NEW CAR ASSESSMENT PROGRAM (NCAP)

FRONTAL BARRIER IMPACT TEST

FORD MOTOR COMPANY
1990 FORD CLUB WAGON VAN
NHTSA NO. ML0204

MOBILITY SYSTEMS AND EQUIPMENT COMPANY
9920 LA CIENEGA BOULEVARD SUITE 708
INGLEWOOD, CALIFORNIA 90301

MARCH 20, 1990

FINAL REPORT

Prepared For:

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF MARKET INCENTIVES
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PREPARED BY: A. V. Khadilkar, Program Manager

S. Pruitt, Test Engineer

T. Kippen, Test Engineer

A. Mapara, Test Engineer

MOBILITY SYSTEMS AND EQUIPMENT COMPANY

APPROVED BY: Anil V. Khadilkar

Dr. Anil V. Khadilkar, Program Manager

DATE: MARCH 20, 1990

FINAL REPORT ACCEPTED BY:

Vincent Quarles

MANAGER, New Car Assessment Program

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15. Supplementary Notes

16. Abstract

A 35 mph frontal barrier impact test using a load cell barrier was conducted on a 1990 Ford Club Wagon Van at the Mobility System and Equipment Company (MSE) crash test facility in Mira Loma, CA, on 08 March 1990.

The barrier impact velocity was 35.3 mph, and the ambient temperature at the barrier face at the time of impact was 73 deg. F. The post-test vehicle crush maximum was 19.3 in.

A summary of occupant injury measure data from the test appears below:

Injury Criteria Threshold Value	Driver Dummy	Passenger Dummy
Head Injury Criterion HIC = 1000	2613	1896
Chest Resultant Peak 60 Gs (3 ms clip)	59.0	49.0
Femur Load Left 2250 Pounds Right	1526 3347	688 1294

TYPE OF RESTRAINT SYSTEM: 3-point continuous webbing system at each front outboard seating position.

17. Key Words	18. Distribution Statement
35 MPH FRONTAL BARRIER IMPACT TEST NEW CAR ASSESSMENT PROGRAM (NCAP) 1990 FORD CLUB WAGON VAN	COPIES OF THIS REPORT ARE AVAILABLE FROM: Technical Reference Division Nat'l Highway Traffic Safety Admin. Room 5108, Nassif Building 400 7th St. S.W., Wash., DC 20590

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TABLE OF CONTENTS

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SECTION 1

PURPOSE AND TEST PROCEDURE

This 35 mph frontal barrier impact test is a part of the FY 89 Vehicle Barrier Impact and Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-87-D-02009. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for an impact speed in excess of the current 30 mph FMVSS 208/212/219/301-75 requirements.

This 35 mph frontal barrier impact test was conducted in accordance with the Office of Market Incentives (OMI) Laboratory Indicant Test Procedure, dated 01 September 1986.

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SECTION 2

SUMMARY OF FRONTAL BARRIER IMPACT TESTS

A load cell barrier consisting of 36 cell units was impacted by a 1990 Ford Club Wagon Van, NHTSA No. ML0204, at a velocity of 35.3 mph. The frontal impact test was conducted by Mobility Systems and Equipment Company (MSE) on 08 March 1990. The general test and vehicle description information is presented in Tables 1 and 2. Pretest and posttest photographs of the test vehicle and dummies are shown in Appendix A.

Two (2) Part 572 50th percentile adult male Anthropomorphic Test Devices (ATDs) were placed in the driver and right front passenger designated seating positions (DSP's) according to the NHTSA test requirements.

The ATD's were instrumented with head and chest triaxial accelerometers and right/left femur load cells. In addition, load cells were placed on the driver's and passenger's lap and shoulder belts to measure dummy upper torso and pelvic section belt loading. A summary of dummy configuration and performance verification test data is presented in Appendix C.

The frontal impact event was documented by one (1) real time camera and fifteen (15) high-speed cameras. The camera location data are presented in Table 8.

Sixty-five (65) channels of crash parameters were recorded using two (2) FM tape recorders, three (3) computers and associated data acquisition system. Time history plots of all recorded channels are presented in Appendix B.

2.1 GENERAL COMMENTS

The 1990 Ford Club Wagon Van, was equipped with a 5.0L, 8 cylinder engine and 3 speed transmission. The test weight of the 1990 Ford Club Wagon Van, with two (2) 50th percentile male dummies, instrumentation, and cameras was 5,710 pounds.

The 1990 Ford Club Wagon Van, involved in a frontal load cell barrier crash at a velocity of 35.3 mph.

The maximum static crush for the vehicle of 19.3 inches occurred at the centerline of the front bumper. The windshield was cracked, but no separation was observed. Both the driver's and passenger's front doors needed tools to open.

The driver ATD's head hit the steering column hub. The driver's left and right knees hit the instrument panel and steering column. The driver ATD had a HIC value of 2,613, the maximum

chest acceleration (resultant clipped) was 59 g's and the maximum femur loads were 1,526 (left) and 3,347 (right) pounds.

The passenger head did hit the dash panel. Both of his knees hit the dash panel. The HIC value for the passenger ATD was 1,896, the maximum chest acceleration (resultant clipped) was 49 g's, and the maximum femur loads were 688 (left) and 1,294 (right) pounds.

Seat belt spool out, measured by high-speed film analysis, was 2.7 inches for the driver and 2.5 inches for the passenger belts.

The inboard and outboard track latching devices of the front seats remained latched.

There were no apparent visual indications of any stoddard solvent leaks.

Each of the test vehicle's front outboard seating position was equipped with an active 3-point continuous webbing system at each front outboard seating position.

Data Table No. 1 Test Vehicle Data

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1990/FORD/CLUB WAGON/VAN

VEHICLE NHTSA NO.: M L 0 2 0 4 VIN: 1 F M E E 1 1 N X L H A 1 6 5 2 3

VEHICLE BODY COLOR: WHITE & RED ; MONTH & YEAR OF MANUFACTURE: 08/89

ENGINE: 8 Cylinders; _____ C.I.D; 5.0L Liters; _____ CC
X Gas; _____ Diesel: _____ Turbocharged
PLACEMENT-- X Longitudinal; _____ Transverse (Lateral)

TRANSMISSION: 3 Speed; ____ Manual; X Automatic; X Overdrive
FINAL DRIVE: ____ Front Wheel Drive X Rear Wheel Drive;
____ Four Wheel Drive

DATE VEHICLE AVAILABLE FOR 35 MPH CRASH TESTING: 02/90

ODOMETER READING: 92.1 miles; OPTIONS: X A/C; X P/S; ___ P/Wdo.; X
____ Tilt Whl.; X Cruise Control

DATA RECORD FROM VEHICLE'S TIRE PLACARD:

Tire Pressure (at capacity): 41 psi Front; 41 psi Rear
Recommended Tire Size: P235/75R15 XL
Tires on Vehicle: P235/75R15 XL ; Manufacturer: FIRESTONE
Number of Occupants: 2 Front; 3 Rear; 3 3rd Seat; 8 TOTAL
Type of Front Seats: X Bucket; _____ Bench; _____ Split Bench
Type of Front Seat Back: ____ Fixed; X Adjustable With X Lever
___Rotating Knob

Vehicle Maximum Capacity Loading = 1707* lbs. (A)
No. of Occupants x 150 lbs.- - - = 1200 lbs. (B)
Cargo Capacity (A - B)- - - - - = 507 lbs.
* GVWR - Delivered Weight.

TEST VEHICLE DELIVERED WEIGHT WITH MAXIMUM FLUIDS:

Right Front = 1352 lbs.
Left Front = 1335 lbs. TOTAL FRONT = 2687 lbs.(52.7% of TOTAL)
Right Rear = 1223 lbs.
Left Rear = 1193 lbs
TOTAL WEIGHT = 5103 lbs. TOTAL REAR = 2416 lbs.(47.3% of TOTAL)

Data Table No. 1 (Con't) Test Vehicle Data

CALCULATION OF TEST VEHICLE TARGET WEIGHT:

Total Test Vehicle Delivered Weight With Maximum Fluids = 5103 lbs.
Maximum Cargo Carrying Capacity of Test Vehicle*- - - - - 300 lbs.
Weight of Two P.572 Dummies (2 x 164 lbs.)- - - - - - - - 328 lbs.
TEST VEHICLE TARGET WEIGHT 5731 lbs.
*300 lbs. for light trucks and MPVs

ACTUAL WEIGHT OF TEST VEHICLE WITH 2 DUMMIES AND CARGO:

Right Front = 1440 lbs. TOTAL FRONT = 2908 lbs.(50.9% of TOTAL)
Left Front = 1468 lbs.
Right Rear = 1435 lbs. TOTAL REAR = 2802 lbs.(49.1% of TOTAL)
Left Rear = 1367 lbs.

TOTAL WEIGHT= 5710 lbs. (which includes 372 lbs. of cargo ballast weight placed in the cargo/luggage area)

VEHICLE COMPONENTS REMOVED TO MEET TARGET WEIGHT:

1. X Spare Tire 3. X Tail lamp hsg. ___ Rt.Side X Left Side
2. __ Rear Bumper Assembly 4. Middle and Rear Seat Assemblies

TEST VEHICLE ATTITUDE:

As Delivered----Right Front = 31.5 inches
Left Front = 31.8 inches
Right Rear = 33.1 inches
Left Rear = 33.0 inches

Ready For Test--Right Front = 31.1 inches
Left Front = 31.8 inches
Right Rear = 31.4 inches
Left Rear = 31.3 inches

Test Vehicle Wheelbase: 138.2 inches; C.G.= 67.8 inches rearward of front wheel centerline

Total Vehicle Length:

Right Side = 199.4 inches
Left Side = 199.4 inches
Centerline = 206.3 inches

Data Table No. 2 Post Crash Test Data

DATA OF 35 MPH FRONTAL BARRIER IMPACT RATING TEST: 03/08/90

TIME OF TEST: 3:17 PM: AMBIENT TEMPERATURE AT BARRIER FACE: 73 °F

VEHICLE'S OCCUPANT COMPARTMENT TEMPERATURE: 73 °F

(spec. Range = 66 to 78 °F.)

VEHICLE WINDSHIELD MOLDING TEMPERATURE: 73 °F.

VEHICLE IMPACT VELOCITY: Primary Speed Trap = 35.24 mph
Secondary Speed Trap 35.27 mph
(Specified Range = 34.5 to 35.5 mph)

Distance from vehicle's front bumper forwardmost surface to barrier face when--

(a) entering the speed trap = 5.0 ft
(b) exiting the speed trap = 1.0 ft

VEHICLE STATIC CRUSH:

Vehicle Pre-test Length-Right Side =199.4"; C/Line=206.3"; Left Side=199.4"
Vehicle Post-test Length-Right Side=183.5"; C/Line=187.0"; Left Side=183.3"
Vehicle Static Crush --- Right Side= 15.9"; C/Line= 19.3"; Left Side= 16.1"

VEHICLE REBOUND FROM BARRIER FACE:

Vehicle Right Side = 20.0 inches
Vehicle Centerline = 20.5 inches
Vehicle Left Side = 16.2 inches

VEHICLE DUMMY CONTACT POINTS:

	DRIVER (I.D. No. 465)			PASSENGER (I.D. No. 466)		
	Strg.Col. Hub	Strg. Wheel	Instru. Panel	Instru. Panel	Knee Assy.	Glove Box Door
HEAD - - - - -	YES	NO	NO	YES	NO	N/A
RIGHT KNEE - -	//////////	/////	YES	YES	//////	N/A
LEFT KNEE - -	//////////	/////	YES	YES	//////	N/A

VEHICLE DOOR OPENING INFORMATION:	RIGHT SIDE		LEFT SIDE	
	OPENED	JAMMED	OPENED	JAMMED
FRONT DOORS - - - - - - - - - - - -	YES	YES	YES	YES
REAR DOORS - - - - - - - - - - - -	YES	NO	YES	NO

Data Table No. 2 (Cont'd) Post Crash Test Data

VEHICLE'S FRONT SEAT MOVEMENT DURING CRASH EVENT:

	RIGHT SIDE	LEFT SIDE
Seat Cushion Shift - - - - -	0.0 " forward;	0.0 " forward
Seat Adjuster Failure- - - -	None ;	None

Details Of Any Failure: N/A

OTHER NOTABLE IMPACT EFFECTS:

- No fuel spillage.
- No windshield separation.

SECTION 3

OCCUPANT AND VEHICLE INFORMATION

I. OMI DATA

Dummy Injury Criteria Data Summary
Dummy Positioning Data
Seat Belt Positioning Data
Seat Belt Performance Assessment Data
Driver Dummy to Steering Column Dimensions
Camera Locations

II. OVR DATA

Load Cell Barrier Data
Vehicle Accelerometer Data

Data Table No. 3 FMVSS No. 208 Occupant Crash Protection Data Sheet

VEH. YR./MAKE/MODEL/BODY STYLE: 1990/FORD/CLUB WAGON/VAN

VEH. NHTSA NO.: ML0204 ; TEST DATE: 03/08/90

MAXIMUM ACCELERATION VALUES:		DRIVER DUMMY # 465	PASSENGER DUMMY # 466
Head Channel X	HEAD X	-240.38	-167.51
Head Channel Y	Y	-32.67	31.88
Head Channel Z	Z	113.57	84.80
HEAD RESULTANT	R	242.76	170.60
Chest Channel X	CHEST X	-62.09	-49.55
Chest Channel Y	Y	-8.36	33.70
Chest Channel Z	Z	24.66	17.62
CHEST RESULTANT	R	59.12	49.28
TIME INTERVAL (seconds)		0.0790 to 0.0820	0.0602 to 0.0632

HEAD INJURY CRITERIA (HIC) VALUES:

HIC	HIC	2613.28	1896.48
t_1 (seconds)		0.0688	0.0807
t_2 (seconds)		0.0807	0.0911
Avg. Accel. t_1 to t_2		136.53	126.69

MAXIMUM FEMUR FORCES:

Right Side (lbs.)	FR	3346.9	1293.9
Left Side (lbs.)	FL	1525.7	687.8

MAXIMUM SEAT BELT FORCES:

Lap Belt	LAP	1370.6	1466.7
Shoulder Belt	SHLDR	1895.1	1895.3

MAXIMUM SEAT BELT WEBBING SPOOL-OUT:

Lap/Shoulder Belt Combination *	2.7	2.5

* From Highspeed Film Analysis

Data Table No. 4 Test Dummy Positioning Data

PRE-IMPACT DATA:

Make/Model: FORD CLUB WAGON

Body Style: VAN Model Year: 1990

NHTSA No.: ML0204 Color: WHITE AND PURPLE

DATA FROM CERTIFICATION LABEL:

Vehicle Manufacturer: FORD

Date of Manufacture: 08/89 ; VIN: 1FMEE11NXLHA16523

GVWR: 6,600 lb; GAWR: Front = 3,095 lb; Rear = 3,800 lb

POST-IMPACT DATA:

Date of Test: 03/08/90 Time: 3:17 PM Temperature: 73 °F

Required Impact Velocity Range: 34.5 to 35.5 mph

Impact Velocity: Primary = 35.24 mph Secondary = 35.27 mph

Seat Type: Bucket Adjuster Type: Lever

Bucket Seat Back Type: Integral non-adjustable headrests

TECHNICIANS: Enrique Marin

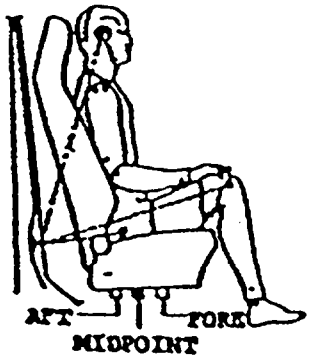
DRIVER DUMMY # |4|6|5|

HEAD	23.0 "	
TARGET	+90.0	
KNEE	21.7 "	
JOINT	- 7.0	
APPROX-IMATE "H" POINT	6.2 "	
	-22.0	

FORE AFT
MIDPOINT

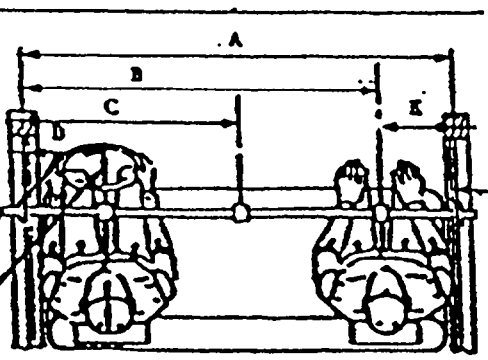
PASSENGER DUMMY # |4|6|6|

	23.0 "	HEAD
	+87.0	TARGET
	23.2 "	KNEE
	- 7.0	JOINT
	7.5 "	APPROX-
	-20.0	MATE "H" POINT



AFT FORE
MIDPOINT

A = 73.0 "
B = 56.0 "
C = 36.5 "
D = 17.0 "
E = 17.0 "



LATERAL BAR

ADJUSTABLE POINTER

DOOR GLASS HEIGHT

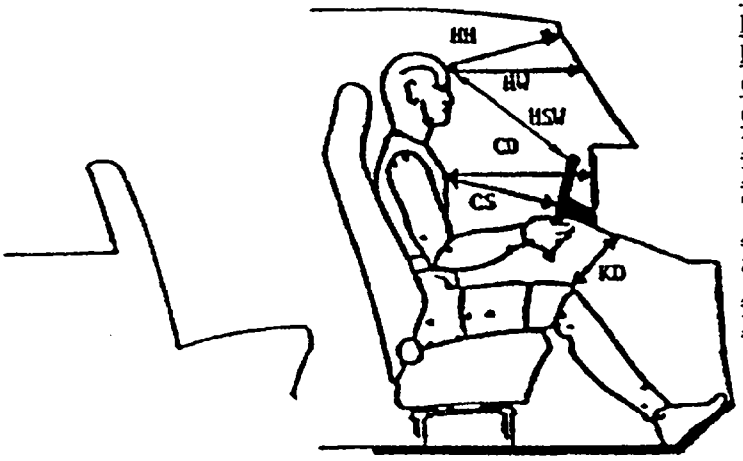
LEFT FRONT DOOR

RIGHT FRONT DOOR

DRIVER DUMMY # |4|6|5|

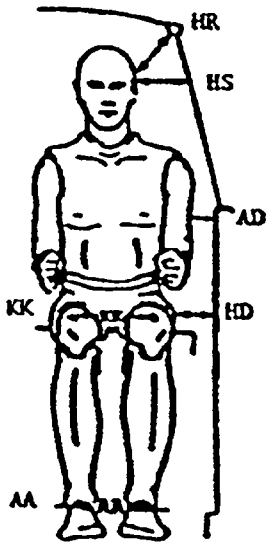
PASSENGER DUMMY # |4|6|6|

Data Table No. 4 (Cont'd) Test Dummy Positioning Data



	Driver	Passenger
HH	21.7	21.0
HW	26.1	25.3
CD	25.0	23.5
CS	24.5	N/A
KD	L- 8.9	L- 7.2
KD	R- 9.0	R- 7.8
Torso Angle	17.0	Torso Angle 16.0
Seat Back Angle	20.0	Seat Back Angle 20.0
HSW	22.2	N/A

HSW = Head to Steering Wheel (in.)
HA = Head Target to A Pillar (in.)
HH = Head to Windshield Header (in.)
HW = Head to Windshield (in.)
CD = Chest to Dash (in.)
CS = Chest to Steering Wheel (in.)
HR = Head to Side Roof
HS = Head to Side Window (in.)
AD = Arm to Door (in.)
HD = Hip to Door (in.)
KK = Knee to Knee (in.)
Torso and seat back angles are relative to vertical. (deg.)



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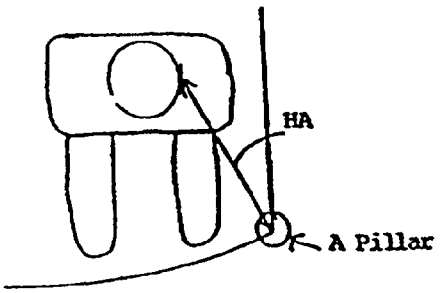
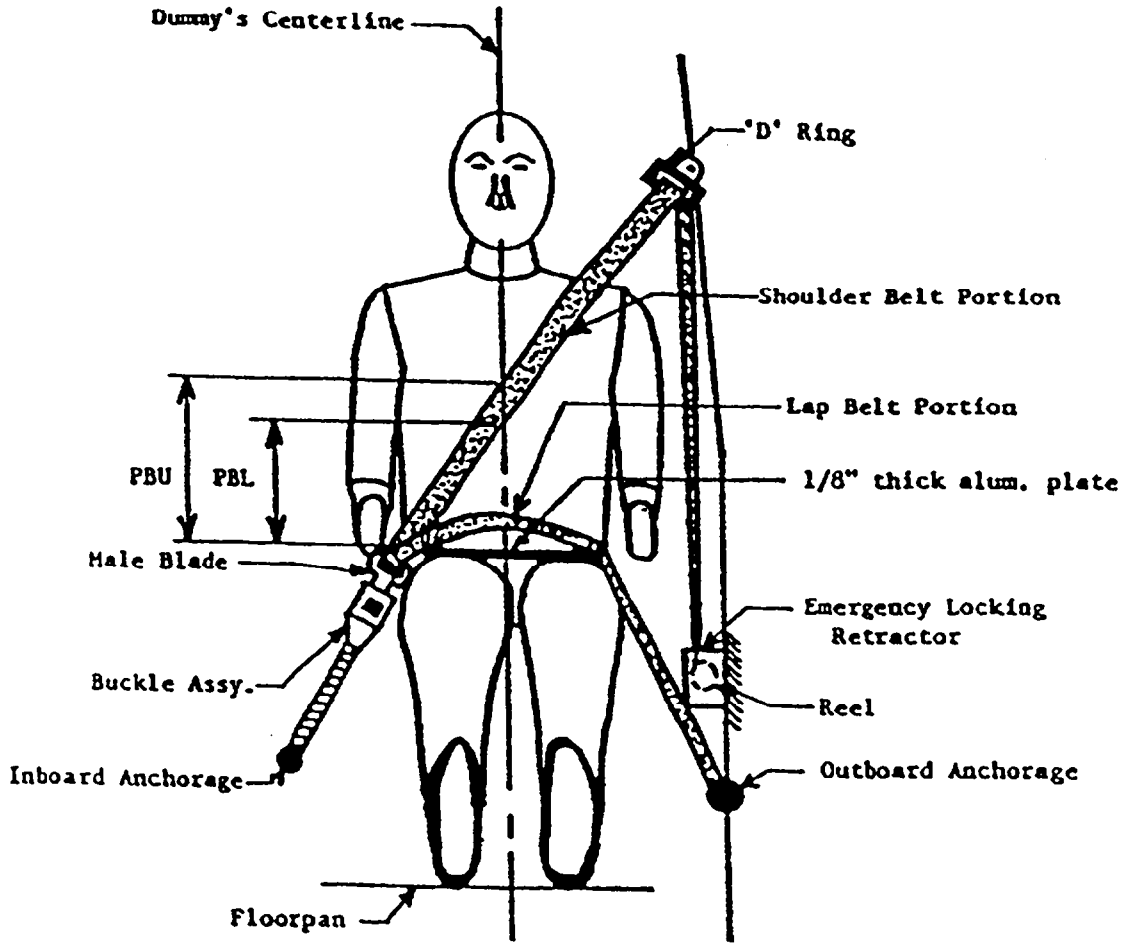


	Driver	Passenger
HR	9.2	9.6
HS	9.8	9.8
AD	4.7	4.7
HD	8.0	7.5
KK	14.5	11.7
AA	12.0	7.0
HA	25.0	22.7



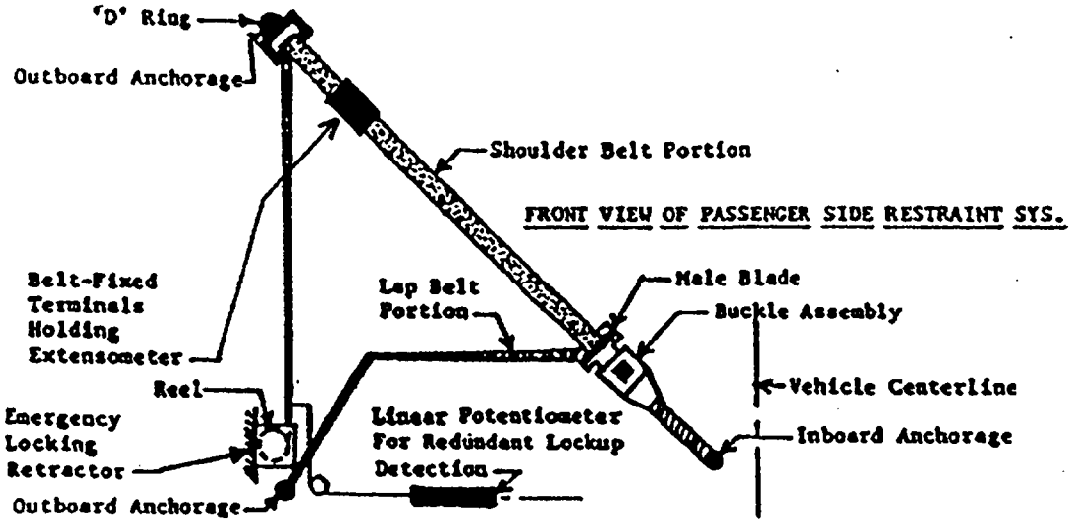
FRONT VIEW OF DRIVER DUMMY

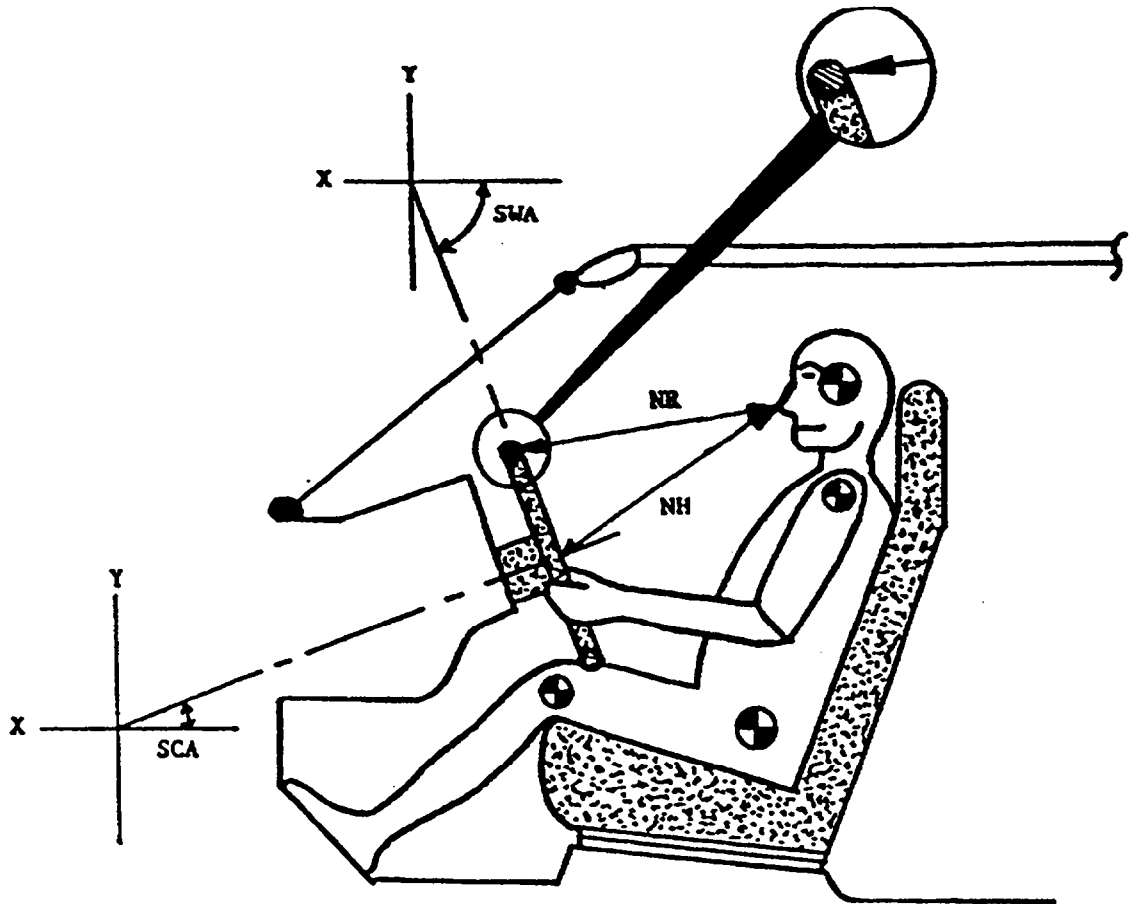
	DRIVER DUMMY (inches)	PASSENGER DUMMY (inches)
PBU -- Top surface of alum. plate to belt upper edge	12.8	14.1
PBL -- Top surface of alum. plate to belt lower edge	9.2	10.5
LAP BELT TENSION, POUNDS	3.0	3.0
SHOULDER BELT TENSION, POUNDS	0.0	0.0

111a Table 6 Seat Belt Performance Assessment Test Data

	DRIVER SIDE		PASSENGER SIDE	
BELT LENGTH DATA:	PRE-TEST	POST-TEST	PRE-TEST	POST-TEST
Total belt length from retractor reel to bolt hole anchor point for continuous webbing systems	104.2	104.2	113.4	113.4
Retractor reel to 'D' ring as measured on Part 572	7.0	5.2	13.2	12.5
Shoulder belt length as measured on Part 572 dummy	35.0	36.0	35.0	35.5
Lap belt length as measured on Part 572 dummy	35.2	36.5	36.5	39.0
Remainder of belt webbing left on retractor reel	SH-27.0 LP-N/A	SH-26.5 LP-N/A	SH-28.7 LP-N/A	SH-26.4 LP-N/A
BELT SPOOL-OFF DATA:				
As determined by film analysis	2.7 in		2.5 in	
As determined electronically	NOT MEASURED		NOT MEASURED	
As determined mechanically	2.3 in		No Data	
BELT STRAIN DATA:				
Measured between male blade and 'D' ring	3.6 Percent		2.1 Percent	

*S = Shoulder
L = Lap





LEFT SIDE VIEW

	MEASUREMENTS
NR--Distance from tip of dummy's nose to Top Rear surface of steering wheel rim.	20.7 Inches
NH--Distance from tip of dummy's nose to center of steering column hub.	20.0 Inches
SCA-Angle of steering column relative to the horizontal X axis.	40 Degrees
SWA-Angle of steering wheel relative to the horizontal X axis.	50 Degrees

Data Table 8 Camera Location Data

VEH. NHTSA NO.: ML0204 ; TEST DATE: 03/08/90 ; TIME: 3:17 PM

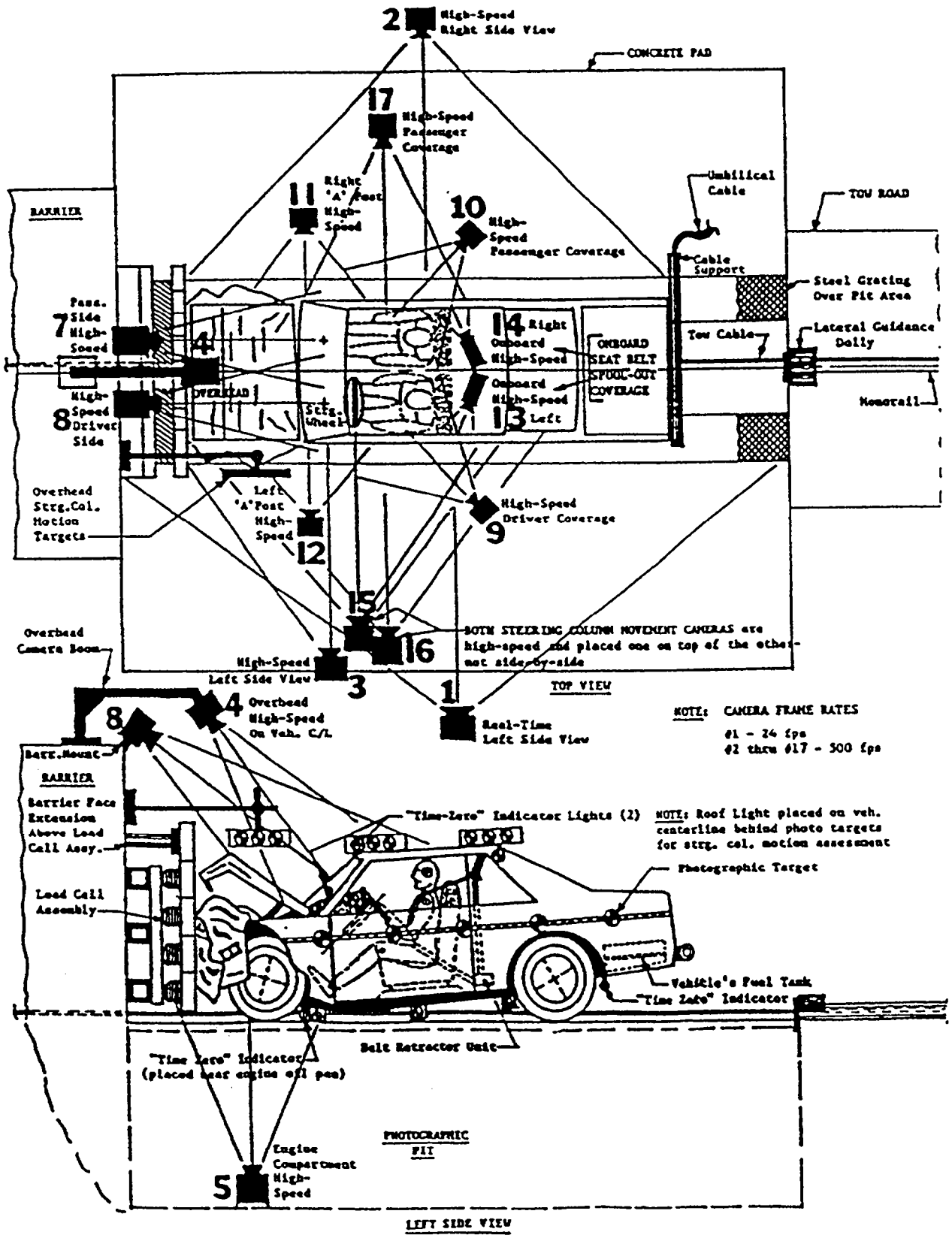
VEH. YEAR/MAKE/MODEL/BODY STYLE: 1990/FORD/CLUB/WAGON/VAN

CAMERA NO.	VIEW	CAMERA POS. (in.) X	Y	Z	ANGLE (deg)	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
1	Left Side View	-676	268	57	3	682	15-70 ZOOM	24
2	Right Side View	374	93	52.5	0	354	16	550
3	Left Side View	-328	87	35	1	307	16	500
4	Overhead	-1	-4	192	70	149	16	500
5	Pit-Engine	2	42	-58	29	**	16	400
6	Pit-Fuel Tank	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.
7	Front-Passenger	13	-14	104	-50	95	50	600
8	Front-Driver	-12	-14	104	-45	96	50	600
9	Left Side-Driver	-100	75	83	17	79	50	600
10	Right Side-Passenger	100	80	82	13	81	50	600
11	Right Side-'A' Post	172	6	60	2	165	50	550
12	Left Side-'A' Post	-290	-30	64	0	286	50	700
13	Onboard-Left Side	-16	98	35	44	40	16	650
14	Onboard-Right Side	16	98	35	30	40	16	700
15	Left Side-Steering Col.	-502	84	130	9	483	50	600
16	Left Side-Steering Col.	-498	80	112	6	477	50	700
17	Right Side Passenger	133	47	53	3	116	50	650

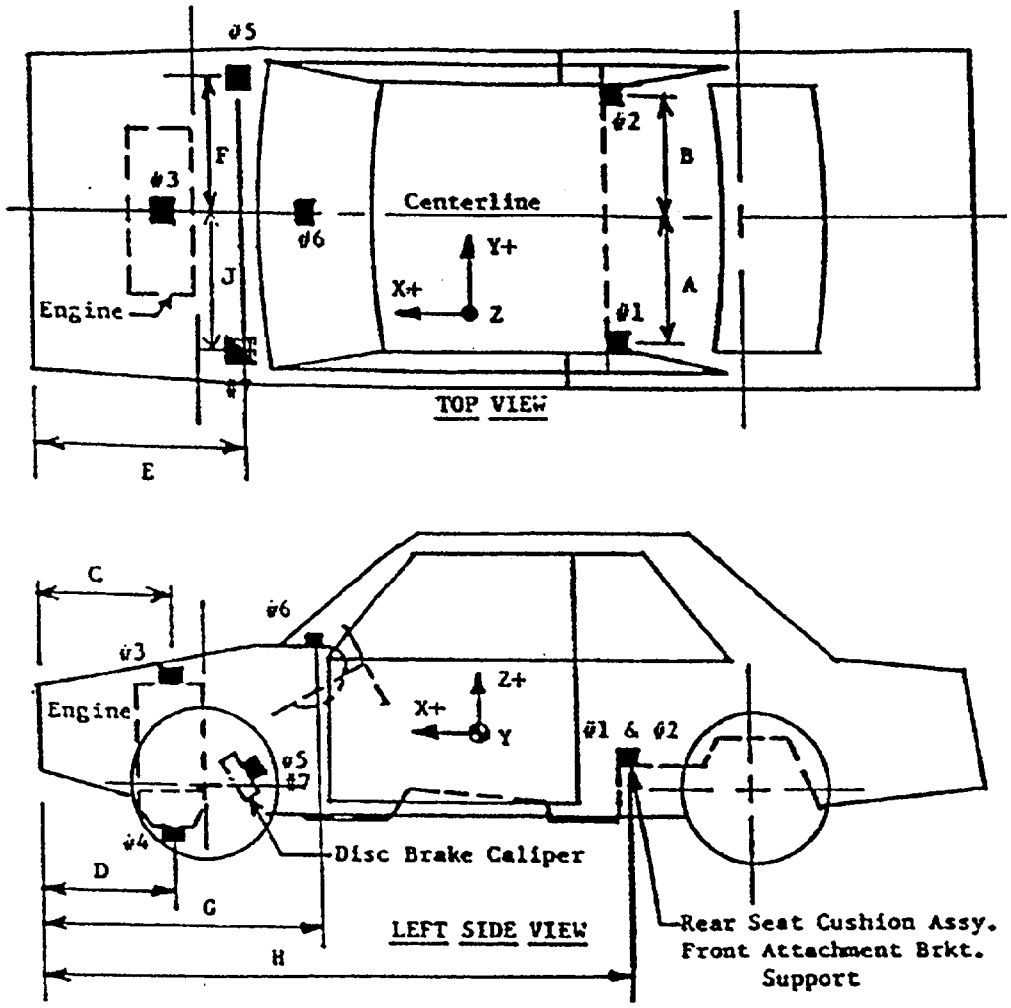
* X = film plane to monorail centerline
  Y = film plane to barrier face
  Z = film plane to ground

**Pit camera uses refractor lens for imagery.

Data Table No. 8 (Cont'd) Camera Location Data



Data Table No. 9 Vehicle Accelerometer Location and Data Summary



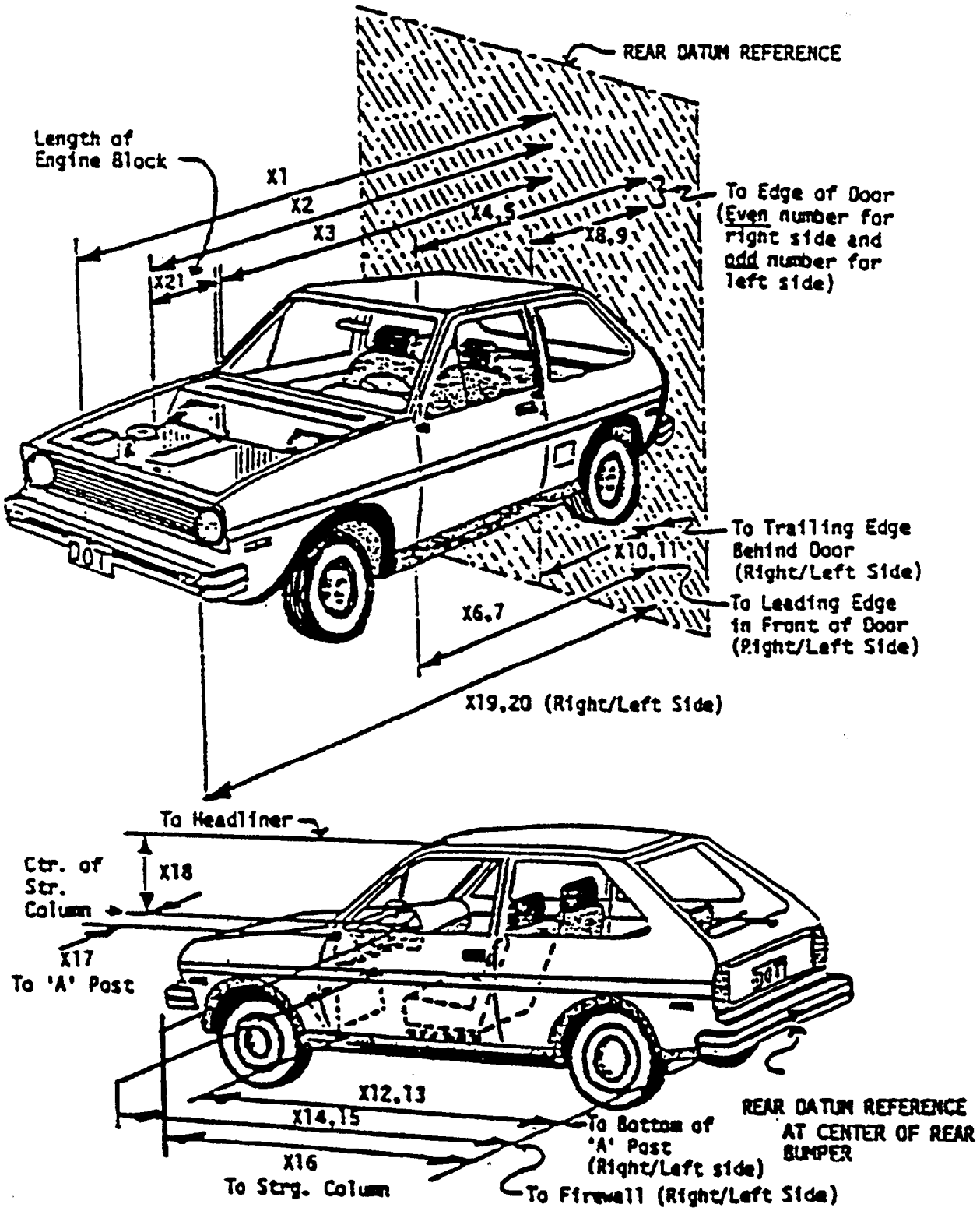
Dimension	Length (in.)
A	21.5
B	14.4
C	49.0
D	60.0
E	28.2
F	27.7
G	43.0
H	129.0
J	27.7

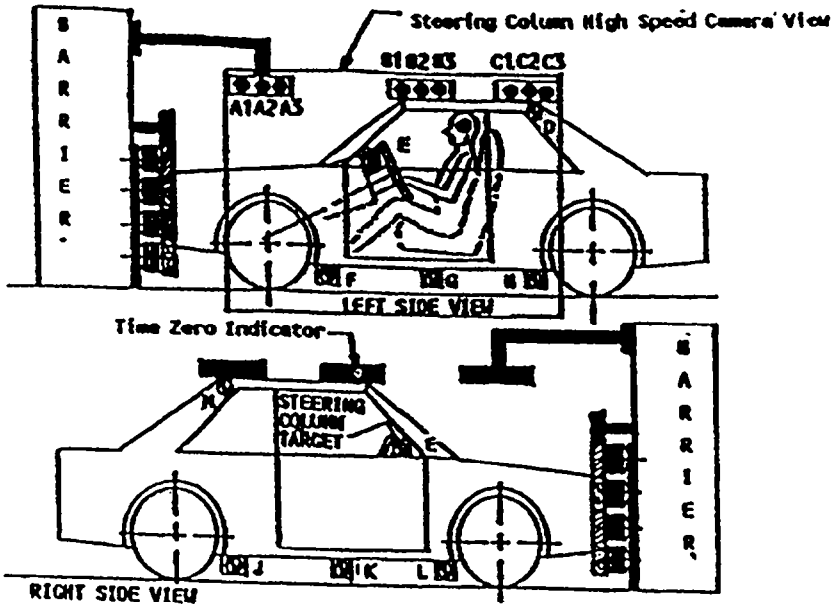
Loc. No.	Description	Maximum Value X-	msec.	X+	msec.
1	Rear seat X-member @ Left Side	-37.4	11.3	1.8	160.6
2	Rear seat X-member @ Right Side	-34.7	10.9	2.2	168.9
3	Top of Engine Block	-111.3	30.1	18.5	37.7
4	Bottom of Engine	-96.3	31.9	55.8	48.2
5	Disc Brake Caliper Right Side	-125.6	27.5	39.5	39.2
6	Instrument Panel	-82.6	53.3	34.3	105.6
7	Disc Brake Caliper @Left Side	-137.0	16.1	27.8	38.5

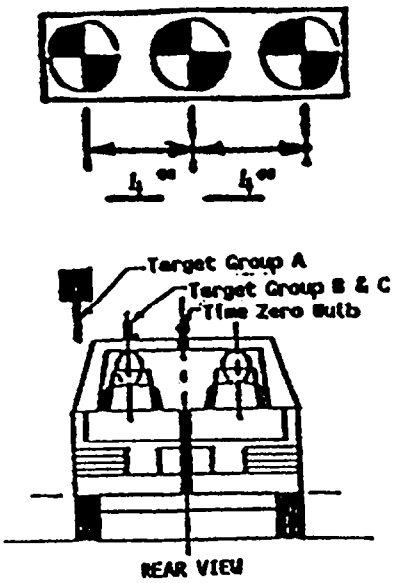
Data Table No. 10 Test Vehicle Measurements

NO.	MEASUREMENT DESCRIPTION	Pre-Test (in.)	Post-Test (in.)	Diff. (in.)
X1	Total Length of Test Vehicle at Centerline	206.3	187.0	19.3
X2	Rear Surface of Vehicle to Front of Engine	181.3	176.1	5.2
X3	Rear Surface of Vehicle to Firewall	184.4	181.7	2.7
X4	Rear Surface to Upr. Leading Edge of Right Door	168.0	167.2	0.8
X5	Rear Surface to Upr. Leading Edge of Left Door	167.6	165.3	2.3
X6	Rear Surface to Lwr. Leading Edge of Right Door	161.2	160.8	0.4
X7	Rear Surface to Lwr. Leading Edge of Left Door	160.8	157.5	3.3
X8	Rear Surface to Upr. Trailing Edge of Right Door	129.1	128.8	0.3
X9	Rear Surface to Upr. Trailing Edge of Left Door	128.6	129.2	-0.6
X10	Rear Surface to Lwr. Trailing Edge of Right Door	128.2	128.0	0.2
X11	Rear Surface to Lwr. Trailing Edge of Left Door	127.8	124.7	3.1
X12	Rear Surface to Bottom 'A' Post on Right Side	166.2	164.0	2.2
X13	Rear Surface to Bottom 'A' Post on Left Side	166.0	163.8	2.2
X14	Rear Surface to Firewall on Right Side	184.3	180.0	4.3
X15	Rear Surface to Firewall on Left Side	183.3	179.8	3.5
X16	Rear Surface to Steering Column	151.0	148.5	2.5
X17	Center of Steering Column to 'A' Post	14.0	20.7	-6.7
X18	Center Steering Column to Headlining	21.0	21.1	-0.1
X19	Rear Surface to Right Side of Front Bumper	199.4	183.5	15.9
X20	Rear Surface to Left Side of Front Bumper	199.4	183.3	16.1
X21	Length of Engine Block	26.0	26.0	0.0

Data Table No. 10 (Cont'd) Test Vehicle Measurements







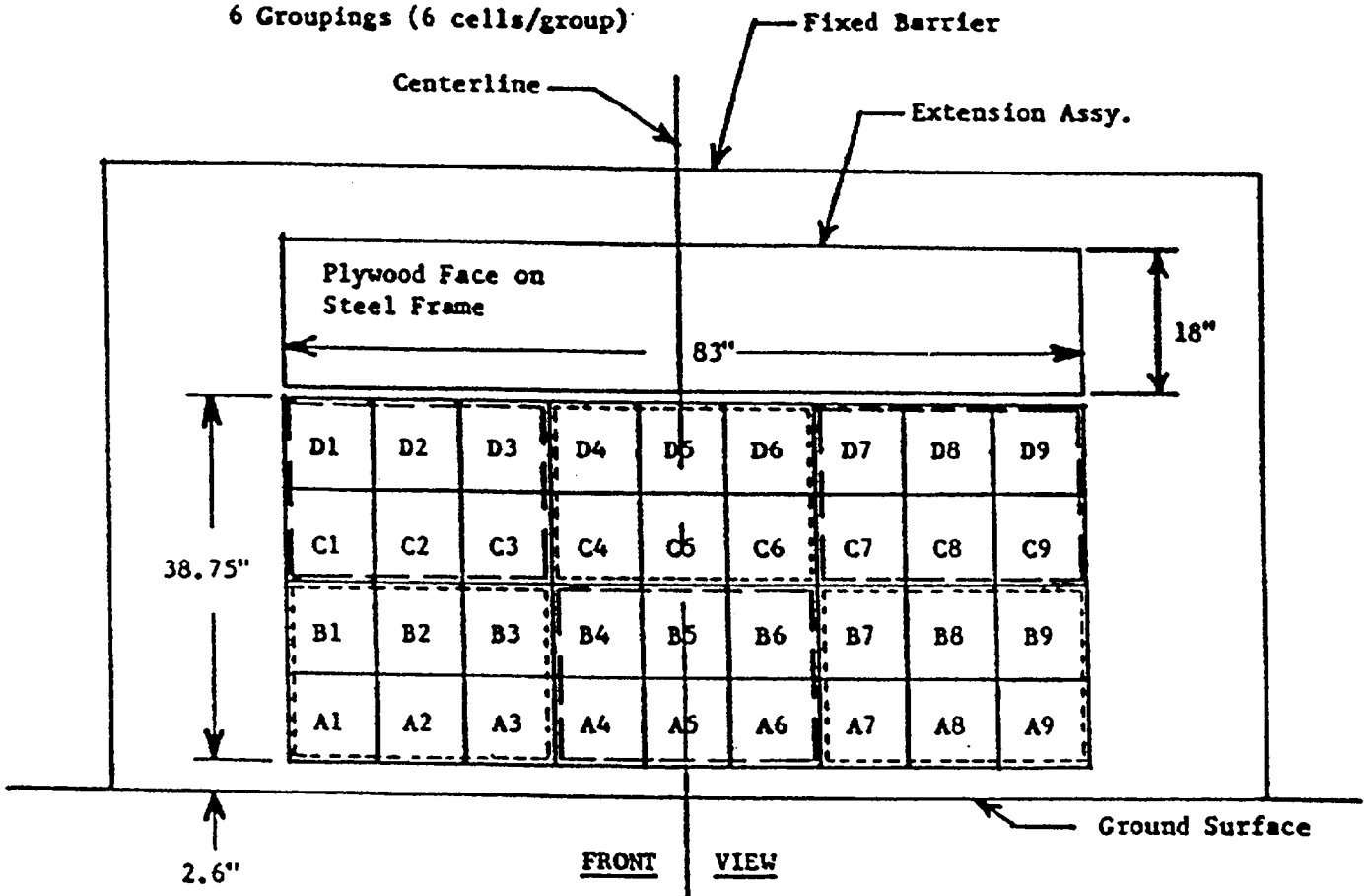
BARRIER TARGETS	'X' From Imag. Barrier Face Vertical Plane	'Y' From Monorail C/L	'Z' Above Ground
A-1	41.0	23.0	95.2
A-2	45.0	23.0	95.2
A-3	49.0	23.0	95.2

BARRIER TARGETS	'X' From Imag. Barrier Face Vertical Plane	'Y' From Monorail C/L	'Z' Above Ground
B-1	53.0	20.5	79.2
B-2	57.0	20.5	79.2
B-3	61.0	20.5	79.2
C-1	188.2	20.5	79.5
C-2	192.2	20.5	79.5
C-3	196.2	20.5	79.5
D	194.1	32.0	72.5
E	48.0	17.7	52.2
F	45.2	33.2	10.6
G	93.7	33.3	11.6
H	142.5	33.2	12.3
J	142.1	33.2	12.2
K	93.7	33.3	11.7
L	44.5	33.2	10.9
M	194.0	32.0	72.5

NOTE: Diameter of all photo targets is 4".

