

12878

REPORT NUMBER: 301-CAL-98-4

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

**MITSUBISHI MOTORS
1998 MITSUBISHI GALANT
4-DOOR SEDAN**

NHTSA NUMBER: CW5600

CALSPAN TEST NUMBER: 8412-4

CALSPAN CORPORATION
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BUFFALO, NEW YORK 14225



March 2, 1998

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

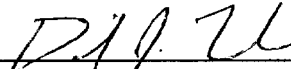
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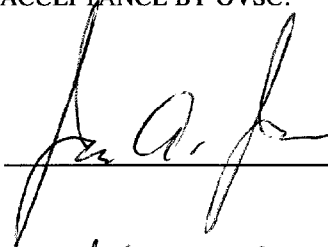
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16. Abstract Compliance tests were conducted on the subject 1998 Mitsubishi Galant 4-Door Sedan in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-301-01 for the determination of FMVSS 301 compliance. Test failures identified were as follows: The test vehicle appeared to comply with all requirements of FMVSS 301 "Fuel System Integrity."			
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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 Corporation under Contract No. DTNH22-95-D-11000. The purpose of this test was to determine if the subject vehicle, a 1998 Mitsubishi Galant 4-Door Sedan, 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 3286 pound 1998 Mitsubishi Galant 4-Door Sedan was impacted from the rear by a 3961 pound moving barrier at a velocity of 29.3 mph. The test was performed by the Calspan Corporation on March 2, 1998.

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 13.4 inches. Pre- and post-test photographs of the vehicle can be found in appendix A.

The 16.9 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.: CW5600 Test Mode: 30 mph Rear Barrier
 Test Date: March 2, 1998 Time: 11:30 Temperature : 42 °F
 Vehicle Make/Model/Body Style: 1998 Mitsubishi Galant 4-Door Sedan
 Vehicle Test Weight: 3286 lbs Impact Velocity: 29.3 mph
 Static Crush: Left Side = 11.3 inches
 Right Side = 15.0 inches
 Centerline = 13.8 inches
 Average Crush: 13.4 inches

TYPE OF FRONT OCCUPANT RESTRAINT SYSTEM INSTALLED IN TEST VEHICLE:

Driver's DSP: Seatbelt, Airbag, Knee Bolster
 Right Passenger's DSP: Seatbelt, Airbag, Knee Bolster

VISIBLE DUMMY CONTACT POINTS:

Driver: The back of the head to the center of the headrest.

 Passenger: The back of the head to the center of the headrest.

DOOR OPENING DATA: Closed/Operable - Left Front
 Closed/operable - Right Front

Stoddard Solvent Spillage from Vehicle's Fuel System: There was no Stoddard solvent leakage from any portion
of the vehicle fuel system during the impact, the 25 minutes following the impact, nor during any phase
of the static vehicle rollover.

Remarks: The rear window shattered during the impact. Both the driver and passenger seatbacks reclined 10°
rearward from their pre-test positions during the impact. Both the seatback recline ratchet mechanisms
and the seat track adjusters remained operable after the impact. The vehicle's rear doors remained
closed but were inoperable after the impact. They were opened with the use of a pry bar.

Table 2

GENERAL TEST AND VEHICLE PARAMETER DATATEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 1998 Mitsubishi Galant 4-Door Sedan

NHTSA No.: CW5600 ; VIN: 4A3AJ56G9WE036684 ; Color: Green

Engine Data: 4 cylinders; - CID; 2.4 Liters; - cc

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

Transmission Data: 5 speeds; X Manual; - 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: 1/23/98 ; Odometer Reading 11 miles

Selling Dealer: (DBA) Cortese Mitsubishi

& Address: 3875 W. Henrietta Road Rochester, NY 14623

DATA FROM TIRE VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by: Mitsubishi Motors

Date of Manufacture: 9/97

GVWR: 3913 lbs.; GAWR: 2172 lbs. FRONT; 1808 lbs. REAR

DATA FROM TIRE PLACARD:

Location of Placard on Vehicle: Left Front Door

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

Recommended Tire Size: 185/70R14

* Recommended Cold Tire Pressure: 32 psi FRONT; 29 psi REAR

Size of Tires on Test Vehicle: 185/70R14

Type of Spare Tire: Space Saver

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>3</u> Rear;	<u>5</u> Total
Vehicle Capacity Weight (VCW)	=	<u>827</u>	lbs.
No. of Occupants x 150 lbs.	=	<u>750</u>	lbs.
Rated Cargo/Luggage Weight (RCLW)	=	<u>77</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	=	<u>894.0</u>	lbs.	Right Rear	=	<u>536.0</u>	lbs.
Left Front	=	<u>876.0</u>	lbs.	Left Rear	=	<u>587.0</u>	lbs.
TOTAL FRONT	=	<u>1,770</u>	lbs.	TOTAL REAR	=	<u>1,123</u>	lbs.
TOTAL DELIVERED WEIGHT = <u>2,893</u> lbs.							
% of Total Front of Vehicle Weight = <u>61</u>				% of Total Rear Weight = <u>39</u> %			

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight	=	<u>2,893</u>	lbs.
Rated Cargo/Luggage Weight (RCLW)	=	<u>77</u>	lbs.
Weight of 2 p.572 Dummies, 167 & 164 lbs	=	<u>331</u>	lbs.
TARGET TEST WEIGHT	=	<u>3,301</u>	lbs.

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 62 POUNDS OF CARGO WEIGHT:

Right Front	=	<u>991.0</u>	lbs.	Right Rear	=	<u>624.0</u>	lbs.
Left Front	=	<u>1015.0</u>	lbs.	Left Rear	=	<u>656.0</u>	lbs.
TOTAL FRONT	=	<u>2,006</u>	lbs.	TOTAL REAR	=	<u>1,280</u>	lbs.
TOTAL TEST WEIGHT = <u>3,286.0</u> lbs.							
% of Total Front Weight = <u>61.0</u> %				% of Total Rear Weight = <u>39.0</u> %			

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

Type of Ballast: None

Method of Securing Ballast: Not Applicable

Vehicle Components Removed for Weight Reduction: Wheel covers, Battery was moved off-board.

VEHICLE ATTITUDE (all dimension in inches):

AS DELIVERED:	RF	<u>27.4</u>	LF	<u>27.0</u>	RR	<u>27.4</u>	LR	<u>27.0</u>
---------------	----	-------------	----	-------------	----	-------------	----	-------------

AS TESTED:	RF	<u>25.8</u>	LF	<u>26.5</u>	RR	<u>26.0</u>	LR	<u>26.6</u>
------------	----	-------------	----	-------------	----	-------------	----	-------------

Vehicle's Wheel Base: 103.7 in.

Location of Vehicle's C.G.: 40.4 inches rearward of front wheel center.

FUEL SYSTEM DATA:

Fuel System Capacity From Owner's Manual = 16.9 gallons

Usable Capacity Figure Furnished by COTR = 16.9 gallons

Test Volume Range (91 to 94% of Usable Capacity) = 15.4 to 15.9 gallons

ACTUAL TEST VOLUME= 15.6 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 operated.	
Details of Fuel System:	Filler - Right side, behind rear axle; Tank - Center, ahead of rear axle;
Lines - Inside right frame rail.	

Table 3

MOVING BARRIER PARAMETER DATA

WEIGHT OF MOVING BARRIER:

Right Front	=	<u>1113</u>	lbs.	Right Rear	=	<u>868</u>	lbs.
Left Front	=	<u>1102</u>	lbs.	Left Rear	=	<u>878</u>	lbs.
TOTAL FRONT	=	<u>2,215</u>	lbs.	TOTAL REAR	=	<u>1,746</u>	lbs.
TOTAL BARRIER WEIGHT	=	<u>3,961</u>	lbs.				

MOVING BARRIER DIMENSIONS:

Barrier Face Height:	<u>60.0</u>	in.
Barrier Face Width:	<u>78.0</u>	in.
Barrier Face		
Ground Clearance:	<u>5.0</u>	in.
Tread Width:	<u>59.5</u>	in.
Wheel Base:	<u>120.0</u>	in.
Location of C.G.:	X: <u>52.9</u> inches rearward of front wheel center.	
	Y: <u>0.0</u> inches from longitudinal-vertical plane of symmetry.	
	Z: <u>16.3</u> inches above ground.	

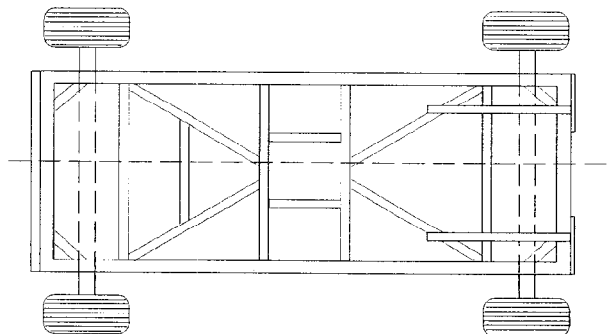
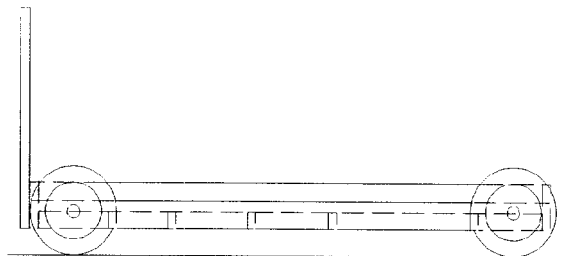


Table 4

POST IMPACT DATA

TYPE OF TEST:

Type of Test: Rear Barrier Impact Angle: 0°
 Test Date: March 2, 1998 Time: 11:30 Temperature: 42 °F
 Vehicle NHTSA No.: CW5600
 Required Impact Velocity Range: 28.9 to 29.9 mph

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

Trap No. 1 = 29.3 mph; Trap No. 2 = 29.3 mph
 Average Impact Speed = 29.3 mph

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

Vehicle Length:

Pre-Test	Right =	<u>183.3</u>	; C/L =	<u>188.3</u>	; Left =	<u>183.3</u>
Post-Test	Right =	<u>168.3</u>	; C/L =	<u>174.5</u>	; Left =	<u>172.0</u>
Crush	Right =	<u>15.0</u>	; C/L =	<u>13.8</u>	; Left =	<u>11.3</u>
AVERAGE	=	<u>13.4</u>	inches			

Figure 1

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

DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS

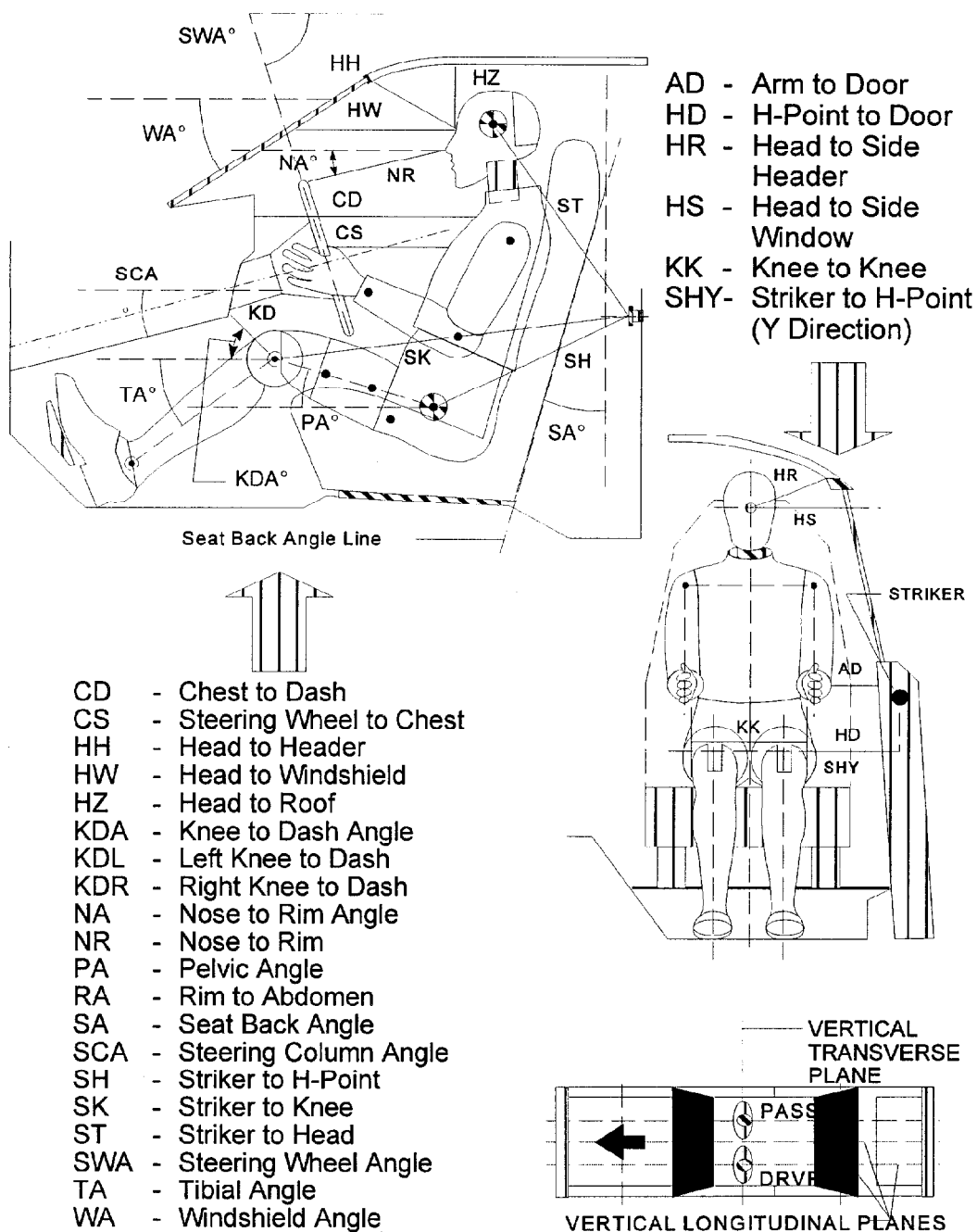


Table 5

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

	DRIVER (Serial #116)		
WA°	29 deg.		
SWA°	69 deg.		
SCA°	21 deg.		
SA°	24 deg.		
HZ	7.3		
HH	12.0		
HW	22.9		
HR	8.8		
NR	15.5	Angle	-13 deg.
CD	21.9		
CS	11.8		
RA	8.2		
KDL	7.9	Angle (KDA)	30 deg.
KDR	7.3		
PA°	24.5 deg.		
TA°	37 deg.		
KK	9.8		
ST	20.0	Angle	4 deg.
SK	22.6	Angle	87 deg.
SH	9.4	Angle	132 deg.
SHY	10.1		
HS	12.1		
HD	7.1		
AD	4.1		

Table 6

FUEL SYSTEM INTEGRITY POST IMPACT TEST DATA

FMVSS NO. 301

TEST VEHICLE NHTSA NO.: CW5600 TEST DATE: March 2, 1998

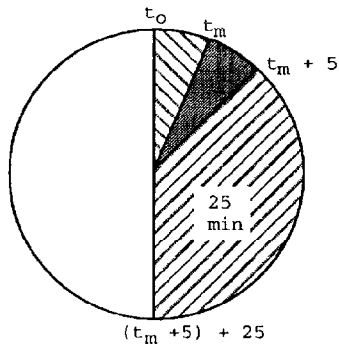
Vehicle Mfgr./Make/Model: 1998 Mitsubishi Galant 4-Door Sedan

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

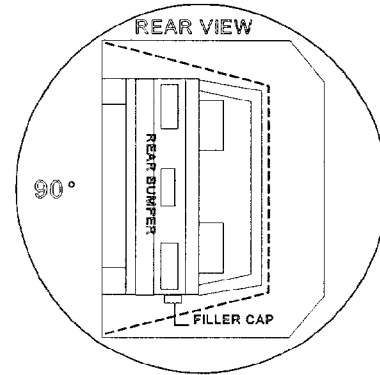
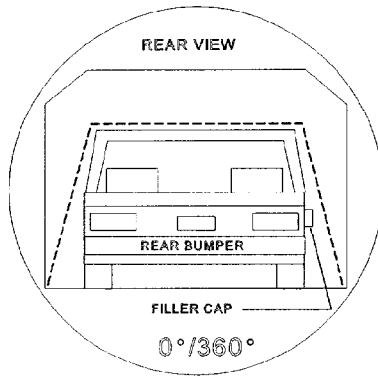
Table 7

FMVSS NO. 301 STATIC ROLLOVER DATA SHEETTEST PHASE :

0-90 Deg.

Vehicle NHTSA ID No. :

CW5600

I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 1 minutes 10 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 00 seconds

TOTAL 6 minutes 10 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):

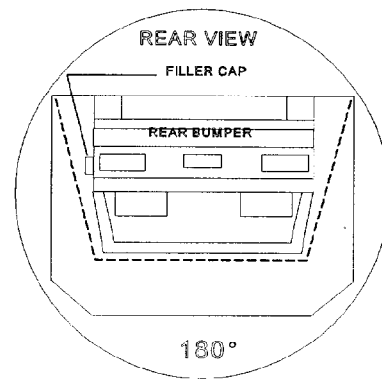
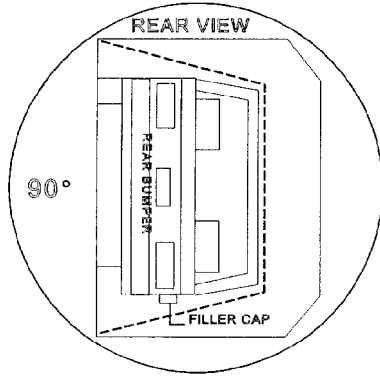
None

Table 7

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

TEST PHASE :
90-180 Deg.

Vehicle NHTSA ID No. :
CW5600



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	<u>1</u>	minutes	<u>10</u>	seconds
FMVSS 301 Position Hold Time +	<u>5</u>	minutes	<u>00</u>	seconds
TOTAL	<u>6</u>	minutes	<u>10</u>	seconds
Next whole minute interval	<u>7</u>	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):

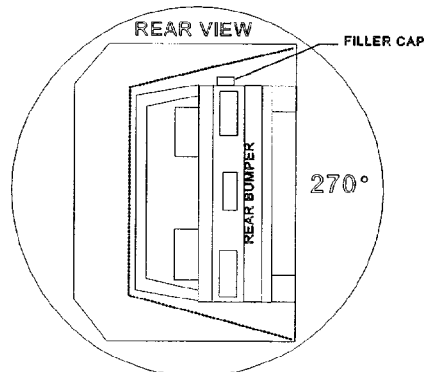
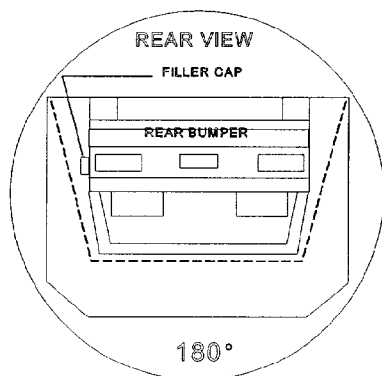
None

Table 7

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

TEST PHASE :
180-270 Deg.

Vehicle NHTSA ID No. :
CW5600

I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 1 minutes 05 seconds
 (Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 00 seconds

TOTAL 6 minutes 5 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):

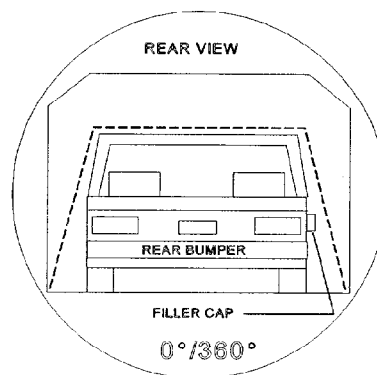
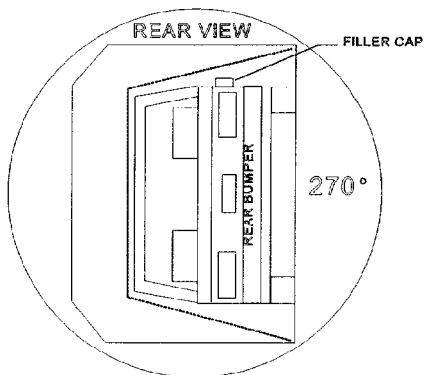
None

Table 7

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

TEST PHASE :
270-360 Deg.

Vehicle NHTSA ID No. :
CW5600



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 1 minutes 08 seconds
 (Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 00 seconds

TOTAL 6 minutes 8 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

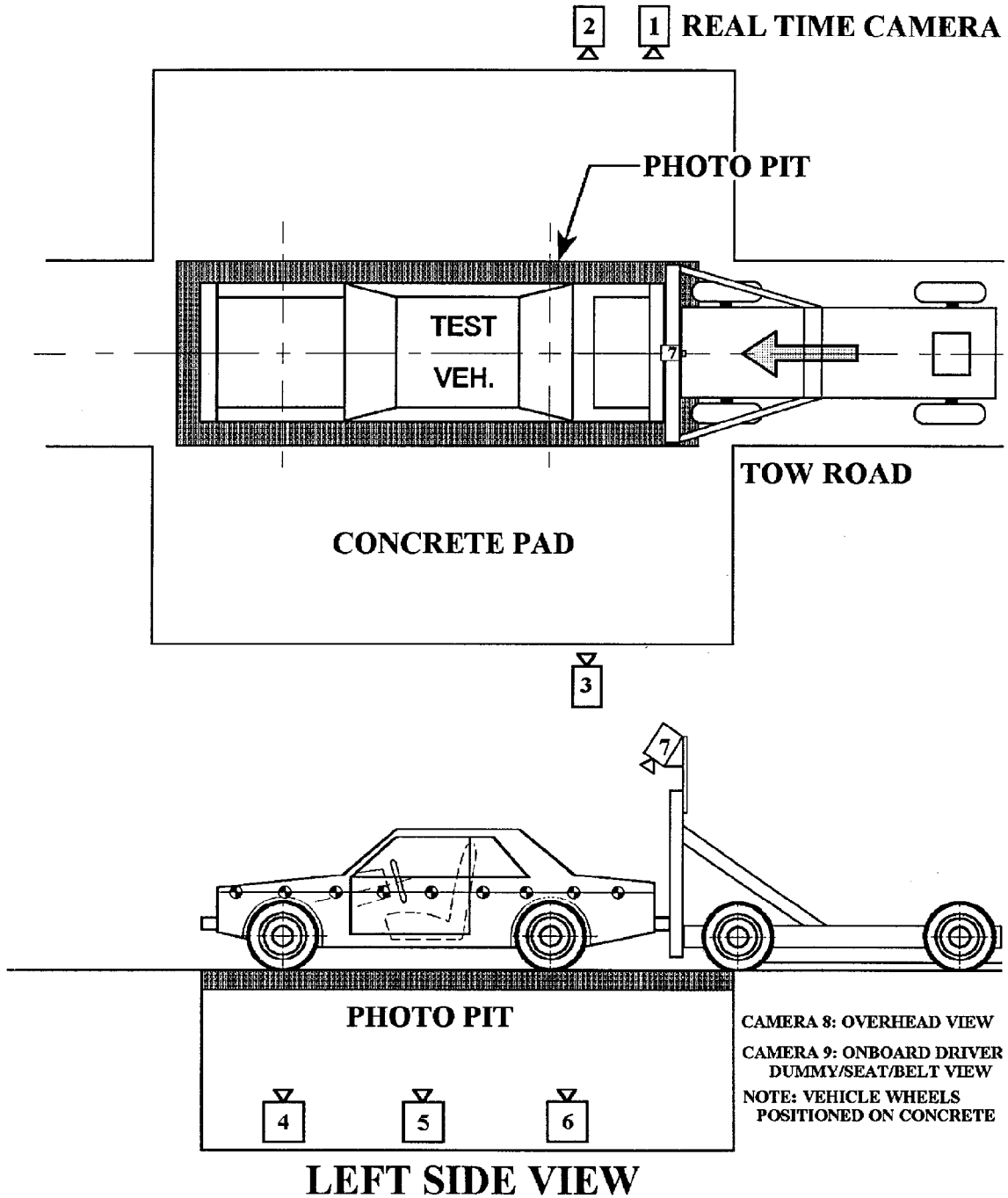


Table 8

HIGH-SPEED CAMERA LOCATIONSNHTSA No. : CW5600 Vehicle : 1998 Mitsubishi Galant 4-Door Sedan

CAMERA NO.	VIEW	CAMERA POSITIONS (inches)*			ANGLE** (degrees)	LENS (mm)	SPEED (fps)
		X	Y	Z			
1	Real-Time Camera	-	-	-	-	-	24
2	Right Side View	-445	-53.7	43.8	-1	25	1040
3	Left Side View	466	79.2	41.5	0	25	750
4	Vehicle Front Underbody View	0	138	-77	90	13	610
5	Vehicle Mid-Section Underbody View	0	74	-77	90	13	750
6	Vehicle Rear Underbody View	0	24	-77	90	13	610
7	Moving Barrier View	0	0	99	-70	7.5	500
8	Overhead Overall View	-20	0	386	-90	25	1010
9	Onboard Driver Dummy/Seat/Belt View	-	-	-	-	12.5	400

* 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

LIST OF PHOTOGRAPHS

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A-9	PRE-TEST LEFT FRONT THREE-QUARTER VIEW	A-11
A-10	POST-TEST LEFT FRONT THREE-QUARTER VIEW	A-12
A-11	PRE-TEST RIGHT REAR THREE-QUARTER VIEW	A-13
A-12	POST-TEST RIGHT REAR THREE-QUARTER VIEW	A-14
A-13	PRE-TEST FRONT UNDERBODY VIEW	A-15
A-14	POST-TEST FRONT UNDERBODY VIEW	A-16
A-15	PRE-TEST REAR UNDERBODY VIEW	A-17
A-16	POST-TEST REAR UNDERBODY VIEW	A-18
A-17	CERTIFICATION PLACARD	A-19
A-18	TIRE PLACARD	A-20
A-19	ROLLOVER 90°	A-21
A-20	ROLLOVER 180°	A-22
A-21	ROLLOVER 270°	A-23
A-22	ROLLOVER 360°	A-24

