

Item #1

REPORT NUMBER: 301-CAL-96-10

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

**CAMI-AUTOMOTIVE INC. CANADA  
1996 GEO TRACKER  
4-DOOR MPV**

**NHTSA NUMBER: CT0108**

**CALSPAN TEST NUMBER: 8344-10**

**CALSPAN SRL CORPORATION  
P.O. BOX 400  
BUFFALO, NEW YORK, 14225**



May 17, 1996

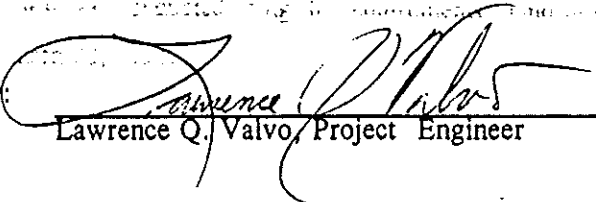
**FINAL REPORT**

**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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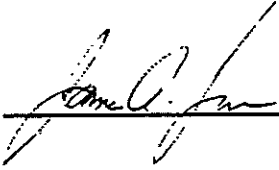
  
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Approval Date:

June 3, 1996

FINAL REPORT ACCEPTANCE BY OVSC:

Accepted By:



Acceptance Date:

6/6/96

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. 301-CAL-96-10		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle Final Report of FMVSS301 Compliance Testing of a 1996 Geo Tracker 4-door MPV NHTSA No. CT0108				5. Report Date May 17, 1996	
				6. Performing Organization Code CAL	
7. Author(s) Lawrence Q. Valvo, Project Engineer David J. Travale, Program Manager				8. Performing Organization Report No. 8344-10	
9. Performing Organization Name and Address Calspan Advanced Technology Center P.O. Box 400 Buffalo, New York 14225				10. Work Unit No.	
				11. Contract or Grant No. DTNH22-94-C-01136	
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Vehicle Safety Compliance (NEF-30) 400 Seventh St, S.W., Rm. 6115, Washington, D.C. 20590				13. Type of Report and Period Covered Final Test Report	
				14. Sponsoring Agency Code NEF-30	
15. Supplementary Notes					
16. Abstract Compliance tests were conducted on the subject 1996 Geo Tracker 4-door MPV in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-301-01 for the determination of FMVSS 301 compliance. Test failures identified were as follows:  The test vehicle did not appear to comply with all requirements of FMVSS 301 "Fuel System Integrity." The vehicle spilled 19.7 oz. of stoddard by weight in the 5 minutes following the impact after the vehicle motion ceased and continued to leak at a rate of 1.5 oz./minute for the next 25 minutes. Both of these values exceeded the requirements of FMVSS No. 301 "Fuel System Integrity," therefore the rollover phase of the test was not conducted. Underbody high speed cameras documented stoddard leakage that occurred during the impact from the right rear quadrant of the fuel tank.					
17. Key Words Compliance Testing Safety Engineering FMVSS 301			18. Distribution Statement Copies of this report are available from: NHTSA Technical Reference Division Room 5108 (NAD-52), 400 Seventh, S.W., Washington, D.C. 20590 Telephone No. (202) 366-4946		
19. Security Classif. (of this report) UNCLASSIFIED		20. Security Classif. (of this page) UNCLASSIFIED		21. No. of Pages	22. Price

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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 SRL Corporation under Contract No. DTNH22-94-C-01136. The purpose of this test was to determine if the subject vehicle, a 1996 Geo Tracker 4-door 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 3239 pound 1996 Geo Tracker 4-door MPV was impacted from the rear by a 3959 pound moving barrier at a velocity of 29.5 mph. The test was performed by the Calspan SRL Corporation on May 17, 1996.

One instrumented Part 572 E and non-instrumented Part 572 B, 50th percentile male Anthropomorphic Test Device (ATD) were placed in the driver and right-front passenger seating positions respectively.

Average longitudinal crush was 11.8 inches. Pre- and post-test photographs of the vehicle can be found in appendix A.

Prior to the impact, the vehicle fuel tank contained 13.5 gallons of orange stoddard fluid (93% Usable Capacity). The vehicle spilled 19.7 oz. of stoddard by weight in the 5 minutes following the impact after the vehicle motion ceased and continued to leak at a rate of 1.5 oz./minute for the next 25 minutes. Both of these values exceeded the requirements of FMVSS No. 301 "Fuel System Integrity," therefore the rollover phase of the test was not conducted. Underbody high speed cameras documented stoddard leakage that occurred during the impact however this leakage was unable to be collected. Stoddard leakage seemed to occur from the right rear portion of the fuel tank near its vehicle attachment point. Section 3 of this report presents the compliance test data.

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.: CT0108 Test Mode: 30 mph Rear Barrier  
 Test Date: May 17, 1996 Time: 15:45 Temperature: 73 °F  
 Vehicle Make/Model/Body Style: 1996 Geo Tracker 4-door MPV  
 Vehicle Test Weight: 3239 lbs Impact Velocity: 29.5 mph  
 Static Crush: Left Side = 12.0 inches  
 Right Side = 11.9 inches  
 Centerline = 11.5 inches  
 Average Crush: 11.8 inches

**TYPE OF FRONT OCCUPANT RESTRAINT SYSTEM INSTALLED IN TEST VEHICLE:**

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

**VISIBLE DUMMY CONTACT POINTS:**

Driver: Back of head with headrest, top of head with rear seat backrest.

Passenger: Back of head with headrest.

**DOOR OPENING DATA:**

Closed/Inoperable - Left Front  
Closed/Inoperable - Right Front

Stoddard Solvent Spillage from Vehicle's Fuel System: Stoddard leaked from the right rear portion of the fuel tank during and immediately following impact. Stoddard leaked from this area in amounts that exceeded the requirements of FMVSS No. 301. Leakage measurements can be found in Section 3.

Remarks: Both driver and passenger seat backs reclined to their full rearward positions during the impact. The recline mechanism remained operable following the impact.

Table 2

GENERAL TEST AND VEHICLE PARAMETER DATATEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 1996 Geo Tracker 4-door MPV

NHTSA No.: CT0108 ; VIN: 2CNBJ1362T6905729 ; Color: Green

Engine Data: 4 cylinders; - CID; 1.6 Liters; - cc

Placement: X Longitudinal or In-Line; - Transverse or Lateral

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

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

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

Date Received: 2-12-96 ; Odometer Reading 75 miles

Selling Dealer: West-Herr Chevrolet, Inc.

& Address: P.O. Box 158 Eden, NY 14057-0158

DATA FROM TIRE VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by: CAMI-AUTOMOTIVE INC. CANADA

Date of Manufacture: 08/95

GVWR: 3527 lbs.; GAWR: 1697 lbs. FRONT; 2116 lbs. REAR

DATA FROM TIRE PLACARD:

Location of Placard on Vehicle: Driver B-pillar

Tire Pressure with Maximum Capacity Vehicle Load: 44 psi FRONT 44 psi REAR

Recommended Tire Size: 205/75 R16

\* Recommended Cold Tire Pressure: 23 psi FRONT; 23 psi REAR

Size of Tires on Test Vehicle: 205/75 R16

Type of Spare Tire: 205/75 R16 (on rear gate)

Vehicle Capacity Data:

Type of Front Seats:	<u>-</u> Bench;	<u>X</u> Bucket;	<u>-</u> Split Bench
Number of Occupants:	<u>2</u> Front;	<u>2</u> Rear;	<u>4</u> Total
Vehicle Capacity Weight (VCW) =	<u>714</u> lbs.		
No. of Occupants x 150 lbs. =	<u>600</u> lbs.		
Rated Cargo/Luggage Weight (RCLW) =	<u>114</u>		

\*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	=	751	lbs.	Right Rear	=	653	lbs.
Left Front	=	727	lbs.	Left Rear	=	664	lbs.
TOTAL FRONT	=	1,478	lbs.	TOTAL REAR	=	1,317	lbs.
TOTAL DELIVERED WEIGHT	=	2,795	lbs.				
% of Total Front of Vehicle Weight	=	53	%	% of Total Rear Weight	=	47	%

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight	=	2,795	lbs.
Rated Cargo/Luggage Weight (RCLW)	=	114	lbs.
Weight of 2 p.572 Dummies, 167 & 164 lbs	=	331	lbs.
TARGET TEST WEIGHT	=	3,240	lbs.

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 113 POUNDS OF CARGO WEIGHT:

Right Front	=	872	lbs.	Right Rear	=	763	lbs.
Left Front	=	859	lbs.	Left Rear	=	745	lbs.
TOTAL FRONT	=	1,731	lbs.	TOTAL REAR	=	1,508	lbs.
TOTAL TEST WEIGHT	=	3,239	lbs.				
% of Total Front Weight	=	53	%	% of Total Rear Weight	=	47	%

\* Weight of Ballast Secured in Vehicle Trunk Area = 0 lbs.

Type of Ballast: None

Method of Securing Ballast: None

Vehicle Components Removed for Weight Reduction: None

VEHICLE ATTITUDE (all dimension in inches):

AS DELIVERED:	RF	30.8	LF	31.0	RR	31.1	LR	31.1
AS TESTED:	RF	29.7	LF	29.8	RR	30.3	LR	30.3

Vehicle's Wheel Base: 97.6 in.

Location of Vehicle's C.G.: 45.4 inches rearward of front wheel center.

FUEL SYSTEM DATA:

Fuel System Capacity From Owner's Manual	=	11.1	gallons	
Usable Capacity Figure Furnished by COTR	=	14.5	gallons	
Test Volume Range (91 to 94% of Usable Capacity)	=	13.2	to 13.6	gallons
ACTUAL TEST VOLUME	=	13.5**	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.

\*\* One gallon less than the specified fuel tank Usable Capacity (93% of Usable Capacity).

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 operated.		
Details of Fuel System:	Fuel tank is located between the rear bumper and rear axle, fuel filler is located on the left rear quarter panel aft of the rear axle, fuel lines are routed along the inboard side of the right frame rail.	



Table 3

**MOVING BARRIER PARAMETER DATA**

**WEIGHT-OF MOVING BARRIER:**

Right Front	=	1091	lbs.	Right Rear	=	887	lbs.
Left Front	=	1095	lbs.	Left Rear	=	886	lbs.
TOTAL FRONT	=	2,186	lbs.	TOTAL REAR	=	1,773	lbs.
TOTAL BARRIER WEIGHT	=	3,959	lbs.				

**MOVING BARRIER DIMENSIONS:**

Barrier Face Height:	60.0	in.
Barrier Face Width:	78.0	in.
Barrier Face		
Ground Clearance:	5.0	in.
Tread Width:	59.5	in.
Wheel Base:	120.0	in.
Location of C.G.:	X: 53.7	inches rearward of front wheel center.
	Y: 0.0	inches from longitudinal-vertical plane of symmetry.
	Z: 16.0	inches above ground.

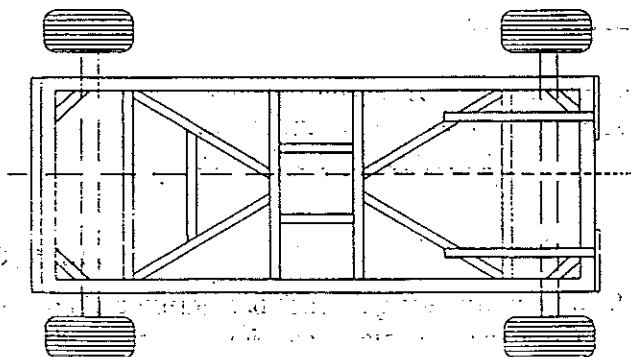
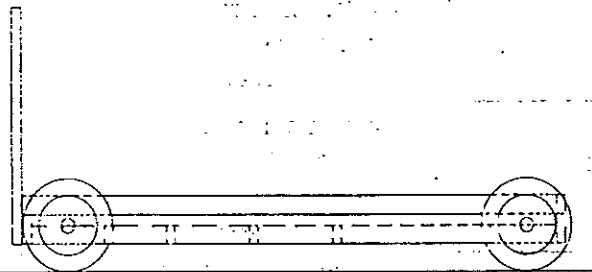


Table 4

POST IMPACT DATA

TYPE OF TEST:

Type of Test: Rear Barrier Impact Angle: 0°  
 Test Date: May 17, 1996 Time: 15:45 Temperature: 73 °F  
 Vehicle NHTSA No.: CT0108  
 Required Impact Velocity Range: 28.9 to 29.9 mph

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

Trap No. 1 = 29.5 mph; Trap No. 2 = 29.5 mph  
 Average Impact Speed = 29.5 mph

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

Vehicle Length:

Pre-Test	Right =	<u>155.4</u>	;	C/L =	<u>157.0</u>	;	Left =	<u>155.5</u>
Post-Test	Right =	<u>143.5</u>	;	C/L =	<u>145.5</u>	;	Left =	<u>143.5</u>
Crush	Right =	<u>11.9</u>	;	C/L =	<u>11.5</u>	;	Left =	<u>12.0</u>
AVERAGE	=	<u>11.8</u>		inches				

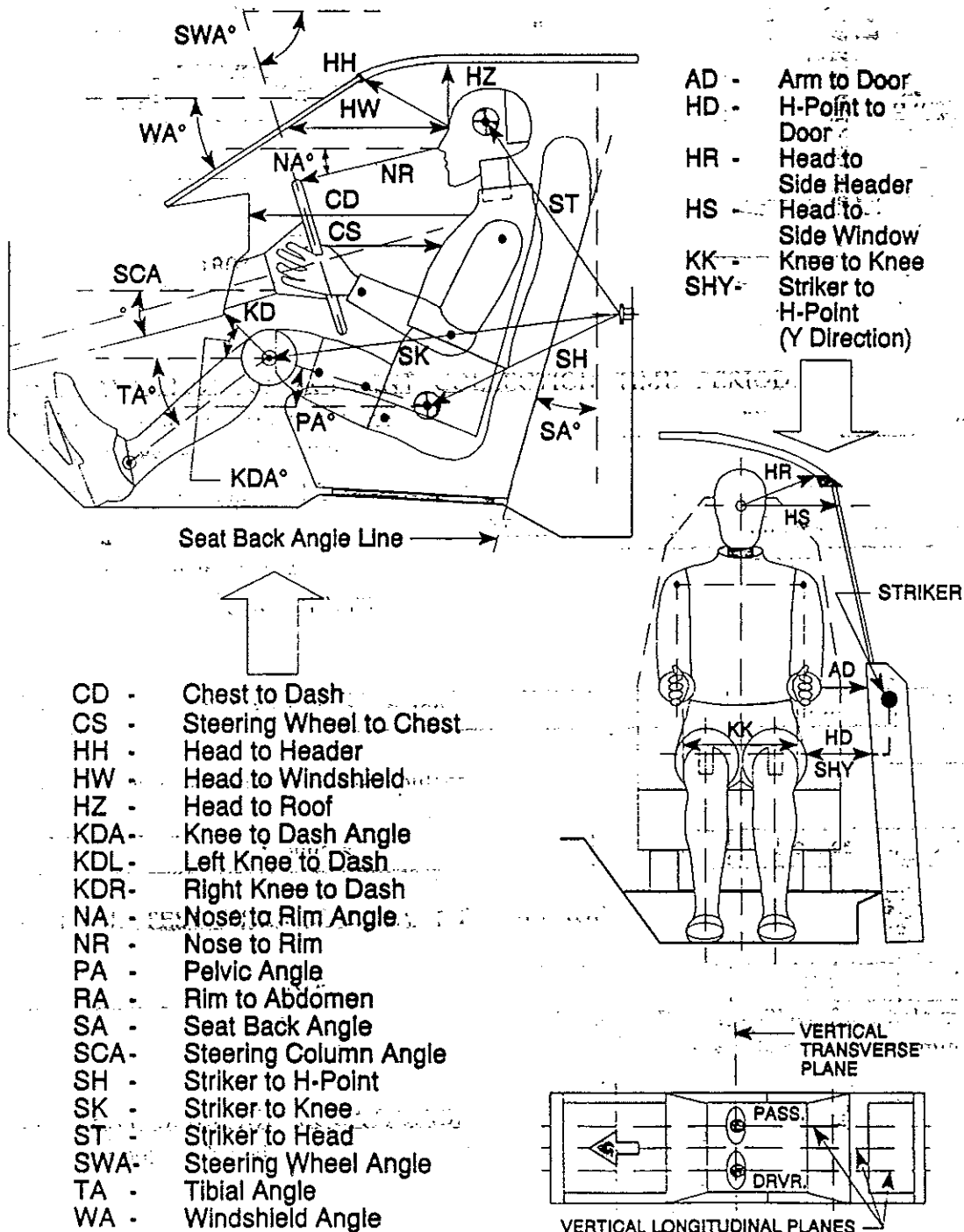
Section 3

COMPLIANCE TEST DATA

Figure 1

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

DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS



S 211690

Table 5

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

	DRIVER (Serial #341)
WA°	44 deg.
SWA°	58 deg.
SCA°	32 deg.
SA°	18 deg.
HZ	10.4
HH	19.1
HW	24.7
HR	8.7
NR	17.0 Angle 13.0 deg.
CD	21.7
CS	12.8
RA	8.0
KDL	6.1 Angle (KDA) 36 deg.
KDR	5.8
PA°	24 deg.
TA°	41 deg.
KK	11.1
ST	22.1 Angle 10
SK	22.0 Angle 93
SH	7.3 Angle 127
SHY	7.8
HS	10.6
HD	5.3
AD	2.6

Table 6  
FUEL SYSTEM INTEGRITY POST IMPACT TEST DATA

FMVSS NO. 301

TEST VEHICLE NHTSA NO.: CT0108 TEST DATE: May 17, 1996

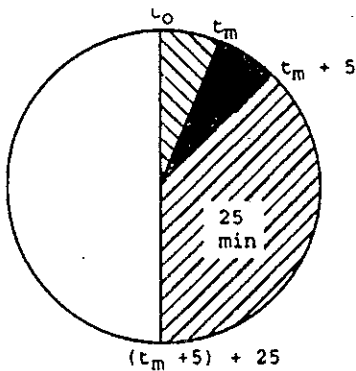
Vehicle Mfgr./Make/Model: 1996 Geo Tracker 4-door MPV

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) barrier face first  
with  
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
*	1 oz.
19.7 oz.	5 oz.
1.5 oz./1 min.	1 oz./1 min.

\* Solvent spillage from the vehicle fuel tank during the impact was evident in the underbody camera views. This spillage was unable to be collected.

SOLVENT SPILLAGE DETAILS:

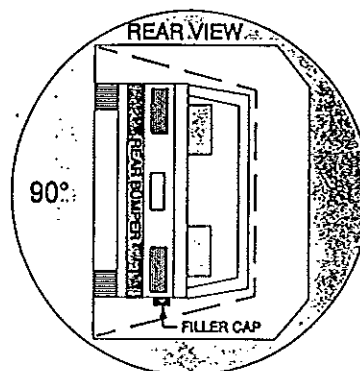
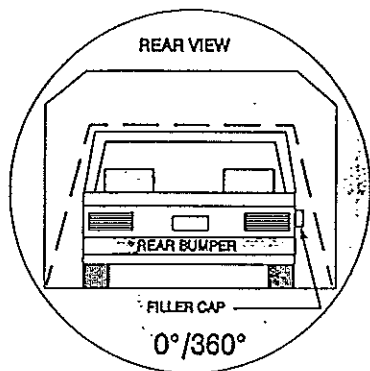
The vehicle fuel tank leaked stoddard during and following the impact. Stoddard appeared to exit the fuel tank at an area near or at the right rear tank and shield attachment bolt.

Table 7

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE :  
0-90 Deg.

Vehicle NHTSA ID No. :  
CT0108



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	-	minutes	-	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
<b>TOTAL</b>	0	minutes	0	seconds
Next whole minute interval	0	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
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III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

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

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

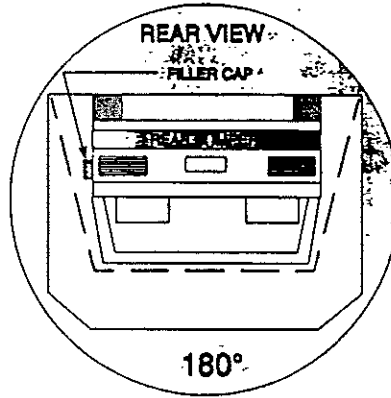
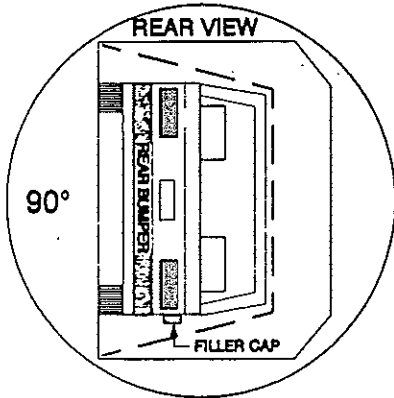
IV. SOLVENT SPILLAGE LOCATION(S):

Rollover not conducted.

Table 7  
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE :  
 90-180 Deg.

Vehicle NHTSA ID No. :  
 CT0108



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	-	minutes	-	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
<b>TOTAL</b>	0	minutes	0	seconds
Next whole minute interval	0	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:

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

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

IV. SOLVENT SPILLAGE LOCATION(S):

Rollover not conducted.

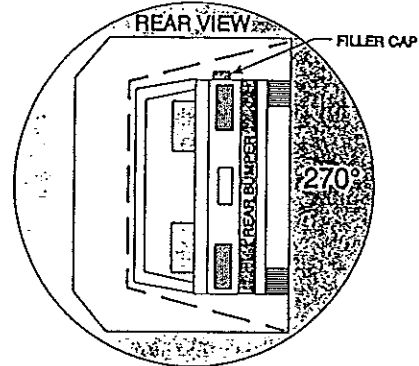
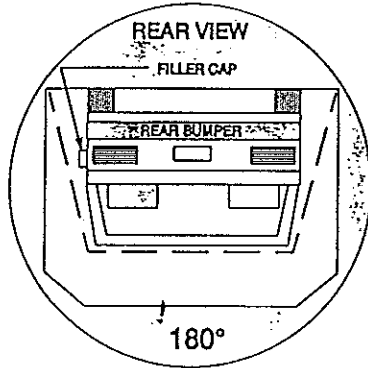
**S 211694**



Table 7  
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE :  
180-270 Deg.

Vehicle NHTSA ID No. :  
CT0108



**I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:**

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	-	minutes	-	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
<b>TOTAL</b>	0	minutes	0	seconds
Next whole minute interval	0	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:**

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

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

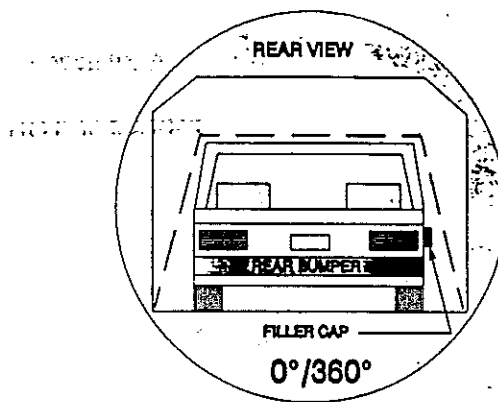
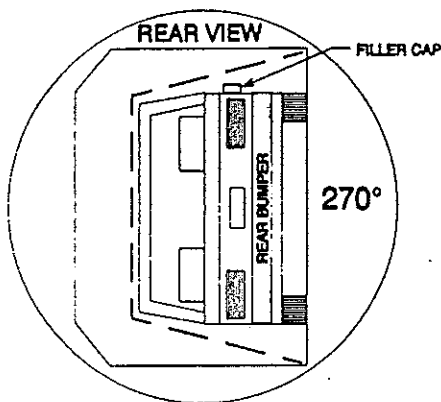
**IV. SOLVENT SPILLAGE LOCATION(S):**

Rollover not conducted.

Table 7  
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE :  
270-360 Deg.

Vehicle NHTSA ID No.:  
CT0108



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	-	minutes	-	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
<b>TOTAL</b>	0	minutes	0	seconds
Next whole minute interval	0	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:

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

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

IV. SOLVENT SPILLAGE LOCATION(S):

Rollover not conducted.

Figure 2

CAMERA POSITIONS FOR REAR IMPACTS

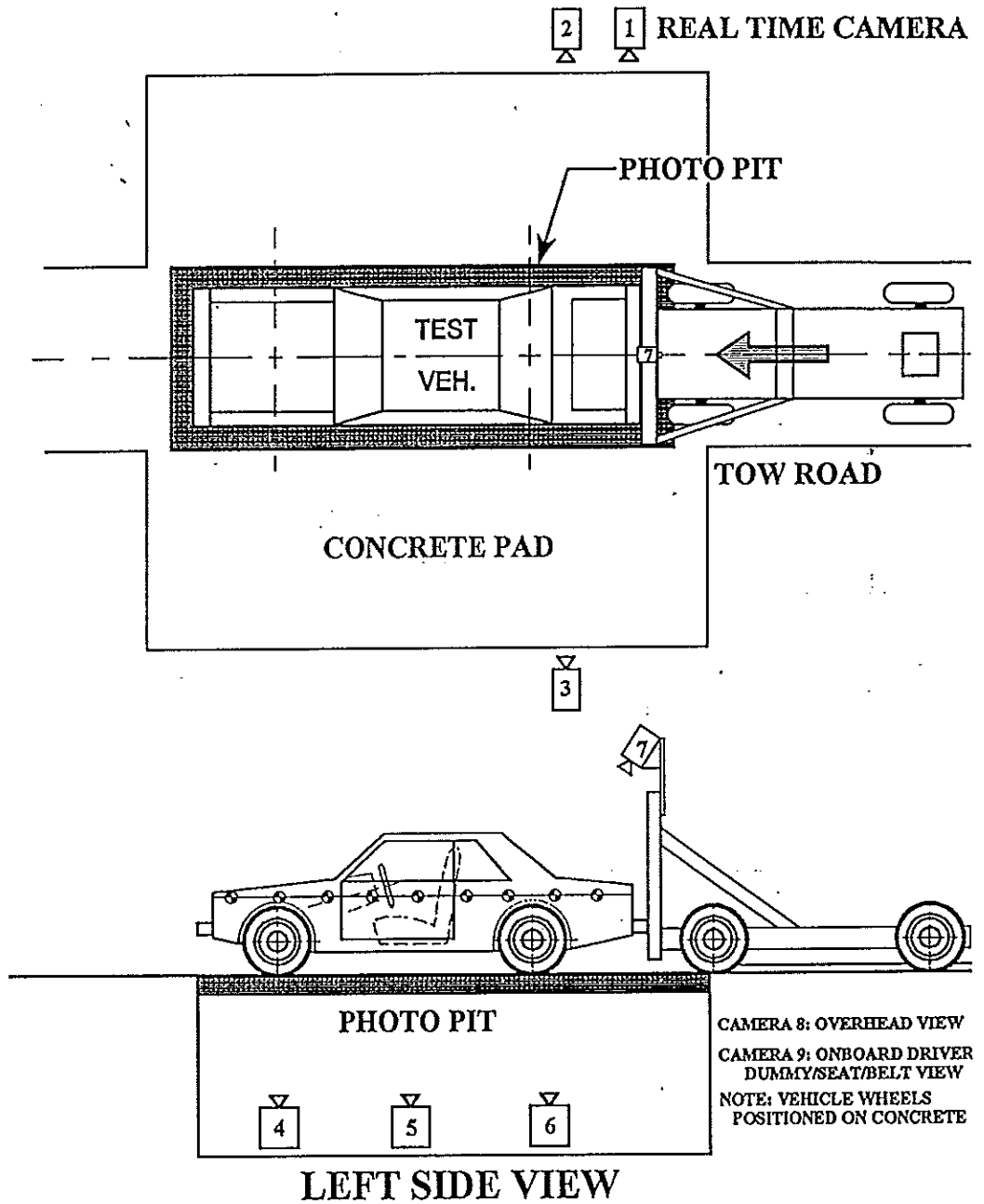


Table 8

## HIGH-SPEED CAMERA LOCATIONS

NHTSA No. CT0108 Vehicle 1996 Geo Tracker 4-door MPV

CAMERA NO.	VIEW	CAMERA POSITIONS (inches)			ANGLE**	LENS (mm)	SPEED (fps)
		X	Y	Z			
1	Real-Time Camera						24
2	Right Side View	-574	-37	45	75	13	830
3	Left Side View	522	-47	54	74	13	810
4	Vehicle Front Underbody View	0	-130	-77	90	13	640
5	Vehicle Mid-Section Underbody View	0	-78	-77	90	13	710
6	Vehicle Rear Underbody View	0	-36	-77	90	13	670
7	Moving Barrier View	0	0	99	-105	13	500
8	Overhead Overall View	0	-20	386	-90	13	740
9	Onboard Driver Dummy/Seat/Belt View					8	500

- \* X = film plane 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

Section 4

NONCOMPLIANCE DATA

[The table content is extremely faint and illegible due to heavy noise and low contrast. It appears to be a multi-column table with several rows of data.]

