

V2267

REPORT NUMBER: 301-CAL-95-1

**SAFETY COMPLIANCE TESTING FOR FMVSS 301
FUEL SYSTEM INTEGRITY**

**NISSAN CORPORATION
1995 NISSAN QUEST
MPV**

NHTSA NUMBER: CS5209

CALSPAN TEST NUMBER: 8247-1

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March 2, 1995

FINAL REPORT

PREPARED FOR:

**U. S. Department of Transportation
National Highway Traffic Safety Administration
ENFORCEMENT
Office of Vehicle Safety Compliance
400 Seventh Street, S. W.
Room No. 6115 (NEF-30)
Washington, DC 20590**

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Section 1

PURPOSE OF COMPLIANCE TEST

This 30 mph rear moving barrier impact test is part of the Federal Motor Vehicle Safety Standard (FMVSS) 301 Compliance Test Program conducted for the National Highway Traffic Safety Administration (NHTSA) by Calspan Advanced Technology Center under Contract No. DTNH22-94-C-01136. The purpose of this test was to determine if the subject vehicle, a 1995 Nissan Quest MPV, meets the performance requirements of FMVSS No. 301, "Fuel System Integrity." This compliance test was conducted using the requirements found in the OVSC Laboratory Test Procedure No. TP-301-01, dated March 28, 1994.

Section 2

COMPLIANCE TEST RESULTS SUMMARY

A 4380 pound 1995 Nissan Quest MPV was impacted from the rear by a 3959 pound moving barrier at a velocity of 29.8. The test was performed by the Calspan Corporation Advanced Technology Center on March 2, 1995.

One instrumented Part 572 E and one non-instrumented Part 572 B, 50th percentile male Anthropomorphic Test Device (ATD) were placed in the driver and right-front passenger seating positions respectively. Additional ballast (90 pounds) was secured in the vehicle cargo area.

Average longitudinal crush was 7.4 inches. Pre- and post-test photographs of the vehicle can be found in appendix A.

The 20.0 gallon fuel tank was filled to 92.5 percent capacity with orange Stoddard fluid prior to the impact. After the impact, there was no fluid leakage for the first 30 minutes nor during any phase of the rollover test. The vehicle appeared to comply with all the requirements of FMVSS No. 301 "Fuel System Integrity." Section 3 presents the results of these tests.

The crash event was recorded by one real-time and eight high-speed cameras. Camera locations and other pertinent camera information are found on pages 3-9 and 3-10 of this report.

Table 1

CRASH TEST SUMMARY

Vehicle NHTSA No.: CS5209 Test Mode: 30 mph Rear Barrier
 Test Date: March 2, 1995 Time: 14:12 Temperature : 34 °F
 Vehicle Make/Model/Body Style: 1995 Nissan Quest MPV
 Vehicle Test Weight: 4380 lbs Impact Velocity: 29.8 mph
 Static Crush: Left Side = 7.3 inches
 Right Side = 6.8 inches
 Centerline = 8.1 inches
 Average Crush: 7.4 inches

TYPE OF FRONT OCCUPANT RESTRAINT SYSTEM INSTALLED IN TEST VEHICLE:

Driver's DSP: Airbag, 3 point belt
 Right Passenger's DSP: 3 point belt

VISIBLE DUMMY CONTACT POINTS:

Driver: Back of head to head rest
 Passenger: Back of head to head rest

DOOR OPENING DATA:

Closed/Operable - Left Front
Closed/Operable - Right Front

Stoddard Solvent Spillage from Vehicle's Fuel System: None

Remarks: Rear window shattered and left and right rear side windows unlatched at impact. Rear hatch remained latched.
Following the impact, the vehicle traveled further than expected and engaged a secondary abort system which caused the vehicle airbag to deploy.

Table 2

GENERAL TEST AND VEHICLE PARAMETER DATATEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 1995 Nissan Quest MPV

NHTSA No.: CS5209 ; VIN: 4N2DN11W4SD813636 ; Color: Red

Engine Data: 6 cylinders; - CID; 3.0 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
 - Pwr. Windows; - Pwr. Door Locks; X Tilt Wheel

Date Received: 1/18/95 ; Odometer Reading 00076 miles

Selling Dealer: Hart Taylor Nissan

& Address: 1899 West Ridge Rd., Rochester, NY 14615

DATA FROM TIRE VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by: Nissan Corporation

Date of Manufacture: 10/94

GVWR: 5445 lbs.; GAWR: 2716 lbs. FRONT; 2800 lbs. REAR

DATA FROM TIRE PLACARD:

Location of Placard on Vehicle: Driver's door

Tire Pressure with Maximum Capacity Vehicle Load: 35 psi FRONT 35 psi REAR

Recommended Tire Size: P205/75R15

* Recommended Cold Tire Pressure: 35 psi FRONT; 35 psi REAR

Size of Tires on Test Vehicle: P205/75R15

Type of Spare Tire: Compact spare

Vehicle Capacity Data:

Type of Front Seats:	-	Bench;	X	Bucket;	-	Split Bench
Number of Occupants:	2	Front;	5	Rear;	7	Total
Vehicle Capacity Weight (VCW)	=	1290	lbs.			
No. of Occupants x 150 lbs.	=	1,050	lbs.			
Rated Cargo/Luggage Weight (RCLW)	=	240				

*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	=	1114	lbs.	Right Rear	=	779	lbs.
Left Front	=	1140	lbs.	Left Rear	=	777	lbs.
TOTAL FRONT	=	2,254	lbs.	TOTAL REAR	=	1,556	lbs.
TOTAL DELIVERED WEIGHT	=	3,810	lbs.				
% of Total Front of Vehicle Weight	=	59	%	% of Total Rear Weight	=	41	%

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight	=	3,810	lbs.
Rated Cargo/Luggage Weight (RCLW)	=	240	lbs.
Weight of 2 p.572 Dummies, 167 & 164 lbs	=	331	lbs.
TARGET TEST WEIGHT	=	4,381	lbs.

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 239 POUNDS OF CARGO WEIGHT:

Right Front	=	1273	lbs.	Right Rear	=	886	lbs.
Left Front	=	1303	lbs.	Left Rear	=	918	lbs.
TOTAL FRONT	=	2,576	lbs.	TOTAL REAR	=	1,804	lbs.
TOTAL TEST WEIGHT	=	4,380	lbs.				
% of Total Front Weight	=	59	%	% of Total Rear Weight	=	41	%

* Weight of Ballast Secured in Vehicle Trunk Area = 110 lbs.

Type of Ballast: Mid seat, lead shot

Method of Securing Ballast: Mid and rear seat belts

Vehicle Components Removed for Weight Reduction: None

VEHICLE ATTITUDE (all dimension in inches):

AS DELIVERED:	RF	31.4	LF	31.1	RR	31.7	LR	31.4
AS TESTED:	RF	30.1	LF	29.8	RR	30.7	LR	30.4
Vehicle's Wheel Base:		112.6	in.					
Location of Vehicle's C.G.:		46.4	inches rearward of front wheel center.					

FUEL SYSTEM DATA:

Fuel System Capacity From Owner's Manual	=	20.0	gallons
Usable Capacity Figure Furnished by COTR	=	20.0	gallons
Test Volume Range (91 to 94 % of Usable Capacity)	=	18.2	to 18.8 gallons
ACTUAL TEST VOLUME=		18.5	gallons (with entire fuel system filled)

* Ballast weight includes the RCLW, the weight of drained vehicle fluids and the weight of any removed vehicle components less the weight of onboard instrumentation, cameras, and hardware.

Table 2

GENERAL TEST AND VEHICLE PARAMETER DATA (cont.)FUEL SYSTEM DATA (continued):

Test Fluid Type:	Stoddard Solution		
Test Fluid Specific Gravity:	0.764		
Test Fluid Kinematic Viscosity:	0.96	centistokes	
Test Fluid Color:	Orange	("red" is preferred)	
Type of Vehicle Fuel Pump:	Electric		
Electric Fuel Pump Operation with Ignition Switch ON and Engine OFF -			
Fuel pump operates			
Details of Fuel System:	Fuel lines located on left side of vehicle underbody, fuel filler located		
on left side of vehicle forward of the rear axle.			

Table 3

POST IMPACT DATATYPE OF TEST:

Type of Test: Rear Barrier Impact Angle: 0°
 Test Date: March 2, 1995 Time: 14:12 Temperature: 34 °F
 Vehicle NHTSA No.: CS5209
 Required Impact Velocity Range: 28.9 to 29.9 mph

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

Trap No. 1 = 29.8 mph; Trap No. 2 = 29.8 mph
 Average Impact Speed = 29.8 mph

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

Vehicle Length:

Pre-Test	Right =	<u>184.8</u>	; C/L =	<u>190.3</u>	; Left =	<u>186.0</u>
Post-Test	Right =	<u>177.5</u>	; C/L =	<u>183.5</u>	; Left =	<u>177.9</u>
Crush	Right =	<u>7.3</u>	; C/L =	<u>6.8</u>	; Left =	<u>8.1</u>
AVERAGE	=	<u>7.4</u>	inches			

Section 3
COMPLIANCE TEST DATA

Figure 1

PART 572 DUMMY IN-VEHICLE POSITION
(FOR REAR IMPACTS ONLY)

DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS

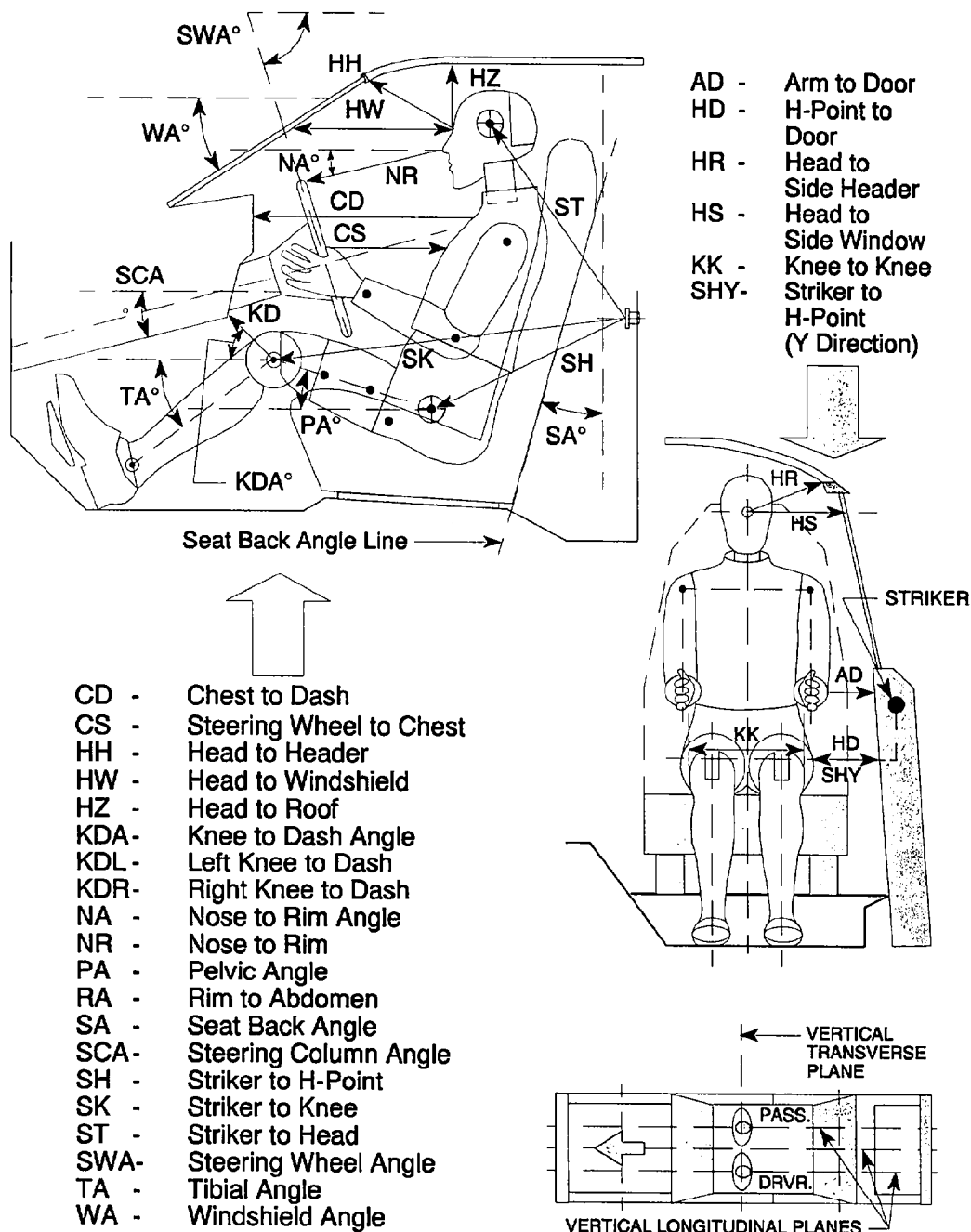


Table 4

**FRONT SEAT OCCUPANT MEASUREMENTS
(FOR REAR IMPACT ONLY)**

	DRIVER (Serial # 366)
WA°	31 deg.
SWA°	60 deg.
SCA°	30 deg.
SA°	24 deg.
HZ	6.3
HH	15.0
HW	23.4
HR	8.9
NR	14.1 Angle -10 deg.
CD	21.5
CS	11.0
RA	6.7
KDL	3.9 Angle (KDA) 14 deg.
KDR	6.0
PA°	22 deg.
TA°	-49 deg.
KK	12
ST	26.6 Angle 72 deg. (from horizontal)
SK	28.3 Angle 4 deg. (from horizontal)
SH	11.9 Angle -2 deg. (from horizontal)
SHY	10.0
HS	13.4
HD	6.6
AD	4.9

Table 5
FUEL SYSTEM INTEGRITY POST IMPACT TEST DATA

FMVSS NO. 301

TEST VEHICLE NHTSA NO.: CS5209 TEST DATE: March 2, 1995

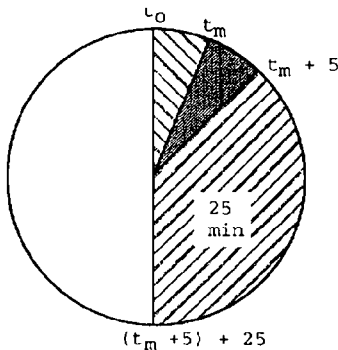
Vehicle Mfgr./Make/Model: 1995 Nissan Quest MPV

Test vehicle fuel tank filled to 91% to 94% of manufacturer's "usable" capacity and with electric fuel pump operating (if it will operate without engine operation). Part 572 test dummies located at each front designated seating position.

TEST VEHICLE IMPACT TYPE:

- Frontal (30 mph)
- Oblique (30 mph) with - ° barrier face first
contacting -
 (driver/passenger) side
- X Rear Moving Barrier (30 mph)
- Lateral Moving Barrier (20 mph)

FUEL SPILLAGE MEASUREMENT:



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

ACTUAL	MAX ALLOWED
0	1 oz.
0	5 oz.
0	1 oz./1 min.

SOLVENT SPILLAGE DETAILS:

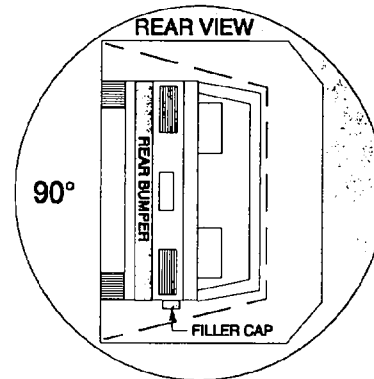
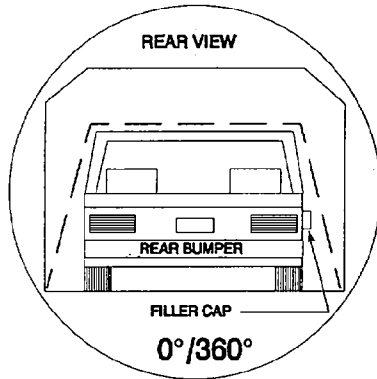
None

Table 6

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE :
0-90 Deg.

Vehicle NHTSA ID No. :
CS5209

I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	1	minutes	57	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	6	minutes	57	seconds
Next whole minute interval	7	minutes		

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce
----------	---------	---------	---------

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0	0	0	N/A
---	---	---	-----

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

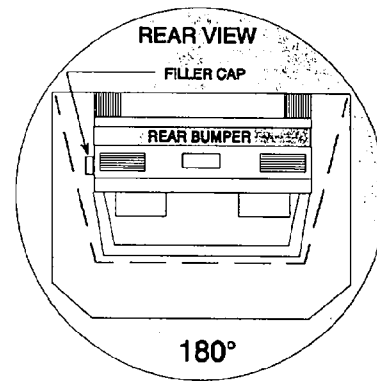
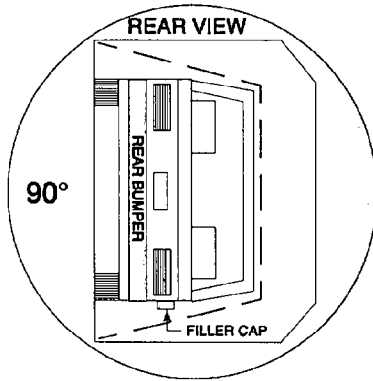
IV. SOLVENT SPILLAGE LOCATION(S):

None

Table 6
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE :
90-180 Deg.

Vehicle NHTSA ID No. :
CS5209



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° 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		

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce
----------	---------	---------	---------

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0	0	0	N/A
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Note: Record spillage for whole minute intervals only as determined above.

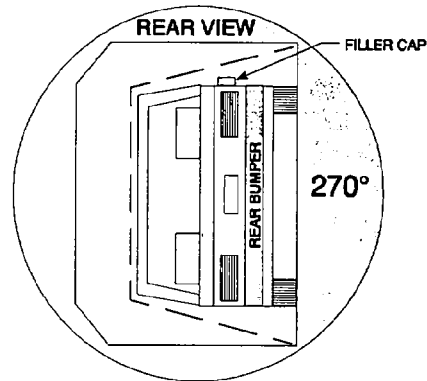
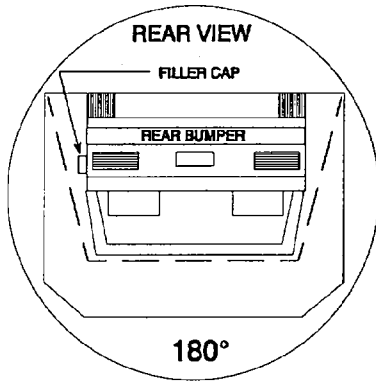
IV. SOLVENT SPILLAGE LOCATION(S):

None

Table 6
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE :
180-270 Deg.

Vehicle NHTSA ID No. :
CS5209



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time	2	minutes	02	seconds
(Spec. Range = 1 to 3 minutes)				
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
	7	minutes	02	seconds
TOTAL	8	minutes		
Next whole minute interval				

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce
----------	---------	---------	---------

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

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

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

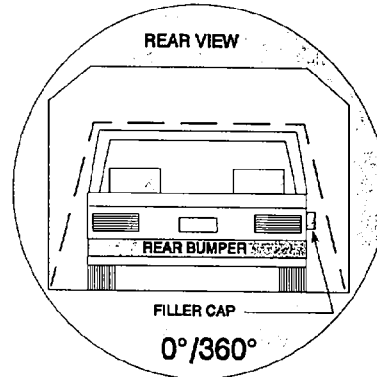
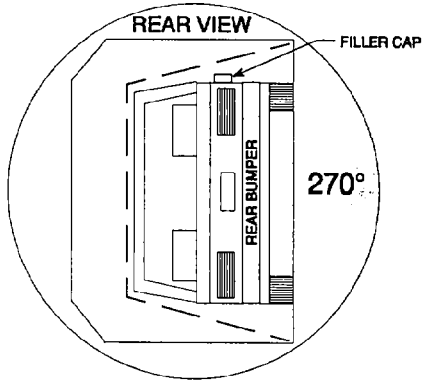
IV. SOLVENT SPILLAGE LOCATION(S):

None

Table 6
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE :
270-360 Deg.

Vehicle NHTSA ID No. :
CS5209



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	1	minutes	51	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	6	minutes	51	seconds
Next whole minute interval	7	minutes		

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce
----------	---------	---------	---------

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

Figure 2

CAMERA POSITIONS FOR REAR IMPACTS

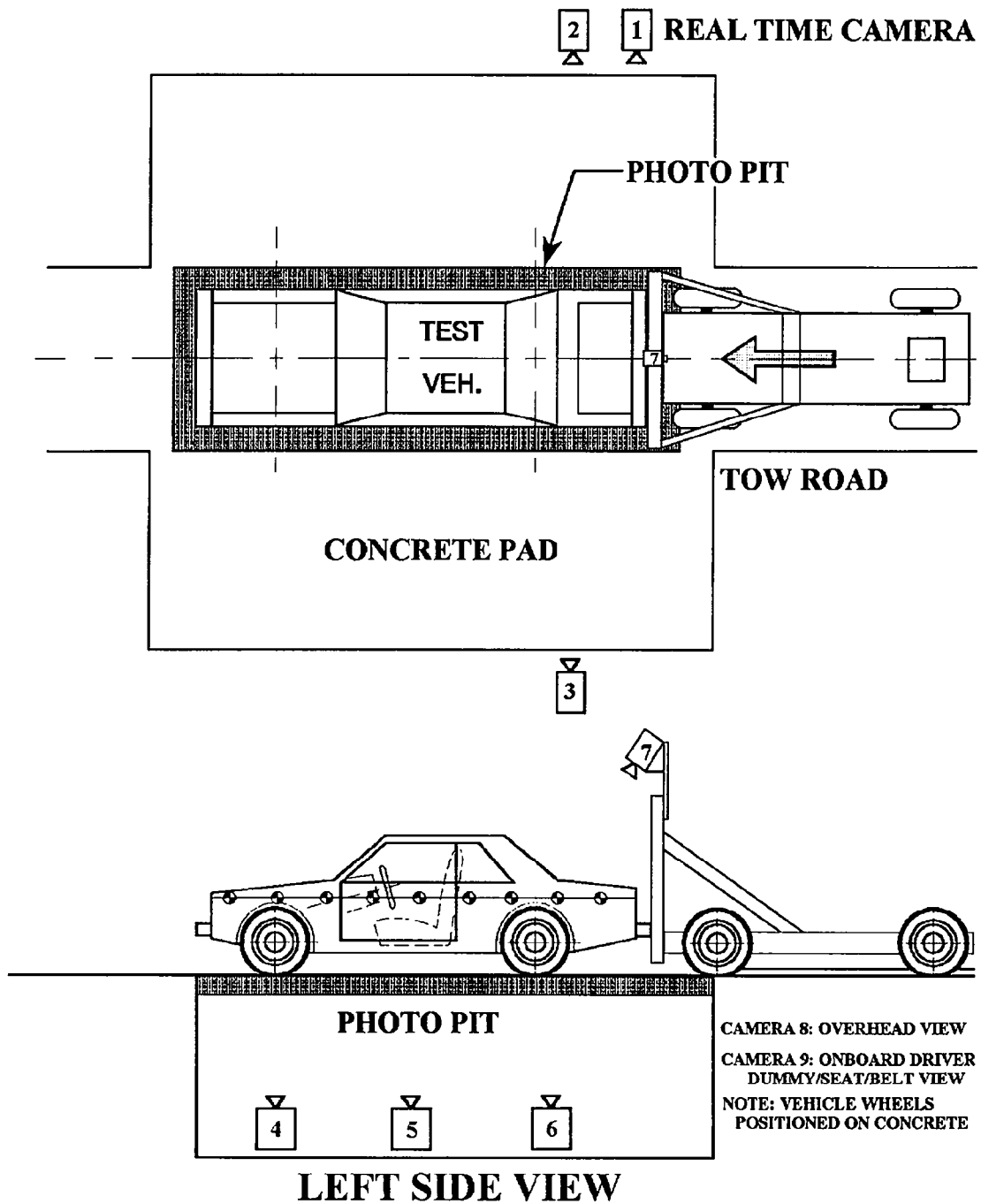


Table 7

HIGH-SPEED CAMERA LOCATIONSNHTSA No. : CS5209 Vehicle : 1995 Nissan Quest MPV

CAMERA NO.	VIEW	CAMERA POSITIONS (inches)*			ANGLE** (degrees)	LENS (mm)	SPEED (fps)
		X	Y	Z			
1	Real-Time Camera	-	-	-	-	-	24
2	Right Side View	-313	0	41	1	13	790
3	Left Side View	333	75	41	1	13	850
4	Vehicle Front Underbody View	0	-144	-77	90	13	770
5	Vehicle Mid-Section Underbody View	0	-86	-77	90	13	730
6	Vehicle Rear Underbody View	0	-38	-77	90	13	-
7	Moving Barrier View	0	0	99	-105	13	1030
8	Overhead Overall View	-20	0	386	-90	13	910
9	Onboard Driver Dummy/Seat/Belt View	-	-	-	-	8	-

* X = film plant to monorail centerline (+ to left of rail)

Y = film plane to impact location (+ ahead of impact location)

Z = film plane to ground (+ above ground)

** = referenced to horizontal plane

Appendix A
PHOTOGRAPHS

Note: The deployed airbag as seen in the following post test photographs were not a result of the rear impact. Following the impact, the vehicle traveled further than expected and engaged a secondary abort system which caused the vehicle airbag to deploy.