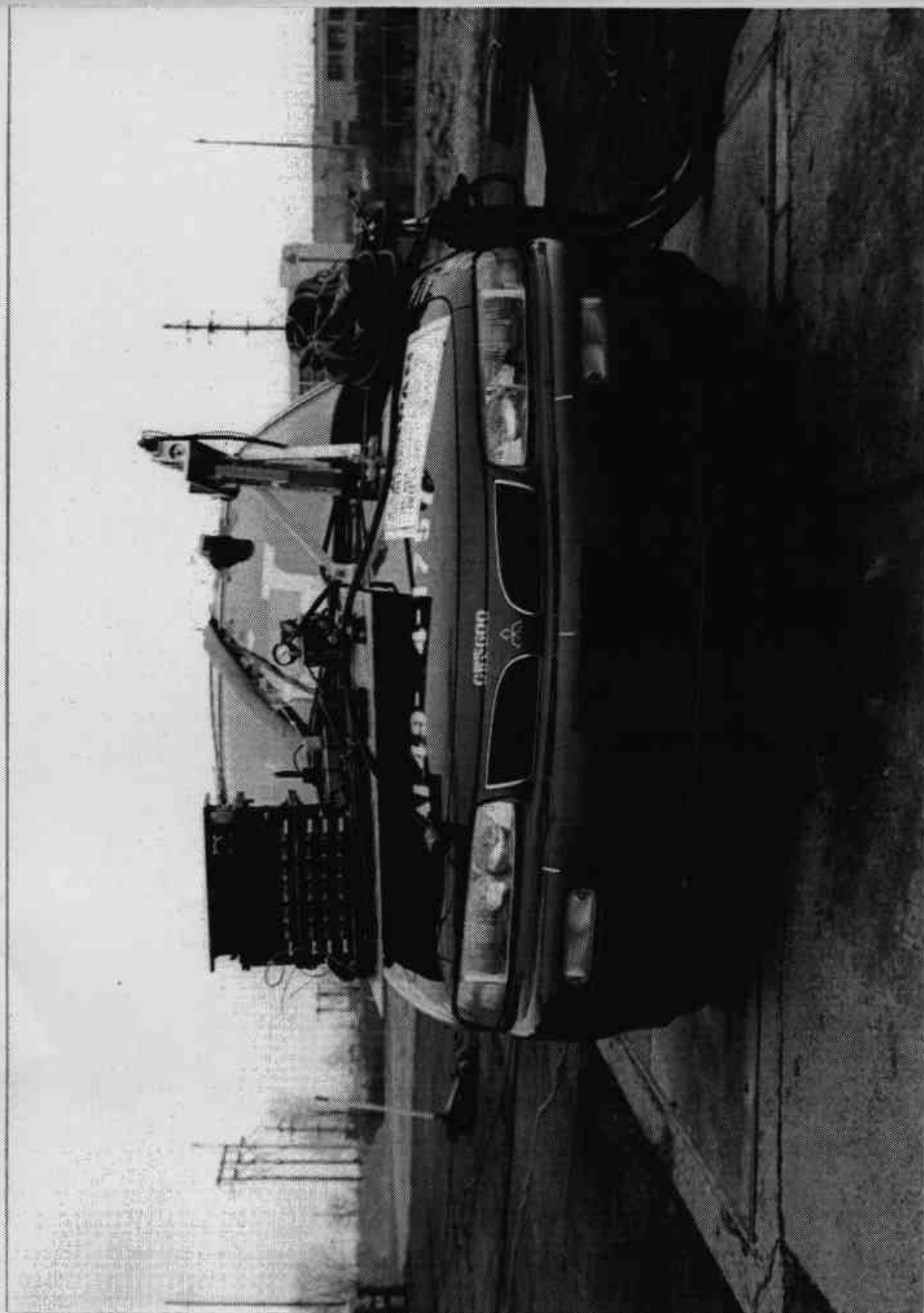


Figure A-1 PRE-TEST FRONT VIEW



Figure A-2 POST-TEST FRONT VIEW



Figure A-3 PRE-TEST LEFT SIDE VIEW

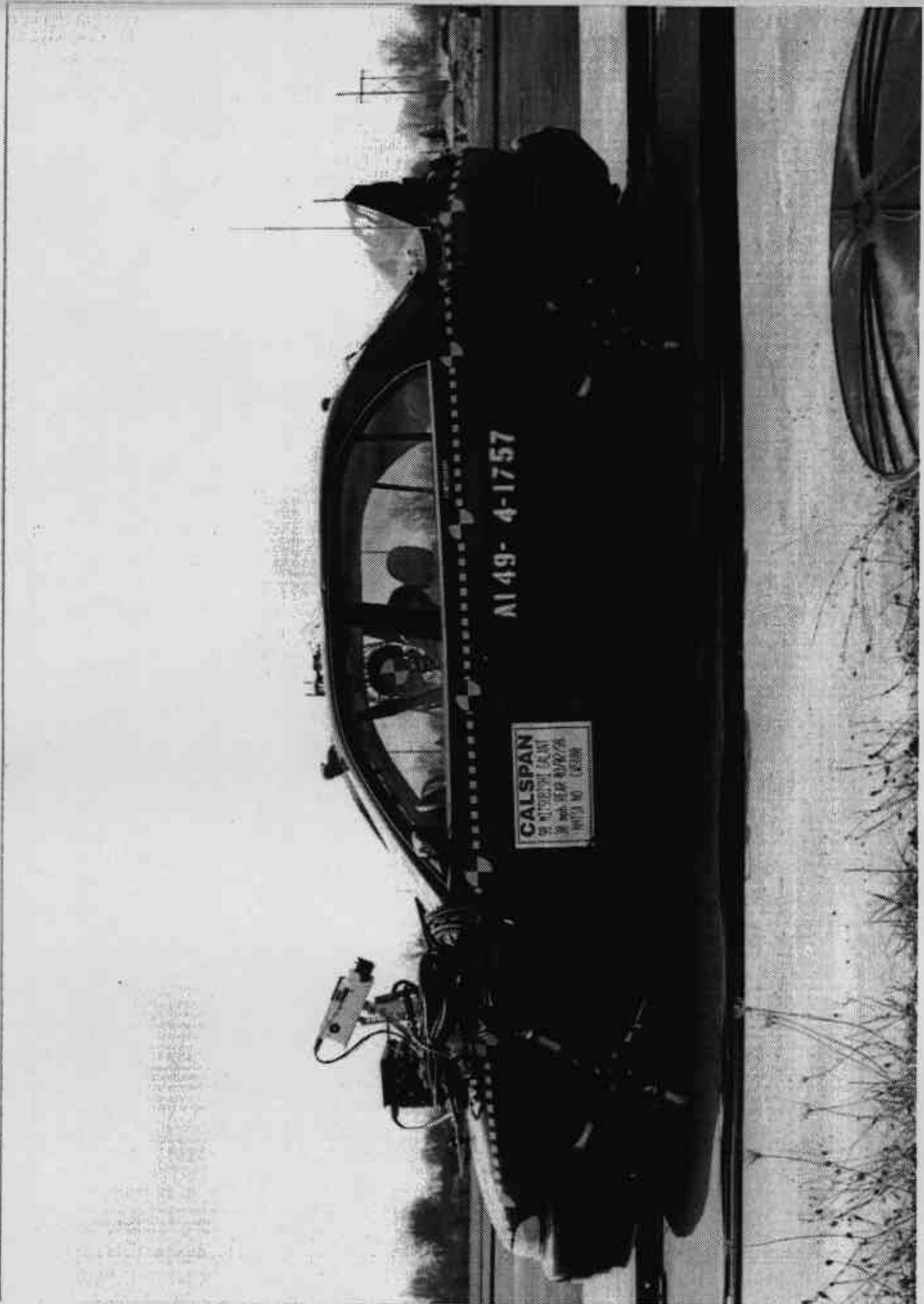


Figure A-4 POST-TEST LEFT SIDE VIEW

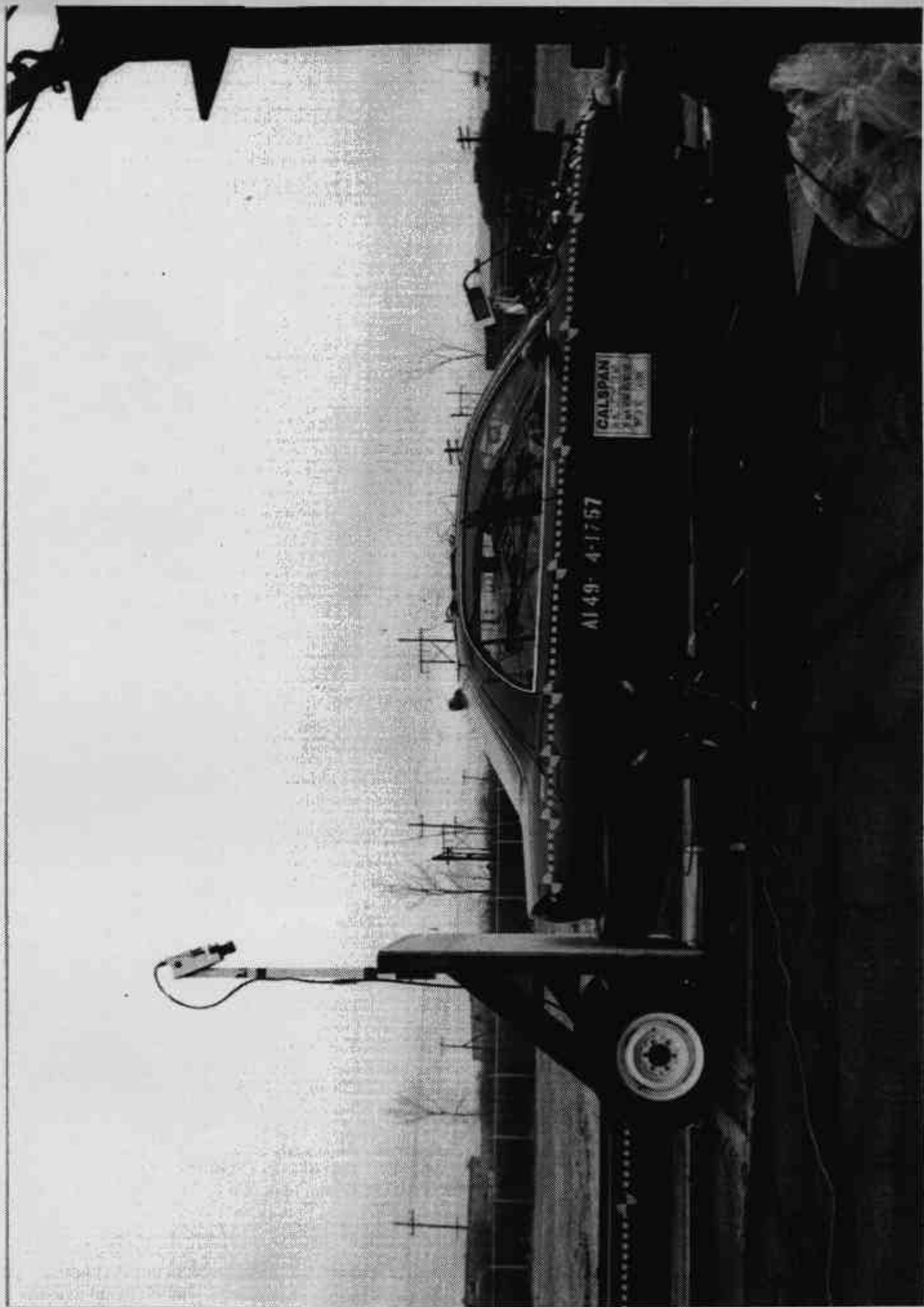


Figure A-5 PRE-TEST RIGHT SIDE VIEW

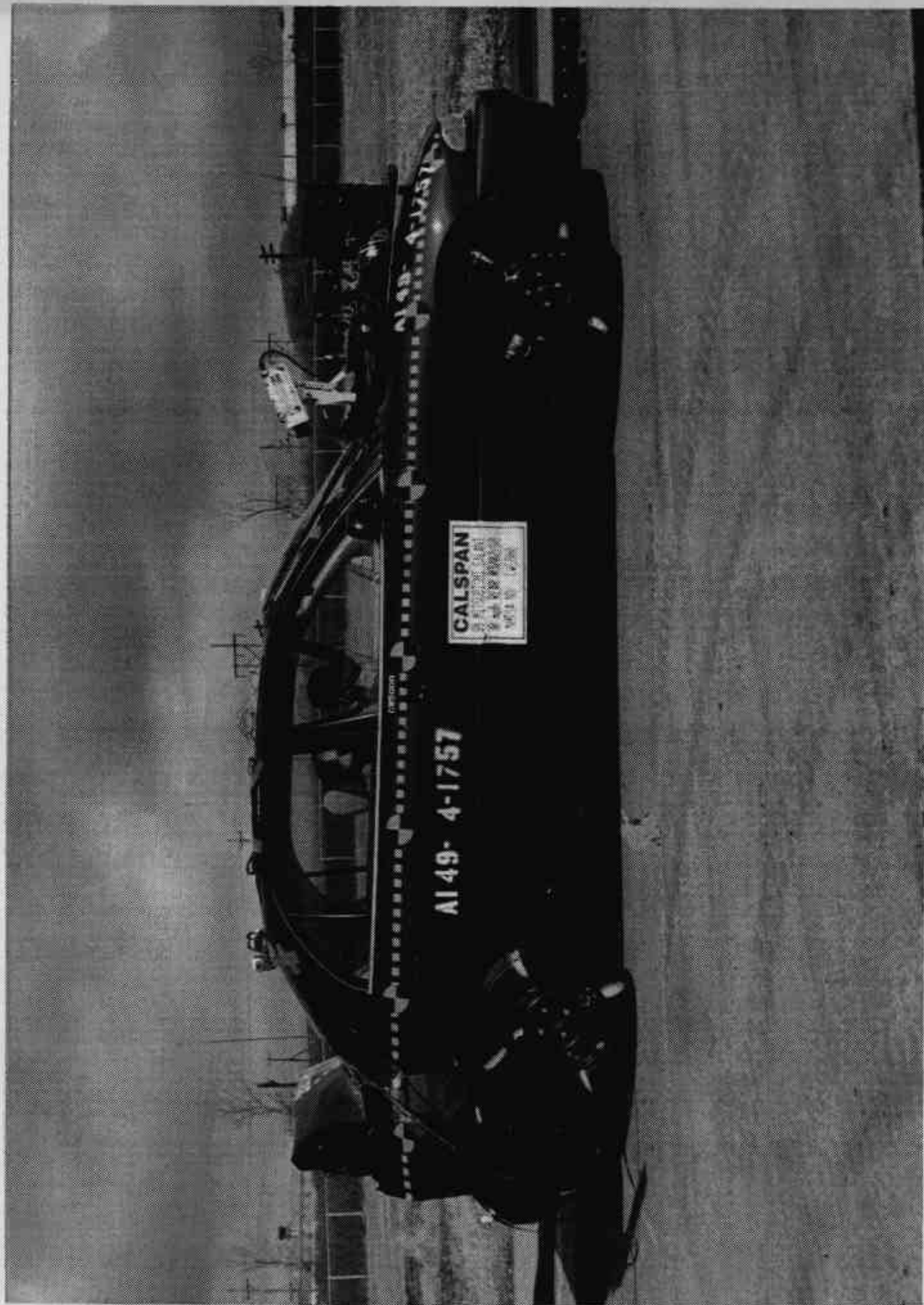


Figure A-6 POST-TEST RIGHT SIDE VIEW



Figure A-7 PRE-TEST REAR VIEW

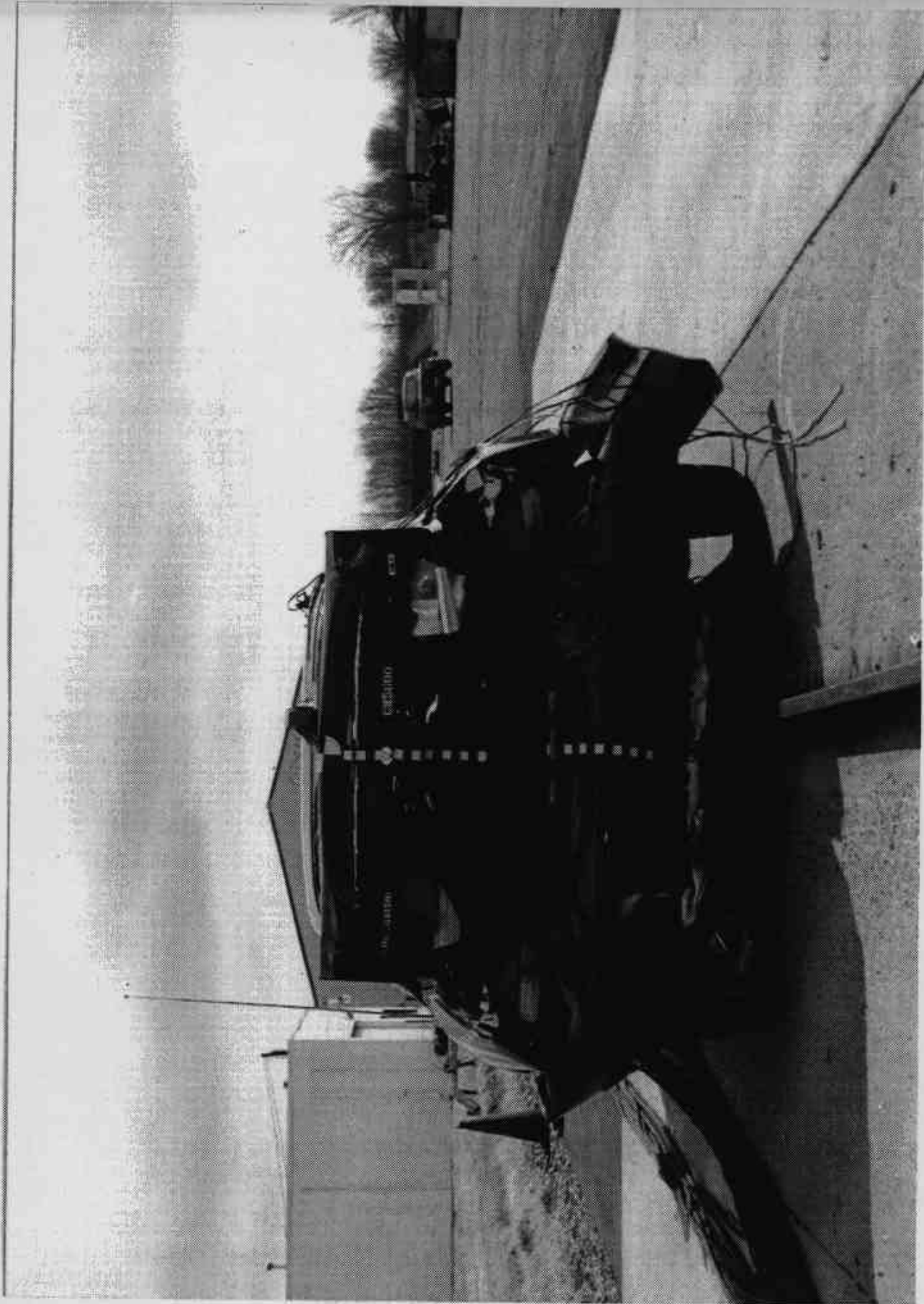


Figure A-8 POST-TEST REAR VIEW

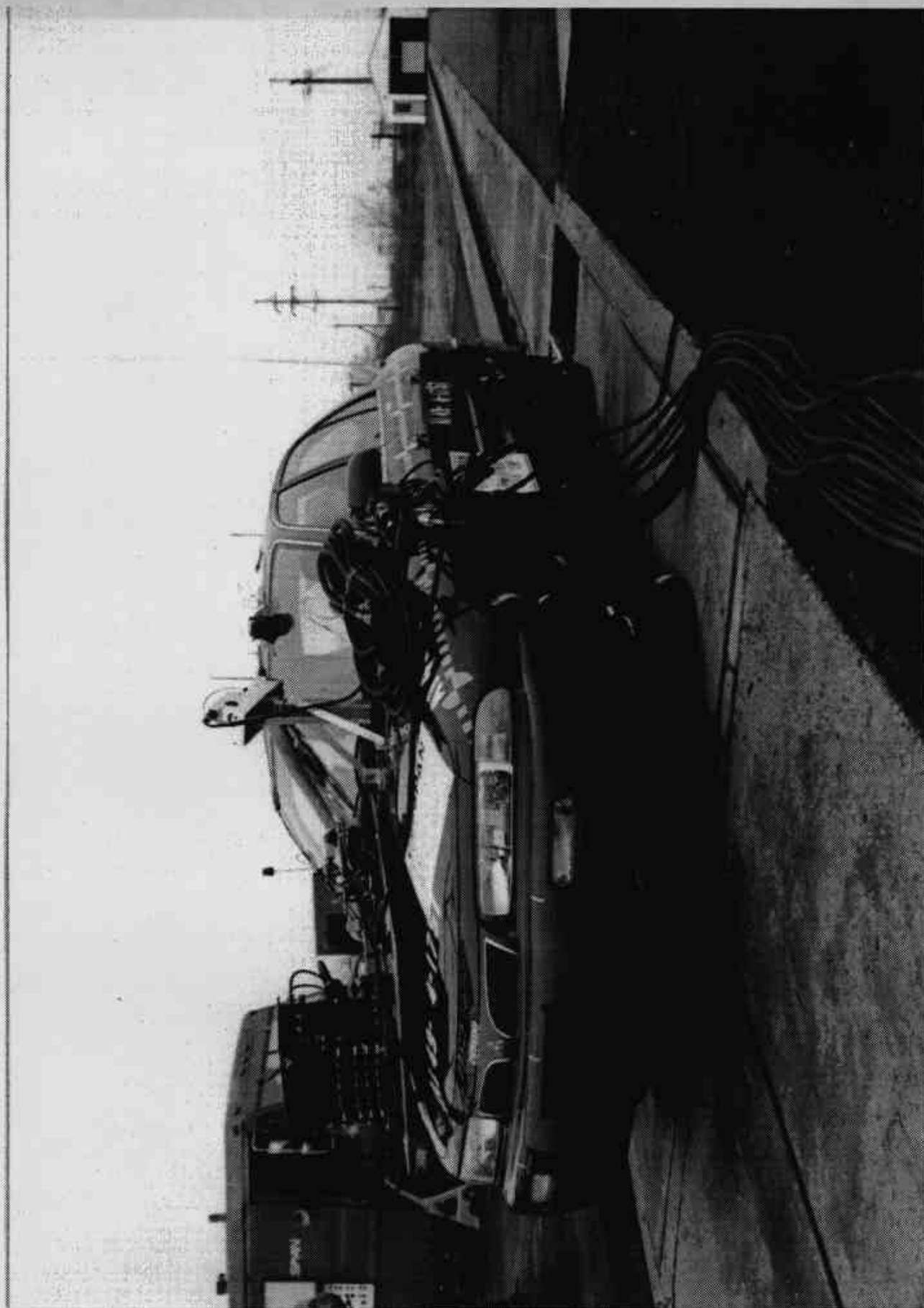


Figure A-9 PRE-TEST LEFT FRONT THREE-QUARTER VIEW

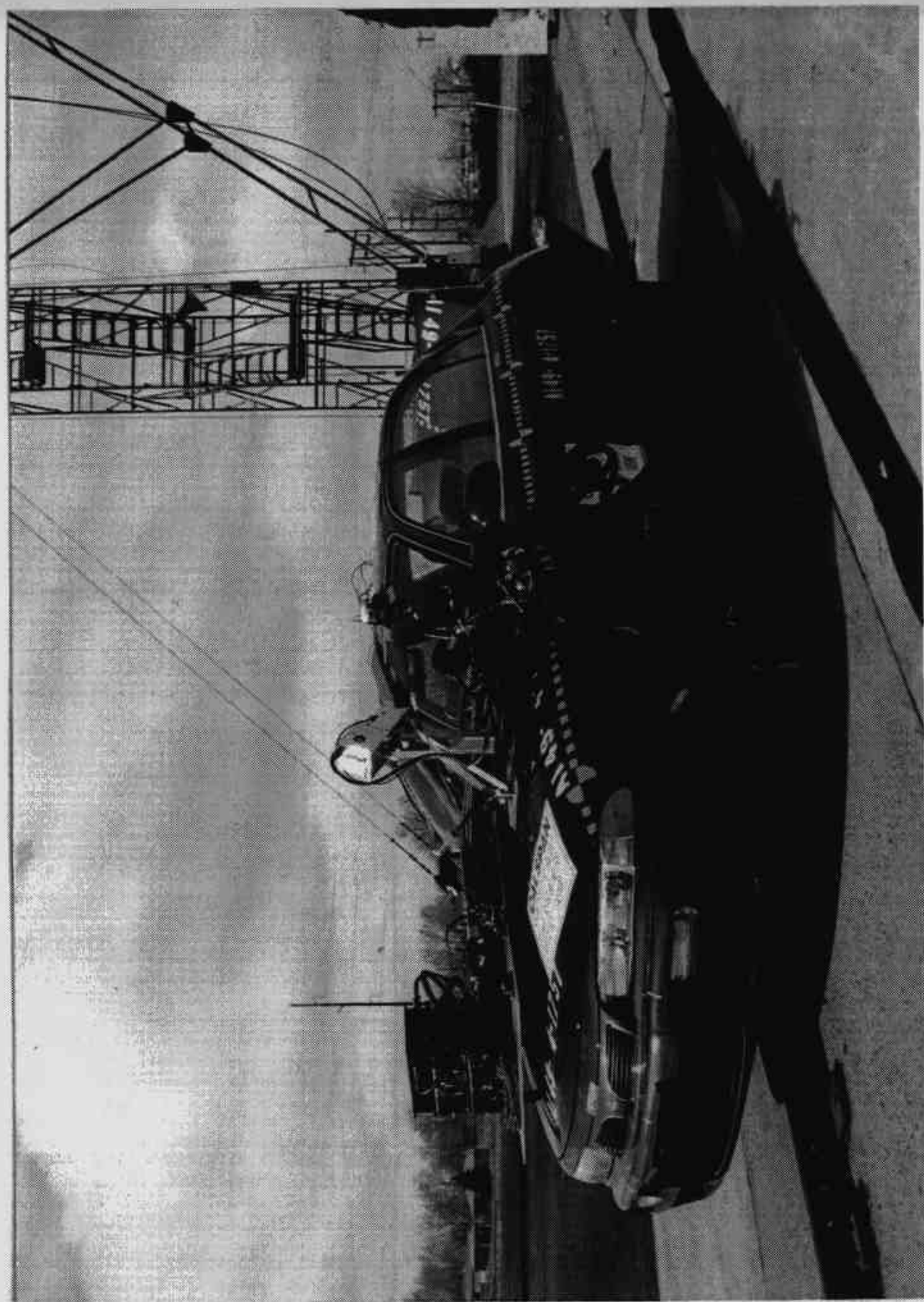


Figure A-10 POST-TEST LEFT FRONT THREE-QUARTER VIEW

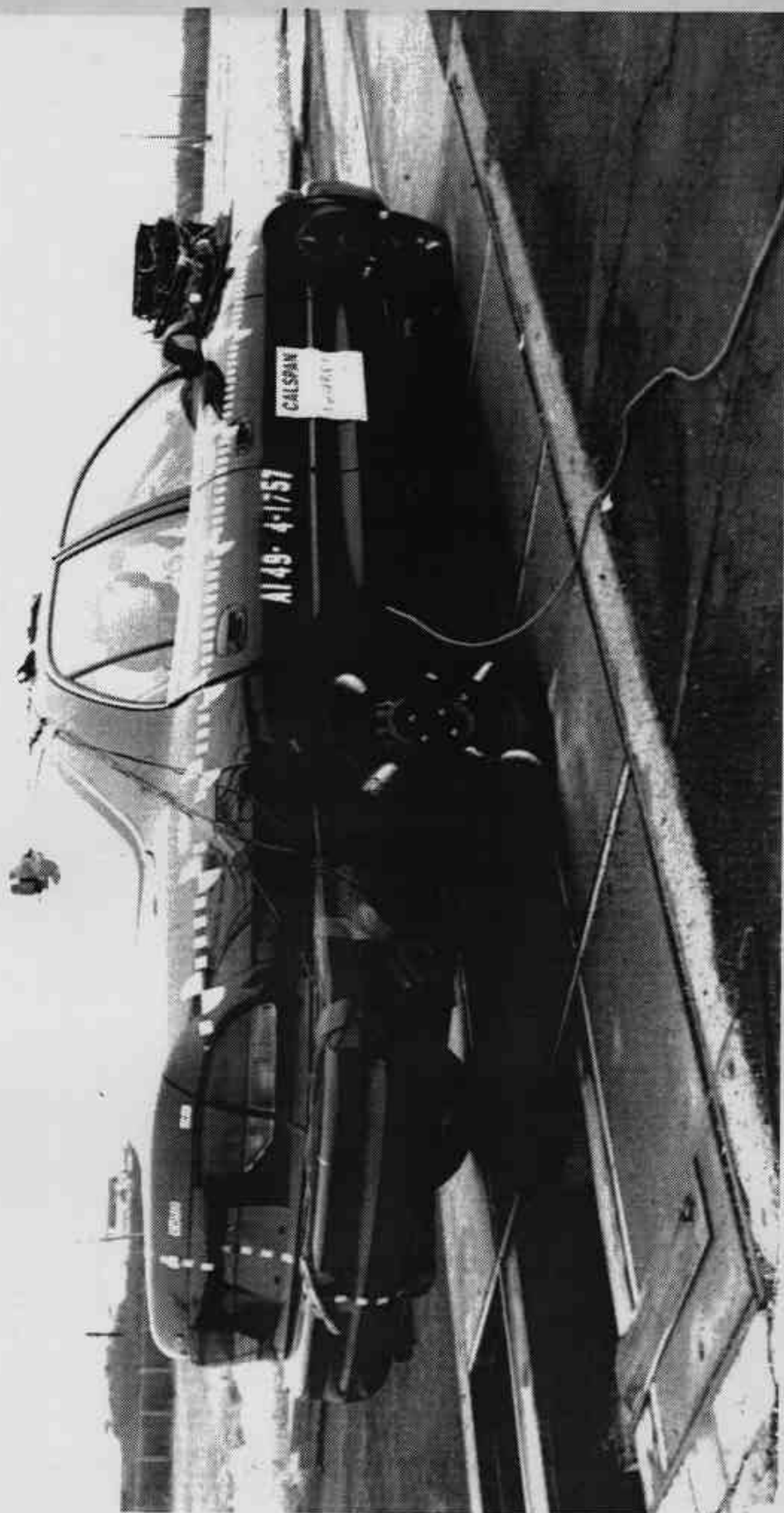


Figure A-11 PRE-TEST RIGHT REAR THREE-QUARTER VIEW

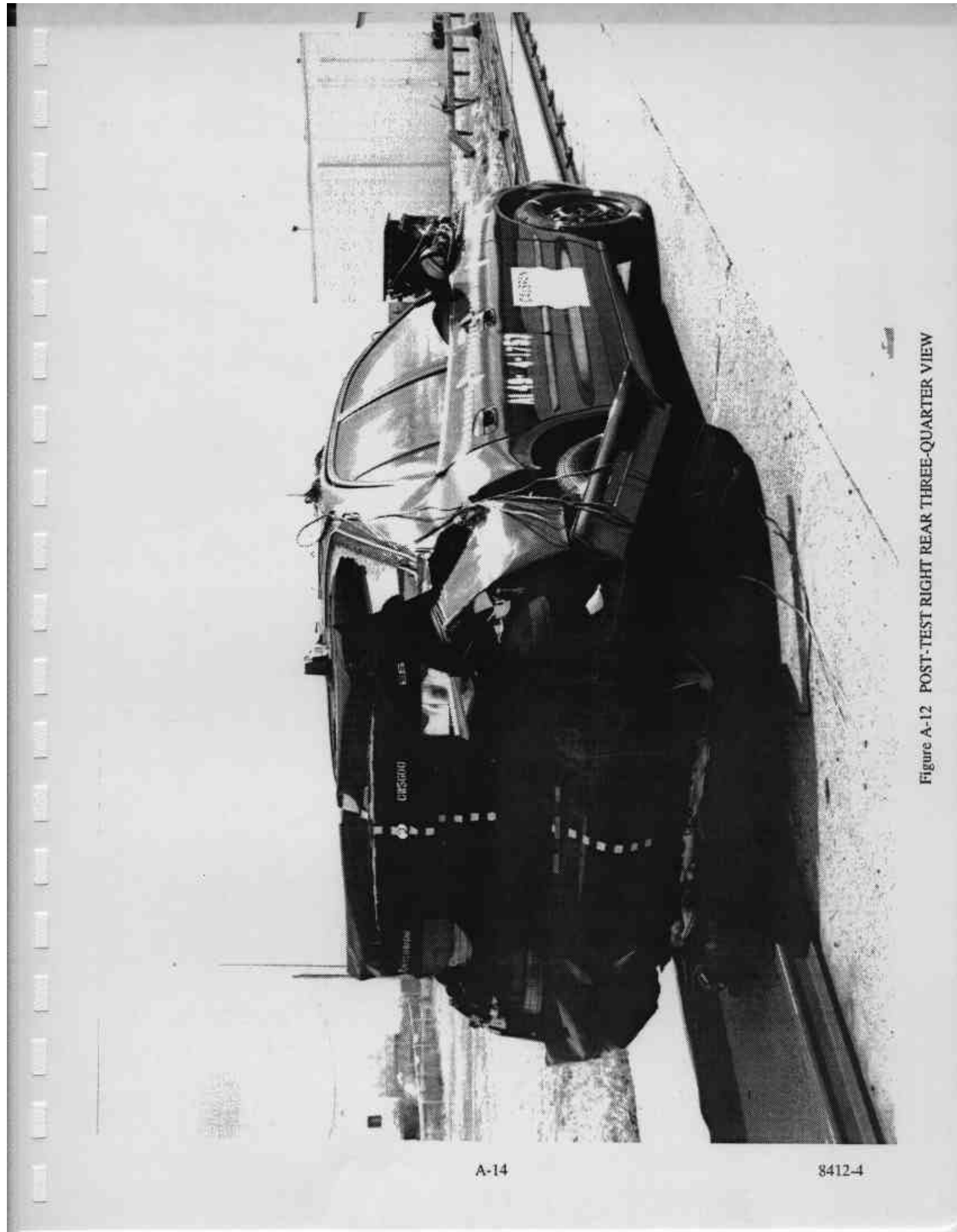


Figure A-12 POST-TEST RIGHT REAR THREE-QUARTER VIEW

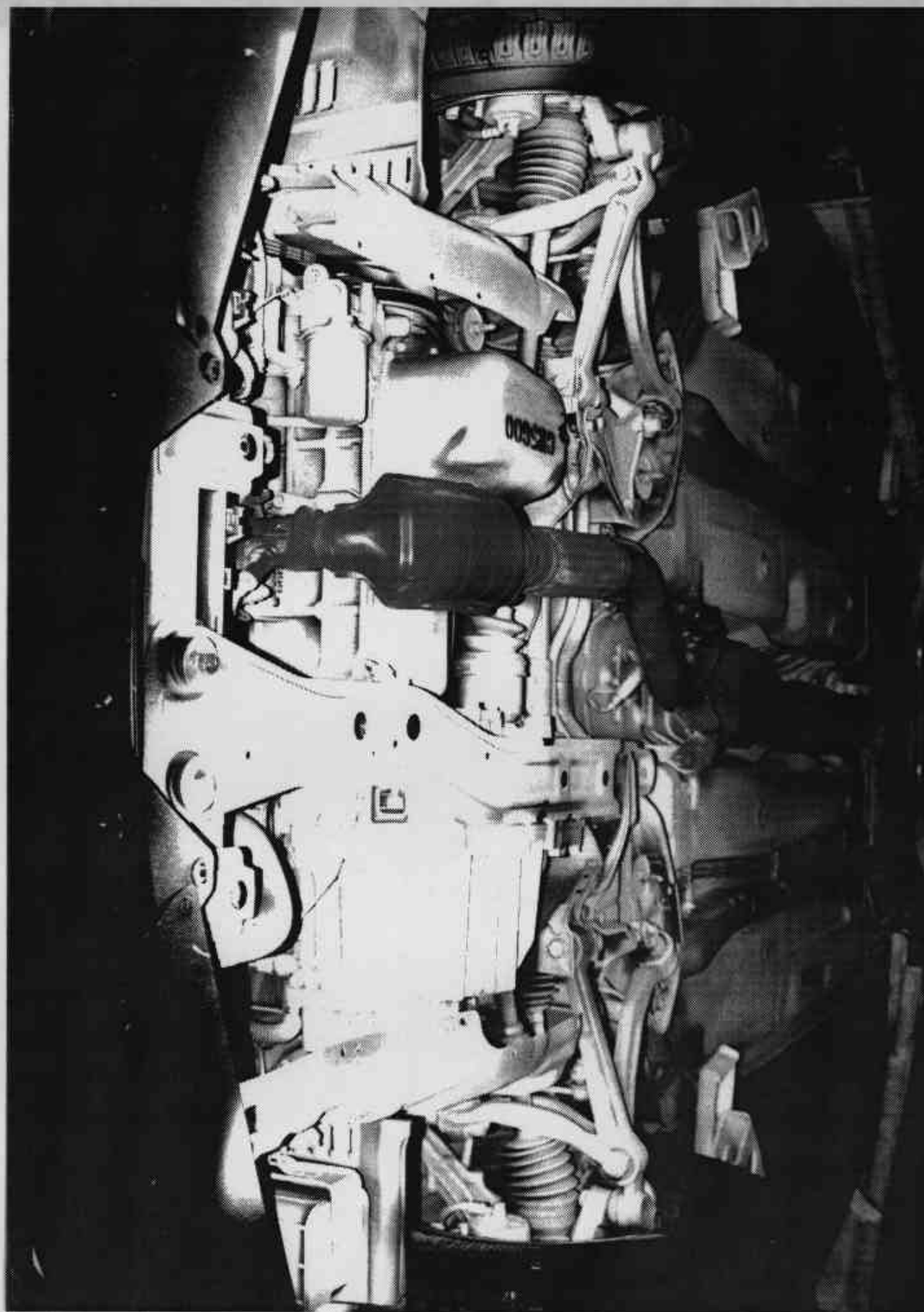


Figure A-13 PRE-TEST FRONT UNDERBODY VIEW