Table 9

TEST VEHICLE NONCOMPLIANCE NOTICE

NHTSA Contract Lab: Calspan SRL Corporation

Lab Project Manager & Telephone No.: David J. Travale (716) 632-7500

Date of Test: May 17, 1996 Vehicle NHTSA No. CT0108

Vehicle Manufacturer: CAM-AUTOMOTIVE INC CANADA

Model Year: 1996 VIN: 2CNBH362T6905729

Model: Tracker Body Style: 4-door MPV Build Date: 03/95

Dummy Stabilized Temperature at Time of Test: 70 (Spec: 69 ± 1)

Impact Velocity: 29.5 mph Time of Test: \_\_\_\_\_

Type of Automatic Restraint System: \_\_\_\_\_

Driver: Airbag 3-point belt system

Passenger: Airbag 3-point belt system

Failure Details:

The vehicle spilled 19.7 oz. by weight of stoddard in the 5 minute post impact period after the vehicle motion ceased. For the subsequent 25 minutes, the vehicle spilled stoddard at a rate of 1.5 oz./minute by weight.

Requirements:

FMVSS 301 allows a maximum of 5 oz. by weight of stoddard spillage in the 5 minutes after the vehicle motion ceases following the impact. For the subsequent 25 minutes, fuel spillage during any 1-minute interval shall not exceed 1 oz. by weight.

Approximate date that final test report will be made available to CTM:

6-4-96

Date Mfg. Rep. Notified: \_\_\_\_\_ Rep. Name: \_\_\_\_\_

Remarks: \_\_\_\_\_

Date of Proposed Joint Inspection of Test Vehicle: \_\_\_\_\_

NHTSA CMT: \_\_\_\_\_ CIR No. \_\_\_\_\_ Date: S 211700

Appendix A  
PHOTOGRAPHS

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8344-10

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Figure A-1 PRE-TEST FRONT VIEW