LIST OF PHOTOGRAPHS

<u>Figure</u>	<u>Photograph Title</u>	<u>Page No.</u>
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A-16	POST-TEST REAR UNDERBODY VIEW	A-18
A-17	CERTIFICATION PLACARD	A-19
A-18	TIRE PLACARD	A-20

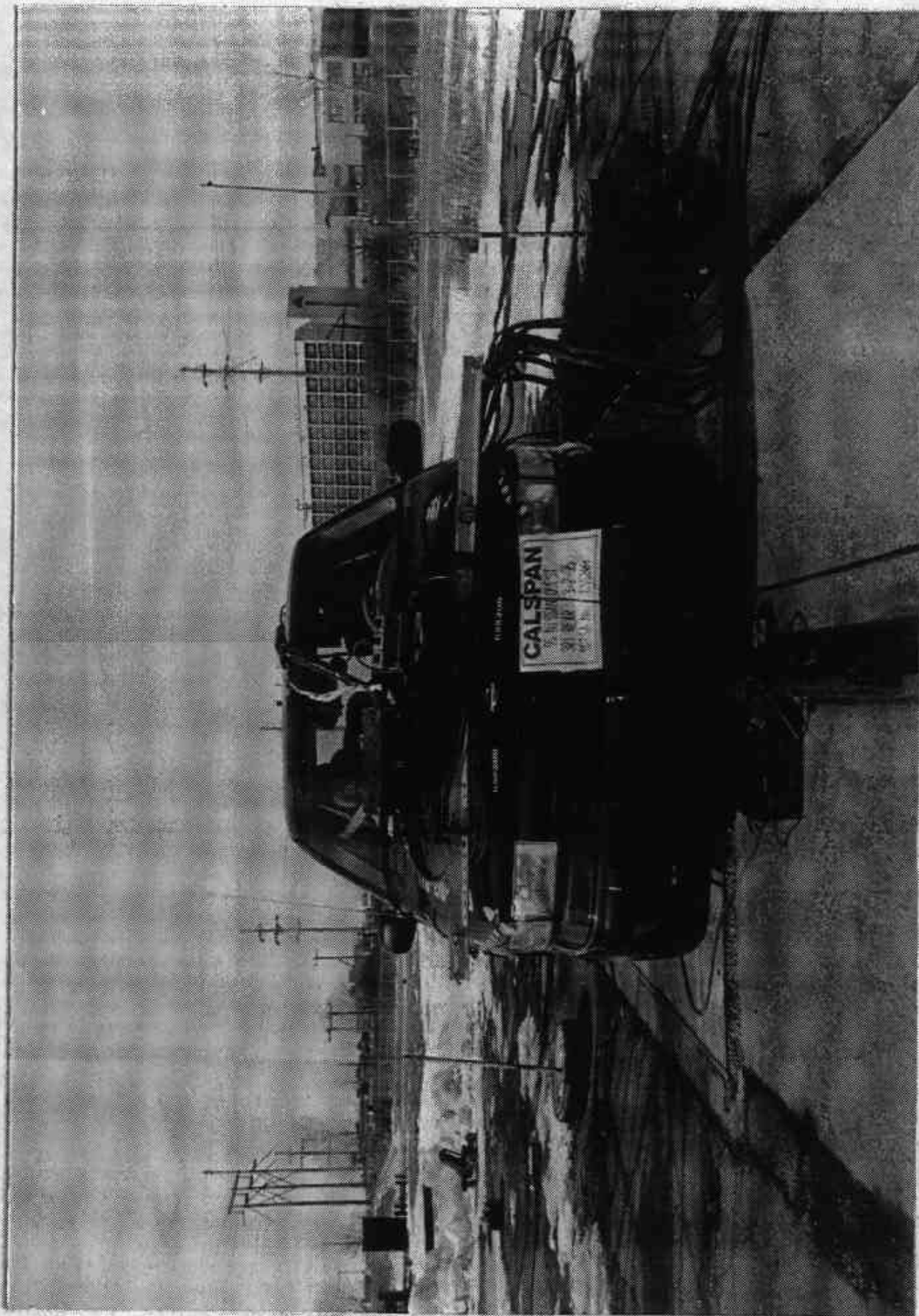


Figure A-1 PRE-TEST FRONT VIEW

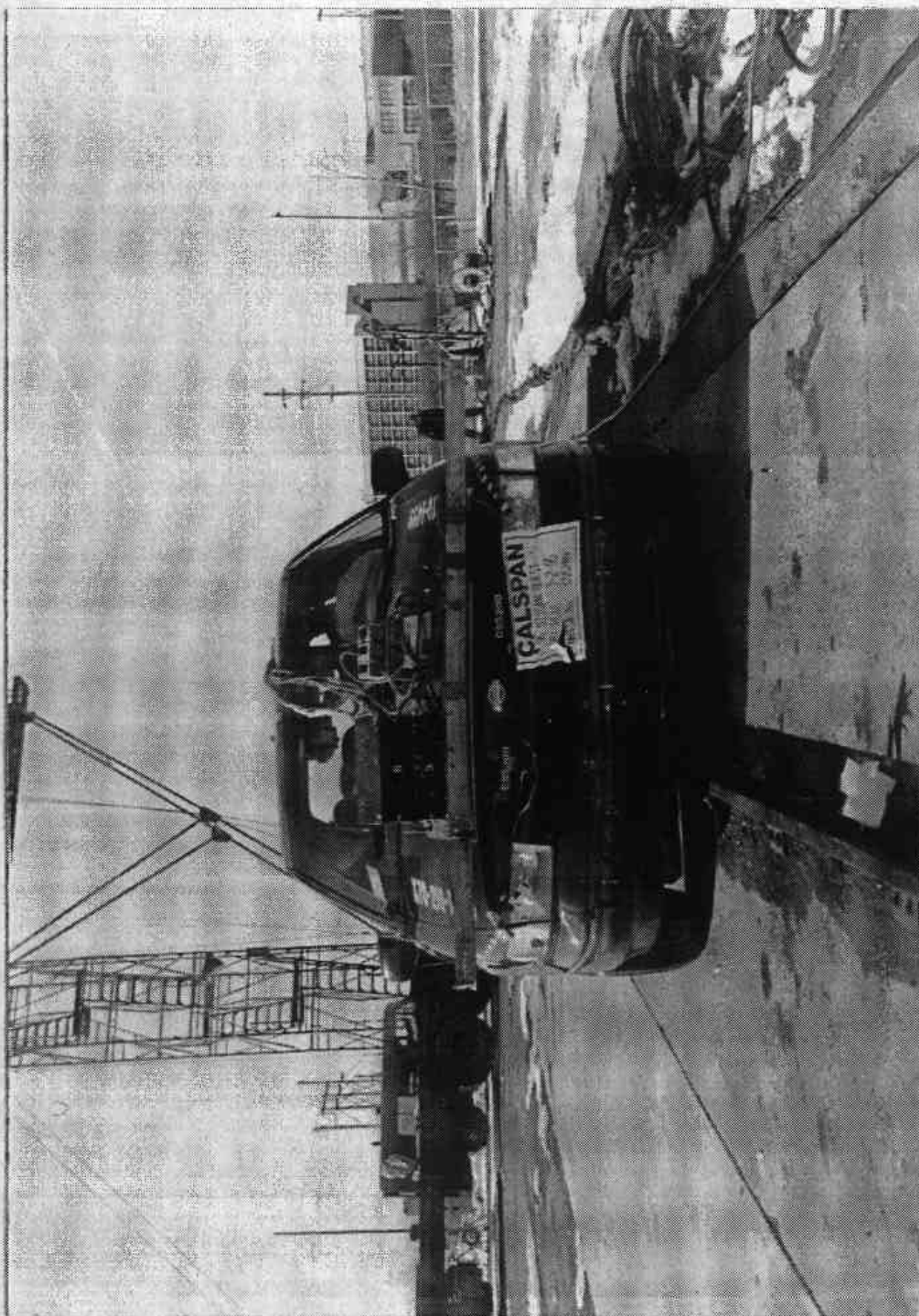


Figure A-2 POST-TEST FRONT VIEW

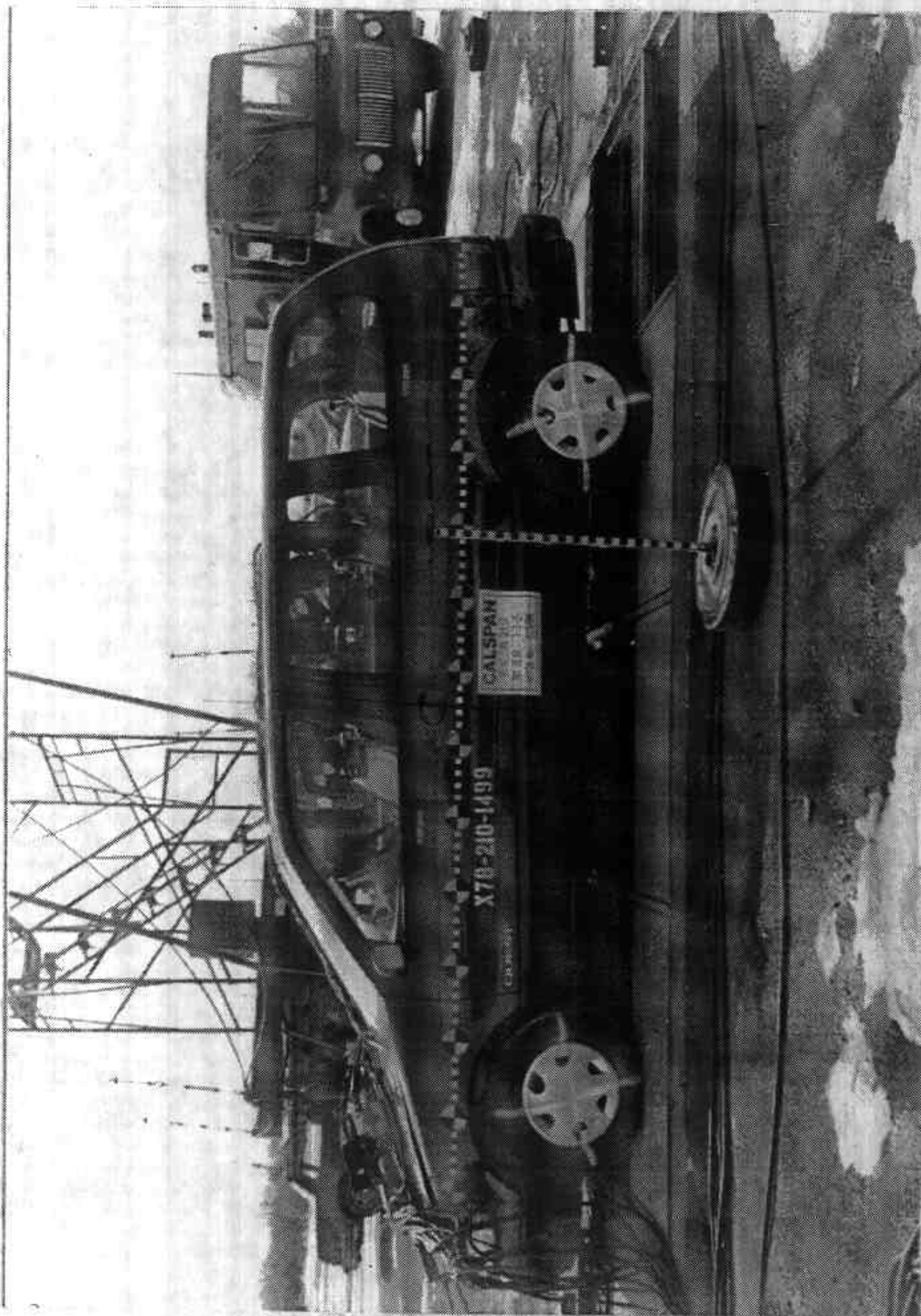


Figure A-3 PRE-TEST LEFT SIDE VIEW

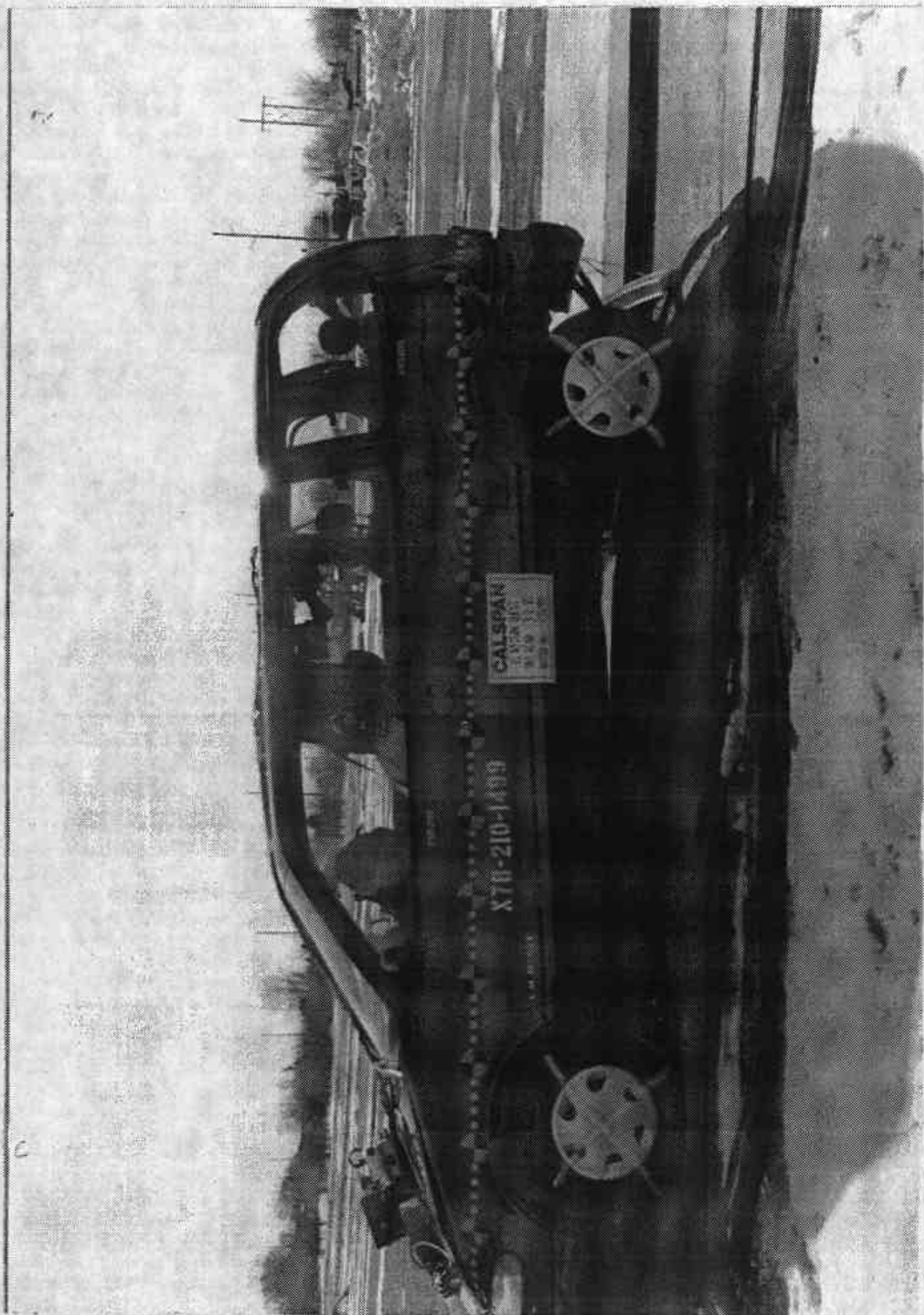


Figure A-4 POST-TEST LEFT SIDE VIEW

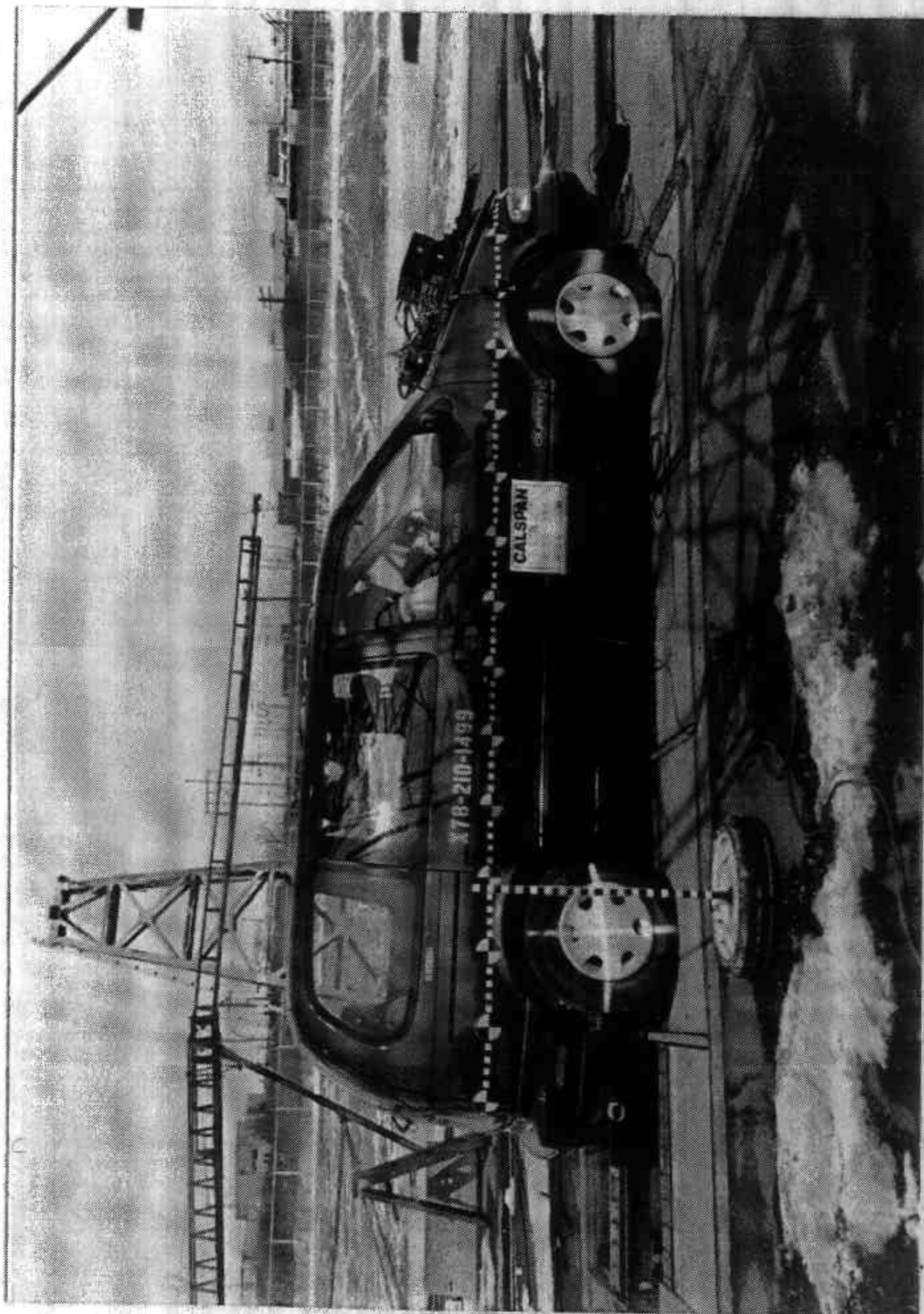


Figure A-5 PRE-TEST RIGHT SIDE VIEW

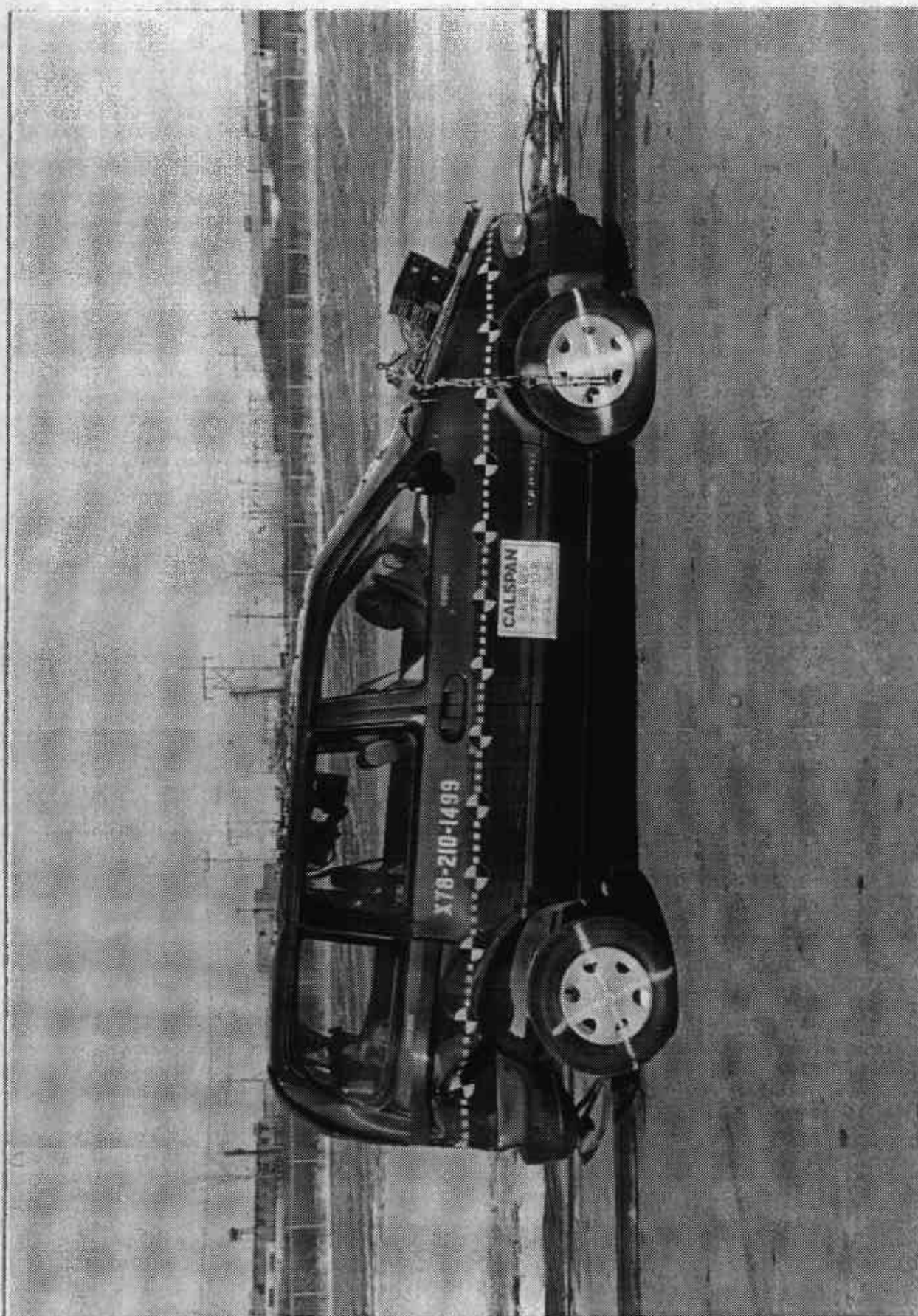


Figure A-6 POST-TEST RIGHT SIDE VIEW

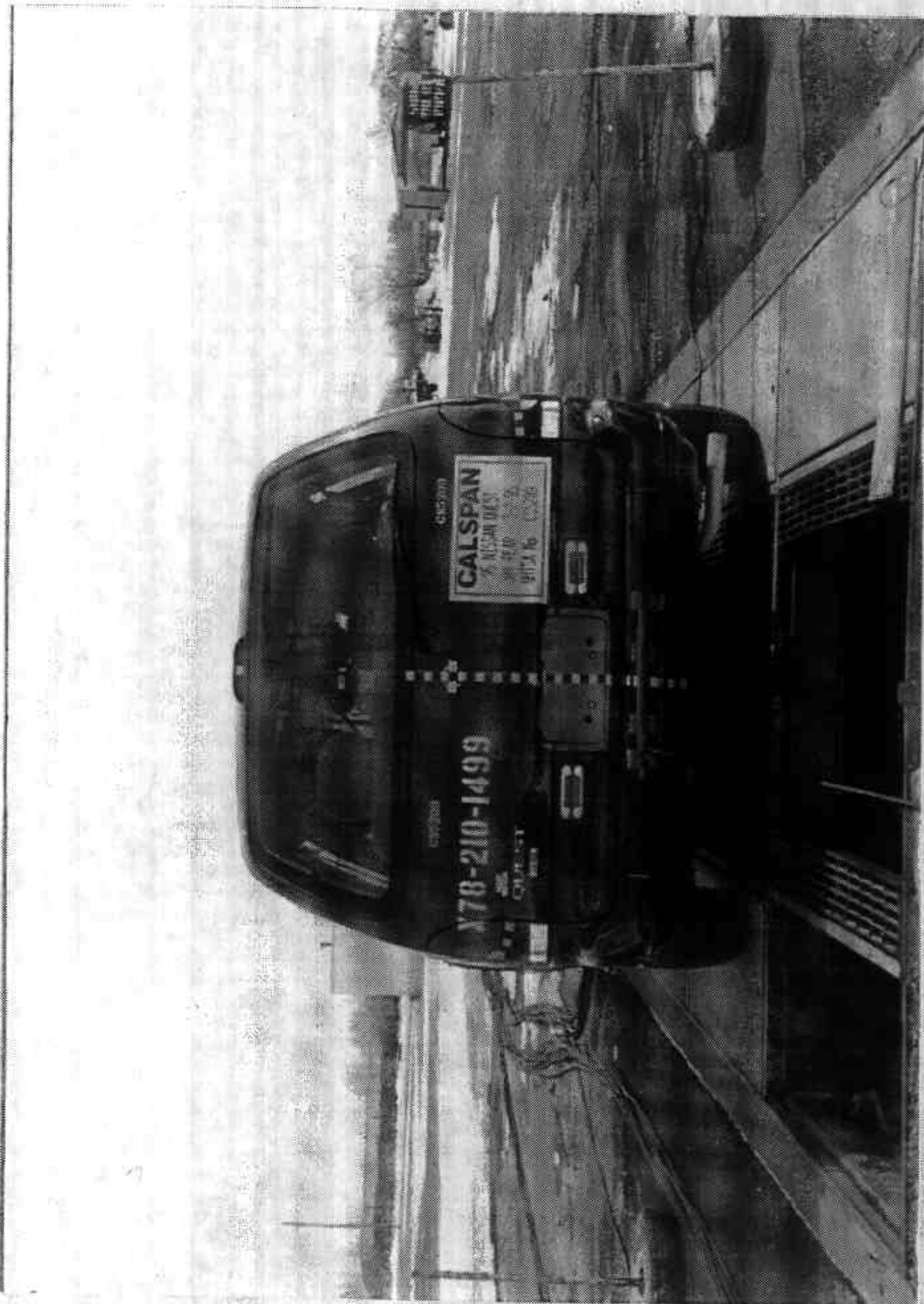


Figure A-7 PRE-TEST REAR VIEW

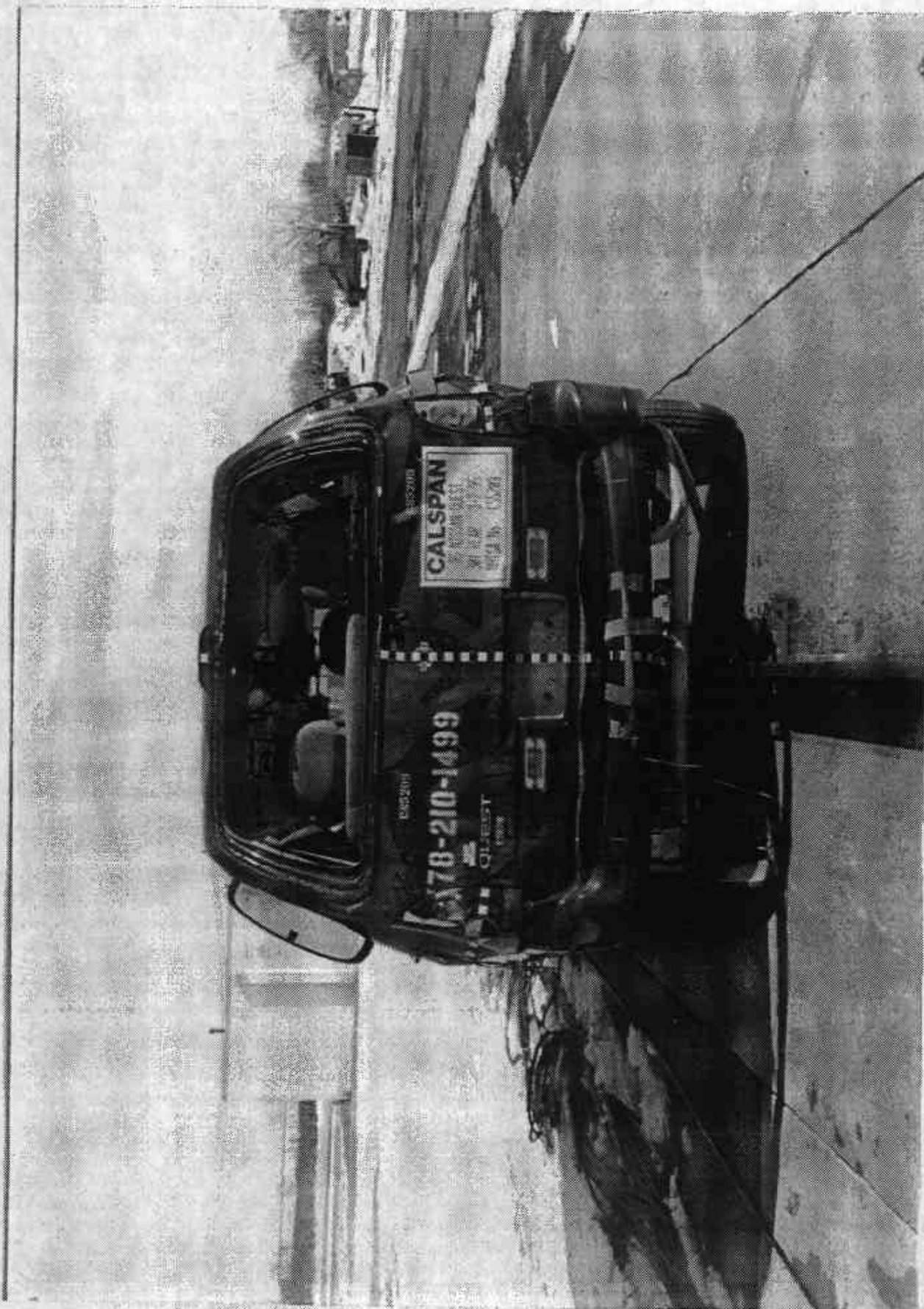


Figure A-8 POST-TEST REAR VIEW

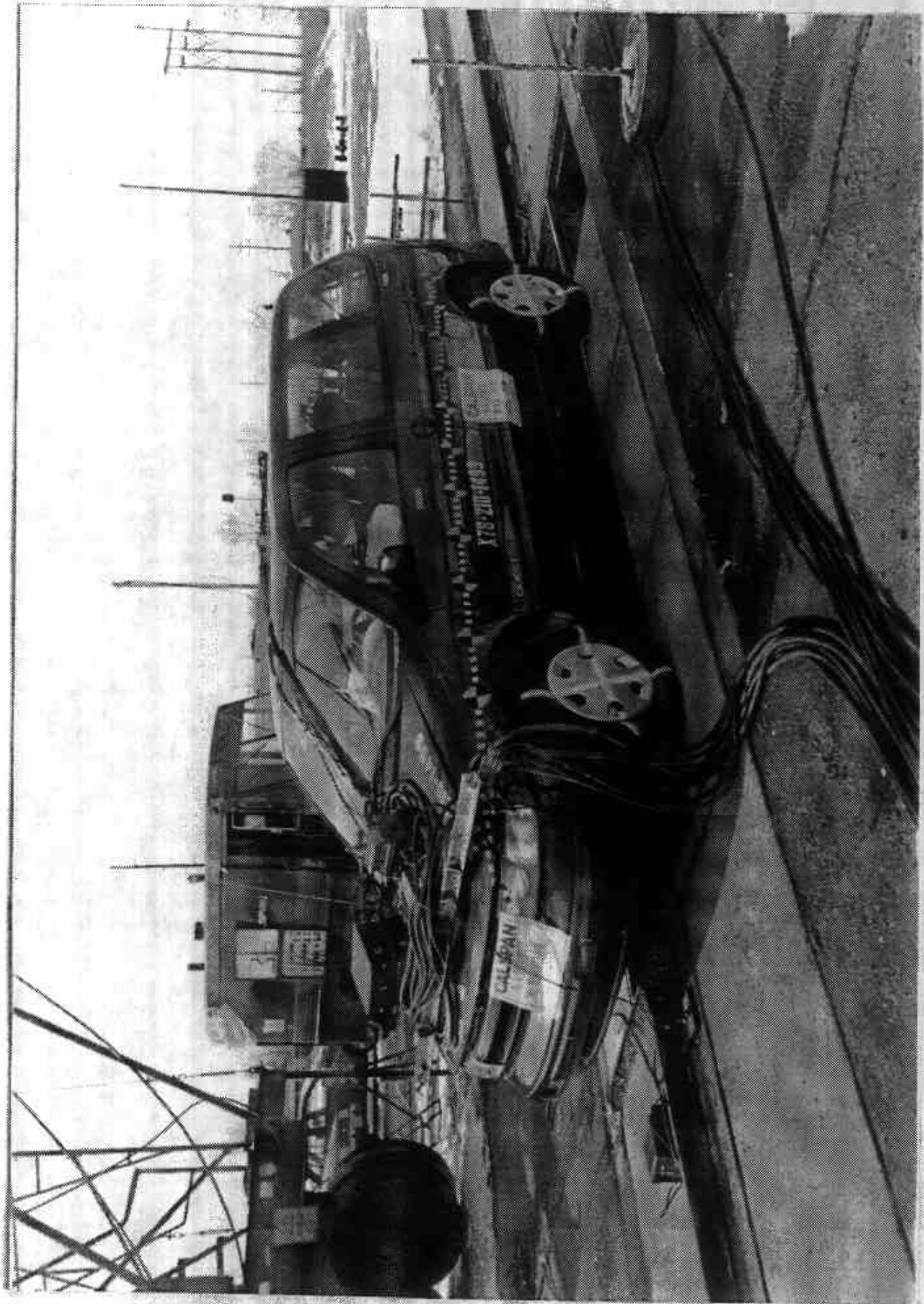


Figure A-9 PRE-TEST LEFT FRONT THREE-QUARTER VIEW

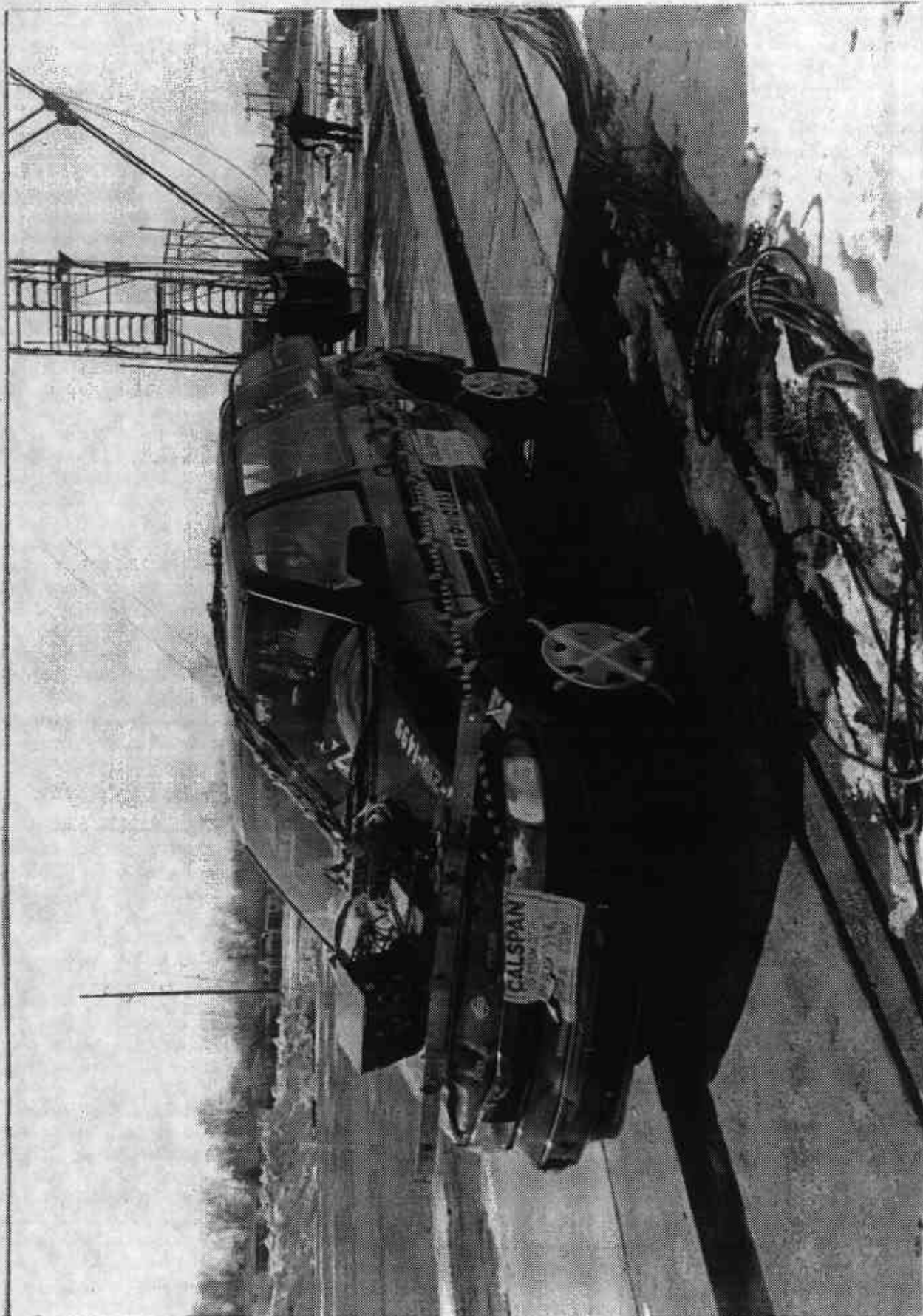


Figure A-10 POST-TEST LEFT FRONT THREE-QUARTER VIEW

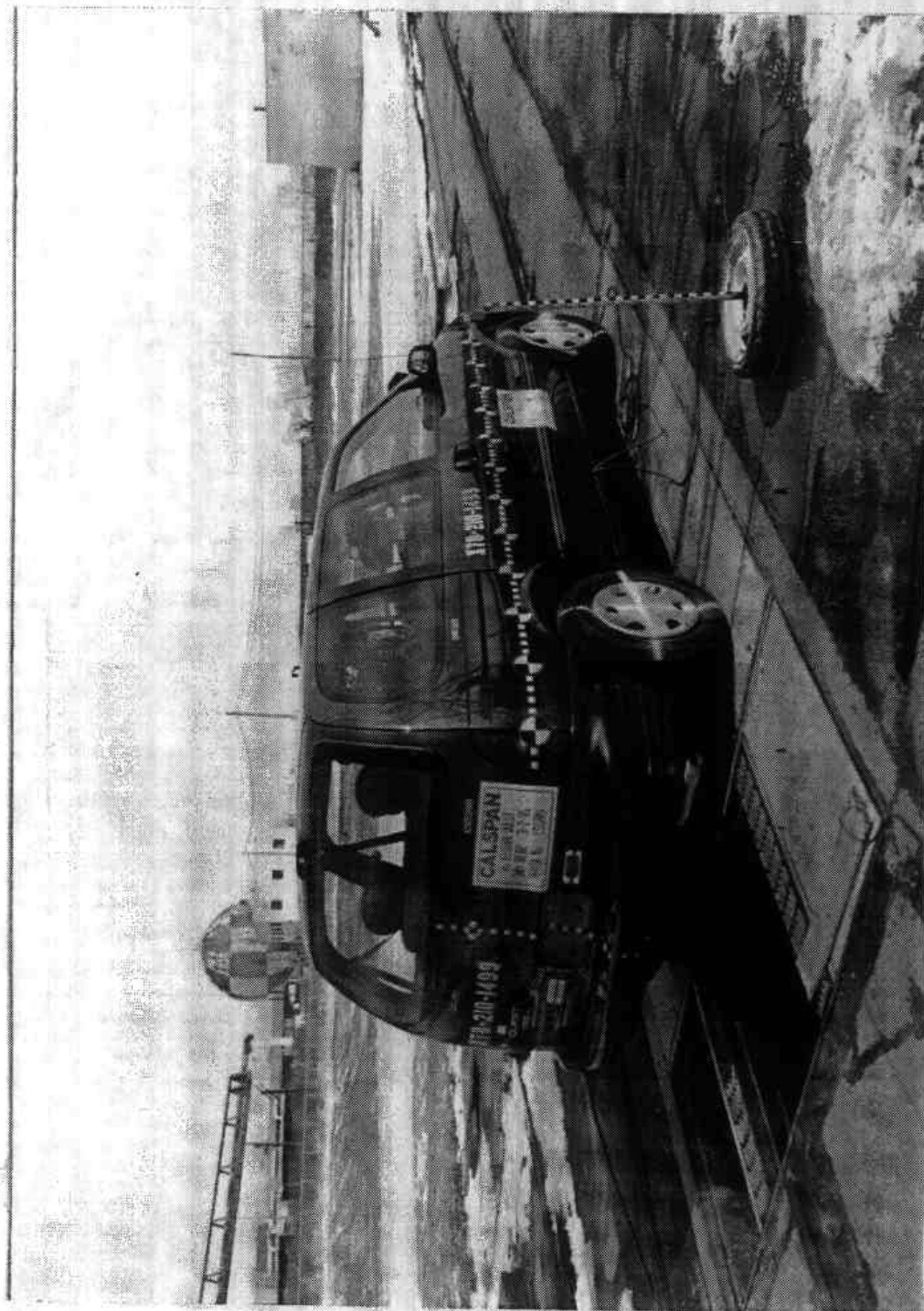


Figure A-11 PRE-TEST RIGHT REAR THREE-QUARTER VIEW



Figure A-12 POST-TEST RIGHT REAR THREE-QUARTER VIEW

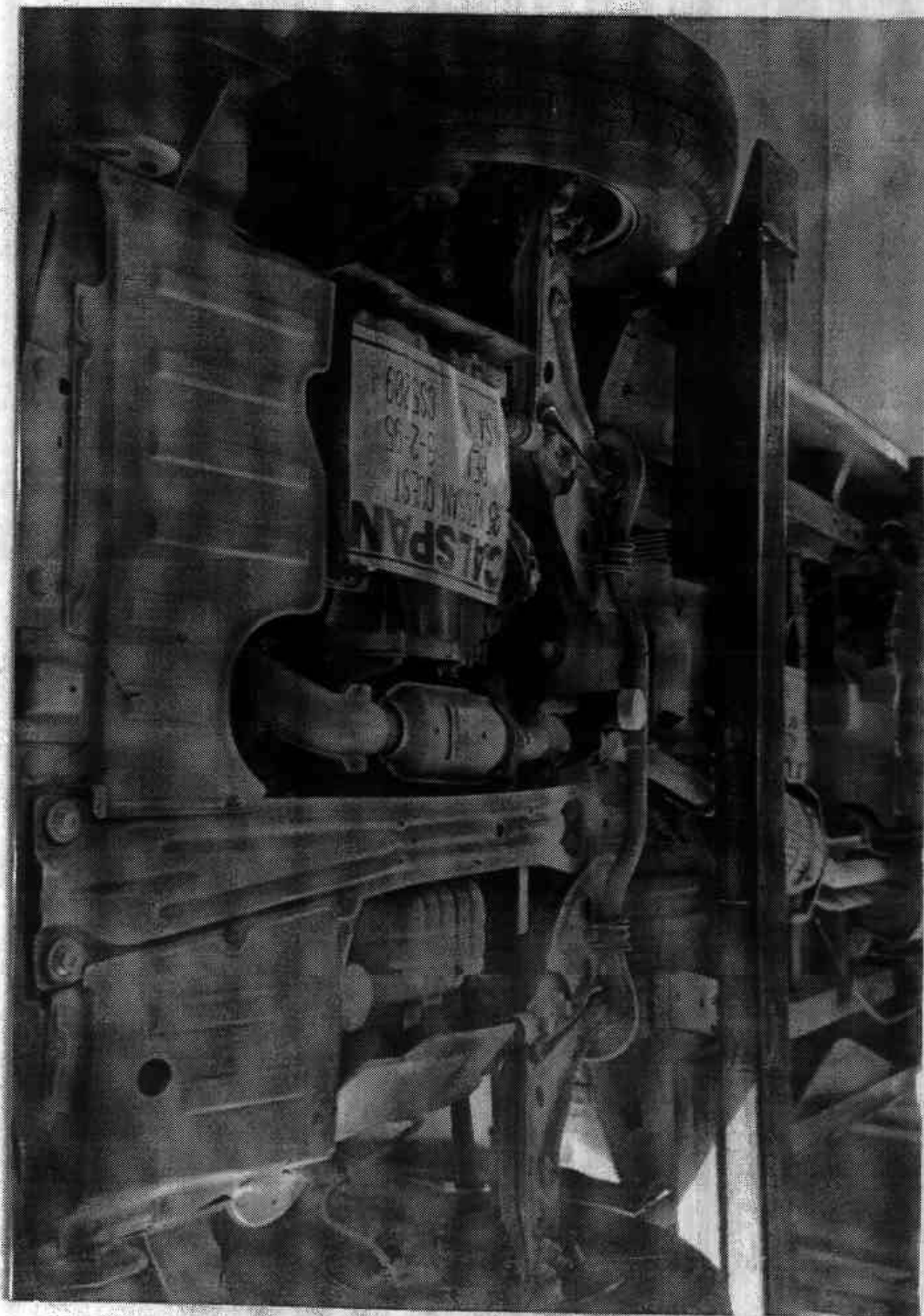


Figure A-13 PRE-TEST FRONT UNDERBODY VIEW