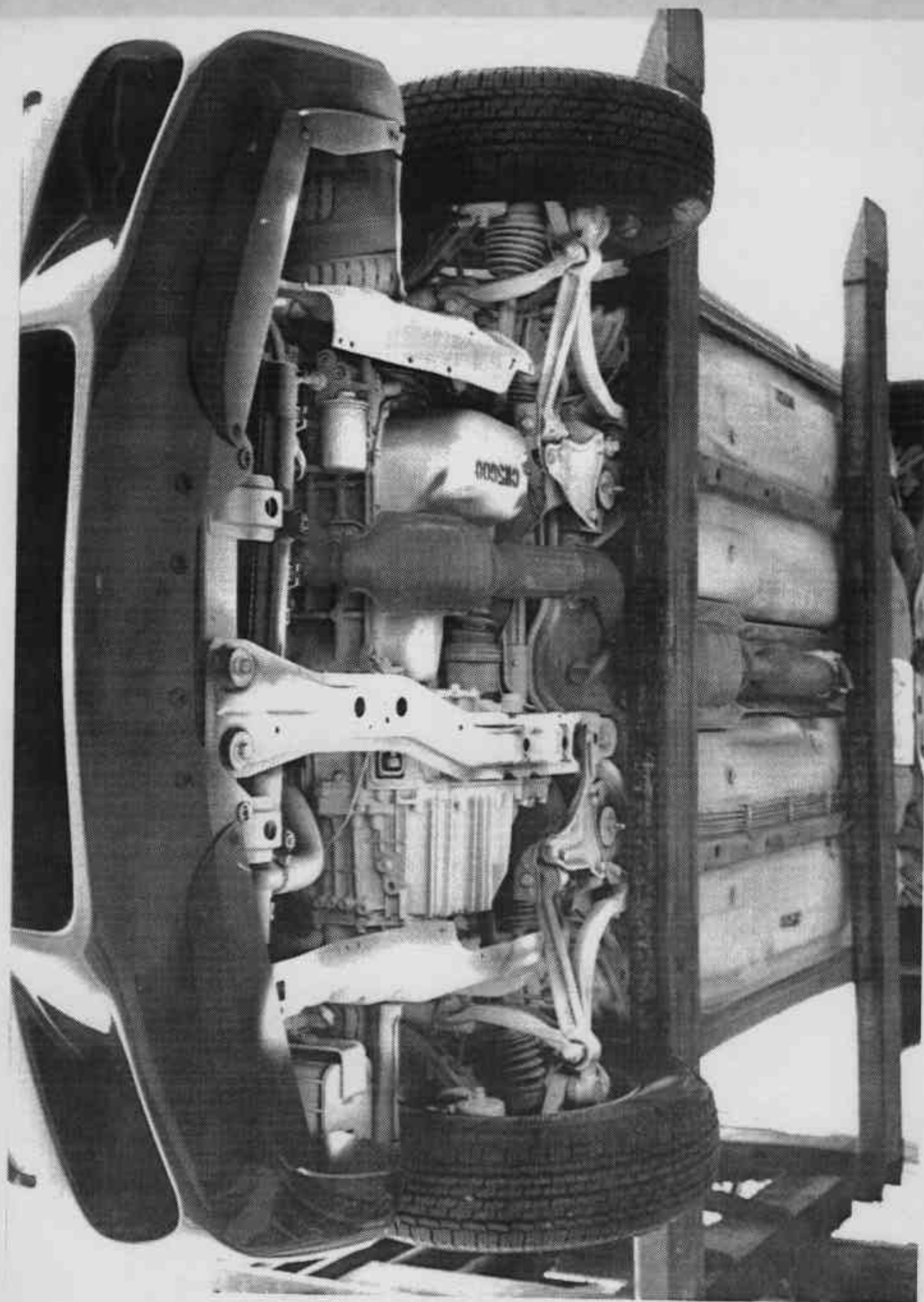


Figure A-14 POST-TEST FRONT UNDERBODY VIEW

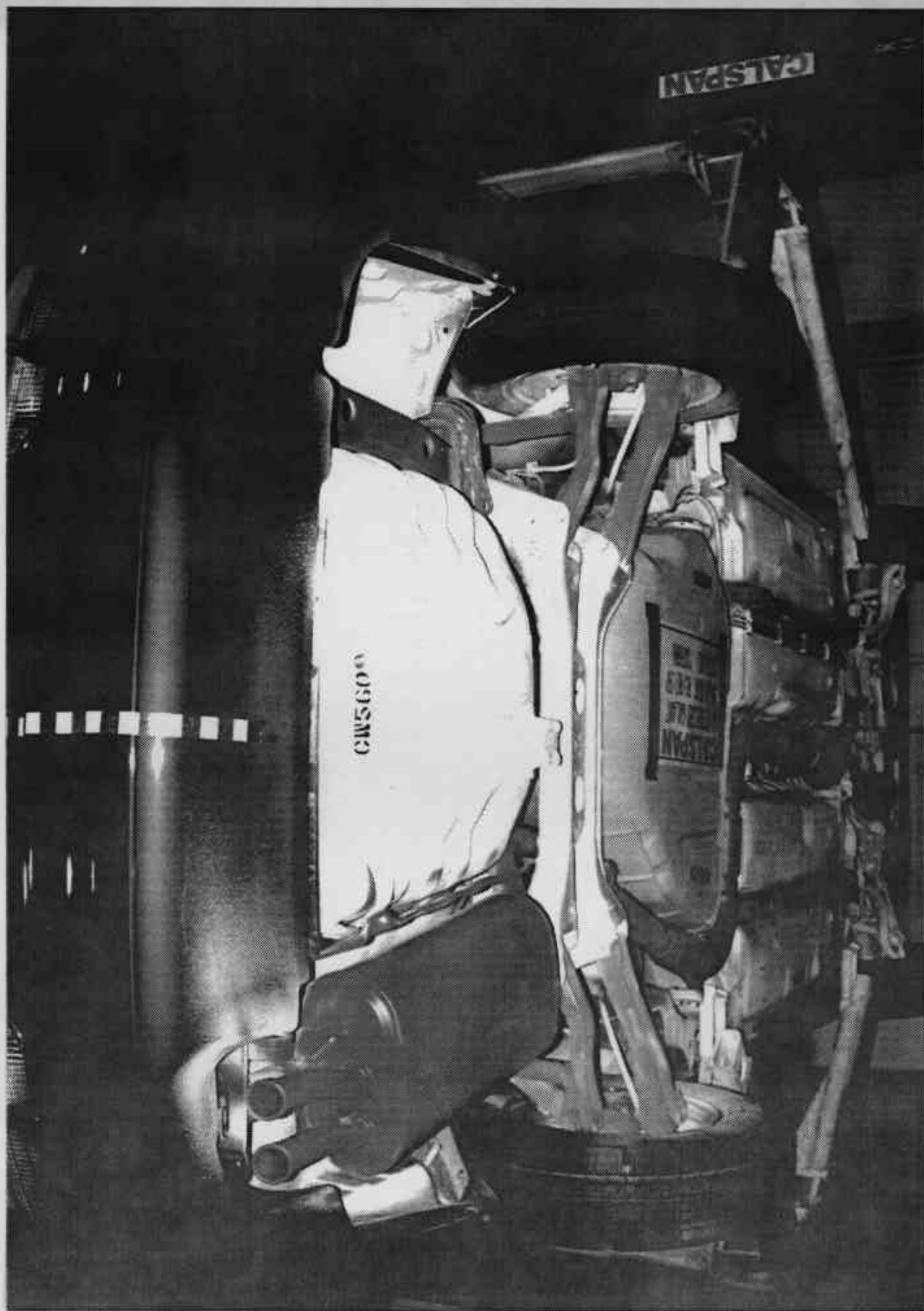


Figure A-15 PRE-TEST REAR UNDERBODY VIEW



Figure A-16 POST-TEST REAR UNDERBODY VIEW

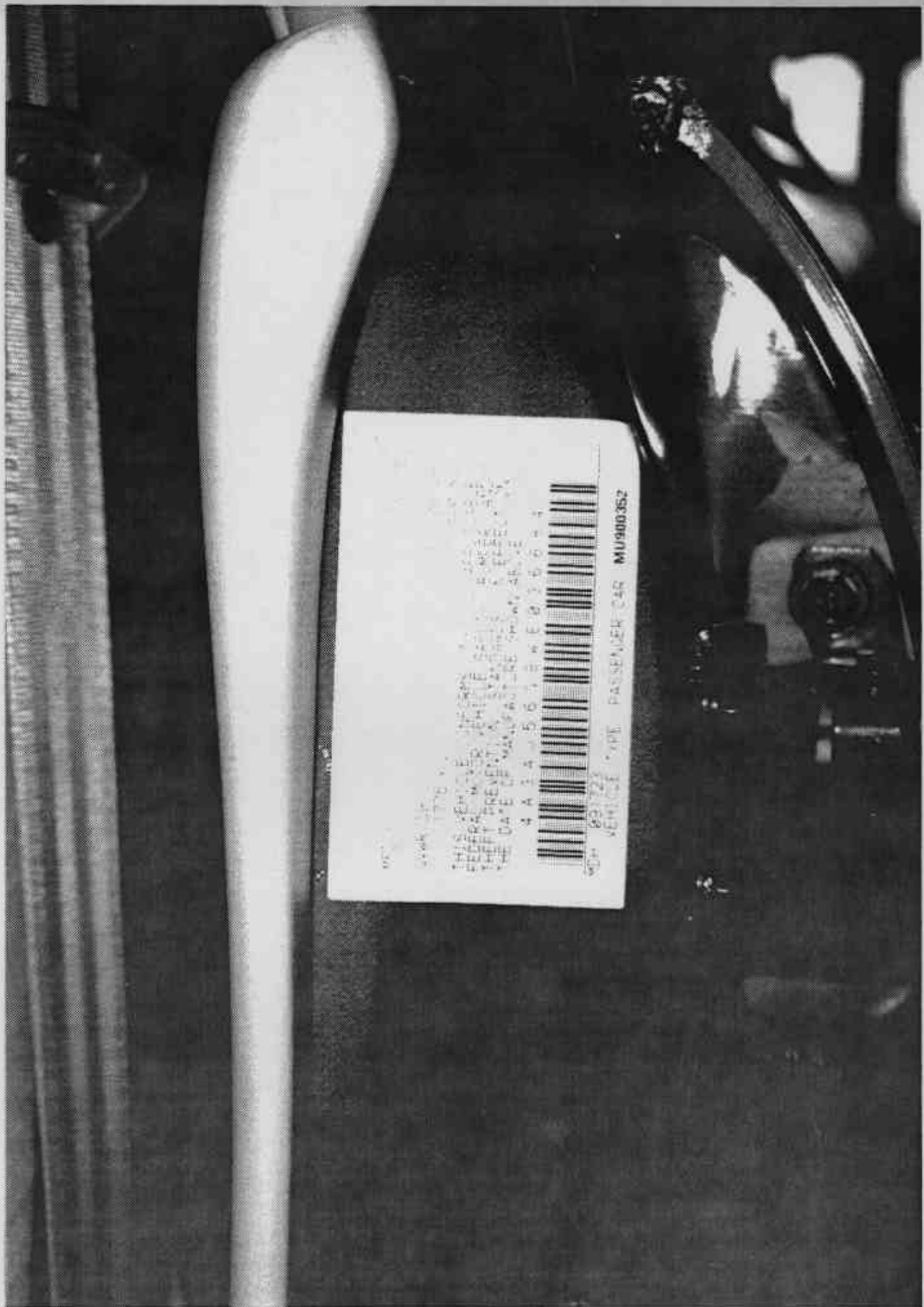


Figure A-17 CERTIFICATION PLACARD

TIRE INFLATION PRESSURE (COLD)		
STANDARD INFLATION PRESSURE FOR ALL LOAD		
1ST SEAT	2	PASS.
2ND SEAT	3	PASS.
TOTAL	5	PASS.
LUGGAGE	35kg	(77 LBS)
TOTAL WEIGHT	375kg	(827 LBS)
TIRE SIZE	P185/70R14 87H P195/60R15 87H	
FRONT	220kPa (32psi)	REAR 200kPa (29psi)
TIRE SIZE T125/70D15 TEMPORARY USE ONLY		
420kPa (60psi)		
PART NO. MR103896		

Figure A-18 TIRE PLACARD

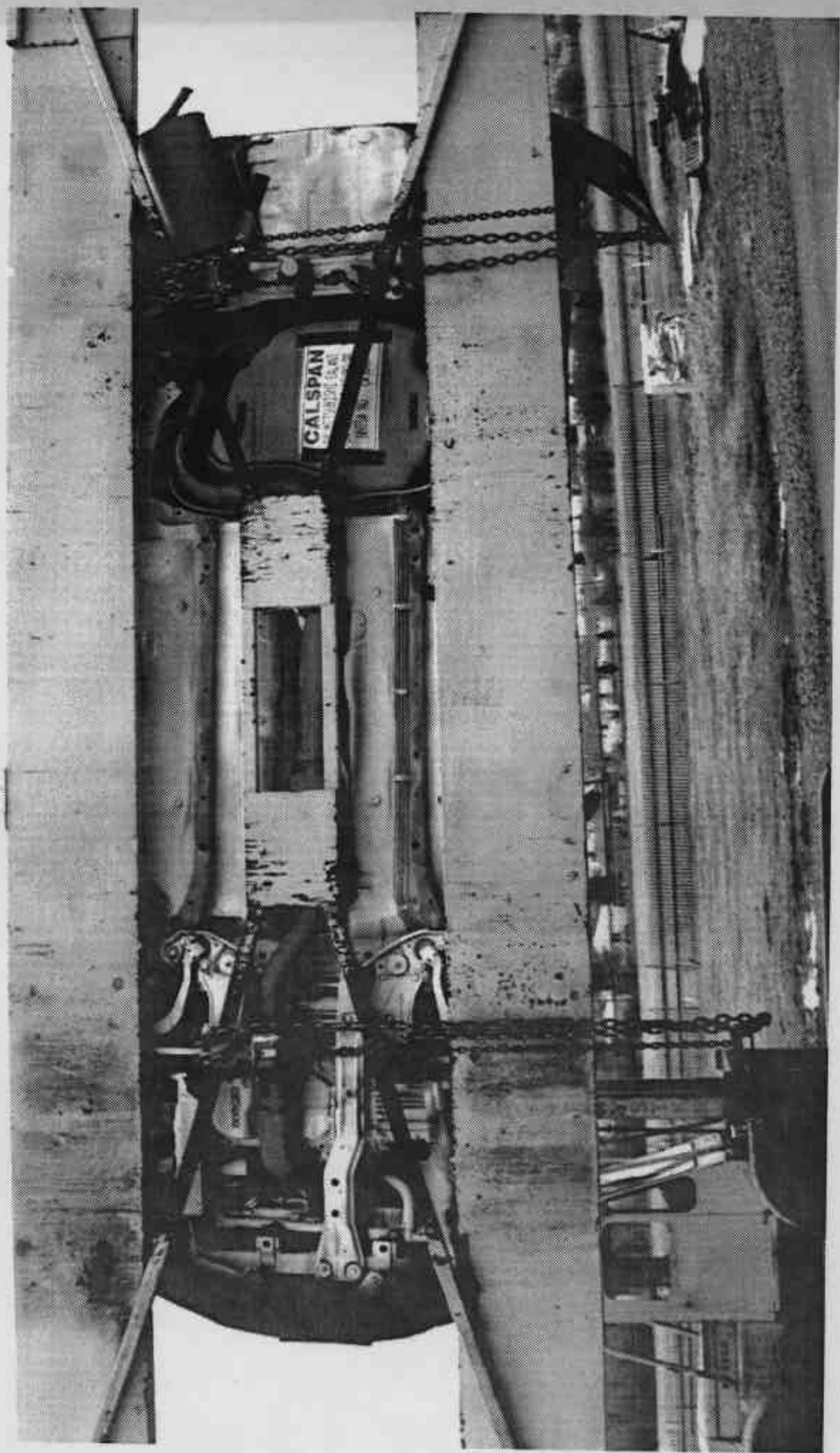


Figure A-19 ROLLOVER 90°

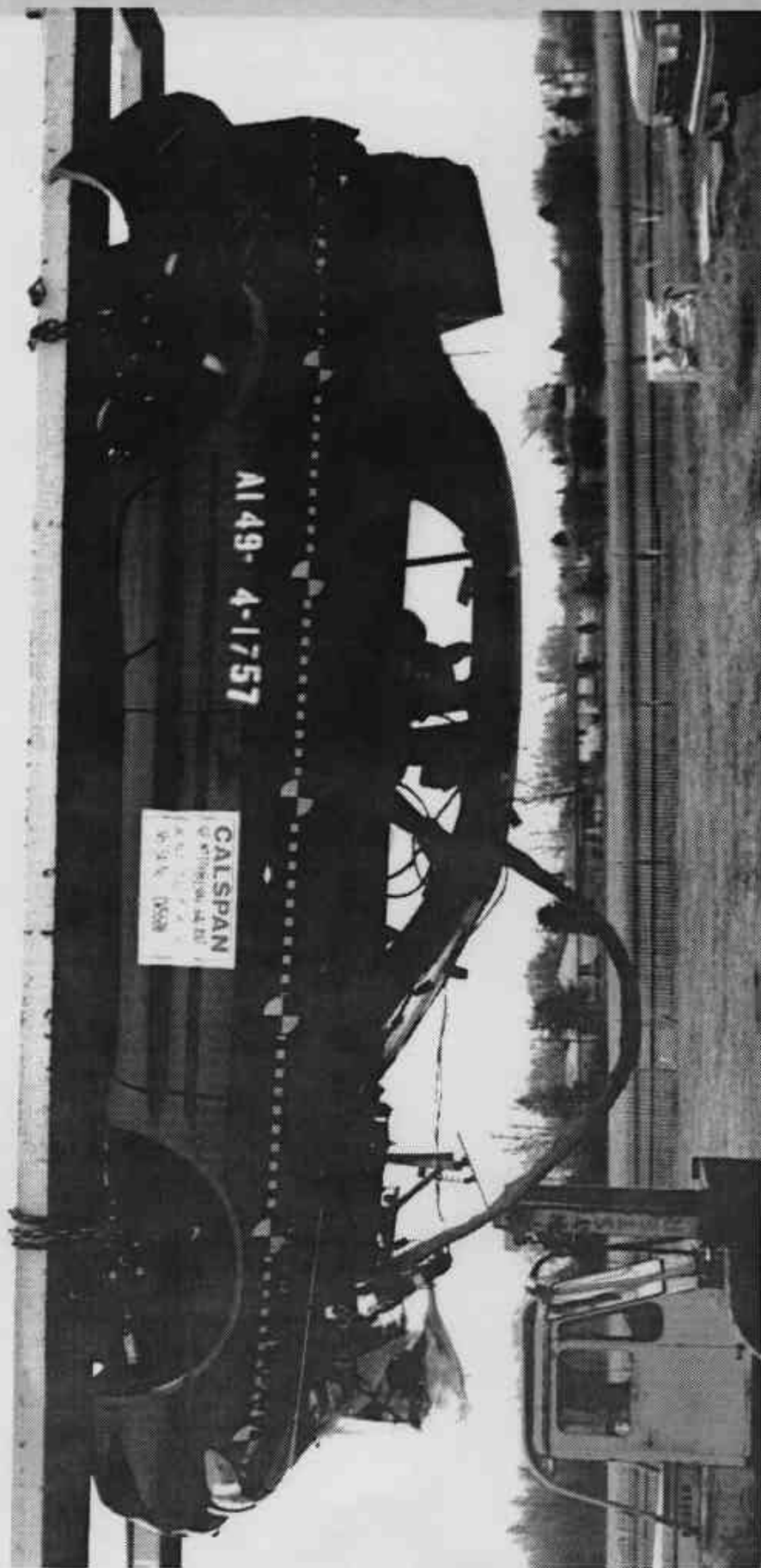


Figure A-20 ROLLOVER 180°

A-22

8412-4



Figure A-21 ROLLOVER 270°



Figure A-22 ROLLOVER 360°

Appendix B
VEHICLE AND DUMMY RESPONSE DATA
(REAR IMPACT ONLY)