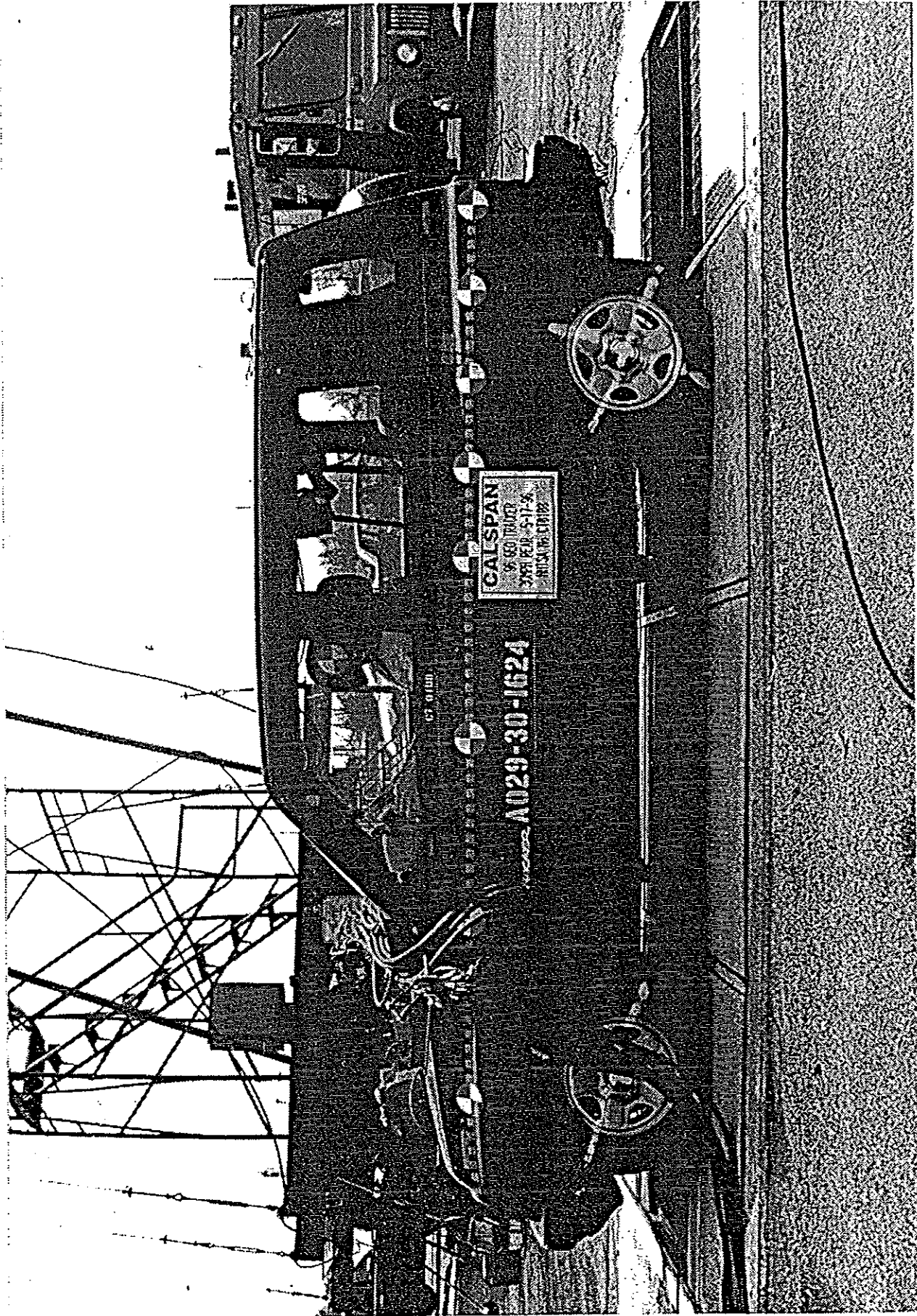


Figure A-3 PRE-TEST LEFT SIDE VIEW



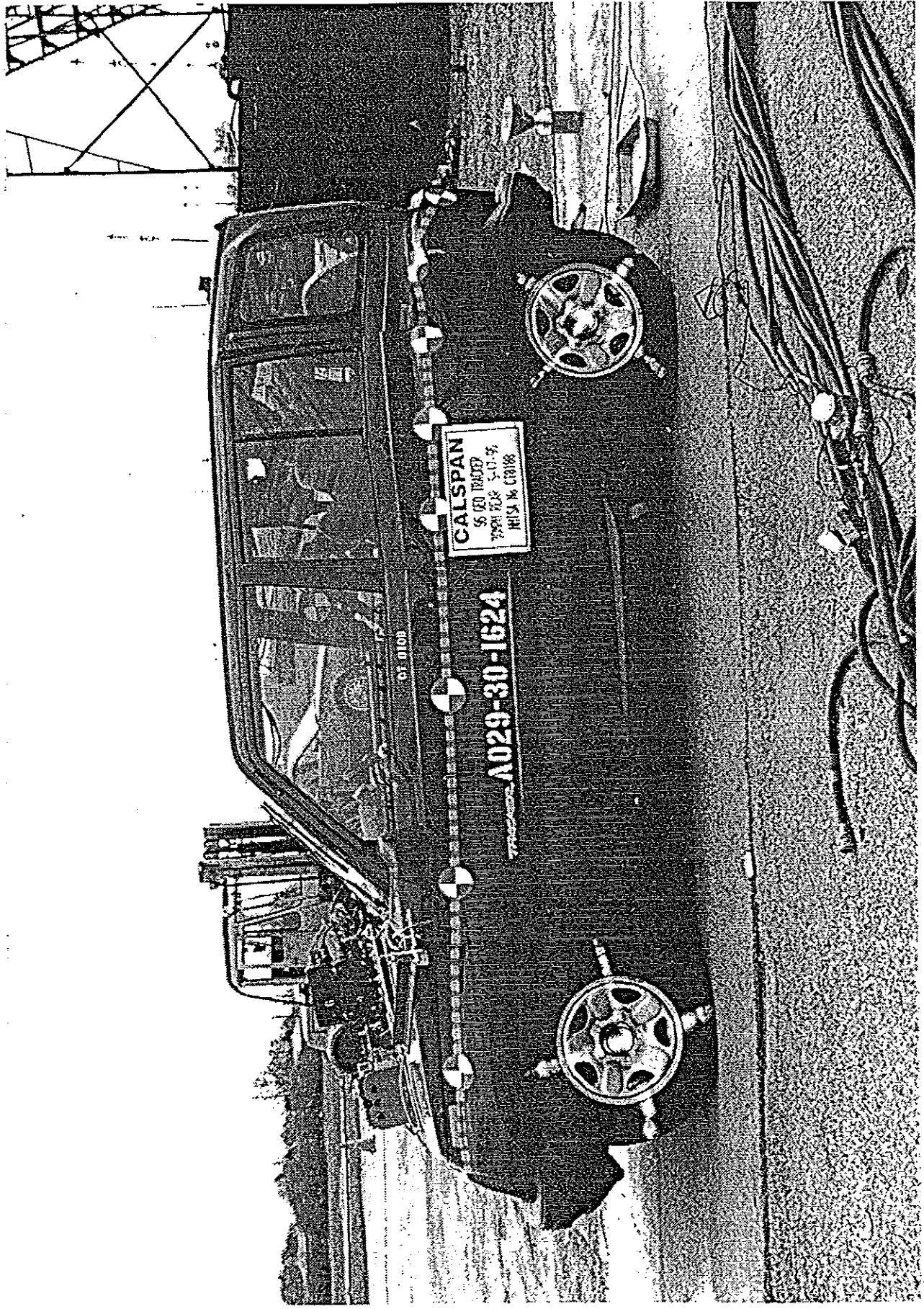




Figure 1. 2. THE FIRST NIGHT OF THE YEAR

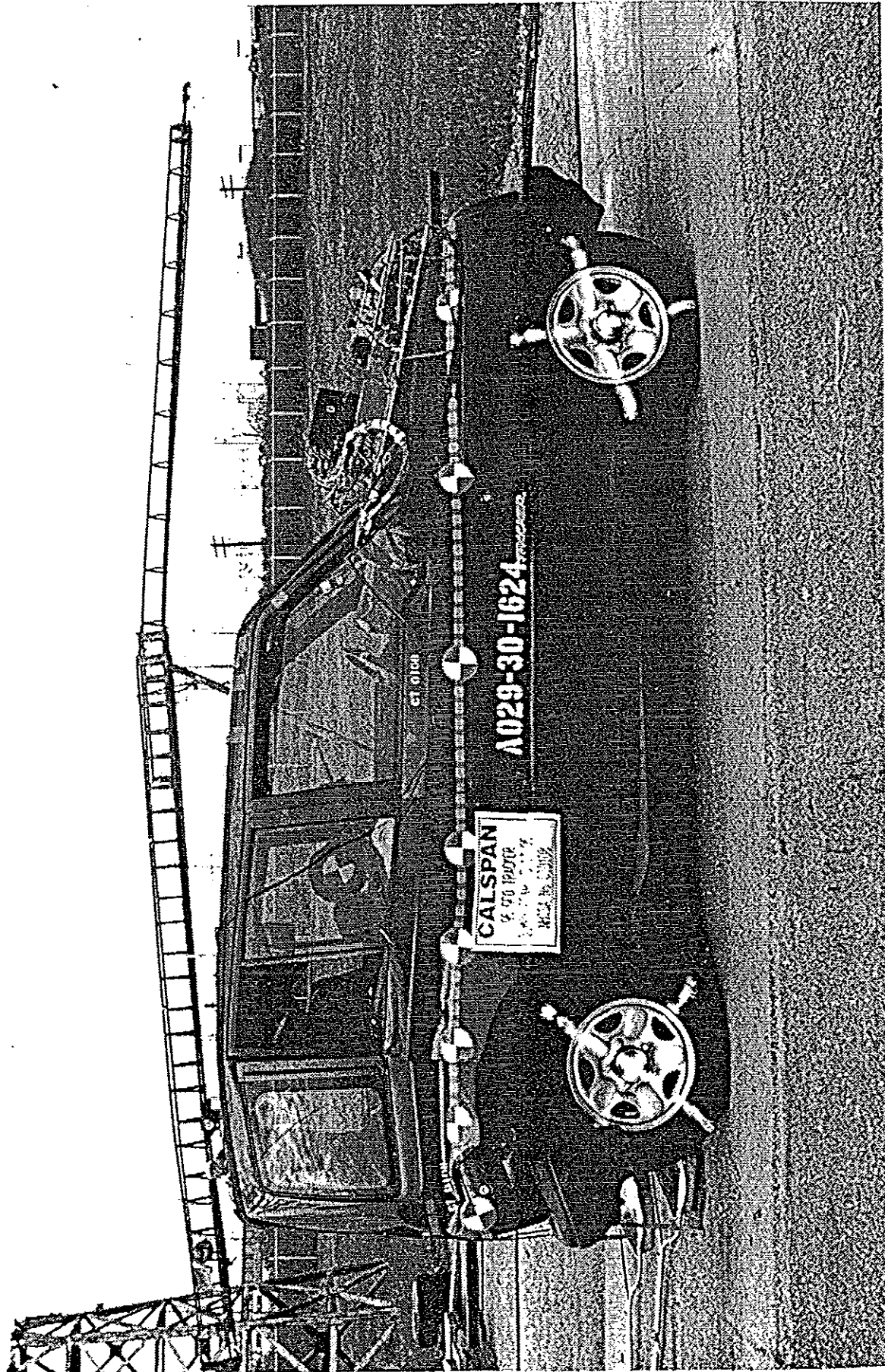


Figure A-6 POST-TEST RIGHT SIDE VIEW





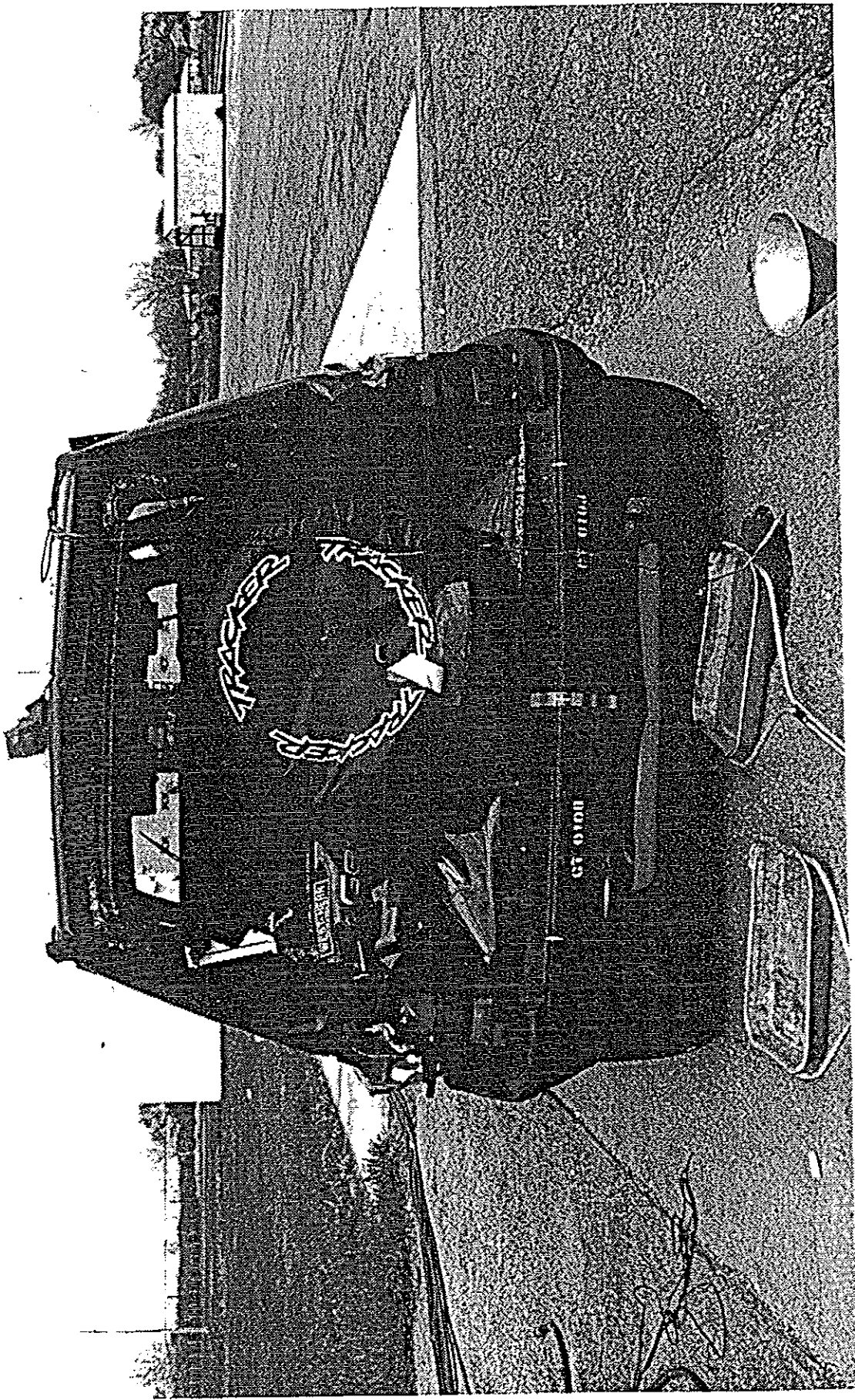


Figure A-8 POST-TEST REAR VIEW





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

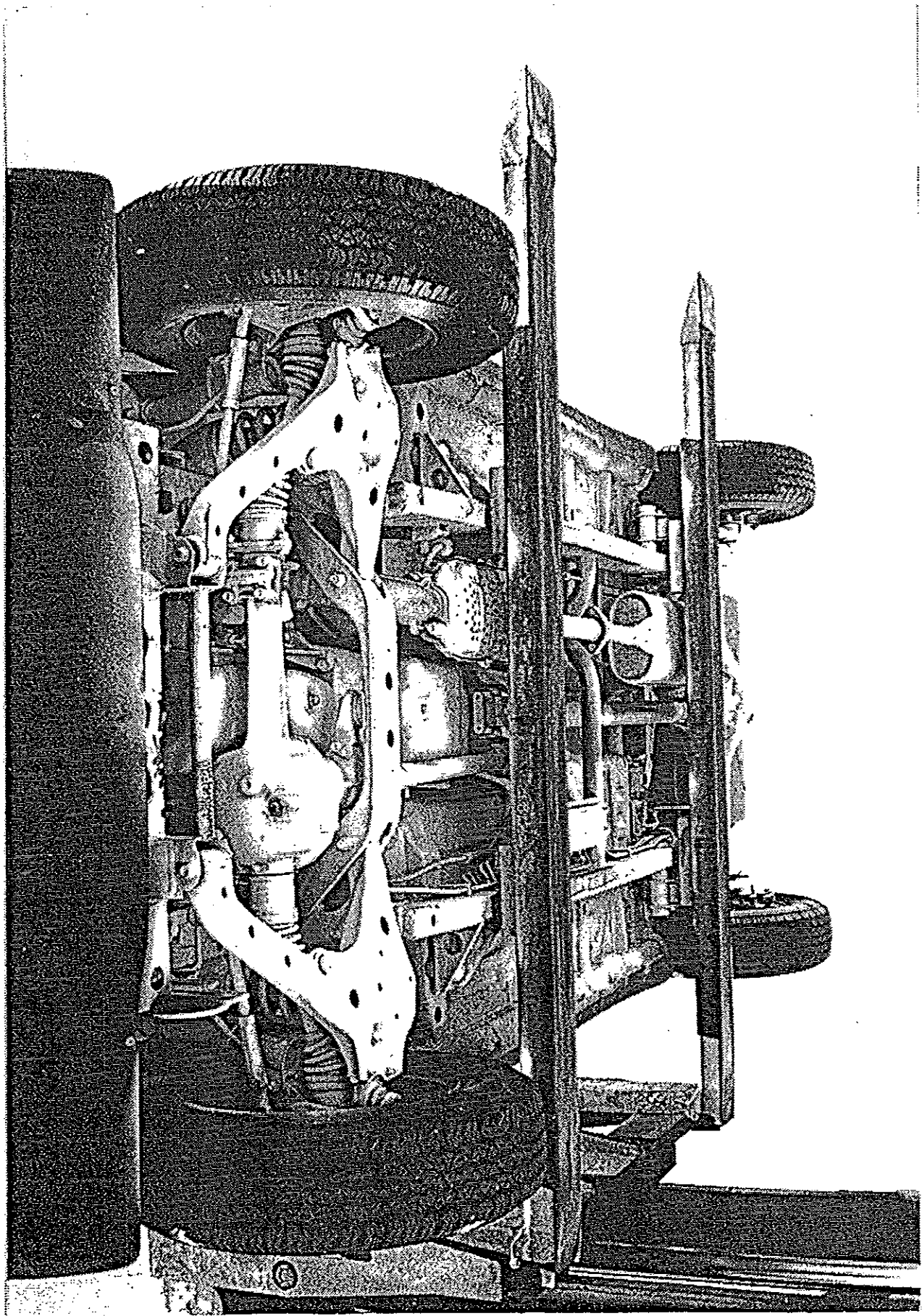


Figure A-13 PRE-TEST FRONT UNDERBODY VIEW

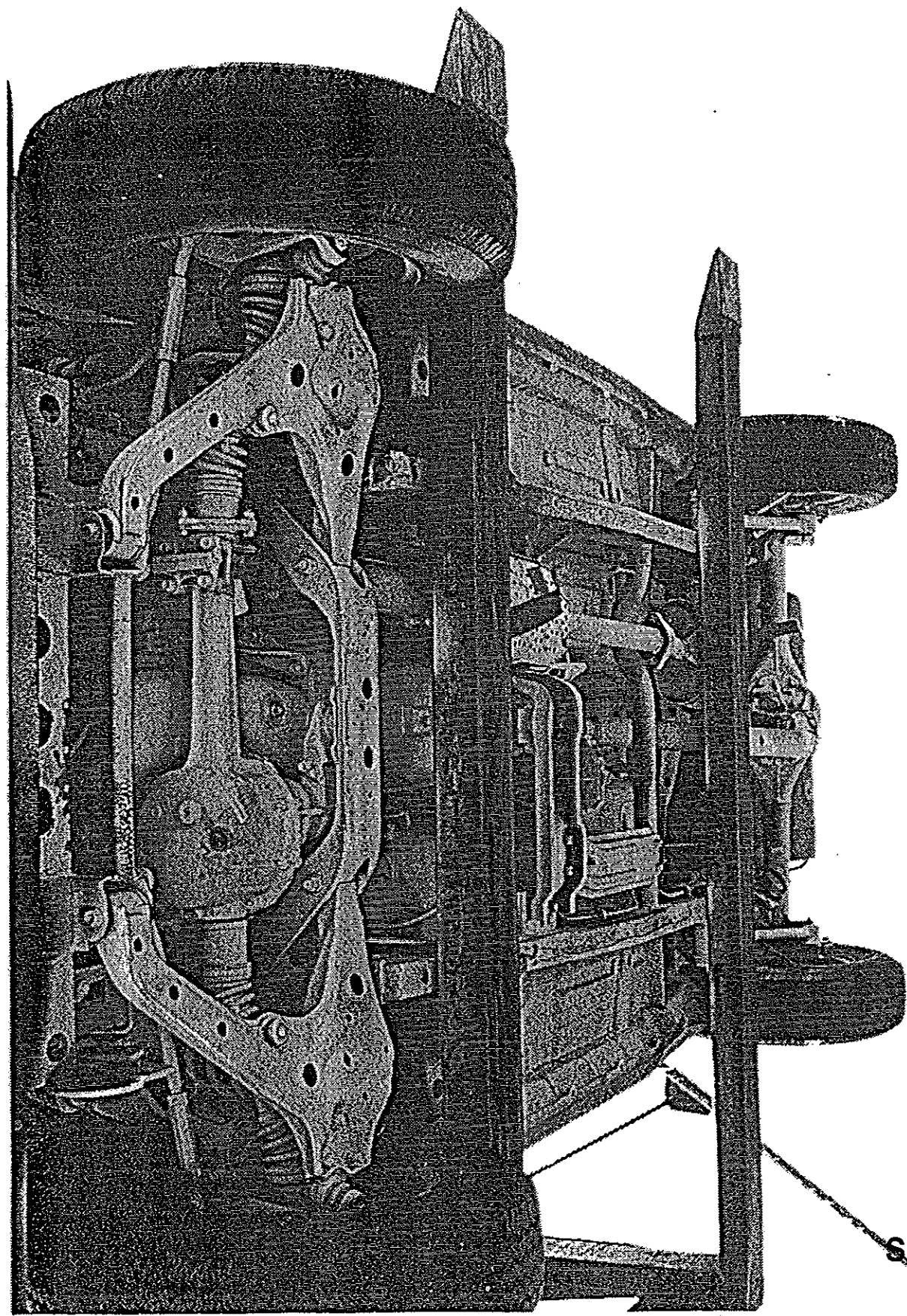


Figure A-14 POST-TEST FRONT UNDERBODY VIEW

S 211716



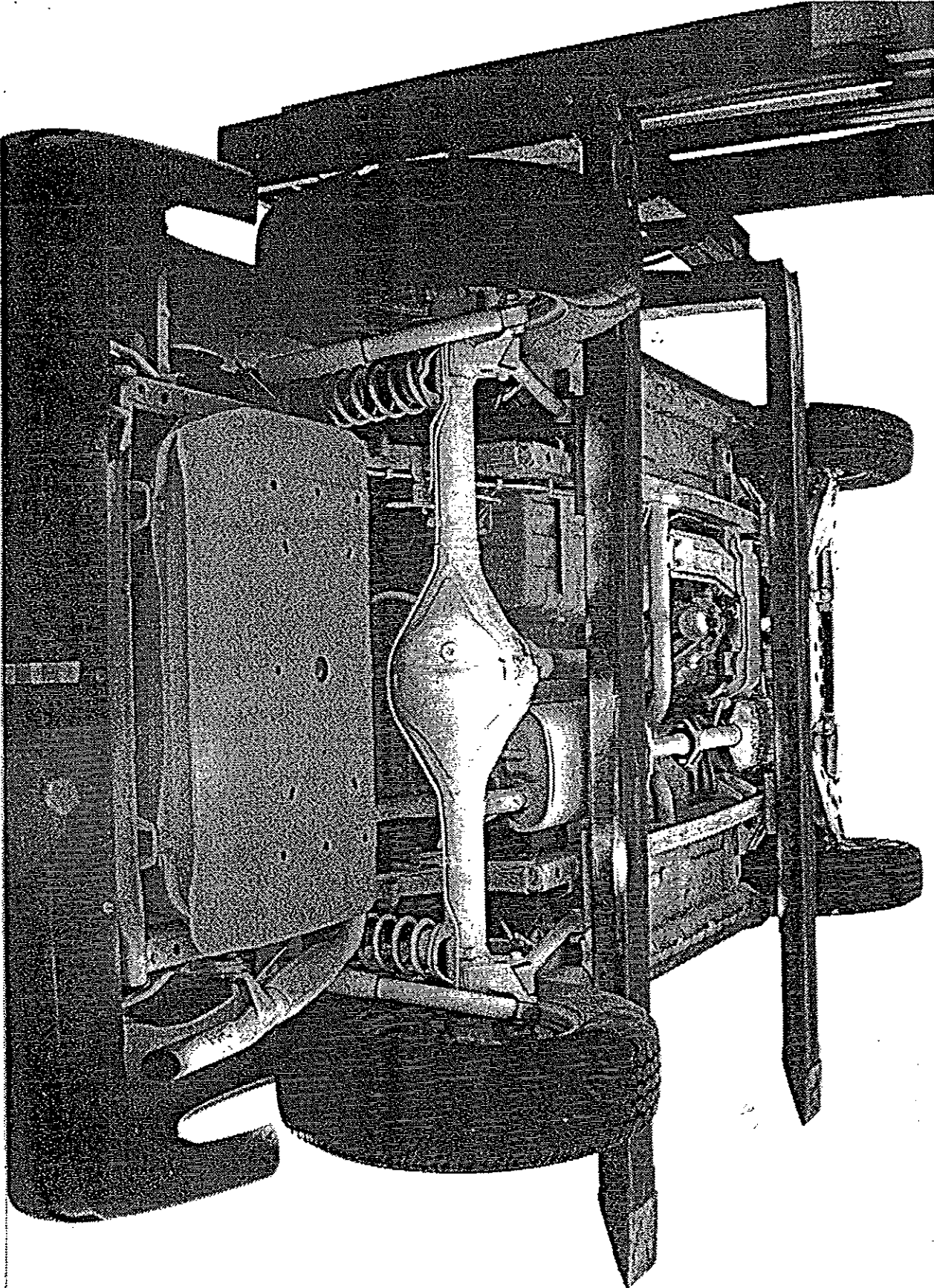


Figure A-15 PRE-TEST REAR UNDERBODY VIEW

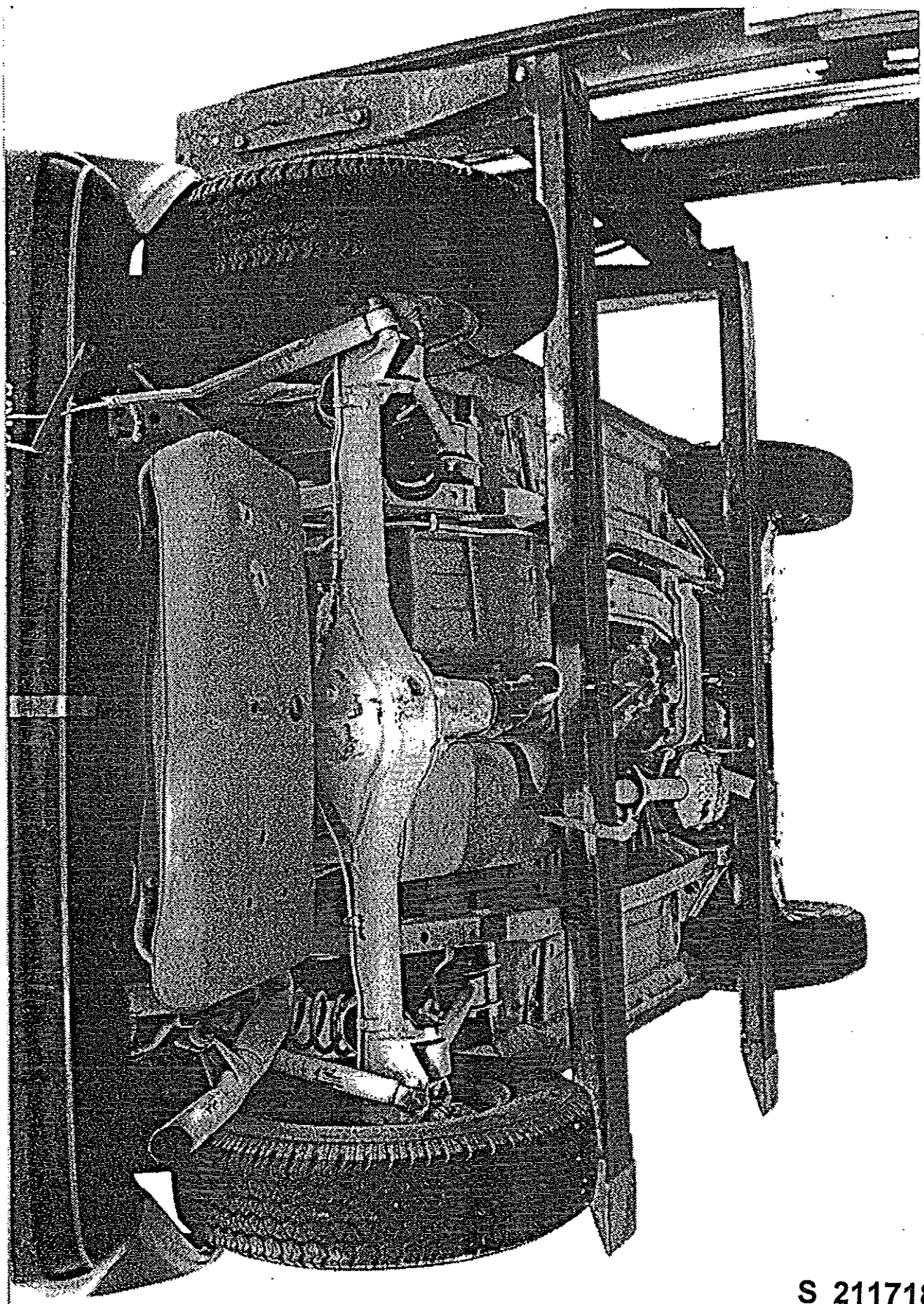


Figure A. 14 POST-TEST REAR UNDERBODY VIEW

S 211718



MFD BY CAMIAUTOMOTIVE INC. CANADA  
DATE 08/95 GWR 3527LB GAWR FRT 1697LB GAWR RR 2116LB  
1500KG 770KG 950KG  
TIRES P205/75R15 (FRT RR) P185/75R15 1/2AJ (FRT RR)  
MAY ONLY TIRE PRESS 23PSI (160KPA) FRT RR  
THIS VEHICLE CONFORMS TO ALL  
APPLICABLE U.S. FEDERAL MOTOR VEHICLE  
SAFETY STANDARDS IN EFFECT ON THE  
DATE OF MANUFACTURE SHOWN ABOVE  
3CNBJ1362161505729  
MULTIPURPOSE PASSENGER VEHICLE  
THIS VEHICLE EQUIPPED FOR 2148Y 324KG PAYLOAD  
SEE OWNER MANUAL FOR ADDITIONAL INFORMATION

TIRE	G
LB/kg	353
TIRES	
RIMS	
INFLATION PRESSURE COLD	
PSI/kPa	

Figure A-17 CERTIFICATION PLACARD

### TIRE PLACARD

	GAWR	GAWR FT	GAWR RP
LB/kg	3530/1600	1700/770	2120/960
TIRES		P205/75R15	P205/75R15
RIMS		15X5 1/2JJ	15X5 1/2JJ
INFLATION PRESSURE COLD PSI/kPa		23/160	23/160

56860

SUZUKI MOTOR CORPORATION  
 SUZUKI MOTOR VEHICLE  
 EFFECT ON THE  
 SHOWN ABOVE  
 PASSENGER VEHICLE  
 714LB/ 324KG PASSENGER  
 ORIGINAL INFORMATION

Figure A-18 TIRE PLACARD



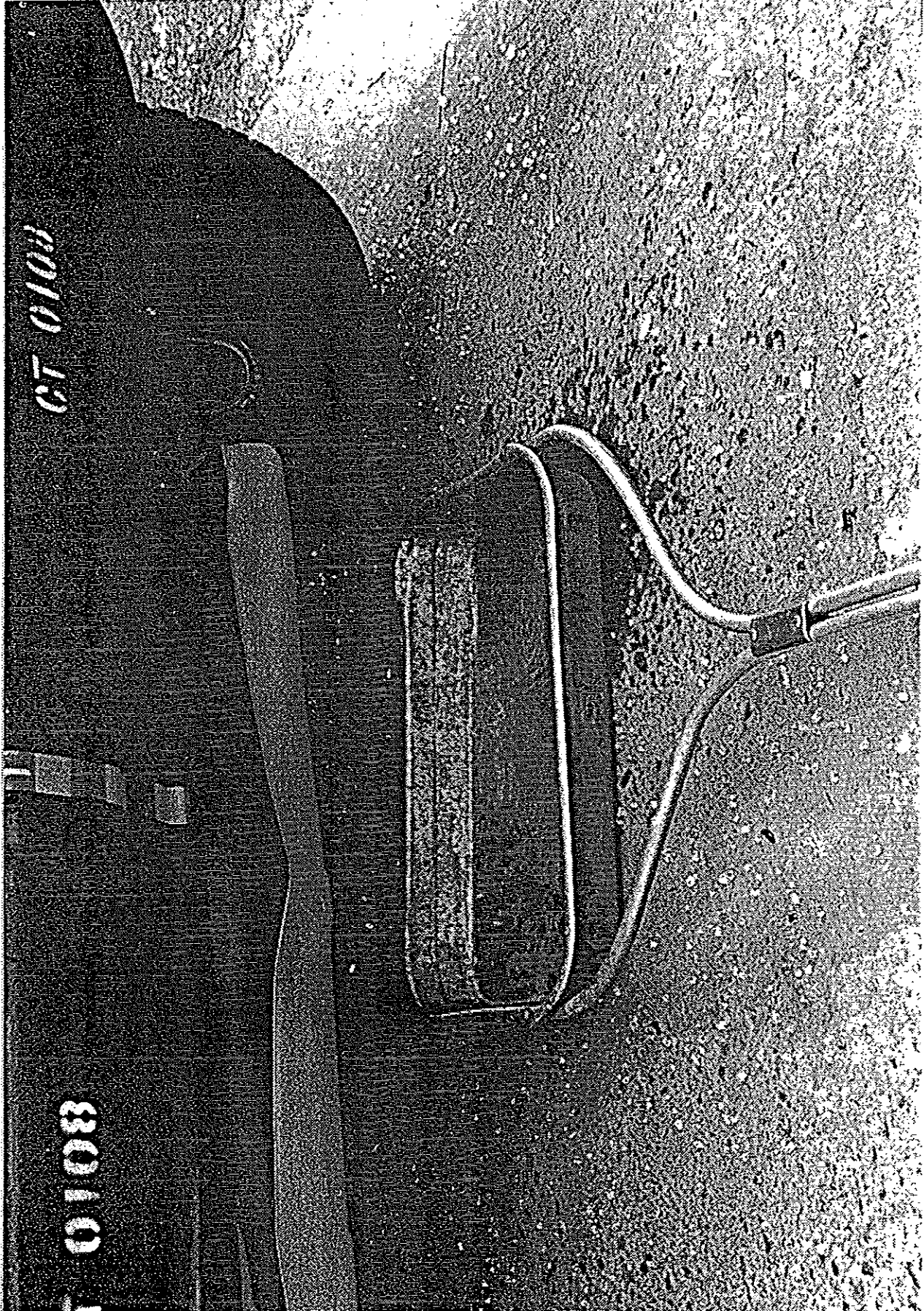


Figure A-19 SUPPLEMENTARY PHOTO #1

S 211721

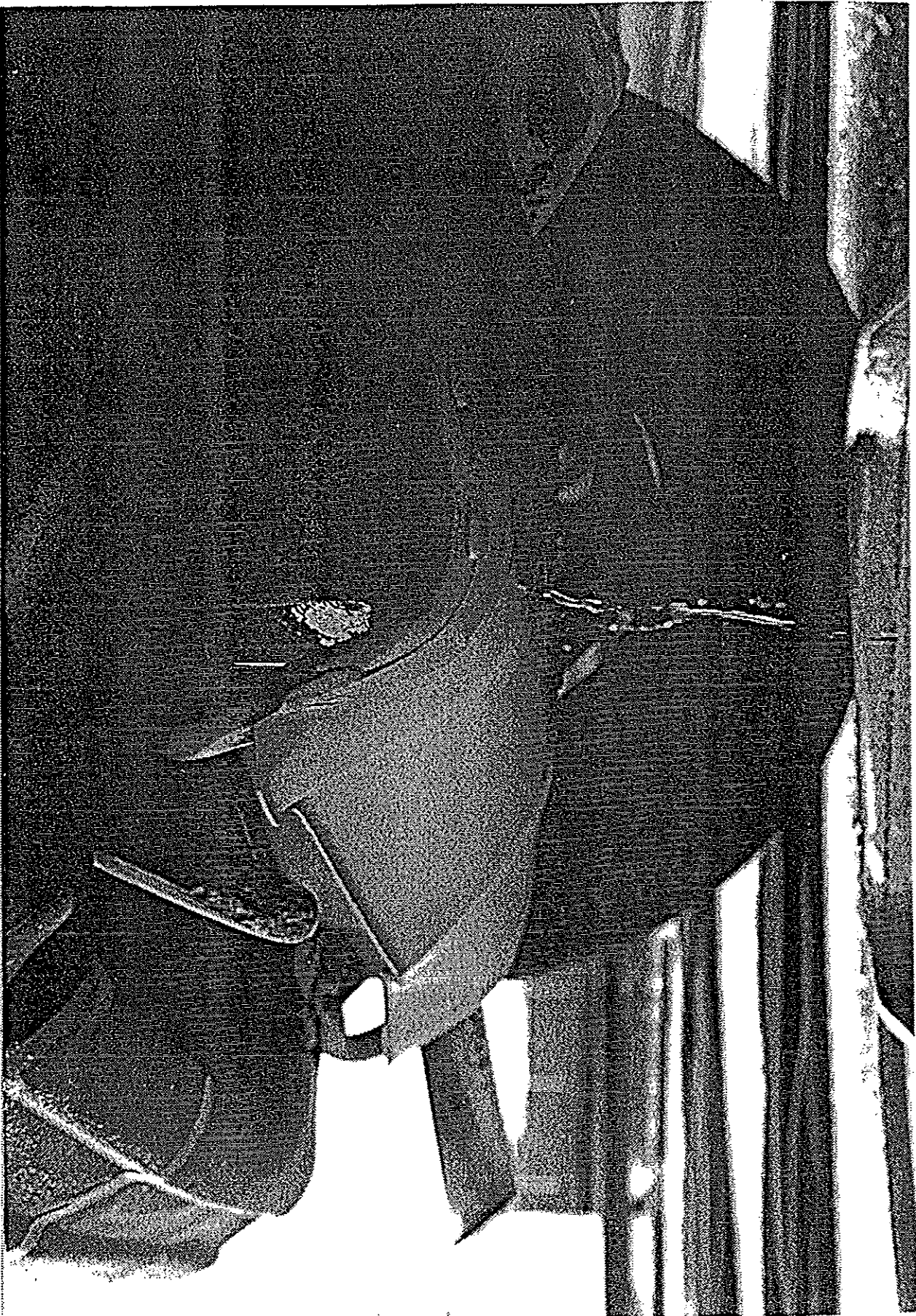


Figure A-20 SUPPLEMENTARY PHOTO #2

S 211722



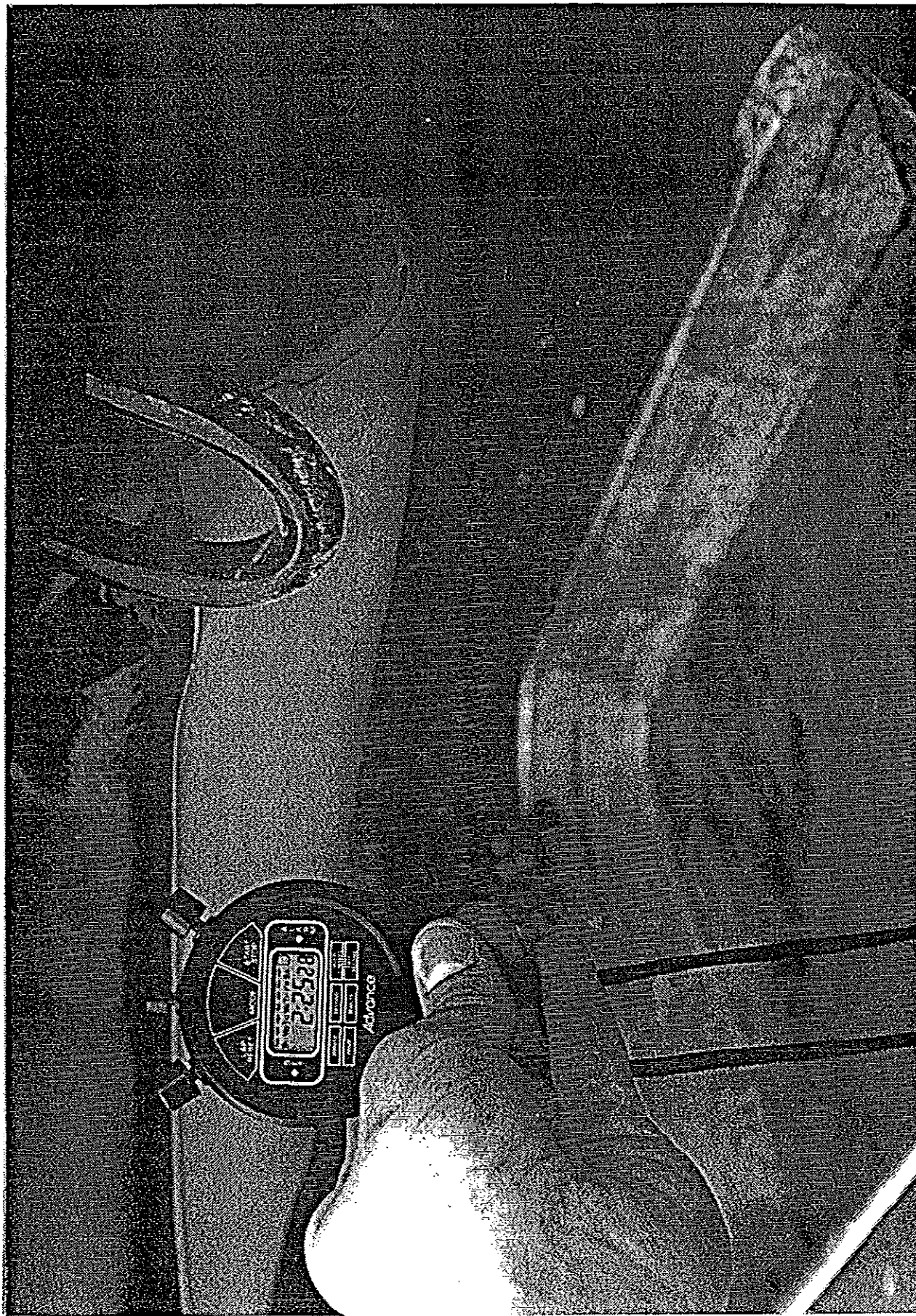


Figure A-21 SUPPLEMENTARY PHOTO #3

S 211723

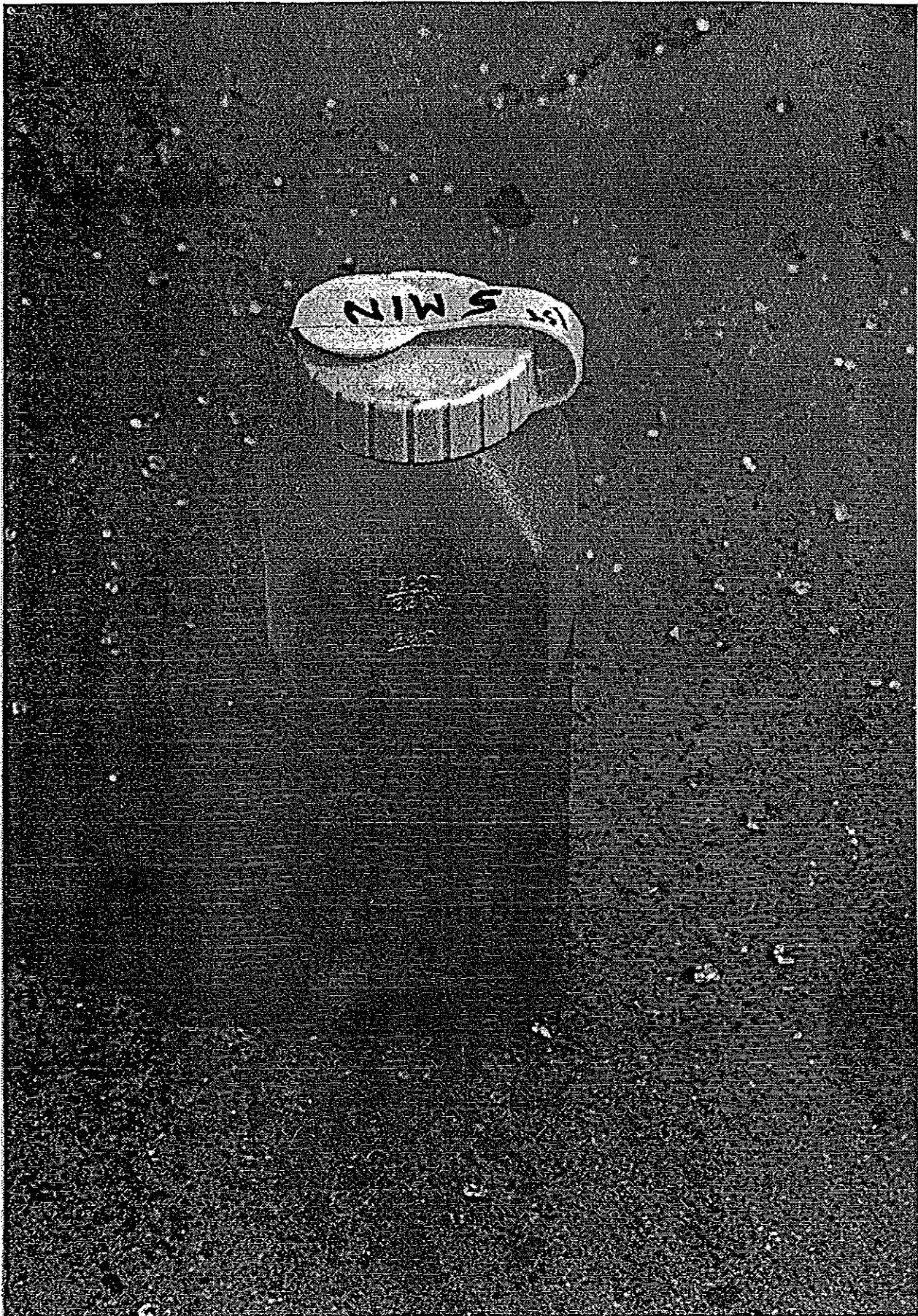


Figure A-22 SUPPLEMENTARY PHOTO #4



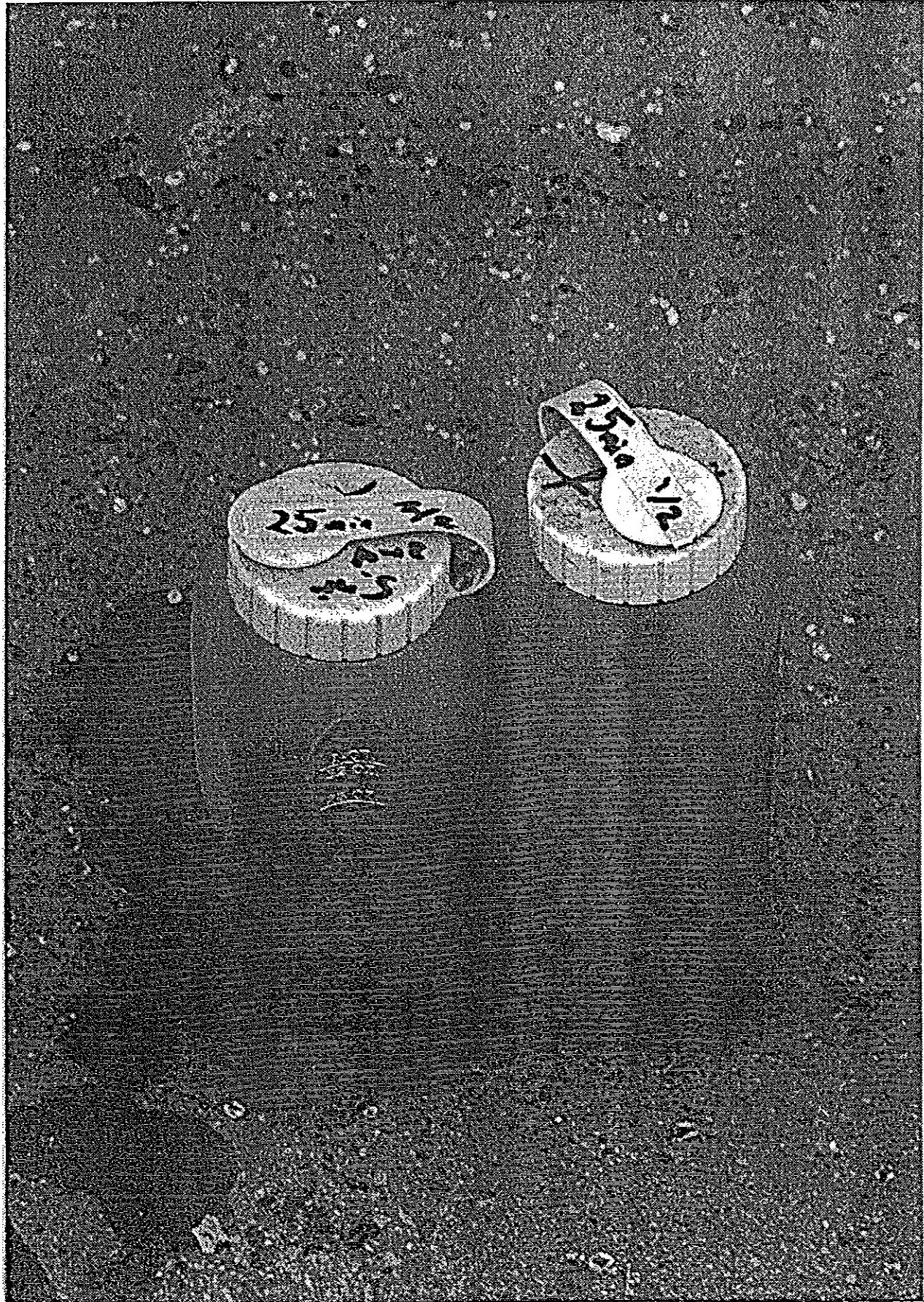


Figure A-23 SUPPLEMENTARY PHOTO #5

Appendix B

VEHICLE AND DUMMY RESPONSE DATA

(REAR IMPACT ONLY)

Note: Data is displayed using the NHTSA coordinate system.



