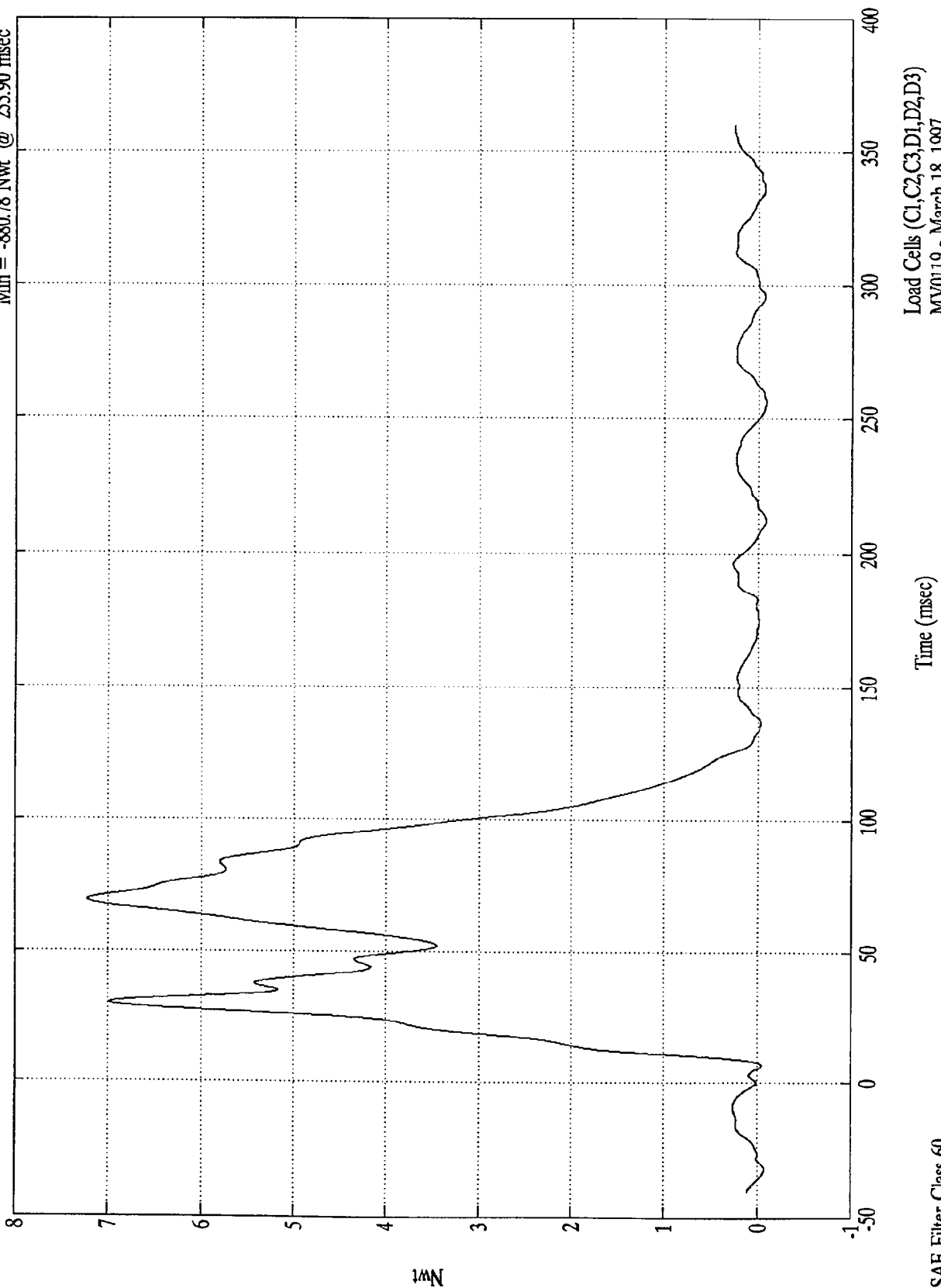
SAE Filter Class 60

NCAP TEST #6 - 1997 Buick LeSabre 4Door

$\times 10^4$