Data Table No. 12 Load Cell Locations on Fixed Barrier

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



6 GROUPINGS OF 6 LOAD CELLS EACH

C1 thru D3	C4 thru D6	C7 thru D9
A1 thru B3	A4 thru B6	A7 thru B9

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

APPENDIX A

PHOTOGRAPHS

PRETEST FRONT VIEW
POSTTEST FRONT VIEW
PRETEST LEFT SIDE VIEW
POSTTEST LEFT SIDE VIEW
PRETEST RIGHT SIDE VIEW
POSTTEST RIGHT SIDE VIEW
PRETEST RIGHT FRONT 3/4 VIEW
POSTTEST RIGHT FRONT 3/4 VIEW
PRETEST LEFT REAR 3/4 VIEW
POSTTEST LEFT REAR 3/4 VIEW
PRETEST WINDSHIELD VIEW
POSTTEST WINDSHIELD VIEW
PRETEST ENGINE COMPARTMENT VIEW
POSTTEST ENGINE COMPARTMENT VIEW
PRETEST FRONT UNDERBODY VIEW
POSTTEST FRONT UNDERBODY VIEW
PRETEST REAR UNDERBODY VIEW
POSTTEST REAR UNDERBODY VIEW
PRETEST DRIVER DUMMY POSITION VIEW
POSTTEST DRIVER DUMMY POSITION VIEW
PRETEST PASSENGER DUMMY POSITION VIEW
POSTTEST PASSENGER DUMMY POSITION VIEW
PRETEST DRIVER DUMMY & VEHICLE INTERIOR VIEW (Door Open)
POSTTEST DRIVER DUMMY & VEHICLE INTERIOR VIEW (Door Open)
PRETEST PASSENGER DUMMY & VEHICLE INTERIOR VIEW (Door Open)
POSTTEST PASSENGER DUMMY & VEHICLE INTERIOR VIEW (Door Open)
POSTTEST DRIVER DUMMY (ATD) HAKNEE CONTACT AREA
POSTTEST DRIVER DUMMY (ATD) HEAD CONTACT AREA
POSTTEST PASSENGER DUMMY (ATD) HEAD AND KNEE CONTACT AREA

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PRETEST FRONT VIEW

POSTTEST FRONT VIEW

PRETEST LEFT SIDE VIEW

POSTTEST LEFT SIDE VIEW

PRETEST RIGHT SIDE VIEW

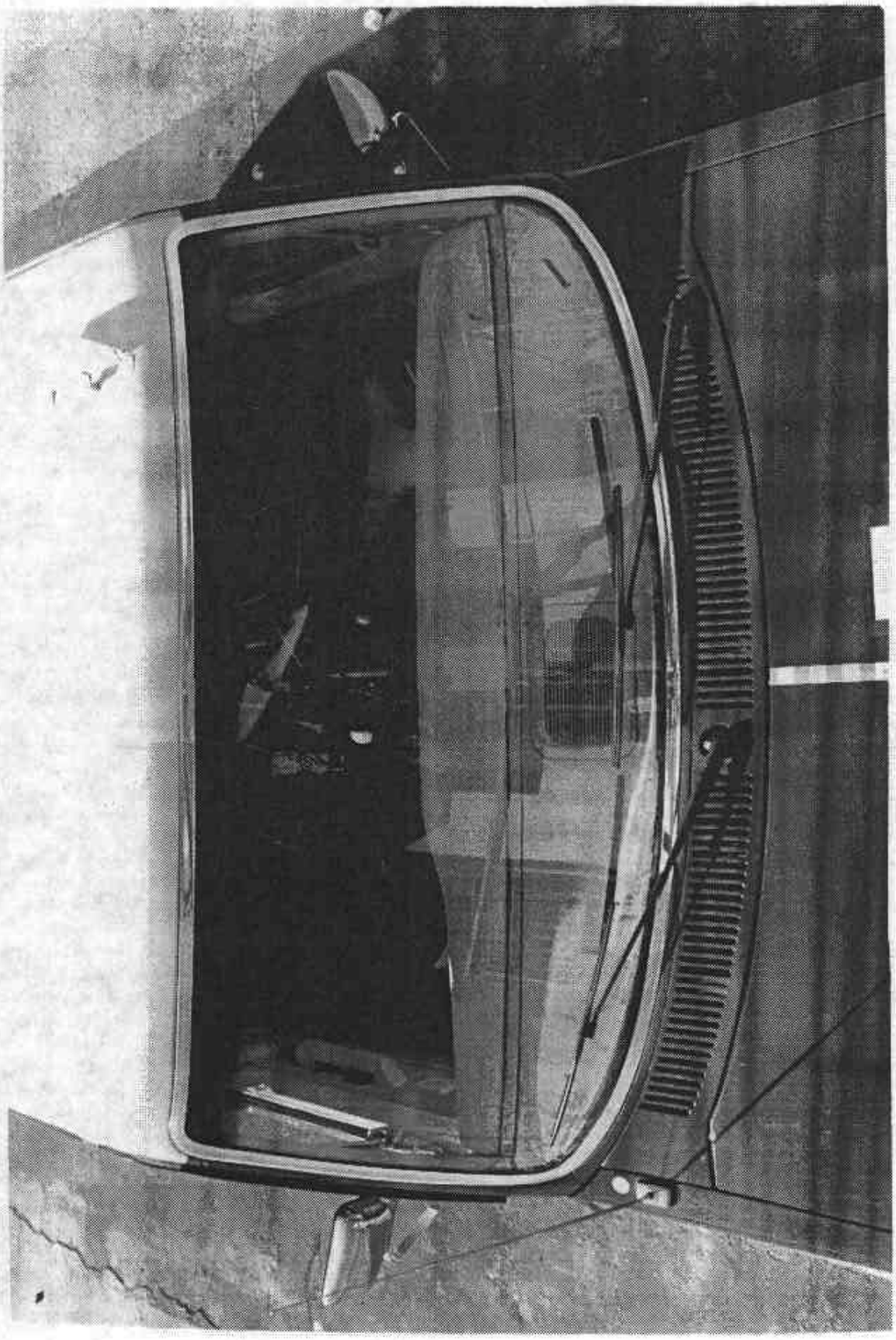
POSTTEST RIGHT SIDE VIEW

PRETEST RIGHT FRONT 3/4 VIEW

POSTTEST RIGHT FRONT 3/4 VIEW

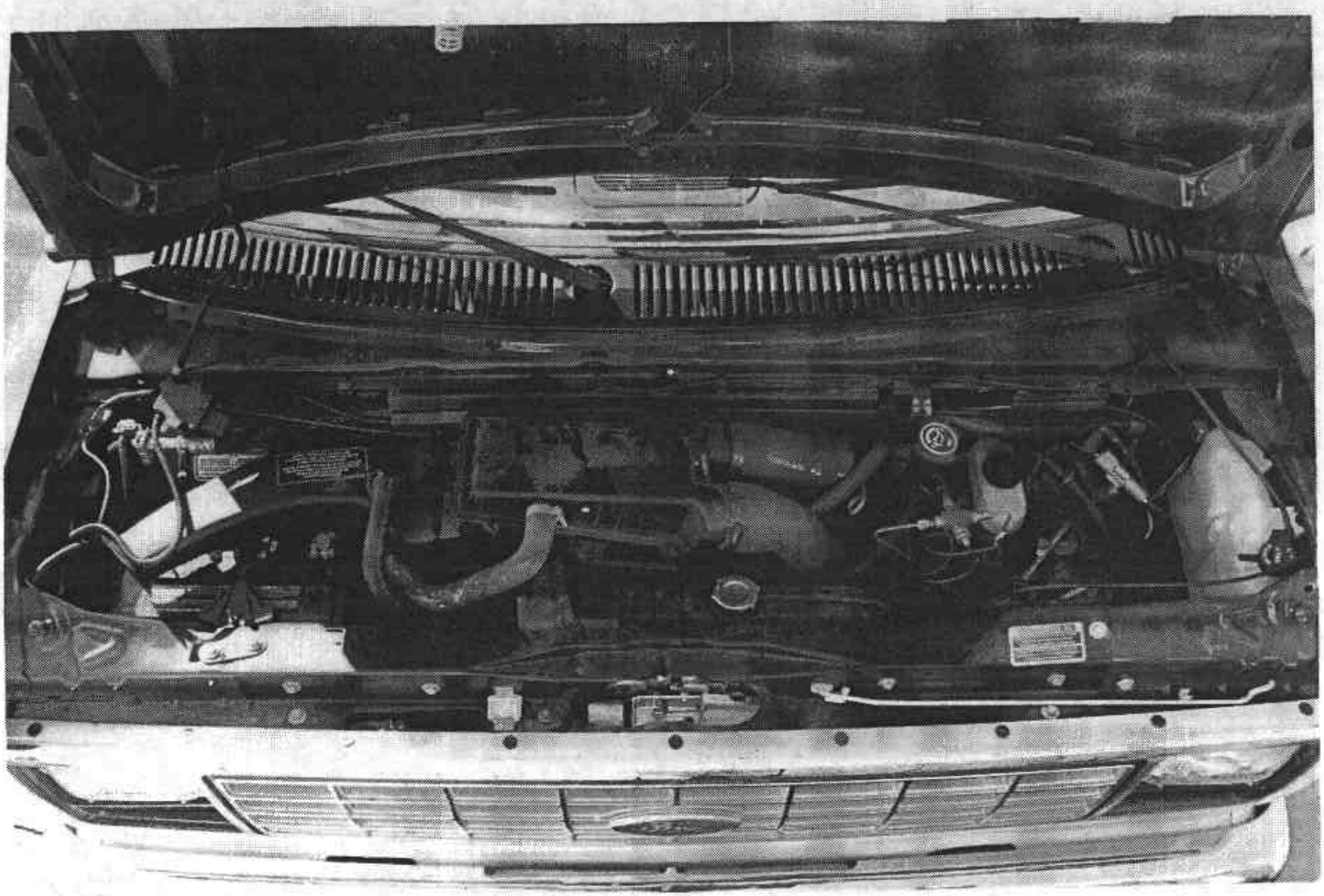
PRETEST LEFT REAR 3/4 VIEW

POSTTEST LEFT REAR 3/4 VIEW

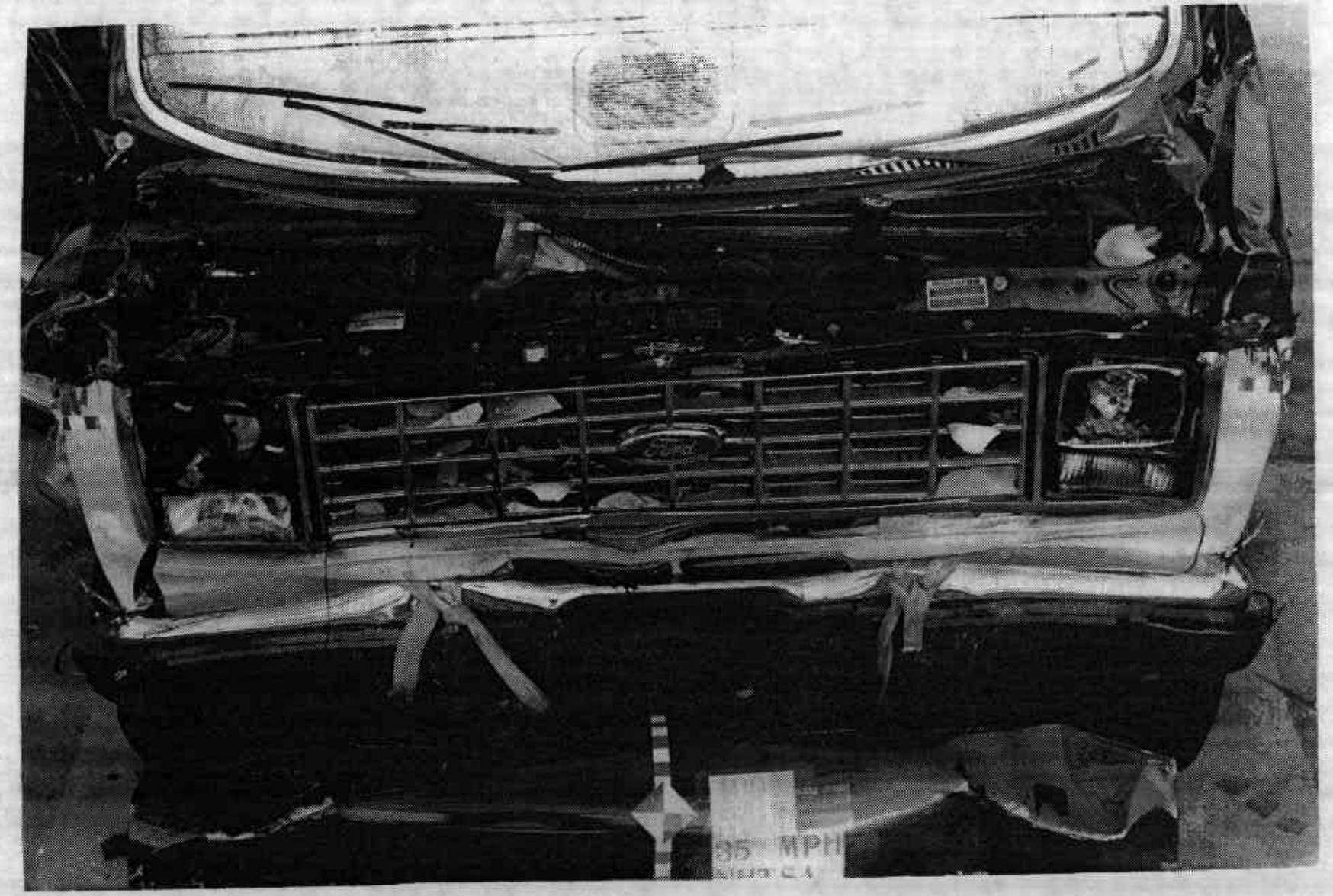


PRETEST WINDSHIELD VIEW

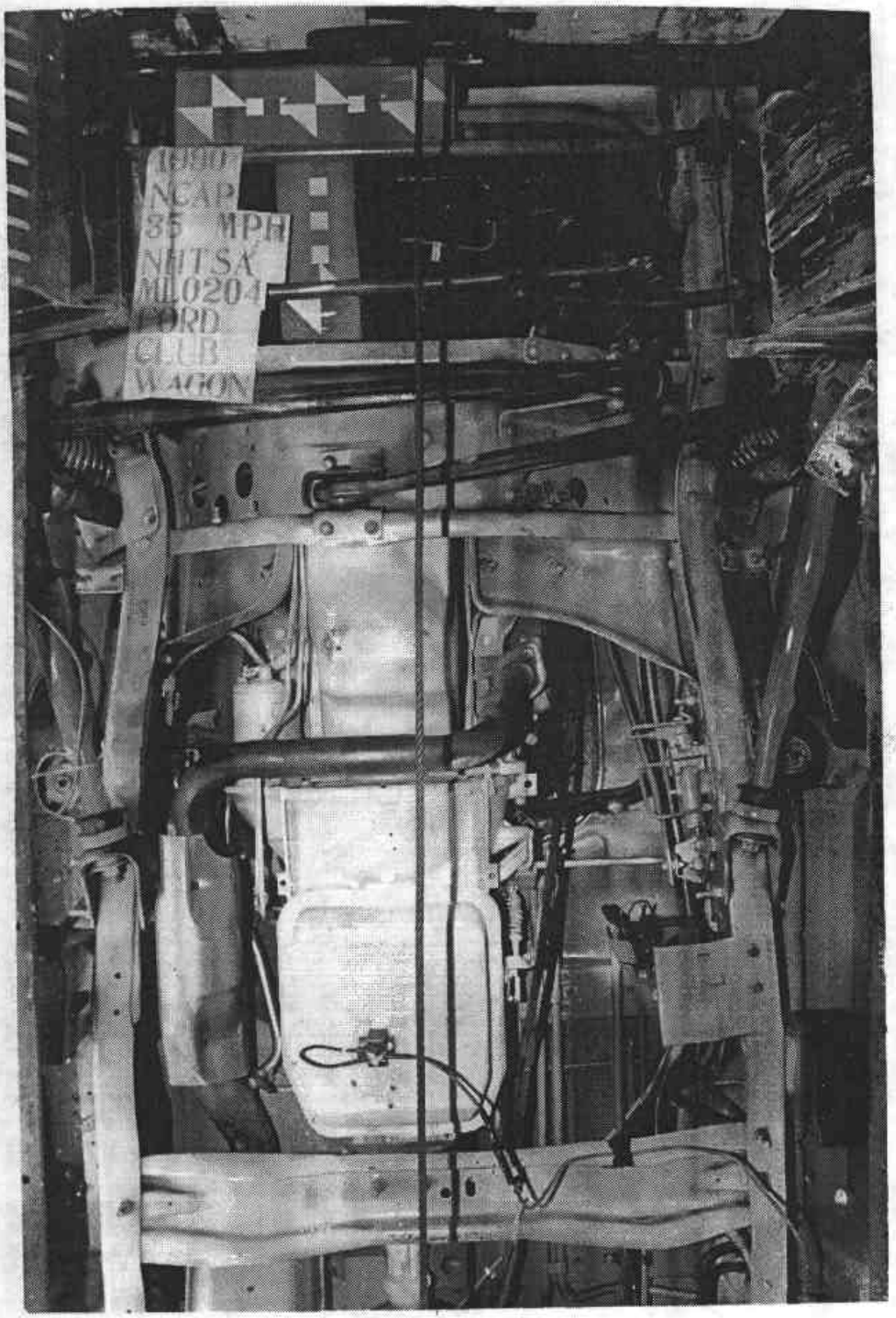
POSTTEST WINDSHIELD VIEW



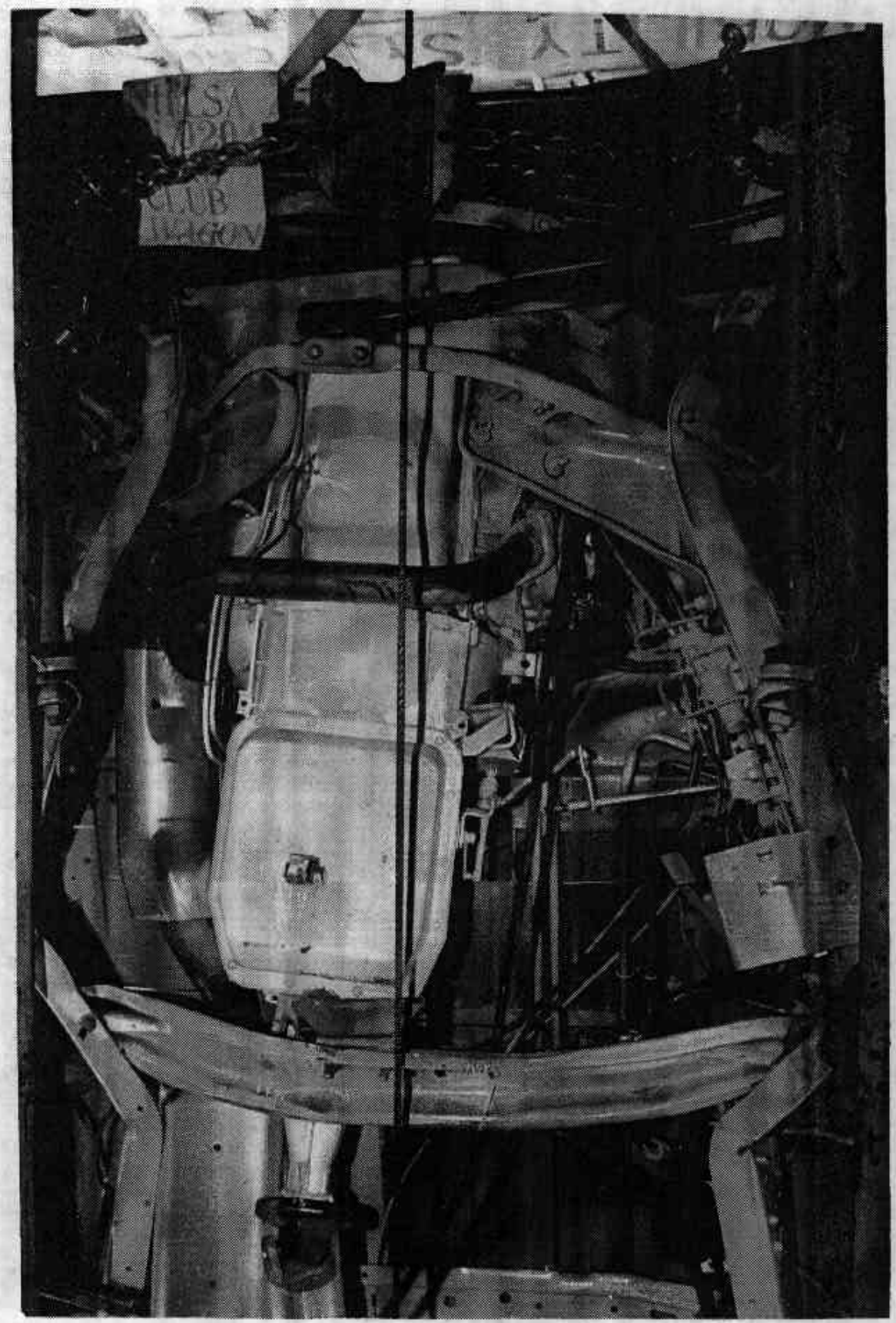
PRETEST ENGINE COMPARTMENT VIEW



POSTTEST ENGINE COMPARTMENT VIEW



PRETEST FRONT UNDERBODY VIEW



POSTTEST FRONT UNDERBODY VIEW

MSE-90-R9092-N03

PRETEST REAR UNDERBODY VIEW
A-17

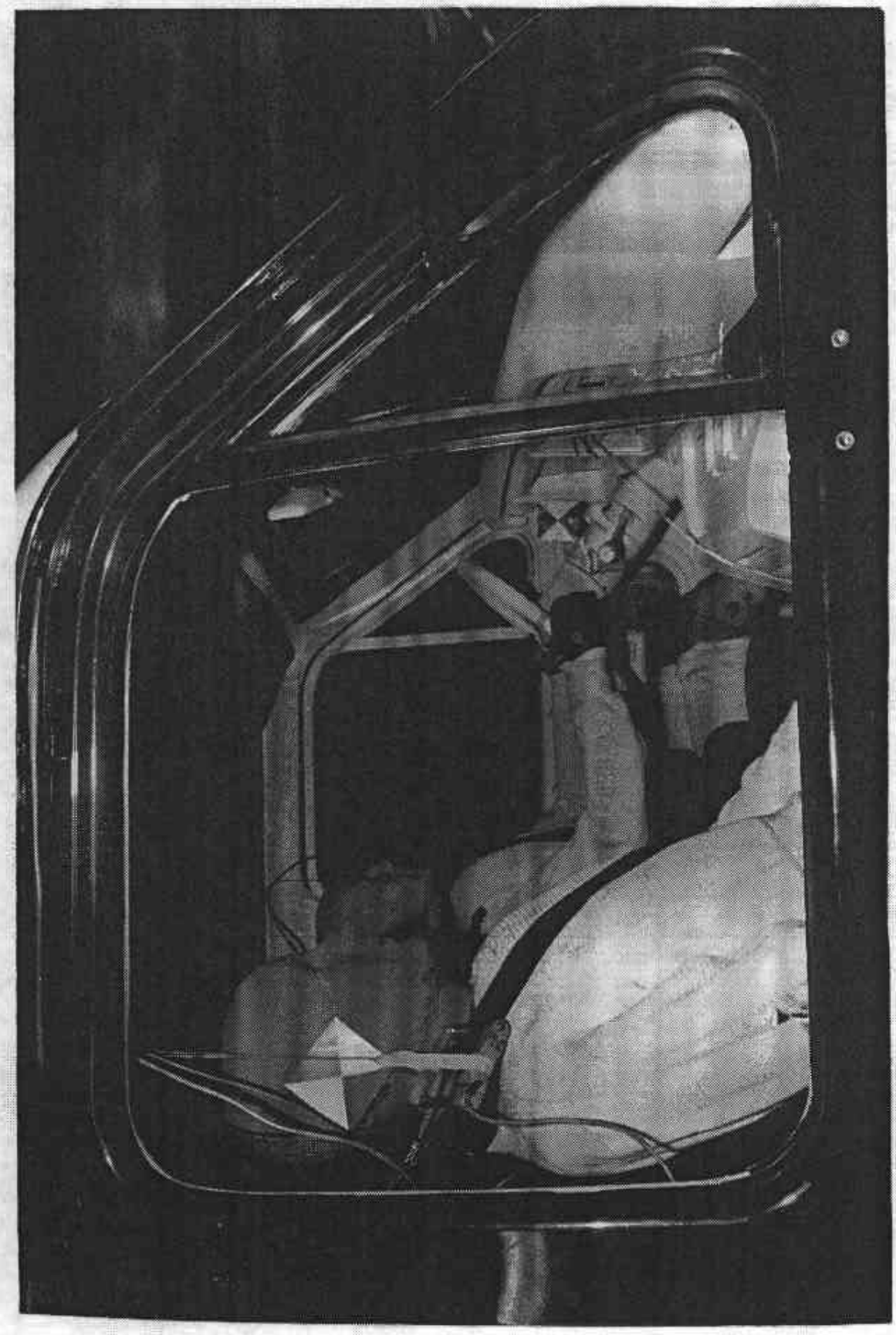
MSE-90-R9092-N03

POSTTEST REAR UNDERBODY VIEW
A-18

MSE-90-R9092-N03

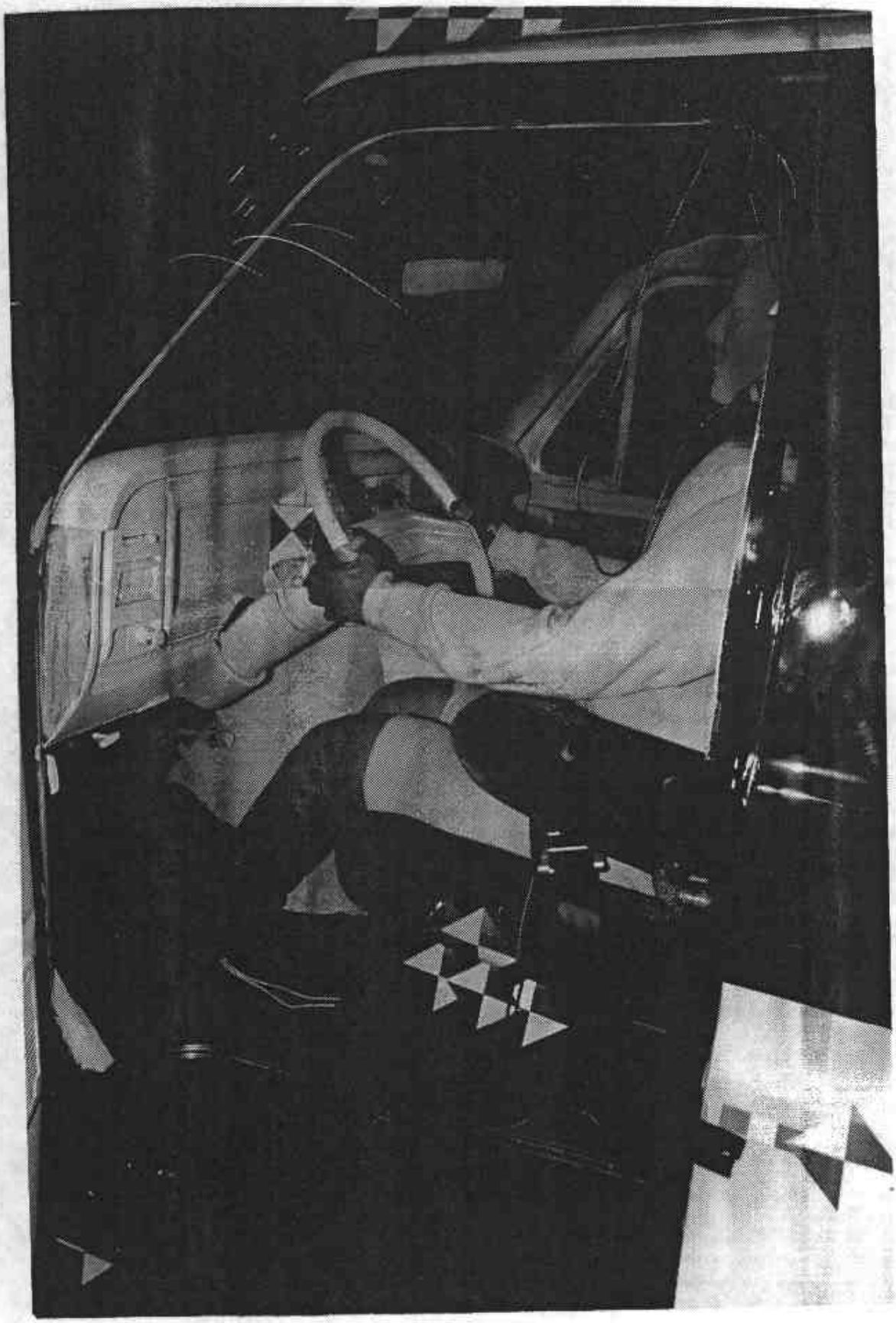
PRETEST DRIVER DUMMY POSITION VIEW

POSTTEST DRIVER DUMMY POSITION VIEW



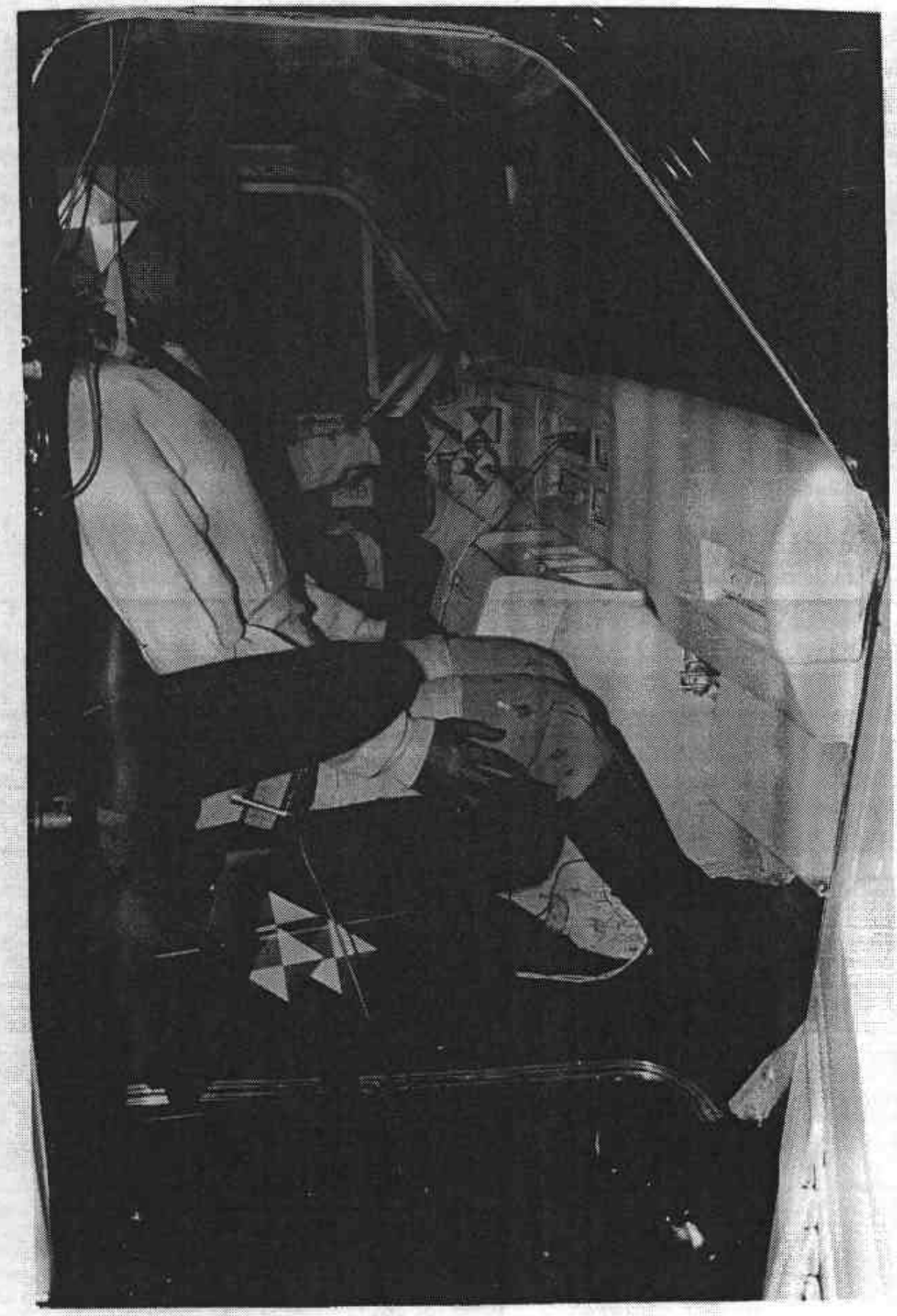
PRETEST PASSENGER DUMMY POSITION VIEW

POSTTEST PASSENGER DUMMY POSITION VIEW



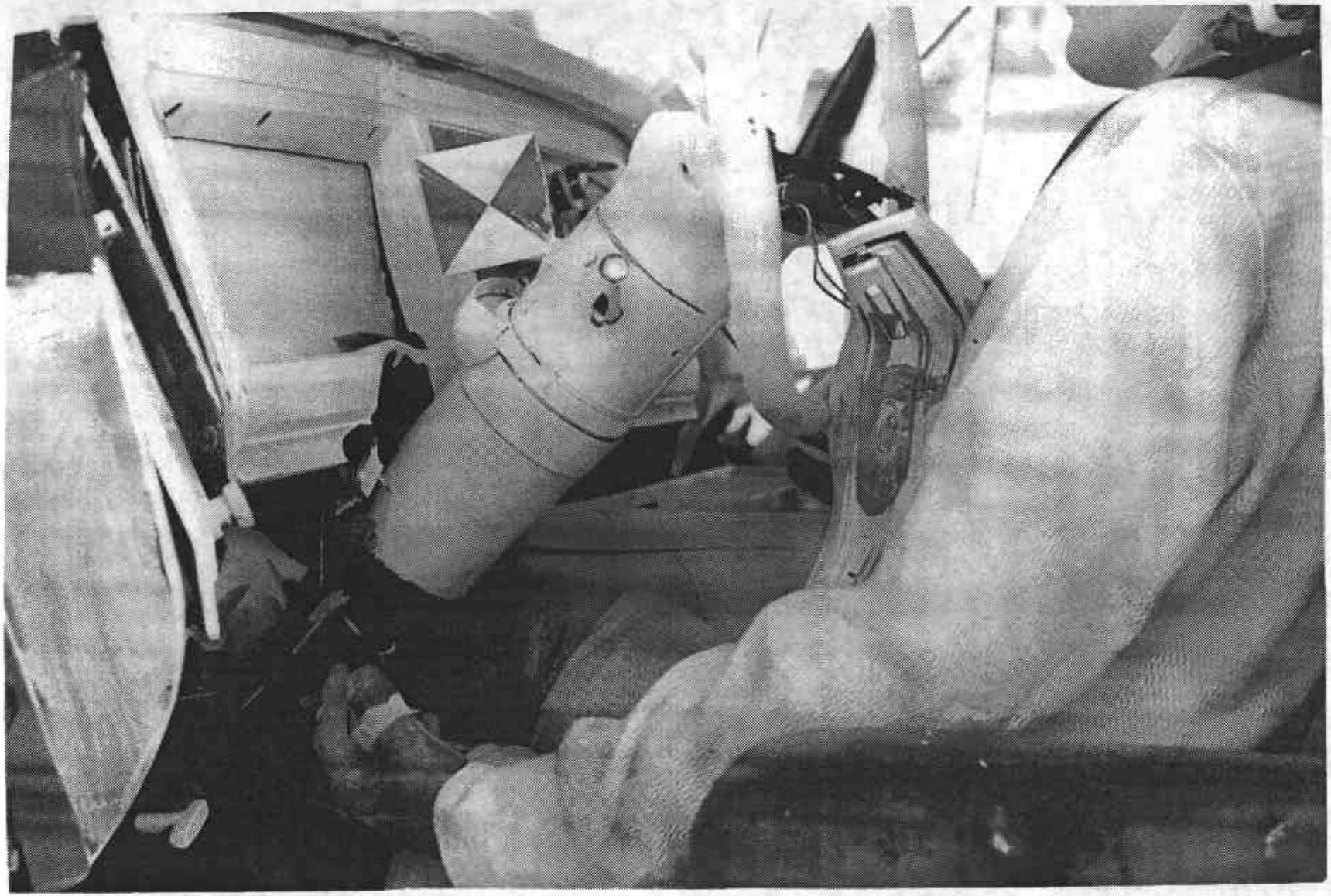
PRETEST DRIVER DUMMY & VEHICLE INTERIOR VIEW (Door Open)

POSTTEST DRIVER DUMMY & VEHICLE INTERIOR VIEW (Door Open)



PRETEST PASSENGER DUMMY & VEHICLE INTERIOR VIEW (Door Open)

POSTTEST PASSENGER DUMMY & VEHICLE INTERIOR VIEW (Door Open)
A-26 MSE-90-R9092-N03



POSTTEST DRIVER DUMMY (ATD) HEAD CONTACT AREA

POSTTEST PASSENGER DUMMY (ATD) HEAD AND KNEE CONTACT AREA

APPENDIX B-1

VEHICLE AND DUMMY (ATD) RESPONSE DATA

DATA FILTERING:

ATD Head Channels	- Class 1000
ATD Chest Channels	- Class 180
ATD Femur Channels	- Class 600
Vehicle Channels	- Class 60

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General Test Information

VERSNO: V2 TGID: 1
TITLE: 1990 35MPH NCAP FRONTAL BARRIER IMPACT
TSTOBJ: ACQUIRE NCAP DATA USING TWO INSTR. DUMMIES AND LOAD CELL BARRIER
TSTDAT: 08/MAR/90 TSTPRF: MSE CONNO: DTNH22-87-D-02009
TSTREF: NCAP90 TSTTYP: NCA TSTCFN: VTB
TKSURF: ASH TKCOND: DRY TEMP: 73 RECTYP: FMT
LINK: UMB CLSSPD: 35.2 IMPANG: 0 OFFSET: 0.0
IMPPNT: 9999.9 MEASUR: ENG TOTCRV: 65
TSTCOM: NO COMMENTS

Vehicle Information

VGID: 2 VEHNO: 1 MAKE: 02 MODEL: 23 YEAR: 90 BODY: VN
VIN: 1FMEE11NXLHA16523 ENGINE: V81F ENGDSP: 5.0 LITERS TRANSM: AR
VEHTWT: 5710 WHLBAS: 138.2 VEHLEN: 206.3 VEHWID: 80.0
VEHCG: 65.4 STRSEP: NO COLMEC: OTH MODIND: P
MODDSC: UNMODIFIED
BX
1: 206.3
2: 181.3
3: 184.4
4: 168.0
5: 167.6
6: 161.2
7: 160.8
8: 129.1
9: 128.6
10: 128.2
11: 127.8
12: 166.2
13: 166.0
14: 184.3
15: 183.3
16: 151.0
17: 14.0
18: 21.0
19: 199.4
20: 199.4
21: 26.0
VEHSPD: 35.2 CRBANG: 0 PDOF: 0 BMPENG: NA
SILENG: NA APLENG: NA
DPD
1: 16.7
2: 20.0
3: 21.8
4: 21.6
5: 19.9
6: 16.9
VDI: 12FCAW9 LENCNT: 68.0 DAMDST: 0.0 CRHDST: 21.8
AX
1: 187.0
2: 176.1
3: 181.7
4: 167.2
5: 165.3
6: 160.8
7: 157.5
8: 128.8
9: 129.2
10: 128.0
11: 124.7
12: 164.0
13: 163.8
14: 180.0
15: 179.8
16: 184.5
17: 20.7
18: 21.1
19: 183.5
20: 183.3
21: 26.0
CARANG: 999 VEHOR: 999
VEHCOM: COLMEC IS TELESCOPING TUBING

Barrier Information

Barrier ID: 3
BARRIG: R
BARSHP: LCB
BARANG: 0
BARDIA: 999.9
BARCOM: 36 50KLB LOAD CELLS ARRANGED IN A 9 WIDE BY 4 HIGH MATRIX.

Occupant Information

Occupant Group ID: 4 VEHNO: 1
OCCLOC: 01 OCCTYP: P5 OCCAGE: 99 OCCSEX: M OCCHT: 999 OCCWT: 999
MTHCAL: P5 DUMSIZ: 50
DUMMAN: MFG: HUMANOID SYSTEMS, S/N: 465
DUMMOD: UNMODIFIED
DUMDSC: NO COMMENTS
HH: 21.7 HW: 26.1 HR: 9.2 HS: 9.8 CD: 25.0 CS: 24.5 AD: 4.7 HD: 8.0
KD: 9.0 HB:999.9 NB:999.9 CB:999.9 KB:999.9
RESTR1: 3PT RESTR2: SWE
RESTXT: NO COMMENTS
SEPOSN: CN AIRDEP: NA
CNTRH1: SH CNTRH2: NO CNTRC1: SW CNTRC2: NO CNTRL1: OT CNTRL2: DP
HIC: 2613. T1: 68.800 T2: 80.700
CLIP3M: 59.1 LFEM: 1526. RFEM: 3347. CSI: 728. LBELT: 1371. SBELT: 1895.
OCCCOM: CNTRL1 IS STEERING COLUMN

Occupant Information

Occupant Group ID: 4 VEHNO: 1
OCCLOC: 02 OCCTYP: P5 OCCAGE: 99 OCCSEX: M OCCHT: 999 OCCWT: 999
MTHCAL: P5 DUMSIZ: 50
DUMMAN: MFG: HUMANOID SYSTEMS, S/N: 466
DUMMOD: UNMODIFIED
DUMDSC: NO COMMENTS
HH: 21.0 HW: 25.3 HR: 9.6 HS: 9.8 CD: 23.5 CS:999.9 AD: 4.7 HD: 7.5
KD: 7.5 HB:999.9 NB:999.9 CB:999.9 KB:999.9
RESTR1: 3PT RESTR2: NON
RESTXT: NO COMMENTS
SEPOSN: CN AIRDEP: NA
CNTRH1: DP CNTRH2: NO CNTRC1: NO CNTRC2: NO CNTRL1: DP CNTRL2: NO
HIC: 1897. T1: 80.700 T2: 91.100
CLIP3M: 49.3 LFEM: 688. RFEM: 1294. CSI: 498. LBELT: 1467. SBELT: 1895.
OCCCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 001
SENTYP: AC SENLOC: 01 SENATT: HDCG
AXIS: XL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: BF83H
CALDAT: 17/JAN/90 INSRAT: 200 CHLMAX: 120 INIVEL: 35.2
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 002
SENTYP: AC SENLOC: 01 SENATT: HDCG
AXIS: YL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: BJ15H
CALDAT: 17/JAN/90 INSRAT: 200 CHLMAX: 16 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 003
SENTYP: AC SENLOC: 01 SENATT: HDCG
AXIS: ZL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: BG29H
CALDAT: 17/JAN/90 INSRAT: 200 CHLMAX: 57 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 004
SENTYP: AC SENLOC: 01 SENATT: CHST
AXIS: XL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: AD76
CALDAT: 17/JAN/90 INSRAT: 200 CHLMAX: 31 INIVEL: 35.2
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 005
SENTYP: AC SENLOC: 01 SENATT: CHST
AXIS: YL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: AD99
CALDAT: 17/JAN/90 INSRAT: 200 CHLMAX: 8 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 006
SENTYP: AC SENLOC: 01 SENATT: CHST
AXIS: ZL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: BI60H
CALDAT: 17/JAN/90 INSRAT: 200 CHLMAX: 15 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 007
SENTYP: LC SENLOC: 01 SENATT: FMRL
AXIS: XL UNITS: LBS PREFIL: 1650
INSMAN: MFG: GSE INC., MODEL: 2430, S/N: 701
CALDAT: 16/JAN/90 INSRAT: 3000 CHLMAX: 51 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 008
SENTYP: LC SENLOC: 01 SENATT: FMRR
AXIS: XL UNITS: LBS PREFIL: 1650
INSMAN: MFG: GSE INC., MODEL: 2430, S/N: 707
CALDAT: 16/JAN/90 INSRAT: 3000 CHLMAX: 124 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 009
SENTYP: AC SENLOC: 02 SENATT: HDCG
AXIS: YL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: AE09
CALDAT: 17/JAN/90 INSRAT: 200 CHLMAX: 84 INIVEL: 35.2
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 010
SENTYP: AC SENLOC: 02 SENATT: HDCG
AXIS: YL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: AD61
CALDAT: 17/JAN/90 INSRAT: 200 CHLMAX: 16 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 011
SENTYP: AC SENLOC: 02 SENATT: HDCG
AXIS: ZL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: AD98
CALDAT: 17/JAN/90 INSRAT: 200 CHLMAX: 42 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 012
SENTYP: AC SENLOC: 02 SENATT: CHST
AXIS: XL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: BI14H
CALDAT: 17/JAN/90 INSRAT: 200 CHLMAX: 27 INIVEL: 35.2
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 013
SENTYP: AC SENLOC: 02 SENATT: CHST
AXIS: YL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: BI19H
CALDAT: 17/JAN/90 INSRAT: 200 CHLMAX: 21 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 014
SENTYP: AC SENLOC: 02 SENATT: CHST
AXIS: ZL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: BI92H
CALDAT: 17/JAN/90 INSRAT: 200 CHLMAX: 9 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 015
SENTYP: LC SENLOC: 02 SENATT: FMRL
AXIS: XL UNITS: LBS PREFIL: 1650
INSMAN: MFG: GSE INC., MODEL: 2430, S/N: 709
CALDAT: 16/JAN/90 INSRAT: 3000 CHLMAX: 27 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 016
SENTYP: LC SENLOC: 02 SENATT: FMRR
AXIS: XL UNITS: LBS PREFIL: 1650
INSMAN: MFG: GSE INC., MODEL: 2430, S/N: 710
CALDAT: 16/JAN/90 INSRAT: 3000 CHLMAX: 44 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 017
SENTYP: LC SENLOC: 01 SENATT: LPBO
AXIS: OT UNITS: LBS PREFIL: 1650
INSMAN: MFG: LEBOW, MODEL: 3371, S/N: 333
CALDAT: 16/JAN/90 INSRAT: 3500 CHLMAX: 39 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 018
SENTYP: LC SENLOC: 01 SENATT: SHBT
AXIS: OT UNITS: LBS PREFIL: 1650
INSMAN: MFG: LEBOW, MODEL: 3371, S/N: 327
CALDAT: 16/JAN/90 INSRAT: 3500 CHLMAX: 55 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 019
SENTYP: LC SENLOC: 02 SENATT: LPBO
AXIS: OT UNITS: LBS PREFIL: 1650
INSMAN: MFG: LEBOW, MODEL: 3371, S/N: 330
CALDAT: 16/JAN/90 INSRAT: 3500 CHLMAX: 42 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 020
SENTYP: LC SENLOC: 02 SENATT: SHBT
AXIS: OT UNITS: LBS PREFIL: 1650
INSMAN: MFG: LEBOW, MODEL: 3371, S/N: 308
CALDAT: 16/JAN/90 INSRAT: 3500 CHLMAX: 55 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 021
SENTYP: DS SENLOC: 01 SENATT: SHBT
AXIS: OT UNITS: OTH PREFIL: 1650
INSMAN: MFG: ETI, MODEL: LCP12A-12, S/N: 8803-1
CALDAT: 25/JAN/90 INSRAT: 30 CHLMAX: 12 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: SEAT BELT ELONGATION, UNITS ARE INCHES/IN. (PERCENTAGE BELT STRETCH)

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 022
SENTYP: DS SENLOC: 02 SENATT: SHBT
AXIS: OT UNITS: OTH PREFIL: 1650
INSMAN: MFG: ETI, MODEL: LCP12A-12, S/N: 8712-1
CALDAT: 25/JAN/90 INSRAT: 30 CHLMAX: 7 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: SEAT BELT ELONGATION, UNITS ARE INCHES/IN. (PERCENTAGE BELT STRETCH)

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 023
SENTYP: AC SENLOC: NA SENATT: SULF
AXIS: XG UNITS: G'S PREFIL: 1650
INSMAN: MFG: SETRA, MODEL: 111, S/N: 1103
CALDAT: 17/JAN/90 INSRAT: 100 CHLMAX: 94 INIVEL: 35.2
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 024
SENTYP: AC SENLOC: NA SENATT: SURF
AXIS: XG UNITS: G'S PREFIL: 1650
INSMAN: MFG: SETRA, MODEL: 111, S/N: 1124
CALDAT: 17/JAN/90 INSRAT: 250 CHLMAX: 75 INIVEL: 35.2
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 025
SENTYP: AC SENLOC: NA SENATT: ENGN
AXIS: XG UNITS: G'S PREFIL: 1650
INSMAN: MFG: SETRA, MODEL: 113B, S/N: 1877
CALDAT: 17/JAN/90 INSRAT: 250 CHLMAX: 98 INIVEL: 35.2
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 026
SENTYP: AC SENLOC: NA SENATT: ENGN
AXIS: XG UNITS: G'S PREFIL: 1650
INSMAN: MFG: SETRA, MODEL: 113B, S/N: 1878
CALDAT: 17/JAN/90 INSRAT: 250 CHLMAX: 54 INIVEL: 35.2
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 027
SENTYP: AC SENLOC: NA SENATT: DPLC
AXIS: XG UNITS: G'S PREFIL: 1650
INSMAN: MFG: SETRA, MODEL: 111, S/N: 1108
CALDAT: 17/JAN/90 INSRAT: 250 CHLMAX: 69 INIVEL: 35.2
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 028
SENTYP: AC SENLOC: NA SENATT: FLLR
AXIS: XG UNITS: G'S PREFIL: 1650
INSMAN: MFG: SETRA, MODEL: 111, S/N: 1123
CALDAT: 17/JAN/90 INSRAT: 250 CHLMAX: 89 INIVEL: 35.2
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 029
SENTYP: AC SENLOC: NA SENATT: FLRR
AXIS: XG UNITS: G'S PREFIL: 1650
INSMAN: MFG: SETRA, MODEL: 111, S/N: 1105
CALDAT: 17/JAN/90 INSRAT: 100 CHLMAX: 94 INIVEL: 35.2
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 030
SENTYP: LC SENLOC: NA SENATT: LCA1
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19349
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 6 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 031
SENTYP: LC SENLOC: NA SENATT: LCA2
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19324
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 7 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 032
SENTYP: LC SENLOC: NA SENATT: LCA3
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19283
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 4 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 033
SENTYP: LC SENLOC: NA SENATT: LCA4
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19263
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 5 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 034
SENTYP: LC SENLOC: NA SENATT: LCA5
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19265
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 21 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 035
SENTYP: LC SENLOC: NA SENATT: LCA6
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19266
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 6 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 036
SENTYP: LC SENLOC: NA SENATT: LCA7
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19317
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 1 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 037
SENTYP: LC SENLOC: NA SENATT: LCA8
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19270
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 4 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 038
SENTYP: LC SENLOC: NA SENATT: LCA9
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19428
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 5 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 039
SENTYP: LC SENLOC: NA SENATT: LCB1
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19273
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 8 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 040
SENTYP: LC SENLOC: NA SENATT: LCB2
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19276
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 18 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 041
SENTYP: LC SENLOC: NA SENATT: LCB3
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19258
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 91 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 042
SENTYP: LC SENLOC: NA SENATT: LCB4
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19278
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 13 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 043
SENTYP: LC SENLOC: NA SENATT: LCB5
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19279
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 6 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 044
SENTYP: LC SENLOC: NA SENATT: LCB6
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19282
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 11 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: CF
INSCOM: QUESTIONABLE DATA AFTER T=114 MSEC.