FACILITY: track TEST DATE: 02 Mar 1998
 RUN #: 1757 TEST TIME: 11:00:05
 SERIES #: 1 BOARD: a

TITLE: 301 Rear 30 MPH-1998 Mitsubishi Galant

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM		MINIMUM		FILTER CLASS
			AMP	msec	AMP	msec	
1	Pos. 1 Head X	Gs	36.1	103.6	-17.5	85.9	1000
2	Pos. 1 Head Y	Gs	1.8	319.8	-2.5	154.4	1000
3	Pos. 1 Head Z	Gs	17.2	92.8	-1.1	46.3	1000
4	Pos. 1 Chest Disp	ins	0.1	317.9	0.0	173.6	60
5	Pos. 1 Chest X	Gs	15.8	75.8	-3.3	300.1	180
6	Pos. 1 Chest Y	Gs	2.3	272.8	-1.2	145.9	180
7	Pos. 1 Chest Z	Gs	8.0	62.2	-2.6	93.2	180
8	Pos. 1 Lap Belt Load	lbs	48.7	304.1	-4.3	11.2	60
9	Pos. 1 Pelvic X	Gs	19.6	59.0	-3.4	173.2	1000
10	Pos. 1 Pelvic Y	Gs	2.8	196.4	-3.4	173.2	1000
11	Pos. 1 Pelvic Z	Gs	12.6	61.8	-4.2	252.9	1000
12	Pos. 1 Belt Spoolout	ins	0.1	-16.4	-4.9	242.4	60
13	Pos. 1 Upper Neck Fx	lbs	111.7	112.4	-54.8	216.3	1000
14	Pos. 1 Upper Neck Fy	lbs	19.0	333.0	-22.3	204.2	1000
15	Pos. 1 Upper Neck Fz	lbs	242.7	94.0	-76.5	15.5	1000
16	Left Rear Xmember X	Gs	41.8	9.1	-15.1	20.5	60
17	Pos. 1 Head Resultant	Gs	39.1	103.6	0.1	-20.5	1000
18	Pos. 1 Chest Resultant	Gs	17.2	62.2	0.0	-13.6	180
19	Pos. 1 Pelvic Res.	Gs	23.4	59.0	0.0	259.0	1000
20	Pos. 1 Upper Neck F(Res)	lbs	247.9	94.0	0.7	5.1	1000

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

hic: 188.57
 t1 = 87.600 msec
 t2 = 123.600 msec
 Average G's Over Hic Duration = 30.74

CLIP V2.1 SUMMARY: Pos. 1 Chest Resultant

Peak Resultant (3 ms CLIPPED DURATION) = 16.982 G's
 Tstart = 61.3286 ms
 Tend = 64.3286 ms
 CSI = 47.080

FACILITY: track TEST DATE: 02 Mar 1998
 RUN #: 1757 TEST TIME: 11:00:05
 SERIES #: 1 BOARD: b

TITLE: 301 Rear 30 MPH-1998 Mitsubishi Galant

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM		MINIMUM		FILTER CLASS
			AMP	msec	AMP	msec	
1	Pos. 1 Upper Neck Mx	Ft-Lbs	3.9	307.5	-2.2	75.9	600
2	Pos. 1 Upper Neck My	Ft-Lbs	17.9	113.8	-17.1	139.5	600
3	Pos. 1 Upper Neck Mz	Ft-Lbs	4.3	85.8	-4.6	196.4	600
4	Right Rear Xmember X	Gs	36.8	9.0	-7.1	30.7	60
5	Upper Seatback X	Gs	21.6	73.2	-10.8	48.4	60
6	Lower Seatback X	Gs	28.6	11.3	-11.5	22.6	60
7	NULL		0.0	359.9	0.0	359.9	1000
8	NULL		0.0	359.9	0.0	359.9	1000
17	Pos. 1 Neck Moment Res.	Ft-Lbs	18.0	112.6	0.0	-36.0	600