Group 4 Load Cell Sum

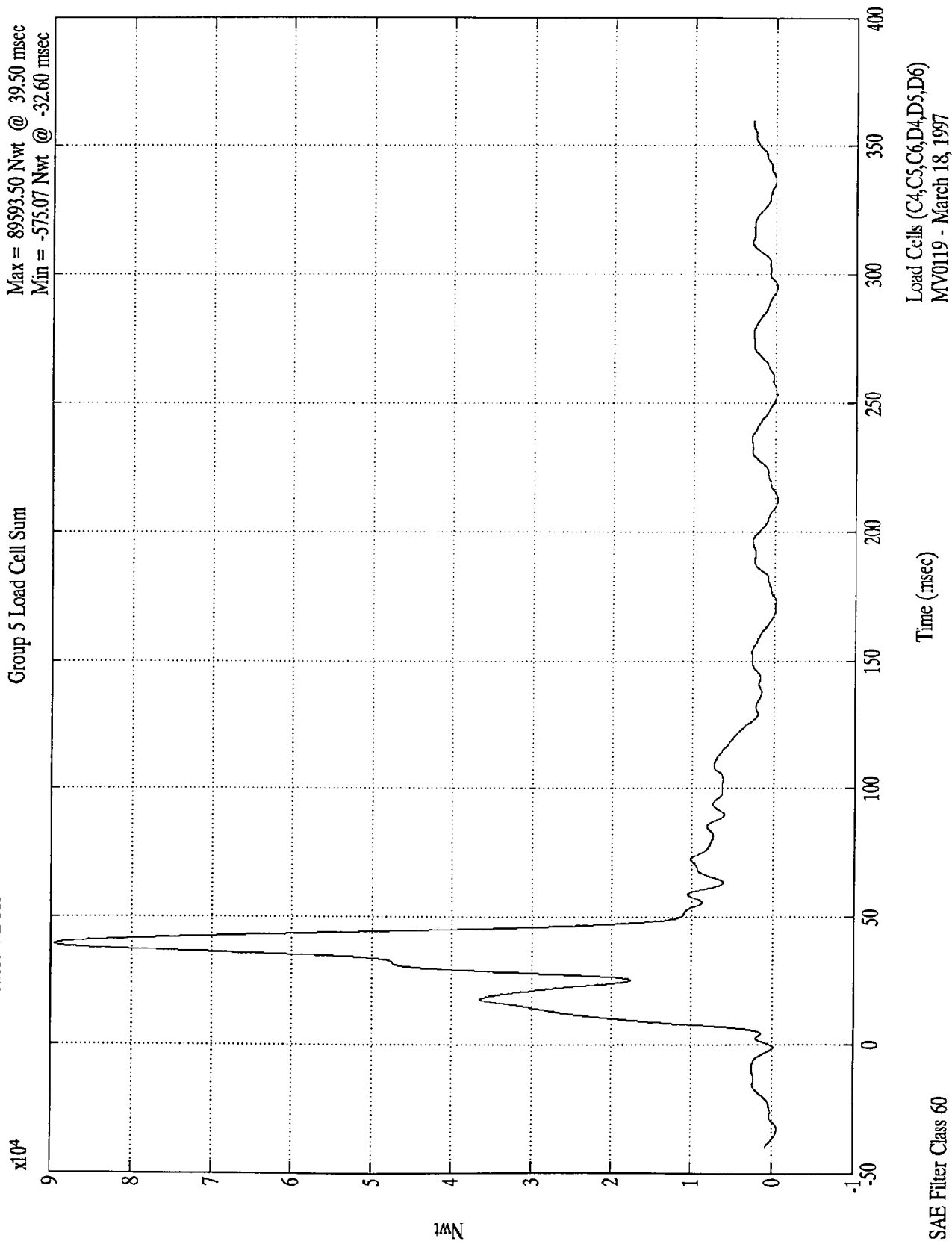
Max = 72262.20 Nwt @ 69.10 msec
Min = -880.78 Nwt @ 255.90 msec