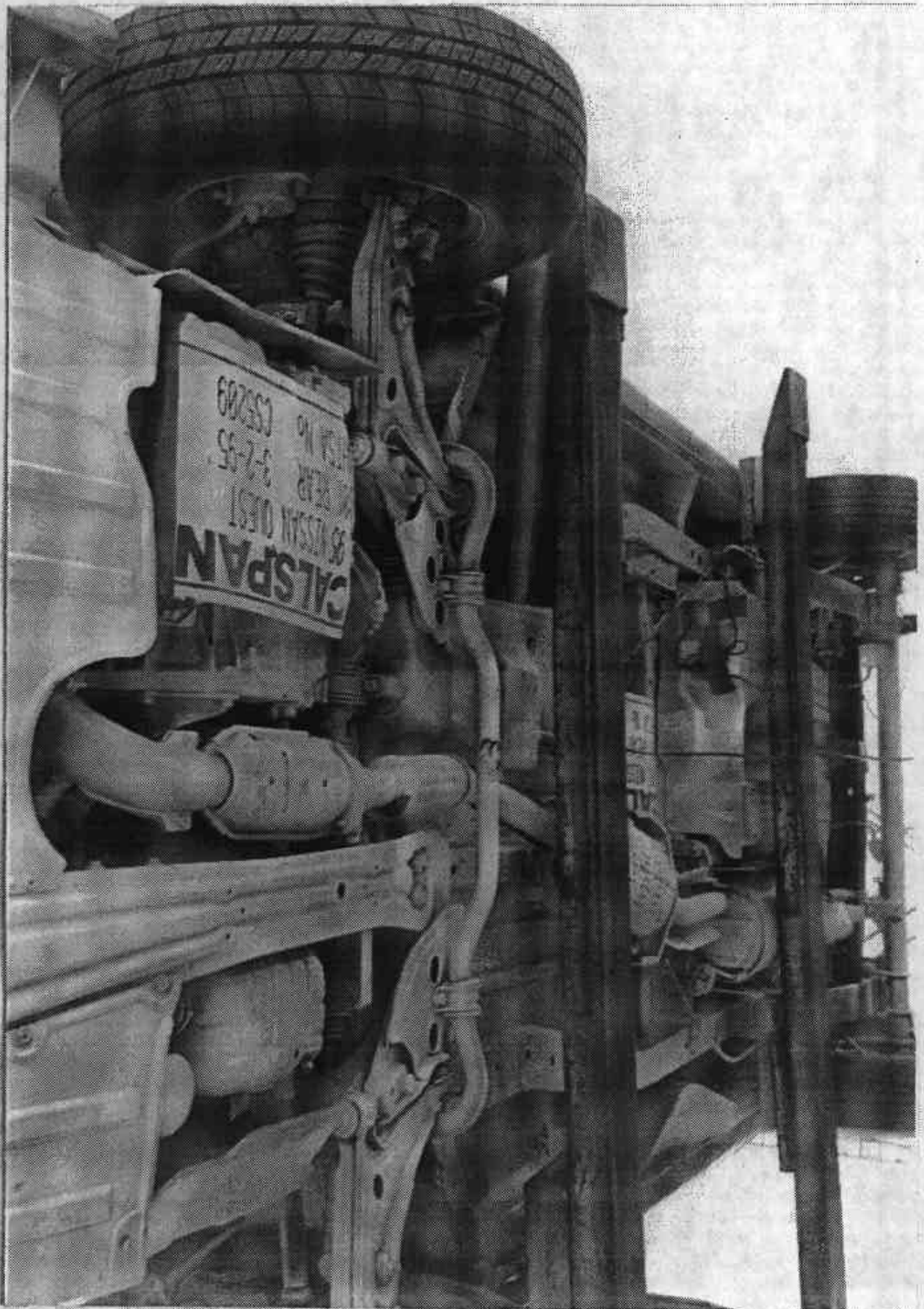


Figure A-14 POST-TEST FRONT UNDERBODY VIEW

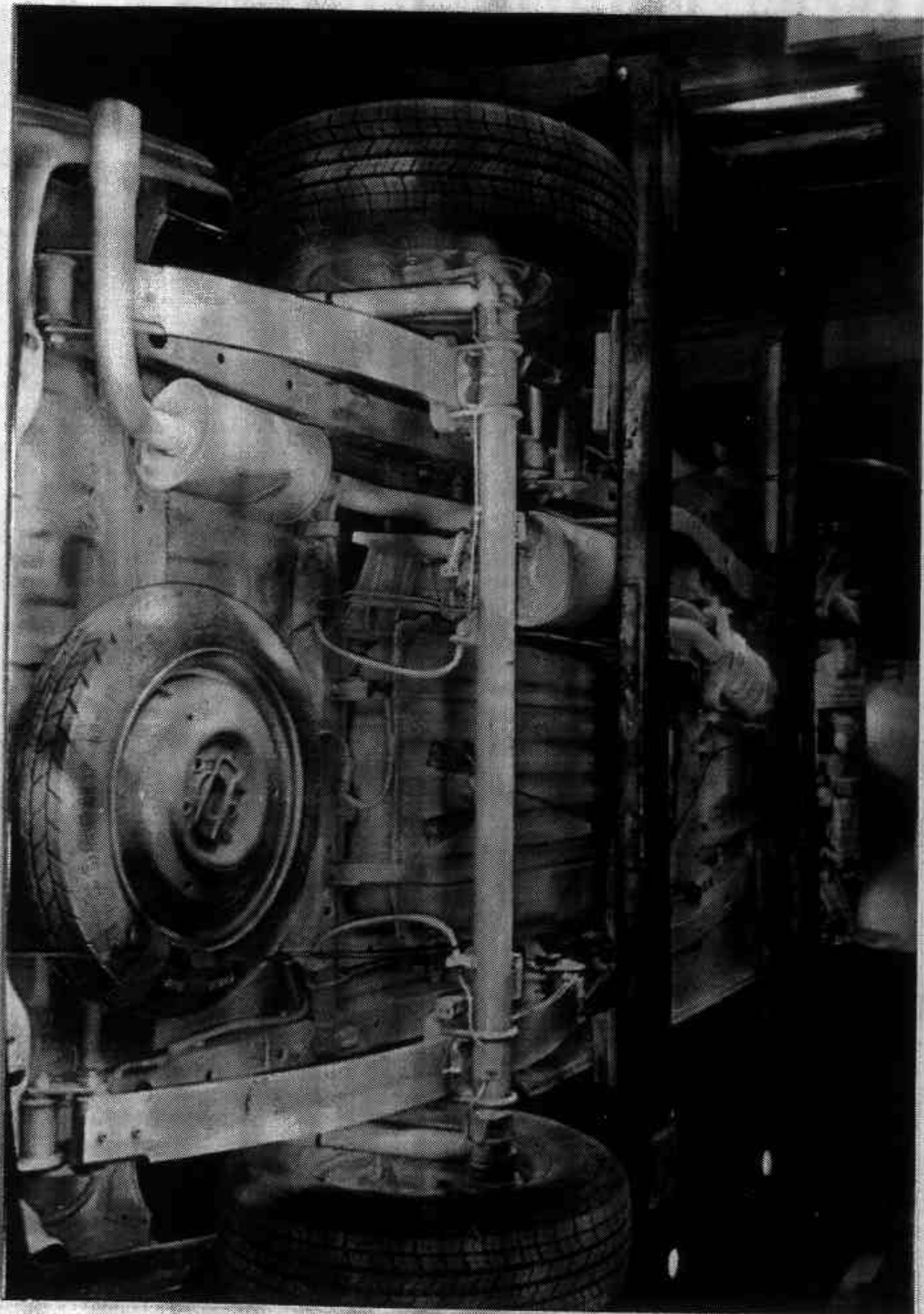


Figure A-15 PRE-TEST REAR UNDERBODY VIEW

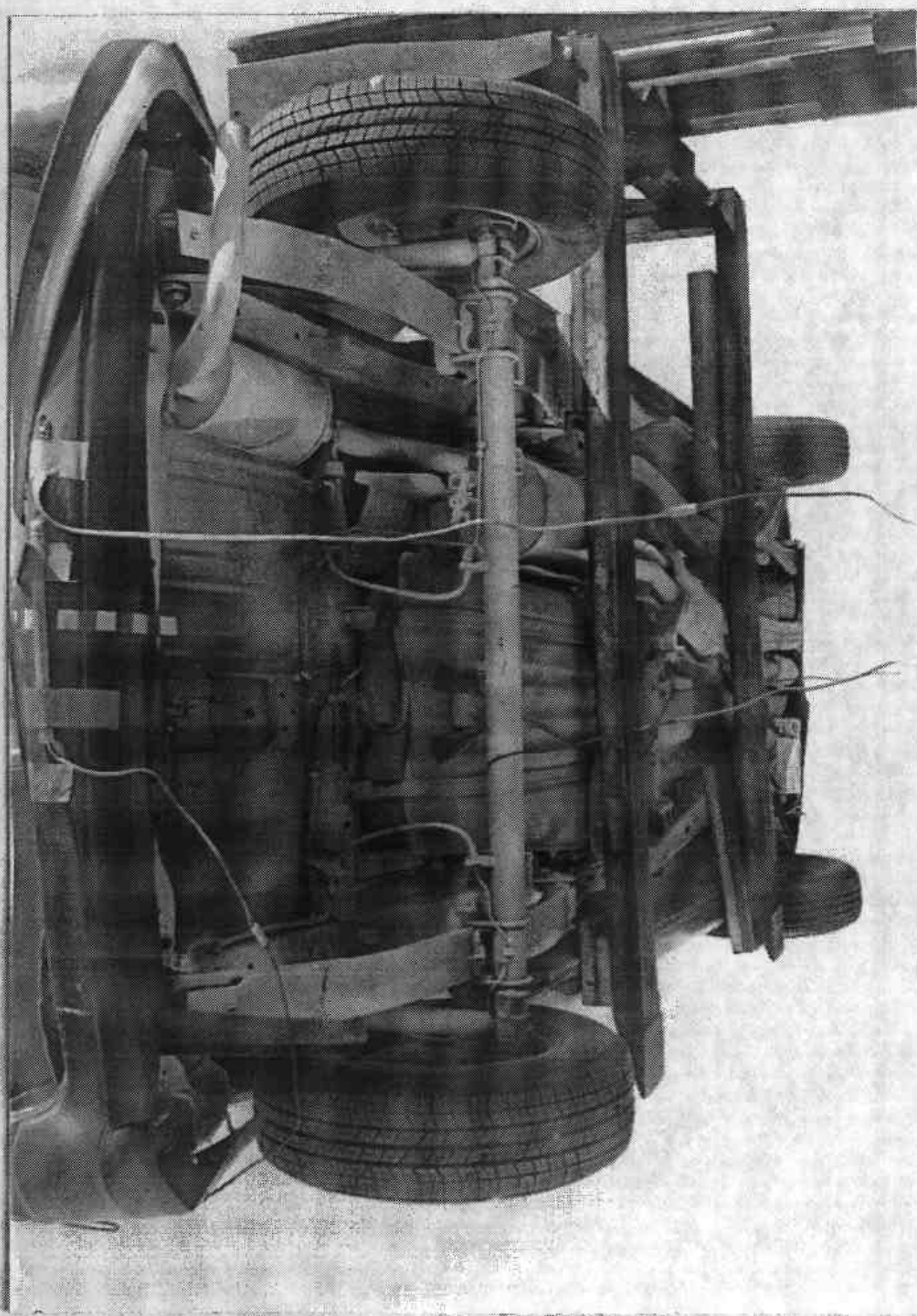


Figure A-16 POST-TEST REAR UNDERBODY VIEW

MFD. BY FORD MOTOR CO. IN U.S.A. DATE: 10/94
 FOR NISSAN MOTOR CO., LTD.
 GVWR: 5445LB / 2469KG
 FRONT GVWR: 2716LB 1231KG
 WITH P205/75RX15S TIRES
 15X5.5JJ RIMS AT 35 PSI COLD
 THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE
 SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.
 VIN: 4N2DN11W4SD813636 MODEL: MPV

F0235
T0130

08200

ISG

COLOR
EG

Figure A-17 CERTIFICATION PLACARD

RECOMMENDED COLD TIRE INFLATION PRESSURE PRESSIONS DE GONFLAGE RECOMMANDÉES (À FROID)					
TIRE SIZE DIMENSIONS DES PNEUS	MAX. GWT PNEUS (POUNDS)	FRONT PSI AVANT (PSI)	REAR PSI ARRIÈRE (PSI)	UNIFORMITY INDEX IND. DE UNIFORMITÉ	FRONT PSI AVANT (PSI)
P205/70R15	3,320 lbs	35 (34)	35 (34)	115/100/115	35 (34)
P215/70R15	3,500 lbs	35 (34)	35 (34)	115/100/115	35 (34)
P215/70R15	3,500 lbs	35 (34)	35 (34)	115/100/115	35 (34)
VEHICLE CAPACITY WEIGHT CAPACITÉ PNEUS DE VÉHICULE					
1700 lb. / 768 kg.					
TOTAL OCCUPANTS OCCUPANTS TOTAUX					
SEATING CAPACITY / PLACES ASSIÈGES					
1st SEAT 1st SEAT 2nd SEAT 2nd SEAT					
3 3 3 3					
N/A N/A					
3 3					