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 045
SENTYP: LC SENLOC: NA SENATT: LCB7
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19262
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 77 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 046
SENTYP: LC SENLOC: NA SENATT: LCB8
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19285
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 13 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 047
SENTYP: LC SENLOC: NA SENATT: LCB9
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19286
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 17 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 048
SENTYP: LC SENLOC: NA SENATT: LCC1
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19287
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 13 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 049
SENTYP: LC SENLOC: NA SENATT: LCC2
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19288
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 23 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 050
SENTYP: LC SENLOC: NA SENATT: LCC3
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19289
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 66 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 051
SENTYP: LC SENLOC: NA SENATT: LCC4
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19291
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 15 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 052
SENTYP: LC SENLOC: NA SENATT: LCC5
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19324
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 44 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 053
SENTYP: LC SENLOC: NA SENATT: LCC6
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19313
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 42 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 054
SENTYP: LC SENLOC: NA SENATT: LCC7
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19314
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 50 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 055
SENTYP: LC SENLOC: NA SENATT: LCC8
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19315
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 15 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 056
SENTYP: LC SENLOC: NA SENATT: LCC9
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19316
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 12 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 057
SENTYP: LC SENLOC: NA SENATT: LCD1
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19460
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 7 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 058
SENTYP: LC SENLOC: NA SENATT: LCD2
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19318
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 10 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 059
SENTYP: LC SENLOC: NA SENATT: LCD3
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19322
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 17 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 060
SENTYP: LC SENLOC: NA SENATT: LCD4
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19323
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 16 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 061
SENTYP: LC SENLOC: NA SENATT: LCD5
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 120-FS, S/N: 19260
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 16 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 062
SENTYP: LC SENLOC: NA SENATT: LCD6
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19325
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 25 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

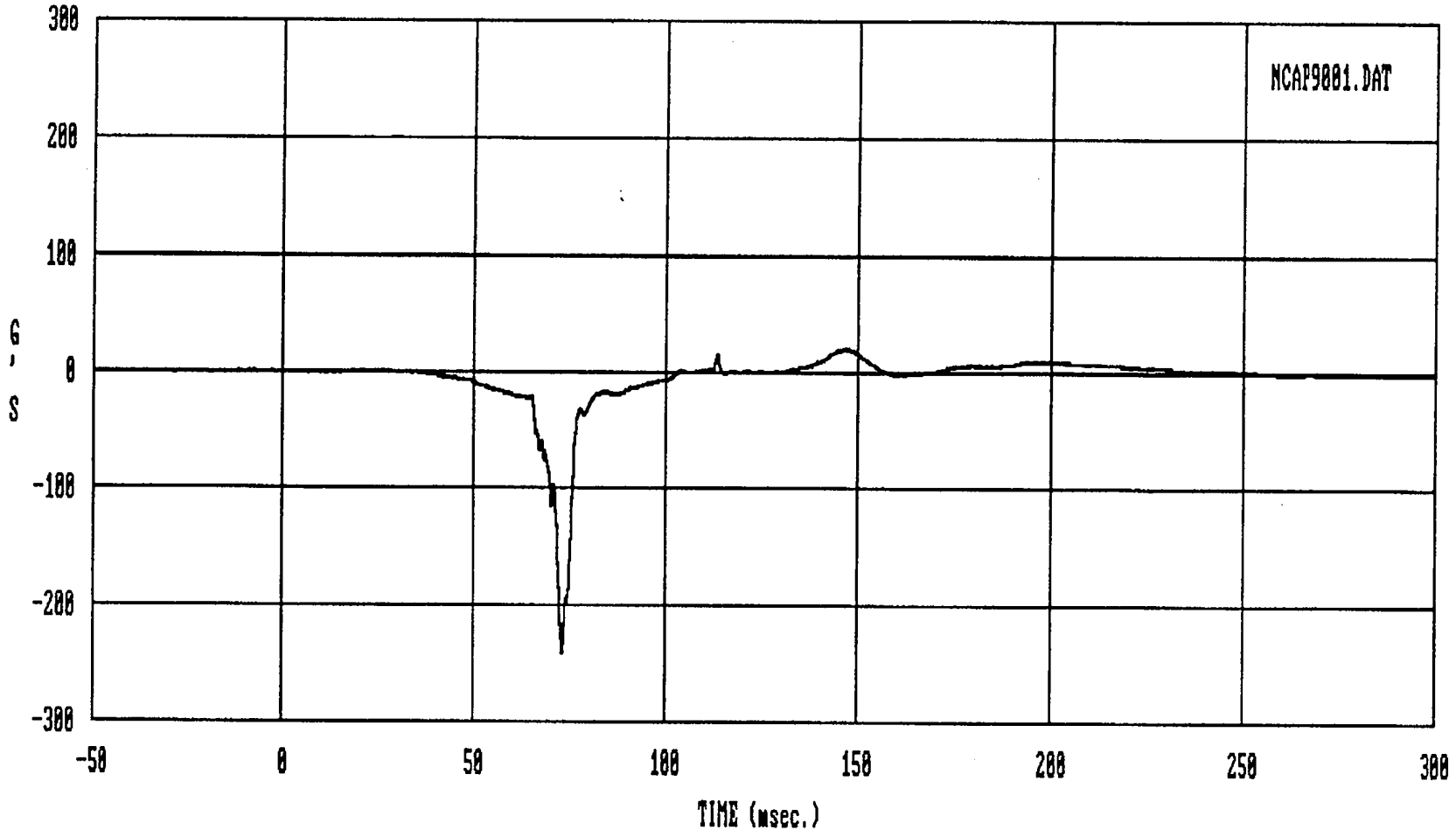
Inst. Group ID: 5 VEHNO: 0 CURNO: 063
SENTYP: LC SENLOC: NA SENATT: LCD7
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19332
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 16 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 064
SENTYP: LC SENLOC: NA SENATT: LCD8
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19333
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 12 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

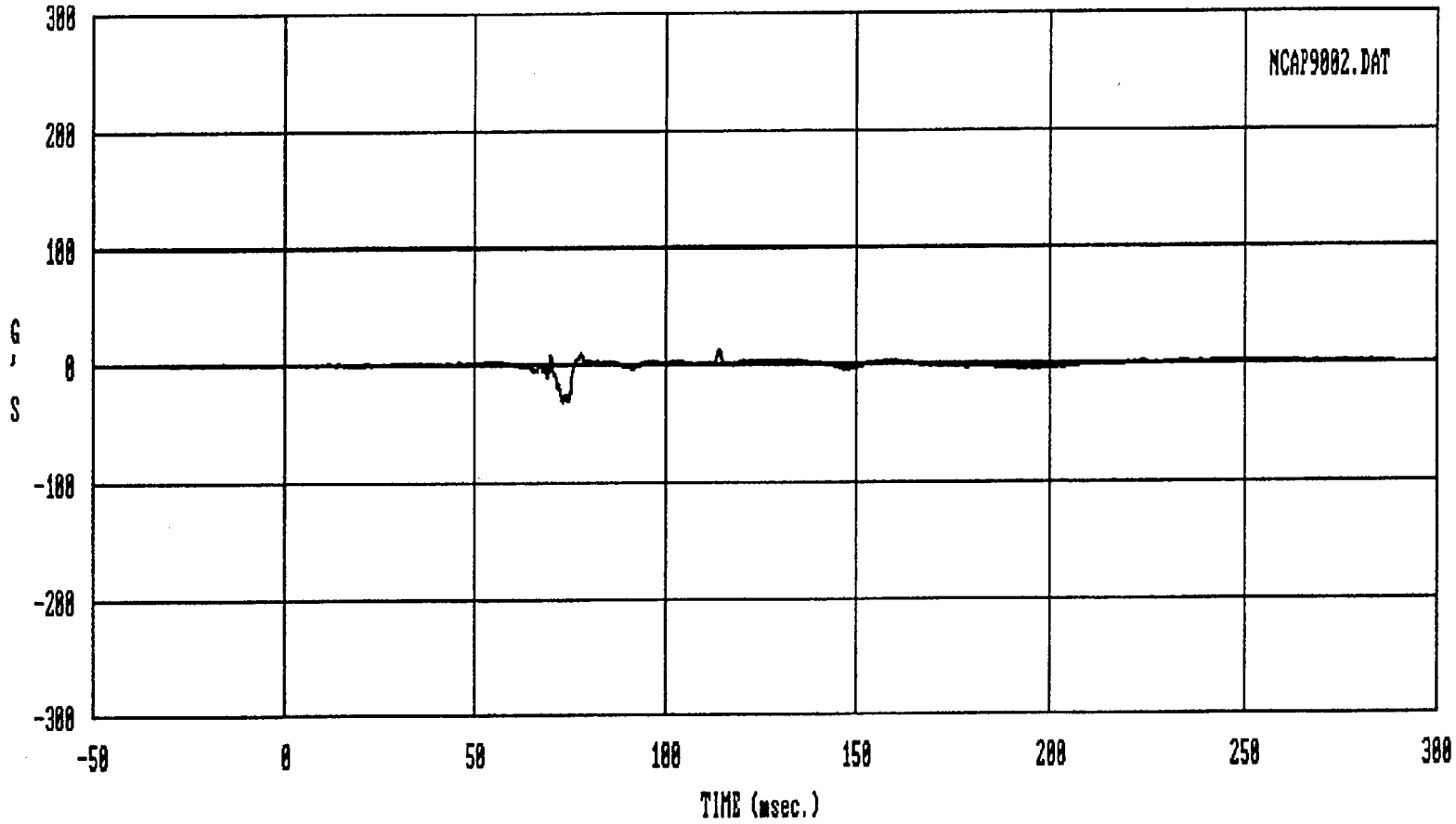
Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 065
SENTYP: LC SENLOC: NA SENATT: LCD9
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19466
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 12 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:



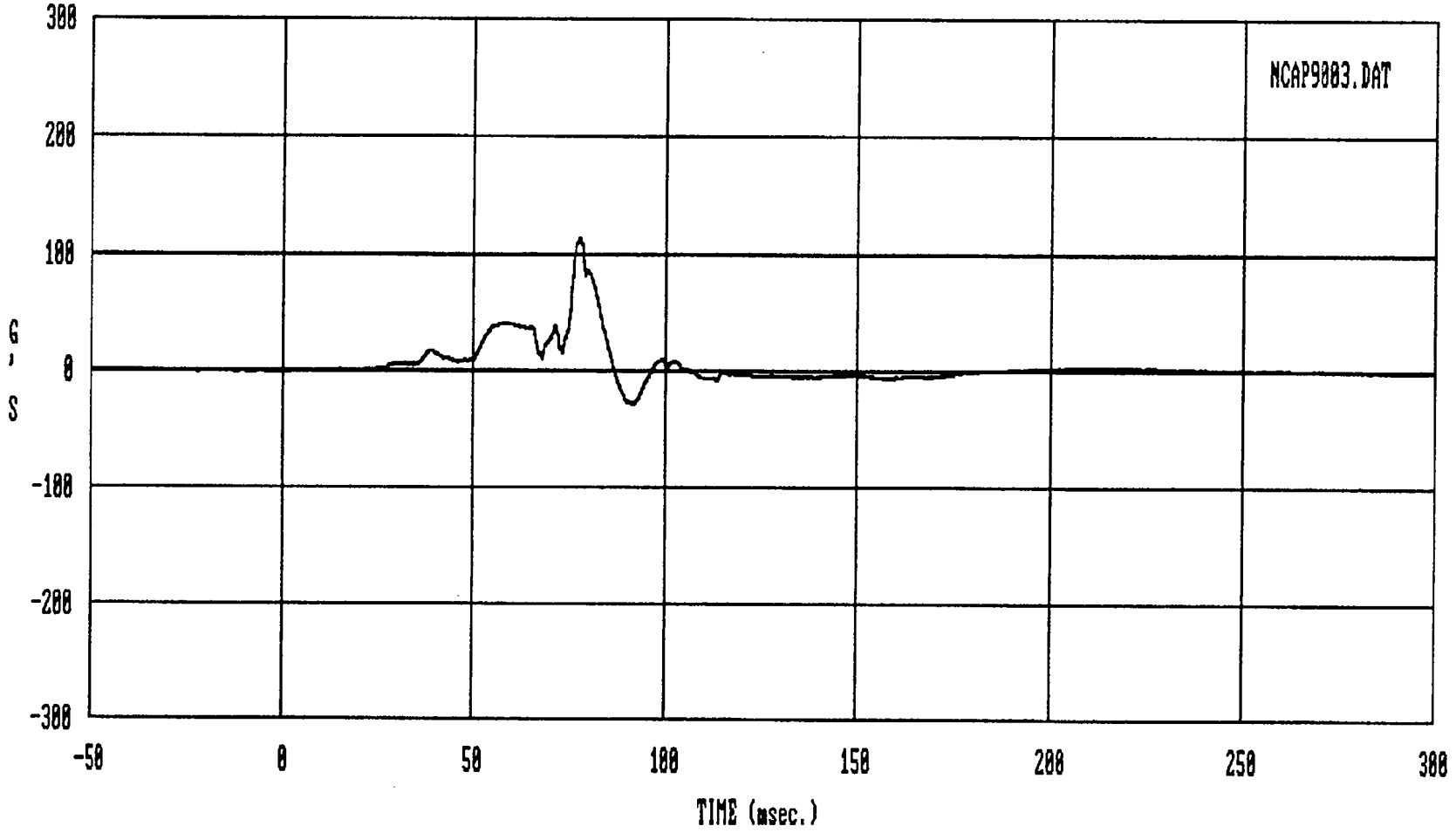
Curve: Driver Head acceleration -- X axis Filter: SAE CLASS 1000 Max = 21.600 Min = -240.38

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



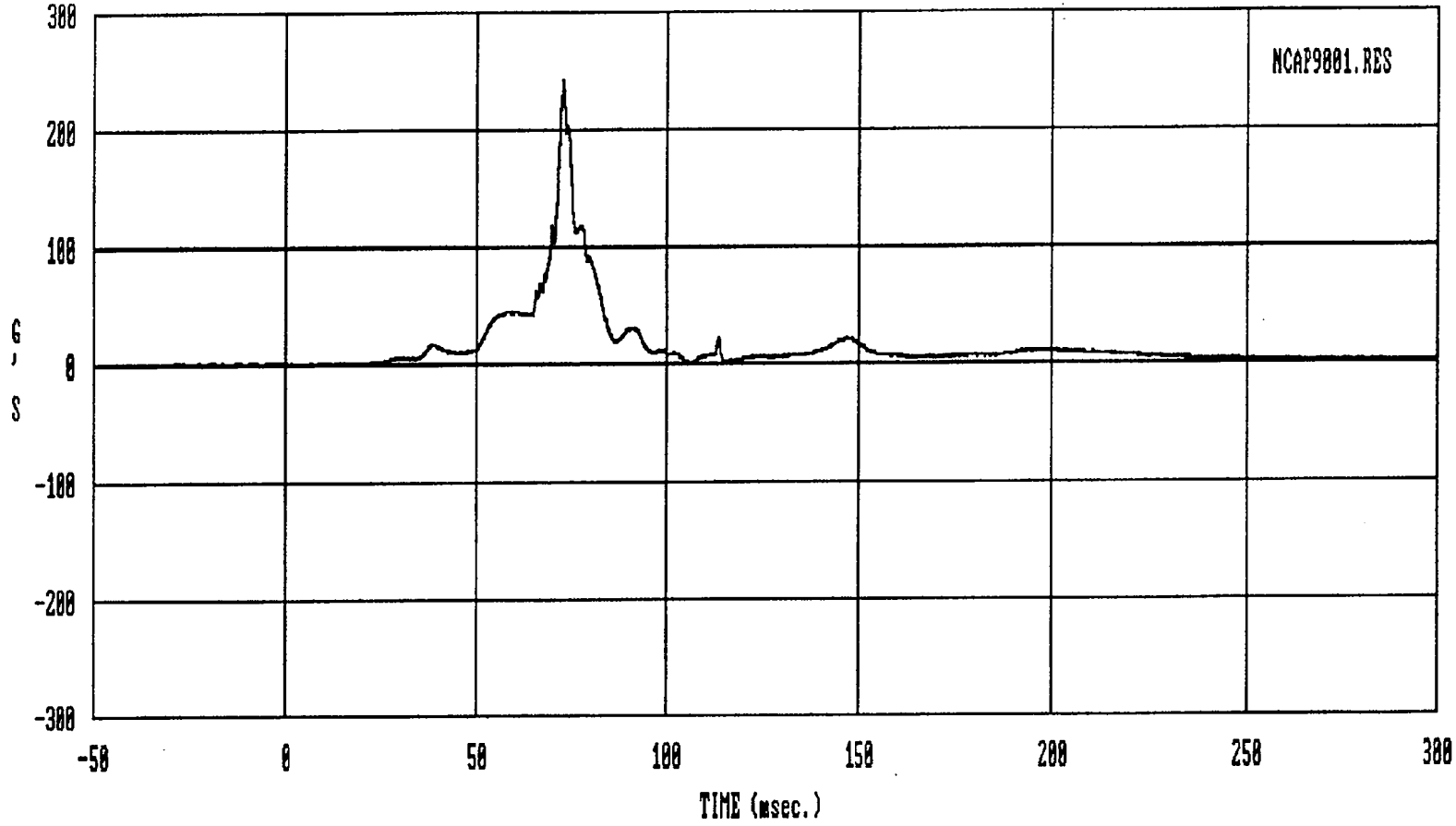
Curve: Driver Head acceleration -- Y axis Filter: SAE CLASS 1000 Max = 13.385 Min = -32.674

MSE Date: 03/08/90 Program: 1990 New Car Assessment 89 Vehicle: 1990 Ford Club Wagon Van



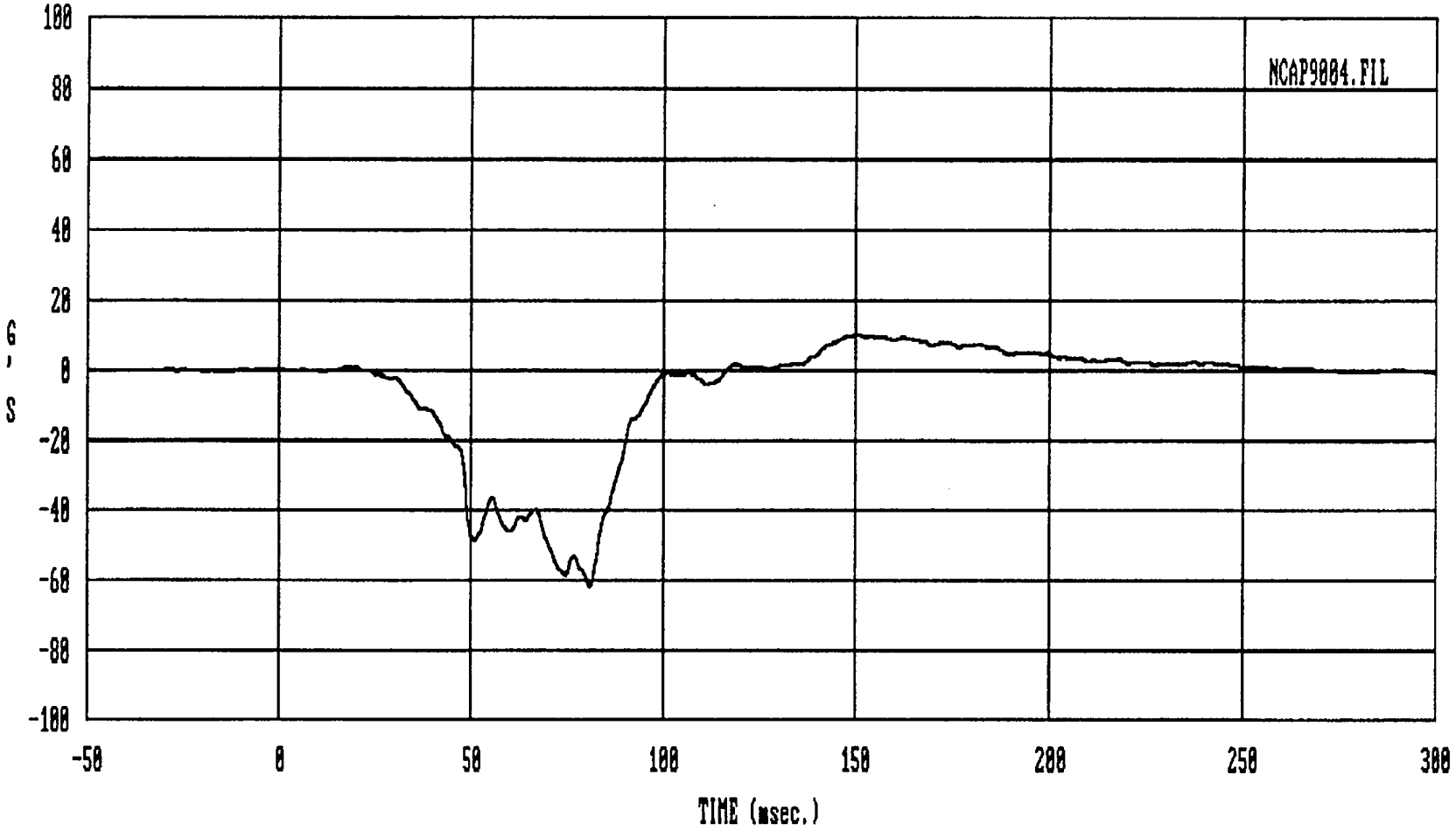
Curve: Driver Head acceleration — Z axis Filter: SAE CLASS 1000 Max = 113.57 Min = -28.227

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



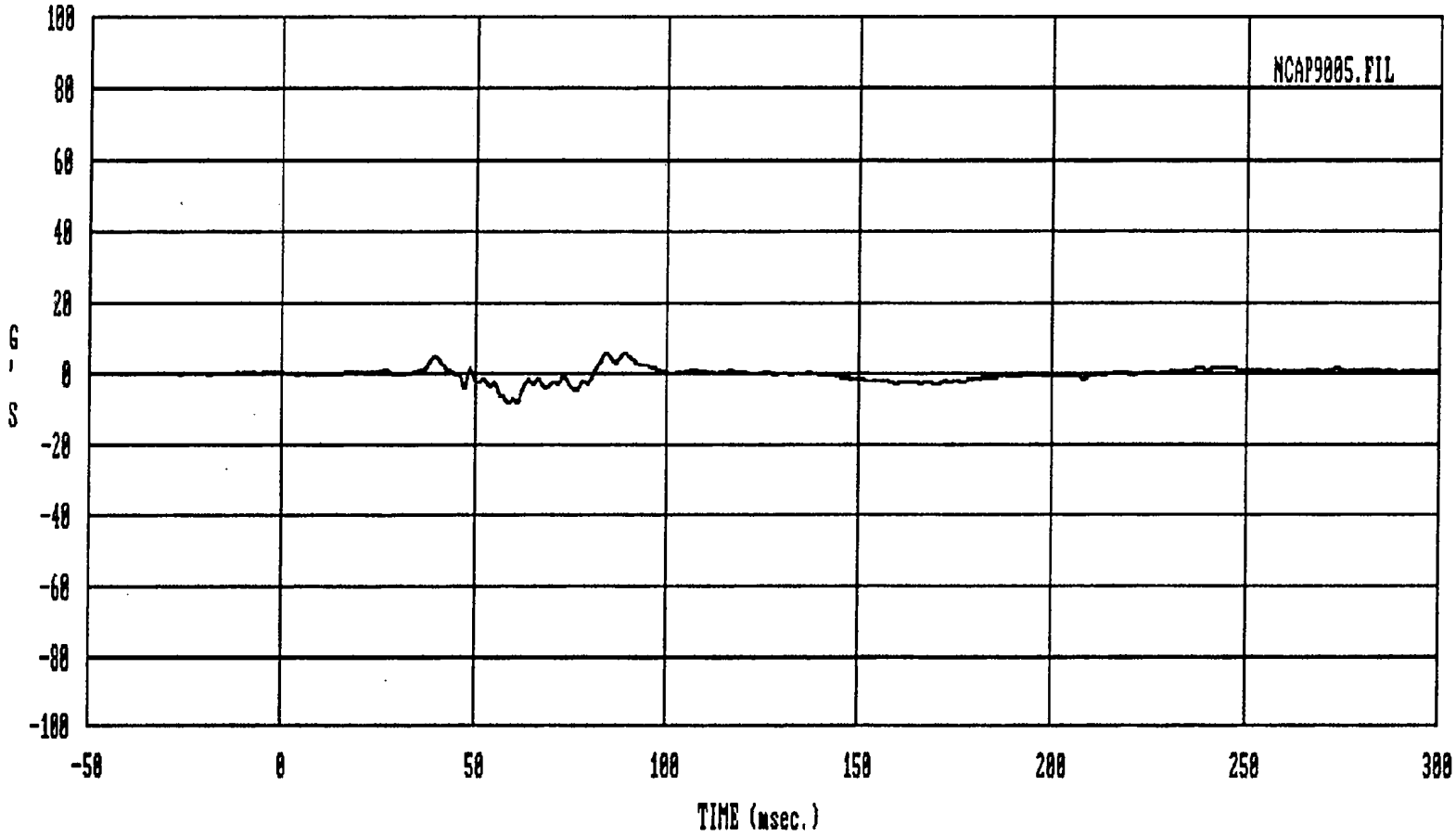
Curve: Driver Head resultant acceleration Filter: SAE CLASS 1000 Max = 242.76 Min = .00000

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



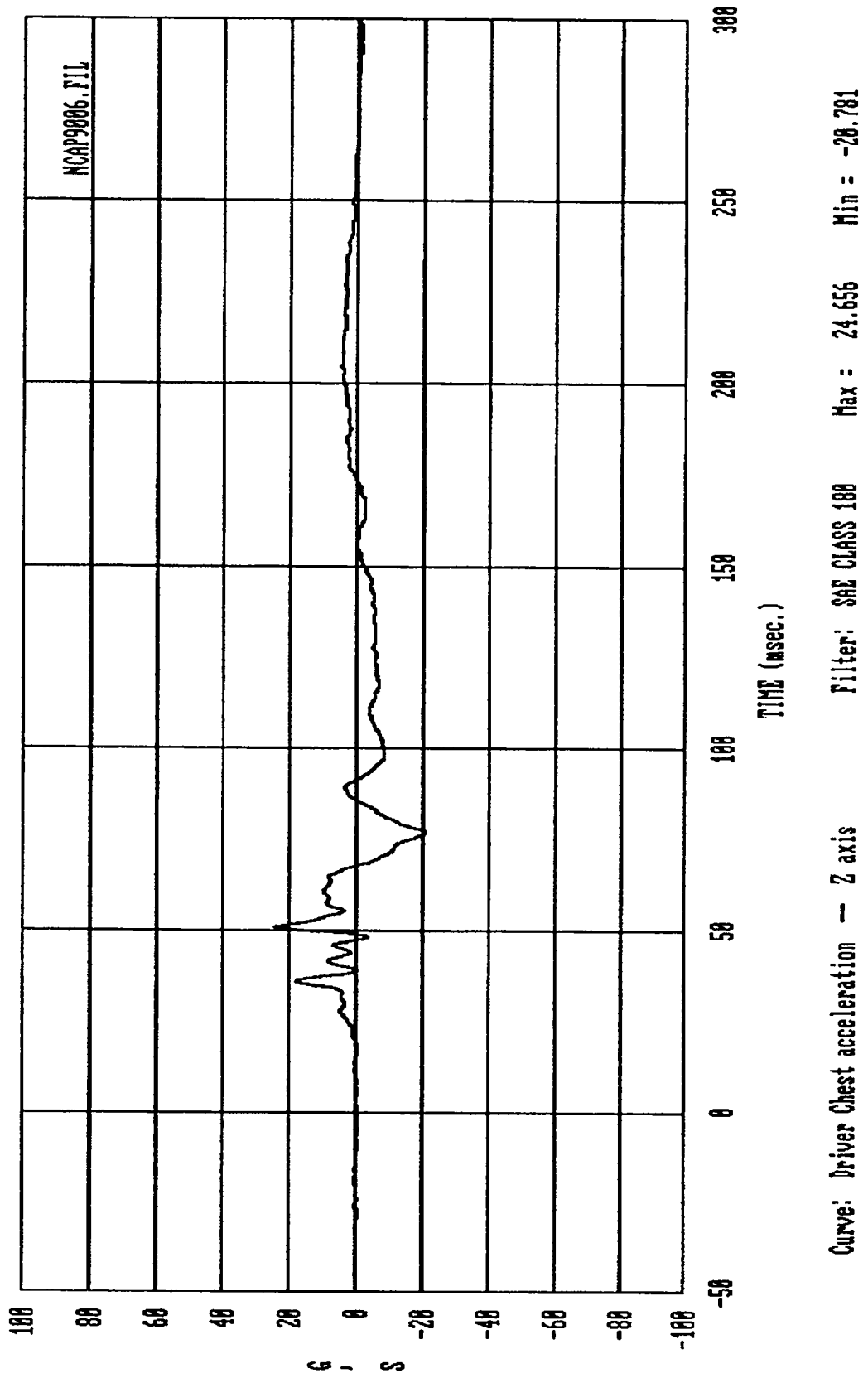
Curve: Driver Chest acceleration — X axis Filter: SAE CLASS 180 Max = 10.275 Min = -62.090

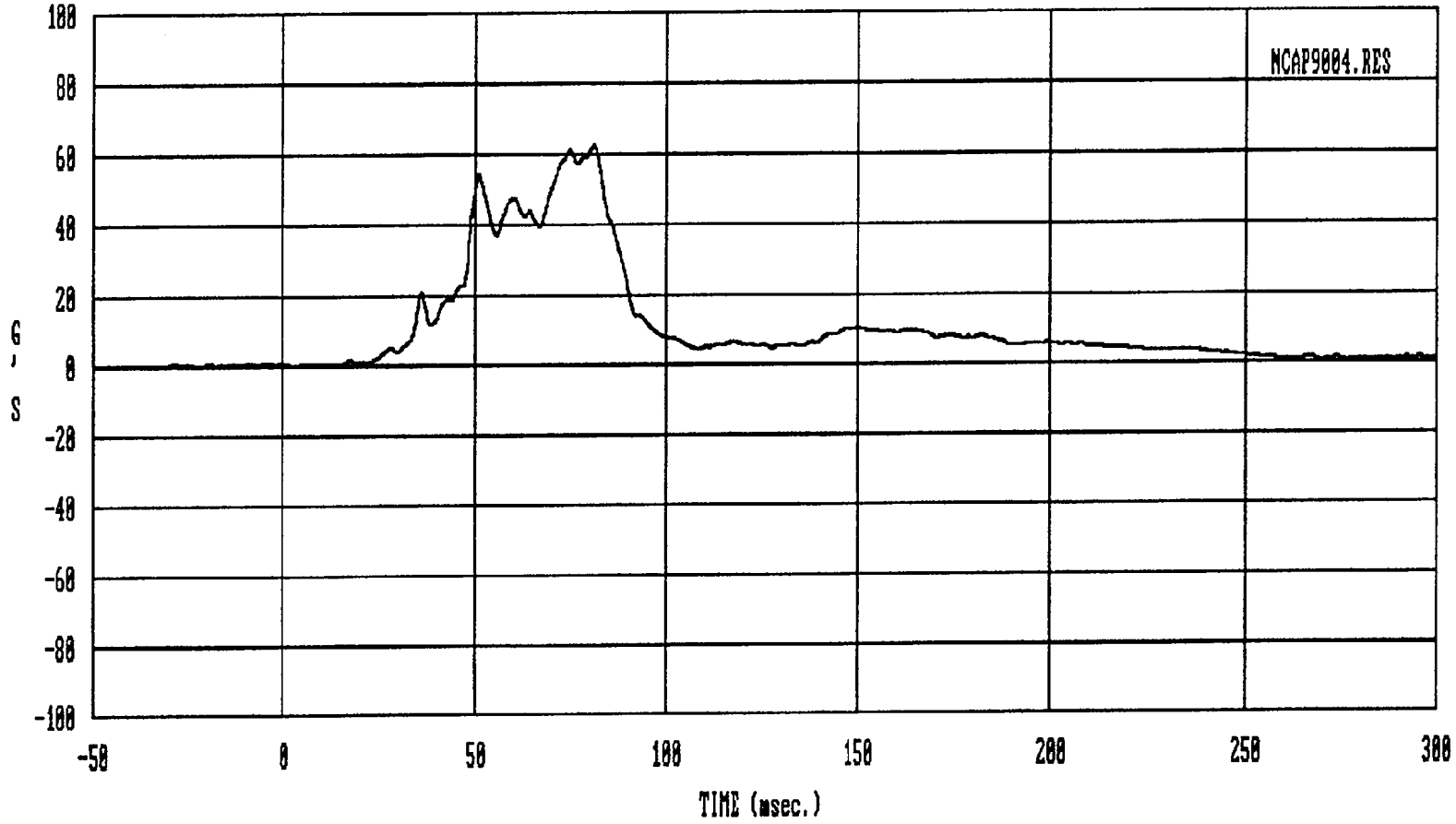
MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



Curve: Driver Chest acceleration -- Y axis Filter: SAE CLASS 180 Max = 5.8435 Min = -8.3571

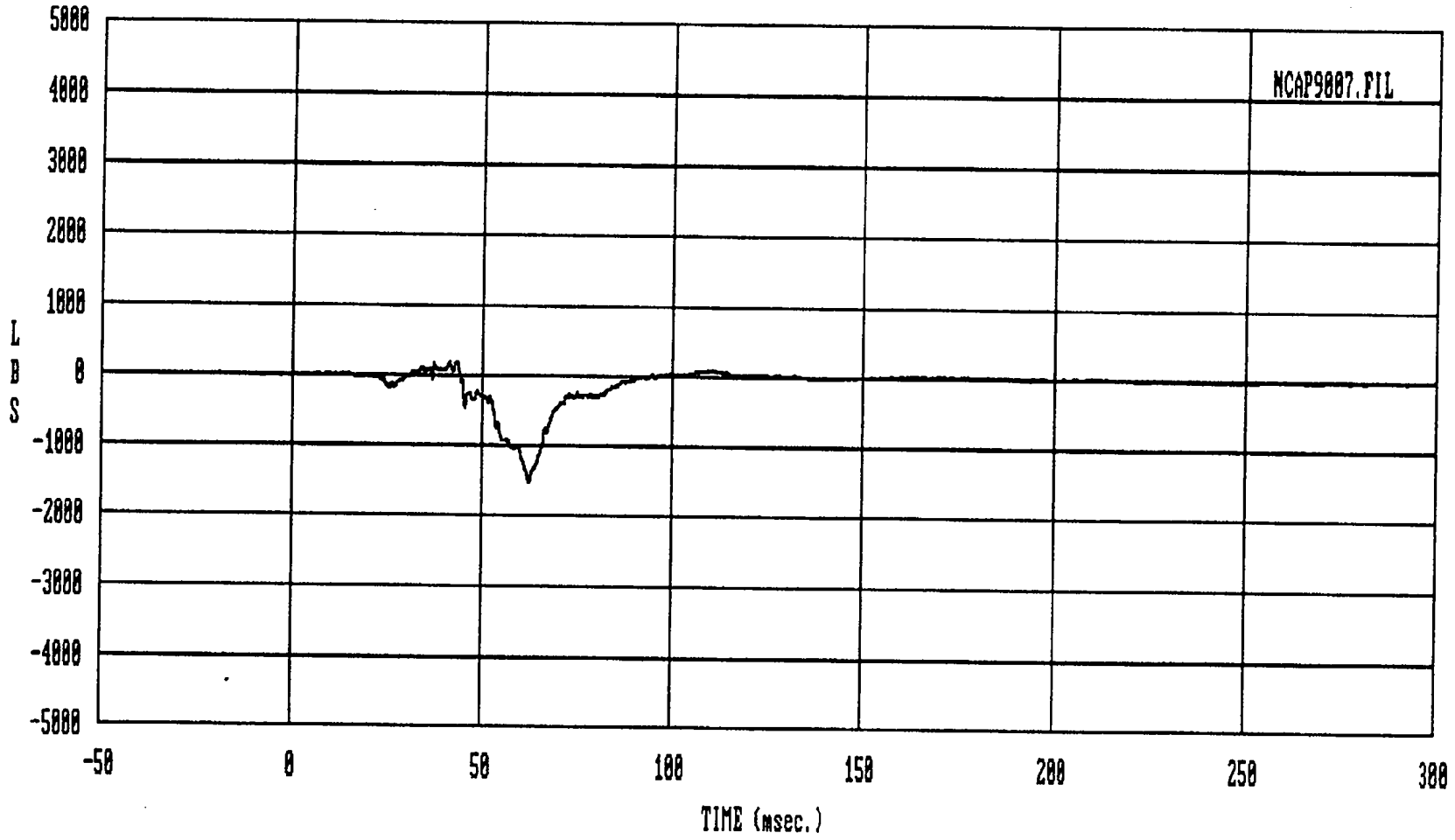
MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van


NCAP9006.FIL
100
80
60
40
20
0
-20
-40
-60
-80
-100
G - S
-50
0
50
100
150
200
250
300
TIME (msec.)
Curve: Driver Chest acceleration — Z axis
Filter: SAE CLASS 180
Max = 24.656
Min = -28.781
MSE
Date: 03/08/90
Program: 1990 New Car Assessment #9
Vehicle: 1990 Ford Club Wagon Van



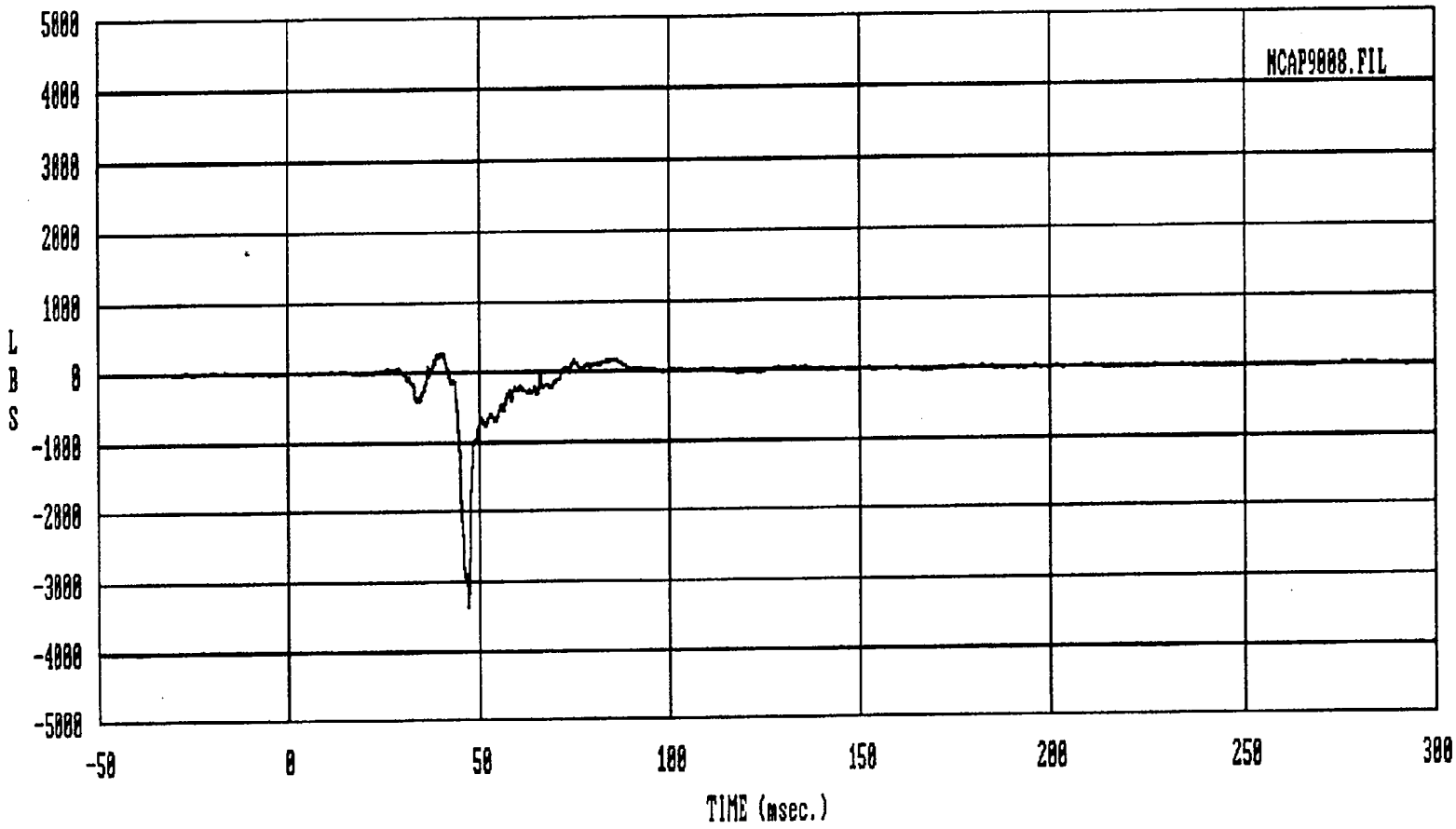
Curve: Driver Chest resultant acceleration Filter: SAE CLASS 180 Max = 62.771 Min = .10858

MSE Date: 03/08/98 Program: 1998 New Car Assessment #9 Vehicle: 1998 Ford Club Wagon Van



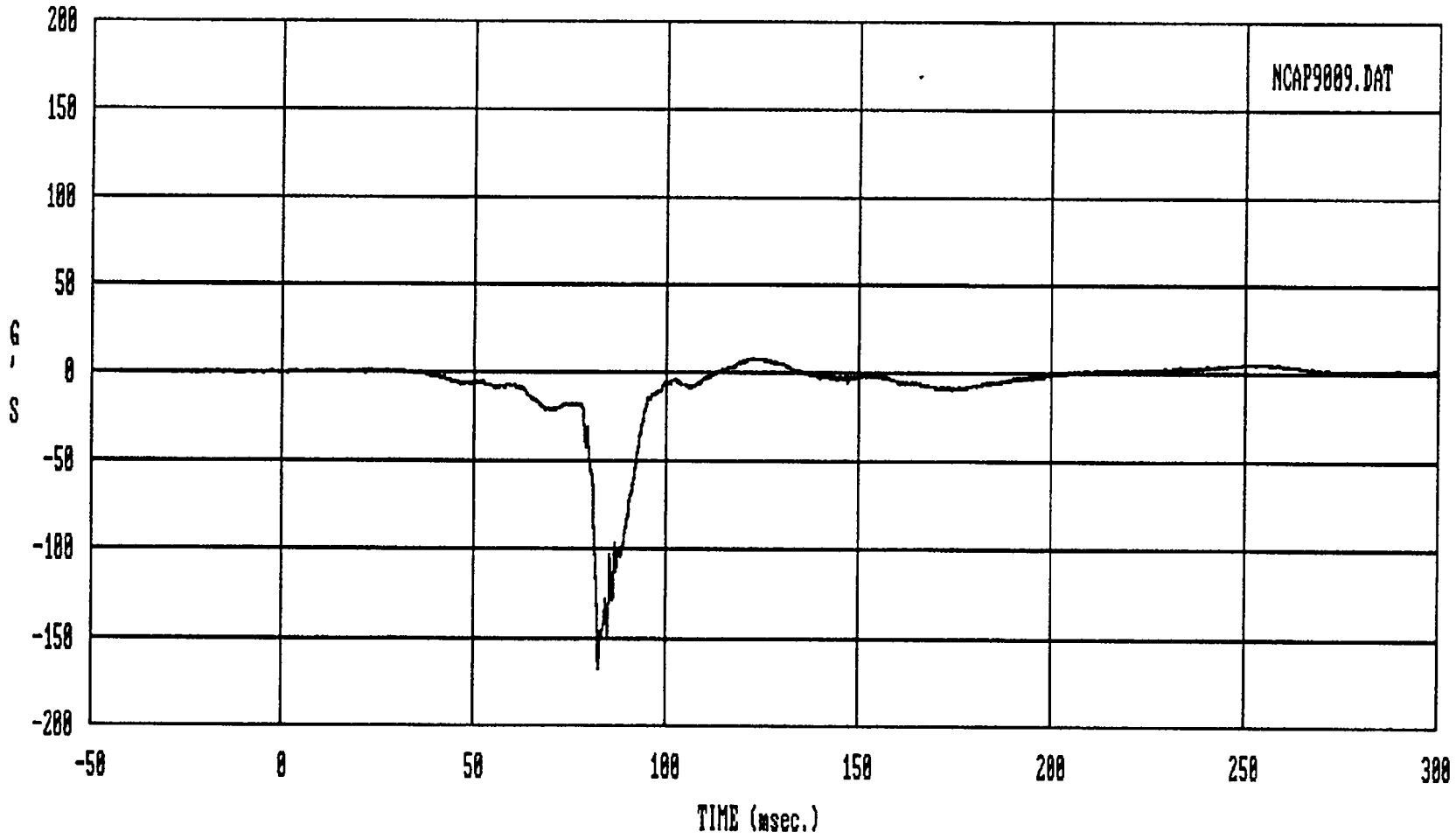
Curve: Driver Left Femur force Filter: SAE CLASS 600 Max = 201.29 Min = -1525.7

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



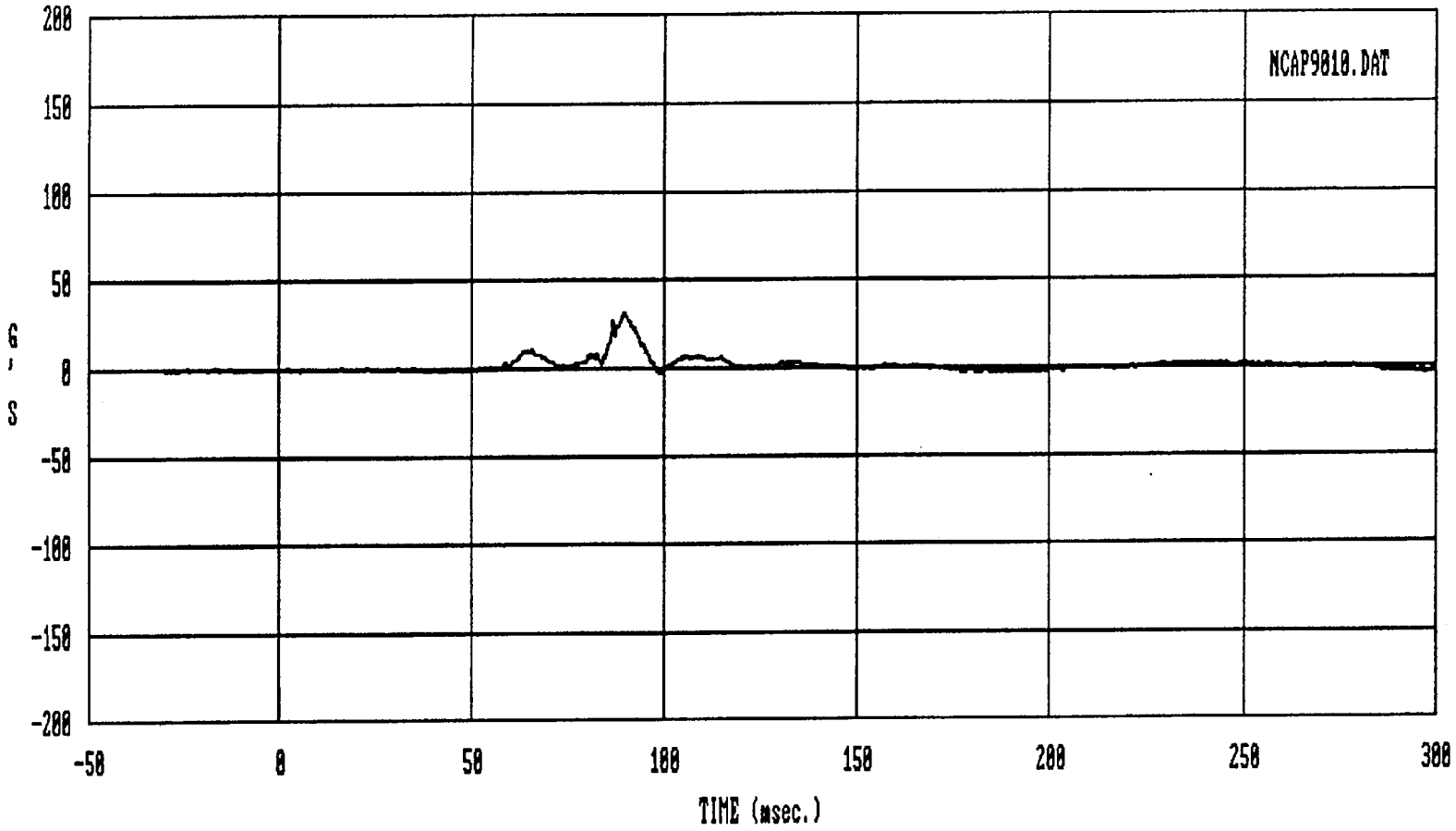
Curve: Driver Right Femur force Filter: SAE CLASS 600 Max = 275.00 Min = -3346.9

MSE Date: 03/08/98 Program: 1998 New Car Assessment #9 Vehicle: 1998 Ford Club Wagon Van



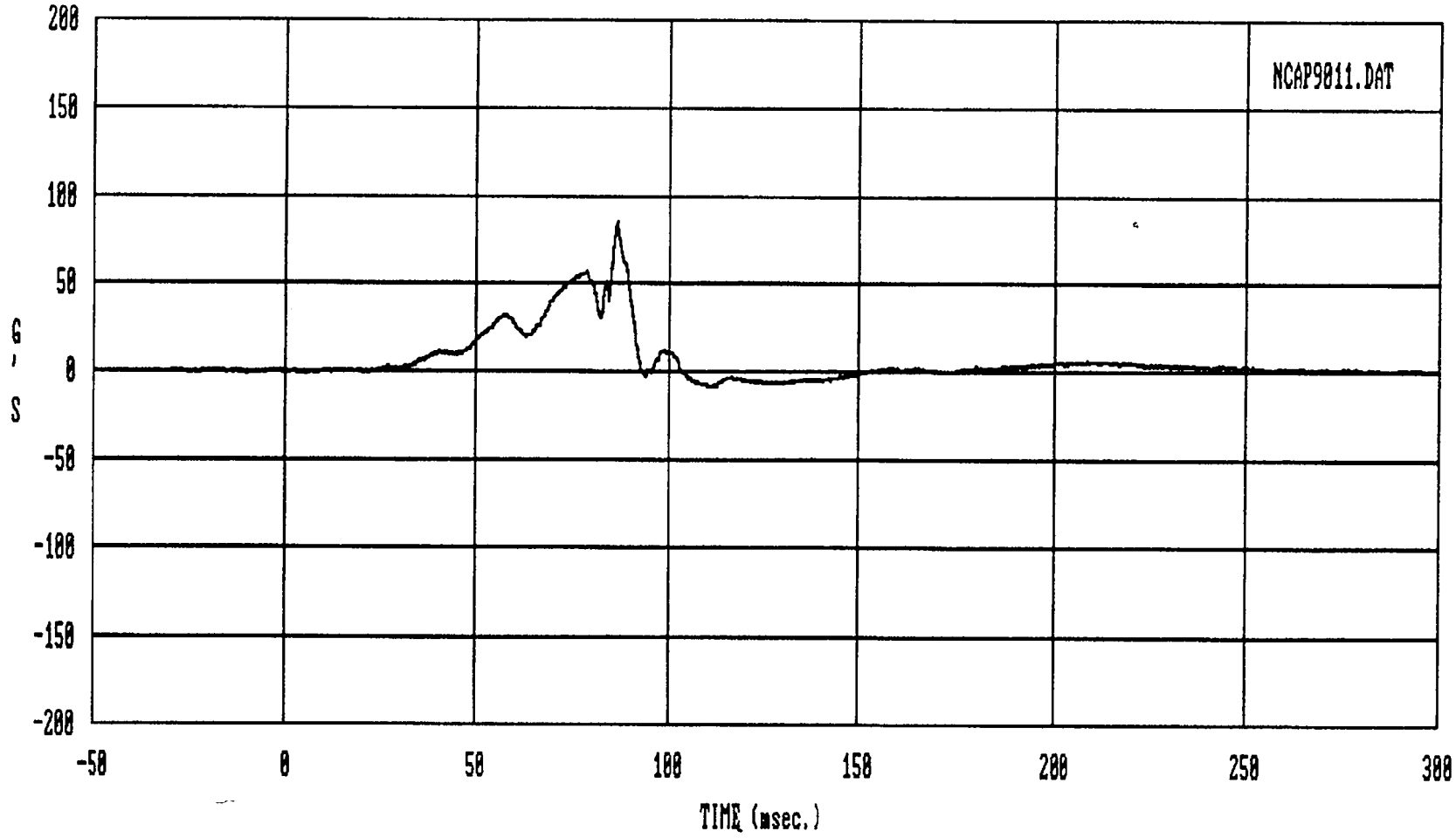
Curve: Pasngr Head acceleration — X axis Filter: SAE CLASS 1000 Max = 8.6954 Min = -167.51

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



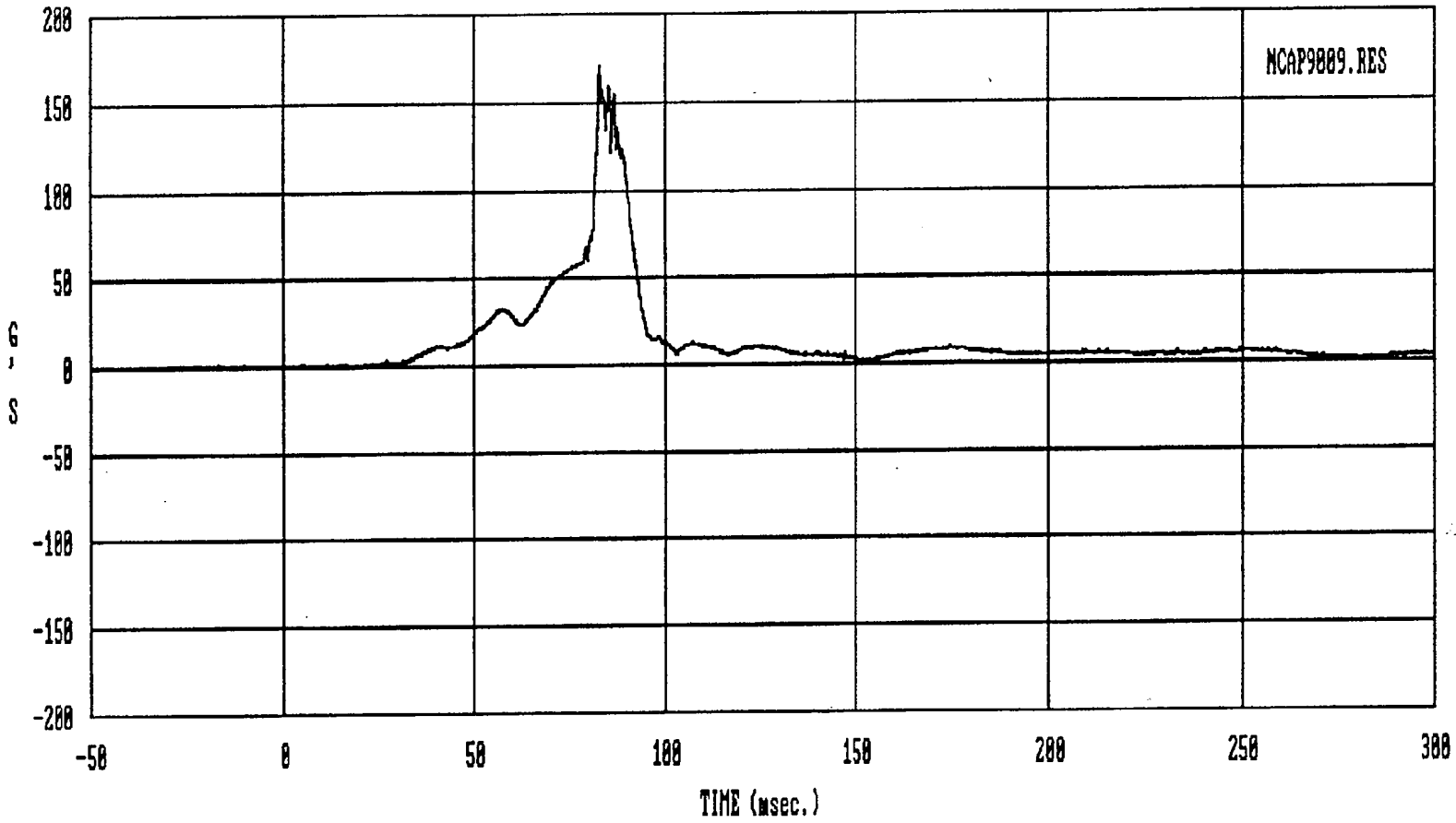
Curve: Pasngr Head acceleration -- Y axis Filter: SAE CLASS 1000 Max = 31.876 Min = -3.5223