TEST NO. CW5600

VEHICLE

SAE FILTER CHANNEL CLASS

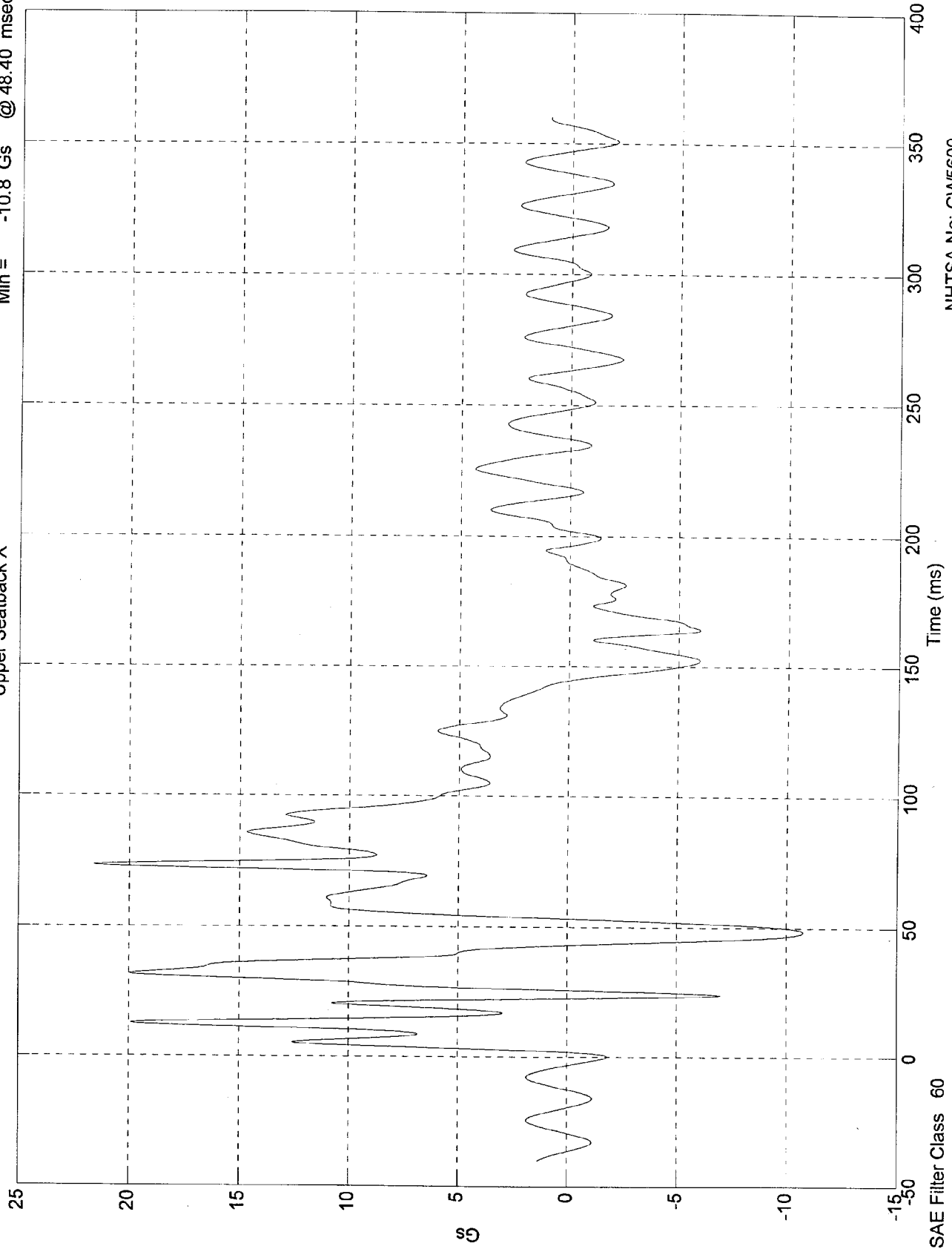
60

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

301 Rear 30 MPH-1998 Mitsubishi Galant

Upper Seatback X

Max = 21.6 Gs @ 73.30 msec
Min = -10.8 Gs @ 48.40 msec

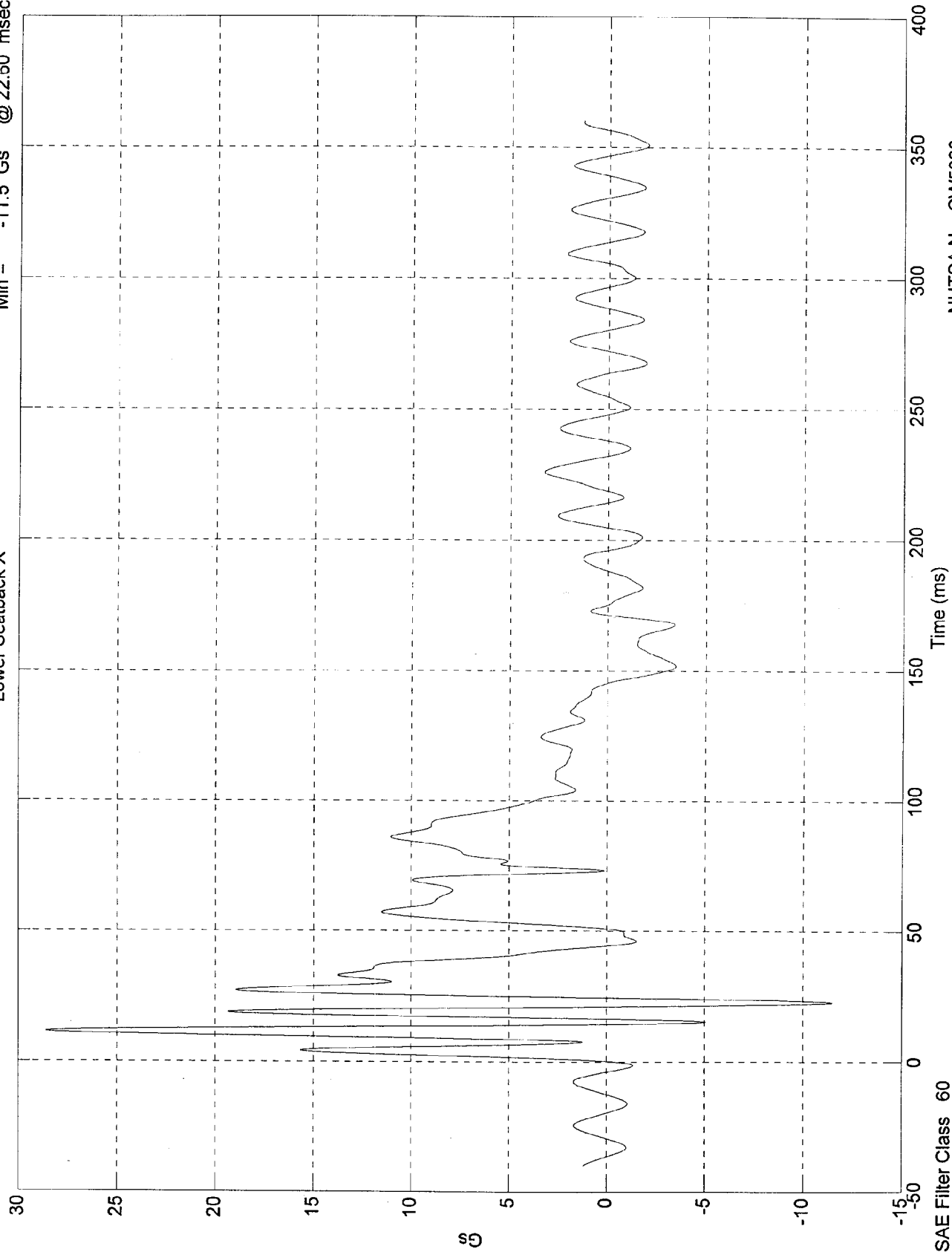


NHTSA No: CW5600
Date: 02 Mar 1998

301 Rear 30 MPH-1998 Mitsubishi Galant

Max = 28.6 Gs @ 11.40 msec
Min = -11.5 Gs @ 22.60 msec

Lower Seatback X



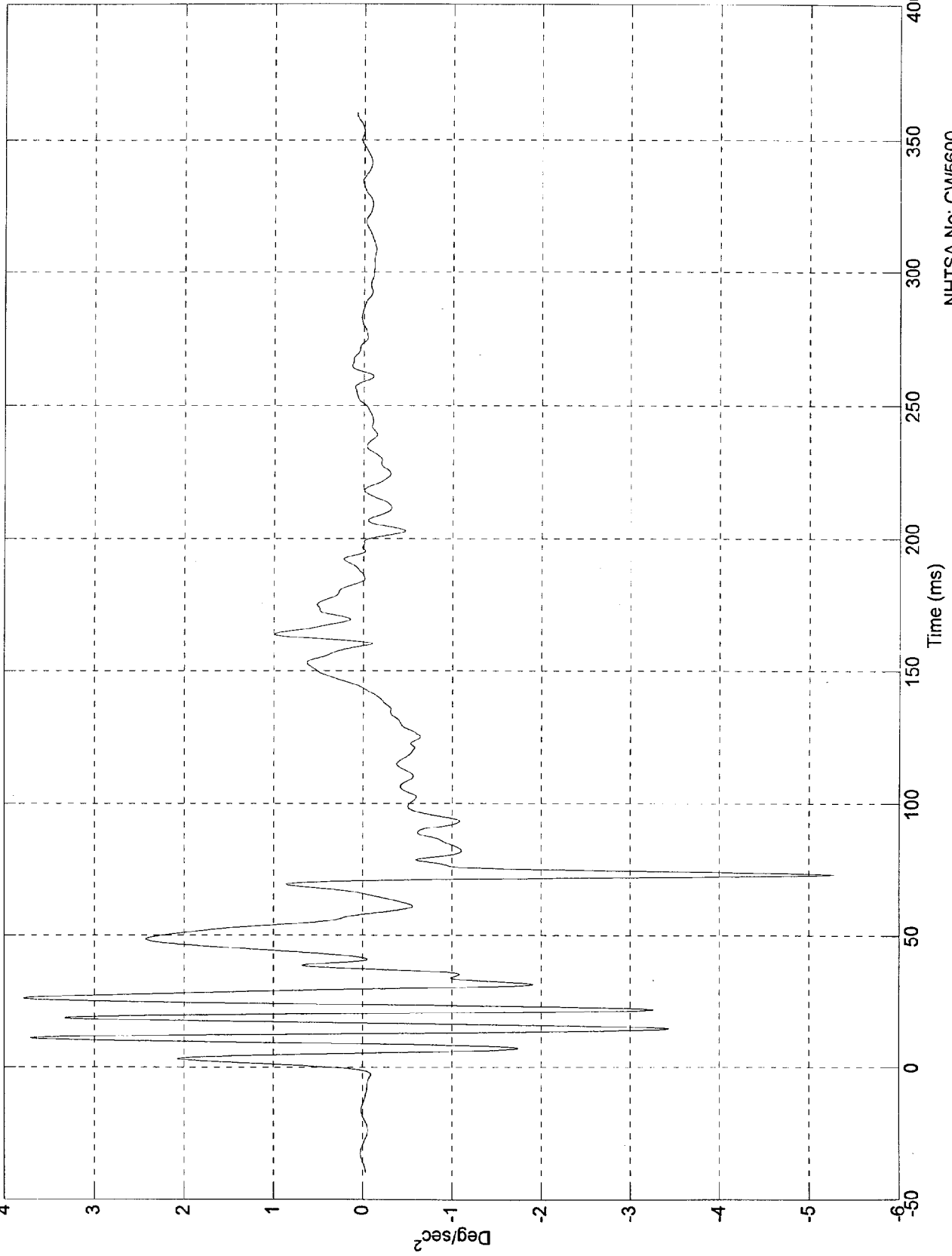
NHTSA No: CW5600
Date: 02 Mar 1998

301 Rear 30 MPH-1998 Mitsubishi Galant

Max = 3.78e+004 Deg/sec² @ 26.00 msec
Min = -5.28e+004 Deg/sec² @ 73.30 msec

Seatback Angular Acceleration

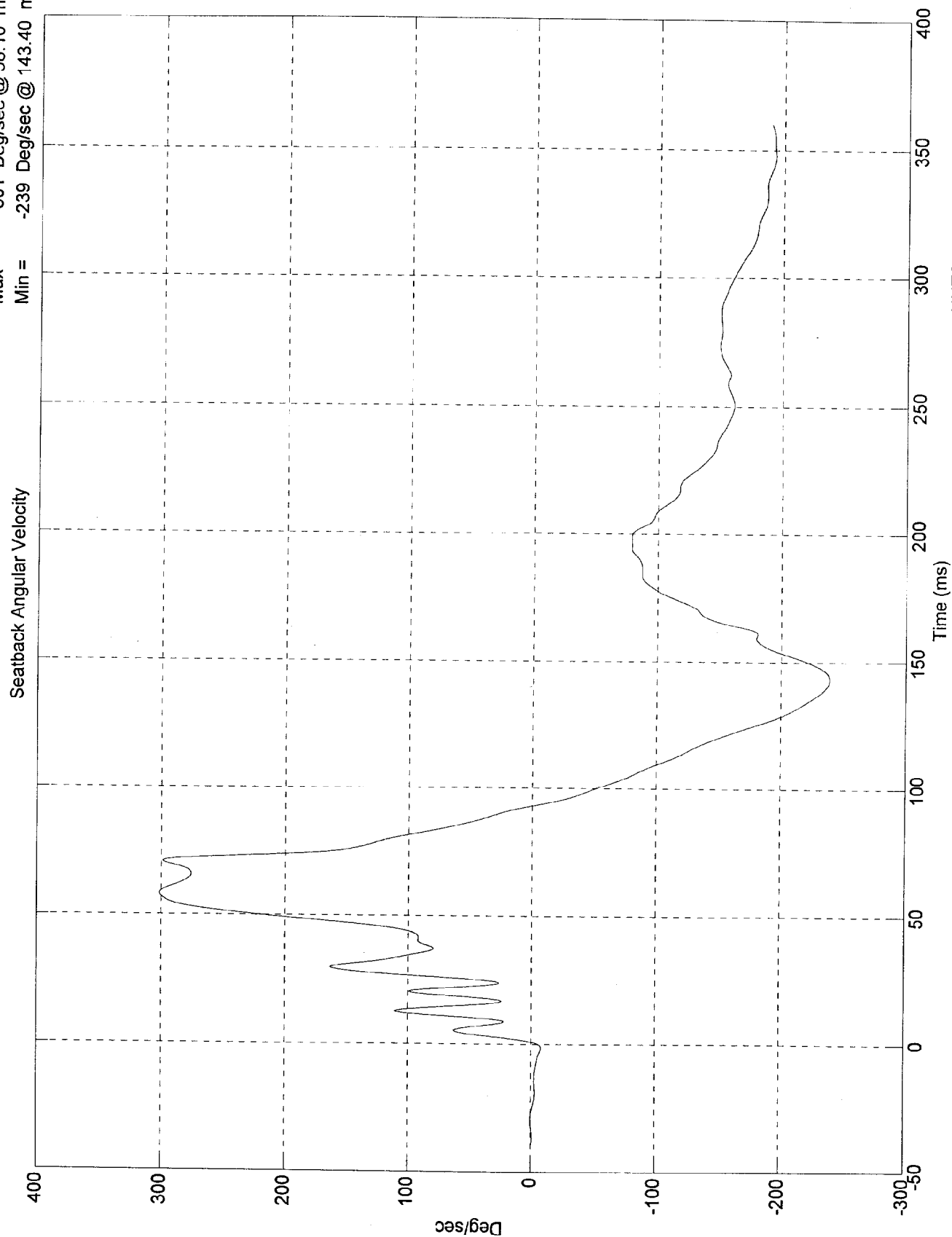
4 x 10⁴



NHTSA No: CW5600
Date: 02 Mar 1998

301 Rear 30 MPH-1998 Mitsubishi Galant

Max = 301 Deg/sec @ 58.10 msec
Min = -239 Deg/sec @ 143.40 msec

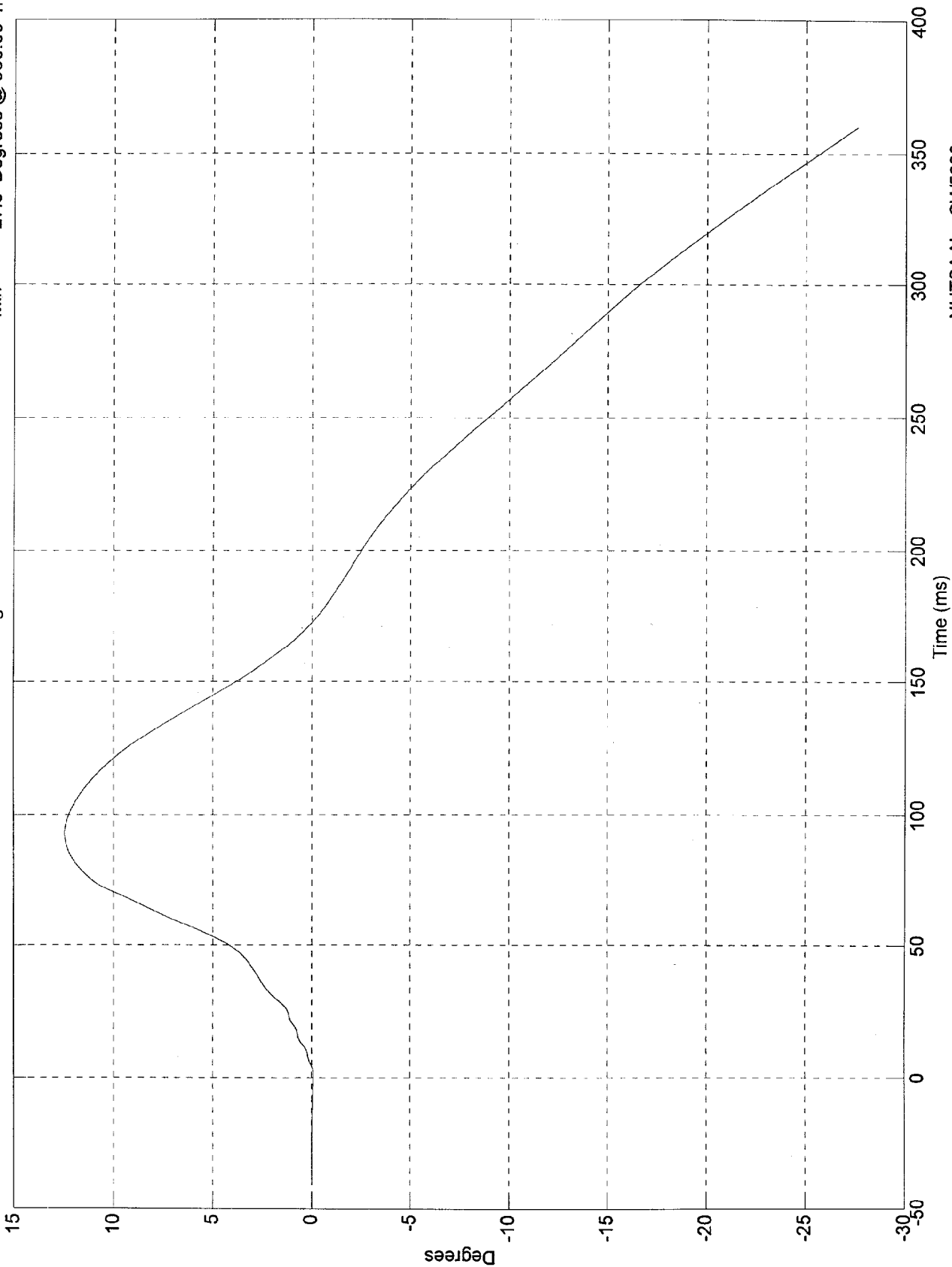


NHTSA No: CW5600
Date: 02 Mar 1998

301 Rear 30 MPH-1998 Mitsubishi Galant

Max = 12.4 Degrees @ 92.80 msec
Min = -27.6 Degrees @ 360.00 msec

Seatback Angular Position

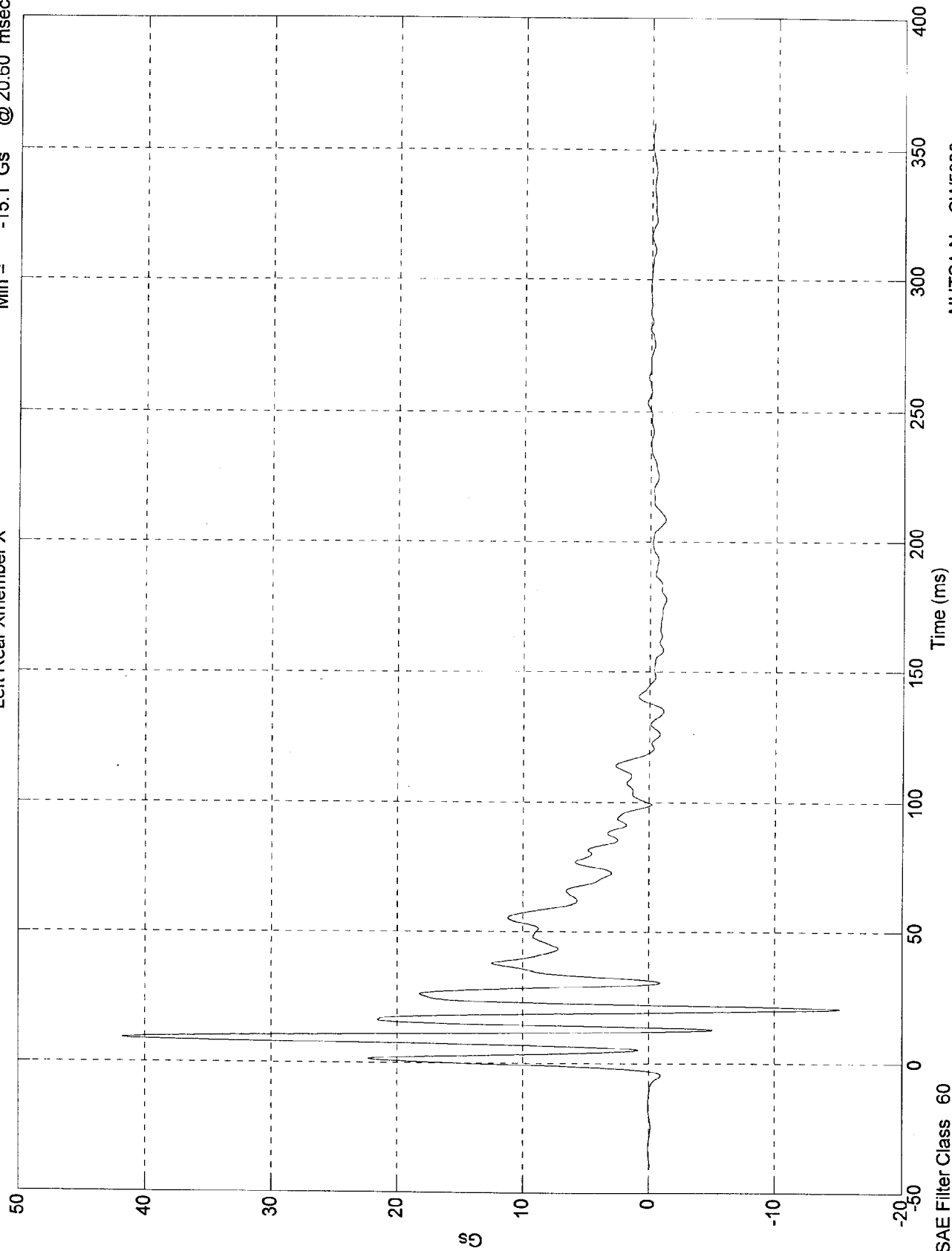


NHTSA No: CW5600
Date: 02 Mar 1998

301 Rear 30 MPH-1998 Mitsubishi Galant

Max = 41.8 Gs @ 9.20 msec
Min = -15.1 Gs @ 20.60 msec

Left Rear Xmember X

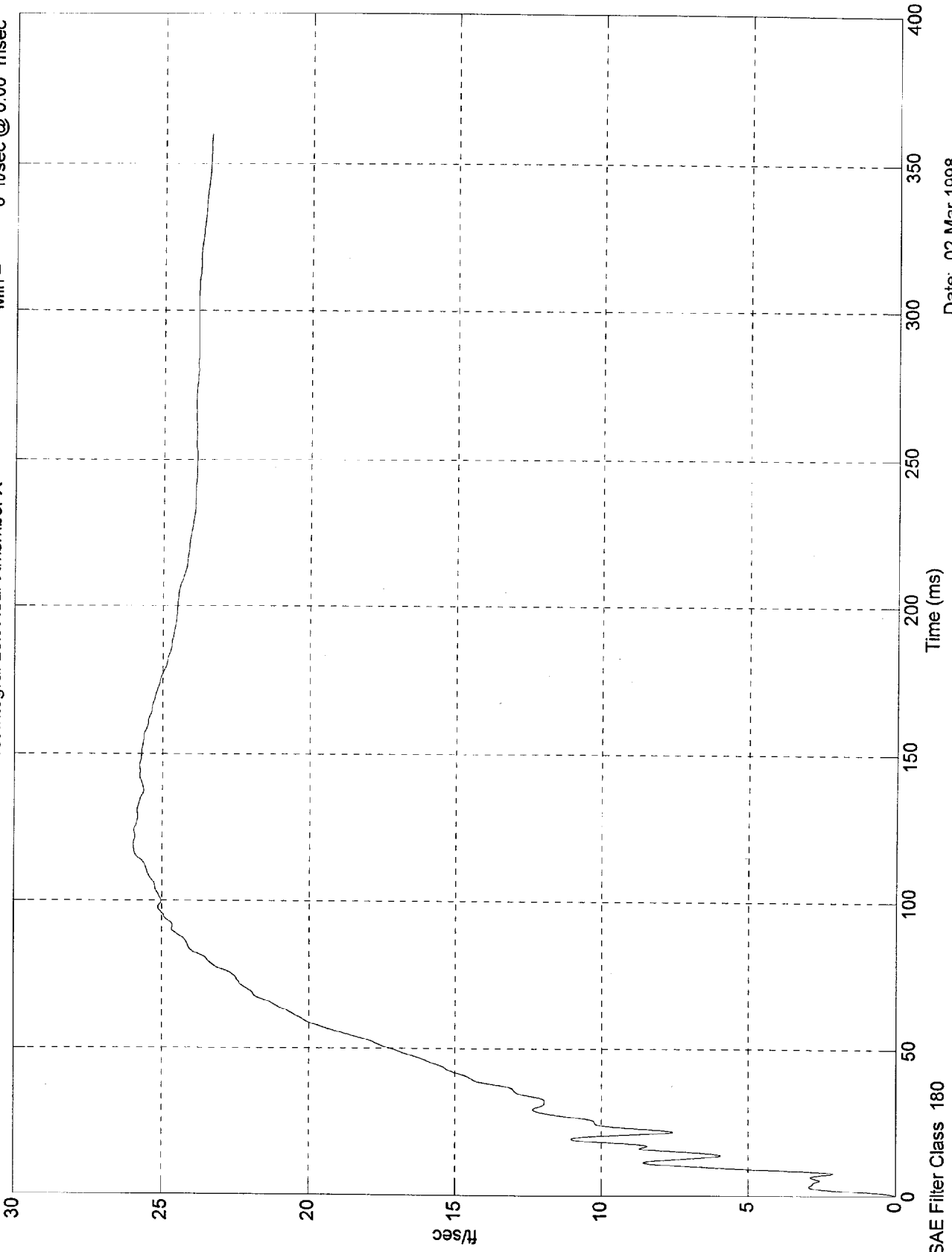


NHTSA No: CW5600
Date: 02 Mar 1998

301 Rear 30 MPH-1998 Mitsubishi Galant

Max = 26 ft/sec @ 118.90 msec
Min = 0 ft/sec @ 0.00 msec

1st Integral Left Rear Xmember X

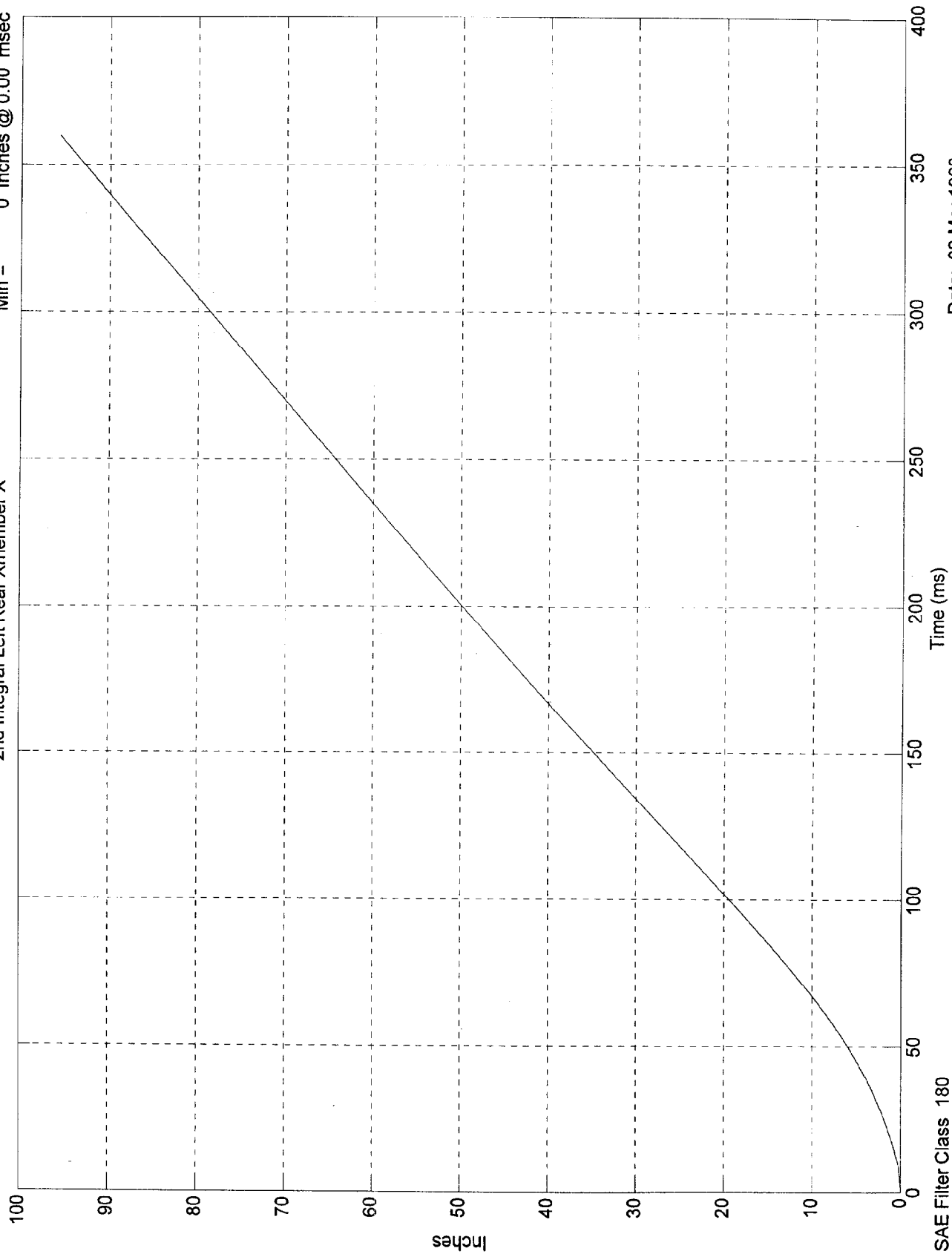


Date: 02 Mar 1998

301 Rear 30 MPH-1998 Mitsubishi Galant

Max = 95.7 Inches @ 360.00 msec
Min = 0 Inches @ 0.00 msec

2nd Integral Left Rear Xmember X

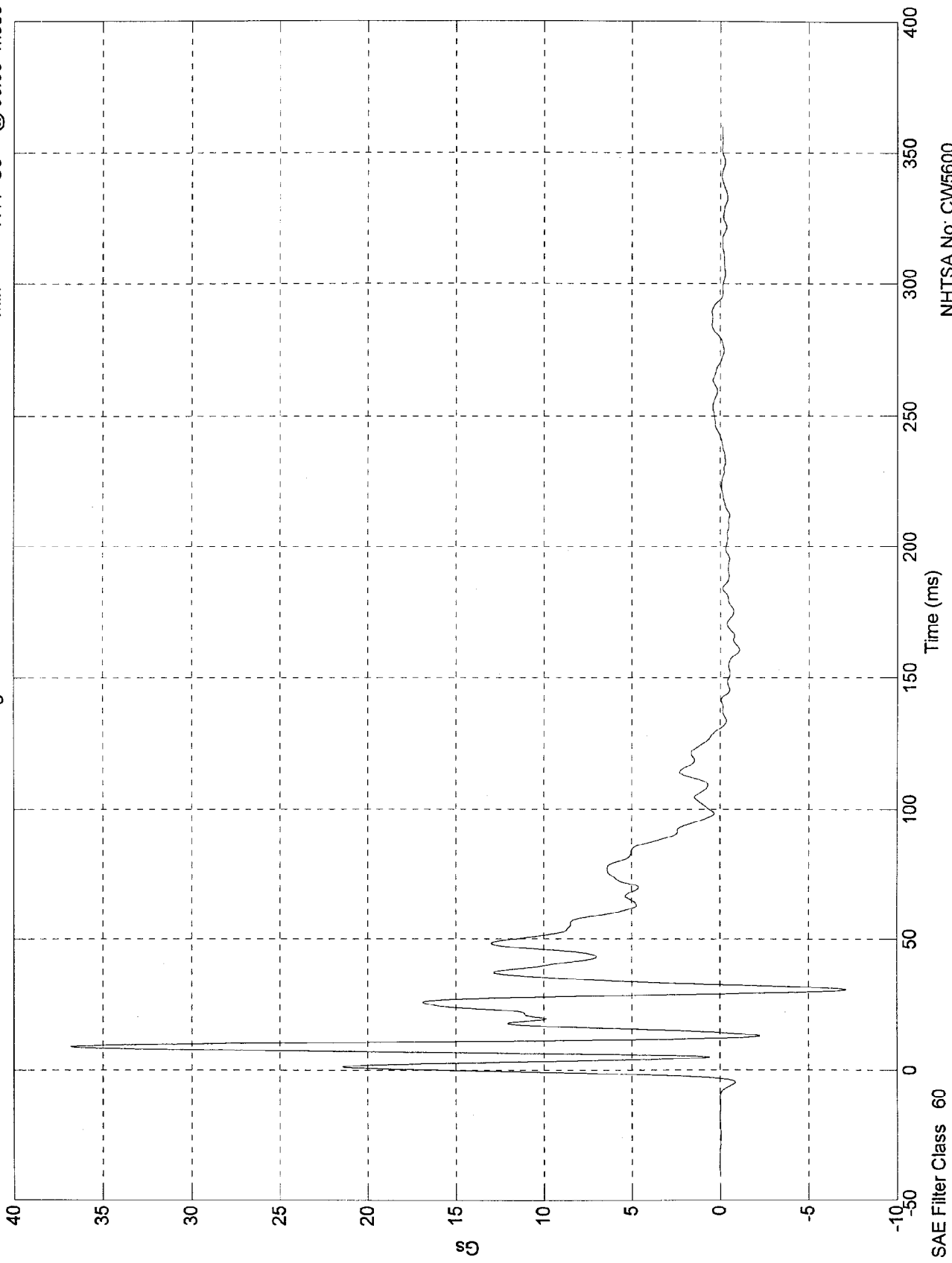


Date: 02 Mar 1998

301 Rear 30 MPH-1998 Mitsubishi Galant

Right Rear Xmember X

Max = 36.8 Gs @ 9.10 msec