Figure A-18 TIRE PLACARD

Appendix B

VEHICLE AND DUMMY RESPONSE DATA

(REAR IMPACT ONLY)

FACILITY: TRACK TEST DATE: 02 Mar 1995
 RUN #: 1499 TEST TIME: 14:12:58
 SERIES #: 1 BOARD: a

TITLE: 301 Rear 30 MPH-1995 Nissan Quest

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM		MINIMUM		FILTER CLASS
			AMP	msec	AMP	msec	
1	Pos. 1 Head X	Gs	27.9	122.0	-4.2	359.9	1000.0
2	Pos. 1 Head Y	Gs	2.8	157.2	-1.7	122.0	1000.0
3	Pos. 1 Head Z	Gs	17.7	112.1	-.1	5.4	1000.0
4	Pos. 1 Chest Disp.	Ins	N/A	N/A	N/A	N/A	180.0
5	Pos. 1 Chest X	Gs	12.9	60.8	-3.7	352.9	180.0
6	Pos. 1 Chest Y	Gs	3.9	163.0	-3.7	157.3	180.0
7	Pos. 1 Chest Z	Gs	6.0	69.7	-1.9	159.5	180.0
8	Pos. 1 Lap Belt	lbs	49.5	313.6	-62.3	120.4	60.0
9	Pos. 1 Pelvic X	Gs	17.8	73.9	-5.5	158.8	1000.0
10	Pos. 1 Pelvic Y	Gs	2.2	96.2	-7.5	139.4	1000.0
11	Pos. 1 Pelvic Z	Gs	9.1	64.4	-4.5	139.4	1000.0
12	Pos. 1 Belt Spoolout	Ins	.0	-89.9	-4.3	88.2	60.0
13	Pos. 1 Upper Neck Fx	lbs	123.4	122.2	-35.9	359.9	1000.0
14	Pos. 1 Upper Neck Fy	lbs	20.4	163.0	-59.6	122.2	1000.0
15	Pos. 1 Upper Neck Fz	lbs	187.7	113.2	-35.8	139.4	1000.0
16	Left Rear Crossmember X	Gs	19.9	30.2	-3.8	120.2	60.0
17	Pos. 1 Head Resultant	Gs	31.1	122.0	.0	8.3	1000.0
18	Pos. 1 Chest Resultant	Gs	13.4	60.7	.0	-34.1	180.0
19	Pos. 1 Pelvic Resultant	Gs	19.2	73.7	.0	.7	1000.0
20	Pos. 1 Neck Force Res.	lbs	193.0	113.2	1.4	8.8	1000.0

36 ms Fixed Duration HIC SUMMARY: Pos. 1 Head Resultant

hic: 102.61
 t1 = 101.760 msec
 t2 = 137.760 msec
 Average G's Over Hic Duration = 24.10

CLIP SUMMARY: Pos. 1 Chest Resultant

Peak Resultant (3 ms CLIPPED DURATION) = 12.732 G's
 Tstart = 59.5200 ms
 Tend = 62.6400 ms
 CSI = 35.199

FACILITY: TRACK TEST DATE: 02 Mar 1995
RUN #: 1499 TEST TIME: 14:12:58
SERIES #: 1 BOARD: b

TITLE: 301 Rear 30 MPH-1995 Nissan Quest

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM		MINIMUM		FILTER CLASS
			AMP	msec	AMP	msec	
1	Pos. 1 Upper Neck Mx	ft-lbs	10.4	120.2	-3.0	343.9	600.0
2	Pos. 1 Upper Neck My	ft-lbs	9.5	265.6	-10.3	139.4	600.0
3	Pos. 1 Upper Neck Mz	ft-lbs	3.3	163.0	-5.2	120.4	600.0
4	Right Rear Crossmember X	Gs	20.6	33.4	-4.6	120.1	60.0
5	Upper Seatback X	Gs	20.9	18.7	-9.5	50.9	60.0
6	Lower Seatback X	Gs	29.5	55.7	-9.1	25.6	60.0
17	Pos. 1 Neck Moment Res.	ft-lbs	14.6	139.4	.0	-84.0	600.0

TEST NO. CS5209

VEHICLE

SAE FILTER CHANNEL CLASS

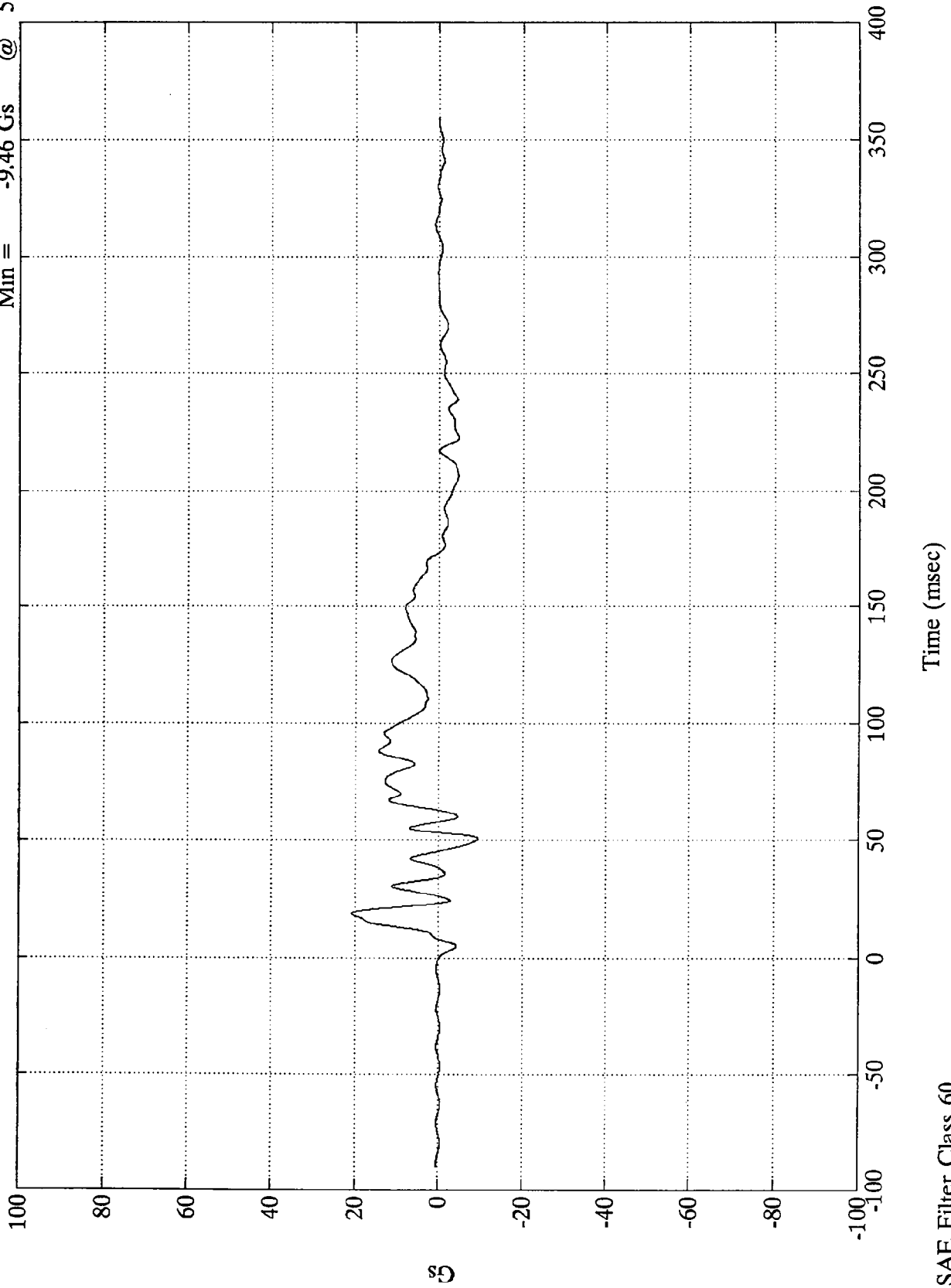
60

Note: Angular seatback position is measured in degrees of rotation from the initial (design) position.

301 Rear 30 MPH-1995 Nissan Quest

Upper Seatback X

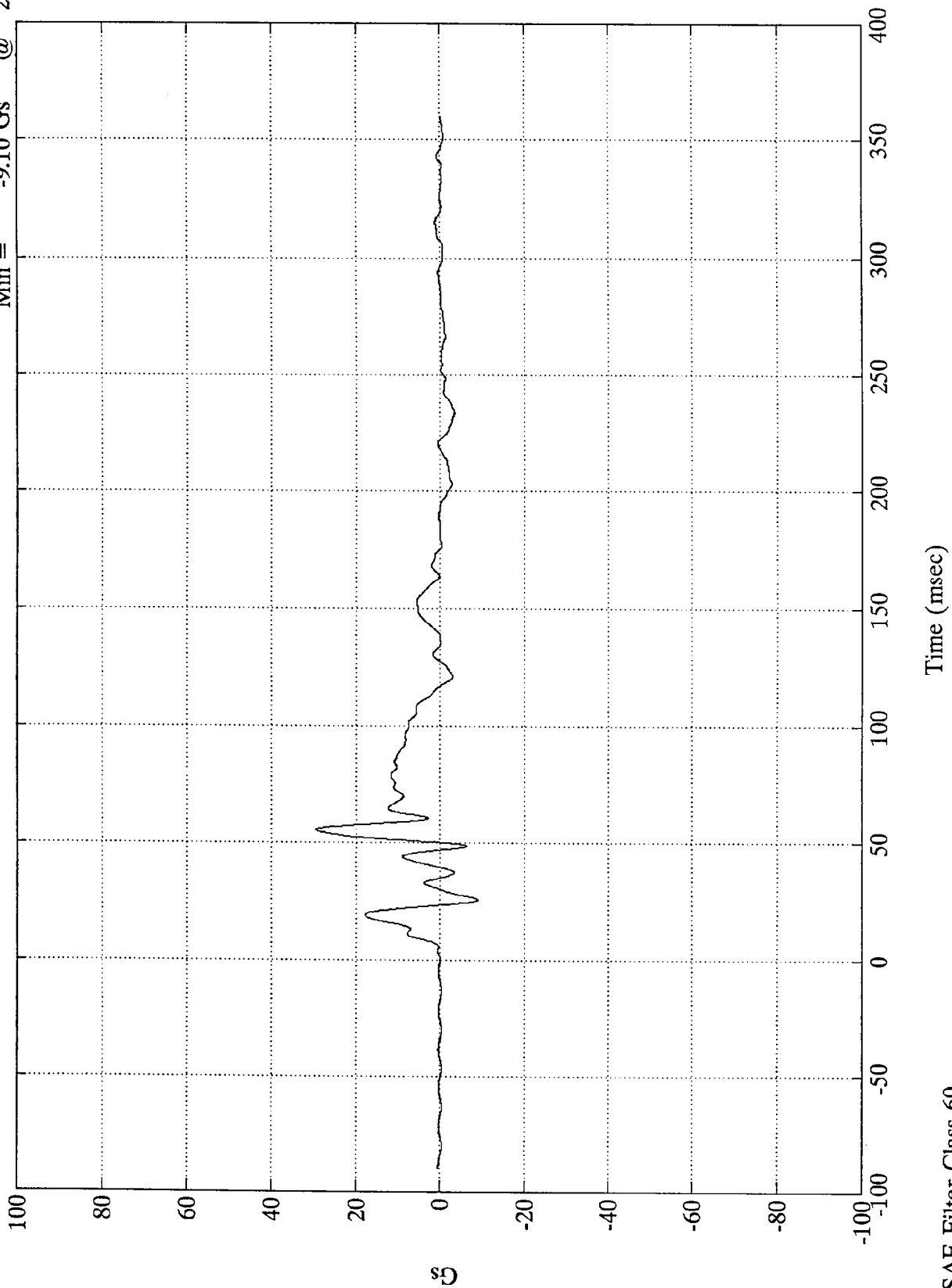
Max = 20.89 Gs @ 18.71 msec
Min = -9.46 Gs @ 50.88 msec



301 Rear 30 MPH-1995 Nissan Quest

Max = 29.49 Gs @ 55.68 msec
Min = -9.10 Gs @ 25.55 msec

Lower Seatback X

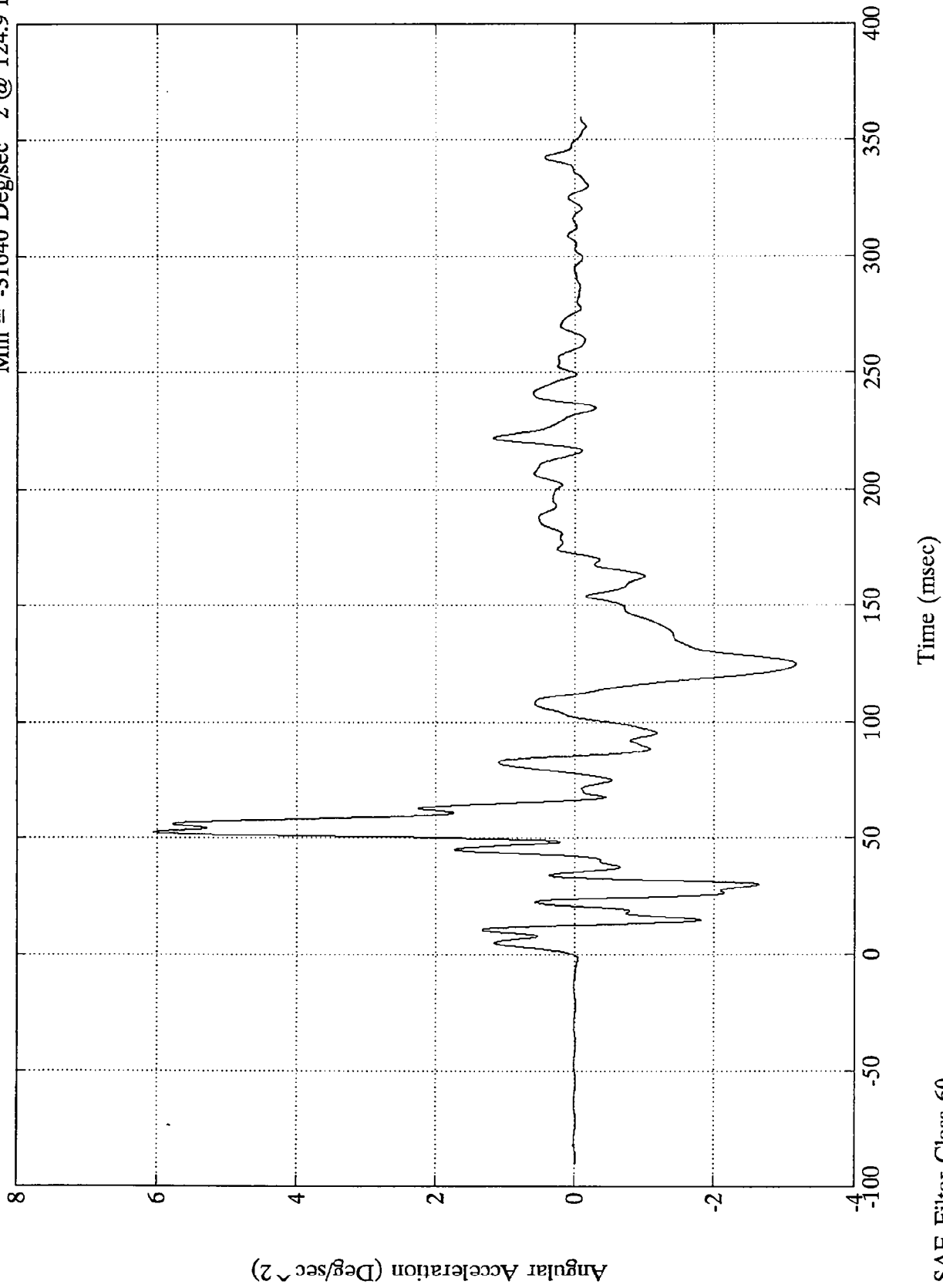


301 Rear 30 MPH-1995 Nissan Quest

Max = 60510 Deg/sec² @ 52.68 msec
Min = -31640 Deg/sec² @ 124.9 msec

Seataback Angular Acceleration

x10⁴

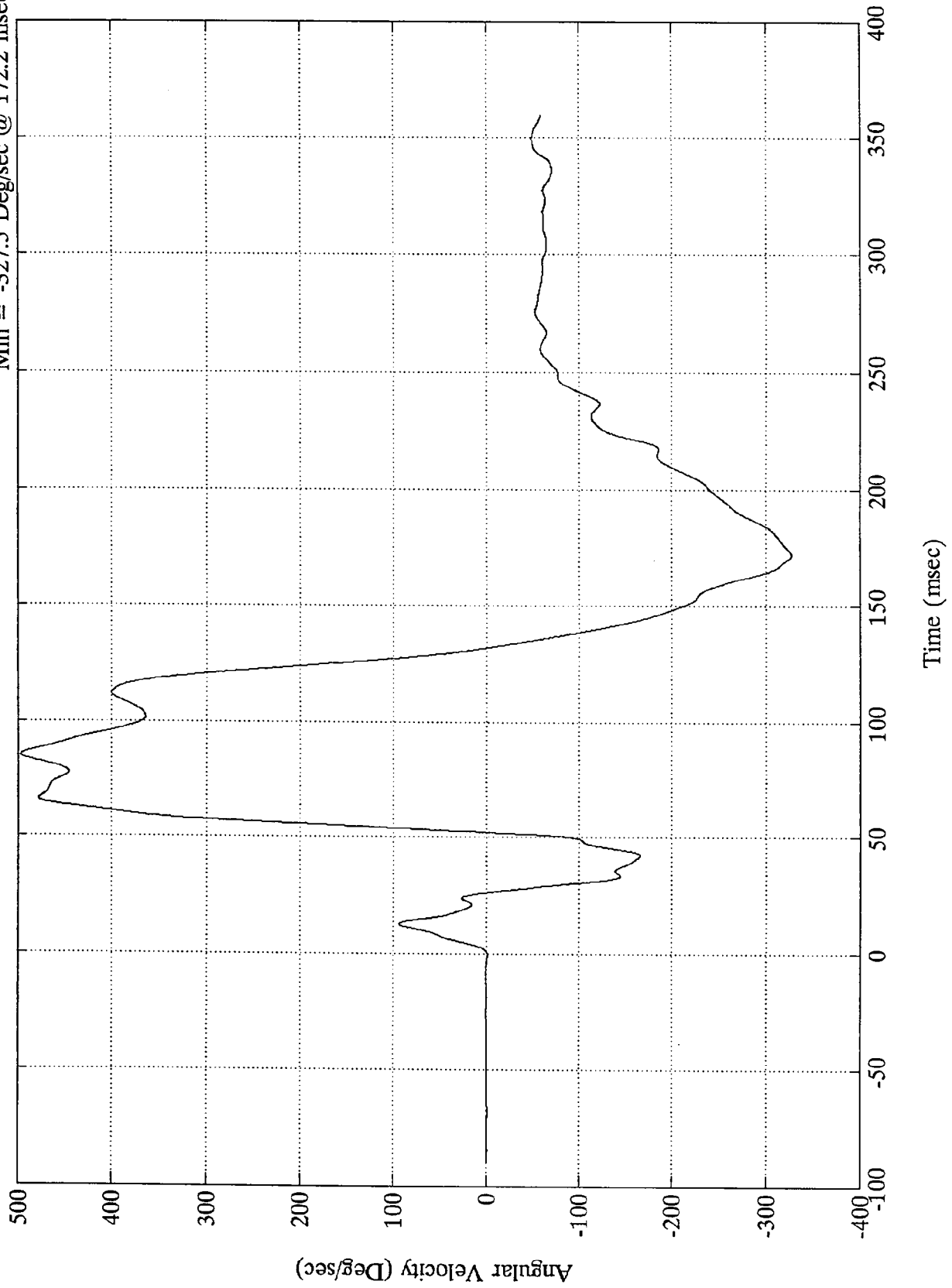


SAE Filter Class 60

301 Rear 30 MPH-1995 Nissan Quest

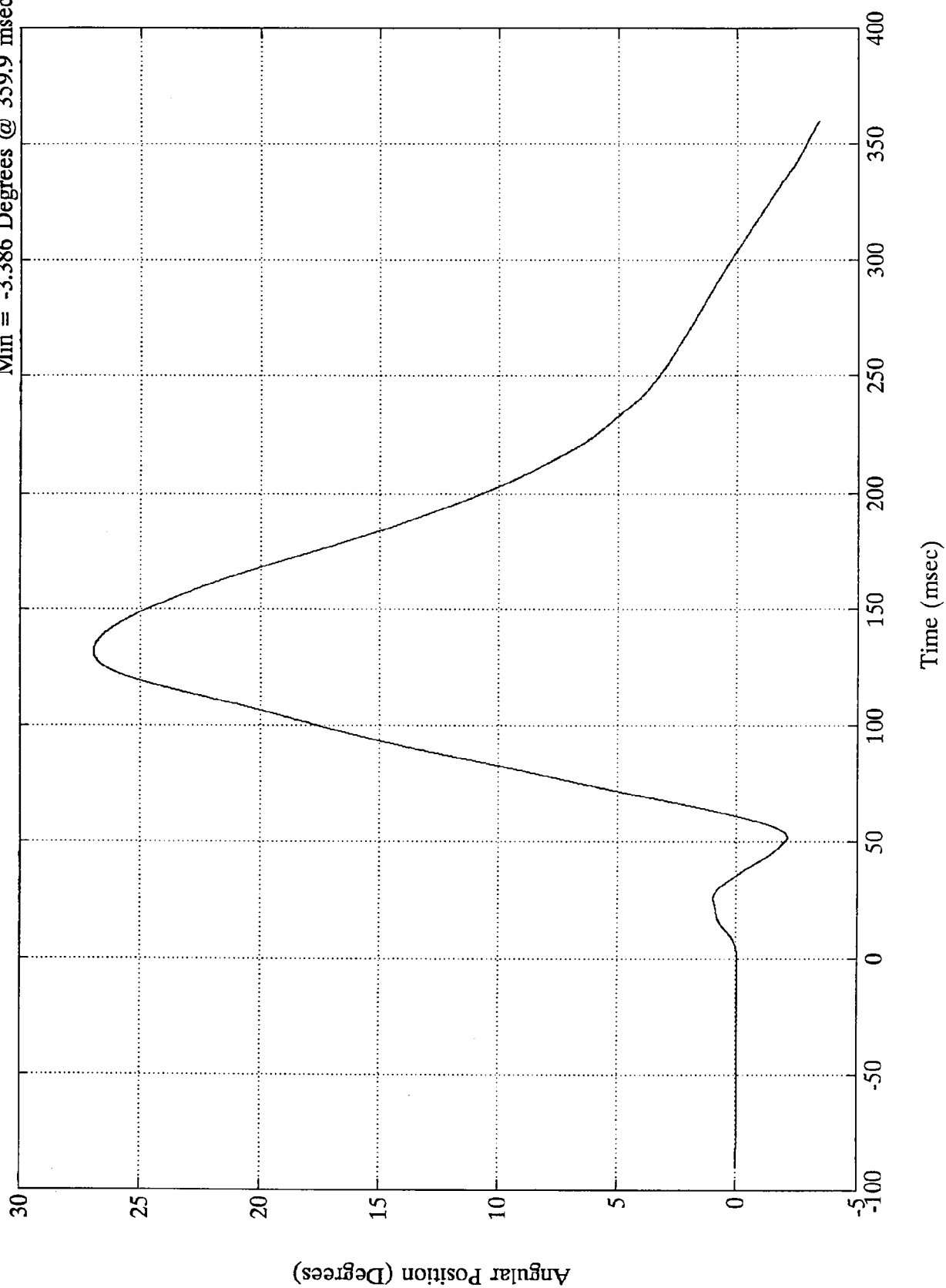
Max = 497.6 Deg/sec @ 85.56 msec
Min = -327.5 Deg/sec @ 172.2 msec

Seatback Angular Velocity



301 Rear 30 MPH-1995 Nissan Quest

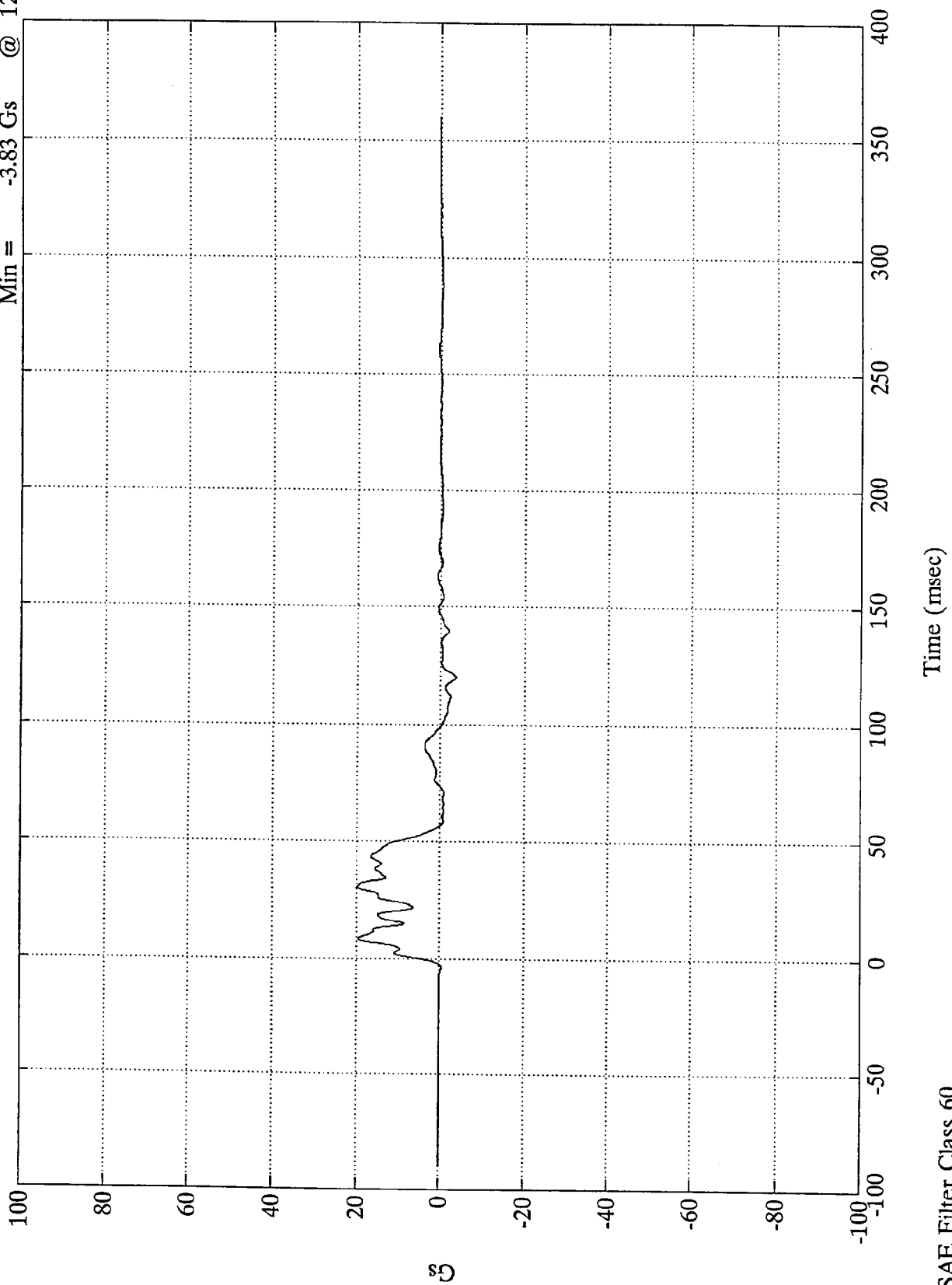
Seatback Angular Position
Max = 26.93 Degrees @ 132.1 msec
Min = -3.386 Degrees @ 359.9 msec