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



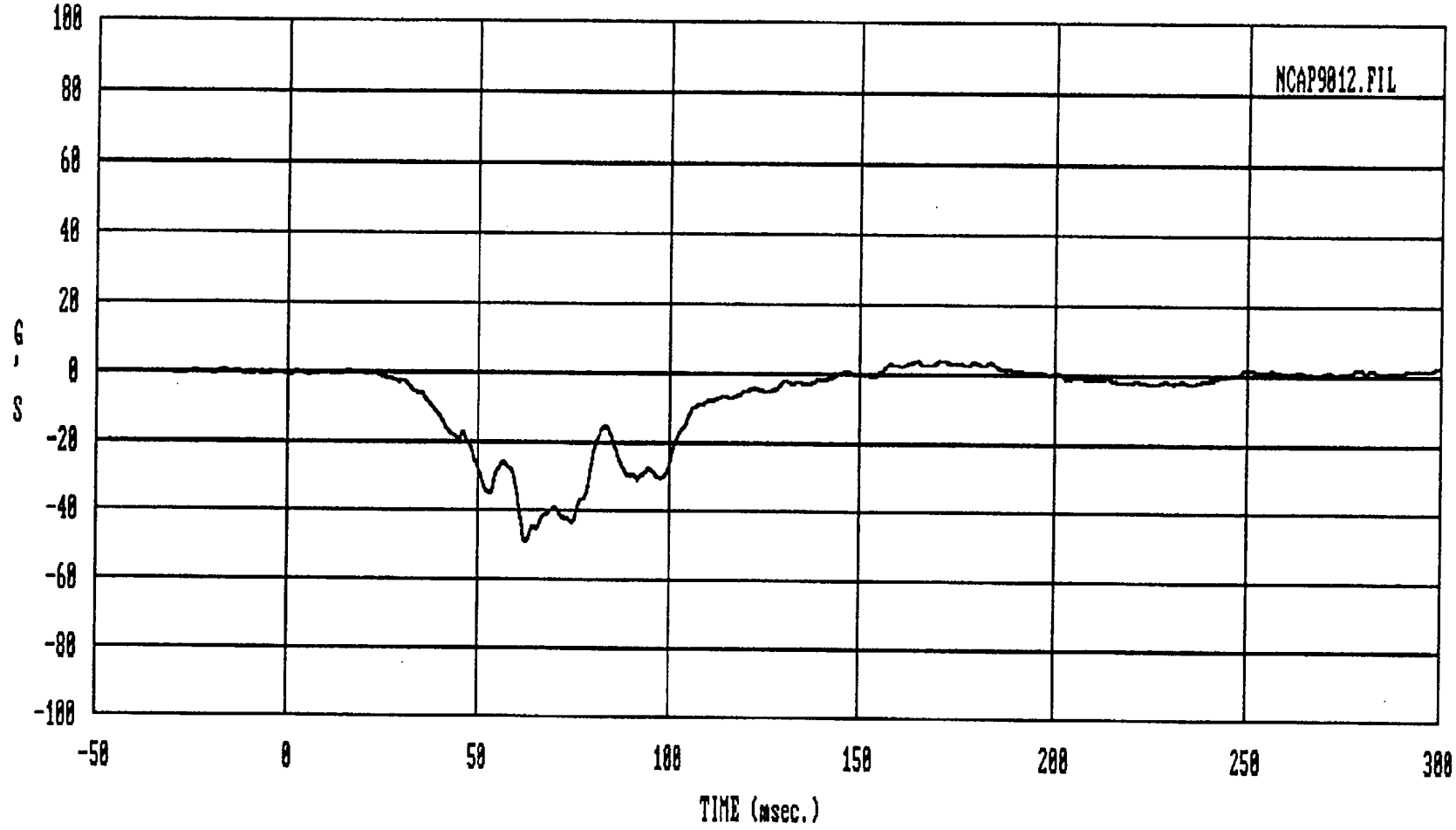
Curve: Pasngr Head acceleration — Z axis Filter: SAE CLASS 1000 Max = 84.801 Min = -9.1842

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



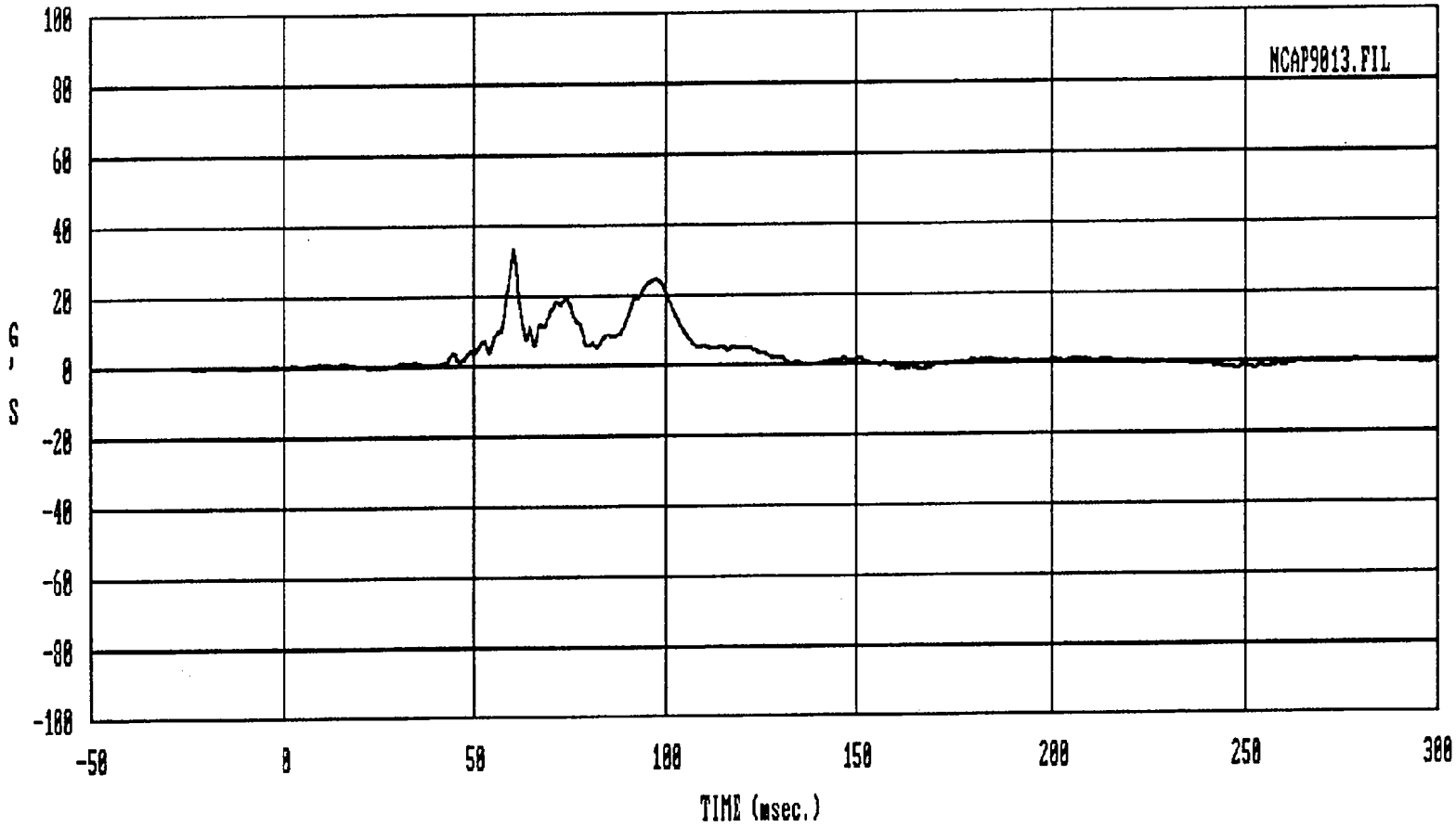
Curve: Pasngr Head resultant acceleration Filter: SAE CLASS 1000 Max = 170.60 Min = .00000

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



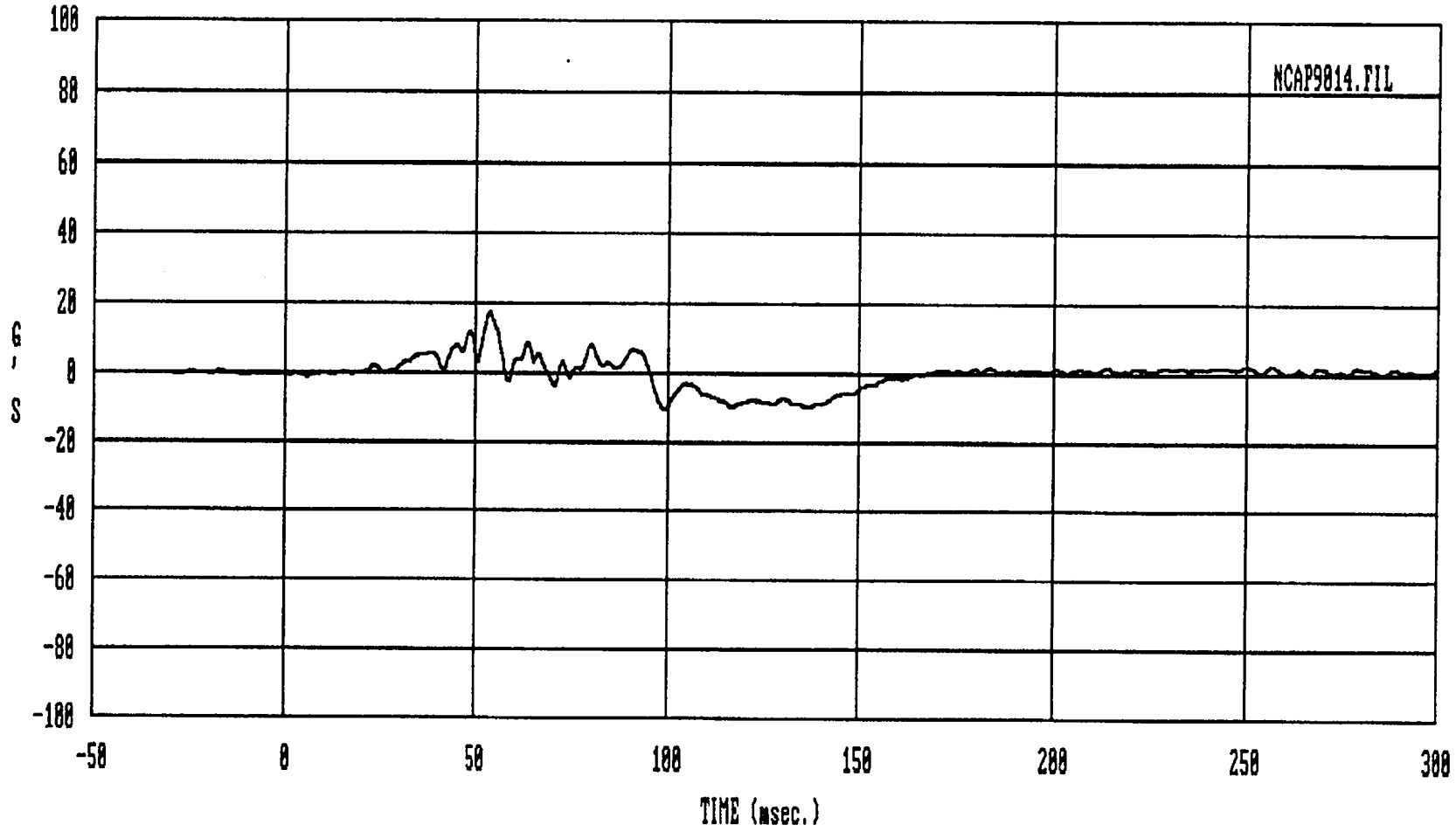
Curve: Pasngr Chest acceleration — X axis Filter: SAE CLASS 180 Max = 4.1898 Min = -49.552

MSE Date: 03/08/98 Program: 1998 New Car Assessment #9 Vehicle: 1998 Ford Club Wagon Van



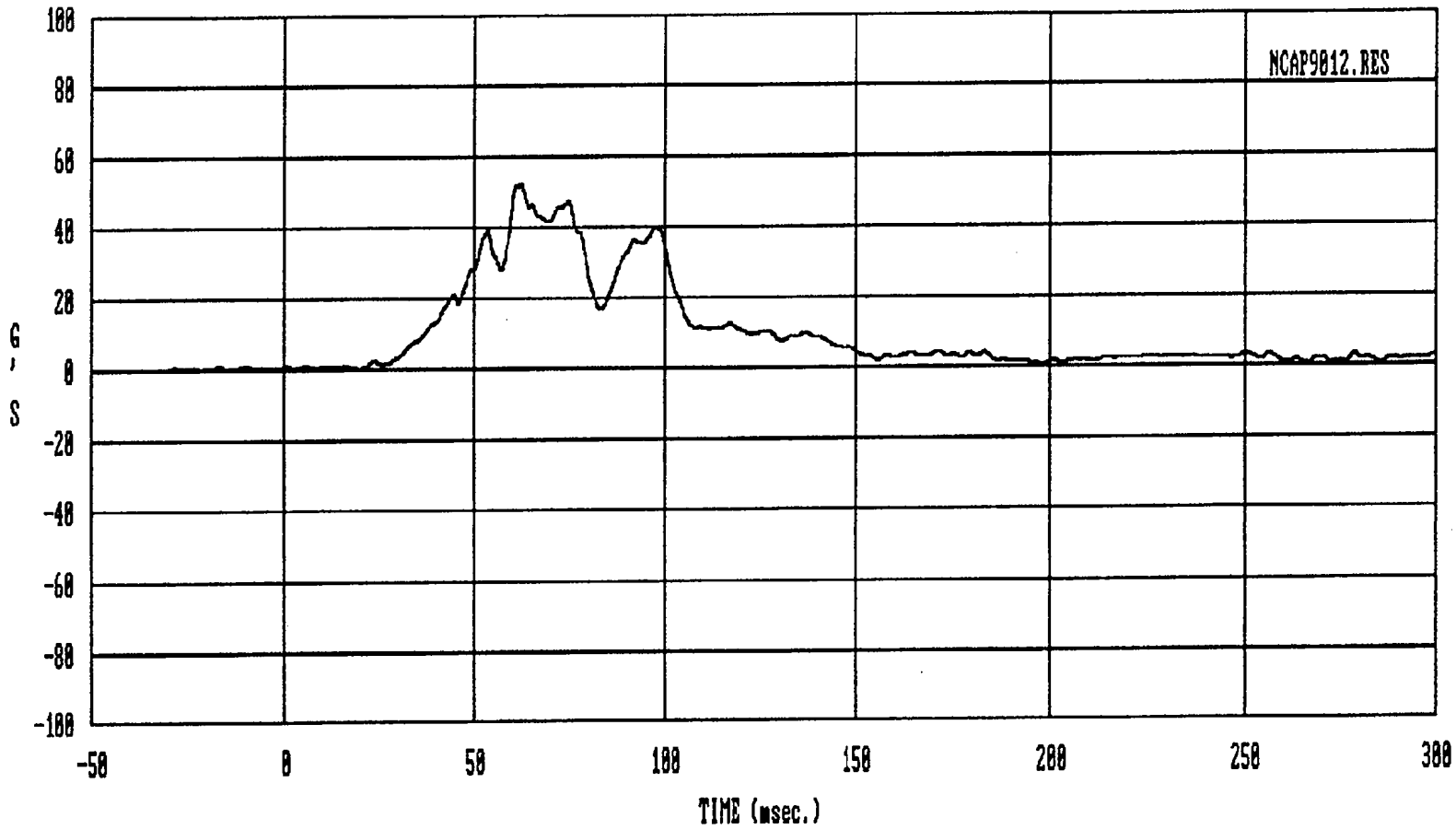
Curve: Pasngr Chest acceleration -- Y axis Filter: SAE CLASS 180 Max = 33.698 Min = -1.9192

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



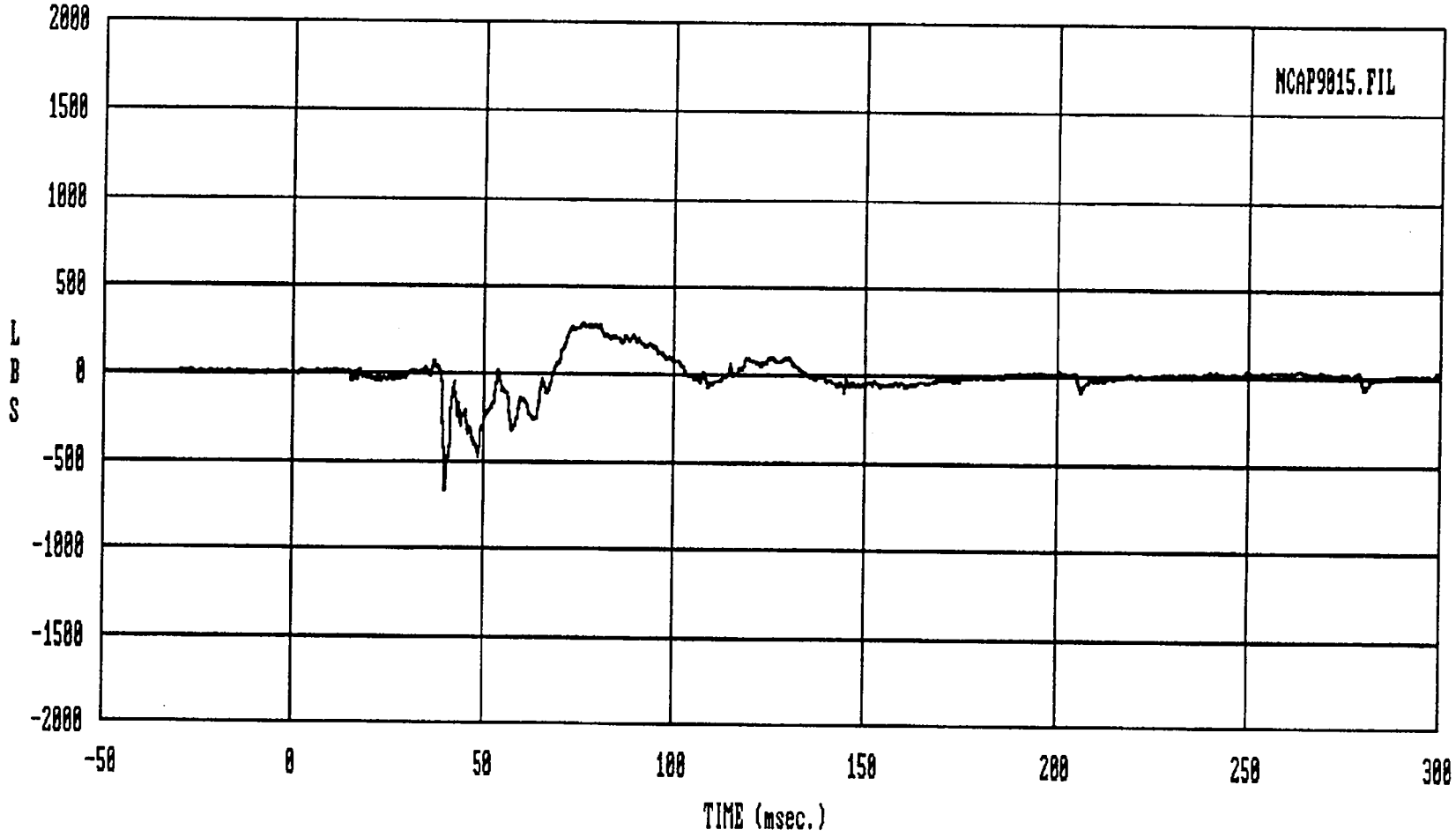
Curve: Pasngr Chest acceleration — Z axis Filter: SAE CLASS 180 Max = 17.616 Min = -10.150

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



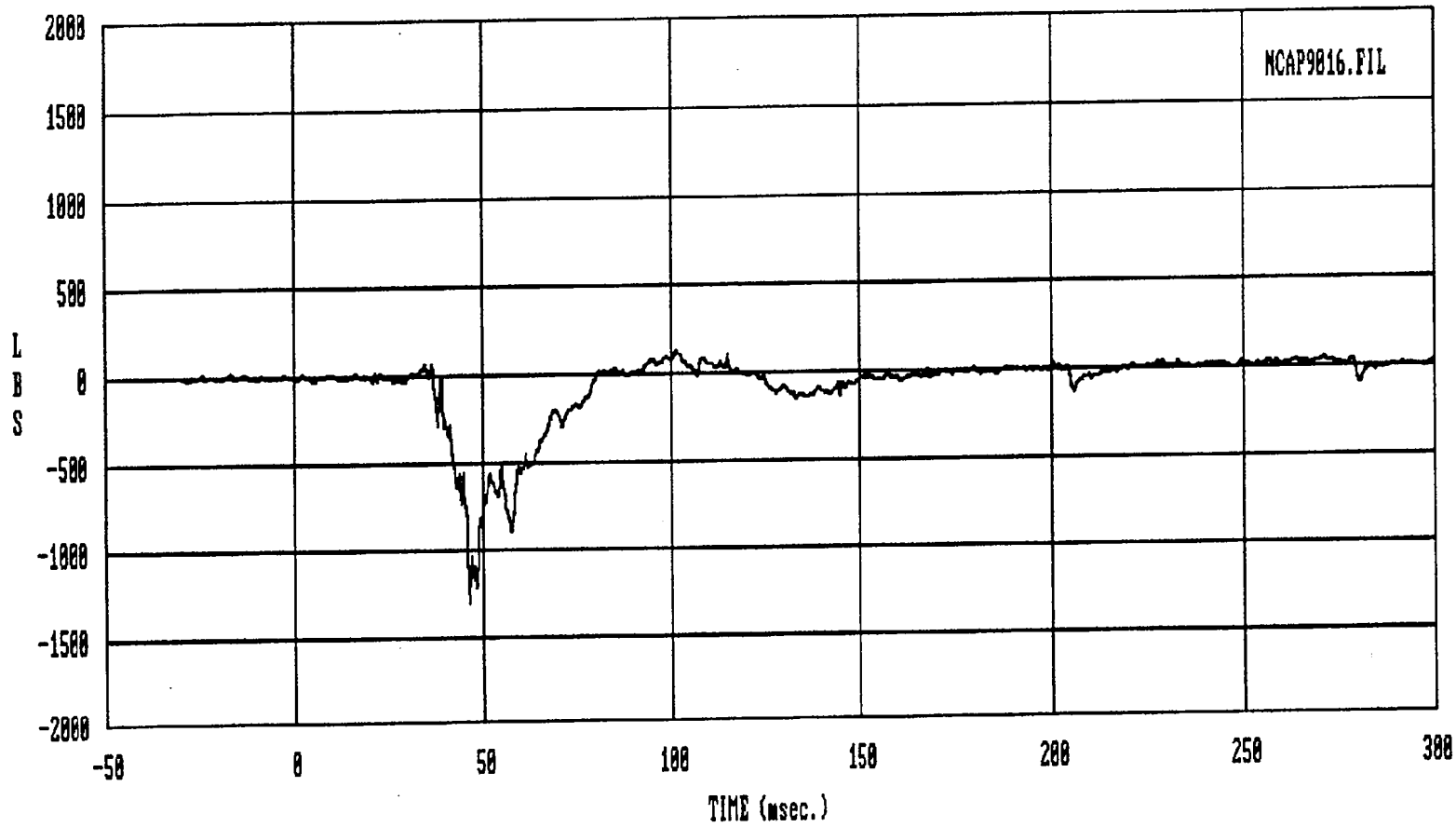
Curve: Pasngr Chest resultant acceleration Filter: SAE CLASS 180 Max = 52.326 Min = .19692

MSE Date: 03/08/98 Program: 1998 New Car Assessment #9 Vehicle: 1998 Ford Club Wagon Van



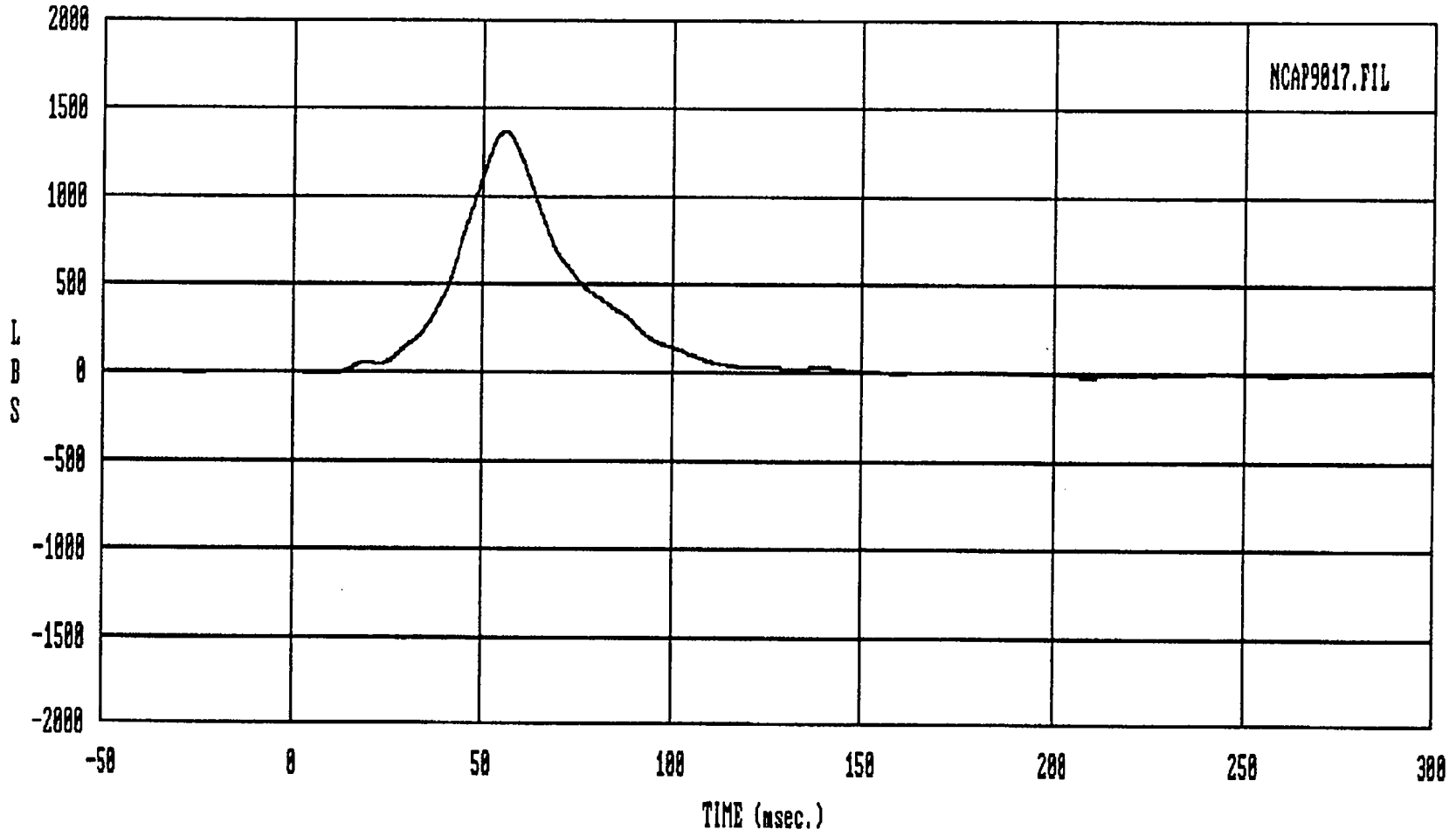
Curve: Pasngr Left Femur force Filter: SAE CLASS 600 Max = 296.81 Min = -687.82

MSE Date: 03/08/98 Program: 1998 New Car Assessment #9 Vehicle: 1998 Ford Club Wagon Van



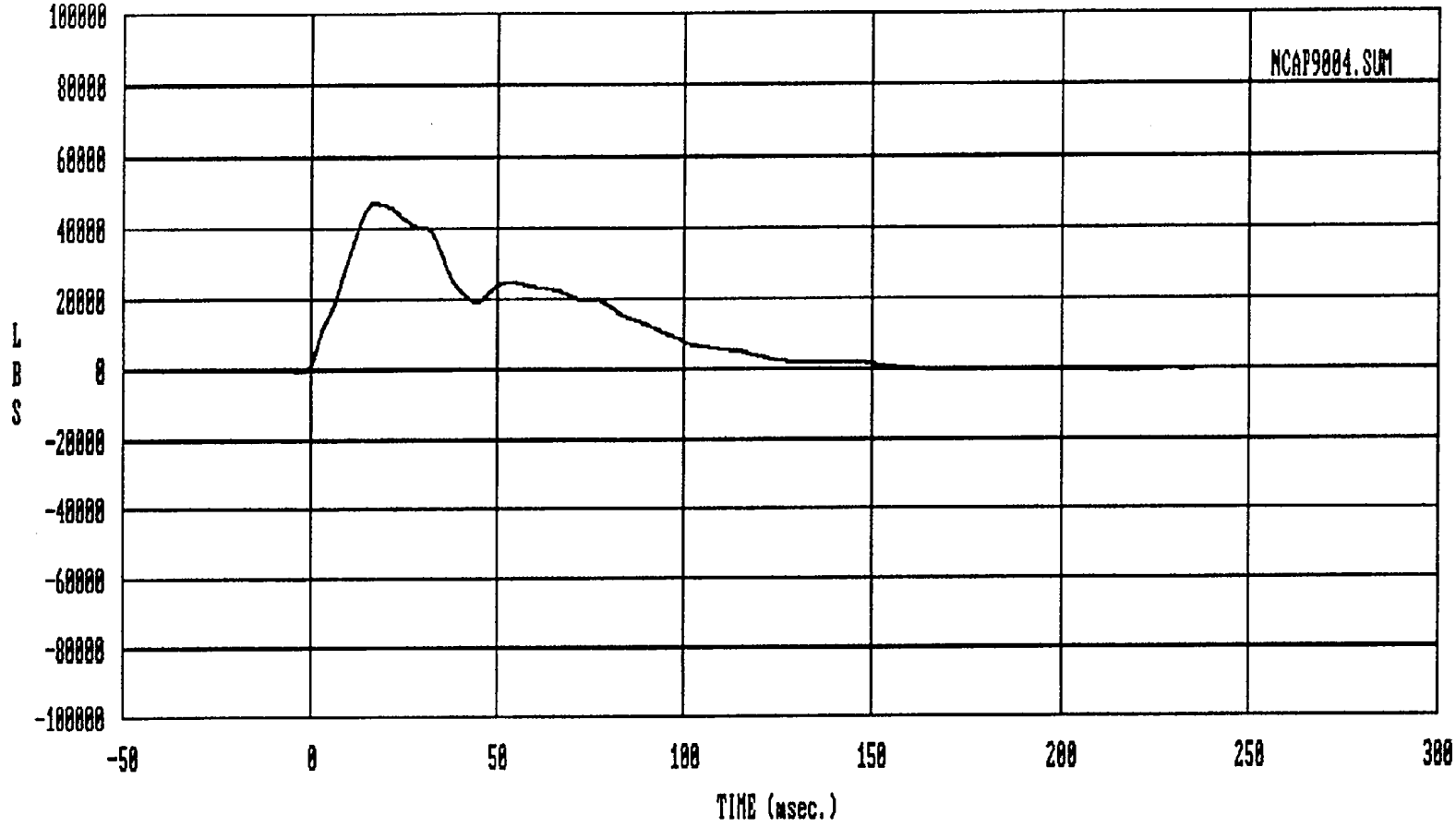
Curve: Pasngr Right Femur Force Filter: SAE CLASS 600 Max = 124.77 Min = -1293.9

MSE Date: 03/08/98 Program: 1998 New Car Assessment #9 Vehicle: 1998 Ford Club Wagon Van



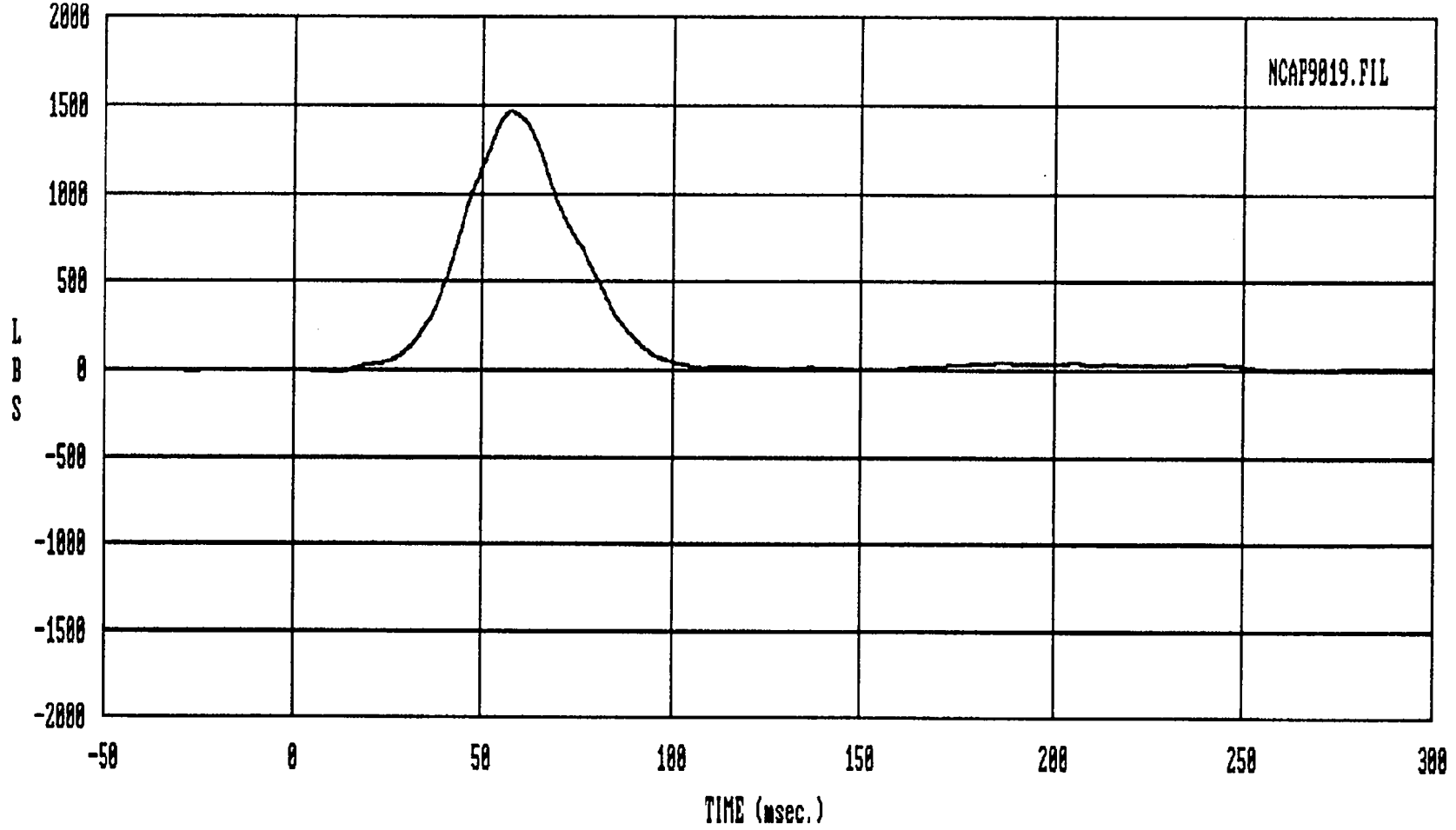
Curve: Driver Lap seat belt force Filter: SAE CLASS 60 Max = 1370.6 Min = -23.018

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



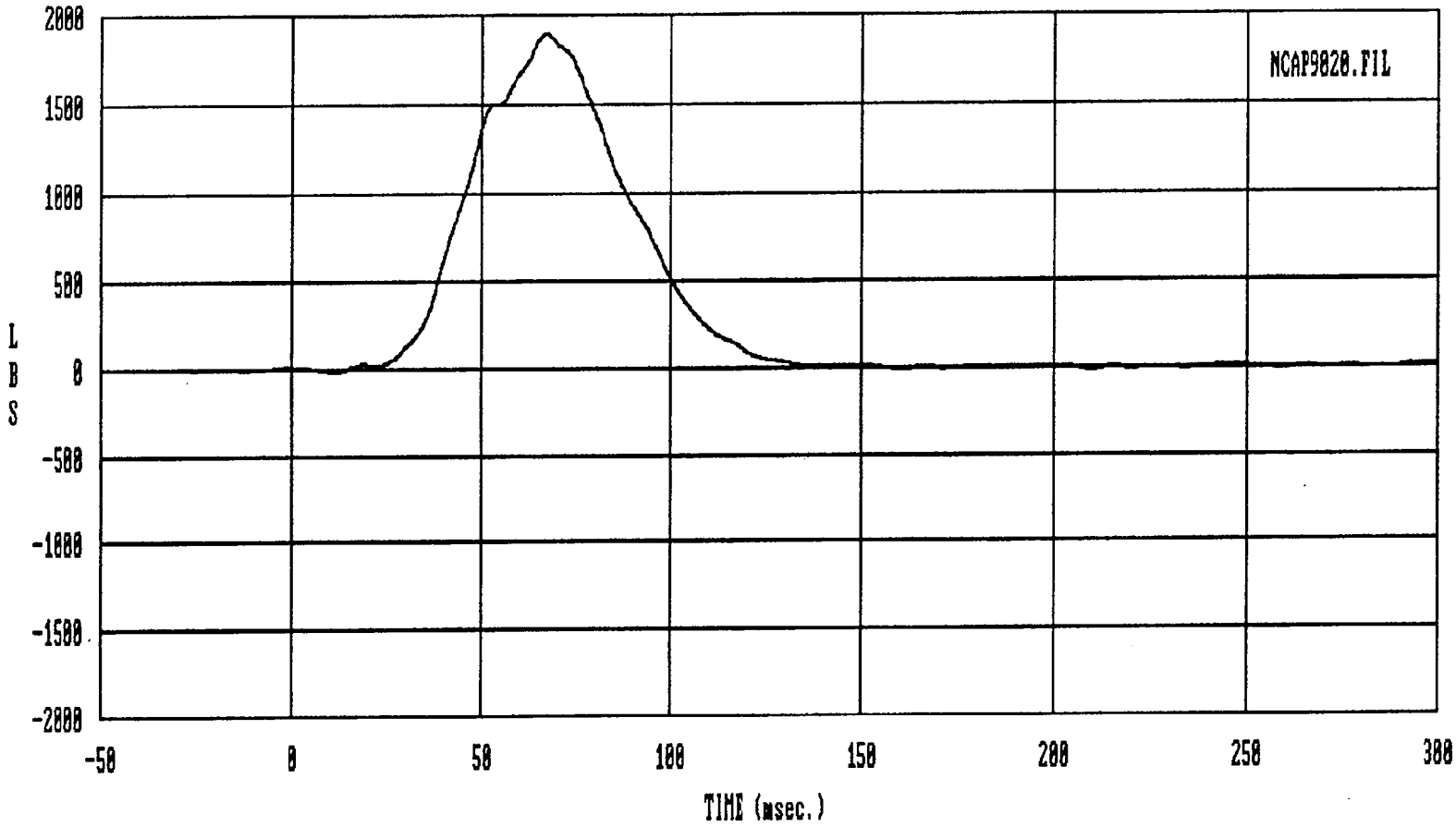
Curve: LCB sum force A1,A2,A3,B1,B2,B3 -- Group 4 Filter: SAE CLASS 60 Max = 47075. Min = -647.32

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



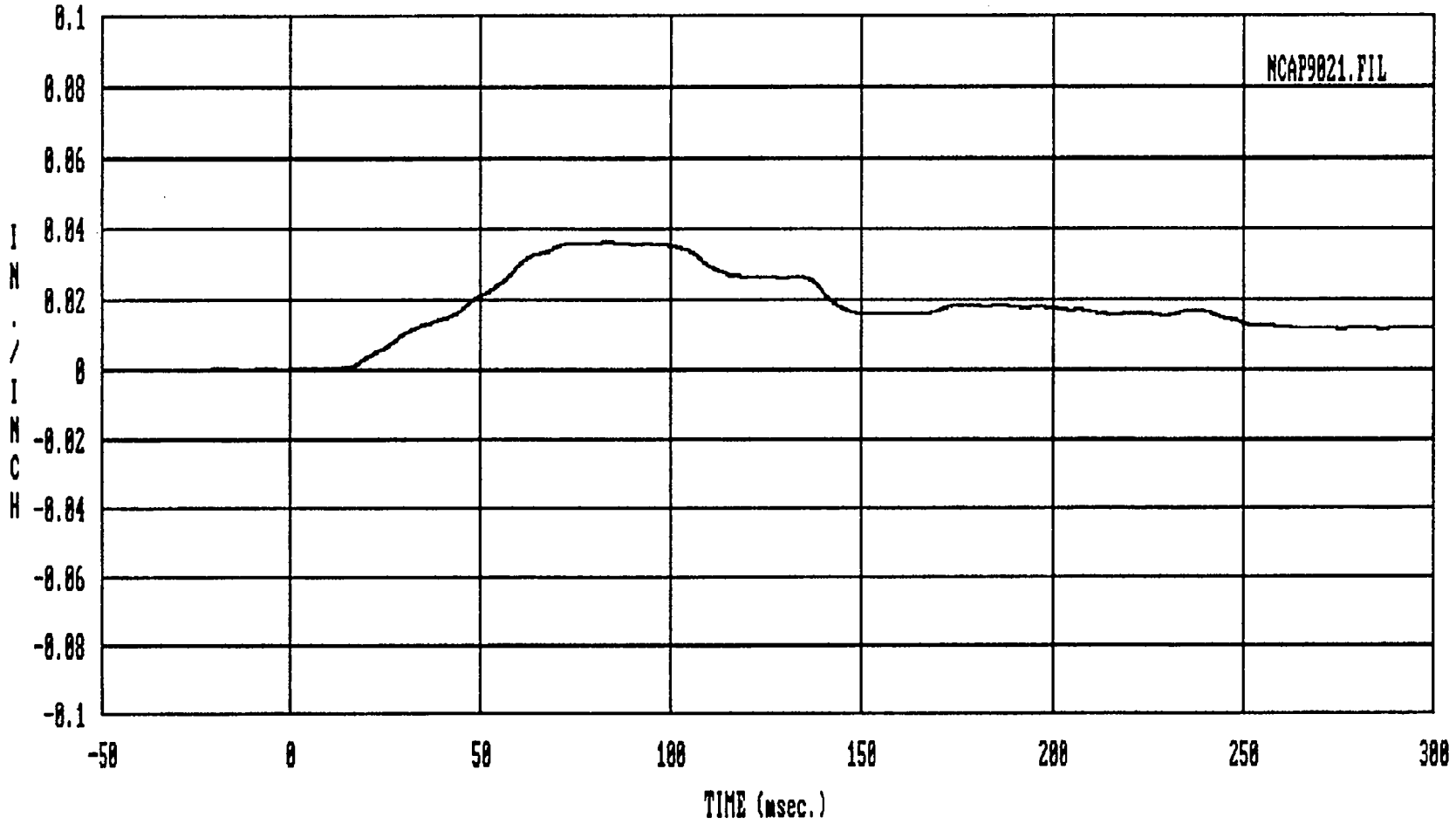
Curve: Pasngr Lap seat belt force Filter: SAE CLASS 60 Max = 1466.7 Min = -14.026

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



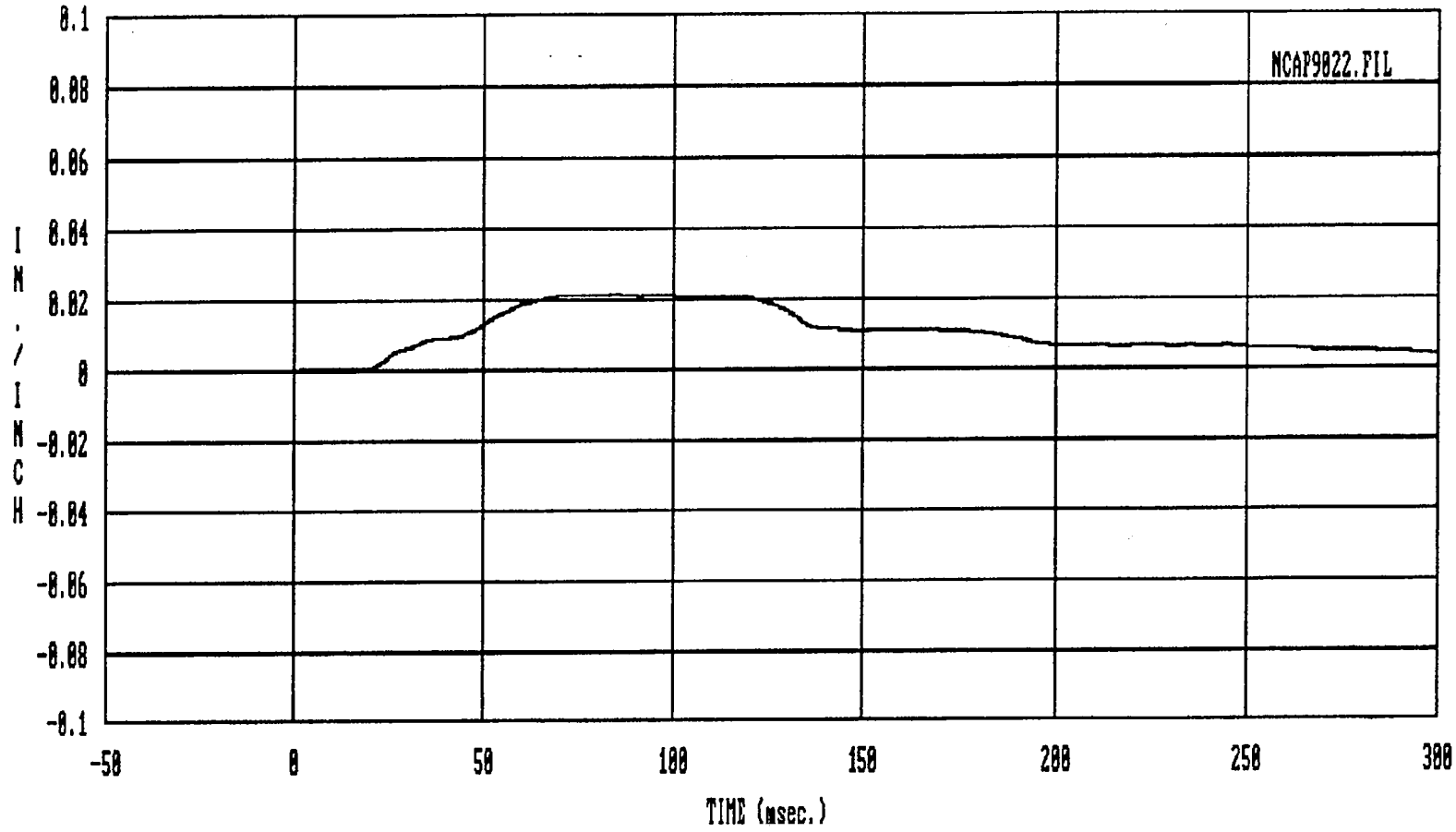
Curve: Pasngr Shoulder seat belt force Filter: SAE CLASS 60 Max = 1895.3 Min = -14.636

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



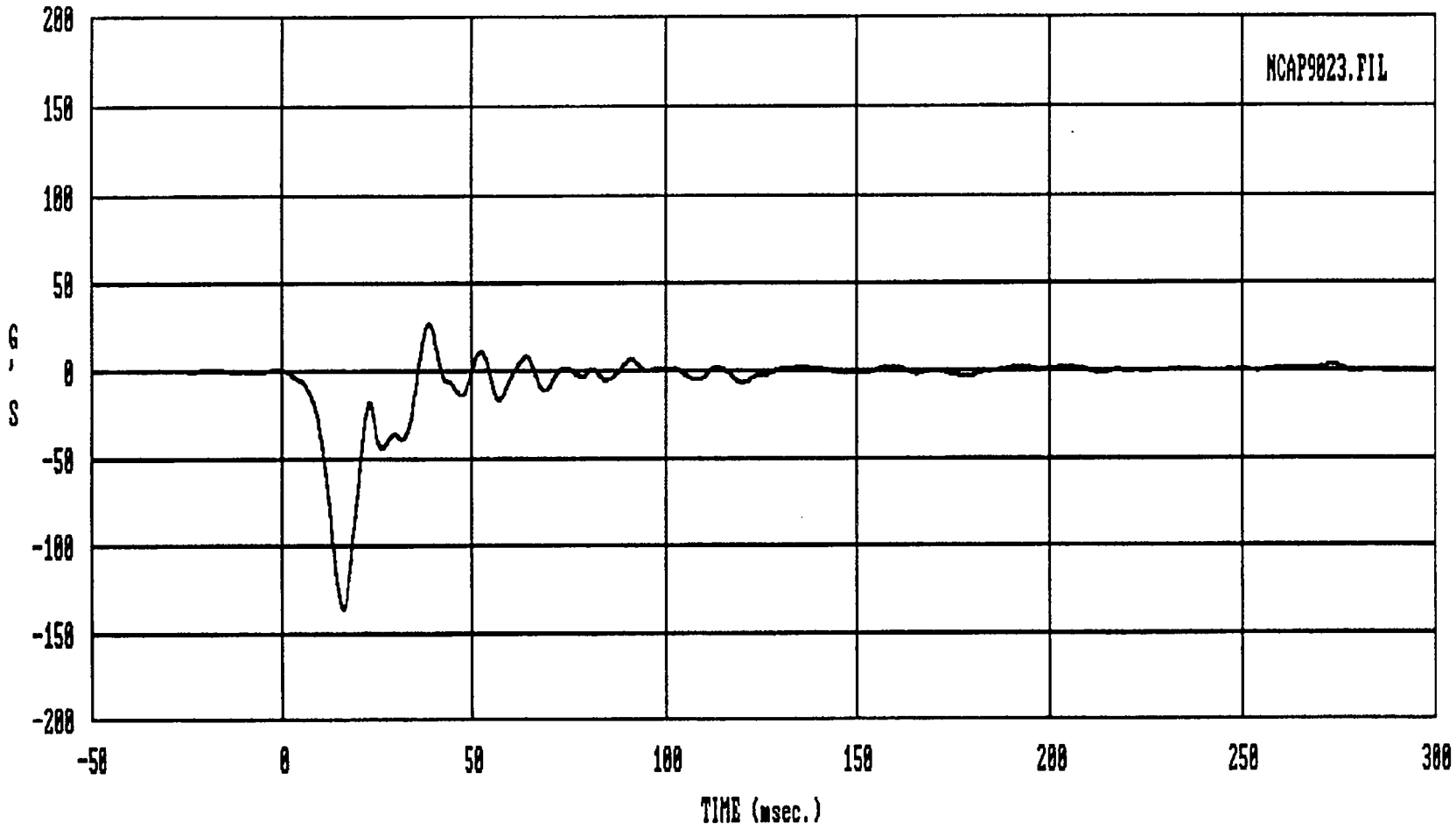
Curve: Driver seat belt elongation (Percent stretch) Filter: SAE CLASS 60 Max = .36818E-01 Min = .47944E-03