Load Cells (C1, C2, C3, D1, D2, D3)
MV0119 - March 18, 1997

SAE Filter Class 60

NCAP TEST #6 - 1997 Buick LeSabre 4-Door

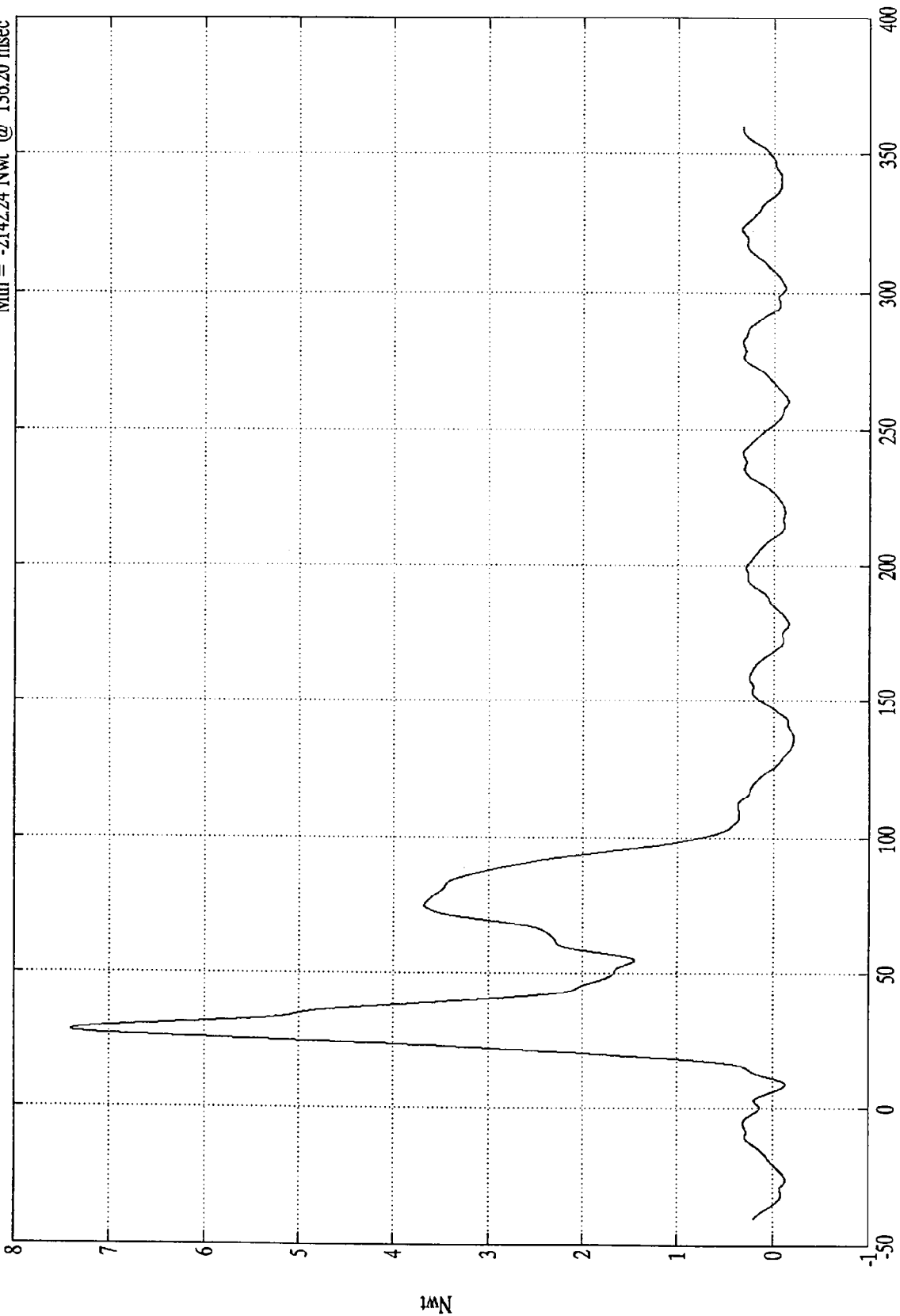