301 Rear 30 MPH-1995 Nissan Quest

Max = 19.90 Gs @ 30.23 msec
Min = -3.83 Gs @ 120.24 msec

Left Rear Crossmember X

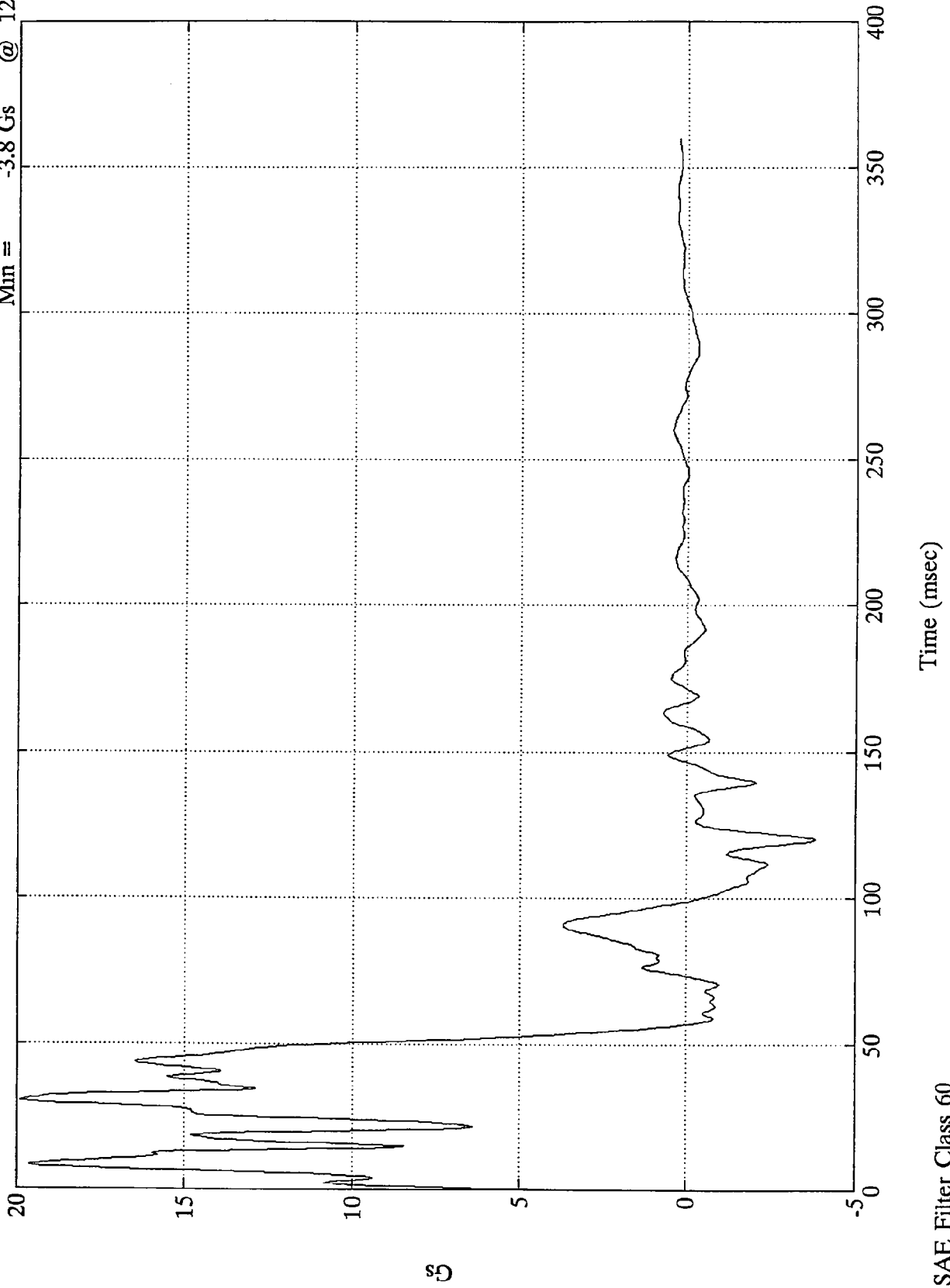


SAE Filter Class 60

301 Rear 30 MPH-1995 Nissan Quest

Max = 19.9 Gs @ 30.23 msec
Min = -3.8 Gs @ 120.24 msec

Left Rear Crossmember X



Gs

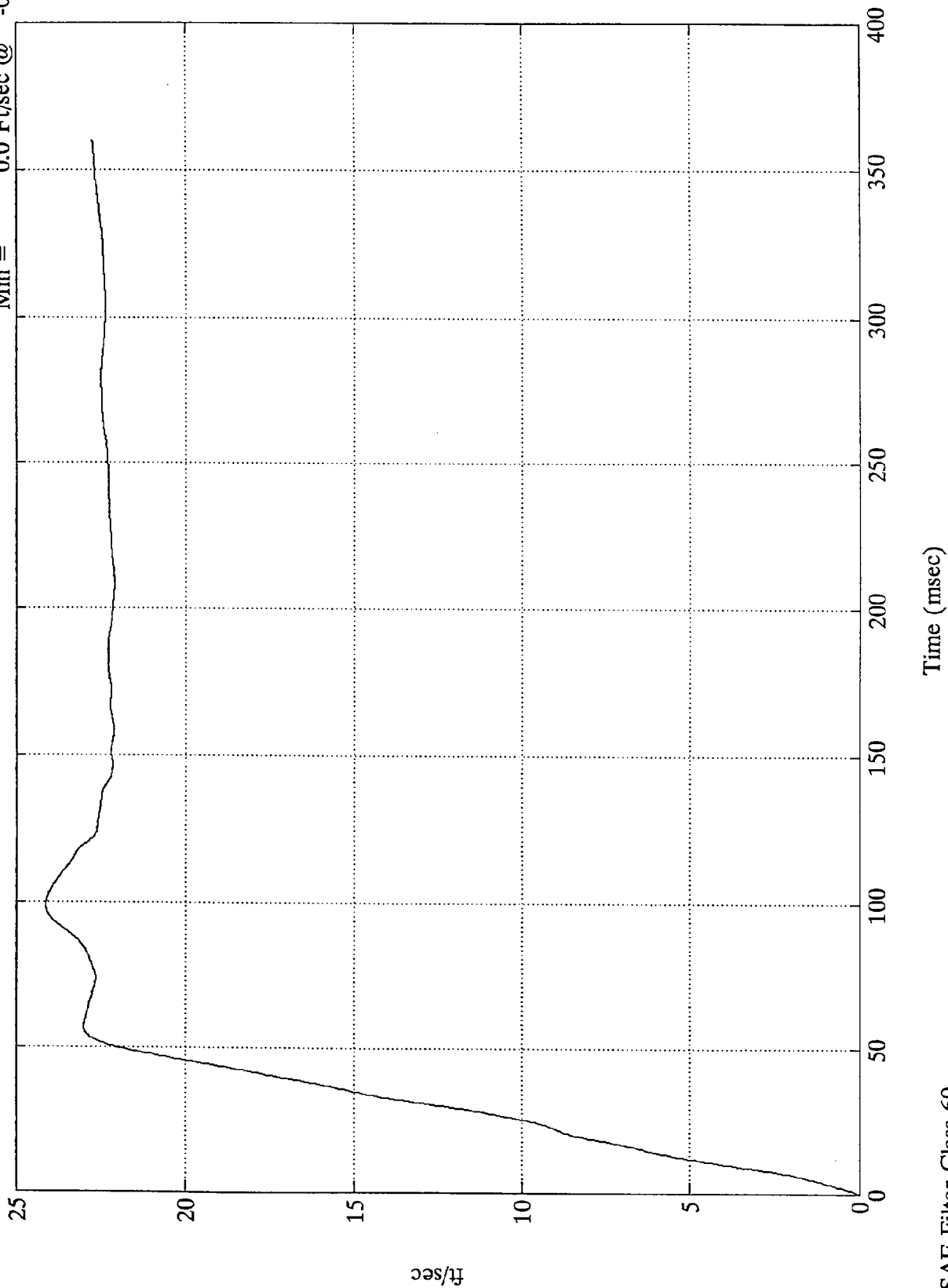
Time (msec)

SAE Filter Class 60

301 Rear 30 MPH-1995 Nissan Quest

1st Integral Left Rear Crossmember X

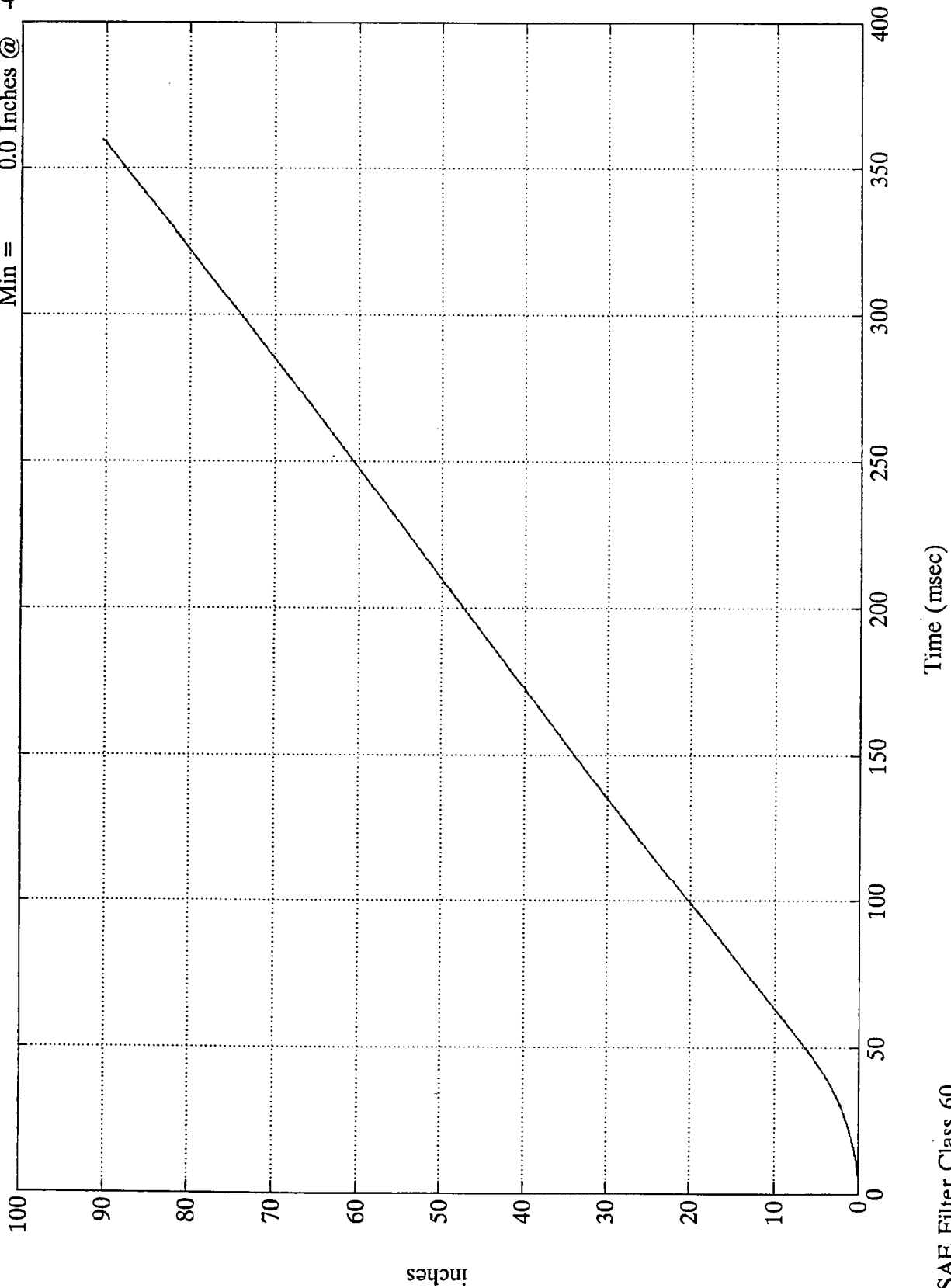
Max = 24.1 Ft/sec @ 98.88 msec
Min = 0.0 Ft/sec @ -0.00 msec



301 Rear 30 MPH-1995 Nissan Quest

2nd Integral Left Rear Crossmember X

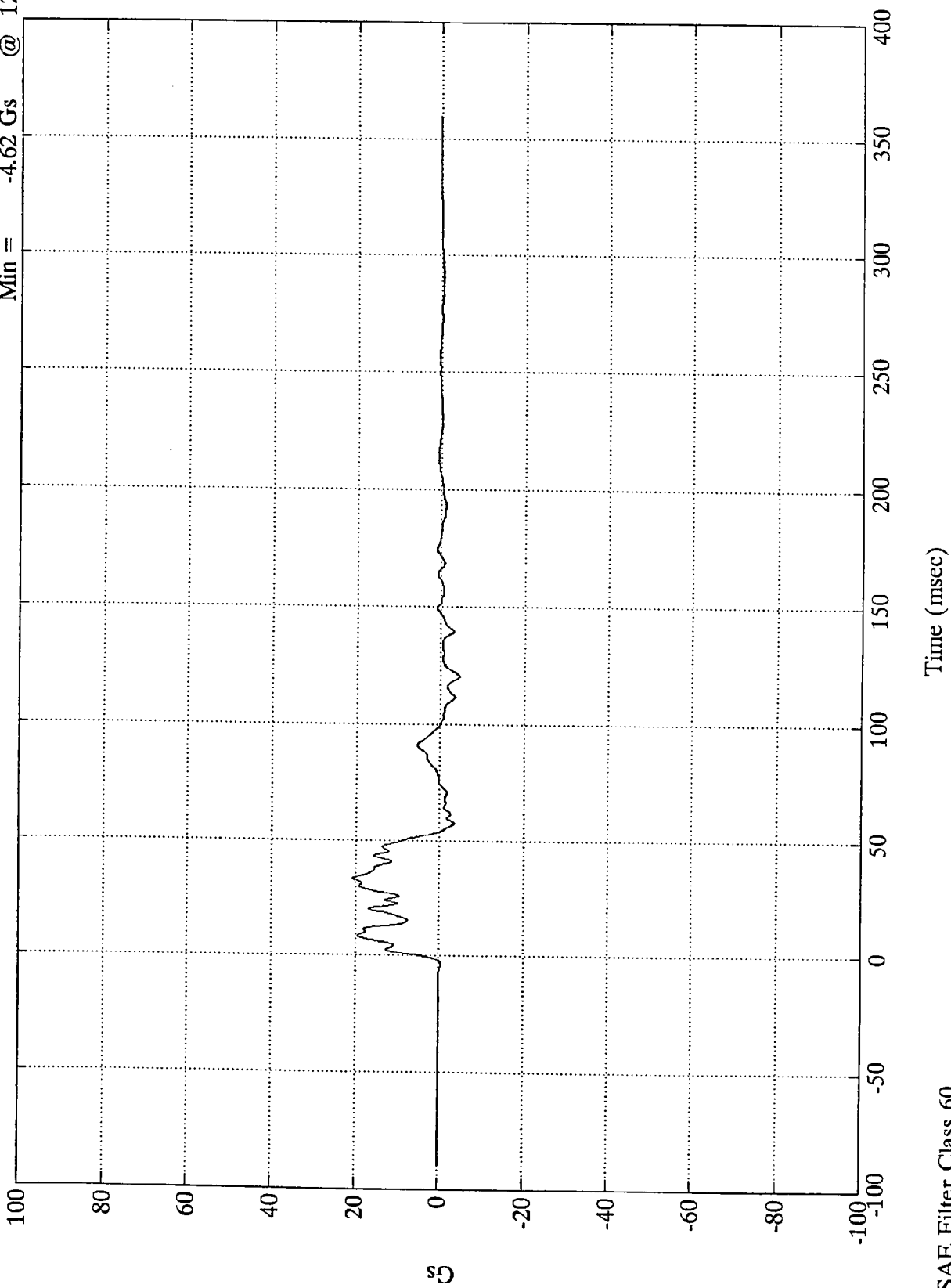
Max = 90.2 Inches @ 359.88 msec
Min = 0.0 Inches @ -0.00 msec



301 Rear 30 MPH-1995 Nissan Quest

Right Rear Crossmember X

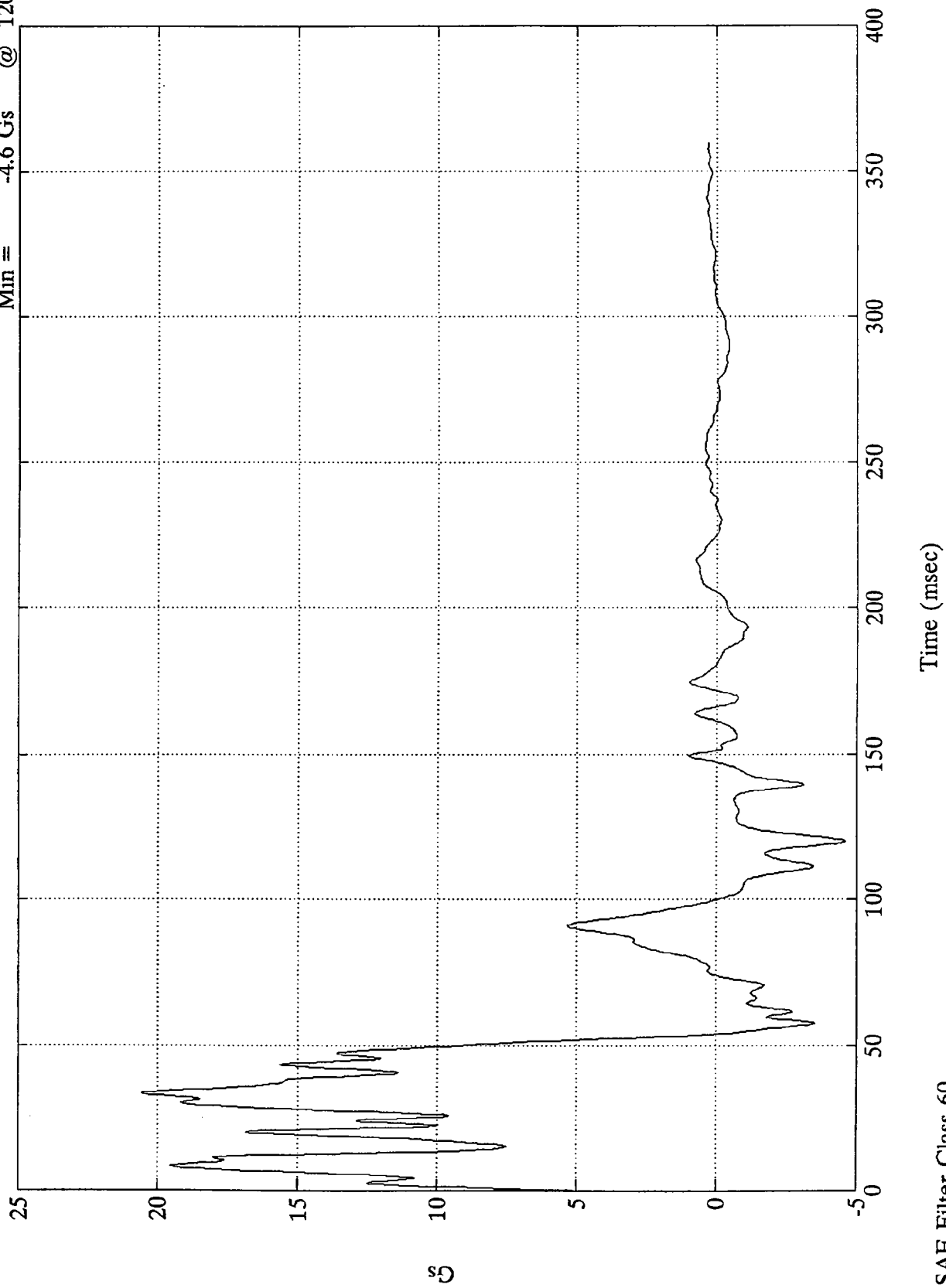
Max = 20.55 Gs @ 33.36 msec
Min = -4.62 Gs @ 120.12 msec



SAE Filter Class 60

301 Rear 30 MPH-1995 Nissan Quest

Right Rear Crossmember X
Max = 20.5 Gs @ 33.36 msec
Min = -4.6 Gs @ 120.12 msec

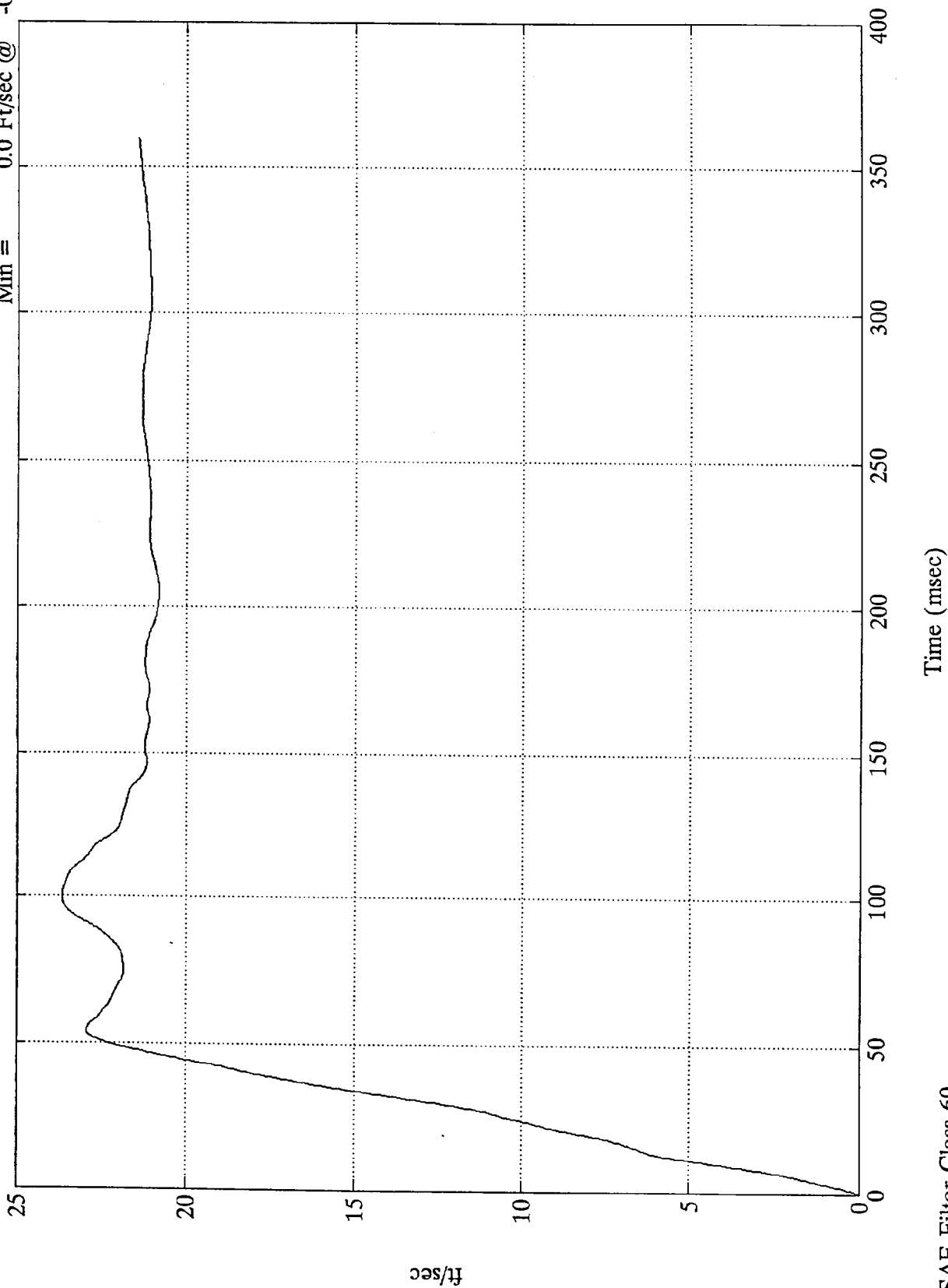


SAE Filter Class 60

301 Rear 30 MPH-1995 Nissan Quest

1st Integral Right Rear Crossmember X

Max = 23.6 Ft/sec @ 99.84 msec
Min = 0.0 Ft/sec @ -0.00 msec

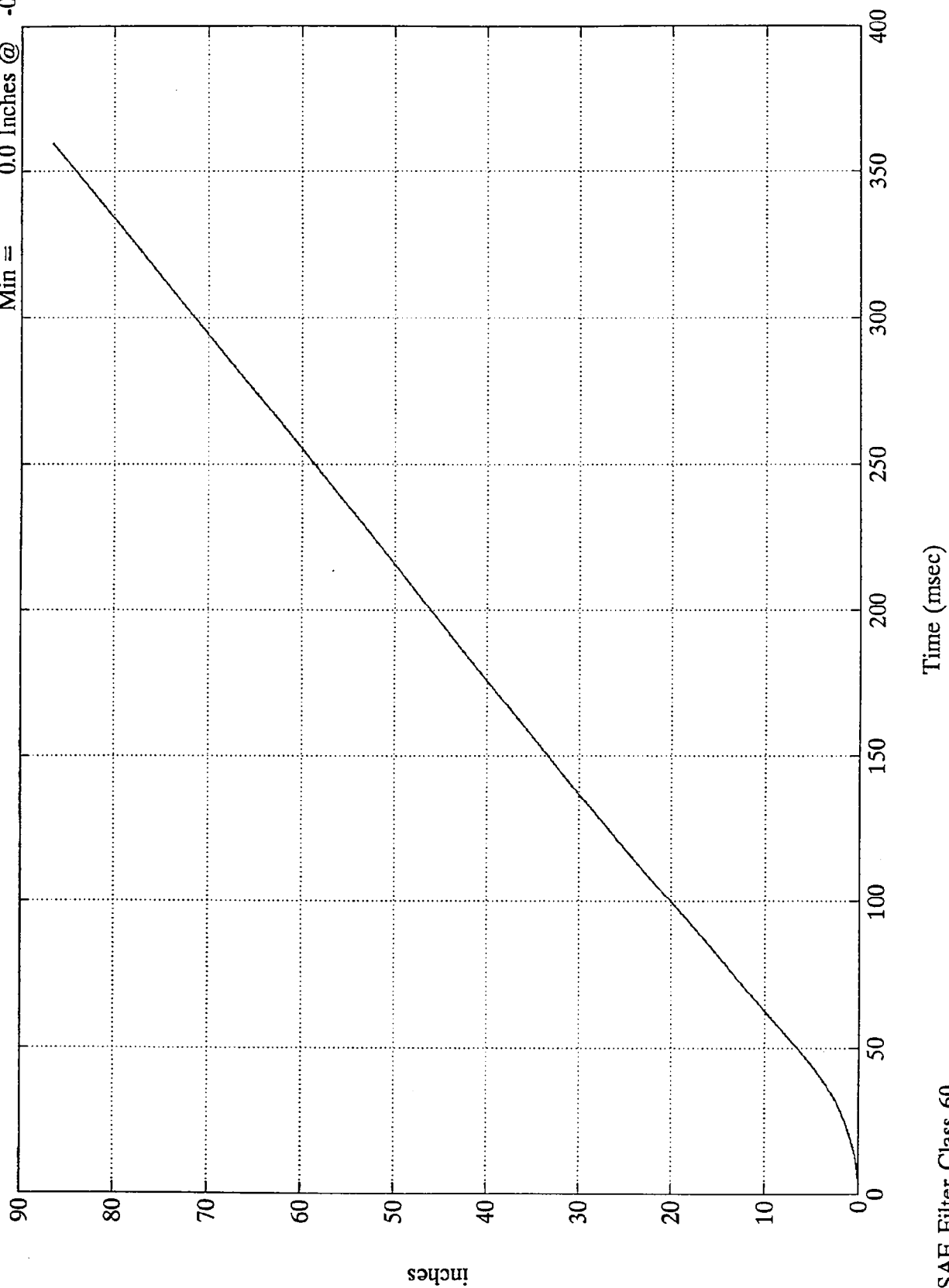


SAE Filter Class 60

301 Rear 30 MPH-1995 Nissan Quest

2nd Integral Right Rear Crossmember X

Max = 86.6 Inches @ 359.88 msec
Min = 0.0 Inches @ -0.00 msec



TEST NO. CS5209

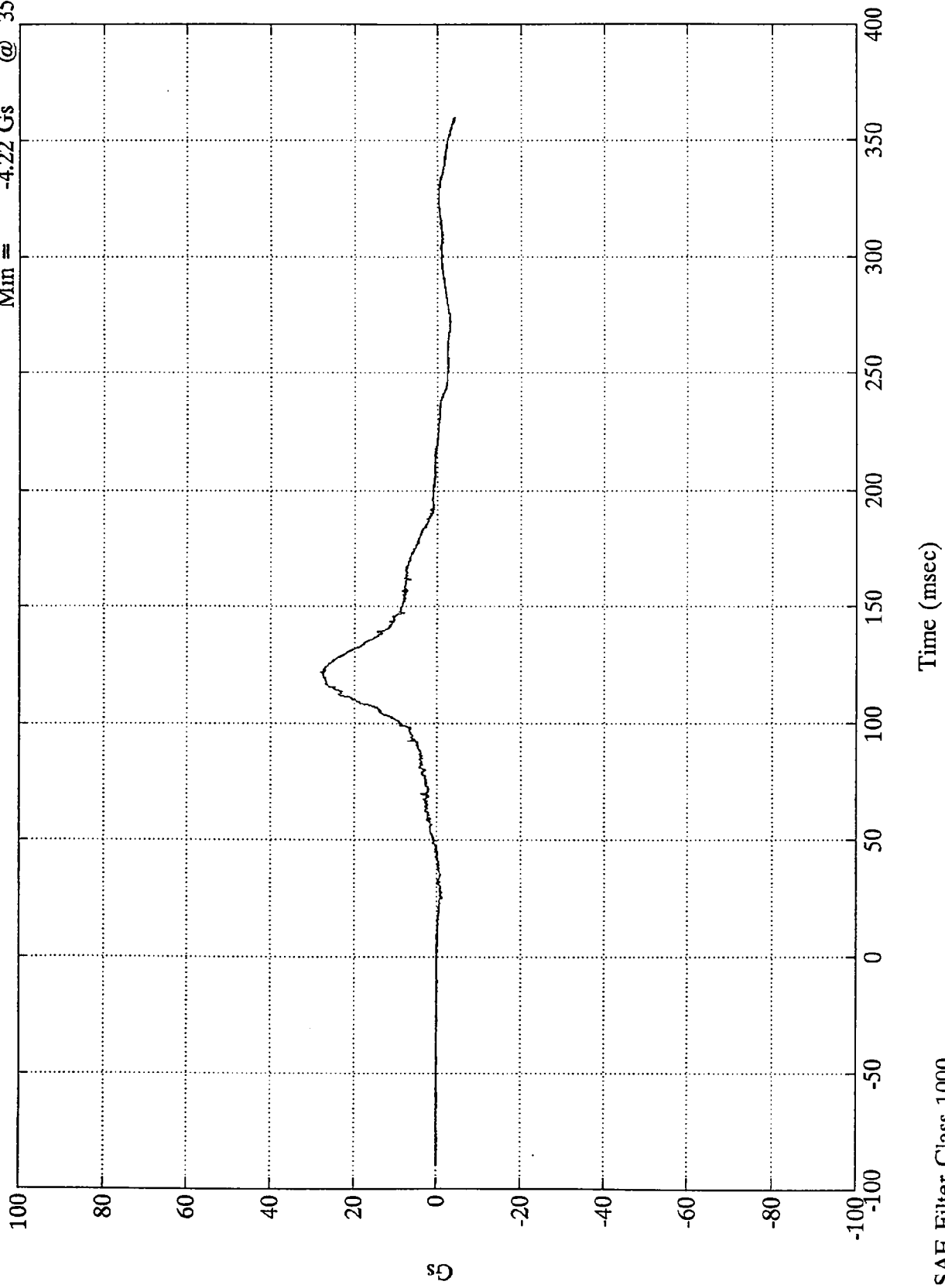
DRIVER DUMMY (Pos. 1)	SAE FILTER CHANNEL CLASS
Head Accelerations	1000
Chest Accelerations	180
Pelvic Accelerations	1000
Upper Neck Forces	1000
Upper Neck Moments	600
Belt Forces	60
Belt Spoolout	60

Note: Pos. #1 ATD Pelvic Z data and Pelvic Resultant are questionable after 55 milliseconds.