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



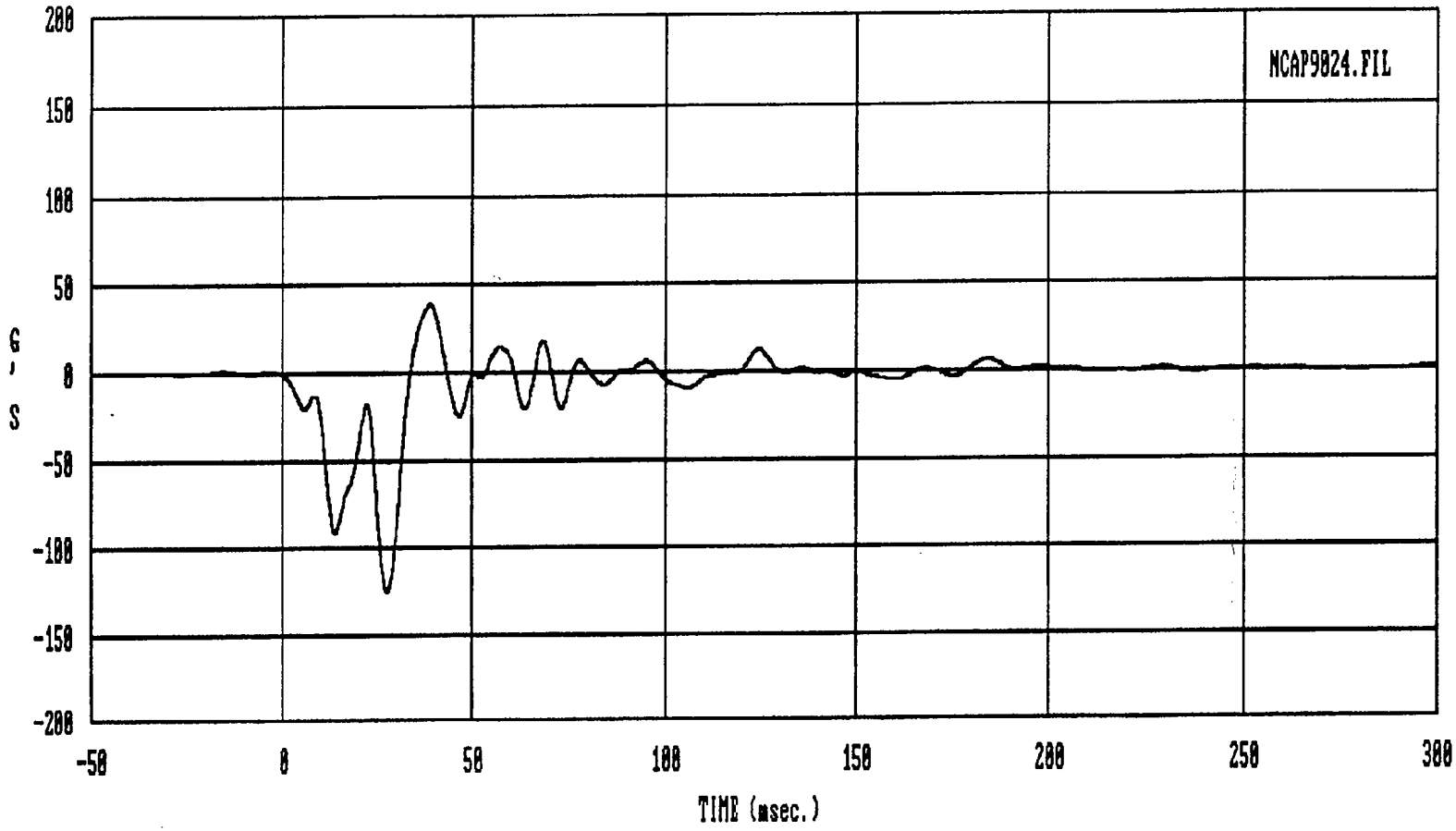
Curve: Pasngr seat belt elongation (Percent stretch) Filter: SAE CLASS 60 Max = .21467E-01 Min = .23161E-03

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



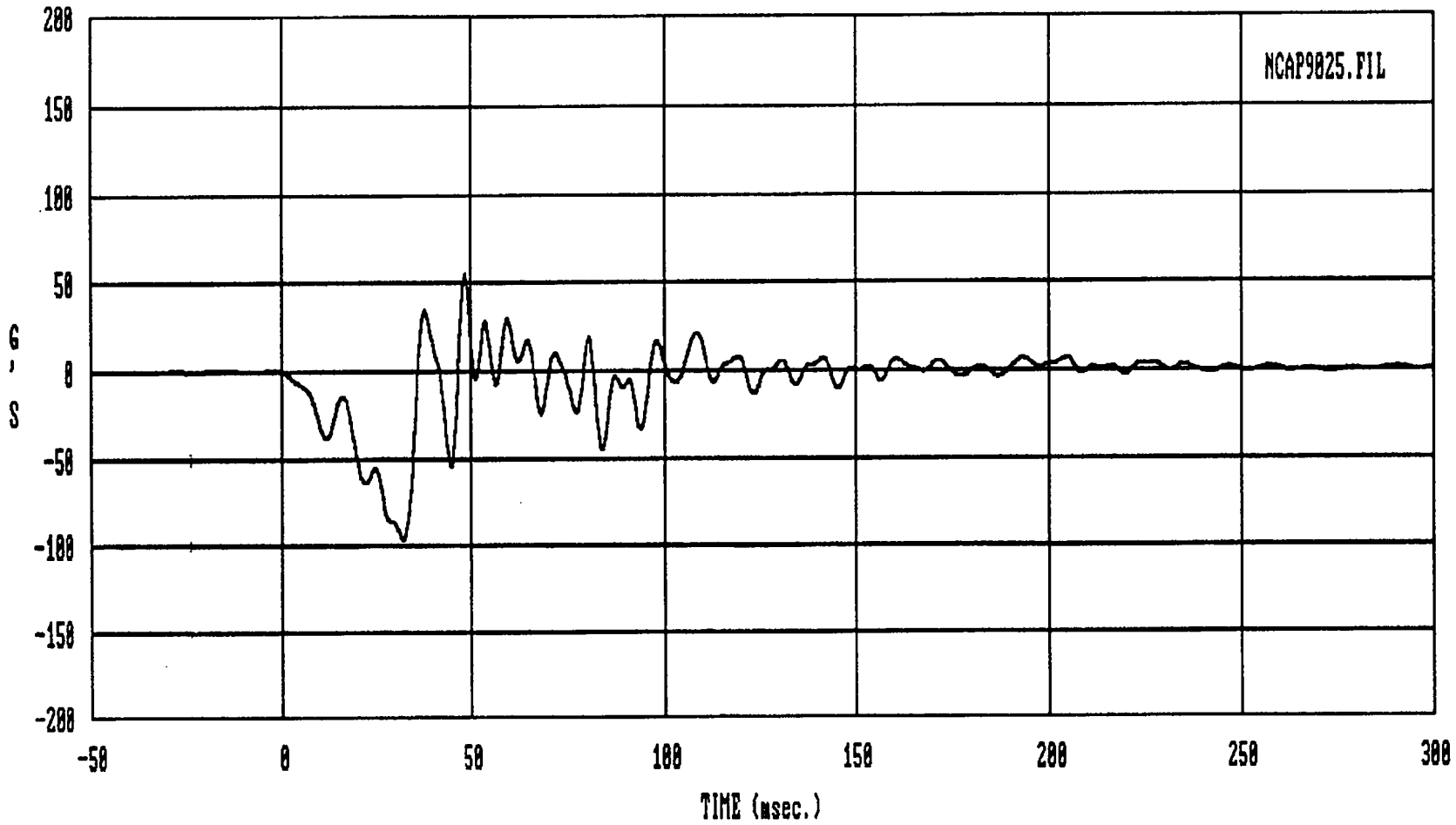
Curve: Left front brake caliper acceleration — X axis Filter: SAE CLASS 60 Max = 27.757 Min = -137.00

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



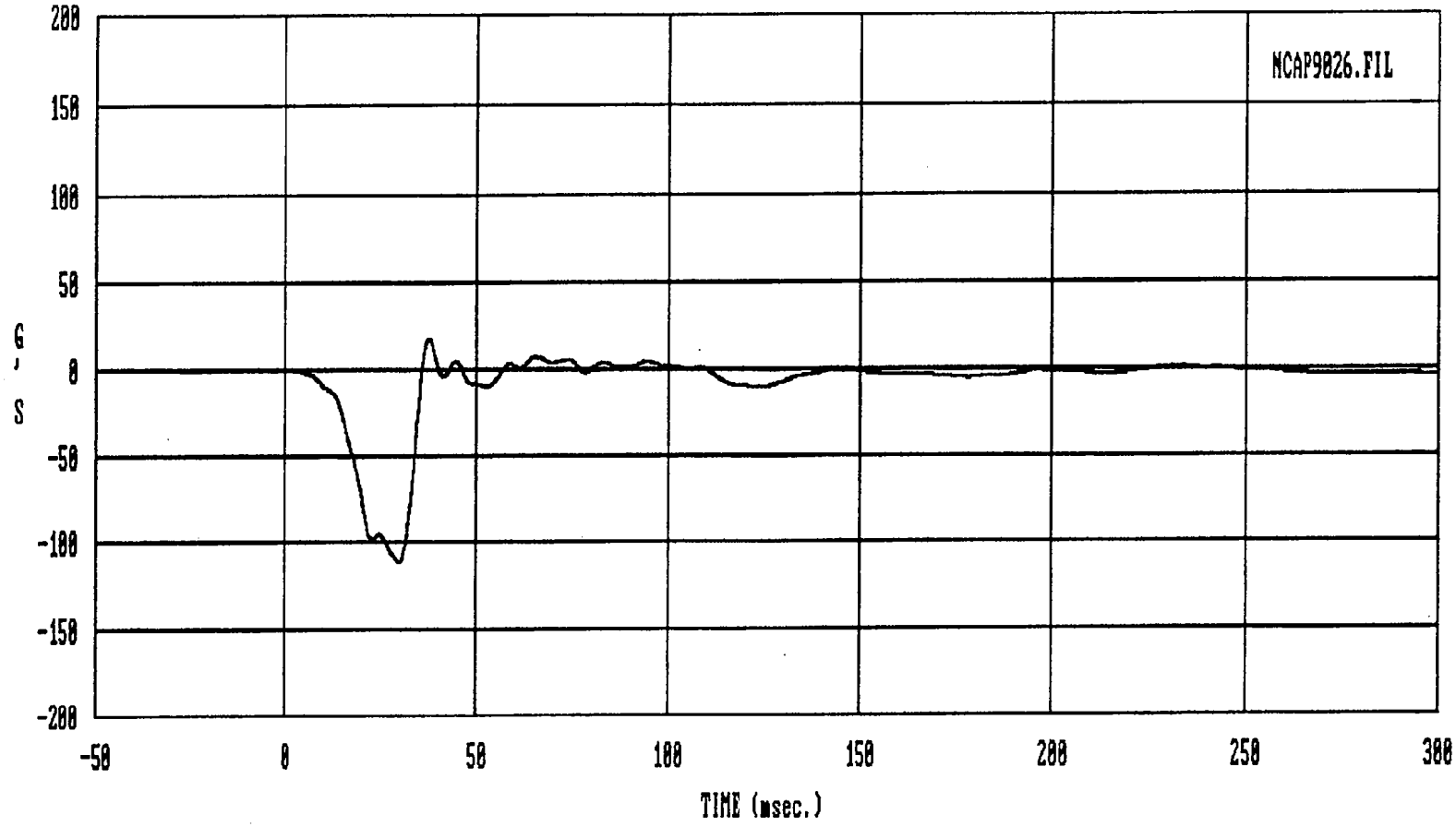
Curve: Right front brake caliper accel. — X axis Filter: SAE CLASS 60 Max = 39.499 Min = -125.59

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



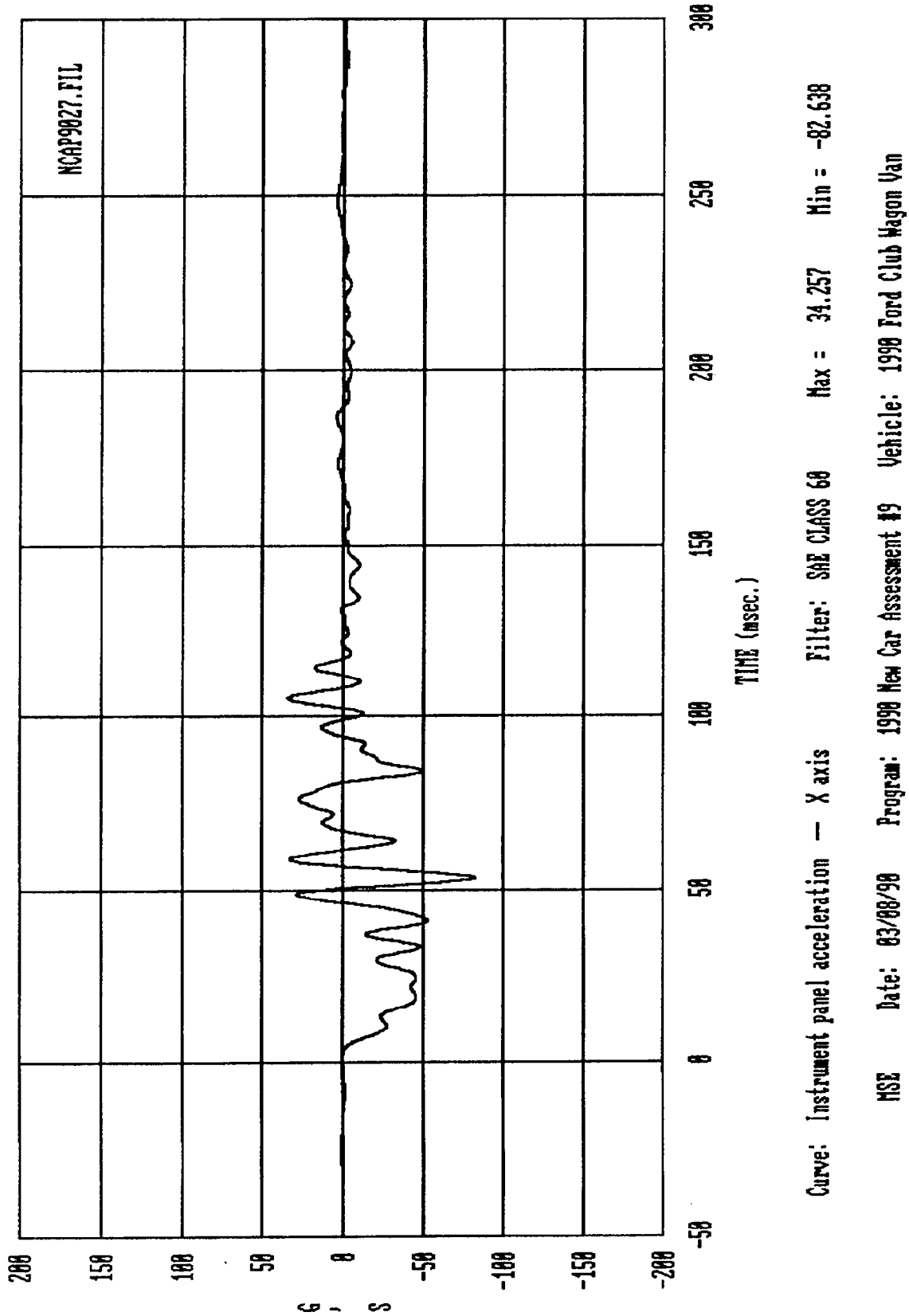
Curve: Engine bottom acceleration — X axis Filter: SAE CLASS 60 Max = 55.795 Min = -96.290

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



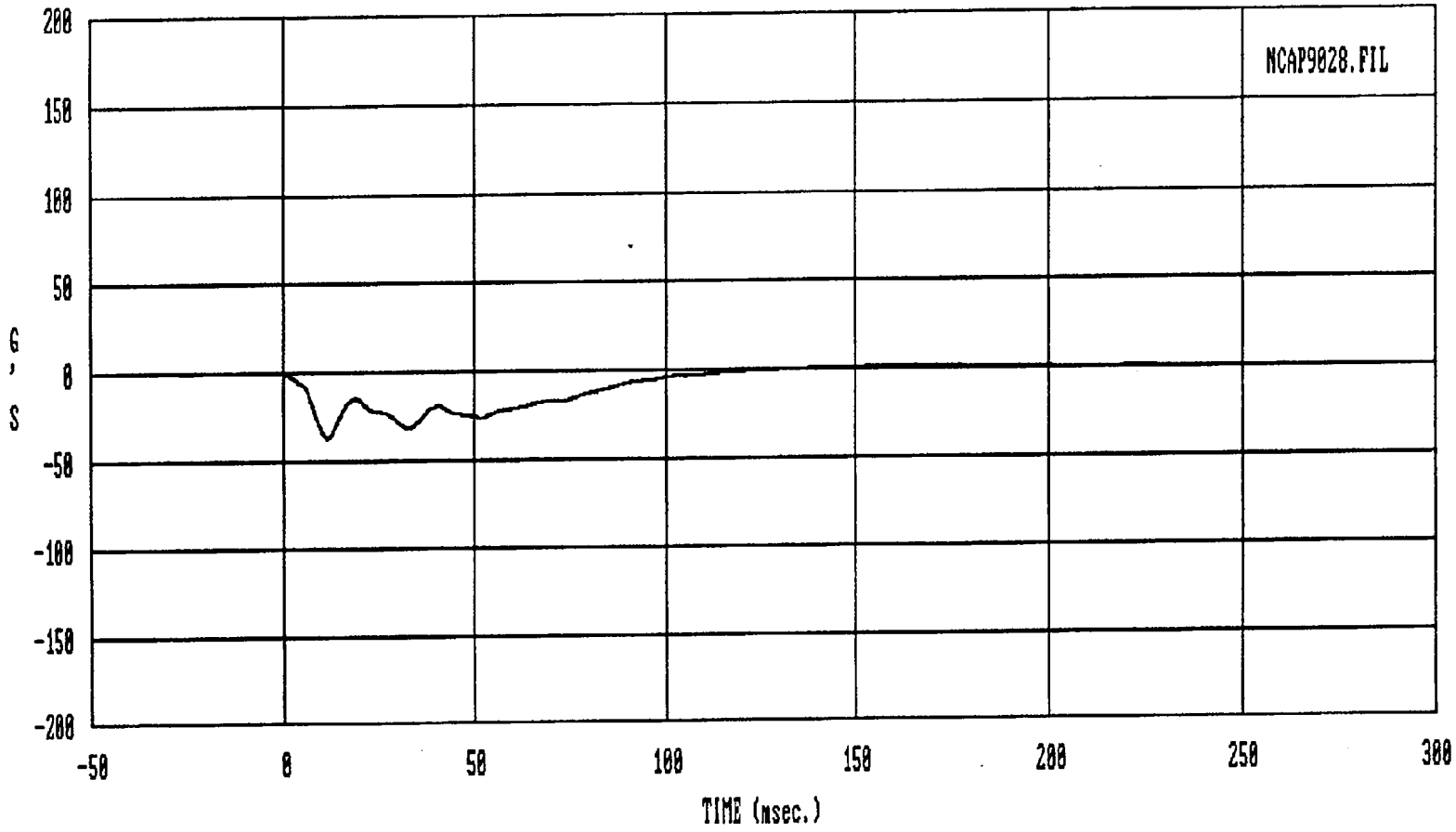
Curve: Engine top acceleration -- X axis Filter: SAE CLASS 60 Max = 18.490 Min = -111.31

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



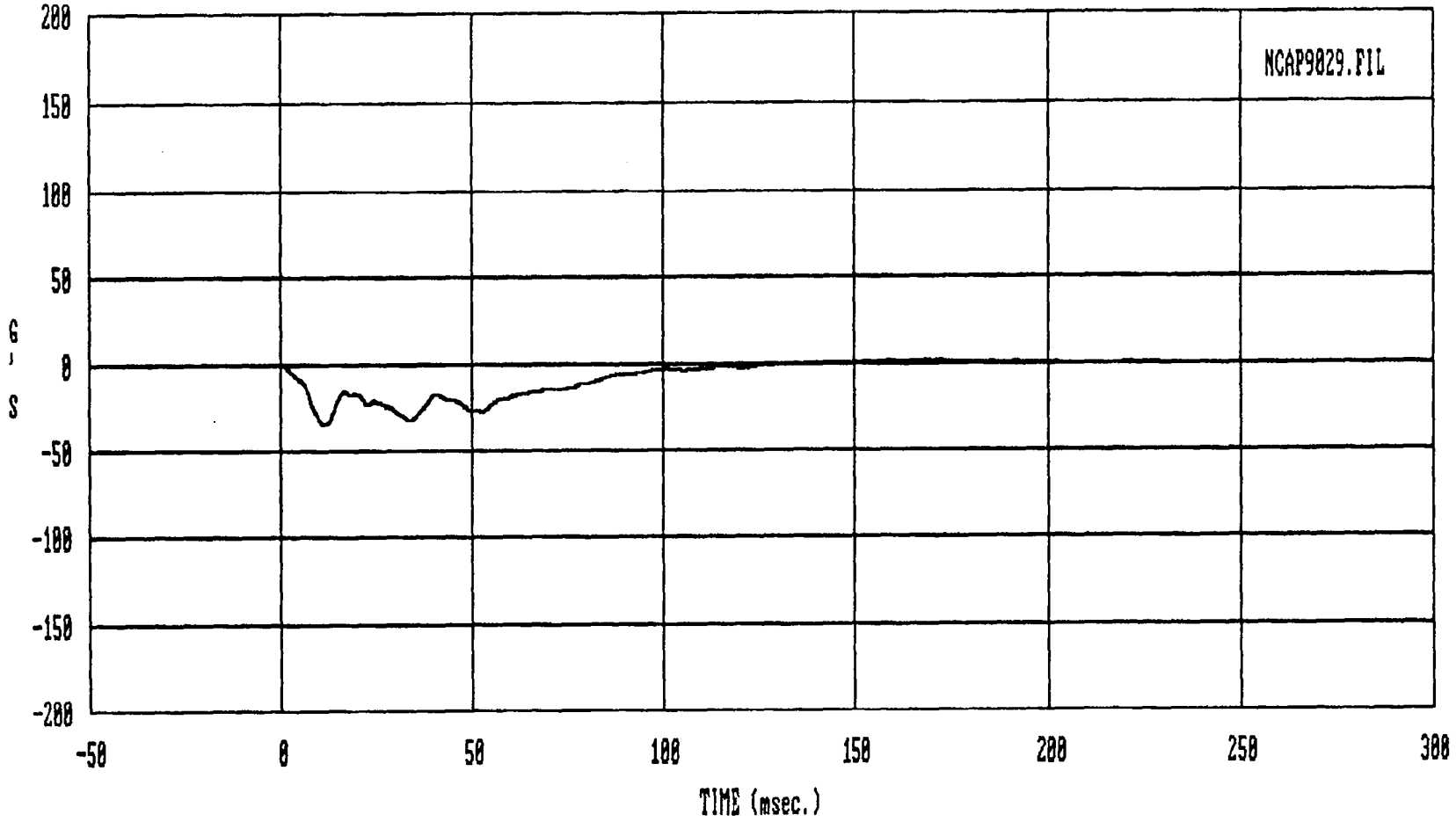
Curve: Instrument panel acceleration — X axis Filter: SAE CLASS 60 Max = 34.257 Min = -82.638

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



Curve: Left-rear seat cross-member accel. — X axis Filter: SAE CLASS 60 Max = 1.7914 Min = -37.388

MSE Date: 03/08/98 Program: 1998 New Car Assessment #9 Vehicle: 1998 Ford Club Wagon Van



Curve: Right-rear seat cross member accel. -- X axis Filter: SAE CLASS 60 Max = 2.2126 Min = -34.663

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van

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APPENDIX B-2

LOAD CELL BARRIER DATA

DATA FILTERING:
Load Cell Barrier Channels - Class 60

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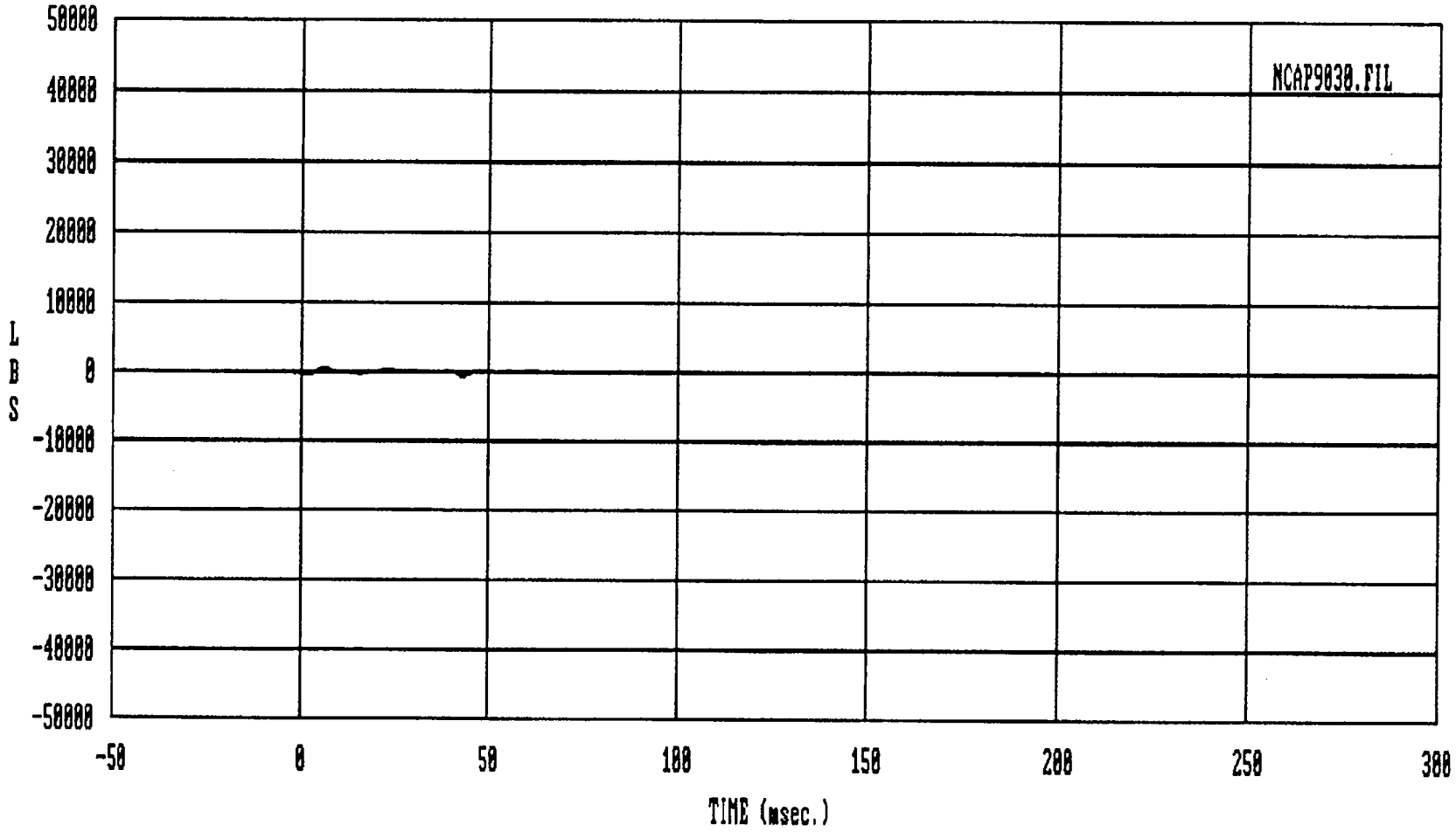
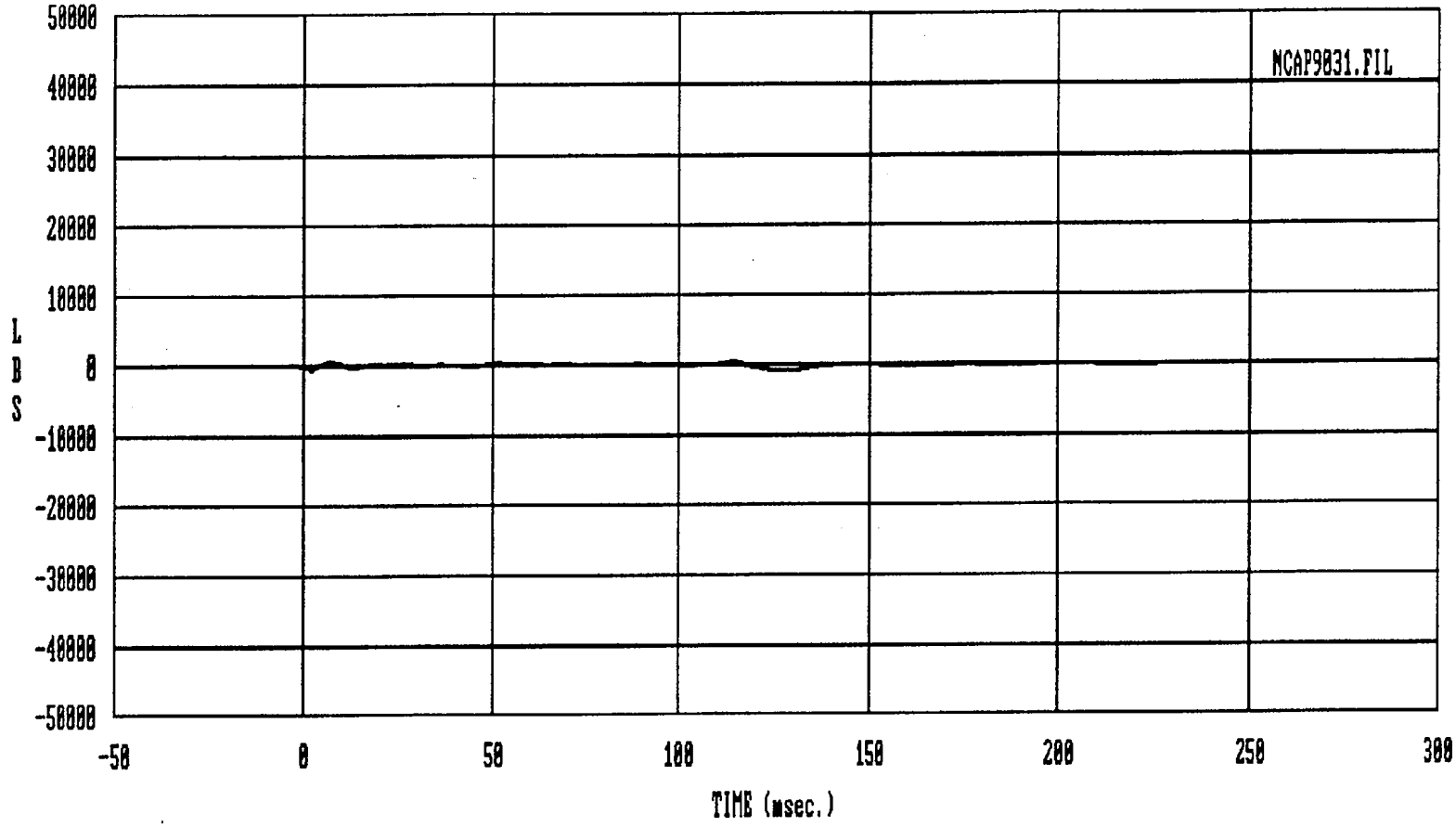


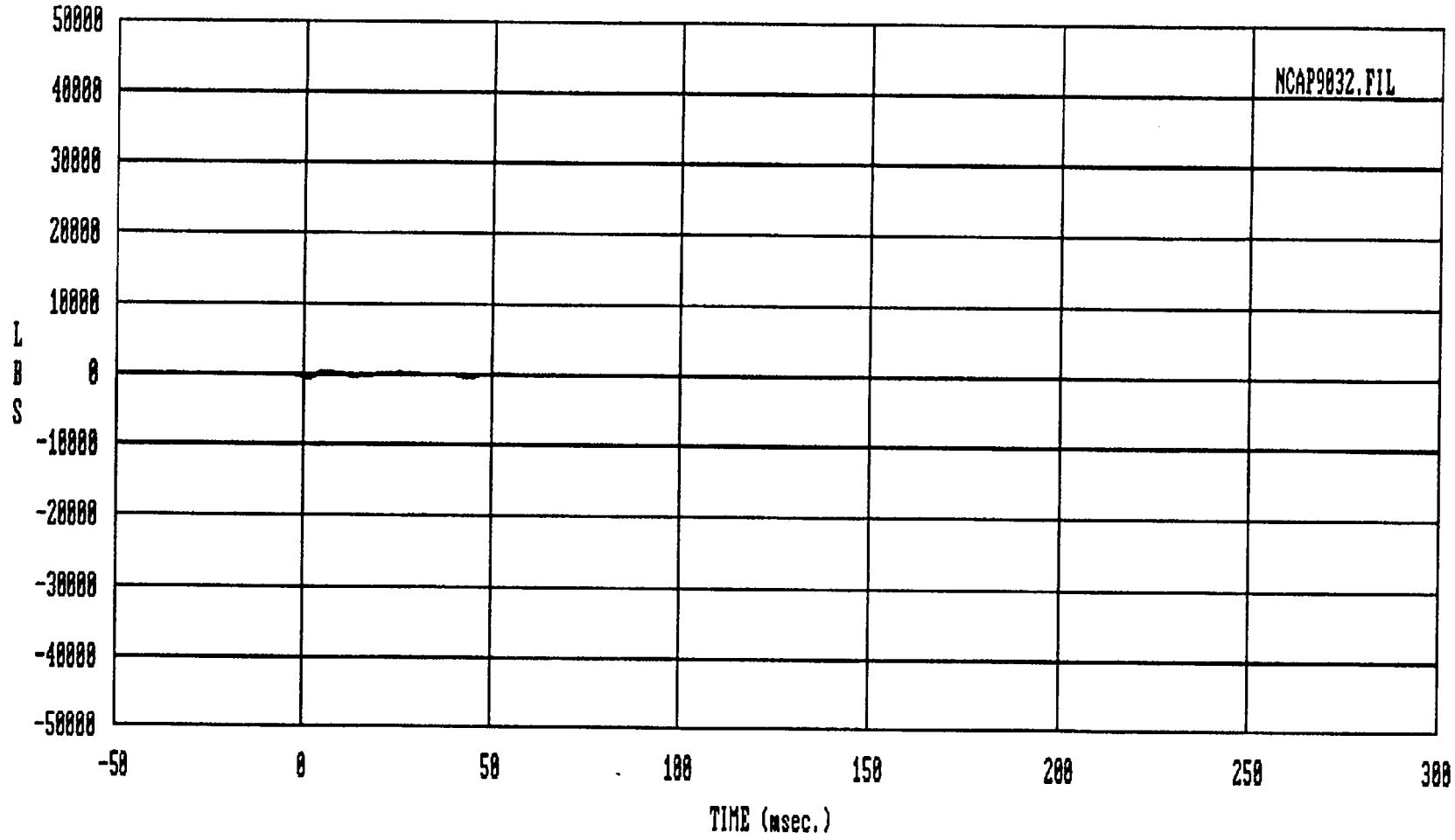
Curve: Force on Barrier load cell A1 Filter: SAE CLASS 60 Max = 600.85 Min = -552.88

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



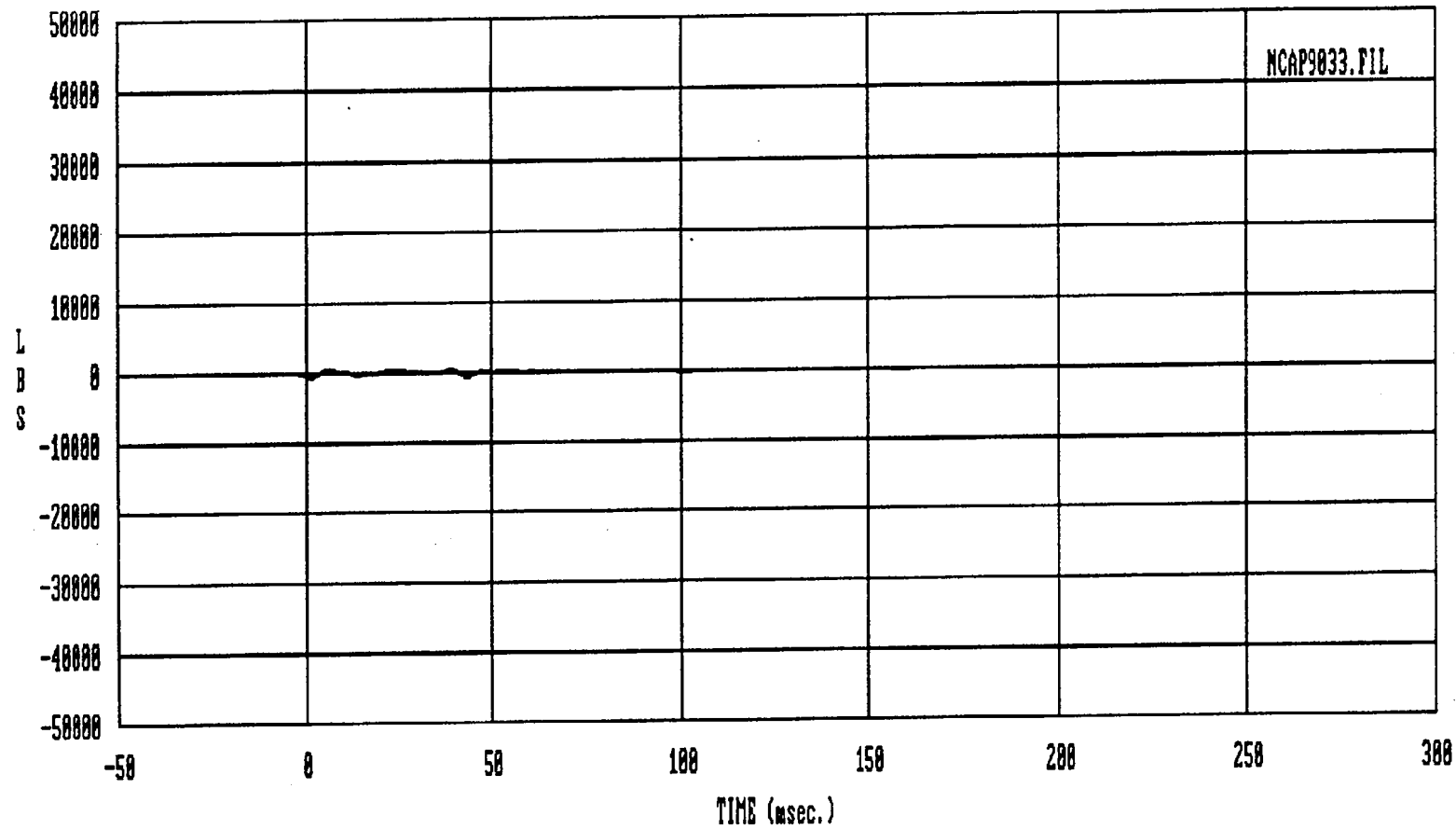
Curve: Force on Barrier load cell A2 Filter: SAE CLASS 60 Max = 584.47 Min = -881.15

MSE Date: 03/08/98 Program: 1998 New Car Assessment #9 Vehicle: 1998 Ford Club Wagon Van



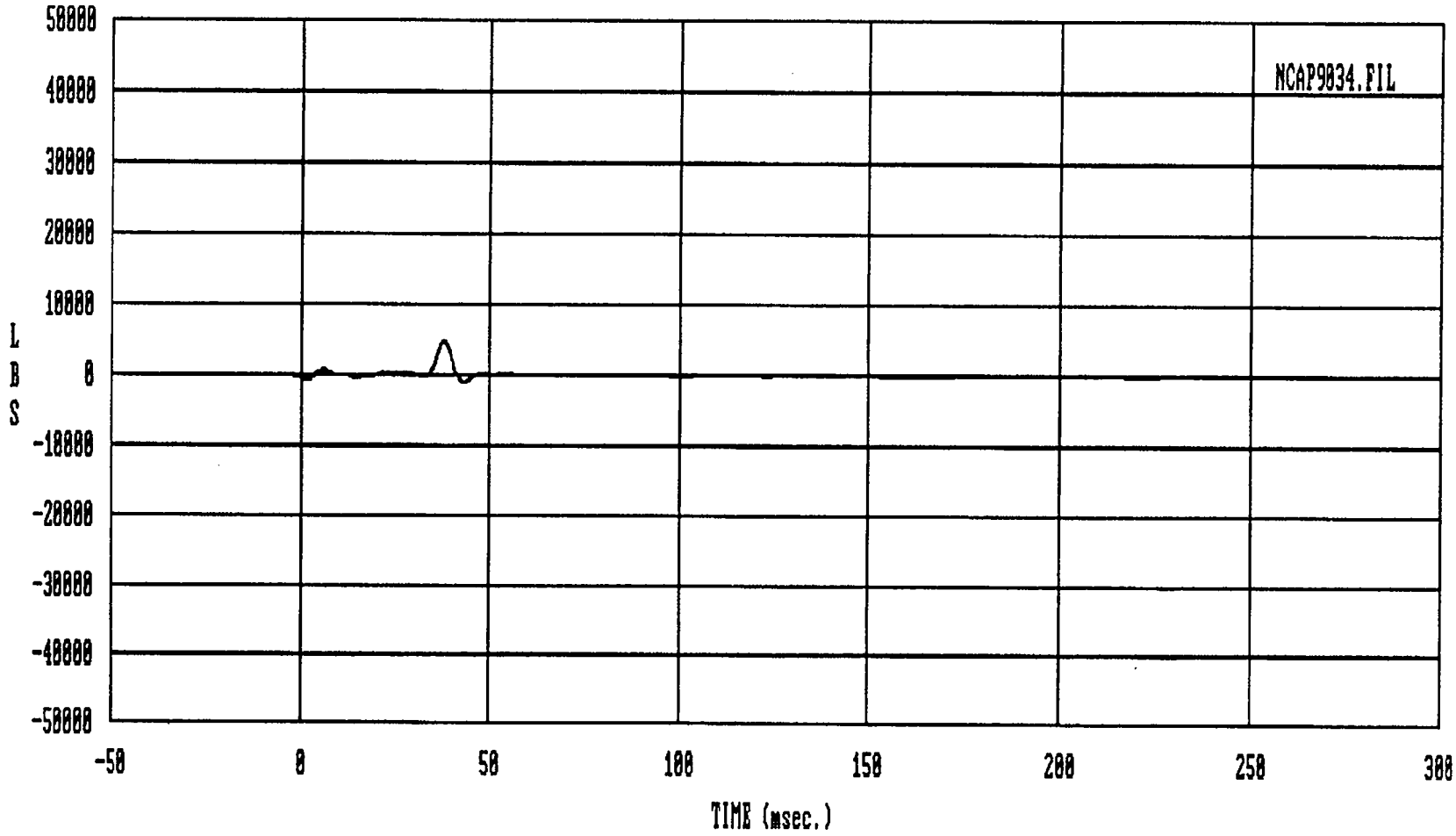
Curve: Force on Barrier load cell A3 Filter: SAE CLASS 60 Max = 488.28 Min = -583.21

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



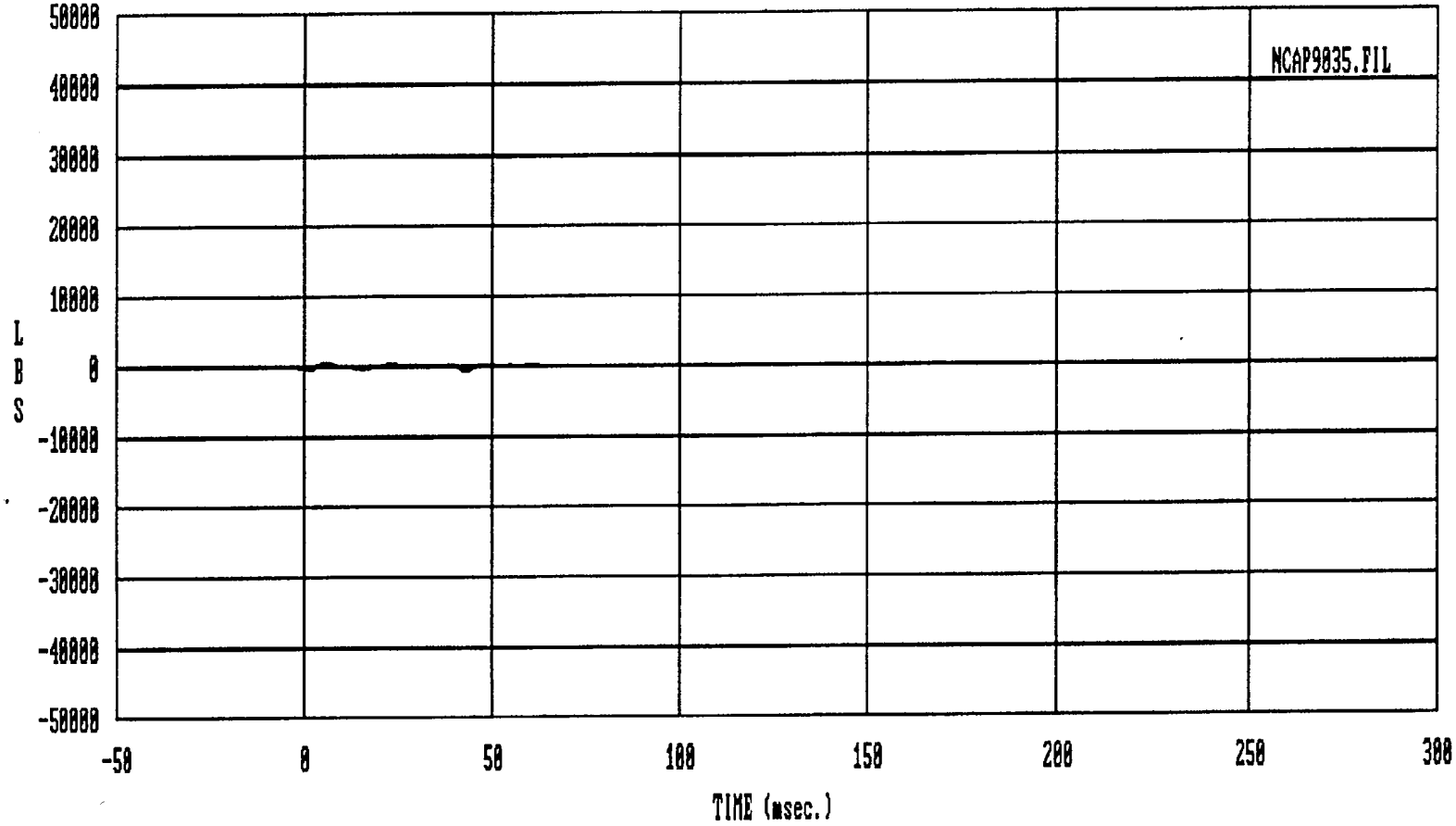
Curve: Force on Barrier load cell A4 Filter: SAE CLASS 60 Max = 696.64 Min = -579.12

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



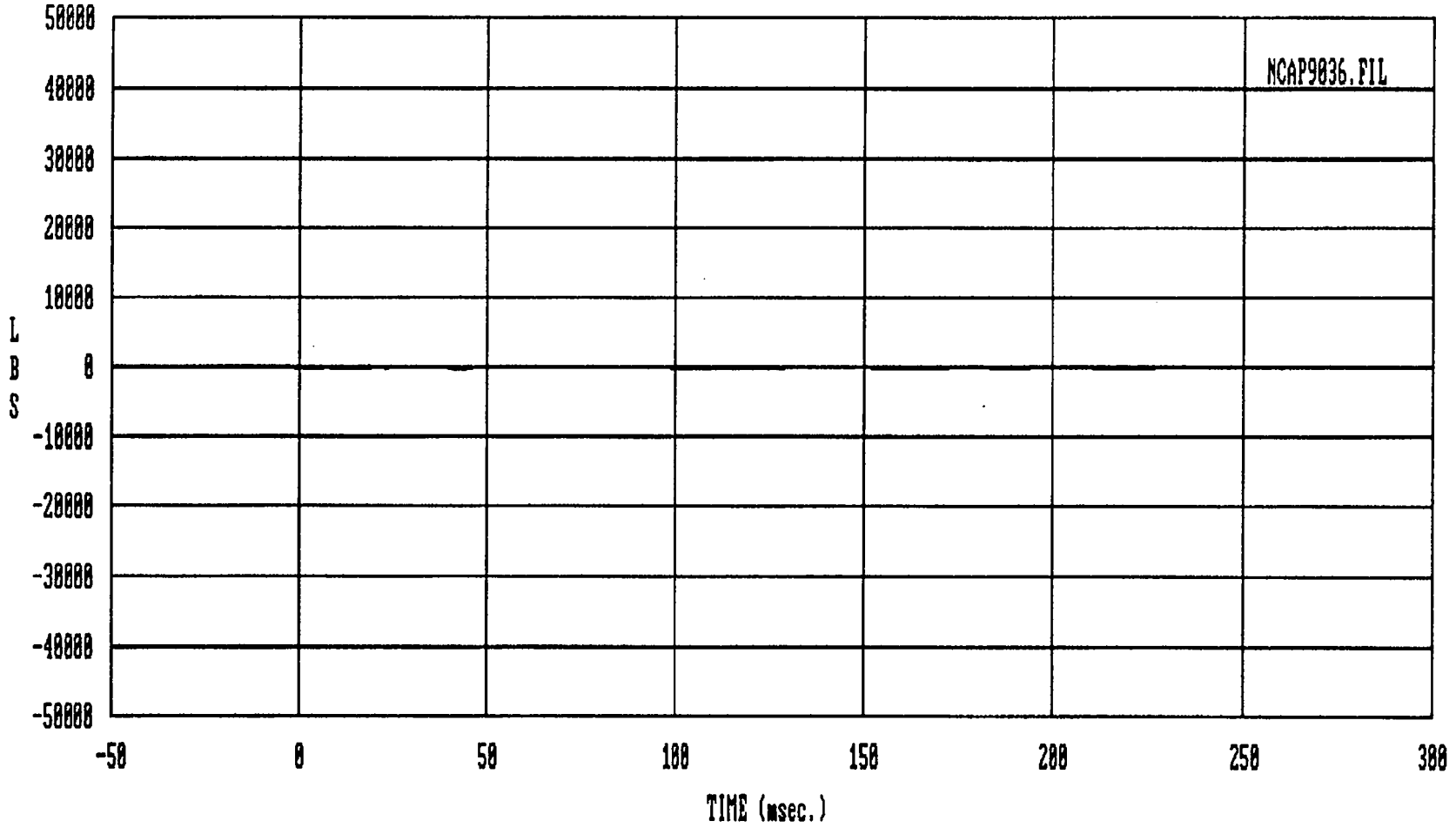
Curve: Force on Barrier load cell A5 Filter: SAE CLASS 60 Max = 4800.8 Min = -968.73

MSE Date: 03/08/98 Program: 1998 New Car Assessment #9 Vehicle: 1998 Ford Club Wagon Van



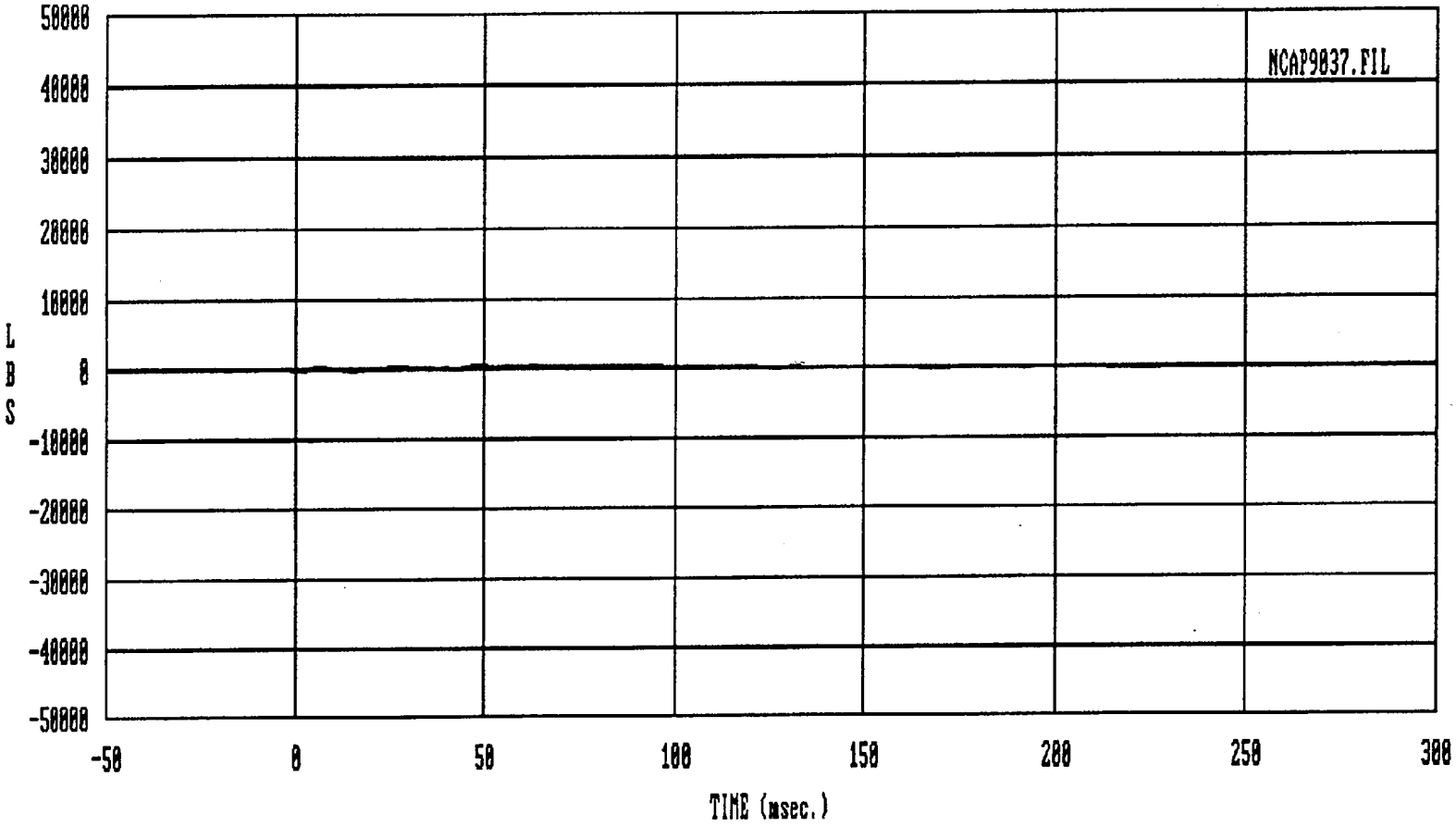
Curve: Force on Barrier load cell A6 Filter: SAE CLASS 60 Max = 600.85 Min = -552.88