NCAP TEST #6 - 1997 Buick LeSabre 4-Door

$\times 10^4$

Group 6 Load Cell Sum

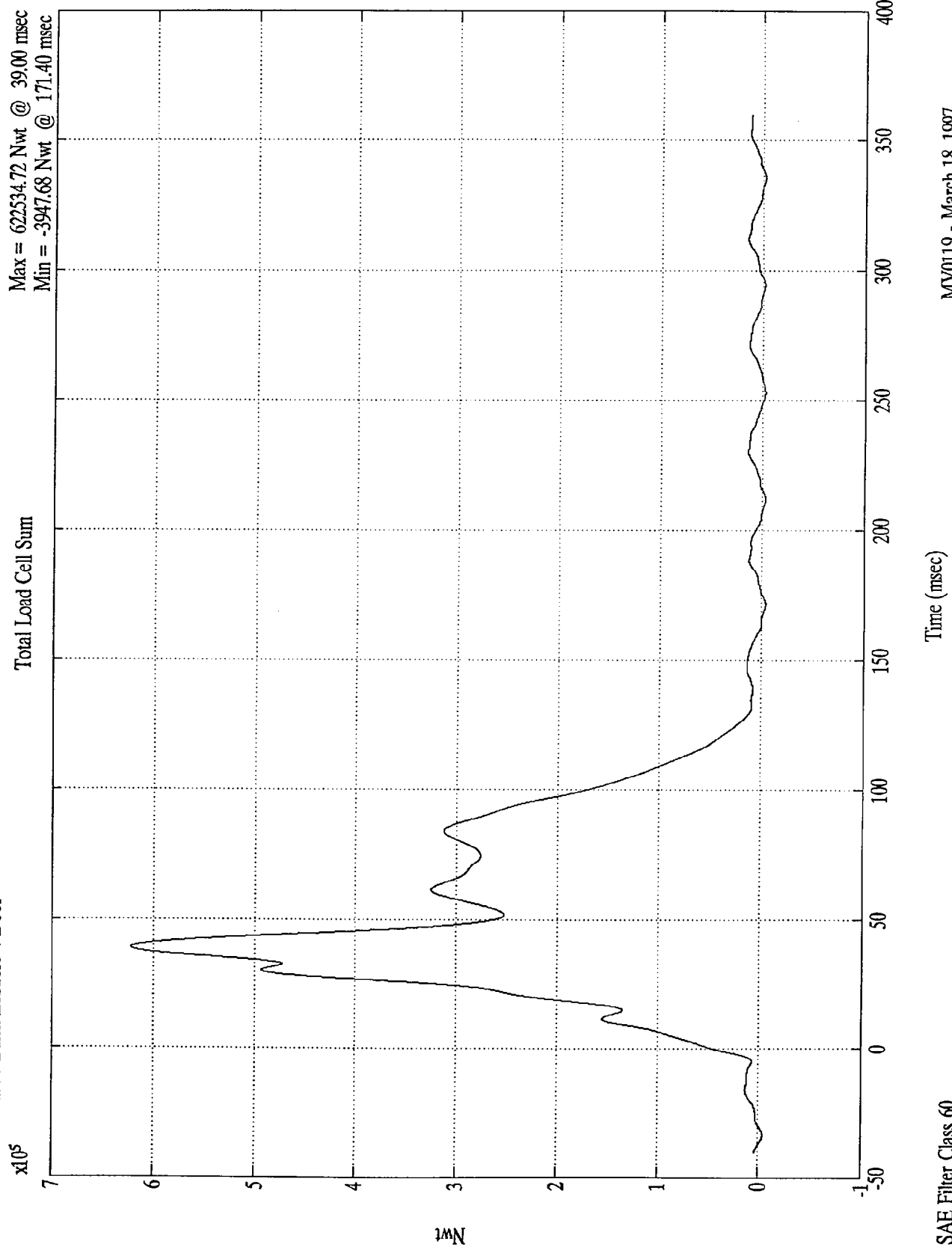
Max = 74122.40 Nwt @ 28.20 msec
Min = -21422.24 Nwt @ 136.20 msec