301 Rear 30 MPH-1995 Nissan Quest

Pos. 1 Head X

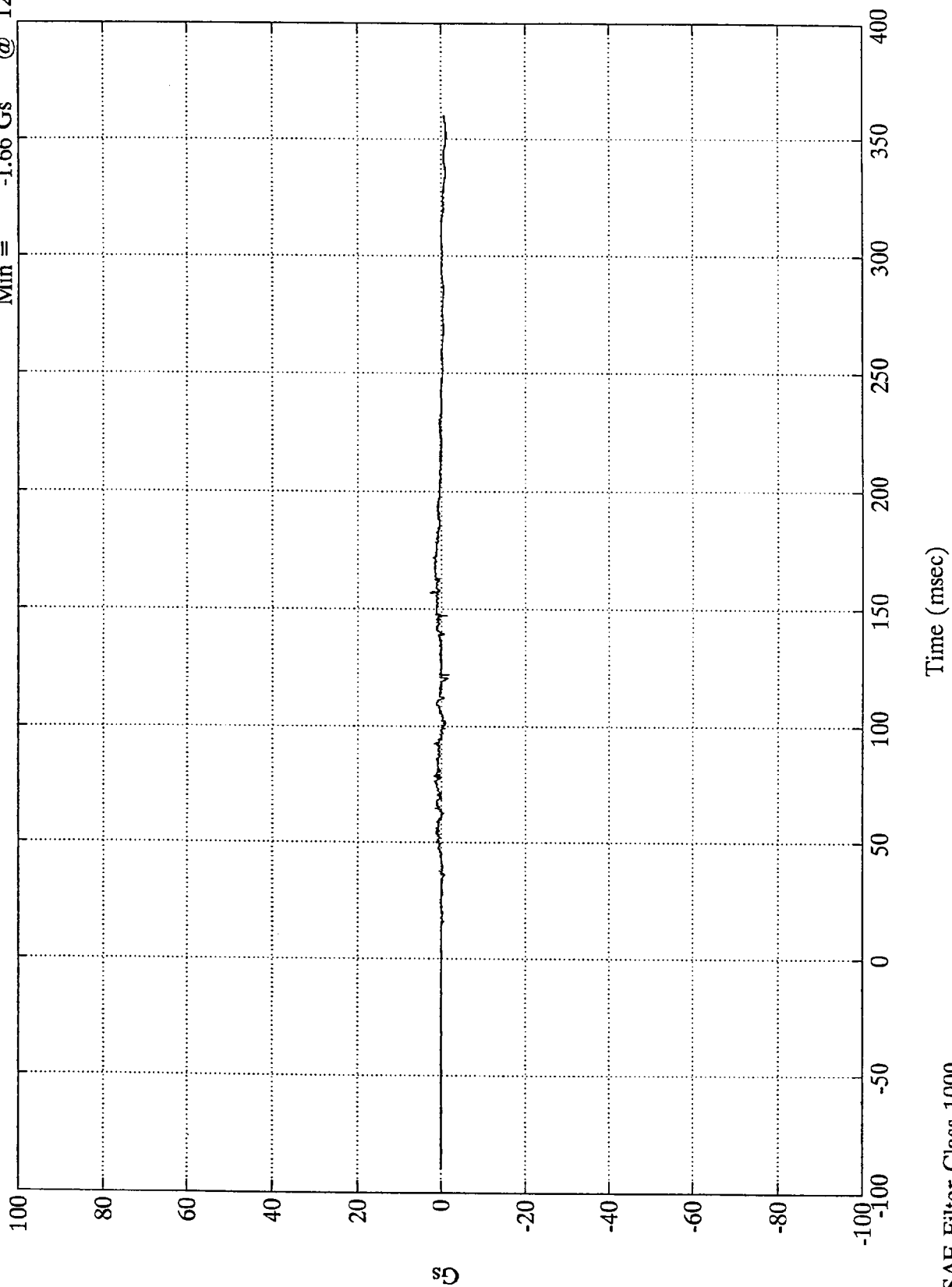
Max = 27.89 Gs @ 122.04 msec
Min = -4.22 Gs @ 359.88 msec



301 Rear 30 MPH-1995 Nissan Quest

Max = 2.81 Gs @ 157.20 msec
Min = -1.66 Gs @ 122.04 msec

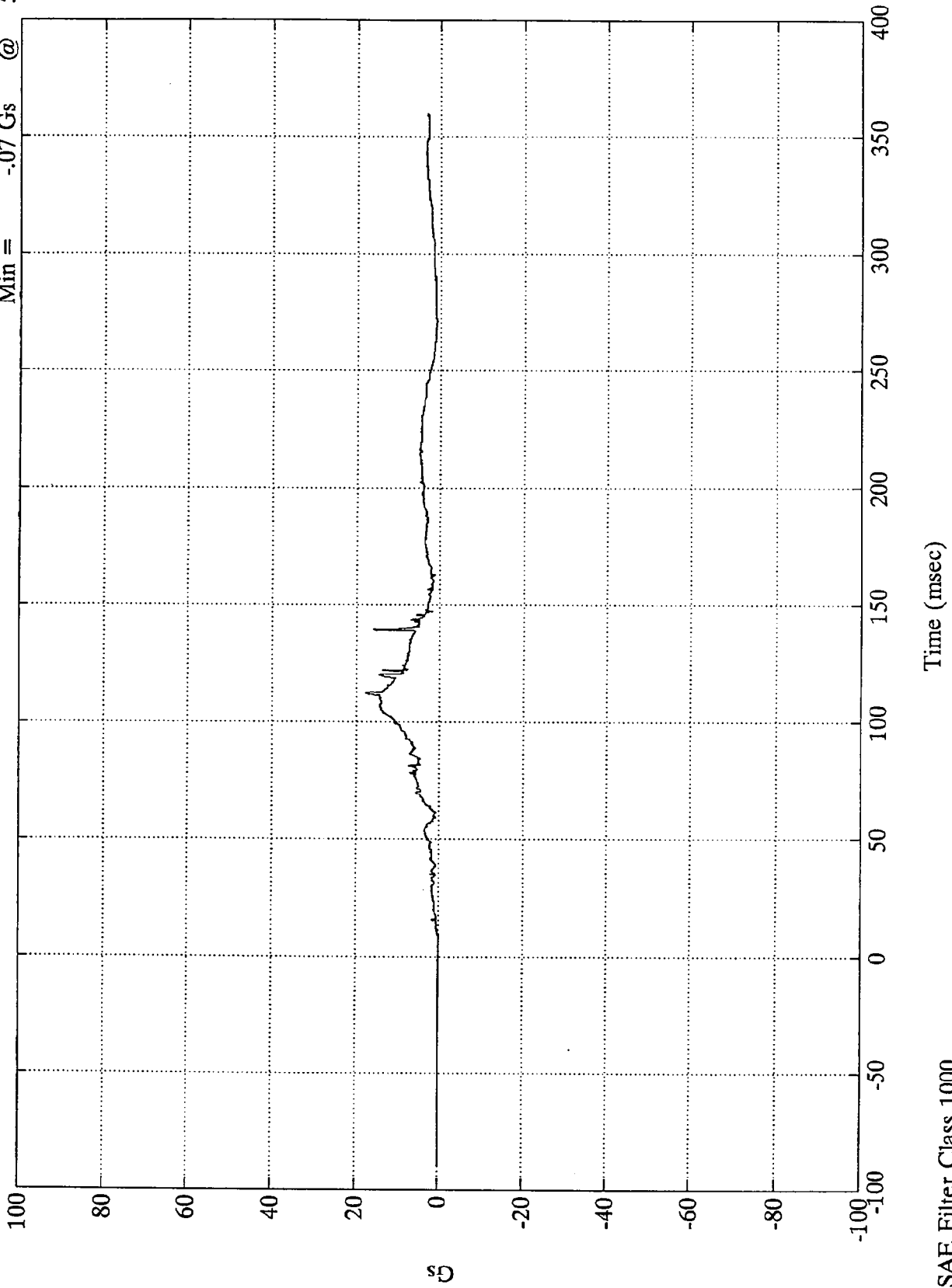
Pos. 1 Head Y



301 Rear 30 MPH-1995 Nissan Quest

Pos. 1 Head Z

Max = 17.68 Gs @ 112.08 msec
Min = -0.07 Gs @ 5.39 msec

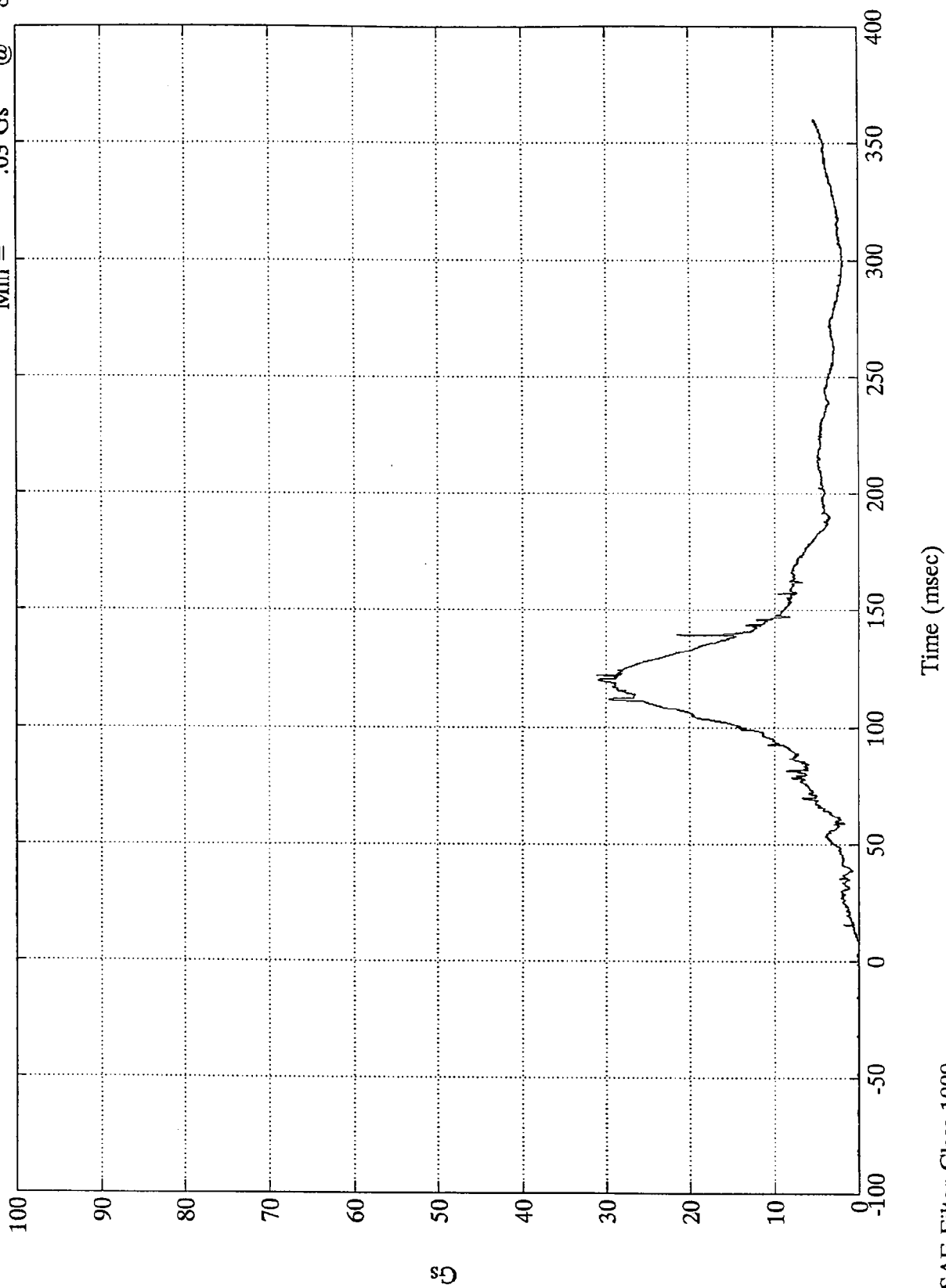


SAE Filter Class 1000

301 Rear 30 MPH-1995 Nissan Quest

Pos. 1 Head Resultant

Max = 31.07 Gs @ 122.04 msec
Min = .03 Gs @ 8.27 msec

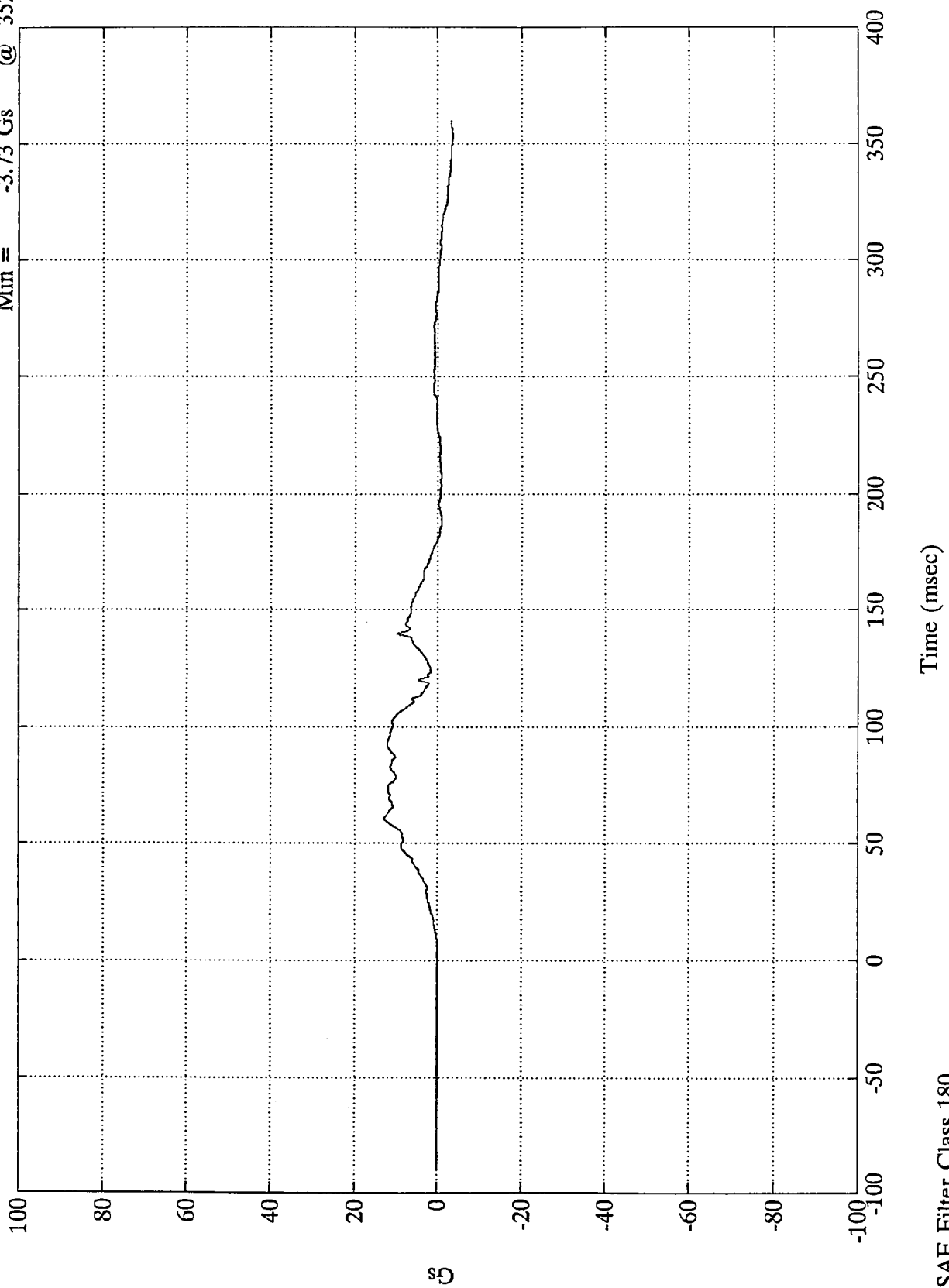


SAE Filter Class 1000

301 Rear 30 MPH-1995 Nissan Quest

Pos. 1 Chest X

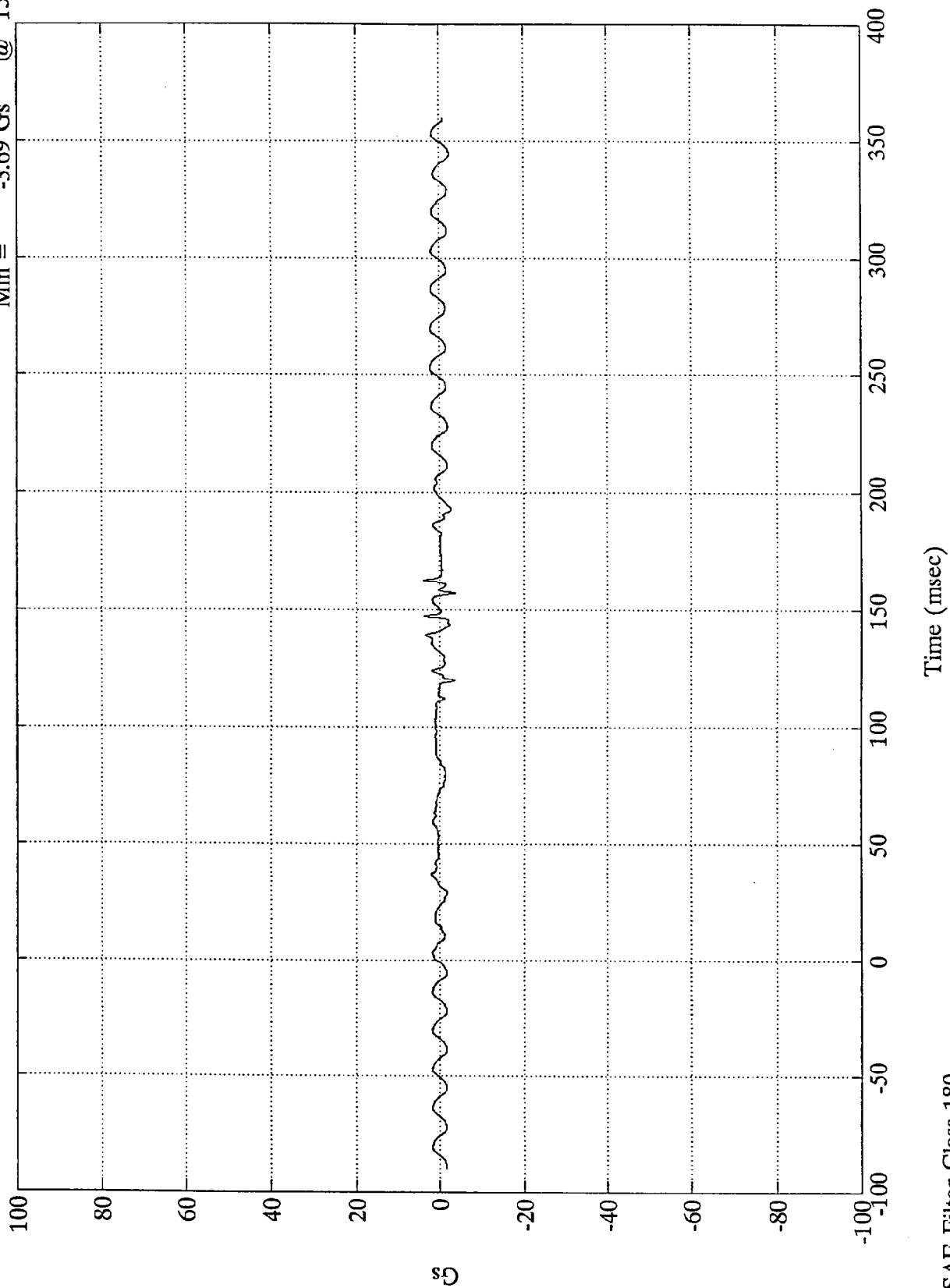
Max = 12.91 Gs @ 60.84 msec
Min = -3.73 Gs @ 352.92 msec