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



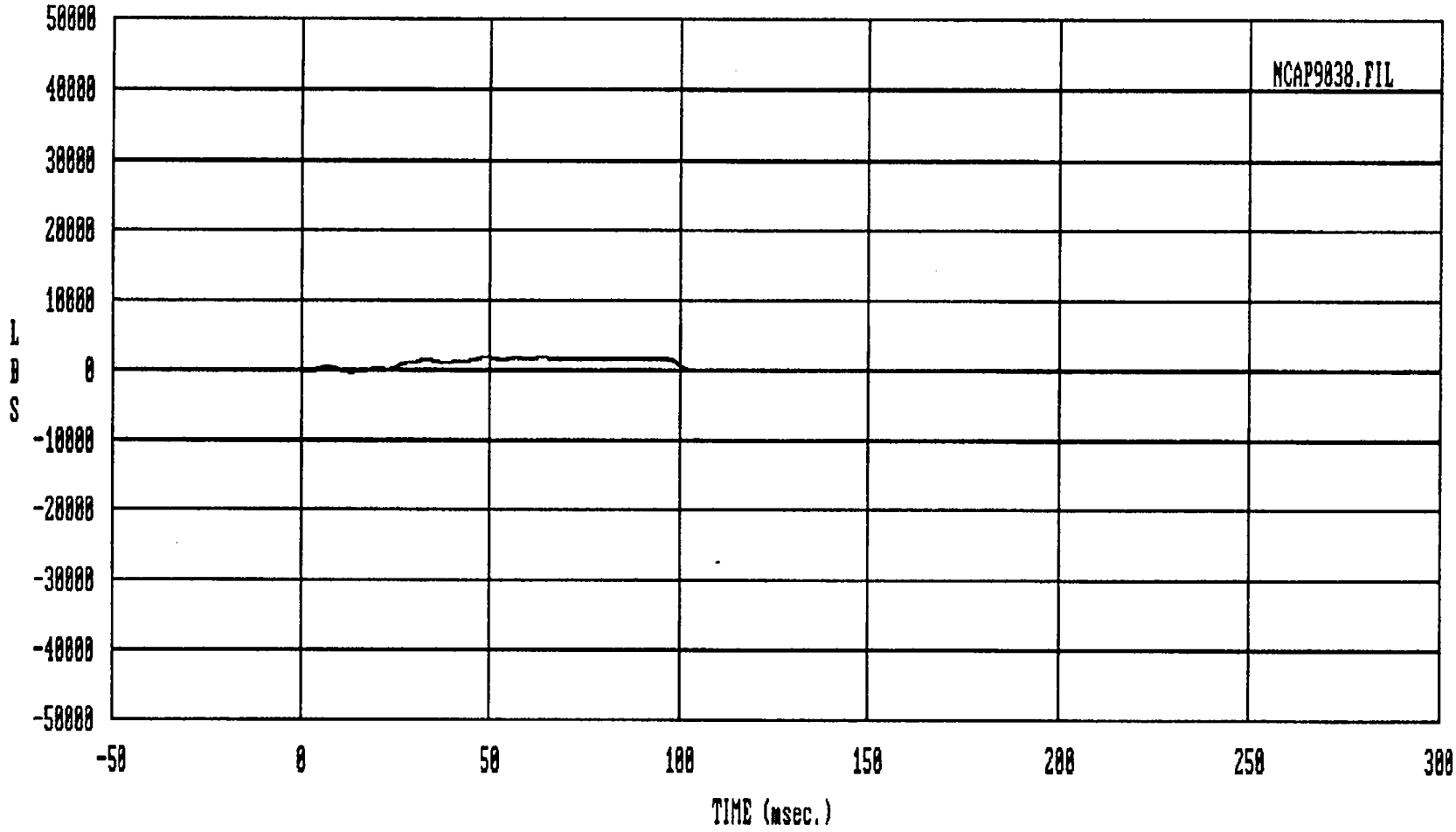
Curve: Force on Barrier load cell A7 Filter: SAE CLASS 60 Max = 107.99 Min = -349.22

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



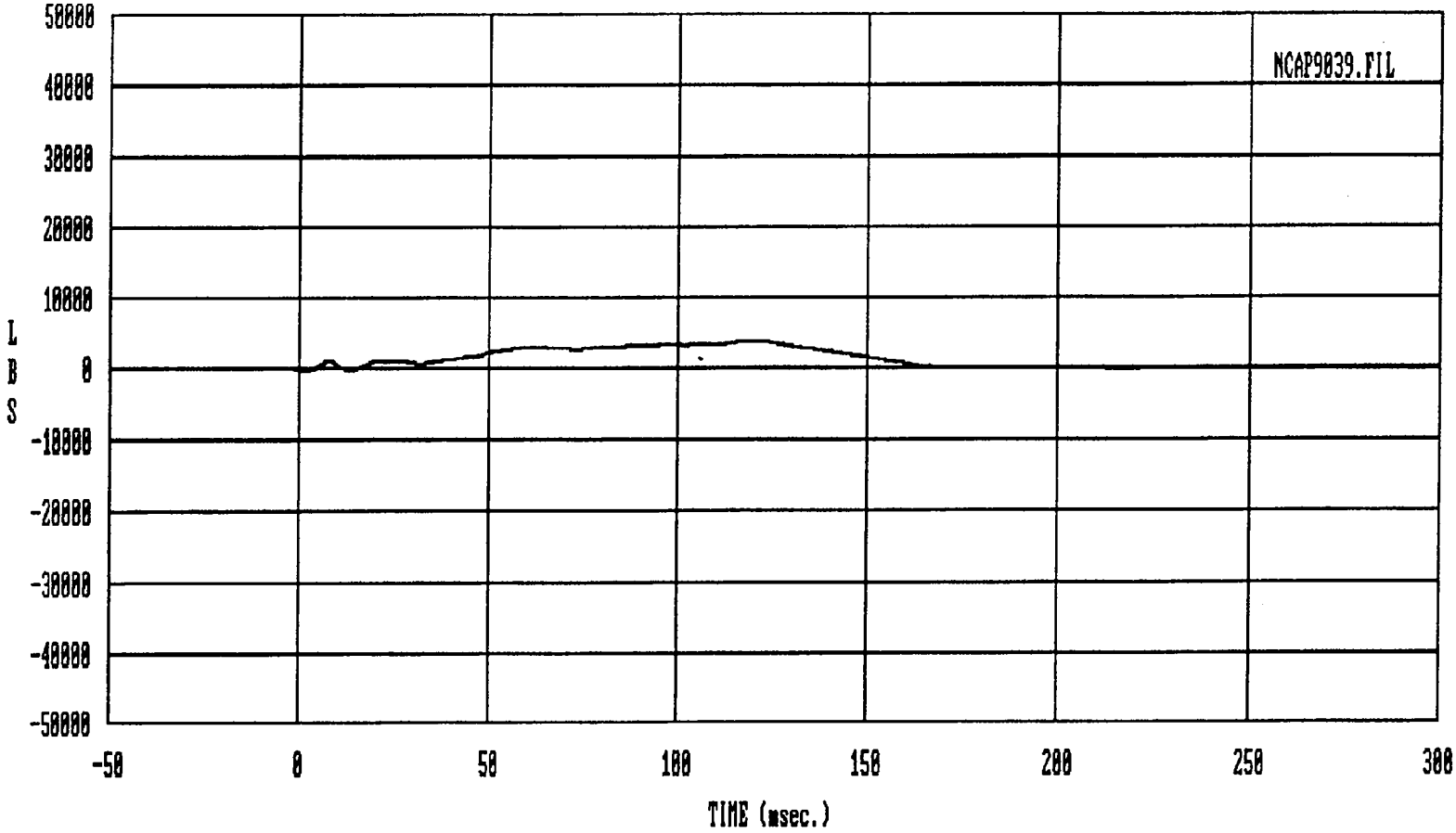
Curve: Force on Barrier load cell A8 Filter: SAE CLASS 60 Max = 686.27 Min = -305.78

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



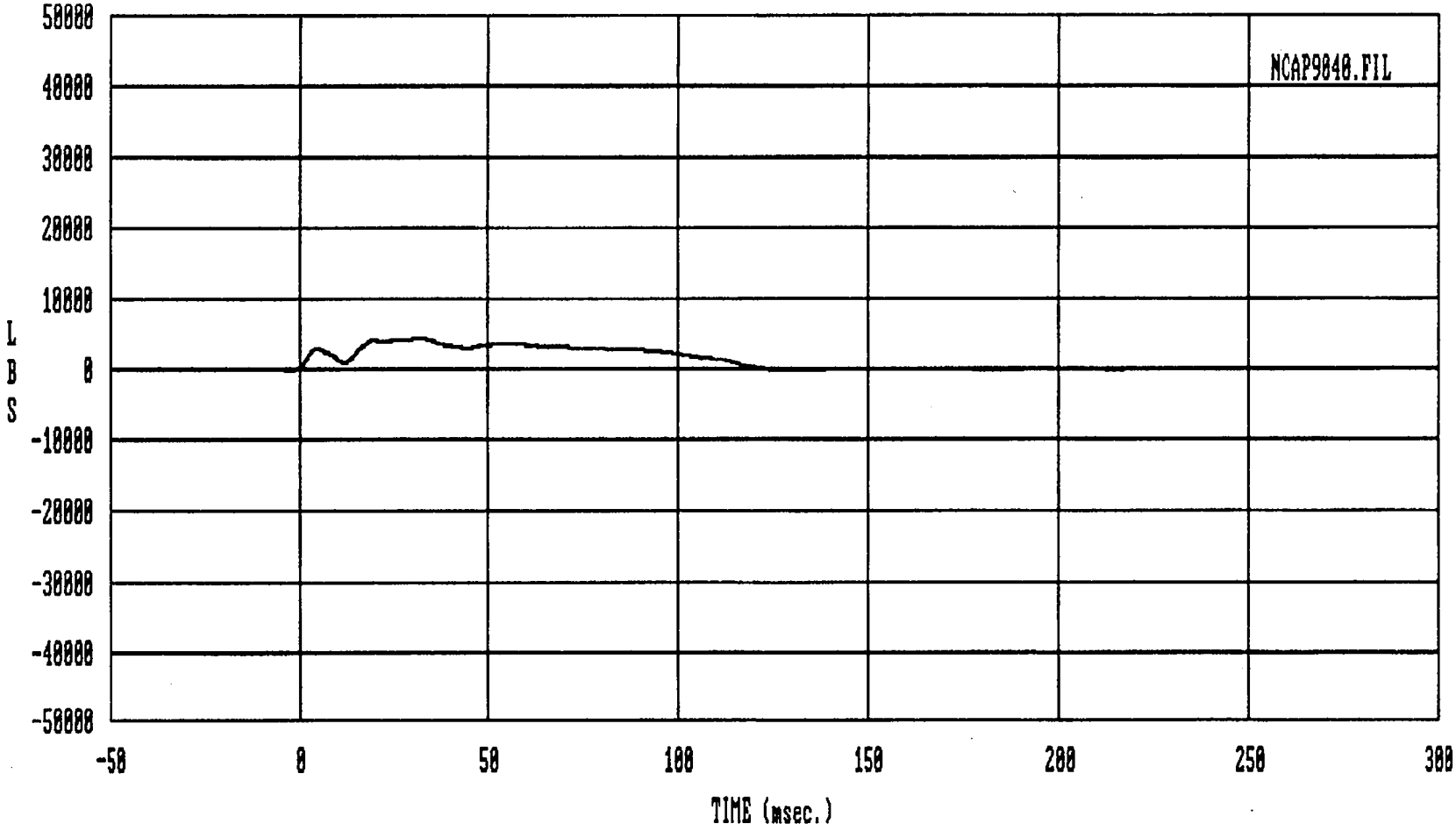
Curve: Force on Barrier load cell A9 Filter: SAE CLASS 60 Max = 1993.9 Min = -288.41

MSE Date: 03/08/98 Program: 1998 New Car Assessment #9 Vehicle: 1998 Ford Club Wagon Van



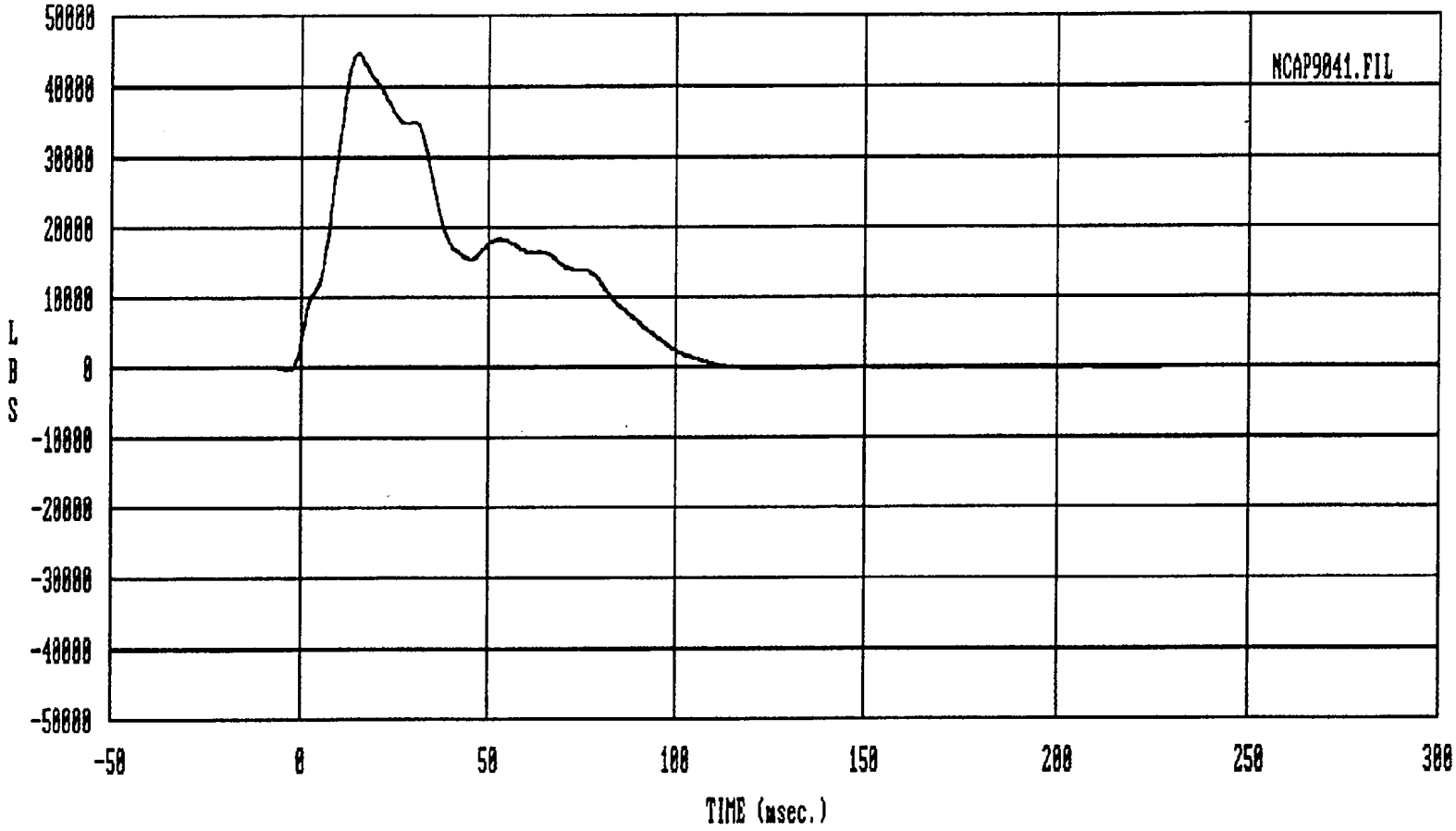
Curve: Force on Barrier load cell B1 Filter: SAE CLASS 60 Max = 3760.5 Min = -401.47

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



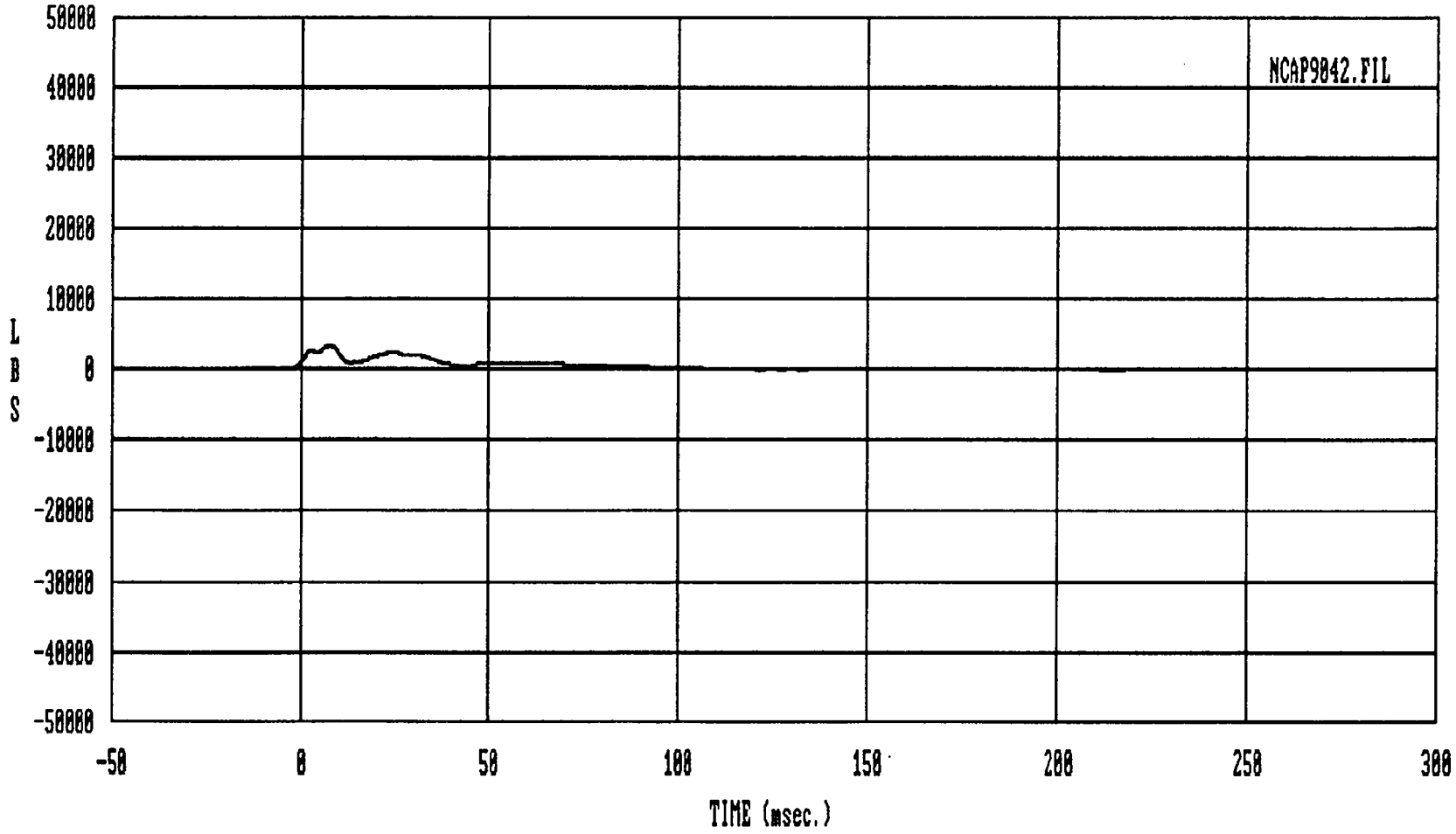
Curve: Force on Barrier load cell B2 Filter: SAE CLASS 60 Max = 4364.3 Min = -188.71

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



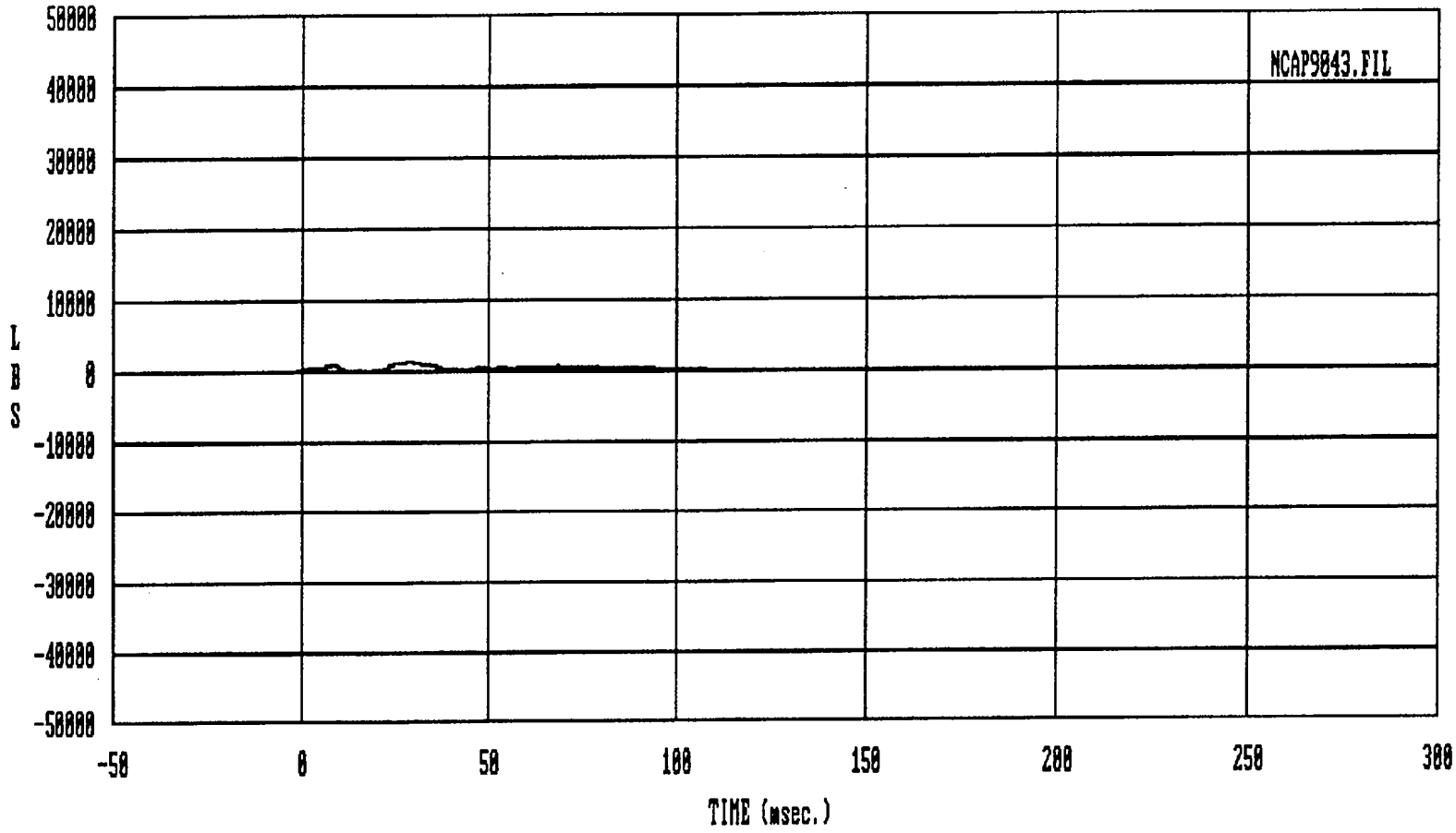
Curve: Force on Barrier load cell B3 Filter: SAE CLASS 60 Max = 44713. Min = -211.88

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



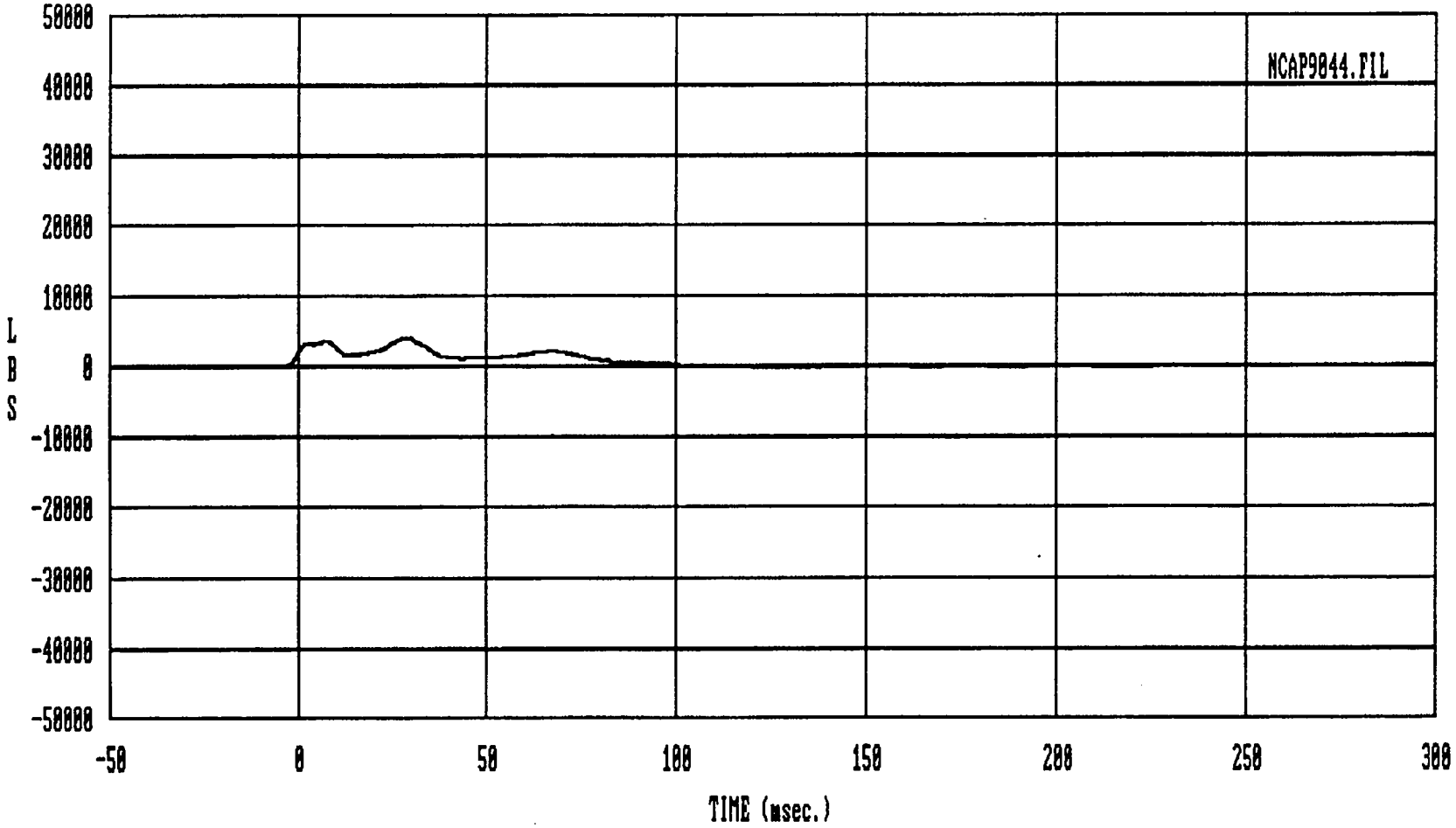
Curve: Force on Barrier load cell B4 Filter: SAE CLASS 60 Max = 3334.3 Min = -186.43

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



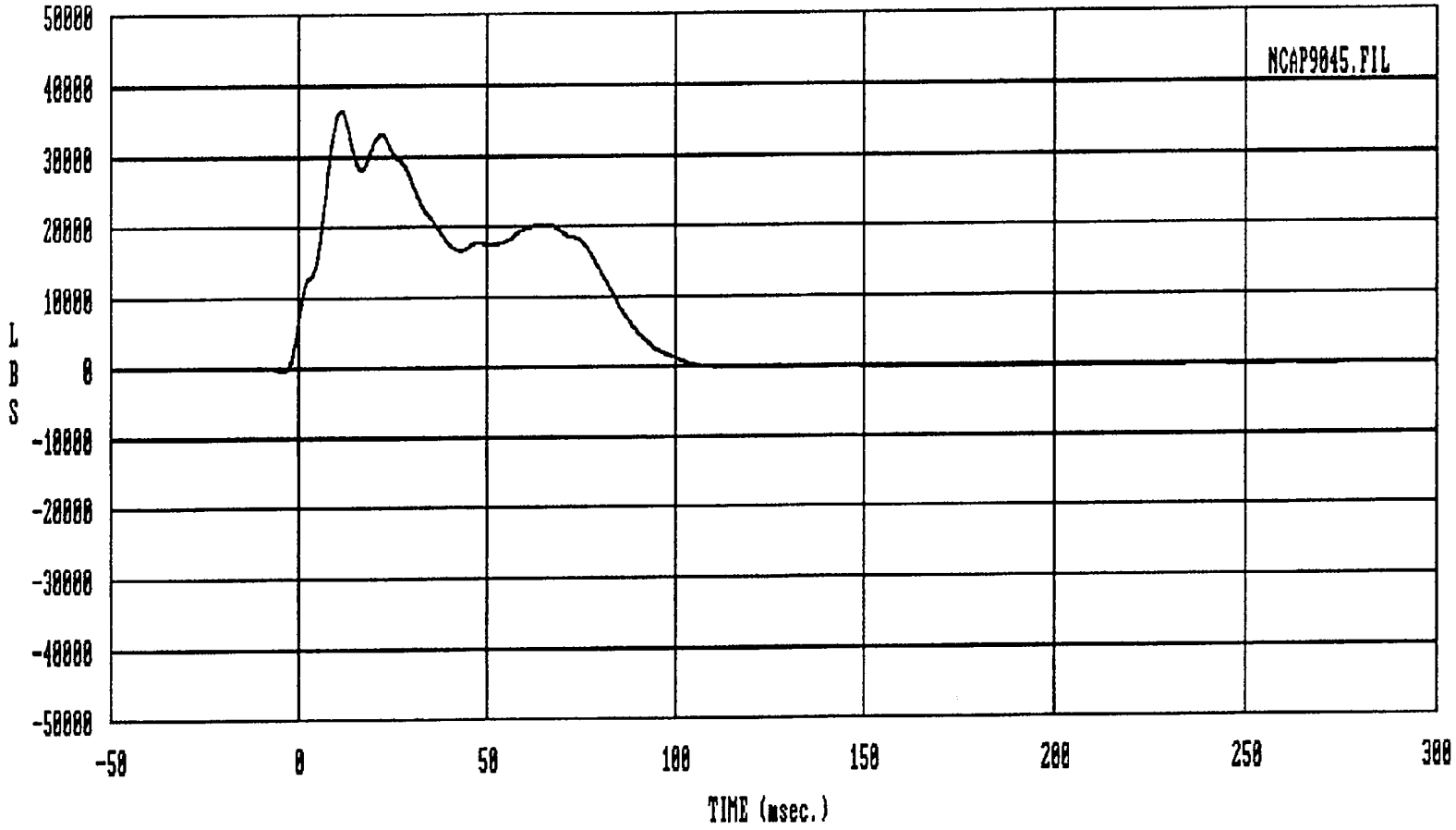
Curve: Force on Barrier load cell B5 Filter: SAE CLASS 60 Max = 1321.6 Min = -72.160

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



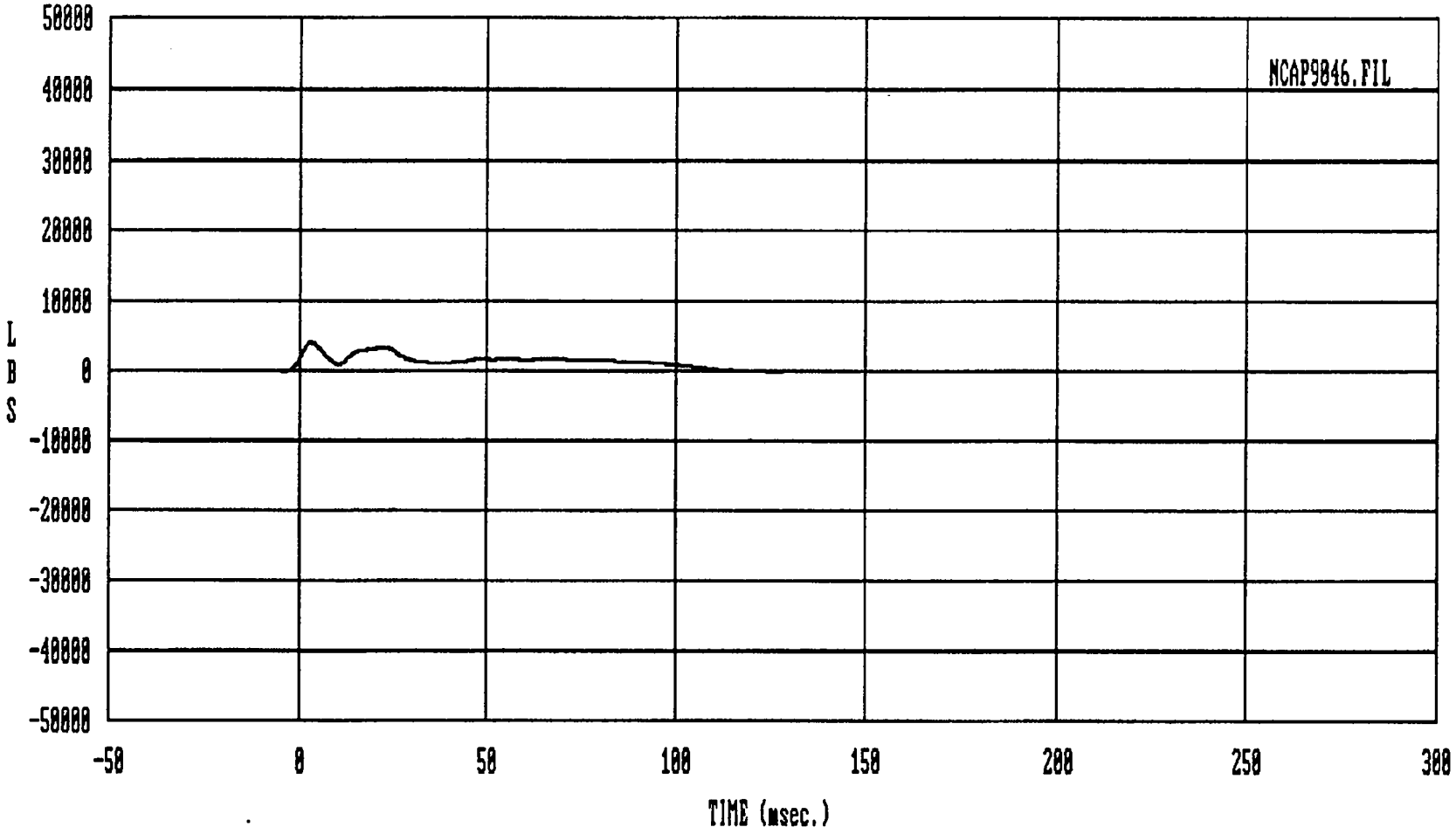
Curve: Force on Barrier load cell B6 Filter: SAE CLASS 60 Max = 4032.9 Min = -164.92

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



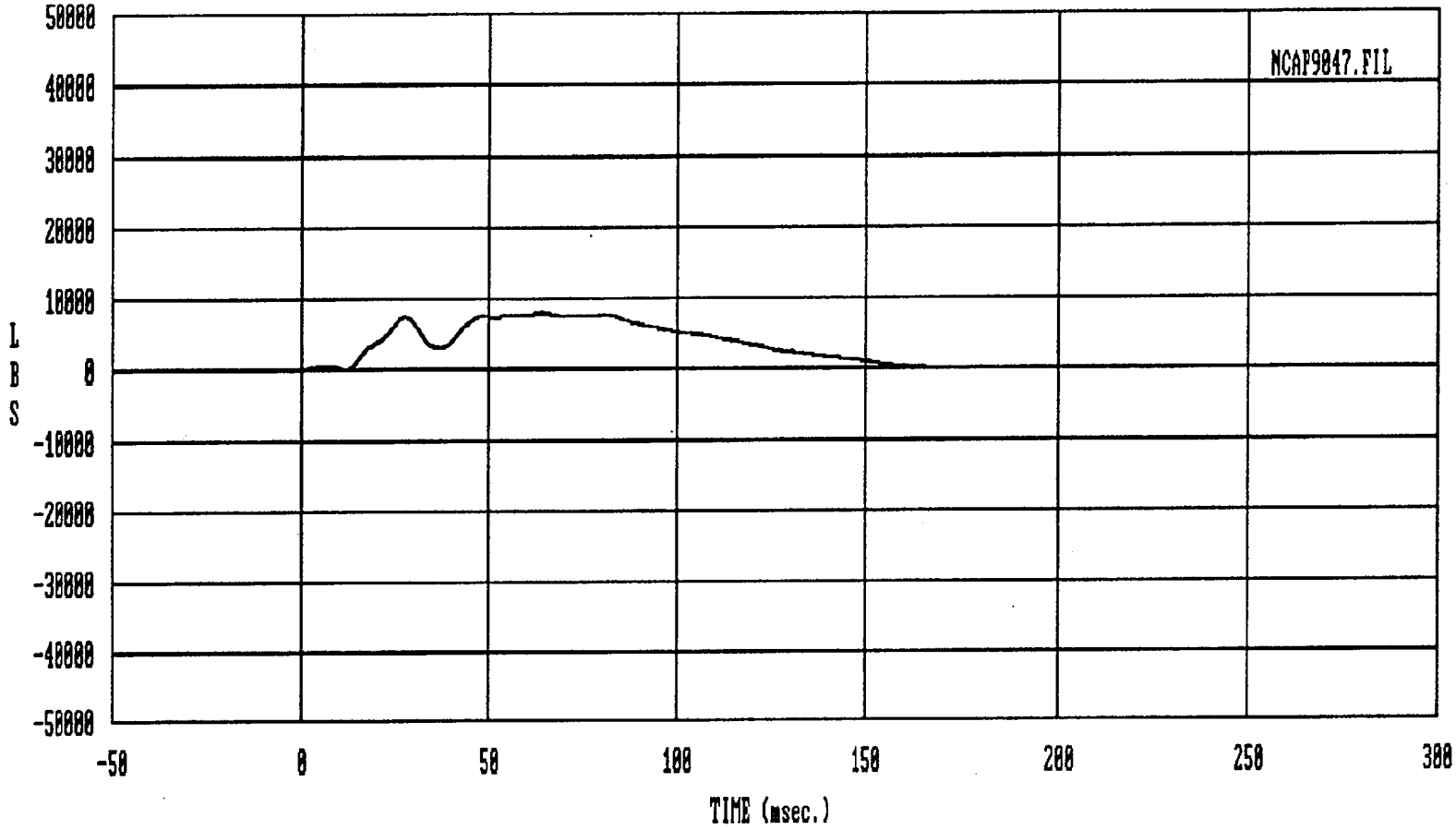
Curve: Force on Barrier load cell B7 Filter: SAE CLASS 60 Max = 36559. Min = -284.37

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



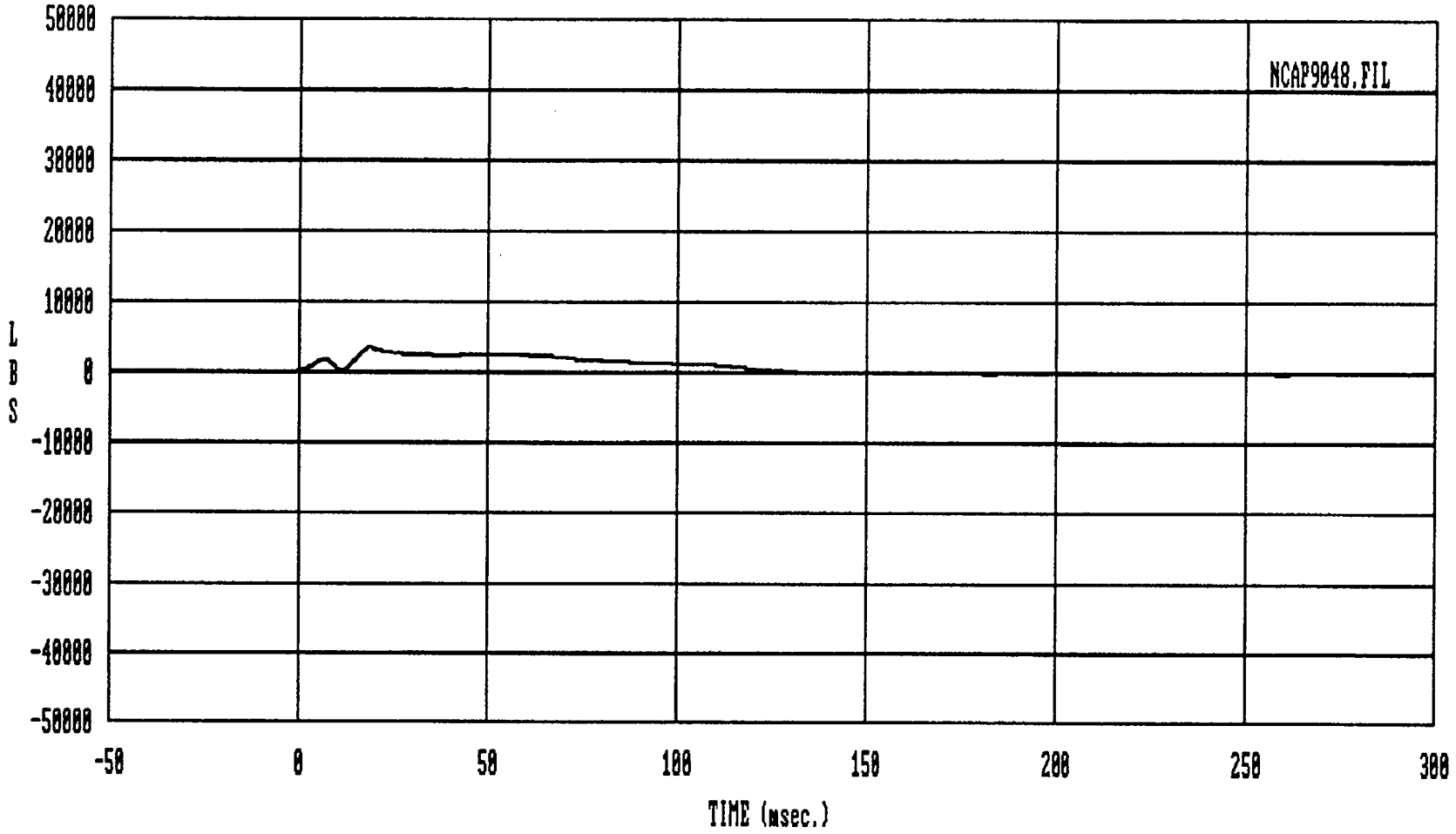
Curve: Force on Barrier load cell B8 Filter: SAE CLASS 60 Max = 4097.0 Min = -124.16

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



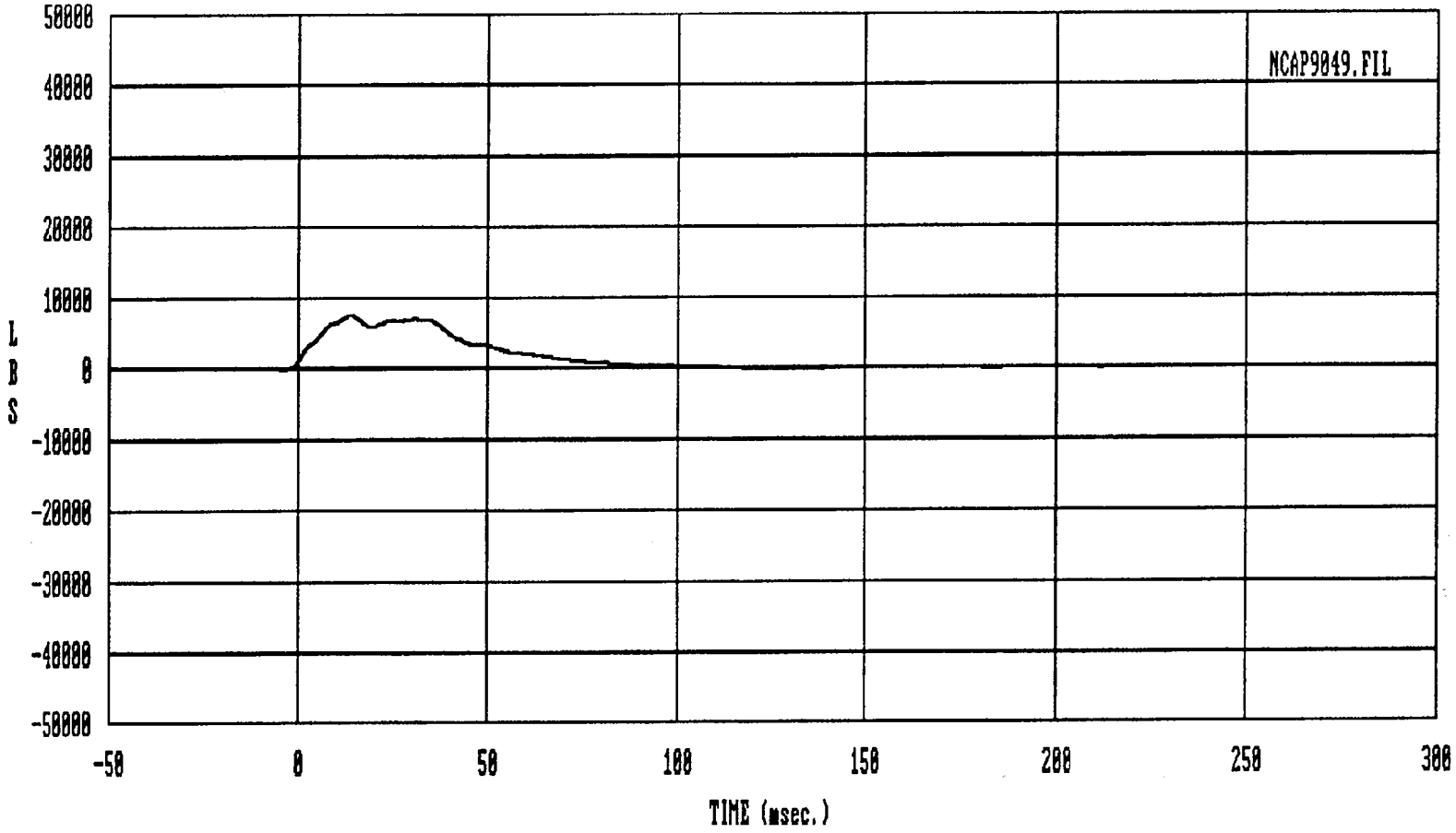
Curve: Force on Barrier load cell B9 Filter: SAE CLASS 60 Max = 7971.6 Min = -64.788

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



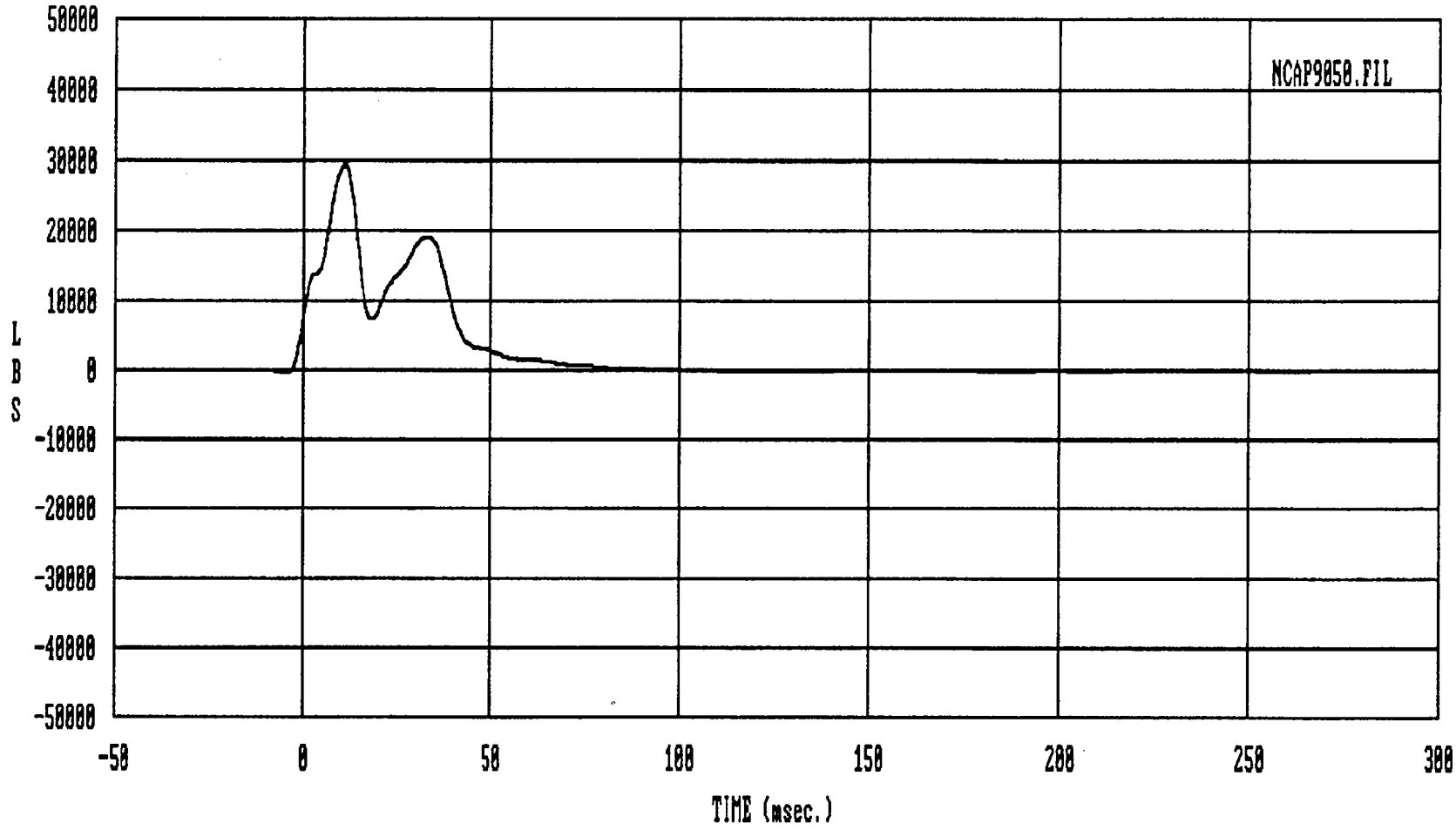
Curve: Force on Barrier load cell C1 Filter: SAE CLASS 60 Max = 3527.4 Min = -89.832

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



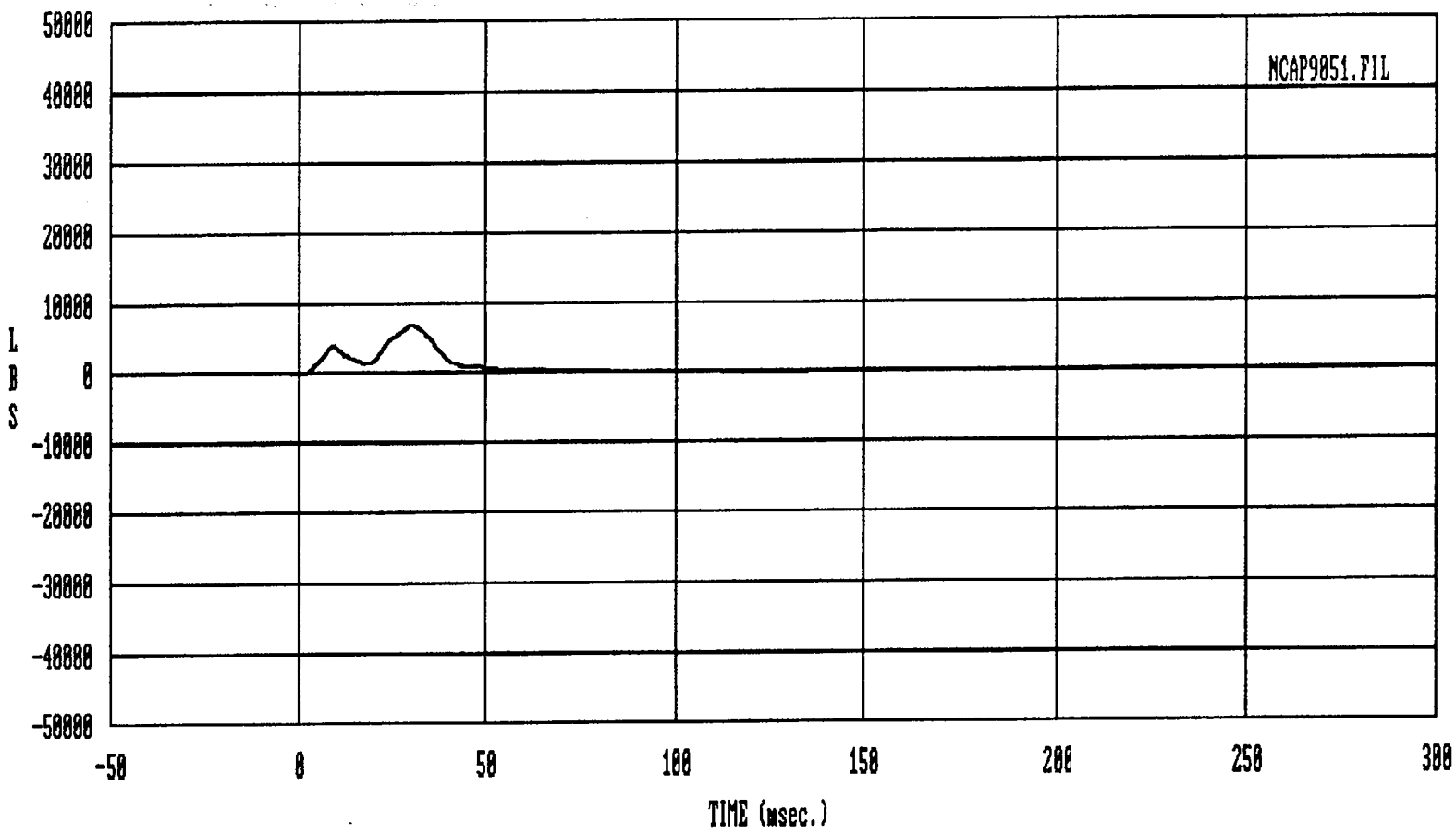
Curve: Force on Barrier load cell C2 Filter: SAE CLASS 60 Max = 7508.6 Min = -174.74