Load Cells (C7,C8,C9,D7,D8,D9)
MV0119 - March 18, 1997

SAE Filter Class 60

NCAP TEST #6 - 1997 Buick LeSabre 4-Door



Appendix C

PART 572B/E DUMMY CONFIGURATION

AND PERFORMANCE VERIFICATION DATA SHEETS

Appendix C contains the results from certification tests performed on the 50th percentile male anthropomorphic test devices utilized for this crash test. The results indicate that the dummies meet all of the performance requirements of the six standard tests as specified in 49 CFR Part 572, Federal Register, Volume 42, No. 25, dated February 7, 1977.

The tests were conducted at the Dummy Certification Test Facility of Calspan SRL Corporation. A summary of the test results, and Part 572 specifications are included in this Appendix.

Dummy serial numbers and certification dates are:

<u>Position No./Location</u>	<u>Serial No.</u>	<u>Completion Date</u>
#1/Driver	245	1/97
#2/Right Front Passenger	064	1/97

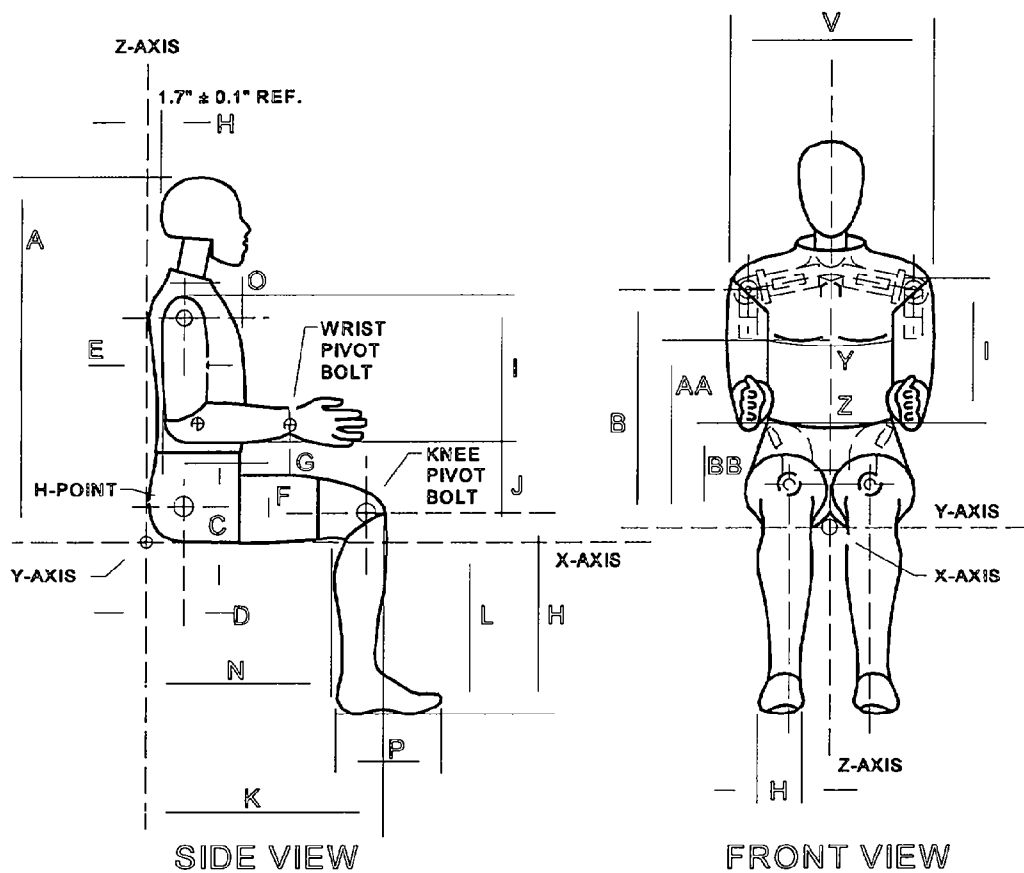
Electronic Test Equipment

The complement of signal conditioning, recording and display equipment, in conjunction with dummy certification testing, can be found in New Car Assessment and Standards Inducant Testing Final Report No. 6525-V-1.'

Figure 15

DUMMY CONFIGURATION DIMENSIONS

EXTERNAL DIMENSIONS
SPECIFICATIONS



NOTE: Figure is referenced to the erect seated position. The curved lumbar does not allow the Hybrid III to be positioned in a perfect erect attitude.
(REF: S572.31(A)(6))

CALSPAN CORPORATION
Transportation Sciences Center

PART 572E
HEAD DROP TEST

Dummy Serial Number 245
Calspan Sequential Test Number 1
Date 1/24/97
Workfile 245197.hdp

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70
Relative Humidity	10% - 70%	24
Peak Resultant Acceleration	225-275 G's	225.4
Peak Lateral Acceleration	15 G's Max	9.6
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician: B. Swiecicki

CALSPAN CORPORATION

Transportation Sciences Center

PART 572E
NECK FLEXION TESTDummy Serial Number 245
Calspan Sequential Test Number 1
Date 1/26/97
Workfile 245197.nfl

6 Axis Neck Transducer

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70
Relative Humidity		10% - 70%	26
Impact Velocity		22.60 - 23.40 Ft/s	23.20
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	22.64
	20 ms	17.60 - 22.60 G's	20.27
	30 ms	12.50 - 18.50 G's	15.36
Max Pendulum G's Above 30 ms		29 G's Max	15.36
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	38.88
D Plane Rotation	Max	64 - 78 Deg	64.42
	Time	57 - 64 ms	59.25
Moment About Occipital Condyle	Max	65 - 80 Ft-Lbs	68.19
	Time	47 - 58 ms	52.25
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	120.50
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	98.50

Remarks:

Laboratory Technician: B. Swiecicki

CALSPAN CORPORATION
Transportation Sciences Center

PART 572E
NECK EXTENSION TEST

Dummy Serial Number 245
Calspan Sequential Test Number 1
Date 1/25/97 6 Axis Neck Transducer
Workfile 245197.nex

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70
Relative Humidity		10% - 70%	25
Impact Velocity		19.50 - 20.30 Ft/s	19.70
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	17.68
	20 ms	14.00 - 19.00 G's	15.61
	30 ms	11.00 - 16.00 G's	12.43
Max Pendulum G's Above 30 ms		22 G's Max	12.43
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	42.13
D Plane Rotation	Max	81 - 106 Deg	91.30
	Time	72 - 82 ms	75.63
Moment About Occipital Condyle	Max	-59.0 - -39.0 Ft-Lbs	-48.39
	Time	65 - 79 ms	71.75
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	151.25
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	138.00

Remarks:

Laboratory Technician: B. Swiecicki

CALSPAN CORPORATION

Transportation Sciences Center

PART 572E THORAX IMPACT TEST

Dummy Serial Number 245
Calspan Sequential Test Number 1
Date 1/31/97
Workfile 245197.th3

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70
Relative Humidity	10% - 70%	29
Pendulum Velocity	21.6 - 22.4 Ft/s	22.00
Maximun Deflection	2.50 - 2.86 in	2.60
Maximum Resistive Force	1160 - 1325 Lbs	1279.04
Internal Hysteresis	69 - 85 %	77.3

Remarks:

Laboratory Technician: B. Swiecicki

CALSPAN CORPORATION
Transportation Sciences Center

PART 572E
KNEE IMPACT TEST

Dummy Serial Number 245
Calspan Sequential Test Number 1
Date 2/10/97
Workfile 245197