FACILITY: Track  
RUN #: 1624  
SERIES #: 1

TEST DATE: 17 May 1996  
TEST TIME: 14:39:24  
BOARD: a

TITLE: 301 Rear 30 MPH-1996 Geo Tracker

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM		MINIMUM		FILTER CLASS
			AMP	msec	AMP	msec	
1	Pos. 1 Head X	Gs	59.4	104.3	-5.2	82.8	1000.0
2	Pos. 1 Head Y	Gs	5.3	104.3	-2.9	42.1	1000.0
3	Pos. 1 Head Z	Gs	8.3	110.5	-8.7	100.8	1000.0
4	Pos. 1 Chest Disp	ins	N/A	N/A	N/A	N/A	180.0
5	Pos. 1 Chest X	Gs	21.4	90.8	-2.2	160.2	180.0
6	Pos. 1 Chest Y	Gs	4.1	96.7	-3.8	47.3	180.0
7	Pos. 1 Chest Z	Gs	2.6	325.3	-6.6	73.6	180.0
8	Pos. 1 Lap Belt Load	lbs	66.3	130.1	-13.0	58.7	60.0
9	Pos. 1 Pelvic X	Gs	19.1	79.9	-7.8	110.8	1000.0
10	Pos. 1 Pelvic Y	Gs	8.7	82.9	-4.4	43.6	1000.0
11	Pos. 1 Pelvic Z	Gs	4.0	324.0	-9.0	51.4	1000.0
12	Pos. 1 Belt Spoolout	ins	.2	351.2	-.5	324.0	60.0
13	Pos. 1 Upper Neck Fx	lbs	73.9	82.6	-69.6	106.4	1000.0
14	Pos. 1 Upper Neck Fy	lbs	41.4	82.6	-18.3	143.3	1000.0
15	Pos. 1 Upper Neck Fz	lbs	123.5	152.0	-142.7	114.5	1000.0
16	Left Rear Xmember X	Gs	27.0	12.0	-2.4	154.4	60.0
17	Pos. 1 Head Resultant	Gs	59.8	104.2	.0	12.7	1000.0
18	Pos. 1 Chest Resultant	Gs	21.8	90.7	.0	-31.4	180.0
19	Pos. 1 Pelvic Res.	Gs	19.8	79.8	.0	8.5	1000.0
20	Pos. 1 Upper Neck F(Res)	lbs	147.6	110.2	1.0	19.2	1000.0

V2 36 ms Fixed Duration HIC SUMMARY: Pos. 1 Head Resultant

hic: 235.68  
t1 = 94.920 msec  
t2 = 110.880 msec  
Average G's Over Hic Duration = 46.53

CLIP V2.1 SUMMARY: Pos. 1 Chest Resultant

Peak Resultant (3 ms CLIPPED DURATION) = 19.547 G's  
Tstart = 89.3591 ms  
Tend = 92.3591 ms  
CSI = 40.148

FACILITY: Track  
RUN #: 1624  
SERIES #: 1

TEST DATE: 17 May 1996  
TEST TIME: 14:39:24  
BOARD: b

TITLE: 301 Rear 30 MPH-1996 Geo Tracker

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM		MINIMUM		FILTER CLASS
			AMP	msec	AMP	msec	
1	Pos. 1 Upper Neck Mx	ft-lbs	2.6	151.7	-4.8	71.0	600.0
2	Pos. 1 Upper Neck My	ft-lbs	48.7	107.9	-6.3	153.2	600.0
3	Pos. 1 Upper Neck Mz	ft-lbs	3.6	83.2	-5.9	165.8	600.0
4	Right Rear Xmember X	Gs	25.7	11.9	-3.7	101.2	60.0
5	Upper Seatback X	Gs	25.5	18.4	-20.2	42.6	60.0
6	Lower Seatback X	Gs	22.6	15.7	-7.8	124.6	60.0
17	Pos. 1 Neck Moment Res.	ft-lbs	48.9	107.9	.0	-66.2	600.0

TEST NO. CT0108

VEHICLE

SAE FILTER CHANNEL CLASS

60

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

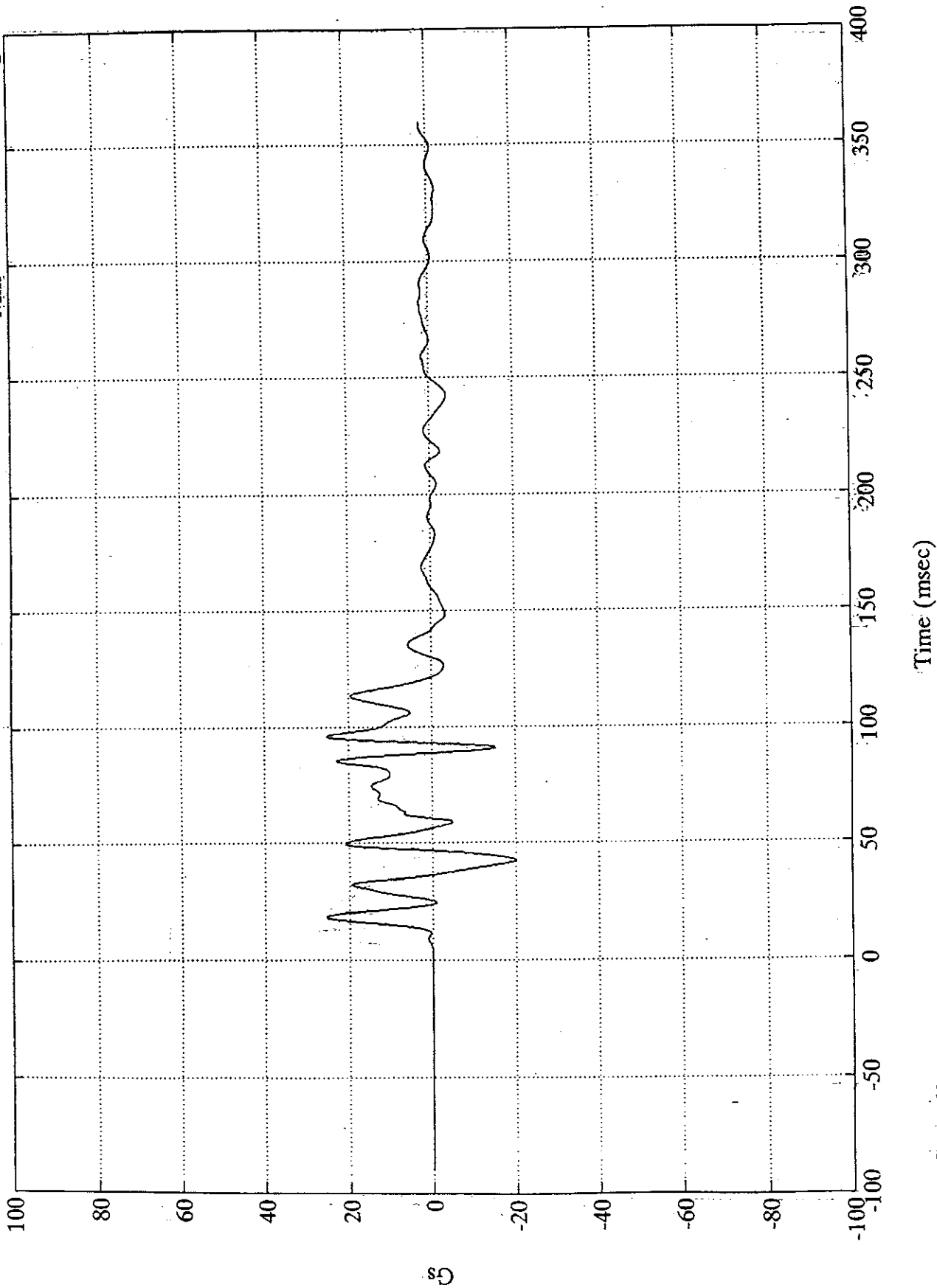
B-4

8344-10

301 Rear 30 MPH-1996 Geo Tracker

Upper Seatback X

Max = 25.45 Gs @ 18.36 msec  
Min = -20.22 Gs @ 42.59 msec



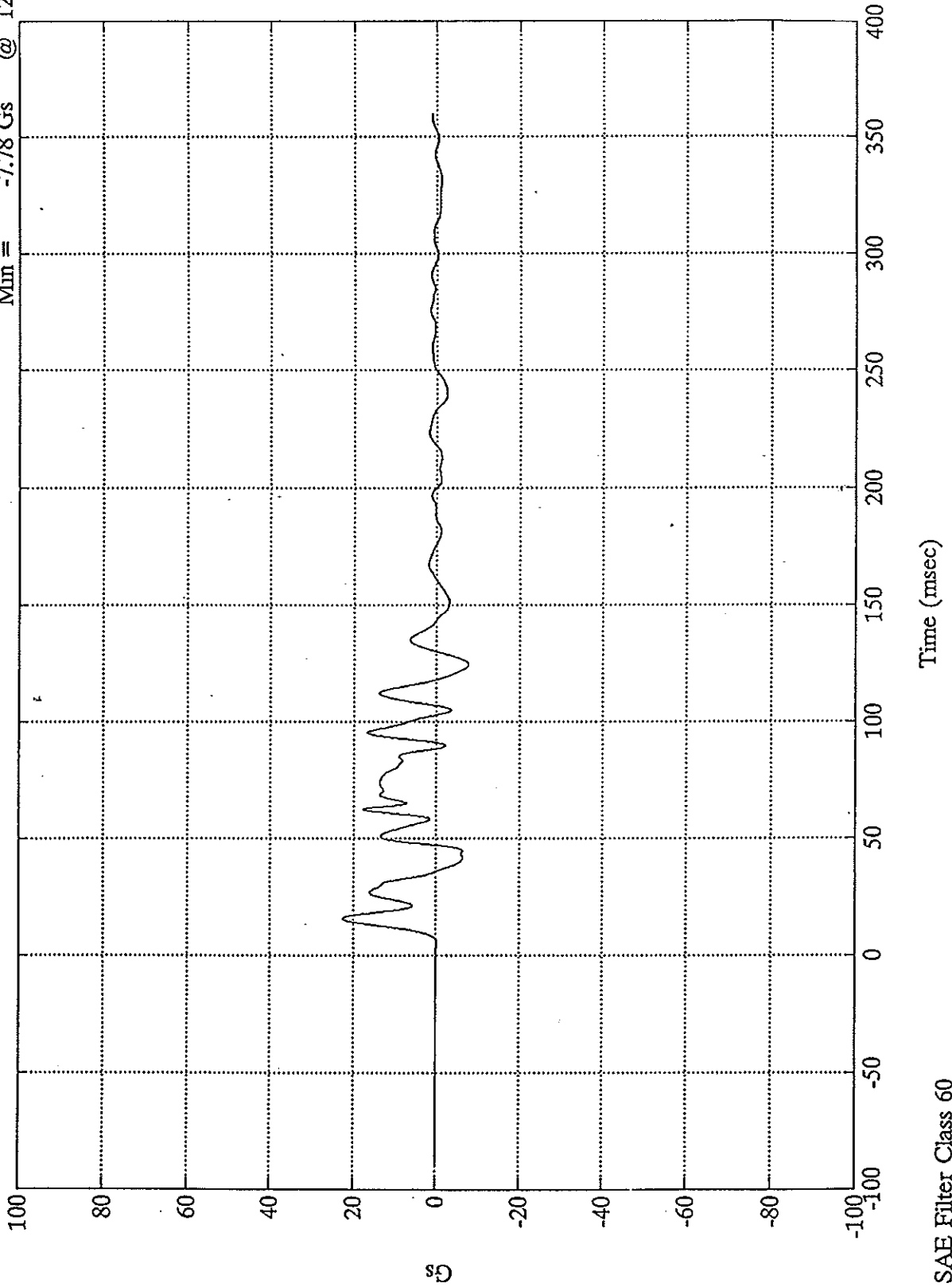
SAE Filter Class 60

EA12-005  
PRODUCED BY SUZUKI MOTOR CORPORATION

301 Rear 30 MPH-1996 Geo Tracker

Lower Seatback X

Max = 22.63 Gs @ 15.71 msec  
Min = -7.78 Gs @ 124.56 msec



SAE Filter Class 60

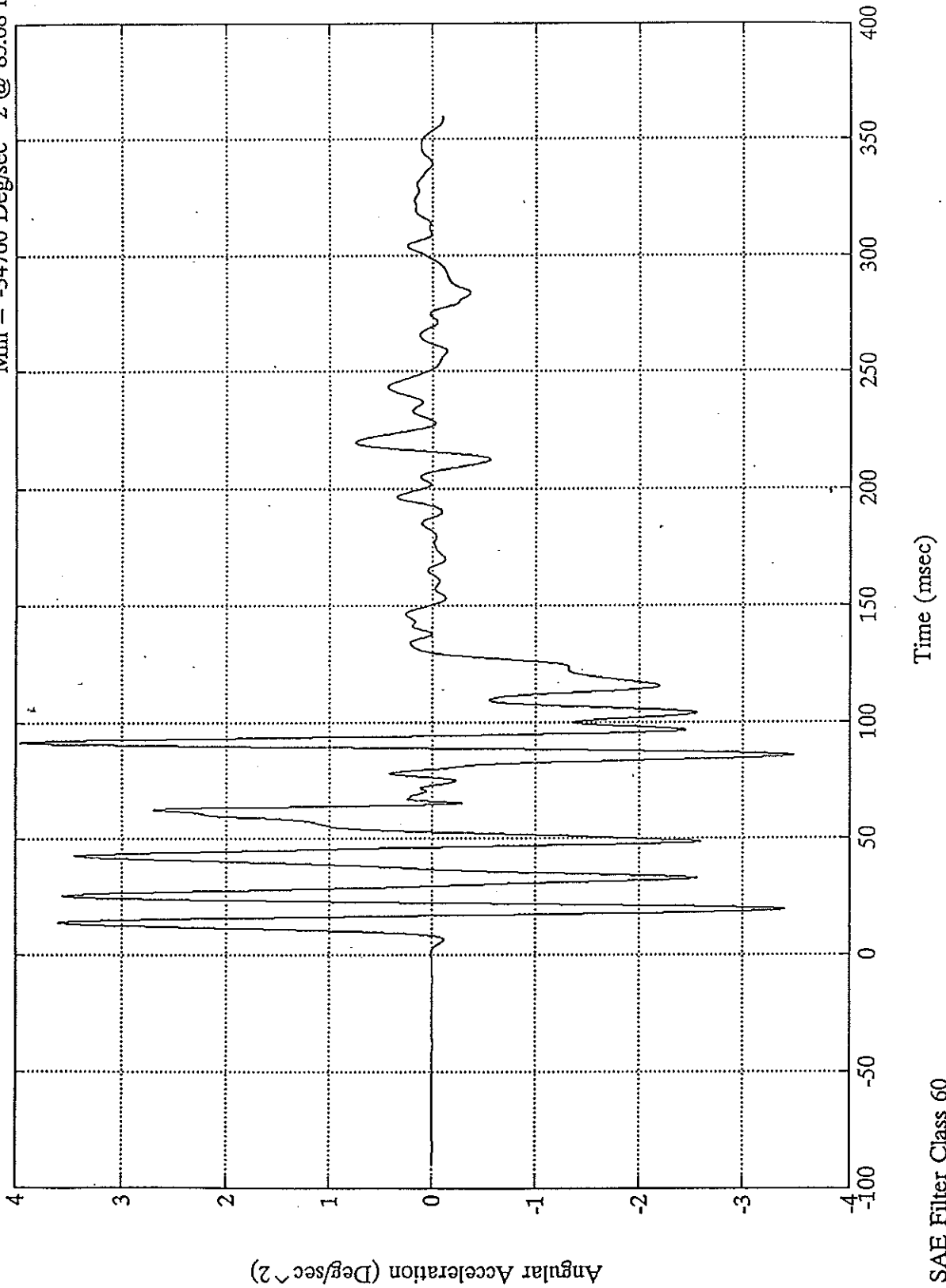
B-6

8344-10

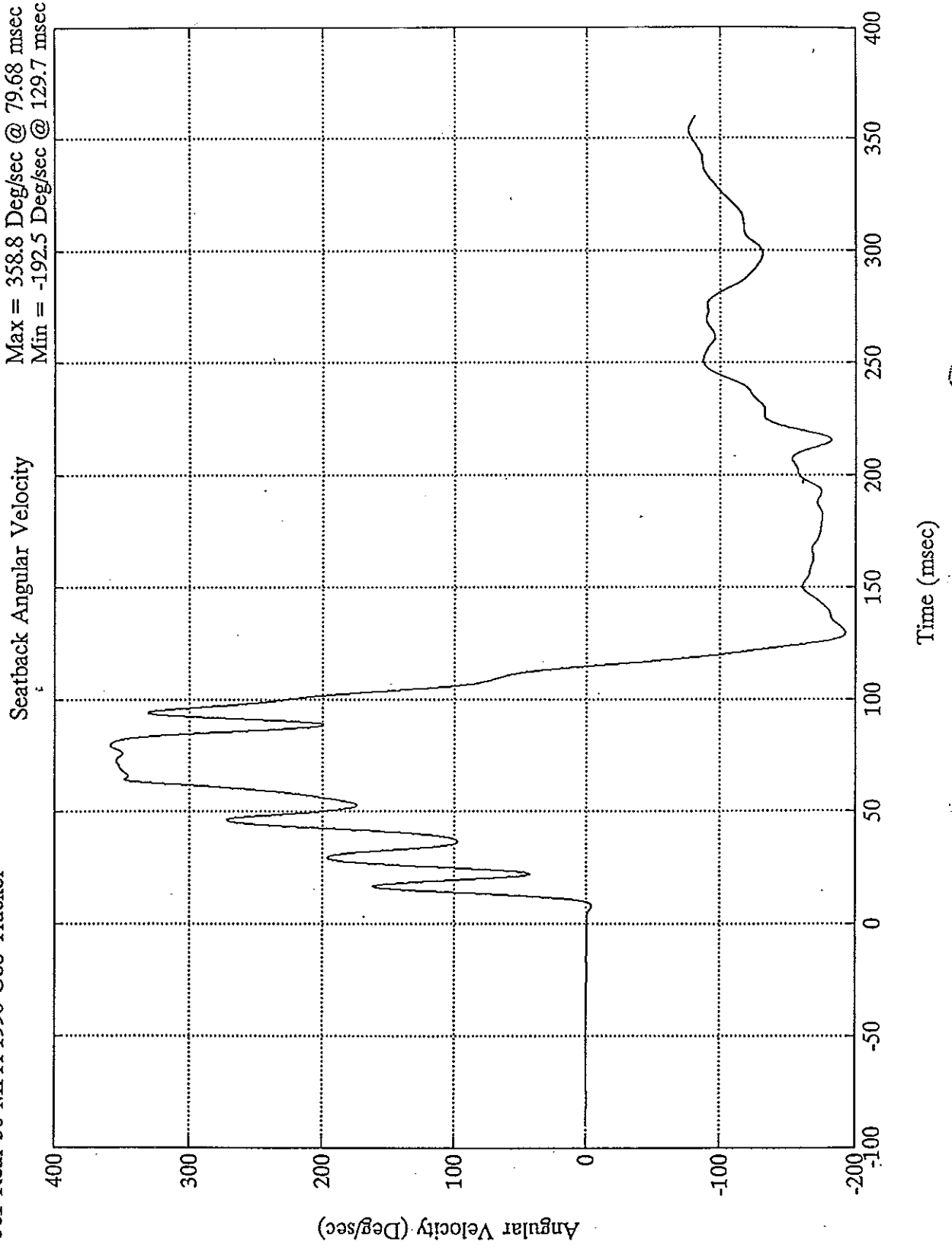
301 Rear 30 MPH-1996 Geo Tracker  
x10<sup>4</sup>

Max = 39640 Deg/sec<sup>2</sup> @ 91.56 msec  
Min = -34760 Deg/sec<sup>2</sup> @ 85.68 msec

Seatback Angular Acceleration



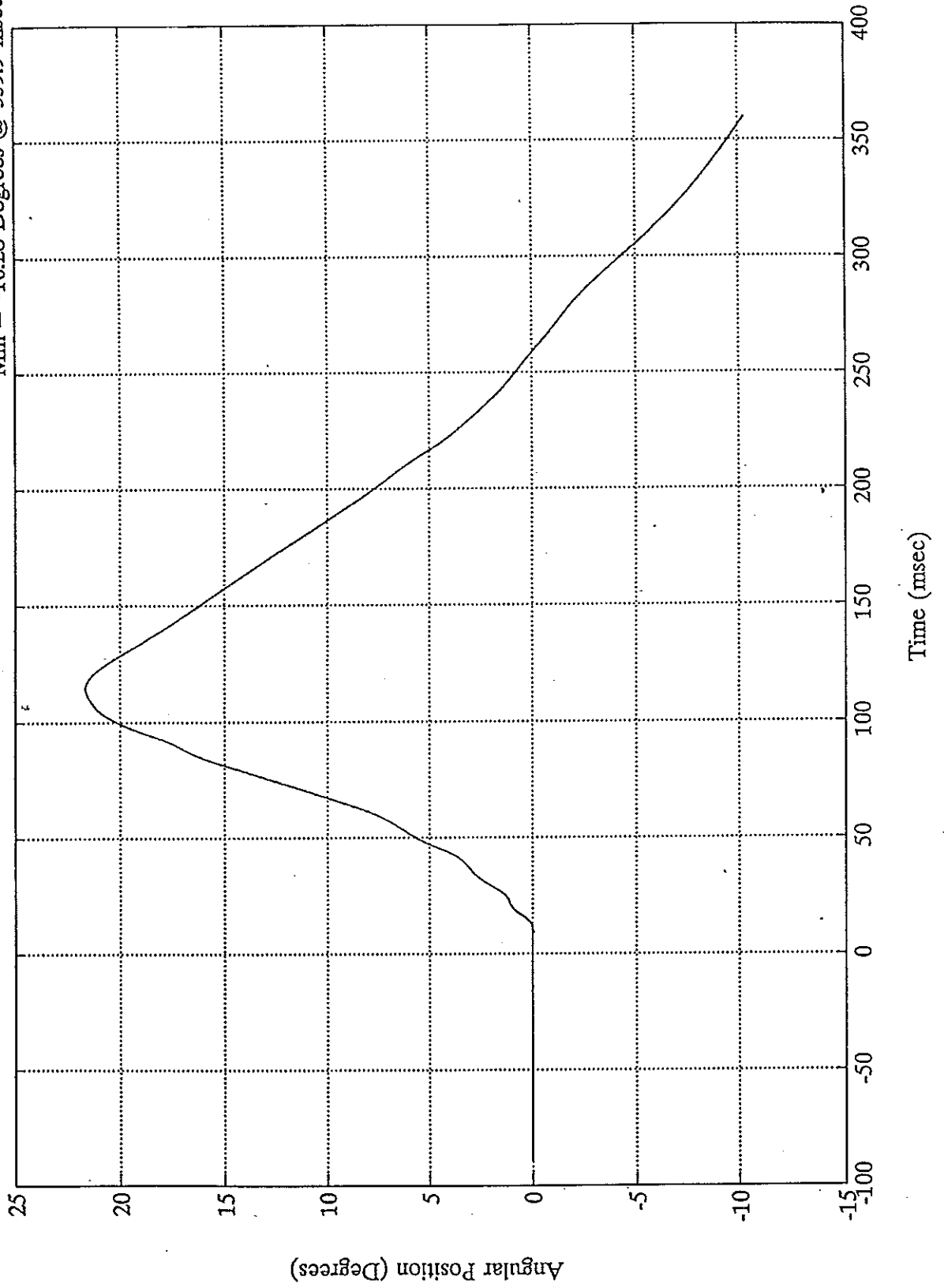
301 Rear 30 MPH-1996 Geo Tracker



301 Rear 30 MPH-1996 Geo Tracker

Max = 21.64 Degrees @ 114.7 msec  
Min = -10.28 Degrees @ 359.9 msec

Seatback Angular Position

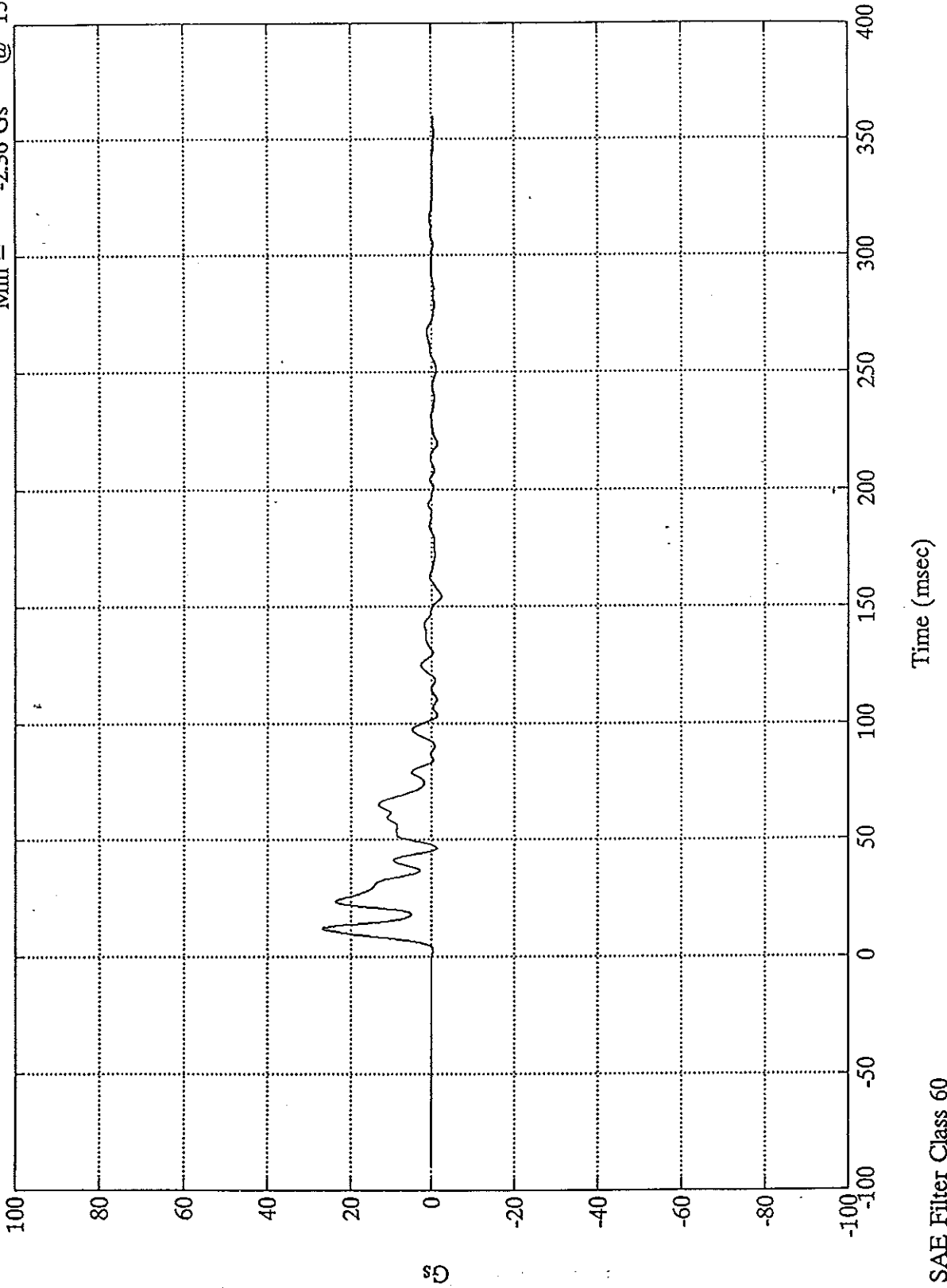




301 Rear 30 MPH-1996 Geo Tracker

Left Rear Xmember X

Max = 26.96 Gs @ 11.99 msec  
Min = -2.36 Gs @ 154.44 msec

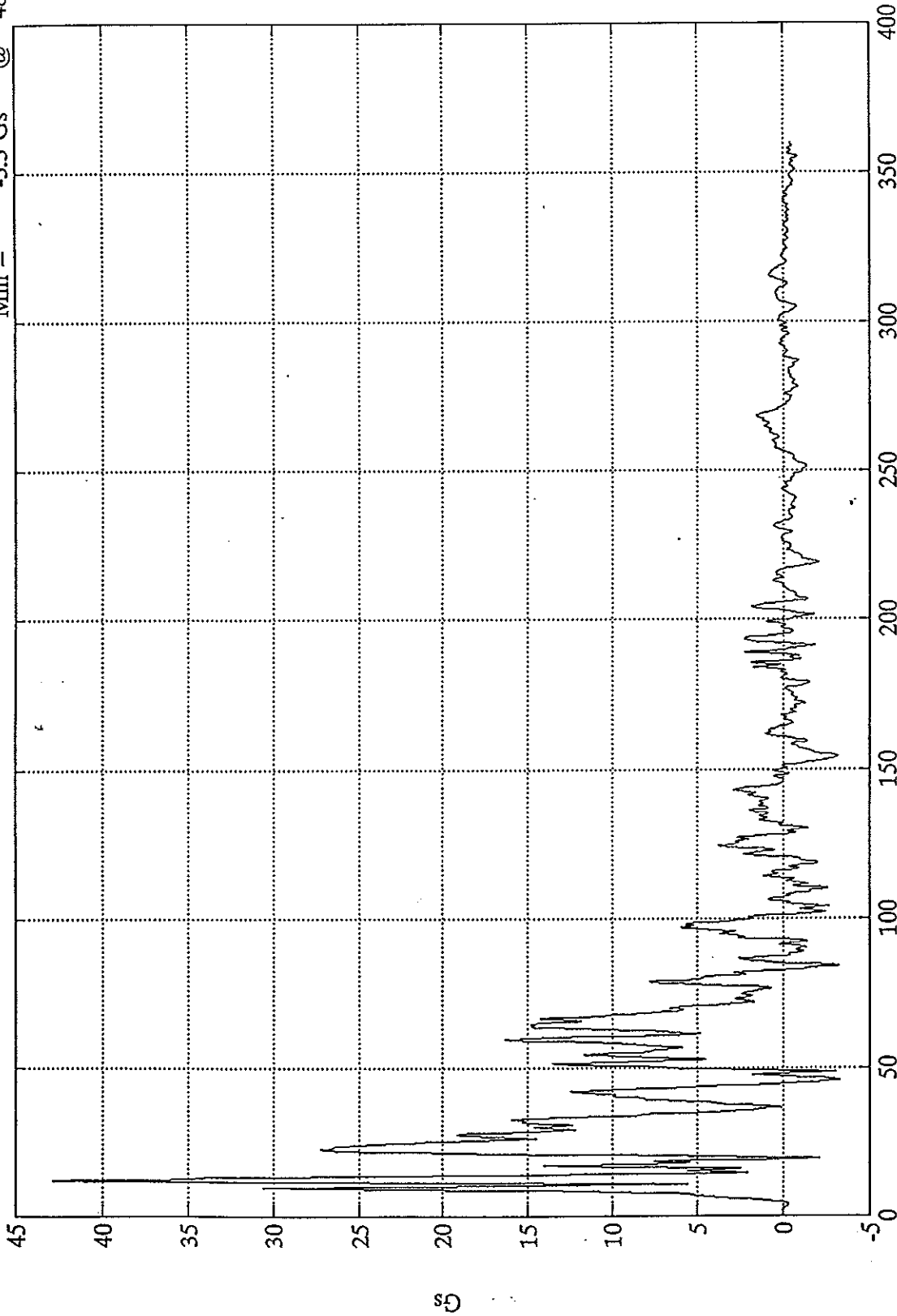


SAE Filter Class 60

301 Rear 30 MPH-1996 Geo Tracker

Left Rear Xmember X

Max = 42.8 Gs @ 11.99 msec  
Min = -3.3 Gs @ 48.59 msec



Time (msec)