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



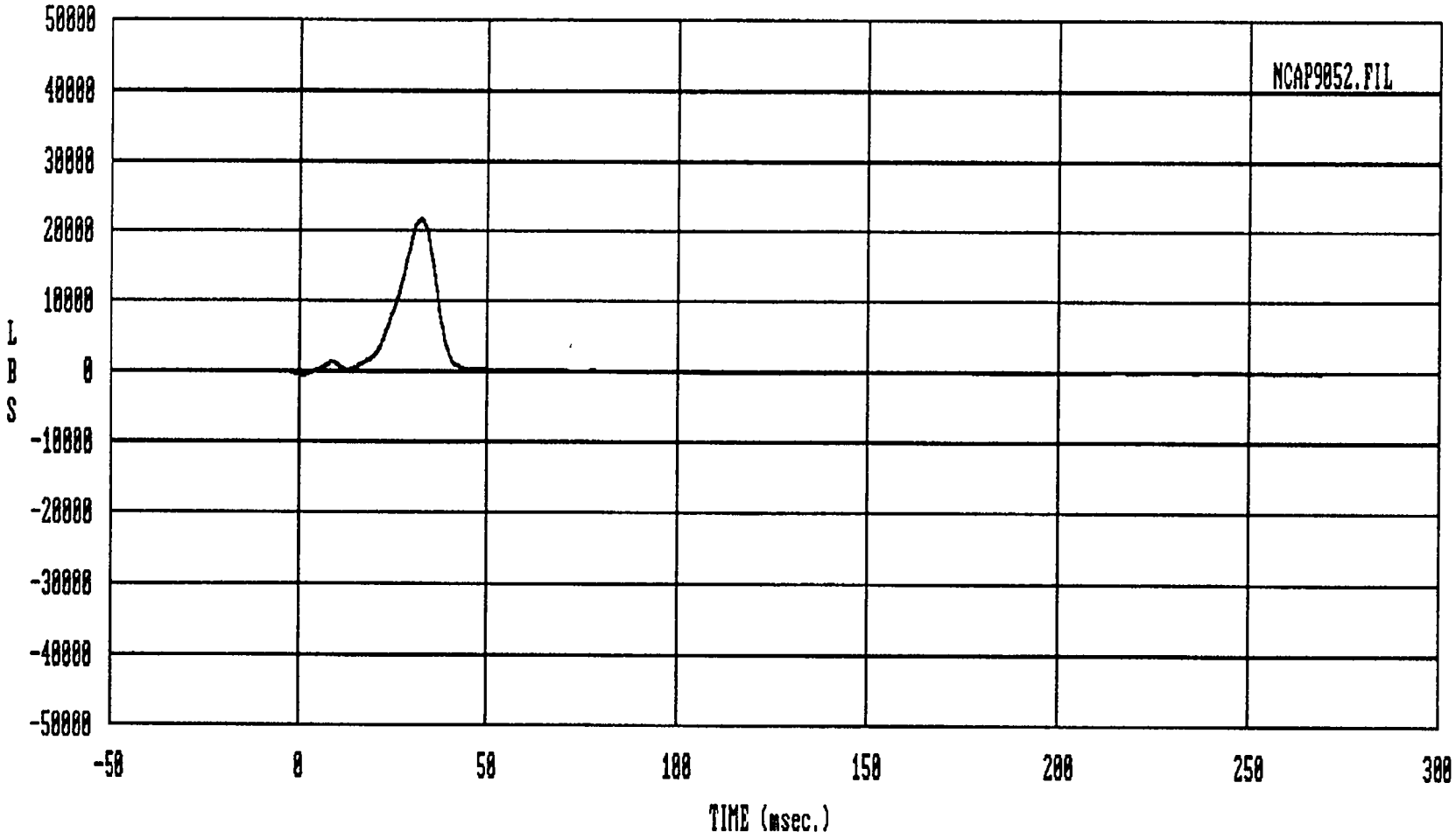
Curve: Force on Barrier load cell C3 Filter: SAE CLASS 60 Max = 29497. Min = -244.69

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



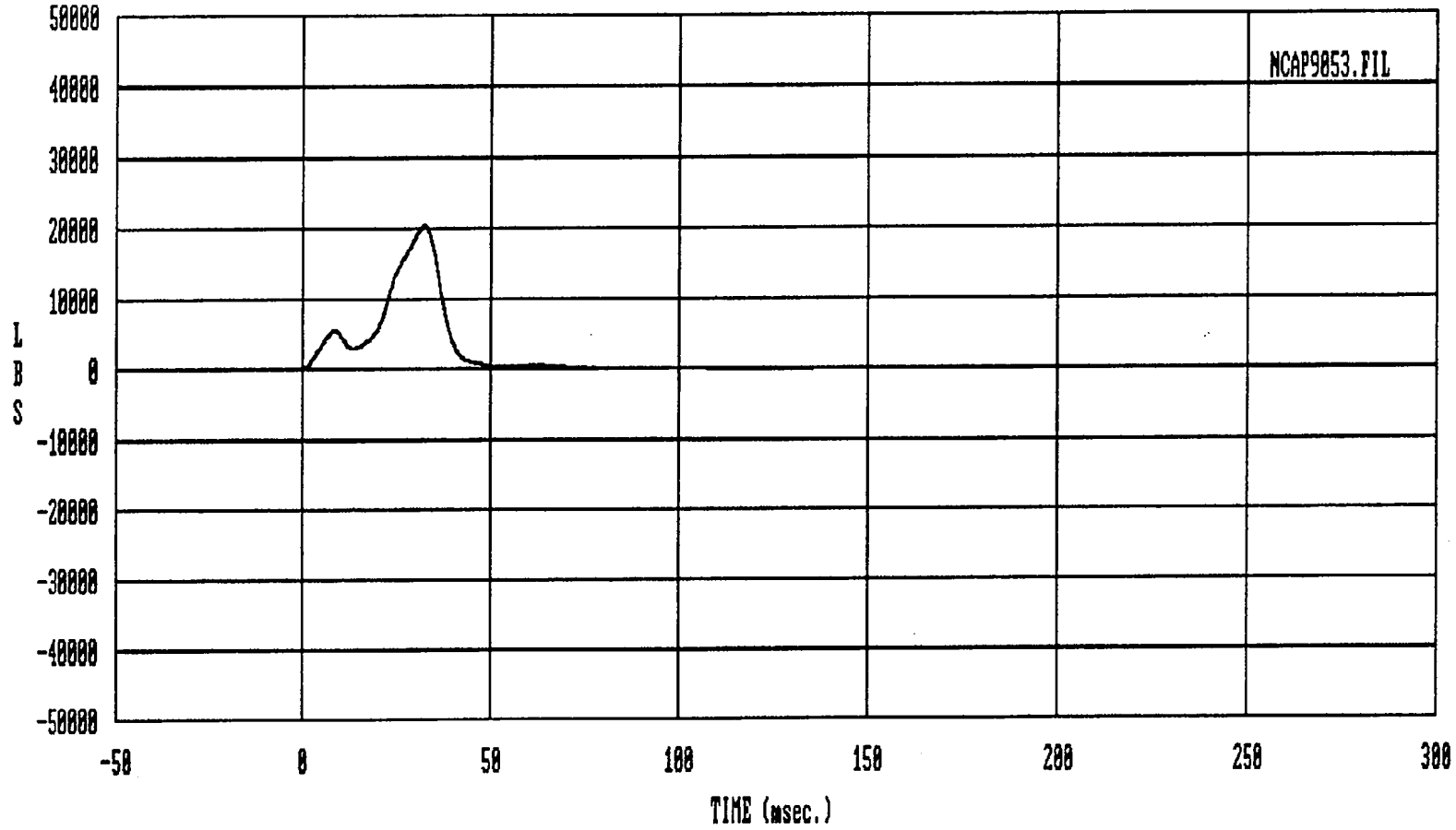
Curve: Force on Barrier load cell C4 Filter: SAE CLASS 60 Max = 6863.2 Min = -269.37

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



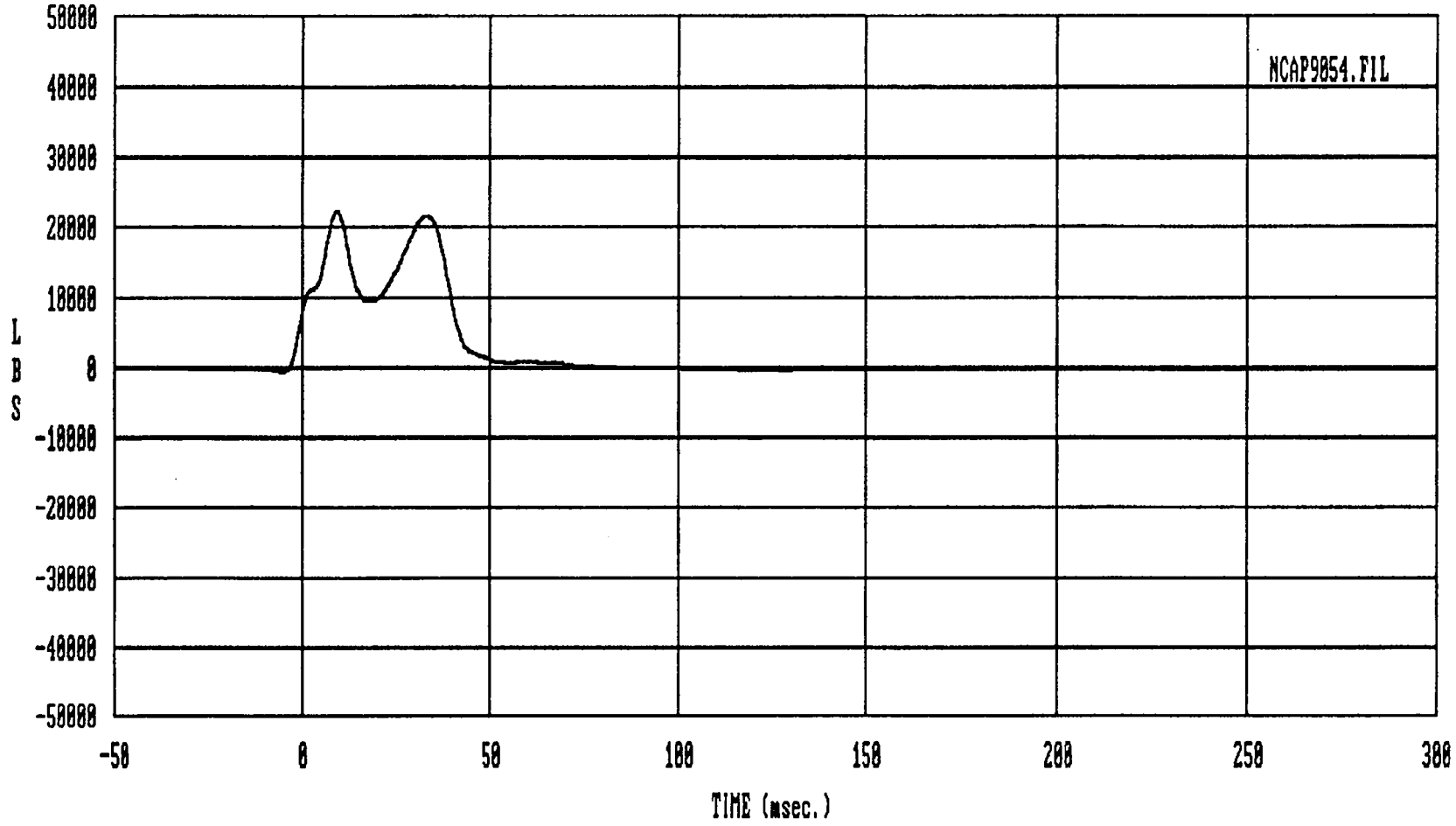
Curve: Force on Barrier load cell C5 Filter: SAE CLASS 60 Max = 21745. Min = -510.22

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



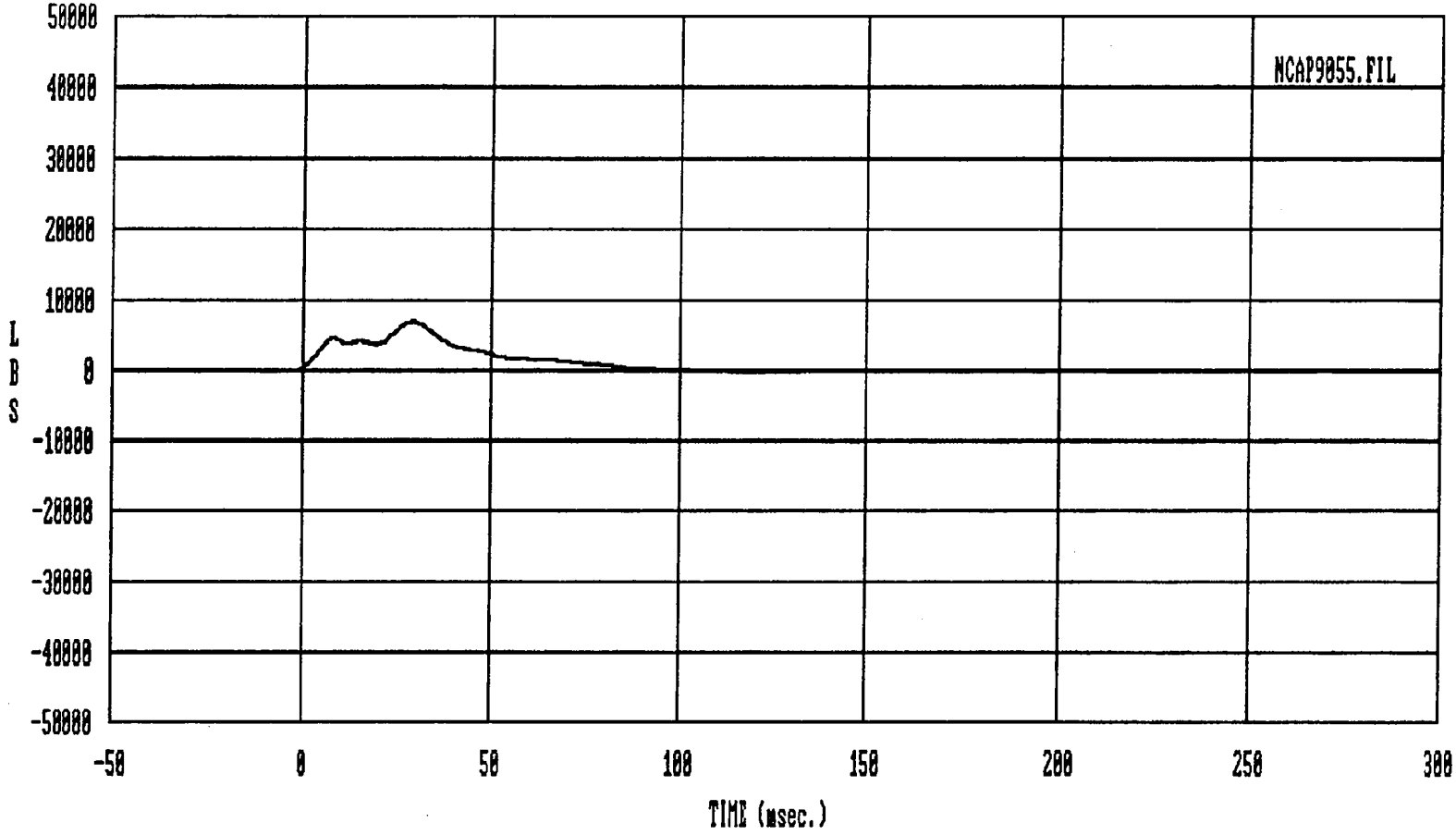
Curve: Force on Barrier load cell C6 Filter: SAE CLASS 60 Max = 20382. Min = -218.07

MSE Date: 03/08/98 Program: 1998 New Car Assessment #9 Vehicle: 1998 Ford Club Wagon Van



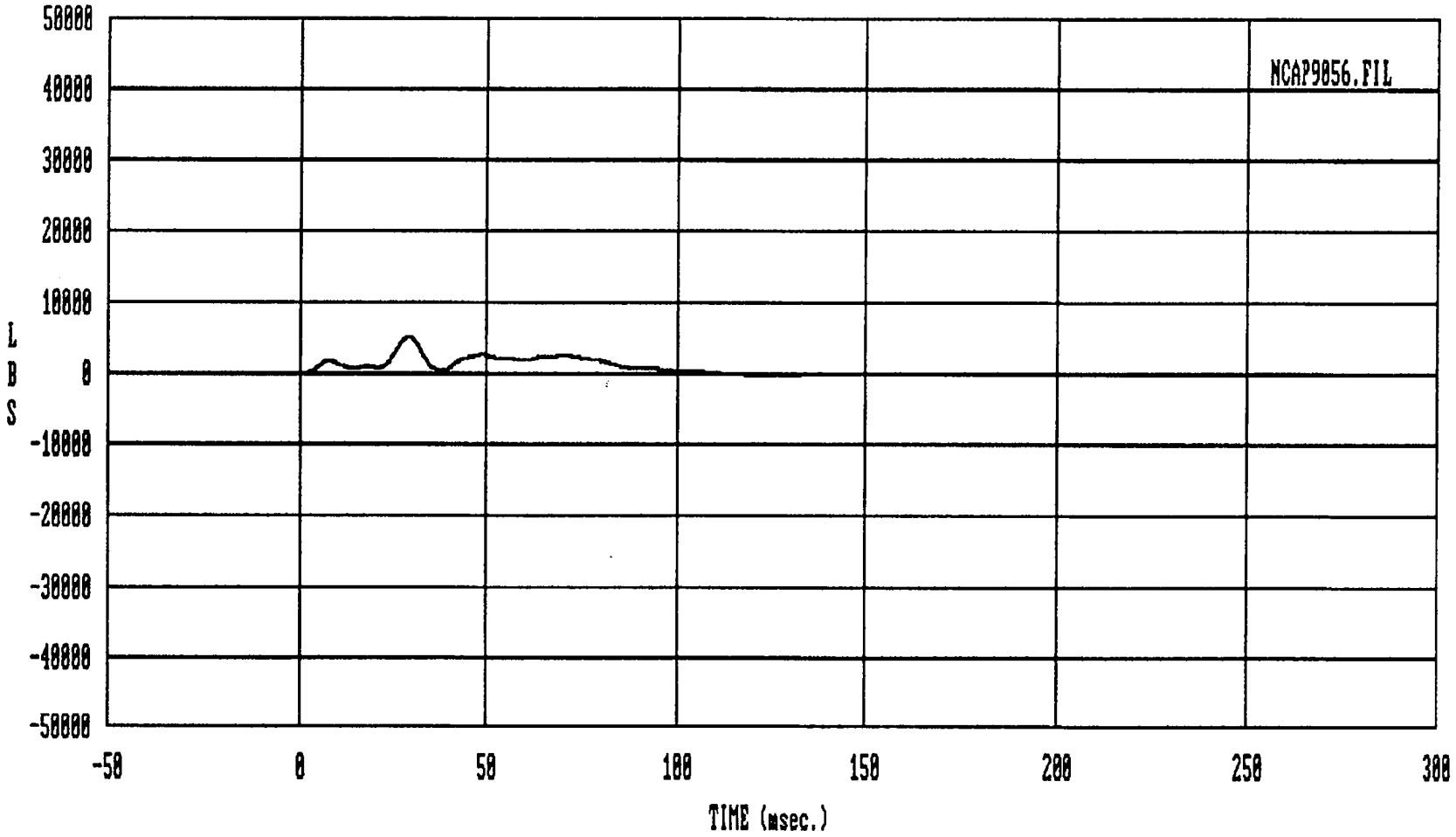
Curve: Force on Barrier load cell C7 Filter: SAE CLASS 60 Max = 22354. Min = -362.95

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



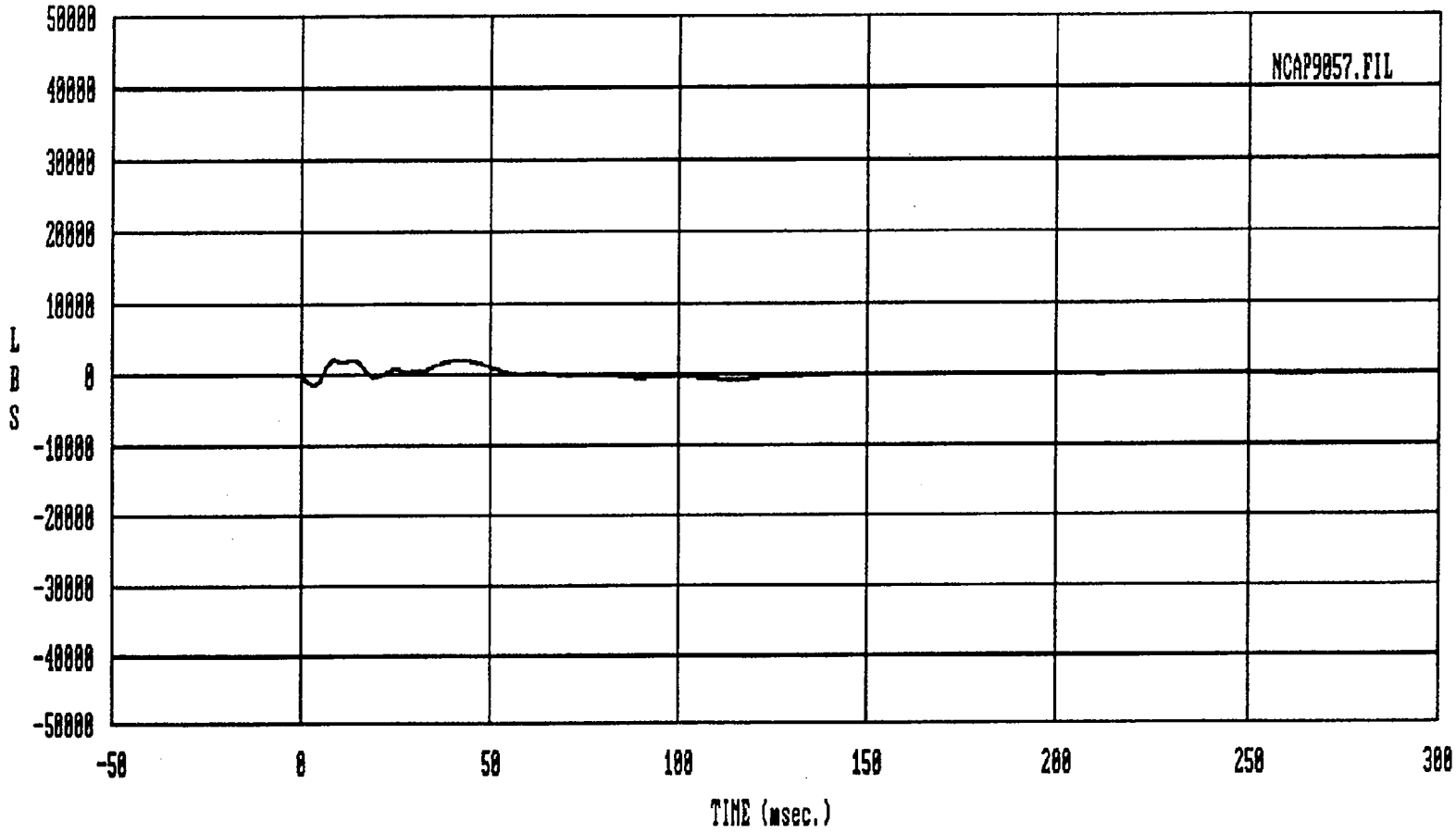
Curve: Force on Barrier load cell C8 Filter: SAE CLASS 60 Max = 7812.6 Min = -218.99

MSE Date: 03/08/98 Program: 1998 New Car Assessment #9 Vehicle: 1998 Ford Club Wagon Van



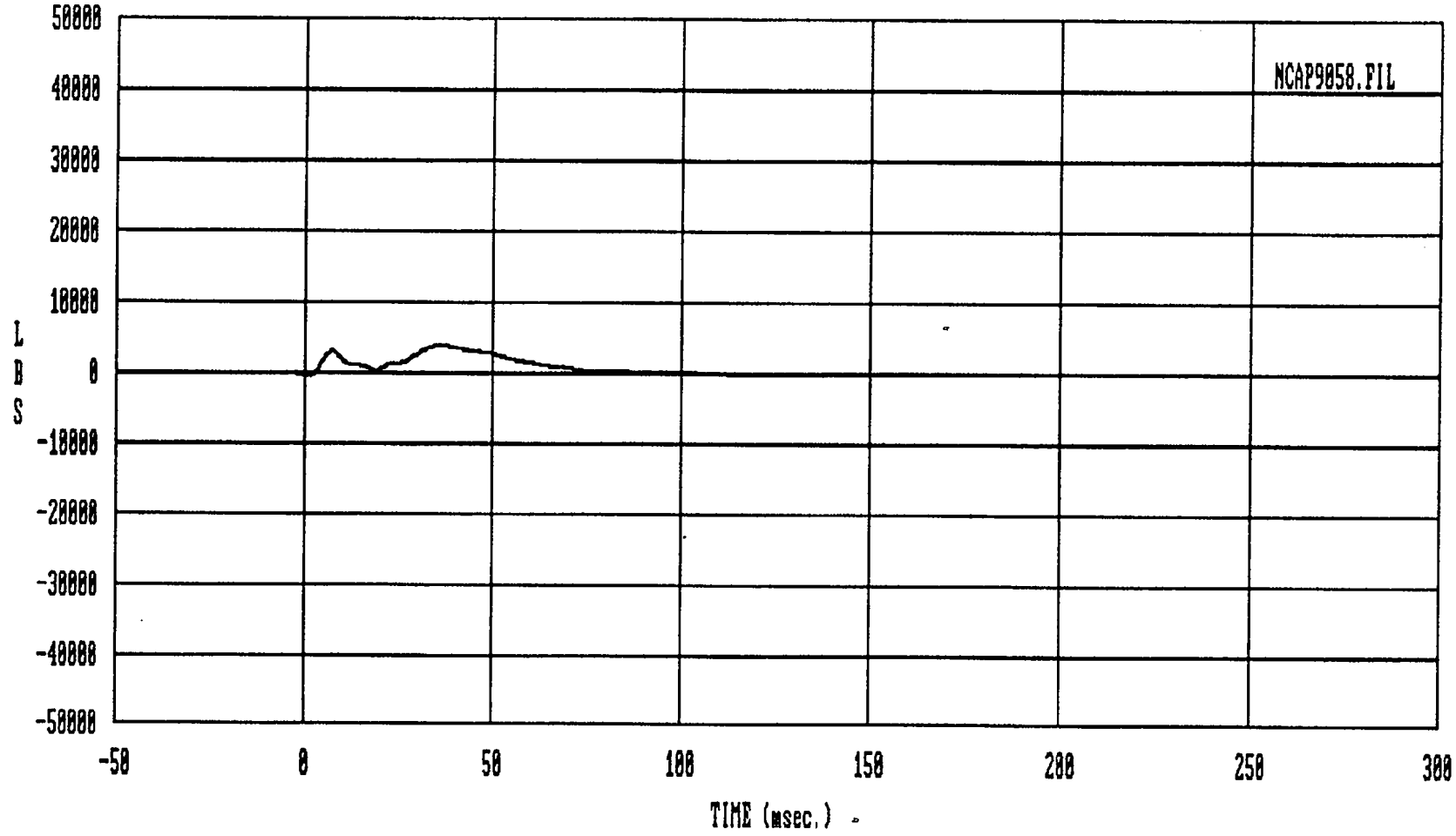
Curve: Force on Barrier load cell C9 Filter: SAE CLASS 60 Max = 5196.7 Min = -200.00

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



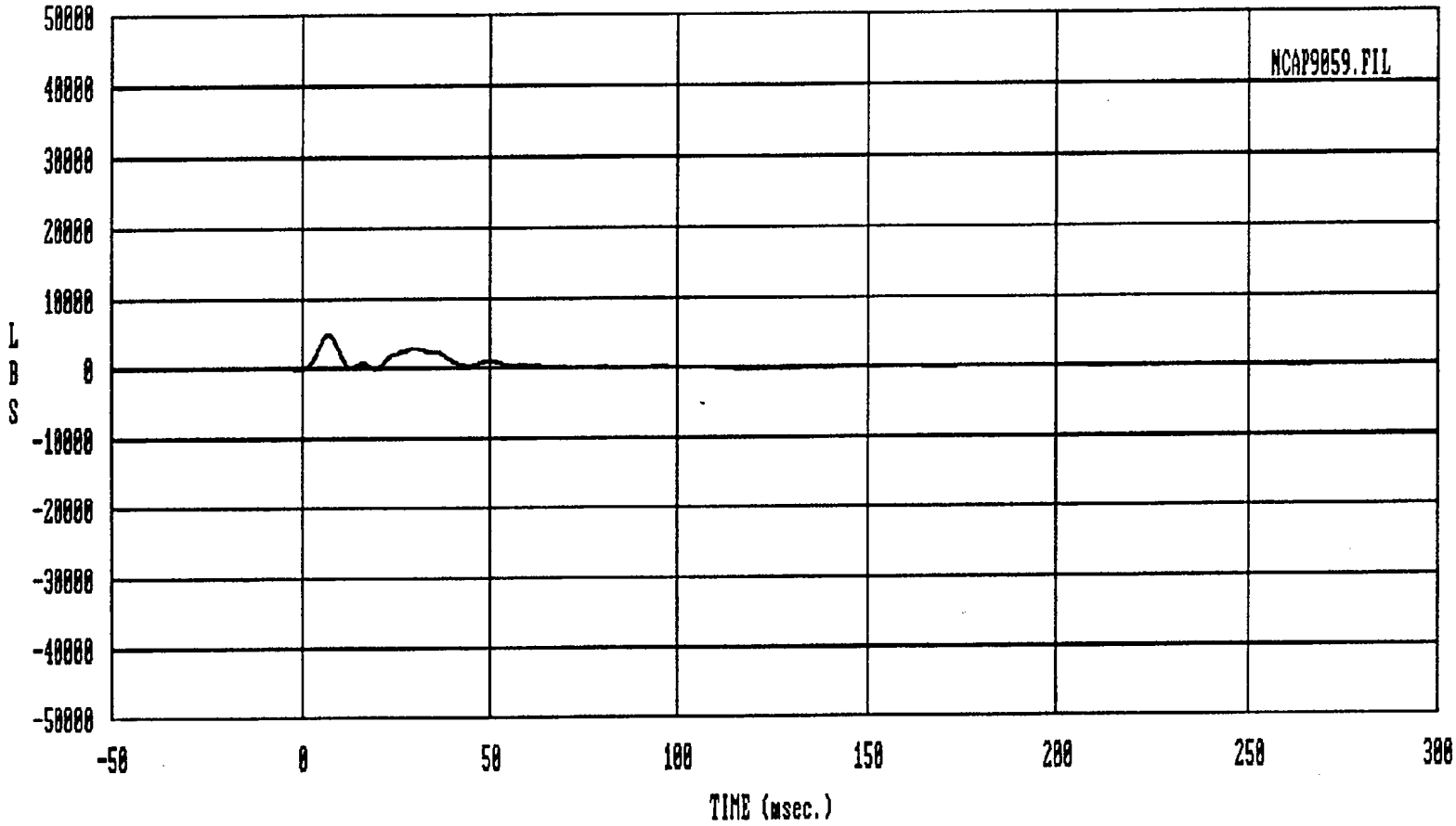
Curve: Force on Barrier load cell D1 Filter: SAE CLASS 60 Max = 2085.6 Min = -1345.0

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



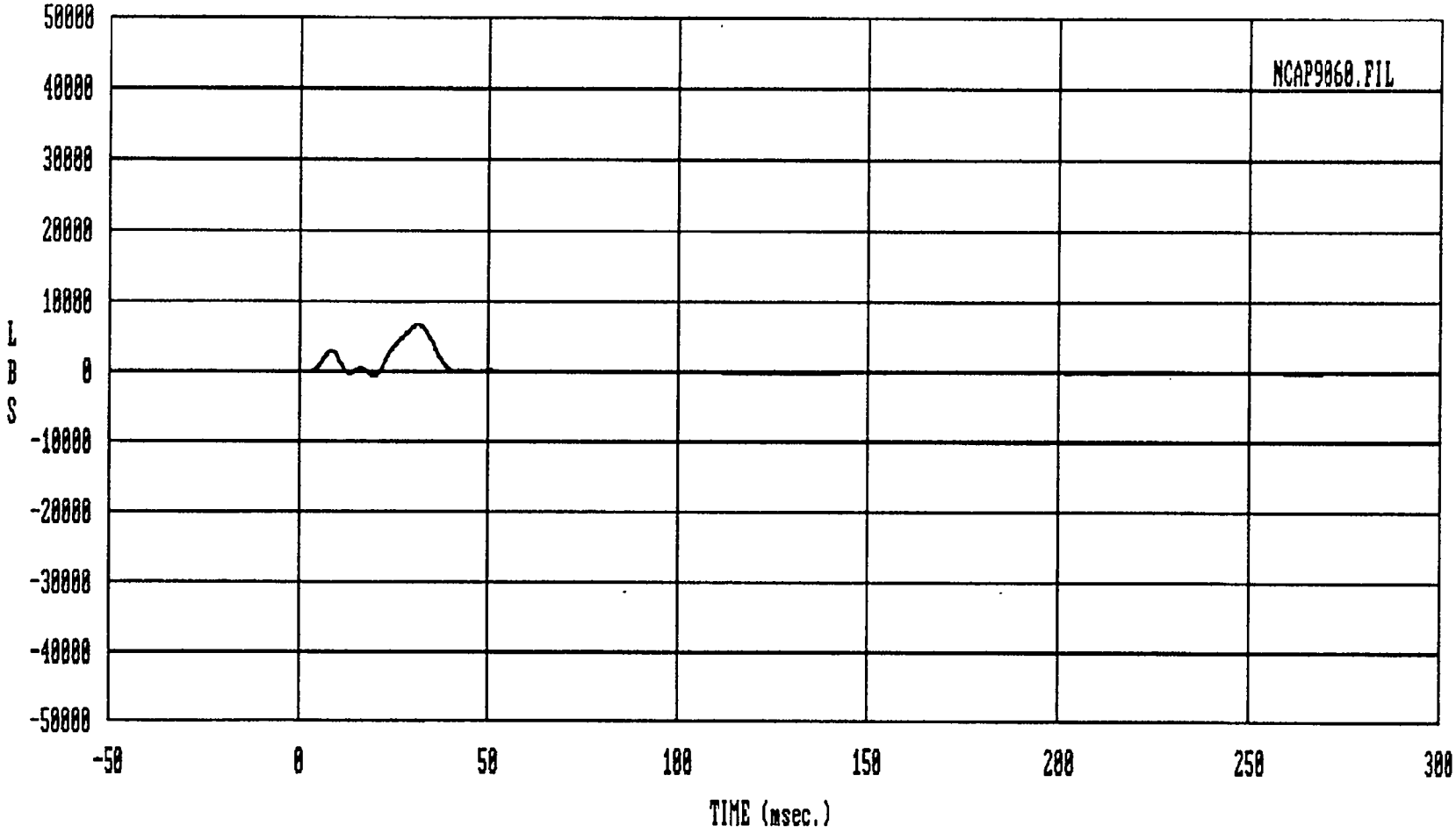
Curve: Force on Barrier load cell D2 Filter: SAE CLASS 60 Max = 3971.7 Min = -478.39

MSE Date: 03/08/98 Program: 1998 New Car Assessment #9 Vehicle: 1998 Ford Club Wagon Van



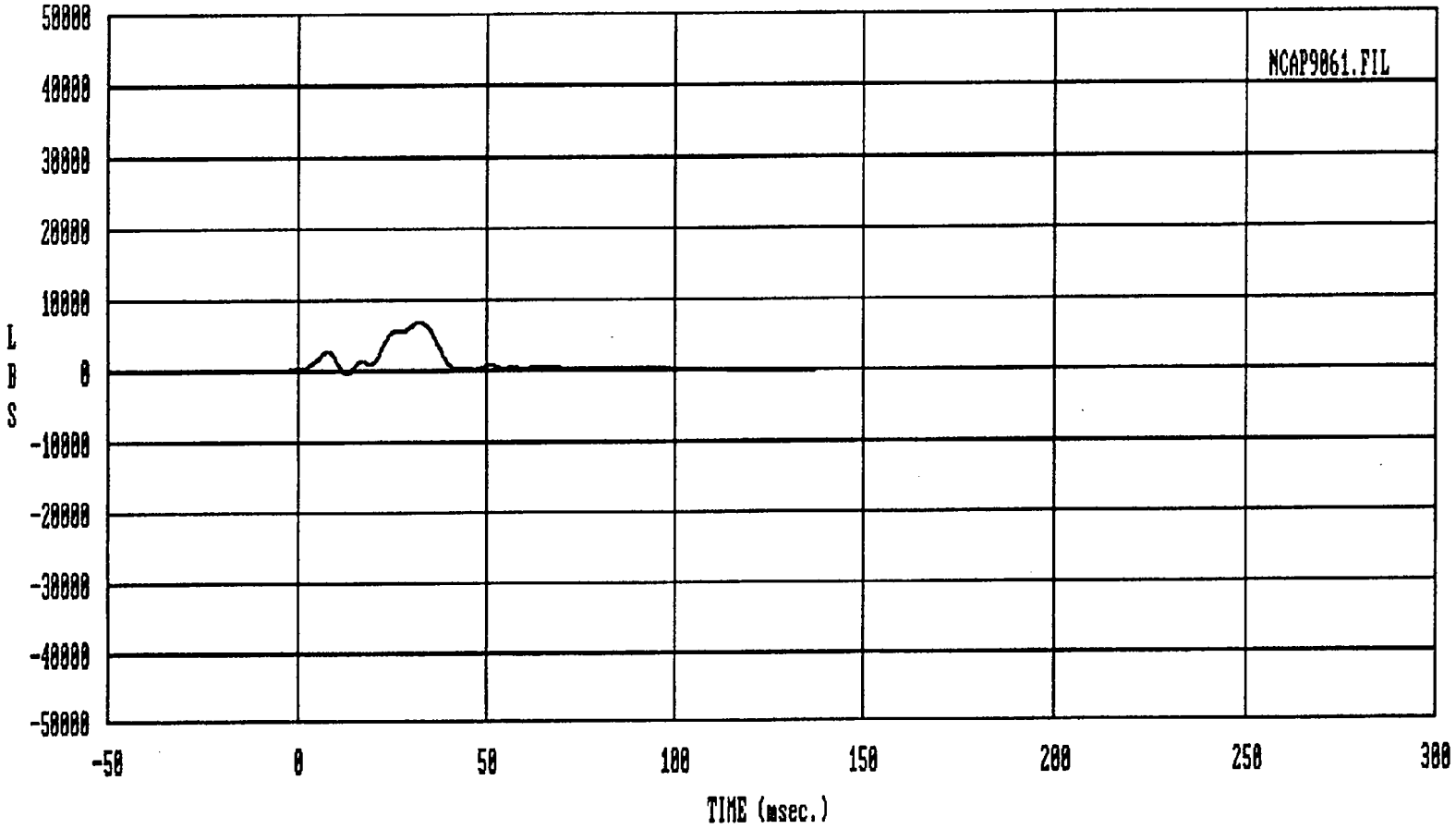
Curve: Force on Barrier load cell D3 Filter: SAE CLASS 60 Max = 5026.5 Min = -316.80

MSE Date: 03/08/98 Program: 1998 New Car Assessment #9 Vehicle: 1998 Ford Club Wagon Van



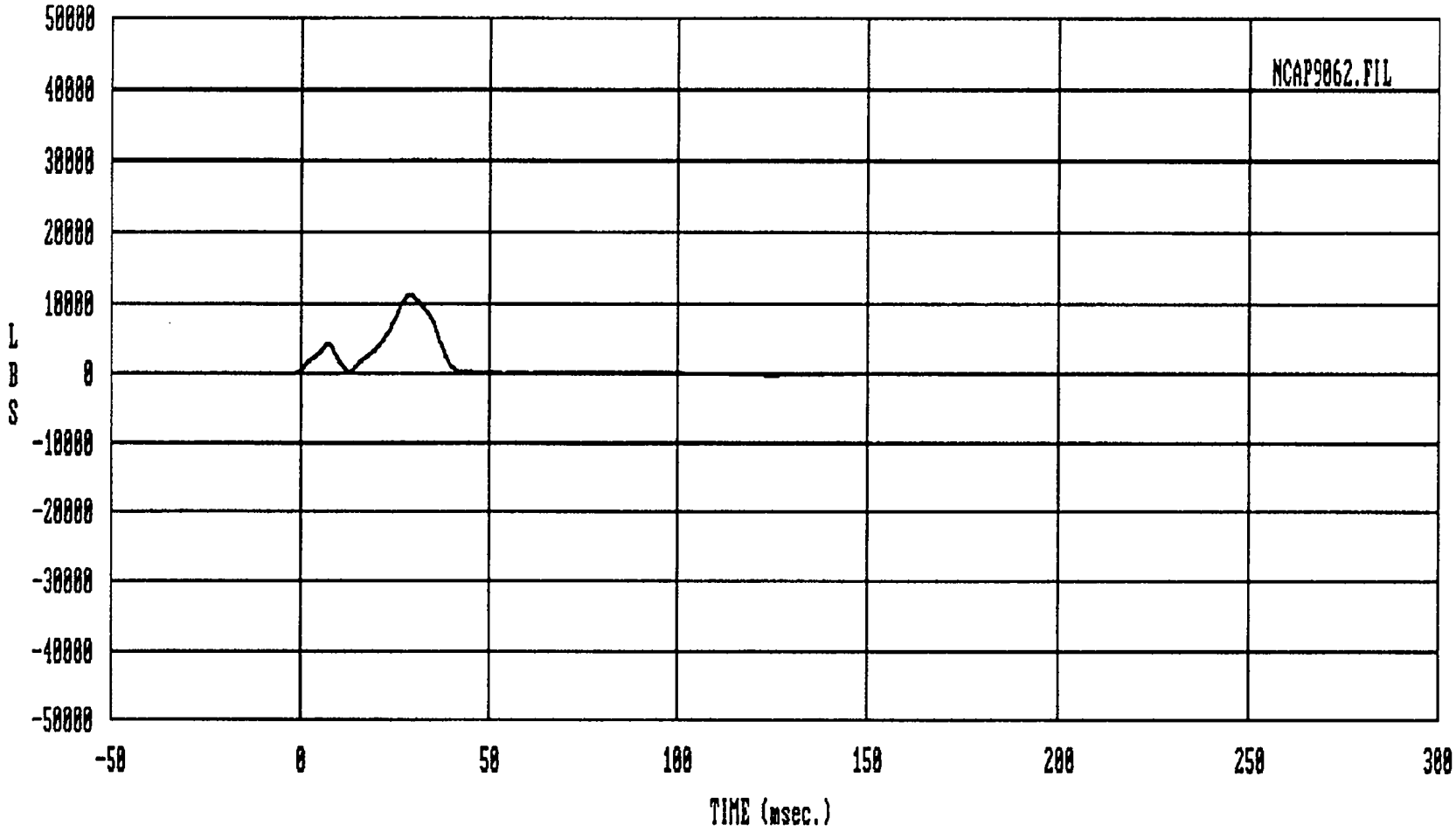
Curve: Force on Barrier load cell D4 Filter: SAE CLASS 60 Max = 6727.3 Min = -588.64

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



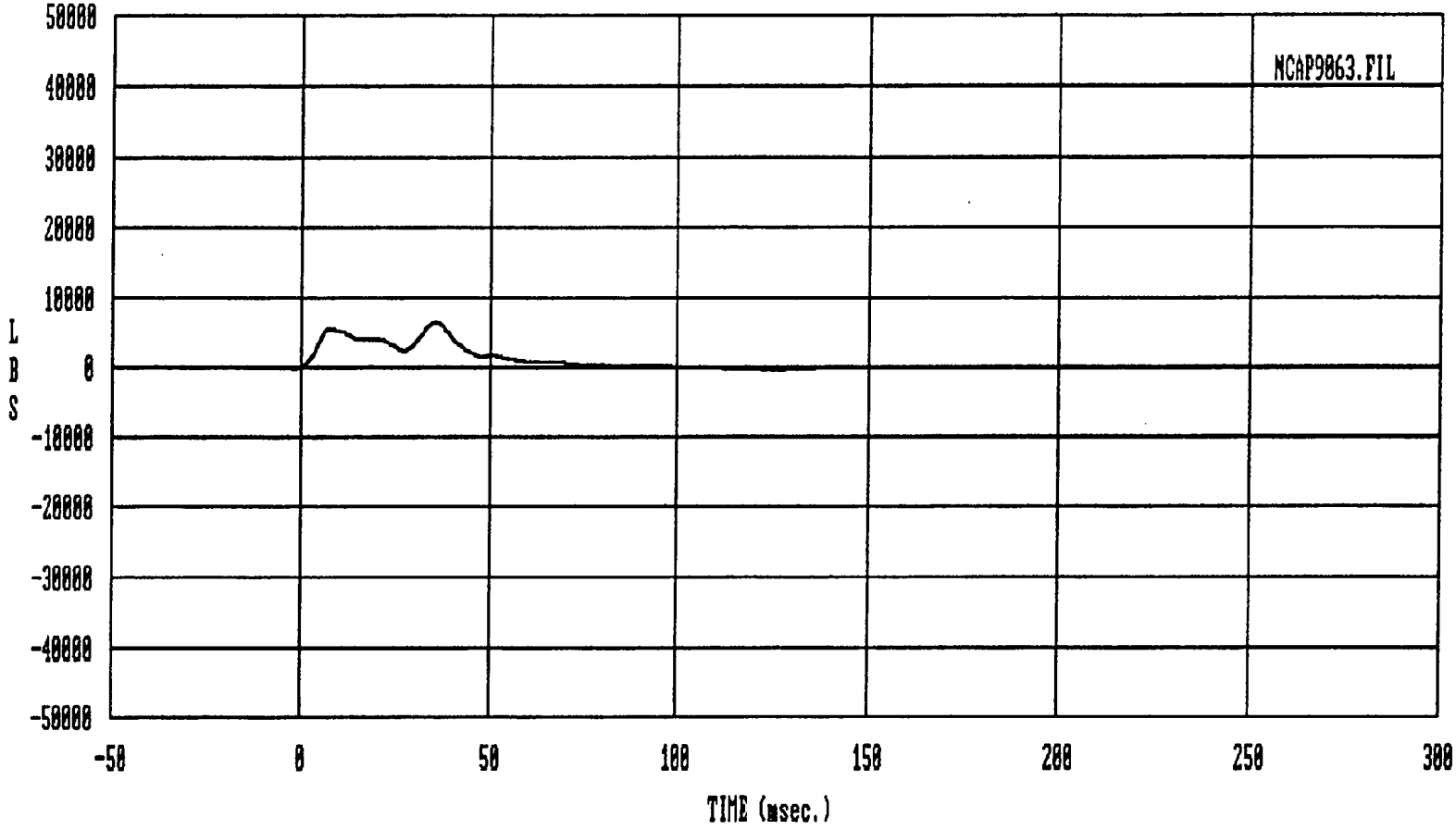
Curve: Force on Barrier load cell D5 Filter: SAE CLASS 60 Max = 6960.9 Min = -359.83

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



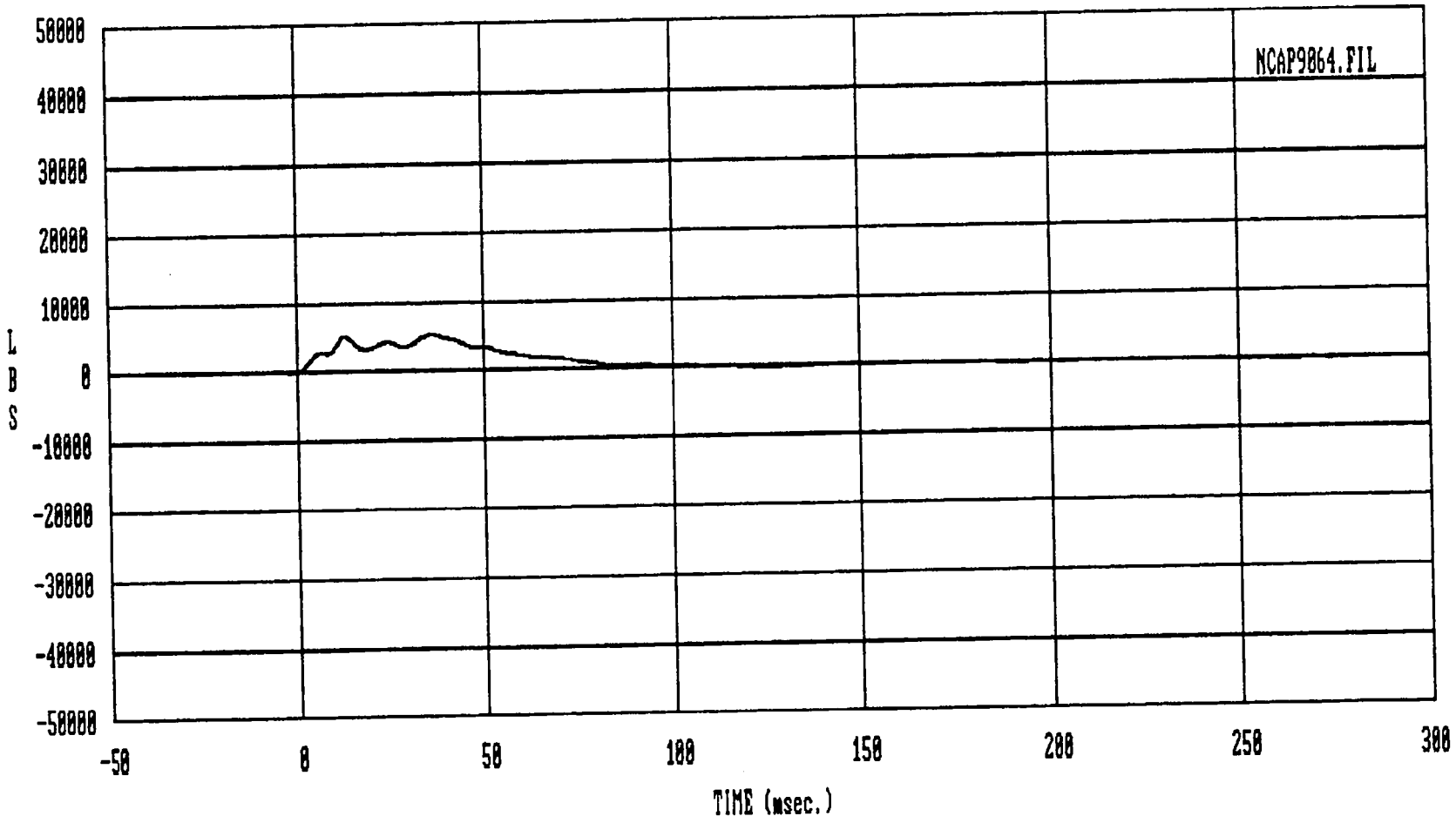
Curve: Force on Barrier load cell D6 Filter: SAE CLASS 60 Max = 11229. Min = -381.04

MSE Date: 03/08/98 Program: 1998 New Car Assessment #9 Vehicle: 1998 Ford Club Wagon Van