301 Rear 30 MPH-1995 Nissan Quest

Max = 3.92 Gs @ 162.96 msec
Min = -3.69 Gs @ 157.32 msec

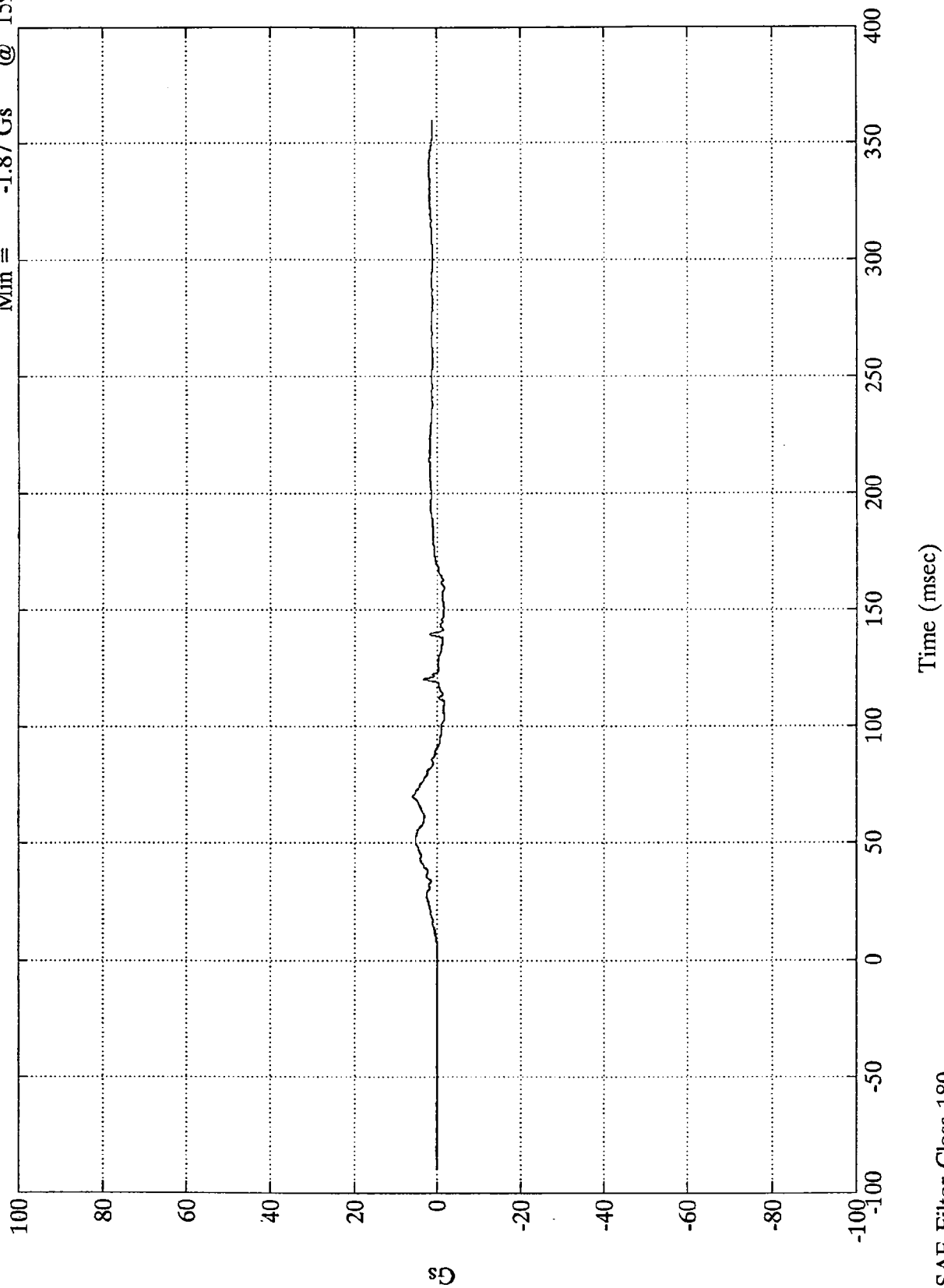
Pos. 1 Chest Y



SAE Filter Class 180

301 Rear 30 MPH-1995 Nissan Quest

Pos. 1 Chest Z
Max = 5.96 Gs @ 69.72 msec
Min = -1.87 Gs @ 159.48 msec

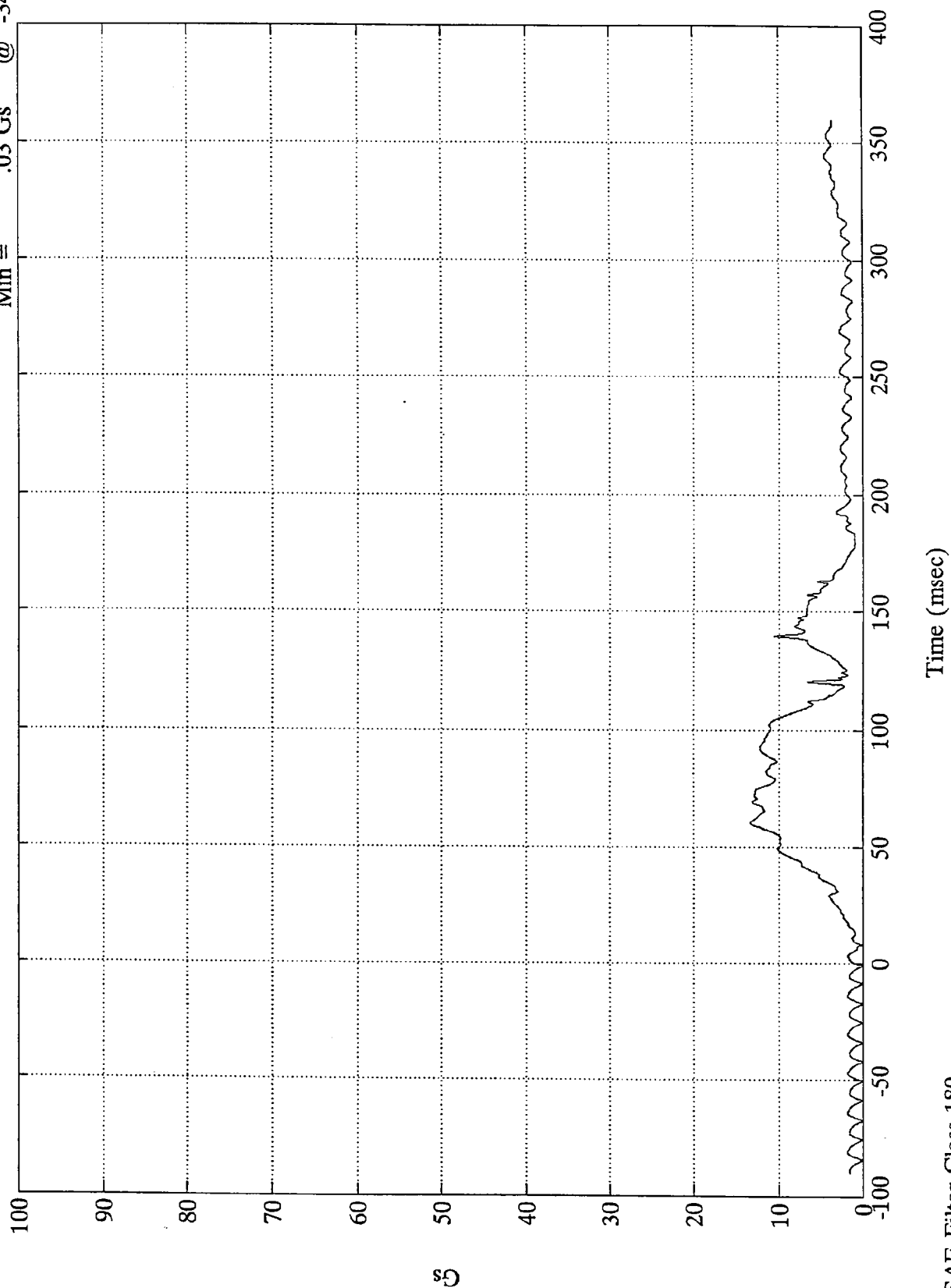


SAE Filter Class 180

301 Rear 30 MPH-1995 Nissan Quest

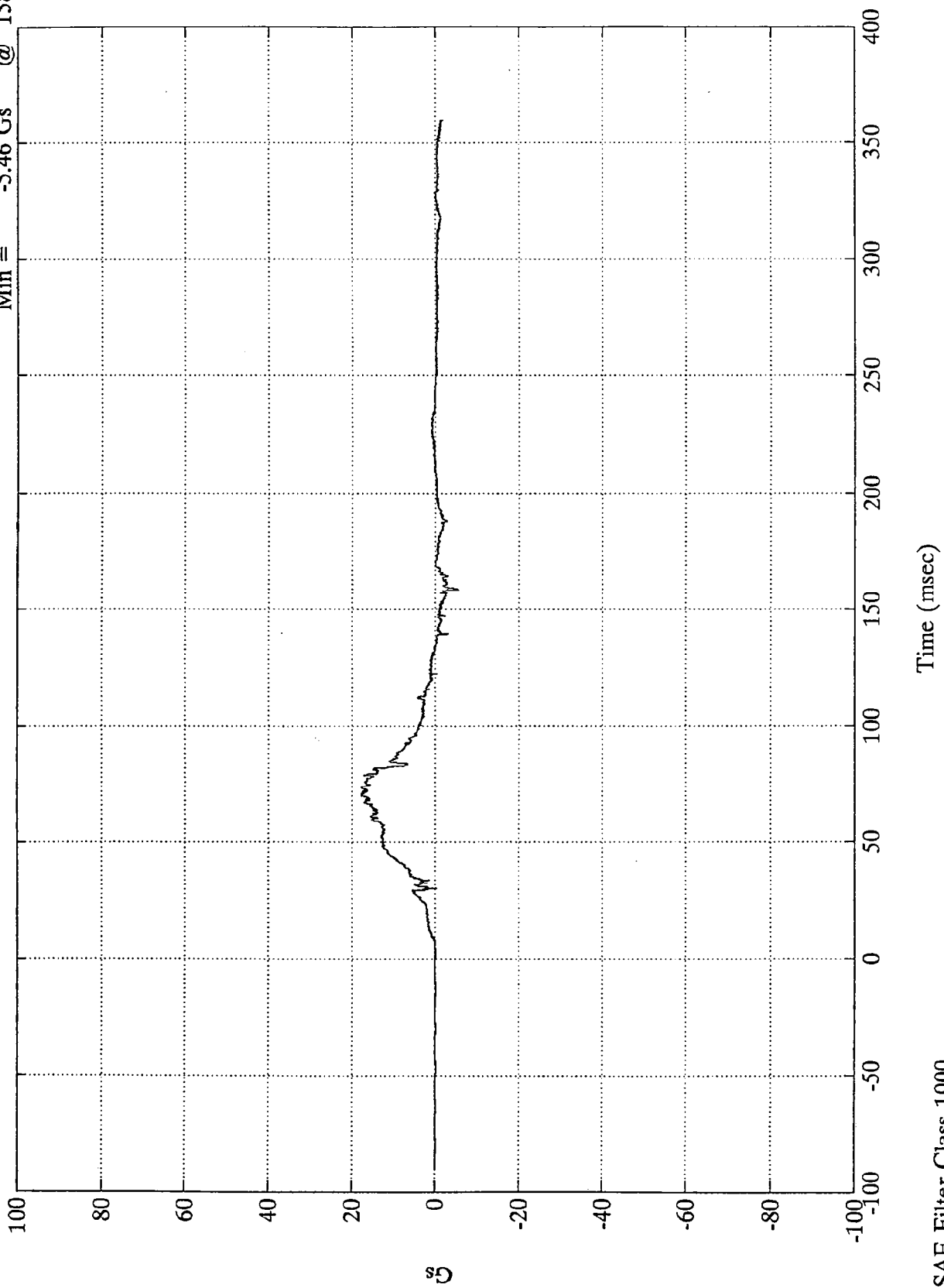
Max = 13.35 Gs @ 60.72 msec
Min = .03 Gs @ -34.08 msec

Pos. 1 Chest Resultant



301 Rear 30 MPH-1995 Nissan Quest

Pos. 1 Pelvic X
Max = 17.79 Gs @ 73.92 msec
Min = -5.46 Gs @ 158.76 msec

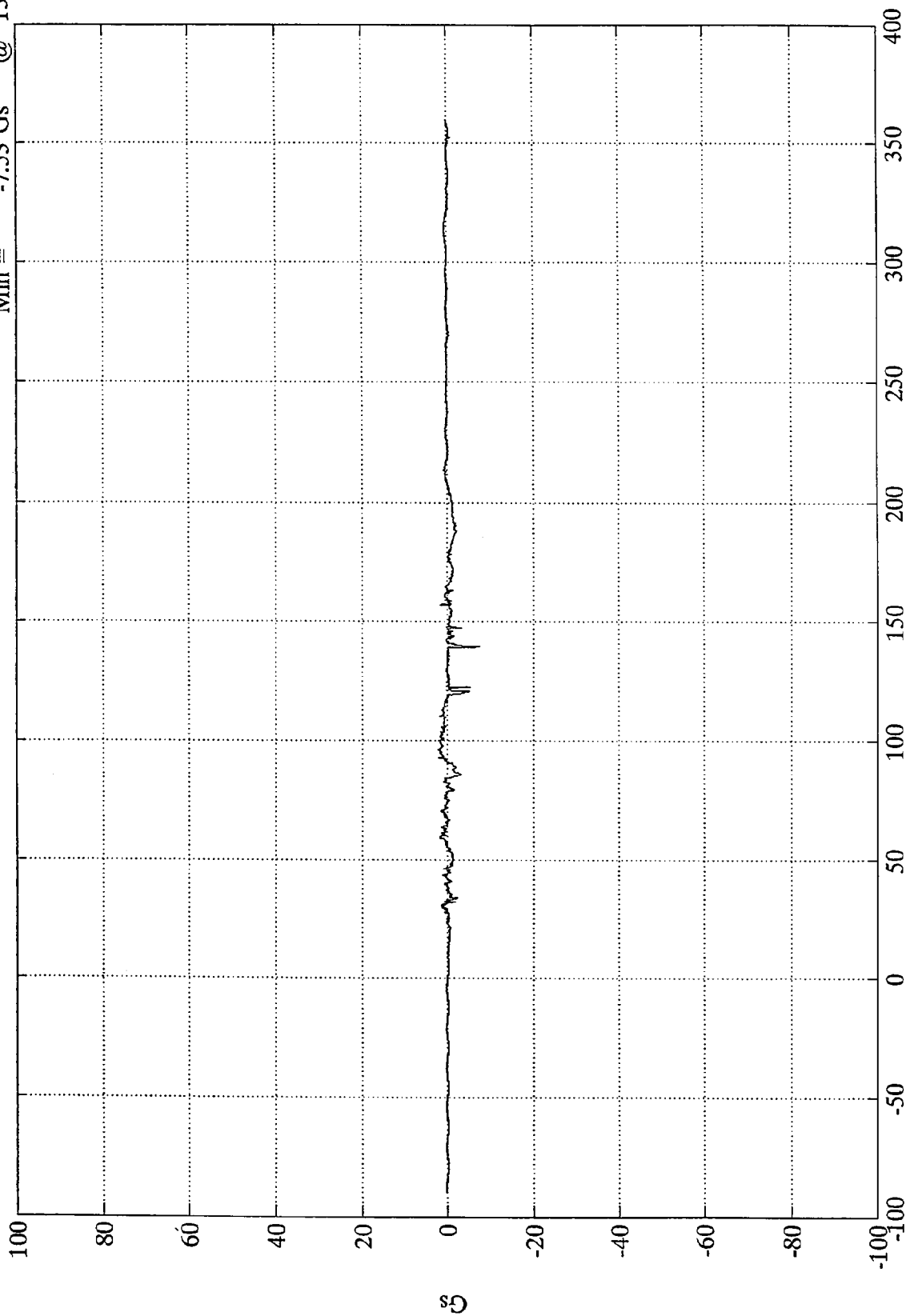


SAE Filter Class 1000

301 Rear 30 MPH-1995 Nissan Quest

Max = 2.21 Gs @ 96.23 msec
Min = -7.53 Gs @ 139.44 msec

Pos. 1 Pelvic Y

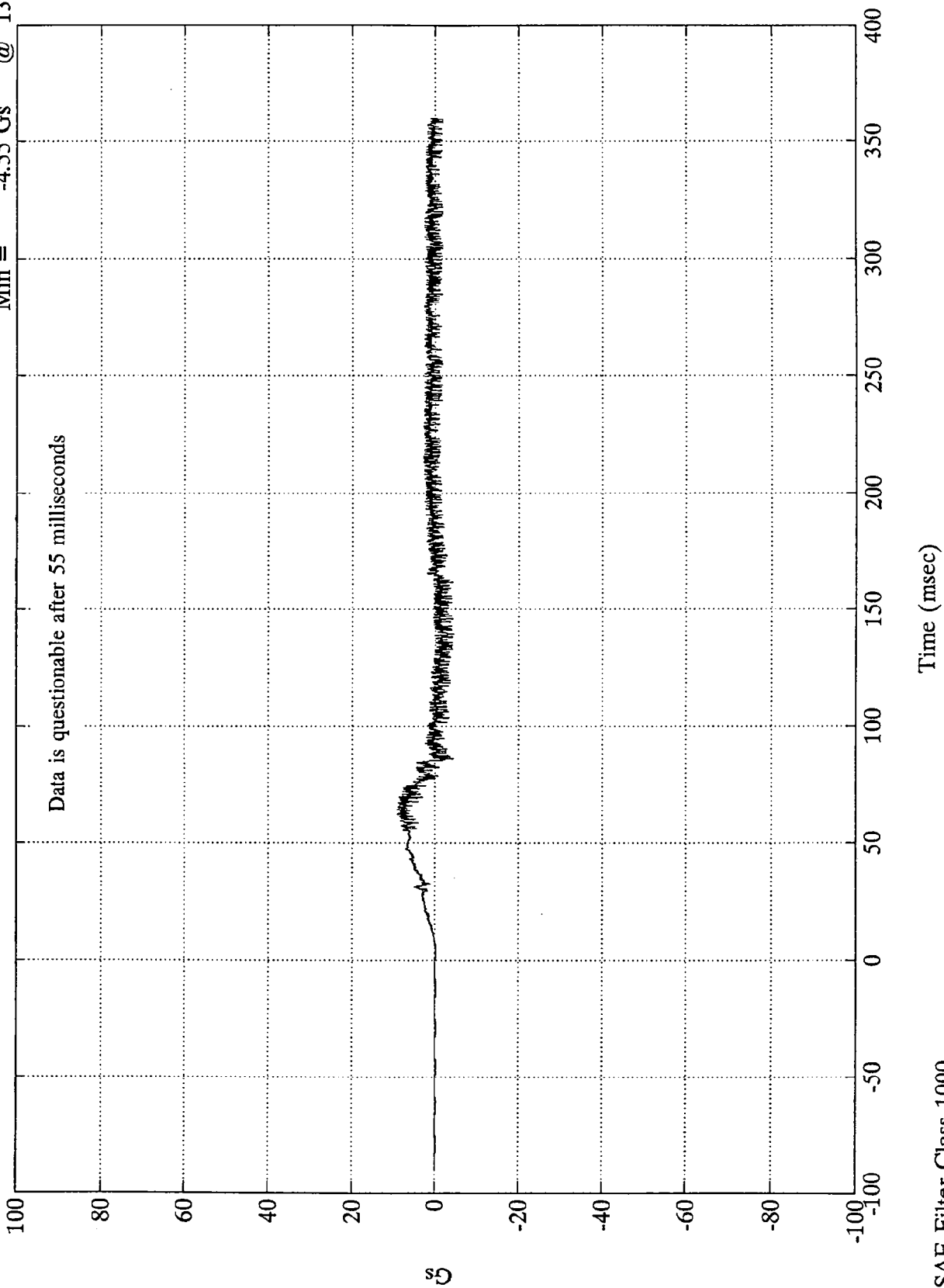


Time (msec)

SAE Filter Class 1000

301 Rear 30 MPH-1995 Nissan Quest

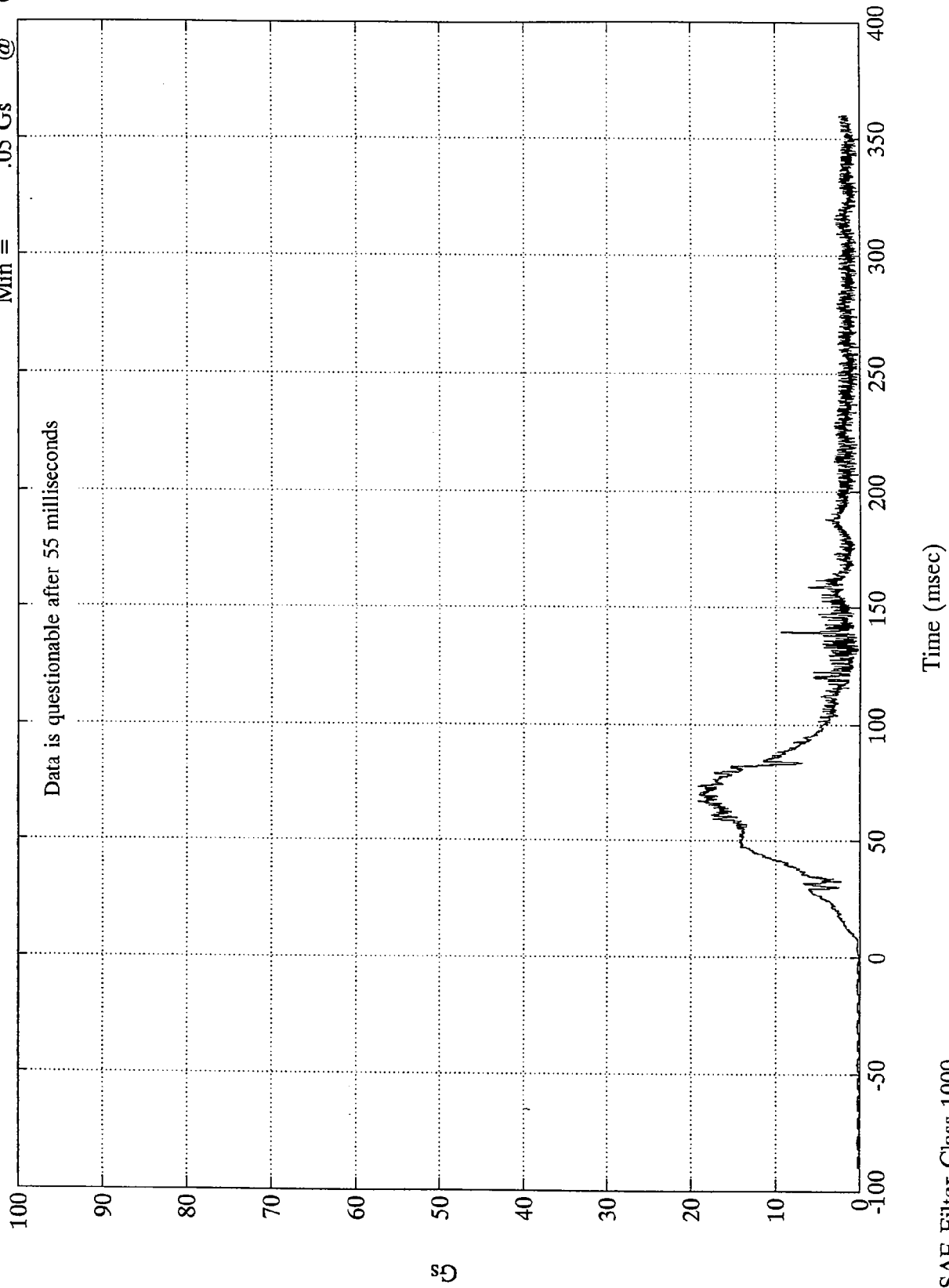
Pos. 1 Pelvic Z
Max = 9.15 Gs @ 64.44 msec
Min = -4.55 Gs @ 139.44 msec