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66-78 Deg F	70
Relative Humidity	10% - 70%	25
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 -1300 Lbs	1158
RIGHT KNEE		
Temperature	66-78 Deg F	70
Relative Humidity	10% - 70%	25
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 -1300 Lbs	1166

Remarks:

Laboratory Technician: B. Swiecicki

CALSPAN CORPORATION

Transportation Sciences Center

PART 572E EXTERNAL DIMENSIONS

Dummy Serial Number 245
Calspan Sequential Test Number 1
Date 1/31/97

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70
Relative Humidity			25
Location for Chest Circumference	AA	16.9 - 17.1 in	17.0
Location for Waist Circumference	BB	8.9 - 9.1 in	9.0
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	38.6
Waist Circumference	Z	32.9 - 34.1 in	33.4
Chest Depth	O	8.4 - 9.0 in	8.6
H-Point Height	C	3.3 - 3.5 in	3.4
H-Point from Backline	D	5.3 - 5.5 in	5.4
Skull Cap to Backline	H	1.6 - 1.8 in	1.7
Total Sitting Height	A	34.6 - 35.0 in	34.8
Thigh Clearance	F	5.5 - 6.1 in	6.0
Buttock Knee Length	K	22.8 - 23.8 in	23.6
Buttock Popliteal Length	N	17.8 - 18.8 in	18.4
Popliteal Height	L	16.9 - 17.9 in	17.3
Knee Pivot Height	M	19.1 - 19.7 in	19.4
Foot Length	P	9.9 - 10.5 in	10.1
Foot Breadth	W	3.6 - 4.2 in	3.8
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.6
Shoulder Breadth	V	16.6 - 17.2 in	16.8
Shoulder Pivot Height	B	19.9 - 20.5 in	20.4
Elbow Rest Height	J	7.5 - 8.3 in	8.0
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.3
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.6

Remarks:

Laboratory Technician: B. Swiecicki

CALSPAN CORPORATION
Transportation Sciences Center

PART 572E
HEAD DROP TEST

Dummy Serial Number 064
Calspan Sequential Test Number 1
Date 2/26/97
Workfile 064197.hdp

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70
Relative Humidity	10% - 70%	25
Peak Resultant Acceleration	225-275 G's	252.9
Peak Lateral Acceleration	15 G's Max	12.2
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician: B. Swiecicki

CALSPAN CORPORATION
Transportation Sciences Center

PART 572E
NECK FLEXION TEST

Dummy Serial Number 064
Calspan Sequential Test Number 1
Date 1/26/97
Workfile 064197.nfl

6 Axis Neck Transducer

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70
Relative Humidity		10% - 70%	25
Impact Velocity		22.60 - 23.40 Ft/s	23.20
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	23.19
	20 ms	17.60 - 22.60 G's	19.14
	30 ms	12.50 - 18.50 G's	13.96
Max Pendulum G's Above 30 ms		29 G's Max	13.96
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	39.88
D Plane Rotation	Max	64 - 78 Deg	65.52
	Time	57 - 64 ms	61.13
Moment About Occipital Condyle	Max	65 - 80 Ft-Lbs	66.87
	Time	47 - 58 ms	53.88
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	117.50
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	103.63

Remarks:

Laboratory Technician: B. Swiecicki

CALSPAN CORPORATION
Transportation Sciences Center

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	064	
Calspan Sequential Test Number	1	
Date	1/26/97	6 Axis Neck Transducer
Workfile	064197.nex	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70
Relative Humidity		10% - 70%	25
Impact Velocity		19.50 - 20.30 Ft/s	19.70
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	18.43
	20 ms	14.00 - 19.00 G's	16.03
	30 ms	11.00 - 16.00 G's	13.36
Max Pendulum G's Above 30 ms		22 G's Max	13.36
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	41.38
D Plane Rotation	Max	81 - 106 Deg	93.65
	Time	72 - 82 ms	75.88
Moment About Occipital Condyle	Max	-59.0 - -39.0 Ft-Lbs	-49.37
	Time	65 - 79 ms	72.75
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	151.25
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	142.75

Remarks:

Laboratory Technician: B. Swiecicki

CALSPAN CORPORATION

Transportation Sciences Center

PART 572E THORAX IMPACT TEST

Dummy Serial Number 064
Calspan Sequential Test Number 1
Date 1/31/97
Workfile 064197.th3

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70
Relative Humidity	10% - 70%	31
Pendulum Velocity	21.6 - 22.4 Ft/s	22.00
Maximun Deflection	2.50 - 2.86 in	2.59
Maximum Resistive Force	1160 - 1325 Lbs	1297.98
Internal Hysteresis	69 - 85 %	74.5

Remarks:

Laboratory Technician: B. Swiecicki

CALSPAN CORPORATION
Transportation Sciences Center

PART 572E
KNEE IMPACT TEST

Dummy Serial Number 064
Calspan Sequential Test Number 1
Date 2/10/97
Workfile 064197