SAE Filter Class 180

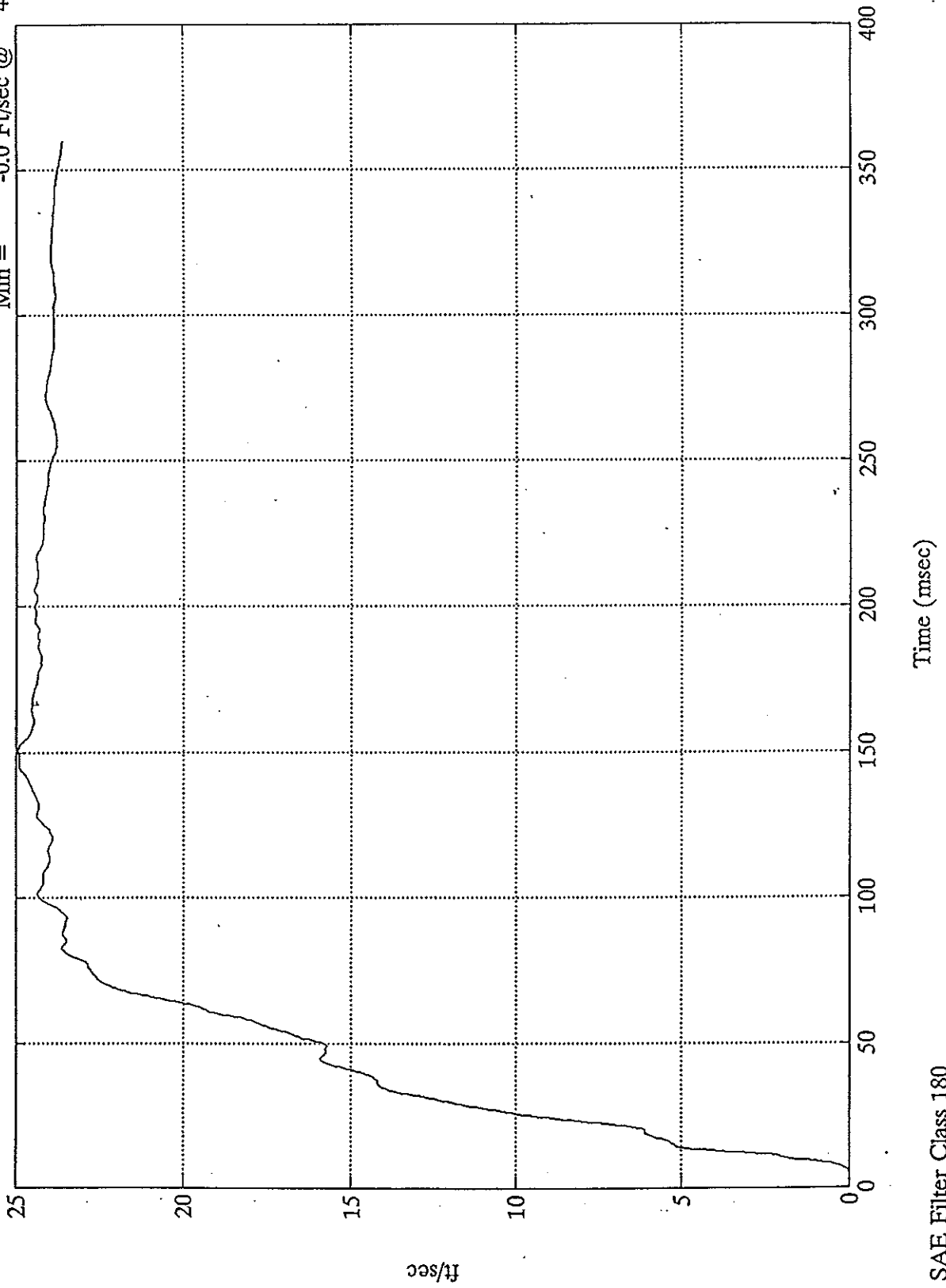
B-11

8344-10

301 Rear 30 MPH-1996 Geo Tracker

1st Integral Left Rear Xmember X

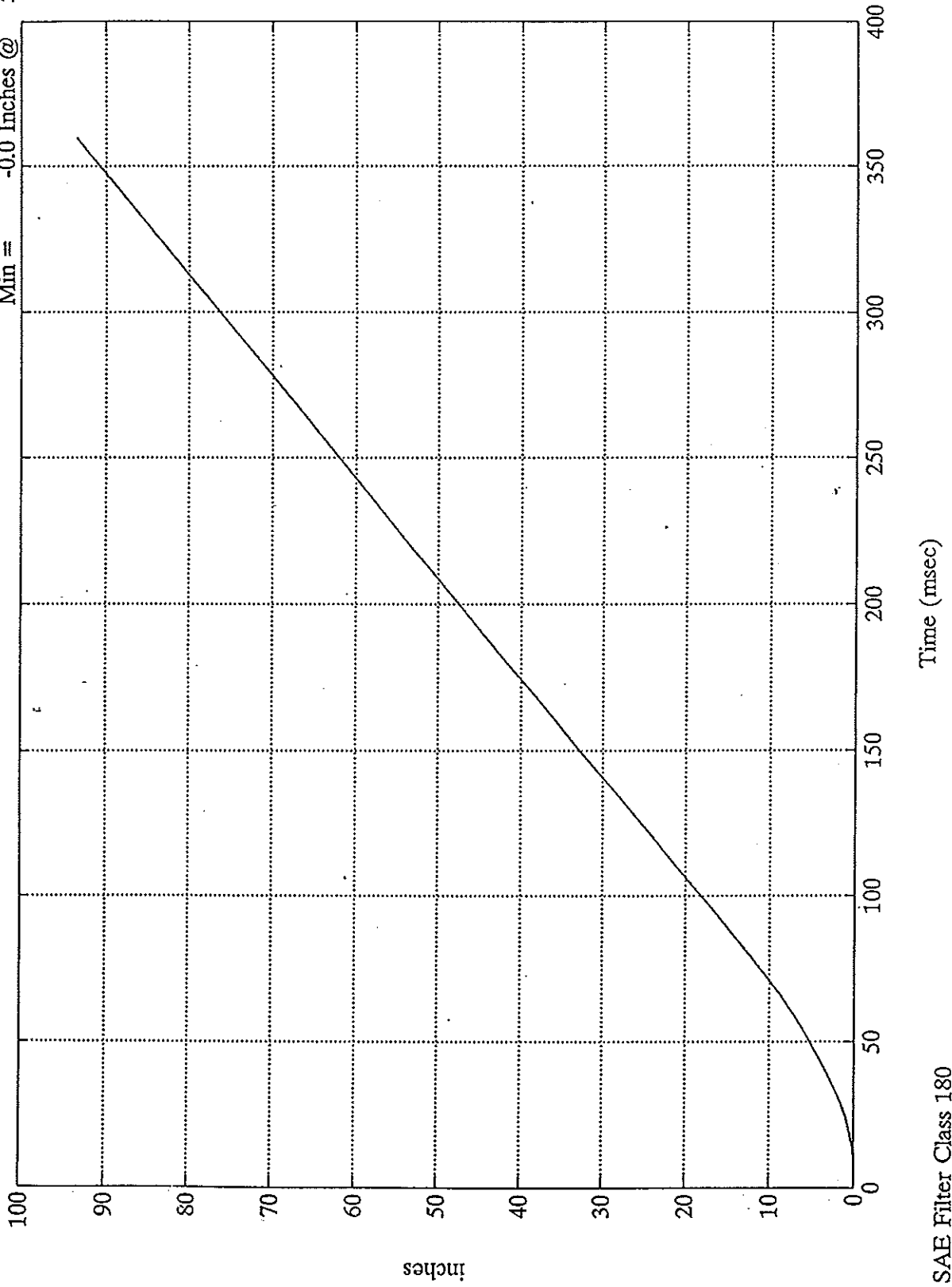
Max = 24.9 Ft/sec @ 150.24 msec  
Min = -0.0 Ft/sec @ 4.67 msec



301 Rear 30 MPH-1996 Geo Tracker

2nd Integral Left Rear Xmember X

Max = 93.5 Inches @ 359.88 msec  
Min = -0.0 Inches @ 5.39 msec

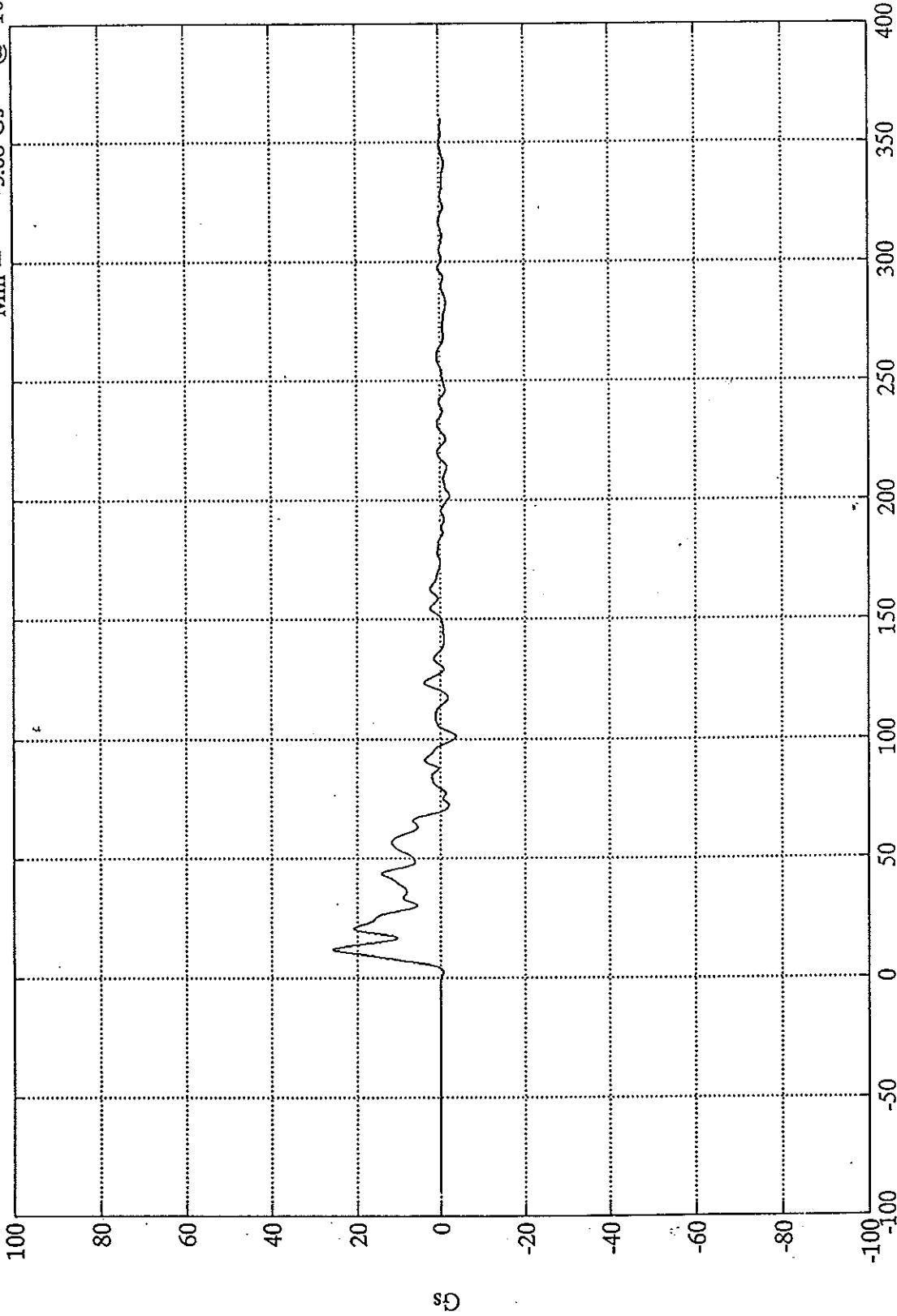


SAE Filter Class 180

301 Rear 30 MPH-1996 Geo Tracker

Right Rear Xmember X

Max = 25.73 Gs @ 11.87 msec  
Min = -3.68 Gs @ 101.16 msec



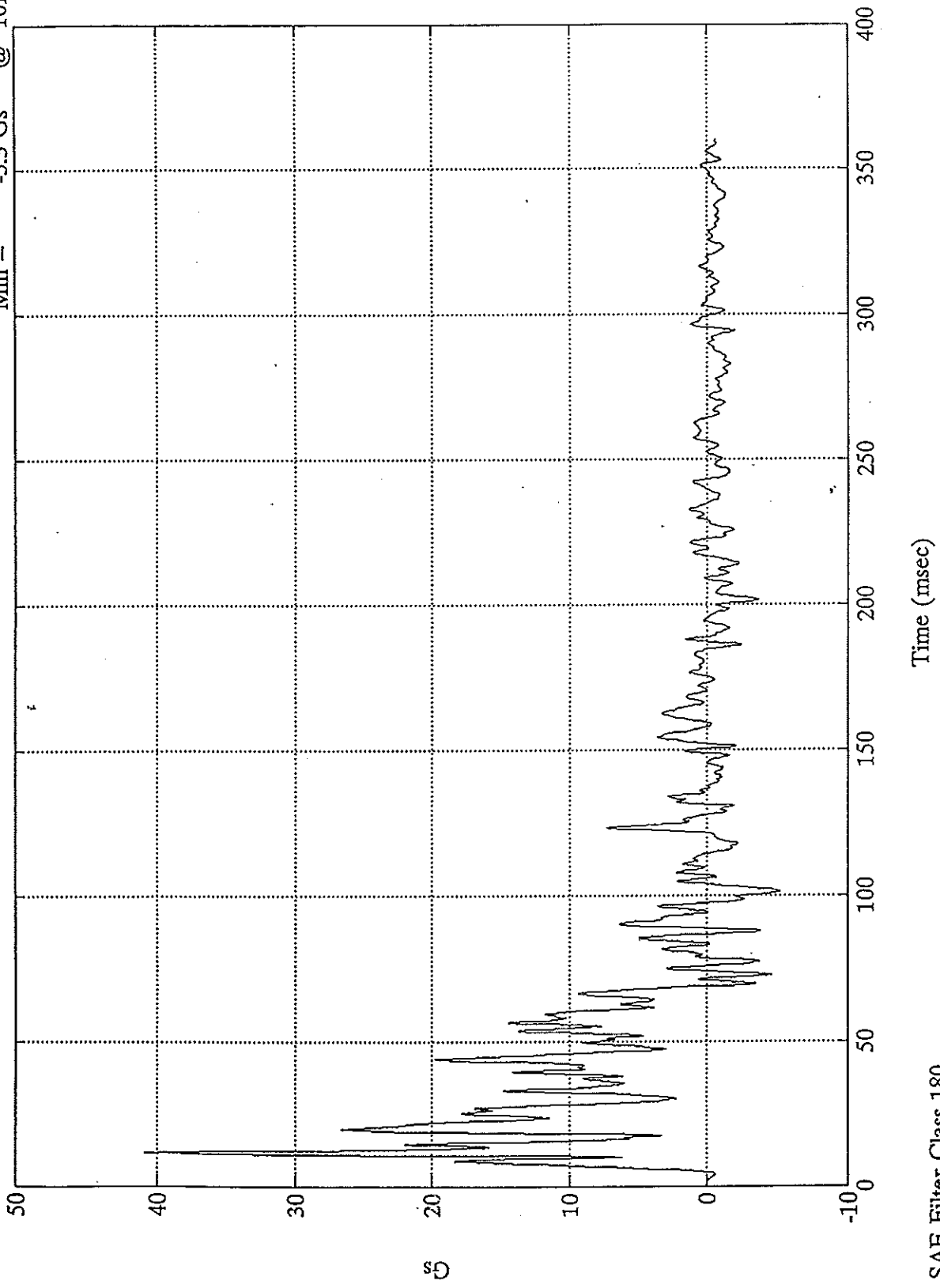
Time (msec)

SAE Filter Class 60

301 Rear 30 MPH-1996 Geo Tracker

Right Rear Xmember X

Max = 40.9 Gs @ 11.63 msec  
Min = -5.3 Gs @ 101.52 msec

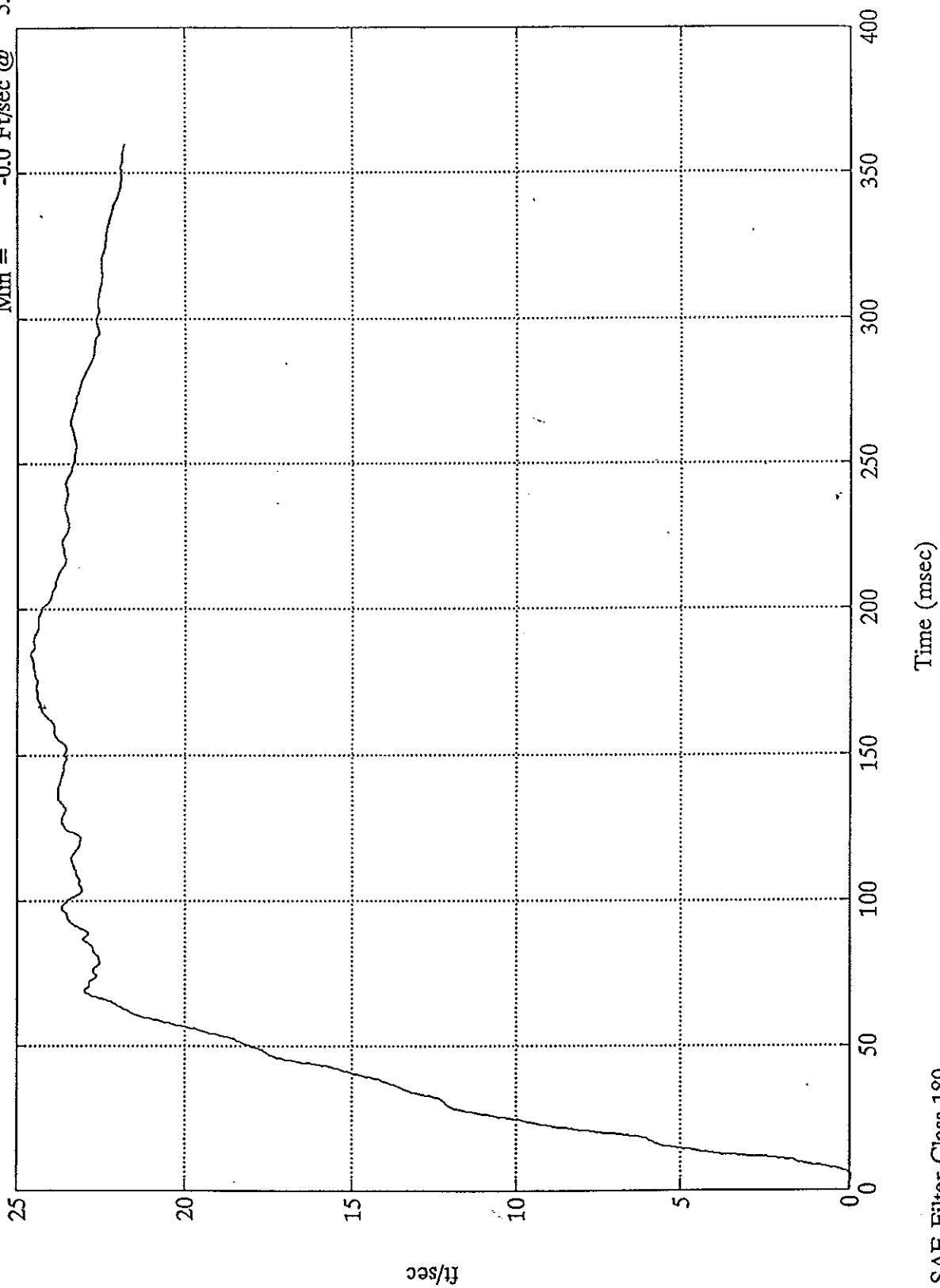




301 Rear 30 MPH-1996 Geo Tracker

1st Integral Right Rear Xmember X

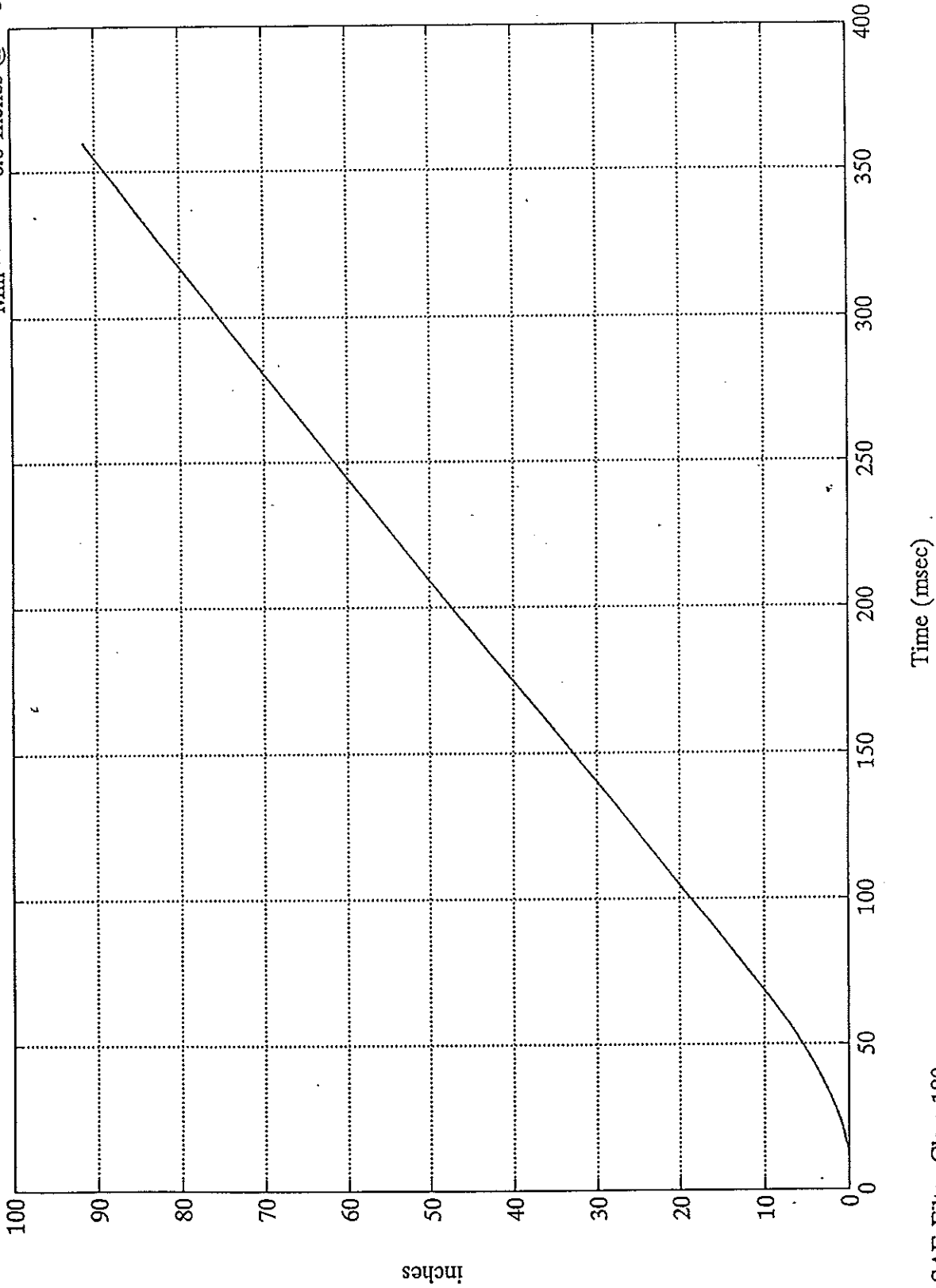
Max = 24.6 Ft/sec @ 184.79 msec  
Min = -0.0 Ft/sec @ 5.03 msec