301 Rear 30 MPH-1995 Nissan Quest

Max = 19.17 Gs @ 73.68 msec
Min = .05 Gs @ 0.71 msec

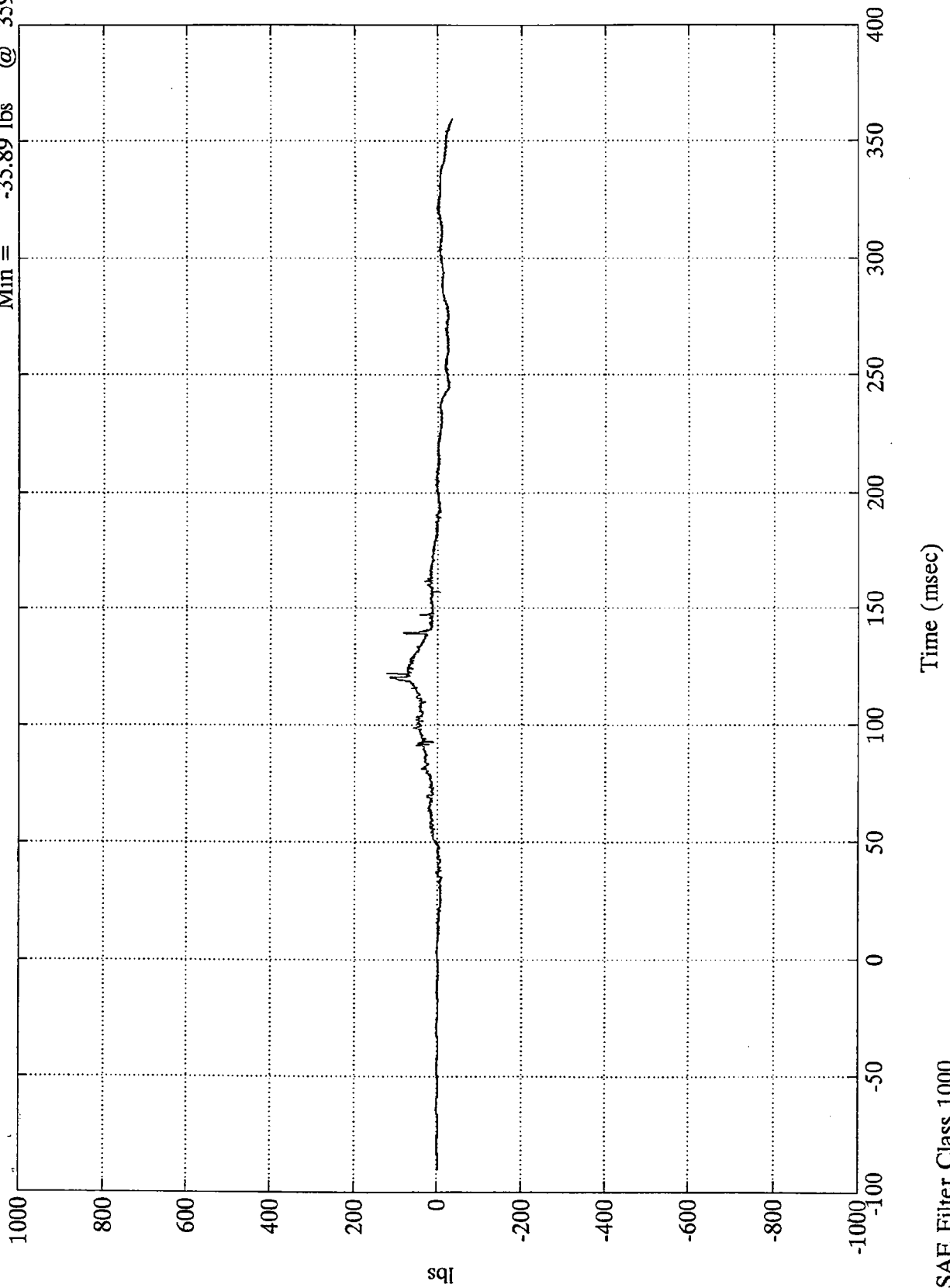
Pos. 1 Pelvic Resultant



301 Rear 30 MPH-1995 Nissan Quest

Pos. 1 Upper Neck Fx

Max = 123.45 lbs @ 122.16 msec
Min = -35.89 lbs @ 359.88 msec

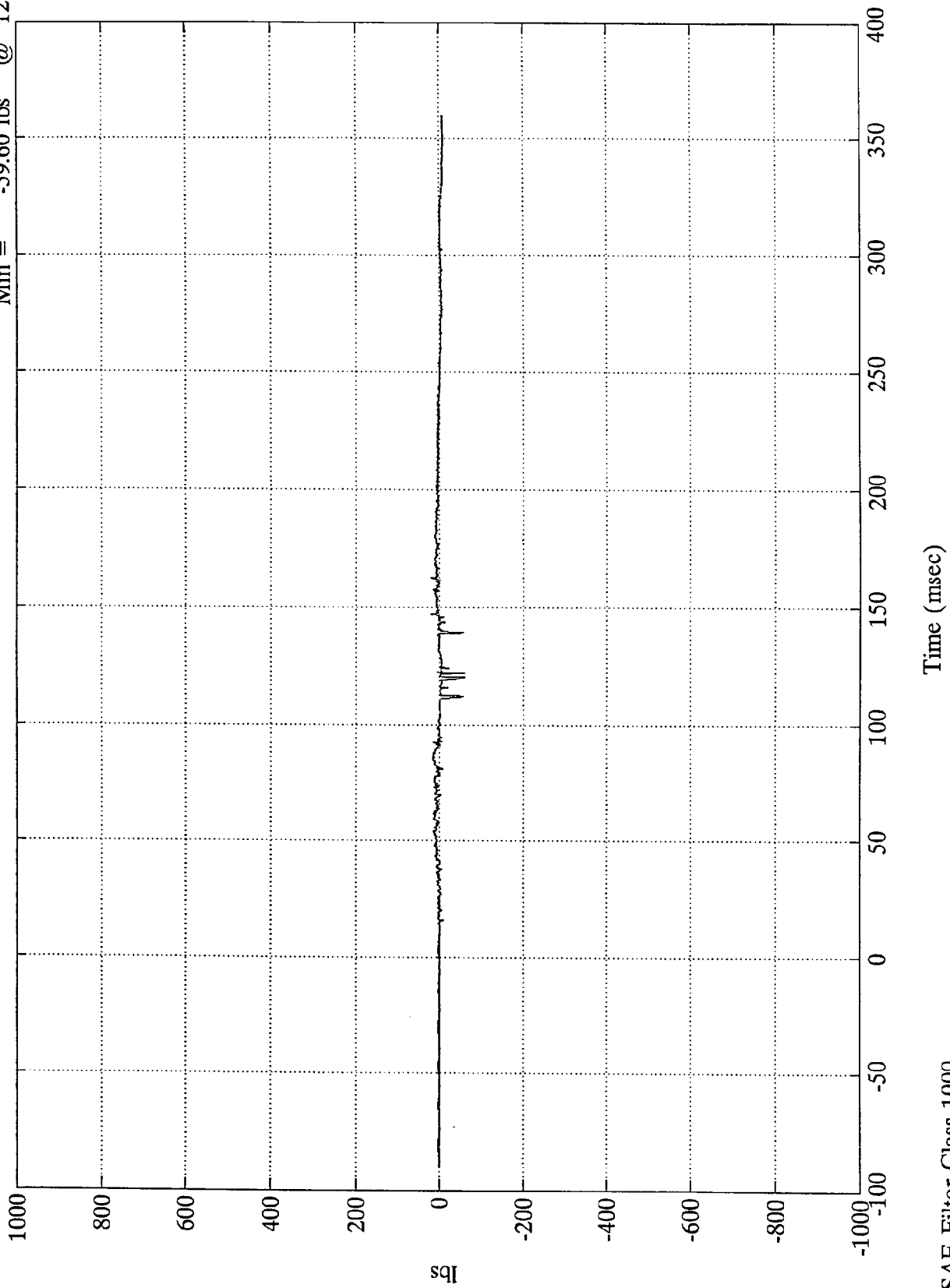


sqi

301 Rear 30 MPH-1995 Nissan Quest

Pos. 1 Upper Neck Fy

Max = 20.45 lbs @ 162.96 msec
Min = -59.60 lbs @ 122.16 msec

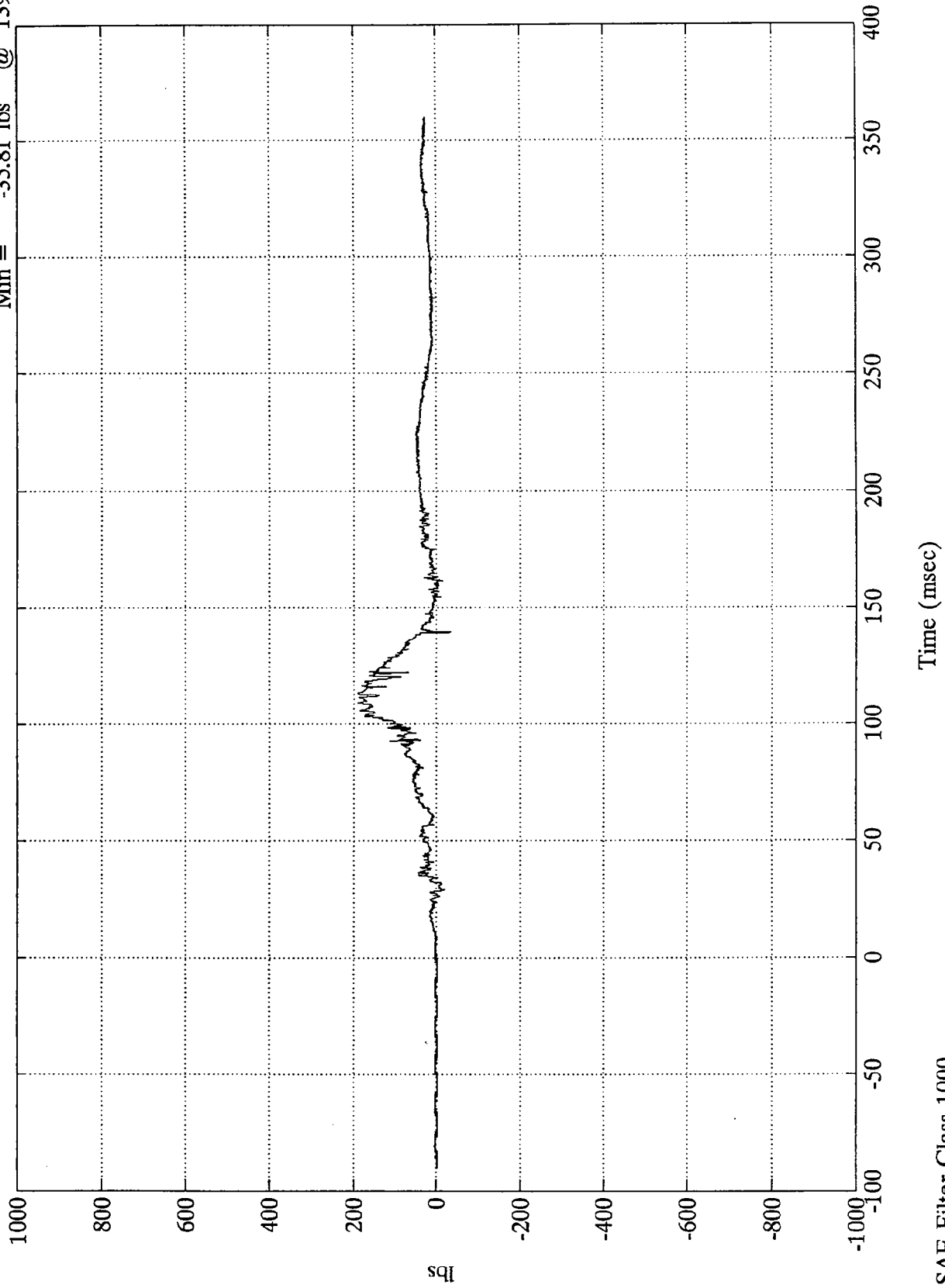


SAE Filter Class 1000

301 Rear 30 MPH-1995 Nissan Quest

Pos. 1 Upper Neck Fz

Max = 187.70 lbs @ 113.15 msec
Min = -35.81 lbs @ 139.44 msec

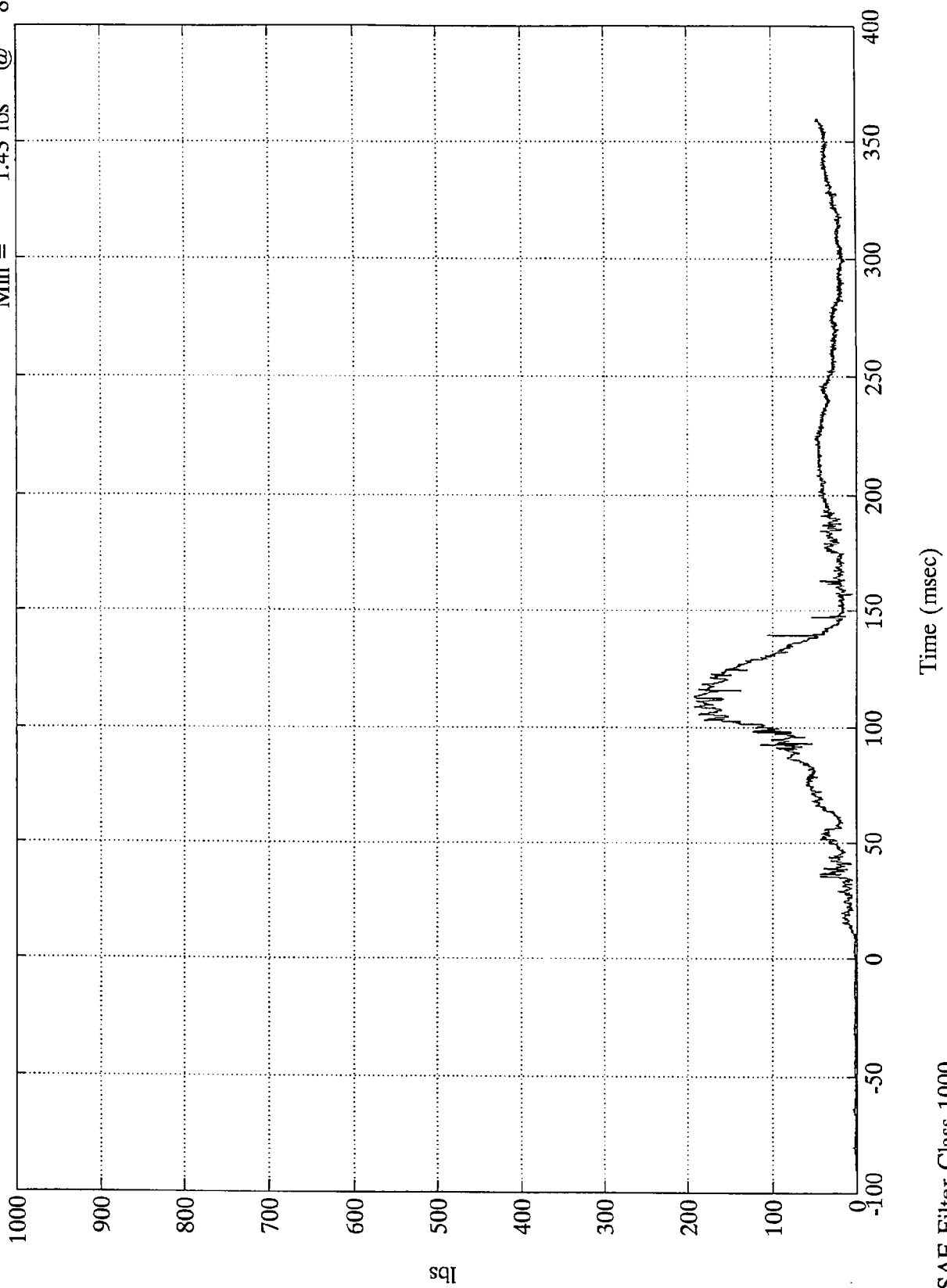


SAE Filter Class 1000

301 Rear 30 MPH-1995 Nissan Quest

Max = 193.05 lbs @ 113.15 msec
Min = 1.43 lbs @ 8.75 msec

Pos. 1 Neck Force Res.

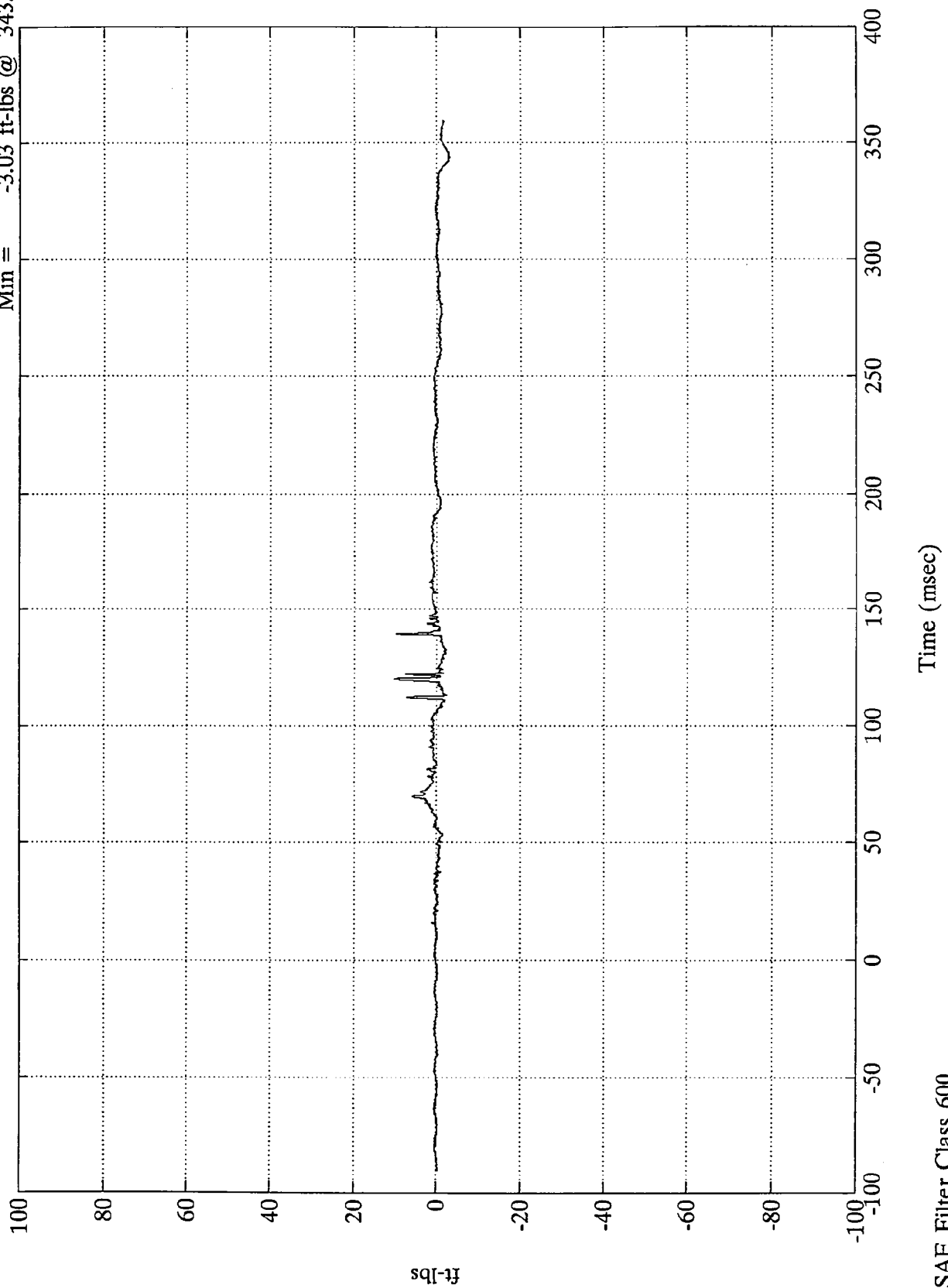


SAE Filter Class 1000

301 Rear 30 MPH-1995 Nissan Quest

Pos. 1 Upper Neck Mx

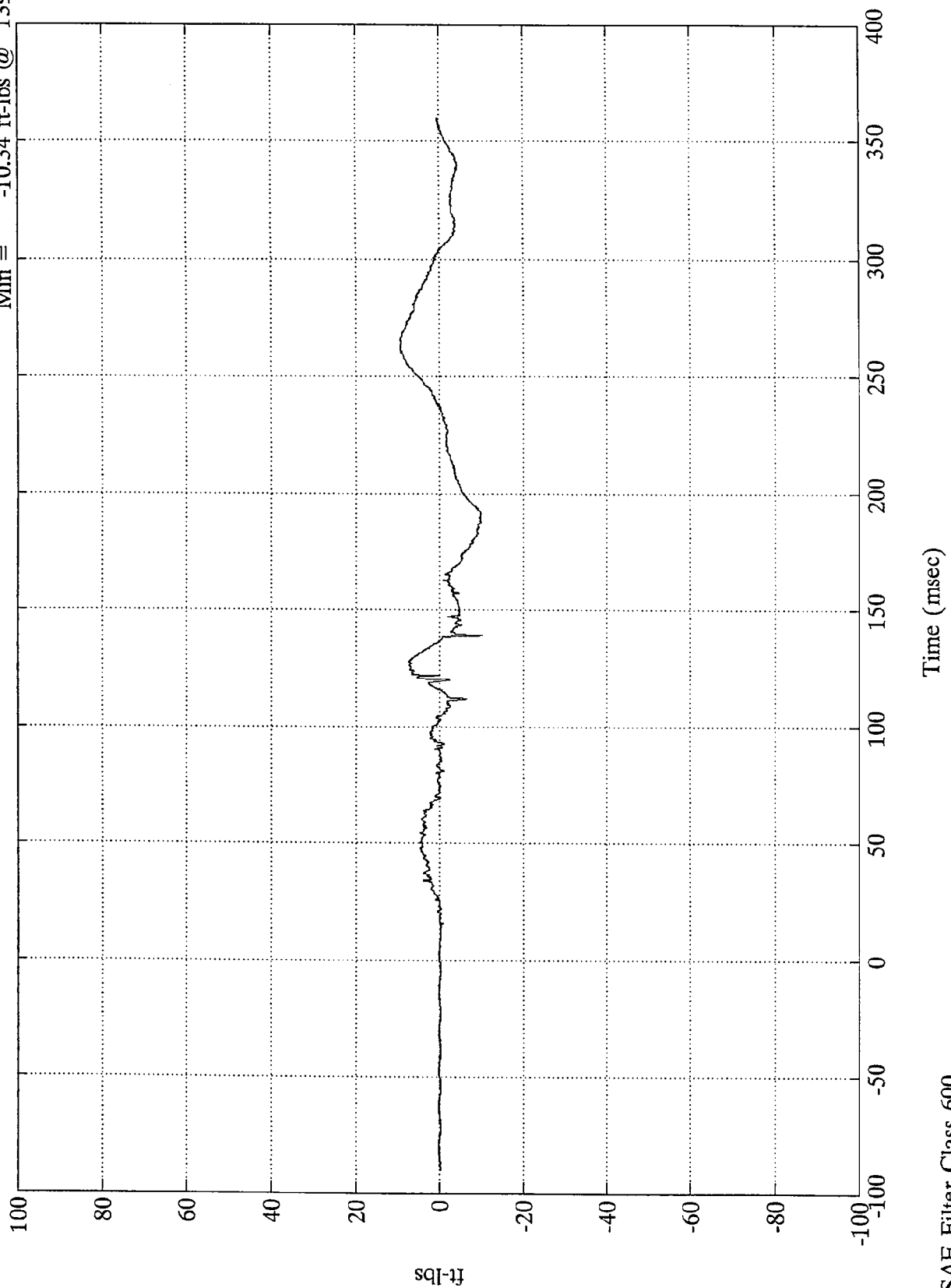
Max = 10.37 ft-lbs @ 120.24 msec
Min = -3.03 ft-lbs @ 343.92 msec



301 Rear 30 MPH-1995 Nissan Quest

Pos. 1 Upper Neck My

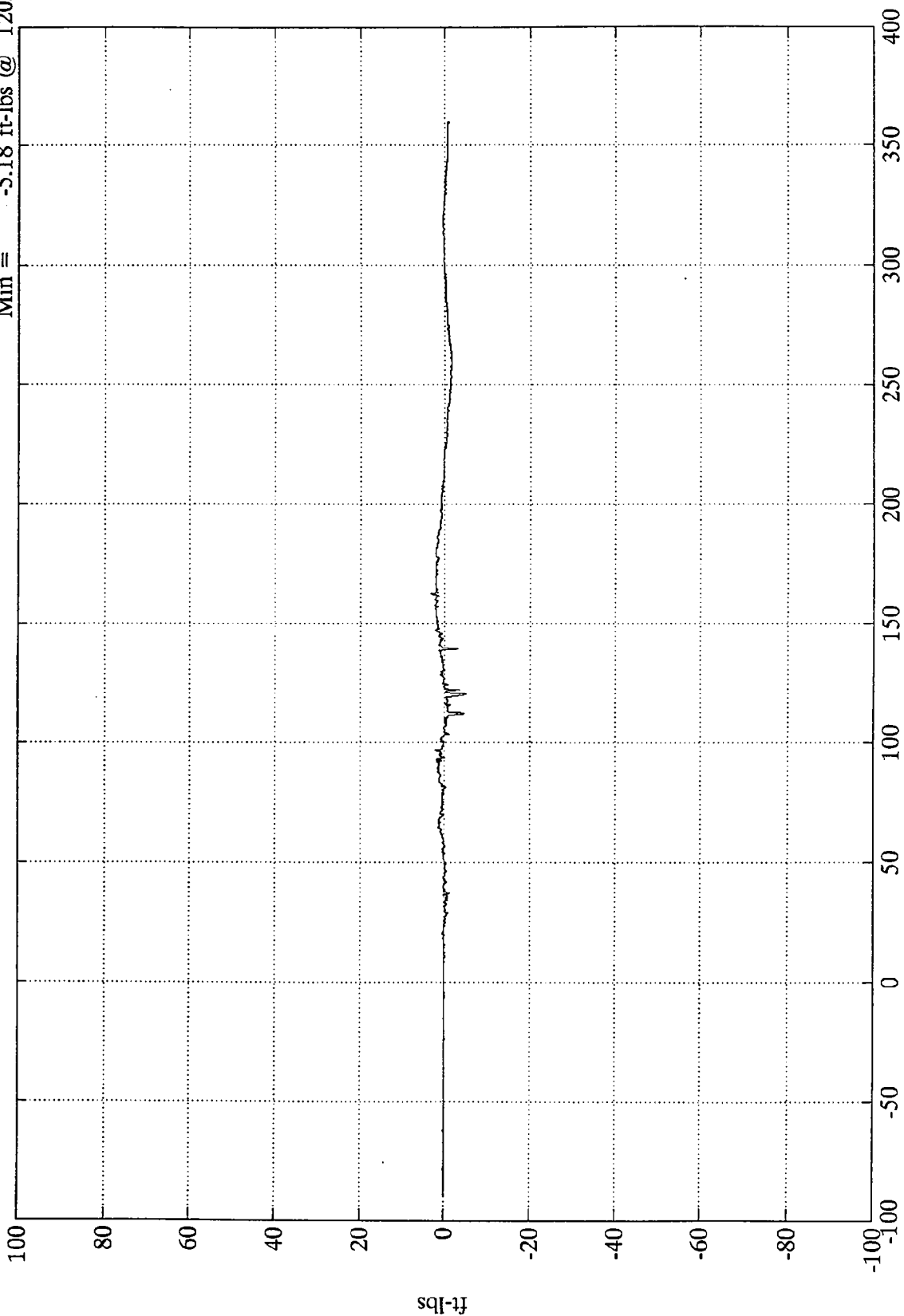
Max = 9.47 ft-lbs @ 265.55 msec
Min = -10.34 ft-lbs @ 139.44 msec



301 Rear 30 MPH-1995 Nissan Quest

Pos. 1 Upper Neck Mz

Max = 3.30 ft-lbs @ 162.96 msec
Min = -5.18 ft-lbs @ 120.36 msec



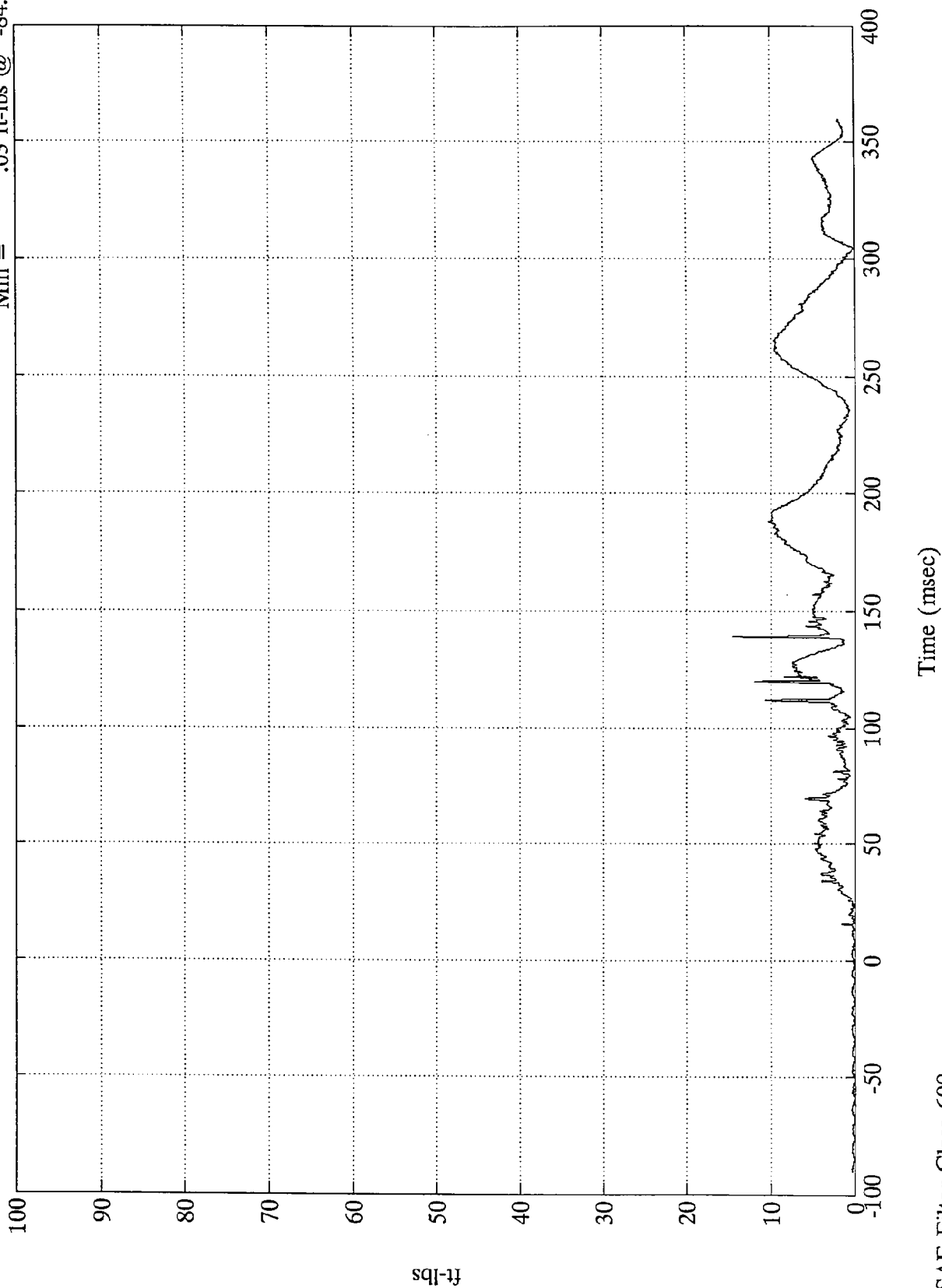
Time (msec)

SAE Filter Class 600

301 Rear 30 MPH-1995 Nissan Quest

Max = 14.57 ft-lbs @ 139.44 msec
Min = .03 ft-lbs @ -84.00 msec

Pos. 1 Neck Moment Res.

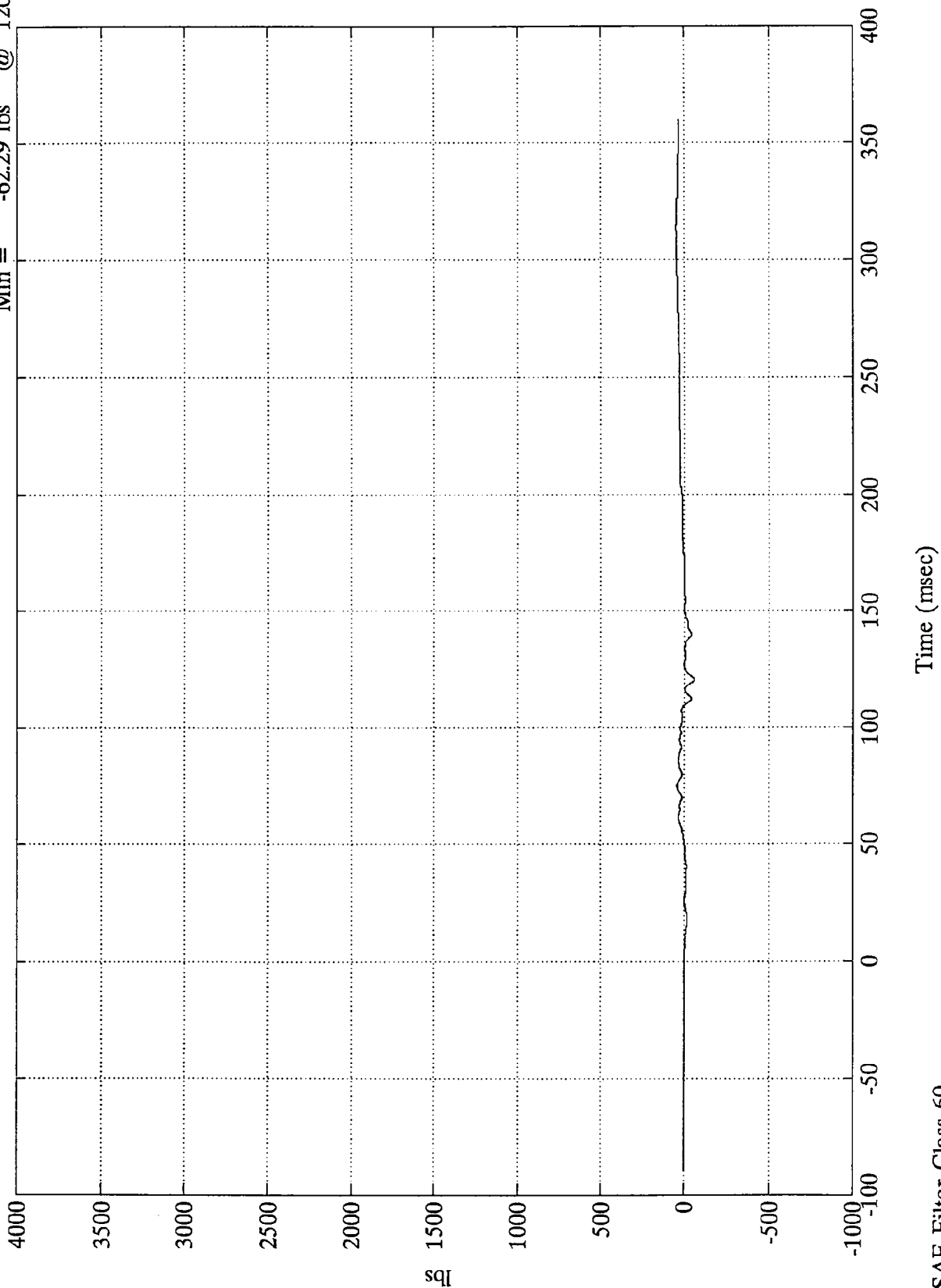


SAE Filter Class 600

301 Rear 30 MPH-1995 Nissan Quest

Pos. 1 Lap Belt

Max = 49.48 lbs @ 313.55 msec
Min = -62.29 lbs @ 120.36 msec



301 Rear 30 MPH-1995 Nissan Quest

Max = .03 Ins @ -89.88 msec
Min = -4.32 Ins @ 88.20 msec

Pos. 1 Belt Spoolout