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66-78 Deg F	70
Relative Humidity	10% - 70%	25
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 -1300 Lbs	1148.0
RIGHT KNEE		
Temperature	66-78 Deg F	70
Relative Humidity	10% - 70%	26
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 -1300 Lbs	1112.0

Remarks:

Laboratory Technician: B. Swiecicki

CALSPAN CORPORATION
Transportation Sciences Center

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 064
Calspan Sequential Test Number 1
Date 1/31/97

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70
Relative Humidity			25
Location for Chest Circumference	AA	16.9 - 17.1 in	17.0
Location for Waist Circumference	BB	8.9 - 9.1 in	9.0
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	39.0
Waist Circumference	Z	32.9 - 34.1 in	33.8
Chest Depth	O	8.4 - 9.0 in	8.4
H-Point Height	C	3.3 - 3.5 in	3.4
H-Point from Backline	D	5.3 - 5.5 in	5.4
Skull Cap to Backline	H	1.6 - 1.8 in	1.7
Total Sitting Height	A	34.6 - 35.0 in	34.8
Thigh Clearance	F	5.5 - 6.1 in	6.0
Buttock Knee Length	K	22.8 - 23.8 in	23.4
Buttock Popliteal Length	N	17.8 - 18.8 in	18.4
Popliteal Height	L	16.9 - 17.9 in	17.5
Knee Pivot Height	M	19.1 - 19.7 in	19.2
Foot Length	P	9.9 - 10.5 in	10.2
Foot Breadth	W	3.6 - 4.2 in	3.8
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.6
Shoulder Breadth	V	16.6 - 17.2 in	16.8
Shoulder Pivot Height	B	19.9 - 20.5 in	20.2
Elbow Rest Height	J	7.5 - 8.3 in	8.0
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.2
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.6

Remarks:

Laboratory Technician: B. Swiecicki

Appendix D

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENT CALIBRATION FOR DRIVER DUMMY

(6 Month Calibration Minimum)

DRIVER DUMMY (S/N 245)	Serial #	Manufacturer	Calibration	
			Last	Next
Head				
X	ADL98	ENDEVCO	1/97	7/97
Y	AE8K0	ENDEVCO	1/97	7/97
Z	ADMB6	ENDEVCO	1/97	7/97
Chest				
X	A26A	ENDEVCO	1/97	7/97
Y	A27A	ENDEVCO	1/97	7/97
Z	A51A	ENDEVCO	1/97	7/97
Right Femur Load Cell	952	GSE	1/97	7/97
Left Femur Load Cell	951	GSE	1/97	7/97
Neck Load Cell	440	DENTON	1/97	7/97
X				
Y	440	DENTON	1/97	7/97
Z	440	DENTON	1/97	7/97
Neck Moment	440	DENTON	1/97	7/97
X				
Y	440	DENTON	1/97	7/97
Z	440	DENTON	1/97	7/97
Chest Deflection Gauge	245	HUMANOID	2/97	8/97
Hybrid III Use Only				
Lap Belt Load Cells	706	LEBOW	12/96	6/97
Shoulder Belt Load Cells	707	LEBOW	12/96	6/97
Spool-Out Potentiometer	M9	MAGNETEK	1/97	7/97
Belt Stretch Transducer	E1	CALSPAN	2/97	8/97

INSTRUMENT CALIBRATION FOR DRIVER DUMMY

(6 Month Calibration Minimum)

DRIVER DUMMY	Serial #	Manufacturer	Calibration	
			Last	Next
Head				
X (R)	AP1A0	ENDEVCO	1/97	7/97
Y (R)	AC8F6	ENDEVCO	1/97	7/97
Z (R)	ACCW0	ENDEVCO	1/97	7/97
Chest				
X (R)	AHRC9	ENDEVCO	1/97	7/97
Y (R)	AC7W8	ENDEVCO	1/97	7/97
Z (R)	ACC06	ENDEVCO	1/97	7/97
Pelvic				
X	AF480	ENDEVCO	1/97	7/97
Y	AL508	ENDEVCO	1/97	7/97
Z	AF5C1	ENDEVCO	1/97	7/97
Left Upper Tibia				
Mx	038	DENTON	9/96	3/97
Left Upper Tibia				
My	038	DENTON	9/96	3/97
Left Lower Tibia				
Fy	032	DENTON	9/96	3/97
Left Lower Tibia				
Fz	032	DENTON	9/96	3/97
Left Lower Tibia				
Mx	032	DENTON	9/96	3/97
Right Upper Tibia				
Mx	045	DENTON	9/96	3/97
Right Upper Tibia				
My	045	DENTON	9/96	3/97
Right Lower Tibia				
Fy	041	DENTON	9/96	3/97
Right Lower Tibia				
Fz	041	DENTON	9/96	3/97
Right Lower Tibia				
Mx	041	DENTON	9/96	3/97