Min = -7.11 Gs @ 30.80 msec



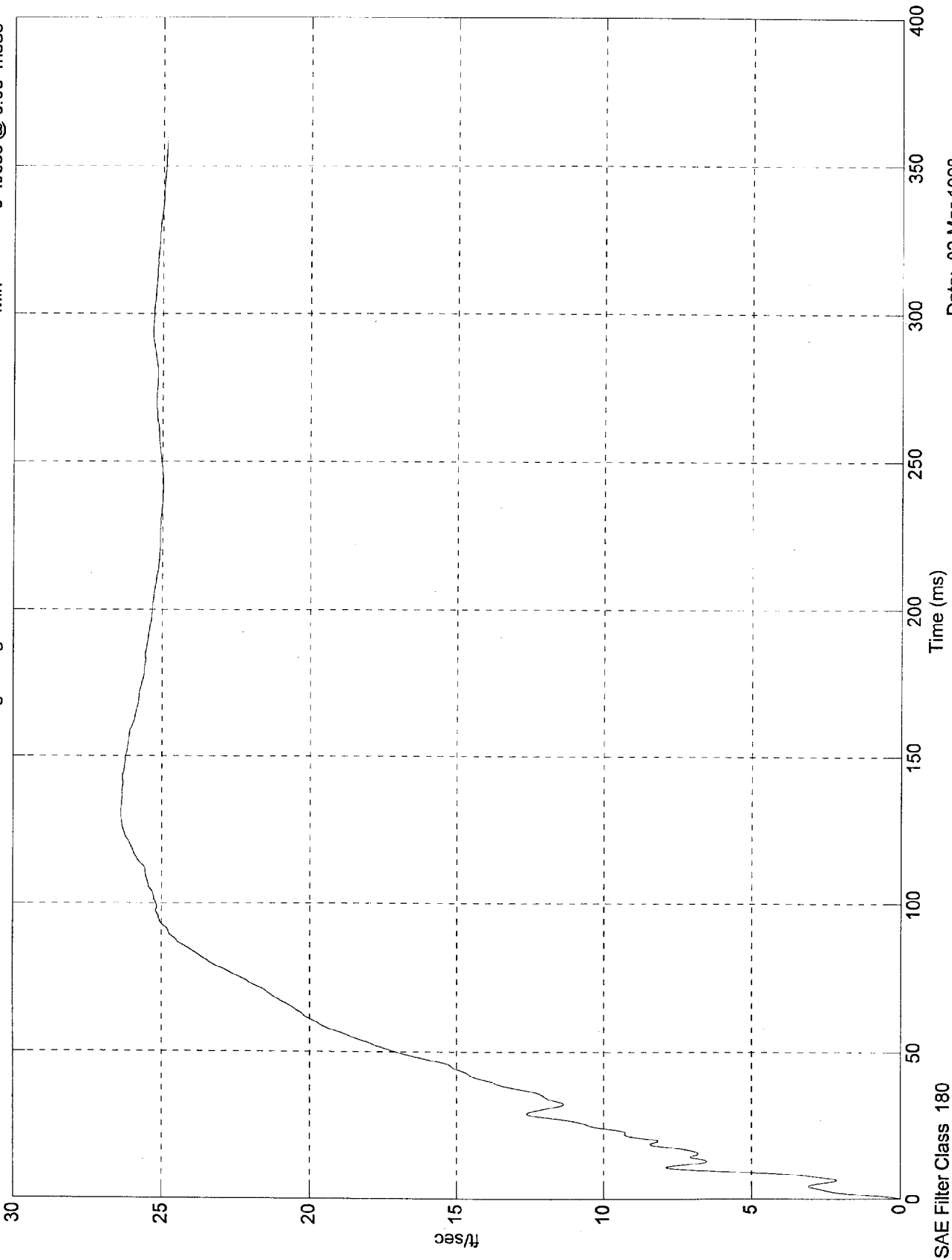
NHTSA No: CW5600
Date: 02 Mar 1998

SAE Filter Class 60

301 Rear 30 MPH-1998 Mitsubishi Galant

Max = 26.4 ft/sec @ 129.90 msec
Min = 0 ft/sec @ 0.00 msec

1st Integral Right Rear Xmember X

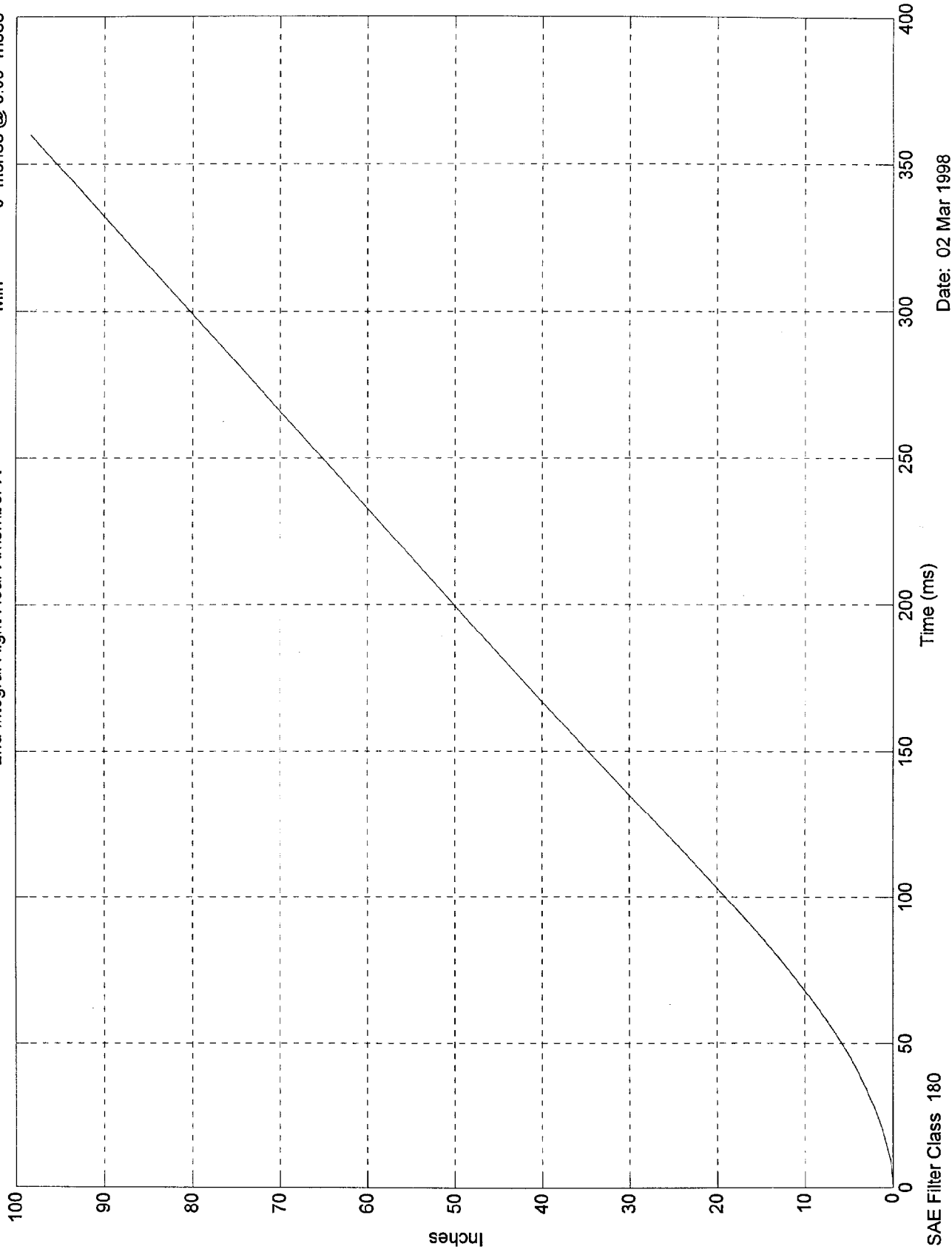


Date: 02 Mar 1998

301 Rear 30 MPH-1998 Mitsubishi Galant

Max = 98.4 Inches @ 360.00 msec
Min = 0 Inches @ 0.00 msec

2nd Integral Right Rear Xmember X



Date: 02 Mar 1998

SAE Filter Class 180

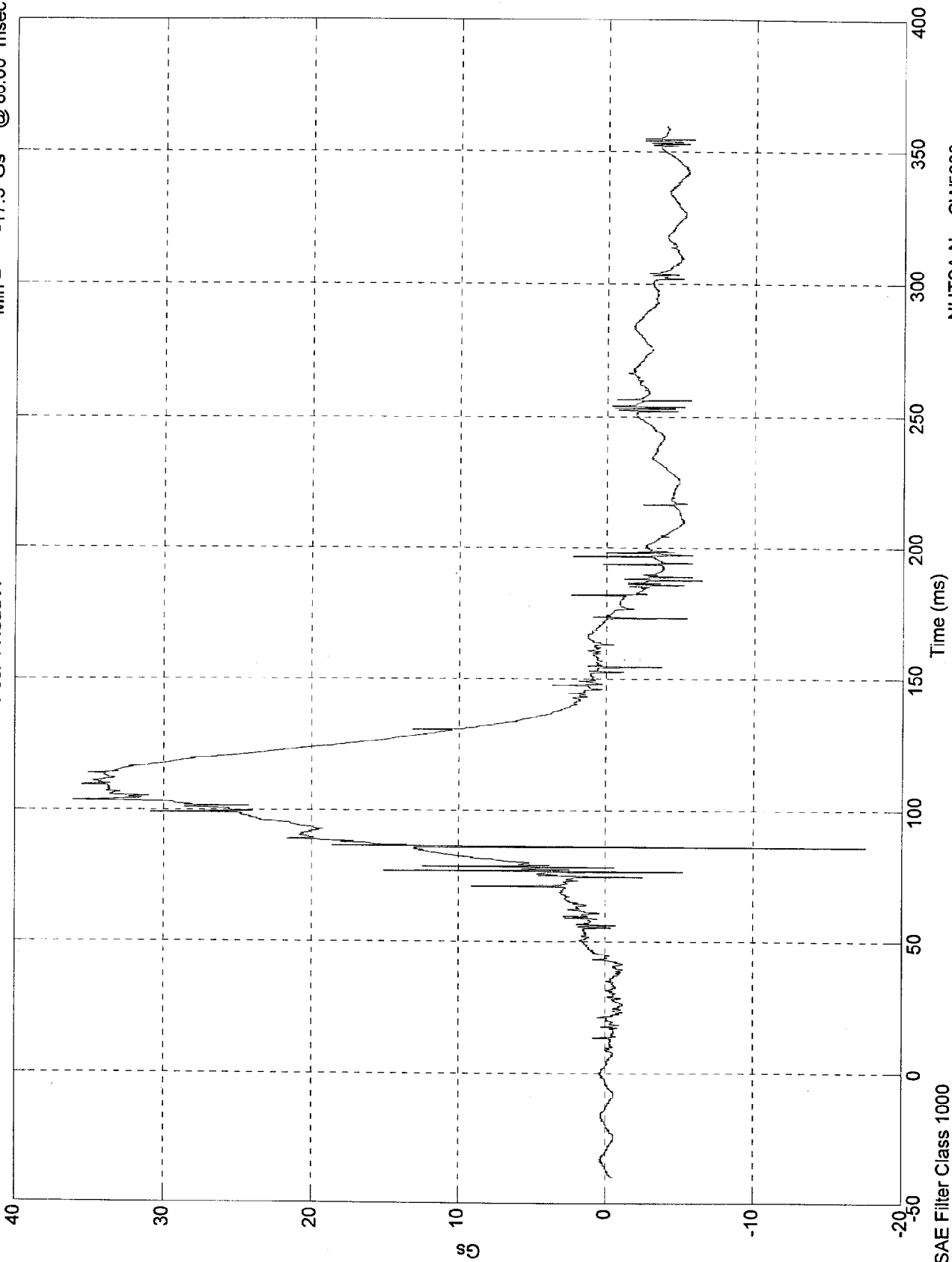
TEST NO. CW5600

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-1998 Mitsubishi Galant

Pos. 1 Head X

Max = 36.1 Gs @ 103.70 msec
Min = -17.5 Gs @ 86.00 msec

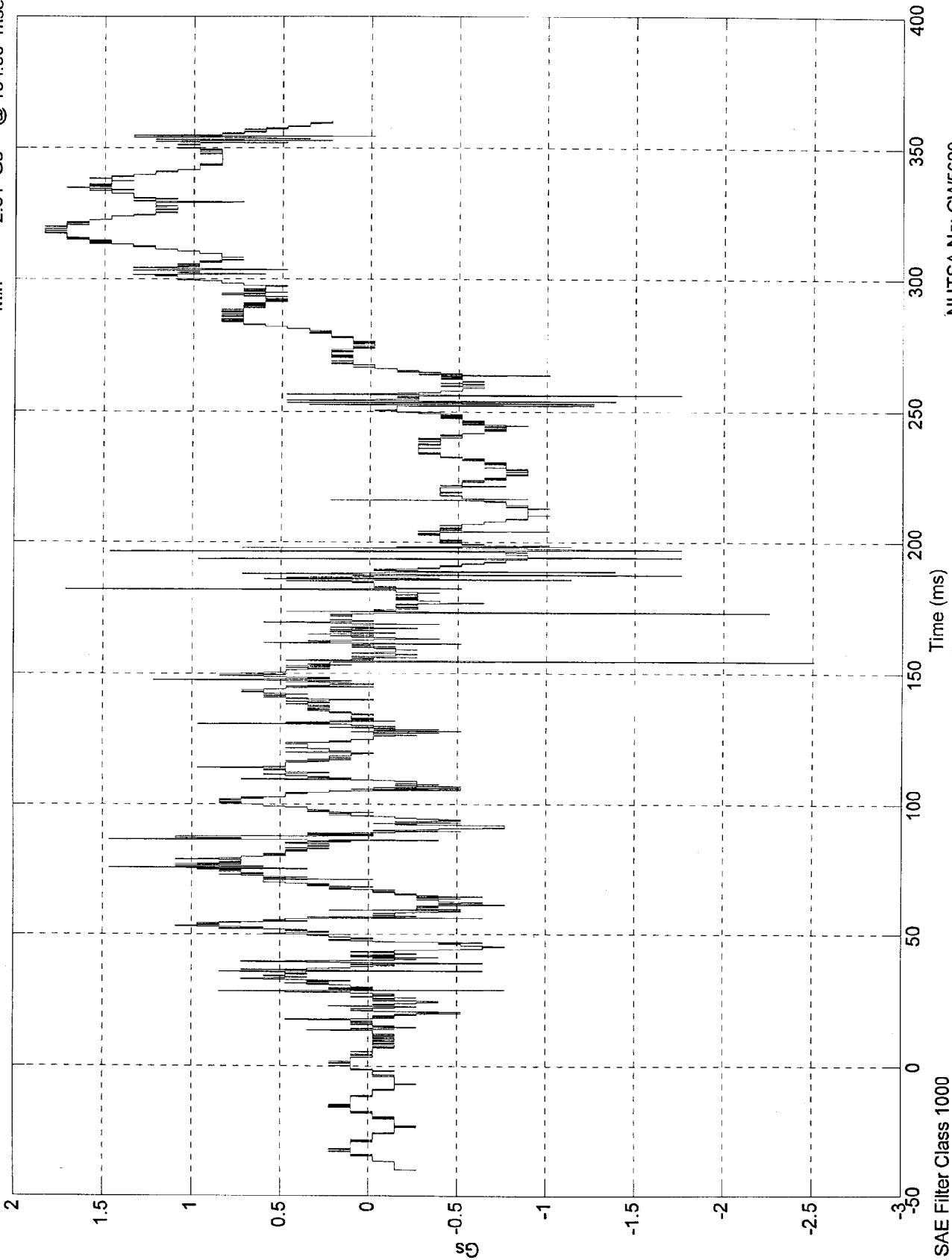


NHTSA No: CW5600
Date: 02 Mar 1998

301 Rear 30 MPH-1998 Mitsubishi Galant

Max = 1.84 Gs @ 317.30 msec
Min = -2.51 Gs @ 154.50 msec

Pos. 1 Head Y

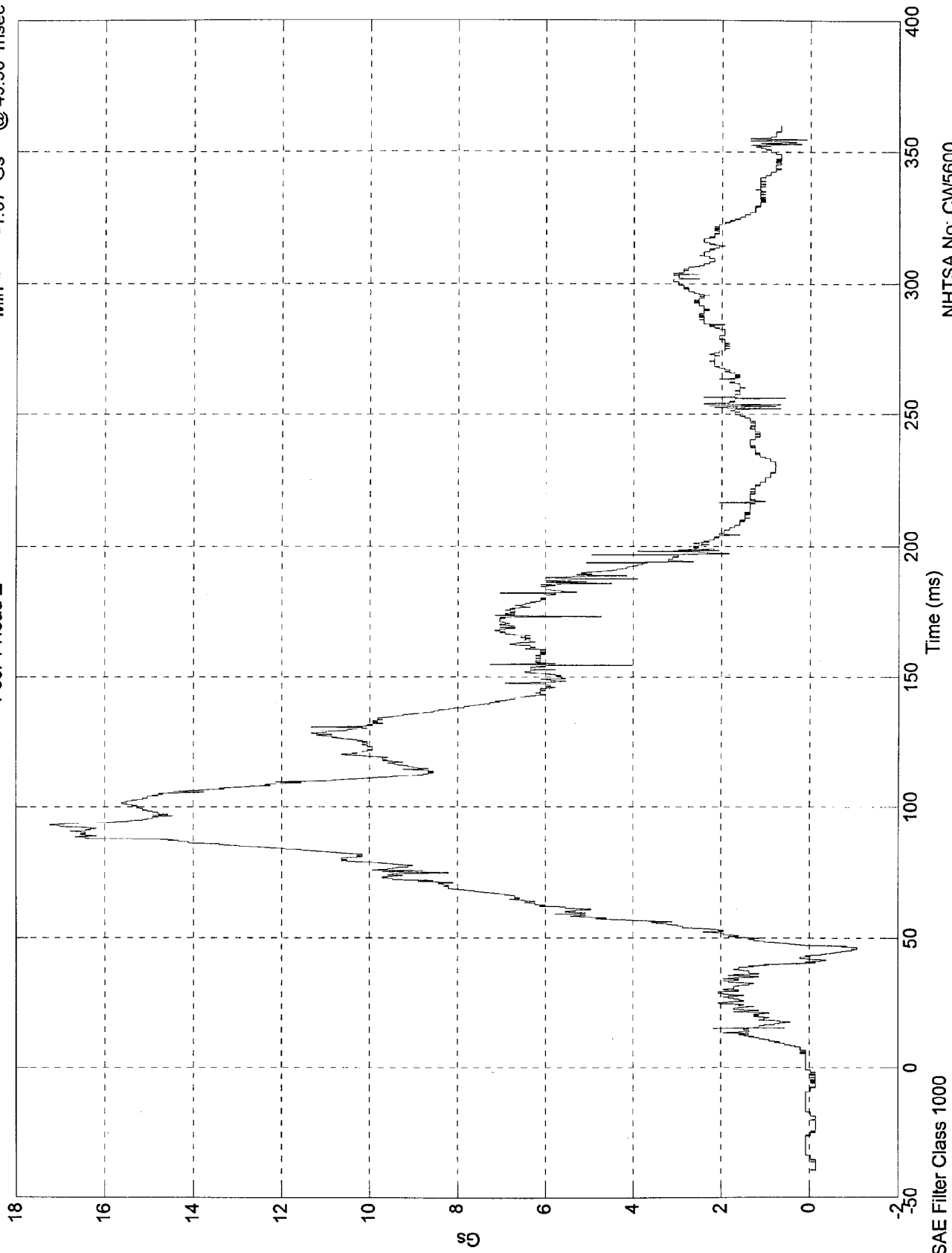


NHTSA No: CW5600
Date: 02 Mar 1998

301 Rear 30 MPH-1998 Mitsubishi Galant

Pos. 1 Head Z

Max = 17.2 Gs @ 92.80 msec
Min = -1.07 Gs @ 45.50 msec

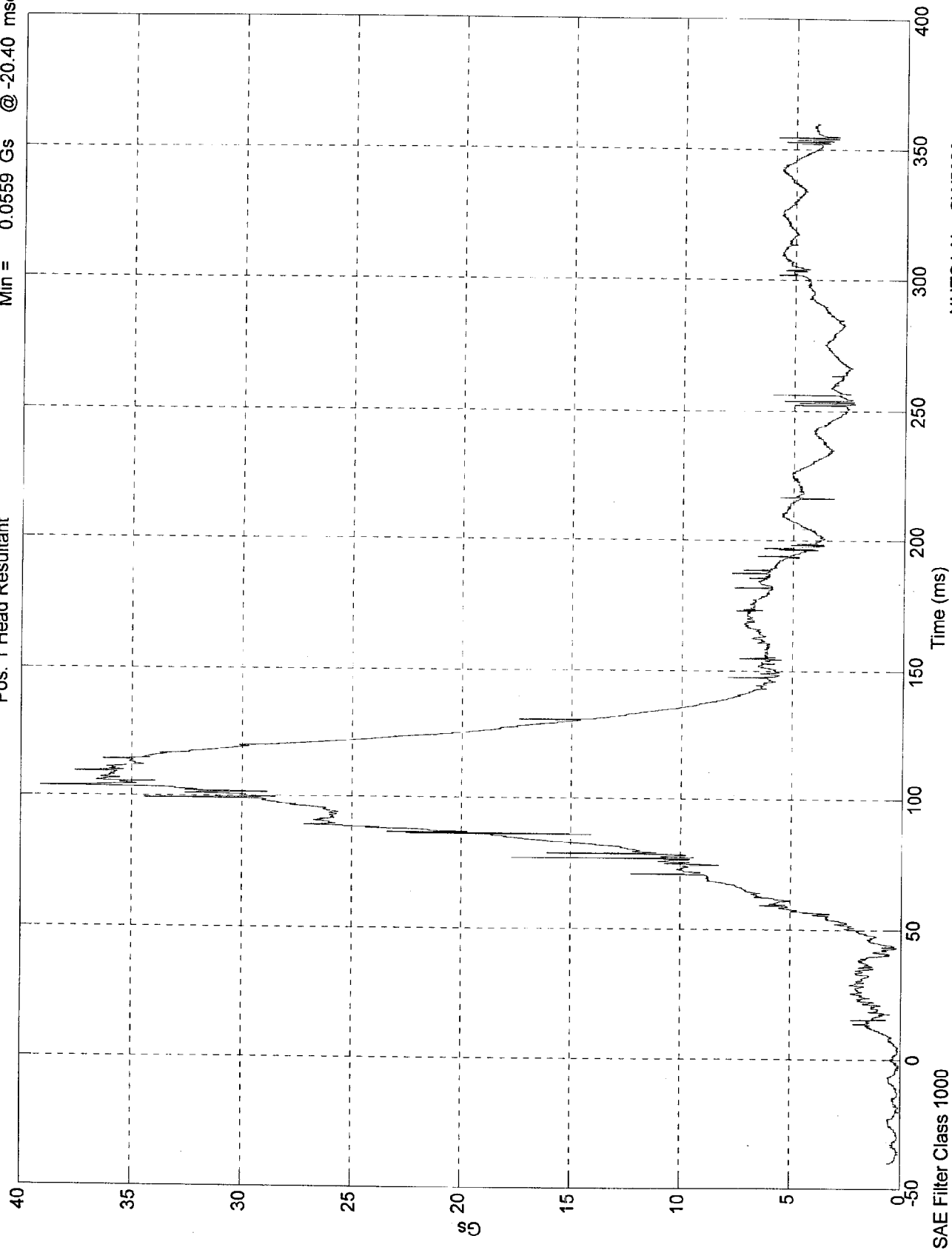


NHTSA No: CW5600
Date: 02 Mar 1998

301 Rear 30 MPH-1998 Mitsubishi Galant

Max = 39.1 Gs @ 103.70 msec
Min = 0.0559 Gs @ -20.40 msec

Pos. 1 Head Resultant

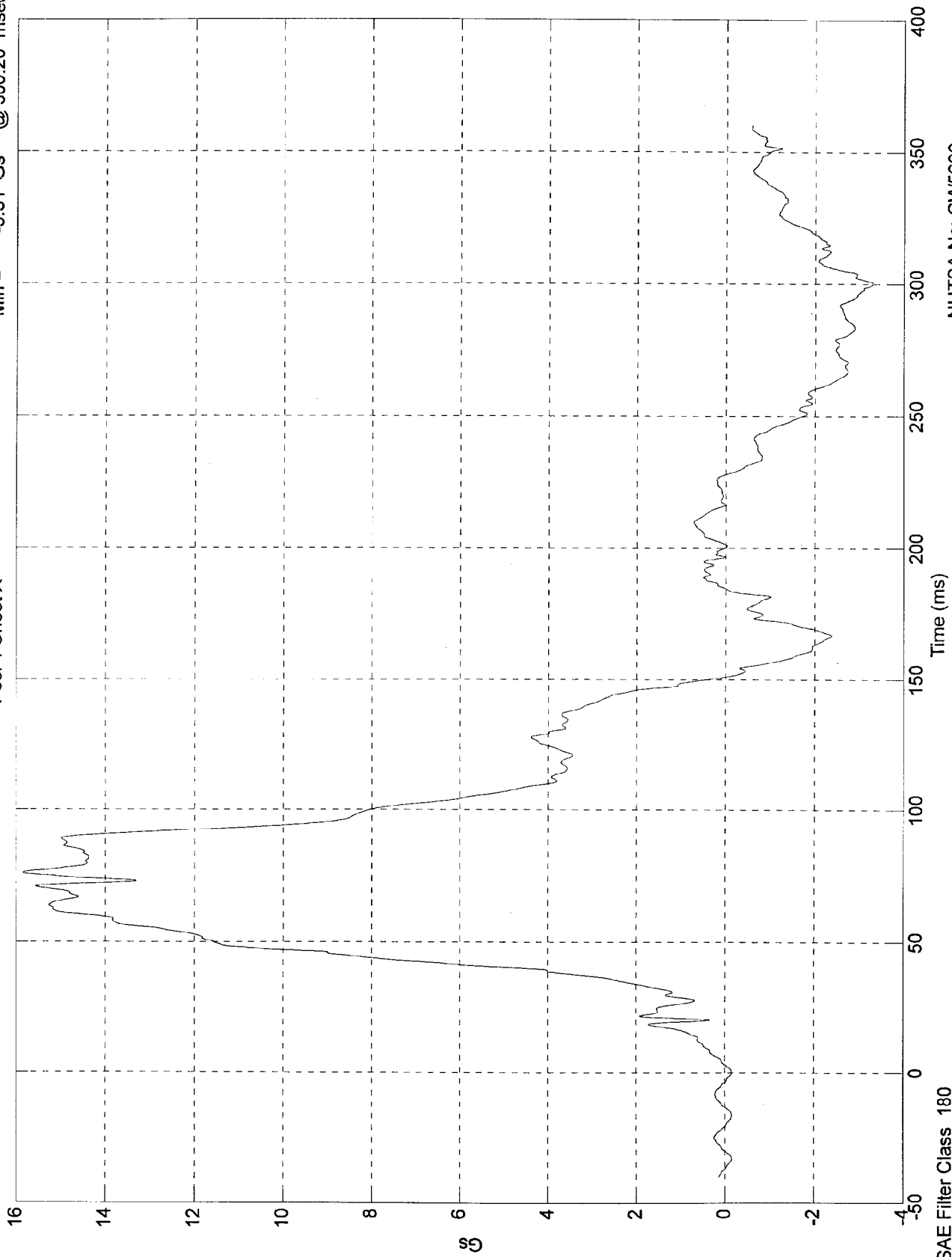


NHTSA No: CW5600
Date: 02 Mar 1998

301 Rear 30 MPH-1998 Mitsubishi Galant

Pos. 1 Chest X

Max = 15.8 Gs @ 75.90 msec
Min = -3.31 Gs @ 300.20 msec



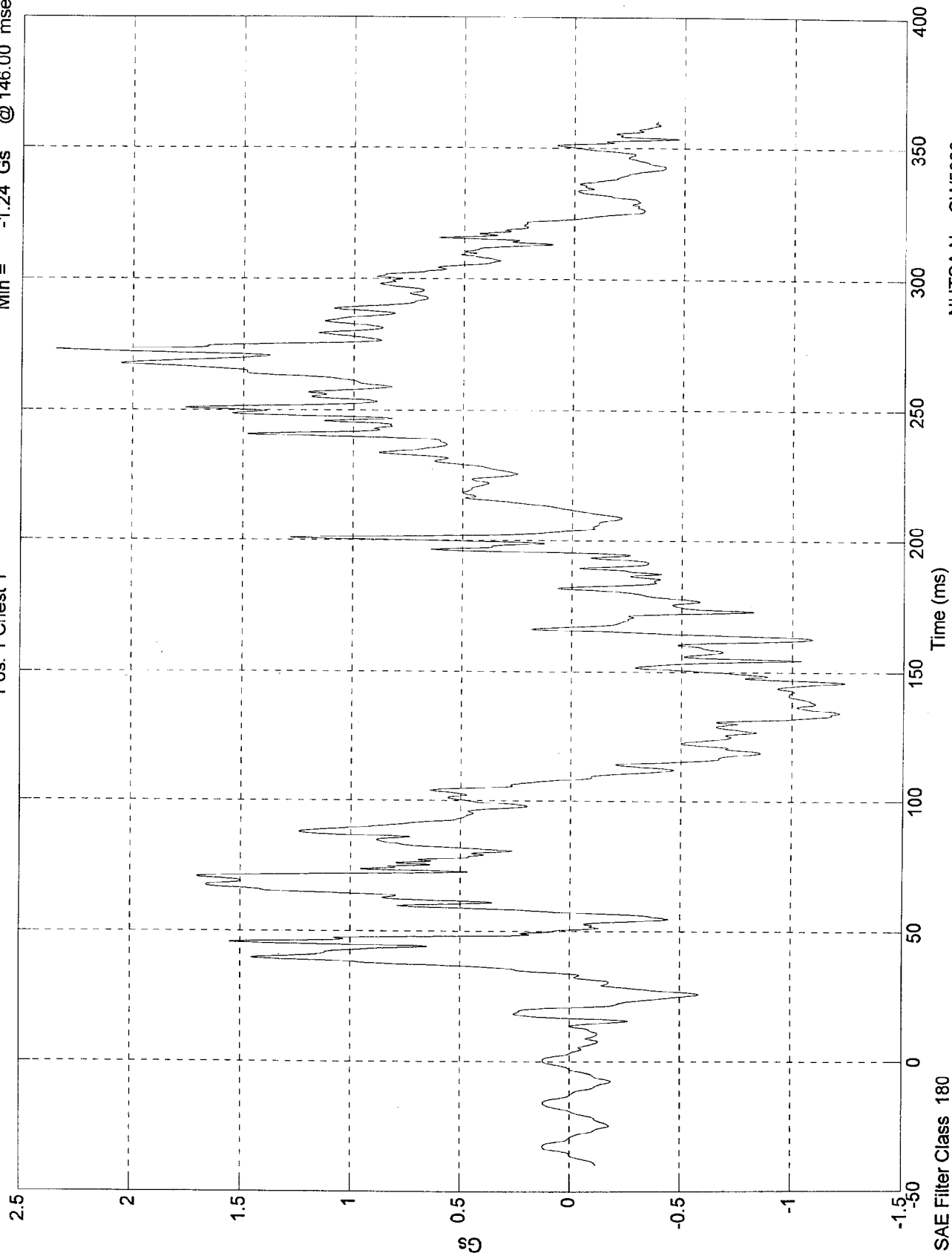
NHTSA No: CW5600
Date: 02 Mar 1998

SAE Filter Class 180

301 Rear 30 MPH-1998 Mitsubishi Galant

Max = 2.35 Gs @ 272.90 msec
Min = -1.24 Gs @ 146.00 msec

Pos. 1 Chest Y

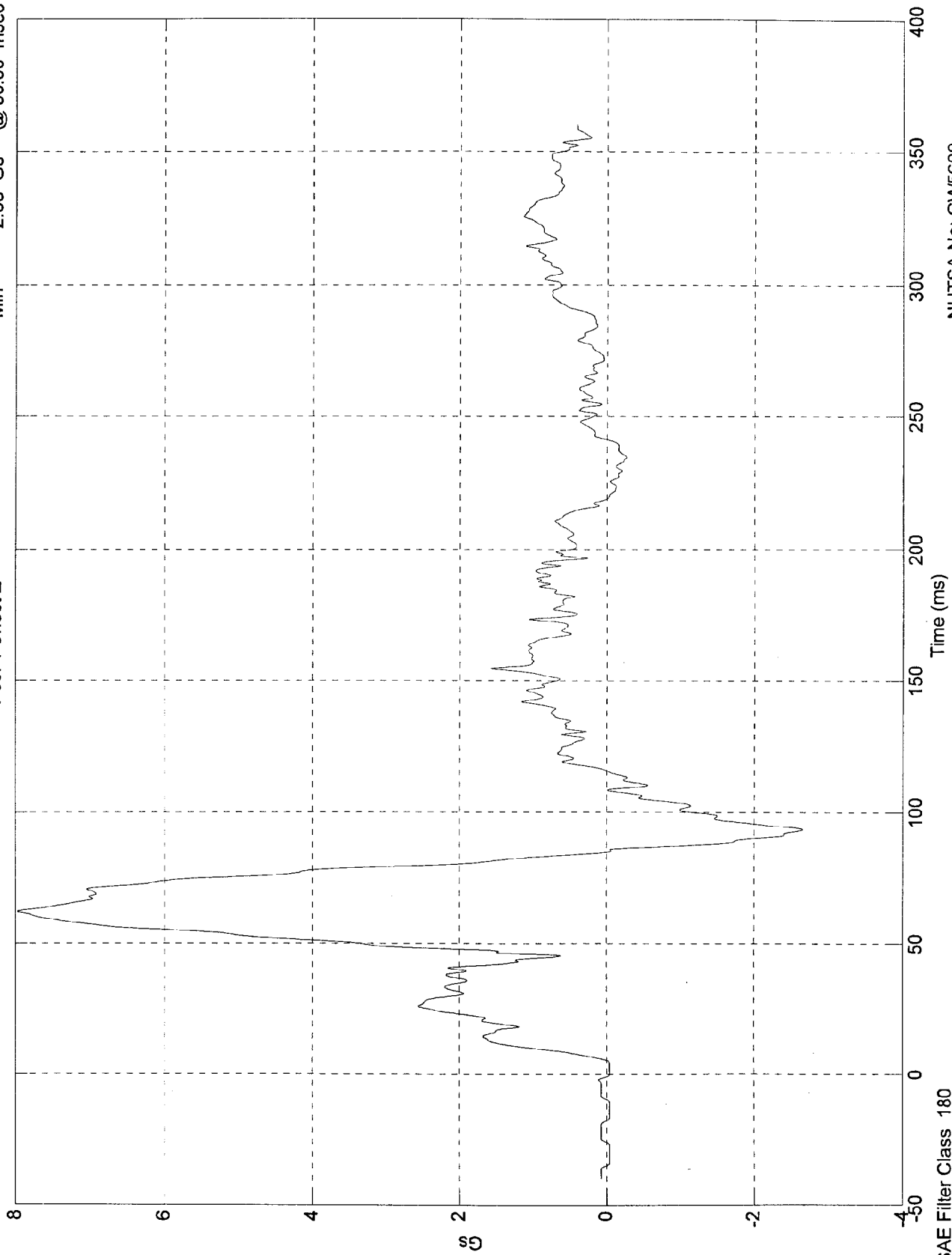


NHTSA No: CW5600
Date: 02 Mar 1998

301 Rear 30 MPH-1998 Mitsubishi Galant

Pos. 1 Chest Z

Max = 7.97 Gs @ 62.30 msec