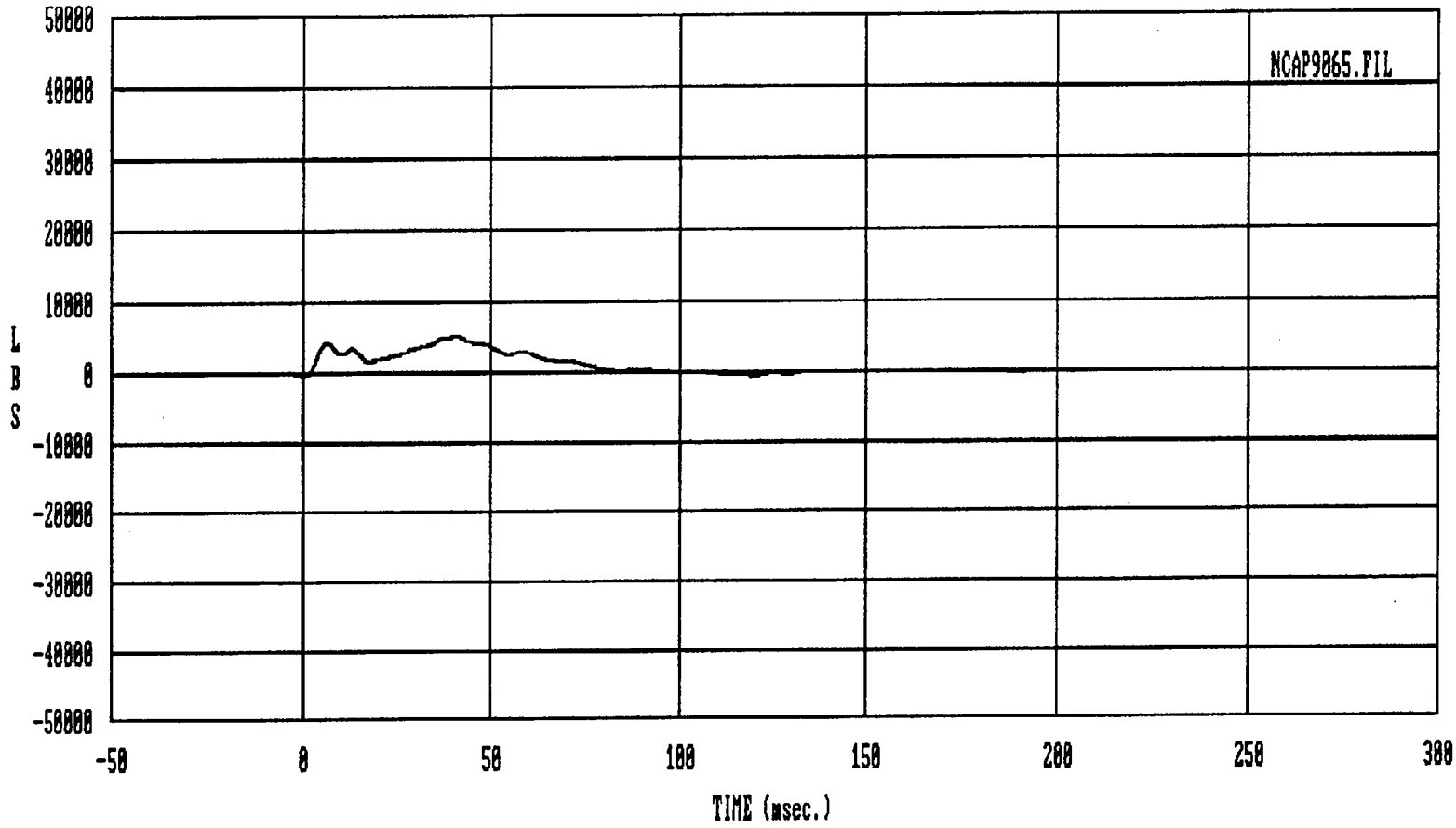
Curve: Force on Barrier load cell D7 Filter: SAE CLASS 60 Max = 6584.2 Min = -334.63

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



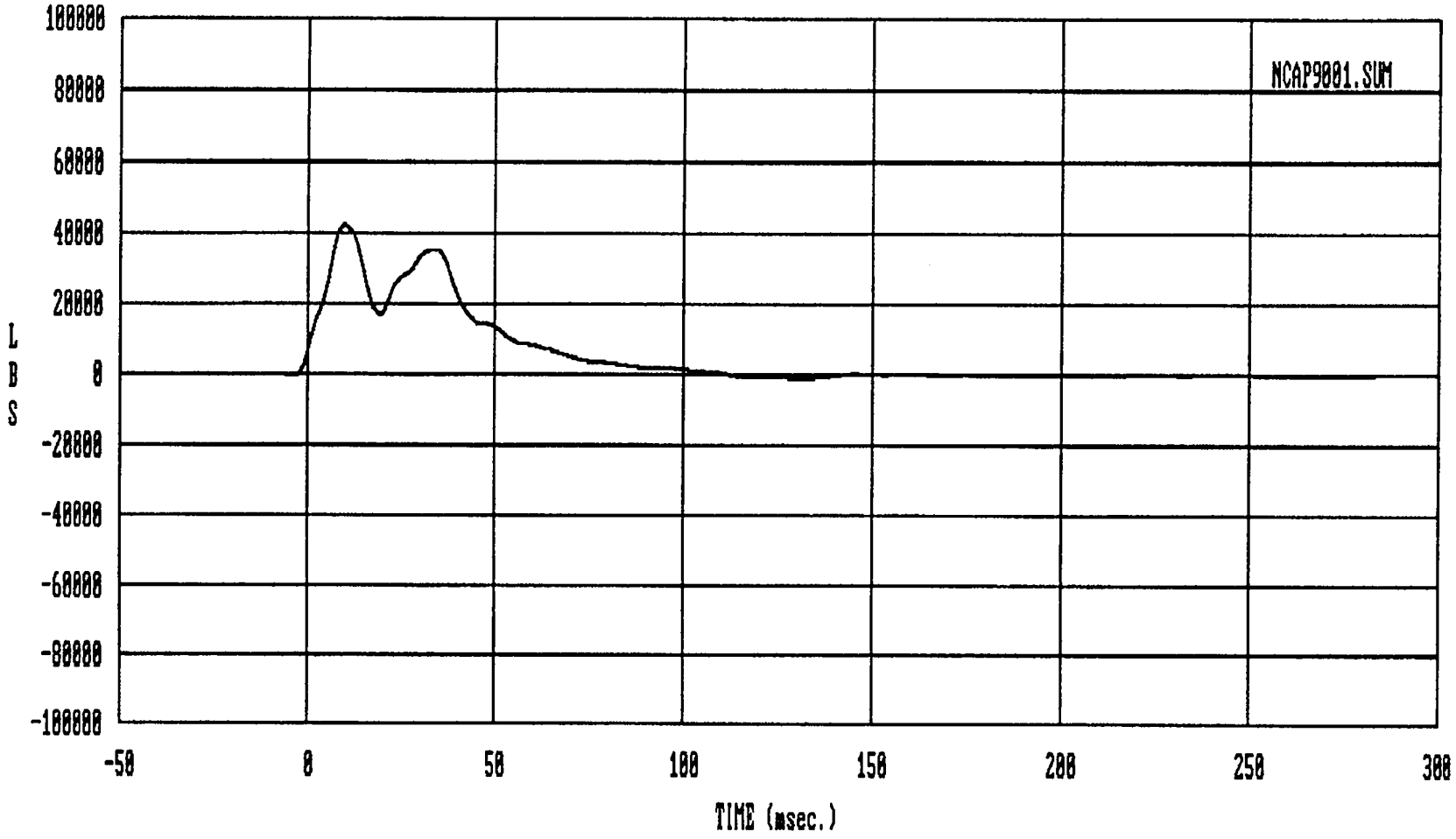
Curve: Force on Barrier load cell D8 Filter: SAE CLASS 60 Max = 5269.8 Min = -317.00

MSE Date: 03/08/98 Program: 1998 New Car Assessment #9 Vehicle: 1998 Ford Club Wagon Van



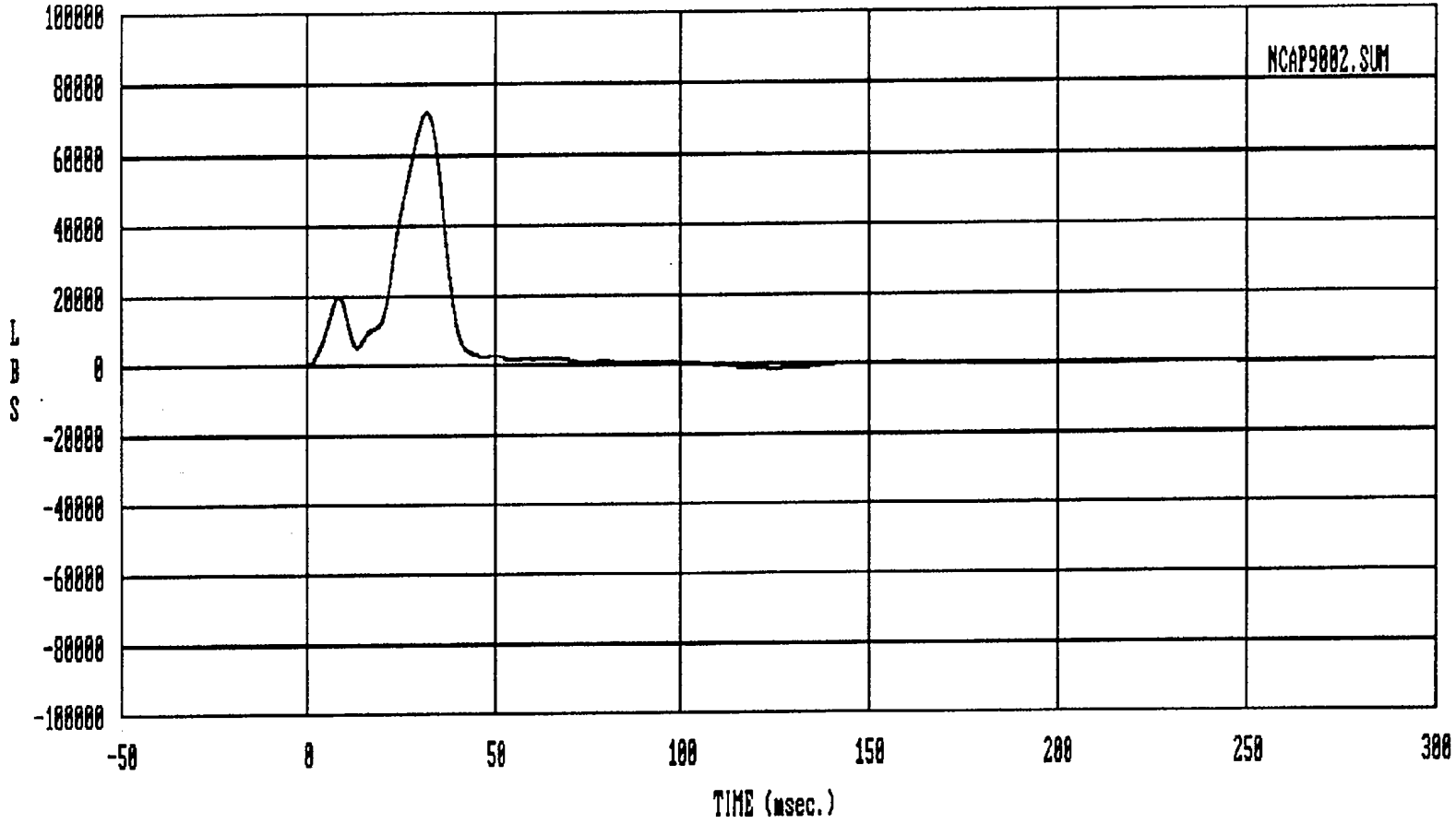
Curve: Force on Barrier load cell D9 Filter: SAE CLASS 60 Max = 5078.9 Min = -494.01

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



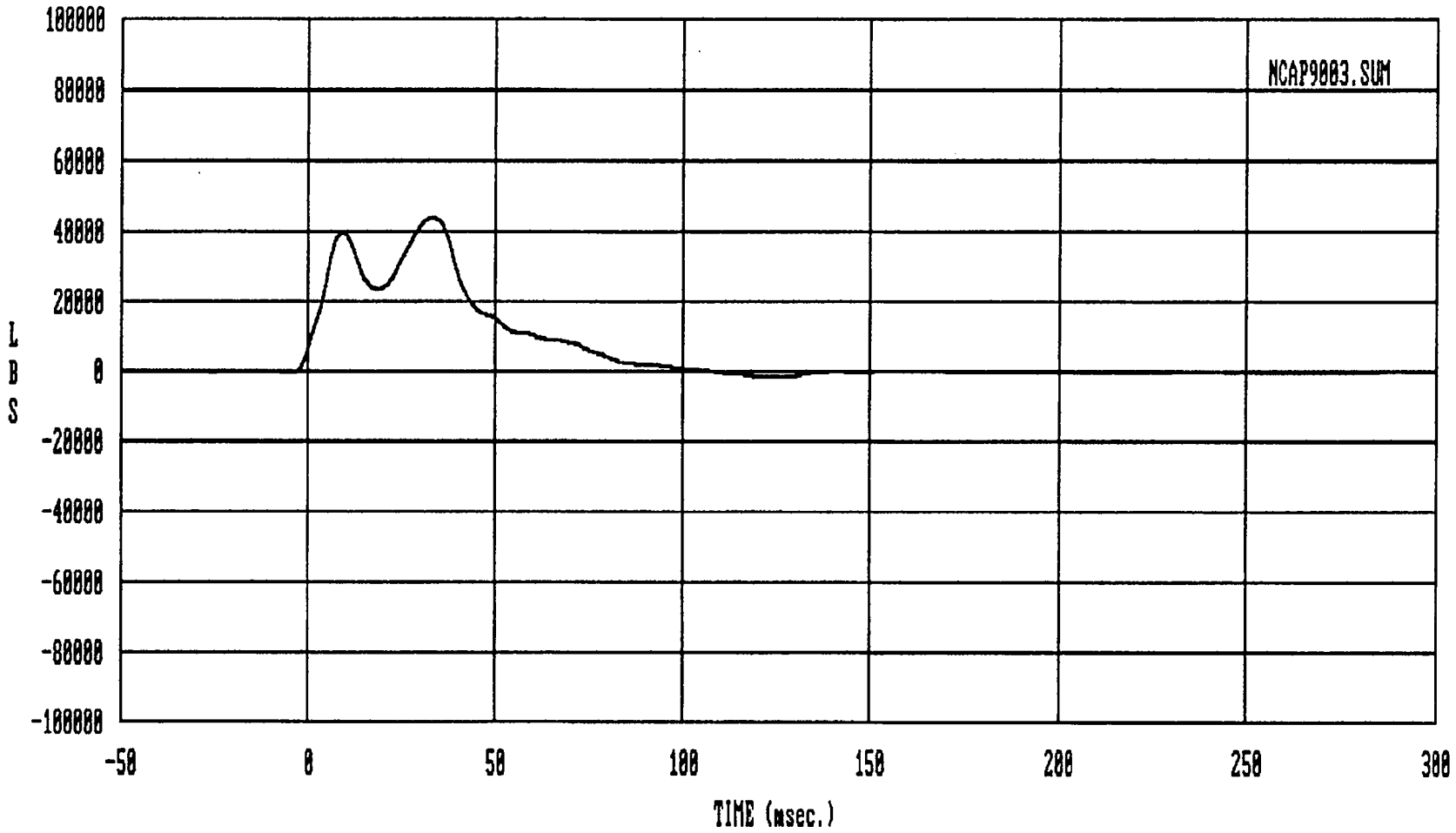
Curve: LCB sum force C1,C2,C3,D1,D2,D3 — Group 1 Filter: SAE CLASS 60 Max = 42381. Min = -1086.8

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



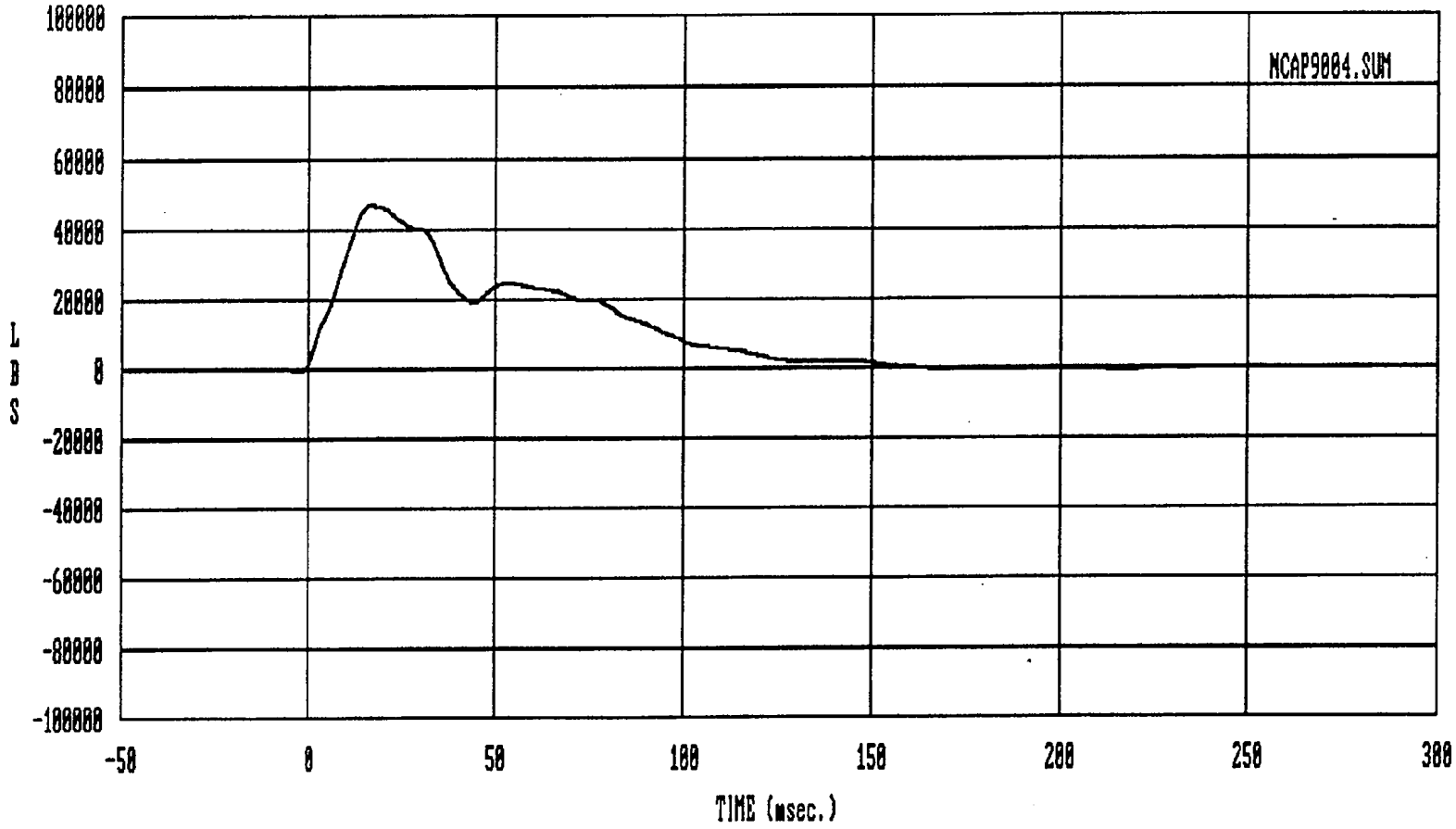
Curve: LCB sum force C4,C5,C6,D4,D5,D6 — Group 2 Filter: SAE CLASS 60 Max = 72136. Min = -1417.3

MSE Date: 03/08/98 Program: 1998 New Car Assessment #9 Vehicle: 1998 Ford Club Wagon Van



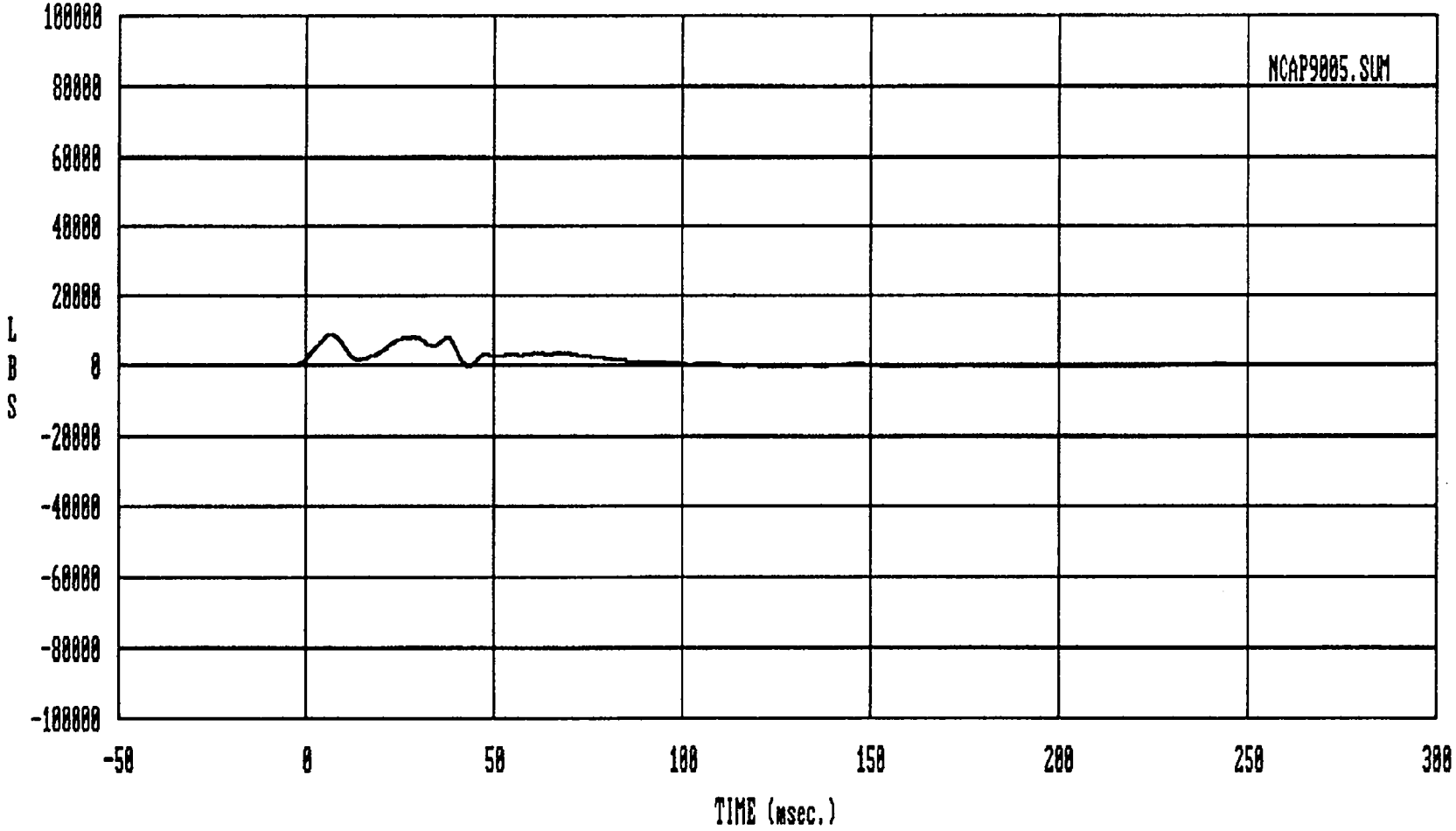
Curve: LCB sum force C7,C8,C9,D7,D8,D9 — Group 3 Filter: SAE CLASS 60 Max = 44002. Min = -1663.2

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



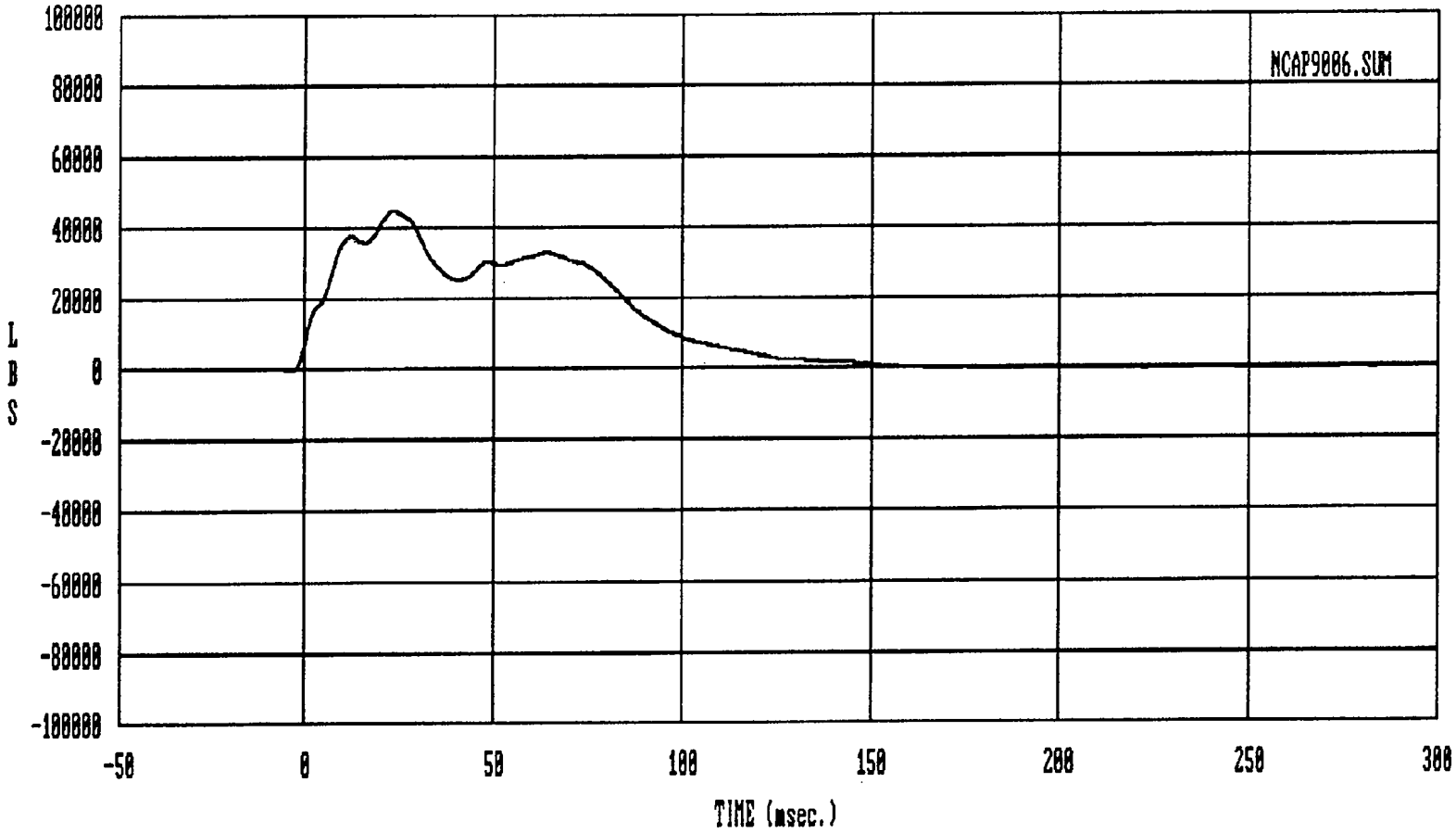
Curve: LCB sum force A1,A2,A3,B1,B2,B3 — Group 4 Filter: SAE CLASS 60 Max = 47875. Min = -647.32

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



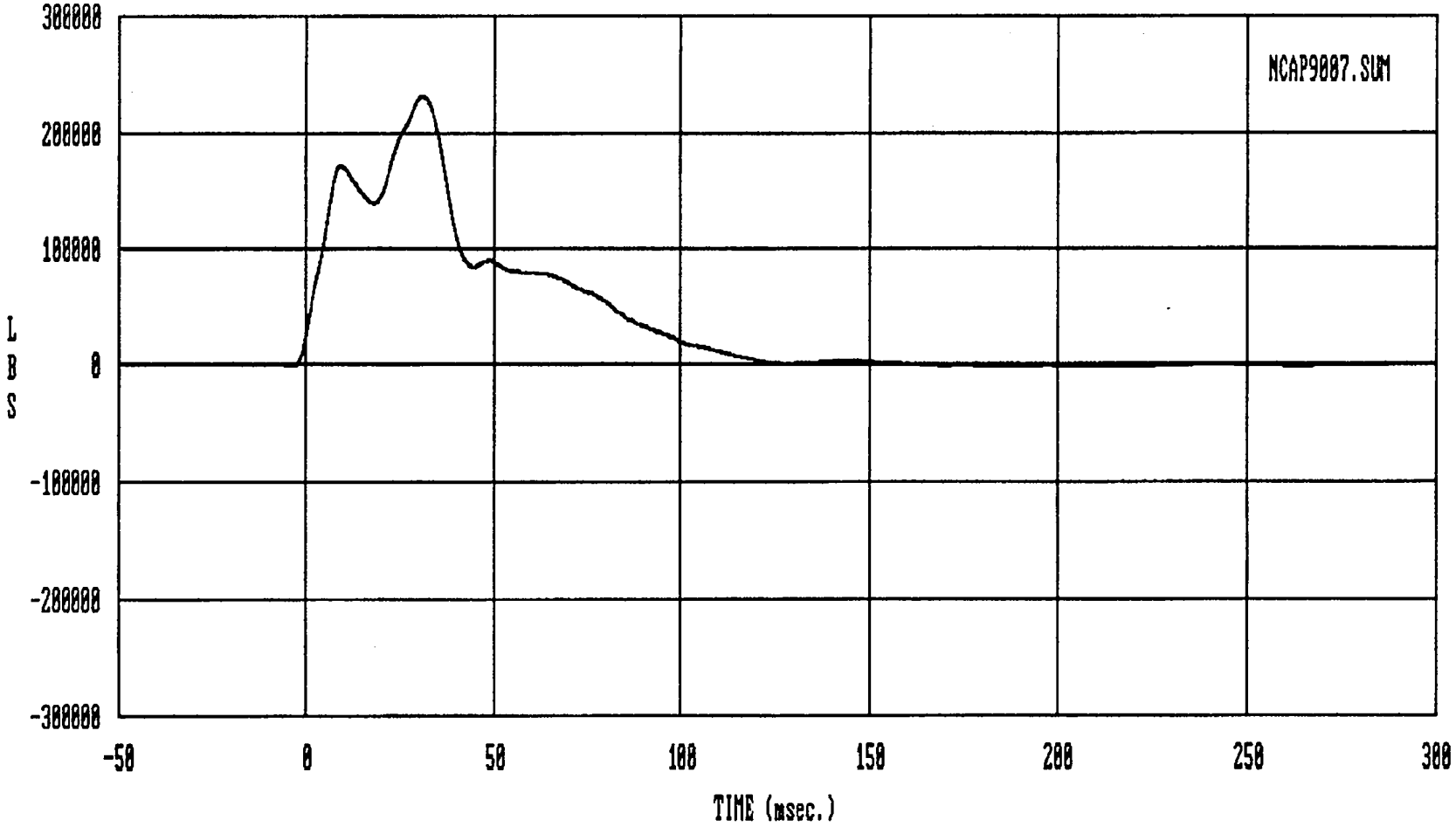
Curve: LCB sum force A4,A5,A6,B4,B5,B6 -- Group 5 Filter: SAE CLASS 60 Max = 9134.0 Min = -497.92

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



Curve: LCB sum force A7,A8,A9,B7,B8,B9 — Group 6 Filter: SAE CLASS 60 Max = 44842. Min = -558.81

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van



Curve: Load Cell Barrier total force Filter: SAE CLASS 60 Max = .23261E+06 Min = -2724.0

MSE Date: 03/08/90 Program: 1990 New Car Assessment #9 Vehicle: 1990 Ford Club Wagon Van

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APPENDIX C

PART 572 DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION TESTS

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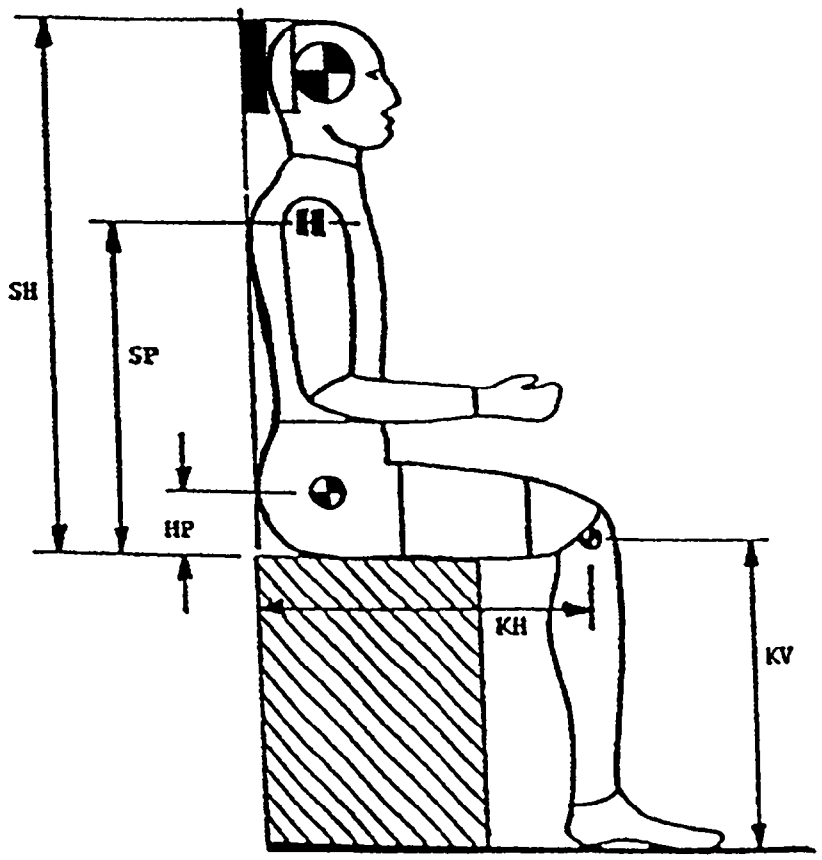
NHTSA DUMMY I.D. NO.: | 4 | 6 | 5 |

I. CONFIGURATION VERIFICATION DATA:



	P. 572 SPECIFICATION	PRE-TEST (if required)	POST-TEST (if required)
DATE OF CONFIGURATION VERIFICATION	//////////	03/02/90 to 03/05/90	
VERIFICATION NUMBER FOR DUMMY* ---	//////////	03	
SH - Seated Height- - - - - - - - -	35.6 to 35.8"	35.60	
SP - Shoulder Pivot Height- - - -	21.8 to 22.4"	21.80	
HP - Hip Pivot Height - - - - - -	3.9 ref.	3.90	
KH - Knee Pivot from back line- -	20.1 to 20.7"	20.50	
KV - Knee Pivot from floor- - - -	19.3 to 19.9"	19.25	
SW - Shoulder Width - - - - - - - -	17.8 to 18.4"	18.10	
HW - Hip Width- - - - - - - - - - -	14.0 to 15.4"	15.10	

TECHNICIAN'S NAME: APURVA MAPARA

*Sequential number beginning with "1" at the start of each fiscal year's crash test program

DUMMY CONFIG. & PERF. VERIF. DATA....Continued:

II. PERFORMANCE VERIFICATION DATA: NHTSA DUMMY I.D. NO.: | 4 | 6 | 5 |

TECHNICIAN NAME: APURVA MAPARA

		PRE-TEST (if required)	POST-TEST (if required)
DATE OF PERFORMANCE VERIFICATION----------		03/02-03/05/90	
SEQUENTIAL VERIFICATION NUMBER FOR DUMMY*-----		03	
VERIF. LAB. TEMPERATURE (66 to 78 F Range)----		68-72 F	F
VERIF. LAB. HUMIDITY (10 to 70% Range---------		60-70 %	%
TEST PARAMETER	SPECIFICATION		
1. HEAD DROP TEST--			
a. Peak Resultant Accel.	210 to 260G	250.785	
b. Peak Lateral Accel.-	<10G	3.20	
c. Time above 100G - - -	0.9 to 1.5 ms	1.20	
2. NECK BENDING TEST--			
a. Pendulum Speed- - - -	21.5 to 22.5 fps	22.00	
b. Pend. Avg. Decel. over $t_3 - t_2$	20 to 24G	21.90	
c. Peak Resultant Head Acceleration - - - -	26G max.	25.60	
d. Pendulum Decel.($t_2 - t_1$)	<3 ms	2.80	
e. Pendulum Decel.($t_3 - t_2$)	25 to 30 ms	26.20	
f. Pendulum Decel.($t_4 - t_3$)	<10 ms	10.00	
g. Max. Head Rotation -	63 to 73	63.80	
h. Chordal Displacement-Head Rotation Angle-			
0° Time- -	-2 to 2 ms	0.00	
0° Displ.-	-.5 to .5"	0.001	
30° Time- -	22.6 to 34 ms	29.40	
30° Displ.-	2.1 to 3.1"	2.58	
60° Time- -	40.3 to 51.7ms	48.10	
60° Displ.-	4.3 to 5.3"	5.10	
Maximum Time- -	53.2 to 66.8ms	56.30	
(63.8°) Displ.-	5.0 to 6.0"	5.42	

*beginning with "1" at the start of each fiscal year's crash test program

TECHNICIAN NAME: APURVA MAPARA

TEST PARAMETER		SPECIFICATION	PRE-TEST (if required)	POST-TEST (if required)
2. NECK BENDING TEST---- Continued: h. Chordal Displacement- Head Rotation Angle-				
60°	Time- -	67.0 to 83.0 ms	68.00	
	Displ.-	4.3 to 5.3 in.	5.05	
30°	Time- -	85.4 to 104.6 ms	86.00	
	Displ.-	2.1 to 3.1 in.	2.322	
0°	Time- -	101.0 to 123.0 ms	101.00	
	Displ.-	-.5 to 0.5 in.	0.05	
3. ABDOMINAL COMPRESSION TEST: (Preload=10 pounds)				
a. Force @ .5" - - - - -		23 to 36 lbs.	30.00	
b. Force @ .75" - - - - -		36 to 50 lbs.	44.00	
c. Force @ 1.0"- - - - -		50 to 63 lbs.	59.00	
d. Force @ 1.3"- - - - -		73 to 88 lbs.	84.00	
4. LUMBAR FLEXION TEST:				
a. Force @ 20° - - - - -		22 to 34 lbs.	28.50	
b. Force @ 30° - - - - -		34 to 46 lbs.	40.50	
c. Force @ 40° - - - - -		46 to 58 lbs.	48.00	
d. Return Angle- - - - -		12° maximum	6.00	
5. CHEST IMPACT TESTS:				
a. High Speed				
(1) Probe Speed - - -		21.78-22.22 fps	22.00	
(2) Peak Deflection -		1.7" maximum	1.69	
(3) Peak Resistive Force - - - - - -		2250 lbs.maximum	1989.00	
(4) Internal Mysteresis		50 to 70%	59.00	
b. Low Speed				
(1) Probe Speed - - -		13.86-14.14 fps	13.90	
(2) Peak Deflection -		1.1" maximum	0.97	
(3) Peak Resistive Force - - - - - -		1450 lbs.maximum	1212.80	
(4) Internal Hysteresis		50 to 70%	58.50	

DUMMY CONFIG. & PERF. VERIF. DATA....Continued:

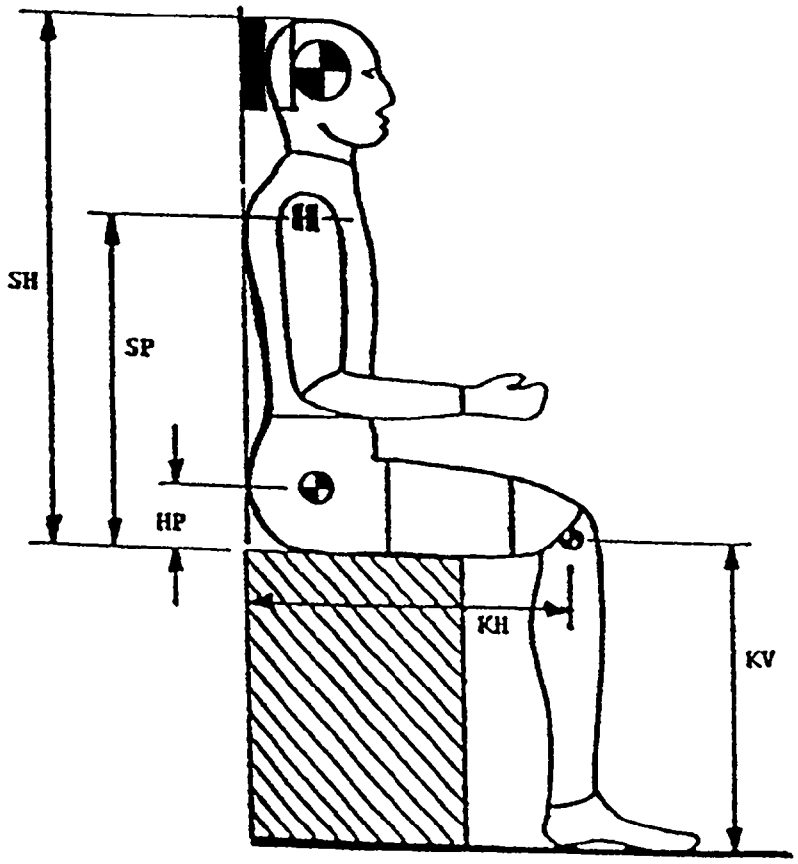
II. PERFORMANCE VERIFICATION DATA: NHTSA DUMMY I.D. NO.: | 4 | 6 | 5 |

TECHNICIAN NAME: APURVA MAPARA

TEST PARAMETER	SPECIFICATION	PRE-TEST (if required)	POST-TEST (if required)
6. KNEE IMPCT TESTS:			
a. Right Side--			
(1) Probe Speed - - -	6.76 to 7.04 fps	6.99	
(2) Maximum Force - -	1850 to 2500 lbs	2417.20	
(3) Time Above 1000#-	1.7 ms minimum	1.90	
b. Left Side--			
(1) Probe Speed - - -	6.76 to 7.04 fps	7.00	
(2) Maximum Force - -	1850 to 2500 lbs	2281.40	
(3) Time Above 1000#-	1.7 ms minimum	1.80	

NHTSA DUMMY I.D. NO.: | 4 | 6 | 6 |

I. CONFIGURATION VERIFICATION DATA:



	P. 572 SPECIFICATION	PRE-TEST (if required)	POST-TEST (if required)
DATE OF CONFIGURATION VERIFICATION	//////////////	02/05/90 to 02/20/90	
VERIFICATION NUMBER FOR DUMMY* ---	//////////////	02	
SH - Seated Height- - - - - - - - -	35.6 to 35.8"	35.60	
SP - Shoulder Pivot Height- - - -	21.8 to 22.4"	21.90	
HP - Hip Pivot Height - - - - - - -	3.9 ref.	3.90	
KH - Knee Pivot from back line- -	20.1 to 20.7"	20.50	
KV - Knee Pivot from floor- - - -	19.3 to 19.9"	19.30	
SW - Shoulder Width - - - - - - - -	17.8 to 18.4"	18.40	
HW - Hip Width- - - - - - - - - - -	14.0 to 15.4"	15.00	

TECHNICIAN'S NAME: APURVA MAPARA

*Sequential number beginning with "1" at the start of each fiscal year's crash test program

DUMMY CONFIG. & PERF. VERIF. DATA....Continued:

II. PERFORMANCE VERIFICATION DATA: NHTSA DUMMY I.D. NO.: | 4 | 6 | 6 |

TECHNICIAN NAME: APURVA MAPARA

		PRE-TEST (if required)	POST-TEST (if required)
DATE OF PERFORMANCE VERIFICATION----------		02/05-02/20/90	
SEQUENTIAL VERIFICATION NUMBER FOR DUMMY*-----		02	
VERIF. LAB. TEMPERATURE (66 to 78 F Range)----		68-72 F	F
VERIF. LAB. HUMIDITY (10 to 70% Range---------		60-70 %	%
TEST PARAMETER	SPECIFICATION		
1. HEAD DROP TEST--			
a. Peak Resultant Accel.	210 to 260G	217.59	
b. Peak Lateral Accel.-	<10G	6.42	
c. Time above 100G - - -	0.9 to 1.5 ms	1.30	
2. NECK BENDING TEST--			
a. Pendulum Speed- - - -	21.5 to 22.5 fps	22.00	
b. Pend. Avg. Decel. over $t_3 - t_2$	20 to 24G	22.40	
c. Peak Resultant Head Acceleration - - - -	26G max.	25.20	
d. Pendulum Decel. $(t_2 - t_1)$	<3 ms	2.50	
e. Pendulum Decel. $(t_3 - t_2)$	25 to 30 ms	27.00	
f. Pendulum Decel. $(t_4 - t_3)$	<10 ms	9.80	
g. Max. Head Rotation -	63 to 73	66.50	
h. Chordal Displacement- Head Rotation Angle-			
0° Time- -	-2 to 2 ms	0.00	
0° Displ.-	-.5 to .5"	0.003	
30° Time- -	22.6 to 34 ms	29.70	
30° Displ.-	2.1 to 3.1"	2.63	
60° Time- -	40.3 to 51.7ms	46.50	
60° Displ.-	4.3 to 5.3"	5.20	
Maximum (66.5°) Time- -	53.2 to 66.8ms	58.20	
(66.5°) Displ.-	5.0 to 6.0"	5.74	

*beginning with "1" at the start of each fiscal year's crash test program

TEST PARAMETER		SPECIFICATION	PRE-TEST (if required)	POST-TEST (if required)
2. NECK BENDING TEST---- Continued:				
h. Chordal Displacement-Head Rotation Angle-				
60°	Time- -	67.0 to 83.0 ms	68.70	
	Displ.-	4.3 to 5.3 in.	5.15	
30°	Time- -	85.4 to 104.6 ms	85.80	
	Displ.-	2.1 to 3.1 in.	2.41	
0°	Time- -	101.0 to 123.0 ms	101.80	
	Displ.-	-.5 to 0.5 in.	0.141	
3. ABDOMINAL COMPRESSION TEST:(Preload=10 pounds)				
a. Force @ .5" - - - - -		23 to 36 lbs.	30.00	
b. Force @ .75" - - - - -		36 to 50 lbs.	47.00	
c. Force @ 1.0"- - - - -		50 to 63 lbs.	61.00	
d. Force @ 1.3"- - - - -		73 to 88 lbs.	84.00	
4. LUMBAR FLEXION TEST:				
a. Force @ 20° - - - - -		22 to 34 lbs.	31.50	
b. Force @ 30° - - - - -		34 to 46 lbs.	42.10	
c. Force @ 40° - - - - -		46 to 58 lbs.	51.00	
d. Return Angle- - - - -		12° maximum	4.00	
5. CHEST IMPACT TESTS:				
a. High Speed				
(1) Probe Speed - - -		21.78-22.22 fps	22.00	
(2) Peak Deflection -		1.7" maximum	1.63	
(3) Peak Resistive Force - - - - - -		2250 lbs.maximum	1974.30	
(4) Internal Mysteresis		50 to 70%	56.6%	
b. Low Speed				
(1) Probe Speed - - -		13.86-14.14 fps	14.00	
(2) Peak Deflection -		1.1" maximum	1.02	
(3) Peak Resistive Force - - - - - -		1450 lbs.maximum	1215.50	
(4) Internal Hysteresis		50 to 70%	54.40	

DUMMY CONFIG. & PERF. VERIF. DATA....Continued:

II. PERFORMANCE VERIFICATION DATA: NHTSA DUMMY I.D. NO.: | 4 | 6 | 6 |

TECHNICIAN NAME: APURVA MAPARA

TEST PARAMETER	SPECIFICATION	PRE-TEST (if required)	POST-TEST (if required)
6. KNEE IMPCT TESTS:			
a. Right Side--			
(1) Probe Speed - - -	6.76 to 7.04 fps	7.01	
(2) Maximum Force - -	1850 to 2500 lbs	1974.80	
(3) Time Above 1000#-	1.7 ms minimum	1.70	
b. Left Side--			
(1) Probe Speed - - -	6.76 to 7.04 fps	6.88	
(2) Maximum Force - -	1850 to 2500 lbs	2216.20	
(3) Time Above 1000#-	1.7 ms minimum	1.70	

APPENDIX D

VEHICLE OWNER'S MANUAL OCCUPANT RESTRAINT SYSTEM INSTRUCTIONS

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Using Safety Restraints Properly

Safety Belts

Safety belts help protect you and your passengers in case of a collision. In most states, the law requires their use. We strongly recommend that you use them every time you travel in your vehicle.

Safety belts provide best restraint when:

- ❑ the seat back is upright
- ❑ the occupant is sitting upright (not slouched)
- ❑ the lap belt is snug and low on the hips
- ❑ the shoulder belt is snug against the chest
- ❑ the knees are straight forward

For your safety, your vehicle has different types of safety belts:

- ❑ Combination lap and shoulder belts
- ❑ Lap belts without retractors
- ❑ Rear lap belts with retractors

See the following sections for directions on how to properly use these safety belts. Also see *Safety restraints for children* in this chapter for special instructions about using safety belts for children.

Warning: Make sure that you and your passengers, including pregnant women, wear safety belts. Be sure that lap belts fit snugly and as low as possible around the hips. Do not wear them around the waist. If safety belts are not used properly, the chances of you or your passengers being injured in a collision greatly increase.

Always drive and ride with your seat back upright and the lap belt snug across the hips to reduce the risk of serious injury to the abdomen or neck that could be caused by sliding under the safety belts in a collision.

Do not allow people to ride in the cargo area of your vehicle. People who are not riding in a seat with a fastened safety belt are much more likely to be injured if you have a collision.

Never let a passenger hold a child on his or her lap while the vehicle is moving. The passenger cannot protect the child from injury in a collision.

Never use a single belt for more than one person or across seating positions. This greatly increases the chance that one or both of the people will be injured in a collision. Each seating position in your vehicle has a specific safety belt assembly which is made up of one buckle and one tongue. Each assembly is designed to be used as a pair.

Warning: Use the shoulder belt on the outside shoulder only. Never wear the shoulder belt under the arm. Never swing it around your neck over the inside shoulder. Never use a single belt for more than one person. Failure to follow these precautions could increase the chance and/or severity of injury in an accident.

Warning: Be sure to lock all doors before you drive away. This will lessen the risk of your being thrown from the vehicle in a collision.

Also, check the safety belt systems periodically to make sure that they work properly and are not damaged.

Warning: Make sure that the lap belt is as low around your hips as possible. Do not wear the lap belt around your waist. If you do not use the lap belts properly, the chances of being injured in a collision greatly increase.

Combination Lap and Shoulder Belts

While your vehicle is in motion, the combination lap and shoulder belt adjusts to

your movement. However, if you brake hard, corner hard or if your vehicle receives an impact of 5 mph (8 km/h) or more, the lap and shoulder belt locks and prevents you from moving. Your belt system cannot be made to lock by jerking on the belt.

After you get into your vehicle, close the door and lock it. Then adjust the seat to the position that suits you best.

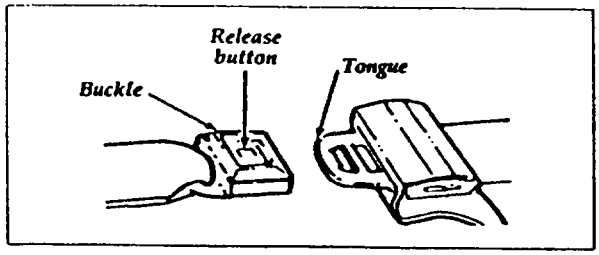
To fasten the belt, pull the lap-shoulder belt from the retractor so that the shoulder portion of the belt crosses your shoulder and chest. Insert the belt tongue into the proper buckle until you hear a snap and feel it latch.

Warning: Use the shoulder belt only on the shoulder that is closest to the vehicle door. Never wear the belt under your arm. If you do not use the shoulder belt properly, the chances of your being injured in a collision greatly increase.

To tighten the lap portion of the belt, pull up on the shoulder piece until it fits you snugly. The belt should rest as low on your hips as possible.

Lap Belts Without Retractors

On the center seat of the second row three-passenger bench seat, you will find a lap belt without a retractor. All of the seats of the third, fourth and fifth row bench seats are equipped the same way. Shorten and fasten these belts when you are not using them. To make each belt longer, tip the tongue at a right angle to the belt and pull the belt over your lap until the tongue reaches the buckle. When buckled, remove excess slack by pulling on the full end of the webbing extending from the tongue.



Fastening and unfastening center occupant safety belts

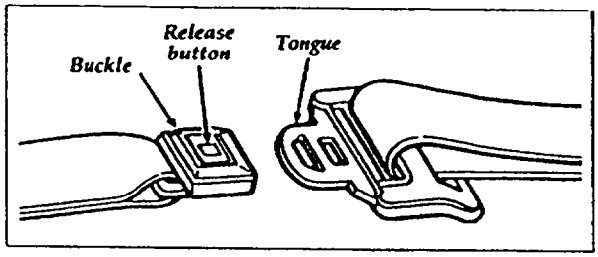
To fasten the belt, pull the belt across your hips and insert the tongue into the correct buckle on your seat until you hear a snap and feel it lock. Make sure the buckle is securely fastened.

Adjust the belt so that it fits snugly around your hips:

- ❑ If you need to lengthen the belt, unfasten it and repeat the procedure above.
- ❑ If you need to shorten the belt, pull on the loose end of the webbing.

Rear Lap Belts with Retractors

Pull the belt out of the retractor with a steady motion and insert the tongue into the buckle until you hear a snap and feel the latch engage.



Fastening and unfastening safety belts

To Untangle the Belt:

If you should jam the lap belt retractor by allowing the belt to retract when it is twisted, you can free the webbing with this procedure:

1. Pull on the belt with both hands to tighten it on the retractor spool.
2. Feed the belt back into the retractor until it is completely retracted. Repeat previous step if necessary.
3. Pull the belt out of its holder as far as it will go and untwist the belt or remove the object that is jamming the belt. Let the belt retract.
4. Then, pull the belt out and let it retract several times to make sure that the belt works properly.

To Unfasten the Belt:

1. Push the release button on the the buckle. This allows the tongue to unlatch from the buckle.
2. While the belt retracts, guide the tongue to its original position. If you do not guide the tongue, it may strike you or part of the vehicle.

Safety Belt Extension Assembly

You can lengthen a short safety belt eight inches (20 cm) with an extension assembly (611C22). See your local dealer for more details.

Warning: To ensure that the safety belt extension assembly will hold in the event of a collision, only safety belt extensions manufactured by the same supplier as the safety belt should be used. Manufacturer identification is located at the end of the webbing on a label.

Safety Belt Maintenance

Check your safety belt system periodically to make sure that it works properly and isn't damaged. Always have your safety belt system checked after a collision.

For information on cleaning the webbing of seat belt assemblies, see *"Cleaning the Safety Belts"* in the index.

Warning: All safety belt assemblies including retractors and attaching hardware should be inspected after any collision. Ford recommends that all safety belt assemblies used during a collision be replaced unless the collision was minor and a qualified technician finds that the belts do not show damage and continue to operate properly. Safety belt assemblies not in use during a collision should also be inspected and replaced if either damage or improper operation is noted.