INSTRUMENT CALIBRATION FOR DRIVER DUMMY

(6 Month Calibration Minimum)

DRIVER DUMMY	Serial #	Manufacture	Calibration	
			Last	Next
Left Foot Front Z	J18439	ENDEVCO	12/96	6/97
Left Foot Rear X	J18624	ENDEVCO	1/97	7/97
Left Foot Rear Z	J18408	ENDEVCO	1/97	7/97
Right Foot Front Z	J18418	ENDEVCO	12/96	6/97
Right Foot Rear X	AEWK1	ENDEVCO	1/97	7/97
Right Foot Rear Z	AKD92	ENDEVCO	1/97	7/97

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY

(6 Month Calibration Minimum)

PASSENGER DUMMY (S/N 064)	Serial #	Manufacturer	Calibration	
			Last	Next
Head	X	ENDEVCO	1/97	7/97
	Y	ENDEVCO	1/97	7/97
	Z	ENDEVCO	1/97	7/97
Chest	X	ENDEVCO	1/97	7/97
	Y	ENDEVCO	1/97	7/97
	Z	ENDEVCO	1/97	7/97
Right Femur Load Cell	232	GSE	1/97	7/97
	231	GSE	1/97	7/97
	076	DENTON	1/97	7/97
Left Femur Load Cell	076	DENTON	9/96	3/97
	076	DENTON	9/96	3/97
	076	DENTON	9/96	3/97
Neck Moment	X	DENTON	9/96	3/97
	Y	DENTON	9/96	3/97
	Z	DENTON	9/96	3/97
Chest Deflection Gauge	064	HUMANOID	9/96	3/97
	635	LEBOW	9/96	3/97
	711	LEBOW	9/96	3/97
Shoulder Belt Load Cells	M12	MAGNETEK	9/96	3/97
	E2	CALSPAN	2/97	7/97

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY

(6 Month Calibration Minimum)

PASSENGER DUMMY	Serial #	Manufacturer	Calibration	
			Last	Next
Head				
X (R)	APBF4	ENDEVCO	1/97	7/97
Y (R)	APBD7	ENDEVCO	1/97	7/97
Z (R)	AN967	ENDEVCO	1/97	7/97
Chest				
X (R)	APA30	ENDEVCO	1/97	7/97
Y (R)	AP1B5	ENDEVCO	1/97	7/97
Z (R)	AP057	ENDEVCO	1/97	7/97
Pelvic				
X	AF480	ENDEVCO	1/97	7/97
Y	AL508	ENDEVCO	1/97	7/97
Z	AF5C1	ENDEVCO	1/97	7/97
Left Upper Tibia	Mx	DENTON	9/96	3/97
Left Upper Tibia	My	DENTON	9/96	3/97
Left Lower Tibia	Fy	DENTON	9/96	3/97
Left Lower Tibia	Fz	DENTON	9/96	3/97
Left Lower Tibia	Mx	DENTON	9/96	3/97
Right Upper Tibia	Mx	DENTON	9/96	3/97
Right Upper Tibia	My	DENTON	9/96	3/97
Right Lower Tibia	Fy	DENTON	9/96	3/97
Right Lower Tibia	Fz	DENTON	9/96	3/97
Right Lower Tibia	Mx	DENTON	9/96	3/97

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY

(6 Month Calibration Minimum)

PASSENGER DUMMY	Serial #	Manufacture	Calibration	
			Last	Next
Left Foot Front Z	J18400	ENDEVCO	12/96	6/97
Left Foot Rear X	J18649	ENDEVCO	1/97	7/97
Left Foot Rear Z	J17965	ENDEVCO	1/97	7/97
Right Foot Front Z	J18406	ENDEVCO	12/96	6/97
Right Foot Rear X	J18465	ENDEVCO	12/96	6/97
Right Foot Rear Z	J18623	ENDEVCO	12/96	6/97

INSTRUMENT CALIBRATION FOR VEHICLE ACCELEROMETERS

(6 Month Calibration Minimum)

	Serial #	Manufacturer	Calibration	
			Last	Next
Left Seat Rear Crossmember	D85	ICS	3/97	9/97
Right Rear Seat Crossmember	D86	ICS	3/97	9/97
Top of Engine	Y151	ICS	2/97	8/97
Bottom of Engine	D82	ICS	3/97	9/97
Left Disc Brake Caliper	A147	CEC	2/97	8/97
Right Disc Brake Caliper	A189	CEC	1/97	7/97
Instrument Panel	A129	CEC	11/96	5/97
Left Seat Rear Crossmember (R)	Y93	ICS	10/96	4/97
Right Seat Rear Crossmember (R)	D84	ICS	3/97	9/97