Min = -2.65 Gs @ 93.30 msec



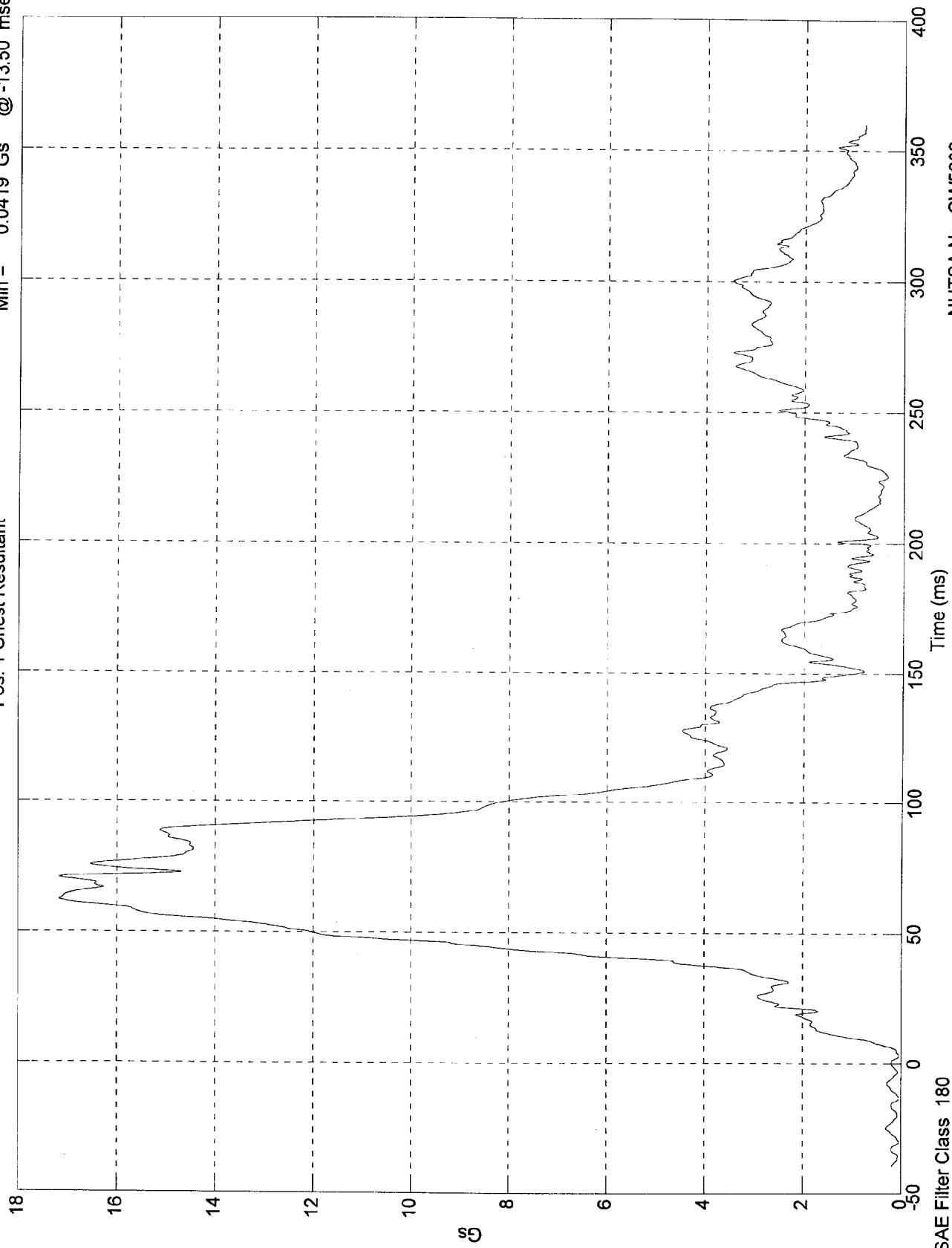
SAE Filter Class 180

NHTSA No: CW5600
Date: 02 Mar 1998

301 Rear 30 MPH-1998 Mitsubishi Galant

Pos. 1 Chest Resultant

Max = 17.2 Gs @ 62.30 msec
Min = 0.0419 Gs @ -13.50 msec



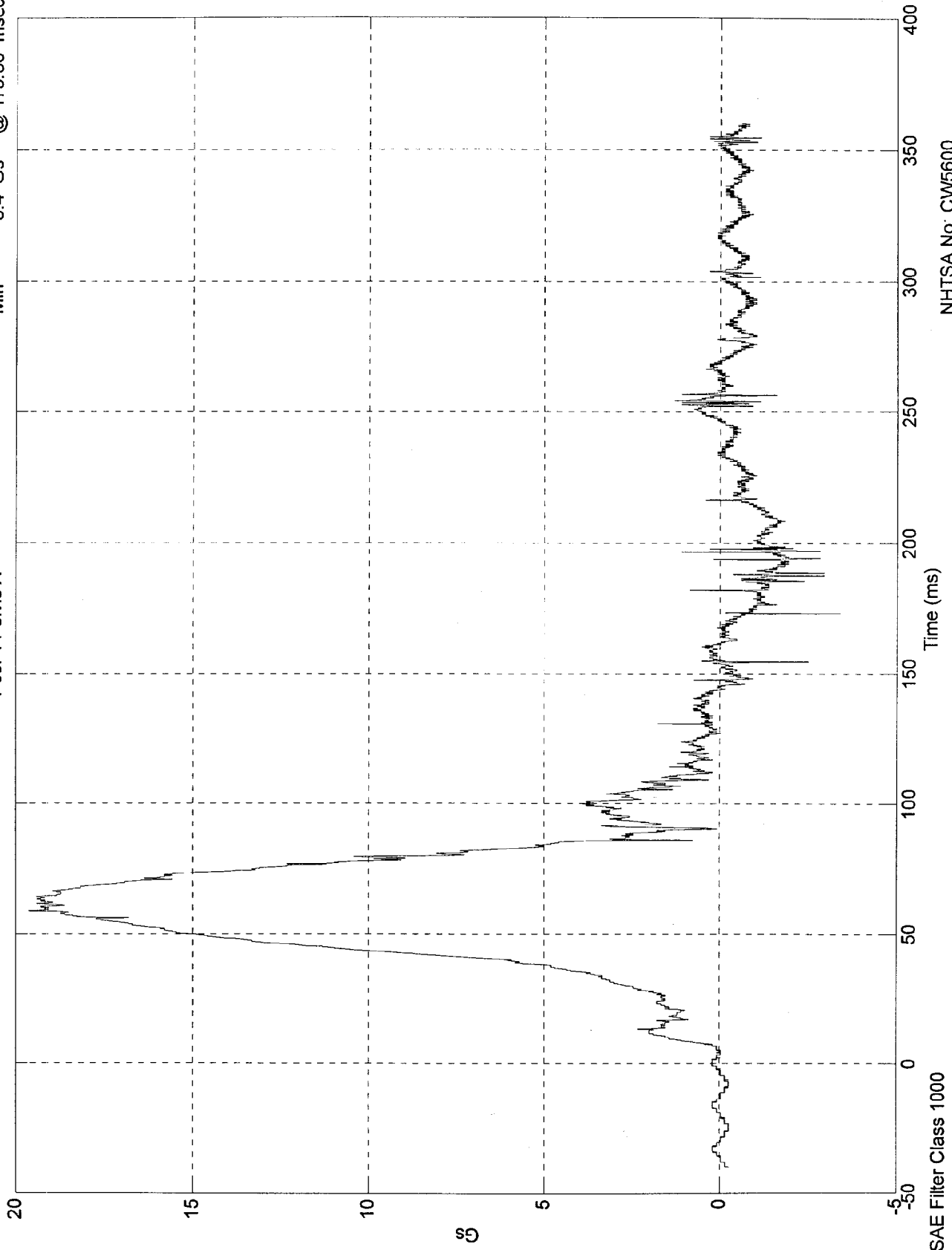
SAE Filter Class 180

NHTSA No: CW5600
Date: 02 Mar 1998

301 Rear 30 MPH-1998 Mitsubishi Galant

Pos. 1 Pelvic X

Max = 19.6 Gs @ 59.00 msec
Min = -3.4 Gs @ 173.30 msec

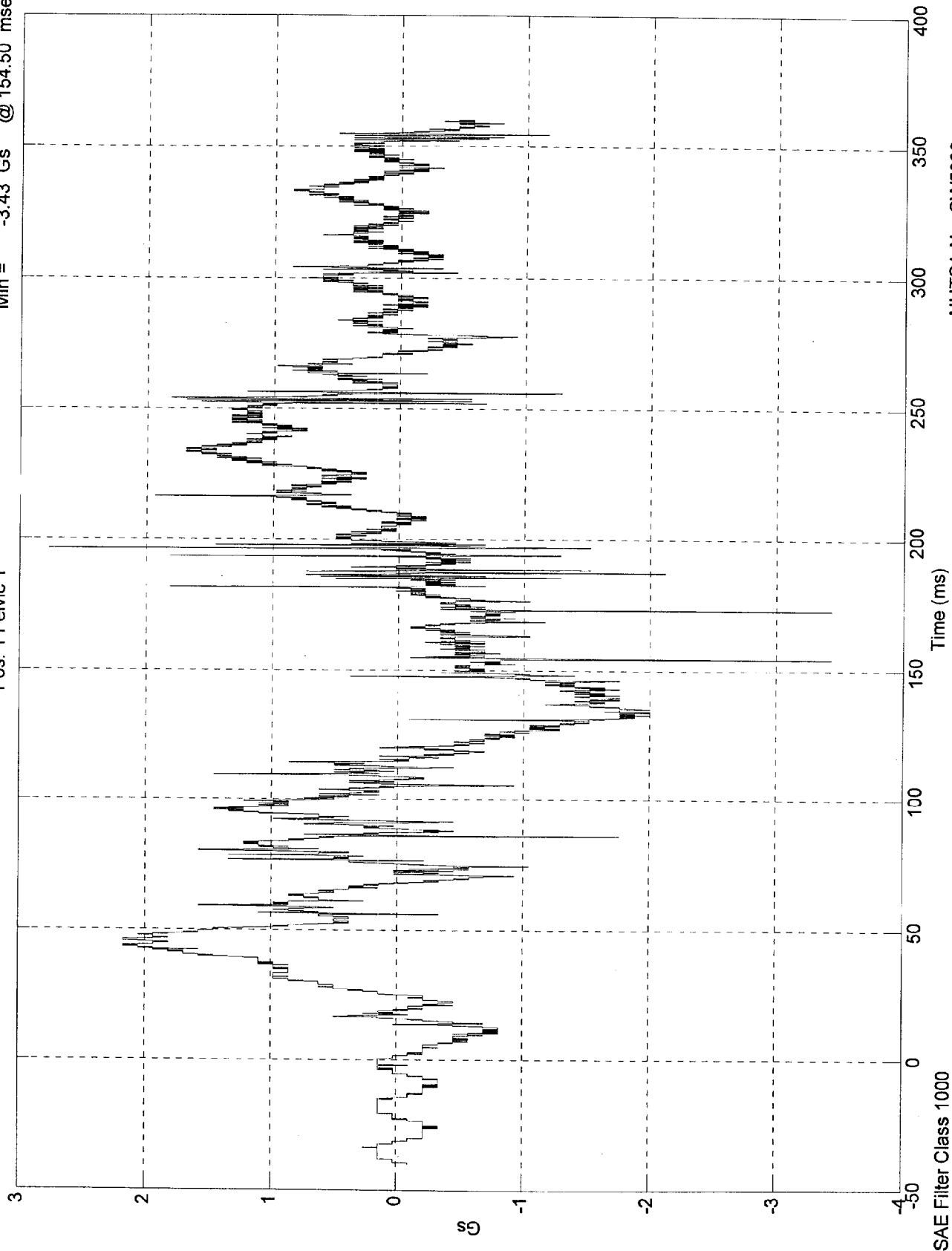


NHTSA No: CW5600
Date: 02 Mar 1998

301 Rear 30 MPH-1998 Mitsubishi Galant

Max = 2.77 Gs @ 196.50 msec
Min = -3.43 Gs @ 154.50 msec

Pos. 1 Pelvic Y

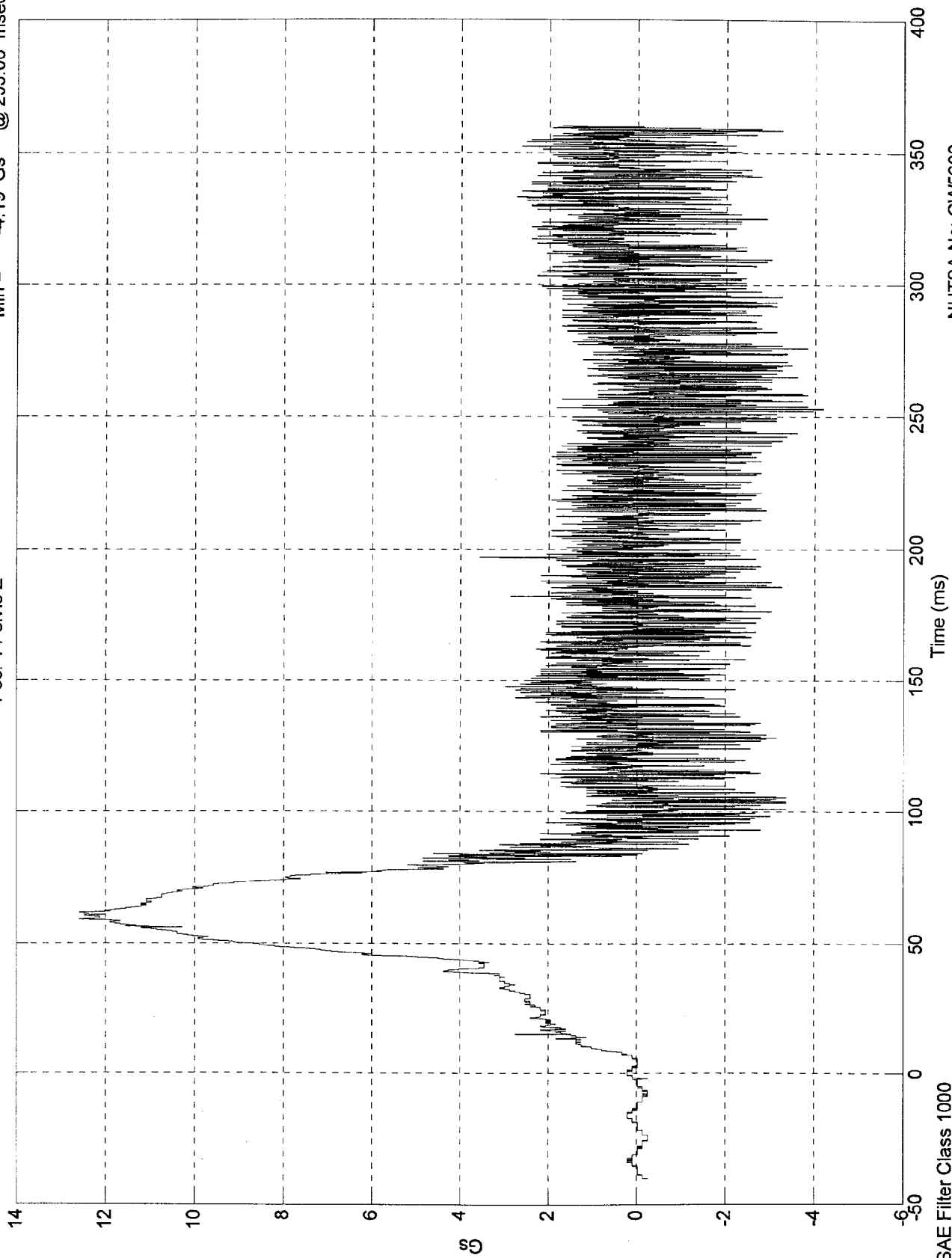


NHTSA No: CW5600
Date: 02 Mar 1998

301 Rear 30 MPH-1998 Mitsubishi Galant

Max = 12.6 Gs @ 59.00 msec
Min = -4.19 Gs @ 253.00 msec

Pos. 1 Pelvic Z

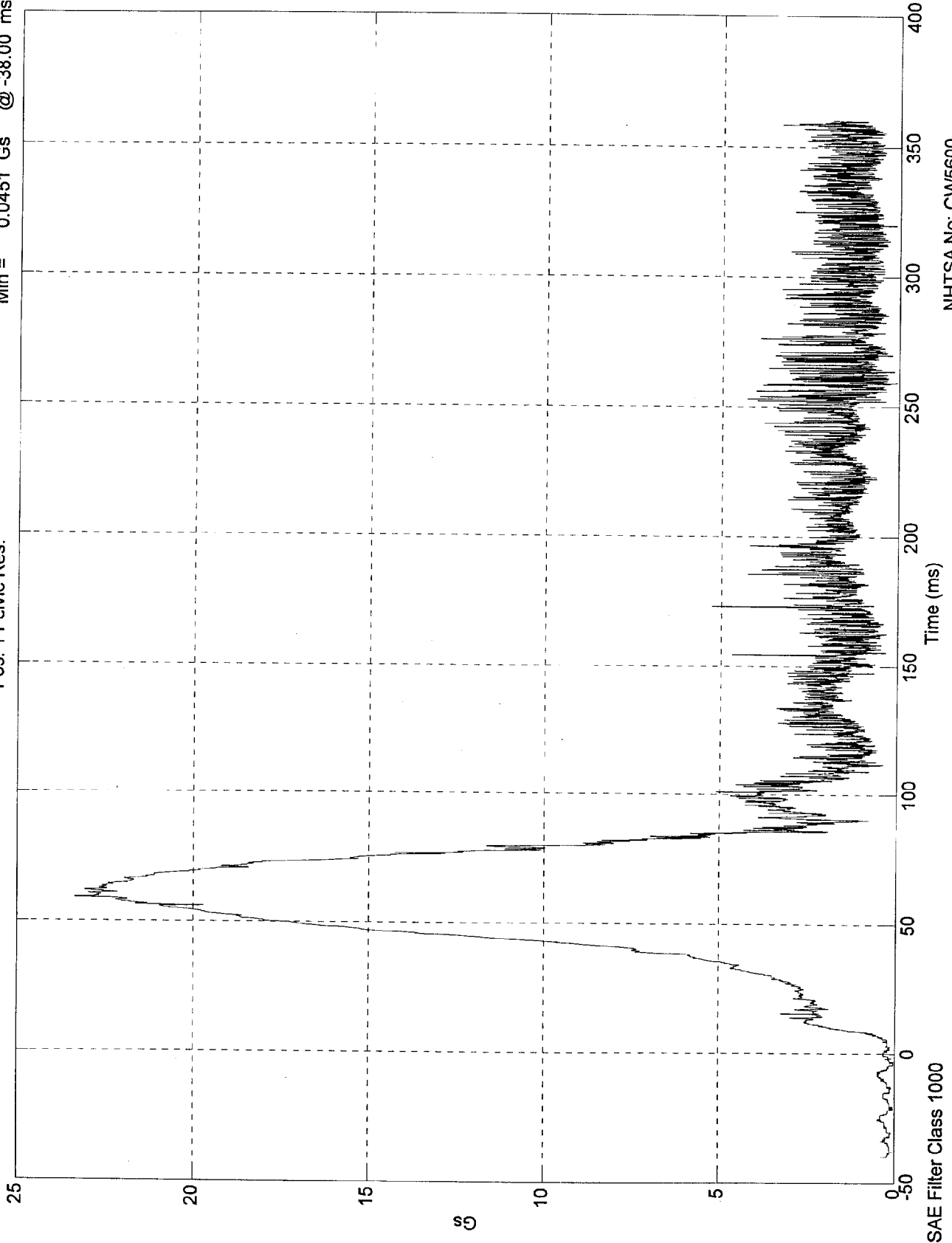


NHTSA No: CW5600
Date: 02 Mar 1998

301 Rear 30 MPH-1998 Mitsubishi Galant

Max = 23.4 Gs @ 59.00 msec
Min = 0.0451 Gs @ -38.00 msec

Pos. 1 Pelvic Res.

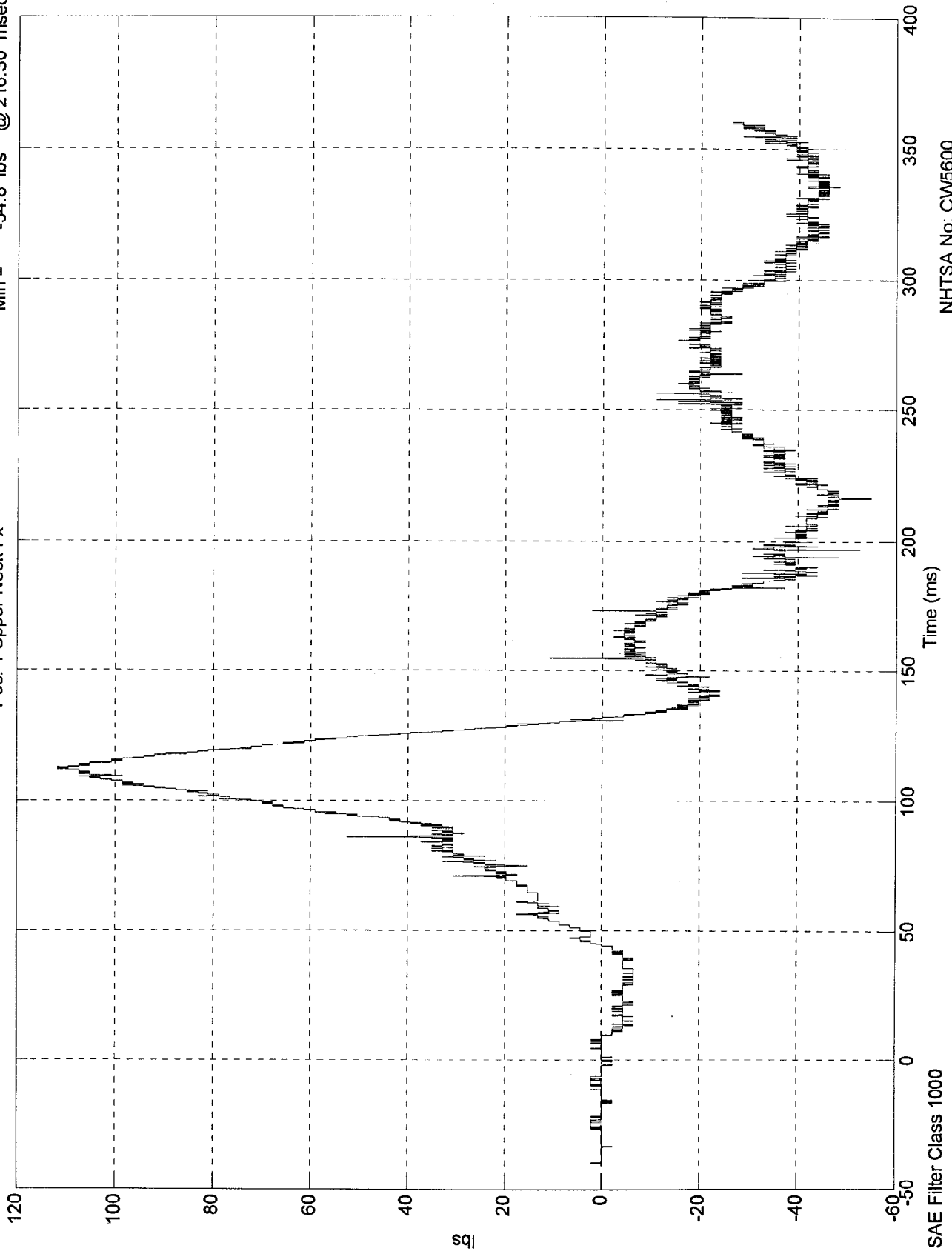


NHTSA No: CW5600
Date: 02 Mar 1998

301 Rear 30 MPH-1998 Mitsubishi Galant

Pos. 1 Upper Neck Fx

Max = 112 lbs @ 111.80 msec
Min = -54.8 lbs @ 216.30 msec

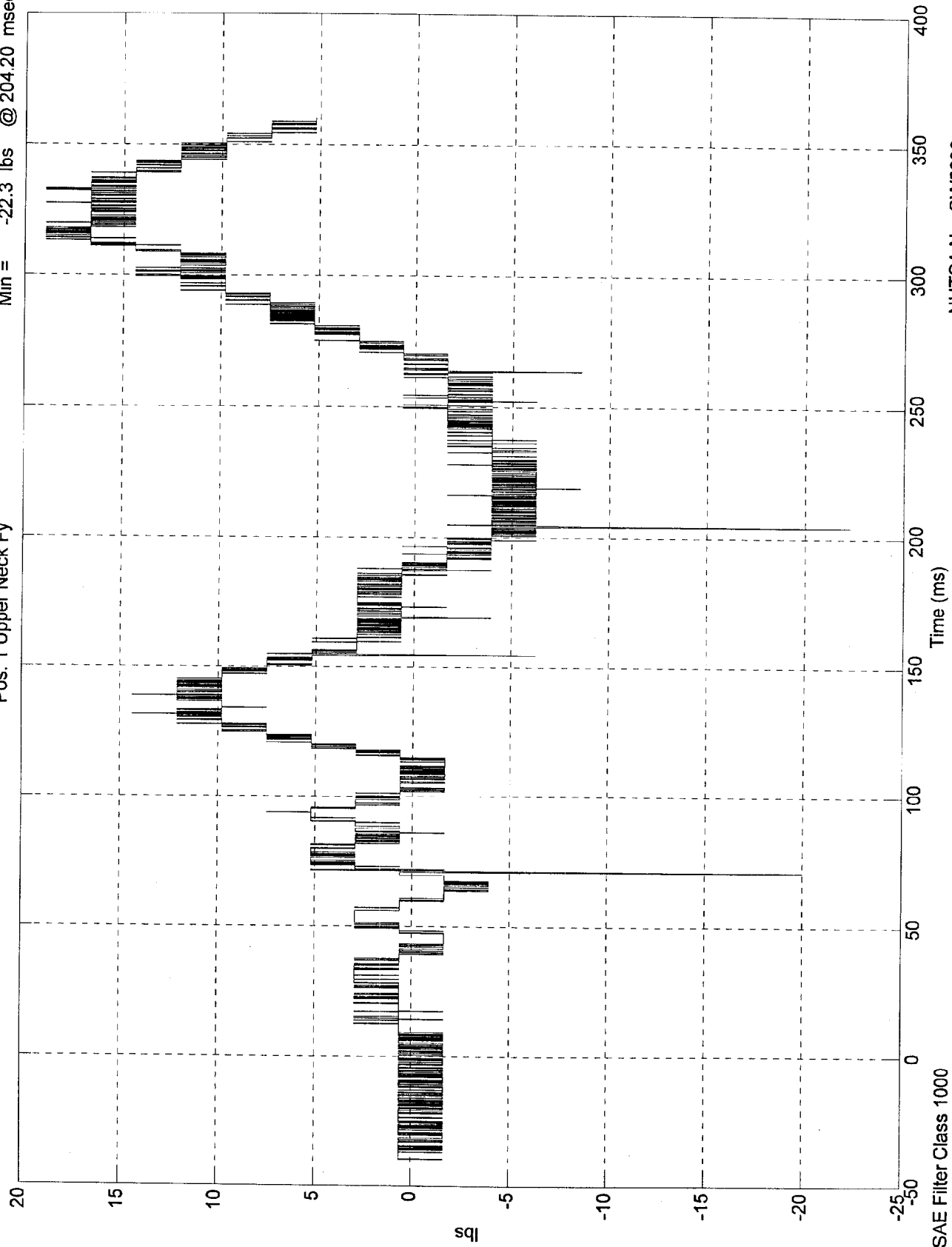


NHTSA No: CW5600
Date: 02 Mar 1998

301 Rear 30 MPH-1998 Mitsubishi Galant

Max = 19 lbs @ 313.60 msec
Min = -22.3 lbs @ 204.20 msec

Pos. 1 Upper Neck Fy

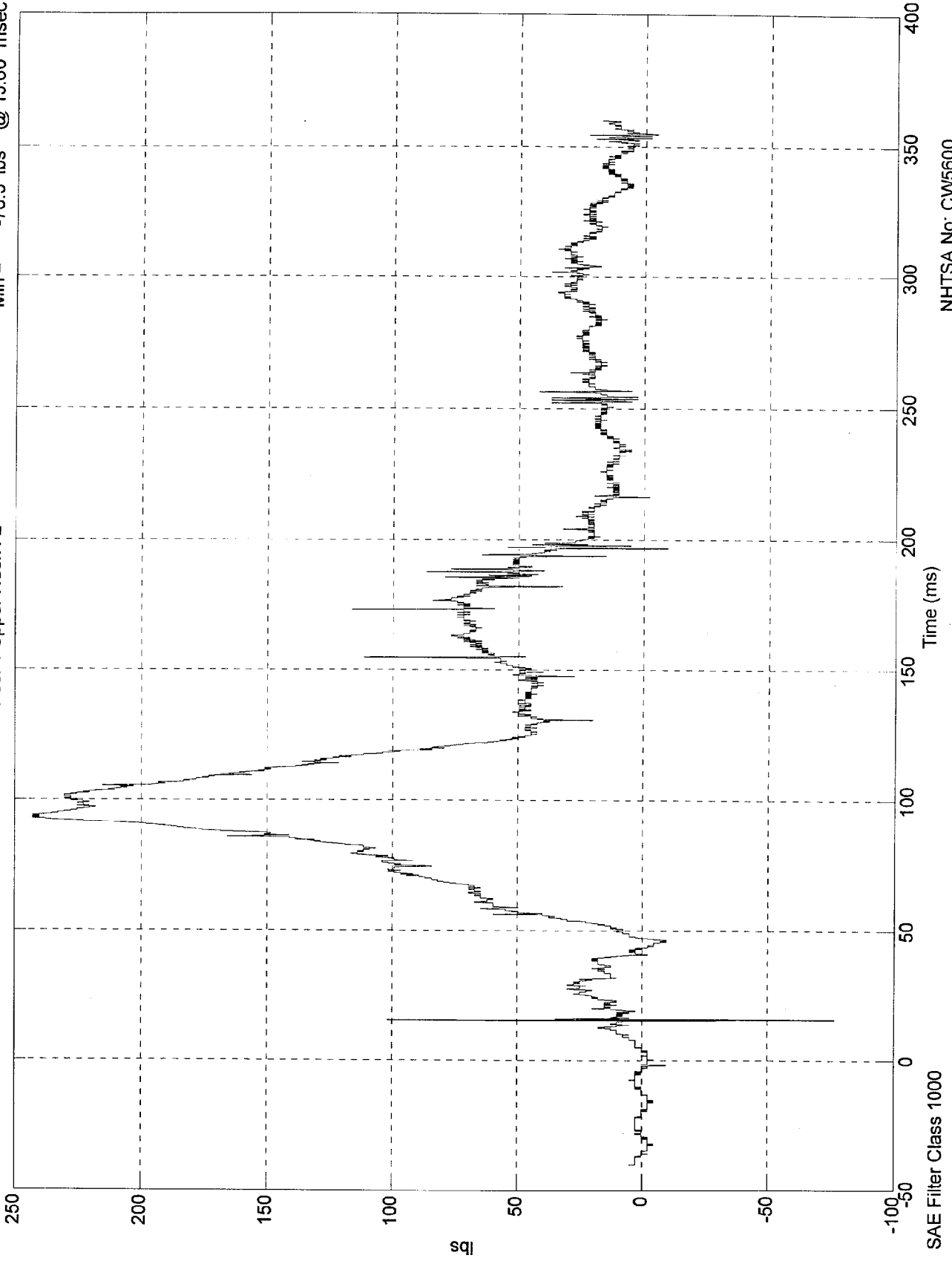


NHTSA No: CW5600
Date: 02 Mar 1998

301 Rear 30 MPH-1998 Mitsubishi Galant

Max = 243 lbs @ 93.00 msec
Min = -76.5 lbs @ 15.60 msec

Pos. 1 Upper Neck Fz

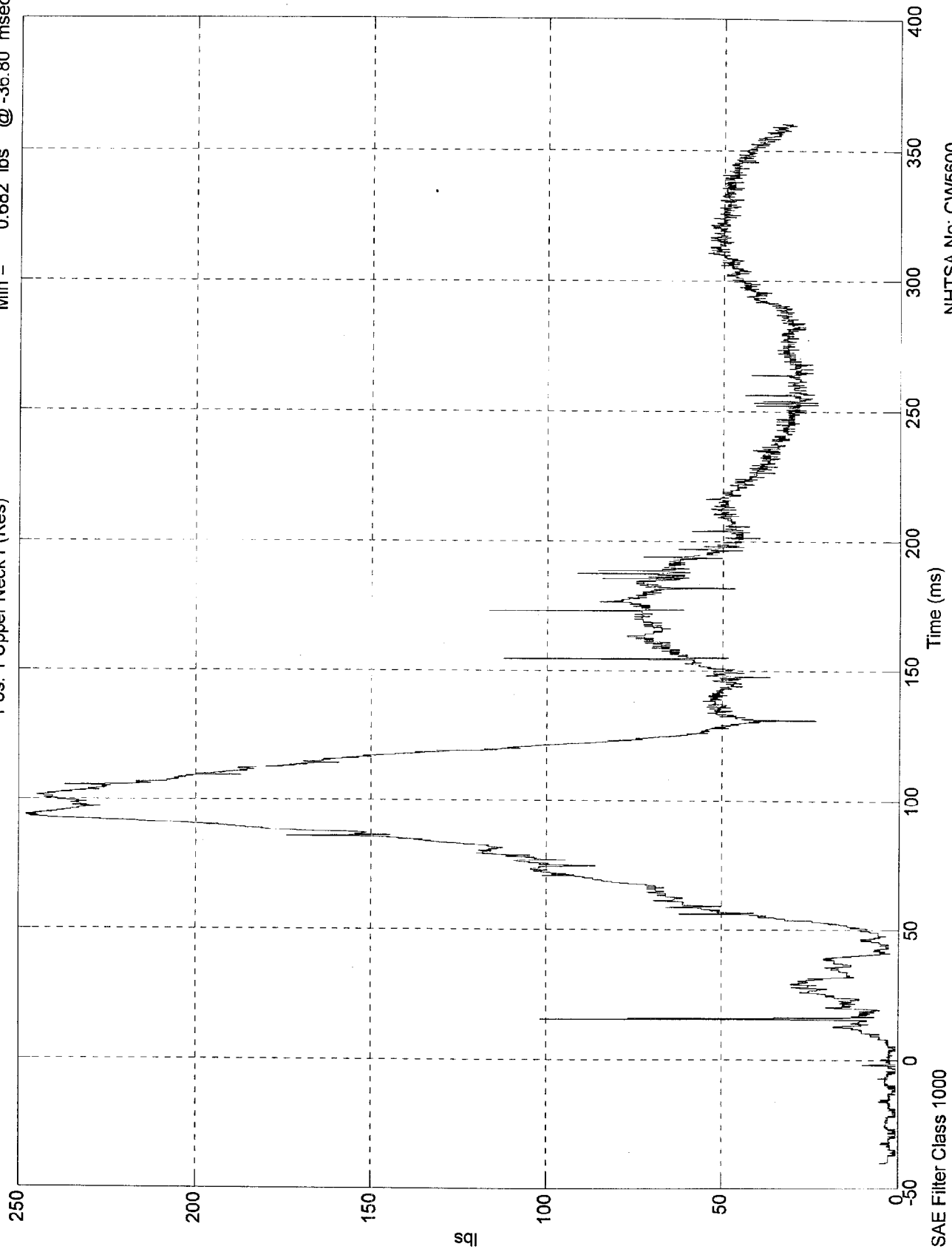


NHTSA No: CW5600
Date: 02 Mar 1998

301 Rear 30 MPH-1998 Mitsubishi Galant

Max = 248 lbs @ 93.60 msec
Min = 0.682 lbs @ -36.80 msec

Pos. 1 Upper Neck F(Res)