301 Rear 30 MPH-1996 Geo Tracker

2nd Integral Right Rear Xmember X

Max = 91.3 Inches @ 359.88 msec  
Min = -0.0 Inches @ 5.87 msec



SAE Filter Class 180

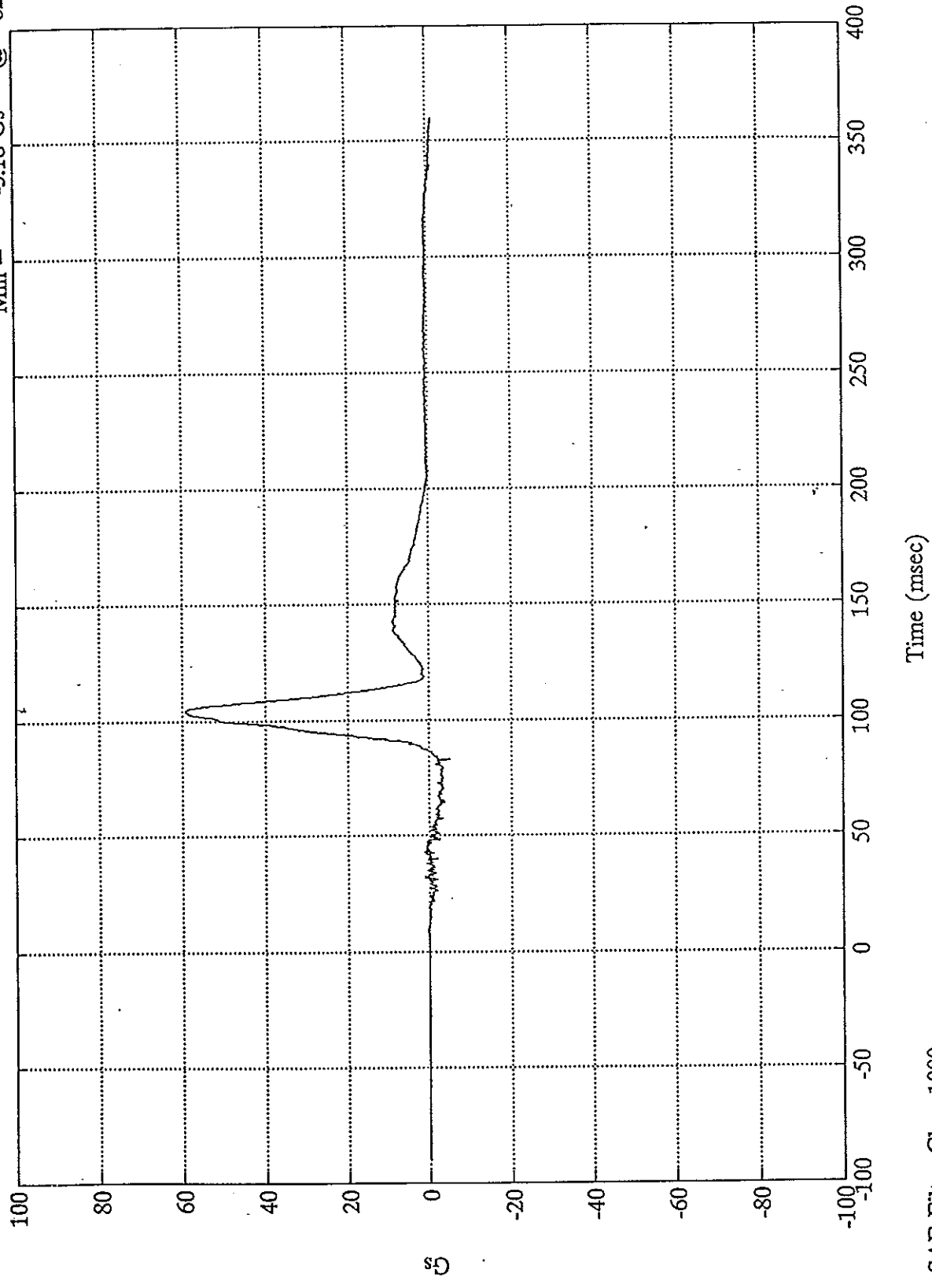
TEST NO. CT0108

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

301 Rear 30 MPH-1996 Geo Tracker

Pos. 1 Head X

Max = 59.35 Gs @ 104.27 msec  
Min = -5.18 Gs @ 82.80 msec

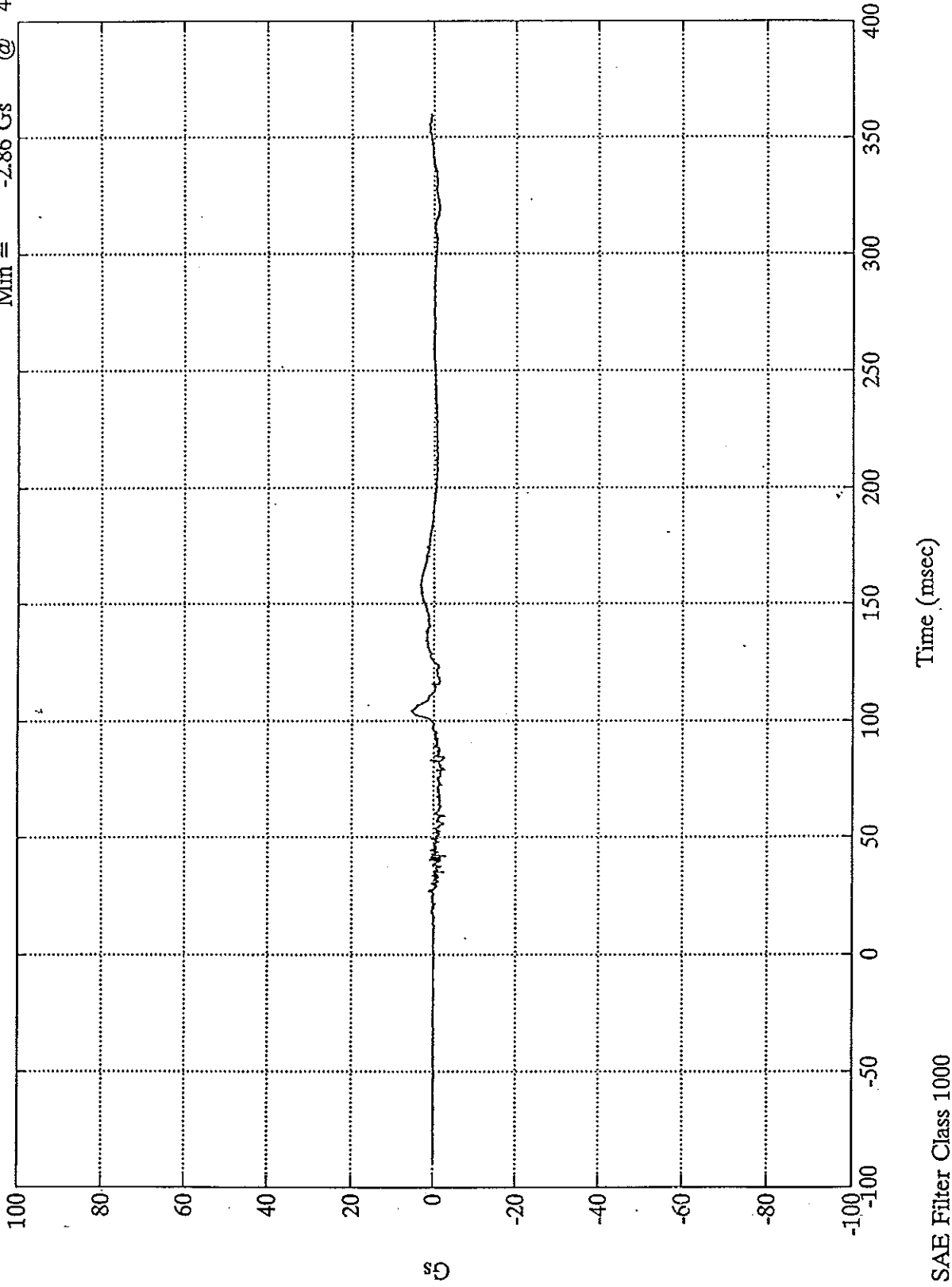


SAE Filter Class 1000

301 Rear 30 MPH-1996 Geo Tracker

Pos. 1 Head Y

Max = 5.32 Gs @ 104.27 msec  
Min = -2.86 Gs @ 42.11 msec



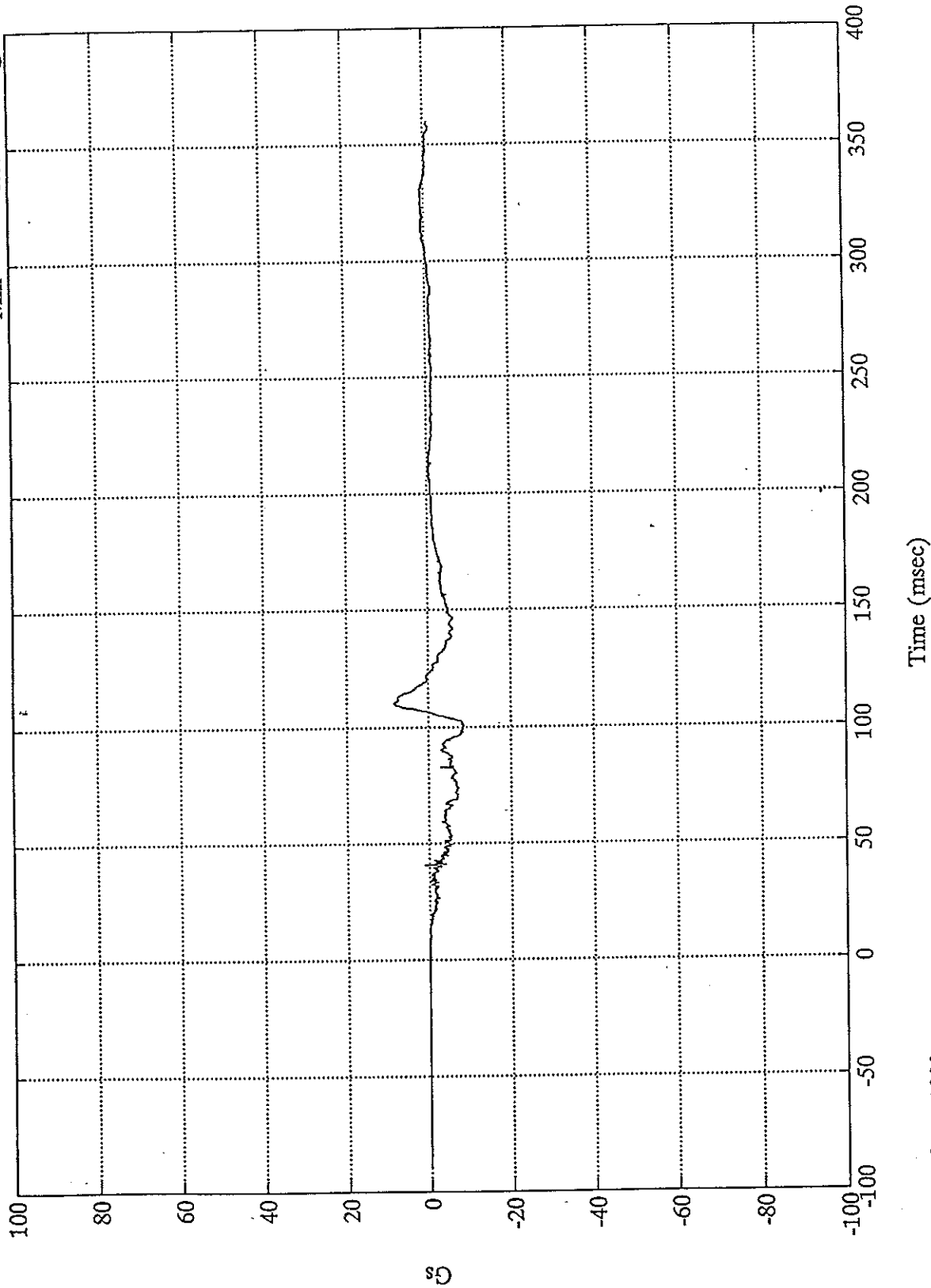
B-20

8344-10

301 Rear 30 MPH-1996 Geo Tracker

Pos. 1 Head Z

Max = 8.29 Gs @ 110.52 msec  
Min = -8.73 Gs @ 100.80 msec



SAE Filter Class 1000

B-21

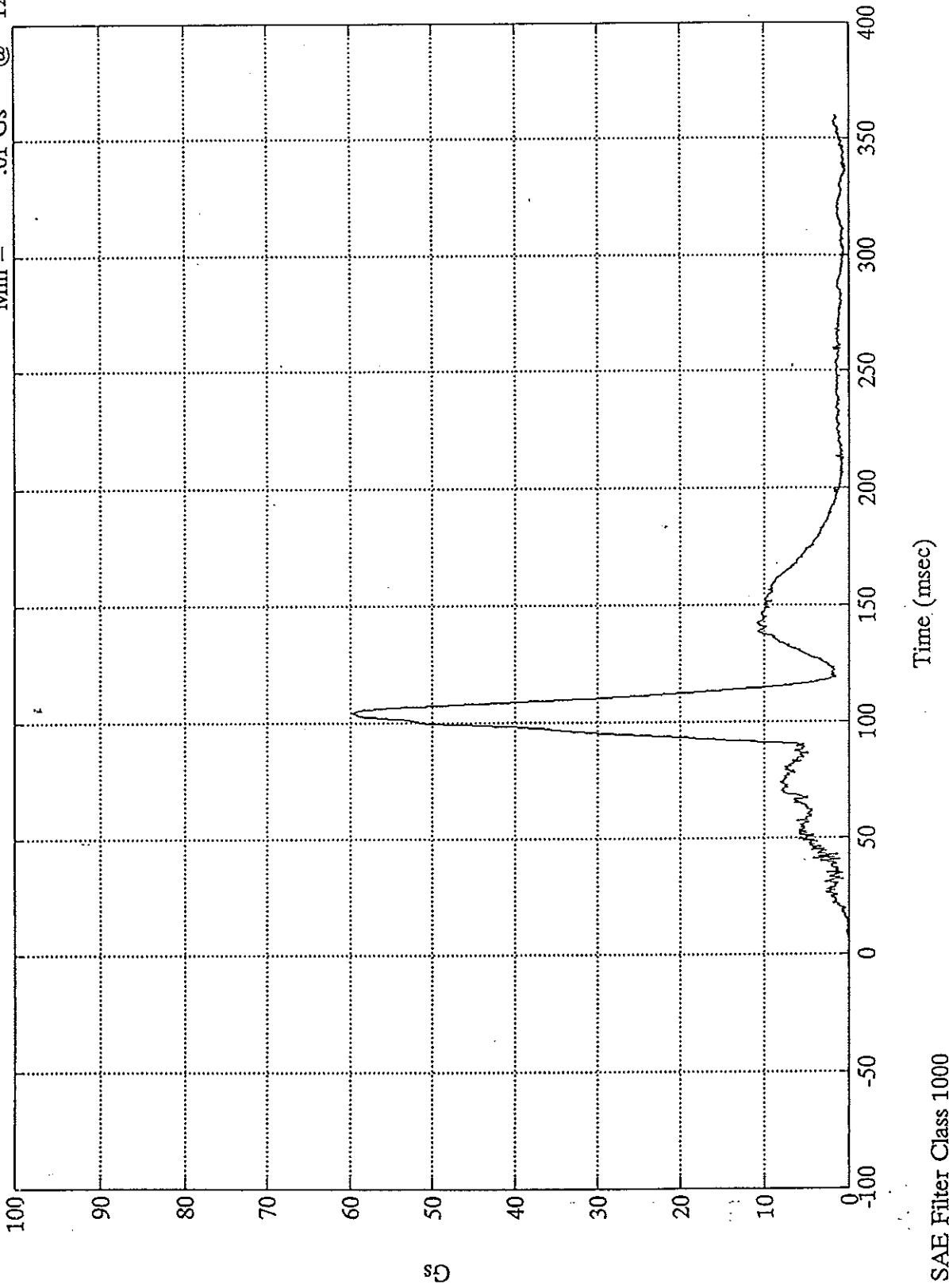
8344-10



301 Rear 30 MPH-1996 Geo Tracker

Pos. 1 Head Resultant

Max = 59.76 Gs @ 104.16 msec  
Min = .01 Gs @ 12.71 msec



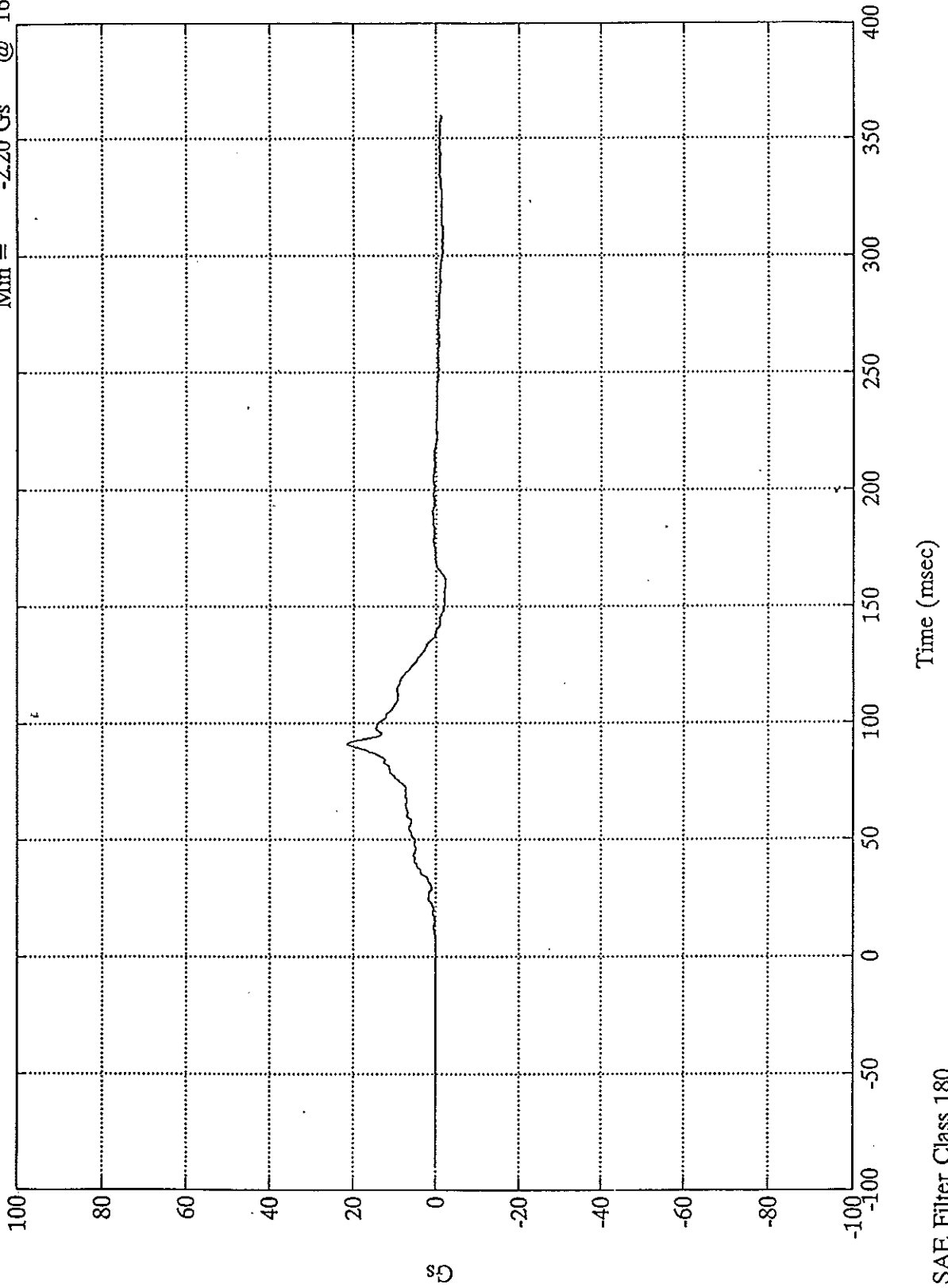
B-22

8344-10

301 Rear 30 MPH-1996 Geo Tracker

Pos. 1 Chest X

Max = 21.43 Gs @ 90.84 msec  
Min = -2.20 Gs @ 160.19 msec



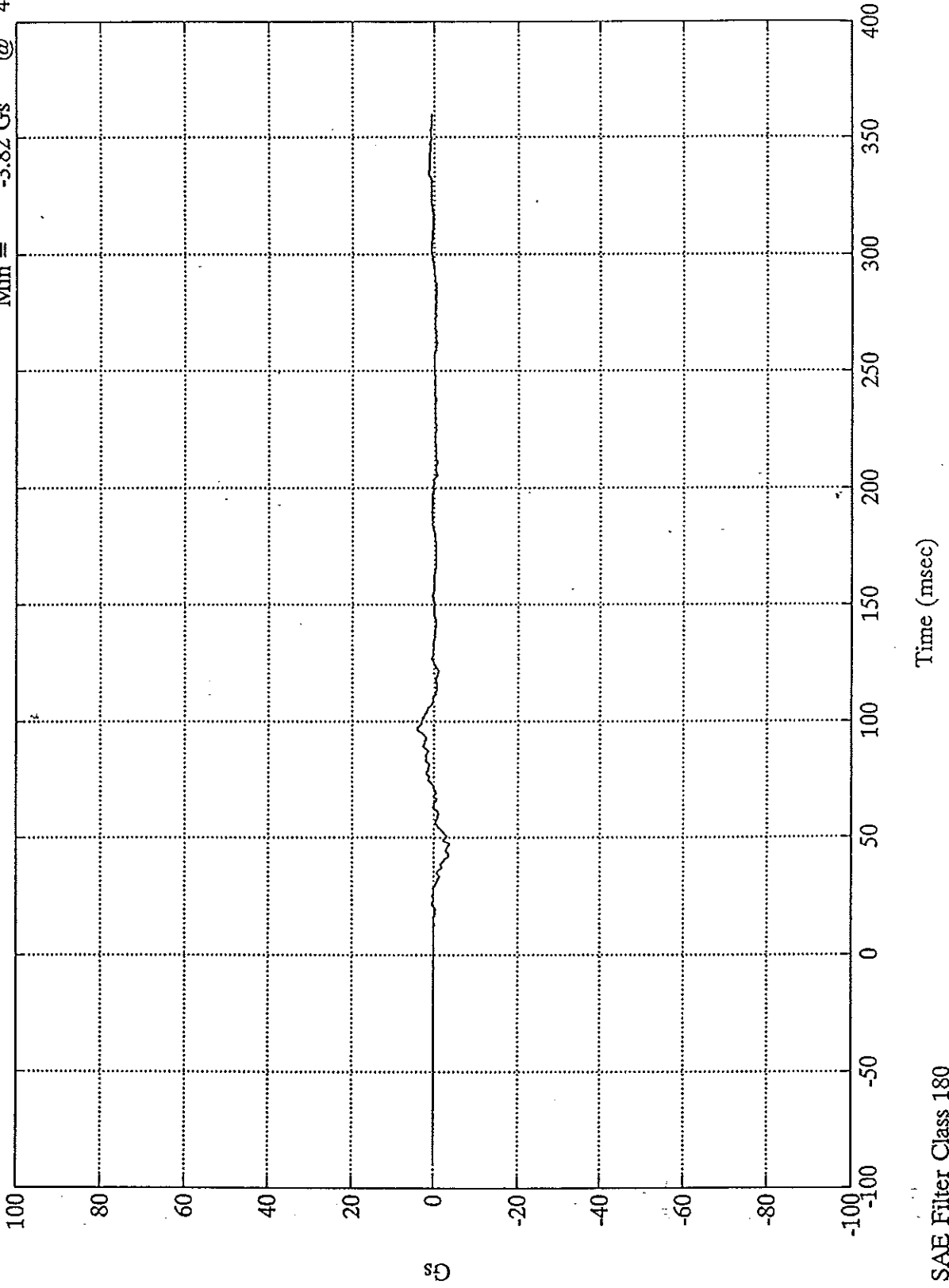
B-23

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301 Rear 30 MPH-1996 Geo Tracker

Pos. 1 Chest Y

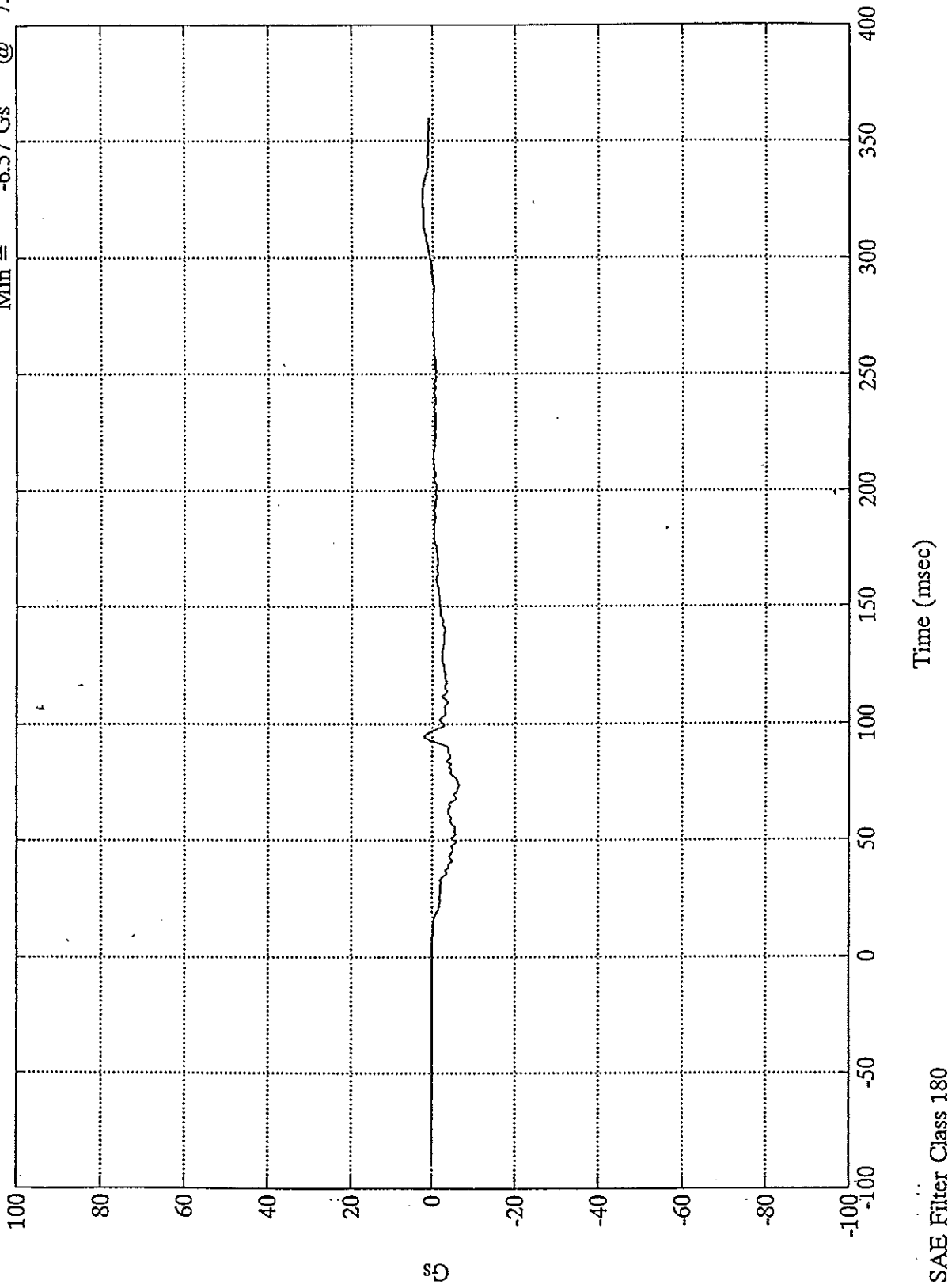
Max = 4.05 Gs @ 96.72 msec  
Min = -3.82 Gs @ 47.27 msec