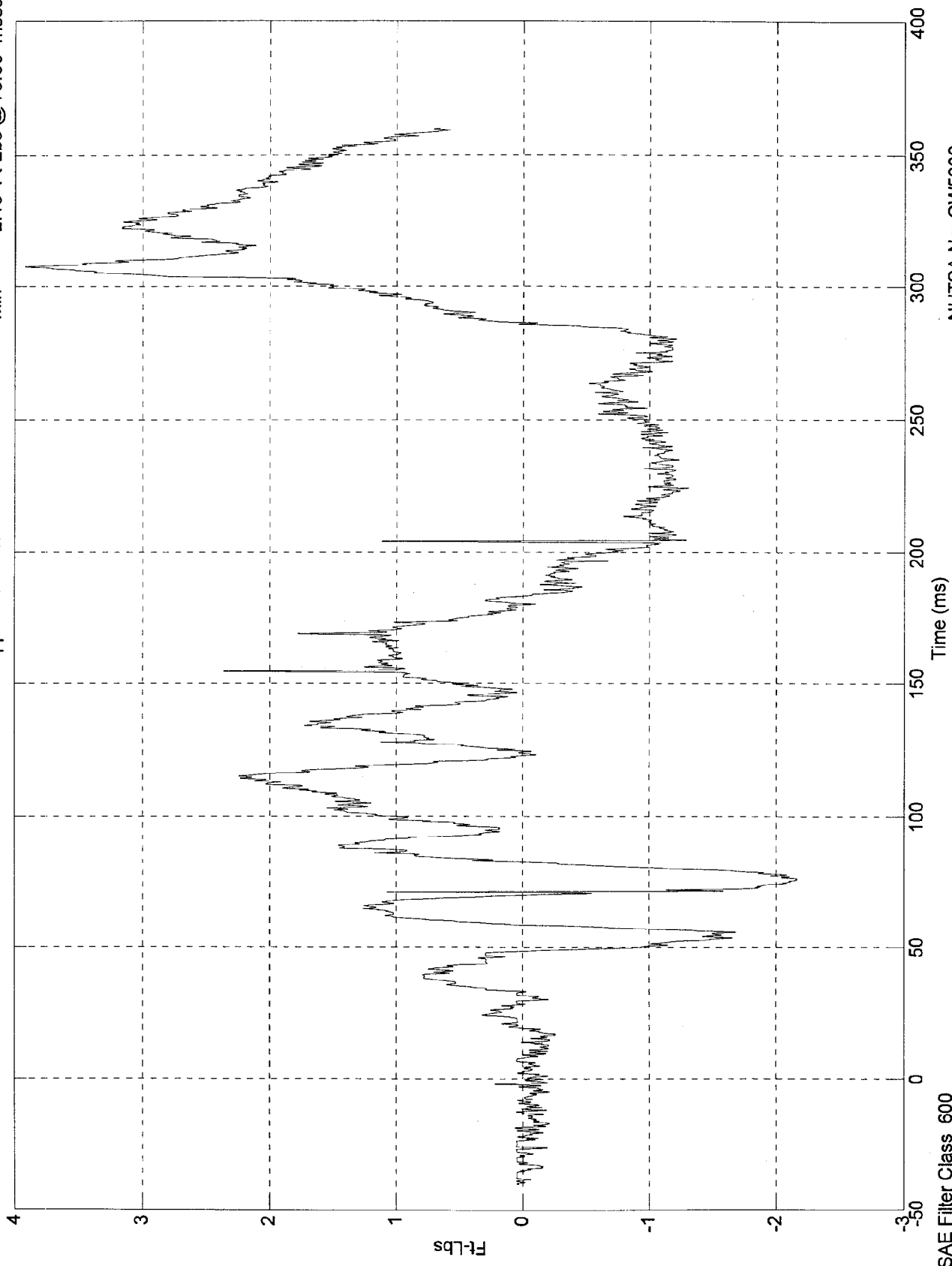


NHTSA No: CW5600
Date: 02 Mar 1998

301 Rear 30 MPH-1998 Mitsubishi Galant

Max = 3.92 Ft-Lbs @ 307.60 msec
Min = -2.16 Ft-Lbs @ 76.00 msec

Pos. 1 Upper Neck Mx



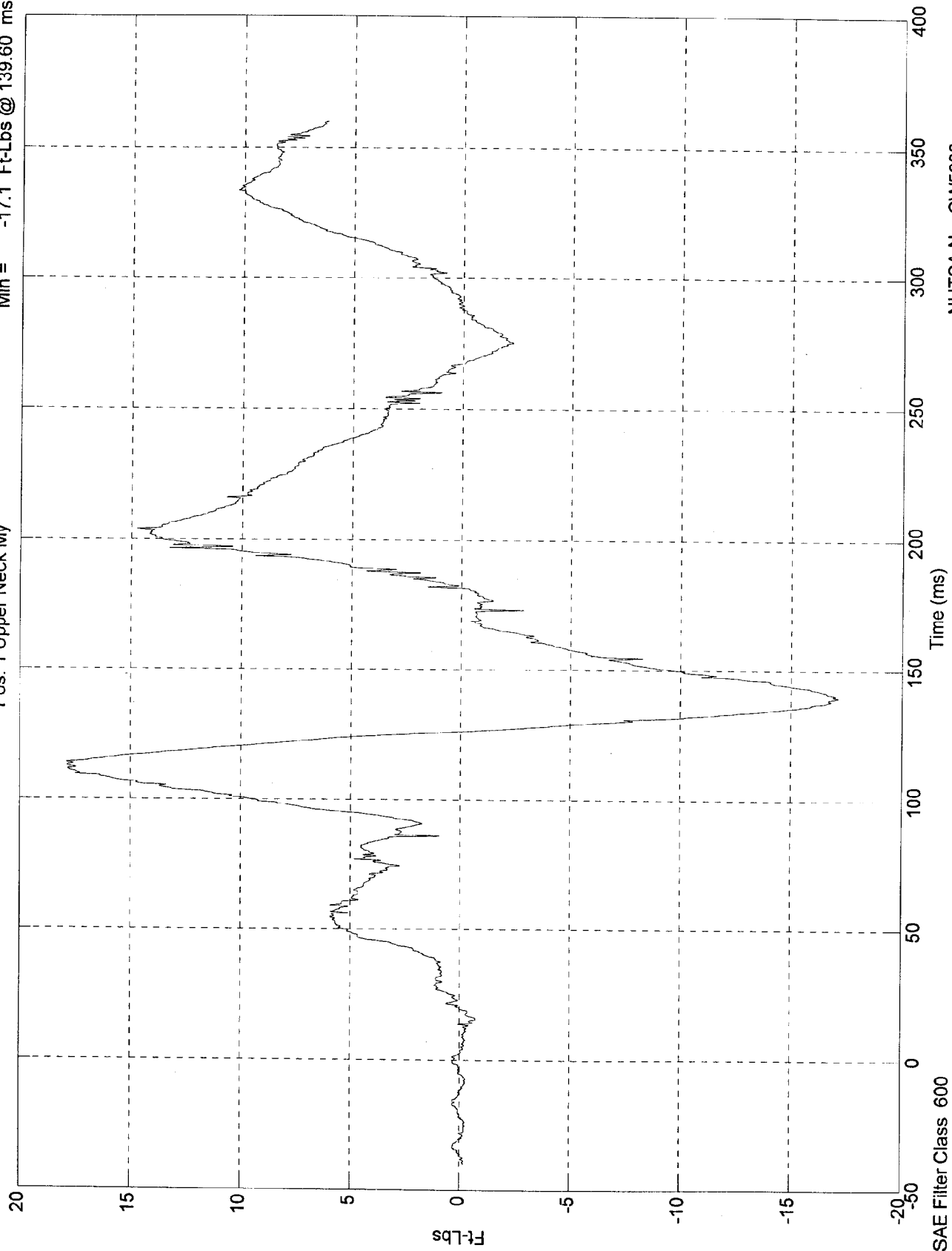
SAE Filter Class 600

NHTSA No: CW5600
Date: 02 Mar 1998

301 Rear 30 MPH-1998 Mitsubishi Galant

Max = 17.9 Ft-Lbs @ 113.90 msec
Min = -17.1 Ft-Lbs @ 139.60 msec

Pos. 1 Upper Neck My

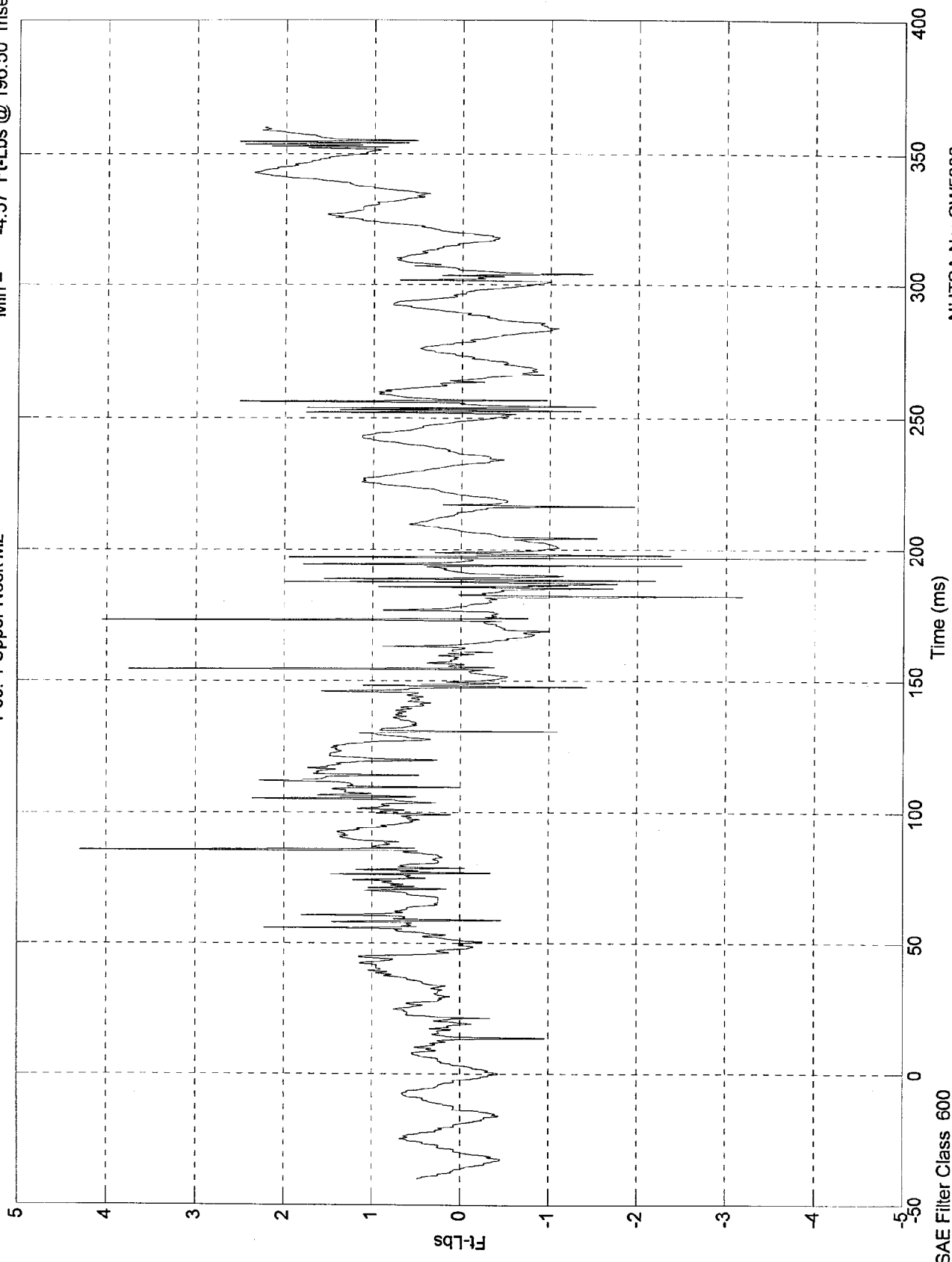


NHTSA No: CW5600
Date: 02 Mar 1998

301 Rear 30 MPH-1998 Mitsubishi Galant

Max = 4.3 Ft-Lbs @ 85.90 msec
Min = -4.57 Ft-Lbs @ 196.50 msec

Pos. 1 Upper Neck Mz

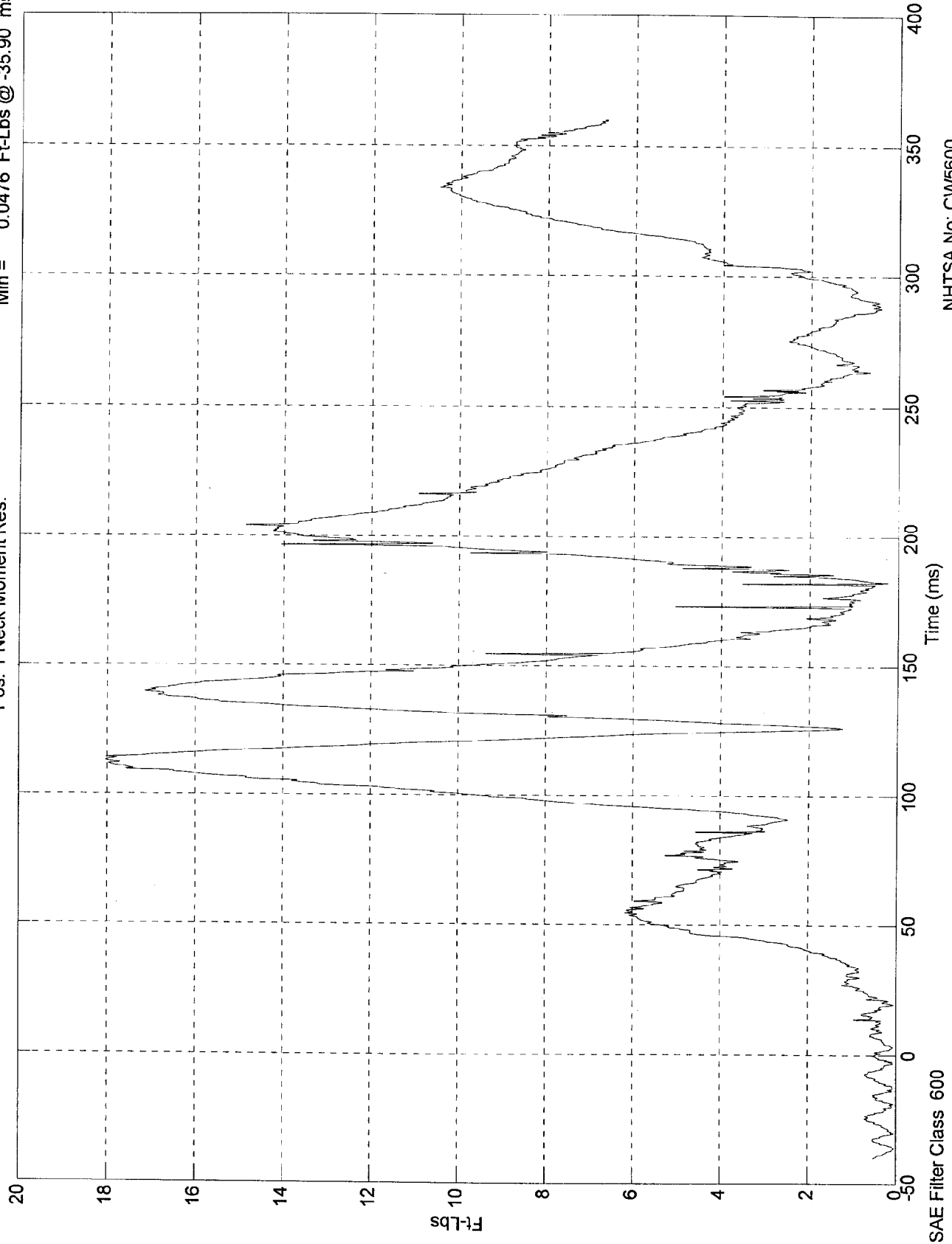


NHTSA No: CW5600
Date: 02 Mar 1998

301 Rear 30 MPH-1998 Mitsubishi Galant

Max = 18 Ft-Lbs @ 112.70 msec
Min = 0.0476 Ft-Lbs @ -35.90 msec

Pos. 1 Neck Moment Res.

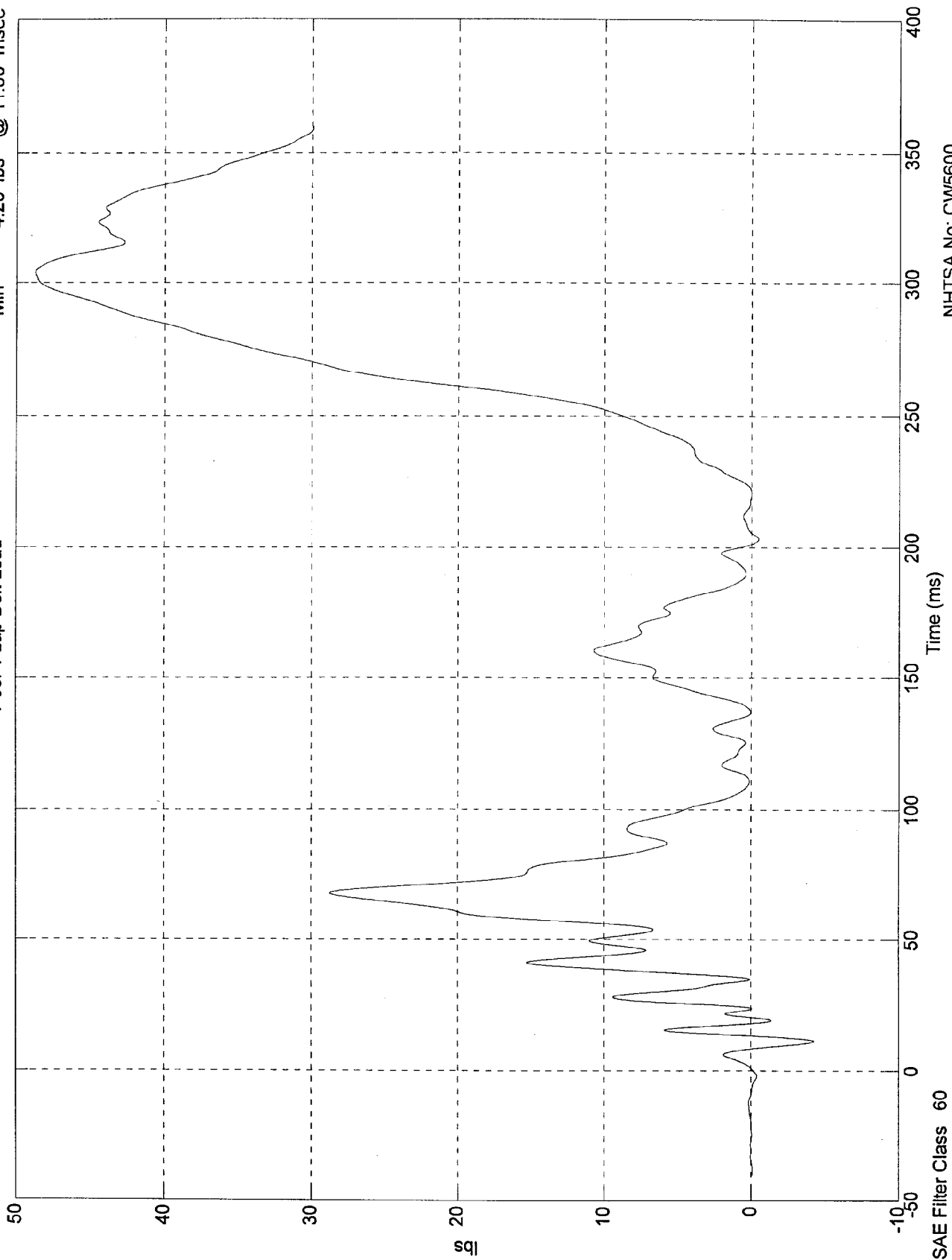


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301 Rear 30 MPH-1998 Mitsubishi Galant

Max = 48.7 lbs @ 304.20 msec
Min = -4.25 lbs @ 11.30 msec

Pos. 1 Lap Belt Load

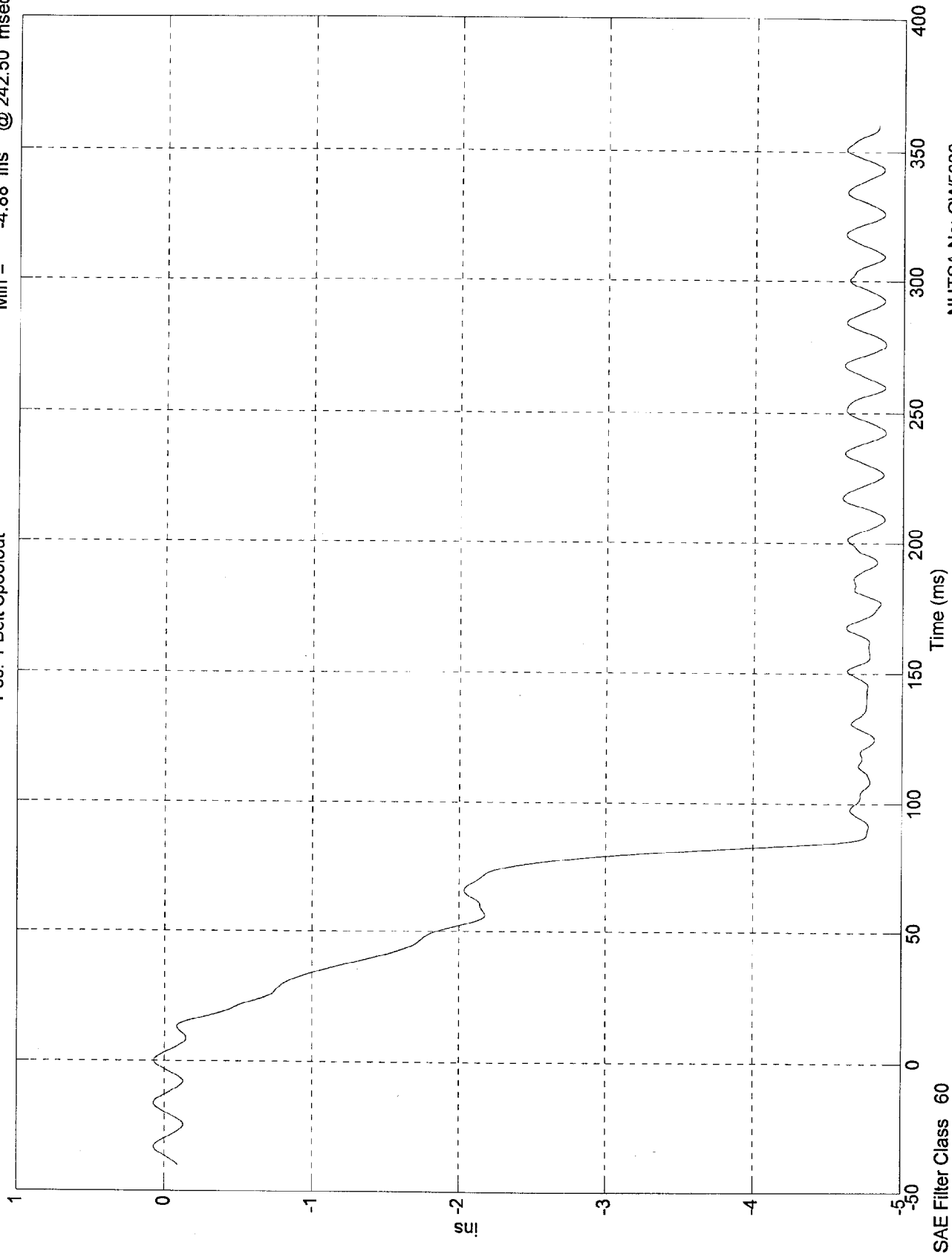


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301 Rear 30 MPH-1998 Mitsubishi Galant

Max = 0.0756 ins @ -16.30 msec
Min = -4.88 ins @ 242.50 msec

Pos. 1 Belt Spoolout



NHTSA No: CW5600
Date: 02 Mar 1998