301 Rear 30 MPH-1996 Geo Tracker

Pos. 1 Chest Z

Max = 2.58 Gs @ 325.32 msec  
Min = -6.57 Gs @ 73.55 msec



SAE Filter Class 180

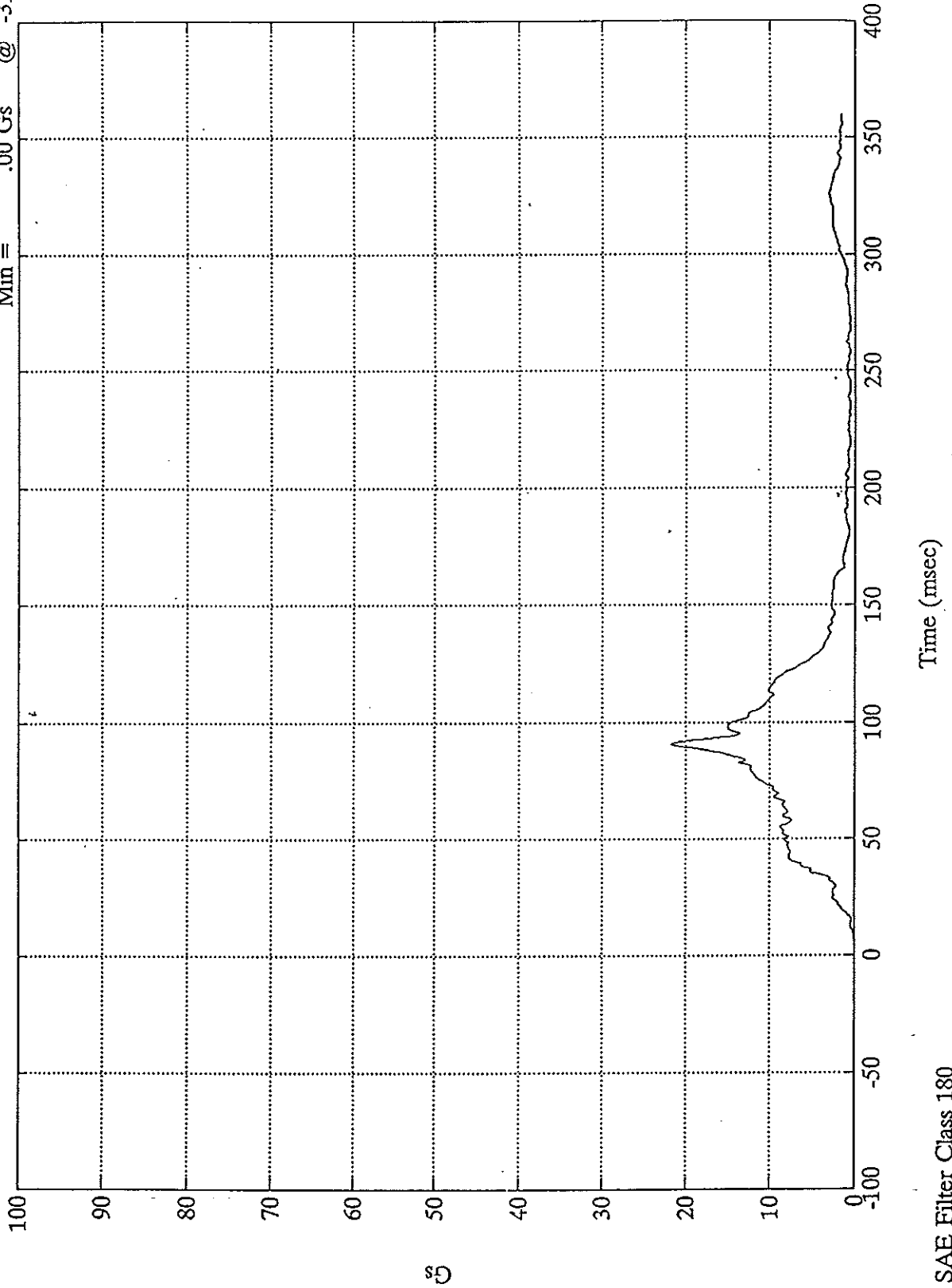
B-25

8344-10

301 Rear 30 MPH-1996 Geo Tracker

Pos. 1 Chest Resultant

Max = 21.78 Gs @ 90.72 msec  
Min = .00 Gs @ -31.44 msec



SAE Filter Class 180

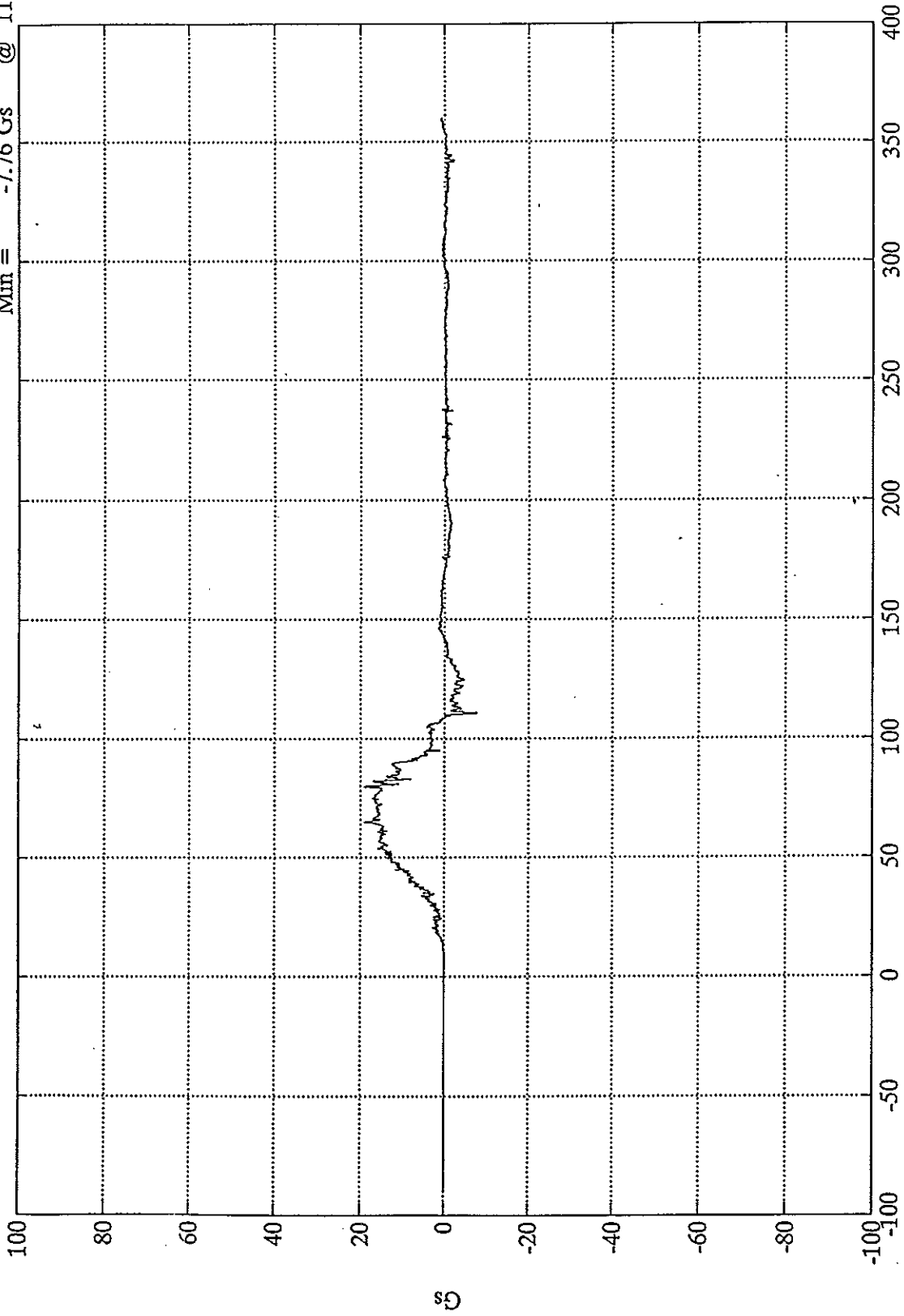
B-26

8344-10

301 Rear 30 MPH-1996 Geo Tracker

Pos. 1 Pelvic X

Max = 19.11 Gs @ 79.91 msec  
Min = -7.76 Gs @ 110.76 msec



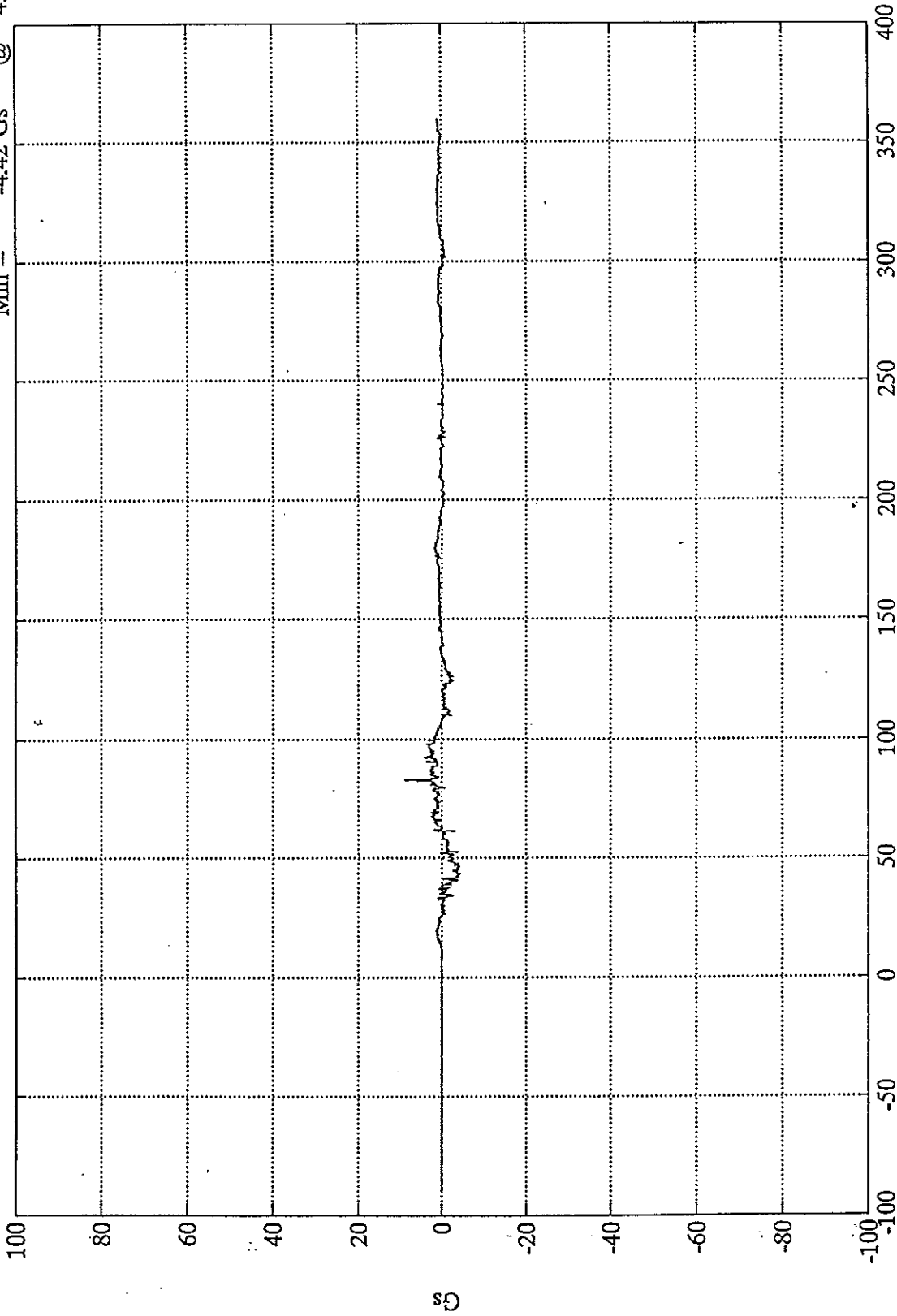
Time (msec)

SAE Filter Class 1000

301 Rear 30 MPH-1996 Geo Tracker

Pos. 1 Pelvic Y

Max = 8.70 Gs @ 82.91 msec  
Min = -4.42 Gs @ 43.56 msec



Time (msec)

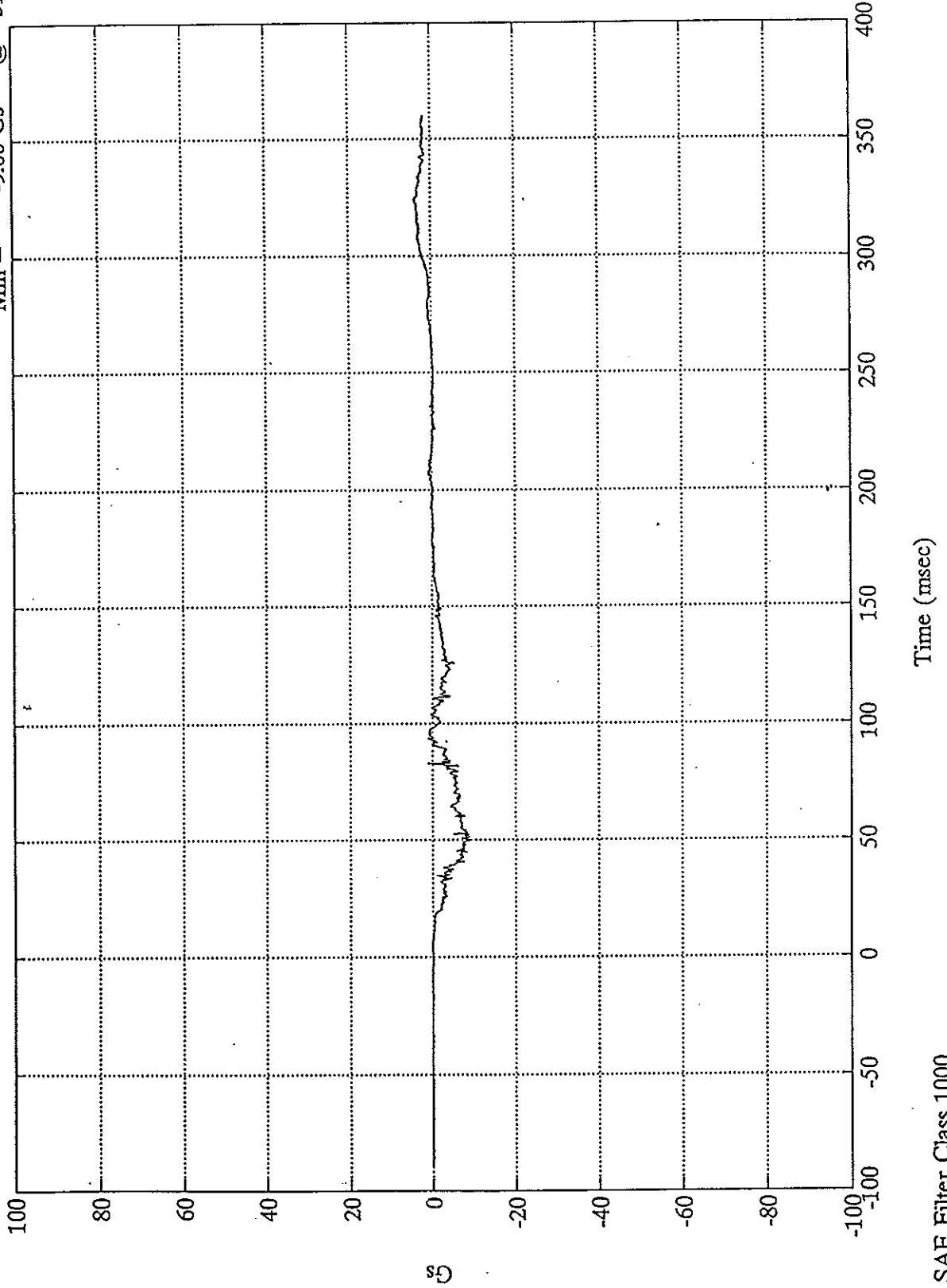
SAE Filter Class 1000



301 Rear 30 MPH-1996 Geo Tracker

Pos. 1 Pelvic Z

Max = 3.96 Gs @ 324.00 msec  
Min = -9.00 Gs @ 51.36 msec



SAE Filter Class 1000

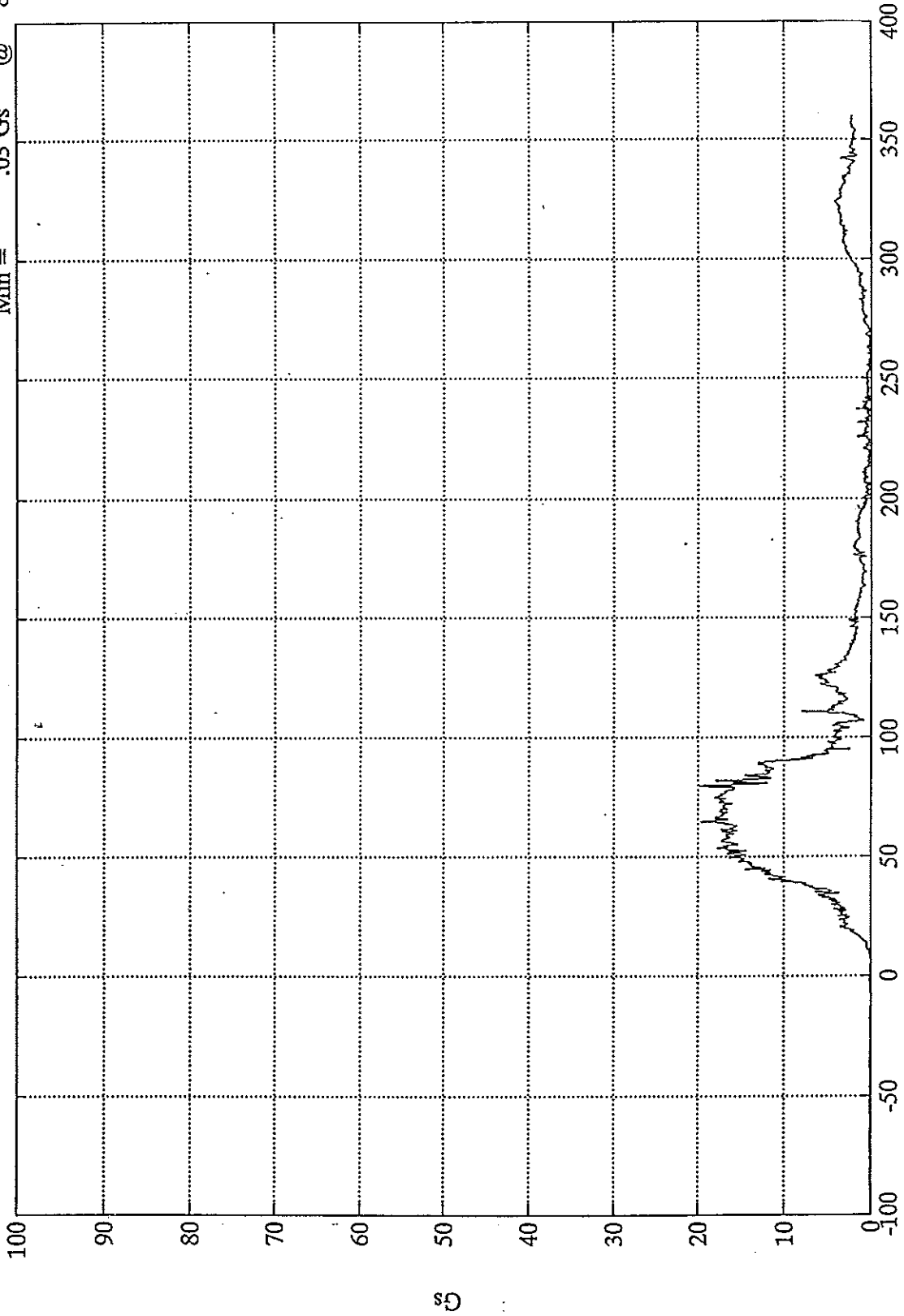
B-29

8344-10

301 Rear 30 MPH-1996 Geo Tracker

Pos. 1 Pelvic Res.

Max = 19.84 Gs @ 79.80 msec  
Min = .03 Gs @ 8.51 msec



Time (msec)

SAE Filter Class 1000

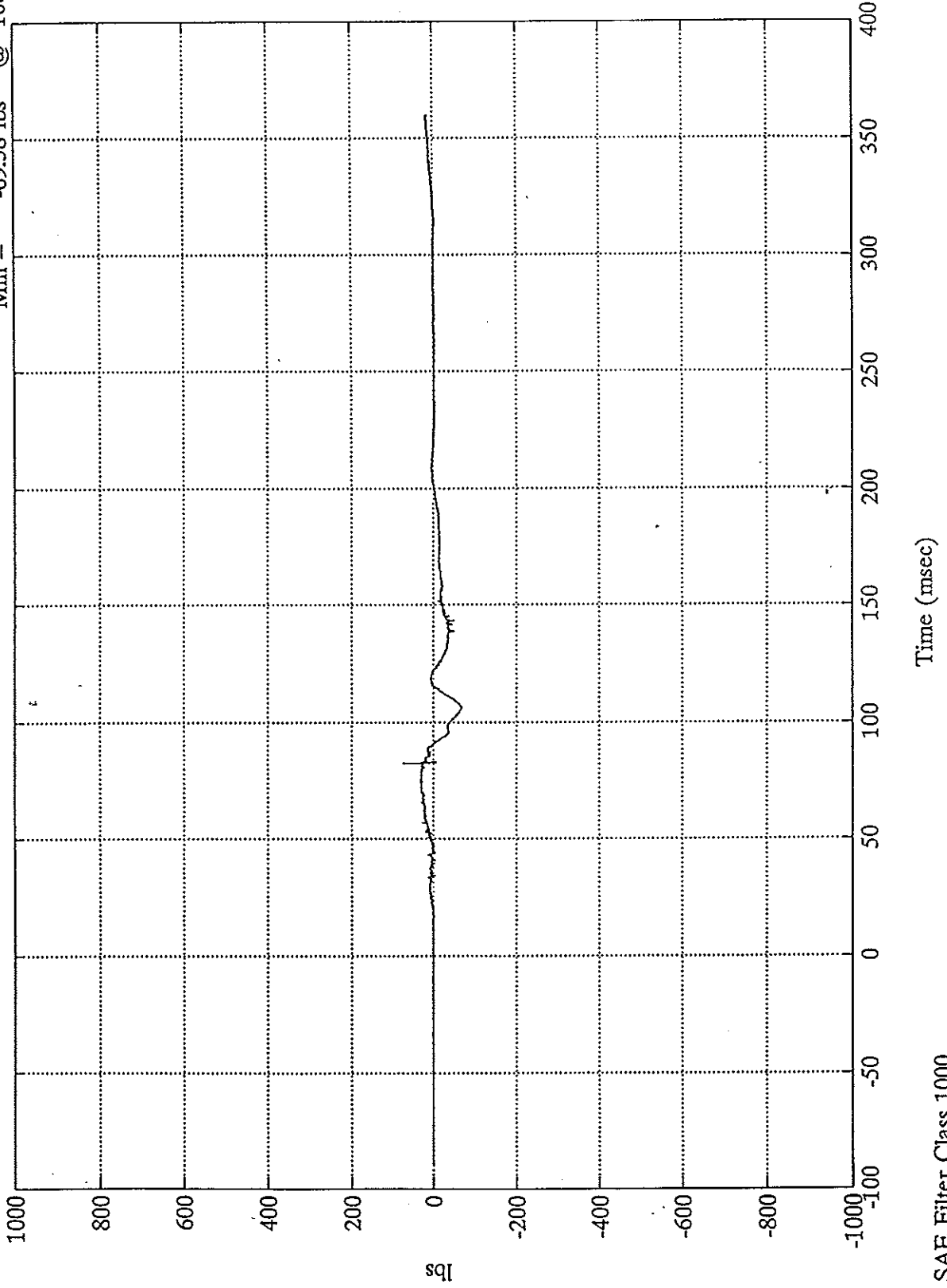
B-30

8344-10

301 Rear 30 MPH-1996 Geo Tracker

Pos. 1 Upper Neck Fx

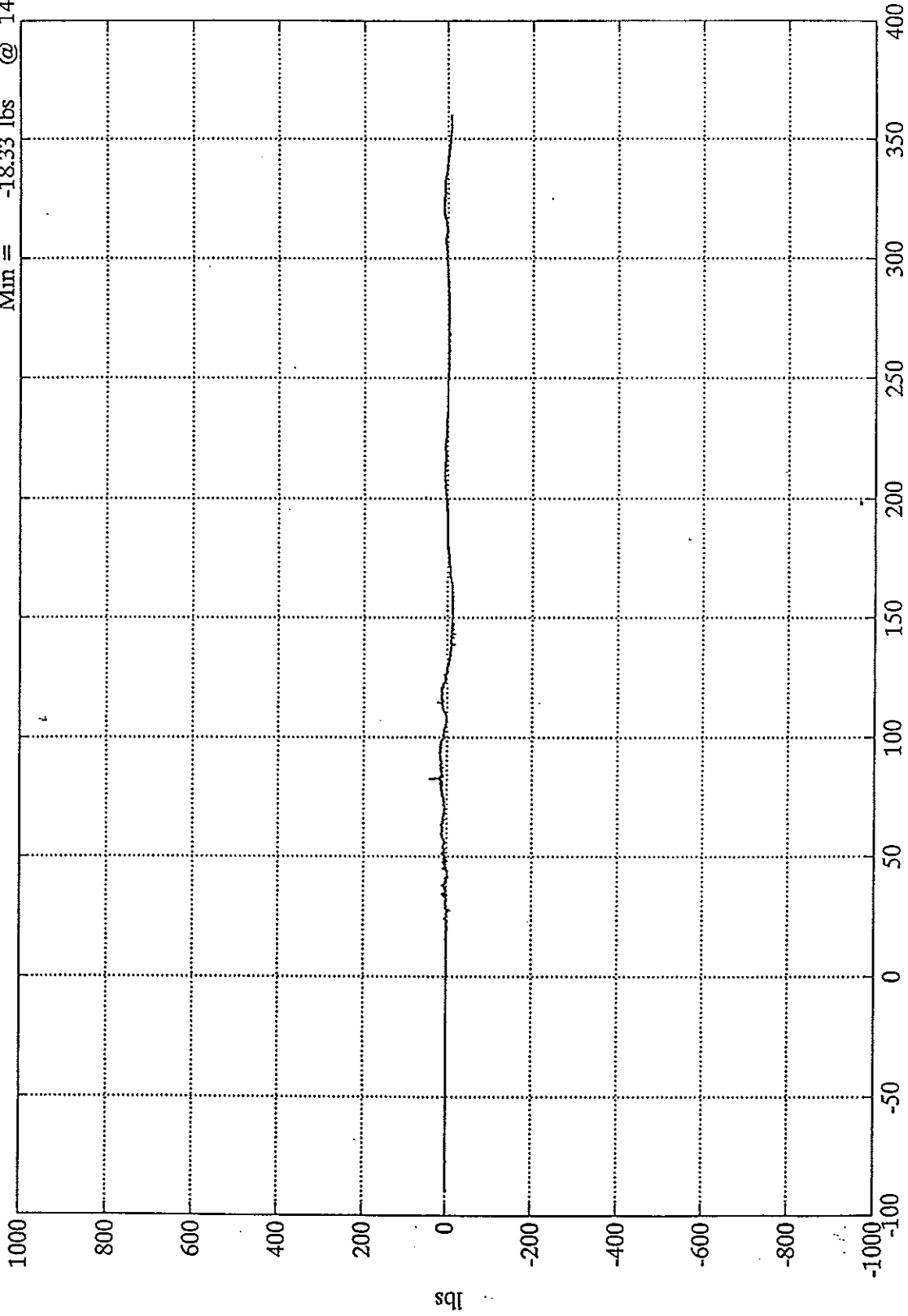
Max = 73.93 lbs @ 82.56 msec  
Min = -69.58 lbs @ 106.44 msec



301 Rear 30 MPH-1996 Geo Tracker

Pos. 1 Upper Neck Fy

Max = 41.37 lbs @ 82.56 msec  
Min = -18.33 lbs @ 143.27 msec



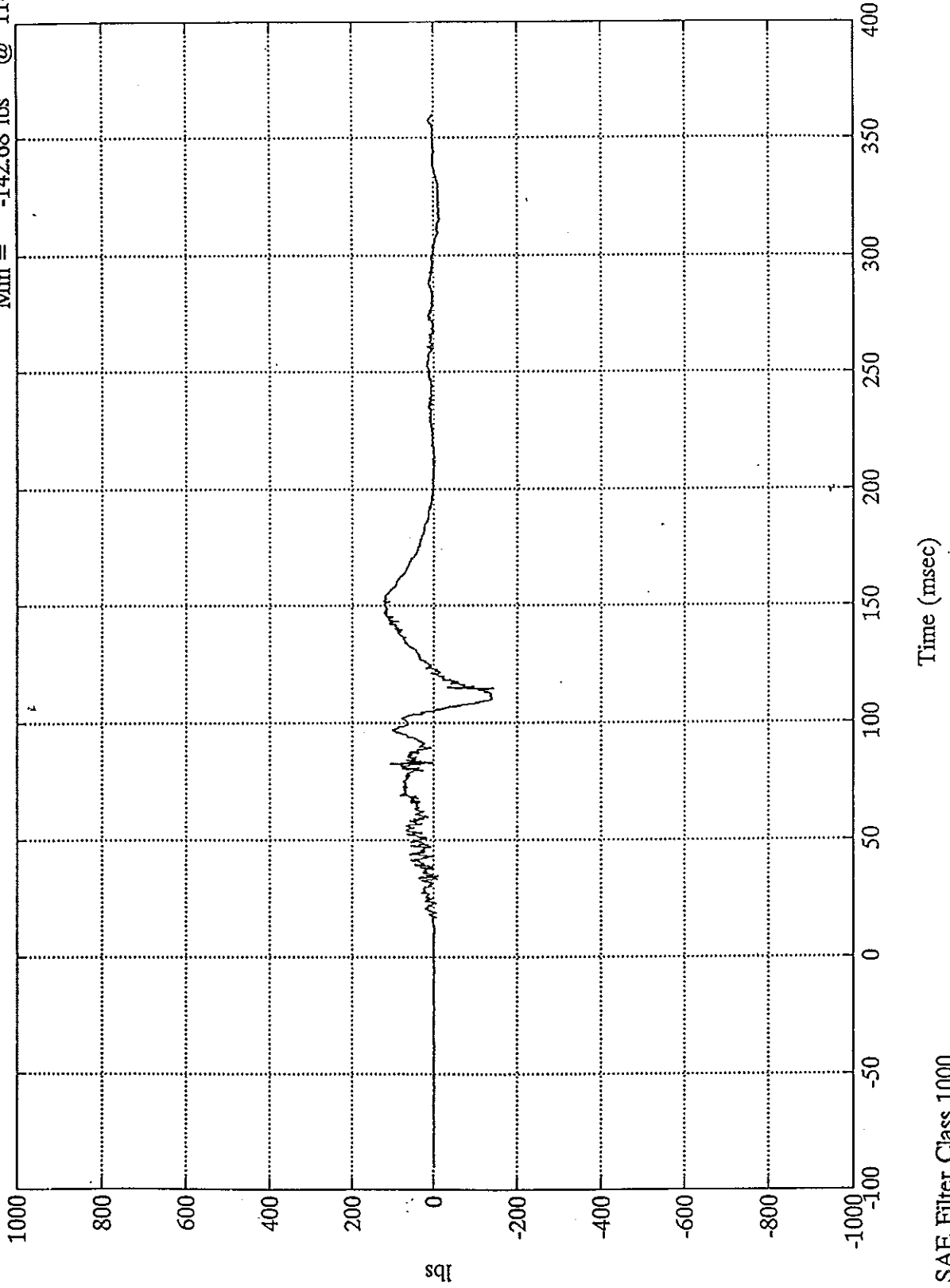
Time (msec)

SAE Filter Class 1000

301 Rear 30 MPH-1996 Geo Tracker

Pos. 1 Upper Neck Fz

Max = 123.45 lbs @ 152.04 msec  
Min = -142.68 lbs @ 114.48 msec



SAE Filter Class 1000

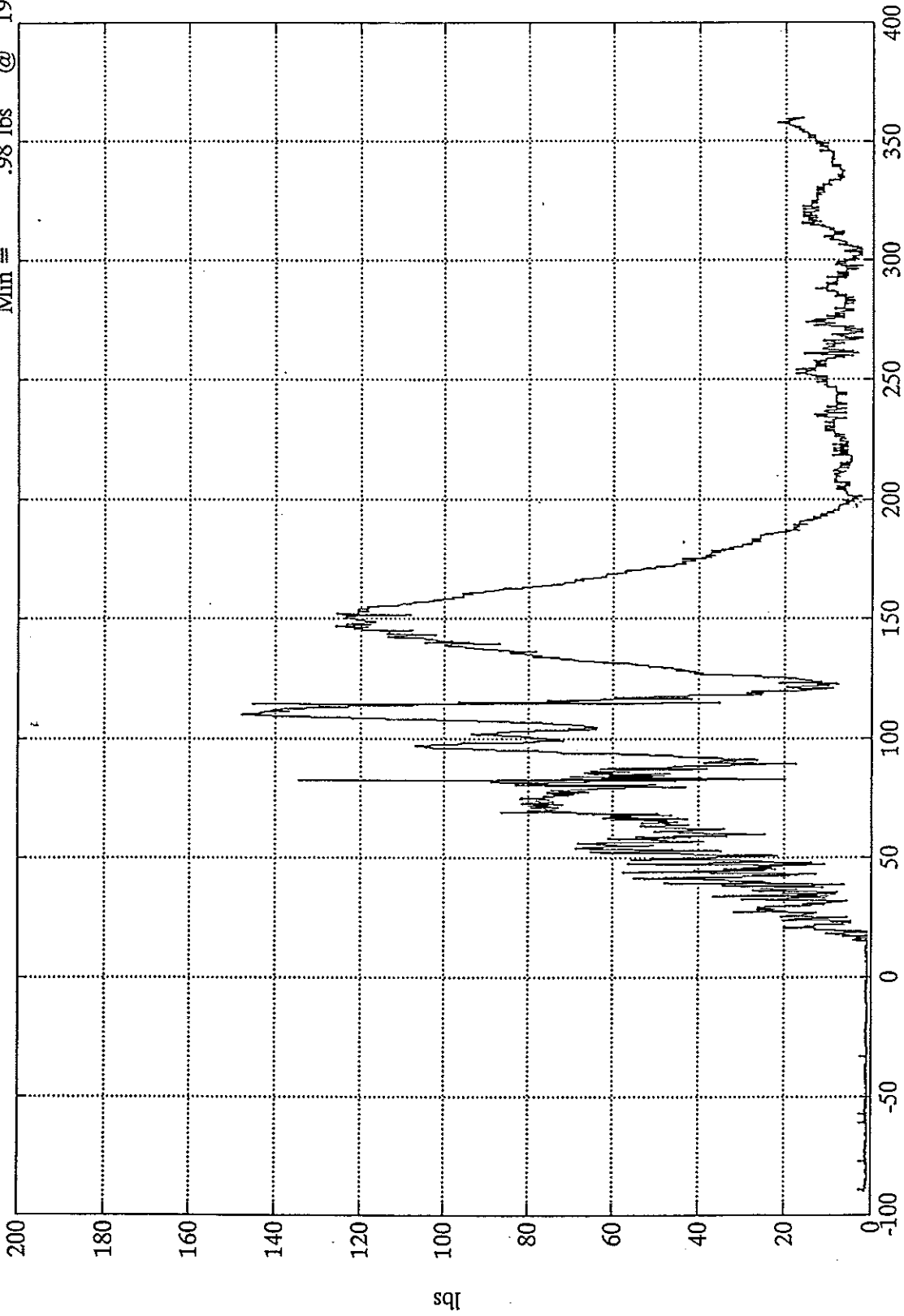
B-33

8344-10

301 Rear 30 MPH-1996 Geo Tracker

Pos. 1 Upper Neck F(Res)

Max = 147.64 lbs @ 110.16 msec  
Min = .98 lbs @ 19.19 msec



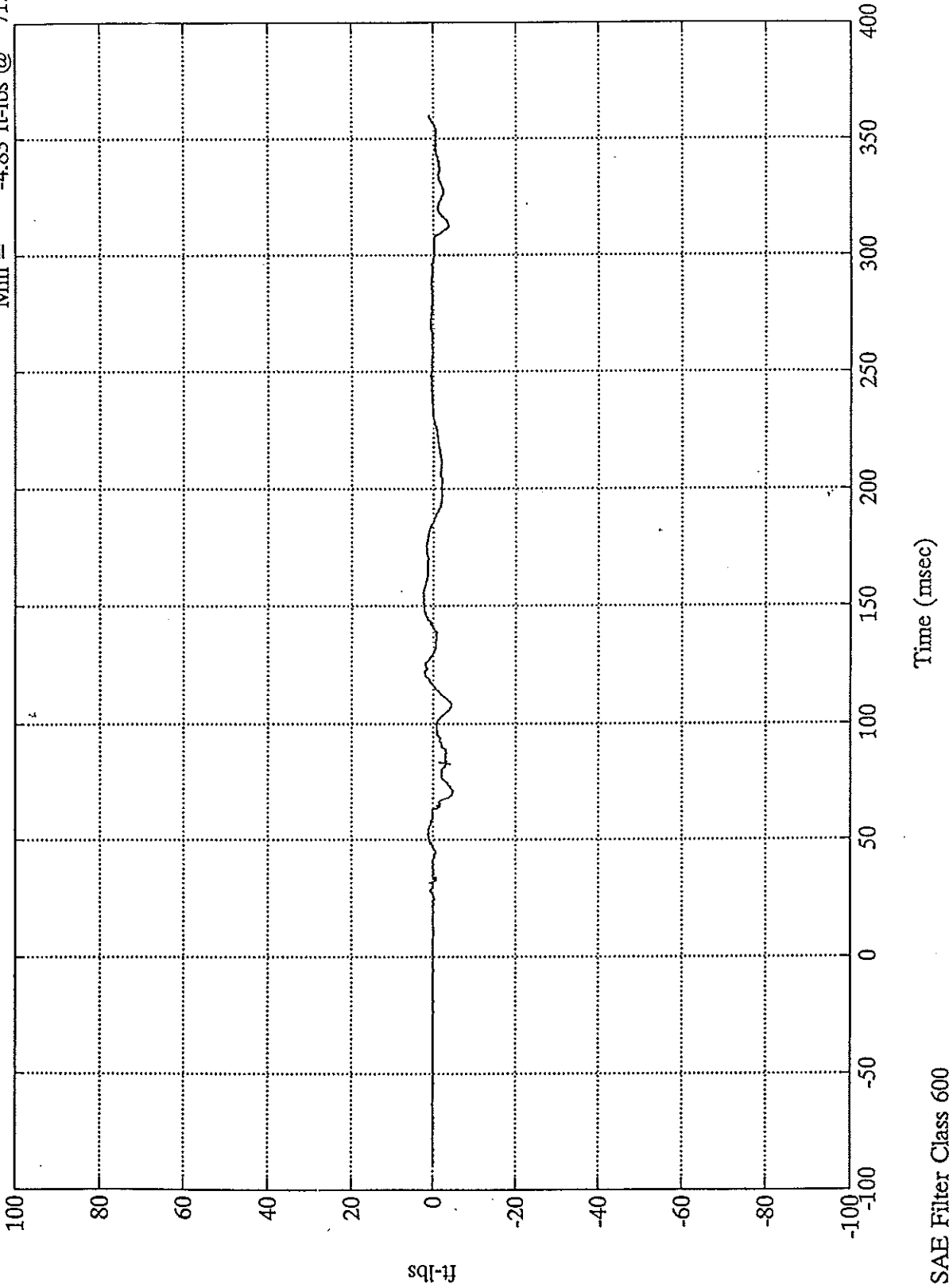
Time (msec)

SAE Filter Class 1000

301 Rear 30 MPH-1996 Geo Tracker

Pos. 1 Upper Neck Mx

Max = 2.57 ft-lbs @ 151.68 msec  
Min = -4.83 ft-lbs @ 71.04 msec



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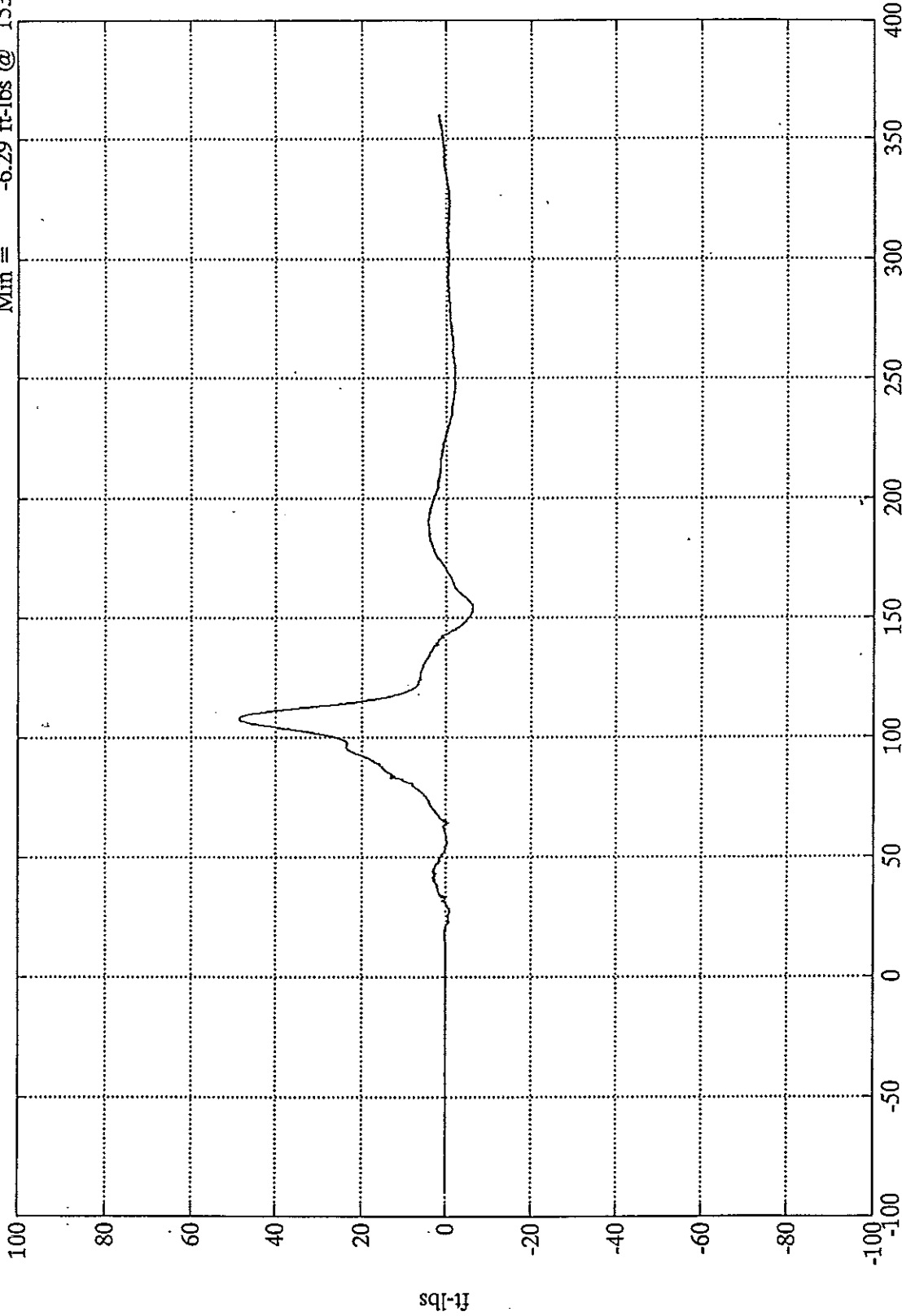
8344-10



301 Rear 30 MPH-1996 Geo Tracker

Pos. 1 Upper Neck My

Max = 48.67 ft-lbs @ 107.88 msec  
Min = -6.29 ft-lbs @ 153.24 msec



Time (msec)

SAE Filter Class 600

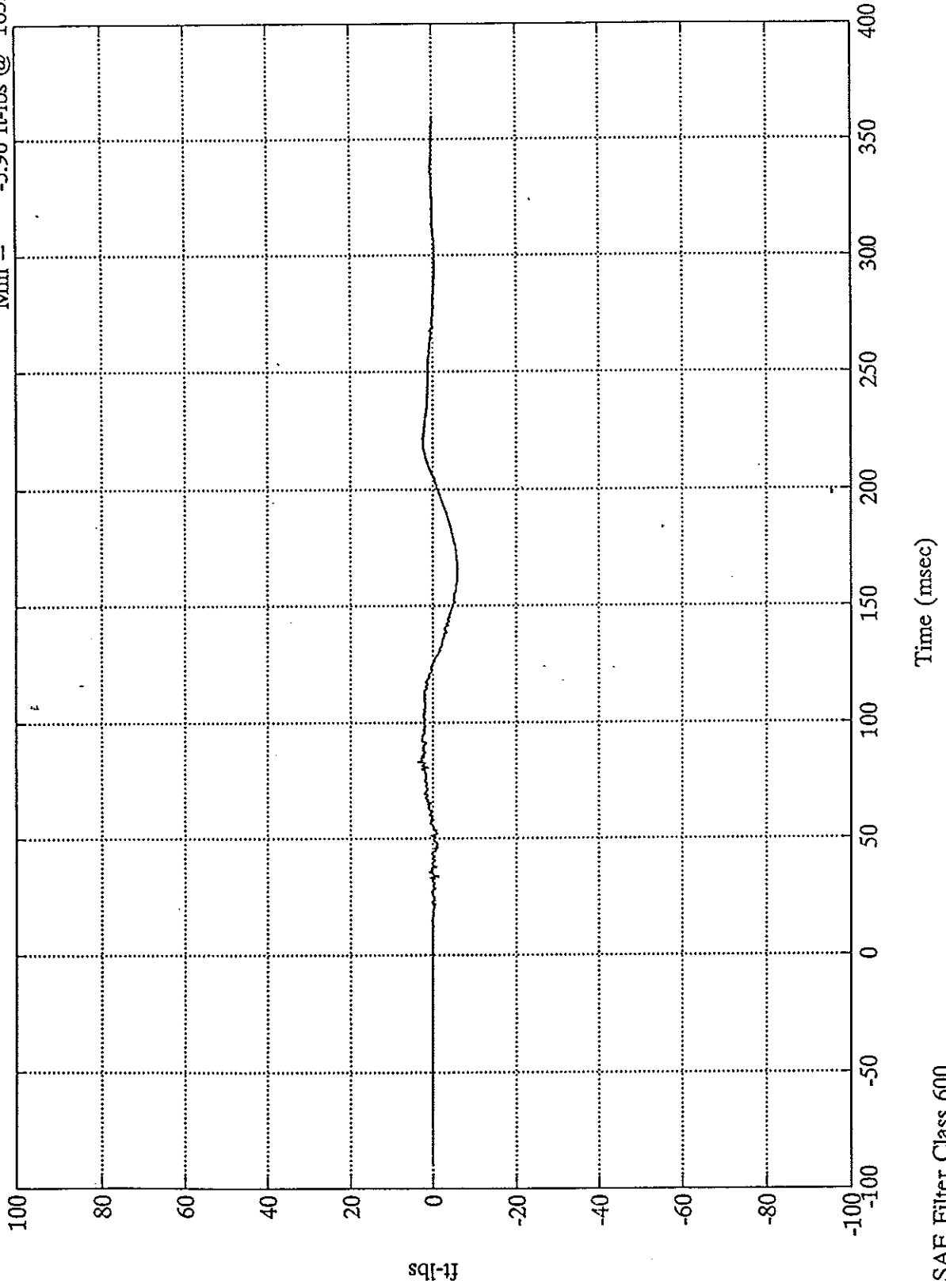
B-36

8344-10

301 Rear 30 MPH-1996 Geo Tracker

Pos. 1 Upper Neck Mz

Max = 3.56 ft-lbs @ 83.15 msec  
Min = -5.90 ft-lbs @ 165.83 msec



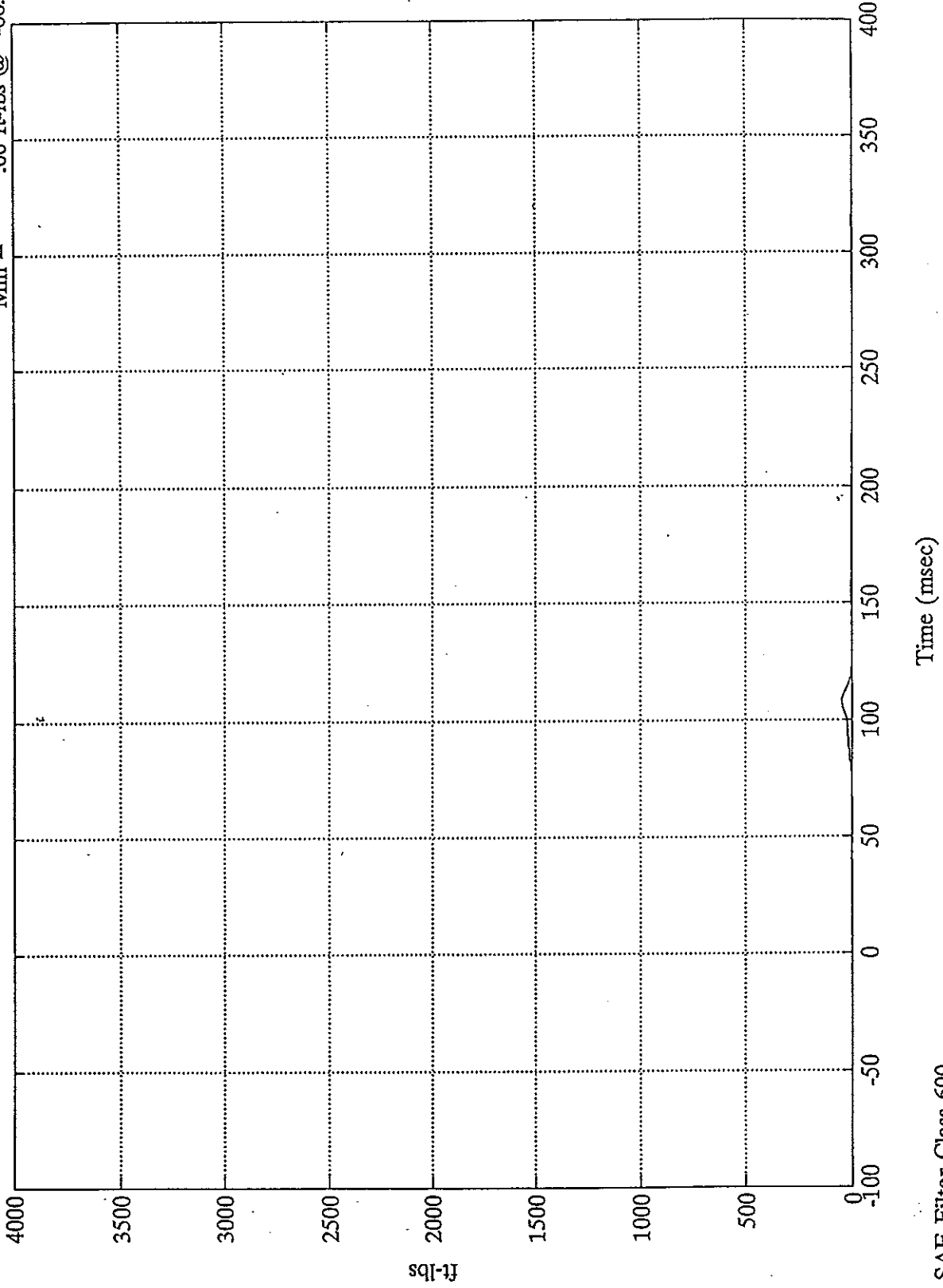
B-37

8344-10

301 Rear 30 MPH-1996 Geo Tracker

Pos. 1 Neck Moment Res.

Max = 48.91 ft-lbs @ 107.88 msec  
Min = .00 ft-lbs @ -66.24 msec



SAE Filter Class 600

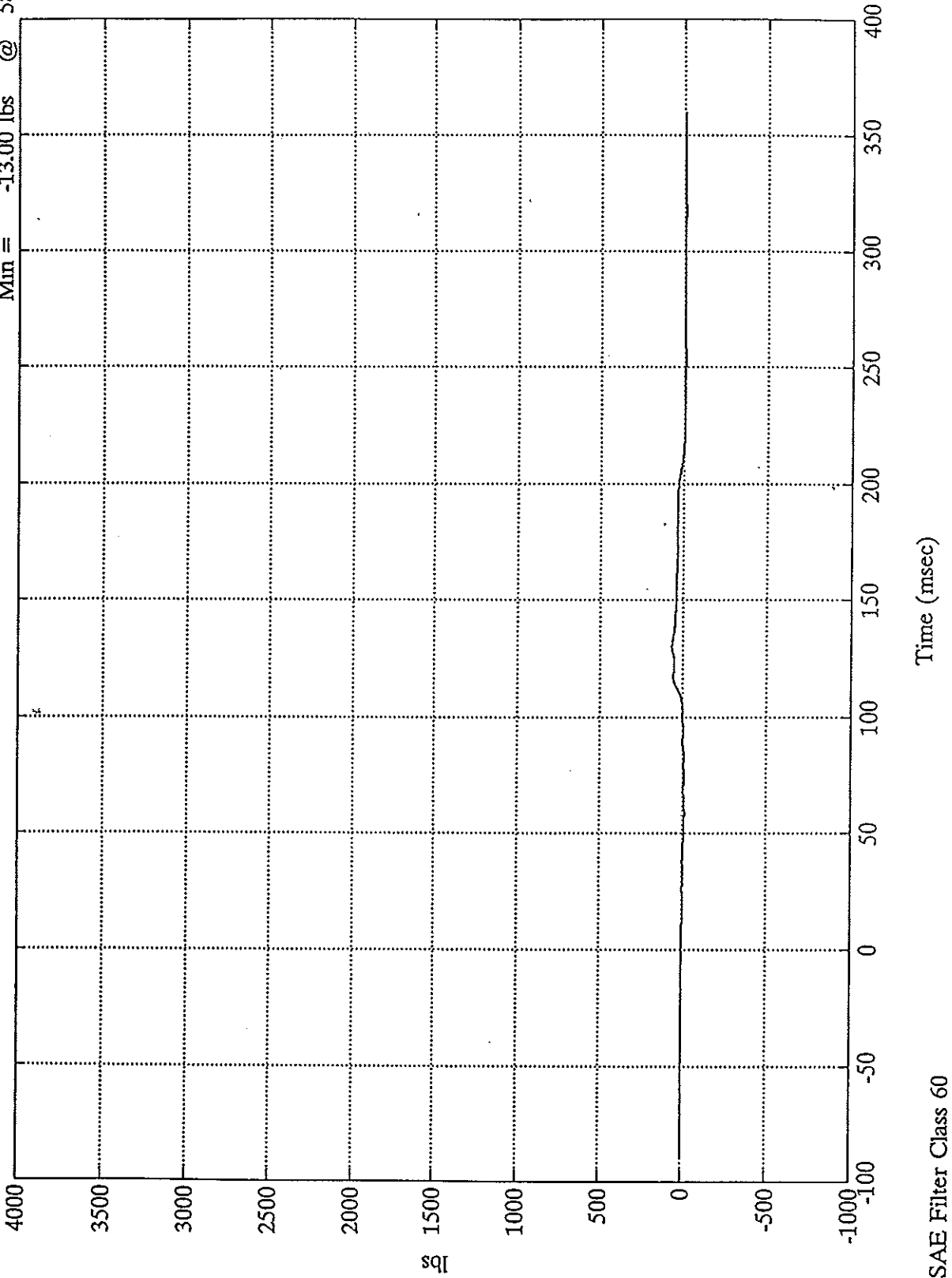
B-38

8344-10

301 Rear 30 MPH-1996 Geo Tracker

Pos. 1 Lap Belt Load

Max = 66.28 lbs @ 130.08 msec  
Min = -13.00 lbs @ 58.68 msec



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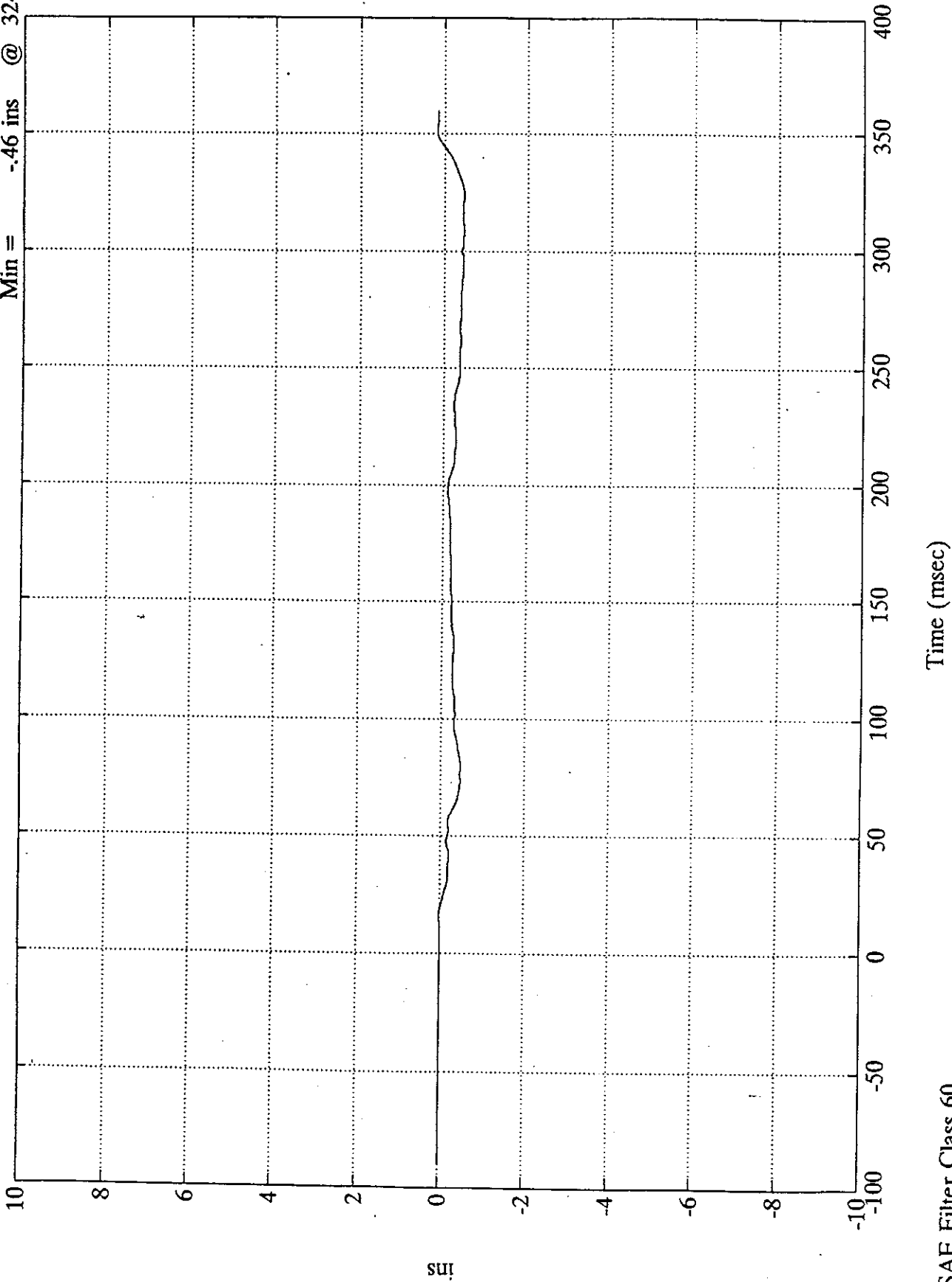
8344-10

S 211764

301 Rear 30 MPH-1996 Geo Tracker

Pos. 1 Belt Spoolout

Max = .18 ins @ 351.24 msec  
Min = -.46 ins @ 324.00 msec



SAE Filter Class 60

S 211765